



TRANE®

Technical Service Manual

R-410a Split Systems



R-410a 60 Hz

Single Splits
Heat Pump

Indoor Unit
4MXW9509-A
4MXW9512-A
4MXW9518-A
4MXW9524-A

Outdoor Unit
4TXK9509-A
4TXK9512-A
4TXK9518-A
4TXK9524-A

March 2014



Warnings, Cautions and Notices

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

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

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

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

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

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

⚠ WARNING

Ground Required!

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

⚠ WARNING

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

Important!

Environmental Concerns

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

Responsible Refrigerant Practices

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



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Model Specifications

Model			4MXW9509A10N0AA 4TXK9509A10N0AA	4MXW9512A10N0AA 4TXK9512A10N0AA
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases	--	1	1
Power Supply Mode		--	Outdoor	Outdoor
Min/Max. Voltage		V	187/253	187/253
Cooling Capacity/ Heating Capacity		Btu/h	9000/ 9800	12000/ 13000
Cooling Power Input	W		600	882
Heating Power Input	W		650	960
Cooling Current/ Heating Current	A		5.7/ 7	6/ 7.5
Rated Input	W		1300	1400
Rated Cooling Current	A		9	9
Rated Heating Current	A		9	9
Max. Over Current Protection	A		15	15
EER /COP	W		4.4/ 4.4	4.0/ 4.0
SEER/HSPF	--		27/ 9.0	25/ 9.0
Air Flow Volume	m ³ /h		710/510/480/420/370/310/200	770/530/490/440/375/310/200
Dehumidifying Volume	L/h		0.9	1.4
Indoor Unit Model		--	4MXW9509A10N0AA	4MXW9512A10N0AA
Fan Type		--	Cross-flow	Cross-flow
Fan Diameter Length(D×L)		mm	Φ98×662	Φ98×662
Cooling Speed	r/min		1400/1050/1000/900/800/700/500	1450/1070/1000/900/800/700/500
Heating Speed	r/min		1400/1150/1080/1030/980/900/850	1450/1150/1080/1030/980/900/850
Fan Motor Power Output	W		10	10
Fan Motor RLA	A		0.07	0.07
Evaporator Form	--		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
Evaporator Pipe Diameter	mm		Φ7	Φ7
Evaporator Row-fin Gap	mm		2-1.5	2-1.5
Evaporator Coil Length (L×D×W)	mm		662×25.4×305	662×25.4×305
Swing Motor Model	--		MP24HC /MP24HB/MP24HA	MP24HC /MP24HB/MP24HA
Swing Motor Power Output	W		2.4	2.4
Fuse Current	A		3.15	3.15
Set Temperature Range	°C		16~30	16~30
Sound Pressure Level	dB (A)		42/38/36/34/30/26/23	44/38/36/34/30/26/24
Sound Power Level	dB (A)		52/48/46/44/40/36/33	54/50/48/46/44/40/34
Dimension (W×H×D)	mm		866×292×209	866×292×209
Dimension of Package(L×W×H)	mm		945×377×297	945×377×297
Net Weight /Gross Weight	kg		11.0/ 14.0	11.0/ 14.0
Outdoor Unit Model		--	4TXK9509A10N0AA	4TXK9512A10N0AA
Compressor Trademark			MITSUBISHI ELECTRIC	MITSUBISHI ELECTRIC
Compressor Manufacturer		--	MITSUBISHI ELECTRIC <GUANGZHOU> COMPRESSOR CO.LTD	MITSUBISHI ELECTRIC <GUANGZHOU> COMPRESSOR CO.LTD
Compressor Model	--		KNB092FTAMC	KNB092FTAMC
Compressor Type	--		Rotary	Rotary
Compressor LRA.	A		13.8	13.8
Compressor RLA	A		6.2	6.2
Compressor Power Input	W		860	860
Compressor Overload Protector	--		External 1NT11L-6578	External 1NT11L-6578
Fan Type	--		Axial-flow	Axial-flow
Fan Motor Power Output	W		40	40
Fan Motor RLA	A		0.18	0.18
Outdoor Unit Air Flow Volume	m ³ /h		2000	2000
Condenser Form	--		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
Condenser Pipe Diameter	mm		Φ7.94	Φ7.94
Condenser Rows-fin Gap	mm		2.5-1.5	2.5-1.5
Condenser Coil Length (L×D×W)	mm		763×57×550	763×57×550
Permissible Excessive Operating Pressure for the Discharge Side	MPa		4.3	4.3
Permissible Excessive Operating Pressure for the Suction Side	MPa		2.5	2.5
Maximum Allowable Pressure	MPa		4.3	4.3
Cooling Operation Ambient Temperature Range	°C		-18~48	-18~48
Heating Operation Ambient Temperature Range	°C		-20~30	-20~30
Throttling Method	--		Electron expansion valve	Electron expansion valve
Defrosting Method	--		Automatic Defrosting	Automatic Defrosting
Climate Type	--		T1	T1
Isolation	--		I	I
Moisture Protection	--		IP24	IP24
Sound Pressure Level	dB (A)		49	49
Sound Power Level	dB (A)		59	59
Dimension (W×H×D)	mm		899×596×378	899×596×378
Dimension of Package(L×W×H)	mm		948×420×645	948×420×645
Net Weight	kg		39/ 41	39.5/ 41.5
Refrigerant	--		R410A	R410A
Refrigerant Charge	kg		1.3	1.3



Model			4MXW9518A10N0AA 4TXK9518A10N0AA	4MXW9524A10N0AA 4TXK9524A10N0AA
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases	--	1	1
Power Supply Mode	--		Outdoor	Outdoor
Min/Max. Voltage	V		187/253	187/253
Cooling Capacity/ Heating Capacity	Btu/h		18000/ 19000	24000/ 25000
Cooling Power Input	W		1500	1960
Heating Power Input	W		1580	2320
Cooling Current/ Heating Current	A		8.01/ 8.44	8.45/ 10.1
Rated Input	W		2500	4200
Rated Cooling Current	A		13.1	14.23
Rated Heating Current	A		13.3	17.17
Max. Over Current Protection	A		20	30
EER /COP	W		3.5/ 3.5	3.6/ 3.2
SEER/HSPF	--		21/ 9.3	21/ 9.3
Air Flow Volume	m ³ /h		950/870/790/710/630/560/480	1200/1100/1000/900/800/700
Dehumidifying Volume	L/h		1.8	2.5
Indoor Unit	Indoor Unit Model	--	4MXW9518A10N0AA	4MXW9524A10N0AA
	Fan Type	--	Cross-flow	Cross-flow
	Fan Diameter Length(D×L)	mm	Φ100×765	Φ106 × 890
	Cooling Speed	r/min	1400/1300/1200/1100/1000/900/800	1400/1300/1200/1100/1000/900/800
	Heating Speed	r/min	1450/1350/1250/1150/1050/950/850	1350/1350/1250/1150/1050/900/800
	Fan Motor Power Output	W	25	70
	Fan Motor RLA	A	0.1	0.38
	Evaporator Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	φ7	φ7
	Evaporator Row-fin Gap	mm	2-1.5	2-1.5
	Evaporator Coil Length (L×D×W)	mm	765×25.4×343	903×25.4×381
	Swing Motor Model	--	MP28VC/MP35DA/MP24AA	MP35CJ/MP24HC/MP24HB
	Swing Motor Power Output	W	2.5	2.5
	Fuse Current	A	3.15	3.15
	Set Temperature Range	°C	16~30	16~30
	Sound Pressure Level	dB (A)	51/47/44/41/38/36/33	52/49/47/45/43/41/38
	Sound Power Level	dB (A)	61/57/54/51/48/46/43	62/59/57/55/53/51/48
	Dimension (W×H×D)	mm	1018x319x230	1178x326x264
	Dimension of Package(L×W×H)	mm	1097x397x340	1250x411x355
	Net Weight /Gross Weight	kg	15.5/ 19.0	17.5/ 21.5
Outdoor Unit	Outdoor Unit Model	--	4TXK9518A10N0AA	4TXK9524A10N0AA
	Compressor Trademark		GREE	GREE
	Compressor Manufacturer	--	ZHUHAI LANDA COMPRESSOR CO.,LTD	ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model	--	QXA-B141zF030A	QXAS-D23zX090
	Compressor Type	--	Rotary	Rotary
	Compressor LRA.	A	25	40
	Compressor RLA	A	7.2	14.7
	Compressor Power Input	W	1440	2450
	Compressor Overload Protector	--	External 1NT11L-6233	External 1NT11L-6233
	Fan Type	--	Axial-flow	Axial-flow
	Fan Motor Power Output	W	60	90
	Fan Motor RLA	A	0.50	0.65
	Outdoor Unit Air Flow Volume	m ³ /h	3200	4000
	Condenser Form	--	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	φ9.52	φ7.94
	Condenser Rows-fin Gap	mm	2-1.4	3-1.4
	Condenser Coil Length (L×D×W)	mm	812.5×44×660	960×57.15×748
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3	4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	2.5
	Maximum Allowable Pressure	MPa	4.3	4.3
	Cooling Operation Ambient Temperature Range	°C	-18~48	-18~48
	Heating Operation Ambient Temperature Range	°C	-20~30	-20~30
	Throttling Method	--	Electron expansion valve	Electron expansion valve
	Defrosting Method	--	Automatic Defrosting	Automatic Defrosting
	Climate Type	--	T1	T1
	Isolation	--	I	I
	Moisture Protection	--	IP24	IP24
	Sound Pressure Level	dB (A)	56	59
	Sound Power Level	dB (A)	66	69
	Dimension (W×H×D)	mm	955x700x396	980x790x427
	Dimension of Package(L×W×H)	mm	1029x458x750	1083x488x855
	Net Weight	kg	49/ 54	70/ 75
	Refrigerant	--	R410A	R410A
	Refrigerant Charge	kg	1.6	2.6



Piping Specifications

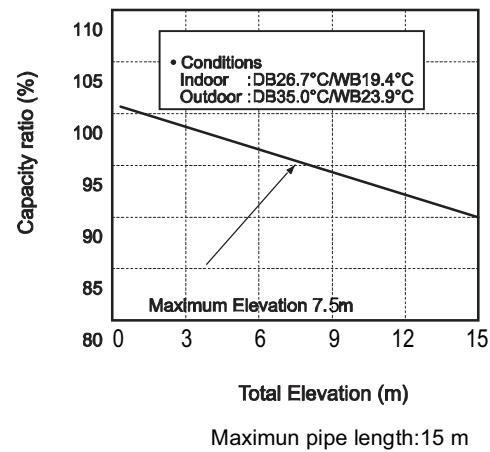
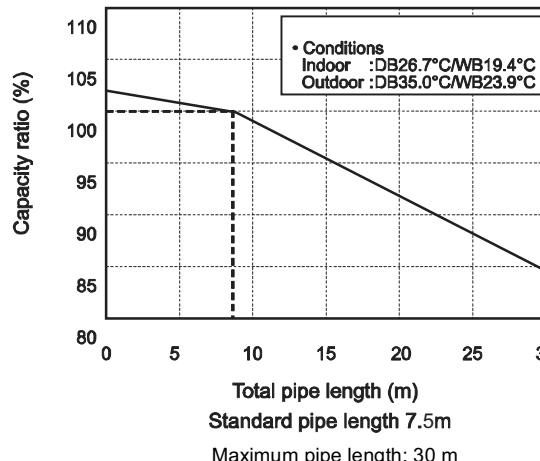
60Hz Heat pump

Model		4MXW9509A10N0AA 4TXK9509A10N0AA	4MXW9512A10N0AA 4TXK9512A10N0AA
Connection Pipe	Length	m	7.5
	Gas Additional Charge	g/m	20
	Outer Diameter of Liquid Pipe(GREE Allocation)(Metric)	mm	φ6
	Outer Diameter of Gas Pipe(GREE Allocation)(Metric)	mm	φ12
	Max Distance Height	m	15
	Max Distance Length	m	30

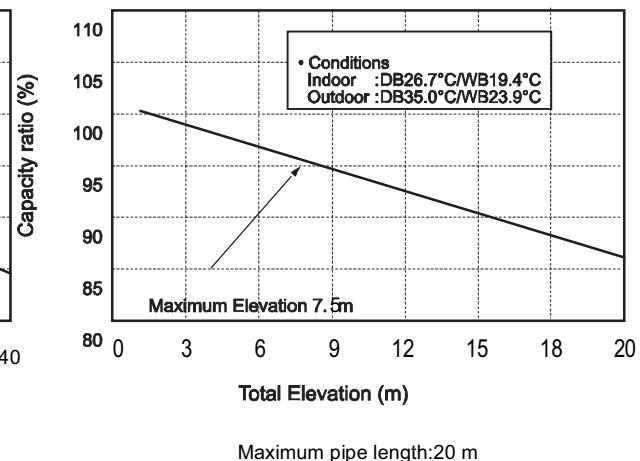
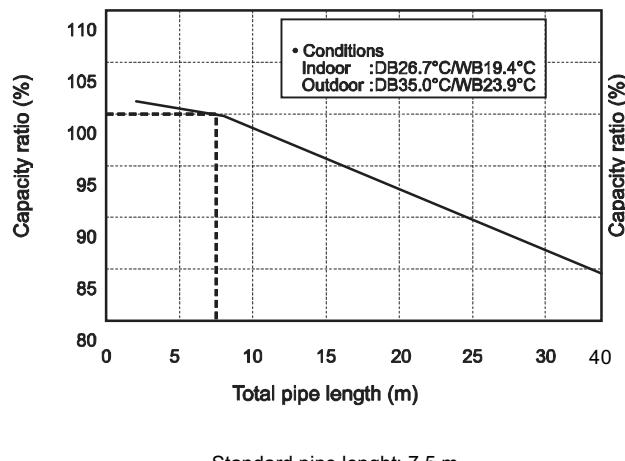
Model		4MXW9518A10N0AA 4TXK9518A10N0AA	4MXW9524A10N0AA 4TXK9524A10N0AA
Connection Pipe	Length	m	7.5
	Gas Additional Charge	g/m	50
	Outer Diameter of Liquid Pipe(GREE Allocation)(Metric)	mm	φ6
	Outer Diameter of Gas Pipe(GREE Allocation)(Metric)	mm	φ16
	Max Distance Height	m	20
	Max Distance Length	m	40

Capacity Variation Ratio According to Pipe Length

*For 9/12 Mbh models:



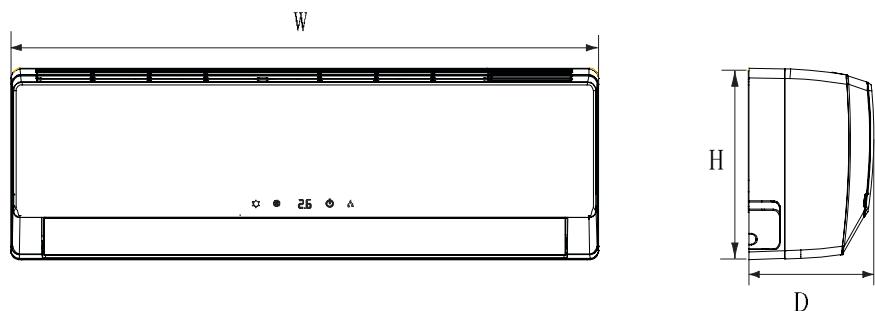
*For 18/24 Mbh models:





Dimensions

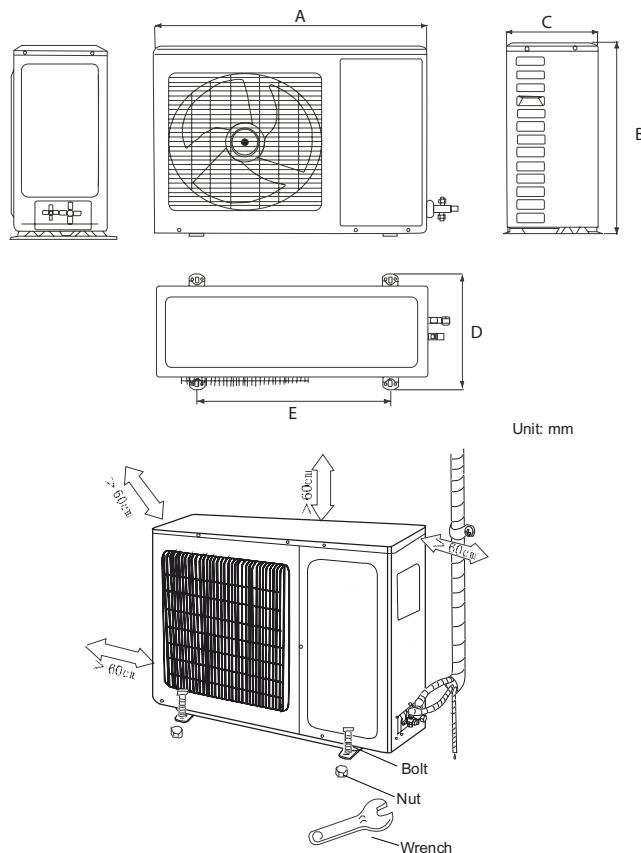
Indoor Units



60Hz Models

Dimensions(mm)			
unit	W(width)	H(height)	D(depth)
4MXW9509A1000AA	866	292	209
4MXW9512A1000AA	866	292	209
4MXW9518A1000AA	1018	319	230
4MXW9524A1000AA	1178	326	246

Outdoor Units



60Hz Models

Dimension(mm)				D	E
Unit	A(width)	B(height)	C(depth)		
4TXK9509A1000AA	899	596	378	353	551
4TXK9512A1000AA	899	596	378	353	551
4TXK9518A1000AA	955	700	396	363	559
4TXK9524A1000AA	980	790	427	395	607



Electrical Characteristics

60Hz Models

Model		Power Supply				Current		OMF	
Indoor	Outdoor	Hz	Voltage	Min.	Max	MCA	MFA	W	FLA
4MXW9509A1000AA	4TXK9509A1000AA	60	208~230	187	253	10	15	40	0.18
4MXW9512A1000AA	4TXK9512A1000AA	60	208~230	187	253	10	15	40	0.18
4MXW9518A1000AA	4TXK9518A1000AA	60	208~230	187	253	15	20	60	0.50
4MXW9524A1000AA	4TXK9524A1000AA	60	208~230	187	253	20	30	90	0.65

Remark:

MCA: Min. Current Amps. (A)

MFA: Max. Fuse Amps. (A)

W: Fan Motor Rated Output (W)

FLA: Full Load Amps. (A)

OFM: Outdoor Fan Motor



Capacity Tables

Model	4MXW9509A1/ 4TXK9509A1					
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SUMMER		OUTDOOR TEMPERATURE DRY					
Indoor conditions		25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total Capacity (Btu/h)	9597	8993	8805	8041	8703	8304
	Sensible Capacity (Btu/h)	7543	7235	7109	6543	6355	6177
	Input (W)	574	599	621	627	707	718
	Compressor Frequency (Hz)	45	45	45	45	45	45
24°C D 17°C W	Total Capacity (Btu/h)	9966	9328	9089	8601	8884	8833
	Sensible Capacity (Btu/h)	7805	7628	7512	7553	6413	6410
	Input (W)	576	613	623	630	710	722
	Compressor Frequency (Hz)	45	45	45	45	45	45
27°C D 19°C W	Total Capacity (Btu/h)	10648	9625	9000	8355	9276	9099
	Sensible Capacity (Btu/h)	8177	7724	7198	6922	6444	6491
	Input (W)	606	622	600	645	720	732
	Compressor Frequency (Hz)	45	45	45	45	45	45
32°C D 23°C W	Total Capacity (Btu/h)	11263	10358	9399	8863	9423	9232
	Sensible Capacity (Btu/h)	8280	7969	7563	7235	6232	6184
	Input (W)	609	625	650	688	748	787
	Compressor Frequency (Hz)	45	45	45	45	45	45

WINTER		OUTDOOR TEMPERATURE DRY					
Indoor conditions		12°C D	7°C D	4°C D	0°C D	-4°C D	-7°C D
		11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W
15°C	Total Capacity (Btu/h)	10850	10460	12170	12864	11347	9692
	Input (W)	700	656	831	1049	1057	1089
	Compressor Frequency (Hz)	64	64	64	64	64	64
18°C	Total Capacity (Btu/h)	10659	10180	11577	12105	10759	9343
	Input (W)	717	676	850	1105	1111	1093
	Compressor Frequency (Hz)	64	64	64	64	64	64
20°C	Total Capacity (Btu/h)	10034	9300	10971	11242	9850	8735
	Input (W)	722	680	859	1098	1105	1040
	Compressor Frequency (Hz)	64	64	64	64	64	64
22°C	Total Capacity (Btu/h)	9539	9007	9609	10285	8860	7846
	Input (W)	710	673	886	1043	1057	989
	Compressor Frequency (Hz)	64	64	64	64	64	64



Model	4MXW9512A1/ 4TXK9512A1					
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SUMMER		OUTDOOR TEMPERATURE DRY					
Indoor conditions		25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total Capacity (Btu/h)	12015	11554	10681	9985	9292	8981
	Sensible Capacity (Btu/h)	9011	8449	7883	7183	5949	5477
	Input (W)	865	852	861	876	915	901
	Compressor Frequency (Hz)	51	51	51	51	51	51
24°C D 17°C W	Total Capacity (Btu/h)	13417	12363	11527	10855	9858	9510
	Sensible Capacity (Btu/h)	9292	8609	7951	7238	6361	5316
	Input (W)	873	889	912	929	958	944
	Compressor Frequency (Hz)	51	51	51	51	51	51
27°C D 19°C W	Total Capacity (Btu/h)	14008	13052	12000	11565	10176	9828
	Sensible Capacity (Btu/h)	10005	9234	8531	8012	6985	6497
	Input (W)	922	934	882	975	981	1050
	Compressor Frequency (Hz)	51	51	51	51	51	51
32°C D 23°C W	Total Capacity (Btu/h)	15083	13626	9292	12319	11401	13643
	Sensible Capacity (Btu/h)	10105	8747	8706	8459	7631	9270
	Input (W)	1046	1079	1104	1143	1176	1081
	Compressor Frequency (Hz)	51	51	51	51	51	51

WINTER		OUTDOOR TEMPERATURE DRY					
Indoor conditions		12°C D	7°C D	4°C D	0°C D	-4°C D	-7°C D
		11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W
15°C	Total Capacity (Btu/h)	15998	14618	13420	13792	12477	11788
	Input (W)	1131	1090	1019	1236	1243	1263
	Compressor Frequency (Hz)	69	69	69	69	69	69
18°C	Total Capacity (Btu/h)	15525	13821	13005	13456	12323	11602
	Input (W)	1170	1143	1065	1281	1312	1322
	Compressor Frequency (Hz)	69	69	69	69	69	69
20°C	Total Capacity (Btu/h)	14905	13100	12085	13169	11921	10746
	Input (W)	1228	1190	1131	1362	1332	1129
	Compressor Frequency (Hz)	69	69	69	69	69	69
22°C	Total Capacity (Btu/h)	14389	12757	11886	12715	11103	10052
	Input (W)	1275	1222	1158	1341	1355	1364
	Compressor Frequency (Hz)	69	69	69	69	69	69



