

SERVICE MANUAL

ELEMENT SERIE

**ASH-09AIE, ASH-12AIE
ASH-18AIE, ASH-24AIE**



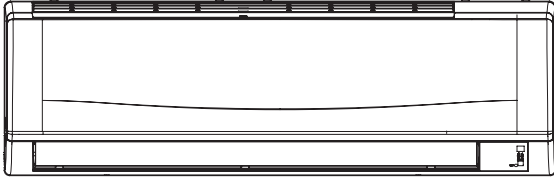
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Summary and Features

Indoor Unit



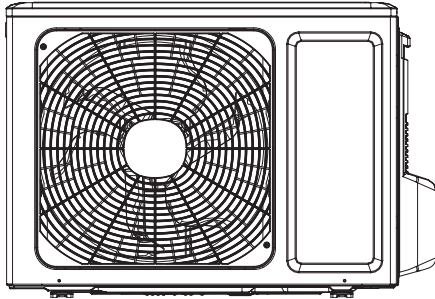
Remote Controller

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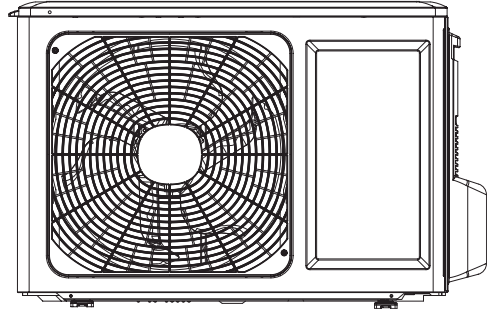


Outdoor Unit

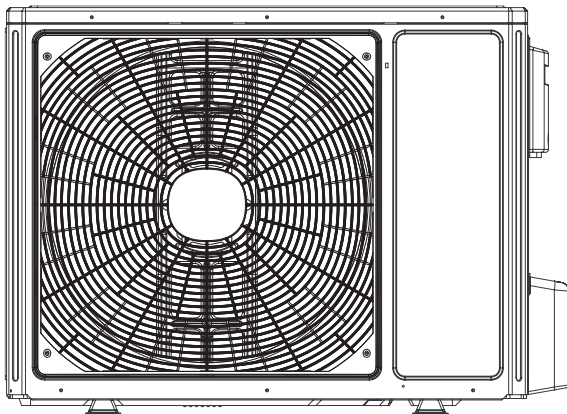
ASH-09AIE



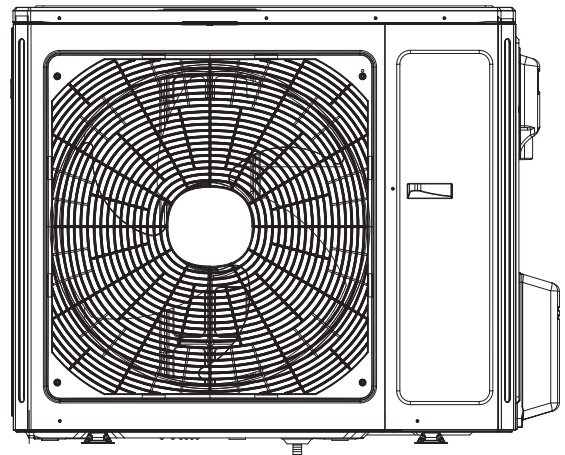
ASH-12AIE



ASH-18AIE



ASH-24AIE



EN 14825 : 2012

Declared capacity/energy efficiency ratio/coefficient of performance/Average season for cooling/ heating, at indoor temperature and outdoor temperature Tj

SINCLAIR		COOLING			HEATING			
MODEL	INDOOR TEMP. WB/DB (°C)	OUTDOOR TEMP. WB/DB (°C)	DECLARED CAPACITY (kW)	EER	INDOOR TEMP. WB/DB (°C)	OUTDOOR TEMP. WB/DB (°C)	DECLARED CAPACITY (kW)	COP
ELEMENT SERIE								
ASH-09AIE	27/19	35/-	2,6	2,9	20/-	-7/-8	2,1	2,6
		30/-	2,0	4,3		2/1	1,5	3,9
		25/-	1,3	6,7		7/6	1,0	4,9
		20/-	1,2	10,6		12/11	0,8	5,0
ASH-12AIE	27/19	35/-	3,5	2,8	20/-	-7/-8	2,4	2,8
		30/-	2,5	4,5		2/1	1,5	4,0
		25/-	1,5	6,4		7/6	1,0	4,3
		20/-	1,2	6,9		12/11	1,0	4,7
ASH-18AIE	27/19	35/-	5,1	3,1	20/-	-7/-8	4,5	2,5
		30/-	3,8	4,7		2/1	2,7	3,7
		25/-	2,6	6,2		7/6	1,8	4,8
		20/-	1,9	8,6		12/11	1,5	5,5
ASH-24AIE	27/19	35/-	6,2	2,8	20/-	-7/-8	4,9	2,5
		30/-	4,5	4,3		2/1	3,1	3,8
		25/-	3,0	5,8		7/6	1,9	4,7
		20/-	2,1	7,1		12/11	2,0	5,6

1. Safety Precautions

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


Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment.


Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

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

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

Recognize the following safety information:

 **Warning** Incorrect handling could result in personal injury or death.

 **Caution** Incorrect handling may result in minor injury, or damage to product or property.

 **Warning**

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

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

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

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

 **Caution**

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

2. Specifications

2.1 Unit Specifications

Model			ASH-09AIE
Power Supply	Rated Voltage	V~	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity(Min~Max)	W		2600(450~3230)
Heating Capacity(Min~Max)	W		3000(450~4100)
Cooling Power Input(Min~Max)	W		870(200~1420)
Heating Power Input(Min~Max)	W		900(200~1550)
Cooling Current Input	A		3.8
Heating Current Input	A		4
Rated Input	W		1550
Rated Cooling Current	A		6.3
Rated Heating Current	A		6.9
Air Flow Volume (SH/H/M/L)	m ³ /h		600/520/370/280
Dehumidifying Volume	L/h		0.8
EER	W/W		/
COP	W/W		/
SEER			5.6
SCOP			3.8
Application Area	m ²		12-18
Indoor Unit	Indoor Unit Fan Type		Cross-flow
	Indoor Unit Fan Diameter Length(DXL)	mm	Φ92X596
	Cooling Speed (SH/H/M/L)	r/min	1350/1100/900/700
	Heating Speed (SH/H/M/L)	r/min	1350/1140/980/820
	Indoor Unit Fan Motor Power Output	W	10
	Indoor Unit Fan Motor RLA	A	0.16
	Indoor Unit Fan Motor Capacitor	μF	1.2
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXD _X W)	mm	610X24X294
	Swing Motor Model		MP24BA
	Swing Motor Power Output	W	1.5
	Fuse Current	A	3.15
	Indoor Unit Sound Pressure Level (SH/H/M/L)	dB (A)	41/38/30/24
	Indoor Unit Sound Power Level (SH/H/M/L)	dB (A)	55/52/44/38
	Indoor Unit Dimension (WXH _X D)	mm	770X283X201
	Indoor Unit Dimension of Carton Box (LXWXH)	mm	844X342X261
	Indoor Unit Dimension of Package (LXWXH)	mm	847X345X276
Indoor Unit Net Weight	kg	8	
Indoor Unit Gross Weight	kg	11	

Outdoor Unit	Outdoor Unit Model		ASH-09AIE	
	Outdoor Unit Product Code		CB146W25600	
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD	
	Compressor Model		QXA-A091zE190A	
	Compressor Oil		RB 68EP	
	Compressor Type		Rotary	
	Compressor Locked Rotor Amp (L.R.A)	A		20
	Compressor Rated Load Amp (RLA)	A		4.5
	Compressor Power Input	W		942
	Compressor Overload Protector			1NT11L-6233
	Throttling Method			Electron expansion valve
	Set Temperature Range	°C		16~30
	Cooling Operation Ambient Temperature Range	°C		18~43
	Heating Operation Ambient Temperature Range	°C		-7~24
	Condenser Form			Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm		Φ7
	Condenser Rows-fin Gap	mm		2-1.4
	Condenser Coil Length (LXDXW)	mm		710X19.05X508
	Outdoor Unit Fan Motor Speed	rpm		900
	Outdoor Unit Fan Motor Power Output	W		30
	Outdoor Unit Fan Motor RLA	A		0.24
	Outdoor Unit Fan Motor Capacitor	μF		/
	Outdoor Unit Air Flow Volume	m ³ /h		1600
	Outdoor Unit Fan Type			Axial-flow
	Outdoor Unit Fan Diameter	mm		Φ400
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa		4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa		2.5
	Outdoor Unit Sound Pressure Level (H/M/L)	dB (A)		51/-/-
Outdoor Unit Sound Power Level (H/M/L)	dB (A)		62/-/-	
Outdoor Unit Dimension (WXHDX)	mm		776X540X320	
Outdoor Unit Dimension of Carton Box (LXWXH)	mm		848X360X580	
Outdoor Unit Dimension of Package (LXWXH)	mm		851X363X595	
Outdoor Unit Net Weight	kg		28	
Outdoor Unit Gross Weight	kg		32	
Refrigerant			R410A	
Refrigerant Charge	kg		0.7	
Connection Pipe	Connection Pipe Length	m	5	
	Connection Pipe Gas Additional Charge	g/m	20	
	Outer Diameter of Liquid Pipe	mm	Φ6	
	Outer Diameter of Gas Pipe	mm	Φ9.52	
	Max Distance Height	m	10	
	Max Distance Length	m	15	

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

Model			ASH-12AIE
Power Supply	Rated Voltage	V~	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity(Min~Max)		W	3500(600~3960)
Heating Capacity(Min~Max)		W	3800(600~5130)
Cooling Power Input(Min~Max)		W	1150(220~1550)
Heating Power Input(Min~Max)		W	1100(220~1650)
Cooling Current Input		A	5.1
Heating Current Input		A	4.9
Rated Input		W	1650
Rated Cooling Current		A	6.9
Rated Heating Current		A	7.3
Air Flow Volume (SH/H/M/L)		m ³ /h	680/560/410/300
Dehumidifying Volume		L/h	1.4
EER		W/W	/
COP		W/W	/
SEER			5.1
SCOP			3.8
Application Area		m ²	16-24
Indoor Unit	Indoor Unit Fan Type		Cross-flow
	Indoor Unit Fan Diameter Length(DXL)	mm	Φ92X596
	Cooling Speed (SH/H/M/L)	r/min	1350/1150/950/750
	Heating Speed (SH/H/M/L)	r/min	1350/1190/1020/850
	Indoor Unit Fan Motor Power Output	W	10
	Indoor Unit Fan Motor RLA	A	0.16
	Indoor Unit Fan Motor Capacitor	μF	1.2
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	mm	610X24X294
	Swing Motor Model		MP24BA
	Swing Motor Power Output	W	1.5
	Fuse Current	A	3.15
	Indoor Unit Sound Pressure Level (SH/H/M/L)	dB (A)	42/39/31/25
	Indoor Unit Sound Power Level (SH/H/M/L)	dB (A)	56/53/45/39
	Indoor Unit Dimension (WXHXD)	mm	770X283X201
	Indoor Unit Dimension of Carton Box (LXWXH)	mm	844X342X261
Indoor Unit Dimension of Package (LXWXH)	mm	847X352X276	
Indoor Unit Net Weight	kg	9	
Indoor Unit Gross Weight	kg	12	

Outdoor Unit	Outdoor Unit Model		ASH-12AIE	
	Outdoor Unit Product Code		CB146W25700	
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD	
	Compressor Model		QXA-A091zE190A	
	Compressor Oil		RB 68EP	
	Compressor Type		Rotary	
	Compressor Locked Rotor Amp (L.R.A)	A		20
	Compressor Rated Load Amp (RLA)	A		4.5
	Compressor Power Input	W		942
	Compressor Overload Protector			1NT11L-6233
	Throttling Method			Electron expansion valve
	Set Temperature Range	°C		16~30
	Cooling Operation Ambient Temperature Range	°C		18~43
	Heating Operation Ambient Temperature Range	°C		-7~24
	Condenser Form			Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm		Φ9.52
	Condenser Rows-fin Gap	mm		2-1.4
	Condenser Coil Length (LXDXW)	mm		710X38.1X508
	Outdoor Unit Fan Motor Speed	rpm		860
	Outdoor Unit Fan Motor Power Output	W		35
	Outdoor Unit Fan Motor RLA	A		0.3
	Outdoor Unit Fan Motor Capacitor	μF		2.5
	Outdoor Unit Air Flow Volume	m ³ /h		1800
	Outdoor Unit Fan Type			Axial-flow
	Outdoor Unit Fan Diameter	mm		Φ394.5
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa		4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa		2.5
	Outdoor Unit Sound Pressure Level (H/M/L)	dB (A)		53/-/-
Outdoor Unit Sound Power Level (H/M/L)	dB (A)		62/-/-	
Outdoor Unit Dimension (WXHXD)	mm		848X540X320	
Outdoor Unit Dimension of Carton Box (LXWXH)	mm		878X360X580	
Outdoor Unit Dimension of Package (LXWXH)	mm		881X363X595	
Outdoor Unit Net Weight	kg		30	
Outdoor Unit Gross Weight	kg		33.5	
Refrigerant			R410A	
Refrigerant Charge	kg		1	
Connection Pipe	Connection Pipe Length	m	5	
	Connection Pipe Gas Additional Charge	g/m	20	
	Outer Diameter of Liquid Pipe	mm	Φ6	
	Outer Diameter of Gas Pipe	mm	Φ9.52	
	Max Distance Height	m	10	
	Max Distance Length	m	20	

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

Model			ASH-18AIE
Power Supply	Rated Voltage	V~	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity(Min~Max)		W	5275(1200~6200)
Heating Capacity(Min~Max)		W	5570(1100~6000)
Cooling Power Input(Min~Max)		W	1600(380~2650)
Heating Power Input(Min~Max)		W	1750(350~2650)
Cooling Current Input		A	7.1
Heating Current Input		A	7.8
Rated Input		W	2650
Rated Cooling Current		A	11.8
Rated Heating Current		A	11.8
Air Flow Volume (SH/H/M/L)		m ³ /h	800/680/560/460
Dehumidifying Volume		L/h	1.8
EER		W/W	3.30
COP		W/W	3.18
SEER			5.4
SCOP			3,8
Application Area		m ²	23-34
Indoor Unit	Indoor Unit Fan Type		Cross-flow
	Indoor Unit Fan Diameter Length(DXL)	mm	Φ98X650
	Cooling Speed (SH/H/M/L)	r/min	1350/1100/950/800
	Heating Speed (SH/H/M/L)	r/min	1400/1200/1050/900
	Indoor Unit Fan Motor Power Output	W	20
	Indoor Unit Fan Motor RLA	A	0.31
	Indoor Unit Fan Motor Capacitor	μF	1.5
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.4
	Evaporator Coil Length (LXDXW)	mm	657X25.4X304.8
	Swing Motor Model		MP28VB
	Swing Motor Power Output	W	2
	Fuse Current	A	3.15
	Indoor Unit Sound Pressure Level (SH/H/M/L)	dB (A)	49/44/40/35
	Indoor Unit Sound Power Level (SH/H/M/L)	dB (A)	60/55/51/46
	Indoor Unit Dimension (WXHXD)	mm	867X305X215
	Indoor Unit Dimension of Carton Box (LXWXH)	mm	945X380X295
Indoor Unit Dimension of Package (LXWXH)	mm	948X383X310	
Indoor Unit Net Weight	kg	12	
Indoor Unit Gross Weight	kg	15	

Outdoor Unit	Outdoor Unit Model		ASH-18AIE	
	Outdoor Unit Product Code		CB146W25900	
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD	
	Compressor Model		QXA-B141zF030A	
	Compressor Oil		68EP	
	Compressor Type		Rotary	
	Compressor Locked Rotor Amp (L.R.A)	A		25
	Compressor Rated Load Amp (RLA)	A		7.2
	Compressor Power Input	W		1440
	Compressor Overload Protector			1NT11L-6233 KSD115°C HPC115/95U1
	Throttling Method			Capillary
	Set Temperature Range	°C		16~30
	Cooling Operation Ambient Temperature Range	°C		18~43
	Heating Operation Ambient Temperature Range	°C		-7~24
	Condenser Form			Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm		Φ7
	Condenser Rows-fin Gap	mm		2-1.4
	Condenser Coil Length (LXDXW)	mm		851X38.1X660
	Outdoor Unit Fan Motor Speed	rpm		750
	Outdoor Unit Fan Motor Power Output	W		60
	Outdoor Unit Fan Motor RLA	A		0.28
	Outdoor Unit Fan Motor Capacitor	μF		/
	Outdoor Unit Air Flow Volume	m ³ /h		3200
	Outdoor Unit Fan Type			Axial-flow
	Outdoor Unit Fan Diameter	mm		Φ520
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa		4.3
	Permissible Excessive Operating Pressure for the Suction Side	MPa		2.5
Outdoor Unit Sound Pressure Level (H/M/L)	dB (A)		55/-/-	
Outdoor Unit Sound Power Level (H/M/L)	dB (A)		65/-/-	
Outdoor Unit Dimension (WXHxD)	mm		955X700X396	
Outdoor Unit Dimension of Carton Box (LXWXH)	mm		1026X455X735	
Outdoor Unit Dimension of Package (LXWXH)	mm		1029X458X750	
Outdoor Unit Net Weight	kg		46	
Outdoor Unit Gross Weight	kg		50	
Refrigerant			R410A	
Refrigerant Charge	kg		1.3	
Connection Pipe	Connection Pipe Length	m	5	
	Connection Pipe Gas Additional Charge	g/m	20	
	Outer Diameter of Liquid Pipe	mm	Φ6	
	Outer Diameter of Gas Pipe	mm	Φ12	
	Max Distance Height	m	10	
Max Distance Length	m	25		

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

Model			ASH-24AIE
Power Supply	Rated Voltage	V~	220-240
	Rated Frequency	Hz	50
	Phases		1
Power Supply Mode			Indoor
Cooling Capacity(Min~Max)		W	6450(2530~6550)
Heating Capacity(Min~Max)		W	7000(2530~7600)
Cooling Power Input(Min~Max)		W	2180(600~2650)
Heating Power Input(Min~Max)		W	2220(600~2800)
Cooling Current Input		A	9.7
Heating Current Input		A	10.5
Rated Input		W	2800
Rated Cooling Current		A	10.5
Rated Heating Current		A	12.5
Air Flow Volume (SH/H/M/L)		m ³ /h	1000/800/700/550
Dehumidifying Volume		L/h	2
EER		W/W	3.00
COP		W/W	3.15
SEER			5.1
SCOP			3.8
Application Area		m ²	27-42
Indoor Unit	Indoor Unit Fan Type		Cross-flow
	Indoor Unit Fan Diameter Length(DXL)	mm	Φ98X765
	Cooling Speed (SH/H/M/L)	r/min	1350/1150/1000/850
	Heating Speed (SH/H/M/L)	r/min	1400/1200/1000/900
	Indoor Unit Fan Motor Power Output	W	35
	Indoor Unit Fan Motor RLA	A	0.31
	Indoor Unit Fan Motor Capacitor	μF	2.5
	Evaporator Form		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-fin Gap	mm	2-1.5
	Evaporator Coil Length (LXD _X W)	mm	765X25.4X342.9
	Swing Motor Model		MP35XX
	Swing Motor Power Output	W	2.5
	Fuse Current	A	3.15
	Indoor Unit Sound Pressure Level (SH/H/M/L)	dB (A)	51/47/42/37
	Indoor Unit Sound Power Level (SH/H/M/L)	dB (A)	63/57/53/49
	Indoor Unit Dimension (WXHXD)	mm	1008X319X221
	Indoor Unit Dimension of Carton Box (LXWXH)	mm	1073X395X313
Indoor Unit Dimension of Package (LXWXH)	mm	1076X398X328	
Indoor Unit Net Weight	kg	14.5	
Indoor Unit Gross Weight	kg	17.5	

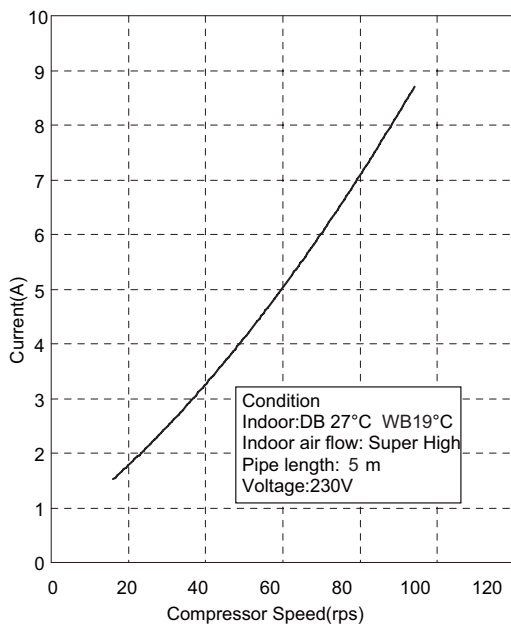
Outdoor Unit	Outdoor Unit Model		ASH-24AIE
	Outdoor Unit Product Code		CB146W26000
	Compressor Manufacturer		ZHUHAI LANDA COMPRESSOR CO.,LTD
	Compressor Model		QXA-B141zF030A
	Compressor Oil		RB 68EP
	Compressor Type		Rotary
	Compressor Locked Rotor Amp (L.R.A)	A	25
	Compressor Rated Load Amp (RLA)	A	7.2
	Compressor Power Input	W	1440
	Compressor Overload Protector		1NT11L-6233 KSD115°C HPC115/95U1
	Throttling Method		Capillary
	Set Temperature Range	°C	16~30
	Cooling Operation Ambient Temperature Range	°C	18~43
	Heating Operation Ambient Temperature Range	°C	-7~24
	Condenser Form		Aluminum Fin-copper Tube
	Condenser Pipe Diameter	mm	Φ7
	Condenser Rows-fin Gap	mm	2-1.4
	Condenser Coil Length (LXDXW)	mm	984X38.1X748
	Outdoor Unit Fan Motor Speed	rpm	800
	Outdoor Unit Fan Motor Power Output	W	90
	Outdoor Unit Fan Motor RLA	A	0.5
	Outdoor Unit Fan Motor Capacitor	μF	/
	Outdoor Unit Air Flow Volume	m ³ /h	4000
	Outdoor Unit Fan Type		Axial-flow
	Outdoor Unit Fan Diameter	mm	Φ552
	Defrosting Method		Automatic Defrosting
	Climate Type		T1
	Isolation		I
	Moisture Protection		IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	4.3
Permissible Excessive Operating Pressure for the Suction Side	MPa	2.5	
Outdoor Unit Sound Pressure Level (H/M/L)	dB (A)	58/-/-	
Outdoor Unit Sound Power Level (H/M/L)	dB (A)	68/-/-	
Outdoor Unit Dimension (WXHXD)	mm	980X790X427	
Outdoor Unit Dimension of Carton Box (LXWXH)	mm	1080X485X840	
Outdoor Unit Dimension of Package (LXWXH)	mm	1083X488X855	
Outdoor Unit Net Weight	kg	55.5	
Outdoor Unit Gross Weight	kg	60.5	
Refrigerant		R410A	
Refrigerant Charge	kg	1.8	
Connection Pipe	Connection Pipe Length	m	5
	Connection Pipe Gas Additional Charge	g/m	50
	Outer Diameter of Liquid Pipe	mm	Φ6
	Outer Diameter of Gas Pipe	mm	Φ16
	Max Distance Height	m	10
	Max Distance Length	m	25

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

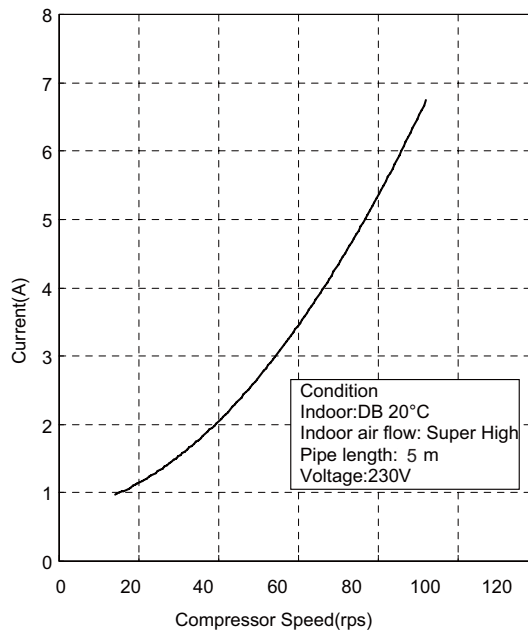
2.2 Operation Characteristic Curve

ASH-09AIE & ASH-12AIE Units

Cooling

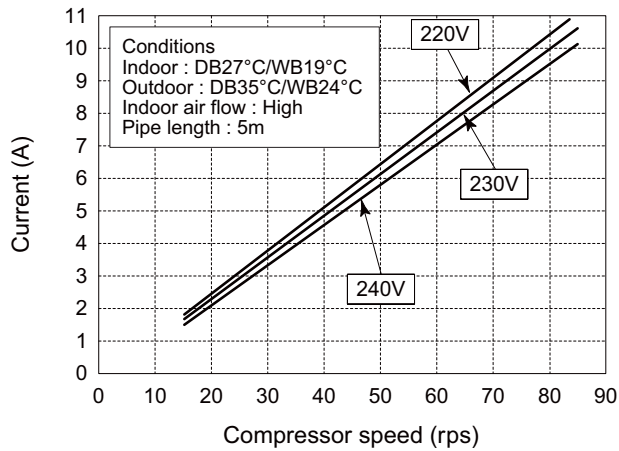


Heating

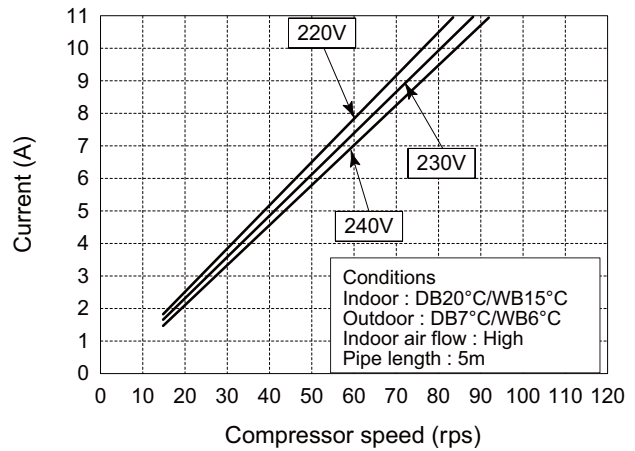


ASH-18AIE Unit

Cooling

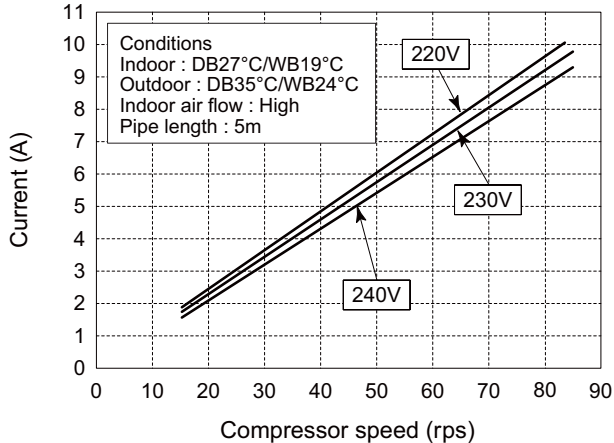


Heating

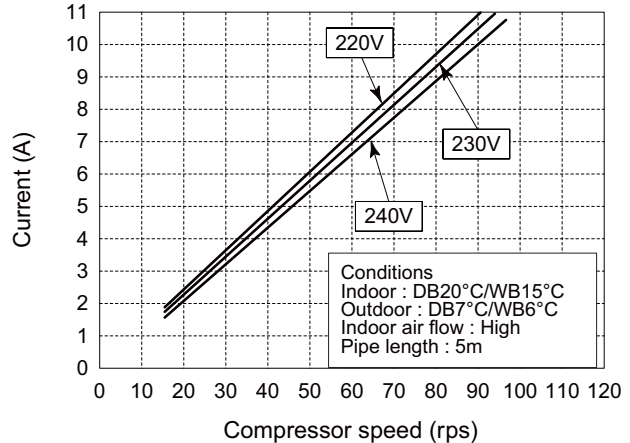


ASH-24AIE Unit

Cooling



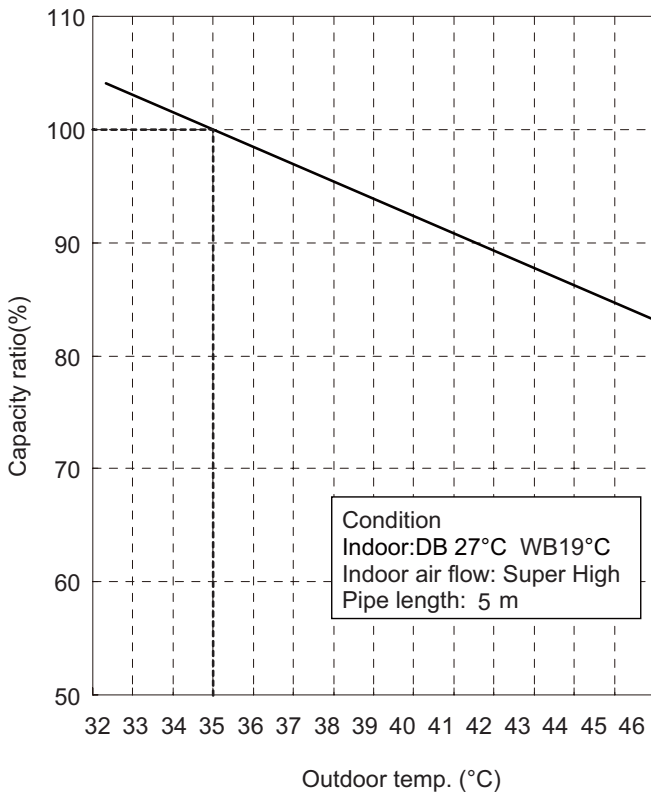
Heating



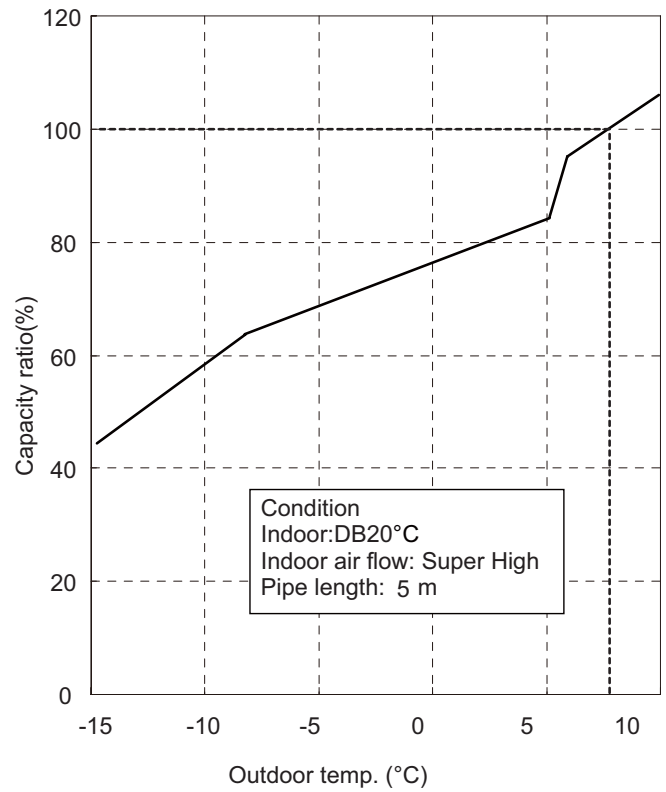
2.3 Capacity Variation Ratio According to Temperature

ASH-09AIE & ASH-12AIE Units

Cooling

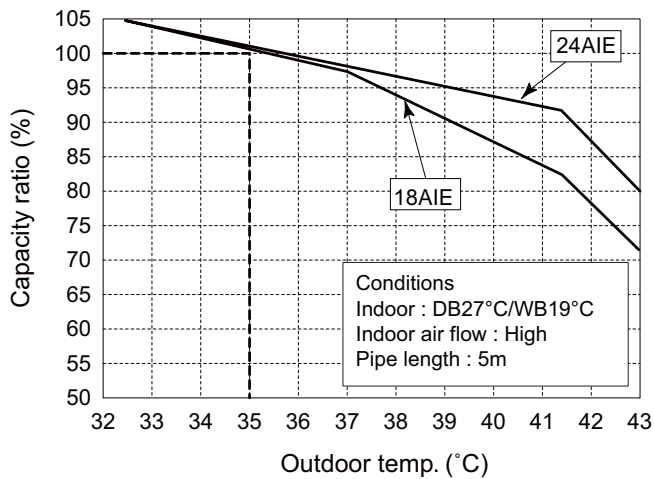


Heating

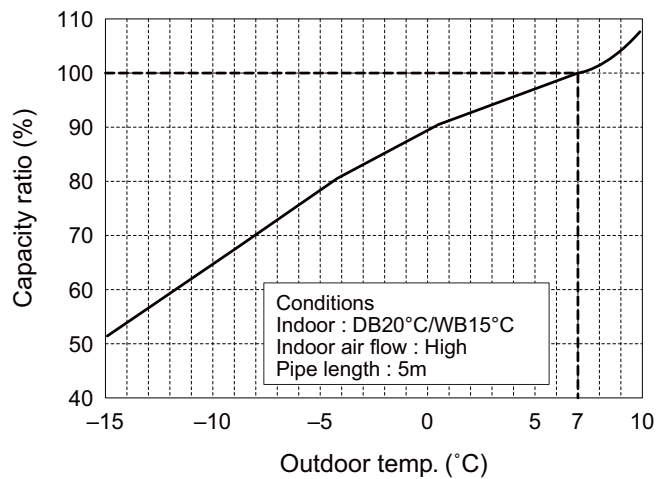


ASH-18AIE & ASH-24AIE Units

Cooling



Heating



2.4 Operation Data

Cooling

Temperature condition (°C)		Model name	Standard pressure	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor revolution (rps)
Indoor	Outdoor			P (MPa)	T1 (°C)			
27/19	35/24	ASH-09AIE	0.9 to 1.1	12 to 14	75 to 37	Super High	High	/
		ASH-12AIE	0.8 to 1.0	10 to 12	85 to 43			73
		ASH-18AIE	0.9 to 1.1	12 to 14	70 to 40			80
		ASH-24AIE	0.8 to 1.0	10 to 12	72 to 40			

Heating

Temperature condition (°C)		Model name	Standard pressure	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor revolution (rps)
Indoor	Outdoor			P (MPa)	T1 (°C)			
20/15	7/6	ASH-09AIE	2.4 to 2.6	70 to 35	2 to 4	Super High	High	/
		ASH-12AIE	2.4 to 2.6					
		ASH-18AIE	2.5 to 2.7	70 to 35	2 to 4			69
		ASH-24AIE	2.5 to 2.7	70 to 35	0 to 3			75

T1: Outlet and inlet pipe temperature of evaporator

T2: Outlet and inlet pipe temperature of condenser

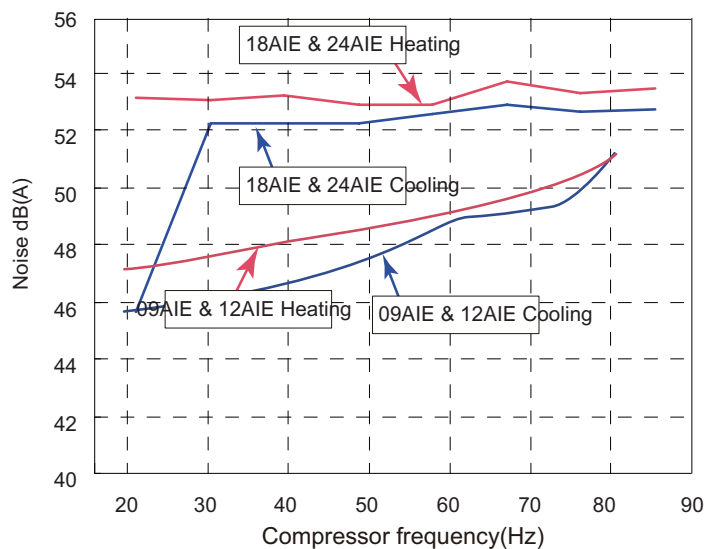
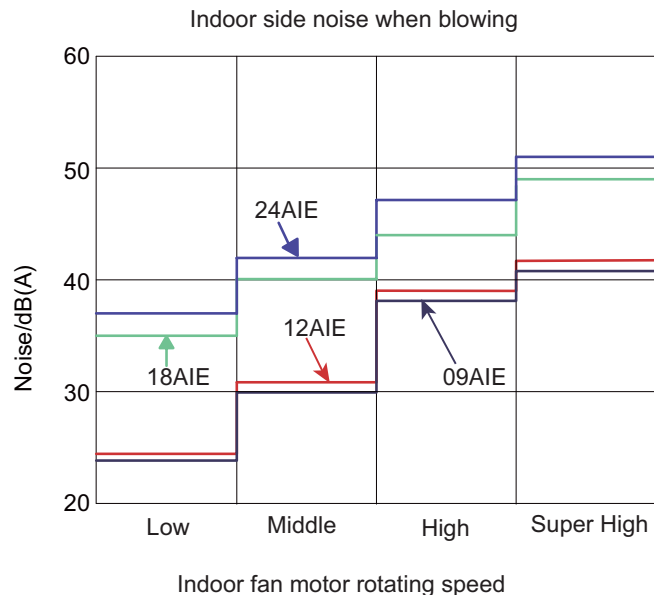
P: Pressure of air pipe used for connecting outdoor and indoor units

NOTES :

(1) Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent. (Thermistor themometer)

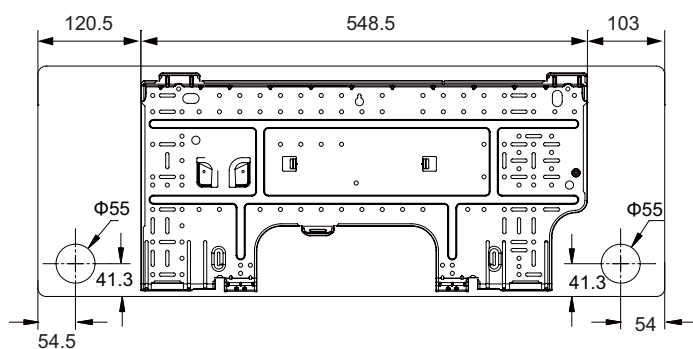
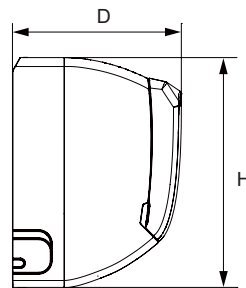
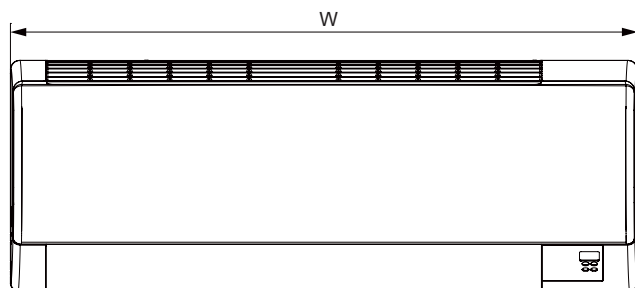
(2) Connecting piping condition :5m

2.5 Noise Criteria Curve Tables for both Models

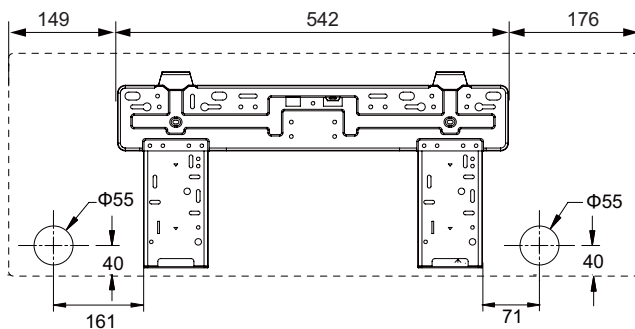


3. Construction Views

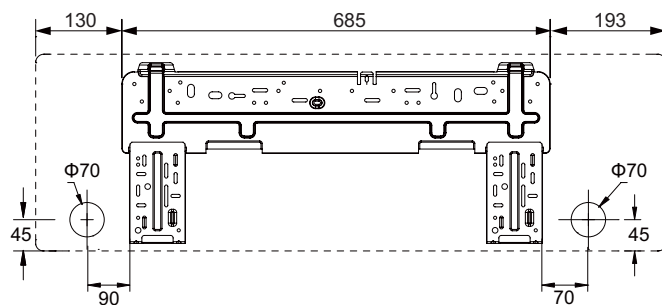
3.1 Indoor Unit



ASH-09AIE & ASH-12AIE Units



ASH-18AIE Unit



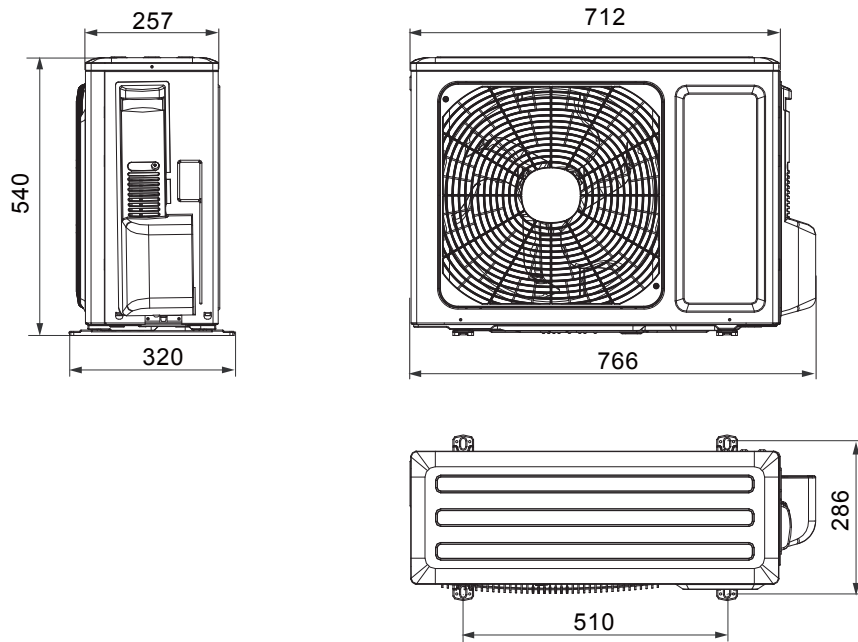
ASH-24AIE Unit

unit:mm

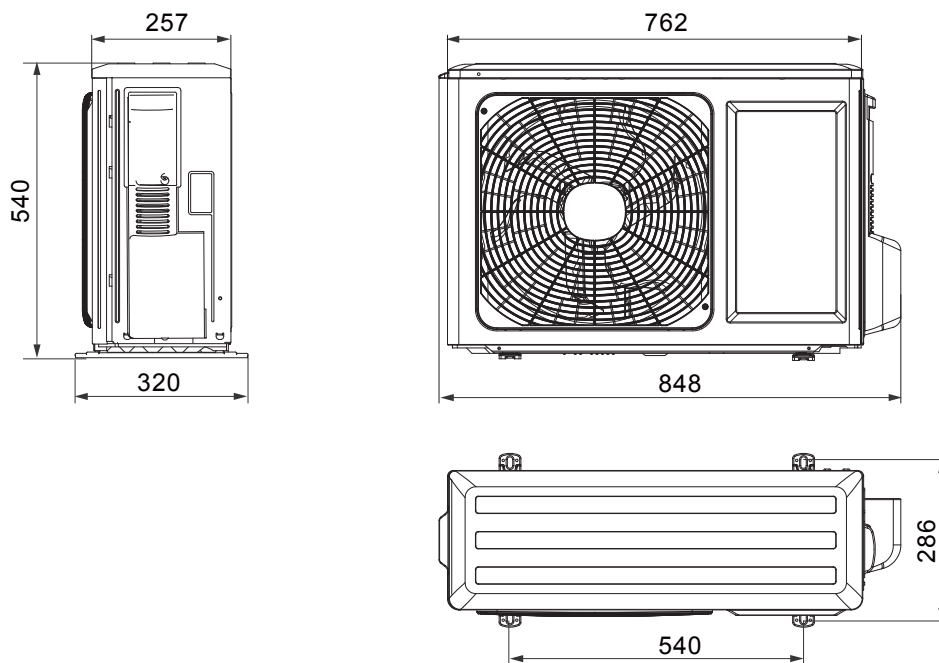
Models	W	H	D
09 & 12	770	283	201
18	867	305	215
24	1008	319	221

3.2 Outdoor Unit

(1) ASH-09AIE

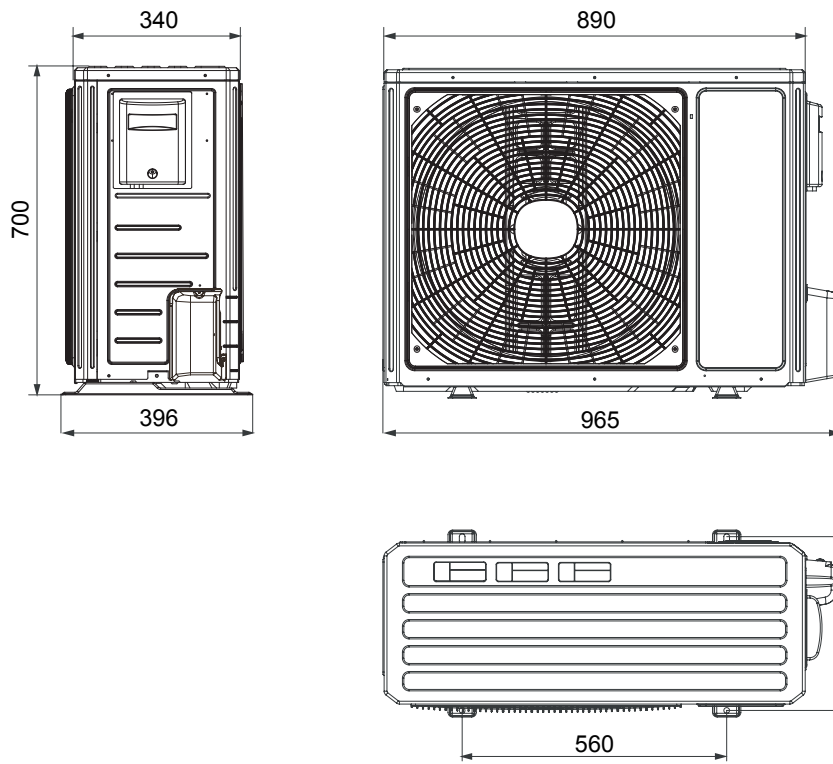


(2) ASH-12AIE

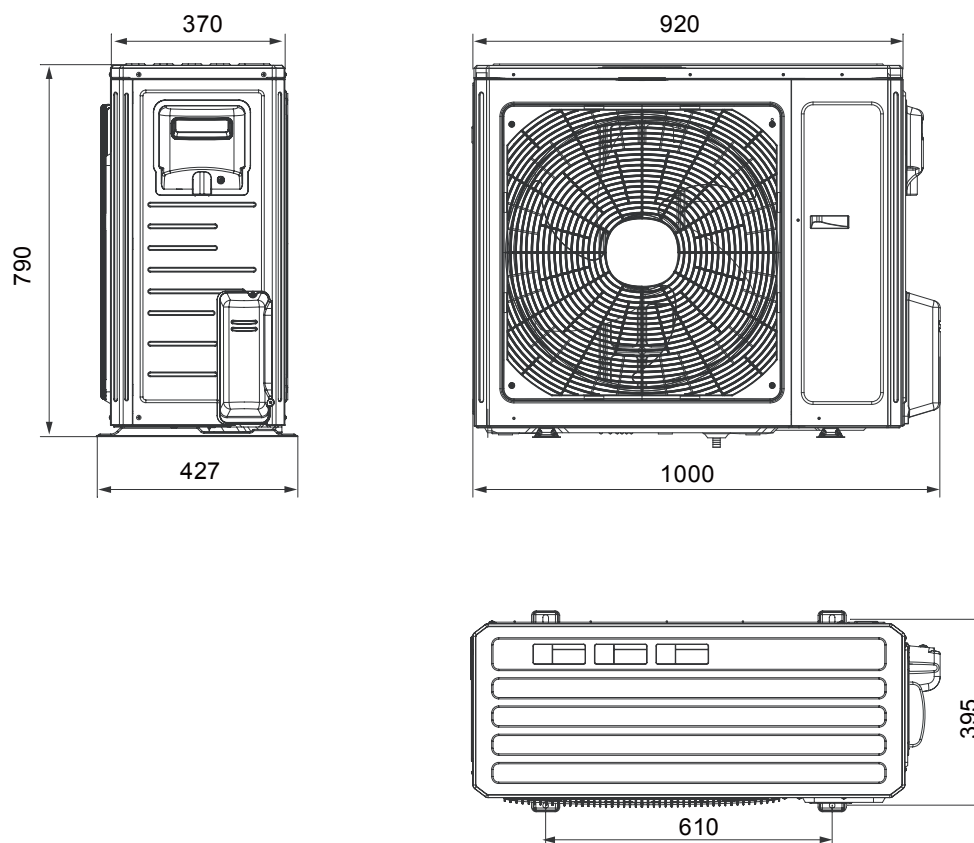


unit:mm

(3) ASH-18AIE

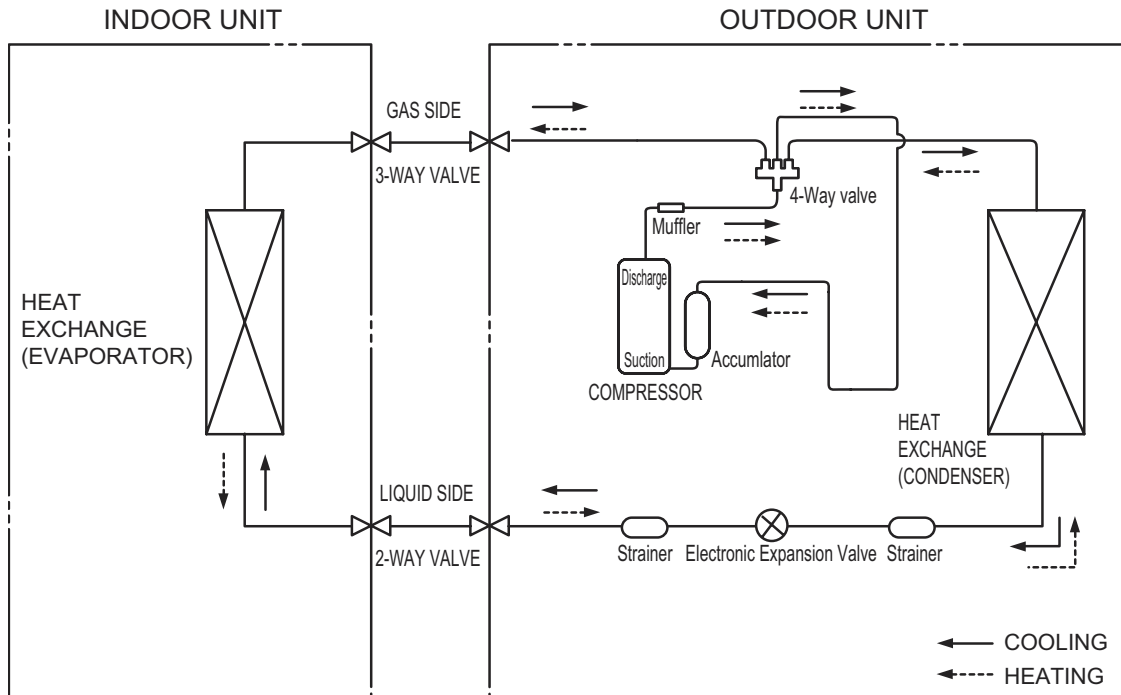


(4) ASH-24AIE



4. Refrigerant System Diagram

(1) ASH-09AIE & ASH-12AIE Units

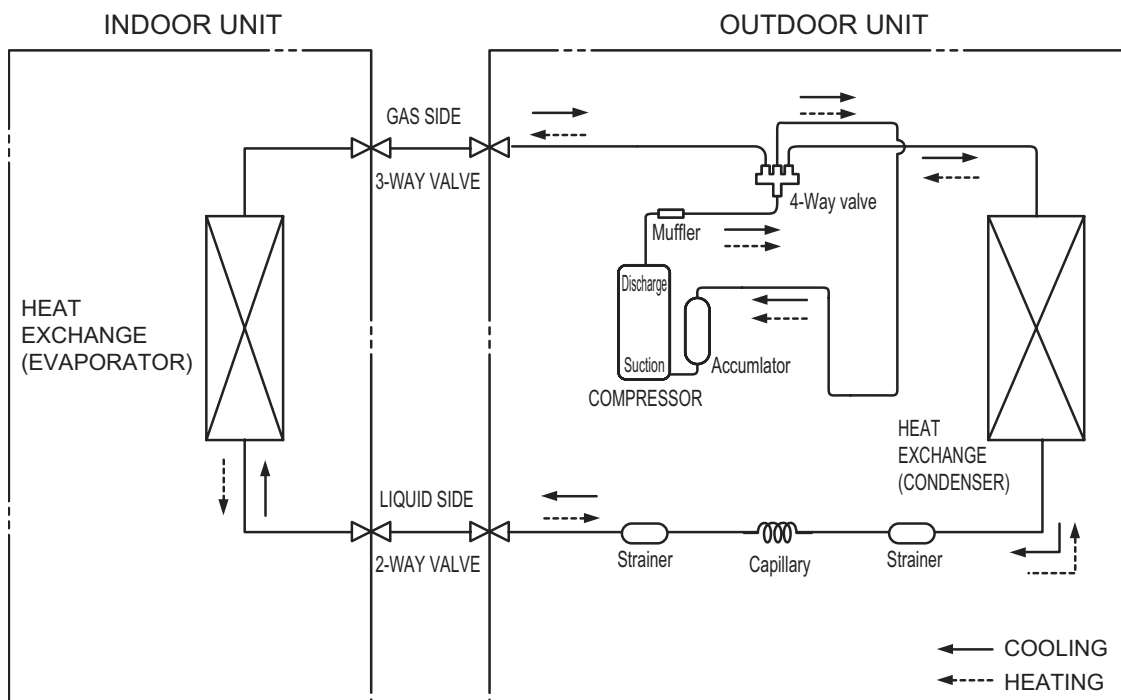


Refrigerant pipe diameter

Liquid : 1/4" (6 mm)

