



Service Manual

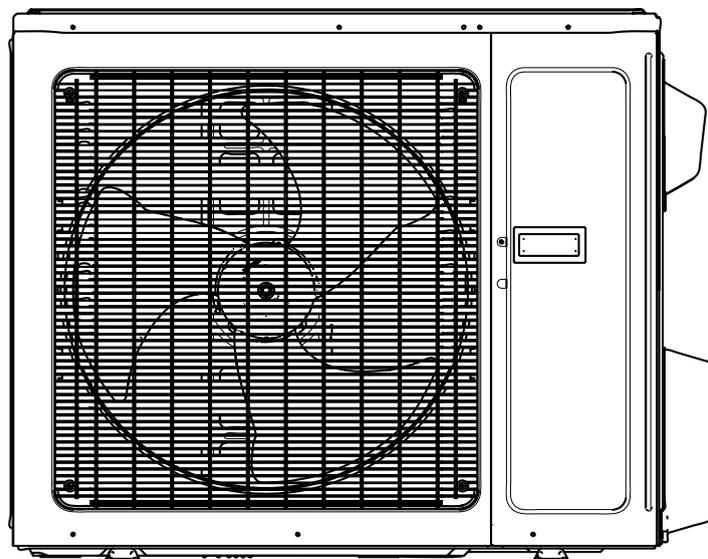
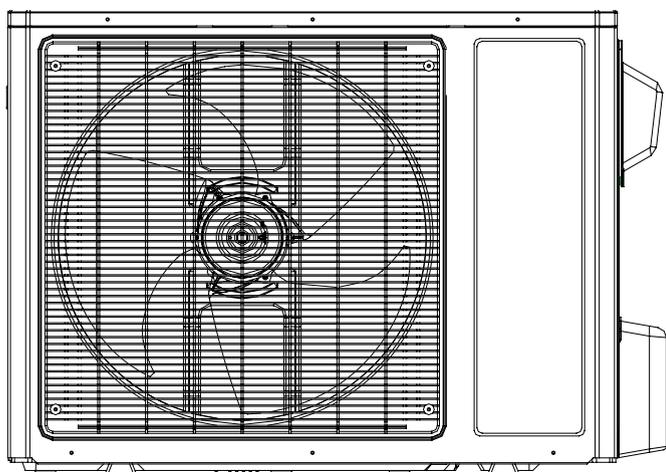


Table of Contents

Part I : Technical Information	1
1. Summary	1
2. Specifications	3
2.1 Specification Sheet	3
2.2 Capacity Variation Ratio According to Temperature	17
2.3 Cooling and Heating Data Sheet in Rated Frequency	17
3. Outline Dimension Diagram.....	19
3.1 Indoor Unit	19
3.2 Outdoor Unit	21
4. Refrigerant System Diagram	24
5. Electrical Part.....	25
5.1 Wiring Diagram.....	25
5.2 PCB Printed Diagram.....	31
6. Function and Control.....	39
6.1 Remote Controller Introduction.....	39
6.2 Brief Description of Modes and Functions.....	43
Part II : Installation and Maintenance	49
7. Notes for Installation and Maintenance.....	49
8. Installation	52
8.1 Installation Dimension Diagram	52
8.2 Installation Parts-Checking	54
8.3 Selection of Installation Location.....	54
8.4 Requirements for electric connection.....	54
8.5 Installation of Indoor Unit.....	54
8.6 Installation of Outdoor unit	56
8.7 Vacuum Pumping and Leak Detection.....	58
8.8 Check after Installation and Test operation.....	58

GRARC24AS GRHARC18AS
GRHARC24AS

GRARC36AS2 GRHARC36AS2



Remote Controller:



Model List:

Product code	Indoor model	Indoor product code	Outdoor model	Outdoor product code	Remote Controller
CB464004100_X29326	GWHARC09SA	CB464N04100_X29326	GRHARC09ASA	CB425W08200_X29326	YAP1FF
CB464005000_X29326	GWARC12SA	CB464N05000_X29326	GRARC12ASA	CB425W07800_X29326	YAP1F
CB464005100_X29326	GWHARC12SA	CB464N05100_X29326	GRHARC12ASA	CB425W07900_X29326	YAP1FF
CB464003200_X29326	GWARC09S	CB464N03200_X29326	GRARC09AS	CB348W03300_X29326	YAP1F
CB464003100_X29326	GWARC12S	CB464N03100_X29326	GRARC12AS	CB348W03500_X29326	
CB464003300_X29326	GWARC18S	CB464N03300_X29326	GRARC18AS	CB348W04700_X29326	
CB464003000_X29326	GWARC24S	CB464N03000_X29326	GRARC24AS	CB348W03200_X29326	YAP1FF
CB464003800_X29326	GWHARC09S	CB464N03800_X29326	GRHARC09AS	CB348W03400_X29326	
CB464003600_X29326	GWHARC12S	CB464N03600_X29326	GRHARC12AS	CB348W03600_X29326	
CB464005200_X29326	GWHARC18S	CB464N05200_X29326	GRHARC18AS	CB348W04600_X29326	YAP1FF
CB464003700_X29326	GWHARC24S	CB464N03700_X29326	GRHARC24AS	CB348W03100_X29326	
CB434019000_X29326	GWARC36S2	CB434N19000_X29326	GRARC36AS2	CB432W22900_X29326	YAP1F
CB434017800_X29326	GWHARC36S2	CB434N17800_X29326	GRHARC36AS2	CB432W23000_X29326	YAP1FF

2. Specifications

2.1 Specification Sheet

Product Code			CB464004100_X29326	
Power Supply	Rated Voltage	V~	115	
	Rated Frequency	Hz	60	
	Phases		1	
Power Supply Mode			Outdoor	
Cooling Capacity		Btu/h	9000	
Heating Capacity		Btu/h	9500	
Cooling Power Input		W	900	
Heating Power Input		W	870	
Cooling Power Current		A	10.87	
Heating Power Current		A	10.36	
Rated Input		W	1270	
Rated Current		A	12.66	
Rated Heating Current		A	10.65	
Air Flow Volume		CFM	318/288/241/171	
Dehumidifying Volume		Pint/h	1.69	
EER		(Btu/h)/W	10	
COP		(Btu/h)/W	10.92	
SEER			18	
SCOP(Average/Warmer/Colder)			9	
Application Area		yd ²	14-22	
Indoor Unit	Model		GWHARC09SA	
	Product Code		CB464N04100_X29326	
	Fan Type		Cross-flow	
	Fan Diameter Length(DxL)		mm	Φ98×580
	Cooling Speed		r/min	1350/1200/1050/750
	Heating Speed		r/min	1350/1200/1050/850
	Fan Motor Power Output		W	20
	Fan Motor RLA		A	0.24
	Fan Motor Capacitor		μF	4
	Evaporator Form			Aluminum Fin-copper Tube
	Evaporator Pipe Diameter		mm	Φ5
	Evaporator Row-fin Gap		mm	2-1.4
	Evaporator Coil Length (LxDxW)		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)	43/38/34/28
	Sound Power Level		dB (A)	53/48/44/28
	Dimension (WXHXD)		inch	31 1/8X10 7/8X7 7/8
	Dimension of Carton Box (LXWXH)		inch	33 15/32X13 11/32X10 5/16
	Dimension of Package (LXWXH)		inch	33 35/64X13 31/32X10 3/4
Net Weight		lb	20.9	
Gross Weight		lb	25.4	

Outdoor Unit	Model of Outdoor Unit		GRHARC09ASA
	Product Code of Outdoor Unit		CB425W08200_X29326
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-A091zE190
	Compressor Oil		FVC68D or RB 68EP
	Compressor Type		Rotary
	L.R.A.	A	40
	Compressor RLA	A	12.62
	Compressor Power Input	W	980
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Electron expansion valve
	Operation Temp	°F	61~86
	Ambient Temp (Cooling)	°F	0~115
	Ambient Temp (Heating)	°F	-4~75
	Condenser Form		Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7
	Rows-fin Gap	mm	1-1.4
	Coil Length (LXD _X W)	mm	756×19.05×508
	Fan Motor Speed	rpm	850
	Output of Fan Motor	W	30
	Fan Motor RLA	A	0.24
	Fan Motor Capacitor	μF	/
	Air Flow Volume of Outdoor Unit	m ³ /h	1800
	Fan Type	--	Axial-flow
	Fan Diameter	mm	400
	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 (H/M/L)	dB (A)	52
	Sound Power Level (H/M/L)	dB (A)	62
Dimension (WXHXD)	inch	33 25/64X21 17/64X12 19/32	
Dimension of Carton Box (LXWXH)	inch	34 9/16X14 11/64X22 53/64	
Dimension of Package (LXWXH)	inch	34 11/16X14 19/64X23 27/64	
Net Weight	lb	62.8	
Gross Weight	lb	68.4	
Refrigerant		R410A	
Refrigerant Charge	oz	24.7	
Connection Pipe	Length	ft	24.6
	Gas Additional Charge	oz/ft.	0.2
	Outer Diameter Liquid Pipe		1/4"
	Outer Diameter Gas Pipe		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.

Outdoor Unit	Model of Outdoor Unit		GRARC09AS	GRHARC09AS
	Product Code of Outdoor Unit		CB348W03300_X29326	CB348W03400_X29326
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD	ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QXF-A079zE190A	QXF-A079zE190A
	Compressor Oil		FW68DA	FW68DA
	Compressor Type		Rotary	Rotary
	L.R.A.	A	/	/
	Compressor RLA	A	4.6	4.6
	Compressor Power Input	W	790	790
	Overload Protector		HPC115/95U1/KSD115°C	HPC115/95U1/KSD115°C
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation Temp	°F	61~86	61~86
	Ambient Temp (Cooling)	°F	-4~115	-4~115
	Ambient Temp (Heating)	°F	/	-13~75
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	710×19.05×508	710×19.05×508
	Fan Motor Speed	rpm	900	900
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	0.36	0.36
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	1600	1600
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	400	400
	Defrosting Method		/	/
	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)	49	50
	Sound Power Level (H/M/L)	dB (A)	59	60
Dimension (WXHXD)	inch	30 25/32X21 17/64X12 19/32	30 25/32X21 17/64X12 19/32	
Dimension of Carton Box (LXWXH)	inch	32 9/32X13 31/32X22 53/64	32 9/32X13 31/32X22 53/64	
Dimension of Package (LXWXH)	inch	32 13/32X14 3/32X23 27/64	32 13/32X14 3/32X23 27/64	
Net Weight	lb	63.9	66.2	
Gross Weight	lb	69.5	71.7	
Refrigerant		R410A	R410A	
Refrigerant Charge	oz	28.2	28.9	
Connection Pipe	Length	ft	24.6	24.6
	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	40	40
	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.

Outdoor Unit	Model of Outdoor Unit		GRARC12ASA	GRHARC12ASA
	Product Code of Outdoor Unit		CB425W07800_X29326	CB425W07900_X29326
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-A091zE190	QXA-A091zE190
	Compressor Oil		FVC68D or RB 68EP	FVC68D or RB 68EP
	Compressor Type		Rotary	Rotary
	L.R.A.	A	40	40
	Compressor RLA	A	15.23	15.23
	Compressor Power Input	W	980	980
	Overload Protector		1NT11L-6233 or KSD115°C or HPC115/95U1	1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation Temp	°F	61~86	61~86
	Ambient Temp (Cooling)	°F	0~115	0~115
	Ambient Temp (Heating)	°F	/	-4~75
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	712×38.1×506	712×38.1×506
	Fan Motor Speed	rpm	900	900
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	0.23	0.23
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	1800	1800
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	400	400
	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)	53	53
Sound Power Level (H/M/L)	dB (A)	63	63	
Dimension (WXHXD)	inch	33 25/64X21 17/64X12 19/32	33 25/64X21 17/64X12 19/32	
Dimension of Carton Box (LXWXH)	inch	34 9/16X14 11/64X22 53/64	34 9/16X14 11/64X22 53/64	
Dimension of Package (LXWXH)	inch	34 11/16X14 19/64X23 27/64	34 11/16X14 19/64X23 27/64	
Net Weight	lb	63.9	67.3	
Gross Weight	lb	69.5	72.8	
Refrigerant		R410A	R410A	
Refrigerant Charge	oz	31.8	31.8	
Connection Pipe	Length	ft	24.6	24.6
	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	49.2	49.2
	Max Distance Length	ft	98.4	98.4
Note: The connection pipe applies metric diameter.				

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

Outdoor Unit	Model of Outdoor Unit		GRARC12AS	GRHARC12AS
	Product Code of Outdoor Unit		CB348W03500_X29326	CB348W03600_X29326
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD	ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QXF-A102zE190B	QXF-A102zE190B
	Compressor Oil		FW68DA	FW68DA
	Compressor Type		Rotary	Rotary
	L.R.A.	A	/	/
	Compressor RLA	A	6.6	6.6
	Compressor Power Input	W	1023	1023
	Overload Protector		HPC115/95U1/KSD115°C	HPC115/95U1/KSD115°C
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation Temp	°F	61~86	61~86
	Ambient Temp (Cooling)	°F	-4~115	-4~115
	Ambient Temp (Heating)	°F	/	-13~75
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7.94
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	742x38.1x550	742x38.1x550
	Fan Motor Speed	rpm	900	900
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	0.37	0.37
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	2200	2200
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	438	438
	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)	52	53
	Sound Power Level (H/M/L)	dB (A)	62	63
Dimension (WXHXD)	inch	33 25/64X23 15/32X12 19/32	33 25/64X23 15/32X12 19/32	
Dimension of Carton Box (LXWXH)	inch	34 9/16X14 11/64X24 51/64	34 9/16X14 11/64X24 51/64	
Dimension of Package (LXWXH)	inch	34 11/16X14 19/64X25 25/64	34 11/16X14 19/64X25 25/64	
Net Weight	lb	70.6	72.8	
Gross Weight	lb	77.2	79.4	
Refrigerant		R410A	R410A	
Refrigerant Charge	oz	34.2	35.3	
Connection Pipe	Length	ft	24.6	24.6
	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	40	40
	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.

Outdoor Unit	Model of Outdoor Unit		GRARC18AS	GRHARC18AS
	Product Code of Outdoor Unit		CB348W04700_X29326	CB348W04600_X29326
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO. LTD.	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXF-A102zE190C	QXA-B141zF030A
	Compressor Oil		FW68DA or equivalent	RB68EP
	Compressor Type		Rotary	Rotary
	L.R.A.	A	25	25
	Compressor RLA	A	8.5	9.5
	Compressor Power Input	W	1023	1440
	Overload Protector		1NT11L-6233/KSD115°C/HPC 115/95	1NT11L-6233 or KSD115°C or HPC115/95U1
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation Temp	°F	61~86	61~86
	Ambient Temp (Cooling)	°F	-4~115	-4~115
	Ambient Temp (Heating)	°F	/	-13~75
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	734×38.1×550	851×38.1×660
	Fan Motor Speed	rpm	880	800
	Output of Fan Motor	W	40	60
	Fan Motor RLA	A	0.62	0.65
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	2400	3200
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	445	550
	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)	52	57
	Sound Power Level (H/M/L)	dB (A)	62	67
Dimension (WXHXD)	inch	35 25/64X23 15/32X14 7/8	38X27 9/16X15 19/32	
Dimension of Carton Box (LXWXH)	inch	37 13/64X16 27/64X24 51/64	40 25/64X17 29/32X28 15/16	
Dimension of Package (LXWXH)	inch	37 21/64X16 17/32X25 25/64	40 33/64X18 1/32X29 17/32	
Net Weight	lb	80.5	104.7	
Gross Weight	lb	87.1	111.4	
Refrigerant		R410A	R410A	
Refrigerant Charge	oz	37	49.4	
Connection Pipe	Length	ft	24.6	24.6
	Gas Additional Charge	oz/ft.	/	0.2
	Outer Diameter Liquid Pipe	inch	1/4"	1/4"
	Outer Diameter Gas Pipe	inch	1/2"	1/2"
	Max Distance Height	ft	50	49.2
	Max Distance Length	ft	100	98.4
	Note: The connection pipe applies metric diameter.			

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

Outdoor Unit	Model of Outdoor Unit		GRARC24AS	GRHARC24AS
	Product Code of Outdoor Unit		CB348W03200_X29326	CB348W03100_X29326
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD	ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QXFS-D25zX090H	QXFS-D25zX090H
	Compressor Oil		FW68DA	FW68DA
	Compressor Type		Rotary	Rotary
	L.R.A.	A	24	24
	Compressor RLA	A	13	13
	Compressor Power Input	W	2420	2420
	Overload Protector		HPC115/95U1/KSD115°C	HPC115/95U1/KSD115°C
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation Temp	°F	61~86	61~86
	Ambient Temp (Cooling)	°F	-4~115	-4~115
	Ambient Temp (Heating)	°F	/	-13~75
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	935×38.1×660	935×38.1×660
	Fan Motor Speed	rpm	800	800
	Output of Fan Motor	W	60	60
	Fan Motor RLA	A	0.4	0.4
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	3200	3200
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	520	520
	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)	57	57
	Sound Power Level (H/M/L)	dB (A)	67	67
Dimension (WXHXD)	inch	38X27 9/16X15 19/32	38X27 9/16X15 19/32	
Dimension of Carton Box (LXWXH)	inch	40 25/64X17 29/32X28 15/16	40 25/64X17 29/32X28 15/16	
Dimension of Package (LXWXH)	inch	40 33/64X18 1/32X29 17/32	40 33/64X18 1/32X29 17/32	
Net Weight	lb	119.1	121.3	
Gross Weight	lb	129	131.2	
Refrigerant		R410A	R410A	
Refrigerant Charge	oz	63.5	63.5	
Connection Pipe	Length	ft	24.6	24.6
	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	65.6	65.6
	Max Distance Length	ft	100.1	100.1
Note: The connection pipe applies metric diameter.				

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

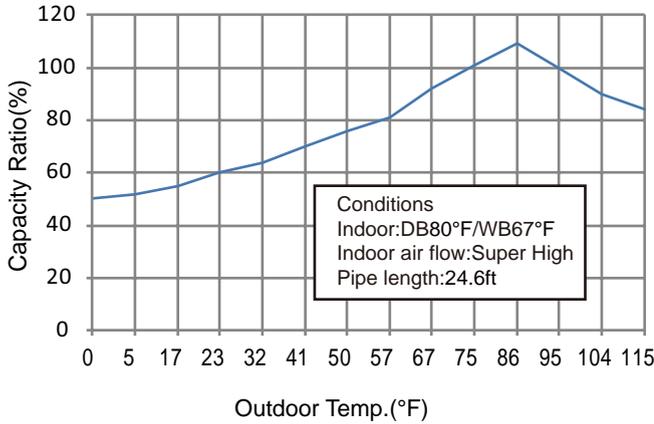
Outdoor Unit	Model of Outdoor Unit		GRARC36AS2	GRHARC36AS2
	Product Code of Outdoor Unit		CB432W22900_X29326	CB432W23000_X29326
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD	ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QXFS-D25zX090H	QXFS-D25zX090H
	Compressor Oil		FW68DA or equivalent	FW68DA or equivalent
	Compressor Type		Rotary	Rotary
	L.R.A.	A	24	24
	Compressor RLA	A	16.9	16.9
	Compressor Power Input	W	2420	2420
	Overload Protector		HPC115/95U1/KSD115°C	HPC115/95U1 KSD115°C
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation Temp	°F	61~86	61~86
	Ambient Temp (Cooling)	°F	-4~115	-4~115
	Ambient Temp (Heating)	°F	/	-13~75
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7.94	Φ7.94
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	952x38.1x748	952x38.1x748
	Fan Motor Speed	rpm	880	880
	Output of Fan Motor	W	92	92
	Fan Motor RLA	A	0.7	0.7
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	4000	4000
	Fan Type	--	Axial-flow	Axial-flow
	Fan Diameter	mm	550	550
	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)	59	61
Sound Power Level (H/M/L)	dB (A)	69	71	
Dimension (WXHXD)	inch	39 1/2X31 7/64X16 13/16	39 1/2X31 7/64X16 13/16	
Dimension of Carton Box (LXWXH)	inch	42 33/64X19 6/64X33 5/64	42 33/64X19 6/64X33 5/64	
Dimension of Package (LXWXH)	inch	42 41/64X19 14/64X33 42/64	42 41/64X19 14/64X33 42/64	
Net Weight	lb	137.8	140.0	
Gross Weight	lb	148.8	151	
Refrigerant		R410A	R410A	
Refrigerant Charge	oz	88.2	88.2	
Connection Pipe	Length	ft	24.6	24.6
	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	82
Note: The connection pipe applies metric diameter.				

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

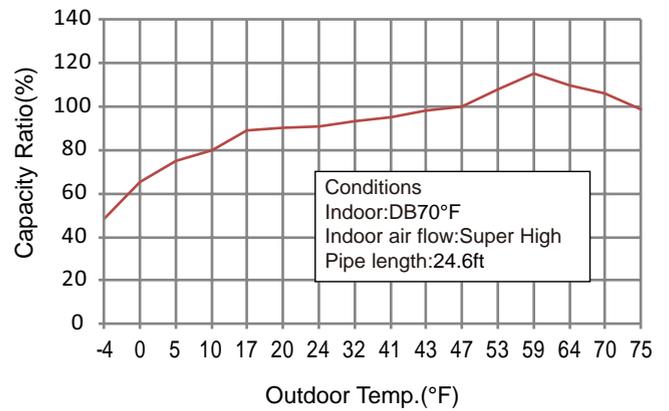
2.2 Capacity Variation Ratio According to Temperature

115V~

Cooling

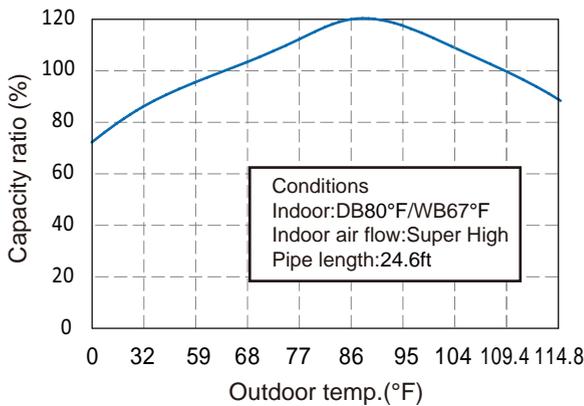


Heating

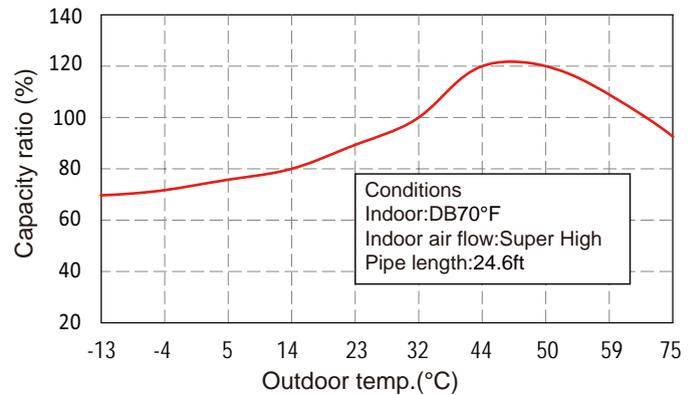


208/230V~

Cooling:



Heating:



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	Compressor revolution (rps)
Indoor	Outdoor			T1 (°F)	T2 (°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	52
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	72
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	73
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	75
80/66.9	95/-	36K	130~142	46.8 to 52.8	127 to 96.8	Super High	High	37

Heating:

Rated heating condition(°F) (DB/WB)		Model	Pressure of gas pipe connecting indoor and outdoor unit	Inlet and outlet pipe temperature of heat exchanger		Fan speed of indoor unit	Fan speed of outdoor unit	Compressor revolution (rps)
Indoor	Outdoor			P (PSIG)	T1 (°F)			
70/-	20/19	09K	362~406	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High	65
70/-	20/19	12K	362~406	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High	77
70/-	20/19	18K	507~550	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High	75
70/-	20/19	24K	507~550	in:167~181.4 out:98.6~113	in:33.8~37.4 out:35.6~42.8	Super High	High	80
70/-	20/19	36K	507~550	134 to 102	36 to 39	Super High	High	34

Instruction:

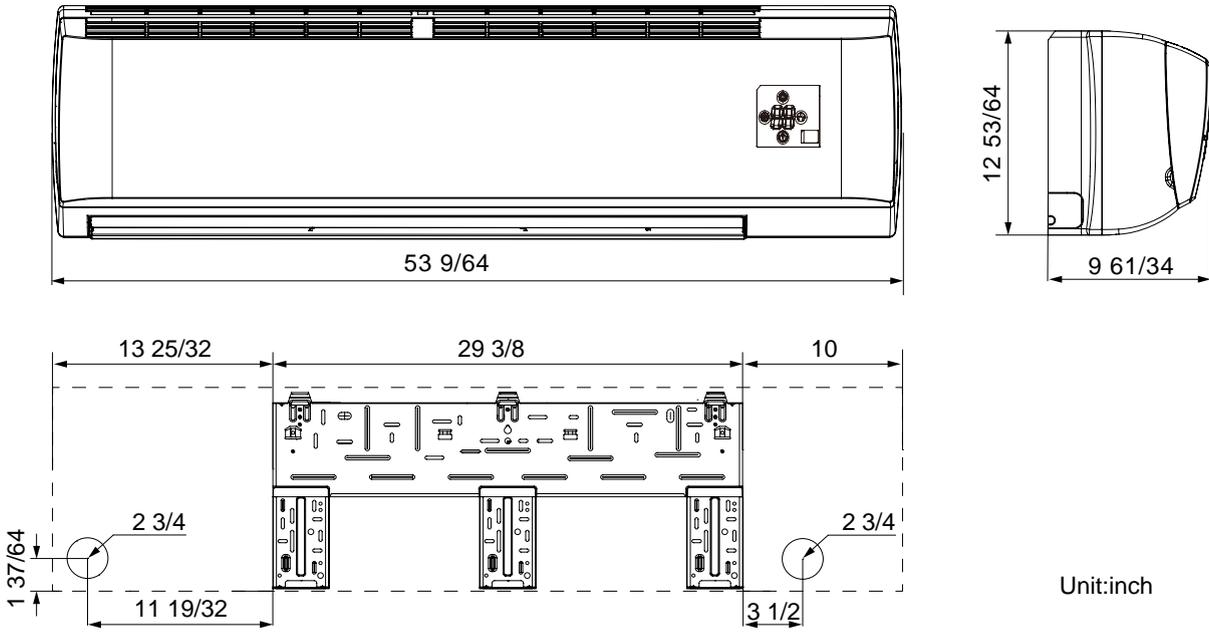
T1: Inlet and outlet pipe temperature of evaporator

