

# SINGLE ZONE INVERTER MINI SPLIT SERVICE MANUAL



For the Standard models:

SZ09H525ZMO, SZ12H525ZMO  
SZ18H525ZMO, SZ24H525ZMO  
SZ30H525ZMO, SZ36H525ZMO

For the Peak Heat models:

HSZ09H525ZMO, HSZ12H525ZMO  
HSZ18H525ZMO, HSZ24H525ZMO  
CSZ36H525ZMO, CSZ48H525ZMO  
CSZ60H525ZMO



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# Safety Precautions

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## 1. Precautions

To prevent personal injury, or property or unit damage, adhere to all precautionary measures and instructions outlined in this manual. Before servicing a unit, refer to this service manual and its relevant sections.

Failure to adhere to all precautionary measures listed in this section may result in personal injury, damage to the unit or to property, or in extreme cases, death.

 **WARNING** indicates a potentially hazardous situation which if not avoided could result in serious personal injury, or death.

 **CAUTION** indicates a potentially hazardous situation which if not avoided could result in minor or moderate personal injury, or unit damage.

### 1.1 In case of Accidents or Emergency

#### WARNING

- If a gas leak is suspected, immediately turn off the gas and ventilate the area if a gas leak is suspected before turning the unit on.
- If strange sounds or smoke is detected from the unit, turn the breaker off and disconnect the power supply cable.
- If the unit comes into contact with liquid, contact an authorized service center.
- If liquid from the batteries makes contact with skin or clothing, immediately rinse or wash the area well with clean water.
- Do not insert hands or other objects into the air inlet or outlet while the unit is plugged in.
- Do not operate the unit with wet hands.
- Do not use a remote controller that has previously been exposed to battery damage or battery leakage.

#### CAUTION

- Clean and ventilate the unit at regular intervals when operating it near a stove or near similar devices.
- Do not use the unit during severe weather conditions. If possible, remove the product from the window before such occurrences.

### 1.2 Pre-Installation and Installation

#### WARNING

- Use this unit only on a dedicated circuit.
- Damage to the installation area could cause the unit to fall, potentially resulting in personal injury, property damage, or product failure.
- Only qualified personnel should disassemble, install, remove, or repair the unit.
- Only a qualified electrician should perform electrical work. For more information, contact your dealer, seller, or an authorized service center.

#### CAUTION

- While unpacking be careful of sharp edges around the unit as well as the edges of the fins on the condenser and evaporator.

### 1.3 Operation and Maintenance

#### WARNING

- Do not use defective or under-rated circuit breakers.
- Ensure the unit is properly grounded and that a dedicated circuit and breaker are installed.
- Do not modify or extend the power cable. Ensure the power cable is secure and not damaged during operation.
- Do not unplug the power supply plug during operation.
- Do not store or use flammable materials near the unit.
- Do not open the inlet grill of the unit during operation.
- Do not touch the electrostatic filter if the unit is equipped with one.
- Do not block the inlet or outlet of air flow to the unit.
- Do not use harsh detergents, solvents, or similar items to clean the unit. Use a soft cloth for cleaning.
- Do not touch the metal parts of the unit when removing the air filter as they are very sharp.
- Do not step on or place anything on the unit or outdoor units.
- Do not drink water drained from the unit
- Avoid direct skin contact with water drained from the unit.
- Use a firm stool or step ladder according to manufacturer procedures when cleaning or maintaining the unit.

#### CAUTION

- Do not install or operate the unit for an extended period of time in areas of high humidity or in an environment directly exposing it to sea wind or salt spray.
- Do not install the unit on a defective or damaged installation stand, or in an unsecure location.
- Ensure the unit is installed at a level position
- Do not install the unit where noise or air discharge created by the outdoor unit will negatively impact the environment or nearby residences.
- Do not expose skin directly to the air discharged by the unit for prolonged periods of time.
- Ensure the unit do not operate in areas water or other liquids.
- Ensure the drain hose is installed correctly to ensure proper water drainage.
- When lifting or transporting the unit, it is recommended that two or more people are used for this task.
- When the unit is not to be used for an extended time, disconnect the power supply or turn off the breaker.

## **WARNING For Using Flammable Refrigerant**

### 1. Installation (where refrigerant pipes are allowed)

- Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.
- Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- That the installation of pipe-work shall be kept to a minimum.
- That pipe-work shall be protected from physical damage.
- Where refrigerant pipes shall be compliance with national gas regulations.
- That mechanical connections shall be accessible for maintenance purposes.
- Be more careful that foreign matter (oil, water, etc) does not enter the piping.

Also, when storing the piping, securely seal the opening by pinching, taping, etc.

- Appliance shall be stored in a well ventilated area where the room size corresponds to the room area as specified for operation.
- Appliance shall be stored in a well ventilated area where the room size corresponds to the room area as specified for operation.
- Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joint could be used).

- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.

### 2. When a FLAMMABLE REFRIGERANT is used, the requirements for installation space of appliance and /or ventilation requirements are determined according to

- the mass charge amount (M) used in the appliance,
- the installation location,
- the type of ventilation of the location or of the appliance.
- piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.
- that protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris;
- that piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system;
- that steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation;
- that precautions shall be taken to avoid excessive vibration or pulsation;
- the minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula;
- after completion of field piping for split systems, the field pipe-work shall be pressure tested with an inert gas and then vacuum

tested prior to refrigerant charging, according to the following requirements:

- a. The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system can not be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.
- b. The test pressure after removal of pressure source shall be maintained for at least 1 h with no decrease of pressure indicated by the test gauge, with test gauge resolution not exceeding 5% of the test pressure.

c. During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 1500 microns within 10 min. The vacuum pressure level shall be specified in the manual, and shall be the lesser of 500 microns or the value required for compliance with national and local codes and standards, which may vary between residential, commercial, and industrial buildings.

-- field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

-- Any servicing shall be performed only as recommended by the manufacturer.

### 3. Qualification of workers

Any maintenance, service and repair operations must be required qualification of the working personnel. Every working procedure that affects safety means shall only be carried out by competent persons that joined the training and achieved competence should be documented by a certificate. The training of these procedures is carried out by national training organizations or manufacturers that are accredited to teach the relevant national competency standards that may be set in legislation. All training shall follow the ANNEX HH requirements of UL 60335-2-40 4th Edition.

Examples for such working procedures are:

- breaking into the refrigerating circuit;
- opening of sealed components;
- opening of ventilated enclosures.

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## 2. Information servicing(For flammable materials)

### 2.1 Checks to the area

- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

### 2.2 Work procedure

- Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.

### 2.3 General work area

- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

### 2.4 Checking for presence of refrigerant

- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. no sparking, adequately sealed or intrinsically safe.

### 2.5 Presence of fire extinguisher

- If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

### 2.6 No ignition sources

- No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks.
- "No Smoking" signs shall be displayed.

### 2.7 Ventilated area

- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any

hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

### 2.8 Checks to the refrigeration equipment

- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance. The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:
  - the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
  - the ventilation machinery and outlets are operating adequately and are not obstructed;
  - if an indirect refrigerating circuit is being used, the secondary circuits shall be checked for the presence of refrigerant;
  - marking to the equipment continues to be visible and legible, marking and signs that are illegible shall be corrected;
  - refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

### 2.9 Checks to electrical devices

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

#### Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that there no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

### 2.10 Sealed electrical components shall be replaced

### 2.11 Intrinsically safe components must be replaced

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## 2.12 Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

## 2.13 Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
- The following leak detection methods are deemed acceptable for refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

NOTE Examples of leak detection fluids are

- bubble method,
- fluorescent method agents.
- If a leak is suspected, all naked flames shall be removed/ extinguished.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut of valves) in a part of the system remote from the leak. See the following instructions of removal of refrigerant.

## 2.14 Removal and evacuation

- When breaking into the refrigerant circuit to make repairs or for any other purpose, conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration.
- The following procedure shall be adhered to:
  - safely remove refrigerant following local and national regulations;
  - evacuate;
  - purge the circuit with inert gas(optional for A2L);
  - evacuate(optional for A2L);
  - continuously flush or purge with inert gas when using flame to open circuit; and open the circuit;
- The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and

national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

- For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

## 2.15 Charging procedures

- In addition to conventional charging procedures, the following requirements shall be followed:
  - Works shall be undertaken with appropriate tools only (In case of uncertainty, please consult the manufacturer of the tools for use with flammable refrigerants)
  - Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
  - Cylinders shall be kept upright.
  - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete(if not already).
  - Extreme care shall be taken not to overfill the refrigeration system.
  - Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

## 2.16 Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

- Become familiar with the equipment and its operation.
- Isolate system electrically.
- Before attempting the procedure ensure that:
  - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  - all personal protective equipment is available and being

used correctly;

- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.
- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with manufacturer's instructions.
- Do not overfill cylinders. (No more than 80 % volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

## 2.17 Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

## 2.18 Recovery

- When removing refrigerant from a system, either for servicing or decommissioning,
- it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

- The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

## 2.19 Transportation, marking and storage for units

1. Transport of equipment containing flammable refrigerants

Compliance with the transport regulations

2. Marking of equipment using signs

Compliance with local regulations

3. Disposal of equipment using flammable refrigerants

Compliance with national regulations

4. Storage of equipment/appliances

The storage of equipment should be in accordance with the manufacturer's instructions.

5. Storage of packed (unsold) equipment

Storage package protection should be constructed such that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge. The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

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# Model Reference

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## 1. Model Reference

| Outdoor Unit Model | Capacity (Btu/h) | Power Supply         |
|--------------------|------------------|----------------------|
| SZ09H525ZMO        | 9k               | 1Ph, 208/230V~, 60Hz |
| HSZ09H525ZMO       | 9k Peak Heat     |                      |
| SZ12H525ZMO        | 12k              |                      |
| HSZ12H525ZMO       | 12k Peak Heat    |                      |
| SZ18H525ZMO        | 18k              |                      |
| HSZ18H525ZMO       | 18k Peak Heat    |                      |
| SZ24H525ZMO        | 24k              |                      |
| HSZ24H525ZMO       | 24k Peak Heat    |                      |
| SZ30H525ZMO        | 30k              |                      |
| SZ36H525ZMO        | 36k              |                      |
| CSZ36H525ZMO       | 36k Peak Heat    |                      |
| CSZ48H525ZMO       | 48k Peak Heat    |                      |
| CSZ60H525ZMO       | 60k Peak Heat    |                      |

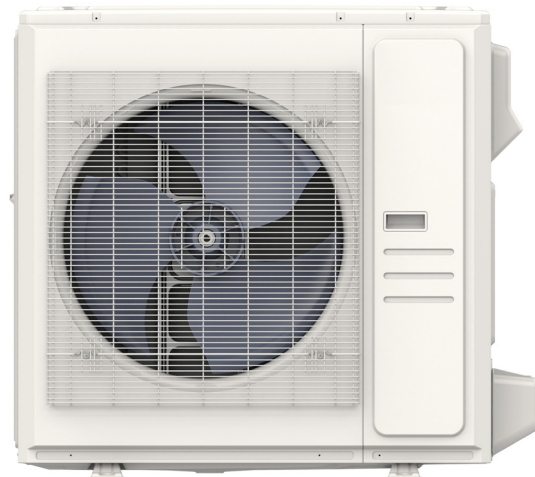
## 2. External Appearance

### Outdoor Unit

9k/12k



36k Peak Heat



9k Peak Heat/12k Peak Heat



48k Peak Heat/60k Peak Heat



18k/18k Peak Heat



24k/24k Peak Heat/30k/36k



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# Outdoor Unit

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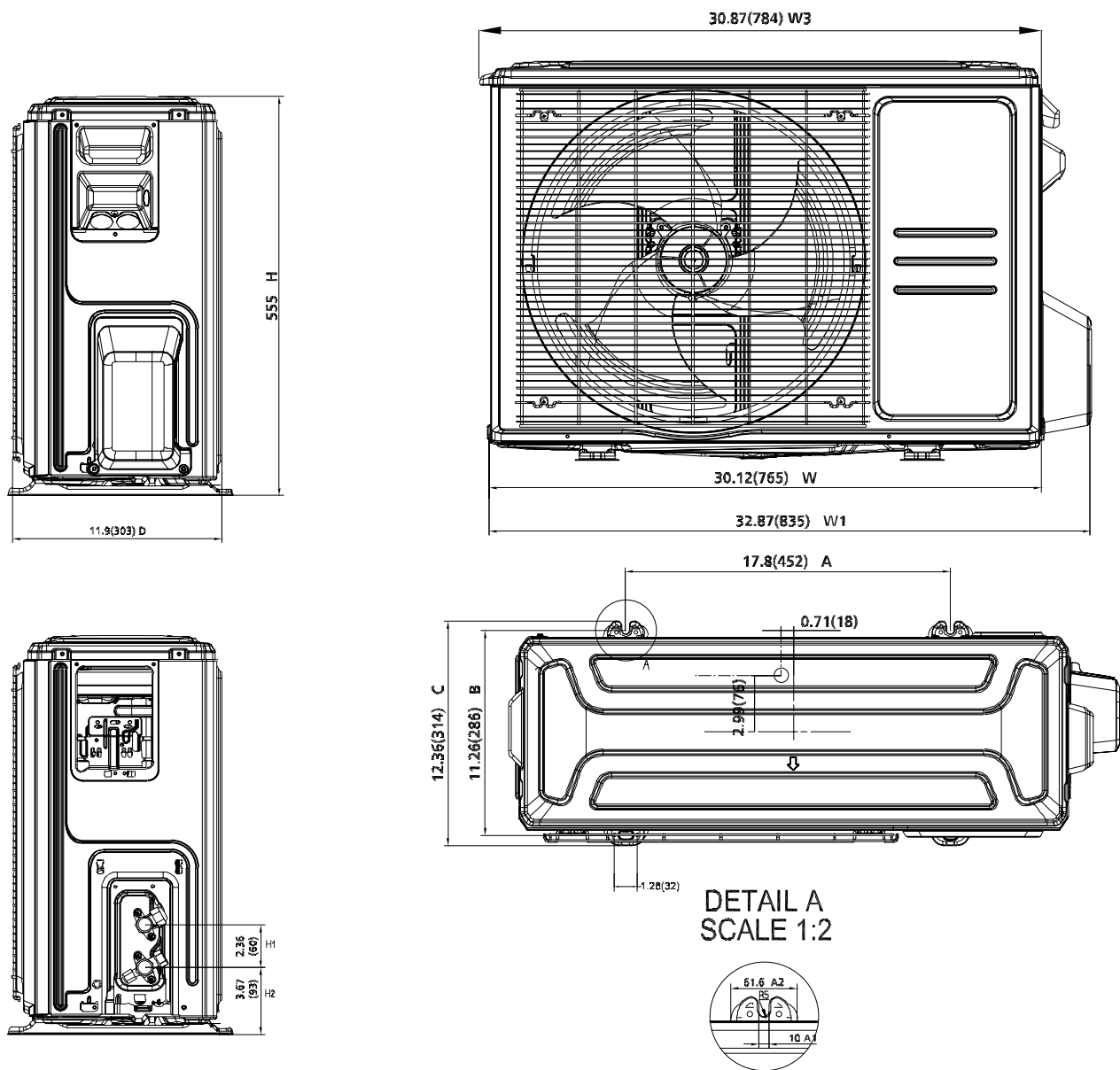
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## 1. Dimensional Drawings

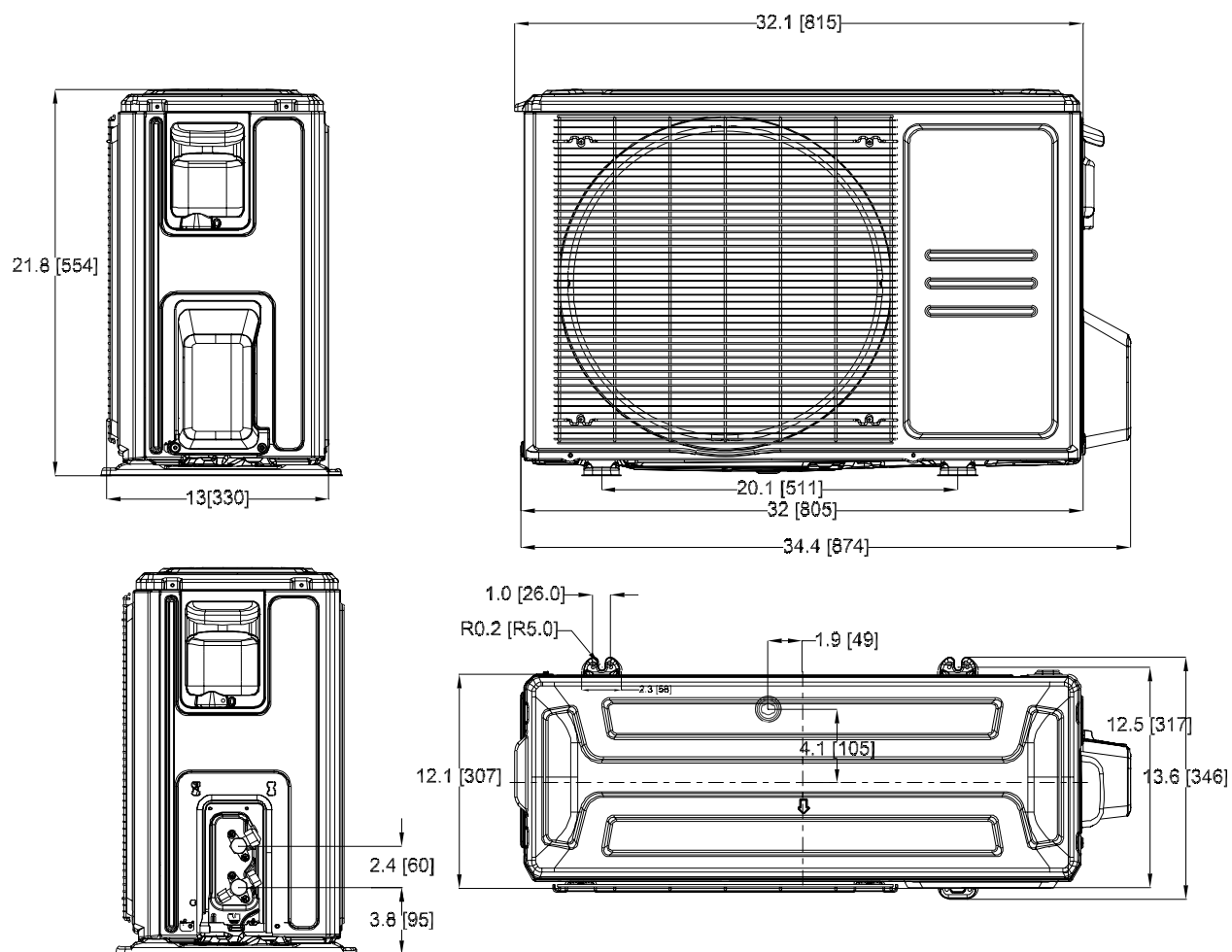
Please check the corresponding dimensional drawing according to the panel plate.

| Outdoor Unit Model | Panel Plate |
|--------------------|-------------|
| SZ09H525ZMO        | X230        |
| HSZ09H525ZMO       | X330        |
| SZ12H525ZMO        | X230        |
| HSZ12H525ZMO       | X330        |
| SZ18H525ZMO        | X430        |
| HSZ18H525ZMO       | X430        |
| SZ24H525ZMO        | D30         |
| HSZ24H525ZMO       | D30         |
| SZ30H525ZMO        | D30         |
| SZ36H525ZMO        | D30         |
| CSZ36H525ZMO       | X630        |
| CSZ48H525ZMO       | E30         |
| CSZ60H525ZMO       | E30         |

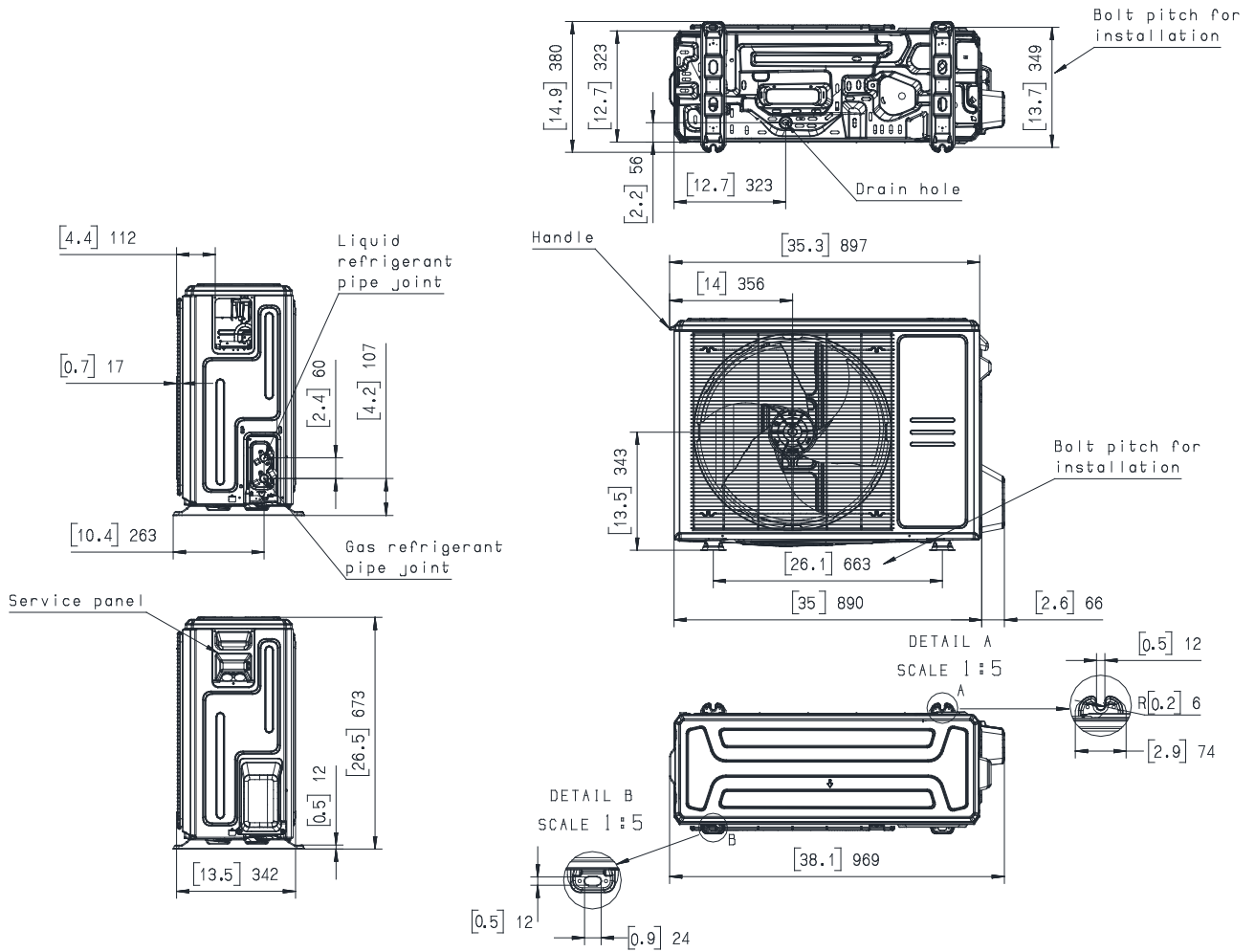
SZ09H525ZMO, SZ12H525ZMO Dimension



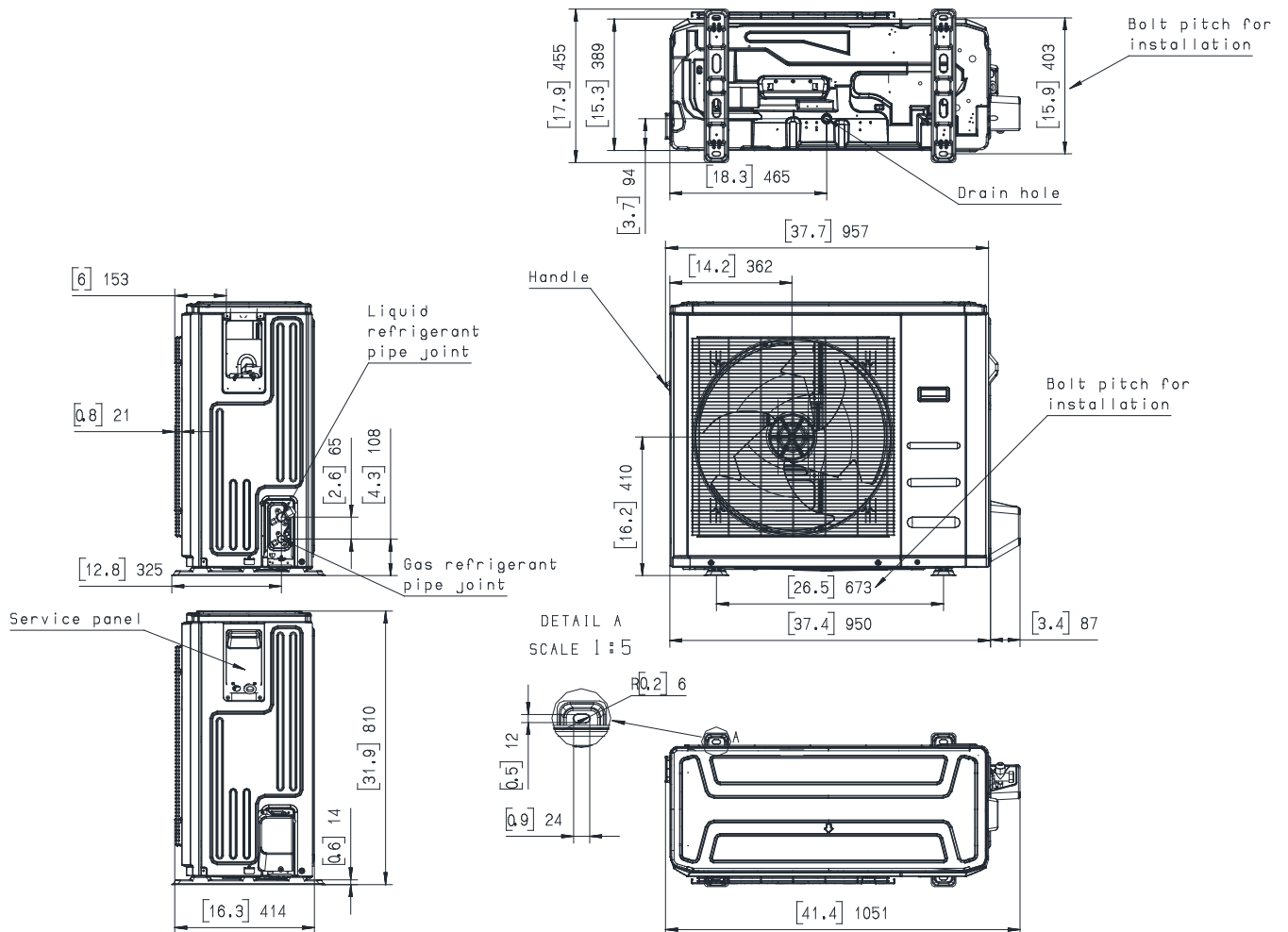
## HSZ09H525ZMO, HSZ12H525ZMO Dimension



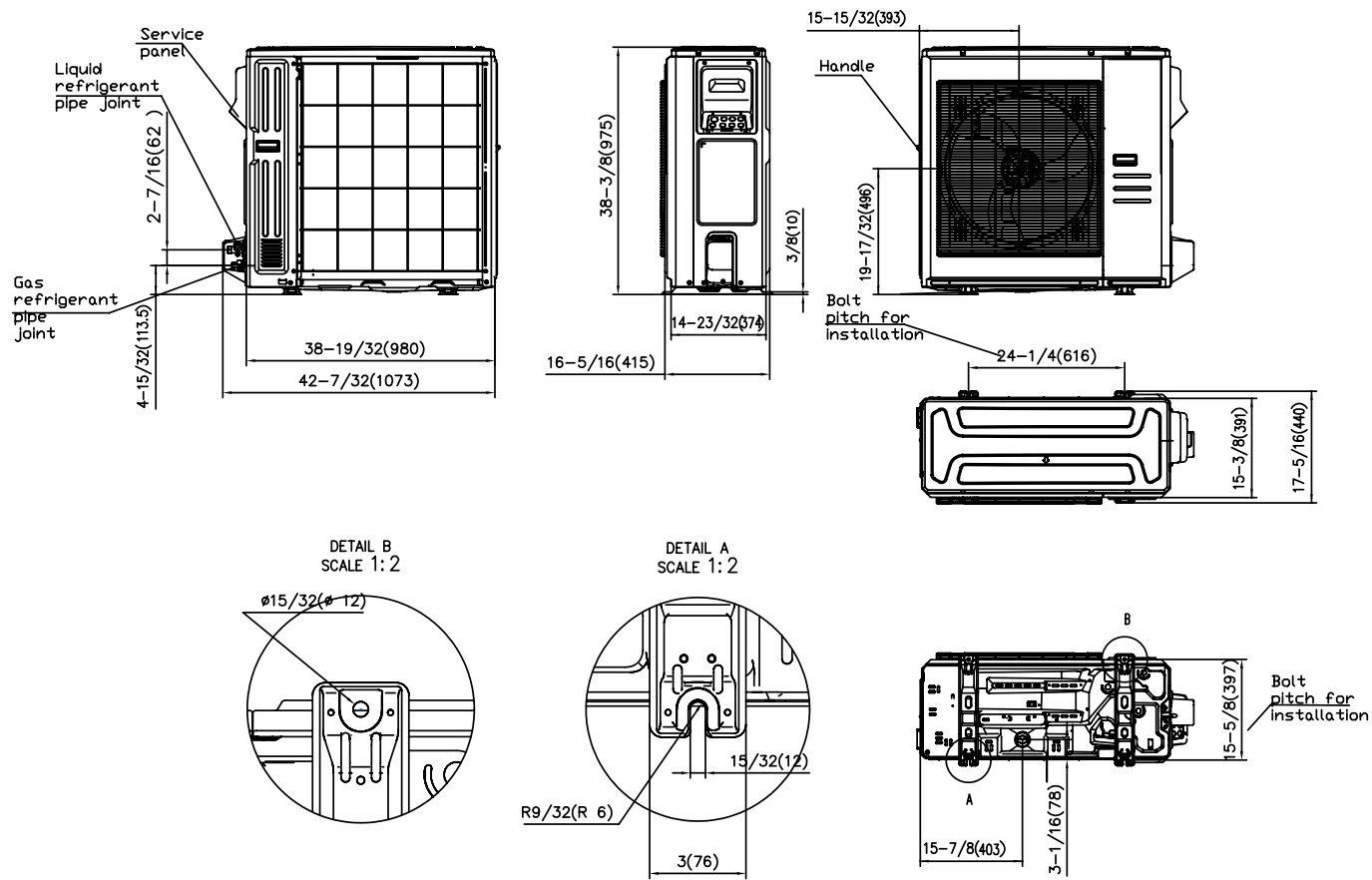
## SZ18H525ZMO, HSZ18H525ZMO Dimension



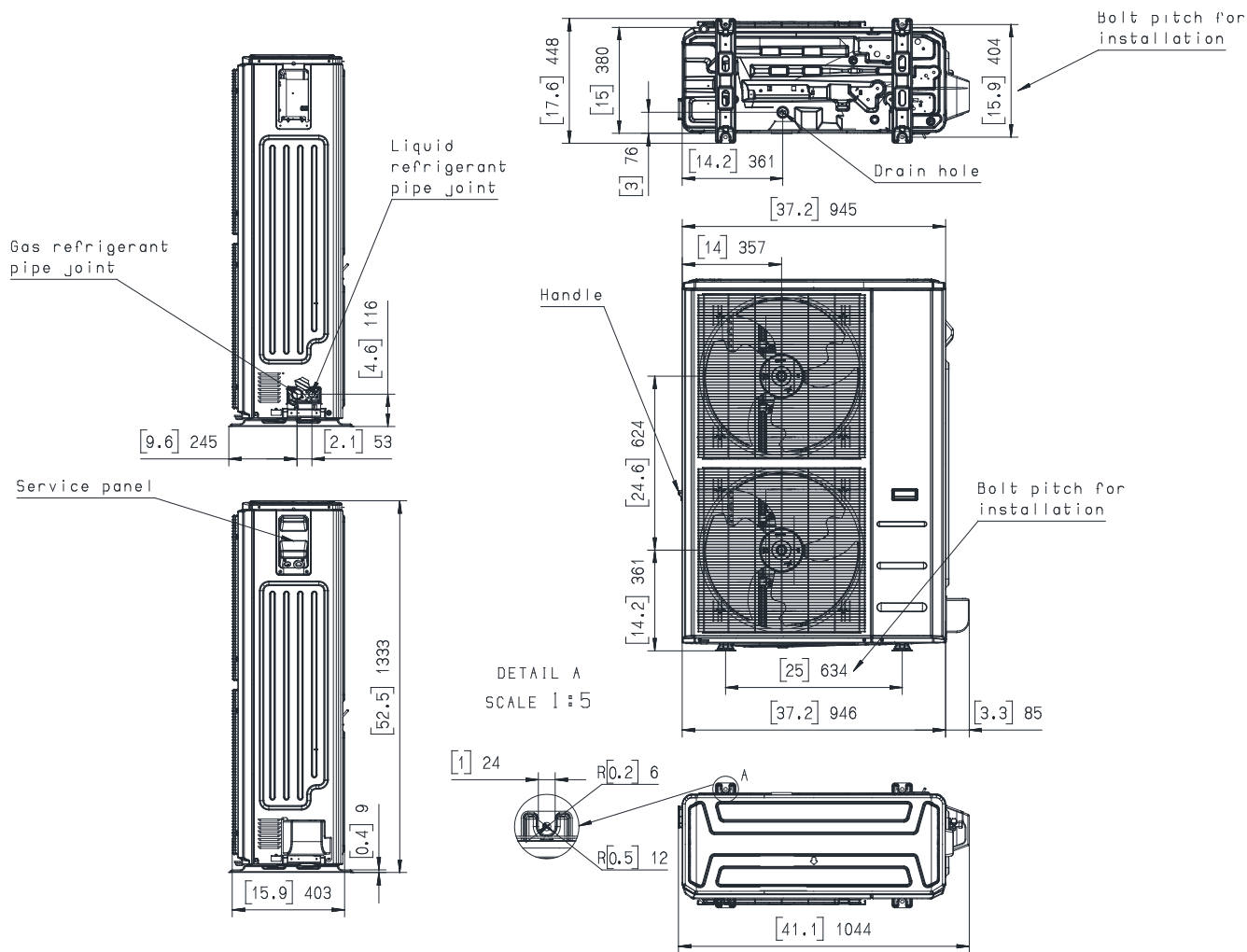
## SZ24H525ZMO, HSZ24H525ZMO, SZ30H525ZMO, SZ36H525ZMO Dimension



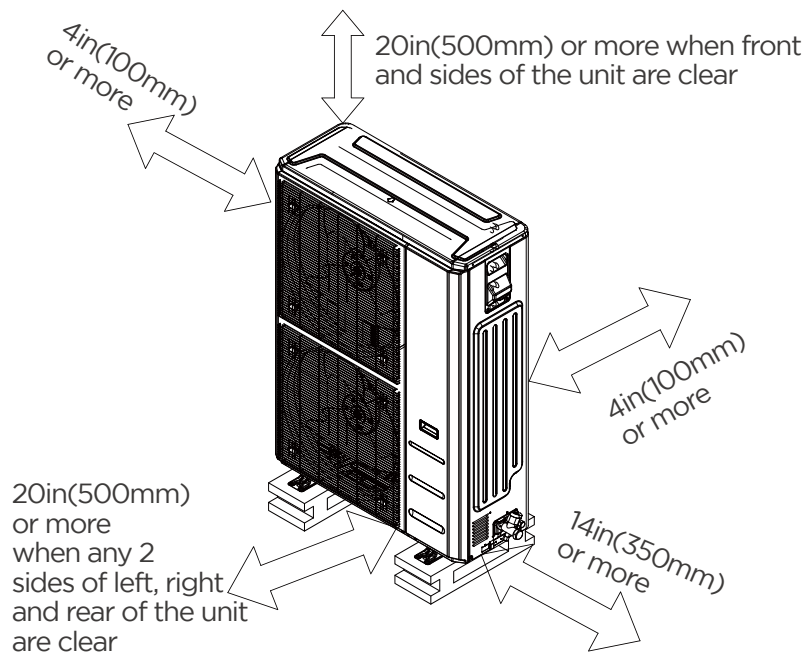
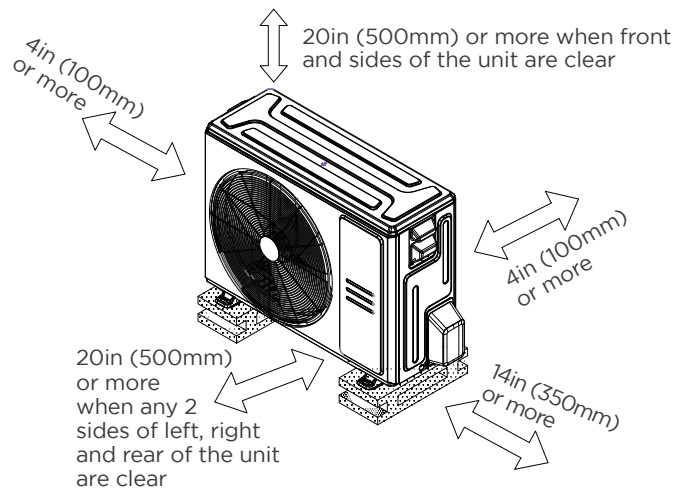
CSZ36H525ZMO Dimension



CSZ48H525ZMO, CSZ60H525ZMO Dimension



## 2. Installation location



### 3. Capacity Correction Factor for Height Difference

| Capacity(Btu/h)               | 6k~9k                        |           | Pipe Length (ft/m) |         |         |       |
|-------------------------------|------------------------------|-----------|--------------------|---------|---------|-------|
| Cooling                       |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 82/25 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 15/49.2   |                    |         | 0.975   | 0.911 |
|                               |                              | 32.8/10   |                    | 0.985   | 0.985   | 0.920 |
|                               |                              | 16.4/5    | 0.995              | 0.995   | 0.995   | 0.929 |
|                               |                              | 0         | 1.000              | 1.000   | 1.000   | 0.934 |
|                               | Outdoor Upper<br>than Indoor | -16.4/-5  | 1.000              | 1.000   | 1.000   | 0.934 |
|                               |                              | -32.8/-10 |                    | 1.000   | 1.000   | 0.934 |
|                               |                              | -15/-49.2 |                    |         | 1.000   | 0.934 |
|                               |                              |           |                    |         |         |       |
| Heating                       |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 82/25 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 15/49.2   |                    |         | 1.000   | 0.956 |
|                               |                              | 32.8/10   |                    | 1.000   | 1.000   | 0.956 |
|                               |                              | 16.4/5    | 1.000              | 1.000   | 1.000   | 0.956 |
|                               |                              | 0         | 1.000              | 1.000   | 1.000   | 0.956 |
|                               | Outdoor Upper<br>than Indoor | -16.4/-5  | 0.992              | 0.992   | 0.992   | 0.948 |
|                               |                              | -32.8/-10 |                    | 0.984   | 0.984   | 0.941 |
|                               |                              | -15/-49.2 |                    |         | 0.976   | 0.933 |

| Capacity(Btu/h)               | 12k                          |           | Pipe Length (ft/m) |         |         |       |
|-------------------------------|------------------------------|-----------|--------------------|---------|---------|-------|
| Cooling                       |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 82/25 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 15/49.2   |                    |         | 0.975   | 0.932 |
|                               |                              | 32.8/10   |                    | 0.985   | 0.985   | 0.942 |
|                               |                              | 16.4/5    | 0.995              | 0.995   | 0.995   | 0.951 |
|                               |                              | 0         | 1.000              | 1.000   | 1.000   | 0.956 |
|                               | Outdoor Upper<br>than Indoor | -16.4/-5  | 1.000              | 1.000   | 1.000   | 0.956 |
|                               |                              | -32.8/-10 |                    | 1.000   | 1.000   | 0.956 |
|                               |                              | -15/-49.2 |                    |         | 1.000   | 0.956 |
|                               |                              |           |                    |         |         |       |
| Heating                       |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 82/25 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 15/49.2   |                    |         | 0.981   | 0.974 |
|                               |                              | 32.8/10   |                    | 0.994   | 0.981   | 0.974 |
|                               |                              | 16.4/5    | 1.000              | 0.994   | 0.981   | 0.974 |
|                               |                              | 0         | 1.000              | 0.994   | 0.981   | 0.974 |
|                               | Outdoor Upper<br>than Indoor | -16.4/-5  | 0.992              | 0.986   | 0.973   | 0.966 |
|                               |                              | -32.8/-10 |                    | 0.978   | 0.965   | 0.958 |
|                               |                              | -15/-49.2 |                    |         | 0.957   | 0.951 |

| Capacity(Btu/h)               | 18k                          |           | Pipe Length (ft/m) |         |         |         |
|-------------------------------|------------------------------|-----------|--------------------|---------|---------|---------|
| Cooling                       |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 98.4/30 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 65.6/20   |                    |         | 0.941   | 0.919   |
|                               |                              | 32.8/10   |                    | 0.974   | 0.951   | 0.928   |
|                               |                              | 16.4/5    | 0.995              | 0.983   | 0.960   | 0.937   |
|                               |                              | 0         | 1.000              | 0.988   | 0.965   | 0.942   |
|                               | Outdoor Upper<br>than Indoor | -16.4/-5  | 1.000              | 0.988   | 0.965   | 0.942   |
|                               |                              | -32.8/-10 |                    | 0.988   | 0.965   | 0.942   |
|                               |                              | -65.6/-20 |                    |         | 0.965   | 0.942   |
|                               |                              |           |                    |         |         |         |
| Heating                       |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 98.4/30 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 65.6/20   |                    |         | 0.987   | 0.978   |
|                               |                              | 32.8/10   |                    | 0.996   | 0.987   | 0.978   |
|                               |                              | 16.4/5    | 1.000              | 0.996   | 0.987   | 0.978   |
|                               |                              | 0         | 1.000              | 0.996   | 0.987   | 0.978   |
|                               | Outdoor Upper<br>than Indoor | -16.4/-5  | 0.992              | 0.988   | 0.979   | 0.970   |
|                               |                              | -32.8/-10 |                    | 0.980   | 0.971   | 0.962   |
|                               |                              | -65.6/-20 |                    |         | 0.963   | 0.955   |

| Capacity<br>(Btu/h)              | 24k                          |           | Pipe Length (ft/m) |         |         |         |          |        |
|----------------------------------|------------------------------|-----------|--------------------|---------|---------|---------|----------|--------|
| Cooling                          |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 98.4/30 | 131.2/40 | 164/50 |
| Height difference<br>H (ft/m)    | Indoor Upper<br>than Outdoor | 82/25     |                    |         |         | 0.917   | 0.898    | 0.879  |
|                                  |                              | 65.6/20   |                    |         | 0.946   | 0.926   | 0.907    | 0.887  |
|                                  |                              | 32.8/10   |                    | 0.975   | 0.955   | 0.936   | 0.916    | 0.896  |
|                                  |                              | 16.4/5    | 0.995              | 0.985   | 0.965   | 0.945   | 0.925    | 0.905  |
|                                  |                              | 0         | 1.000              | 0.990   | 0.970   | 0.950   | 0.930    | 0.910  |
|                                  | Outdoor Upper<br>than Indoor | -16.4/-5  | 1.000              | 0.990   | 0.970   | 0.950   | 0.930    | 0.910  |
|                                  |                              | -32.8/-10 |                    | 0.990   | 0.970   | 0.950   | 0.930    | 0.910  |
|                                  |                              | -65.6/-20 |                    |         | 0.970   | 0.950   | 0.930    | 0.910  |
|                                  |                              | -82/-25   |                    |         |         | 0.950   | 0.930    | 0.910  |
|                                  |                              |           |                    |         |         |         |          |        |
| Heating                          |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 98.4/30 | 131.2/40 | 164/50 |
| Height<br>difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 82/25     |                    |         |         | 0.984   | 0.978    | 0.972  |
|                                  |                              | 65.6/20   |                    |         | 0.991   | 0.984   | 0.978    | 0.972  |
|                                  |                              | 32.8/10   |                    | 0.997   | 0.991   | 0.984   | 0.978    | 0.972  |
|                                  |                              | 16.4/5    | 1.000              | 0.997   | 0.991   | 0.984   | 0.978    | 0.972  |
|                                  |                              | 0         | 1.000              | 0.997   | 0.991   | 0.984   | 0.978    | 0.972  |
|                                  | Outdoor Upper<br>than Indoor | -16.4/-5  | 0.992              | 0.989   | 0.983   | 0.977   | 0.970    | 0.964  |
|                                  |                              | -32.8/-10 |                    | 0.981   | 0.975   | 0.969   | 0.963    | 0.957  |
|                                  |                              | -65.6/-20 |                    |         | 0.967   | 0.961   | 0.955    | 0.949  |
|                                  |                              | -82/-25   |                    |         |         | 0.953   | 0.947    | 0.941  |

| Capacity<br>(Btu/h)                  | 30k                          |           | Pipe Length (ft/m) |         |         |         |          |        |
|--------------------------------------|------------------------------|-----------|--------------------|---------|---------|---------|----------|--------|
| Cooling                              |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 98.4/30 | 131.2/40 | 164/50 |
| Height<br>difference<br><br>H (ft/m) | Indoor Upper<br>than Outdoor | 82/25     |                    |         |         | 0.891   | 0.862    | 0.832  |
|                                      |                              | 65.6/20   |                    |         | 0.930   | 0.900   | 0.871    | 0.841  |
|                                      |                              | 32.8/10   |                    | 0.970   | 0.940   | 0.910   | 0.879    | 0.849  |
|                                      |                              | 16.4/5    | 0.995              | 0.980   | 0.949   | 0.919   | 0.888    | 0.858  |
|                                      |                              | 0         | 1.000              | 0.985   | 0.954   | 0.923   | 0.893    | 0.862  |
|                                      | Outdoor Upper<br>than Indoor | -16.4/-5  | 1.000              | 0.985   | 0.954   | 0.923   | 0.893    | 0.862  |
|                                      |                              | -32.8/-10 |                    | 0.985   | 0.954   | 0.923   | 0.893    | 0.862  |
|                                      |                              | -65.6/-20 |                    |         | 0.954   | 0.923   | 0.893    | 0.862  |
|                                      |                              | -82/-25   |                    |         |         | 0.923   | 0.893    | 0.862  |
|                                      |                              |           |                    |         |         |         |          |        |
| Heating                              |                              |           | 24.6/7.5           | 32.8/10 | 65.6/20 | 98.4/30 | 131.2/40 | 164/50 |
| Height<br>difference<br><br>H (ft/m) | Indoor Upper<br>than Outdoor | 82/25     |                    |         |         | 0.961   | 0.945    | 0.929  |
|                                      |                              | 65.6/20   |                    |         | 0.976   | 0.961   | 0.945    | 0.929  |
|                                      |                              | 32.8/10   |                    | 0.992   | 0.976   | 0.961   | 0.945    | 0.929  |
|                                      |                              | 16.4/5    | 1.000              | 0.992   | 0.976   | 0.961   | 0.945    | 0.929  |
|                                      |                              | 0         | 1.000              | 0.992   | 0.976   | 0.961   | 0.945    | 0.929  |
|                                      | Outdoor Upper<br>than Indoor | -16.4/-5  | 0.992              | 0.984   | 0.969   | 0.953   | 0.937    | 0.922  |
|                                      |                              | -32.8/-10 |                    | 0.976   | 0.961   | 0.945   | 0.930    | 0.914  |
|                                      |                              | -65.6/-20 |                    |         | 0.953   | 0.938   | 0.922    | 0.907  |
|                                      |                              | -82/-25   |                    |         |         | 0.930   | 0.915    | 0.900  |