Gas : 3/8" (9.52 mm)

(2) ASH-18AIE & ASH-24AIE Units



Refrigerant pipe diameter

Liquid : 1/4" (6 mm)

Gas : 1/2" (12 mm) (ASH-18AIE Unit)


Gas : 5/8" (16 mm) (ASH-24AIE Unit)

5. Schematic Diagram


5.1 Electrical Data

Meaning of marks

●Indoor Unit

Symbol	Color Symbol	symbol	Color Symbol
BU	BLUE	BN	BROWN
YE	YELLOW	BK	BLACK
RD	RED	Symbol	Parts Name
YEGN	YELLOW GREEN		PROTECTIVE EARTH

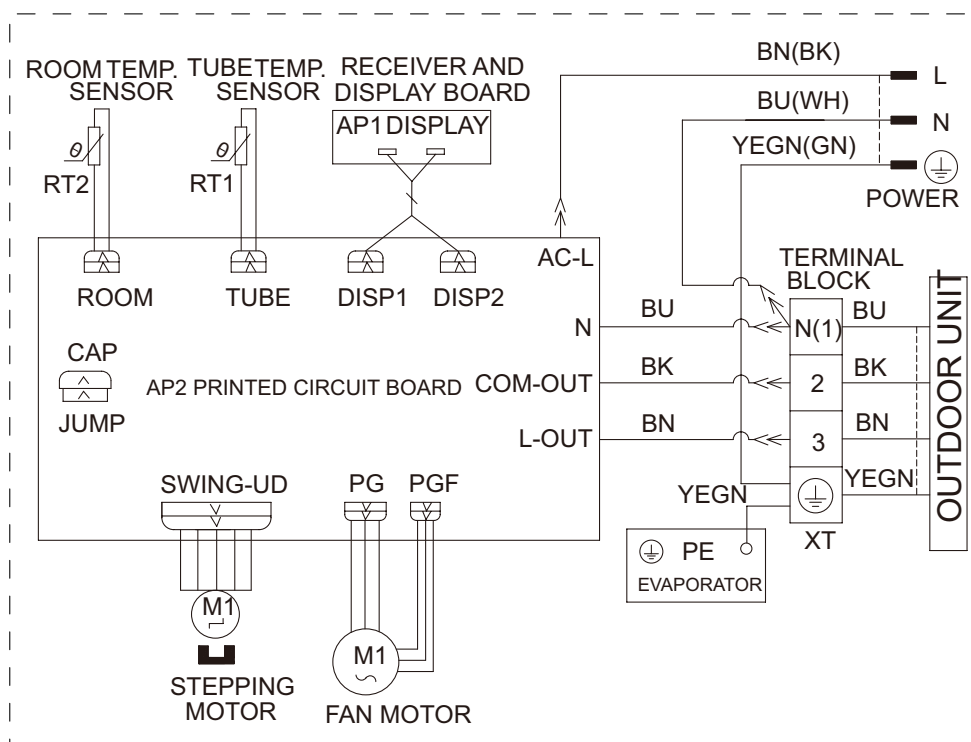
●Outdoor Unit

Symbol	Parts Name	Symbol	Color Symbol
SAT	OVERLOAD	RD	RED
COMP	COMPRESSOR	BN	BROWN
	PROTECTIVE EARTH	BU	BLUE
Symbol	Color Symbol	BK	BLACK
WH	WHITE	YEGN	YELLOW GREEN
YE	YELLOW	/	/

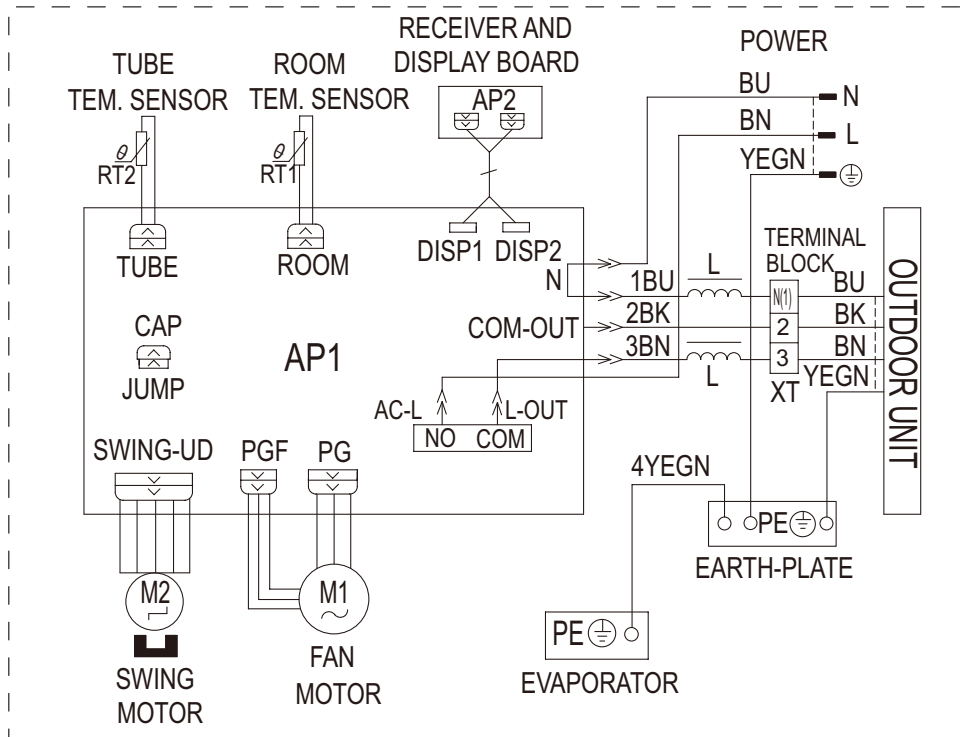
5.2 Electrical Wiring

●Indoor Unit

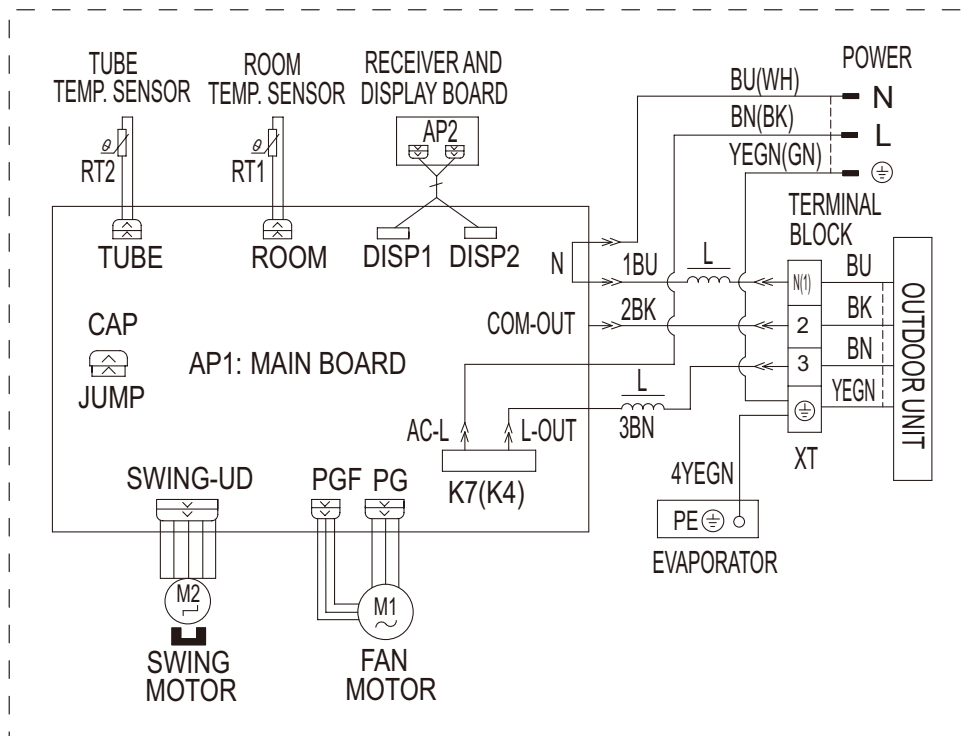
Only applicable for the ASH-09AIE & ASH-12AIE models without cold plasma



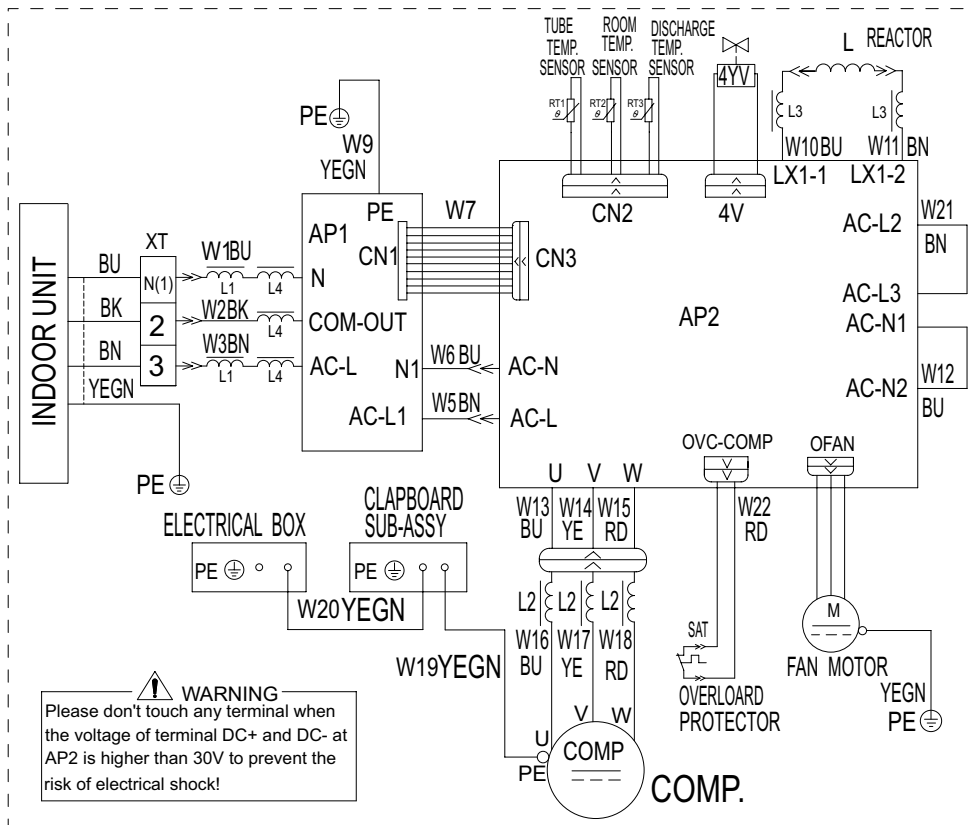
Only applicable for the ASH-18AIE models without cold plasma



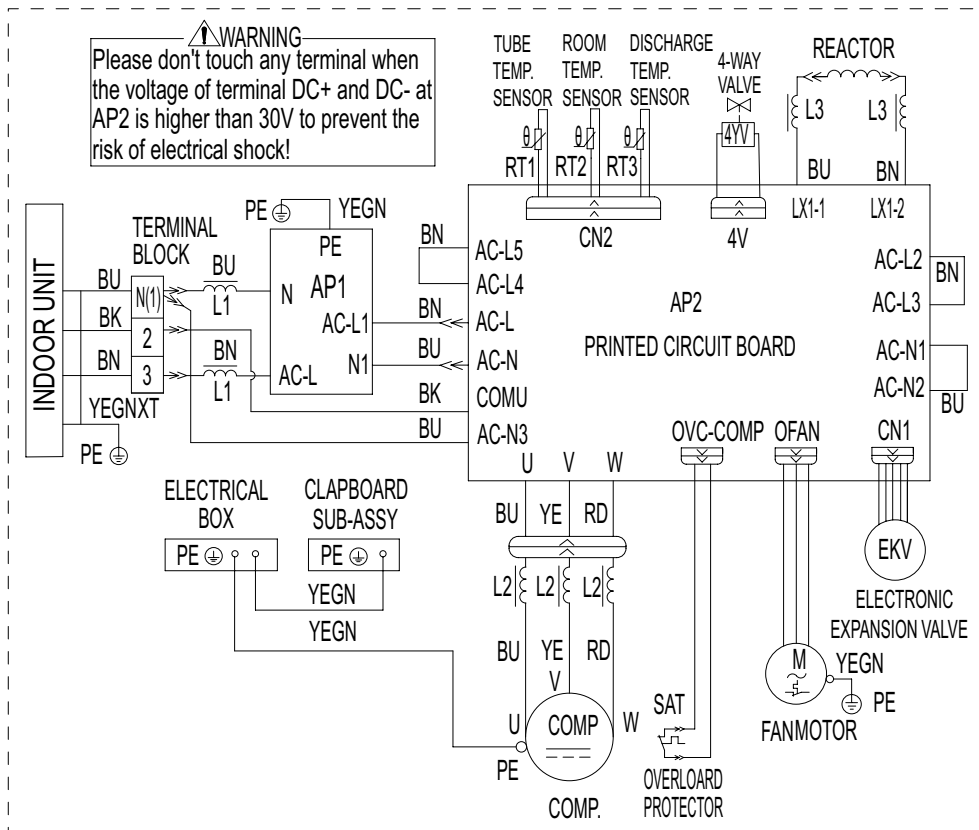
Only applicable for the ASH-24AIE models without cold plasma



Outdoor unit ASH-09AIE



Outdoor unit ASH-12AIE



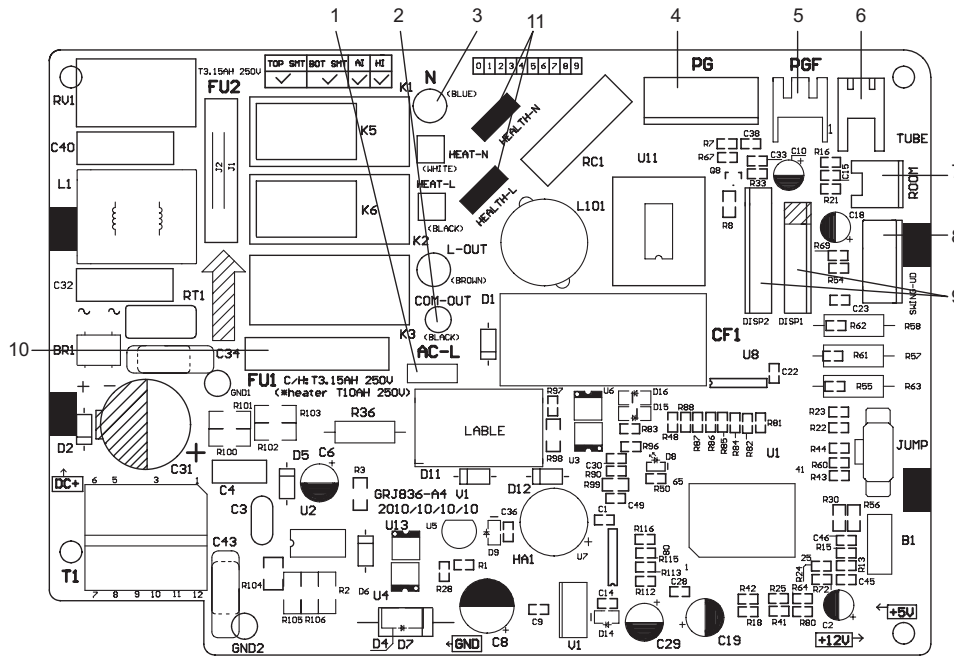
These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

5.3 Printed Circuit Board

(1) Indoor Unit

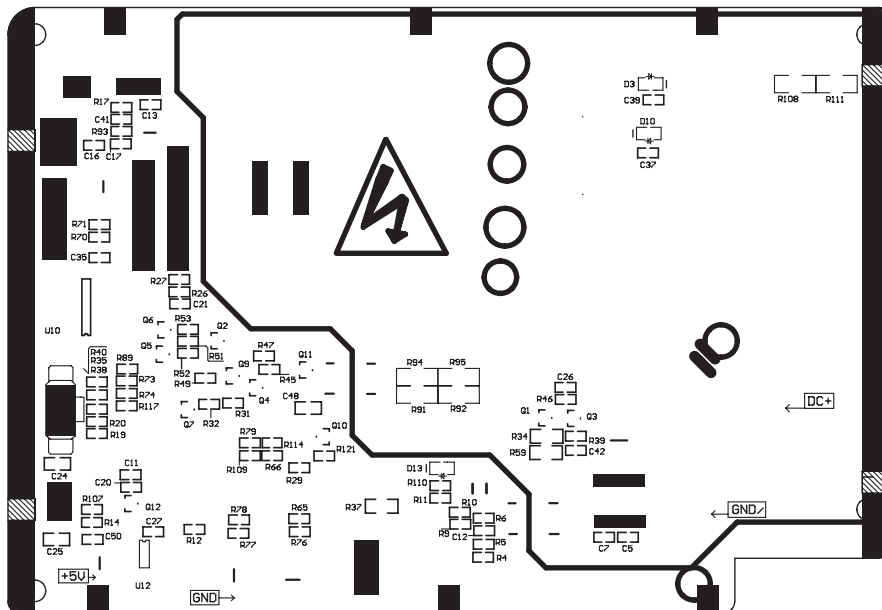
ASH-09AIE & ASH-12AIE Units

●TOP VIEW



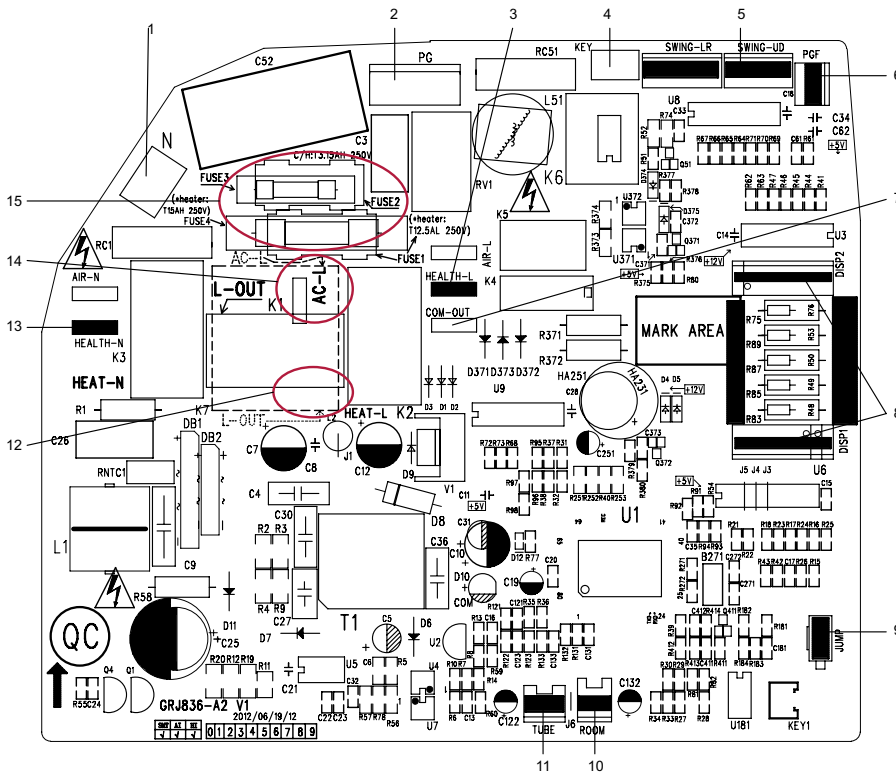
NO.	Name
1	Interface of input live wire
2	Interface of communication wire
3	Interface of input neutral wire
4	PG motor control interface
5	Feedback interface from PF motor
6	Interface of pipe temperature sensor
7	Interface of ambient temperature sensor
8	Interface of swing motor
9	Display interface
10	Protective tube
11	Interface of health wire

●BOTTOM VIEW



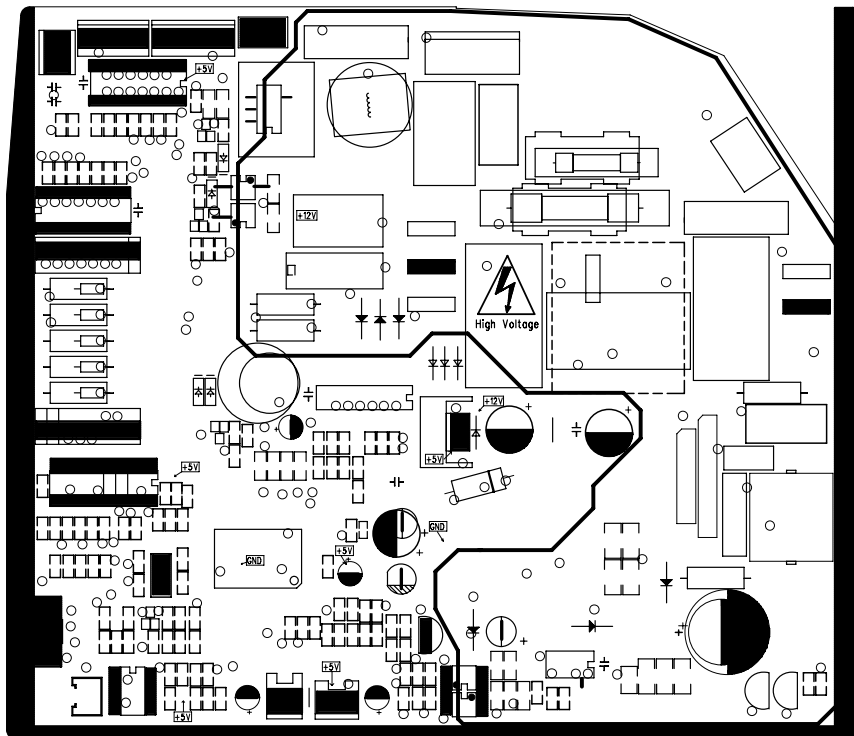
ASH-18AIE & ASH-24AIE Units

●TOP VIEW



1	Interface of neutral wire
2	Interface of PG motor
3	Interface of health function live wire
4	Interface of auto button
5	Interface of up and down swing
6	Interface of PG feedback
7	Interface of indoor and outdoor unit communication
8	Interface of display
9	Interface of jumper cap
10	Interface of ambient temperature sensor
11	Interface of tube temperature sensor
12	Power supply interface of outdoor live wire
13	Interface of health function neutral wire
14	Interface of live wire
15	Interface of fuse

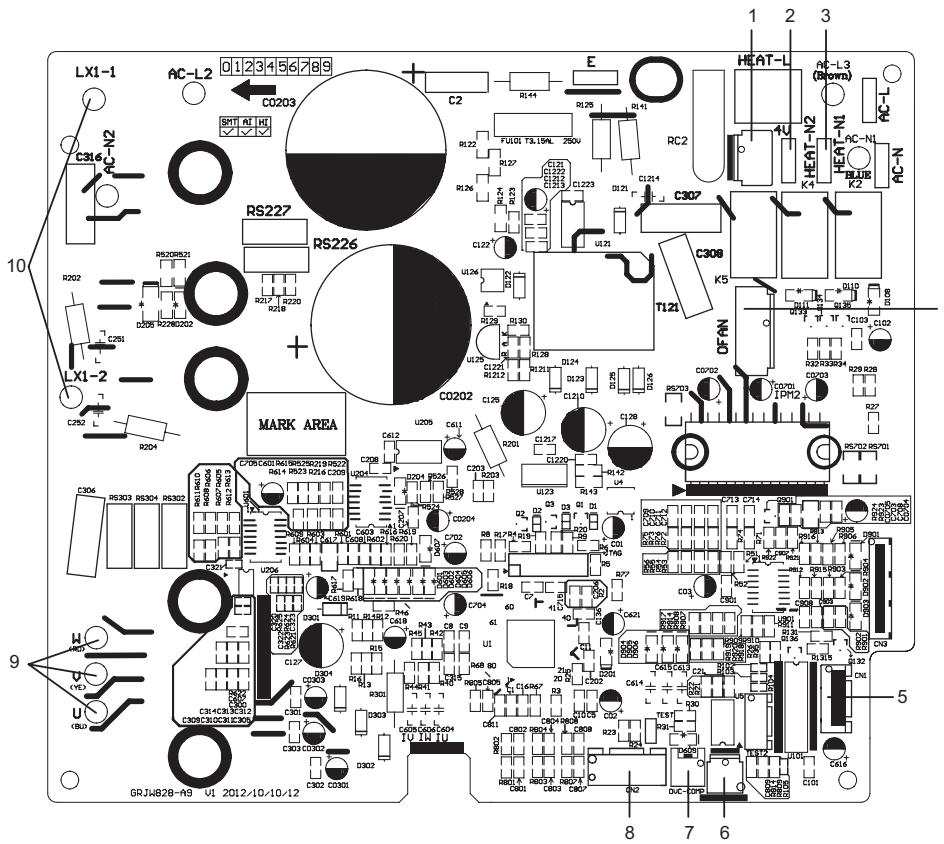
●BOTTOM VIEW



(2) Outdoor Unit

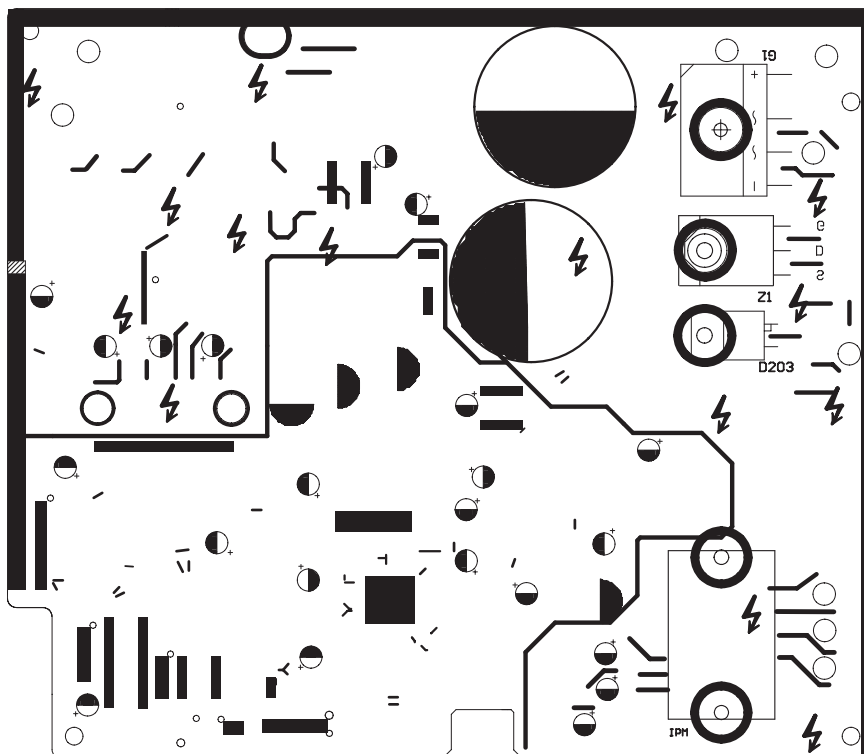
ASH-09AIE

●TOP VIEW



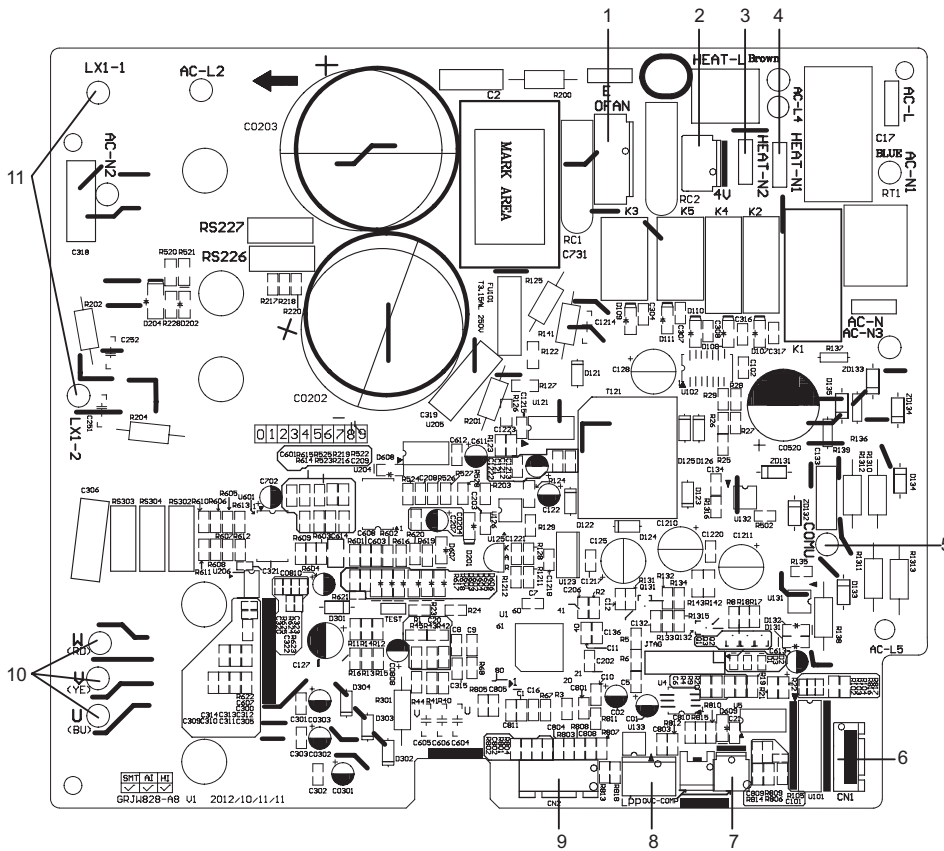
No.	Name
1	Interface of 4-way valve
2	Electric heating interface of compressor
3	Electric heating interface of chassis
4	Interface of fan
5	Interface of electronic expansion valve
6	Overload protection interface
7	Interface of low-pressure valve
8	Interface of temperature sensor
9	U, V, W three-phase interface of compressor
10	Interface of induction

●BOTTOM VIEW



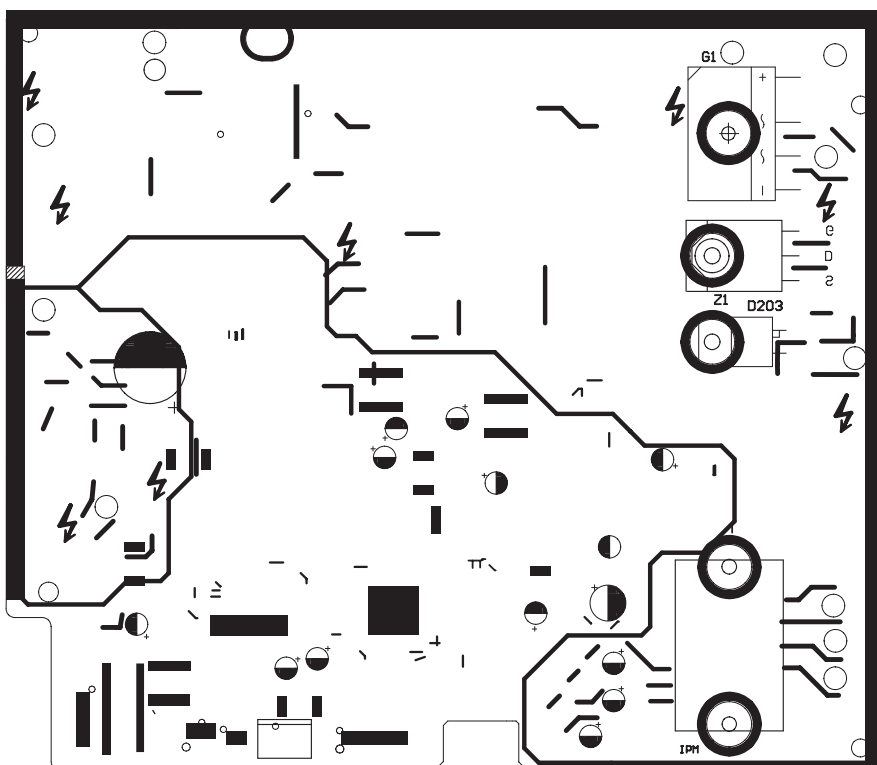
ASH-12AIE

●TOP VIEW



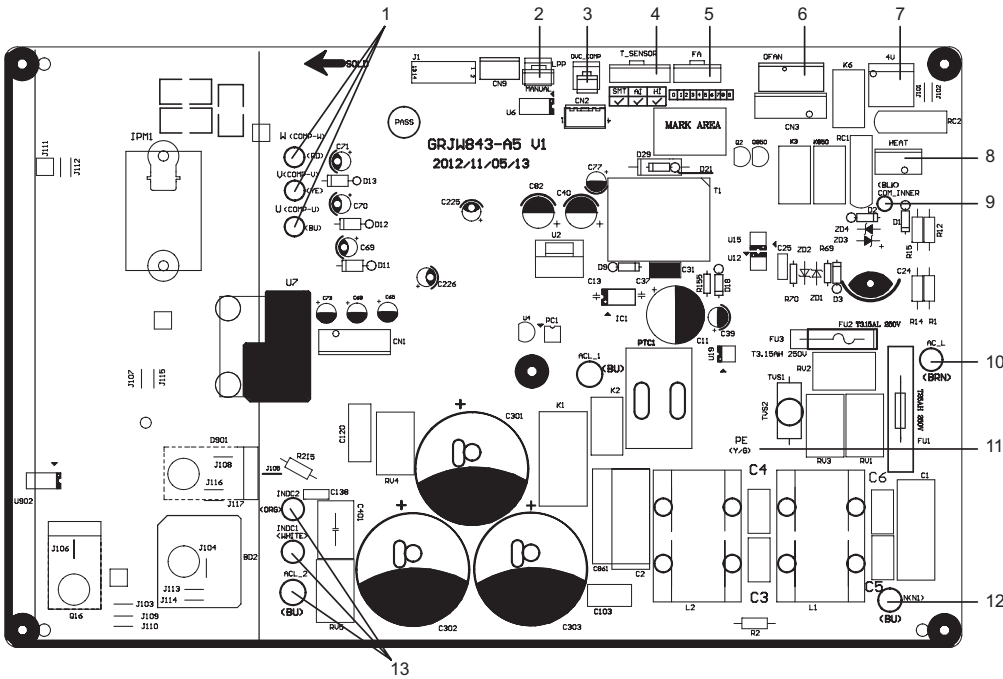
No.	Name
1	Interface of fan
2	Interface of 4-way valve
3	Electric heating interface of compressor
4	Electric heating interface of chassis
5	Interface of communication wire
6	Interface of electronic expansion valve
7	Overload protection interface
8	Interface of low-pressure valve
9	Interface of temperature sensor
10	U, V, W three-phase interface of compressor
11	Interface of induction

●BOTTOM VIEW



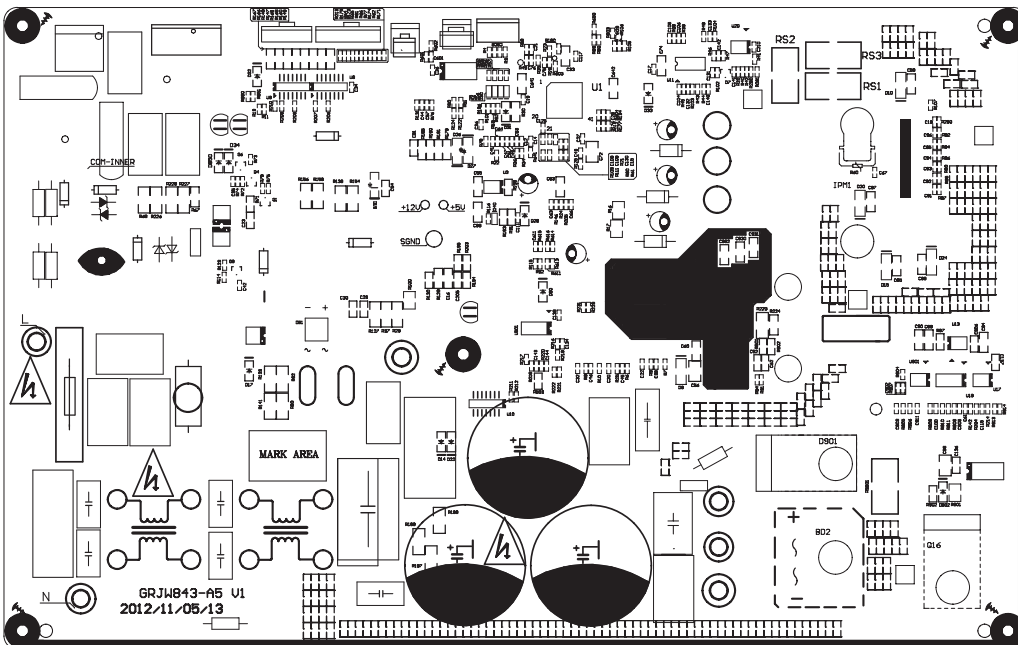
ASH-18AIE & ASH-24AIE

●TOP VIEW



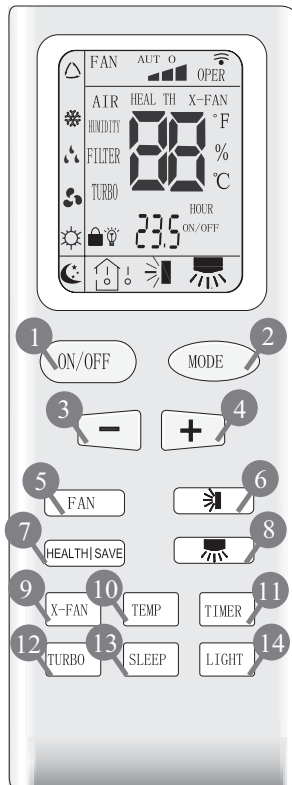
No.	Name
1	Wiring terminal of compressor
2	Low-pressure protection terminal
3	Overload protection terminal of compressor
4	Temperature sensor terminal of outdoor unit
5	Electronic expansion valve
6	Terminal of outdoor fan
7	Terminal of 4-way valve
8	Electric heating wiring terminal of chassis
9	Communication wire connected with indoor unit
10	Live wire
11	Earthing wire
12	Neutral wire
13	PFC induction wire

●BOTTOM VIEW



6. Function and Control

6.1 Remote Control Operations



Note: This remote controller is universal and can be used for multi-functional air conditioning. If the button on the remote controller with the function which the air conditioner doesn't have is pressed, the unit remains in its original operating mode.

1 ON/OFF

Press it to start or stop operation.

2 MODE

Press it to select operation mode (AUTO/COOL/DRY/FAN/HEAT).

3 -

Press it to decrease temperature setting.

4 +

Press it to increase temperature setting.

5 FAN

Press it to set fan speed.



6

Press it to set swing angle.



7 HEALTHSAVE

Press it to turn on or off health function.



8

Press it to set left & right swing angle.

9 X-FAN (X-FAN is the alternative expression of BLOW for the purpose of understanding.)

10 TEMP

11 TIMER

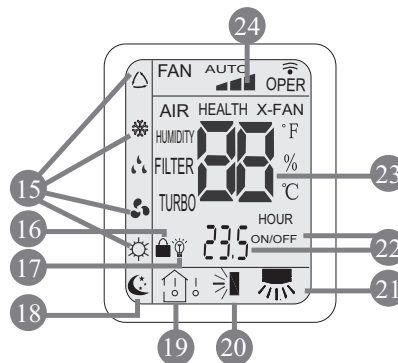
Press it to set timer ON/ timer OFF.

12 TURBO

13 SLEEP

14 LIGHT

Press it to turn on/off the light.



15 MODE icon:

If MODE button is pressed, current operation mode icon \triangle (AUTO), \ast (COOL), H_2O (DRY), FAN (FAN) or HEAT (HEAT is only for heat pump models) will show.

16 LOCK icon:

LOCK is displayed by pressing "+" and "-" buttons simultaneously. Press them again to clear the display.

17 LIGHT icon:

LIGHT is displayed by pressing the LIGHT button. Press LIGHT button again to clear the display.

18 SLEEP icon :


SLEEP is displayed by pressing the SLEEP button. Press this button again to clear the display.

19 TEMP icon:


Pressing TEMP button, TEMP (set temperature), TEMP (ambient temperature), TEMP (outdoor ambient temperature) and blank is displayed circularly.

NOTE: " TEMP " function is applicable to partial of models.

20 Up & down swing icon:

 is displayed when pressing the up & down swing button. Press this button again to clear the display.

21 Left & right swing icon:

 is displayed when pressing the left & right swing button. Press this button again to clear the display.

22 SET TIME display:

After pressing TIMER button, ON or OFF will blink. This area will show the set time.

23 DIGITAL display:

This area will show the set temperature. In SAVE mode, "SE" will be displayed. During defrosting operation, "H1" will be displayed.

24 FAN SPEED display:

Press FAN button to select the desired fan speed setting (AUTO-Low-Med-High). Your selection will be displayed in the LCD windows, except the AUTO fan speed.

Remote controller description

1 ON/OFF:

Press this button to turn on the unit. Press this button again to turn off the unit.

2 MODE:

Each time you press this button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, FAN, and HEAT *, as the following:



*Note: Only for models with heating function.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LCD, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.




3 + :

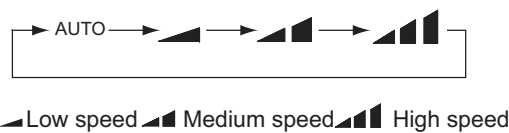
Press this button to increase set temperature. Hold it down for above 2 seconds to rapidly increase set temperature. In AUTO mode, set temperature is not adjustable.

4 -:





Press this button to decrease set temperature. Hold it down for above . 2 seconds to rapidly decrease set temperature. In AUTO mode, set temperature is not adjustable.

5 FAN :

This button is used for setting fan speed in the sequence that goes from AUTO, , ,  to then back to Auto.




6 

- Press  button to start or stop up & down swing function. The remote controller defaults to simple swing condition.
- Press + button and  button at the same time at unit OFF to switch between simple swing and static swing;  blinks for 2 seconds.
- In static swing condition, pressing  button, the swing angle of up & down louver changes as below:







• If the unit is turned off during swing operation, the louver will stop at present position.

7 HEALTH|SAVE:

Press HEALTH part of this button to turn on or off HEALTH function. Pressing SAVE part of this button,  is displayed and the unit goes into SAVE operation mode. Press SAVE part of the button again to cancel SAVE function. During SAVE operation, the temperature and fan speed is not adjustable.

8 

- Press  button to start or stop left & right swing function. The remote controller defaults to simple swing condition.
- Press + button and  button at the same time at unit OFF to switch between simple swing and static swing;  blinks for 2 seconds.

- In static swing condition, pressing  button, the swing angle of left & right louver changes as below:



- If the unit is turned off during swing operation, the louver will stop at present position. (Optional for some models)

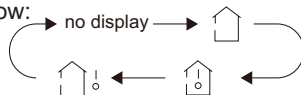
9 X-FAN:

Pressing X-FAN button in COOL or DRY mode, the icon "X-FAN" is displayed and the indoor fan will continue operation for 2 minutes in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is defaulted.

X-FAN is not available in AUTO, FAN and HEAT mode.

10 TEMP:

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



When selecting "🏠" with remote controller or no display, temperature indicator on indoor unit displays set temperature; When selecting "🏠" with remote controller, temperature indicator on indoor unit displays indoor ambient temperature; 3s later or within 3s it receives other remote control signal that will return to display the setting temperature.

Caution:

- This model hasn't outdoor ambient temperature display function. While remote controller can operate "🏠" and indoor unit displays set temperature.
- It's defaulted to display set temperature when turning on the unit.
- Only for the models with temperature indicator on indoor unit.

11 TIMER:

Press TIMER button at unit ON to set TIMER OFF; HOUR OFF blinks. Press TIMER button at unit OFF to set TIMER ON; HOUR ON blinks. In this case, pressing + or - button changes time setting. Holding down either button rapidly changes time setting (time setting range 0.5-24 hours). Press TIMER button again to confirm setting; HOUR ON/OFF stops blinking. If there is not any operation of button within 5 seconds during HOUR ON/OFF blinking, TIMER setting will be cancelled.



12 TURBO:

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed. (This function is not applicable for some models).



13 SLEEP:

Press this button to go into the SLEEP operation mode. Press it again to cancel this function. This function is available in COOL, HEAT (Only for models with heating function) mode to maintain the most comfortable temperature for you.

14 LIGHT:

Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on,  is displayed. If the light is turned off,  disappears.

15 Combination of "+" and "-" buttons: About lock

Press "+" and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked,  is displayed. In this case, pressing any button,  blinks three times.

16 Combination of "MODE" and "-" buttons: About switch between Fahrenheit and Centigrade.

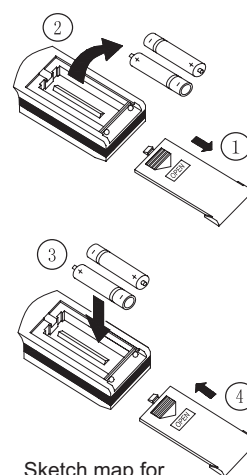
At unit OFF, press "+" MODE and "-" buttons simultaneously to switch between °C and °F.

6.2 Replacement of Batteries

1. Remove the battery cover plate from the rear of the remote controller. (As shown in the figure)
2. Take out the old batteries.
3. Insert two new AAA1.5V dry batteries, and pay attention to the polarity.
4. Reinstall the battery cover plate.

Notes:

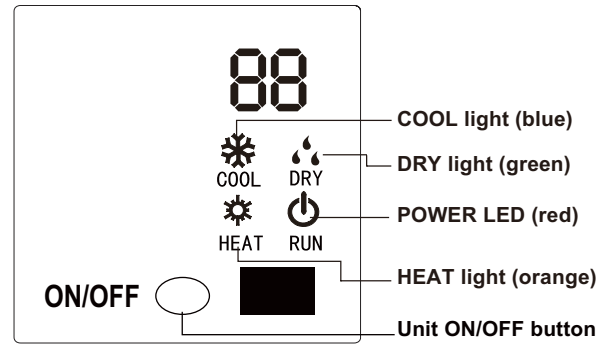
- When replacing the batteries, do not use old or different batteries, otherwise, it may cause malfunction.
- If the wireless remote controller will not be used for a long time, please remove batteries to prevent damage from leaking batteries.
- The operation should be performed in its receiving range.
- It should be kept 1m away from the TV set or stereo sound sets.
- If the wireless remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds. If it still can't operate properly, replace the batteries.