Model	4MXW9518A1/ 4TXK9518A1					
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SUMMER		OUTDOOR TEMPERATURE DRY					
Indoor conditions		25°C	30°C	35°C	40°C	45°C	50°C
21°C D 15°C W	Total Capacity (Btu/h)	17427	16526	15379	14223	16447	11967
	Sensible Capacity (Btu/h)	12721	12312	11687	11022	12994	9633
	Input (W)	1238	1450	1458	1585	1703	1715
	Compressor Frequency (Hz)	68	68	68	68	68	68
24°C D 17°C W	Total Capacity (Btu/h)	18529	17403	16488	15482	14359	13980
	Sensible Capacity (Btu/h)	13434	12721	12151	11503	10756	10554
	Input (W)	1262	1484	1483	1622	1754	1772
	Compressor Frequency (Hz)	68	68	68	68	68	68
27°C D 19°C W	Total Capacity (Btu/h)	19454	19071	18000	17331	16267	14434
	Sensible Capacity (Btu/h)	14281	14151	13513	13137	12462	11172
	Input (W)	1280	1408	1500	1642	1784	1818
	Compressor Frequency (Hz)	68	68	68	68	68	68
32°C D 23°C W	Total Capacity (Btu/h)	19894	20122	19802	19276	18389	17737
	Sensible Capacity (Btu/h)	13926	14386	14455	14362	13977	13745
	Input (W)	1298	1428	1536	1712	1870	1925
	Compressor Frequency (Hz)	68	68	68	68	68	68

WINTER		OUTDOOR TEMPERATURE DRY					
Indoor conditions		12°C D	7°C D	4°C D	0°C D	-4°C D	-7°C D
		11°C W	6°C W	3°C W	-1°C W	-6°C W	-8°C W
15°C	Total Capacity (Btu/h)	27934	25523	24556	20826	18667	17693
	Input (W)	2779	2526	2486	2334	2328	2260
	Compressor Frequency (Hz)	68	68	68	68	68	68
18°C	Total Capacity (Btu/h)	27238	25100	23829	20420	18550	17720
	Input (W)	2855	2655	2526	2388	2337	2268
	Compressor Frequency (Hz)	68	68	68	68	68	68
20°C	Total Capacity (Btu/h)	27066	25000	23657	20282	18013	17503
	Input (W)	2905	2700	2558	2381	2325	2282
	Compressor Frequency (Hz)	68	68	68	68	68	68
22°C	Total Capacity (Btu/h)	26274	24604	22896	19177	17868	17400
	Input (W)	2955	2666	2538	2430	2330	2270
	Compressor Frequency (Hz)	68	68	68	68	68	68



Model	4MXW9524A1/ 4TXK1524A1					
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SUMMER		OUTDOOR TEMPERATURE DRY					
Indoor conditions							
		25 °C	30 °C	35 °C	40 °C	45 °C	50 °C
21 °C D 15 °C W	Total Capacity (Btu/h)	21714	21015	20023	18930	17956	13532
	Sensible Capacity (Btu/h)	15417	15309	14957	14492	14077	10860
	Input (W)	1745	1837	1947	1954	2174	2367
	Compressor Frequency (Hz)	56	56	56	56	56	56
24 °C D 17 °C W	Total Capacity (Btu/h)	23002	22098	21256	20128	19290	14970
	Sensible Capacity (Btu/h)	16839	16486	16154	15578	15201	12006
	Input (W)	1759	1848	1978	2005	2192	2356
	Compressor Frequency (Hz)	56	56	56	56	56	56
27 °C D 19 °C W	Total Capacity (Btu/h)	25106	24509	24000	21759	20876	15837
	Sensible Capacity (Btu/h)	17565	17460	16884	16723	16322	12592
	Input (W)	1781	1871	1965	2022	2171	2385
	Compressor Frequency (Hz)	56	56	56	56	56	56
32 °C D 23 °C W	Total Capacity (Btu/h)	24563	24612	24905	25206	21469	19755
	Sensible Capacity (Btu/h)	16703	17425	18330	19259	17003	16200
	Input (W)	1752	1907	1995	2175	2302	2524
	Compressor Frequency (Hz)	56	56	56	56	56	56

WINTER		OUTDOOR TEMPERATURE DRY					
Indoor conditions		12 °C D	7 °C D	4 °C D	0 °C D	-4 °C D	-7 °C D
		11 °C W	6 °C W	3 °C W	-1 °C W	-6 °C W	-8 °C W
15 °C	Total Capacity (Btu/h)	25414	24550	22418	19044	17304	16738
	Input (W)	2029	1888	1799	1721	1673	1505
	Compressor Frequency (Hz)	56	56	56	56	56	56
18 °C	Total Capacity (Btu/h)	25274	24273	22244	18920	17108	16611
	Input (W)	2023	1912	1813	1728	1876	1501
	Compressor Frequency (Hz)	56	56	56	56	56	56
20 °C	Total Capacity (Btu/h)	24895	24000	22170	18774	16906	16726
	Input (W)	2041	1930	1830	1747	1675	1461
	Compressor Frequency (Hz)	56	56	56	56	56	56
22 °C	Total Capacity (Btu/h)	24370	23689	21412	17988	16676	16310
	Input (W)	2103	1956	1876	1785	1709	1533
	Compressor Frequency (Hz)	56	56	56	56	56	56

Wiring Diagrams

Figure 1. 4MXW9509A1000AA-4TXK9509A1000AA

4MXW9512A1000AA-4TXK9512A1000AA

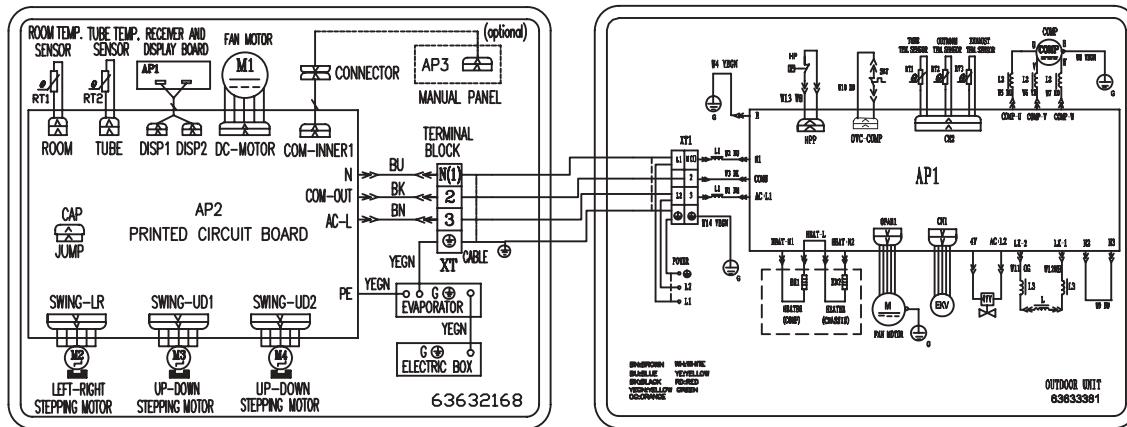


Figure 2. 4MXW9518A1000AA-4TXK9518A1000AA

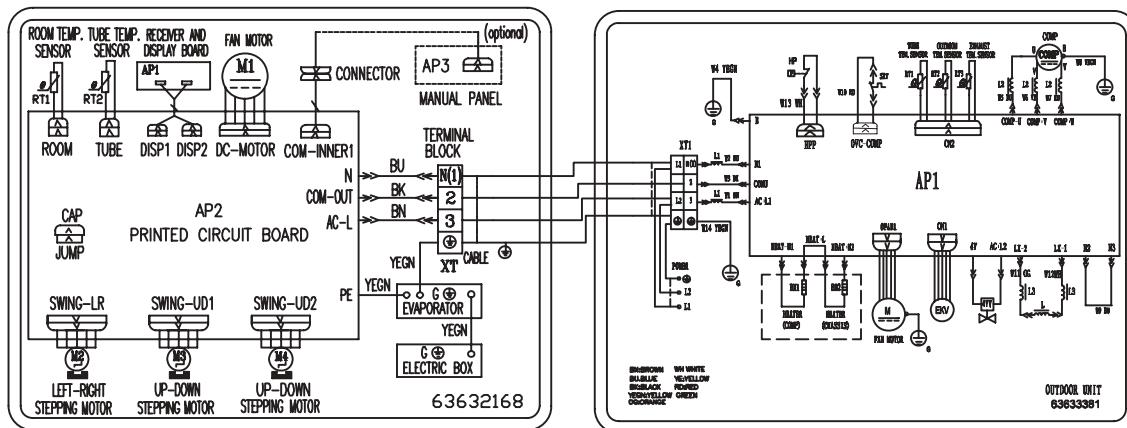
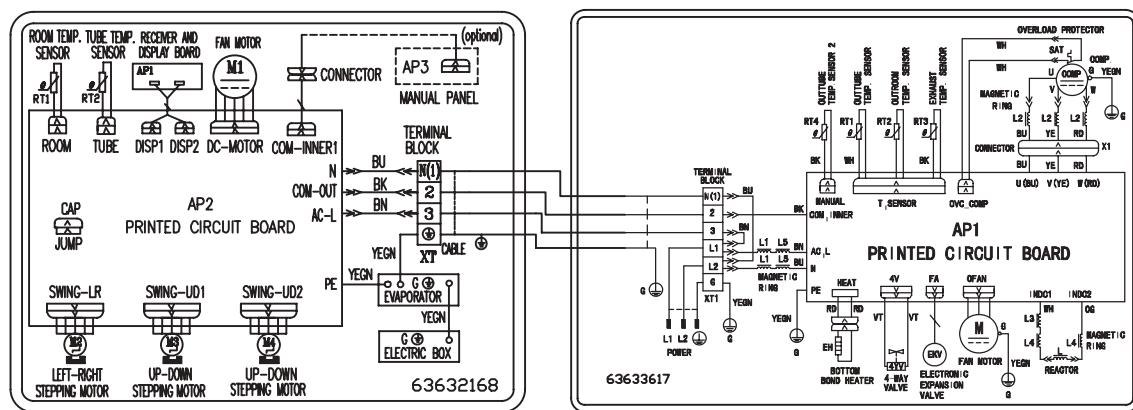
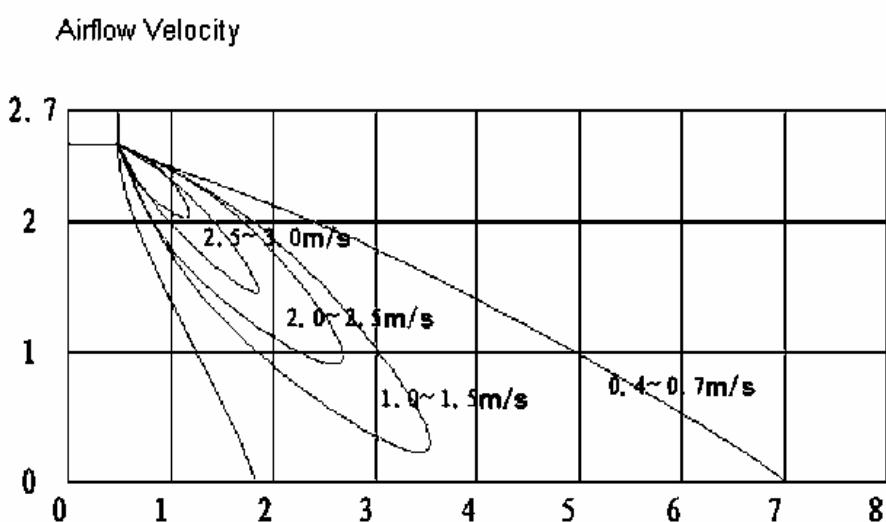




Figure 3. 4MXW9524A1000AA-4TXK9524A1000AA

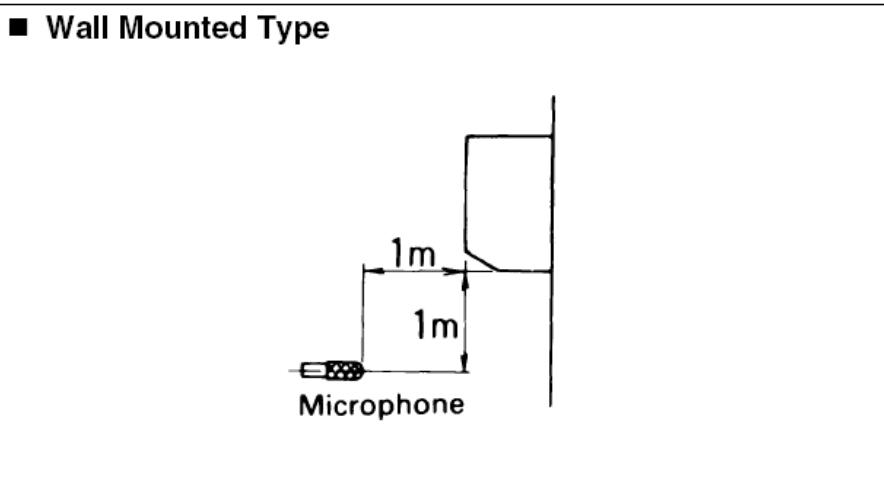


Air Velocity Distribution



Sound Level

Test condition



Test value

60Hz Models(Heat pump)

Model		Indoor Sound Pressure level (dB(A))						
Indoor	Outdoor	SH	H	MH	M	L	ML	SL
4MXW9509A1000AA	4TXK9509A1000AA	42	38	36	34	30	26	23
4MXW9512A1000AA	4TXK9512A1000AA	42	38	36	34	30	26	24
4MXW9518A1000AA	4TXK9518A1000AA	51	47	44	41	38	36	33
4MXW9524A1000AA	4TXK9524A1000AA	52	49	47	45	43	41	38

Operating Functions

Operation of remote controller

Temperature parameters

- Room set temperature (T_{set})
- Room ambient temperature (T_{amb})

Fundamental functions

After powered on, no matter when the compressor is started, the time interval between two startups cannot be less than 3 minutes.

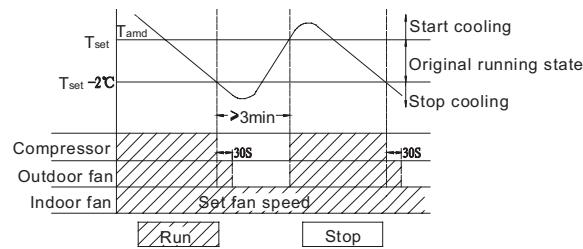
COOL mode

The condition and process of cooling

- If T_{amb} is superior or equal T_{set} , COOL mode will act, the compressor and outdoor fan will run, and the indoor fan will run at the set speed.
- If T_{amb} is inferior or equal $T_{set} - 2^{\circ}\text{C}$, the compressor will stop, the outdoor fan will delay 30 seconds to stop, and the indoor fan will run at the set speed.
- If $T_{set} - 2^{\circ}\text{C} < T_{amb} < T_{set}$, the unit will keep running in the previous mode.

In this mode, the reversal valve will not be powered on and the temperature setting range is $16^{\circ}\text{C} \sim 30^{\circ}\text{C}$.

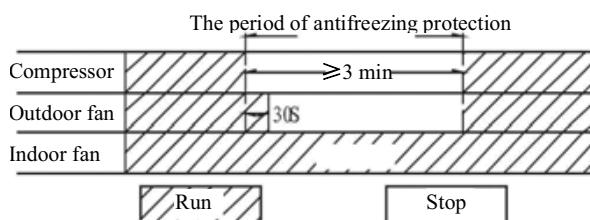
The unit will adjust the running frequency of the compressor automatically according to the change of ambient temperature.



Protection function

- Antifreezing protection

Under cooling and drying mode, after the compressor run about 10 mins, when the pipe temp. of the evaporator is to low, the compressor will stop, the outdoor fan will stop after 30s, under cooling mode the indoor fan and swing motor will keep running in the original mode, under drying mode the indoor fan will run at low fan speed, the swing motor will run in the original mode. When antifreezing protection is eliminated and the compressor has stopped for 3 minutes, the unit will resume running in the original mode.



Overcurrent protection

If total current is high, the compressor will run in limited or dropped frequency. When total current goes on rising over the stated value, the compressor will stop, the outdoor fan will delay 30 seconds to stop.

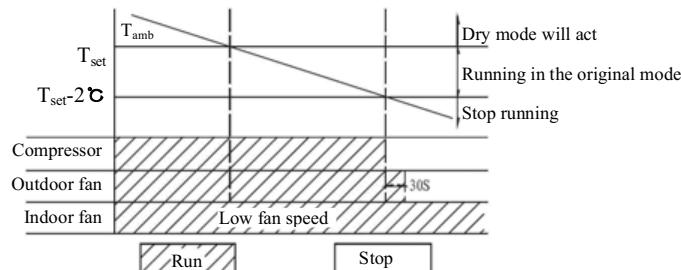
DRY mode

The condition and process of drying

- If $T_{amb} > T_{set}$, DRY mode will act, the indoor fan, outdoor fan and compressor will run, and indoor fan will run at low speed.
- If $T_{set} - 2^{\circ}C \leq T_{amb} \leq T_{set}$, the unit will keep running in the original mode.
- If $T_{amb} < T_{set} - 2^{\circ}C$, the compressor will stop running, the outdoor fan will delay 30 seconds to stop and the indoor fan will run at low speed.

In this mode, the reversal valve will not be powered on and the temperature setting range is $16^{\circ}C\sim30^{\circ}C$.

The unit will adjust the running frequency of the compressor automatically according to the change of ambient temperature.



Protection

Protection is the same with that in COOL mode.

HEAT mode

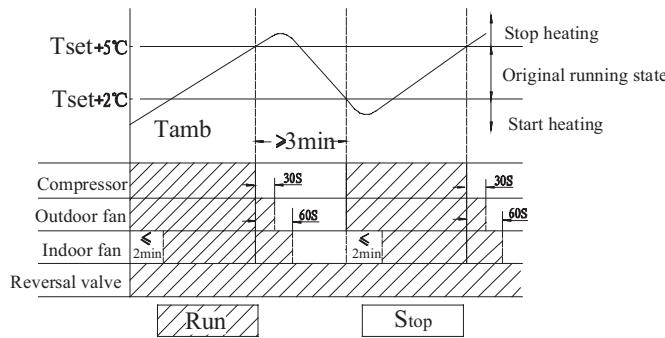
The condition and process of heating

- If $T_{amb} \leq T_{set} + 2^{\circ}C$, HEAT mode will act, the compressor, outdoor fan and 4-way valve will run simultaneously, the indoor fan will delay at most for 2min to run.
- If $T_{set} + 2^{\circ}C < T_{amb} < T_{set} + 5^{\circ}C$, the unit will keep running in the original mode.
- If $T_{amb} \geq T_{set} + 5^{\circ}C$, the compressor will stop, the outdoor fan will delay 30 sec to stop and the indoor fan will blow for 60 sec at the original speed and then stop.

In this mode, the temperature setting range is $16^{\circ}C\sim30^{\circ}C$.

The air conditioner will adjust the running frequency of the compressor automatically according to the change of ambient temperature.

When the unit is turned off in HEAT mode, or switched to other mode from HEAT mode, the four-way valve will be powered off 2min later after the compressor stops.



The condition and process of defrosting

When frost is detected in the condenser, the system will enter into defrosting state. When defrosting starts, the compressor and indoor fan will stop, and the outdoor fan and four-way valve will delay 30 seconds to stop. The compressor will start again after 30s and. When the compressor has run for 8mins, the compressor will stop.

After 30 seconds the four-way valve opens and after another 60 seconds, the compressor and outdoor fan resume running. The indoor fan will delay 2 minutes to run at the latest and temperature on the display panel shows H1.

Under heating mode, when the compressor is stopped by malfunction, the indoor fan will blow at low fan speed for 60s and then stop.

Protection

- Overcurrent protection

If total current is high, the compressor will run in limited or dropped frequency. When total current go on rising over the stated value, the compressor will stop, the outdoor fan will delay 30 seconds to stop.

FAN mode

In this mode, the indoor fan will run the fan in High, Med, Low and Auto mode. The compressor, outdoor fan and four-way valve will stop.

In this mode, the temperature setting range is 16~30°C.

The unit will adjust the running frequency of the compressor automatically according to the change of ambient temperature.

AUTO mode

In this mode, the system selects COOL, HEAT and FAN mode automatically according to the change of ambient temperature. The protection function is the same with that of COOL/HEAT mode.

The unit will adjust the running frequency of the compressor automatically according to the change of ambient temperature.

Other control

ON / OFF

Each time the On/Off button of the remote controller is pressed, the On/Off state will switch once.

MODE selection

Press the MODE button on the remote controller to select and display the following modes: AUTO, COOL, DRY, FAN, and HEAT.

TEMP setting button

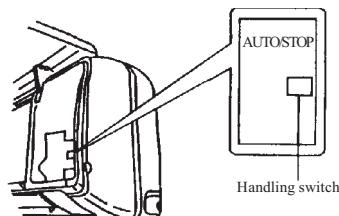
Each time TEMP + or TEMP - button is pressed, the set temperature will be increased or decreased by 1°C.

Adjusting range is 16~30°C . In AUTO mode, this button does not function.

AUTO key

When the unit is stop, press AUTO key, the unit will run under AUTO mode and the swing motor starts.

When the unit is running, press AUTO key, the unit will be stopped.

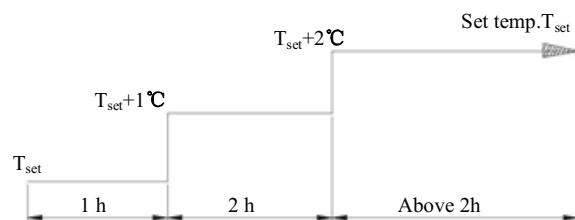


Timer control

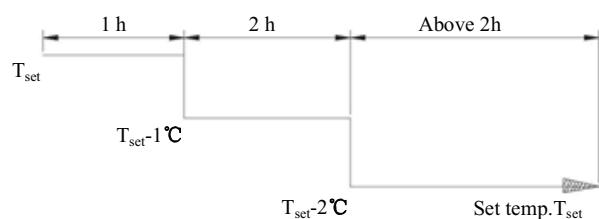
The unit is turned on or off according to the timer set by the remote controller.

Sleep control

When the air conditioner is in COOL or DRY mode, after Sleep mode has been set properly, the preset Tset will be increased by 1°C after the sleep program has run for 1 hour, and Tset will be increased by another 1°C after 2 hours. Tset has been increased by 2°C total in two hours. Then the unit will run at this set temperature and at the set speed.



When the air conditioner is in HEAT mode, after Sleep mode has been set properly, the preset Tset will be decreased by 1°C after the sleep program has run for 1 hour, and Tset will be decreased by another 1°C after 2 hours. Tset has been increased by 2°C totally in two hours. Then the unit will run at this set temperature and at the set speed.



In AUTO or FAN mode, the setting temp. will not change.

Indoor fan control

Use the remote controller to set the indoor fan running at HIGH, MED or LOW speed. At this time the fan will run at high, medium or low speed. It can also be set to AUTO and the indoor fan will select fan speed(HIGH, MED or LOW) automatically according to ambient temperature.

There are at least 3 mins and 30s delay for fan speed shift.

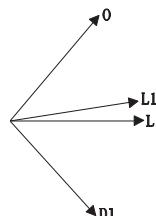
Power supply for outdoor unit

The power supply for outdoor unit is turned on in AUTO, COOL, HEAT and DRY mode under turn-on state.