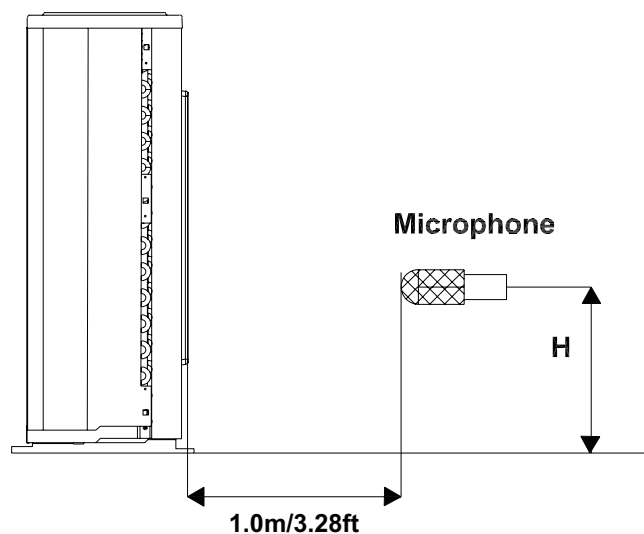
| Capacity<br>(Btu/h)           | 36k                               |           | Pipe Length (ft/m) |         |       |          |        |          |        |
|-------------------------------|-----------------------------------|-----------|--------------------|---------|-------|----------|--------|----------|--------|
| Cooling                       |                                   |           | 24.6/7.5           | 15/49.2 | 82/25 | 35/114.8 | 164/50 | 213.3/65 | 75/246 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Out-<br>door | 98.4/30   |                    |         |       | 0.889    | 0.851  | 0.812    | 0.787  |
|                               |                                   | 65.6/20   |                    |         | 0.924 | 0.898    | 0.859  | 0.821    | 0.795  |
|                               |                                   | 32.8/10   |                    | 0.959   | 0.933 | 0.907    | 0.868  | 0.829    | 0.803  |
|                               |                                   | 16.4/5    | 0.995              | 0.969   | 0.942 | 0.916    | 0.876  | 0.837    | 0.811  |
|                               |                                   | 0         | 1.000              | 0.974   | 0.947 | 0.921    | 0.881  | 0.841    | 0.815  |
|                               | Outdoor<br>Upper<br>than Indoor   | -16.4/-5  | 1.000              | 0.974   | 0.947 | 0.921    | 0.881  | 0.841    | 0.815  |
|                               |                                   | -32.8/-10 |                    | 0.974   | 0.947 | 0.921    | 0.881  | 0.841    | 0.815  |
|                               |                                   | -65.6/-20 |                    |         | 0.947 | 0.921    | 0.881  | 0.841    | 0.815  |
|                               |                                   | -30/-98.4 |                    |         |       | 0.921    | 0.881  | 0.841    | 0.815  |
|                               |                                   |           |                    |         |       |          |        |          |        |
| Heating                       |                                   |           | 24.6/7.5           | 15/49.2 | 82/25 | 35/114.8 | 164/50 | 213.3/65 | 75/246 |
| Height difference<br>H (ft/m) | Indoor Upper<br>than Out-<br>door | 98.4/30   |                    |         |       | 0.964    | 0.945  | 0.927    | 0.915  |
|                               |                                   | 65.6/20   |                    |         | 0.976 | 0.964    | 0.945  | 0.927    | 0.915  |
|                               |                                   | 32.8/10   |                    | 0.988   | 0.976 | 0.964    | 0.945  | 0.927    | 0.915  |
|                               |                                   | 16.4/5    | 1.000              | 0.988   | 0.976 | 0.964    | 0.945  | 0.927    | 0.915  |
|                               |                                   | 0         | 1.000              | 0.988   | 0.976 | 0.964    | 0.945  | 0.927    | 0.915  |
|                               | Outdoor<br>Upper<br>than Indoor   | -16.4/-5  | 0.992              | 0.980   | 0.968 | 0.956    | 0.938  | 0.920    | 0.908  |
|                               |                                   | -32.8/-10 |                    | 0.972   | 0.960 | 0.948    | 0.930  | 0.912    | 0.900  |
|                               |                                   | -65.6/-20 |                    |         | 0.952 | 0.941    | 0.923  | 0.905    | 0.893  |
|                               |                                   | -30/-98.4 |                    |         |       | 0.933    | 0.915  | 0.898    | 0.886  |

| Capacity<br>(Btu/h)              | 48k                          |           | Pipe Length (ft/m) |         |       |          |        |        |
|----------------------------------|------------------------------|-----------|--------------------|---------|-------|----------|--------|--------|
| Cooling                          |                              |           | 24.6/7.5           | 15/49.2 | 82/25 | 35/114.8 | 164/50 | 246/75 |
| Height<br>difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 98.4/30   |                    |         |       | 0.884    | 0.843  | 0.775  |
|                                  |                              | 65.6/20   |                    |         | 0.920 | 0.893    | 0.852  | 0.783  |
|                                  |                              | 32.8/10   |                    | 0.957   | 0.930 | 0.902    | 0.860  | 0.791  |
|                                  |                              | 16.4/5    | 0.995              | 0.967   | 0.939 | 0.911    | 0.869  | 0.799  |
|                                  |                              | 0         | 1.000              | 0.972   | 0.944 | 0.916    | 0.873  | 0.803  |
|                                  | Outdoor Upper<br>than Indoor | -16.4/-5  | 1.000              | 0.972   | 0.944 | 0.916    | 0.873  | 0.803  |
|                                  |                              | -32.8/-10 |                    | 0.972   | 0.944 | 0.916    | 0.873  | 0.803  |
|                                  |                              | -65.6/-20 |                    |         | 0.944 | 0.916    | 0.873  | 0.803  |
|                                  |                              | -30/-98.4 |                    |         |       | 0.916    | 0.873  | 0.803  |
|                                  |                              |           |                    |         |       |          |        |        |
| Heating                          |                              |           | 24.6/7.5           | 15/49.2 | 82/25 | 35/114.8 | 164/50 | 246/75 |
| Height<br>difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 98.4/30   |                    |         |       | 0.958    | 0.936  | 0.901  |
|                                  |                              | 65.6/20   |                    |         | 0.972 | 0.958    | 0.936  | 0.901  |
|                                  |                              | 32.8/10   |                    | 0.986   | 0.972 | 0.958    | 0.936  | 0.901  |
|                                  |                              | 16.4/5    | 1.000              | 0.986   | 0.972 | 0.958    | 0.936  | 0.901  |
|                                  |                              | 0         | 1.000              | 0.986   | 0.972 | 0.958    | 0.936  | 0.901  |
|                                  | Outdoor Upper<br>than Indoor | -16.4/-5  | 0.992              | 0.978   | 0.964 | 0.950    | 0.929  | 0.894  |
|                                  |                              | -32.8/-10 |                    | 0.970   | 0.956 | 0.942    | 0.921  | 0.887  |
|                                  |                              | -65.6/-20 |                    |         | 0.949 | 0.935    | 0.914  | 0.880  |
|                                  |                              | -30/-98.4 |                    |         |       | 0.927    | 0.907  | 0.873  |

| Capacity<br>(Btu/h)              | 60k                          |           | Pipe Length (ft/m) |         |       |          |        |        |
|----------------------------------|------------------------------|-----------|--------------------|---------|-------|----------|--------|--------|
| Cooling                          |                              |           | 24.6/7.5           | 15/49.2 | 82/25 | 35/114.8 | 164/50 | 246/75 |
| Height<br>difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 98.4/30   |                    |         |       | 0.870    | 0.823  | 0.743  |
|                                  |                              | 65.6/20   |                    |         | 0.911 | 0.879    | 0.831  | 0.751  |
|                                  |                              | 32.8/10   |                    | 0.953   | 0.920 | 0.888    | 0.840  | 0.758  |
|                                  |                              | 16.4/5    | 0.995              | 0.962   | 0.930 | 0.897    | 0.848  | 0.766  |
|                                  |                              | 0         | 1.000              | 0.967   | 0.934 | 0.902    | 0.852  | 0.770  |
|                                  | Outdoor Upper<br>than Indoor | -16.4/-5  | 1.000              | 0.967   | 0.934 | 0.902    | 0.852  | 0.770  |
|                                  |                              | -32.8/-10 |                    | 0.967   | 0.934 | 0.902    | 0.852  | 0.770  |
|                                  |                              | -65.6/-20 |                    |         | 0.934 | 0.902    | 0.852  | 0.770  |
|                                  |                              | -30/-98.4 |                    |         |       | 0.902    | 0.852  | 0.770  |
|                                  |                              |           |                    |         |       |          |        |        |
| Heating                          |                              |           | 24.6/7.5           | 15/49.2 | 82/25 | 35/114.8 | 164/50 | 246/75 |
| Height<br>difference<br>H (ft/m) | Indoor Upper<br>than Outdoor | 98.4/30   |                    |         |       | 0.955    | 0.932  | 0.894  |
|                                  |                              | 65.6/20   |                    |         | 0.970 | 0.955    | 0.932  | 0.894  |
|                                  |                              | 32.8/10   |                    | 0.985   | 0.970 | 0.955    | 0.932  | 0.894  |
|                                  |                              | 16.4/5    | 1.000              | 0.985   | 0.970 | 0.955    | 0.932  | 0.894  |
|                                  |                              | 0         | 1.000              | 0.985   | 0.970 | 0.955    | 0.932  | 0.894  |
|                                  | Outdoor Upper<br>than Indoor | -16.4/-5  | 0.992              | 0.977   | 0.962 | 0.947    | 0.924  | 0.887  |
|                                  |                              | -32.8/-10 |                    | 0.969   | 0.954 | 0.939    | 0.917  | 0.880  |
|                                  |                              | -65.6/-20 |                    |         | 0.947 | 0.932    | 0.910  | 0.873  |
|                                  |                              | -30/-98.4 |                    |         |       | 0.924    | 0.902  | 0.866  |

## 4. Noise Criterion Curves

Outdoor Unit

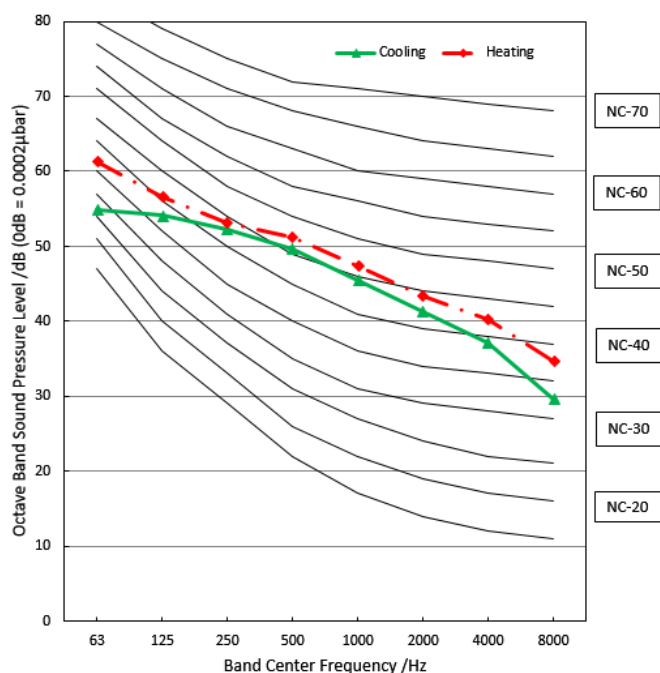


Note:  $H = 0.5 \times \text{height of outdoor unit}$

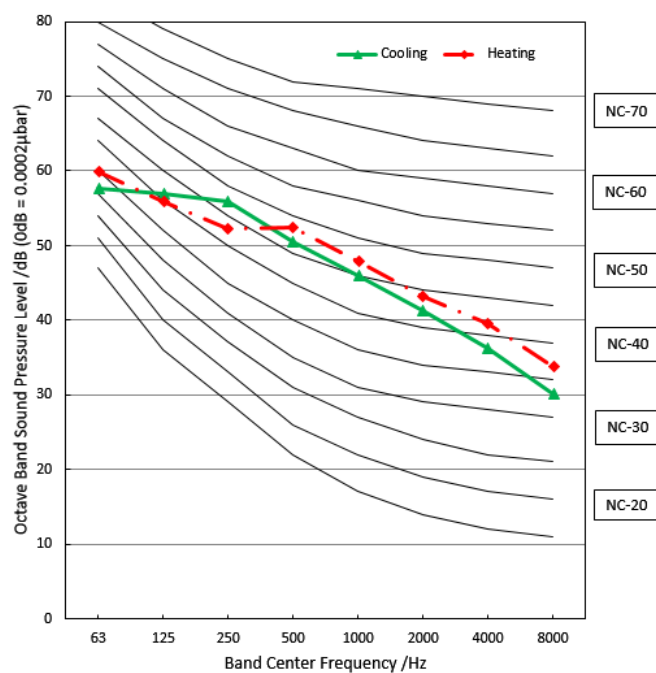
Notes:

- Sound measured at 1.0m/3.25ft away from the center of the unit.
- Data is valid at free field condition
- Data is valid at nominal operation condition
- Reference acoustic pressure  $OdB = 20\mu Pa$
- Sound level will vary depending on arrange off actors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

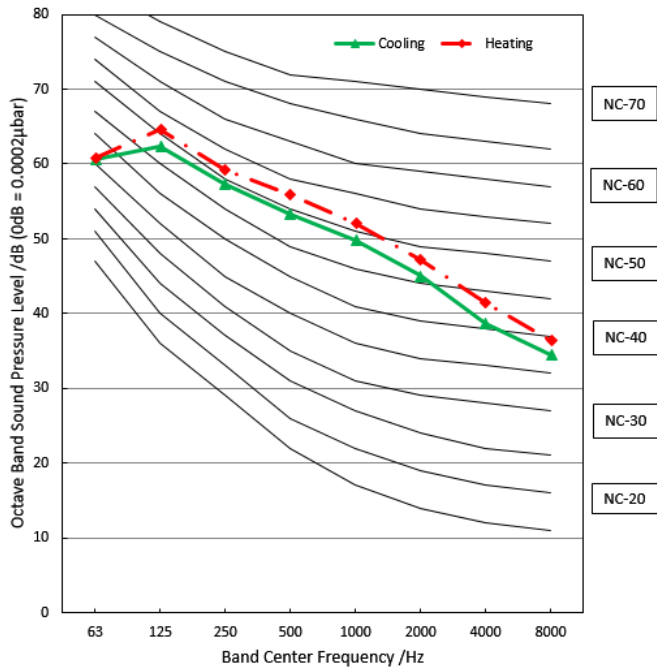
SZ09H525ZMO



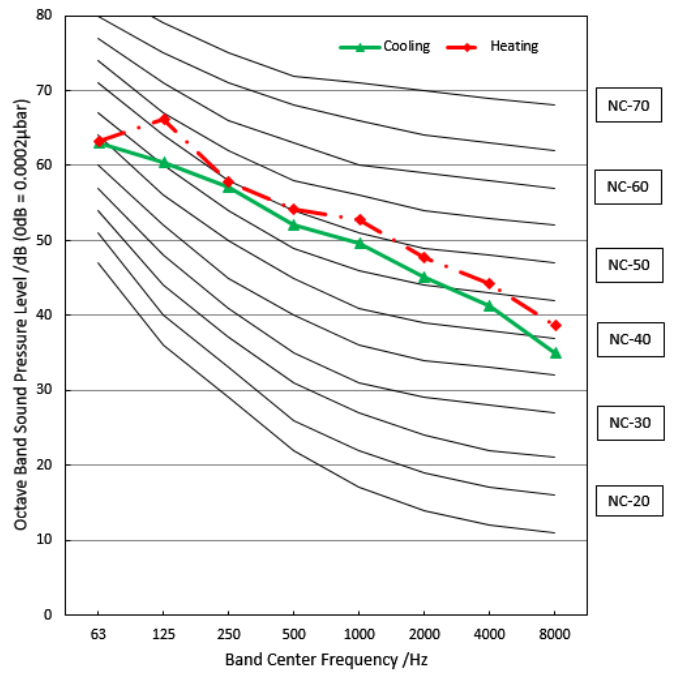
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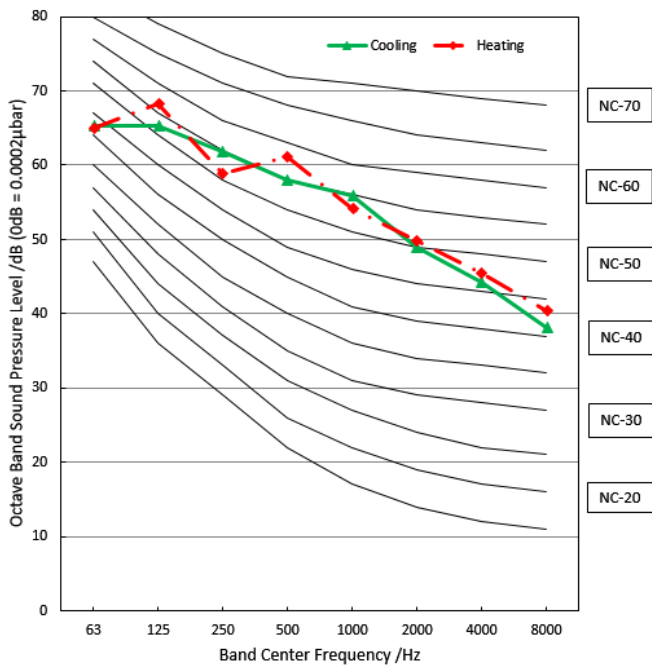
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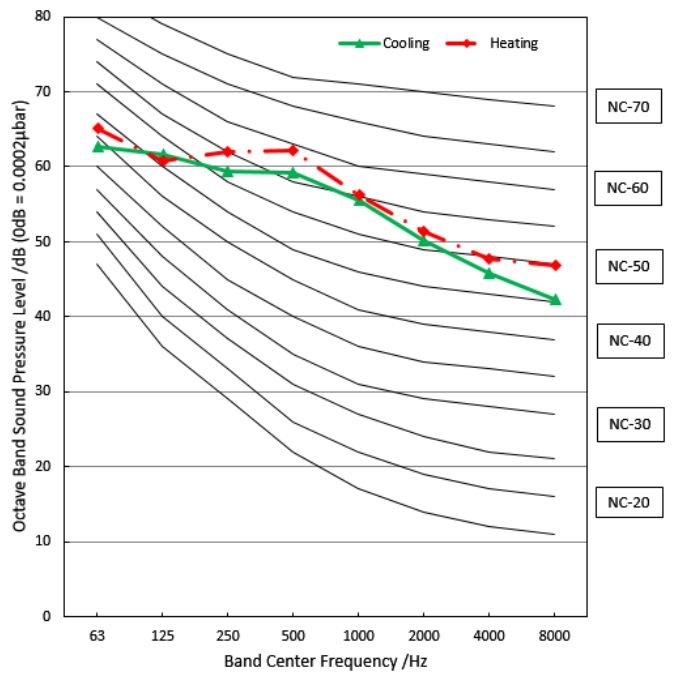
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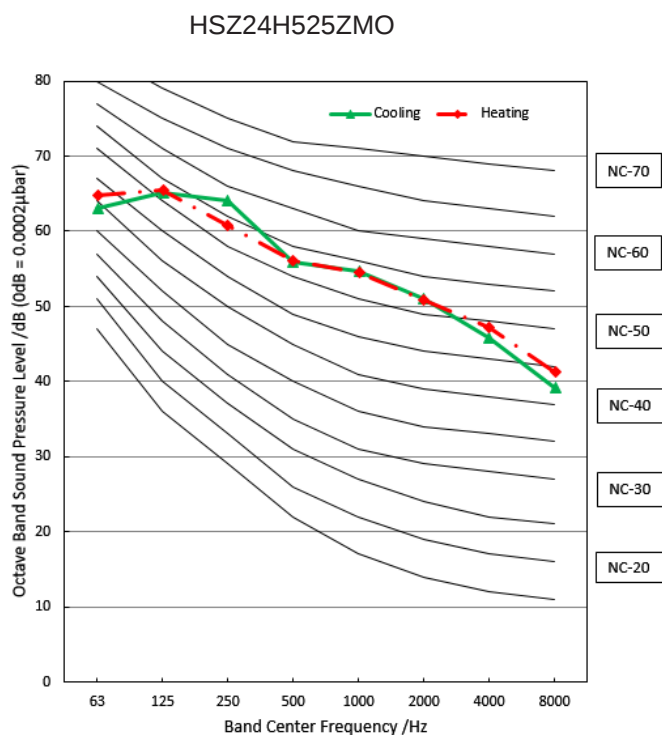
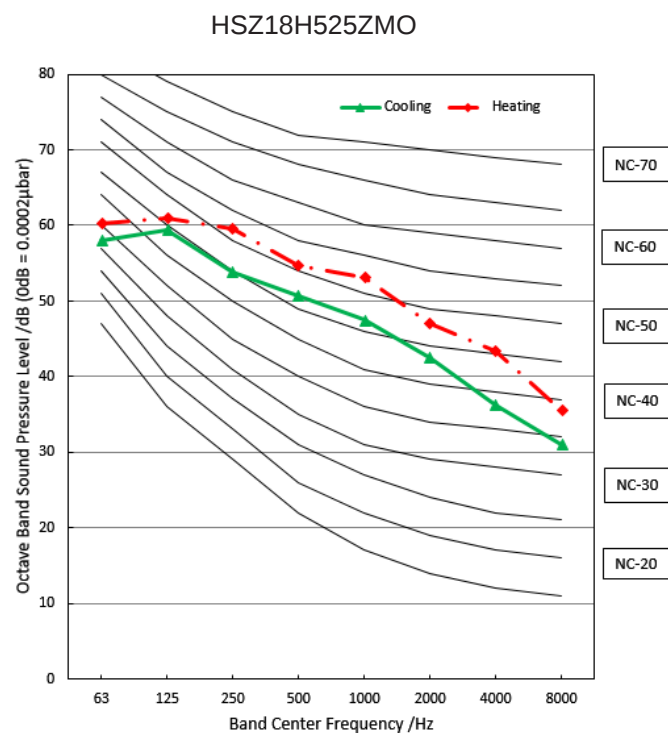
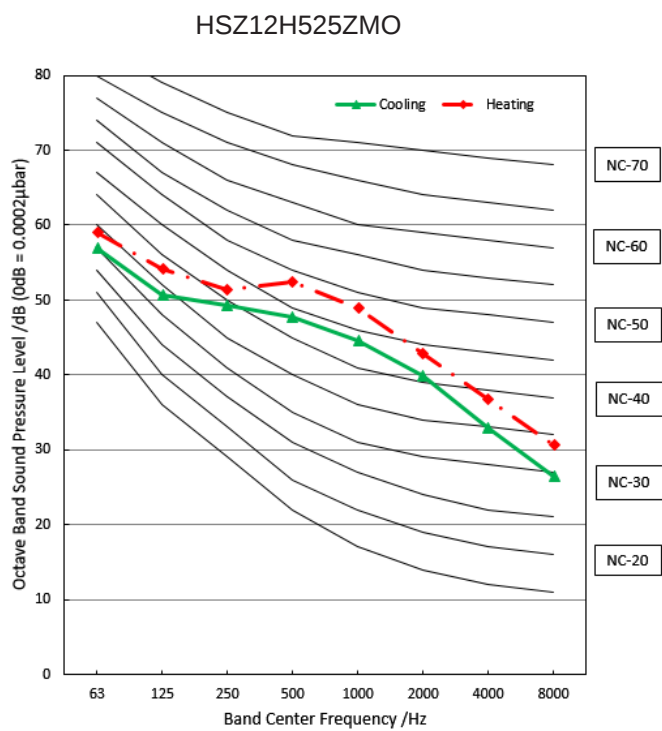
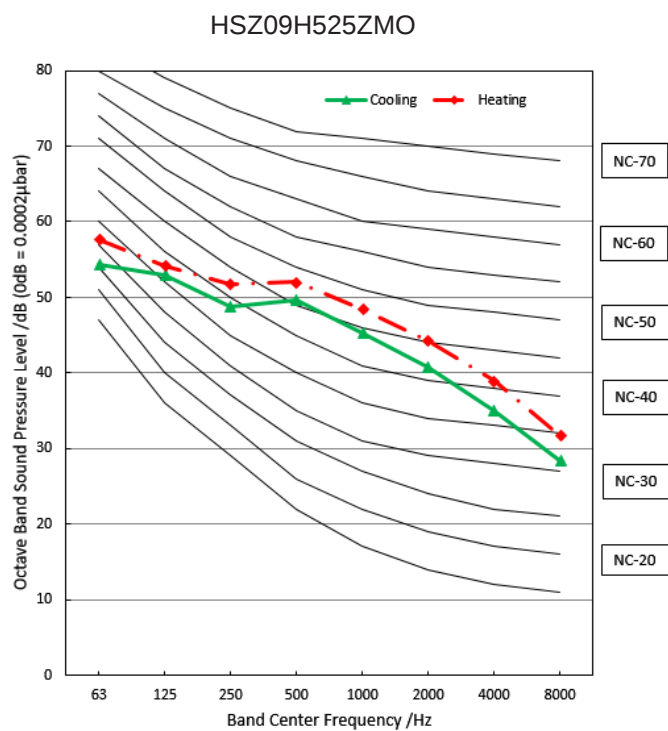


SZ30H525ZMO

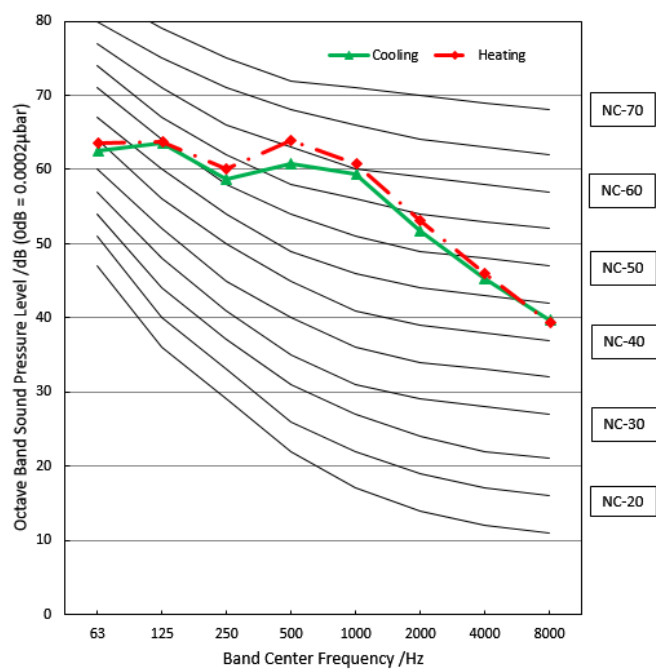


SZ36H525ZMO

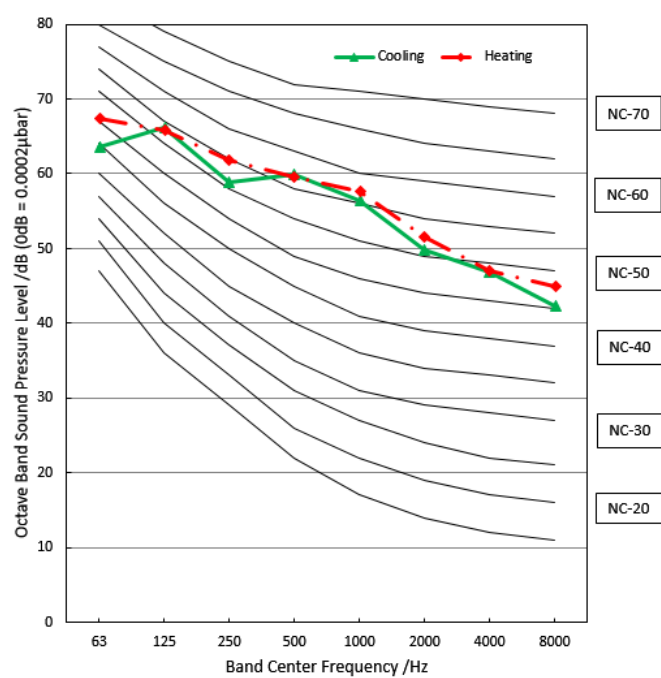




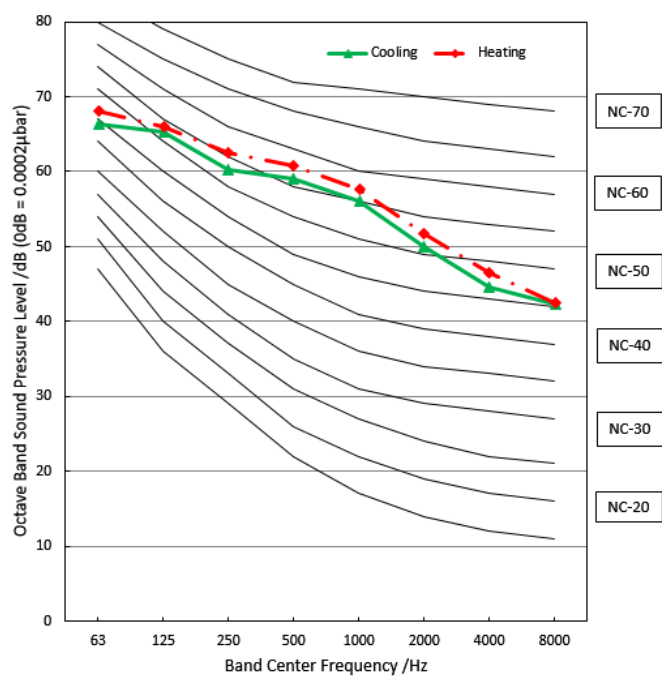
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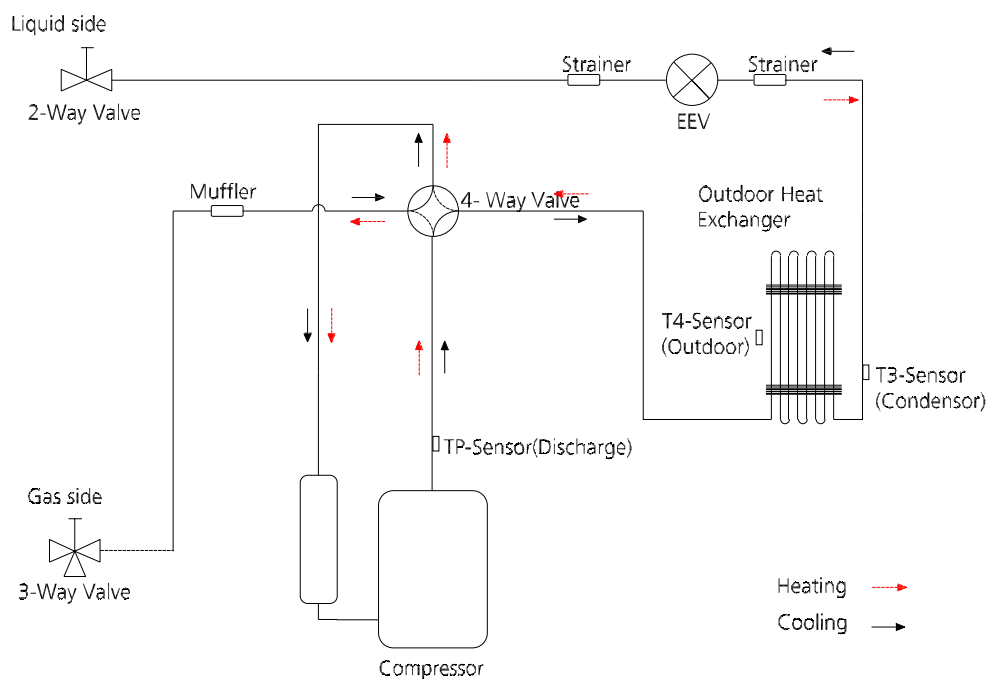
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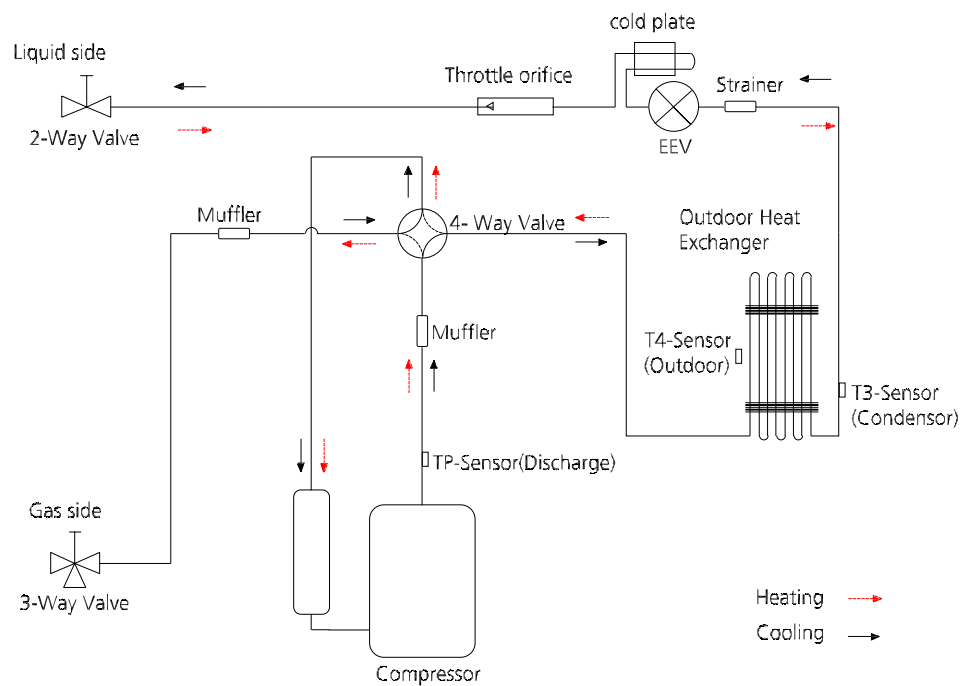
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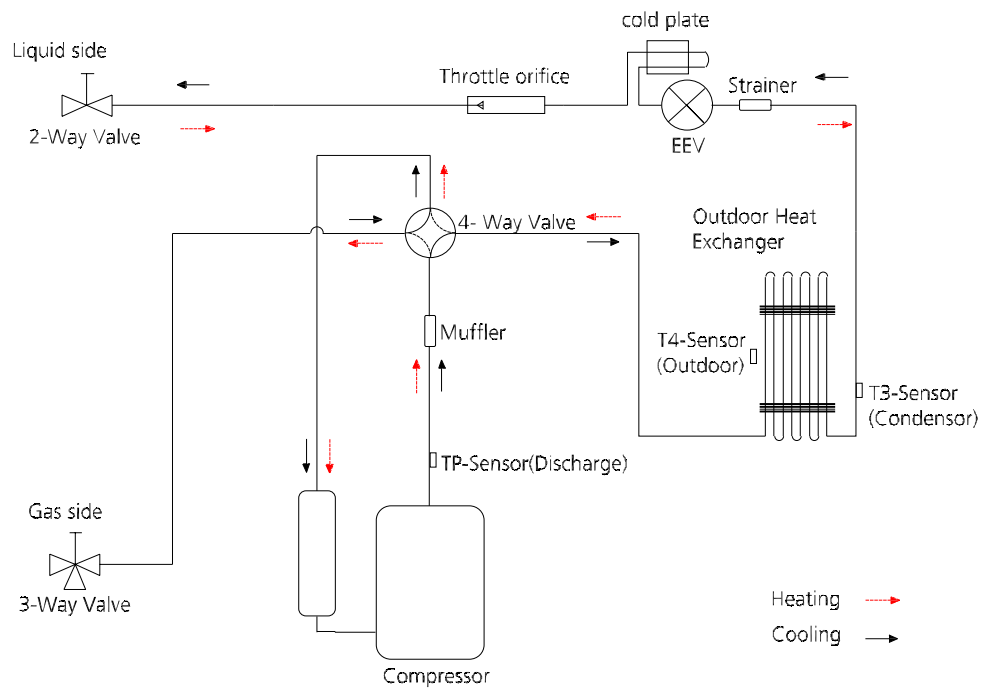
## 5. Refrigerant Cycle Diagrams



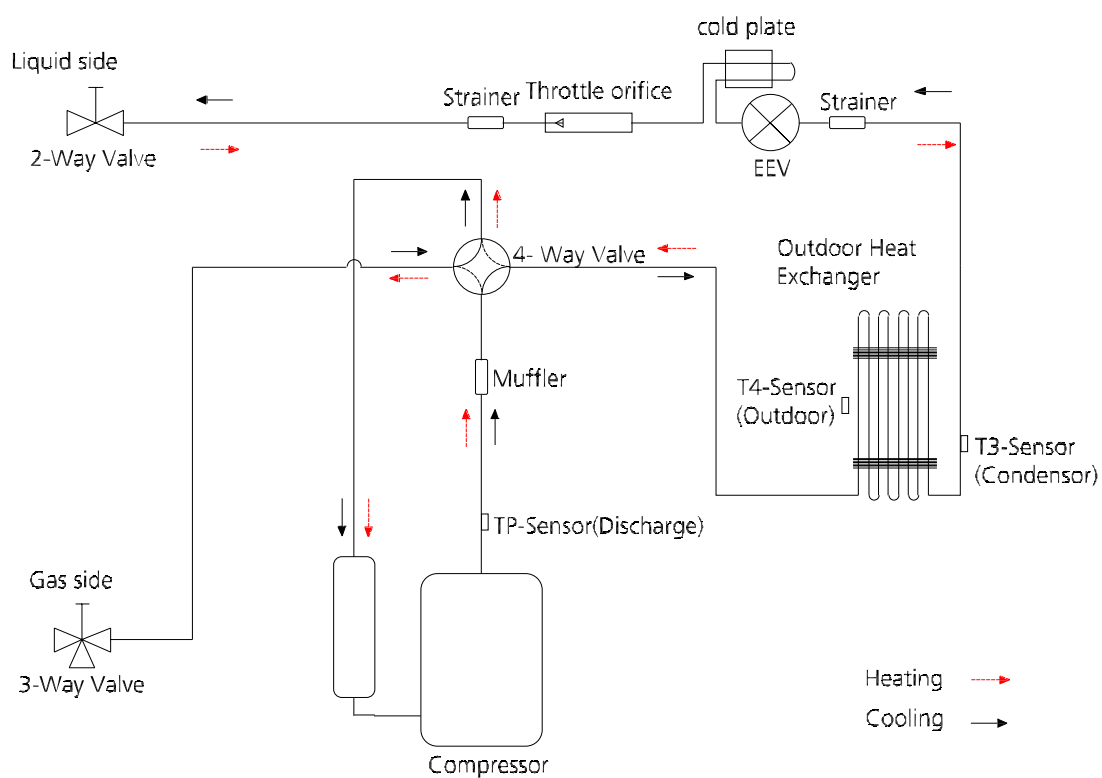
| Model No.    | Pipe Size (Diameter:ø)<br>inch(mm) |           | Piping length (ft/m) |       | Elevation (ft/m) |         | Additional Refrigerant |
|--------------|------------------------------------|-----------|----------------------|-------|------------------|---------|------------------------|
|              | Gas                                | Liquid    | Rated                | Max.  | Rated            | Max.    |                        |
| SZ09H525ZMO  | 3/8(9.52)                          | 1/4(6.35) | 24.6/7.5             | 82/25 | 0                | 49.2/15 | 0.16oz/ft (15g/m)      |
| HSZ09H525ZMO |                                    |           |                      |       |                  |         |                        |
| SZ12H525ZMO  |                                    |           |                      |       |                  |         |                        |
| HSZ12H525ZMO |                                    |           |                      |       |                  |         |                        |



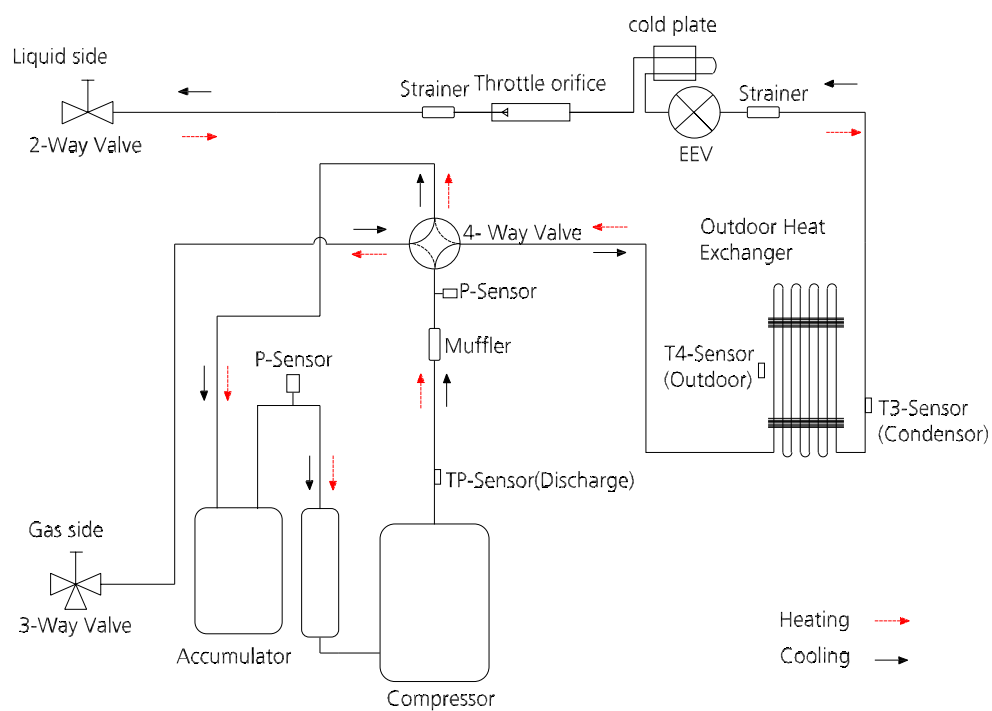
| Model No.    | Pipe Size (Diameter:ø)<br>inch(mm) |           | Piping length (ft/m) |         | Elevation (ft/m) |         | Additional Refrigerant |
|--------------|------------------------------------|-----------|----------------------|---------|------------------|---------|------------------------|
|              | Gas                                | Liquid    | Rated                | Max.    | Rated            | Max.    |                        |
| SZ18H525ZMO  | 1/2(12.7)                          | 1/4(6.35) | 24.6/7.5             | 98.4/30 | 0                | 65.6/20 | 0.16oz/ft (15g/m)      |
| HSZ18H525ZMO |                                    |           |                      |         |                  |         |                        |



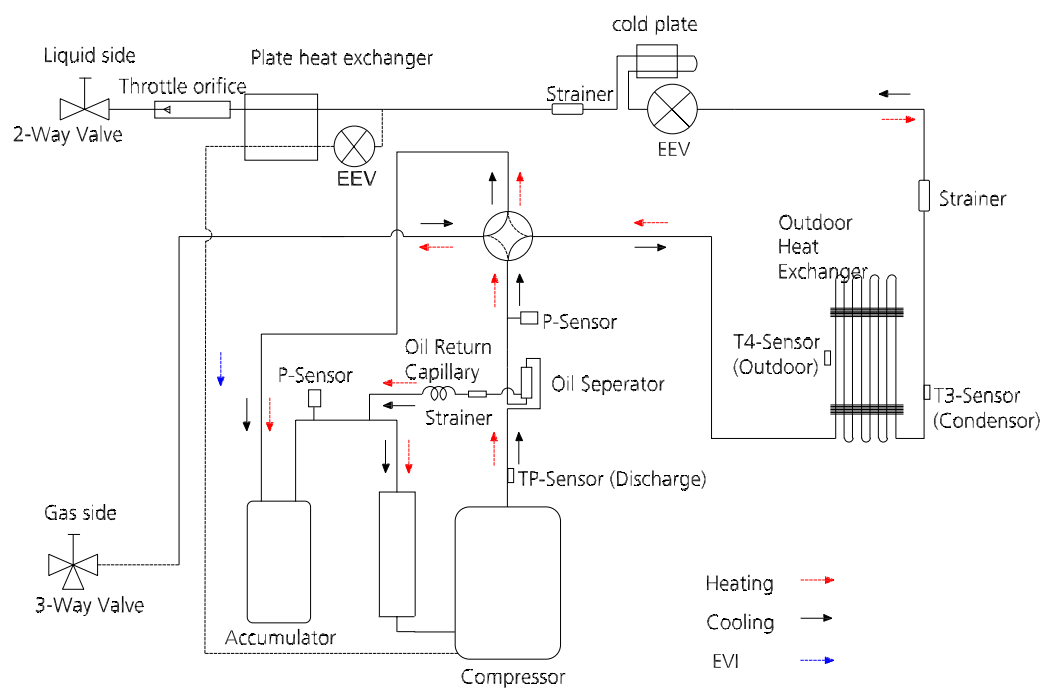
| Model No.   | Pipe Size (Diameter:ø)<br>inch(mm) |           | Piping length (ft/m) |        | Elevation (ft/m) |       | Additional Refrigerant |
|-------------|------------------------------------|-----------|----------------------|--------|------------------|-------|------------------------|
|             | Gas                                | Liquid    | Rated                | Max.   | Rated            | Max.  |                        |
| SZ24H525ZMO | 5/8(16)                            | 3/8(9.52) | 24.6/7.5             | 164/50 | 0                | 82/25 | 0.32oz/ft (30g/m)      |



| Model No.    | Pipe Size (Diameter:ø)<br>inch(mm) |           | Piping length (ft/m) |        | Elevation (ft/m) |       | Additional Refrigerant |
|--------------|------------------------------------|-----------|----------------------|--------|------------------|-------|------------------------|
|              | Gas                                | Liquid    | Rated                | Max.   | Rated            | Max.  |                        |
| HSZ24H525ZMO | 5/8(16)                            | 3/8(9.52) | 24.6/7.5             | 164/50 | 0                | 82/25 | 0.32oz/ft (30g/m)      |
| SZ30H525ZMO  |                                    |           |                      |        |                  |       |                        |



| Model No.   | Pipe Size (Diameter:ø)<br>inch(mm) |           | Piping length (ft/m) |        | Elevation (ft/m) |         | Additional Refrigerant |
|-------------|------------------------------------|-----------|----------------------|--------|------------------|---------|------------------------|
|             | Gas                                | Liquid    | Rated                | Max.   | Rated            | Max.    |                        |
| SZ36H525ZMO | 5/8(16)                            | 3/8(9.52) | 24.6/7.5             | 246/75 | 0                | 98.4/30 | 0.32oz/ft (30g/m)      |

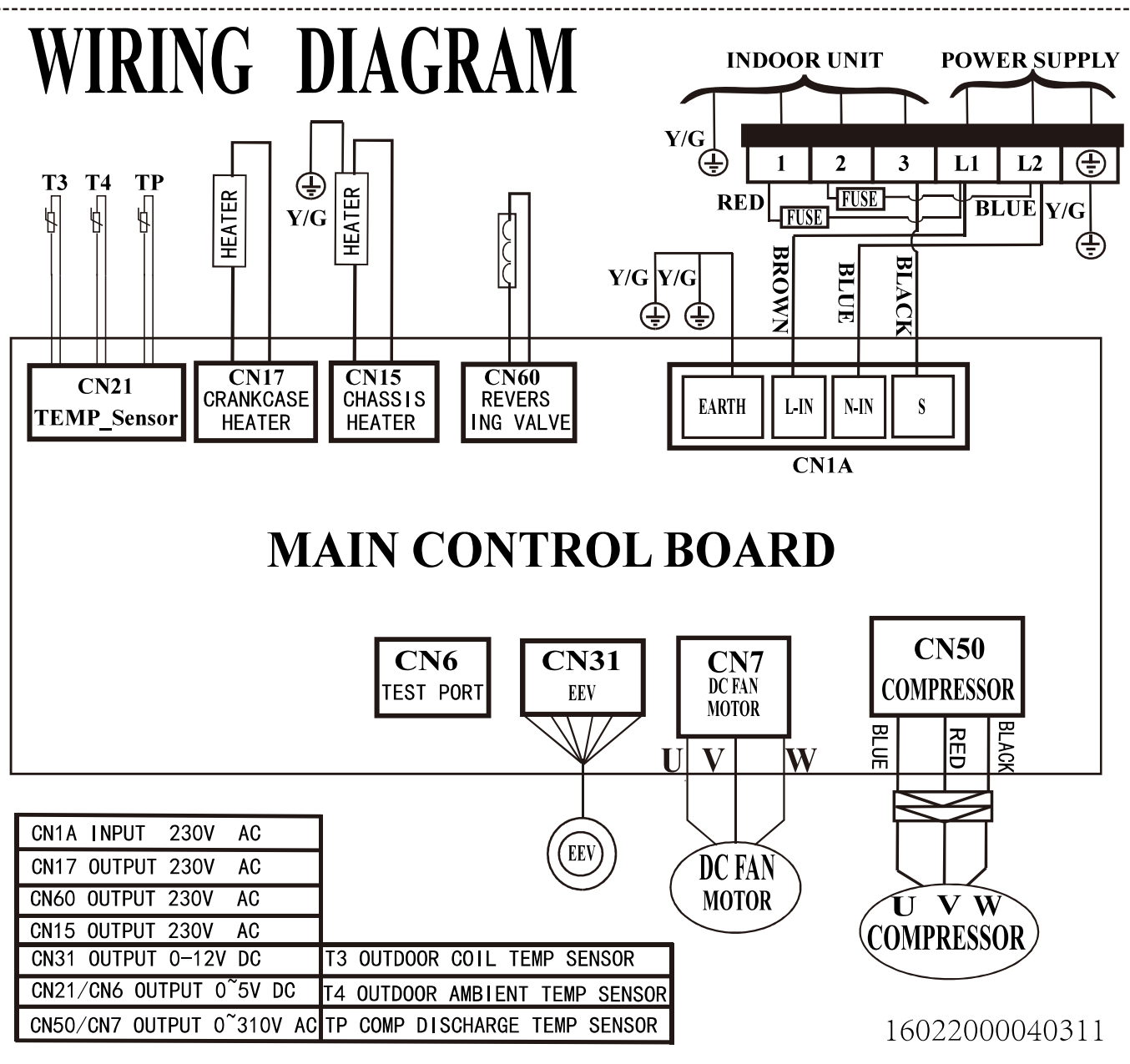


| Model No.    | Pipe Size (Diameter:ø)<br>inch(mm) |           | Piping length (ft/m) |        | Elevation (ft/m) |         | Additional Refrigerant |
|--------------|------------------------------------|-----------|----------------------|--------|------------------|---------|------------------------|
|              | Gas                                | Liquid    | Rated                | Max.   | Rated            | Max.    |                        |
| CSZ36H525ZMO | 3/4(19)                            | 3/8(9.52) | 24.6/7.5             | 246/75 | 0                | 98.4/30 | 0.32oz/ft (30g/m)      |
| CSZ48H525ZMO |                                    |           |                      |        |                  |         |                        |
| CSZ60H525ZMO |                                    |           |                      |        |                  |         |                        |

