

3.4 Troubleshooting

3.4.1 “E1” Compressor High Pressure Protection

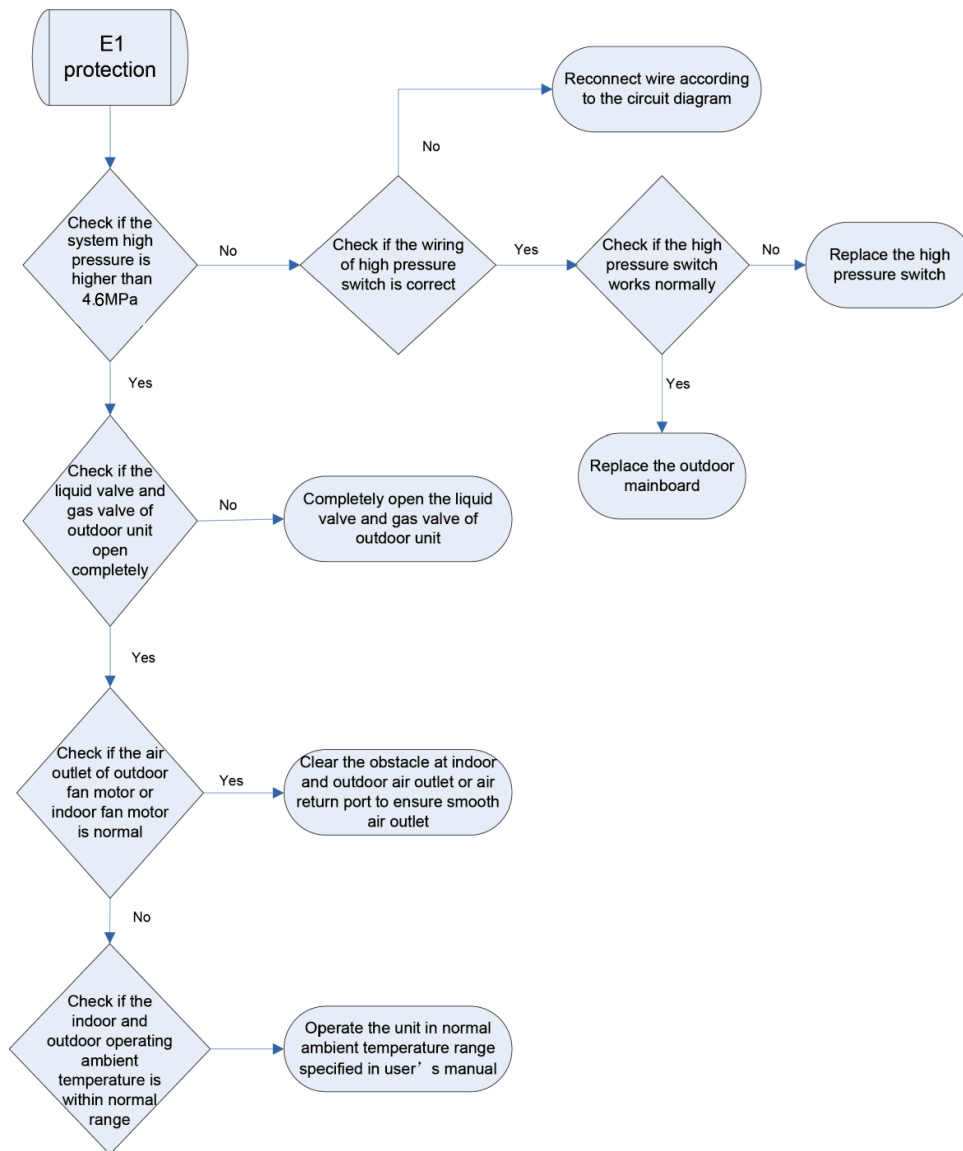
Error display: IDU wired control and IDU receiver light board will display **E1**.

Error judgment condition and method:

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.

Possible reason:

- Cut-off valve of ODU is not fully opened;
- High pressure switch is abnormal;
- Outdoor or indoor fan is not working properly;
- IDU filter or air duct is blocked (heating mode);
- Ambient temperature is too high;
- Refrigerant charging amount is too much;
- System pipeline is blocked.

Troubleshooting:**3.4.2 “E2” Indoor Anti-freezing Protection**

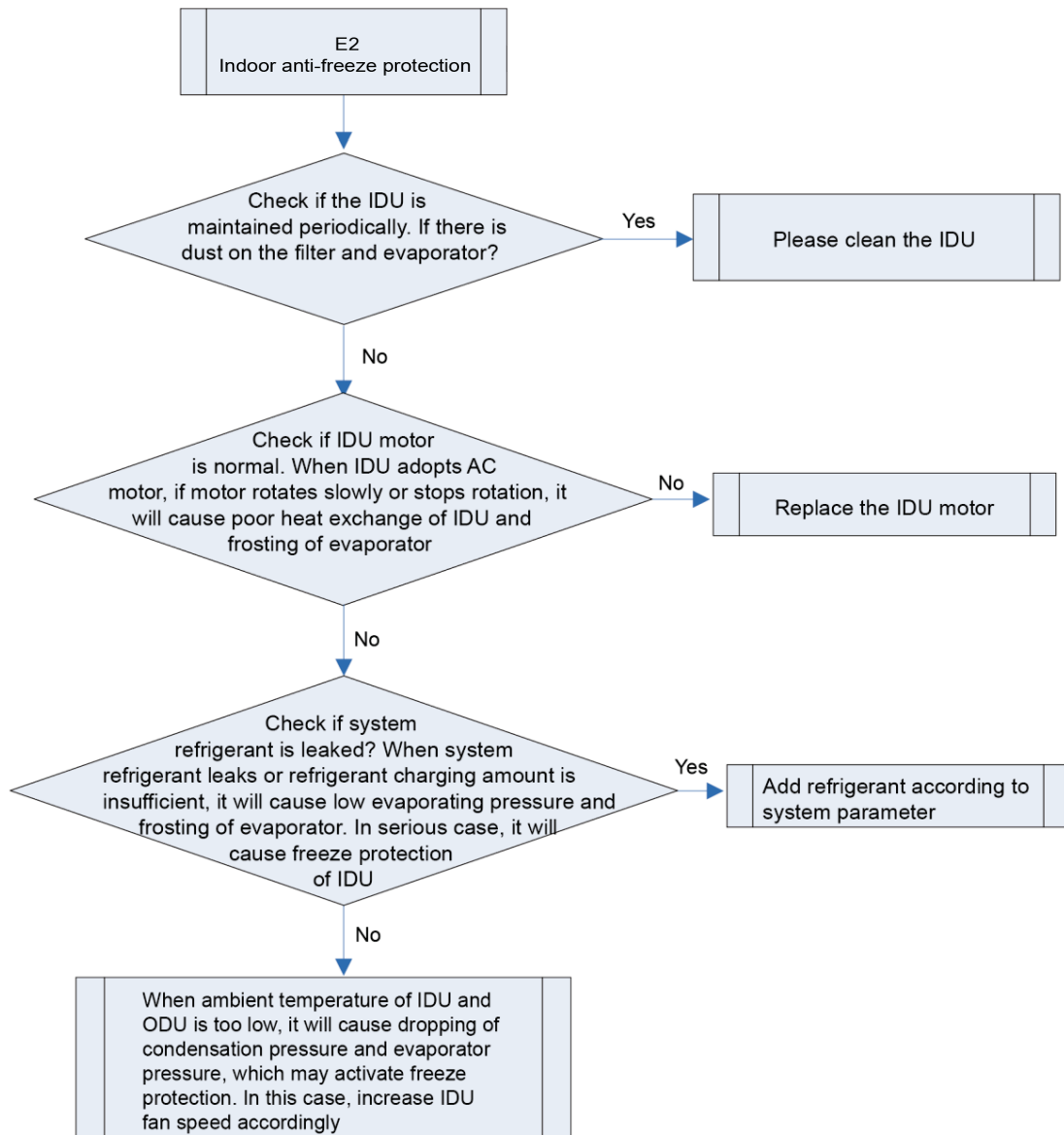
Error display: IDU wired control and IDU receiver light board will display **E2**.

Error judgment condition and method:

Check IDU pipe temperature. When pipe temperature is too low, freeze protection will be activated to prevent freezing damage of evaporator.

Possible reason:

- IDU filter and evaporator are dirty;
- IDU motor is blocked;
- Refrigerant amount is insufficient;
- Ambient temperature of IDU and ODU is too low.

Troubleshooting:

3.4.3 “E3” Compressor Low-pressure Protection, Refrigerant Shortage Protection, Refrigerant Recovery Mode

Error display: IDU wired control and IDU receiver light board will display **E3**.

Error judgment condition and method:

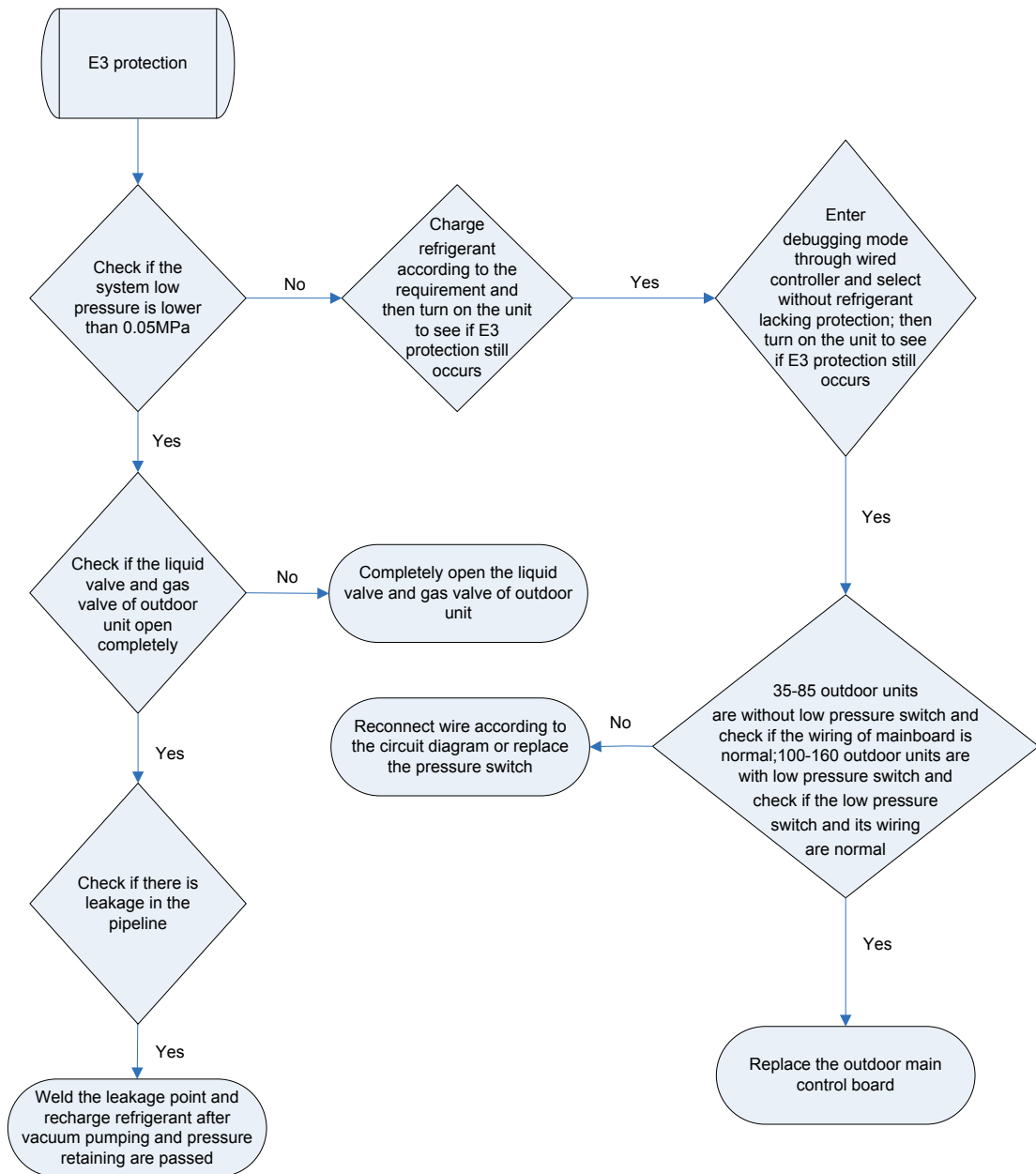
It is judged through the action of low pressure switch. If the low pressure switch is cut off, it is judged that low pressure is too low and the system stops operation for protection.