The power supply for outdoor unit will delay 3 minutes to turn off under turn-off state or in the FAN mode under turn-on state.

Swing control

Use the SWING button of the wireless remote control to control SWING On and Off. Swing will only act when indoor fan is running. After power on, the swing motor turns back to 0 position and closes the air outlet vent; if it does not preset swing, after the unit is turned on, it will turn to the max. air outlet D1 position; then turn back to L position under COOL mode.Under HEAT mode, the guide louver stays at D1; when in swinging state, it will swing between L1 and D1 position. When the unit is turned off, it will turn back to 0 position.



Buzzer control

When the unit is power on or receives remote control signal or the auto key be pressed, the buzzer will give out a beep.

Power-off memory function

Contents of memory: Mode; Swing; Set fan speed, Set temperature, Timing etc.

Under turn-on state, when power off and power on, the power supply for outdoor unit will be turn on after 3 mins.

Under turn-off state, when power off and power on, the power supply for outdoor unit will be turn on immediately.

Delay Protection of Compressor

Under COOL; DRY; HEAT mode, before each time the compressor starts, there will be 3 mins delay.

Common protection function in each mode

Overload protection

Ttube: at cooling,it detects the temp. of outdoor heat exchanger,at heating,it detects the temp. of indoor heat exchanger.

When Ttube is detected high, the compressor will run in limited frequency. When Ttube goes on rising over the stated value, the compressor will stop; under AUTO HEAT or HEAT mode, indoor fan will blow 60s at low fan speed and then stop; under other mode, the indoor fan will run at set speed.



Compressor discharge temperature protection

When discharge temperature is too high to over the stated value, the compressor will stop, and When discharge temp. resume normal and the compressor has stopped for 3 minutes, the unit will resume its original operating status.

Communication malfunction

When not receiving correct signal for 3 minutes, the unit has communication malfunction and the outdoor unit stops, it is the same as normal stop when meeting the set temp.

Module protection

When module is in protection, the compressor will stop, after the compressor has stopped for 3 minutes, it will resume to running. During module protection period, the indoor unit displays malfunction and the whole unit stops.

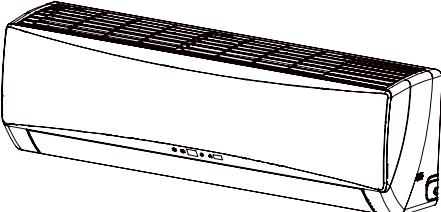
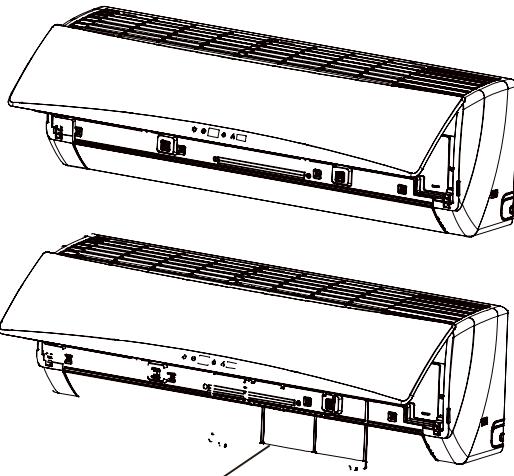
10. Removal Procedure

10.1 Removal Procedure of Indoor Unit



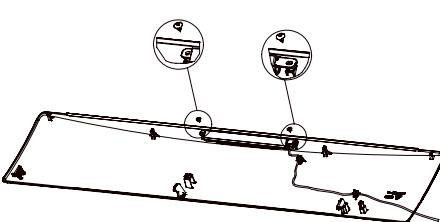
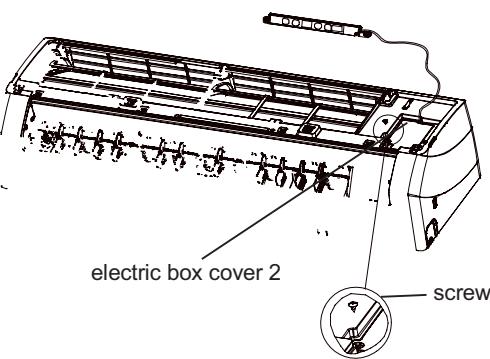
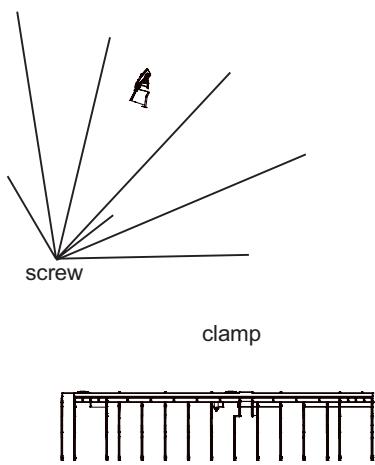
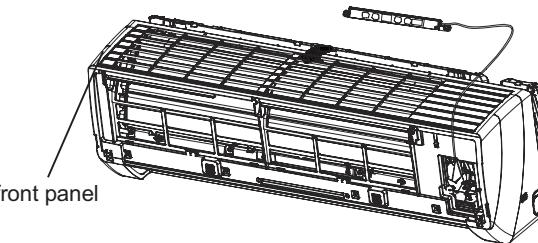
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

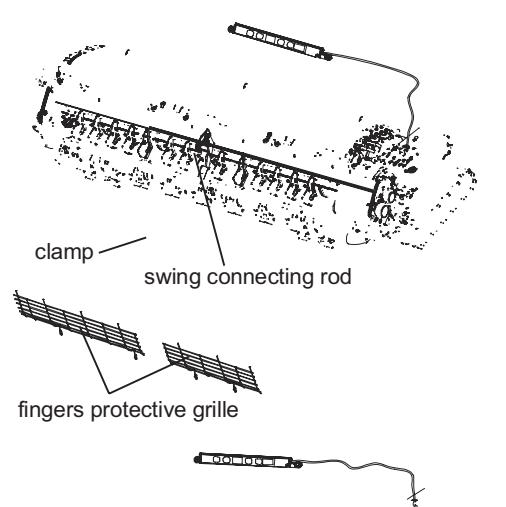
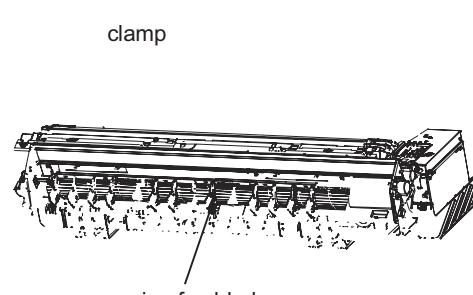
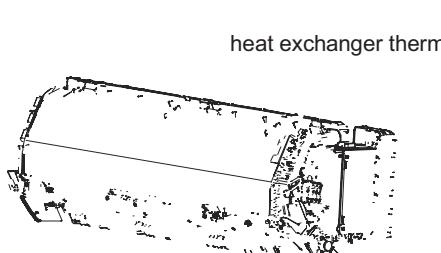
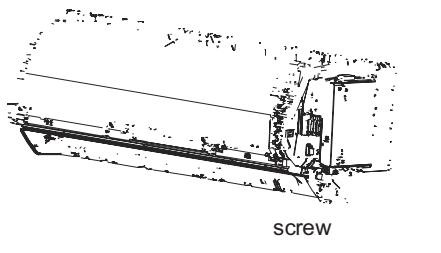
(1)Models:09/12K

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

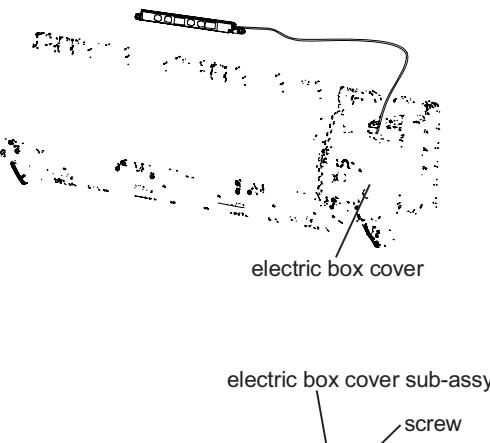
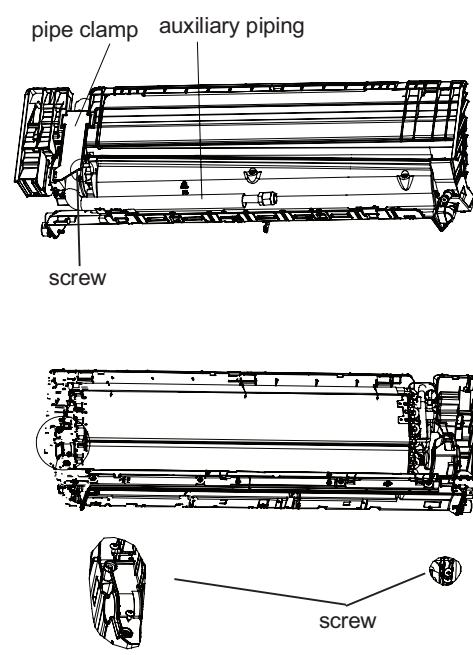
Steps	Procedure
2	<p>Remove the rotating shaft of big guide louver from the groove, slightly bend the big guide louver to remove it.</p>
3	<p>Remove the axial bushing of small guide louver.</p>
4	<p>Remove the rotating shaft of small guide louver from the groove, slightly bend the small guide louver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

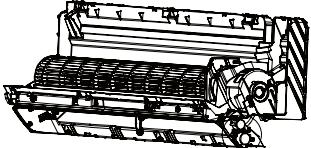
Removal Procedure

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

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

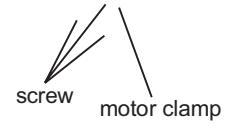
Removal Procedure

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

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

Removal Procedure

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



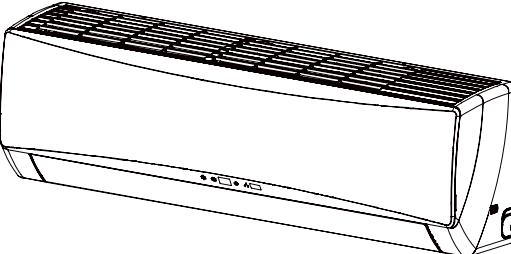
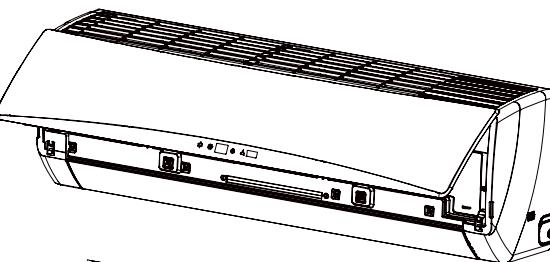
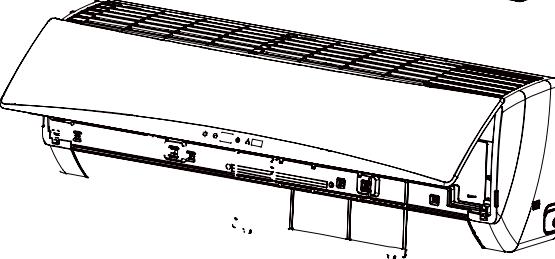
bearing cushion rubber base

cross fan blade
motor

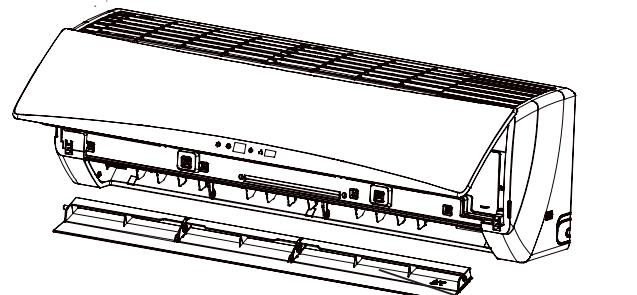
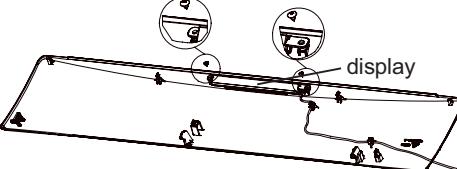


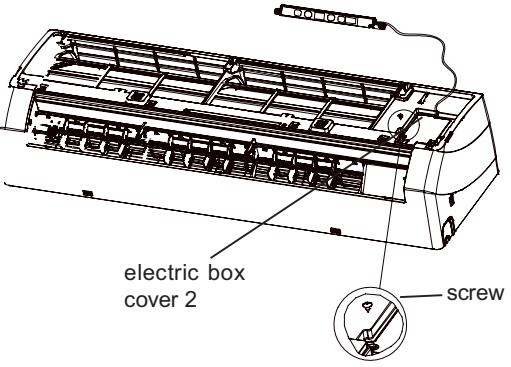
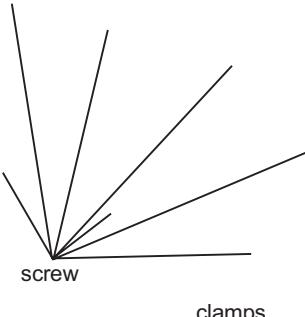
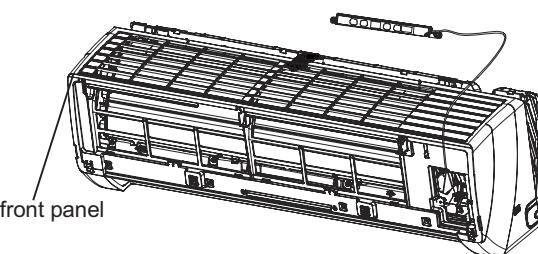
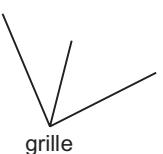
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

(2) Model: 18K, but take A1 panel for example.

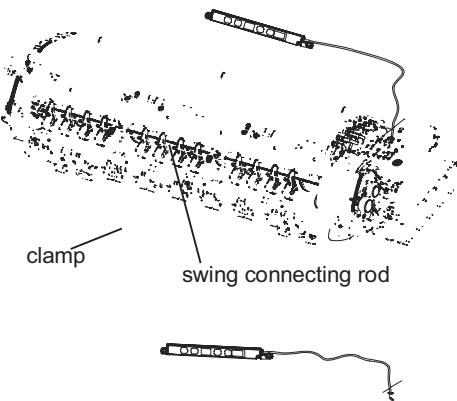
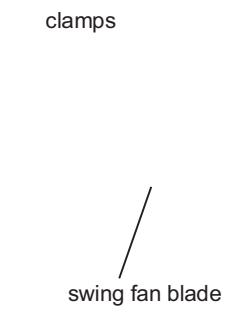
Steps	Procedure
1. Before disassembling the unit	<p>Before disassembling the unit.</p> 
2. Remove filter	<p>1 Open the panel.</p> <p>2 Loosen the clasps on filter, push the filter inward and then pull it upward, then the filter can be removed.</p>  
3. Remove guide louver	<p>1 Remove the axial bushing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

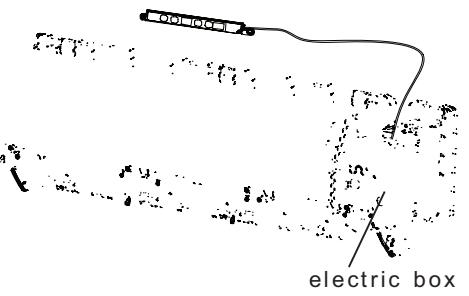
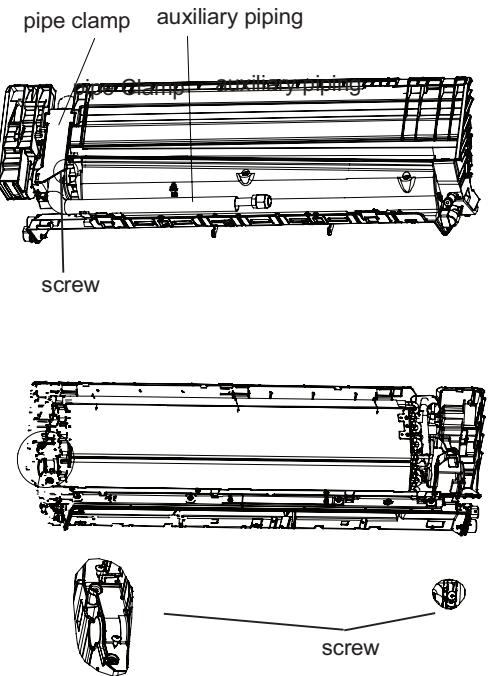
Removal Procedure

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

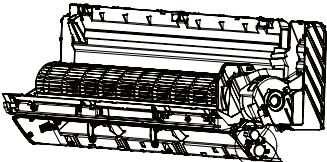
Steps	Procedure
5. Remove front case	
1 Remove the screws fixing electric box cover 2, to remove the electric box cover 2.	 
2 Remove the screws fixing front panel, loosen the clamps, to remove the front panel.	 

Removal Procedure

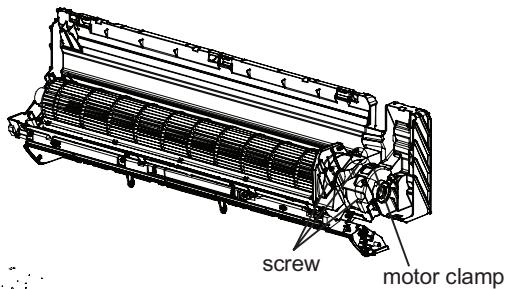
Steps	Procedure
6. Remove swing fan blade	<p>1 Loosen the clamps fixing swing connecting rod, to remove the swing connecting rod.</p>  <p>2 Remove the clamps fixing swing fan blade,to remove the swing fan blade.</p> 
7. Remove electric box sub-assy	<p>1 Remove the indoor tube temp. sensor.</p> <p>2 Remove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

Steps	Procedure
3	<p>Remove the clamps fixing electric box cover, to remove the cover.</p>  <p>The diagram shows a close-up view of an electrical junction box. Two metal clamps are attached to the top edge of the box. A hand is shown using a flathead screwdriver to pry one of the clamps off its mounting point. Labels indicate the 'electric box cover' and the 'electric box cover sub-assy'.</p>
4	<p>Remove every wiring terminals, and remove the screws fixing electric box cover, to remove the electric box cover sub-assy.</p>
8. Remove evaporator sub-assy	
1	<p>Remove the screws fixing connection pipe clamp, to remove the connection pipe clamp.</p>  <p>The top diagram shows a side view of a rectangular component with two horizontal pipes. A 'pipe clamp' is visible on the left side, secured by a 'screw'. The word 'auxiliary piping' points to the right pipe. The bottom diagram shows a front view of the same component, partially disassembled. A separate circular diagram shows a close-up of a single screw being removed from a clamp.</p>

Removal Procedure

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

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



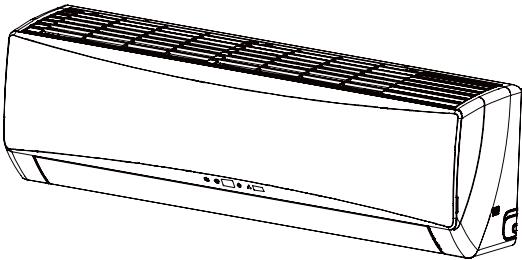
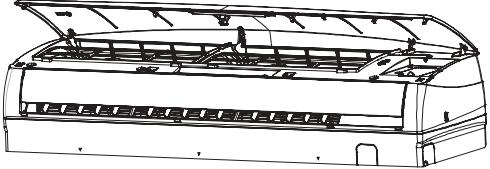
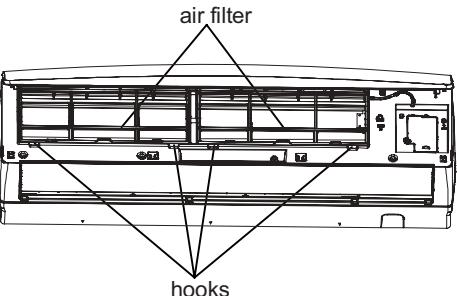
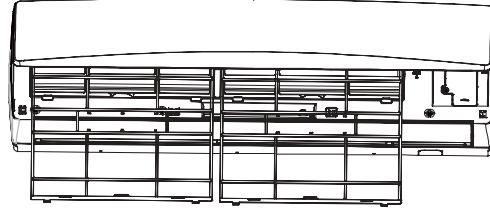
bearing cushion rubber base

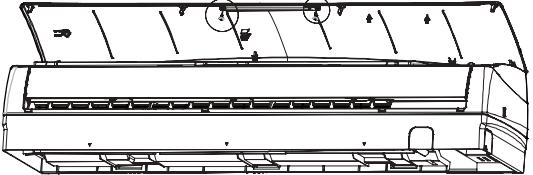
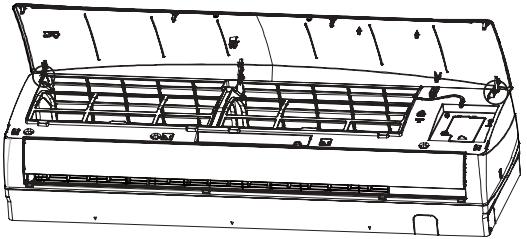
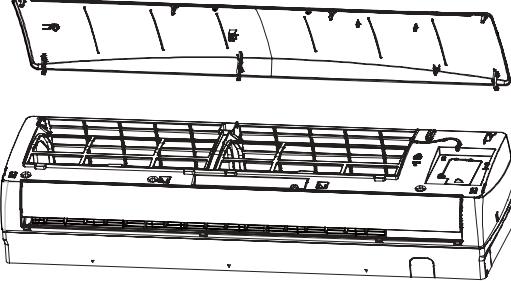
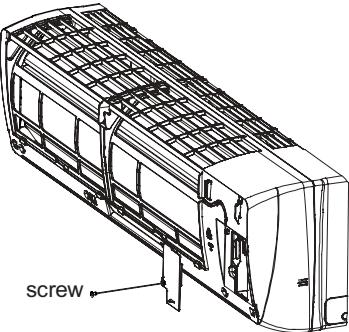
cross fan blade
motor



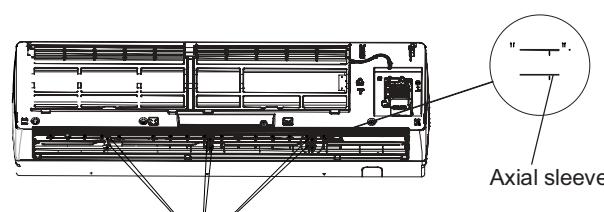
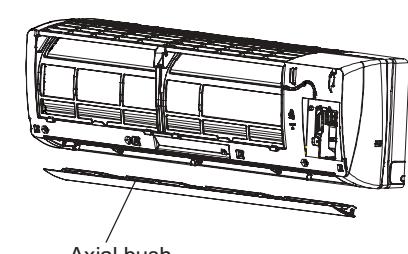
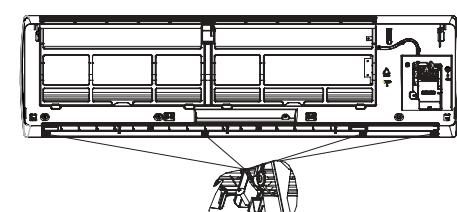
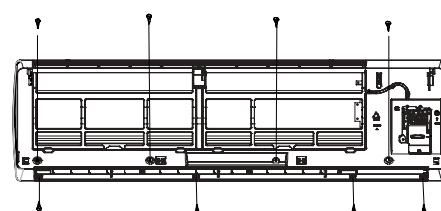
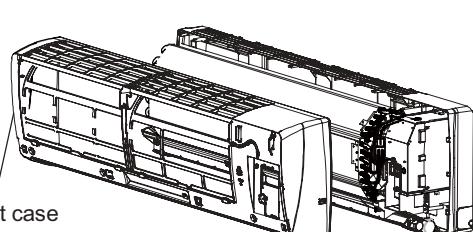
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

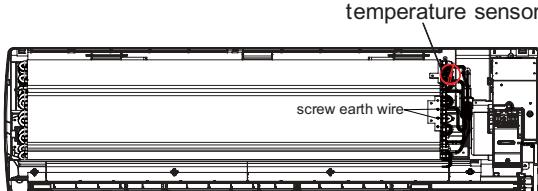
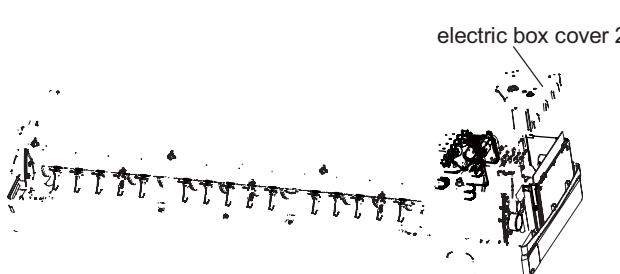
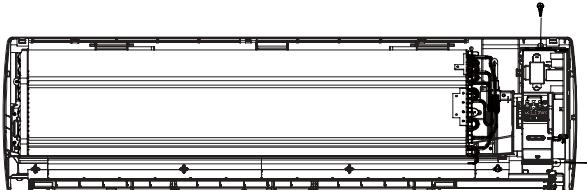
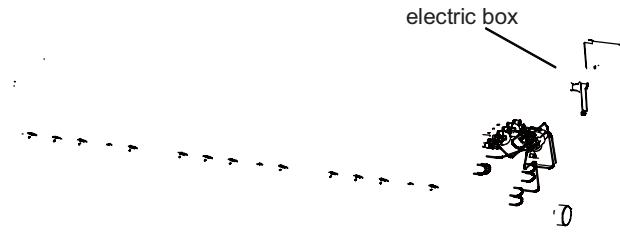
(3) Model: 24K, but take A1 panel for example.

