

MULTI-ZONE MINI-SPLIT

(DUAL, TRIPLE, QUAD, & FIVE PORT)

SERVICE MANUAL



For the following models:

<u>Indoor Unit</u>		<u>Outdoor Unit</u>
<i>Wall Mounted</i>	<i>Console</i>	
SHE9H4ZIGX	SMZC9H4ZIGX	<i>Dual</i>
SHE12HZIGX	SMZC12H4ZIGX	SMZ18H46ZOGX
SHE18HZIGX	SMZC18H4ZIGX	
<i>SHE9H4ZIGB</i>	<i>Cassette</i>	<i>Triple</i>
SHE12HZIGB	SMZCA12H4ZIGX	SMZ24H46ZOGX
SHE18HZIGB	SMZCA18H4ZIGX	
SHE24HZIGB	SMZCA24H4ZIGX	<i>Quad</i>
 	 	SMZ30H46ZOGX
<i>Floor/Ceiling</i>	<i>Ducted</i>	<i>Five Port</i>
SMZFC9H4ZIGX	SMZD9H4ZIGX	SMZ42H46ZOGX
SMZFC12H4ZIGX	SMZD12H4ZIGX	
SMZFC18H4ZIGX	SMZD18H4ZIGX	
SMZFC24H4ZIGX	SMZD21H4ZIGX	
	SMZD24H4ZIGX	

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1. Precaution

- Installation MUST conform with local building codes or, in the absence of local codes, with the National Electrical Code NFPA70/ANSI C1-1993 or current edition and Canadian Electrical Code Part1 CSA C.22.1.
- The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.
- Installation or repairs made by unqualified persons can result in hazards to you and others.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury, and/or death.
- This service manual is only intended for the service engineer to use.

1.1 Safety Precaution

- To prevent injury or damage to the user, other people, or property, the following instructions must be followed.
- Incorrect operation due to ignoring instructions may cause harm or damage.
- Before servicing the unit, be sure to read this service manual first.

1.2 Warning

- Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.
- For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center.
- Always ground the product.
- Install the panel and the cover of the control box securely.
- Always install a dedicated circuit and breaker.
- Use a properly rated breaker and fuse.
- Do not modify or extend the power cable.
- Do no install, remove, or reinstall the unit by yourself (customer).
- Be cautious when unpacking and installing the product.
- For installation, always contact the dealer or an authorized service center.
- Do not install the product on a defective installation stand.
- Be sure the installation does not deteriorate with age.
- Do not let the air conditioner run for a long time when the humidity in the area is high or if a door or window is left open.
- Make sure that the power cable cannot be pulled out or damaged during operation.
- Do not place anything on the power cable.
- Do not plug or unplug the power supply plug during operation.
- Do not touch or operate the product with wet hands.
- Do not place a heater or other appliance near the power cable.
- Do not allow water to run into electrical parts.
- Do not store or use flammable gas or combustibles near the product.
- Do not use the product in a tightly closed space for a long time. (oxygen deficiency)
- When flammable gas leaks, turn off the gas and open a window for ventilation before turning the product back on.
- If strange sounds or smoke comes from the product, turn the breaker off or disconnect the power supply cable.
- Stop operation and close the window during storms or hurricanes.
- Do not open the inlet grill of the product during operation.
- Do not touch the electrostatic filter, if equipped.

- When the product is soaked, contact an authorized service center.
- Be careful to prevent water from entering the product.
- Ventilate the product from time to time when operating with a stove, etc.
- Turn the main power off when cleaning or maintaining the product.
- When the product is not used for a long time, disconnect the power supply plug or turn off the breaker.
- Make sure that nobody can step on or fall onto the outdoor unit.

1.3 Caution

- Always check for gas (refrigerant) leakage after installation or repair of product.
- Install the drain hose to ensure that water is drained away properly.
- Keep level even when installing the product.
- Do not install the product where the noise or hot air from the outdoor unit could cause damage to harm to neighbors or other property.
- Use two or more people to lift and transport the product.
- Do not install the product where it will be exposed to sea wind (salt spray) directly.

1.4 Operational

- Do not expose the skin directly to cool air for a long time. (Do not sit in the draft)
- Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.
- Do not block the inlet or outlet of air flow.
- Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.
- Do not touch the metal parts of the product when removing the air filter. They are very sharp.
- Do not step on or put anything on the product (outdoor units).
- Always insert the filter securely. Clean the filter every two weeks or more often if necessary.
- Do not insert hands or other objects through air inlet or outlet while the product is operating.
- Do not drink the water drained from the product.
- Use a firm stool or ladder when cleaning or maintaining the product.
- Replace all the batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.
- Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.
- If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if batteries have leaked inside.

2. Model Names and Definitions

2.1 Model Names and Definition

NOTE: The number of characters for each letter may be less than the example shown.

X A A B B C C D E F G X X

Example: S M Z C A 1 2 H 4 Z I G X

AA – Name of system

HE: High Efficiency

MZ:Multi-Zone

BB – Type of indoor unit (if applicable)

C: Console

CA: Cassette

FC: Floor/Ceiling

D: Ducted

NOTE: The "High Efficiency" and "Outdoor unit" do not have this characteristic. "High Efficiency" units are assumed to be wall mounted units.

CC – BTU Capacity

G – Type of unit

D – Heating or Cooling

I: Indoor Unit

H: Heat pump

O: Outdoor Unit

E – Type of Refrigerant

X – Internal Code

4: R410a

F – Rated Voltage

Z: 230V

Model	Type of Unit (I/O)	Type of Unit	Capacity (BTU)
SHE9H4ZIGX / SHE9H4ZIGB	Indoor	Wall Mounted	9,000
SHE12H4ZIGX / SHE12H4ZIGB			12,000
SHE18H4ZIGX / SHE18H4ZIGB			18,000
SHE24H4ZIGB			21,400
SMZC9H4ZIGX		Console	9,000
SMZC12H4ZIGX			12,000
SMZC18H4ZIGX			18,000
SMZCA12H4ZIGX		Cassette	12,000
SMZCA18H4ZIGX			14,400
SMZCA24H4ZIGX			22,800
SMZFC9H4ZIGX		Floor/Ceiling	8,500
SMZFC12H4ZIGX			11,900
SMZFC18H4ZIGX			17,000
SMZFC24H4ZIGX			22,800
SMZD9H4ZIGX		Ducted	8,500
SMZD12H4ZIGX			11,900
SMZD18H4ZIGX			15,300
SMZD21H4ZIGX			20,400
SMZD24H4ZIGX			23,800
SMZ18H46ZOGX	Outdoor	Outdoor	18,000
SMZ24H46ZOGX			24,000
SMZ30H46ZOGX			30,000
SMZ46H46ZOGX			46,000

2.2 Types of Indoor Units

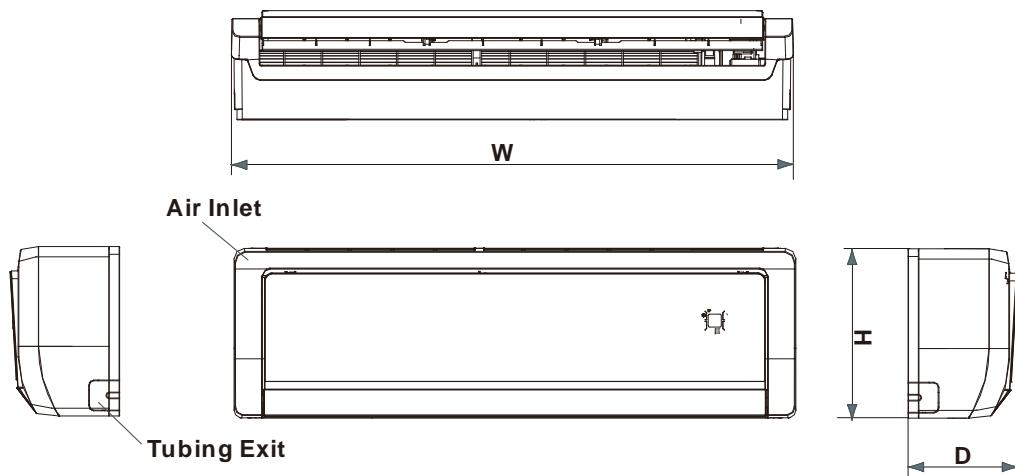
<u>Indoor Unit Type</u>	<u>Catalog Number</u>	<u>Indoor Unit</u>
Wall-mounted	SHE9H4ZIGX	
	SHE12H4ZIGX	
	SHE18H4ZIGX	
	SHE9H4ZIGB	
	SHE12H4ZIGB	
	SHE18H4ZIGB	
	SHE24H4ZIGB	
Console	SMZC9H4ZIGX	
	SMZC12H4ZIGX	
	SMZC18H4ZIGX	
Cassette	SMZCA12H4ZIGX	
	SMZCA18H4ZIGX	
	SMZCA24H4ZIGX	
Floor / Ceiling	SMZFC9H4ZIGX	
	SMZFC12H4ZIGX	
	SMZFC18H4ZIGX	
	SMZFC24H4ZIGX	
Ducted	SMZD9H4ZIGX	
	SMZD12H4ZIGX	
	SMZD18H4ZIGX	
	SMZD21H4ZIGX	
	SMZD24H4ZIGX	

3. Dimensions

3.1 Indoor Unit

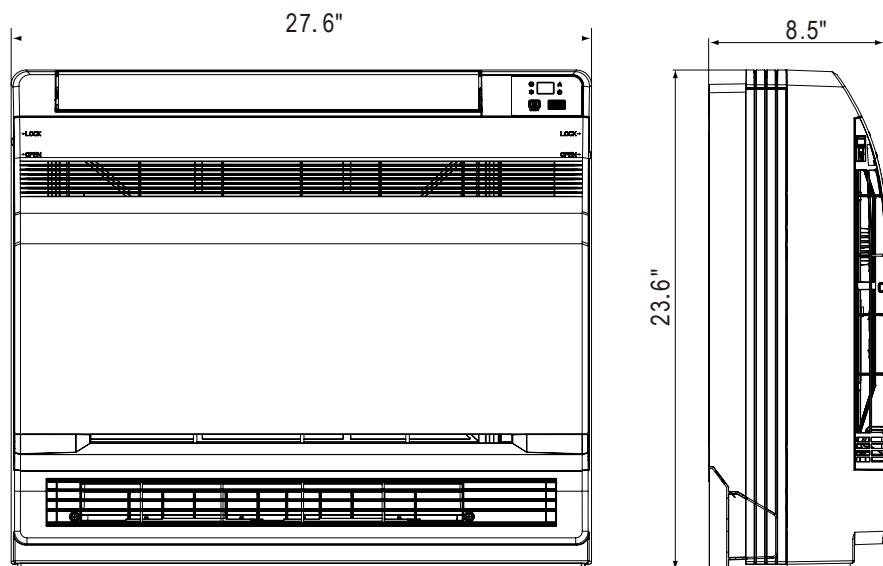
3.1.1 Wall Mounted

Model	Width	Height	Depth
SHE9H4ZIGX / SHE12H4ZIGX	34.3"	11"	7"
SHE18H4ZIGX	37.8"	11.8"	7.7"
SHE9H4ZIGB / SHE12H4ZIGB	33.3"	10.8"	7.1"
SHE18H4ZIGB	37"	11.7"	7.9"
SHE24H4ZIGB	39.6"	12.4"	8.6"



3.1.2 Console

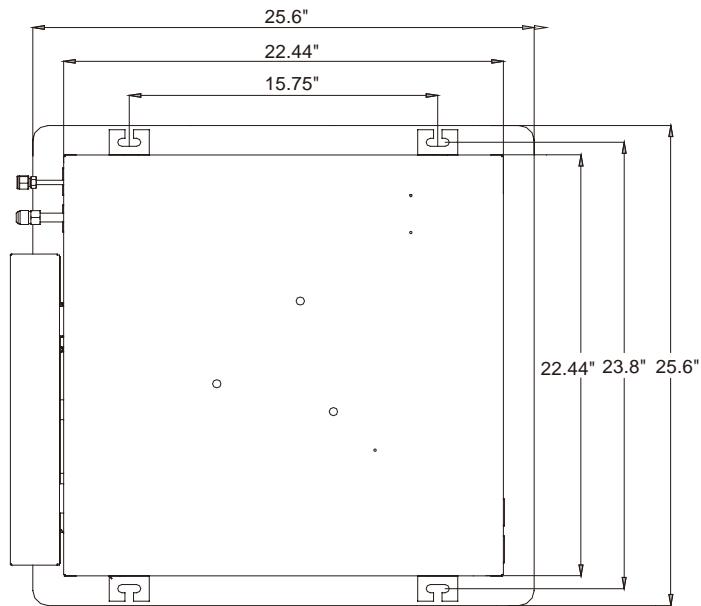
Model	Width	Height	Depth
SMZC9H4ZIGX			
SMZC12H4ZIGX	27.6"	23.6"	8.5"
SMZC18H4ZIGX			



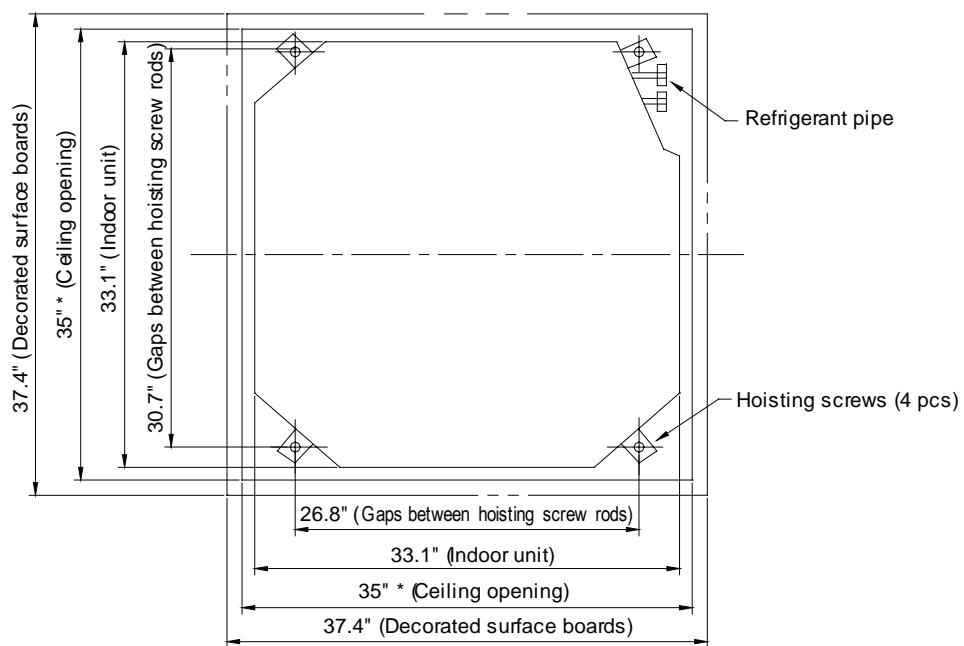
3.1.3 Cassette

Model	Width	Height	Depth
SMZCA12H4ZIGX	1 st Outline	1 st Outline	1 st Outline
SMZCA18H4ZIGX			
SMZCA24H4ZIGX	2 nd Outline	2 nd Outline	2 nd Outline

SMZCA12H4ZIGX & SMZCA18H4ZIGX

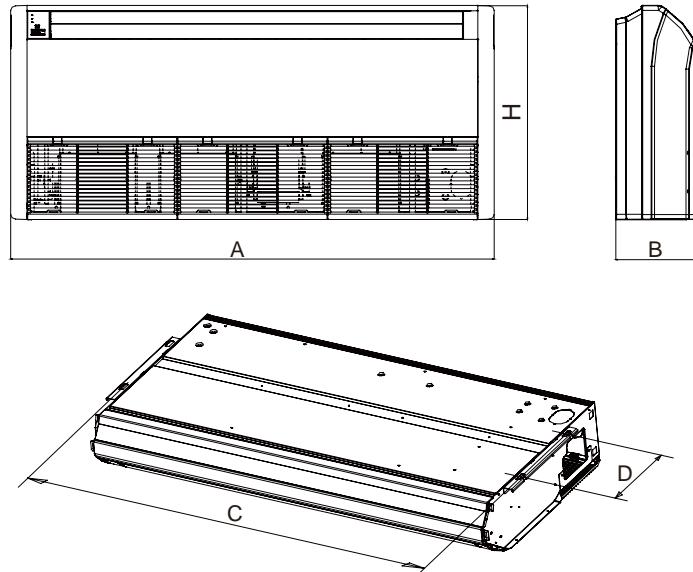


SMZCA24H4ZIGX



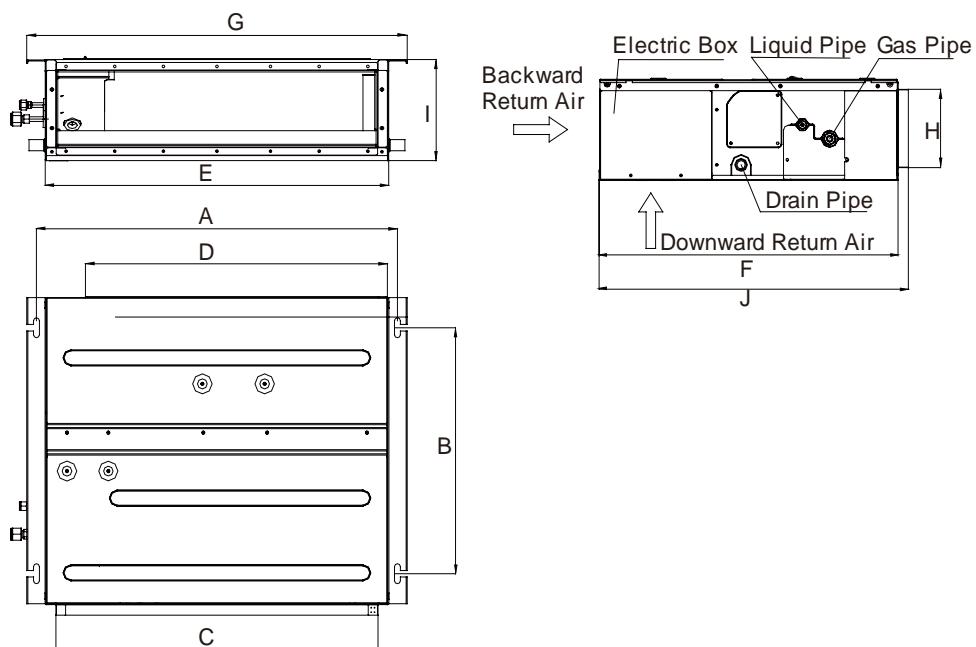
3.1.4 Floor/Ceiling

Model	A	B	H	C	D
SMZFC9H4ZIGX					
SMZFC12H4ZIGX	48.03"	8.86"	27.56"	45.59"	11.02"
SMZFC18H4ZIGX					
SMZFC24H4ZIGX					



3.1.4 Ducted

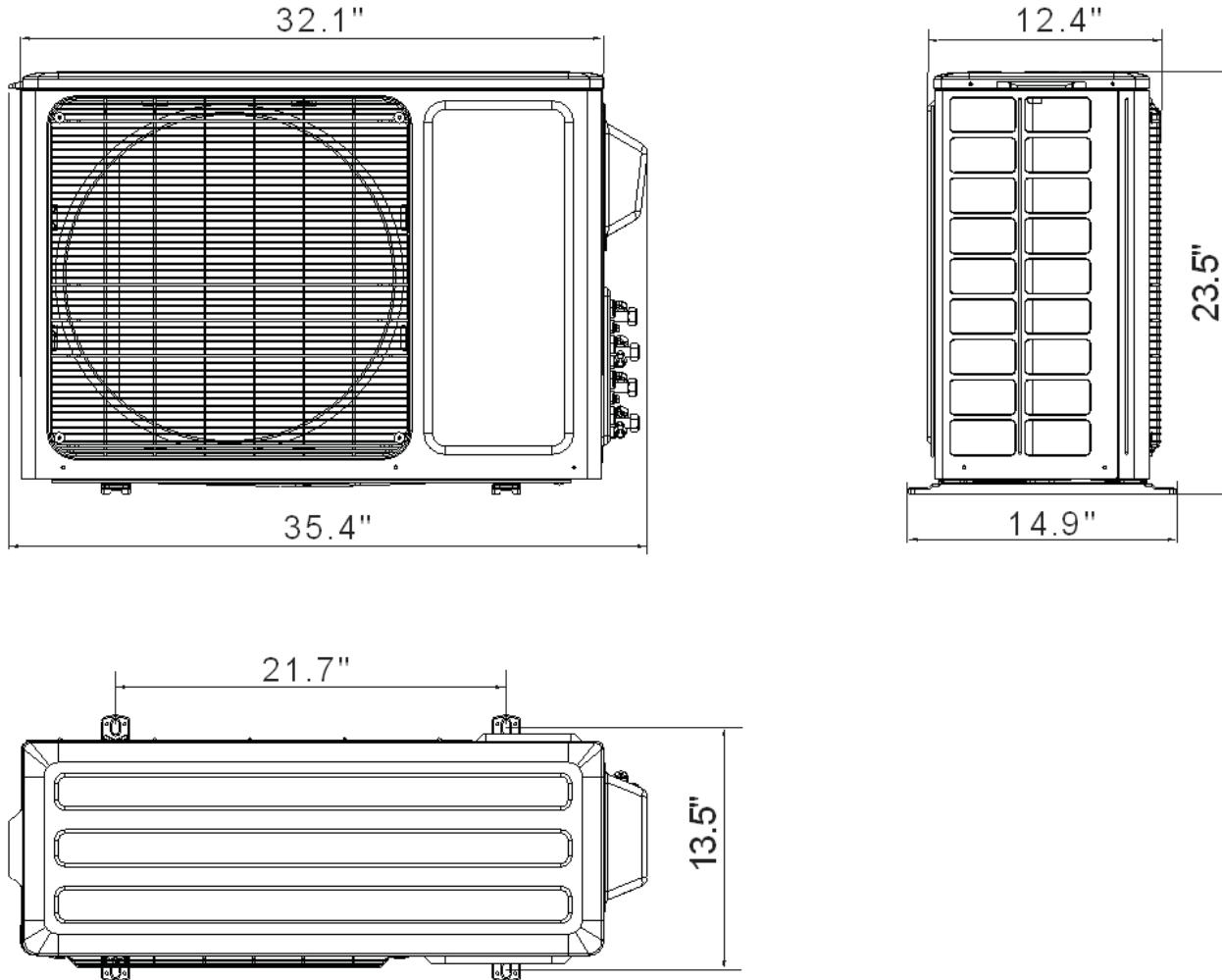
Model	A	B	C	D	E	F	G	H	I	J
SMZD9H4ZIGX	29.21"	19.33"	26.06"	24.41"	27.56"	24.21"	30.79"	6.14"	7.87"	25"
SMZD12H4ZIGX										
SMZD18H4ZIGX	37.09"	19.33"	33.94"	32.28	35.43"	24.21"	38.66"	6.14"	7.87"	25"
SMZD21H4ZIGX	44.96"	19.33"	41.81	40.16"	43.31"	24.21"	46.54"	6.14"	7.87"	25"
SMZD24H4ZIGX										



3.2 Outdoor Unit

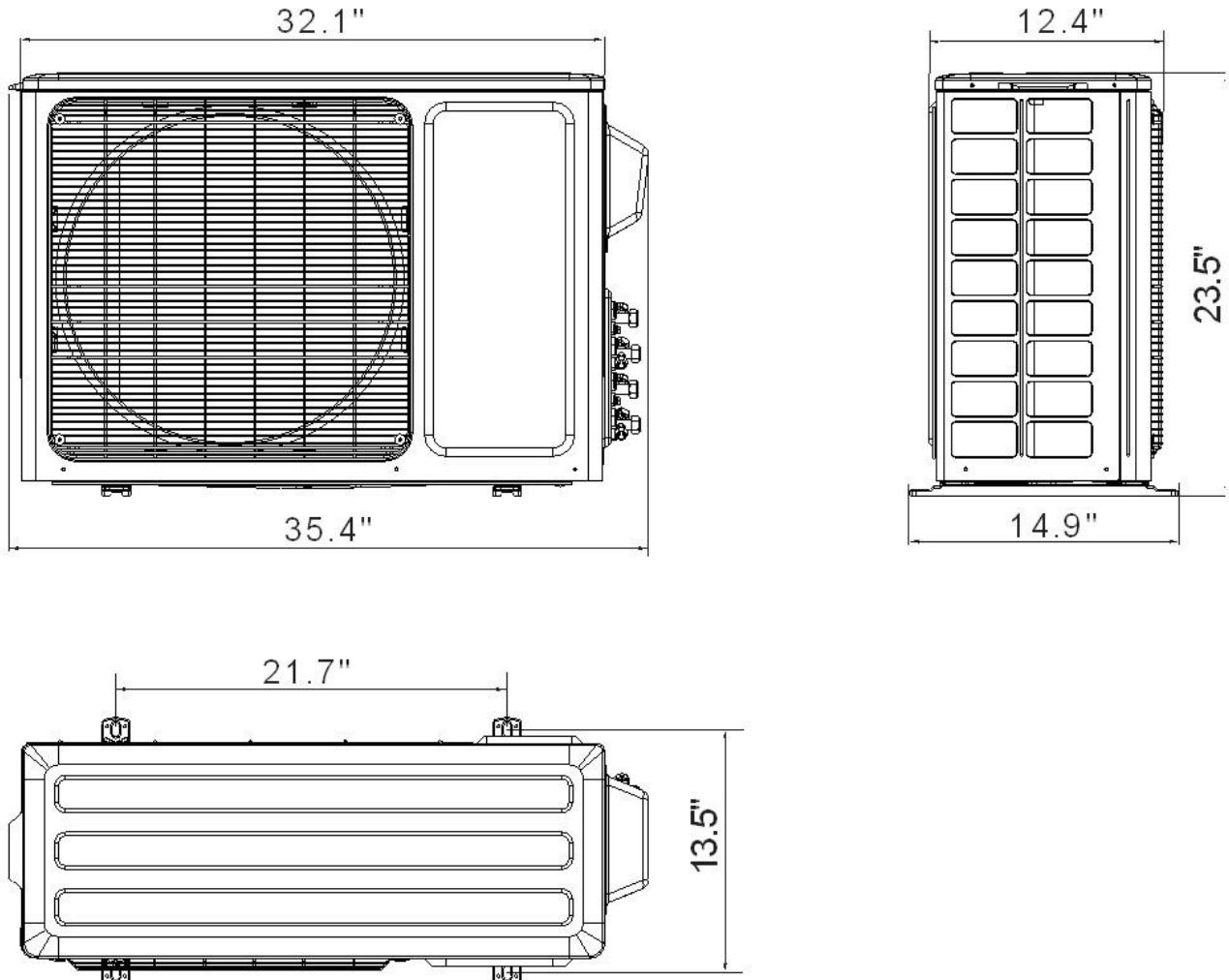
3.2.1 Dual Port

SMZ18H46ZOGX



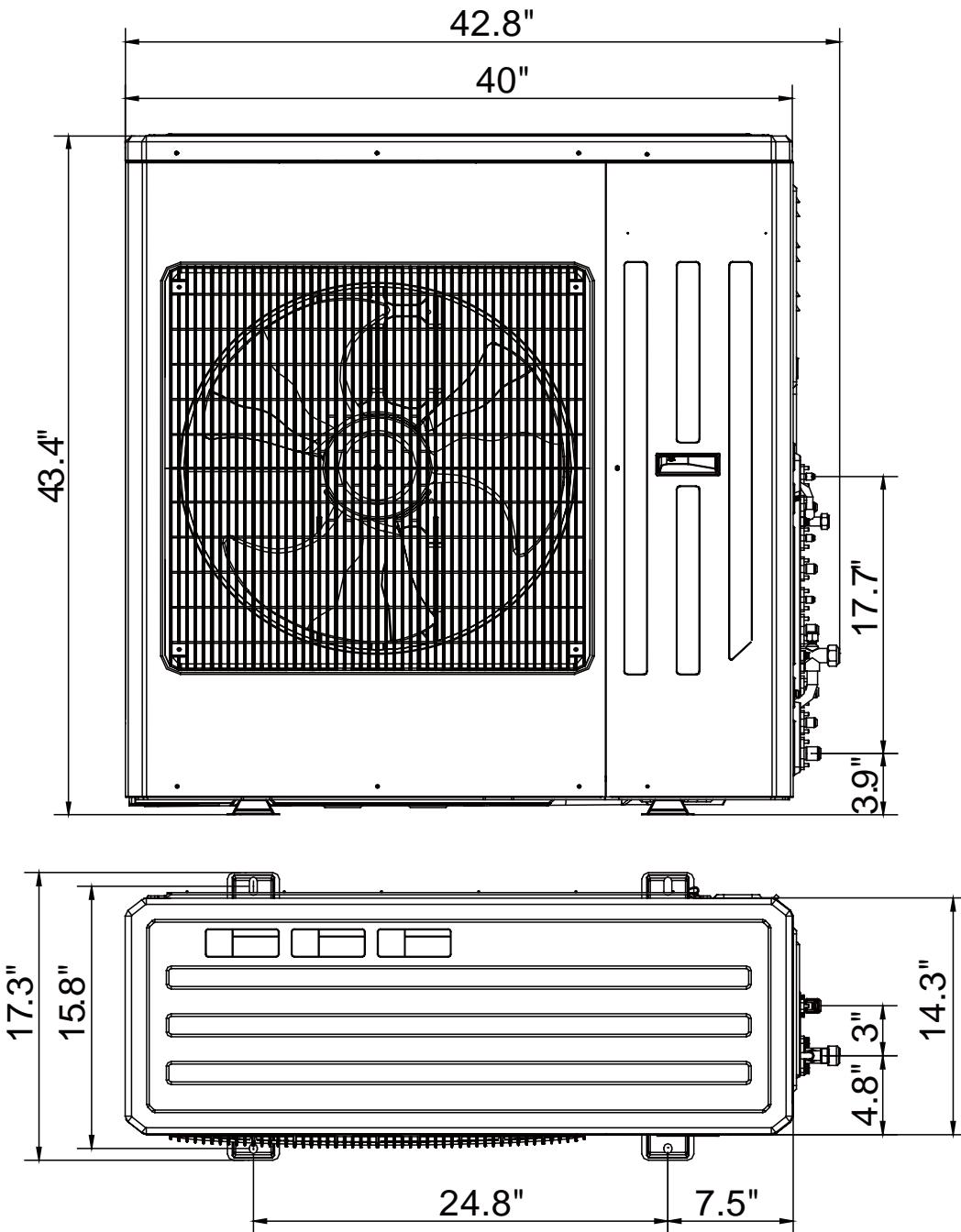
3.2.2 Triple / Quad Port

SMZ24H46ZOGX / SMZ30H46ZOGX



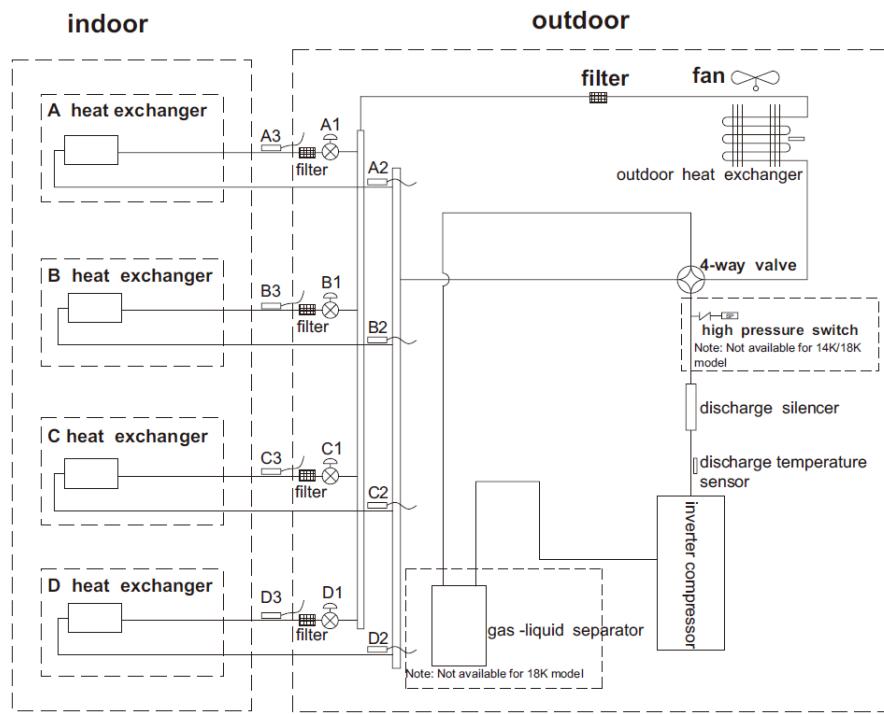
3.2.3 Five Port

SMZ42H46ZOGX



4. Refrigeration System Diagram

Model	Ports	Capacity (BTU)
SMZ18H46ZOGX	Dual	18,000
SMZ24H46ZOGX	Triple	24,000
SMZ30H46ZOGX	Quad	30,000



A1: Unit A electronic expansion valve

B1: Unit B electronic expansion valve

C1: Unit C electronic expansion valve

D1: Unit D electronic expansion valve

A2: Unit A gas pipe temperature sensor

B2: Unit B gas pipe temperature sensor

C2: Unit C gas pipe temperature sensor

D2: Unit D gas pipe temperature sensor

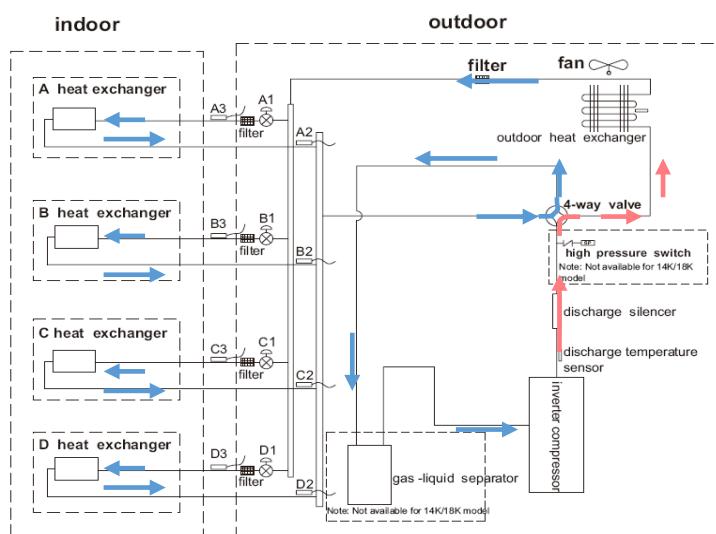
A3: Unit A liquid pipe temperature sensor

B3: Unit B liquid pipe temperature sensor

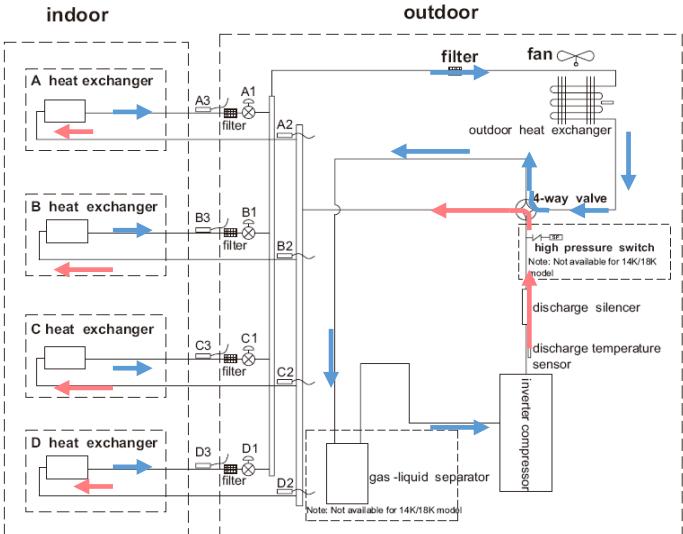
C3: Unit C liquid pipe temperature sensor

D3: Unit D liquid pipe temperature sensor

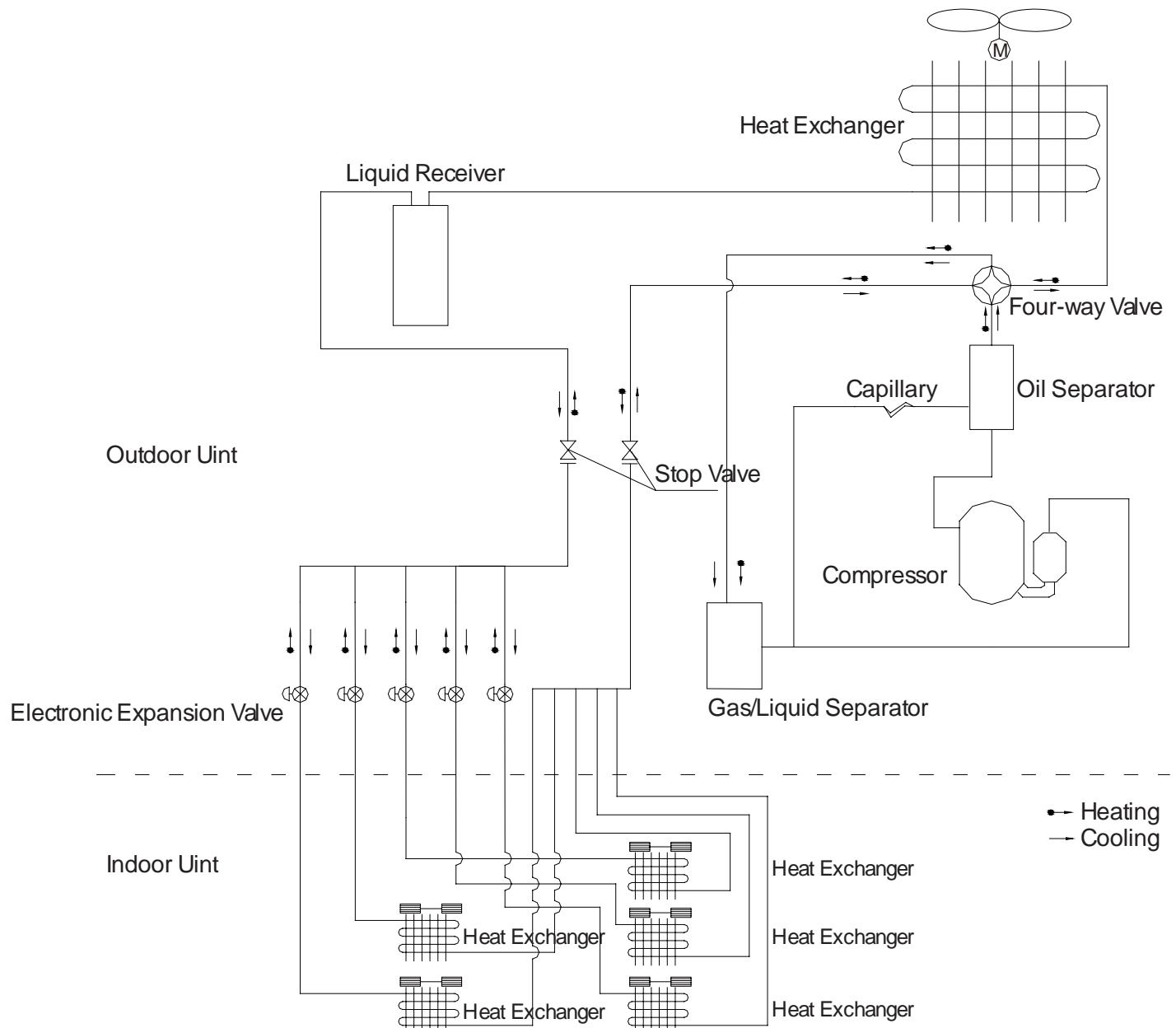
Cooling Cycle



Heating Cycle



<u>Model</u>	<u>Ports</u>	<u>Capacity (BTU)</u>
SMZ42H46ZOGX	Five	42,000



5. Key Components

5.1 Compressor

Working Range: 30~100Hz (SMZ18H46ZOGX, SMZ24H46ZOGX, SMZ30H46ZOGX)
15~110Hz (SMZ42H46ZOGX)

Using the set temperature, unit capacity, indoor and outdoor temperature, the outdoor unit will determine the required load and adjust the working frequency of the compressor.

5.2 Electronic Expansion Valve

Opening Angle: 90~480Hz

The outdoor coil is separated into 2, 3, 4, or 5 independent systems. Each system is controlled by an electronic expansion valve. The refrigerant quantity allocation of the indoor unit is controlled by the opening angle of the electronic expansion valve. If the difference between the inlet and outlet temperature of the indoor unit is too high, the expansion valve will open. If the difference is too low, the expansion valve will close.

Cooling Mode: If the cooling indoor fan is turned off, the electronic expansion valve will close and there will be no refrigerant flowing to that unit. The opening of the expansion valve is controlled by the difference of the inlet and outlet temperature of the indoor unit and utilized to obtain the highest heat exchange efficiency (EER).

Heating Mode: If the heating indoor fan is turned off, the electronic expansion valve will maintain a certain opening angle to make sure that the oil in the heat exchanger can be returned to the compressor; there will be a small quantity of heat in the indoor unit coils.

5.3 Pressure Switch

NOTE: There is no pressure switch for model SMZ18H46ZOGX.

SMZ24H46ZOGX	High pressure switch:	638 / 550 psi (opens on pressure rise)
SMZ30H46ZOGX	High pressure switch:	638 / 550 psi (opens on pressure rise)
SMZ42H46ZOGX	High pressure switch:	609 psi (opens on pressure rise)
	Low pressure switch:	72.5 psi (opens on pressure drop)

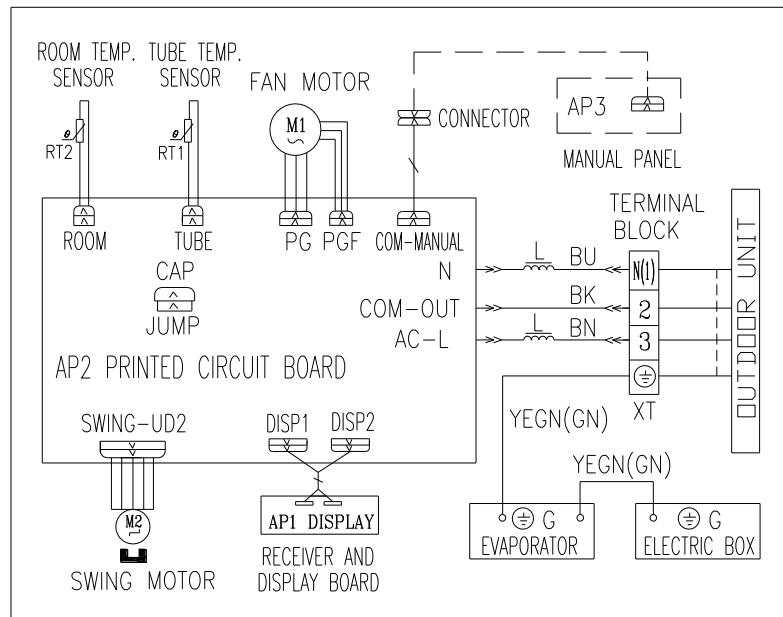
6. Wiring Diagram

NOTE: The wiring diagrams shown are subject to change without notice. Please refer to the one supplied with the unit for the most accurate information.

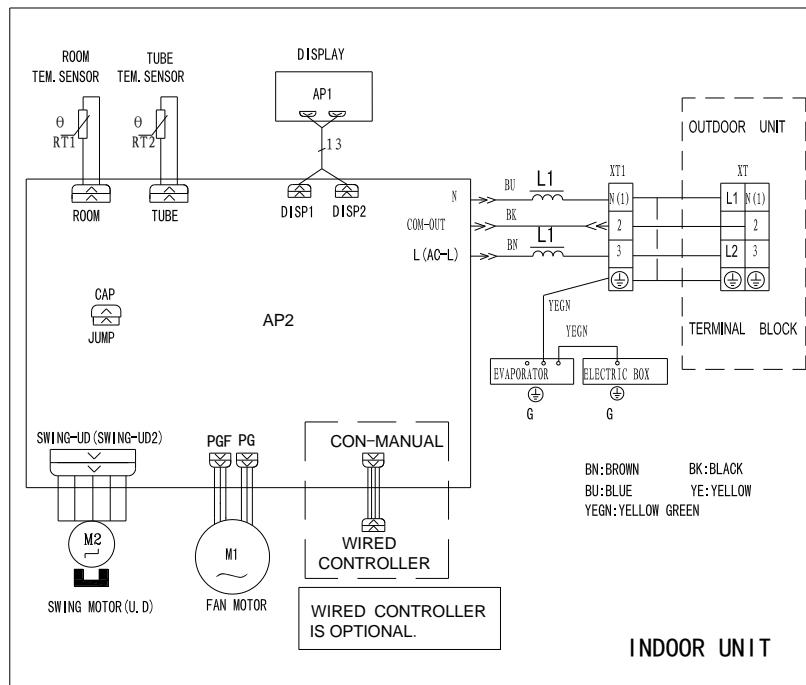
6.1 Indoor Units

6.1.1 Wall Mounted

Model	Capacity (BTU)
SHE9H4ZIGX	9,000
SHE12H4ZIGX	12,000
SHE18H4ZIGX	18,000



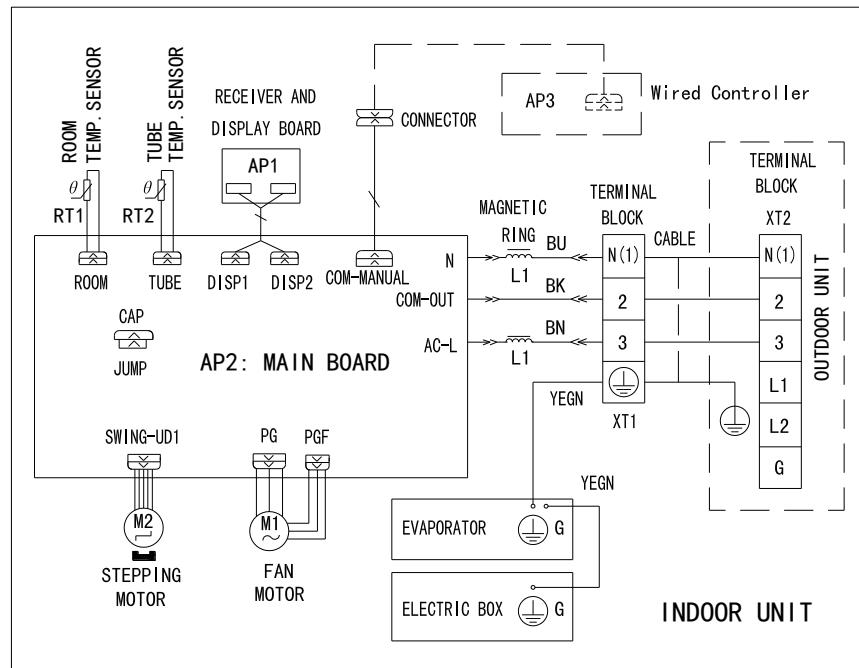
Model	Capacity (BTU)
SHE9H4ZIGB	9,000
SHE12H4ZIGB	12,000



Model
SHE18H4ZIGB

Capacity (BTU)

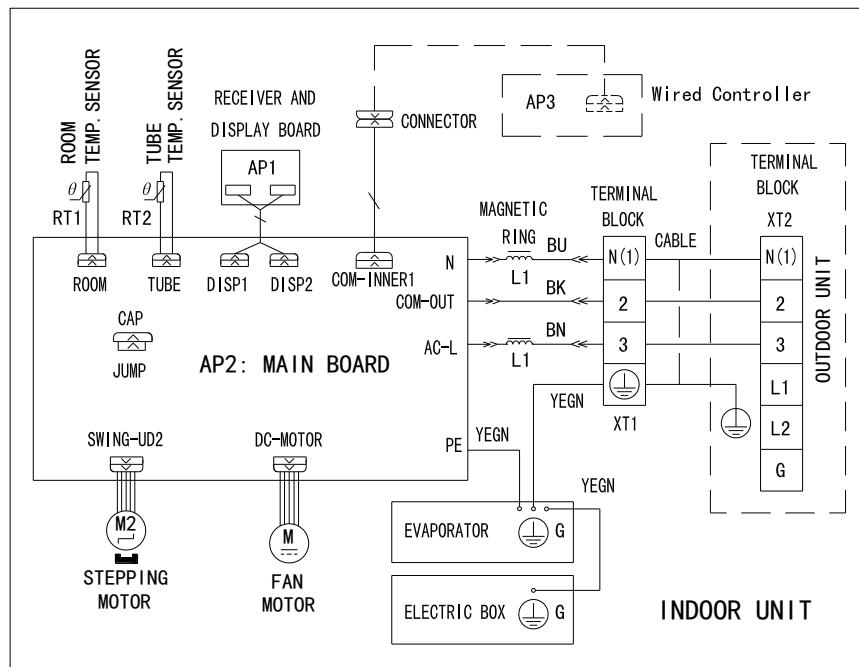
18,000



Model
SHE24H4ZIGB

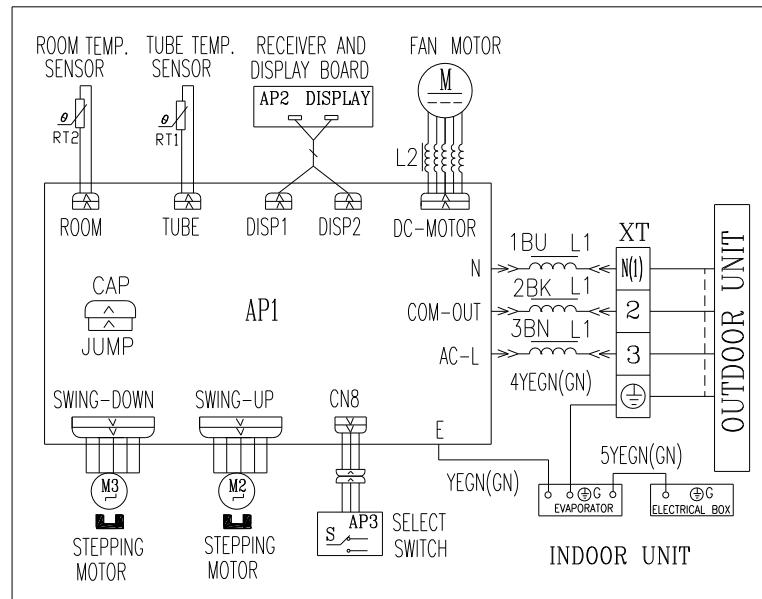
Capacity (BTU)

21,400



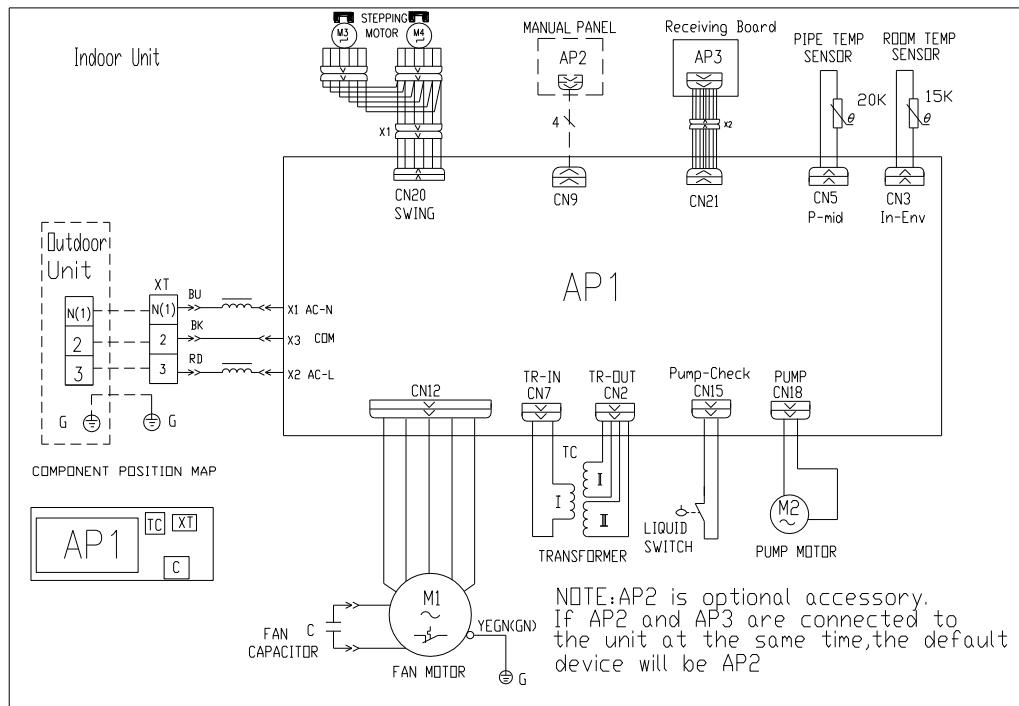
6.1.2 Console

<u>Model</u>	<u>Capacity (BTU)</u>
SMZC9H4ZIGX	9,000
SMZC12H4ZIGX	12,000
SMZC18H4ZIGX	18,000



6.1.3 Cassette

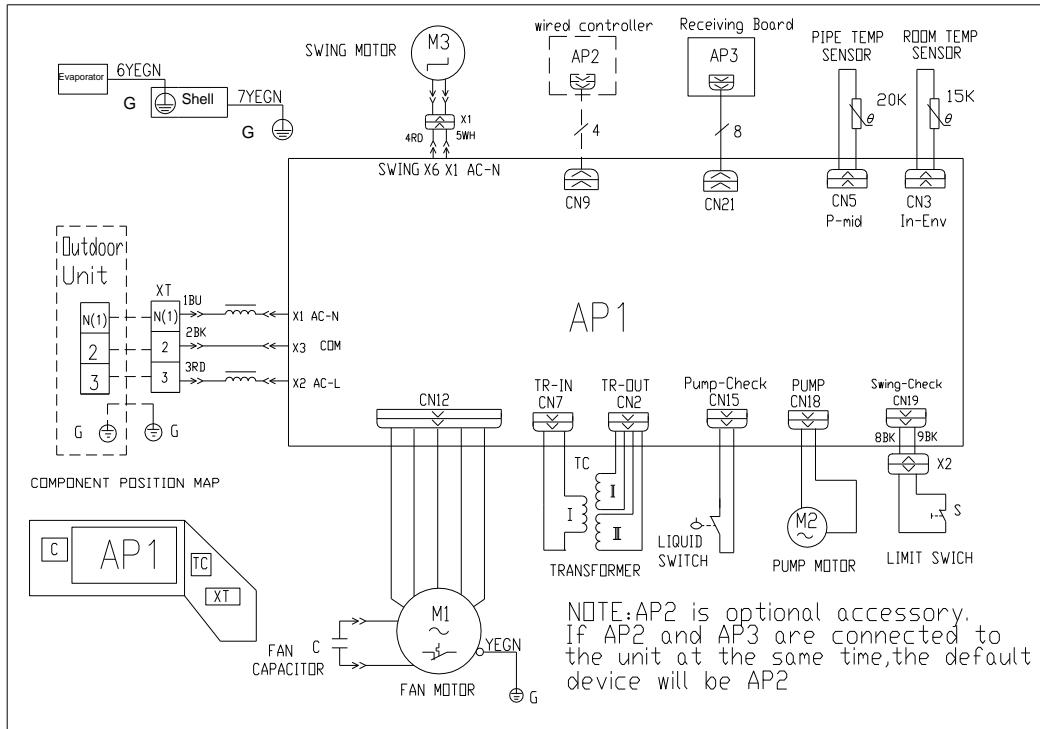
<u>Model</u>	<u>Capacity (BTU)</u>
SMZCA12HZIGX	12,000
SMZCA18HZIGX	14,400



