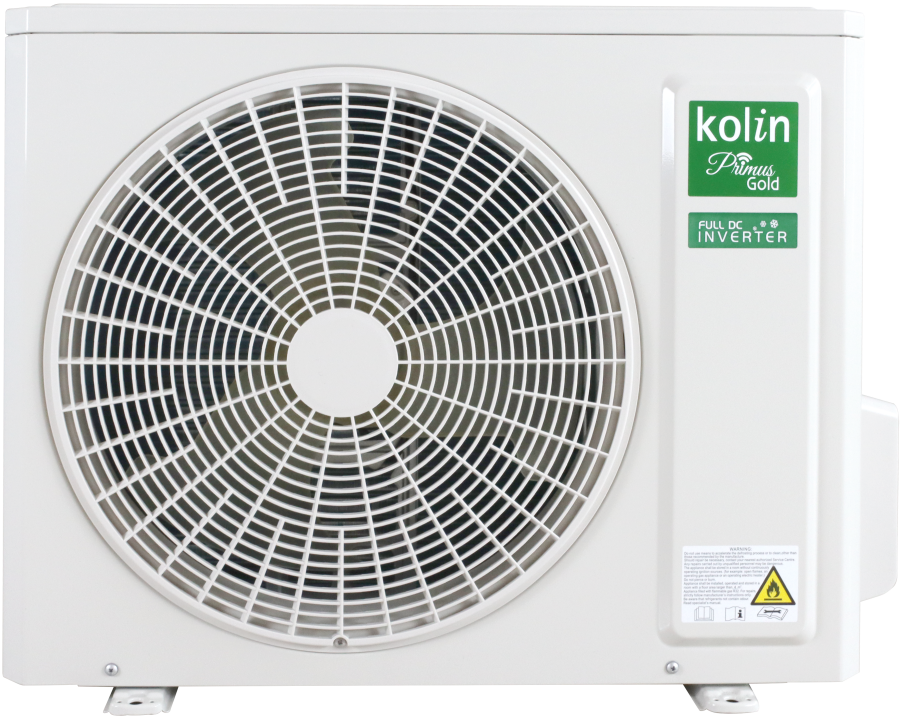
kolin air conditioner | works for years

# Kolin Primus Gold Series

# 1. Summary

**Indoor Unit:**


**Outdoor Unit:**

# 8. Maintenance and Troubleshooting

## 8.1 Error Code List

| Malfunction Name | Display Method of Indoor Unit (Error Code) | A/C Status | Possible Causes(For specific maintenance method, please refer to the following procedure of troubleshooting) |
|---|---|---|---|
| Indoor ambient temperature sensor is open/ short- circuited | F1 | The unit will stop operation as it reaches the temperature point. During cooling and drying operation, except indoor fan operates, other loads( such as compressor, outdoor fan, 4-way valve) stop operation; During heating operation, the complete unit stops operation. | 1. The wiring terminal between indoor ambient temperature sensor and controller is loosened or poorly contacted;<br>2. There's short circuit due to trip-over of the parts on controller;<br>3.Indoor ambient temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor)<br>4. Main board is broken. |
| Indoor evaporator temperature sensor is open/ short-circuited | F2 | The unit will stop operation as it reaches the temperature point. During cooling and drying operation, except indoor fan operates, other loads stop operation; During heating operation, the complete unit stops operation. | 1. The wiring terminal between indoor evaporator temperature sensor and controller is loosened or poorly contacted;<br>2. There's short circuit due to the trip-over of the parts on controller;<br>3.Indoor evaporator temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor)<br>4. Main board is broken. |
| Blocked protection of IDU fan motor | H6 | IDU fan, ODU fan, compressor and electric heat tube stop operation. Horizontal louver stops at the current position. | 1. The feedback terminal of PG motor is not connected tightly.<br>2. The control terminal of PG motor is not connected tightly.<br>3. Fan blade rotates unsmoothly.<br>4. Malfunction of motor<br>5. Main board is broken. |
| Malfunction protection of jumper cap | C5 | Operation of remote controller or control panel is available, but the unit won't act. | 1. There's not jumper cap on the main board.<br>2. Jumper cap is not inserted properly and tightly.<br>3. Jumper cap is damaged.<br>4. Controller is damaged. |
| Zero-crossing inspection circuit malfunction of the IDU fan motor | U8 | Operation of remote controller or control panel is available, but the unit won't act. | 1. Quick de-energization and energization. Wrong judgement by the controller because the electricdischarging of capacitor is slow.<br>2. Zero-crossing inspection circuit of main board for controller is abnormal. |
| High pressure protection | E1 | During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, if it is inverter unit, the complete unit stops; if it is floor standing unit, the complete unit stops and operation of remote controller or controller is unavailable. | 1. The main board and the display panel are not connected well.<br>2. The OVC terminal on main board is not connected well with the high pressure switch on the complete unit.<br>3. The wiring of high pressure switch is loosened.<br>4. Refrigerant is superabundant;<br>5. Poor heat exchange (including blocked heat exchanger and bad radiating environment );<br>6. Ambient temperature is too high; (if it is 3-phase unit, the high pressure protection may be caused by overcurrent protection due to this reason)<br>7. The supply voltage is abnormal (if it is 3-phase unit, the high pressure protection may be caused by overcurrent protection due to this reason)<br>8. The air intake and air discharge at indoor / outdoor heat exchanger are not smooth. The air cycle is short circuited.<br>9. Filter and heat exchange fins of indoor/outdoor units are blocked.<br>10. The system pipeline is blocked.<br>11. The gas valve and liquid valve for outdoor unit are not completely opened.<br>12. The OVC input is at high level. |
| Communication malfunction | E6 | During cooling operation, compressor stops while indoor fan motor operates. During heating operation , the complete unit stops. | 1. The communication line is not connected tightly or poorly contacted. Poor contact of any line may cause communication malfunction.<br>2. The match between main board and display panel is incorrect. Indoor and outdoor unit boards are matched incorrectly.<br>3. Incorrect wire connection.<br>4. Controller is damaged. |