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

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

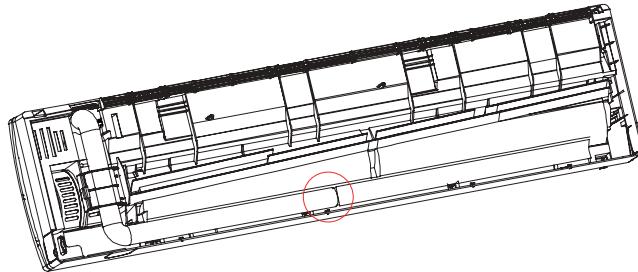
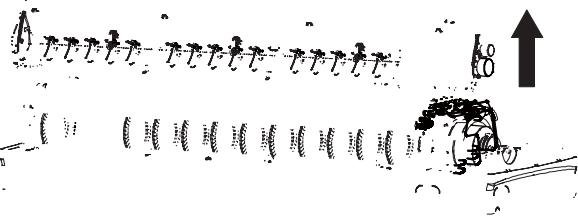
Removal Procedure

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

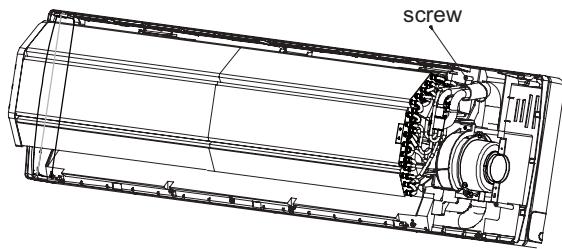
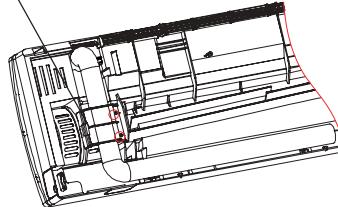
Steps	Procedure
7. Remove electric box	
1	Remove Temperature Sensor; Twist off the earthing screw fixing the evaporator.
	
2	Remove the screw of electric box. Take out the electric box cover to separate the electric box cover 2.
	
3	Remove every wiring terminals, and remove the screws fixing electric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

Removal Procedure

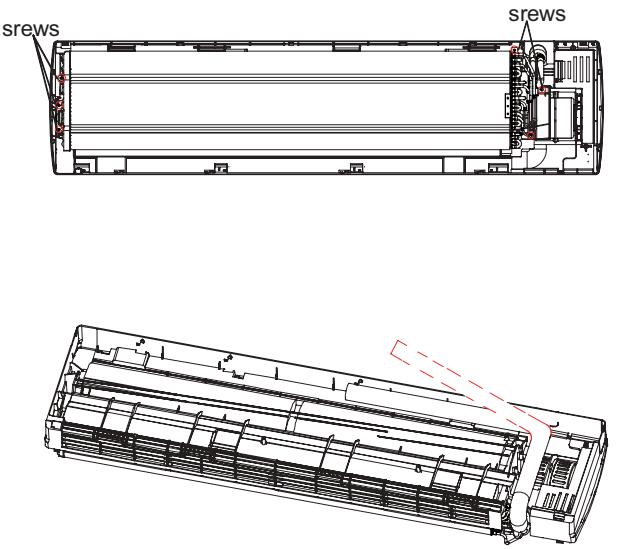
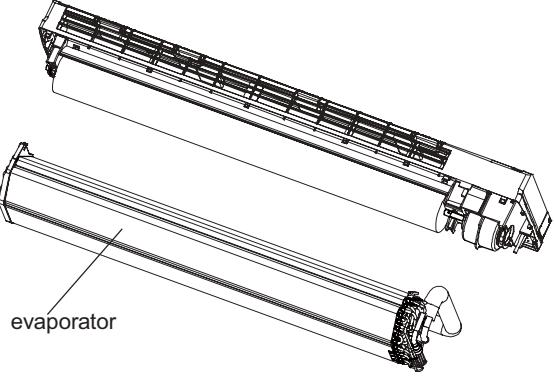
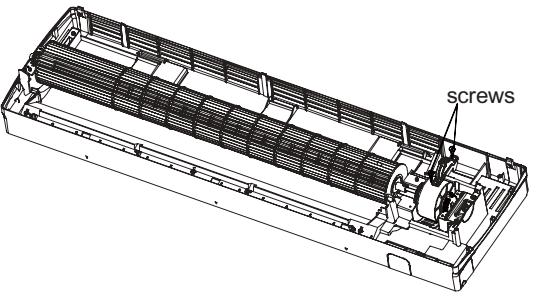
Steps	Procedure
8. Remove evaporator sub-assy	
1	Loosen the clasps connecting the water tray and chassis, and then remove the water tray.
2	Remove the screws fixing connection pipe clamp, to remove the connection pipe clamp.
3	Remove the screws fixing evaporator sub-assy, slightly regulate the tube,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



pipe clamp

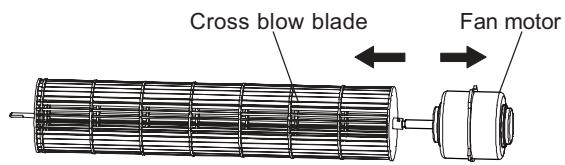
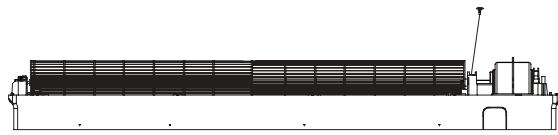


screw

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

Removal Procedure

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



10.2 Removal Procedure of Outdoor Unit



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

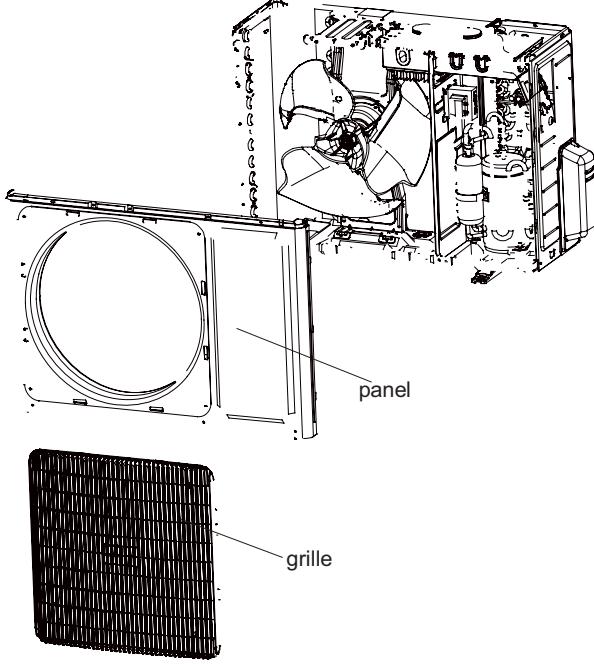
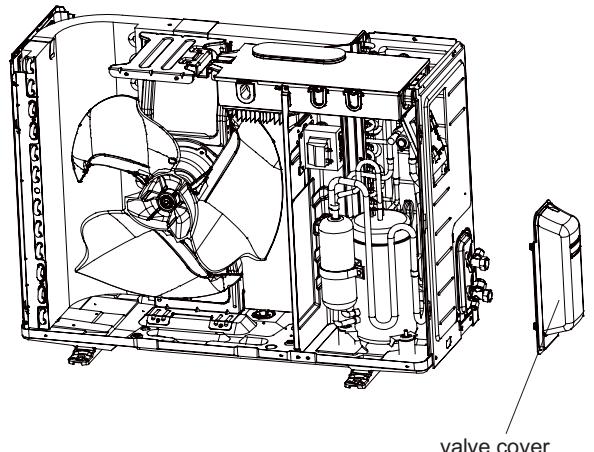
(1) Models: 09/12K

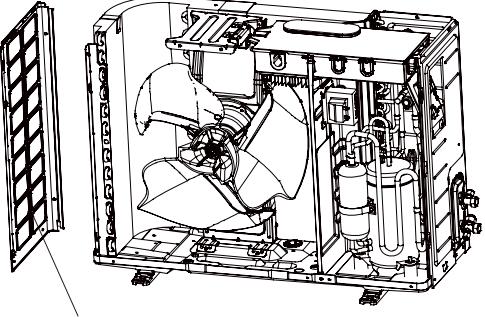
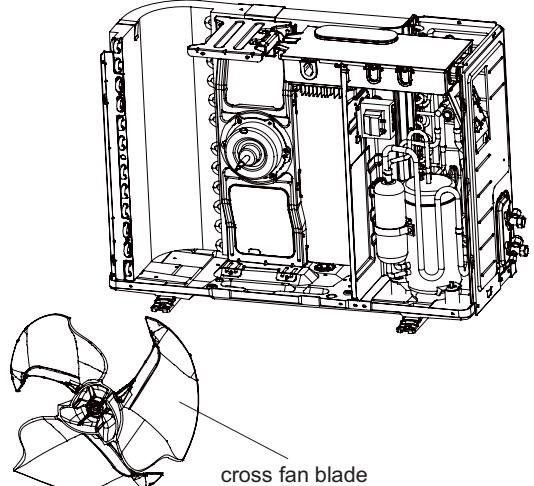
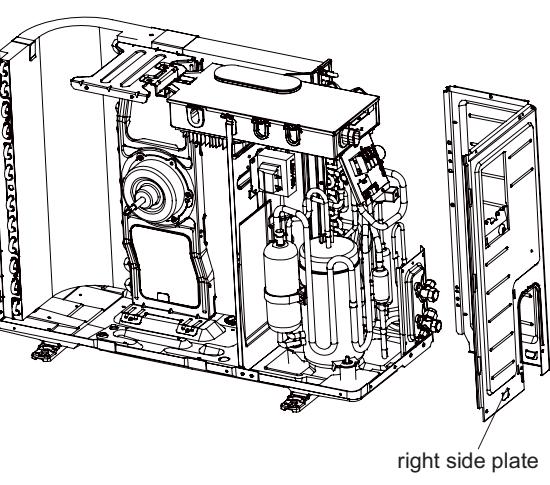
Note:

Electric heater band is not shown below.

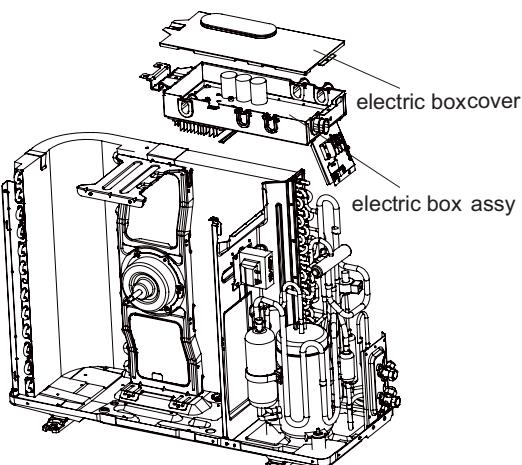
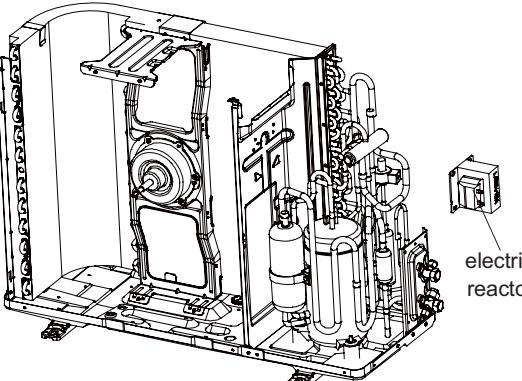
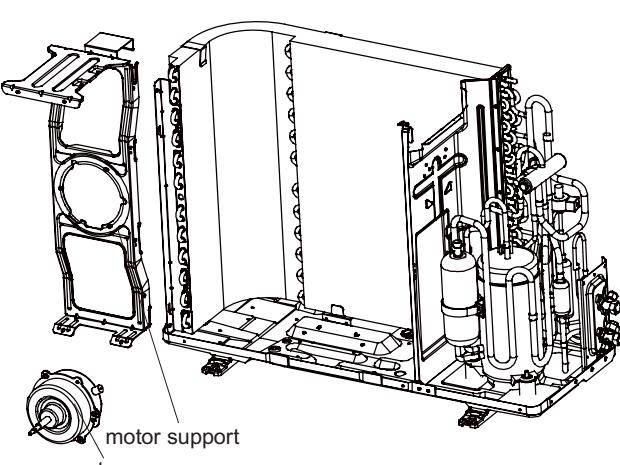
Steps	Procedure
1. Before disassembly	<p>1. Before disassembly</p>
2. Remove top cover	<p>Remove the screws connecting top cover, left and right side plate, as well as panel, to remove the top cover.</p>
3. Remove handle	<p>Remove the screws connecting handle and right side plate, to remove the handle.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

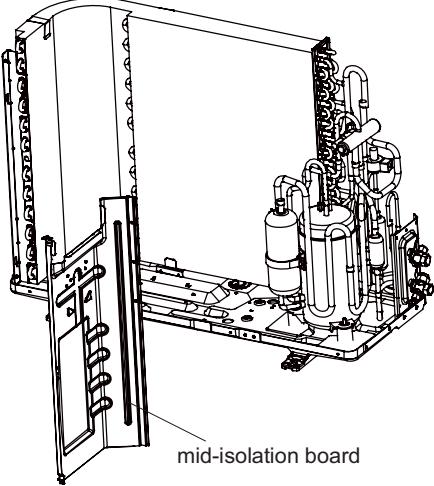
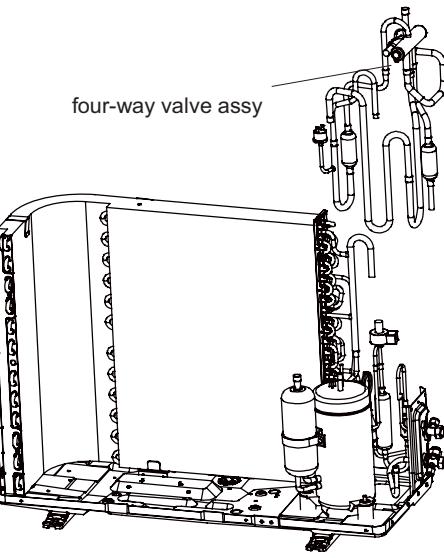
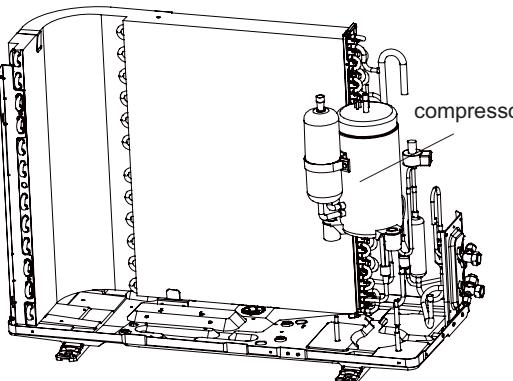
Removal Procedure

Steps	Procedure
4. Remove panel and grille	<p>Remove the screws fixing panel, to remove the panel. Remove the screws connecting panel grille and panel, loosen the clamp, to remove the panel grille.</p>  <p>panel</p> <p>grille</p>
5. Remove valve cover	<p>Remove the screw fixing valve cover, to remove the cover.</p>  <p>valve cover</p>

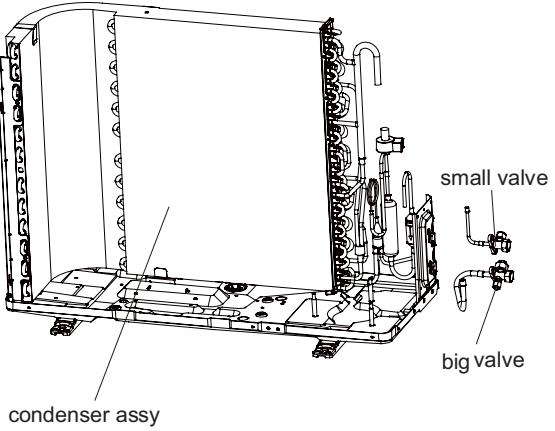
Steps	Procedure
6. Remove left side plate	<p>Remove the screws fixing left side plate and condenser support board, to remove the left side plate.</p>  <p>left side plate</p>
7. Remove cross fan blade	<p>Remove the screw nut fixing cross fan blade, remove the gasket and spring cushion, to remove the cross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

Removal Procedure

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

Steps	Procedure
12. Remove mid-isolation board	<p>Remove the screws connecting mid-isolation board, chassis and condenser assy, to remove the mid-isolation.</p> 
13. Remove four-way valve assy	<p>Welding cut the spot weld of four-way valve assy, compressor air suction/discharging valve and condenser pipe outlet, lift to remove the four-way valve assy. (Note: release the refrigerant before welding cutting.)</p> 
14. Remove compressor	<p>Remove the three feet screw nuts fixing compressor, to remove the compressor.</p> 

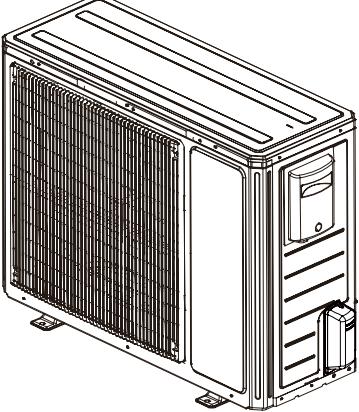
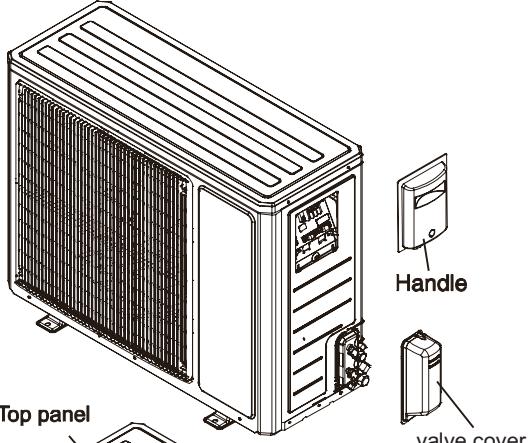
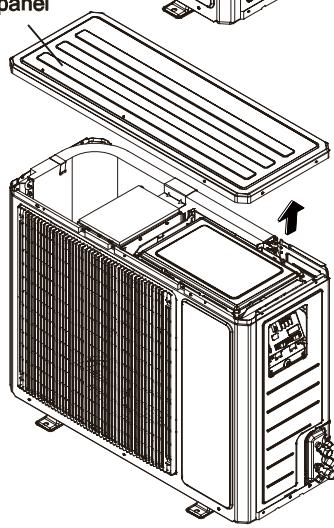
Removal Procedure

Steps	Procedure
	<p>15. Remove big and small valve assy</p> <p>Remove screws connecting condenser assy and chassis, to remove the condenser assy. Remove the screws fixing big and small valve, to remove the valves.</p> 

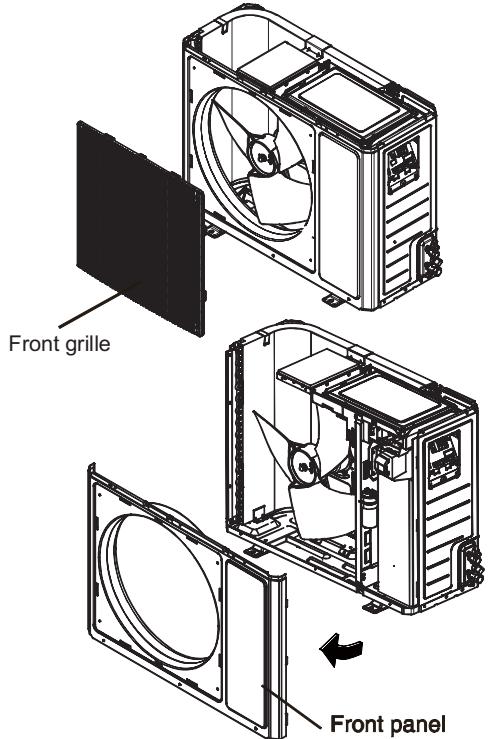
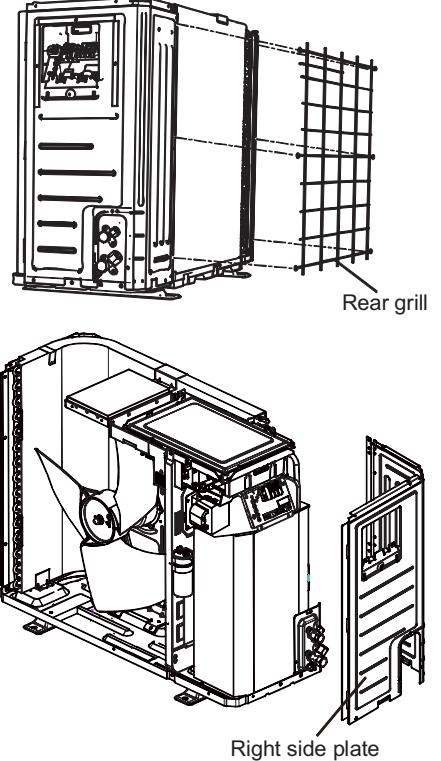