Possible reason:

- Cut-off 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;
- Refrigerant charging amount is insufficient;
- System pipeline is blocked.

Troubleshooting:



3.4.4 “E4” Compressor Air Discharge High-temperature Protection

Error display: IDU wired control and IDU receiver light board will display **E4**.

Error judgment condition and method:

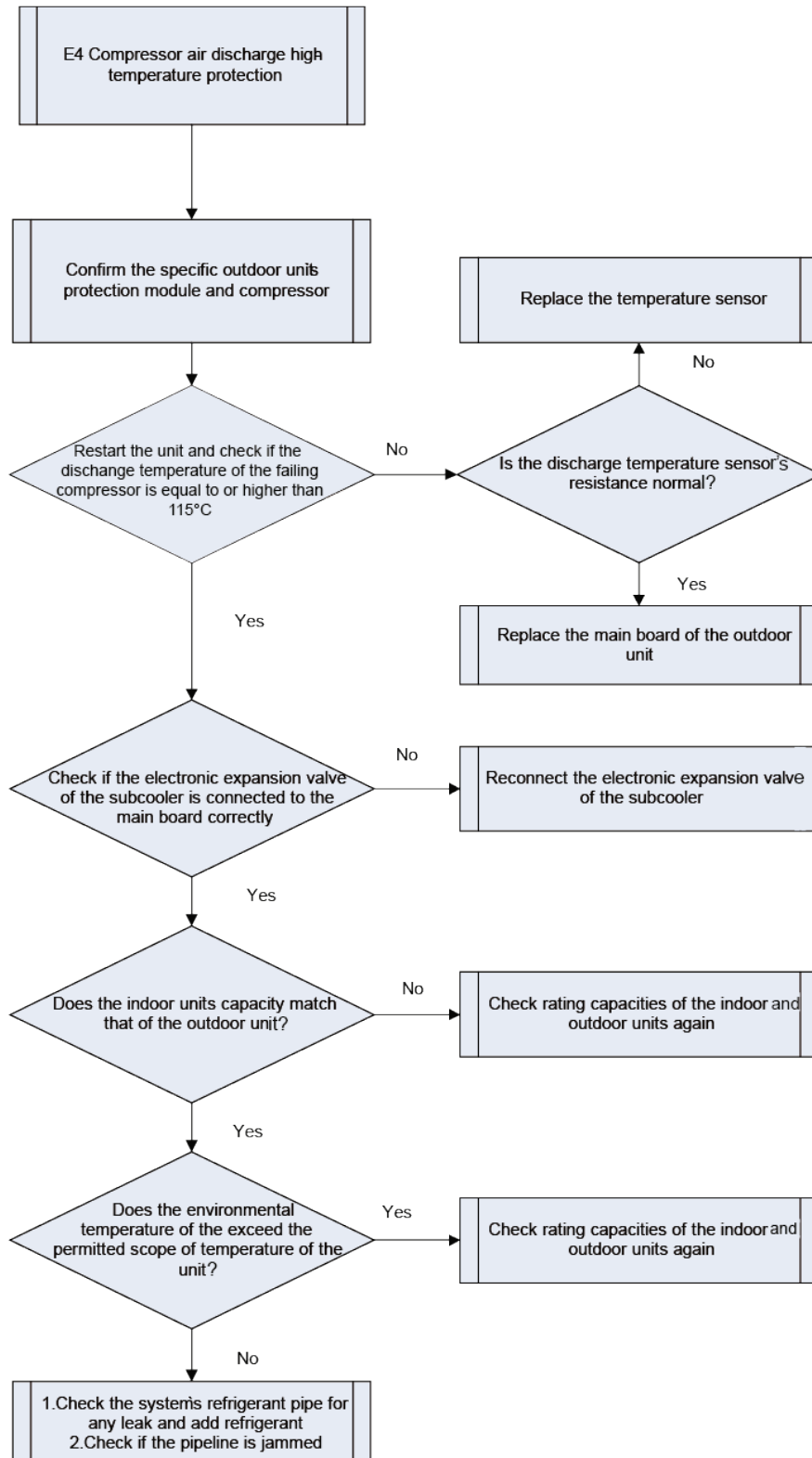
Test the compressor discharge temperature through compressor discharge pipe and shell top temperature sensor. If the tested temperature value is higher than 125°C, the unit will stop for protection.

Possible reason:

- Cut-off 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;
- Refrigerant charging amount is insufficient;
- System pipeline is blocked.

Troubleshooting:



3.4.5 “E6” Communication Error

Error display: IDU wired control and IDU receiver light board will display E6.

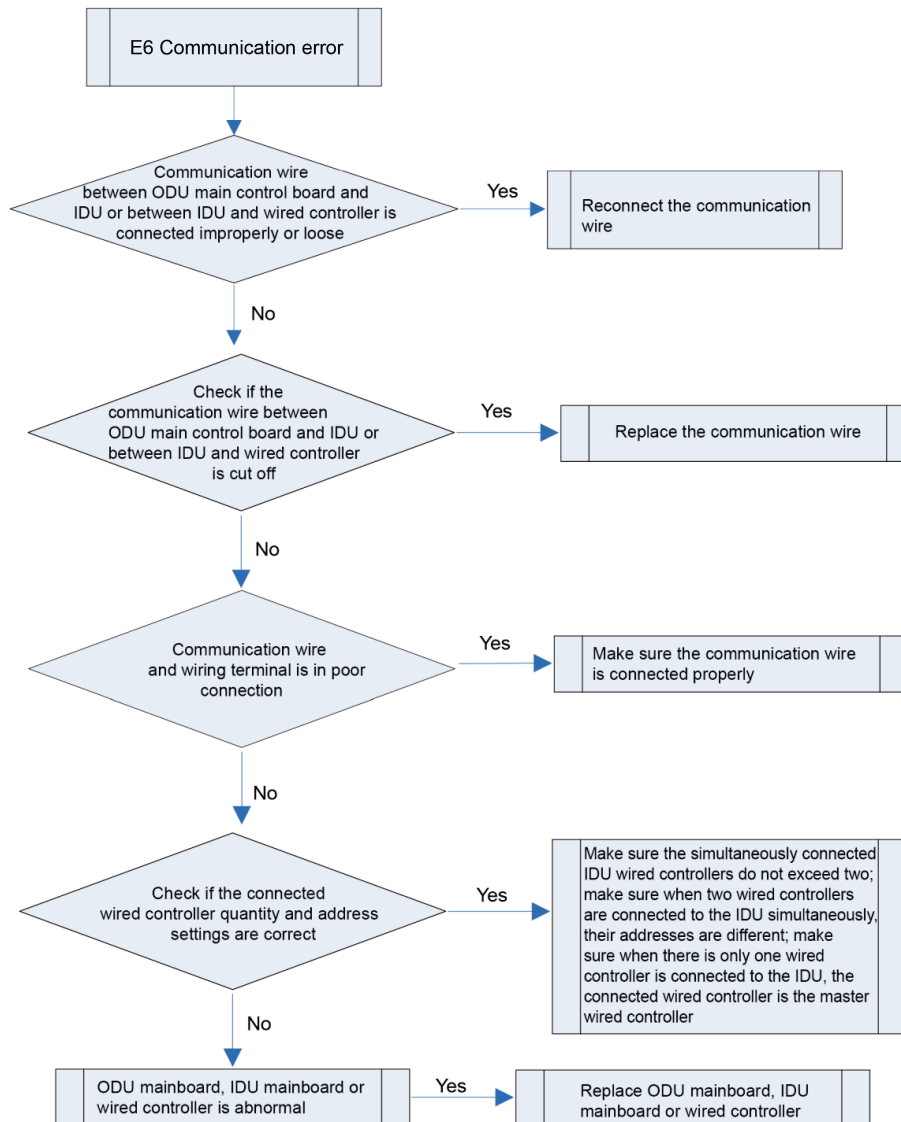
Error judgment condition and method:

If no communication between ODU and IDU or between IDU and wired control in continuously 120s, this error will be reported.

Possible reason:

- Communication wire is connected improperly or loose;
- Communication wire is cut off;
- Communication wire is in poor connection;
- Connected wired controller quantity or address setting is improper;
- Controller is abnormal.

Troubleshooting:



3.4.6 “E9” Water Overflow Protection

Error display: IDU wired control and IDU receiver light board will display **E9**.

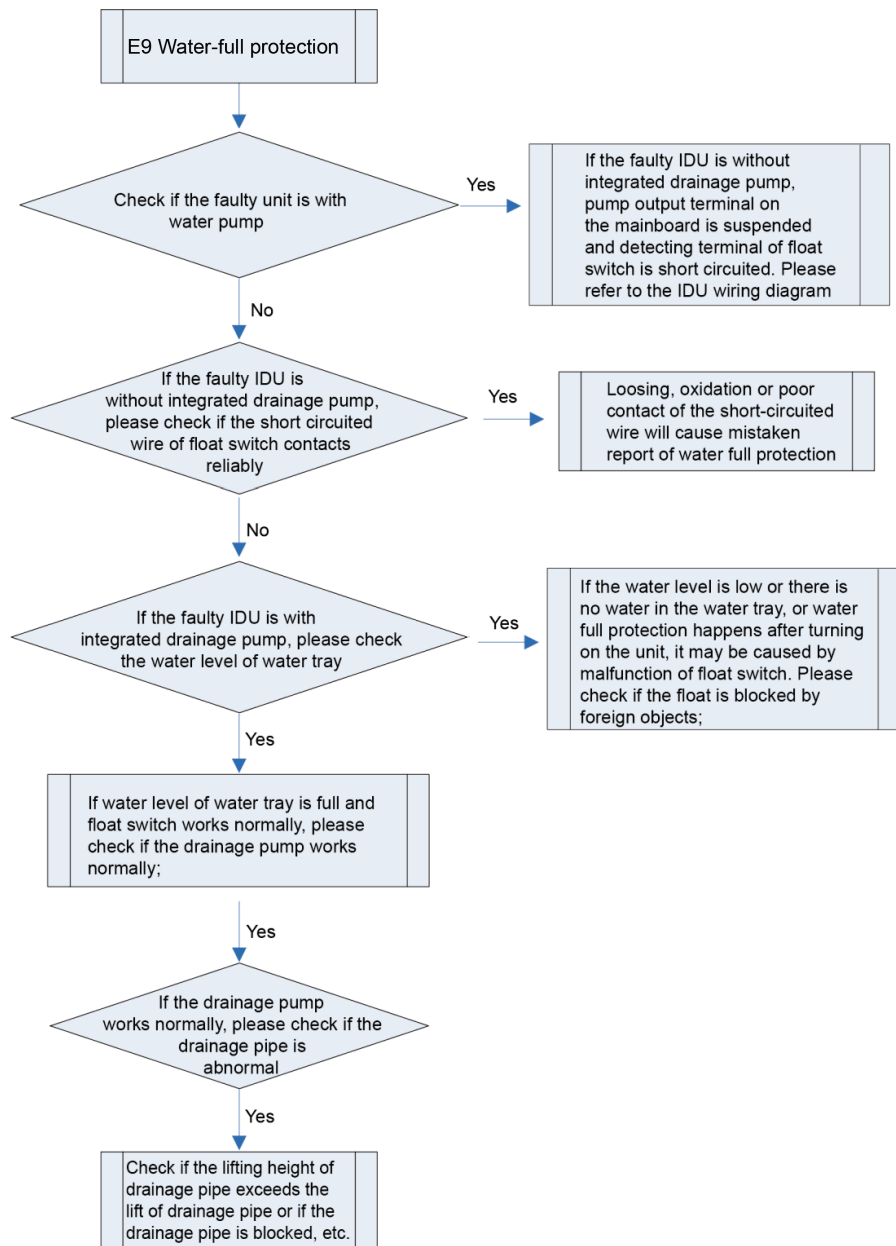
Error judgment condition and method:

Check the status of IDU float switch. When water level is too high, float switch is activated, so water full protection happens.

Possible reason:

- IDU is installed improperly;
- Drainage pump is broken;
- Float switch operates abnormally;
- IDU mainboard is abnormal.

Troubleshooting:



3.4.7 “F0” Indoor Ambient Temperature Sensor Error

Error display: IDU wired control and IDU receiver light board will display **F0**.

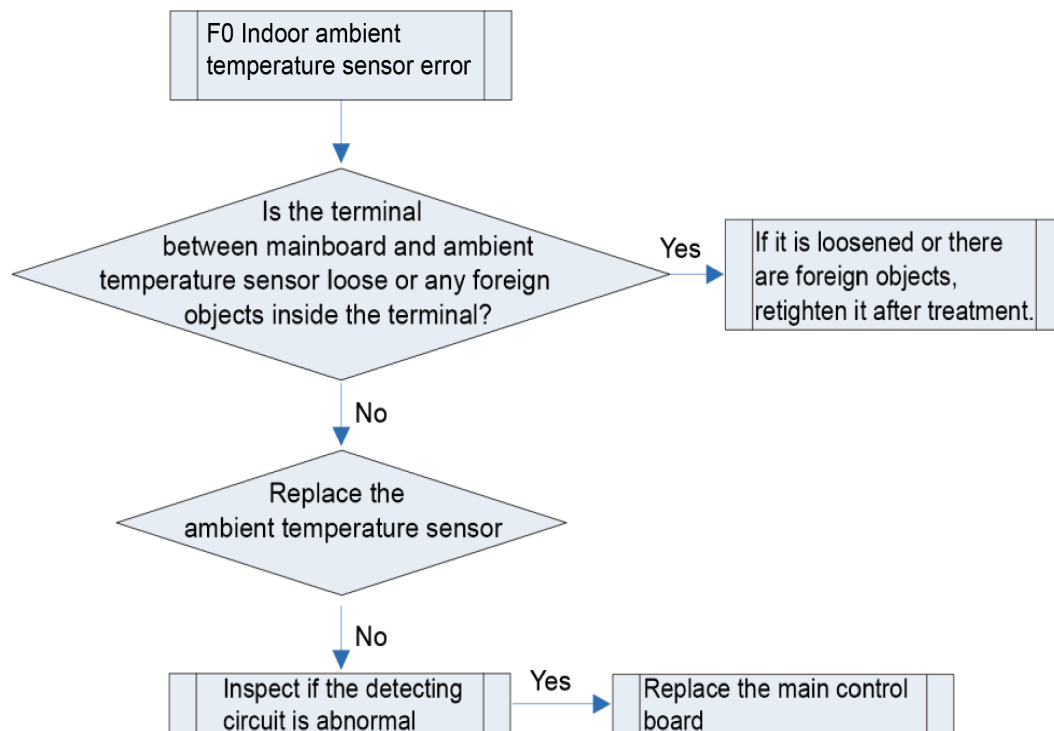
Error judgment condition and method:

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 reason:

- Poor contact between ambient temperature sensor and terminal in mainboard interface;
- Ambient temperature sensor is abnormal;
- Detecting circuit is abnormal.

Troubleshooting:



3.4.8 “F1” Evaporator Temperature Sensor Error

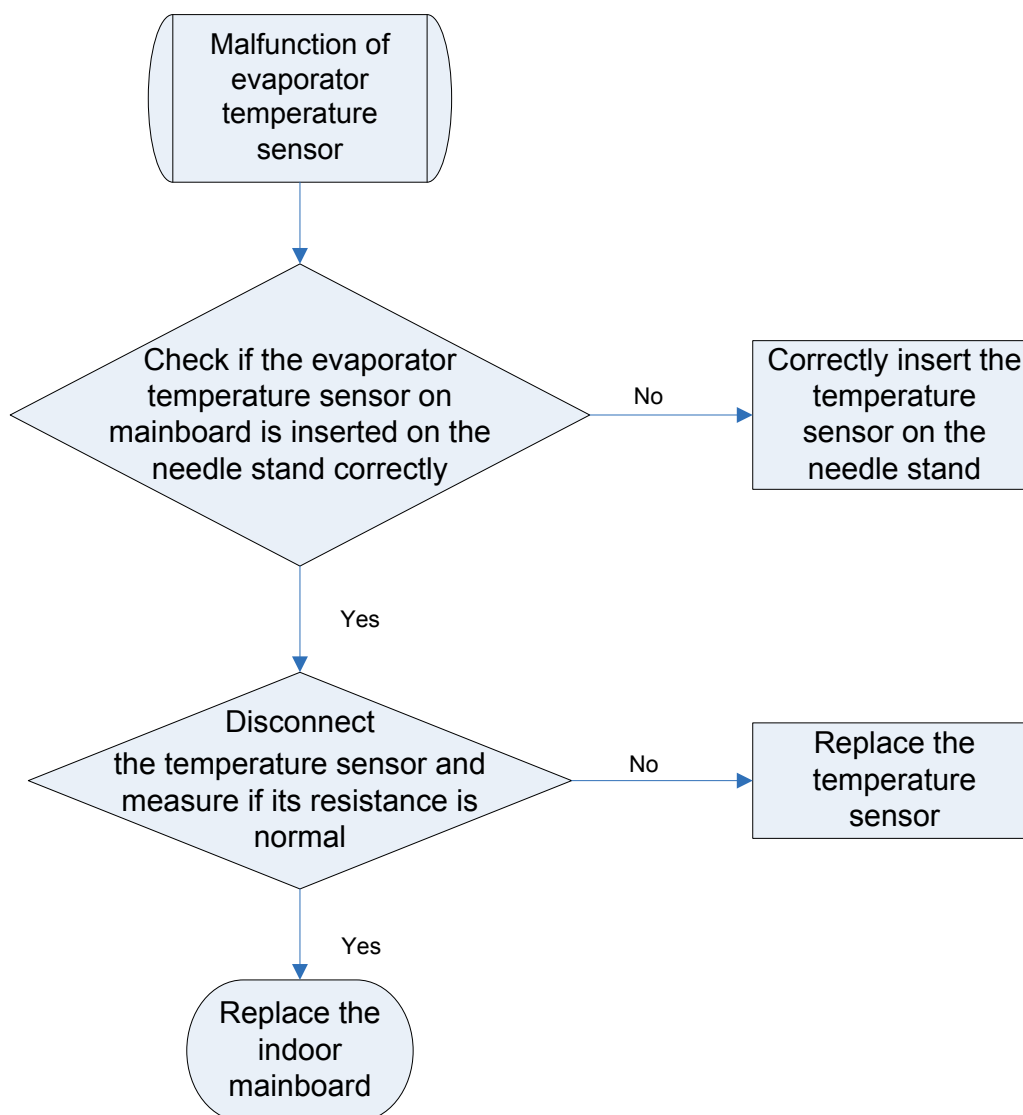
Error display: IDU wired control and IDU receiver light board will display **F1**.

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 reason:

- Poor contact between temperature sensor and terminal in mainboard interface;
- Temperature sensor is abnormal;
- Detecting circuit is abnormal.

Troubleshooting:**3.4.9 “F2” Condenser Temperature Sensor Error**

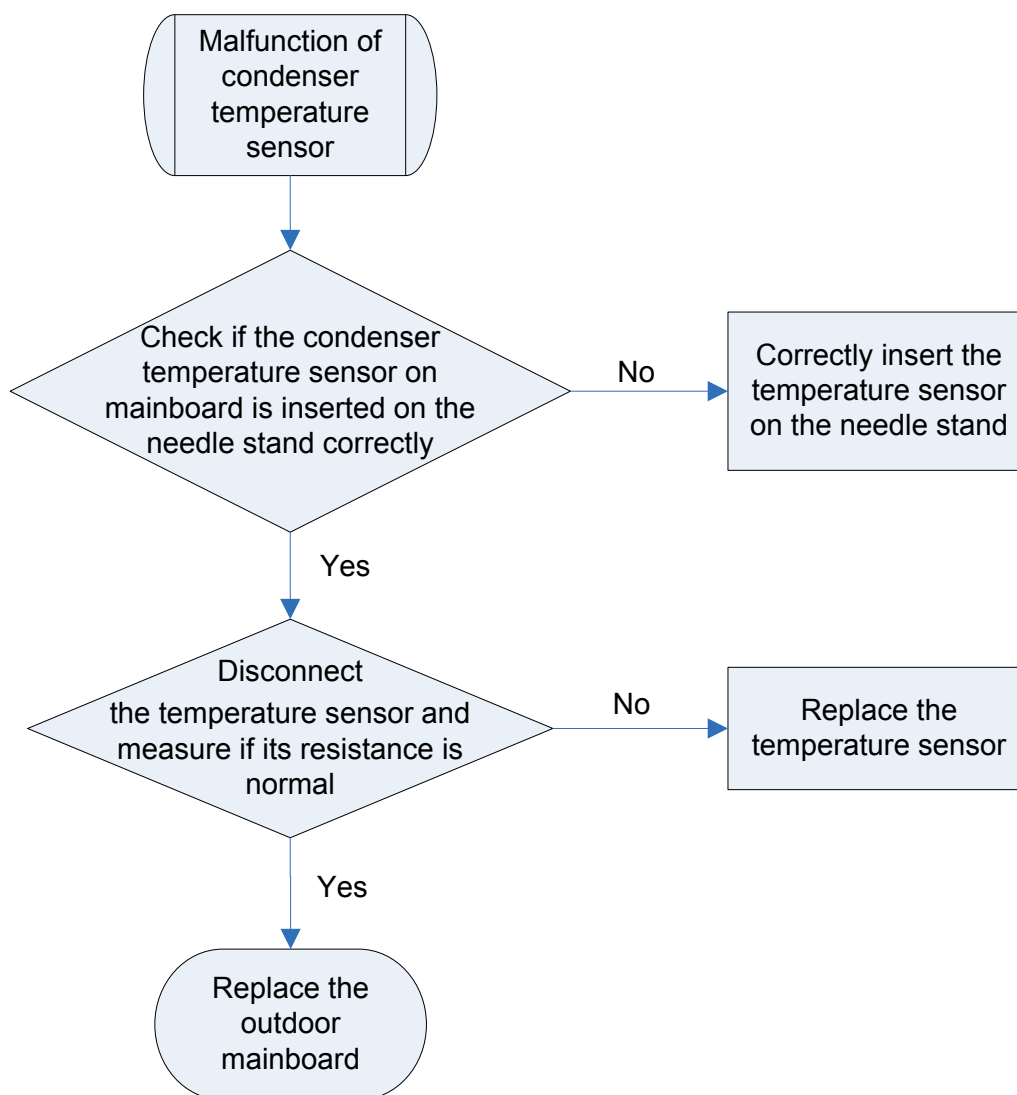
Error display: IDU wired control and IDU receiver light board will display: **F2**.

