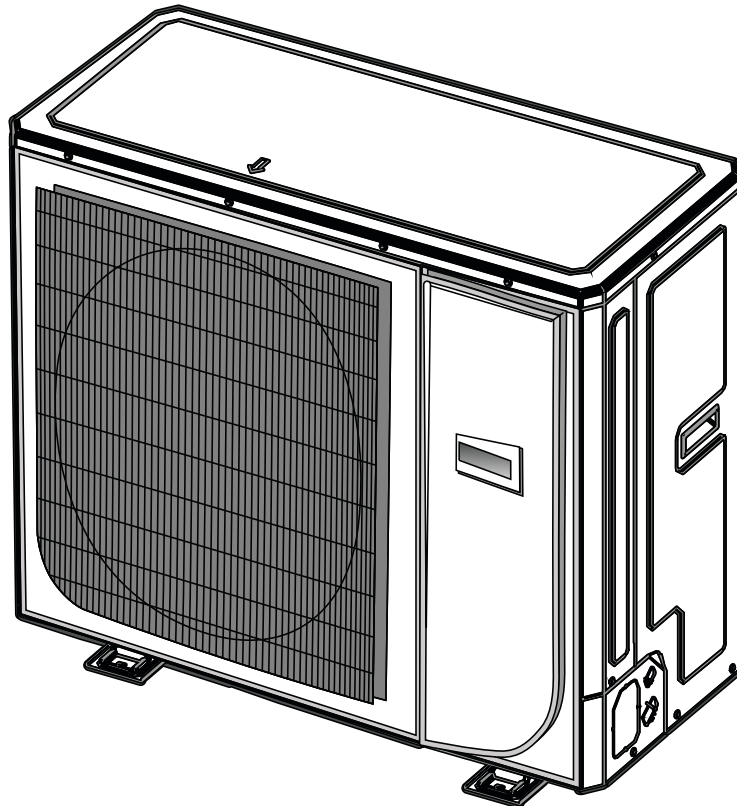




# Service Manual

## Connect Series Split Heat Pumps



**GE APPLIANCES**  
*a Haier company*

Rev. 07-20

## Foreword

Thank you for choosing GE Appliances Connect Series heat pumps.. Please read this manual carefully in order to properly install the equipment and maximize customer satisfaction.

This manual specifies safe operation requirements from perspectives of product introduction, control, troubleshooting and maintenance, as well as basic principles and implementation methods. Professional operators must abide by relevant national (local) safety requirements and technical specifications set forth in this manual during operations; otherwise, the air conditioning system may fail or be damaged, and personnel safety may be compromised.

|                                                                                   |                                                                                       |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  | Please read this manual before installing this heat pump.                             |
|  | Before repairing the air conditioner, please first read the technical service manual. |
|  | Please read this instruction manual before operating this heat pump                   |

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# Safety Notifications

## Maintenance Safety

### PROHIBITED:

- Do not pierce or burn.
- Please note that refrigerant may be odorless.
- The appliance shall be stored in a room without continuously operating ignition sources (For example: open flames, an operating gas appliance or an operating electric heater).
- Indoor unit adopts special joints that can't be detached. The installation method is the same with the common joints. Because the joint can't be detached and if it is leaking; it must be cut out and replaced with a braze joint.
- Using unsuitable parts or tools may lead to electric shock or fire hazard.
- Please ventilate the room immediately if refrigerant leaks during maintenance. Heavy leakage may lead to breathing difficulty, severe injury or death.
- Disconnect power before disassembling the appliance for maintenance.
- The appliance should be maintained and cared by authorized technical personnel with necessary qualifications.

### WARNING:

- If the unit location is more than 6 feet high, please wear a safety helmet, gloves and a safety belt.
- Never mix any other substances except the specified refrigerant into the refrigerant circuit.
- Check the location to see if the weight can be properly supported before installing the unit.
- Please test the system for leaks prior to charging. Leaks discovered after the unit start up require refrigerant pump-down, leak repair and recharging. Do not allow refrigerant to leak into unventilated spaces.
- Prepare suitable tools and protectors.
- Please isolate all power to the system while making repairs and performing maintenance.

### NOTICE:

- This unit requires a proper earth ground per local and national electrical codes.
- Never repair the unit with wet hands. Operating the unit with wet hands may lead to electric shock.
- Isolate all power sources before cleaning the unit.
- All field installed wiring must conform to local and national electric codes.
- Brazing, welding and cutting must be done in properly ventilated areas.
- Gas appliances, heaters and other fire sources should be kept away from the installation and maintenance site.
- Maintenance should be done according to manufacturer's instructions.

### OBSERVED:

- Check all condensate drain outlets during maintenance and operational checks.
- Unit should be installed level and on a surface that will sufficiently support its weight.
- Disassembly of the unit, handling of the refrigerant, oil and accessories should all be done according to applicable local rules and regulations.

## Safety Notifications

---

### Operation Safety



#### PROHIBITED:

- Never try to modify the unit, otherwise, it may cause electric shock, overheat or fire hazard.
- Replace all wires that have worn or damaged insulation.
- This equipment must have a dedicated electrical circuit and service disconnect switch.



#### WARNING:

- Maintain a regular schedule for preventative maintenance.



#### NOTICE:

- Do not remove the fan cover while the unit is running.
- Use soap and water only to clean the unit. Do not use any solvents to clean the control panel.
- Isolate all power to the system before cleaning the unit.

# Introduction

## Lists of Units

### Outdoor Units

| Model       | Power Supply      | Circuit Breaker Capacity | Appearance                                                                          |
|-------------|-------------------|--------------------------|-------------------------------------------------------------------------------------|
|             | V/Ph/Hz           | A                        |                                                                                     |
| AUH2436ZGDA | 208/230V-1Ph-60Hz | 35                       |  |
| AUH4860ZGDA | 208/230V-1Ph-60Hz | 45                       |  |

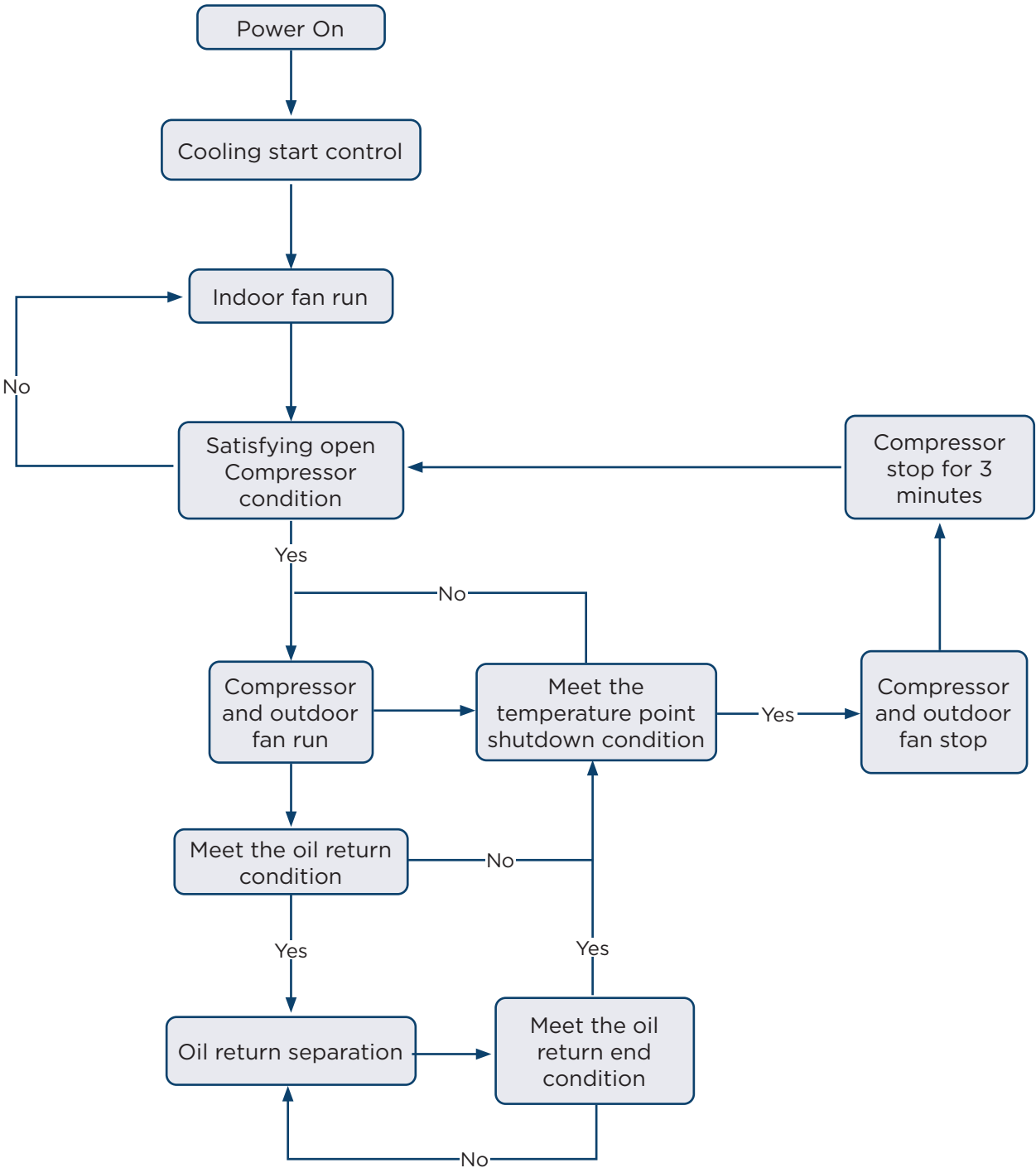
### Indoor Units

| Model      | Cooling/Heating Capacity (Btu/h) | Power Supply      | Fuse Capacity | Circuit Breaker Capacity | Appearance                                                                            |
|------------|----------------------------------|-------------------|---------------|--------------------------|---------------------------------------------------------------------------------------|
|            |                                  | V/Ph/Hz           | A             | A                        |                                                                                       |
| UUY24ZGDAA | 24000/24000                      | 208/230V-1Ph-60Hz | 3.5           | 15                       |  |
| UUY36ZGDAA | 36000/36000                      | 208/230V-1Ph-60Hz | 3.5           | 15                       |                                                                                       |
| UUY48ZGDAA | 48000/48000                      | 208/230V-1Ph-60Hz | 3.5           | 15                       |  |
| UUY60ZGDAA | 54000/54000                      | 208/230V-1Ph-60Hz | 3.5           | 15                       |                                                                                       |

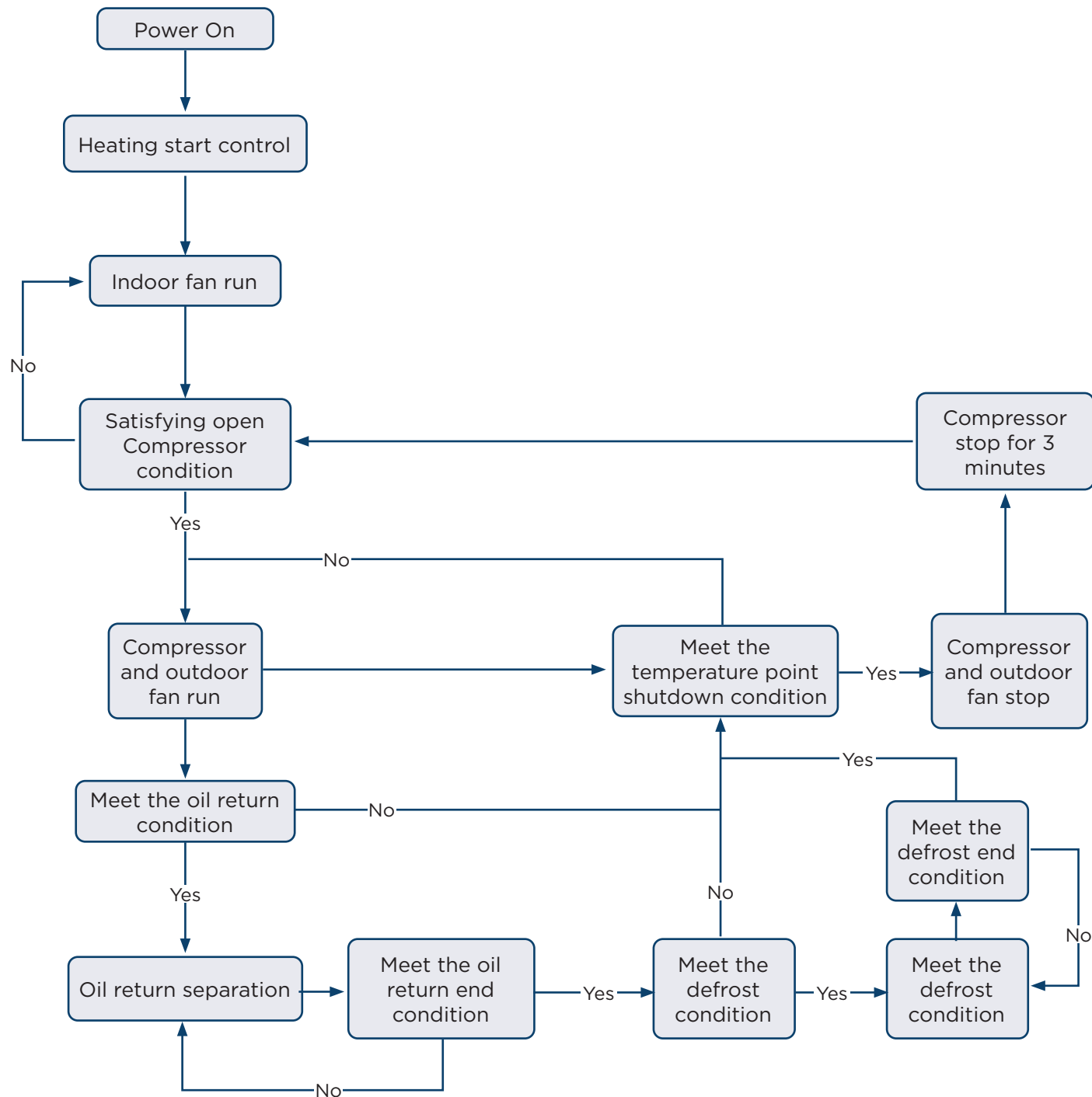
# Controls

## Operation Modes

### Cooling Mode



## Heating Mode



# Controls

## Control Modes

### Based Control

#### Compressor Control

When the unit comes on in heating or cooling mode; the indoor fan will run for a short time before the compressor starts. Under different modes, the compressor can only be stopped after running for some time (special cases excluded). This is to protect the compressor from short-cycling. Once the compressor has stopped, it cannot be operated right away due to a time delay.

#### EXV Control

The electric expansion valve will reset when the unit is first started. During the process, the expansion valve will make clicking sounds. The valve will open to a predetermined step before the unit starts in cooling or heating mode.

#### Outdoor Fan Control

This series heat pump has two types of outdoor units: one with a single fan and the other with dual fans. The outdoor fan can run at the highest level 10 and the lowest level 1. By controlling the speed of outdoor fan, the unit can achieve cooling at low temperature and heating at high temperature. The outdoor unit fan will not run while the system is set to indoor fan mode only.

#### 4-way Valve Control

The 4-way valve will be energized in heat mode (after a brief time delay) on start-up. The 4-way valve will be de energized during cooling and defrost modes.

The 4-way valve will continue to be energized in heating mode after the unit stops. This occurs so the valve will not inadvertently shift into cooling position.

There must be adequate differential pressure for the 4-way valve to function properly.

### Special Control

#### Defrosting Control

Defrosting will start when the temperature sensed by outdoor tube outdoor coil temperature drops below a calculated value. The 4-way valve will switch to the cooling mode, and outdoor and indoor fan will both stop. The defrost cycle will terminate when the outdoor coil temperature reaches the calculated defrost termination value. The 4-way valve will switch back to the heating mode, and the compressor and outdoor fan(s) will restart.

#### Oil Return Control

The system will enter oil return mode if the compressor has been running at low frequency for an extended period. The system will exit oil return mode in about 5 minutes.

### Protection Control

#### High Pressure Protection Control

The system will shut the compressor down if the high pressure switch is open continuously for a short period of time and display an E1 error code. The compressor will restart after the switch closes for a short period of time. The system will shut the compressor down if the switch opens again within a predetermined time interval. The system will remain in a locked out condition until the power is cycled to the unit.

## Controls

### Low Pressure Protection Control

The system will shut the compressor down if the low pressure switch opens for a short time and display an E3 error code. The system will automatically restart the compressor when the switch closes after a short time delay. The system will shut the compressor down if the switch subsequently opens again within a predetermined time and will require a power reset to restart.

### High Temperature Prevention Control

The system will enable high temperature prevention control while in heating mode if the indoor coil temperature rises above a predetermined threshold. The outdoor fan will slow down during high temperature protection mode.

### Discharge High Temperature Protection Control

System will enable discharge temperature protection control if the discharge high temperature sensor is detected open for a predetermined amount of time. The system will shut down and display error code E4 during high temperature protection. The system will restore operation when the discharge temperature drops below the safety threshold. The system will lock out if high discharge temperature is sensed again during a certain time period and power must be reset to the unit.

## Functions

### Capacity Selection

Set the capacity of the outdoor unit through DIP switch SA2-1 on the outdoor unit main control board.

| Outdoor DIP SA2-1           |                                     |                                     |                          |                                     |     |                                     |                                     |                                     |                                     |     |                                     |                                     |                          |                                     |                                     |
|-----------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| AUH2436ZGDA                 |                                     |                                     |                          |                                     |     |                                     |                                     | AUH4860ZGDA                         |                                     |     |                                     |                                     |                          |                                     |                                     |
| 24K                         |                                     |                                     |                          | 36K                                 |     |                                     |                                     | 48K                                 |                                     |     |                                     | 60K                                 |                          |                                     |                                     |
| On                          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | On  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | On  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |                                     |
| Off                         | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Off | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Off | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                             | 1                                   | 2                                   | 3                        | 4                                   |     | 1                                   | 2                                   | 3                                   | 4                                   |     | 1                                   | 2                                   | 3                        | 4                                   |                                     |
| ■ Indicates switch position |                                     |                                     |                          |                                     |     |                                     |                                     |                                     |                                     |     |                                     |                                     |                          |                                     |                                     |

### Set Defrost Mode

DIP switch SA2-2 on the outdoor unit main control board determines the defrost mode. The following is an example of the defrost setting for a 36k unit. Standard Defrost is default, and Strong Defrost is suitable for defrosting in ultra-low temperature environments.

| Outdoor DIP SA2-2           |                                     |                                     |                                     |                                     |                |                                     |                                     |                                     |                                     |
|-----------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Standard Defrost (default)  |                                     |                                     |                                     |                                     | Strong Defrost |                                     |                                     |                                     |                                     |
| On                          | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | On             | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Off                         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Off            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                             | 1                                   | 2                                   | 3                                   | 4                                   |                | 1                                   | 2                                   | 3                                   | 4                                   |
| ■ Indicates switch position |                                     |                                     |                                     |                                     |                |                                     |                                     |                                     |                                     |

## Set Operating Mode

DIP switches SA2-3 & SA2-4 on the outdoor unit main control board select the operating mode. The following example shows the 36K outdoor unit. Standard Mode is the default mode.

The heat pump can easily be set to increase the output capacity by adjusting the DIP switches to Strong Mode. The heat pump can also be set to Energy Saving mode if the load is less than expected.

| Outdoor DIP SA2-3/SA2-4     |   |   |   |             |   |   |   |                    |   |   |   |
|-----------------------------|---|---|---|-------------|---|---|---|--------------------|---|---|---|
| Standard Mode (default)     |   |   |   | Strong Mode |   |   |   | Energy Saving Mode |   |   |   |
| On                          | ■ | ■ | ■ | On          | ■ | ■ | ■ | On                 | ■ | ■ | ■ |
| Off                         | ■ | ■ | ■ | Off         | ■ | ■ | ■ | Off                | ■ | ■ | ■ |
|                             | 1 | 2 | 3 |             | 1 | 2 | 3 |                    | 1 | 2 | 3 |
| ■ Indicates switch position |   |   |   |             |   |   |   |                    |   |   |   |

## Set Indoor Fan Speed

Set the indoor fan speed through the indoor main control board DIP switches. The higher level, the higher the speed of the indoor unit fan.

| UUY24ZGDAA                  |     |   |                       |   |   | UUY36ZGDAA           |     |   |                       |   |   |
|-----------------------------|-----|---|-----------------------|---|---|----------------------|-----|---|-----------------------|---|---|
|                             |     |   | HEAT (Indoor DIP SA2) |   |   |                      |     |   | HEAT (Indoor DIP SA2) |   |   |
| Level 1<br>(default)        | On  | ■ | ■                     | ■ | ■ | Level 1<br>(default) | On  | ■ | ■                     | ■ | ■ |
|                             | Off | ■ | ■                     | ■ | ■ |                      | Off | ■ | ■                     | ■ | ■ |
|                             |     | 1 | 2                     | 3 | 4 |                      |     | 1 | 2                     | 3 | 4 |
| Level 2                     | On  | ■ | ■                     | ■ | ■ | Level 2              | On  | ■ | ■                     | ■ | ■ |
|                             | Off | ■ | ■                     | ■ | ■ |                      | Off | ■ | ■                     | ■ | ■ |
|                             |     | 1 | 2                     | 3 | 4 |                      |     | 1 | 2                     | 3 | 4 |
| Level 3                     | On  | ■ | ■                     | ■ | ■ | Level 3              | On  | ■ | ■                     | ■ | ■ |
|                             | Off | ■ | ■                     | ■ | ■ |                      | Off | ■ | ■                     | ■ | ■ |
|                             |     | 1 | 2                     | 3 | 4 |                      |     | 1 | 2                     | 3 | 4 |
| UUY48ZGDAA                  |     |   |                       |   |   | UUY60ZGDAA           |     |   |                       |   |   |
|                             |     |   | HEAT (Indoor DIP SA2) |   |   |                      |     |   | HEAT (Indoor DIP SA2) |   |   |
| Level 1<br>(default)        | On  | ■ | ■                     | ■ | ■ | Level 1<br>(default) | On  | ■ | ■                     | ■ | ■ |
|                             | Off | ■ | ■                     | ■ | ■ |                      | Off | ■ | ■                     | ■ | ■ |
|                             |     | 1 | 2                     | 3 | 4 |                      |     | 1 | 2                     | 3 | 4 |
| Level 2                     | On  | ■ | ■                     | ■ | ■ | Level 2              | On  | ■ | ■                     | ■ | ■ |
|                             | Off | ■ | ■                     | ■ | ■ |                      | Off | ■ | ■                     | ■ | ■ |
|                             |     | 1 | 2                     | 3 | 4 |                      |     | 1 | 2                     | 3 | 4 |
| Level 3                     | On  | ■ | ■                     | ■ | ■ | Level 3              | On  | ■ | ■                     | ■ | ■ |
|                             | Off | ■ | ■                     | ■ | ■ |                      | Off | ■ | ■                     | ■ | ■ |
|                             |     | 1 | 2                     | 3 | 4 |                      |     | 1 | 2                     | 3 | 4 |
| ■ Indicates switch position |     |   |                       |   |   |                      |     |   |                       |   |   |

# Controls

## Forced Defrost Control

Press and hold the SW1 button for about 5 seconds to enter the first menu level. The outdoor unit main board display will flash. Short-press the SW1 button to switch the function to "O6". Short-press SW2 or SW3 to change the selection within function "O6" to "ON", followed by a short-press on SW1 to save. The menu will time out if no function is performed within 10 seconds.

## Refrigerant Recovery Control

Press and hold the SW1 button for about 5 seconds to enter the first menu level. The outdoor unit main board display will flash. Short-press the SW1 button to switch the function to "O8". Short-press SW2 or SW3 to change the selection within function "O8" to "ON", followed by a short-press on SW1 to save. The menu will time out if no function is performed within 10 seconds.

## Forced Operation Control

Press and hold the SW1 button for about 5 seconds to enter the first menu level. The outdoor unit main board display will flash. Short-press the SW1 button to switch the function to "O9". Short-press SW2 or SW3 to change the selection within function "O9" to "ON", followed by a short-press on SW1 to save. The menu will time out if no function is performed within 10 seconds.

Press and hold SW1 for about 5 seconds to enter the first menu level. The outdoor unit main board display will flash. Short-press the SW1 button to switch the function to "11". Short-press SW2 or SW3 to change the selection to:

00 - Pressure

01 - Frequency

02 - Exhaust temperature

08 - Fan speed

Short-press SW1 to save. The data will be displayed on the LED.

## Thermostat Functions

Please refer to your thermostat user guide for information on your thermostat functions.

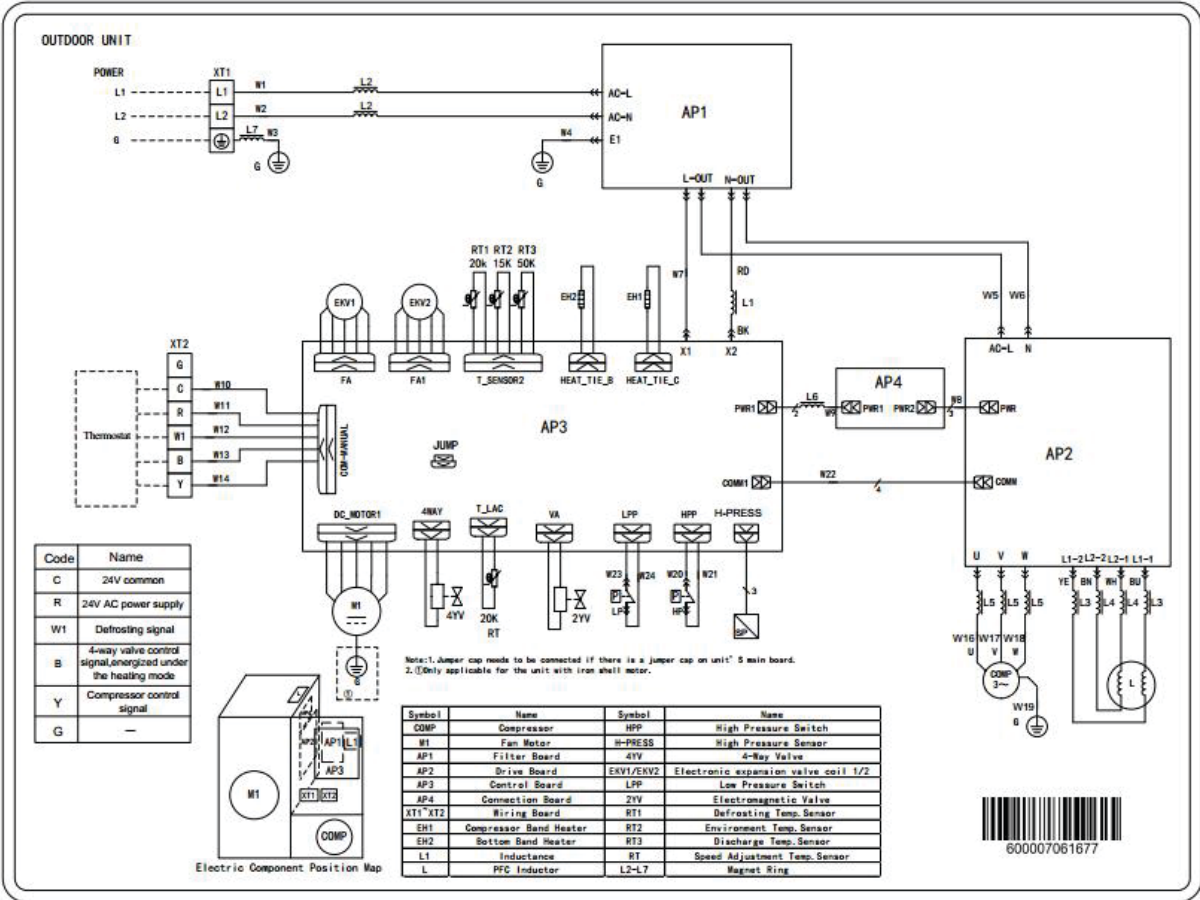
# Troubleshooting

## Wiring Diagrams

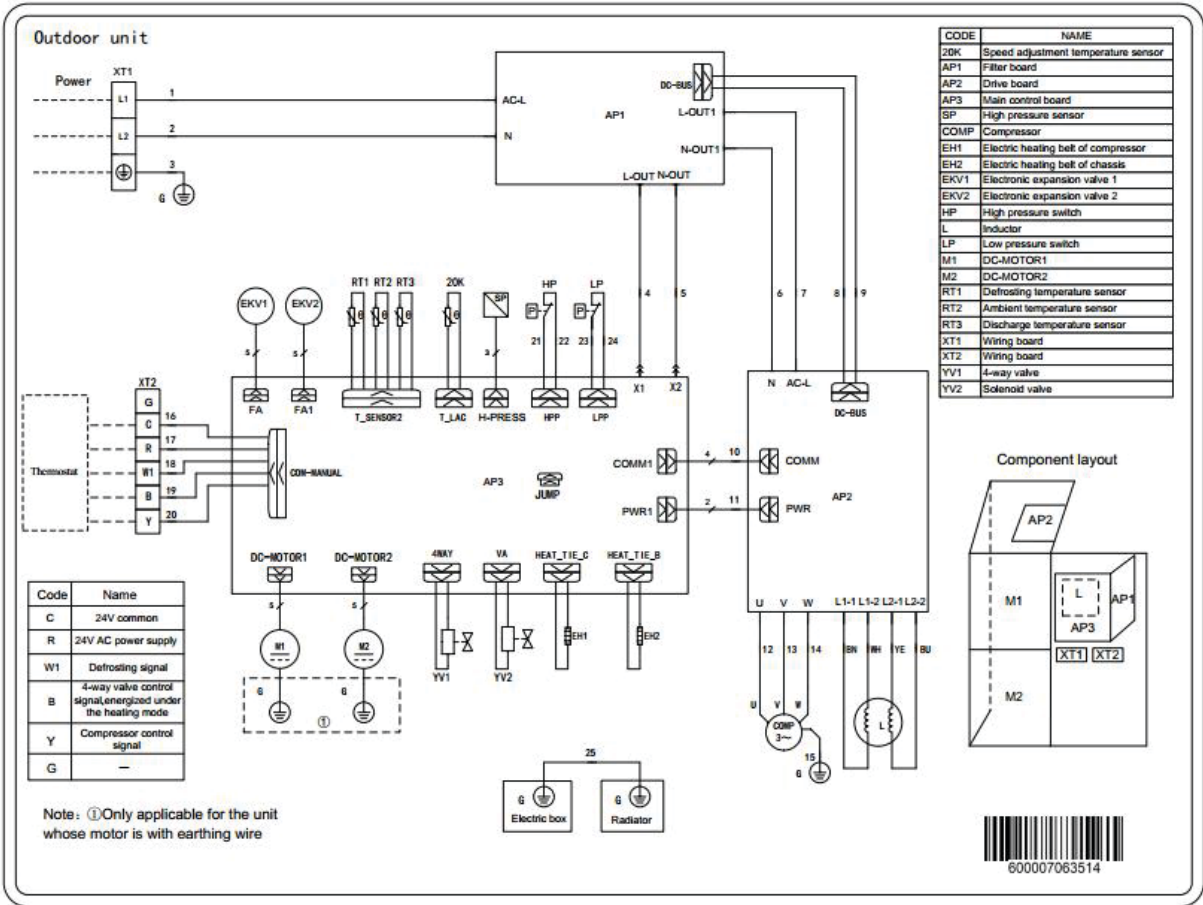
The following electric diagram is for reference only. Please refer to diagram attached to the unit as the latest version.

### Outdoor Units

Model: AUH2436ZGDA



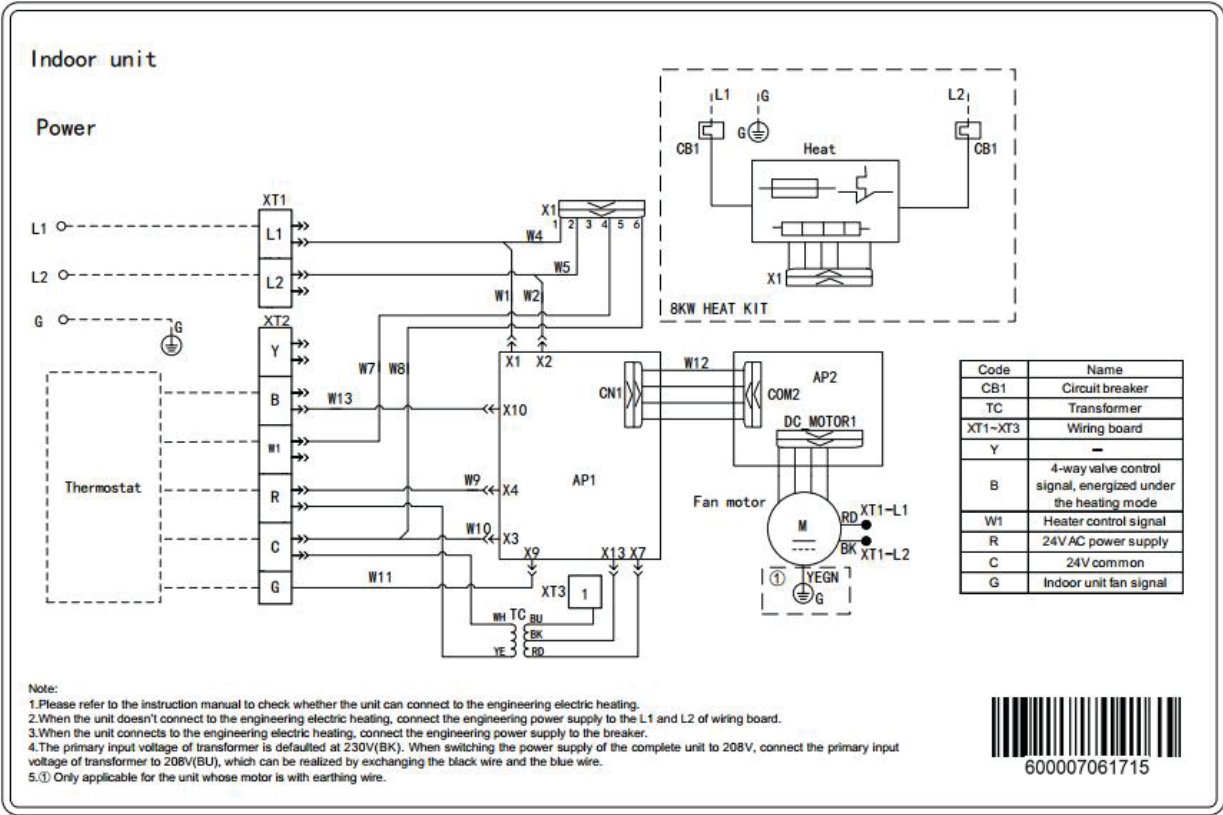
Model: AUH4860ZGDA



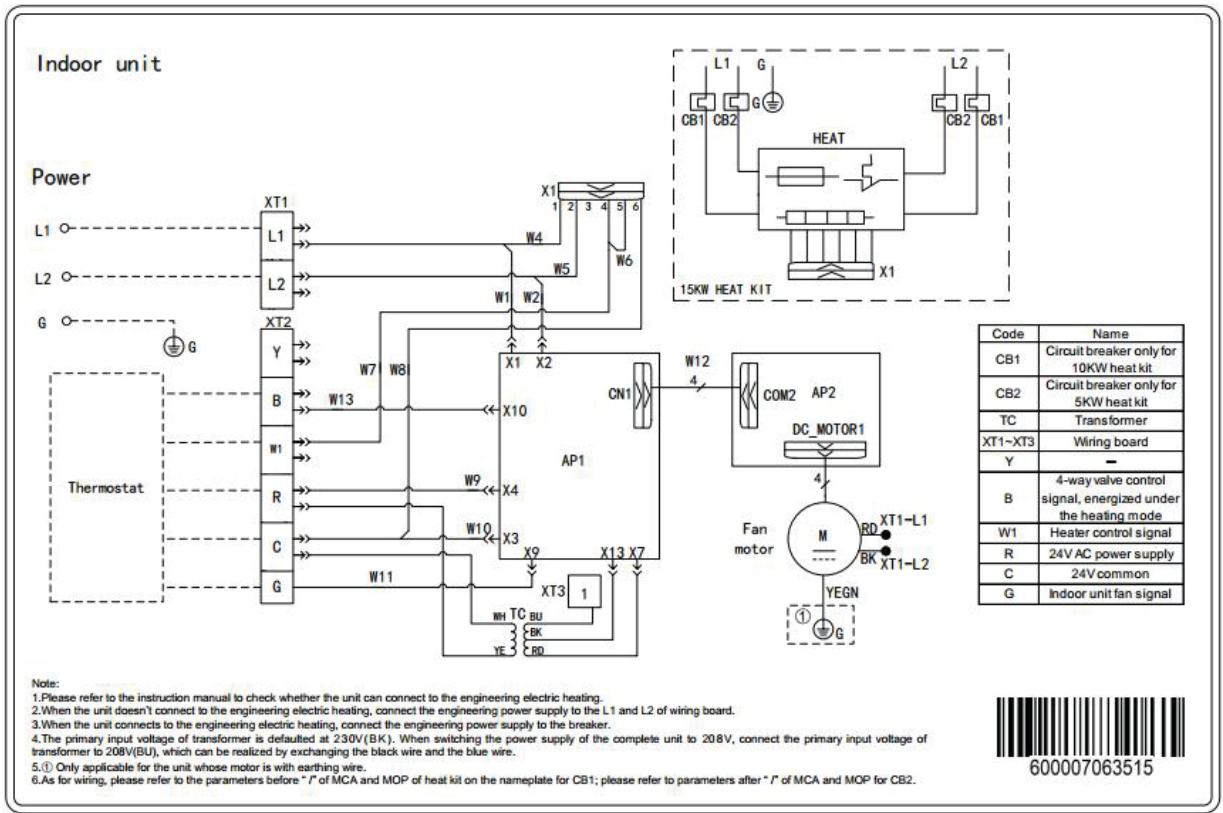
# Troubleshooting

## Indoor Units

Model: UUY24ZGDAA, UUY36ZGDAA



Model: UUY48ZGDAA, UUY60ZGDAA



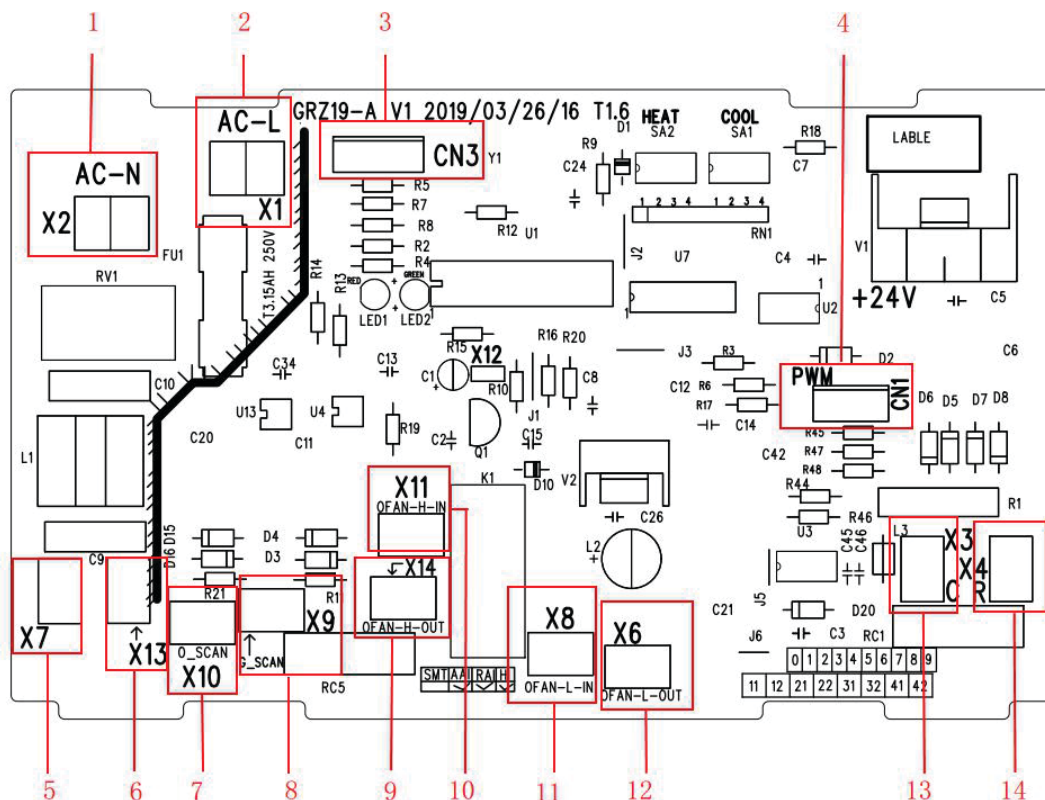
## PCB Layout

### Interface

Indoor unit:

Model: UUY24ZGDAA, UUY36ZGDAA, UUY48ZGDAA, UUY60ZGDAA

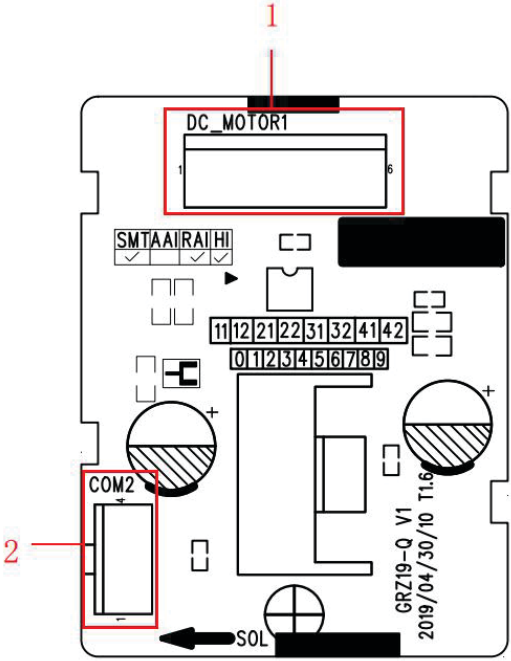
### Main Board



| No. | Printing     | Interface                             | No. | Printing         | Interface                       |
|-----|--------------|---------------------------------------|-----|------------------|---------------------------------|
| 1   | AC-N (X2)    | Neutral wire input                    | 8   | X9 (G_SCAN)      | Indoor motor check              |
| 2   | AC-L (X1)    | Live wire input                       | 9   | X14 (OFAN-H-OUT) | AC motor high speed output      |
| 3   | CN3          | Wired control communication interface | 10  | X11 (OFAN-H-IN)  | AC motor high speed input       |
| 4   | CN1          | DC motor output                       | 11  | X8 (OFAN-L-IN)   | AC motor low speed input        |
| 5   | X7           | Transformer Neutral wire input        | 12  | X6(OFAN-L-OUT)   | AC motor low speed output       |
| 6   | X13          | Transformer Live wire input           | 13  | X3 (C)           | Transformer Neutral wire output |
| 7   | X10 (O_SCAN) | 4-Way check                           | 14  | X4 (R)           | Transformer Live wire output    |

# Troubleshooting

## Motor Board

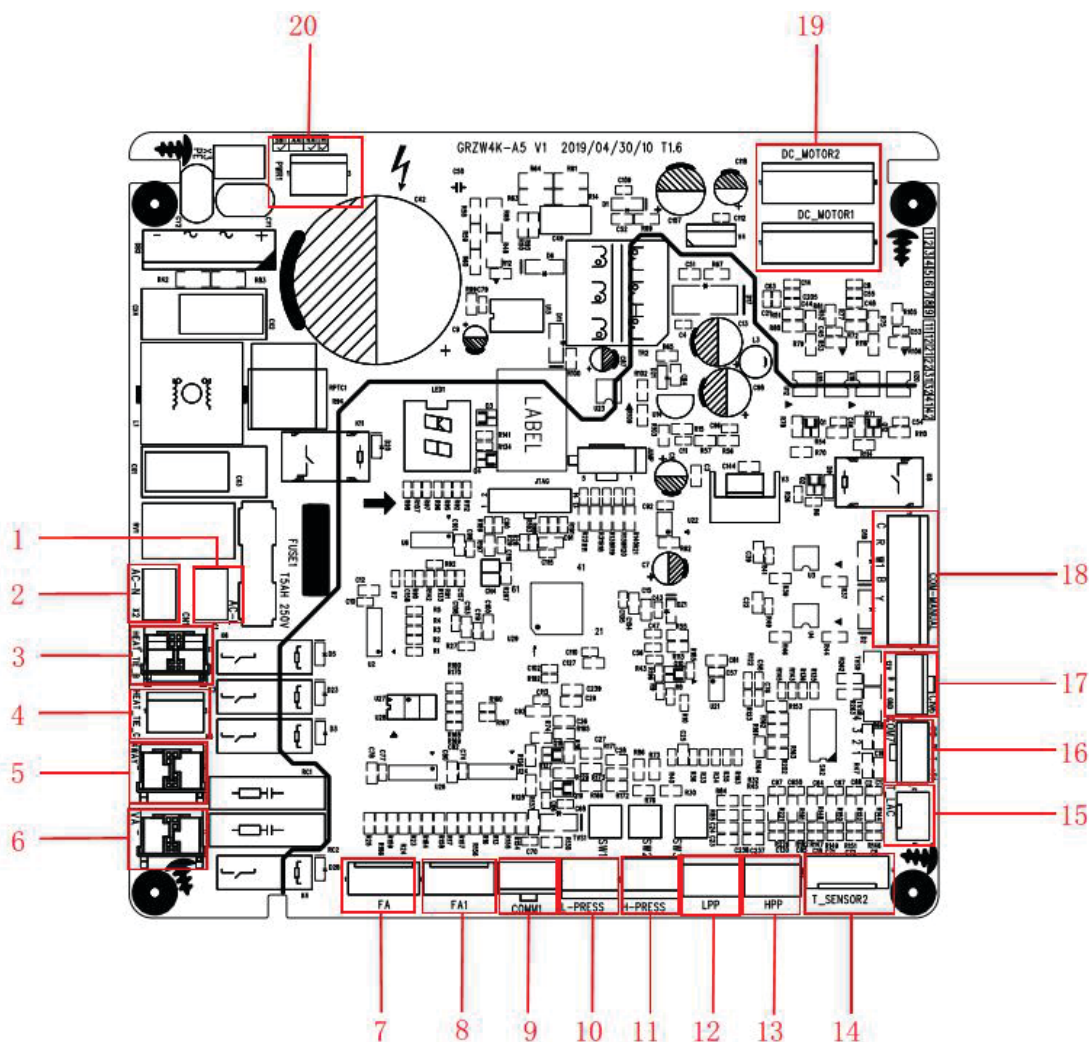


| No. | Printing  | Interface       | No. | Printing | Interface                     |
|-----|-----------|-----------------|-----|----------|-------------------------------|
| 1   | DC-MOTOR1 | DC motor output | 2   | COM2     | DC motor control signal input |

# Troubleshooting

Indoor unit:  
Model: AUH2436ZGDA, AUH4860ZGDA

## Main Board

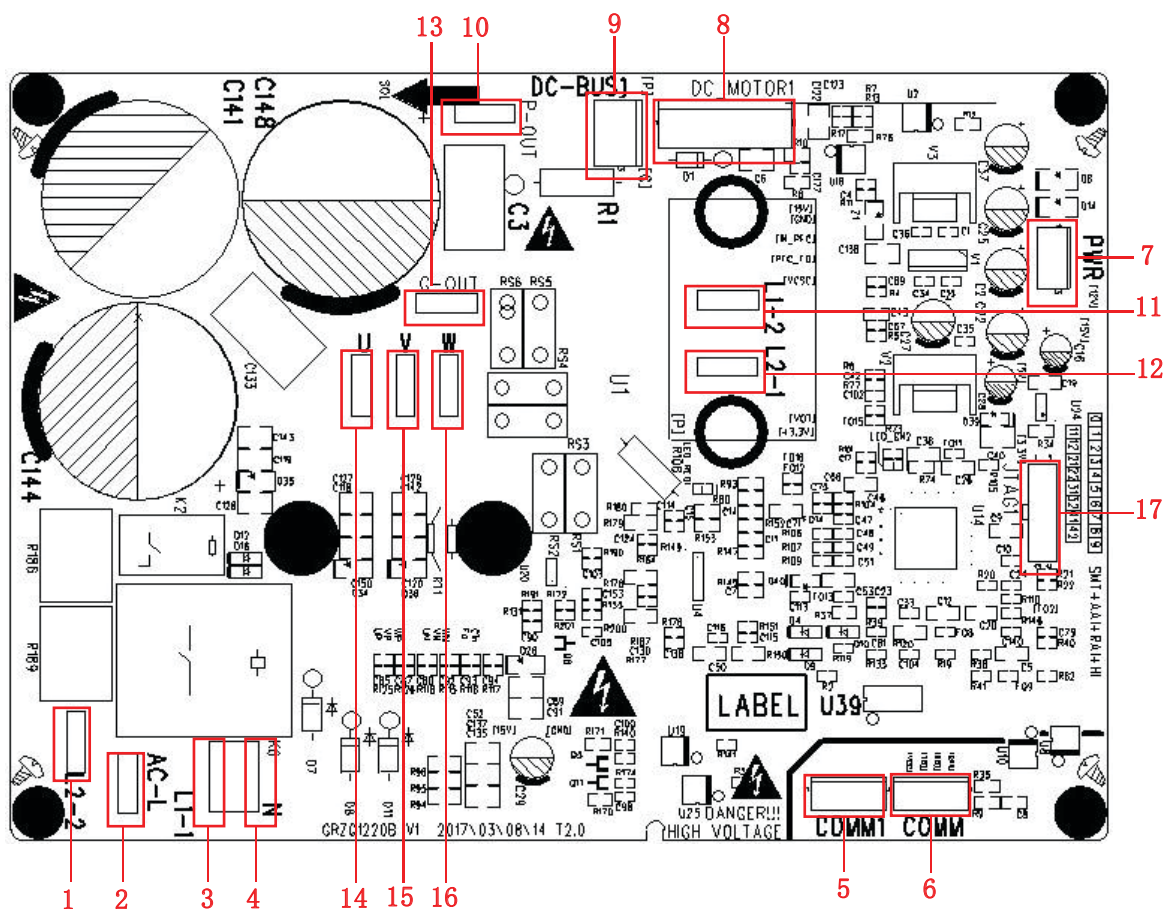


| No. | Printing   | Interface                                                              | No. | Printing               | Interface                                                                                                                                    |
|-----|------------|------------------------------------------------------------------------|-----|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | AC-L       | Live wire input                                                        | 11  | H-PRESS                | High pressure sensor interface                                                                                                               |
| 2   | AC-N       | Neutral wire input                                                     | 12  | LPP                    | System low pressure protection interface                                                                                                     |
| 3   | HEAT_TIE_B | Chassis electric heating belt                                          | 13  | HPP                    | System high pressure protection interface                                                                                                    |
| 4   | HEAT_TIE_C | Compressor electric heating belt                                       | 14  | T_SENSOR2              | 2. Outdoor tube temperature sensor interface<br>4. Outdoor ambient temperature sensor interface<br>6. Discharge temperature sensor interface |
| 5   | 4WAY       | 4-way valve                                                            | 15  | T_LAC                  | Low temperature cooling temperature sensing                                                                                                  |
| 6   | VA         | Electromagnetic valve interface                                        | 16  | COM7                   | Unit communication interface                                                                                                                 |
| 7   | FA         | Electronic expansion valve interface                                   | 17  | CN6                    | GPRS communication interface                                                                                                                 |
| 8   | FA1        | Electronic expansion valve 1 interface<br>Refrigerant heat dissipation | 18  | COM-MANUAL             | Thermostat interface                                                                                                                         |
| 9   | COMM1      | Drive communication interface                                          | 19  | DC_MOTOR1<br>DC_MOTOR2 | DC motor output                                                                                                                              |
| 10  | L-PRESS    | Low pressure sensor interface                                          | 20  | PWR1                   | 310V DC power supply interface                                                                                                               |

# Troubleshooting

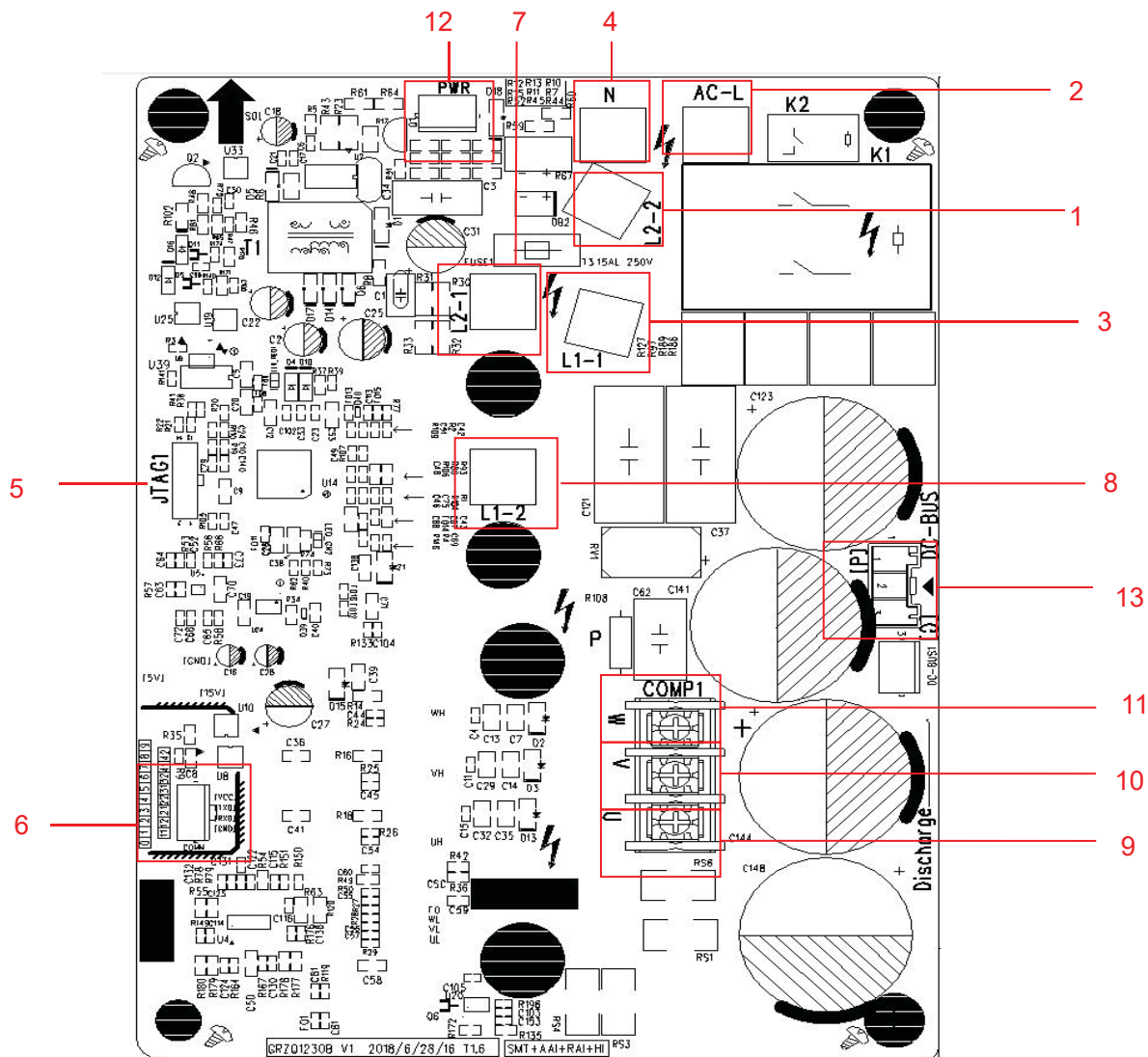
## Drive Board

Model: AUH2436ZGDA



| No. | Printing  | Interface                               | No. | Printing | Interface                           |
|-----|-----------|-----------------------------------------|-----|----------|-------------------------------------|
| 1   | L2-2      | PFC induction wire (blue)               | 10  | P-OUT    | Reserved                            |
| 2   | AC-L      | Live wire                               | 11  | L1-2     | PFC induction wire (white)          |
| 3   | L1-1      | PFC induction wire (brown)              | 12  | L2-1     | PFC induction wire (yellow)         |
| 4   | N         | Neutral wire                            | 13  | G-OUT    | Reserved                            |
| 5   | COMM1     | Communication terminal, same with COMM  | 14  | U        | Compressor U phase terminal         |
| 6   | COMM      | Communication terminal, same with COMM1 | 15  | V        | Compressor V phase terminal         |
| 7   | PWR       | Drive power supply terminal             | 16  | W        | Compressor W phase terminal         |
| 8   | DC-MOTOR1 | DC fan terminal                         | 17  | JTAG1    | Programming interface (for testing) |
| 9   | DC-BUS1   | Power discharge terminal (for testing)  |     |          |                                     |

Model: AUH4860ZGDA

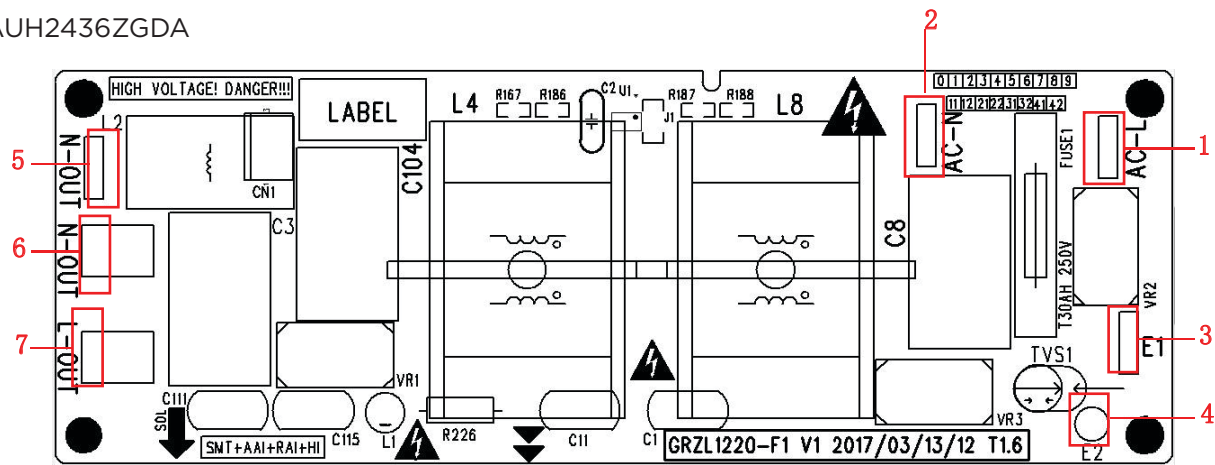


| No. | Printing | Interface                              | No. | Printing | Interface                              |
|-----|----------|----------------------------------------|-----|----------|----------------------------------------|
| 1   | L2-2     | PFC induction wire (blue)              | 8   | L1-2     | PFC induction wire (white)             |
| 2   | AC-L     | Live wire                              | 9   | U        | Compressor U phase terminal            |
| 3   | L1-1     | PFC induction wire (brown)             | 10  | V        | Compressor V phase terminal            |
| 4   | N        | Neutral wire                           | 11  | W        | Compressor W phase terminal            |
| 5   | JTAG1    | Programming interface (for testing)    | 12  | PWR      | Drive power supply terminal            |
| 6   | COMM     | Communication terminal, same with COMM | 13  | DC-BUS   | Power discharge terminal (for testing) |
| 7   | L2-1     | PFC induction wire (yellow)            |     |          |                                        |

# Troubleshooting

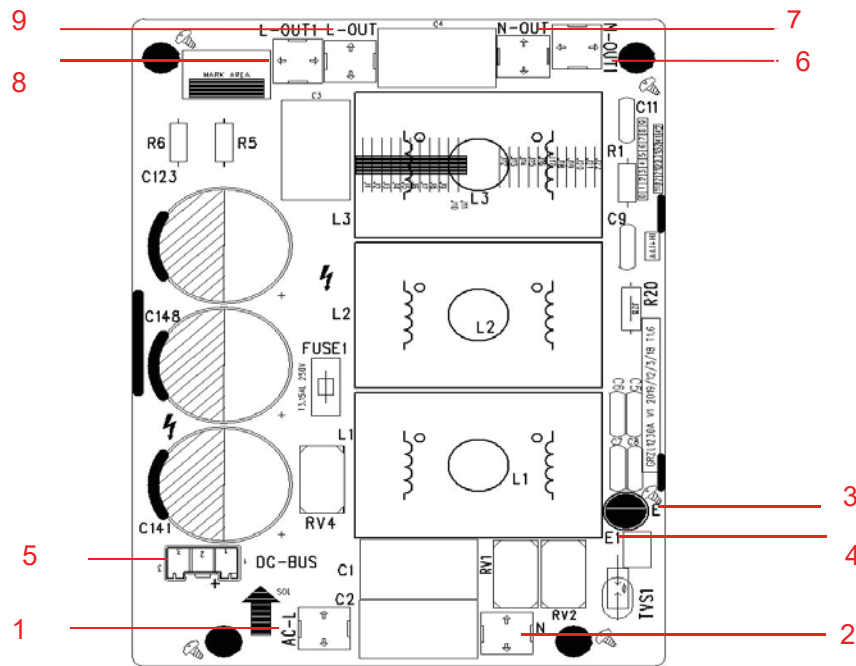
## Filtering Board

Model: AUH2436ZGDA



| No. | Printing | Interface                                 | No. | Printing | Interface                                     |
|-----|----------|-------------------------------------------|-----|----------|-----------------------------------------------|
| 1   | AC-L     | Power input live wire terminal            | 5   | N-OUT    | Power output neutral wire terminal (reserved) |
| 2   | AC-N     | Power input neutral wire terminal         | 6   | N-OUT    | Power output neutral wire terminal            |
| 3   | E1       | Filtering board ground wire terminal      | 7   | L-OUT    | Power output live wire terminal               |
| 4   | E2       | Filtering board grounding hole (reserved) |     |          |                                               |

Model: AUH4860ZGDA



| No. | Printing | Interface                                 | No. | Printing | Interface                                     |
|-----|----------|-------------------------------------------|-----|----------|-----------------------------------------------|
| 1   | AC-L     | Power input live wire terminal            | 6   | N-OUT1   | Power output neutral wire terminal (reserved) |
| 2   | N        | Power input neutral wire terminal         | 7   | N-OUT    | Power output neutral wire terminal            |
| 3   | E        | Filtering board ground wire terminal      | 8   | L-OUT1   | Power output live wire terminal               |
| 4   | E1       | Filtering board grounding hole (reserved) | 9   | L-OUT    | Power output live wire terminal               |
| 5   | DC-BUS   | Power discharge terminal (for testing)    |     |          |                                               |

# Troubleshooting

## IPM, PFC Testing Method

### Method of Testing IPM Module

- Turn off power to the outdoor unit for at least one minute. Set a multi meter to diode test function. Remove the U, V and W wires from the compressor.

### Testing Steps

1. Place the black meter lead on the “P” terminal and place the red meter lead on U, V and W respectively to measure voltage between UP, VP and WP.
2. Please the red meter lead on the “N” terminal and the black meter lead on U, V, and W respectively to measure voltage between NU, NV and NW.
3. A good IPM board is indicated by reading 0.3 to 0.7 volts between UP, VP, WP, NU, NV and NW.
4. A bad board is indicated by a zero reading in any of the measurements.

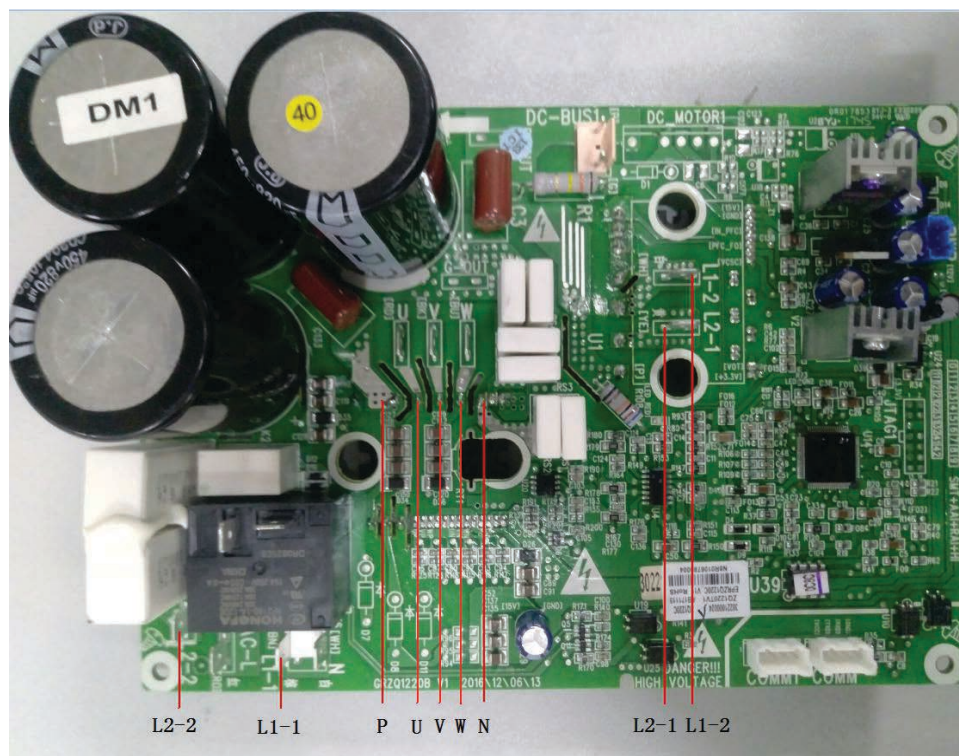
### Method of Testing PFC Module Short Circuit

- Turn off power to the outdoor unit and wait at least one minute. Set a multi meter to diode test. Remove wires from L1-2, and L2-1.

### Testing Steps:

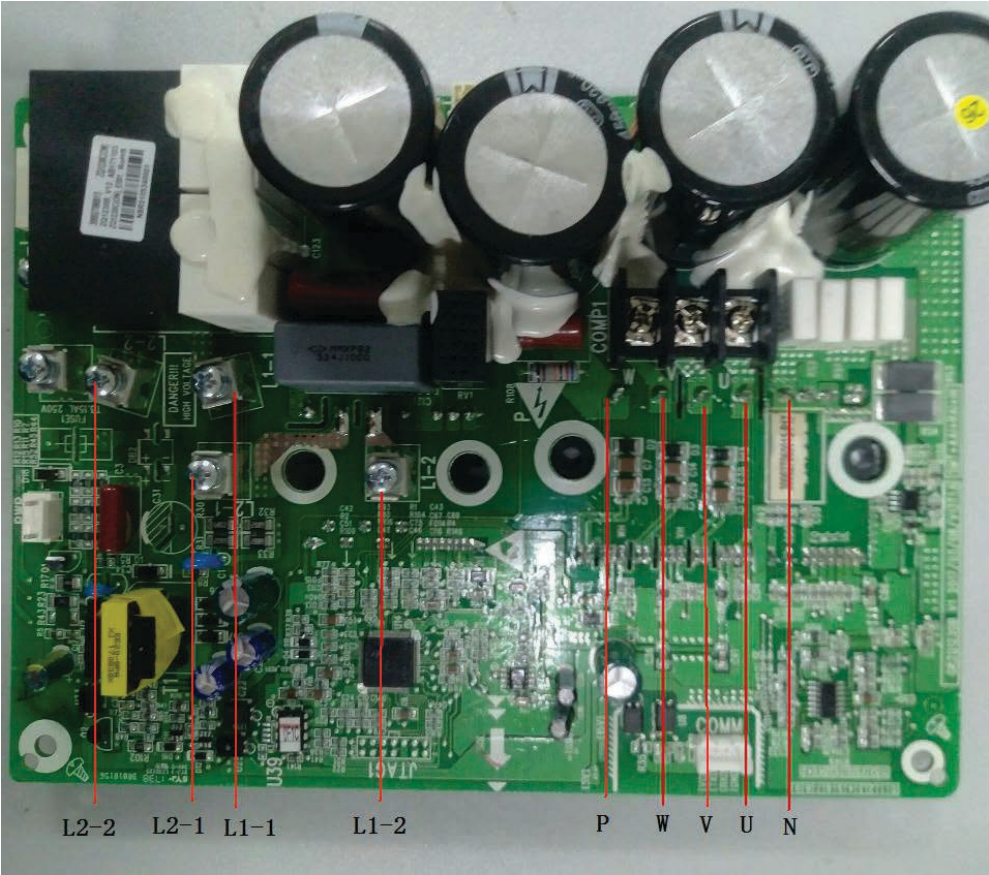
1. Place the black lead on terminal P and the read lead on terminal L1-2 and L2-1 respectively. Measure the voltages between L1-2 and P; L2-1 and P.
2. Place the red lead on terminal N and the black lead on L1-2 and L2-1 respectively. Measure the voltage between N and L1-2 and N and L2-1.
3. Voltages between 0.3 and 0.7 volts indicate a normal PFC module. Any zero volt measurement indicates a failed module.

AUH2436ZGDAA



# Troubleshooting

AUH4860ZGDAA



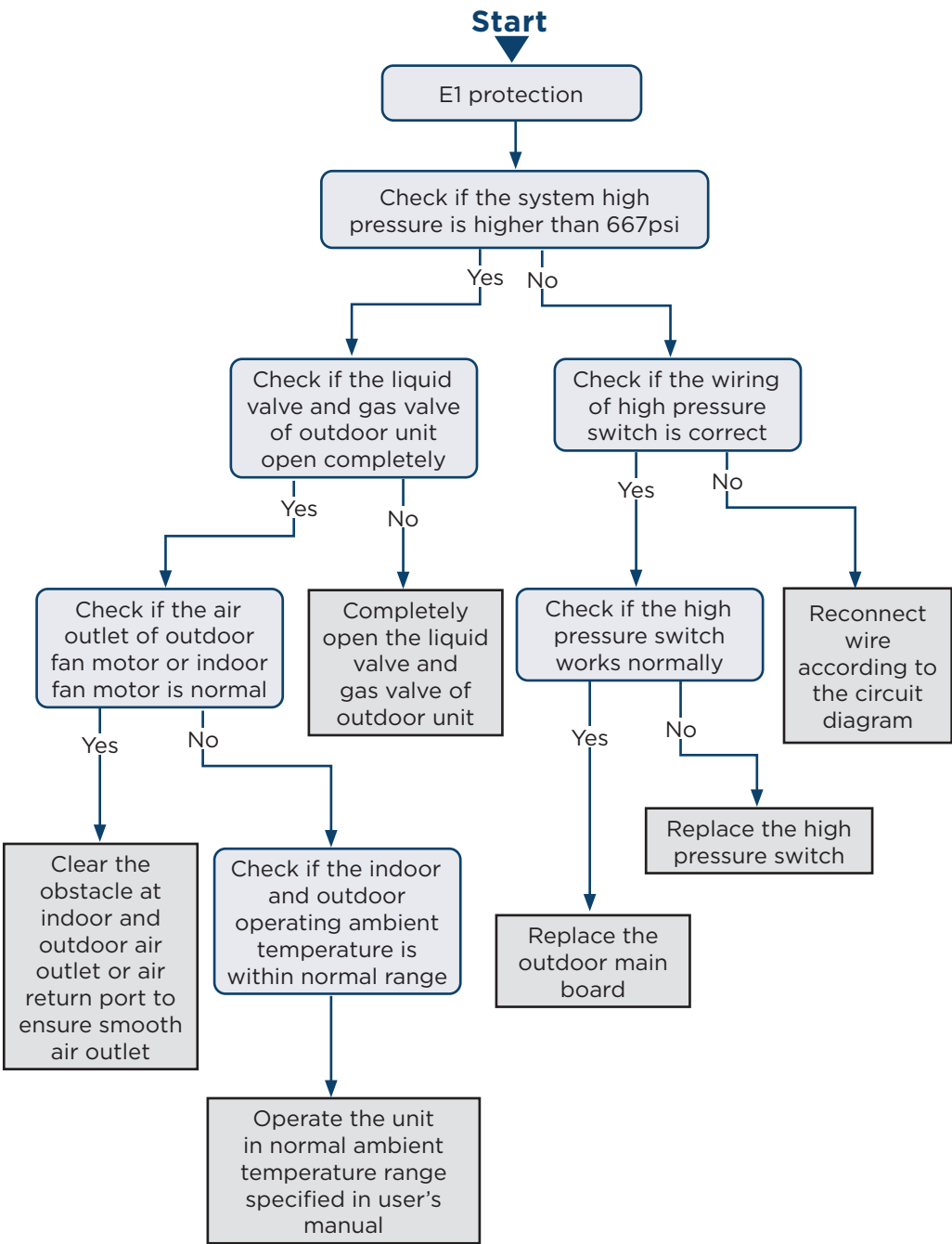
## Error Codes

| No. | Error code | Error                                                |
|-----|------------|------------------------------------------------------|
| 1   | E1         | Compressor high pressure protection                  |
| 2   | E3         | Compressor low pressure protection                   |
| 3   | E4         | Compressor air discharge high-temperature protection |
| 4   | F2         | Condenser temperature sensor error                   |
| 5   | F3         | Outdoor ambient temperature sensor error             |
| 6   | F4         | Discharge temperature sensor error                   |
| 7   | F6         | ODU tube temperature sensor error                    |
| 8   | EE         | ODU memory chip error                                |
| 9   | H4         | Overload                                             |
| 10  | H5         | IPM protection                                       |
| 11  | H6         | DC fan error                                         |
| 12  | H7         | Driver out-of-step protection                        |
| 13  | HC         | PFC protection                                       |
| 14  | Lc         | Startup failure                                      |
| 15  | P0         | Driver reset protection                              |
| 16  | P5         | Over-current protection                              |
| 17  | P6         | Master control and driver communication error        |
| 18  | P7         | Driver module sensor error                           |
| 19  | P8         | Driver module high temperature protection            |
| 20  | PA         | AC current protection                                |
| 21  | Pc         | Driver current error                                 |
| 22  | PL         | Bus low-voltage protection                           |
| 23  | PH         | Bus high-voltage protection                          |
| 24  | PU         | Charge loop error                                    |
| 25  | ee         | Drive memory chip error                              |
| 26  | e1         | High pressure sensor error                           |
| 27  | C4         | ODU jumper cap error                                 |

# Troubleshooting

## Troubleshooting

| "E1" Compressor High Pressure Protection                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                                                                                                                                                                          |
| <b>Error judgment condition and method:</b><br>It is judged through the action of high pressure switch. If the high pressure switch is cut off, it is judged that high pressure is too high and the system stops operation for protection.                                                                                                                                                                   |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>• Cut-off valve of ODU is not fully opened</li> <li>• High pressure switch is abnormal</li> <li>• Outdoor or indoor fan is not working properly</li> <li>• IDU filter or air duct is blocked (heating mode)</li> <li>• Ambient temperature is too high</li> <li>• System is overcharged</li> <li>• Refrigerant line set is blocked</li> </ul> |



## “E3” Compressor Low-Pressure Protection, Refrigerant Undercharge Protection, Refrigerant Recovery Mode

### Error display:

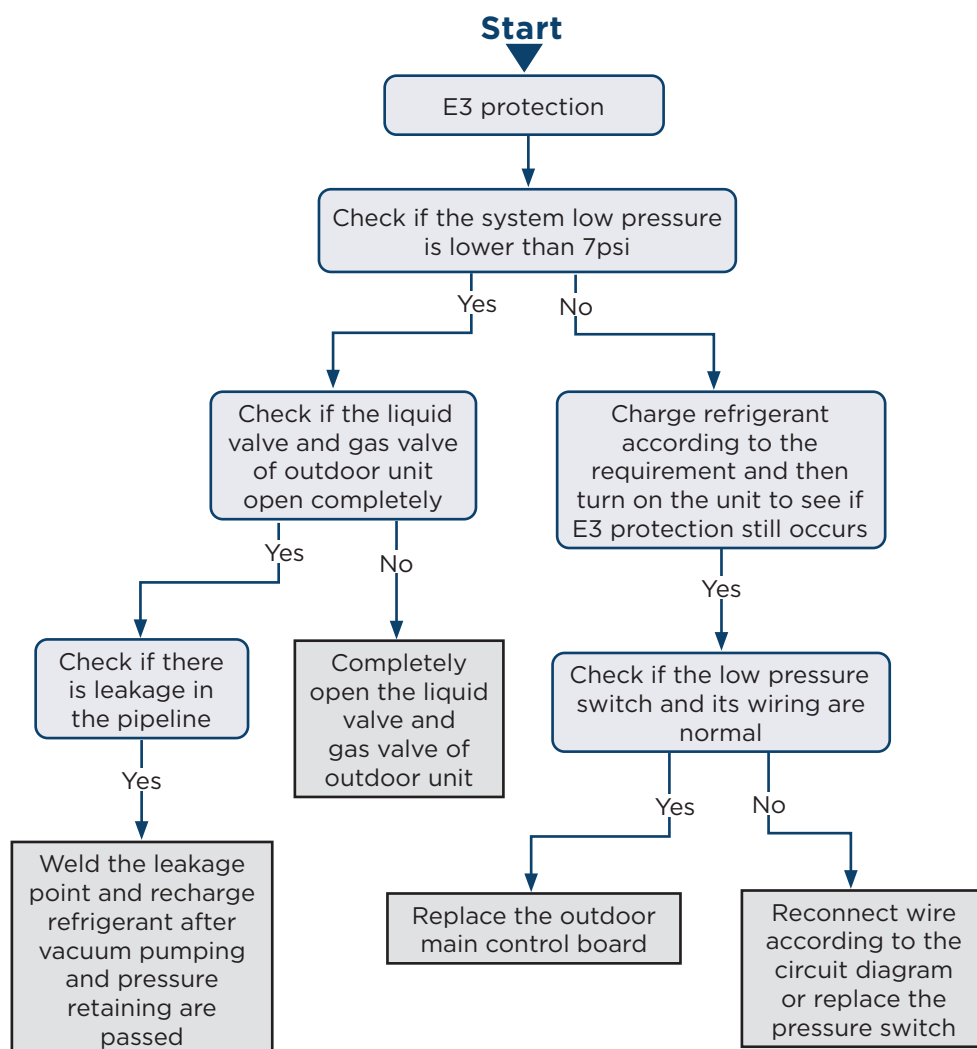
ODU main board LED display

### Error judgment condition and method:

It is judged through the action of low pressure switch. If the low pressure switch is cut off, it is judged that low pressure is too low and the system stops operation for protection.