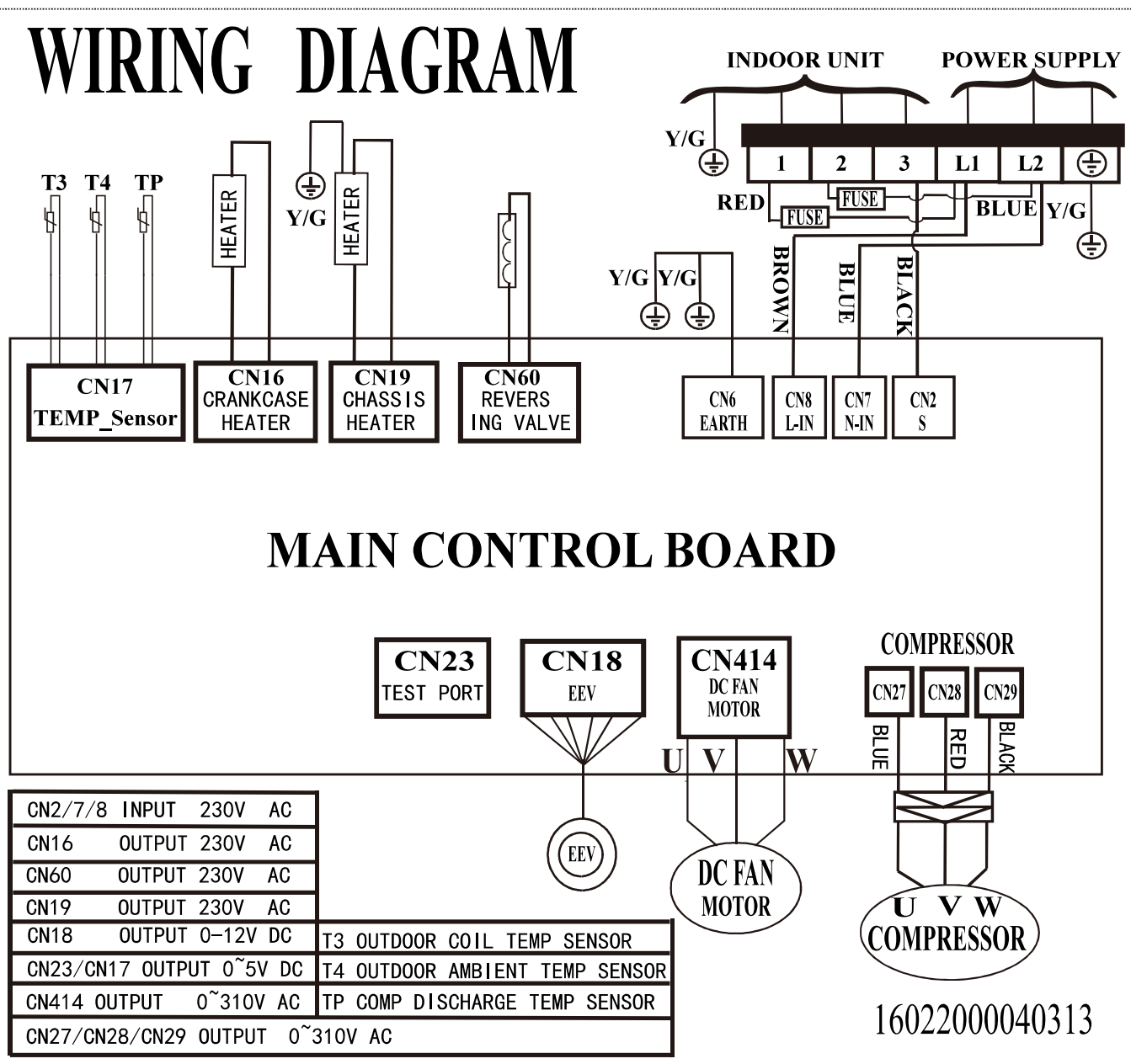
## 6. Electrical Wiring Diagrams

| Outdoor Unit |                    |                           |
|--------------|--------------------|---------------------------|
| ODU Model    | ODU Wiring Diagram | ODU Printed Circuit Board |
| SZ09H525ZMO  | 16022000040311     | 17122000057661            |
| SZ12H525ZMO  |                    |                           |
| HSZ09H525ZMO |                    |                           |
| HSZ12H525ZMO |                    |                           |
| SZ18H525ZMO  | 16022000040313     | 17122000048066            |
| HSZ18H525ZMO |                    | 17122000048064            |
| SZ24H525ZMO  |                    |                           |
| HSZ24H525ZMO | 16022000040331     | 17122300007152            |
| SZ30H525ZMO  |                    |                           |
| SZ36H525ZMO  | 16022000040650     |                           |
| CSZ36H525ZMO | 16022000040733     |                           |
| CSZ48H525ZMO | 16022000040730     |                           |
| CSZ60H525ZMO |                    |                           |

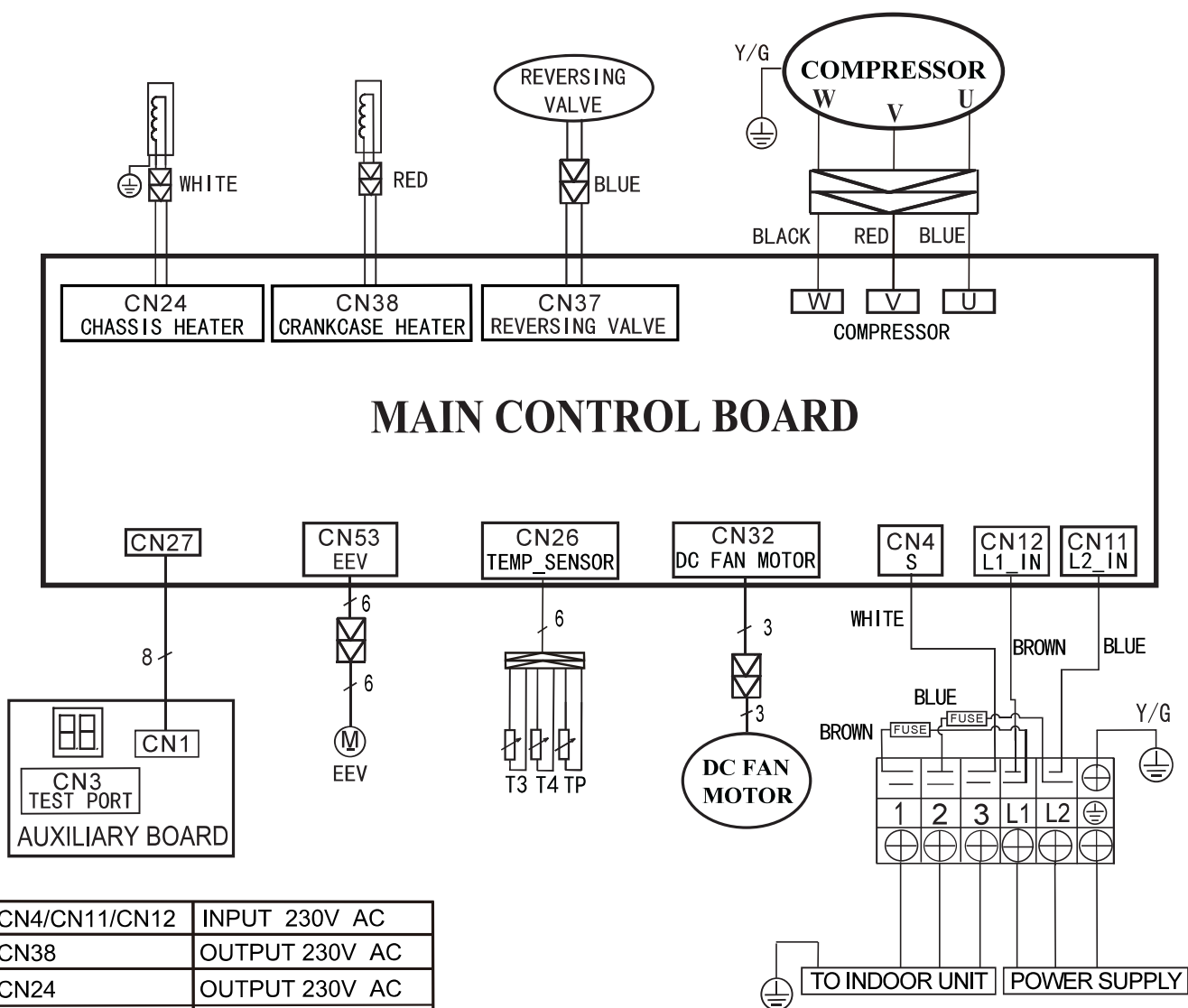
# WIRING DIAGRAM



# WIRING DIAGRAM



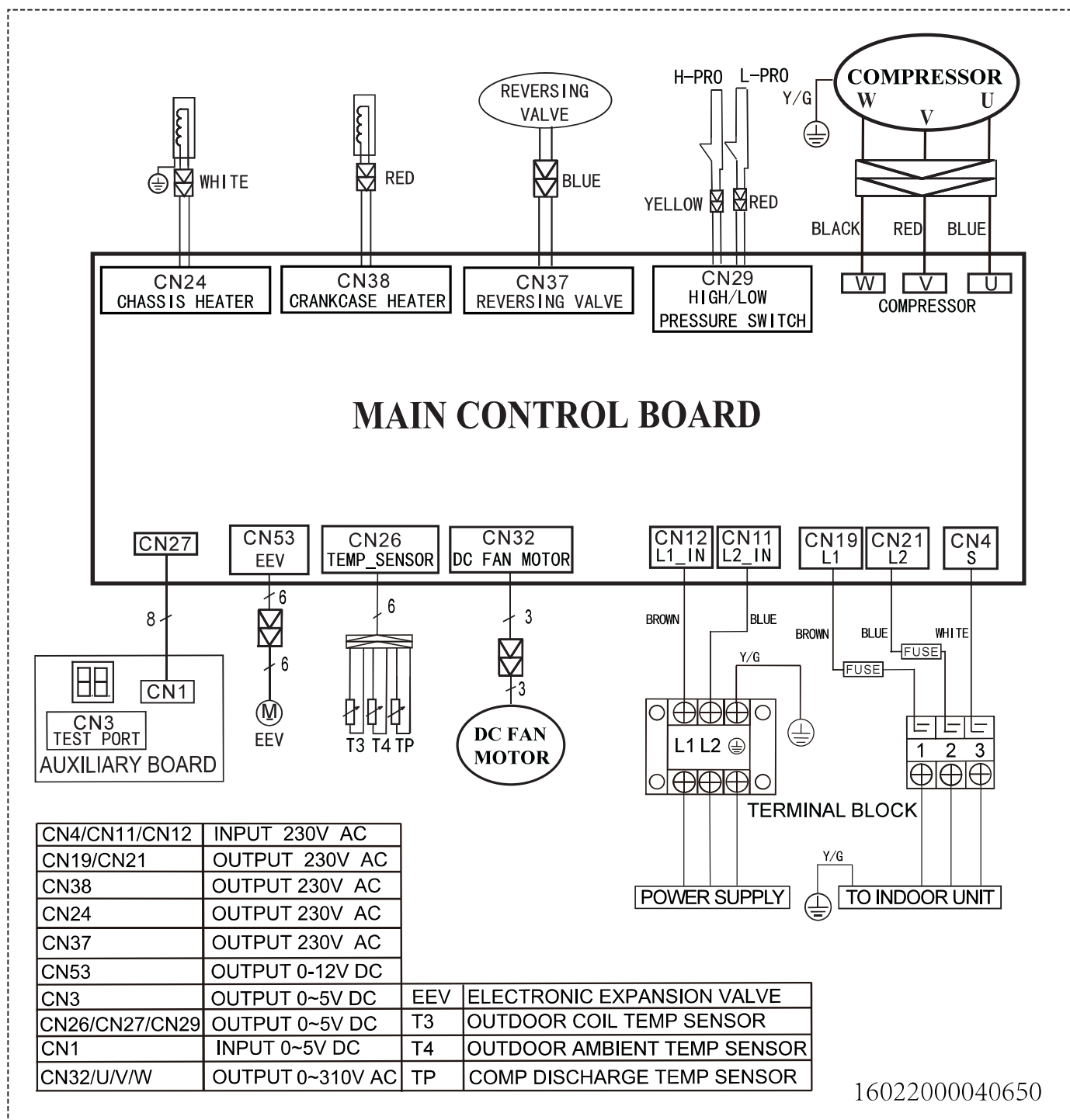
Outdoor unit wiring diagram: 16022000040331



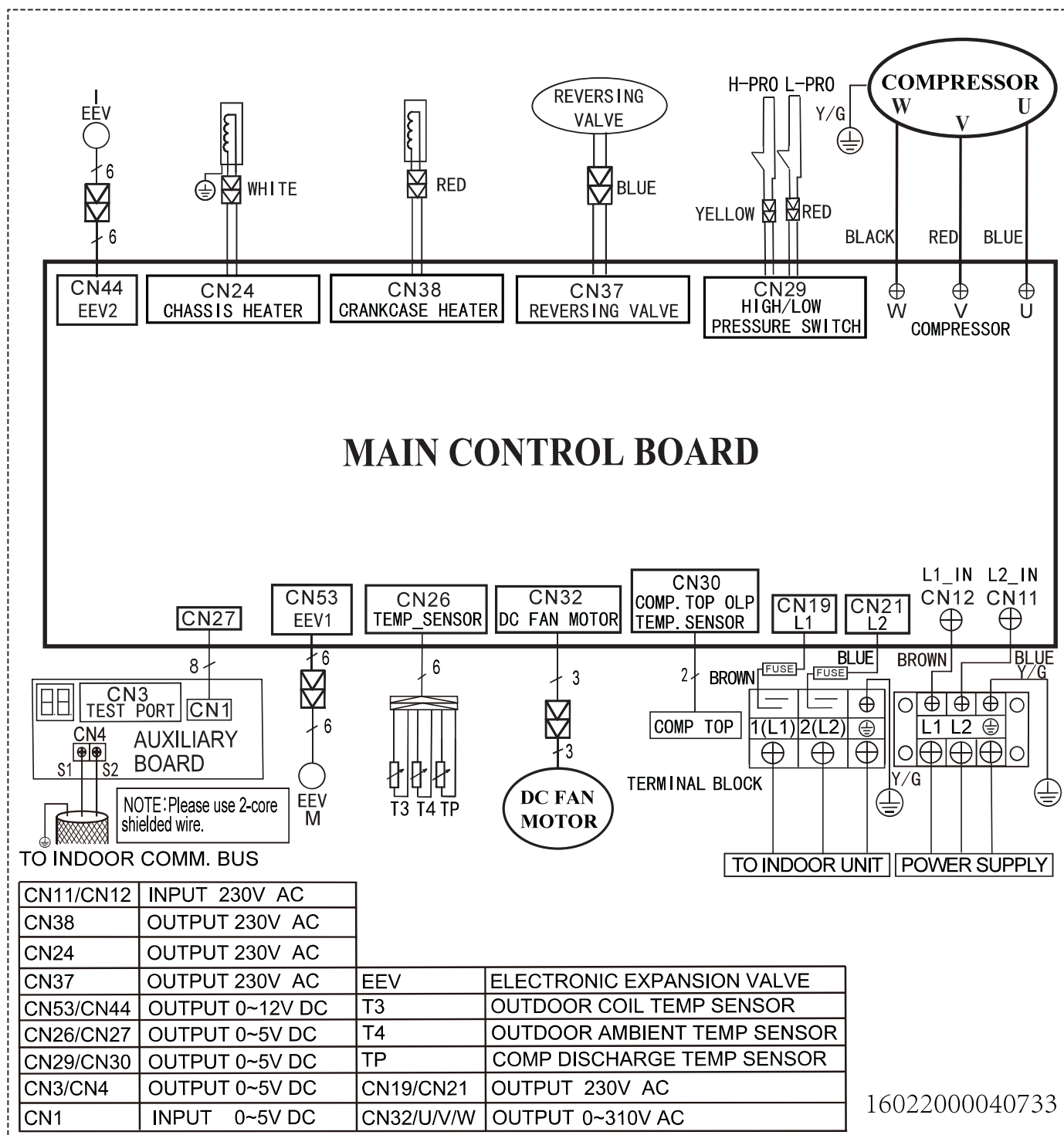
|               |                  |     |                             |
|---------------|------------------|-----|-----------------------------|
| CN4/CN11/CN12 | INPUT 230V AC    |     |                             |
| CN38          | OUTPUT 230V AC   |     |                             |
| CN24          | OUTPUT 230V AC   |     |                             |
| CN37          | OUTPUT 230V AC   |     |                             |
| CN53          | OUTPUT 0~12V DC  | EEV | ELECTRONIC EXPANSION VALVE  |
| CN26/CN27/CN3 | OUTPUT 0~5V DC   | T3  | OUTDOOR COIL TEMP SENSOR    |
| CN1           | INPUT 0~5V DC    | T4  | OUTDOOR AMBIENT TEMP SENSOR |
| CN32/U/V/W    | OUTPUT 0~310V AC | TP  | COMP DISCHARGE TEMP SENSOR  |

16022000040331

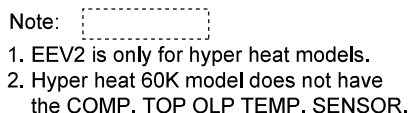
Outdoor unit wiring diagram: 16022000040650



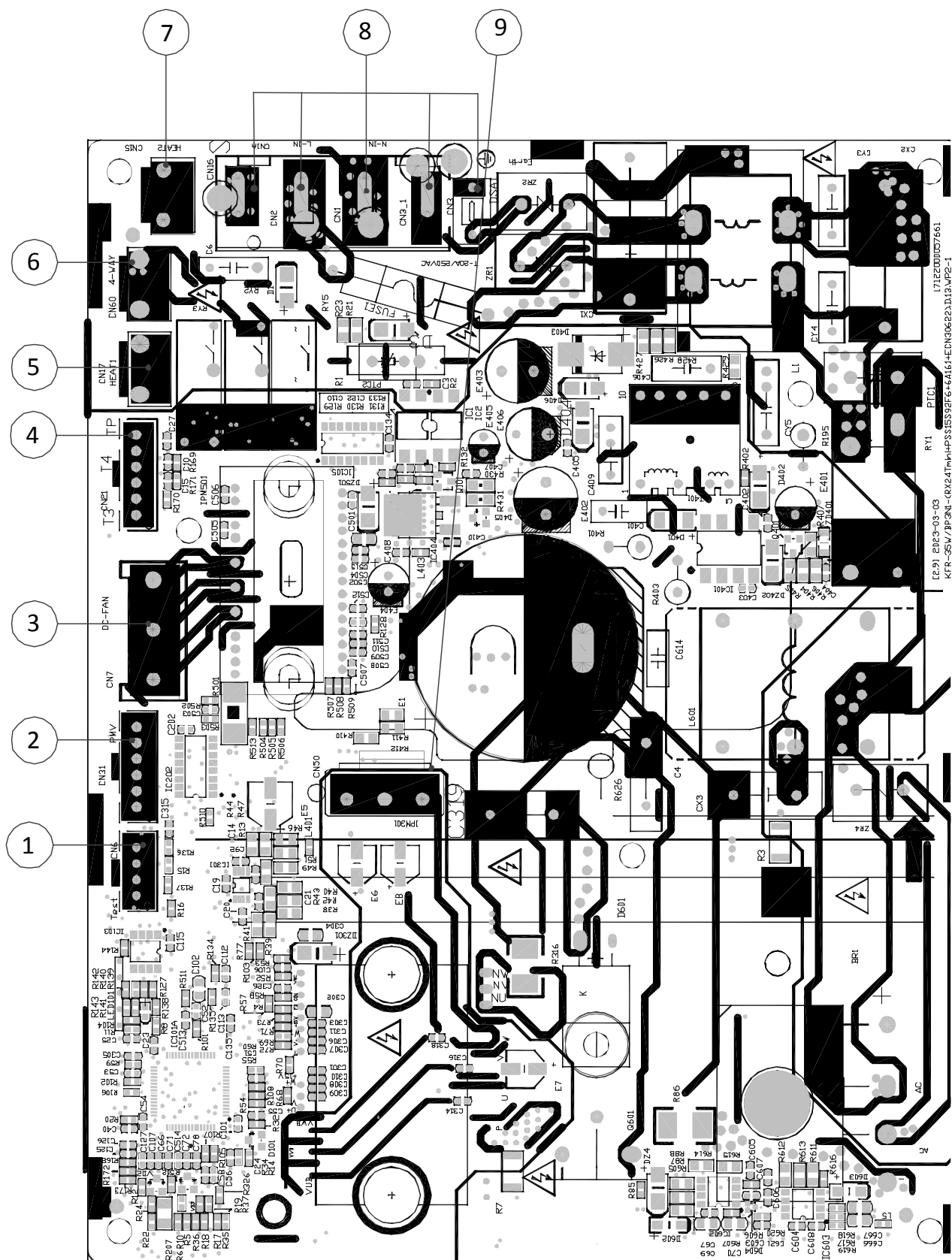
Outdoor unit wiring diagram:16022000040733



16022000040730



Outdoor unit printed circuit board diagram: 17122000057661



| No. | Name     | CN#  | Meaning                                                                                             |
|-----|----------|------|-----------------------------------------------------------------------------------------------------|
| 1   | TESTPORT | CN6  | used for testing                                                                                    |
| 2   | PMV      | CN31 | connect to electric expansion valve (Output:0~2V DC)                                                |
| 3   | DC-FAN   | CN7  | connect to DC fan (Output: 0~310V AC).                                                              |
| 4   | TP T4 T3 | CN21 | connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP (Output: 0~5V DC) |
| 5   | HEAT1    | CN17 | connect to compressor heater (Output: 230V AC).                                                     |
| 6   | 4-WAY    | CN60 | connect to 4 way valve (Output: 230V AC)                                                            |
| 7   | HEAT2    | CN15 | connect to chassis heater (Output: 230V AC)                                                         |
| 8   | CN1A     | CN16 | S: connect to indoor unit communication                                                             |
|     |          | CN2  | L_in: connect to L-line (230V AC input)                                                             |
|     |          | CN1  | N_in: connect to N-line (230V AC input)                                                             |
|     |          | CN3  | Earth                                                                                               |
| 9   | CN50     | W    | connect to compressor (Output: 0-310V AC)                                                           |
|     |          | V    |                                                                                                     |
|     |          | U    |                                                                                                     |

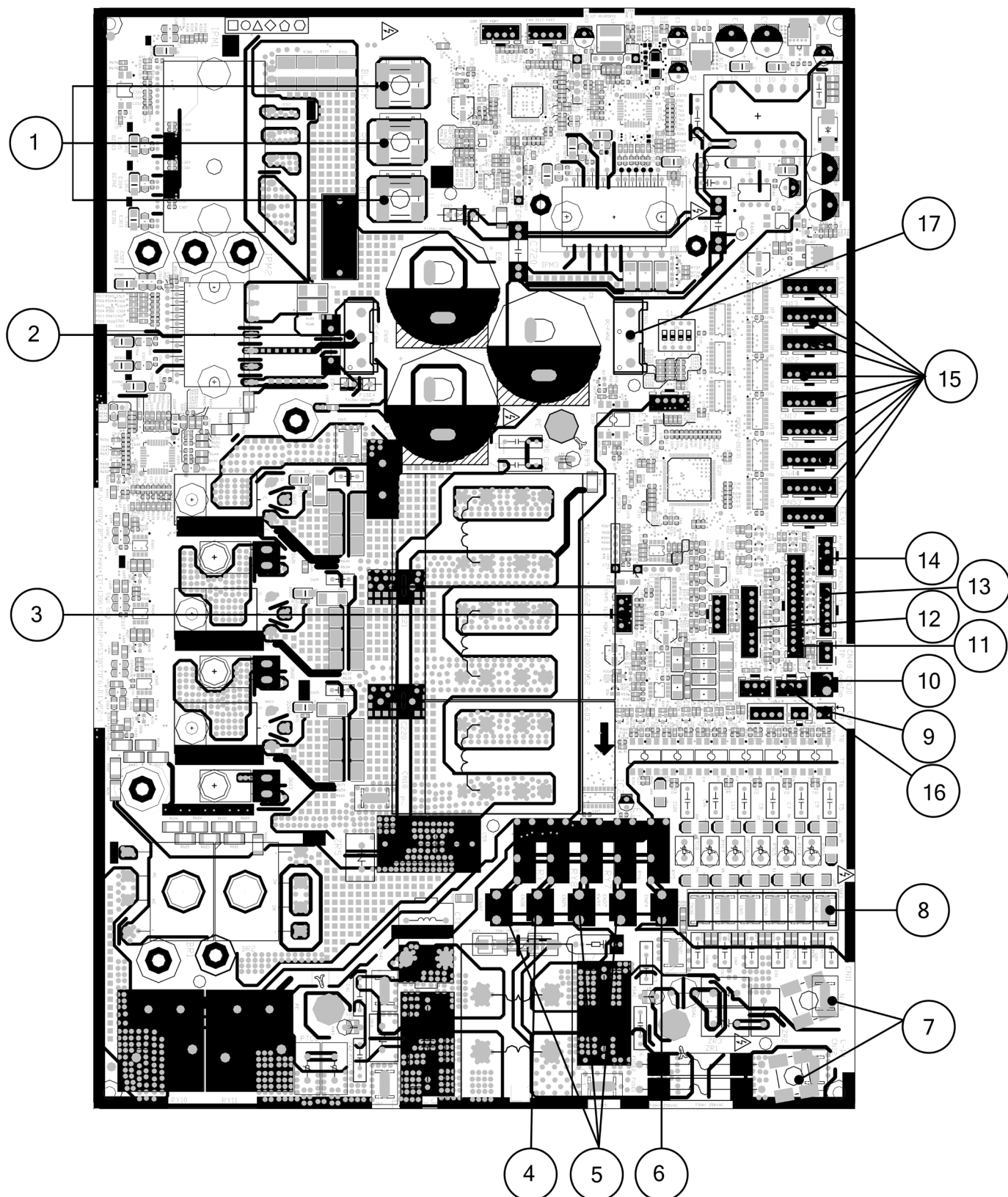
**Note:** This section is for reference only. Please take practicality as standard.



| No. | Name         | CN#    | Meaning                                                                                            |
|-----|--------------|--------|----------------------------------------------------------------------------------------------------|
| 1   | Power Supply | CN6    | Earth: connect to Ground                                                                           |
|     |              | CN7    | N_in: connect to N-line (230V AC input)                                                            |
|     |              | CN8    | L_in: connect to L-line (230V AC input)                                                            |
| 2   | S            | CN2    | S: connect to indoor unit communication(230V AC input)                                             |
| 3   | 4-WAY        | CN60   | connect to 4 way valve(Output: 230V AC)                                                            |
| 4   | AC-FAN       | CN5    | connect to AC fan                                                                                  |
| 5   | HEAT2        | CN19   | connect to chassis heater(Output: 230V AC)                                                         |
| 6   | TP T4 T3     | CN17   | connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP(Output: 0~5V DC) |
| 7   | PMV          | CN18   | connect to Electric Expansion Valve                                                                |
| 8   | HEAT1        | CN16   | connect to compressor heater(Output: 230V AC)                                                      |
| 9   | DC-FAN       | CN414  | connect to DC fan(Output: 0~310V AC)                                                               |
| 10  | TESTPORT     | CN23   | used for testing                                                                                   |
| 11  | FAN_IPM      | IPM501 | IPM for DC fan                                                                                     |
| 12  | COMP_IPM     | IPM1   | IPM for compressor                                                                                 |
| 13  | U            | CN27   | connect to compressor(Output: 0~310V AC)                                                           |
|     | V            | CN28   |                                                                                                    |
|     | W            | CN29   |                                                                                                    |
| 14  | EE_PORT      | CN505  | EEPROM programer port                                                                              |

**Note:** This section is for reference only. Please take practicality as standard.

Outdoor unit printed circuit board diagram: 17122300007152



| No. | Name                  | CN#  | Meaning                                                                                                                                                                 |
|-----|-----------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | COMPRESSOR            | W    | connect to compressor(Output: 0~310V AC)                                                                                                                                |
|     |                       | V    |                                                                                                                                                                         |
|     |                       | U    |                                                                                                                                                                         |
| 2   | DC-FAN1               | CN32 | connect to DC fan(Output: 0~310V AC)                                                                                                                                    |
| 3   | TESTPORT              | CN45 | used for testing                                                                                                                                                        |
| 4   | HEAT_Y                | CN38 | connect to compressor heater(Output: 230V AC)                                                                                                                           |
| 5   | 4-WAY                 | CN37 | connect to 4 way valve 1(Output: 230V AC)                                                                                                                               |
|     |                       | CN25 | connect to 4 way valve 2(Output: 230V AC)                                                                                                                               |
|     |                       | CN42 | connect to 4 way valve 3(Output: 230V AC)                                                                                                                               |
| 6   | HEAT_D                | CN24 | connect to chassis heater(Output: 230V AC)                                                                                                                              |
| 7   | Power Supply          | CN11 | N_in: connect to N-line (230V AC input)                                                                                                                                 |
|     |                       | CN12 | L_in: connect to L-line (230V AC input)                                                                                                                                 |
| 8   | S-A                   | CN43 | S: connect to indoor unit communication(230V AC input)                                                                                                                  |
|     | S-B                   |      |                                                                                                                                                                         |
|     | S-C                   |      |                                                                                                                                                                         |
|     | S-D                   |      |                                                                                                                                                                         |
|     | S-E                   |      |                                                                                                                                                                         |
|     | S-F                   |      |                                                                                                                                                                         |
| 9   | TBH-IN TBH-OUT T3B TF | CN9  | connect to cold plate inlet temp. sensor TBH-IN, cold plate outlet temp. sensor TBH-OUT, condenser coil middle temp. sensor T3B, refrigerant tube inlet temp. sensor TF |
| 10  | OLP TEMP. SENSOR      | CN30 | connect to compressor top temp. sensor (Output: 0~5V DC)                                                                                                                |
| 11  | T2B                   | CN28 | connect to evaporator coil outlet temperature sensor T2B                                                                                                                |
| 12  | /                     | CN27 | connect to key board CN1                                                                                                                                                |
| 13  | T3 T4 TP              | CN26 | connect to condenser coil temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP(Output: 0~5V DC)                                                            |
| 14  | H-PRO,L-RPO           | CN29 | connect to high and low pressure switch(pin1-pin2&pin3-pin4:5VDC pulse wave)                                                                                            |

| No. | Name    | CN#  | Meaning                                               |
|-----|---------|------|-------------------------------------------------------|
| 15  | EEVA    | CN17 | connect to electric expansion valve(Output: 0~12V DC) |
|     | EEVB    | CN16 |                                                       |
|     | EEVC    | CN22 |                                                       |
|     | EEVD    | CN14 |                                                       |
|     | EEVE    | CN13 |                                                       |
|     | EEVF    | CN1  |                                                       |
|     | EEV1    | CN53 |                                                       |
|     | EEV2    | CN44 |                                                       |
|     | EEV3    | CN3  |                                                       |
| 16  | H_YL    | CN49 | connect to high pressure sensor                       |
| 17  | DC-FAN2 | CN10 | connect to DC fan(Output: 0~310V AC)                  |

**Note:** This section is for reference only. Please take practicality as standard.

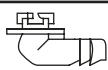
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# Installation

## Contents

1. **Accessories**
2. **Location Selection**
3. **Outdoor Unit Installation**
4. **Refrigerant Pipe Installation**
5. **Vacuum Drying and Leakage Checking**
6. **Additional Refrigerant Charge**
7. **Engineering of Insulation**
8. **Engineering of Electrical Wiring**
9. **Test Operation**

## 1. Accessories

| Name        | Shape                                                                             | Quantity |
|-------------|-----------------------------------------------------------------------------------|----------|
| Drain joint |  | 1        |
| Seal        |  | 1        |

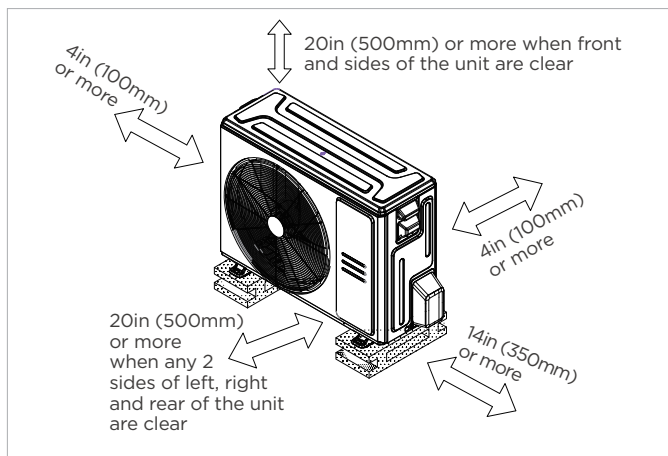
## 2. Location selection

**2.1 Unit location selection can refer to installation manual.**

**2.2 DO NOT install the unit in the following locations:**

- Near an obstacle that will block air inlets and outlets.
- Near a public street, crowded areas, or where noise from the unit will disturb others..
- Near animals or plants that will be harmed by hot air discharge.
- Near any source of combustible gas.
- In a location that is exposed to large amounts of dust
- In a location exposed to a excessive amounts of salty air.

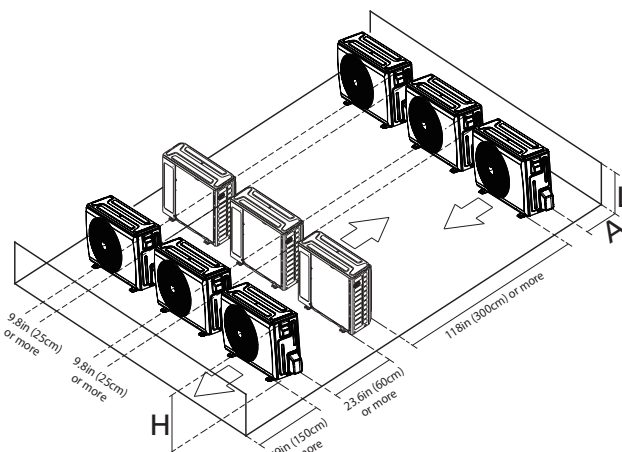
**2.3 Meets all spatial requirements shown in Installation Clearance Requirements below.**



## 2.4 Rows of series installation

The relations between H, A and L are as follows.

|            | L                    | A                     |
|------------|----------------------|-----------------------|
| $L \leq H$ | $L \leq 1/2H$        | 9.8in (25cm) or more  |
|            | $1/2H < L \leq H$    | 11.8in (30cm) or more |
| $L > H$    | Can not be installed |                       |



NOTE

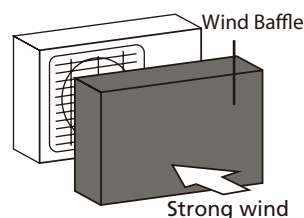
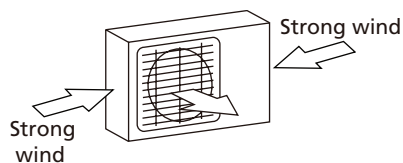
H: Unit height

L: Height of the wall behind the unit

A: Distance between unit and wall

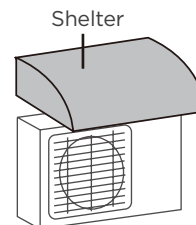
## 2.5 If the unit is exposed to heavy wind:

- Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds.



## 2.6 If the unit is frequently exposed to heavy rain or snow:

Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.



## 2.7 If the unit is frequently exposed to salty air (seaside):

Use outdoor unit that is specially designed to resist corrosion.

### 3. Outdoor unit installation

#### 3.1 Install drain joint(Heat pump unit only)

Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit.

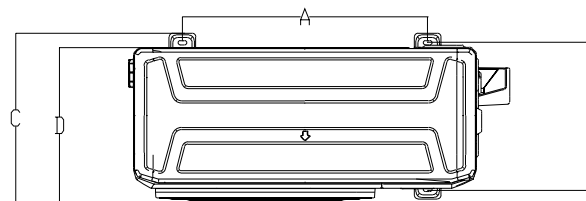
Note that there are two different types of drain joints depending on the type of outdoor unit.

If the drain joint comes with a rubber seal(see Fig. A ), do the following:

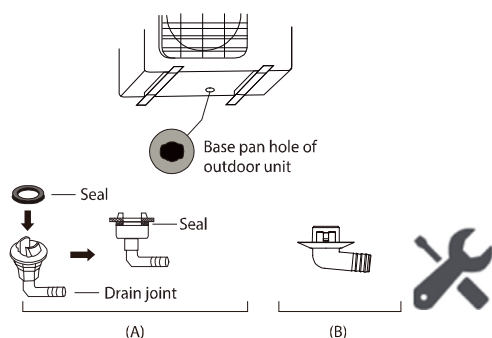
1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit. **For some panel plates, you need to use tool.**
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

If the drain joint doesn't come with a rubber seal (see Fig. B ), do the following:

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.



| Panel Plate                                               | Unit | D     | A     | B     | C     |
|-----------------------------------------------------------|------|-------|-------|-------|-------|
| SZ09H525ZMO<br>SZ12H525ZMO                                | inch | 11.93 | 17.80 | 11.26 | 12.36 |
|                                                           | mm   | 303   | 452   | 286   | 314   |
| HSZ09H525ZMO<br>HSZ12H525ZMO                              | inch | 12.99 | 20.12 | 12.48 | 13.62 |
|                                                           | mm   | 330   | 511   | 317   | 346   |
| SZ18H525ZMO<br>HSZ18H525ZMO                               | inch | 13.46 | 26.1  | 13.94 | 15.5  |
|                                                           | mm   | 342   | 663   | 354   | 394   |
| CSZ36H525ZMO                                              | inch | 14.76 | 24.2  | 15.6  | 17.3  |
|                                                           | mm   | 375   | 615   | 397   | 440   |
| SZ24H525ZMO<br>HSZ24H525ZMO<br>SZ30H525ZMO<br>SZ36H525ZMO | inch | 16.14 | 26.50 | 15.87 | 17.9  |
|                                                           | mm   | 410   | 673   | 403   | 455   |
| CSZ48H525ZMO<br>CSZ60H525ZMO                              | inch | 16.34 | 24.96 | 15.9  | 17.99 |
|                                                           | mm   | 415   | 634   | 404   | 457   |



#### 3.3 Anchor Outdoor Unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket with bolt(M10). Prepare the installation base of the unit according to the dimensions below.

The following is a list of different outdoor unit sizes and the distance between their mounting feet.

## 4. Refrigerant Pipe Installation

### 4.1 Maximum length and drop height

Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements shown in the following table.

#### Current Loop

| Capacity<br>(kBtu/h) | Max. Length<br>(ft/m) | Max. Elevation<br>(ft/m) |
|----------------------|-----------------------|--------------------------|
| 6k/9k/12k            | 82/25                 | 49.2/15                  |
| 18                   | 98.4/30               | 65.6/20                  |
| 24~33                | 164/50                | 82/25                    |
| 36                   | 213.3/65              | 98.4/30                  |

#### RS485

| Capacity<br>(kBtu/h) | Max. Length<br>(ft/m) | Max. Elevation<br>(ft/m) |
|----------------------|-----------------------|--------------------------|
| 36~60                | 246/75                | 98.4/30                  |

#### Caution:

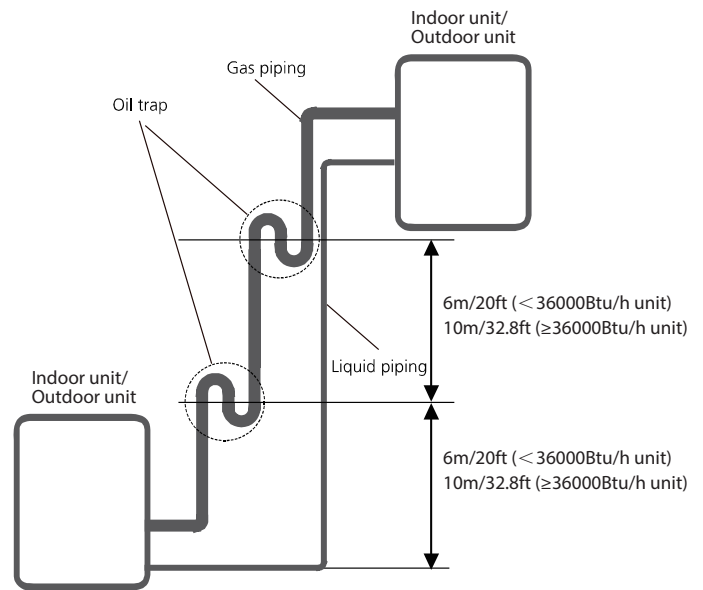
1. The capacity test is based on the standard length and the maximum permissive length is based on the system reliability.

#### 2. Oil traps

-If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of oil return. Oil traps in the rising gas piping can prevent this.

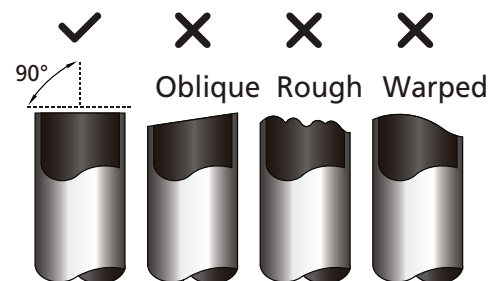
-An oil trap should be installed every 20ft(6m) of vertical suction line riser (<36kBtu/h unit).

-An oil trap should be installed every 32.8ft(10m) of vertical suction line riser (≥36kBtu/h unit).

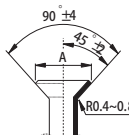


### 4.2 The procedure of connecting pipes

1. Choose the pipe size according to the specification table.
2. Confirm the cross way of the pipes.
3. Measure the necessary pipe length.
4. Cut the selected pipe with pipe cutter
  - Make the section flat and smooth.



5. Insulate the copper pipe
  - Before test operation, the joint parts should not be heat insulated.
6. Flare the pipe
  - Insert a flare nut into the pipe before flaring the pipe
  - According to the following table to flare the pipe.

| Pipe diameter<br>(inch(mm)) | Flare dimension A<br>(inch/mm) |           | Flare shape                                                                       |
|-----------------------------|--------------------------------|-----------|-----------------------------------------------------------------------------------|
|                             | Min                            | Max       |                                                                                   |
| Ø1/4 (Ø6.35)                | 0.33/8.4                       | 0.34/8.7  |  |
| Ø3/8 (Ø9.52)                | 0.52/13.2                      | 0.53/13.5 |                                                                                   |
| Ø1/2 (Ø12.7)                | 0.64/16.2                      | 0.65/16.5 |                                                                                   |
| Ø5/8 (Ø15.9)                | 0.76/19.2                      | 0.78/19.7 |                                                                                   |
| Ø3/4 (Ø19)                  | 0.91/23.2                      | 0.93/23.7 |                                                                                   |
| Ø7/8 (Ø22)                  | 1.04/26.4                      | 1.06/26.9 |                                                                                   |

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.

7. Drill holes if the pipes need to pass the wall.

8. According to the field condition to bend the pipes so that it can pass the wall smoothly.

9. Bind and wrap the wire together with the insulated pipe if necessary.

10. Set the wall conduit

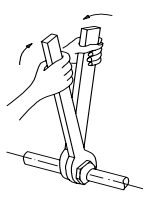
11. Set the supporter for the pipe.

12. Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

13. Connect the pipe to indoor unit and outdoor unit by using two spanners.

- Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the bell mouth, and too small torque may cause leakage. Refer the following table for different pipe connection.

| Pipe diameter<br>(inch(mm)) | Torque                | Sketch map                                                                          |
|-----------------------------|-----------------------|-------------------------------------------------------------------------------------|
|                             | N.m(lb.ft)            |                                                                                     |
| Ø1/4 (Ø6.35)                | 18~20<br>(13.3~14.8)  |  |
| Ø3/8 (Ø9.52)                | 32~39<br>(23.6~28.8)  |                                                                                     |
| Ø1/2 (Ø12.7)                | 49~59<br>(36.1~43.5)  |                                                                                     |
| Ø5/8 (Ø15.9)                | 57~71<br>(42~52.4)    |                                                                                     |
| Ø3/4 (Ø19)                  | 67~101<br>(49.4~74.5) |                                                                                     |
| Ø7/8 (Ø22)                  | 85~110<br>(62.7~81.1) |                                                                                     |

## 5. Vacuum Drying and Leakage Checking

### 5.1 Purpose of vacuum drying

- Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation. Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

### 5.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

### 5.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

#### 5.3.1 Ordinary vacuum drying

- When conduct first vacuum drying, connect pressure gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1 hour (vacuum degree of vacuum pump shall be reached -755mmHg).
- If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is moisture or leakage in pipeline system and need to go on with drying for half an hour.
- If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.
- Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

#### 5.3.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

- Finding moisture during flushing refrigerant pipe.
- Conducting construction on rainy day, because rain water might penetrated into pipeline.
- Construction period is long, and rain water might penetrated into pipeline.

4. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

1. Vacuum drying for 1 hour.
2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm<sup>2</sup>.

Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.

3. Vacuum drying again for half an hour.

If the pressure reached -755mmHg, start to pressure leakage test. If it cannot reached the value, repeat vacuum damage and vacuum drying again for 1 hour.

4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

## 6. Additional Refrigerant Charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe between indoor and outdoor unit. Refer the following formula to calculate the charge volume.

|       | Diameter of liquid pipe (inch(mm)) | Formula                                                                |
|-------|------------------------------------|------------------------------------------------------------------------|
| R454B | Ø1/4 (Ø6.35)                       | $V=0.16(15)\text{oz/ft(g/m)} \times (L - \text{standard pipe length})$ |
|       | Ø3/8 (Ø9.52)                       | $V=0.32(30)\text{oz/ft(g/m)} \times (L - \text{standard pipe length})$ |

**V:** Additional refrigerant charge volume.

**L :** The length of the liquid pipe.

Note:

- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

---

## 7 . Engineering of Insulation

### 7.1 Insulation of refrigerant pipe

#### 1. Operational procedure of refrigerant pipe insulation

Cut the suitable pipe → insulation (except joint section) → flare the pipe → piping layout and connection → vacuum drying → insulate the joint parts

#### 2. Purpose of refrigerant pipe insulation

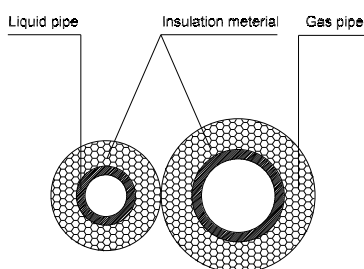
- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not enough, it shall form dew and cause leakage.
- Temperature of gas pipe is very high (generally 50-100 °C) during heating. Insulation work must be carried out to prevent hurt by carelessness touching.

#### 3. Insulation material selection for refrigerant pipe

- The burning performance should over 120 °C
- According to the local law to choose insulation materials
- The thickness of insulation layer shall be above 10mm. If in hot or wet environment place, the layer of insulation should be thicker accordingly.

#### 4. Installation highlights of insulation construction

- Gas pipe and liquid pipe shall be insulated separately, if the gas pipe and liquid pipe were insulated together; it will decrease the performance of air conditioner.



- The insulation material at the joint pipe shall be 5~10cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The insulation material at the joint pipe shall be banded to the gap pipe and liquid pipe tightly.
- The linking part should be use glue to paste together
- Be sure not bind the insulation material over-tight, it may extrude out the air in the material to cause bad insulation and cause easy aging of the material.

## 8. Engineering of Electrical Wring

### 1. Highlights of electrical wiring installation

- All wiring must comply with local and national electrical codes, regulations and must be installed by a licensed electrician.
- All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
- Power voltage should be within 90-110% of rated voltage. Insufcient power supply can cause malfunction, electrical shock, or fire.
- Installation of an external surge suppressor at the outdoor disconnect is recommended.
- If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
- Only connect the unit to an individual branch circuit. Do not connect another appliance to that outlet.
- Make sure to properly ground the air conditioner.
- Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
- Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
- If the unit has an auxiliary electric heater, it must be installed at least 40in (1 m) away from any combustible materials.
- To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning of the power, always wait 10 minutes or more before you touch the electrical components.
- Make sure that you do not cross your electrical wiring with your signal wiring.
- This may cause distortion, interference or possibly damage to circuit boards.
- No other equipment should be connected to the same power circuit.
- Connect the outdoor wires before connecting the indoor wires.

Table: Minimum Cross-Sectional Area able of Power and Signal Cables

| Rated Current of Appliance (A) | AWG |
|--------------------------------|-----|
| ≤ 6                            | 18  |
| 6 - 10                         | 16  |
| 10 - 16                        | 14  |
| 16 - 25                        | 12  |
| 25 - 32                        | 10  |

## 2. Outdoor Unit Wiring

### WARNING:

Before performing any electrical or wiring work, turn off the main power to the system.