Model
SMZCA24HZIGX

Capacity (BTU)

22,800



6.1.4 Floor/Ceiling

Model
SMZFC9H4ZIGX
SMZFC12H4ZIGX
SMZFC18H4ZIGX
SMZFC24H4ZIGX

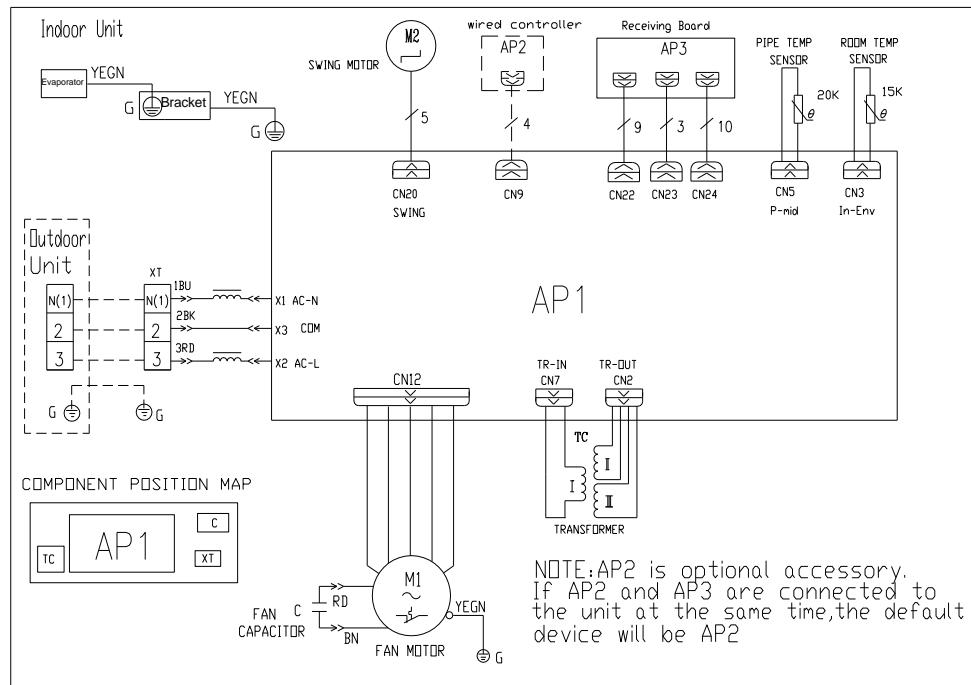
Capacity (BTU)

8,500

11,900

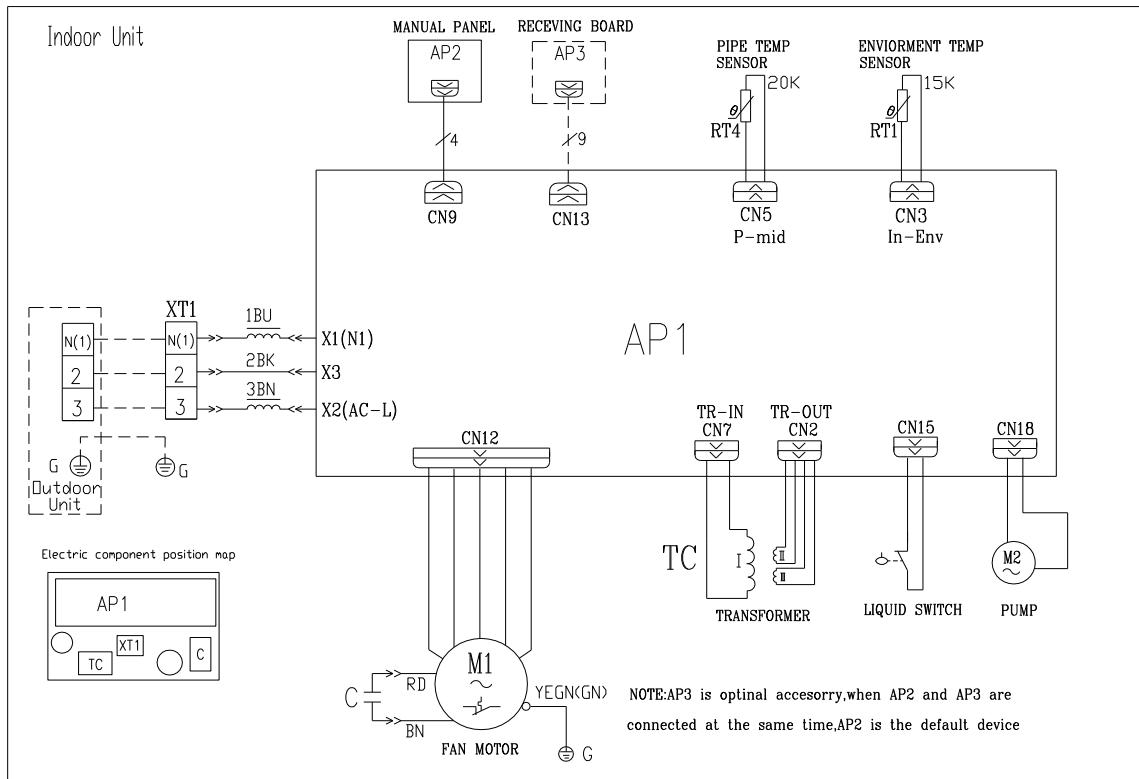
17,000

22,800



6.1.5 Ducted

<u>Model</u>	<u>Capacity (BTU)</u>
SMZD9H4ZIGX	8,500
SMZD12H4ZIGX	11,900
SMZD18H4ZIGX	15,300
SMZD21H4ZIGX	20,400
SMZD24H4ZIGX	23,800

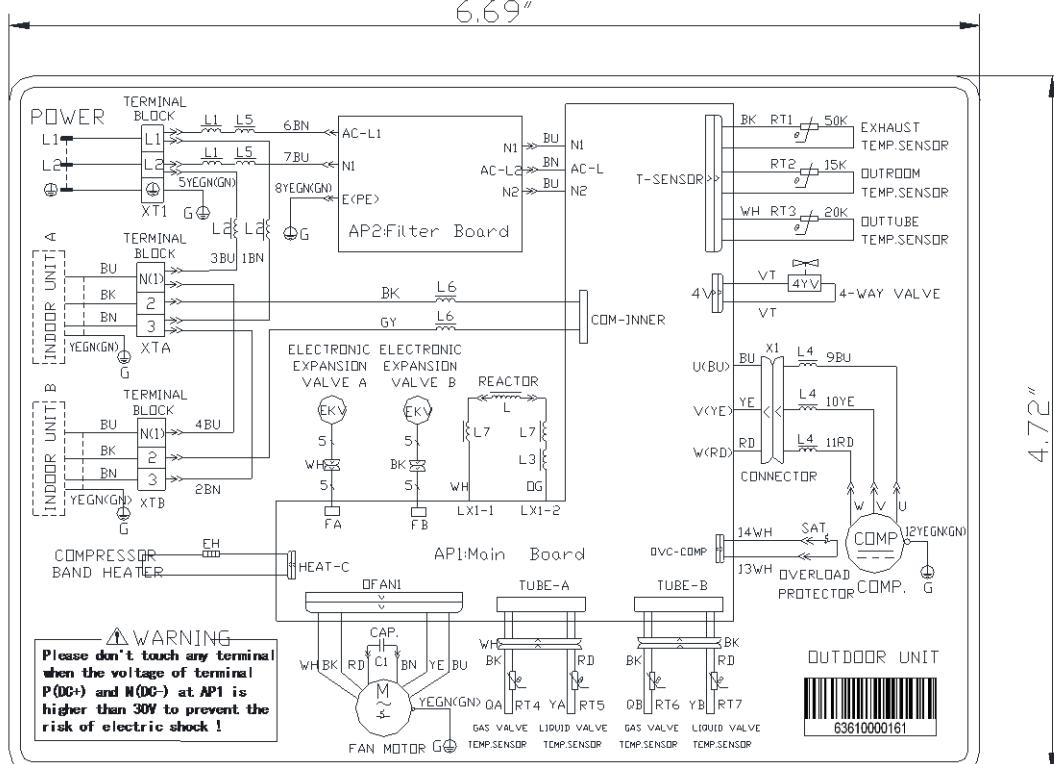
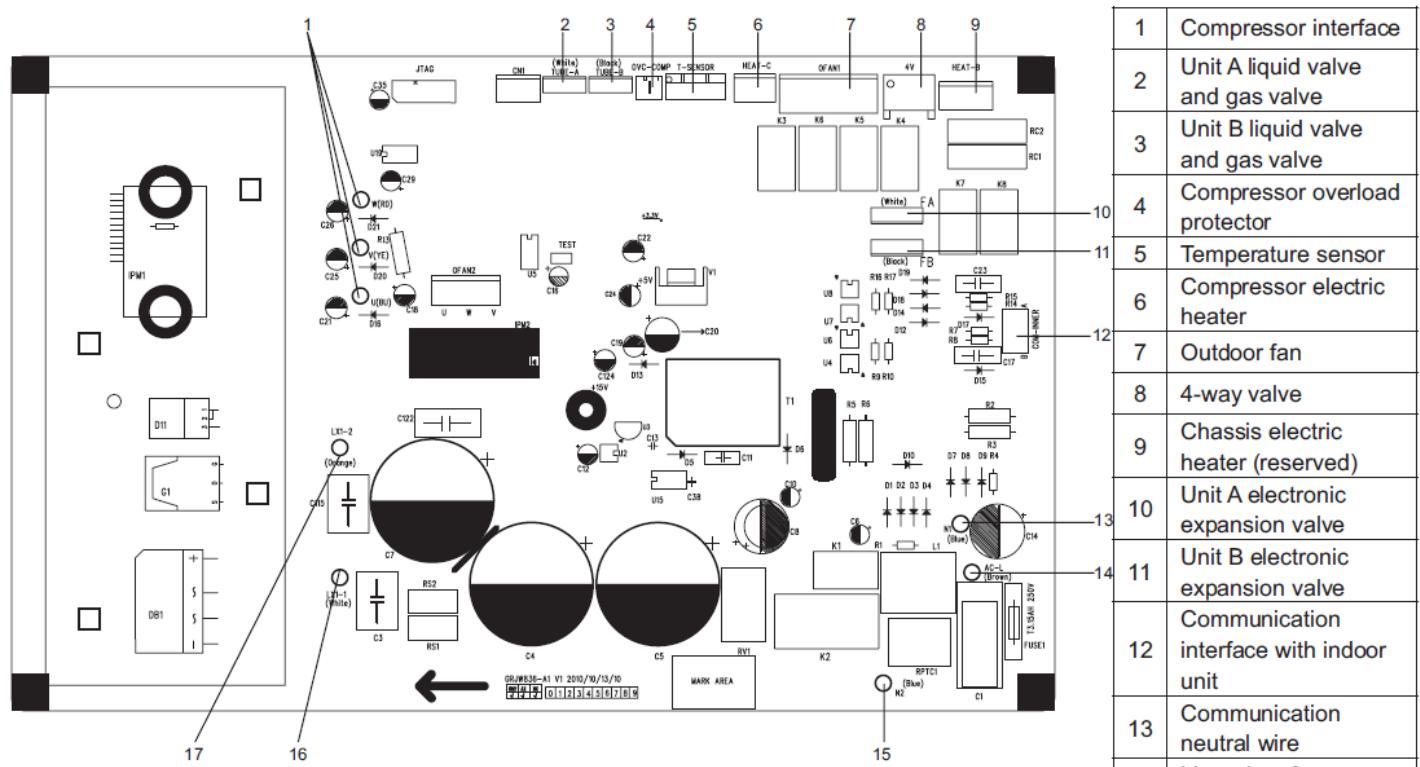


6.2 Outdoor Units

6.2.1 Dual Port

SMZ18H46ZOGX

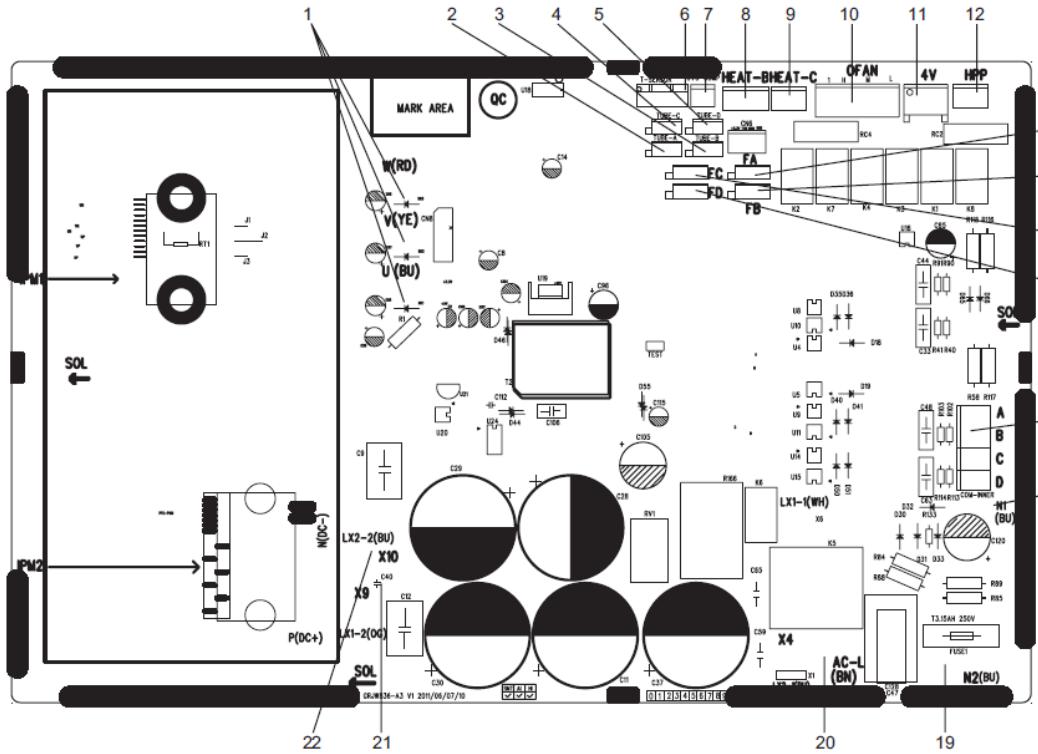
• TOP VIEW



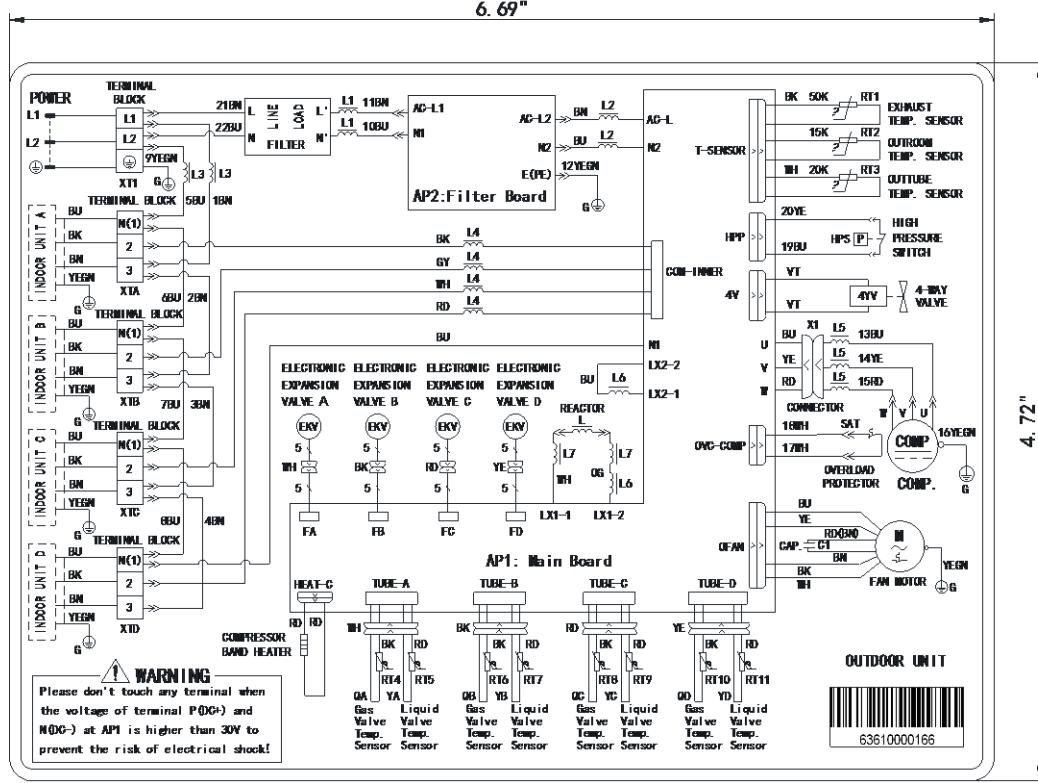
6.2.2 Triple / Quad Port

SMZ24H46ZOGX / SMZ30H46ZOGX

• TOP VIEW



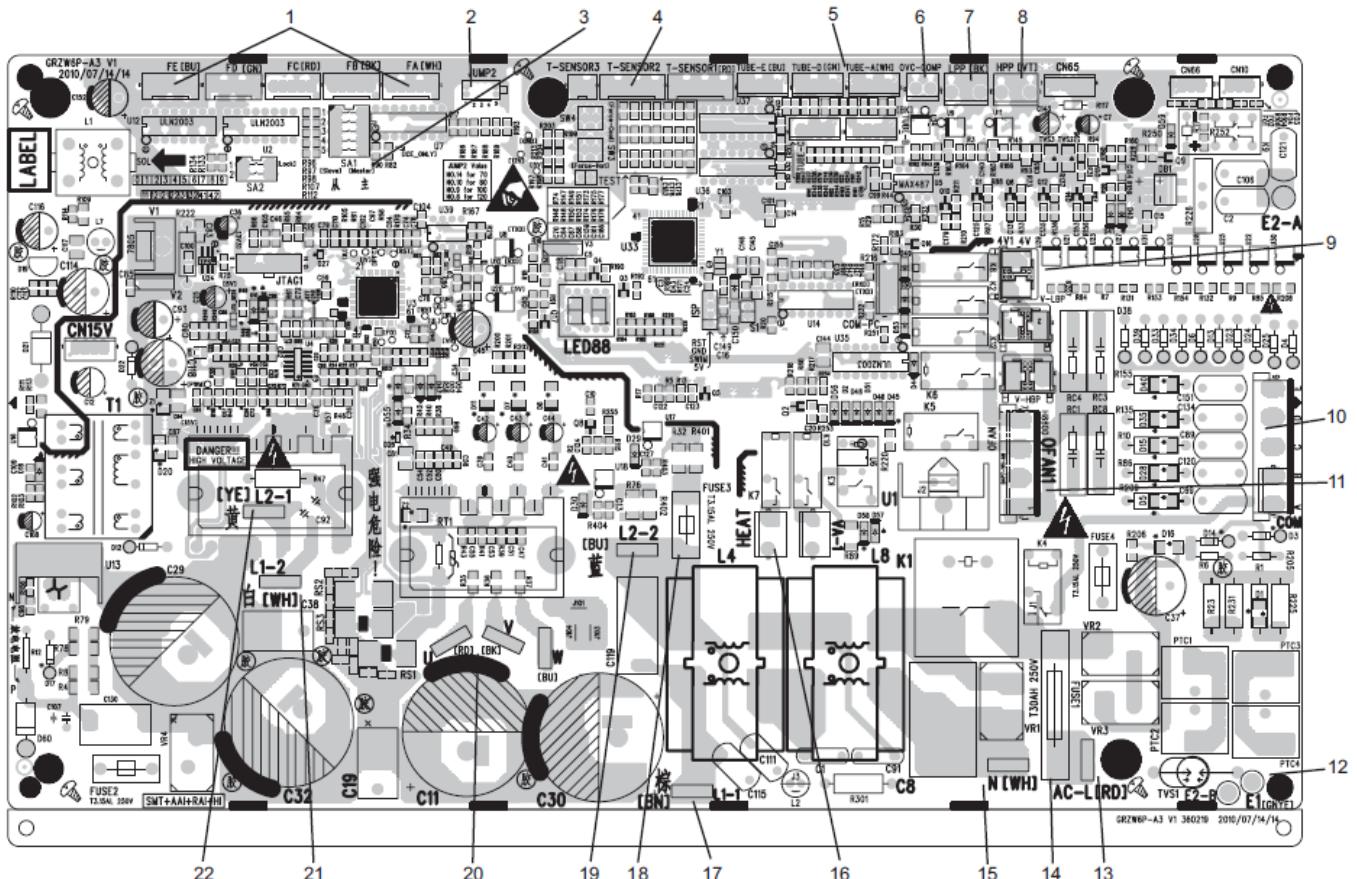
1	Compressor interface
2	Temperature sensor interface of unit A liquid valve and gas valve
3	Temperature sensor interface of unit B liquid valve and gas valve
4	Temperature sensor interface of unit C liquid valve and gas valve
5	Temperature sensor interface of unit D liquid valve and gas valve
6	Temperature sensor interface
7	Interface of compressor overload protector
8	Interface of chassis electric heater
9	Interface of compressor electric heater belt
10	Outdoor fan interface
11	4-way valve interface
12	High voltage protection interface
13	Interface of electronic expansion valve A
14	Interface of electronic expansion valve B
15	Interface of electronic expansion valve C
16	Interface of electronic expansion valve D
17	Communication wire interface
18	Communication neutral wire interface
19	Input neutral wire interface
20	Input live wire interface
21	PFC input live wire interface
22	PFC input neutral wire interface



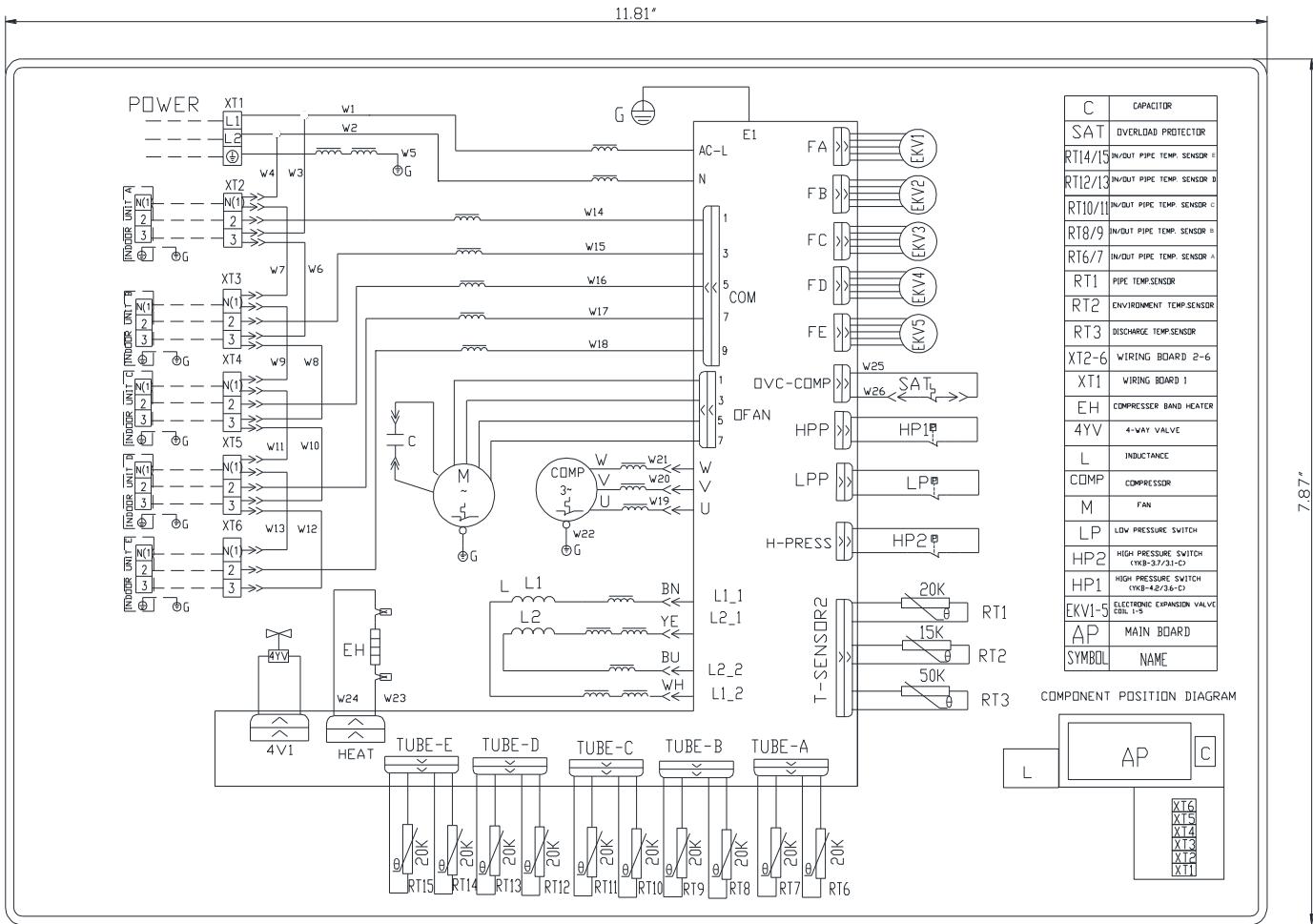
6.2.3 Five Port

SMZ42H46ZOGX

• TOP VIEW



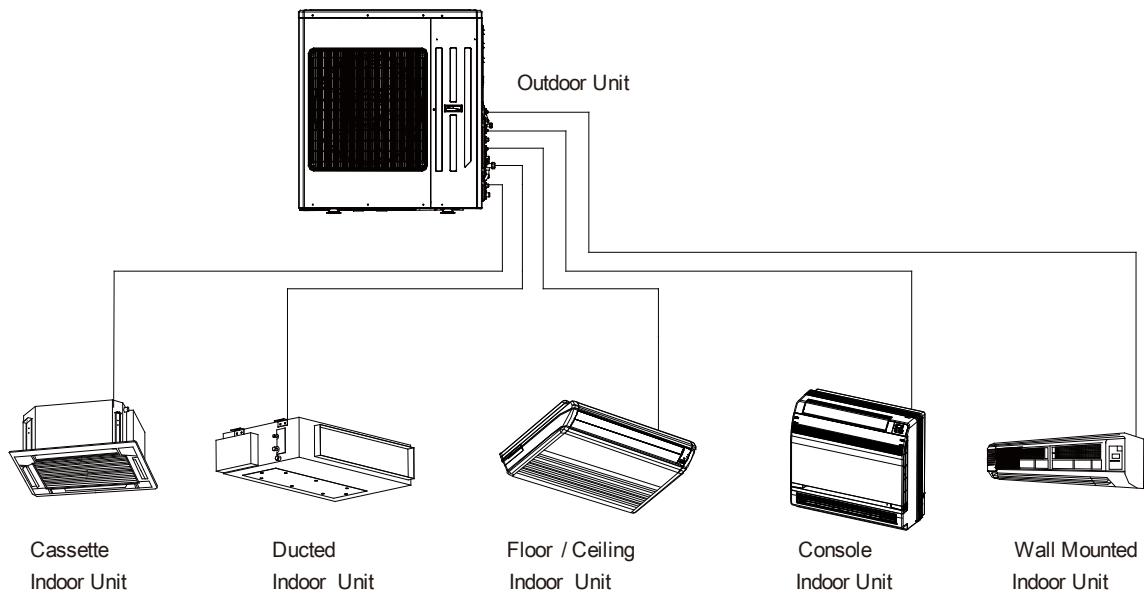
1	FA-FE: Terminals of EXV(Electronic expansion Valve)	12	E1:Terminals of Earth
2	JUMP2:the code of capacity	13	AC-L:Terminals of line wire
3	SA1: Master select switch	14	FUSE1: Fuse
4	T-SENSOR2:Terminals of temperature sensor	15	N:Terminals of neureal wire
5	TUBE-A - TUBE-E:Terminals of tube temperature sensor	16	HEAT:Terminals of compressor band heater
6	OVC-COMP:Terminals of overload protector	17	L1-1:Terminals of reactor's brown wire
7	LPP:Terminals of low pressure switch	18	FUSE3: Fuse of fan
8	HPP:Terminals of high pressure switch	19	L2-2:Terminals of reactor's blue wire
9	4V1:Terminals of 4-way valve	20	U/V/W:Terminals of compressor
10	COM:Terminals of communication	21	L1-2:Terminals of reactor's white wire
11	OFAN1:Terminals of fan	22	L2-1:Terminals of reactor's yellow wire



7. System Configuration

7.1 System Structure

For this multi-zone air conditioning system, the outdoor unit is able to drive the indoor units which can be different types as shown below. The console indoor unit can be controlled only by the remote control. The other indoor units can be controlled by either the remote control or the wall control. The outdoor unit will run if any of the indoor units sends a request for heating or cooling. All indoor units will stop once the outdoor unit is turned off.



7.2 Configuration Options

7.2.1 Dual Port Options

SMZ18H46ZOGX

NOTE: Do not mismatch or connect to an outdoor unit other than the designed matched system.

One (1) Indoor Unit Two (2) Indoor Units

9K	9K + 9K
12K	9K + 12K

7.2.2 Quad Port Options

SMZ24H46ZOGX

*NOTE: Do not mismatch or connect to an outdoor unit other than the designed matched system.
This system must be used with a minimum of two (2) indoor units (evaporators).*

<u>Two (2) Indoor Units</u>	<u>Three (3) Indoor Units</u>
------------------------------------	--------------------------------------

9K + 9K	
9K + 12K	9K + 9K + 9K
9K + 18K	9K + 9K + 12K
12K + 12K	
12K + 18K	

The configuration shown below will work but it is not recommended if all indoor units may require simultaneous continuous operation at full efficiency.

9K + 12K + 12K

7.2.3 Quad Port Options

SMZ30H46ZOGX

*NOTE: Do not mismatch or connect to an outdoor unit other than the designed matched system.
This system must be used with a minimum of two (2) indoor units (evaporators).*

<u>Two (2) Indoor Units</u>	<u>Three (3) Indoor Units</u>	<u>Four (4) Indoor Units</u>
------------------------------------	--------------------------------------	-------------------------------------

9K + 9K	9K + 9K + 9K	
9K + 12K	9K + 9K + 12K	
9K + 18K	9K + 9K + 18K	9K + 9K + 9K + 9K
12K + 12K	9K + 12K + 12K	
12K + 18K	12K + 12K + 12K	
18K + 18K		

The configurations shown below will work but it is not recommended if all indoor units may require simultaneous continuous operation at full efficiency.

18K + 18K	9K + 12K + 18K	9K + 9K + 9K + 12K
	12K + 12K + 18K	9K + 9K + 12K + 12K

7.2.4 Five Port Options

SMZ42H46ZOGX

*NOTE: Do not mismatch or connect to an outdoor unit other than the designed matched system.
This system must be used with a minimum of two (2) indoor units (evaporators).*

<u>Two (2) Indoor Units</u>	<u>Three (3) Indoor Units</u>	<u>Four (4) Indoor Units</u>	<u>Five (5) Indoor Units</u>
	9K + 9K + 9K		
9K + 9K	9K + 9K + 12K		
9K + 12K	9K + 9K + 18K		
9K + 18K	9K + 12K + 12K		
12K + 12K	9K + 12K + 18K	9K + 9K + 9K + 9K	
12K + 18K	9K + 18K + 18K	9K + 9K + 9K + 12K	
18K + 18K	12K + 12K + 12K	9K + 9K + 9K + 18K	
12K + 21K	12K + 12K + 18K	9K + 9K + 12K + 12K	
12K + 24K	12K + 18K + 18K	9K + 9K + 12K + 18K	
18K + 21K	9K + 9K + 21K	9K + 12K + 12K + 12K	
18K + 24K	9K + 9K + 24K		
21K + 21K	9K + 18K + 21K		
21K + 24K	9K + 12K + 21K		
	9K + 12K + 24K		
	12K + 12K + 21K		

The configurations shown below will work but it is not recommended if all indoor units may require simultaneous continuous operation at full efficiency.

	18K + 18K + 18K	9K + 9K + 18K + 18K
	9K + 18K + 24K	9K + 12K + 12K + 18K
	9K + 21K + 21K	9K + 12K + 12K + 21K
	9K + 21K + 24K	12K + 12K + 12K + 18K
24K + 24K	12K + 18K + 21K	9K + 9K + 9K + 24K
	12K + 18K + 24K	9K + 9K + 12K + 21K
	12K + 21K + 21K	9K + 9K + 12K + 24K
	12K + 12K + 24K	12K + 12K + 12K + 12K
		9K + 9K + 9K + 21K

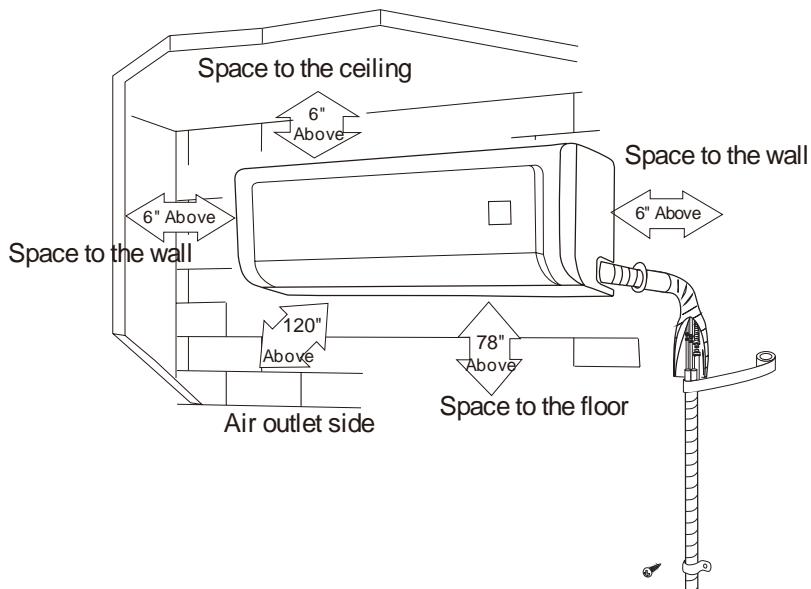
8. Installation

8.1 Placing the Indoor Unit

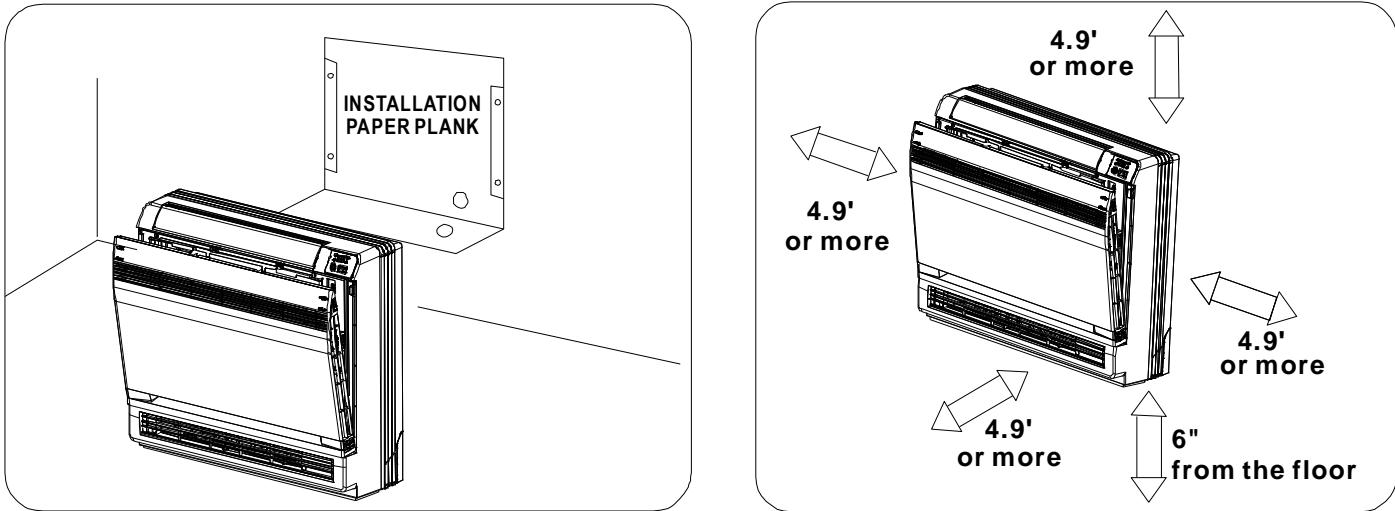
GENERAL WARNINGS!

- Ensure the proper clearance and mounting requirements are met as shown.
- Ensure airflow from the inlet and outlet area of the indoor unit is not obstructed.
- Make sure that there is enough space for care and maintenance.
- Do not install unit in a humid area (i.e. laundry room, bathroom).
- Ensure the installation area is level.
- Select a place where the condensate water can be easily drained.
- Ensure unit is installed away from heat sources, leakages of inflammable, explosive substances, or smog.
- The power cords and connection lines of the indoor and outdoor units must be at least 3.3 ft. away from the TV set or radio to avoid the image interference and noise.
- Select an area that is strong enough to withstand 4 times the weight of the indoor unit. This prevents vibration and noise. If not, reinforce before installation. (Refer to the installation cardboard template for more details.)

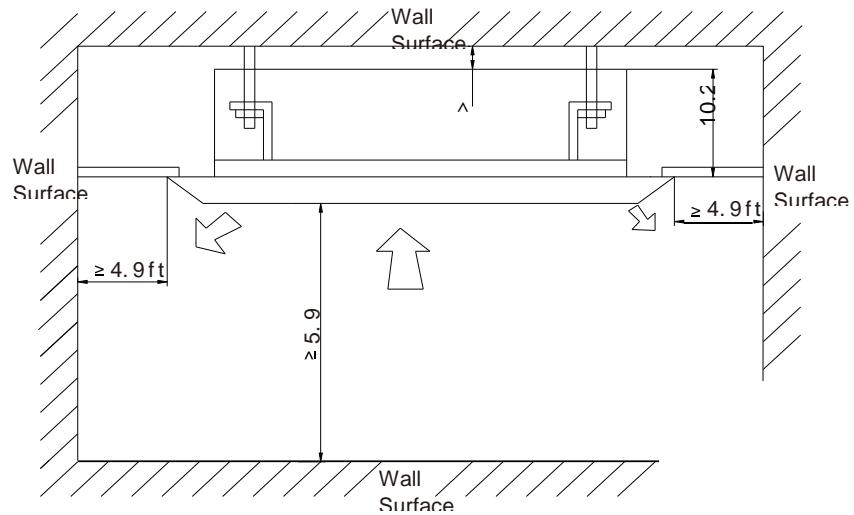
8.1.1 Wall Mounted



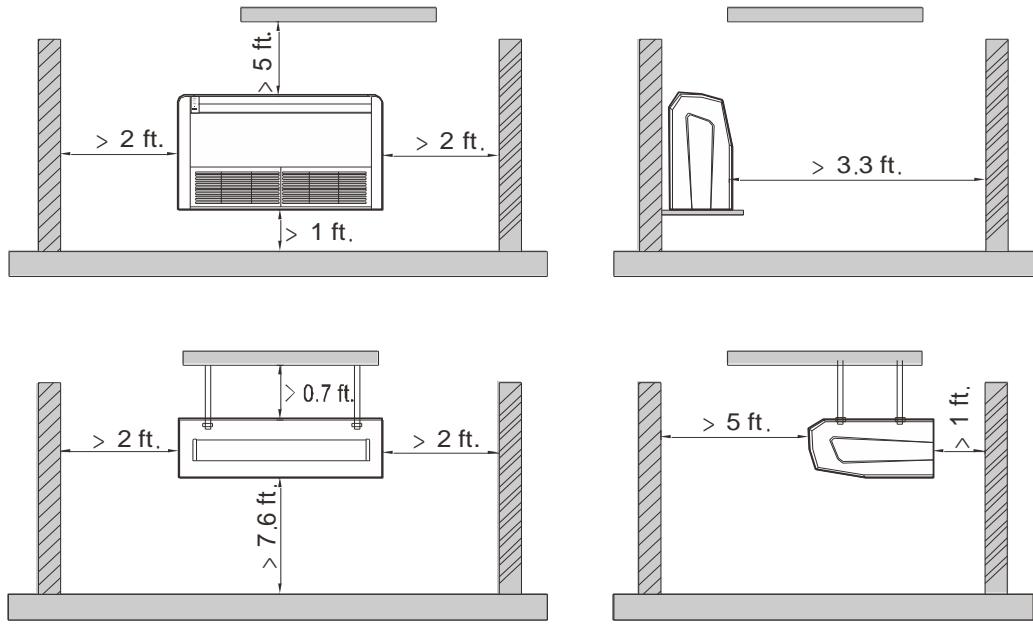
8.1.2 Console



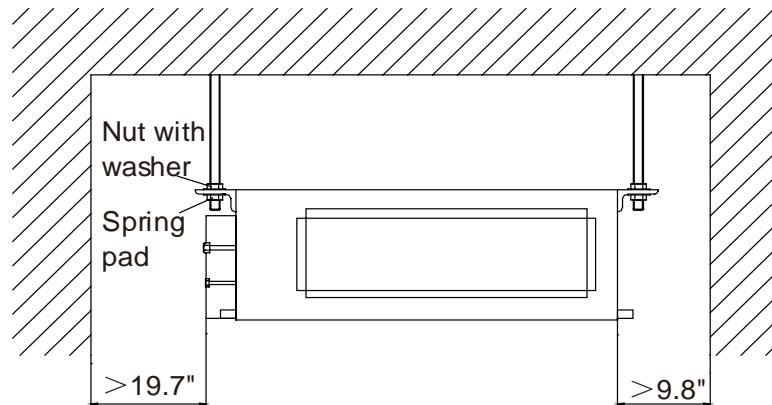
8.1.3 Cassette



8.1.4 Floor/Ceiling



8.1.5 Ducted

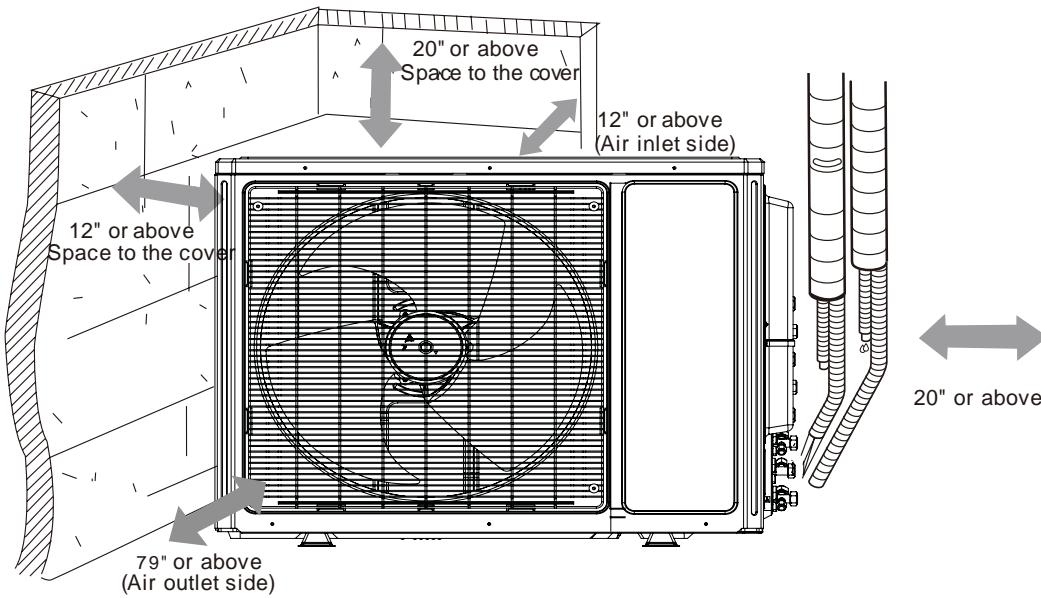


8.2 Placing the Outdoor Unit

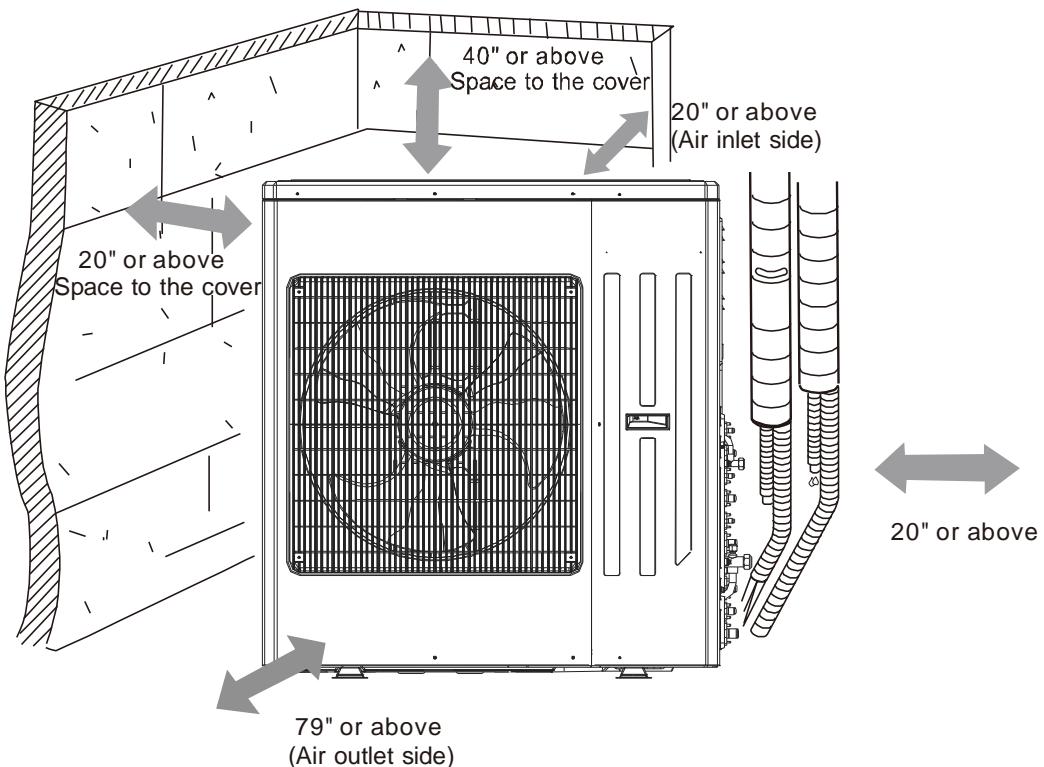
GENERAL WARNINGS!

- Ensure the proper clearance and mounting requirements are met as shown.
- Ensure airflow from the inlet and outlet area of the outdoor unit is not obstructed.
- Make sure that there is enough space for care and maintenance.
- Ensure the installation area is level.
- Ensure unit is installed away from heat sources, leakages of inflammable, explosive substances, or smog.

8.2.1 Dual/Triple/Quad Port



8.2.2 Five Port



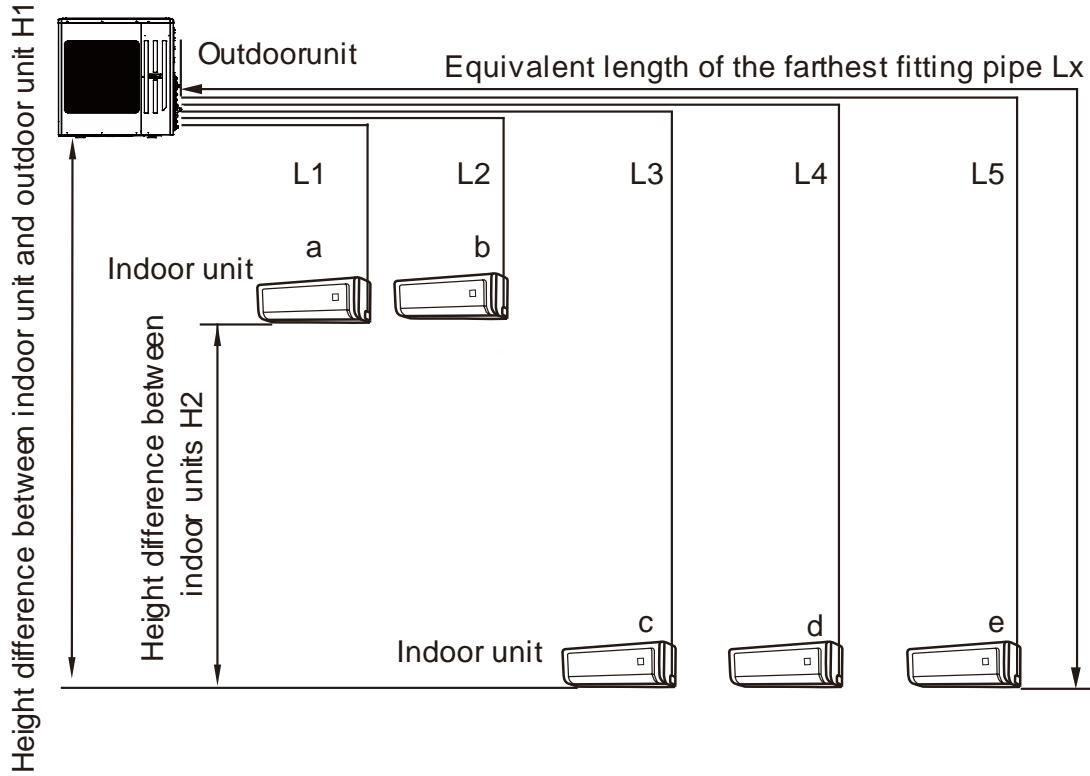
8.3 Maximum Line Length and Height

For best results, mount the outdoor unit as close as possible to the indoor units. Check the maximum line length specifications before mounting. **The maximum line length must not be exceeded!**

Dual/Quad Port Outdoor Units (18K, 24K & 30K)

<u>Description</u>	<u>Dual Port Outdoor Unit</u>	<u>Triple/Quad Port Outdoor Unit</u>
Max length for any indoor unit	32.8'	65.6'
Max height for each indoor and outdoor unit	16.4'	32.8'
Max total length	65.6'	229.7'

Five Port Outdoor Units (42K)



Description

<u>Description</u>	<u>Connection Length</u>	<u>Quad Port Outdoor Unit</u>
Max length for any indoor unit	LX	82'
Max height for each indoor and outdoor unit	H1	49'
Max height difference between indoor units	H2	24.6'
Max total length	L1 + L2 + L3 + L4 + L5	262.5'

8.4 Tubing Connection Size

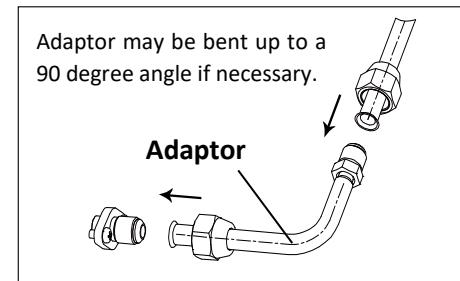
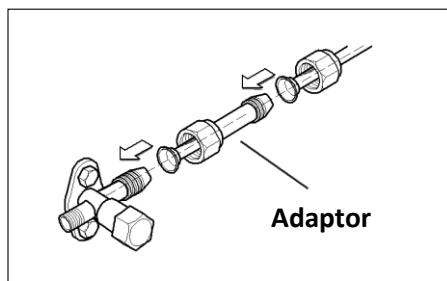
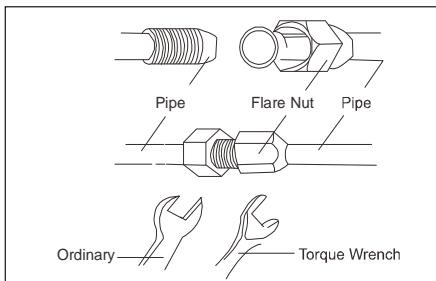
NOTE: When the indoor line set requires a different size from the outdoor connection, please follow the line set size of indoor unit. An adaptor is required to connect the line set to outdoor unit.

8.4.1 Indoor Unit

	1/4"	3/8"	1/2"	5/8"	Adapter Included	Adapter Size
Wall-Mounted A	9K	X	X		Yes	1/2" F to 3/8" M*
	12K /18K	X		X	Yes	3/8" F to 1/2" M
Wall-Mounted B	9K / 12K	X	X			1/2" F to 3/8" M*
	18K	X		X	Yes	3/8" F to 1/2" M
Cassette Console Floor/Ceiling Ducted	24K	X			X	None
	9K	X	X			1/2" F to 3/8" M*
	12K	X	X			1/2" F to 3/8" M
	18K	X		X		3/8" F to 1/2" M
	21K		X		X	None
	24K		X		X	None

8.4.2 Outdoor Unit

	1/4"	3/8"	1/2"	5/8"	Adapter Included
Dual Port (18K)	Terminal A	X	X		None
	Terminal B	X	X		
Triple (24K)	Terminal A	X	X		None
	Terminal B	X	X		
	Terminal C	X	X		
Quad Port (30K)	Terminal A	X	X		None
	Terminal B	X	X		
	Terminal C	X	X		
	Terminal D	X	X		
Five Port (42K)	Terminal A		X		X
	Terminal B	X		X	1/4" F to 3/8" M (9510251)-2 pcs 1/2" F to 3/8" M (9510252)-2 pcs 1/2" F to 5/8" M (9510253)-2 pcs 3/8" F to 1/4" M (9510254) 5/8" F to 3/8" M (9510255) 3/8" F to 1/2" M (9510256) 5/8" F to 1/2" M (9510257)
	Terminal C	X		X	
	Terminal D	X	X		
	Terminal E	X	X		



* Only used for five-port (42K) outdoor unit.
* Only used for five-port (42K) outdoor unit.

8.5 Refrigerant Tubing

GENERAL WARNINGS!

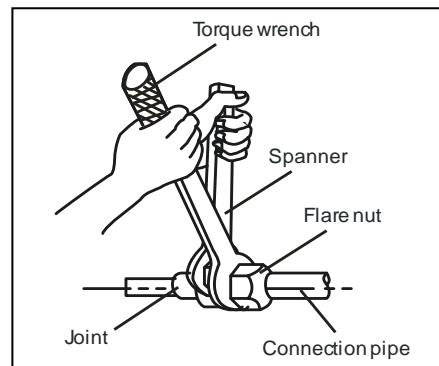
- The outdoor unit is supplied with a sufficient refrigerant charge of R410a for the maximum design length (no extra refrigerant required). Beyond this length, additional refrigerant is required and must be weighed in (see specifications).
- The indoor unit contains a small quantity of nitrogen. **DO NOT** remove the caps until tubing is ready to be installed.
- When removing the valve caps, **DO NOT** stand in front of valves as the system is under high pressure.
- An oil trap is recommended to be installed if the indoor unit is over 15 feet in height from the outdoor unit. To prevent kinking, bend tubes using a tubing tool.
- **DO NOT** braze tubing or use thread sealant. Use flare connections only.

8.5.1 Torque Table for Flare Nuts

When tightening the nut with a spanner and torque wrench, please follow the torque requests in the table below.

NOTE: Exceeding the tightening torque will damage the flare surface.

