

TQSDT

OWNER'S MANUAL



Service Manual

Models: TM18H4O
TM24H4O
TM30H4O
TM36H4O
TM42H3O
(Refrigerant R410A)



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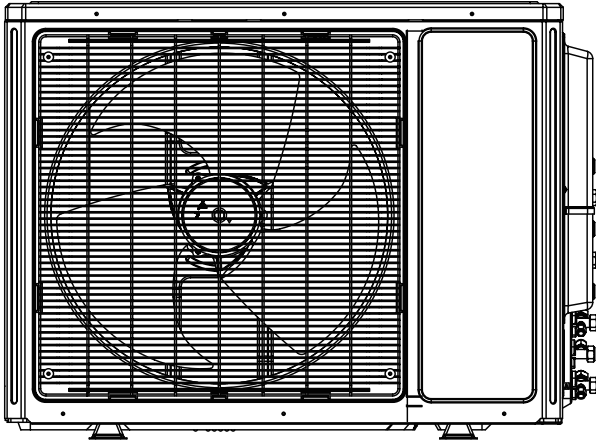
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Part I : Technical Information

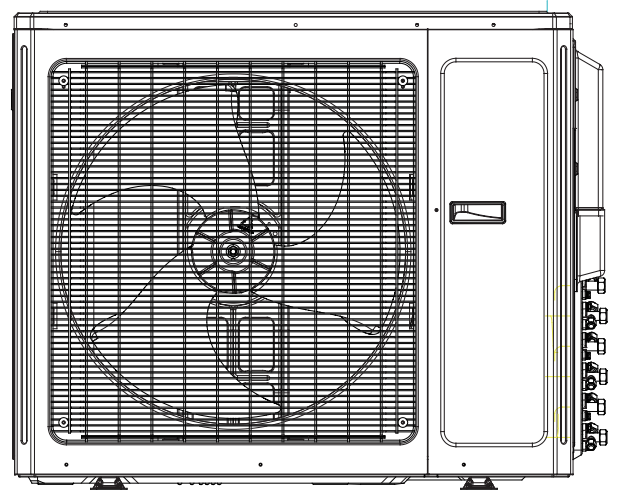
1. Summary

Outdoor Unit

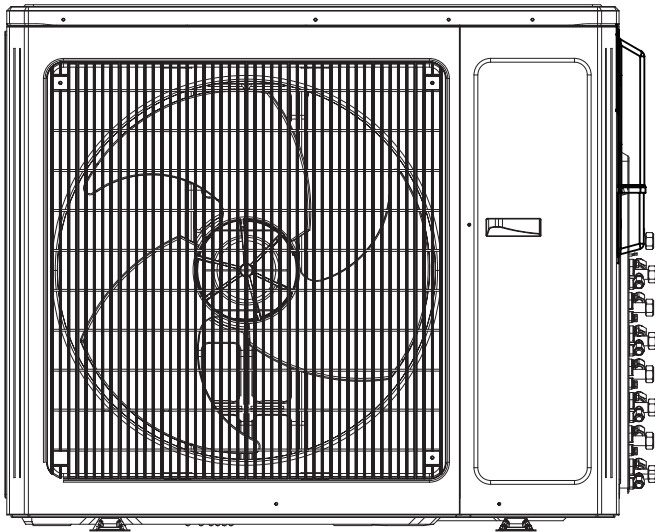
TM18H4O



TM24H4O

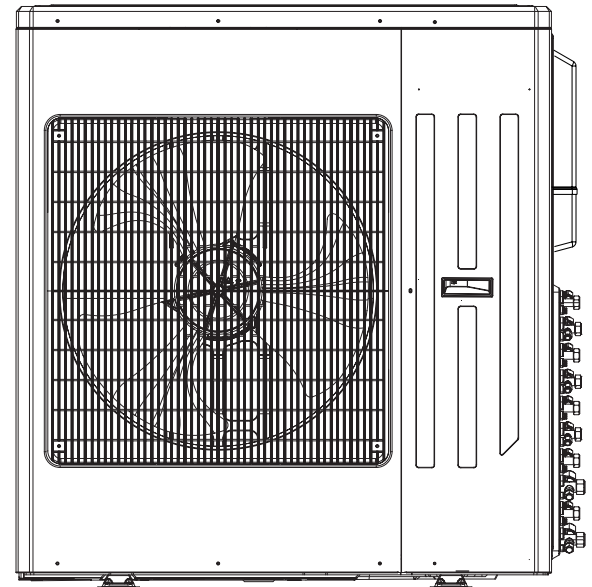


TM30H4O



TM36H4O

TM42H3O



Model List:

No	Model	Product code
1	TM18H4O	CB228W07700_L81561
2	TM24H4O	CB228W07800_L81561
3	TM30H4O	CB228W07900_L81561
4	TM36H4O	CB228W08000_L81561
5	TM42H3O	CN860W0180_L81561

2. Specifications

Model			TM18H4O	
Product Code			CB228W07700_L81561	
Power supply	Rated Voltage	V~	208/230	
	Rated Frequency	Hz	60	
	Phases		1	
Cooling capacity(max~min)		Btu/h	18000(6155~6998)	
Heating capacity(max~min)		Btu/h	19000(8530~22600)	
Cooling Power Input(max~min)		W	1440	
Heating Power Input(max~min)		W	1520	
Cooling Current Input		A	6.26	
Heating Current Input		A	6.61	
Rated Power Input		W	2800	
Rated Current		A	12.42	
EER		(Btu/h)/W	12.5	
COP		(Btu/h)/W	12.5	
Outdoor Unit	Compressor Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD	
	Compressor Model		QXA-B141zF030A	
	Compressor Refrigerant Oil Type		RB68EP	
	Compressor Type		Inverter Rotary	
	L.R.A		A	/
	Compressor Rated Load Amp (RLA)		A	10.82
	Compressor Power Input		W	1440
	Compressor Thermal Protector			1NT11L-6233
	Throttling Method			Electron expansion valve
	Cooling Operation Ambient Temperature Range		°F	-0.4~118.4
	Heating Operation Ambient Temperature Range		°F	-4~75.2
	Condenser Material			Aluminum Fin-copper Tube
	Condenser Pipe Diameter		inch	Φ9/32
	Rows-Fin Gap(mm)		inch	2-1/18
	Coil length (l) X height (H) X coil width (L)		inch	33 1/2X1 /12X26
	Fan Motor Speed (rpm) (H/M/L)		rpm	630
	Output of Fan Motor		W	60
	Fan Motor RLA		A	0.62
	Fan Motor Capacitor		μF	/
	Air Flow Volume of Outdoor Unit		CFM	1883
	Fan Type-Piece			Axial-flow
	Fan Diameter		inch	Φ20 1/2
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IPX4
	Permissible Excessive Operating Pressure for the Discharge Side		MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side		MPa	2.5
	Dimension (W/H/D)		inch	38X27 9/16X15 39/64
	Dimension of Package (L/W/H)		inch	40 13/32X18X29
	Dimension of Package(L/W/H)		inch	40 1/2X18X29 1/2
Net Weight		lb	114.7	
Gross Weight		lb	124.6	
Refrigerant Charge			R410A	
Refrigerant Charge		oz	56.45	

Outdoor Unit	Cross-sectional Area of Power Cable Conductor	sq in	0.0032
	Recommended Power Cable(Core)	N	3
	Connection Pipe Connection Method		Flare Connection
	Not Additional Gas Connection Pipe Length	ft	32.8
	Connection Pipe Gas Additional Charge	oz/ft.	0.2
	Outer Diameter of Liquid Pipe1(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Liquid Pipe2(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Gas Pipe1(LENNOX Allocation) (Metric)	inch	3/8
	Outer Diameter of Gas Pipe2(LENNOX Allocation) (Metric)	inch	3/8
	Connection Pipe Max. Height Distance(indoor and indoor)	ft	32.8
	Connection Pipe Max. Height Distance(indoor and outdoor and indoor up)	ft	32.8
	Connection Pipe Max. Height Distance(indoor and outdoor and outdoor up)	ft	32.8
	Max. equivalent connection pipe length(outdoor to last indoor)	ft	32.8
	Connection Pipe Max. Length Distance(total length)	ft	65.6

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

Model			TM24H4O	
Product Code			CB228W07800_L81561	
Power supply	Rated Voltage	V~	208/230	
	Rated Frequency	Hz	60	
	Phases		1	
Cooling capacity(max~min)		Btu/h	24000(7500~33000)	
Heating capacity(max~min)		Btu/h	26000(7500~35000)	
Cooling Power Input(max~min)		W	1920	
Heating Power Input(max~min)		W	2050	
Cooling Current Input		A	8.35	
Heating Current Input		A	8.9	
Rated Power Input		W	4550	
Rated Current		A	20.19	
EER		(Btu/h)/W	12.5	
COP		(Btu/h)/W	12.7	
Outdoor Unit	Compressor Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD	
	Compressor Model		QXAS-D23zX090B	
	Compressor Refrigerant Oil Type		RB68EP	
	Compressor Type		Inverter Rotary	
	L.R.A		A	/
	Compressor Rated Load Amp (RLA)		A	15.82
	Compressor Power Input		W	2550
	Compressor Thermal Protector			1NT11L-6233
	Throttling Method			Electron expansion valve
	Cooling Operation Ambient Temperature Range		°F	-0.4~118.4
	Heating Operation Ambient Temperature Range		°F	-4~75.2
	Condenser Material			Aluminum Fin-copper Tube
	Condenser Pipe Diameter		inch	Φ2/7
	Rows-Fin Gap(mm)		inch	2-1/18
	Coil length (l) X height (H) X coil width (L)		inch	38 21/32X1 1/2X29 7/16
	Fan Motor Speed (rpm) (H/M/L)		rpm	800
	Output of Fan Motor		W	90
	Fan Motor RLA		A	0.59
	Fan Motor Capacitor		μF	/
	Air Flow Volume of Outdoor Unit		CFM	2354
	Fan Type-Piece			Axial-flow
	Fan Diameter		inch	Φ21 43/64-2 39/64
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IPX4
	Permissible Excessive Operating Pressure for the Discharge Side		MPa	4.3
	Permissible Excessive Operating Pressure for the Suction Side		MPa	2.5
	Dimension (W/H/D)		inch	38 37/64X31 7/64X17 21/64
	Dimension of Package (L/W/H)		inch	42 1/2X19X33
Dimension of Package(L/W/H)		inch	42 43/64X19 13/64X33 43/64	
Net Weight		lb	153.2	
Gross Weight		lb	164.3	
Refrigerant Charge			R410A	
Refrigerant Charge		oz	77.6	

Outdoor Unit	Cross-sectional Area of Power Cable Conductor	sq in	0.0051
	Recommended Power Cable(Core)	N	3
	Connection Pipe Connection Method	-	Flare Connection
	Not Additional Gas Connection Pipe Length	ft	98.4
	Connection Pipe Gas Additional Charge	oz/ft.	0.2
	Outer Diameter of Liquid Pipe1(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Liquid Pipe2(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Liquid Pipe2(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Gas Pipe1(LENNOX Allocation) (Metric)	inch	3/8
	Outer Diameter of Gas Pipe2(LENNOX Allocation) (Metric)	inch	3/8
	Outer Diameter of Gas Pipe2(LENNOX Allocation) (Metric)	inch	3/8
	Connection Pipe Max. Height Distance(indoor and indoor)	ft	32.8
	Connection Pipe Max. Height Distance(indoor and outdoor and indoor up)	ft	32.8
	Connection Pipe Max. Height Distance(indoor and outdoor and outdoor up)	ft	32.8
	Max. equivalent connection pipe length(outdoor to last indoor)	ft	65.6
Connection Pipe Max. Length Distance(total length)	ft	196.8	

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

Model			TM30H4O	
Product Code			CB228W07900_L81561	
Power supply	Rated Voltage	V~	208/230	
	Rated Frequency	Hz	60	
	Phases		1	
Cooling capacity		Btu/h	28500	
Heating capacity		Btu/h	30000	
Cooling Power Input		W	2280	
Heating Power Input		W	2350	
Cooling Current Input		A	9.91	
Heating Current Input		A	10.22	
Rated Power Input		W	3800	
Rated Current		A	16.86	
EER		(Btu/h)/W	12.50	
COP		(Btu/h)/W	12.76	
SEER			21.00	
HSPF			10.50	
Outdoor Unit	Compressor Trademark		ZHUHAI LANDA COMPRESSOR CO.LTD	
	Compressor Model		QXAS-D32zX090A	
	Compressor Refrigerant Oil Type		RB68EP	
	Compressor Type		Inverter Rotary	
	L.R.A	A	30	
	Compressor Rated Load Amp (RLA)		A	13.9
	Compressor Power Input		W	4150
	Compressor Thermal Protector			1NT11L—6233
	Throttling Method			Electron expansion valve
	Cooling Operation Ambient Temperature Range		°F	0~118
	Heating Operation Ambient Temperature Range		°F	-4~86
	Condenser Material			Aluminum Fin-copper Tube
	Condenser Pipe Diameter		inch	Φ5/16
	Rows-Fin Gap(mm)		inch	2-1/16
	Coil length (l) X height (H) X coil width (L)		inch	27 7/16X29 7/16X12 13/64
	Fan Motor Speed (rpm) (H/M/L)		rpm	630
	Output of Fan Motor		W	60
	Fan Motor RLA		A	/
	Fan Motor Capacitor		μF	/
	Air Flow Volume of Outdoor Unit		CFM	2330
	Fan Type-Piece			Axial-flow
	Fan Diameter		inch	Φ21 19/32-4 45/64
	Defrosting Method			Automatic Defrosting
	Climate Type			T1
	Isolation			I
	Moisture Protection			IPX4
	Permissible Excessive Operating Pressure for the Discharge Side		PSIG	550
	Permissible Excessive Operating Pressure for the Suction Side		PSIG	240
	Dimension (WXHXD)		inch	38 27/64X31 7/64X17 21/64
	Dimension of Package (LXWXH)		inch	42 1/2X19X33
Dimension of Package(LXWXH)		inch	42 43/64X19 13/64X33 43/64	
Net Weight		lb	145.5	
Gross Weight		lb	154.4	
Refrigerant Charge			R410A	
Refrigerant Charge		oz	98.8	

Outdoor Unit	Cross-sectional Area of Power Cable Conductor	sq in	0.0062
	Recommended Power Cable(Core)	N	3
	Connection Pipe Connection Method	-	Flare Connection
	Not Additional Gas Connection Pipe Length	ft	131.2
	Connection Pipe Gas Additional Charge	oz/ft.	0.2
	Outer Diameter of Liquid Pipe1(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Liquid Pipe2(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Liquid Pipe3(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Liquid Pipe4(LENNOX Allocation) (Metric)	inch	1/4
	Outer Diameter of Gas Pipe1(LENNOX Allocation) (Metric)	inch	3/8
	Outer Diameter of Gas Pipe2(LENNOX Allocation) (Metric)	inch	3/8
	Outer Diameter of Gas Pipe3(LENNOX Allocation) (Metric)	inch	3/8
	Outer Diameter of Gas Pipe4(LENNOX Allocation) (Metric)	inch	3/8
	Connection Pipe Max. Height Distance(indoor and indoor)	ft	24.6
	Connection Pipe Max. Height Distance(indoor and outdoor and indoor up)	ft	49.2
	Connection Pipe Max. Height Distance(indoor and outdoor and outdoor up)	ft	49.2
	Max. equivalent connection pipe length(outdoor to last indoor)	ft	82.0
	Connection Pipe Max. Length Distance(total length)	ft	229.7

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

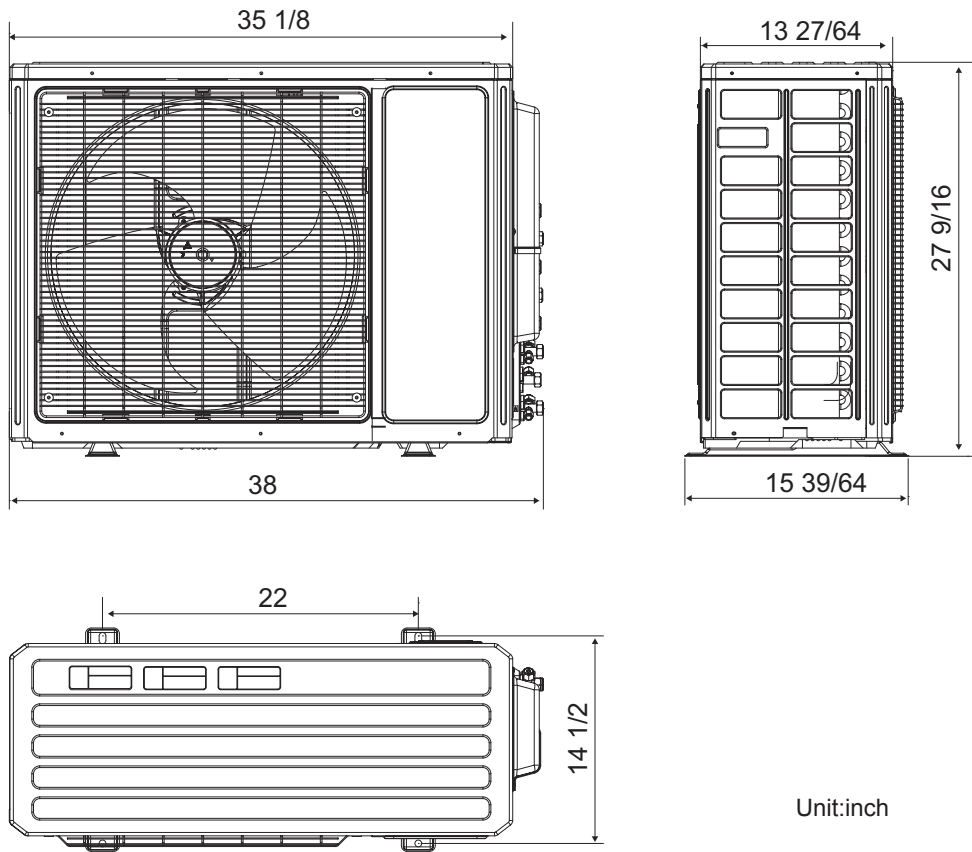
Model			TM36H4O	TM42H3O	
Product Code			CB228W08000_L81561	CN860W0180_L81561	
Power supply	Rated Voltage	V~	208/230	208/230	
	Rated Frequency	Hz	60	60	
	Phases		1	1	
Cooling capacity		Btu/h	34000	36000	
Heating capacity		Btu/h	42500	43000	
Cooling Power Input		W	2800	3740	
Heating Power Input		W	3350	3650	
Cooling Current Input		A	12.5	16.5	
Heating Current Input		A	15	16	
Rated Power Input		W	3800	4000	
Rated Current		A	30	30	
EER		(Btu/h)/W	12.14	9.63	
COP		(Btu/h)/W	12.69	11.78	
SEER			21.00	21.00	
HSPF			10.20	10.20	
Outdoor Unit	Compressor Trademark		ZHUHAI LANDA COMPRESSOR CO.LTD	ZHUHAI LANDA COMPRESSOR CO.LTD	
	Compressor Model		QXAS-D32zX090A	QXAS-D32zX090A	
	Compressor Refrigerant Oil Type		RB68EP		
	Compressor Type		Inverter Rotary	Inverter Rotary	
	L.R.A		A	30	30
	Compressor Rated Load Amp (RLA)		A	15.6	17.8
	Compressor Power Input		W	4150	4150
	Compressor Thermal Protector			1NT11L—6233	1NT11L—6233
	Throttling Method			Electron expansion valve	Electron expansion valve
	Cooling Operation Ambient Temperature Range		°F	0~118	0~118
	Heating Operation Ambient Temperature Range		°F	-4~86	-4~86
	Condenser Material			Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Condenser Pipe Diameter		inch	Φ5/16	Φ5/16
	Rows-Fin Gap(mm)		inch	2-1/16	2-1/16
	Coil length (l) X height (H) X coil width (L)		inch	27 7/16X29 7/16X12 13/64	27 7/16X29 7/16X12 13/64
	Fan Motor Speed (rpm) (H/M/L)		rpm	850	850
	Output of Fan Motor		W	140	140
	Fan Motor RLA		A	/	/
	Fan Motor Capacitor		μF	/	/
	Air Flow Volume of Outdoor Unit		CFM	4531	4531
	Fan Type-Piece			Axial-flow	Axial-flow
	Fan Diameter		inch	Φ22 13/32—5 63/65	Φ22 13/32—5 63/65
	Defrosting Method			Automatic Defrosting	Automatic Defrosting
	Climate Type			T1	T1
	Isolation			I	I
	Moisture Protection			IPX4	IPX4
	Permissible Excessive Operating Pressure for the Discharge Side		PSIG	550	550
	Permissible Excessive Operating Pressure for the Suction Side		PSIG	240	240
	Dimension (W/H/D)		inch	42 1/2X43 27/64X17 21/64	42 1/2X43 27/64X17 21/64
	Dimension of Package (L/W/H)		inch	46X18 57/64X43 57/64	46X18 57/64X43 57/64
	Dimension of Package(L/W/H)		inch	46 1/6X19X44 1/2	46 1/6X19X44 1/2
	Net Weight		lb	198.5	198.5
Gross Weight		lb	216.1	216.1	
Refrigerant Charge			R410A	R410A	
Refrigerant Charge		oz	128.8	128.8	

Outdoor Unit	Cross-sectional Area of Power Cable Conductor	sq in	0.0062	0.0062
	Recommended Power Cable(Core)	N	3	3
	Connection Pipe Connection Method	-	Flare Connection	Flare Connection
	Not Additional Gas Connection Pipe Length	ft	131.2	131.2
	Connection Pipe Gas Additional Charge	oz/ft.	0.2	0.2
	Outer Diameter of Liquid Pipe1(LENNOX Allocation) (Metric)	inch	1/4	1/4
	Outer Diameter of Liquid Pipe2(LENNOX Allocation) (Metric)	inch	1/4	1/4
	Outer Diameter of Liquid Pipe3(LENNOX Allocation) (Metric)	inch	1/4	1/4
	Outer Diameter of Liquid Pipe4(LENNOX Allocation) (Metric)	inch	1/4	1/4
	Outer Diameter of Liquid Pipe4(LENNOX Allocation) (Metric)	inch	1/4	1/4
	Outer Diameter of Gas Pipe1(LENNOX Allocation) (Metric)	inch	3/8	3/8
	Outer Diameter of Gas Pipe2(LENNOX Allocation) (Metric)	inch	3/8	3/8
	Outer Diameter of Gas Pipe3(LENNOX Allocation) (Metric)	inch	3/8	3/8
	Outer Diameter of Gas Pipe4(LENNOX Allocation) (Metric)	inch	3/8	3/8
	Outer Diameter of Gas Pipe4(LENNOX Allocation) (Metric)	inch	3/8	3/8
	Connection Pipe Max. Height Distance(indoor and indoor)	ft	24.6	24.6
	Connection Pipe Max. Height Distance(indoor and outdoor and indoor up)	ft	49.2	49.2
	Connection Pipe Max. Height Distance(indoor and outdoor and outdoor up)	ft	49.2	49.2
	Max. equivalent connection pipe length(outdoor to last indoor)	ft	82.0	82.0
	Connection Pipe Max. Length Distance(total length)	ft	246.1	246.1

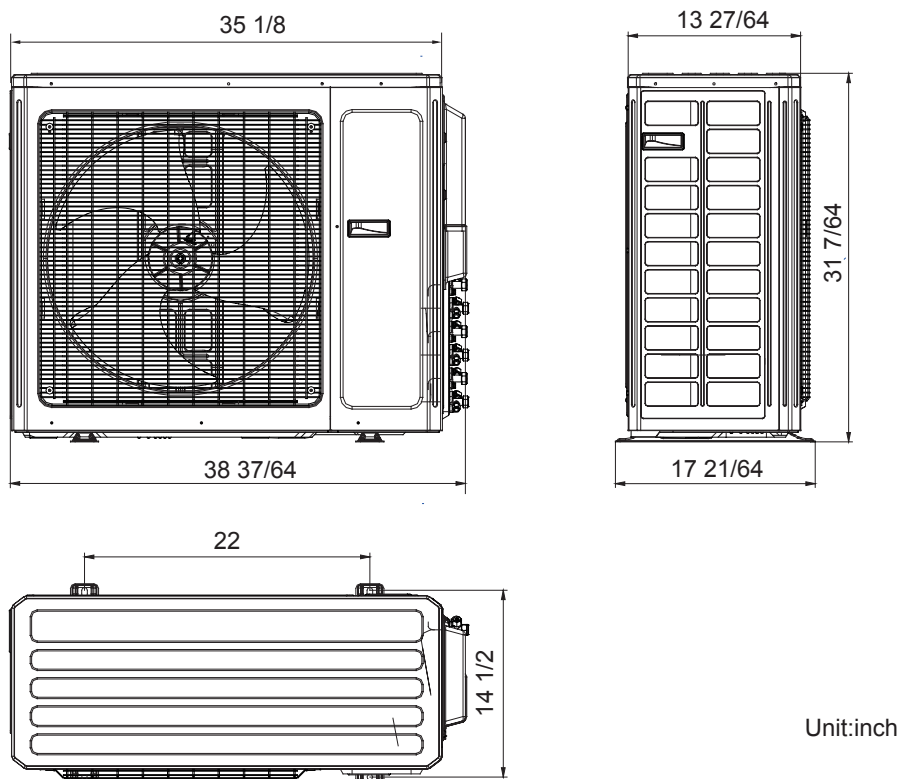
The above data is subject to change without notice; please refer to the nameplate of the unit.