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 reason:

- Poor contact between temperature sensor and terminal in mainboard interface;
- Temperature sensor is abnormal;
- Detecting circuit is abnormal.

Troubleshooting:**3.4.10 “F3” Outdoor Ambient Temperature Sensor Error**

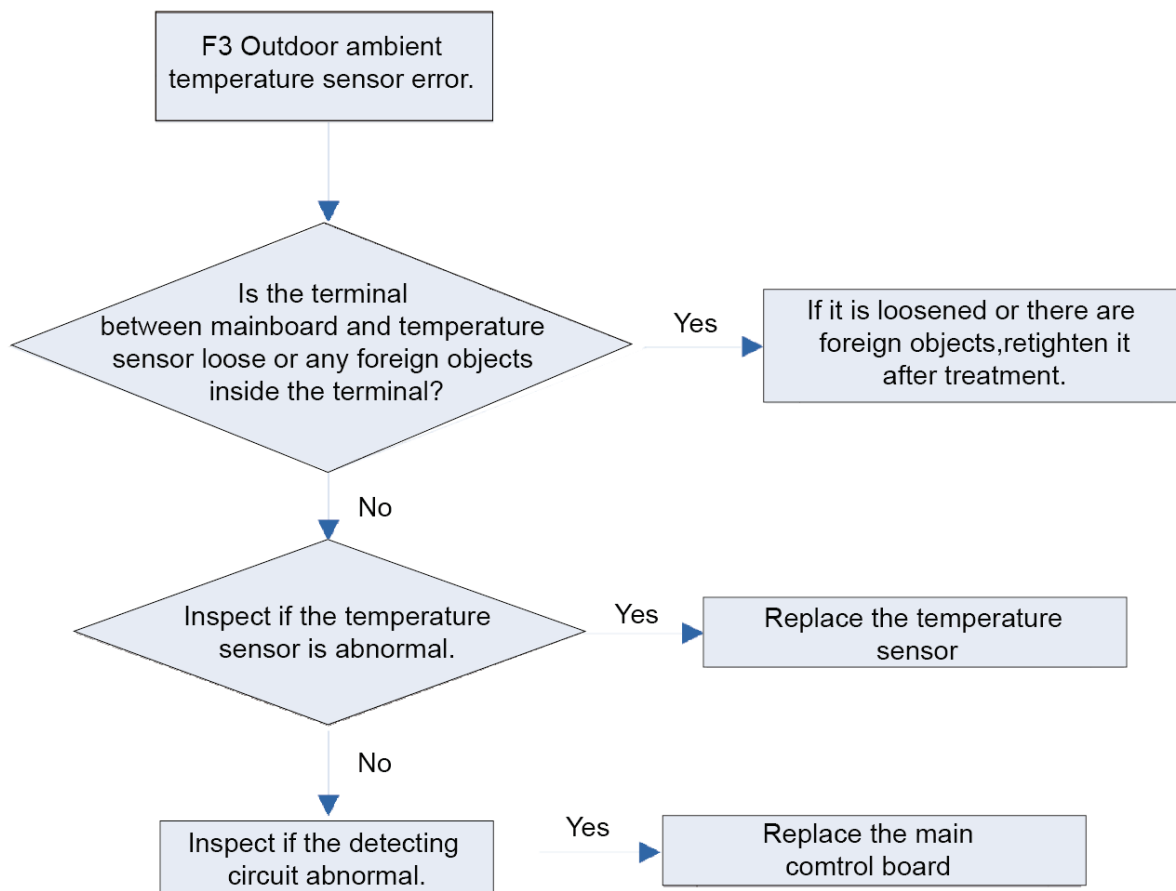
Error display: IDU wired control and IDU receiver light board will display: **F3**.

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 reason:

- Poor contact between ambient temperature sensor and terminal in mainboard interface;
- Ambient temperature sensor is abnormal;
- Detecting circuit is abnormal.

Troubleshooting:**3.4.11 “F4” Discharge Temperature Sensor Error**

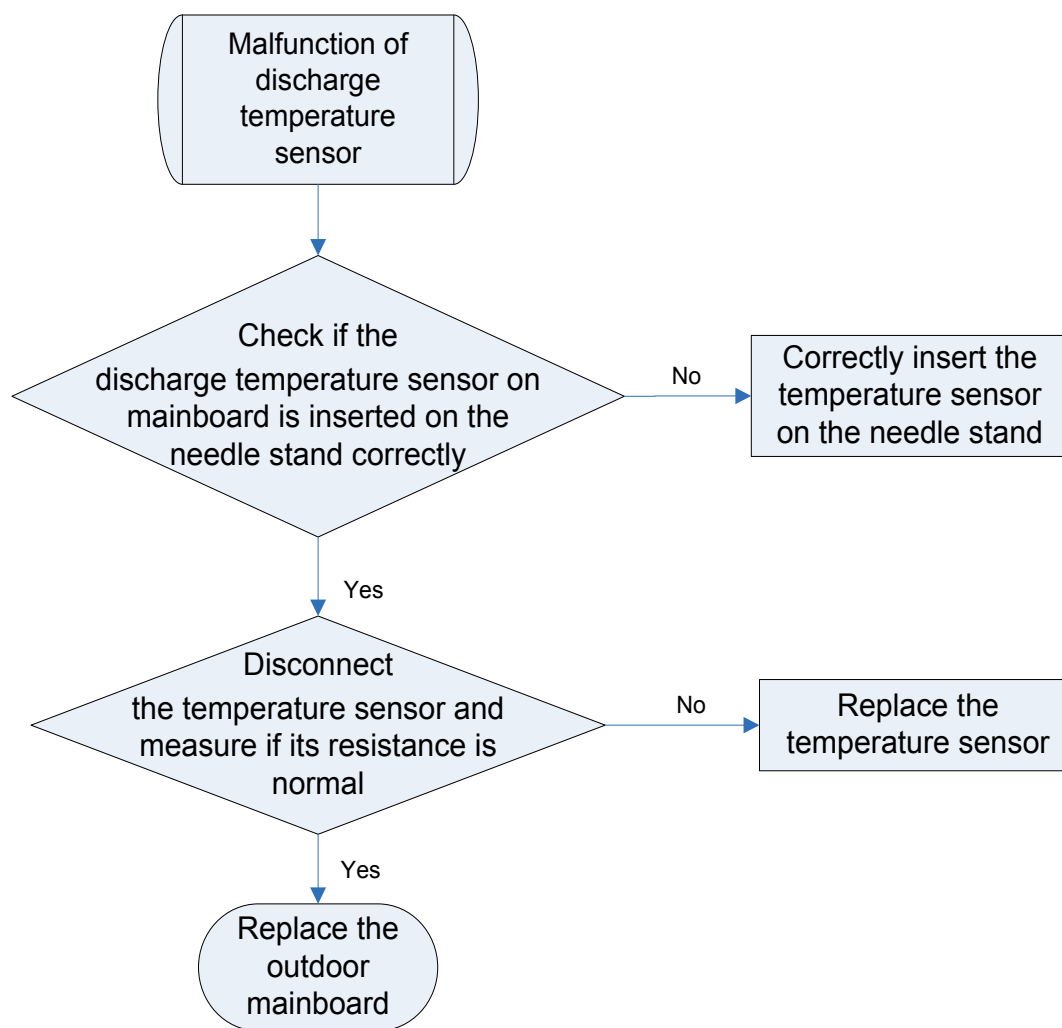
Error display: IDU wired control and IDU receiver light board will display **F4**.

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 reason:

- Poor contact between temperature sensor and terminal in mainboard interface;
- Temperature sensor is abnormal;
- Detecting circuit is abnormal.

Troubleshooting:**3.4.12 “F5” Wired Control Temperature Sensor Error**

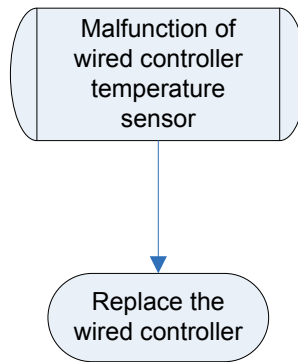
Error display : IDU wired control and IDU receiver light board will display **F5**.

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 reason:

- Poor contact between temperature sensor and terminal in mainboard interface;
- Temperature sensor is abnormal;
- Detecting circuit is abnormal.

Troubleshooting:**3.4.13 “C5” IDU Jumper Cap Error**

Error display: IDU wired control and IDU receiver light board will display **C5**.

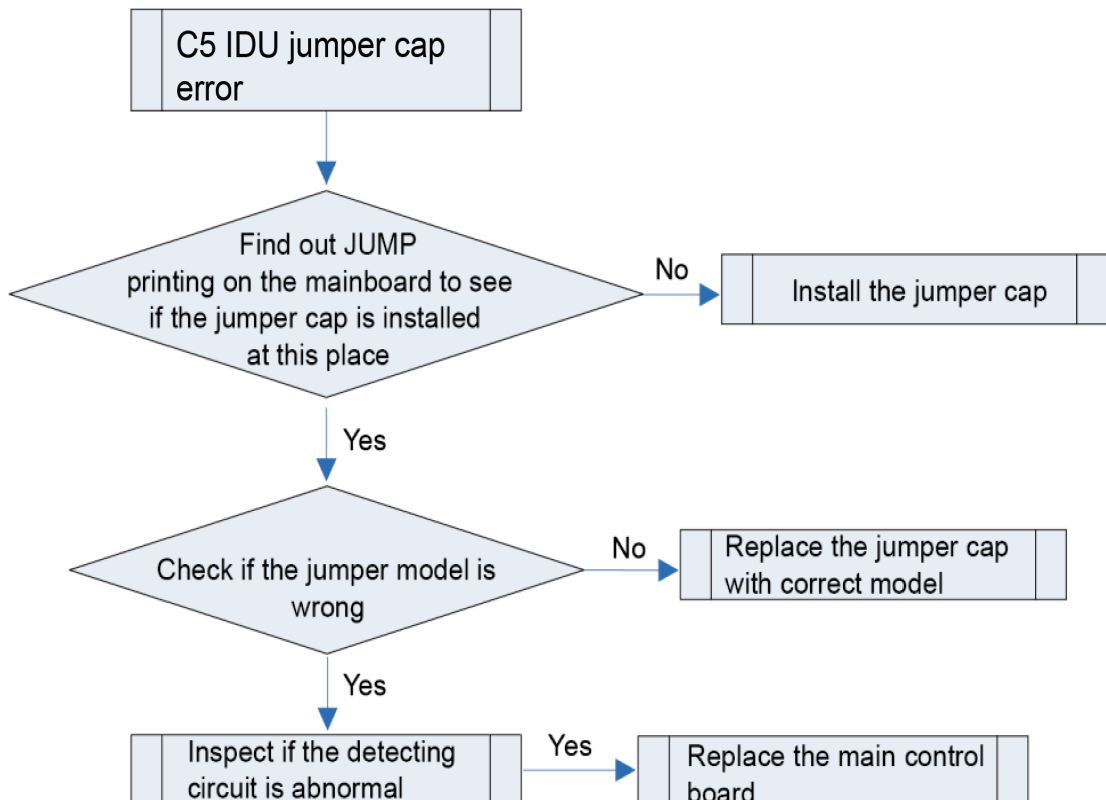
Error judgment condition and method:

If jumper cap model doesn't match with mainboard, this error will be reported.