T2: Inlet and outlet pipe temperature of condenser

P: Pressure at the side of big valve

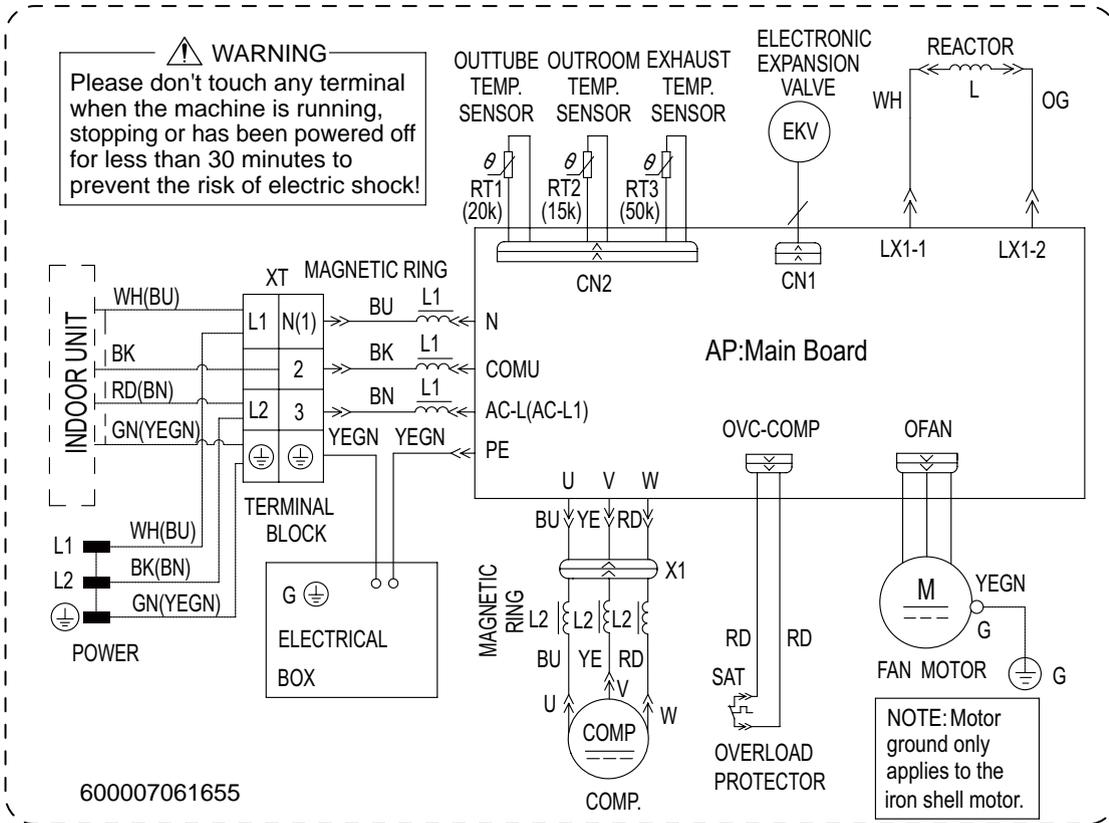
Connection pipe length: 24.6ft.

GWARC36S2 GWHARC36S2

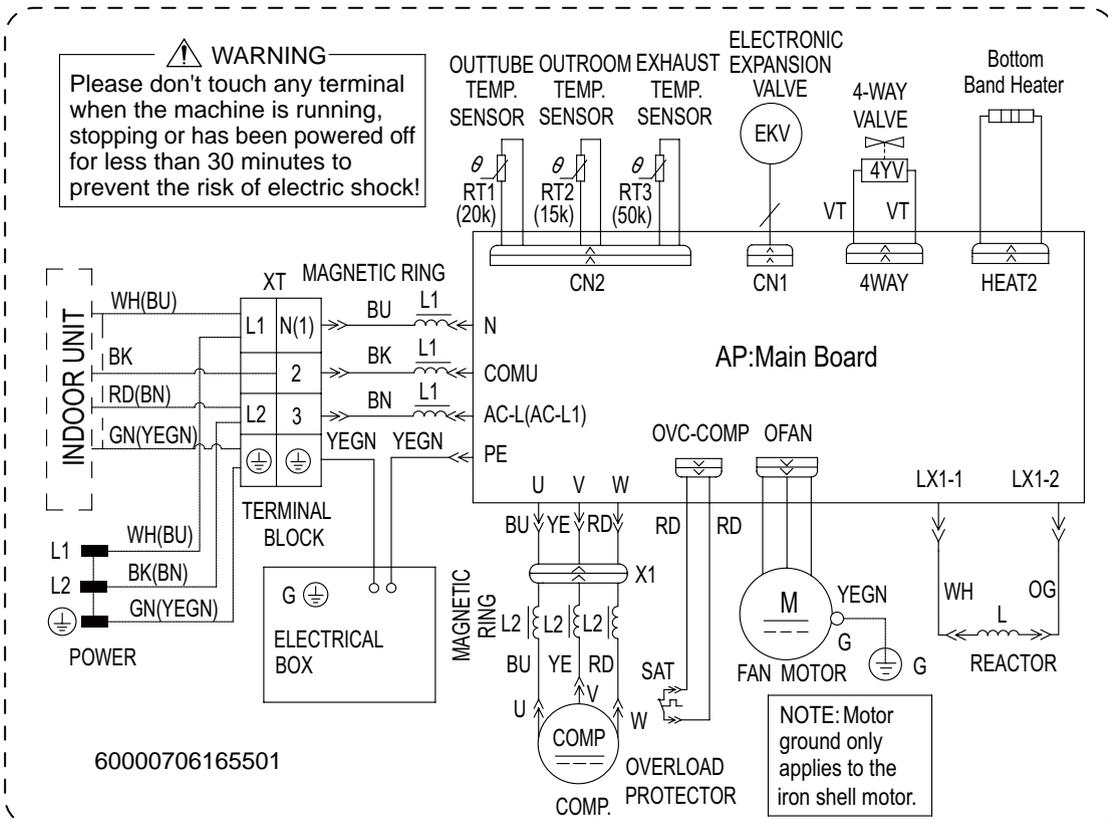


Unit:inch

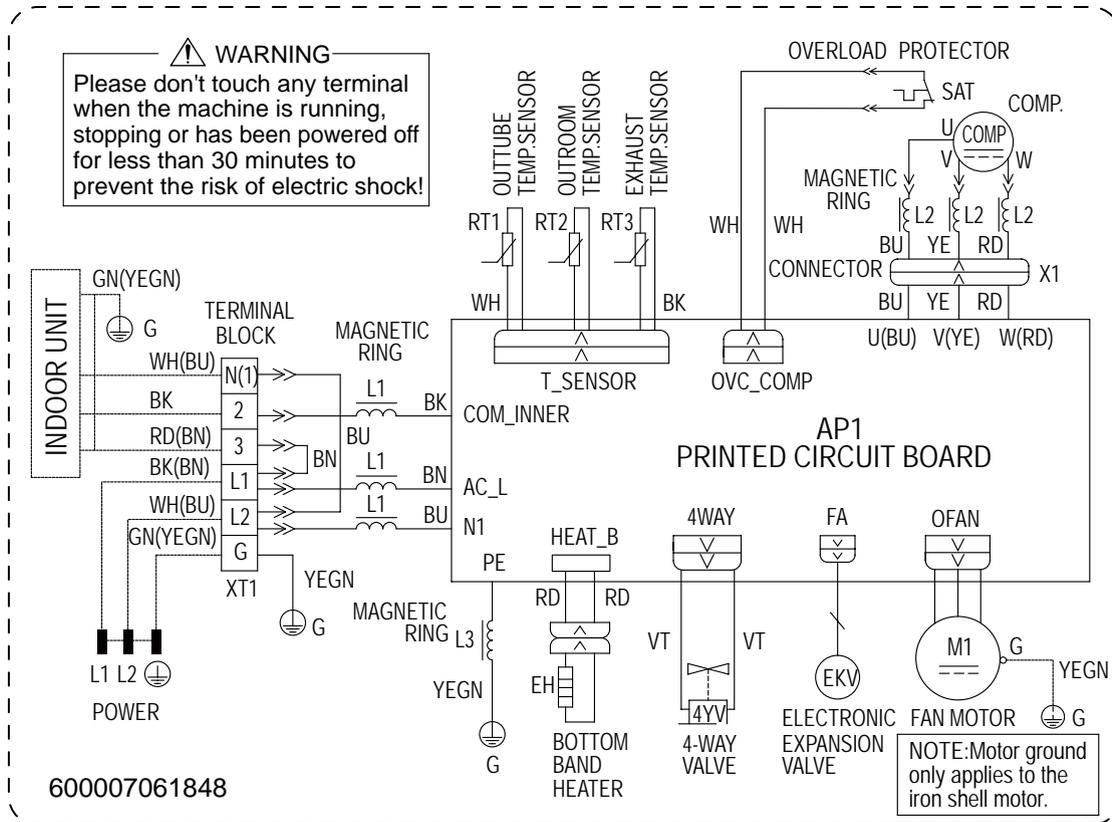
GRARC09AS GRARC12AS



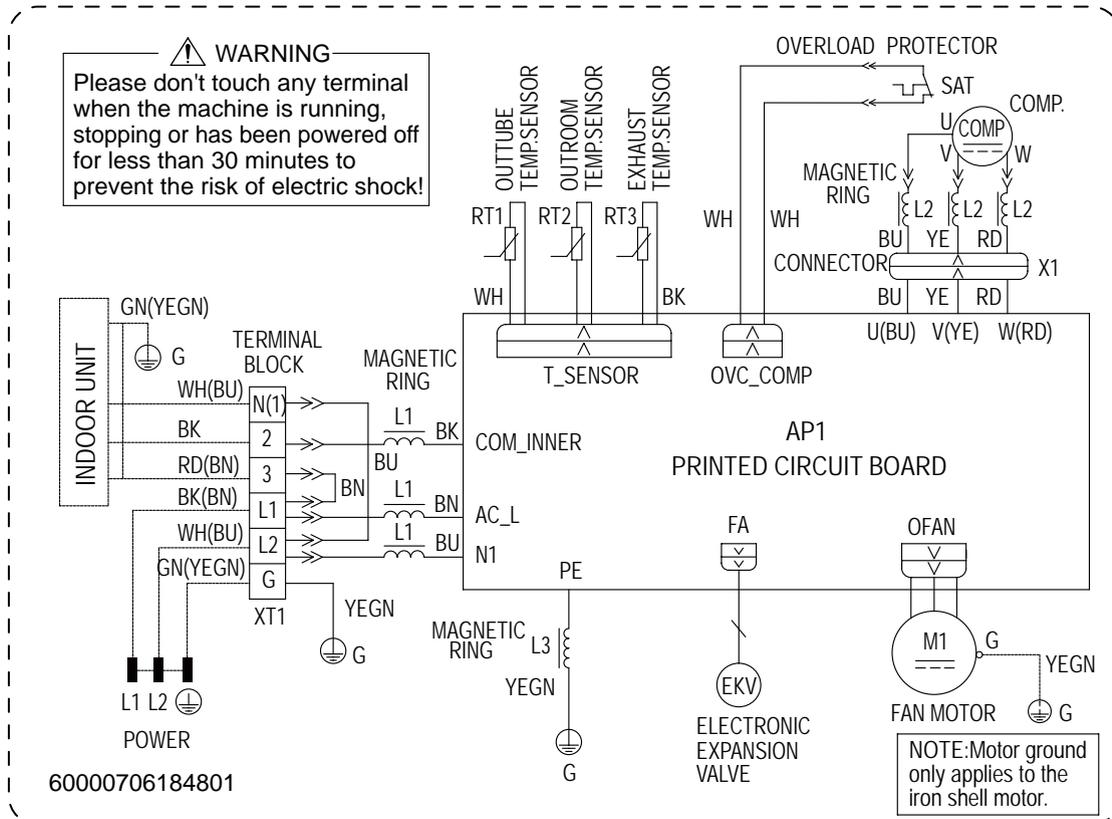
GRHARC09AS GRHARC12AS



GRHARC18AS GRHARC24AS



GRARC18AS GRARC24AS



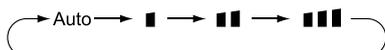
temperature. Press "FAN" button to adjust fan speed. Press "扇" / "↔" button to adjust fan blowing angle. (Cooling only unit won't receive heating mode signal. If setting heat mode with remote controller, press ON/OFF button can't start up the unit).

Note:

- For preventing cold air, after starting up heat mode, indoor unit will delay 1~5 minutes to blow air (Actual delay time depends on indoor ambient temperature).
- Set temperature range from remote controller: 61-86°F(16~32°C).

FAN button

Pressing this button can set fan speed circularly as: auto (AUTO), low(■), medium(■■), high(■■■).



Note:

- Under AUTO speed, air conditioner will select proper fan speed automatically according to factory default setting.
- It's low fan speed under dry mode.

TURBO button

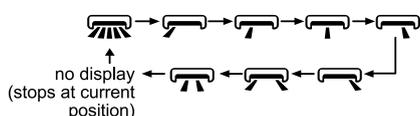
Under COOL or HEAT mode, press this button to turn to quick COOL or quick HEAT mode. "⚡" icon is displayed on remote controller. Press this button again to exit turbo function and "⚡" icon will disappear. If start this function, the unit will run at super-high fan speed to cool or heat quickly so that the ambient temperature approaches the preset temperature as soon as possible.

△/▽ button

- Press "△" or "▽" button once increase or decrease set temperature 1°F (°C). Holding "△" or "▽" button, 2s later, set temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly.
- When setting T-ON, T-OFF or CLOCK, press "△" or "▽" button to adjust time. (Refer to CLOCK, TON, T-OFF buttons)

扇 button

Press this button can select left & right swing angle. Fan blow angle can be selected circularly as below:



Note:

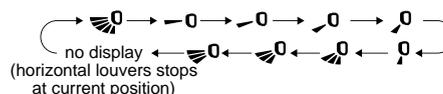
- Press this button continuously more than 2s, the main unit will swing back and forth from left to right, and then loosen the button, the unit will stop swinging and present position of guide louver will be kept immediately.
- Under left and right swing mode, when the status is switched from off to 扇, if press this button again 2s later, 扇 status

will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.

- The function is only available for some models.

↔ button

Press this button can select left & right swing angle. Fan blow angle can be selected circularly as below:



- When selecting "扇", air conditioner is blowing fan automatically. Horizontal louver will automatically swing up & down at maximum angle.
- When selecting "↔", air conditioner is blowing fan at fixed position. Horizontal louver will stop at the fixed position.
- When selecting "↔", air conditioner is blowing fan at fixed angle. Horizontal louver will send air at the fixed angle.
- Hold "↔" button above 2s to set your required swing angle. When reaching your required angle, release the button.

Note:

- "↔" may not be available. When air conditioner receives this signal, the air conditioner will blow fan automatically.
- Press this button continuously for more than 2s, the main unit will swing back and forth from up to down, and then loosen the button, the unit present position of guide louver will be kept immediately.
- Under up and down swing mode, when the status is switched from off to 扇, if press this button again 2s later, 扇 status will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.

T-ON/T-OFF button

- T-ON button

"T-ON" button can set the time for timer on. After pressing this button, "⊕" icon disappears and the word "ON" on remote controller blinks. Press "△" or "▽" button to adjust T-ON setting. After each pressing "△" or "▽" button, T-ON setting will increase or decrease 1min. Hold "△" or "▽" button, 2s later, the time will change quickly until reaching your required time. Press "T-ON" to confirm it. The word "ON" will stop blinking. "⊕" icon resumes displaying. Cancel T-ON: Under the condition that T-ON is started up, press "T-ON" button to cancel it.

- T-OFF button

"T-OFF" button can set the time for timer off. After pressing this button, "⊕" icon disappears and the word "OFF" on remote controller blinks. Press "△" or "▽" button to adjust T-OFF setting. After each pressing "△" or "▽" button, T-OFF setting will increase or decrease 1min. Hold "△" or "▽" button, 2s later, the time will change quickly until reaching your required time. Press "T-OFF" word "OFF" will stop blinking. "⊕" icon resumes displaying. Cancel T-OFF. Under the condition that T-OFF is started up, press "T-OFF" button to cancel it.

Note:

- Under on and off status, you can set T-OFF or T-ON simultaneously.
- Before setting T-ON or T-OFF, please adjust the clock time.
- After starting up T-ON or T-OFF, set the constant circulating valid.
- After that, air conditioner will be turned on or turned off according to setting time. ON/OFF button has no effect on setting. If you don't need this function, please use remote controller to cancel it.

I FEEL button

Press this button to start I FEEL function and "  " will be displayed on the remote controller. After this function is set, the remote controller will send the detected ambient temperature to the controller and the unit will automatically adjust the indoor temperature according to the detected temperature. Press this button again to cancel I FEEL function and "  " will disappear.

- Please put the remote controller near user when this function is set. Do not put the remote controller near the object of high temperature or low temperature in order to avoid detecting inaccurate ambient temperature. When I FEEL function is turned on, the remote controller should be put within the area where indoor unit can receive the signal sent by the remote controller.

CLOCK button

Press this button to set clock time. "  " icon on remote controller will blink. Press "  " or "  " button within 5s to set clock time. Each pressing of "  " or "  " button, clock time will increase or decrease 1 minute. If hold "  " or "  " button, 2s later, time will change quickly. Release this button when reaching your required time. Press "CLOCK" button to confirm the time. "  " icon stops blinking.

Note:

- Clock time adopts 24-hour mode.
- The interval between two operations can't exceed 5s. Otherwise, remote controller will quit setting status. Operation for TIMER ON/TIMER OFF is the same.

SLEEP button

Under COOL or HEAT mode, press this button to start up sleep function.

"  " icon is displayed on remote controller. Press this button again to cancel sleep function and "  " icon will disappear. After powered on, Sleep Off is defaulted. After the unit is turned off, the Sleep function is canceled.

In this mode, set temperature will be adjusted with the change of time. Under Fan, DRY and Auto modes, this function is not available.

X-FAN button

Pressing this button in COOL or DRY mode, the icon "  " is displayed and the indoor fan will continue operation for a while in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is Having set X-FAN function on: After turning off the unit by pressing ON/OFF defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

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

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

Health/Scavenging button

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

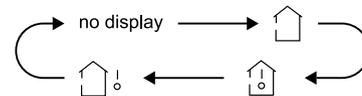
- This function is applicable to partial of models .

LIGHT button

Press this button to turn off display light on indoor unit. "  " icon on remote controller disappears. Press this button again to turn on display light. "  " icon is displayed.

TEMP button

Press this button, you can see indoor set temperature, indoor ambient temperature on indoor unit's display. The setting on remote controller is selected circularly as below:



When selecting "  " or no display with remote controller, temperature indicator on indoor unit displays set temperature.
 When selecting "  " with remote controller, temperature indicator on indoor unit displays indoor ambient temperature.
 When selecting "  " with remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.

NOTE:

- Outdoor temperature display is not available for some models. At that time, indoor unit receives "  " signal, while it displays indoor set temperature.
- It's defaulted to display set temperature when turning on the unit. There is no display in the remote controller.
- Only for the models whose indoor unit has dual-8 display.

- When selecting displaying of indoor or outdoor ambient temperature, indoor temperature indicator displays corresponding temperature and automatically turn to display set temperature after three or five seconds.

Function introduction for combination buttons

Energy-saving function

Under cooling mode, press "TEMP" and "CLOCK" buttons simultaneously to start up or turn off energysaving function. When energy-saving function is started up, "SE" will be shown on remote controller, and air conditioner will adjust the set temperature automatically according to ex-factory setting to reach to the best energy-saving effect. Press "TEMP" and "CLOCK" buttons simultaneously again to exit energysaving function.

Note:

- Under energy-saving function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under energy-saving function, set temperature can't be adjusted. Press "TURBO" button and the remote controller won't send signal.
- Sleep function and energy-saving function can't operate at the same time. If energy-saving function has been set under cool mode, press sleep button will cancel energy-saving function. If sleep function has been set under cool mode, start up the energy-saving function will cancel sleep function.

8°C heating function

Under heat mode, press "TEMP" and "CLOCK" buttons simultaneously to start up or turn off 8°C heating function. When this function is started up, "8" and "8°C" will be shown on remote controller, and the air conditioner keep the heating status at 8°C. Press "TEMP" and "CLOCK" buttons simultaneously again to exit 8°C heating function.

Note:

- Under 8°C heating function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under 8°C heating function, set temperature can't be adjusted. Press "TURBO" button and the remote controller won't send signal.
- Sleep function and 8°C heating function can't operate at the same time. If 8°C heating function has been set under heat mode, press sleep button will cancel 8°C heating function. If sleep function has been set under heat mode, start up the 8°C heating function will cancel sleep function.
- Under °F temperature display, the remote controller will display 46°F heating.

Child lock function

Press "△" or "▽" simultaneously to turn on or turn off child lock function. When child lock function is on, "■" icon is displayed on remote controller. If you operate the remote controller, the "■" icon will blink three times without sending signal to the unit.

Temperature display switchover function

Under OFF status, press "▽" and "MODE" buttons simultaneously

to switch temperature display between °C and °F.

Auto clean function

Under unit off status, hold "MODE" and "FAN" buttons simultaneously for 5s to turn on or turn off the auto clean function. When the auto clean function is turned on, indoor unit displays "CL". During the auto clean process of evaporator, the unit will perform fast cooling or fast heating. There may be some noise, which is the sound of flowing liquid or thermal expansion or cold shrinkage. The air conditioner may blow cool or warm air, which is a normal phenomenon. During cleaning process, please make sure the room is well ventilated to avoid affecting the comfort.

Note:

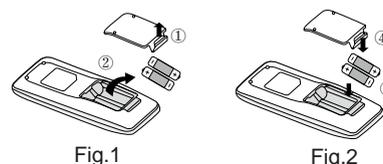
- The auto clean function can only work under normal ambient temperature. If the room is dusty, clean it once a month; if not, clean it once every three months. After the auto clean function is turned on, you can leave the room. When auto clean is finished, the air conditioner will enter standby status.
- This function is only available for some models.

WiFi function

Press "MODE" and "TURBO" button simultaneously to turn on or turn off WiFi function. When WiFi function is turned on, the "WiFi" icon will be displayed on remote controller; Long press "MODE" and "TURBO" buttons simultaneously for 10s, remote controller will send WiFi reset code and then the WiFi function will be turned on. WiFi function is defaulted ON after energization of the remote controller. (This function only applicable for some models)

Replacement of batteries in remote controller

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).



NOTICE:

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

6.2 Brief Description of Modes and Functions

•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 61~86°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 61~86°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 61~86°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.The temperature of the model cannot be adjusted in automatic mode

Under auto mode, the system will automatically select operation mode(cooling, heating and fan) according to indoor ambient temperature. There will be 30s delayed for protection between mode switchover.

◆ When $T_{amb} \geq 78^{\circ}\text{F}$, the system operates under cooling mode; Ex-factory set temperature is 77°F.

◆ Heat pump unit: when $T_{amb} \geq 71^{\circ}\text{F}$, the system operates under heating mode; Ex-factory set temperature is 68°F.

◆ $71^{\circ}\text{F} < T_{amb} < 78^{\circ}\text{F}$: The system operates under fan mode if turn on the unit to enter into auto mode for the first time; If switch to auto mode from cooling, heating or fan mode, the system keeps previous operation mode; If switch to auto mode from drying mode, the system operates under fan mode.

b.The temperature of the model can be adjusted in automatic mode

◆ Cooling only unit:

If turn on the unit to enter into auto mode for the first time, When $T_{amb} < T_{set} + 4^{\circ}\text{F} (2^{\circ}\text{C})$, the system operates under fan mode; $T_{amb} \geq T_{set} + 4^{\circ}\text{F} (2^{\circ}\text{C})$, the system operates under cooling mode; If switch to auto mode from other mode, when $T_{amb} \leq T_{set} - 2^{\circ}\text{F} (1^{\circ}\text{C})$, the system operates under fan mode; $T_{amb} \geq T_{set} + 2^{\circ}\text{F} (1^{\circ}\text{C})$, the system operates under cooling mode; the system keeps previous operation mode in other cases.