3. Outline Dimension Diagram

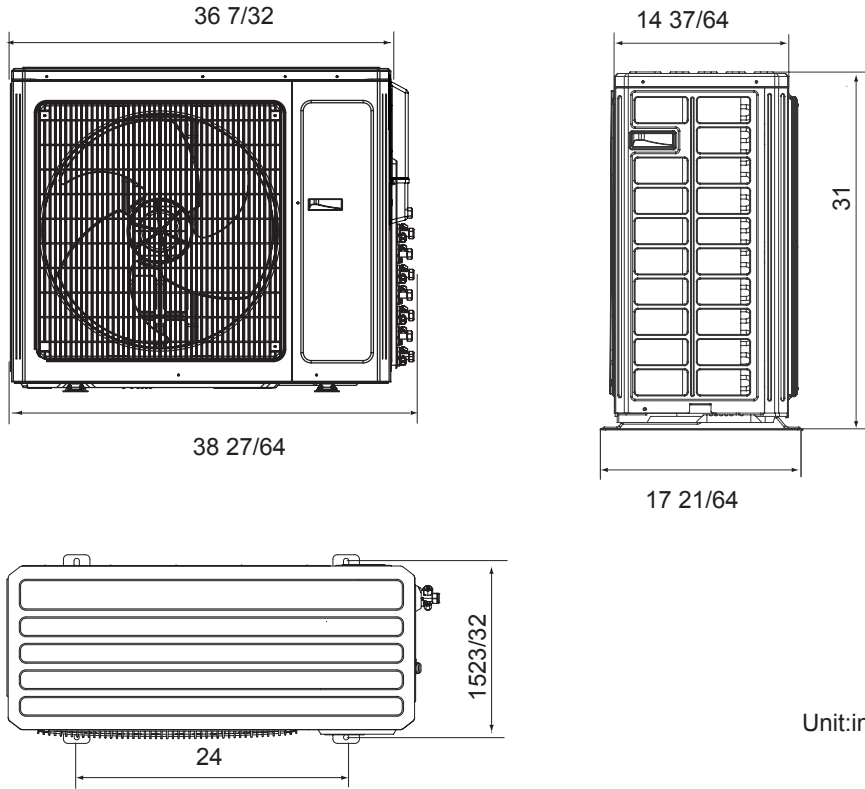
TM18H4O



TM24H4O



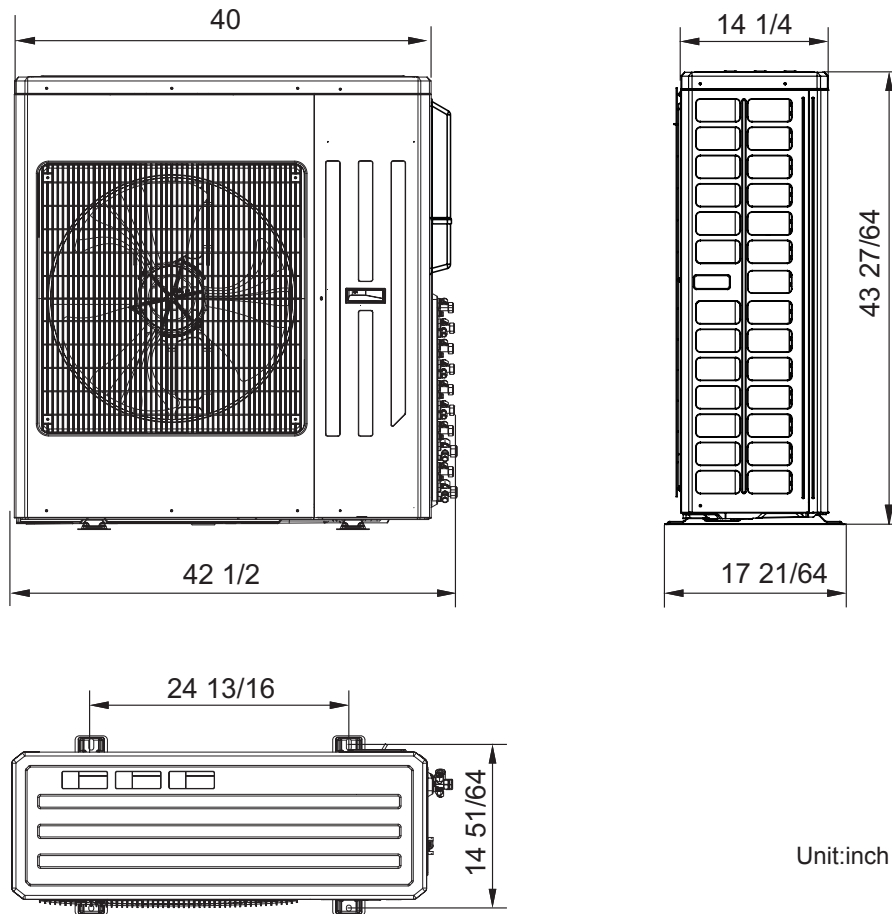
TM30H40



Unit:inch

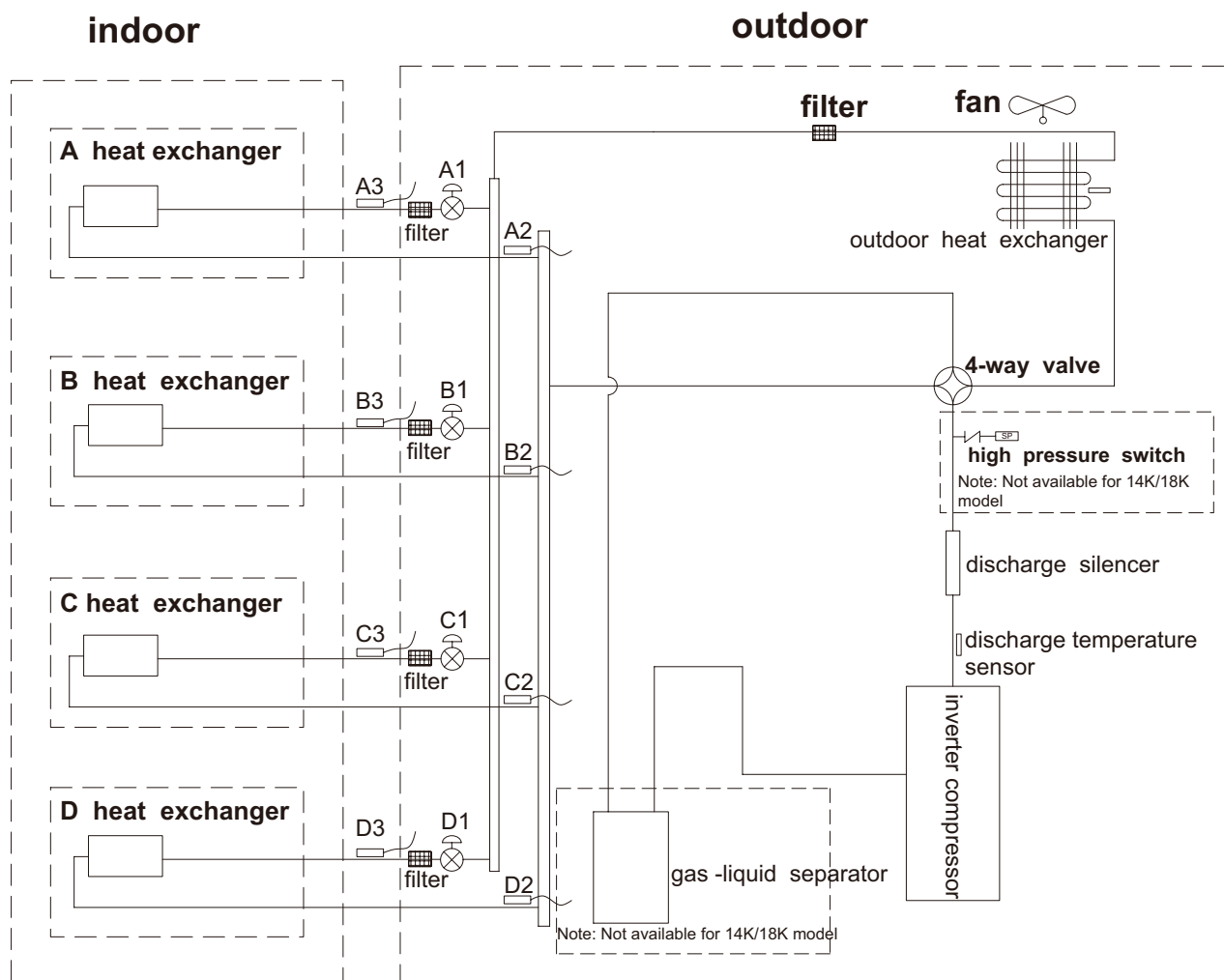
TM36H40

TM42H30



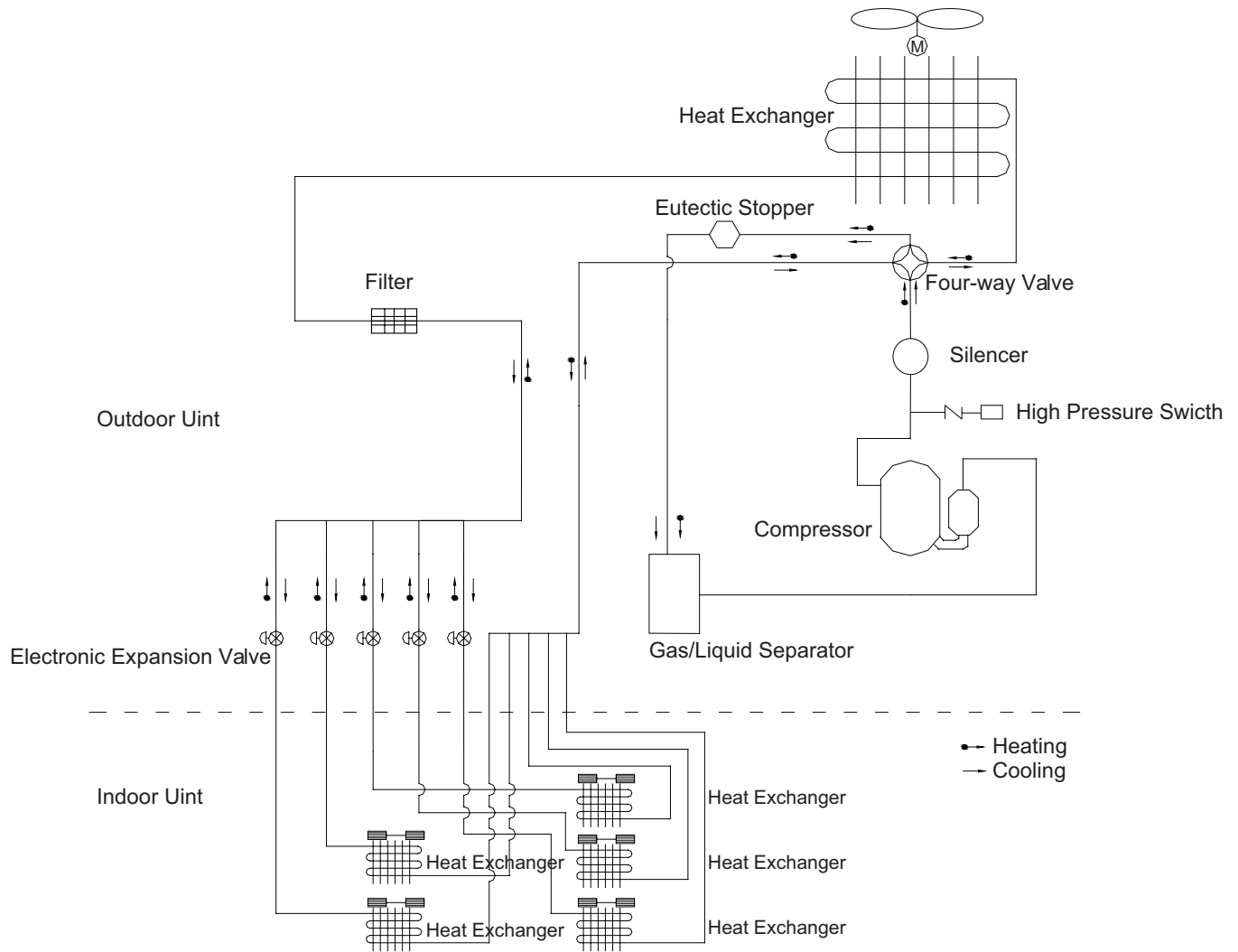
Unit:inch

4. Refrigerant System Diagram



A1:A-unit electronic expansion valve **B1:B-unit electronic expansion valve**
C1:C-unit electronic expansion valve **D1:D-unit electronic expansion valve**
A2:A-unit gas pipe temperature sensor **B2:B-unit gas pipe temperature sensor**
C2:C-unit gas pipe temperature sensor **D2:D-unit gas pipe temperature sensor**
A3:A-unit liquid pipe temperature sensor **B3:B-unit liquid pipe temperature sensor**
C3:C-unit liquid pipe temperature sensor **D3:D-unit liquid pipe temperature sensor**

Schematic Diagram of Free Match Series Inverter Heat Pump System



Schematic Diagram of Free Match Series Inverter Heat Pump System

The outdoor and indoor units start to work once the power is switched on. During the cooling operation, the low temperature, low pressure refrigerant gas from the heat exchanger of each indoor unit gets together and then is taken into the compressor to be compressed into high temperature, high pressure gas, which will soon go to the heat exchanger of the outdoor unit to exchange heat with the outdoor air and then is turned into refrigerant liquid. After passing through the throttling device, the temperature and pressure of the refrigerant liquid will further decrease and then go the main valve. After that, it will be divided and go to the heat exchanger of each indoor unit to exchange heat with the air which needs to be conditioned. Consequently, the refrigerant liquid become low temperature, low pressure refrigerant gas again. Such a refrigeration cycle goes round and round to achieve the desired refrigeration purpose. During the heating operation, the four-way valve is involved to make the refrigeration cycle run reversely. The refrigerant radiates heat in the heat exchanger of the indoor unit (so do the electric heating devices) and absorb heat in the heat exchanger of the outdoor unit for a heat pump heating cycle so as to achieve the desired heating purpose.

5. Electrical Part

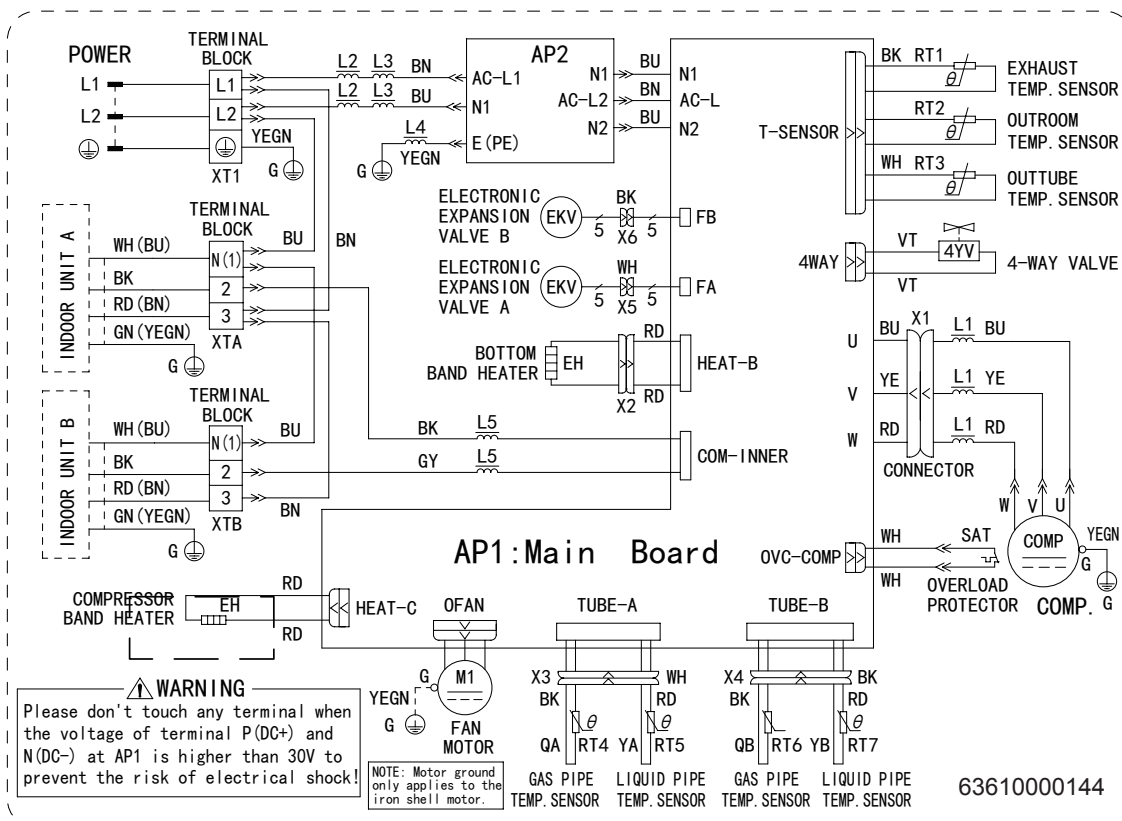
5.1 Wiring Diagram

● Instruction

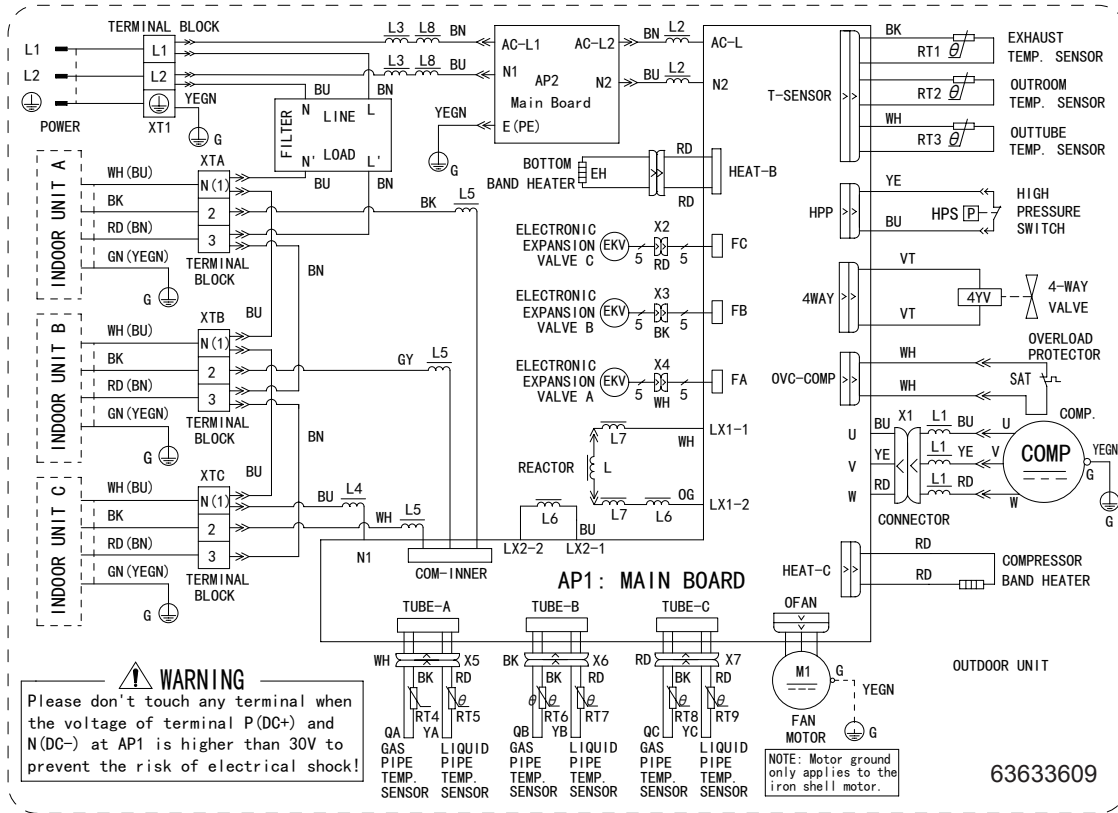
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	GREEN	COMP	Compressor
YE	Yellow	BN	Brown		Grounding wire
RD	Red	BU	Blue		
YEGN	Yellow/Green	BK	Black		
VT	Violet	OG	Orange		

● Outdoor Unit

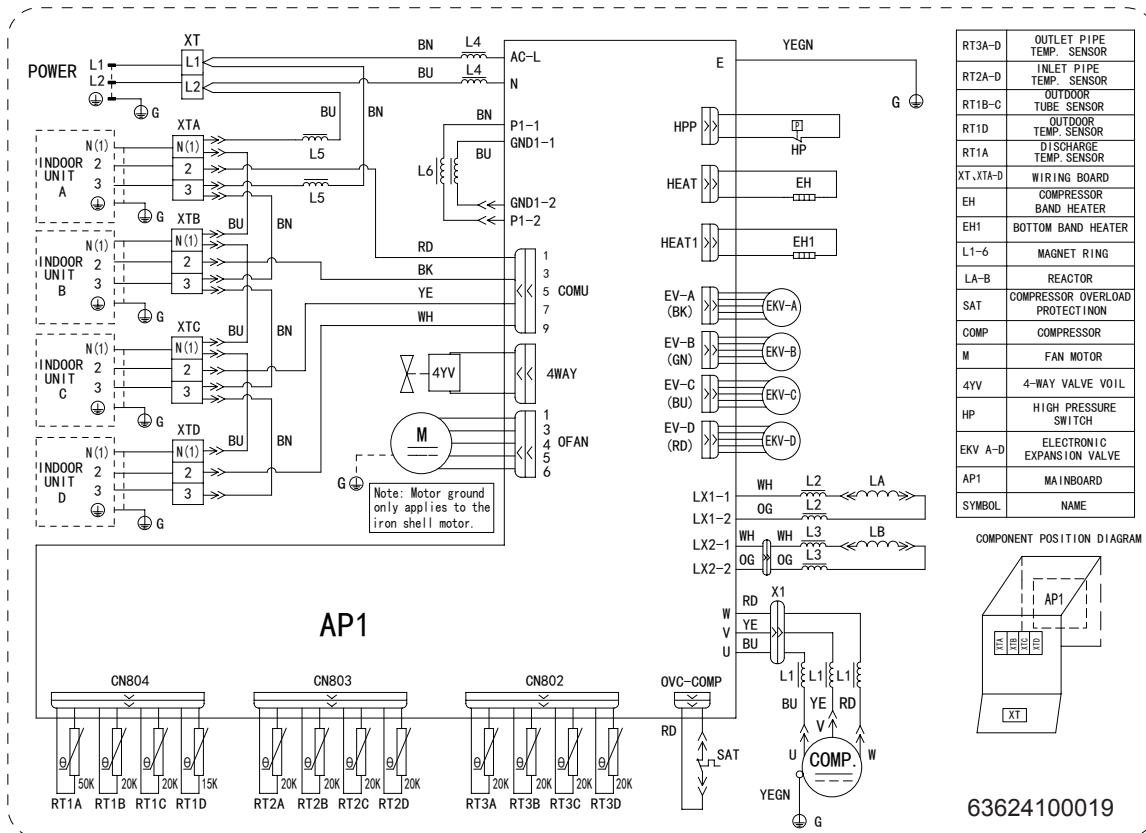
TM18H40



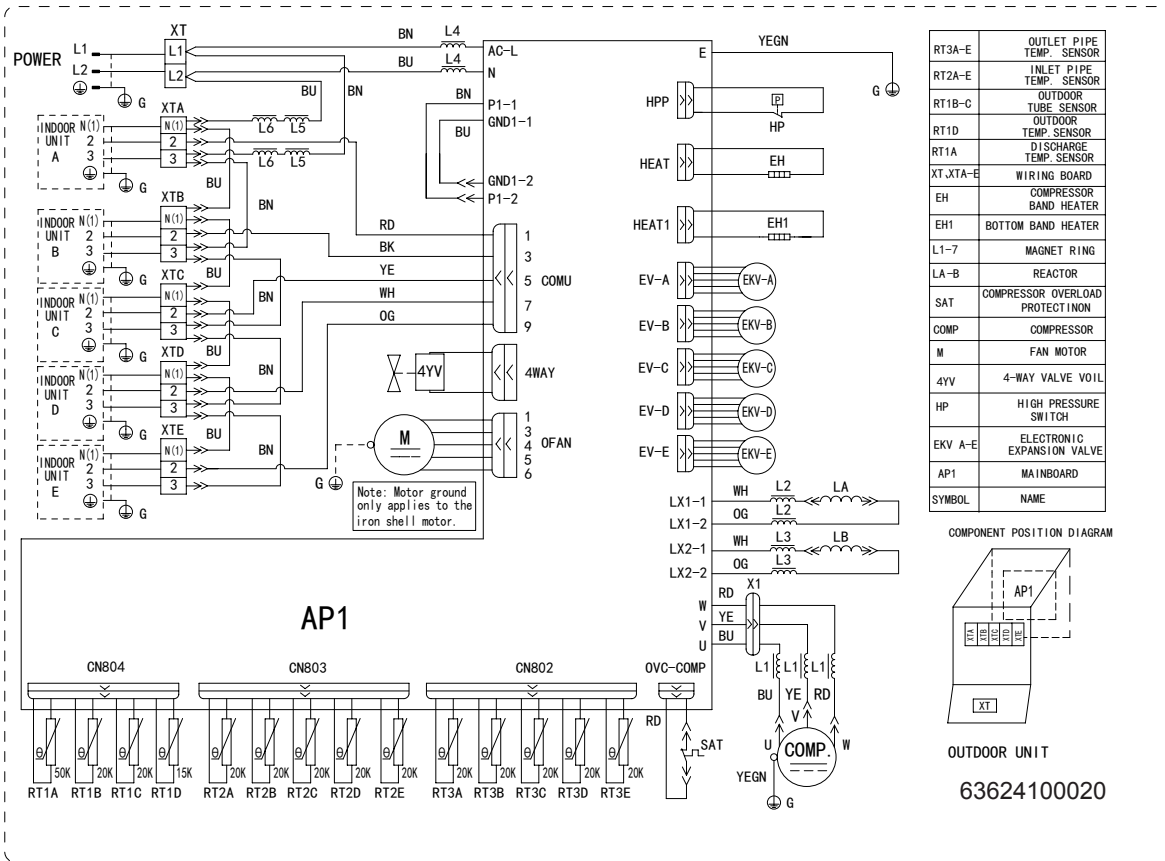
TM24H4O



TM30H4O



TM36H4O
TM42H3O

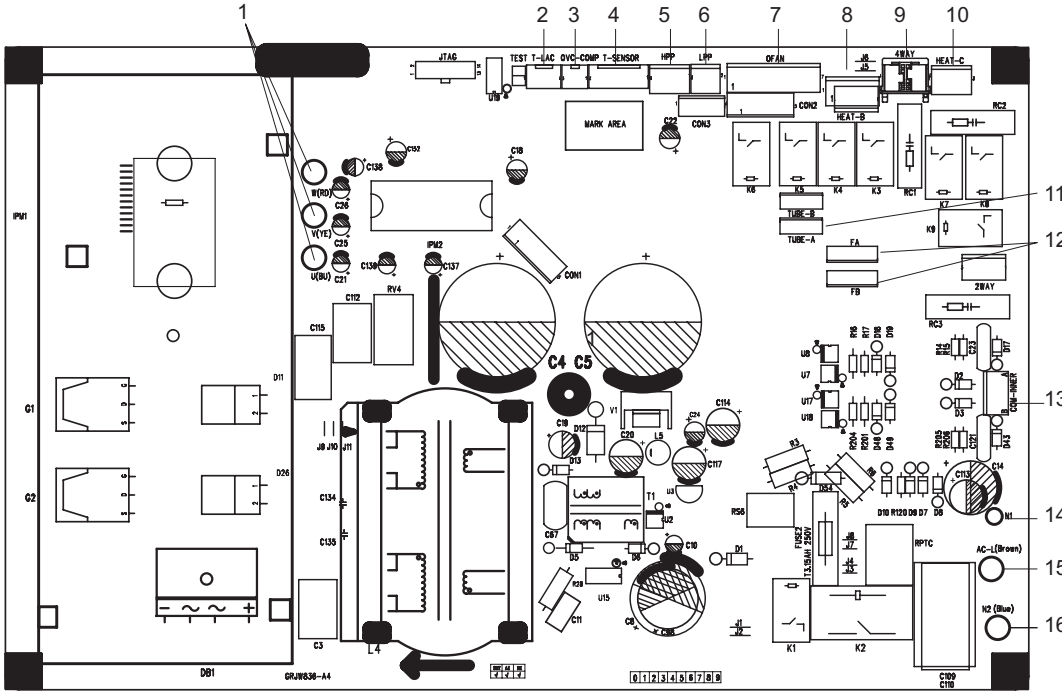


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

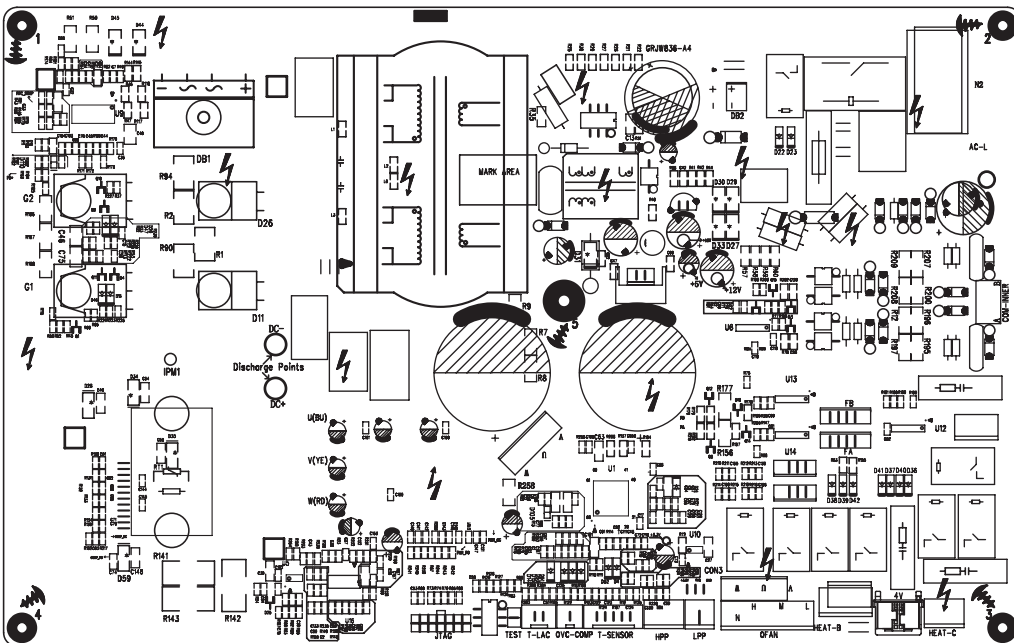
TM18H4O

● TOP VIEW



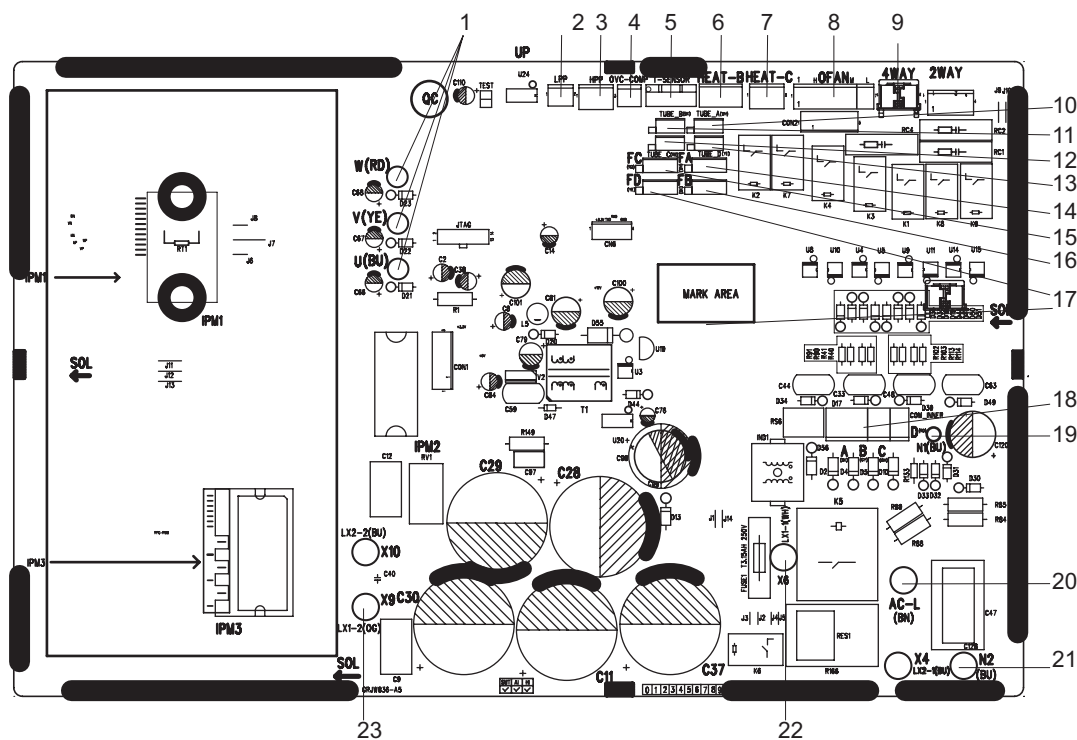
1	Terminal of compressor
2	Terminal of low-temperature cooling temperature sensor
3	Overload protection terminal of compressor
4	Temperature sensor terminal of outdoor unit
5	High pressure protection terminal
6	Low pressure protection terminal
7	Terminal of outdoor unit
8	Electric heating belt terminal of chassis
9	Terminal of 4-way valve
10	Electric heating belt terminal of compressor
11	Terminal of temperature sensor wire for liquid valve and gas valve
12	Terminal of electronic expansion valve
13	Terminal of communication wire for indoor unit and outdoor unit
14	Neutral wire terminal for communication
15	Live wire terminal
16	Neutral wire terminal