Sketch map for replacing batteries

6.3 Unit Indication Section

1. When the unit is energized, all the display marks will be shown and only the power LED lights.
2. When the unit is turned on remotely, the power LED goes out while the current setting running mode is displayed.
3. Under defrosting mode, heating indicator OFF 0.5s and ON 10s.
4. In normal situation, the setting temperature is displayed in "dual 8" place.
5. When the signal of displaying indoor temperature or outdoor temperature is received from the controller, the corresponding temperature will be shown in "dual 8" place. It resumes displaying setting temperature 3s later.



6.4 Description of Each Control Operation

For ASH-09AIE and ASH-12AIE units

1. Temperature Parameters

- Indoor preset temperature (T_{preset})
- Indoor ambient temperature (T_{amb})

2. Basic Functions

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

(1) COOL mode

① The condition and process of cooling

If $T_{\text{amb}} \geq T_{\text{preset}}$ COOL mode will act, the compressor and outdoor fan will run, and the indoor fan will run at the set speed.

If $T_{\text{amb}} \leq T_{\text{preset}} - 2^{\circ}\text{C}$, the compressor will stop, the outdoor fan will delay 30 seconds to stop, and the indoor fan will run at the set speed. If $T_{\text{preset}} - 2^{\circ}\text{C} \leq T_{\text{amb}} \leq T_{\text{preset}}$, 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 ~30°C.

② Protection function

● Overcurrent protection

If total current is high, the compressor will run in limited frequency. If total current is too high, the compressor will stop, the outdoor fan will delay 30 seconds to stop, indoor unit will display E5 and outdoor yellow light will blink 5 times.

● Antifreezing protection

When the antifreezing protection is detected, the compressor will stop, the outdoor fan will stop after 30 seconds, and the indoor fan and swing motor will keep running in the original mode. When antifreezing protection is eliminated and the compressor has stopped for 3 minutes, the compressor will resume running in the original mode.

(2) Dehumidifying mode

① Working conditions and process of dehumidifying

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

If $T_{\text{preset}} - 2^{\circ}\text{C} \leq T_{\text{amb}} \leq T_{\text{preset}}$, the compressor remains at its original operation state.

If $T_{\text{amb}} < T_{\text{preset}} - 2^{\circ}\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will operate at low speed.

② Protection function

Protection is the same as that under the cooling mode.

(3) HEAT mode

① The condition and process of heating

If $T_{\text{amb}} \leq T_{\text{preset}} + 2^{\circ}\text{C}$, HEAT mode will act, the compressor, outdoor fan and reversal valve will run, the indoor fan will delay 3min to stop at the latest.

If $T_{\text{preset}} + 2^{\circ}\text{C} \leq T_{\text{amb}} \leq T_{\text{preset}} + 5^{\circ}\text{C}$, the unit will keep running in the original mode.

If $T_{\text{amb}} \geq T_{\text{preset}} + 5^{\circ}\text{C}$, the compressor will stop, the outdoor fan will delay 30sec to stop and indoor fan will blow 60S at low speed, the fan speed cannot be shifted within blow residual heat.

● In this mode, the temperature setting range is 16 ~30°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 after the compressor stops.

② 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 after 15 seconds and then defrosting will be started. When the compressor has run for 7 minutes or defrosting is finished, 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 3 minutes to run at the latest and under defrosting status, heating indicator on indoor unit OFF 0.5s and ON 10s.

③ Protection function

● Anti-cold-wind protection

In HEAT mode, in order to prevent the indoor unit from blowing out cold wind, each time the compressor starts, the indoor fan will delay 3 minutes after the compressor to run at the latest and it can adjust fan speed automatically when temperature is low.

● Overcurrent protection

Overcurrent protection is the same with that in COOL mode.

● Cold air prevention

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

1. In the case of $T_{\text{indoor amb.}} < 24^{\circ}\text{C}$: if $T_{\text{tube}} \leq 40^{\circ}\text{C}$ and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if $T_{\text{tube}} > 40^{\circ}\text{C}$, the indoor fan also will run at low speed; and after 1-minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1-minute low speed operation or 2-minute non-operation, if $T_{\text{tube}} > 42^{\circ}\text{C}$, the fan will run at present speed.

2. In the case of $T_{\text{indoor amb.}} \geq 24^{\circ}\text{C}$: if $T_{\text{tube}} \leq 42^{\circ}\text{C}$, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within one-minute low speed operation, if $T_{\text{tube}} > 42^{\circ}\text{C}$, the indoor fan will be converted to preset speed.

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

● Total current up and frequency down protection

If the total current $I_{\text{total}} \leq W$, frequency rise will be allowed; if $I_{\text{total}} \geq X$, frequency rise will not be allowed; if $I_{\text{total}} \geq Y$, the compressor will run at reduced frequency; and if $I_{\text{total}} \geq Z$, the compressor will stop and the outdoor fan will stop with a time lag of 30s.

(4) Fan Mode

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

Under the mode, temperature can be set within a range of 16 - 30°C.

(5) AUTO Mode

① The condition and process of auto

a. When $T_{\text{amb.}} \geq 26^{\circ}\text{C}$ the unit will operate at Cooling mode. In that case, the set temperature will be 25°C.

b. When $T_{\text{amb.}} \leq 22^{\circ}\text{C}$ the heat pump unit will operate at Heating mode. In that case, the set temperature will be 20°C; the cooling-only unit will operate at Fan mode and the set temperature will be 25°C.

c. When $23^{\circ}\text{C} \leq T_{\text{amb.}} \leq 25^{\circ}\text{C}$ the unit will keep its operation status but if it is firstly energized, the unit will operate at Fan mode.

d. When unit operates at Auto mode, the frequency of compressor will be the same as that in Cooling mode if the unit is cooling while it will be the same as that in the Heating mode if the unit is heating.

② Protection function

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

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

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

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

① Overload protection

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

1) Cooling overload

a. If $T_{\text{tube}} \leq 52$, the unit will return to its original operation state.

b. If $T_{\text{tube}} \leq 55$, frequency rise is not allowed.

c. If $T_{\text{tube}} \leq 58$, the compressor will run at reduced frequency.

d. If $T_{\text{tube}} \leq 62$, the compressor will stop and the indoor fan will run at preset speed.

2) Heating overload

a. If $T_{\text{tube}} \leq 52$, the unit will return to its original operation state.

b. If $T_{\text{tube}} \leq 55$, frequency rise is not allowed.

c. If $T_{\text{tube}} \leq 58$, the compressor will run at reduced frequency.

d. If $T_{\text{tube}} \leq 62$, the compressor will stop and the indoor fan will blow residue heat and then stop.

② Exhaust temperature protection of compressor

If exhaust temperature 98, frequency is not allowed to rise.

If exhaust temperature 103, the compressor will run at reduced frequency.

If exhaust temperature 110, the compressor will stop.

If exhaust temperature 90 and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

③ Communication fault

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

④ Module protection

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

⑤ Overload protection

If temperature sensed by the overload sensor is over 115, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds.

⑥ If temperature is below 95, the overload protection will be relieved. If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

3. Other Controls

(1) ON/OFF

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

(2) Mode Selection

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

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1°C. Regulating Range: 16~30°C, the button is useless under the AUTO mode.

(4) Time Switch

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

(5) SLEEP State Control

① Cooling mode

a. When initial temperature setting is 16~23°C, after turning on sleep function, temperature will increase 1°C every one hour. After temperature is increased by 3°C, the unit will keep this temperature. After operation for 7 hours, temperature will decrease 1°C. After that, the unit will operate at this temperature all the time.

b. When initial temperature setting is 24~27°C, after turning on sleep function, temperature will increase 1°C every one hour. After temperature is increased by 2°C, the unit will keep this temperature. After operation for 7 hours, temperature will decrease 1°C. After that, the unit will operate at this temperature all the time.

c. When initial temperature setting is 28~29°C, after turning on sleep function, temperature will increase 1°C every one hour. After temperature is increased by 1°C, the unit will keep this temperature. After operation for 7 hours, temperature will decrease 1°C. After that, the unit will operate at this temperature all the time. When the initial temperature setting is 30°C, the unit will operate under this temperature. After operation for 7 hours, temperature will decrease 1°C. After that, the unit will operate at this temperature all the time.

② Heating mode:

a. When initial temperature setting is 16°C, the unit operate under this temperature all the time.

b. When initial temperature setting is 17~20°C, after turning on sleep function, temperature will decrease 1°C every one hour. After temperature is increased by 1°C, the unit will keep this temperature.

c. When initial temperature setting is 21~27°C, after turning on sleep function, temperature will decrease 1°C every one hour. After temperature is increased by 2°C, the unit will keep this temperature.

d. When initial temperature setting is 28~30°C, after turning on sleep function, temperature will decrease 1°C every one hour. After temperature is increased by 3°C, the unit will keep this temperature.

(6) Indoor Fan Control

Speed of indoor fan can be set as Turbo, High, Med., Low by remote control. In that case, fan will operate at super high, high, medium, or low speed accordingly. The fan speed can also be set at Auto, which is as follows:

① In heating mode: in auto heating or heating mode, the auto fan speed is as follows:

a. $T_{amb} \leq T_{preset} + 1^\circ\text{C}$: indoor fan will operate at high speed;

b. $T_{preset} + 1^\circ\text{C} < T_{amb} < T_{preset} + 3^\circ\text{C}$: indoor fan will operate at med. speed;

c. $T_{amb} \geq T_{preset} + 3^\circ\text{C}$: indoor fan will operate at low speed; At least 210 seconds of operation shall be maintained for switchover between high and low speeds, med. and low speeds, and high and low speeds.

② In cooling mode, in auto cooling or cooling mode, the auto fan speed is as follows:

a. $T_{amb} \geq T_{preset} + 2^\circ\text{C}$: indoor fan will operate at high speed.

b. $T_{preset} < T_{amb} < T_{preset} + 2^\circ\text{C}$: indoor fan will operate at med. speed;

c. $T_{amb} \leq T_{preset}$: indoor fan will operate at low speed. At least 210 seconds of operation shall be maintained for switchover between high and low speeds, med. and low speeds, and high and low speeds.

(7) Buzzer Control

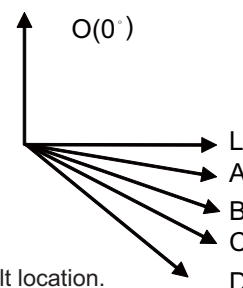
The buzzer will send a “Di” sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler doesn’t receive the remote control ON signal under the mode of heating mode.

(8) Auto button

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

(9) Up-and-Down Swinging Control

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



(10) Display

① Operation pattern and mode pattern display

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

② Double-8 display

According to the different setting of remote control, the nixie light may display the current temperature (the temperature scope is

from 16 to 30°C) and indoor ambient temperature. The heating and air supply temperature will display 25°C under auto-mode, the temperature will display 20°C under the heating mode, and under defrosting status, heating indicator on indoor unit OFF 0.5s and ON 10s. (If you set the fahrenheit temperature display, the nixie light will display according to fahrenheit temperature)

(11) Protection function and failure display

E2: Freeze-proofing protection E4: Exhausting protection E5: Overcurrent protection E6: Communication failure

F1: Indoor ambient sensor start and short circuit (continuously measured failure in 5S)

F2: Indoor evaporator sensor start and short circuit (continuously measured failure in 5S)

F3: Outdoor ambient sensor start and short circuit (continuously measured failure in 30S)

F4: Outdoor condenser sensor start and short circuit (continuously measured failure in 30S, and don't measure within 10 minutes after defrosted)

F5: Outdoor exhausting sensor start and short circuit (continuously measured failure in 30S after the compressor operated 3 minutes)

H3: Overload protection of compressor H5: Module protection PH: High-voltage protection PL: Low-voltage protection

P1: Nominal cooling and heating P2: Maximum cooling and heating P3: Medium cooling and heating

P0: Minimum cooling and heating

(12) Drying Function

You may start or stop the drying function under the modes of cooling and dehumidify at the starting status (The modes of automatism, heating and air supply do not have drying function). When you start the drying function, after stop the machine by pressing the switch button, you should keep running the inner fans for 2 minutes under low air damper (The swing will operate as the least status within 2 minutes, and other load is stopped), then stop the entire machine; When you stop the drying function, press the switch button will stop the machine directly.

When you start the drying function, operating the drying button wi

(13) Memory Function

When interrupting the power supply memory content: mode, swing function, light, set temperature and wind speed. After interrupted the power supply, the machine will start when recovering the power according to the memory content automatically. It stop the inner fans and close the guide louver.

For 18、24K Unit

Indoor Part

Temperature Parameter

- ◆ Room setting temperature (T_{preset})
- ◆ Room ambient temperature (T_{amb.}) (temperature sensor :15K, partial pressure resistance:15K)
- ◆ Surface temperature of copper pipe for indoor heat exchanger (T_{indoor tube}) (temperature sensor: 20K, partial pressure resistance: 20K)

1. Basic Functions of System

(1) Cooling Mode

- ① In this mode, indoor fan and swing will operate according to the setting status. The temperature setting range is 16~30°C.
- ② When the unit stop operation due to malfunction of outdoor unit or protection, indoor unit will keep original operating status. Malfunction code will be displayed.
- ③ When $0 \leq (T_{\text{preset}} - T_{\text{amb.}})$, if the indoor unit is operating at high fan speed, the speed of fan will change to medium fan speed; if the indoor unit is operating at medium or low fan speed, the speed of fan will keep the same; (This condition can only be carried out after the compressor is started up); There's no change for super-high fan speed; when $(T_{\text{amb.}} - T_{\text{preset}}) \geq 1^\circ\text{C}$, the fan speed will resume setting fan speed;

(2) Dry Mode

- ① In this mode, fan will operate at low fan speed and swing will operate at setting status. The temperature setting range is 16~30°C.
- ② When the unit stop operation due to malfunction of outdoor unit or protection, indoor unit will keep original operating status. Malfunction code will be displayed.

(3) Fan Mode

- ① In this mode, indoor fan will operate at high, medium, low or auto fan speed. Compressor, indoor fan and the four-way valve will all stop operation.
- ② In this mode, the temperature setting range is 16~30°C.

(4) Heating Mode

- ① In this mode, the temperature setting range is 16~30°C.
- ② Working condition and process of heating: when the unit is turned on in heating mode, indoor unit enters into anti-cold air condition; when the unit is turned off, the unit will enter into the condition of blowing residual heat.
- ③ Protection function: in heating mode, when the compressor is stopped due to malfunction, indoor fan will operate at the condition of blowing residual heat.
- ④ Defrosting control: after receiving the defrosting signal from outdoor unit, heating indicator on indoor unit OFF 0.5s and ON 10s.
- ⑤ Anti-cold function
- ⑥ Blowing residual heat function;
 - a) During heating operation, when the stopping condition for the compressor is reached, the compressor and the outdoor fan motor stop operation. The upper & down horizontal louver will rotate to the horizontal position L. The indoor fan will be stopped after operating for 60s at setting speed.
 - b) Due to the blockage of PG motor, horizontal louver will keep the stop position when the unit is turned off. (In other modes) When the unit is stopped due to other malfunctions, up & down horizontal louver will rotate to horizontal position L. The indoor fan will be stopped after operating for 60s at setting speed.
 - c) If the unit is turned off when the compressor is operating in heating mode or auto heating mode, up & down horizontal louver will rotate to horizontal position L. The indoor fan will be stopped after operating for 60s at setting speed.

(5) Auto Mode

- ① When $T_{\text{amb.}} \geq 26^\circ\text{C}$, the unit will operate in cooling mode. The implied setting temperature is 25°C.
- ② Heat pump type: when $T_{\text{amb.}} \leq 22^\circ\text{C}$, the unit will operate in heating mode. The implied setting temperature is 20°C.
- ③ Cooling only unit: when $T_{\text{amb.}} \leq 25^\circ\text{C}$, the unit will operate in auto mode. The implied setting temperature is 25°C.
- ④ When $23^\circ\text{C} \leq T_{\text{indoor amb.}} \leq 25^\circ\text{C}$, the unit will operate in auto fan mode if the unit is turned on and enters into the auto mode for the first time. If the unit is switched to auto mode from other mode, it will keep the previous operation mode (if the unit is switched to auto mode from dry mode, the unit will operate at auto fan mode).

2. Display Status of Indoor Indicator (NOTE: Nixie tube is not available for A8 panel.)

(1) Status of Indoor Display Board

- ① After energization, all the icons will be displayed and then only the power indicator is bright. When the unit is turned on by remote controller, the operation indicator will be bright. Meanwhile, the current setting operation mode will be displayed.
- ② During defrosting, heating indicator on indoor unit OFF 0.5s and ON 10s.
- ③ "Dual-8" displays setting temperature.

● Display of operation icon and mode icon

After energization, all the icons will be displayed for once. In standby status, the operation indicator will be in red. If turn on the unit by remote controller, the operating indication icon will be bright. Meanwhile, the current setting operation mode will be displayed (mode indicator: cooling indicator, heating indicator, dry indicator). If turn off the light button, all displays will be turned off.

● Temperature display control mode for split type unit

- ① When user set the remote controller as the setting temperature display status, the current setting temperature will be displayed on remote controller.
- ② Only when the remote control signal is switched to indoor ambient temperature display status from other display status, controller will display the indoor ambient temperature for 3s and then turn back to display the setting temperature.
- ③ When user hasnt set the temperature displaying status, it will be displayed according to the setting temperature.

(2)Malfunction Display of Indoor Unit

When multiple malfunctions occurred simultaneously, malfunction protection codes will be displayed in cycle.

3.Other Control Target

(1) Up&down swing function

After energization, up & down swing motor will firstly let the horizontal louver anticlockwise rotate to position 0 to close air outlet.

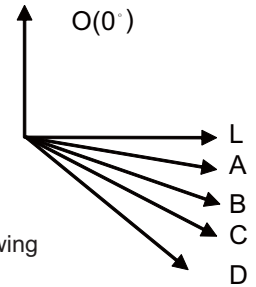
If swing function has not been set after startup of the unit, up & down horizontal louver will clockwise turn to position D in HEAT mode, or clockwise turn to level position L in other modes.

If setting swing function while starting up the unit, the horizontal louver will swing between L and D.

There are 7 kinds of swing status of horizontal louver: Positions L, A, B, C and D, swing between L and D and stop at any position between L and D.

Upon turning off the unit, the horizontal louver will close at position 0. Swing function is available only when swing function set and indoor fan is operating.

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



(2) Buzzer

Upon energization and operation, the buzzer will give out sound.

(3) Auto Button

After pressing this button, the unit will operate in auto mode. Indoor fan will operate at auto fan speed and swing motor will operate.

Press this button again to turn off the unit. The complete unit is energized when pressing the button and the complete unit will enter into fast testing status. After energization, if its detected that the auto button is pressed down and the complete unit is at fast testing status, the fast testing status will be exited.

(4) Sleep Function

This mode is only valid in cooling and heating mode. The unit will select the appropriate sleeping curve to operate according to the different setting temperature.

During cooling mode:

- ① When the initial temperature is set as 16~23°C, after starting up the sleep function, the temperature will increase by 1°C every one hour. After the temperature has increased by 3°C, the unit will keep this temperature. When the unit has operated for 7 hours, the temperature will decrease by 1°C and then the unit will operate at this temperature all the time;
- ② When the initial temperature is set as 24~27°C, after starting up the sleep function, the temperature will increase by 1°C every one hour. After the temperature has increased by 2°C, the unit will keep this temperature. When the unit has operated for 7 hours, the temperature will decrease by 1°C and then the unit will operate at this temperature all the time;
- ③ When the initial temperature is set as 28~29°C, after starting up the sleep function, the temperature will increase by 1°C every one hour. After the temperature has increased by 1°C, the unit will keep this temperature. When the unit has operated for 7 hours, the temperature will decrease by 1°C and then the unit will operate at this temperature all the time;
- ④ When the initial temperature is set as 30°C, the unit will operate at this temperature. After the unit has operate for 7 hours, the temperature will decrease by 1°C and then the unit will operate at this temperature all the time.

During Heating Mode:

- ① When the initial temperature is set at 16°C, the unit will operate at this temperature all the time;
- ② When the initial temperature is set as 17~20°C, after starting up the sleep function, the temperature will decrease by 1°C every one hour. After the temperature is decreased by 1°C, the unit will operate at this temperature;
- ③ When the initial temperature is set as 21~27°C, after starting up the sleep function, the temperature will decrease by 1°C every one hour. After the temperature is decreased by 2°C, the unit will operate at this temperature;
- ④ When the initial temperature is set as 28~30°C, after starting up the sleep function, the temperature will decrease by 1°C every one hour.

After the temperature is decreased by 3°C, the unit will operate at this temperature;

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

(5) Timer Function

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

General timer:

Timer ON

If timer ON is set during operation of the unit, the unit will continue to operate. If timer ON is set at unit OFF, upon ON time reaches the unit will start to operate according to previous setting status.

Timer OFF

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

(6) Blow Function

Blow function can be set in cooling and dry mode.

(7) Indoor Fan Control

Indoor fan can be set at super-high, high, medium or low. Meanwhile, the fan will operate at super-high, high, medium and low fan speed respectively and it can also set at auto fan speed.

(8) Memory Function

Memory content includes mode, up & down swing, light, set temperature and set fan speed, general timer (clock timer can't be memorized). Upon power failure, the unit after power recovery will automatically start operation according to memorized content. The unit, without timer setting before power failure, will operate according to the last setting after power recovery. The unit, with general timer setting which has not been fulfilled before power failure, will memorize the time setting and re-calculate the time after power recovery. If there is timer function in the last remote controller command but setting time has reached, the system will act as timer on/off setting before power failure. After power failure, the system memorizes the operation states before power failure without timer action. Clock timer can not be memorized.

(9) Locked protection to PG motor

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

(10) Turbo Function

This function can be set in cooling or heating mode to quickly cool or heat the room (Turbo function is not available in auto, dry and fan mode). After pressing the turbo button, indoor fan will operate at super-high fan speed.

4. Malfunction Detection for Temperature sensor**(1) Indoor ambient temperature sensor:**

Malfunction of temperature sensor will be detected at any time;

(2) Indoor tube temperature sensor

Malfunction of temperature sensor won't be detected during defrosting period. It starts detecting the malfunction of temperature sensor after defrosting is finished for 5 mins. Malfunction of temperature sensor will be detected at any other time.

(3) Protection of temperature sensor

1. When the temperature sensor is detected short circuit for 5s successively:

The detected temperature by the temperature sensor is too high and the complete unit will stop operation, meanwhile, the protection and malfunction of temperature sensor will be displayed accordingly.

2. When the temperature sensor is detected open circuit for 5s successively: The unit will stop operation due to protection and the corresponding malfunction of temperature sensor will be displayed directly.

5. Compulsory operating function of indoor unit**(1) Enter into compulsory operation control**

After the unit is energized for 5mins, press the light button on remote controller for 3 times in 3s successively to enter into Freon recovery mode. Fo will be displayed. When Freon recovery mode operated for 25mins, all loads will operate in cooling mode. (The setting fan speed is high fan speed and the setting temperature is 16°C)

(2) Exit the compulsory operation control

Freon recovery mode will be exited after receiving any signal from remote controller or button and then the unit will operate at the current setting command; Freon mode will also be exited after operating for 25mins and then the unit will be turned off.

Outdoor Part

1. Input Parameter Compensation and Calibration

① Check the input parameter compensation function

As the instruction feature of split unit, concerning the comfortable, in heating mode, the indoor ambient temperature of compressor stopping time is higher than preset temperature.

② Check effective judgment controls of parameters

Effective judgment function of the outdoor exhaust temperature thermo-bulb

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

2. Basic Functions

(1) Cooling Mode

① Conditions and processes of cooling operation:

- If the compressor is stop, and $[T_{\text{preset}} - (T_{\text{indoor ambient}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] \leq 0.5^{\circ}\text{C}$, start up the unit for cooling, and start to cooling operation;
- During operations of cooling, if $0^{\circ}\text{C} \leq [T_{\text{preset}} - (T_{\text{indoor ambient}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})] < 2^{\circ}\text{C}$, the cooling operation will be still running;
- During operations of cooling, if $2^{\circ}\text{C} \leq [T_{\text{preset}} - (T_{\text{indoor ambient}} - \Delta T_{\text{cooling indoor ambient temperature compensation}})]$, the cooling operation will stop after reaching to the temperature point.

② Temperature setting range

- If $T_{\text{outdoor ambient}} \geq [T_{\text{low-temperature cooling}}]$, the temperature can be set at: 16~30°C (Cooling at room temperature);
- If $T_{\text{outdoor ambient}} < [T_{\text{low-temperature cooling}}]$, the temperature can be set at: 25~30°C (Cooling at low temperature), that is, the minimum setting temperature for outdoor unit judgment is 25°C.

(2) Dry Mode

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

② The temperature setting range is: 16~30°C;

(3) Fan Mode

1. The compressor, outdoor fan and four-way valve are switched off;

② The temperature setting range is: 16~30°C.

(4) Heating Mode

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

- If the compressor is stop, and $[(T_{\text{indoor ambient}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{preset}}] \leq 0.5^{\circ}\text{C}$, start the machine to enter into heating operations for heating;
- During operations of heating, if $0^{\circ}\text{C} \leq [(T_{\text{indoor ambient}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{preset}}] < 2^{\circ}\text{C}$, the heating operation will be still running;
- During operations of heating, if $2^{\circ}\text{C} \leq [(T_{\text{indoor ambient}} - \Delta T_{\text{heating indoor ambient temperature compensation}}) - T_{\text{preset}}]$, the heating operation will stop after reaching the temperature point.

② The temperature setting range in this mode is: 16~30°C.

(5) Defrosting Control

① After the time for defrosting is judged to be satisfied, if the temperature for defrosting is satisfied after detections for continuous 3minutes, the defrosting operation will start.

② Start to defrost: Compressor stops and starts up 55S later;

③ Defrosting finish: Compressor stops and starts up 55S later;

④ Conditions of finishing defrosting

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

- $T_{\text{outdoor pipe}} \geq 12^{\circ}\text{C}$;
- $T_{\text{outdoor ambient}} < -5^{\circ}\text{C}$, and the $T_{\text{outdoor pipe}} \geq 6^{\circ}\text{C}$ last more than 80S;
- The continuous running time of defrosting reaches to 8min.

(6) Compressor Control

- ① The frequency of compressor will be controlled with the relationship of ambient temperature and preset temperature and changing speed of ambient temperature;
- ② Start the compressor after starting cooling, heating, dry operations, and the outdoor fan start for 5s;
- ③ When the unit is off, in safety stops and switching to fan mode, the compressor will stop immediately;
- ④ In all modes: once the compressor starts up, it will not be allowed to stop until having run for the $[T_{\min. \text{ Compressor running time}}]$ (Note: including cases of shutdown when the temperature point is reached; except the cases requiring stopping the compressor such as fault protection, remote shutdown, mode switching etc.);
- ⑤ In all modes: once the compressor stops, it will be allowed to restart after 3-minute delay (Note: The indoor units have a function of power memory, the machine can be restarted after remote shutdown and powering up again without delay).

(7) Outdoor Fan Control

- ① When the unit is off by remote control, in safety stops and stop after reaching to the temperature point.
- ② In fan mode: The outdoor fan stops;
- ③ Start to defrost: Outdoor fan will stop after compressor stops for 50S;
- ④ Defrosting finish: Outdoor fan will start up when the compressor is stopping.

(8) 4-way valve control

- ① The 4-way valve control under the modes of Cooling, dehumidification and fan: closing;
- ② When the unit is on in heating mode, the 4-way valve is energized;
- ③ When the unit is on in heating mode and heating mode shift to other modes, the 4-way valve will be de-energized after compressor stops for 2min;
- ④ After protection stops, the 4-way valve will be de-energized after 4min;
- ⑤ Start to defrost: The power of 4-way valve will be de-energized after the compressor stops;
- ⑥ Defrosting finish: The 4-way valve will be energized after the compressor stops.

(9) Freeze prevention protection

- ① Under cooling or drying mode, if it detected that $T_{\text{indoor tube}} < 0^{\circ}\text{C}$ for 3 min successively, the unit will stop operation due to freeze prevention protection. If $6^{\circ}\text{C} < T_{\text{indoor tube}}$, and compressor has stopped for 3min, the complete unit can be allowed to resume operation;
- ② Under cooling or drying mode, if $T_{\text{indoor tube}} < 6^{\circ}\text{C}$, the operation frequency of compressor may decrease or the operation frequency of compressor may stop increasing,
- ③ If the unit stops operation due to freeze prevention protection for 6 times successively, the unit can't resume operation automatically and error code will be displayed successively. Only press ON/OFF button can resume the operation. During operation process, if compressor operates for more than 10min, times of stop operation due to freeze prevention protection will be cleared. Malfunction and malfunction times will be cleared immediately when turning off the unit or switch to fan/heating mode.

(10) Overload protection function

- ① Overload protection function under cooling or drying mode, if $65^{\circ}\text{C} \leq T_{\text{outdoor tube}}$, the unit stops operation due to overload protection under cooling; if $T_{\text{outdoor tube}} < 55^{\circ}\text{C}$, and compressor has stopped for 3mins, the complete unit can then be allowed to resume operation;
- ② under cooling or drying mode, if $55^{\circ}\text{C} \leq T_{\text{outdoor tube}}$, operation frequency of compressor will decrease or operation frequency of compressor will stop increasing;
- ③ Overload protection function under heating mode, if $64^{\circ}\text{C} \leq T_{\text{indoor tube}}$, the unit will stop operation due to overload protection under heating, If $T_{\text{indoor tube}} < 54^{\circ}\text{C}$, and compressor has stopped for 3min, the complete unit can then be allowed to resume operation;
- ④ Under heating mode, if $54^{\circ}\text{C} \leq T_{\text{indoor tube}}$, operation frequency of compressor will decrease or operation frequency of compressor will stop increasing;
- ⑤ If the unit stops operation due to overload protection for 6 times successively, the unit can't resume operation automatically and error code will be displayed successively. Only press ON/OFF button can resume the operation. During operation process, if compressor operates for more than 10min, times of stop operation due to overload protection will be cleared. Malfunction and malfunction times will be cleared immediately when turning off the unit, under fan mode or switching to heating mode.

(11) Discharge temperature protection function of compressor

- ① If $115^{\circ}\text{C} \leq T_{\text{discharge}}$, the unit stops operation due to discharge protection; if $T_{\text{discharge}} < 97^{\circ}\text{C}$, and compressor has stopped for 3min, the complete unit can then be allowed to resume operation;
- ② If $97^{\circ}\text{C} \leq T_{\text{discharge}}$, operation frequency of compressor will decrease or operation frequency of compressor will stop increasing;
- ③ If the unit stops operation due to discharge temperature protection of compressor for 6 times successively, the unit can't resume

operation automatically and error code will be displayed successively. Only press ON/OFF button can resume the operation. During operation process, if compressor operates for more than 10min, times of stop operation due to discharge protection will be cleared. Malfunction and malfunction times will be cleared immediately when turning off the unit, or switching to fan mode.

(12)Current protection function

- ① If $12A \leq I$ AC current, operation frequency of compressor will decrease or operation frequency of compressor will stop increasing;
- ② If $17A \leq I$ AC current, the unit stops operation due to overcurrent protection. When compressor has stopped operation for 3min, the complete unit can then be allowed to resume operation.
- ③ If the unit stops operation due to overcurrent protection for 6 times successively, the unit can't resume operation automatically. Only press ON/OFF button can resume the operation. During operation process, if compressor operates for more than 10min, times of stop operation due to overcurrent protection will be cleared.

(13)Voltage-dropping protection

During operation, if the voltage is decreasing quickly, the unit may stop operation and alarm voltage-dropping malfunction. 3 mins later, the unit will be restarted up automatically.

(14)Communication malfunction

If it hasn't received the correct signal from indoor unit for 3min successively, the unit will stop operation due to communication malfunction; If communication malfunction is resumed and compressor has stopped for 3min, the complete unit can then be allowed to resume operation.

(15)IPM module protection

After compressor is turned on, if it causes overcurrent to IPM modular, or control voltage is too low due to some abnormal causes, IP will generate modular protection signal. Main chip will detect the modular protection signal as soon as the unit is turned on. Once modular protection signal is detected, the unit will stop operation immediately due to protection. If modular protection is resumed and compressor has stopped for 3min, the complete unit can then be allowed to resume operation.

If the unit stops operation due to modular protection for 3 times successively, the unit can't resume operation automatically, except pressing ON/OFF button. If compressor has operates for more than 10 min successively, the stop operation times due to modular protection will be cleared.

(16)Modular overheating protection

- ① If $80^{\circ}\text{C} \leq T_{\text{modular}}$, operation frequency of compressor will decrease or operation frequency of compressor will stop increasing;
- ② If $95^{\circ}\text{C} \leq T_{\text{modular}}$, the unit will stop operation due to protection; if $T_{\text{modular}} < 87^{\circ}\text{C}$, and compressor has stopped for 3min, the complete unit can then be resume operation;
- ③ If the unit stops operation due to modular overheating protection for 6 times successively, the unit can't resume operation automatically. Only press ON/OFF button can resume the operation. During operation process, if compressor operates for more than 10min, times of stop operation due to modular overheating protection will be cleared. Malfunction times will be cleared immediately when turning off the unit, or switching to fan mode.

(17)Overload protection of compressor

- ① If it detected that overload switch of compressor breaks for 3s successively, the system will stop operation due to protection;
- ② If it detected overload protection is resumed, and compressor has stopped for 3min, the complete unit can then be allowed to resume operation;
- ③ If it detected that the unit stops operation due to overload protection of compressor for 3 times successively, the unit can't resume operation automatically, except pressing ON/OFF button. After compressor operates for 30min, overload protection times of compressor will be cleared.

7. Installation Manual

Important Notices

1. The unit installation work must be done by qualified personnel according to the local rules and this manual.
2. Before installing, please contact with local authorized maintenance center, if unit is not installed by the authorized maintenance center, the malfunction may not solved, due to discommodious contacts.
3. When removing the unit to the other place, please firstly contact with the authorized Maintenance Center in the local area.

Basic Requirements For Installation Position

Install in the following place may cause malfunction. If it is unavoidable contact with service center please:

- * Place where strong heat sources, vapors, flammable gas or volatile object are emitted.
- * Place where high-frequency waves are generated by radio equipment, welders and medical equipment.
- * Place where a lot of salinities such as coast exists.
- * Place where the oil (machine oil) is contained in the air.
- * Place where a sulfured gas such as the hot spring zones is generated.
- * Other place with special circumstance.

7.1 Tools Required for Installation (not supplied)

1. Gauge manifold
2. Electronic balance for refrigerant charging
3. Phillips head screwdriver
4. Knife or wire stripper
5. Carpenters level
9. Hammer
10. Drill
11. Tube cutter
12. Tube flaring tool
13. Torque wrench
14. Adjustable wrench
15. Reamer (for deburring)
16. Vacuum pump (For R410A)
17. Gas leakage detector

7.2 Installation Position Selection

1. Indoor Unit

- (1) The air inlet and outlet vent should be far from the obstruction, make sure that the air can be blown through the whole room.
- (2) Select a position where the condensing water can be easily drained out, and the place is easily connected for outdoor unit.
- (3) Select a location where the children can not reach.
- (4) Can select the place where is strong enough to withstand the full weight and vibration of the unit. And will not increase the noise.
- (5) Be sure to leave enough space to allow access for routine

maintenance. The height of the installed location should be 250cm or more from the floor.

- (6) Select a place about 1m or more away from TVset or any other electric appliances.
- (7) Select a place where the filter can be easily taken out.
- (8) Make sure that the indoor unit installation should accord with installation dimension diagram requirements.
- (9) Do not use the unit in the immediate surroundings of a laundry a bath a shower or a swimming pool.

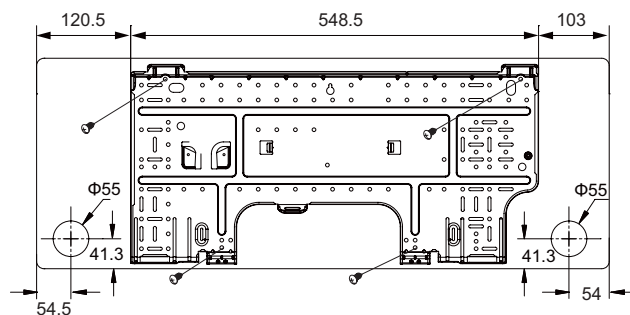
2. Outdoor Unit

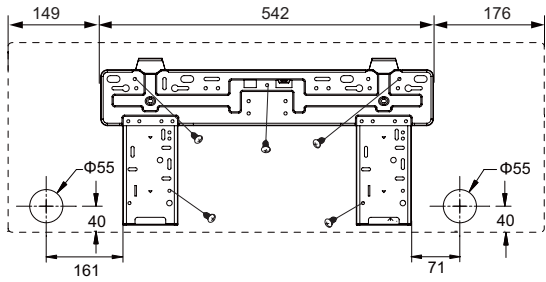
- (1) Select a location from which noise and outflow air emitted by unit will not inconvenience neighbors, animals, plants.
- (2) Select a location where there should be sufficient ventilation.
- (3) Select a location where there should be no obstructions cover the inlet and outlet vent.
- (4) The location should be able to withstand the full weight and vibration of the outdoor unit and permit safe installation.
- (5) Select a dry place, but do not expose under the direct sunlight or strong wind.
- (6) Make sure that the outdoor unit installation dimension should accord with installation dimension diagram, convenient for maintenance, repair.
- (7) The height difference of connecting the tubing within 10m, the length of connecting the tubing within 15(09K) or 20(12K)m.
- (8) Select a place where it is out of reach for the children.
- (9) Select a place where will not block the passage and do not influence the city appearance.

7.3 Installation of Indoor Unit

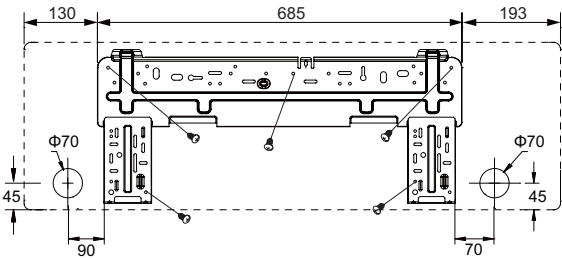
1. Always mount the rear panel horizontally. Due to the water tray of indoor unit has been adopted the both-way drainage design, the outlet of water tray should be adjusted slightly down when installing, that is taking the outlet of the water tray as the center of a circle, the included angle between the evaporator and level should be 0 or more, that is good for condensing water drainage.
2. Fix the rear panel on the wall with screws. (Where is pre-covered with plastic granula)
3. Be sure that the rear panel has been fixed firmly enough to withstand the weight of an adult of 60kg, further more, the weight should be evenly shared by each screw.

ASH-09AIE & ASH-12AIE units





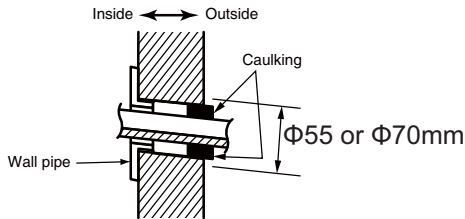
ASH-18AIE Unit



ASH-24AIE Unit

2. Boring a wall hole and installing wall pipe

1. Slant the piping hole (Φ55mm) on the wall slightly downward to the outdoor side. (The hole for 24K is Φ70mm.)
2. Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.



3. Flaring work and connection of piping

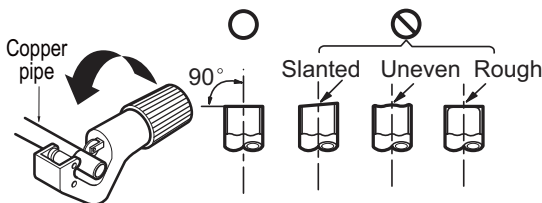
3.1 Flaring work

Flaring work

Main cause for refrigerant leakage is due to defect in the flaring work. Carry out correct flaring work using the following procedure.

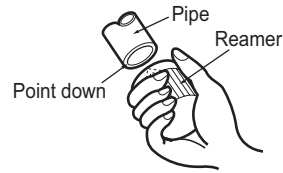
Cut the pipes and the cable

1. Use the piping kit accessory or pipes purchased locally.
2. Measure the distance between the indoor and the outdoor unit.
3. Cut the pipes a little longer than the measured distance.
4. Cut the cable 1.5m longer than the pipe length.



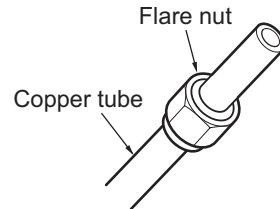
Burr removal

1. Completely remove all burrs from the cut cross section of pipe/tube.
2. Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing.



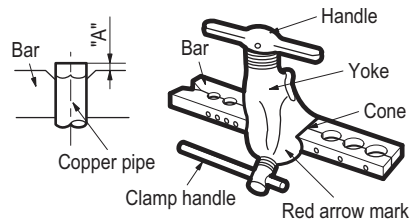
Putting nut on

Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal. (not possible to put them on after flaring work)



Flaring work

Firmly hold copper pipe in a die in the dimension shown in the table above.

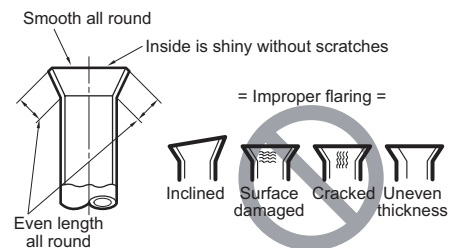


Carry out flaring work using flaring tool as shown below.

Outside diameter		A
mm	inch	mm
Ø6	1/4	0~0.5
Ø9.52	3/8	0~0.5
Ø12	1/2	0~0.5
Ø16	5/8	0~1.0
Ø19	3/4	1.0~1.3

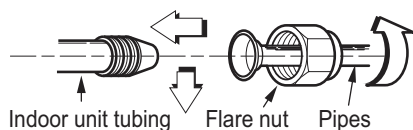
Check

1. Compare the flared work with figure below.
2. If flare is noted to be defective, cut off the flared section and reflare it.

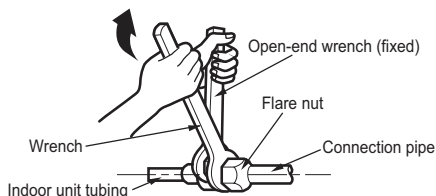


3.2 Connection of piping

1. Align the center of the pipes and sufficiently tighten the flare nut by hand.



2. Tighten the flare nut with a wrench.

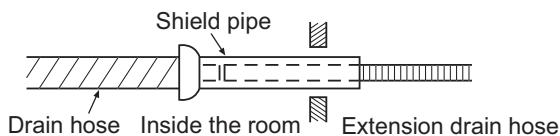


Outside diameter		Torque
mm	inch	kg·m
Ø6.35	1/4	1.8
Ø9.52	3/8	4.2
Ø12.7	1/2	5.5
Ø15.88	5/8	6.6
Ø19.05	3/4	6.6

4. Drain hose junction

If drain hose extension or embedded drain piping is required, use appropriate parts that match the hose front end.

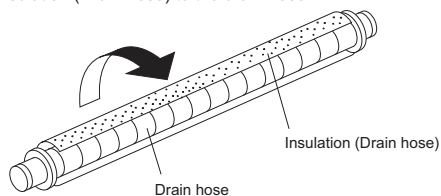
Insert drain hose into the handle of drain pan, and join drain hose and connecting hose according to the figure by.



CAUTION

Insert the drain hose and drain cap into the drain port, making sure that it comes in contact with the back of the drain port, and then mount it. If the drain hose is not connected properly, leaking will occur.

- Attach the Insulation (Drain hose) to the drain hose.



5. Wiring Connection

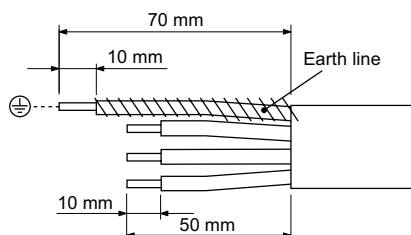
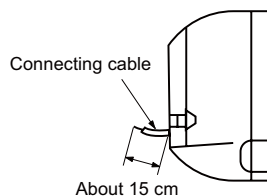
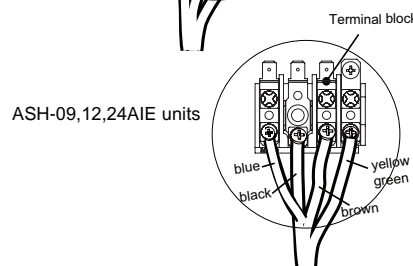
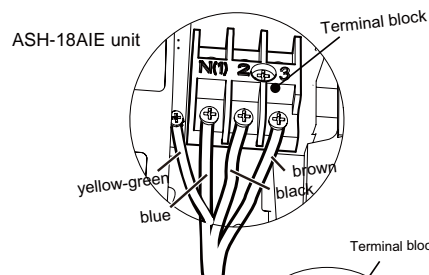
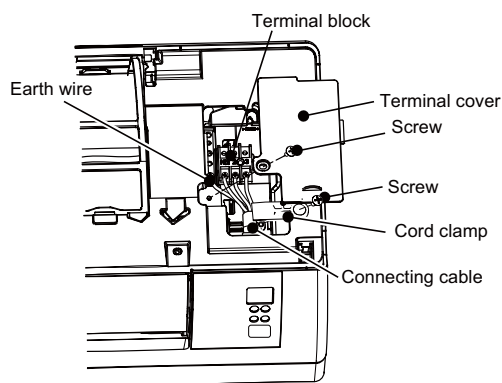
Wiring the connecting cable can be carried out without removing the front panel.

1. Remove the front panel. Open the front panel upward and pull it toward you.
2. Remove the terminal cover and cord clamp.
3. Insert the connecting cable (or as according to local regulations/codes) into the pipe hole on the wall.
4. Pull the connecting cable through the cable slot on the rear case so that it protrudes about 15cm out of the front.

5. Insert the connecting cable fully into the terminal block and secure it tightly with screws.
6. Tightening torque: 1.2 N·m (0.12 kgf·m).
7. Secure the connecting cable with the cord clamp.
8. Attach the terminal cover and front panel on the indoor unit.

CAUTION

- Be sure to refer to the wiring system diagram labeled inside the front panel.
- Check local electrical regulations for any specific wiring instructions or limitations.

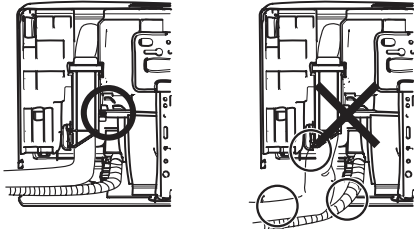


6. Installing indoor unit

In the case of bending or curing refrigerant pipes, keep the following precautions in mind.

Abnormal sound may be generated if improper work is conducted.

- 1) Do not strongly press the refrigerant pipes onto the bottom frame.
- 2) Do not strongly press the refrigerant pipes on the front grille, either.



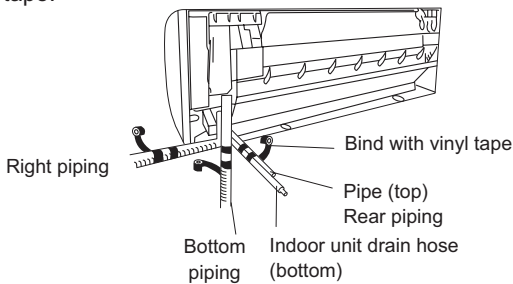
The piping can be lead out from right, right rear, left left rear.

Right-side, right-back, or right-bottom piping

1) After making slits on the front panel with a knife or similar tool, cut them out with a pair of nippers or an equivalent tool.

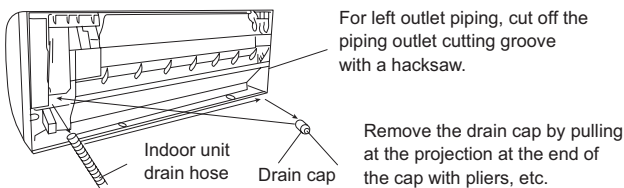
Attach the drain hose to the underside of the refrigerant pipes with an adhesive vinyl tape.

2) Wrap the refrigerant pipes and drain hose together with an insulation tape.



Left-side, left-back, or left-bottom piping

- Interchange the drain cap and the drain hose.



CAUTION

- (1) In order to align the drain hose and drain cap, be sure to insert securely and vertically. Incline insertion will cause water leakage.
- (2) When inserting, be sure not to attach any material besides water. If any other material is attached, it will cause deterioration and water leakage.
- (3) After removing drain hose, be sure not to forget mounting drain cap.
- (4) Be sure to fix the drain hose with tape to the bottom of piping.

- (5) Prevent drain water frozen under low temperature environment.

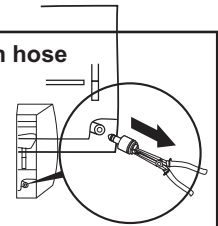
When installing indoor unit's drain hose outdoors, necessary measure for frost protection should be taken to prevent drain water frozen.

- Under low temperature environment (when outdoor temperature under 32 °F), after cooling operation is executed, water in the drain hose could be frozen. Once drain water is frozen, the drain hose will be blocked and water leakage may be resulted for indoor unit.

How to replace the drain plug and drain hose

• How to remove the drain cap

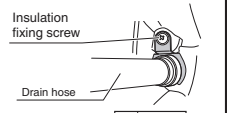
Clamp drain cap with needle-nose pliers, and pull out.



• How to remove the drain hose

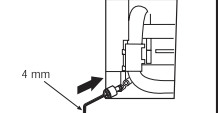
The drain hose is secured in place by a screw.

Remove the screw securing the drain hose, then pull out the drain hose.

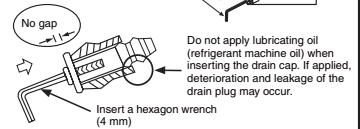


• How to attach the drain cap

1. Insert hexagonal wrench (4 mm).



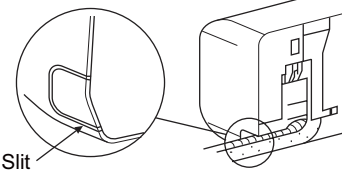
2. Firmly insert drain cap.



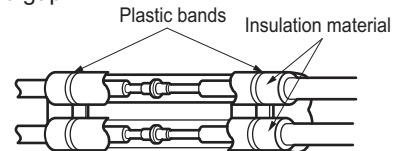
• How to attach the drain hose

Insert the drain hose firmly until the connector contacts the insulation, then secure it in place using the original screw.