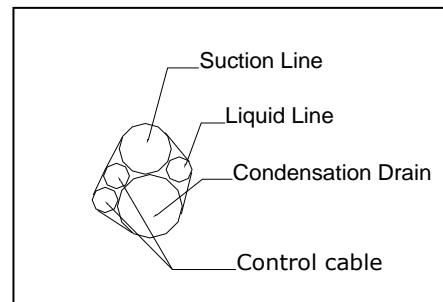
Nut Size	Torque
1/4"	11–22 lbs ft.
3/8"	23–29 lbs ft.
1/2"	33–37 lbs ft.
5/8"	44–48 lbs ft.



8.5.2 Bundling the Lines

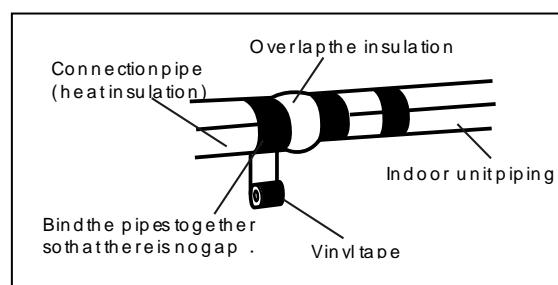
Bundle the refrigerant lines, control cables, and condensation drain together as shown in the picture below. Be sure to leave ample length on the control cables for termination. Bundle can be secured together using tape.

IMPORTANT: Condensate drain MUST be placed at the bottom of the bundle as shown. Failure to do so may cause evaporator to drain improperly.



Each tube must be insulated separately, including their unions with at least 1/4" thick insulation. Wrap the refrigeration tubing, drain hose, and electrical cables with a UV protected vinyl tape. Overlap insulation at all refrigeration joints. Insulation joints may overlap if desired.

CAUTION: Failure to completely wrap both lines with insulation may result in damage from condensation forming on lines and dripping onto wall, ceilings, etc.



8.6 Electrical Connection

GENERAL WARNINGS!

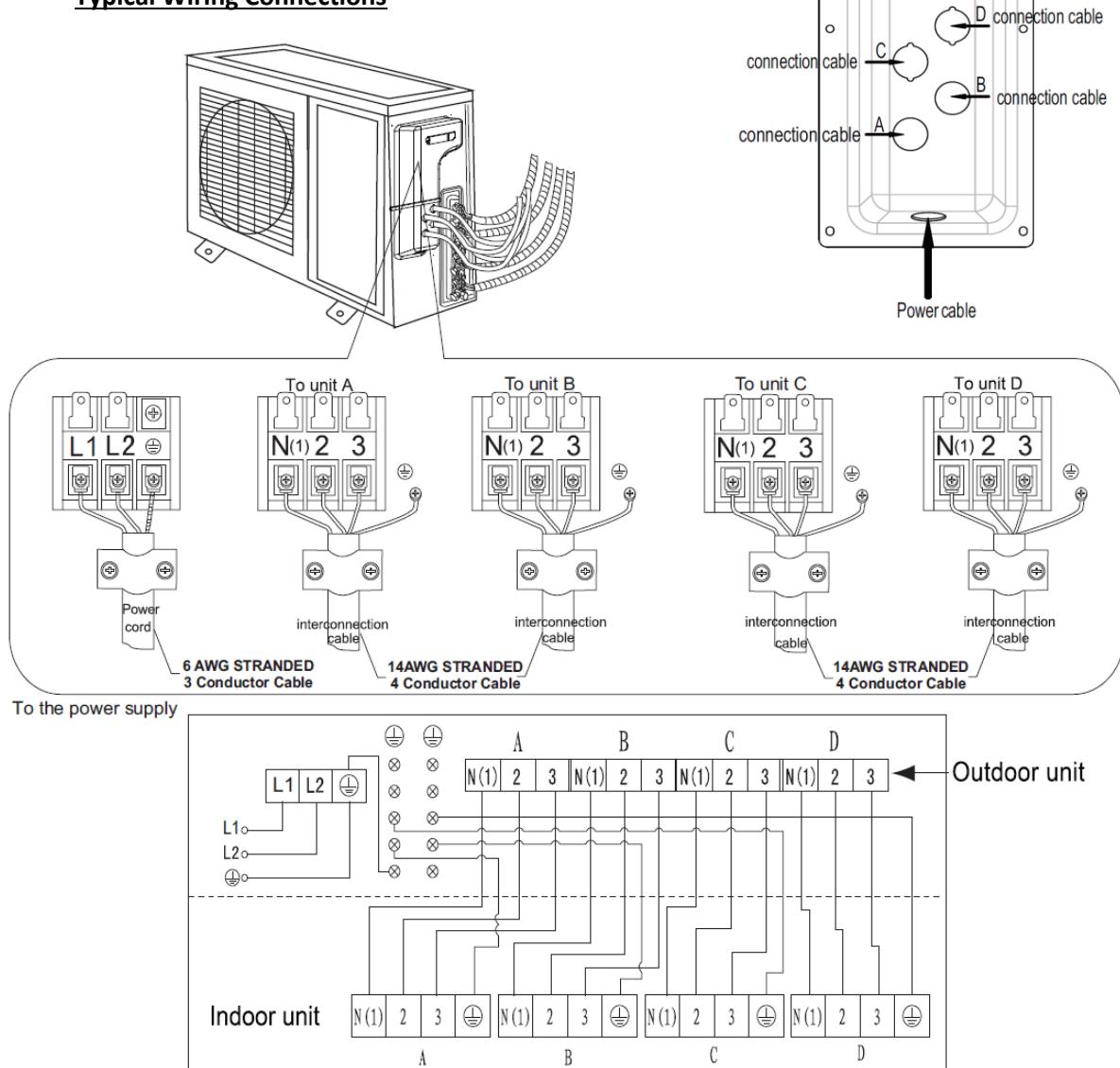
- Electrical wiring and connections should be made by a qualified electrician in accordance with the National and Local electrical codes and regulations.
- The system must be properly grounded.
- Voltage should not vary beyond $\pm 10\%$ of the rated voltage.
- See the specifications page for proper wire sizes and circuit breaker sizes.
- See diagrams on pages 18-20 for further wiring information.

8.6.1 Dual/Triple/Quad Port

Connecting the Cable to the Outdoor Unit

1. Remove cable knock-outs (a water tight cable strain relief or conduit is recommended here).
2. Remove screws to take off side panel.
3. Feed cable wire through knock-out holes.
4. Connect the wires to the terminals.
5. Replace side panel with the screws.
6. Secure wire cables.

Typical Wiring Connections



WARNINGS!

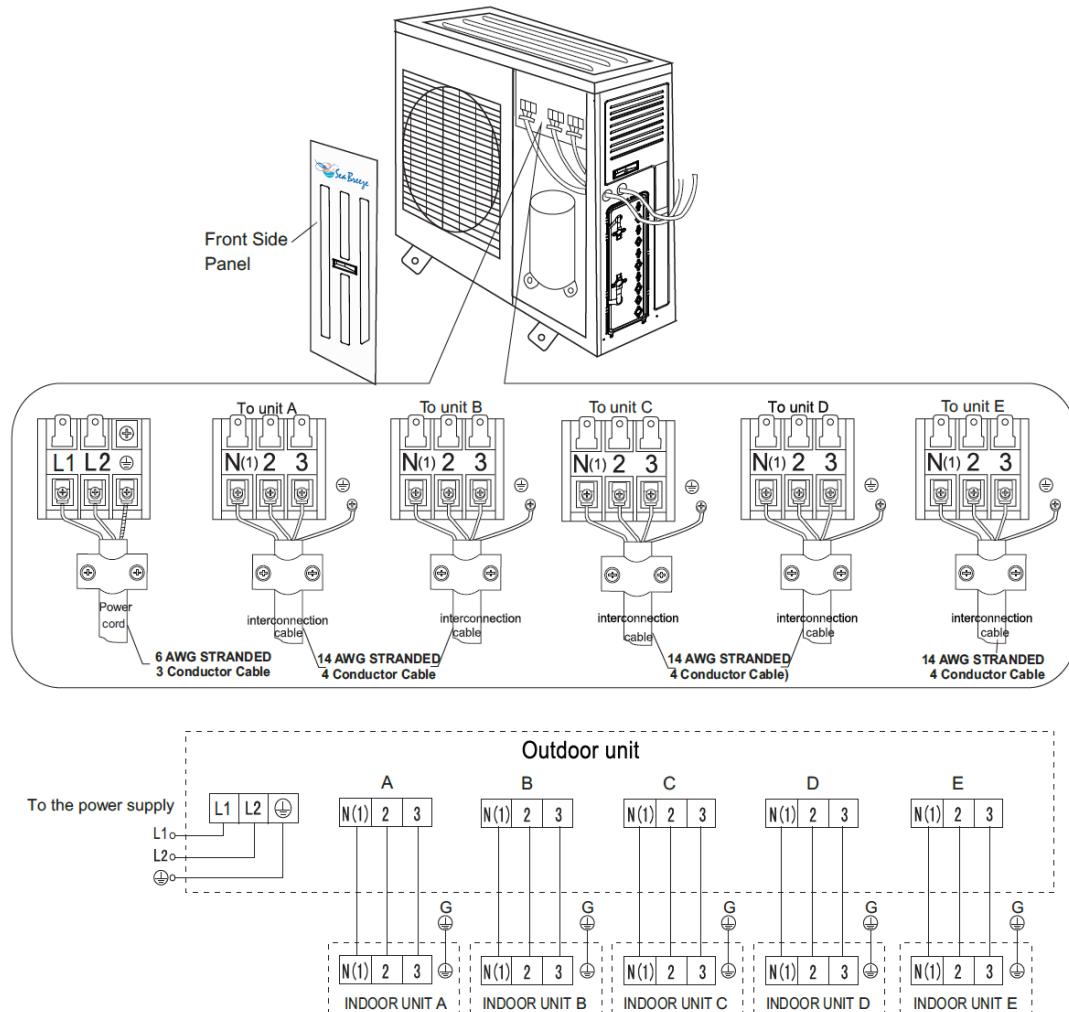
- Improper wiring between the indoor and outdoor units can cause serious damage to the system and risk to personal injury or fire. Use caution when connecting the wiring to ensure that the wires are connected properly.
- DO NOT use thermostat wire to connect indoor and outdoor units. DO NOT cross wires!
- If a condensate pump is needed, it must be connected to the supply power at the outdoor unit.

8.6.2 Five Port

Connecting the Cable to the Outdoor Unit

1. Remove screws to take off front side panel.
2. Feed cable wire through knock-out holes on the right side panel. (A water tight cable strain relief or conduit is recommended here.)
3. Connect the wires to the terminals.
4. Replace front side panel with the screws.
5. Secure wire cables.

Typical Wiring Connections



Note: When connecting lines, connect in the most convenient sequence according to your installation considering line set sizes. Example: If installation consists of three (3) 9K indoor units it would be easier to use ports C, D, and E, since no adapter would be required. Another example would be installation of an 18K indoor unit and (2) 9K indoor units. The best ports to use here would be B, C, D, (or E) again no adapter is required.

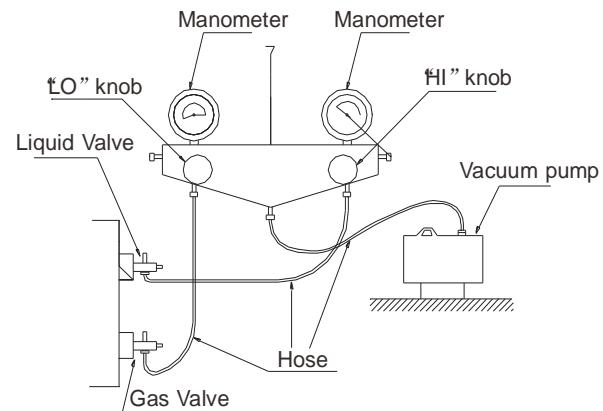
8.7 Evacuating the System

After connecting the indoor and outdoor units, evacuate the air from the line set and the indoor unit by following the procedures below.

Leak Testing

Indoor units are nitrogen pre-charged, however they should be pressure tested before installation. Follow the steps below to test for leaks.

1. Connect the charging hoses to the low side of the manifold and the service port of the gas valve (See figure beside).
2. Connect the center hose of the manifold valve to a nitrogen source.
NOTE: The nitrogen gas cylinder is used in a vertical standing position.
3. Charge system with nitrogen to 150 psi and check for leaks using standard industry leak detection methods.
4. Pay attention to possible evaporator leaks that may have occurred during shipping or installation.
5. Remove the nitrogen by opening the manifold valves.



Vacuum Purge

1. Connect the center hose of the manifold valves to a vacuum pump, and fully open the low and high pressure sides of the manifold valves. **DO NOT open service port valves.**
2. Turn on the vacuum pump. Evacuate system for about one (1) hour and confirm that the vacuum reading is 500 microns.
3. Close all manifold valves and turn off the vacuum pump. After waiting for several minutes, confirm that the vacuum reading of the manifold has not changed. If the vacuum reading has changed, there is a leak that must be found and repaired before continuing.
4. Remove the valve caps from the two valves. Slowly open liquid valve completely using a hexagonal Allen key. Use the same procedure on the suction valve. Open both valves to the full back seat position.
5. Securely tighten the caps back onto liquid and suction valves.
6. Check for gas leaks at all connections. Test with an electronic leak detector or with soapy water. Be sure to wipe off the soap with a clean cloth after leakage test.

8.8 Start-Up Testing

8.8.1 Preparation

NOTE: A wall control (MSWCH; 243-7002) is optional. For operation and installation details, please refer to manual 950-0210 and 950-0220 respectively.

1. Double check that all wiring has been properly connected.
2. Check that tubing has been properly connected and ensure the suction and liquid side service valves are fully open.
3. Review remote control functions in the operation manual.

8.8.2 Operational Test

NOTE: The cooling test can only be performed if the outdoor temperature is between 14°F and 118 °F.

The heating test can only be performed if the outdoor temperature is between 5°F and 81°F.

Unit may require several minutes to confirm the set point temperature and system functions

“COOL” Operation

NOTE: The indoor fan will not turn off in cooling mode when the set temperature is satisfied.

1. Ensure there is power going to the system. Turn on all indoor units and set to “COOL” mode. Change the set temperature to 61°F for all indoor units
2. Press the “FAN” button to select high fan speed on all units.
3. The compressor should turn on no later than three (3) minutes (compressor delay) afterwards. After operating for five (5) minutes after the compressor started, check for cool air flow. Outlet temperature should be 20-24°F lower than ambient temperature. (If outlet temperature is out of range, contact technical support).

“HEAT” Operation

NOTE: The indoor fan will turn off in heating mode shortly after the set temperature is satisfied.

1. Ensure there is power going to the system. Turn on all indoor units and set to “HEAT” mode. Change the set temperature to 86°F for all indoor units
2. Press the “FAN” button to select high fan speed on all units.
3. The compressor should turn on no later than five (5) minutes (compressor delay) afterwards. After operating for several minutes after the compressor started, verify the unit is blowing warm air.

8.8.3 Other Operations

Test the emergency operation button for proper operation. (see operation manual). It is recommended that all other function be tested for operation. Please refer to the operation manual to verify that the unit operates properly. Also, review the remote control functions with the owner. If unit does not perform as described, please see the troubleshooting section.

8.8.3 Temperature Differential

NOTE: This feature is only available for the wall mounted units.

Follow the following steps to set the temperature differential:

1. Change the temperature on the remote from °F to °C by pressing the “mode” and “–” button simultaneously.
2. Within thirty (30) seconds of bringing power to the system, set the indoor unit to HEAT mode. Change the setpoint to 17-20°C depending on the desired setting (see table on right for details). Alternate between pressing “+” and “-” (change temperature to original setting three (3) times within five (5) seconds). The indoor unit will display the differential (1-3°C) briefly and the heating and operation lights will flash three times.

Temperature	Differential
17°C	±3°C
18°C	±2°C
19°C	±1°C
20°C	±0°C

9. Functions and Protection Features

9.1 Functions

9.1.1 "COOL" Mode

Temperature range: 61~86°F

4 way valve position: Closed (Off)

On operation: • The compressor will only start running when any of the indoor units call for cooling and the compressor delay interval has passed.

• When the compressor is operating, the electronic expansion valve and outdoor fan will also turn on.

• Using the indoor/outdoor ambient temperature, the set temperature, and the operating indoor units' capacity, the main board will calculate the system's load and set the working frequency of the inverter compressor.

Off Operation: • The compressor will stop running when all indoor units have reached the set temperature.

• If one indoor unit has reached the set temperature while others are still operating, the corresponding electronic expansion valve for that particular unit will close completely after a five (5) second delay.

• The outdoor fan will turn off one (1) minute after the compressor shuts off.

Outdoor Fan Operation: • The outdoor fan starts five (5) seconds before the compressor starts running.

• The outdoor fan will run at high speed for forty (40) seconds when it first starts, then it will run at a set speed. The fan will run at each set speed for at least eighty (80) seconds.

• When the number of running indoor units is changed, the PC board will change the outdoor fan accordingly.

• When the compressor stops, the outdoor fan runs at the last set speed and then stop one (1) minute after.

Switching to "HEAT" mode: When all operating indoor units are switched from "COOL" to "HEAT" mode, the compressor will turn off and wait three (3) minutes before turning back on. The 4-way valve will open (on) two (2) minutes after the compressor stopped.

9.1.2 "DRY" Mode

Temperature range: Same as "COOL" mode

4 way valve position: Same as "COOL" mode

On operation: Same as "COOL" mode

NOTE: The maximum capacity of "DRY" mode is 90% of that of "COOL" mode.

9.1.3 "FAN" Mode

Temperature range: 61~86°F

4 way valve position: Closed (Off)

On operation: • Indoor fan operates. Can be set to AUTO, HIGH, MED, or LOW.
• Compressor does not turn on

Outdoor Fan Operation: Off

9.1.4 "HEAT" Mode

Temperature range: 61~86°F

4 way valve position: Open (On)

On Operation: • The compressor will only start running when any of the indoor units call for heating and the compressor delay interval has passed.

• When the compressor is operating, the electronic expansion valve and outdoor fan will also turn on.

• Using the indoor/outdoor ambient temperature, the set temperature, and the operating indoor units' capacity, the main board will calculate the system's load and set the working frequency of the inverter compressor.

Off Operation: • The compressor will stop running when all indoor units have reached the set temperature.

• If one indoor unit has reached the set temperature while others are still operating, the corresponding electronic expansion valve for that particular unit will maintain a certain opening angle to make sure that the refrigerant in the coil can be returned to the compressor.

• The outdoor fan will turn off one (1) minute after the compressor shuts off.

• The 4 way valve will close (turn off) two (2) minutes after the compressor shuts off.

Outdoor Fan Operation: • The outdoor fan starts five (5) seconds before the compressor starts running.

• The outdoor fan will run at high speed for forty (40) seconds when it first starts, then it will run at a set speed. The fan will run at each set speed for at least eighty (80) seconds.

• When the number of running indoor units is changed, the PC board will change the outdoor fan accordingly.

• When the compressor stops, the outdoor fan runs at the last set speed and then stop one (1) minute after.

Switching to "COOL" Mode: When all operating indoor units are switched from "HEAT" to "COOL" mode, the compressor will turn off and wait three (3) minutes before turning back on. The 4-way valve will close (off) two (2) minutes after the compressor stopped.

Defrost Function: • This feature will activate according to specific conditions for the indoor/outdoor ambient and outdoor coil temperatures.

• "H1" code will be displayed on the indoor unit display or wall control.

• Unit will exit defrost mode after outdoor coil temperature reaches 50°F or the maximum defrost time has passed (generally 7-10 minutes).

Oil Return Function: • Same as "Defrost Function"
• Maximum duration is five (5) minutes instead of 7-10 minutes.

9.2 Protection Features

9.2.1 Mode Conflict ("E7")

If two or more indoor units are operating in different modes, an indoor unit may show this error code if there is a mode conflict. Below are the priority levels and mode conflict for the different modes of operation.

"compressor ON" mode > "compressor OFF" mode
"FIRST on" mode > "NEXT on" mode

<u>Mode</u>	<u>Conflict</u>
COOL	
DRY	HEAT
FAN	
HEAT	COOL/DRY/FAN

9.2.2 Overload Protection ("E8")

NOTE: The condenser coils will be in the outdoor unit when operating in "COOL" mode and in the indoor unit when the system is operating in "HEAT" mode.

If the condenser coil temperature gets too high, the compressor should slow down and the temperature should therefore drop. If the outdoor coils are still too hot, the compressor will stop running and display an "E8" error code.

9.2.3 Compressor Overload Protection ("H3")

If the discharge temperature of the compressor is too high, the compressor will shut off. After the temperature has dropped and the compressor delay interval has passed, the compressor will resume operation. If this occurs six times in a row before the compressor stays on for longer than seven (7) minutes, then the system will not turn on until power has been disconnected to the system.

9.2.4 Communication Malfunction ("E6")

If the indoor unit does not receive a communication signal from the outdoor unit in 3 minutes, the indoor unit will display an "E6" error code and the outdoor unit will operate as if the indoor unit was not installed.

9.2.5 Intelligent Power Module (IPM) Protection ("H5")

When the IPM module is overheated, the compressor will stop. During this period, the indoor units will display the error code "H5." After the compressor has stopped for three (3) minutes, the system will resume operation. If this occurs six times in a row before the compressor stays on for longer than seven (7) minutes, then the system will not turn on until power has been disconnected to the system.

9.2.6 Compressor Overpressure ("E1")

When the high-pressure is tripped for three (3) seconds continuously, the compressor will enter the high-pressure protection mode and the "E1" error codes will be displayed on the indoor units. The compressor will only resume after the power has been cut off and restored to the unit.

9.2.7 Compressor Phase Protection ("Ld")

If one of the three phases of the compressor is open, the system will enter the compressor phase protection mode with "Ld" displaying on the indoor units. The malfunction will be cleared after 1 min. The unit will restart and then determine if any of the phases are still open. If this occurs six times in a row before the compressor stays on for longer than seven (7) minutes, then the system will not turn on until power has been disconnected to the system.

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10. Error codes

10.1 Error Codes on Indoor unit panel

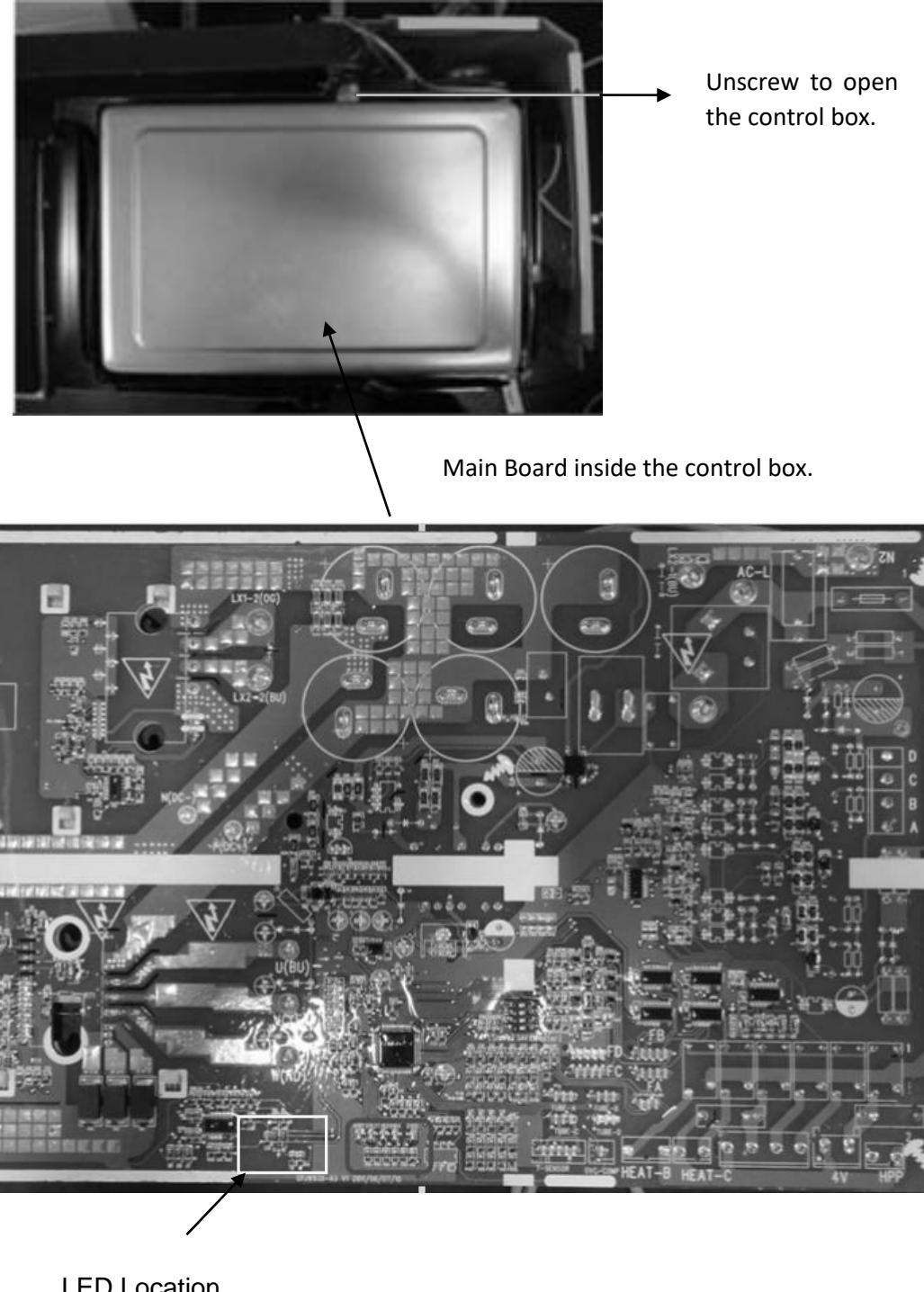
Malfunction Description	Display	Running LED	Cooling LED	Heating LED
Short/open circuit of the coil temp. sensor for the condenser (42K Unit Only)	oE	3 Flashes	3 Flashes	3 Flashes
Short/open circuit of the liquid valve temp. sensor	b5		19 Flashes	
Short/open circuit of the suction valve temp. sensor	b7		22 Flashes	
Jumper failure	C5	15 Flashes		
Trial operation	dd	Flashing	Flashing	Flashing
Incorrect connection of communication wire or expansion valve failure	dn			
High Pressure Protection	E1	1 Flash		
Anti-Freezing Protection	E2	2 Flashes		
Low Pressure Protection (42K Unit Only)	E3	3 Flashes		
Exhaust Protection (Temperature Overheat)	E4	4 Flashes		
Over Current Protection	E5	5 Flashes		
Communication Malfunction	E6	6 Flashes		
Mode Conflict	E7	7 Flashes		
Overload Protection	E8	8 Flashes		
Anti-Cold Blow Protection	E9	9 Flashes		
Condensate Water Full of Indoor Unit			Flashing	Flashing
EEPROM malfunction (Except For 42K Unit)	EE			15 Flashes
Frequency Drop for Module current protection - phase current (Except For 42K Unit)	En	3 Flashes	3 Flashes	3 Flashes
Frequency Drop for Module temperature protection (Except For 42K Unit)	EU		6 Flashes	6 Flashes
Refrigerant Insufficiency or Blockage Protection	F0	10 Flashes		
Indoor Ambient Sensor Failure	F1		1 Flash	
Indoor Tube Sensor Failure	F2		2 Flashes	
Outdoor Ambient Sensor Failure	F3		3 Flashes	
Outdoor Tube Sensor Failure	F4		4 Flashes	
Outdoor Exhaust Sensor Failure	F5		5 Flashes	
Frequency Drop for Overload (Except for 42K Unit)	F6		6 Flashes	
Oil Return in Cooling Mode	F7		7 Flashes	
Frequency Drop for Over Current Protection (Except for 42K Unit)	F8		8 Flashes	
Frequency Drop for Exhaust Protection (Except for 42K Unit)	F9		9 Flashes	
Refrigerant Recovery Mode	F0	Flashing	Flashing	
Frequency Drop for Anti-Freezing Protection (Except for 42K Unit)	FH		2 Flashes	2 Flashes

Malfunction Description	Display	Running LED	Cooling LED	Heating LED
Frequency Drop for Heating High Temperature Protection	H0			10 Flashes
Defrost or Oil Return Heat Mode	H1			1 Flash
Electrostatic Air Cleaning Protection	H2			2 Flashes
Compressor Overload Protection	H3			3 Flashes
System Overload	H4			4 Flashes
IPM Protection	H5			5 Flashes
Indoor Fan Motor Failure (Except for 42K Unit)	H6	14 Flashes		
Compressor Desynchronizing	H7			7 Flashes
PFC Over-current Malfunction	HC			6 Flashes
Demagnetizing Protection for Compressor	HE			14 Flashes
Outdoor Fan motor Failure	L3			
High Supply Voltage Protection	L9	20 Flashes		
Startup Failure	Lc			11 Flashes
Compressor Phase Failure / Reverse Protection	Ld			
Compressor Stalling (42K Unit Only)	LE	3 Flashes	3 Flashes	3 Flashes
Over-Speed (42K Unit Only)	LF	3 Flashes	3 Flashes	3 Flashes
Indoor and Outdoor Unit Do Not Match Each Other	LP			
Phase Over-current Protection	P5			15 Flashes
Communication Error between the Drive Board and the Main Board (42K Unit Only)	P6	16 Flashes		
Module Temperature Sensor Failure	P7			18 Flashes
Module Overheat Protection	P8	19 Flashes		
AC Contactor Protection (42K Unit Only)	P9	3 Flashes	3 Flashes	3 Flashes
Current Sensor Error	Pc	3 Flashes	3 Flashes	3 Flashes
Transducer Connection Protection (42K Unit Only)	Pd	3 Flashes	3 Flashes	3 Flashes
Temperature Drift Protection (42K Unit Only)	PE	3 Flashes	3 Flashes	3 Flashes
Drive Board Ambient Sensor Failure (42K Unit Only)	PF	3 Flashes	3 Flashes	3 Flashes
High Voltage Protection of DC Busbar	PH		11 Flashes	
Low Voltage Protection of DC Busbar	PL			21 Flashes
AC Input Voltage Anomaly (42K Unit Only)	PP	3 Flashes	3 Flashes	3 Flashes
Capacitor Charging Circuit Error	PU			17 Flashes
Compress Phase Circuit Detection Error (Except for 42K Unit)	U1			12 Flashes
DC Busbar Voltage Drop Error (Except for 42K Unit)	U3			20 Flashes
Reversing Valve Error	U7			
Indoor fan Motor Zero-cross Detecting Error (Except for 42K Unit)	U8	17 Flashes		
Outdoor Unit Zero-cross Detecting Error	U9			

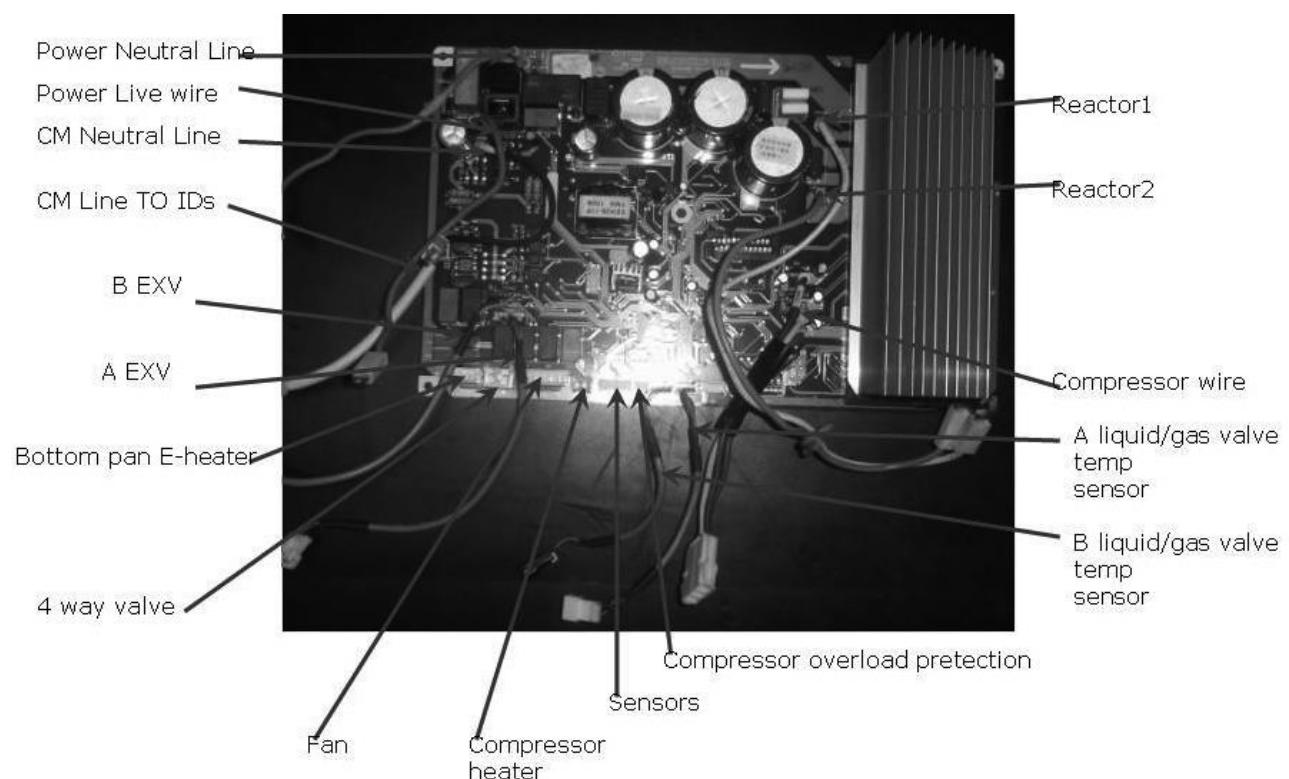
10.2 Flash codes on the PC board of outdoor unit

10.2.1 Dual/Triple/Quad Ports

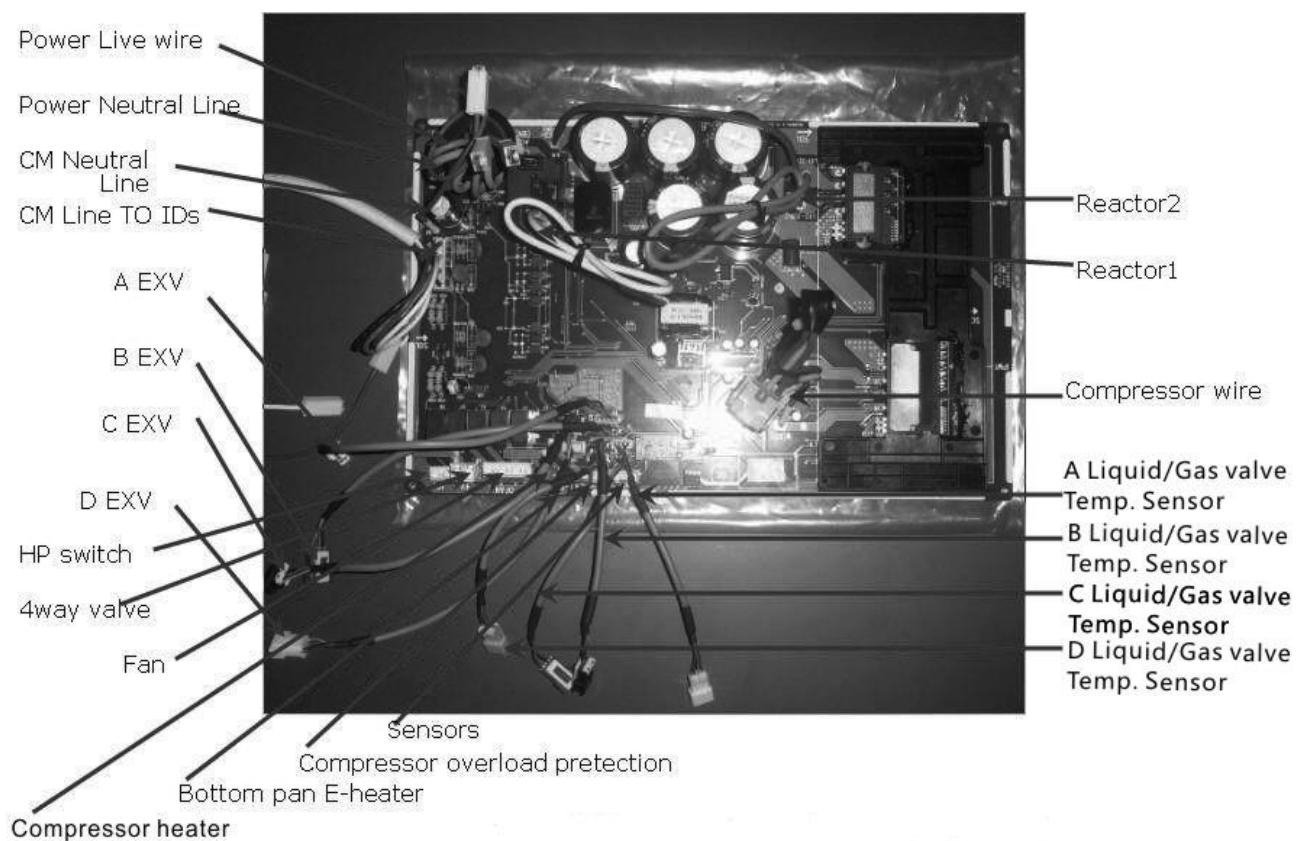
There are four LEDs for error codes which are located on the outdoor main board. Remove the top cover of the outdoor unit to approach the control box.



Dual Port (SMZ18H46ZOGX) Main Board



Triple/Quad Port (SMZ24H46ZOGX /SMZ30H46ZOGX) Main Board



When several malfunctions occur at the same time, they will be displayed in circulation and every malfunction is displayed for 5 seconds.

○ – off

● – on

◊ – flash

Malfunction Description	LED 1	LED 2	LED 3	LED 4
Normal stop	○	○	○	○
Compressor run	●	○	○	○
Compressor overload protection	◊	○	○	○
Discharge protection	○	●	○	○
Outdoor unit overload protection	●	●	○	○
High pressure protection	◊	●	○	○
Over current protection	○	◊	○	○
IMP protection	●	◊	○	○
IMP over heating protection	◊	◊	○	○
PFC protection (including PFC overheating protection)	○	○	●	○
Phase current protection	●	○	●	○
Over voltage protection	◊	○	●	○
Insufficient voltage protection	○	●	●	○
Start failure	●	●	●	○
Compressor desynchronizing	◊	●	●	○
Compressor phase-lacking protection	○	◊	●	○
Compressor phase current detection malfunction	●	◊	●	○
Memory chip mistake	◊	◊	●	○
DC power supply circuit-short	○	○	◊	○
Defrosting	●	○	◊	○
Oil return	◊	○	◊	○
Complete unit frequency restriction protection	○	●	◊	○
Complete unit frequency dropping protection	●	●	◊	○
Unit A frequency restriction or frequency dropping protection	◊	●	◊	○
Unit B frequency restriction or frequency dropping protection	○	◊	◊	○
Unit C frequency restriction or frequency dropping protection	●	◊	◊	○
Unit D frequency restriction or frequency dropping protection	◊	◊	◊	○
Outdoor ambient temperature sensor protection	○	○	○	●
Outdoor tube temperature sensor protection	●	○	○	●
Discharge temperature sensor protection	◊	○	○	●

○ – off

● – on

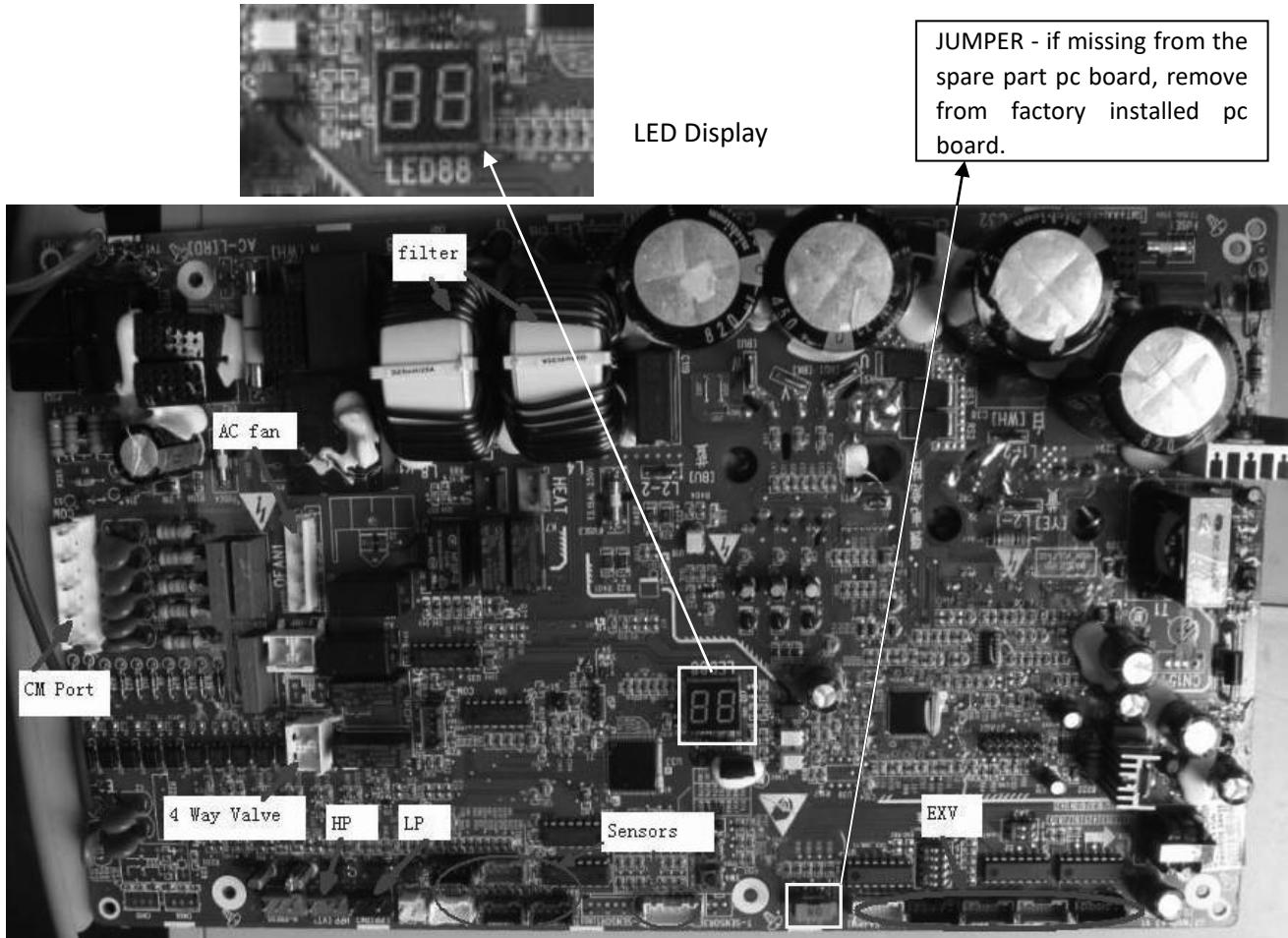
◊ – flash

Malfunction Description	LED 1	LED 2	LED 3	LED 4
IPM thermal resistance malfunction	○	●	○	●
Unit A liquid pipe temperature sensor malfunction	●	●	○	●
Unit A gas pipe temperature sensor malfunction	◊	●	○	●
Unit B liquid pipe temperature sensor malfunction	○	◊	○	●
Unit B gas pipe temperature sensor malfunction	●	◊	○	●
Unit C liquid pipe temperature sensor malfunction	◊	◊	○	●
Unit C gas pipe temperature sensor malfunction	○	○	●	●
Unit D liquid pipe temperature sensor malfunction	●	○	●	●
Unit D gas pipe temperature sensor malfunction	◊	○	●	●
Unit A mode conflict	○	●	●	●
Unit B mode conflict	●	●	●	●
Unit C mode conflict	◊	●	●	●
Unit D mode conflict	○	◊	●	●
Communication failure with Unit A	●	◊	●	●
Communication failure with Unit B	◊	◊	●	●
Communication failure with Unit C	○	○	◊	●
Communication failure with Unit D	●	○	◊	●
Unit A freeze protection	◊	○	◊	●
Unit B freeze protection	○	●	◊	●
Unit C freeze protection	●	●	◊	●
Unit D freeze protection	◊	●	◊	●
Unit A overheating prevention protection	○	◊	◊	●
Unit B overheating prevention protection	●	◊	◊	●
Unit C Overheating prevention protection	◊	◊	◊	●
Unit D overheating prevention protection	○	○	○	◊
Unit A communication wire misconnection or expansion valve malfunction	●	○	○	◊
Unit B communication wire misconnection or expansion valve malfunction	◊	○	○	◊
Unit C communication wire misconnection or expansion valve malfunction	○	●	○	◊
Unit D communication wire misconnection or expansion valve malfunction	●	●	○	◊

10.2.2 Five Ports

There is a LED display for error codes that is located on the outdoor main board. Remove the top cover of the outdoor unit to gain access to the main board in the control box.

Five Port (SMZ42H46ZOGX) Main Board



Malfunction Name of 42K Multi zone	Outdoor Display	Indoor Display	Wall Control Display
Defrosting Mode 1	08	/	/
Defrosting Mode 2	0A	/	/
Whole Unit Running Normally	ON	/	/
Short/open circuit of the coil inlet temp. sensor for the condenser	A5	oE	A5
Short/open circuit of the coil outlet temp. sensor for the condenser	A7	oE	A7
Short/open circuit of the liquid line temp. sensor	14 (for Unit A) 24 (for Unit B) 34 (for Unit C) 44 (for Unit D) 54 (for Unit E)	b5	B5
Short/open circuit of the suction line temp. sensor	13 (for Unit A) 23 (for Unit B) 33 (for Unit C) 43 (for Unit D) 53 (for Unit E)	b7	B7
Jumper failure	C5	C5	C5

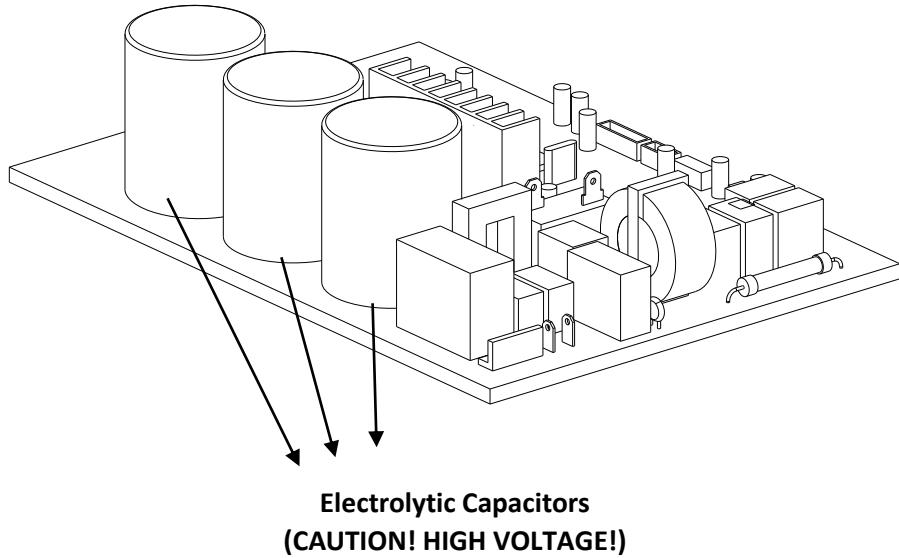
Malfunction Name of 42K Multi zone	Outdoor Display	Indoor Display	Wall Control Display
Trial operation	dd	dd	dd
Incorrect connection of communication wire or expansion valve failure	dn	dn	dn
High Pressure Protection	E1	E1	E1
Anti-Freezing Protection	E2	E2	E2
Low Pressure Protection	E3	E3	E3
Exhaust Protection (Temperature Overheat)	E4	E4	E4
Over Current Protection		E5	
Communication Malfunction	41 (for Unit D) 51 (for Unit E)	E6	E6
Mode Conflict	46 (for Unit D) 56 (for Unit E)	E7	E7
Overload Protection	E8	E8	E8
Condensate Water Full in Indoor Unit	E9	E9	E9
Indoor Ambient Sensor Failure	15 (for Unit A) 25 (for Unit B) 35 (for Unit C) 45 (for Unit D) 55 (for Unit E)	F1	F1
Indoor Tube Sensor Failure	42 (for Unit D) 52 (for Unit E)	F2	F2
Outdoor Ambient Sensor Failure	F3	F3	F3
Outdoor Tube Sensor Failure	F4	F4	F4
Outdoor Exhaust Sensor Failure	F5	F5	F5
Oil Return in Cooling Mode	F7	F7	F7
Refrigerant Recovery Mode	Fo	Fo	Fo
Defrost or Oil Return Heat Mode	H1	H1	
Forced Defrosting	H1	H1	H1
Compressor Overload Protection	H3	H3	H3
IPM Protection	H5	H5	H5
Compressor Desynchronizing	H7	H7	H7
PFC Protection	HC	HC	HC
High Supply Voltage Protection	L9	L9	L9
Startup Failure	Lc	Lc	Lc
Compressor Phase Failure / Reverse Protection	Ld	Ld	Ld
Compressor Stalling	LE	LE	LE
Over-Speed	LF	LF	LF
IPM Reset	P0	P0	P0
Compressor Over-current Protection	P5	P5	P5
Communication Error between the Drive Board and the Main Board	P6	P6	P6
Module Temperature Sensor Failure	P7	P7	P7
Radiator Overheat Protection	P8	P8	P8
AC Contactor Protection	P9	P9	P9
AC input Current Protection	PA	PA	PA
Current Sensor Error	Pc	Pc	Pc
Transducer Connection Protection	Pd	Pd	Pd
Temperature Drift Protection	PE	PE	PE
Drive Board Ambient Sensor Failure	PF	PF	PF
High Voltage Protection	PH	PH	PH
Low Voltage Protection	PL	PL	PL
AC Input Voltage Anomaly	PP	PP	PP
Capacitor Charging Circuit Error	PU	PU	PU

11. Troubleshooting

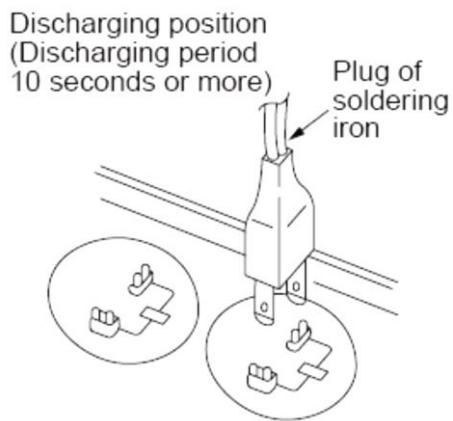
NOTE: All pictures used in this section are for reference only. Actual products may be different.

WARNING!

Electricity is still kept in the capacitors even when the power supply is shut off or disconnected. Do not forget to discharge the electricity in the capacitors before troubleshooting.



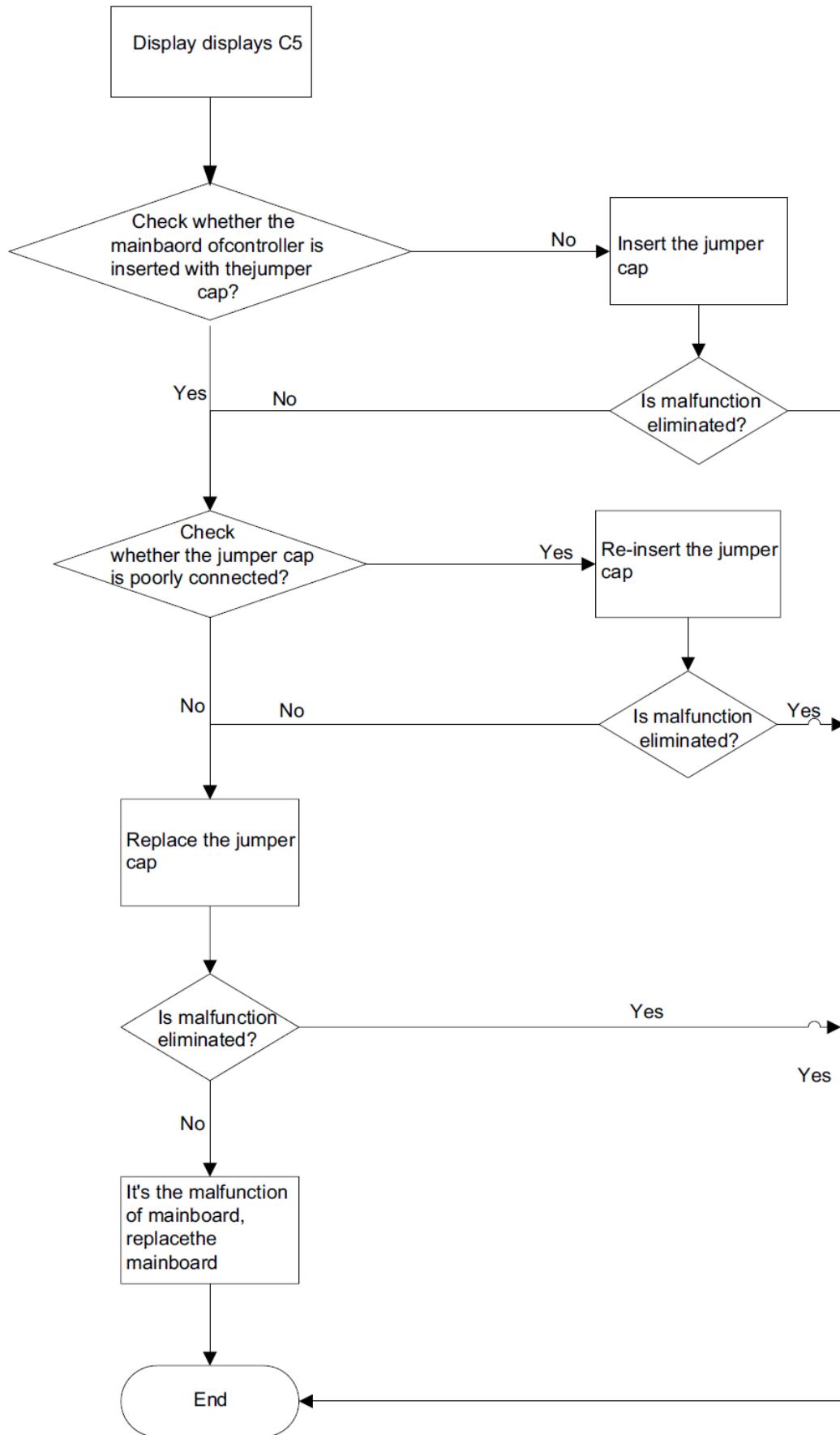
For other models, please connect the discharge resistance (approximately 100Ω 40W) or soldering iron (plug) between the "+" and "-" terminals of the electrolytic capacitor on the opposite side of the outdoor PCB.