● BOTTOM VIEW



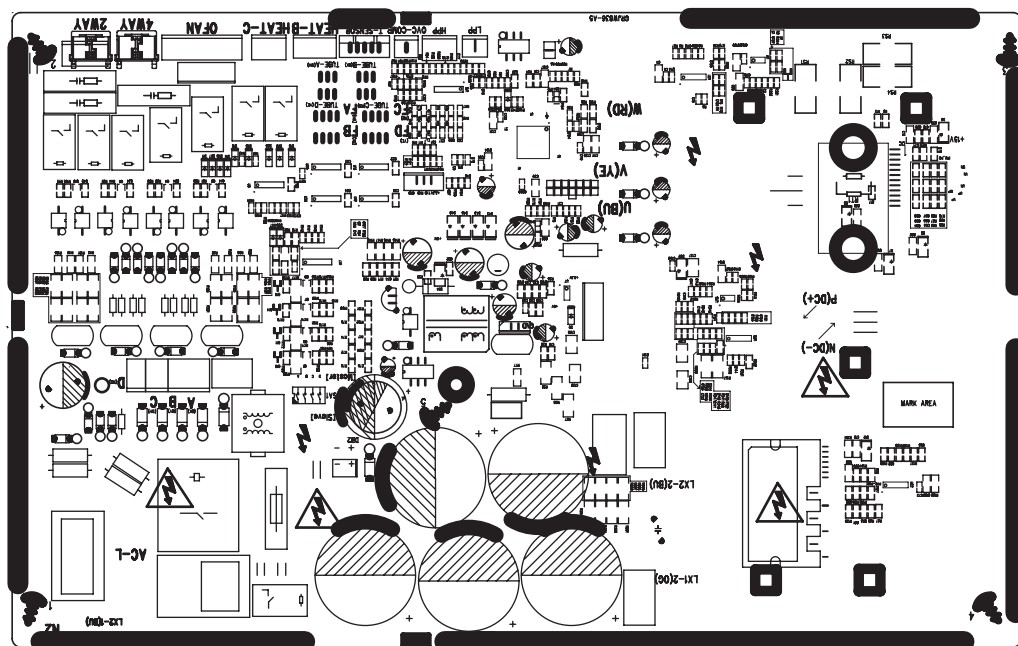
TM24H40

● TOP VIEW



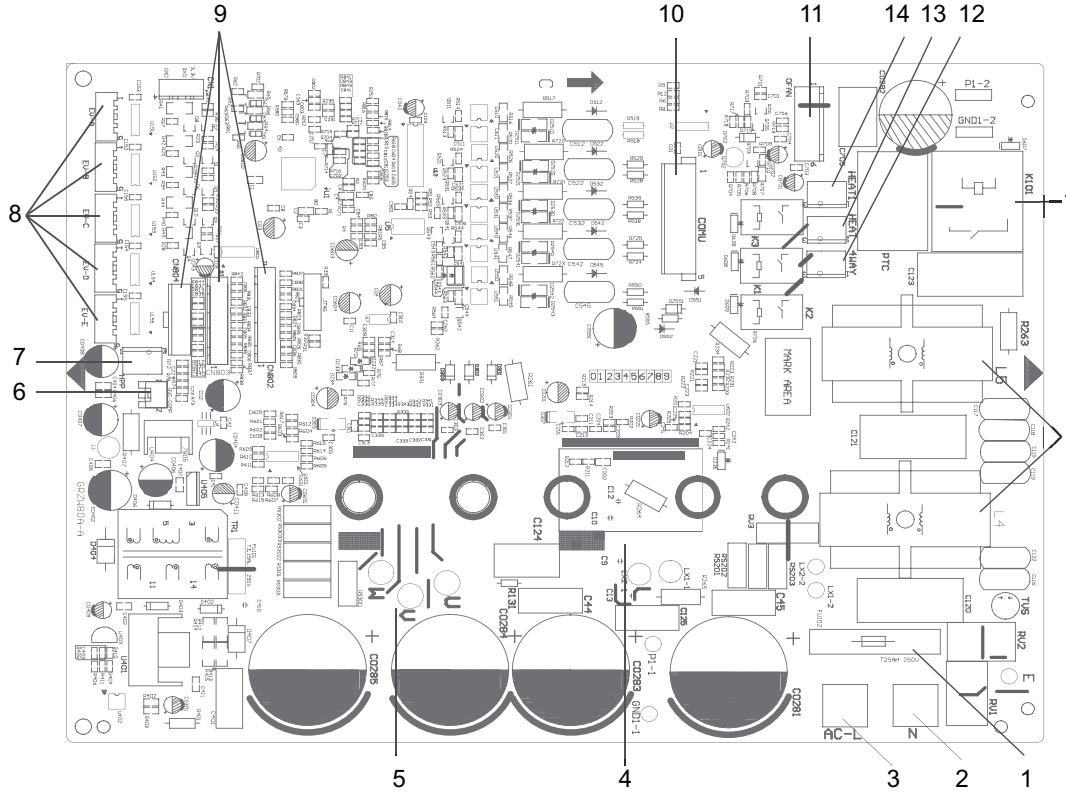
1	Terminal of compressor
2	Low pressure protection terminal
3	High pressure protection terminal
4	Overload protection terminal of compressor
5	Temperature sensor terminal of outdoor unit
6	Electric heating terminal of chassis
7	Electric heating terminal of compressor
8	Terminal of outdoor unit
9	Terminal of 4-way valve
10	Temperature sensor for liquid valve and gas valve for unit A
11	Temperature sensor for liquid valve and gas valve for unit B
12	Temperature sensor for liquid valve and gas valve for unit C
13	Temperature sensor for liquid valve and gas valve for unit D
14	Electronic expansion vale for unit A
15	Electronic expansion vale for unit C
16	Electronic expansion vale for unit B
17	Electronic expansion vale for unit D
18	Communication wire with indoor unit
19	Neutral wire for counication
20	Live wire
21	Neutral wire
22	Reactor wire 1
23	Reactor wire 2

● BOTTOM VIEW



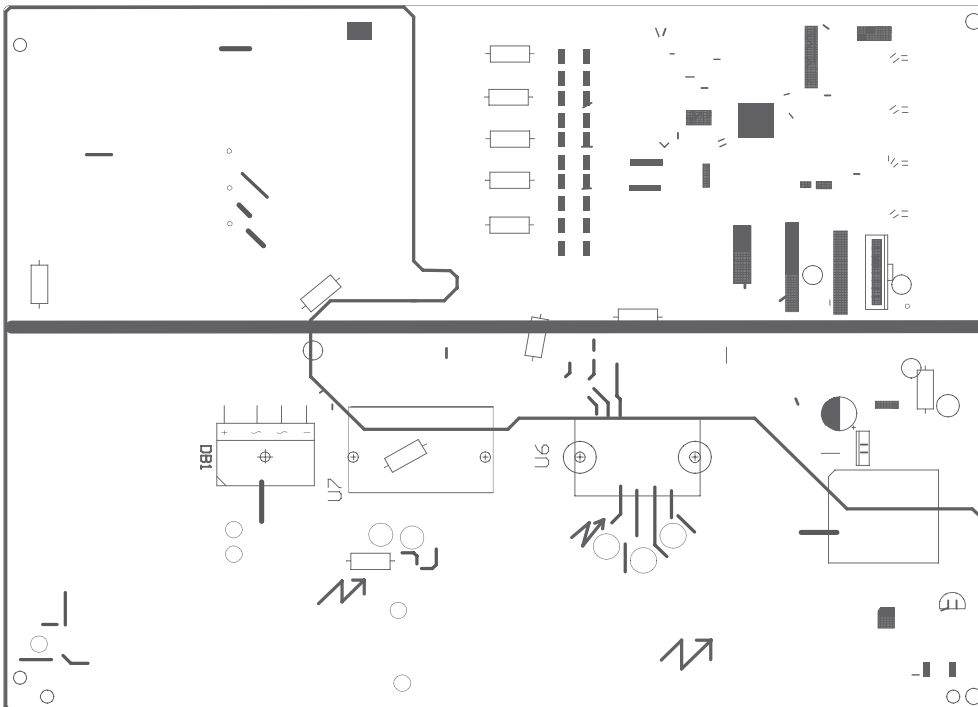
TM30H4O TM36H4O TM42H3O

● TOP VIEW



1	T25AH 250V: Fuse
2	N: terminals of neural wire
3	AC-L: terminals of line wire
4	PFC electrocircuit
5	U/V/W: terminals of compressor
6	OVC-COMP: terminals of overload protector
7	HPP: terminals of high pressure switch
8	EVA-EVE: terminals of EXV(electronic expansion valve)
9	CN802-CN803: terminals of temperature sensor
10	COMU: terminals of communication
11	OFAN: terminals of fan
12	4WAY: terminals of 4-way valve
13	HEAT: terminals of compressor band heater
14	HEAT1: terminals of bottom band heater
15	K101: Main relay
16	L4-L5: choke

● BOTTOM VIEW



6. Function and Control

1 Basic functions of the system

1.1 Cooling Mode

1.1.1 Cooling conditions and process:

If the compressor is in stop status and start the unit for cooling operation, when one of the indoor units reaches the cooling operation condition, the unit start cooling operation; in this case, the electronic expansion valve, the outdoor fan and the compressor start operation.

1.1.2 Stop in cooling operation

1.1.2.1 Compressor stops

The compressor stops immediately, the outdoor fan stops after 1min.

1.1.2.2 Some of the indoor units reach the stop condition (the compressor does not stop)

The compressor operates immediately according to the required frequency. For the indoor unit with no requirement, the corresponding electronic expansion valve is closed to OP.

1.1.3 Cooling mode transfers to heating mode

When the unit transfers to heating mode, the 4-way valve is energized after the compressor stops for 2min. The other disposals are the same as stopping in cooling mode.

1.1.4 4-way valve: in this mode, the 4-way valve is closed.

1.1.5 Outdoor fan control in cooling mode

The outdoor fan starts before 5s of the starting of compressor. The outdoor fan will run in high speed for 3min after starting and then it will run in set speed. The fan shall run at every speed for at least 80s. (When the quantity of running indoor unit is changed, the unit will enter the control described in 1.3.5.1 and 1.3.5.2);

When the compressor stops, the outdoor fan runs at present speed and stops after 1min.

1.2 Dry Mode

1.2.1 The dry conditions and process are the same as those in cooling mode;

1.2.2 The status of 4-way valve: closed;

1.2.3 The temperature setting range: 16 ~ 30°C;

1.2.4 Protection function: the same as those in cooling mode;

1.2.5 In dry mode, the maximum value A of the capacity requirement percentage of single unit is 90% of that in cooling mode.

The open condition of the electronic expansion valve, outdoor fan and compressor is the same as those in cooling mode.

1.3 Heating Mode

1.3.1 Cooling conditions and process:

When one of the indoor units reaches the heating operation condition, the unit starts heating operation.

1.3.2 Stop in heating operation:

1.3.2.1 When all the indoor units reach the stop condition, the compressor stops and the outdoor fan stops after 1min;

1.3.2.2 Some of the indoor units reach the stop condition

The compressor reduces the frequency immediately and operates according to the required frequency;

1.3.2.3 Heating mode transfers to cooling mode(dry mode), fan mode

a. The compressor stops; b. the power of 4-way valve is cut off after 2min; c. the outdoor fan stops after 1min; d. the status of 4-way valve: energized;

1.3.3 Outdoor fan control in heating mode

The outdoor fan starts before 5s of the starting of compressor and then it will run in high speed for 40s;

The fan shall run at every speed for at least 80s;

When the compressor stops, the outdoor fan stops after 1min.

1.3.4 Defrosting function

When the defrosting condition is met, the compressor stops; the electronic expansion valve of all indoor units open in big angle; the outdoor fan stops after 40s of the stop of compressor, meanwhile, the 4-way valve reverses the direction; after the 4-way valve reverses the direction, the compressor starts; then begin to calculate the time of defrosting, the frequency of the compressor rises to reach the defrosting frequency.

1.3.5 Oil-returned control in heating mode

1.3.5.1 Oil-returned condition

The whole unit is operating in low frequency for a long time

1.3.5.2 Oil-returned process in heating mode

The indoor unit displays "H1"

1.3.5.3 Oil-returned finished condition in heating mode

The duration reaches 5min

1.4 Fan Mode

The compressor, the outdoor fan and the 4-way valve are closed; temperature setting range is 16~30℃.

2. Protection Function

2.1 Mode Conflict Protection of indoor unit

When the setting mode is different of different indoor unit, the unit runs in below status:

- a. The mode of the first operating indoor unit is the basic mode, then compare the mode of the other indoor units to see if there is a conflict. Cooling mode (dry mode) is in conflict with heating mode.
- b. Fan mode is in conflict with heating mode and the heating mode is the basic mode. No matter which indoor unit operates first, the unit will run in heating mode.

2.2 Overload protection function

When the tube temperature is a little low, the compressor raises the operation frequency; when the tube temperature is a little high, the compressor frequency is restricted or lows down the operation frequency; when the tube temperature is too high, the compressor protection stops running.

If the discharge temperature protection continuously appears for 6 times, the compressor can't resume running. The compressor can resume running after cutting off the power and then putting through the power. (if the running time of the compressor is longer than 7min, the protection times record will be cleared)

2.3 Discharge Protection Function

When the discharge temperature is a little low, the compressor raises the operation frequency; when the discharge temperature is a little high, the compressor frequency is restricted or lows down the operation frequency; when the discharge temperature is too high, the compressor protection stops running.

If the discharge temperature protection continuously appears for 6 times, the compressor can't resume running. The compressor can resume running after cutting off the power and then putting through the power. (if the running time of the compressor is longer than 7min, the protection times record will be cleared)

2.4 Communication malfunction

Detection of the quantity of installed indoor units:

After 3min of energizing, if the outdoor unit does not receive the communication data of certain indoor unit, the outdoor unit will judge that indoor unit is not installed and will treat it as it is not installed. If the outdoor unit receives the communication data of that indoor unit later, the outdoor unit will treat that unit as it is installed.

2.5 Overcurrent Protection

a. Overcurrent protection of complete unit; b. phase wire current protection; c. compressor phase current protection

2.6 Compressor high-pressure protection

2.6.1 When the high-pressure switch is detected cut off for 3s continuously, the compressor will enter high-pressure protection as it stops when reaching set temperature. Meanwhile, the outdoor unit will send the signal of "high-pressure protection" to the indoor units;

2.6.2 After the appearance of high-pressure protection, when the high-pressure switch is detected closed for 6s continuously, the compressor can resume running only after cutting off the power and then putting through the power.

2.7 Compressor overload protection

If the compressor overload switch is detected having movement, the indoor unit will display the corresponding malfunction as it stops when the indoor temperature reaching set temperature. When the compressor stops for more than 3min and the compressor overload switch is reset, the unit will resume operation status automatically. If the protection appears for more than 6 times (if the running time of the compressor is longer than 30min, the protection times record will be cleared), the unit can not resume operation status automatically, but can resume running only after cutting off the power and then putting through the power.

2.8 Compressor Phase-lacking Protection

When the compressor starts, if one of the three phases is detected open, the compressor will enter phase-lacking protection. The malfunction will be cleared after 1min, the unit will restart and then detect if there is still has phase-lacking protection. If the phase-lacking protection is detected for 6 times continuously, the compressor will not restart but can resume running only after cutting off the power and then putting through the power. If the running time of the compressor is longer than 7min, the protection times record will be cleared.

2.9 IPM Protection

2.9.1 When the IMP module protection is detected, the unit will stop as the indoor temperature reaching set temperature, PFC is closed, display IMP protection malfunction. After the compressor stops for 3min, the unit will resume operation status automatically; if the IMP protection is detected for more than 6 times continuously (If the running time of the compressor is longer than 7min, the protection times record will be cleared), the system will stop and send the signal of module protection to indoor unit. The unit can not resume operation status automatically, but can resume running only after cutting off the power and then putting through the power.

2.9.2 IMP module overheating protection

2.9.2.1 When $T_{IMP} > 85^{\circ}\text{C}$, prohibit to raise frequency;

2.9.2.2 When $T_{IMP} \geq 90^{\circ}\text{C}$, the operation frequency of compressor lows down by 15% every 90s according to the present capacity requirement of the complete unit. It will keep 90s after lowing down the frequency. After lowing down the frequency, if $T_{IMP} \geq 90^{\circ}\text{C}$, the unit will circulate the above movement until reaching the minimum frequency; if $85^{\circ}\text{C} < T_{IMP} < 90^{\circ}\text{C}$, the unit will run at this frequency; when $T_{IMP} \leq 85^{\circ}\text{C}$, the unit will run at the frequency according to the capacity requirement;

2.9.2.3 When $T_{IMP} \geq 95^{\circ}\text{C}$, the compressor stops. After the compressor stops for 3min, if $T_{IMP} < 85^{\circ}\text{C}$, the compressor and the outdoor fan will resume operation.

Part II : Installation and Maintenance

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

Please follow the instructions below.

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



Warnings

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire cant be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires cant be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.

10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.

11. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 1/8 inch.

12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.

13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.

14. Replace the fuse with a new one of the same specification if it is burnt down; dont replace it with a cooper wire or conducting wire.

15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)
2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 44.09lb.
3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.
4. Ware safety belt if the height of working is above 78 3/4 inch.
5. Use equipped components or appointed components during installation.
6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

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

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

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

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

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

●When installing or moving this unit, do not charge the refrigerant which is not comply with that on the nameplate or unqualified refrigerant. Otherwise, it may cause abnormal operation, wrong action, mechanical malfunction or even series safety accident.

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

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

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

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

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

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

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

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

●Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire. Poor connections may lead to electric shock or fire.

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

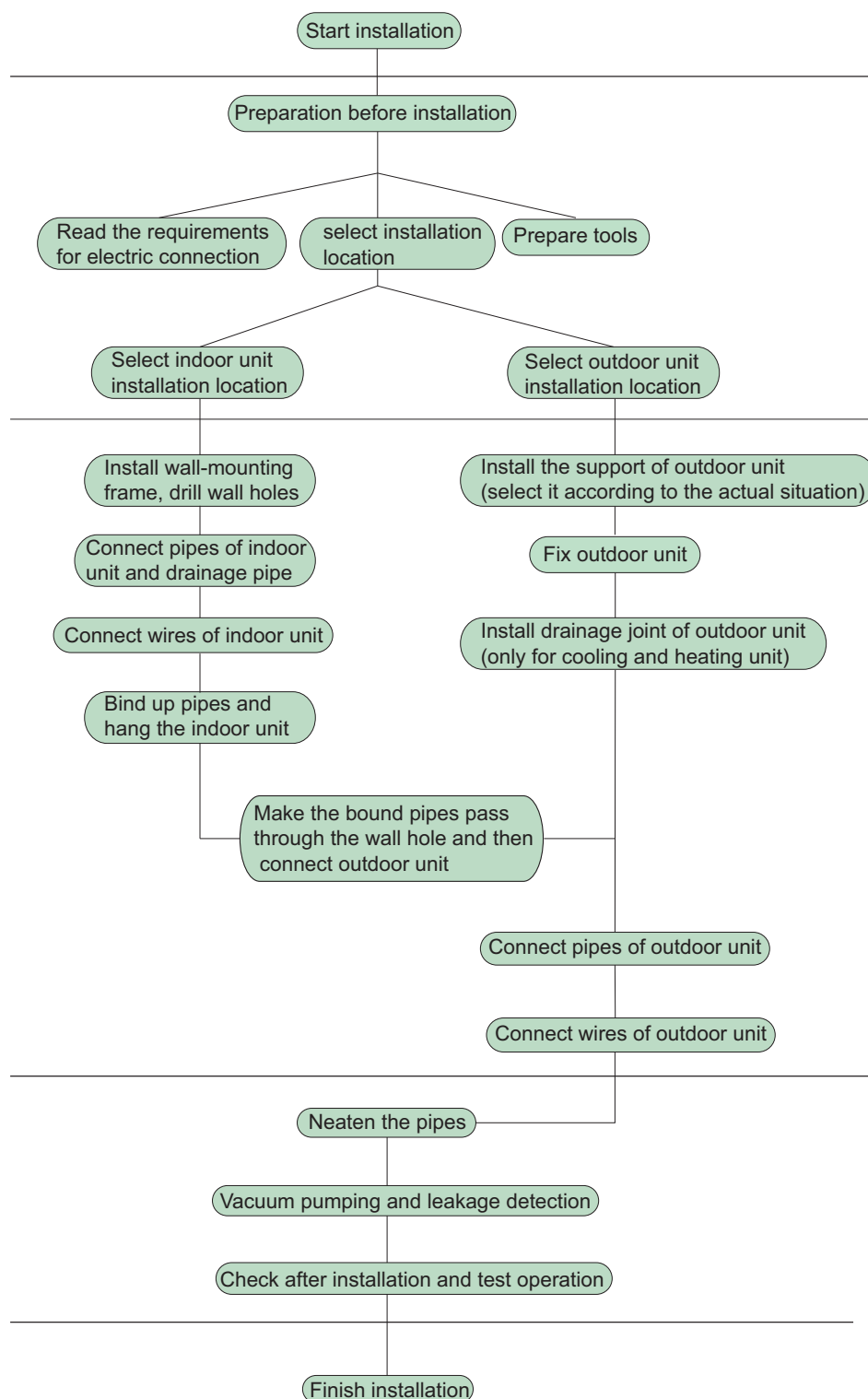
Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.

Main Tools for Installation and Maintenance

<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure meter</p> 
<p>10. Pipe pliers, pipe cutter</p> 	<p>11. Pipe expander, pipe bender</p> 	<p>12. Soldering appliance, refrigerant container</p> 

8. Installation Manual

Installation procedures



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

8.1 Electrical Connections

1. Remove the handle at the right side plate of the outdoor unit (one screw).
2. Remove the cable clamp, connect the power connection cable with the terminal at the row of connection and fix the connection. The fitting line distributing must be consistent with the indoor unit. terminal of line bank. Wiring should meet that of indoor unit.
3. Fix power connection wire by wire clamp.
4. Ensure wire has been fixed well.
5. Install the handle.

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

! An all-pole disconnection switch having a contact separation of at least 3mm in all pole should be connected in fixed wiring.

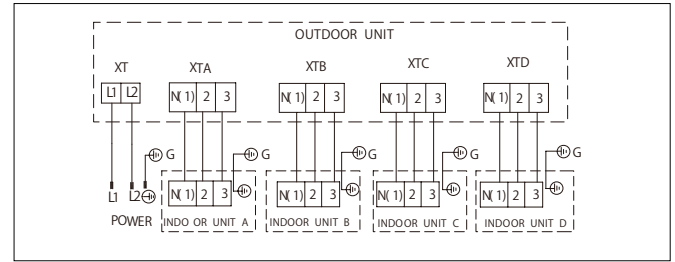
! Wrong wire connection may cause malfunction of some electric components. After fixing cable, ensure that leads between connection to fixed point have some space.

! The connection pipes and the connecting wirings of the unit A and unit B must be corresponding to each other respectively.

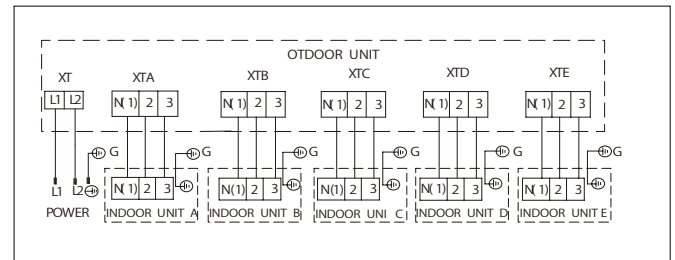
! The appliance shall be installed in accordance with national wiring regulations.

Note: the above figures are only intended to be a simple diagram of the appliance and may not correspond to the appearance of the units that have been purchased.

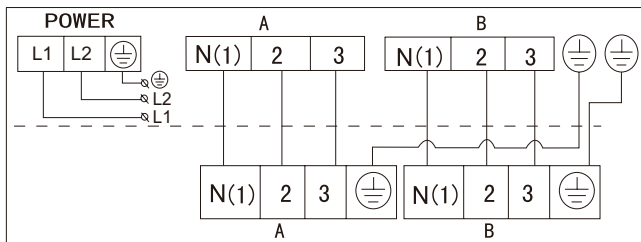
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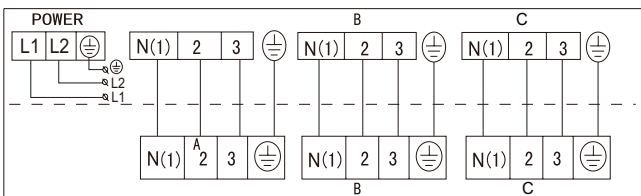
TM36H4O TM42H3O



TM18H4O



TM24H4O



8.2 Installing the Outdoor Unit

Location

Use bolts to secure the unit to a flat, solid floor.

When mounting the unit on a wall or the roof, make sure the support is firmly secured so that it cannot move in the event of intense vibrations or a strong wind.

Do not install the outdoor unit in pits or air vents

Installing the pipes

Use suitable connecting pipes and equipment for the refrigerant R410A.

Wrap all the refrigerant pipes and joints.

Tighten the connections using two wrenches working in opposite directions.

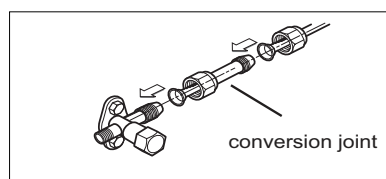
Caution: Installation Must be Performed in Accordance with the NEC/CEC by Authorized Personnel Only.

Humid air left inside the refrigerant circuit can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit using a vacuum pump.

- (1) Unscrew and remove the caps from the 2-way and 3-way valves.
- (2) Unscrew and remove the cap from the service valve.
- (3) Connect the vacuum pump hose to the service valve.
- (4) Operate the vacuum pump for 10-15 minutes until an absolute vacuum of 10 mm Hg has been reached.
- (5) With the vacuum pump still in operation, close the low-pressure knob on the vacuum pump coupling. Stop the vacuum pump.
- (6) Open the 2-way valve by 1/4 turn and then close it after 10 seconds.
- (7) Turn the body of the 2-way and 3-way valves. Disconnect the vacuum pump hose.
- (8) Replace and tighten all the caps on the valves.

Hex nut diameter(inch)	Tightening torque(ft.lbf)
Φ1/4	11.10~4.75
Φ3/8	20.12~29.50
Φ1/2	33.19~40.56
Φ5/8	44.24~47.94
Φ3/4	51.32~55.31

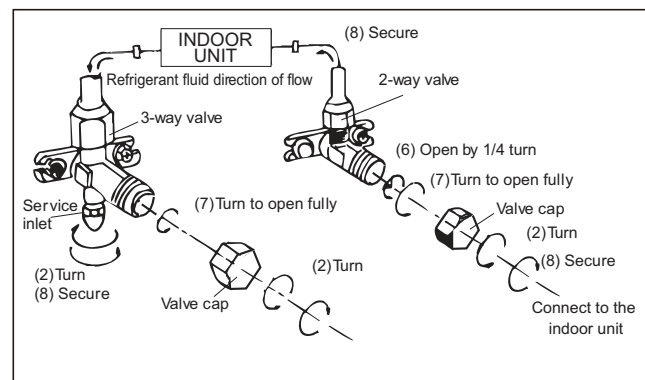
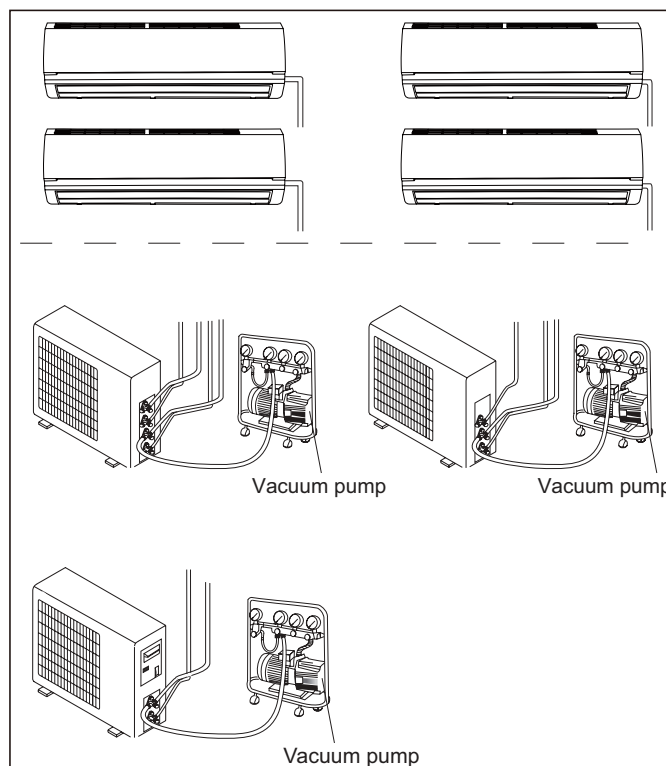
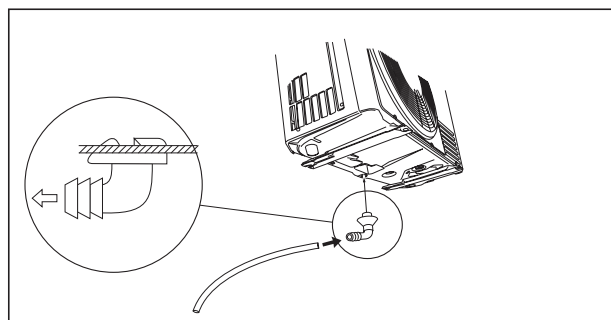
TM18H4O need to be installed the indoor unit




Install the drain fitting and the drain hose(for model with heat pump only)

Condensation is produced and flows from the outdoor unit when the appliance is operating in the heating mode. In order not to disturb neighbours and to respect the environment, install a drain fitting and a drain hose to channel the condensate


water. Install the drain fitting and rubber washer on the outdoor unit chassis and connect a drain hose to it as shown in the figure.