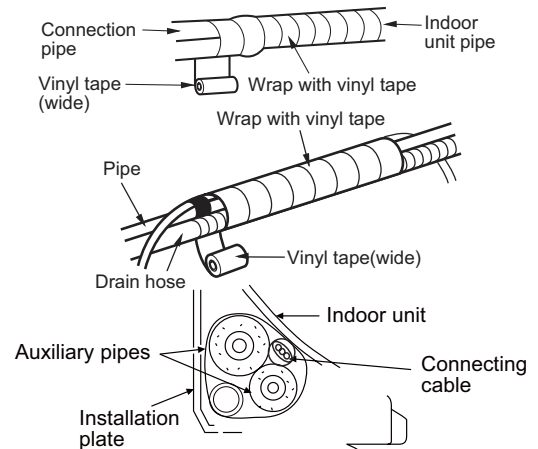
1. After making slits on the front panel with a knife or similar tool, cut them out with a pair of nippers or an equivalent tool.



2. Overlap the connection pipe insulation material and the indoor unit pipe insulation material. Bind them together with vinyl tape so that there is no gap.



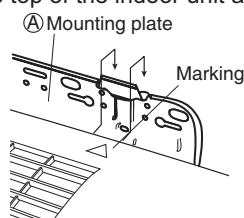
3. Wrap the area which accommodates the rear piping housing section with vinyl tape.



4. Bundle the piping and drain hose together by wrapping them with vinyl tape for enough to cover where they fit into the rear piping housing section.

Indoor unit installation

1) Pass the drain hose and refrigerant pipes through the wall hole, then set the indoor unit on the mounting plate hooks by using the markings at the top of the indoor unit as a guide.

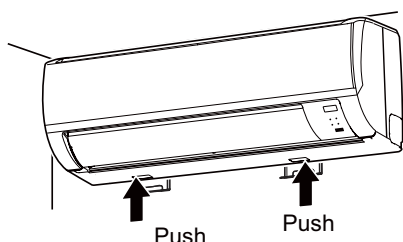


2) Swing the indoor unit to right and left to confirm that it is firmly hooked on the installation plate.

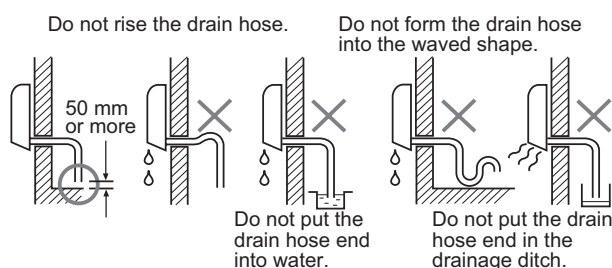
3) While pressing the indoor unit onto the wall, hook it at the lower part on the installation plate.

Pull the indoor unit toward you to confirm that it is firmly hooked on the installation plate.

For detaching the indoor unit from the installation plate pull the indoor unit toward you while pushing the bottom up at the specified places.



4) Run the drain hose at a downward sloped angle.



5) Put water in the drain pan and make sure that the water is being drained outside.

Caution:

Install the drain pipe for proper drainage. Improper drainage can result in water dripping inside the room.

7.4 Installation of Outdoor Unit

1. Installation of Outdoor Unit

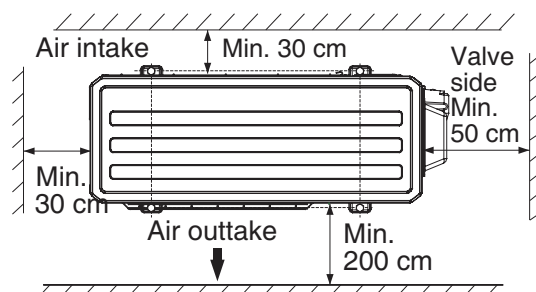
(1) Install the unit where it will not be tilted by more than 3°. However, do not install the unit with it tilted towards the side containing the compressor.

(2) When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.

(3) In the area with heavy snowfall, if the intake and outlet of outdoor unit is blocked with snow it is likely to cause of the breakdown. Please construct a canopy and a pedestal or place the unit on a high stand (local configured)

1. Place the outdoor unit at the selected position in advance.

2. Outdoor unit to be fasten with bolts at the four places indicated by the arrows without fail.



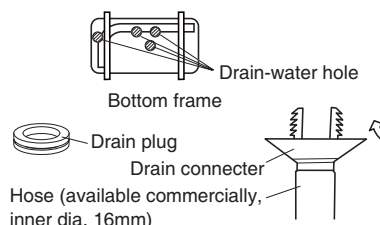
2. Draining the Water (no for cooling only)

* Holes are provided on the base plate of the outdoor unit to ensure that the defrost water produced during heating operations is drained off efficiently.

* If a centralized drain is required when installing the unit on a balcony or wall.

* If the drain port is covered by a mounting base or floor surface, place additional foot bases of at least 30mm in height under the outdoor units feet.

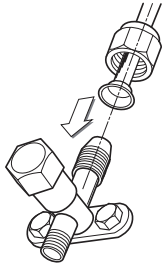
* In cold areas, do not use a drain hose with the outdoor unit. (Otherwise, drain water may freeze, impairing heating performance.)



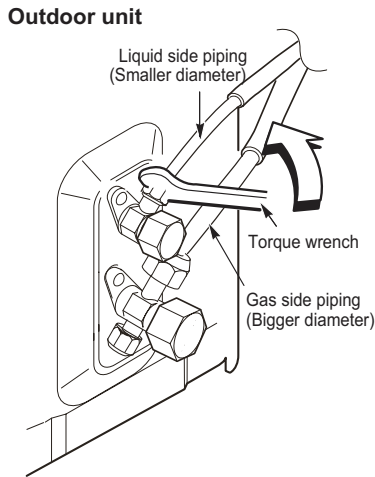
3. Refrigerant Piping Connection

1. Remove the Valve cover from the unit by loosening the screw.

2. Align the center of the pipings and sufficiently tighten the flare nut by hand.



3. Finally, tighten the flare nut with torque wrench until the wrench clicks.



4. Evacuation

After the piping has been connected to the indoor unit, perform the air purge.

AIR PURGE

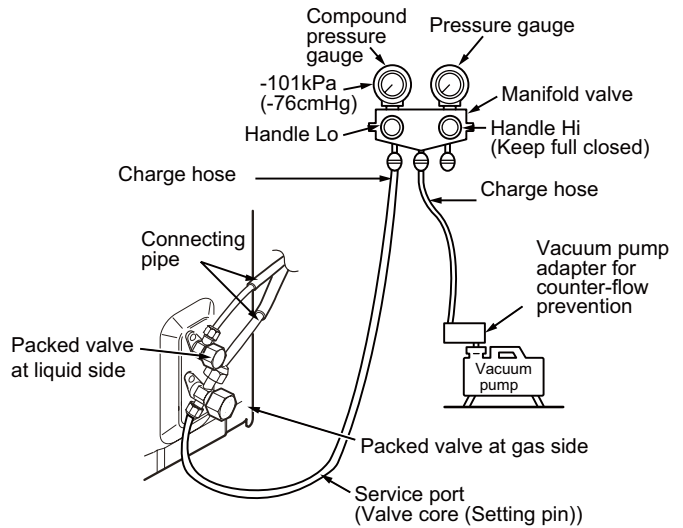
Evacuate the air in the connecting pipes and in the indoor unit using a vacuum pump.
Do not use the refrigerant in the outdoor unit.
For details, see the vacuum pump manual.

Air purging with vacuum pump

Be sure to use a vacuum pump with counter-flow prevention function so that oil inside the pump does not flow back into the air conditioner pipes when the pump stops. (If oil inside the vacuum pump enters into the air conditioner circuit which uses R410A, trouble with the refrigeration system may develop.)

1. Connect the charge hose from the manifold valve to the service port of the gas side packed valve.
2. Connect the charge hose to the port of the vacuum pump.
3. Open fully the low pressure side handle of the gauge manifold valve.
4. Operate the vacuum pump to begin evacuating. Perform evacuating for about 15 minutes if the piping length is 20 meters (15 minutes for 20 meters) (assuming a pump capacity of 27 liters per minute). Confirm that the compound pressure gauge reading is -101 kPa (-76 cmHg).

5. Close the low pressure valve handle of gauge manifold.
6. Open fully the valve stem of the packed valves (both sides of Gas and Liquid).
7. Remove the charging hose from the service port.
8. Securely tighten the caps on the packed valves.



CAUTION

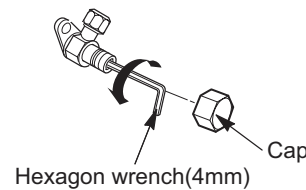
• IMPORTANT POINTS FOR PIPING WORK

1. Keep dust and moisture from entering the pipes.
2. Tighten connections carefully (between pipes and unit).
3. Evacuate the air in the connecting pipes using a VACUUM PUMP.
4. Check for gas leaks at all connections.

Packed Valve handling precautions

- Open the valve stem all the way; but do not try to open it beyond the stopper.
- Securely tighten the valve stem cap with torque in the following table:

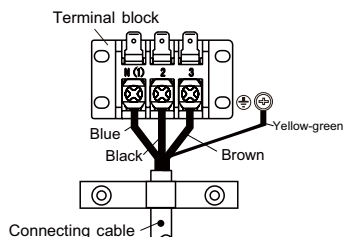
Gas side (Ø12 mm)	50 to 55 N·m (5.0 to 5.5 kgf·m)
Liquid side (Ø6 mm)	14 to 18 N·m (1.4 to 1.8 kgf·m)
Service port	14 to 18 N·m (1.4 to 1.8 kgf·m)



5. Wiring Connection

- 1) Remove the handle from the outdoor unit.
- 2) Fasten the connection cord to the retaining plate using the lock nut.
- 3) Connect connection cord to terminal.
- 4) Install the handle.

The screws are packed with the terminal board.



7.5 Power

1. The supply voltage must be the same as the rated voltage of the air conditioner.

2. Prepare a power source for the exclusive use of the air conditioner.

- Incorrect wiring connection may cause electrical parts to burn out.
- Be sure to comply with local regulations/codes when running the wire from outdoor unit to indoor unit. (Size of wire and wiring method etc.)
- Every wire must be securely connected.
- If incorrect or incomplete wiring is carried out, fire or smoke may result.
- Prepare the power supply for the exclusive use of the air conditioner.
- This product can be connected to the main breaker.

Connection to fixed wiring: A switch or circuit breaker that can disconnect all poles must be included in the fixed wiring. Be sure to use an approved circuit breaker or switch. (It's the suggestion value in the table)

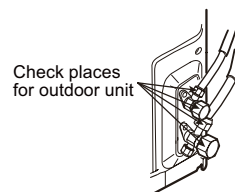
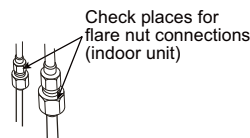
Models	Air switch capacity
ASH-09 AIE, ASH-12 AIE	16A
ASH-18 AIE, ASK-24 AIE	25A

7.6 Test Operation

1. Check that all tubing and wiring have been properly connected.
2. Check that the gas and liquid side service valves are fully open.

1. Gas Leak Test

Check the flare nut connections for gas leaks with a gas leak detector and/or soapy water.



2. Test Running

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

Perform test operation and check items 1 and 2 below.

2.1 INDOOR UNIT

- (1) Is operation of each button on the remote control unit normal?
- (2) Does each lamp light normally?
- (3) Do the air flow-direction louver operate normally?
- (4) Is the drain normal?

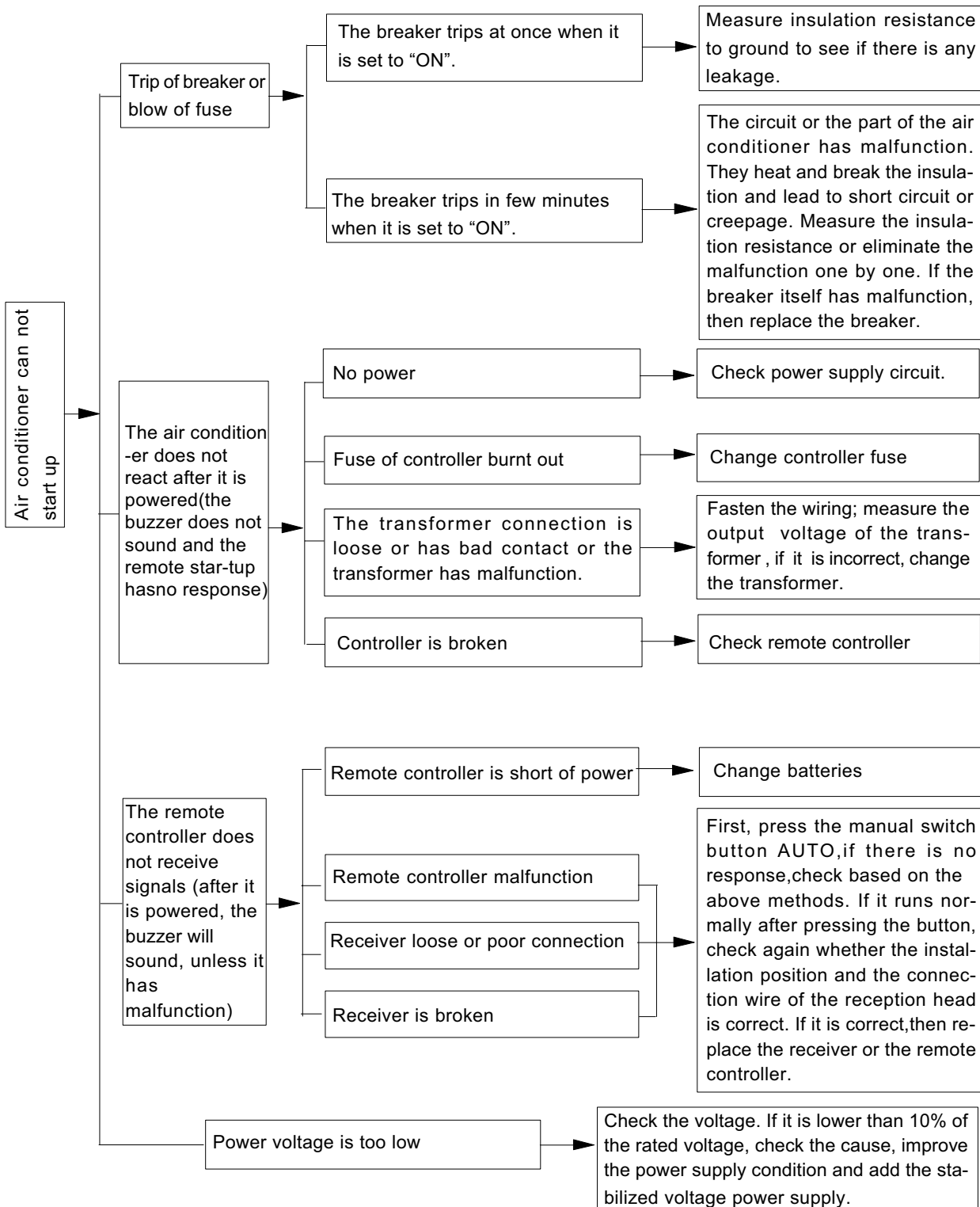
2.2 OUTDOOR UNIT

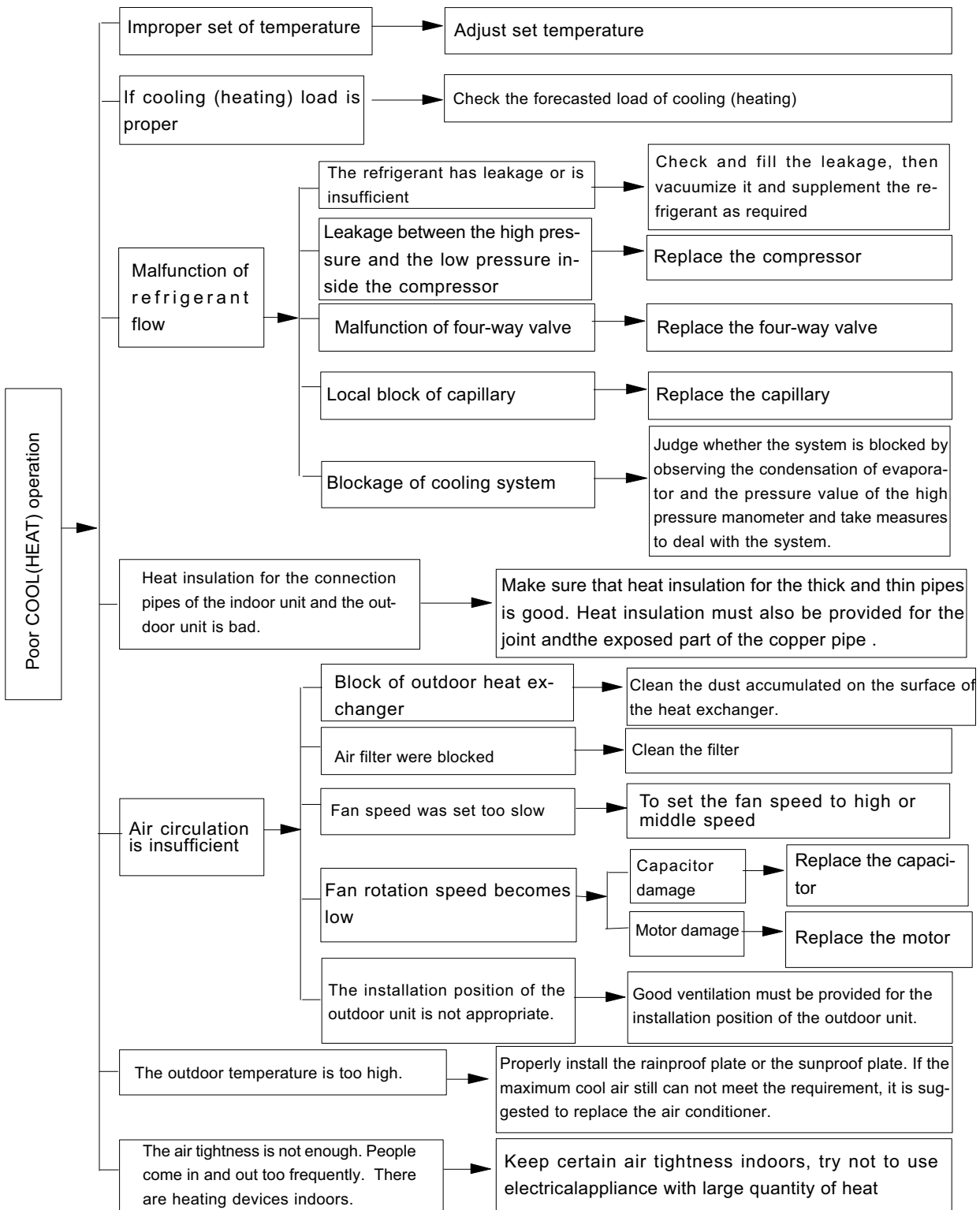
- (1) Is there any abnormal noise and vibration during operation?
- (2) Will noise, wind, or drain water from the unit disturb the neighbors?
- (3) Is there any gas leakage?

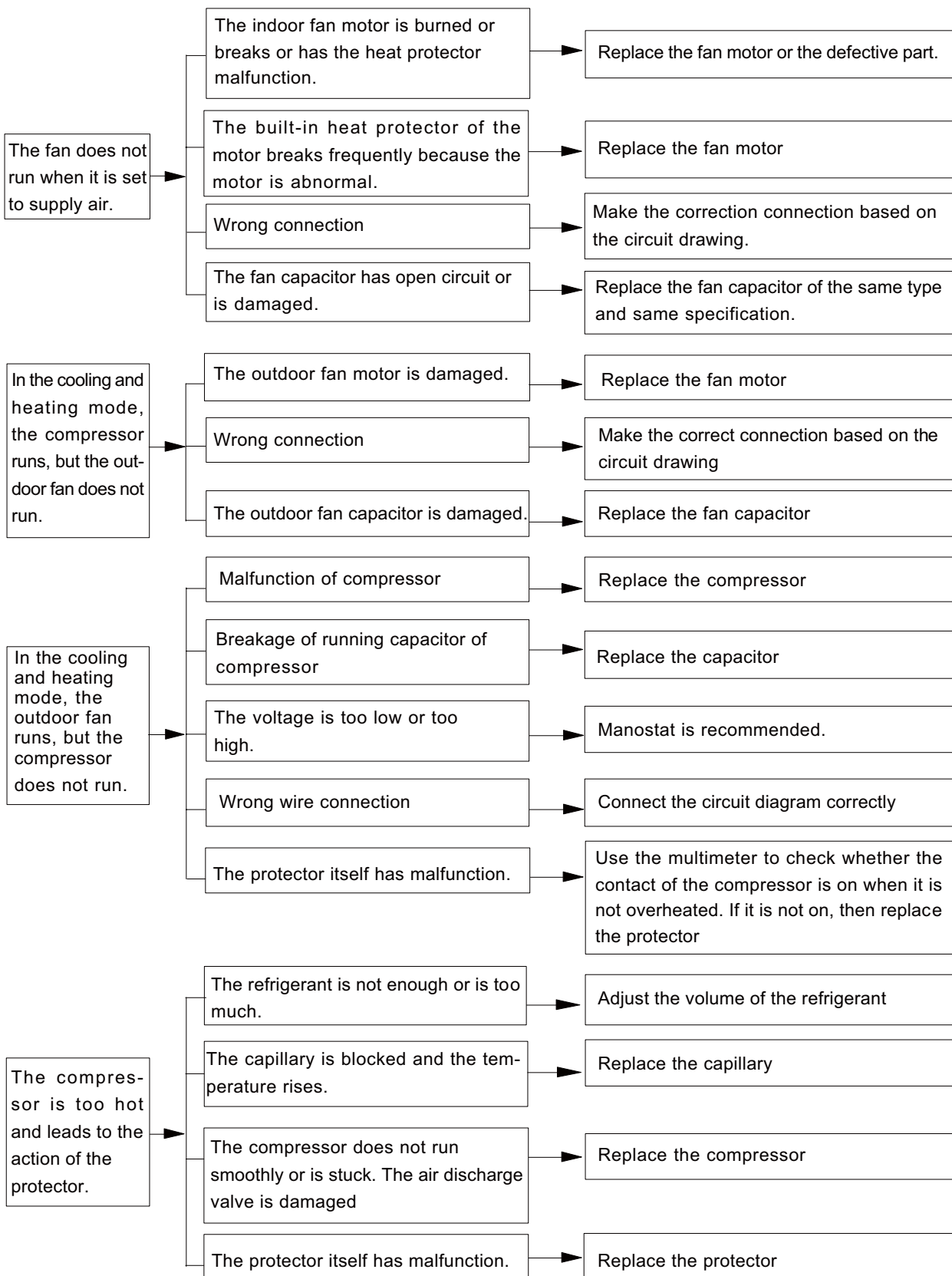
8. Troubleshooting

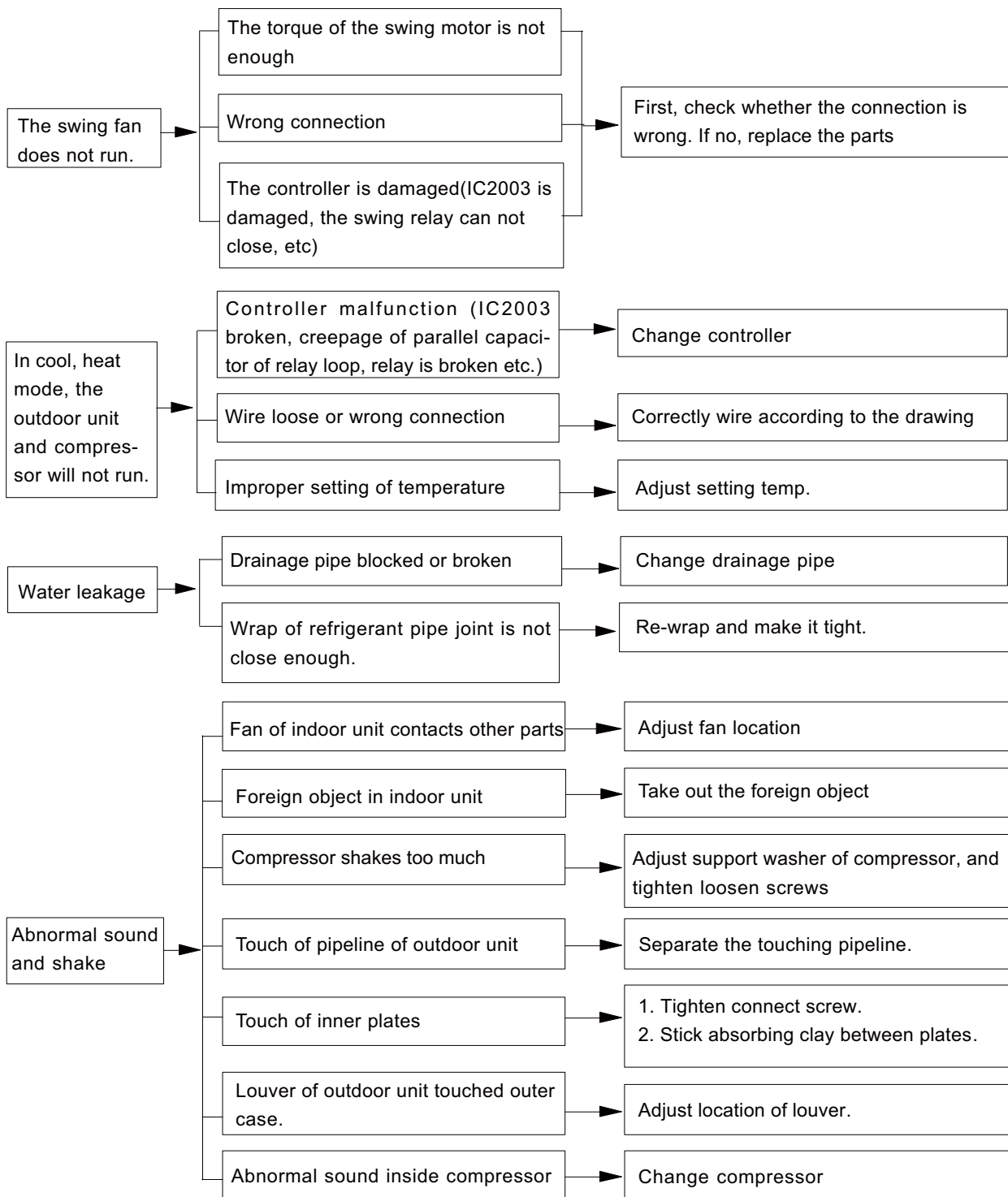
8.1 Malfunction Analysis

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









8.2 Flashing LED of Indoor/Outdoor Unit and Primary Judgement

Applicable for ASH-09AIE & ASH-12AIE models

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			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	Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s			Yellow Indicator	Red Indicator
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				OFF 3S and blink 3 times			During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates.	1. Poor air-return in indoor unit; 2. Fan speed is abnormal; 3. Evaporator is dirty.
3	System block or refrigerant leakage	E3	OFF 3S and blink 3 times					OFF 3S and blink 9 times		The Dual-8 Code Display will show E3 until the low pressure switch stop operation.	1.Low-pressure protection 2.Low-pressure protection of system 3.Low-pressure protection of compressor
4	High discharge temperature protection of compressor	E4	OFF 3S and blink 4 times				OFF 3S and blink 7 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).
5	Overcurrent protection	E5	OFF 3S and blink 5 times				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.
6	Communication Malfunction	E6	OFF 3S and blink 6 times						OFF	During cooling operation, compressor stops while indoor fan motor operates. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
7	High temperature resistant protection	E8	OFF 3S and blink 8 times				OFF 3S and blink 6 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).
8	EEPROM malfunction	EE			OFF 3S and blink 15 times		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	Replace outdoor control panel AP1
9	Limit/decrease frequency due to high temperature of module	EU		OFF 3S and blink 6 times		OFF 3S and blink 6 times				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.
10	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.

Troubleshooting

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
11	Gathering refrigerant	F0	OFF 3S and blink 1 times	OFF 3S and blink 1 times				When the outdoor unit receive signal of Gathering refrigerant ,the system will be forced to run under cooling mode for gathering refrigerant	Nominal cooling mode	
12	Indoor ambient temperature sensor is open/short circuited	F1		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.	<ol style="list-style-type: none"> Loosening or bad contact of indoor ambient temp. sensor and mainboard terminal. Components in mainboard fell down leads short circuit. Indoor ambient temp. sensor damaged.(check with sensor resistance value chart) Mainboard damaged. 	
13	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	<ol style="list-style-type: none"> Loosening or bad contact of Indoor evaporator temp. sensor and mainboard terminal. Components on the mainboard fall down leads short circuit. Indoor evaporator temp. sensor damaged.(check temp. sensor value chart for testing) Mainboard damaged. 	
14	Outdoor ambient temperature sensor is open/short circuited	F3		OFF 3S and blink 3 times			OFF 3S and blink 6 times	During cooling and drying operating, compressor stops while indoor fan operates; During heating operation, the complete unit will stop operation	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)	
15	Outdoor condenser temperature sensor is open/short circuited	F4		OFF 3S and blink 4 times			OFF 3S and blink 5 times	During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor)	
16	Outdoor discharge temperature sensor is open/short circuited	F5		OFF 3S and blink 5 times			OFF 3S and blink 7 times	During cooling and drying operation, compressor will sop after operating for about 3 mins, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 mins.	<ol style="list-style-type: none"> Outdoor temperature sensor hasnt been connected well or is damaged. Please check it by referring to the resistance table for temperature sensor) The head of temperature sensor hasnt been inserted into the copper tube 	
17	Limit/decrease frequency due to overload	F6		OFF 3S and blink for 6 times			OFF 3S and blink 3 times	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)	
18	Decrease frequency due to overcurrent	F8		OFF 3S and blink 8 times			OFF 3S and blink once	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	

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
19	Decrease frequency due to high air discharge	F9		OFF 3S and blink 9 times				OFF 3S and blink twice	All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)
20	Limit/decrease frequency due to antifreezing	FH		OFF 3S and blink 2 times	OFF 3S and blink 2 times			OFF 3S and blink 4 times	All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low
21	Voltage for DC bus-bar is too high	PH		OFF 3S and blink 11 times				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 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)
22	Voltage of DC bus-bar is too low	PL			OFF 3S and blink 21 times			OFF 3S and blink 12 times	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range. 2.If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, theres malfunction for the circuit, please replace the control panel (AP1)
23	Compressor Min frequency in test state	P0								Showing during min. cooling or min. heating test
24	Compressor rated frequency in test state	P1								Showing during nominal cooling or nominal heating test
25	Compressor maximum frequency in test state	P2								Showing during max. cooling or max. heating test

Troubleshooting

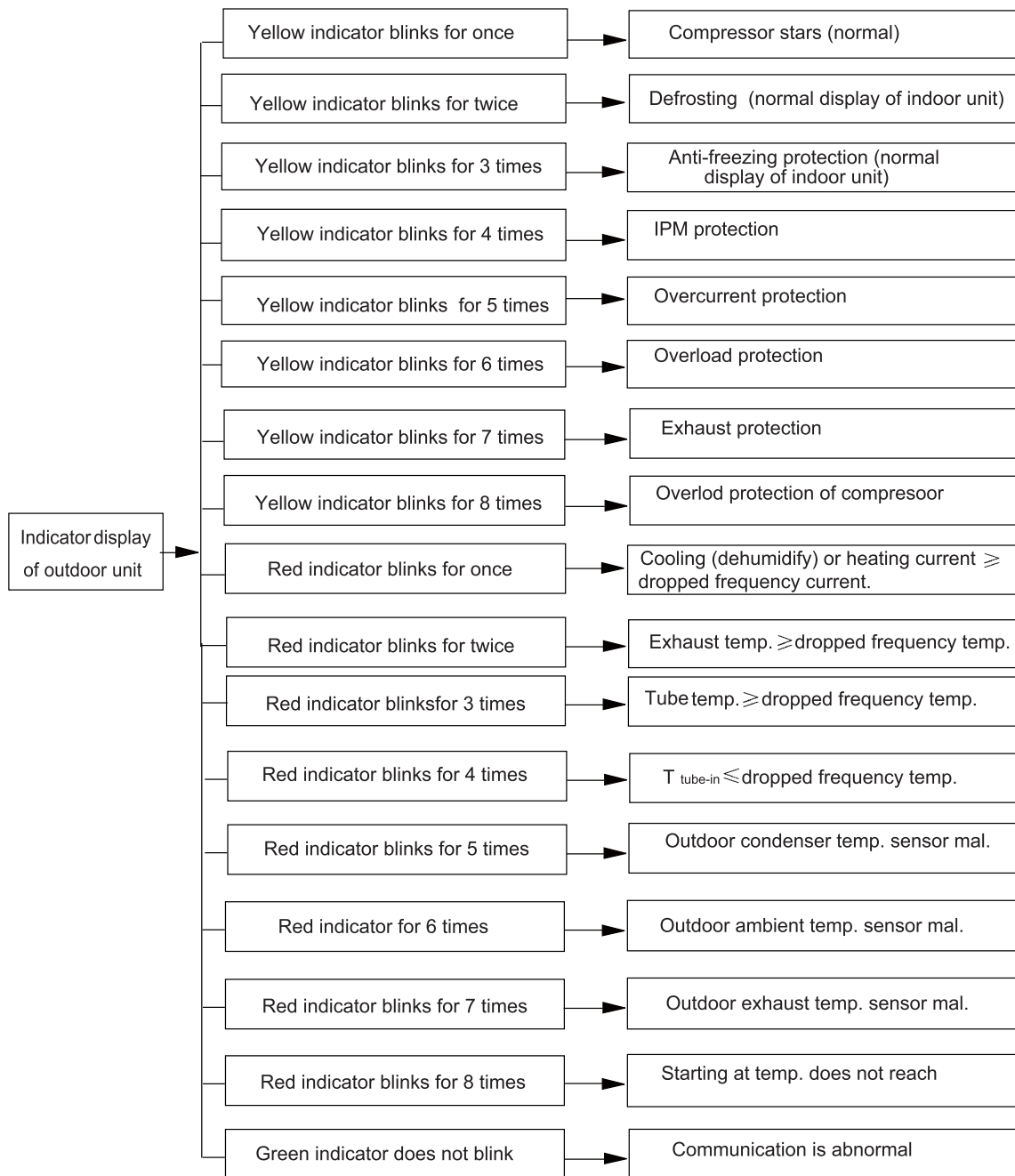
NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
26	Compressor intermediate frequency in test state	P3							Showing during middle cooling or middle heating test	
27	Overcurrent protection of phase current for compressor	P5		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).	
28	Charging malfunction of capacitor	PU			OFF 3S and blink 17 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Refer to the part three—charging malfunction analysis of capacitor	
29	Malfunction of module temperature sensor circuit	P7			OFF 3S and blink 18 times			During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Replace outdoor control panel AP1	
30	Module high temperature protection	P8			OFF 3S and blink 19 times			During cooling operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	After the complete unit is de-energized for 20mins, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.	
31	Overload protection for compressor	H3			OFF 3S and blink 3 times	OFF 3S and blink 8 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)	
32	IPM protection	H5			OFF 3S and blink 5 times	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 (IPM protection, loss of synchronism protection and overcurrent protection of phase current for compressor).	
33	Module temperature is too high	H5			OFF 3S and blink 5 times	OFF 3S and blink 10 times				

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
34	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.
35	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.
36	PFC protection	HC			OFF 3S and blink 6 times	OFF 3S and blink 14 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
37	Outdoor DC fan motor malfunction	L3	OFF 3S and blink 23 times				OFF 3S and blink 14 times		Outdoor DC fan motor malfunction lead to compressor stop operation,	DC fan motor malfunction or system blocked or the connector loosed
38	power protection	L9	OFF 3S and blink 20 times			OFF 3S and blink 9 times			compressor stop operation and Outdoor fan motor will stop 30s latter , 3 minutes latter fan motor and compressor will restart	To protect the electrical components when detect high power
39	Indoor unit and outdoor unit doesn't match	LP	OFF 3S and blink 19 times			OFF 3S and blink 16 times			compressor and Outdoor fan motor can't work	Indoor unit and outdoor unit doesn't match
40	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
41	Normal communication							continuously		
42	Defrosting				OFF 3S and blink once (during blinking, ON 10s and OFF 0.5s)	OFF 3S and blink twice			Defrosting will occur in heating mode. Compressor will operate while indoor fan will stop operation.	Its the normal state

Troubleshooting

NO.	Malfunction Name	Display Method of Indoor Unit			Display Method of Outdoor Unit			A/C status	Possible Causes	
		Dual-8 Code Display	Indicator Display (during blinking, ON 0.5s and OFF 0.5s)			Indicator has 3 kinds of display status and during blinking, ON 0.5s and OFF 0.5s				
			Operation Indicator	Cool Indicator	Heating Indicator	Yellow Indicator	Red Indicator			Green Indicator
43	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
44	Malfunction of voltage dropping for DC bus-bar	U3			OFF 3S and blink 20 times				During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop	Supply voltage is unstable
45	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.
46	The four-way valve is abnormal	U7		OFF 3S and blink 20 times					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.
47	Frequency limiting (power)						OFF 3S and blink 13 times			
48	Compressor is open-circuited					OFF 3S and blink once				
49	The temperature for turning on the unit is reached						OFF 3S and blink 8 times			
50	Frequency limiting (module temperature)						OFF 3S and blink 11 times			
51	Malfunction of zero-cross detection circuit	U8	OFF 3S and blink 17 times						The complete unit stops	1.Power supply is abnormal; 2.Detection circuit of indoor control mainboard is abnormal.

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

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

2. Low voltage overcurrent protection

Possible cause: Sudden drop of supply voltage.

3. Communication malfunction

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

4. Sensor open or short circuit

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

5. Compressor over load protection

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

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

6. System malfunction

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

Possible causes: Outdoor temperature is too high when cooling; insufficient outdoor air circulation; refrigerant flow malfunction. please refer to the malfunction analysis in the previous section for handling method.

7. IPM module protection

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

Applicable for ASH-18AIE & ASH-24AIE models

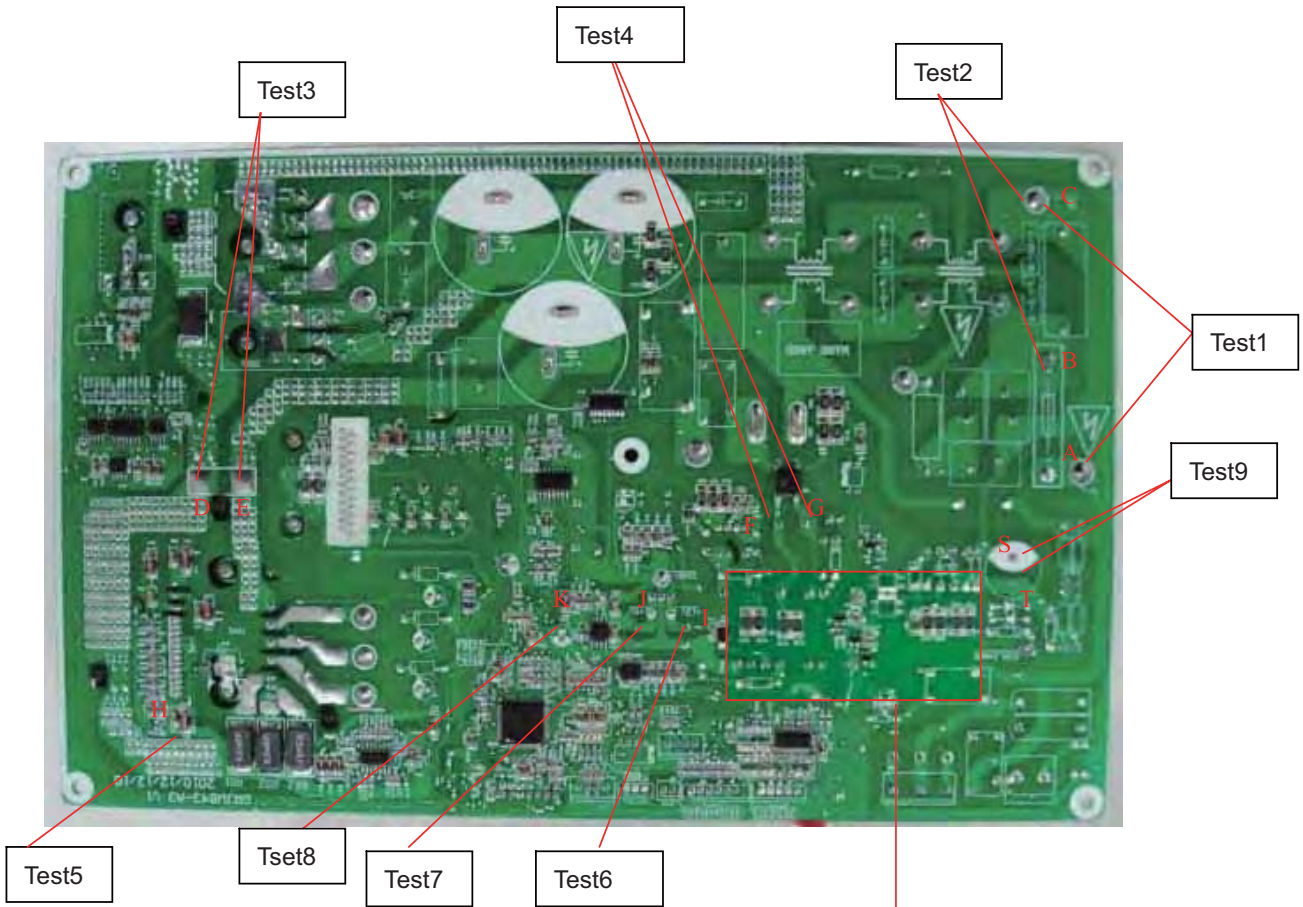
NO.	Name of malfunction	Indoor unit displaying method			Outdoor unit display(LEDs have 3 status) □ OFF ■ ON ☆ Blinks				AC status	Malfunctions		
		Double 8 code display	Indicator display(LED blinks 0.5s-ON/0.5s-OFF)			D40/D5	D41/D6	D42/D16			D43/D30	
			Running LED	Cooling LED	Heating LED							
1	System high pressure protection	E1	3s off blink once			□	☆	☆	☆	cooling,dehumidifying,except the indoor fan motor is running,others will stop to run. heating;all stop running	High pressure of system,might be: 1.Refrigerant is too much; 2.Poor heating exchanging for units(including heat exchanger is dirty and unit heating radiating ambient is poor); 3.Ambient temp.is too high.	
2	Anti-freezing protection	E2	3s off blink twice			■	□	■	□	cooling,dehumidifying,compressor,outdoor fan motor will stop running,indoor fan motor will keep running.	1.Poor indoor unit air returning; 2.Indoor fan motor rotating speed abnormal; 3.Evaporator is dirty;	
3	Compressor air exhaust high temp. protection	E4	3s off blink four times			■	□	■	☆	cooling,dehumidifying,compressor,outdoor fan motor will stop running,indoor fan motor works. heating:all stop running.	Pls refer to trouble shoot (air exhaust protection,overload)	
4	AC overload protection	E5	Off 3s blink 5 times			□	■	☆	□	Cooling,dehumidifying,compressor,outdoor fan motor will stop,indoor fan will work. heating;all will stop	1.power supply is stable,fluctuation is too much 2.Power supply is too low,overload is too much.	
5	Indoor and outdoor units communication malfunction	E6	Off 3s blink 6 times			□	□	□	☆	Cooling,compressor will stop,indoor fan motor works,Heating:all will stop	Please refer to troubleshooting	
6	Anti-high temp. protection	E8	Off 3s blink 8 times			■	□	■	■	Cooling,compressor will stop,indoor fan motor works,Heating:all will stop	Please refer to troubleshooting	
7	Indoor unit motor no feedback	H6	Off 3s blink 11 times							Whole unit will stop to run	1.Poor insert for GPF 2.Indoor control board AP1 malfunction 3.Indoor motor M1 malfunction	
8	Jump wire cap malfunction protection	C5	Off 3s blink 15 times							Whole unit will stop to run	Indoor control board AP1 jump cap poor connected,please reinsert or replace the jump cap.	
9	Indoor ambient sensor open circuit,short circuit	F1		Off 3s blink once						Cooling,dehumidifying:indoor fan motor is running,other overloads will stop;Heating,whole unit will stop to run.	1.Room temp.sensor is not connected with the control panel AP1 2.Room temp.sensor is damaged	
10	Indoor evaporator sensor circuit open,short circuit	F2		Off 3s blink twice						Cooling,dehumidifying;indoor fan motor running,other overload will stop;Heating,whole unit will stop.	1.Tube temp.sensor is not connected with the control panel AP1 2.Tube temp.sensor is damaged	
11	Outdoor ambient sensor circuit open,circuit short	F3		Off 3s blinks three times			□	□	☆	■	Cooling,dehumidifying;compressor will stop,indoor fan motor will work.Heat:all will stop	Outdoorroom temp.sensor hasn't connected well,or damaged,please refer to the sensor resistance value for checking.
12	Outdoor condensor sensor open circuit,short circuit	F4		Off 3s blinks 4 times			□	□	☆	□	Cooling,dehumidifying;compressor will stop,indoor fan motor will work.Heat:all will stop	Outdoorroom temp.sensor hasn't connected well,or damaged,please refer to the sensor resistance value for checking.

Troubleshooting

13	Outdoor air exhaust sensor open circuit, short circuit	F5		Off 3s blinks 5 times		□	□	☆	☆	Cooling, dehumidifying; after running for 3mins later, the compressor will stop to run, indoor fan motor will start to run. heating: after run 3 mins later, all will stop to run.	1. Exhaust temp sensor hasn't connected well, or damaged, please refer to the sensor resistance value for checking. 2. Sensor head hasn't insert into the copper tube.
14	Overload limit/ descending frequency	F6		Off 3s blinks 6 times		■	□	☆	☆	Overload normal operation, compressor is running, frequency descending	Please refer to troubleshooting
15	Over current need frequency descending	F8		Off 3s blinks 8 times		■	■	□	■	Overload normal operation, compressor is running, frequency descending	1. Input power supply is too low 2. System voltage is too high, over is too much
16	Air exhaust over high need frequency descending	F9		Off 3s blinks 9 times		■	■	□	□	Overload normal operation, compressor is running, frequency descending	1. Overload is too much, ambient temp. is too high 2. Refrigerant is short 3. Electric expansion malfunction
17	DC generatrix voltage is too high	PH		Off 3s blink 11 times		□	■	□	☆	Cooling, dehumidifying, compressor stop running, Fan motor works. Heating: all will stop	1. Testing wire terminal L and N position. If higher than 265VAC, please cut off the power supply and restart until back to normal 2. If input voltage is normal, testing the voltage of electrolytic capacitor on AP1 after turn on the unit. There may be some problem and replace the AP1 if the electrolytic capacitor voltage range at 200-280V
18	Whole unit's current testing malfunction	U9		Off 3s blink 13 times		□	■	☆	■	Cooling, dehumidifying; compressor stops running, indoor fan motor works. Heating: all will stop running	The circuit on AP1 has malfunction, replace the outdoor unit AP1
19	Compressor current overcurrent protection	P5		Off 3s blink 15 times		□	☆	□	□	Cooling, dehumidifying; compressor stops running, indoor fan motor works. Heating: all will stop running	Please refer to troubleshooting (IPM protection, compressor lose steps, compressor current overcurrent protection)
20	Defrosting				Off 0.5s blink 10s					Under the heating mode, compressor running, indoor/outdoor fan motor stop working	It is normal function
21	Compressor overload protection	H3		Off 3s blink 3 times		□	☆	☆	□	Cooling, dehumidifying; compressor stops running, indoor fan motor works. Heating: all will stop running	1. Wire terminal OVCCOMP loosen or circuit, has problem, the resistance of SAT should be lower than 1 ohm. 2. Please refer to troubleshooting (exhaust/ overload protection)
22	IPM protection	H5		Off 3s blink 5 times		■	□	■	■	Cooling, dehumidifying; compressor stops running, indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting
23	Outdoor DC fan motor malfunction	L3	OFF 3S and blink 23 times			■	□	□	□	Outdoor DC fan motor malfunction lead to compressor stop operation,	DC fan motor malfunction or system blocked or the connector loosed
24	Malfunction of zero-cross detection circuit	U8	Off 3s blink 17 times							The complete unit stops	1. Power supply is abnormal; 2. Detection circuit of indoor control mainboard is abnormal.

25	PFC protection	HC			Off 3s blink 6 times	□	■	☆	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting
26	Compressor lose steps	H7			Off 3s blink 7 times	□	☆	■	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting
27	Startsup fail	Lc			Off 3s blink 11 times	□	☆	□	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to troubleshooting
28	Compressor current testing circuit malfunction	U1			Off 3s blink 13 times	□	☆	■	□		Replace the outdoor control board AP1
29	EEPROM malfunction	EE			Off 3s blink 15 times	□	□	□	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Replace the outdoor control board AP1
30	Capacitor charge malfunction	PU			Off 3s blink 17 times	□	■	□	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Pls refer to Part 3 capacitor charging fault of troubleshooting
31	Module sensor circuit diagram	P7			Off 3s blink 18 times	□	□	■	☆	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Replace the outdoor control board AP1
32	Module temp. over high protection	P8			Off 3s blink 19 times	■	□	☆	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	To check whether the ambient Temp. of IPM is too high or the heat-sinching of IPM is dirty else replace the outdoor baord AP1
33	DC Bus voltage dips	U3			Off 3s blink 20 times	□	■	■	■	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	Power voltage is not stable
34	Low DC Bus voltage protection	PL			Off 3s blink 21 times	□	■	■	□	Cooling, dehumidifying;compressor stops running,indoor fan motor works. Heating: all will stop running	1.Check the Input voltage if the Voltage is lower than 150VAC,restart the machine when the power supply is mormal. 2.Checking the reactor L connection.
35	IPM temp.is too high limit/ decrease frequency	EU				■	■	■	☆	Over load normal works,compressor runing frequency declines	Whole unit break for 20 mins and discharge,to check the outdoor control board AP1's IPM module coolant whether is short,the radiator is tightened. If above phenomenon is not OK,Please improve or replace the control board AP1
36	Four-way valve abnormal	U7				■	□	☆	□	This malfunction happened,only in heating mode,all will stop to run.	1.Power supply voltage is lower than AC175V 2.Wire terminal 4V loosen or wire break 3.4V damaged,replace 4V
37	Outdoor unit zero-cross detecting error	U9				■	■	☆	□	Cooling:compressor will stop,indoor fan motor works. Heating:all will stop.	Replace the outdoor control board AP1
38	Anti-freezing llmit/decrease frequency	FH				■	■	■	□	All loads work normally but the running frequency limited or decrease	Indoor unit air return is poor or fan speed is to low.