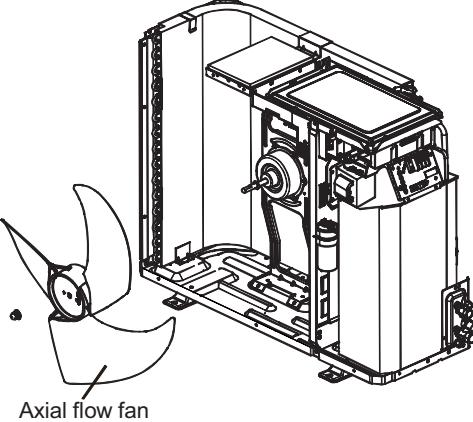
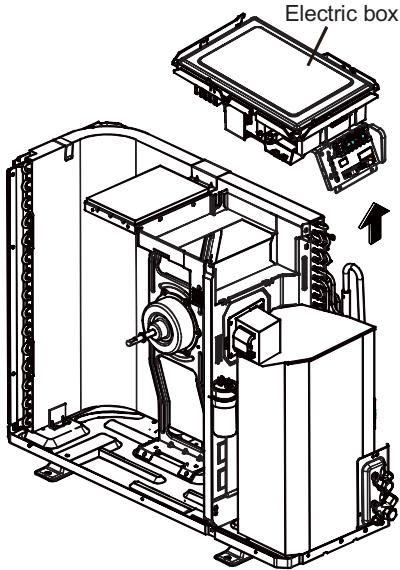
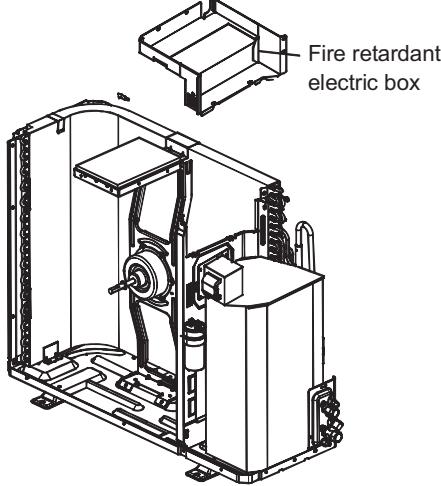
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

(2)Model:18K

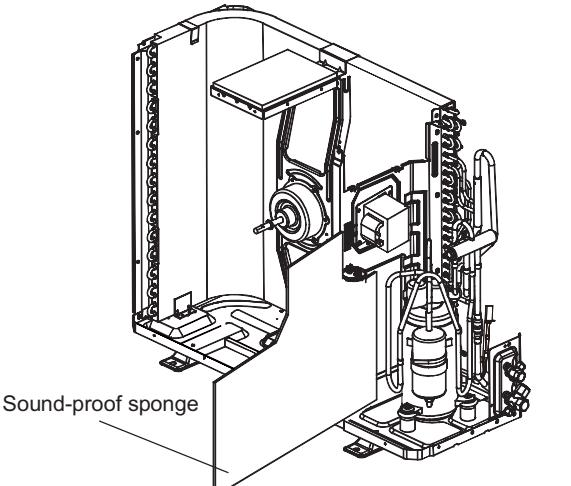
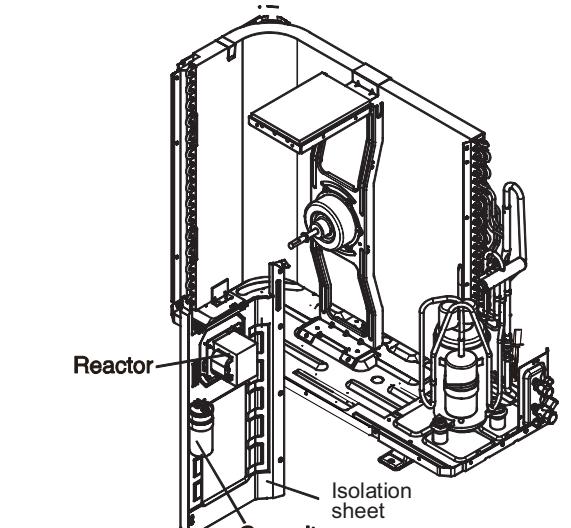
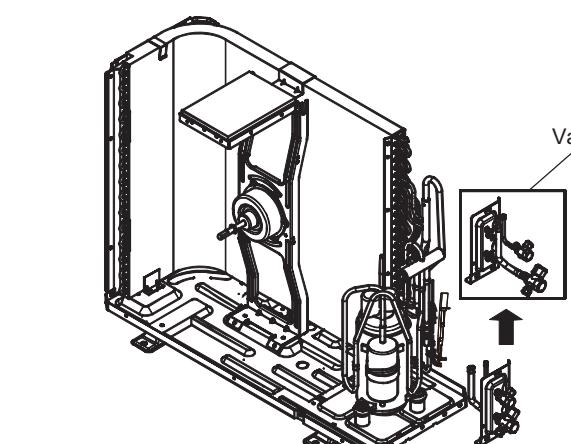
Steps	Procedure
<p>1. Remove top cover and handle</p> <p>Before disassembly</p> <p>Twist off the screws used for fixing the handle, pull the handle upward to remove it. Remove the screw fixing valve cover,to remove the cover.</p> <p>Twist off the screws used for fixing the top cover, pull the top cover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

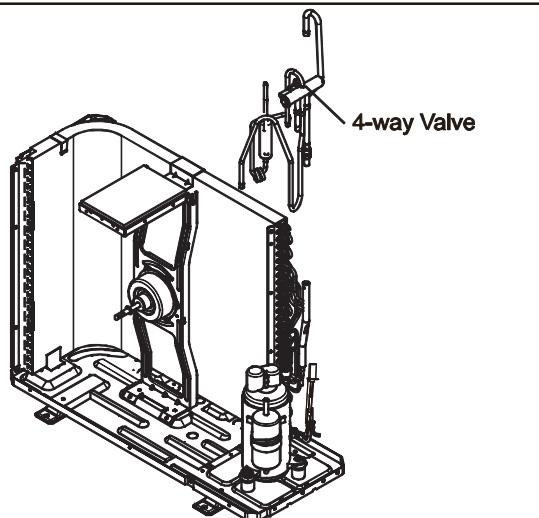
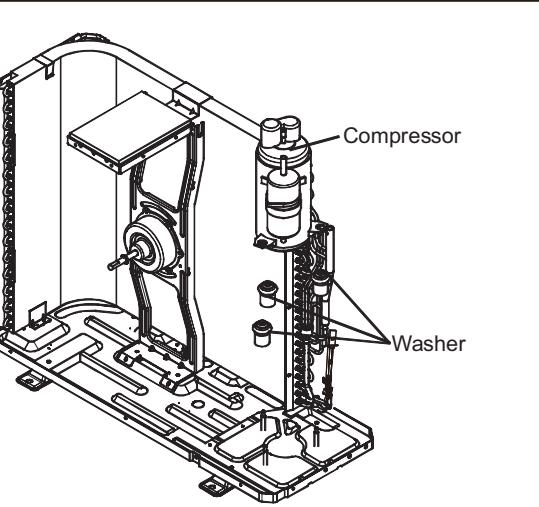
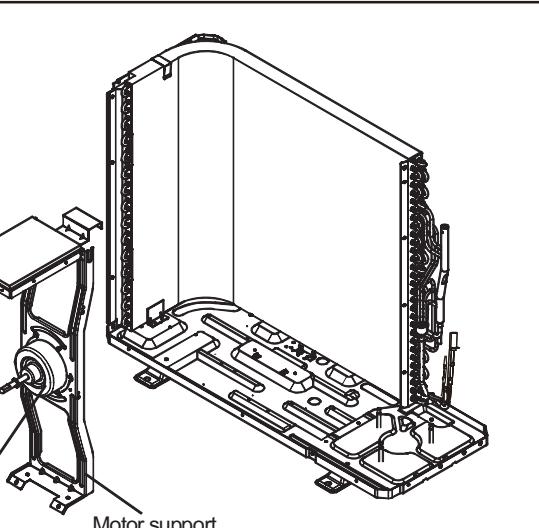
Removal Procedure

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

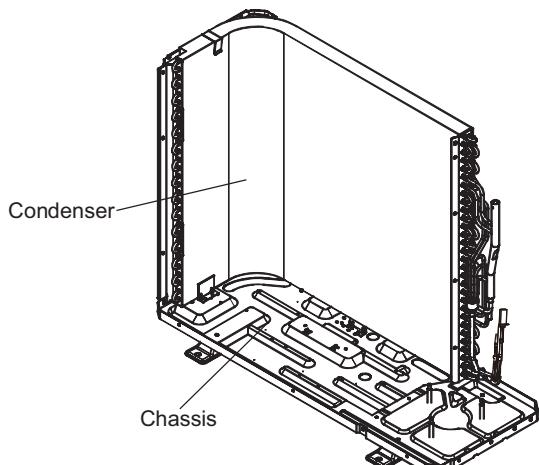
Steps	Procedure
4. Remove the axial flow fan	<p>Twist off the nut fixing the blade with wrench and the draw out the axial flow fan.</p>  <p>Axial flow fan</p>
5. Remove Electric Box Assy	<p>Unplug wiring terminals of motor, compressor, reactor and capacitor. Remove earthing screws on side patch board.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

Removal Procedure

Steps	Procedure
6. Removal of sound-proof sponge	<p>Tear sound-proof sponge with caution.</p> 
7. Removal of isolation sheet	<p>Remove screws fixing isolation sheet and then remove the sheet.</p> 
8. Removal of valve	<p>Unsolder gas and liquid valves and then remove the screws fixing valve supports. Remove valves with the supports. Remove screws fixing valve and then, remove</p> <p>Before working, make sure that the refrigerant is empty in the circuit.</p> <p>Before unsoldering, wrap the valve completely with wet cloth to prevent the valve from being damaged by high temperature.</p> 

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

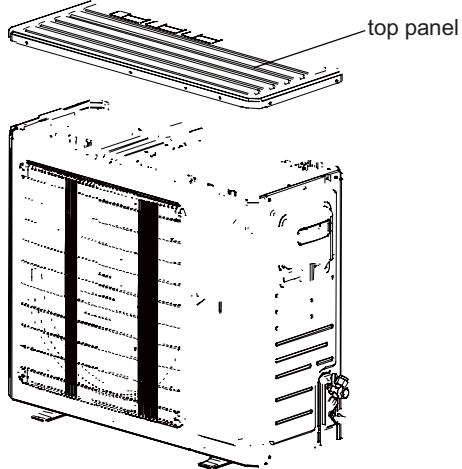
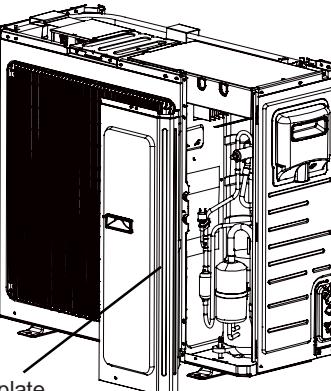
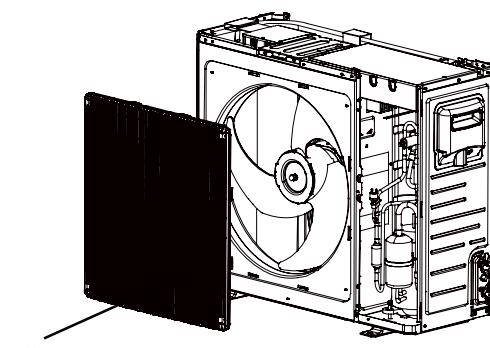
Removal Procedure

Steps	Procedure
12. Remove the condenser	<p>Remove the screw connecting the condenser and the chassis. Raise the condenser to remove it.</p> 

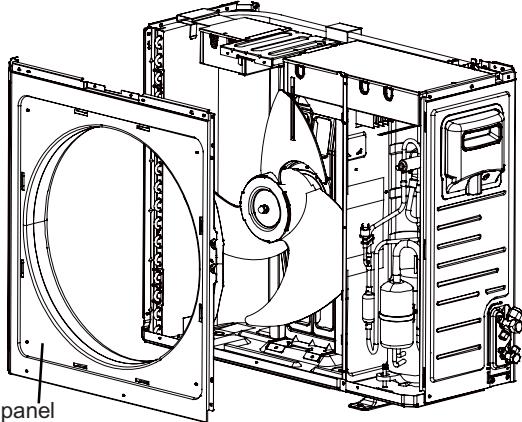
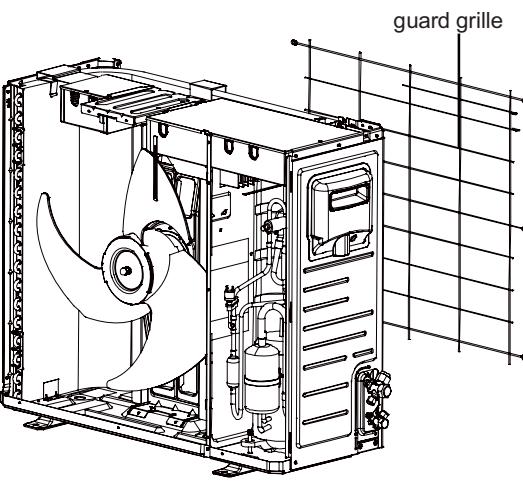
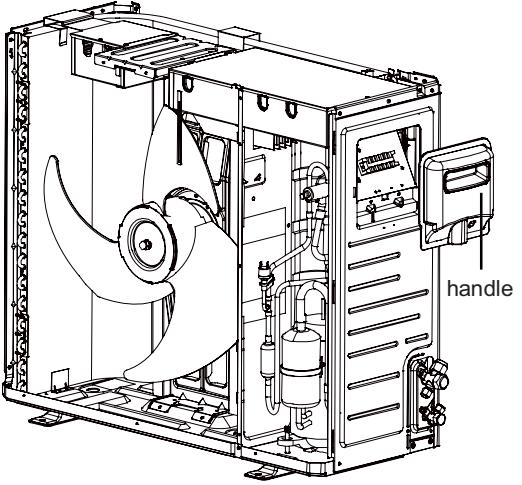


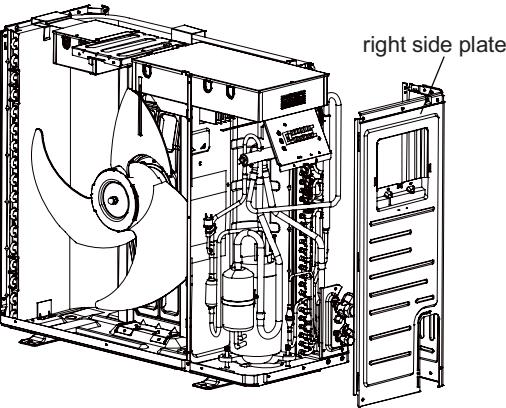
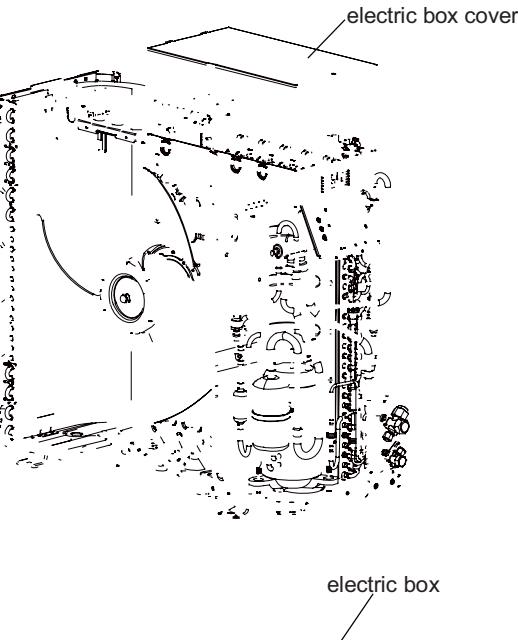
Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

(3)Model:24K

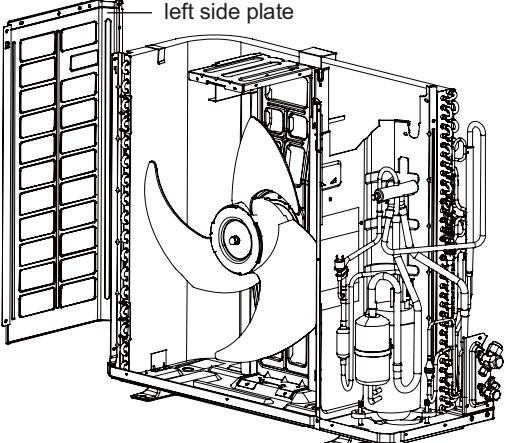
Steps	Procedure
1. Remove top cover and front side plate	
a Use the screwdriver to remove the screws connecting the top panel and panel and side panels. Remove the top panel. b Loosen the screws connecting the front side panel and mask and chassis. Remove the front side panel.	
2. Remove grille	

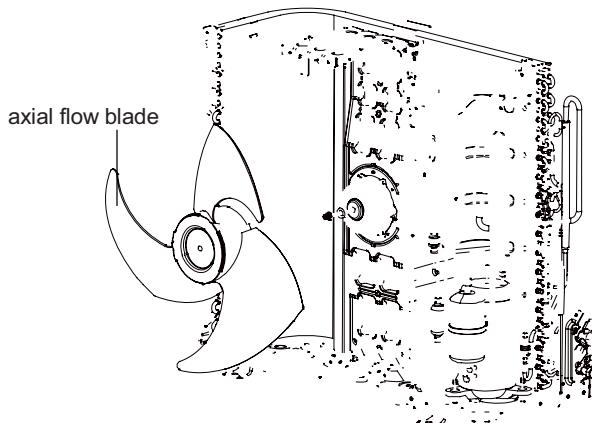
Removal Procedure

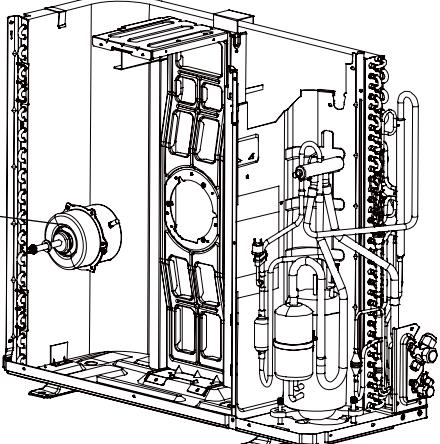
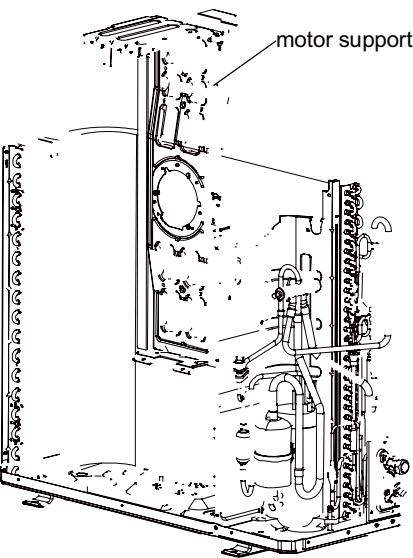
Steps	Procedures
3. Remove panel	<p>Twist off the screws connecting the panel, chassis and motor support with screwdriver, and then remove the panel.</p> 
4. Remove guard grille	<p>Twist off the screws fixing the guard grille and then remove the guard grille.</p> 
5. Remove handle	<p>Twist off the screws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

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

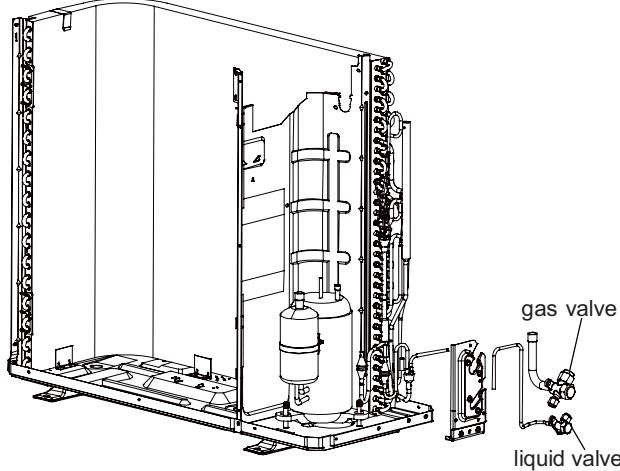
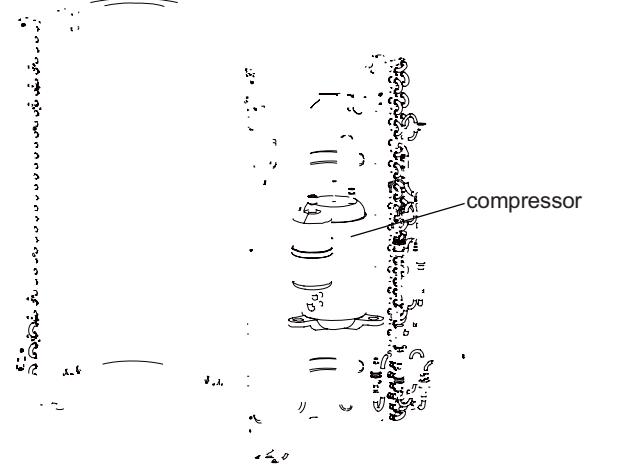
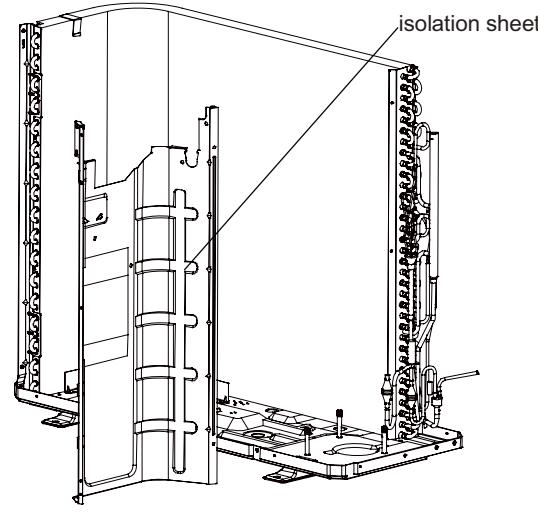
Removal Procedure