◆ Heat pump unit:

If turn on the unit to enter into auto mode for the first time, when $T_{amb} \geq T_{set} + 4^{\circ}\text{F} (2^{\circ}\text{C})$, the system operates under cooling mode; When $T_{amb} \leq T_{set} - 2^{\circ}\text{F} (1^{\circ}\text{C})$, the system operates under heating mode; $T_{set} - 2^{\circ}\text{F} (1^{\circ}\text{C}) < T_{amb} < T_{set} + 4^{\circ}\text{F} (2^{\circ}\text{C})$: the system operates under fan mode;

If switch to auto mode from other mode, when $T_{amb} \geq T_{set} + 8^{\circ}\text{F} (4^{\circ}\text{C})$, the system operates under cooling mode; when $T_{amb} \leq T_{set} - 6^{\circ}\text{F} (3^{\circ}\text{C})$, the system operates under heating mode; the system keeps previous operation mode in other cases.

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 $(T_{amb} - T_{compensation})$ for heat pump unit and T_{amb} for cooling only unit.

4. If there's I feel function, $T_{compensation}$ 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 61~86°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

1. Under heating mode: auto speed under heating or auto heating mode:

a. When $T_{amb} \leq T_{preset} - 2^{\circ}\text{C} (4^{\circ}\text{F})$, indoor fan will operate at high speed;

b. When $T_{preset} - 2^{\circ}\text{C} (4^{\circ}\text{F}) < T_{amb} < T_{preset}$, indoor fan will operate at medium speed;

c. When $T_{amb} \geq T_{preset}$, indoor fan will operate at low speed; There should be at least 180s operation time during switchover of each speed.

2. Under cooling mode: auto speed under cooling or auto cooling mode:

a. When $T_{amb} \geq T_{preset} + 2^{\circ}\text{C} (4^{\circ}\text{F})$, indoor fan will operate at high speed;

b. When $T_{preset} < T_{amb} < T_{preset} + 2^{\circ}\text{C} (4^{\circ}\text{F})$, indoor fan will operate at medium speed;

c. When $T_{amb} \leq T_{preset}$, indoor fan will operate at low speed; There should be at least 210s operation time during switchover of each speed.

(4) Sleep

If the remote control has several sleep modes, press the actual setting sleep mode, otherwise run the sleep 2 mode.

SLEEP 1:

In Cool modes; sleep status after run for one hour, the main unit

setting temperature will increase 1°C(2°F), two hours, setting temperature increased 2°C(4°F), then the unit will run at this setting temperature, rising temperature limit 30°C(86°F);

In Heat mode: sleep status after run for one hour, the setting temperature will decrease 1°C, two hours, setting temperature will decrease 2, then the unit will run at this setting temperature, falling temperature limit 16°C(61°F).

SLEEP 2:

1. In cooling mode:

1.1 When the initial set temperature is 16-23°C(61~74°F), the temperature will rise 1°C(1.8°F) by every hour after sleep function is set; the temperature will not change after rising 3°C(6°F); after running for 7 hours, the temperature will decrease 1°C(2°F) and it will not change after that.

1.2 When the initial set temperature is 24-27°C(75~81°F), the temperature will rise 1°C(2°F) by every hour after sleep function is set; the temperature will not change after rising 2°C(4°F); after running for 7 hours, the temperature will decrease 1°C(2°F) and it will not change after that.

1.3 When the initial set temperature is 28-29°C(82~85°F), the temperature will rise 1°C(2°F) by every hour after sleep function is set; the temperature will not change after rising 1°C(2°F); after running for 7 hours, the temperature will decrease 1°C(2°F) and it will not change after that.

1.4 When the initial set temperature is 30°C(86°F), the unit will keep on running at this temperature; after running for 7 hours, the temperature will decrease 1°C(2°F) and it will not change after that.

2. In heating mode:

2.1 When the initial set temperature is 16°C(61°F), the unit will keep on running at this temperature;

2.2 When the initial set temperature is 17-20°C(62~68°F), the temperature will decrease 1°C(2°F) by every hour after sleep function is set; the temperature will not change after decreasing 1°C(2°F);

2.3 When the initial set temperature is 21-27°C(69~81°F), the temperature will decrease 1°C(2°F) by every hour after sleep function is set; the temperature will not change after decreasing 2°C(4°F);

2.4 When the initial set temperature is 28-30°C(82~86°F), the temperature will decrease 1°C(2°F) by every hour after sleep function is set; the temperature will not change after decreasing 3°C(6°F);

SLEEP 3:

In this mode, the setting temperature within eight hours can be freely set by the remote control.

(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, 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

(1) Start up compulsory defrosting function

Under ON status, set heating mode with remote controller and adjust the temperature to 61°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.

(2) Exit compulsory defrosting mode

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

(10) Refrigerant recovery function:

(1) Enter refrigerant recycling function

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

(2) Exit refrigerant recycling function

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

(11) Ambient temperature display control mode

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

2. 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 61~86°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) 8° heating function

Under heating mode, you can set 8°C heating function by remote controller. The system will operate at 8°C(46°F) set temperature.

(16) Turbo fan control function

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

No turbo function under auto, dry or fan mode.

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

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

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

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

Tips:

The automatic cleaning function can only be started under normal environmental conditions. If the indoor environment is easy to dust, it is recommended to clean it once a month. If the indoor environment is not so dusty, it is recommended to clean it once every three months. After turning on the automatic cleaning mode, the user can leave the room. When cleaning is complete, the unit will automatically enter standby mode.

Outdoor Units

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 = $(T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})$

temperature compensation)

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

(2) Check effective judgment controls of parameters

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

a. Judgment of exhaust detection temperature change:

After the compressor starts up and runs for 10 minutes, if the compressor frequency $f \geq 40\text{Hz}$, and the rising value T_{exhaust} ($T_{\text{exhaust (after start-up for 10 minutes)}} - T_{\text{exhaust (before start-up)}}$) $< 35.6^\circ\text{F}$, 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 $[T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] < 0^\circ\text{F}$, start up the machine for cooling, the cooling operation will start;

(2) During operations of cooling, if $0^\circ\text{F} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] < 4^\circ\text{F}$, the cooling operation will be still running;

(3) During operations of cooling, if $4^\circ\text{F} \leq [T_{\text{setup}} - (T_{\text{indoor ambient temperature}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})]$, 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: 61~86°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: 61~86°F ;

(3) Air-supplying Mode

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

2. The temperature setting range is: 61~86°F.

(4) Heating Mode



1. Conditions and processes of heating operations:

($T_{\text{indoor ambient temperature}}$ is the actual detection temperature of indoor environment thermo-bulb, $T_{\text{heating indoor ambient temperature compensation}}$ is the indoor ambient temperature compensation during heating operations)

(1) If the compressor is shut down, and $[(T_{\text{indoor ambient temperature}} - T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] < 0^{\circ}\text{F}$, start the machine to enter into heating operations for heating;

(2) During operations of heating, if $0^{\circ}\text{F} \leq [(T_{\text{indoor ambient temperature}} - T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}] < 4^{\circ}\text{F}$, the heating operation will be still running;

(3) During operations of heating, if $4^{\circ}\text{F} \leq [(T_{\text{indoor ambient temperature}} - T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{setup}}]$, the heating operation will stop after reaching the temperature point.

2. The temperature setting range in this mode is: 61~86°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 $[t_{\text{max. defrosting time}}]$.

4. Control Logic

(1) Compressor Control

Start the compressor after starting cooling, heating, dehumidifying operations, and the outer fans start for 5s; When the machine is shutdown, in safety stops and when switching to air-supplying mode, the compressor will stop immediately. In all modes: once the compressor starts up, it will not be allowed to stop until having run for the $[t_{\text{min. compressor running time}}]$ (Note: including cases of shutdown when the temperature point is reached; except the cases requiring stopping the compressor such as fault protection, remote shutdown, mode switching etc.); In all modes: once the compressor stops, it will be allowed be restart after 3-minute delay (Note: The indoor units have a function of power memory, the machine can be restarted after remote shutdown and powering up again without delay).

1. Cooling mode

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

2. Dehumidifying mode

Same as the cooling mode.

3. Air-supplying mode

The compressor is switched off.

4. Heating mode

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

(2) Defrosting:

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

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

(2) Outer Fans Control

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

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

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

(3) 4-way valve control

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

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

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

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

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

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

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

(3) Defrosting control under heating mode:

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

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

(4) Evaporator frozen-preventing protection function

1. Starting estimation:

When the indoor unit is running 6 minutes (the compressor is turned on), the $T_{\text{inner pipe}} \leq T_{\text{frozen-preventing stop}}$ (the temperature of hysteresis is 2) is detected in 3 minutes., then enter the frozen-preventing protection.

2. Frequency limited

When the indoor unit enters frozen-preventing protection, according to cooling reaches temperature point stop.

(5) 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 [Protection times clearing of compressor overloading.] 30 minutes.

(6) 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.

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

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

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

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

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

5. Power turn-off:

If the $[T_{\text{Power turn-off temperature of module}}] \leq T_{Module}$, you should stop the machine for module overheating protection; If $T_{Module} < [T_{\text{Limited frequency temperature of module}}]$ 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_{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)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

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_{Clearing Time of Compressor Phase Current Times}], the overcurrent protection is cleared to recount.

(11) Starting-up Failure Protection for Compressor

Stop the compressor after its starting-up fails, restart it after 20s if the fault doesn't shows, 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.

(12) 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.

(13) Voltage Abnormity Protection for DC Bus

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

1. Over-Low Voltage Protection for DC Bus:

When the compressor is running, the DC bus voltage is detected. If the PFC is not opened, the bus voltage is smaller than the VPFC does not open the undervoltage protection valuetime, if the PFC is turned on, the bus voltage is smaller than the VPFC Open undervoltage protection value Times Under voltage protection, under pressure protection, the compressor is closed, and the PFC is closed, and the compressor will clear the fault sign after 3 minutes.

2.Over-High Voltage Protection for DC Bus

When the compressor is running, if the DC bus voltage is detected is greater than the VPFC output protection value, the voltage protection is reported, the stopper, the PFC, and the compressor will clear the fault flag after 3 minutes.

(14) Abnormity Protection for Four-way Valve

Under the model of heating operation in good condition: the compressor is detected $[T_{\text{Inner Tube}} < (T_{\text{Inner Ring-T Abnormity Temperature Difference For Four-Way Valve Reversion}})]$, during the running, it should be regarded as four-way valve reversion abnormity. And then it can run if stop the reversion abnormity protection for four-way valve 3 min; and if it still can't run when the reversion abnormity protection for four-way valve happens to stop working for 3 times in succession, it is available if presses ON/OFF.

Attention: the protection shall be shielded during the testing mode and defrosting process, and it shall be cleared out the failure and its times immediately when turning off or delivering wind / cooling /

dehumidifying mode conversed (the inverted mode don't clear out the failure when it can't recover to operate).

(15) 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.

(16) Failure Detection for Sensor

1. Outdoor Ambient Sensor: detect the failure of sensor at all times.
2. Outdoor Tube Sensor: You should not detect the failure of outdoor tube sensor within 10 minutes heating operation compressor except the defrosting, and you could detect it at other time.
3. Outdoor Exhaust Sensor:
 - (a) The compressor only detect the sensor failure after it start up 3 min in normal mode;
 - (b) It should detect the exhaust sensor failure immediately in the testing mode.
4. Module Temperature Sensor:
 - (a) Short-Circuit Detection: the compressor should be detected immediately when the module temperature sensor occurs short-circuits;
 - (b) Open-Circuit Detection: the compressor should be detected on open-circuit when it runs 3min (it needn't 30s avoiding the module over-heated).
 - (c) Detect the sensor failure at all times in the testing mode.
5. Disposal for Sensor Protection
 - (1) When the short-circuit of sensor is detected within 30s, It is regarded as the temperature of sensor over-high (or infinitely high), and now according to the over-high sensor, the machine should carry out the corresponding protection to stop working, and show the corresponding temperature shutdown protection and sensor failure at the same time (for example: the compressor stops immediately when the outdoor tube sensor short-circuit, and the machine shall show the overload protection and outdoor tube sensor failure).
 - (2) When the open-circuit of sensor is detected within 30s, The protection shall be stopped and it shall show the corresponding sensor failure.
6. Electric Heating Function of Chassis
 - (1) When 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.

Part II : Installation and Maintenance

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; dont 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:

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.

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

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

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.

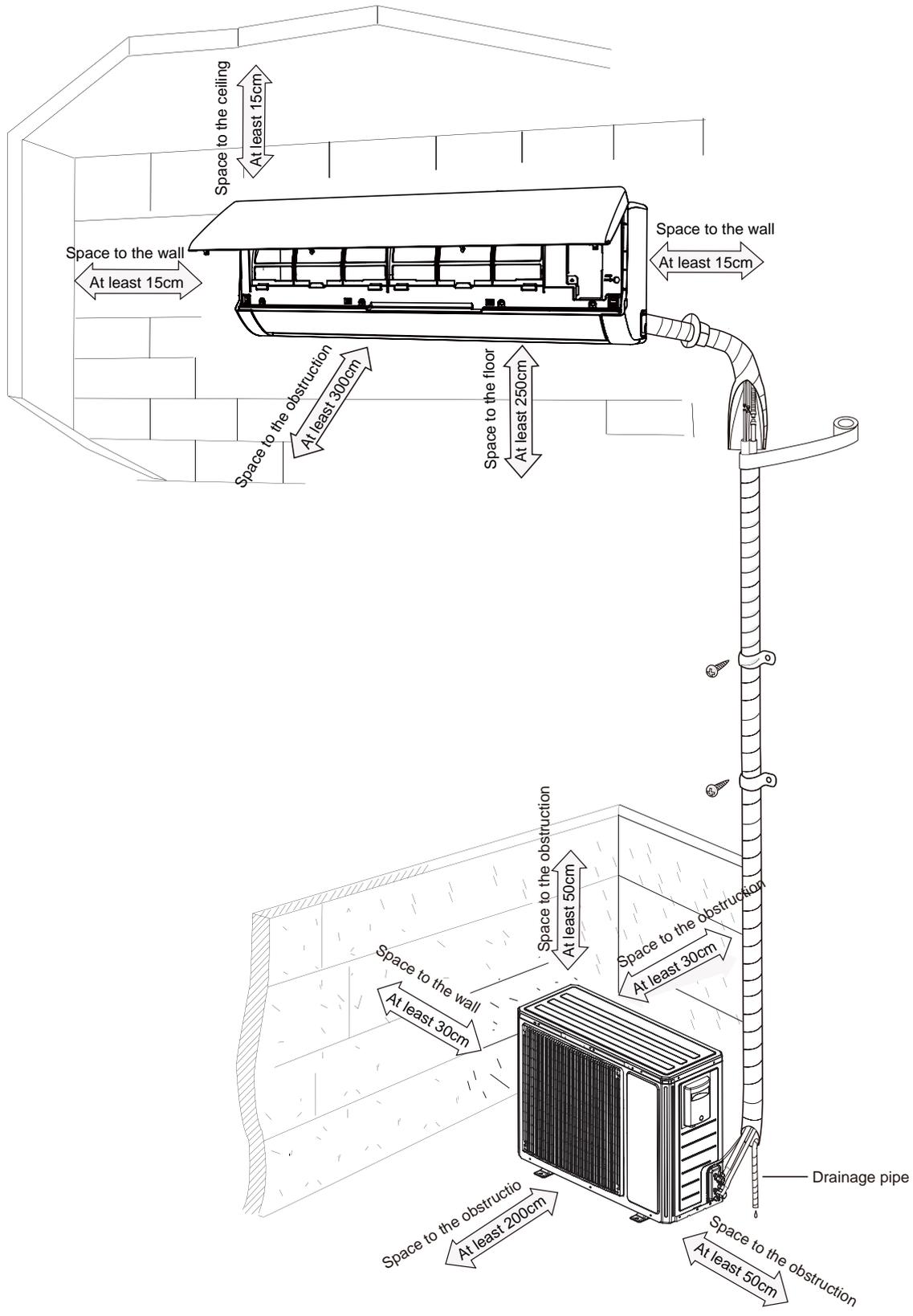
Poor connections may lead to electric shock or fire.

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.

8. Installation

8.1 Installation Dimension Diagram



8.2 Installation Parts-Checking

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

⚠ Note:

- 1.Please contact the local agent for installation.
- 2.Dont 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 wont 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 wont increase noise and vibration.
- (6) The appliance must be installed 2.5m above floor.
- (7) Dont 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 wont 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 Requirements for electric connection

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) If the supply cord is damaged,it must be replaced by the manufacturer,its service agent or similarly qualified persons in order to avoid a hazard.
- (8) The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
- (9) The appliance shall be installed in accordance with national wiring regulations.

2. Grounding Requirement:

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

8.5 Installation of Indoor Unit

1. Choosing Installation location

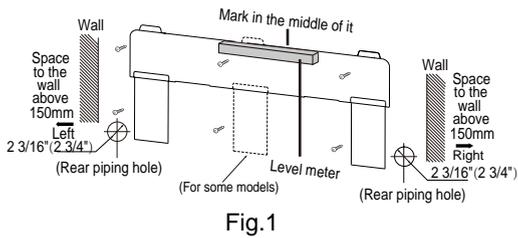
Recommend the installation location to the client and then confirm it with the client.

2. Install wall-mounting frame

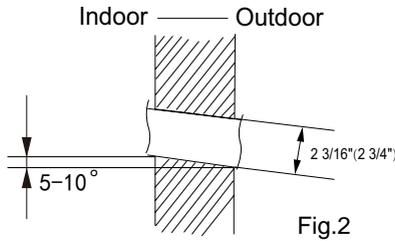
- (1) Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
- (2) Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) and then fill the plastic expansion particles in the holes.
- (3) Fix the wall-mounting frame on the wall with tapping screws and then check if the frame is firmly installed by pulling the frame. If the plastic expansion particle is loose, please drill another fixing hole nearby.

3. install wall-mounting frame

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



(2) Open a piping hole with the diameter of 2 3/16" (2 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)

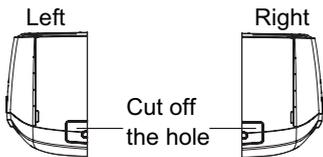
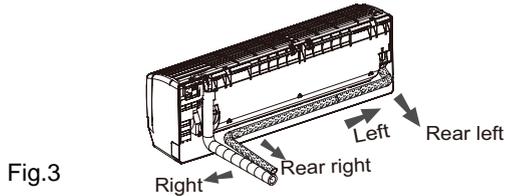


⚠ Note:

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

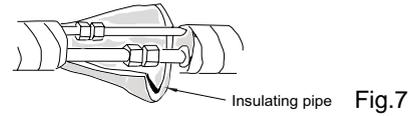
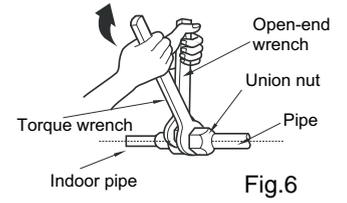
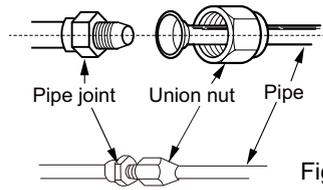
4. Outlet Pipe

- (1) The pipe can be led out in the direction of right, rear right, left or rear left. (As show in Fig.3)
- (2) When selecting leading out the pipe from left or right, please cut off the corresponding hole on the bottom case. (As show in Fig.4)



5. Connect the Pipe of Indoor Unit

- (1) Aim the pipe joint at the corresponding bellmouth. (As show in Fig.5)
- (2) Pretightening the union nut with hand.
- (3) Adjust the torque force by referring to the following sheet. Place the open-end wrench on the pipe joint and place the torque wrench on the union nut. Tighten the union nut with torque wrench. (As show in Fig.6)
- (4) Wrap the indoor pipe and joint of connection pipe with insulating pipe, and then wrap it with tape. (As show in Fig.7)

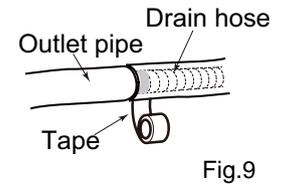
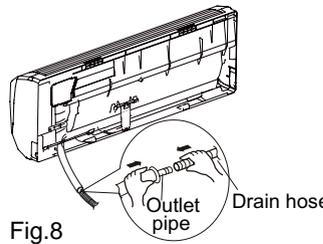


Refer to the following table for wrench moment of force:

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

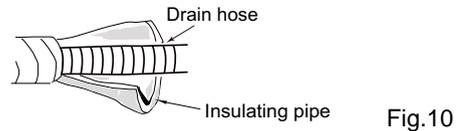
6. Install drain hose

- (1) Connect the drain hose to the outlet pipe of indoor unit. (As show in Fig.8)
- (2) Bind the joint with tape. (As show in Fig.9)



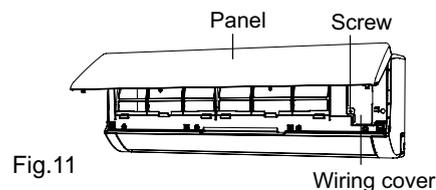
⚠ Note:

- (1) Add insulating pipe in the indoor drain hose in order to prevent condensation.
- (2) The plastic expansion particles are not provided. (As show in Fig.10)



7. connect wire of indoor unit

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



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

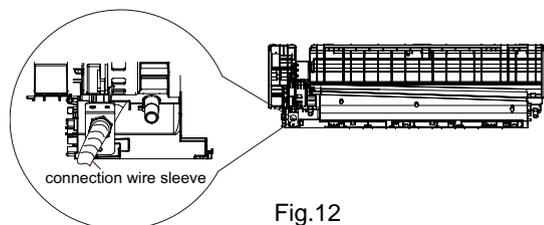


Fig.12

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

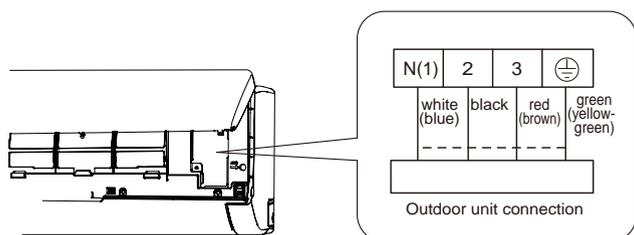


Fig.13

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

- (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 to a certain degree, separate the indoor power and then separate the drain hose.(As show in Fig.15)
- (3) Bind them evenly.
- (4) The liquid pipe and gas pipe should be bound separately at the end.

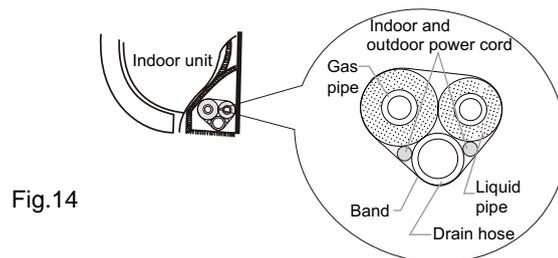


Fig.14

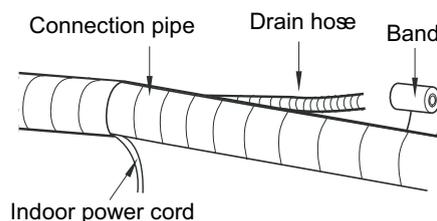


Fig.15

Note:

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

9. Hang the Indoor Unit

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

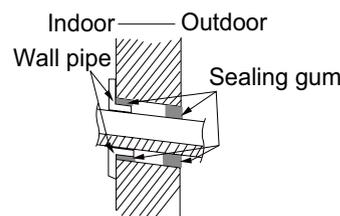


Fig.16

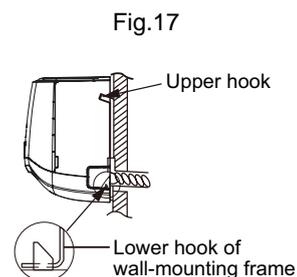


Fig.17

Note:

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

8.6 Installation of Outdoor unit

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

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

Note:

- (1) Take sufficient protective measures when installing the outdoor unit.
- (2) Make sure the support can withstand at least four times the

unit weight.

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

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

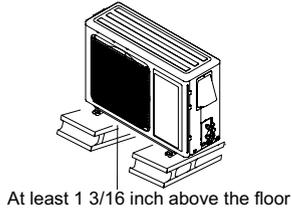


Fig.18

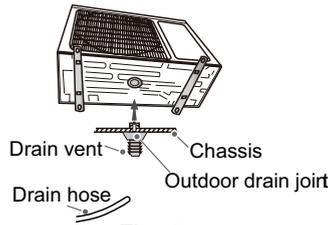


Fig.19

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

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

3. Fix Outdoor Unit

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

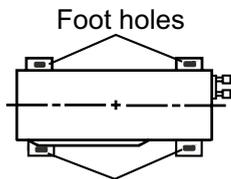


Fig.20

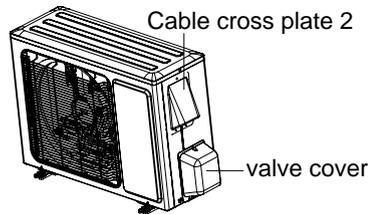


Fig.21

4. Connect Indoor and Outdoor Pipes

- (1) Remove the screw on the handle or cable cross plate 2, then remove it.(As show in Fig.21)
- (2) Remove the screw cap of valve and aim the pipe joint at the bellmouth of pipe.(As show in Fig.22)

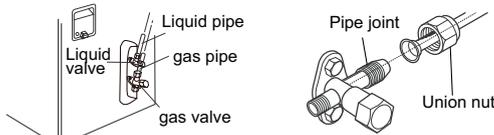


Fig.22

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

Refer to the following table for wrench moment of force:

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

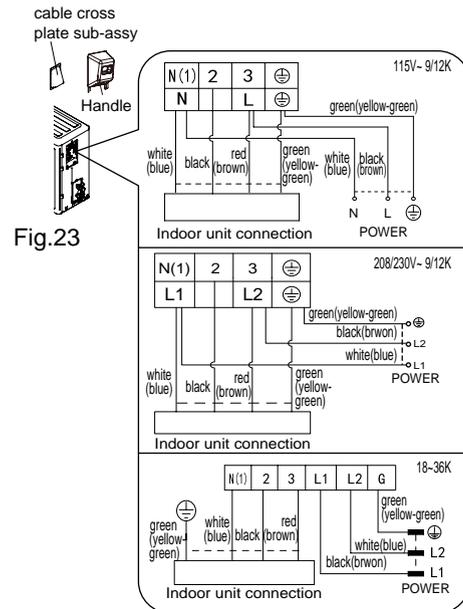


Fig.23

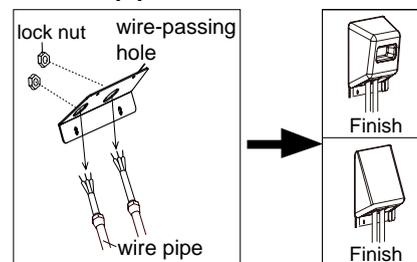
Note: the wiring board is for reference only, please refer to the actual one.