# 8. Maintenance and Troubleshooting

| | | | |
|---|---|---|---|
| Overcurrent protection | E5 | During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop. | 1. Unstable supply voltage. Normal fluctuation shall be within 10% of the rated voltage on the nameplate.<br>2. Supply voltage is too low and load is too high.<br>3. Measure the current of live wire on main board. If the current isn't higher than the overcurrent protection value, please check the controller.<br>4. The indoor and outdoor heat exchangers are too dirty, or the air inlet and air outlet are blocked.<br>5. The fan motor is not running. Abnormal fan speed: fan speed is too low or the fan doesn't run<br>6. The compressor is not running normally. There is abnormal sound, oil leakage or the temperature of the shell is too high, etc.<br>7. There's blockage in the system (filth blockage, ice plug, greasy blockage, Y-valve hasn't been opened completely) |
| Overload malfunction | E8 | The entire unit stops. | 1. Indoor and outdoor heat exchanger is too dirty? Or air inlet/outlet is blocked?<br>2. Fan motor doesn't work at a normal fan speed; fan speed is toolow or the fan doesn't run.<br>3. Compressor operates normally or not? Is there any abnormal noise or oil leak? Casing is too hot?<br>4. System is blocked inside? (Dirt blockage? Ice blockage? Oil blockage? Y-valve is not fully open?)<br>5. Main board temperature sensor detects wrongly. |
| Overload protection for compressor | H3 | The entire unit stops. | 1. Outdoor and indoor heat exchangers are too dirty or the air inlet/ outlet is blocked.<br>2. Fan motor doesn't work at a normal fan speed; fan speed is too low or the fan doesn't run.<br>3. Compressor doesn't work normally. Strange noise or leakage occurs. Temperature of the shell is too high.<br>4. System is blocked inside(dirt block, ice block, oil block, Y-valve not fully open).<br>5. High pressure switch is abnormal<br>6. The refrigerant is leaking and cause overheating protection to compressor |
| Insufficient fluorine protection | F0 | Indoor fan runs according to set fan and other loads will stop. | 1.Refrigerant leakage;<br>2.Indoor evaporator temperature sensor works abnormally;<br>3.The unit has been plugged up somewhere;<br>4.The compressor can't be started up normally. Because the power voltage for the complete unit is too low, and the outdoor working condition is too high. |
| Outdoor condenser temperature sensor is open/shortcircuited | F4 | The unit will stop operation as it reaches the temperature point.<br>During cooling and drying operation, compressor stops and indoor fan operates;<br>During eating operation , the complete unit stops operation. | 1. The wiring terminal between outdoor condenser temperature sensor and controller is loosened or poorly contacted;<br>2. There's short circuit due to the trip-over of the parts on controller;<br>3.Outdoor condenser temperature sensor is damaged;<br>(Please check it by referring to the resistance table for temperature sensor)<br>4. Main board is broken. |
| Malfunction of detecting plate(WIFI ) | JF | Loads operate normally, while the unit can't be normally controlled by APP. | 1. Main board of indoor unit is damaged;<br>2. Detection board is damaged;<br>3. The connection between indoor unit and detection board is not good; |
| Anti-freezing protection for evaporator | E2 | | Not the error code. It's the status code for the operation. |
| Cold air prevention protection | H1 | | Not the error code. It's the status code for the operation. |
| Refrigerant recovery mode | Fo | | Refrigerant recovery. The Serviceman operates it for maintenance. |