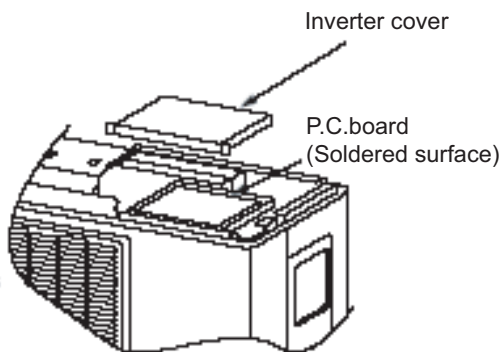
Key test point (bottom layer)



Test point No.	Test point	Related elements	Test value under normal condition
Test 1	Between A and C	Neutralwire, live wire	160V-265V
Test 2	Between B and C	Neutralwire, live wire	160V-265V
Test 3	Between D and E	Electrolytic capacitor of DC bus bar	DC 180V-380V
Test 4	Between F and G	Electrolytic capacitor of switch power	DC 180V-380V
Test 5	Both ends of diode D10	D10 (IPM module +15V)	DC 14.5V-15.6V
Test 6	Both ends of electrolytic capacitor C40	C40 (+12V power)	DC 12V-13V
Test 7	Both ends of electrolytic capacitor C82	C82 (+5V power)	DC 5V
Test 8	Both ends of electrolytic capacitor C225	C225 (+3.3V power)	DC 3.3V
Test 9	Between S and T	Communication circular current	DC 56V
Test 10	Between point N and GND	R78 to N terminal (ground) (signal receiving terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 11	U12	Between 1 and 2 at leading foot of U12	Jumping between 0V and 3.3V
Test 12	Between point M and GND	R75 to M terminal(ground) (signal sending terminal of outdoor unit)	Jumping between 0V and 3.3V
Test 13	U15	Between 3 and 4 at leading foot of U15	Jumping between 0V and 3.3V

●Discharging method

(1) remove the inverter cover(Outdoor Unit)



(2)As shown below,connect the discharge resistance(approx.100Ω20W)or plug of the sold ering iron to voltage between + - terminals of the electrolytic capacitor (test3 “D ” and “E” point) on PC Board for 30s, and then peformedischarging.

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 disc harging 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 electrol ytic capacitor completely by using soldering iron,etc.

8.3 How to Check Simply the Main Part

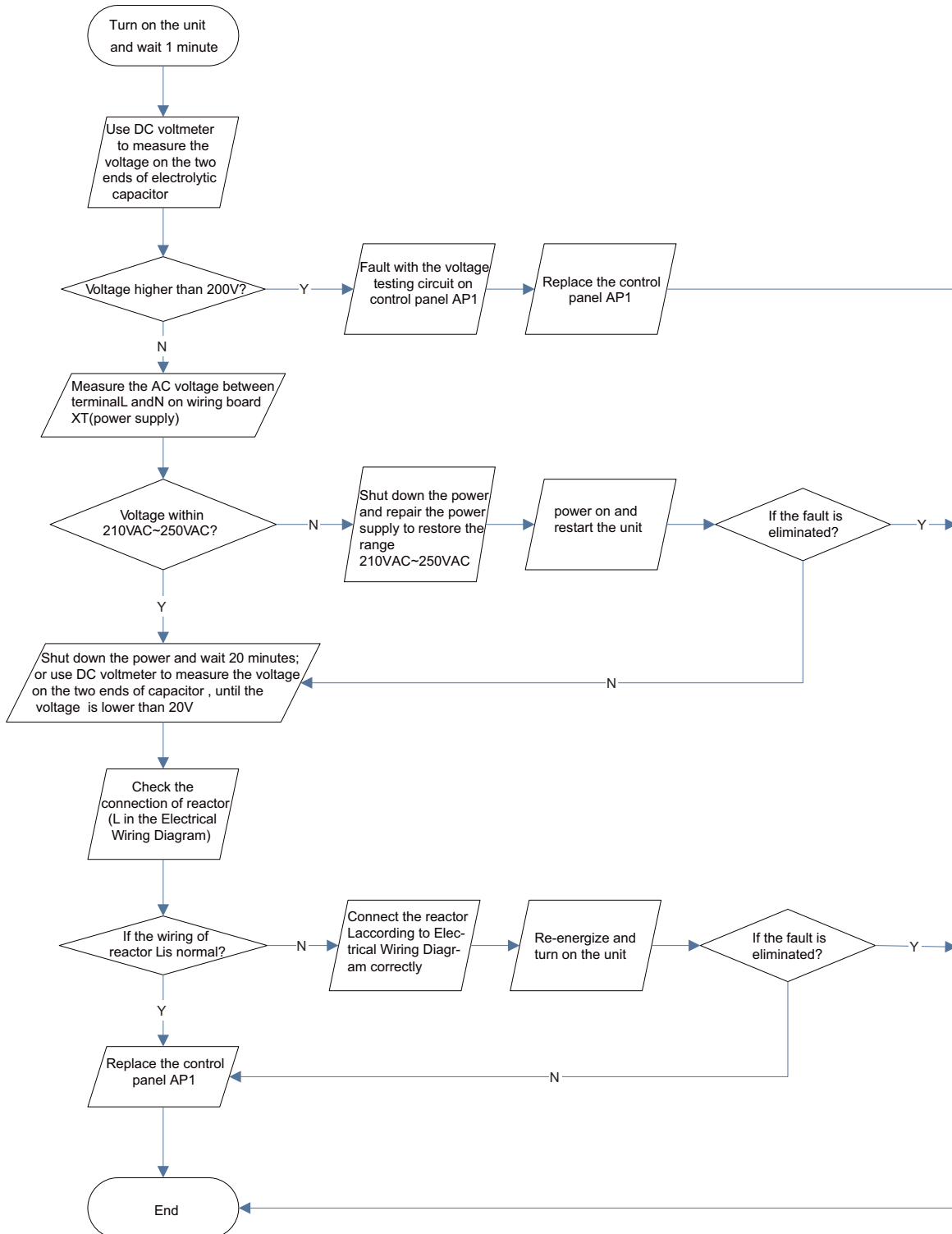
Applicable for ASH-09AIE & ASH-12AIE models

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

Main Check Points:

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

Fault diagnosis process:

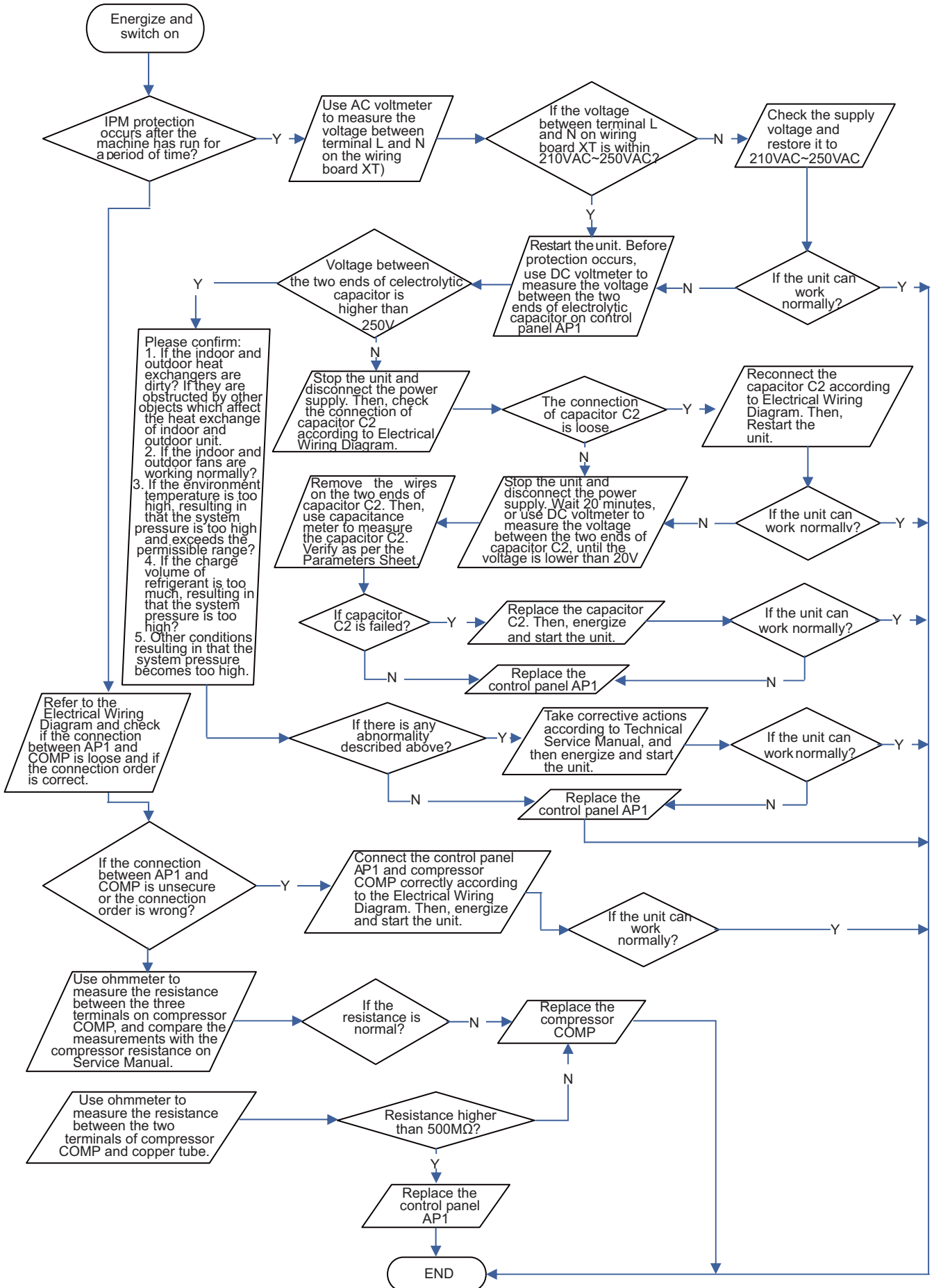


(2) IPM Protection, Out-of-step Fault, Compressor Phase Overcurrent (AP1 below refers to the outdoor control panel)

Main check points:

- Is the connection between control panel AP1 and compressor COMP secure? Loose? Is the connection in correct order?
- Is the voltage input of the machine within normal range? (Use AC voltmeter to measure the voltage between terminal L and N on the wiring board XT)
- Is the compressor coil resistance normal? Is the insulation of compressor coil against the copper tube in good condition?
- Is the working load of the machine too high? Is the radiation good?
- Is the charge volume of refrigerant correct?

Fault diagnosis process:

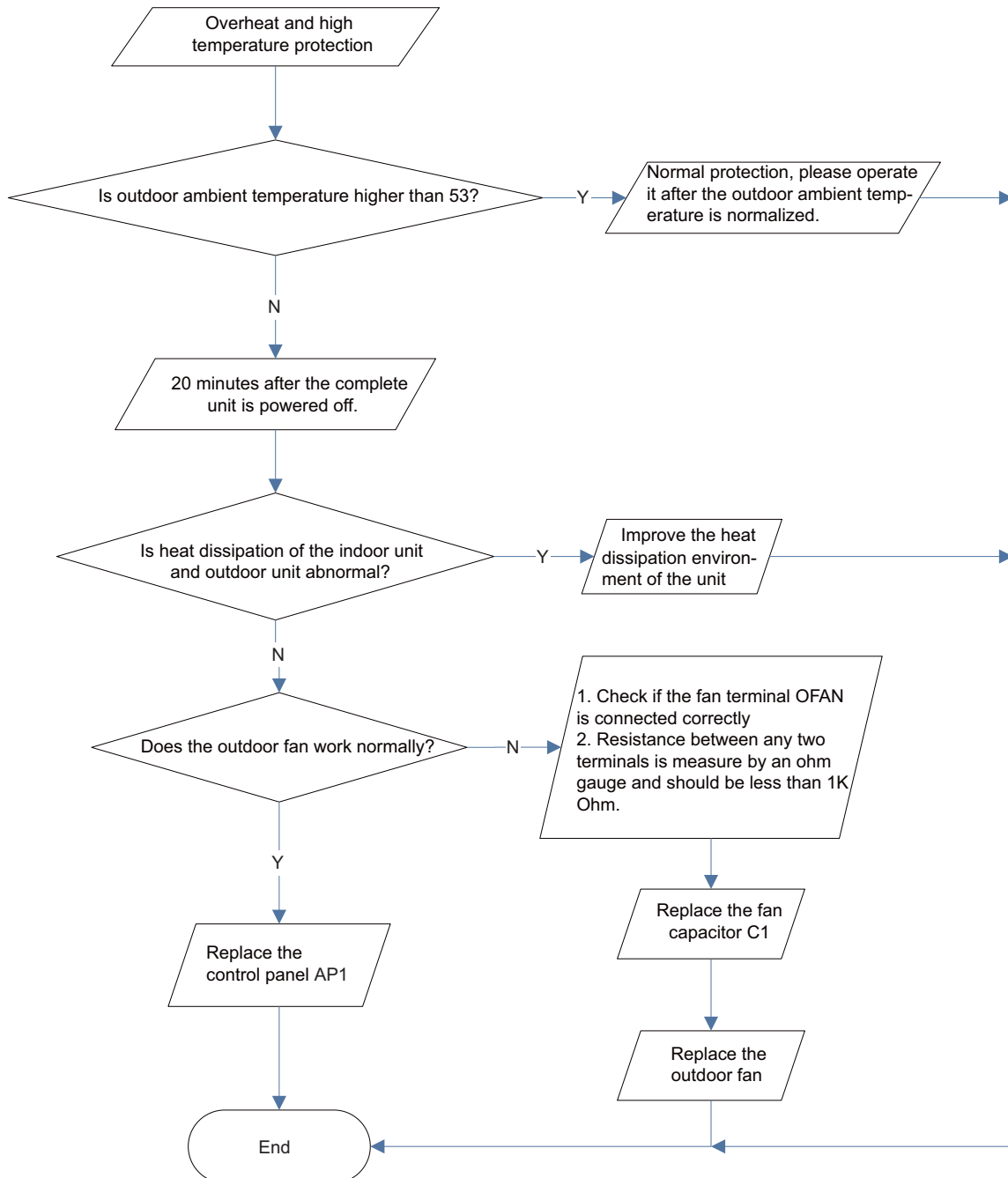


(3)High temperature and overload protection diagnosis (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

- Is outdoor ambient temperature in normal range?
- Are the outdoor and indoor fans operating normally?
- Is the heat dissipation environment inside and outside the unit good?

Fault diagnosis process:

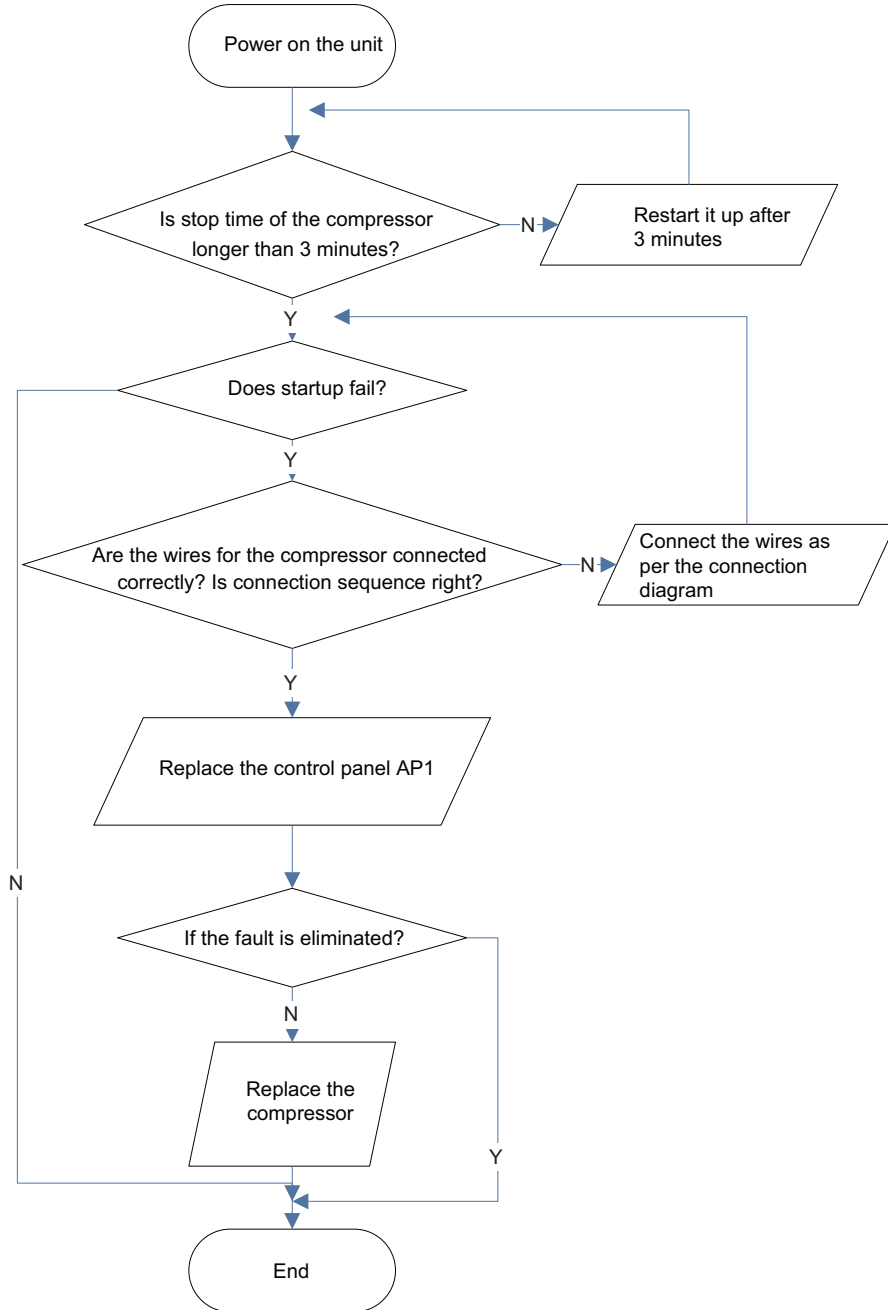


(4) Start-up failure (following AP1 for outdoor unit control board)

Mainly detect:

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

Fault diagnosis process:

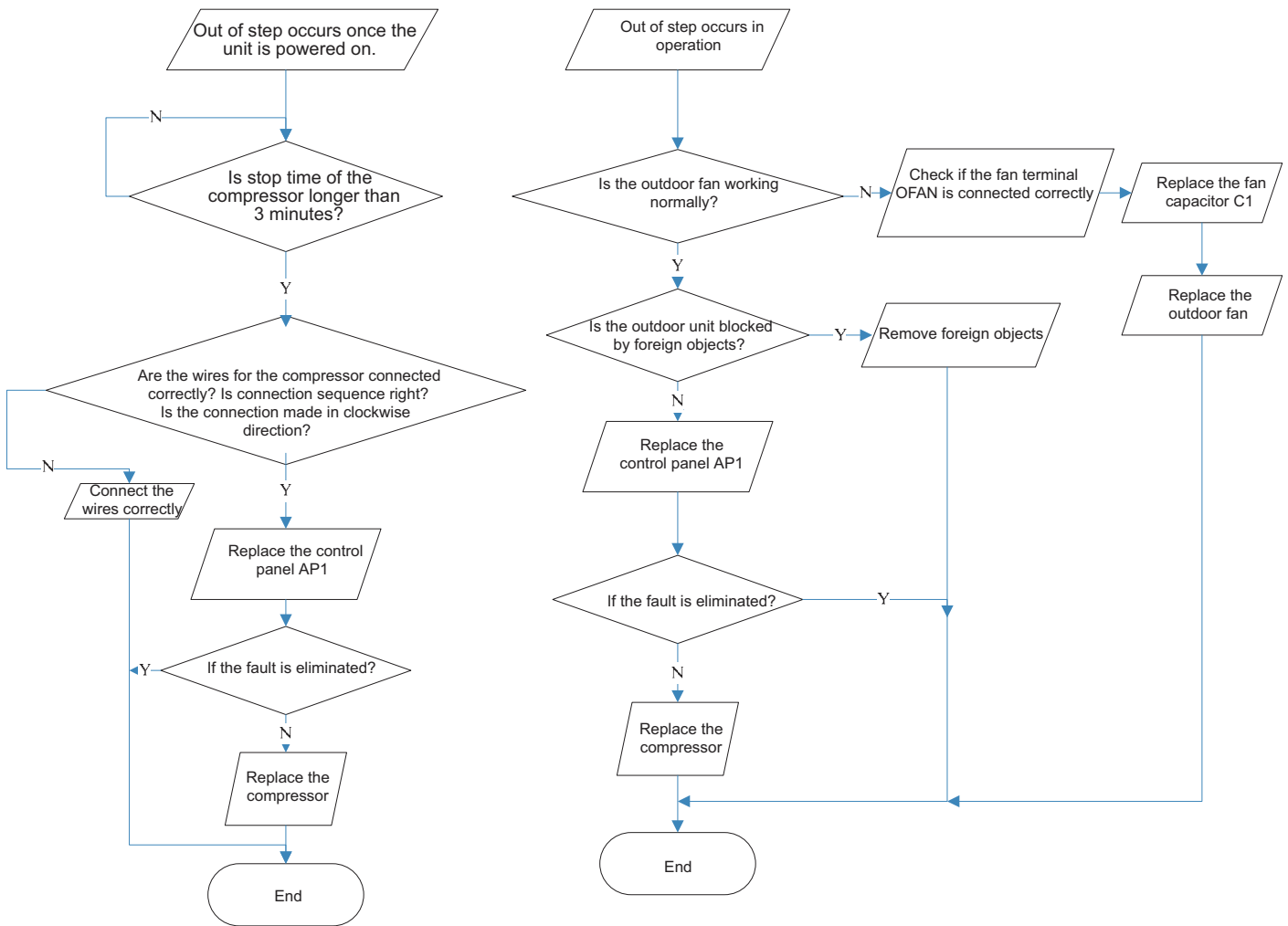


(5) Out of step diagnosis for the compressor (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

- Is the system pressure too high?
- Is the input voltage too low?

Fault diagnosis process:

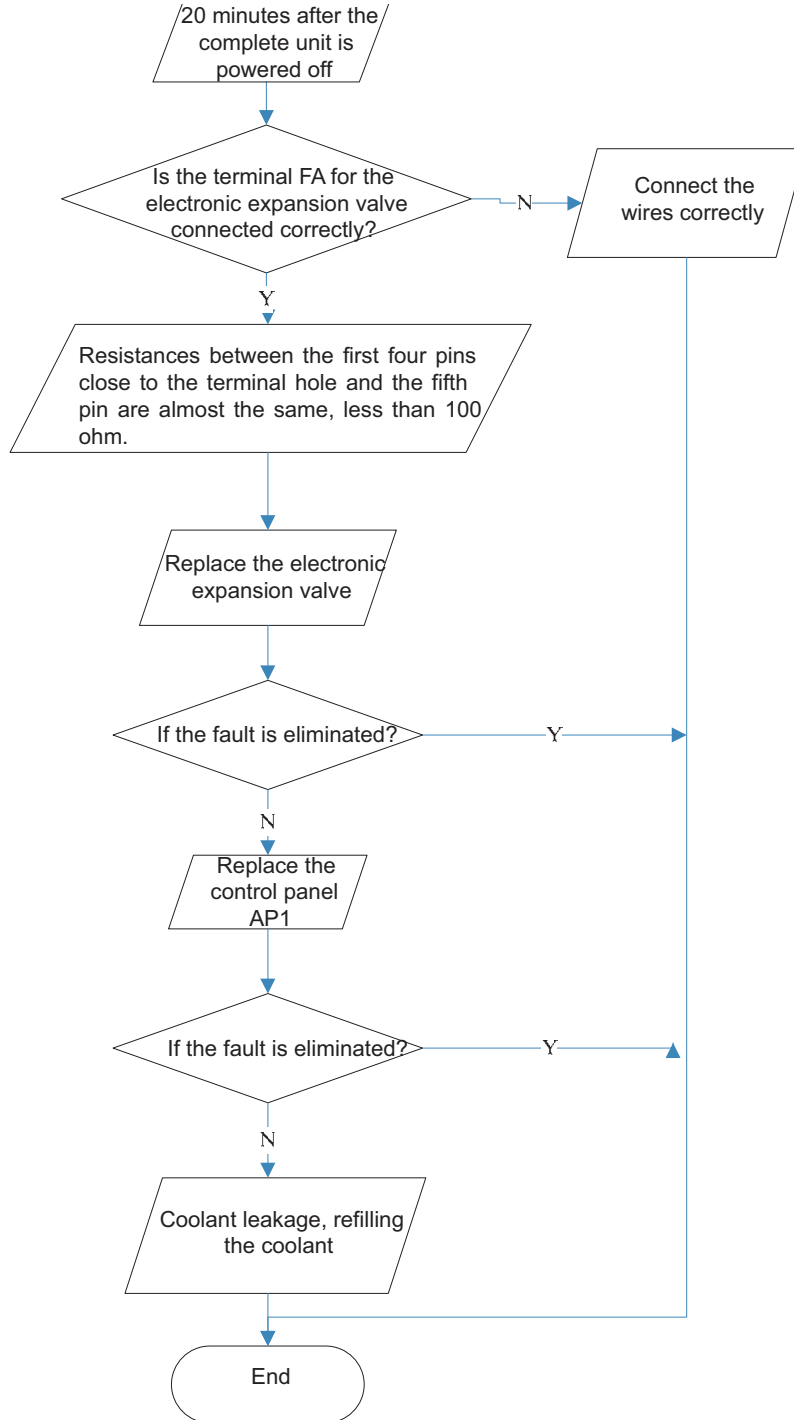


(6)Overload and air exhaust malfunction diagnosis (following AP1 for outdoor unit control board)

Mainly detect:

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

Fault diagnosis process:

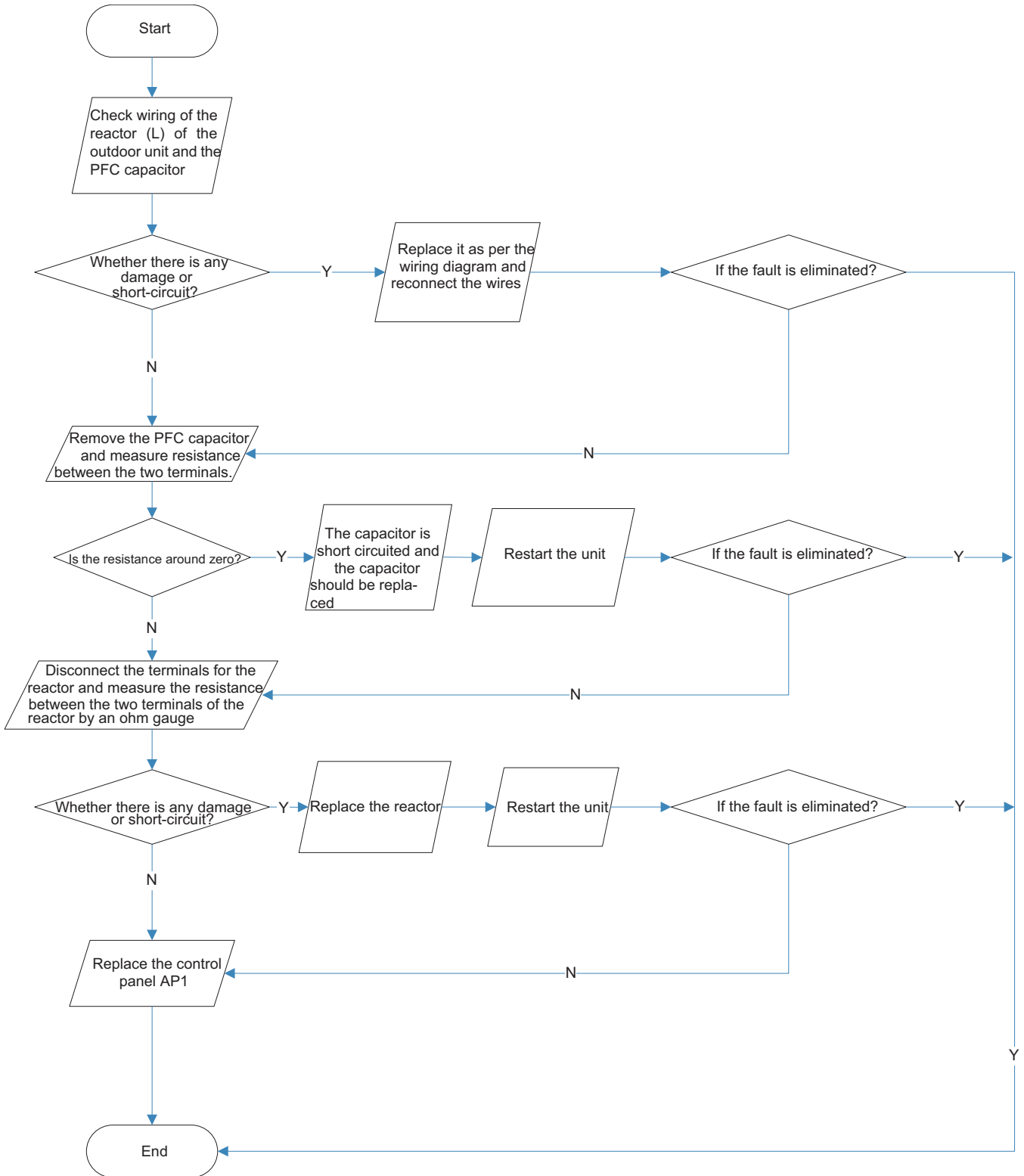


(7)Power factor correct or (PFC) fault (a fault of outdoor unit) (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

- Check if the reactor (L) of the outdoor unit and the PFC capacitor are broken

Fault diagnosis process:

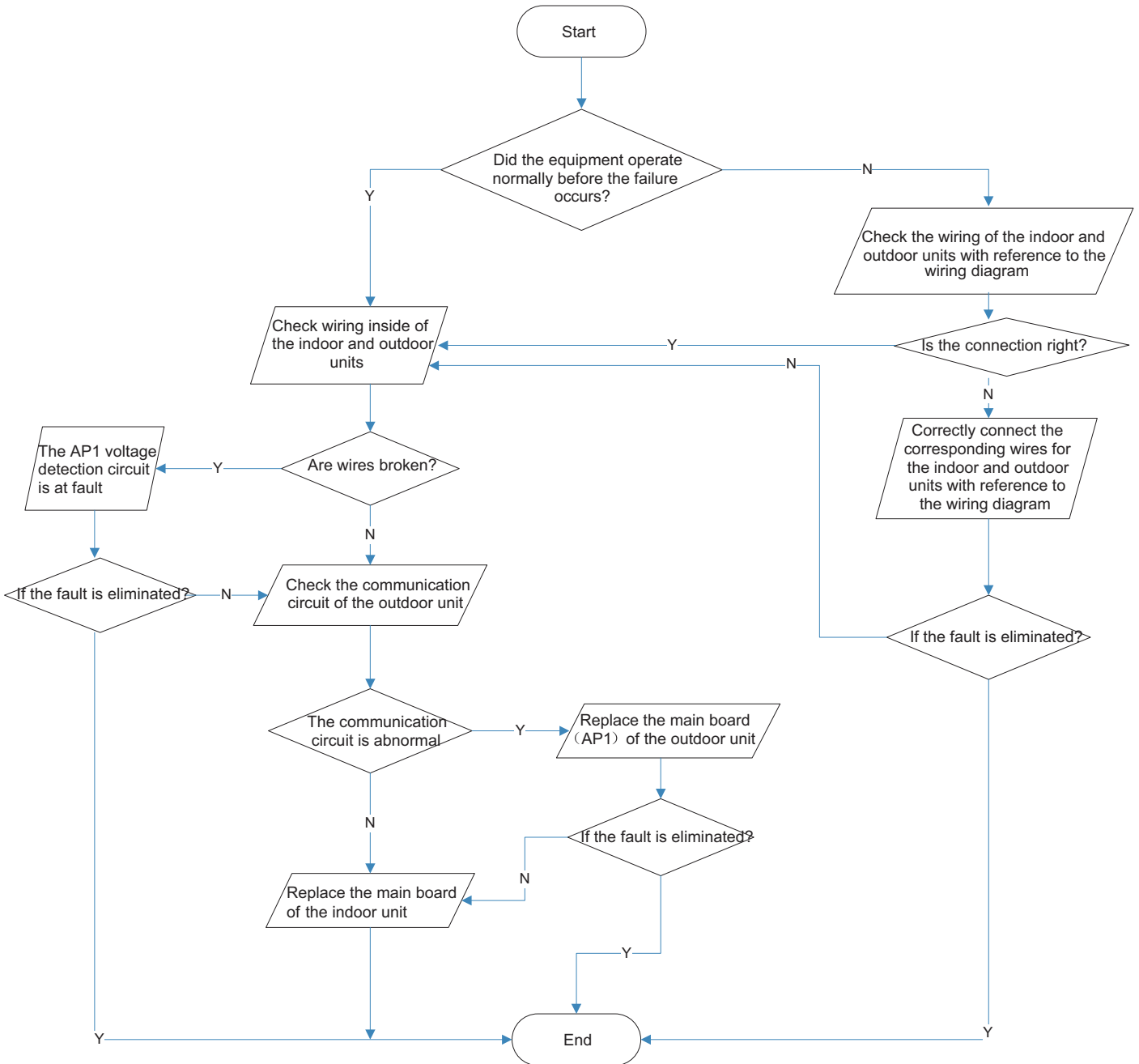


(8) Communication malfunction: (following AP1 for outdoor unit control board)

Mainly detect:

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

Fault diagnosis process:



Applicable for ASH-18AIE & ASH-24AIE models

Confirm the malfunction type according to the malfunction indicator of indoor/outdoor unit and malfunction sheet (usually the sheet will be stuck on the electric box cover or top cover of the unit).

As long as there is a malfunction, the indicator of the outdoor controller board will display the corresponding malfunction directly; Some malfunctions will be displayed on the indoor unit directly and some malfunctions will be seen on the remote controller by pressing light button for 4 times in 3 seconds.

In the below malfunction diagnosis process, "Y" means "Yes", "N" means "No";

In the below malfunction diagnosis process, controller board AP1 is for outdoor controller board;

Before proceeding malfunction check, discharge the electrolytic capacitor according to the method mentioned before and make sure the voltage is below 20V. Otherwise, it may cause electric shock or break the controller board!

(1) Capacitor charging malfunction (outdoor unit malfunction)

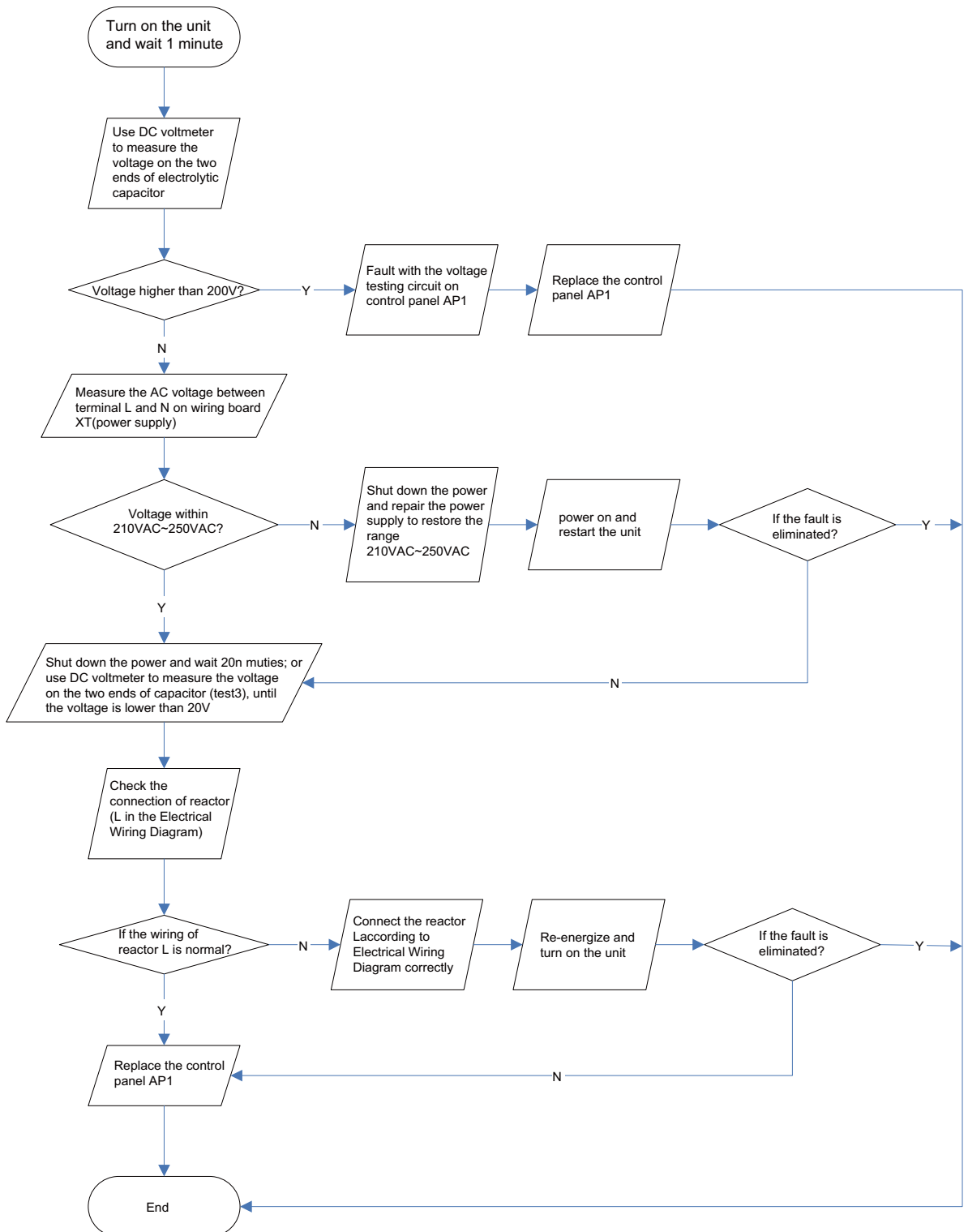
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	■	□	■

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 (outdoor unit malfunction)

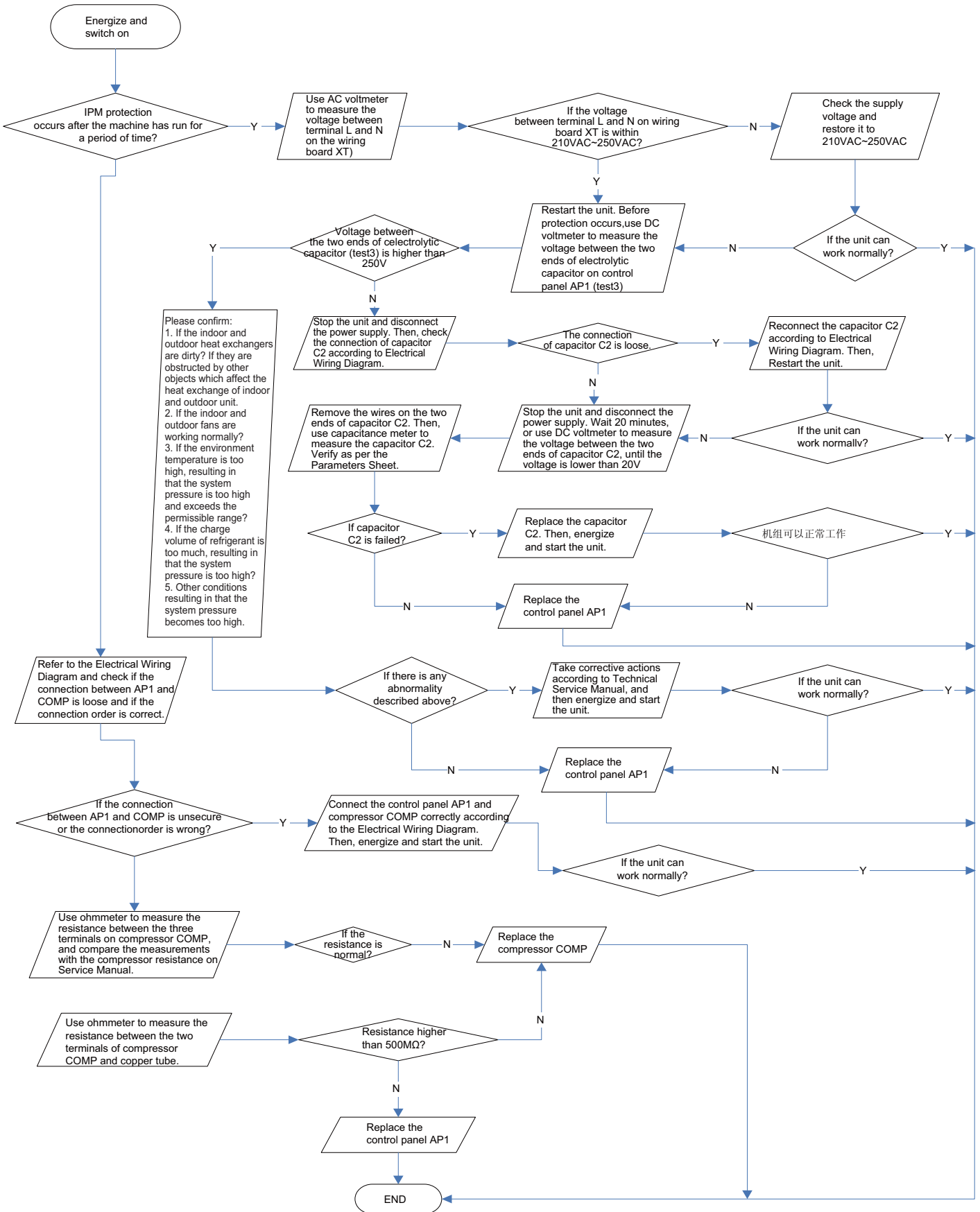
Outdoor unit malfunction indicator status

Malfunction	D5	D6	D16	D30
IPM protection	<input type="checkbox"/>	☆	<input type="checkbox"/>	■
Desynchronizing malfunction	<input type="checkbox"/>	☆	■	☆
Compressor overcurrent	<input type="checkbox"/>	☆	<input type="checkbox"/>	<input type="checkbox"/>

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 high temperature, overload protection
(check outdoor unit in cooling mode and check indoor unit in heating mode)**

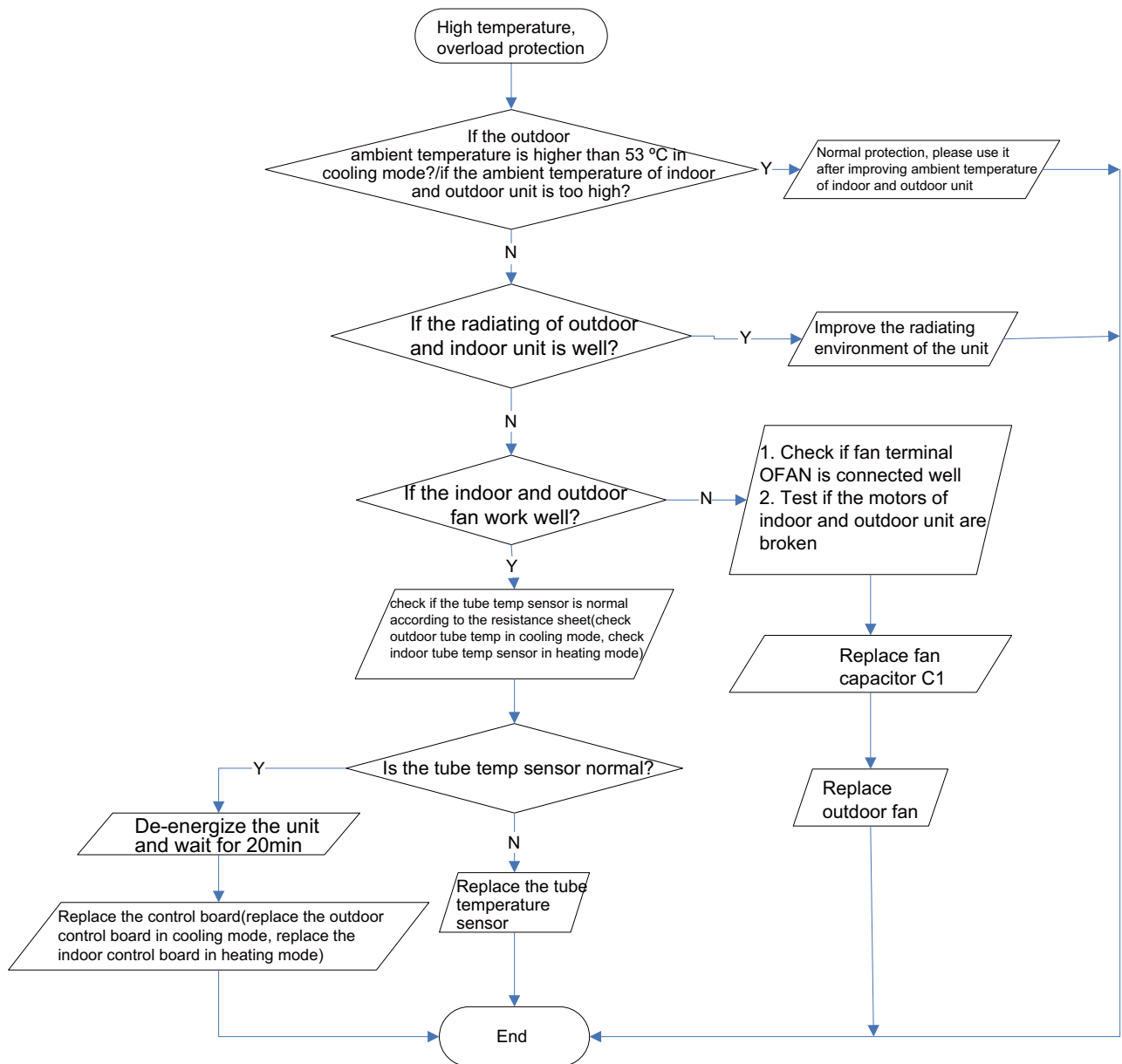
Outdoor unit malfunction indicator status

D5	D6	D16	D30
■	□	■	■

Main detection point:

- If the outdoor ambient temperature is in normal range;
- If the indoor and outdoor fan is running normally;
- If the radiating environment inside and outside the unit is well (including if the fan speed is too low)?
- If the tube temperature sensor of indoor and outdoor unit is normal?