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

⚠ Note:

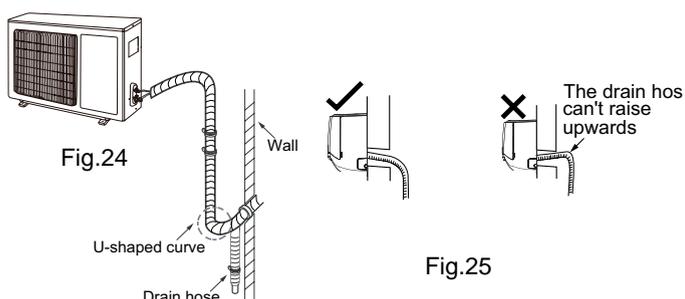
- (1) After tightening the screw, pull the power cord slightly to check if it is firm.
- (2) Never cut the power connection wire to prolong or shorten the distance.
- (3)The connecting wire and connection pipe can't touch each other.
- (4)Top cover of outdoor unit and electric box assembly should be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

Install the over line pipe



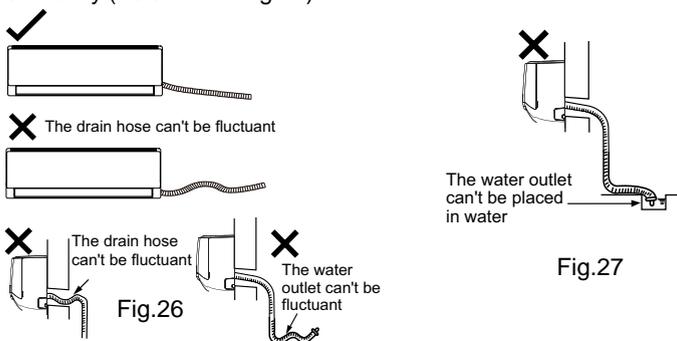
6. Neaten the Pipes

- (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)



Note:

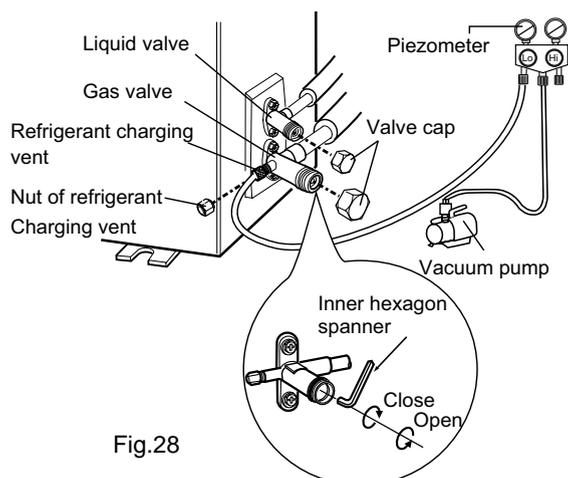
- (1) The through-wall height of drain hose shouldnt be higher than the outlet pipe hole of indoor unit.(As show in Fig.25)
- (2) Slant the drain hose slightly downwards. The drain hose can't be curved, raised and fluctuant, etc.(As show in Fig.26)
- (3) The water outlet can't be placed in water in order 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. (As show in Fig.28)



2. Leakage Detection

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

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 61°F, 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	Antifreezing protection	E2	During cooling and drying operation: compressor and outdoor fan stop while indoor fan operates.	1. Poor air-return in indoor unit; 2. Fan speed is abnormal; 3. Evaporator is dirty.
3	System block or refrigerant leakage	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
4	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).
5	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.
6	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.
7	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).
8	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
9	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 deenergized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
10	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.

NO.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
11	Gathering refrigerant	F0	When the outdoor unit receive signal of Gathering refrigerant ,the system will be forced to run under cooling mode for gathering refrigerant	Nominal cooling mode
12	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.	1. Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal. 2. Components in mainboard fell down leads short circuit. 3. Indoor ambient temp. sensor damaged. (check with sensor resistance value chart) 4. Mainboard damaged.
13	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	1. Loosening or bad contact of Indoor vaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged. (check temp. sensor value chart for testing) 4. Mainboard damaged.
14	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)
15	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.	1.Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor) 2.The head of temperature sensor hasn't been inserted into the copper tube
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

NO.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
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.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, there's malfunction for the circuit, please replace the control panel (AP1)
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 its 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 its no use, please replace control panel AP1.

NO.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
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	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.
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 rev detecting circuit.
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 electrical components when detect high power
38	Indoor unit and outdoor unit doesnt match	LP	compressor and Outdoor fan motor can't work	Indoor unit and outdoor unit doesnt 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	Defrosting	Heating indicator off for 0.5s and then blinks for 10s	Not the error code. It's the status code for the operation	
41	PFC protection	HC	During cooling and drying operation: compressor will stop while indoor fan will operate; During heating operation: the complete unit will stop operation.	Replace outdoor control panel AP1 or Reactor

NO.	Malfunction Name	Display Method of Indoor Unit	A/C status	Possible Causes
		Dual-8 Code Display		
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 units 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 units control panel AP1, please replace the outdoor units 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 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;
47	Anti-freezing protection for evaporator	E2	Not the error code. It's the status code for the operation.	
48	Cold air prevention protection	E9	Not the error code. It's the status code for the operation.	
49	Refrigerant recovery mode	Fo	Refrigerant recovery. The Serviceman operates it for maintenance.	
50	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 -221°F or more than 621°F for cooling; more than 321°F for heating); 2. Failure startup of compressor? 3. Are wires of compressor not connected tightly? 4. Is compressor damaged? 5. Is main board damaged?

Analysis or processing of some of the malfunction display:**1. Compressor discharge protection**

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

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

2. Low voltage overcurrent protection

Possible cause: Sudden drop of supply voltage.

3. Sensor open or short circuit

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

4. Compressor over load protection

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

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

5. System malfunction

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

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

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

6. IPM module protection

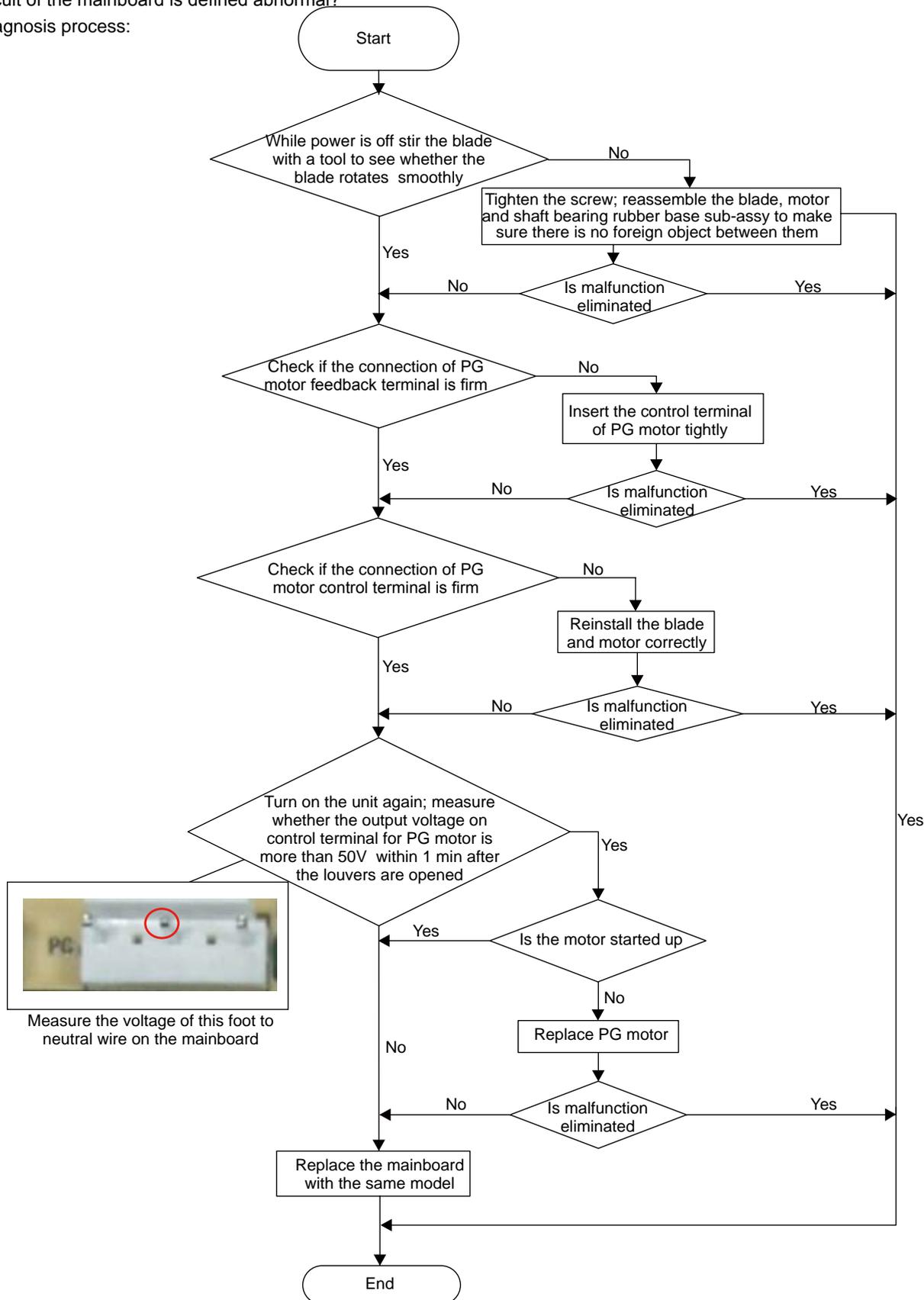
Processing method: Once the module malfunction happens, if it persists for a long time and can not be self-canceled, cut off the power and turn off the unit, and then re-energize the unit again after about 10 min. After repeating the procedure for several times, if the malfunction still exists, replace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

2. Malfunction of Blocked Protection of IDU Fan Motor H6

Main detection points:

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

Malfunction diagnosis process:

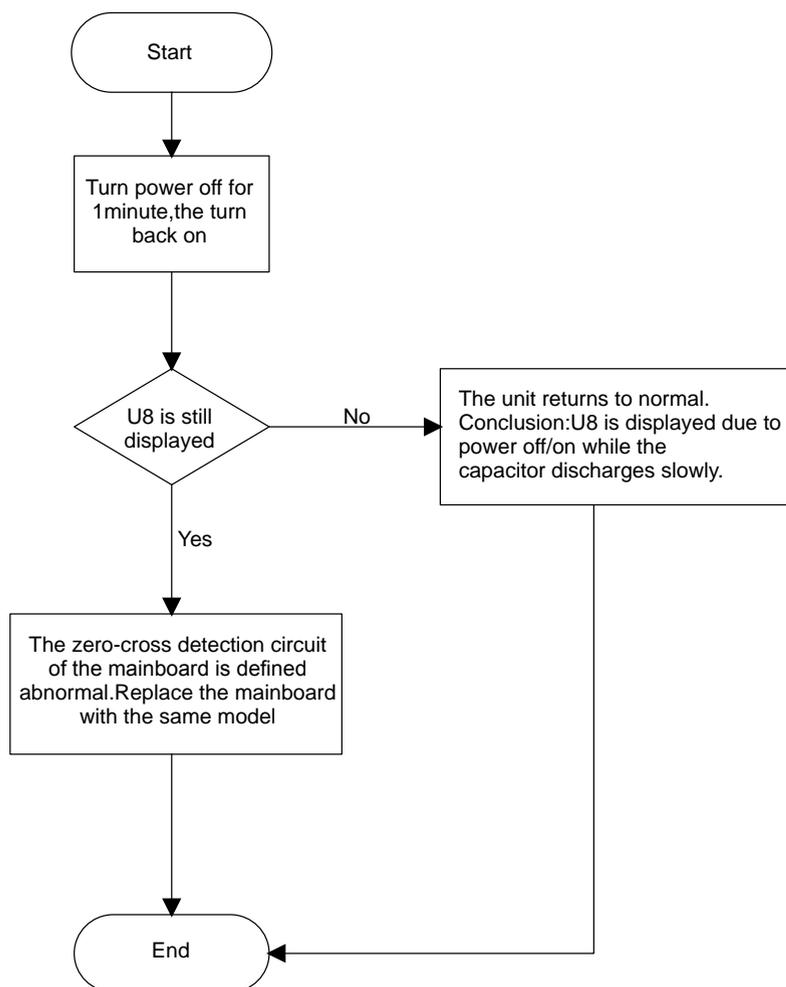


4. Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8

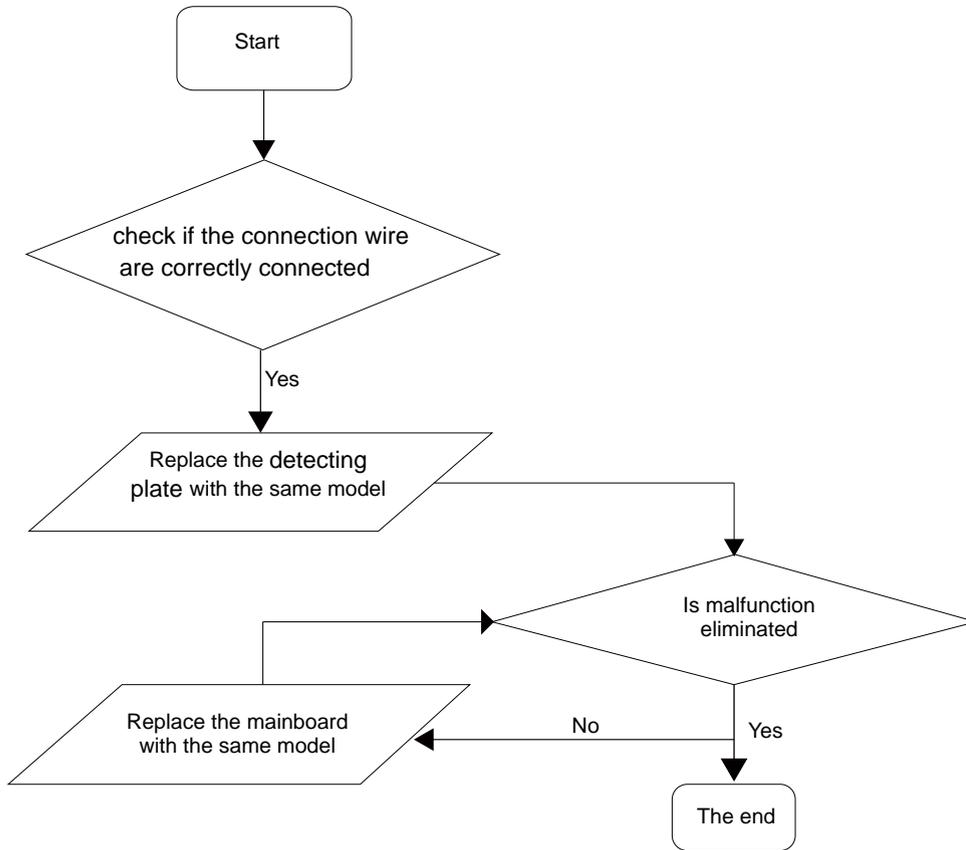
Main detection points:

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

Malfunction diagnosis process:



6. Malfunction of detecting plate(WIFI) JF

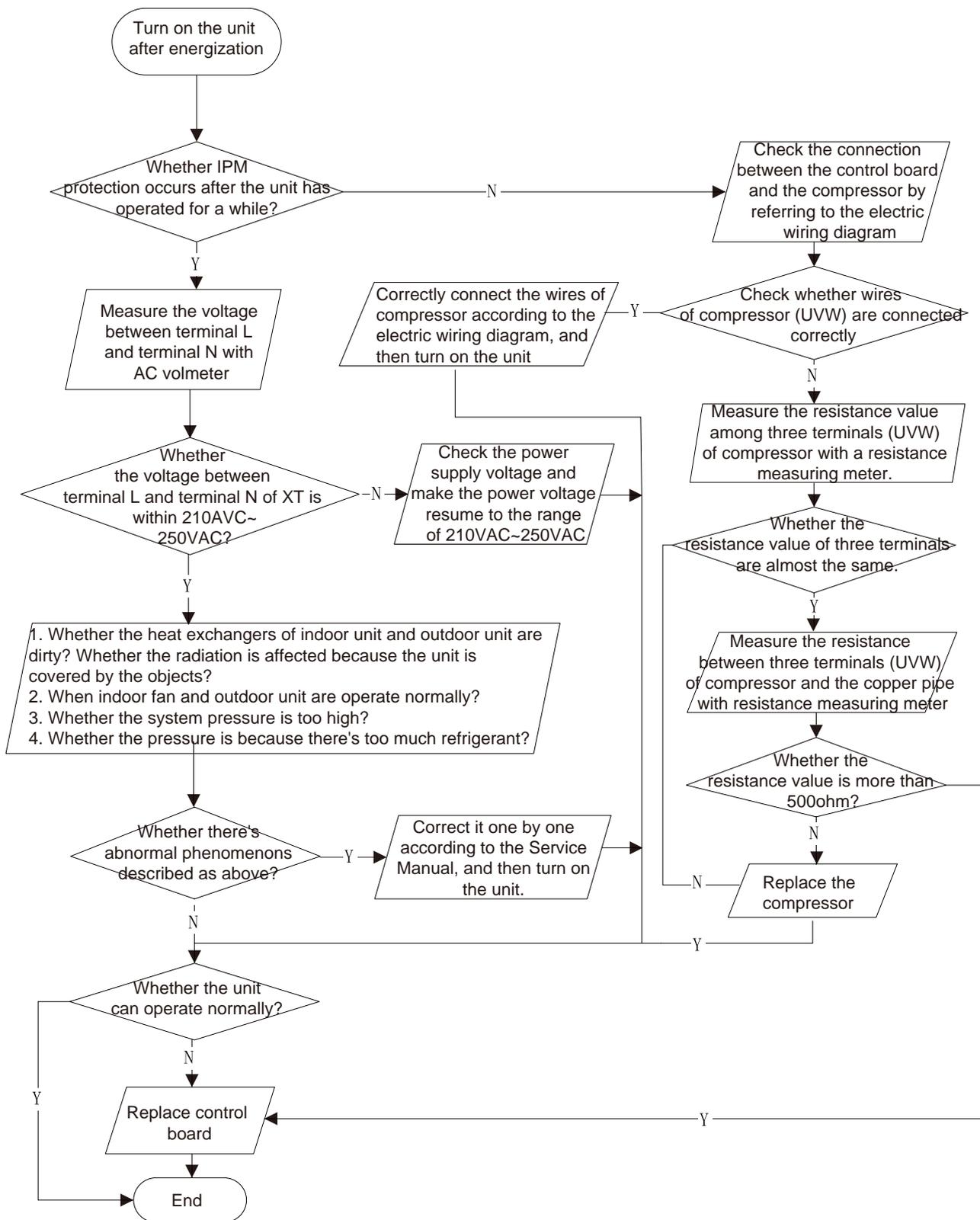


(2) IPM protection, phase current overcurrent (the control board as below indicates the control board of outdoor unit) H5/P5

Mainly detect:

- (1) Compressor COMP terminal (2) voltage of power supply (3) compressor
- (4) Refrigerant-charging volume (5) air outlet and air inlet of outdoor/indoor unit

Troubleshooting:

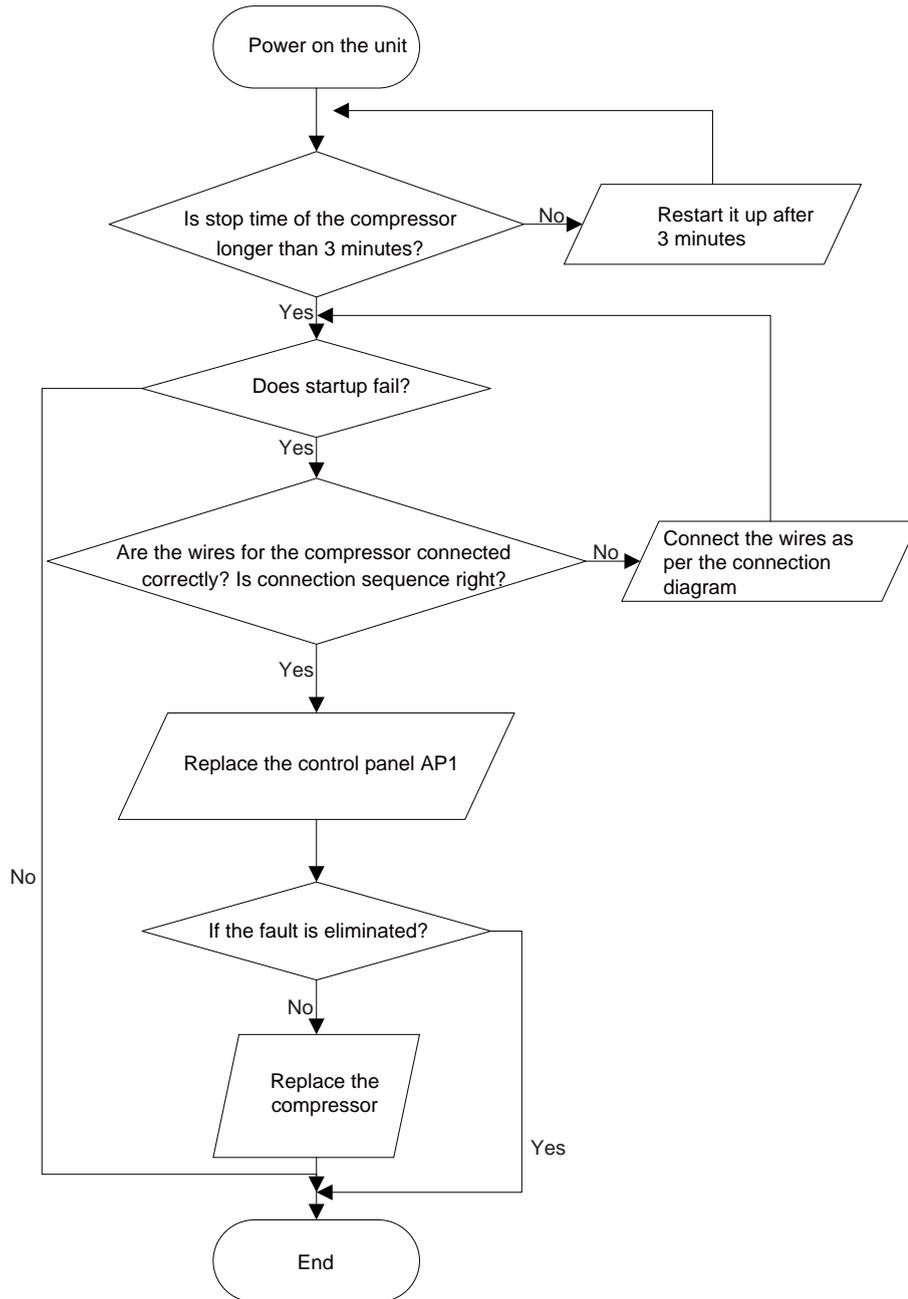


(4) Start-up failure (following AP1 for outdoor unit control board)

Mainly detect:

- Whether the compressor wiring is connected correct?
- Is compressor broken?
- Is time for compressor stopping enough?