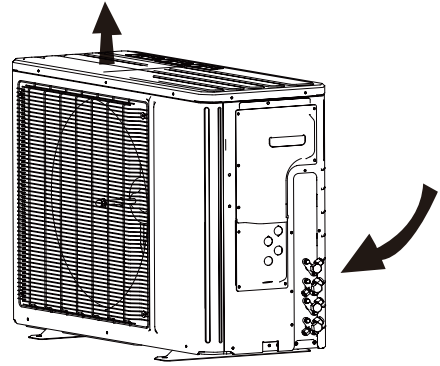



8.3 Installation Dimension Diagram


 Use suitable instruments for the refrigerant R410A.


- Do not use any other refrigerant than R410A.


 Do not use mineral oils to clean the unit.

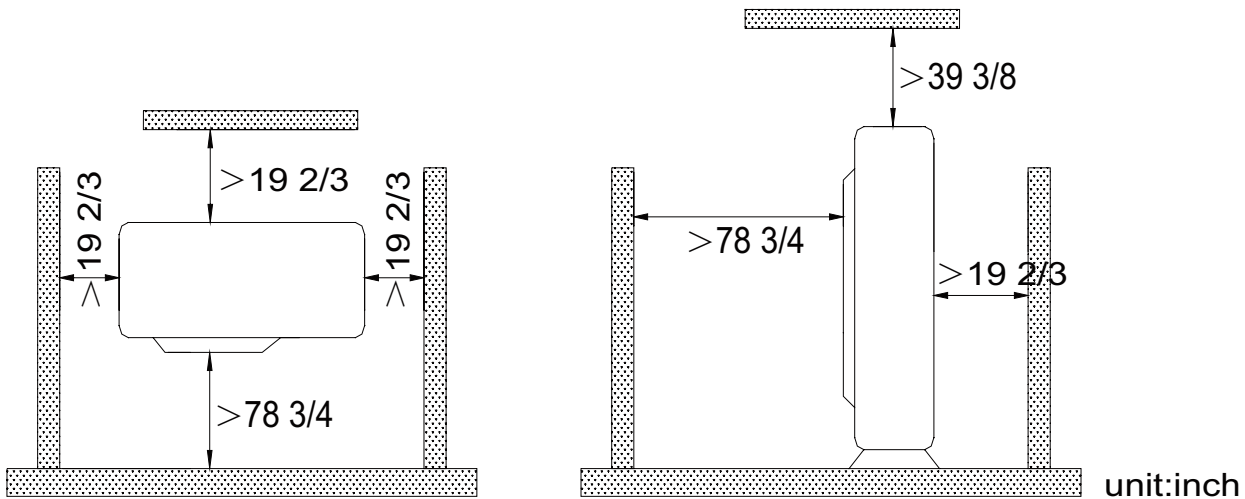


 The installation must be done by trained and qualified service personnel with reliability according to this manual.

 Contact service center before installation to avoid the malfunction due to unprofessional installation.

 When picking up and moving the units, you must be guided by trained and qualified person.

 Ensure that the recommended space is left around the appliance .



8.4 Check after Installation

Check Items	Problems Owing to Improper Installation
Is the installation reliable?	The unit may drop, vibrate or make noises
Has the gas leakage been checked?	May cause unsatisfactory cooling (heating) effect
Is the thermal insulation of the unit sufficient?	May cause condensation and water dropping
Is the drainage smooth?	May cause condensation and water dropping
Does the power supply voltage accord with the rated voltage specified on the nameplate?	The unit may bread down or the components may be burned out
Are the lines and pipelines correctly installed?	The unit may bread down or the components may be burned out
Has the unit been safely grounded?	Risk of electrical leakage
Are the models of lines in conformity with requirements?	The unit may bread down or the components may be burned out
Are there any obstacles near the air inlet and outlet of the indoor and outdoor units?	The unit may bread down or the components may be burned out
Have the length of refrigerating pipe and refrigerant charge amount been recorded?	It is not easy to decide the charge amount of refrigerant.

9. Troubleshooting

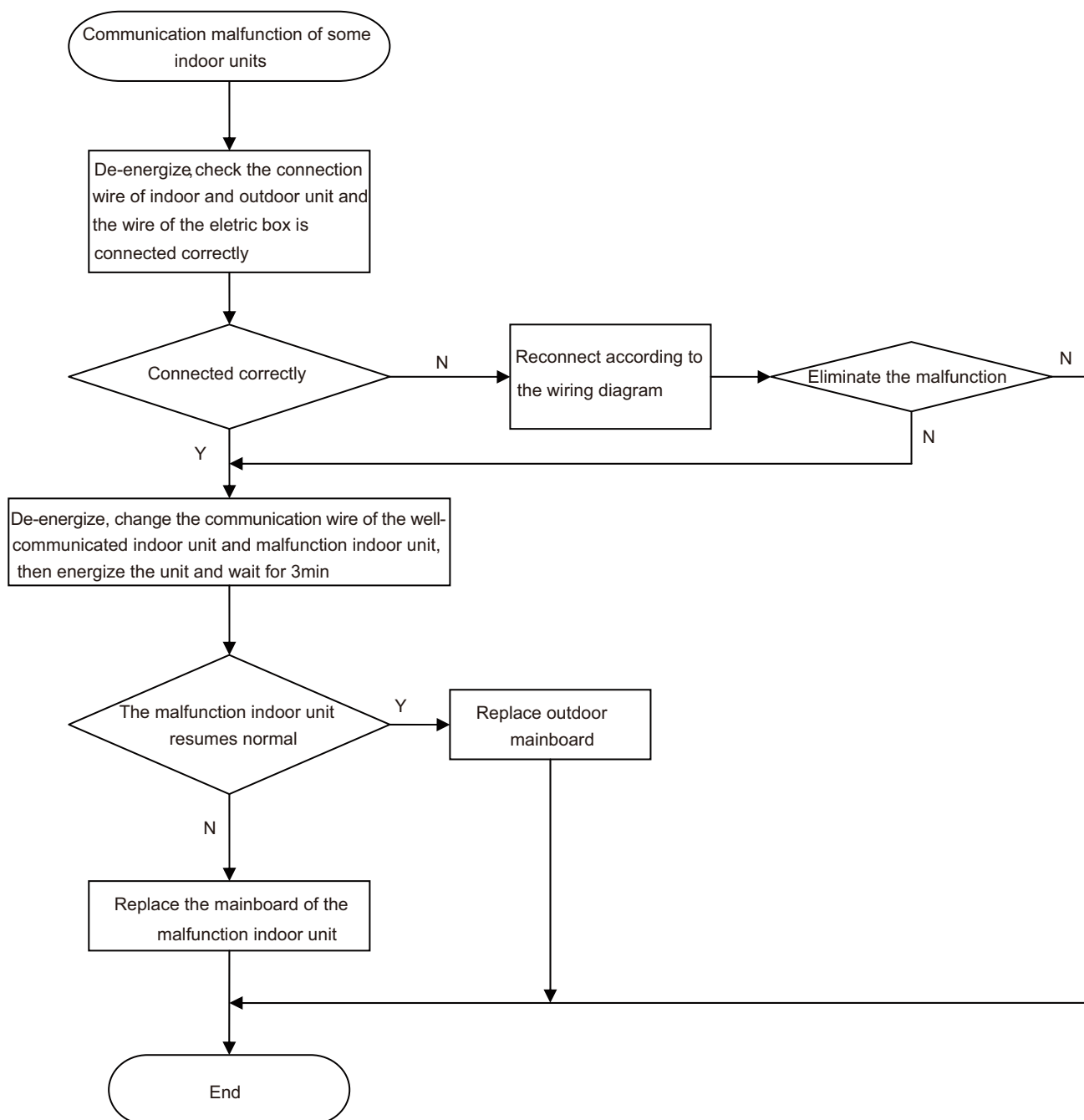
9.1 Malfunction Indicator

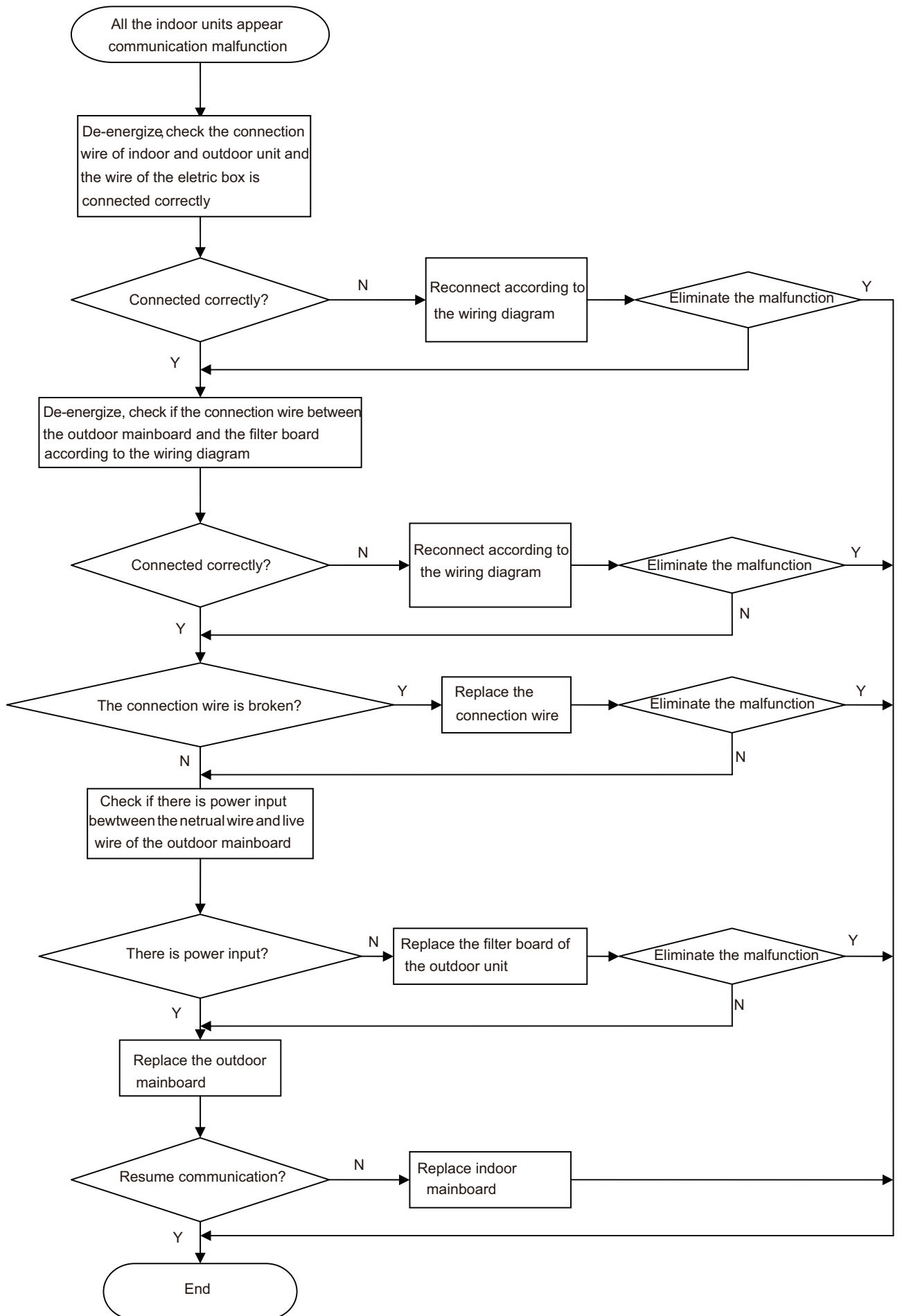
▲ The error code will be displayed on the wired controller and the main board of the outdoor unit The meaning of each error.

Name of malfunction	The indicator display			Indoor display
	Yellow light	Red light	Green light	
Compressor runs	Flash once			
Defrost	Flash twice			H1
Anti-freezing protection	Flash 3 times			E2
IPM protection	Flash 4 times			H5
AC over-current protection	Flash 5 times			E5
Over-burden protection	Flash 6 times			H4
Compressor exhaust high temperature protection	Flash 7 times			E4
Compressor overload protection	Flash 8 times			H3
Power protection	Flash 9 times			L9
EEPROM reads and write protection	Flash 11 times			
Low PN voltage protection	Flash 12 times			PL
Over voltage protection for PN	Flash 13 times			PH
PFC protection	Flash 14 times			HC
PFC module temperature protection	Flash 15 times			oE
Low pressure protection	Flash 17 times			E3
High pressure protection	Flash 18 times			E1
Limit/decline frequency(electric current)		Flash 1 times		
Frequency limit (exhaust)		Flash 2 times		
Frequency limit(Over-burden)		Flash 3 times		
Outdoor ambient sensor malfunction		Flash 6 times		F3
Outdoor tube sensor malfunction		Flash 5 times		F4
Exhaust sensor malfunction		Flash 7 times		F5
Attain the temperature of switch on		Flash 8 times		
Frequency limit(power)		Flash 13 times		
Outdoor fan malfunction		Flash 14 times		
Frequency limit(PFC module temperature)		Flash 15 times		
PFC module sensor malfunction		Flash 16 times		oE
Liquid pipe temperature sensor malfunction of A		Flash 17 times		
Gas pipe temperature sensor malfunction of A		Flash 18 times		
Liquid pipe temperature sensor malfunction of B		Flash 19 times		
Gas pipe temperature sensor malfunction of B		Flash 20 times		
Liquid pipe temperature sensor malfunction of C		Flash 21 times		
Gas pipe temperature sensor malfunction of C		Flash 22 times		
Liquid pipe temperature sensor malfunction of D		Flash 23 times		
Gas pipe temperature sensor malfunction of D		Flash 24 times		
Liquid pipe temperature sensor malfunction of E		Flash 25 times		
Gas pipe temperature sensor malfunction of E		Flash 26 times		
Exit of the condenser tube sensor malfunction		Flash 27 times		
Correspondence is normal			Flash 7 times(n=indoor unit number)	
Communication failure between indoor unit and outdoor unit (indoor unit all Communication failure)			Often bright	
Indoor ambient sensor malfunction				F1
Indoor evaporate sensor malfunction				F2
Mode conflict				E7
Accept fluorine mode				Fo
Jumper cap malfunction protection				C5

9.2 Malfunction Checking and Elimination

◆ Malfunction display: E6 Communication malfunction

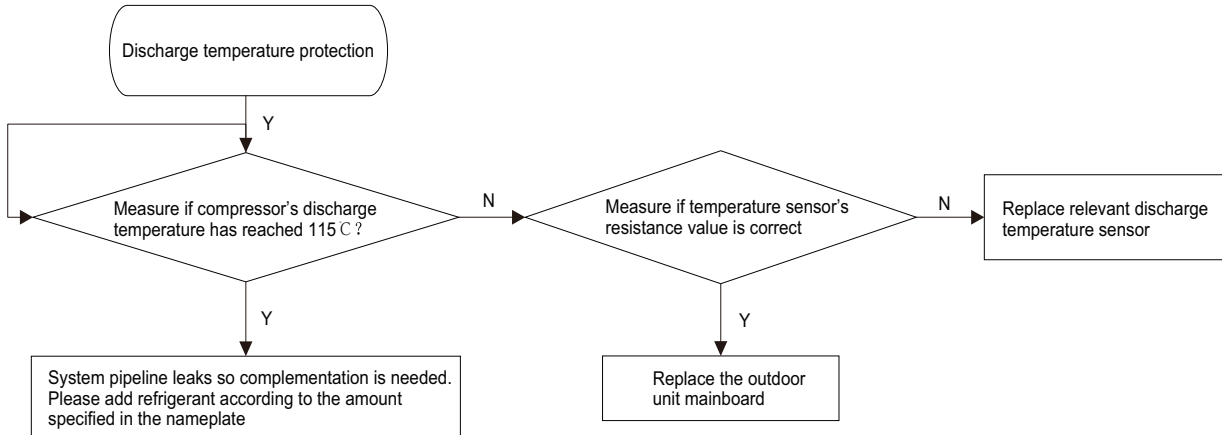




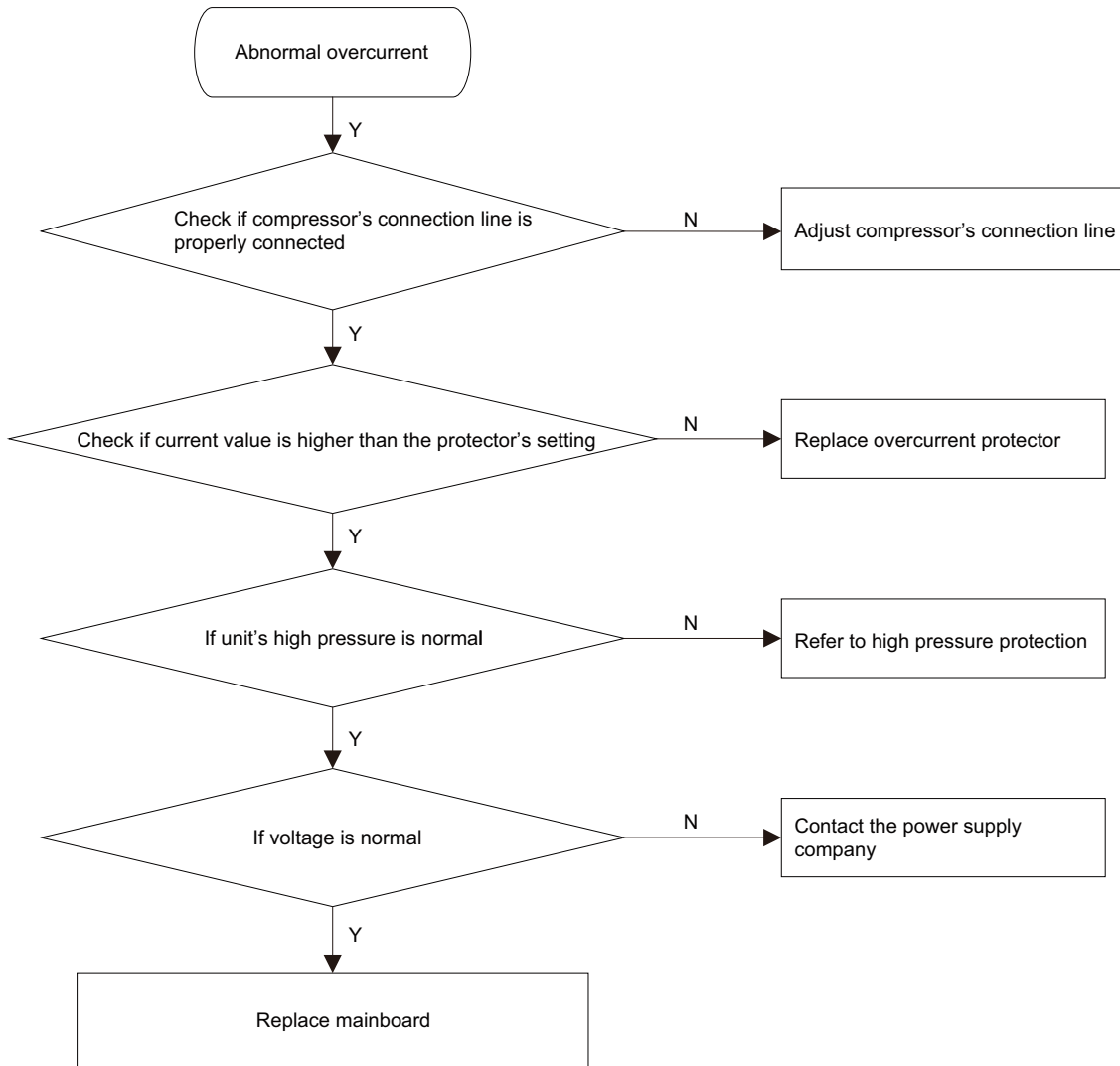
◆ Malfunction display: E1 Compressor High Pressure Protection



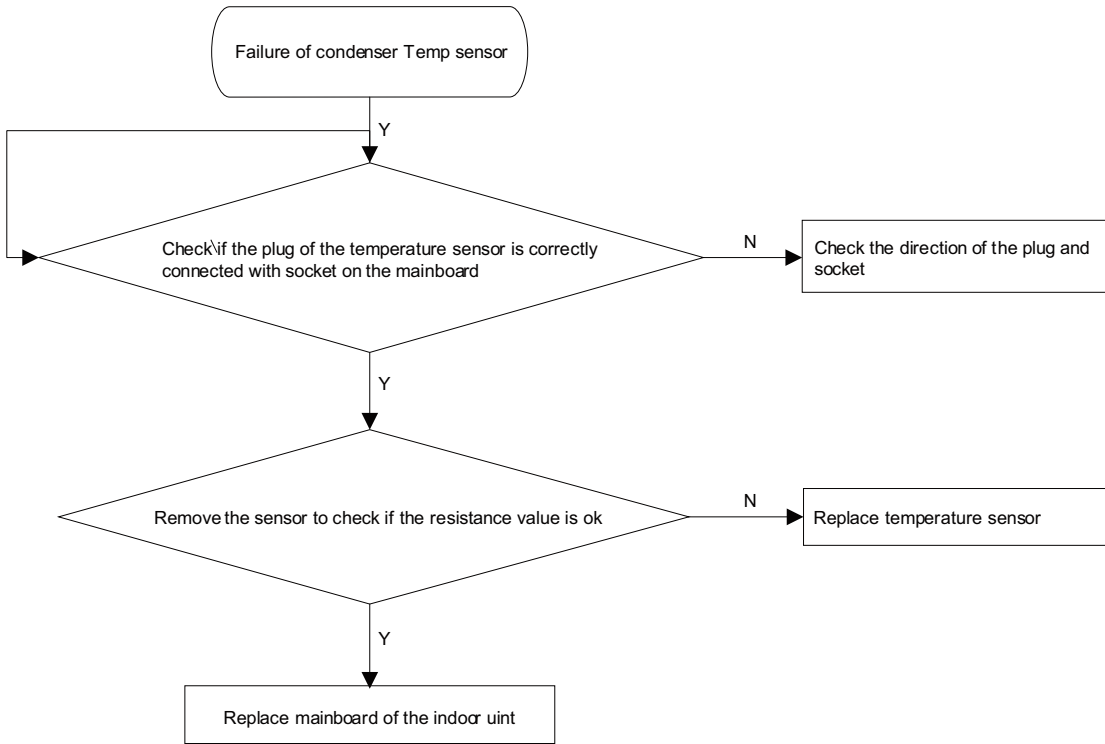
◆ Malfunction display: E4 Compressor Exhaust High Temperature Protection



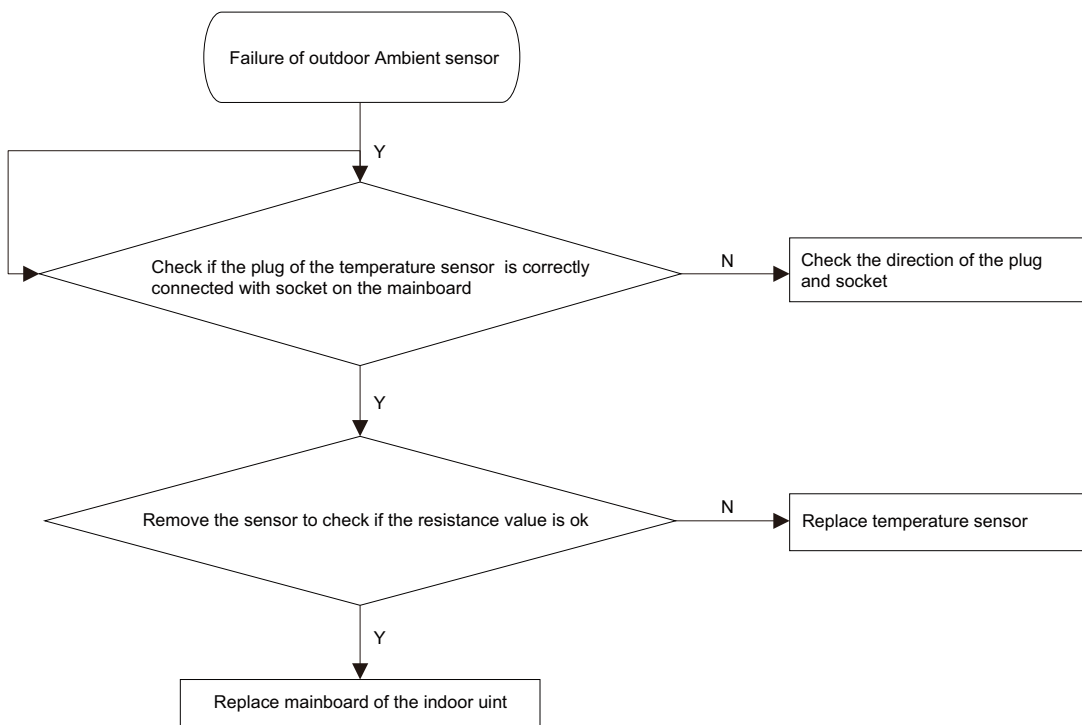
◆ Malfunction display: E5 Compressor Overheat



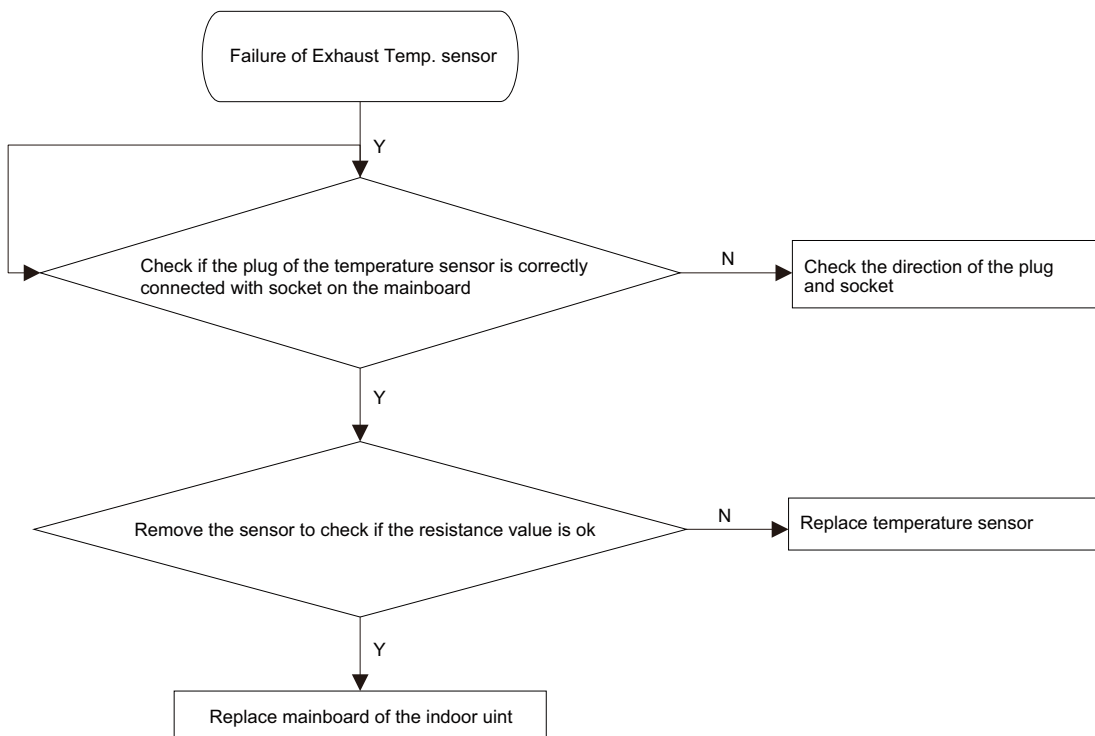
◆ Malfunction display: F2 Failure of Evaporator Temp. Sensor