### Possible causes:

- Service valve of ODU is not fully opened
- Low pressure sensor is abnormal
- Outdoor or indoor fan is not working properly
- IDU filter or air duct is blocked (cooling mode)
- Ambient temperature is too low
- System is undercharged
- Refrigerant line set is blocked



## "E4" Compressor Air Discharge High-Temperature Protection

### Error display:

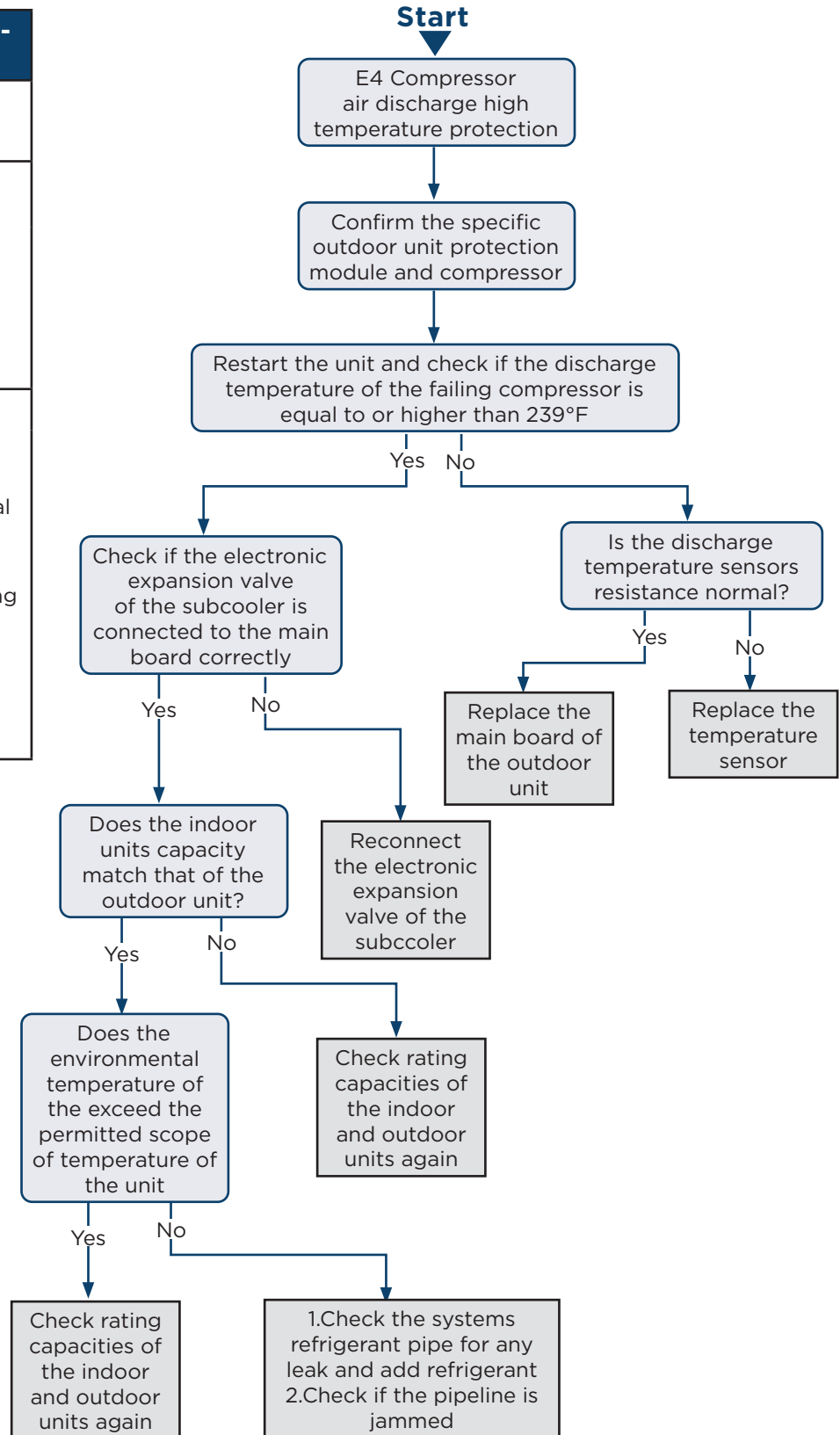
ODU main board LED display

### Error judgment condition and method:

Test the compressor discharge temperature through compressor discharge pipe and compressor shell top temperature sensor. If the tested temperature value is higher than 239°F, the unit will stop for protection.

### Possible causes:

- Service valve of ODU is not fully opened
- Electronic expansion valve is abnormal
- Outdoor or indoor fan is not working properly
- IDU filter or air duct is blocked (cooling mode)
- Ambient temperature exceeds allowable operation range
- System is under charged
- Refrigerant lines are blocked



## "F2" Condenser Temperature Sensor Error

### Error display:

ODU main board LED display

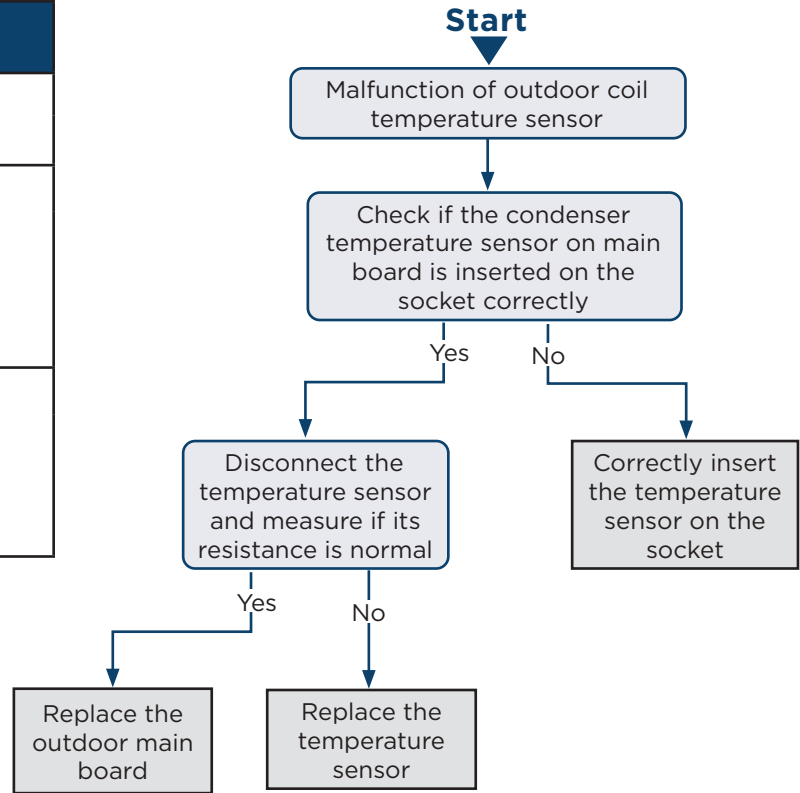
### Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value, If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error.

### Possible causes:

- Poor contact between temperature sensor and terminal in main board interface
- Temperature sensor is abnormal
- Detecting circuit is abnormal

Note: Please refer to Appendix 1 for the relation between temperature and resistance of temperature sensor.



## "F3" Outdoor Ambient Temperature Sensor Error

### Error display:

ODU main board LED display

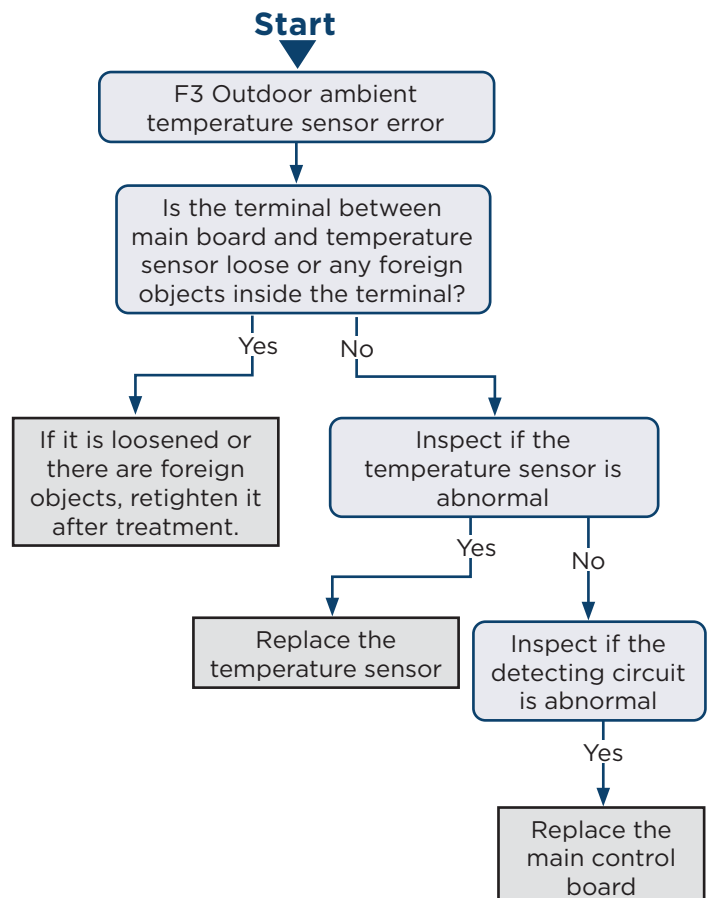
### Error judgment condition and method:

Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value, If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error.

### Possible causes:

- Poor contact between ambient temperature sensor and terminal in main board interface
- Ambient temperature sensor is abnormal
- Detecting circuit is abnormal

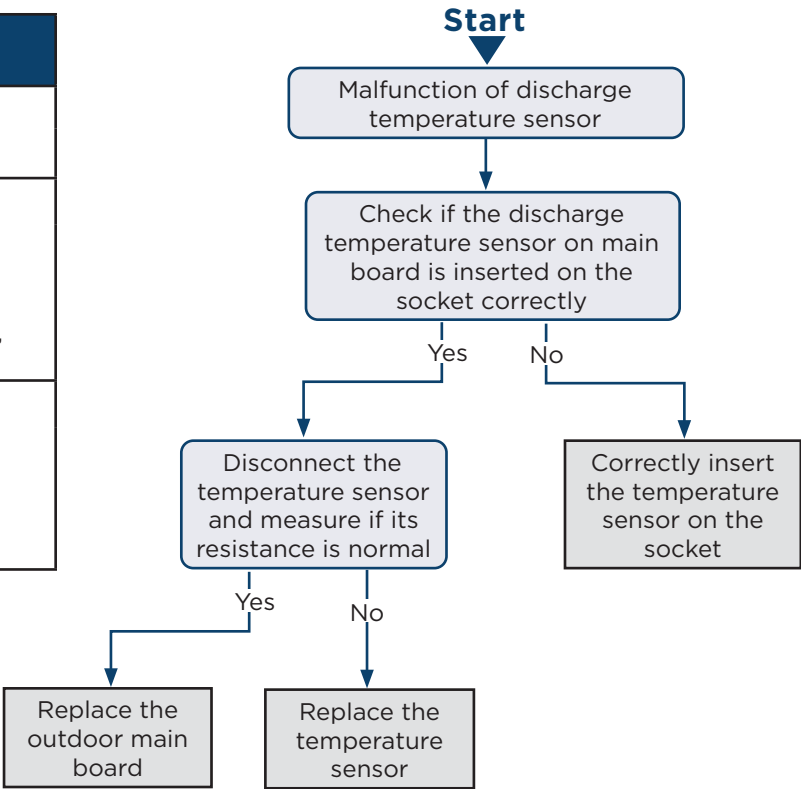
Note: Please refer to Appendix 1 for the relation between temperature and resistance of temperature sensor.



# Troubleshooting

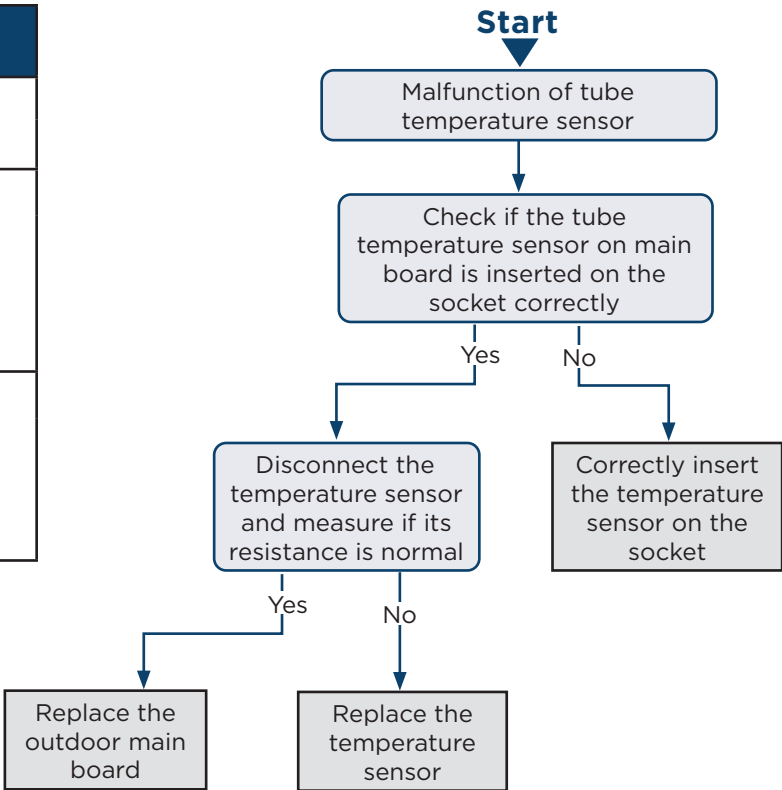
| "F4" Discharge Temperature Sensor Error                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                                              |
| <b>Error judgment condition and method:</b><br>Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value, If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error. |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>• Poor contact between temperature sensor and terminal in main board interface</li> <li>• Temperature sensor is abnormal</li> <li>• Detecting circuit is abnormal</li> </ul>                                      |

Note: Please refer to Appendix 1 for the relation between temperature and resistance of temperature sensor.



| "F6" ODU Tube Temperature Sensor Error                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                                              |
| <b>Error judgment condition and method:</b><br>Sample the AD value of temperature sensor through temperature sensor detecting circuit and judge the range of AD value, If the sampling AD value exceeds upper limit and lower limit in 5 seconds continuously, report the error. |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>• Poor contact between temperature sensor and terminal in main board interface</li> <li>• Temperature sensor is abnormal</li> <li>• Detecting circuit is abnormal</li> </ul>                                      |

Note: Please refer to Appendix 1 for the relation between temperature and resistance of temperature sensor.



## “EE” ODU Memory Chip Error

### Error display:

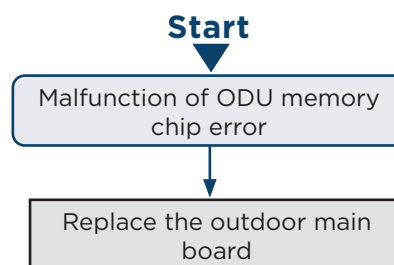
ODU main board LED display

### Error judgment condition and method:

If ODU main board cannot read the memory chip, this error will be reported.

### Possible causes:

- Memory chip on the ODU main board is damaged.
- Memory chip is weakly soldered.
- Memory chip lead is short-circuited.



## “H4” Overload

### Error display:

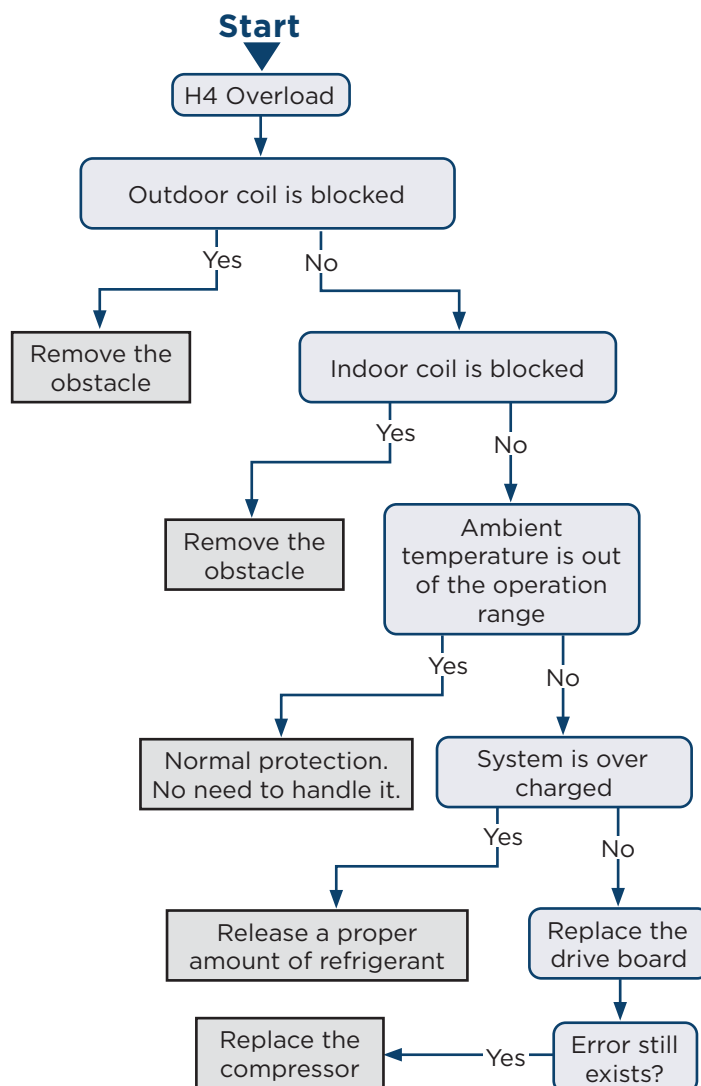
ODU main board LED display

### Error judgment condition and method:

When condensing pressure is higher than the protection value, system will report overload protection.

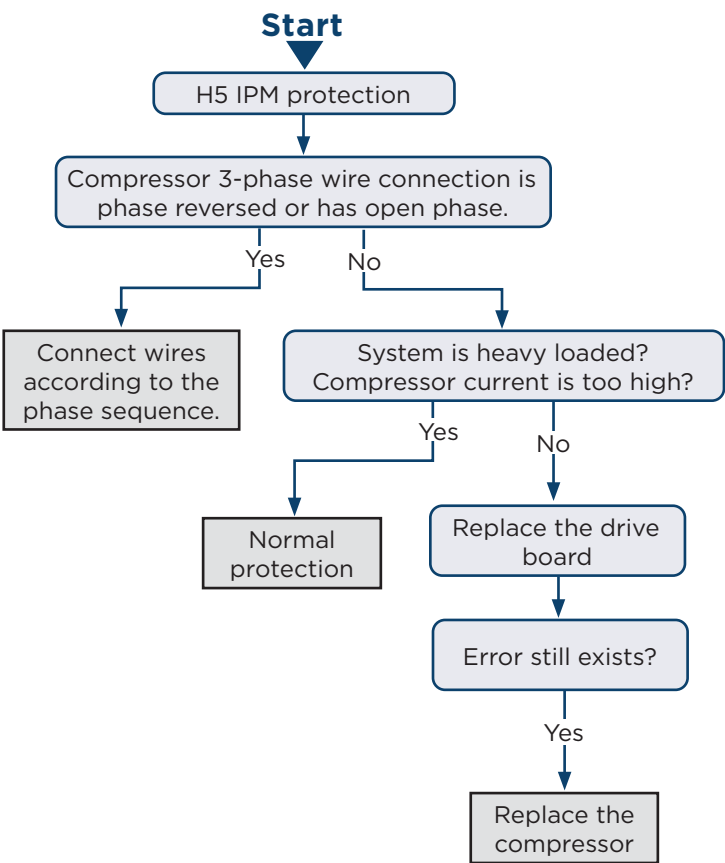
### Possible causes:

- Cooling ODU heat exchanger is blocked or heat exchange is bad.
- Heating IDU heat exchanger is blocked or heat exchange is bad.
- Operating temperature is too high.
- System is over charged

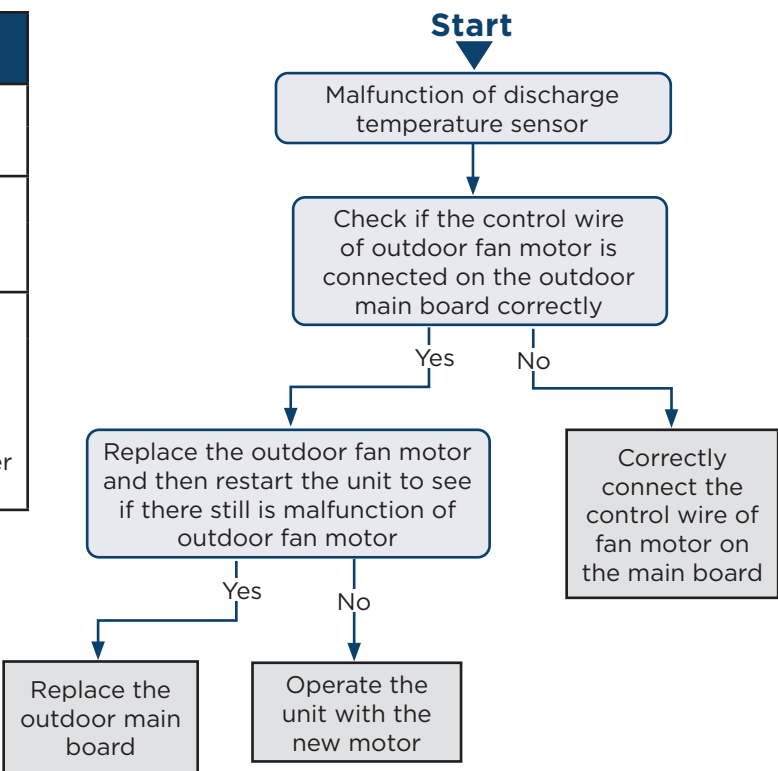


# Troubleshooting

| "H5" IPM Protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Error judgment condition and method:</b><br>Drive processor supply voltage is low. IPM module malfunction. System will shut down.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>Compressor 3-phase wire connection has open phase or is phase-reversed.</li> <li>System is overloaded and compressor current is too high.</li> <li>Drive board IPM module is damaged.</li> <li>Drive board IPM module's 15V power supply is lower than 13.5V.</li> <li>Drive board 6-line PWM signal and the corresponding element are abnormal.</li> <li>Drive board compressor current sampling circuit element is damaged or drive chip current sampling AD terminal is abnormal.</li> <li>Compressor is damaged.</li> </ul> |



| "H6" DC Fan Error                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                                                      |
| <b>Error judgment condition and method:</b><br>Main board does not receive the outdoor fan signal within 30 seconds after outdoor fan run call is initiated                                                                                                                              |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>Outdoor fan wiring terminal is not correctly connected to the main board.</li> <li>Outdoor fan is damaged.</li> <li>Outdoor fan software is incorrect. This can occur after the outdoor fan has been replaced.</li> </ul> |



## “H7” Driver Out-of-Step Protection

### Error display:

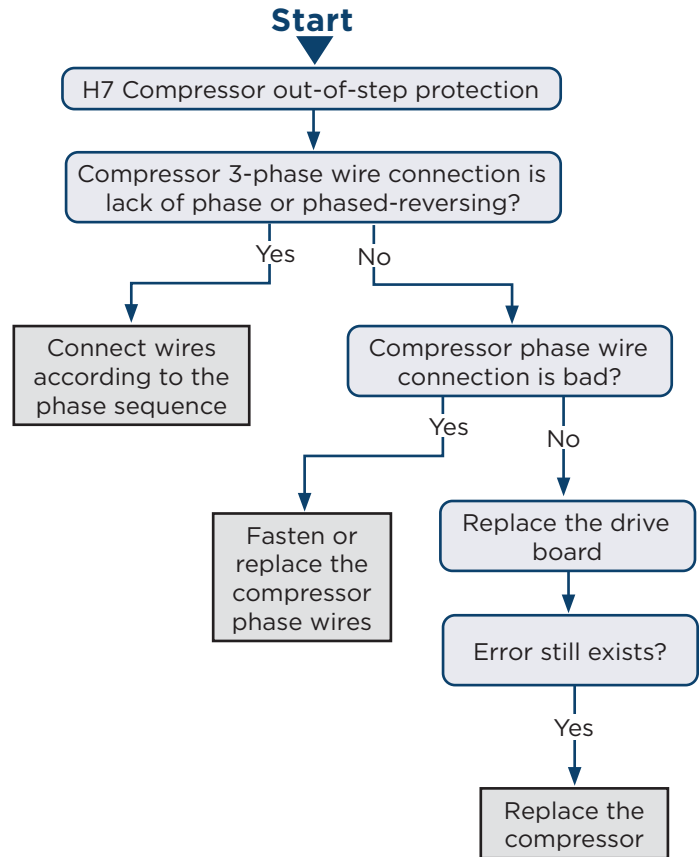
ODU main board LED display

### Error judgment condition and method:

The processor cannot detect the compressor rotor position. The running speed is different that the speed called for. Either case will stop compressor operation.

### Possible causes:

- Compressor 3-phase wire connection is out of phase or phase-reversed.
- Compressor wiring is out of phase.
- System is blocked, short of refrigerant or compressor oil.
- Drive board IPM module is damaged.
- Drive board compressor current sampling circuit element is damaged or drive chip current sampling AD terminal is abnormal.
- Compressor is damaged.



## “HC” PFC Protection

### Error display:

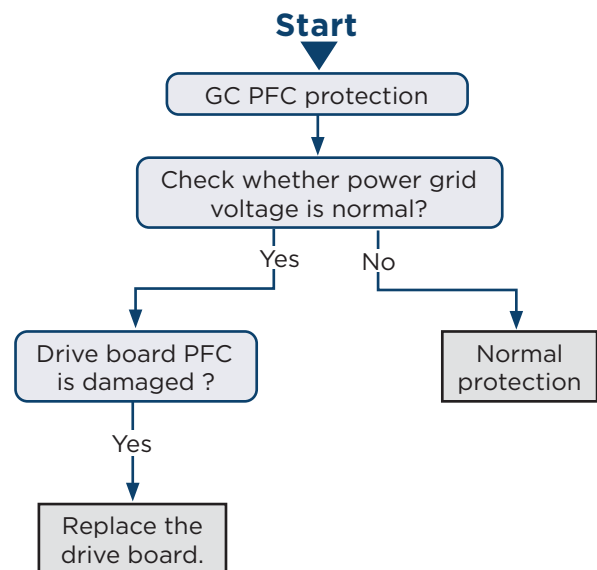
ODU main board LED display

### Error judgment condition and method:

System shutdown due to drive processor low voltage malfunction.

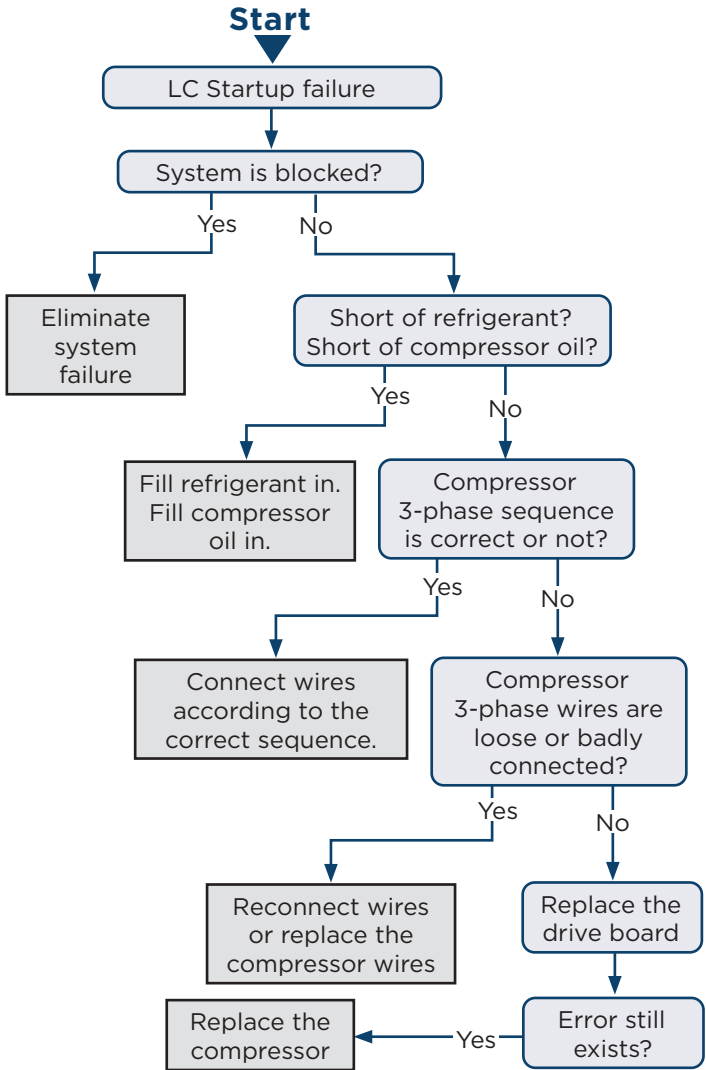
### Possible causes:

- Power grid voltage is abnormal.
- Drive board PFC module is damaged.
- Drive board IPM module's 15V power supply is lower than 13.5V.
- Drive board PWM signal for PFC and the corresponding element are abnormal.
- Drive board PFC current sampling circuit element is damaged or drive chip current sampling AD terminal is abnormal.

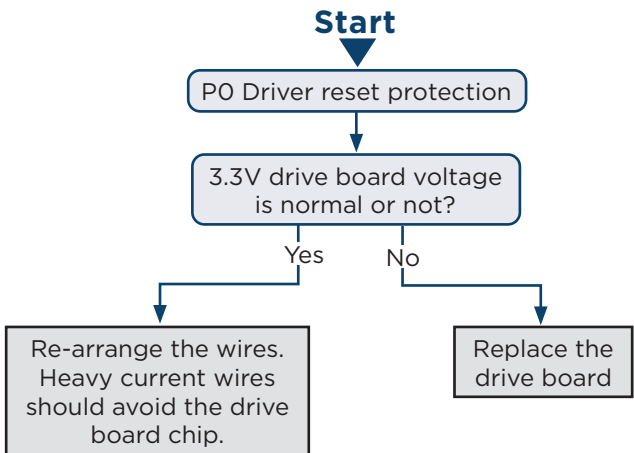


# Troubleshooting

| "Lc" Startup Failure                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                              |
| <b>Error judgment condition and method:</b><br>Check the error code on 7 segment LED display of ODU main control board. Inverter compressor startup failure is indicated by a PJ on the display. |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>• Poor contact of compressor U, V, W wire</li> <li>• Compressor is faulty</li> <li>• Compressor drive board is faulty</li> </ul>  |



| "P0" Driver Reset Protection                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                |
| <b>Error judgment condition and method:</b><br>Drive board chip resets and starts initialization. After the drive board is energized for 5s, it detects that the chip resets again. In this case, it can be judged as drive chip reset protection. |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>• 3.3V drive chip supply voltage drop.</li> <li>• TRST lead of JTAG programming is interrupted.</li> </ul>                                                                          |



## “P5” Over-Current Protection

### Error display:

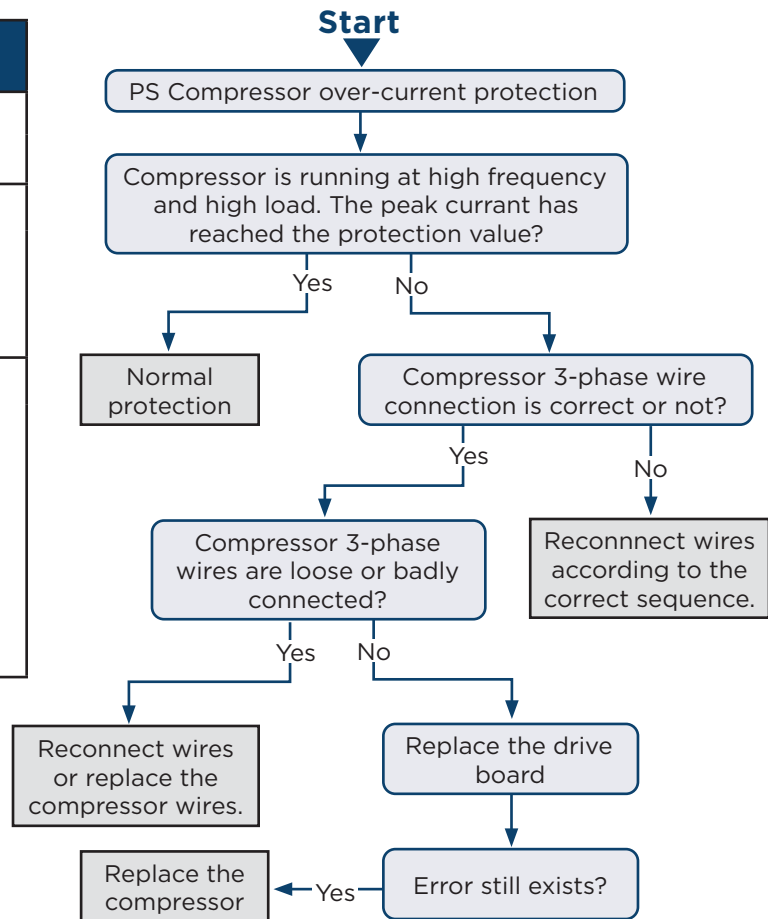
ODU main board LED display

### Error judgment condition and method:

If compressor's instant current value is higher than the set current protection value, it will be judged that compressor over-current occurs and system will shut down for protection.

### Possible causes:

- System load is too much and compressor current is too large.
- Compressor 3-phase wire connection is out of phase.
- Compressor wire is loose or has bad contact.
- Drive board current sampling circuit element is damaged or drive chip current sampling AD terminal is abnormal.
- Compressor is damaged.



## “P6” Master Control and Driver Communication Error

### Error display:

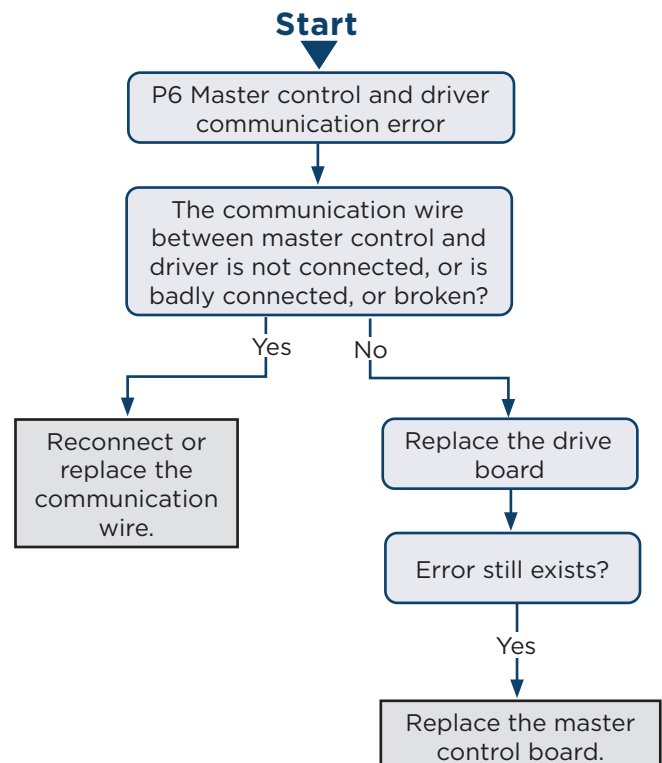
ODU main board LED display

### Error judgment condition and method:

If there is no other malfunction and the communication between master control and driver is cut off for 30s, then it can be judged that the communication between master control and driver is faulted. System will shut down for protection.

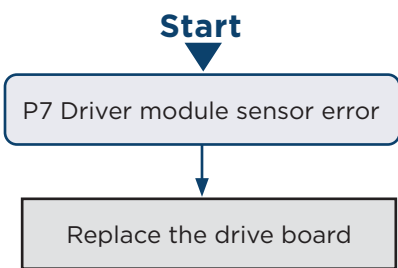
### Possible causes:

- Communication wire between master control and driver is not well connected, or has bad contact, or is broken.
- The switch power of drive board is abnormal, therefore, the 3.3V power voltage is abnormal.
- Communication circuit of the drive board or the master control board is abnormal.

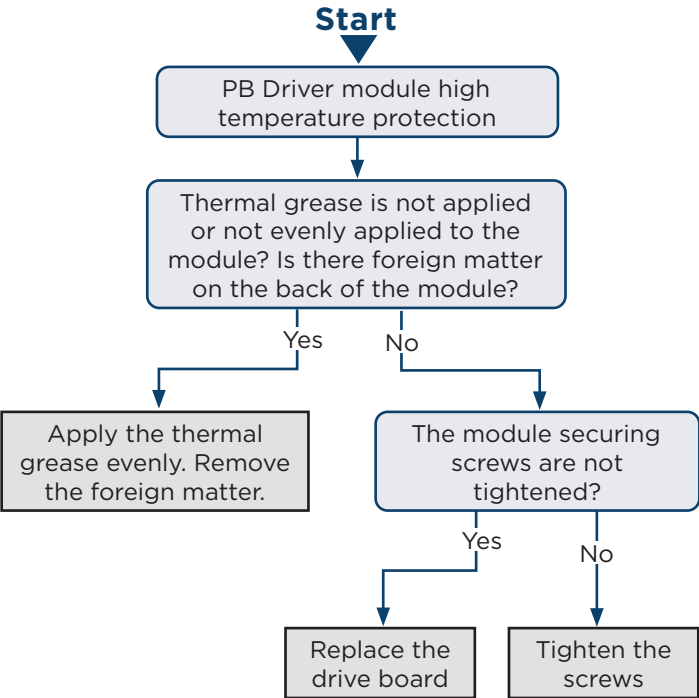


# Troubleshooting

| "P7" Driver Module Sensor Error                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                      |
| <b>Error judgment condition and method:</b><br>If IPM or PFC module temperature is lower than the set protection value, then it can be judged that driver module sensor error occurs and system will shut down for protection.                           |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>Module temperature sensor is short-circuited or open.</li> <li>Drive board current sampling circuit element is damaged or drive chip current sampling AD terminal is abnormal.</li> </ul> |



| "P8" Driver Module High Temperature Protection                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error display:</b><br>ODU main board LED display                                                                                                                                                                                                                                                                                                                                     |
| <b>Error judgment condition and method:</b><br>If IPM module temperature or PFC module temperature exceeds the set protection value, then it can be judged that driver module temperature is too high and system will shut down for protection.                                                                                                                                         |
| <b>Possible causes:</b> <ul style="list-style-type: none"> <li>Thermal grease is not applied or not evenly applied to the module, or there is other substance on the back of the module.</li> <li>The module securing screws are not tight.</li> <li>Drive board temperature sampling circuit element is damaged or drive chip temperature sampling AD terminal is abnormal.</li> </ul> |



## “PA” AC Current Protection

### Error display:

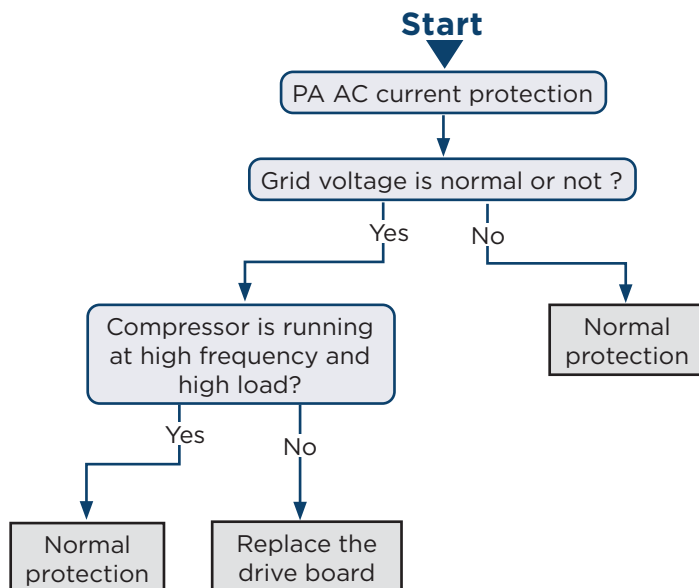
ODU main board LED display

### Error judgment condition and method:

If input current value exceeds the set protection value, then it can be judged that AC current protection occurs and system will shut down for protection.