Fault diagnosis process:

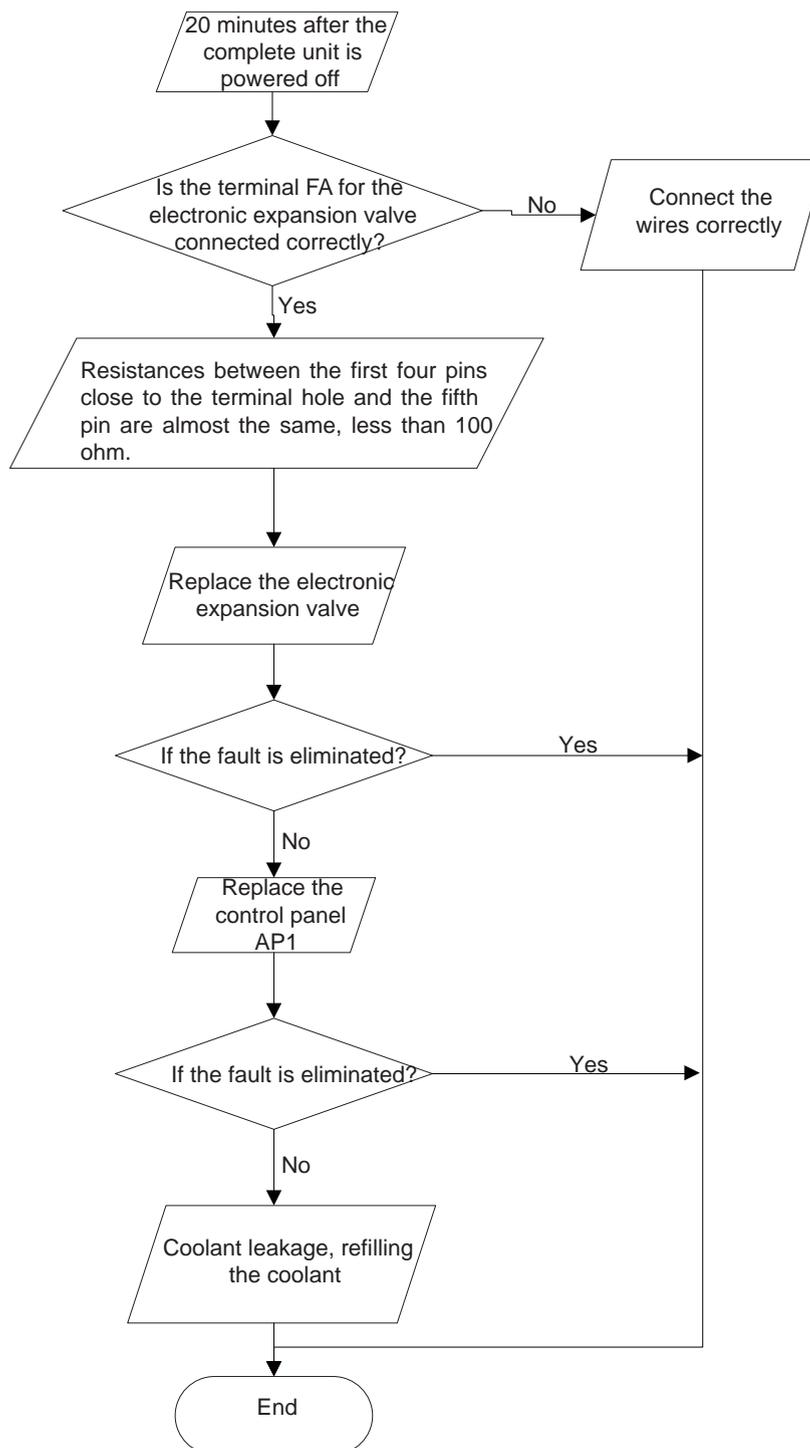


(6) Overload and air exhaust malfunction diagnosis (following AP1 for outdoor unit control board)

Mainly detect:

- Is the PMV connected well or not? Is PMV damaged?
- Is refrigerant leaked?

Fault diagnosis process:

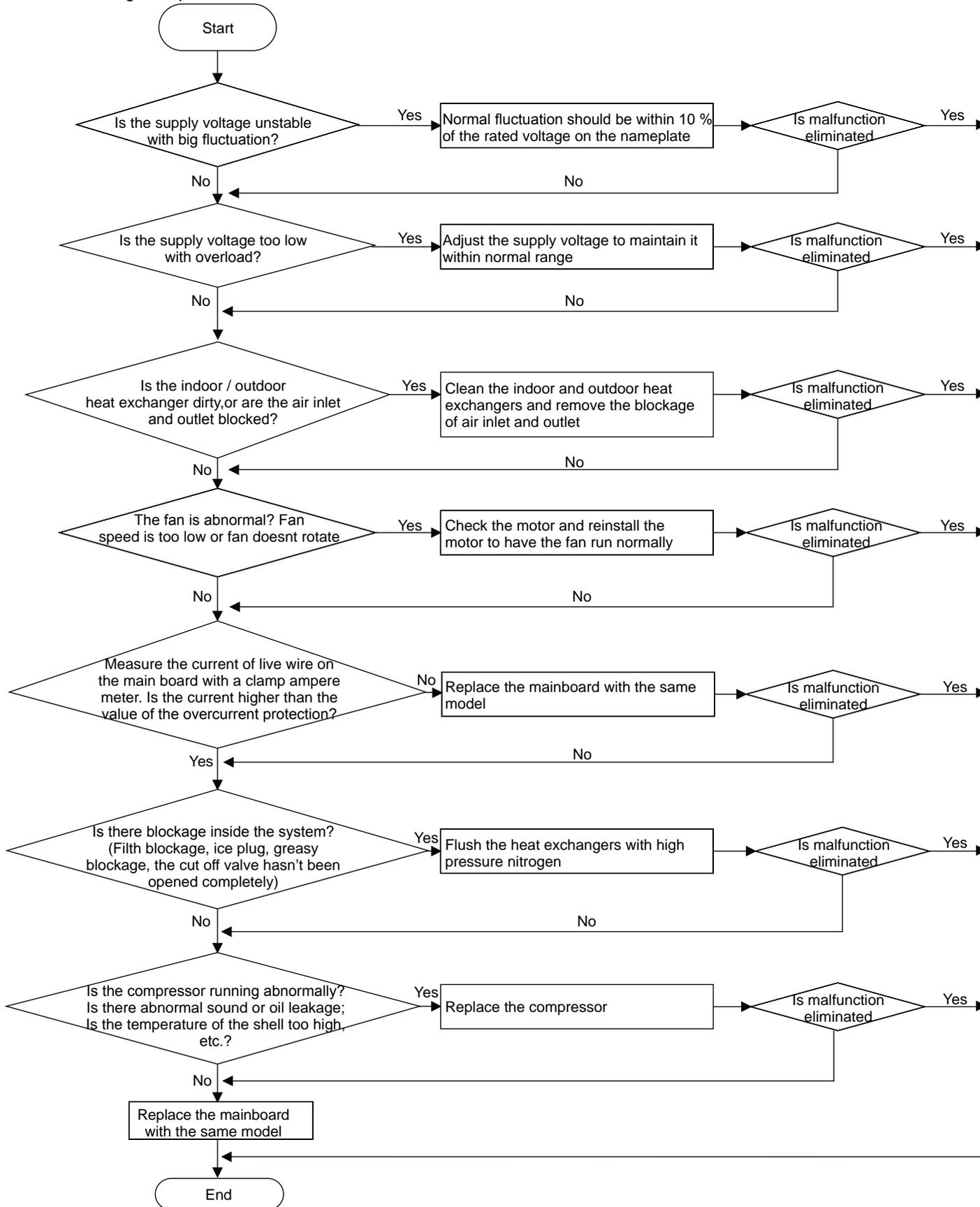


(8) Malfunction of Overcurrent Protection

Main detection points:

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

Malfunction diagnosis process:



9.3 Maintenance method 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 are 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 if 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

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 its 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.

NO.	Description
1	Front Panel Assy
2	Display Board
3	Front Case Assy
3A	Guide Louver
3B	Air Louver
4	Helicoid Tongue
5	Left Axile Bush
6	Rear Case assy
7	Drainage Hose
8	Ring of Bearing
9	O-Gasket sub-assy of Bearing
10	Evaporator Support
11	Cold Plasma Generator
12	Evaporator Assy
13	Wall Mounting Frame
14	Cross Flow Fan
15	Fan Motor
16	Connecting pipe clamp
17	Rubber Plug (Water Tray)
18	Stepping Motor
19	Crank
20	Electric Box Assy
21	Axile Bush
22	Terminal Board
23	Jumper
24	Main Board
24A	Temperature Sensor
25	Electric Box Cover Sub-Assy
26	Shield Cover of Electric Box Cover
27	Electric Box Cover
28	Power Cord
29	Connecting Cable
30	Remote Controller
31	Test Board Assy

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

No.	Description
1	Front Panel
2	Filter Sub-Assy
3	Decorative Strip
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
14	Ring of 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
27	Electric Box
28	Jumper
29	Main Board
30	Terminal Board
31	Electric Box Cover
32	Shield Cover of Electric Box Cover
33	Screw Cover
34	Electric Box Cover2
35	Power Cord
36	Connecting Cable
37	Remote Controller
38	Cold Plasma Generator
39	Test Board Assy

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

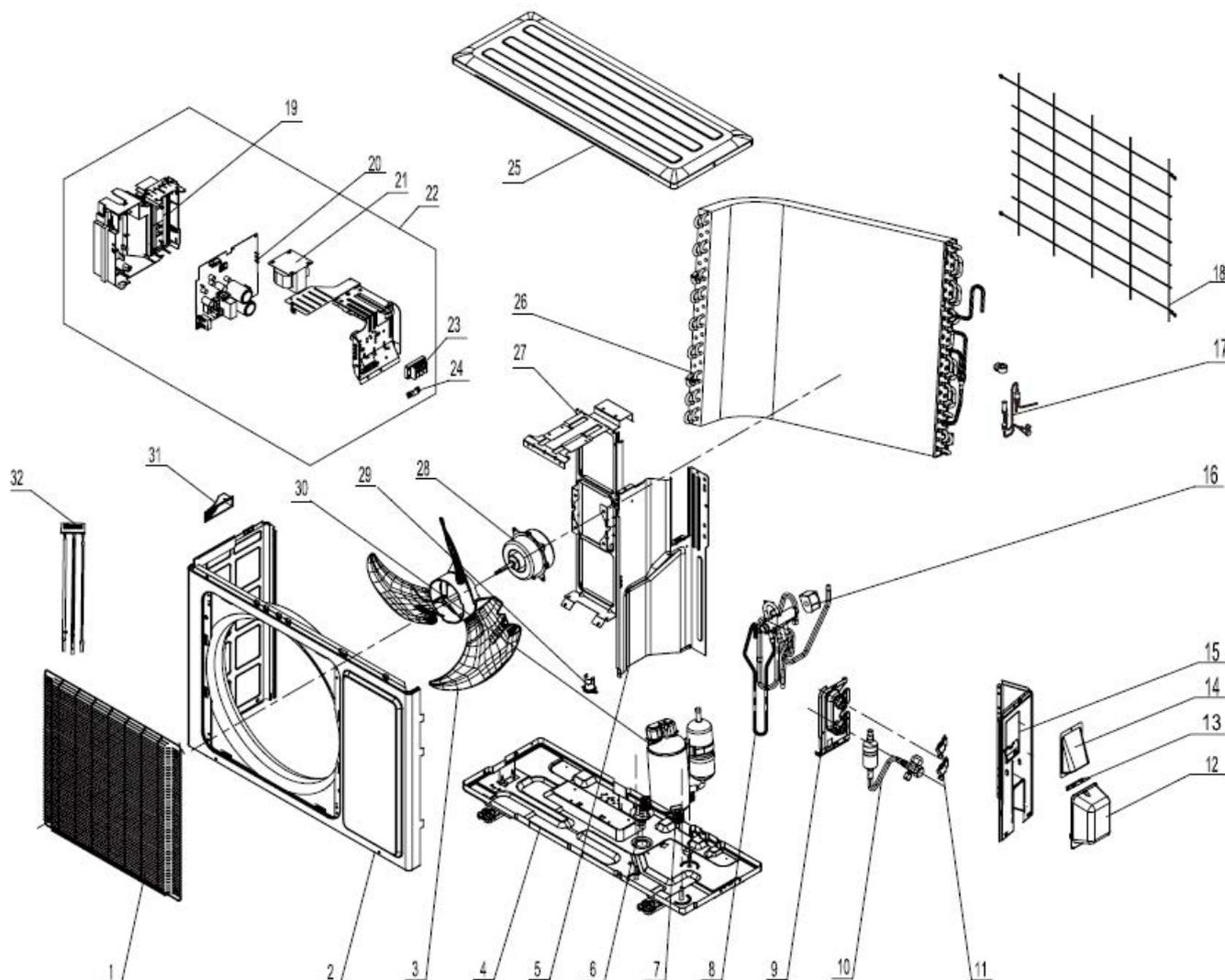
No.	Description
1	Front Panel Assy
2	Filter Sub-Assy
3	Screw Cover
4	Front Case Assy
5	Air Louver(Manual)
6	Helicoid Tongue
7	Left Axile Bush
8	Rear Case assy
9	Rubber Plug (Water Tray)
10	Ring of Bearing
11	O-Gasket sub-assy of Bearing
12	Cross Flow Fan
13	Evaporator Support
14	Evaporator Assy
15	Cold Plasma Generator
16	Wall Mounting Frame
17	Motor Press Plate
18	Fan Motor
19	Connecting pipe clamp
20	Drainage Hose
21	Stepping Motor
22	Crank
23	Guide Louver
24	Axile Bush
25	Electric Box
26	Terminal Board
27	Electric Box Cover2
28	Main Board
29	Display Board
30	Shield cover of Electric Box
31	Electric Box Cover
32	Jumper
33	Lower Shield of Electric Box
34	Electric Box Assy
35	Temperature Sensor
36	Remote Controller
37	Test Board Assy

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

NO.	Description	NO.	Description
1	Detecting Plate	26	Fan Motor
2	Front Panel	27	Pipe Clamp
3	Stand Bar	28	Drainage Hose
4	Filter Sub-Assy	29	Cover Plate
5	Front Case Sub-assy	30	Motor Fixed Clip 1
6	Lower Guide Louver	31	SteppingMotor
7	Upper Guide Louver	32	Press Plate(Crank)
8	Axile Bush	33	Crank-guide
9	Air Louver 1	34	Upper Crank
10	Air Louver 2	35	Lower crank
11	Connecting Rod	36	SteppingMotor
12	Louver Clamp	37	Electric Box Assy
13	SteppingMotor	38	Electric Box
14	Water Tray	39	Terminal Board
15	Water Tray Sub-Assy	40	Jumper
16	Screw Cover	41	Main Board
17	Rubber Plug (Water Tray)	42	Display Board
18	Rear Case Sub-Assy	43	Electric Box Cover 2
19	Cross Flow Fan 1	44	Electric Box Cover
20	Bearing Holder Sub-assy	45	Remote Controller
21	Cross Flow Fan 2	46	Connecting Cable
22	O-Gasket of Cross Fan Bearing	47	Temperature Sensor
23	Left Evaporator Support	48	Temperature Sensor
24	Evaporator Assy	49	Cold Plasma Generator
25	Wall Mounting Frame		

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

GRHARC09AS

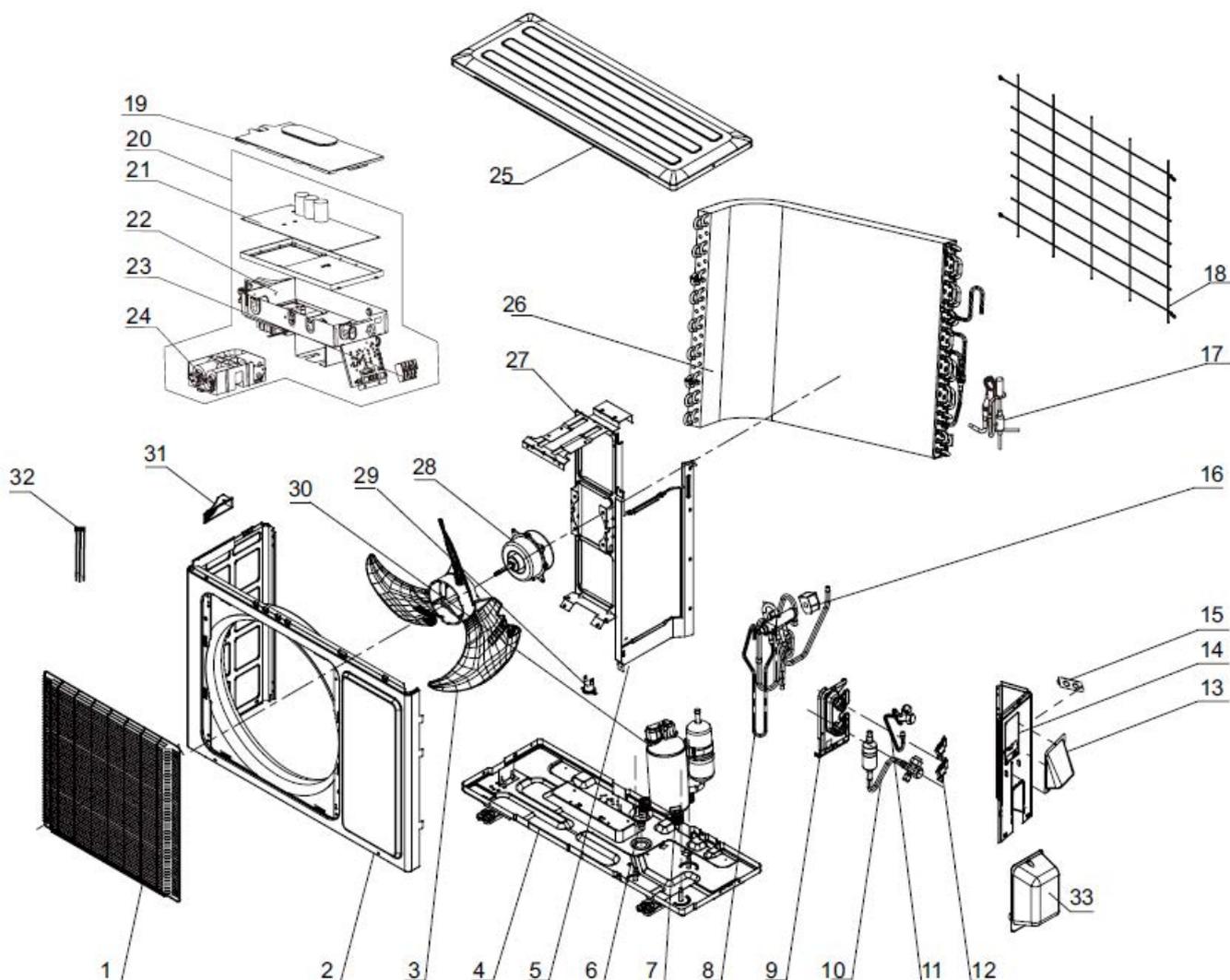


The component picture is only for reference; please refer to the actual product.

NO.	Description	NO.	Description	NO.	Description
1	Front Grill	13	Cover of Pass Wire	24	Electric Box Cover Sub-Assy
2	Front Panel Assy	14	Cable Cross Plate 2	25	Top Cover Sub-Assy
3	Axial Flow Fan	15	Right Side Plate Assy	26	Condenser Assy
4	Chassis Sub-assy	16	Magnet Coil	27	Motor Support
5	Clapboard Sub-Assy	17	Electric Expansion Valve Sub-Assy	28	Fan Motor
6	Drainage Connector	18	Rear Grill	29	Compressor Overload Protector(External)
7	Compressor Gasket	19	Electric Box Assy	30	Compressor and Fittings
8	4-Way Valve Assy	20	Main Board	31	Small Handle
9	Valve Support	21	Reactor	32	Temperature Sensor
10	Cut off Valve Assy	22	Terminal Board		
11	Valve Support Block	23	Wire Clamp		
12	valve cover				

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

GRHARC09ASA GRHARC12ASA

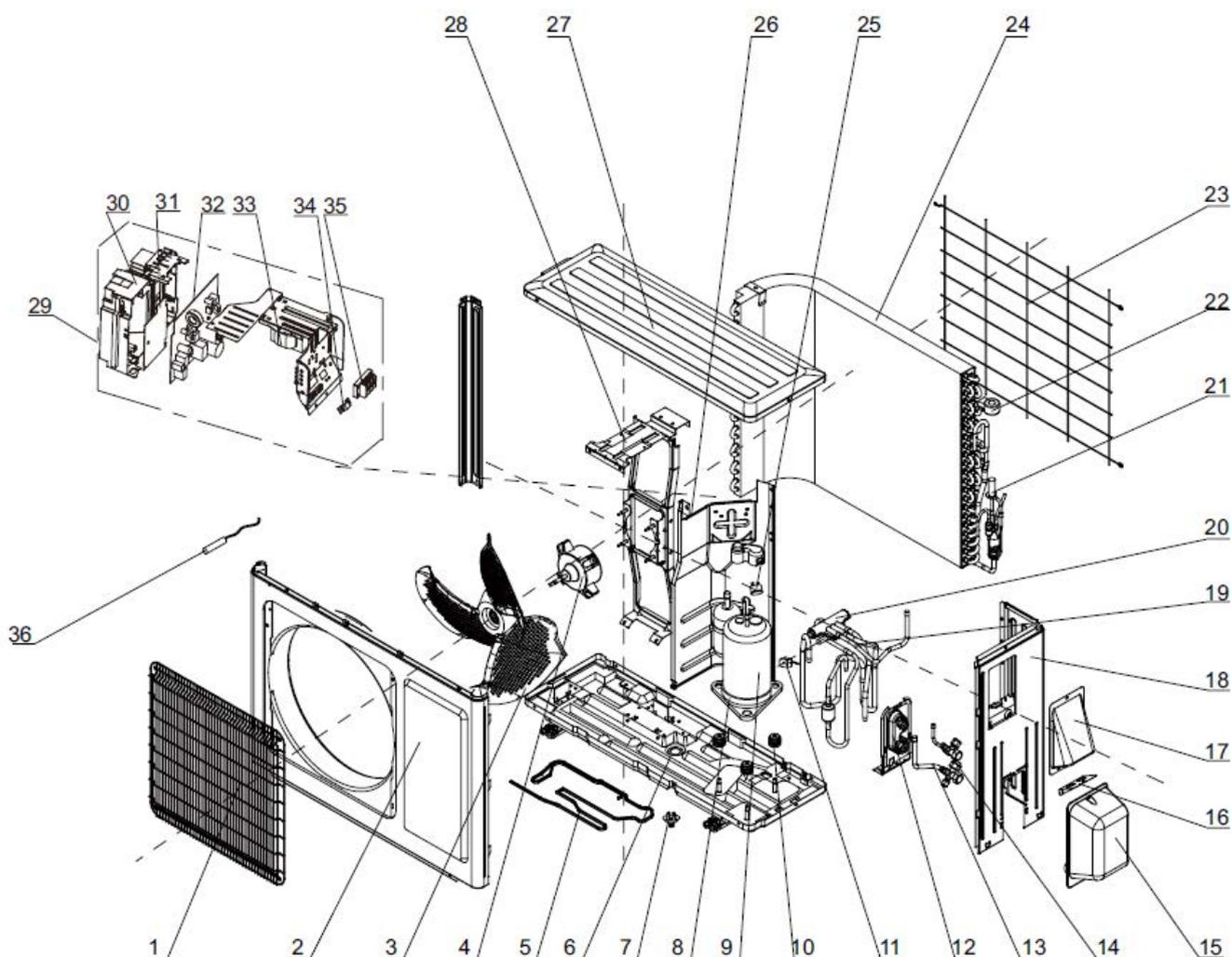


The component picture is only for reference; please refer to the actual product.

NO.	Description	NO.	Description	NO.	Description
1	Front Grill	13	Cover of Pass Wire	24	Capacitor Box Sub-Assy
2	Front Panel Assy	14	Right Side Plate Assy	25	Top Cover Sub-Assy
3	Axial Flow Fan	15	Cable Cross Plate 2	26	Condenser Assy
4	Chassis Sub-assy	16	Magnet Coil	27	Motor Support
5	Clapboard Sub-Assy	17	Electric Expansion Valve Sub-Assy	28	Fan Motor
6	Drainage Connector	18	Rear Grill	29	Compressor Overload Protector(External)
7	Compressor Gasket	19	Electric Box Cover Sub-Assy	30	Compressor and Fittings
8	4-Way Valve Assy	20	Electric Box Assy	31	Small Handle
9	Valve Support	21	Main Board	32	Temperature Sensor
10	Cut off Valve Assy	22	Electric box 1	33	valve cover
11	Valve	23	Terminal Board		
12	Valve Support Block				

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

GRHARC12AS

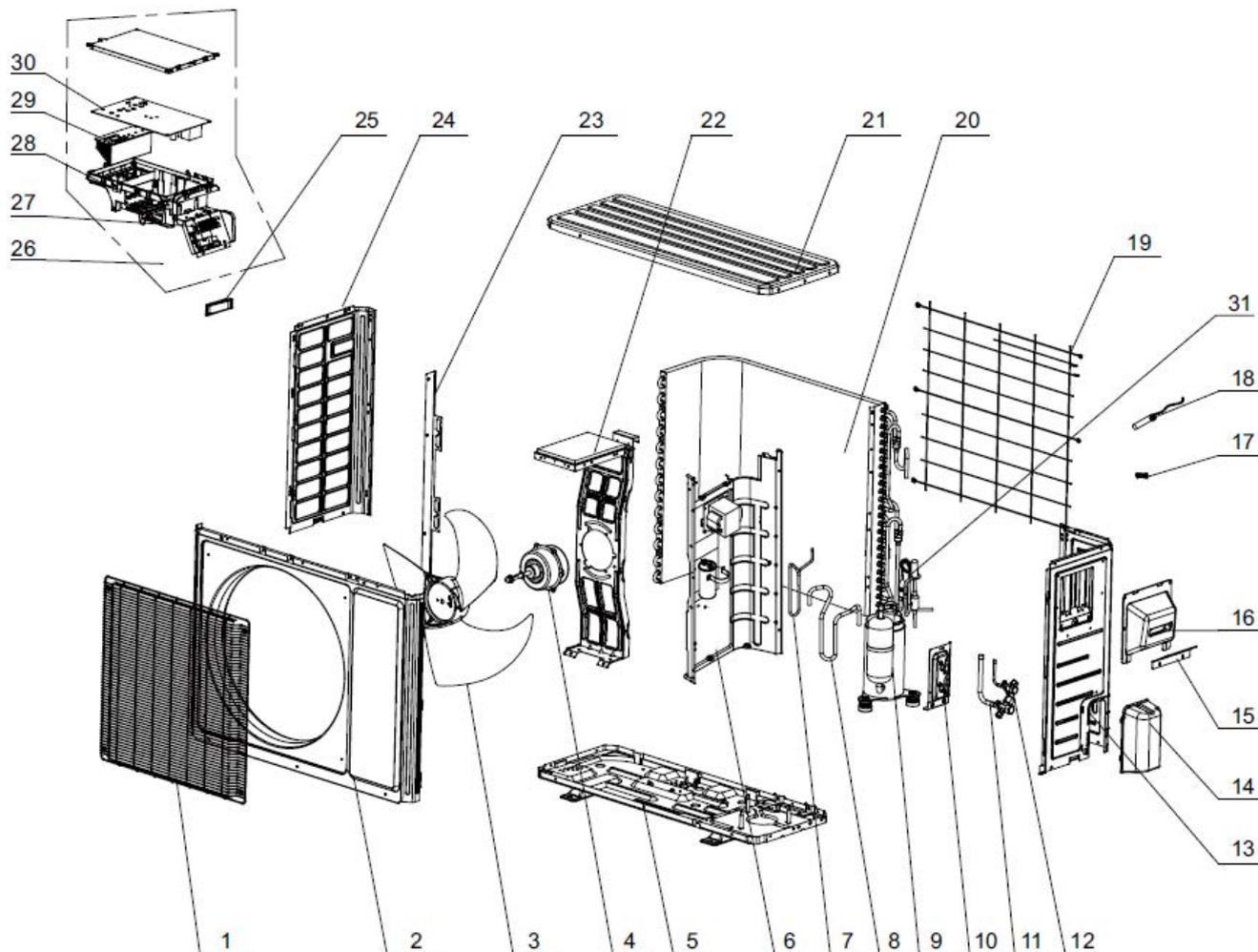


The component picture is only for reference; please refer to the actual product.