◆ **Malfunction display: F3 Failure of Outdoor Ambient Sensor**



◆ **Malfunction display: F5 Failure of Exhaust Temp. Sensor**



9.3 Maintenance Method for Normal Malfunction

1. Air Conditioner Cant be Started Up

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

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see its blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation position is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Units pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	Blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit pressure is much lower than regulated range. If refrigerant isnt leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver cant swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor cant operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor cant operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor cant operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver Cant Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor cant operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver cant operate	Replace the main board with the same model

4. ODU Fan Motor Cant Operate

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

5. Compressor Cant Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and its 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor cant operate	Repair or replace compressor

6. Air Conditioner is Leaking

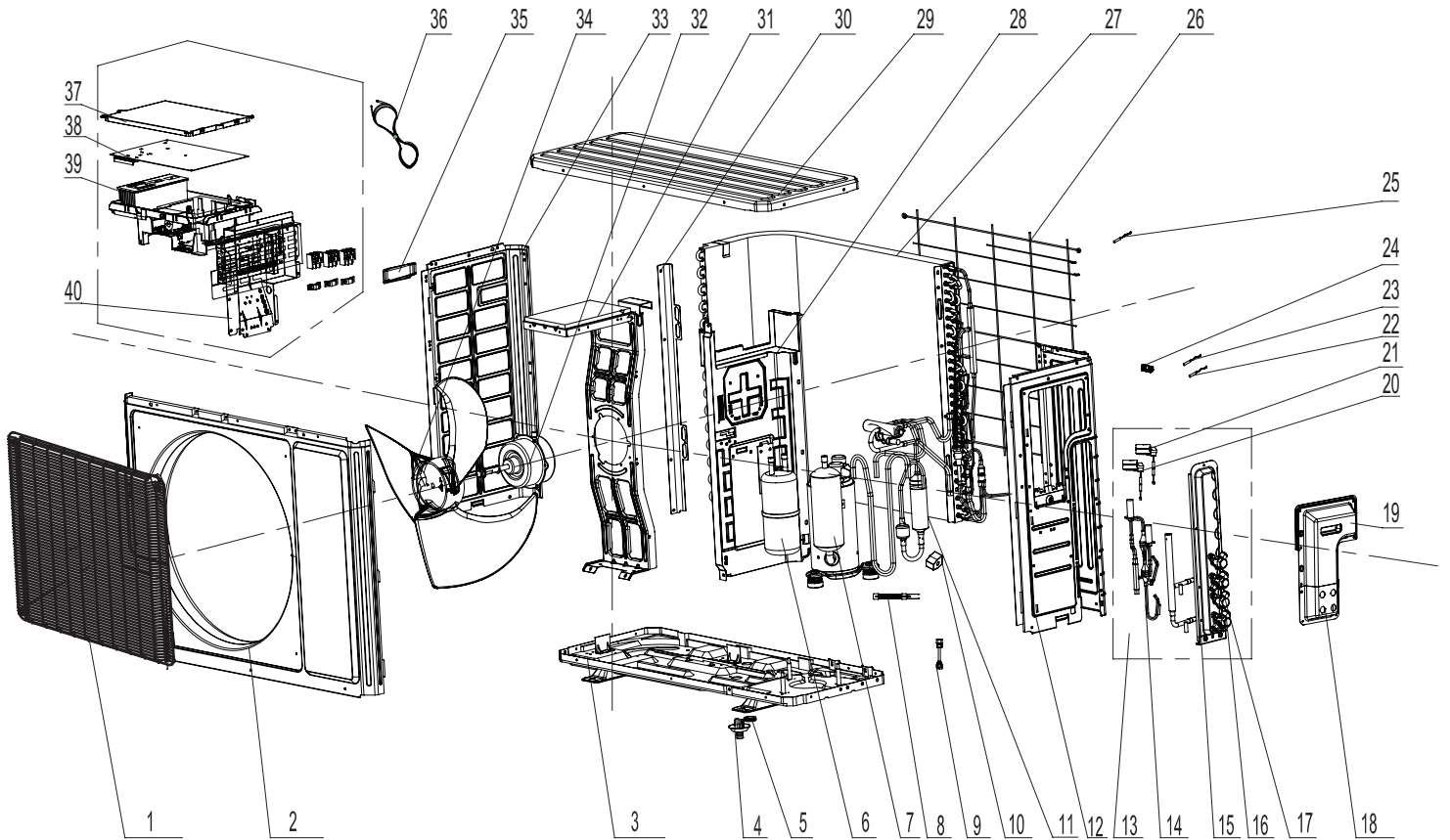
Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe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

7. Abnormal Sound and Vibration

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

10. Exploded View and Parts List

TM18H4O

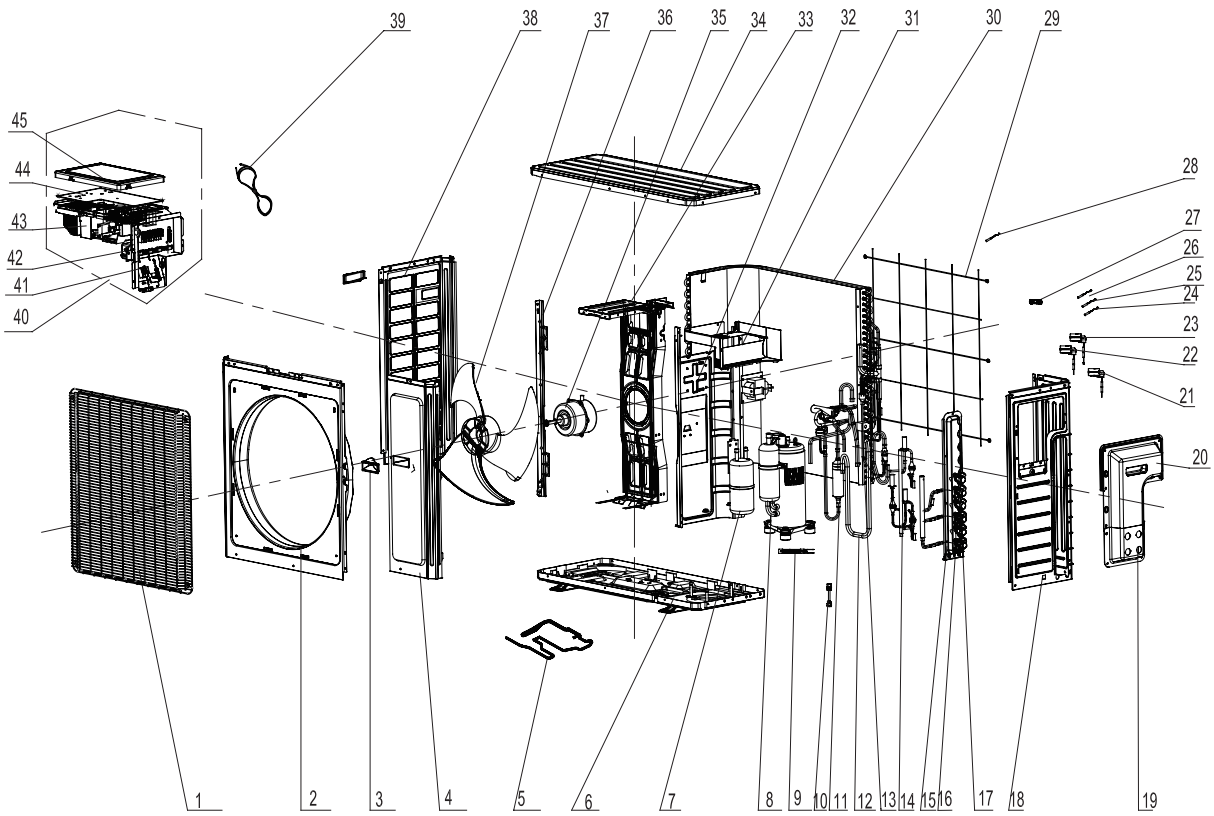


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		TM18H4O	
		Product Code	
		CB228W07700_L81561	
1	Front Grill	01473049	1
2	Front Panel Assy	00000300024	1
3	Chassis Sub-assy	02803263P	1
4	Drainage Connector	06123401	1
5	Drainage hole Cap	06813401/76713033/76713068	1
6	Gas-liquid Separator Assy	07223048	1
7	Compressor and Fittings	00105249G	1
8	Electric Heater(Compressor)	7651300403	1
9	Tube Connector Sub-assy	/	/
10	Magnet Coil	4300040045	1
11	4-Way Valve Assy	03073328	1
12	Right Side Plate	0130326801P	1
13	Valve Support Assy	03016300003	1
14	Electronic Expansion Valve assy	03017400020	1
15	Valve Support Sub-Assy	0171312802P	1
16	Cut off Valve	07130239	1
17	Cut off Valve	071302391	1
18	Wiring Cover Sub-assy	01253057	1
19	Handle Assy	02113044	1
20	Electric Expand Valve Fitting	43000084	1
21	Electric Expand Valve Fitting	4300008401	1
22	Temperature Sensor	39000073	1
23	Temperature Sensor	3900007301	1
24	Wiring Clamp	26115004	1
25	Temperature Sensor	39000073	1
26	Rear Grill	01473043	1
27	Condenser Assy	011002000279	1
28	Clapboard Assy	0123315301	1
29	Coping	012049000007P	1
30	Supporting Board(Condenser)	01795010	1
31	Motor Support Sub-Assy	01705067	1
32	Fan Motor	1501506402	1
33	Left Side Plate	01305093P	1
34	Axial Flow Fan	10335008	1
35	Left Handle	2623305301	1
36	Connecting Cable	/	/
37	Electric Box Cover	20123028	1
38	Main Board	30138000310	1
39	Electric Box	20113027	1
40	Terminal Board	42010178	1

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TM24H4O

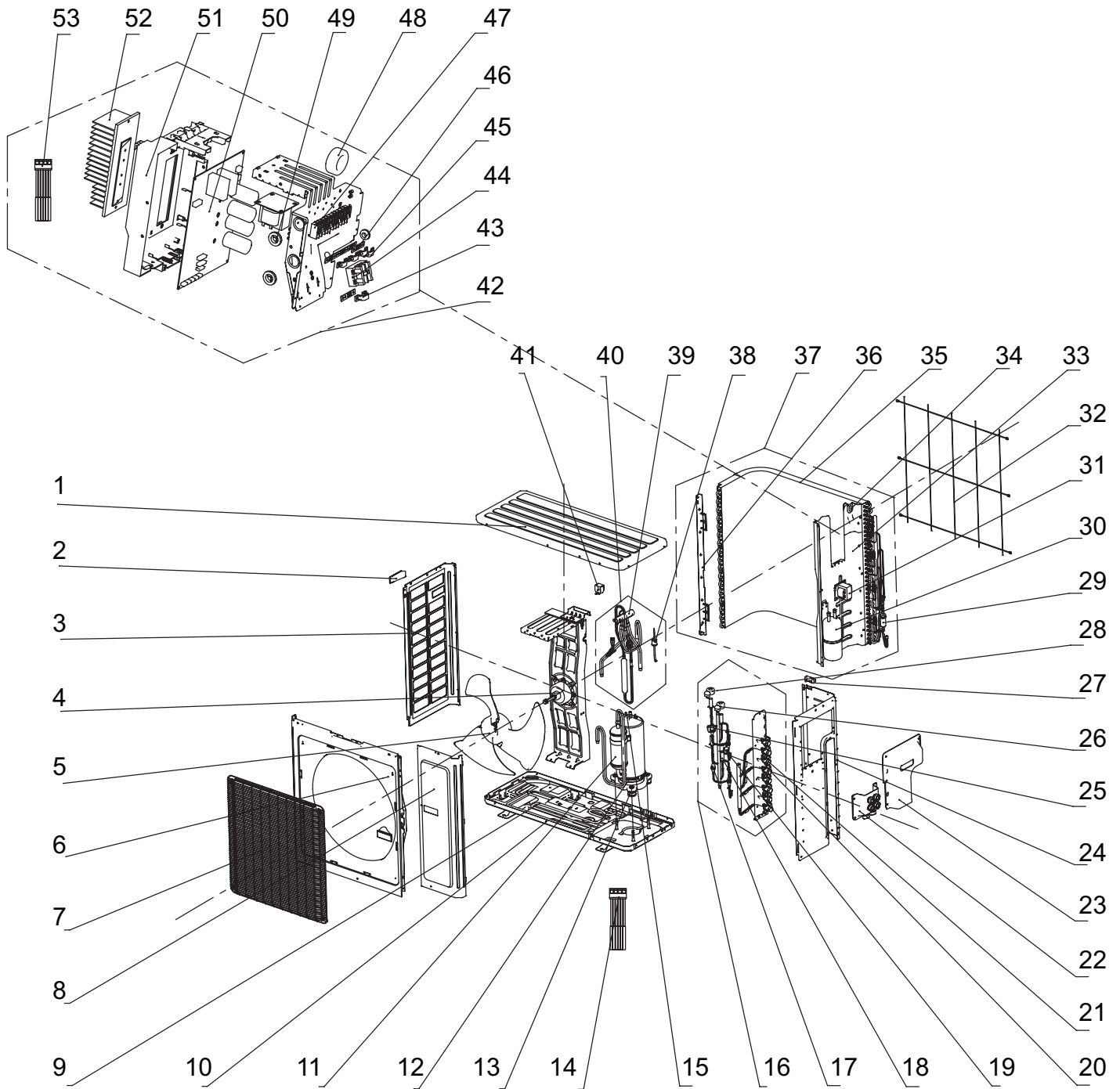


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		TM24H4O	
		Product code	
1	Front Grill	01473050	1
2	Cabinet	0143500401P	1
3	Left Handle	02113031	1
4	Front Side Plate	01305086P	1
5	Electrical Heater (Chassis)	7651000411	1
6	Chassis Sub-assy	02803280P	1
7	Gas-liquid Separator	07223048	1
8	Compressor and Fittings	0010524501	3
9	Electric Heater(Compressor)	7651873215	1
10	Tube Connector Sub-assy	06643008	1
11	4-Way Valve Assy	03015200001	1
12	Connection Pipe	03509700042	1
13	Magnet Coil	4300040045	1
14	Electronic Expansion Valve assy	0713395301	1
15	Valve Support Assy	0713395401	1
16	Cut off Valve	07130239	1
17	Cut off Valve	07130239	1
18	Right Side Plate	0131410000901P	1
19	Wiring Cover Sub-assy	01264100034	1
20	Handle Assy	02204100008	1
21	Electric Expand Valve Fitting	43000084	1
22	Electric Expand Valve Fitting	4300008401	1
23	Electric Expand Valve Fitting	4300008402	1
24	Temperature Sensor	3900030901	1
25	Temperature Sensor	39000073	1
26	Temperature Sensor	3900007305/3900007306	1
27	Wiring Clamp	26115004	1
28	Temperature Sensor	3900030901	1
29	Rear Grill	01574100003	1
30	Condenser Assy	0116398001	1
31	Electric Box (Fireproofing)	01413426	1
32	Clapboard Sub-Assy	01233190	1
33	Motor Support Sub-Assy	017012000017	1
34	Top Cover Sub-Assy	01255007	1
35	Fan Motor	017012000017	1
36	Condenser Support Plate	01175092	1
37	Axial Flow Fan	10335014	1
38	Left Side Plate	01305043P	1
39	Connecting Cable	/	/
40	Electric Box Assy	10000100020	1
41	Terminal Board	42010178	1
42	Connection Support	01703211	1
43	Electric Box	20113015	1
44	Main Board	30138000311	1
45	Electric Box Cover Sub-Assy	02603217	1

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TM30H4O

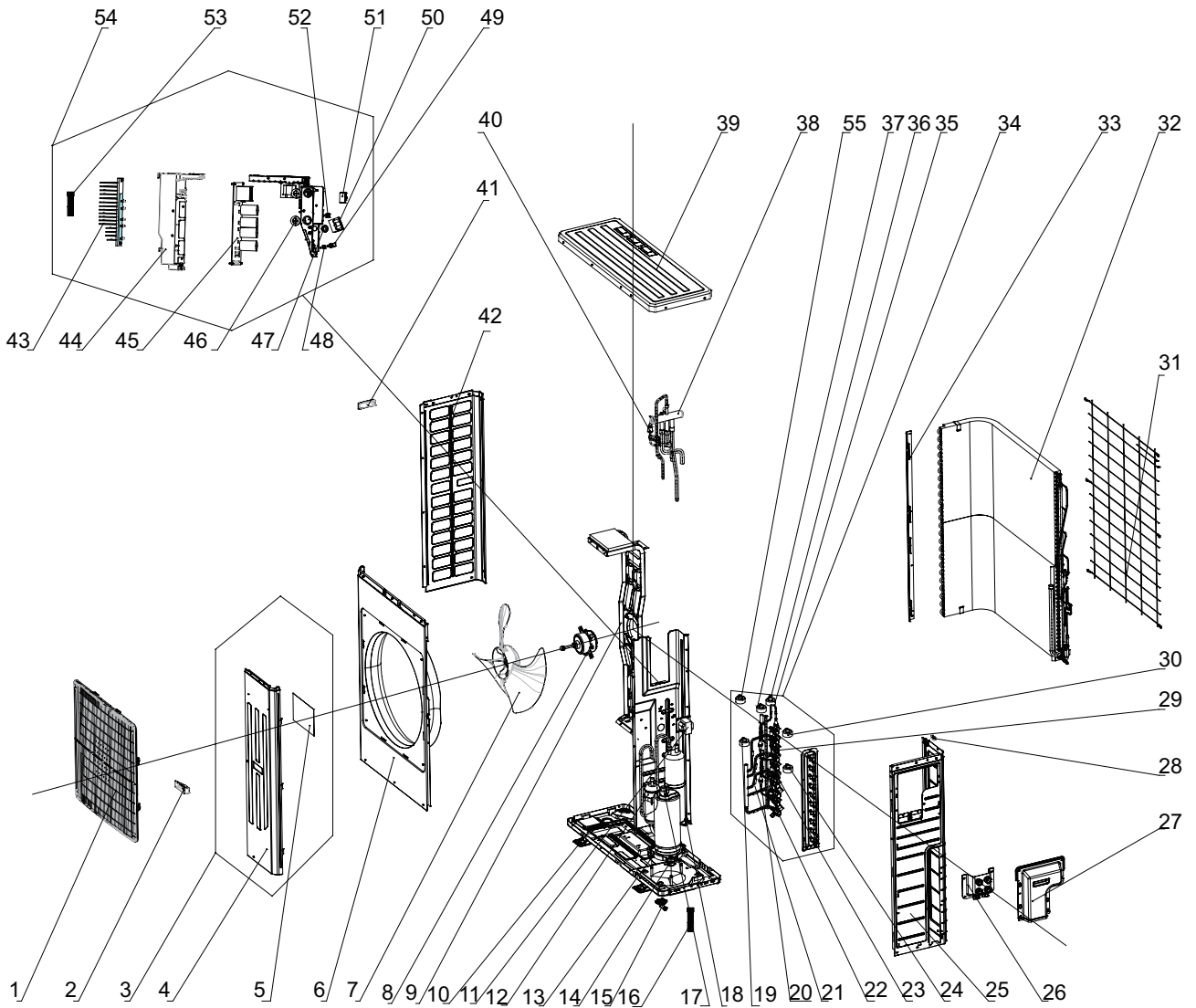


The component picture is only for reference; please refer to the actual product.

NO.	Description	Part Code	Qty
		TM30H4O	
		Product code	
		CB228W07900_L81561	
1	Coping	01255006P	1
2	Left Handle	26235401	1
3	Left Side Plate	01305043P	1
4	Fan Motor	15702802	1
5	Axial Flow Fan	10335014	1
6	Cabinet	0143500401P	1
7	Front Grill	01473050	1
8	Front Side Plate	01305086P	1
9	Electrical Heater	765100047	1
10	Chassis Sub-assy	01284100112P	1
11	Compressor	00205200003	1
12	Electric Heater(Compressor)	7651873215	1
13	Compressor Gasket	76713066	1
14	Sensor Sub-assy	39008000017G	3
15	Compressor Overload Protector(External)	00180030	1
16	Valve Support Assy	030163000003	1
17	Strainer A	07210022	1
18	Electronic Expansion Valve	07334447	2
19	Electric Expand Valve Fitting	4304413222	1
20	Cut off Valve	07130239	1
21	Cut off Valve	07130239	1
22	Wiring Cover Sub-assy	01264100034	1
23	Handle Assy	02204100008	1
24	Right Side Plate	0131410000901P	1
25	Electric Expand Valve Fitting	4304413234	1
26	Electric Expand Valve Fitting	4304413235	1
27	Wiring Clamp	26115004	1
28	Electric Expand Valve Fitting	4304413237	1
29	Bidirection Strainer	07220016	1
30	Gas-liquid Separator Assy	07225017	1
31	Reactor	43130186	1
32	Rear Grill	01574100003	1
33	Clapboard	01244100003	1
34	Cable Cross Loop	76512008	1
35	Condenser Assy	01124100118	1
36	Condenser Support Plate	01175092	1
37	Condenser Assy	01124100118	1
38	Pressure Protect Switch	4602000902	1
39	4-way Valve	4300008201	1
40	4-Way Valve Assy	04045200071	1
41	Magnet Coil	4300040072	1
42	Electric Box Assy	01395200378	1
43	Wire Clamp	71010003	1
44	Terminal Board	420111041	1
45	Wire Clamp	71010003	1
46	Insulation Gasket	70410006	2
47	Terminal Board	420111041	4
48	Magnetic Ring	49010109	1
49	Cable Cross Loop	76512008	5
50	Main Board	30228000026	5
51	Electric Box	26904100013	5
52	Radiator	49010252	5
53	Sensor Sub-assy	39004100005G	1

Above data is subject to change without notice.

TM36H4O TM42H3O



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

NO.	Description	Part Code		Qty
		TM36H4O	TM42H3O	
		Product code	Product code	
		CB228W08000_L81561	CN860W0180_L81561	
1	Front Grill	01574106	01574106	1
2	Handle Assy	02204100008	02204100008	1
3	Front Side Plate Sub-Assy	01305508	01305508	1
4	Front Side Plate	01305065P	01305065P	1
5	Insulated Board (Cover of Electric Box)	20113003	20113003	1
6	Cabinet	01435007P	01435007P	1
7	Axial Flow Fan	10335010	10335010	1
8	Fan Motor	1570280201	1570280201	1
9	Motor Support Assy	01805200256	01805200256	1
10	Electrical Heater	765100047	765100047	1
11	Reactor	43130186	43130186	1
12	Compressor	00205200003	00205200003	1
13	Electrical Heater(Compressor)	7651873209	7651873209	1
14	Compressor Gasket	76713066	76713066	3
15	Drainage Joint	26113009	26113009	1
16	Sensor Sub-assy	39004100006G	39004100006G	1
17	Compressor Overload Protector(External)	00180030	00180030	1
18	Bolt	70210051	70210051	2
19	Electric Expand Valve Fitting	4300876704	4304413222	1
20	Strainer A	07210022	07210022	1
21	Bidirection Strainer	07220016	07220016	1
22	Cut off Valve	07130239	07130239	1
23	Cut off Valve	071302391	071302391	1
24	Electric Expand Valve Fitting	4300876704	4304413234	1
25	Right Side Plate	0131410002701P	0131410002701P	1
26	Wiring Cover Sub-assy	01264100034	01264100034	1
27	Handle Assy	02204100008	02204100008	1
28	Wiring Clamp	26115004	26115004	1
29	Cut off Valve	07130239	071302391	1
30	Electric Expand Valve Fitting	4300876717	4304413235	1
31	Rear Grill	01574100007	01574100007	1
32	Condenser Assy	01124100116	01124100116	1
33	Condenser support plate	01895309	01895309	1
34	Valve Support Assy	07133814	07133814	1
35	Electric Expand Valve Fitting	4300876718	4304413237	1
36	Electronic Expansion Valve	07130369	07130369	1
37	Electric Expand Valve Fitting	4300876719	4304413238	1
38	4-way Valve	43000338	43000338	1
39	Top Cover	0125500901P	0125500901P	1
40	Pressure Protect Switch	4602000902	4602000902	1
41	Left Handle	26235401	26235401	1
42	Left Side Plate	01305064P	01305064P	1
43	Radiator	49010252	49010252	1
44	Electric Box	26904100013	26904100013	1
45	Main Board	30228000027	30228000025	1
46	Cable Cross Loop	76510021	76510021	2
47	Magnetic Ring	49010109	49010109	4
48	Insulation Gasket	70410006	70410006	1
49	Wire Clamp	71010003	71010003	5
50	Terminal Board	420111041	420111041	5
51	Terminal Board	42018094	42018094	5
52	Wire Clamp	71010005	71010005	1
53	Sensor Sub-assy	39004100006G	39004100006G	1
54	Electric Box Assy	01395200376	01395200377	1
55	Electric Expand Valve Fitting	4300876720	4300876720	1

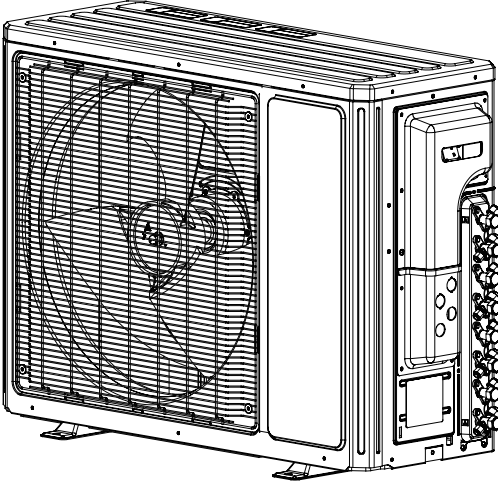
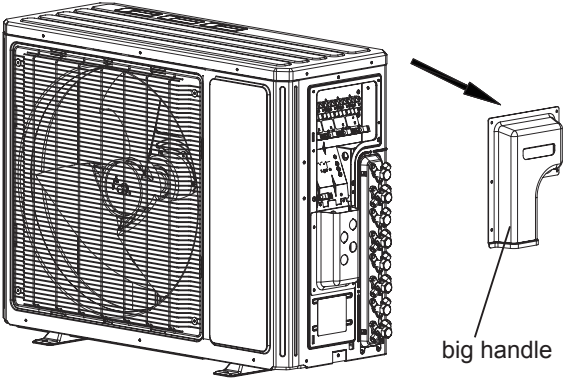
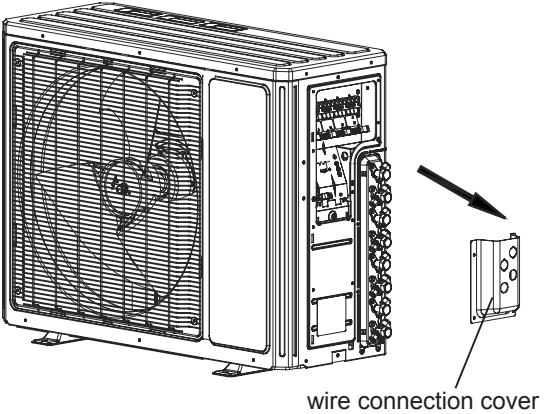
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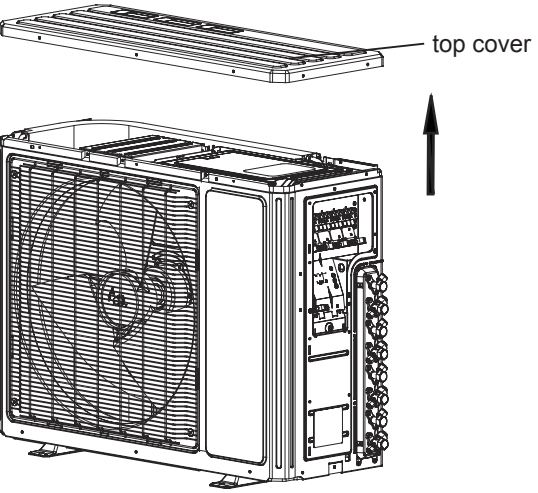
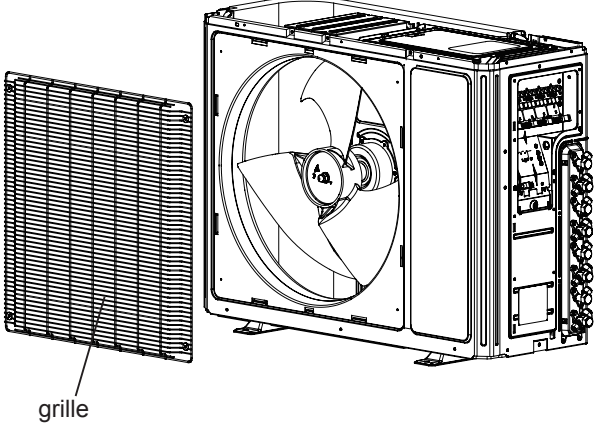
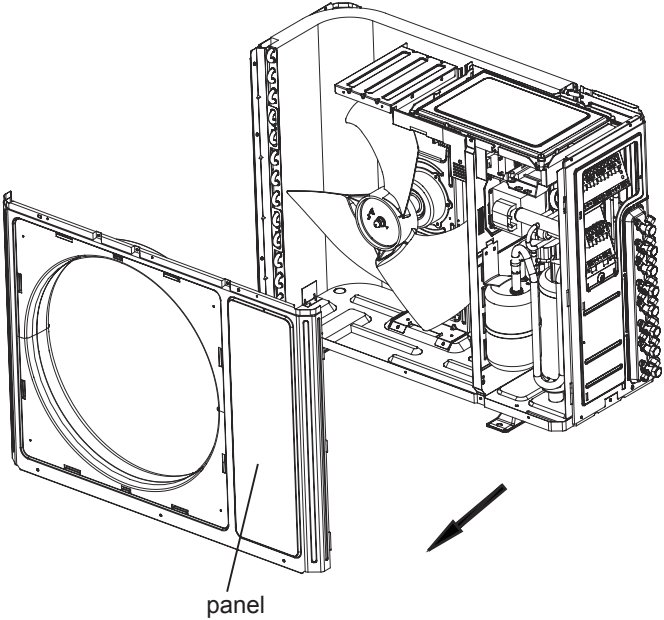
11. Removal Procedure