Possible reason:

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

Troubleshooting:



3.4.14 “EE” IDU or ODU Memory Chip Error

Error display: IDU wired control and IDU receiver light board will display **EE**.

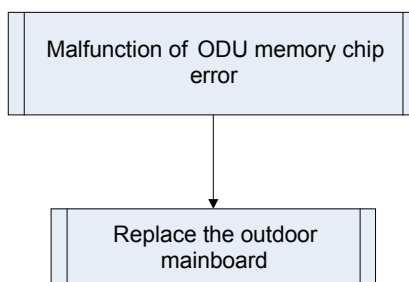
Error judgment condition and method:

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

Possible reason:

- Memory chip on the ODU mainboard is damaged;
- Memory chip is weakly welded;
- Memory chip lead is short-circuited.

Troubleshooting:



3.4.15 “H3” Compressor Overload Protection

Error display: IDU wired control and IDU receiver light board will display **H3**.

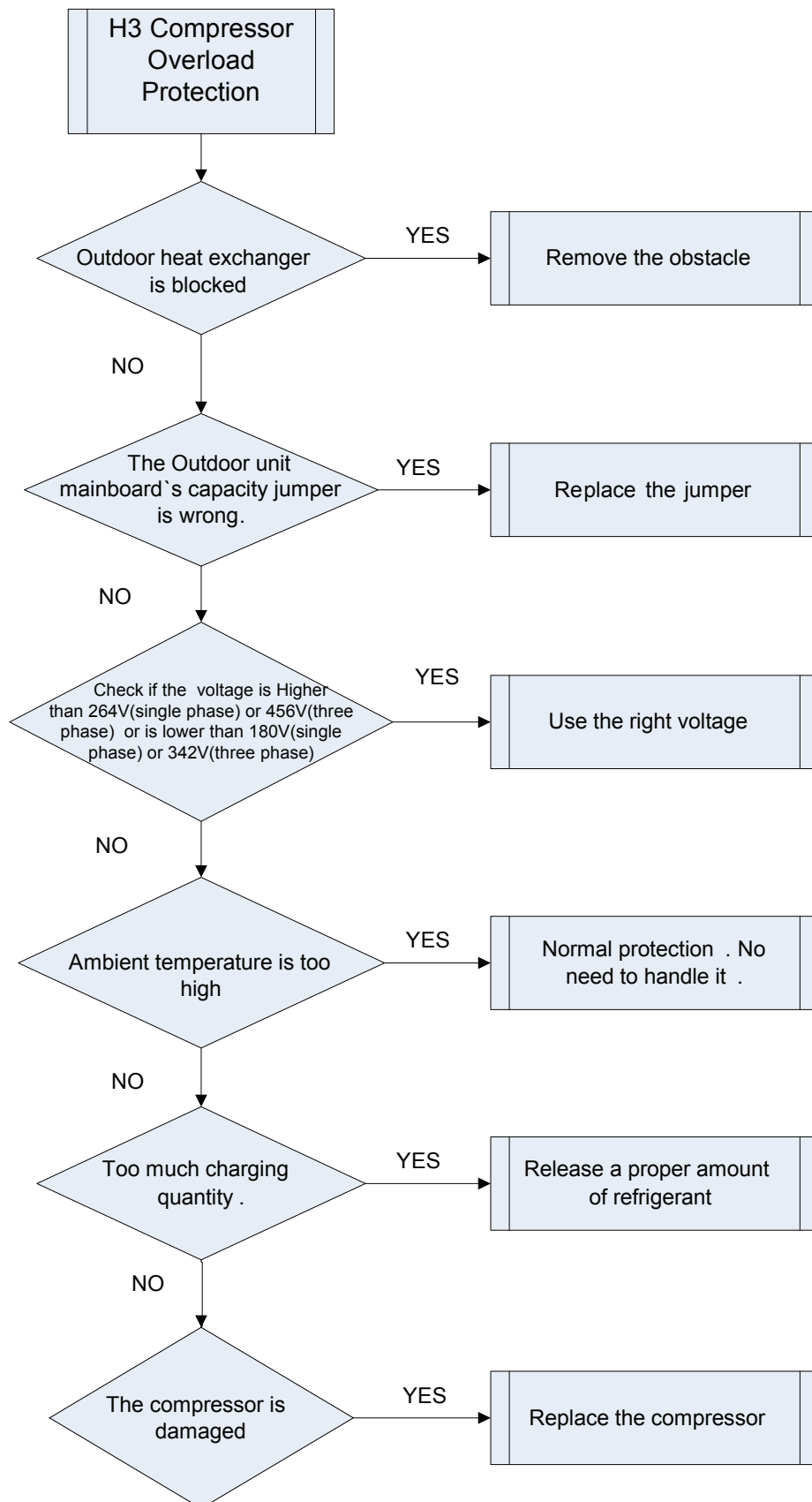
Error judgment condition and method:

When the outdoor unit mainboard’s current sensor interface detects the compressor is over-current, error H3 will be reported.

Possible reason:

- The Outdoor unit mainboard’s capacity jumper is not correct;
- ODU mainboard is damaged;
- Power supply voltage is too high or too low;
- Ambient temperature is too high;
- The unit is over-charged;
- Compressor is damaged.

Troubleshooting:



3.4.16 “H4” Overload

Error display: IDU wired control and IDU receiver light board will display **H4**.

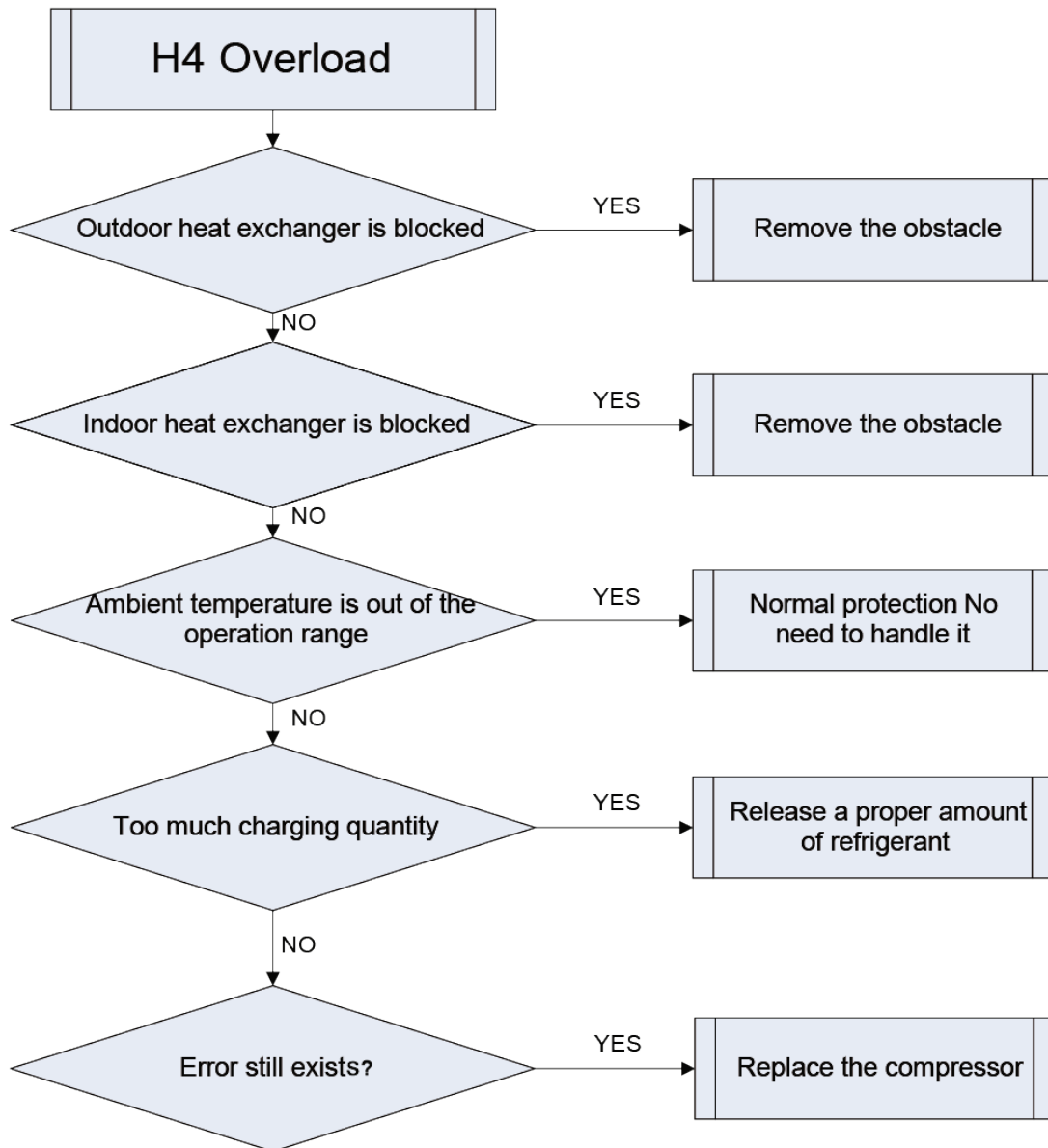
Error judgment condition and method:

When tube temperature is higher than the protection value, system will report overload protection.

Possible reason:

- 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 charging quantity is too much.

Troubleshooting:



3.4.17 “c4” ODU Jumper Cap Error

Error display: IDU wired control and IDU receiver light board will display **c4**.