Malfunction diagnosis process:



(4) Diagnosis for failure start up malfunction (outdoor unit malfunction)

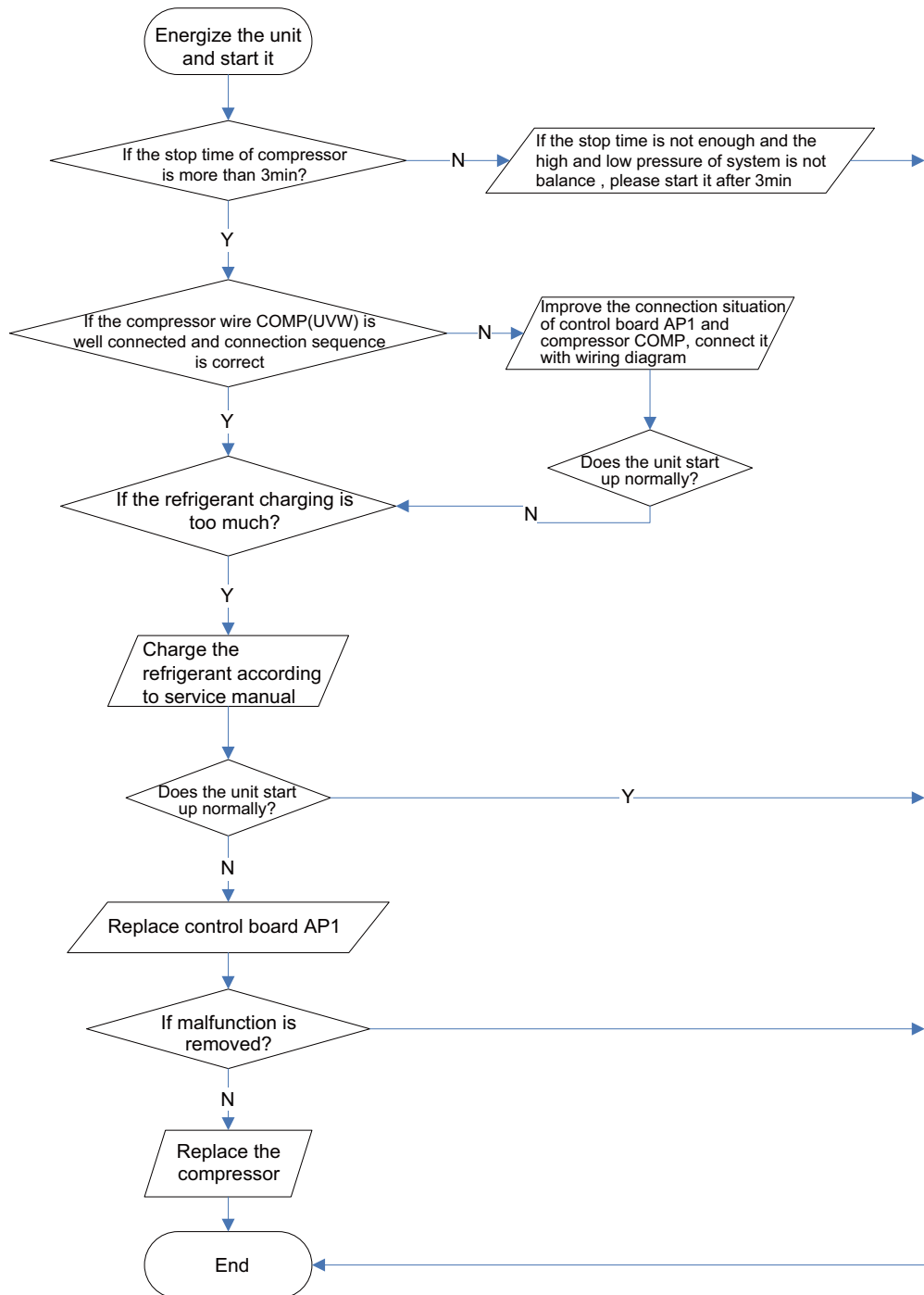
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	☆	□	☆

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 (outdoor unit malfunction)

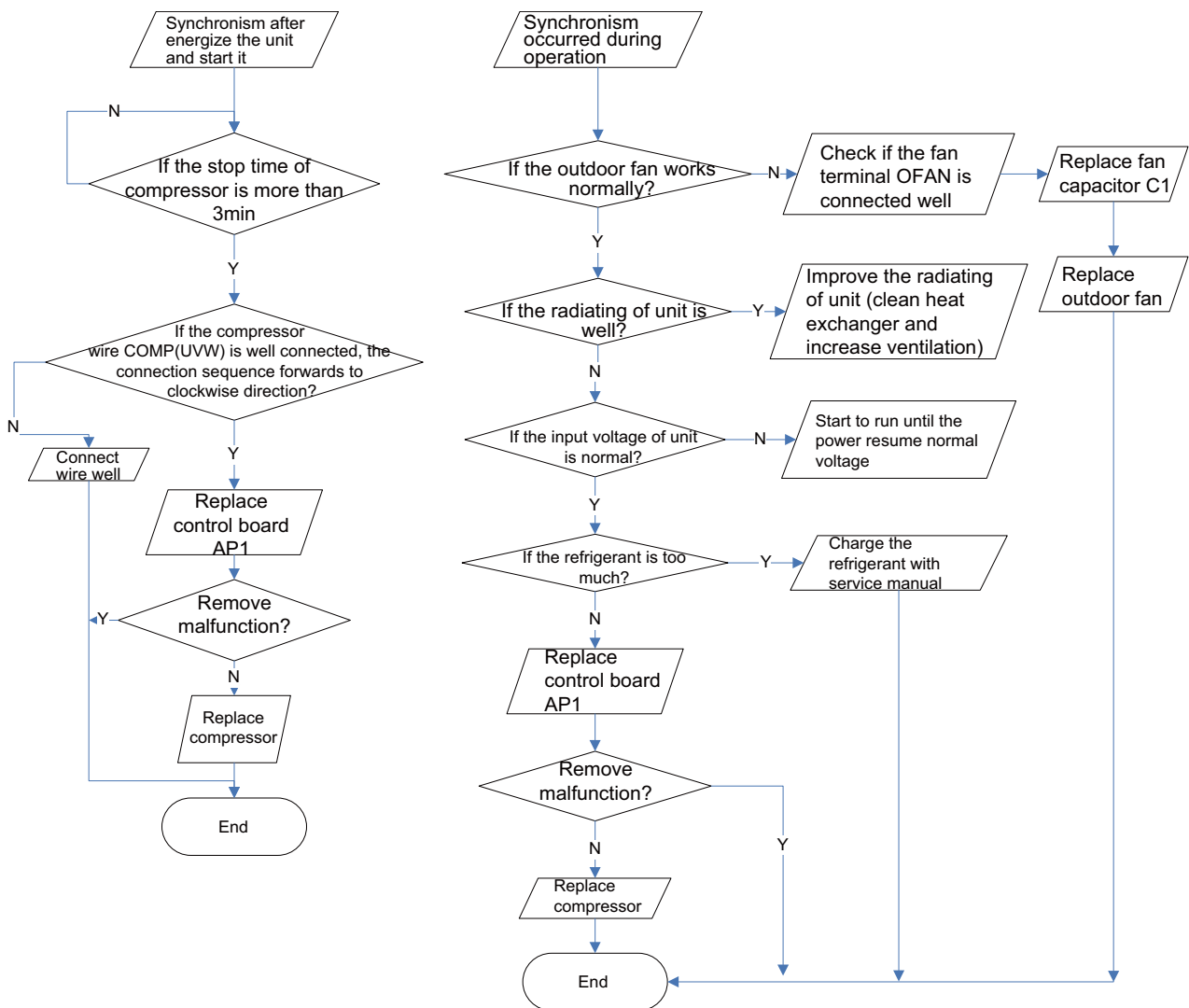
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	☆	■	☆

Main detection point:

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

Malfunction diagnosis process:



(6)Diagnosis for overload and discharge malfunction (outdoor unit malfunction)

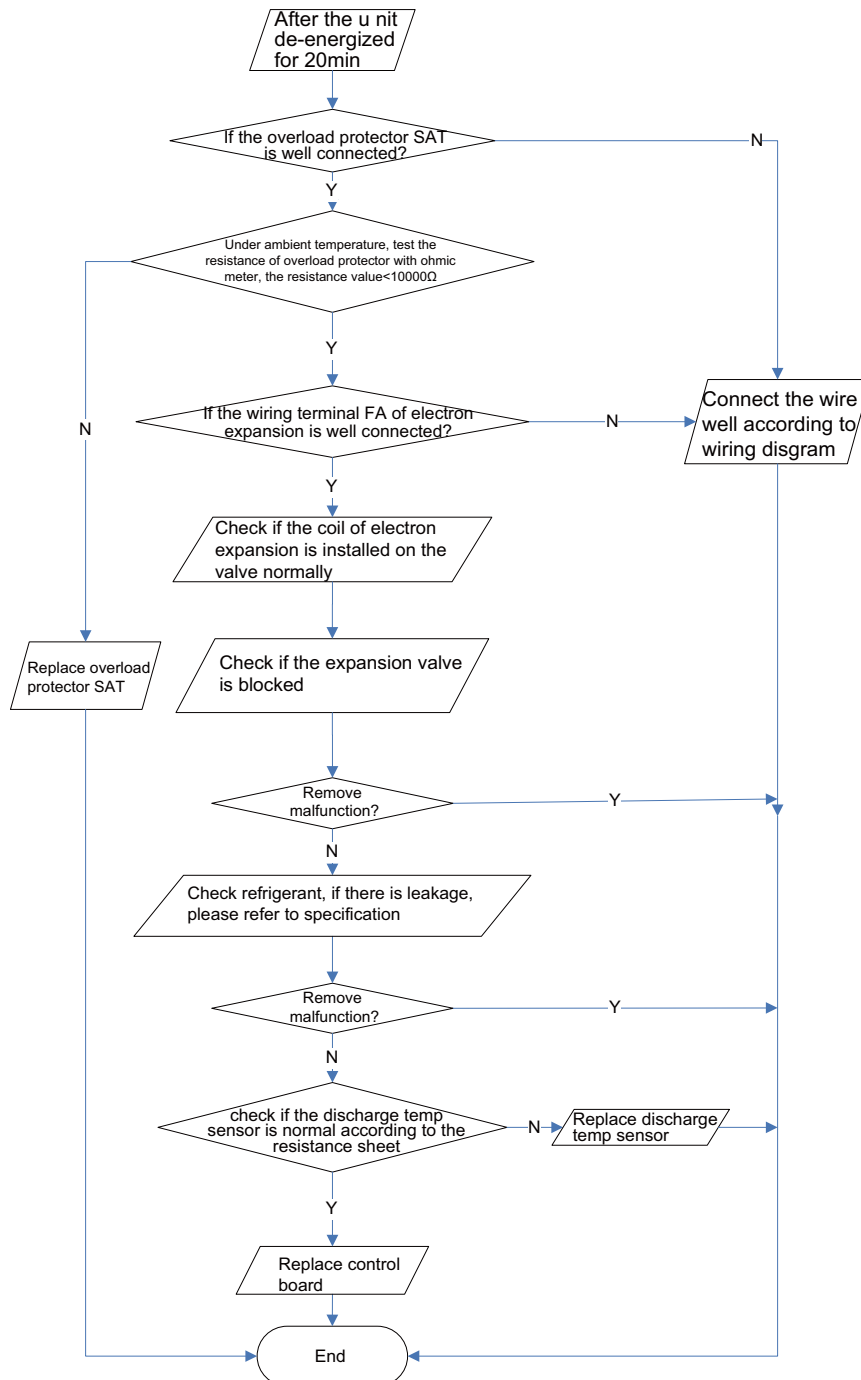
Outdoor unit malfunction indicator status

Malfunction	D5	D6	D16	D30
Overload	□	☆	☆	□
Discharge	■	□	■	☆

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?
- If the discharge temp sensor is damaged?

Malfunction diagnosis process:



(7) Communication malfunction

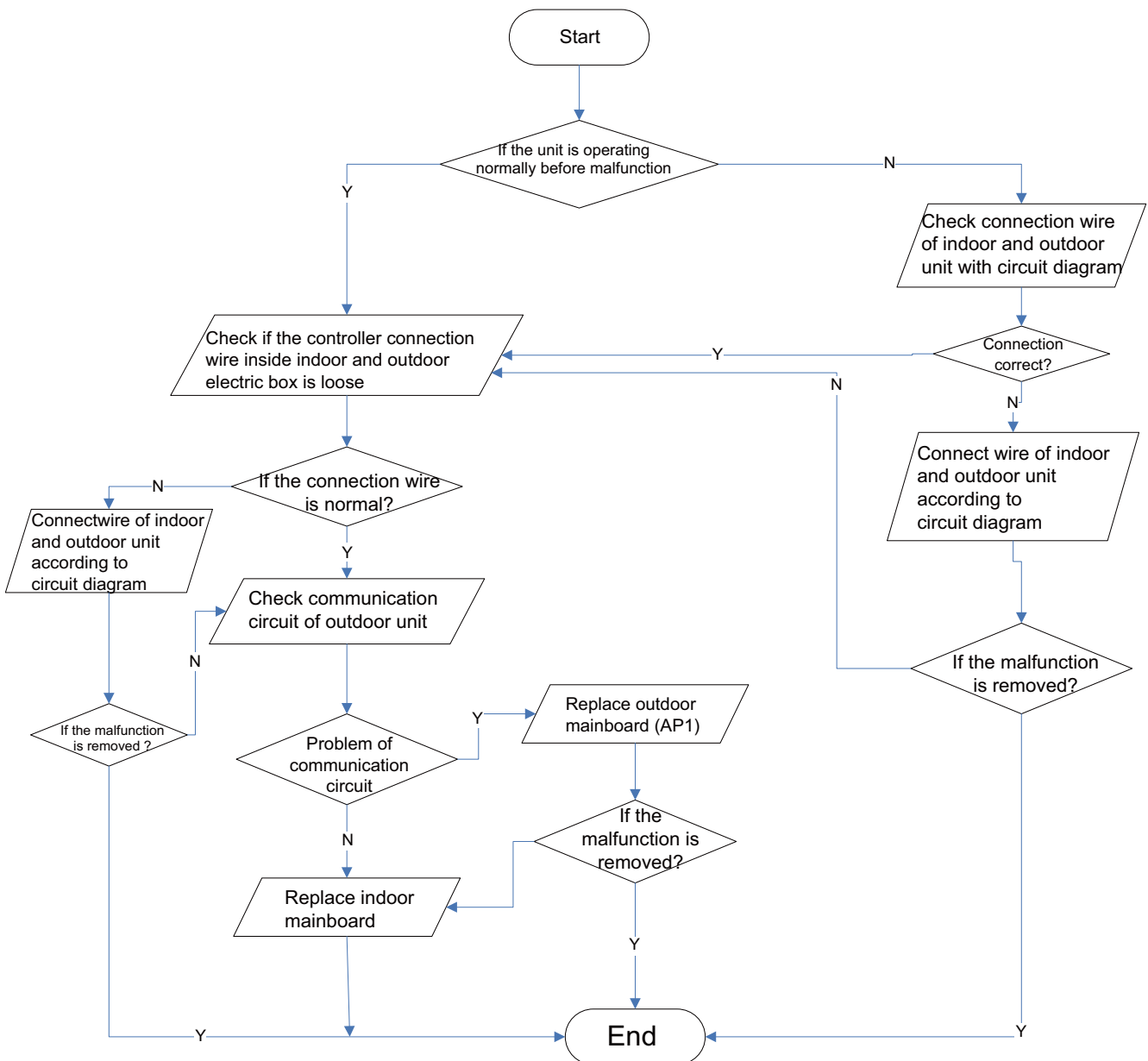
Outdoor unit malfunction indicator status

D5	D6	D16	D30
□	□	□	☆

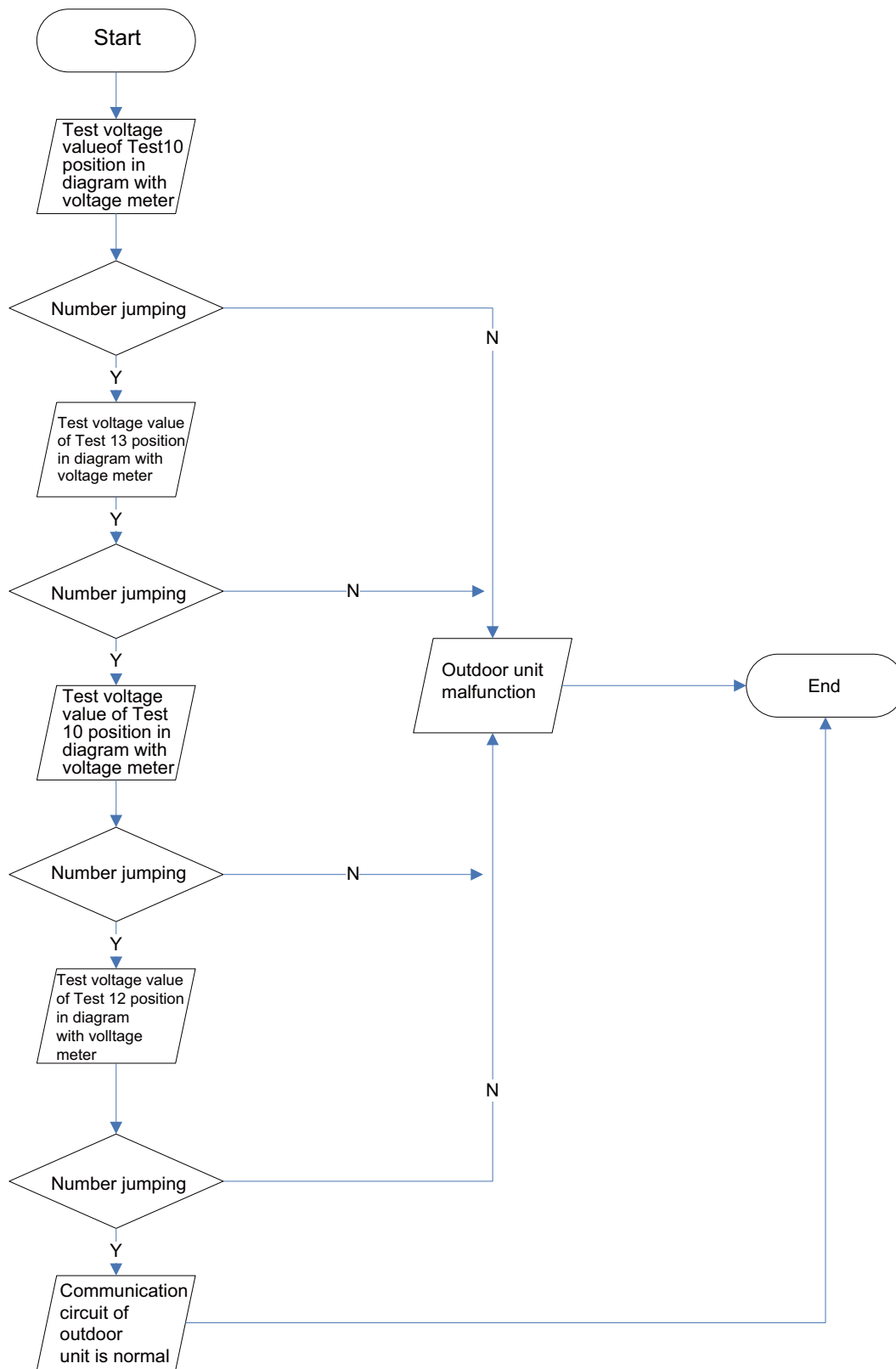
Main detection point:

- 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:



Diagnosis process for outdoor communication circuit (refer to the key detection points of outdoor unit)



Appendix

Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)							
Temp. (°C)	Resistance(kΩ)	Temp. (°C)	Resistance(kΩ)	Temp. (°C)	Resistance(kΩ)	Temp. (°C)	Resistance(kΩ)
-19	138.1	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)		Temp. (°C)	Resistance(kΩ)		Temp. (°C)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13
-18	171.4		21	23.9		60	4.948
-17	162.1		22	22.85		61	4.773
-16	153.3		23	21.85		62	4.605
-15	145		24	20.9		63	4.443
-14	137.2		25	20		64	4.289
-13	129.9		26	19.14		65	4.14
-12	123		27	18.13		66	3.998
-11	116.5		28	17.55		67	3.861
-10	110.3		29	16.8		68	3.729
-9	104.6		30	16.1		69	3.603
-8	99.13		31	15.43		70	3.481
-7	94		32	14.79		71	3.364
-6	89.17		33	14.18		72	3.252
-5	84.61		34	13.59		73	3.144
-4	80.31		35	13.04		74	3.04
-3	76.24		36	12.51		75	2.94
-2	72.41		37	12		76	2.844
-1	68.79		38	11.52		77	2.752
0	65.37		39	11.06		78	2.663
1	62.13		40	10.62		79	2.577
2	59.08		41	10.2		80	2.495
3	56.19		42	9.803		81	2.415
4	53.46		43	9.42		82	2.339
5	50.87		44	9.054		83	2.265
6	48.42		45	8.705		84	2.194
7	46.11		46	8.37		85	2.125
8	43.92		47	8.051		86	2.059
9	41.84		48	7.745		87	1.996
10	39.87		49	7.453		88	1.934
11	38.01		50	7.173		89	1.875
12	36.24		51	6.905		90	1.818
13	34.57		52	6.648		91	1.736
14	32.98		53	6.403		92	1.71
15	31.47		54	6.167		93	1.658
16	30.04		55	5.942		94	1.609
17	28.68		56	5.726		95	1.561
18	27.39		57	5.519		96	1.515
19	26.17		58	5.32		97	1.47
						98	1.427
						99	1.386
						100	1.346
						101	1.307
						102	1.269
						103	1.233
						104	1.198
						105	1.164
						106	1.131
						107	1.099
						108	1.069
						109	1.039
						110	1.01
						111	0.983
						112	0.956
						113	0.93
						114	0.904
						115	0.88
						116	0.856
						117	0.833
						118	0.811
						119	0.77
						120	0.769
						121	0.746
						122	0.729
						123	0.71
						124	0.692
						125	0.674
						126	0.658
						127	0.64
						128	0.623
						129	0.607
						130	0.592
						131	0.577
						132	0.563
						133	0.549
						134	0.535
						135	0.521
						136	0.509

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

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

Note: The information above is for reference only.

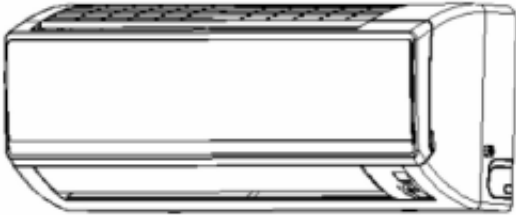
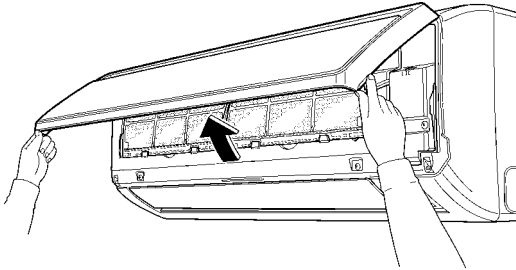
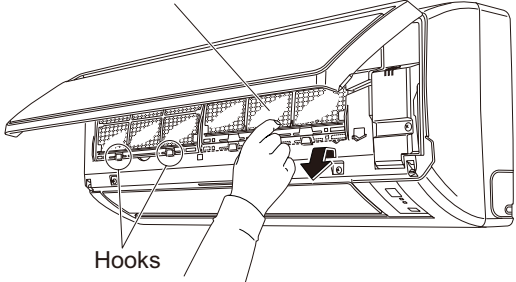
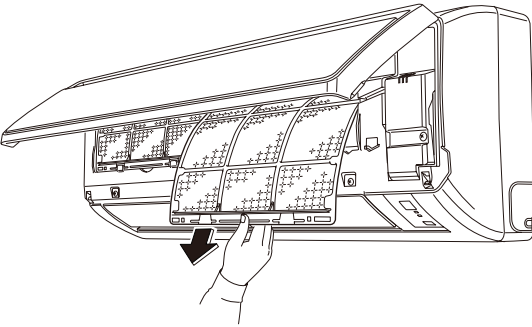
9. Removal Procedure

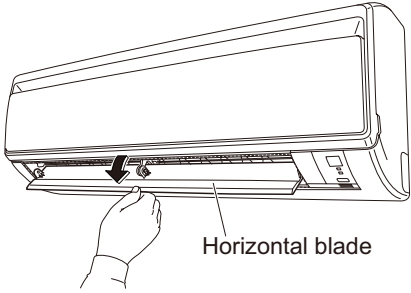
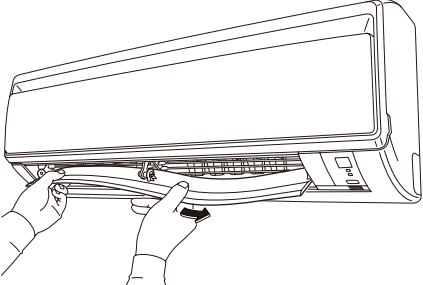
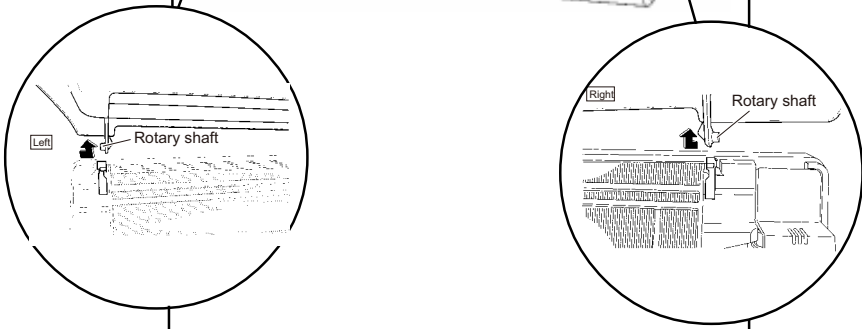
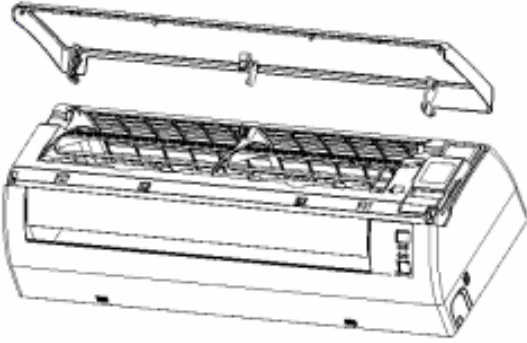
9.1 Removal Procedure of Indoor Unit

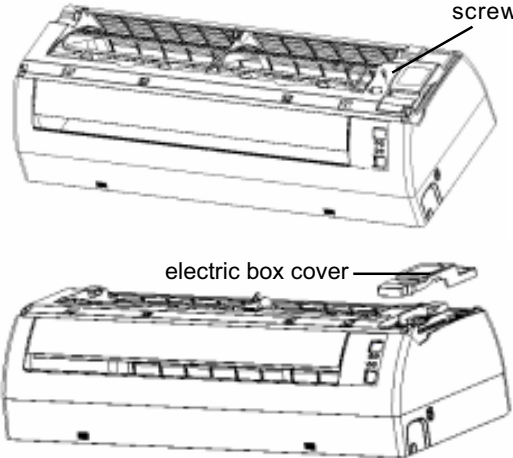
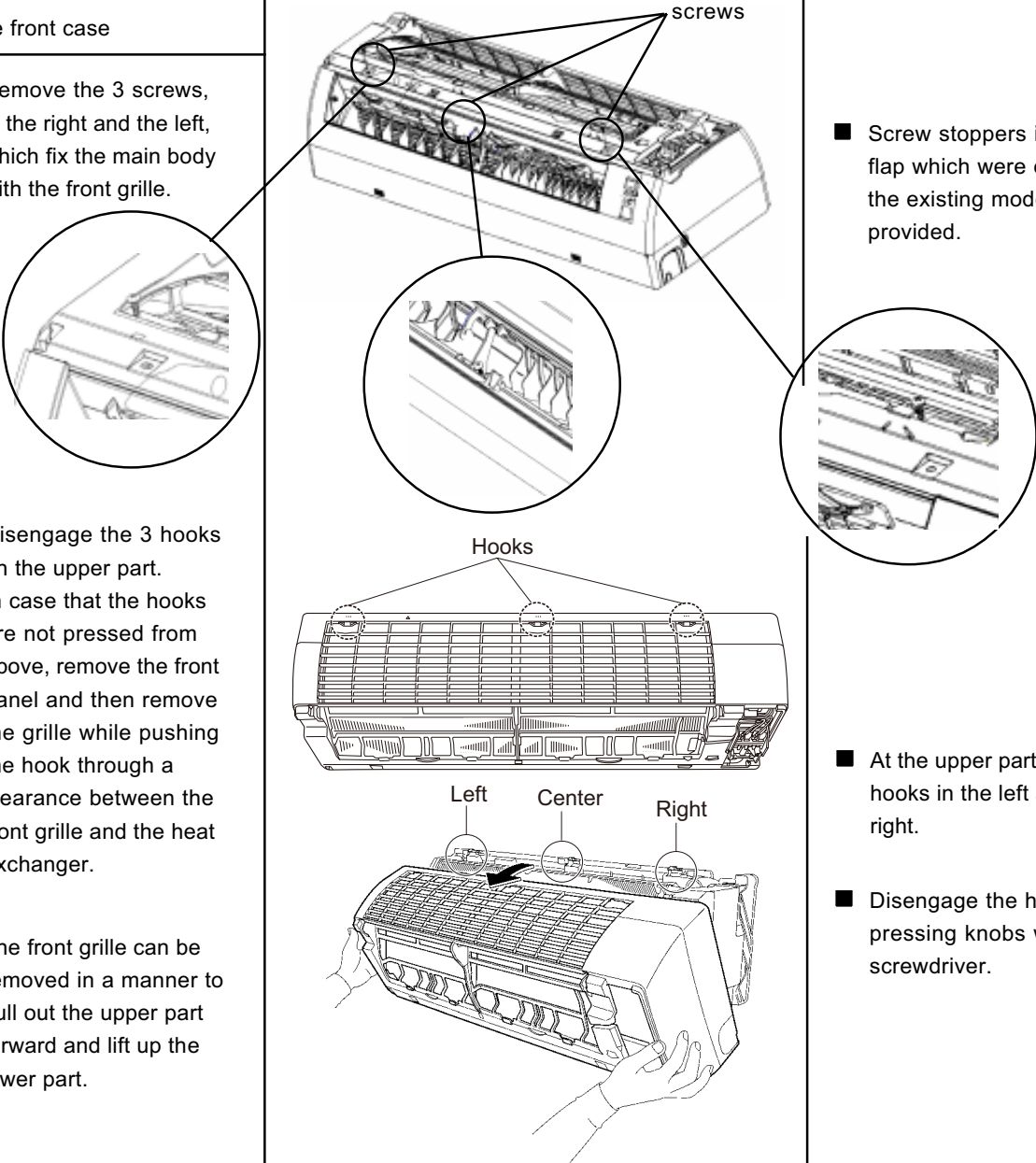


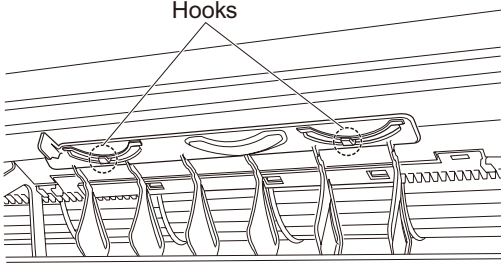
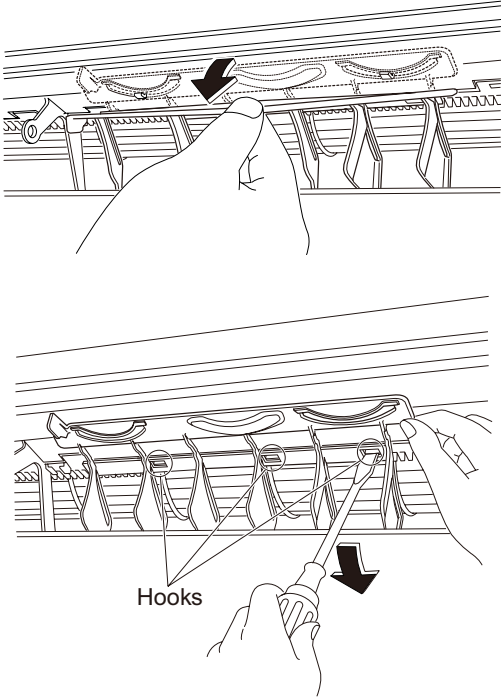
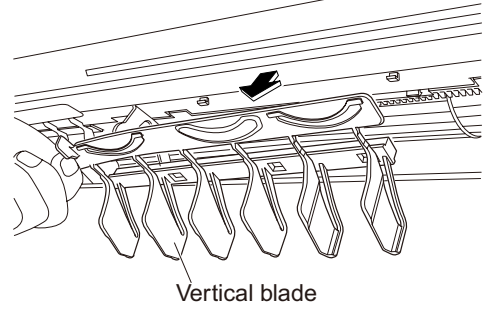
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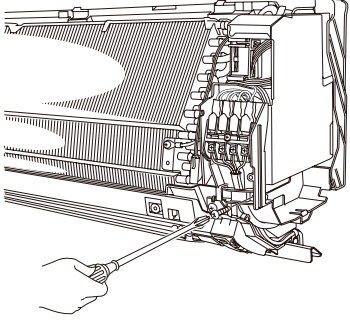
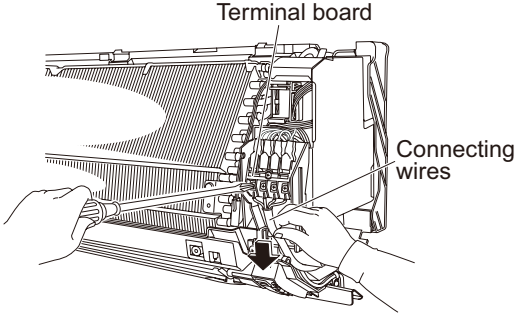
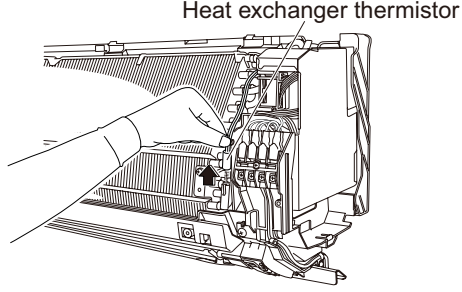
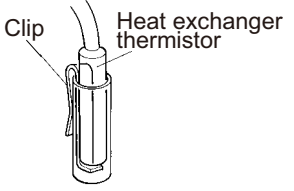
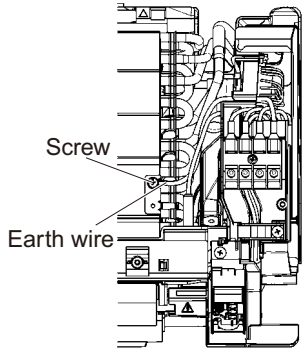
Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

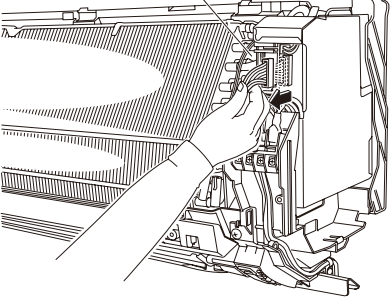
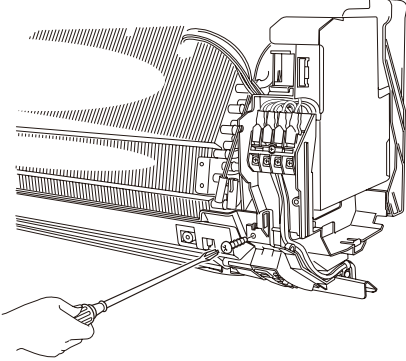
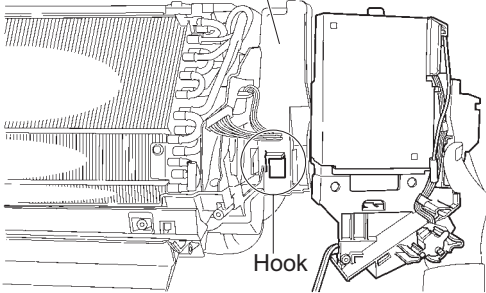
Steps	Procedure	Points
1. External features		<ul style="list-style-type: none"> ■ If ON/OFF button is kept pushing for 5 seconds, a forced cooling operation will be carried out for approx. 15 minutes.
2. Removing air filters	<p>1 Pull protrusions on left and right sides of panel with fingers and open front grille all the way.</p>  <p>2 Lift center section of air filter and disengage hooks.</p>  <p>3 Remove air filter by pulling forward.</p> 	<ul style="list-style-type: none"> ■ Left and right filters are interchangeable. ■ To re-install, insert air filter along the guide.

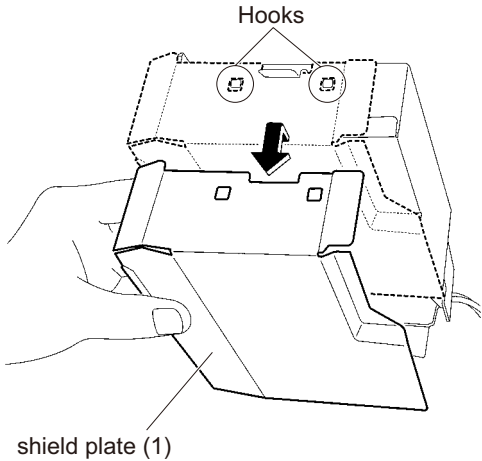
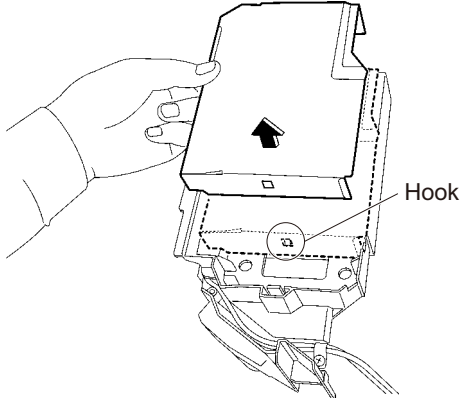
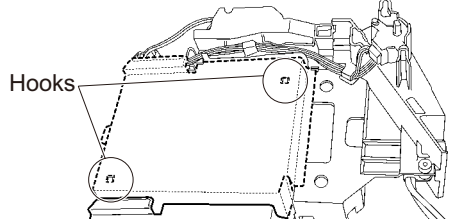
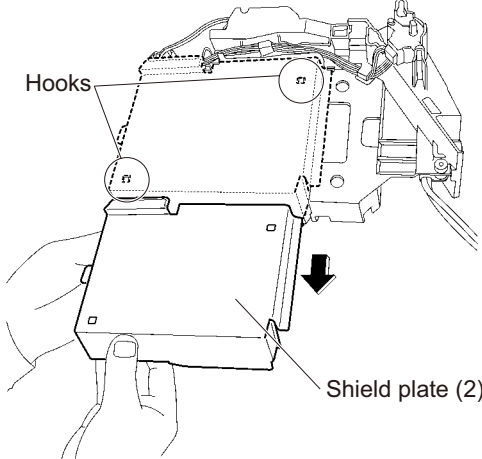
Steps	Procedure	Points
3. Remove panel		
1	<p>Pull down horizontal blade by pulling forward.</p>  <p>Horizontal blade</p>	<p>Support the front panel by one hand, while remove the rotation axis at the upper center by the other hand.</p> <ul style="list-style-type: none"> ■ And pull out the front panel forward to remove.
2	<p>Remove horizontal blade by pulling forward.</p> 	
3	<p>Hook a finger onto the projection part provided on the both sides of the unit's panel and open up the panel to the position higher than it will stop.</p> 	<ul style="list-style-type: none"> ■ Left and right filters are interchangeable. ■ To re-install, insert air filter along the guide.
4	<p>Remove the front panel from the unit.</p> 	

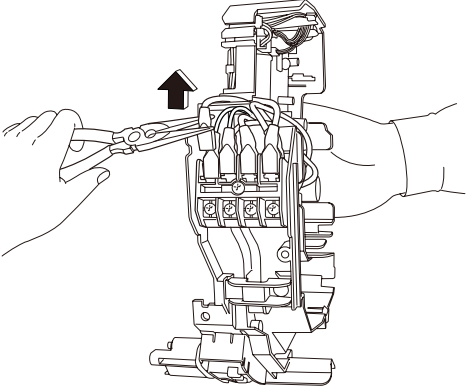
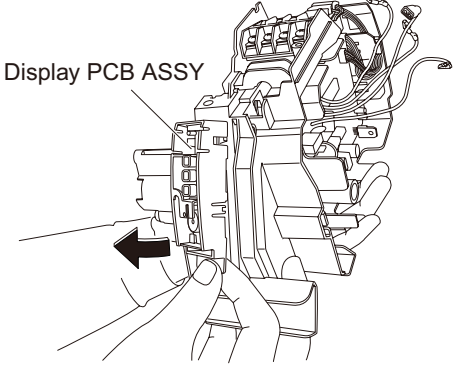
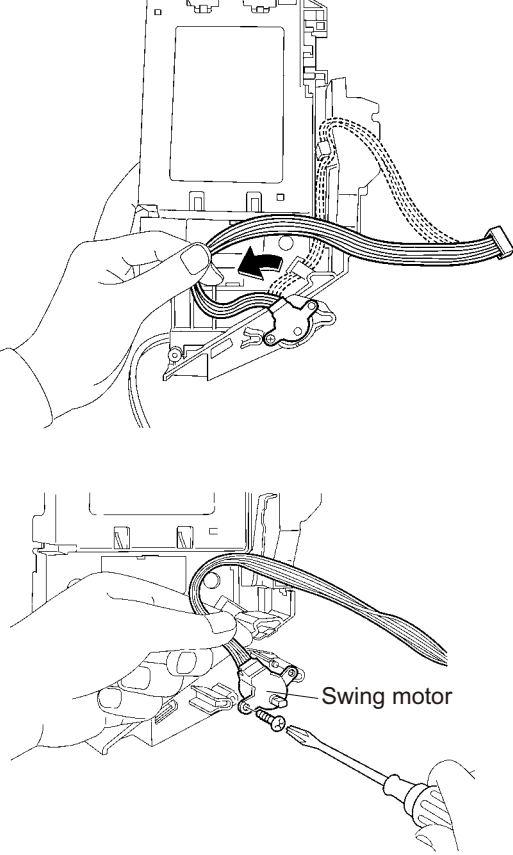
Steps	Procedure	Points
<p>4. Remove electric box cover</p> <p>1 Remove a electric box cover mounting screw. Open electric box cover upward.</p>	 <p>screws</p> <p>electric box cover</p>	<ul style="list-style-type: none"> ■ A switch for field setting is not provided in particular.
<p>5. Remove front case</p> <p>1 Remove the 3 screws, in the right and the left, which fix the main body with the front grille.</p> <p>2 Disengage the 3 hooks on the upper part. In case that the hooks are not pressed from above, remove the front panel and then remove the grille while pushing the hook through a clearance between the front grille and the heat exchanger.</p> <p>3 The front grille can be removed in a manner to pull out the upper part forward and lift up the lower part.</p>	 <p>screws</p> <p>Hooks</p> <p>Left Center Right</p>	<ul style="list-style-type: none"> ■ Screw stoppers inside the flap which were equipped in the existing models are not provided. ■ At the upper part there are 2 hooks in the left and the right. ■ Disengage the hooks by pressing knobs with a screwdriver.

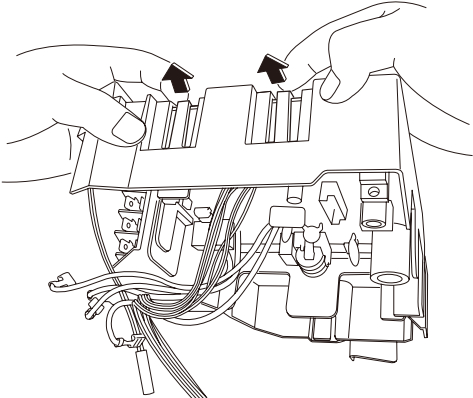
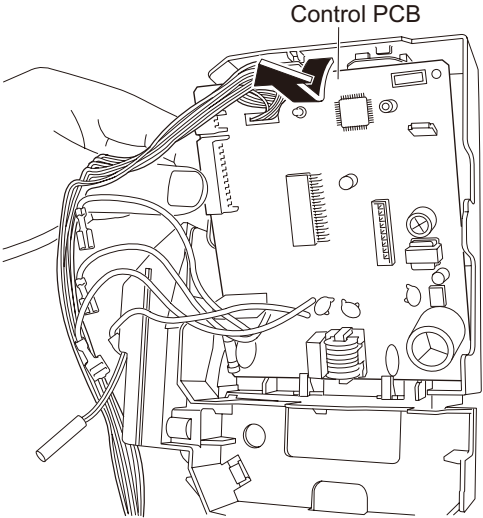
Steps	Procedure	Points
6. Remove the vertical blade		
1	<p>Unfasten the hooks at the upper 2 positions.</p> 	
2	<p>Unfasten the 3 hooks at the shaft mounting part by pressing them with a flat screwdriver.</p> 	<ul style="list-style-type: none"> ■ A set of vertical blade has 6 fins as on ASSY. (It is impossible to replace only one fin.) ■ The set of vertical blades is not marked for difference between right and left.
3	<p>Remove the vertical blade.</p> 	<ul style="list-style-type: none"> ■ Repeat the same procedure to remove the vertical blade on the other side.

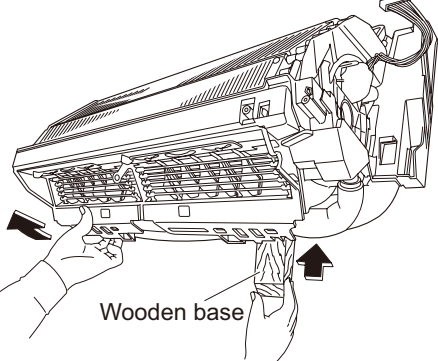
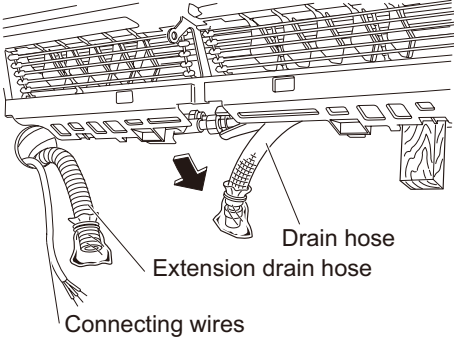
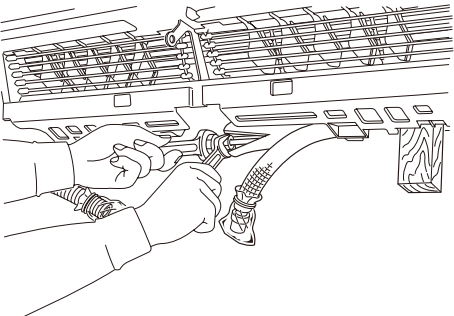
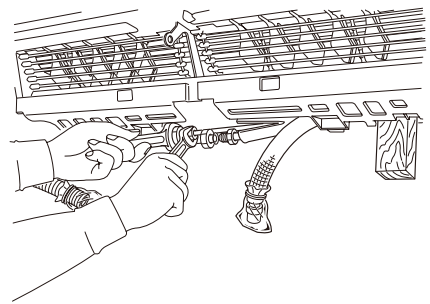
Steps	Procedure	Points
7. Remove electrical box		
1	Disconnect the cable clamp 	<ul style="list-style-type: none"> ■ Pay attention to the direction of the retainer of the thermistor so that the retainer will not touch the harness (same as the existing models.)
2	Disconnect the connection wires. 	
3	Remove temperature sensor 	<ul style="list-style-type: none"> ■ Take care not to lose the clip of thermistor. 
4	Remove a screw on the terminal board. 	<ul style="list-style-type: none"> ■ The electrical box can be removed instead of disengaging the terminal board.

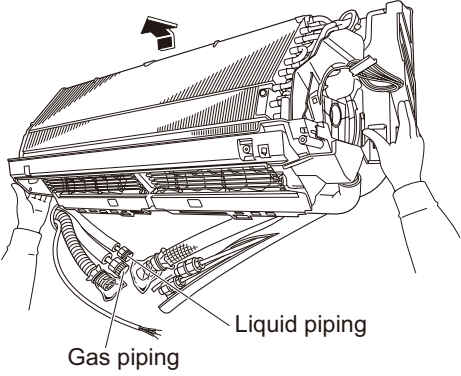
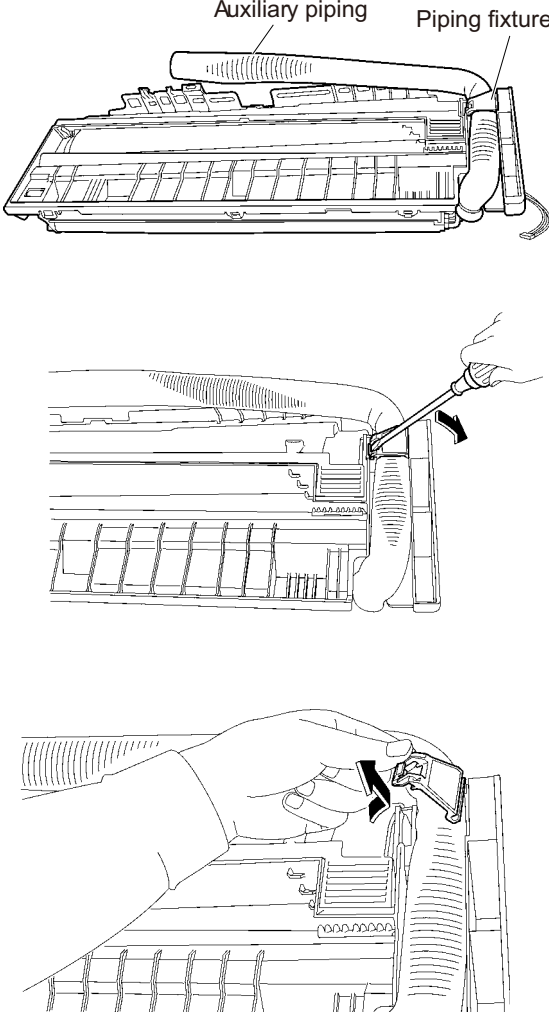
Steps		Procedure	Points
5	Remove fan motor Signal Wire	<p data-bbox="683 349 922 383">fan motor Signal Wire</p> 	
6	Remove a screw on the electrical box.		
7	Pull up the electrical box forward to remove.	<p data-bbox="746 1155 890 1189">Bottom frame</p> <p data-bbox="799 1435 855 1469">Hook</p> 	

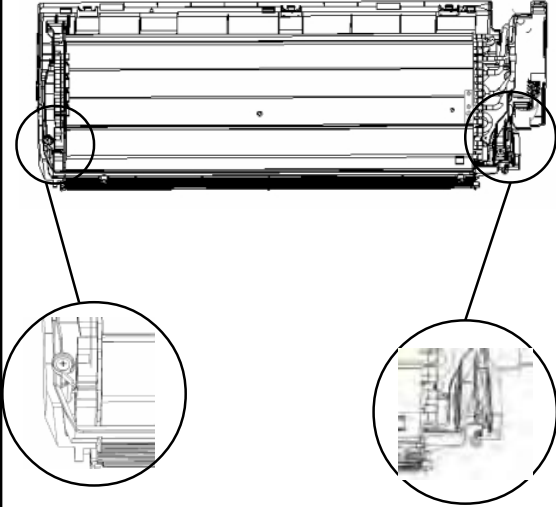
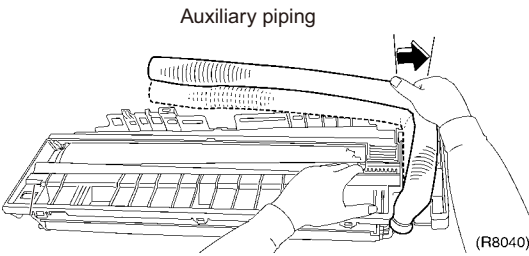
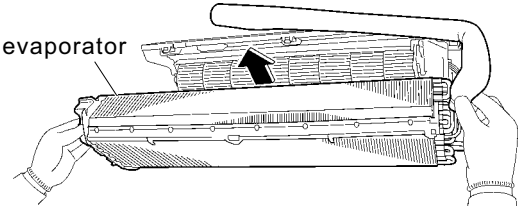
Steps	Procedure	Points
8. Remove the shield plate and control PCB		
1	<p>Unfasten the hooks at the upper 2 positions of the shield plate.</p> 	<p>■ Remove the electrical box according to the "Removal of Electrical Box".</p>
2	<p>Unfasten the hook at the lower position, and remove the shield plate (1).</p> 	
3	<p>Lift the shield plate (2) and unfasten the 2 hooks.</p> 	
4	<p>Slide the shield plate (2) and remove it.</p> 	

Steps		Procedure	Points
5	Take off wiring terminal		
6	Remove display PCB sub-Assy.		
7	Remove swing motor.		


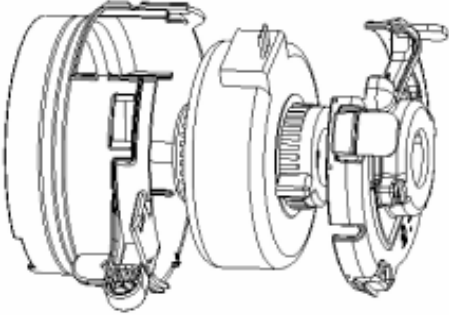
Steps	Procedure	Points
<p>8</p>	<p>To remove the control PCB, unfasten the 2 hooks at the upper part from the rear side.</p> 	<ul style="list-style-type: none"> ■ The control PCB is integrated with the power supply PCB.
<p>9</p>	<p>Lift up the upper part of the control PCB, and remove it.</p>  <p style="text-align: center;">Control PCB</p>	

Steps	Procedure	Points
9. Remove the refrigerant piping		
1	<p>Lift the indoor unit by a wooden base.</p> 	<p>! CAUTION</p> <p>If gas leaks, repair the spot of leaking, then collect all refrigerant from the unit. After conducting vacuum drying, recharge proper amount of refrigerant.</p>
2	<p>Place a plastic sheet under the drain pan as remaining drain may leak.</p> 	<p>! CAUTION</p> <p>Do not contaminate any gas (including air) other than the specified refrigerant (R-410A) into refrigerant cycle. (Contaminating of air or other gas causes abnormal high pressure in refrigerating cycle, and this results in pipe breakage or personal injuries.)</p>
3	<p>Disconnect the flare nut for gas piping by 2 wrenches.</p> 	<ul style="list-style-type: none"> ■ Pay attention so that the residual water in the drain will not make the floor wet.
4	<p>Disconnect the flare nut for liquid piping by 2 wrenches.</p> 	<ul style="list-style-type: none"> ■ In case that a drain hose is buried inside a wall, remove it after the drain hose in the wall is pulled out. ■ Use two wrenches to disconnected pipes. ■ When disconnecting pipes, cover every nozzle with caps so as not to let dust and moisture in.