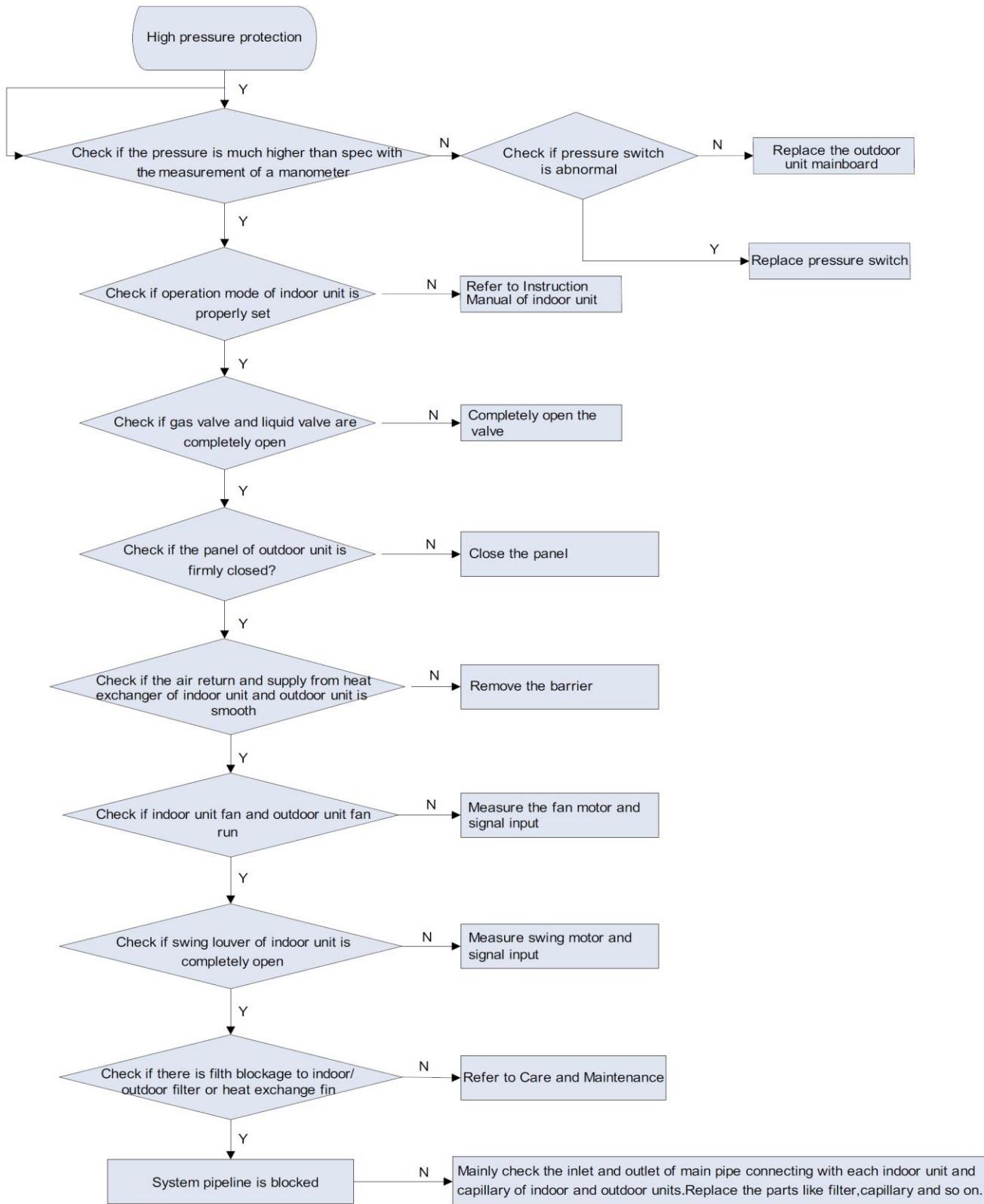
NOTE: The picture above is for reference only. The actual plugs and capacitors may be different.

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11.1 C5: Jumper Failure



11.2 E1: High Pressure Protection



Additional Possible Causes

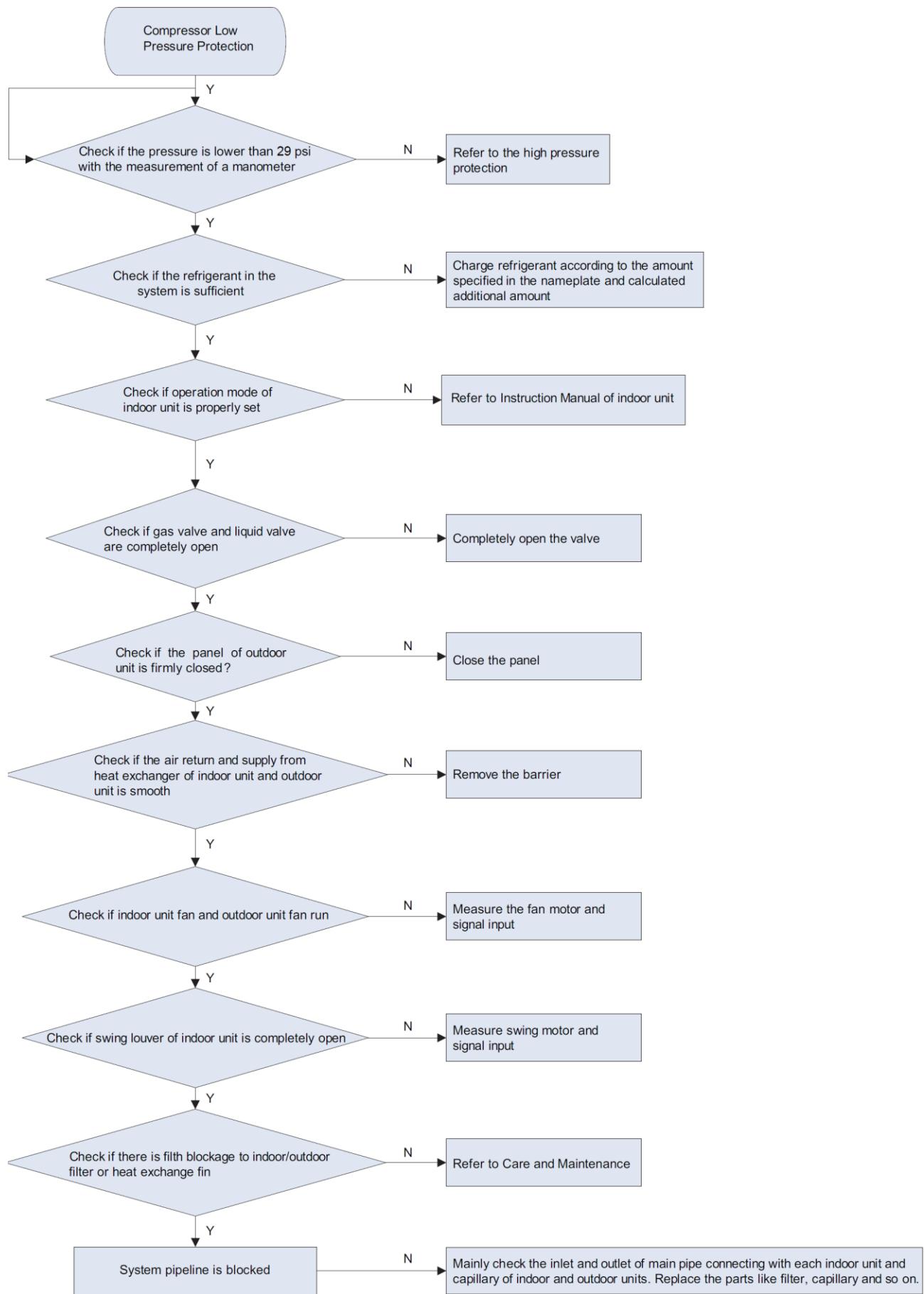
- Outdoor board and pressure switch is not connected well
- Too much refrigerant in the system
- Outdoor ambient temperature is too high (i.e. >127 °F)
- Expansion valve or 4 way valve failed

11.3 E2: Anti-Freezing Protection

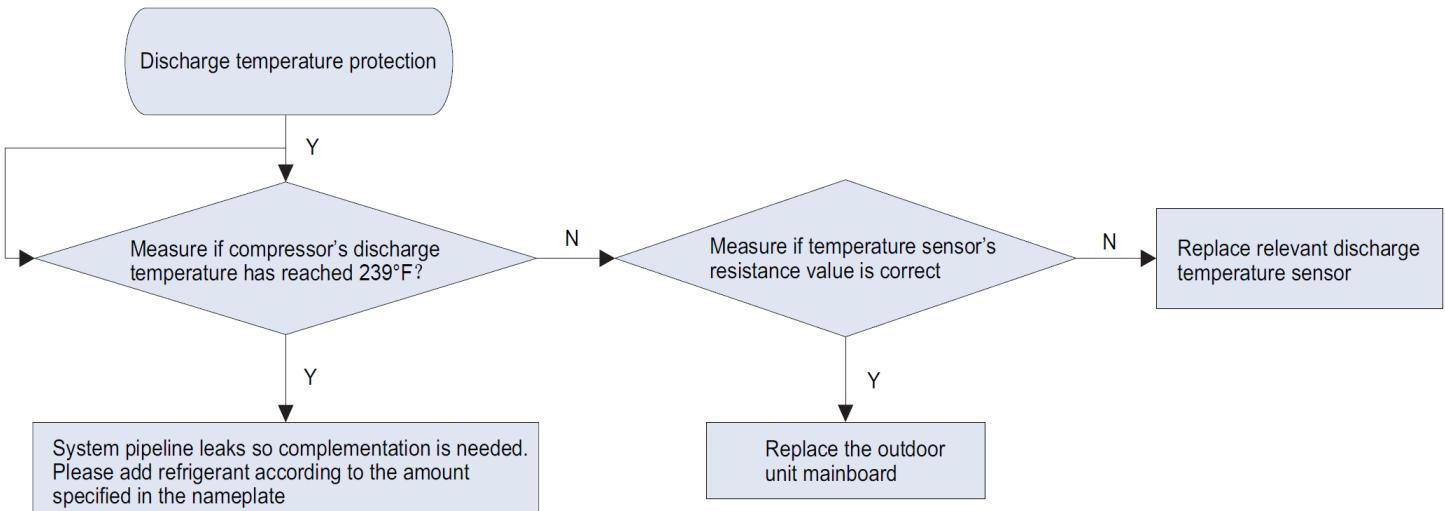
Possible Causes

- Check the air flow. Make sure the inlet and outlet of both indoor and outdoor unit is not blocked.
- Check the air filters and make sure they are clean.
- Check the indoor tube sensor F2 by referring the value from “Appendix II” on page 125. If it is broken, then replace the sensor. If the sensor is good, then replace the indoor PC board.

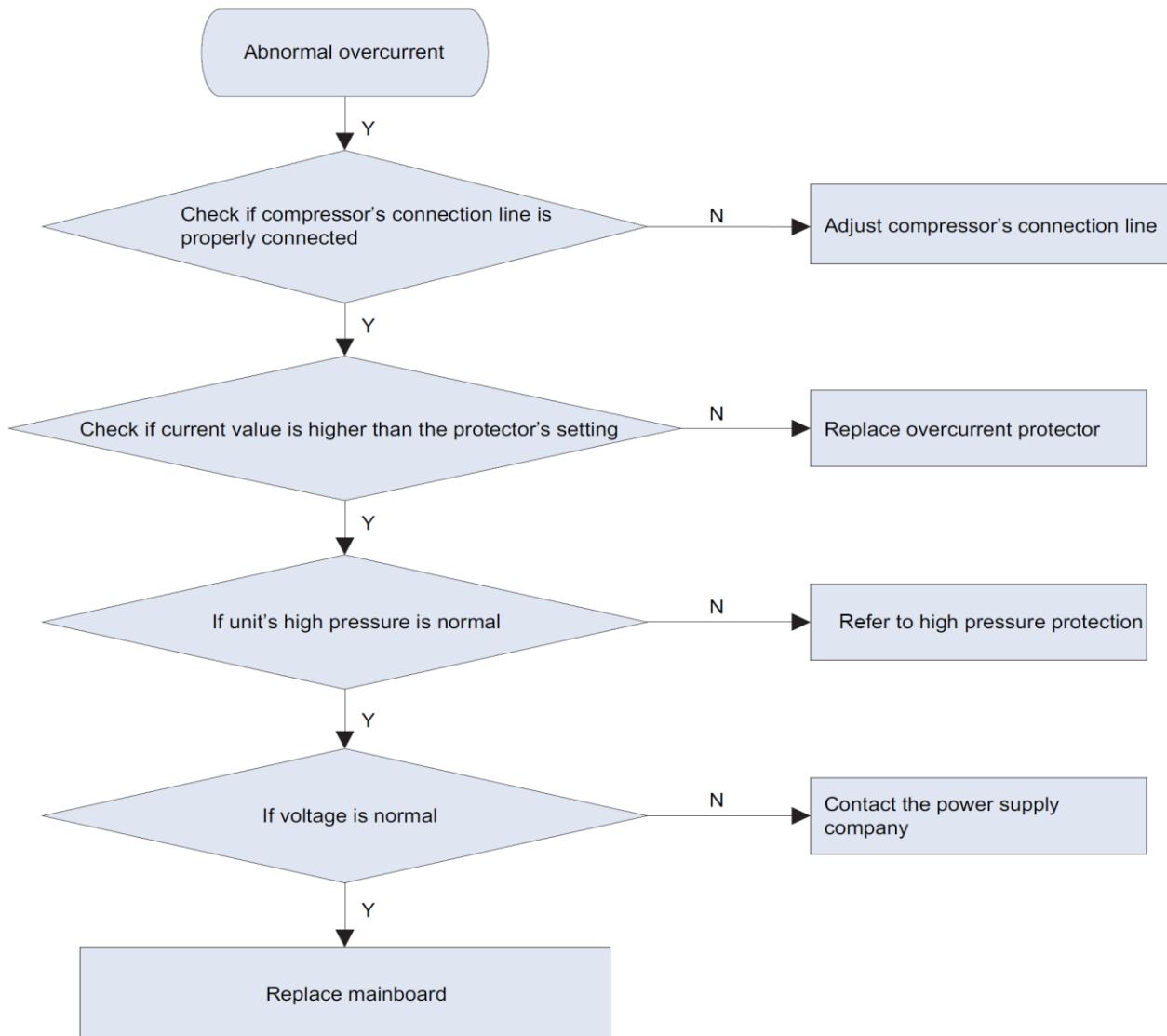
11.4 E3: Low Pressure Protection



11.5 E4: Exhaust Protection

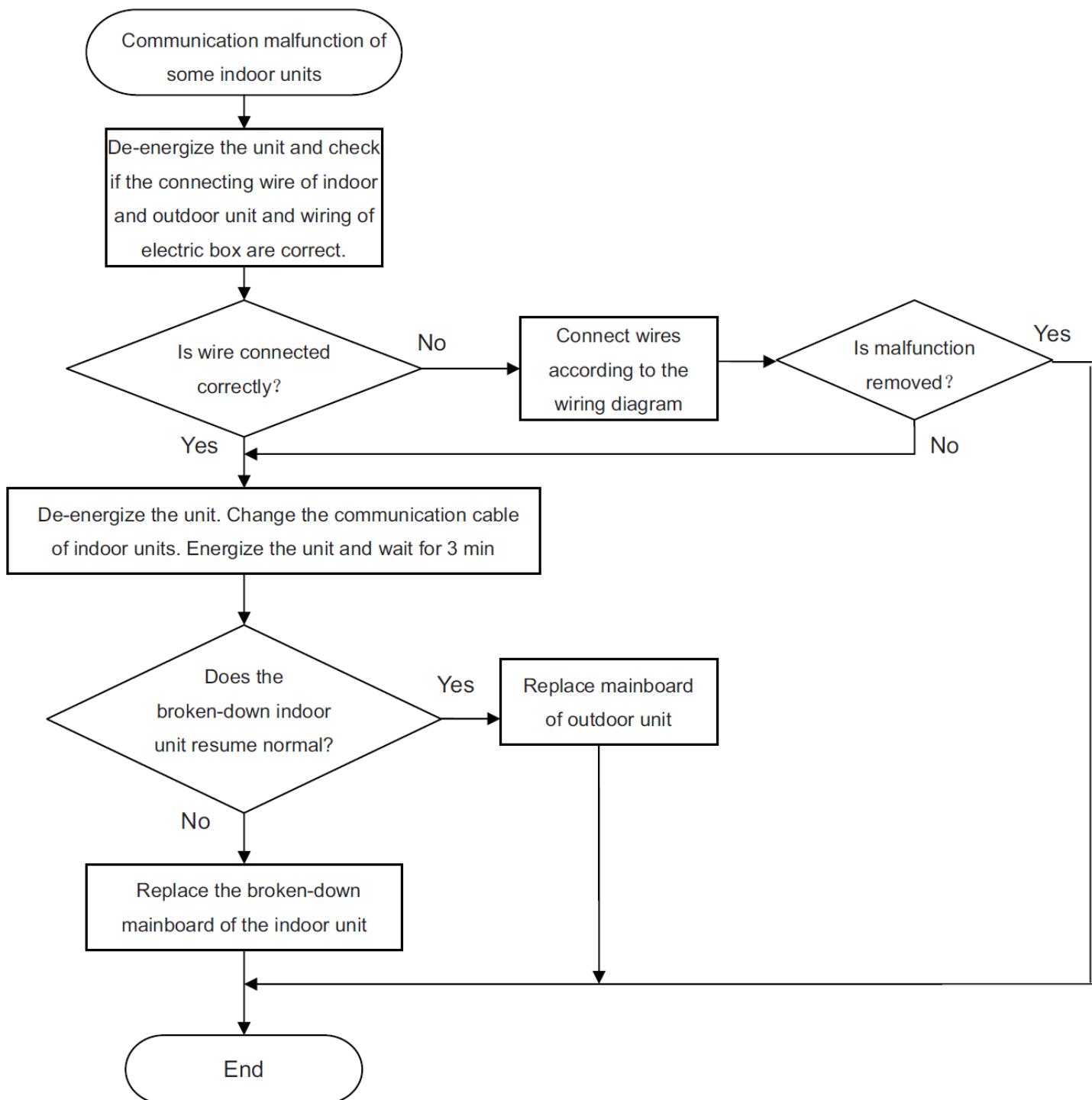


11.6 E5: Over-Current Protection

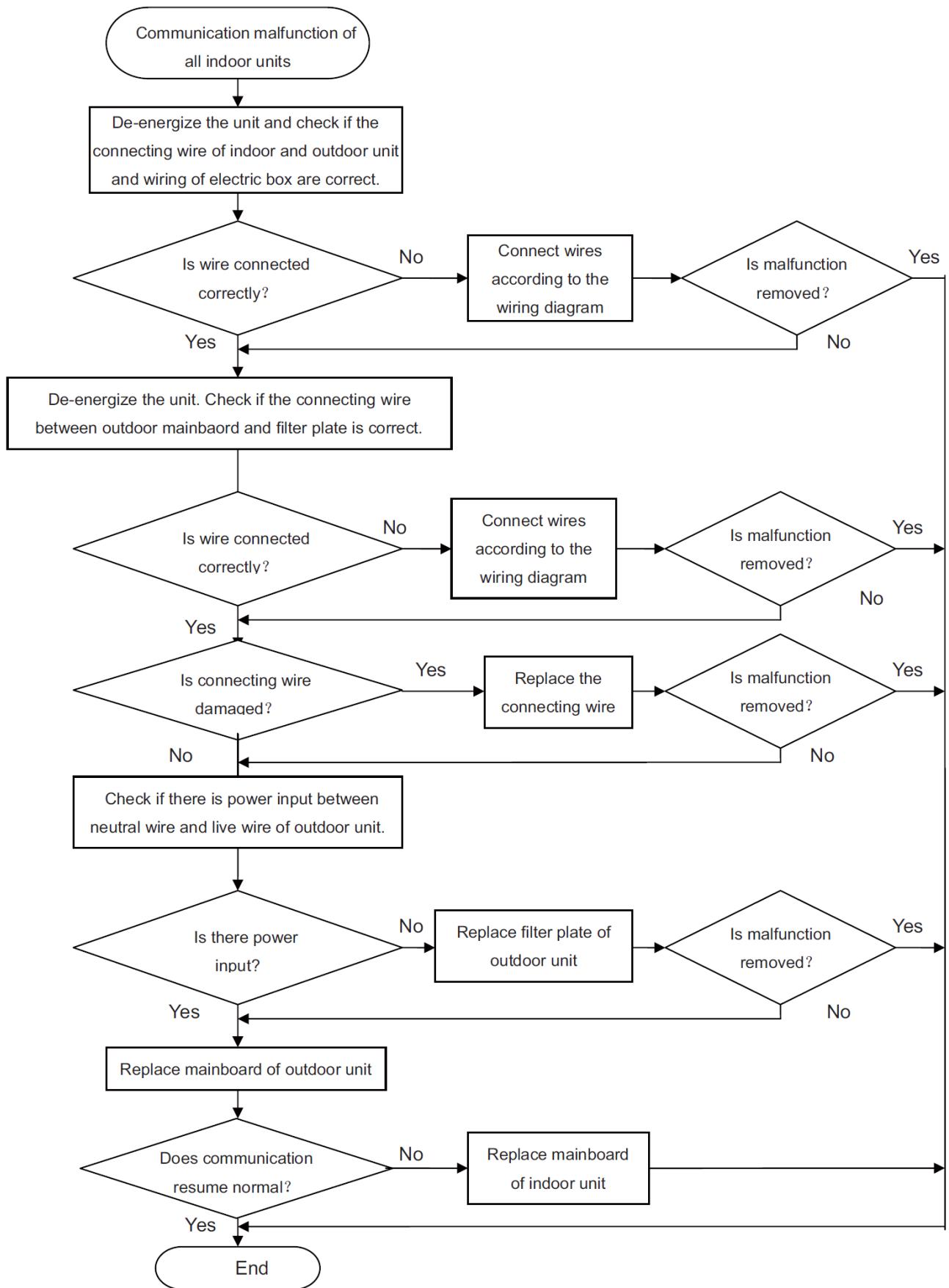


11.7 E6: Communication Malfunction

If “E6” only shows up on some indoor units.



If “E6” only shows up on all indoor units.

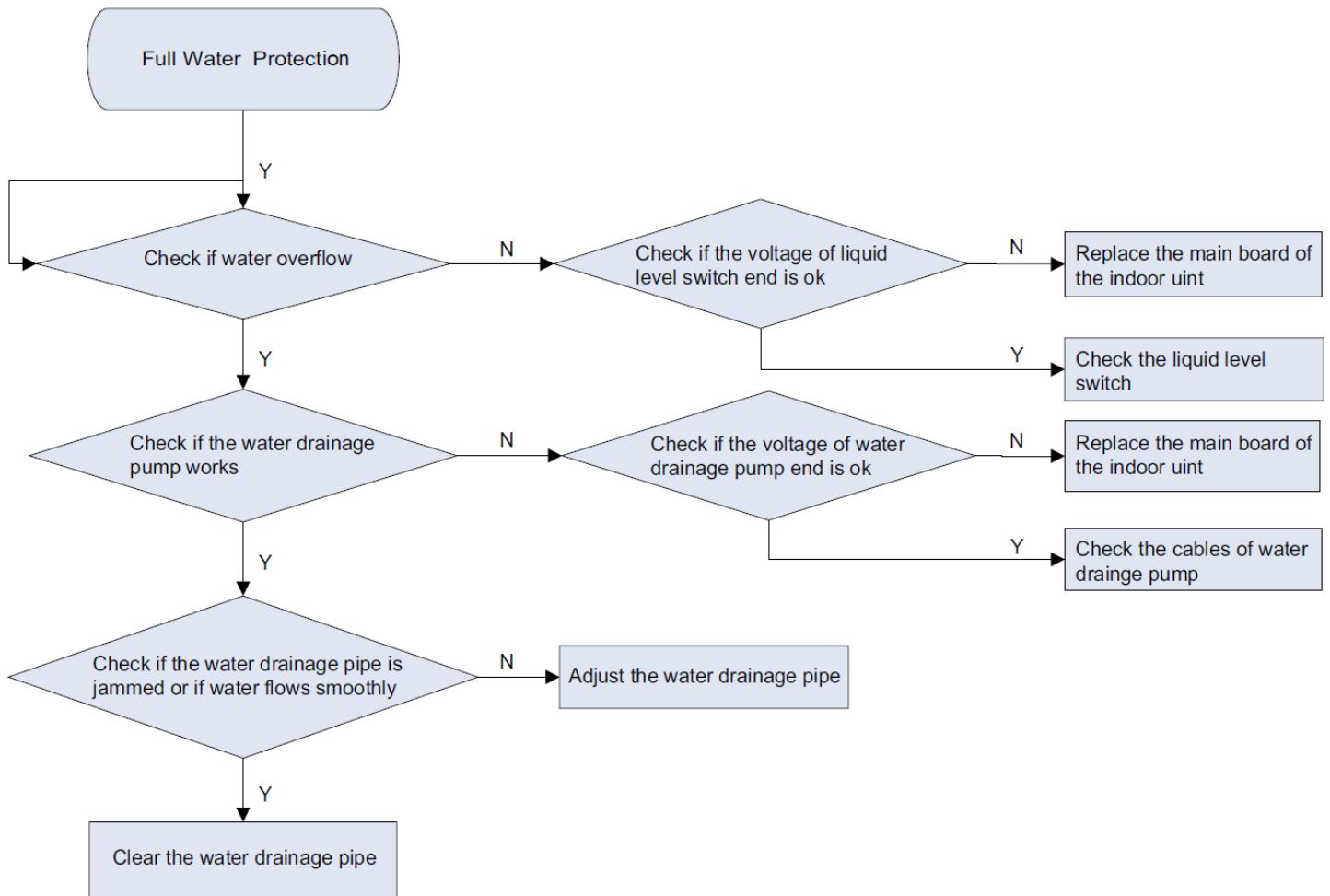


11.8 E8: Overload Protection

The system overload protection E8 is mainly caused by high pressure or overcurrent issue. Please refer to the flow chat for E1 (on page 52) and E5 (on page 55).

11.9 E9: Condensate Water Full in Indoor Unit

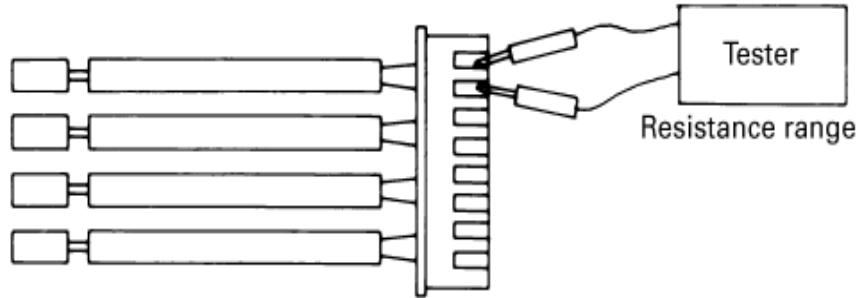
(For Cassette and Ducted indoor units only)



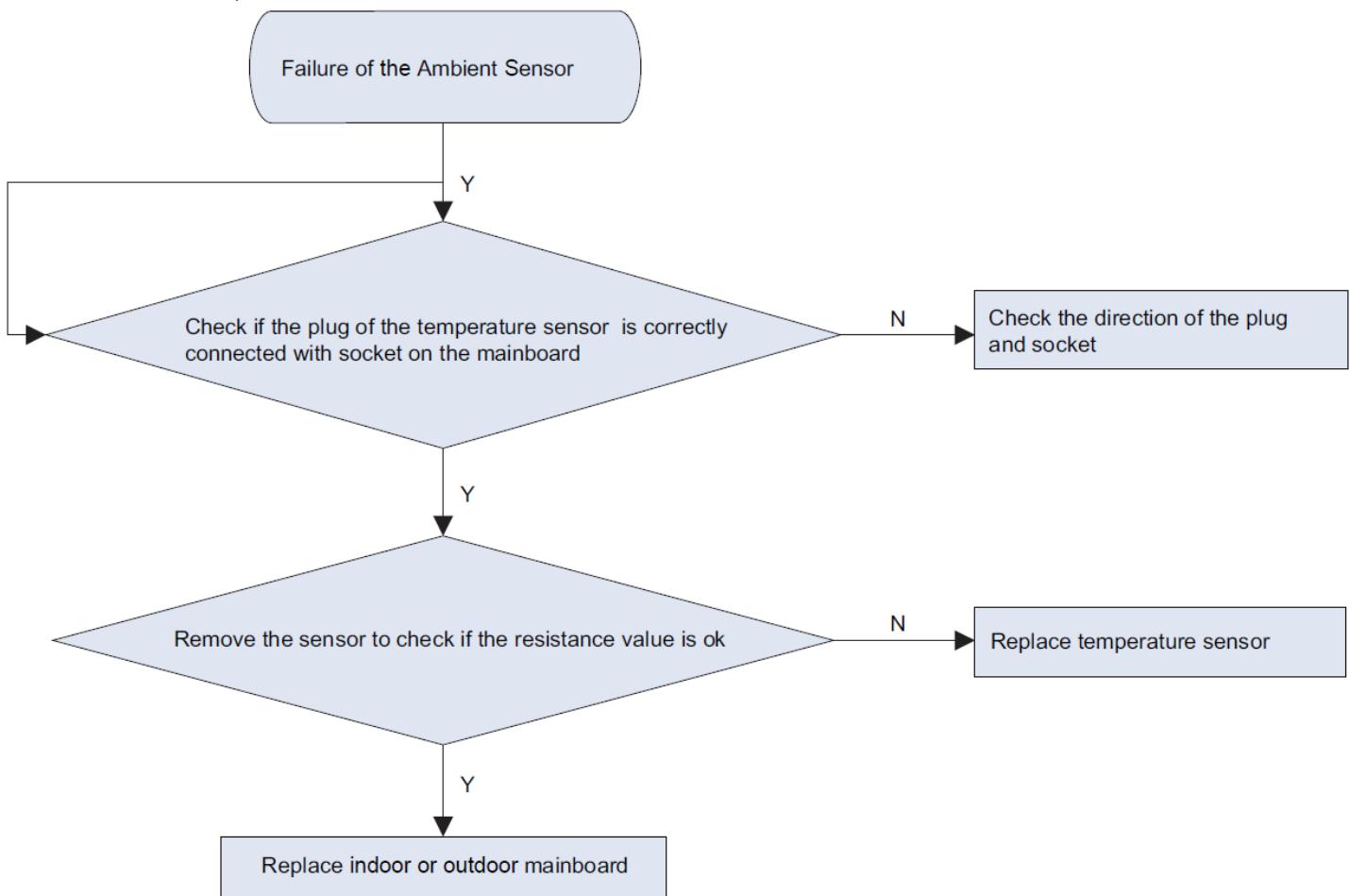
11.10 F1/F2/F3/F4/F5: Temperature Sensor Failure

- Check the resistance value of corresponding sensor.
- Check the position of corresponding sensor; make sure the connection is good.
- Check the wiring.
- If above are OK, the PC board may have to be replaced.

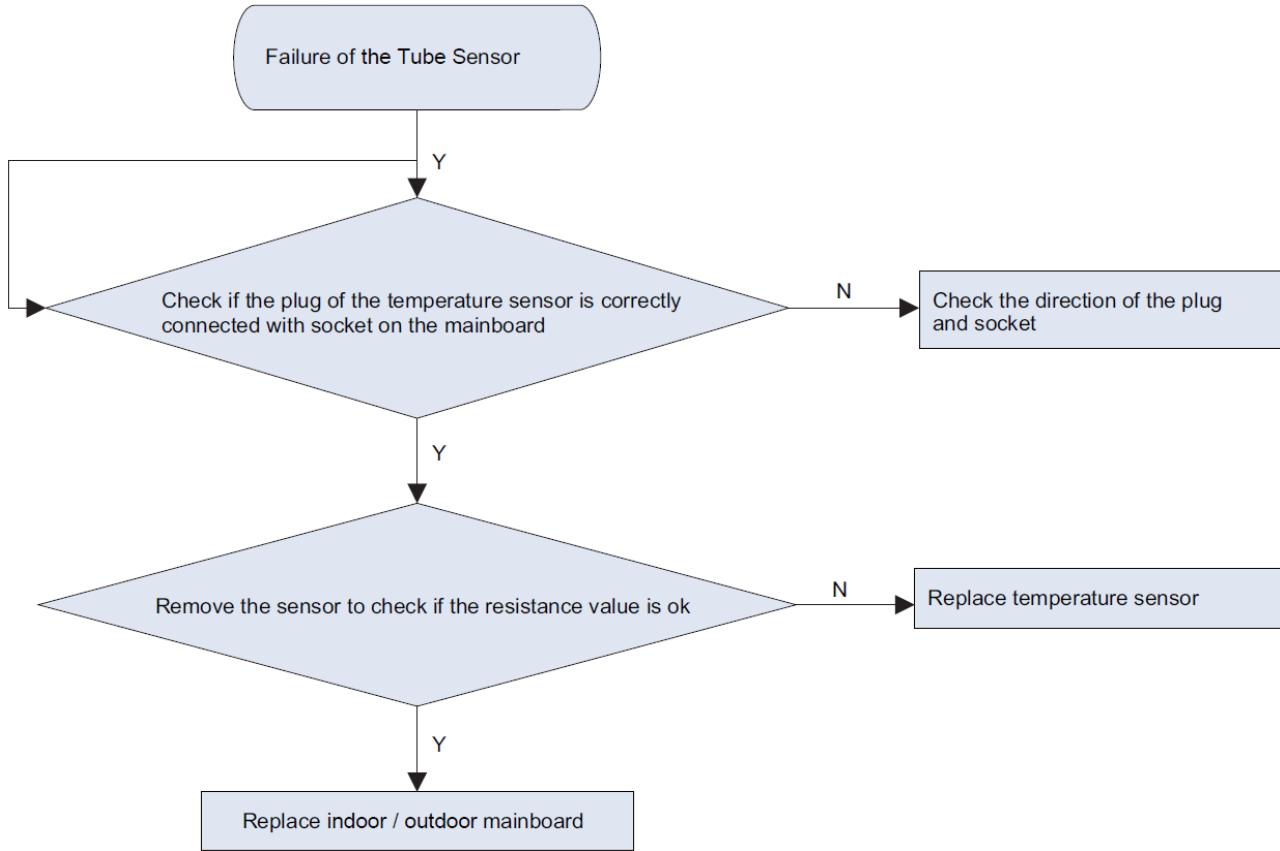
See Appendix I, II, or III on page 124-126 for the resistance of the sensors.



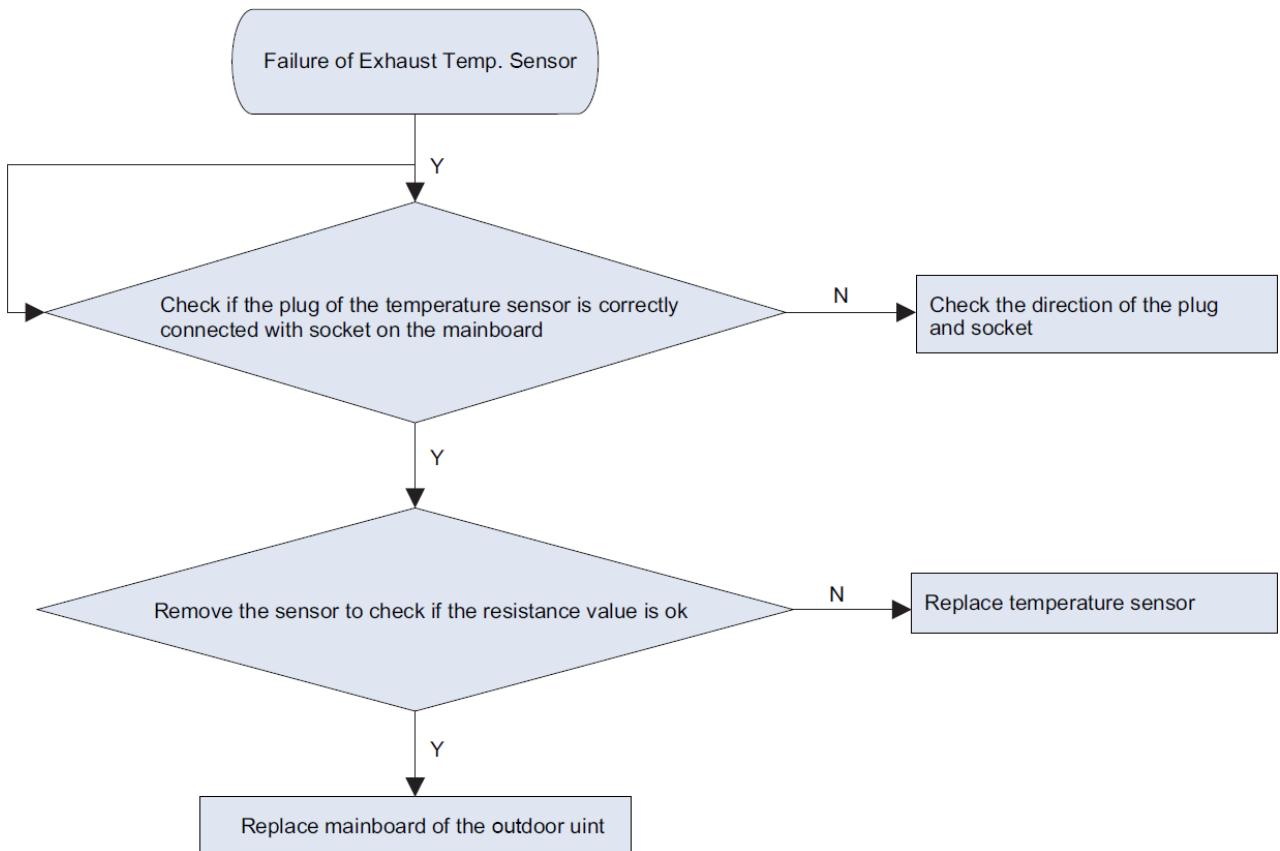
11.10.1 F1/F3: Ambient Sensor for Indoor and Outdoor



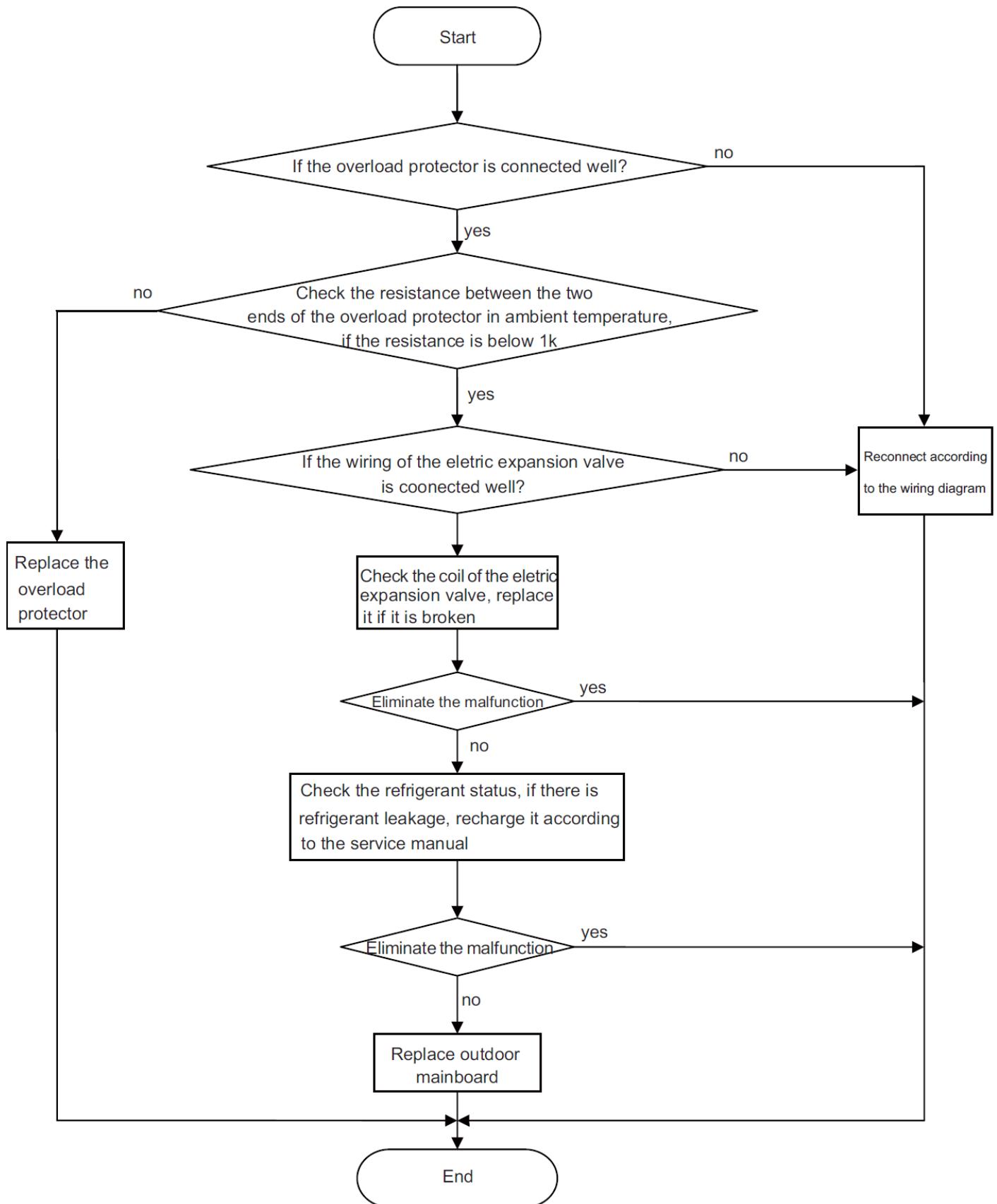
11.10.2 F2/F4: Tube Sensor for Indoor and Outdoor



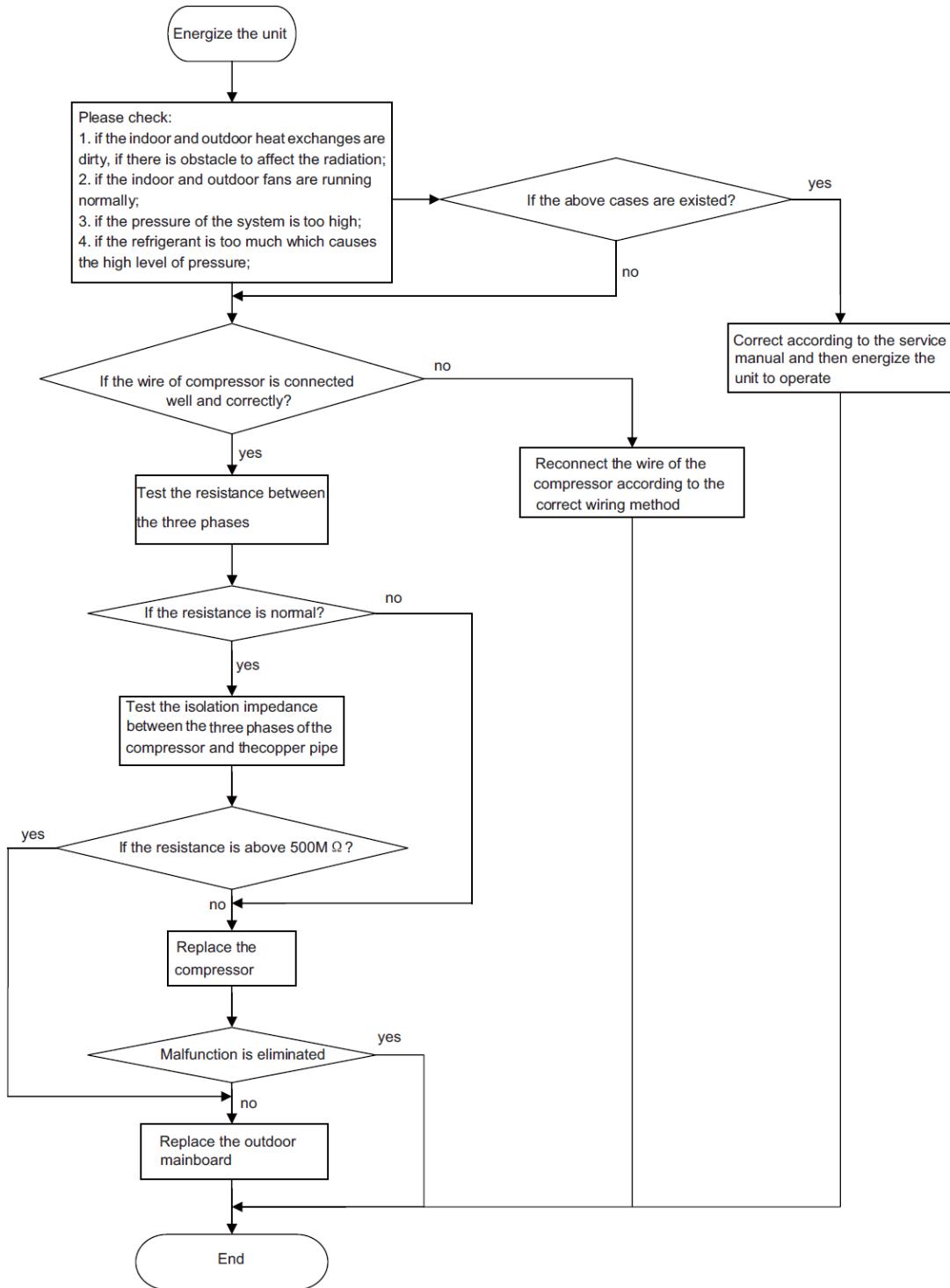
11.10.3 F5: Exhaust Sensor Failure



11.11 H3: Compressor Overload Protection



11.12 H5: IPM Protection

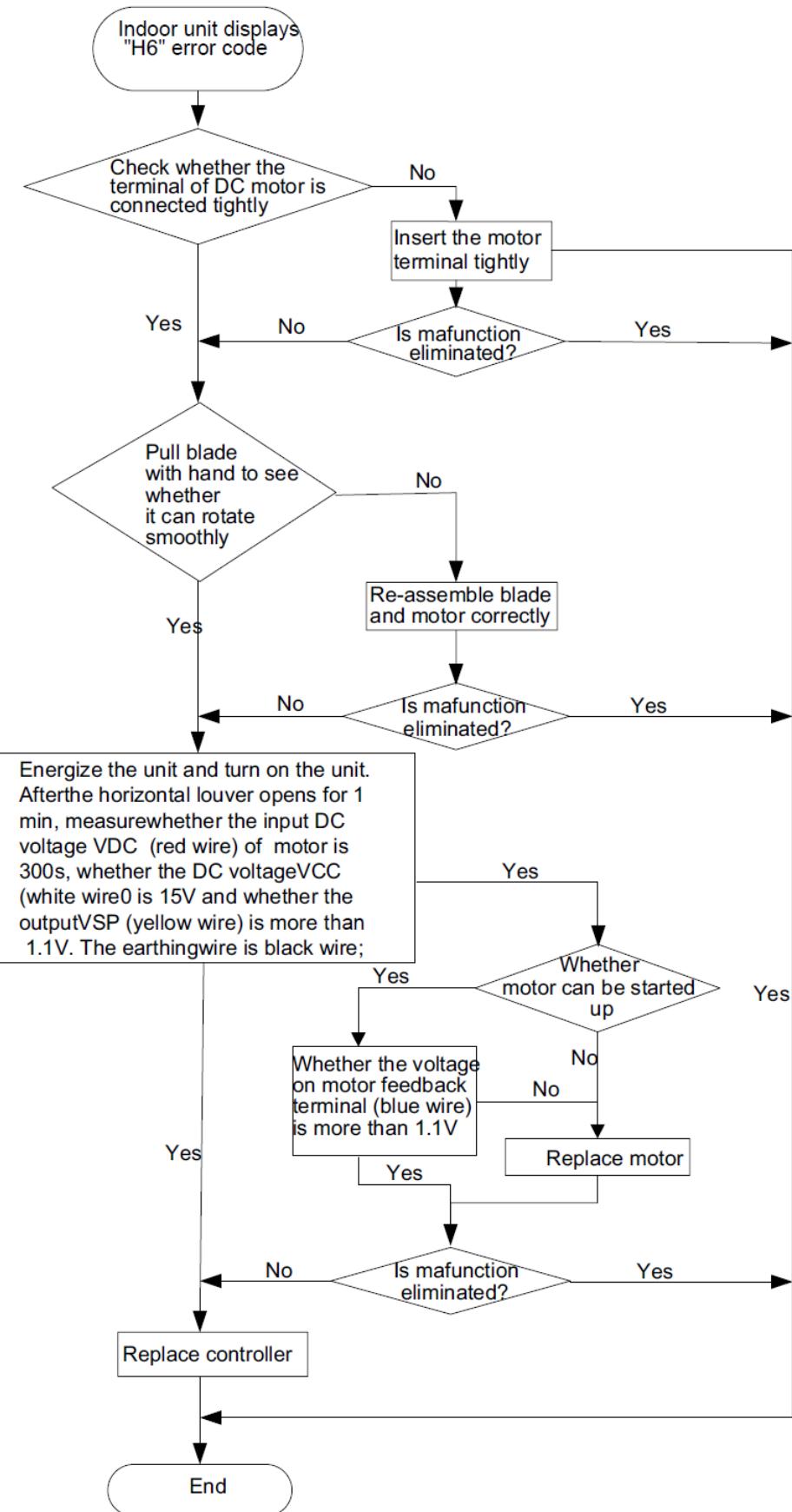


Additional Possible Causes

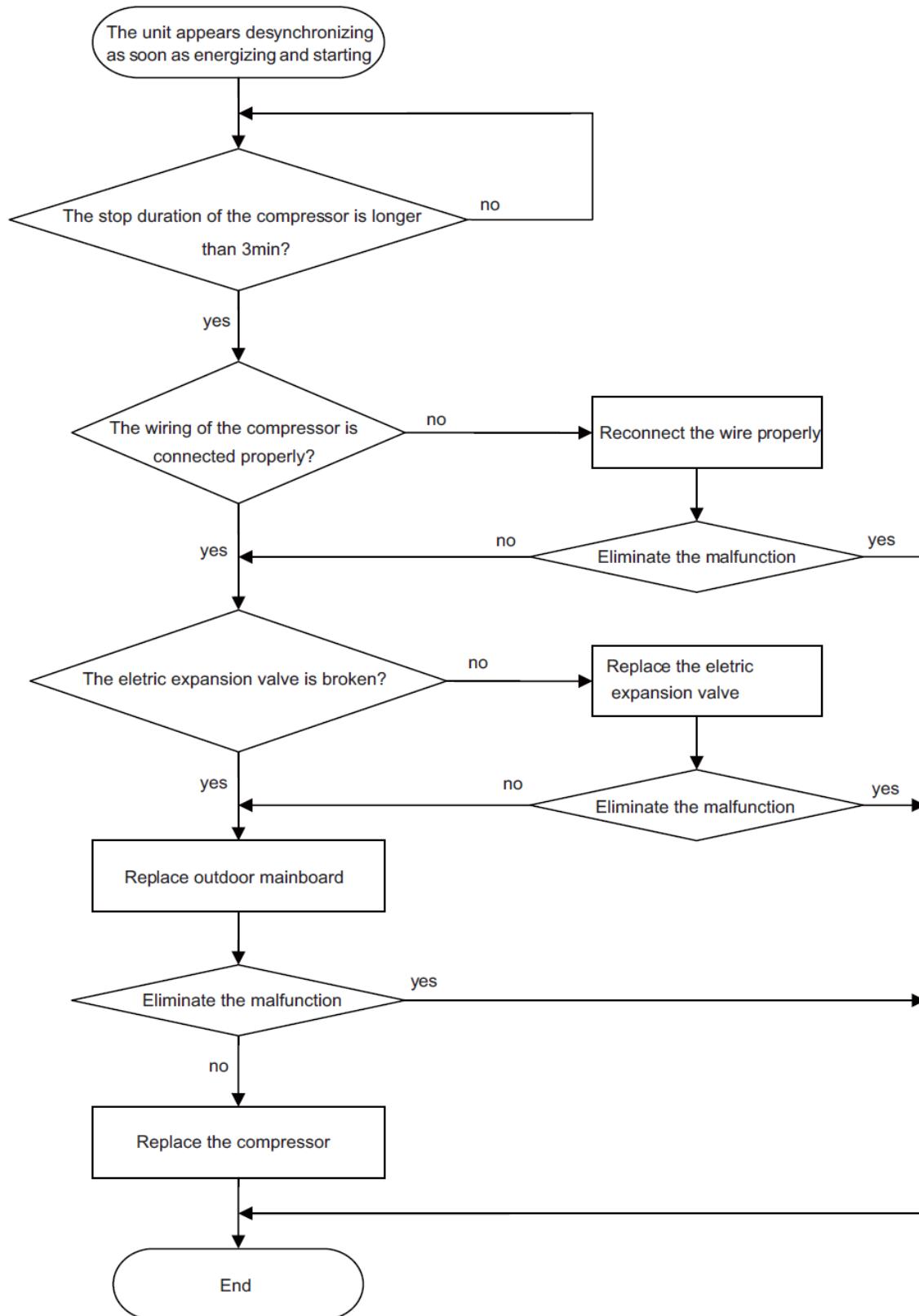
- The input voltage of the unit is not normal.
- The connection wire for the compress is not connect well or loose.
- The resistance of the compressor is not normal.
- The unit is overloaded.
- The refrigerant charge is not correct.