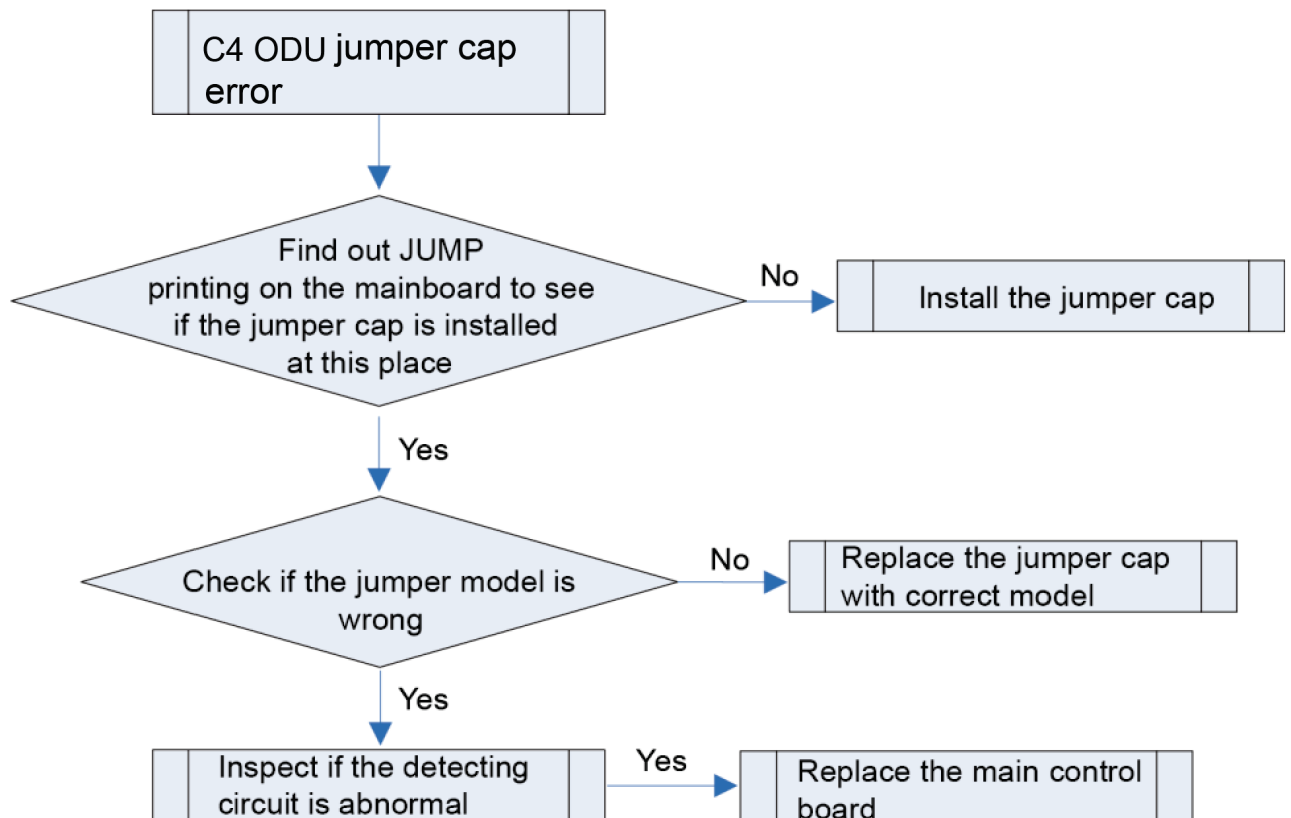
Error judgment condition and method:

If jumper cap model doesn't match with mainboard, report the error.

Possible reason:

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

Troubleshooting:



3.4.18 “EL” Emergency stop (fire alarm)

If fire alarm terminal is enabled after the IDU mainboard connects to function expansion board, error EL will be reported.

3.5 Failures Not Caused by Errors

If your air-conditioning unit suffers from abnormal operation or failure, please first check the following points before repair:

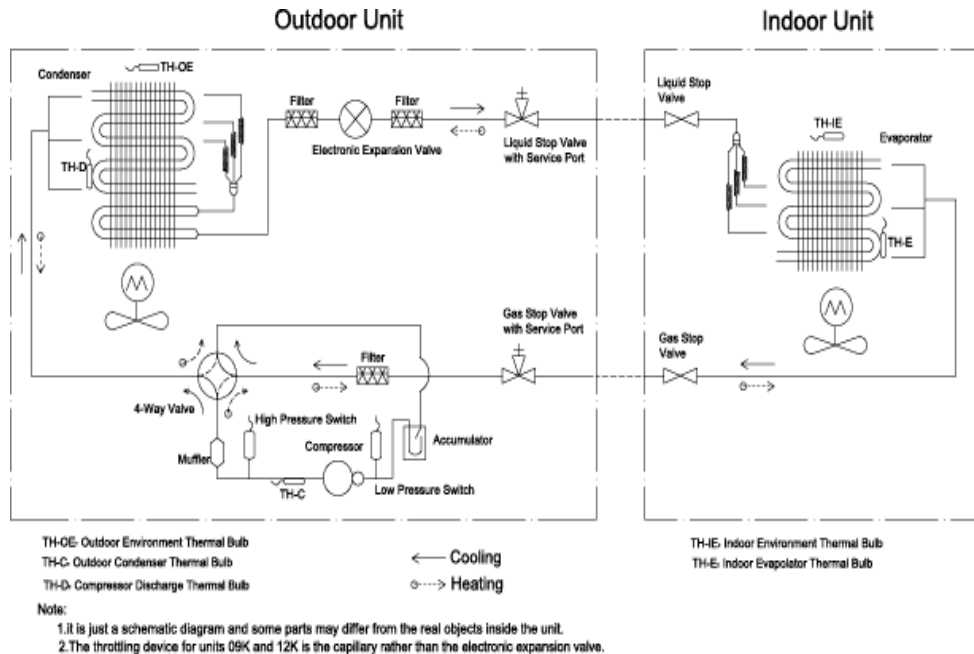
Failure	Possible Reasons
The unit cannot be started.	<ol style="list-style-type: none"> 1) The power supply is not connected. 2) Electrical leakage of air-conditioning unit causes tripping of the leakage switch. 3) The operating keys are locked. 4) The control loop has failure.
The unit operates for a while and then stops.	<ol style="list-style-type: none"> 1) There is obstacle in front of the condenser. 2) The control loop is abnormal.
Poor cooling effect.	<ol style="list-style-type: none"> 1) The air filter is dirty or blocked. 2) There is heat source or too many people inside the room. 3) The door or window is open. 4) There is obstacle at the air intake or outlet. 5) The set temperature is too high. 6) There is refrigerant leakage. 7) The performance of room temperature sensor becomes worse.



NOTICE: Check the above items and adopt the corresponding corrective measures. If the air conditioner continues to function poorly, please stop the air conditioner immediately and contact Gree's authorized local service center. Ask our professional service staff to check and repair the unit.

4. Maintenance

4.1 System Diagram



4.2 Connection Pipe Vacuum Pumping



NOTICE

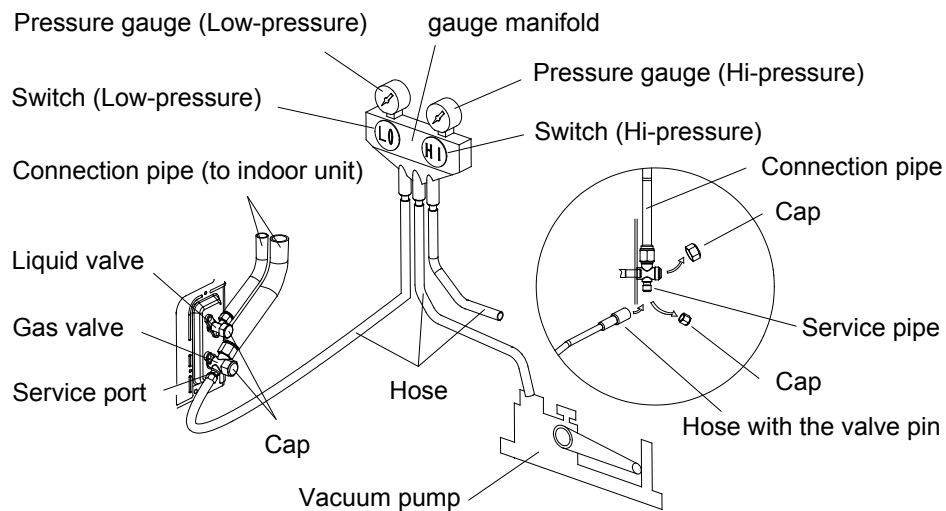
Make sure the outlet of vacuum pump is away from fire source and is well-ventilated.

- (1) Remove the caps of the liquid valve, gas valve and also the service port.
- (2) Connect the hose at the low pressure side of the manifold valve assembly to the service port of the unit's gas valve, and 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.
 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.
- (4) The evacuation duration depends on the unit's capacity, generally.

Model	Time(min)
GU50W/A1-K	20
GU71W/A1-K; GU85W/A1-K; GU100W/A1-M	30
GU125W/A1-M; GU140W/A1-M; GU160W/A1-M	45

And verify if the pressure gauge at the low pressure side of the manifold valve assembly reads -1.0Mp (-75cmHg), if not, it indicates there is leak somewhere. Then, close the switch fully and then stop the vacuum pump.

- (1) Wait for 10min to see if the system pressure can remain unchanged. During this time, the reading of the pressure gauge at the low pressure side cannot be larger than 0.005Mp (0.38cmHg).
- (2) 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. Note that the gas and liquid valve can be opened fully only after the manifold valve assembly is removed.
- (3) Place back the caps of the liquid valve, gas valve and also the service port.



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 branch valve assembly to the maintenance ports to speed up the evacuation.

4.3 Refrigerant Charging

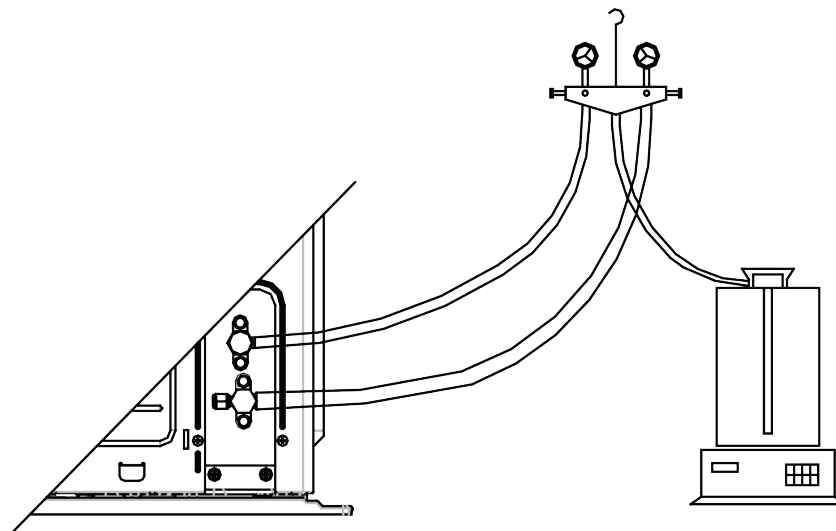
Pre-charging

Step 1: Connect the high pressure gauge line to the valve of liquid pipe and connect the low pressure gauge line to the valve of gas pipe. Connect the middle gauge line to the vacuum pump. Power on the vacuum pump and perform vacuum drying.

Step 2: After vacuum drying, close the high and low pressure gauge valves. Then remove the middle gauge line from the connector of vacuum pump. Then connect to the refrigerant tank.

Step 3: Loosen the middle gauge line from the connector of pressure gauge to a proper extent and slightly open the valve of refrigerant tank. Evacuate the middle gauge line. Then tighten up the connector again and completely open the valve of refrigerant tank at the same time.

Step 4: Keep the refrigerant tank erect and put it on an electronic scale. Record the current weight as m_1 .



Step 5: Open the high pressure gauge valve (Keep the low pressure gauge valve closed). Then charge refrigerant into the system. Meanwhile, record the weight of refrigerant tank as m_2 .

Step 6: $m_1 - m_2 = m$. If m equals to the required charging quantity M , close the valve of refrigerant tank at once. Then move to step 8.