Steps	Procedure	Points
10. Remove evaporator assy		
1	<p>Remove the indoor unit from the installation plate.</p> 	<ul style="list-style-type: none"> When the pipings are disconnected, protect the both openings from entering moisture.
2	<p>Release the hook of the piping fixture on the back of the unit.</p> 	

Steps	Procedure	Points
3	<p data-bbox="193 327 480 456">Loosen the 2 screws, in the right and the left, which fix the evaporator assy.</p>  <p>The diagram shows a top-down view of the evaporator assembly. Two screws on the right and left sides are circled. Two circular callouts provide magnified views of these screws and their mounting points on the assembly.</p>	
4	<p data-bbox="193 1003 408 1093">Widen the auxiliary piping to the extent of 10°~20°.</p>  <p>The diagram shows a hand holding a long, flexible auxiliary piping. An arrow points to the right, indicating the direction of widening. The piping is shown being bent over the evaporator assembly. The label 'Auxiliary piping' is positioned above the pipe. The reference code '(R8040)' is located at the bottom right of the diagram.</p>	
5	<p data-bbox="193 1323 448 1429">Pull the evaporator assy to the front side to undo the hooks completely, and then lift it.</p>  <p>The diagram shows a hand pulling the evaporator assembly forward. An arrow points to the right, indicating the direction of movement. The label 'evaporator' is positioned to the left of the assembly. The hand is shown at the bottom, lifting the assembly.</p>	

Steps	Procedure	Points
11. Remove cross flow fan and fan motor	<div data-bbox="574 398 1109 689" data-label="Image"> </div> <div data-bbox="574 766 1085 1057" data-label="Image"> </div> <div data-bbox="574 1093 1085 1429" data-label="Image"> </div> <div data-bbox="574 1541 1085 1966" data-label="Image"> </div>	
1	Remove cross flow fan and fan motor.	
2	Remove the rubber cushion of the bearing.	
3	Remove the screws at the joint of the cross flow blade and the motor.	

Steps	Procedure	Points
4	Take down the motor sub-assy. 	
5	Remove fan motor. 	

9.2 Removal Procedure of Outdoor Unit

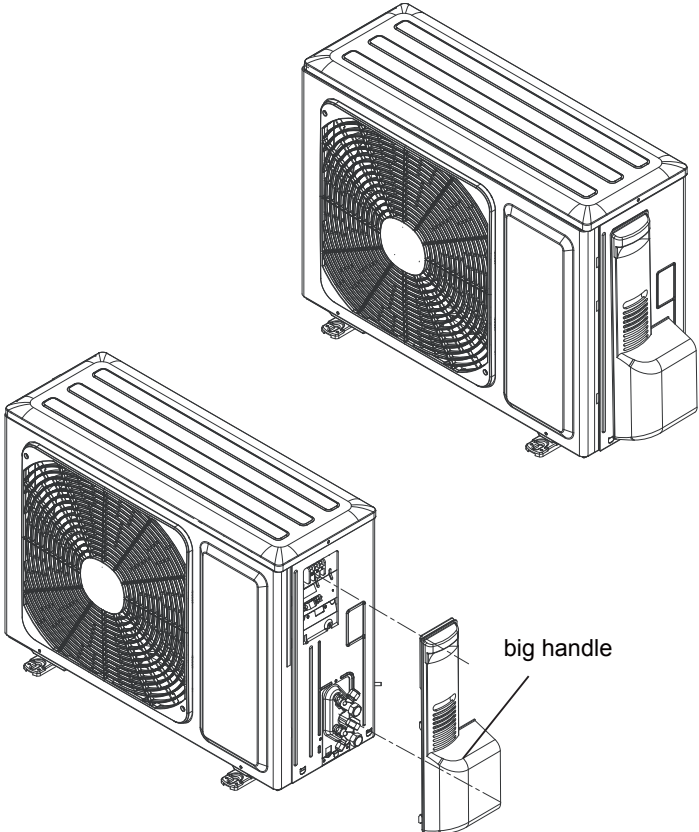
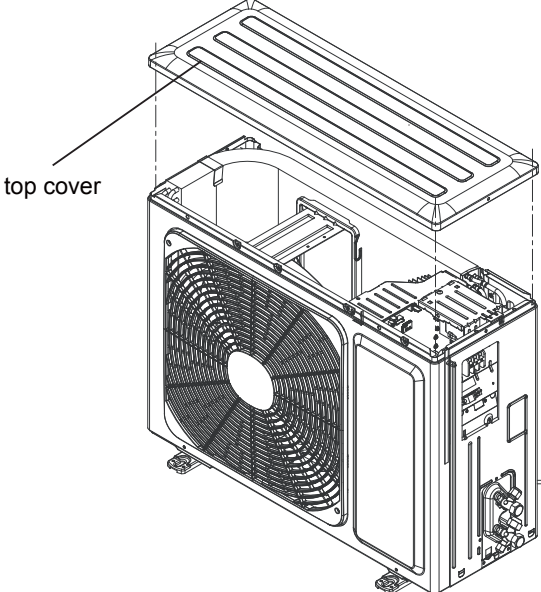


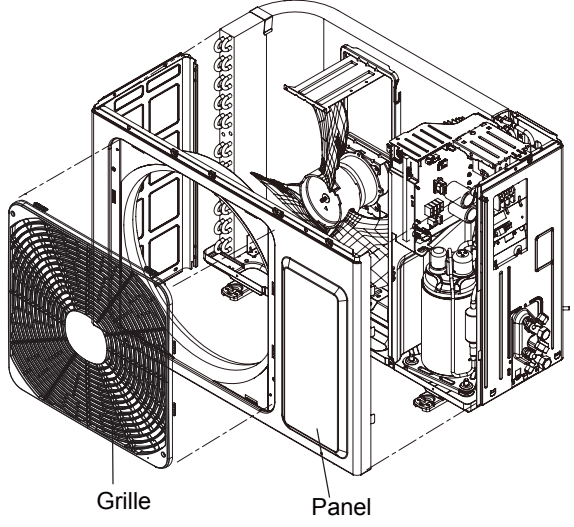
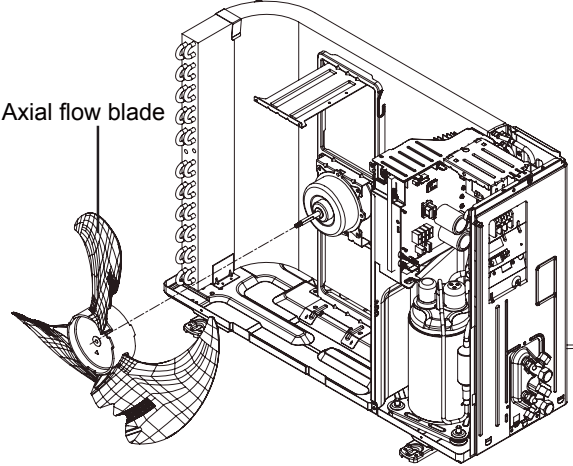
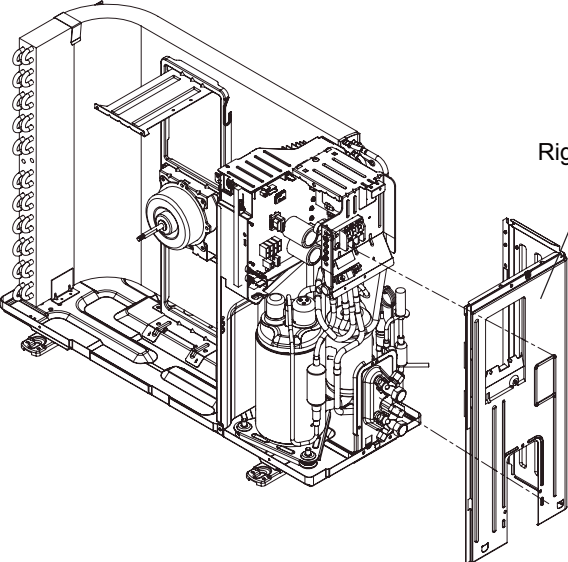
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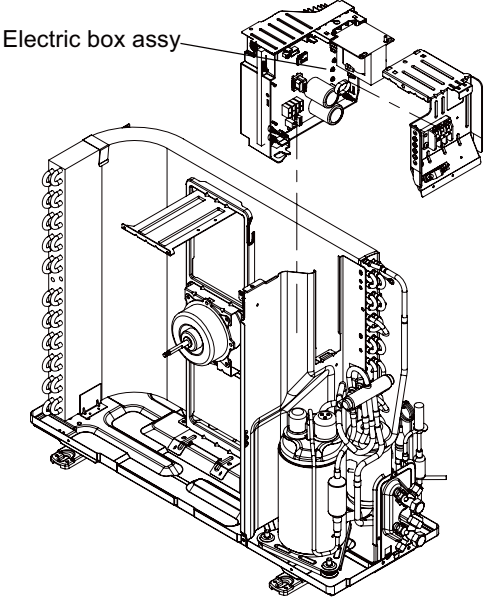
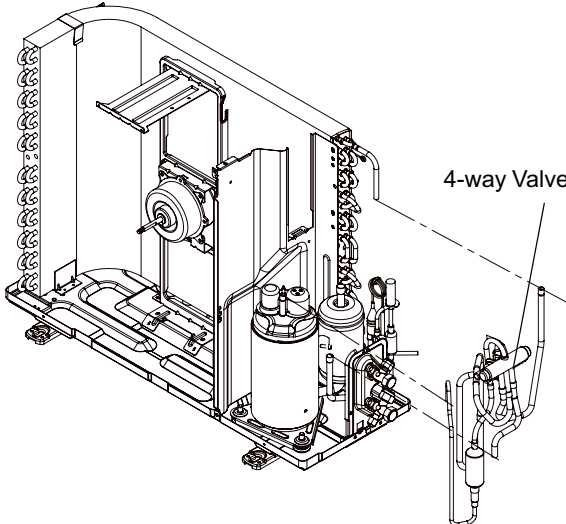
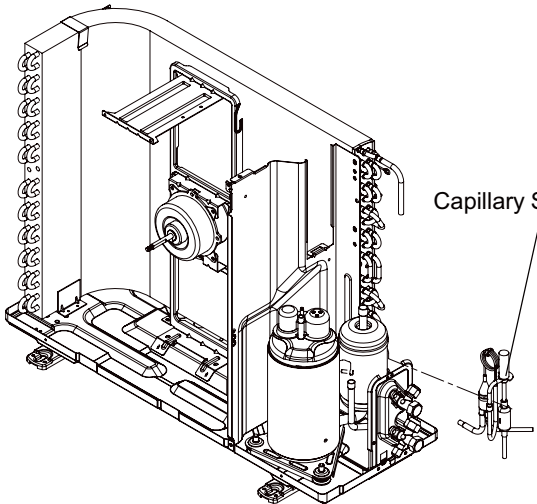
Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

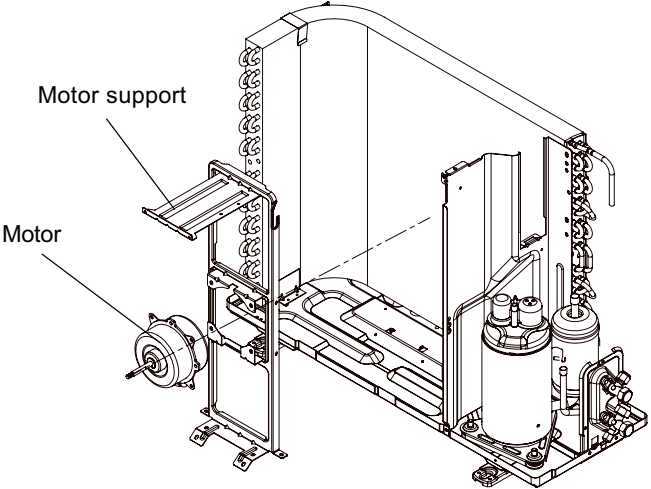
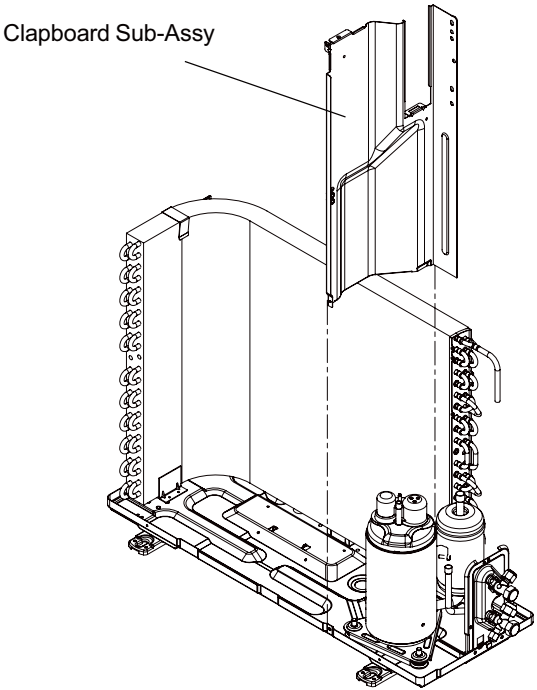
(1) ASH-09AIE, ASH-12AIE

NOTE: Take ASH-09AIE for example.

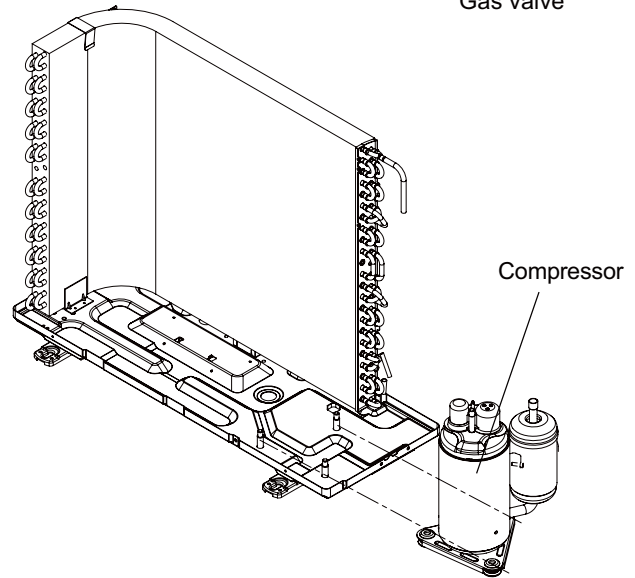
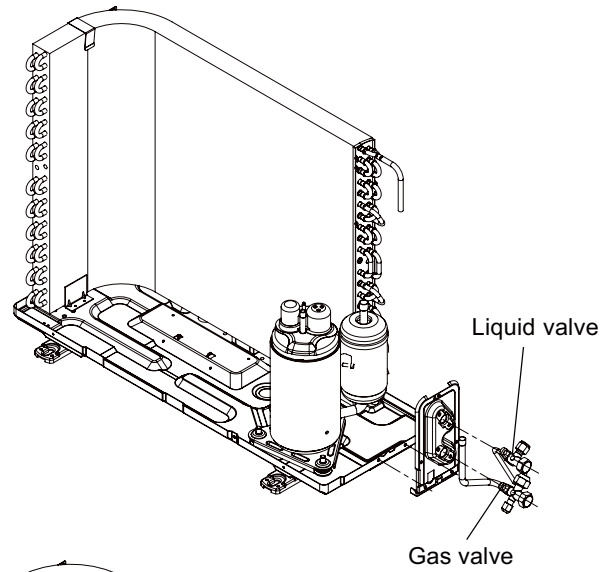
Steps	Procedure
<p>1.Remove big handle</p> <p>Before disassamble.</p> <p>Remove 1 connection screw fixing big handleand then removethe big handle.</p>	
<p>2. Remove top cover</p> <p>Remove 3 connection screws among top cover plate, front panel and right sideplate. Then remove top cover plate.</p>	

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

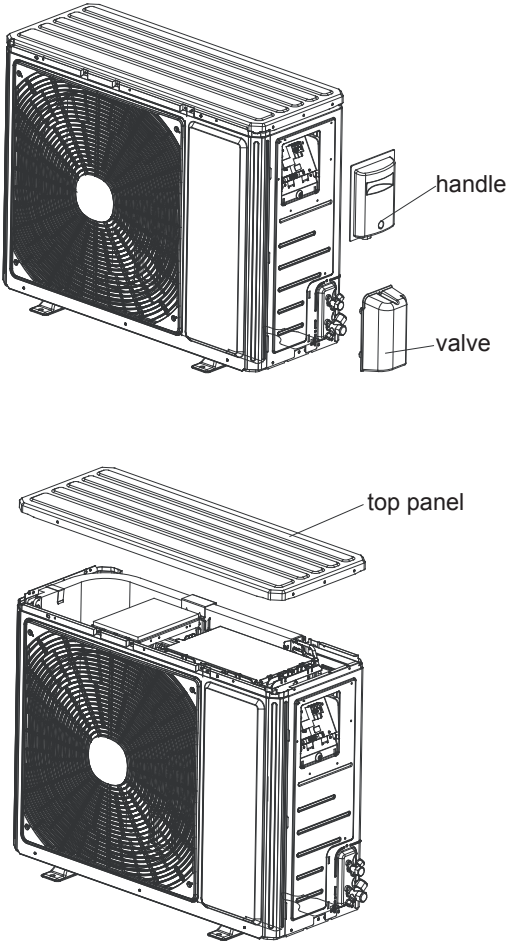
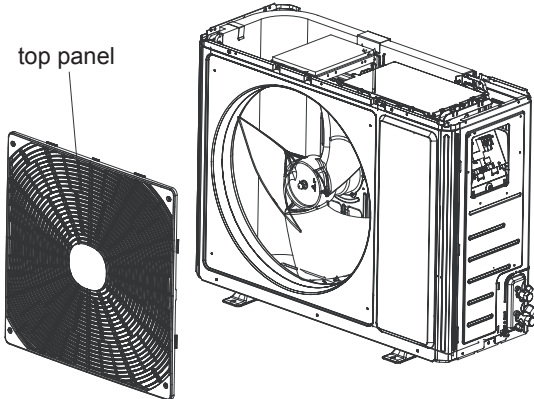
Steps	Procedure
<p>6.Remove electric box assy</p>	<p>Remove the 2 screws fixing the cover of electric box. Lift to remove the cover. Loosen the wire and disconnect the terminal. Lift to remove the electric box assy.</p>  <p>Electric box assy</p>
<p>7.Remove 4-way valve assy</p>	<p>Unscrew the fastening nut of the 4-way Valve Assy coil and remove the coil. Wrap the 4-way Valve Assy with wet cotton and unsolder the 4 weld spots connecting the 4-way Valve Assy to take it out.(Note: Refrigerant should be discharged firstly.) Welding process should be as quickly as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.</p>  <p>4-way Valve Assy</p>
<p>8.Remove capillary sub-assy</p>	<p>Unsolder weld point of capillary Sub-assy, valve and outlet pipe of condensator. Then remove the capillary Sub-assy. Do not block the capillary when unsoldering it. (Note: before unsoldering,discharge refrigerants completely)</p>  <p>Capillary Sub-assy</p>

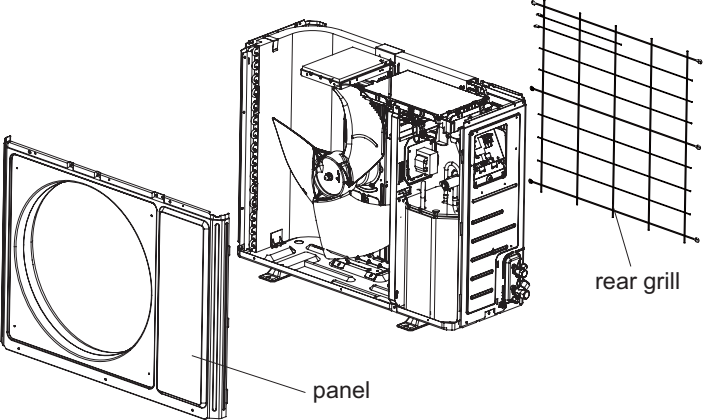
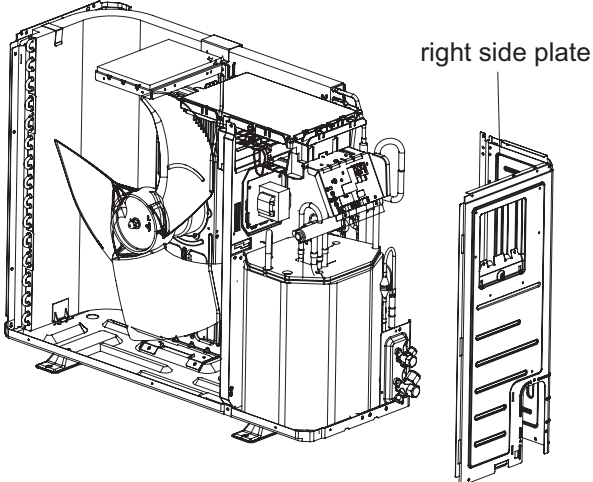
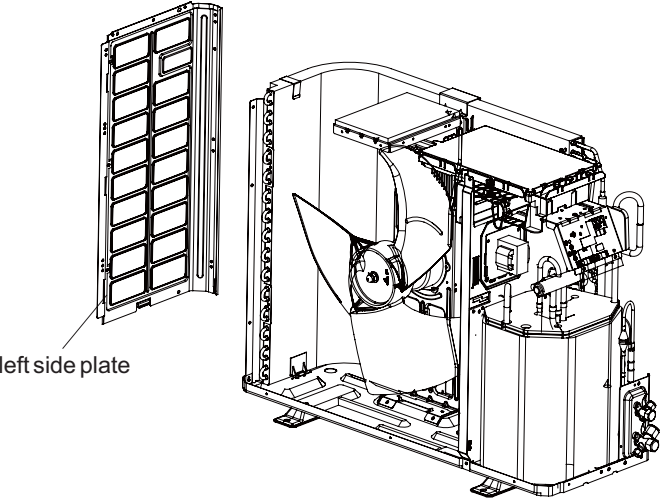
Steps	Procedure
<p>9.Remove motor and motor support</p>	<p>Remove the 4 tapping screws fixing the motor. Pull out the lead-out wire and remove the motor. Remove the 2 tapping screws fixing the motor support. Lift motor support to remove it.</p> 
<p>10.Remove clapboard sub-assy</p>	<p>Loosen the screws of the Clapboard Sub-Assy . The Clapboard Sub-Assy has a hook on the lower side. Lift and pull the Clapboard Sub-Assy to remove.</p> 

Steps	Procedure
11.Remove Compressor	
1	<p>Remove the 2 screws fixing the gas valve. Unsolder the welding spot connecting gas valve and air return pipe and remove the gas valve. (Note: it is necessary to warp the gas valve when unsoldering the welding spot.) Remove the 2 screws fixing liquid valve. Unsolder the welding spot connecting liquid valve and remove the liquid valve.</p>
2	<p>Remove the 3 footing screws of the compressor and remove the compressor.</p>



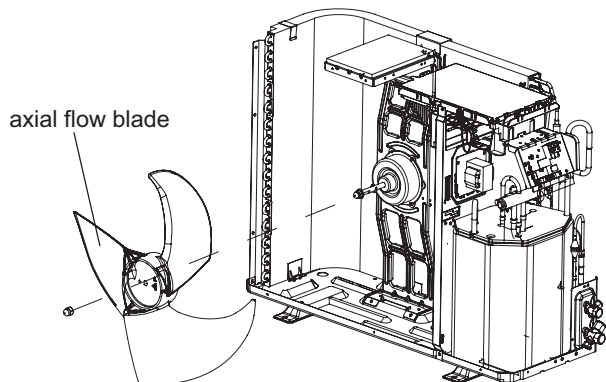
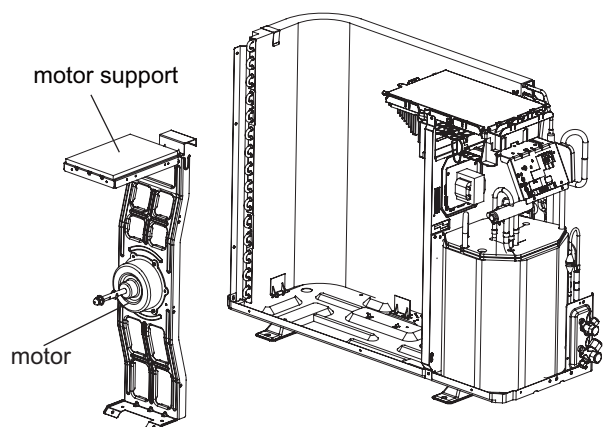
(2) ASH-18AIE

Steps	Procedure	
1. Remove top panel	<p>1 Twist off the screws used for fixing the handle and valve cover, pull the handle and valve cover upward to remove it.</p> <p>2 Remove the 3 screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.</p>	 <p>Diagram illustrating the removal of the top panel and handle/valve cover. The top panel is shown being lifted off the unit. The handle and valve cover are shown being removed from the side panel.</p>
2. Remove grille, panel and rear grill	<p>1 Remove the 2 screws connecting the grille and the panel, and then remove the grille.</p>	 <p>Diagram illustrating the removal of the grille. The grille is shown being lifted off the front panel of the unit.</p>

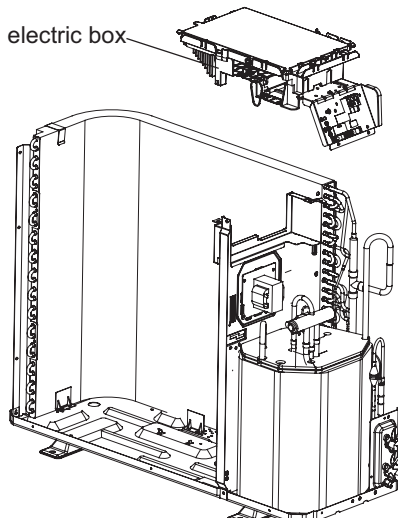
Steps	Procedure	
2	<p>Remove the 5 screws connecting the panel with the chassis and the motor support, and then remove the panel.</p> <p>Remove the 6 screws connecting the left side plate and right side plate and then remove rear grill</p>	
3. Remove left side plate and right side plate		
1	<p>Remove the screws connecting the right side plate with the chassis, the valve support and the electric box, and then remove the right side plate assy.</p>	
2	<p>Remove the screws connecting the left side plate and the chassis, and then remove the left side plate assy.</p>	

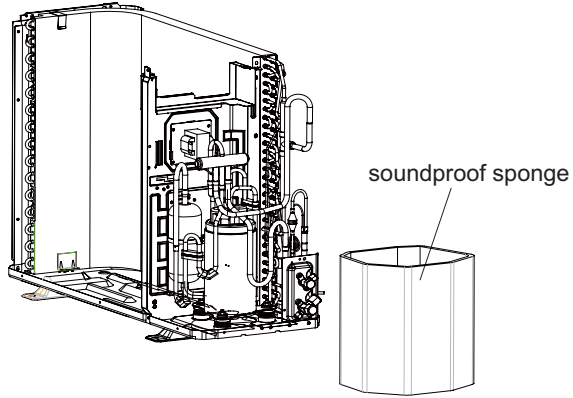
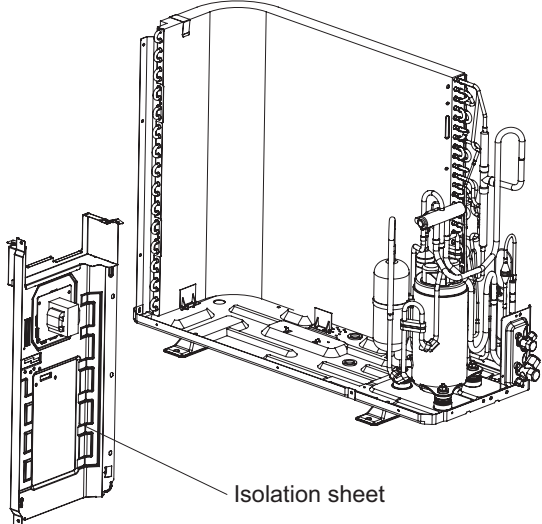
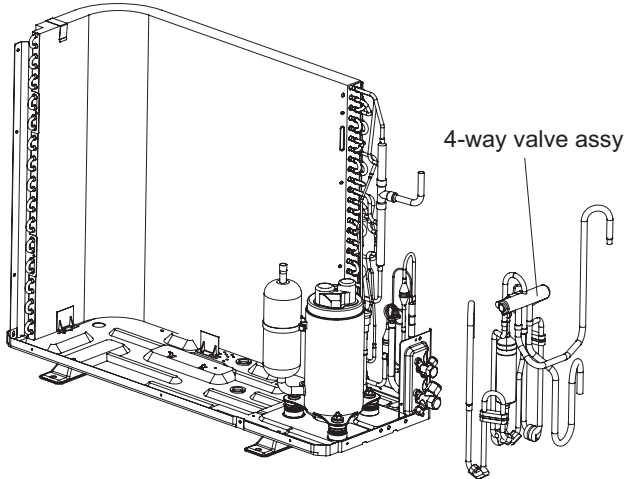
Steps	Procedure
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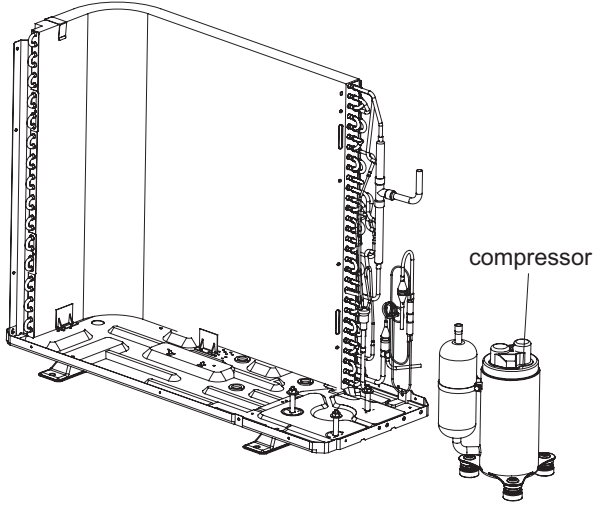
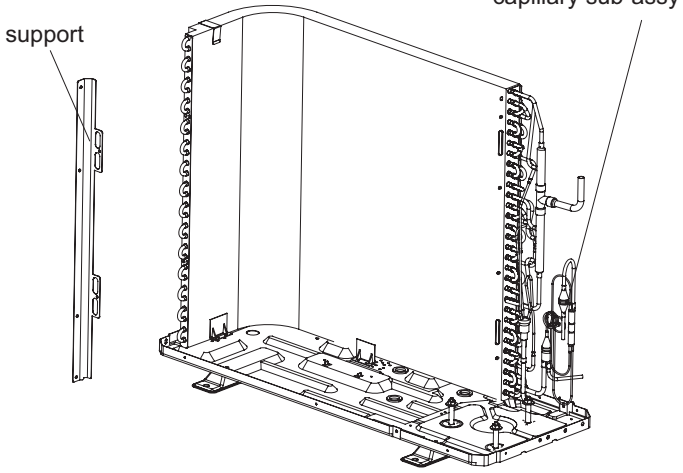
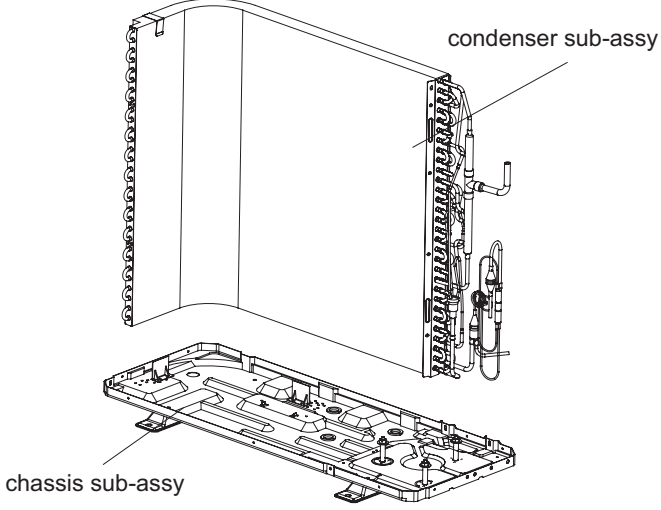
4. Remove fan motor	
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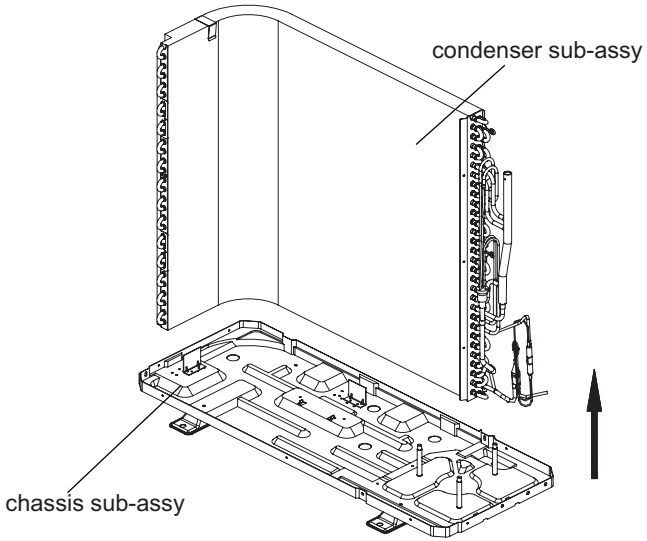
1	Remove the nuts fixing the blade and then remove the axial flow blade.	 <p>axial flow blade</p>
2	Remove the 4 tapping screws fixing the motor; disconnect the leading wire insert of the motor and then remove the motor. Remove the 2 tapping screws fixing the motor support and then pull the motor support upwards to remove it.	 <p>motor support</p> <p>motor</p>

5. Remove electric box	
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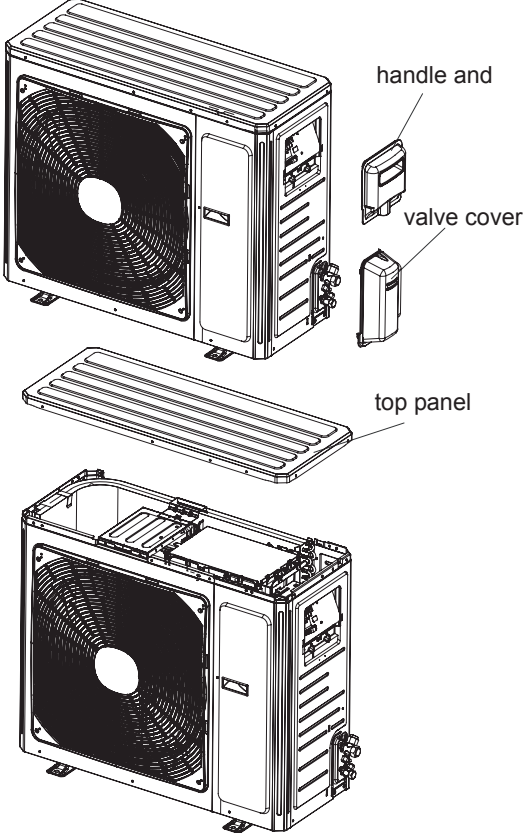
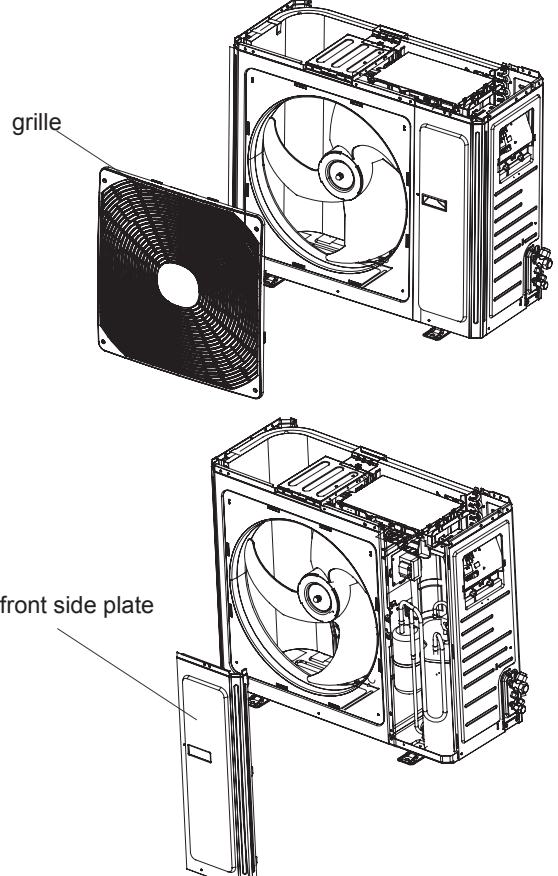
	Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.	 <p>electric box</p>
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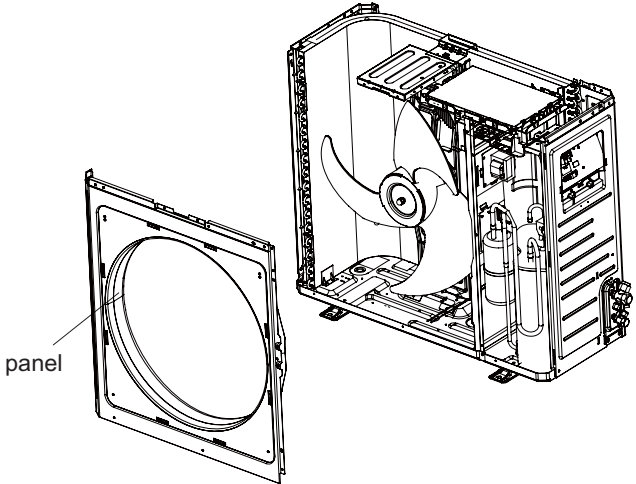
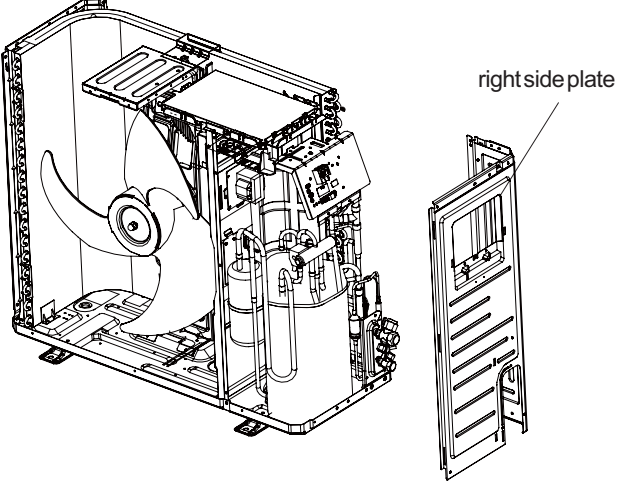
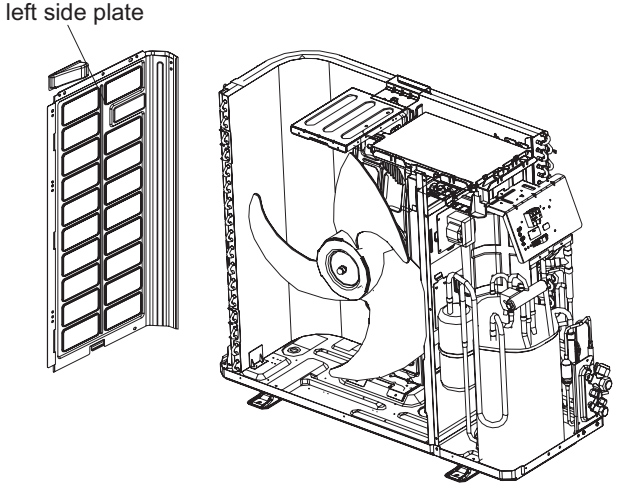
Steps	Procedure
<p>6.Remove soundproof sponge</p>	<p>Since the piping ports on the soundproof sponge are torn easily, remove the soundproof sponge carefully</p> 
<p>7. Remove Isolation sheet</p>	<p>Remove the 3 screws fixing the isolation sheet and then remove the Isolation sheet.</p> 
<p>8. Remove 4-way valve assy</p>	<p>Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy,and then remove the 4-way valve assy.</p> 

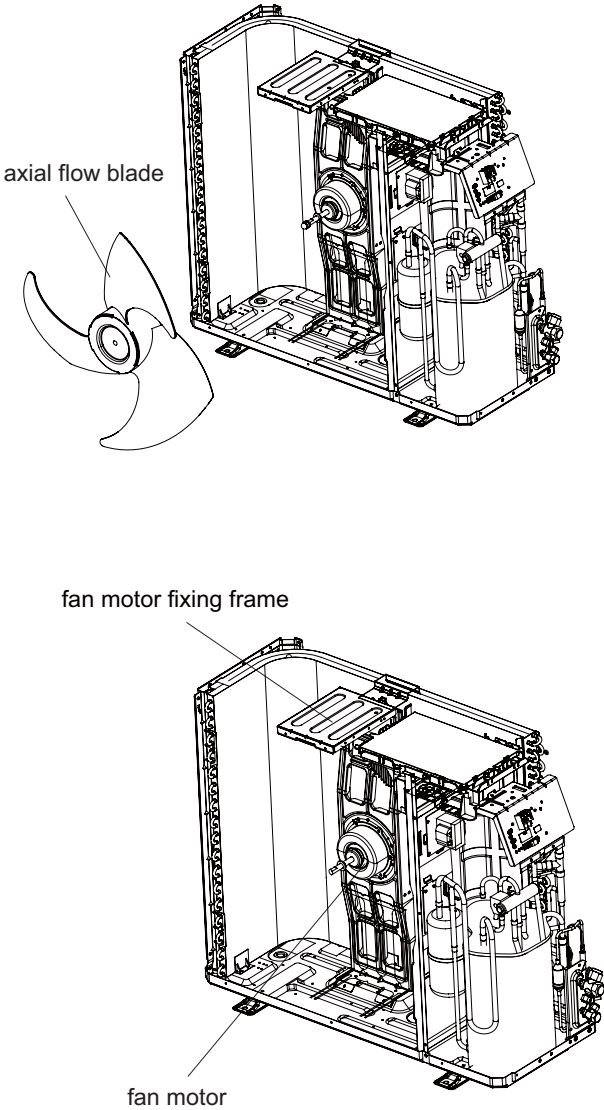
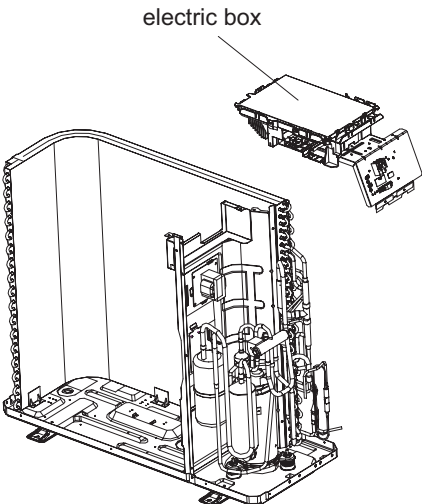
Steps	Procedure
<p>9. Remove compressor</p>	<p>Remove the 3 foot nuts fixing the compressor and then remove the compressor.</p>  <p>compressor</p>
<p>10. Remove condenser sub-assy</p>	<p>1 Remove the screws connecting the support (condenser) and condenser assy, and then remove the support (condenser).</p>  <p>support</p> <p>capillary sub-assy</p> <p>2 Remove the chassis sub-assy and condenser sub-assy.</p>  <p>condenser sub-assy</p> <p>chassis sub-assy</p>

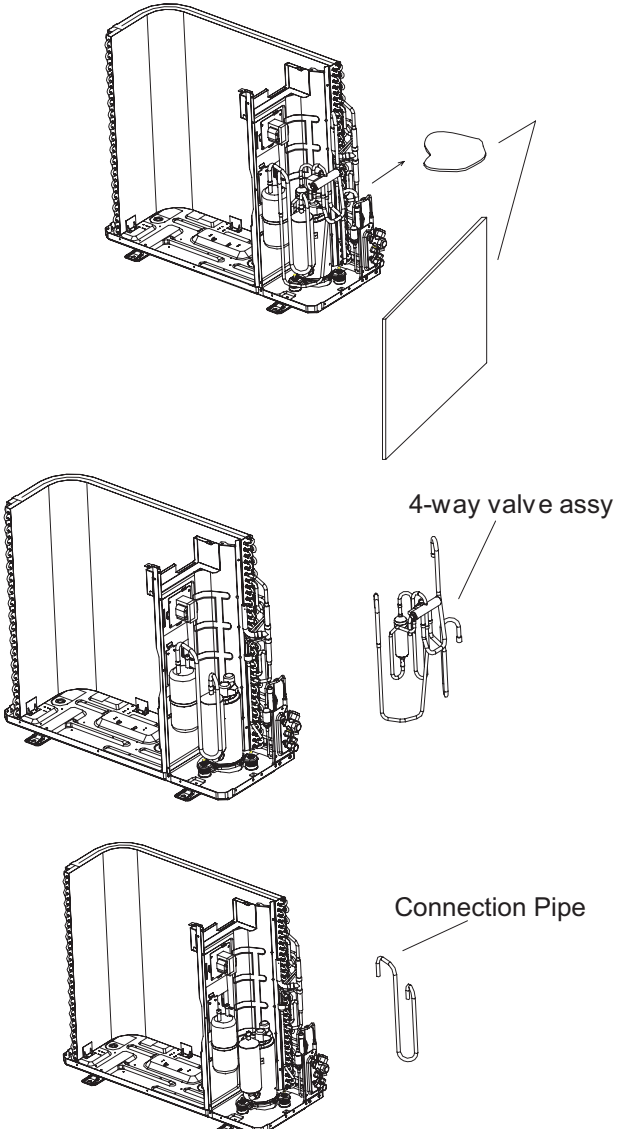
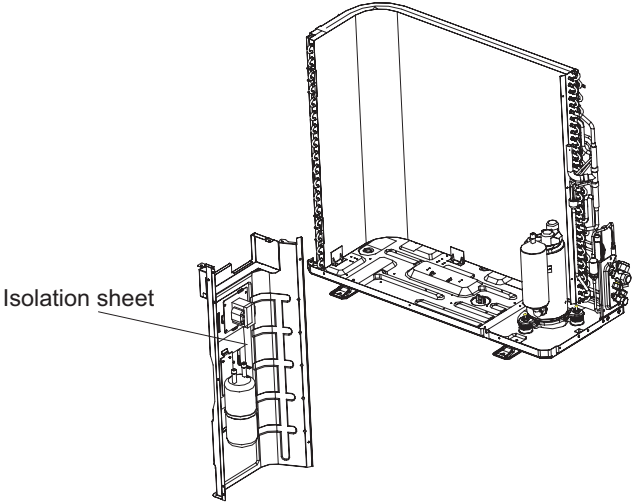
Steps	Procedure	
2	Disassemble the chassis sub-assy and condenser sub-assy.	 <p>The diagram shows an exploded view of two sub-assemblies. The 'chassis sub-assy' is a flat, rectangular metal plate with various mounting points and slots. The 'condenser sub-assy' is a vertical component with a complex internal structure, including a coil and various electrical connections. A vertical arrow on the right side of the diagram points upwards, indicating the direction of removal or assembly.</p>

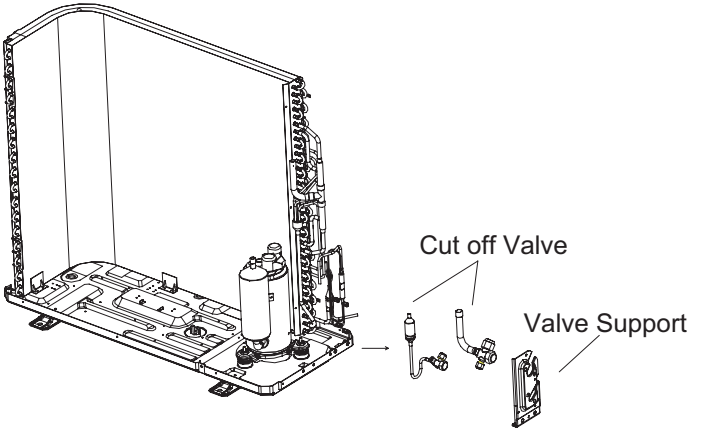
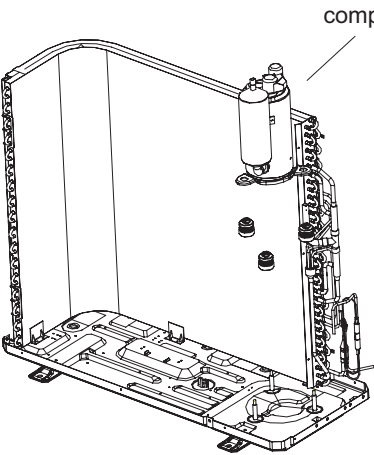
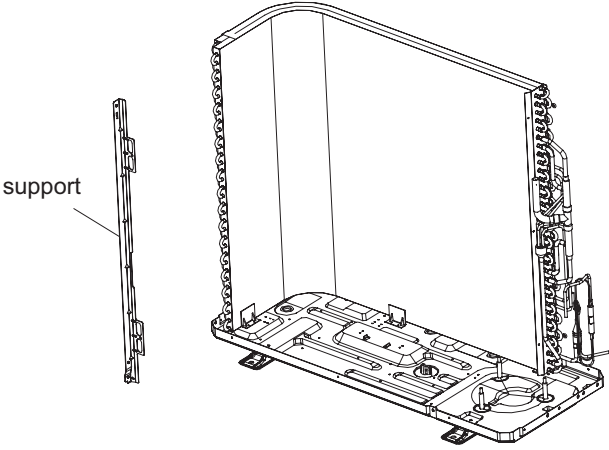
(3) ASH-24AIE