NO.	Description	NO.	Description	NO.	Description
1	Front Grill	14	Valve	26	Clapboard Sub-Assy
2	Cabinet	15	Valve Cover	27	Top Cover Plate
3	Axial Flow Fan	16	Cable Cross Plate 1	28	Motor Support
4	Fan Motor	17	Cable Cross Plate 2	29	Electric Box Assy
5	Electrical Heater	18	Right Side Plate	30	Electric Box
6	Chassis Sub-assy	19	4-Way Valve Assy	31	Electrical box cover
7	Drainage Connector	20	4-Way Valve	32	Main Board
8	Electrical Heater(Compressor)	21	Electric Expansion Valve Sub-Assy	33	Reactor
9	Compressor and Fittings	22	Electric Expand Valve Fitting	34	Wire Clamp
10	Compressor Gasket	23	Rear Grill	35	Terminal Board
11	Magnet Coil	24	Condenser Assy	36	Temperature Sensor
12	Valve Support	25	Compressor Overload Protector(External)		
13	Valve				

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

GRARC24AS

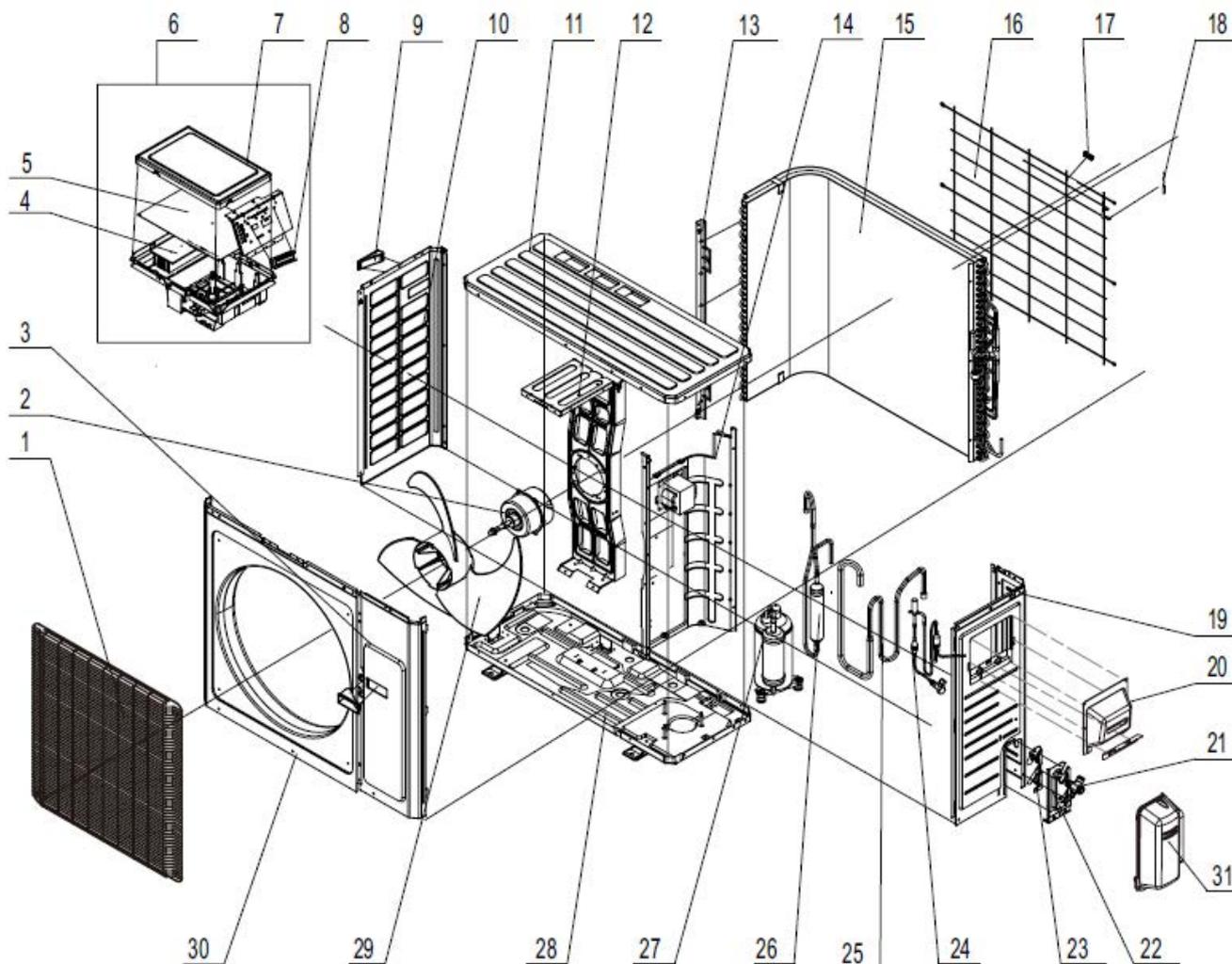


The component picture is only for reference; please refer to the actual product.

NO.	Description	NO.	Description	NO.	Description
1	Front Grill	12	Cut off Valve Sub-Assy	23	Condenser Support Plate
2	Cabinet	13	Right Side Plate	24	Left Side Plate
3	Axial Flow Fan	14	Valve Cover	25	Handle
4	Fan Motor	15	Retaining Plate	26	Electric Box Assy
5	Chassis Sub-assy	16	Handle Assy	27	Terminal Board
6	Clapboard Assy	17	Valve Support Block	28	Electric Box
7	Discharge Tube Sub-assy	18	Temperature Sensor	29	Radiator
8	Inhalation Tube Sub-assy	19	Rear Grill	30	Main Board
9	Compressor and Fittings	20	Condenser Assy	31	Electronic Expansion Valve assy
10	Valve Support Assy	21	Coping		
11	Cut off Valve	22	Motor Support Sub-Assy		

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

GRARC36AS2



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

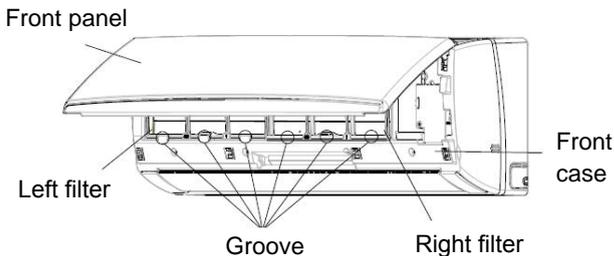
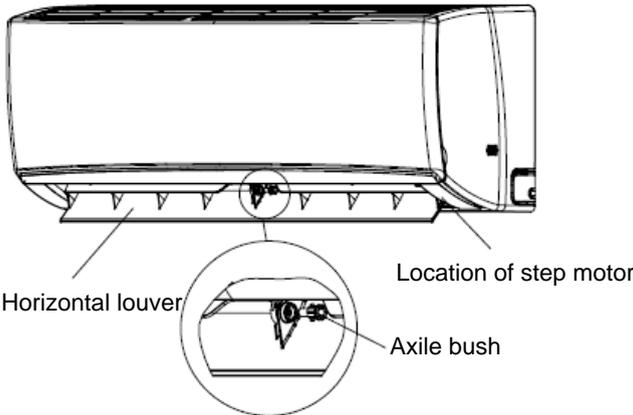
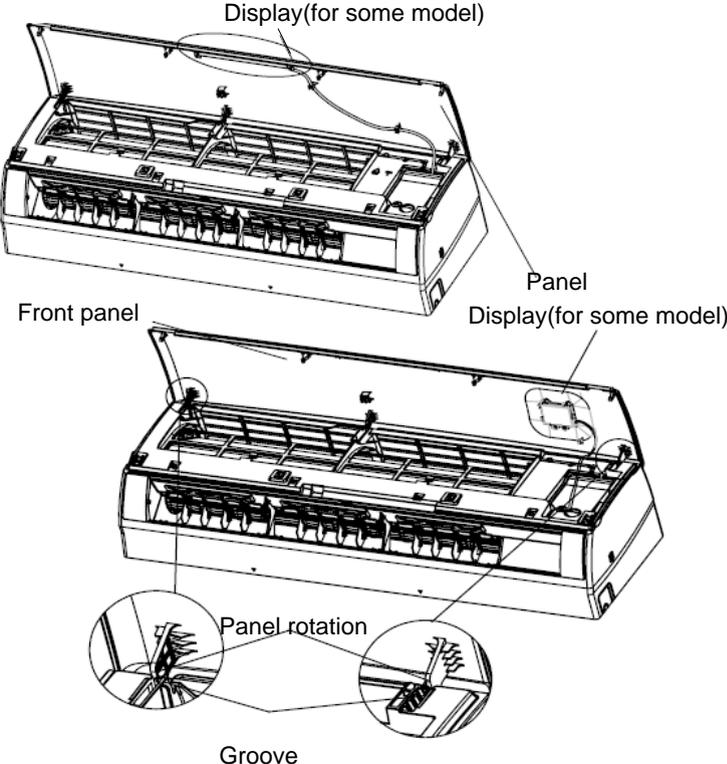
NO.	Description	NO.	Description	NO.	Description
1	Front Grill	12	Motor Support Sub-Assy	23	Baffle(Valve Support)
2	Fan Motor	13	Condenser Support Plate	24	Electronic Expansion Valve
3	Front Side Plate	14	Clapboard Sub-Assy	25	Inhalation Tube Sub-assy
4	Radiator	15	Condenser Assy	26	Discharge Tube Sub-assy
5	Main Board	16	Rear Grill	27	Compressor and Fittings
6	Electric Box Assy	17	Wiring Clamp	28	Chassis Sub-assy
7	Electric Box Cover	18	Temperature Sensor	29	Axial Flow Fan
8	Terminal Board	19	Right Side Plate	30	Cabinet
9	Handle	20	Handle Assy	31	Valve Cover
10	Left Side Plate	21	Cut off Valve		
11	Coping	22	Valve Support Sub-Assy		

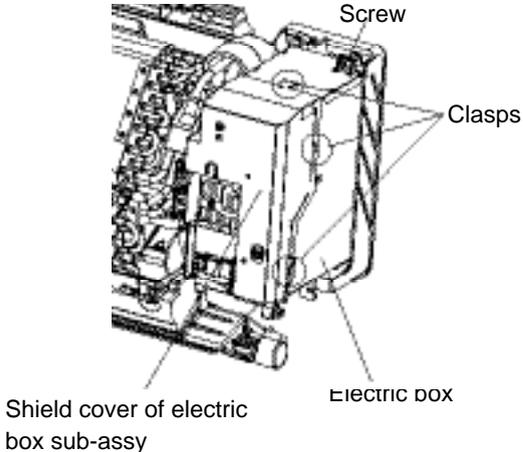
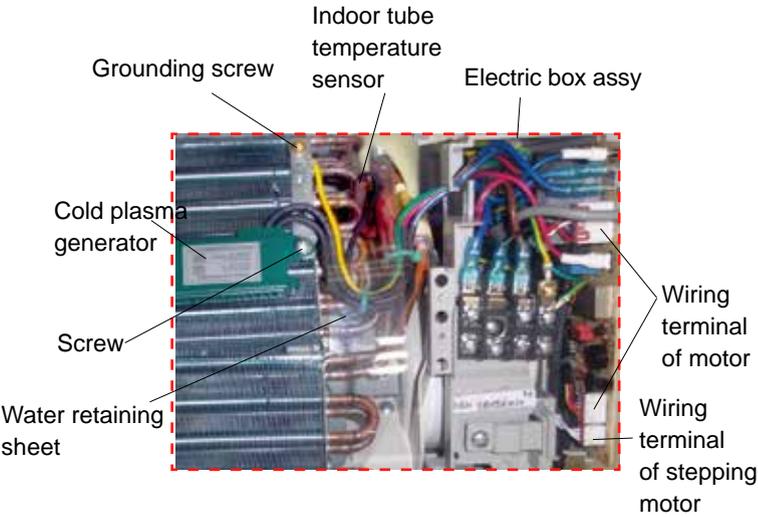
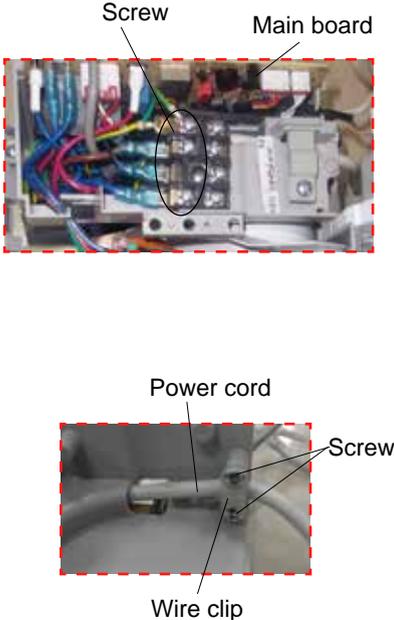
Some models may not contain some parts, please refer to the actual product.

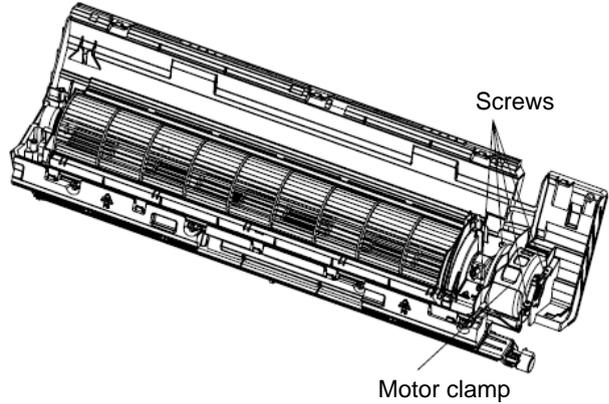
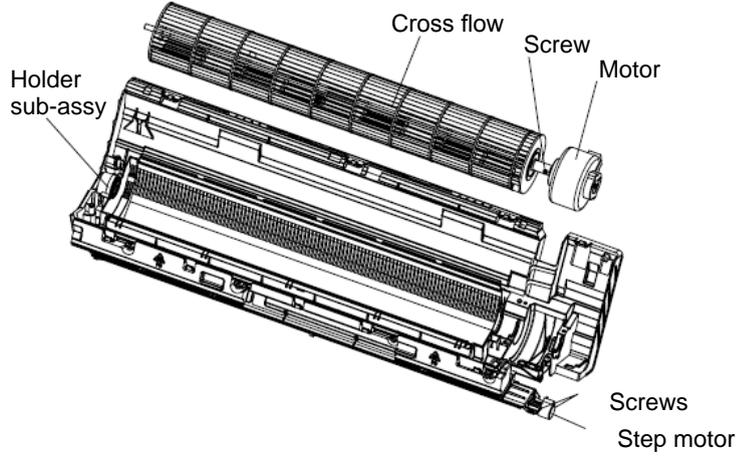
11. Removal Procedure

11.1 Removal Procedure of Indoor Unit

⚠ Caution: discharge the refrigerant completely before removal.

Step	Procedure	
1. Remove filter assemb		
	<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>	
2. Remove horizontal louv		
	<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>	
3. Remove panel and displ		
<p>a</p> <p>b</p>	<p>C6 panel display: Screw off the 2 screws that are locking the display board.</p> <p>Separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p>	

Step	Procedure
7. Remove electric box as	
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> 

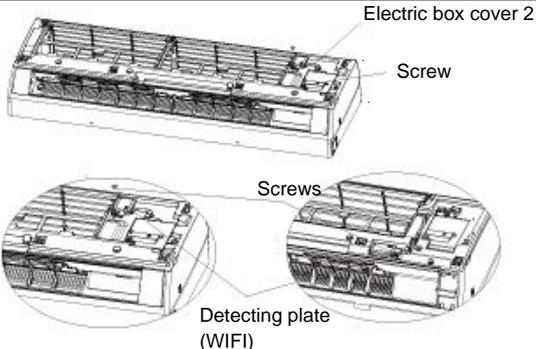
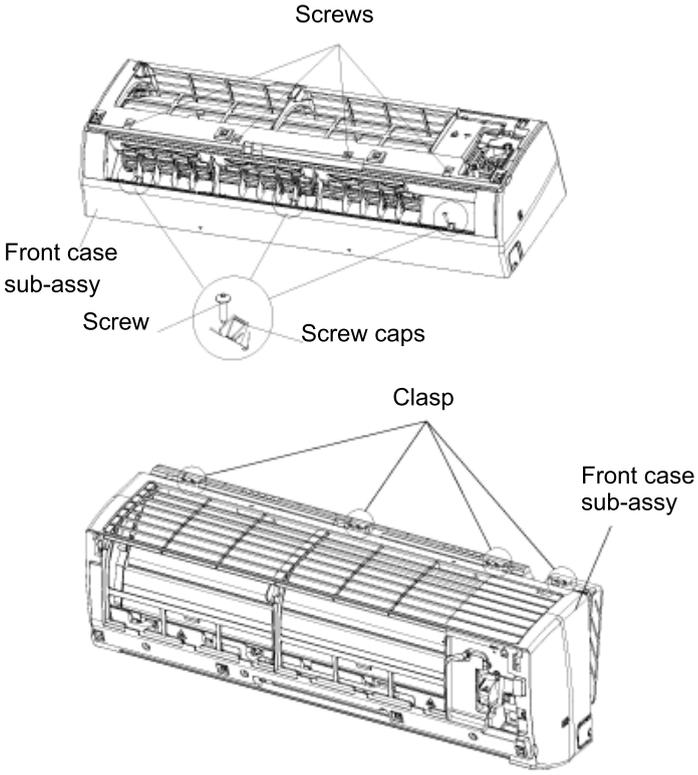
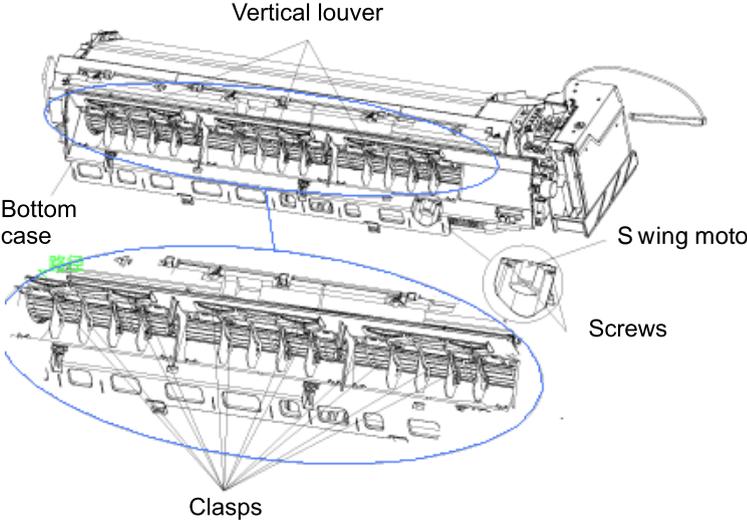
Step	Procedure	
9. Remove motor and cross flow bla		
a	<p>Remove the screws fixing motor clamp and then remove the motor clamp.</p>	
b	<p>Remove the screws at the connection place of cross flow blade and motor; lift the motor and cross flow blade upwards to remove them. Remove the bearing holder sub-assy.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

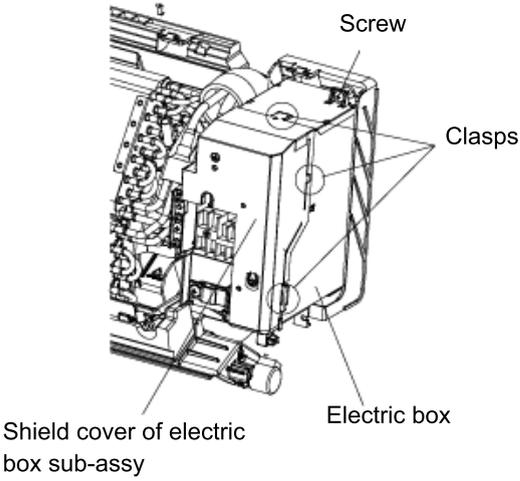
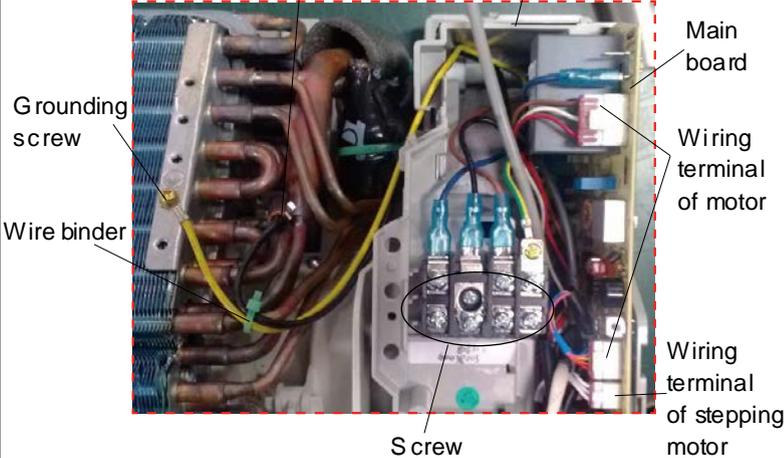
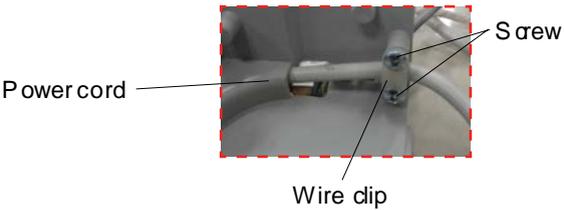


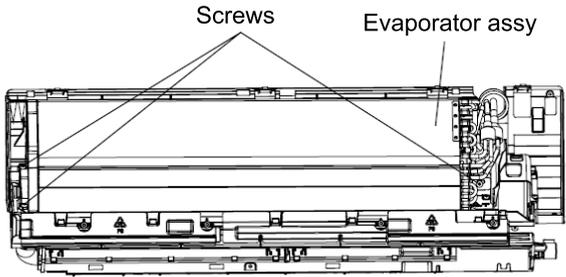
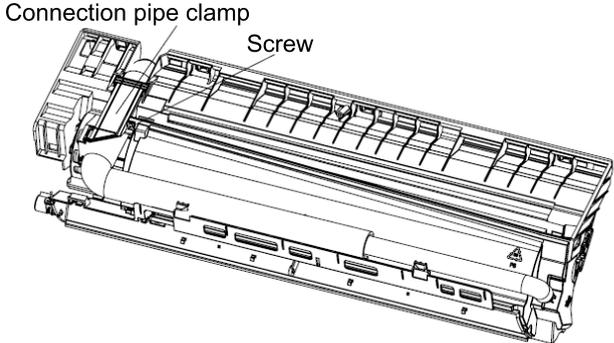
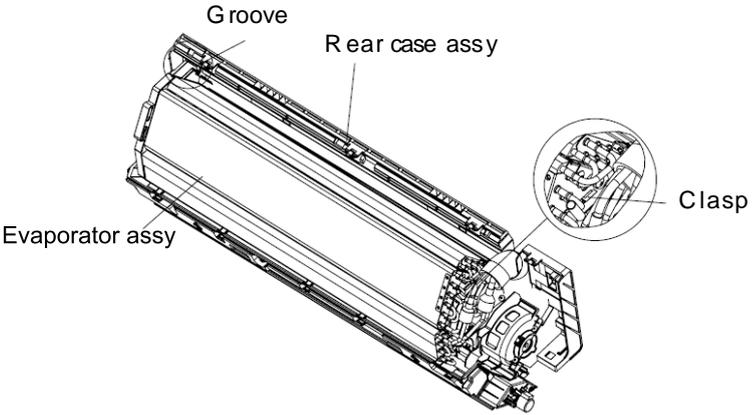
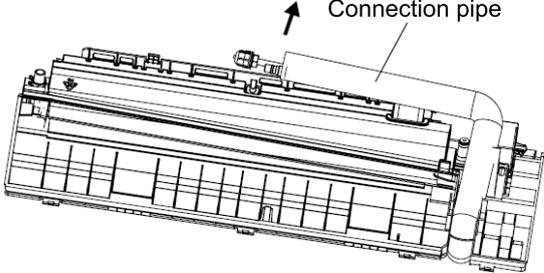
Caution: discharge the refrigerant completely before removal.