### Possible causes:

- System is heavy-loaded and compressor current is too large.
- Grid voltage is abnormal.
- PFC module is damaged.
- Drive board PFC current sampling circuit element is damaged or drive chip PFC current sampling AD terminal is abnormal.



## “Pc” Driver Current Error

### Error display:

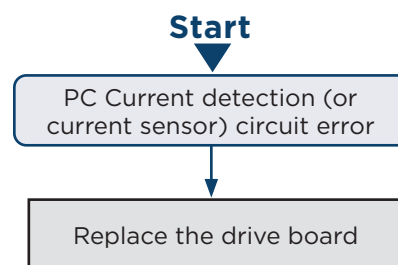
ODU main board LED display

### Error judgment condition and method:

After power charging, if offset voltage average is detected to exceed 12.5% of 1.65V in 1s, then it can be judged that current detection (or current sensor) circuit is faulted. System will shut down for protection.

### Possible causes:

- Current detection (or current sensor) sampling circuit element is abnormal.
- Drive chip compressor current sampling AD terminal is badly welded or short-circuited.



## “PL” Bus Low-Voltage Protection

### Error display:

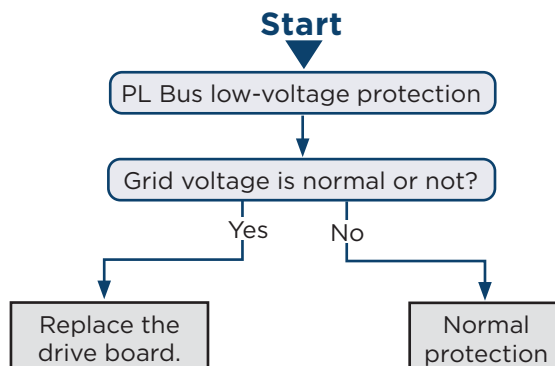
ODU main board LED display

### Error judgment condition and method:

When compressor is running and there is no other malfunction, if busbar voltage is lower than the set value for low voltage protection, then it can be judged that bus low-voltage protection occurs. System will shut down for protection.

### Possible causes:

- Voltage of power grid is abnormal.
- Drive board busbar voltage sampling circuit element is damaged or drive board busbar voltage sampling AD terminal is abnormal.



# Troubleshooting

## “PH” Bus High-Voltage Protection

### Error display:

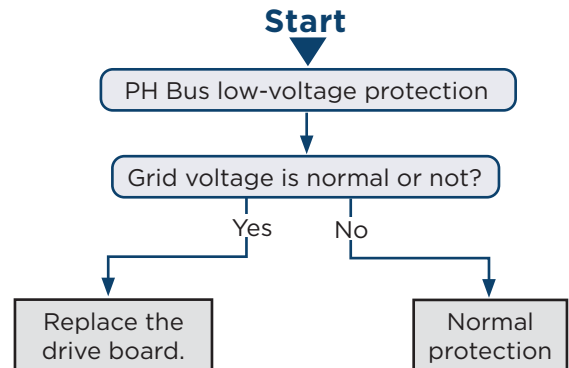
ODU main board LED display

### Error judgment condition and method:

If there is no other malfunction and the busbar voltage is higher than the set value for high voltage protection, then it can be judged that bus high-voltage protection occurs. System will shut down for protection.

### Possible causes:

- Voltage of power grid is abnormal.
- Drive board busbar voltage sampling circuit element is damaged or drive board busbar voltage sampling AD terminal is abnormal.



## “PU” Charge Loop Error

### Error display:

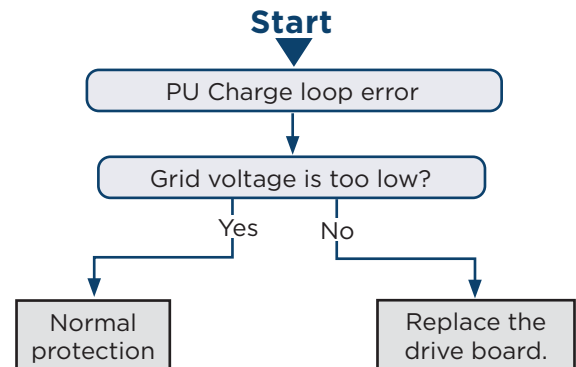
ODU main board LED display

### Error judgment condition and method:

When the charge loop begins to charge and the busbar voltage cannot reach the set value in a certain period of time, it can be judged that charge loop error exists. System will shut down for protection.

### Possible causes:

- Voltage of power grid is abnormal. Voltage is too low.
- Drive board charge loop element is abnormal.
- Drive board busbar voltage sampling circuit element is damaged or drive chip busbar voltage sampling AD terminal is abnormal.



## “ee” Drive Memory Chip Error

### Error display:

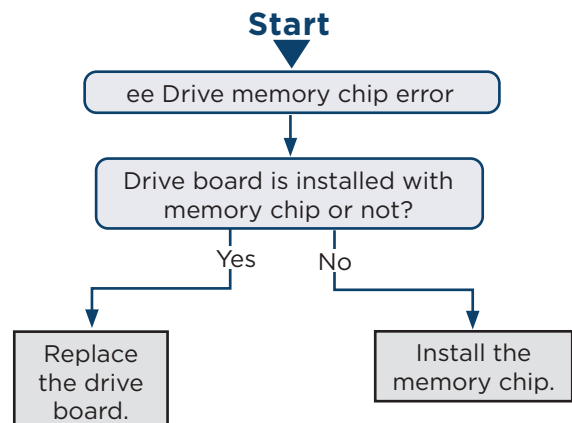
ODU main board LED display

### Error judgment condition and method:

If power is connected but the drive board and the memory chip cannot detect the memory chip or read the memory chip data correctly, then it can be judged that drive memory chip error exists.

### Possible causes:

- The drive board that needs memory chip is not installed with the memory chip.
- The lead or connector of memory chip is badly welded or short-circuited.



## "e1" High Pressure Sensor Error

### Error display:

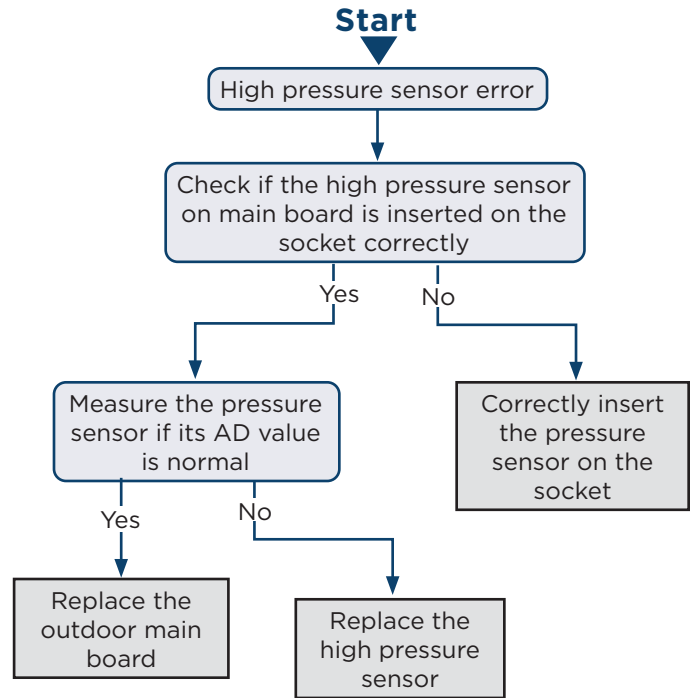
ODU main board LED display

### Error judgment condition and method:

Sample the AD value of pressure sensor through pressure sensor detecting circuit and judge the range of AD value, If the sampling AD value exceeds upper limit and lower limit in 30 seconds continuously, report the error.

### Possible causes:

- Poor contact between pressure sensor and terminal in main board interface
- Pressure sensor is abnormal
- Detecting circuit is abnormal



## "C4" ODU Jumper Cap Error

### Error display:

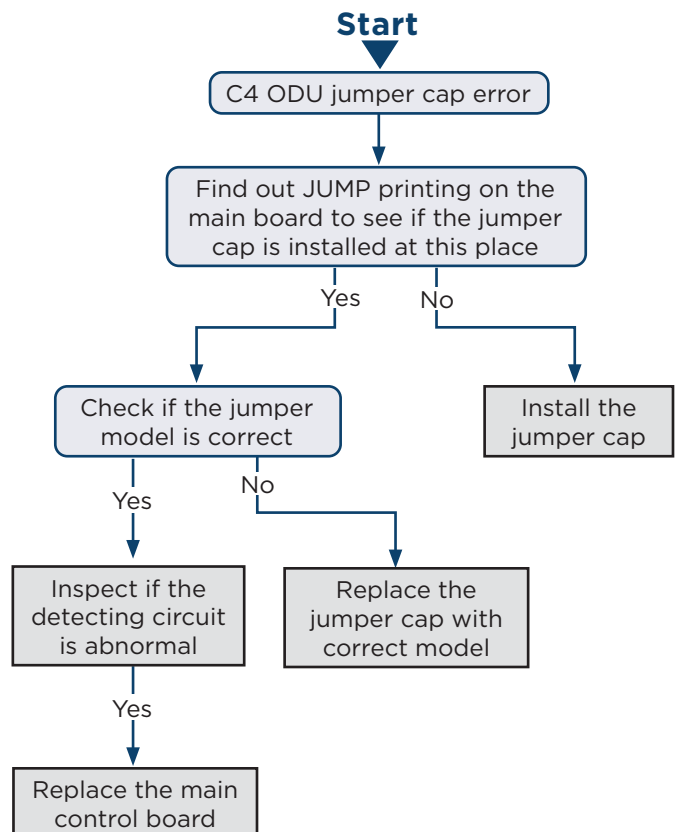
ODU main board LED display

### Error judgment condition and method:

If jumper cap model doesn't match with main board, report the error

### Possible causes:

- Jumper cap is not installed
- Jumper cap model is wrong
- Detecting circuit is abnormal



## Failures Not Caused by Errors

If your heat pump fails to function normally, please first check the following items before contacting service:

| Problem                        | Cause                                                 | Corrective measure                                                              |
|--------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------|
| The heat pump doesn't run      | The compressor is protected by a 3 minute time-delay. | Please wait for time delay protection.                                          |
|                                | Wire connection is wrong.                             | Connect wires according to the wiring diagram.                                  |
|                                | Fuse or circuit breaker is broken                     | Replace the fuse or switch on the circuit breaker.                              |
|                                | Power failure.                                        | Restart after power is resumed.                                                 |
|                                | Power plug is loose.                                  | Re-insert the power plug.                                                       |
|                                | Thermostat has weak battery.                          | Replace the batteries.                                                          |
| Bad cooling or heating effect. | Air inlet and outlet of the units have been blocked.  | Clear the obstacles and keep the room for the units well ventilated.            |
|                                | Improper temperature setting                          | Select a proper temperature.                                                    |
|                                | Fan speed is too low.                                 | Select a proper fan speed.                                                      |
|                                | Air flow direction is not right.                      | Change the direction of air louvers.                                            |
|                                | Doors or windows are open.                            | Close them.                                                                     |
|                                | Exposed under direct sunshine.                        | Draw curtains or louvers in front of the windows.                               |
|                                | Too many heat sources in the room.                    | Remove unnecessary heat sources.                                                |
|                                | Filter is blocked or dirty.                           | Send for a professional to clean the filter.                                    |
|                                | Air inlets or outlets of the units are blocked.       | Clear away obstacles that are blocking the air inlets and outlets of the units. |

The following situations are not operation failures:

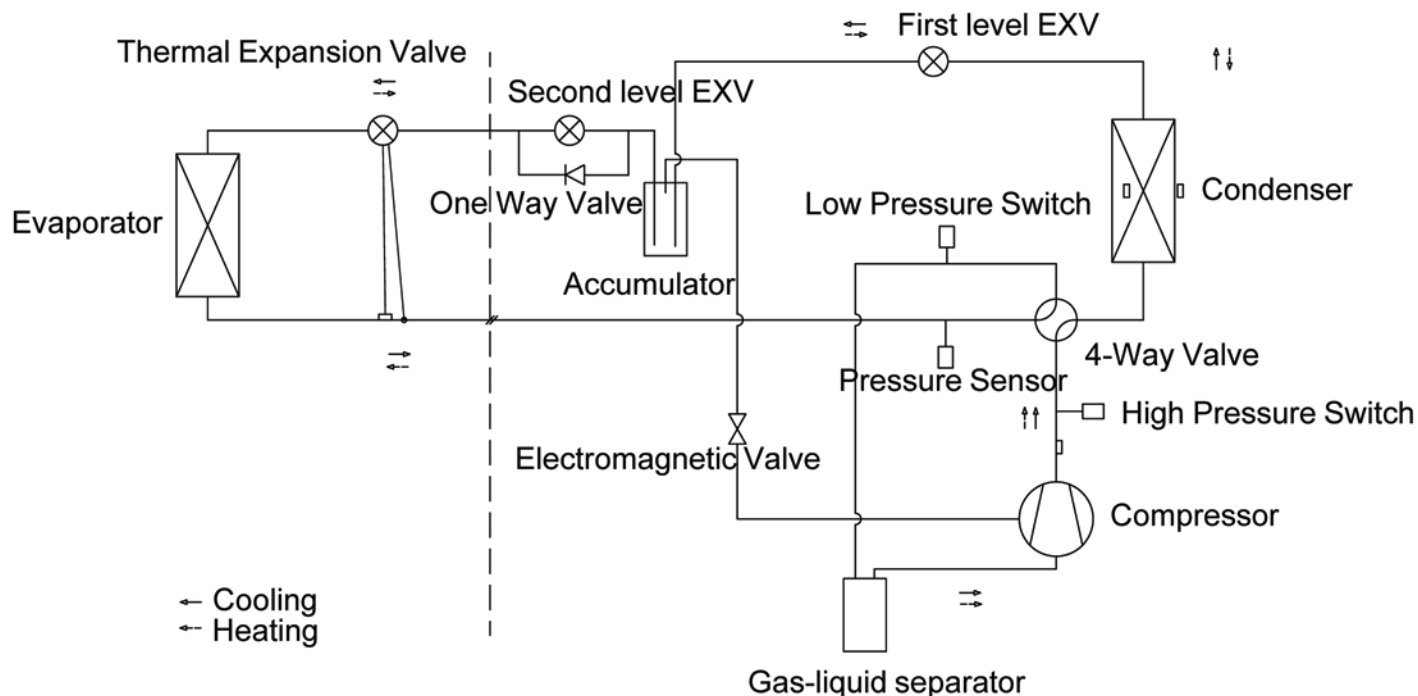
| Problem                                  | Time of occurrence                                                                                                            | Cause                                                                                                                 |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Mist comes from the heat pump.           | During operation.                                                                                                             | If the unit is running under high humidity conditions, the air in the room will condense.                             |
| The heat pump generates excessive noise. | System switches to heating mode after defrosting.                                                                             | Defrosting process will generate some water, which will turn to water vapor.                                          |
|                                          | The heat pump is buzzing at the beginning of operation.                                                                       | Thermostat will be buzzing when it starts working. The noise will become weak 1 min later.                            |
| Dust comes from the heat pump.           | When the unit is turned on, it purrs.                                                                                         | When the system is just started, the refrigerant is not stable. About 30s later, the purr of the unit will dissipate. |
|                                          | About 20s after the unit first enables the heating mode or there is refrigerant brushing sound when defrosting under heating. | It's the sound of 4-way valve switching direction. The sound will disappear after the valve changes its direction.    |
|                                          | There is hissing sound when the unit is started or stopped and a slight hissing sound during and after operation.             | It's the sound of gaseous refrigerant that stops flowing and the sound of drainage system.                            |
|                                          | There is a sound of crunching during and after operation.                                                                     | Because of temperature change, front panel and other components may be expanding and contracting.                     |
|                                          | There is a hissing sound when the unit is turned on or suddenly stopped during operation or after defrosting.                 | Because refrigerant suddenly stops flowing or changes the flow direction.                                             |
|                                          | The unit starts operation after being unused for a long time.                                                                 | Dust inside the units come out together with the air.                                                                 |
| The heat pump generates some smell.      | During operation.                                                                                                             | The room smell or the smell of cigarette comes out through the units                                                  |



### NOTICE:

- Check the above items and adopt the corresponding corrective measures. If the heat pump continues to function poorly, please stop the heat pump immediately and contact a local service contractor.

## System Diagram



## System Evacuation

- NOTICE:**
- Make sure the outlet of vacuum pump is away from fire source and is well-ventilated.
  - Before evacuating, make sure the unit cut-off valves are closed.
  - When evacuating, both the liquid pipe and the gas pipe must be evacuated.

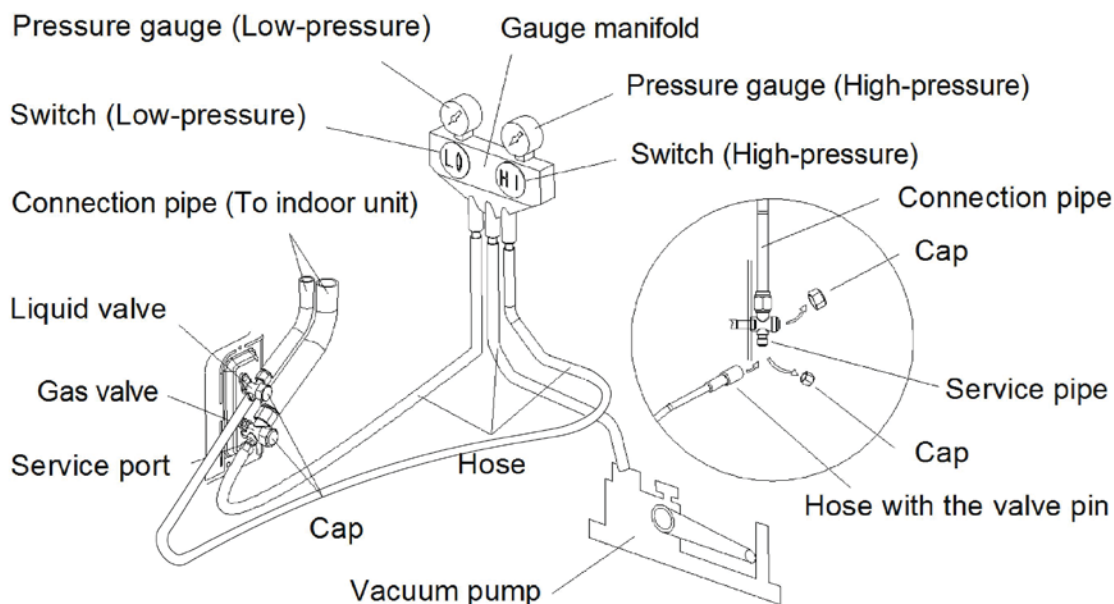
1. Remove the caps of the liquid valve, gas valve and also the service port.
2. Meanwhile the gas and liquid valves should be kept closed in case of refrigerant leak.
3. Connect the hose used for evacuation to the vacuum pump.
4. Open the switch at the lower pressure side of the manifold valve assembly and start the vacuum pump. Meanwhile, the switch at the high pressure side of the manifold valve assembly should be kept closed, otherwise evacuation would fail.
5. The evacuation duration depends on the unit's capacity, generally:

| Model       | Time(min) |
|-------------|-----------|
| AUH2436ZGDA | 35        |
| AUH4860ZGDA | 40        |

Verify if the pressure gauge at the low pressure side of the manifold valve assembly reads 350 microns, if not, it indicates there is leak somewhere. Then, close the valves fully and then stop the vacuum pump.

6. Wait for 10min to see if the system pressure can remain unchanged. If the pressure increase, there may be leakage.

7. Slightly open the liquid valve and let some refrigerant go to the connection pipe to balance the pressure inside and outside of the connection pipe, so that air will not come into the connection pipe when removing the hose. Notice that the gas and liquid valve can be opened fully only after the manifold valve assembly is removed.
8. Replace back the caps of the liquid valve, gas valve and also the service ports.



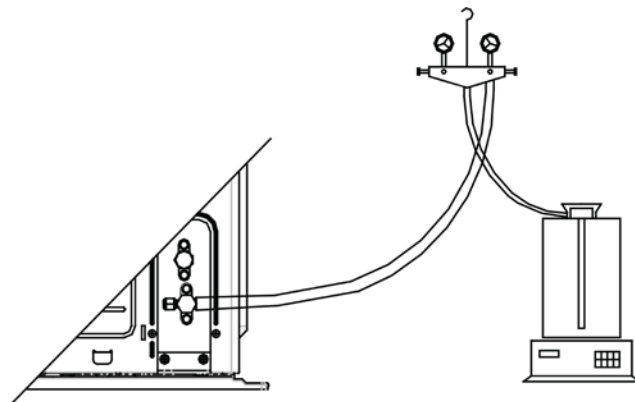
## NOTICE:

- For large-size units, there are maintenance ports for liquid valve and gas valve. During evacuation, you may connect the two hoses of the manifold gauges to the maintenance ports to speed up the evacuation.
- Refrigerant should be reclaimed into the appropriate storage tank. System should use oxygen-free nitrogen purging to ensure safety. This process may need to repeat several times. Do not use compressed air or oxygen in this process.

## Refrigerant Charging

### Pre-Charging

1. Connect the high pressure gauge line to the liquid service valve and connect the low pressure gauge line to the vapor line valve. Connect the middle gauge line to the vacuum pump. Power on the vacuum pump and evacuate the system.
2. After evacuation, close the high and low pressure gauge valves and remove the middle gauge line from the connector of vacuum pump and connect the refrigerant tank.
3. Loosen the middle gauge line from the connector and slightly open the refrigerant tank valve. Purge the middle gauge line. Tighten up the connector again and completely open the valve of refrigerant tank at the same time.
4. Keep the refrigerant tank erect and put it on an electronic scale. Zero the scale.



## Maintenance

5. Open the high pressure gauge valve (Keep the low pressure gauge valve closed). Then charge refrigerant into the system.
6. Add the required amount of refrigerant calculated and close off the manifold gauge when complete.
7. If you can't continue to charge refrigerant into the system and the quantity of charged refrigerant is less than the required charging quantity, then restart the system and add the remainder of the required refrigerant into the vapor line while the system is running.
8. After charging, remove the pressure gauge.

### Refrigerant Charging When Unit is Running

1. Connect the low pressure gauge line to the vapor line service valve and connect the high pressure gauge line to the service valve. Connect the middle gauge line to the vacuum pump. Power on the vacuum pump and evacuate the system.
2. After evacuation, close the high and low pressure gauge valves. Then remove the middle gauge line from the connector of vacuum pump and connect the refrigerant tank.
3. Purge the center hose.
4. Turn on the heat pump and let it run for a while.
5. Open the low pressure gauge valve (Keep the high pressure gauge valve closed) and charge add the remaining required refrigerant.
6. After all required refrigerant is charged in, close the valve of refrigerant tank.
7. Remove the pressure gauge to finish the refrigerant charging work.

### Procedure of Refrigerant Charging

Following is the supplementary requirement for refrigerant charging on the basis of normal procedure:

1. Make sure that when charging refrigerant into the system, no other types of refrigerant will be mixed. The pipeline for refrigerant charging should be as short as possible to reduce the amount of refrigerant left in it.
2. The refrigerant tank should stand erect.
3. Make sure the refrigerating system is already grounded before refrigerant charging.
4. When charging is completed (or not yet completed), stick a label on the system.
5. Perform a final refrigerant leak test before leaving the work site.

## Maintenance of Major Components

### Replacement of Thermostat

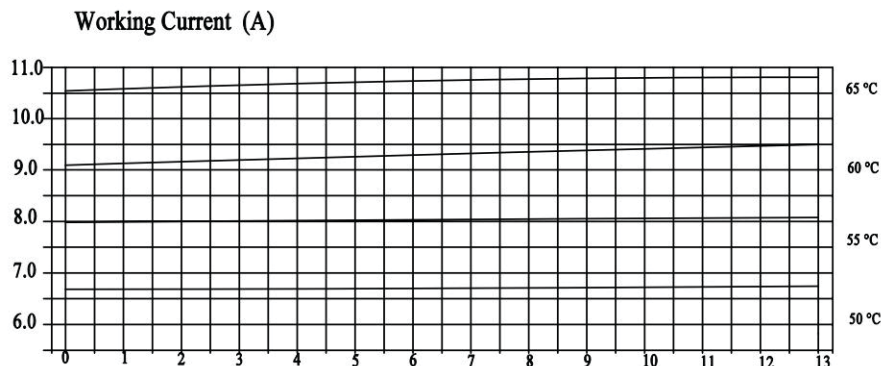
Please refer to the instruction manual for your thermostat.

## How to Replace the Compressor

### Diagnosis of Compressor Failure: On Condition that the Unit CAN be Started Up

1. Start the unit if it will run and check the current of the faulted compressor. Use manifold gauges to measure the discharge and suction pressures at the service valves. Refer to the following table based on the recommended working current. The electric current of an inverter compressor will be different under different rotation speed or different working conditions. If the compressor is working at 60Hz, the working current corresponding to different condensing temperature and evaporating temperature is shown below:

Inverter compressor QXFT-F310zN450



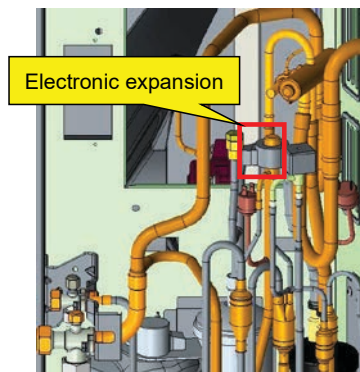
2. Judge whether the operating noise of the compressor is normal, and whether there is a sharp noise or obvious scraping. If there is a normal compressor working nearby, compare their operating noises.
3. Examine whether the electronic expansion valve of the outdoor unit is active and whether the 4-way valve works or not. How to examine:

#### I. Electronic Expansion Valve:

The electronic expansion valve will be reset every time when the unit is powered on or off. Touch the valve and you can feel the movement of the valve spool. In the last stage of the reset process, you will hear the click of the valve and feel its vibration.

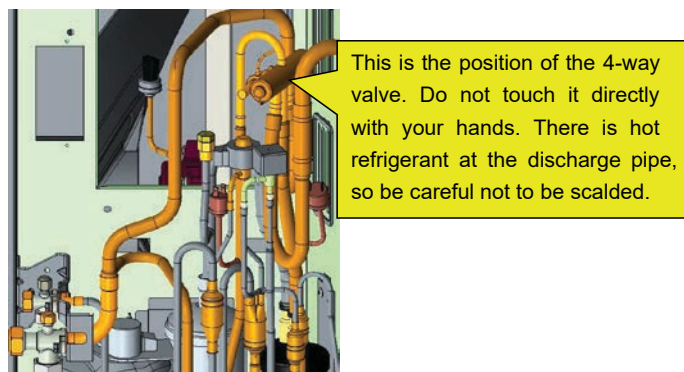
Touch the electronic expansion valve:

- a. Touch the top of the electronic expansion valve and you can feel its move as it is reset upon startup.
- b. Make sure the coil is fixed firmly.



#### II. 4-way Valve:

During normal operation, the 4 copper tubes that connect to the valve will have different temperatures. When the 4-way valve is working, it will generate some noise and vibration.



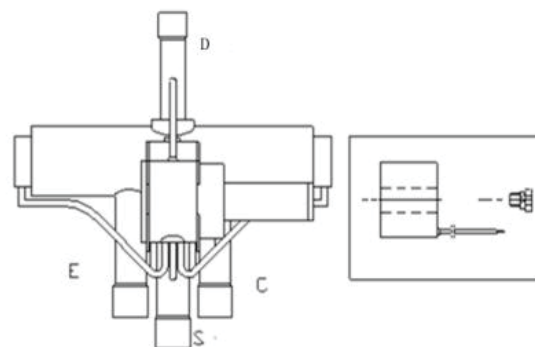
Labels on the 4-way valve:

D-connect to the discharge side; E-connect to the evaporator of indoor unit; S-connect to the suction side of the liquid separator; C-connect to the outdoor coil.

When the system is in cooling mode, C-the pipeline is with high pressure and high temperature; E, S-the pipeline is with low pressure and low temperature.

When the system is in heating mode, E-the pipeline is with high pressure and high temperature; C, S-the pipeline is with low pressure and low temperature;

Because D is connected to the discharge side, it is with high pressure and high temperature regardless of the operating mode. When the unit is powered on, in defrosting or oil return mode, the 4-way valve will produce some noise. Do not touch the pipes directly with your hands and be aware of the hot temperature.



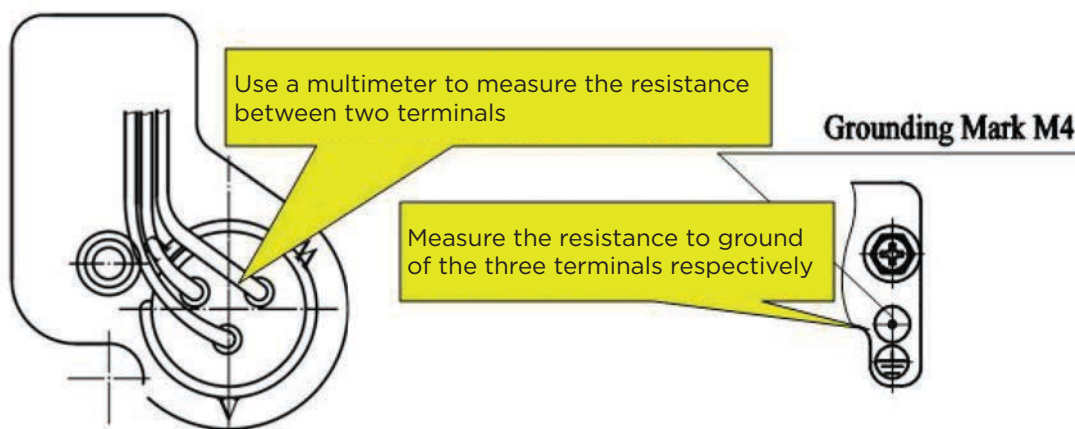
D- Connect to the exhaust side

Caution! High temperature!

4. Check the drive board of compressor, i.e. the IPM module. Please refer to the IPM checking method in the section of troubleshooting. Check the drive board of compressor, i.e. the IPM module. Please refer to the IPM checking method in the section of troubleshooting.

## Diagnosis of Compressor Failure: On Condition that the Unit CANNOT be Started Up

1. Cut off the power supply and detach the cover of the wiring box of the compressor. Check the wiring connections of the compressor.
2. Check the resistance between the wiring terminals (U, V, W) of compressor.



Refer to the following table for the resistance between any two terminals:

| Compressor model | UV Winding Resistance | VW Winding Resistance | WU Winding Resistance |
|------------------|-----------------------|-----------------------|-----------------------|
| QXFT-F310zN450   | 0.79±7%Ω              | 0.79±7%Ω              | 0.79±7%Ω              |
| QXAU-F516zX440A  |                       |                       |                       |

Measure the resistance to ground of each wiring terminal. The resistance should be above 10 megohm. If not, we can judge that the compressor windings are grounded.

3. On condition that the unit cannot be started up; we also need to check the solenoid valve assembly of the system including the electronic expansion valve. The checking method is the same as instructed above.
4. Check whether the IPM module is normal. Please refer to the IPM checking method in the section of troubleshooting.

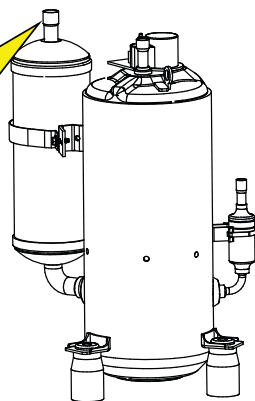
## Replacement of Compressor

### 1. Preparation

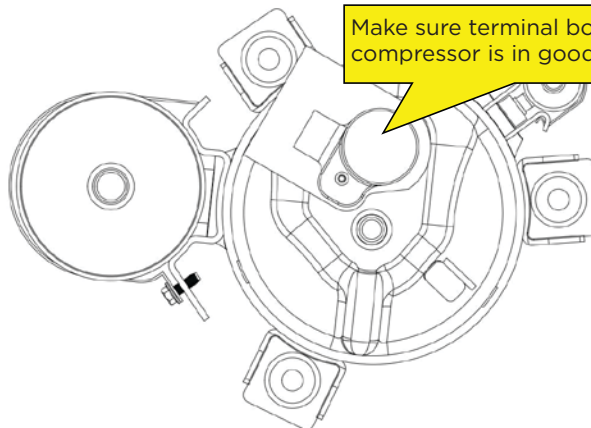
A. Prepare the components for replacement:

- Do not carry the compressors horizontally or upside down when carrying the compressors. Make sure the lubricant inside the compressor doesn't pour out from the oil refrigerant ports. The suction and discharge openings of the compressor must be sealed. Use tape for the openings if the rubber plugs are not available.

Make sure the rubber seals of the suction and discharge openings of the compressor are in good condition.



Make sure terminal box cover of the compressor is in good condition.



#### NOTICE:

- Before replacement, make sure the nameplates and models of the compressors are identical.
- Make sure the lubricant is sealed inside the compressors.

B. Prepare relevant tools:

- Prepare nitrogen. Please strictly follow the nitrogen welding standards during the welding process. Make sure there is sufficient nitrogen. The nitrogen pressure should be above 2" to 3" W.C.
- Prepare brazing rods. Common brazing rod contains less than 5% silver. This material is used for brazing copper to copper. The refrigerant ports of our compressor are made from copper-plated steel, so we must use 15% brazing rod.
- Prepare applicable welding tools. Please evaluate how much oxygen and acetylene should be used according to the current welding condition. Try to avoid repeated welding.
- Prepare a complete set of tools, including an internal hexagonal wrench, diagonal pliers, pincer pliers, nipper pliers, a multimeter, a pressure gauge, phillips screwdriver, straight screwdriver, more than two wrenches, insulating tape and wire ties.

### 2. Disconnect power

- If the compressor needs to be replaced after judging as above, then switch off the outdoor unit and disconnect the power cable of the outdoor unit. Use insulating tape to wrap the power cable and put a notice card on the power switch to remind people to be cautious of electric shock.

### 3. Preparation of electric components

- When you detach the compressor wires, temperature sensors and electric heaters, mark them correspondingly for the convenience of reconnecting them.

### 4. Recover refrigerant

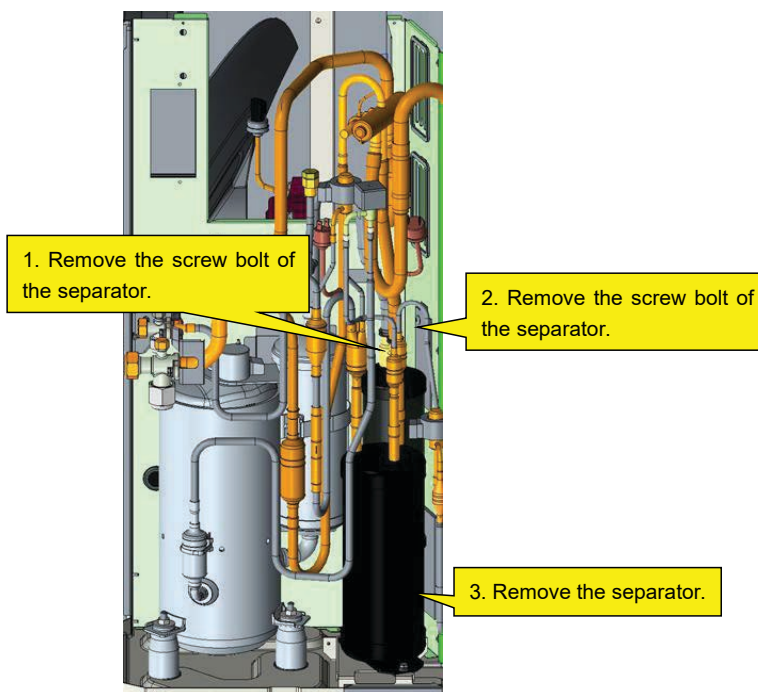
- Recover refrigerant from the system. Recover simultaneously from the high pressure side and low pressure side. Do not recover too quickly; otherwise large quantity of lubricant will escape from the system together with the refrigerant.

## 5. Detach the compressor

- Check the condition of the damaged compressor, including its position and model.
- If the information of the compressor is confirmed, check the oil quality.
  - I. If the oil is clear and impurities-free, we consider that the oil of the system is not polluted. Meanwhile, if we confirm that the valves and pipes are also normal, then we can replace the compressor only. For the removal of compressor, please refer to the section: Removal of Major Components.
    - How to check oil quality:
      - A. After the compressor is detached, put it on a solid surface and shake it at an angle of 30-45° to ensure that the contaminant at the bottom of the compressor can be poured out.
      - B. Place the compressor at a position above the ground level and then pour out the oil from the suction inlet of the compressor. Collect the oil in a transparent container. The amount of oil should be over 150ml.
        - Notes:
          - The axial direction of the compressor should not slant at an angle larger than 20° to the horizontal plane.
          - Prevent the compressor from falling.
          - Put a transparent container (over 150ml in volume) under the suction port to collect the compressor oil, thus we can see the oil quality.
        - C. Put the container of compressor lubricant in a bright location and see if there is impurity and discoloration. Sniff at the compressor lubricant. Normally, there is no pungent smell.
    - II. If the oil is contaminated, replace the compressor and the gas-liquid separator.
      - Note: Confirm whether the compressor needs to be replaced. The refrigerant ports of the faulted compressor must be sealed by adhesive tape as soon as the compressor is detached. Make sure the compressor is well preserved for future analysis.

## 6. Check the components

- If the oil is contaminated, check the components of the unit, including the gas-liquid separator.
- Check the gas-liquid separator.
- When the separator is detached, check whether there are impurities inside. Testing method is listed below.
  - Note: When pouring the liquid from the separator, make sure the discharge pipe is at the lower position. Slant at an angle not greater than 20°
  - Use a transparent container to collect the content inside the separator. Check its color, seal it well and return it to the factory for inspection.
  - Note: If the compressor is damaged and needs to be replaced, the gas-liquid separator should also be replaced, whether or not there are impurities in the separator or other abnormal conditions.
  - Confirm which parts of the system should be replaced. Make sure the refrigerant ports of the damaged parts or components are sealed by adhesive tape as soon as they are detached. Keep them in the original condition for future analysis.



## Maintenance

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### 7. Clear the pipeline

- After confirming which parts of the system should be replaced, check the pipeline of the system. Blow through the main pipeline with nitrogen. After clearing the pipeline, if the components are not replaced immediately, seal the pipeline with adhesive tape to prevent the system from being contaminated by moisture and impurities in the air.

### 8. Replace the compressor

- For the removal of compressor, please refer to the section: Removal of Major Components.

### 9. Check/Replace the gas-liquid separator

- Note: If a compressor is damaged and needs to be replaced, its gas-liquid separator should also be replaced. This will avoid the abnormal condition of the separator from affecting the safe and reliable operation of the system.
- For the removal of gas-liquid separator, please refer to the section: Removal of Major Components.