1. Prepare the cable for connection

a. You must first choose the right cable size.

Choose the cable type according to the local electrical codes and regulations.

b. The size of the power supply cable, signal cable, fuse, and switch needed is determined by the Minimum Circuit Ampacity of the unit. The Minimum Circuit Ampacity is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

c. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal approximately 5.9in (150mm) of wire.

d. Strip the insulation from the ends.

e. Using a wire crimper, crimp u-lugs on the ends.

NOTE: When connecting the wires, strictly follow the wiring diagram found inside the electrical box cover.

2. Remove the 2 screws fixed the front right panel, then take it down to perform wire connection. (for double fan outdoor units)

Unscrew the big handle and remove it. (for single fan outdoor units)

3. Connect the u-lugs to the terminals Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.

4. Clamp down the cable with the cable clamp.

5. Insulate unused wires with electrical tape.

Keep them away from any electrical or metal parts.

6. Reinstall the cover of the electric control box.

## 9. Test Operation

**1. The test operation must be carried out after the entire installation has been completed.**

**2. Please confirm the following points before the test operation.**

- The indoor unit and outdoor unit are installed properly.
- Piping and wiring are properly connected.
- Ensure that there are no obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
- The refrigeration system does not leak.
- The drainage system is unimpeded and draining to a safe location.
- The heating insulation is properly installed.
- The grounding wires are properly connected
- The length of the piping and the added refrigerant stow capacity have been recorded.
- Power voltage is the correct voltage for the air conditioner.

CAUTION: Failure to perform the test run may result in unit damage, property damage or personal injury.

## 3. Test Run Instructions

1. Open both the liquid and gas stop valves.

2. Turn on the main power switch and allow the unit to warm up.

3. Set the air conditioner to COOL mode, and check the following points.

### Indoor unit

- Double check to see if the room temperature is being registered correctly.
- Ensure the manual buttons on the indoor unit works properly.
- Check to see that the drainage system is unimpeded and draining smoothly.
- Ensure there is no vibration or abnormal noise during operation.

### Outdoor unit

- Check to see if the refrigeration system is leaking.
- Make sure there is no vibration or abnormal noise during operation.
- Ensure the wind, noise, and water generated by the unit do not disturb your neighbors or pose a safety hazard.

## 4. Drainage Test

a. Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.

- 
- b. Turn on the main power switch and run the air conditioner in COOL mode.
  - c. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.
  - d. Make sure that there are no leaks in any of the piping.
  - e. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

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# Basic Functions

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# 1. Basic Functions

## 1.1 Abbreviation

Unit element abbreviations

| Abbreviation        | Element                                                    |
|---------------------|------------------------------------------------------------|
| T1                  | Indoor room temperature                                    |
| T2                  | Coil temperature of evaporator                             |
| T3                  | Coil temperature of condenser                              |
| T4                  | Outdoor ambient temperature                                |
| TP                  | Compressor discharge temperature                           |
| Tsc                 | Adjusted setting temperature                               |
| CDIFTEMP            | Cooling shutdown temperature                               |
| HDIFTEMP2           | Heating shutdown temperature                               |
| TCDE1               | Exit defrost temperature1                                  |
| TCDE2               | Exit defrost temperature2 (maintain for a period of time ) |
| TIMING_DEFROST_TIME | Enter defrost time                                         |

In this manual, such as CDIFTEMP, HDIFTEMP2, TCDE1, TCDE2, TIMING\_DEFROST\_TIME...etc., they are well-setting parameter of EEPROM.

## 1.2 Fan Mode

When fan mode is activated:

- The outdoor fan and compressor are stopped.

## 1.3 Cooling Mode

### 1.3.1 Compressor Control

Reach the configured temperature:

- 1) When the compressor runs continuously for less than 120 minutes.
  - If the following conditions are satisfied, the compressor ceases operation.
    - Calculated frequency(fb) is less than minimum limit frequency(FminC).
    - Compressor runs at FminC more than ten minutes.
    - Indoor room temperature(T1) is lower than or equal to (Tsc-CDIFTEMP-0.5°C/1°F)
- 2) When the compressor runs continuously for more than 120 minutes.
  - If the following conditions are satisfied, the compressor ceases operation.
    - Calculated frequency(fb) is less than minimum limit frequency(FminC).
    - Compressor runs at FminC more than 10 minutes.

- When indoor room temperature(T1) is lower than or equal to (Tsc-CDIFTEMP).

Note: CDIFTEMP is EEPROM setting parameter. It is 2°C(4°F) usually.

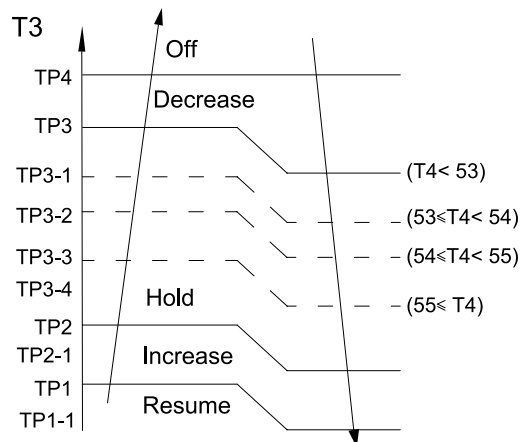
- 3) If one of the following conditions is satisfied, not judge protective time.

- Compressor running frequency is more than test frequency.
- When compressor running frequency is equal to test frequency, outdoor ambient temperature(T4) is more than 15°C(59°F) or outdoor ambient sensor(T4) fault.
- Change setting temperature.
- Turning on/off turbo or sleep function
- Various frequency limit shutdown occurs.

### 1.3.2 Outdoor Fan Control

- The outdoor unit will be run at different fan speed according to outdoor ambient temperature(T4) and compressor frequency.
- For different outdoor units, the fan speeds are different.

### 1.3.3 Condenser Temperature Protection



When the condenser temperature exceeds a configured value, the compressor ceases operation.

## 1.4 Heating Mode(Heat Pump Units)

### 1.4.1 Compressor Control

- 1) Reach the configured temperature
  - If the following conditions are satisfied, the compressor ceases operation.
    - Calculated frequency(fb) is less than minimum limit frequency(FminH).
    - Compressor runs at FminH more than 10 minutes.
    - T1 is higher than or equal to Tsc+ HDIFTEMP2.

Note: HDIFTEMP2 is EEPROM setting parameter. It is

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2°C(4°F) usually.

- If one of the following conditions is satisfied, not judge protective time.
  - Compressor running frequency is more than test frequency.
  - Compressor running frequency is equal to test frequency, outdoor ambient temperature(T4) is more than 15°C(59°F) or Outdoor ambient sensor(T4) fault.
  - Change setting temperature.
  - Turning on/off turbo or sleep function
- 2) When the current is higher than the predefined safe value, surge protection is activated, causing the compressor to cease operations.

#### 1.4.2 Outdoor Fan Control:

- The outdoor unit will be run at different fan speed according to outdoor ambient temperature(T4) and compressor frequency.
- For different outdoor units, the fan speeds are different.

#### 1.4.3 Defrosting mode

- The unit enters defrosting mode according to the temperature value of condenser temperature(T3) and outdoor ambient temperature(T4) as well as the compressor running time.
- In defrosting mode, the compressor continues to run, the indoor and outdoor motor will cease operation, the defrost light of the indoor unit will turn on, and the "df" symbol is displayed.
- If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
  - Condenser temperature(T3) rises above TCDE1.
  - Condenser temperature(T3) maintained above TCDE2 for 80 seconds.
  - Unit runs for 15 minutes consecutively in defrosting mode.
- If Outdoor ambient temperature(T4) is lower than or equal to -22°C(-8 °F) and compressor running time is more than TIMING\_DEFROST\_TIME, if any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
  - Unit runs for 10 minutes consecutively in defrosting mode.
  - Condenser temperature(T3) rises above 10°C/50°F..
- If any one of the following conditions is satisfied, the unit enters defrosting mode
  - If condenser temperature(T3) or outdoor ambient temperature(T4) is lower than -3°C for 30 seconds, Ts-T1 is lower than 5°C and compressor running time is more than EE\_TIME\_DEFROST7.

- If condenser temperature(T3) or outdoor ambient temperature(T4) is lower than -3°C for 30 seconds and compressor running time is more than EE\_TIME\_DEFROST7+30 minutes.
- If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
  - Condenser temperature(T3) rises above TCDE1+4°C/7°F.
  - Condenser temperature(T3) maintained above TCDE2+4°C/7°F for 80 seconds.
  - Unit runs for 15 minutes consecutively in defrosting mode.

# Troubleshooting

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# Troubleshooting

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## 6. Check Procedures

## 1. Safety Caution

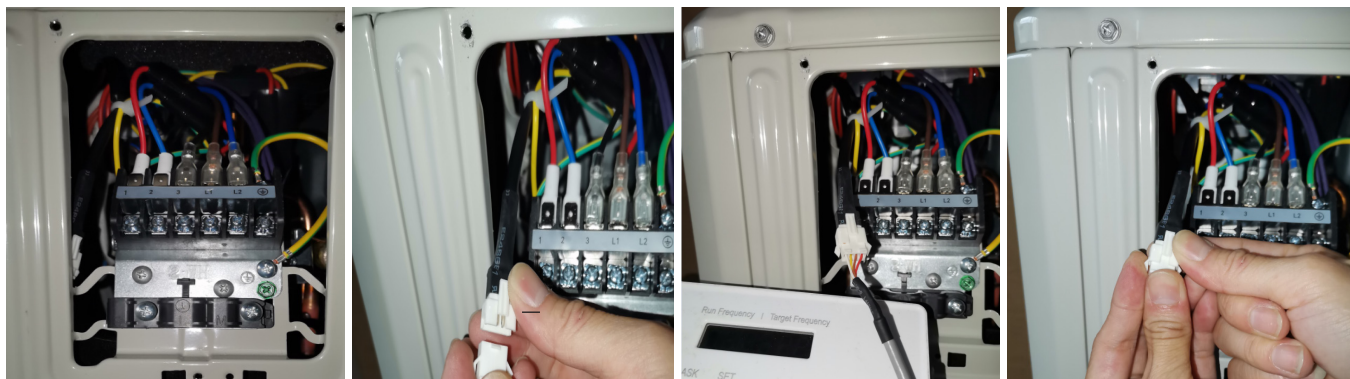
### WARNING

Be sure to turn off all power supplies or disconnect all wires to avoid electric shock. While checking indoor/outdoor PCB, please equip oneself with antistatic gloves or wrist strap to avoid damage to the board.

### WARNING

Electricity remains in capacitors even when the power supply is off. Ensure the capacitors are fully discharged before troubleshooting.

**NOTE:** If using the inverter test tool maintenance, remove the big handle, take out the detection cable, take out female end of the cable and connect the inverter test tool. After the maintenance is completed, insert the female end back into the port.



Note: This picture is for reference only. Actual appearance may vary.

## 2. General Troubleshooting

### 2.1 Error Display(For models with auxiliary boards)

| Display | Malfunction or Protection                                           | Solution                       |
|---------|---------------------------------------------------------------------|--------------------------------|
| dF      | Defrosting                                                          | Normal Display, not error code |
| FC      | Forced cooling                                                      |                                |
| EC01    | ODU fan speed out of control                                        | TS14                           |
| EC11    | Over current failure of outdoor DC fan motor                        | TS14                           |
| EC12    | Lack phase failure of outdoor DC fan motor                          | TS34                           |
| EC50    | ODU temp. sensor error(T3,T4.TP)                                    | TS16                           |
| EC51    | ODU EEPROM parameter error                                          | TS10                           |
| EC52    | ODU coil temp. sensor(T3) error                                     | TS16                           |
| EC53    | ODU ambient temp. sensor(T4) error                                  | TS16                           |
| EC54    | COMP. discharge temp. sensor(TP) error                              | TS16                           |
| EC55    | ODU IPM module temperature sensor malfunction                       | TS36                           |
| EC56    | IDU coil outlet temp. sensor(T2B) error                             | TS16                           |
| EC57    | Refrigerant pipe temperature sensor error                           | TS16                           |
| EL01    | IDU & ODU communication error                                       | TS11                           |
| PC00    | IPM module protection                                               | TS19                           |
| PC02    | Compressor top(or IPM) temp. protection/Refrigerant sensor error    | TS27                           |
| PC06    | Discharge temperature protection of compressor                      | TS25                           |
| PC08    | Outdoor overcurrent protection                                      | TS18                           |
| PC09    | High temperature protection of condenser                            | TS26                           |
| PC0F    | PFC module protection                                               | TS24                           |
| PC0L    | Low ambient temperature protection                                  | --                             |
| PC10    | ODU low AC voltage protection                                       | TS21                           |
| PC11    | ODU main control board DC bus high voltage protection               | TS21                           |
| PC12    | ODU main control board DC bus low voltage protection /341 MCE error | TS21                           |
| PC30    | System high pressure protection                                     | TS29                           |

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|      |                                                                      |      |
|------|----------------------------------------------------------------------|------|
| PC31 | System low pressure protection                                       | TS31 |
| PC40 | Communication error between ODU main chip and compressor driven chip | TS23 |
| PC42 | Compressor start failure of outdoor unit                             | TS17 |
| PC43 | ODU compressor lack phase protection                                 | TS34 |
| PC44 | ODU zero speed protection                                            | TS17 |
| PC45 | ODU IR chip drive failure                                            | TS35 |
| PC46 | Compressor speed has been out of control                             | TS17 |
| PC49 | Compressor overcurrent failure                                       | TS17 |
| LC06 | High temperature protection of Inverter module (IPM)                 | TS28 |
| PH90 | High temperature protection of evaporator                            | TS37 |
| PH91 | Low temperature protection of evaporator                             | TS38 |

### 3. Outdoor Unit Point Check Function

- A check switch is included on the auxiliary PCB.
- Push SW1 to check the unit's status while running. The digital display shows the following codes each time the SW1 is pushed.

| Number of Presses | Display                                               | Remark                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 00                | Normal display                                        | Displays running frequency, running state, or malfunction code                                                                                                                                                                                                                                                                                                       |
| 01                | Indoor unit capacity demand code                      | Actual data*HP*10<br><br>If capacity demand code is higher than 99, the digital display tube will show single digit and tens digit. (For example, the digital display tube show "5.0", it means the capacity demand is 15. the digital display tube show "60", it means the capacity demand is 6.0)<br><br>S communication, the digital display tube will show: "--" |
| 02                | Amendatory capacity demand code                       |                                                                                                                                                                                                                                                                                                                                                                      |
| 03                | The frequency after the capacity requirement transfer |                                                                                                                                                                                                                                                                                                                                                                      |
| 04                | The frequency after the frequency limit               |                                                                                                                                                                                                                                                                                                                                                                      |
| 05                | The frequency of sending to 341 chip                  |                                                                                                                                                                                                                                                                                                                                                                      |
| 06                | Indoor unit evaporator temperature (T2)               | If the temp. is lower than -9°C, the digital display tube will show "-9".<br>If the temp. is higher than 70°C, the digital display tube will show "70". If the indoor unit is not connected, the digital display tube will show: "--"                                                                                                                                |
| 07                | Condenser pipe temp.(T3)                              |                                                                                                                                                                                                                                                                                                                                                                      |
| 08                | Outdoor ambient temp.(T4)                             |                                                                                                                                                                                                                                                                                                                                                                      |
| 09                | Compressor discharge temp.(Tp)                        | The display value is between 0~199°C. If the temp. is lower than 0°C, the digital display tube will show "0". If the temp. is higher than 99°C, the digital display tube will show single digit and tens digit. ( For example, If the display shows 0.5, so 0.5 multiplied by 10 to become 5, then added to 100 to become 105°C.)                                    |
| 10                | AD value of current                                   | The display value is a hex number.                                                                                                                                                                                                                                                                                                                                   |
| 11                | AD value of voltage                                   | For example, the digital display tube shows "Cd", so $C*16^1+d*16^0=12*16+13=205$ , it means AD value is 205.<br><br>AD value is detected by the chip.                                                                                                                                                                                                               |
| 12                | Indoor unit running mode code                         | S communication: Standby:0, Cooling:1, Heating:2, Fan only 3, Drying:4, Forced cooling:6, Defrosting: 7,<br><br>485 communication: Standby:0, Fan only 1, Cooling:2, Heating:3, Forced cooling:4, Drying:6, Self clean:8                                                                                                                                             |
| 13                | Outdoor unit running mode code                        |                                                                                                                                                                                                                                                                                                                                                                      |
| 14                | EXV open angle                                        | Actual data/4.<br><br>If the value is higher than 99, the digital display shows single and double digits.<br><br>For example, if the digital display shows "2.0", so 2.0 multiplied by 10 to become 20, then added to 100 to become 120, the EXV open angle is $120 \times 4 = 480p$ .                                                                               |

|    |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |                                                                                                                                                                                                            |
|----|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15 | Frequency limit symbol                      | Bit7                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by IGBT radiator           | The display value is a hexadecimal number.<br>For example, the digital display show 2A, then Bit5=1, Bit3=1, and Bit1=1.<br><br>This means that a frequency limit may be caused by T2, T3, or the current. |
|    |                                             | Bit6                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by PFC                     |                                                                                                                                                                                                            |
|    |                                             | Bit5                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by high temperature of T2. |                                                                                                                                                                                                            |
|    |                                             | Bit4                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by low temperature of T2.  |                                                                                                                                                                                                            |
|    |                                             | Bit3                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by T3.                     |                                                                                                                                                                                                            |
|    |                                             | Bit2                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by Tp.                     |                                                                                                                                                                                                            |
|    |                                             | Bit1                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by current                 |                                                                                                                                                                                                            |
|    |                                             | Bit0                                                                                                                                                                                                                                                                                                                                                                                                                     | Frequency limit caused by voltage                 |                                                                                                                                                                                                            |
| 16 | Outdoor unit fan motor state                | Off: 0, Turbo:1 High speed:2, Med speed: 3, Low speed: 4, Breeze:5, Super breeze: 6 other speed:7                                                                                                                                                                                                                                                                                                                        |                                                   |                                                                                                                                                                                                            |
| 17 | IGBT radiator temp.                         | The display value is between 0~130°C. If the temp. is higher than 99°C, the digital display tube will show single digit and tens digit. (For example, the digital display tube show "0.5",it means the IGBT radiator temp. is 105°C. the digital display tube show "1.6",it means the IGBT radiator temp. is 116°C)                                                                                                      |                                                   |                                                                                                                                                                                                            |
| 18 | Indoor unit number                          | The indoor unit can communicate with outdoor unit well.<br>General:1, Twins:2                                                                                                                                                                                                                                                                                                                                            |                                                   |                                                                                                                                                                                                            |
| 19 | Evaporator pipe temp. T2 of 1# indoor unit  | If the temp. is lower than 0°C, the digital display tube will show "0".If the temp. is higher than 70°C, the digital display tube will show "70".<br>If the indoor unit is not connected, the digital display tube will show: "--"(heating T2, cooling T2B)                                                                                                                                                              |                                                   |                                                                                                                                                                                                            |
| 20 | Evaporator pipe temp. T2 of 2# indoor unit  |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |                                                                                                                                                                                                            |
| 21 | Reserved                                    |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |                                                                                                                                                                                                            |
| 22 | 1# Indoor unit capacity demand code         | S communication, the digital display tube will show: "--"                                                                                                                                                                                                                                                                                                                                                                |                                                   |                                                                                                                                                                                                            |
| 23 | 2# Indoor unit capacity demand code         | Actual data*HP*10                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |                                                                                                                                                                                                            |
| 24 | Reserved                                    | If capacity demand code is higher than 99, the digital display tube will show single digit and tens digit. (For example, the digital display tube show "5.0",it means the capacity demand is 15. the digital display tube show "60",it means the capacity demand is 6.0). If the indoor unit is not connected, the digital display tube will show: "--"<br><br>S communication, the digital display tube will show: "--" |                                                   |                                                                                                                                                                                                            |
| 25 | Room temp. T1 of 1# indoor unit             | If the temp. is lower than -9°C, the digital display tube will show "-9".<br>If the temp. is higher than 70°C, the digital display tube will show "70". If the indoor unit is not connected, the digital display tube will show: "--"<br><br>S communication, the digital display tube will show: "--"                                                                                                                   |                                                   |                                                                                                                                                                                                            |
| 26 | Room temp. T1 of 2# indoor unit             | If the temp. is lower than 0°C, the digital display tube will show "0".If the temp. is higher than 70°C, the digital display tube will show "70".<br>If the indoor unit is not connected, the digital display tube will show: "--"<br><br>S communication, the digital display tube will show: "--"                                                                                                                      |                                                   |                                                                                                                                                                                                            |
| 27 | Average room temp. T1                       | If the temp. is lower than 0°C, the digital display tube will show "0".If the temp. is higher than 70°C, the digital display tube will show "70".                                                                                                                                                                                                                                                                        |                                                   |                                                                                                                                                                                                            |
| 28 | Reason of stop                              |                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |                                                                                                                                                                                                            |
| 29 | Evaporator pipe temp. T2B of 1# indoor unit | If the temp. is lower than -9 °C, the digital display tube will show "-9".If the temp. is higher than 70°C, the digital display tube will show "70". If the indoor unit is not connected, the digital display tube will show: "--"<br><br>S communication, the digital display tube will show: "--"                                                                                                                      |                                                   |                                                                                                                                                                                                            |
| 30 | Evaporator pipe temp. T2B of 2# indoor unit | If the temp. is lower than 0 °C, the digital display tube will show "0".<br>If the temp. is higher than 70°C, the digital display tube will show "70". If the indoor unit is not connected, the digital display tube will show: "--"<br><br>S communication. the digital display tube will show: "--"                                                                                                                    |                                                   |                                                                                                                                                                                                            |

## 4. Quick Maintenance by Error Code

If you do not have the time to test which specific parts are faulty, you can directly change the required parts according to the error code. You can find the parts to replace by error code in the following table.

| Part requiring replacement          | Error Code |      |      |      |      |      |      |      |      |
|-------------------------------------|------------|------|------|------|------|------|------|------|------|
|                                     | ELO1       | EC50 | EC51 | EC52 | EC53 | EC54 | EC55 | EC56 | EC57 |
| Indoor PCB                          | ✓          | x    | x    | x    | x    | x    | x    | x    | x    |
| Outdoor PCB                         | ✓          | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    | ✓    |
| ODU coil temp. sensor               | x          | ✓    | x    | ✓    | x    | x    | x    | x    | x    |
| ODU ambient temp. sensor            | x          | ✓    | x    | x    | ✓    | x    | x    | x    | x    |
| COMP. discharge temp. sensor        | x          | ✓    | x    | x    | x    | ✓    | x    | x    | x    |
| IPM module temperature sensor       | x          | x    | x    | x    | x    | x    | ✓    | x    | x    |
| IDU coil outlet temp. sensor        | x          | x    | x    | x    | x    | x    | x    | ✓    | x    |
| Refrigerant pipe temperature sensor | x          | x    | x    | x    | x    | x    | x    | x    | ✓    |
| Condenser temperature sensor        | x          | x    | x    | x    | x    | x    | x    | x    | x    |
| Reactor                             | ✓          | x    | x    | x    | x    | x    | x    | x    | x    |
| IPM module board                    | ✓          | x    | x    | x    | x    | x    | x    | x    | x    |

| Part requiring replacement          | Error Code |      |                         |      |                                  |      |      |      |
|-------------------------------------|------------|------|-------------------------|------|----------------------------------|------|------|------|
|                                     | EC07/EC71  | PC00 | PC01/PC10/<br>PC11/PC12 | PC02 | PC08/PC42/<br>PC44/<br>PC46/PC49 | PC0F | PH90 | PH91 |
| Outdoor PCB                         | ✓          | ✓    | ✓                       | ✓    | ✓                                | ✓    | x    | x    |
| Outdoor fan motor                   | ✓          | ✓    | x                       | x    | ✓                                | x    | x    | x    |
| Reactor or inductance               | x          | ✓    | ✓                       | x    | ✓                                | ✓    | x    | x    |
| Compressor                          | x          | ✓    | x                       | x    | x                                | x    | x    | x    |
| IPM module board                    | x          | ✓    | ✓                       | x    | ✓                                | x    | x    | x    |
| Bridge rectifier                    | x          | ✓    | ✓                       | x    | ✓                                | x    | x    | x    |
| Evaporator coil temperature sensor  | x          | x    | x                       | x    | x                                | x    | ✓    | ✓    |
| PFC module                          | x          | x    | x                       | x    | x                                | ✓    | x    | x    |
| Additional refrigerant              | x          | x    | x                       | x    | x                                | x    | x    | x    |
| Over load protector                 | x          | x    | x                       | ✓    | x                                | x    | x    | x    |
| ODU ambient temp. sensor            | x          | x    | x                       | x    | x                                | x    | x    | x    |
| Refrigerant pipe temperature sensor | x          | x    | x                       | x    | x                                | x    | x    | x    |
| Indoor fan                          | x          | x    | x                       | x    | x                                | x    | ✓    | x    |
| Indoor PCB                          | x          | x    | x                       | x    | x                                | x    | ✓    | ✓    |

| Part requiring replacement   | Error Code |      |      |      |      |      |      |      |
|------------------------------|------------|------|------|------|------|------|------|------|
|                              | PC40       | EC12 | PC43 | PC45 | PC06 | PC08 | PC30 | PC31 |
| Outdoor PCB                  | ✓          | ✓    | ✓    | x    | ✓    | ✓    | ✓    | ✓    |
| Outdoor fan motor            | x          | ✓    | x    | x    | x    | ✓    | ✓    | ✓    |
| ODU coil temp. sensor        | x          | x    | x    | x    | x    | ✓    | x    | x    |
| COMP. discharge temp. sensor | x          | x    | x    | x    | ✓    | x    | x    | x    |
| Compressor                   | x          | x    | ✓    | x    | x    | x    | x    | x    |
| IPM module board             | x          | x    | x    | ✓    | x    | x    | x    | x    |
| Additional refrigerant       | x          | x    | x    | x    | ✓    | ✓    | x    | ✓    |
| Electric control box         | ✓          | x    | x    | x    | x    | x    | x    | x    |
| High pressure switch         | x          | x    | x    | x    | x    | x    | ✓    | x    |
| Low pressure switch          | x          | x    | x    | x    | x    | x    | x    | ✓    |

## 5. Troubleshooting by Error Code

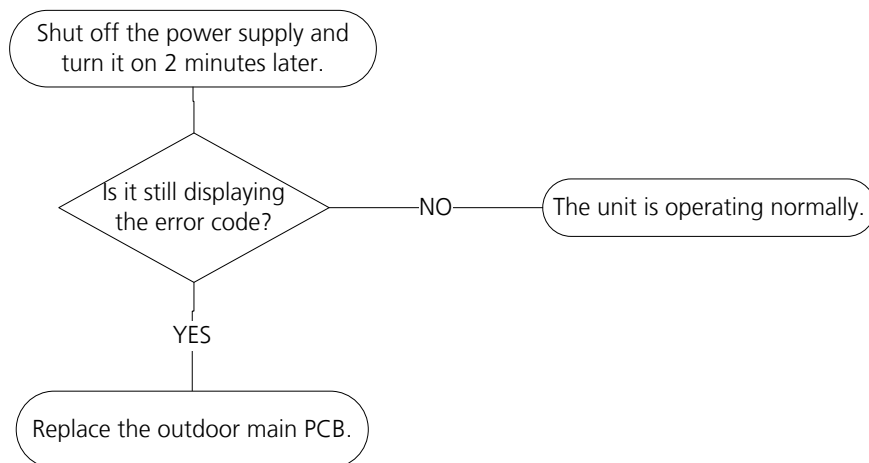
### 5.1 EC51 (ODU EEPROM parameter error diagnosis and solution)

**Description:** Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.

**Recommended parts to prepare:**

- Indoor PCB
- Outdoor PCB

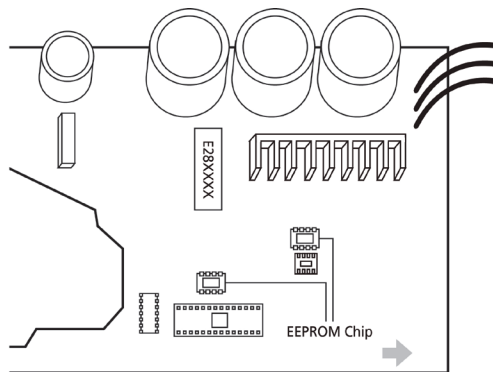
**Troubleshooting and repair:**



**Remarks:**

**EEPROM:** A read-only memory whose contents can be erased and reprogrammed using a pulsed voltage.

The location of the EEPROM chip on the outdoor PCB is shown in the following image:



This pictures are only for reference, actual appearance may vary.

## 5.2 EL01(IDU & ODU communication error diagnosis and solution)

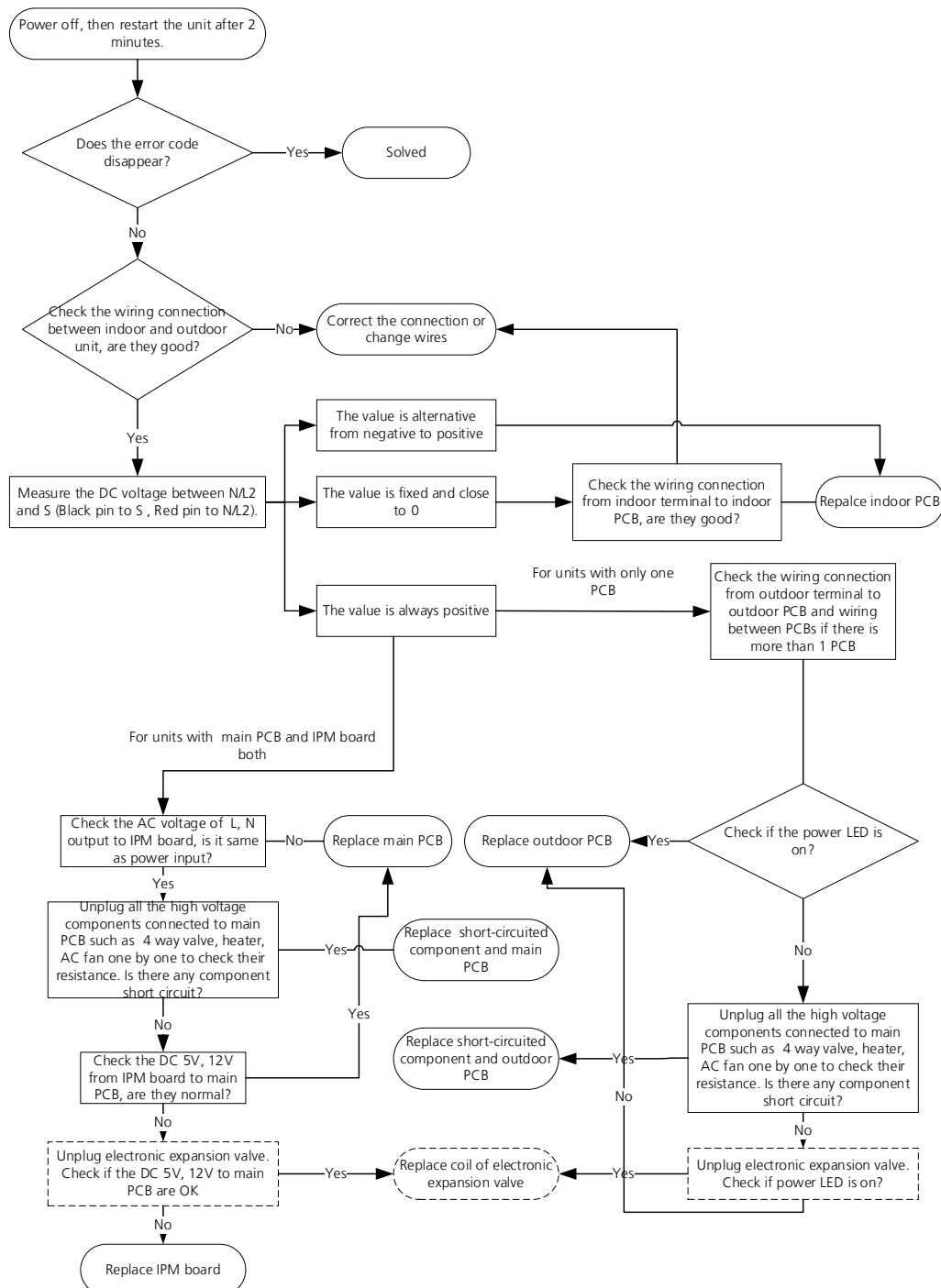
**Description:** Indoor unit can not communicate with outdoor unit

**Recommended parts to prepare:**

- Indoor PCB
- Outdoor PCB
- Reactor

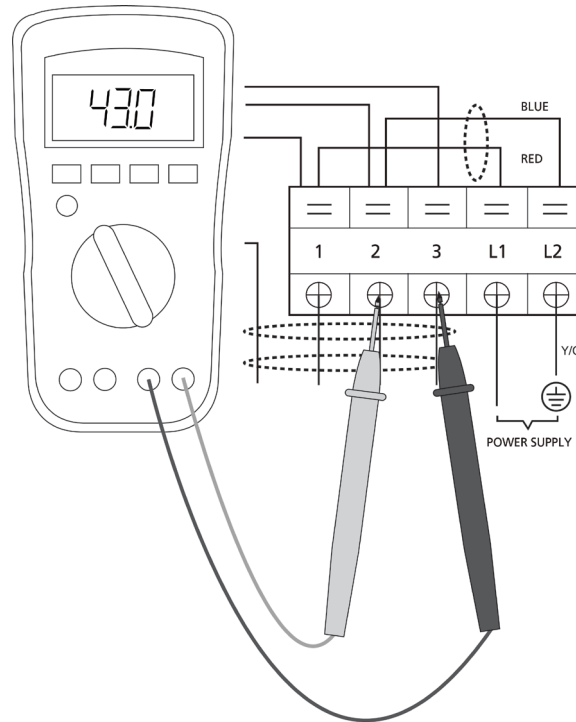
**Troubleshooting and repair:**

**Current loop Communication(S Communication):**



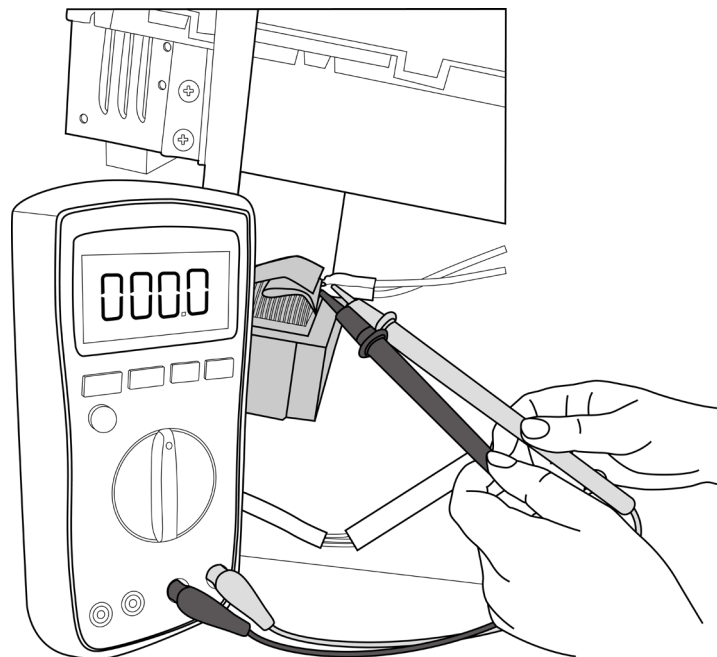
### Remarks:

- Use a multimeter to test the DC voltage between 2 port(or S or L2 port) and 3 port(or N or S port) of outdoor unit.  
The red pin of multimeter connects with 2 port(or S or L2 port) while the black pin is for 3 port(or N or S port) .
- When AC is operating normally, the voltage is moving alternately as positive values and negative values
- If the outdoor unit has malfunction, the voltage has always been the positive value.
- While if the indoor unit has malfunction, the voltage has always been a certain value.



**S and N  
or  
L2 and S  
or  
2 and 3**

- Use a multimeter to test the resistance of the reactor which does not connect with capacitor.
- The normal value should be around zero ohm. Otherwise, the reactor must have malfunction.



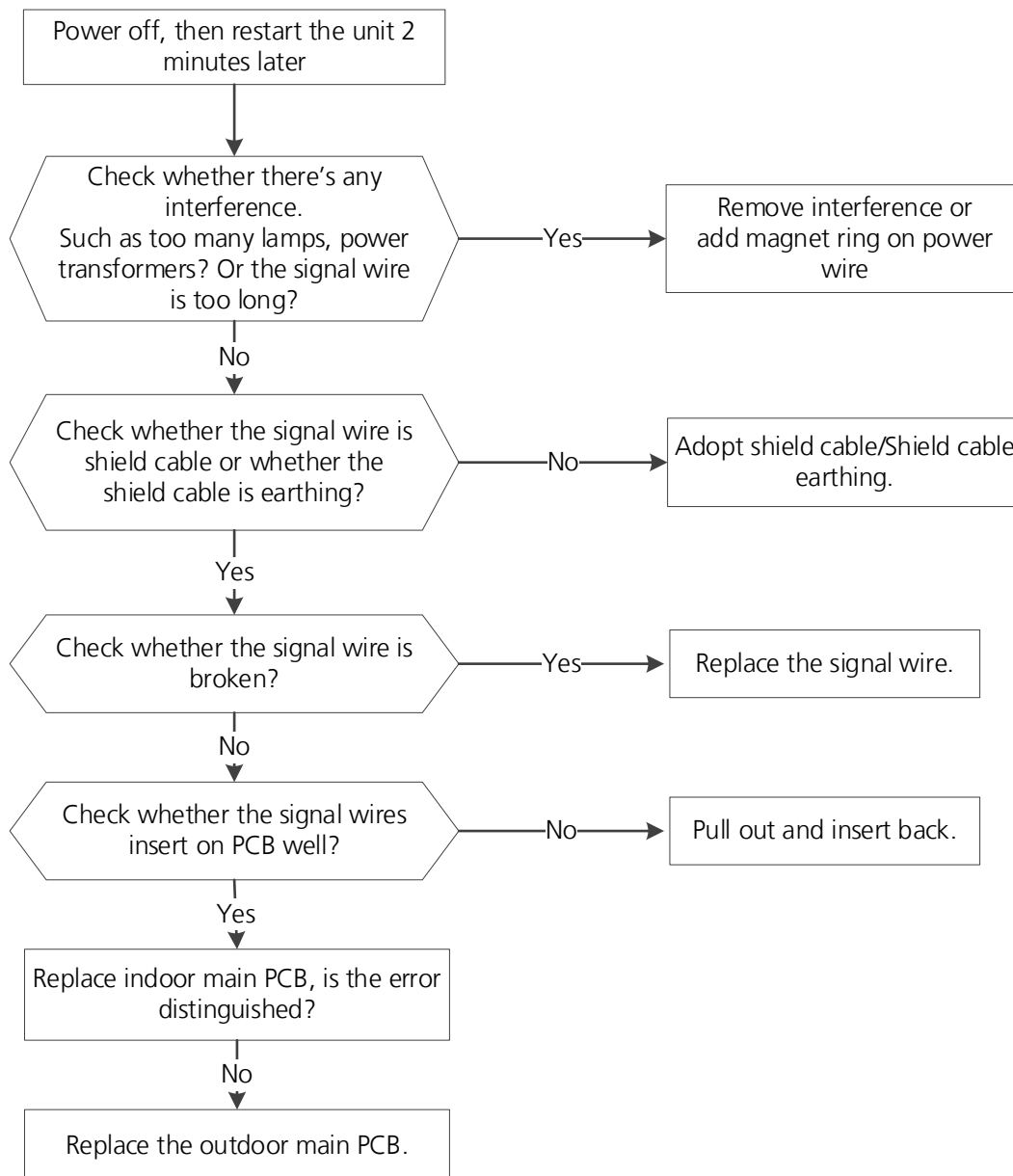
**Note:** The picture and the value are only for reference, actual condition and specific value may vary.

## 485 Communication(S1,S2 Communication):

### Recommended parts to prepare:

- Signal wires
- Magnet ring
- Indoor PCB
- Outdoor PCB

### Troubleshooting and repair:



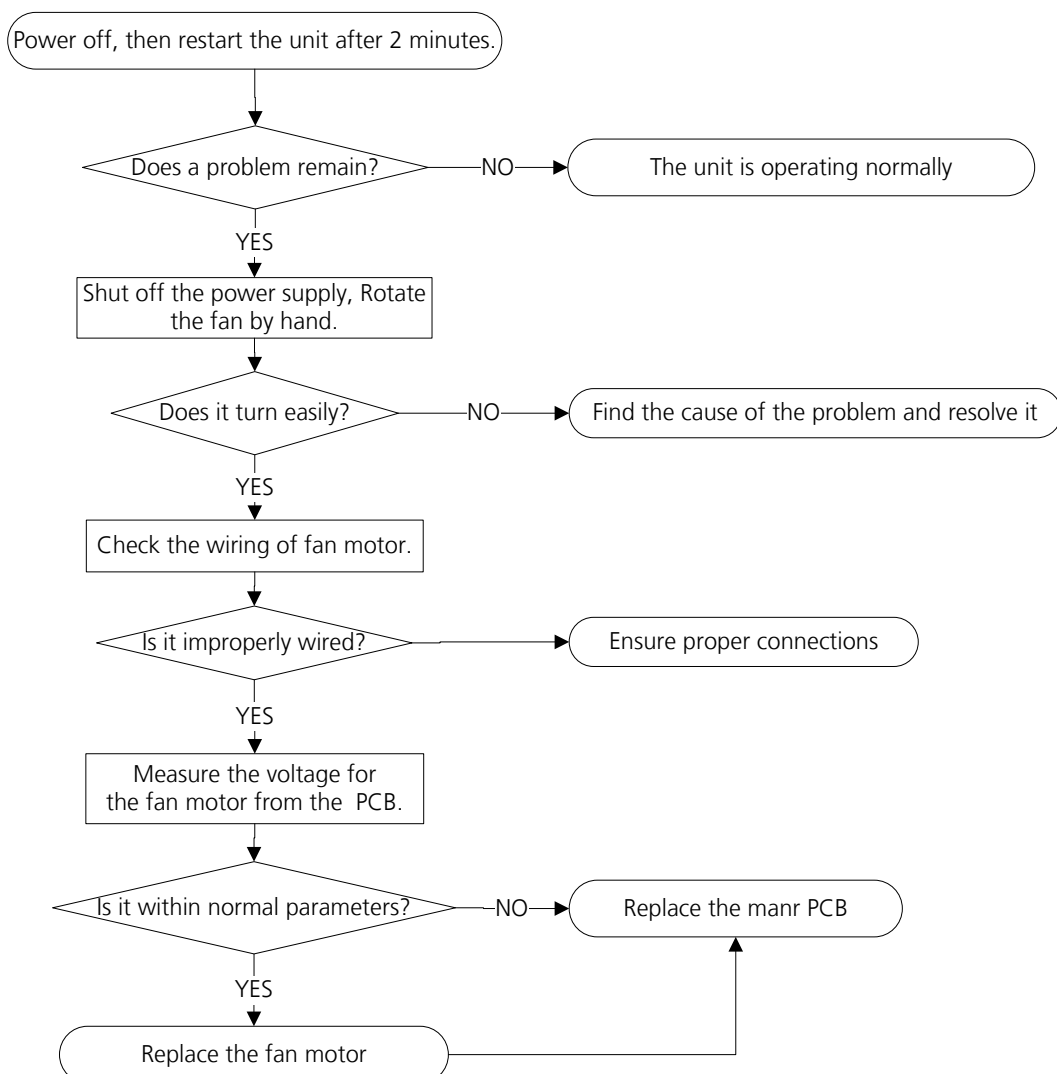
### 5.3 EC07 (ODU fan speed out of control)/EC71(Over Current Failure of Outdoor DC Fan Motor) Diagnosis and Solution

**Description:** When indoor / outdoor fan speed keeps too low or too high for a certain time, the LED displays the failure code and the AC turns off.

#### Recommended parts to prepare:

- Connection wires
- Fan assembly
- Fan motor
- PCB

#### Troubleshooting and repair:



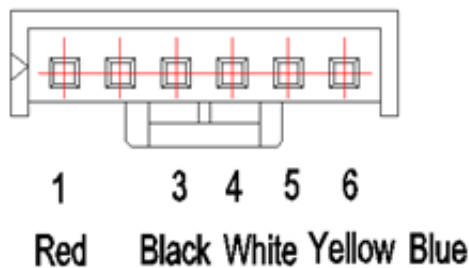
## Index:

### 1. Outdoor DC Fan Motor(control chip is in fan motor)

Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, the PCB must has problems and need to be replaced.

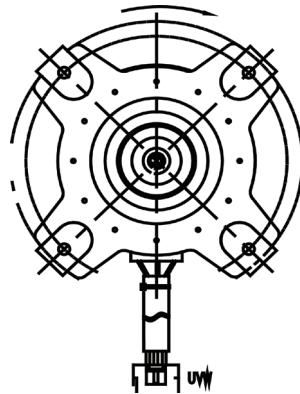
- DC motor voltage input and output (voltage: 220-240V~):

| No. | Color  | Signal | Voltage    |
|-----|--------|--------|------------|
| 1   | Red    | Vs/Vm  | 192V~380V  |
| 2   | ---    | ---    | ---        |
| 3   | Black  | GND    | 0V         |
| 4   | White  | Vcc    | 13.5-16.5V |
| 5   | Yellow | Vsp    | 0~6.5V     |
| 6   | Blue   | FG     | 13.5-16.5V |



### 2. Outdoor DC Fan Motor (control chip is in outdoor PCB)

Release the UVW connector. Measure the resistance of U-V, U-W, V-W. If the resistance is not equal to each other, the fan motor must has problems and need to be replaced. otherwise the PCB must has problems and need to be replaced.