Step 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 record the current quantity of charged refrigerant:

$$m = m_1 - m_2$$

$$m' = M - m$$

The remaining charging quantity is: $m' = M - m$

Step 8: After charging, remove the pressure gauge.

Refrigerant charging when unit is turned on:

Step 1: Close the valve of refrigerant tank. First remove the pressure gauge lines and connect the outdoor unit to the indoor unit. Then reconnect the pressure gauge lines. Connect the low pressure gauge line to the other joint of gas valve and connect the high pressure gauge line to the liquid valve. Connect the middle gauge line to the vacuum pump. Power on the vacuum pump and perform vacuum drying.

Step 2: After vacuum drying, close the high and low pressure gauge valves. Then remove the middle gauge line from the connector of vacuum pump. Then connect to the refrigerant tank.

Step 3: Loosen the middle gauge line from the connector of pressure gauge to a proper extent and slightly open the valve of refrigerant tank. Evacuate the middle gauge line. Then tighten up the connector again and completely open the valve of refrigerant tank at the same time.

Step 4: Turn on the air conditioner and let it run for a while.

Step 5: Open the low pressure gauge valve (Keep the high pressure gauge valve closed).

Then charge in the remaining charging quantity m`.

Step 6: After all, required refrigerant is charged in, close the valve of refrigerant tank.

Step 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.

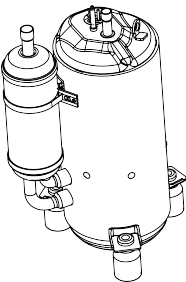
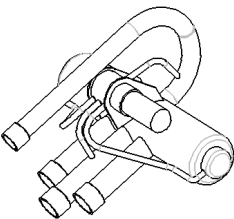
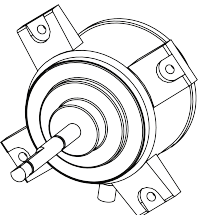
3) Make sure the refrigerating system is already grounded before refrigerant charging.

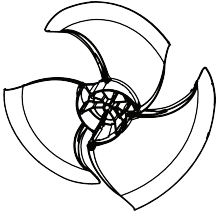
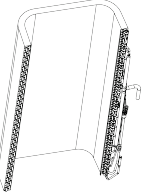
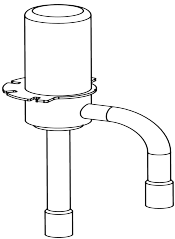
4) When charging is completed (or not yet completed), stick a label on the system.

5) Before re-charging refrigerant into the system, use oxygen-free nitrogen to perform pressure test. When charging is completed, perform leak test before trial running. Before leaving the workplace, perform a leak test again.

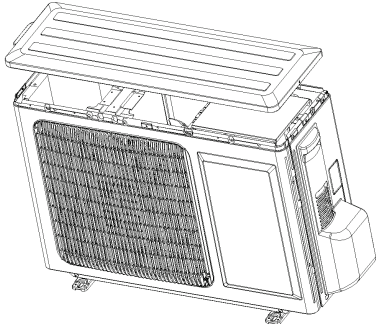
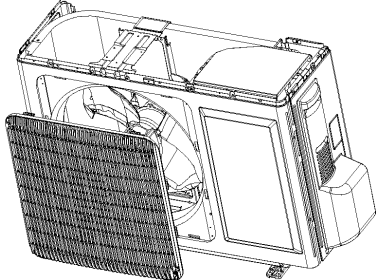
4.4 Removal of Major Components

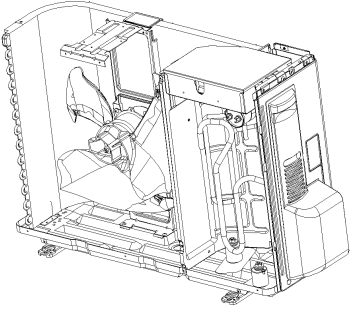
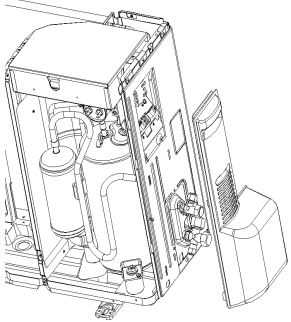
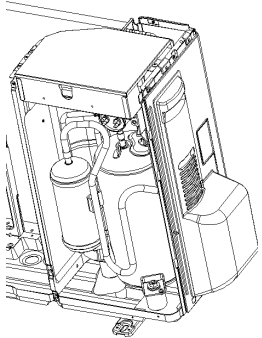
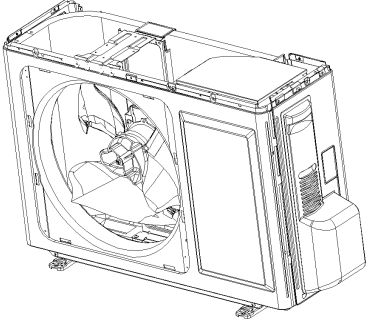
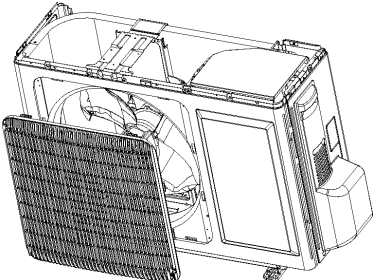
4.4.1 Removal of ODU Major Components

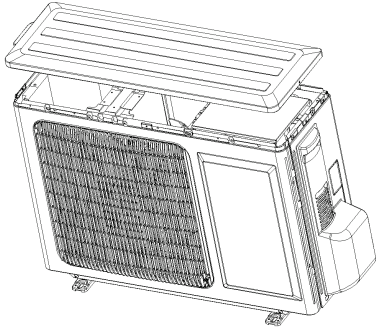
Picture	Name	Function
	Compressor	Through compression, the low pressure refrigerant occupies a less space. As its pressure and temperature both rise, it becomes high pressure and high temperature refrigerant. It is the power drive of the system.
	4-way valve	It is used to change directions, the flow of refrigerant in cooling/heating.
	Motor	The power drive of the fan. It enables the fan to run so as to provide smooth currents of air for forced convection and heat exchange of condenser and evaporator.

Picture	Name	Function
	Fan	It is used to provide smooth currents of air for forced convection and heat exchange of condenser and evaporator.
	Condenser	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 evaporator.

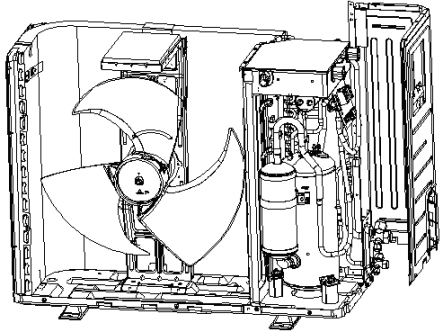
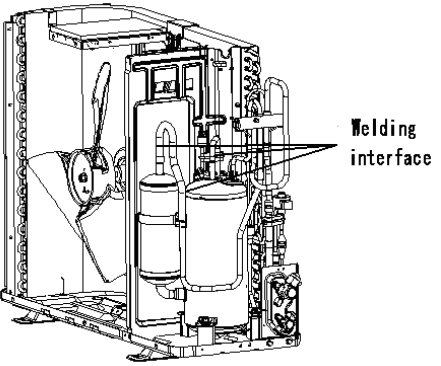
Model: GU50W/A1-K; GU71W/A1-K; GU85W/A1-K

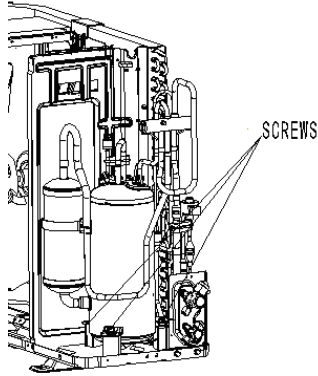
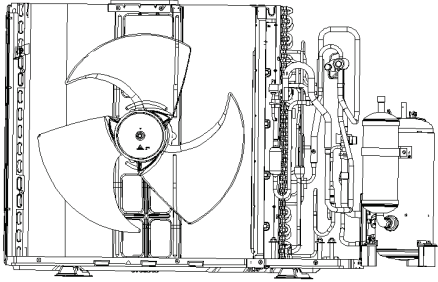
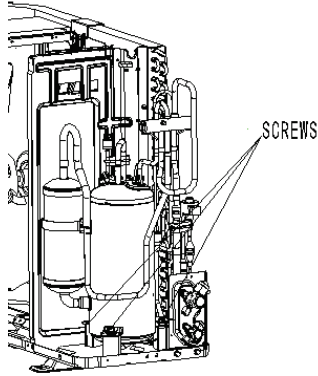
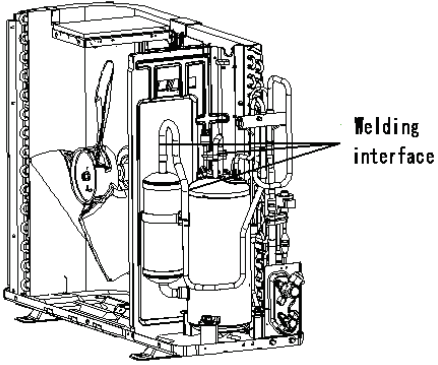
Removal of front panel		
Note: Before removing the front panel, make sure power is cut off.		
Step	Picture	Work instruction
1.Remove the upper cover plate.		Unscrew the screws of the upper cover plate with a screwdriver.
2.Remove the front grill.		Unscrew the screws of the front grill with a screwdriver.

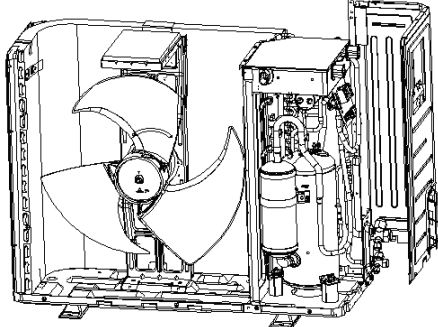
Removal of front panel		
Note: Before removing the front panel, make sure power is cut off.		
Step	Picture	Work instruction
3.Remove the front panel.		Unscrew the screws that connect the front panel to the middle insulating board and screws around the front panel.
4.Remove the right side plate.		Unscrew the screws that connect the right side plate to the electric box and the screws around the right side plate.
5.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.
6.Install the front side plate.		Tighten up the screws around the front side plate.
7.Install the grill.		Attach the grill back in place and tighten up the screws.

Removal of front panel		
Note: Before removing the front panel, make sure power is cut off.		
Step	Picture	Work instruction
8. Install the upper cover plate.		Tighten up the screws around the upper cover plate.