### 10. Check the system for leaks

- First of all, check each brazing point. Check whether the brazed joints are smooth and whether there is any obvious flaws or other abnormal condition.
- Next, fill high-pressure nitrogen into the system for leak detection. If it is only the outdoor unit that needs to be repaired and the indoor unit is confirmed normal, then it's OK to charge high-pressure nitrogen into the outdoor unit only. Fill with nitrogen simultaneously from the high pressure side and low pressure side. We recommend charging the nitrogen from the both service valves at the same time. Nitrogen pressure should be greater than 150 psi. Use soapy water to check for leaks. Check the brazed joints particularly.
- Finally, pressurize the entire system. Fill high-pressure nitrogen into the system and maintain 300 psi. Close both service valves and maintain the pressure of indoor and outdoor units for more than 12h. If the pressure remains unchanged, then start system evacuation; otherwise, check the system for leaks again. Temperature should be considered when judging the pressure change. If temperature changes by 2°F, pressure will change by 1-1/2 psi or so.

### 11. Evacuate the system and charge refrigerant

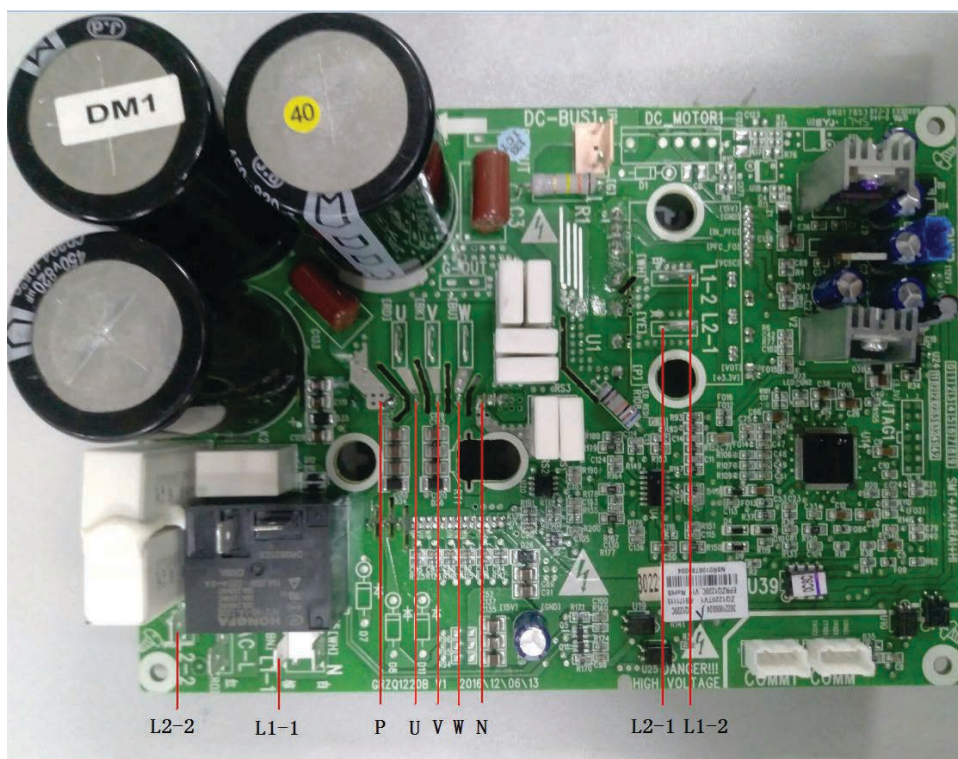
- Please refer to the section of maintenance: vacuum pumping and refrigerant charging.

### 12. Connect electric components

- Connect cables, compressor wires and the electric heating belt according to the signs marked before and the wiring diagram on the cover of the electric box.

## How to Replace the Compressor Drive Module

1. First, make sure that power is off. Use a multi meter to measure the voltage between L1, L2, L3, and N. to be sure the voltage is isolated. Tag the breaker to indicate that the equipment is under repair.
2. Measure the voltage between DC bus P and N on the drive board of the compressor. Set the multimeter for DC voltage and measure the voltage between P and N as shown below. If the voltage is below 36V, proceed with the next step.
3. Remove all the wires on the drive board of the compressor.

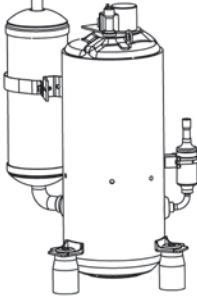
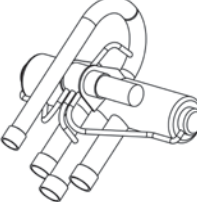
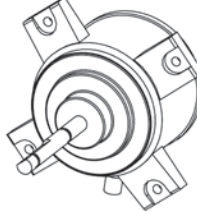


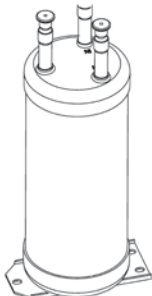
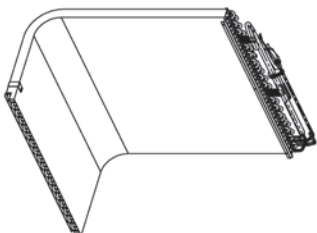
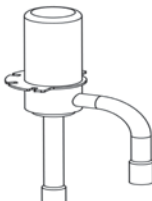
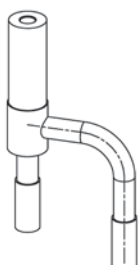
4. Remove the screws on the drive board of the compressor. The screws are located in the white circles as shown above in the picture.
5. Replace with a new compressor drive board. Before replacement, apply some silica gel on the IPM module.
6. Install the new compressor drive board. Tighten the screws and connect the wires correctly.

## Maintenance

### Removal of Major Components

#### Removal of ODU Major Components

| Picture                                                                             | Name                 | Function                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Compressor           | Through compression, the low pressure refrigerant becomes pressurized. As its pressure and temperature both rise, it becomes high pressure and high temperature refrigerant. It is the power drive of the system.                                                                                        |
|    | 4-way valve          | It is used to change the direction of refrigerant flow for heating and cooling.                                                                                                                                                                                                                          |
|   | Motor                | The power drive of the fan. It enables the fan to run so as to provide air to flow across the coil and transfer heat from the coil to the air.                                                                                                                                                           |
|  | Fan                  | It is used to provide smooth currents of air for forced convection and heat exchange of condenser and evaporator.                                                                                                                                                                                        |
|  | Gas liquid separator | Installed at the suction side of compressor, it can separate the liquefied refrigerant from the gaseous refrigerant to make sure that only gaseous refrigerant will be drawn into the compressor. Ineffective compression or slugging phenomenon will occur if liquid refrigerant enters the compressor. |

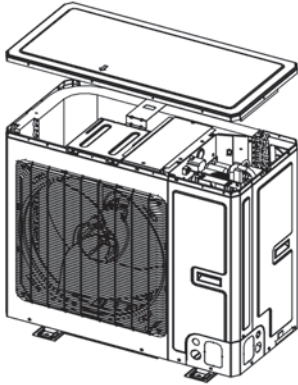
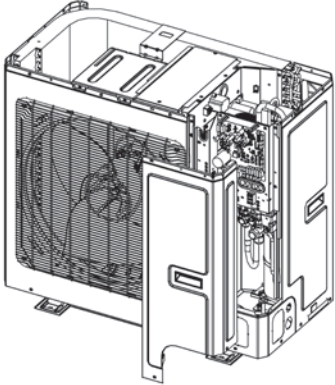
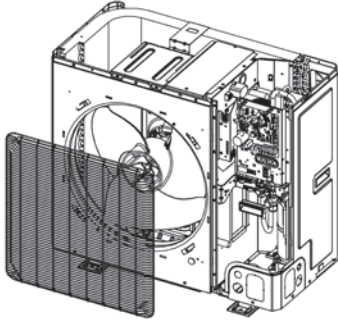
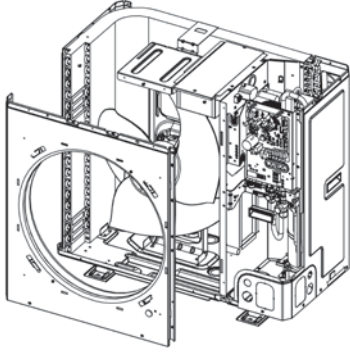
| Picture                                                                             | Name                       | Function                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Accumulator                | Flash refrigerant from liquid to gas                                                                                                                                |
|    | Outdoor coil               | It is used to transfer partial heat of the hot flow to the cold flow so that the flow temperature can reach the specified index. It is an energy exchanging device. |
|   | Electronic expansion valve | It is used to lower the pressure and temperature of liquefied refrigerant and adjust the flow of refrigerant entering the coil.                                     |
|  | Solenoid Valve             | Electromagnetic valve controls increased enthalpy switch.                                                                                                           |

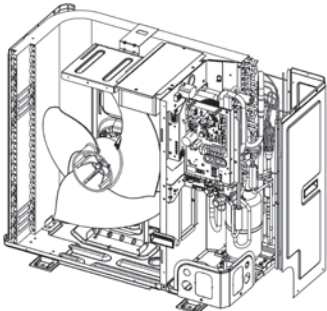
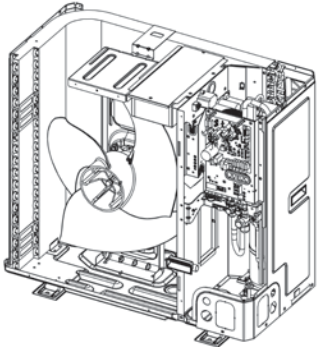
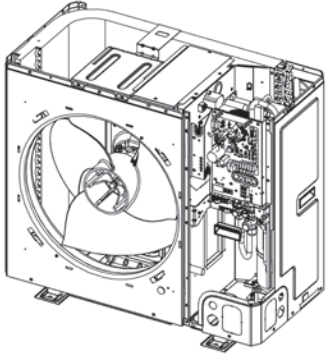
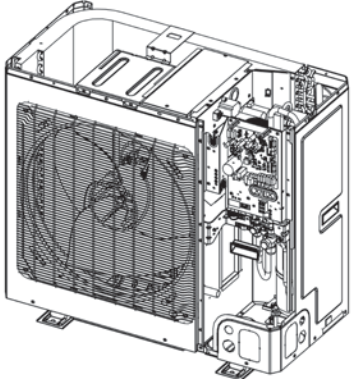
## Maintenance

Model: AUH2436ZGDA

### Front Panel Removal

Note: Be sure power is off before removing front panel.

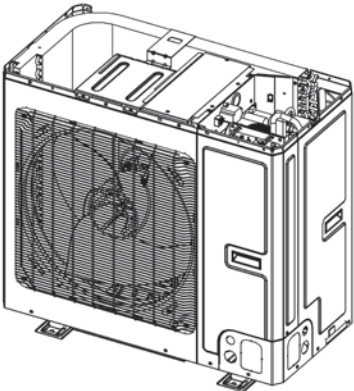
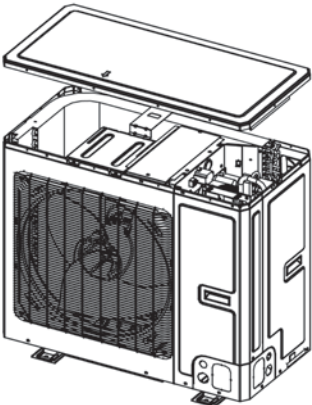
| Step                             | Picture                                                                             | Work instruction                                                                                                  |
|----------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 1. Remove the upper cover plate. |    | Unscrew the screws of the upper cover plate with a screwdriver.                                                   |
| 2. Remove the front side plate.  |   | Unscrew the screws of the upper and front side plate with a screwdriver.                                          |
| 3. Remove the front grill.       |  | Unscrew the screws of the front grill with a screwdriver.                                                         |
| 4. Remove the front panel.       |  | Unscrew the screws that connect the front panel to the middle insulating board and screws around the front panel. |

| Front Panel Removal                                     |                                                                                     |                                                                                                                                 |
|---------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure power is off before removing front panel. |                                                                                     |                                                                                                                                 |
| Step                                                    | Picture                                                                             | Work instruction                                                                                                                |
| 5. Remove the right side plate.                         |    | Unscrew the screws that connect the right side plate to the electric box and the screws around the right side plate.            |
| 6. Install the right side plate                         |   | Screw up the screws around the right side plate. Be careful to handle well the clasps at the bottom of the right side plate.    |
| 7. Install the front panel.                             |  | Install the front panel by mounting on 6 clasps on its both sides. Please note that there is one screw on the lower right side. |
| 8. Install the grill.                                   |  | Attach the grill back in place and tighten up the screws.                                                                       |

## Maintenance

### Front Panel Removal

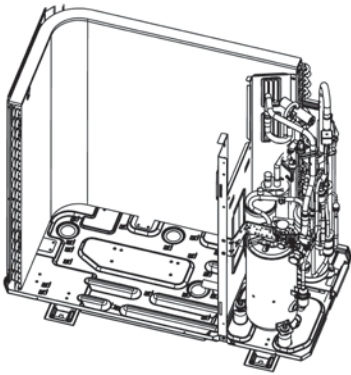
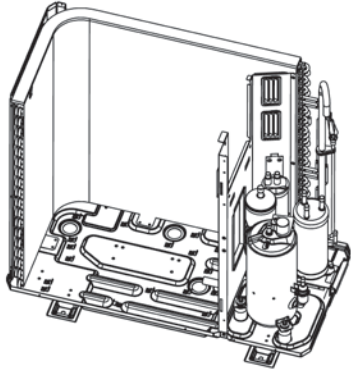
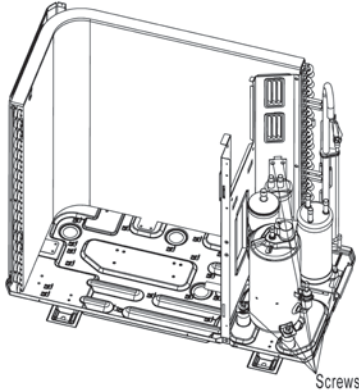
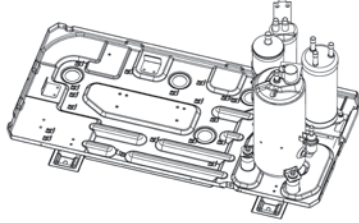
Note: Be sure power is off before removing front panel.

| Step                               | Picture                                                                            | Work instruction                                                     |
|------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 9. Install the front side plate.   |   | Fix the clasps on both sides of the plate and tighten up the screws. |
| 10. Install the upper cover plate. |  | Tighten up the screws around the upper cover plate.                  |

Model: AUH2436ZGDA

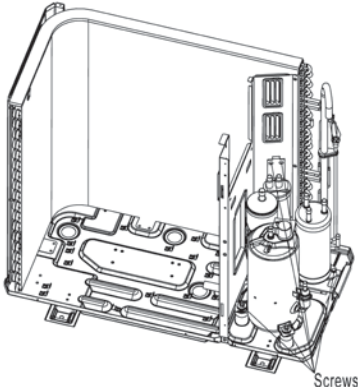
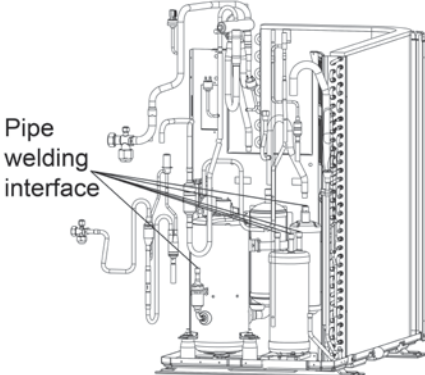
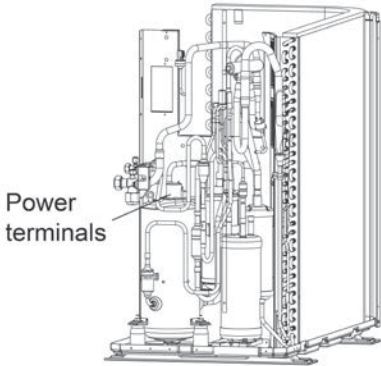
## Compressor/Gas Liquid Separator Removal

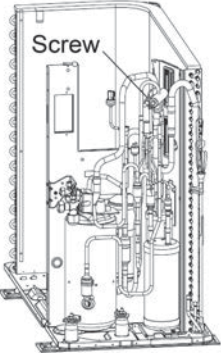
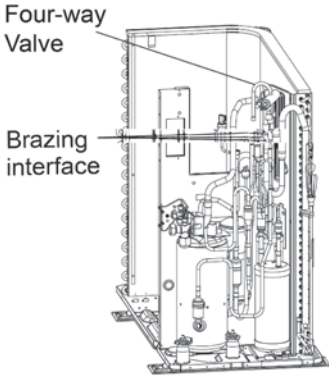
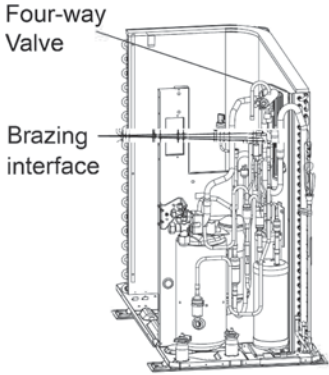
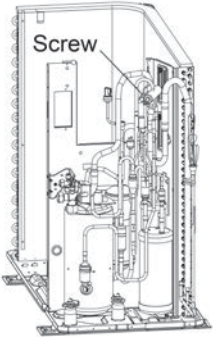
Note: Make sure all refrigerant is recovered and power is isolated before removing compressor and gas liquid separator.

| Step                                                                           | Picture                                                                             | Work instruction                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Remove wires.                                                               |    | <p>Loosen the securing screws of the wires with a screwdriver.</p> <p>Remove the wires.</p> <p>Note: When removing the wires, mark the wire terminals corresponding to their color so as to avoid misconnection.</p> |
| 2. Break off the pipes that connecting to the compressor/gas liquid separator. |   | <p>Braze the pipes that are connected to the compressor/gas liquid separator.</p> <p>Then remove the pipes. Note: When welding the pipes, do not let the flame burn the other components.</p>                        |
| 3. Loosen the compressor's base connectors / gas liquid separator's base nuts. |  | <p>Use a wrench to twist off the compressor/gas liquid separator's base nuts.</p>                                                                                                                                    |
| 4. Remove the compressor/gas liquid separator from the chassis.                |  | <p>Take away the compressor/gas liquid separator and replace with a new one.</p> <p>Note: When replacing the compressor/gas liquid separator, avoid touching the nearby pipeline and components.</p>                 |

Compressor/Gas Liquid Separator Removal

Note: Make sure all refrigerant is recovered and power is isolated before removing compressor and gas liquid separator.

| Step                                                                                  | Picture                                                                                                          | Work instruction                                                                                                                                                                               |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5. Install the new compressor/gas liquid separator onto the chassis.                  |  <p>Screws</p>                  | After replacing the compressor/gas liquid separator, tighten up the base screw nuts.                                                                                                           |
| 6. Connect the brazing interfaces of compressor/gas liquid separator to the pipeline. |  <p>Pipe welding interface</p> | <p>Braze the connection pipes of compressor to connect them to the compressor.</p> <p>Note: When replacing the compressor, avoid touching the nearby pipeline and components.</p>              |
| 7. Connect the compressor wires.                                                      |  <p>Power terminals</p>       | <p>Connect the compressor wires to the wire terminals on the top of compressor.</p> <p>Note: When connecting the wires, be sure to match the colors with the corresponding wire terminals.</p> |

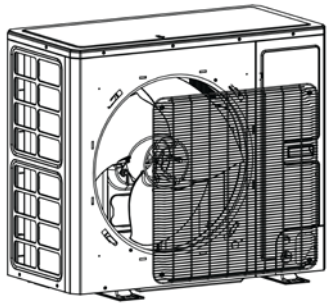
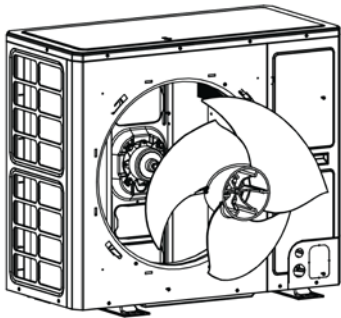
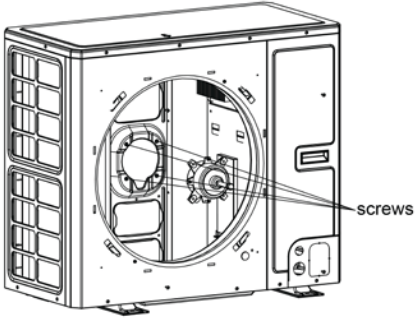
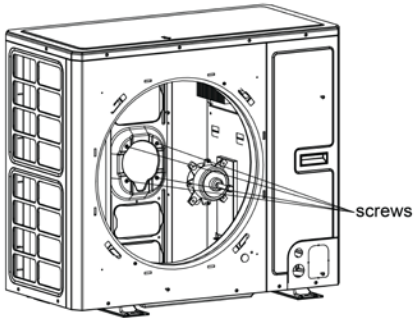
| 4-Way Valve Removal                                                                                   |                                                                                     |                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Make sure refrigerant is fully recovered and power is isolated before removing the 4-way valve. |                                                                                     |                                                                                                                                                                                                                                                |
| Step                                                                                                  | Picture                                                                             | Work instruction                                                                                                                                                                                                                               |
| 1. Remove the solenoid coil from the 4-way valve                                                      |    | Carefully unscrew the screws of electromagnetic coil with a screwdriver.                                                                                                                                                                       |
| 2. Break off the connection pipes from the 4-way valve.                                               |   | Use a torch to loosen the 4 joints on the 4-way valve and then remove the connection pipes.<br><br>Note: When brazing the pipes, the 4-way valve should be wrapped with wet cloth for cooling. Do not let the flame burn the other components. |
| 3. Replace the 4-way valve and connect it to the connection pipes.                                    |  | Replace the 4-way valve and then use a torch to braze the 4 joints of the 4-way valve.<br><br>Note: When brazing the pipes, the 4-way valve should be wrapped with wet cloth for cooling. Do not let the flame burn the other components.      |
| 4. Install the coil of 4-way valve.                                                                   |  | Tighten the screws of the coil of 4-way valve with a screwdriver.                                                                                                                                                                              |

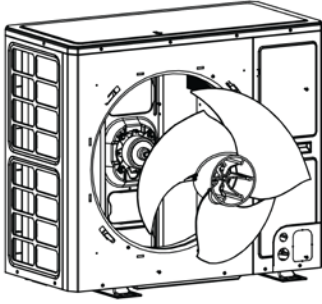
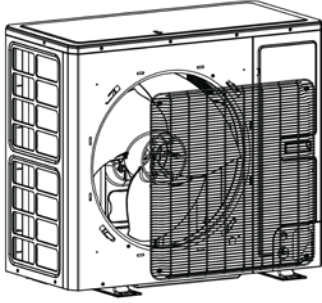
## Maintenance

Model: AUH2436ZGDA

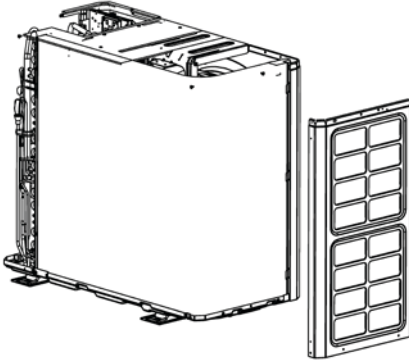
### Fan and Motor Removal

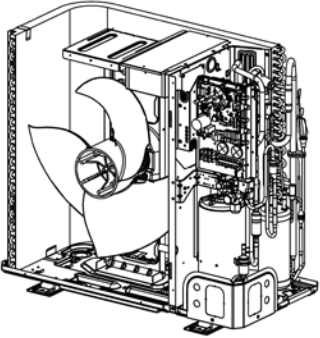
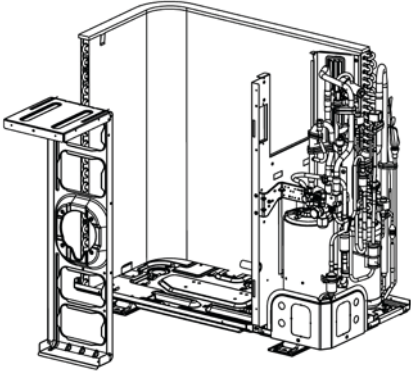
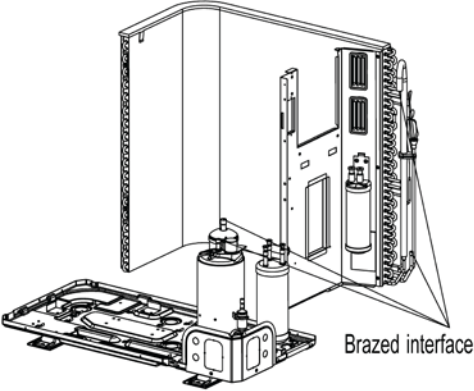
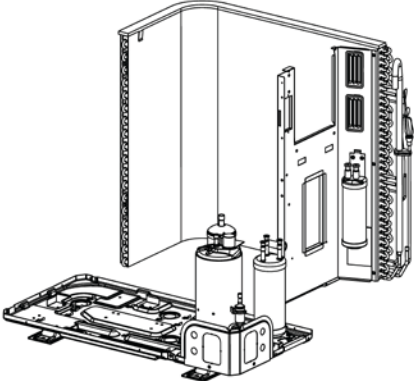
Note: Be sure to isolate power before removing the fan.

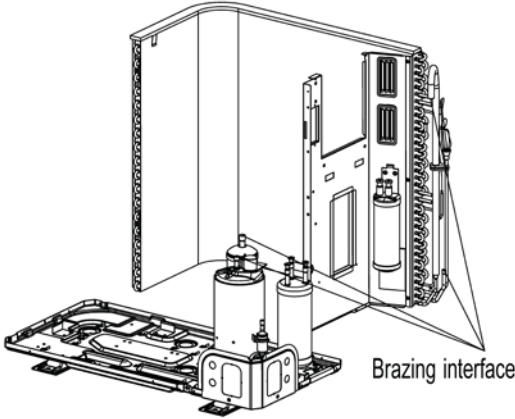
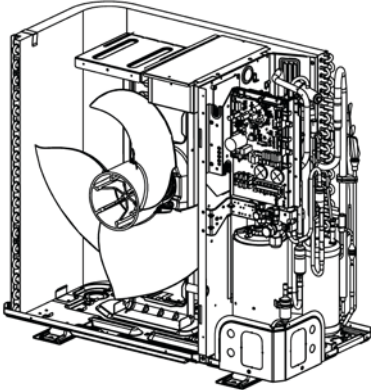
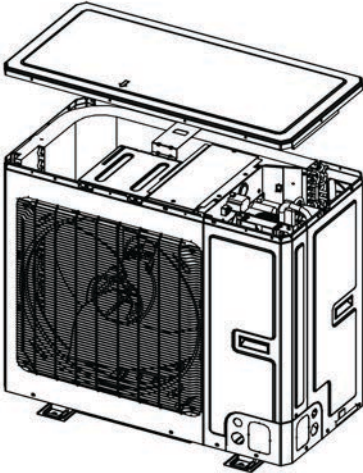
| Step                  | Picture                                                                             | Work instruction                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Remove the grill.  |    | Use a screwdriver to unscrew the two screws on the upper left and lower right corners.                                                           |
| 2. Remove the fan.    |   | Use a wrench to remove the specialized nut and gasket of the fan.<br>Note: Please keep the nut and gasket safe after removing them from the fan. |
| 3. Remove motor.      |  | Use a screwdriver to unscrew the bolt of motor.<br>Note: Motor wire should be first removed from the electric box.                               |
| 4. Install the motor. |  | Replace with a new motor. Then tighten up the screw bolt.                                                                                        |

| Fan and Motor Removal                                   |                                                                                    |                                                                                                                                                                                                                              |
|---------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure to isolate power before removing the fan. |                                                                                    |                                                                                                                                                                                                                              |
| Step                                                    | Picture                                                                            | Work instruction                                                                                                                                                                                                             |
| 5. Install the fan.                                     |   | <p>Install the fan in place. Put on the gasket and use a wrench to secure the screw nut.</p> <p>Note: After installing the fan, turn the fan by hand to see if it can run normally. If not, please check for the reason.</p> |
| 6. Install the grill.                                   |  | <p>After replacing the motor, use a screwdriver to tighten up the screw bolt that secures the motor. Arrange the wires according to the wiring diagram.</p>                                                                  |

Model: AUH2436ZGDA

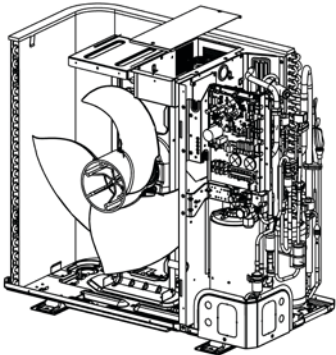
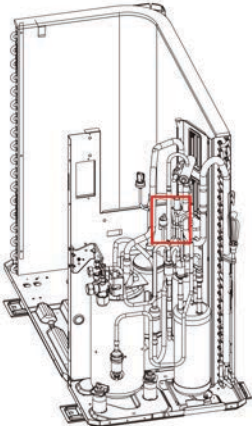
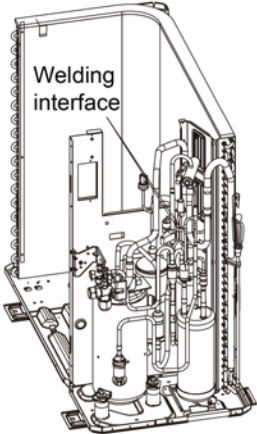
| Outdoor Coil Removal                                                                                       |                                                                                     |                                                  |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------|
| Note: Make sure all refrigerant has been recovered and power is isolated before removing the outdoor coil. |                                                                                     |                                                  |
| Step                                                                                                       | Picture                                                                             | Work instruction                                 |
| 1. Remove the panels.                                                                                      |  | <p>Remove the upper, lower and front panels.</p> |

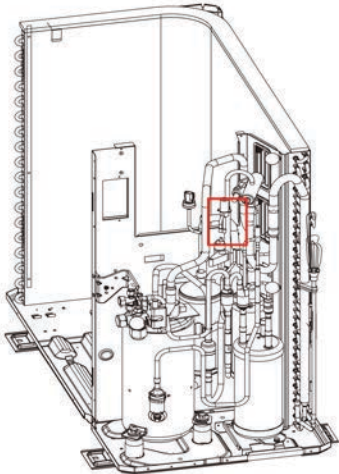
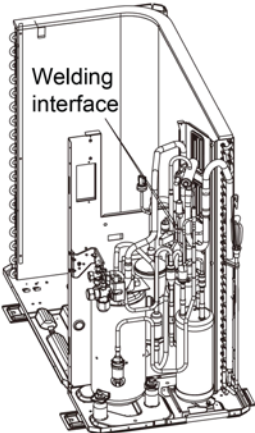
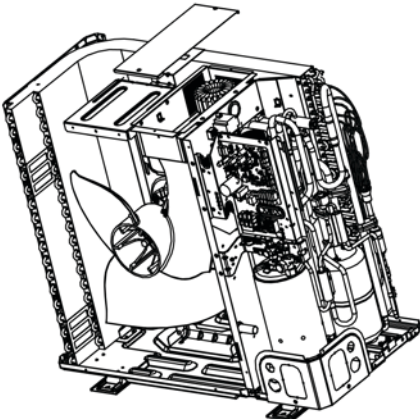
| Outdoor Coil Removal                                                                                       |                                                                                     |                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Make sure all refrigerant has been recovered and power is isolated before removing the outdoor coil. |                                                                                     |                                                                                                                                                                                                                                                                              |
| Step                                                                                                       | Picture                                                                             | Work instruction                                                                                                                                                                                                                                                             |
| 2. Remove the electric box.                                                                                |    | <p>Loosen the wire clamp at the bottom of the electric box.</p> <p>Unscrew the screws of electric box.</p> <p>The connection wires inside and outside the electric box should be removed.</p>                                                                                |
| 3. Remove motor support.                                                                                   |   | <p>When removing the motor support, be careful to protect the components.</p>                                                                                                                                                                                                |
| 4. Remove the outdoor coil.                                                                                |  | <p>Heat the brazed joint with a torch until the pipes separate.</p> <p>Note: When brazing the pipes, do not let the flame burn the other components. The brazing points of the outdoor coil are steel and copper brazed points. Be sure to maintain the brazing quality.</p> |
| 5. Remove the outdoor coil                                                                                 |  | <p>Loosen the securing screws of coil support. Take off the plate type heat exchanger and the support as a whole.</p>                                                                                                                                                        |

| Outdoor Coil Removal                                                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Make sure all refrigerant has been recovered and power is isolated before removing the outdoor coil. |                                                                                     |                                                                                                                                                                                                                                                                                                                                                               |
| Step                                                                                                       | Picture                                                                             | Work instruction                                                                                                                                                                                                                                                                                                                                              |
| 6. Install the new outdoor coil.                                                                           |   | <p>Secure the screws of coil and support. Then fix them together on the chassis.</p> <p>Install the coil by referring to the positions of entering and leaving pipes. Braze the connection pipes.</p> <p>Nitrogen welding: the pressure of nitrogen is 2" to 3" W.C.</p> <p>Note: When brazing the pipes, do not let the flame burn the other components.</p> |
| 7. Secure the electric box and arrange the wires according to the requirement.                             |   | <p>Put the electric box in place and tighten up the screws of electric box.</p> <p>Arrange and secure the wires as original.</p>                                                                                                                                                                                                                              |
| 8. Check and open the upper                                                                                |  | <p>Check whether each component and connection wire is well connected.</p> <p>If everything is OK, place back the upper, left and right side panels.</p>                                                                                                                                                                                                      |

# Maintenance

Model: AUH2436ZGDA

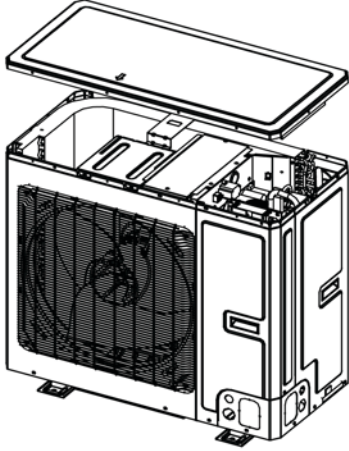
| Electronic Expansion Valve Removal                                                              |                                                                                     |                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Recover all refrigerant and isolate power before removing the electronic expansion valve. |                                                                                     |                                                                                                                                                                                                                                                                                                                            |
| Step                                                                                            | Picture                                                                             | Work instruction                                                                                                                                                                                                                                                                                                           |
| 1. Remove the electric box.                                                                     |    | <p>Remove the upper, lower and front panels.</p> <p>Loosen the wire clamp at the bottom of the electric box</p> <p>Unscrew the screws of electric box.</p> <p>The connection wires inside and outside the electric box should be removed.</p> <p>When removing the electric box, be careful to protect the components.</p> |
| 2. Remove the fixed block.                                                                      |   | <p>Remove the fixed block between the electronic expansion valve and the pipe.</p>                                                                                                                                                                                                                                         |
| 3. Remove the electronic expansion valve.                                                       |  | <p>Take off the coil of electronic expansion valve.</p> <p>Loosen the connection pipe of electronic expansion valve by brazing. Then remove the connection pipe.</p> <p>Note: When brazing the pipe, do not let the flame bunt the other components.</p>                                                                   |

| Electronic Expansion Valve Removal                                                              |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Recover all refrigerant and isolate power before removing the electronic expansion valve. |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                |
| Step                                                                                            | Picture                                                                             | Work instruction                                                                                                                                                                                                                                                                                                                                                               |
| 4. Take out the electronic expansion valve.                                                     |    | Take out the electronic expansion valve.                                                                                                                                                                                                                                                                                                                                       |
| 5. Install the new electronic expansion valve.                                                  |   | <p>Braze the connection pipe of electronic expansion valve.</p> <p>When brazing the electronic expansion valve, the valve should be wrapped with wet cloth.</p> <p>Nitrogen brazing: the pressure of nitrogen is 2" to 3" W.C.</p> <p>Note: When brazing the pipes, do not let the flame burn the other components.</p> <p>Install the coil of electronic expansion valve.</p> |
| 6. Secure the electric box and arrange the wires as required.                                   |  | <p>Put the electric box back in place and tighten up the screws.</p> <p>Arrange the wires as original.</p>                                                                                                                                                                                                                                                                     |

## Maintenance

### Electronic Expansion Valve Removal

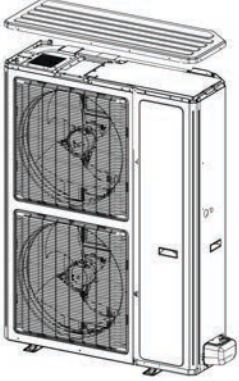
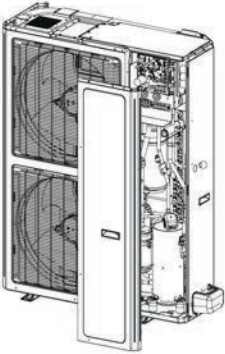
Note: Recover all refrigerant and isolate power before removing the electronic expansion valve.

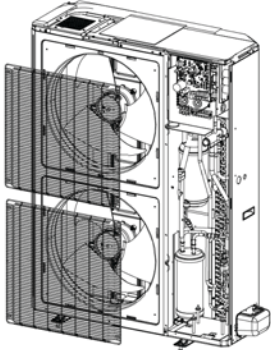
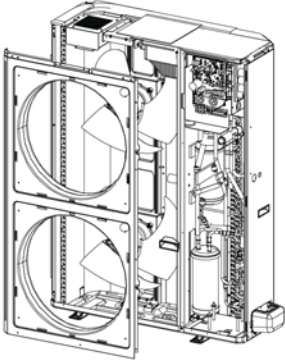
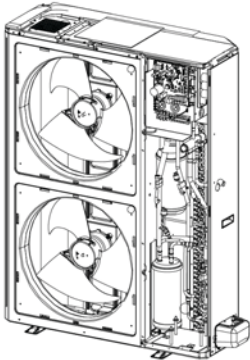
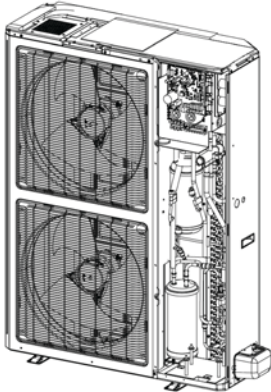
| Step                                          | Picture                                                                           | Work instruction                                                                                                                                                        |
|-----------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7. Check and open the upper and front panels. |  | <p>Check whether each component and connection wire is well connected.</p> <p>If everything is OK, install the upper, left and right panels. Tighten up the screws.</p> |

Model: AUH4860ZGDA

### Front Panel Removal

Note: Be sure power is isolated before removing from panel.