11.13 H6: Indoor Fan Motor Failure

For Dual/Quad port units only (SMZ18H46ZOGX & SMZ30H46ZOGX)



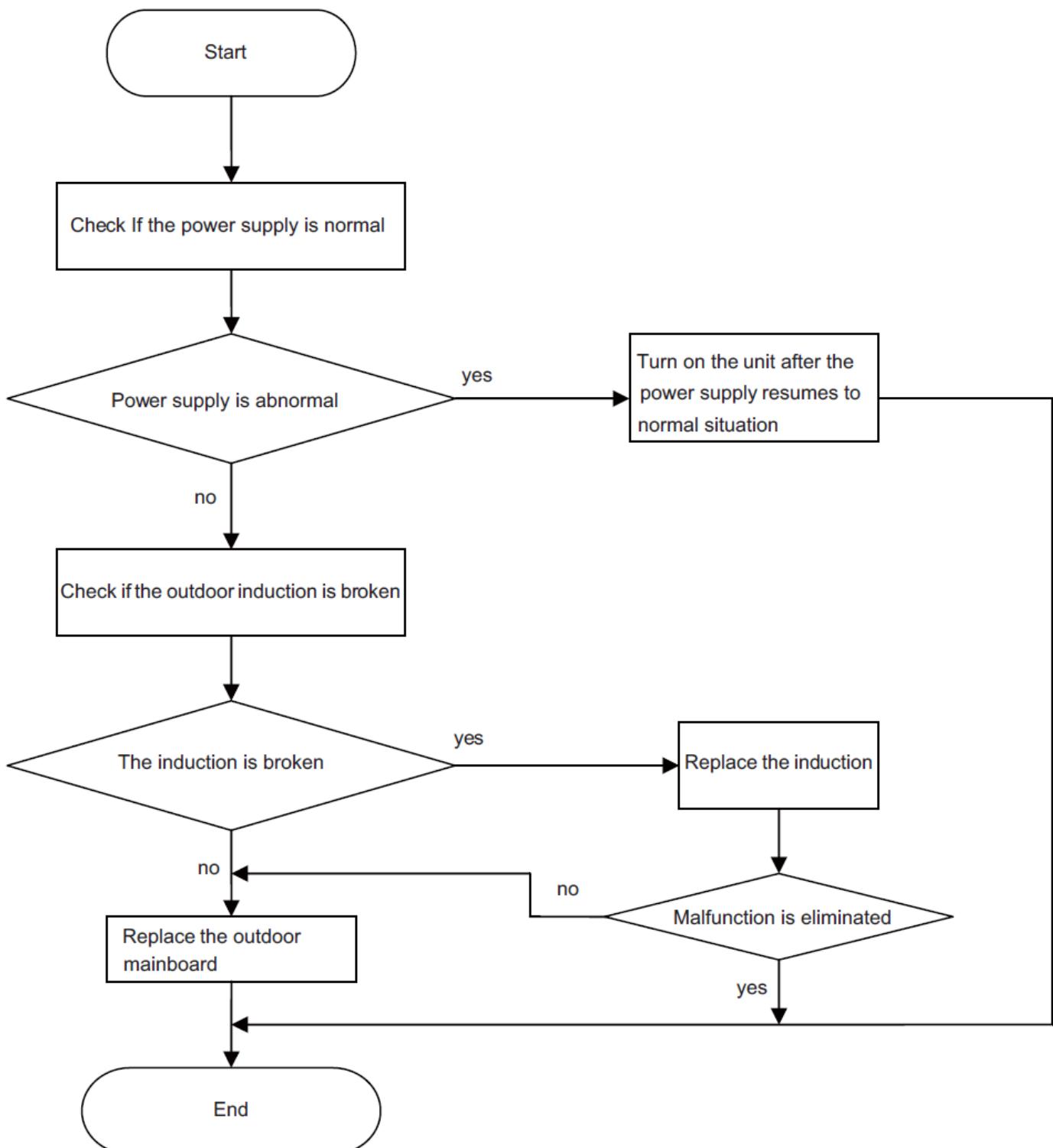
11.14 H7: Compressor Desynchronizing



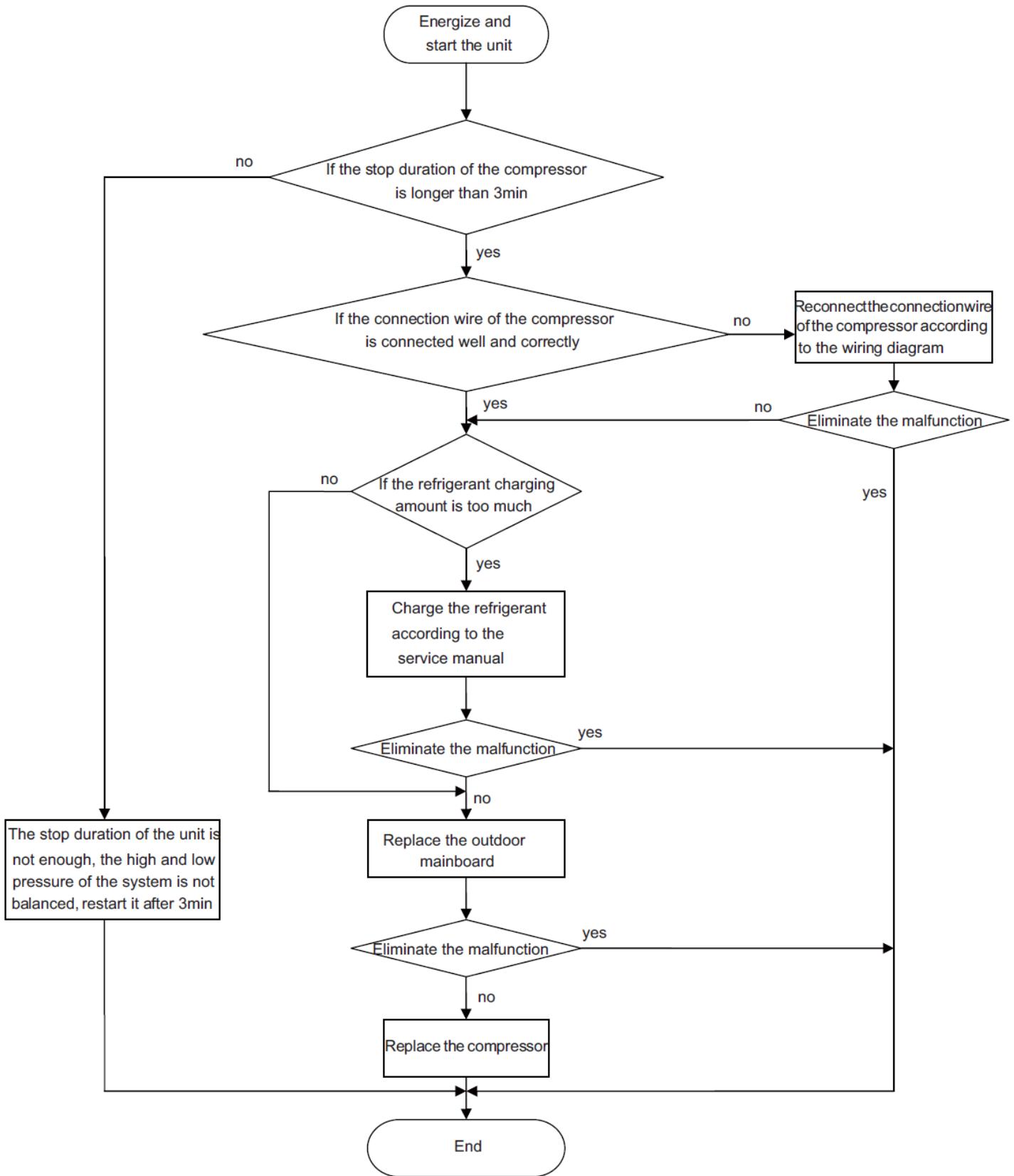
Additional Possible Causes

- High pressure
- Radiation of the unit is not good

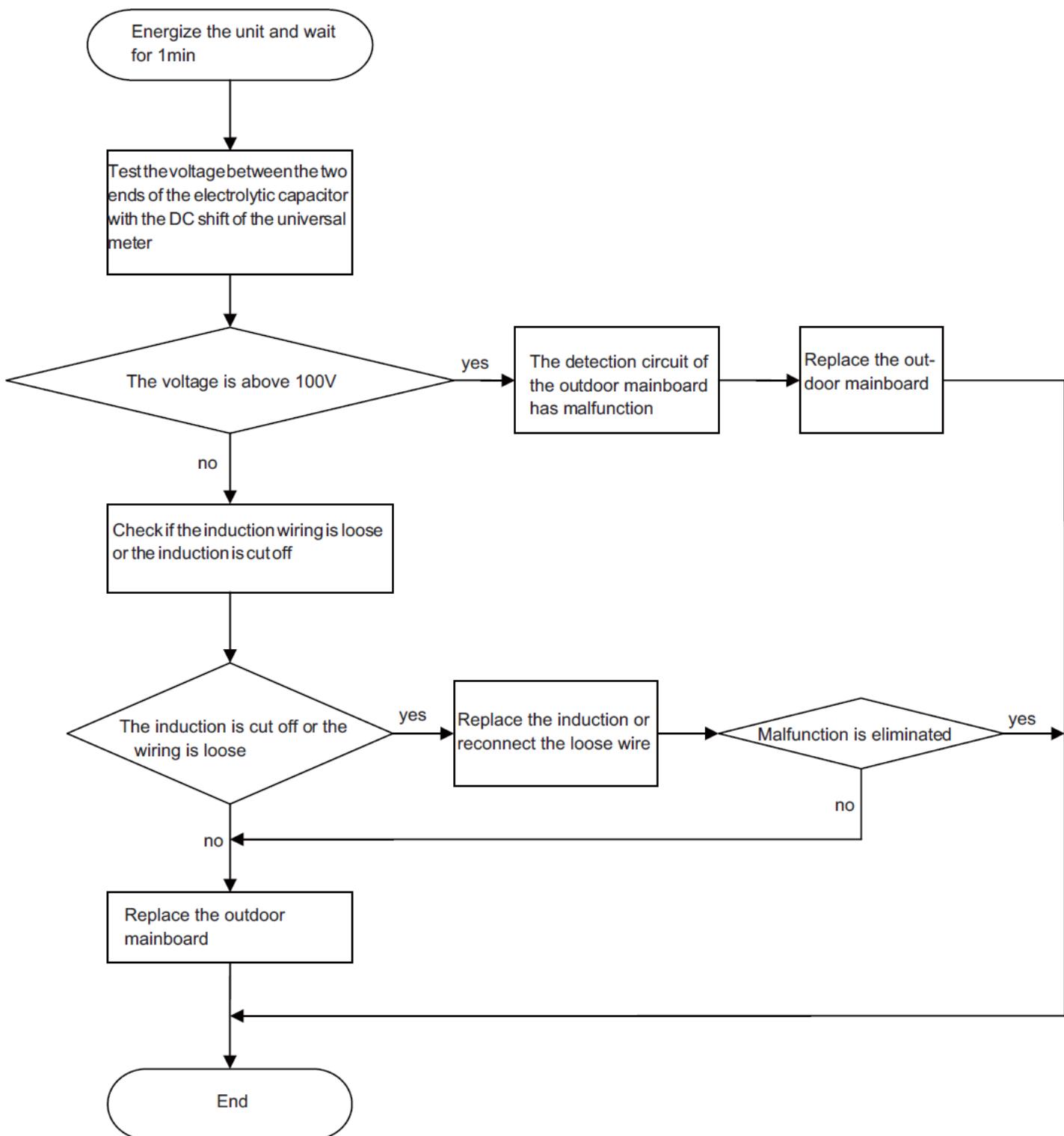
11.15 HC: PFC Protection



11.16 Lc: Startup Failure

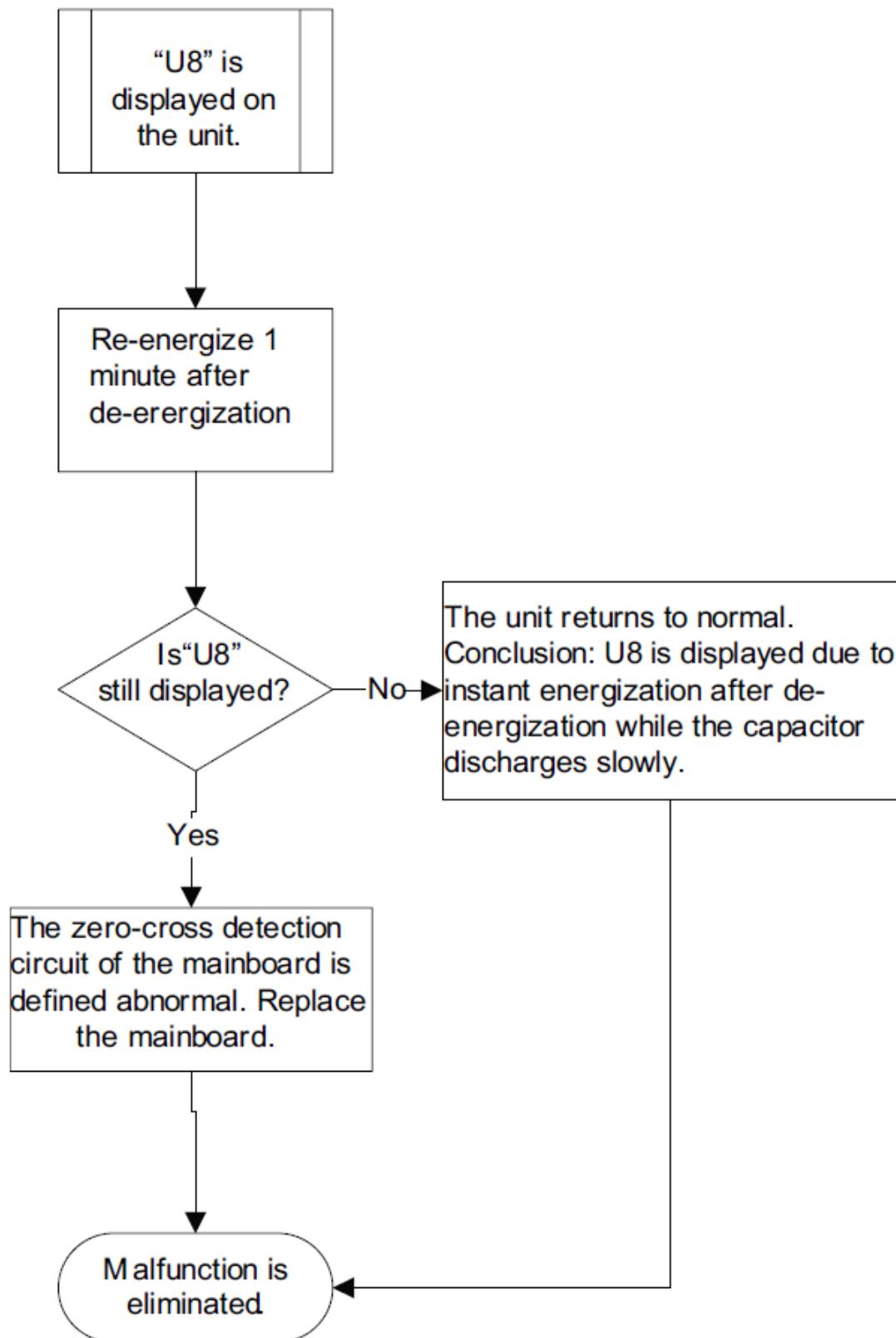


11.17 PU: Capacitor Charging Circuit Error



11.18 U8: Indoor Fan Motor Zero-Cross Detecting Error

For Dual/Triple/Quad port units only (SMZ18H46ZOGX /SMZ24H46ZOGX / SMZ30H46ZOGX)



11.19 Error Code label on the outdoor units

For Dual/Triple/Quad port unit (SMZ18H46ZOGX /SMZ24H46ZOGX / SMZ30H46ZOGX)

Name of malfunction	Outdoor unit control board LED status				Name of malfunction	Outdoor unit control board LED status			
	□ OFF		■ ON	☆ Blink		□ OFF		■ ON	☆ Blink
	LED1	LED2	LED3	LED4		LED1	LED2	LED3	LED4
Nomal stop	□	□	□	□	IPM thermal resistor malfunction	□	■	□	■
Compressor runs	■	□	□	□	Liquid pipe temperature sensor malfunction of A	■	■	□	■
Stop for compressor overload protection	☆	□	□	□	Gas pipe temperature sensor malfunction of A	☆	■	□	■
Stop for exhaust protection	□	■	□	□	Liquid pipe temperature sensor malfunction of B	□	☆	□	■
Overload protection of out unit	■	■	□	□	Gas pipe temperature sensor malfunction of B	■	☆	□	■
Stop for compressor high-pressure protection	☆	■	□	□	Liquid pipe temperature sensor malfunction of C	☆	☆	□	■
Stop for over current protection	□	☆	□	□	Gas pipe temperature sensor malfunction of C	□	□	■	■
IPM protection	■	☆	□	□	Liquid pipe temperature sensor malfunction of D	■	□	■	■
IPM over heat protection	☆	☆	□	□	Gas pipe temperature sensor malfunction of D	☆	□	■	■
PFC protection	□	□	■	□	Mode conflict of Unit A	□	■	■	■
Stop for phase current protection	■	□	■	□	Mode conflict of Unit B	■	■	■	■
Overvoltage protection	☆	□	■	□	Mode conflict of Unit C	☆	■	■	■
Lackvoltage protection	□	■	■	□	Mode conflict of Unit D	□	☆	■	■
Startup failure	■	■	■	□	Communication failure with A	■	☆	■	■
Desynchronizing of compressor	☆	■	■	□	Communication failure with B	☆	☆	■	■
Lack phase protection of compressor	□	☆	■	□	Communication failure with C	□	□	☆	■
Phase current detection malfunction of compressor	■	☆	■	□	Communication failure with D	■	□	☆	■
Error of memory chip	☆	☆	■	□	Unit A anti-freezing protection	☆	□	☆	■
Short circuit of DC power supply	□	□	☆	□	Unit B anti-freezing protection	□	■	☆	■
Defrost	■	□	☆	□	Unit C anti-freezing protection	■	■	☆	■
Oil return	☆	□	☆	□	Unit D anti-freezing protection	☆	■	☆	■
Frequency limit for protection	□	■	☆	□	Unit A high temperature protectrion	□	☆	☆	■
Frequency drop for protection	■	■	☆	□	Unit B high temperature protectrion	■	☆	☆	■
Limit frequency or frequency drop protection of A	☆	■	☆	□	Unit C high temperature protectrion	☆	☆	☆	■
Limit frequency or frequency drop protection of B	□	☆	☆	□	Unit D high temperature protectrion	□	□	□	☆
Limit frequency or frequency drop protection of C	■	☆	☆	□	Outdoor ambient sensor malfunction	□	□	□	■
Limit frequency or frequency drop protection of D	☆	☆	☆	□	Outdoor tube sensor malfunction	■	□	□	■
Wrong connection with A or expansion valve malfunction	■	□	□	☆	Wrong connection with C or expansion valve malfunction	□	■	□	☆
Wrong connection with B or expansion valve malfunction	☆	□	□	☆	Wrong connection with D or expansion valve malfunction	■	■	□	☆
Outdoor exhaust sensor malfunction	☆	□	□	■					

Cautions for Installation and Maintenance

About electric components

- Maintaining to the electric components should be done by the professional electrician.
- Make sure the electric power has been cut off and the capacitor has discharged all its electricity prior to the check or replacement of any component.
- Only the component supplied by manufacturer can be used for the replacement.
- Do not replace any component randomly, and privately shield, shortcircuit or remove any component.
- Check if each terminal is secure or not. If not, tighten it.
- Prior to the startup, check if the actual voltage and current are among $\pm 10\%$ of the rated value. For the three-phase power supply, check if the voltage difference between phases is within 3%, if not, then start it is inadmissible.
- When finish the check on the components inside the electric box, make sure to close the cover of the electric box tightly.

About the piping system

- Prior to checking the piping system, make sure the power supply has been cut off.
- When cutting the copper pipe, remove the burrs on the edge and make sure the inside of the pipe is clear and dry.
- During the piping, mark the pipe clearly to avoid any confusion.
- When brazing the piping, make sure it is charged with nitrogen.
- Check if the piping system leaks by charging the pipe with nitrogen.

Nitrogen Pressure 41.5kgf/cm² (50~100kgf/cm² when the outdoor unit is connected)

Pressure Sustainable Duration

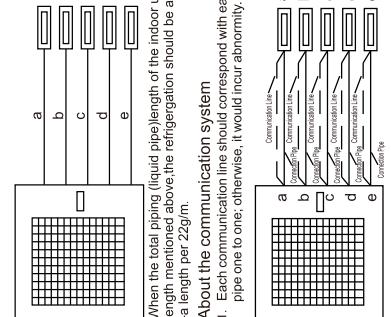
As the ambient temperature goes up or down by 1°C, the increase or decrease of the pressure should be within 0.1kgf/cm².

- When vacuumizing the piping, it should be done at both liquid and gas pipes at the same time. When the vacuum is up to -100gf/cm², stop vacuumizing after another 1.0~1.5 hours. Then, the acceptable standard is that the vacuum remains the same after four hours pressure sustainable duration.
- When the total piping (liquid pipe) length of the indoor unit is less than the length mentioned below, no extra refrigerant is needed.

Total Piping Length(m) a + b + c + d + e Remarks

Model GWHD(36)ND3AO Max. 4 sets of indoor units are allowed

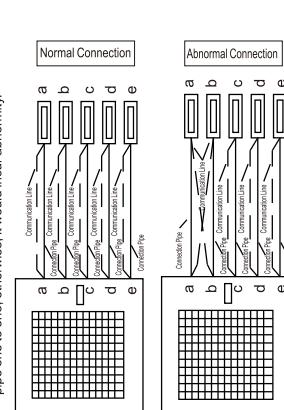
GWHD(42)ND3AO Max. 5 sets of indoor units are allowed



When the total piping (liquid pipe) length of the indoor unit exceeds the length mentioned above, the refrigeration should be added for the extra length per 22g/m.

About the communication system

- Each communication line should correspond with each connection pipe one to one; otherwise, it would incur abnormality.



2. The communication line between the indoor and outdoor units is the **dcv-current**, so the indoor unit must get the power supply from the outdoor unit.

About the debugging

- Prior to the startup of the unit, make sure if all liquid and gas valves are opened, and all screw caps of the valves and the refrigerant pipe -circuit month have tightened.
- Prior to the startup of the unit, make sure the compressor has preheated for at least eight hours.

Outdoor Unit Error Code List

	Error	Code	Error	Code	Error	Code	Error	Code
Normal running	No		Whole unit over-current protection	E5	Unit C Indoor Pipe Inlet Sensor Error	34		
System high pressure protection	E1		Indoor unit water overflow error	E9	Unit C/Unit Ambient Temperature Sensor Error	35		
System low pressure protection	E3		AC control protection	P9	Unit C Mode Conflict	36		
Compressor discharge high temperature protection	E4		Abnormal AC input voltage	PP	Unit D Communication Error	41		
Compressor charging error			Capacitor charging error		Unit D Indoor Pipe Malway Sensor Error	42		
Heating overheat protection	O5		Compressor overheat protection	H3	Unit D Indoor Pipe Outlet Sensor Error	43		
Cooling overheat protection	E8		Unit D Indoor Pipe Inlet Sensor Error	L9	Unit D Indoor Pipe Outlet Sensor Error	44		
Anti-freezing protection	E2		Unit D Indoor Ambient Temperature Sensor Error	F0	Unit D Mode Conflict	45		
Refrigerant Recovery Status			Compressor rotation failure	LE	Unit D Anti-Freezing Protection	46		
Defrosting mode 1	08		(for the commercial unit)		Unit E Communication Error	51		
Defrosting mode 2	0A		Over speed	F7	Unit E Indoor Pipe Malway Sensor Error	52		
Oil returning in cooling			Shortopen circuit of the of the outdoor ambient temperature sensor	F3	Unit E Indoor Pipe Outlet Sensor Error	53		
Defrosting or air returning in heating	H1		Outdoor ambient temperature sensor error	F4	Unit E Indoor Pipe Inlet Sensor Error	54		
Outdoor defrosting	H1		Forcible defrosting	PH	Unit E Indoor Ambient Temperature Sensor Error	55		
DC link low voltage protection			Shortopen circuit of the outdoor discharge temperature sensor	F5	Unit E Mode Conflict	56		
Module Over-Heat Protection	P8				Unit E Anti-Freezing Protection	57		
Circuit Sensor Error	Pc							
Module Temperature Sensor Error	P7							
Compressor Phase Protection	P5							
Low Voltage Protection	PL							
Compressor Startup Failure	LC							
PFC Protection	HC							
IPM Module Reset	P0							
Compressor Desynchronizing	H7							
Compressor Phase Failure/reverse Protection	Ld							
Driver and Master Controller Communication Error	P6							
IPM Module Current Protection	H5							
AC Current Protection (input side)	PA							
trial run/trial operation	dd							
Jumper Terminal Error Protection	C5							

12. Disassembly Procedure

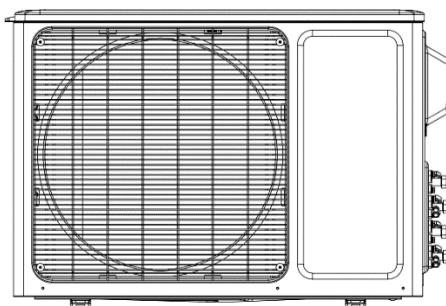
CAUTION! Be sure to wait for a minimum of 10 minutes after turning off power before disassembly.

12.1 Outdoor Units

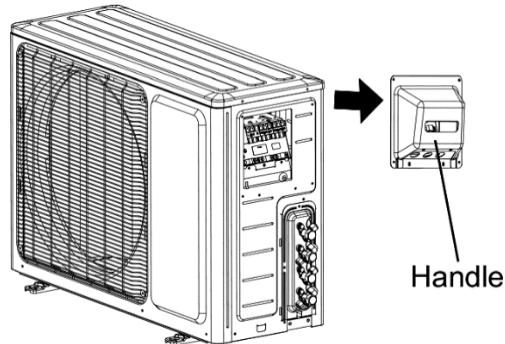
12.1.1 Dual Port (SMZ18H46ZOGX)

Step 1: Remove top cover and handle

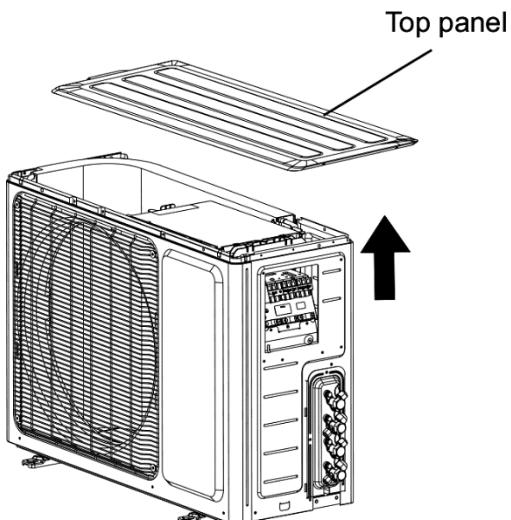
Before disassembly.



Twist off the screws used for fixing the handle, pull the handle upward to remove it.

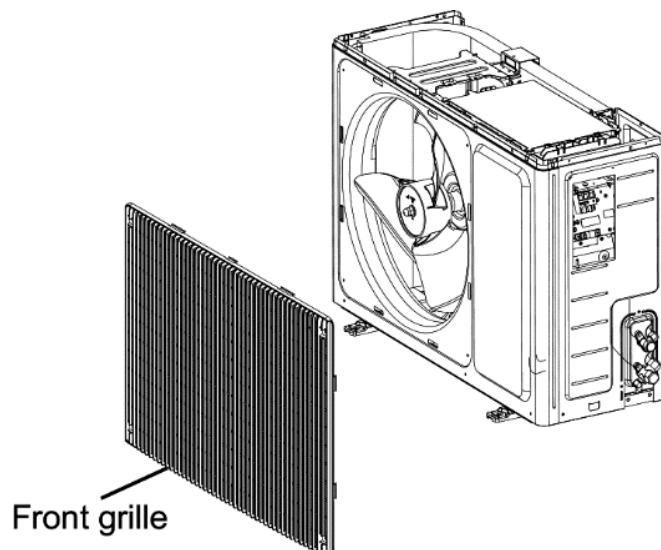


Twist off the screws used for fixing the top cover, pull the top cover upward to remove it.

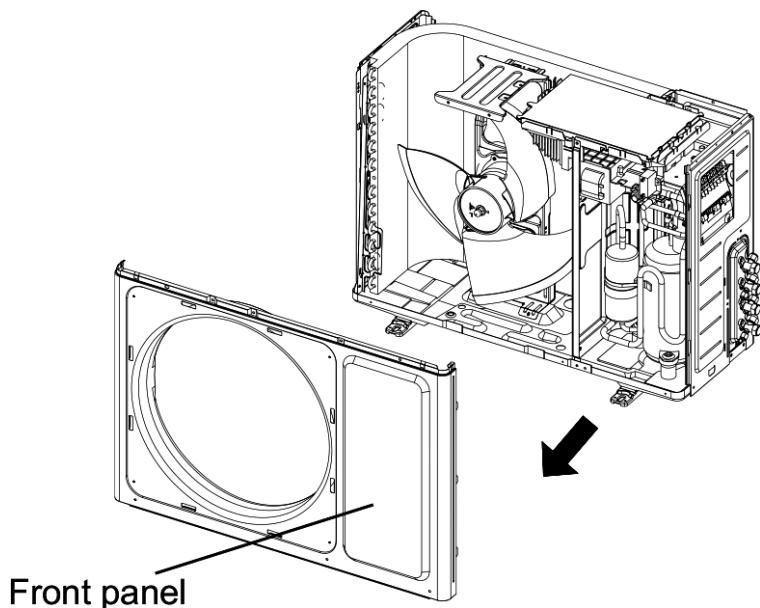


Step 2: Remove front grill and front panel

Remove the screws connecting the front grill and the front panel.
Remove the front grill.

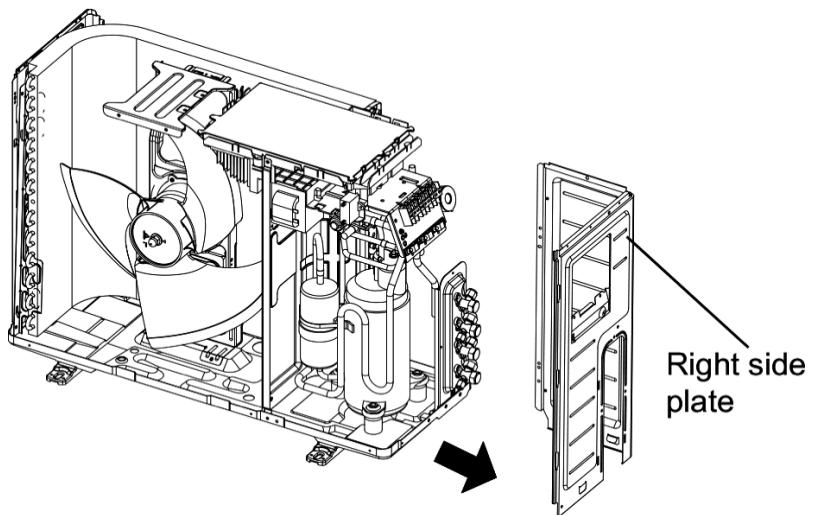


Twist off the screws fixing the panel, pull it upward, loosen the clasp on the right side, rotate it to the left, and then remove the front panel.

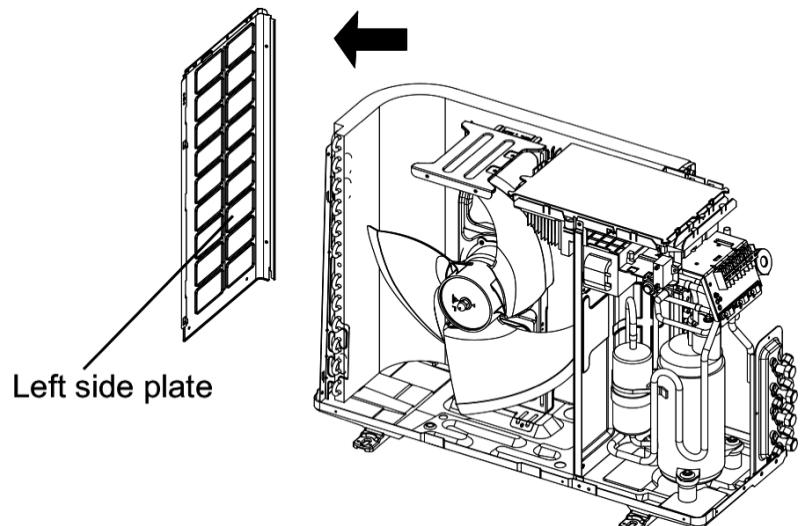


Step 3: Remove right side plate

Remove the screws connecting the right side plate with the chassis, the valve support, and the electric box. Then remove the right side plate assembly.

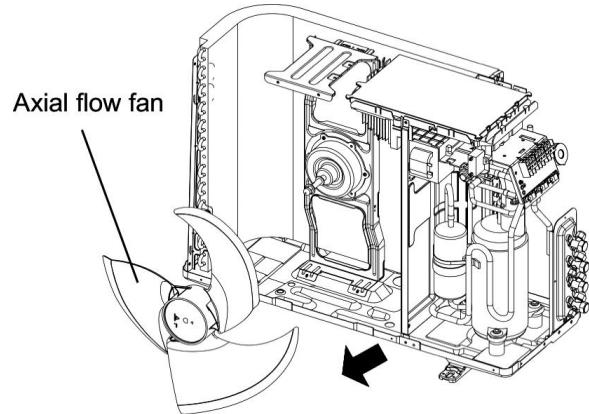


Remove the screws connecting the left side plate and the chassis and then remove the left side plate assembly.

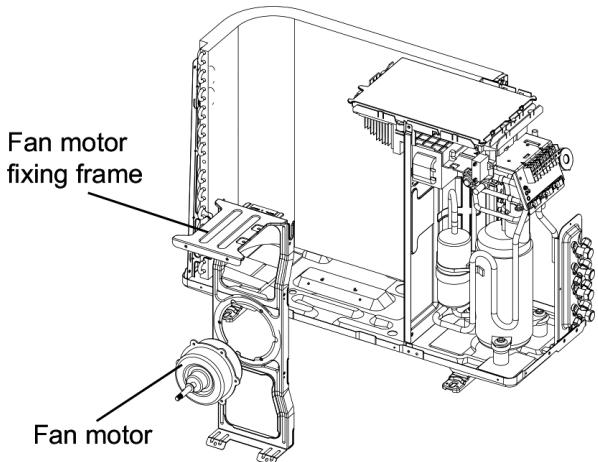


Step 4: Remove axial flow fan

Remove the nuts fixing the blade and then remove the axial flow fan.

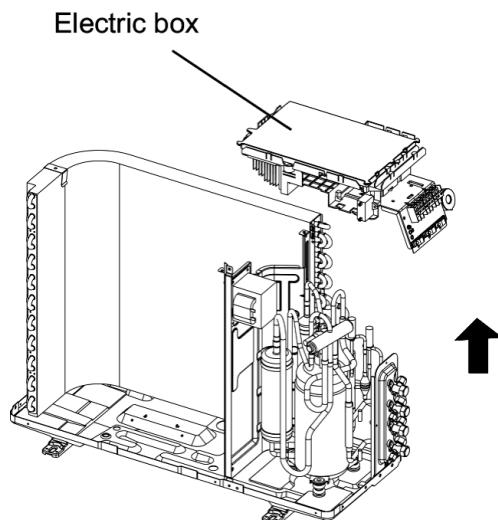


Remove the four (4) tapping screws fixing the motor. Disconnect the leading wire insert of the motor and then remove the motor. Remove the two (2) tapping screws fixing the motor support and then pull the motor support upwards to remove it.



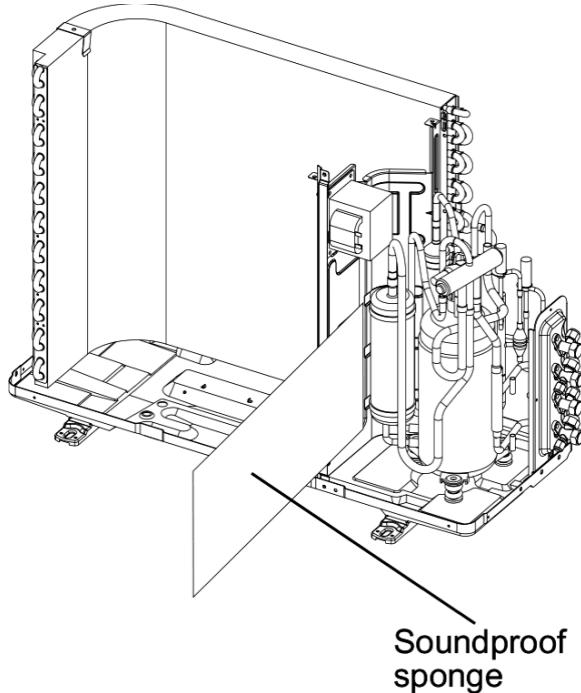
Step 5: Remove electric box assembly

Remove the screws fixing the electric box subassembly; loosen the wire bundle, pull out the wiring terminals and then pull the electric box upwards to remove it.



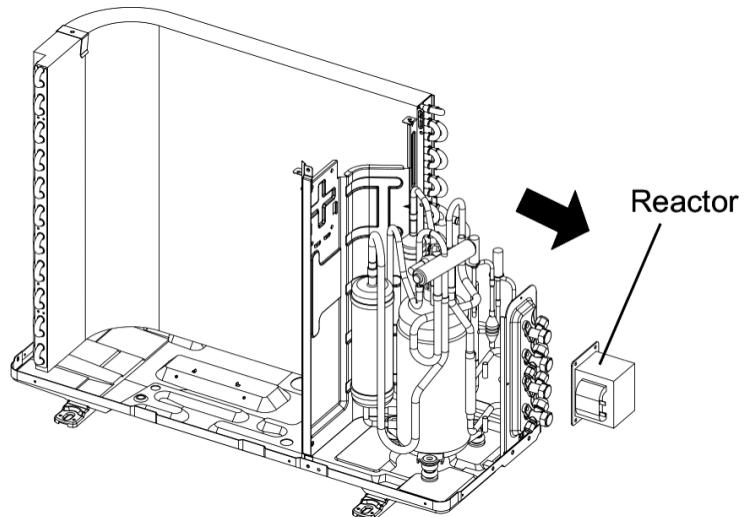
Step 6: Remove soundproof sponge

Carefully remove the soundproof sponge from around the compressor.



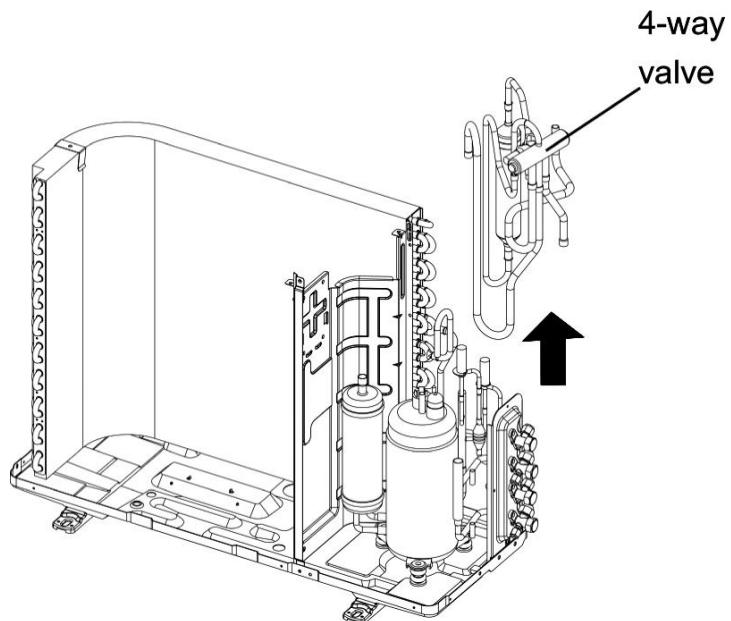
Step 7: Remove reactor

Remove screws connecting reactor and middle isolation sheet. Then remove the reactor.



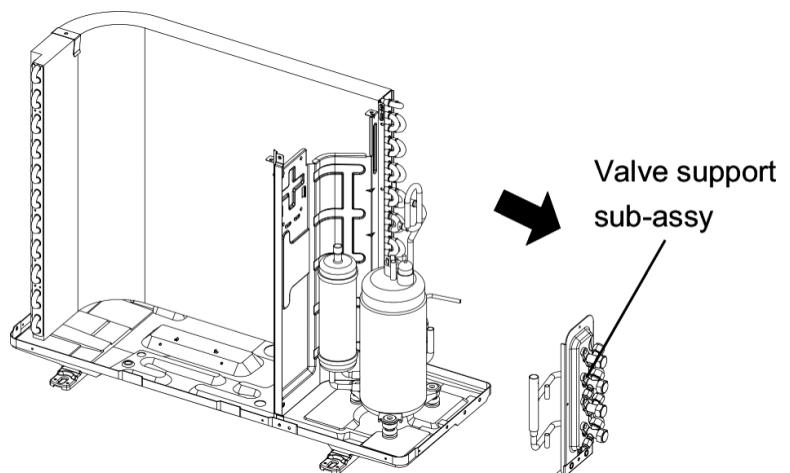
Step 8: Remove 4-way valve

Recover all the refrigerant from the system. Unsolder the pipelines connecting the compressor and condenser assembly. Then remove the 4-way valve assembly.



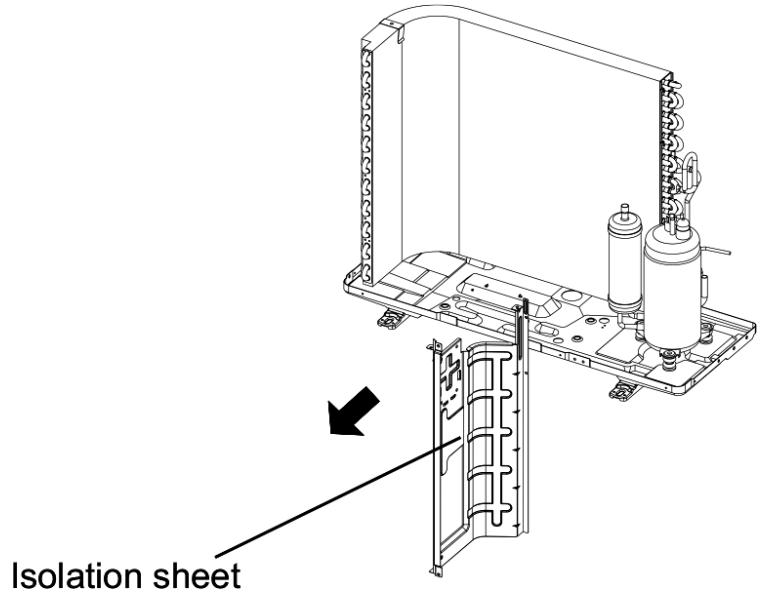
Step 9: Remove electronic expansion valve and cut-off valve

Remove electronic expansion valve and cut-off valve. Unsolder the brazed joint between the electronic expansion valve and cut-off valve as well as the brazed joint for connection pipe for condenser, and then remove the expansion valve. Meanwhile, rotate out the electronic coil and then pull it upwards to remove it.



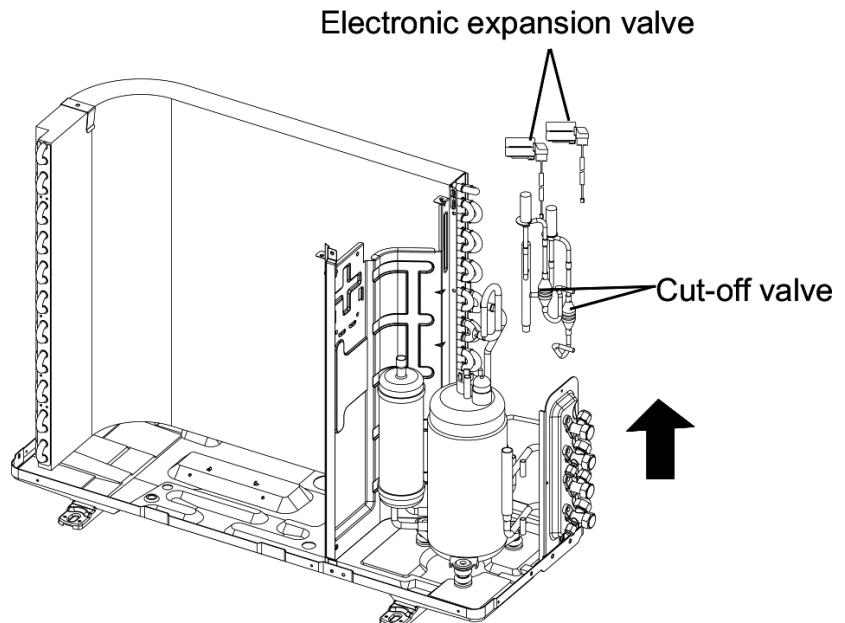
Step 10: Remove valve support subassembly

Remove screws fixing valve support and chassis. Then remove the valve support subassembly.



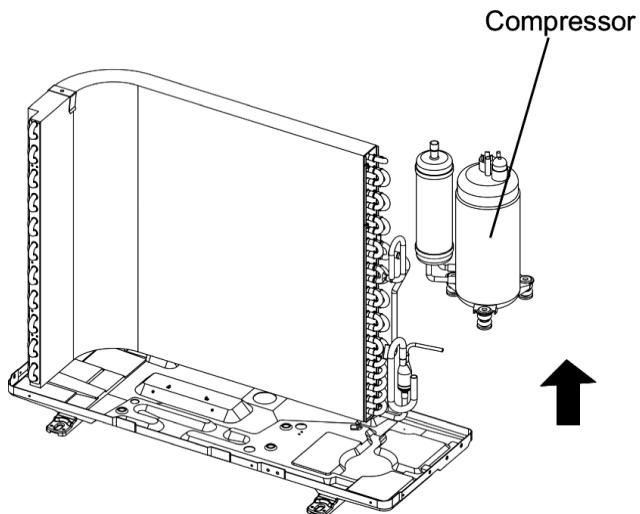
Step 11: Remove isolation sheet

Remove screws fixing isolation sheet and then remove the isolation sheet.



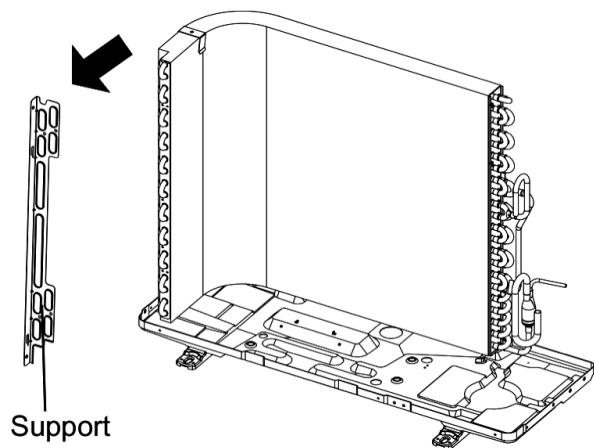
Step 12: Remove compressor

Twist off the three foot nuts on the compressor and then remove the compressor.

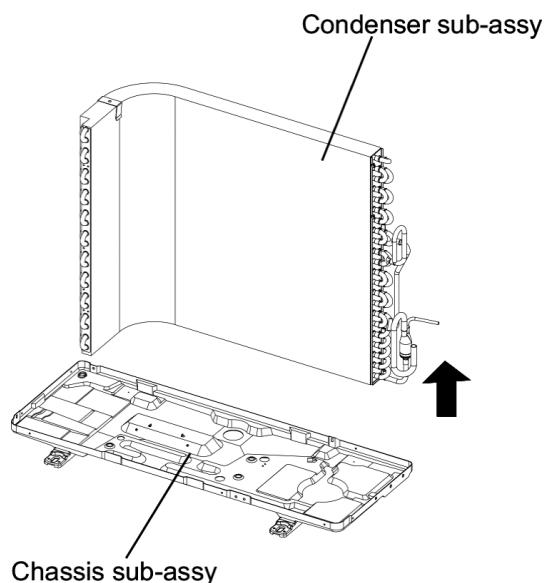


Step 13: Remove condenser subassembly

Remove the nuts fixing the blade and then remove the axial flow fan.



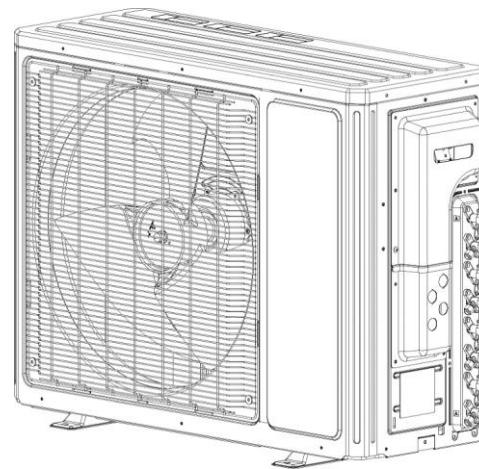
Remove the four (4) tapping screws fixing the motor. Disconnect the leading wire insert of the motor and then remove the motor. Remove the two (2) tapping screws fixing the motor support and then pull the motor support upwards to remove it.



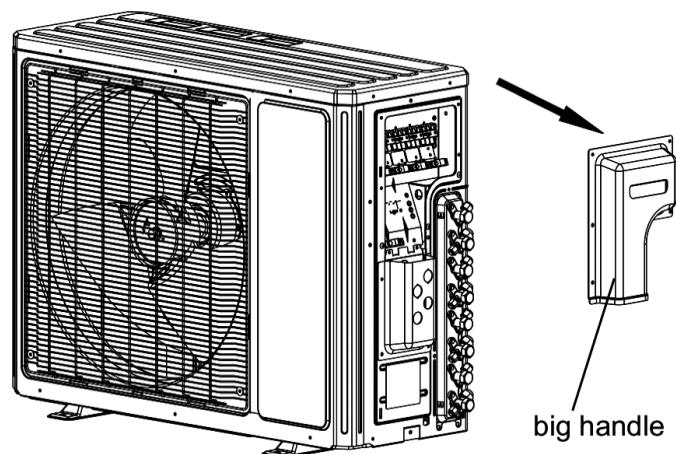
12.1.2 Triple/Quad Port (SMZ24H46ZOGX/SMZ30H46ZOGX)

Step 1: Remove the big handle and wire connection cover

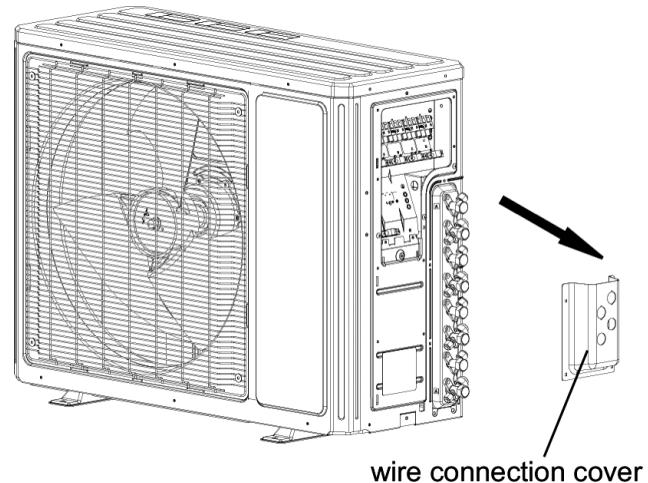
Before disassembly.



Remove the screws fixing the big handle and the right side plate to remove the big handle.

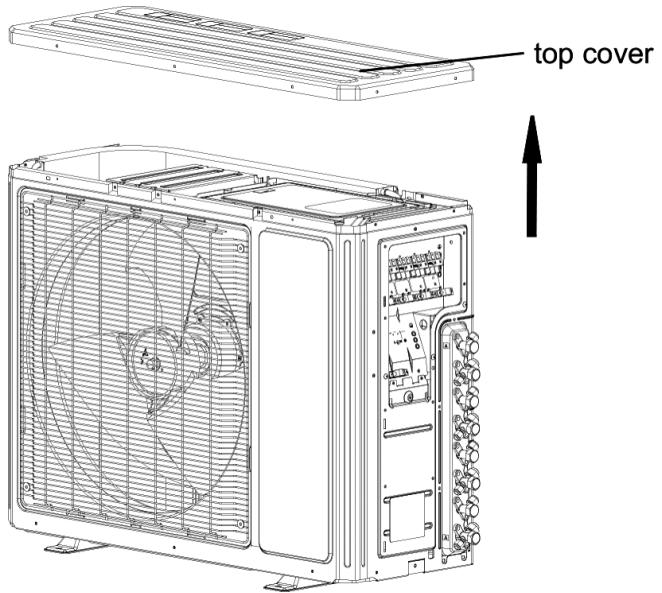


Remove the screws fixing the wire connection cover and right side plate to remove the wire connection cover.



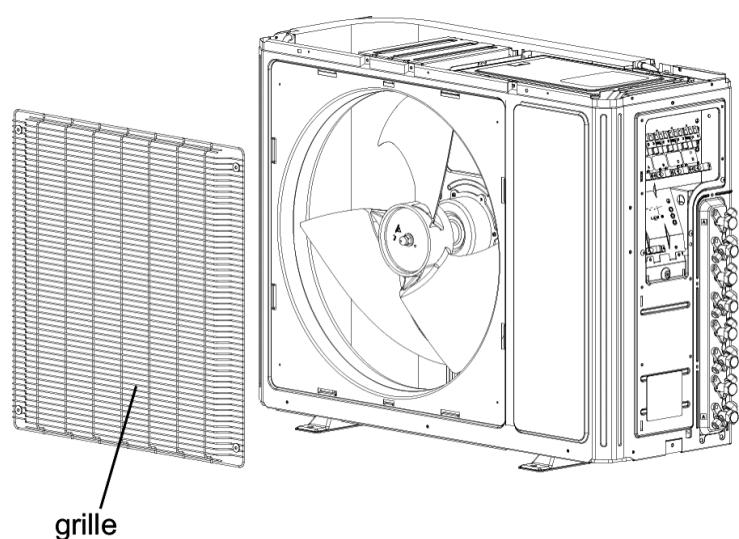
Step 2: Remove top cover

Remove the screws fixing top cover, panel, and left and right side plate to remove top cover.



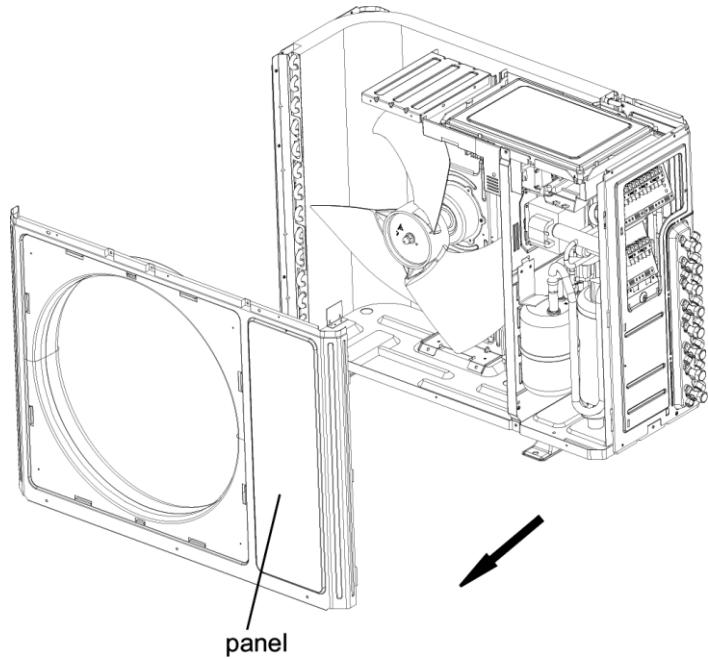
Step 3: Remove grill

Remove the screws fixing grill and panel to remove the grill on the panel.



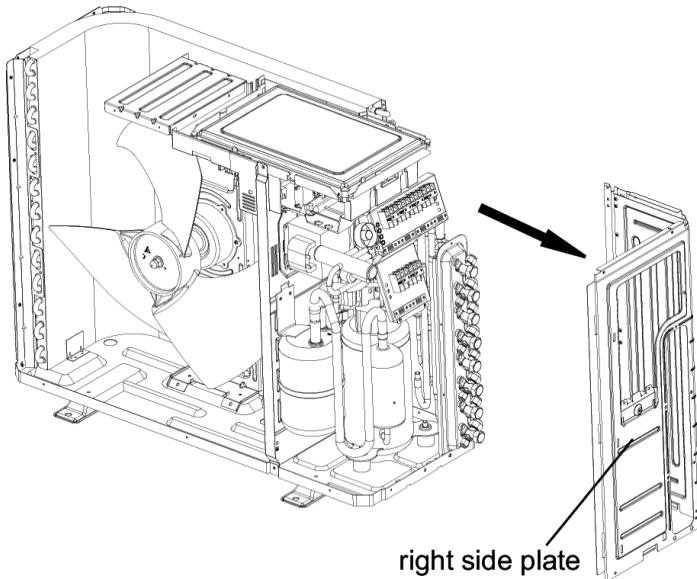
Step 4: Remove panel

Remove the screws fixing panel, chassis, and motor support to remove the panel.