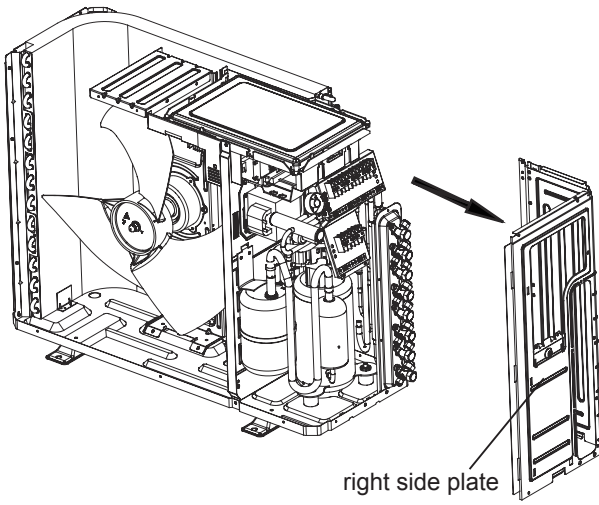
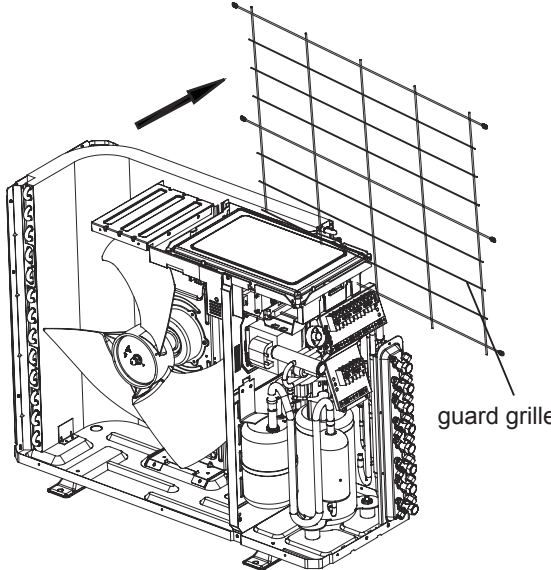
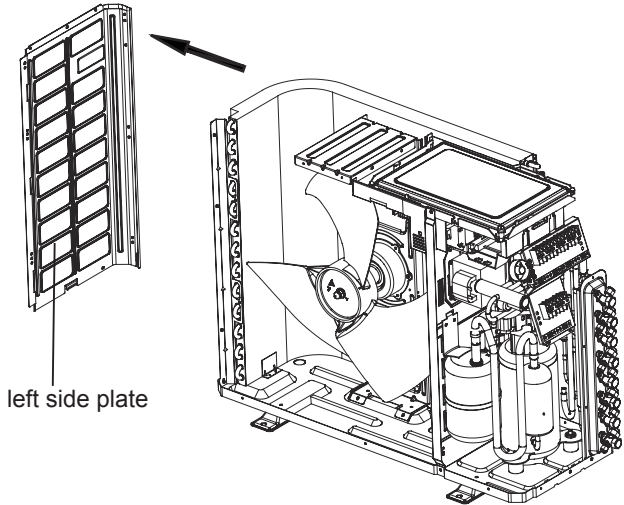


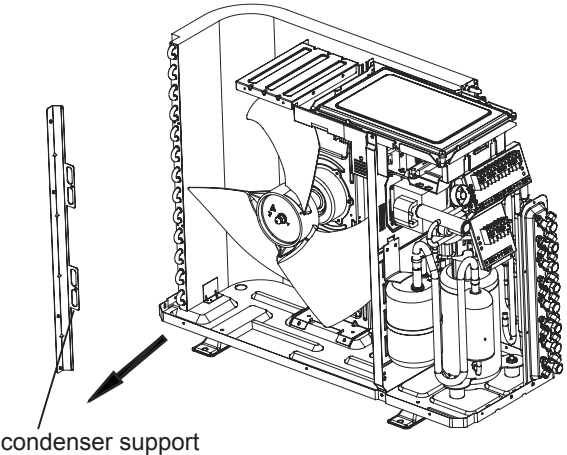
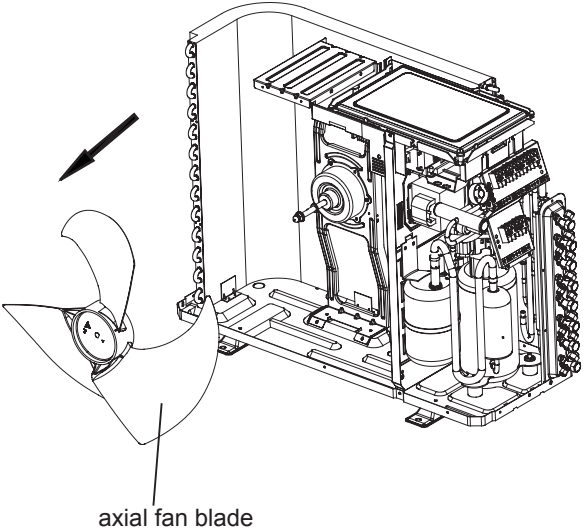
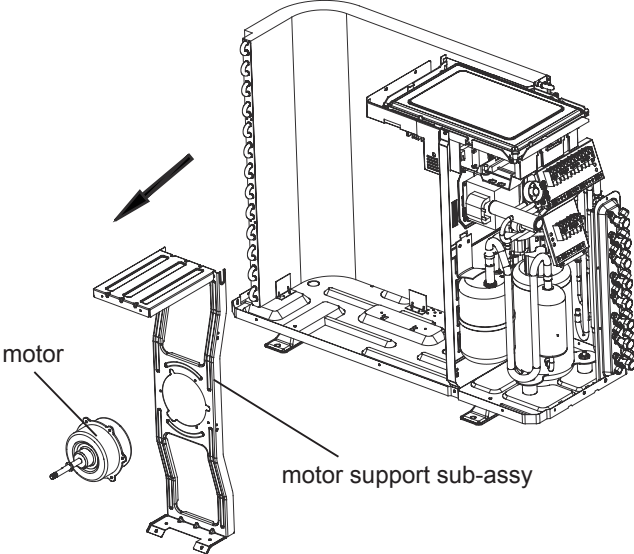
Warning: Be sure to wait for a minimum of 20 minutes after turning off all power supplies and discharge the refrigerant completely before removal.

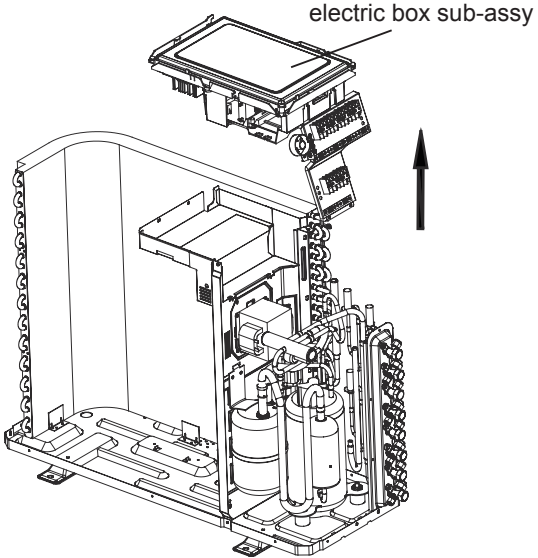
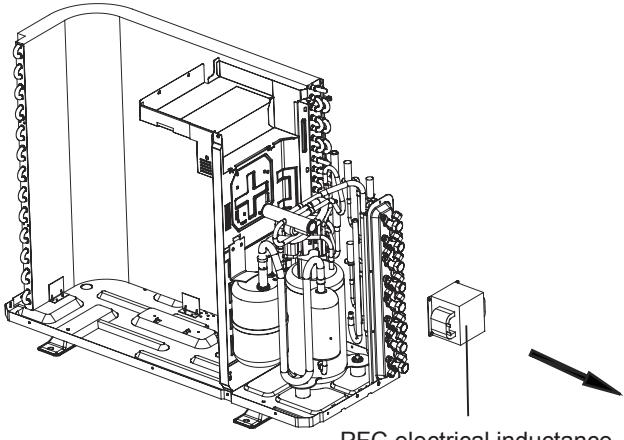
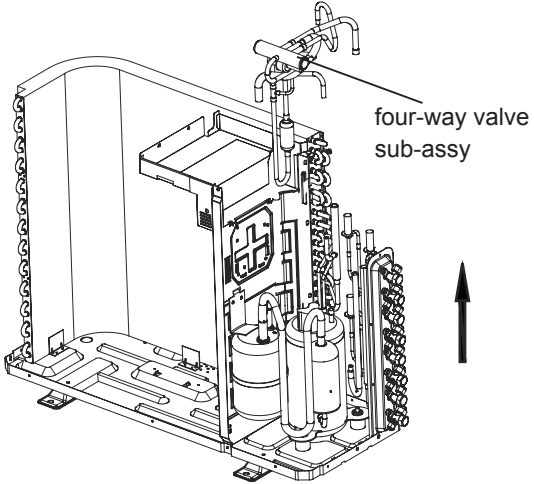
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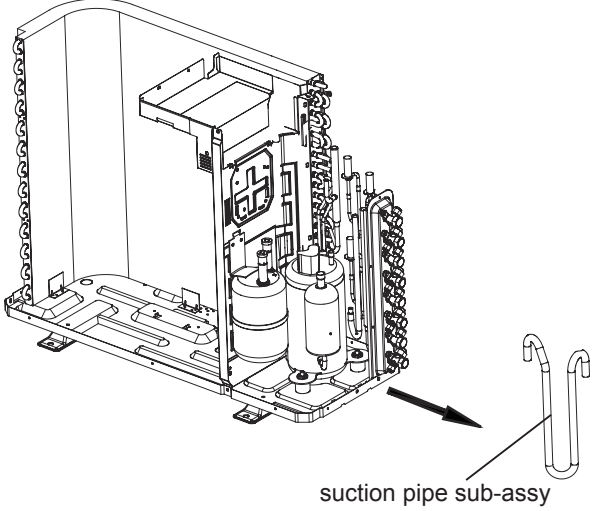
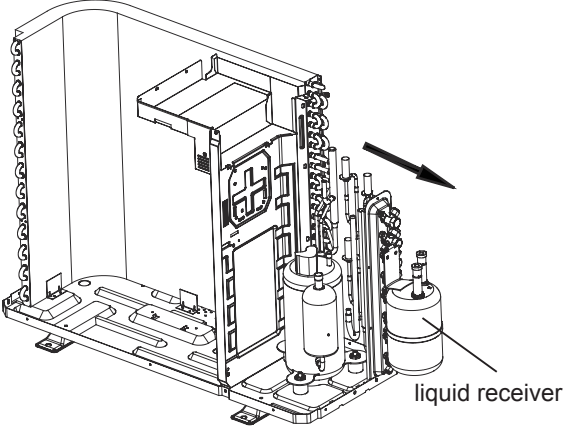
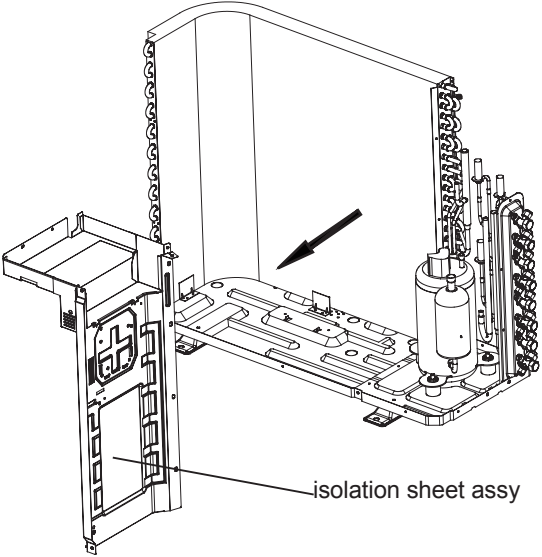
Steps	Procedure
1.Remove big handle and wire connection cover	<p data-bbox="207 666 423 694">Before disassembly</p>  <p data-bbox="207 1102 760 1164">Remove the screws fixing big handle and right side plate to remove the big handle.</p>  <p data-bbox="1344 1447 1458 1476">big handle</p> <p data-bbox="207 1727 743 1814">Remove the screws fixing wire connection cover and right side plate to remove the wire connection cover.</p>  <p data-bbox="1206 1967 1442 1996">wire connection cover</p>

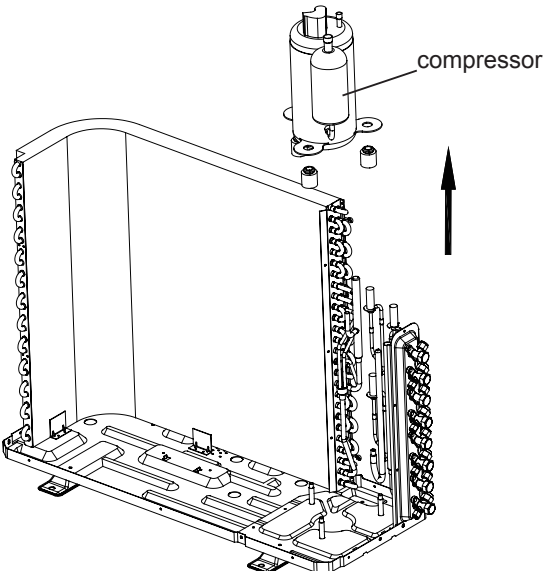
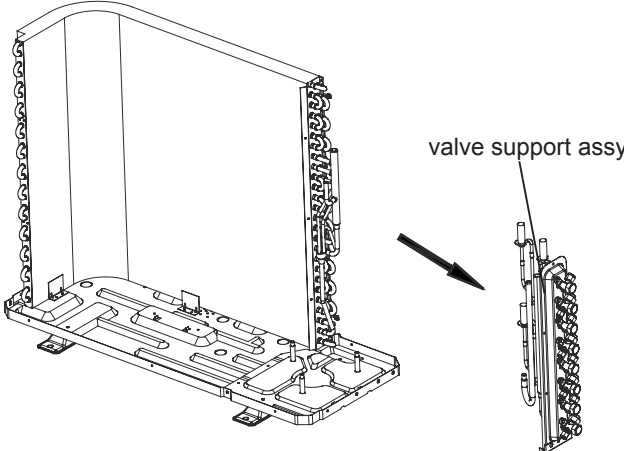
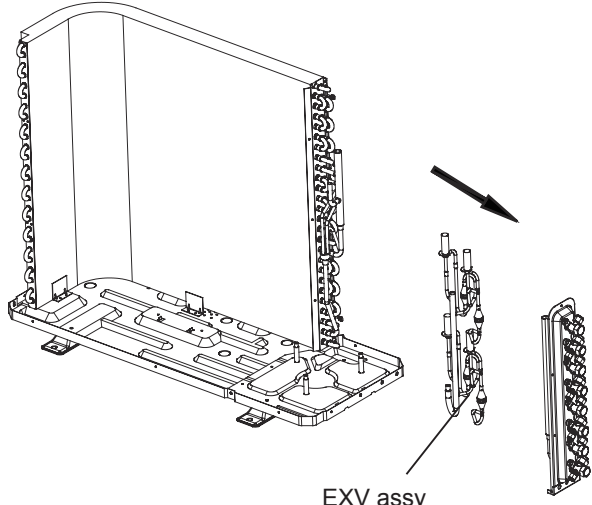
Steps	Procedure
<p>2.Remove top cover</p>	<p>Remove the screws fixing top cover, panel and left & right side plate, to remove top cover.</p> 
<p>3.Remove grille</p>	<p>Remove the screws fixing grille and panel, to remove the grille on the panel.</p> 
<p>4.Remove panel</p>	<p>Remove the screws fixing panel, chassis and motor support, to remove the panel.</p> 

Steps	Procedure
<p>5.Remove right side plate</p>	<p>Remove the screws fixing right side plate, valve support and guard grille, to remove the right side plate.</p>  <p>right side plate</p>
<p>6.Remove guard grille</p>	<p>Remove the screws fixing guard grille and left side plate to remove guard grille.</p>  <p>guard grille</p>
<p>7.Remove left side plate</p>	<p>Remove the screws fixing chassis and condenser support, to remove the left side plate.</p>  <p>left side plate</p>

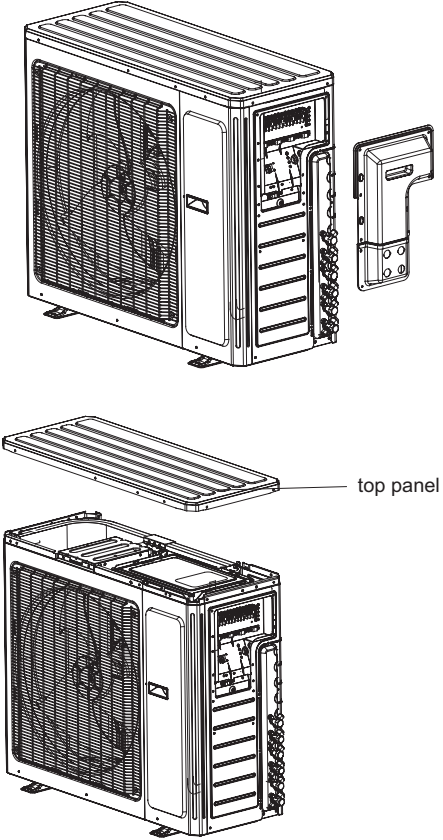
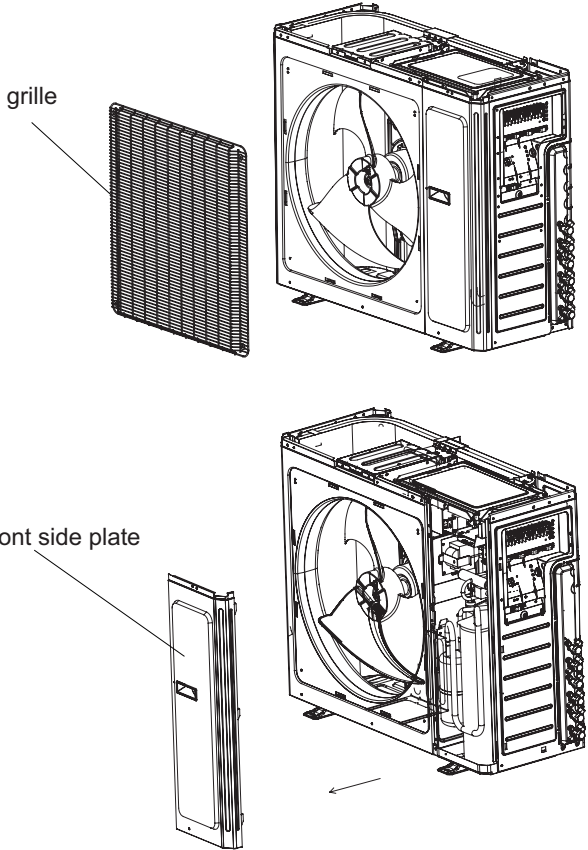
Steps	Procedure
8.Remove condenser support	<p>Remove the screws fixing support and chassis, to remove the condenser support.</p>  <p>condenser support</p>
9.Remove axial fan blade	<p>Remove the screw nuts fixing fan blade with spanner, to remove the fan blade.</p>  <p>axial fan blade</p>
10.Remove motor and motor support sub-assy	<p>Remove the tapping screws fixing motor, pull out the pin of leading wire for motor and remove the screws fixing motor support and chassis, to remove the motor and motor support sub-assy.</p>  <p>motor</p> <p>motor support sub-assy</p>

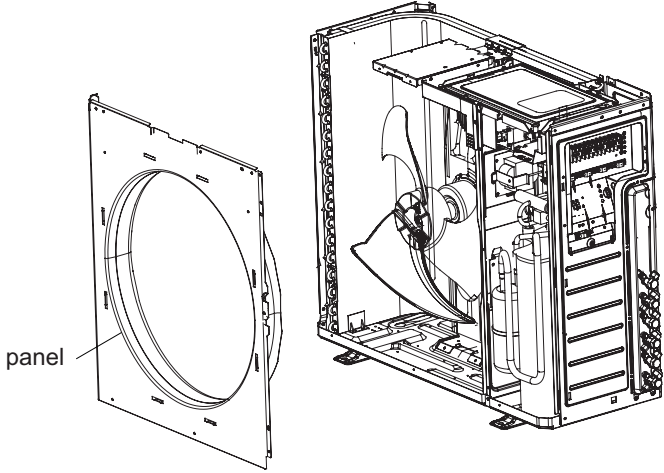
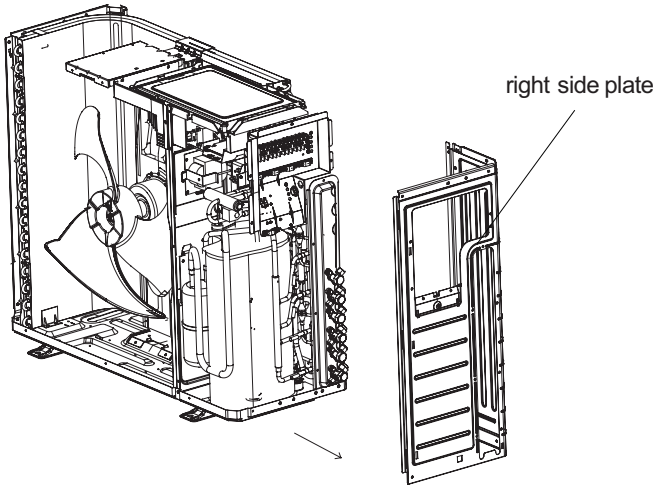
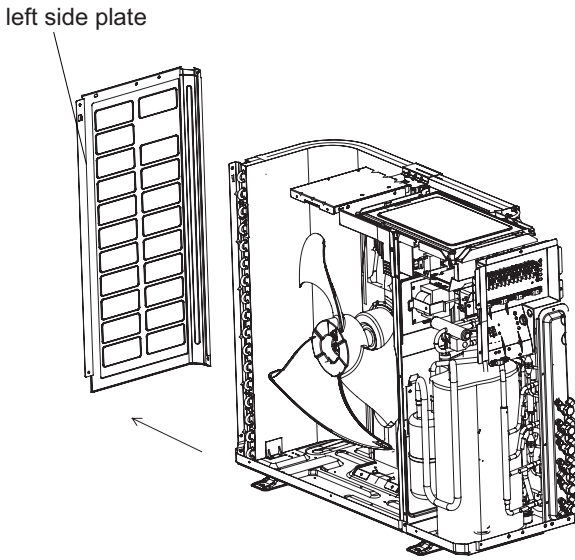
Steps	Procedure
<p>11.Remove electric box sub-assy</p>	<p>Remove the tapping screws fixing isolation sheet, loosen the wire binds, pull out the terminal, lift to remove the electric box sub-assy.</p>  <p>electric box sub-assy</p>
<p>12.Remove PFC electrical inductance</p>	<p>Remove the screws fixing PFC electrical inductance and isolation sheet, to remove the PFC electrical inductance.</p>  <p>PFC electrical inductance</p>
<p>13.Remove four-way valve sub-assy</p>	<p>Welding cut the welding point jointing the four-way valve with blowtorch to remove the four-way valve sub-assy. (Note: please make sure theres no refrigerant in the unit before remove any tube or compressor)</p>  <p>four-way valve sub-assy</p>

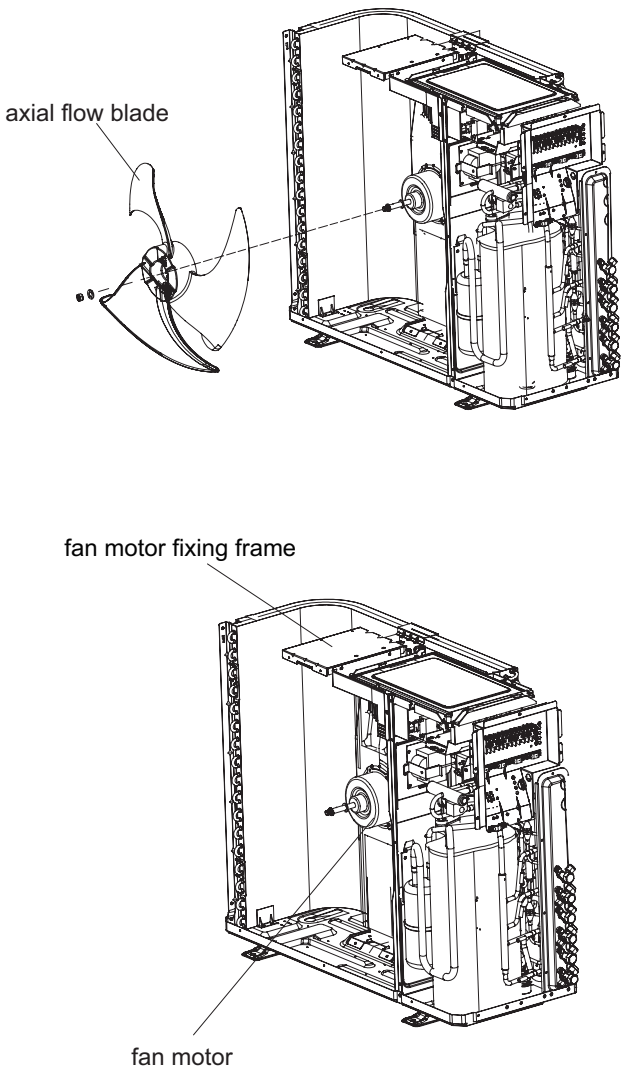
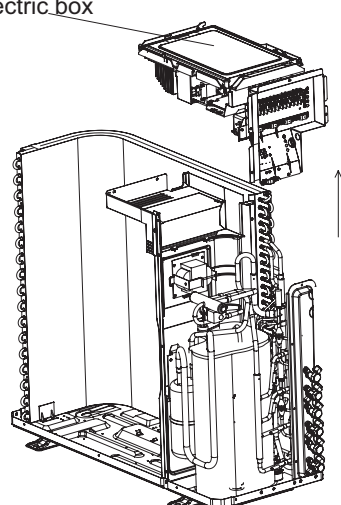
Steps	Procedure	
14.Remove suction pipe sub-assy	<p>Welding cut the welding point jointing the suction pipe sub-assy, compressor and liquid receiver, to remove the suction pipe sub-assy.</p>	 <p>suction pipe sub-assy</p>
15.Remove liquid receiver	<p>Remove the screws fixing isolation sheet and liquid receiver and lift to remove the liquid receiver.</p>	 <p>liquid receiver</p>
16.Remove the isolation sheet assy	<p>Remove the screws fixing isolation sheet and condenser side plate, to remove the isolation sheet assy.</p>	 <p>isolation sheet assy</p>

Steps	Procedure
<p>17.Remove compressor</p>	<p>Remove the screw nuts fixing compressor foots and chassis with spanner, as well as the foot cushion, to remove the compressor.</p> 
<p>18.Remove valve support assy</p>	<p>Remove the screws fixing valve support assy and chassis sub-assy, to remove the valve support assy.</p> 
<p>19.Remove EXV assy</p>	<p>Welding cut the welding point jointing EXV sub-assy and refrigerant collection pipe, to remove the EXV assy. (Note: fully pack the big valve with wet cloth when welding cutting, to avoid high temperature damage of valve)</p> 