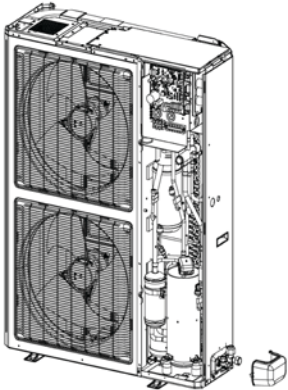
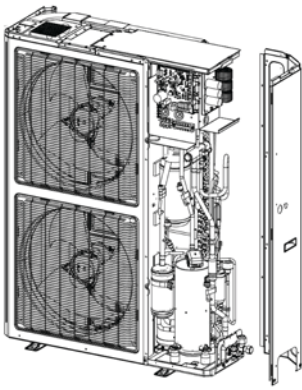
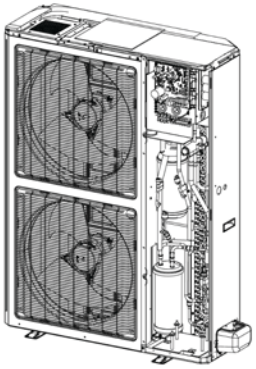
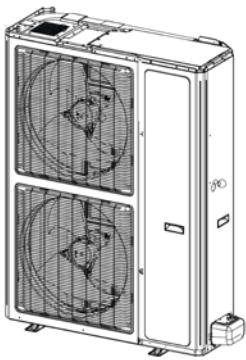
| Step                             | Picture                                                                             | Work instruction                                                |
|----------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 1. Remove the upper cover plate. |  | Unscrew the screws of the upper cover plate with a screwdriver. |
| 2. Remove the front plate.       |  | Unscrew the screws of the front plate with a screwdriver.       |

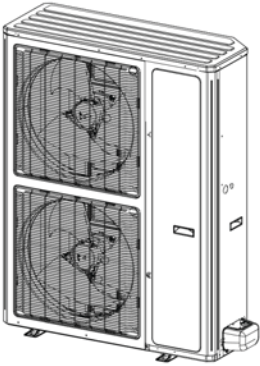
| Front Panel Removal                                         |                                                                                     |                                                                                                                                 |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure power is isolated before removing from panel. |                                                                                     |                                                                                                                                 |
| Step                                                        | Picture                                                                             | Work instruction                                                                                                                |
| 3. Remove the front grill.                                  |    | Unscrew the screws of the front grill with a screwdriver.                                                                       |
| 4. Remove the front panel.                                  |   | Unscrew the screws that connect the front panel to the middle insulating board and screws around the front panel.               |
| 5. Install the front panel.                                 |  | Install the front panel by mounting on 6 clasps on its both sides. Please note that there is one screw on the lower right side. |
| 6. Install the grill.                                       |  | Attach the grill back in place and tighten up the screws.                                                                       |

## Maintenance

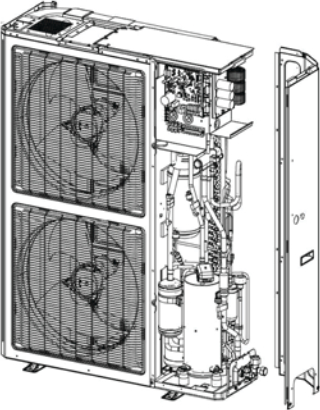
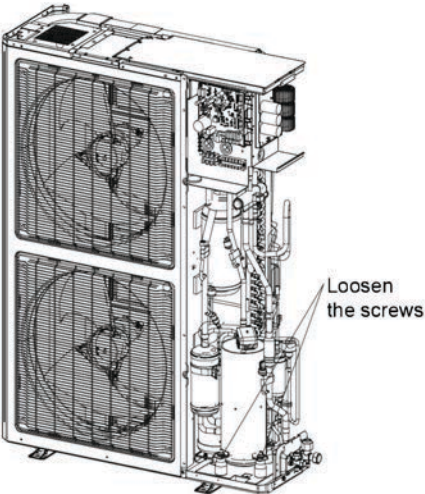
### Front Panel Removal

Note: Be sure power is isolated before removing from panel.

| Step                             | Picture                                                                             | Work instruction                                                                                                             |
|----------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 7. Remove the valve cover        |    | Unscrew the screws of the valve cover with a screwdriver.                                                                    |
| 8. Remove the right side plate.  |   | Unscrew the screws that connect the right side plate to the electric box and the screws around the right side plate.         |
| 9. Install the right side plate. |  | Screw up the screws around the right side plate. Be careful to handle well the clasps at the bottom of the right side plate. |
| 10. Install the grill.           |  | Attach the grill back in place and tighten up the screws.                                                                    |

| Front Panel Removal                                         |                                                                                   |                                                     |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------|
| Note: Be sure power is isolated before removing from panel. |                                                                                   |                                                     |
| Step                                                        | Picture                                                                           | Work instruction                                    |
| 11. Install the upper cover plate.                          |  | Tighten up the screws around the upper cover plate. |

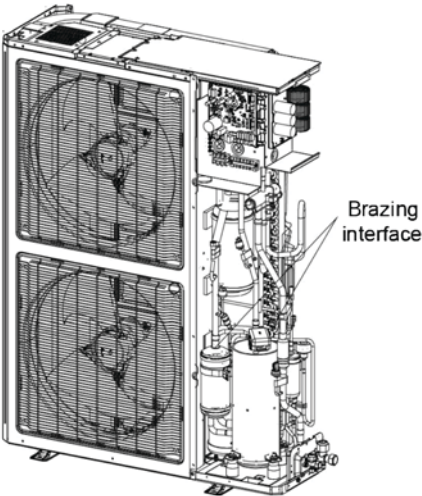
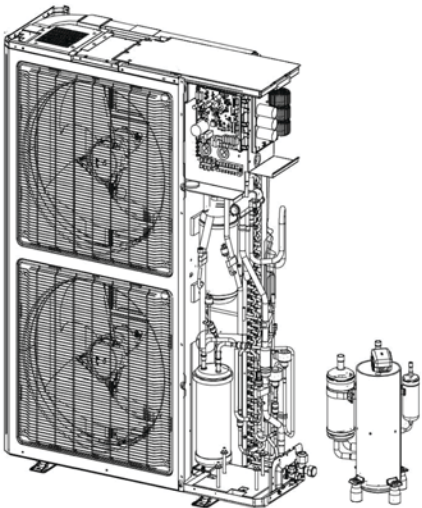
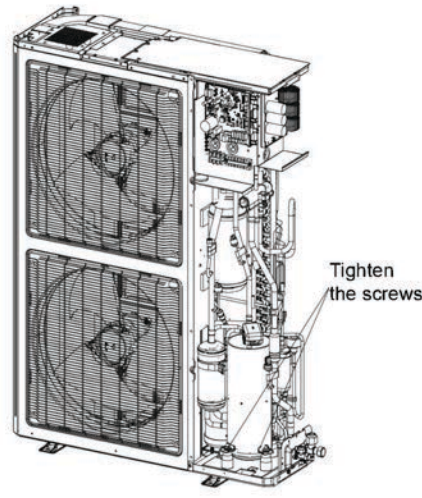
Model: AUH4860ZGDA

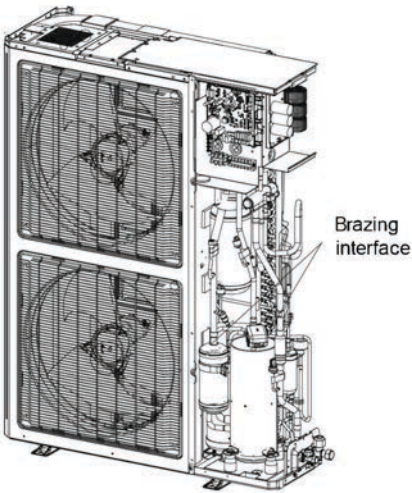
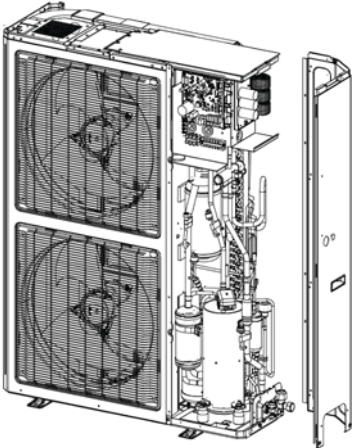
| Compressor Disassembly                                                                           |                                                                                     |                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure the refrigerant is recovered and power is isolated before removing the compressor. |                                                                                     |                                                                                                                                                                                                               |
| Step                                                                                             | Picture                                                                             | Work instruction                                                                                                                                                                                              |
| 1. Remove wires.                                                                                 |  | Loosen the securing screws of the wires with a screwdriver.<br><br>Remove the wires.<br><br>Note: When removing the wires, mark the wire terminals corresponding to their color so as to avoid misconnection. |
| 2. Loosen the securing screws at the foot of compressor.                                         |  | Use a wrench to twist off the screw nuts at the foot of compressor.                                                                                                                                           |

# Maintenance

## Compressor Disassembly

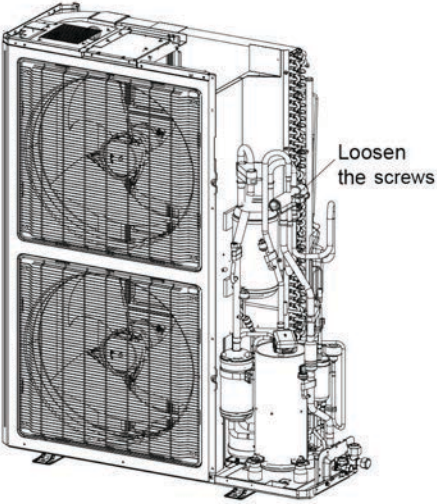
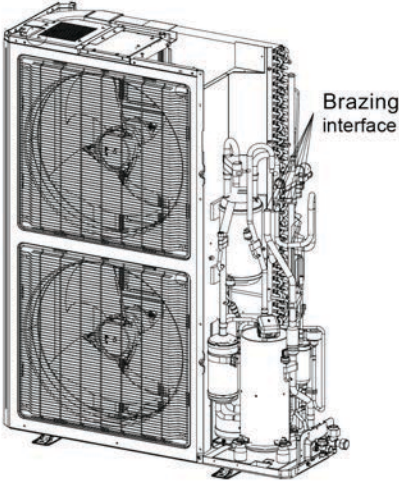
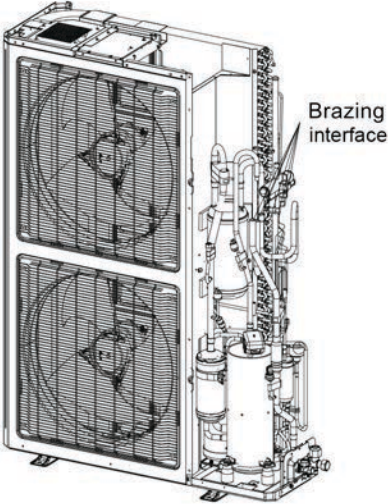
Note: Be sure the refrigerant is recovered and power is isolated before removing the compressor.

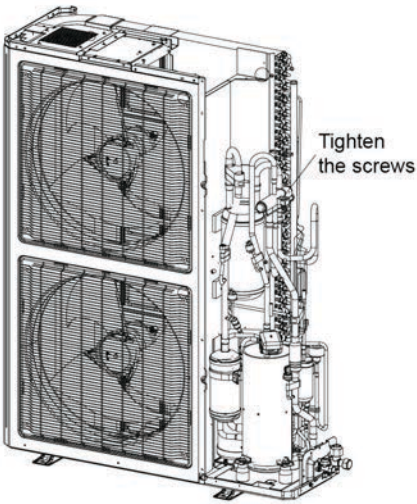
| Step                                                   | Picture                                                                             | Work instruction                                                                                                                                                               |
|--------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3. Break off the pipes that connect to the compressor. |    | <p>Braze the pipes that are connected to the compressor.</p> <p>Then remove the pipes.</p> <p>Note: When brazing the pipes, do not let the flame burn the other components</p> |
| 4. Remove the compressor from the chassis              |   | <p>Take out the compressor and replace it.</p> <p>Note: When replacing the compressor, avoid touching the nearby pipeline and components.</p>                                  |
| 5. Fix the new compressor back onto the chassis.       |  | <p>After replacing the compressor, tighten up the screws at the foot of compressor.</p>                                                                                        |

| Compressor Disassembly                                                                           |                                                                                    |                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure the refrigerant is recovered and power is isolated before removing the compressor. |                                                                                    |                                                                                                                                                                                                |
| Step                                                                                             | Picture                                                                            | Work instruction                                                                                                                                                                               |
| 6. Connect the pipes to the suction and discharge ports.                                         |   | <p>Braze the compressor connection pipes and connect them to the compressor.</p> <p>Note: When replacing the compressor, avoid touching the nearby pipeline and components.</p>                |
| 7. Connect the compressor                                                                        |  | <p>Connect the compressor wires to the wire terminals on the top of compressor.</p> <p>Note: When connecting the wires, be sure to match the colors with the corresponding wire terminals.</p> |

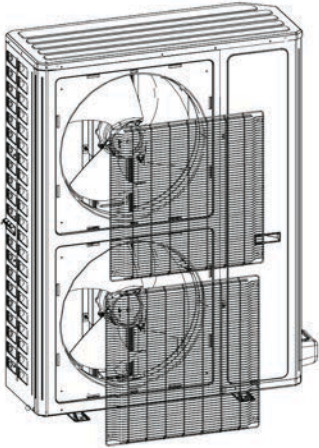
# Maintenance

Model: AUH4860ZGDA

| 4-Way Valve Removal                                                                                   |                                                                                     |                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Make sure refrigerant is fully recovered and power is isolated before removing the 4-way valve. |                                                                                     |                                                                                                                                                                                                                                                       |
| Step                                                                                                  | Picture                                                                             | Work instruction                                                                                                                                                                                                                                      |
| 1. Remove the solenoid coil from the 4-way valve                                                      |    | Carefully unscrew the screws of electromagnetic coil with a screwdriver.                                                                                                                                                                              |
| 2. Break off the connection pipes from the 4-way valve.                                               |   | <p>Use a torch to loosen the 4 joints on the 4-way valve and then remove the connection pipes.</p> <p>Note: When brazing the pipes, the 4-way valve should be wrapped with wet cloth for cooling. Do not let the flame burn the other components.</p> |
| 3. Replace the 4-way valve and connect it to the connection pipes.                                    |  | <p>Replace the 4-way valve and then use a torch to braze the 4 joints of the 4-way valve.</p> <p>Note: When brazing the pipes, the 4-way valve should be wrapped with wet cloth for cooling. Do not let the flame burn the other components.</p>      |

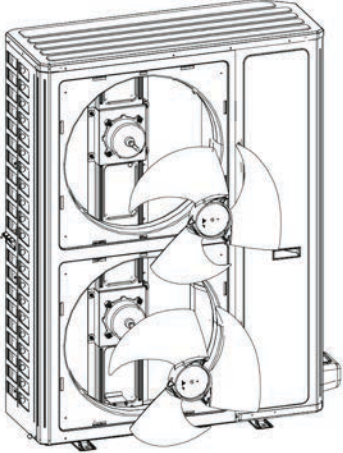
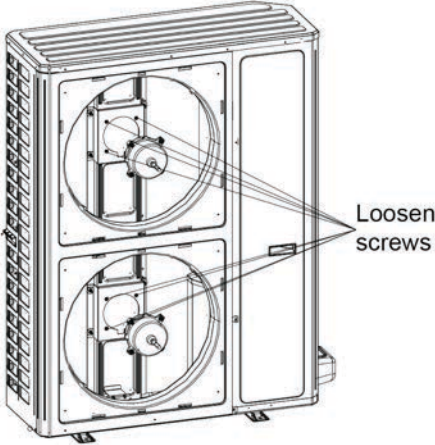
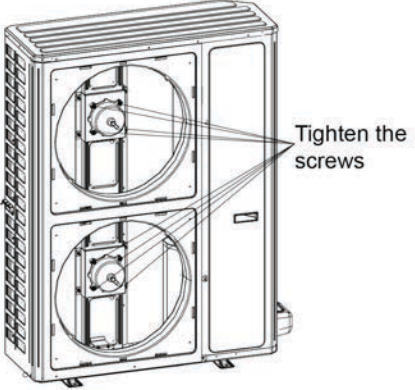
| 4-Way Valve Removal                                                                                   |                                                                                   |                                                                   |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Note: Make sure refrigerant is fully recovered and power is isolated before removing the 4-way valve. |                                                                                   |                                                                   |
| Step                                                                                                  | Picture                                                                           | Work instruction                                                  |
| 4. Install the coil of 4-way valve.                                                                   |  | Tighten the screws of the coil of 4-way valve with a screwdriver. |

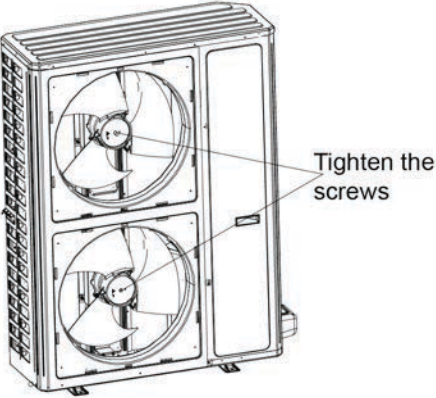
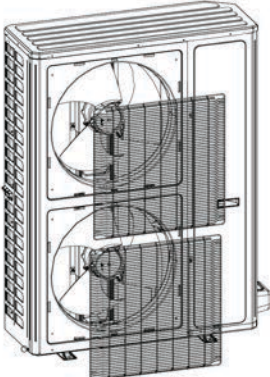
Model: AUH4860ZGDA

| Fan and Motor Removal                                   |                                                                                     |                                                                                        |
|---------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Note: Be sure to isolate power before removing the fan. |                                                                                     |                                                                                        |
| Step                                                    | Picture                                                                             | Work instruction                                                                       |
| 1. Remove the grill.                                    |  | Use a screwdriver to unscrew the two screws on the upper left and lower right corners. |

## Fan and Motor Removal

Note: Be sure to isolate power before removing the fan.

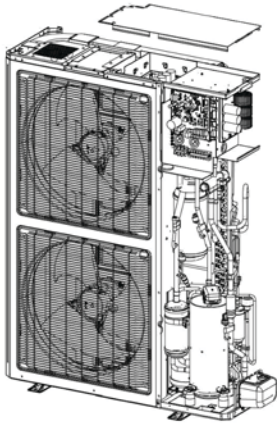
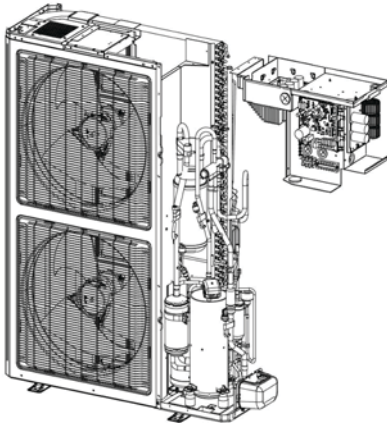
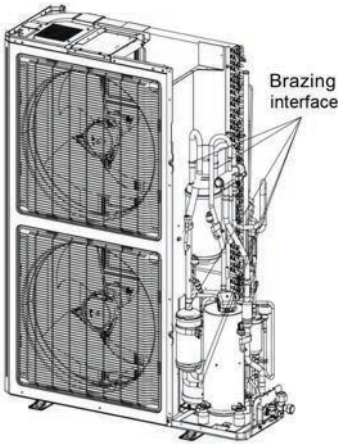
| Step                  | Picture                                                                             | Work instruction                                                                                                                                            |
|-----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2. Remove the fan.    |    | <p>Use a wrench to remove the specialized nut and gasket of the fan.</p> <p>Note: Please keep the nut and gasket safe after removing them from the fan.</p> |
| 3. Remove motor.      |  | <p>Use a screwdriver to unscrew the bolt of motor.</p> <p>Note: Motor wire should be first removed from the electric box.</p>                               |
| 4. Install the motor. |  | <p>Replace with a new motor. Then tighten up the screw bolt.</p>                                                                                            |

| Fan and Motor Removal                                   |                                                                                    |                                                                                                                                                                                                                              |
|---------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure to isolate power before removing the fan. |                                                                                    |                                                                                                                                                                                                                              |
| Step                                                    | Picture                                                                            | Work instruction                                                                                                                                                                                                             |
| 5. Install the fan.                                     |   | <p>Install the fan in place. Put on the gasket and use a wrench to secure the screw nut.</p> <p>Note: After installing the fan, turn the fan by hand to see if it can run normally. If not, please check for the reason.</p> |
| 6. Install the grill.                                   |  | <p>After replacing the motor, use a screwdriver to tighten up the screw bolt that secures the motor. Arrange the wires according to the wiring diagram.</p>                                                                  |

Model: AUH4860ZGDA

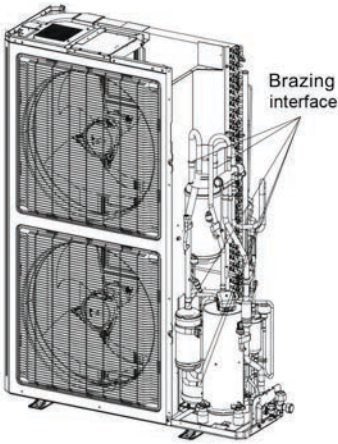
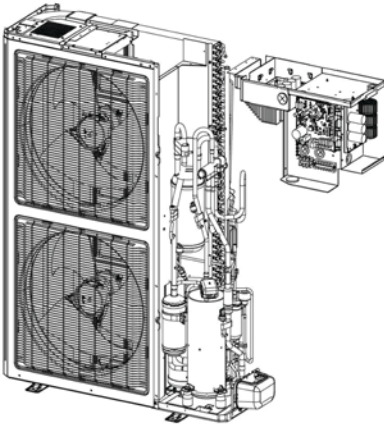
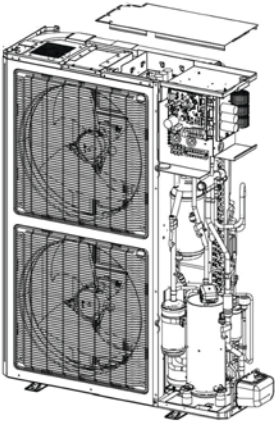
## Compressor/Gas Liquid Separator Removal

Note: Be sure power is isolated and refrigerant is recovered before removing the gas liquid separator.

| Step                                                                                       | Picture                                                                             | Work instruction                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Loosen the wire clamp at the bottom of the electric box and the screws of electric box. |    | <p>Remove the upper, lower and front panels.</p> <p>Loosen the wire clamp at the bottom of the electric box.</p> <p>Unscrew the screws of electric box.</p>                                       |
| 2. Remove the electric box.                                                                |   | <p>The connection wires inside and outside the electric box should be removed.</p> <p>When removing the electric box, be careful to protect the components.</p>                                   |
| 3. Remove the compressor/gas liquid separator from the chassis.                            |  | <p>Remove the compressor/gas liquid separator and replace with a new one.</p> <p>Note: When replacing the compressor/gas liquid separator, avoid touching the nearby pipeline and components.</p> |

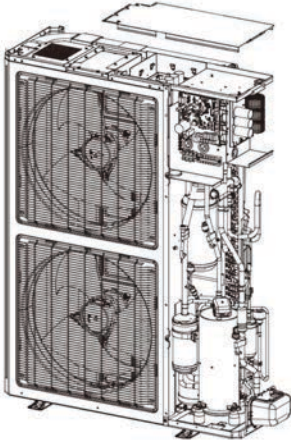
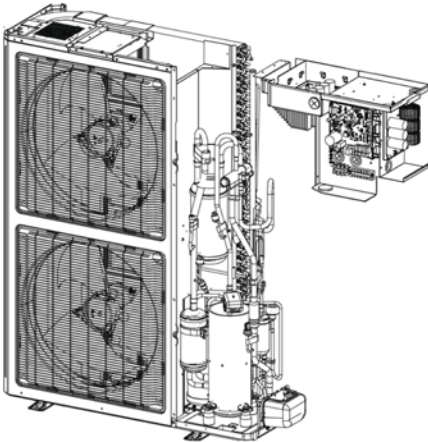
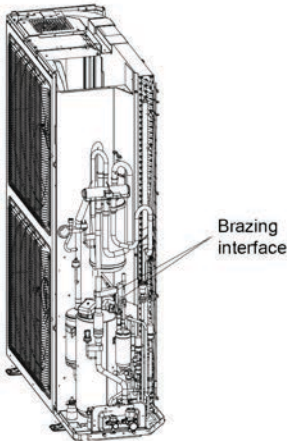
Compressor/Gas Liquid Separator Removal

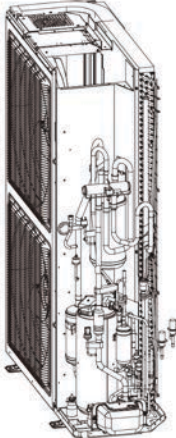
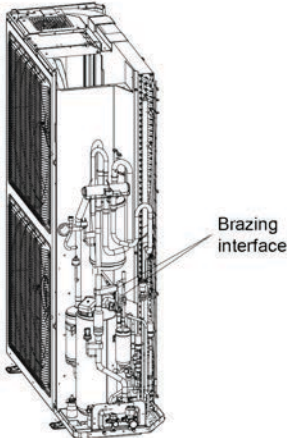
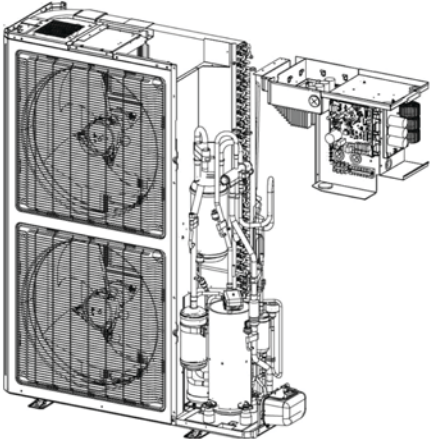
Note: Be sure power is isolated and refrigerant is recovered before removing the gas liquid separator.

| Step                                         | Picture                                                                             | Work instruction                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4. Install the new gas liquid separator      |    | <p>Install the gas liquid separator by referring to the positions of entering and leaving pipes. Braze the two joints</p> <p>Nitrogen welding: the pressure of nitrogen is 2" to 3" W.C</p> <p>Note: When brazing the pipes, do not let the flame burn the other components.</p> <p>Tighten the screws of gas liquid separator.</p> |
| 5. Secure the electric box and               |   | <p>Put the electric box back in place and tighten up the screws.</p> <p>Arrange the wires as original.</p>                                                                                                                                                                                                                          |
| 6. Check and open the upper and side panels. |  | <p>Check whether each component and connection wire is well connected.</p> <p>If everything is OK, install the upper, left and right panels. Tighten up the screws.</p>                                                                                                                                                             |

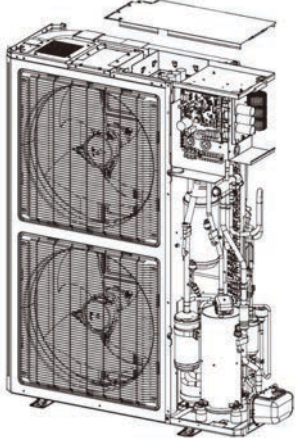
# Maintenance

Model: AUH4860ZGDA

| Electronic Expansion Valve Removal                                                                          |                                                                                     |                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure power is isolated and refrigerant is recovered before removing the Electronic Expansion Valve |                                                                                     |                                                                                                                                                                                                                                                        |
| Step                                                                                                        | Picture                                                                             | Work instruction                                                                                                                                                                                                                                       |
| 1. Loosen the wire clamp at the bottom of the electric box and the screws of electric box.                  |    | <p>Remove the upper, lower and front panels.</p> <p>Loosen the wire clamp at the bottom of the electric box.</p> <p>Unscrew the screws of electric box.</p>                                                                                            |
| 2. Remove the electric box.                                                                                 |   | <p>The connection wires inside and outside the electric box should be removed.</p> <p>When removing the electric box, be careful to protect the components.</p>                                                                                        |
| 3. Remove the electronic expansion valve.                                                                   |  | <p>Take off the coil of electronic expansion valve.</p> <p>Loosen the connection pipe of electronic expansion valve using a torch. Remove the connection pipe.</p> <p>Note: When brazing the pipe, do not let the flame burn the other components.</p> |

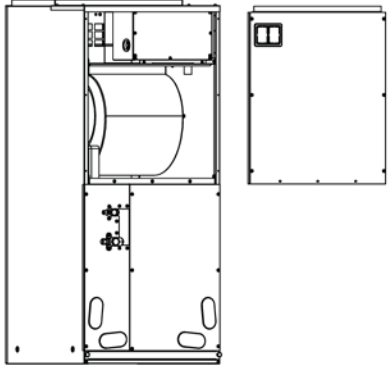
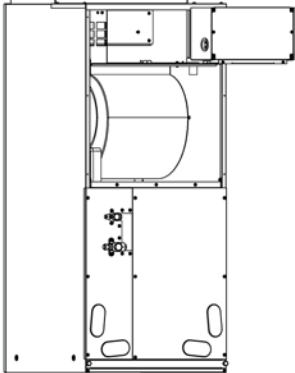
| Electronic Expansion Valve Removal                                                                          |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure power is isolated and refrigerant is recovered before removing the Electronic Expansion Valve |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                |
| Step                                                                                                        | Picture                                                                             | Work instruction                                                                                                                                                                                                                                                                                                                                                               |
| 4. Take out the electronic expansion valve.                                                                 |    | Take out the electronic expansion valve.                                                                                                                                                                                                                                                                                                                                       |
| 5. Install the new electronic expansion valve.                                                              |   | <p>Braze the connection pipe of electronic expansion valve.</p> <p>When brazing the electronic expansion valve, the valve should be wrapped with wet cloth.</p> <p>Nitrogen welding: the pressure of nitrogen is 2" to 3" W.C.</p> <p>Note: When brazing the pipes, do not let the flame burn the other components.</p> <p>Install the coil of electronic expansion valve.</p> |
| 6. Secure the electric box and arrange the wires as required.                                               |  | <p>Put the electric box back in place and tighten up the screws.</p> <p>Arrange the wires as original.</p>                                                                                                                                                                                                                                                                     |

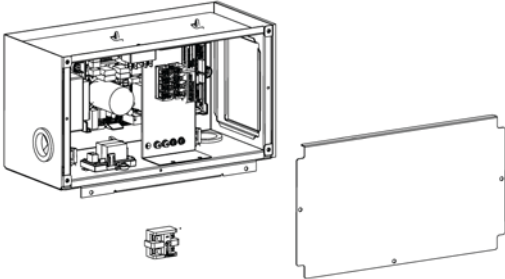
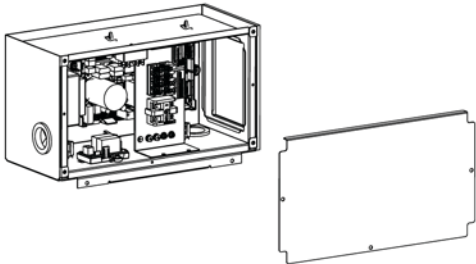
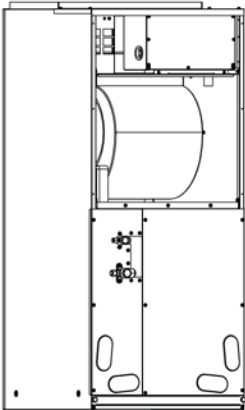
# Maintenance

| Electronic Expansion Valve Removal                                                                          |                                                                                   |                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure power is isolated and refrigerant is recovered before removing the Electronic Expansion Valve |                                                                                   |                                                                                                                                                                         |
| Step                                                                                                        | Picture                                                                           | Work instruction                                                                                                                                                        |
| 7. Check and open the upper and side panels.                                                                |  | <p>Check whether each component and connection wire is well connected.</p> <p>If everything is OK, install the upper, left and right panels. Tighten up the screws.</p> |

## Removal of IDU Major Components

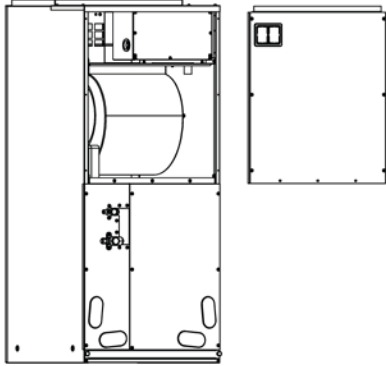
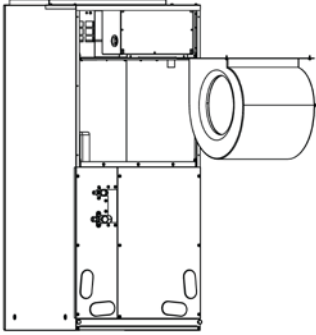
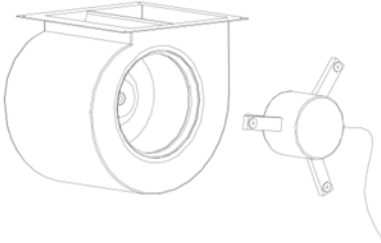
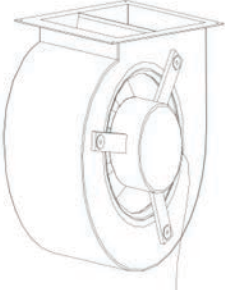
### Air handler Unit

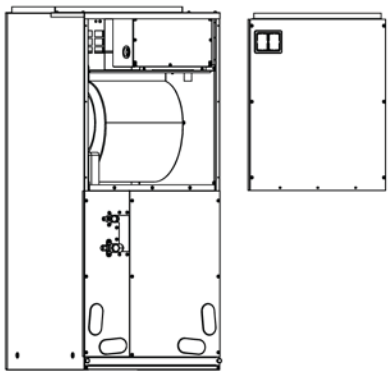
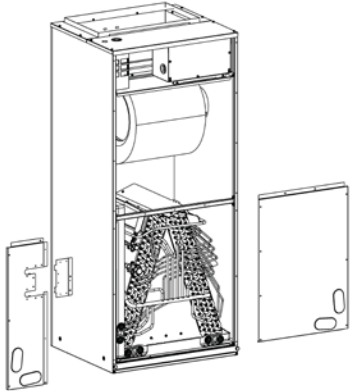
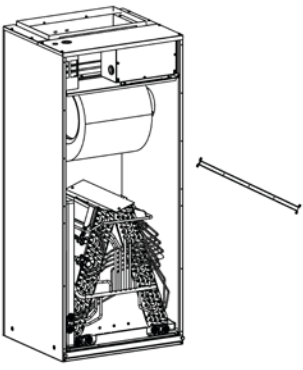
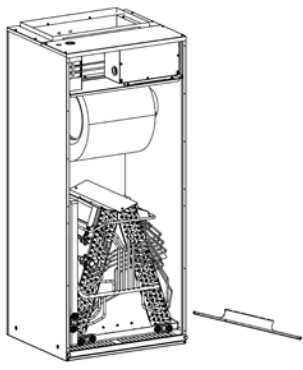
| Electric Box Disassembly and Assembly                                                                       |                                                                                     |                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure power is isolated and refrigerant is recovered before removing the Electronic Expansion Valve |                                                                                     |                                                                                                                                                                                                                     |
| Step                                                                                                        | Picture                                                                             | Work instruction                                                                                                                                                                                                    |
| 1. Remove the upper panel                                                                                   |  | <p>Loosen screws around the upper panel with a screwdriver.</p> <p>Remove the upper panel away from the unit.</p>                                                                                                   |
| 2. Remove the electric box.                                                                                 |  | <p>Disconnect the power cord and control line from the wiring terminals, and then draw them out.</p> <p>Loosen screws around the electric box with a screwdriver.</p> <p>Remove the electric box from the unit.</p> |

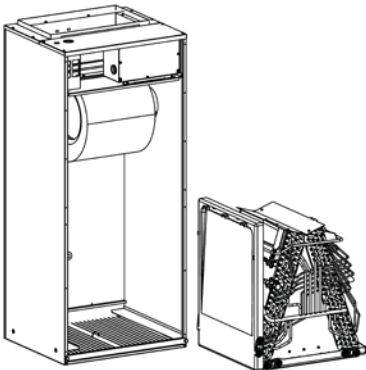
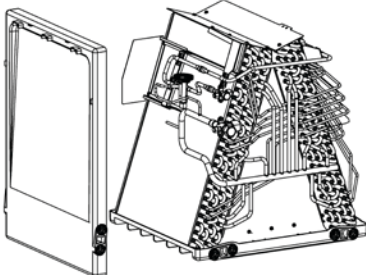
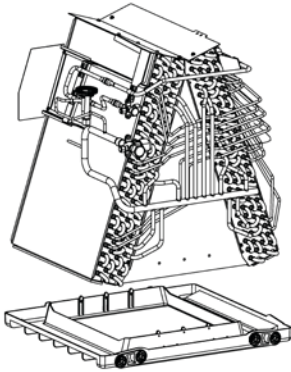
| Electric Box Disassembly and Assembly                                                                       |                                                                                    |                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Note: Be sure power is isolated and refrigerant is recovered before removing the Electronic Expansion Valve |                                                                                    |                                                                                                                                                                                                                        |
| Step                                                                                                        | Picture                                                                            | Work instruction                                                                                                                                                                                                       |
| 3. Remove the electric element.                                                                             |   | <p>Disconnect the electric element from the wiring terminal.</p> <p>Loosen screws around the electric element with a screwdriver.</p> <p>Remove the electric element from the electric box.</p>                        |
| 4. Mount the new electric element.                                                                          |   | <p>Place the electric element at the proper position.</p> <p>Tighten the screws around the electric element with a screwdriver.</p> <p>Wire the electric element to the wiring terminal.</p>                           |
| 5. Reinstall the electric box.                                                                              |  | <p>Place the electric box at the proper position.</p> <p>Tighten screws around the electric box with a screwdriver.</p> <p>Connect the power cord and control line properly.</p> <p>Reassemble the unit as before.</p> |

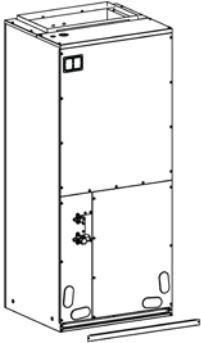
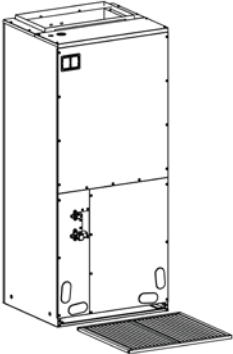
## Maintenance

### Fan Motor Disassembly and Assembly

| Step                       | Picture                                                                             | Work instruction                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Remove the upper panel. |    | Loosen screws round the upper panel with a screwdriver.<br><br>Remove the upper panel from unit.                                                                                                                 |
| 2. Remove the fan.         |   | Disconnect the wires of the fan from the wiring terminal and draw them out.<br><br>Loosen screws located at the front of the fan with a screwdriver.<br><br>Remove the fan from the unit.                        |
| 3. Remove the motor.       |  | Disconnect the wires of the fan from the wiring terminal and draw them out.<br><br>Loosen screws located at the front of the fan with a screwdriver.<br><br>Remove the fan from the unit.                        |
| 4. Reinstall the fan.      |  | Place the motor at the proper position.<br><br>Tighten screws fixing the motor and fan wheel.<br><br>Tighten screw bolts fixing the motor bracket.<br><br>After the installation, reassemble the unit as before. |

| Indoor Coil And Drain Pan Disassembly and Assembly |                                                                                     |                                                                                                                  |
|----------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Step                                               | Picture                                                                             | Work instruction                                                                                                 |
| 1. Remove the upper panel.                         |    | Loosen screws round the upper panel with a screwdriver.<br>Remove the upper panel from unit                      |
| 2. Remove the lower panel (1) and panel (2).       |   | Loosen screws round the lower panel with a screwdriver.<br>Remove the lower panel from unit.                     |
| 3. Remove the enhanced frame if applicable.        |  | Remove the screws from enhanced frame.<br>Disassemble the enhanced frame from the unit.                          |
| 4. Remove the mounting plate of the drain pan.     |  | Loosen screws at both side of the mounting plate with a screwdriver.<br>Remove the mounting plate from the unit. |

| Indoor Coil And Drain Pan Disassembly and Assembly |                                                                                     |                                                                                        |
|----------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Step                                               | Picture                                                                             | Work instruction                                                                       |
| 5. Remove the primary drain pan.                   |    | Remove the primary drain pan from the unit.                                            |
| 6. Remove the secondary drain pan.                 |   | Remove the secondary drain pan from the unit.                                          |
| 7. Remove the coil.                                |  | Remove the coil away from the primary drain pan.<br><br>Reassemble the unit as before. |