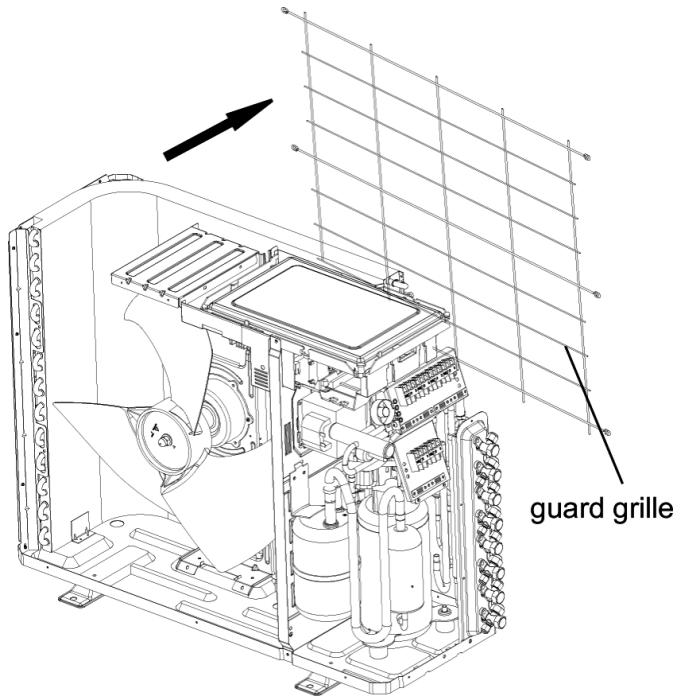
Step 5: Remove guard grill

Remove the screws fixing guard grill and left side plate to remove guard grill.



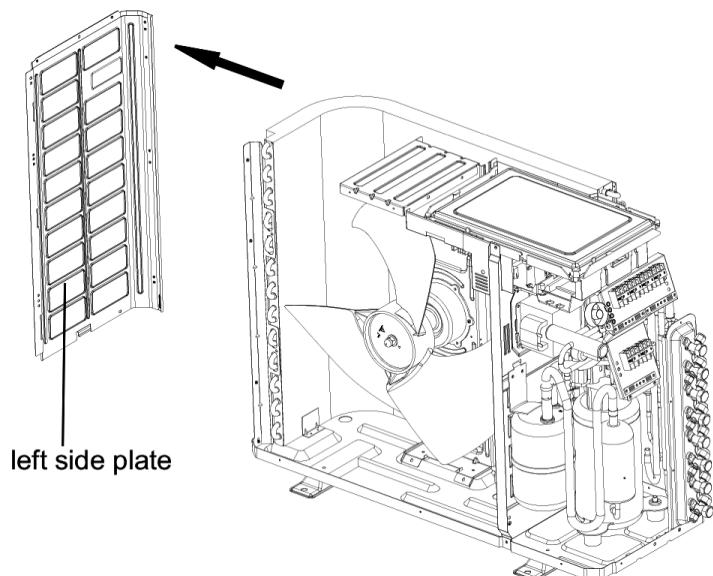
Step 6: Remove guard grill

Remove the screws fixing the guard grill and the left side plate to remove the guard grill.



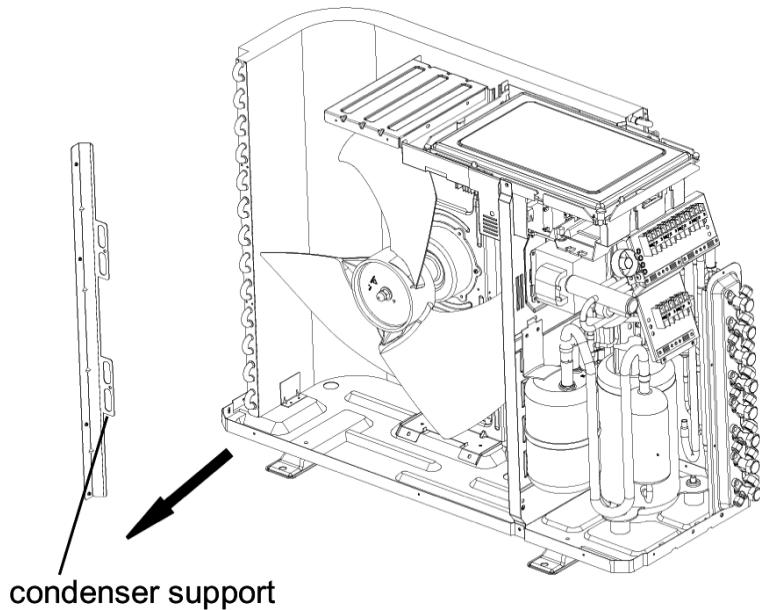
Step 7: Remove left side plate

Remove the screws fixing chassis and condenser support to remove the left side plate.



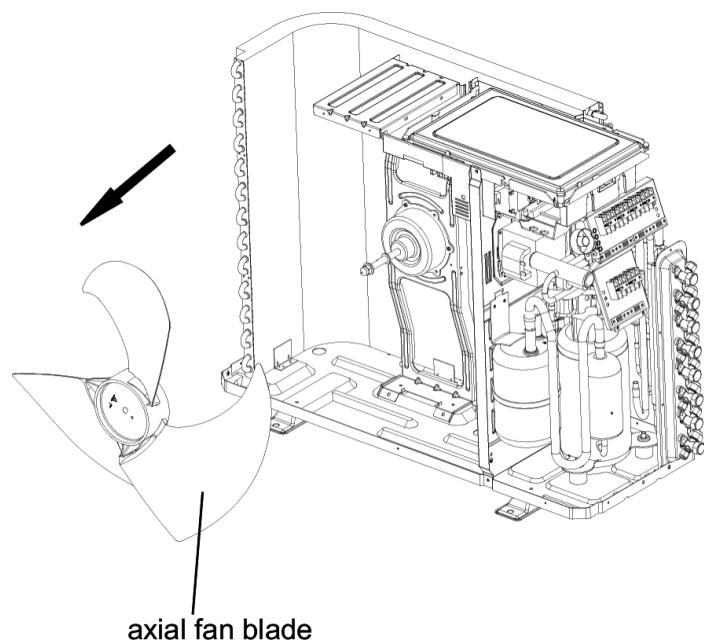
Step 8: Remove condenser support

Remove the screws fixing support and chassis to remove the condenser support.



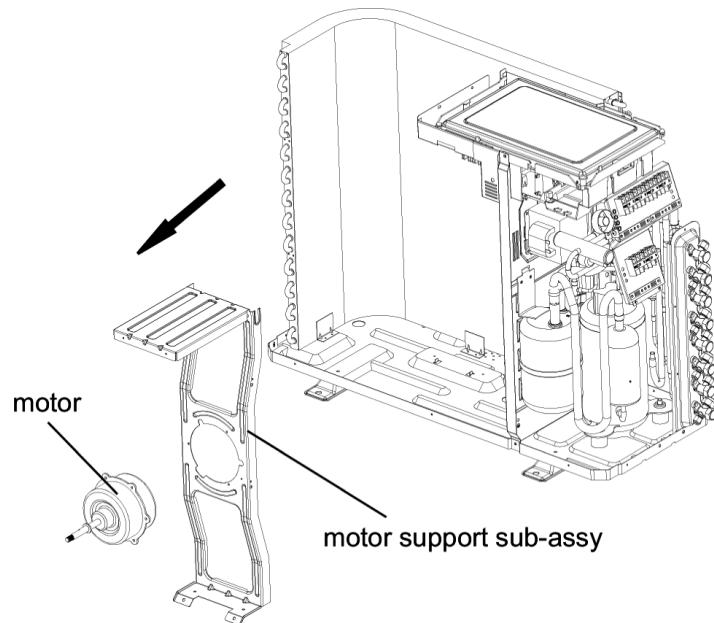
Step 9: Remove axial fan blade

Remove the screw nuts fixing fan blade with spanner to remove the fan blade.



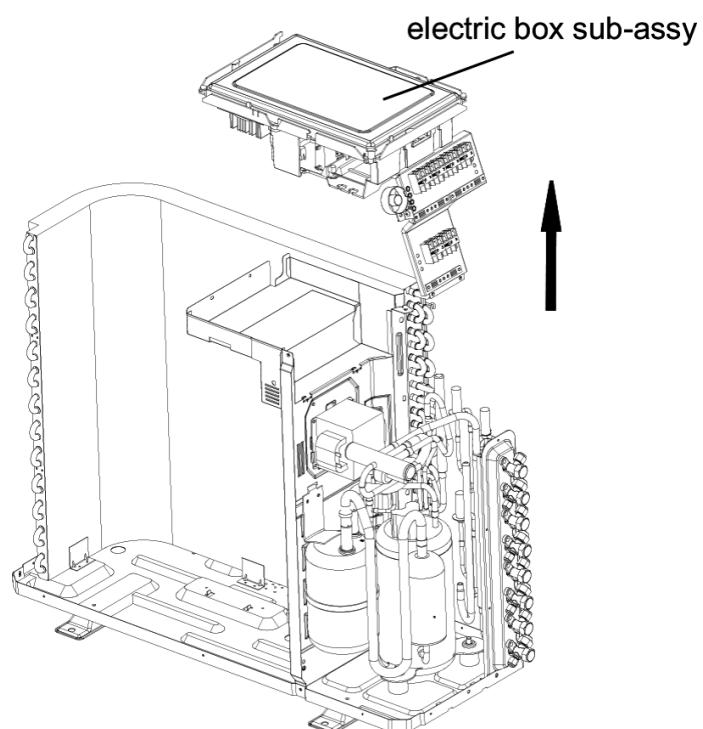
Step 10: Remove motor and motor support subassembly

Remove the tapping screws fixing motor. Pull out the pin of the leading wire for the motor and remove the screws fixing the motor support and chassis to remove the motor and motor support subassembly.



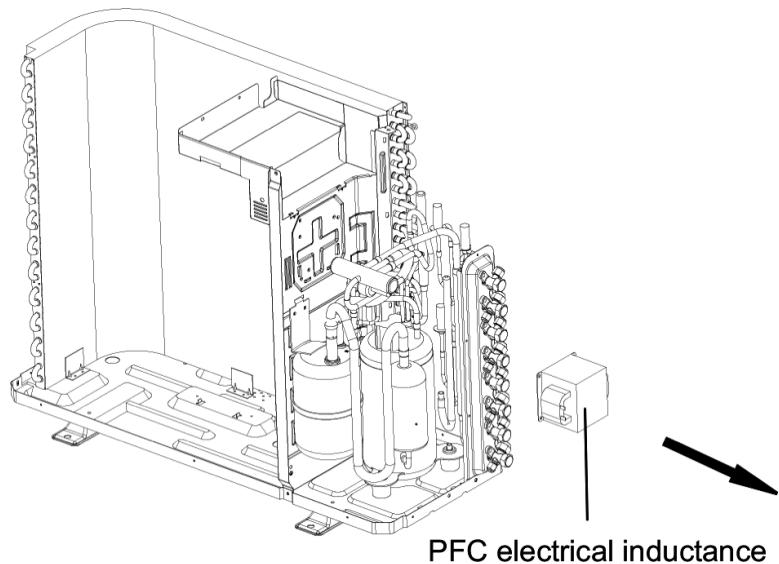
Step 11: Remove electric box subassembly

Remove the tapping screws fixing the isolation sheet, loosen the wire binds, and then pull out the terminal. Lift to remove the electric box subassembly.



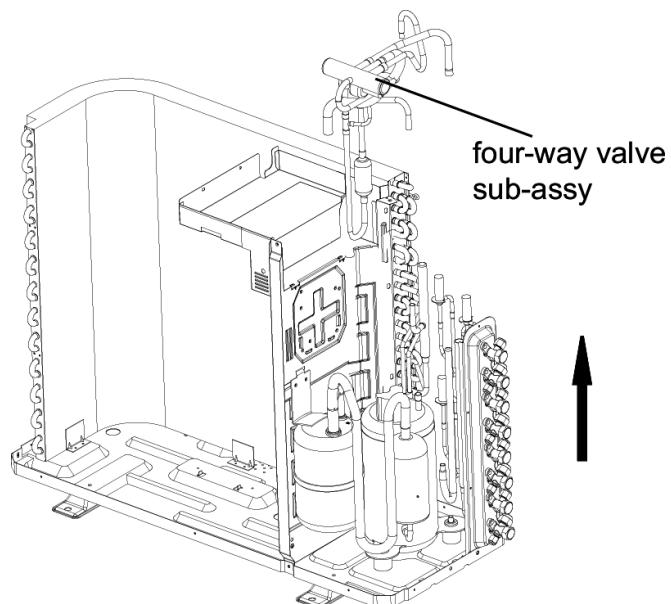
Step 12: Remove PFC electrical inductance

Remove the screws fixing the PFC electrical inductance and isolation sheet to remove the PFC electrical inductance.



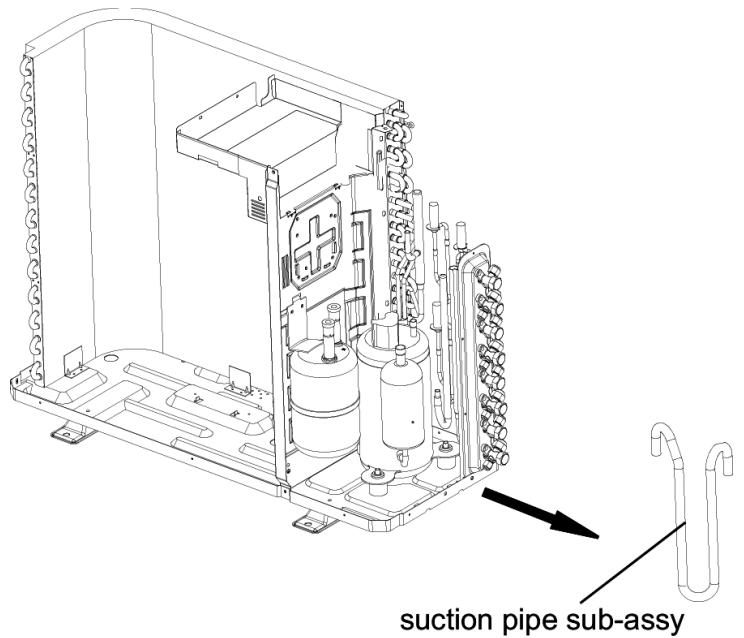
Step 13: Remove 4-way valve subassembly

Recover all the refrigerant from the system. Unsolder the pipelines connecting the compressor and condenser assembly. Then remove the 4-way valve assembly.



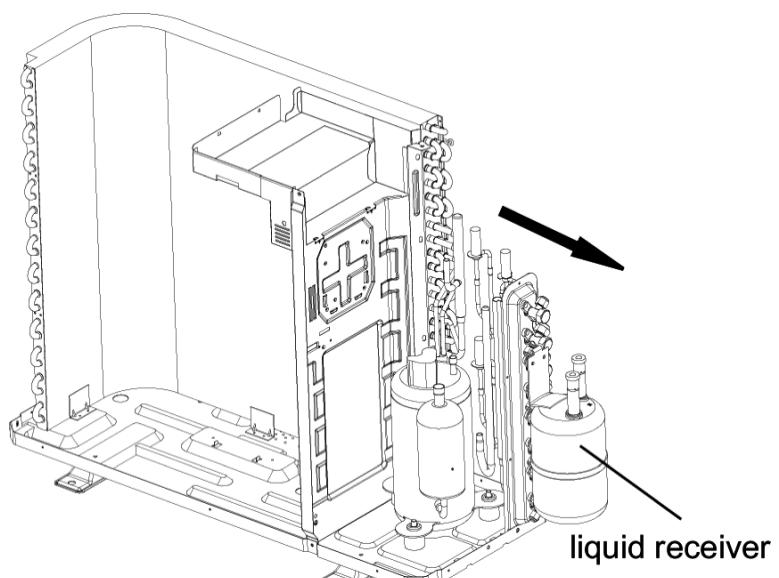
Step 14: Remove suction pipe subassembly

Unsolder the brazed joint joining the suction pipe subassembly, compressor, and liquid receiver to remove the suction pipe subassembly.



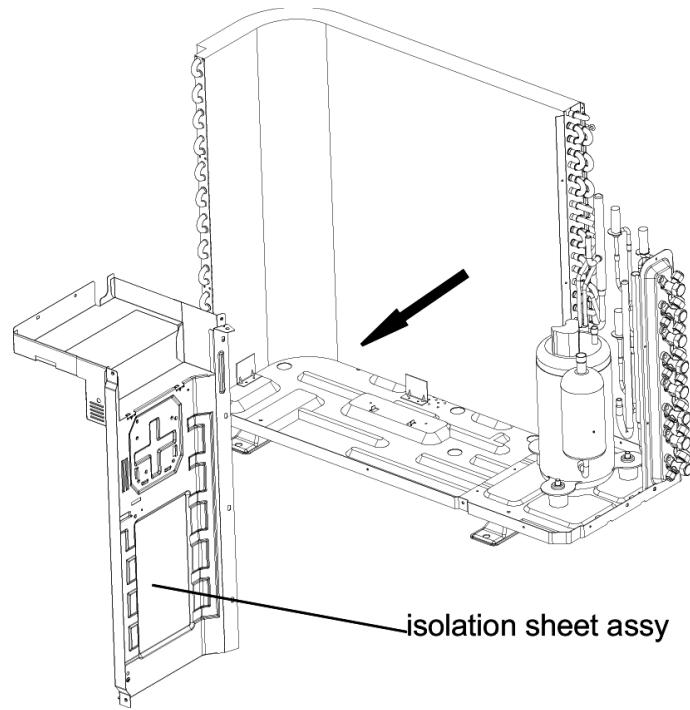
Step 15: Remove liquid receiver

Remove the screws fixing isolation sheet and liquid receiver and lift to remove the liquid receiver.



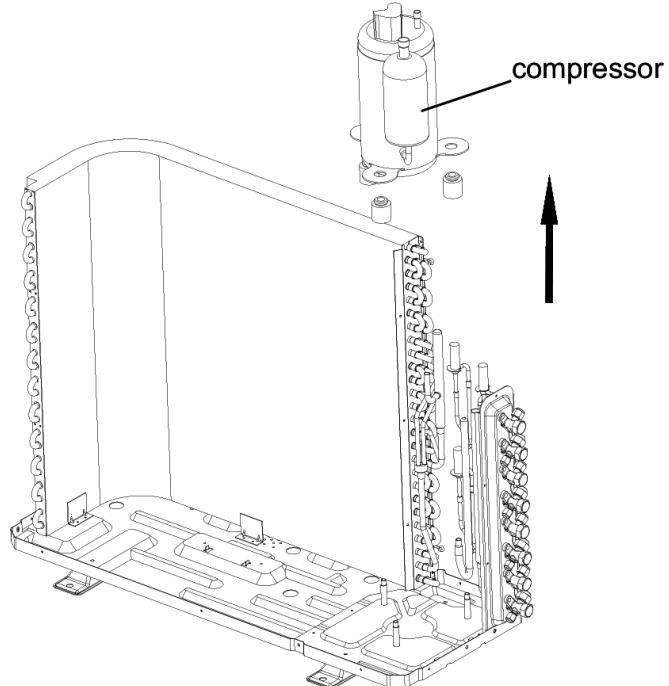
Step 16: Remove the isolation sheet assembly

Remove the screws fixing the isolation sheet assembly and the condenser side plate to remove the PFC electrical inductance.



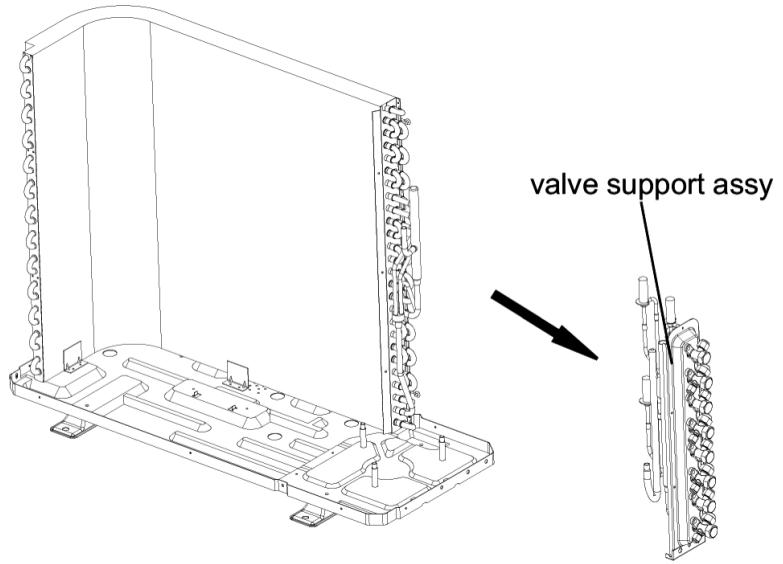
Step 17: Remove compressor

Remove the screw nuts fixing the compressor feet and chassis with the spanner, as well as the foot cushion, to remove the compressor.



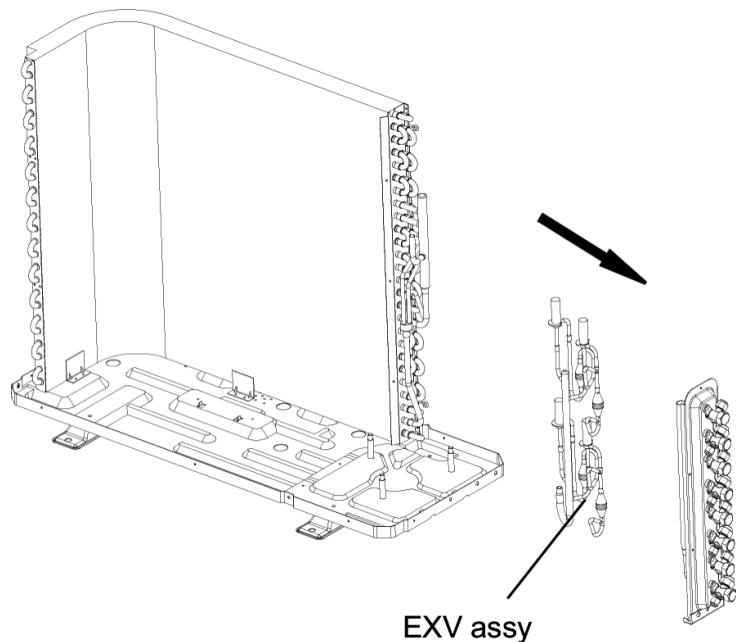
Step 18: Remove valve support assembly

Remove the screws fixing valve support assembly and chassis subassembly to remove the valve support assembly.



Step 19: Remove EXV assembly

Unsolder the brazed joint joining the EXV subassembly and refrigeration collection pipe to remove the EXV assembly. (NOTE: fully pack the big valve with wet cloth when unsoldering to avoid high temperature damage of valve)

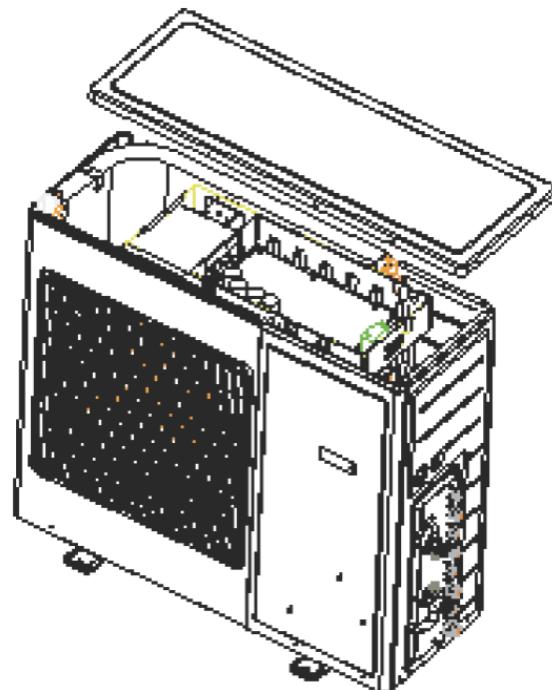


12.1.3 Five Port (SMZ42H46ZOGX)

12.1.3.1 Disassembly and Reassembly of Fan Blades

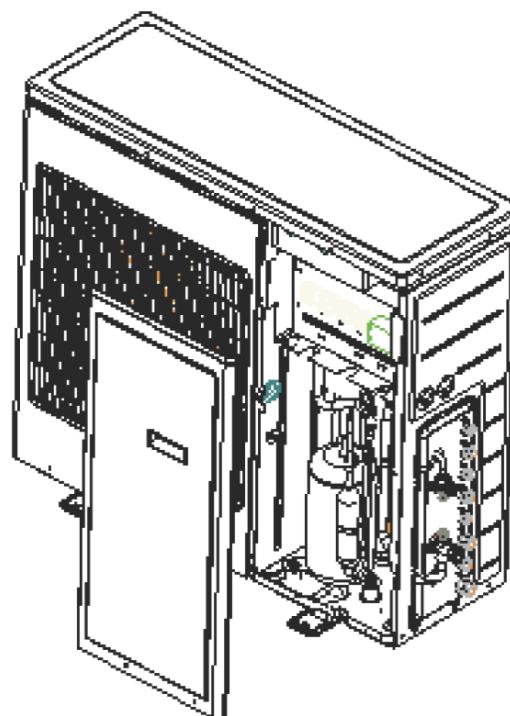
Step 1: Remove top cover

Remove the screws on the cover plate by using a screwdriver. Then remove cover plate.



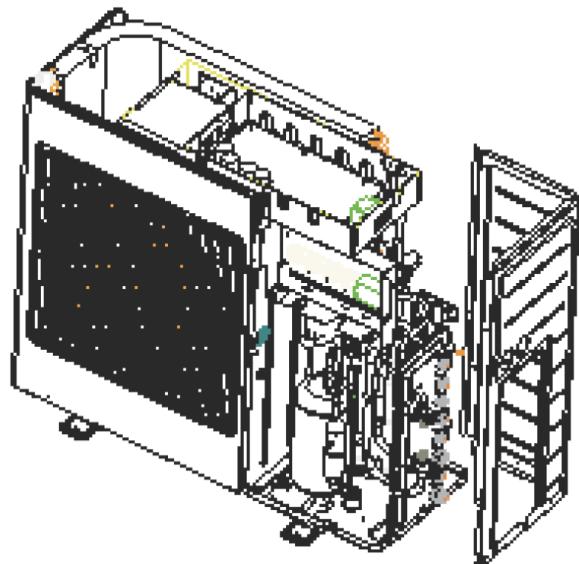
Step 2: Remove front panel

Remove the screws on the front panel by using a screwdriver. Then remove the front panel.



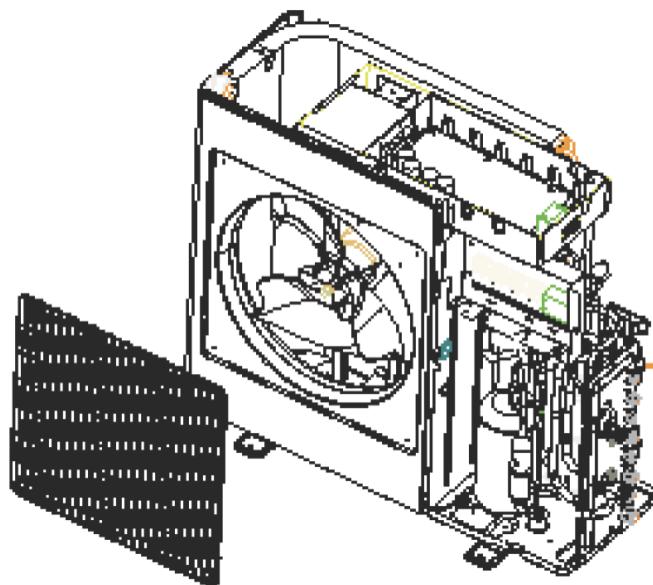
Step 3: Remove right panel

Remove the screws on the panel by using a screwdriver. Then remove the panel on the right side.



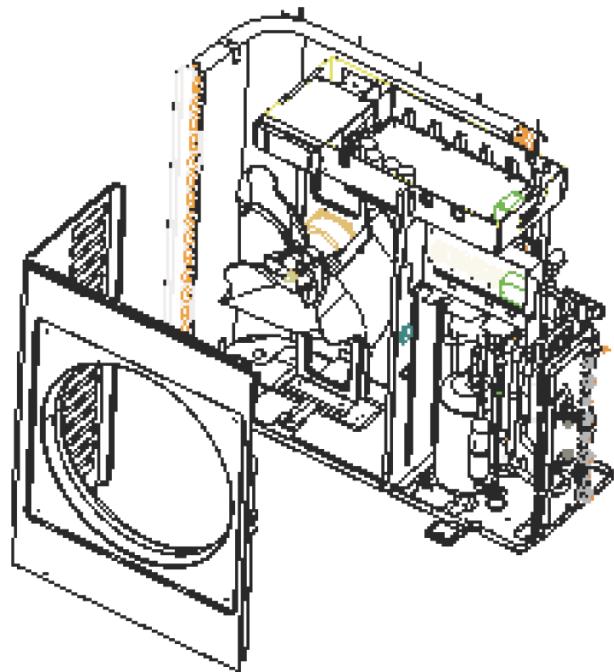
Step 4: Remove grill

Remove the screws on the grill by using a screwdriver. Then remove the grill.



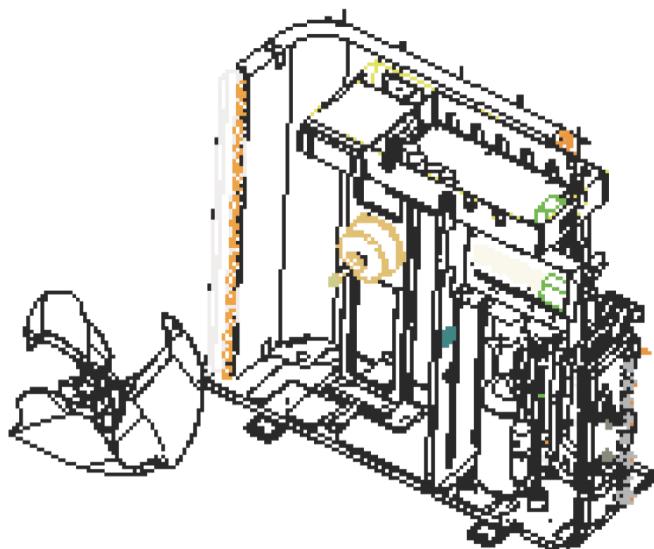
Step 5: Remove the outer casing

Remove the screws on the outer casing by using a screwdriver. Then remove the outer casing.



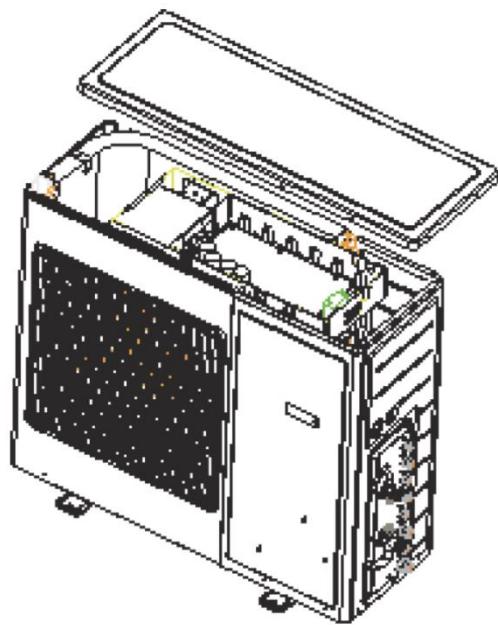
Step 6: Remove the fan blades

Remove the fixed screws on the fan blades by using a spanner. Then remove the fan blades.



Step 7: Reassembly

Assembly the disassembled main parts in the reverse order as it was disassembled. Power on the unit to test it is working properly.



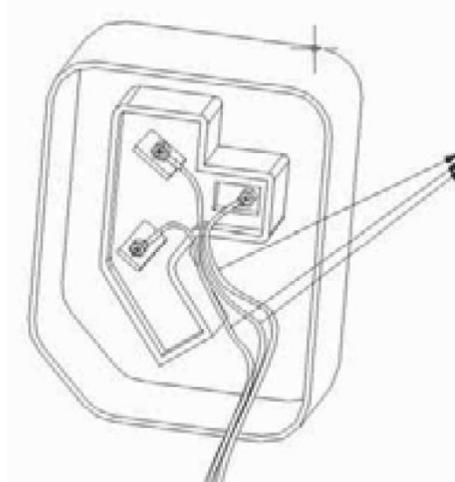
12.1.3.2 Disassembly and Reassembly of the Compressor

NOTE: Make sure system is disconnected from power and all refrigerant is recovered from system.

Step 1: Disconnect the power cord

Remove the fixed screws on the power cord by using a screwdriver. Remove the power cord.

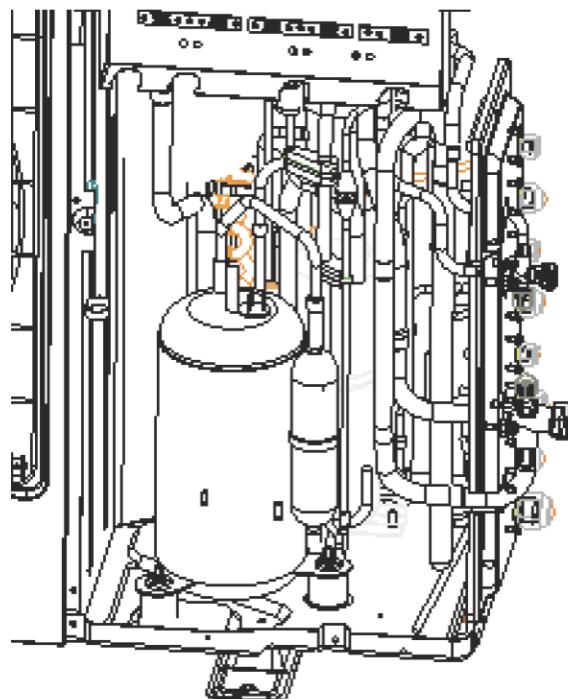
NOTE: Please note the color of each power cord and also the corresponding terminal number when removing the power cord in case of misconnection.



Note the colour of each power cord and also the corresponding terminal

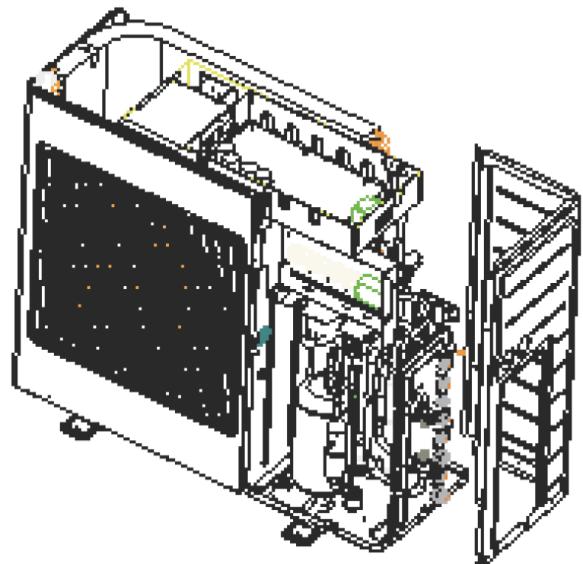
Step 2: Remove the pipeline connected to compressor

Unsolder the brazed joints connecting the refrigerant tubing and the compressor (inlet and outlet). Then remove the pipe subassembly.



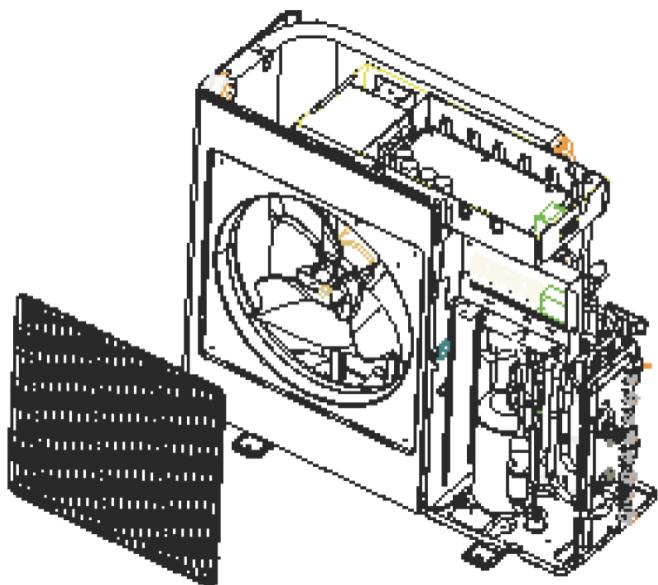
Step 3: Remove the compressor

Remove the bolts on the compressor feet securing it in place. Remove the compressor from the bottom plate.



Step 4: Replacing the compressor

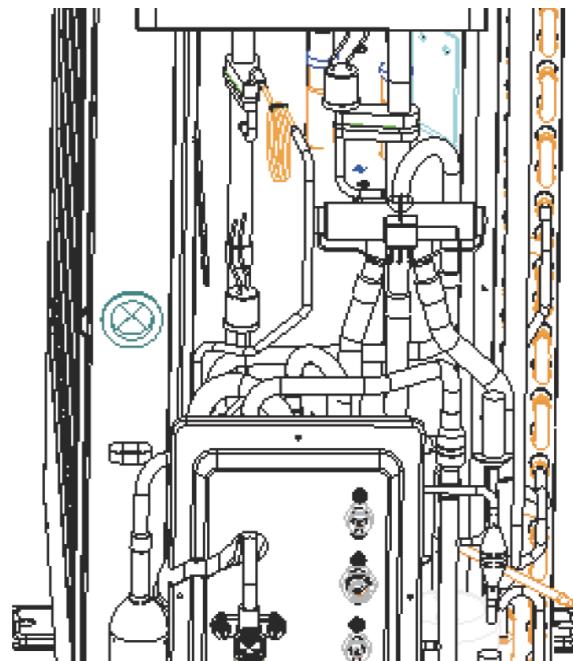
Place the compressor on the bottom plate replace the bolts on the compressor feet. Connect the suction inlet and discharge outlet with the refrigerant system.



12.1.3.3 Disassembly and Reassembly of the 4-way Valve

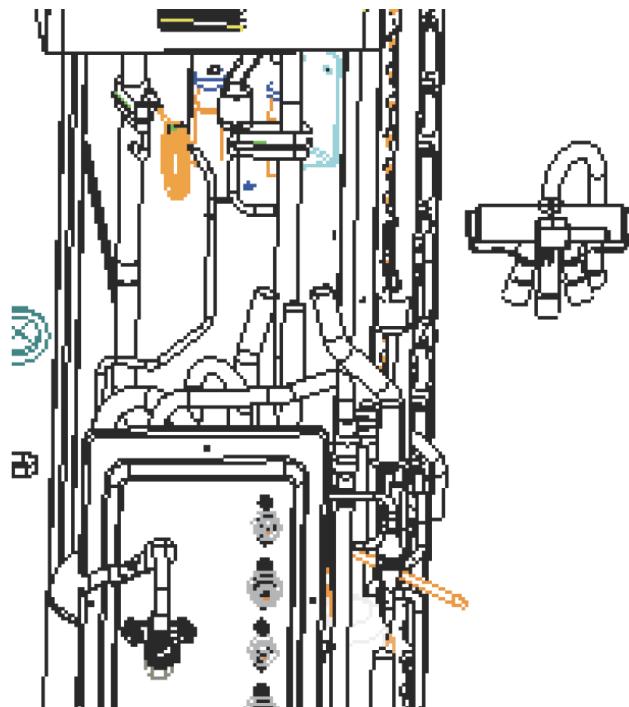
Step 1: Remove the 4-way valve coil

Remove the screws on the 4-way valve coil and then remove the 4-way valve coil.



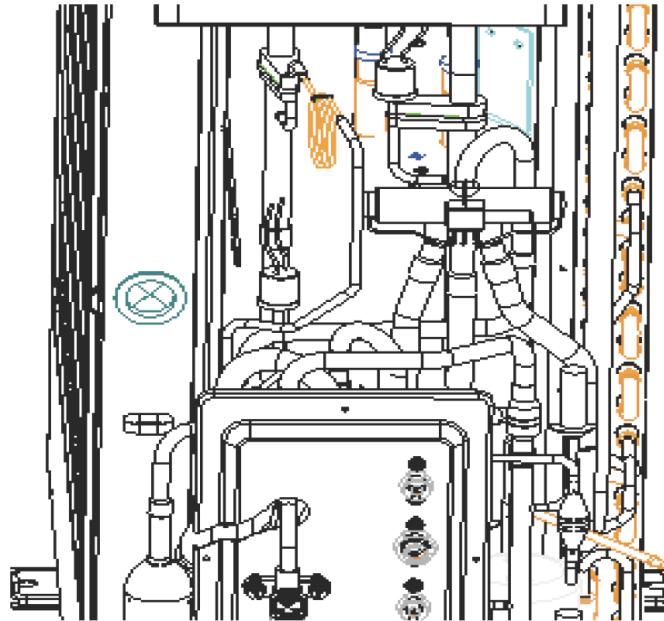
Step 2: Remove the 4-way valve

Unsolder the brazed joints connecting the 4-way valve with the inlet and outlet tubes. Then remove the 4-way valve.



Step 3: Reassembly

Place the 4-way valve in the correct position and braze all connecting tubes to the 4-way valve. Set the 4-way valve coil back in place and screw back on.



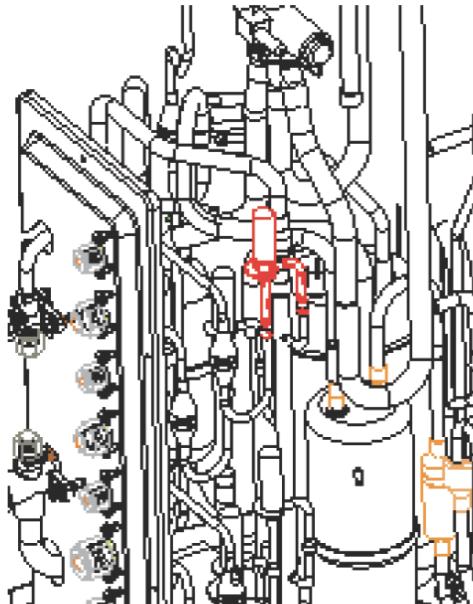
12.1.3.4 Disassembly and Reassembly of the Electronic Expansion Valve

Step 1: Remove the electronic expansion valve coil

Remove the electronic expansion valve coil by rotating it until the lock is unfixed.

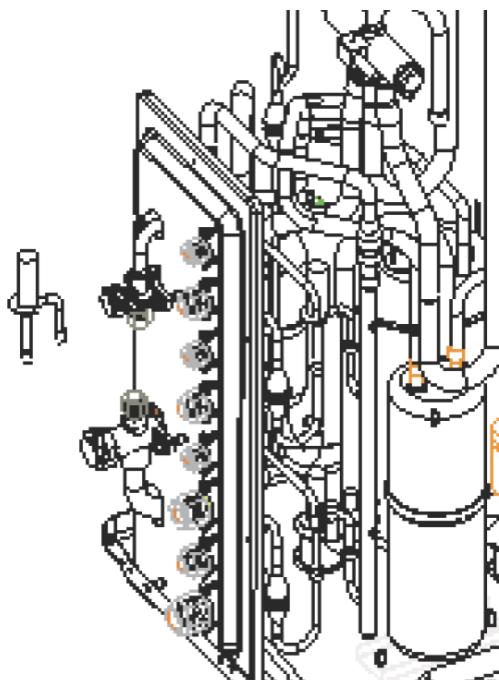
Step 2: Remove the electronic expansion valve

Unsolder the brazed joints of the electronic expansion valve. Then remove the electronic expansion valve.



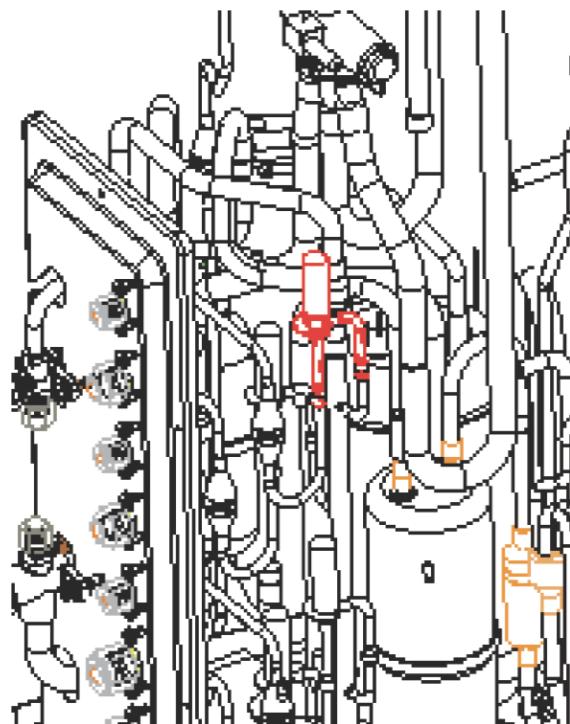
Step 3: Reassembly: Electronic expansion valve

Place the electronic expansion valve in the proper location.



Step 4: Reassembly: Brazing

After the expansion valve is in place, braze the joints for the expansion valve.



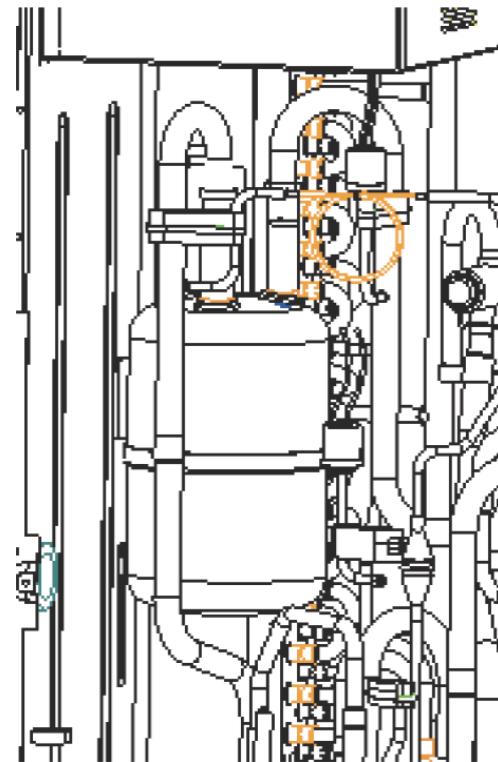
Step 5: Reassembly: Electronic expansion valve coil

Set the electronic expansion valve coil on the valve body and adjust the lock to the right place.

12.1.3.5 Disassembly and Reassembly of Accumulator

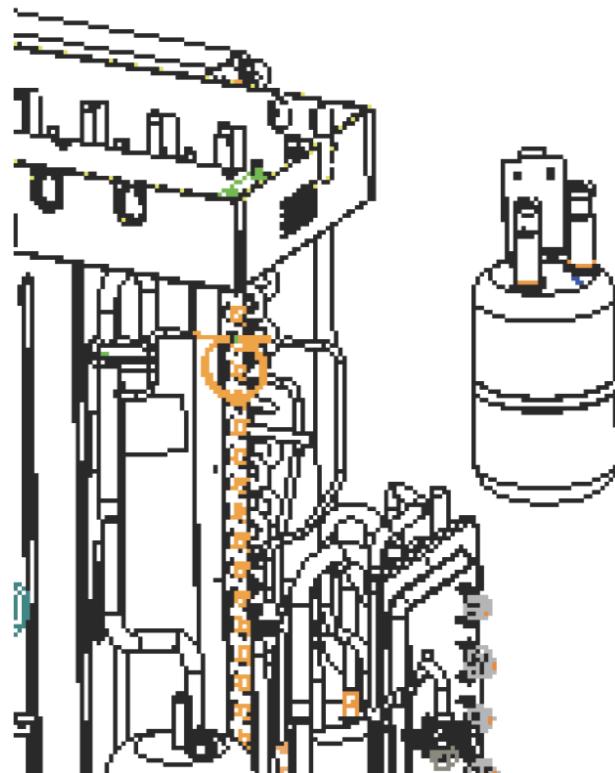
Step 1: Unsoldering

Unsolder the joints connecting the accumulator.



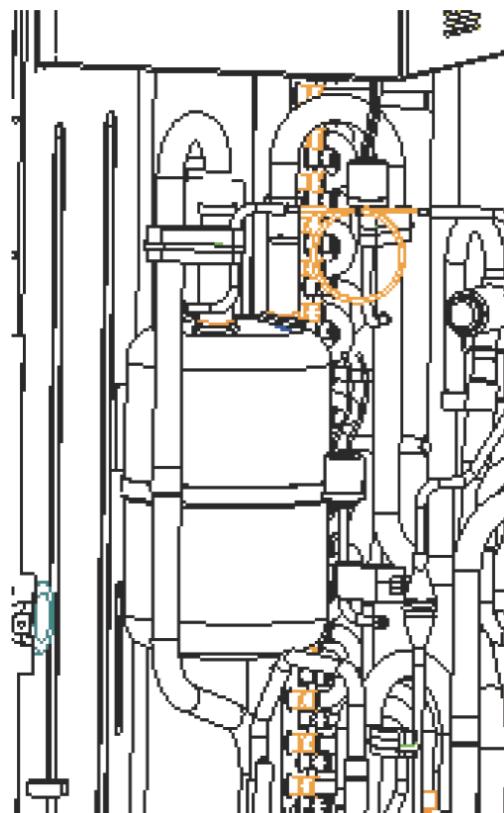
Step 2: Remove accumulator

Remove the bolt that fixes the accumulator in place. Then remove the accumulator from the middle baffle.



Step 3: Reassembly

Fix the new accumulator on the middle baffle. Then tighten the bolt that fixes it in place. And finally, braze the joints for the accumulator.

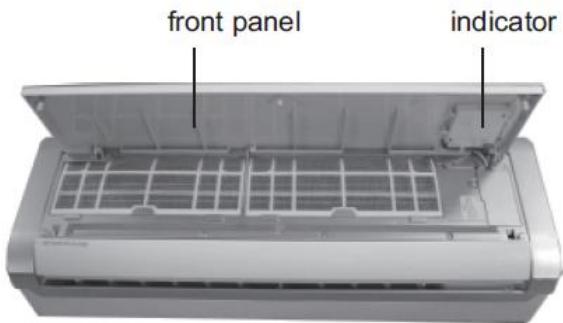


12.2 Indoor Units

12.2.1 Wall Mounted

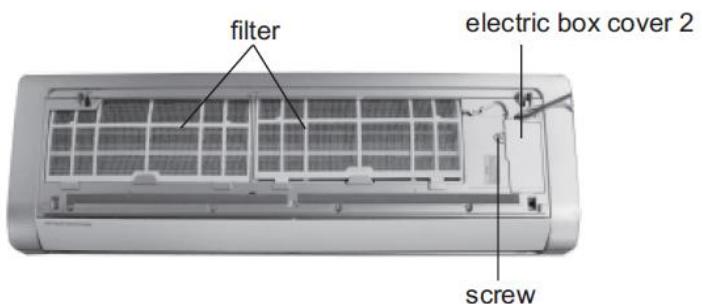
Step 1: Remove front panel

Open front panel and remove the screws holding the indicator. Push the rotor shaft on both sides of the panel to make it separate from the groove. Then remove the panel.



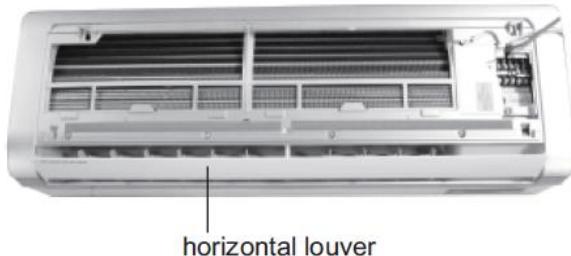
Step 2: Remove filter and electric box cover 2

Push the filter inward and then pull it upward to remove the filter. Remove screws on electric box cover 2 and then remove the cover.



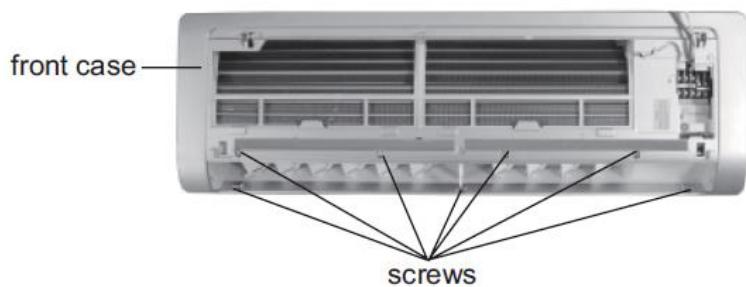
Step 3: Remove horizontal louver

Remove middle axle sleeve of horizontal louver and then slightly bend the horizontal louver to remove it.



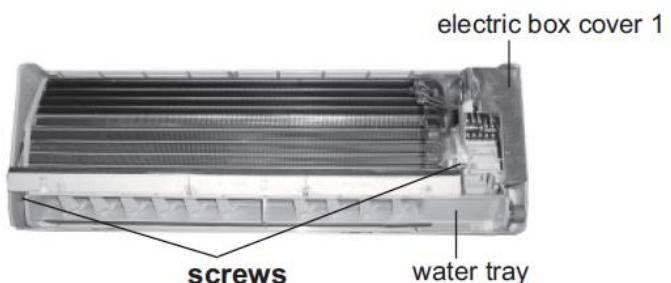
Step 4: Remove front case

Remove the screws holding in the front case. Loosen clasps in the middle of the front case and then turn over the front case to remove it



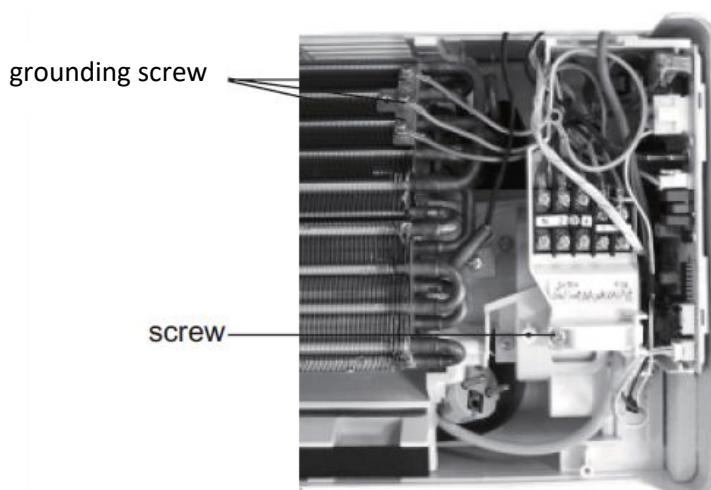
Step 5: Remove water tray

Remove the screws of electric box cover 1 and loosen the clasps. Unplug the wiring terminal of the swing motor and remove the screws holding the water tray in place. Then remove the water tray.



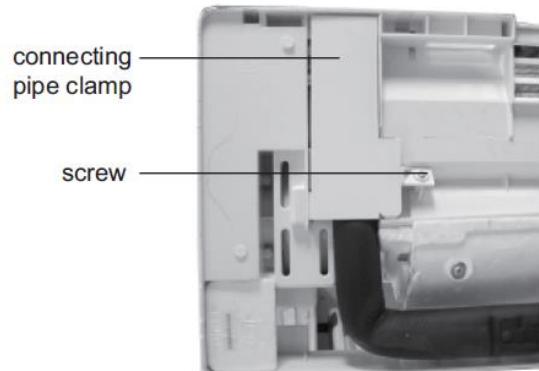
Step 6: Remove electric box

Remove the grounding screw of the evaporator and the screws of the electric box. Unplug the connecting wire for the indoor motor. Loosen the clasps of the electric box and then remove the electric box.