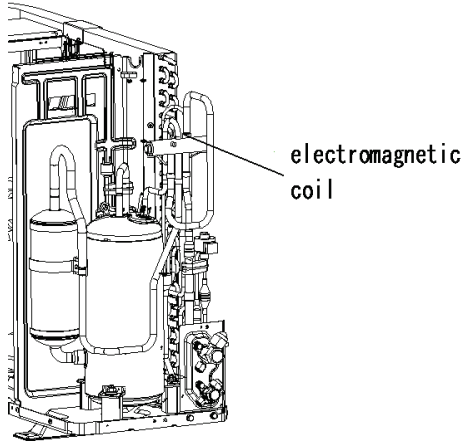
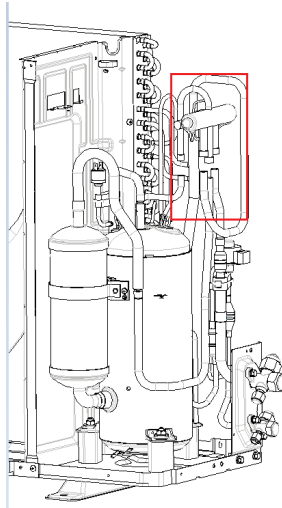
Model: GU50W/A1-K;GU71W/A1-K;GU85W/A1-K

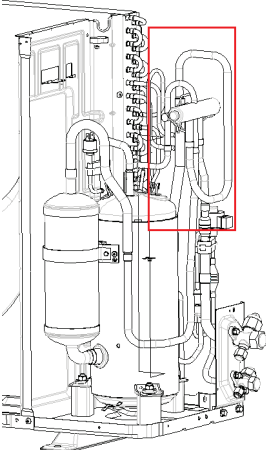
Removal of compressor		
Note: Before removing the compressor, make sure there is no refrigerant in the pipeline and power is cut off.		
Step	Picture	Work instruction
1. Remove wires.		Loosen the securing screws of the wires with a screwdriver. Remove the wires. Note: When removing the wires, mark the wire terminals corresponding to their color so as to avoid misconnection.
2. Break off the pipes that connecting to the compressor.		Weld the pipes that are connected to the compressor. Then remove the pipes. Note: When welding the pipes, do not let the flame burn the other components.

Removal of compressor		
Note: Before removing the compressor, make sure there is no refrigerant in the pipeline and power is cut off.		
Step	Picture	Work instruction
3. Loosen the securing screws at the foot of compressor.		Use a wrench to twist off the screws at the foot of compressor.
4. Remove the compressor from the chassis.		Take out the compressor and replace it. Note: When replacing the compressor, avoid touching the nearby pipeline and components.
5. Fix the new compressor back onto the chassis.		After replacing the compressor, tighten up the screws at the foot of compressor.
6. Connect the compressor suction port and exhaust port with the pipes.		Weld the compressor connection pipes and connect them to the compressor. Note: When replacing the compressor, avoid touching the nearby pipeline and components.

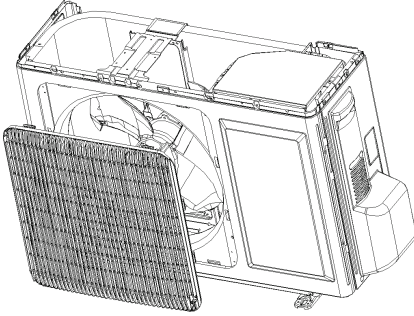
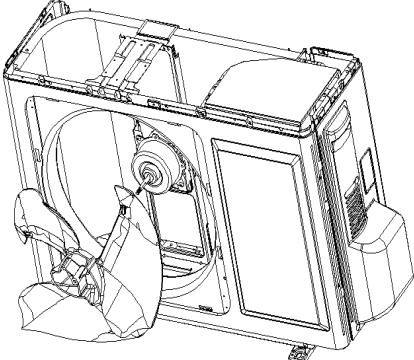
Removal of compressor		
Note: Before removing the compressor, make sure there is no refrigerant in the pipeline and power is cut off.		
Step	Picture	Work instruction
7. Connect the compressor wires.		<p>Connect the compressor wires to the wire terminals on the top of compressor.</p> <p>Note: When connecting the wires, be sure to match the colors with the corresponding wire terminals.</p>

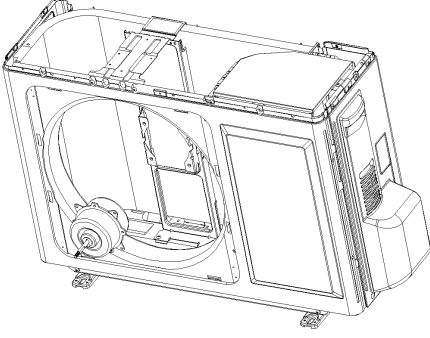
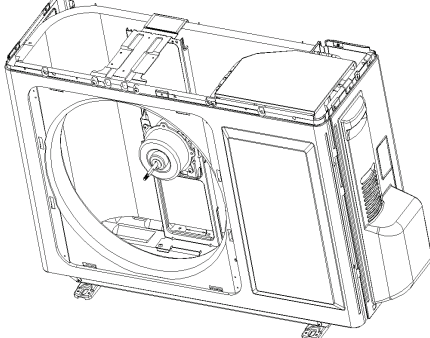
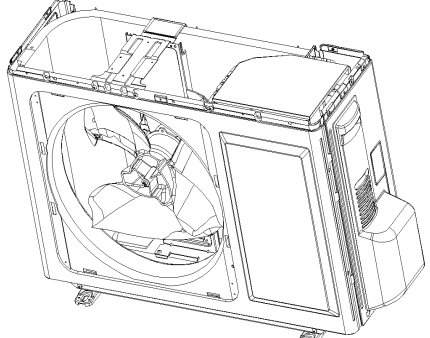
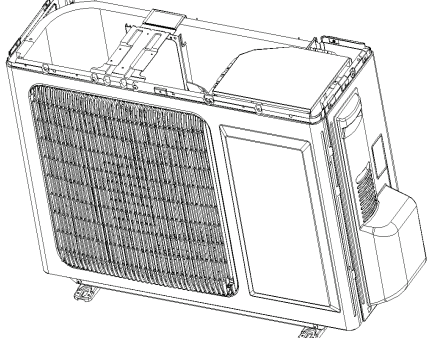
Model: GU50W/A1-K; GU71W/A1-K; GU85W/A1-K

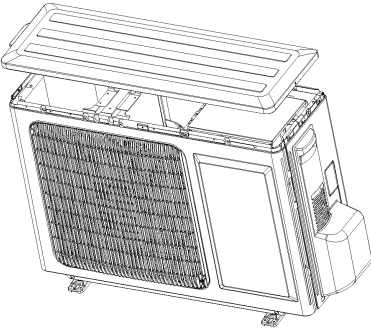
Removal of 4-way valve		
Note: Before removing the 4-way valve, make sure refrigerant is fully discharged from the unit and power is cut off.		
Step	Picture	Work instruction
1. Take off the electromagnetic coil of the 4-way valve.		<p>Carefully unscrew the screws of electromagnetic coil with a screwdriver.</p>
2. Break off the connection pipes from the 4-way valve.		<p>Use a soldering gun to loosen the 4 joints on the 4-way valve and then remove the connection pipes.</p> <p>Note: When welding the pipes, the 4-way valve should be wrapped with wet cloth for cooling. Do not let the flame burn the other components.</p>

Removal of 4-way valve		
Note: Before removing the 4-way valve, make sure refrigerant is fully discharged from the unit and power is cut off.		
Step	Picture	Work instruction
3. Replace the 4-way valve and connect it to the connection pipes.		<p>Replace the 4-way valve and then use a soldering gun to weld the 4 joints of the 4-way valve.</p> <p>Tighten up the screws of electromagnetic coil with a screwdriver.</p> <p>Note: When welding the pipes, the 4-way valve should be wrapped with wet cloth for cooling. Do not let the flame burn the other components.</p>

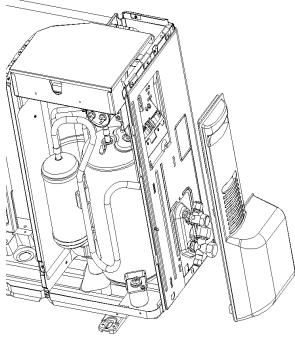
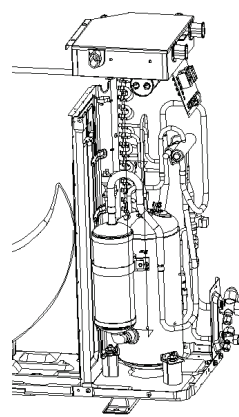
Model: GU50W/A1-K; GU71W/A1-K; GU85W/A1-K

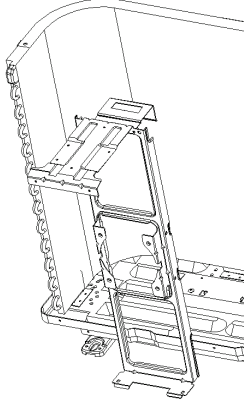
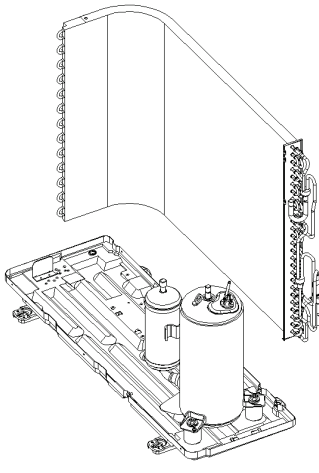
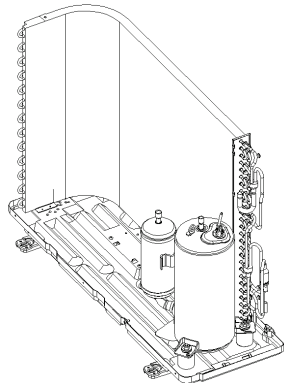
Removal of fan and motor		
Note: Before removing the fan, make sure power is cut off.		
Step	Picture	Work instruction
1. Remove the grill.		Use a screwdriver to unscrew the two screws on the upper left and lower right corners.
2. Remove the fan.		<p>Use a wrench to remove the specialized nut and gasket of the fan.</p> <p>Note: Please keep the nut and gasket safe after removing them from the fan.</p>

Removal of fan and motor		
Note: Before removing the fan, make sure power is cut off.		
Step	Picture	Work instruction
3.Remove motor.		Use a screwdriver to unscrew the bolt of motor. 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.
5.Install the fan.		Install the fan in place. Put on the gasket and use a wrench to secure the screw nut. Note: After installing the fan, turn the fan by hand to see if it can run normally. If not, please check for the reason.
6.Install the grill.		Attach the grill back in place and tighten up the screws.

Removal of fan and motor		
Note: Before removing the fan, make sure power is cut off.		
Step	Picture	Work instruction
7. Install the upper cover plate.		Tighten up the screws around the upper cover plate.

Model: GU50W/A1-K; GU71W/A1-K ; GU85W/A1-K

Removal of condenser		
Note: Before removing the condenser, make sure there is no refrigerant in the pipeline and power is cut off.		
Step	Picture	Work instruction
1. Remove the panels.		Remove the upper, lower and front panels.
2. Remove the electric box.		Loosen the wire clamp at the bottom of the electric box. Unscrew the screws of electric box. The connection wires inside and outside the electric box should be removed.

Removal of condenser		
Note: Before removing the condenser, make sure there is no refrigerant in the pipeline and power is cut off.		
Step	Picture	Work instruction
3.Remove motor support.		When removing the motor support, be careful to protect the components.
4.Remove the condenser.		Heat up the welding points of connection pipes through gas welding until the pipes break off. Loosen the securing screws of condenser support. Take off the plate type heat exchanger and the support as a whole. Note: When welding the pipes, do not let the flame burn the other components. The welding points of condenser are steel and copper welding points. Be sure to maintain the welding quality.
5.Install the new condenser.		Secure the screws of condenser and support. Then fix them together on the chassis. Install the condenser by referring to the positions of entering and leaving pipes. Weld the connection pipes. Nitrogen welding: the pressure of nitrogen is $0.5\pm 0.1\text{kgf/cm}^2$ (relative pressure). Note: When welding the pipes, do not let the flame burn the other components.