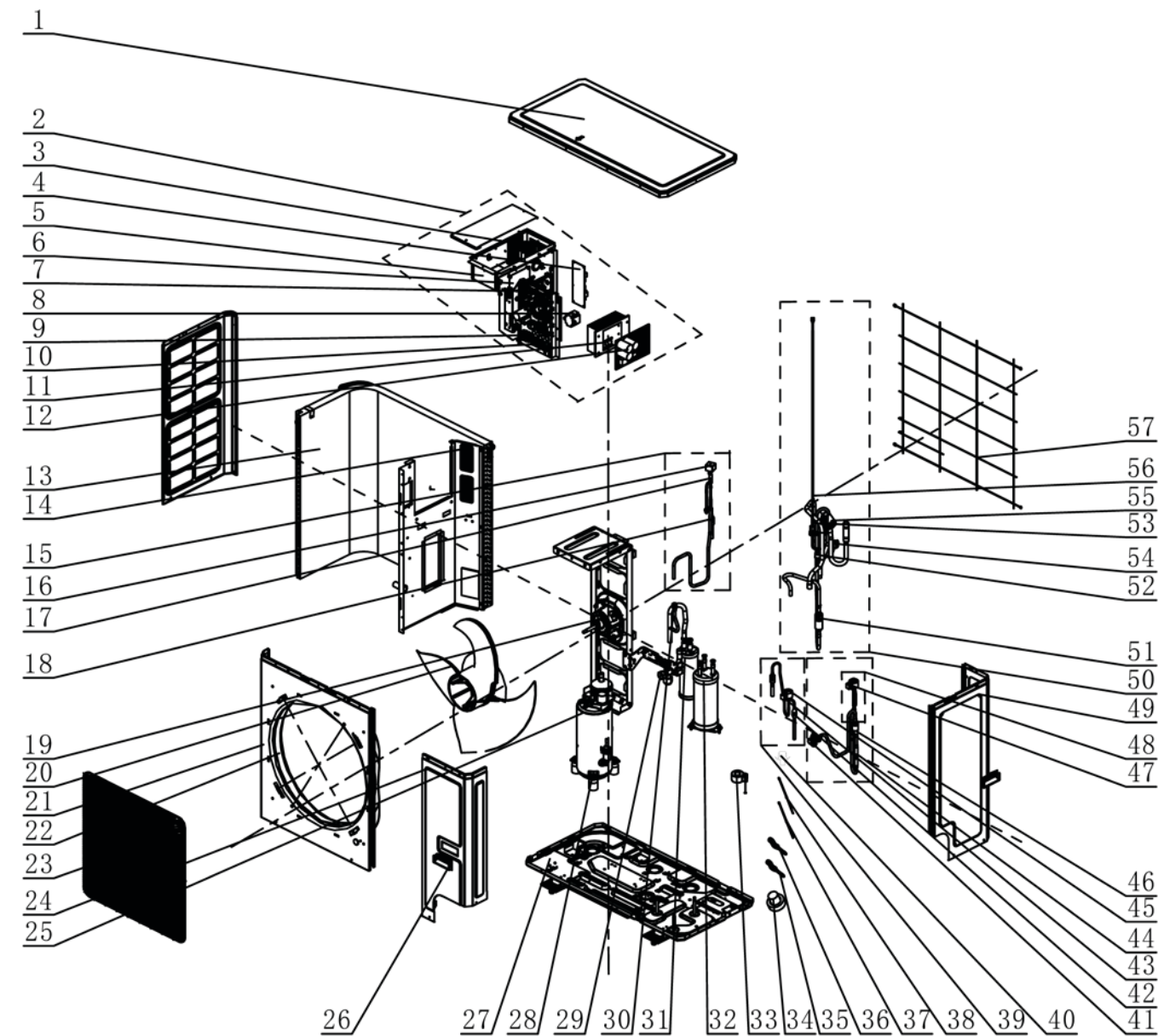
| Filter Disassembly and Assembly |                                                                                    |                                                                                                                   |
|---------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Step                            | Picture                                                                            | Work instruction                                                                                                  |
| 1. Remove the mounting plate    |   | Loosen screws fixing the mounting plate.<br>Remove the mounting plate away from the unit                          |
| 2. Remove the filter screen     |  | Remove the filter screen away from the unit.<br>After replacing the filter screen, reassemble the unit as before. |

# Maintenance

## Exploded View and Parts Lists

### ODU Exploded View and Parts Lists

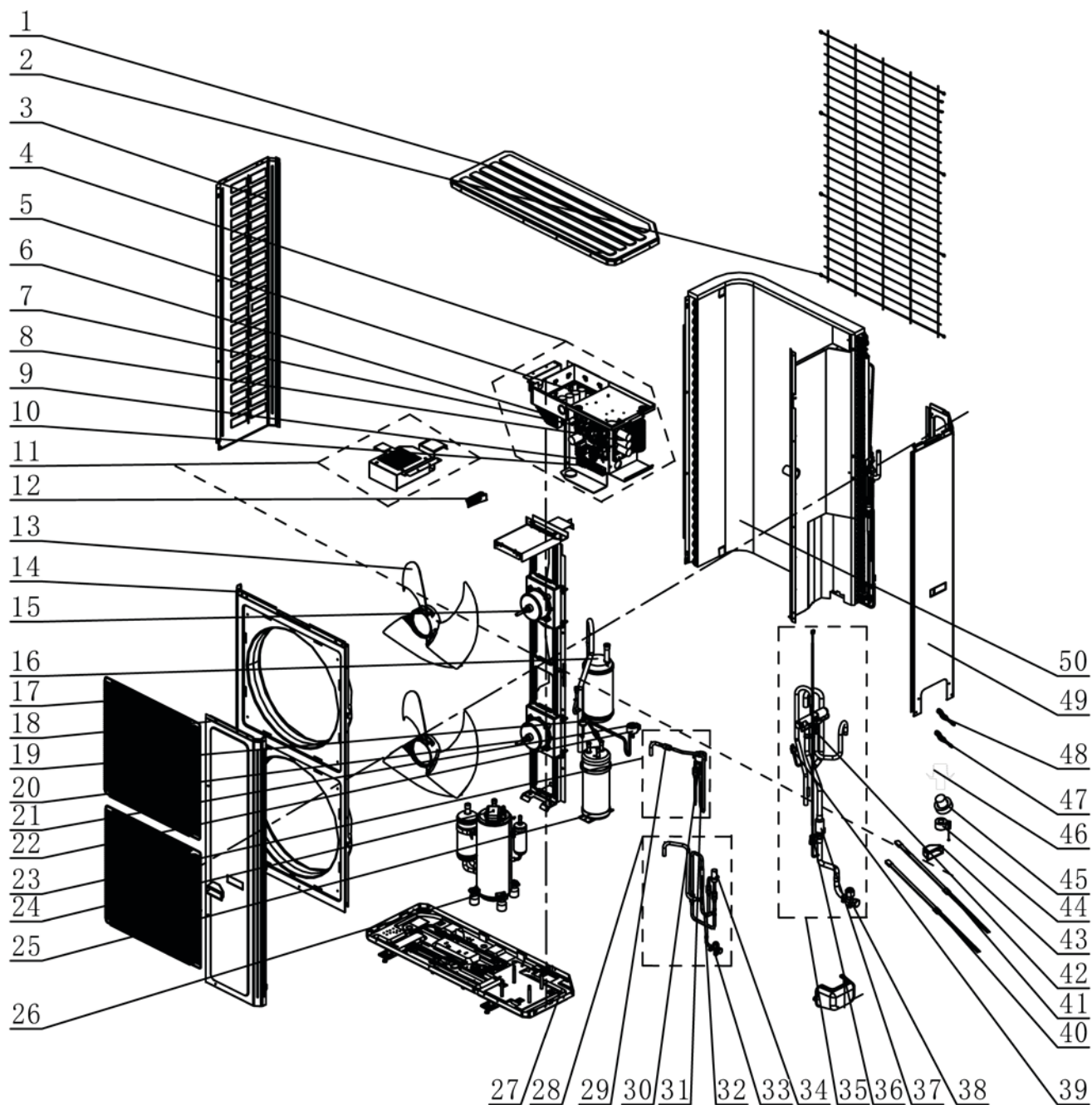
AUH2436ZGDA



| No. | Material name                       |
|-----|-------------------------------------|
| 1   | Coping                              |
| 2   | Electric Box Assembly               |
| 3   | PFC Inductance                      |
| 4   | Filter Board                        |
| 5   | Reactor Sub-Assembly                |
| 6   | Power Switch                        |
| 7   | Main Board                          |
| 8   | Inductance                          |
| 9   | Terminal Board                      |
| 10  | Terminal Board                      |
| 11  | Heat Sink                           |
| 12  | Main Board                          |
| 13  | Coil Assembly                       |
| 14  | Filter Sub-Assembly                 |
| 15  | Electromagnetic Valve Sub-Assembly  |
| 16  | Magnet Coil (Electromagnetic Valve) |
| 17  | Electromagnetic Valve               |
| 18  | Strainer                            |
| 19  | Brushless DC Motor                  |
| 20  | Axial Flow Fan                      |
| 21  | Cabinet                             |
| 22  | Diversion Circle                    |
| 23  | Front Grill                         |
| 24  | Front Side Plate                    |
| 25  | Compressor And Fittings             |
| 26  | Handle                              |
| 27  | Chassis Assembly                    |
| 28  | Foot                                |
| 29  | Cut Off Valve                       |

| No. | Material name                         |
|-----|---------------------------------------|
| 30  | Fusible Plug                          |
| 31  | Gas-liquid Separator                  |
| 32  | Accumulator                           |
| 33  | 4 Way Valve Coil                      |
| 34  | Drainage Hole Cap                     |
| 35  | Temperature Sensor                    |
| 36  | Temperature Sensor                    |
| 37  | Electrical Heater(Compressor)         |
| 38  | Electrical Heater (Chassis)           |
| 39  | Electric Expansion Valve Sub-Assembly |
| 40  | Drainage Joint                        |
| 41  | Cut-Off Valve 3/8(N)                  |
| 42  | Strainer                              |
| 43  | Electric Expand Valve Fitting         |
| 44  | One Way Valve                         |
| 45  | Electronic Expansion Valve            |
| 46  | Strainer                              |
| 47  | Electric Expand Valve Fitting         |
| 48  | Electric Expansion Valve Sub-Assembly |
| 49  | Rear Side Plate                       |
| 50  | 4-Way Valve Assembly                  |
| 51  | Silencer                              |
| 52  | Pressure Protect Switch               |
| 53  | Filter                                |
| 54  | Pressure Protect Switch               |
| 55  | 4-Way Valve                           |
| 56  | Pressure Sensor                       |
| 57  | Rear Grill                            |

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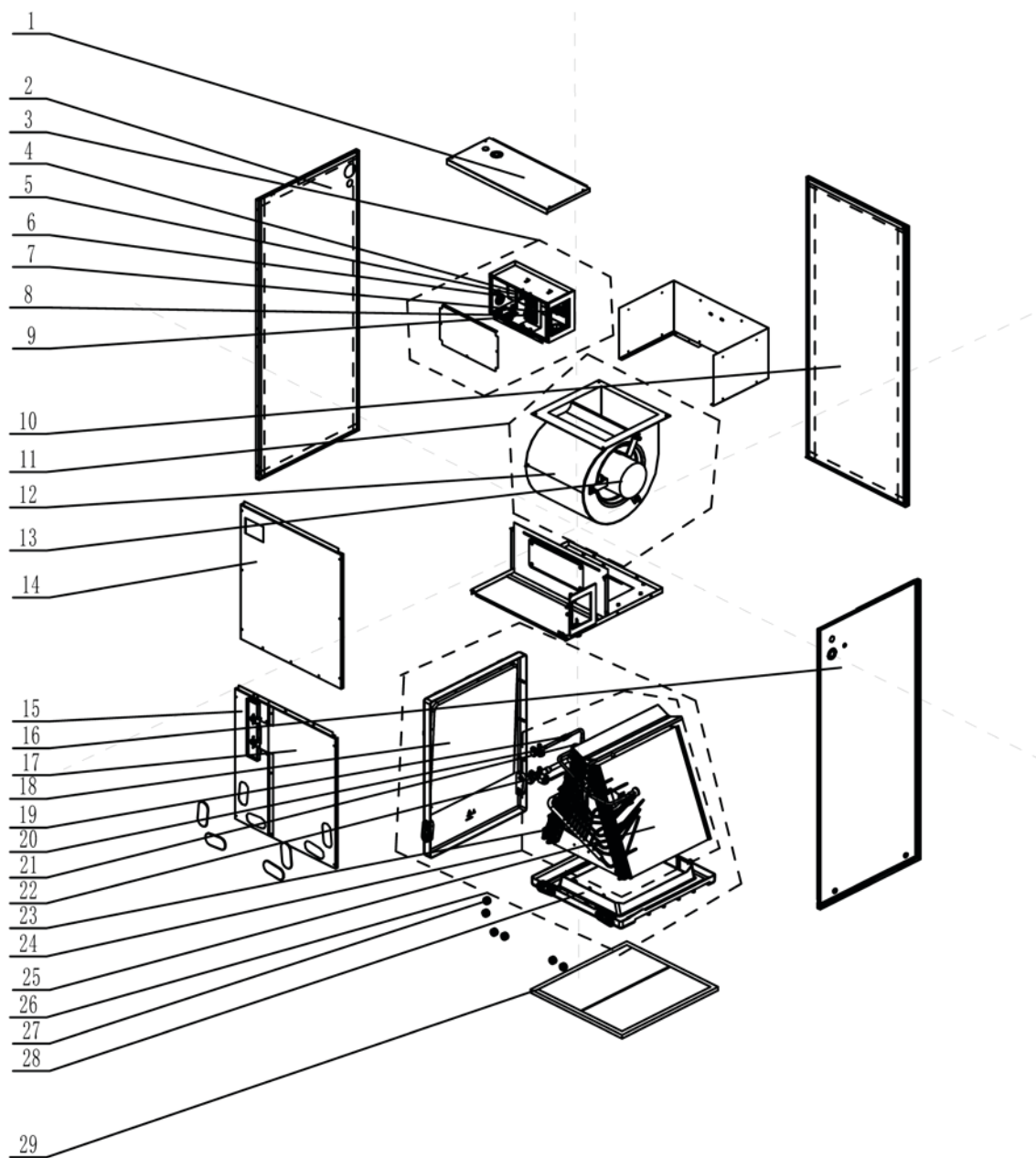
| No. | Material name                         |
|-----|---------------------------------------|
| 1   | Coping                                |
| 2   | Rear Grill                            |
| 3   | Left Side Plate                       |
| 4   | Electric Box Assembly                 |
| 5   | Drive Board                           |
| 6   | Radiator                              |
| 7   | Main Board                            |
| 8   | Filter Board                          |
| 9   | Terminal Board                        |
| 10  | Terminal Board                        |
| 11  | Inductance Box Assembly               |
| 12  | Handle                                |
| 13  | Axial Flow Fan                        |
| 14  | Cabinet                               |
| 15  | Brushless DC Motor                    |
| 16  | Gas-liquid Separator Sub-Assembly     |
| 17  | Front Grill                           |
| 18  | Front Side Plate                      |
| 19  | Pressure Protect Switch               |
| 20  | Brushless DC Motor                    |
| 21  | Electromagnetic Valve                 |
| 22  | Electric Expand Valve Fitting         |
| 23  | Electric Expansion Valve Sub-Assembly |
| 24  | Compressor and Fittings               |
| 25  | Accumulator                           |

| No. | Material name                       |
|-----|-------------------------------------|
| 26  | Foot                                |
| 27  | Chassis Sub-Assembly                |
| 28  | Cut Off Valve Sub-Assembly          |
| 29  | Strainer                            |
| 30  | Magnet Coil (Electromagnetic Valve) |
| 31  | Electric Expand Valve Fitting       |
| 32  | One Way Valve                       |
| 33  | Cut-off Valve                       |
| 34  | Electronic Expansion Valve          |
| 35  | 4-Way Valve Assembly                |
| 36  | Pressure Sensor                     |
| 37  | Strainer                            |
| 38  | Cut Off Valve 3/8                   |
| 39  | Pressure Protect Switch             |
| 40  | Electrical Heater(Compressor)       |
| 41  | Electrical Heater(Compressor)       |
| 42  | 4-Way Valve                         |
| 43  | Handle                              |
| 44  | 4 Way Valve Coil                    |
| 45  | Drainage Hole Cap                   |
| 46  | Drainage Joint                      |
| 47  | Temperature Sensor                  |
| 48  | Temperature Sensor                  |
| 49  | Rear Side Plate Sub-Assembly        |
| 50  | Coil Assembly                       |

# Maintenance

## IDU Exploded View and Parts Lists

UUY24ZGDAA, UUY36ZGDAA



| No. | Material name                |
|-----|------------------------------|
| 1   | Coping                       |
| 2   | Left Side Plate              |
| 3   | Electric Box Assembly        |
| 4   | Terminal Board               |
| 5   | Transformer                  |
| 6   | Terminal Board               |
| 7   | Main Board                   |
| 8   | Terminal Board               |
| 9   | Pinboard                     |
| 10  | Rear Side Plate              |
| 11  | Centrifugal Fan Assembly     |
| 12  | Motor For Centrifugal Fan    |
| 13  | Brushless DC Motor           |
| 14  | Top Cover Board Sub-Assembly |
| 15  | Bottom Cover Plate Assembly  |
| 16  | Right Side Plate             |
| 17  | Bottom Cover Plate Assembly  |
| 18  | Water Tray                   |
| 19  | Strainer                     |
| 20  | Cut-Off Valve 3/8(N)         |
| 21  | Thermal Expansion Valve      |
| 22  | Cut Off Valve                |
| 23  | Evaporator Assembly          |
| 24  | Evaporator Assembly          |
| 25  | Evaporator Assembly          |
| 26  | Water Tray Assembly          |
| 27  | Choke Plug                   |
| 28  | Water Tray                   |
| 29  | Filter Sub-Assembly          |

## Temperature Sensor Temperature/Resistance/Voltage Lists

### 15 K $\Omega$ Temperature Sensors (including ODU temperature sensors)

| F°   | C°  | Resistance (k $\Omega$ ) | Voltage (V) |
|------|-----|--------------------------|-------------|
| -4.0 | -20 | 144                      | 0.311       |
| -2.2 | -19 | 138.1                    | 0.323       |
| -0.4 | -18 | 128.6                    | 0.345       |
| 1.4  | -17 | 121.6                    | 0.362       |
| 3.2  | -16 | 115                      | 0.381       |
| 5.0  | -15 | 108.7                    | 0.4         |
| 6.8  | -14 | 102.9                    | 0.42        |
| 8.6  | -13 | 97.4                     | 0.44        |
| 10.4 | -12 | 92.22                    | 0.462       |
| 12.2 | -11 | 87.35                    | 0.484       |
| 14.0 | -10 | 82.75                    | 0.506       |
| 15.8 | -9  | 78.43                    | 0.53        |
| 17.6 | -8  | 74.35                    | 0.554       |
| 19.4 | -7  | 70.5                     | 0.579       |
| 21.2 | -6  | 66.88                    | 0.605       |
| 23.0 | -5  | 63.46                    | 0.631       |
| 24.8 | -4  | 60.23                    | 0.658       |
| 26.6 | -3  | 57.18                    | 0.686       |
| 28.4 | -2  | 54.31                    | 0.714       |
| 30.2 | -1  | 51.59                    | 0.743       |
| 32.0 | 0   | 49.02                    | 0.773       |
| 33.8 | 1   | 46.8                     | 0.801       |
| 35.6 | 2   | 44.31                    | 0.835       |
| 37.4 | 3   | 42.14                    | 0.866       |
| 39.2 | 4   | 40.09                    | 0.899       |
| 41.0 | 5   | 38.15                    | 0.931       |
| 42.8 | 6   | 36.32                    | 0.965       |
| 44.6 | 7   | 34.58                    | 0.998       |
| 46.4 | 8   | 32.94                    | 1.033       |
| 48.2 | 9   | 31.38                    | 1.067       |
| 50.0 | 10  | 29.9                     | 1.102       |
| 51.8 | 11  | 28.51                    | 1.138       |
| 53.6 | 12  | 27.18                    | 1.174       |
| 55.4 | 13  | 25.92                    | 1.21        |
| 57.2 | 14  | 24.73                    | 1.246       |
| 59.0 | 15  | 23.6                     | 1.282       |
| 60.8 | 16  | 22.53                    | 1.319       |
| 62.6 | 17  | 21.51                    | 1.356       |
| 64.4 | 18  | 20.54                    | 1.393       |
| 66.2 | 19  | 19.63                    | 1.429       |
| 68.0 | 20  | 18.75                    | 1.467       |
| 69.8 | 21  | 17.93                    | 1.503       |
| 71.6 | 22  | 17.14                    | 1.54        |
| 73.4 | 23  | 16.39                    | 1.577       |
| 75.2 | 24  | 15.68                    | 1.613       |

| F°    | C° | Resistance (k $\Omega$ ) | Voltage (V) |
|-------|----|--------------------------|-------------|
| 77.0  | 25 | 15                       | 1.65        |
| 78.8  | 26 | 14.36                    | 1.686       |
| 80.6  | 27 | 13.74                    | 1.722       |
| 82.4  | 28 | 13.16                    | 1.758       |
| 84.2  | 29 | 12.6                     | 1.793       |
| 86.0  | 30 | 12.07                    | 1.829       |
| 87.8  | 31 | 11.57                    | 1.863       |
| 89.6  | 32 | 11.09                    | 1.897       |
| 91.4  | 33 | 10.63                    | 1.931       |
| 93.2  | 34 | 10.2                     | 1.964       |
| 95.0  | 35 | 9.779                    | 1.998       |
| 96.8  | 36 | 9.382                    | 2.03        |
| 98.6  | 37 | 9.003                    | 2.062       |
| 100.4 | 38 | 8.642                    | 2.094       |
| 102.2 | 39 | 8.297                    | 2.125       |
| 104.0 | 40 | 7.963                    | 2.155       |
| 105.8 | 41 | 7.653                    | 2.185       |
| 107.6 | 42 | 7.352                    | 2.215       |
| 109.4 | 43 | 7.065                    | 2.243       |
| 111.2 | 44 | 6.791                    | 2.272       |
| 113.0 | 45 | 6.529                    | 2.299       |
| 114.8 | 46 | 6.278                    | 2.326       |
| 116.6 | 47 | 6.038                    | 2.353       |
| 118.4 | 48 | 5.809                    | 2.379       |
| 120.2 | 49 | 5.589                    | 2.404       |
| 122.0 | 50 | 5.379                    | 2.429       |
| 123.8 | 51 | 5.179                    | 2.453       |
| 125.6 | 52 | 4.986                    | 2.477       |
| 127.4 | 53 | 4.802                    | 2.5         |
| 129.2 | 54 | 4.625                    | 2.522       |
| 131.0 | 55 | 4.456                    | 2.544       |
| 132.8 | 56 | 4.294                    | 2.566       |
| 134.6 | 57 | 4.139                    | 2.586       |
| 136.4 | 58 | 3.99                     | 2.607       |
| 138.2 | 59 | 3.848                    | 2.626       |
| 140.0 | 60 | 3.711                    | 2.646       |
| 141.8 | 61 | 3.579                    | 2.664       |
| 143.6 | 62 | 3.454                    | 2.682       |
| 145.4 | 63 | 3.333                    | 2.7         |
| 147.2 | 64 | 3.217                    | 2.717       |
| 149.0 | 65 | 3.105                    | 2.734       |
| 150.8 | 66 | 2.998                    | 2.75        |
| 152.6 | 67 | 2.898                    | 2.766       |
| 154.4 | 68 | 2.797                    | 2.781       |
| 156.2 | 69 | 2.702                    | 2.796       |
| 158.0 | 70 | 2.611                    | 2.811       |

| F°    | C°  | Resistance (kΩ) | Voltage (V) |
|-------|-----|-----------------|-------------|
| 159.8 | 71  | 2.523           | 2.825       |
| 161.6 | 72  | 2.439           | 2.838       |
| 163.4 | 73  | 2.358           | 2.852       |
| 165.2 | 74  | 2.28            | 2.865       |
| 167.0 | 75  | 2.205           | 2.877       |
| 168.8 | 76  | 2.133           | 2.889       |
| 170.6 | 77  | 2.064           | 2.901       |
| 172.4 | 78  | 1.997           | 2.912       |
| 174.2 | 79  | 1.933           | 2.923       |
| 176.0 | 80  | 1.871           | 2.934       |
| 177.8 | 81  | 1.811           | 2.945       |
| 179.6 | 82  | 1.754           | 2.955       |
| 181.4 | 83  | 1.699           | 2.964       |
| 183.2 | 84  | 1.645           | 2.974       |
| 185.0 | 85  | 1.594           | 2.983       |
| 186.8 | 86  | 1.544           | 2.992       |
| 188.6 | 87  | 1.497           | 3.001       |
| 190.4 | 88  | 1.451           | 3.009       |
| 192.2 | 89  | 1.408           | 3.017       |
| 194.0 | 90  | 1.363           | 3.025       |
| 195.8 | 91  | 1.322           | 3.033       |
| 197.6 | 92  | 1.282           | 3.04        |
| 199.4 | 93  | 1.244           | 3.047       |
| 201.2 | 94  | 1.207           | 3.054       |
| 203.0 | 95  | 1.171           | 3.061       |
| 204.8 | 96  | 1.136           | 3.068       |
| 206.6 | 97  | 1.103           | 3.074       |
| 208.4 | 98  | 1.071           | 3.08        |
| 210.2 | 99  | 1.039           | 3.086       |
| 212.0 | 100 | 1.009           | 3.092       |
| 213.8 | 101 | 0.98            | 3.098       |
| 215.6 | 102 | 0.952           | 3.103       |
| 217.4 | 103 | 0.925           | 3.108       |
| 219.2 | 104 | 0.898           | 3.114       |
| 221.0 | 105 | 0.873           | 3.119       |
| 222.8 | 106 | 0.848           | 3.123       |
| 224.6 | 107 | 0.825           | 3.128       |
| 226.4 | 108 | 0.802           | 3.133       |
| 228.2 | 109 | 0.779           | 3.137       |
| 230.0 | 110 | 0.758           | 3.141       |
| 231.8 | 111 | 0.737           | 3.145       |
| 233.6 | 112 | 0.717           | 3.15        |
| 235.4 | 113 | 0.697           | 3.153       |
| 237.2 | 114 | 0.678           | 3.157       |
| 239.0 | 115 | 0.66            | 3.161       |

| F°    | C°  | Resistance (kΩ) | Voltage (V) |
|-------|-----|-----------------|-------------|
| 240.8 | 116 | 0.642           | 3.165       |
| 242.6 | 117 | 0.625           | 3.168       |
| 244.4 | 118 | 0.608           | 3.171       |
| 246.2 | 119 | 0.592           | 3.175       |
| 248.0 | 120 | 0.577           | 3.178       |
| 249.8 | 121 | 0.561           | 3.181       |
| 251.6 | 122 | 0.547           | 3.184       |
| 253.4 | 123 | 0.532           | 3.187       |
| 255.2 | 124 | 0.519           | 3.19        |
| 257.0 | 125 | 0.505           | 3.192       |
| 258.8 | 126 | 0.492           | 3.195       |
| 260.6 | 127 | 0.48            | 3.198       |
| 262.4 | 128 | 0.467           | 3.2         |
| 264.2 | 129 | 0.456           | 3.203       |
| 266.0 | 130 | 0.444           | 3.205       |
| 267.8 | 131 | 0.433           | 3.207       |
| 269.6 | 132 | 0.422           | 3.21        |
| 271.4 | 133 | 0.412           | 3.212       |
| 273.2 | 134 | 0.401           | 3.214       |
| 275.0 | 135 | 0.391           | 3.216       |
| 276.8 | 136 | 0.382           | 3.218       |
| 278.6 | 137 | 0.372           | 3.22        |
| 280.4 | 138 | 0.363           | 3.222       |
| 282.2 | 139 | 0.355           | 3.224       |
| 284.0 | 140 | 0.346           | 3.226       |
| 285.8 | 141 | 0.338           | 3.227       |
| 287.6 | 142 | 0.33            | 3.229       |
| 289.4 | 143 | 0.322           | 3.231       |
| 291.2 | 144 | 0.314           | 3.232       |
| 293.0 | 145 | 0.307           | 3.234       |
| 294.8 | 146 | 0.299           | 3.235       |
| 296.6 | 147 | 0.292           | 3.237       |
| 298.4 | 148 | 0.286           | 3.238       |
| 300.2 | 149 | 0.279           | 3.24        |
| 302.0 | 150 | 0.273           | 3.241       |
| 303.8 | 151 | 0.266           | 3.242       |
| 305.6 | 152 | 0.261           | 3.244       |
| 307.4 | 153 | 0.254           | 3.245       |
| 309.2 | 154 | 0.248           | 3.246       |
| 311.0 | 155 | 0.243           | 3.247       |
| 312.8 | 156 | 0.237           | 3.249       |
| 314.6 | 157 | 0.232           | 3.25        |
| 316.4 | 158 | 0.227           | 3.251       |
| 318.2 | 159 | 0.222           | 3.252       |
| 320.0 | 160 | 0.217           | 3.253       |

## 20 KΩ Pipeline Temperature Sensors (including temperature sensors for defroster, IDU and ODU pipes)

| F°    | C°  | Resistance (kΩ) | Voltage (V) |
|-------|-----|-----------------|-------------|
| -22.0 | -30 | 361.8           | 0.173       |
| -20.2 | -29 | 339.8           | 0.183       |
| -18.4 | -28 | 319.2           | 0.195       |
| -16.6 | -27 | 300             | 0.206       |
| -14.8 | -26 | 282.2           | 0.218       |
| -13.0 | -25 | 265.5           | 0.231       |
| -11.2 | -24 | 249.9           | 0.245       |
| -9.4  | -23 | 235.3           | 0.259       |
| -7.6  | -22 | 221.6           | 0.273       |
| -5.8  | -21 | 208.9           | 0.288       |
| -4.0  | -20 | 196.9           | 0.304       |
| -2.2  | -19 | 181.4           | 0.328       |
| -0.4  | -18 | 171.4           | 0.345       |
| 1.4   | -17 | 162.1           | 0.362       |
| 3.2   | -16 | 153.3           | 0.381       |
| 5.0   | -15 | 145             | 0.4         |
| 6.8   | -14 | 137.2           | 0.42        |
| 8.6   | -13 | 129.9           | 0.44        |
| 10.4  | -12 | 123             | 0.462       |
| 12.2  | -11 | 116.5           | 0.484       |
| 14.0  | -10 | 110.3           | 0.507       |
| 15.8  | -9  | 104.6           | 0.53        |
| 17.6  | -8  | 99.13           | 0.554       |
| 19.4  | -7  | 94              | 0.579       |
| 21.2  | -6  | 89.17           | 0.605       |
| 23.0  | -5  | 84.61           | 0.631       |
| 24.8  | -4  | 80.31           | 0.658       |
| 26.6  | -3  | 76.24           | 0.686       |
| 28.4  | -2  | 72.41           | 0.714       |
| 30.2  | -1  | 68.79           | 0.743       |
| 32.0  | 0   | 65.37           | 0.773       |
| 33.8  | 1   | 62.13           | 0.804       |
| 35.6  | 2   | 59.08           | 0.835       |
| 37.4  | 3   | 56.19           | 0.866       |
| 39.2  | 4   | 53.46           | 0.898       |
| 41.0  | 5   | 50.87           | 0.931       |
| 42.8  | 6   | 48.42           | 0.965       |
| 44.6  | 7   | 46.11           | 0.998       |
| 46.4  | 8   | 43.92           | 1.033       |
| 48.2  | 9   | 41.84           | 1.067       |
| 50.0  | 10  | 39.87           | 1.102       |
| 51.8  | 11  | 38.01           | 1.138       |
| 53.6  | 12  | 36.24           | 1.174       |
| 55.4  | 13  | 34.57           | 1.209       |
| 57.2  | 14  | 32.98           | 1.246       |
| 59.0  | 15  | 31.47           | 1.282       |
| 60.8  | 16  | 30.04           | 1.319       |
| 62.6  | 17  | 28.68           | 1.356       |

| F°    | C° | Resistance (kΩ) | Voltage (V) |
|-------|----|-----------------|-------------|
| 64.4  | 18 | 27.39           | 1.393       |
| 66.2  | 19 | 26.17           | 1.429       |
| 68.0  | 20 | 25.01           | 1.466       |
| 69.8  | 21 | 23.9            | 1.503       |
| 71.6  | 22 | 22.85           | 1.54        |
| 73.4  | 23 | 21.85           | 1.577       |
| 75.2  | 24 | 20.9            | 1.614       |
| 77.0  | 25 | 20              | 1.65        |
| 78.8  | 26 | 19.14           | 1.686       |
| 80.6  | 27 | 18.32           | 1.722       |
| 82.4  | 28 | 17.55           | 1.758       |
| 84.2  | 29 | 16.8            | 1.793       |
| 86.0  | 30 | 16.1            | 1.828       |
| 87.8  | 31 | 15.43           | 1.863       |
| 89.6  | 32 | 14.79           | 1.897       |
| 91.4  | 33 | 14.18           | 1.931       |
| 93.2  | 34 | 13.59           | 1.965       |
| 95.0  | 35 | 13.04           | 1.998       |
| 96.8  | 36 | 12.51           | 2.03        |
| 98.6  | 37 | 12              | 2.063       |
| 100.4 | 38 | 11.52           | 2.094       |
| 102.2 | 39 | 11.06           | 2.125       |
| 104.0 | 40 | 10.62           | 2.155       |
| 105.8 | 41 | 10.2            | 2.185       |
| 107.6 | 42 | 9.803           | 2.215       |
| 109.4 | 43 | 9.42            | 2.243       |
| 111.2 | 44 | 9.054           | 2.272       |
| 113.0 | 45 | 8.705           | 2.299       |
| 114.8 | 46 | 8.37            | 2.326       |
| 116.6 | 47 | 8.051           | 2.353       |
| 118.4 | 48 | 7.745           | 2.379       |
| 120.2 | 49 | 7.453           | 2.404       |
| 122.0 | 50 | 7.173           | 2.429       |
| 123.8 | 51 | 6.905           | 2.453       |
| 125.6 | 52 | 6.648           | 2.477       |
| 127.4 | 53 | 6.403           | 2.5         |
| 129.2 | 54 | 6.167           | 2.522       |
| 131.0 | 55 | 5.942           | 2.544       |
| 132.8 | 56 | 5.726           | 2.565       |
| 134.6 | 57 | 5.519           | 2.586       |
| 136.4 | 58 | 5.32            | 2.607       |
| 138.2 | 59 | 5.13            | 2.626       |
| 140.0 | 60 | 4.948           | 2.646       |
| 141.8 | 61 | 4.773           | 2.664       |
| 143.6 | 62 | 4.605           | 2.682       |
| 145.4 | 63 | 4.443           | 2.7         |
| 147.2 | 64 | 4.289           | 2.717       |
| 149.0 | 65 | 4.14            | 2.734       |

| F°    | C°  | Resistance (kΩ) | Voltage (V) |
|-------|-----|-----------------|-------------|
| 150.8 | 66  | 3.998           | 2.75        |
| 152.6 | 67  | 3.861           | 2.766       |
| 154.4 | 68  | 3.729           | 2.781       |
| 156.2 | 69  | 3.603           | 2.796       |
| 158.0 | 70  | 3.481           | 2.811       |
| 159.8 | 71  | 3.364           | 2.825       |
| 161.6 | 72  | 3.252           | 2.838       |
| 163.4 | 73  | 3.144           | 2.852       |
| 165.2 | 74  | 3.04            | 2.865       |
| 167.0 | 75  | 2.94            | 2.877       |
| 168.8 | 76  | 2.844           | 2.889       |
| 170.6 | 77  | 2.752           | 2.901       |
| 172.4 | 78  | 2.663           | 2.912       |
| 174.2 | 79  | 2.577           | 2.923       |
| 176.0 | 80  | 2.495           | 2.934       |
| 177.8 | 81  | 2.415           | 2.944       |
| 179.6 | 82  | 2.339           | 2.954       |
| 181.4 | 83  | 2.265           | 2.964       |
| 183.2 | 84  | 2.194           | 2.974       |
| 185.0 | 85  | 2.125           | 2.983       |
| 186.8 | 86  | 2.059           | 2.992       |
| 188.6 | 87  | 1.996           | 3.001       |
| 190.4 | 88  | 1.934           | 3.009       |
| 192.2 | 89  | 1.875           | 3.017       |
| 194.0 | 90  | 1.818           | 3.025       |
| 195.8 | 91  | 1.763           | 3.033       |
| 197.6 | 92  | 1.71            | 3.04        |
| 199.4 | 93  | 1.658           | 3.047       |
| 201.2 | 94  | 1.609           | 3.054       |
| 203.0 | 95  | 1.561           | 3.061       |
| 204.8 | 96  | 1.515           | 3.068       |
| 206.6 | 97  | 1.47            | 3.074       |
| 208.4 | 98  | 1.427           | 3.08        |
| 210.2 | 99  | 1.386           | 3.086       |
| 212.0 | 100 | 1.346           | 3.092       |
| 213.8 | 101 | 1.307           | 3.098       |
| 215.6 | 102 | 1.269           | 3.103       |
| 217.4 | 103 | 1.233           | 3.108       |
| 219.2 | 104 | 1.198           | 3.114       |
| 221.0 | 105 | 1.164           | 3.119       |
| 222.8 | 106 | 1.131           | 3.123       |
| 224.6 | 107 | 1.099           | 3.128       |
| 226.4 | 108 | 1.069           | 3.133       |
| 228.2 | 109 | 1.039           | 3.137       |
| 230.0 | 110 | 1.01            | 3.141       |
| 231.8 | 111 | 0.9825          | 3.145       |
| 233.6 | 112 | 0.9556          | 3.15        |
| 235.4 | 113 | 0.9295          | 3.153       |

| F°    | C°  | Resistance (kΩ) | Voltage (V) |
|-------|-----|-----------------|-------------|
| 237.2 | 114 | 0.9043          | 3.157       |
| 239.0 | 115 | 0.8799          | 3.161       |
| 240.8 | 116 | 0.8562          | 3.165       |
| 242.6 | 117 | 0.8333          | 3.168       |
| 244.4 | 118 | 0.8111          | 3.171       |
| 246.2 | 119 | 0.7895          | 3.175       |
| 248.0 | 120 | 0.7687          | 3.178       |
| 249.8 | 121 | 0.7485          | 3.181       |
| 251.6 | 122 | 0.7289          | 3.184       |
| 253.4 | 123 | 0.7099          | 3.187       |
| 255.2 | 124 | 0.6915          | 3.19        |
| 257.0 | 125 | 0.6736          | 3.192       |
| 258.8 | 126 | 0.6563          | 3.195       |
| 260.6 | 127 | 0.6395          | 3.198       |
| 262.4 | 128 | 0.6232          | 3.2         |
| 264.2 | 129 | 0.6074          | 3.203       |
| 266.0 | 130 | 0.5921          | 3.205       |
| 267.8 | 131 | 0.5772          | 3.207       |
| 269.6 | 132 | 0.5627          | 3.21        |
| 271.4 | 133 | 0.5487          | 3.212       |
| 273.2 | 134 | 0.5351          | 3.214       |
| 275.0 | 135 | 0.5219          | 3.216       |
| 276.8 | 136 | 0.509           | 3.218       |
| 278.6 | 137 | 0.4966          | 3.22        |
| 280.4 | 138 | 0.4845          | 3.222       |
| 282.2 | 139 | 0.4727          | 3.224       |
| 284.0 | 140 | 0.4613          | 3.226       |
| 285.8 | 141 | 0.4502          | 3.227       |
| 287.6 | 142 | 0.4394          | 3.229       |
| 289.4 | 143 | 0.4289          | 3.231       |
| 291.2 | 144 | 0.4187          | 3.232       |
| 293.0 | 145 | 0.4088          | 3.234       |
| 294.8 | 146 | 0.3992          | 3.235       |
| 296.6 | 147 | 0.3899          | 3.237       |
| 298.4 | 148 | 0.3808          | 3.238       |
| 300.2 | 149 | 0.3719          | 3.24        |
| 302.0 | 150 | 0.3633          | 3.241       |
| 303.8 | 151 | 0.3549          | 3.242       |
| 305.6 | 152 | 0.3468          | 3.244       |
| 307.4 | 153 | 0.3389          | 3.245       |
| 309.2 | 154 | 0.3312          | 3.246       |
| 311.0 | 155 | 0.3237          | 3.247       |
| 312.8 | 156 | 0.3164          | 3.249       |
| 314.6 | 157 | 0.3093          | 3.25        |
| 316.4 | 158 | 0.3024          | 3.251       |
| 318.2 | 159 | 0.2956          | 3.252       |
| 320.0 | 160 | 0.2891          | 3.253       |