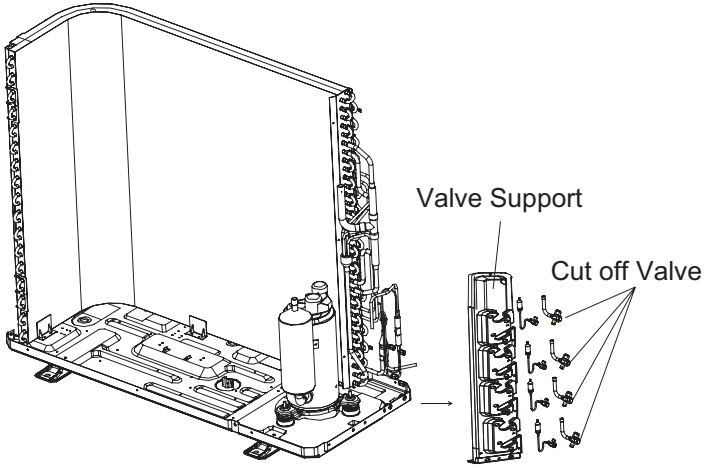
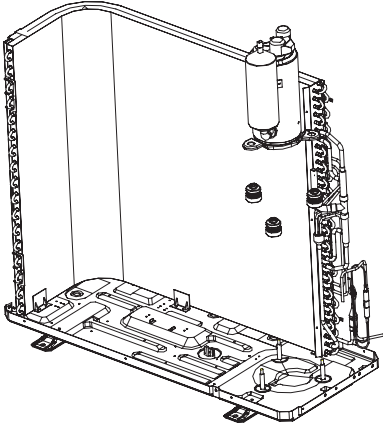
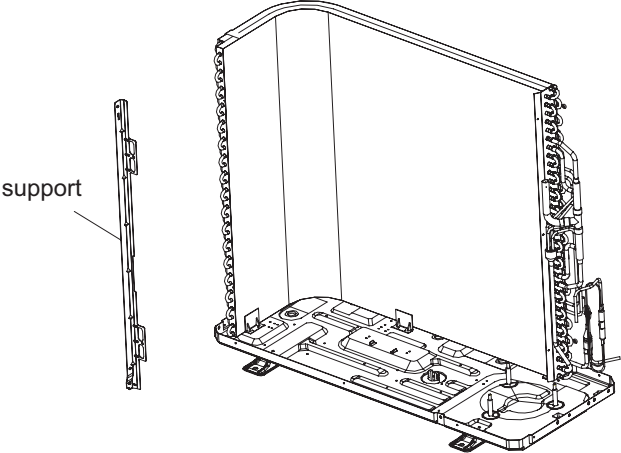
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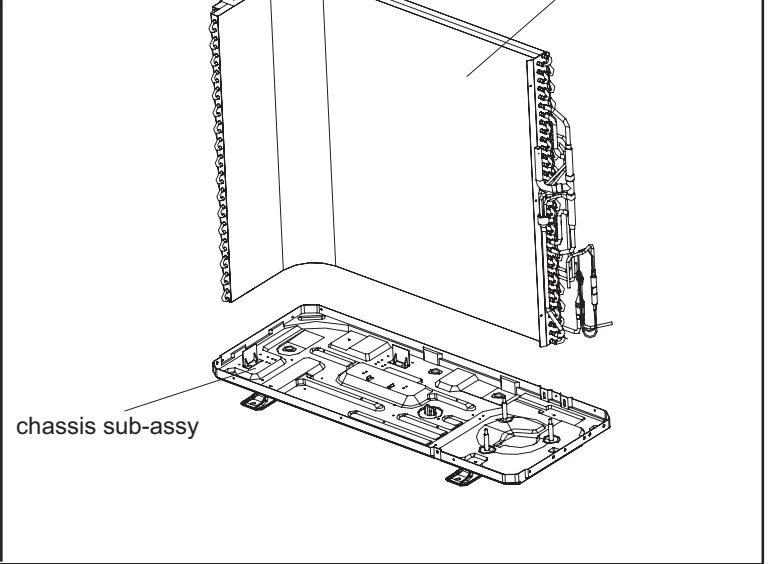
Steps	Procedure	
<p>1. Remove valve cover and top panel</p> <p>a Twist off the screws used for fixing and valve cover , pull valve cover up ward to remove it.</p> <p>b Remove the 3 screws connecting the top panel with the front panel and the right side plate, and then remove the top panel.</p>	 <p>The diagram illustrates the removal of the valve cover and top panel. In step a, the valve cover is shown being twisted off the unit. In step b, the top panel is shown being removed from the unit after the three screws connecting it to the front panel and right side plate have been removed. Labels 'top panel' and 'grille' are used to identify the respective parts.</p>	
<p>2. Remove grille,front side plate and panel.</p> <p>a Remove the 2 screws connecting the grille and the panel, and then remove the grille.</p> <p>b Remove the 1 screw connecting the front side plate and the panel,and then remove the front side plate.</p>	 <p>The diagram illustrates the removal of the grille and front side plate. In step a, the grille is shown being removed from the panel after the two screws connecting them have been removed. In step b, the front side plate is shown being removed from the panel after the one screw connecting them has been removed. Labels 'grille' and 'front side plate' are used to identify the respective parts.</p>	

Steps	Procedure	
c	<p>Remove the 5 screws connecting the panel with the chassis and the motor support, and then remove the panel.</p>	 <p>panel</p>
3. Remove right side plate and left side plate		
a	<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>	 <p>right side plate</p>
b	<p>Remove the screws connecting the left side plate and the chassis, and then remove the left side plate Assy.</p>	 <p>left side plate</p>

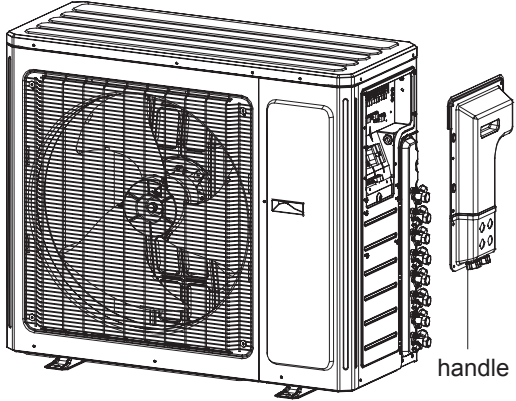
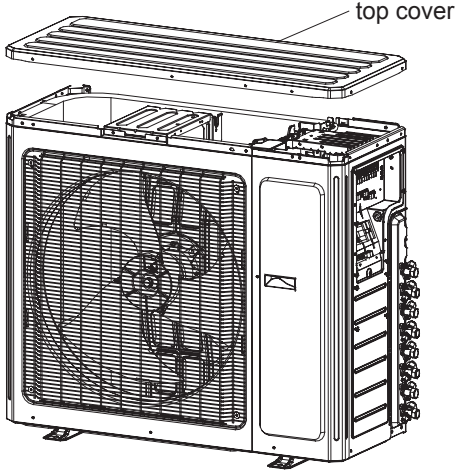
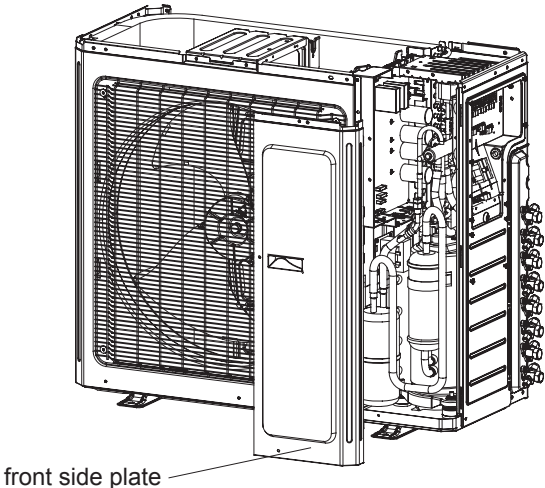
Steps	Procedure	
4. Remove fan motor and axial flow blade	<p>a Remove the nuts fixing the blade and then remove the axial flow blade.</p> <p>b Remove the 4 tapping screws fixing the motor; disconnect the leading wire insert of the motor and then remove the motor. Remove the 2 tapping screws fixing the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

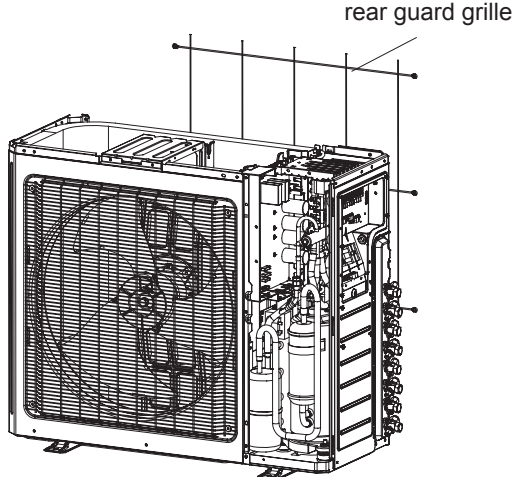
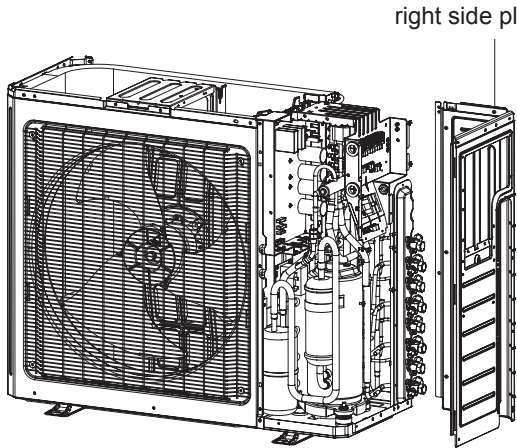
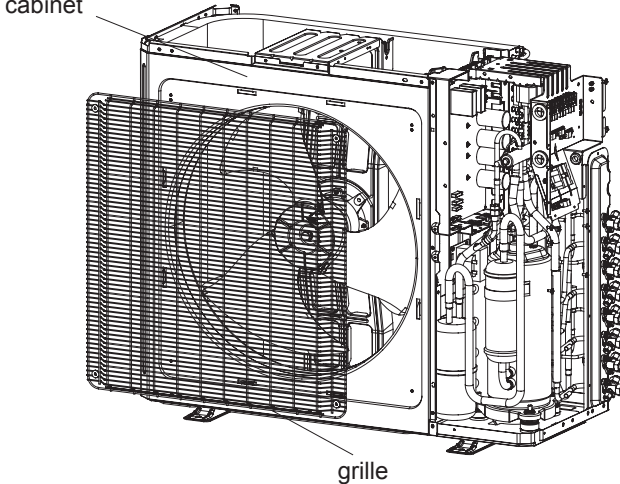
Steps	Procedure	
<p>6.Remove soundproof sponge and 4-way valve assy</p> <p>a</p> <p>Since the piping ports on the soundproof sponge are torn easily, remove the soundproof sponge carefully</p> <p>b</p> <p>Discharge the refrigerant completely;unsolder the pipelines connecting the compressor and the condenser assy,and then remove the 4-way valve assy.</p>		<p>The diagram illustrates three stages of disassembly. In the first stage, the soundproof sponge is shown being removed from the unit's interior. A callout shows the sponge and its mounting brackets. In the second stage, the 4-way valve assembly is shown being removed from the piping. A callout shows the valve assembly. In the third stage, a connection pipe is shown being removed from the piping. A callout shows the connection pipe.</p>
<p>7. Remove Isolation sheet</p>	<p>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's interior. A callout shows the isolation sheet and its mounting brackets.</p>

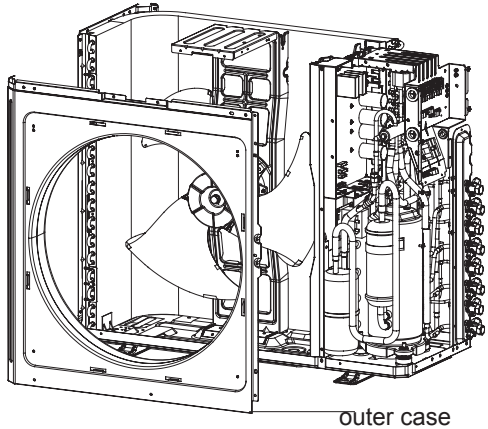
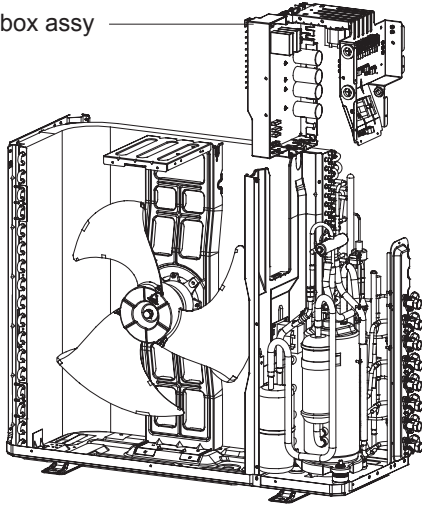
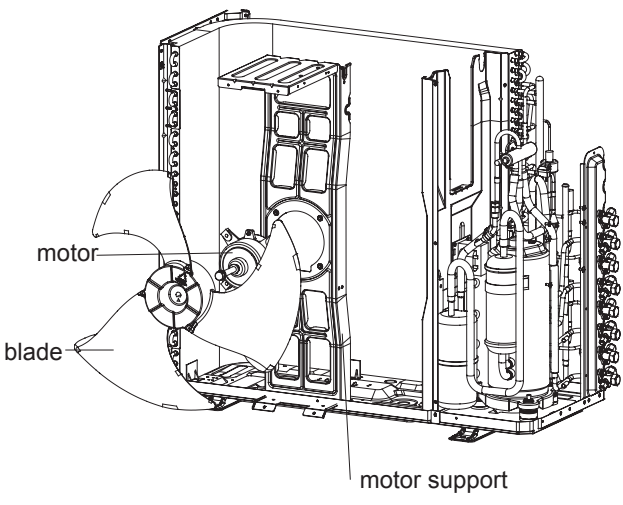
Steps	Procedure	
8. Remove Cut off Valve and Valve Support	<p>Remove the 2 bolts fixing the valve subassemblies. Unsolder the welding joint connecting the gas valve and the return air pipe. Remove the gas valve. (Note: When unsoldering the soldering joint, wrap the gas valve with wet cloth completely 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.</p> <p>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>	
9. Remove compressor	<p>Remove the 3 foot nuts fixing the compressor and then remove the compressor.</p>	
10. Remove support	<p>a Remove the screws connecting the support and condenser assy, and then remove the support.</p>	

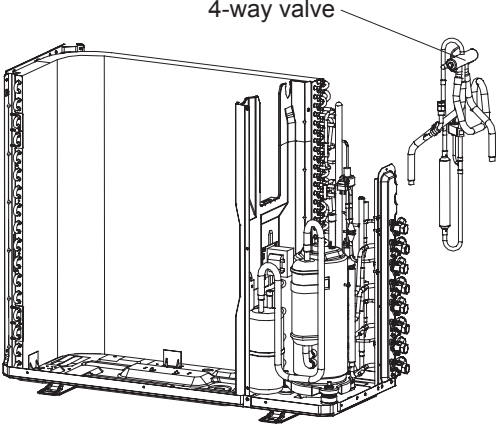
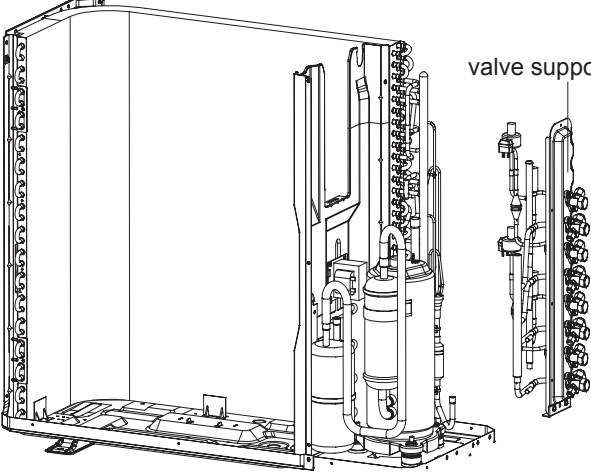
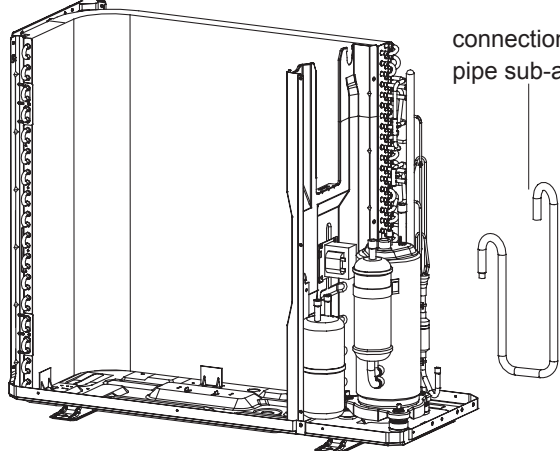
Steps		
11.Remove condenser sub-assy		
	<p>Remove the chassis sub-assy and condenser sub-assy.</p>	

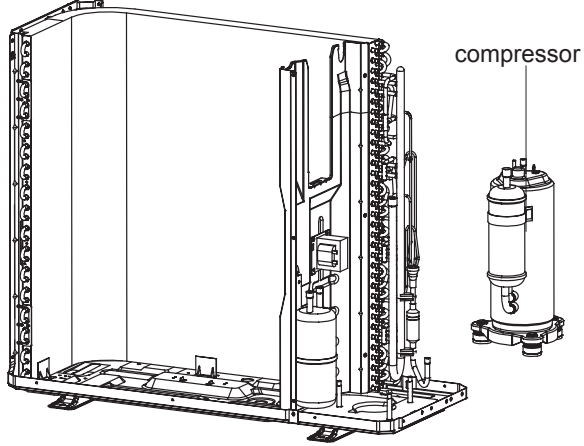
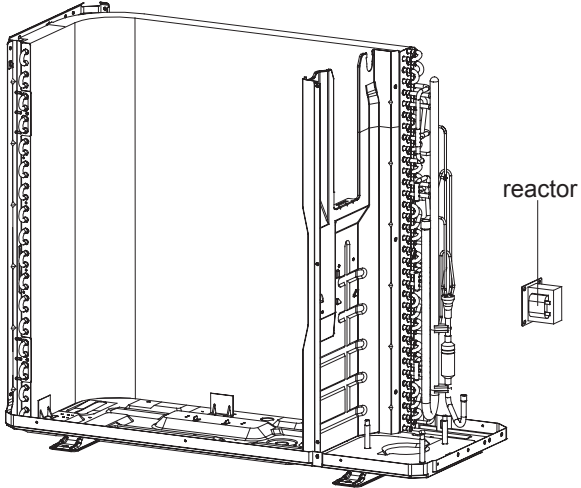
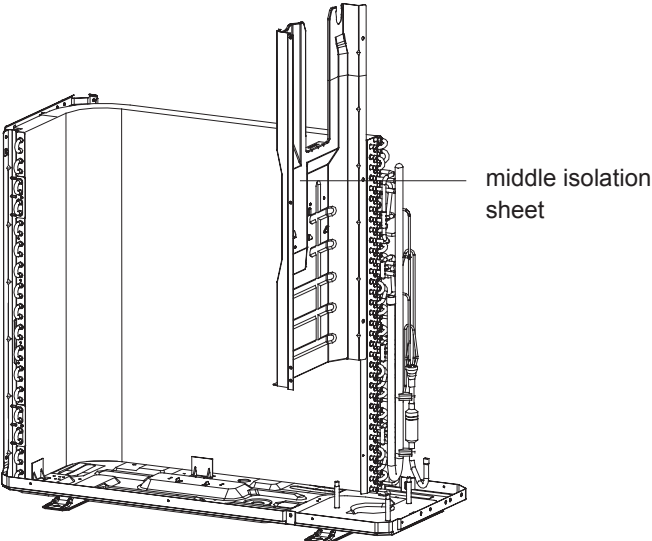
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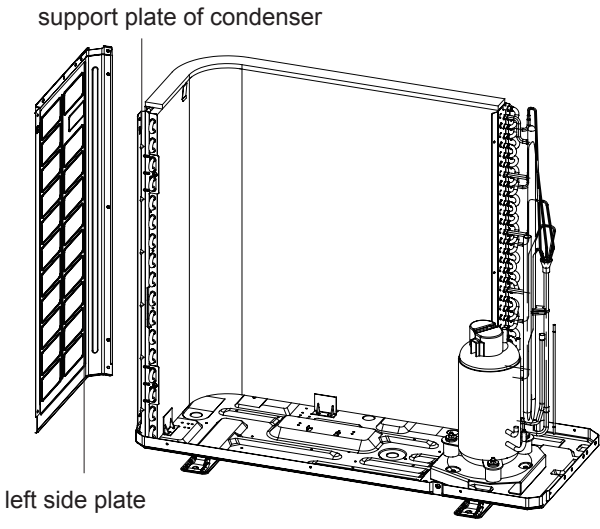
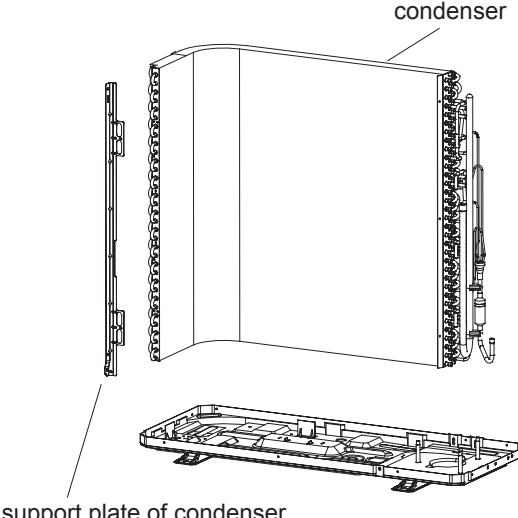
Steps	Procedure
<p>1. Remove the handle</p>	<p>Remove the screws connecting the handle with right side plate and then remove the handle.</p>  <p>handle</p>
<p>2. Remove top cover</p>	<p>Remove the screws connecting the top cover with outer case, right side plate and left side plate; lift the top cover upwards to remove it.</p>  <p>top cover</p>
<p>3. Remove front side plate</p>	<p>Remove the screws connecting the front side plate with chassis and middle isolation sheet, and then remove the front side plate</p>  <p>front side plate</p>

Steps	Procedure
<p>4.Remove rear guard grille</p>	<p>Remove the 6 screws connecting the grille with right side plate and left side plate, and then remove the rear guard grille.</p> 
<p>5.Remove right side plate</p>	<p>Remove the screws connecting the right side plate with electric box assy, valve support, chassis and condenser side plate, and then remove the right side plate.</p> 
<p>6.Remove grille and cabinet</p>	<p>Remove the 4 screws connecting the grille and outer case, and then remove the panel grille.</p> 

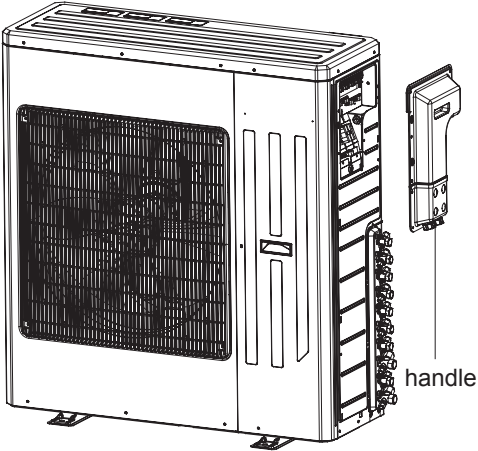
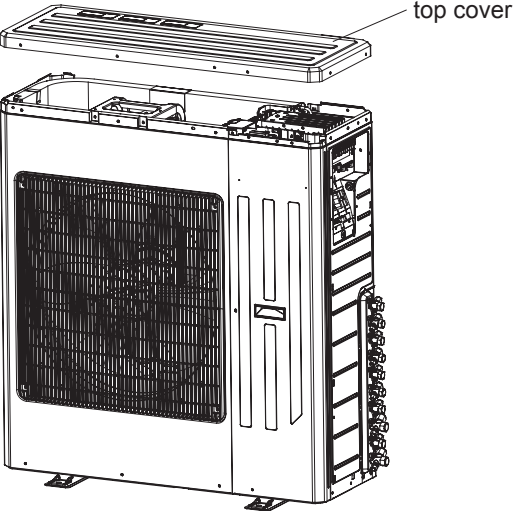
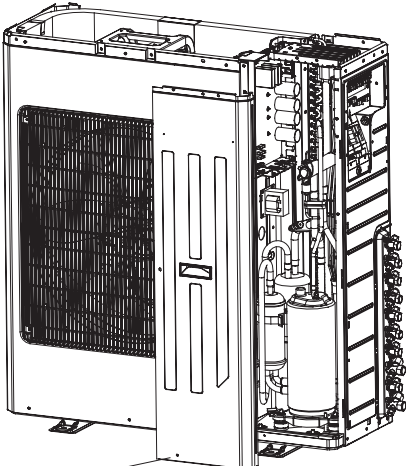
Steps	Procedure
<p>7. Remove outer case</p>	<p>Remove screws connecting outer case and motor support, middle isolation sheet and chassis, pull the outer case upwards slightly, loosen clasps between outer case and right side plate, left side plate, and then remove the outer case.</p>  <p style="text-align: right;">outer case</p>
<p>8. Remove electric box assy</p>	<ol style="list-style-type: none"> 1.Remove the grounding wire screw on the electric box assy and then remove the grounding wire. 2.Disconnect the wiring terminals of reactor, compressor, high and low pressure switch, compressor overload protector, temperature sensor, outdoor fan motor and 4-way valve. (See fig 2) Note: keep pressing the circlip when disconnecting the wiring terminal of reactor; keep pressing the retainer when disconnecting other wiring terminals. 3.Remove the wire inside the wiring groove.  <p style="text-align: right;">electric box assy</p>
<p>9. Remove blade, motor, motor support, reactor</p>	<ol style="list-style-type: none"> 1.Remove nuts fixing axial flow blade with wrench, and then remove the axial flow blade. 2.Remove 2 screws connecting motor support and chassis, loosen damper block and then remove the motor support. 3.Remove 4 screws fixing motor, and then remove the motor 4.Remove 4 screws fixing reactor sub-assy and motor support, and then remove the reactor sub-assy.  <p style="text-align: right;">motor support</p>

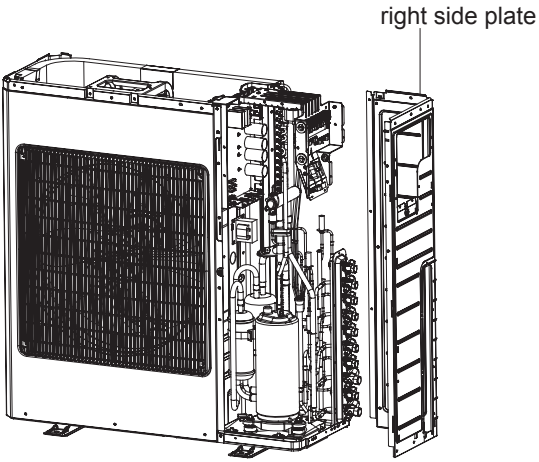
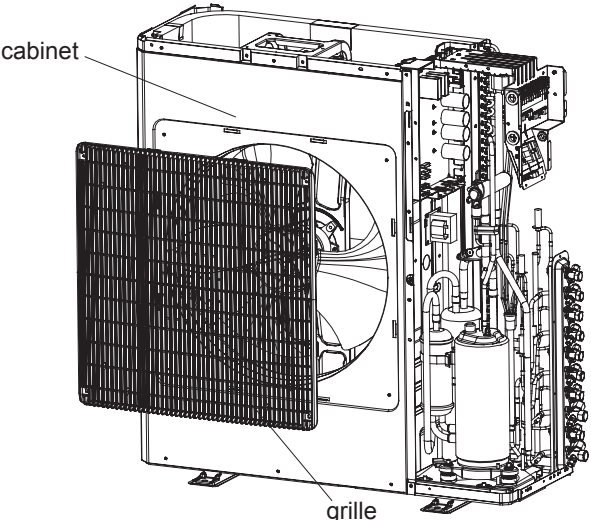
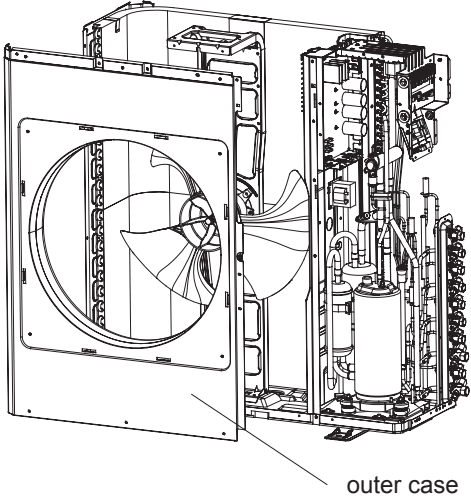
Steps	Procedure
<p>10 Remove 4-way valve</p>	<p>Unsolder the spot weld between 4-way valve and vapour liquid separator, compressor cut-off valve sub-assy and condenser, and then remove the 4-way valve.</p> <p>Note: When unsoldering the spot weld, wrap the 4-way valve with wet cloth completely to avoid damage to valve due to high temperature.</p>  <p style="text-align: right;">4-way valve</p>
<p>11. Remove valve support</p>	<p>Unsolder all spot welds connected with valve support and then remove the valve support.</p> <p>Note:When unsoldering the spot weld, wrap the gas valve and liquid valve with wet cloth completely to avoid damage to valve due to high temperature.</p>  <p style="text-align: right;">valve support</p>
<p>12. Remove connection pipe sub-assy</p>	<p>Remove all spot welds connected with connection pipe, and then remove the connection pipe sub-assy.</p>  <p style="text-align: right;">connection pipe sub-assy</p>