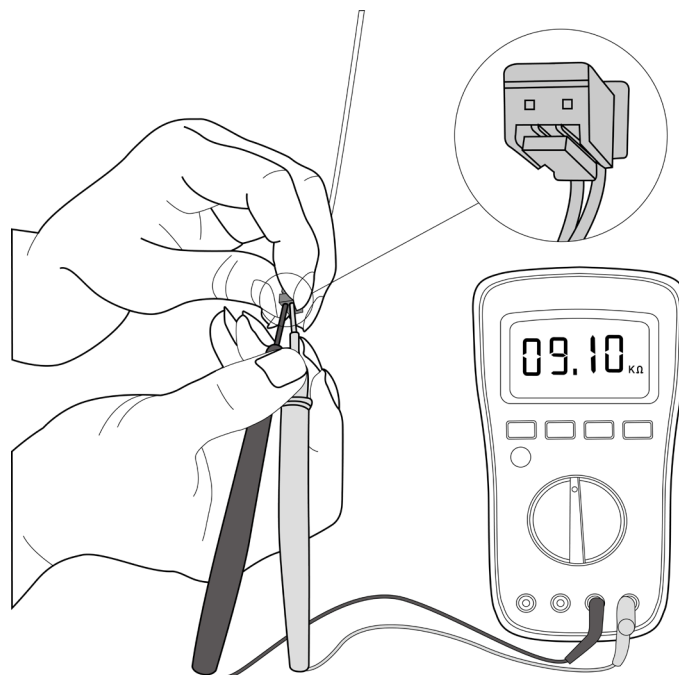
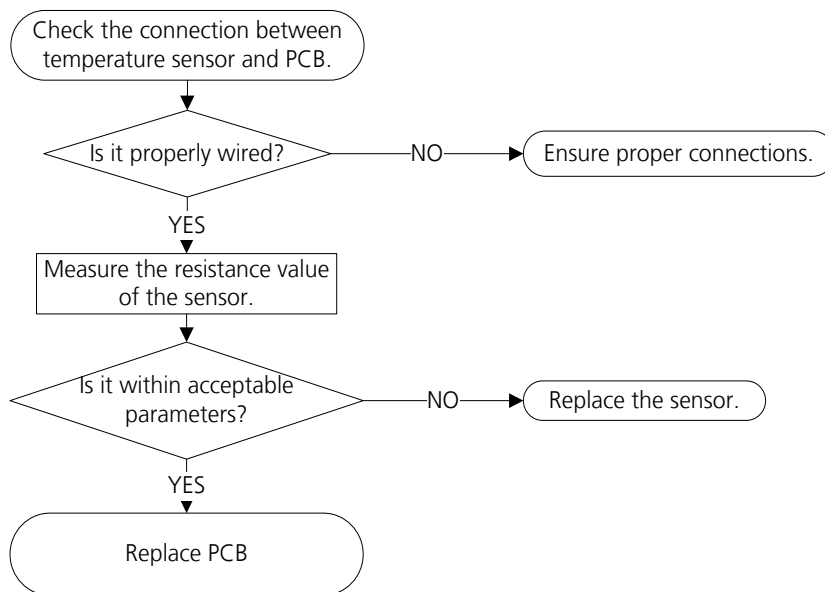
## 5.4 EC52/EC53/EC54/EC56/EC57/EC50 (Open circuit or short circuit of temperature sensor diagnosis and solution)

**Description:** If the sampling voltage is lower than 0.06V or higher than 4.94V, the LED displays the failure code.

**Recommended parts to prepare:**

- Connection wires
- Sensors
- Outdoor PCB

**Troubleshooting and repair:**



This picture and the value are only for reference, actual appearance and value may vary

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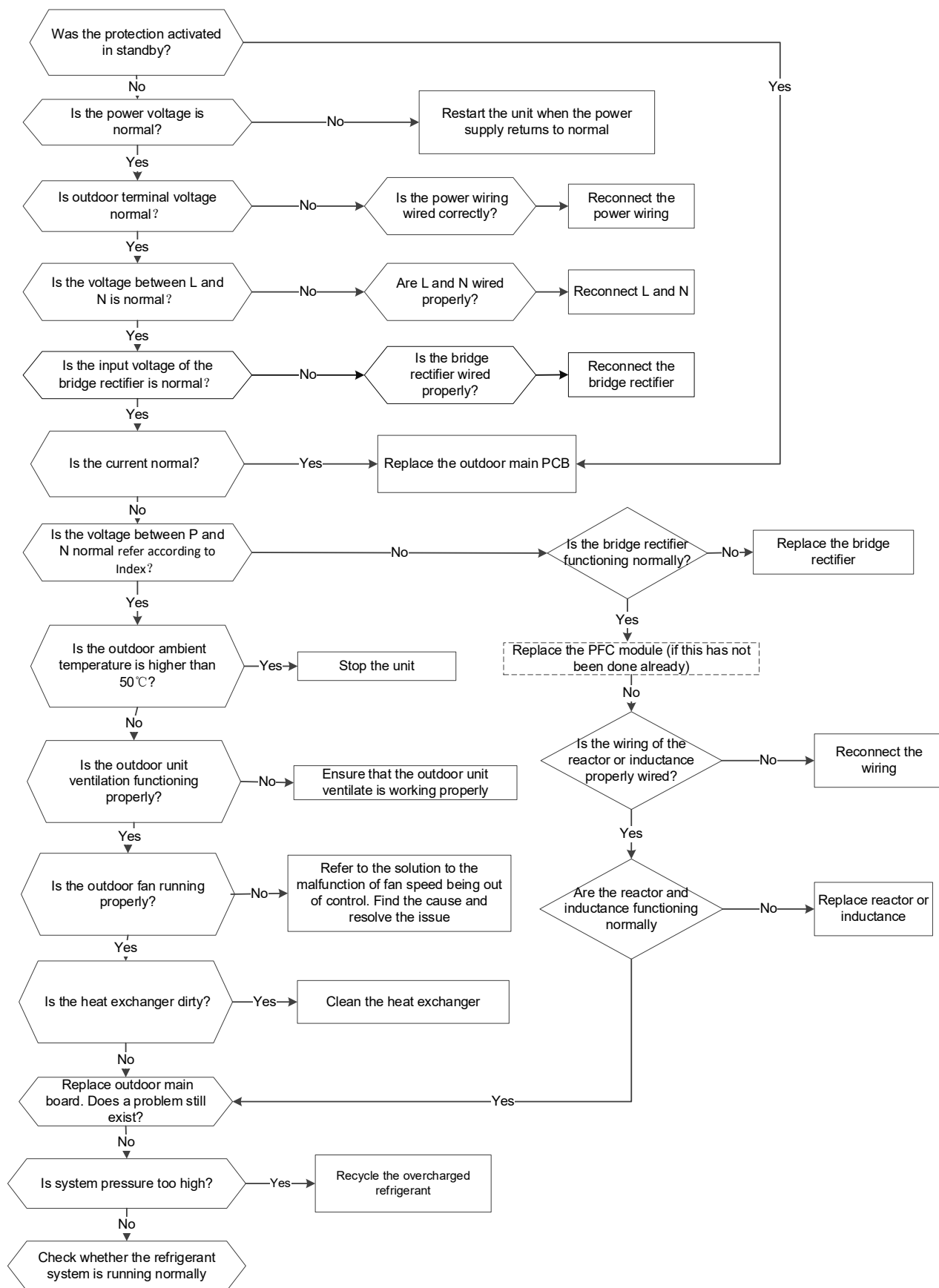
## 5.5 PC08(Current overload protection)/PC42(Compressor start failure of outdoor unit)/PC44(ODU zero speed protection) /PC46(Compressor speed has been out of control)/PC49(Compressor overcurrent failure)

**Description:** An abnormal current rise is detected by checking the specified current detection circuit.

**Recommended parts to prepare:**

- Outdoor PCB
- Connection wires
- Bridge rectifier
- PFC circuit or reactor
- Refrigeration piping system
- Pressure switch
- Outdoor fan
- IPM module board

**Troubleshooting and repair:**



---

## 5.6 PC00(IPM malfunction diagnosis and solution)

**Description:** When the voltage signal the IPM sends to the compressor drive chip is abnormal, the LED displays the failure code and the AC turns off.

### Recommended parts to prepare:

- Connection wires
- IPM module board
- Outdoor fan assembly
- Compressor
- Outdoor PCB
- Reactor or inductance
- Bridge rectifier

### Troubleshooting and repair:

At first test the resistance between every two ports of U, V, W of IPM and P, N. If any result of them is 0 or close to 0, the IPM is defective. Otherwise, please follow the procedure below:



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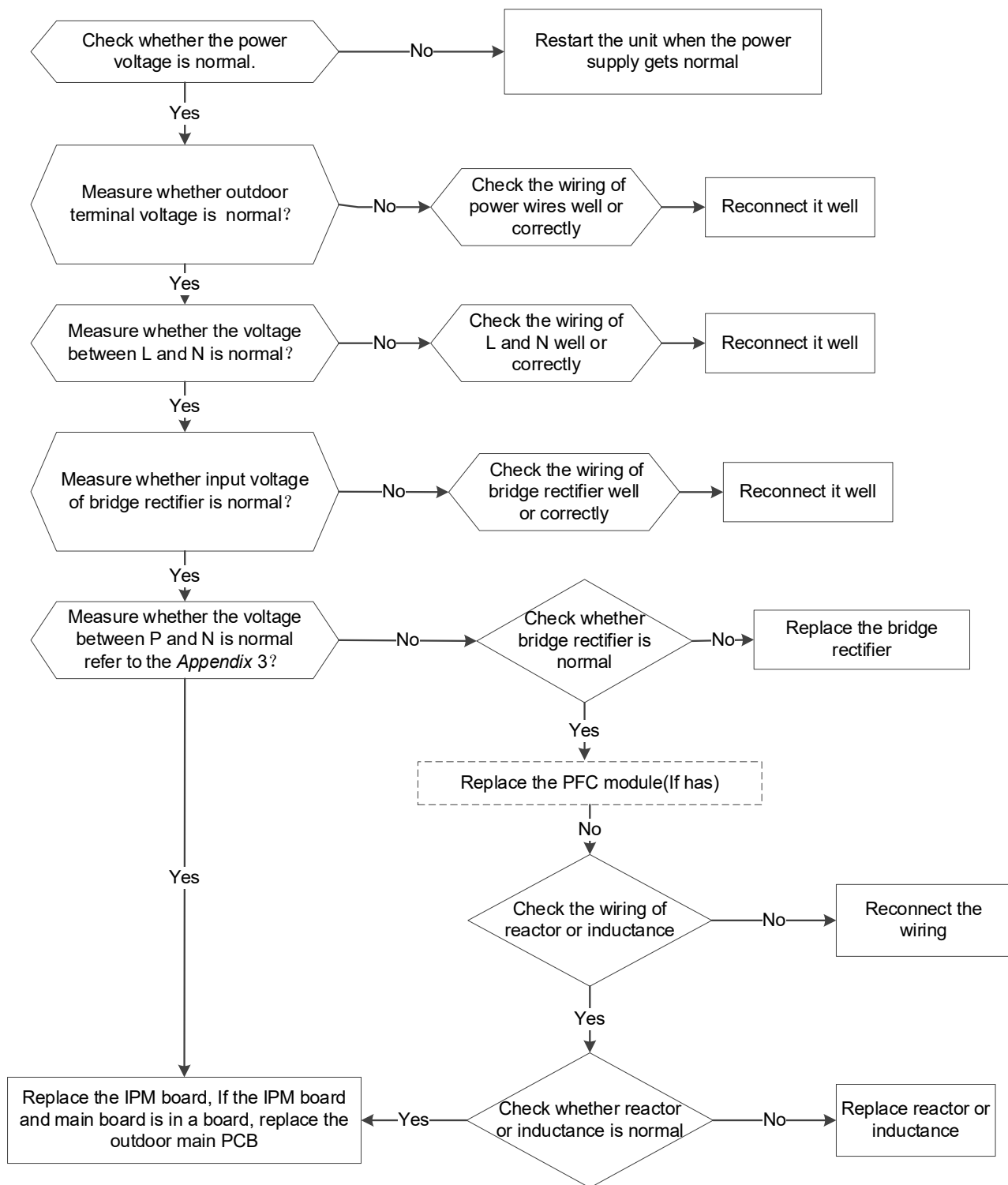
## 5.7 PC01(Over voltage or too low voltage protection)/PC10(ODU low AC voltage protection)/PC11(ODU main control board DC bus high voltage protection)/PC12(ODU main control board DC bus low voltage protection /341 MCE error) Diagnosis and Solution

**Description:** Abnormal increases or decreases in voltage are detected by checking the specified voltage detection circuit.

### Recommended parts to prepare:

- Power supply wires
- IPM module board
- Outdoor PCB
- Bridge rectifier
- PFC circuit or reactor

### Troubleshooting and repair:



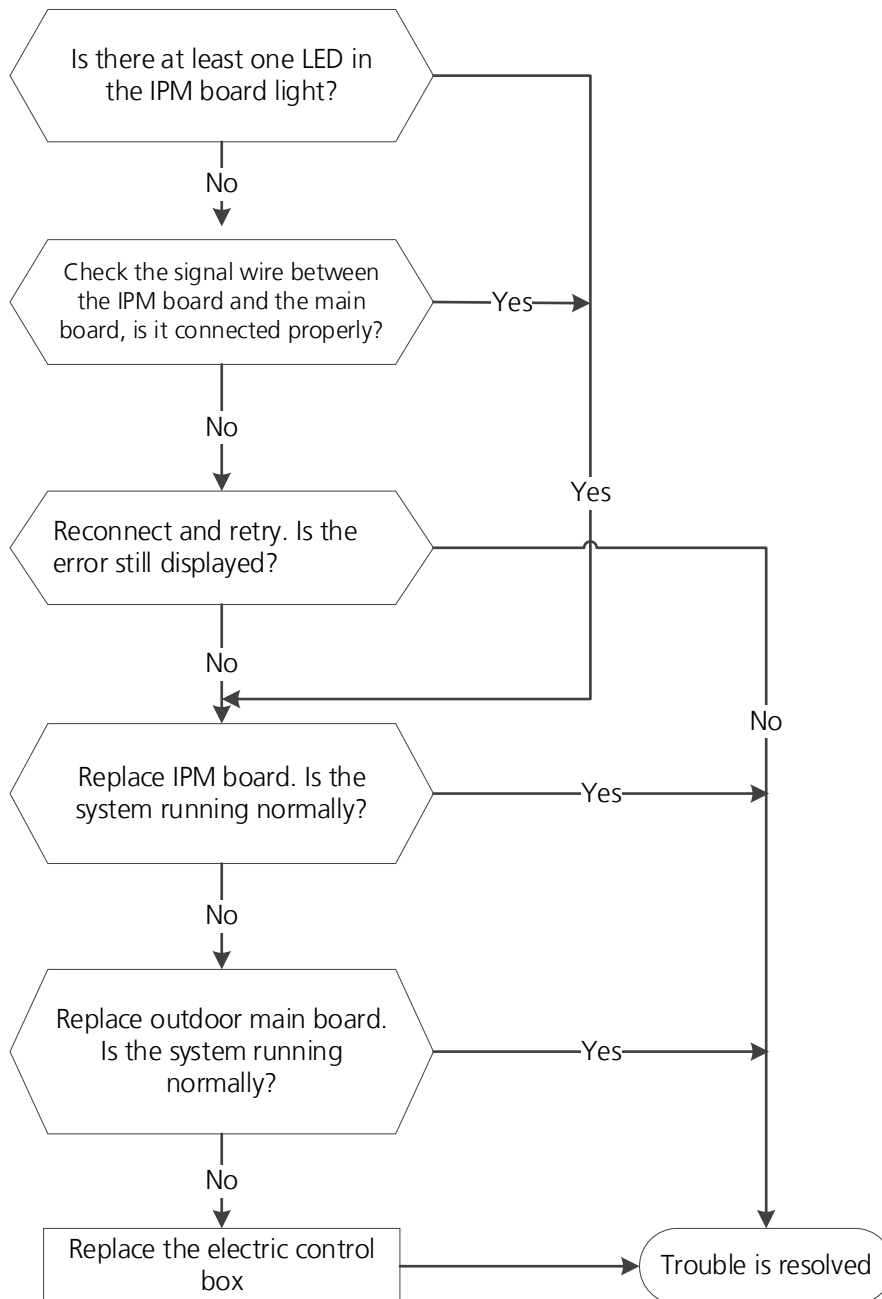
## 5.8 PC40(Communication error between ODU main chip and compressor driven chip diagnosis and solution)

**Description:** The main PCB cannot detect the IPM board.

**Recommended parts to prepare:**

- Connection wires
- Outdoor PCB
- IPM module board
- Electric control box

**Troubleshooting and repair:**



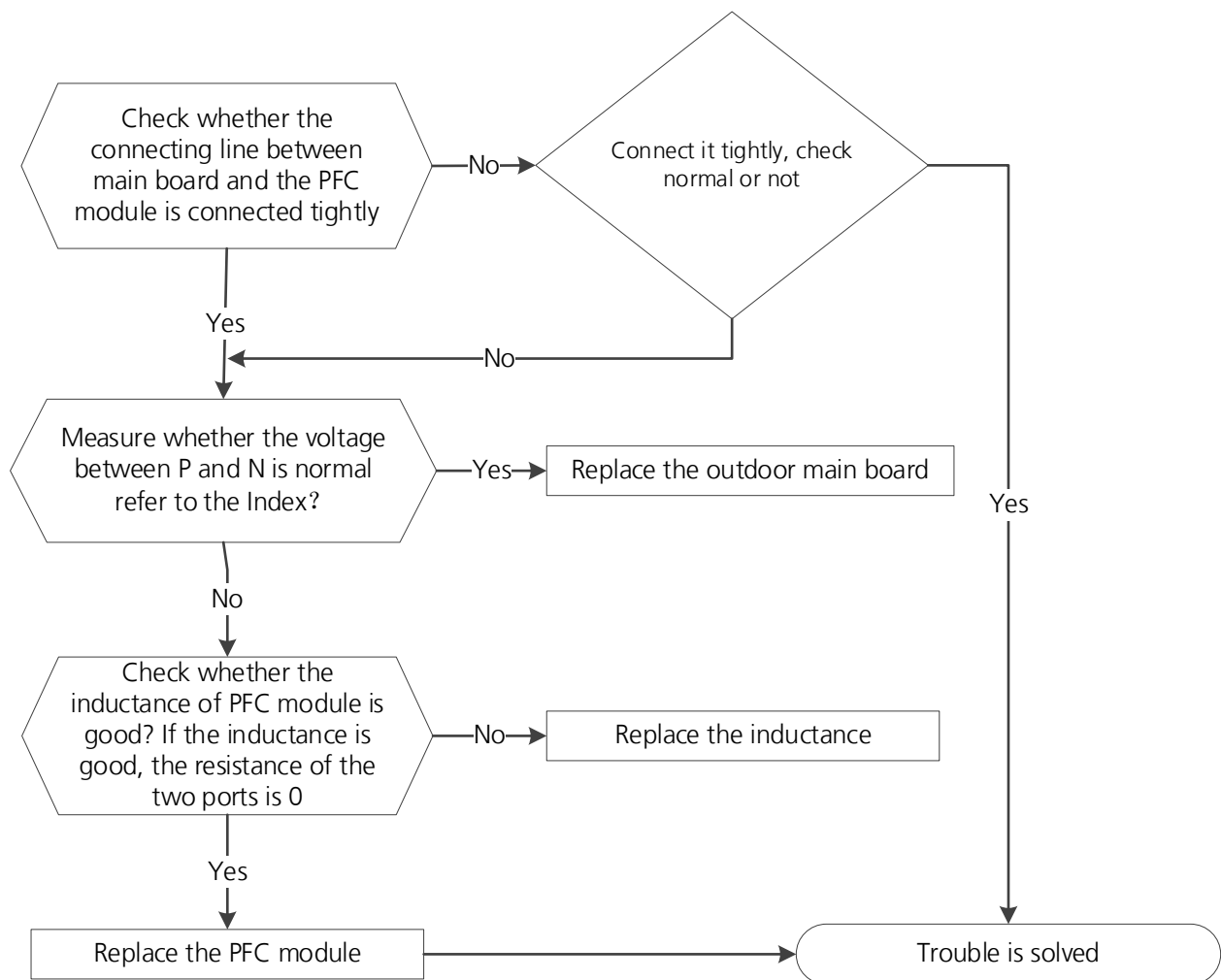
## 5.9 PCOF(PFC module protection diagnosis and solution)

**Description:** Outdoor PCB detects PFC signal is low voltage or DC voltage is lower than 340V for 6s when quick check.

**Recommended parts to prepare:**

- Connection wires
- Outdoor PCB
- Inductance
- PFC circuit or IPM module board

**Troubleshooting and repair:**



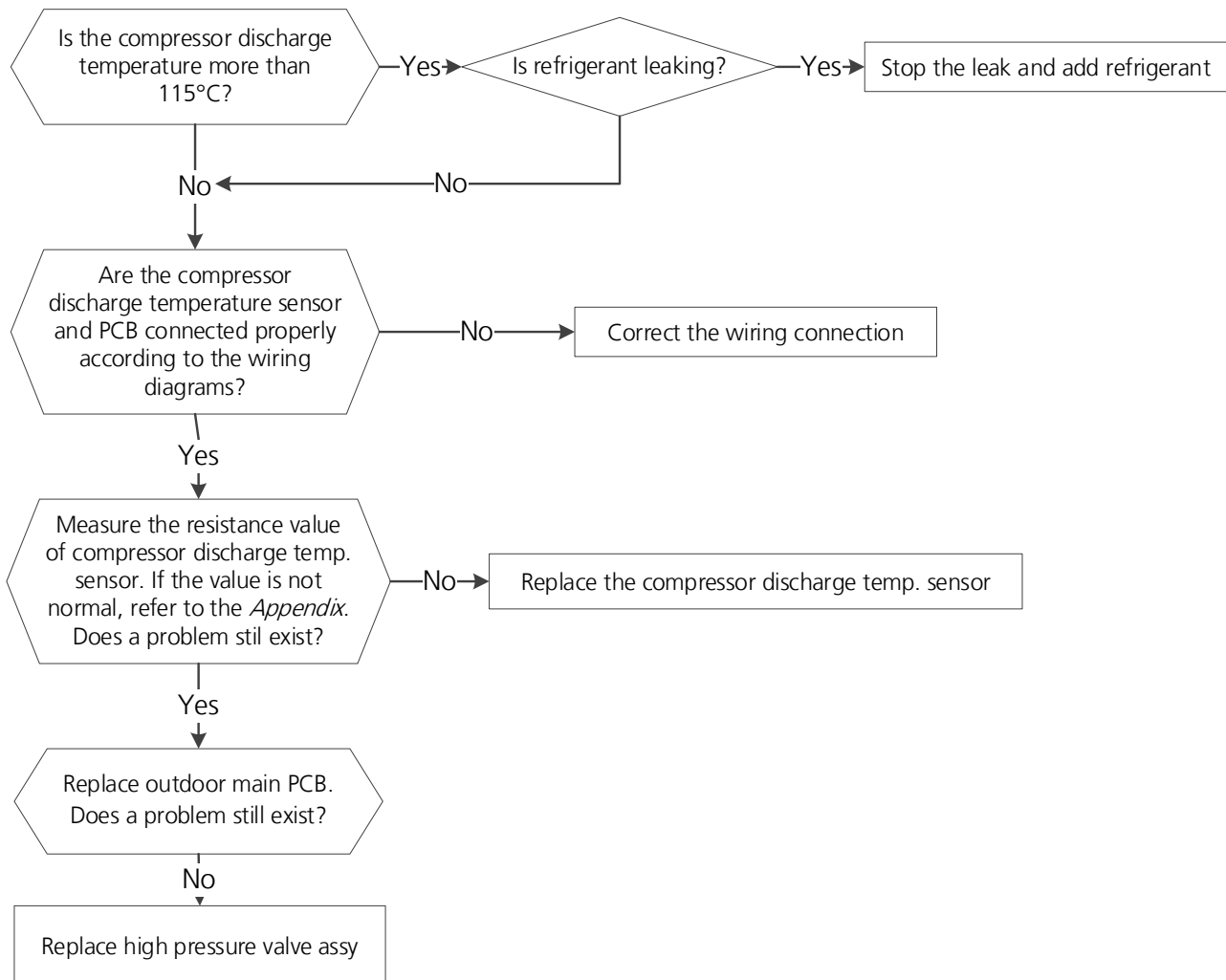
## 5.10 PC06(Discharge temperature protection of compressor diagnosis and solution)

**Description:** When the compressor discharge temperature (TP) is more than 115°C for 10 seconds, the compressor ceases operation and does not restart until TP is less than 90°C

### Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- Discharge temperature sensor
- Refrigerant

### Troubleshooting and repair:



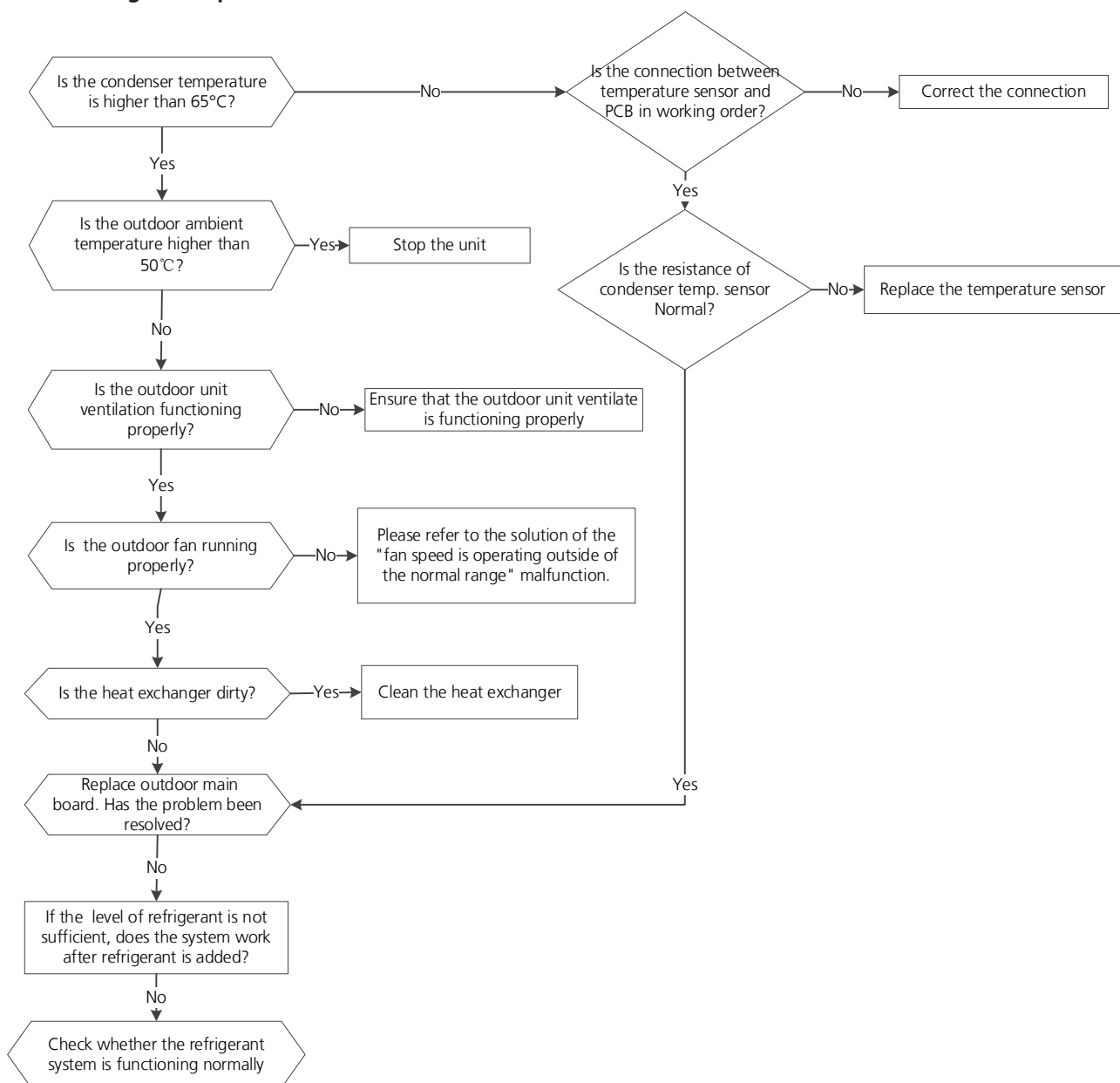
## 5.11 PC0A(High temperature protection of condenser diagnosis and solution)

**Description:** The unit will stop when condenser temperature is higher than 65°C, and runs again when it is less than 52°C

### Recommended parts to prepare:

- Connection wires
- Condenser temperature sensor
- Outdoor fan
- Outdoor main PCB
- Refrigerant

### Troubleshooting and repair:



## 5.12 PC02/LC06 (Compressor top(or IPM) temp. protection/Refrigerant sensor error diagnosis and solution)

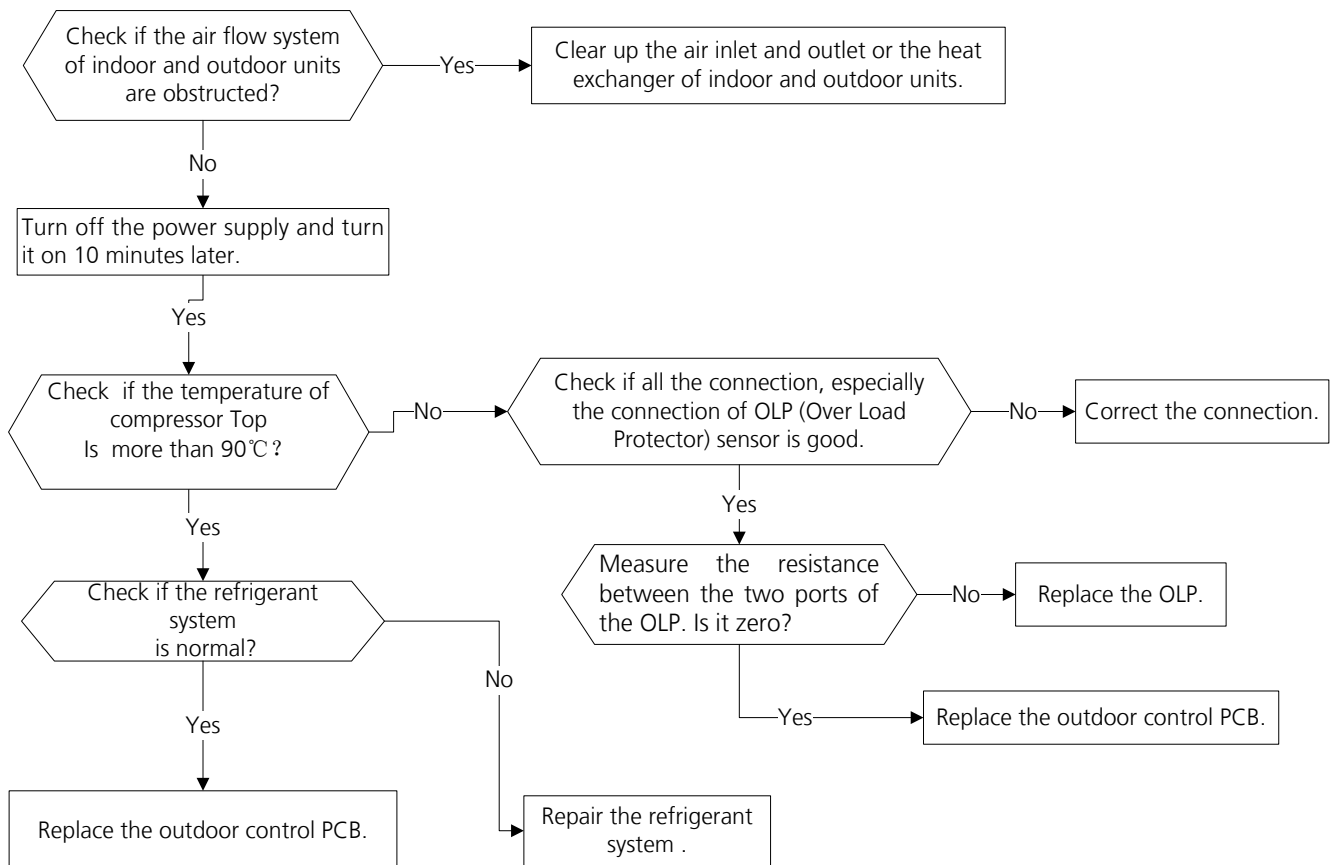
**Description:** For some models with overload protector, If the sampling voltage is not 5V, the LED will display the failure. If the temperature of IPM module is higher than a certain value, the LED displays the failure code.

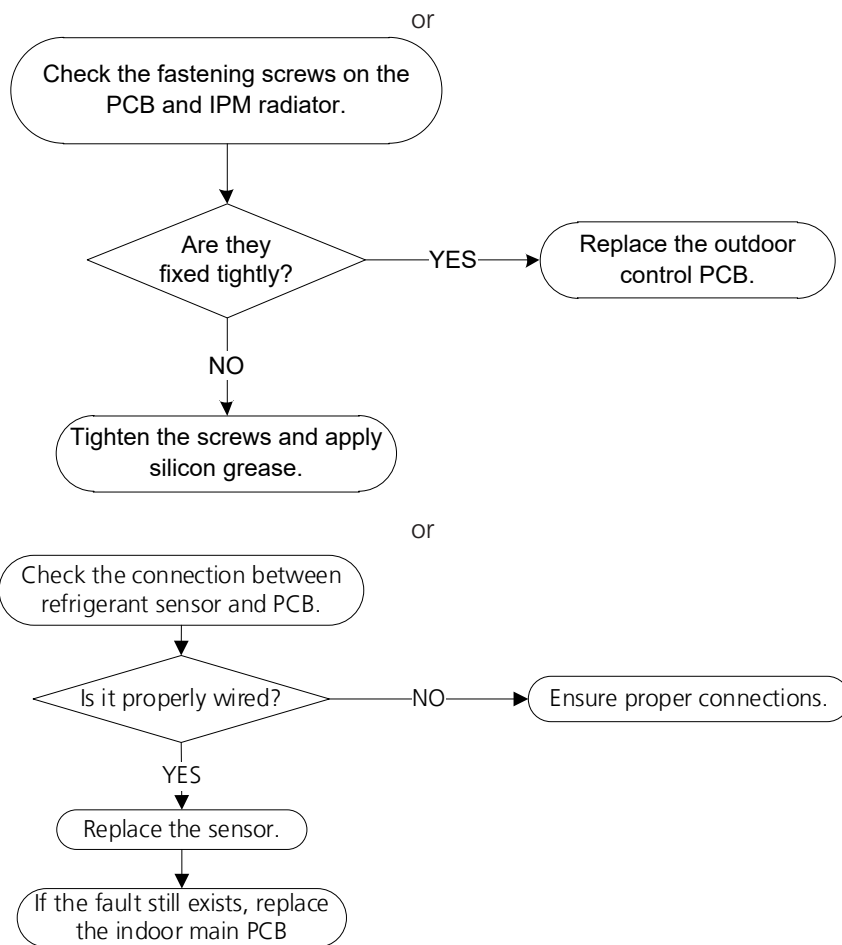
Models without overload protector should be diagnosed according to the second flowchart.

### Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- IPM module board
- High pressure protector
- System blockages

### Troubleshooting and repair:





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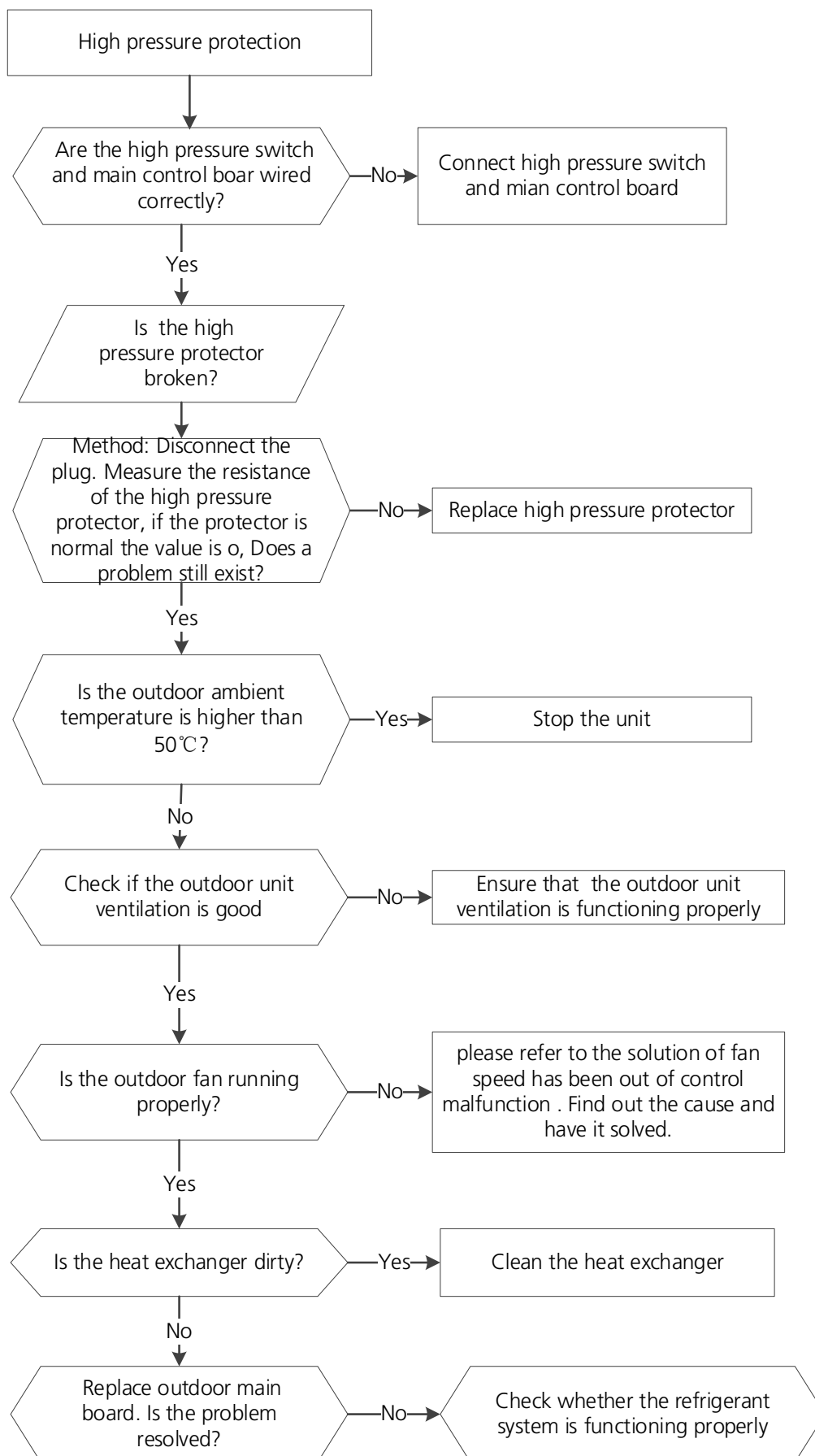
### 5.13 PC30 (System high pressure protection diagnosis and solution)

**Description:** Outdoor pressure switch cut off the system because high pressure is higher than 4.4 MPa

**Recommended parts to prepare:**

- Connection wires
- Pressure switch
- Outdoor fan
- Outdoor main PCB

**Troubleshooting and repair:**



---

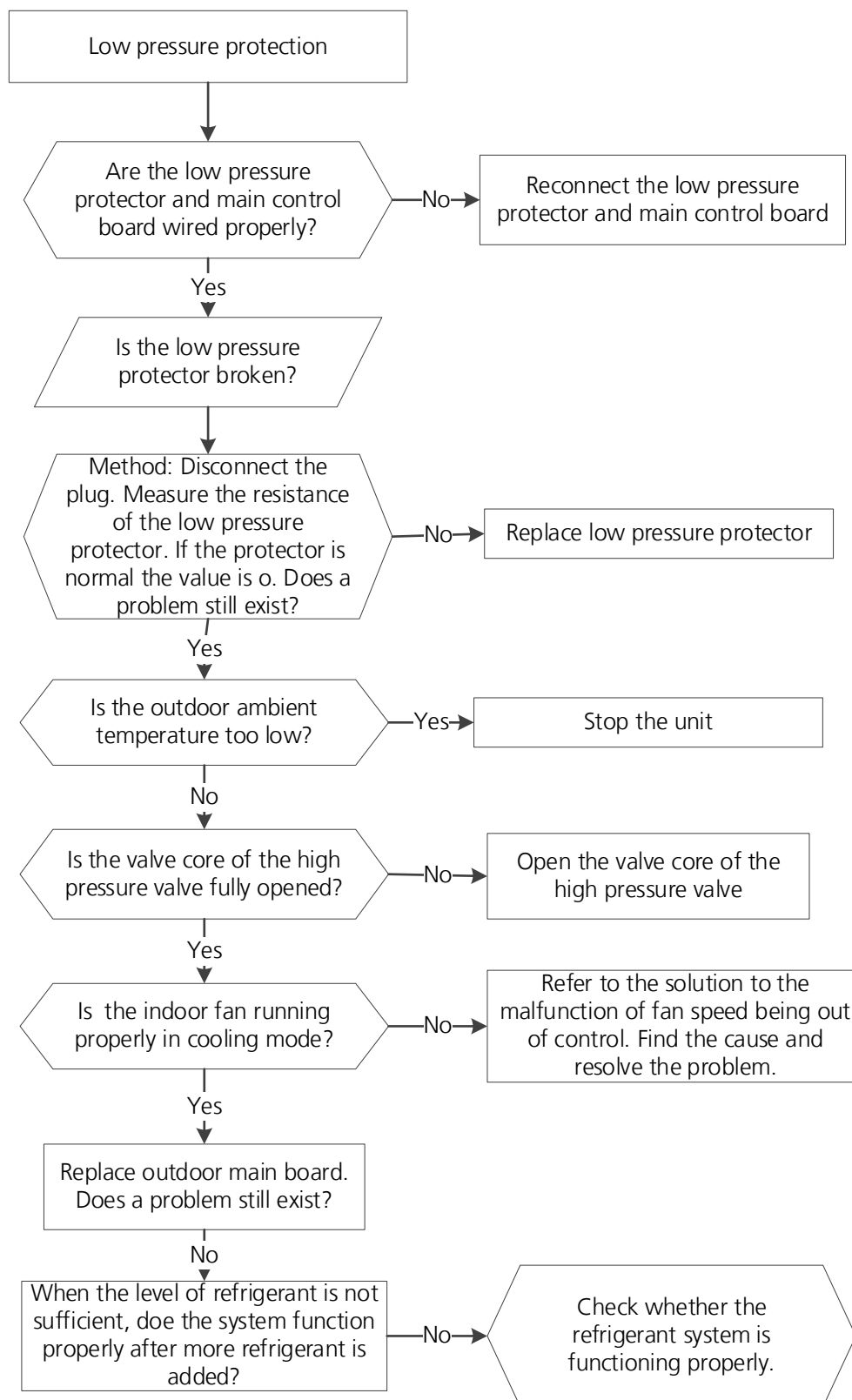
## 5.14 PC31 (System low pressure protection diagnosis and solution)

**Description:** Outdoor pressure switch cut off the system because low pressure is lower than 0.13 MPa, the LED displays the failure code.

### Recommended parts to prepare:

- Connection wires
- Outdoor PCB
- Low pressure protector
- Refrigerant

### Troubleshooting and repair:



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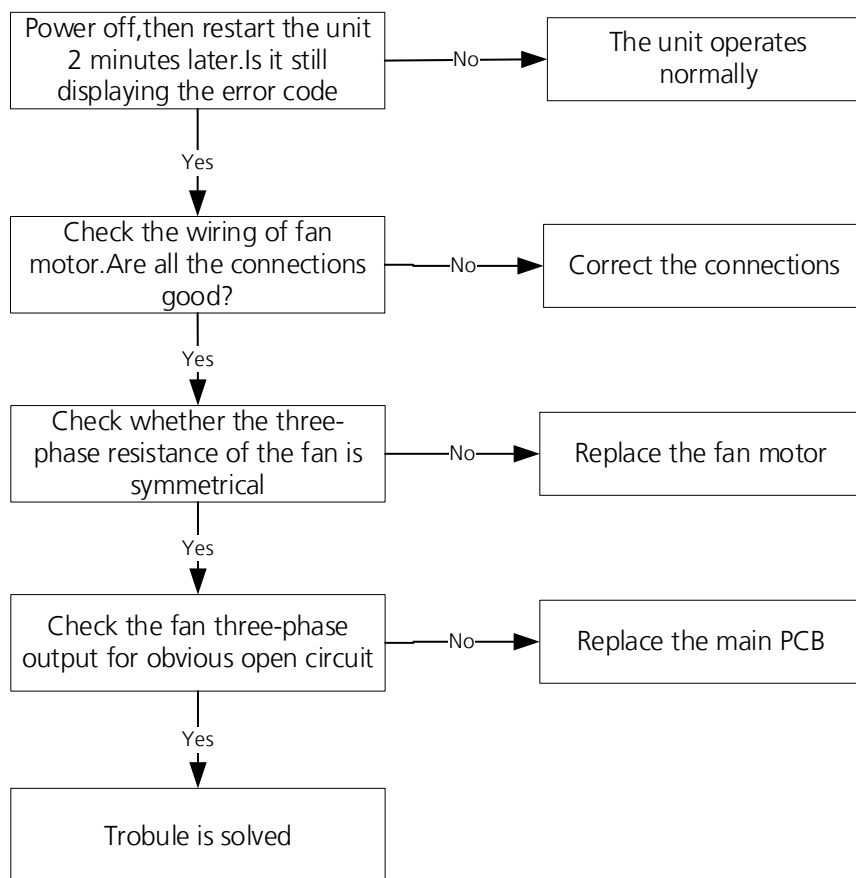
## 5.15 EC72 (Lack phase failure of outdoor DC fan motor diagnosis and solution)

**Description:** When the three-phase sampling current of the DC motor is abnormal, especially when the current of one or more phases is always small and almost 0, the LED displays the failure code.

### Recommended parts to prepare:

- Connection wire
- Fan motor
- Outdoor PCB

### Troubleshooting and repair:



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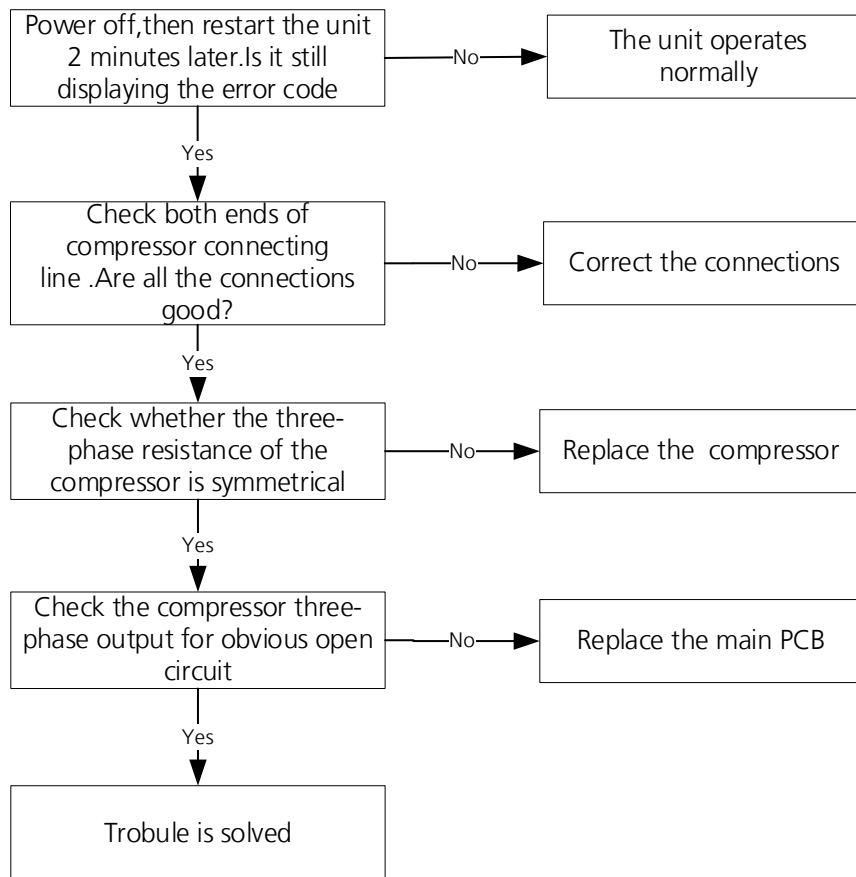
## 5.16 PC43 (ODU compressor lack phase protection diagnosis and solution)

**Description:** When the three-phase sampling current of the compressor is abnormal, especially when the current of one or more phases is always small and almost 0, the LED displays the failure code

### Recommended parts to prepare:

- Connection wire
- Compressor
- Outdoor PCB

### Troubleshooting and repair:



---

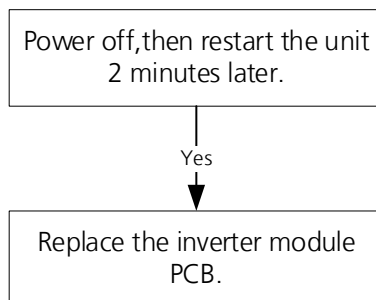
## 5.17 PC45 (ODU IR chip drive failure diagnosis and solution)

**Description:** When the IR chip detects its own parameter error, the LED displays the failure code when power on.

**Recommended parts to prepare:**

- Inverter module PCB.

**Troubleshooting and repair:**



## 5.18 EC55(ODU IPM module temperature sensor malfunction diagnosis and solution)

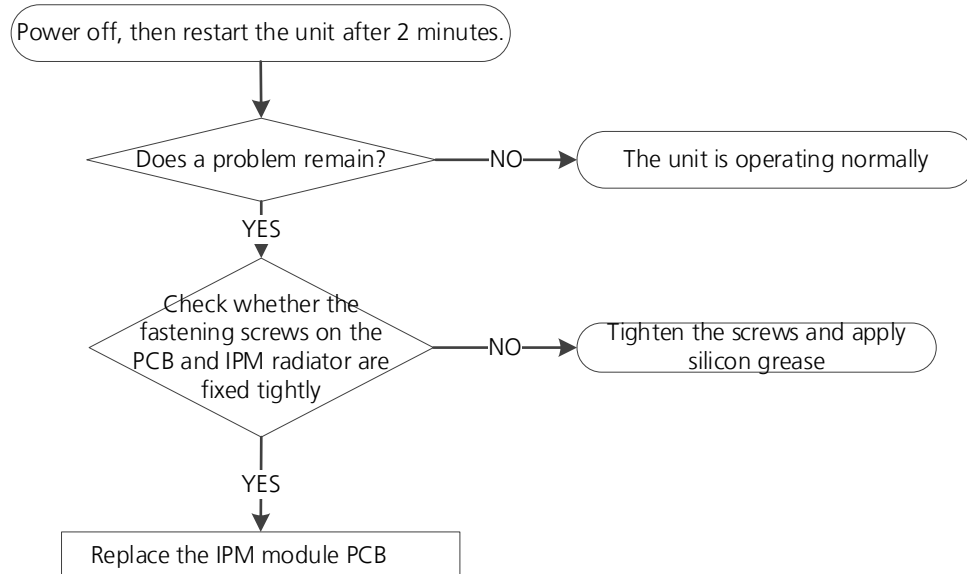
**Description:** If the sampling voltage is 0V or 5V, the LED displays the failure code.