## 50 K $\Omega$ Discharge Temperature Sensors (including discharge air temperature sensor)

| F°    | C°  | Resistance (k $\Omega$ ) | Voltage (V) |
|-------|-----|--------------------------|-------------|
| -22.0 | -30 | 911.56                   | 0.036       |
| -20.2 | -29 | 853.66                   | 0.038       |
| -18.4 | -28 | 799.98                   | 0.041       |
| -16.6 | -27 | 750.18                   | 0.043       |
| -14.8 | -26 | 703.92                   | 0.046       |
| -13.0 | -25 | 660.93                   | 0.049       |
| -11.2 | -24 | 620.94                   | 0.052       |
| -9.4  | -23 | 583.72                   | 0.056       |
| -7.6  | -22 | 549.04                   | 0.059       |
| -5.8  | -21 | 516.71                   | 0.063       |
| -4.0  | -20 | 486.55                   | 0.066       |
| -2.2  | -19 | 458.4                    | 0.07        |
| -0.4  | -18 | 432.1                    | 0.075       |
| 1.4   | -17 | 407.51                   | 0.079       |
| 3.2   | -16 | 384.51                   | 0.084       |
| 5.0   | -15 | 362.99                   | 0.088       |
| 6.8   | -14 | 342.83                   | 0.094       |
| 8.6   | -13 | 323.94                   | 0.099       |
| 10.4  | -12 | 306.23                   | 0.104       |
| 12.2  | -11 | 289.61                   | 0.11        |
| 14.0  | -10 | 274.02                   | 0.116       |
| 15.8  | -9  | 259.37                   | 0.123       |
| 17.6  | -8  | 245.61                   | 0.129       |
| 19.4  | -7  | 232.67                   | 0.136       |
| 21.2  | -6  | 220.5                    | 0.143       |
| 23.0  | -5  | 209.05                   | 0.151       |
| 24.8  | -4  | 195.97                   | 0.158       |
| 26.6  | -3  | 188.12                   | 0.167       |
| 28.4  | -2  | 178.65                   | 0.175       |
| 30.2  | -1  | 169.68                   | 0.184       |
| 32.0  | 0   | 161.02                   | 0.193       |
| 33.8  | 1   | 153                      | 0.202       |
| 35.6  | 2   | 145.42                   | 0.212       |
| 37.4  | 3   | 135.96                   | 0.223       |
| 39.2  | 4   | 131.5                    | 0.233       |
| 41.0  | 5   | 126.17                   | 0.242       |
| 42.8  | 6   | 119.08                   | 0.256       |
| 44.6  | 7   | 113.37                   | 0.267       |
| 46.4  | 8   | 107.96                   | 0.28        |
| 48.2  | 9   | 102.85                   | 0.292       |
| 50.0  | 10  | 98.006                   | 0.306       |
| 51.8  | 11  | 93.42                    | 0.319       |
| 53.6  | 12  | 89.075                   | 0.333       |
| 55.4  | 13  | 84.956                   | 0.348       |
| 57.2  | 14  | 81.052                   | 0.362       |
| 59.0  | 15  | 77.349                   | 0.378       |

| F°    | C° | Resistance (k $\Omega$ ) | Voltage (V) |
|-------|----|--------------------------|-------------|
| 60.8  | 16 | 73.896                   | 0.393       |
| 62.6  | 17 | 70.503                   | 0.41        |
| 64.4  | 18 | 67.338                   | 0.427       |
| 66.2  | 19 | 64.333                   | 0.444       |
| 68.0  | 20 | 61.478                   | 0.462       |
| 69.8  | 21 | 58.766                   | 0.48        |
| 71.6  | 22 | 56.189                   | 0.499       |
| 73.4  | 23 | 53.738                   | 0.518       |
| 75.2  | 24 | 51.408                   | 0.537       |
| 77.0  | 25 | 49.191                   | 0.558       |
| 78.8  | 26 | 47.082                   | 0.578       |
| 80.6  | 27 | 45.074                   | 0.599       |
| 82.4  | 28 | 43.163                   | 0.621       |
| 84.2  | 29 | 41.313                   | 0.643       |
| 86.0  | 30 | 39.61                    | 0.665       |
| 87.8  | 31 | 37.958                   | 0.688       |
| 89.6  | 32 | 36.384                   | 0.711       |
| 91.4  | 33 | 34.883                   | 0.735       |
| 93.2  | 34 | 33.453                   | 0.759       |
| 95.0  | 35 | 32.088                   | 0.784       |
| 96.8  | 36 | 30.787                   | 0.809       |
| 98.6  | 37 | 29.544                   | 0.835       |
| 100.4 | 38 | 28.359                   | 0.86        |
| 102.2 | 39 | 27.227                   | 0.886       |
| 104.0 | 40 | 26.147                   | 0.913       |
| 105.8 | 41 | 25.114                   | 0.94        |
| 107.6 | 42 | 24.128                   | 0.967       |
| 109.4 | 43 | 23.186                   | 0.994       |
| 111.2 | 44 | 22.286                   | 1.022       |
| 113.0 | 45 | 21.425                   | 1.05        |
| 114.8 | 46 | 20.601                   | 1.078       |
| 116.6 | 47 | 19.814                   | 1.107       |
| 118.4 | 48 | 19.061                   | 1.136       |
| 120.2 | 49 | 18.34                    | 1.164       |
| 122.0 | 50 | 17.651                   | 1.193       |
| 123.8 | 51 | 16.99                    | 1.223       |
| 125.6 | 52 | 16.358                   | 1.252       |
| 127.4 | 53 | 15.753                   | 1.281       |
| 129.2 | 54 | 15.173                   | 1.311       |
| 131.0 | 55 | 14.618                   | 1.34        |
| 132.8 | 56 | 14.085                   | 1.37        |
| 134.6 | 57 | 13.575                   | 1.4         |
| 136.4 | 58 | 13.086                   | 1.429       |
| 138.2 | 59 | 12.617                   | 1.459       |
| 140.0 | 60 | 12.368                   | 1.475       |
| 141.8 | 61 | 11.736                   | 1.518       |

| F°    | C°  | Resistance (kΩ) | Voltage (V) |
|-------|-----|-----------------|-------------|
| 143.6 | 62  | 11.322          | 1.548       |
| 145.4 | 63  | 10.925          | 1.577       |
| 147.2 | 64  | 10.544          | 1.606       |
| 149.0 | 65  | 10.178          | 1.635       |
| 150.8 | 66  | 9.8269          | 1.664       |
| 152.6 | 67  | 9.4896          | 1.693       |
| 154.4 | 68  | 9.1655          | 1.722       |
| 156.2 | 69  | 8.9542          | 1.741       |
| 158.0 | 70  | 8.5551          | 1.778       |
| 159.8 | 71  | 5.9676          | 1.806       |
| 161.6 | 72  | 7.9913          | 1.834       |
| 163.4 | 73  | 7.7257          | 1.862       |
| 165.2 | 74  | 7.4702          | 1.889       |
| 167.0 | 75  | 7.2245          | 1.916       |
| 168.8 | 76  | 6.9882          | 1.943       |
| 170.6 | 77  | 6.7608          | 1.969       |
| 172.4 | 78  | 6.542           | 1.995       |
| 174.2 | 79  | 6.3315          | 2.021       |
| 176.0 | 80  | 6.1288          | 2.046       |
| 177.8 | 81  | 5.9336          | 2.071       |
| 179.6 | 82  | 5.7457          | 2.096       |
| 181.4 | 83  | 5.5647          | 2.12        |
| 183.2 | 84  | 5.3903          | 2.144       |
| 185.0 | 85  | 5.2223          | 2.168       |
| 186.8 | 86  | 5.0605          | 2.191       |
| 188.6 | 87  | 4.9044          | 2.214       |
| 190.4 | 88  | 4.7541          | 2.237       |
| 192.2 | 89  | 4.6091          | 2.259       |
| 194.0 | 90  | 4.4693          | 2.281       |
| 195.8 | 91  | 4.3345          | 2.302       |
| 197.6 | 92  | 4.2044          | 2.323       |
| 199.4 | 93  | 4.0789          | 2.344       |
| 201.2 | 94  | 3.9579          | 2.364       |
| 203.0 | 95  | 3.841           | 2.384       |
| 204.8 | 96  | 3.7283          | 2.404       |
| 206.6 | 97  | 3.6194          | 2.423       |
| 208.4 | 98  | 3.5143          | 2.442       |
| 210.2 | 99  | 3.4128          | 2.46        |
| 212.0 | 100 | 3.3147          | 2.478       |
| 213.8 | 101 | 3.22            | 2.496       |
| 215.6 | 102 | 3.1285          | 2.514       |
| 217.4 | 103 | 3.0401          | 2.531       |
| 219.2 | 104 | 2.9547          | 2.547       |
| 221.0 | 105 | 2.8721          | 2.564       |
| 222.8 | 106 | 2.7922          | 2.58        |
| 224.6 | 107 | 2.715           | 2.595       |

| F°    | C°  | Resistance (kΩ) | Voltage (V) |
|-------|-----|-----------------|-------------|
| 226.4 | 108 | 2.6404          | 2.611       |
| 228.2 | 109 | 2.5682          | 2.626       |
| 230.0 | 110 | 2.4983          | 2.64        |
| 231.8 | 111 | 2.4308          | 2.655       |
| 233.6 | 112 | 2.3654          | 2.669       |
| 235.4 | 113 | 2.3021          | 2.682       |
| 237.2 | 114 | 2.2409          | 2.696       |
| 239.0 | 115 | 2.1816          | 2.709       |
| 240.8 | 116 | 2.1242          | 2.722       |
| 242.6 | 117 | 2.0686          | 2.734       |
| 244.4 | 118 | 2.0148          | 2.747       |
| 246.2 | 119 | 1.9626          | 2.759       |
| 248.0 | 120 | 1.9123          | 2.77        |
| 249.8 | 121 | 1.8652          | 2.781       |
| 251.6 | 122 | 1.8158          | 2.793       |
| 253.4 | 123 | 1.7698          | 2.804       |
| 255.2 | 124 | 1.7253          | 2.814       |
| 257.0 | 125 | 1.6821          | 2.825       |
| 258.8 | 126 | 1.6402          | 2.835       |
| 260.6 | 127 | 1.5996          | 2.845       |
| 262.4 | 128 | 1.5602          | 2.855       |
| 264.2 | 129 | 1.522           | 2.864       |
| 266.0 | 130 | 1.485           | 2.873       |
| 267.8 | 131 | 1.449           | 2.882       |
| 269.6 | 132 | 1.4141          | 2.891       |
| 271.4 | 133 | 1.3803          | 2.9         |
| 273.2 | 134 | 1.3474          | 2.908       |
| 275.0 | 135 | 1.3155          | 2.916       |
| 276.8 | 136 | 1.2846          | 2.924       |
| 278.6 | 137 | 1.2545          | 2.932       |
| 280.4 | 138 | 1.2233          | 2.94        |
| 282.2 | 139 | 1.1969          | 2.947       |
| 284.0 | 140 | 1.1694          | 2.955       |
| 285.8 | 141 | 1.1476          | 2.96        |
| 287.6 | 142 | 1.1166          | 2.969       |
| 289.4 | 143 | 1.0913          | 2.975       |
| 291.2 | 144 | 1.0667          | 2.982       |
| 293.0 | 145 | 1.0429          | 2.988       |
| 294.8 | 146 | 1.0197          | 2.995       |
| 296.6 | 147 | 0.9971          | 3.001       |
| 298.4 | 148 | 0.9752          | 3.007       |
| 300.2 | 149 | 0.9538          | 3.013       |
| 302.0 | 150 | 0.9331          | 3.018       |

## Refrigerant R-410A Temperature/Pressure List

| PSIG | °F    |
|------|-------|
| 12   | -37.7 |
| 14   | -34.7 |
| 16   | -32.0 |
| 18   | -29.4 |
| 20   | -36.9 |
| 22   | -24.5 |
| 24   | -22.2 |
| 26   | -20.0 |
| 28   | -17.9 |
| 30   | -15.8 |
| 32   | -13.8 |
| 34   | -11.9 |
| 36   | -10.1 |
| 38   | -8.3  |
| 40   | -6.5  |
| 42   | -4.5  |
| 44   | -3.2  |
| 46   | -1.6  |
| 48   | 0     |
| 50   | 1.5   |
| 52   | 3     |
| 54   | 4.5   |
| 56   | 5.9   |
| 58   | 7.3   |
| 60   | 8.6   |
| 62   | 10    |
| 64   | 11.3  |
| 66   | 12.6  |
| 68   | 13.8  |
| 70   | 15.1  |
| 72   | 16.3  |
| 74   | 17.5  |
| 76   | 18.7  |
| 78   | 19.8  |
| 80   | 21    |
| 82   | 22.1  |
| 84   | 23.2  |
| 86   | 24.3  |
| 88   | 25.4  |
| 90   | 26.4  |
| 92   | 27.4  |
| 94   | 28.5  |
| 96   | 29.5  |
| 98   | 30.5  |

| PSIG | °F   |
|------|------|
| 100  | 31.2 |
| 102  | 32.2 |
| 104  | 33.2 |
| 106  | 34.1 |
| 108  | 35.1 |
| 110  | 35.5 |
| 112  | 36.9 |
| 114  | 37.8 |
| 116  | 38.7 |
| 118  | 39.5 |
| 120  | 40.5 |
| 122  | 41.3 |
| 124  | 42.2 |
| 126  | 43   |
| 128  | 43.8 |
| 130  | 44.7 |
| 132  | 45.5 |
| 134  | 46.3 |
| 136  | 47.1 |
| 138  | 47.9 |
| 140  | 48.7 |
| 142  | 49.5 |
| 144  | 50.3 |
| 146  | 51.1 |
| 148  | 51.8 |
| 150  | 52.5 |
| 152  | 53.3 |
| 154  | 54   |
| 156  | 54.8 |
| 158  | 55.5 |
| 160  | 56.2 |
| 162  | 57   |
| 164  | 57.7 |
| 166  | 58.4 |
| 168  | 59   |
| 170  | 59.8 |
| 172  | 60.5 |
| 174  | 61.1 |
| 176  | 61.8 |
| 178  | 62.5 |
| 180  | 63.1 |
| 182  | 63.8 |
| 184  | 64.5 |
| 186  | 65.1 |

| PSIG | °F   |
|------|------|
| 188  | 65.8 |
| 190  | 66.4 |
| 192  | 67   |
| 194  | 67.7 |
| 196  | 68.3 |
| 198  | 68.9 |
| 200  | 69.5 |
| 202  | 70.1 |
| 204  | 70.7 |
| 206  | 71.4 |
| 208  | 72   |
| 210  | 72.6 |
| 212  | 73.2 |
| 214  | 73.8 |
| 216  | 74.3 |
| 218  | 74.9 |
| 220  | 75.5 |
| 222  | 76.1 |
| 224  | 76.7 |
| 226  | 77.2 |
| 228  | 77.8 |
| 230  | 78.4 |
| 232  | 78.9 |
| 234  | 79.5 |
| 236  | 80   |
| 238  | 80.6 |
| 240  | 81.1 |
| 242  | 81.6 |
| 244  | 82.2 |
| 246  | 82.7 |
| 248  | 83.3 |
| 250  | 83.8 |
| 252  | 84.3 |
| 254  | 84.8 |
| 256  | 85.4 |
| 258  | 85.9 |
| 260  | 86.4 |
| 262  | 86.9 |
| 264  | 87.4 |
| 266  | 87.9 |
| 268  | 88.4 |
| 270  | 88.9 |
| 272  | 89.4 |
| 274  | 89.9 |

| PSIG | °F    |
|------|-------|
| 276  | 90.4  |
| 278  | 90.9  |
| 280  | 91.4  |
| 282  | 91.9  |
| 284  | 92.4  |
| 286  | 92.8  |
| 288  | 93.3  |
| 290  | 93.8  |
| 292  | 94.3  |
| 294  | 94.8  |
| 296  | 95.2  |
| 298  | 95.7  |
| 300  | 96.2  |
| 302  | 96.6  |
| 304  | 97.1  |
| 306  | 97.5  |
| 308  | 98    |
| 310  | 98.4  |
| 312  | 98.9  |
| 314  | 99.3  |
| 316  | 99.7  |
| 318  | 100.2 |
| 320  | 100.7 |
| 322  | 101.1 |
| 324  | 101.6 |
| 326  | 102   |
| 328  | 102.4 |
| 330  | 102.9 |
| 332  | 103.3 |
| 334  | 103.7 |
| 336  | 104.2 |
| 338  | 104.6 |
| 340  | 105.1 |
| 342  | 105.4 |
| 344  | 105.8 |
| 346  | 106.3 |
| 348  | 106.6 |
| 350  | 107.1 |
| 352  | 107.5 |
| 354  | 107.9 |
| 356  | 108.3 |
| 358  | 108.8 |
| 360  | 109.2 |
| 362  | 109.6 |

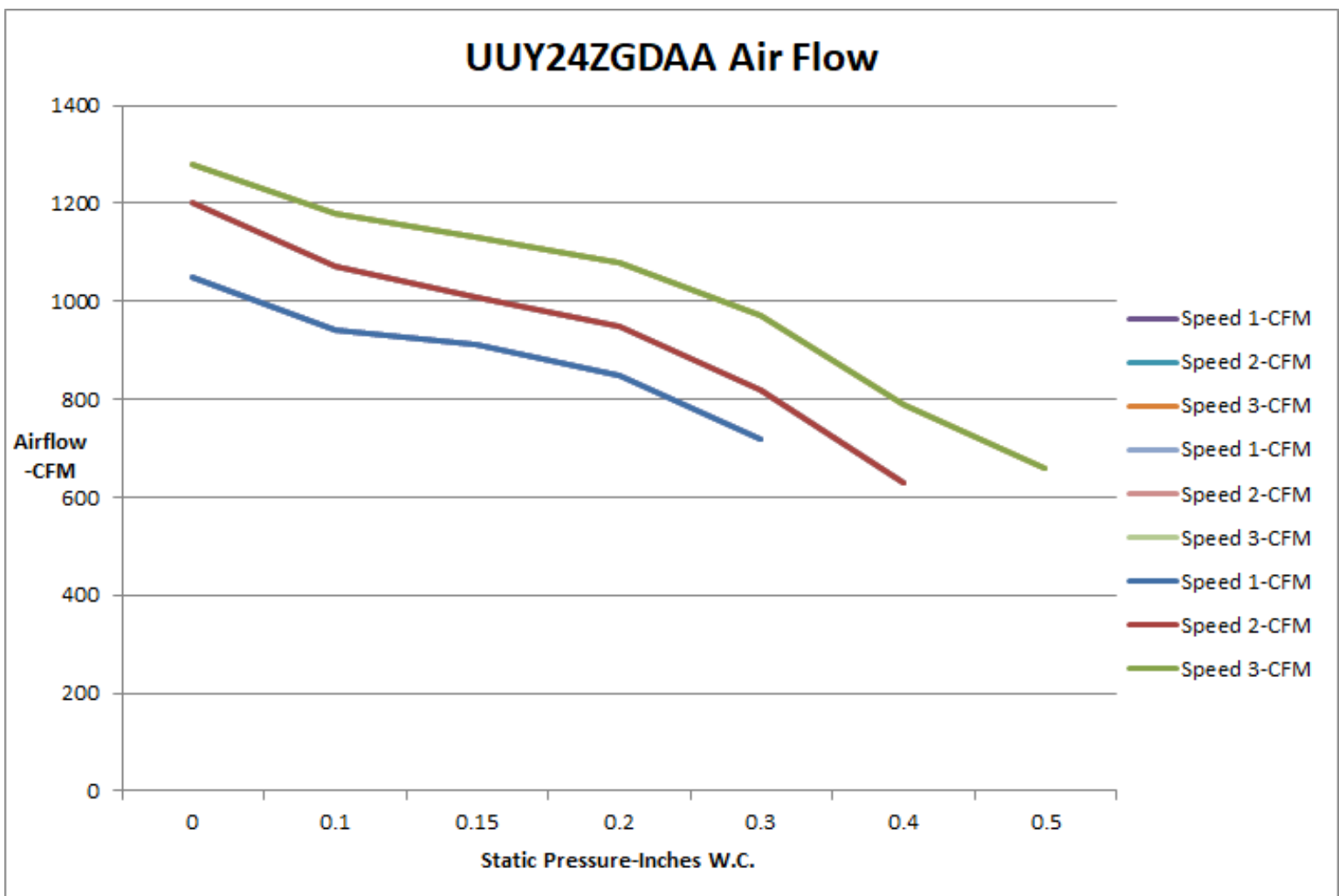
| PSIG | °F    |
|------|-------|
| 364  | 110   |
| 366  | 110.4 |
| 368  | 110.8 |
| 370  | 111.2 |
| 372  | 111.6 |
| 374  | 112   |
| 376  | 112.4 |
| 378  | 112.6 |
| 380  | 113.1 |
| 382  | 113.5 |
| 384  | 113.9 |
| 386  | 114.3 |
| 388  | 114.7 |
| 390  | 115   |
| 392  | 115.5 |
| 394  | 115.8 |
| 396  | 116.2 |
| 398  | 116.6 |
| 400  | 117   |
| 402  | 117.3 |
| 404  | 117.7 |
| 406  | 118.1 |
| 408  | 118.5 |
| 410  | 118.8 |
| 412  | 119.2 |
| 414  | 119.6 |
| 416  | 119.9 |
| 418  | 120.3 |
| 420  | 120.7 |
| 422  | 121   |
| 424  | 121.4 |
| 426  | 121.7 |
| 428  | 122.1 |
| 430  | 122.5 |
| 432  | 122.8 |
| 434  | 123.2 |
| 436  | 123.5 |
| 438  | 123.9 |
| 440  | 124.2 |
| 442  | 124.6 |
| 444  | 124.9 |
| 446  | 125.3 |
| 448  | 125.6 |
| 450  | 126   |

| PSIG | °F    |
|------|-------|
| 452  | 126.3 |
| 454  | 126.6 |
| 456  | 127   |
| 458  | 127.3 |
| 460  | 127.7 |
| 462  | 128   |
| 464  | 128.3 |
| 466  | 128.7 |
| 468  | 129   |
| 470  | 129.3 |
| 472  | 129.7 |
| 474  | 130   |
| 476  | 130.3 |
| 478  | 130.7 |
| 480  | 131   |
| 482  | 131.3 |
| 484  | 131.6 |
| 486  | 132   |
| 488  | 132.3 |
| 490  | 132.6 |
| 492  | 132.9 |
| 494  | 133.3 |
| 496  | 133.6 |
| 498  | 133.9 |
| 500  | 134   |
| 502  | 134.5 |
| 504  | 134.8 |
| 506  | 135.2 |
| 508  | 135.5 |
| 510  | 135.8 |
| 512  | 136.1 |
| 514  | 136.4 |
| 516  | 136.7 |
| 518  | 137   |
| 520  | 137.3 |
| 522  | 137.6 |
| 524  | 137.9 |
| 526  | 138.3 |
| 528  | 138.6 |
| 530  | 138.9 |
| 532  | 139.2 |
| 534  | 139.5 |
| 536  | 139.8 |
| 538  | 140.1 |

| PSIG | °F    |
|------|-------|
| 540  | 140.4 |
| 544  | 141   |
| 548  | 141.6 |
| 552  | 142.1 |
| 556  | 142.7 |
| 560  | 143.3 |
| 564  | 143.9 |
| 568  | 144.5 |
| 572  | 145   |
| 576  | 145.6 |
| 580  | 146.2 |
| 584  | 146.7 |
| 588  | 147.3 |
| 592  | 147.9 |
| 596  | 148.4 |
| 600  | 149   |
| 604  | 149.5 |
| 608  | 150.1 |
| 612  | 150.6 |
| 616  | 151.2 |
| 620  | 151.7 |
| 624  | 152.3 |
| 628  | 152.8 |
| 632  | 153.4 |
| 636  | 153.9 |
| 640  | 154.5 |
| 644  | 155   |
| 648  | 155.5 |
| 652  | 156.1 |
| 656  | 156.6 |
| 660  | 157.1 |
| 664  | 157.7 |
| 668  | 158.2 |
| 672  | 158.7 |
| 676  | 159.2 |
| 680  | 159.8 |
| 684  | 160.3 |
| 688  | 160.8 |
| 692  | 161.3 |
| 696  | 161.8 |

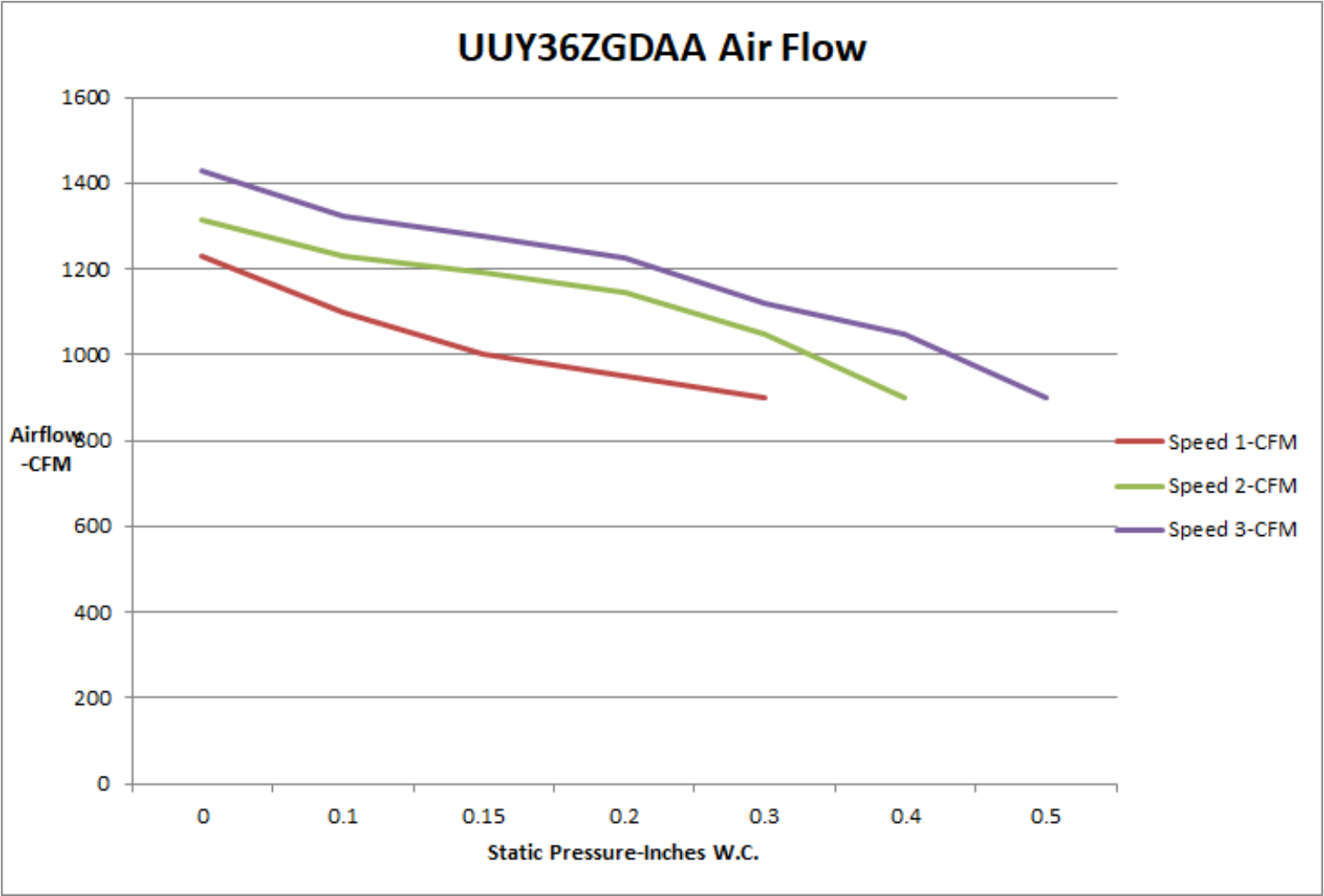
## UUY24ZGDAA Air Flow

| Model      | Static Pressure-Inches W.C. | 0    | 0.1  | 0.15 | 0.2  | 0.3 | 0.4 | 0.5 |
|------------|-----------------------------|------|------|------|------|-----|-----|-----|
| UUY24ZGDAA | Speed 1-CFM                 | 1050 | 940  | 910  | 850  | 720 |     |     |
|            | Speed 2-CFM                 | 1200 | 1070 | 1010 | 950  | 820 | 630 |     |
|            | Speed 3-CFM                 | 1280 | 1180 | 1130 | 1080 | 970 | 790 | 660 |



UUY36ZGDAA Air Flow

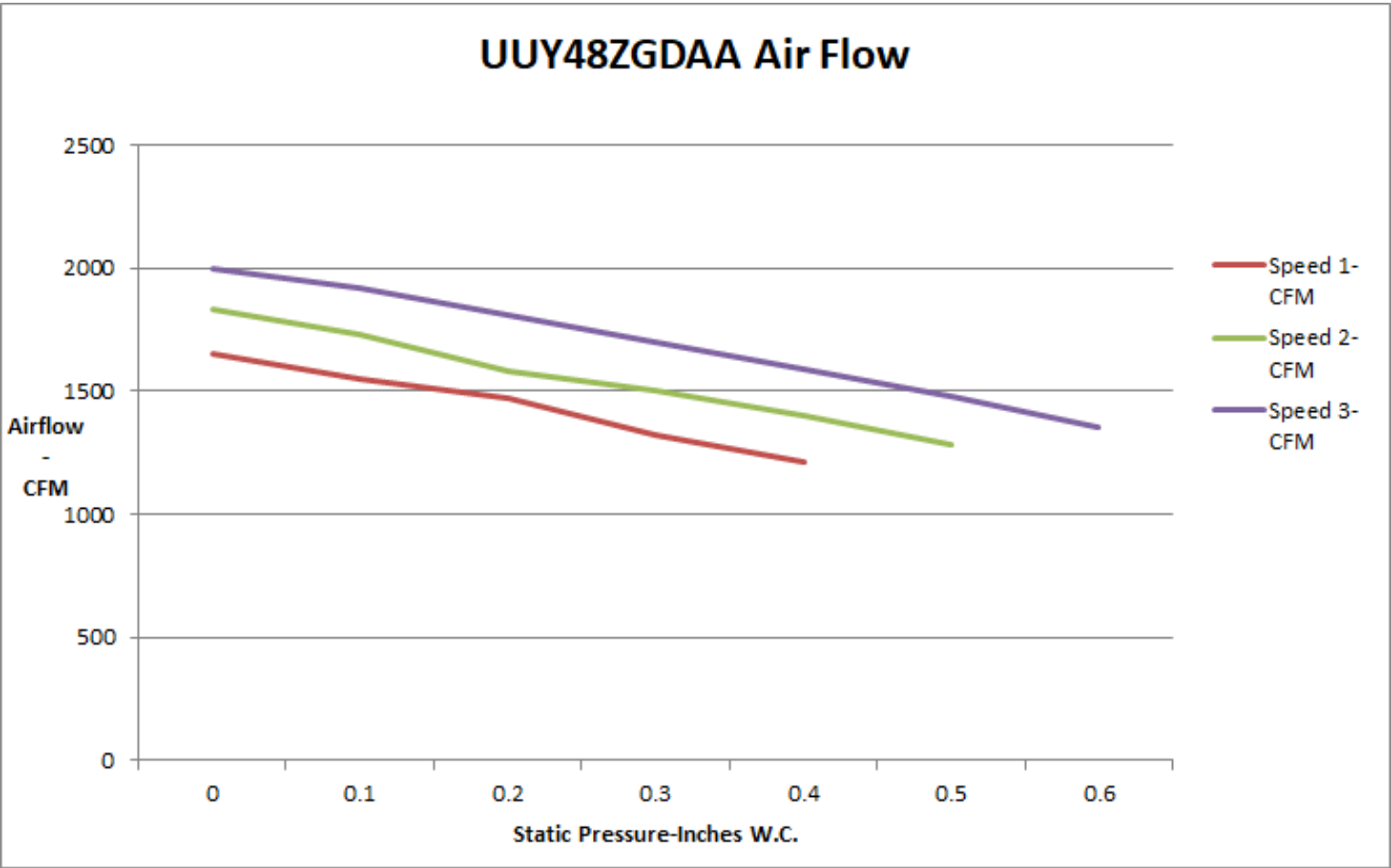
| Model      | Static Pressure-Inches W.C. | 0    | 0.1  | 0.15 | 0.2  | 0.3  | 0.4  | 0.5 |
|------------|-----------------------------|------|------|------|------|------|------|-----|
| UUY36ZGDAA | Speed 1-CFM                 | 1230 | 1100 | 1000 | 950  | 900  |      |     |
|            | Speed 2-CFM                 | 1315 | 1230 | 1190 | 1145 | 1050 | 900  |     |
|            | Speed 3-CFM                 | 1430 | 1325 | 1275 | 1225 | 1120 | 1050 | 900 |



# Appendices

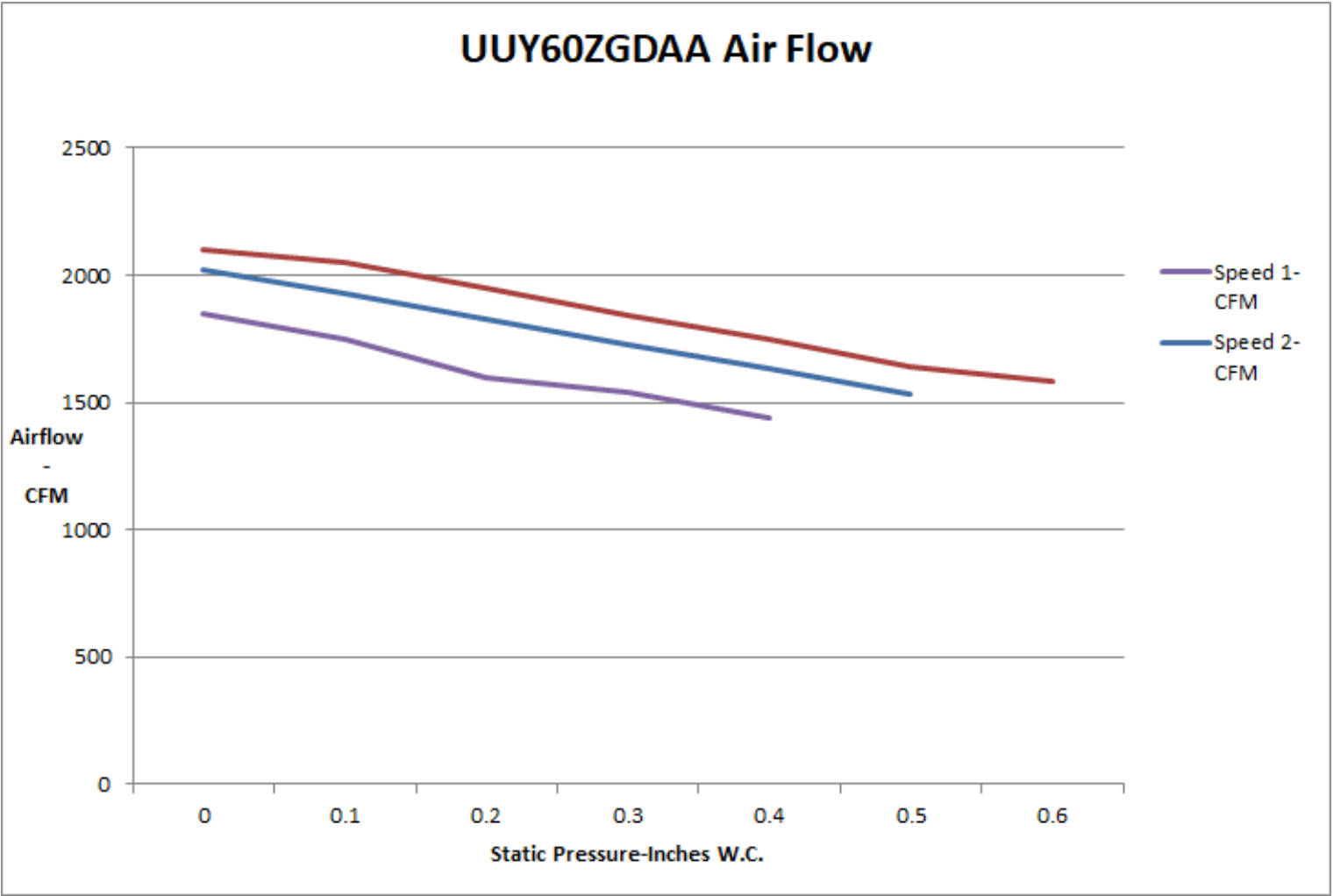
## UUY48ZGDAA Air Flow

| Model      | Static Pressure-Inches W.C. | 0    | 0.1  | 0.2  | 0.3  | 0.4  | 0.5  | 0.6  |
|------------|-----------------------------|------|------|------|------|------|------|------|
| UUY48ZGDAA | Speed 1-CFM                 | 1650 | 1550 | 1470 | 1320 | 1210 |      |      |
|            | Speed 2-CFM                 | 1830 | 1730 | 1580 | 1500 | 1400 | 1280 |      |
|            | Speed 3-CFM                 | 2000 | 1915 | 1810 | 1700 | 1590 | 1480 | 1350 |



UUY60ZGDAA Air Flow

| Model      | Static Pressure-Inches W.C. | 0    | 0.1  | 0.2  | 0.3  | 0.4  | 0.5  | 0.6  |
|------------|-----------------------------|------|------|------|------|------|------|------|
| UUY60ZGDAA | Speed 1-CFM                 | 1850 | 1750 | 1600 | 1540 | 1440 |      |      |
|            | Speed 2-CFM                 | 2020 | 1930 | 1830 | 1730 | 1630 | 1530 |      |
|            | Speed 3-CFM                 | 2100 | 2050 | 1950 | 1840 | 1750 | 1640 | 1580 |



## Appendices

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### Operation Tools

The following tools will be used: 1) Liquid-level gauge; 2) Screwdriver; 3) Electric driven rotary hammer; 4) Drill; 5) Flare Tool; 6) Torque wrench; 7) Open-end wrench; 8) Pipe cutter; 9) Leak detector; 10) Vacuum pump; 11) Pressure gauge; 12) Multi-meter; 13) Hexagon wrench; 14) Measuring tape.



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