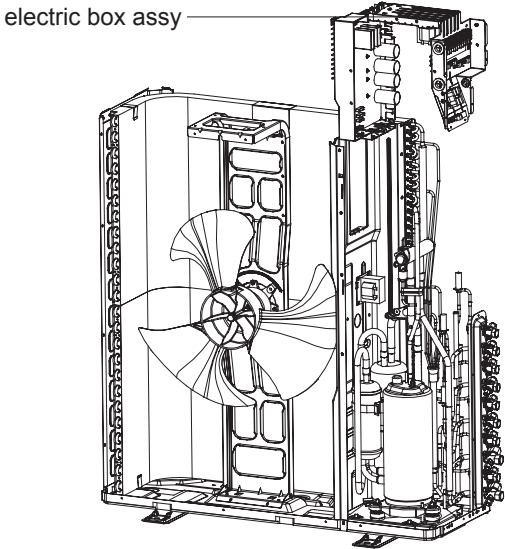
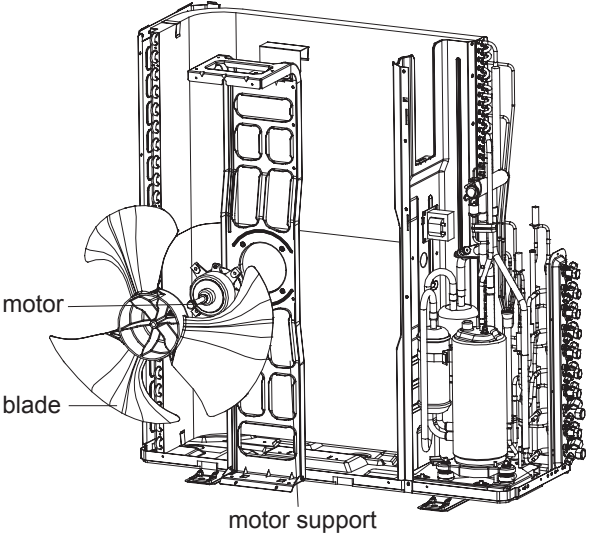
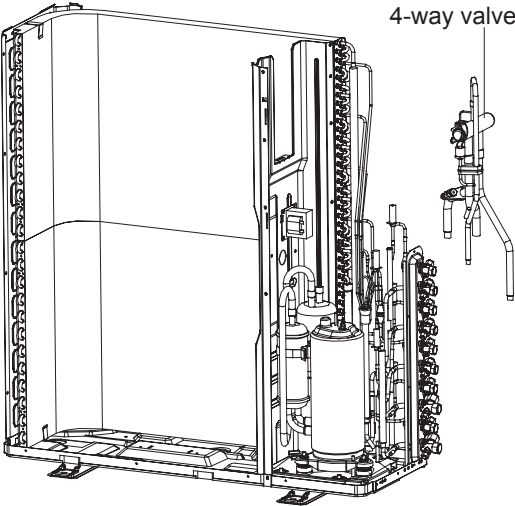
Steps	Procedure
<p>13. Remove compressor</p>	<p>Remove the 3 foot nuts fixing compressor and then lift the compressor upwards to remove the compressor and damping cushion.</p> <p>Note: Keep the ports of discharge pipe and suction pipe from foreign objects.</p> 
<p>14. Remove the reactor</p>	<p>Remove 4 screws fixing reactor sub-assy and motor support, and then remove the reactor sub-assy.</p> 
<p>15. Remove middle isolation sheet</p>	<p>Remove screws connecting middle isolation sheet and support plate of condenser, chassis, and then remove the middle isolation sheet.</p> 

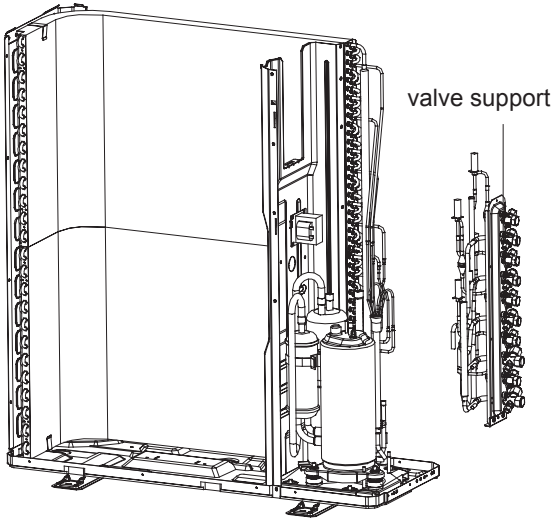
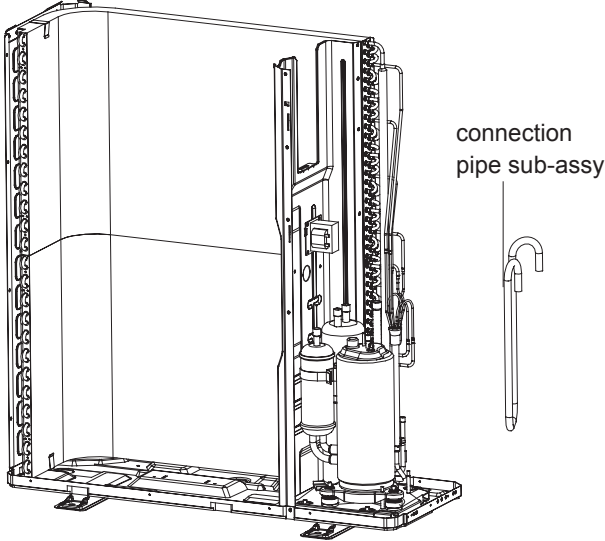
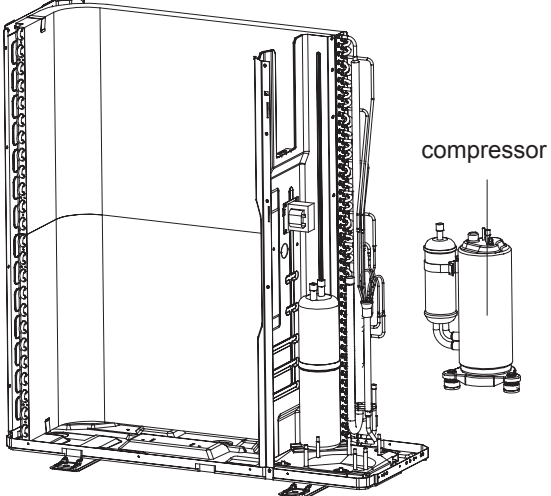
Steps	Procedure
<p>16.Remove left side plate</p>	<p>Remove screws connecting left side plate and support plate of condenser, chassis, and then remove the left side plate.</p> 
<p>17. Remove condenser</p>	<p>Remove 5 screws connecting condenser and chassis, and then remove the condenser. Remove 2 screws connecting support plate of condenser and condenser, and then remove the support plate of condenser.</p> 

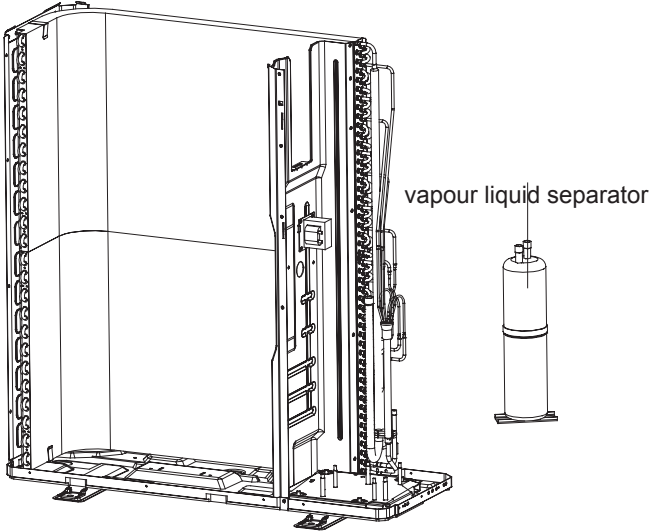
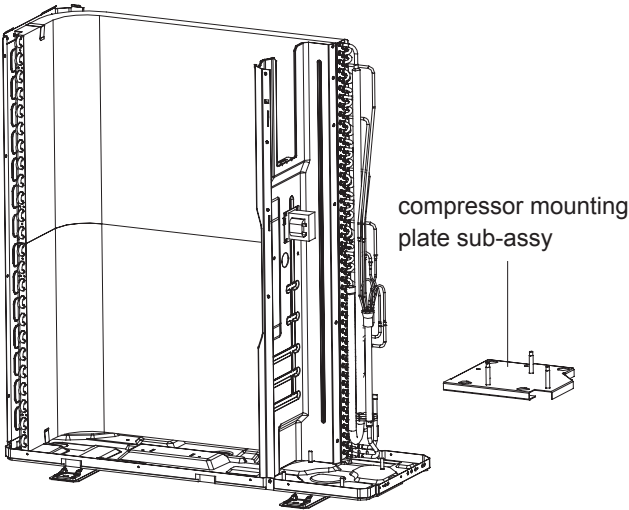
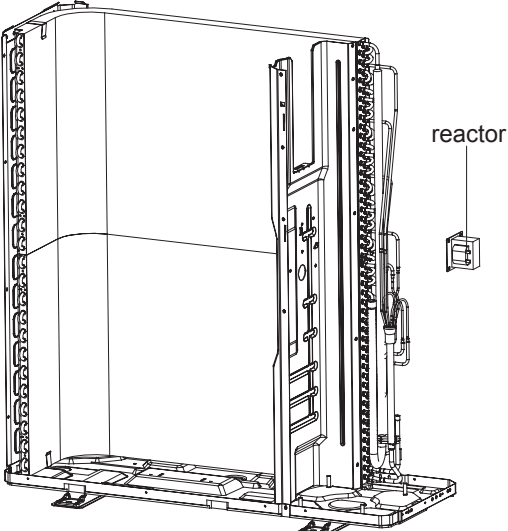
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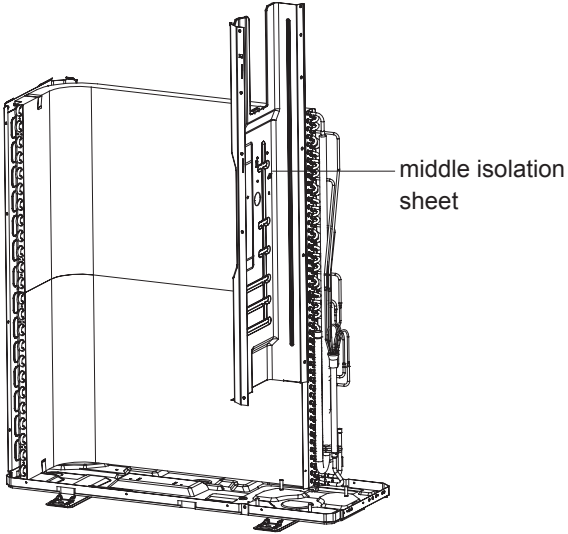
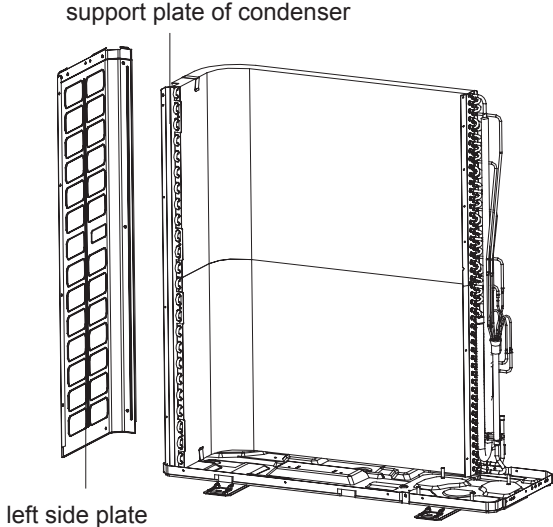
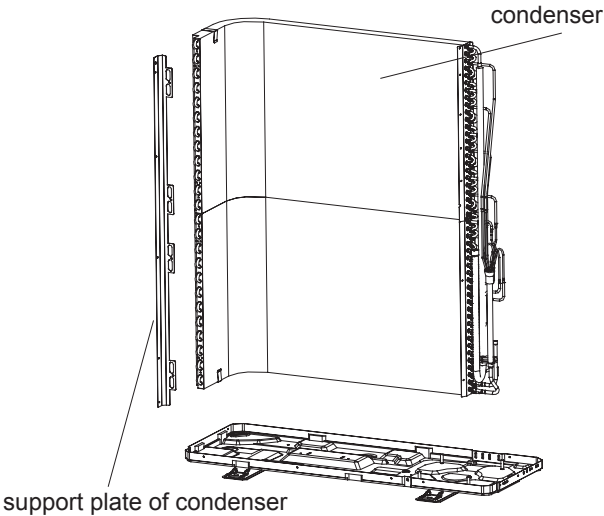
Steps	Procedure	
<p>1. Remove the handle</p>	<p>Remove the screws connecting the handle with right side plate and then remove the handle.</p>	 <p>A line drawing of a heater unit. The handle is shown being removed from the right side plate. A label 'handle' points to the handle component.</p>
<p>2. Remove top cover</p>	<p>Remove the screws connecting the top cover with outer case, right side plate and left side plate; lift the top cover upwards to remove it.</p>	 <p>A line drawing of the heater unit with the top cover removed. A label 'top cover' points to the detached top cover.</p>
<p>3. Remove front side plate</p>	<p>Remove the screws connecting the front side plate with chassis and middle isolation sheet, and then remove the front side plate</p>	 <p>A line drawing of the heater unit with the front side plate removed. A label 'front side plate' points to the detached front side plate.</p>

Steps	Procedure
<p>5.Remove right side plate</p>	<p>Remove the screws connecting the right side plate with electric box assy, valve support, chassis and condenser side plate, and then remove the right side plate.</p> 
<p>6.Remove grille and cabinet</p>	<p>Remove the 4 screws connecting the grille and outer case, and then remove the panel grille.</p> 
<p>7. Remove outer case</p>	<p>Remove screws connecting outer case and motor support, middle isolation sheet and chassis, pull the outer case upwards slightly, loosen clasps between outer case and right side plate, left side plate, and then remove the outer case.</p> 

Steps	Procedure
<p>8. Remove electric box assy</p>	<p>1.Remove the grounding wire screw on the electric box assy and then remove the grounding wire.</p> <p>2.Disconnect the wiring terminals of reactor, compressor, high and low pressure switch, compressor overload protector, temperature sensor, outdoor fan motor and 4-way valve. (See fig 2) Note: keep pressing the circlip when disconnecting the wiring terminal of reactor; keep pressing the retainer when disconnecting other wiring terminals.</p> <p>3.Remove the wire inside the wiring groove.</p> <div data-bbox="899 266 1404 812" style="text-align: right;">  <p>electric box assy</p> </div>
<p>9. Remove blade, motor, motor support, reactor</p>	<p>1.Remove nuts fixing axial flow blade with wrench, and then remove the axial flow blade.</p> <p>2.Remove 2 screws connecting motor support and chassis, loosen damper block and then remove the motor support.</p> <p>3.Remove 4 screws fixing motor, and then remove the motor</p> <p>4.Remove 4 screws fixing reactor sub-assy and motor support, and then remove the reactor sub-assy.</p> <div data-bbox="862 873 1453 1408" style="text-align: right;">  <p>motor</p> <p>blade</p> <p>motor support</p> </div>
<p>10 Remove 4-way valve</p>	<p>Unsolder the spot weld between 4-way valve and vapour liquid separator, compressor cut-off valve sub-assy and condenser, and then remove the 4-way valve.</p> <p>Note: When unsoldering the spot weld, wrap the 4-way valve with wet cloth completely to avoid damage to valve due to high temperature.</p> <div data-bbox="889 1506 1404 2009" style="text-align: right;">  <p>4-way valve</p> </div>

Steps	Procedure
<p>11. Remove valve support</p>	<p>Unsolder all spot welds connected with valve support and then remove the valve support.</p> <p>Note:When unsoldering the spot weld, wrap the gas valve and liquid valve with wet cloth completely to avoid damage to valve due to high temperature.</p>  <p style="text-align: right;">valve support</p>
<p>12. Remove connection pipe sub-assy</p>	<p>Remove all spot welds connected with connection pipe, and then remove the connection pipe sub-assy.</p>  <p style="text-align: right;">connection pipe sub-assy</p>
<p>13. Remove compressor</p>	<p>Remove the 3 foot nuts fixing compressor and then lift the compressor upwards to remove the compressor and damping cushion.</p> <p>Note: Keep the ports of discharge pipe and suction pipe from foreign objects.</p>  <p style="text-align: right;">compressor</p>

Steps	Procedure
<p>14. Remove vapour liquid separator</p>	<p>Unsolder spot welds connected with vapour liquid separator, remove 2 foot nuts fixing vapour liquid separator and compressor mounting plate sub-assy, and then remove the vapour liquid separator.</p>  <p>The diagram shows a side view of the unit's chassis with the internal components. A callout line points to a cylindrical component labeled 'vapour liquid separator' which is being removed from the chassis.</p>
<p>15. Remove compressor mounting plate sub-assy</p>	<p>Remove the 4 foot nuts fixing compressor mounting plate sub-assy and chassis, to remove the compressor mounting plate sub-assy.</p>  <p>The diagram shows a side view of the unit's chassis. A callout line points to a rectangular metal plate labeled 'compressor mounting plate sub-assy' which is being removed from the chassis.</p>
<p>16. Remove the reactor</p>	<p>4. Remove 4 screws fixing reactor sub-assy and motor support, and then remove the reactor sub-assy.</p>  <p>The diagram shows a side view of the unit's chassis. A callout line points to a rectangular component labeled 'reactor' which is being removed from the chassis.</p>

Steps	Procedure
<p>17. Remove middle isolation sheet</p>	<p>Remove screws connecting middle isolation sheet and support plate of condenser, chassis, and then remove the middle isolation sheet.</p>  <p>The diagram shows a side view of the condenser assembly. A vertical rectangular sheet, labeled 'middle isolation sheet', is positioned between the condenser coils and the chassis. A line points from the text label to this sheet.</p>
<p>18. Remove left side plate</p>	<p>Remove screws connecting left side plate and support plate of condenser, chassis, and then remove the left side plate.</p>  <p>The diagram shows the condenser assembly with the left side plate removed. The side plate is shown to the left of the main unit, with a line pointing to it from the label 'left side plate'. The main unit shows the condenser coils and support plate.</p>
<p>19. Remove condenser</p>	<p>Remove 5 screws connecting condenser and chassis, and then remove the condenser. Remove 2 screws connecting support plate of condenser and condenser, and then remove the support plate of condenser.</p>  <p>The diagram shows the condenser being removed from the chassis. The condenser coils are shown being lifted away from the chassis. The support plate of the condenser is shown separately below the chassis, with a line pointing to it from the label 'support plate of condenser'. The condenser coils themselves are labeled 'condenser'.</p>

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

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

Set temperature

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

Ambient temperature

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

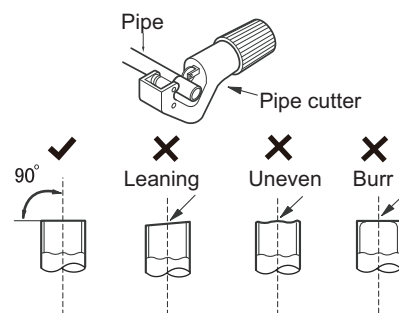
Appendix 2: Pipe Expanding Method

⚠ Note:

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

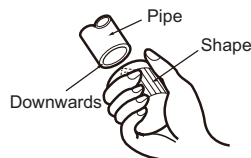
A: Cut the pip

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



B: Remove the burrs

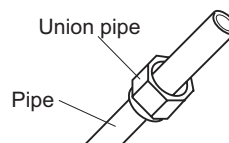
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe

D: Put on the union nut

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



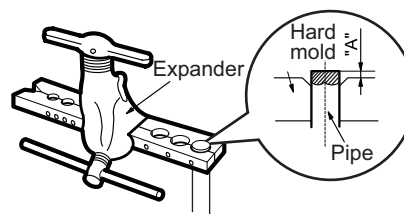
E: Expand the port

- Expand the port with expander.

⚠ Note:

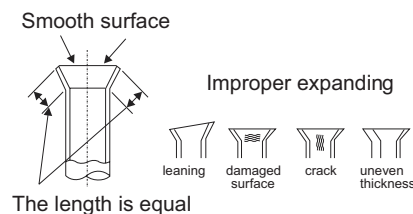
- "A" is different according to the diameter, please refer to the sheet below:

Outer diameter(inch)	A(inch)	
	Max	Min
Φ1/4	2/39	1/36
Φ3/8	1/16	1/51
Φ1/2	1/14	1/51
Φ5/8	5/53	2/23



F: Inspection

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



Appendix 3: List of Resistance for Temperature Sensor

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

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-2.2	138.1	68	18.75	138.2	3.848	208.4	1.071
-0.4	128.6	69.8	17.93	140	3.711	210.2	1.039
1.4	121.6	71.6	17.14	141.8	3.579	212	1.009
3.2	115	73.4	16.39	143.6	3.454	213.8	0.98
5	108.7	75.2	15.68	145.4	3.333	215.6	0.952
6.8	102.9	77	15	147.2	3.217	217.4	0.925
8.6	97.4	78.8	14.36	149	3.105	219.2	0.898
10.4	92.22	80.6	13.74	150.8	2.998	221	0.873
12.2	87.35	82.4	13.16	152.6	2.896	222.8	0.848
14	82.75	84.2	12.6	154.4	2.797	224.6	0.825
15.8	78.43	86	12.07	156.2	2.702	226.4	0.802
17.6	74.35	87.8	11.57	158	2.611	228.2	0.779
19.4	70.5	89.6	11.09	159.8	2.523	230	0.758
21.2	66.88	91.4	10.63	161.6	2.439	231.8	0.737
23	63.46	93.2	10.2	163.4	2.358	233.6	0.717
24.8	60.23	95	9.779	165.2	2.28	235.4	0.697
26.6	57.18	96.8	9.382	167	2.206	237.2	0.678
28.4	54.31	98.6	9.003	168.8	2.133	239	0.66
30.2	51.59	100.4	8.642	170.6	2.064	240.8	0.642
32	49.02	102.2	8.297	172.4	1.997	242.6	0.625
33.8	46.6	104	7.967	174.2	1.933	244.4	0.608
35.6	44.31	105.8	7.653	176	1.871	246.2	0.592
37.4	42.14	107.6	7.352	177.8	1.811	248	0.577
39.2	40.09	109.4	7.065	179.6	1.754	249.8	0.561
41	38.15	111.2	6.791	181.4	1.699	251.6	0.547
42.8	36.32	113	6.529	183.2	1.645	253.4	0.532
44.6	34.58	114.8	6.278	185	1.594	255.2	0.519
46.4	32.94	116.6	6.038	186.8	1.544	257	0.505
48.2	31.38	118.4	5.809	188.6	1.497	258.8	0.492
50	29.9	120.2	5.589	190.4	1.451	260.6	0.48
51.8	28.51	122	5.379	192.2	1.408	262.4	0.467
53.6	27.18	123.8	5.197	194	1.363	264.2	0.456
55.4	25.92	125.6	4.986	195.8	1.322	266	0.444
57.2	24.73	127.4	4.802	197.6	1.282	267.8	0.433
59	23.6	129.2	4.625	199.4	1.244	269.6	0.422
60.8	22.53	131	4.456	201.2	1.207	271.4	0.412
62.6	21.51	132.8	4.294	203	1.171	273.2	0.401
64.4	20.54	134.6	4.139	204.8	1.136	275	0.391
66.2	19.63	136.4	3.99	206.6	1.103	276.8	0.382

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

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-2.2	181.4	68	25.01	138.2	5.13	208.4	1.427
-0.4	171.4	69.8	23.9	140	4.948	210.2	1.386
1.4	162.1	71.6	22.85	141.8	4.773	212	1.346
3.2	153.3	73.4	21.85	143.6	4.605	213.8	1.307
5	145	75.2	20.9	145.4	4.443	215.6	1.269
6.8	137.2	77	20	147.2	4.289	217.4	1.233
8.6	129.9	78.8	19.14	149	4.14	219.2	1.198
10.4	123	80.6	18.13	150.8	3.998	221	1.164
12.2	116.5	82.4	17.55	152.6	3.861	222.8	1.131
14	110.3	84.2	16.8	154.4	3.729	224.6	1.099
15.8	104.6	86	16.1	156.2	3.603	226.4	1.069
17.6	99.13	87.8	15.43	158	3.481	228.2	1.039
19.4	94	89.6	14.79	159.8	3.364	230	1.01
21.2	89.17	91.4	14.18	161.6	3.252	231.8	0.983
23	84.61	93.2	13.59	163.4	3.144	233.6	0.956
24.8	80.31	95	13.04	165.2	3.04	235.4	0.93
26.6	76.24	96.8	12.51	167	2.94	237.2	0.904
28.4	72.41	98.6	12	168.8	2.844	239	0.88
30.2	68.79	100.4	11.52	170.6	2.752	240.8	0.856
32	65.37	102.2	11.06	172.4	2.663	242.6	0.833
33.8	62.13	104	10.62	174.2	2.577	244.4	0.811
35.6	59.08	105.8	10.2	176	2.495	246.2	0.777
37.4	56.19	107.6	9.803	177.8	2.415	248	0.769
39.2	53.46	109.4	9.42	179.6	2.339	249.8	0.746
41	50.87	111.2	9.054	181.4	2.265	251.6	0.729
42.8	48.42	113	8.705	183.2	2.194	253.4	0.71
44.6	46.11	114.8	8.37	185	2.125	255.2	0.692
46.4	43.92	116.6	8.051	186.8	2.059	257	0.674
48.2	41.84	118.4	7.745	188.6	1.996	258.8	0.658
50	39.87	120.2	7.453	190.4	1.934	260.6	0.64
51.8	38.01	122	7.173	192.2	1.875	262.4	0.623
53.6	36.24	123.8	6.905	194	1.818	264.2	0.607
55.4	34.57	125.6	6.648	195.8	1.736	266	0.592
57.2	32.98	127.4	6.403	197.6	1.71	267.8	0.577
59	31.47	129.2	6.167	199.4	1.658	269.6	0.563
60.8	30.04	131	5.942	201.2	1.609	271.4	0.549
62.6	28.68	132.8	5.726	203	1.561	273.2	0.535
64.4	27.39	134.6	5.519	204.8	1.515	275	0.521
66.2	26.17	136.4	5.32	206.6	1.47	276.8	0.509

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

Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)	Temp.(°F)	Resistance(kΩ)
-20.2	853.5	50	98	120.2	18.34	190.4	4.754
-18.4	799.8	51.8	93.42	122	17.65	192.2	4.609
-16.6	750	53.6	89.07	123.8	16.99	194	4.469
-14.8	703.8	55.4	84.95	125.6	16.36	195.8	4.334
-13	660.8	57.2	81.05	127.4	15.75	197.6	4.204
-11.2	620.8	59	77.35	129.2	15.17	199.4	4.079
-9.4	580.6	60.8	73.83	131	14.62	201.2	3.958
-7.6	548.9	62.6	70.5	132.8	14.09	203	3.841
-5.8	516.6	64.4	67.34	134.6	13.58	204.8	3.728
-4	486.5	66.2	64.33	136.4	13.09	206.6	3.619
-2.2	458.3	68	61.48	138.2	12.62	208.4	3.514
-0.4	432	69.8	58.77	140	12.17	210.2	3.413
1.4	407.4	71.6	56.19	141.8	11.74	212	3.315
3.2	384.5	73.4	53.74	143.6	11.32	213.8	3.22
5	362.9	75.2	51.41	145.4	10.93	215.6	3.129
6.8	342.8	77	49.19	147.2	10.54	217.4	3.04
8.6	323.9	78.8	47.08	149	10.18	219.2	2.955
10.4	306.2	80.6	45.07	150.8	9.827	221	2.872
12.2	289.6	82.4	43.16	152.6	9.489	222.8	2.792
14	274	84.2	41.34	154.4	9.165	224.6	2.715
15.8	259.3	86	39.61	156.2	8.854	226.4	2.64
17.6	245.6	87.8	37.96	158	8.555	228.2	2.568
19.4	232.6	89.6	36.38	159.8	8.268	230	2.498
21.2	220.5	91.4	34.88	161.6	7.991	231.8	2.431
23	209	93.2	33.45	163.4	7.726	233.6	2.365
24.8	198.3	95	32.09	165.2	7.47	235.4	2.302
26.6	199.1	96.8	30.79	167	7.224	237.2	2.241
28.4	178.5	98.6	29.54	168.8	6.998	239	2.182
30.2	169.5	100.4	28.36	170.6	6.761	240.8	2.124
32	161	102.2	27.23	172.4	6.542	242.6	2.069
33.8	153	104	26.15	174.2	6.331	244.4	2.015
35.6	145.4	105.8	25.11	176	6.129	246.2	1.963
37.4	138.3	107.6	24.13	177.8	5.933	248	1.912
39.2	131.5	109.4	23.19	179.6	5.746	249.8	1.863
41	125.1	111.2	22.29	181.4	5.565	251.6	1.816
42.8	119.1	113	21.43	183.2	5.39	253.4	1.77
44.6	113.4	114.8	20.6	185	5.222	255.2	1.725
46.4	108	116.6	19.81	186.8	5.06	257	1.682
48.2	102.8	118.4	19.06	188.6	4.904	258.8	1.64

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