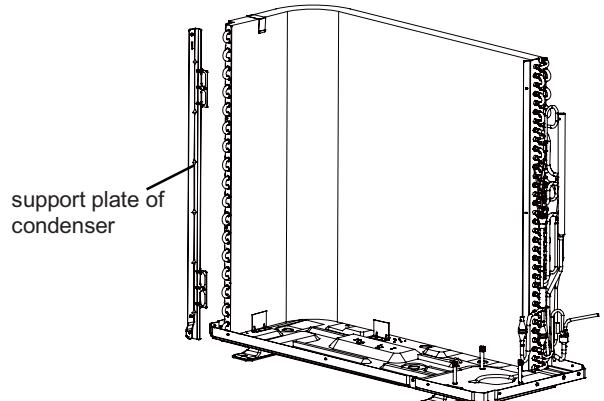
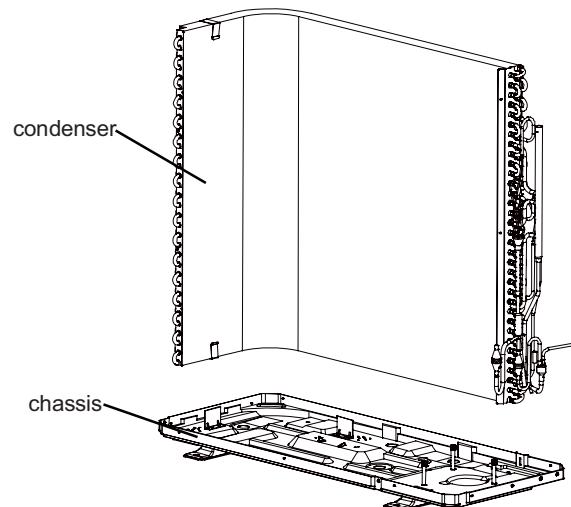
Steps	Procedure
c	<p>Twist off the screws between electric box 1 and left side plate with screwdriver, pull it upwards to remove the electric box 1.</p>
8. Remove left side plate	 <p>electric box 1</p>
9. Remove axial flow blade	<p>Twist off the nuts on blade with wrench and then remove the axial flow blade.</p>



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

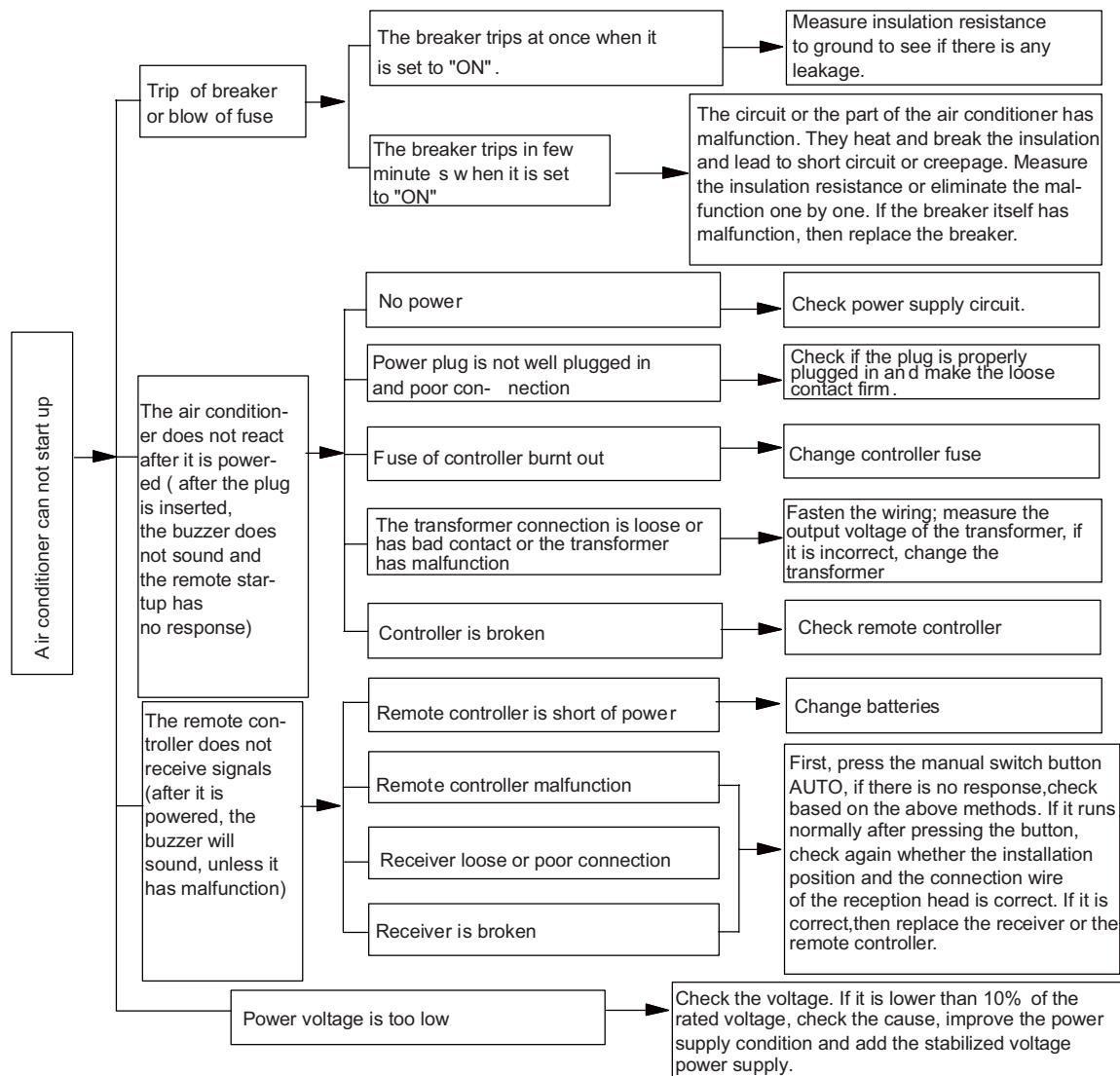
Removal Procedure

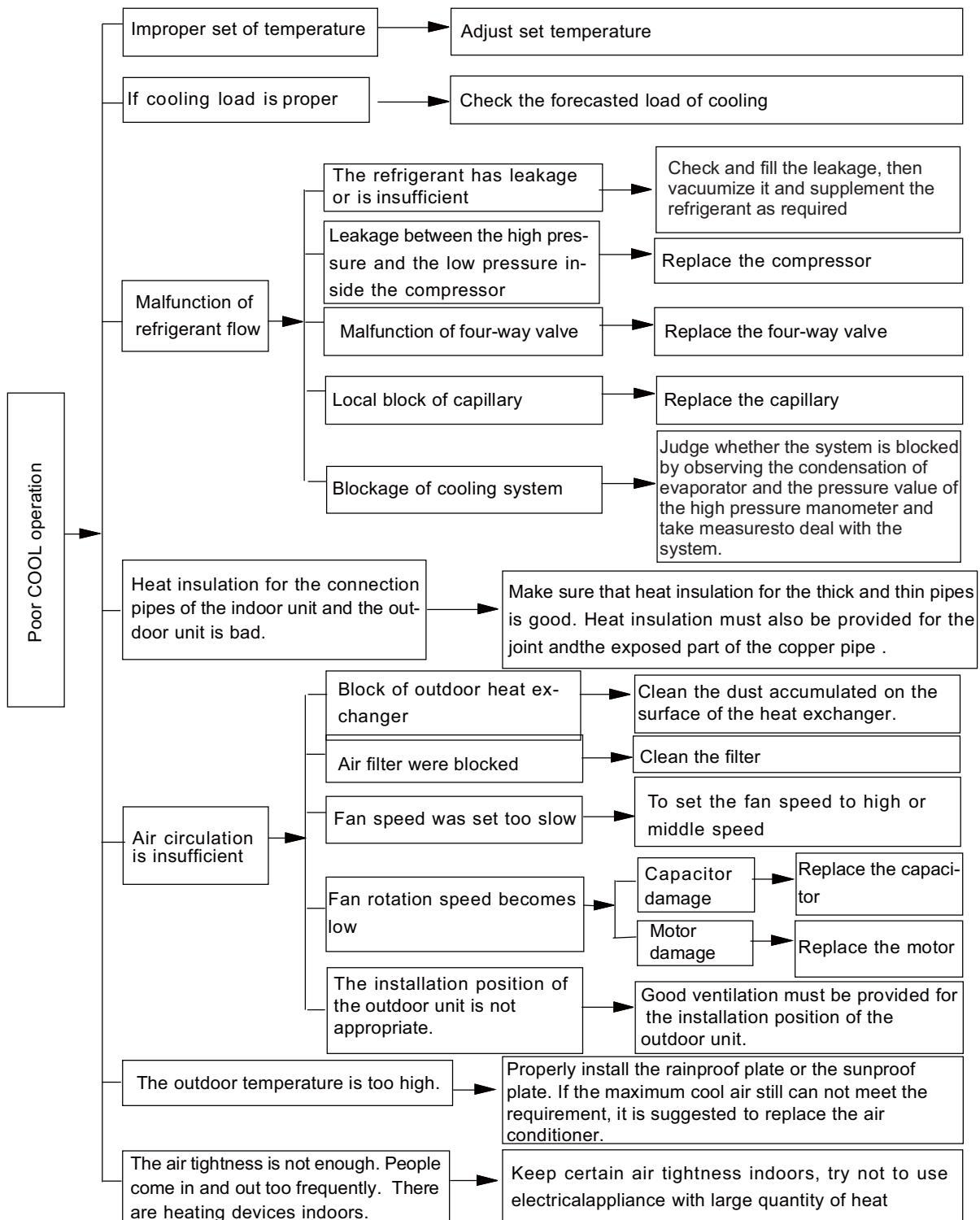
Steps	Procedure
12. Remove gas valve and liquid valve	<p>Twist off the 2 bolts fixing the valve sub-assy. Unsolder the soldering joint between gas valve and air-return pipe and then remove the gas valve.(note: when unsoldering the soldering joint, wrap the gas valve with wet cloth completely to avoid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

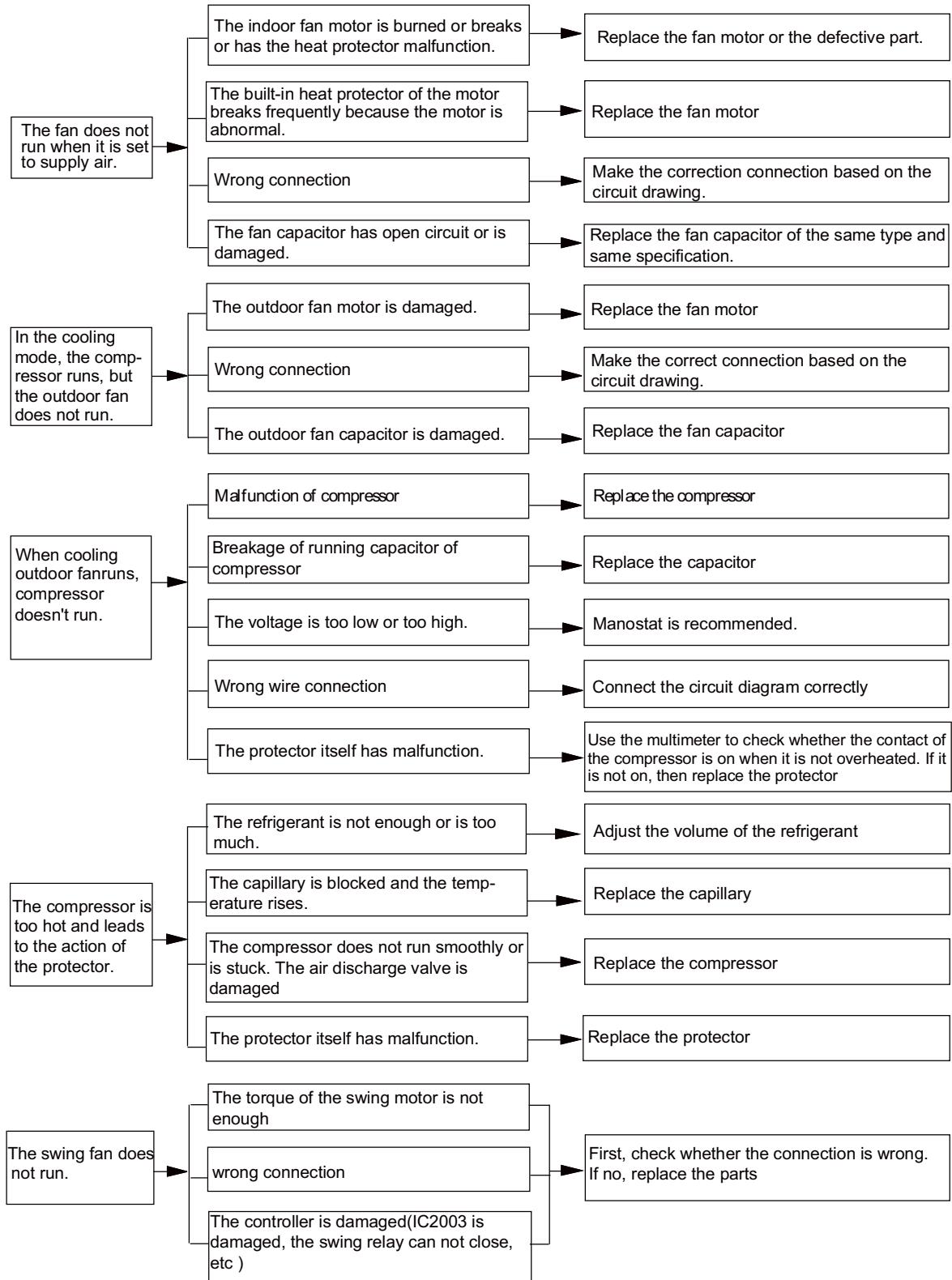
Steps	Procedure
15. Remove support plate of condenser	<p>Twist off the screws connecting the support plate of condenser and condenser with screwdriver, and then remove the support plate of condenser.</p>  <p>support plate of condenser</p>
16. Remove chassis and condenser	<p>Pull it upwards to separate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

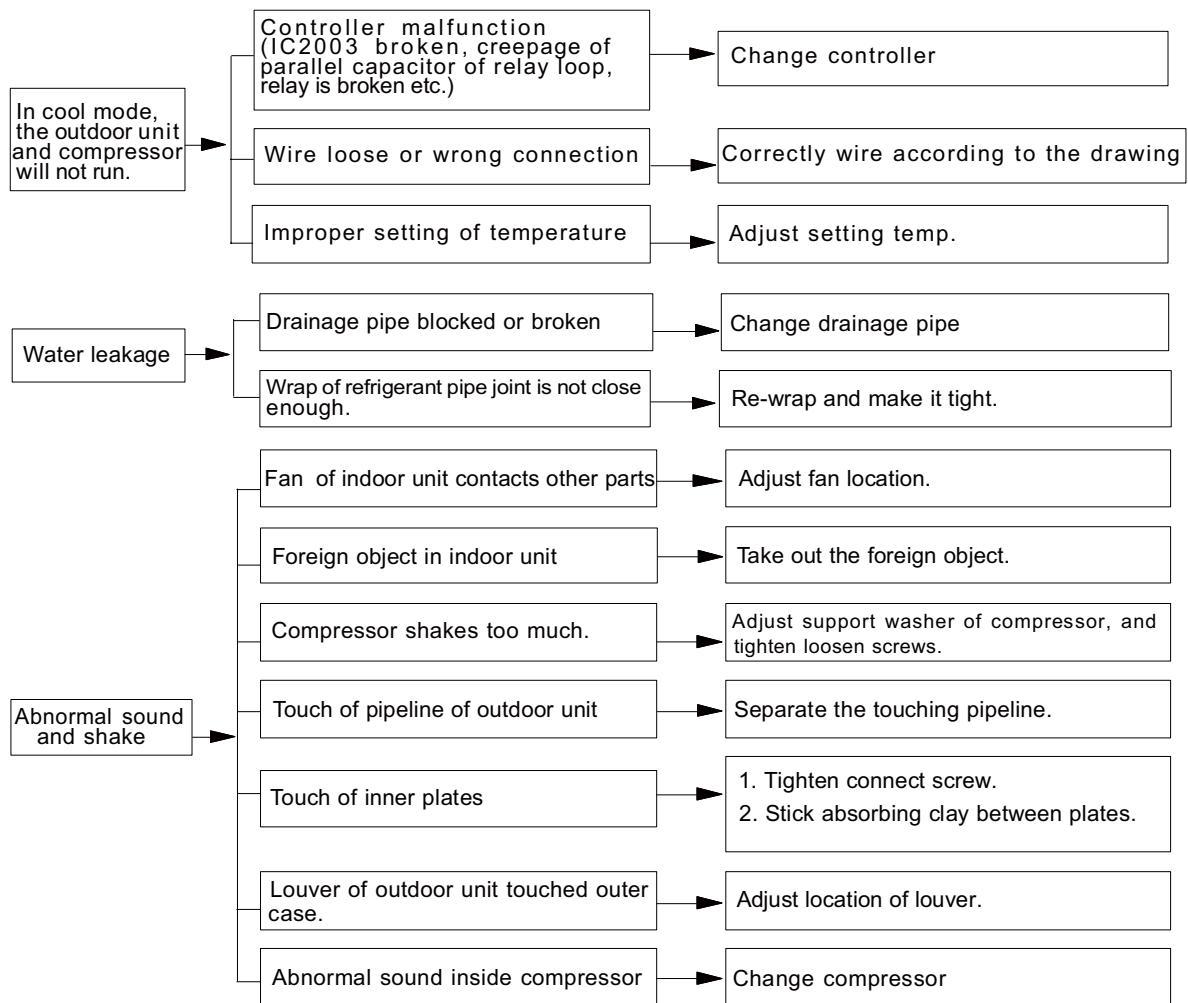
9. Troubleshooting

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









9.1 Precautions before Performing Inspection or Repair

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

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

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

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

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

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

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

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

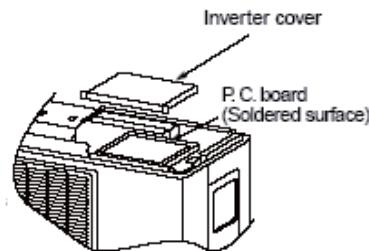
No.	Troubleshooting procedure
1	Confirmation
2	Judgement by Flashing LED of Indoor/Outdoor Unit
3	How to Check Simply the Main Part

NOTE:

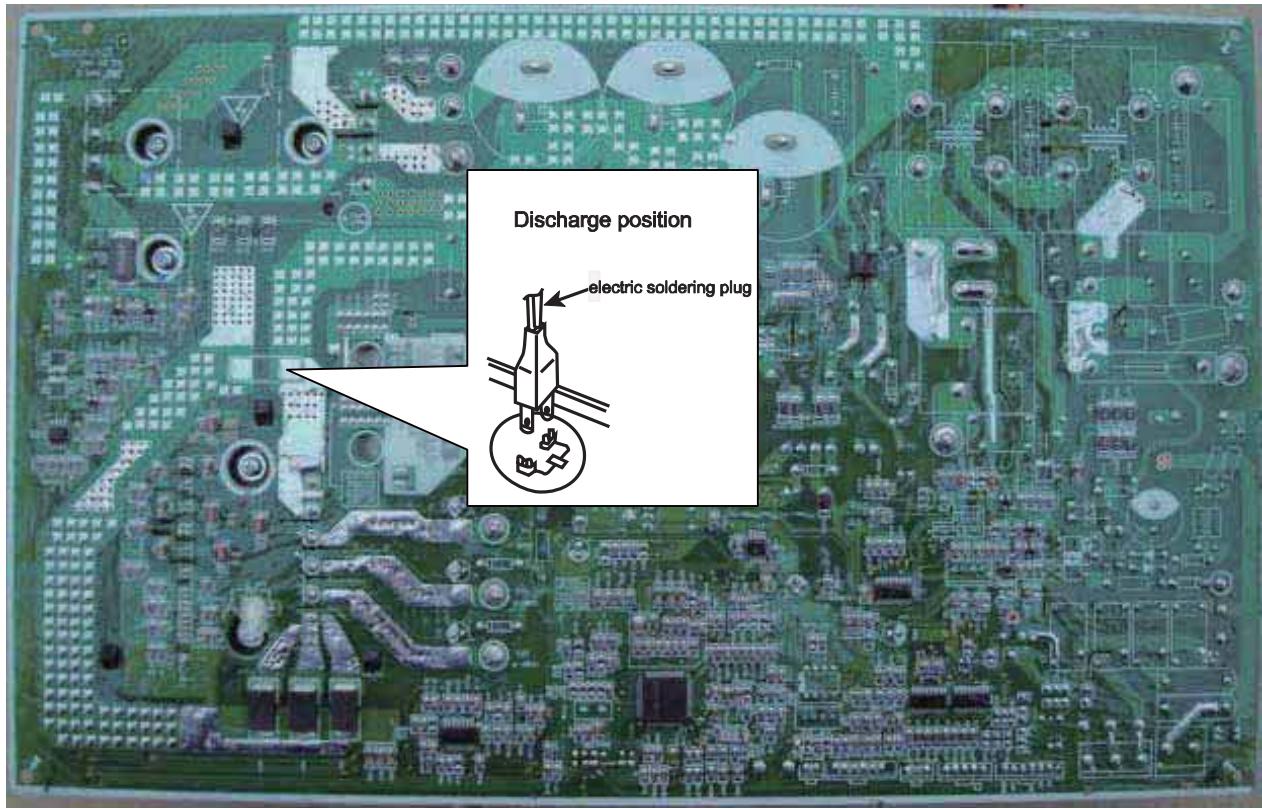
A large-capacity electrolytic capacitor is used in the outdoor unit controller(inverter).Therefore,if the power supply is turned off,charge(charging voltage DC280V to 380V)remains and discharging takes a lot of time. After turning off the power source,if touching the charging section before discharging,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

Discharging method

(1)remove the inverter cover(Outoor Unit)



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



9.2 Confirmation

(1) Confirmation of Power Supply

Confirm that the power breaker operates(ON) normally;

(2) Confirmation of Power Voltage

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

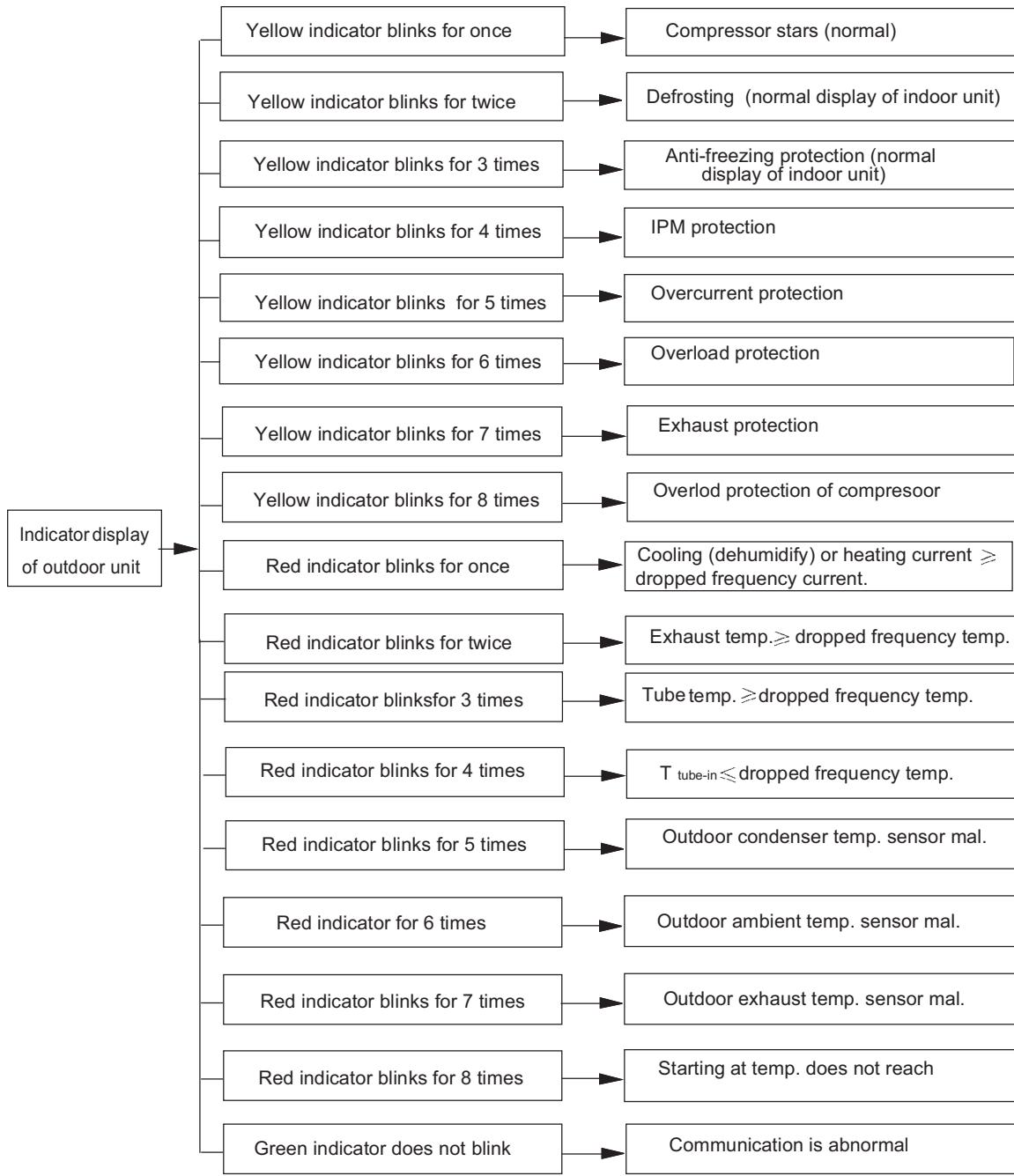
9.3 Flashing LED of Indoor/Outdoor Unit and Primary Judgement

(1)Models:09/12K:

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

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

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



Analysis or processing of some of the malfunction display:

1. Compressor discharge protection

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

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

2. Low voltage overcurrent protection

Possible reason: Sudden drop of supply voltage.