**Recommended parts to prepare:**

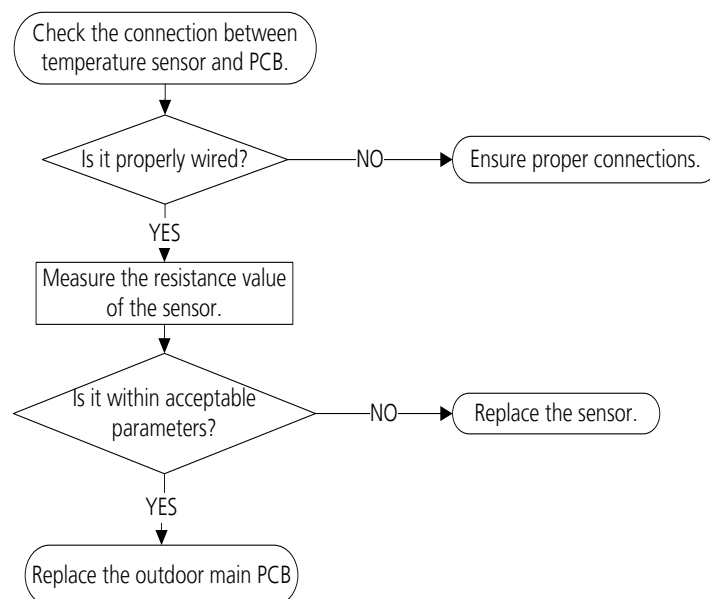
- IPM module PCB
- Connection wires
- Sensors
- Outdoor main PCB

**Troubleshooting and repair:**

If the radiator has no sensor, follow the steps below to resolve,



If the radiator has a sensor(TH), follow the steps below to resolve,



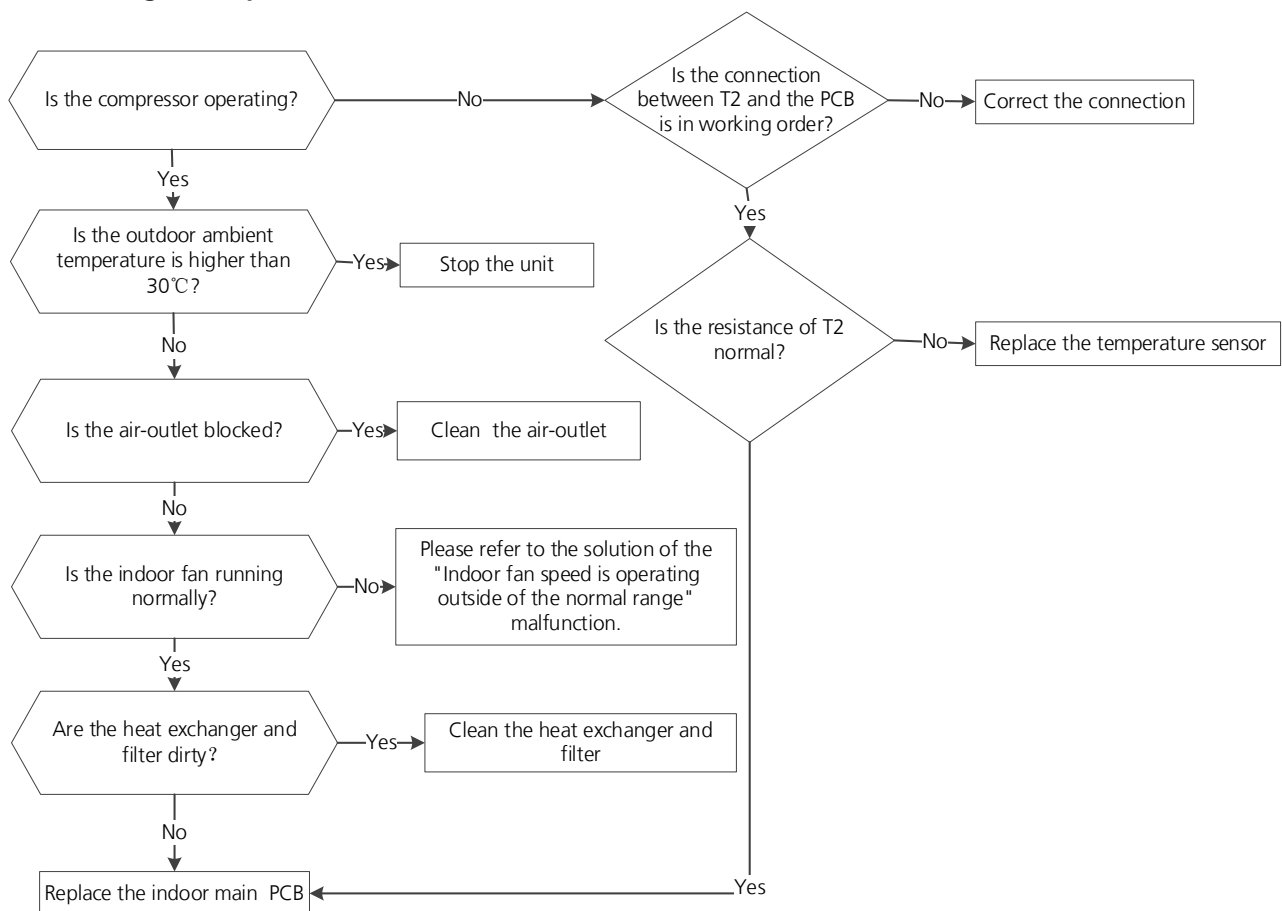
## 5.19 PH90(High temperature protection of evaporator diagnosis and solution)

**Description:** When evaporator coil temperature is more than 60°C in heating mode, the unit stops. It starts again only when the evaporator coil temperature is less than 52°C.

### Recommended parts to prepare:

- Connection wires
- Evaporator coil temperature sensor (T2)
- Indoor fan
- Indoor main PCB

### Troubleshooting and repair:

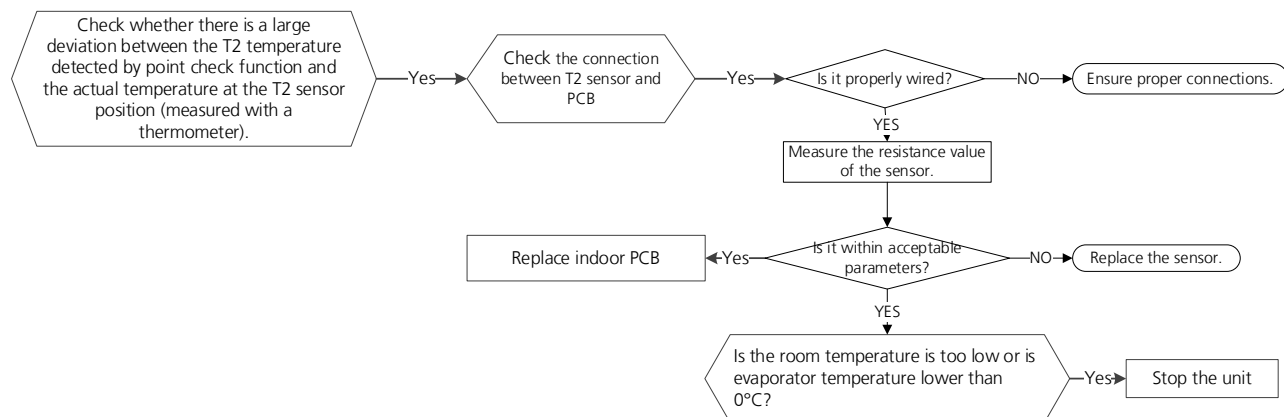


## 5.20 PH91(Low temperature protection of evaporator diagnosis and solution)

**Description:** When evaporator coil temperature is lower than 0°C in cooling mode or drying mode, the unit stops. It starts again only when the evaporator coil temperature is more than 5°C.

### Recommended parts to prepare:

- Connection wires
- Evaporator coil temperature sensor (T2)
- Indoor main PCB



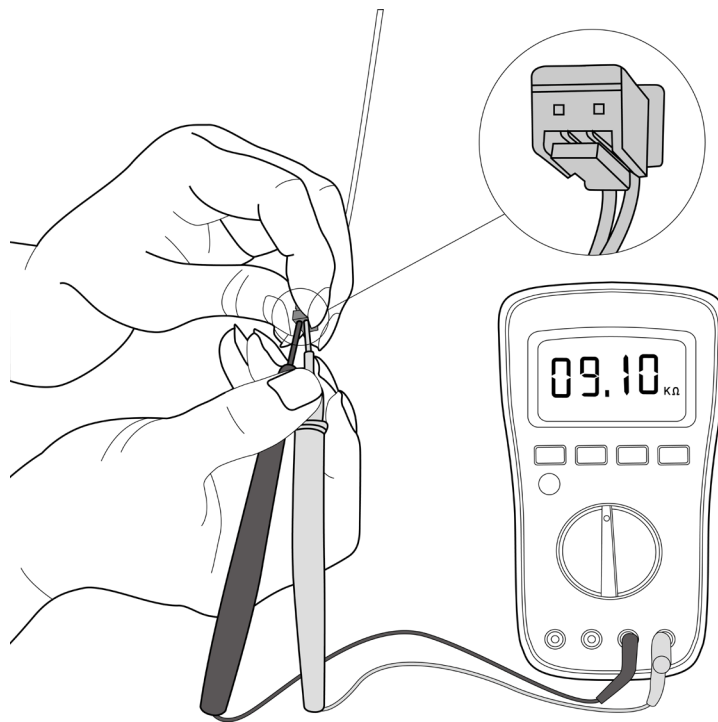
## 6. Check Procedures

### 6.1 Temperature Sensor Check

#### WARNING

**Be sure to turn off all power supplies or disconnect all wires to avoid electric shock. Operate after compressor and coil have returned to normal temperature in case of injury.**

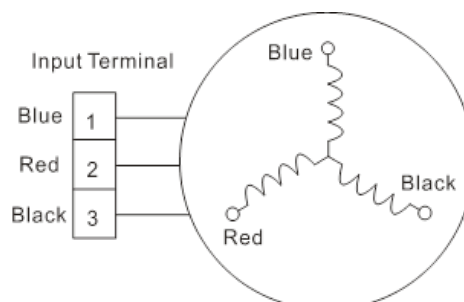
1. Disconnect the temperature sensor from PCB (Refer to Chapter 5&6. Indoor&Outdoor Unit Disassembly).
2. Measure the resistance value of the sensor using a multi-meter.
3. Check corresponding temperature sensor resistance value table (Refer to Chapter Appendix).



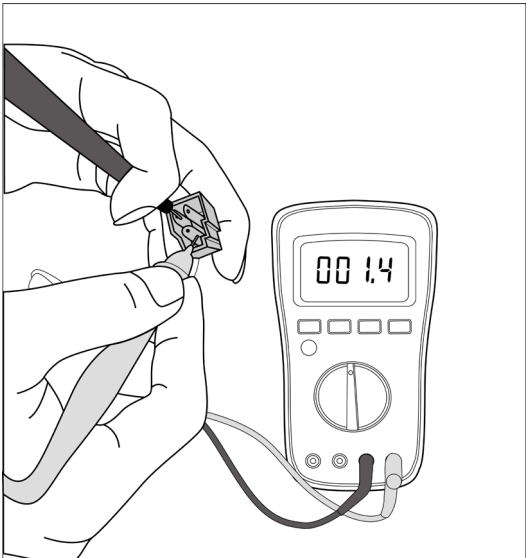
**Note:** The picture and the value are only for reference, actual condition and specific value may vary.

### 6.2 Compressor Check

1. Disconnect the compressor power cord from outdoor PCB (Refer to Chapter 6. Outdoor Unit Disassembly).
2. Measure the resistance value of each winding using a multi-meter.
3. Check the resistance value of each winding in the following table.



| Resistance Value | KSK103D33UEZ3<br>(SZ09H525ZMO)<br>(SZ12H525ZMO) | KTN110D42UFZ<br>(HSZ09H525ZMO)<br>(HSZ12H525ZMO) | KSN140D58UFZ<br>(SZ18H525ZMO)  | KTM240D46UKT2<br>(SZ24H525ZMO)<br>(HSZ18H525ZMO)<br>(HSZ24H525ZMO) | KTF250D22UMT<br>(SZ30H525ZMO)<br>(SZ36H525ZMO) |
|------------------|-------------------------------------------------|--------------------------------------------------|--------------------------------|--------------------------------------------------------------------|------------------------------------------------|
| Blue-Red         | 2.13±5%Ω<br><br>(at 20°C/68°F)                  | 1.82±5%Ω<br><br>(at 20°C/68°F)                   | 1.86±5%Ω<br><br>(at 20°C/68°F) | 1.04±5%Ω<br><br>(at 20°C/68°F)                                     | 0.75±5%Ω<br><br>(at 20°C/68°F)                 |
| Blue-Black       |                                                 |                                                  |                                |                                                                    |                                                |
| Red-Black        |                                                 |                                                  |                                |                                                                    |                                                |



**Note:** The picture and the value are only for reference, actual condition and specific value may vary.

### 6.3 IPM Continuity Check

#### WARNING

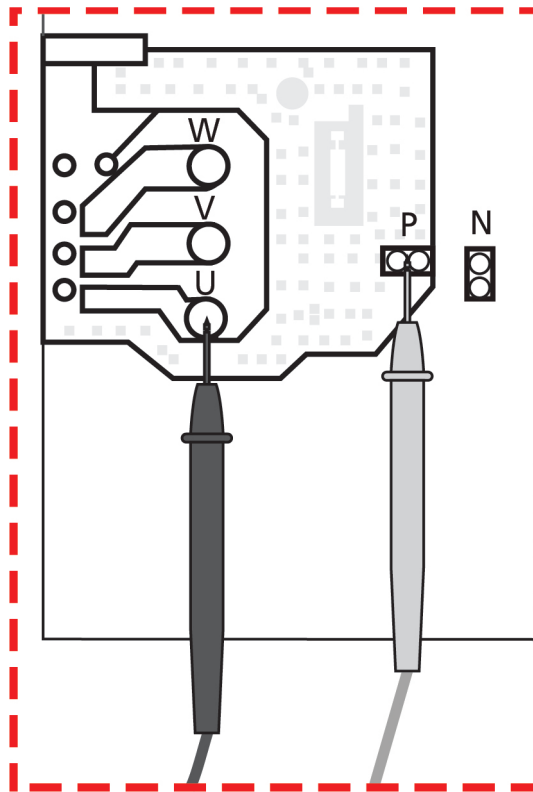
**Electricity remains in capacitors even when the power supply is off.  
Ensure the capacitors are fully discharged before troubleshooting.**

1. Turn off outdoor unit and disconnect power supply.
2. Discharge electrolytic capacitors and ensure all energy-storage unit has been discharged.
3. Disassemble outdoor PCB or disassemble IPM board.
4. Measure the resistance value between P and U(V, W, N); U(V, W) and N.

| Digital tester |          | Resistance value             | Digital tester |          | Resistance value             |
|----------------|----------|------------------------------|----------------|----------|------------------------------|
| (+)Red         | (-)Black | $\infty$<br><br>(Several MΩ) | (+)Red         | (-)Black | $\infty$<br><br>(Several MΩ) |
| P              | N        |                              | U              | N        |                              |
|                | U        |                              | V              |          |                              |
|                | V        |                              | W              |          |                              |
|                | W        |                              | -              |          |                              |

**Or test the conductivity of IPM with diode mode.**

| Needle-type Tester |       | Normal Value | Needle-type Tester |       | Normal Value |
|--------------------|-------|--------------|--------------------|-------|--------------|
| Red                | Black |              | Red                | Black |              |
| P                  | U     | Open-circuit | N                  | U     | 0.3-0.5V     |
|                    | V     |              |                    | V     |              |
|                    | W     |              |                    | W     |              |
| Needle-type Tester |       | Normal Value | Needle-type Tester |       | Normal Value |
| Black              | Red   |              | Black              | Red   |              |
| P                  | U     | 0.3-0.5V     | N                  | U     | Open-circuit |
|                    | V     |              |                    | V     |              |
|                    | W     |              |                    | W     |              |



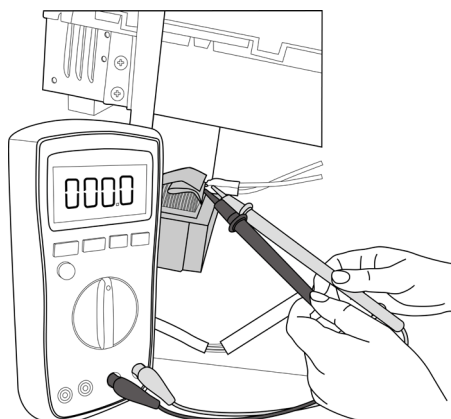
**Note:** The picture and the value are only for reference, actual condition and specific value may vary.

#### 6.4 Normal voltage of P and N

|                         |                                |                              |
|-------------------------|--------------------------------|------------------------------|
| 208-230V(1-phase)       |                                |                              |
| In standby              |                                |                              |
| around 310VDC           |                                |                              |
| In operation            |                                |                              |
| With passive PFC module | With partial active PFC module | With fully active PFC module |
| >200VDC                 | >310VDC                        | >370VDC                      |

#### 6.5 Reactor Check

Measure the resistance and voltage (to ground) of the reactor. The normal resistance should be around 0.1 ohm. Otherwise, the reactor must have malfunction.



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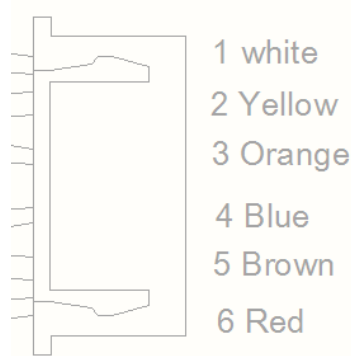
## 6.6 4-way valve Check

1. Power on, use a digital tester to measure the voltage, when the unit operates in cooling, it is 0V. When the unit operates in heating, it is about equal to power supply voltage.

If the value of the voltage is not in the range, the PCB must have problems and need to be replaced.

2 Turn off the power, use a digital tester to measure the resistance. The value should be 1.8~2.5 K $\Omega$ .

## 6.7 EXV Check



1. Turn off outdoor unit and disconnect power supply.

2. Disconnect the connectors of EXV.

3. Measure the resistance value between Red and Blue(Yellow); Brown and Orange(White).

### Resistance to EXV coil

| Color of lead wire | Normal Value      |
|--------------------|-------------------|
| Red- Blue          | About 50 $\Omega$ |
| Red - Yellow       |                   |
| Brown-Orange       |                   |
| Brown-White        |                   |

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# Appendix

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## i) Temperature Sensor Resistance Value Table for TP (°C --K)

| °C  | °F | K Ohm | °C | °F  | K Ohm | °C | °F  | K Ohm | °C  | °F  | K Ohm |
|-----|----|-------|----|-----|-------|----|-----|-------|-----|-----|-------|
| °C  | °F | K Ohm | °C | °F  | K Ohm | °C | °F  | K Ohm | °C  | °F  | K Ohm |
| -20 | -4 | 542.7 | 20 | 68  | 68.66 | 60 | 140 | 13.59 | 100 | 212 | 3.702 |
| -19 | -2 | 511.9 | 21 | 70  | 65.62 | 61 | 142 | 13.11 | 101 | 214 | 3.595 |
| -18 | 0  | 483   | 22 | 72  | 62.73 | 62 | 144 | 12.65 | 102 | 216 | 3.492 |
| -17 | 1  | 455.9 | 23 | 73  | 59.98 | 63 | 145 | 12.21 | 103 | 217 | 3.392 |
| -16 | 3  | 430.5 | 24 | 75  | 57.37 | 64 | 147 | 11.79 | 104 | 219 | 3.296 |
| -15 | 5  | 406.7 | 25 | 77  | 54.89 | 65 | 149 | 11.38 | 105 | 221 | 3.203 |
| -14 | 7  | 384.3 | 26 | 79  | 52.53 | 66 | 151 | 10.99 | 106 | 223 | 3.113 |
| -13 | 9  | 363.3 | 27 | 81  | 50.28 | 67 | 153 | 10.61 | 107 | 225 | 3.025 |
| -12 | 10 | 343.6 | 28 | 82  | 48.14 | 68 | 154 | 10.25 | 108 | 226 | 2.941 |
| -11 | 12 | 325.1 | 29 | 84  | 46.11 | 69 | 156 | 9.902 | 109 | 228 | 2.86  |
| -10 | 14 | 307.7 | 30 | 86  | 44.17 | 70 | 158 | 9.569 | 110 | 230 | 2.781 |
| -9  | 16 | 291.3 | 31 | 88  | 42.33 | 71 | 160 | 9.248 | 111 | 232 | 2.704 |
| -8  | 18 | 275.9 | 32 | 90  | 40.57 | 72 | 162 | 8.94  | 112 | 234 | 2.63  |
| -7  | 19 | 261.4 | 33 | 91  | 38.89 | 73 | 163 | 8.643 | 113 | 235 | 2.559 |
| -6  | 21 | 247.8 | 34 | 93  | 37.3  | 74 | 165 | 8.358 | 114 | 237 | 2.489 |
| -5  | 23 | 234.9 | 35 | 95  | 35.78 | 75 | 167 | 8.084 | 115 | 239 | 2.422 |
| -4  | 25 | 222.8 | 36 | 97  | 34.32 | 76 | 169 | 7.82  | 116 | 241 | 2.357 |
| -3  | 27 | 211.4 | 37 | 99  | 32.94 | 77 | 171 | 7.566 | 117 | 243 | 2.294 |
| -2  | 28 | 200.7 | 38 | 100 | 31.62 | 78 | 172 | 7.321 | 118 | 244 | 2.233 |
| -1  | 30 | 190.5 | 39 | 102 | 30.36 | 79 | 174 | 7.086 | 119 | 246 | 2.174 |
| 0   | 32 | 180.9 | 40 | 104 | 29.15 | 80 | 176 | 6.859 | 120 | 248 | 2.117 |
| 1   | 34 | 171.9 | 41 | 106 | 28    | 81 | 178 | 6.641 | 121 | 250 | 2.061 |
| 2   | 36 | 163.3 | 42 | 108 | 26.9  | 82 | 180 | 6.43  | 122 | 252 | 2.007 |
| 3   | 37 | 155.2 | 43 | 109 | 25.86 | 83 | 181 | 6.228 | 123 | 253 | 1.955 |
| 4   | 39 | 147.6 | 44 | 111 | 24.85 | 84 | 183 | 6.033 | 124 | 255 | 1.905 |
| 5   | 41 | 140.4 | 45 | 113 | 23.89 | 85 | 185 | 5.844 | 125 | 257 | 1.856 |
| 6   | 43 | 133.5 | 46 | 115 | 22.89 | 86 | 187 | 5.663 | 126 | 259 | 1.808 |
| 7   | 45 | 127.1 | 47 | 117 | 22.1  | 87 | 189 | 5.488 | 127 | 261 | 1.762 |
| 8   | 46 | 121   | 48 | 118 | 21.26 | 88 | 190 | 5.32  | 128 | 262 | 1.717 |
| 9   | 48 | 115.2 | 49 | 120 | 20.46 | 89 | 192 | 5.157 | 129 | 264 | 1.674 |
| 10  | 50 | 109.8 | 50 | 122 | 19.69 | 90 | 194 | 5     | 130 | 266 | 1.632 |
| 11  | 52 | 104.6 | 51 | 124 | 18.96 | 91 | 196 | 4.849 |     |     |       |
| 12  | 54 | 99.69 | 52 | 126 | 18.26 | 92 | 198 | 4.703 |     |     |       |
| 13  | 55 | 95.05 | 53 | 127 | 17.58 | 93 | 199 | 4.562 |     |     |       |
| 14  | 57 | 90.66 | 54 | 129 | 16.94 | 94 | 201 | 4.426 |     |     |       |
| 15  | 59 | 86.49 | 55 | 131 | 16.32 | 95 | 203 | 4.294 |     |     |       |
| 16  | 61 | 82.54 | 56 | 133 | 15.73 | 96 | 205 | 4.167 |     |     |       |
| 17  | 63 | 78.79 | 57 | 135 | 15.16 | 97 | 207 | 4.045 |     |     |       |
| 18  | 64 | 75.24 | 58 | 136 | 14.62 | 98 | 208 | 3.927 |     |     |       |
| 19  | 66 | 71.86 | 59 | 138 | 14.09 | 99 | 210 | 3.812 |     |     |       |

## ii) Other Temperature Sensors Resistance Value Table (°C – K)

| °C  | °F | K Ohm   | °C | °F  | K Ohm   | °C | °F  | K Ohm   | °C  | °F  | K Ohm   |
|-----|----|---------|----|-----|---------|----|-----|---------|-----|-----|---------|
| -20 | -4 | 115.266 | 20 | 68  | 12.6431 | 60 | 140 | 2.35774 | 100 | 212 | 0.62973 |
| -19 | -2 | 108.146 | 21 | 70  | 12.0561 | 61 | 142 | 2.27249 | 101 | 214 | 0.61148 |
| -18 | 0  | 101.517 | 22 | 72  | 11.5    | 62 | 144 | 2.19073 | 102 | 216 | 0.59386 |
| -17 | 1  | 96.3423 | 23 | 73  | 10.9731 | 63 | 145 | 2.11241 | 103 | 217 | 0.57683 |
| -16 | 3  | 89.5865 | 24 | 75  | 10.4736 | 64 | 147 | 2.03732 | 104 | 219 | 0.56038 |
| -15 | 5  | 84.219  | 25 | 77  | 10      | 65 | 149 | 1.96532 | 105 | 221 | 0.54448 |
| -14 | 7  | 79.311  | 26 | 79  | 9.55074 | 66 | 151 | 1.89627 | 106 | 223 | 0.52912 |
| -13 | 9  | 74.536  | 27 | 81  | 9.12445 | 67 | 153 | 1.83003 | 107 | 225 | 0.51426 |
| -12 | 10 | 70.1698 | 28 | 82  | 8.71983 | 68 | 154 | 1.76647 | 108 | 226 | 0.49989 |
| -11 | 12 | 66.0898 | 29 | 84  | 8.33566 | 69 | 156 | 1.70547 | 109 | 228 | 0.486   |
| -10 | 14 | 62.2756 | 30 | 86  | 7.97078 | 70 | 158 | 1.64691 | 110 | 230 | 0.47256 |
| -9  | 16 | 58.7079 | 31 | 88  | 7.62411 | 71 | 160 | 1.59068 | 111 | 232 | 0.45957 |
| -8  | 18 | 56.3694 | 32 | 90  | 7.29464 | 72 | 162 | 1.53668 | 112 | 234 | 0.44699 |
| -7  | 19 | 52.2438 | 33 | 91  | 6.98142 | 73 | 163 | 1.48481 | 113 | 235 | 0.43482 |
| -6  | 21 | 49.3161 | 34 | 93  | 6.68355 | 74 | 165 | 1.43498 | 114 | 237 | 0.42304 |
| -5  | 23 | 46.5725 | 35 | 95  | 6.40021 | 75 | 167 | 1.38703 | 115 | 239 | 0.41164 |
| -4  | 25 | 44      | 36 | 97  | 6.13059 | 76 | 169 | 1.34105 | 116 | 241 | 0.4006  |
| -3  | 27 | 41.5878 | 37 | 99  | 5.87359 | 77 | 171 | 1.29078 | 117 | 243 | 0.38991 |
| -2  | 28 | 39.8239 | 38 | 100 | 5.62961 | 78 | 172 | 1.25423 | 118 | 244 | 0.37956 |
| -1  | 30 | 37.1988 | 39 | 102 | 5.39689 | 79 | 174 | 1.2133  | 119 | 246 | 0.36954 |
| 0   | 32 | 35.2024 | 40 | 104 | 5.17519 | 80 | 176 | 1.17393 | 120 | 248 | 0.35982 |
| 1   | 34 | 33.3269 | 41 | 106 | 4.96392 | 81 | 178 | 1.13604 | 121 | 250 | 0.35042 |
| 2   | 36 | 31.5635 | 42 | 108 | 4.76253 | 82 | 180 | 1.09958 | 122 | 252 | 0.3413  |
| 3   | 37 | 29.9058 | 43 | 109 | 4.5705  | 83 | 181 | 1.06448 | 123 | 253 | 0.33246 |
| 4   | 39 | 28.3459 | 44 | 111 | 4.38736 | 84 | 183 | 1.03069 | 124 | 255 | 0.3239  |
| 5   | 41 | 26.8778 | 45 | 113 | 4.21263 | 85 | 185 | 0.99815 | 125 | 257 | 0.31559 |
| 6   | 43 | 25.4954 | 46 | 115 | 4.04589 | 86 | 187 | 0.96681 | 126 | 259 | 0.30754 |
| 7   | 45 | 24.1932 | 47 | 117 | 3.88673 | 87 | 189 | 0.93662 | 127 | 261 | 0.29974 |
| 8   | 46 | 22.5662 | 48 | 118 | 3.73476 | 88 | 190 | 0.90753 | 128 | 262 | 0.29216 |
| 9   | 48 | 21.8094 | 49 | 120 | 3.58962 | 89 | 192 | 0.8795  | 129 | 264 | 0.28482 |
| 10  | 50 | 20.7184 | 50 | 122 | 3.45097 | 90 | 194 | 0.85248 | 130 | 266 | 0.2777  |
| 11  | 52 | 19.6891 | 51 | 124 | 3.31847 | 91 | 196 | 0.82643 | 131 | 268 | 0.27078 |
| 12  | 54 | 18.7177 | 52 | 126 | 3.19183 | 92 | 198 | 0.80132 | 132 | 270 | 0.26408 |
| 13  | 55 | 17.8005 | 53 | 127 | 3.07075 | 93 | 199 | 0.77709 | 133 | 271 | 0.25757 |
| 14  | 57 | 16.9341 | 54 | 129 | 2.95896 | 94 | 201 | 0.75373 | 134 | 273 | 0.25125 |
| 15  | 59 | 16.1156 | 55 | 131 | 2.84421 | 95 | 203 | 0.73119 | 135 | 275 | 0.24512 |
| 16  | 61 | 15.3418 | 56 | 133 | 2.73823 | 96 | 205 | 0.70944 | 136 | 277 | 0.23916 |
| 17  | 63 | 14.6181 | 57 | 135 | 2.63682 | 97 | 207 | 0.68844 | 137 | 279 | 0.23338 |
| 18  | 64 | 13.918  | 58 | 136 | 2.53973 | 98 | 208 | 0.66818 | 138 | 280 | 0.22776 |
| 19  | 66 | 13.2631 | 59 | 138 | 2.44677 | 99 | 210 | 0.64862 | 139 | 282 | 0.22231 |

### iii) System Pressure Table-R454B

| Pressure |      |       | Temperature |       | Pressure |       |        | Temperature |       |
|----------|------|-------|-------------|-------|----------|-------|--------|-------------|-------|
| Kpa      | bar  | PSI   | °C          | °F    | Kpa      | bar   | PSI    | °C          | °F    |
| 58.196   | 0.58 | 8.44  | -60         | -76   | 935.23   | 9.35  | 135.64 | 8           | 46.4  |
| 61.517   | 0.62 | 8.92  | -59         | -74.2 | 963.75   | 9.64  | 139.78 | 9           | 48.2  |
| 64.988   | 0.65 | 9.43  | -58         | -72.4 | 992.93   | 9.93  | 144.01 | 10          | 50    |
| 68.615   | 0.69 | 9.95  | -57         | -70.6 | 1022.8   | 10.23 | 148.34 | 11          | 51.8  |
| 72.402   | 0.72 | 10.50 | -56         | -68.8 | 1053.3   | 10.53 | 152.76 | 12          | 53.6  |
| 76.354   | 0.76 | 11.07 | -55         | -67   | 1084.5   | 10.85 | 157.29 | 13          | 55.4  |
| 80.478   | 0.80 | 11.67 | -54         | -65.2 | 1116.4   | 11.16 | 161.91 | 14          | 57.2  |
| 84.776   | 0.85 | 12.30 | -53         | -63.4 | 1149     | 11.49 | 166.64 | 15          | 59    |
| 89.256   | 0.89 | 12.95 | -52         | -61.6 | 1182.3   | 11.82 | 171.47 | 16          | 60.8  |
| 93.923   | 0.94 | 13.62 | -51         | -59.8 | 1216.3   | 12.16 | 176.40 | 17          | 62.6  |
| 98.781   | 0.99 | 14.33 | -50         | -58   | 1251.1   | 12.51 | 181.45 | 18          | 64.4  |
| 103.84   | 1.04 | 15.06 | -49         | -56.2 | 1286.6   | 12.87 | 186.60 | 19          | 66.2  |
| 109.1    | 1.09 | 15.82 | -48         | -54.4 | 1322.8   | 13.23 | 191.85 | 20          | 68    |
| 114.56   | 1.15 | 16.61 | -47         | -52.6 | 1359.9   | 13.60 | 197.23 | 21          | 69.8  |
| 120.25   | 1.20 | 17.44 | -46         | -50.8 | 1397.7   | 13.98 | 202.71 | 22          | 71.6  |
| 126.15   | 1.26 | 18.30 | -45         | -49   | 1436.3   | 14.36 | 208.31 | 23          | 73.4  |
| 132.28   | 1.32 | 19.18 | -44         | -47.2 | 1475.7   | 14.76 | 214.02 | 24          | 75.2  |
| 138.64   | 1.39 | 20.11 | -43         | -45.4 | 1515.9   | 15.16 | 219.85 | 25          | 77    |
| 145.24   | 1.45 | 21.06 | -42         | -43.6 | 1557     | 15.57 | 225.82 | 26          | 78.8  |
| 152.09   | 1.52 | 22.06 | -41         | -41.8 | 1598.9   | 15.99 | 231.89 | 27          | 80.6  |
| 159.18   | 1.59 | 23.09 | -40         | -40   | 1641.6   | 16.42 | 238.09 | 28          | 82.4  |
| 166.54   | 1.67 | 24.15 | -39         | -38.2 | 1685.2   | 16.85 | 244.41 | 29          | 84.2  |
| 174.15   | 1.74 | 25.26 | -38         | -36.4 | 1729.7   | 17.30 | 250.86 | 30          | 86    |
| 182.04   | 1.82 | 26.40 | -37         | -34.6 | 1775     | 17.75 | 257.43 | 31          | 87.8  |
| 190.2    | 1.90 | 27.59 | -36         | -32.8 | 1821.3   | 18.21 | 264.15 | 32          | 89.6  |
| 198.65   | 1.99 | 28.81 | -35         | -31   | 1868.4   | 18.68 | 270.98 | 33          | 91.4  |
| 207.39   | 2.07 | 30.08 | -34         | -29.2 | 1916.5   | 19.17 | 277.95 | 34          | 93.2  |
| 216.42   | 2.16 | 31.39 | -33         | -27.4 | 1965.6   | 19.66 | 285.08 | 35          | 95    |
| 225.76   | 2.26 | 32.74 | -32         | -25.6 | 2015.5   | 20.16 | 292.31 | 36          | 96.8  |
| 235.41   | 2.35 | 34.14 | -31         | -23.8 | 2066.5   | 20.67 | 299.71 | 37          | 98.6  |
| 245.37   | 2.45 | 35.59 | -30         | -22   | 2118.4   | 21.18 | 307.24 | 38          | 100.4 |
| 255.67   | 2.56 | 37.08 | -29         | -20.2 | 2171.3   | 21.71 | 314.91 | 39          | 102.2 |
| 266.29   | 2.66 | 38.62 | -28         | -18.4 | 2225.2   | 22.25 | 322.73 | 40          | 104   |
| 277.25   | 2.77 | 40.21 | -27         | -16.6 | 2280.2   | 22.80 | 330.70 | 41          | 105.8 |
| 288.56   | 2.89 | 41.85 | -26         | -14.8 | 2336.1   | 23.36 | 338.81 | 42          | 107.6 |
| 300.22   | 3.00 | 43.54 | -25         | -13   | 2393.2   | 23.93 | 347.09 | 43          | 109.4 |
| 312.24   | 3.12 | 45.28 | -24         | -11.2 | 2451.3   | 24.51 | 355.52 | 44          | 111.2 |
| 324.63   | 3.25 | 47.08 | -23         | -9.4  | 2510.4   | 25.10 | 364.09 | 45          | 113   |
| 337.39   | 3.37 | 48.93 | -22         | -7.6  | 2570.7   | 25.71 | 372.84 | 46          | 114.8 |
| 350.54   | 3.51 | 50.84 | -21         | -5.8  | 2632.1   | 26.32 | 381.74 | 47          | 116.6 |
| 364.08   | 3.64 | 52.80 | -20         | -4    | 2694.7   | 26.95 | 390.82 | 48          | 118.4 |
| 378.02   | 3.78 | 54.83 | -19         | -2.2  | 2758.3   | 27.58 | 400.04 | 49          | 120.2 |
| 392.37   | 3.92 | 56.91 | -18         | -0.4  | 2823.2   | 28.23 | 409.46 | 50          | 122   |
| 407.13   | 4.07 | 59.05 | -17         | 1.4   | 2889.3   | 28.89 | 419.04 | 51          | 123.8 |

---

|        |      |        |     |      |        |       |        |    |       |
|--------|------|--------|-----|------|--------|-------|--------|----|-------|
| 422.31 | 4.22 | 61.25  | -16 | 3.2  | 2956.5 | 29.57 | 428.79 | 52 | 125.6 |
| 437.92 | 4.38 | 63.51  | -15 | 5    | 3025   | 30.25 | 438.72 | 53 | 127.4 |
| 453.98 | 4.54 | 65.84  | -14 | 6.8  | 3094.7 | 30.95 | 448.83 | 54 | 129.2 |
| 470.47 | 4.70 | 68.23  | -13 | 8.6  | 3165.7 | 31.66 | 459.13 | 55 | 131   |
| 487.43 | 4.87 | 70.69  | -12 | 10.4 | 3238.1 | 32.38 | 469.63 | 56 | 132.8 |
| 504.84 | 5.05 | 73.22  | -11 | 12.2 | 3311.7 | 33.12 | 480.30 | 57 | 134.6 |
| 522.73 | 5.23 | 75.81  | -10 | 14   | 3386.7 | 33.87 | 491.18 | 58 | 136.4 |
| 541.1  | 5.41 | 78.48  | -9  | 15.8 | 3463   | 34.63 | 502.25 | 59 | 138.2 |
| 559.95 | 5.60 | 81.21  | -8  | 17.6 | 3540.7 | 35.41 | 513.52 | 60 | 140   |
| 579.31 | 5.79 | 84.02  | -7  | 19.4 | 3619.9 | 36.20 | 525.00 | 61 | 141.8 |
| 599.16 | 5.99 | 86.90  | -6  | 21.2 | 3700.5 | 37.01 | 536.69 | 62 | 143.6 |
| 619.54 | 6.20 | 89.85  | -5  | 23   | 3782.7 | 37.83 | 548.61 | 63 | 145.4 |
| 640.43 | 6.40 | 92.88  | -4  | 24.8 | 3866.3 | 38.66 | 560.74 | 64 | 147.2 |
| 661.86 | 6.62 | 95.99  | -3  | 26.6 | 3951.5 | 39.52 | 573.10 | 65 | 149   |
| 683.82 | 6.84 | 99.18  | -2  | 28.4 | 4038.3 | 40.38 | 585.69 | 66 | 150.8 |
| 706.34 | 7.06 | 102.44 | -1  | 30.2 | 4126.8 | 41.27 | 598.52 | 67 | 152.6 |
| 729.41 | 7.29 | 105.79 | 0   | 32   | 4217   | 42.17 | 611.60 | 68 | 154.4 |
| 753.06 | 7.53 | 109.22 | 1   | 33.8 | 4309   | 43.09 | 624.95 | 69 | 156.2 |
| 777.28 | 7.77 | 112.73 | 2   | 35.6 | 4402.9 | 44.03 | 638.56 | 70 | 158   |
| 802.08 | 8.02 | 116.33 | 3   | 37.4 | 4498.7 | 44.99 | 652.46 | 71 | 159.8 |
| 827.48 | 8.27 | 120.01 | 4   | 39.2 | 4596.5 | 45.97 | 666.64 | 72 | 161.6 |
| 853.49 | 8.53 | 123.78 | 5   | 41   | 4696.5 | 46.97 | 681.15 | 73 | 163.4 |
| 880.11 | 8.80 | 127.64 | 6   | 42.8 | 4798.9 | 47.99 | 696.00 | 74 | 165.2 |
| 907.35 | 9.07 | 131.60 | 7   | 44.6 | 4904.1 | 49.04 | 711.25 | 75 | 167   |

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# Outdoor Unit Disassembly

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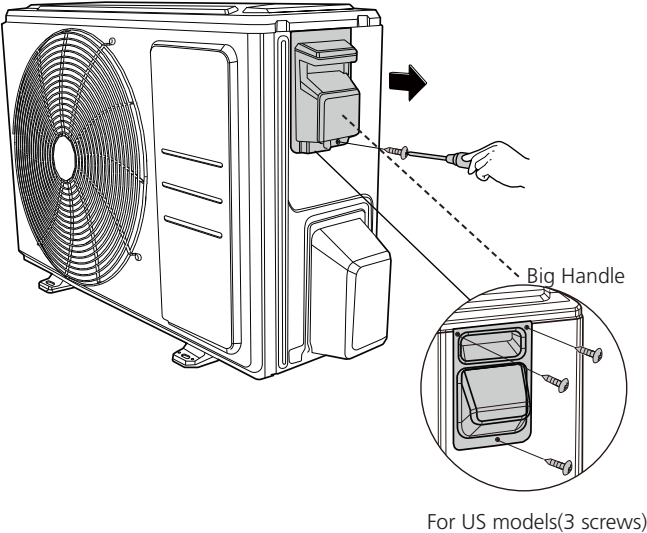
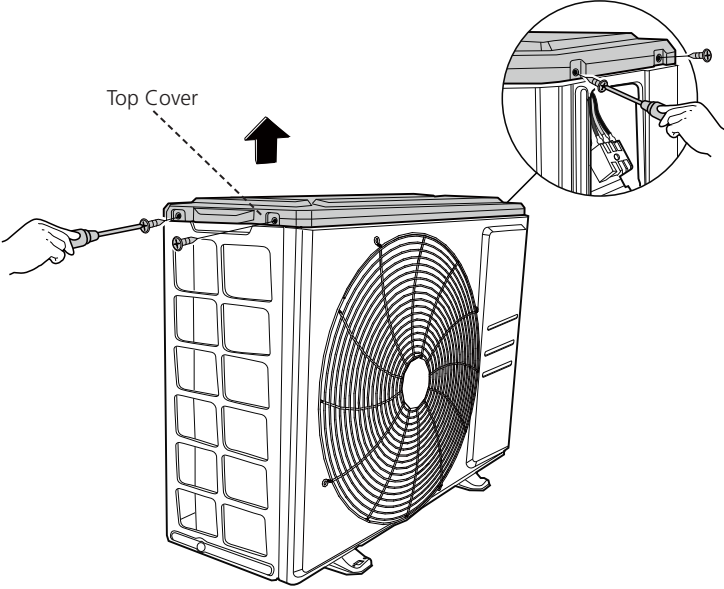
# Outdoor Unit Disassembly

## Contents

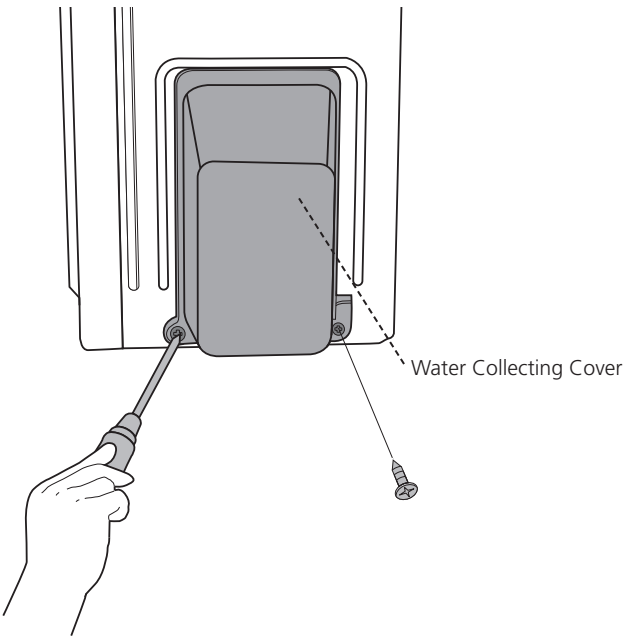
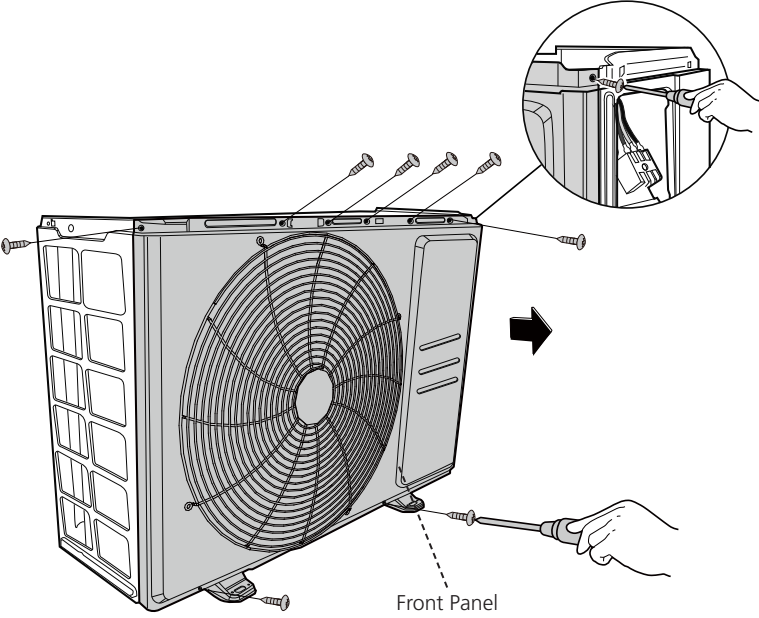
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## 1. SZ09H525ZMO, SZ12H525ZMO Disassembly

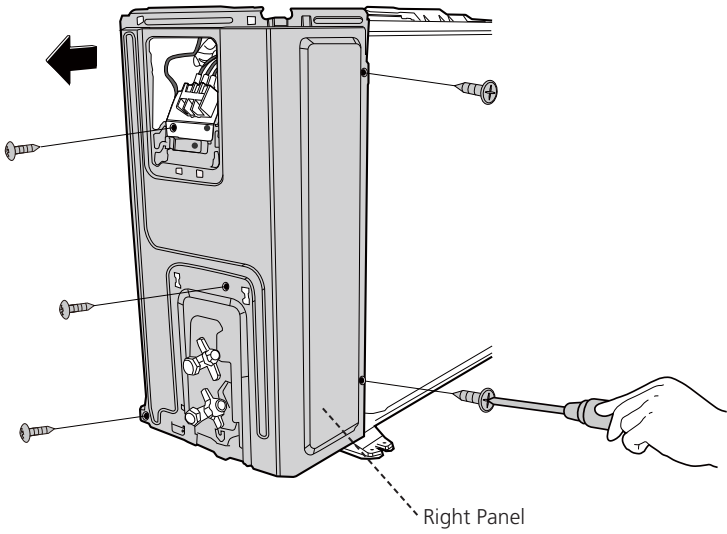
### 1.1 Panel Plate

| Procedure                                                                                                                                                               | Illustration                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) Turn off the air conditioner and the power breaker.</p> <p>2) Remove the screw of the big handle and then remove the big handle (3 screws) (see CJ_X230_001).</p> |  <p style="text-align: center;">CJ_X230_001</p>  |
| <p>3) Remove the screws of the top cover and then remove the top cover (4 screws). One of the screws is located underneath the big handle (see CJ_X230_002).</p>        |  <p style="text-align: center;">CJ_X230_002</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                                                              | Illustration                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4) Remove the screws of water collecting cover and then remove the water collecting cover (2 screws) (see CJ_X230_003).</p>                         |  <p style="text-align: center;"><b>CJ_X230_003</b></p>   |
| <p>5) Remove the screws of the front panel and then remove the front panel (7 screws(onoff models) or 9 screws(inverter models) (see CJ_X230_004).</p> |  <p style="text-align: center;"><b>CJ_X230_004</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

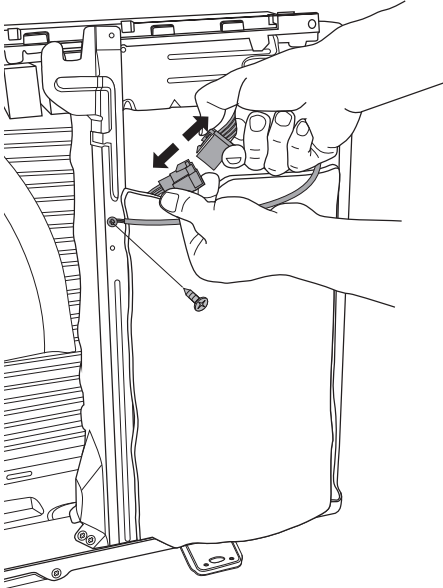
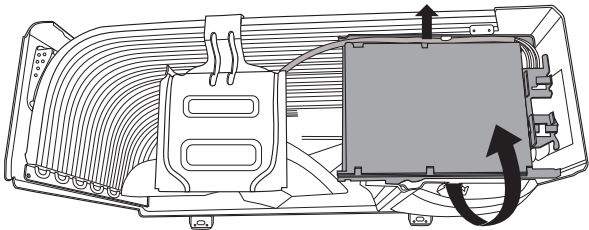
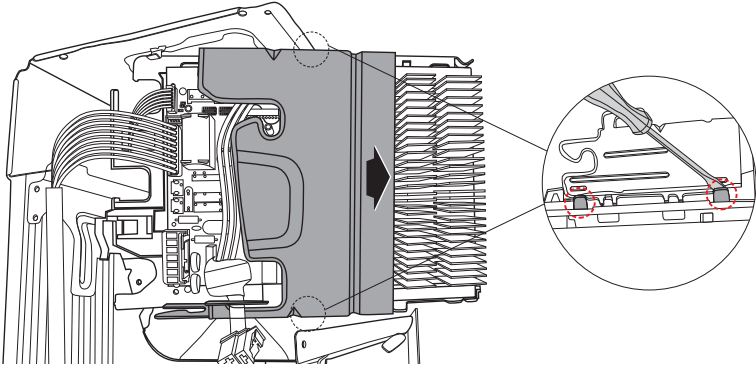
| Procedure                                                                                                    | Illustration                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <p>6) Remove the screws of the right panel and then remove the right panel (5 screws) (see CJ_X230_005).</p> |  <p style="text-align: center;"><b>CJ_X230_005</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