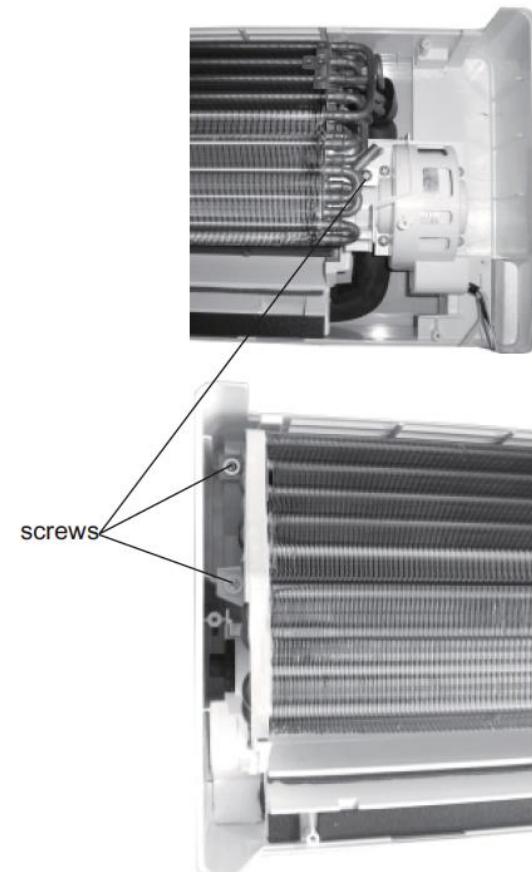


Step 7: Remove left side plate

Remove the screws fixing chassis and condenser support to remove the left side plate.

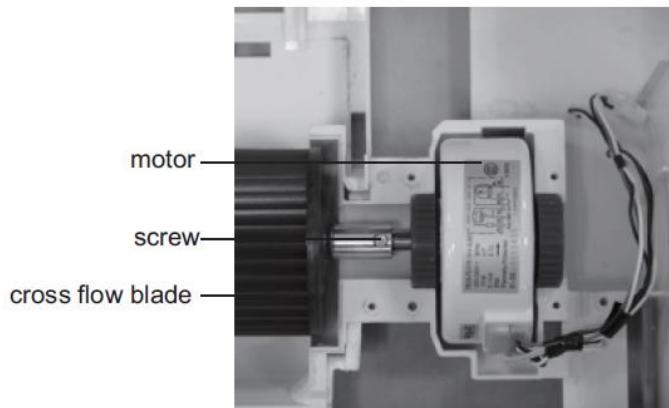
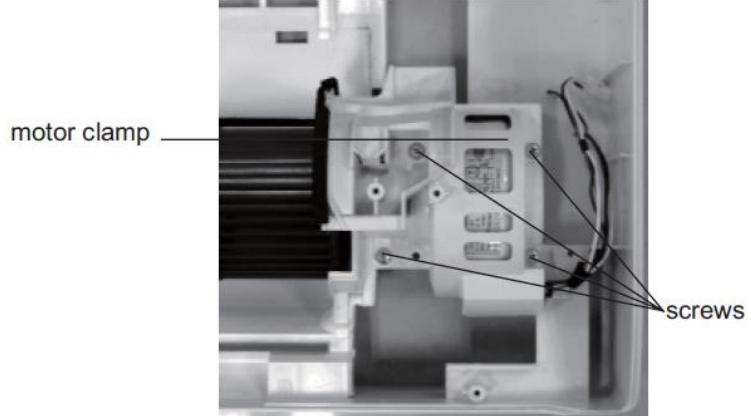


Remove connection screws between evaporator and the rear case. Slightly adjust the pipe of the evaporator and then remove the evaporator.



Step 8: Remove motor and cross flow blade

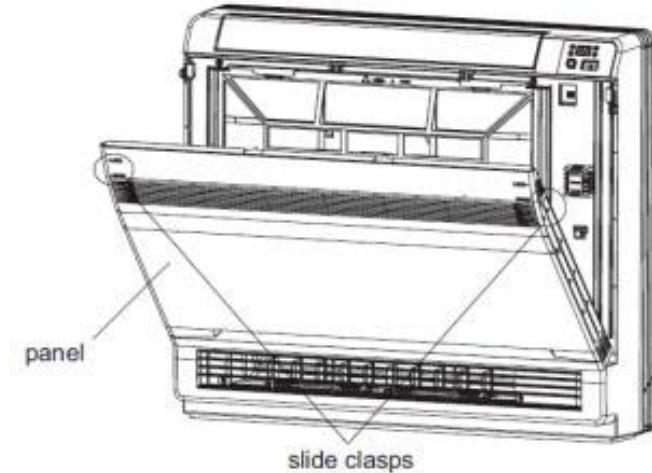
Remove the screws fixing the motor clamp and then remove the clamp. Remove connection screws between the motor and cross flow blade to remove the components.



12.2.2 Console

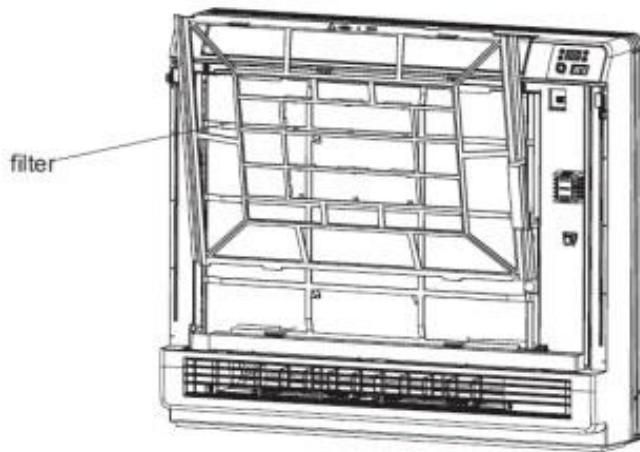
Step 1: Remove panel

Pull the slide clasps at both sides of the panel. Pull the panel outwards, then lift up to remove the panel.



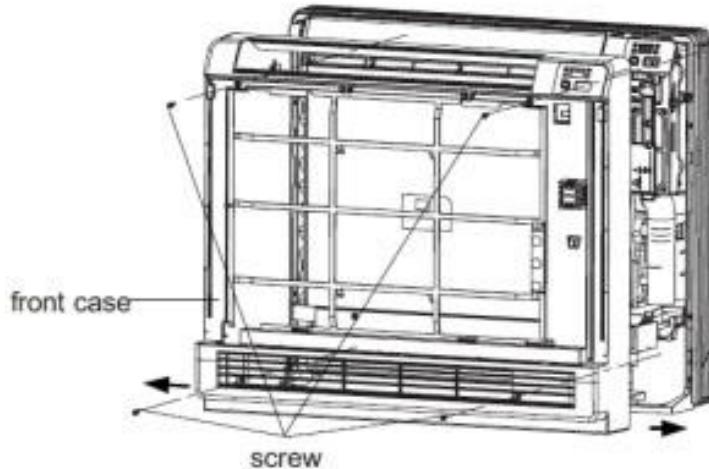
Step 2: Remove filter

Loosen the clasp on the upper side of the filter, then pull panel outwards to remove it.



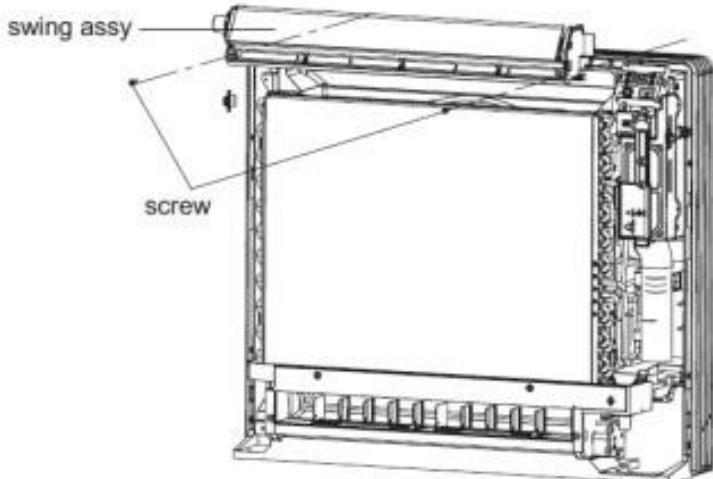
Step 3: Remove front case

Remove the tapping screws fixing the isolation sheet, loosen the wire binds, and then pull out the terminal. Lift to remove the electric box subassembly.



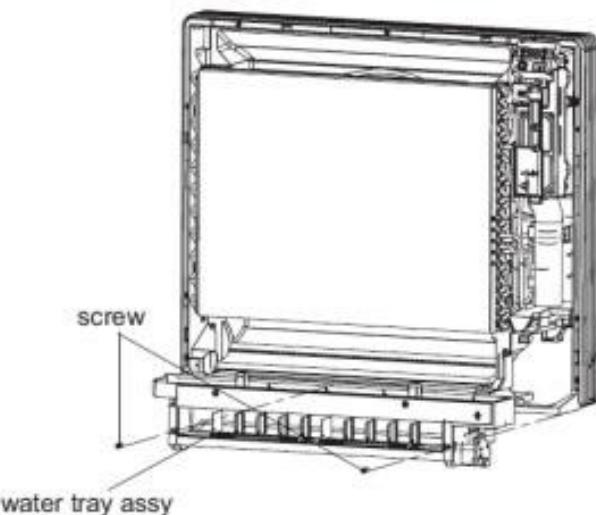
Step 4: Remove swing assembly

Remove the two (2) screws that fixes the swing assembly in place. Pull out the connection wires with the electric box and then pull the swing assembly outwards to remove it.



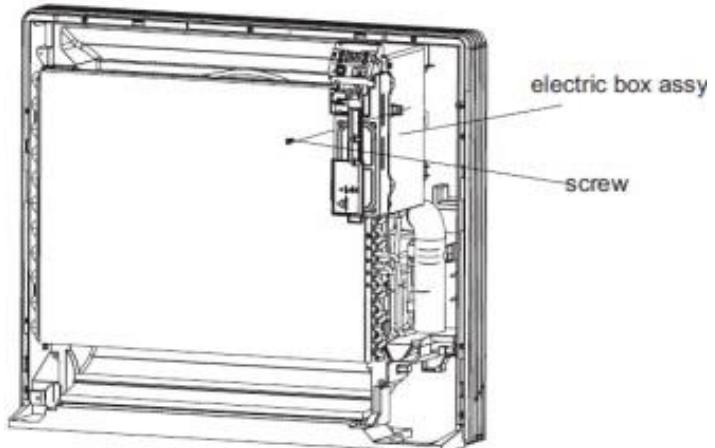
Step 5: Remove water tray assembly

Remove the two (2) screws that fixes the water tray in place. Pull the water tray outwards to remove it.



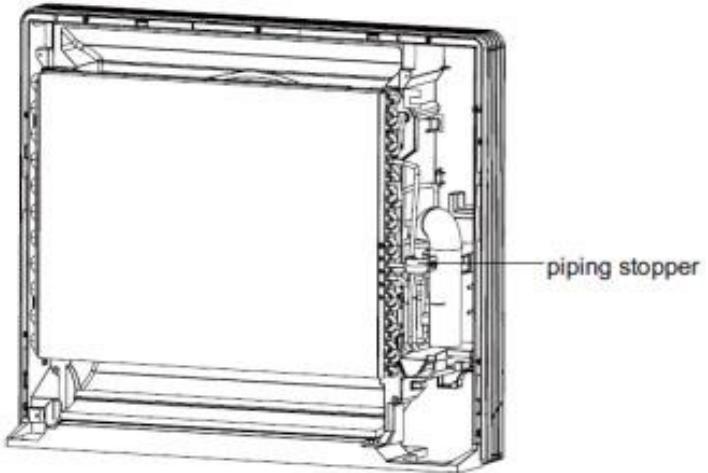
Step 6: Remove electric box assembly

Remove the one screw that fixes the electric box assembly in place. Disconnect all connections and then pull the electric box assembly outwards to remove it.



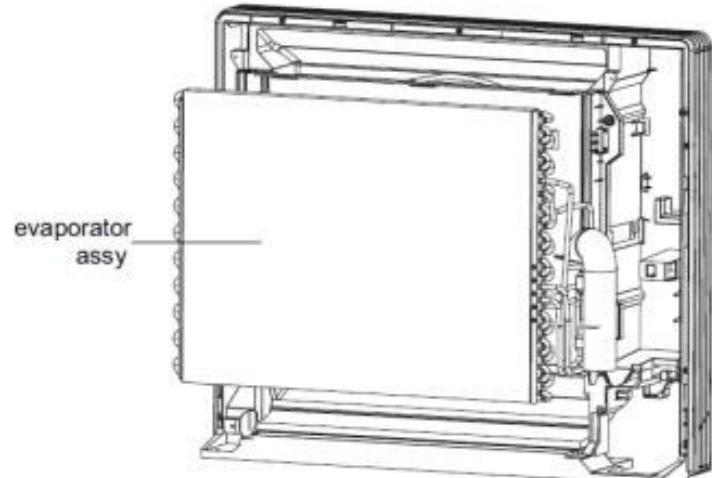
Step 7: Remove piping stopper

Remove nuts on the centrifugal blade and then pull the centrifugal blade outwards to remove it.



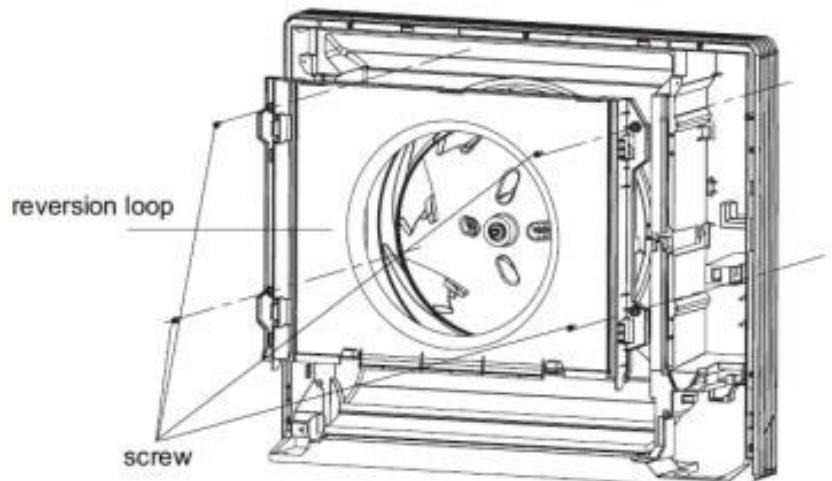
Step 8: Remove water tray assembly

Remove the two (2) screws that fixes the water tray in place. Pull the water tray outwards to remove it.



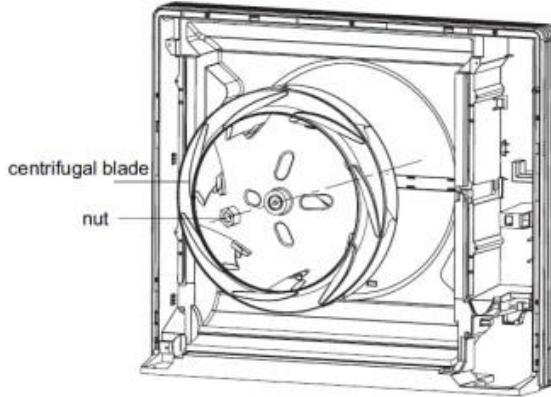
Step 9: Remove electric box assembly

Remove the one screw that fixes the electric box assembly in place. Disconnect all connections and then pull the electric box assembly outwards to remove it.



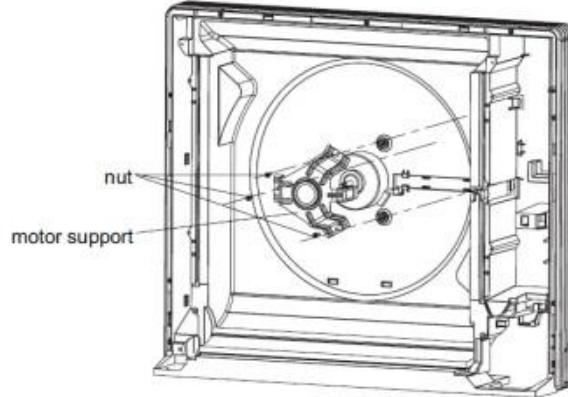
Step 10: Remove piping stopper

Remove nuts on the centrifugal blade and then pull the centrifugal blade outwards to remove it.



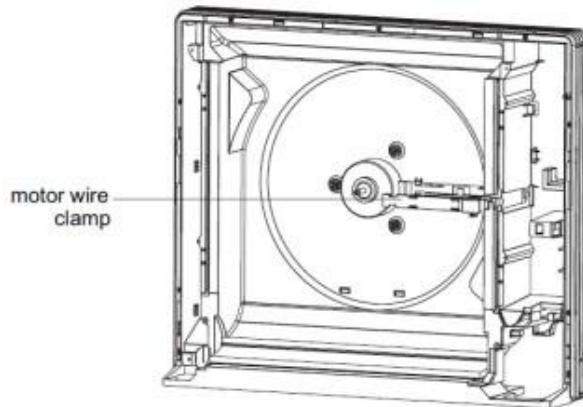
Step 11: Remove water tray assembly

Remove the two (2) screws that fixes the water tray in place. Pull the water tray outwards to remove it.



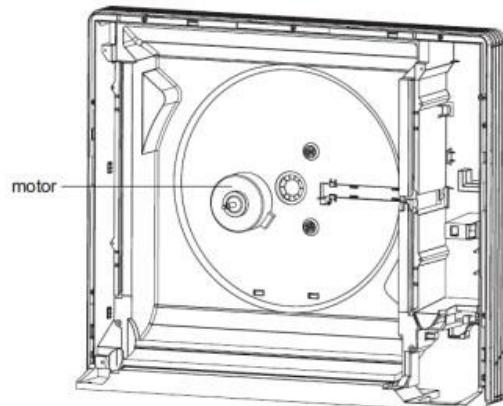
Step 12: Remove electric box assembly

Remove the one screw that fixes the electric box assembly in place. Disconnect all connections and then pull the electric box assembly outwards to remove it.



Step 13: Remove electric box assembly

Remove the one screw that fixes the electric box assembly in place. Disconnect all connections and then pull the electric box assembly outwards to remove it.

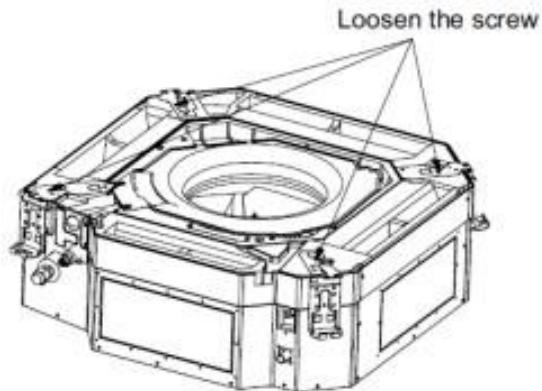


12.2.3 Cassette

12.2.3.1 Disassembly and Reassembly of Fan Motor

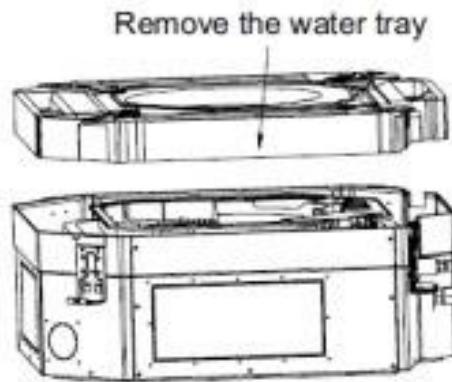
Step 1: Loosen the screws fixing the water tray

Use a screwdriver to loosen the screws that hold the water tray in place.



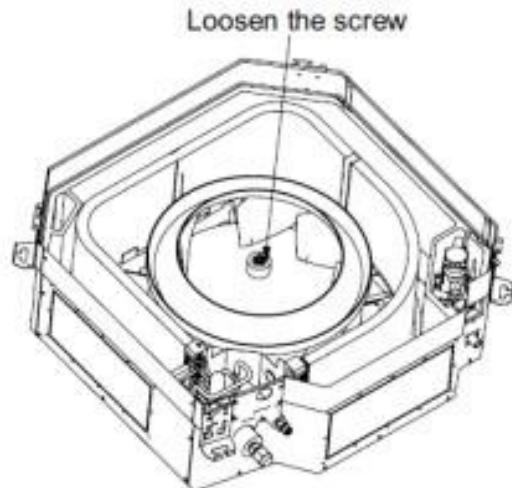
Step 2: Remove water tray

Remove the water tray by lifting it off of the rest of the unit.



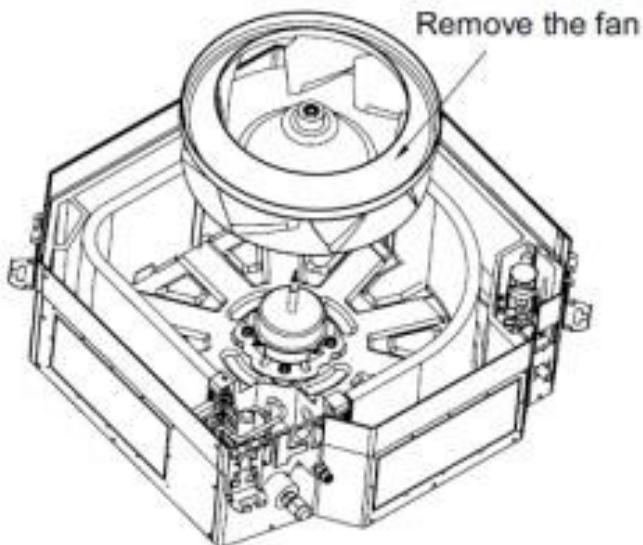
Step 3: Loosen bolts fixing the fan

Use a spanner to loosen the bolts that hold the fan in place.



Step 4: Remove fan

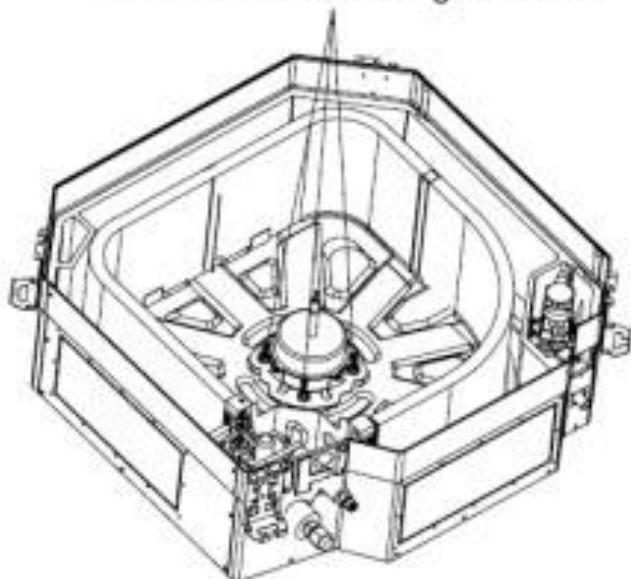
Remove the fan by lifting it off of the rest of the unit.



Step 5: Loosen the screws fixing the motor

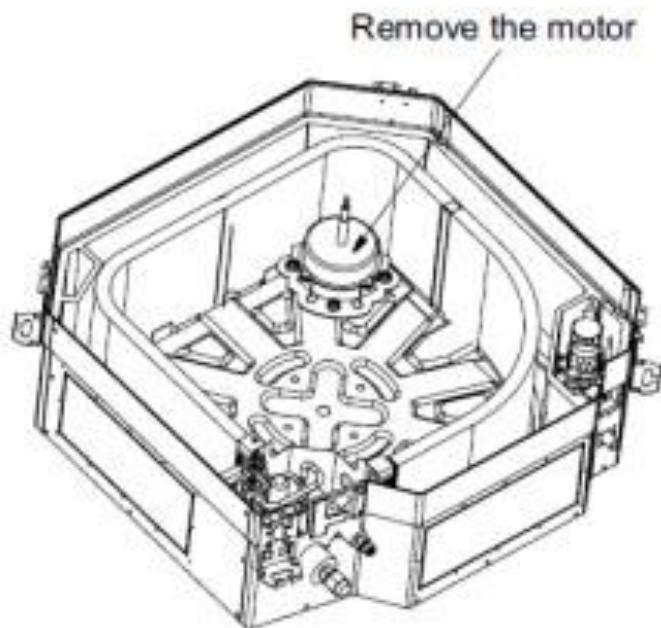
Use a screwdriver to loosen the screws that hold the motor in place.

Loosen the screws fixing the motor



Step 6: Replace the motor

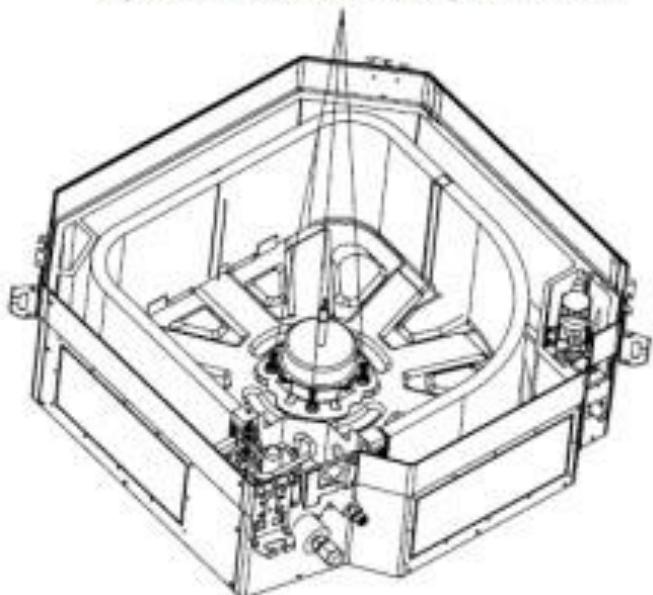
Remove the old motor and replace with a new one, if necessary.



Step 7: Tighten the screws fixing the motor

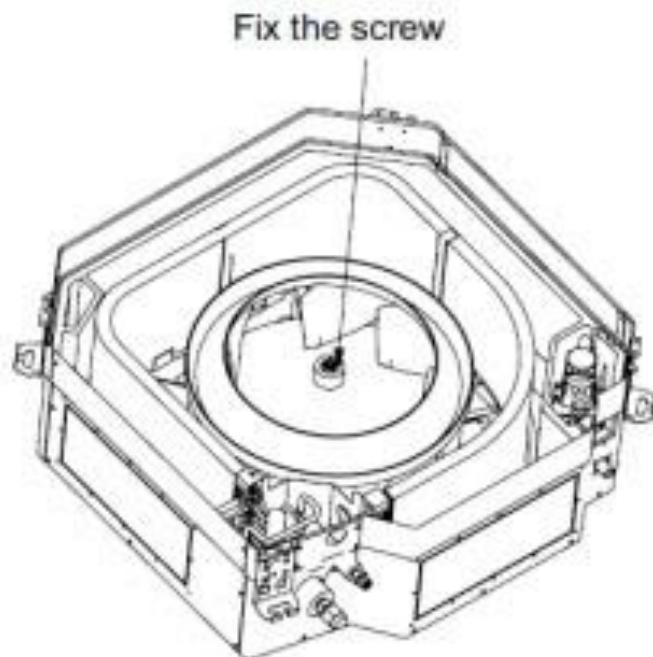
Use a screwdriver to tighten the screws that hold the motor in place.

Tighten the screws fixing the motor



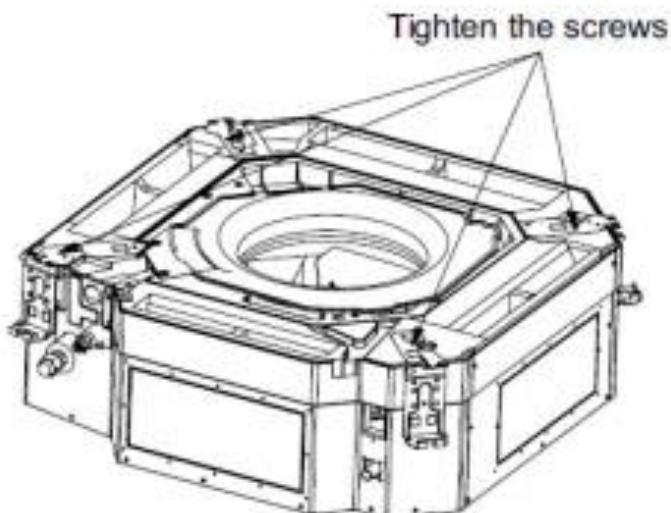
Step 8: Mount the fan

Mount the fan and use a spanner to tighten the bolts that hold the fan in place.



Step 9: Mount the water tray

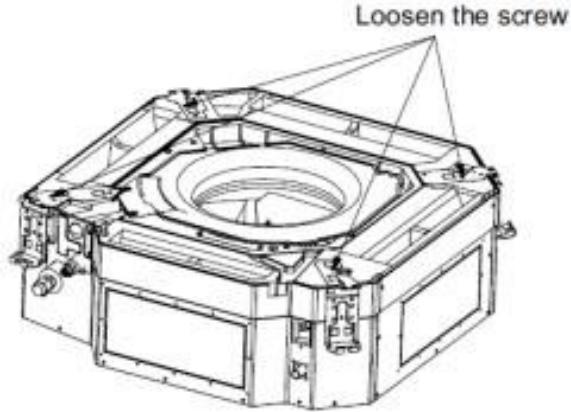
Use a screwdriver to tighten the screws that fix the water tray.



12.2.3.2 Disassembly and Reassembly of Drainage Pump

Step 1: Loosen the screws fixing the water tray

Use a screwdriver to loosen the screws that hold the water tray in place.



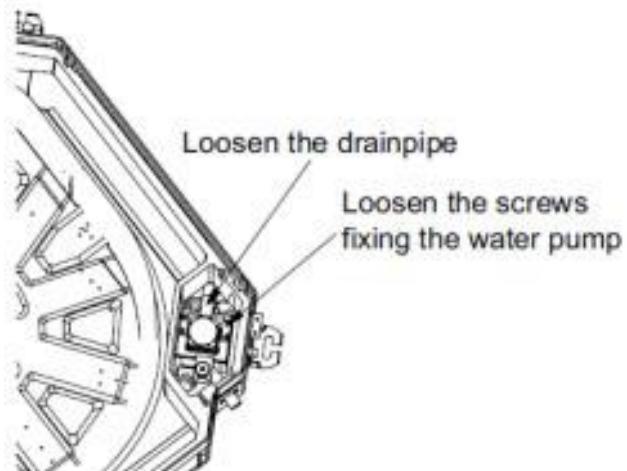
Step 2: Remove water tray

Remove the water tray by lifting it off of the rest of the unit.



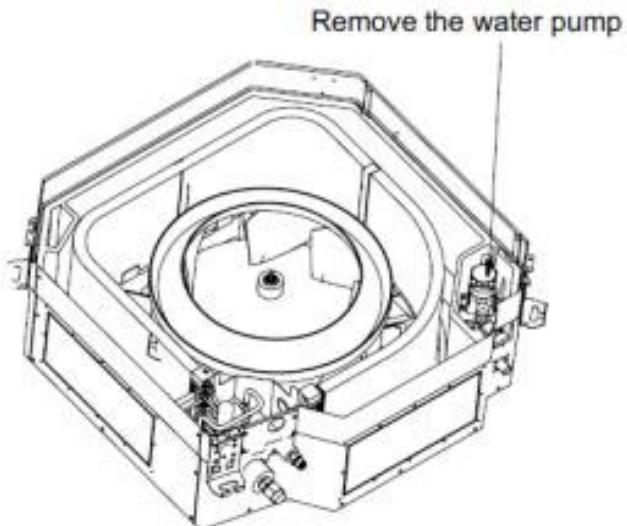
Step 3: Loosen screws fixing the pump

Pull out the water outlet pipe and loosen the screws fixing the water pump.



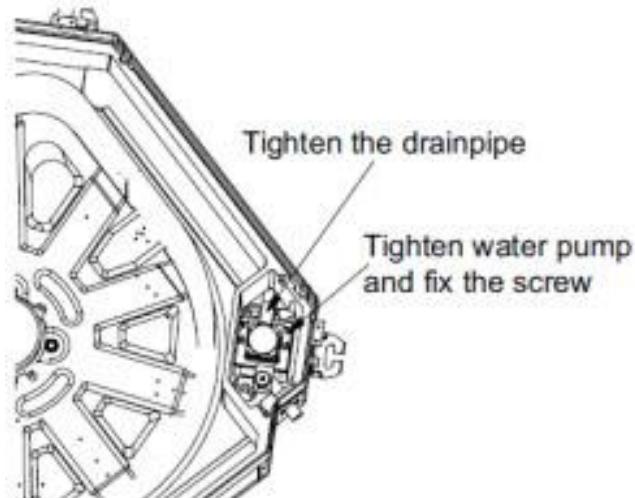
Step 4: Replace pump

Take out the pump and replace it with a new one, if necessary.



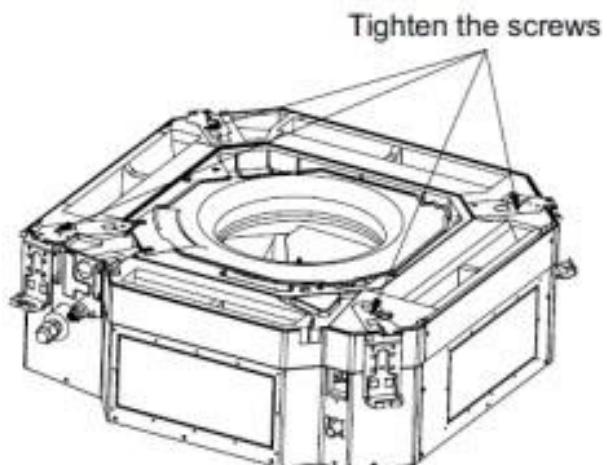
Step 5: Fix the water pump

Connect the drainage pipe and tighten the screws fixing the water pump.



Step 6: Replace water tray

Mount the water tray and tighten the screws holding it in place.



12.2.4 Floor/Ceiling

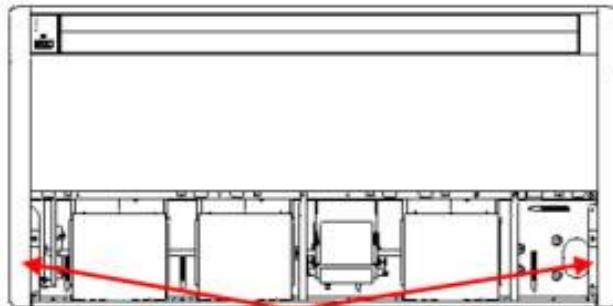
Step 1: Remove front panel

Pull down on the clip on the front grill until the grill is open (as shown in the diagram; arrow represents the position of the buttons; there are two clips for each "grill").



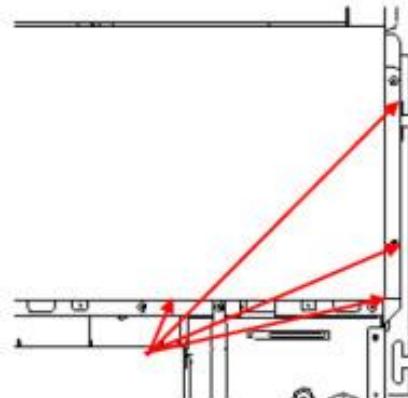
Step 2: Remove left and right plates

Remove the screws (as shown in diagram) with a screwdriver and then push upward to remove the right and left finishing plates. (The arrows in the diagram show the position of the screws.)



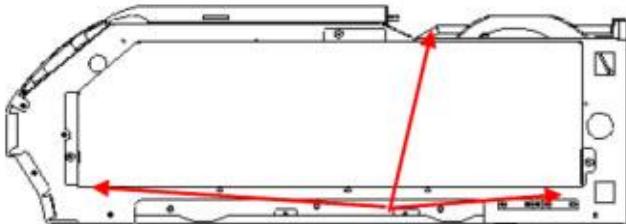
Step 3: Remove panel parts

Remove the screws shown by the arrow in the graph (two (2) on both right and left and four (4) in the front) with the screwdriver and then remove the panel parts.



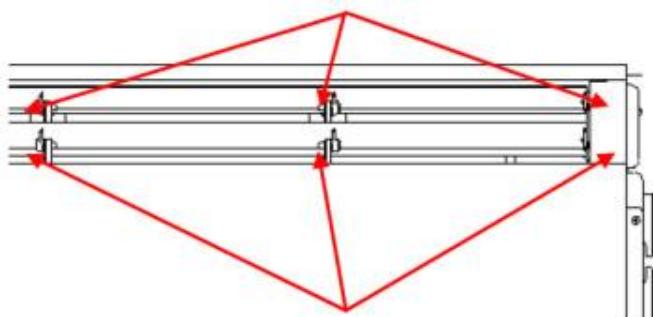
Step 4: Remove electric box cover

Remove the three (3) screws (as shown by the arrow in the graph) to remove the electric box cover.



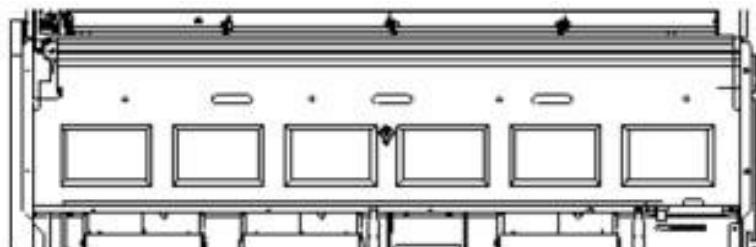
Step 5: Remove the air flow louvers

Remove the air flow louvers from the louver support subassembly and then remove both ends from the louver motor joint.



Step 6: Remove water tray modules

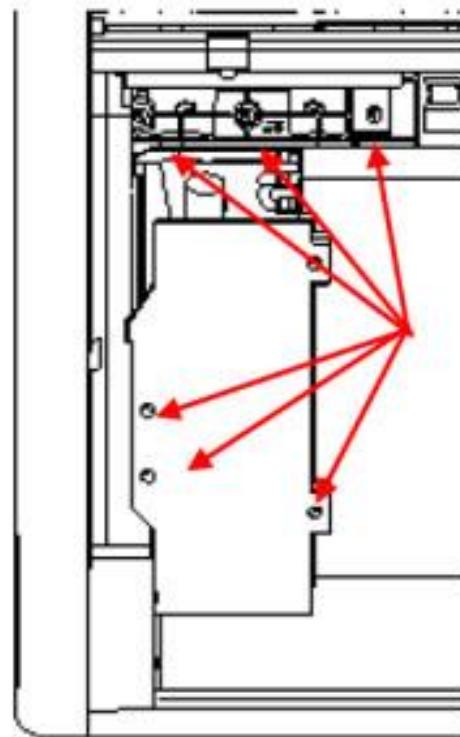
Remove the water tray modules.



Step 7: Remove evaporator components

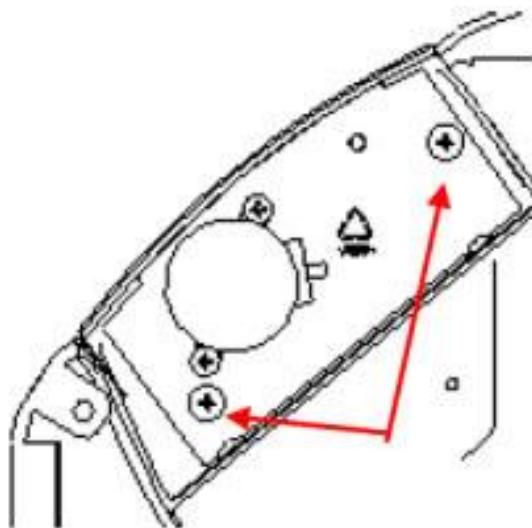
Remove the screws as shown by the arrow in the graph with a screwdriver.

(There are six (6) screws on the left and right of the evaporator and five (5) on the evaporator outlet press plates)



Step 8: Remove the fan plate subassembly

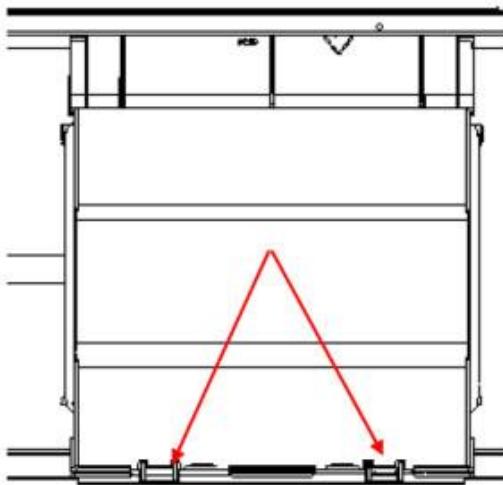
Remove the screws (as shown in diagram) with a screwdriver to remove the plate that holds the air sweeping fans in place.



Step 9: Remove front and back scroll cases

Press the buckle at the joints of the front and back scroll cases and pull upward to remove the front scroll case. Then remove the screws on the back scroll case. Lift the buckle of the back scroll case with hands and remove it.

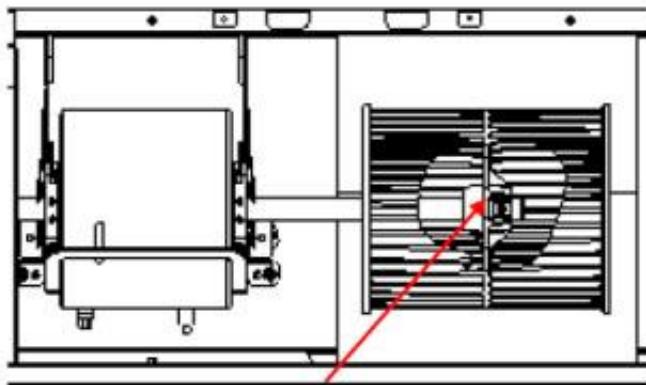
(see diagram to the right; arrows point to two (2) screws on the left and right side of unit)



Step 10: Remove fans

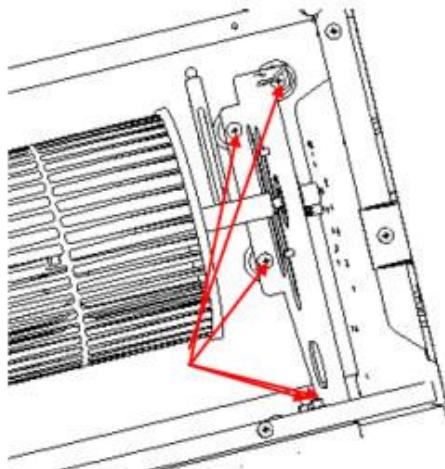
Remove the screws and bolt that hold the fan wheel in place and remove the wheel.

(see diagram for location of bolt)



Step 11: Remove the bearing plates

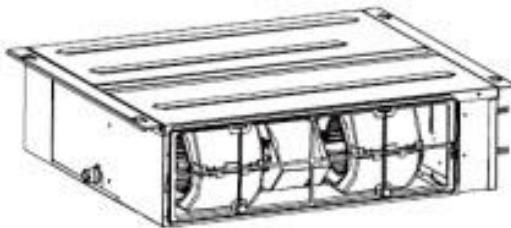
Remove the four (4) screws on the plates that fix the bearings with a screwdriver.



12.2.5 Ducted

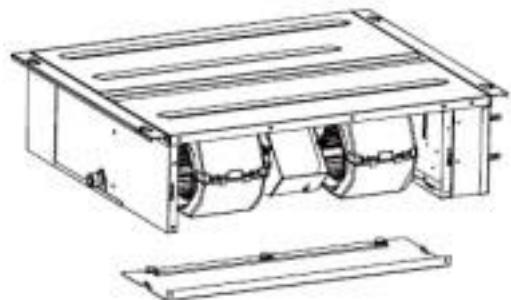
Step 1: Remove electric wire

Turn off the power supply to the system. Open the cover plate of the electric box, then disconnect the electric wires inside the box.



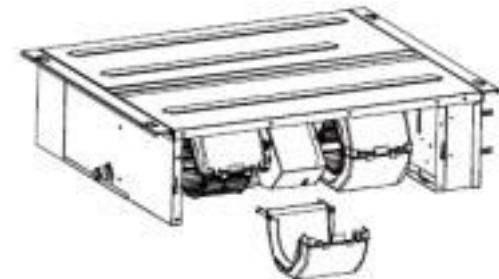
Step 2: Remove plate for the inlet air

Loosen the screws used to fix the cover plate for the inlet air with a screwdriver. Then remove the cover plate.



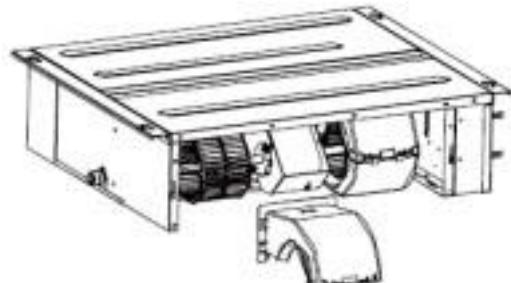
Step 3: Remove the rear fan motor casing

Undo the buckle of the rear and front of the fan motor casing, then remove the rear fan motor casing.



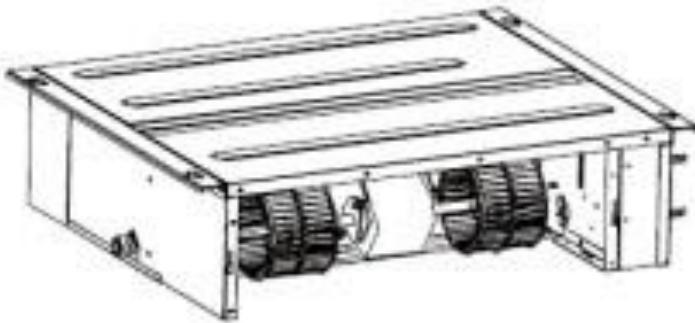
Step 4: Remove front fan motor casing

Loosen the screws used to fix the front fan motor casing and then remove the front fan motor casing.



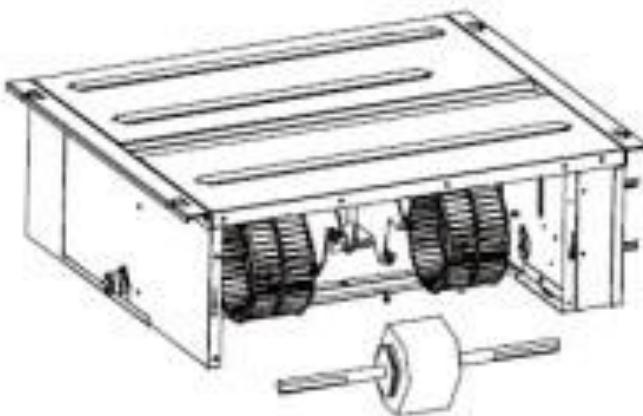
Step 5: Loosen the fan blade and motor

Loosen the screws used to fix the fan blades and then undo the buckle used to fix the motor.



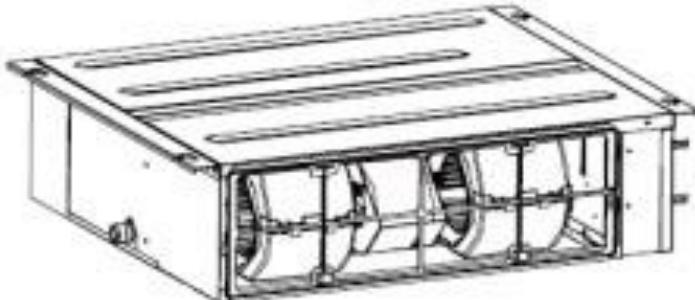
Step 6: Remove the motor

Separate the motor from the motor frame. Remove the fan blade, then take the motor out of the inlet air frame.



Step 7: Reassembly

Reassemble the fan by reversing the steps above. Power on the unit and perform tests to ensure all components are working properly after reassembly.