3. Communication malfunction

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

4. Sensor open or short circuit

Processing method: Check whethers ensor is normal, connected with the corre sponding position on the controller and if damage of lead wire is found.

5. Compressor over load protection

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

Processing method: adjust refrige rant amount; replace the capillary; replace the compressor; use univers al meter to check if the contactor of compress or is fine when it is not over heated, if not replace the protector.

6. System malfunc tion

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 beactivated.

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

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

7. IPM module protection

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

(2)Models:18/24K:

Troubleshooting

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

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)		A/C status	Possible Causes		
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)							
		Operation Indicator	Cool Indicator	Heating Indicator	□ OFF	■ Illuminated	☆ Blink			
		D5 (D40)	D6 (D41)	D16 (D42)	D30 (D43)					
11	Indoor evaporator temperature sensor is open/short circuited	F2		OFF 3S and blink twice				AC stops operation once reaches the setting temperature. Cooling, drying: internal fan motor stops operation while other loads stop operation; heating: AC stop operation	1. Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. 2. Components on the mainboard fall down leads short circuit. 3. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing) 4. Mainboard damaged.	
12	Outdoor ambient temperature sensor is open/short circuited	F3		OFF 3S and blink 3 times		□	□	☆	■ During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
13	Outdoor condenser temperature sensor is open/short circuited	F4		OFF 3S and blink 4 times		□	□	☆	□ During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasn't been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)
14	Outdoor discharge temperature sensor is open/short circuited	F5		OFF 3S and blink 5 times		□	□	☆	☆ During cooling and drying operation, compressor will stop 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
15	Limit/ decrease frequency due to overload	F6		OFF 3S and blink for 6 times		■	□	☆	☆ All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
16	Decrease frequency due to overcurrent	F8		OFF 3S and blink 8 times		■	■	□	■ All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload
17	Decrease frequency due to high air discharge	F9		OFF 3S and blink 9 times		■	■	□	□ All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
18	Voltage for DC bus-bar is too high	PH		OFF 3S and blink 11 times		□	■	□	☆ During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2. If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
19	Malfunction of complete units current detection	U5		OFF 3S and blink 13 times		□	■	☆	■ During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operating, the complete unit will stop operation.	Theres circuit malfunction on outdoor units control panel AP1, please replace the outdoor units control panel AP1.

Troubleshooting

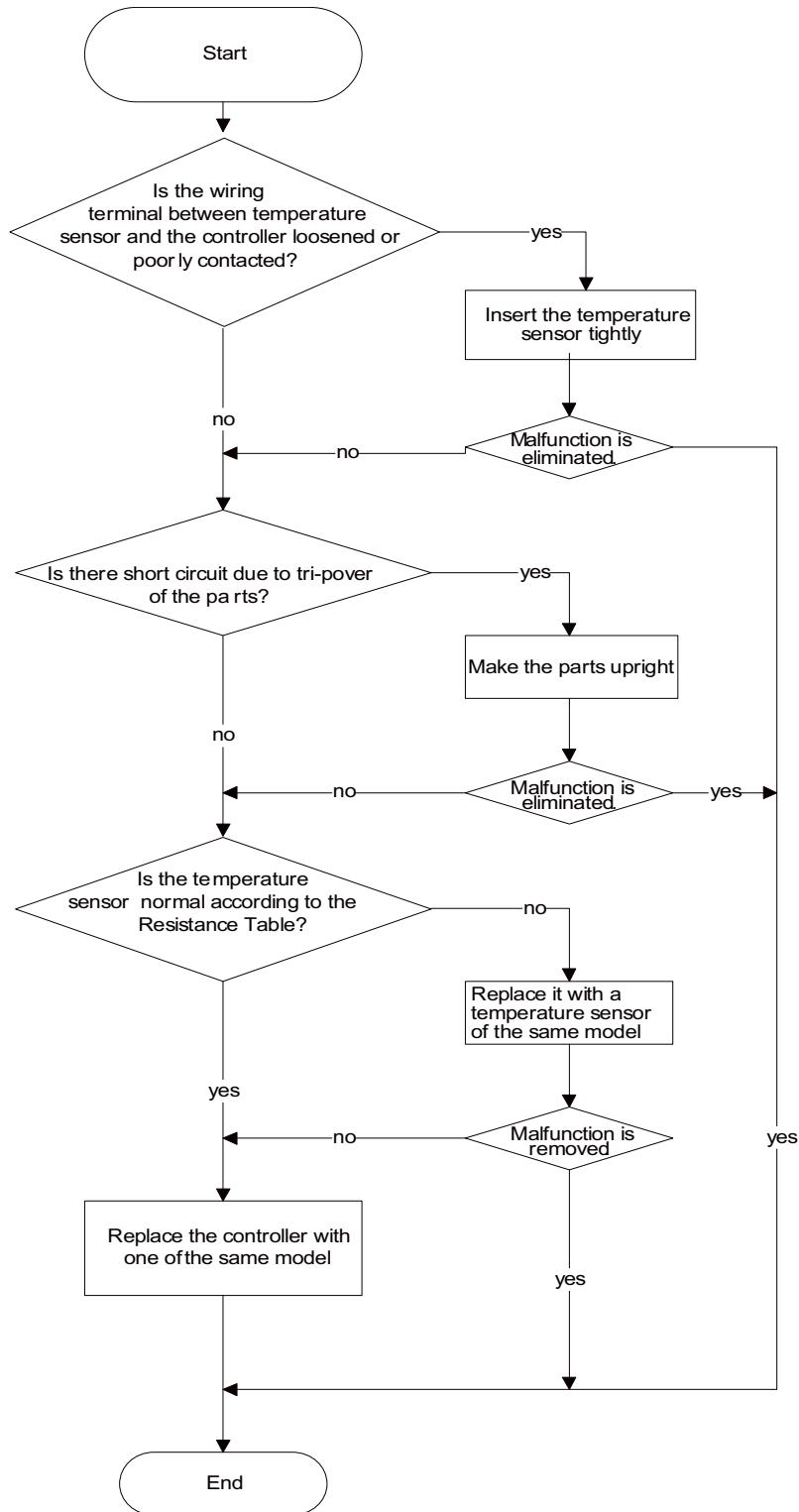
NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit (Indicator has 3 kinds of display status and they will be displayed circularly every 5s.)				A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			□ OFF ■ Illuminated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

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

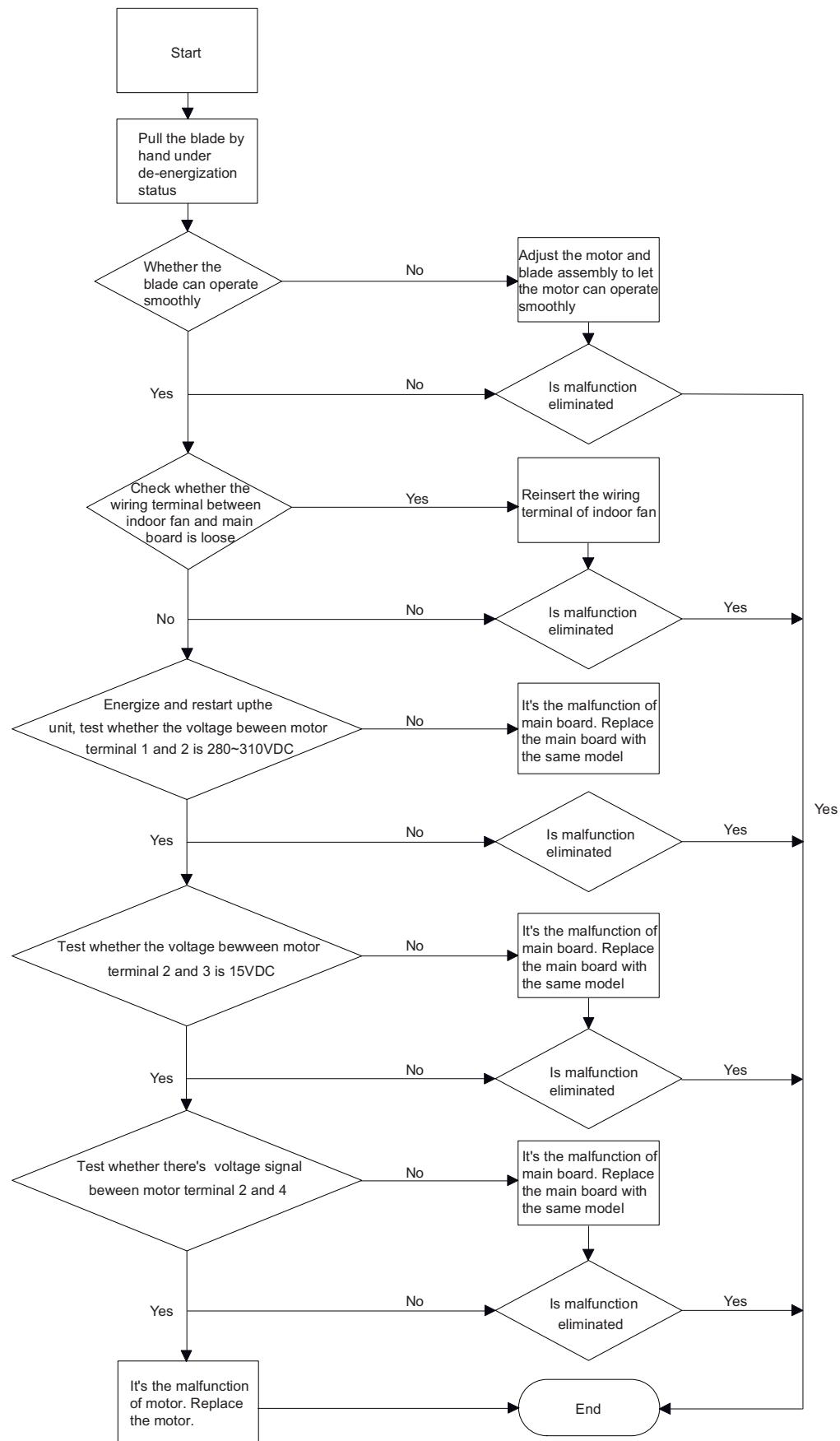
9.4 How to Check Simply the Main Part

Indoor unit:

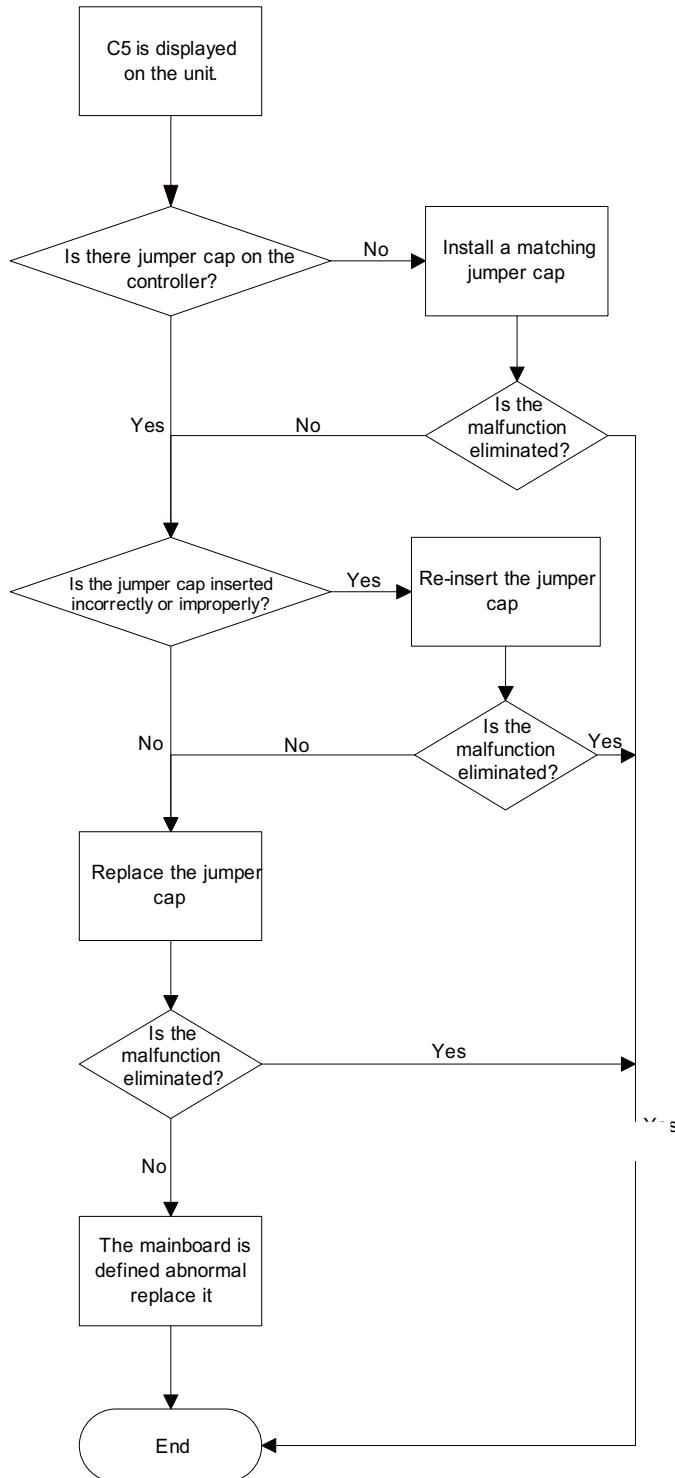
(1) Temperature sensor malfunction



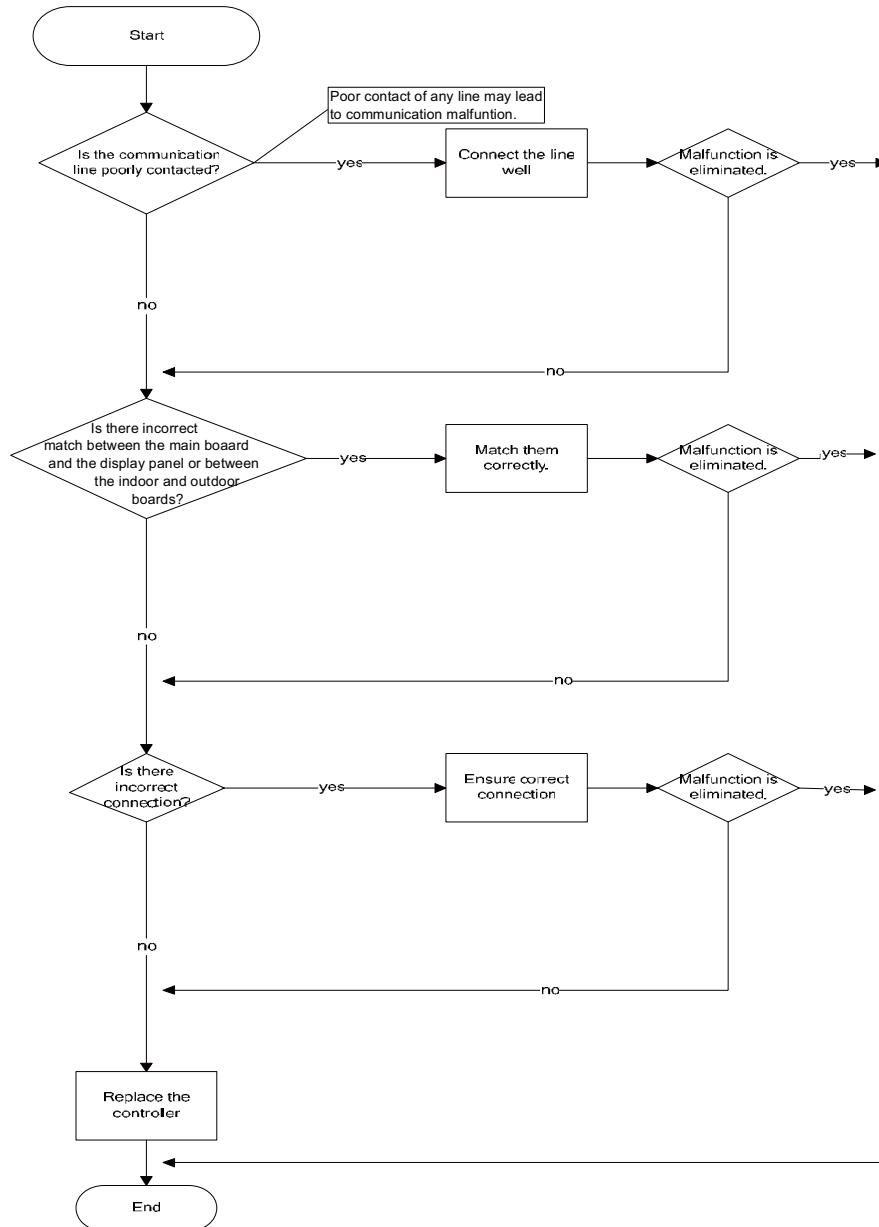
(2) Indoor fan does not operate (H6)



(3)Jumper cap malfunction (C5)



(4) Communication malfunction (E6)



Notice:

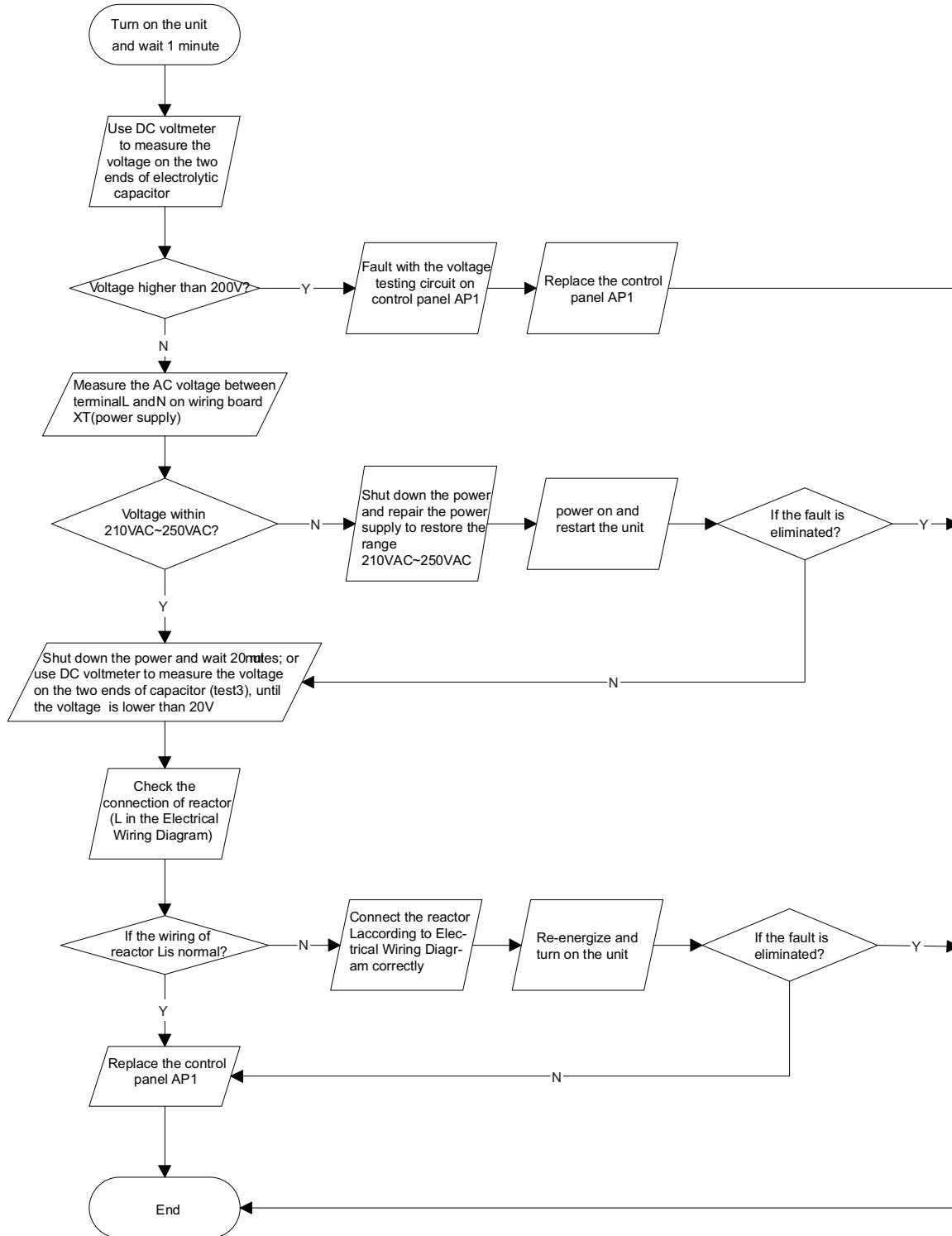
- 1.Before replacing mainboard of indoor unit, make sure the mainboard for replacement is qualified. The following testes shall be done:
 - a.Check if protective tube FUSE 1 has open circuit. If so, replace it with a protective tube of the same model.
 - b.Energize the unit and check if buzzer is sound. If not, the mainboard of indoor unit can't be used.
 - c.Energize the unit with display and check if all icons are displayed after energization and if the display is normal. If not, the main board can't be used.
- 2.The mainboard for replacement shall has the same model with the original mainboard, so do the jumper cap.
- 3.The wiring and assembly methods shall also be the same with that of the original mainboard when replacing the mainboard.