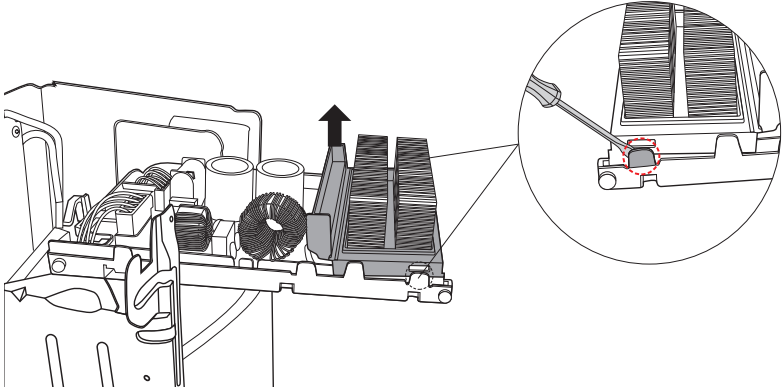
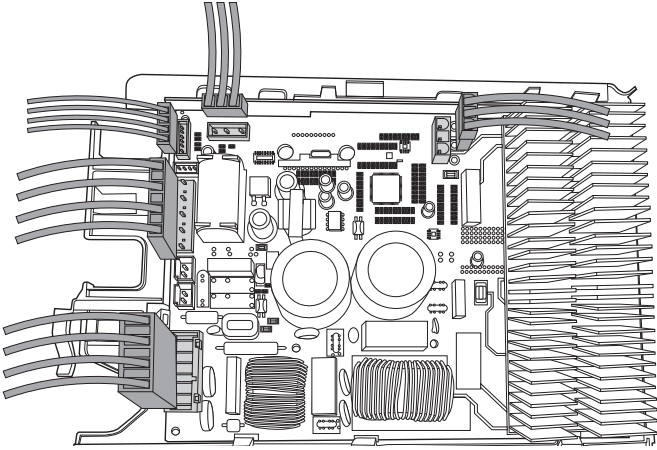
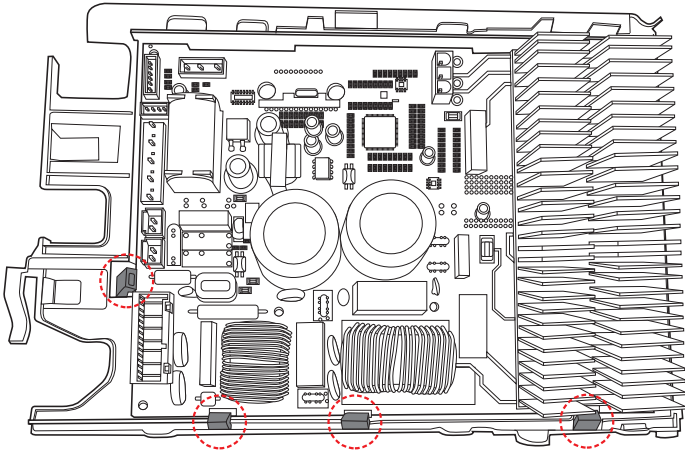
## 1.2 Electrical parts

**⚠ WARNING:** Antistatic gloves must be worn when you disassemble the electronic box.

**Note:** Remove the air outlet grille(refer to 2.1 Panel Plate) before disassembling electrical parts.

| Procedure                                                                                                                                                                                                                                                 | Illustration                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <p>1) Disconnect the connector for compressor and release the ground wire(1 screw). (see CJ_ODU_PCB_006-1).</p>                                                                                                                                           |  <p>CJ_ODU_PCB_006-1</p>  |
| <p>2) Pull out the wires from electrical supporting plate and turn over the electronic control assembly. (see CJ_ODU_PCB_006-2).</p> <p><b>Note:</b> Electric control box cover cannot be removed, so the voltage between P and N cannot be measured.</p> |  <p>CJ_ODU_PCB_006-2</p> |
| <p>3) Remove the electronic installing box subassembly (4 hooks) (see CJ_ODU_PCB_006-3).</p>                                                                                                                                                              |  <p>CJ_ODU_PCB_006-3</p> |

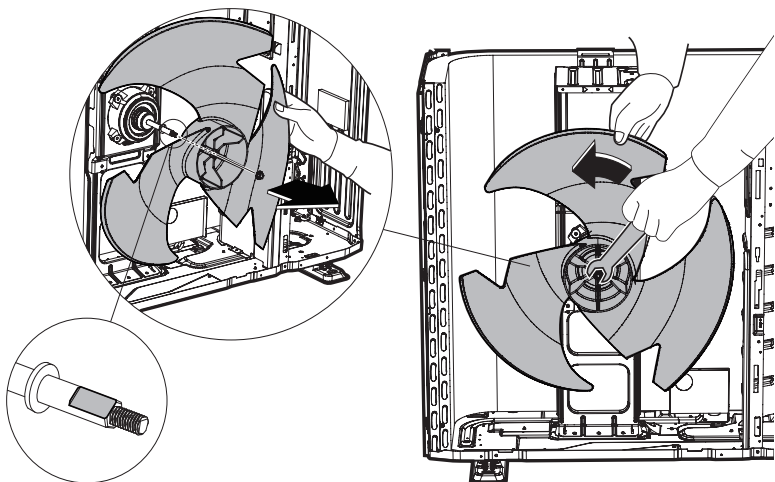
**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                     | Illustration                                                                                                                                    |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4) Remove the fixing board (2 hooks)<br/>(see CJ_ODU_PCB_006-4).(for some models)</p>      |  <p style="text-align: center;"><b>CJ_ODU_PCB_006-4</b></p>   |
| <p>5) Disconnect the connectors from the electronic control board (see CJ_ODU_PCB_006-5).</p> |  <p style="text-align: center;"><b>CJ_ODU_PCB_006-5</b></p>  |
| <p>6) Then remove the electronic control board (4 hooks).(see CJ_ODU_PCB_006-6).</p>          |  <p style="text-align: center;"><b>CJ_ODU_PCB_006-6</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

### 1.3 Fan Assembly

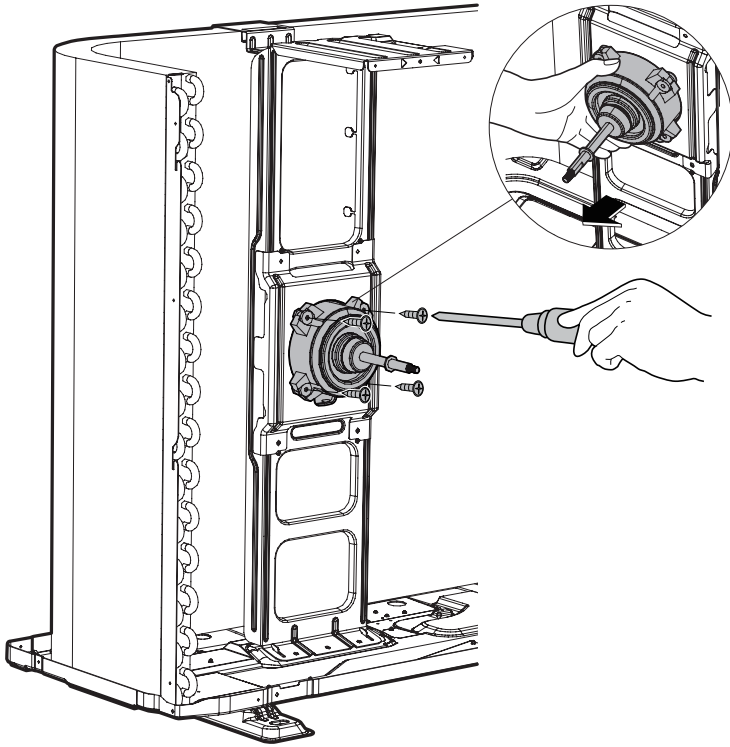
**Note:** Remove the panel plate (refer to 2.1 Panel Plate) before disassembling fan.

| Procedure                                                                                                                                          | Illustration                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) Remove the nut securing the fan with a spanner (see CJ_ODU_FAN_001).</li><li>2) Remove the fan.</li></ol> |  <p>CJ_ODU_FAN_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

## 1.4 Fan Motor

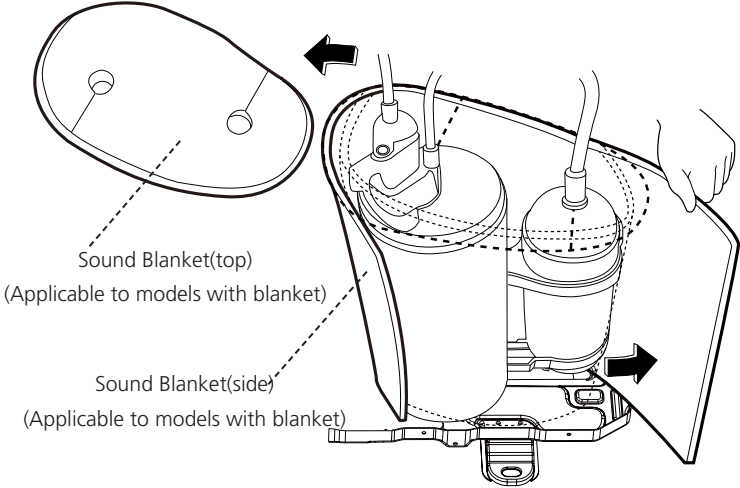
**Note:** Remove the panel plate and the connection of fan motor on PCB (refer to 2.1 Panel Plate and 2.2 Electrical parts) before disassembling fan motor.

| Procedure                                                                                                              | Illustration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3) Remove the fixing screws of the fan motor (4 screws) (see CJ_ODU_MOTOR_001).</p> <p>4) Remove the fan motor.</p> |  <p>The illustration shows a side view of an outdoor unit with its front panel removed. A hand is using a screwdriver to remove one of four screws that secure the fan motor to the unit's frame. A circular inset provides a magnified view of the screw being removed from the motor's mounting bracket. The label 'CJ_ODU_MOTOR_001' is positioned below the main illustration.</p> <p>CJ_ODU_MOTOR_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

1.5 Sound blanket

Note: Remove the panel plate (refer to 2.1 Panel plate) before disassembling sound blanket.

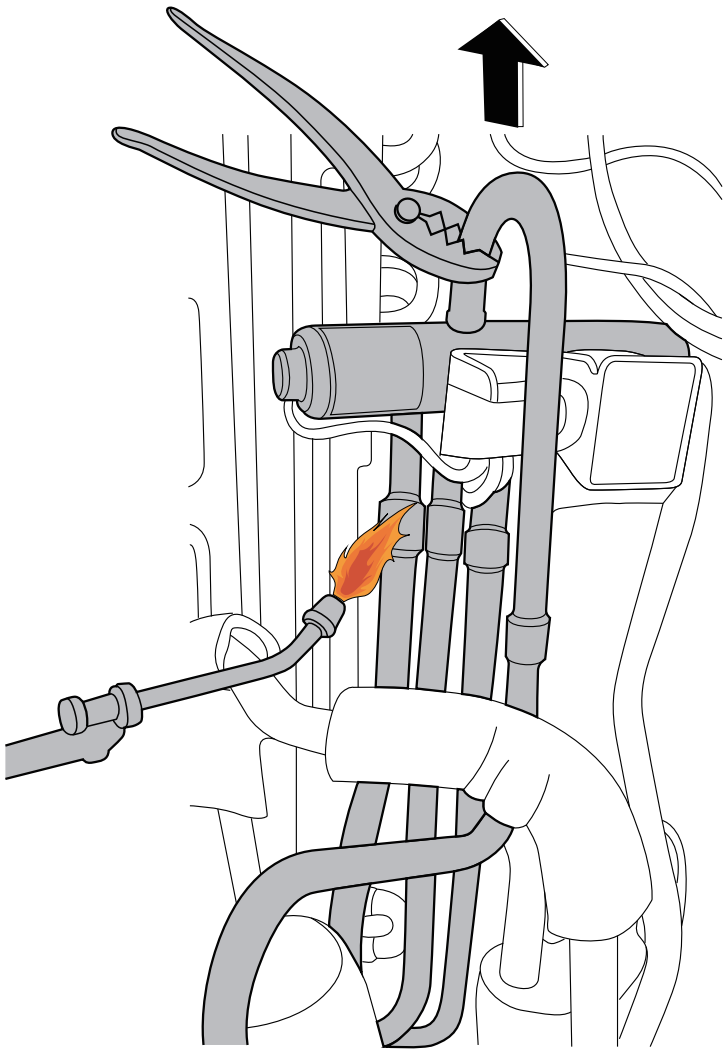
| Procedure                                                            | Illustration                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Remove the sound blanket (side and top) (see CJ_ODU_BLANKET_001). |  <p>Sound Blanket(top)<br/>(Applicable to models with blanket)</p> <p>Sound Blanket(side)<br/>(Applicable to models with blanket)</p> <p>CJ_ODU_BLANKET_001</p> |

Note: This section is for reference only. Actual unit appearance may vary.

## 1.6 Four-way valve (for heat pump models)

**⚠ WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of four-way valve on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

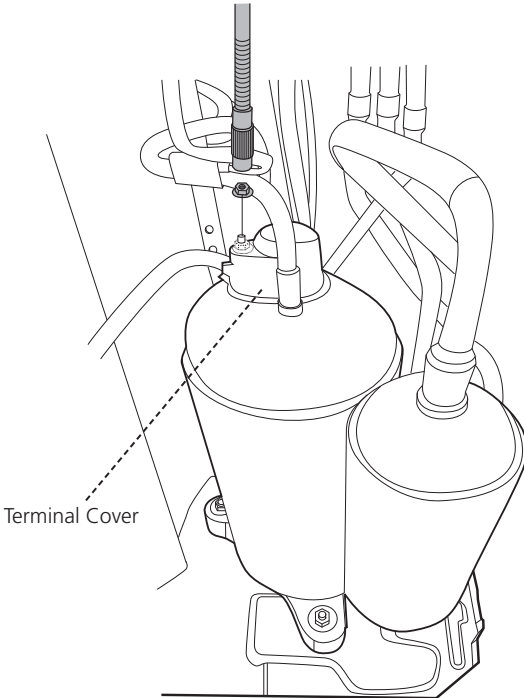
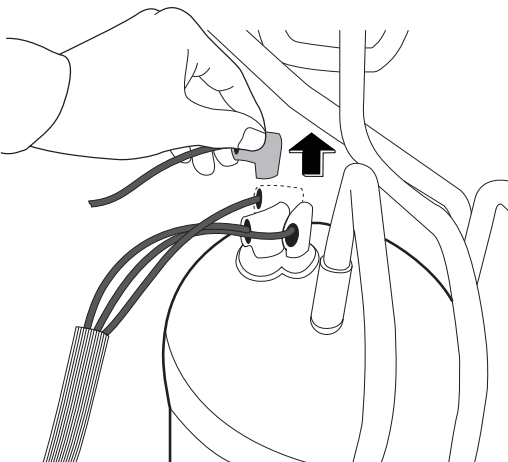
| Procedure                                                                                                                                                                                                          | Illustration                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) Heat up the brazed parts and then detach the the four-way valve and the pipe (see CJ_ODU_VALVE_001).</li><li>2) Remove the four-way valve assembly with pliers.</li></ol> |  <p>CJ_ODU_VALVE_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

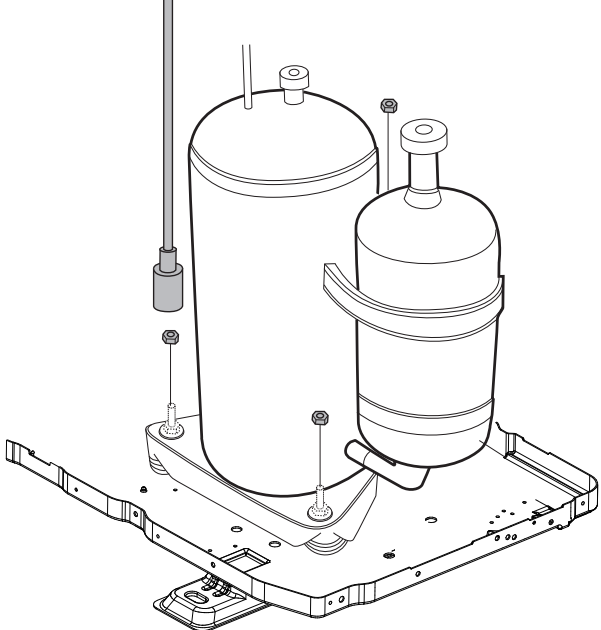
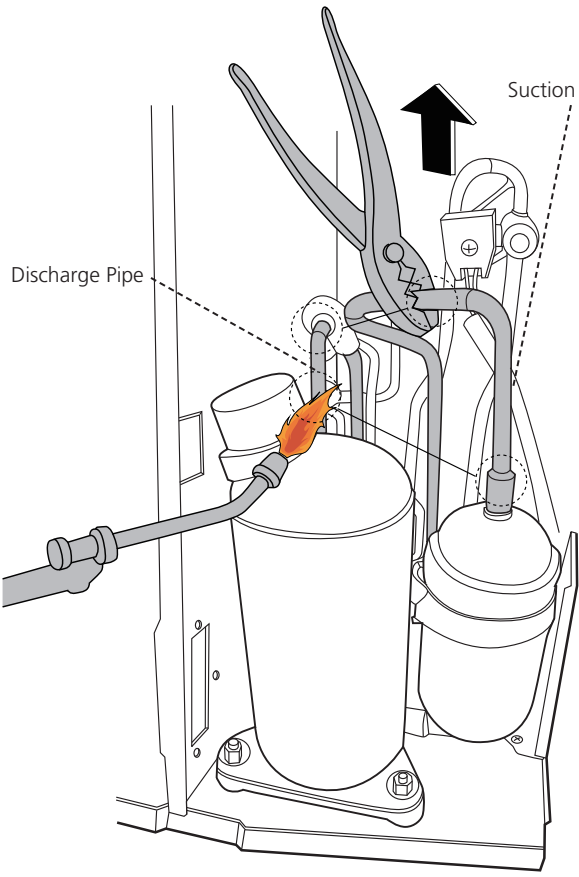
## 1.7 Compressor

**⚠ WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of compressor on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

| Procedure                                                                                       | Illustration                                                                                                |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1) Remove the flange nut of terminal cover and remove the terminal cover (see CJ_ODU_COMP_001). |  <p>CJ_ODU_COMP_001</p>  |
| 2) Disconnect the connectors (see CJ_ODU_COMP_002).                                             |  <p>CJ_ODU_COMP_002</p> |

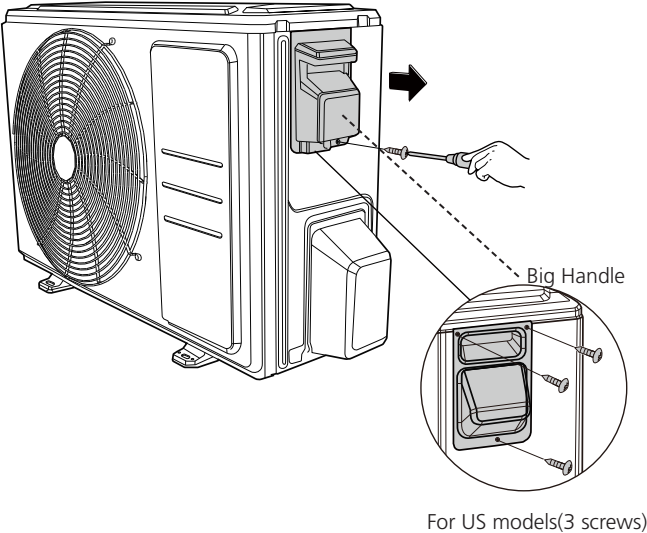
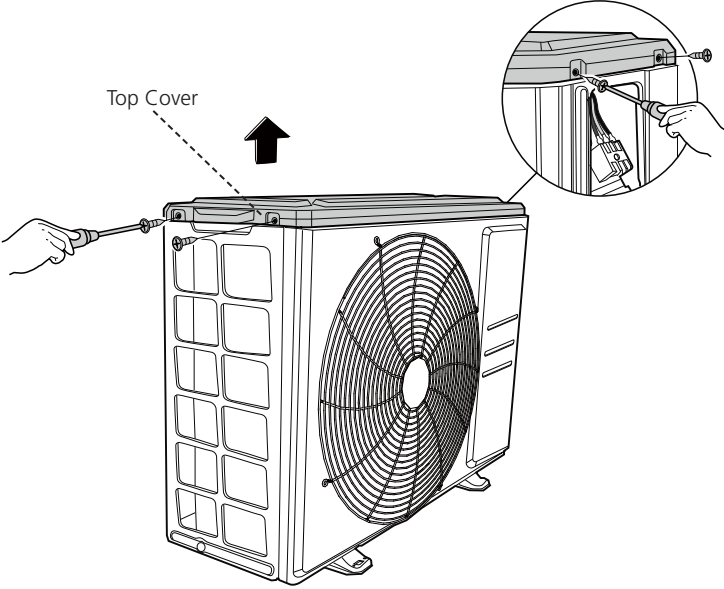
**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                                                                                                   | Illustration                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3) Remove the hex nuts and washers securing the compressor, located on the bottom plate (see CJ_ODU_COMP_003).</p>                                                                       |  <p style="text-align: center;"><b>CJ_ODU_COMP_003</b></p>   |
| <p>4) Heat up the brazed parts and then remove the the discharge pipe and the suction pipe (see CJ_ODU_COMP_004).</p> <p>5) Lift the compressor from the base pan assembly with pliers.</p> |  <p style="text-align: center;"><b>CJ_ODU_COMP_004</b></p> |

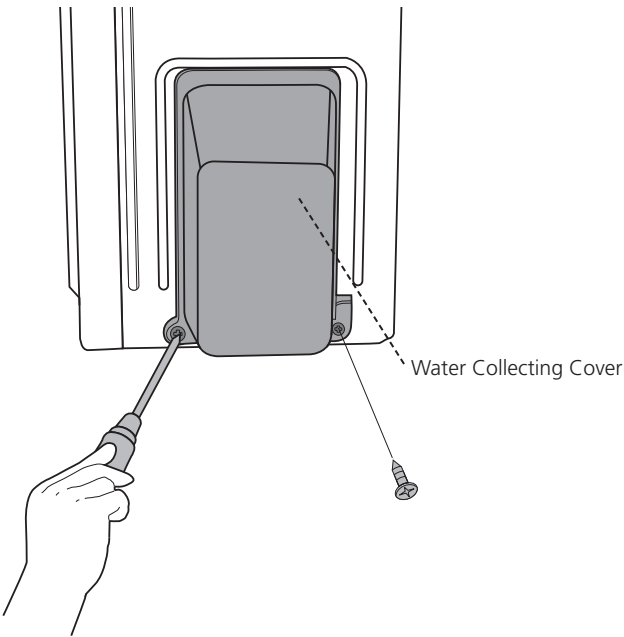
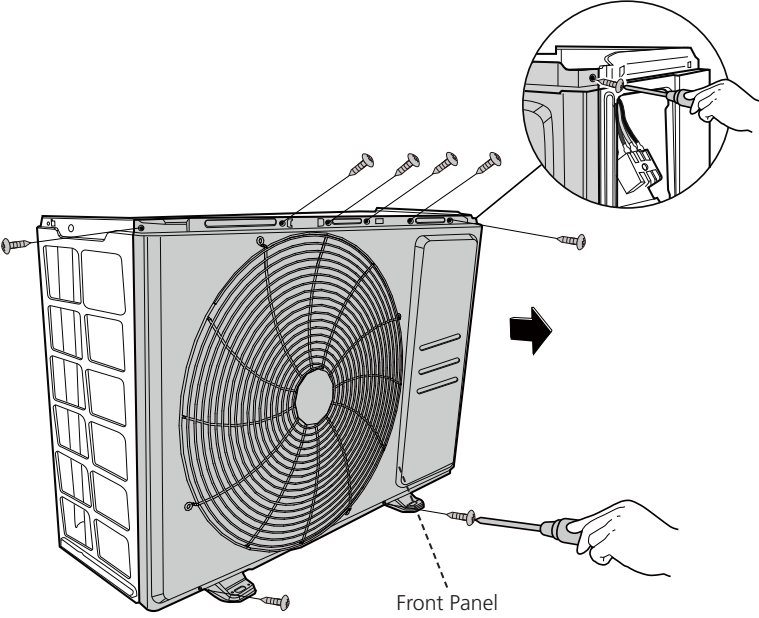
**Note: This section is for reference only. Actual unit appearance may vary.**

## 2. SZ09H525ZMO, SZ12H525ZMO Disassembly

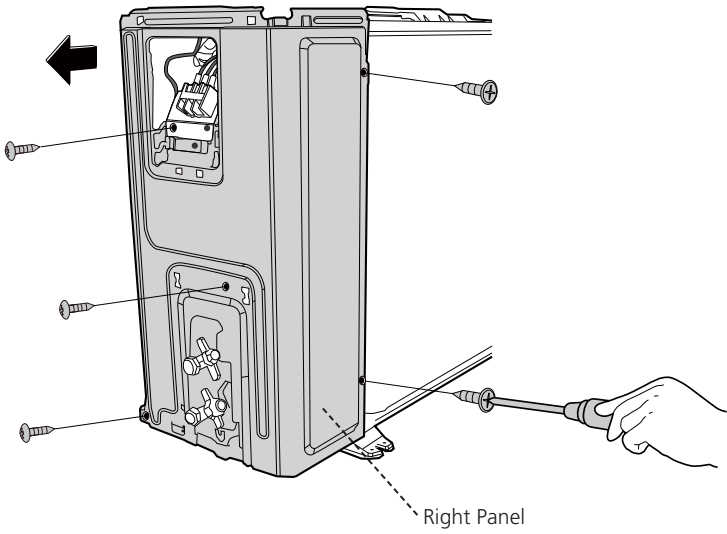
### 2.1 Panel Plate

| Procedure                                                                                                                                                               | Illustration                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) Turn off the air conditioner and the power breaker.</p> <p>2) Remove the screw of the big handle and then remove the big handle (3 screws) (see CJ_X230_001).</p> |  <p style="text-align: center;">CJ_X230_001</p>  |
| <p>3) Remove the screws of the top cover and then remove the top cover (4 screws). One of the screws is located underneath the big handle (see CJ_X230_002).</p>        |  <p style="text-align: center;">CJ_X230_002</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                                                              | Illustration                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4) Remove the screws of water collecting cover and then remove the water collecting cover (2 screws) (see CJ_X230_003).</p>                         |  <p style="text-align: center;"><b>CJ_X230_003</b></p>   |
| <p>5) Remove the screws of the front panel and then remove the front panel (7 screws(onoff models) or 9 screws(inverter models) (see CJ_X230_004).</p> |  <p style="text-align: center;"><b>CJ_X230_004</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

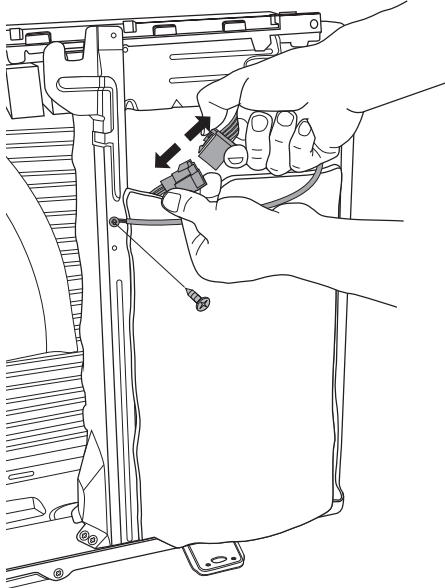
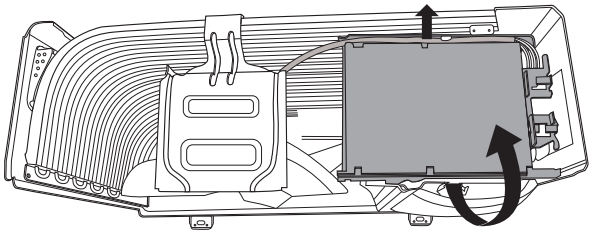
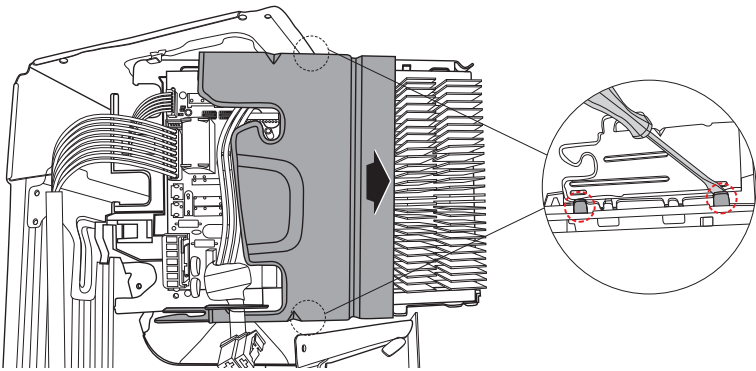
| Procedure                                                                                                    | Illustration                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <p>6) Remove the screws of the right panel and then remove the right panel (5 screws) (see CJ_X230_005).</p> |  <p style="text-align: center;"><b>CJ_X230_005</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

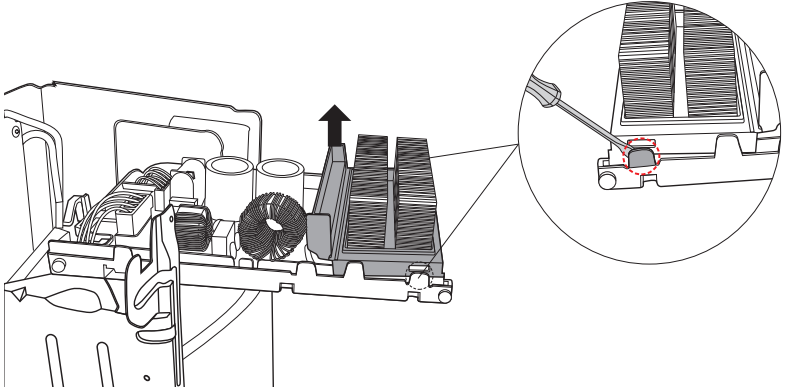
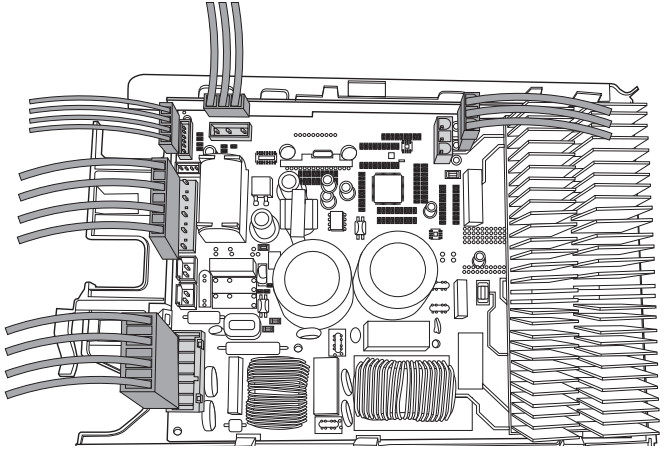
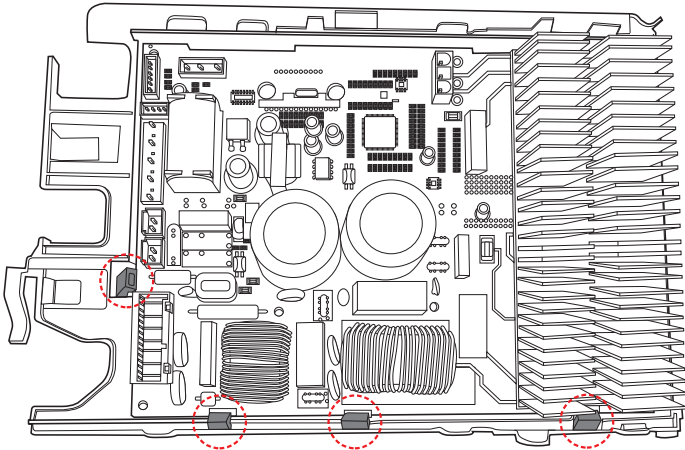
## 2.2 Electrical parts

**⚠ WARNING:** Antistatic gloves must be worn when you disassemble the electronic box.

**Note:** Remove the air outlet grille(refer to 2.1 Panel Plate) before disassembling electrical parts.

| Procedure                                                                                                                                                                                                                                                 | Illustration                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <p>1) Disconnect the connector for compressor and release the ground wire(1 screw). (see CJ_ODU_PCB_006-1).</p>                                                                                                                                           |  <p>CJ_ODU_PCB_006-1</p>  |
| <p>2) Pull out the wires from electrical supporting plate and turn over the electronic control assembly. (see CJ_ODU_PCB_006-2).</p> <p><b>Note:</b> Electric control box cover cannot be removed, so the voltage between P and N cannot be measured.</p> |  <p>CJ_ODU_PCB_006-2</p> |
| <p>3) Remove the electronic installing box subassembly (4 hooks) (see CJ_ODU_PCB_006-3).</p>                                                                                                                                                              |  <p>CJ_ODU_PCB_006-3</p> |

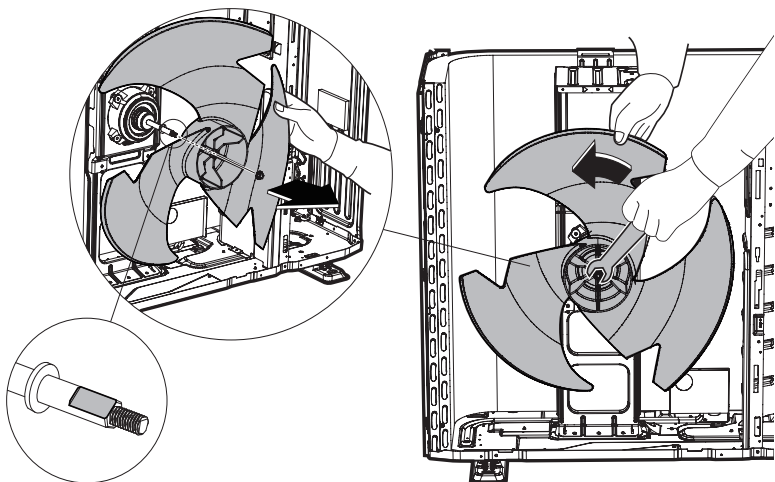
**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                     | Illustration                                                                                                                                    |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4) Remove the fixing board (2 hooks)<br/>(see CJ_ODU_PCB_006-4).(for some models)</p>      |  <p style="text-align: center;"><b>CJ_ODU_PCB_006-4</b></p>   |
| <p>5) Disconnect the connectors from the electronic control board (see CJ_ODU_PCB_006-5).</p> |  <p style="text-align: center;"><b>CJ_ODU_PCB_006-5</b></p>  |
| <p>6) Then remove the electronic control board (4 hooks).(see CJ_ODU_PCB_006-6).</p>          |  <p style="text-align: center;"><b>CJ_ODU_PCB_006-6</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

## 2.3 Fan Assembly

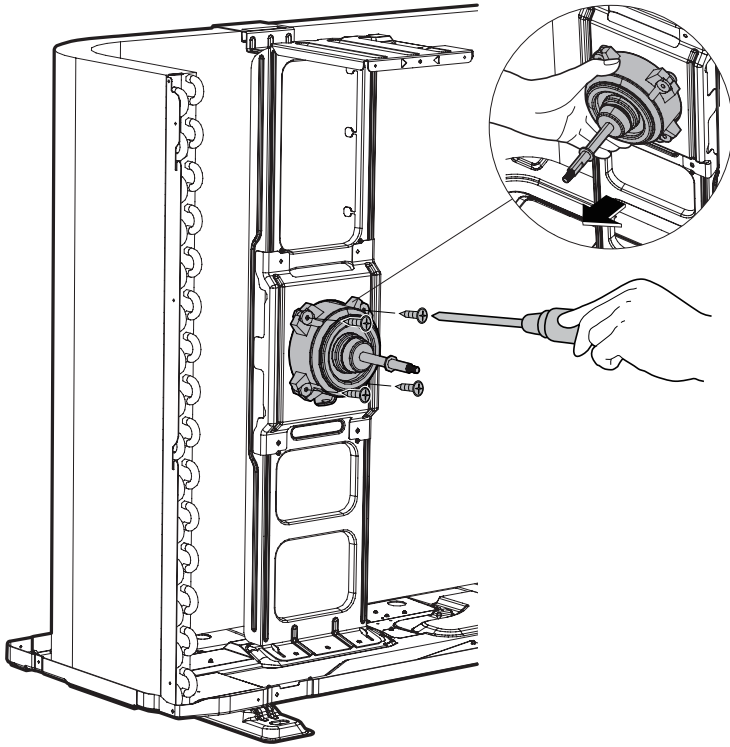
**Note:** Remove the panel plate (refer to 2.1 Panel Plate) before disassembling fan.

| Procedure                                                                                                                                          | Illustration                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) Remove the nut securing the fan with a spanner (see CJ_ODU_FAN_001).</li><li>2) Remove the fan.</li></ol> |  <p>CJ_ODU_FAN_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

## 2.4 Fan Motor

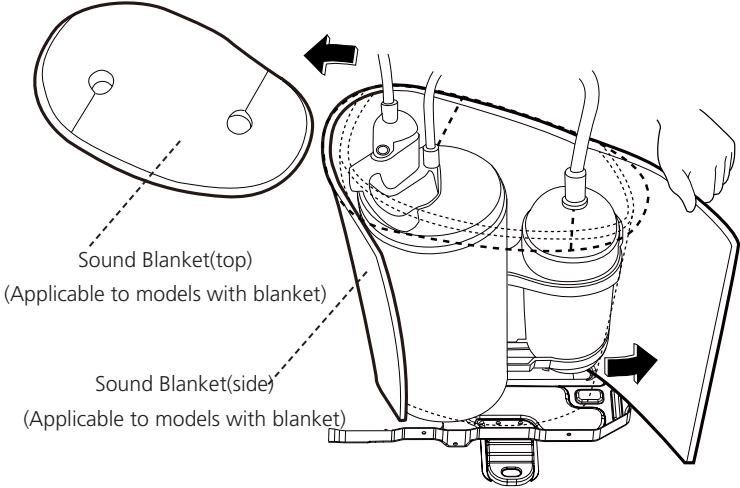
**Note:** Remove the panel plate and the connection of fan motor on PCB (refer to 2.1 Panel Plate and 2.2 Electrical parts) before disassembling fan motor.

| Procedure                                                                                                              | Illustration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3) Remove the fixing screws of the fan motor (4 screws) (see CJ_ODU_MOTOR_001).</p> <p>4) Remove the fan motor.</p> |  <p>The illustration shows a side view of an outdoor unit with its front panel removed. A hand is using a screwdriver to remove one of four screws that secure the fan motor to the unit's frame. A circular inset provides a magnified view of the screw being removed from the motor's mounting bracket. The label 'CJ_ODU_MOTOR_001' is positioned below the main drawing.</p> <p>CJ_ODU_MOTOR_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

2.5      **Sound blanket**

**Note:** Remove the panel plate (refer to 2.1 Panel plate) before disassembling sound blanket.

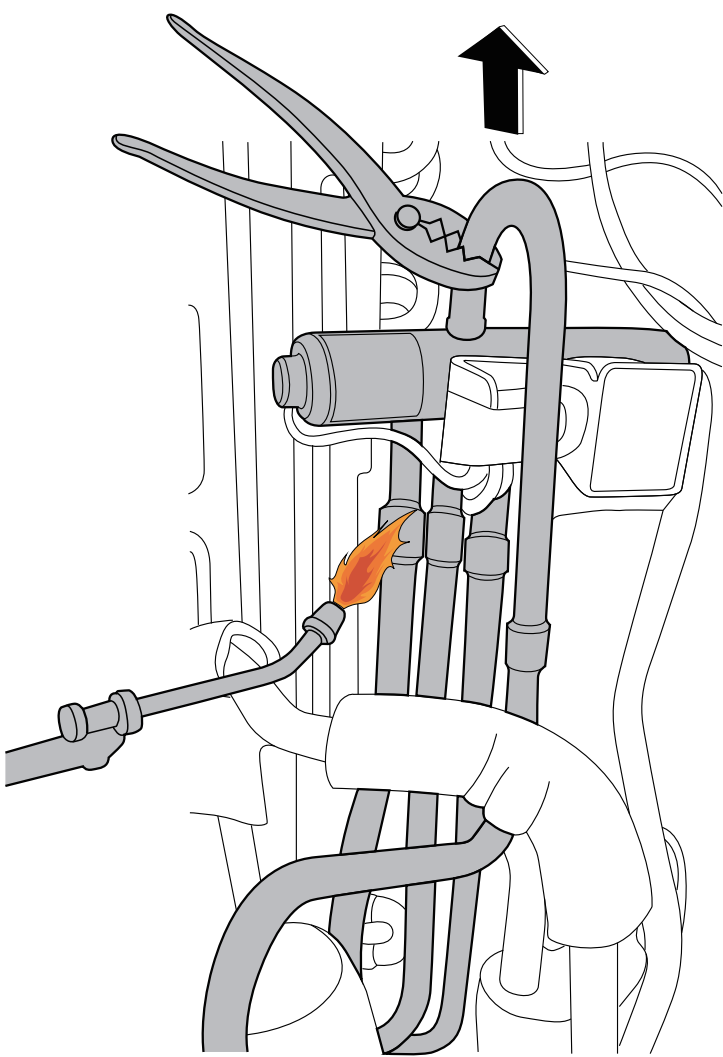
| Procedure                                                            | Illustration                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Remove the sound blanket (side and top) (see CJ_ODU_BLANKET_001). |  <p>Sound Blanket(top)<br/>(Applicable to models with blanket)</p> <p>Sound Blanket(side)<br/>(Applicable to models with blanket)</p> <p><b>CJ_ODU_BLANKET_001</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

## 2.6 Four-way valve (for heat pump models)

**⚠ WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of four-way valve on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

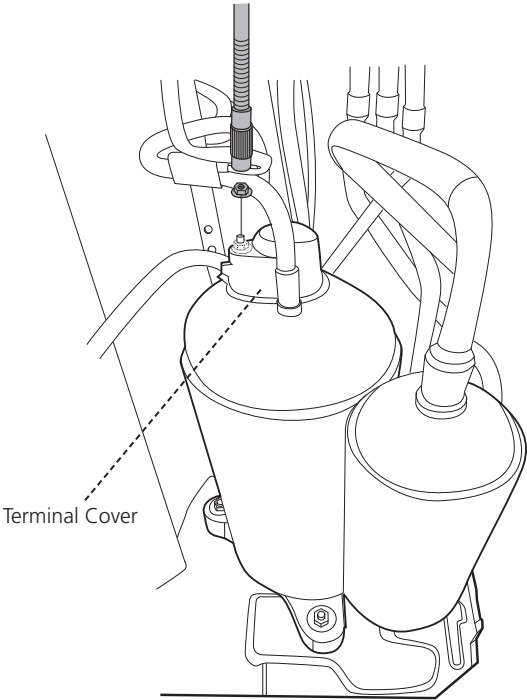
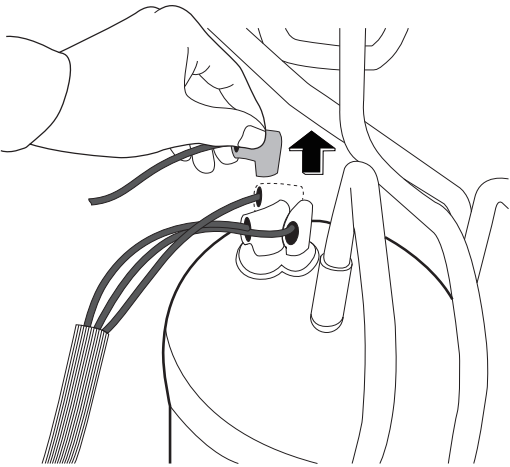
| Procedure                                                                                                                                                                                                          | Illustration                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) Heat up the brazed parts and then detach the the four-way valve and the pipe (see CJ_ODU_VALVE_001).</li><li>2) Remove the four-way valve assembly with pliers.</li></ol> |  <p>CJ_ODU_VALVE_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

2.7 Compressor

**⚠WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of compressor on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

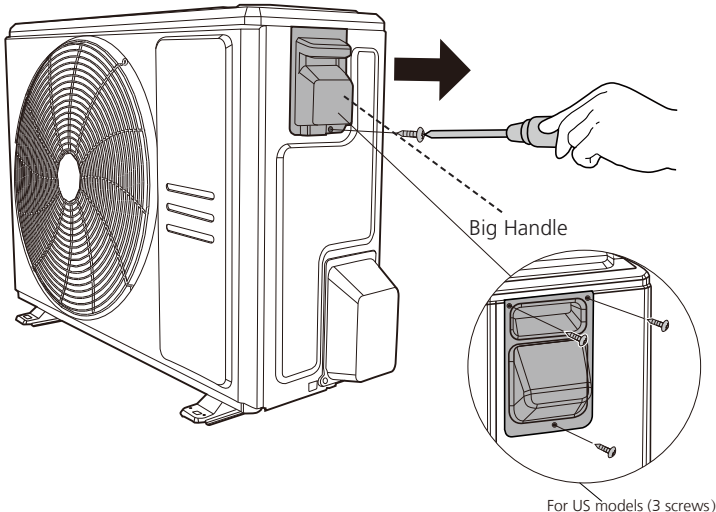
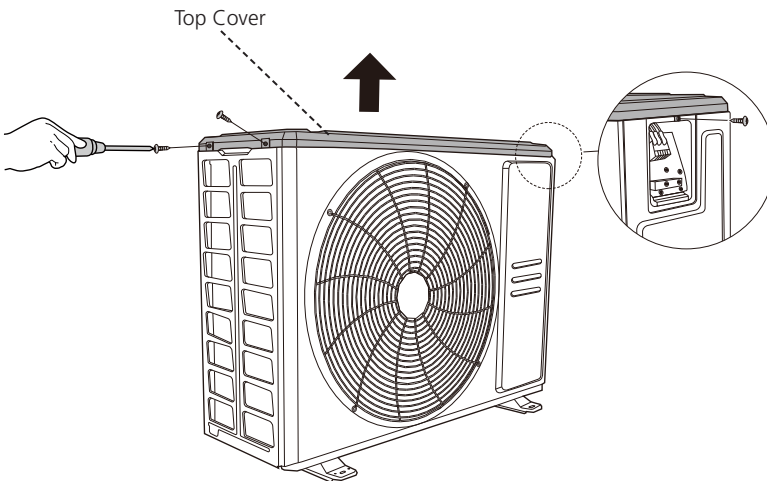
| Procedure                                                                                       | Illustration                                                                                                |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1) Remove the flange nut of terminal cover and remove the terminal cover (see CJ_ODU_COMP_001). |  <p>CJ_ODU_COMP_001</p>  |
| 2) Disconnect the connectors (see CJ_ODU_COMP_002).                                             |  <p>CJ_ODU_COMP_002</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

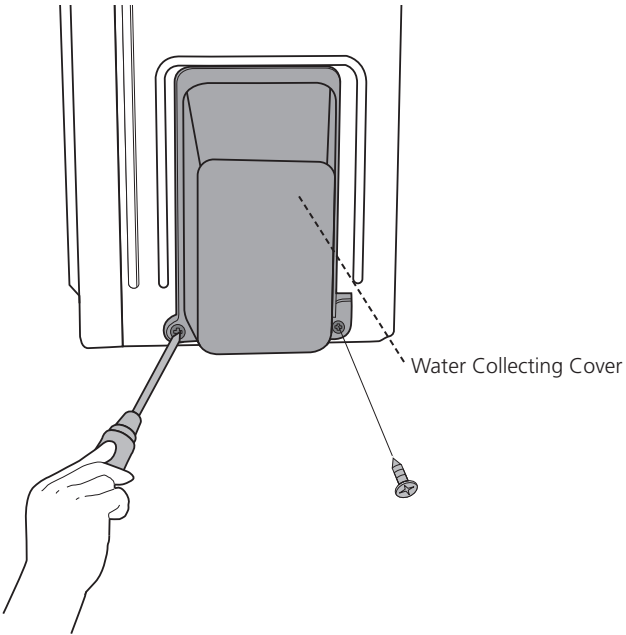
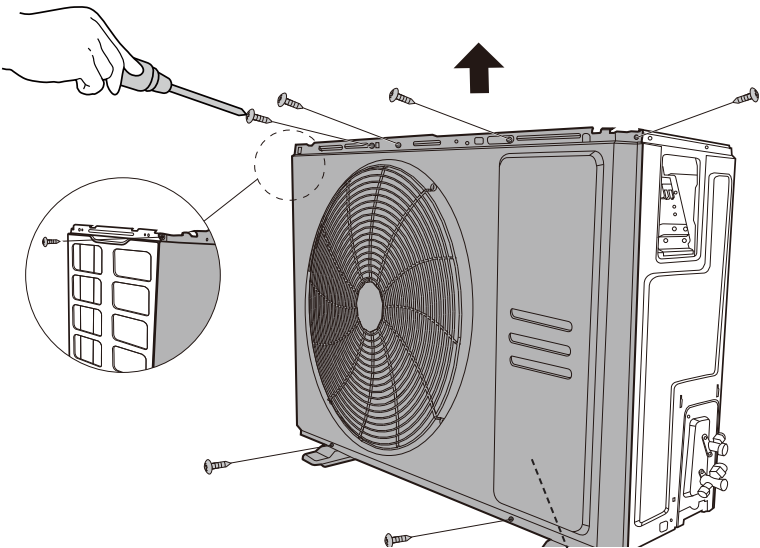