18/24K

Step	Procedure	
1. Remove filter assy	<p>Open the front panel. Push the left and right filters to make them break away from the groove on the front case. Then remove the left and right filters one by one.</p>	
2. Remove horizontal louver	<p>Push out the axile bush on horizontal louver. Bend the horizontal louver with hand and then separate the horizontal louver from the crankshaft of step motor to remove it.</p>	
3. Remove panel	<p>a C6 panel display: Screw off the 2 screws that are locking the display board.</p> <p>b Separate the panel rotation shaft from the groove fixing the front panel and then removes the front panel.</p>	

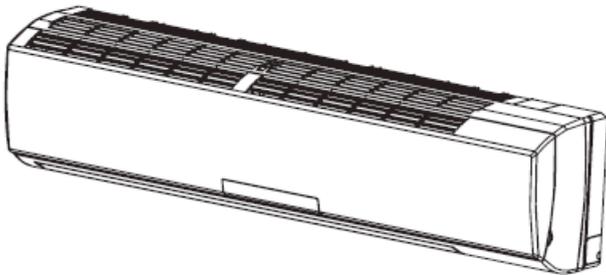
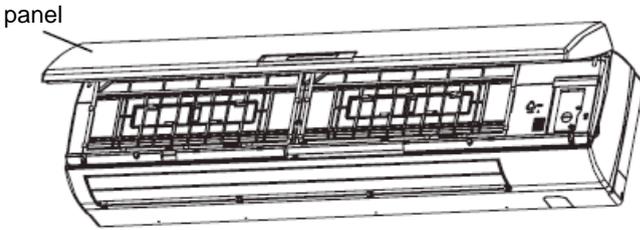
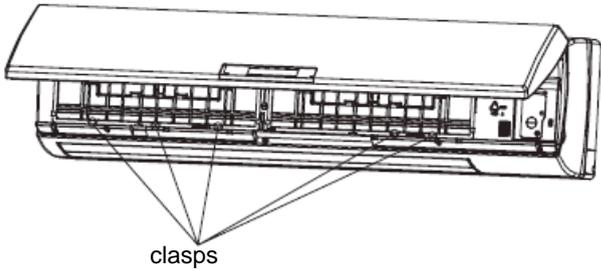
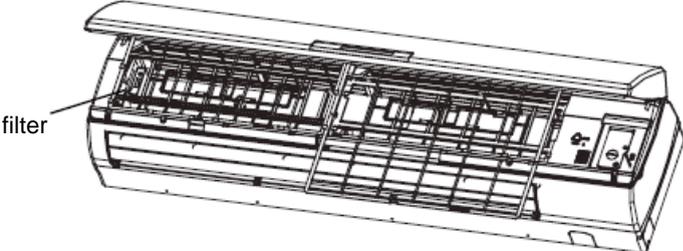
Step	Procedure	Procedure
4. Remove electric box cover 2 and detecting plate(WIFI)	<p>Remove the screws on the electric box cover 2 and detecting plate(WIFI), then remove the electric box cover 2 and detecting plate(WIFI).</p>	 <p>Electric box cover 2</p> <p>Screw</p> <p>Screws</p> <p>Detecting plate (WIFI)</p>
5. Remove front case sub-assy	<p>a Remove the screws fixing front case.</p> <p>Note: 1. Open the screw caps before removing the screws around the air outlet. 2. The quantity of screws fixing the front case sub-assy is different for different models.</p> <p>b Loosen the connection clasps between front case sub-assy and bottom case. Lift up the front case sub-assy and take it out.</p>	 <p>Screws</p> <p>Front case sub-assy</p> <p>Screw</p> <p>Screw caps</p> <p>Clasp</p> <p>Front case sub-assy</p>
6. Remove vertical louver	<p>Loosen the connection clasps between vertical louver and bottom case to remove vertical louver.</p> <p>Screw off the screws that are locking the swing motor and take the motor off.</p>	 <p>Vertical louver</p> <p>Bottom case</p> <p>Swing motor</p> <p>Screws</p> <p>Clasps</p>

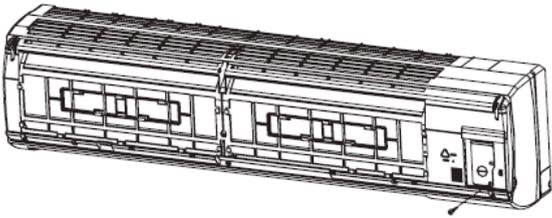
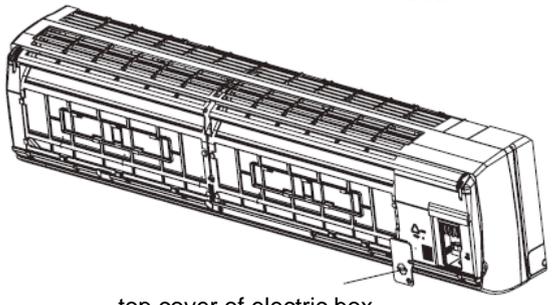
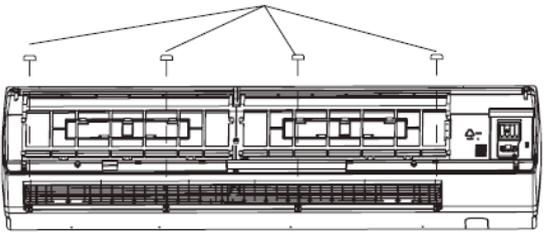
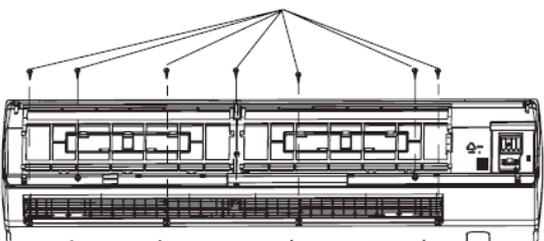
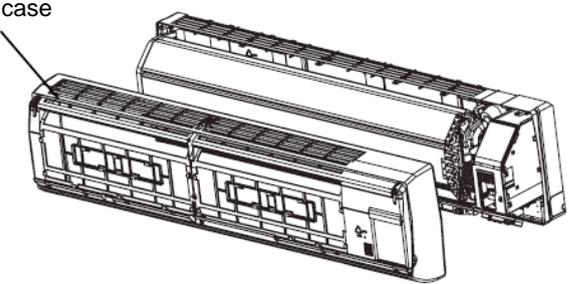
Step	Procedure
7. Remove electric box assy	
a	<p>Loosen the connection clasps between shield cover of electric box sub-assy and electric box, and then remove the shield cover of electric box sub-assy. Remove the screw fixing electric box assy .</p> 
b	<ol style="list-style-type: none"> ① Cut off the wire binder and pull out the indoor tube temperature sensor. ② Screw off one grounding screw. ③ Remove the wiring terminals of motor and stepping motor. ④ Remove the electric box assy. ⑤ Screw off the screws that are locking each lead wire. 
c	<p>Rotate the electric box assy. Twist off the screws that are locking the wire clip and loosen the power cord. Remove the wiring terminal of power cord. Lift up the main board and take it off.</p>  <p>Instruction: Some wiring terminal of this product is with lock catch and other devices. The pulling method is as below:</p> <ol style="list-style-type: none"> 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. 

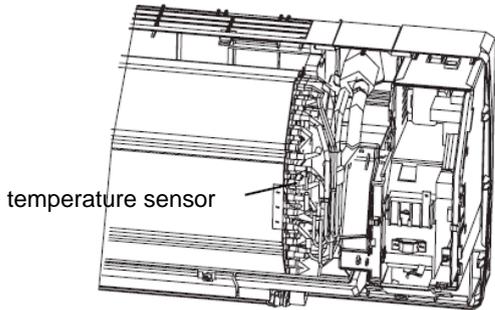
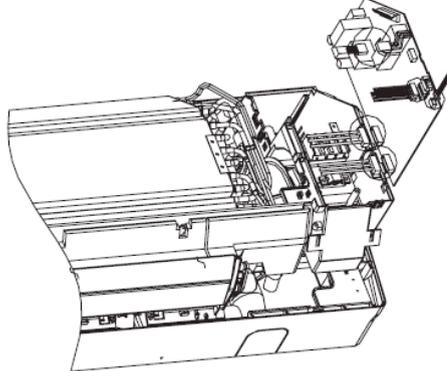
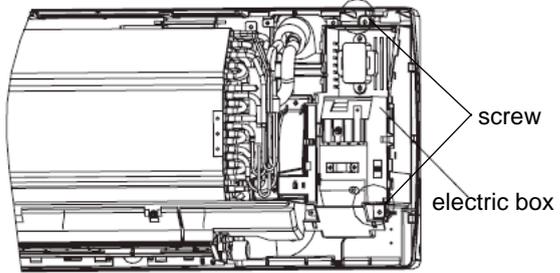
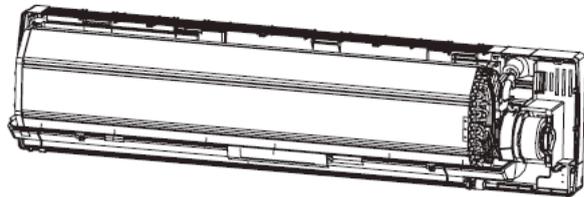
Step	Procedure
8. Remove evaporator assy	
a	<p>Remove 3 screws fixing evaporator assy.</p> 
b	<p>At the back of the unit, remove the screw fixing connection pipe clamp and then remove the connection pipe clamp.</p> 
c	<p>First remove the left side of evaporator from the groove on the rear case assy.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

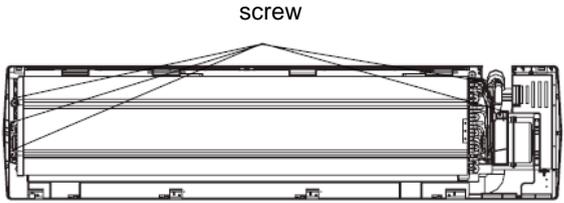
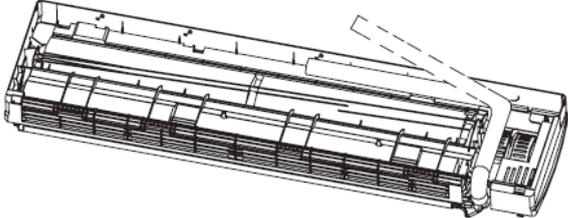
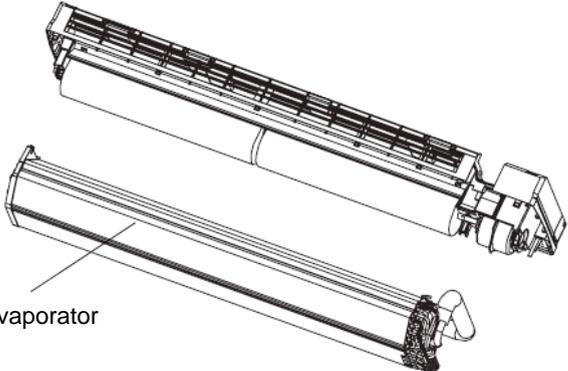
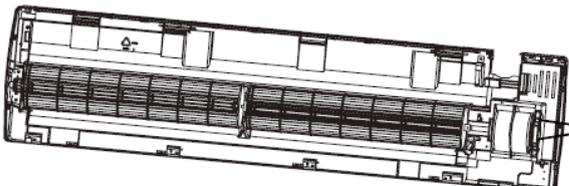
36K

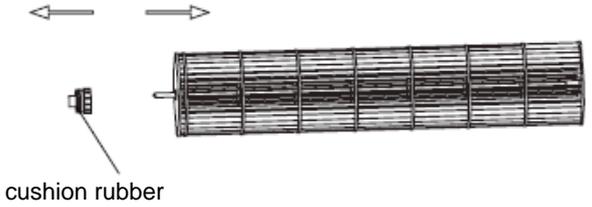
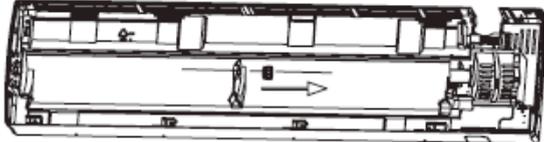
⚠ Caution: discharge the refrigerant completely before removal.

Steps	Procedure	
1. Before disassembly of the unit		
	Axonometric drawing for the complete unit.	
2. Remove filter		
a	Open the panel.	
b	Loosen the clasps on the filter.	
c	Draw out two pieces of filter.	

Steps	Procedure	Procedure
6.Remove top cover of electric box		
a	Remove screws fixing the top cover of electric box.	 <p>screw</p>
b	Remove the top cover of electric box.	 <p>top cover of electric box</p>
7.Remove front case		
a	Remove the screw caps on front case.	 <p>screw cap</p>
b	Remove screws connecting the front case.	 <p>screw</p>
c	Remove the front case.	 <p>front case</p>

Steps	Procedure	
10.Remove temperature sensor	 <p>temperature sensor</p>	
	<p>Pull out the indoor temperature sensor.</p>	
11.Remove electric box		
a	<p>Pull out 6 sockets on PCB board.</p>	
b	<p>Pull out two screws on electric box.</p>	 <p>screw</p> <p>electric box</p>
c	<p>Remove the electric box.</p>	

Steps	Procedure	
16.Remove evaporator		
a	Remove screws between evaporator and bottom case.	 <p style="text-align: center;">screw</p>
b	Turn over the indoor unit and adjust the pipe line to the position as shown by the broken line.	
c	Lift up the evaporator, and then remove the evaporator.	 <p style="text-align: center;">evaporator</p>
17.Remove the fixing plate of motor		
	Remove 2 screws on fixing plate of motor, and then remove the fixing pate of motor.	 <p style="text-align: right;">screw</p>

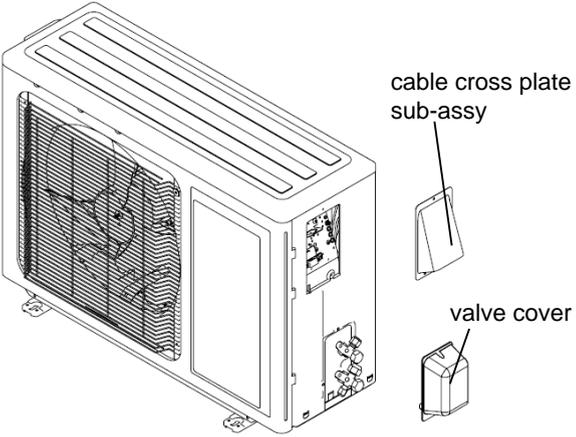
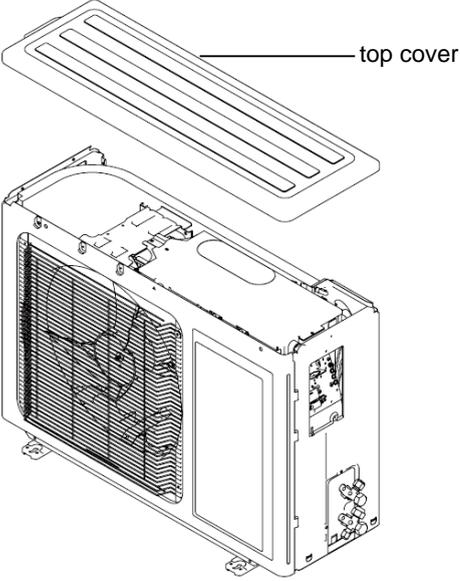
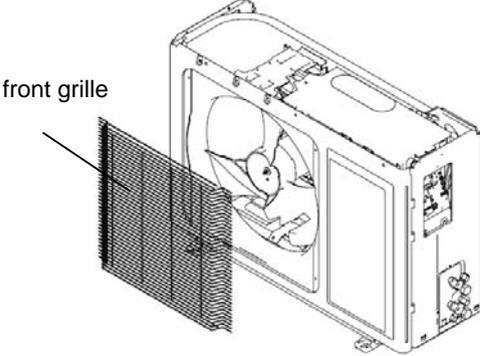
Steps	Procedure	
19.Remove cushion rubber		
a	Remove the cushion rubber on cross flow blade.	
b	Remove the cushion rubber from the base.	

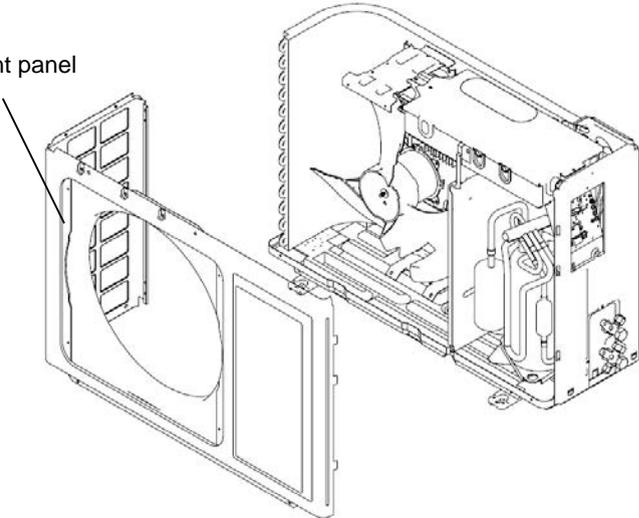
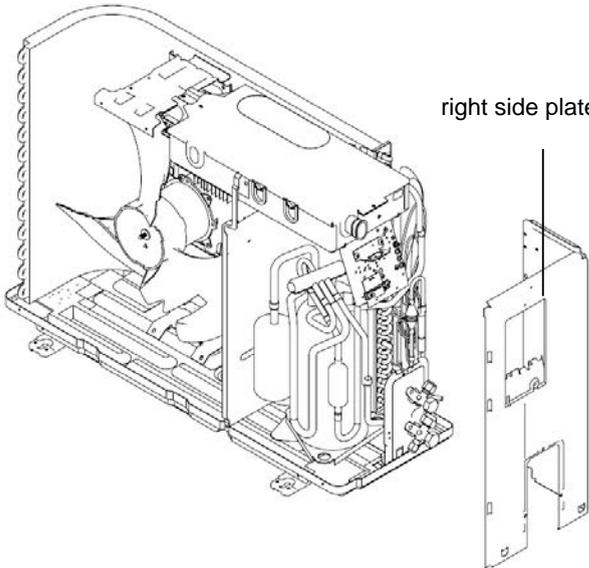
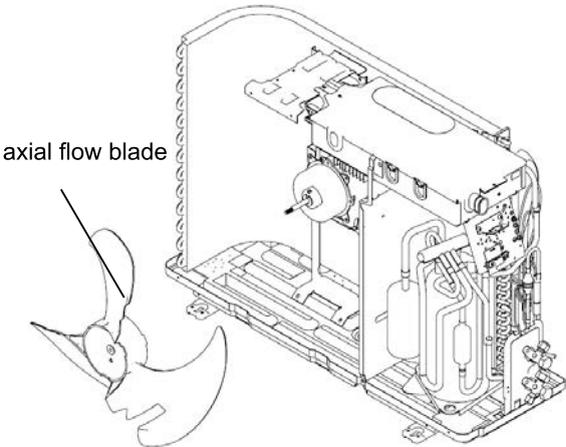
11.2 Removal Procedure of Outdoor Unit

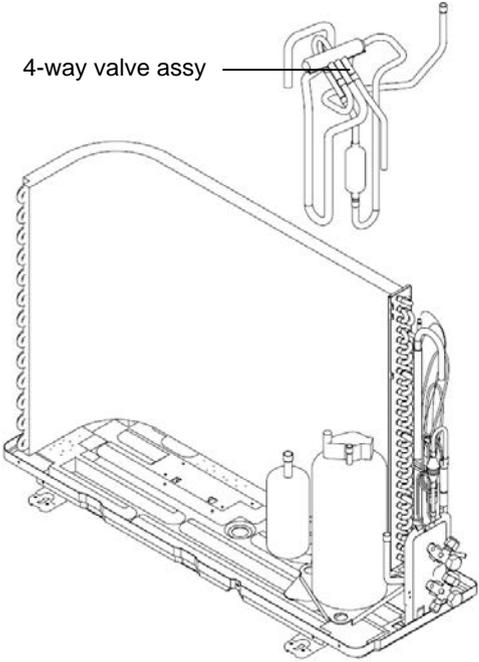
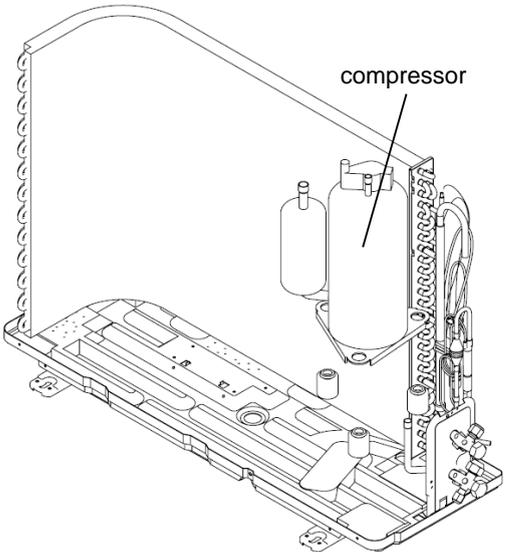


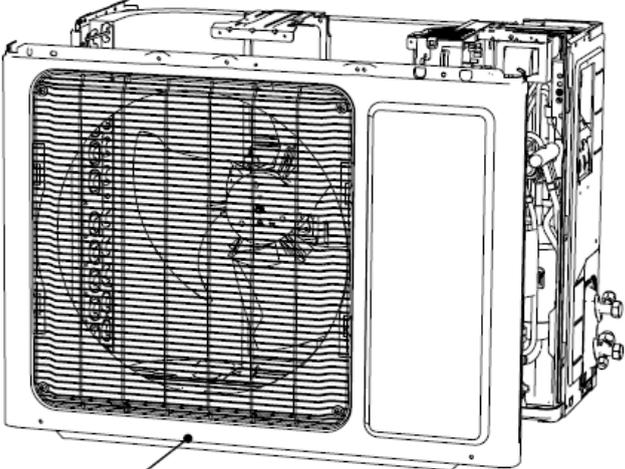
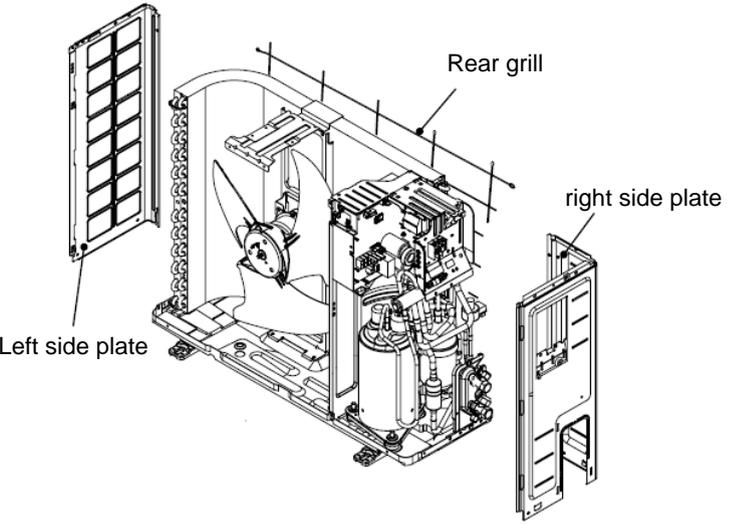
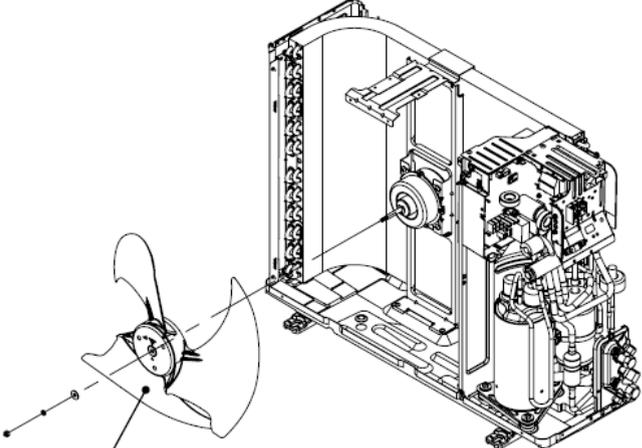
Warning: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

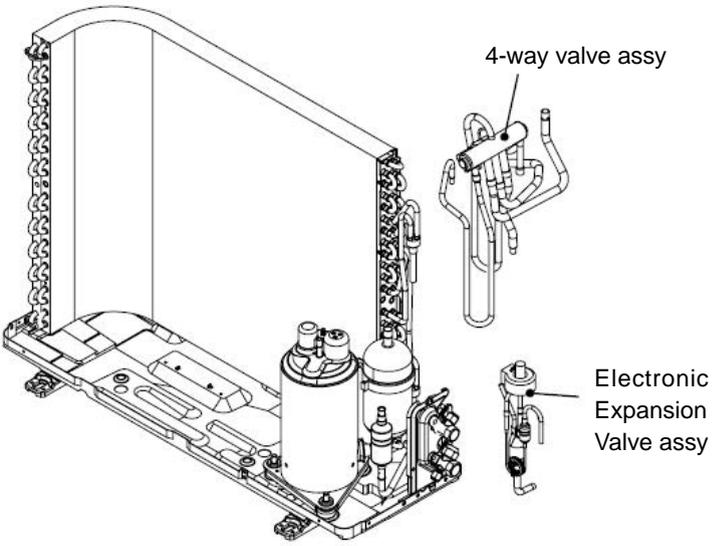
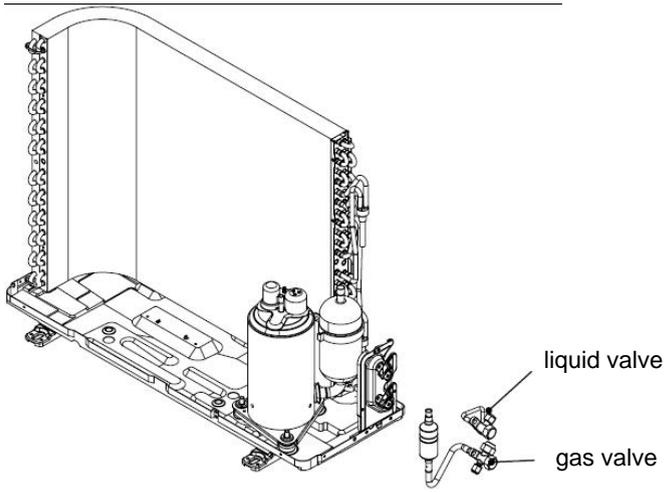
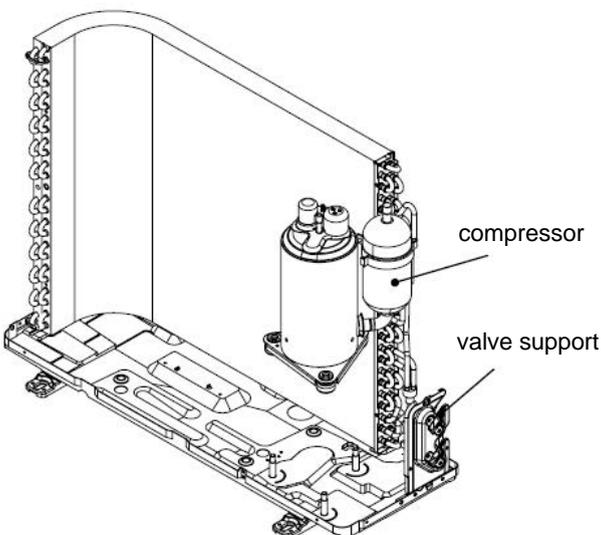
GRHARC09ASA GRARC12ASA GRHARC12ASA GRARC18AS
 NOTE: Take heat pump for example.