Outdoor unit:

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

Main detection point:

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

Malfunction diagnosis process:

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

Main detection point:

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

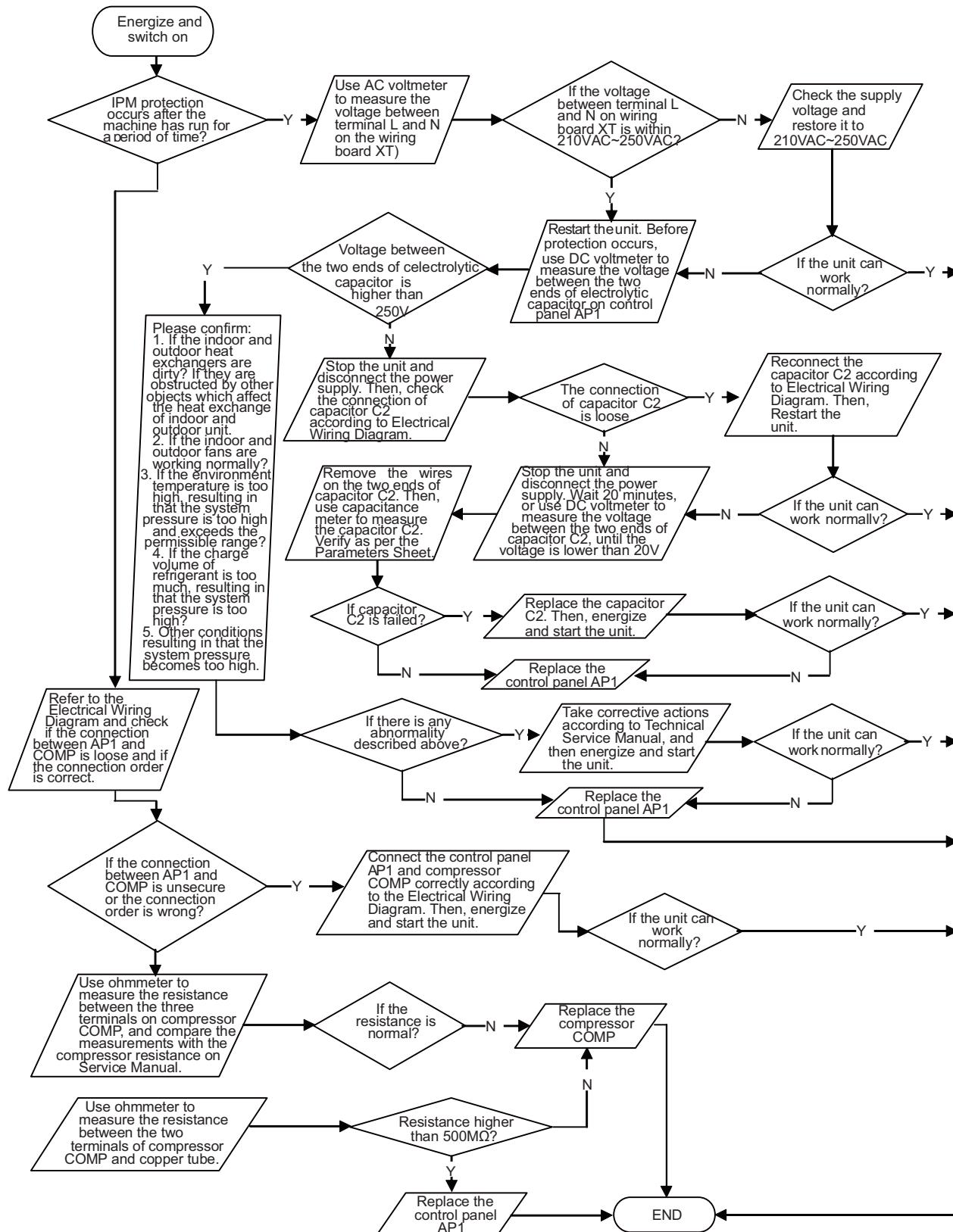
Is voltage input in the normal range (Test the voltage between L, N of wiring board XT by DC voltage meter)?

If coil resistance of compressor is normal? Is compressor coil insulating to copper pipe well?

If the work load of unit is heavy? If radiating of unit is well?

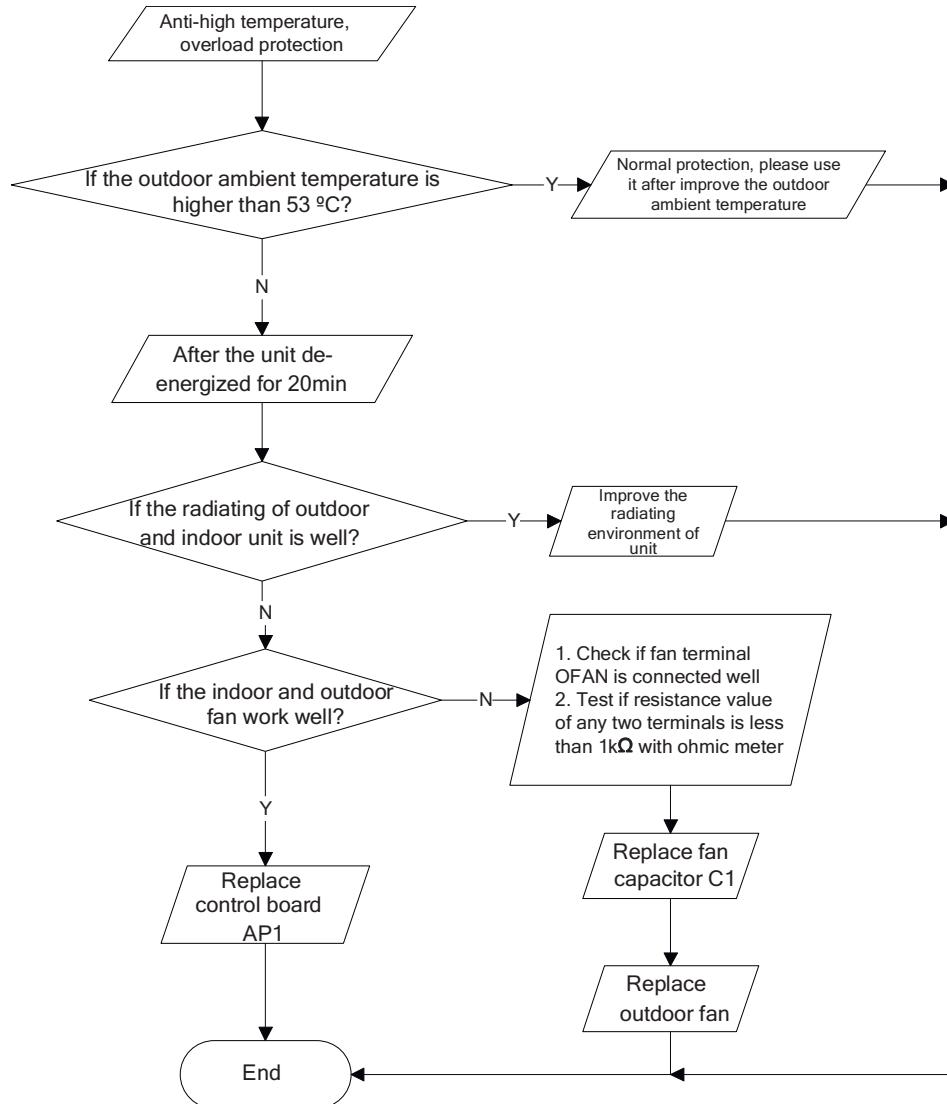
If the refrigerant charging is appropriate?

Malfunction diagnosis process:



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

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

Malfunction diagnosis process:

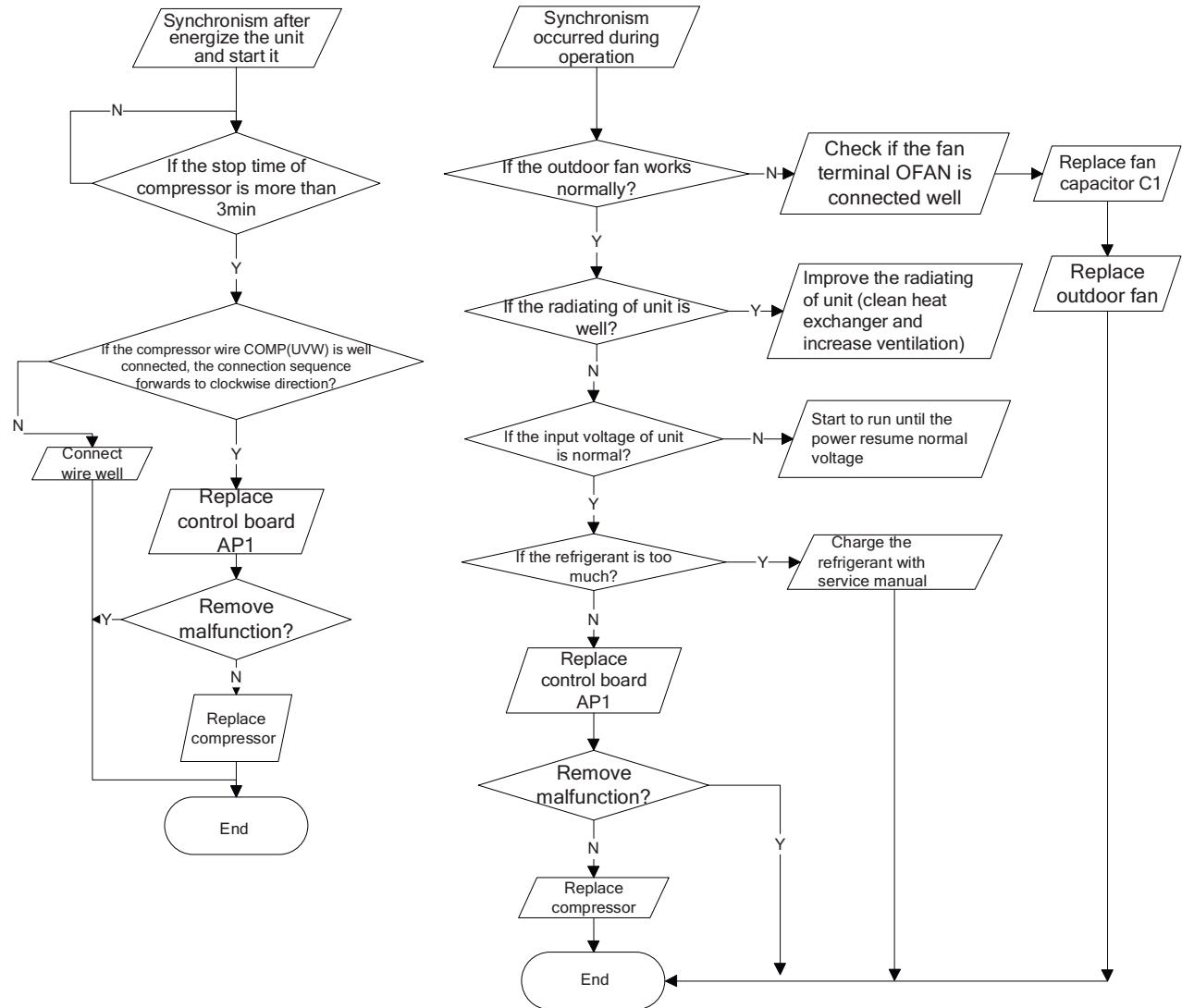
(4) Diagnosis for failure start up malfunction (AP1 below is control board of outdoor unit)**Main detection point:**

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

Malfunction diagnosis process:

(5) Diagnosis for compressor synchronism (AP1 below is control board of outdoor unit)**Main detection point:**

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

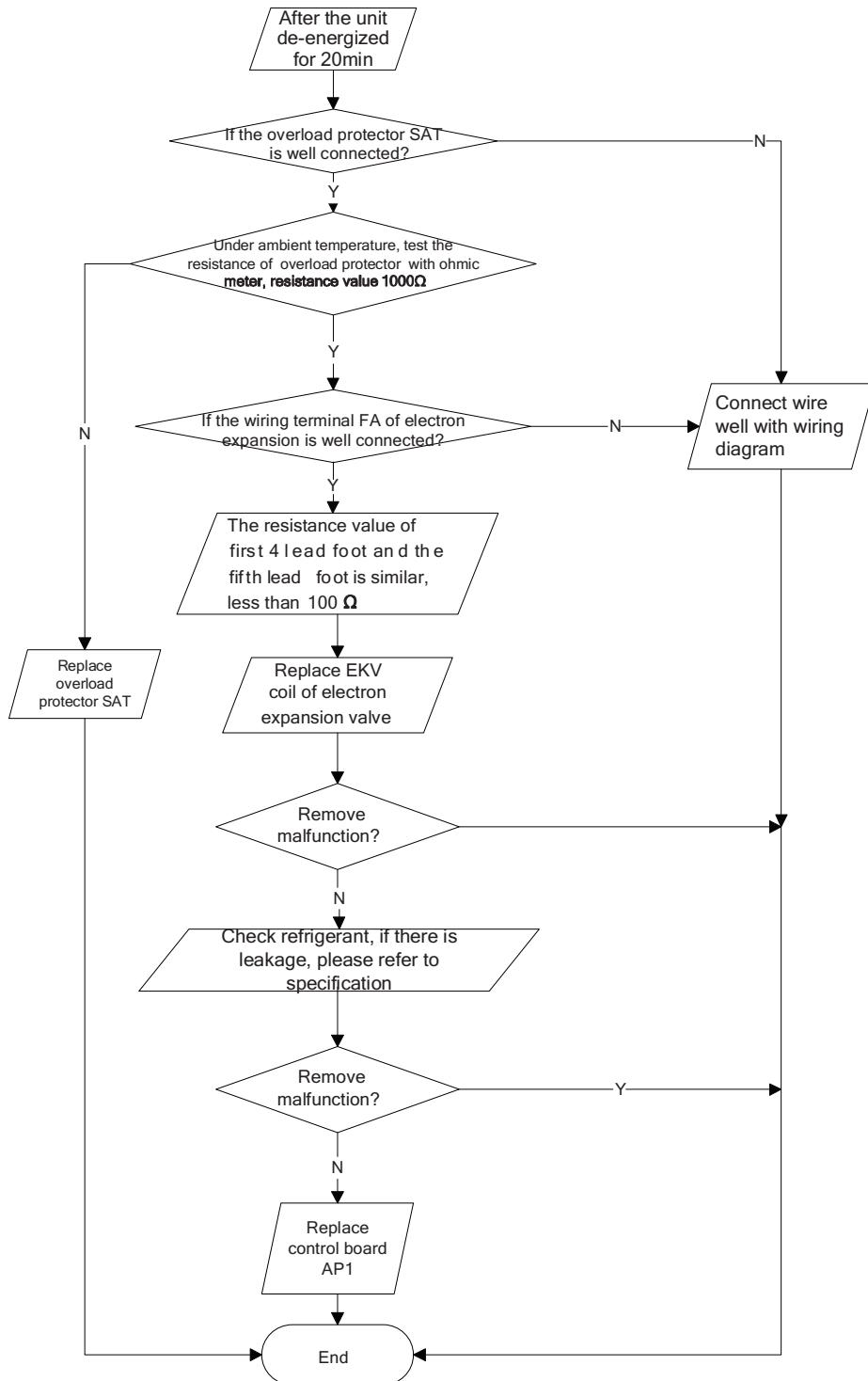
Malfunction diagnosis process:

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

Main detection point:

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

Malfunction diagnosis process:

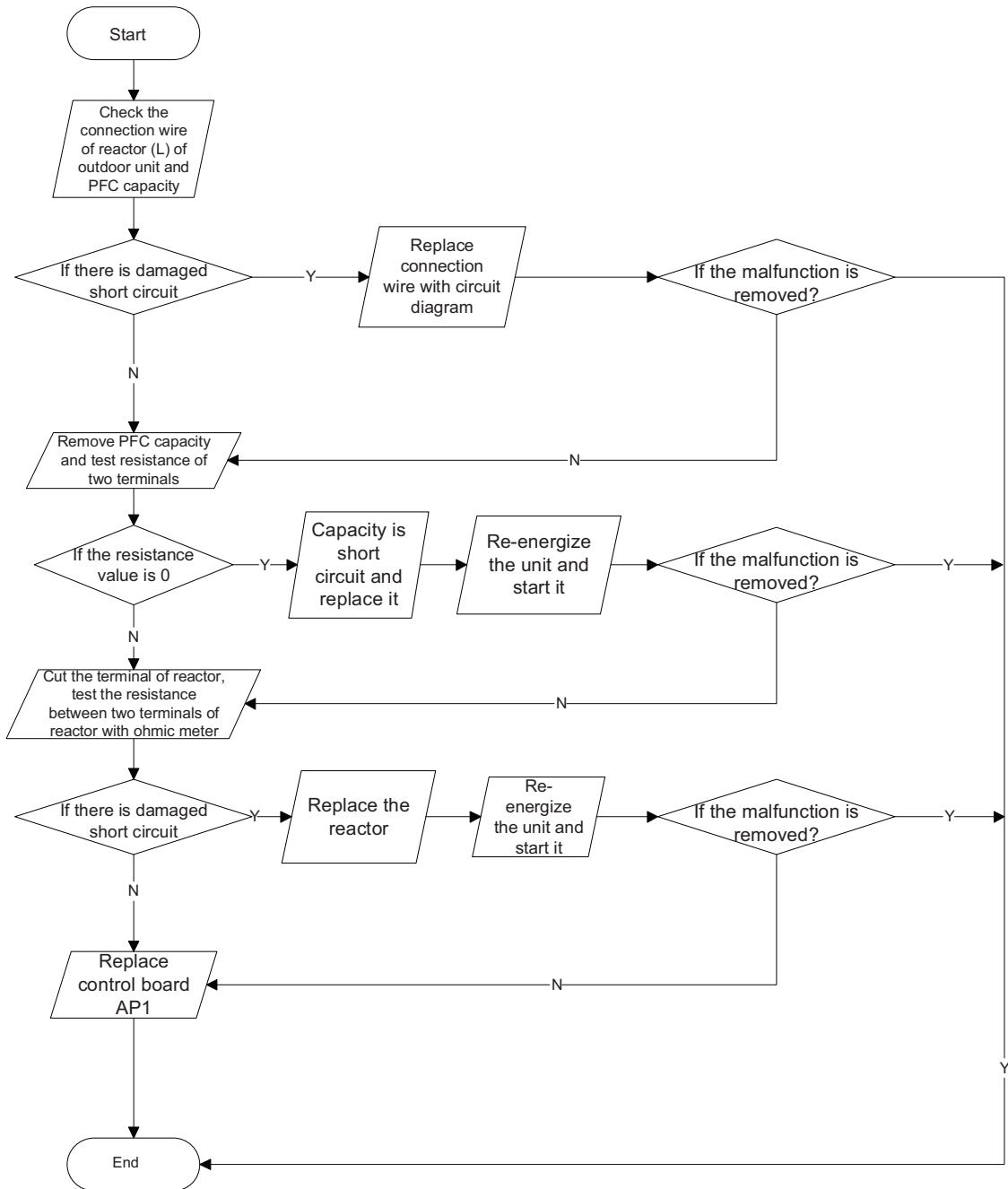


(7) PFC (correction for power factor) malfunction (outdoor unit malfunction) (AP1 below is control board of outdoor unit)

Main detection point:

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

Malfunction diagnosis process:

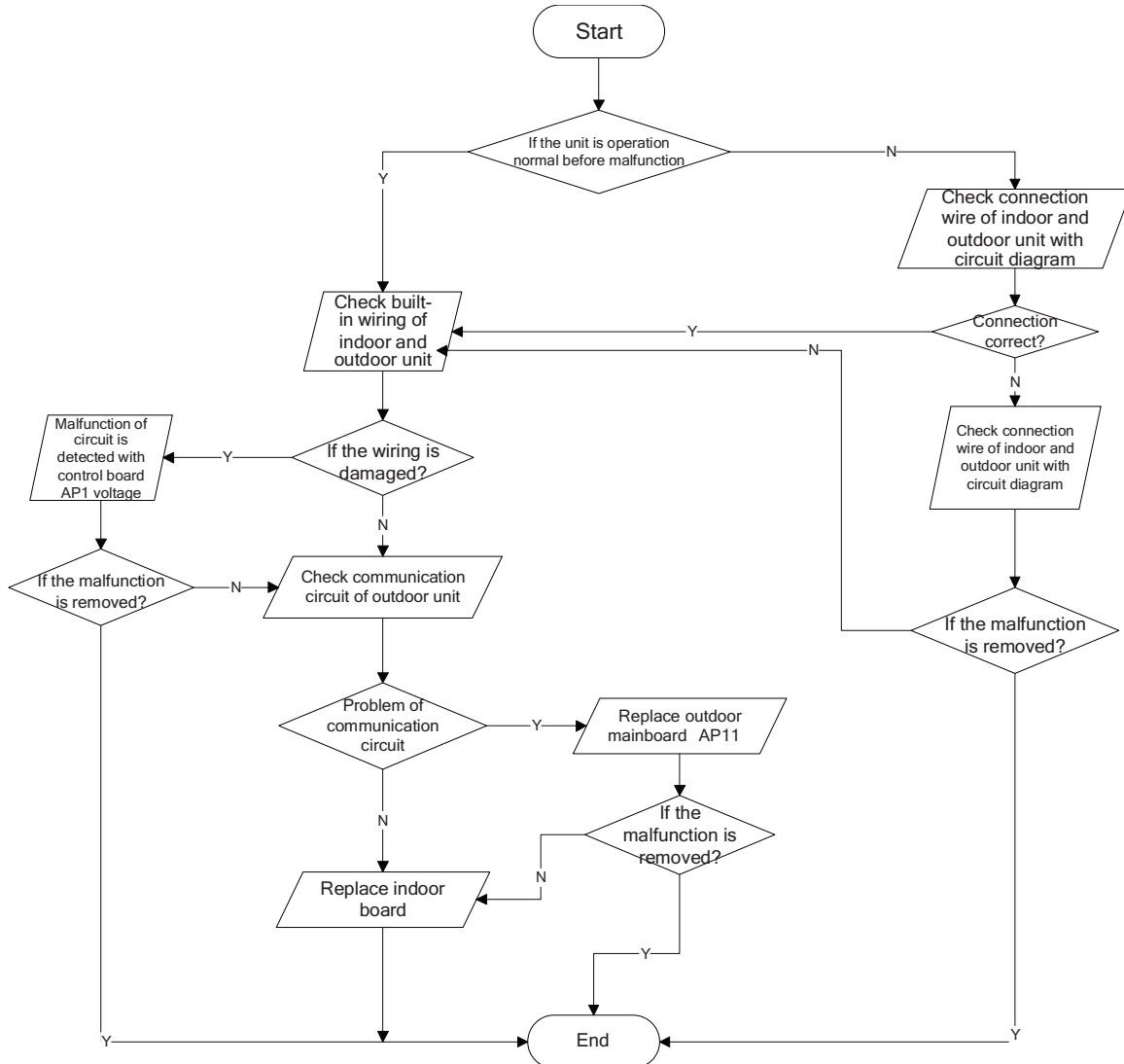


(8) Communication malfunction (AP1 below is control board of outdoor unit)

Main detection point:

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

Malfunction diagnosis process:



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

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

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

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

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

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

Note: The information above is for reference only.



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