### 3. SZ18H525ZMO, HSZ18H525ZMO Disassembly

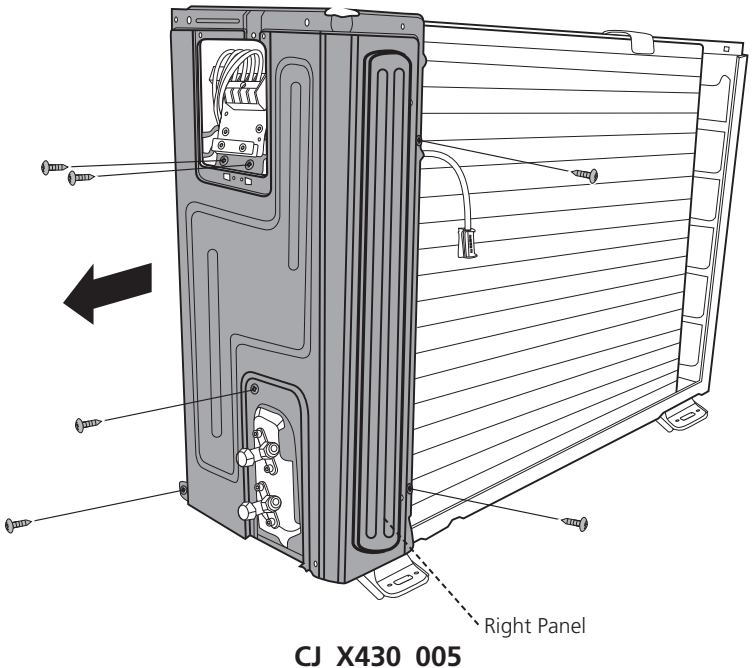
#### 3.1 Panel Plate

| Procedure                                                                                                                                                               | Illustration                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) Turn off the air conditioner and the power breaker.</p> <p>2) Remove the screw of the big handle and then remove the big handle (3 screws) (see CJ_X430_001).</p> |  <p style="text-align: center;"><b>CJ_X430_001</b></p>  |
| <p>3) Remove the screws of the top cover and then remove the top cover (3 screws). One of the screws is located underneath the big handle (see CJ_X430_002).</p>        |  <p style="text-align: center;"><b>CJ_X430_002</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                                      | Illustration                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4) Remove the screws of water collecting cover and then remove the water collecting cover (2 screws) (see CJ_X430_003).</p> |  <p style="text-align: center;"><b>CJ_X430_003</b></p>  <p style="text-align: center;"><b>CJ_X430_004</b>      Front Panel</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

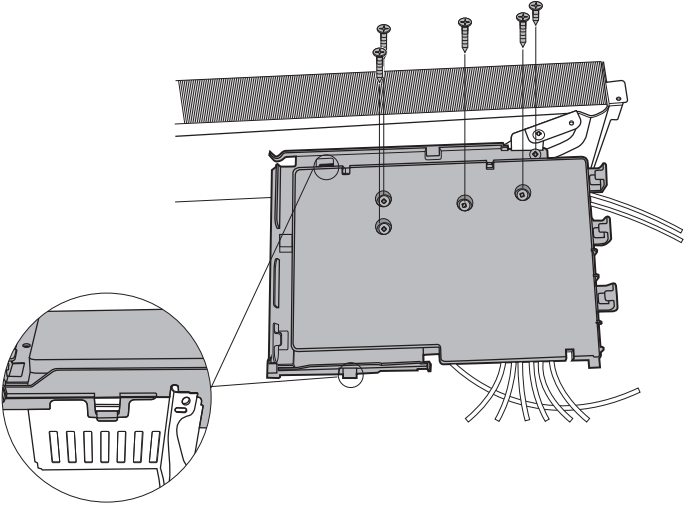
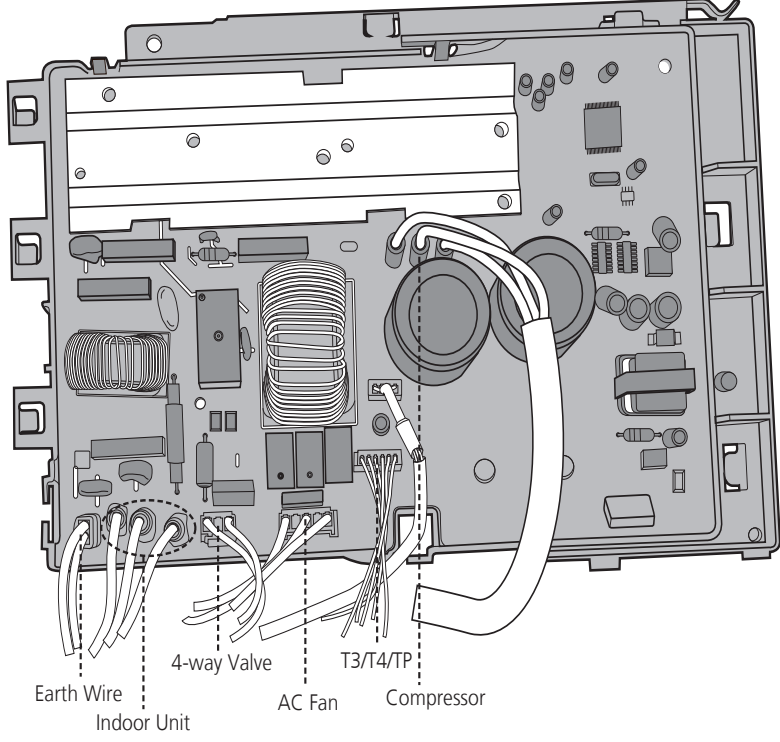
| Procedure                                                                                                    | Illustration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>6) Remove the screws of the right panel and then remove the right panel (6 screws) (see CJ_X430_005).</p> |  <p>The illustration shows a rear view of an outdoor unit. The right panel, which has horizontal slats, is being detached from the main unit body. A large black arrow points to the left, indicating the removal direction. Six screws are shown being removed from the panel: two at the top, two in the middle, and two at the bottom. The panel is labeled 'Right Panel' with a dashed line. The diagram is identified as 'CJ_X430_005'.</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

## 3.2 Electrical parts

**⚠ WARNING:** Antistatic gloves must be worn when you disassemble the electronic box.

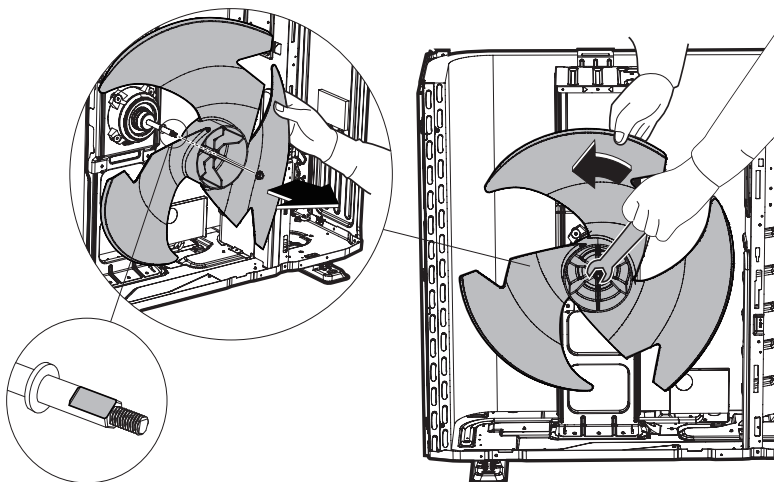
**Note:** Remove the air outlet grille(refer to 2.1 Panel Plate) before disassembling electrical parts.

| Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Illustration                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) Remove the 5 screws and unfix two hooks.(see CJ_ODU_PCB_003-1).</p> <p><b>Note:</b>Electric control box cover cannot be removed, so the voltage between P and N cannot be measured.</p> <p>2) Disconnect the connector for fan motor from the electronic control board (see CJ_ODU_PCB_003-2).</p> <p>3) Remove the connector for the compressor (see CJ_ODU_PCB_003-2).</p> <p>4) Pull out the two blue wires connected with the four way valve (see CJ_ODU_PCB_003-2).</p> <p>5) Pull out connectors of the condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4) and discharge temp. sensor(TP) (see CJ_ODU_PCB_003-2).</p> <p>6) Disconnect the electronic expansion valve wire (see Fig CJ_ODU_PCB_003-2).</p> <p>7) Remove the connector for the DR and reactor (see Fig CJ_ODU_PCB_003-2).</p> <p>8) Then remove the electronic control board.</p> <p><b>Note:</b> When replacing the electronic control board with a new one, pay attention to applying thermal paste on the heat sink.</p> |  <p><b>CJ_ODU_PCB_003-1</b></p>  <p><b>CJ_ODU_PCB_003-2</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

### 3.3 Fan Assembly

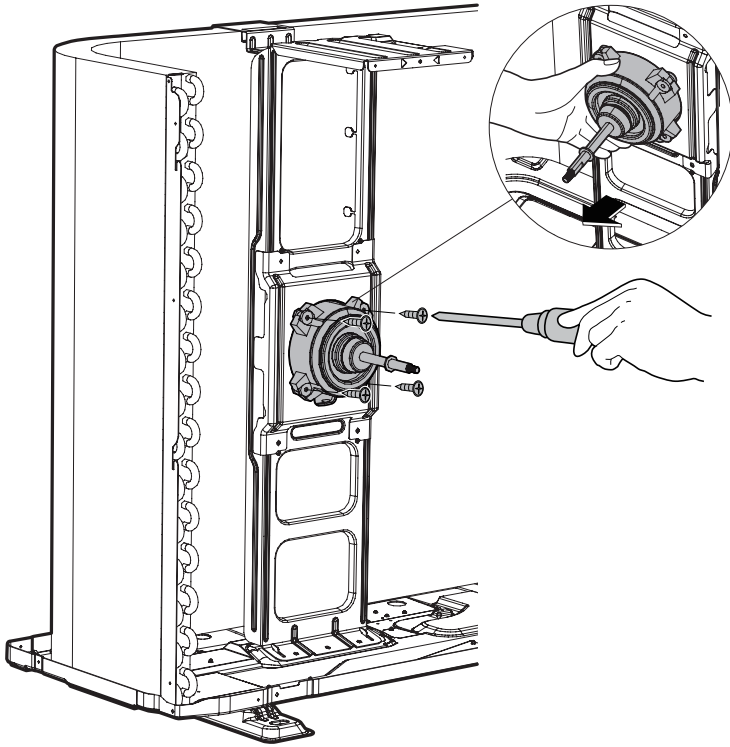
**Note:** Remove the panel plate (refer to 2.1 Panel Plate) before disassembling fan.

| Procedure                                                                                                                                          | Illustration                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) Remove the nut securing the fan with a spanner (see CJ_ODU_FAN_001).</li><li>2) Remove the fan.</li></ol> |  <p>CJ_ODU_FAN_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

### 3.4 Fan Motor

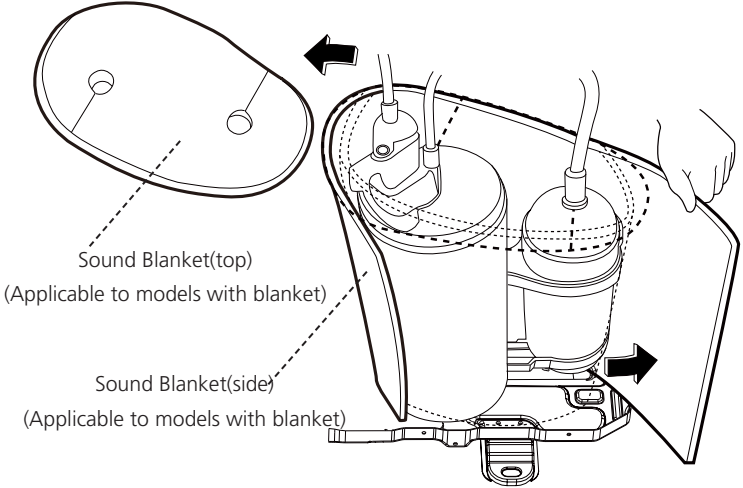
**Note:** Remove the panel plate and the connection of fan motor on PCB (refer to 2.1 Panel Plate and 2.2 Electrical parts) before disassembling fan motor.

| Procedure                                                                                                              | Illustration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3) Remove the fixing screws of the fan motor (4 screws) (see CJ_ODU_MOTOR_001).</p> <p>4) Remove the fan motor.</p> |  <p>The illustration shows a side view of an outdoor unit with its front panel removed. A hand is using a screwdriver to remove one of four screws that secure the fan motor to the unit's frame. A circular inset provides a magnified view of the screw being removed from the motor's mounting bracket. The label 'CJ_ODU_MOTOR_001' is positioned below the main drawing.</p> <p>CJ_ODU_MOTOR_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

3.5      Sound blanket

Note: Remove the panel plate (refer to 2.1 Panel plate) before disassembling sound blanket.

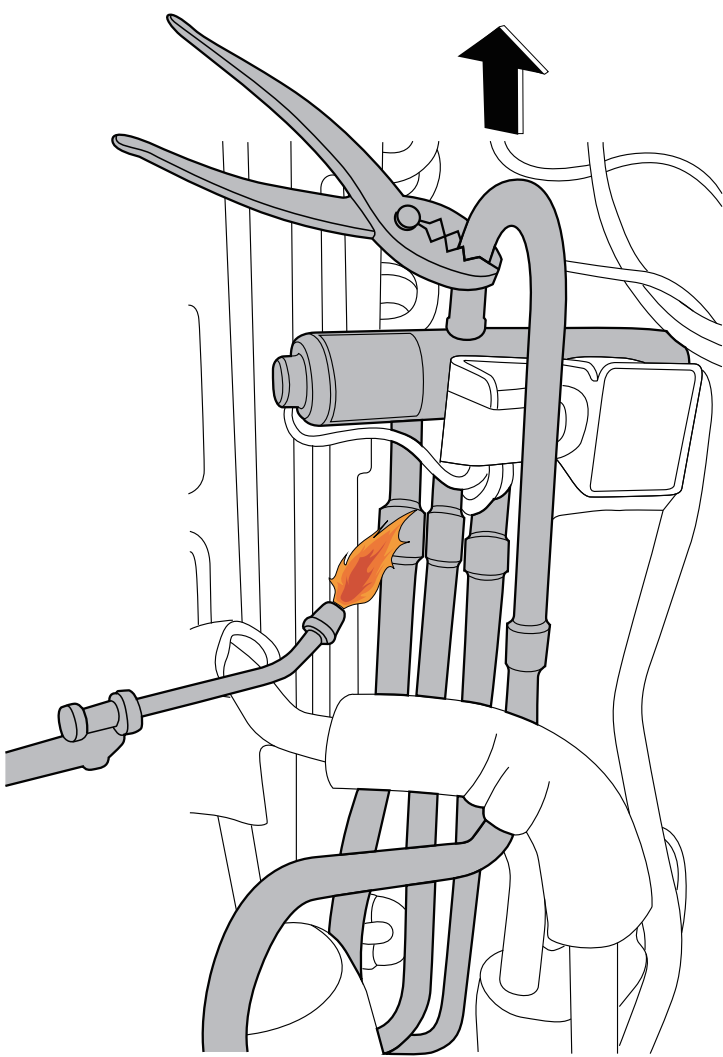
| Procedure                                                            | Illustration                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Remove the sound blanket (side and top) (see CJ_ODU_BLANKET_001). |  <p>Sound Blanket(top)<br/>(Applicable to models with blanket)</p> <p>Sound Blanket(side)<br/>(Applicable to models with blanket)</p> <p>CJ_ODU_BLANKET_001</p> |

Note: This section is for reference only. Actual unit appearance may vary.

### 3.6 Four-way valve (for heat pump models)

**⚠ WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of four-way valve on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

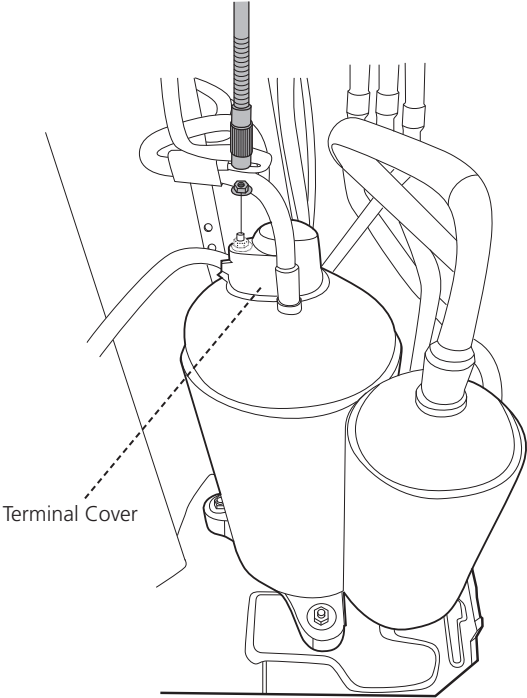
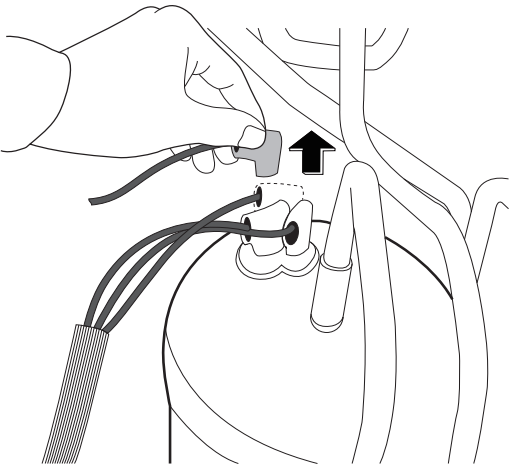
| Procedure                                                                                                                                                                                                          | Illustration                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) Heat up the brazed parts and then detach the the four-way valve and the pipe (see CJ_ODU_VALVE_001).</li><li>2) Remove the four-way valve assembly with pliers.</li></ol> |  <p>CJ_ODU_VALVE_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

3.7 Compressor

**⚠WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of compressor on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

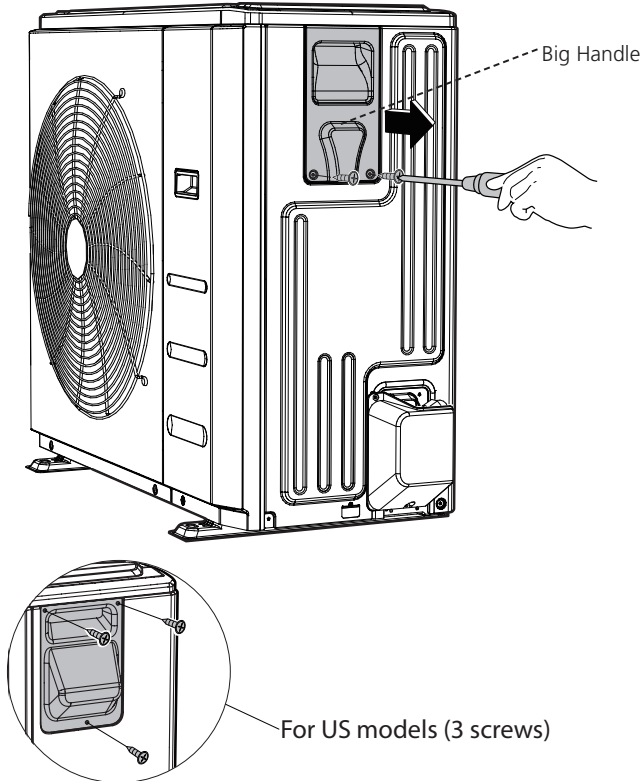
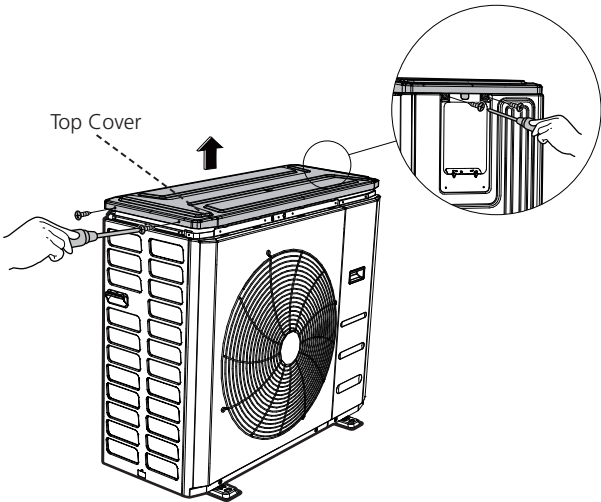
| Procedure                                                                                       | Illustration                                                                                                |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1) Remove the flange nut of terminal cover and remove the terminal cover (see CJ_ODU_COMP_001). |  <p>CJ_ODU_COMP_001</p>  |
| 2) Disconnect the connectors (see CJ_ODU_COMP_002).                                             |  <p>CJ_ODU_COMP_002</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

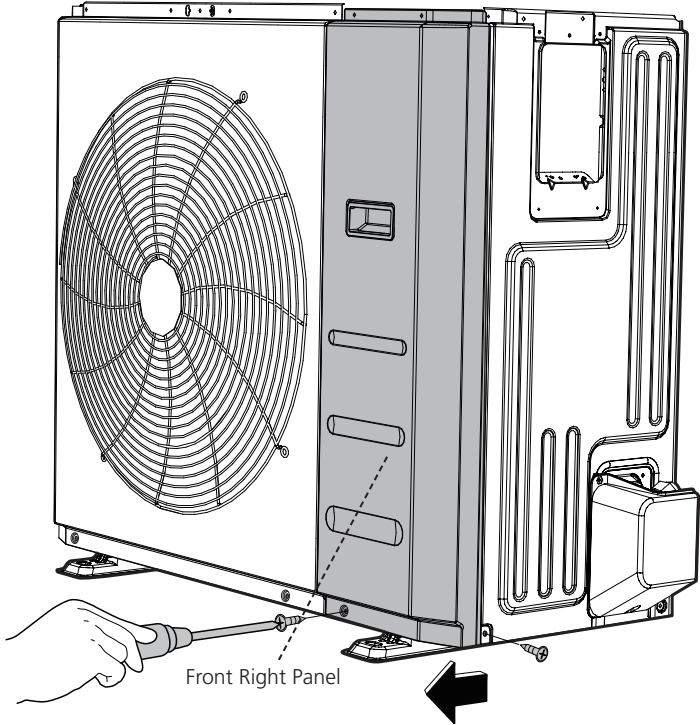
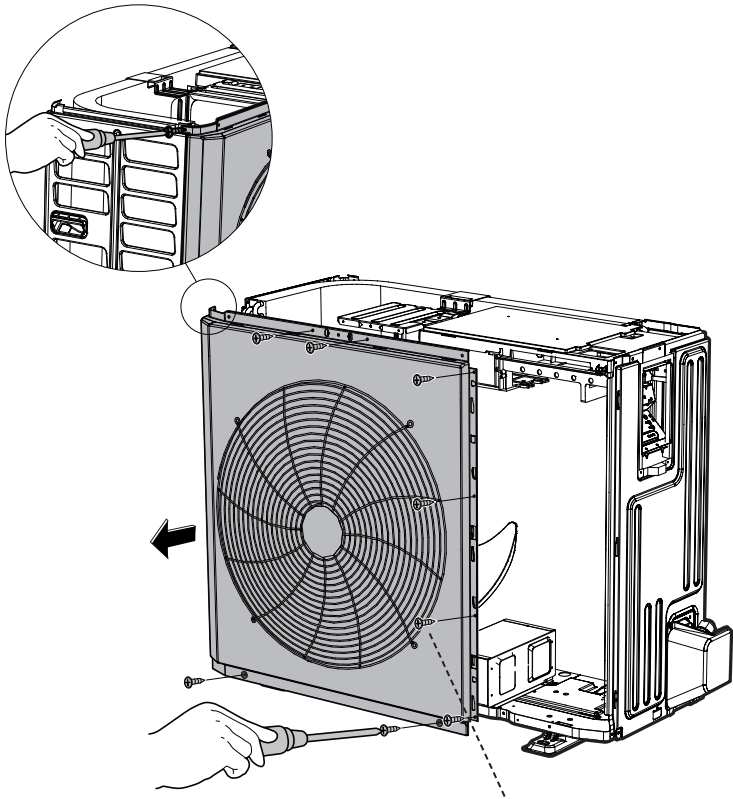


## 4. SZ24H525ZMO, HSZ24H525ZMO, SZ30H525ZMO, SZ36H525ZMO Disassembly

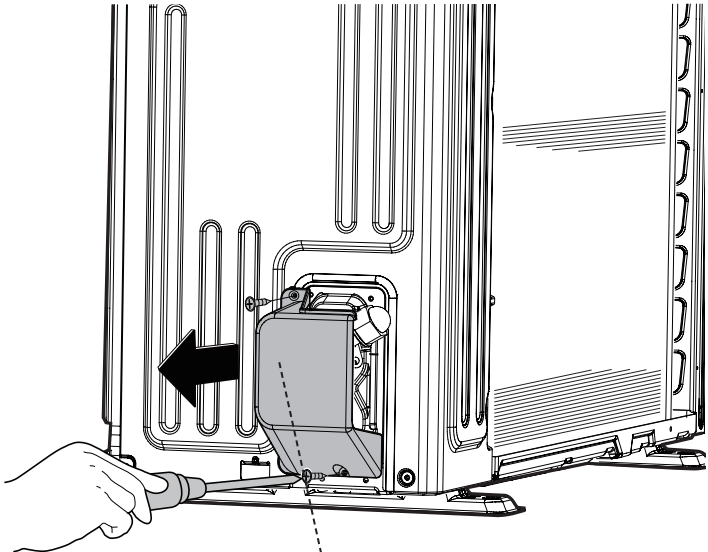
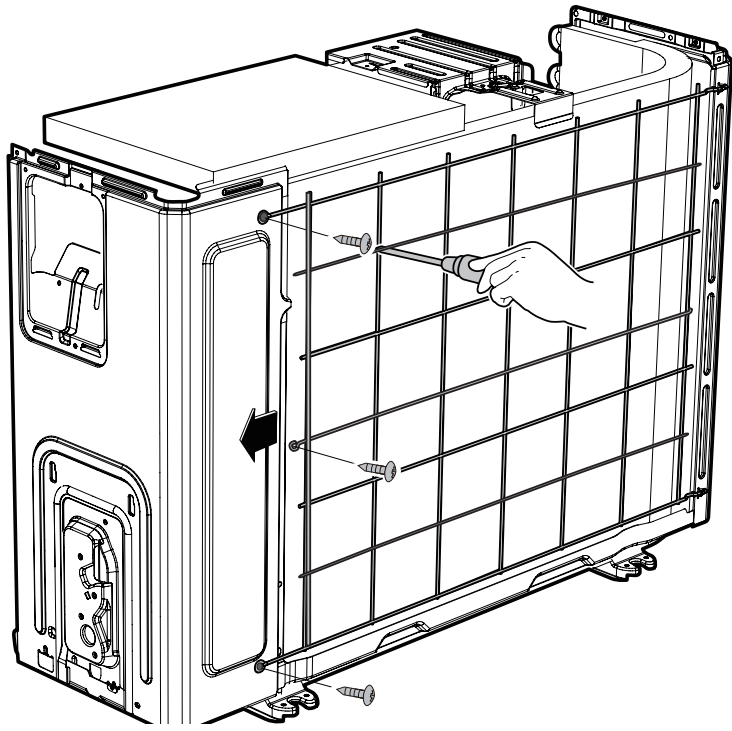
### 4.1 Panel Plate

| Procedure                                                                                                                                                               | Illustration                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <p>1) Turn off the air conditioner and the power breaker.</p> <p>2) Remove the screws of the big handle and then remove the big handle (2 screws) (see CJ_D30_001).</p> |  <p>CJ_D30_001</p>  |
| <p>3) Remove the screws of the top cover and then remove the top cover (4 screws). Two of the screws is located underneath the big handle (see CJ_D30_002).</p>         |  <p>CJ_D30_002</p> |

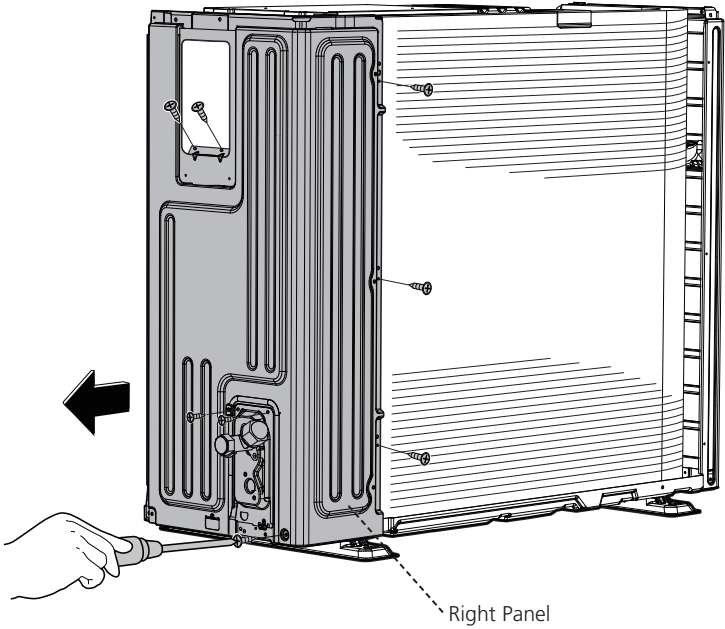
**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                               | Illustration                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4) Remove the screws of the front right panel and then remove the front right panel (2 screws) (see CJ_D30_003).</p> |  <p style="text-align: center;"><b>CJ_D30_003</b></p>  |
| <p>5) Remove the screws of the front panel and then remove the front panel (9 screws) (see CJ_D30_004).</p>             |  <p style="text-align: center;"><b>CJ_D30_004</b></p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                                     | Illustration                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <p>6) Remove the screws of water collecting cover and then remove the water collecting cover (2 screws) (see CJ_D30_005).</p> |  <p>Water Collecting Cover</p> <p>CJ_D30_005</p> |
| <p>7) Remove the screws of the rear net and then remove the rear net (3 screws) (see CJ_D30_006). (for some models)</p>       |  <p>CJ_D30_006</p>                             |

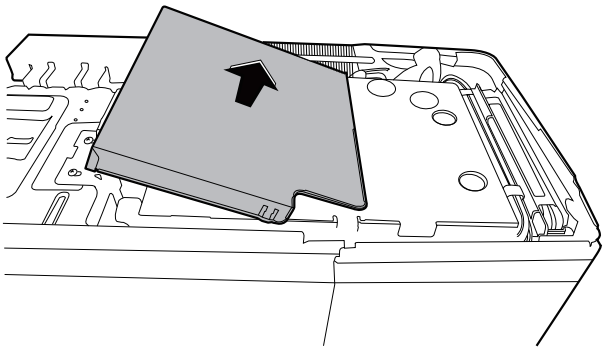
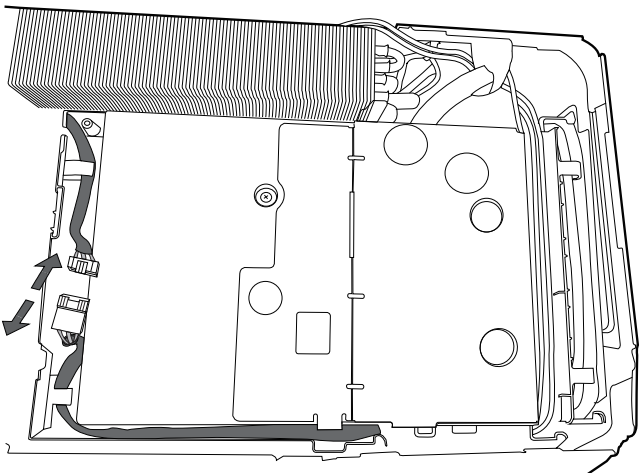
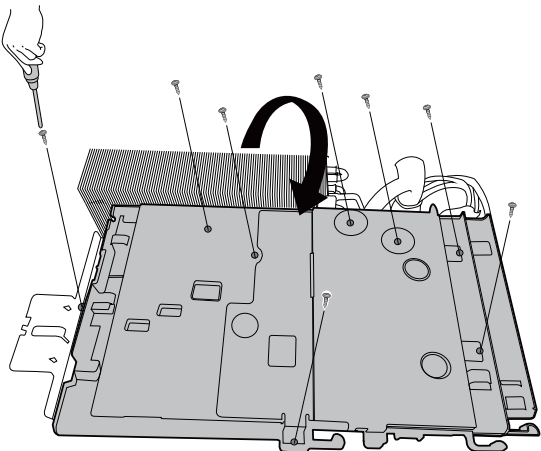
**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                   | Illustration                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <p>8) Remove the screws of the right panel and then remove the right panel (8 screws) (see CJ_D30_007).</p> |  <p style="text-align: center;"><b>CJ_D30_007</b></p> |

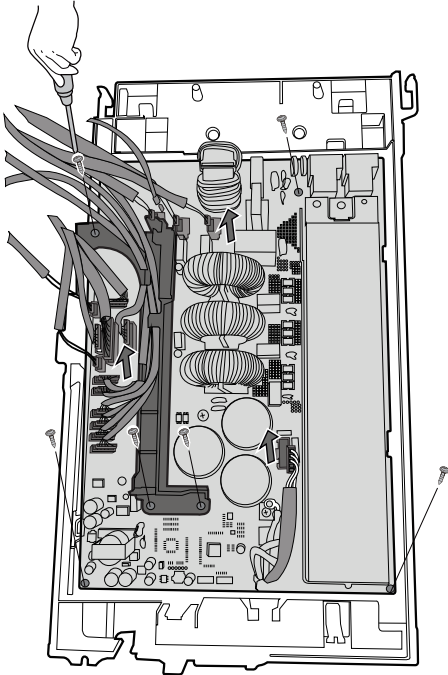
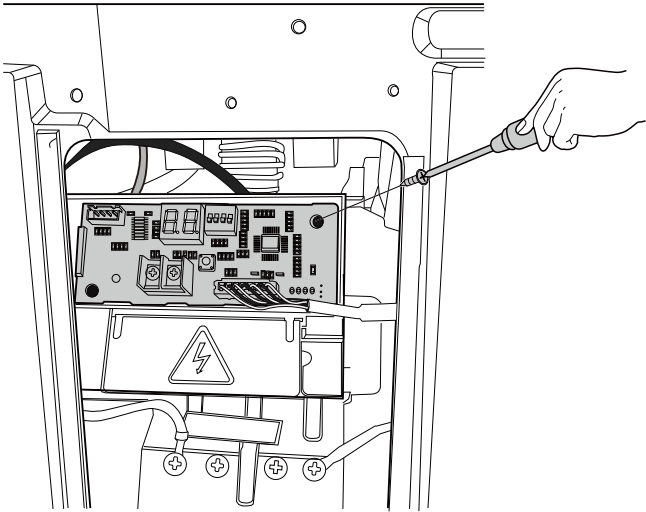
**Note:** This section is for reference only. Actual unit appearance may vary.

4.2 Electrical parts

**⚠ WARNING:** Antistatic gloves must be worn when you disassemble the electronic box.  
**Note:** Remove the air outlet grille(refer to 2.1 Panel Plate) before disassembling electrical parts.

| Procedure                                                                                                      | Illustration                                                                                                 |
|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1) Remove the cover of electrical control box. (see CJ_ODU_PCB_020-1).                                         |  <p>CJ_ODU_PCB_020-1</p>   |
| 2) Disconnect the fan motor connector. (see CJ_ODU_PCB_020-2).                                                 |  <p>CJ_ODU_PCB_020-2</p>  |
| 3) Remove eight fixing screws.<br>4) Turn over the electronic control box subassembly. (see CJ_ODU_PCB_020-3). |  <p>CJ_ODU_PCB_020-3</p> |

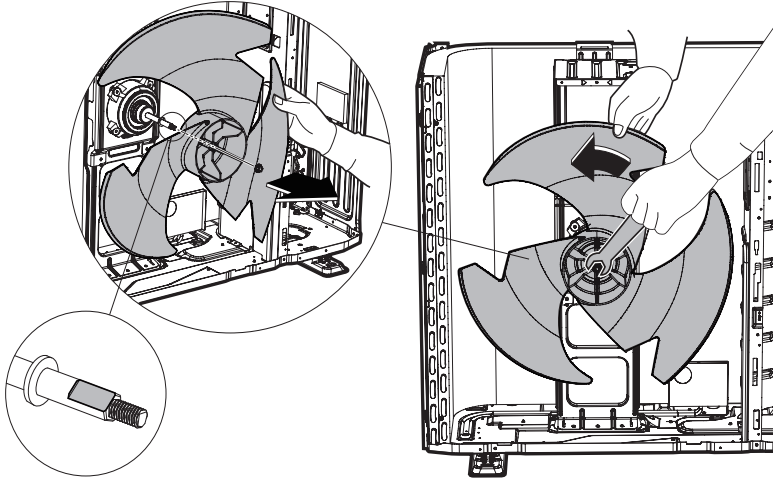
**Note:** This section is for reference only. Actual unit appearance may vary.

| Procedure                                                                                                                                                                                                                                                                   | Illustration                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <p>5) Remove 3 screws and then remove the bracket. (see CJ_ODU_PCB_020-4).</p> <p>6) Disconnect the connectors from the electronic control board (see CJ_ODU_PCB_020-4).</p> <p>7) Remove 3 screws and then remove the electronic control board.(see CJ_ODU_PCB_020-4).</p> |  <p>CJ_ODU_PCB_020-4</p>   |
| <p>8) Pull out the connector, remove one screw and then remove the key board subassembly on terminal board. (see CJ_PCB_020-5).</p>                                                                                                                                         |  <p>CJ_ODU_PCB_020-5</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

### 4.3 Fan Assembly

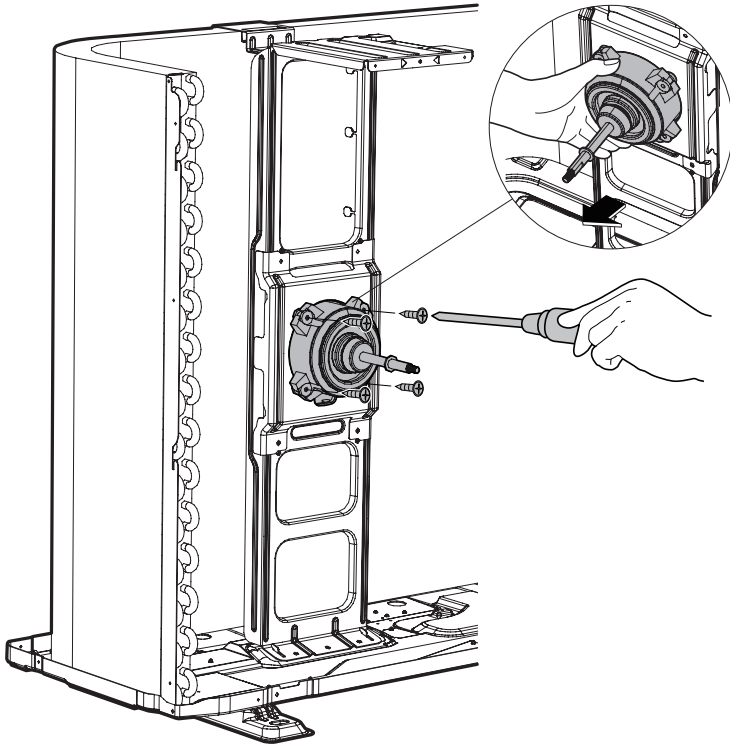
**Note:** Remove the panel plate (refer to 2.1 Panel Plate) before disassembling fan.

| Procedure                                                                                                        | Illustration                                                                                                            |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <div>1) Remove the nut securing the fan with a spanner (see CJ_ODU_FAN_001).</div> <div>2) Remove the fan.</div> | <div></div> <div>CJ_ODU_FAN_001</div> |

**Note:** This section is for reference only. Actual unit appearance may vary.

## 4.4 Fan Motor

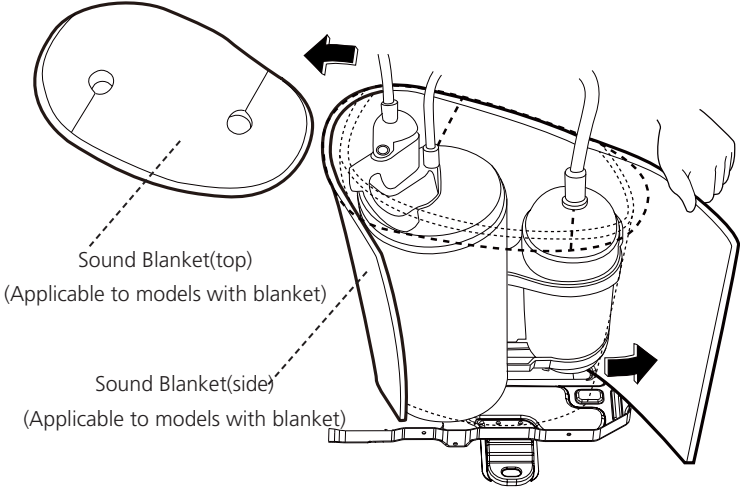
**Note:** Remove the panel plate and the connection of fan motor on PCB (refer to 2.1 Panel Plate and 2.2 Electrical parts) before disassembling fan motor.

| Procedure                                                                                                              | Illustration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>3) Remove the fixing screws of the fan motor (4 screws) (see CJ_ODU_MOTOR_001).</p> <p>4) Remove the fan motor.</p> |  <p>The illustration shows a side view of an outdoor unit with its front panel removed. A hand is using a screwdriver to remove one of four screws that secure the fan motor to the unit's frame. A circular inset provides a magnified view of the screw being removed from the motor's mounting bracket. The label 'CJ_ODU_MOTOR_001' is positioned below the main illustration.</p> <p>CJ_ODU_MOTOR_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

4.5 Sound blanket

Note: Remove the panel plate (refer to 2.1 Panel plate) before disassembling sound blanket.

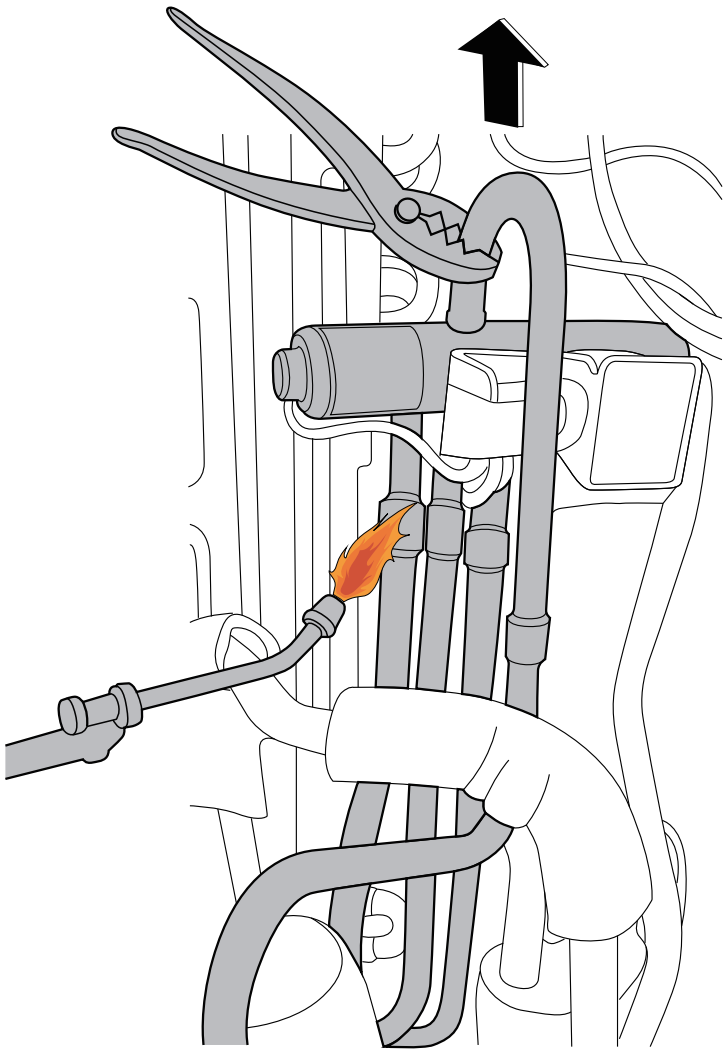
| Procedure                                                            | Illustration                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) Remove the sound blanket (side and top) (see CJ_ODU_BLANKET_001). |  <p>Sound Blanket(top)<br/>(Applicable to models with blanket)</p> <p>Sound Blanket(side)<br/>(Applicable to models with blanket)</p> <p>CJ_ODU_BLANKET_001</p> |

Note: This section is for reference only. Actual unit appearance may vary.

#### 4.6 Four-way valve (for heat pump models)

**⚠ WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of four-way valve on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

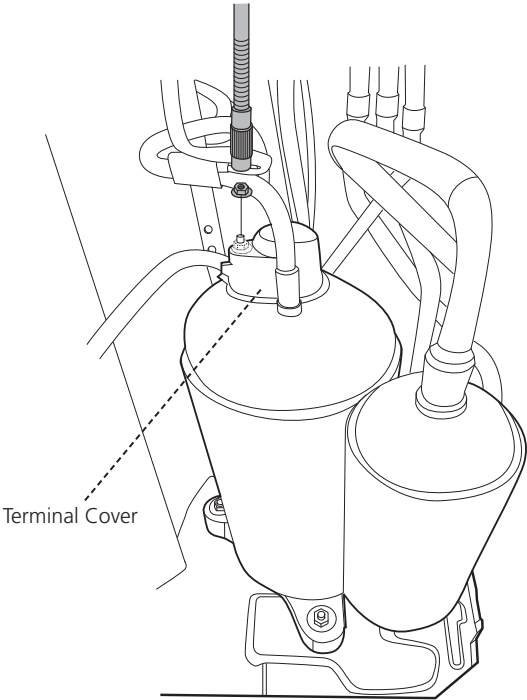
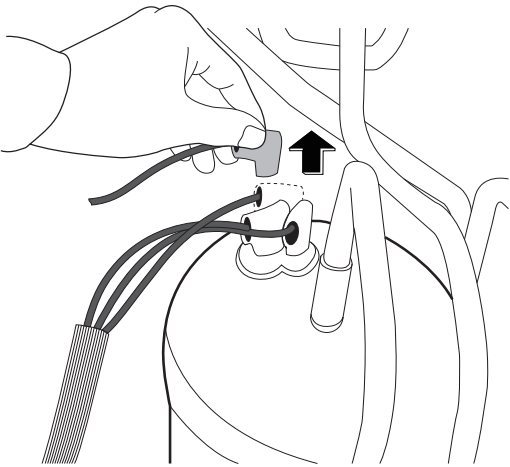
| Procedure                                                                                                                                                                                                          | Illustration                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1) Heat up the brazed parts and then detach the the four-way valve and the pipe (see CJ_ODU_VALVE_001).</li><li>2) Remove the four-way valve assembly with pliers.</li></ol> |  <p>CJ_ODU_VALVE_001</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

4.7 Compressor

**⚠WARNING:** Evacuate the system and confirm that there is no refrigerant left in the system before removing the four-way valve and the compressor. (For R32 & R290, you should evacuate the system with the vacuum pump; flush the system with nitrogen; then repeat the two steps before heating up the brazed parts. The operations above should be implemented by professionals.)

**Note:** Remove the panel plate, connection of compressor on PCB (refer to 2.1 Panel plate and 2.2 Electrical parts) before disassembling sound blanket.

| Procedure                                                                                       | Illustration                                                                                                |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1) Remove the flange nut of terminal cover and remove the terminal cover (see CJ_ODU_COMP_001). |  <p>CJ_ODU_COMP_001</p>  |
| 2) Disconnect the connectors (see CJ_ODU_COMP_002).                                             |  <p>CJ_ODU_COMP_002</p> |

**Note:** This section is for reference only. Actual unit appearance may vary.