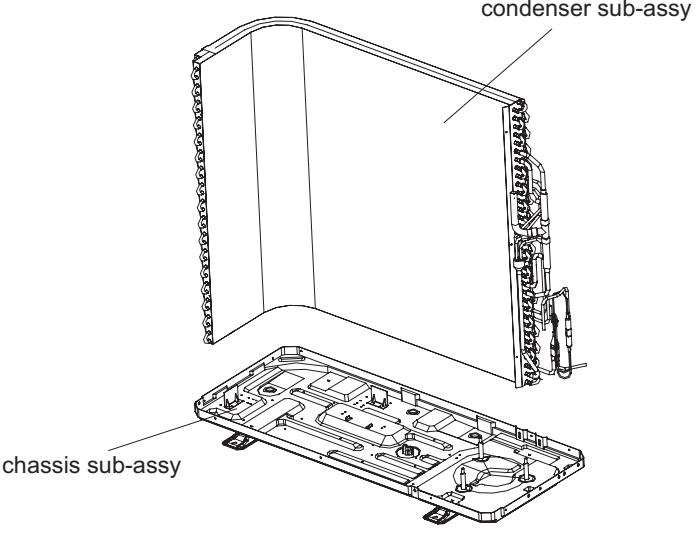
Steps	Procedure
<p>1. Remove top panel</p> <p>1 Twist off the screws used for fixing the handle and valve cover, pull the handle and valve cover upward to remove it.</p> <p>2 Remove the 3 screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.</p>	
<p>2. Remove grille, front side plate and panel.</p> <p>1 Remove the 2 screws connecting the grille and the panel, and then remove the grille.</p> <p>2 Remove the 1 screw connecting the front side plate and the panel, and then remove the front side plate.</p>	

Steps	Procedure	
3	<p>Remove the 5 screws connecting the panel with the chassis and the motor support, and then remove the panel.</p>	
3. Remove right side plate and left side plate		
1	<p>Remove the screws connecting the right side plate with the chassis, the valve support and the electric box, and then remove the right side plate assy.</p>	
2	<p>Remove the screws connecting the left side plate and the chassis, and then remove the left side plate assy.</p>	

Steps	Procedure	
<p data-bbox="97 280 564 309">4. Remove fan motor and axial flow blade</p> <p data-bbox="121 479 137 508">1</p> <p data-bbox="220 465 679 533">Remove the nuts fixing the blade and then remove the axial flow blade.</p> <p data-bbox="121 1122 137 1151">2</p> <p data-bbox="220 1122 671 1352">Remove the 4 tapping screws fixing the motor; disconnect the leading wire insert of the motor and then remove the motor. Remove the 2 tapping screws fixing the motor support and then pull the motor support upwards to remove it.</p>		 <p data-bbox="836 456 999 486">axial flow blade</p> <p data-bbox="895 882 1126 911">fan motor fixing frame</p> <p data-bbox="959 1375 1062 1404">fan motor</p>
<p data-bbox="97 1476 363 1505">5. Remove electric box</p>	<p data-bbox="220 1648 671 1798">Remove the screws fixing the electric box sub-assy; loosen the wire bundle; pull out the wiring terminals and then pull the electric box upwards to remove it.</p>	 <p data-bbox="1034 1487 1158 1516">electric box</p>

Steps	Procedure
<p data-bbox="108 286 699 318">6.Remove soundproof sponge and 4-way valve assy</p> <p data-bbox="135 421 758 470">1 Since the piping ports on the soundproof sponge are torn easily, remove the soundproof sponge carefully</p> <p data-bbox="135 907 710 1019">2 Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy,and then remove the 4-way valve assy.</p>	 <p>The diagram illustrates the removal of the soundproof sponge and the 4-way valve assembly in three stages. In the first stage, the soundproof sponge is shown being removed from the unit's interior. In the second stage, the 4-way valve assembly is shown being removed from the piping. In the third stage, a connection pipe is shown being removed from the unit.</p>
<p data-bbox="108 1451 399 1482">7. Remove Isolation sheet</p>	<p data-bbox="204 1608 718 1662">Remove the 3 screws fixing the isolation sheet and then remove the Isolation sheet.</p>  <p>The diagram shows the isolation sheet being removed from the unit. The sheet is shown being lifted away from the unit's interior, revealing the internal components.</p>

Steps	Procedure	
8. Remove Cut off Valve and Valve Support	<p>Remove the 2 bolts fixing the valve subassemblies. Unsolder the welding joint connecting the gas valve and the return air pipe. Remove the gas valve. (Note: When unsoldering the soldering joint, wrap the gas valve with wet cloth completely to avoid damage to the valve caused by high temperature.) Unsolder the welding joint connecting the liquid valve and the connecting pipe. Remove the liquid valve. Remove screws fixing valve support and then remove the valve support; remove the screw fixing the condenser and then pull the condenser upwards to remove it.</p>	 <p>Cut off Valve</p> <p>Valve Support</p>
9. Remove compressor	<p>Remove the 3 foot nuts fixing the compressor and then remove the compressor.</p>	 <p>compressor</p>
10. Remove support	<p>1 Remove the screws connecting the support and condenser assy, and then remove the support.</p>	 <p>support</p>

Steps		
11.Remove condenser sub-assy		
	<p>Remove the chassis sub-assy and condenser sub-assy.</p>	

PARTS GUIDE

ELEMENT SERIES

**ASH-09AIE, ASH-12AIE
ASH-18AIE, ASH-24AIE**



ELEMENT	name	part code	qty
ASH-09AIE	Drainage Connector (small)	06123401	1
ASH-12AIE	Drainage Connector (small)	06123401	1
ASH-18AIE	Drainage Plug (small)	0681340101	3
	Drainage Connector (small)	06123401	1
ASH-24AIE	Drainage Plug (middle)	06813401	3
	Drainage Connector (small)	06123401	1



ASH-09AIE



ASH-12AIE



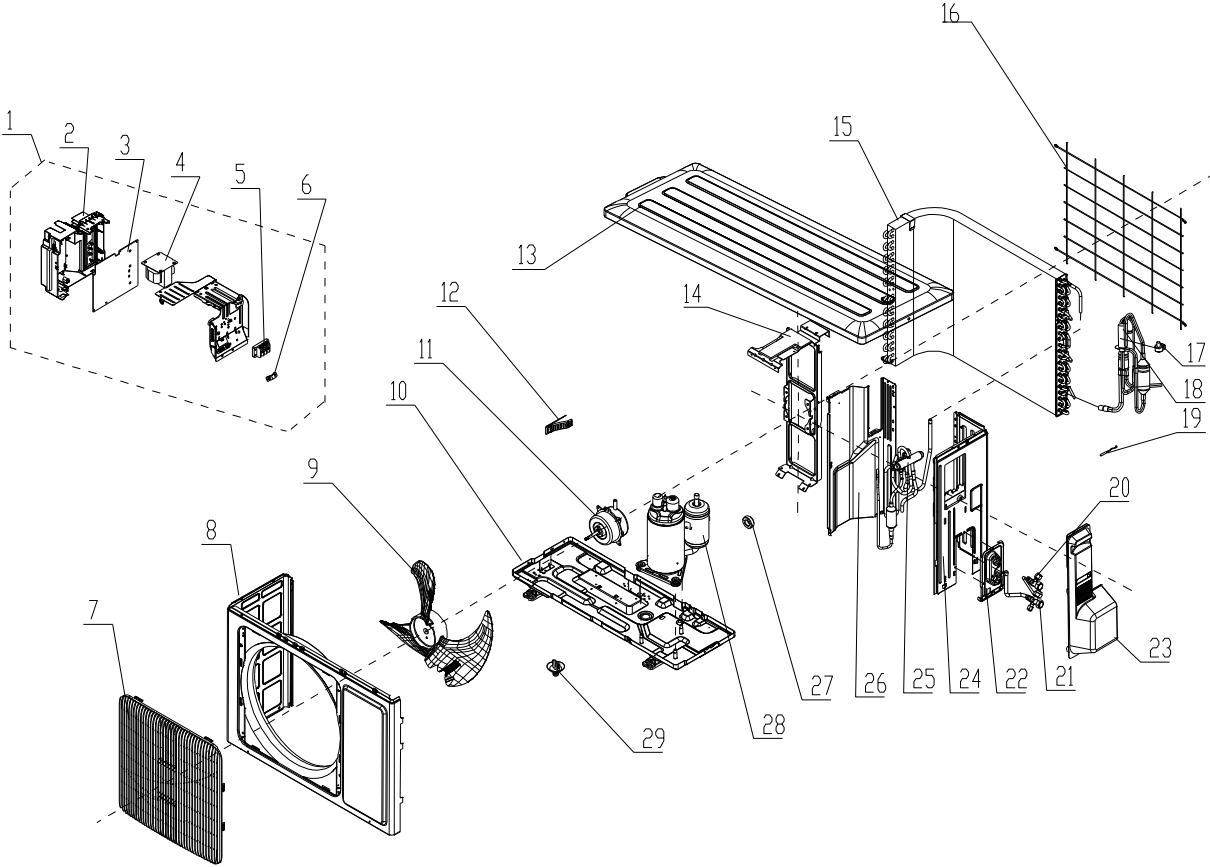
ASH-18AIE



ASH-24AIE

Outdoor units

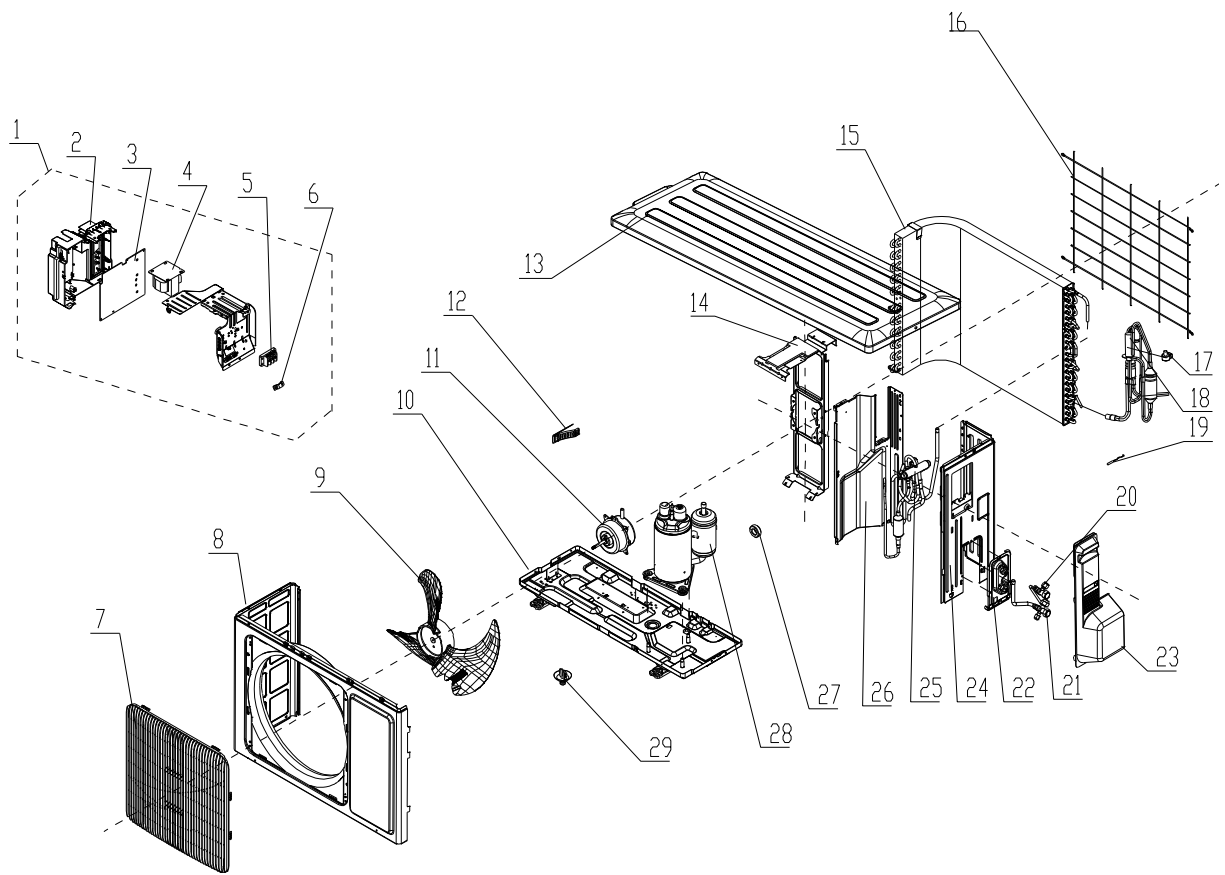
ASH-09AIE



No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-09AIE					
1	Electric Box Assy	02613858		1	BK
2	Electric Box Sub-Assy	02613862		1	BH
3	Main Board W8283BZ	30148854		1	BF
4	Reactor	43130184		1	AS
5	Terminal Board	420111041		1	AD
6	Wire Clamp	71010003		1	AB
7	Front Grill	22413032		1	AL
8	Front Panel	01533034P		1	AU
9	Axial Flow Fan	10333004		1	AM
10	Chassis Sub-assy	02803037P		1	AU
11	Brushless DC Motor FW30J-ZL	1501308502		1	AZ
12	Small Handle	26233100		1	AC
13	Top Cover Sub-Assy	01253073		1	AN
14	Motor Support	01703104		1	AN
15	Condenser Assy	01163812		1	BG
16	Rear Grill	01473009		1	AL
17	Magnet Coil QA(Q)12-GL-01-RK	4300876701		1	AS
18	Electronic Expansion Valve	07130369		1	AU
19	Temperature Sensor 20KT/15KS/50KT-JST-XARP-06V-Z(ivory象牙白)-700/350/270mm	3900030804		1	AH
20	Cut off Valve Assy	07133474		1	AP
21	Valve 1/4(R410A)	07100003		1	AK
22	Valve Support	0171314201P		1	AE
23	Big Handle	26233433		1	AE
24	Right Side Plate Sub-Assy	0130317801		1	AM
25	4-Way Valve Assy	03073151		1	AX
26	Clapboard Sub-Assy	01233385		1	AL
27	Magnetic Ring	49010109		1	AC
28	Compressor and Fittings QXA-A091zE190A	00103896G		1	BN
29	Drainage Connector	06123401		1	AA

The data are subject to change without notice.

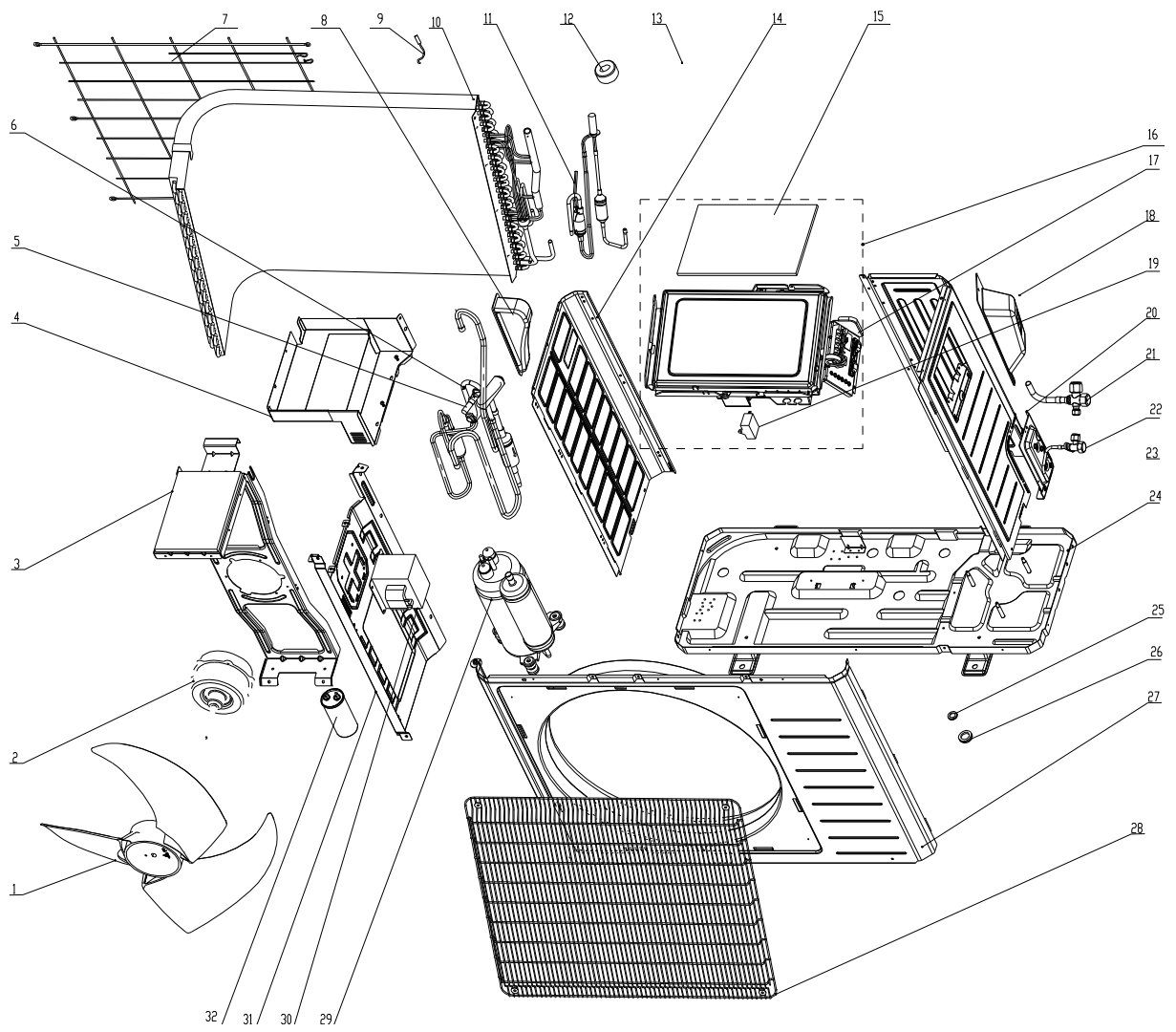
ASH-12AIE



No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-12AIE					
1	Electric Box Assy	02613643		1	BK
2	Electric Box Sub-Assy	02613666		1	BH
3	Main Board W8283CD	30148856		1	BF
4	Reactor	43130184		1	AS
5	Terminal Board	420111041		1	AD
6	Wire Clamp	71010003		1	AB
7	Front Grill	22413032		1	AL
8	Front Panel	0153303204P		1	AU
9	Axial Flow Fan	10333427		1	AN
10	Chassis Sub-assy	02803279P		1	AU
11	Fan Motor FW35X	1501306719		1	AX
12	Small Handle	none		0	
13	Top Cover Plate	01253443		1	AN
14	Motor Support	0170310401		1	AN
15	Condenser Assy	01163898		1	BM
16	Rear Grill	01473057		1	AL
17	Magnet Coil QA(Q)12-GL-01-RK	4300876701		1	AS
18	Electric Expansion Valve Sub-Assy	07133818		1	AU
19	Temperature Sensor 20KT/15KS/50K	3900030805		1	AH
20	Cut off Valve 3/8(R410A)	071302391		1	AP
21	Valve 1/4(R410A)	07100003		1	AK
22	Valve Support Assy	01713169		1	AQ
23	Big Handle	26233433		1	AE
24	Right Side Plate Sub-Assy	0130317801		1	AM
25	4-Way Valve Assy	03073136		1	BA
26	Clapboard Sub-Assy	0123314201		1	AL
27	Magnetic Ring	49010109		1	AC
28	Compressor and Fittings QXA-A091zE	00103896G		1	BN
29	Drainage Connector	06123401		1	AA

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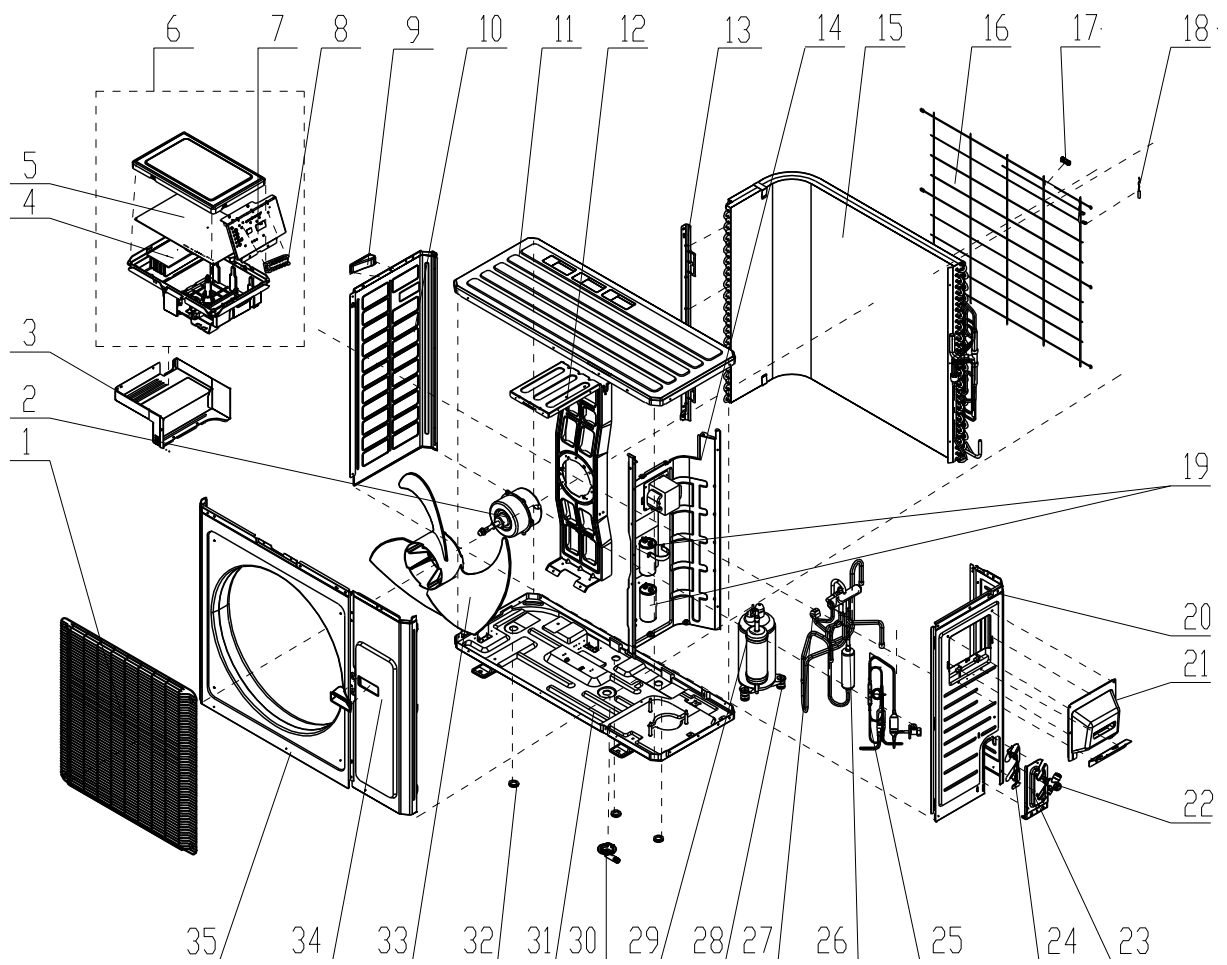
ASH-18AIE



No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-18AIE					
1	Axial Flow Fan	10335008		1	AQ
2	Fan Motor LW60M-ZL	1501506402		1	BB
3	Motor Support Sub-Assy	01705036		1	AN
4	Electric Box (Fireproofing)	none		0	
5	Magnet Coil	4300040033		1	AL
6	4-Way Valve Assy	03073158		1	BA
7	Rear Grill	01473043		1	AL
8	Left Handle	26235401		1	AC
9	Temperature Sensor 20KT/15KS/50KT-JST-XARP-06V-1100/800/600mm	3900030901		1	AH
10	Condenser Assy	01163935		1	BR
11	Electronic Expansion Valve assy	none		0	
12	Electric Expand Valve Fitting	none		0	
13	Top Cover	01255005P		1	AP
14	Left Side Plate	01305093P		1	AN
15	Insulating Plate of Electric box Cover	20113003		1	AF
16	Electric Box Assy	02613677		1	BN
17	Terminal Board	420111041		1	AD
18	Handle	26235254		1	AC
19	Capacitor CBB61	none		0	
20	Valve support assy	01715010P		1	AE
21	Cut off Valve 1/4(R410A)	0713506803		1	AK
22	Cut off Valve 1/2(R410A)	0713506703		1	AP
23	Right Side Plate	0130509402P		1	AN
24	Chassis Sub-assy	02803207P		1	AU
25	Drainage Connector	06123401		1	AA
26	Drainage Plug	0681340101		3	AB
27	Front Panel	01535013P		1	AU
28	Front grill	22413033		1	AL
29	Compressor and Fittings QXA-B141zF030A	00105249G		1	BP
30	Reactor	43130025		1	AT
31	Clapboard Assy	01233153		1	AL
32	Capacitor CBB65	none		0	
	Main board	30148862		1	BM

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ASH-24AIE

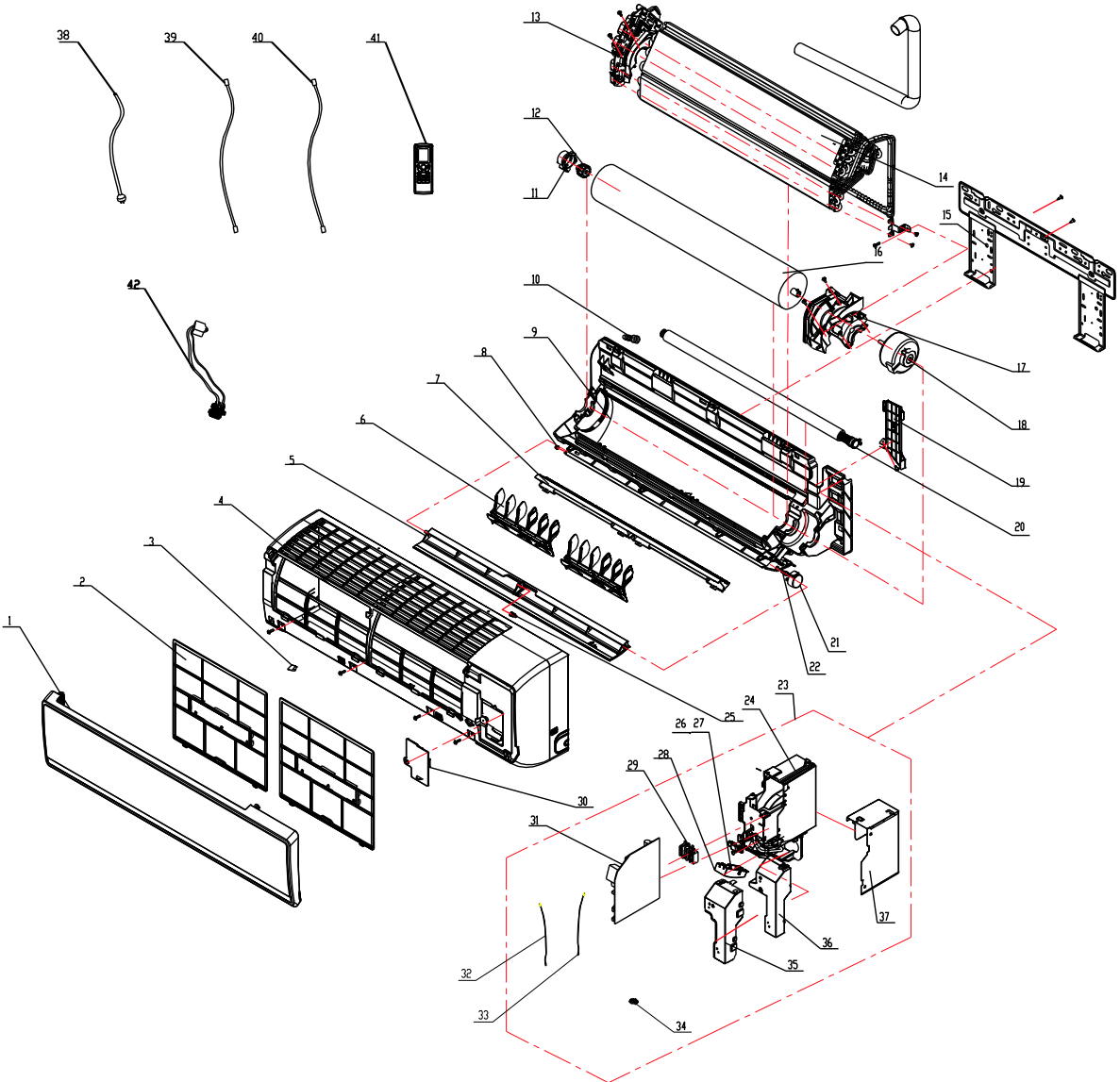


No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-24AIE					
1	Front Grill	22413034		1	AM
2	Fan Motor LW92K-ZL	1501403402		1	BC
3	Electric Box (Fireproofing)	20113027		1	AM
4	Radiator	49010252		1	AR
5	Main Board W8433ADE	30148864		1	BM
6	Electric Box Assy	02613662		1	BP
7	Terminal Board Support sub-assy	01713175A		1	AD
8	Terminal Board	420111041		1	AD
9	Left Handle	26235401		1	AC
10	Left Side Plate	01305043P		1	AP
11	Top Cover	01255006P		1	AQ
12	Motor Support Sub-Assy	01705025		1	AR
13	Condenser support plate	01175092		1	AF
14	Clapboard Assy	01233164		1	AP
15	Condenser Assy	01163917		1	BT
16	Rear Grill	01475013		1	AL
17	Wiring clamp	26115004		1	AB
18	Temperature Sensor 20KT/15KS/50KT-JST-XARP-06V- 1100/800/600mm	3900030901		1	AH
19	Capacitor CBB61	none		0	
20	Right Side Plate	0130504401P		1	AP
21	Big Handle	26235001		1	AE
22	Cut-off Valve 5/8(R410a)	07133157		1	AQ
23	Valve Support Sub-Assy	0171501201P		1	AF
24	Baffle (valve support)	01365435P		1	AD
25	Capillary Sub-assy	03163297		1	AS
26	4-Way Valve Assy	03073144		1	BA
27	Magnet Coil(4-way Valve)	4300040045		1	AM
28	Compressor Gasket	76710247		3	AE
29	Compressor and Fittings QXA-B141zF030A	00105249G		1	BP
30	Drainage Connector	06123401		1	AA
31	Chassis Sub-assy	02803255P		1	AW
32	Drainage Hole Cap	06813401		3	AB
33	Axial Flow Fan	10335009		1	AM
34	Front Side Plate	01305086P		1	AL
35	Cabinet	01435004P		1	AU

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Indoor units

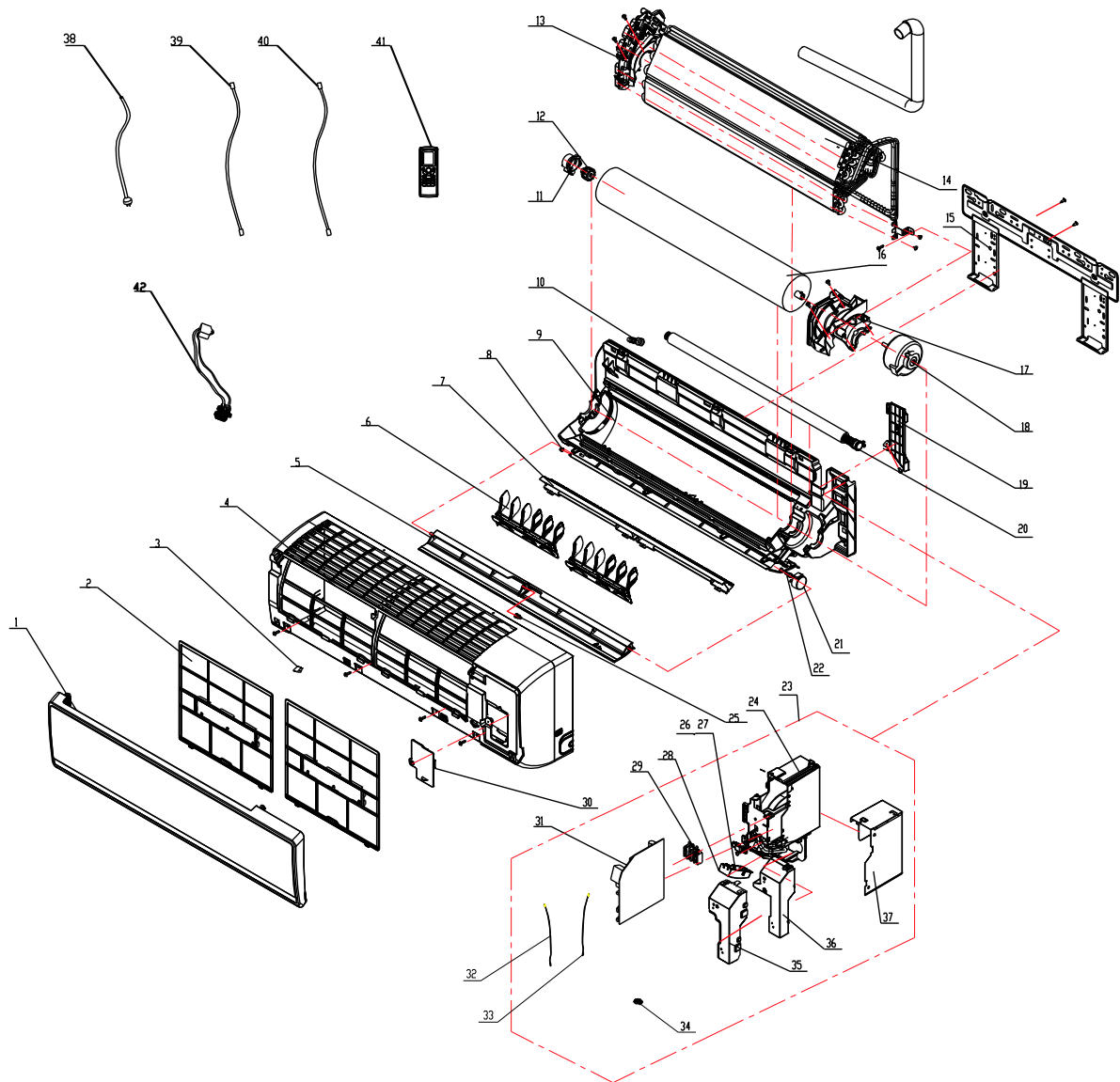
ASH-09AIE



No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-09AIE					
1	Front Panel	27230001300		1	AM
2	Filter Sub-Assy	1112208201		2	AD
3	Screw Cover	24252019		1	AB
4	Front Case Assy	2001237501		1	AU
5	Guide Louver	10512119		1	AF
6	Air Louver	10512160		2	AK
7	Helicoid tongue	26112486		1	AL
8	Left Axile Bush	none		0	
9	Rear Case assy	2220229501		1	BA
10	Rubber Plug (Water Tray)	none		0	
11	O-Gasket sub-assy of Bearing	none		0	
12	O-Gasket of Cross Fan Bearing	none		0	
13	Evaporator Support	24212108		1	AK
14	Evaporator Assy	0100227003		1	BE
15	Wall Mounting Frame	0125201801A		1	AK
16	Cross Flow Fan	10352423		1	AM
17	Motor Press Plate	26112191		1	AH
18	Fan Motor FN10V-PG	15012141		1	AX
19	Pipe Clamp	none		0	
20	Drainage Pipe Sub-assy	0523204101		1	AD
21	Step Motor MP24BA	1521210701		1	AG
22	Crank	73012005		1	AB
23	Electric Box Assy	20402706		1	AZ
24	Electric Box	20112086		1	AK
25	Axile Bush	none		0	
26	Indicator Light Cover	22242084		1	AE
27	Indicator shield cover	22242083		1	AC
28	Display Board	30568112		1	AM
29	Terminal Board	42011233		1	AF
30	Electric Box Cover2	none		0	
31	Main Board M836F2VBJ	30148846		1	AX
32	Ambient Temperature Sensor 15KS-XH-2P-K3(黒)-300mm	390000453		1	AD
33	Temperature Sensor 20KT-JST-XARP-02V(白色)-200mm	39000305		1	AD
34	Jumping Connector	4202300112		1	AA
35	Shield Cover of Electric box Cover	none		0	
36	Electric Box Cover	20122106		1	AF
37	Shield cover of Electric Box	none		0	
38	Power Cord	400204643		1	AM
39	Connecting Cable	none		0	
40	Connecting Cable	40020538		1	AN
41	Remote Controller YB1F2(XFAN)	305100611_K96999		1	AT
42	Cold plasma generator sub-assy	none		0	

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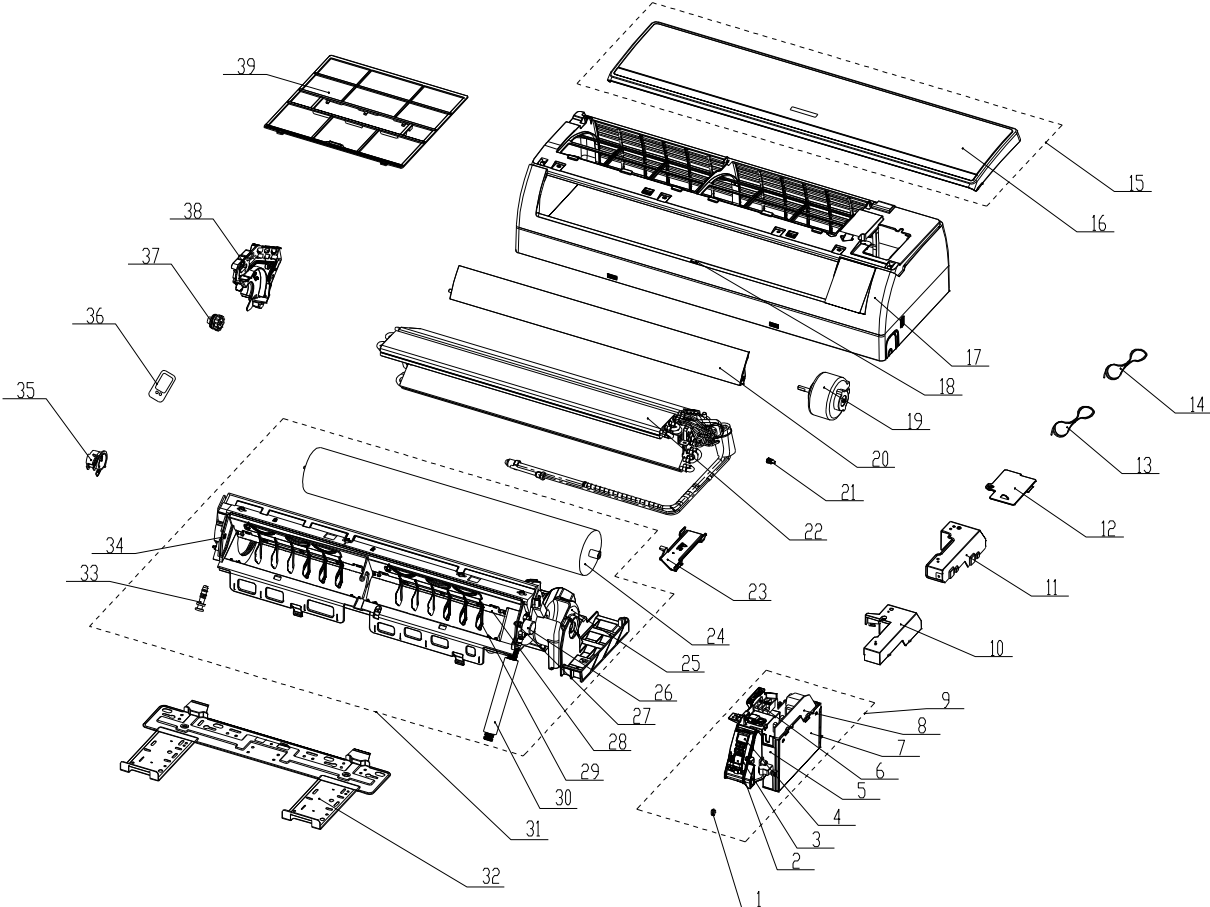
ASH-12AIE



No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-12AIE					
1	Front Panel	27230001300		1	AM
2	Filter Sub-Assy	1112208201		2	AD
3	Screw Cover	24252019		1	AB
4	Front Case Assy	2001237501		1	AU
5	Guide Louver	10512119		1	AF
6	Air Louver	10512160		2	AK
7	Helicoid tongue	26112486		1	AL
8	Left Axile Bush	none		0	
9	Rear Case assy	2220229501		1	BA
10	Rubber Plug (Water Tray)	none		0	
11	O-Gasket sub-assy of Bearing	none		0	
12	O-Gasket of Cross Fan Bearing	none		0	
13	Evaporator Support	24212108		1	AK
14	Evaporator Assy	0100274503		1	BE
15	Wall Mounting Frame	0125201801A		1	AK
16	Cross Flow Fan	10352423		1	AM
17	Motor Press Plate	26112191		1	AH
18	Fan Motor FN10V-PG	15012141		1	AX
19	Pipe Clamp	none		0	
20	Drainage Pipe Sub-assy	0523204101		1	AD
21	Step Motor MP24BA	1521210701		1	AG
22	Crank	73012005		1	AB
23	Electric Box Assy	20402765		1	AZ
24	Electric Box	20112086		1	AK
25	Axile Bush	none		0	
26	Indicator Light Cover	22242084		1	AE
27	Indicator shield cover	22242083		1	AC
28	Display Board D8193A	30568112		1	AM
29	Terminal Board	42011233		1	AF
30	Electric Box Cover2	none		0	
31	Main Board M836F2VBJ	30148846		1	AX
32	Ambient Temperature Sensor 15KS	390000453		1	AD
33	Temperature Sensor 20KT-JST-XAF	39000305		1	AD
34	Jumper	4202300114		1	AA
35	Shield Cover of Electric box Cover	none		0	
36	Electric Box Cover	20122106		1	AF
37	Shield cover of Electric Box	none		0	
38	Power Cord	400204643		1	AM
39	Connecting Cable	none		0	
40	Connecting Cable	40020538		1	AN
41	Remote Controller YB1F2(XFAN)	305100611_K96999		1	AT
42	Cold plasma generator sub-assy	none		0	

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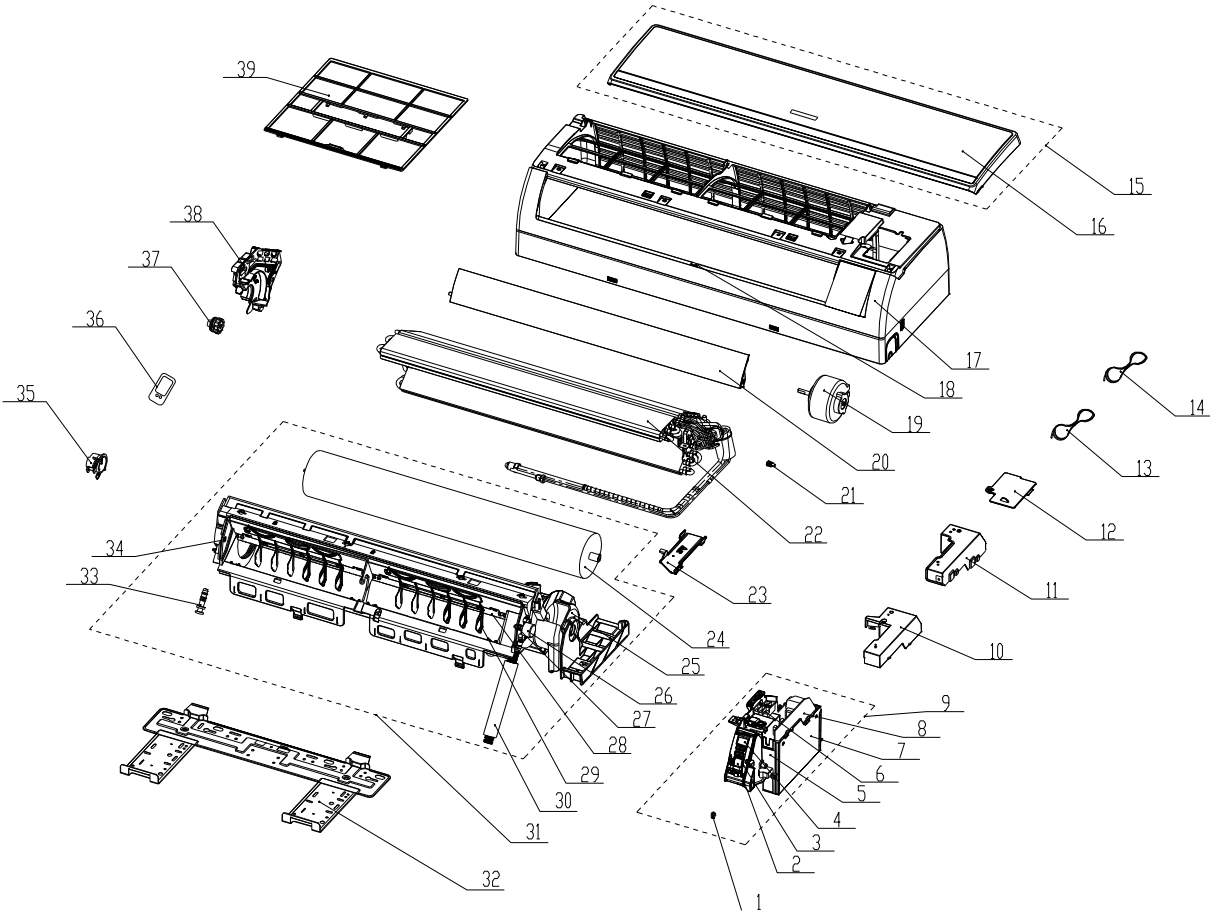
ASH-18AIE



No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-18AIE					
1	Jumper	4202300115		1	AA
2	Indicator shield cover	22242083		1	AC
3	Indicator Light Cover	22242084		1	AE
4	Display Board D8193A	30568112		1	AM
5	Electric Box	20112103		1	AK
6	Terminal Board	4201026601		1	AE
7	Shield cover of Electric Box	01592087		1	AF
8	Main Board M836F2UDJ	30148858		1	AY
9	Electric Box Assy	20402748		1	AZ
10	Electric Box Cover	20122123		1	AF
11	Shield Cover of Electric box Cover	01592088		1	AF
12	Electric Box Cover2	20122142		1	AD
13	Power Cord	4002046421		1	AP
14	Connecting Cable	40020538		1	AN
15	Front Panel B4	27230001301		1	AP
17	Front Case Assy	20012497		1	AW
18	Screw Cover	242520041		1	AB
19	Fan Motor FN20V-PG	15012146		1	AX
20	Guide Louver	10512140		1	AF
21	Axile Bush	10542036		1	AB
22	Evaporator Assy	01002320		1	BG
23	Pipe Clamp	2611216401		1	AC
24	Cross Flow Fan	10352036		1	AN
25	Motor Press Plate	26112231		1	AH
26	Step Motor MP28VB	15012086		1	AG
27	Crank	10582070		1	AB
28	Helicoid tongue	26112232		1	AM
29	Air Louver	10512160		2	AK
30	Drainage hose	0523001407		1	AD
31	Rear Case assy	22202154		1	AY
32	Wall Mounting Frame	01252484		1	AK
33	Water Tray Glue Plug	76712012		1	AC
34	Left Axile Bush	10512037		1	AB
35	Ring of Bearing	26152022		1	AC
36	Remote Controller YB1F2(XFAN)	305100611_K96999		1	AT
37	O-Gasket sub-assy of Bearing	none		1	
38	Evaporator Support	24212119		1	AK
39	Filter Sub-Assy	11122104		2	AD

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ASH-24AIE



No	Description	Part Code	Actualization	Qty	Price Code
MODEL: ASH-24AIE					
1	Jumper	4202300127		1	AA
2	Indicator shield cover	22242083		1	AC
3	Indicator Light Cover	22242084		1	AE
4	Display Board D8193A	30568112		1	AM
5	Electric Box	20112103		1	AK
6	Terminal Board	42011233		1	AF
7	Shield cover of Electric Box	01592087		1	AF
8	Main Board M836F2UCJ	30148859		1	AY
9	Electric Box Assy	20402711		1	AZ
10	Electric Box Cover	20122123		1	AF
11	Shield Cover of Electric box Cover	01592088		1	AF
12	Electric Box Cover2	20112081		1	AD
13	Power Cord	4002046418		1	AP
14	Connecting Cable	40020538		0	AN
15	Front Panel	27230001302		1	AM
16	Front Panel	none		1	
17	Front Case Assy	20012514		1	AX
18	Screw Cover	24252016		3	AA
19	Fan Motor FN25A-PG	15012098		1	AY
20	Guide Louver	10512138		1	AF
21	Axile Bush	10542036		2	AB
22	Evaporator Assy	0100257205		1	BK
23	Pipe Clamp	26112188		1	AC
24	Cross Flow Fan	10352030		1	AN
25	Motor Press Plate	26112316		1	AH
26	Stepping Motor MP35XX	1521300101		1	AG
27	Crank	10582070		1	AB
28	Helicoid tongue	26112229		1	AM
29	Air Louver	10512139		3	AK
30	Drainage hose	0523001405		1	AD
31	Rear Case assy	22202157		1	AY
32	Wall Mounting Frame	01252032		1	AK
33	Water Tray Glue Plug	76712012		1	AC
34	Left Axile Bush	10512037		1	AB
35	Ring of Bearing	26152025		1	AC
36	Remote Controller YB1F2(XFAN)	305100611_K96999		1	AT
37	O-Gasket sub-assy of Bearing	none		1	
38	Evaporator Support	24212103		1	AK
39	Filter Sub-Assy	11122091		2	AD

The data are subject to change without notice.

Take-back of electrical waste Information for Users to Disposal of electrical and electronic equipment (private households)

Icon on the product or in the accompanying documentation means that used electric or electronic products must not be disposed together with domestic waste. For the correct disposal of the product hand it over to a place for take-back, where it is collected free of charge. By correct disposal of the product you can help to preserve valuable natural resources and help in preventing potential negative impacts to environment and human health, which could be consequence of incorrect disposal of waste. Ask for more details from local authorities, nearest collection point, in Waste Acts of respective country, in the Czech Republic in Act no. 185/2001 Coll., in the wording of later regulations. In case of incorrect disposal of this waste, a fine can be imposed according to national regulations.



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