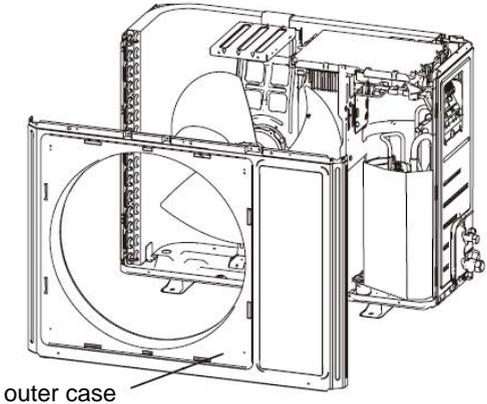
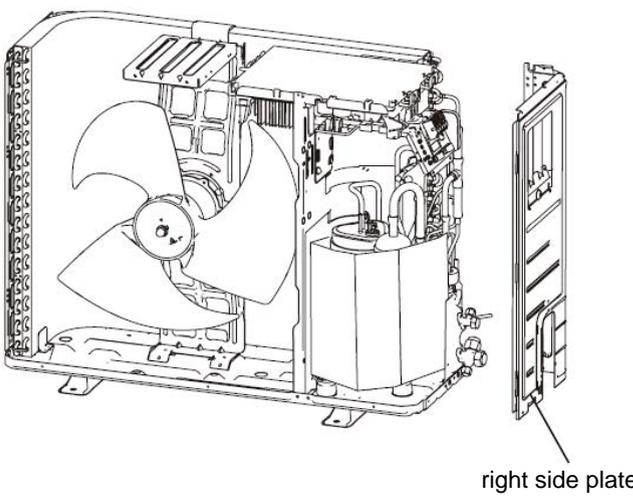
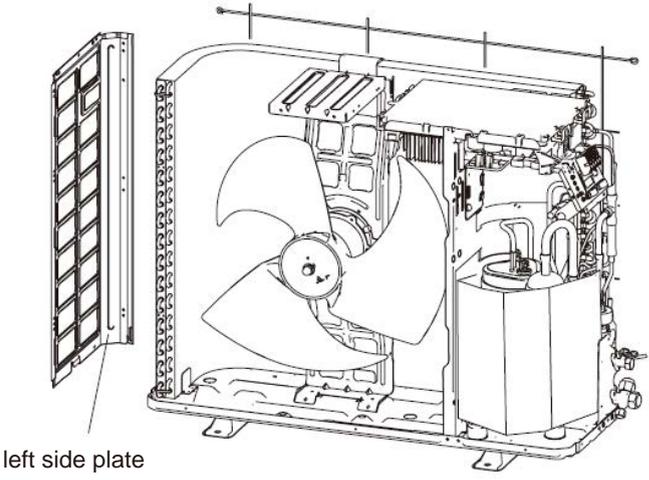
Steps	Procedure
<p>1.Remove cable cross plate sub-assy and valve cover</p>	<p>Remove the screws fixing cable cross plate sub-assy and then remove the cable cross plate sub-assy.</p> <p>Remove the screws fixing valve cover and then remove the valve cover.</p> 
<p>2.Remove top cover</p>	<p>Remove connection screws connecting the top cover plate with the front panel and the right side plate,and then remove the top cover.</p> 
<p>3.Remove front grille</p>	<p>Remove connection screws between the front grille and the front panel. Then remove the front grille.</p> 

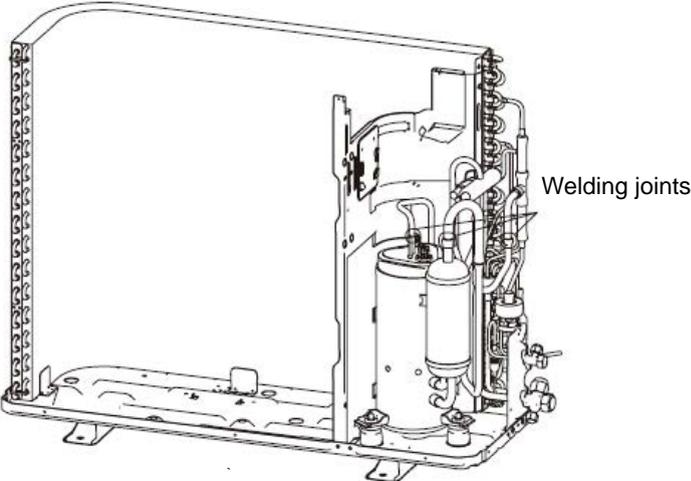
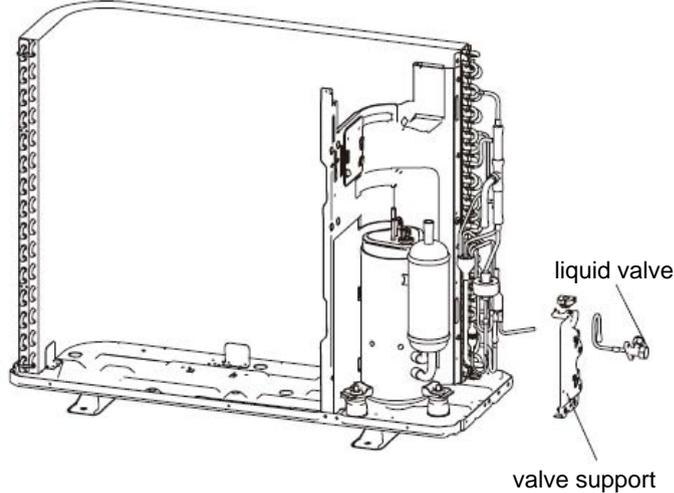
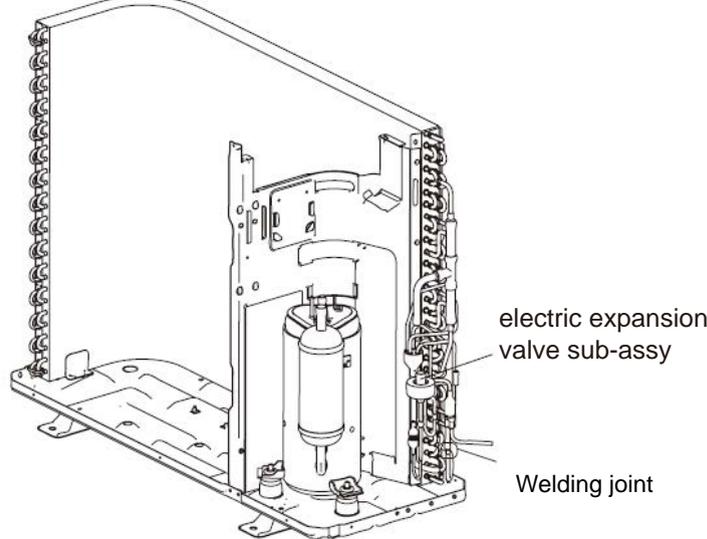
Steps	Procedure	
<p>4.Remove front panel</p>	<p>Remove connection screws connecting the front panel with the chassis and the motor support, and then remove the front panel.</p>	
<p>5.Remove right side plate</p>	<p>Remove connection screws connecting the right side plate with the valve support and the electric box. Then remove the right side plate.</p>	
<p>6.Remove axial flow blade</p>	<p>Remove the nut fixing the blade and then remove the axial flow blade.</p>	

Steps	Procedure
10. Remove 4-way valve assy	<p data-bbox="215 329 699 694">Unscrew the fastening nut of the 4-way Valve Assy coil and remove the coil. Wrap the 4-way Valve Assy with wet cotton and unsolder the 4 weld spots connecting the 4-way Valve Assy to take it out (Note: Refrigerant should be discharged firstly.) Welding process should be as quickly as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.</p> 
11. Remove compressor	<p data-bbox="215 1102 699 1170">Remove the 3 footing screws of the compressor and remove the compressor.</p> 

Step	Procedure	Procedure
<p>4. Remove front panel assy</p>	<p>Remove connection screws connecting the front panel assy with the chassis and the motor support, and then remove the front panel assy.</p>	 <p>front panel</p>
<p>5. Remove rear grill and left, right side plate assy</p>	<p>Remove the screws fixing rear grill, right side plate, left side plate and then remove them.</p>	 <p>Rear grill</p> <p>right side plate</p> <p>Left side plate</p>
<p>6. Remove axial flow blade</p>	<p>Remove the nut fixing the blade and then remove the axial flow blade.</p>	 <p>axial flow blade</p>

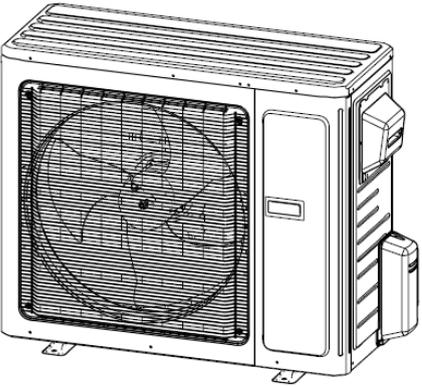
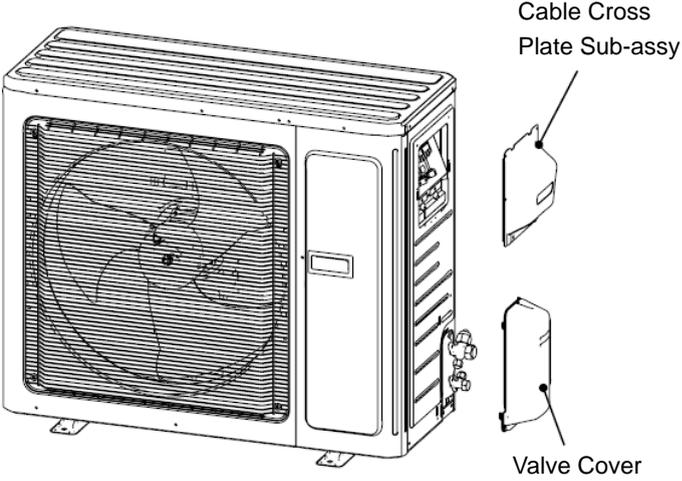
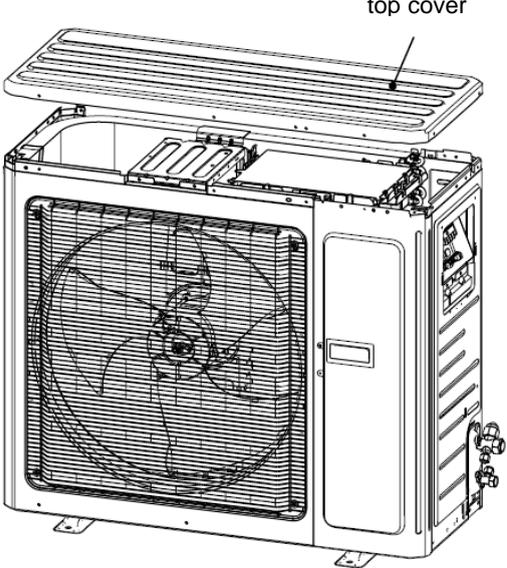
Step	Procedure
<p>10. Remove 4-way valve assy and electronic expansion valve assy</p>	<p>Unsolder the welding joints connecting the 4-way valve assy with capillary sub-assy, compressor and condenser; remove the 4-way valve.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> <p>Unsolder weld point of electronic expansion assy valve assy and outlet pipe of condenser. Then remove the electronic expansion assy. Do not block the electronic expansion assy before when unsoldering it. (Note: before unsoldering, discharge refrigerants completely)</p> 
<p>11. 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>12. Remove compressor</p>	<p>Remove the 3 footing screws of the compressor and remove the compressor.</p> <p>Remove the screws fixing valve support and then remove the valve support.</p> 

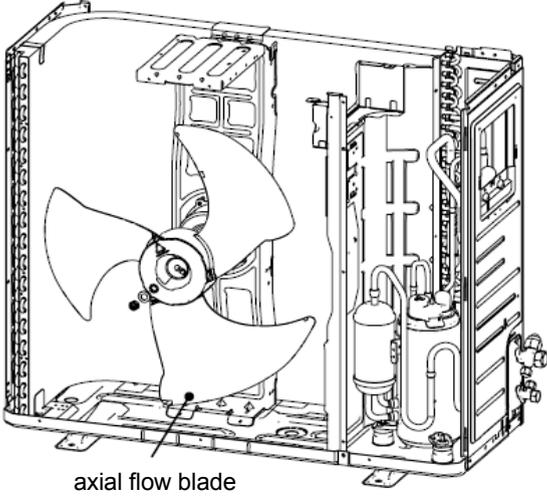
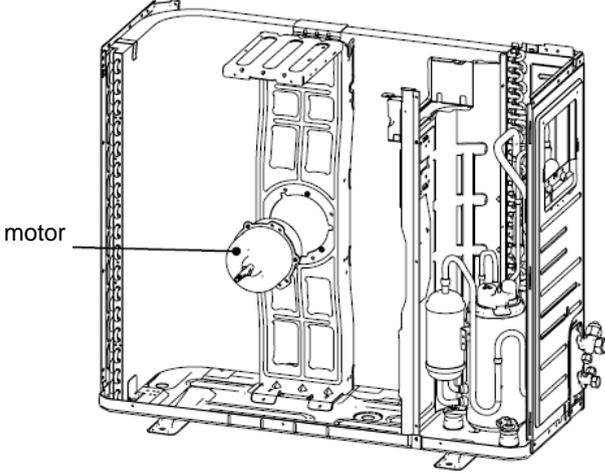
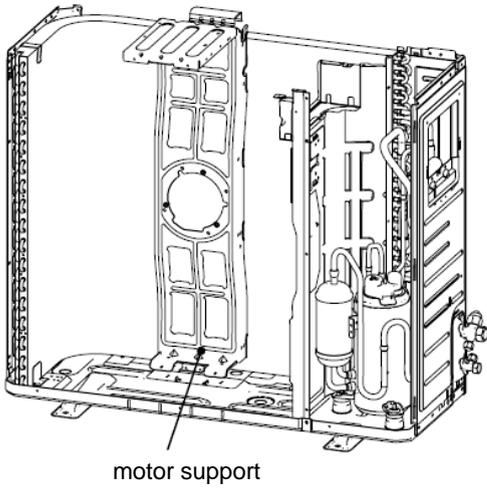
Steps	Procedure	
	<p>Remove the screws connecting the outer case with motor support, isolation plate and chassis; lift the outer case upwards; loosen the clasps of outer case with right side plate and left side plate, and then remove the outer case.</p>	 <p>outer case</p>
<p>3. Remove right & left side plate</p>		
<p>a</p>	<p>Remove the screws connecting the right side plate with electric box assy, valve support, chassis and condenser side plate, and then remove the right side plate.</p>	 <p>right side plate</p>
<p>b</p>	<p>Remove the screws connecting the left side plate with chassis, and then remove the left side plate.</p>	 <p>left side plate</p>

Steps	Procedure
<p>6. Remove 4-way valve assy</p>	<p>Unsolder the welding joints connecting the 4-way valve assy with capillary sub-assy, compressor and condenser; remove the 4-way valve.</p> <p>Note: Before unsoldering the welding joint, wrap the 4-way valve with a wet cloth completely to avoid damage to the valve caused by high temperature.</p> 
<p>7. Remove liquid valve and valve support</p>	<p>Remove the screws fixing the liquid valve, remove the liquid valve.</p> <p>Remove the screws fixing valve support and then remove the valve support.</p> 
<p>8. Remove electric expansion valve sub-assy</p>	<p>Remove the terminals of the electronic expansion valve coil and rotate to remove the electronic expansion valve coil.</p> <p>Unsolder the welding joint connecting the electronic expansion valve and then remove the electronic expansion valve sub-assy.</p> <p>(Note: before unsoldering, discharge refrigerants completely)</p> 

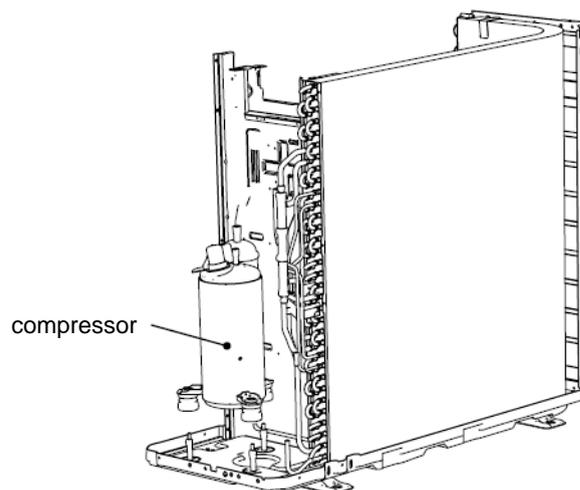
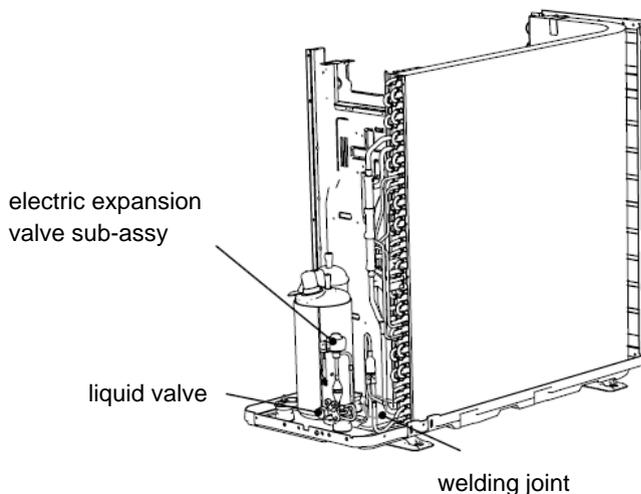
GRARC36AS2 GRHARC36AS2

NOTE: Take heat pump for example.

Step	Procedure
<p>1. Before disassembly</p>	
<p>2. Remove cable cross plate sub-assy and valve cover</p>	<p>Remove the screws fixing cable cross plate sub-assy, valve cover and then remove them.</p>  <p>Cable Cross Plate Sub-assy</p> <p>Valve Cover</p>
<p>3. Remove top cover</p>	<p>Remove the screws fixing top panel and then remove the top panel.</p>  <p>top cover</p>

Step	Procedure
<p>7. Remove axial flow blade</p>	<p>Remove the nut fixing the blade and then remove the axial flow blade.</p> 
<p>8. Remove motor</p>	<p>Remove the screws fixing motor and then remove the motor.</p> 
<p>9. Remove motor support</p>	<p>Remove the screws fixing motor support and then remove the motor support.</p> 

Step	Procedure
<p>13. Remove electric expansion valve sub-assy</p>	<p>Remove the terminals of the electronic expansion valve coil and rotate to remove the electronic expansion valve coil. Unsolder the welding joint connecting the electronic expansion valve and then remove the electronic expansion valve sub-assy.</p> <p>(Note: before unsoldering, discharge refrigerants completely)</p>
<p>14. Remove compressor</p>	<p>Remove the 3 footing screws of the compressor and 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 is 9.84ft.
- 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 32.81ft at the basis of standard length, you should add 0.0013gal of refrigerant oil for each additional 16.40ft of connection pipe.
 - The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):
 - 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(inch)	Gas pipe(inch)	Cooling only(oz/ft.)	Cooling and heating(oz/ft.)
Φ1/4	Φ3/8or Φ1/2	0.2	0.2
Φ1/4 or Φ3/8	Φ5/8 or Φ3/4	0.2	0.6
Φ1/2	Φ3/4 or Φ7/8	0.3	1.3
Φ5/8	Φ1 or Φ1 1/4	0.7	1.3
Φ3/4	/	2.7	2.7
Φ7/8	/	3.8	3.8

Note: The additional refrigerant charging amount in Sheet 2 is recommendedvalue, not compulsory.

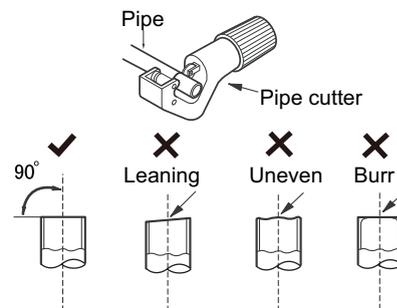
Appendix 3: Pipe Expanding Method

⚠ Note:

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

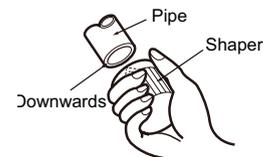
A: Cut the pip

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



B: Remove the burrs

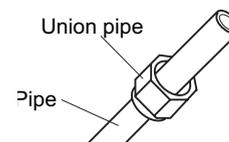
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe

D: Put on the union nut

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



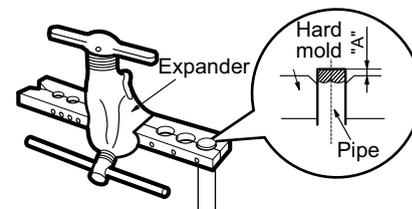
E: Expand the port

- Expand the port with expander.

⚠ Note:

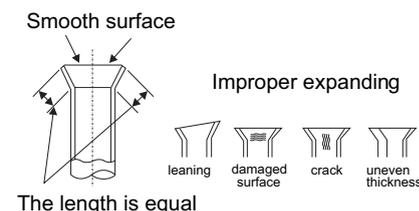
- "A" is different according to the diameter, please refer to the sheet below:

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



F: Inspection

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



Appendix 4: List of Resistance for Temperature Sensor

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

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	138.10	0	49.02	20	18.75	40	7.97
-18	128.60	2	44.31	22	17.14	42	7.35
-16	115.00	4	40.09	24	15.68	44	6.79
-14	102.90	6	36.32	26	14.36	46	6.28
-12	92.22	8	32.94	28	13.16	48	5.81
-10	82.75	10	29.90	30	12.07	50	5.38
-8	74.35	12	27.18	32	11.09	52	4.99
-6	66.88	14	24.73	34	10.20	54	4.63
-4	60.23	16	22.53	36	9.38	56	4.29
-2	54.31	18	20.54	38	8.64	58	3.99

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

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	181.40	20	25.01	60	4.95	100	1.35
-15	145.00	25	20.00	65	4.14	105	1.16
-10	110.30	30	16.10	70	3.48	110	1.01
-5	84.61	35	13.04	75	2.94	115	0.88
0	65.37	40	10.62	80	2.50	120	0.77
5	50.87	45	8.71	85	2.13	125	0.67
10	39.87	50	7.17	90	1.82	130	0.59
15	31.47	55	5.94	95	1.56	135	0.52

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

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-30	911.400	10	98	50	17.65	90	4.469
-25	660.8	15	77.35	55	14.62	95	3.841
-20	486.5	20	61.48	60	12.17	100	3.315
-15	362.9	25	49.19	65	10.18	105	2.872
-10	274	30	39.61	70	8.555	110	2.498
-5	209	35	32.09	75	7.224	115	2.182
0	161	40	26.15	80	6.129	120	1.912
5	125.1	45	21.43	85	5.222	125	1.682



JF00305033

Refricenter of Miami, Inc.
Add: 7101 N.W. 43rd Street Miami, Florida 33166

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