13. Specifications

13.1 Indoor Units

13.1.1 Wall Mounted A

Model Number		SHE9H4ZIGX	SHE12H4ZIGX	SHE18H4ZIGX
Product Code		243-2003-E	243-2004-E	243-2005-E
Performance & Electrical	Rated Voltage	208-230V AC / 1 PH	208-230V AC / 1 PH	208-230V AC / 1 PH
	Control	Remote (standard) or Wall (optional)	Remote (standard) or Wall (optional)	Remote (standard) or Wall (optional)
	Setting Range	61°F to 86°F	61°F to 86°F	61°F to 86°F
	Cooling Capacity (BTU/H) (Min. ~ Max.)	9000 (3100~9600)	12000 (3100~13000)	18000 (6210~22000)
	Heating Capacity (BTU/H) (Min. ~ Max.)	9800 (2200~11000)	13000 (2400~14000)	19800 (4100~22000)
	Wire Size / No. of Conductors	4C- 14 AWG (Recommended)	4C- 14 AWG (Recommended)	4C- 14 AWG (Recommended)
	Indoor Air Circulation (CFM) (Turbo / H / M / L)	306/ 253 /218 /171	330/ 288/ 258 /206	488/ 441/ 383 /324
	Dehumidifying Volume (pts/h)	2.54	2.96	4.22
FAN Motor	Fan Motor Speed (RPM)-Cooling Fan Motor Speed (RPM)-Heating (Turbo / H / M / L)	1400/1150/1050/900 1450/1250/1150/1050	1500/1150/1050/900 1450/1250/1150/1050	1500/1150/1050/950 1500/1200/1100/1000
	Output of Fan Motor (W)	10	10	20
	Fan Motor Capacitor (ufd)	1	1	1.5
	Fan Motor RLA (A)	0.17	0.17	0.32
	Fan Type	Cross Flow Fan	Cross Flow Fan	Cross Flow Fan
Evaporator	Diameter-Length (in)	3.35 – 26.34	3.35 – 26.34	3.86 – 28.86
	Evaporator	Aluminum fin - copper tube	Aluminum fin - copper tube	Aluminum fin - copper tube
	Pipe Diameter (in)	0.276	0.276	0.276
	Row-Fin Gap (in)	2-0.06	2-0.06	2-0.06
Design Data	Coil length(L) x height(H) x coil width(L) (in)	25.9 x 11.2 x 1	25.9 x 11.2 x 1	29 x 12 x 1
	Swing Motor Model / Output (W) (for horizontal louver)	MP28VB / 2	MP28VB / 2	MP28VB / 2.5
	Fuse(A)	3.15	3.15	3.15
	High Pressure (PSI)	550	550	500
	Low Pressure (PSI)	240	240	240
	Auto Restart	Yes	Yes	Yes
	Sound Pressure Level dB(A) (Turbo / H / M / L)	46 / 38 / 30 / 28	48 / 38 / 30 / 28	46 / 43 / 40 / 35
	Sound Power Level dB(A) (Turbo / H / M / L)	56 / 48 / 40 / 38	58 / 48 / 40 / 38	56 / 53 / 50 / 45
Dimensions & Weight	Flare Liquid line	1/4 "	1/4 "	1/4 "
	Flare Suction line	3/8"	1/2"	1/2"
	Dimensions of Unit (W / D / H) (approx in)	34.3 / 7 / 11	34.3 / 7 / 11	37.8 / 7.7 / 11.8
	Dimension of Package (W / D / H) (approx in)	36.9 / 14.9 / 10.8	36.9 / 14.9 / 10.8	40.9 / 15.5 / 11.6
	Net / Gross Weight (lb)	24.3 / 33.1	24.3 / 33.1	28.7 / 39.7

13.1.2 Wall Mounted B

Model Number		SHE9H4ZIGB	SHE12H4ZIGB	SHE18H4ZIGB	SHE24H4ZIGB
Product Code		243-2007-E	243-2008-E	243-2009-E	243-2010-E
Performance & Electrical	Rated Voltage	208-230V AC / 1 PH	208-230V AC / 1 PH	208-230V AC / 1 PH	208-230V AC / 1 PH
	Min. / Max. Operating Voltage	187 / 253 VAC	187 / 253 VAC	187 / 253 VAC	187 / 253 VAC
	Cooling Capacity (BTU/H) (Min. ~ Max.)	9000 (3500~9600)	12000 (3100~13000)	18000 (5970~22350)	21400 (9600~25000)
	Heating Capacity (BTU/H) (Min. ~ Max.)	9800 (2200~11000)	13000 (2400~14000)	19800 (4100~22000)	23000 (4300~26000)
	Indoor Air Circulation (CFM) (Turbo / H / M / L)	306/ 277 /253 /218	335/ 277/ 253 /218	500/ 459/ 383/ 324	589/ 471/ 412/ 353
	Dehumidifying Volume (pts/h)	1.69	2.96	3.8	5.28
FAN Motor	Model	FN20X-PG	FN20X-PG	FN20W-PG	FN60B-ZL
	Fan Motor Speed (RPM)-Cooling Fan Motor Speed (RPM)-Heating (Turbo / H / M / L)	1260/1100/950/750 1320/1200/1100/950	1330/1100/950/750 1350/1170/1050/950	1500/1200/1050/900 1500/1250/1150/1050	1500/1200/1050/900 1450/1150/1020/950
	Output of Fan Motor (W)	20	20	20	60
	Fan Motor Capacitor (ufd)	1	1	1.5	N / A
	Fan Motor RLA (A)	0.2	0.2	0.32	0.24
	Fan Type	Cross Flow Fan	Cross Flow Fan	Cross Flow Fan	Cross Flow Fan
Evaporator	Diameter-Length (in)	3 5/8 – 25 2/5	3 5/8 – 25 2/5	3 6/7 – 28	3 6/7 – 30 1/8
	Evaporator	Aluminum fin - copper tube	Aluminum fin - copper tube	Aluminum fin - copper tube	Aluminum fin - copper tube
	Pipe Diameter (in)	0.276	0.276	0.276	0.276
	Row-Fin Gap (in)	2-0.06	2-0.06	2-0.06	2-0.06
Design Data	Coil length(L) x height(H) x coil width(L) (in)	27.2 x 10.5 x 1	27.2 x 10.5 x 1	28.1 x 12 x 1	30 1/8 x 13 1/2 x 1
	Swing Motor Model / Output (W) (for horizontal louver)	MP24AA / 2	MP24AA / 2	MP28VB / 2.5	MP35XX / 3
	Fuse(A)	3.15	3.15	3.15	3.15
	High Pressure (PSI)	550	550	550	550
	Low Pressure (PSI)	240	240	240	240
	Auto Restart	Yes	Yes	Yes	Yes
	*Remote	Yes	Yes	Yes	Yes
	Wall Control (optional)	Yes	Yes	Yes	Yes
	Sound Pressure Level dB(A) (Turbo / H / M / L)	42 / 38 / 35 / 32	44 / 39 / 36 / 33	49 / 44 / 40 / 35	53 / 45 / 41 / 37
	Sound Power Level dB(A) (Turbo / H / M / L)	52 / 48 / 45 / 42	54 / 49 / 46 / 43	59 / 54 / 50 / 45	63 / 55 / 51 / 47
Dimensions & Weight	Flare Liquid line	1/4"	1/4"	1/4"	1/4"
	Flare Suction line	3/8"	3/8"	1/2"	5/8"
	Dimensions of Unit (W / D / H) (approx in)	33.3 / 7.1 / 10.8	33.3 / 7.1 / 10.8	37 / 7.9 / 11.7	39.6 / 8.6 / 12.4
	Dimension of Package (W / D / H) (approx in)	36.1 / 10.2 / 14.6	36.1 / 10.2 / 14.6	39.9 / 15.6 / 11.3	42.4 / 15.7 / 12.9
	Net / Gross Weight (lb)	22 / 27.6	22 / 27.6	28.7 / 35.3	29.8 / 37.5

13.1.3 Console

Model Number		SMZC9H4ZIGX	SMZC12H4ZIGX	SMZC18H4ZIGX
Product Code		243-6001-E	243-6002-E	243-6003-E
Performance & Electrical	Rated Voltage	208-230V AC / 1 PH	208-230V AC / 1 PH	208-230V AC / 1 PH
	Control	Remote	Remote	Remote
	Setting Range	61°F to 86°F	61°F to 86°F	61°F to 86°F
	Cooling Capacity (BTU/H) (Min. ~ Max.)	9000 (3100~9600)	12000 (3100~13000)	18000 (6210~22000)
	Heating Capacity (BTU/H) (Min. ~ Max.)	9500 (2200~11000)	13000 (2400~14000)	19800 (4100~22000)
	Wire Size / No. of Conductors	14 AWG / 4C (Recommended)	14 AWG / 4C (Recommended)	14 AWG / 4C (Recommended)
	Indoor Air Circulation (CFM) (Turbo / H / MH / M / ML / L / Quiet)	383/ 330/ 312/ 282/ 253/ 218/ 188	441/ 383/ 353/ 324/ 294/ 265/ 206	494/ 471/ 424/ 383/ 341/ 312/ 241
	Dehumidifying Volume(pts/h)	1.69	2.96	3.8
FAN Motor	Fan Motor Speed (RPM)-Cooling Fan Motor Speed (RPM)-Heating (Turbo / H / MH / M / ML / L / Quiet)	650/560/530/480/430/370/320 650/560/530/480/430/370/320	750/650/600/550/500/450/350 750/650/600/550/500/450/350	840/800/720/650/580/530/410 900/840/760/690/620/570/450
	Output of Fan Motor (W)	30	30	30
	Fan Motor Capacitor (ufd)	N/A	N/A	N/A
	Fan Motor RLA (A)	0.15	0.15	0.15
	Fan Type	Cross Flow Fan	Cross Flow Fan	Cross Flow Fan
	Diameter-Length (in)	3 1/7 – 14 4/7	3 1/7 – 14 4/7	3 1/7 – 14 4/7
Evaporator	Evaporator	Aluminum fin - copper tube	Aluminum fin - copper tube	Aluminum fin - copper tube
	Pipe Diameter (in)	1/4	1/4	1/4
	Row-Fin Gap (in)	2-0.05	2-0.05	2-0.05
	Coil length(L) x height(H) x coil width(W) (in)	20.1 x 15.6 x 0.9	20.1 x 15.6 x 0.9	20.1 x 15.6 x 0.9
Design Data	Swing Motor Model (for horizontal louver)	MP24EB	MP24EB	MP24EB
	Fuse(A)	3.15	3.15	3.15
	High Pressure (PSI)	550	550	550
	Low Pressure (PSI)	240	240	240
	Auto Restart	Yes	Yes	Yes
	Sound Pressure Level dB(A) (Turbo / H / MH / M / ML / L / Quiet)	40 / 38 / 36 / 33 / 30 / 26 / 25	43 / 40 / 38 / 37 / 35 / 32 / 27	48 / 46 / 44 / 41 / 37 / 35 / 33
	Sound Power Level dB(A) (Turbo / H / MH / M / ML / L / Quiet)	50 / 48 / 46 / 43 / 40 / 36 / 35	53 / 50 / 48 / 47 / 45 / 42 / 37	58 / 56 / 54 / 51 / 47 / 45 / 43
	Flare Liquid line	1/4"	1/4"	1/4"
	Flare Suction line	3/8"	3/8"	1/2"
	Drain Connection	1 1/9	1 1/9	1 1/9
Dimensions & Weight	Dimensions of Unit (W / D / H) (approx in)	27.6 / 8.5 / 23.6	27.6 / 8.5 / 23.6	27.6 / 8.5 / 23.6
	Dimension of Package (W / D / H) (approx in)	31 / 11.1 / 27.4	31 / 11.1 / 27.4	31 / 11.1 / 27.4
	Net / Gross Weight (lb)	33.1 / 39.7	33.1 / 39.7	33.1 / 39.7

13.1.4 Cassette

Model Of Indoor Unit		SMZCA12H4ZIGX	SMZCA18H4ZIGX	SMZCA24H4ZIGX
Product Code		243-6004-E	243-6005-E	243-6006-E
Performance & Electrical	Rated Voltage	208-230V AC / 1 PH	208-230V AC / 1 PH	208-230V AC / 1 PH
	Control	Remote (standard) or Wall (optional)	Remote (standard) or Wall (optional)	Remote (standard) or Wall (optional)
	Setting Range	61°F to 86°F	61°F to 86°F	61°F to 86°F
	Cooling Capacity (BTU/H)	12000	14400	22800
	Heating Capacity (BTU/H)	13000	16000	27400
	Wire Size / No. of Conductors	4C- 14 AWG (Recommended)	4C- 14 AWG (Recommended)	4C- 14 AWG (Recommended)
	Indoor Air Circulation (CFM) (High Fan Speed)	353	353	694
	Dehumidifying Volume(pts/h)	2.96	3.8	5.28
FAN Motor	Fan Motor Speed (RPM) (SH / H / M / L / SL)	845 / 700 / 530 / 600 / 515	845 / 700 / 530 / 600 / 515	620 / 570 / 520 / 280
	Output of Fan Motor (W)	11	11	50
	Fan Motor Capacitor (ufd)	1	1	3
	Fan Motor RLA (A)	0.23	0.23	0.43
	Fan Type	Centrifugal	Centrifugal	Centrifugal
	Diameter-Height (in)	11.14 – 5.83	11.14 – 5.83	17.72 – 4.41
Evaporator	Evaporator	Aluminum fin - Inner grooved copper tube	Aluminum fin – Inner grooved copper tube	Aluminum fin – Inner grooved copper tube
	Pipe Diameter (in)	0.375	0.375	0.28
	Row-Fin Gap (in)	2-0.06	2-0.06	3-0.05
	Coil length(L) x height(H) x coil width(W) (in)	37.64 x 8.0 x 1.5	37.64 x 8.0 x 1.5	80.35 x 6.75 x 1.18
Design Data	Swing Motor Model (for horizontal louver)	MP35EA	MP35EA	MP35EA
	Fuse(A)	3.15	3.15	3.15
	High Pressure (PSI)	550	550	550
	Low Pressure (PSI)	240	240	240
	Auto Restart	Yes	Yes	Yes
	Condensate Pump	Yes	Yes	Yes
	Condensate Pump lift (ft)	2.3	2.3	3.6
	Anti-Mildew Protection	Yes	Yes	Yes
	Sound Pressure Level dB(A) (High Fan Speed)	46	46	39
	Sound Power Level dB(A) (High Fan Speed)	56	56	49
	Flare Liquid line	1/4"	1/4"	3/8"
	Flare Suction line	3/8"	1/2"	5/8"
Dimensions & Weight	Dimensions of Unit (W / D / H) (approx in)	22.4 / 22.4 / 9.1	22.4 / 22.4 / 9.1	33.1 / 33.1 / 9.45
	Dimension of Package (W / D / H) (approx in)	33.5 / 28.8 / 12.8	33.5 / 28.8 / 12.8	37.9 / 37.9 / 12.8
	Net / Gross Weight (lb)	39.7 / 50.7	39.7 / 50.7	61.7 / 77.2
	Dimensions of Panel (W / D / H) (approx in)	25.6 / 25.6 / 2.0	25.6 / 25.6 / 2.0	37.4 / 37.4 / 2.36
	Dimension of Panel Package (W / D / H) (approx in)	28.9 / 26.5 / 4.6	28.9 / 26.5 / 4.6	41.1 / 40.5 / 5.12
	Net / Gross Weight of Panel (lb)	5.5 / 8.1	5.5 / 8.1	14 / 22

13.1.5 Floor/Ceiling

Model Of Indoor Unit		SMZFC9H4ZIGX	SMZFC12H4ZIGX	SMZFC18H4ZIGX	SMZFC24H4ZIGX
Product Code		243-6007-E	243-6008-E	243-6009-E	243-6010-E
Performance & Electrical	Rated Voltage	208-230V AC / 1 PH			
	Control	Remote (standard) or Wall (optional)			
	Setting Range	61°F to 86°F	61°F to 86°F	61°F to 86°F	61°F to 86°F
	Cooling Capacity (BTU/H)	8500	11900	17000	22800
	Heating Capacity (BTU/H)	9500	13100	18700	27400
	Wire Size / No. of Conductors	4C- 14 AWG (Recommended)			
	Indoor Air Circulation (CFM) (H / M / L)	383 / 324 / 265	383 / 324 / 265	559 / 412 / 294	736 / 530 / 412
	Dehumidifying Volume(pts/h)	1.69	2.96	3.8	5.28
FAN Motor	Fan Motor Speed (RPM) (H / M / L)	690 / 610 / 480	690 / 610 / 480	985 / 800 / 680	985 / 800 / 680
	Output of Fan Motor (W)	15	15	20	40
	Fan Motor Capacitor (ufd)	1	1	2.5	2
	Fan Motor RLA (A)	0.28	0.28	0.56	0.63
	Fan Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal
	Diameter-Height (in)	5.49 – 4.13	5.49 – 4.13	5.49 – 4.13	5.49 – 4.13
Evaporator	Evaporator	Aluminum fin – Inner grooved copper tube			
	Pipe Diameter (in)	0.28	0.28	0.28	0.28
	Row-Fin Gap (in)	2-0.06	2-0.06	2-0.06	2-0.06
	Coil length(L) x height(H) x coil width(W) (in)	31.7 x 12.0 x 1.0	31.7 x 12.0 x 1.0	36.2 x 12.0 x 2.0	36.2 x 12.0 x 2.0
Design Data	Swing Motor Mode (for horizontal louver)	MP35CG	MP35CG	MP35CG	MP35CG
	Fuse(A)	3.15	3.15	3.15	3.15
	High Pressure (PSI)	550	550	550	550
	Low Pressure (PSI)	240	240	240	240
	Auto Restart	Yes	Yes	Yes	Yes
	Anti-Mildew Protection	Yes	Yes	Yes	Yes
	Sound Pressure Level dB(A) (H / M / L)	40 / 38 / 36	40 / 38 / 36	45 / 42 / 40	48 / 46 / 44
	Sound Power Level dB(A) (H / M / L)	50 / 48 / 46	50 / 48 / 46	55 / 52 / 50	58 / 56 / 54
	Flare Liquid line	1/4"	1/4"	1/4"	3/8"
	Flare Suction line	3/8"	3/8"	1/2"	5/8"
Dimensions & Weight	Dimensions of Unit (W / D / H) (approx in)	48.0 / 27.6 / 8.9	48.0 / 27.6 / 8.9	48.0 / 27.6 / 8.9	48.0 / 27.6 / 8.9
	Dimension of Package (W / D / H) (approx in)	52.9 / 32.4 / 12.4	52.9 / 32.4 / 12.4	52.9 / 32.4 / 12.4	52.9 / 32.4 / 12.4
	Net / Gross Weight (lb)	88.2 / 110.2	88.2 / 110.2	88.2 / 110.2	99.2 / 119.1

13.1.6 Ducted

Model Of Indoor Unit		SMZD9H4ZIGX	SMZD12H4ZIGX	SMZD18H4ZIGX	SMZD21H4ZIGX	SMZD24H4ZIGX
Product Code		243-6011-E	243-6012-E	243-6013-E	243-6014-E	243-6015-E
Performance & Electrical	Rated Voltage	208-230V AC / 1 PH				
	Control	Wall (standard) or Remote(optional)				
	Setting Range	61°F to 86°F				
	Cooling Capacity (BTU/H)	8500	11900	15300	20400	23800
	Heating Capacity (BTU/H)	9500	13100	18700	22600	27400
	Wire Size / No. of Conductors	4C- 14 AWG (Recommended)				
	Indoor Air Circulation (CFM) (High Fan Speed)	265	294	412	589	589
	Dehumidifying Volume(pts/h)	1.69	2.96	3.8	4.23	5.28
FAN Motor	Fan Model	FG30A	FG40A	FG60A	FG20E	FG20E
	Fan Motor Speed (SH / H / M / L)	1230 / 970 / 760 / 640	1130 / 960 / 830 / 700	1000 / 920 / 780 / 720	1160 / 985 / 800 / 680	1160 / 985 / 800 / 680
	Output of Fan Motor (W)	40	49	75	22.5	22.5
	Fan Motor Capacitor (ufd)	1.5	3	3	3	3
	Fan Motor RLA (A)	0.35	0.35	0.43	0.54	0.54
	Fan Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
	Fan Quantity	2	2	3	4	4
Evaporator	Diameter-Length (in)	5.49 – 5.30	5.49 – 5.30	5.49 – 5.30	5.49 – 5.30	5.49 – 5.30
	Evaporator	Aluminum fin – Inner grooved copper tube				
	Pipe Diameter (in)	0.28	0.28	0.28	0.28	0.28
	Row-Fin Gap (in)	2-0.06	3-0.06	3-0.06	3-0.06	3-0.06
Design Data	Coil length(L) x height(H) x coil width(W) (in)	20.7 x 8.3 x 1.0	20.7 x 8.3 x 1.0	28.5 x 8.3 x 1.5	36.4 x 8.3 x 1.5	36.4 x 8.3 x 1.5
	Fuse(A)	3.15	3.15	3.15	3.15	3.15
	High Pressure (PSI)	550	550	550	550	550
	Low Pressure (PSI)	240	240	240	240	240
	Auto Restart	Yes	Yes	Yes	Yes	Yes
	Condensate Pump	Yes	Yes	Yes	Yes	Yes
	Condensate Pump lift (ft)	3.6	3.6	3.6	3.6	3.6
	Sound Pressure Level dB(A) (H / L)	37 / 31	39 / 32	41 / 33	42 / 34	42 / 34
	Sound Power Level dB(A) (H / L)	47 / 41	49 / 42	51 / 43	52 / 44	52 / 44
	Flare Liquid line	1/4"	1/4"	1/4"	3/8"	3/8 "
Dimensions & Weight	Flare Suction line	3/8"	3/8"	1/2"	5/8"	5/8"
	Dimensions of Unit (W / D / H) (approx in)	27.6 / 24.2 / 7.9	27.6 / 24.2 / 7.9	35.4 / 24.2 / 7.9	43.3 / 24.2 / 7.9	43.3 / 24.2 / 7.9
	Dimension of Package (W / D / H) (approx in)	35.2 / 29.3 / 12.0	35.2 / 29.3 / 12.0	44.2 / 29.3 / 12.0	52.1 / 29.3 / 12.0	52.1 / 29.3 / 12.0
Net / Gross Weight (lb)		48.51 / 59.54	50.72 / 63.95	59.54 / 79.38	68.36 / 90.41	68.36 / 90.41

13.2 Outdoor Units

13.2.1 Dual Port

Model Number		SMZ18H46ZOGX
Product Code		243-1004-C
Rated Voltage & Frequency and Phase		208-230 / 1PH
Min./ Max. Operating Voltage		187 / 253 VAC
Circuit Breaker Size (A)		20
Working Temperature Range (°F)		Cooling: 14 to 118; Heating: 5 to 81
Refrigerant (R410A), (oz.)		47.62
Min. Circuit Ampacity (A)		15
Low Ambient Cooling Function		Yes
Sound Power Level dB(A) (Max.)		66
Cooling	Rated Capacity (Btu/h)	18,000
	Capacity Invert Range (Btu/h)	7,000 - 21,000
	Rated Power Input (W)	1,650
	Power Input Range (W)	680 - 2,800
	Total Input Current (Cooling)	10.48 / 10.22 A
	SEER	16
Heating	Rated Capacity (Btu/h)	19,000
	Capacity Invert Range (Btu/h)	8,530 - 22,600
	Rated Power Input (W)	1,640
	Power Input Range (W)	680 - 2,800
	Total Input Current (Heating)	10.48 / 10.22 A
	HSPF	8.2
Fan Motor	Fan Type	Axial Fan
	Output (W)	60
	Capacitor (UFD)	3.5
	Fan Motor RLA (A)	0.54
	Fan Speed (RPM)	830 / 670 / 500
Outdoor Fan	Fan Blade Diameter (in)	17.52
	Air Flow Volume of Outdoor Unit (CFM)	1530 / 1354 / 942
Compressor	Model	SNB130FGYMC
	TYPE	Rotary
	Brand	mitsubishi
	RLA	9.56
	Input (W)	1245
	Crankcase Heater Input (W)	25 ± 7
	Oil Type	PVE / FV50S
	Overload Protector	1NT11L-6578
Condenser	Number of Rows	2
	Fin spacing (in)	0.055
	Fin Type	Aluminum, Louvered
	Tube Outside Dia.(in)	0.313
	Coil Length x Height x Width (in)	27.56 x 21.65 x 1.5
	Number of circuits	2
	Defrosting Method	Automatic Defrosting
Dimensions & Weight	Unit Dimensions (W x H x D) (in)	35.39 x 23.46 x 14.88
	Packing Dimensions (W x H x D) (in)	37.32 x 25.39 x 16.54
	Net / Gross Weight (lb)	94.8 / 105.82
Connection	Flare Liquid line	1/4 "
	Flare Suction line [*1]	3/8" [*1]
	Service Port Fitting	1/2" - 20 UNF
	High Pressure (psi)	550
	Low Pressure (psi)	240
	Design Length (ft)	24.6 (for each indoor unit) (49.2' total)
	Max Line Set Vertical Height (ft)	16.4
	Max Line Set Length (ft)	32.8 (for each indoor unit)
	Max Line Set Length (ft)	65.6 (total)
	Charge over Design Length [*2] (oz. / ft)	0.22 (over 49.2')
	Wiring (Indoor to Outdoor)	4C- 14 (Recommended)
	Wiring (Outdoor unit to Power Disconnect)	3C- 12 AWG (minimum)

*1. 12,000 BTU indoor units use a 1/2" to 3/8" adaptor joint that is included with the unit.

*2. When the total length of liquid line is over 49.2 ft, the additional refrigerant charge is required.

13.2.2 Triple Port

Model Number		SMZ24H46ZOGX
Product Code		243-1005-C
Rated Voltage & Frequency and Phase		208-230 / 1PH
Min./ Max. Operating Voltage		187 / 253 VAC
Circuit Breaker Size (A)		30
Working Temperature Range (°F)		Cooling: 14 to 118; Heating: 5 to 81
Refrigerant (R410A), (oz.)		77.6
Min. Circuit Ampacity (A)		20
Low Ambient Cooling Function		Yes
Sound Power Level dB(A) (Max.)		66
Cooling	Rated Capacity (Btu/h)	26,000
	Capacity Invert Range (Btu/h)	7,500 - 33,000
	Rated Power Input (W)	3,050
	Power Input Range (W)	650 - 4,500
	Total Input Current (Cooling)	15.66 / 15.34 A
	SEER	16
Heating	Rated Capacity (Btu/h)	29,000
	Capacity Invert Range (Btu/h)	7,500 - 35,000
	Rated Power Input (W)	2,800
	Power Input Range (W)	980 - 3,950
	Total Input Current (Heating)	15.66 / 15.34 A
	HSPF	8.2
Fan Motor	Fan Type	Axial Fan
	Output (W)	60
	Input (W)	120
	Capacitor (UFD)	3.5
	Fan Motor RLA (A)	0.59
	Fan Speed (RPM)	690 / 600 / 500
Outdoor Fan	Fan Blade Diameter (in)	20.47
	Air Flow Volume of Outdoor Unit (CFM)	1530
Compressor	Model	TNB220FLHMC
	TYPE	Rotary
	Brand	MITSUBISHI
	RLA	14.69
	LRA	45
	Input (W)	2200
	Crankcase Heater Input (W)	40
	Oil Type	PVE / FV50S
	Overload Protector	CS-7C-1595
Condenser	Number of Rows	2
	Fin spacing (in)	0.055
	Fin Type	Aluminum, Louvered
	Tube Outside Dia.(in)	0.375
	Coil Length x Height x Width (in)	35.04 x 25.98 x 1.73
	Number of circuits	3
	Defrosting Method	Automatic Defrosting
Dimensions & Weight	Unit Dimensions (W x H x D) (in)	37.24 x 27.56 x 15.59
	Packing Dimensions (W x H x D) (in)	40.63 x 30.12 x 18.15
	Net / Gross Weight (lb)	134.5 / 145.5
Connection	Flare Liquid line	1/4 "
	Flare Suction line	3/8"-9K BTU or 1/2"-12K / 18K [*1]
	Sevice Port Fitting	1/2" - 20 UNF
	High Pressure (psi)	550
	Low Pressure (psi)	240
	Design Length (ft)	24.6 (for each indoor unit)
	Max Line Set Vertical Height (ft)	32.8
	Max Line Set Length (ft)	65.6 (for each indoor unit)
	Max Line Set Length (ft)	229.7 (total)
	Charge over Design Length [*2] (oz. / ft)	0.22
	Wiring (Indoor to Outdoor)	4C- 16 AWG
	Wiring (Outdoor unit to Power Disconnect)	3C- 10 AWG

*1. 12,000 BTU or 18,000 BTU indoor units use a 1/2" to 3/8" adaptor joint that is included with the unit.

*2. When the total length of liquid line is over 98.4 ft, the additional refrigerant charge is required.

NOTE: Outdoor unit must connect to a minimum of TWO indoor units.

13.2.3 Quad Port

Model Number		SMZ30H46ZOGX
Product Code		243-1006-C
Rated Voltage & Frequency and Phase		208-230 / 1PH
Min./ Max. Operating Voltage		187 / 253 VAC
Circuit Breaker Size (A)		45
Working Temperature Range (°F)		Cooling: 14 to 118; Heating: 5 to 81
Refrigerant (R410A), (oz.)		77.6
Min. Circuit Ampacity (A)		26
Low Ambient Cooling Function		Yes
Sound Power Level dB(A) (Max.)		69
Cooling	Rated Capacity (Btu/h)	29,000
	Capacity Invert Range (Btu/h)	7,500 - 34,000
	Rated Power Input (W)	3,450
	Power Input Range (W)	650 - 4,500
	Total Input Current (Cooling)	20.74 / 18.57 A
	SEER	16
Heating	Rated Capacity (Btu/h)	30,400
	Capacity Invert Range (Btu/h)	7,500 - 36,000
	Rated Power Input (W)	2,850
	Power Input Range (W)	980 - 3,950
	Total Input Current (Heating)	20.74 / 18.57 A
	HSPF	8.2
Fan Motor	Fan Type	Axial Fan
	Output (W)	60
	Capacitor (UFD)	3.5
	Fan Motor RLA (A)	0.59
	Fan Speed (RPM)	690 / 600 / 500
Outdoor Fan	Fan Blade Diameter (in)	20.47
	Air Flow Volume of Outdoor Unit (CFM)	1942 / 1707 / 1413
Compressor	Model	TNB220FLHMC
	TYPE	Rotary
	Brand	MITSUBISHI
	RLA	19.62
	Input (W)	2200
	Crankcase Heater Input (W)	40 ± 7
	Oil Type	PVE / FV50S
Condenser	Overload Protector	CS-7C-1595
	Number of Rows	2
	Fin spacing (in)	0.055
	Fin Type	Aluminum, Louvered
	Tube Outside Dia.(in)	0.375
	Coil Length x Height x Width (in)	35.04 x 25.98 x 1.73
	Number of circuits	4
Dimensions & Weight	Defrosting Method	Automatic Defrosting
	Unit Dimensions (W x H x D) (in)	37.24 x 27.56 x 15.59
	Packing Dimensions (W x H x D) (in)	40.63 x 30.12 x 18.15
	Net / Gross Weight (lb)	136.69 / 147.71
Connection	Flare Liquid line	1/4 "
	Flare Suction line [*1]	3/8" [*1]
	Service Port Fitting	1/2" - 20 UNF
	High Pressure (psi)	550
	Low Pressure (psi)	240
	Design Length (ft)	24.6 (for each indoor unit) (98' total)
	Max Line Set Vertical Height (ft)	32.8
	Max Line Set Length (ft)	65.6 (for each indoor unit)
	Max Line Set Length (ft)	229.7 (total)
	Charge over Design Length [*2] (oz. / ft)	0.22 (over 98')
	Wiring (Indoor to Outdoor)	4C- 14 (Recommended)
	Wiring (Outdoor unit to Power Disconnect)	3C- 6 AWG (minimum)

*1. 12,000 BTU or 18,000 BTU indoor units use a 1/2" to 3/8" adaptor joint that is included with the unit.

*2. When the total length of liquid line is over 98 ft, the additional refrigerant charge is required.

NOTE: Outdoor unit must connect to a minimum of TWO indoor units.

13.2.4 Five Port

Model Number		SMZ42H46ZOGX
Product Code Number		243-1007-C
Rated Voltage & Frequency and Phase		208-230 / 1PH
Min./ Max. Operating Voltage		187 / 253 VAC
Circuit Breaker Size (A)		50
Working Temperature Range (°F)		Cooling: 14 to 118; Heating: 5 to 81
Refrigerant (R410A), (oz.)		169.3
Min. Circuit Ampacity (A)		29
Low Ambient Cooling Function		Yes
Sound Power Level dB(A) (Max.)		68
Cooling	Rated Capacity (Btu/h)	40,000
	Capacity Invert Range (Btu/h)	8,530 - 46,403
	Rated Power Input (W)	4,400
	Total Input Current (Cooling)	21.6 / 19.5 A
	SEER	16
Heating	Rated Capacity (Btu/h)	44,500
	Capacity Invert Range (Btu/h)	10,662 - 47,768
	Rated Power Input (W)	4,600
	Total Input Current (Heating)	22.5 / 20.5 A
	HSPF	8.2
Fan Motor	Fan Type	Axial Fan
	Output (W)	140
	Capacitor (UFD)	6
	Fan Motor RLA (A)	1.1
	Fan Speed (RPM)	860
Outdoor Fan	Fan Blade Diameter (in)	22.44
	Air Flow Volume of Outdoor Unit (CFM)	3237
Compressor	Model	TNB306FPGMC
	TYPE	Inverter Scroll
	Brand	MITSUBISHI
	RLA	21.5
	Input (W)	3010
	Crankcase Heater Input (W)	40
	Oil Type	PVE
	Overload Protector	CS01F272H01
Condenser	Number of Rows	2
	Fin spacing (in)	0.055
	Fin Type	Aluminum, Louvered
	Tube Outside Dia.(in)	0.313
	Coil Length x Height x Width (in)	40.25 x 41.57 x 1.5
	Number of circuits	5
Dimensions & Weight	Defrosting Method	Automatic Defrosting
	Unit Dimensions (W x H x D) (in)	39.96 x 43.43 x 17.32
	Packing Dimensions (W x H x D) (in)	45.59 x 48.62 x 19.41
	Net / Gross Weight (lb)	224.9 / 246.9
Connection	Flare Liquid line	Four of 1/4" - 9K, 12K, 18K BTU; One of 3/8" - 21K / 24K BTU [*1]
	Flare Suction line	Two of 3/8"-9K BTU; Two of 1/2"-12K / 18K BTU [*2]; One of 5/8"-21K / 24K BTU [*3]
	Service Port Fitting	1/2" - 20 UNF
	High Pressure (psi)	550
	Low Pressure (psi)	240
	Design Length (ft)	24.6 (for each indoor unit) (123' total)
	Max Line Set Vertical Height (between outdoor and indoor unit) (ft)	49
	Max Line Set Vertical Height (between indoor and indoor unit) (ft)	24.6
	Max Line Set Length (ft)	82 (for each indoor unit)
	Max Line Set Length (ft)	262.5 (total)
	Charge over Design Length [*2] (oz. / ft)	0.24 (over 164')
	Wiring (Indoor to Outdoor)	4C- 14 AWG (Recommended)
	Wiring (Outdoor unit to Power Disconnect)	3C- 6 AWG (minimum)

*1. Using a 3/8" to 1/4" adaptor joint when connect this port to a 9K, 12K or 18K wall mounted indoor unit.

*2. Using a 1/2" to 3/8" adaptor joint when connect this port to a 9K wall mounted indoor unit.

*3. Using a 5/8" to 3/8" adaptor joint when connect this port to a 9K indoor unit. Or, using a 5/8" to 1/2" adaptor joint when connects this port to a 12K / 18K wall mounted indoor unit.

NOTE: For other types of indoor unit connection, please refer to the specification for connecting size.

*4. When the total length of liquid line is over 164 ft, the additional refrigerant charge is required.

*5. When the outdoor unit is above the indoor unit, the max. vertical height this indoor unit and the outdoor unit is 49.2 ft.

NOTE: Outdoor unit must connect to a minimum of TWO indoor units.

14. Appendix

14.1 Appendix I: Resistance of Ambient Temperature Sensor (15K) for Indoor/Outdoor Units (F1,F3)

Temp. (°F)	Resistance (kΩ)						
-2.2	138.1	68.0	18.75	138.2	3.848	208.4	1.071
-0.4	128.6	69.8	17.93	140.0	3.711	210.2	1.039
1.4	121.6	71.6	17.14	141.8	3.579	212.0	1.009
3.2	115.0	73.4	16.39	143.6	3.454	213.8	0.980
5.0	108.7	75.2	15.68	145.4	3.333	215.6	0.952
6.8	102.9	77.0	15.00	147.2	3.217	217.4	0.925
8.6	97.40	78.8	14.36	149.0	3.105	219.2	0.898
10.4	92.22	80.6	13.74	150.8	2.998	221.0	0.873
12.2	87.35	82.4	13.16	152.6	2.896	222.8	0.848
14.0	82.75	84.2	12.60	154.4	2.797	224.6	0.825
15.8	78.43	86.0	12.07	156.2	2.702	226.4	0.802
17.6	74.35	87.8	11.57	158.0	2.611	228.2	0.779
19.4	79.50	89.6	11.09	159.8	2.523	230.0	0.758
21.2	66.88	91.4	10.63	161.6	2.439	231.8	0.737
23.0	63.46	93.2	10.20	163.4	2.358	233.6	0.717
24.8	60.23	95.0	9.779	165.2	2.280	235.4	0.697
26.6	57.18	96.8	9.382	167.0	2.206	237.2	0.678
28.4	54.31	98.6	9.003	168.8	2.133	239.0	0.660
30.2	51.59	100.4	8.642	170.6	2.064	240.8	0.642
32.0	49.02	102.2	8.297	172.4	1.997	242.6	0.625
33.8	46.60	104.0	7.967	174.2	1.933	244.4	0.608
35.6	44.31	105.8	7.653	176.0	1.871	246.2	0.592
37.4	42.14	107.6	7.352	177.8	1.811	248.0	0.577
39.2	40.09	109.4	7.065	179.6	1.754	249.8	0.561
41.0	38.15	111.2	6.791	181.4	1.699	251.6	0.547
42.8	36.32	113.0	6.529	183.2	1.645	253.4	0.532
44.6	34.58	114.8	6.278	185.0	1.594	255.2	0.519
46.4	32.94	116.6	6.038	186.8	1.544	257.0	0.505
48.2	31.38	118.4	5.809	188.6	1.497	258.8	0.492
50.0	29.90	120.2	5.589	190.4	1.451	260.6	0.480
51.8	28.51	122.0	5.379	192.2	1.408	262.4	0.467
53.6	27.18	123.8	5.197	194.0	1.363	264.2	0.456
55.4	25.92	125.6	4.986	195.8	1.322	266.0	0.444
57.2	24.73	127.4	4.802	197.6	1.282	267.8	0.433
59.0	23.60	129.2	4.625	199.4	1.244	269.6	0.422
60.8	22.53	131.0	4.456	201.2	1.207	271.4	0.412
62.6	21.51	132.8	4.294	203.0	1.171	273.2	0.401
64.4	20.54	134.6	4.139	204.8	1.136	275.0	0.391
66.2	19.63	136.4	3.990	206.6	1.103	276.8	0.382

14.2 Appendix II: Resistance of Tube Temperature Sensor (20K) for Indoor/Outdoor Units (F2,F4)

<u>Temp. (°F)</u>	<u>Resistance (kΩ)</u>						
-2.2	181.4	68.0	25.01	138.2	5.130	208.4	1.427
-0.4	171.4	69.8	23.90	140.0	4.948	210.2	1.386
1.4	162.1	71.6	22.85	141.8	4.773	212.0	1.346
3.2	153.3	73.4	21.85	143.6	4.605	213.8	1.307
5.0	145.0	75.2	20.90	145.4	4.443	215.6	1.269
6.8	137.2	77.0	20.00	147.2	4.289	217.4	1.233
8.6	129.9	78.8	19.14	149.0	4.140	219.2	1.198
10.4	123.0	80.6	18.13	150.8	3.998	221.0	1.164
12.2	116.5	82.4	17.55	152.6	3.861	222.8	1.131
14.0	110.3	84.2	16.80	154.4	3.729	224.6	1.099
15.8	104.6	86.0	16.10	156.2	3.603	226.4	1.069
17.6	99.13	87.8	15.43	158.0	3.481	228.2	1.039
19.4	94.00	89.6	14.79	159.8	3.364	230.0	1.010
21.2	89.17	91.4	14.18	161.6	3.252	231.8	0.983
23.0	84.61	93.2	13.59	163.4	3.144	233.6	0.956
24.8	80.31	95.0	13.04	165.2	3.040	235.4	0.930
26.6	76.24	96.8	12.51	167.0	2.940	237.2	0.904
28.4	72.41	98.6	12.00	168.8	2.844	239.0	0.880
30.2	68.79	100.4	11.52	170.6	2.752	240.8	0.856
32.0	65.37	102.2	11.06	172.4	2.663	242.6	0.833
33.8	62.13	104.0	10.62	174.2	2.577	244.4	0.811
35.6	59.08	105.8	10.20	176.0	2.495	246.2	0.77
37.4	56.19	107.6	9.803	177.8	2.415	248.0	0.769
39.2	53.46	109.4	9.420	179.6	2.339	249.8	0.746
41.0	50.87	111.2	9.054	181.4	2.265	251.6	0.729
42.8	48.42	113.0	8.705	183.2	2.194	253.4	0.71
44.6	46.11	114.8	8.370	185.0	2.125	255.2	0.692
46.4	43.92	116.6	8.051	186.8	2.059	257.0	0.674
48.2	41.84	118.4	7.745	188.6	1.996	258.8	0.658
50.0	39.87	120.2	7.453	190.4	1.934	260.6	0.64
51.8	38.01	122.0	7.173	192.2	1.875	262.4	0.623
53.6	36.24	123.8	6.905	194.0	1.818	264.2	0.607
55.4	34.57	125.6	6.648	195.8	1.736	266.0	0.592
57.2	32.98	127.4	6.403	197.6	1.710	267.8	0.577
59.0	31.47	129.2	6.167	199.4	1.658	269.6	0.563
60.8	30.04	131.0	5.942	201.2	1.609	271.4	0.549
62.6	28.68	132.8	5.726	203.0	1.561	273.2	0.535
64.4	27.39	134.6	5.591	204.8	1.515	275.0	0.521
66.2	26.17	136.4	5.320	206.6	1.470	276.8	0.509

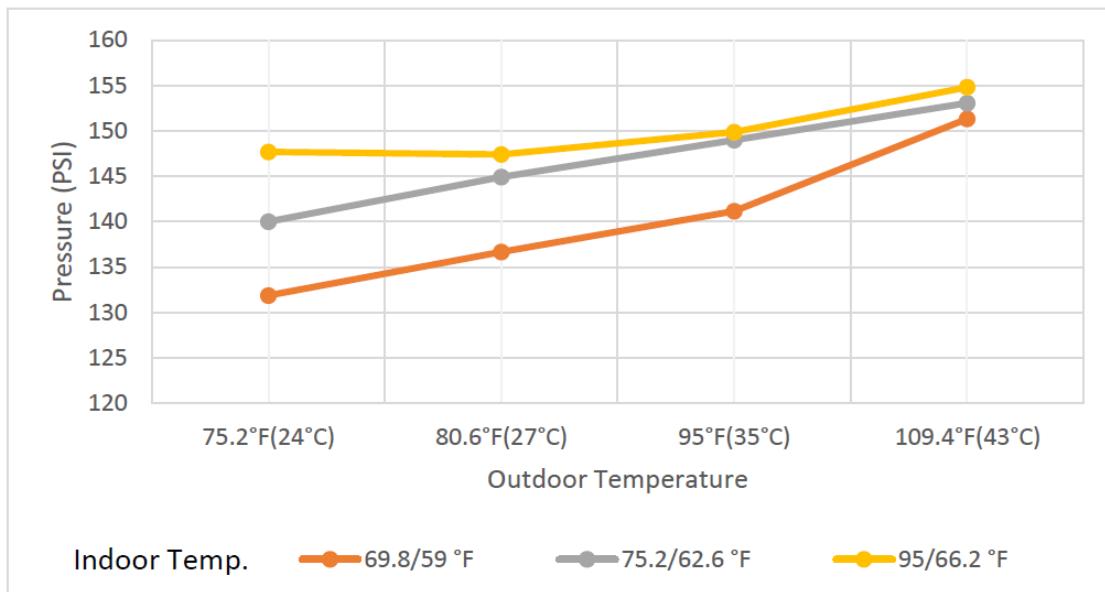
14.3 Appendix III: Resistance of Exhaust Temperature Sensor (50K) for Outdoor Units (F5)

<u>Temp. (°F)</u>	<u>Resistance (kΩ)</u>						
-20.2	853.5	50	98	120.2	18.34	190.4	4.75
-18.4	799.8	51.8	93.42	122	17.65	192.2	4.61
-16.6	750	53.6	89.07	123.8	16.99	194	4.47
-14.8	703.8	55.4	84.95	125.6	16.36	195.8	4.33
-13	660.8	57.2	81.05	127.4	15.75	197.6	4.2
-11.2	620.8	59	77.35	129.2	15.17	199.4	4.08
-9.4	580.6	60.8	73.83	131	14.62	201.2	3.96
-7.6	548.9	62.6	70.5	132.8	14.09	203	3.84
-5.8	516.6	64.4	67.34	134.6	13.58	204.8	3.73
-4	486.5	66.2	64.33	136.4	13.09	206.6	3.62
-2.2	458.3	68	61.48	138.2	12.62	208.4	3.51
-0.4	432	69.8	58.77	140	12.17	210.2	3.41
1.4	407.4	71.6	56.19	141.8	11.74	212	3.32
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	3.13
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	2.96
10.4	306.2	80.6	45.07	150.8	9.83	221	2.87
12.2	289.6	82.4	43.16	152.6	9.49	222.8	2.79
14	274	84.2	41.34	154.4	9.17	224.6	2.72
15.8	259.3	86	39.61	156.2	8.85	226.4	2.64
17.6	245.6	87.8	37.96	158	8.56	228.2	2.57
19.4	232.6	89.6	36.38	159.8	8.27	230	2.5
21.2	220.5	91.4	34.88	161.6	7.99	231.8	2.43
23	209	93.2	33.45	163.4	7.73	233.6	2.37
24.8	198.3	95	32.09	165.2	7.47	235.4	2.3
26.6	189.1	96.8	30.79	167	7.22	237.2	2.24
28.4	178.5	98.6	29.54	168.8	7	239	2.28
30.2	169.5	100.4	28.36	170.6	6.76	240.8	2.12
32	161	102.2	27.23	172.4	6.54	242.6	2.07
33.8	153	104	26.15	174.2	6.33	244.4	2.02
35.6	145.4	105.8	25.11	176	6.13	246.2	1.96
37.4	138.3	107.6	24.13	177.8	5.93	248	1.91
39.2	131.5	109.4	23.19	179.6	5.75	249.8	1.86
41	125.1	111.2	22.29	181.4	5.57	251.6	1.82
42.8	119.1	113	21.43	183.2	5.39	253.4	1.77
44.6	113.4	114.8	20.6	185	5.22	255.2	1.73
46.4	108	116.6	19.81	186.8	5.06	257	1.68
48.2	102.8	118.4	19.06	188.6	4.9	258.8	1.64

14.4 Appendix IV: Pressure on Service Port.

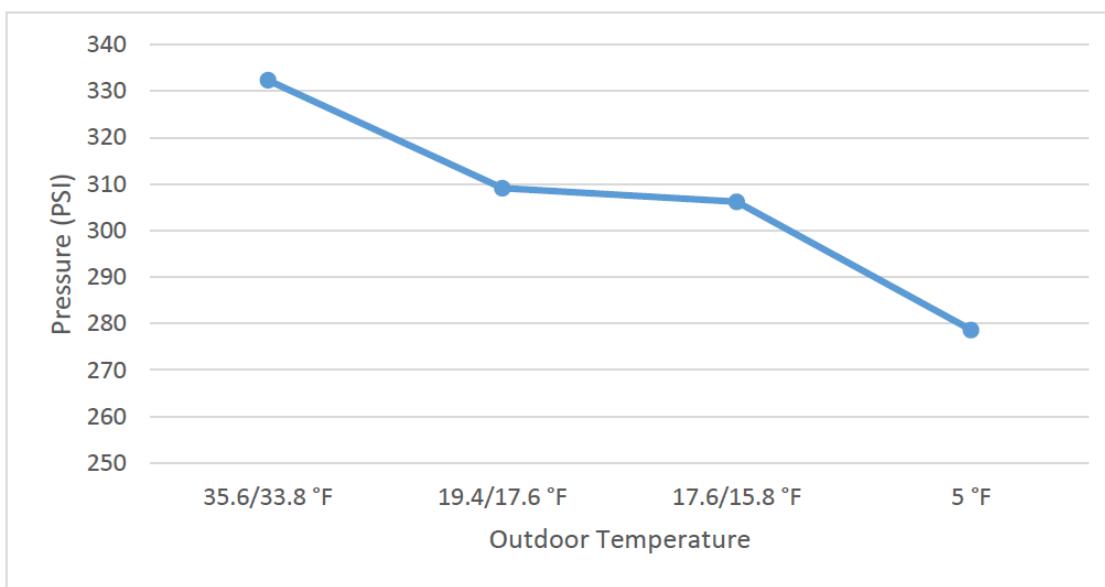
18K Cooling

IDT (DBT/WBT)	ODT (DBT)	Pressure (PSI)			
		75.2°F(24°C)	80.6°F(27°C)	95°F(35°C)	109.4°F(43°C)
69.8/59 °F		131.886	136.673	141.169	151.321
75.2/62.6 °F		140.009	144.94	149.001	153.062
95/66.2 °F		147.696	147.405	149.871	154.802



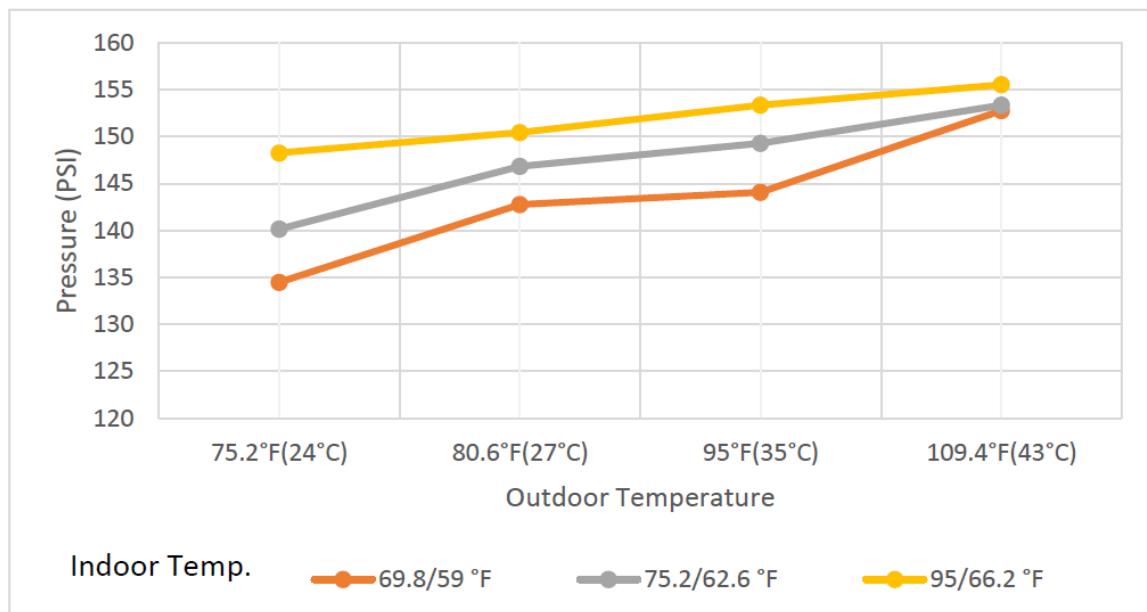
18K Heating

IDT (DBT/WBT)	ODT (DBT/WBT)	Pressure (PSI)			
		35.6/33.8 °F	19.4/17.6 °F	17.6/15.8 °F	5 °F
68/55.4 °F		332.329	309.123	306.222	278.665



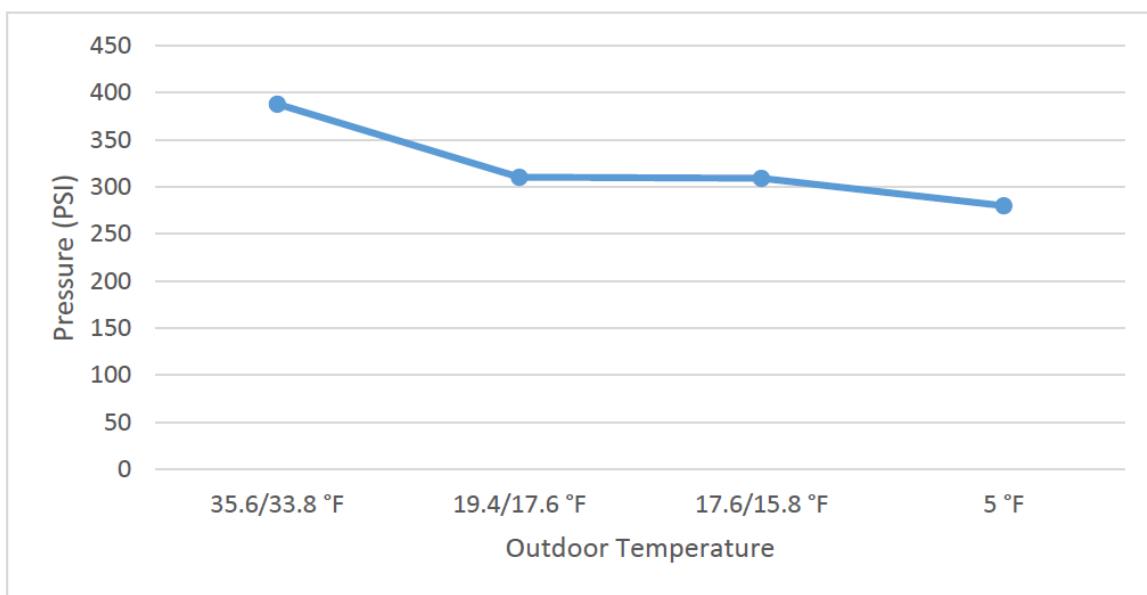
24K Cooling

IDT (DBT/WBT)	ODT (DBT)	Pressure (PSI)			
		75.2°F(24°C)	80.6°F(27°C)	95°F(35°C)	109.4°F(43°C)
69.8/59 °F		134.497	142.764	144.07	152.772
75.2/62.6 °F		140.154	146.825	149.291	153.352
95/66.2 °F		148.276	150.451	153.352	155.528



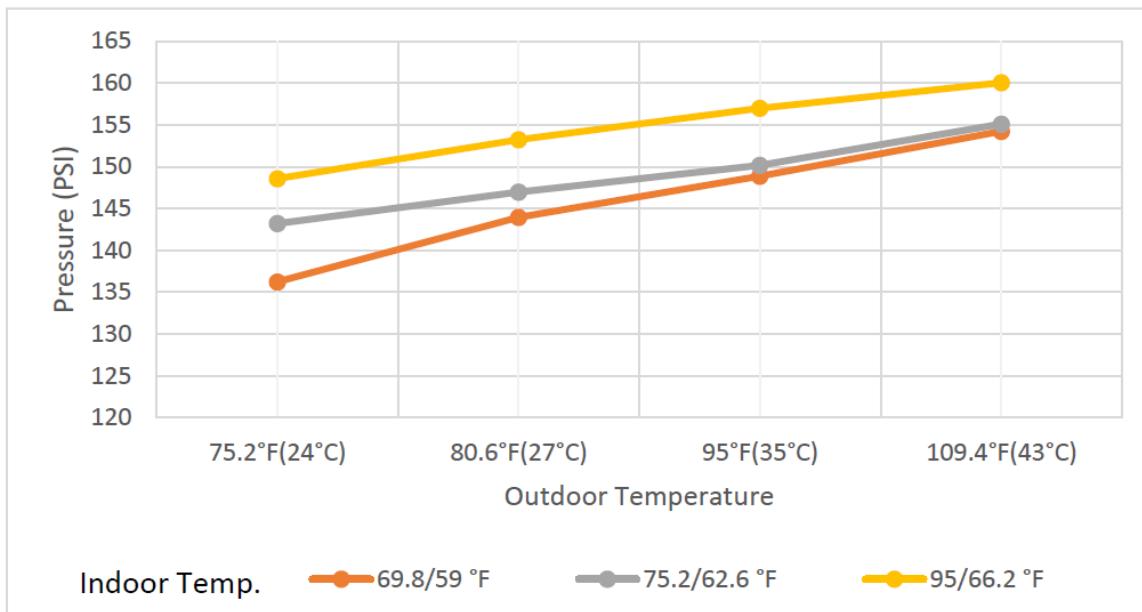
24K Heating

IDT (DBT/WBT)	ODT (DBT/WBT)	Pressure (PSI)			
		35.6/33.8 °F	19.4/17.6 °F	17.6/15.8 °F	5 °F
68/55.4 °F		388.13	310.573	309.123	280.115



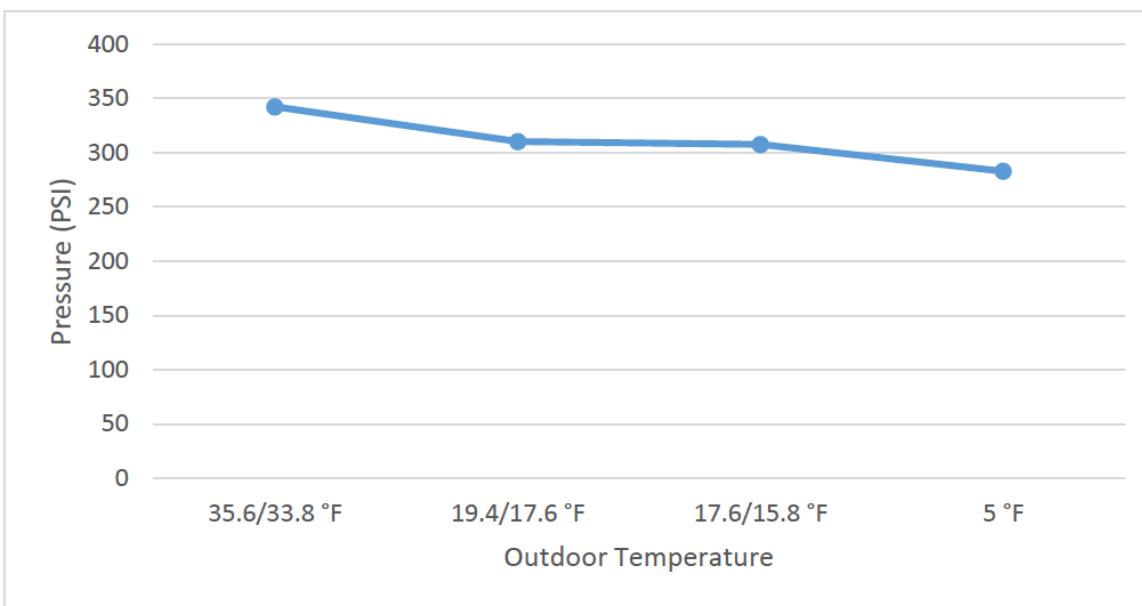
30K Cooling

IDT (DBT/WBT)	ODT (DBT)	Pressure (PSI)			
		75.2°F(24°C)	80.6°F(27°C)	95°F(35°C)	109.4°F(43°C)
69.8/59 °F		136.238	143.925	148.856	154.222
75.2/62.6 °F		143.199	146.97	150.161	155.092
95/66.2 °F		148.566	153.207	156.978	160.024



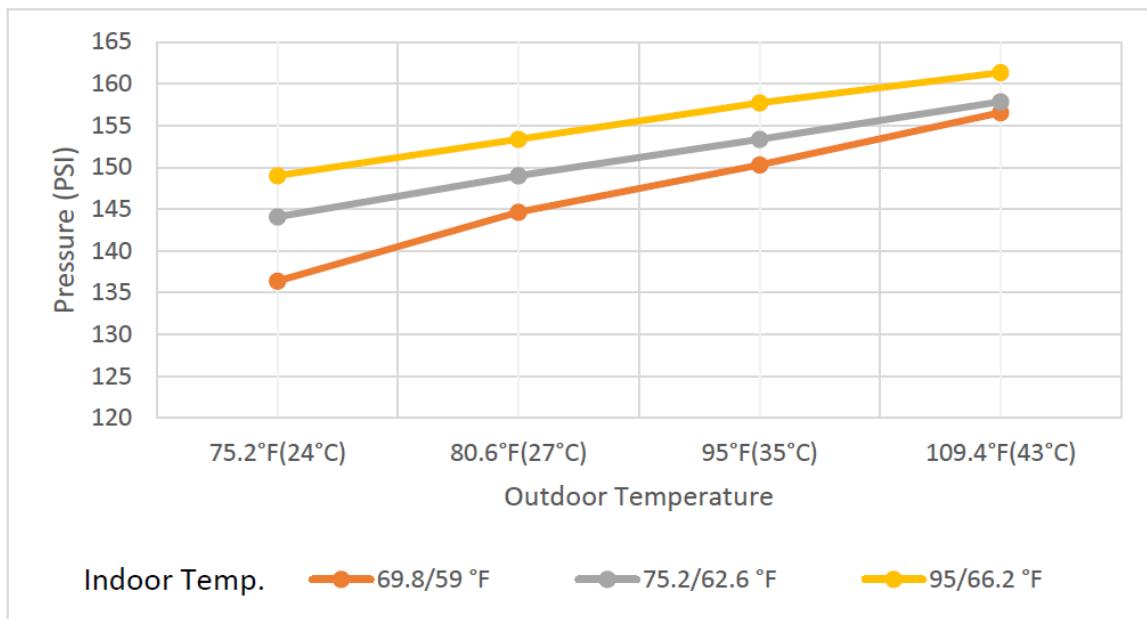
30K Heating

IDT (DBT/WBT)	ODT (DBT/WBT)	Pressure (PSI)			
		35.6/33.8 °F	19.4/17.6 °F	17.6/15.8 °F	5 °F
68/55.4 °F		342.481	310.573	307.672	283.016



42K Cooling

IDT (DBT/WBT)	ODT (DBT)	Pressure (PSI)			
		75.2°F(24°C)	80.6°F(27°C)	95°F(35°C)	109.4°F(43°C)
69.8/59 °F		136.383	144.65	150.306	156.543
75.2/62.6 °F		144.07	149.001	153.352	157.848
95/66.2 °F		149.001	153.352	157.703	161.329



42K Heating

IDT (DBT/WBT)	ODT (DBT/WBT)	Pressure (PSI)			
		35.6/33.8 °F	19.4/17.6 °F	17.6/15.8 °F	5 °F
68/55.4 °F		354.084	314.924	313.474	284.466