# 8. Maintenance and Troubleshooting

| | | | |
|---|---|---|---|
| Defrosting | Heating indicator off for 0.5s and then blinks for 10s | | Not the error code. It's the status code for the operation. |
| Undefined outdoor unit error | oE | Cool: compressor and outdoor fan stops operation, while indoor fan operates;<br>Heat: compressor, outdoor fan and indoor fan stop operation. | 1. Outdoor ambient temperature exceeds the operation range of unit (eg: less than-20°C or more than 60°C for cooling; more than 30°C for heating);<br>2. Failure startup of compressor?<br>3. Are wires of compressor not connected tightly?<br>4. Is compressor damaged?<br>5. Is main board damaged? |
| Cold air prevention protection | E9 | | Not the error code. It's the status code for the operation. |

# 8. Maintenance and Troubleshooting

## 8.2 Procedure of Troubleshooting

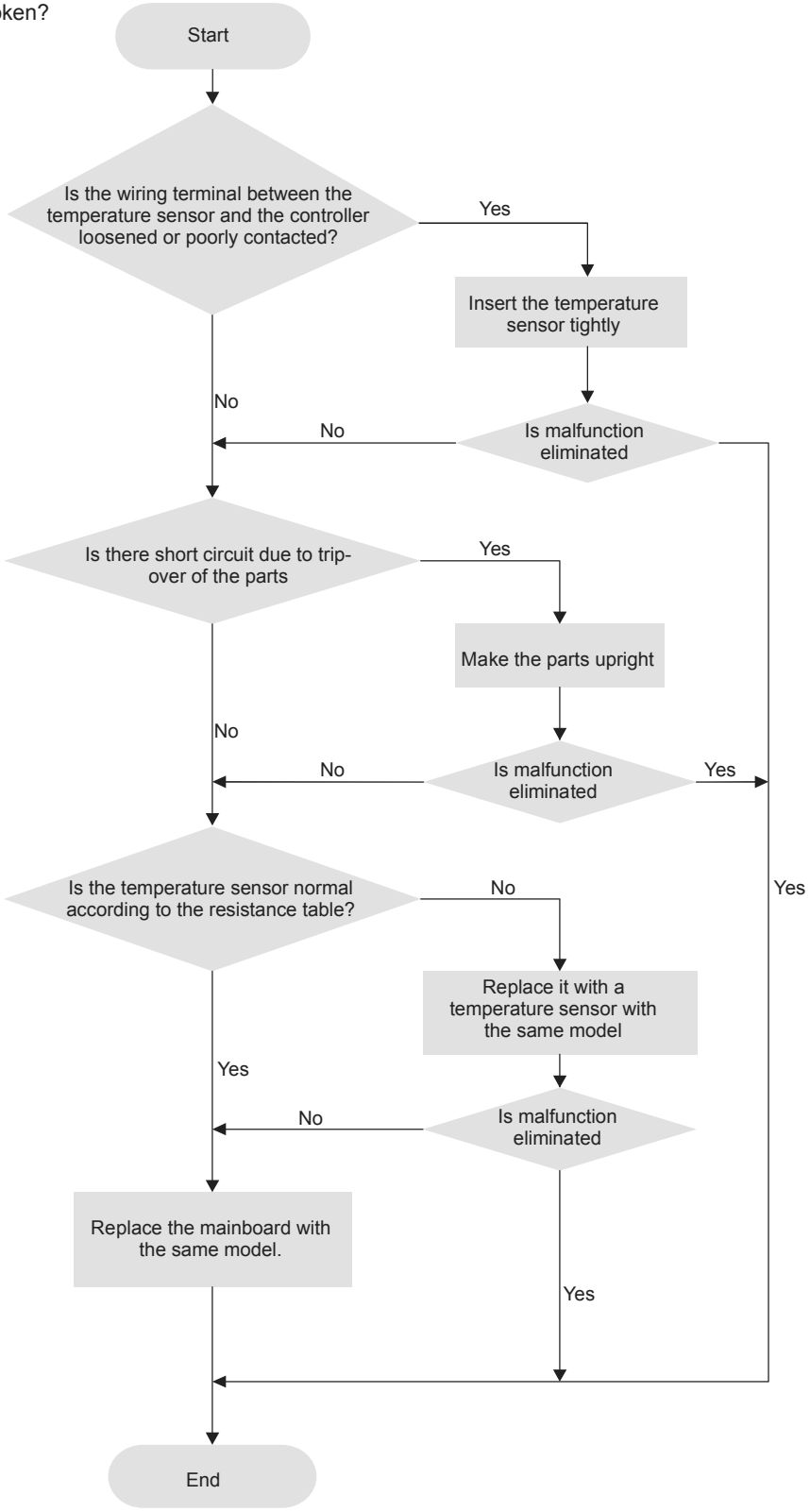
**●Indoor unit:**

**1. Malfunction of Temperature Sensor F1, F2**

Main detection points:

- Is the wiring terminal between the temperature sensor and the controller loosened or poorly contacted?
- Is there short circuit due to trip-over of the parts?
- Is the temperature sensor broken?
- Is mainboard broken?

Malfunction diagnosis process:



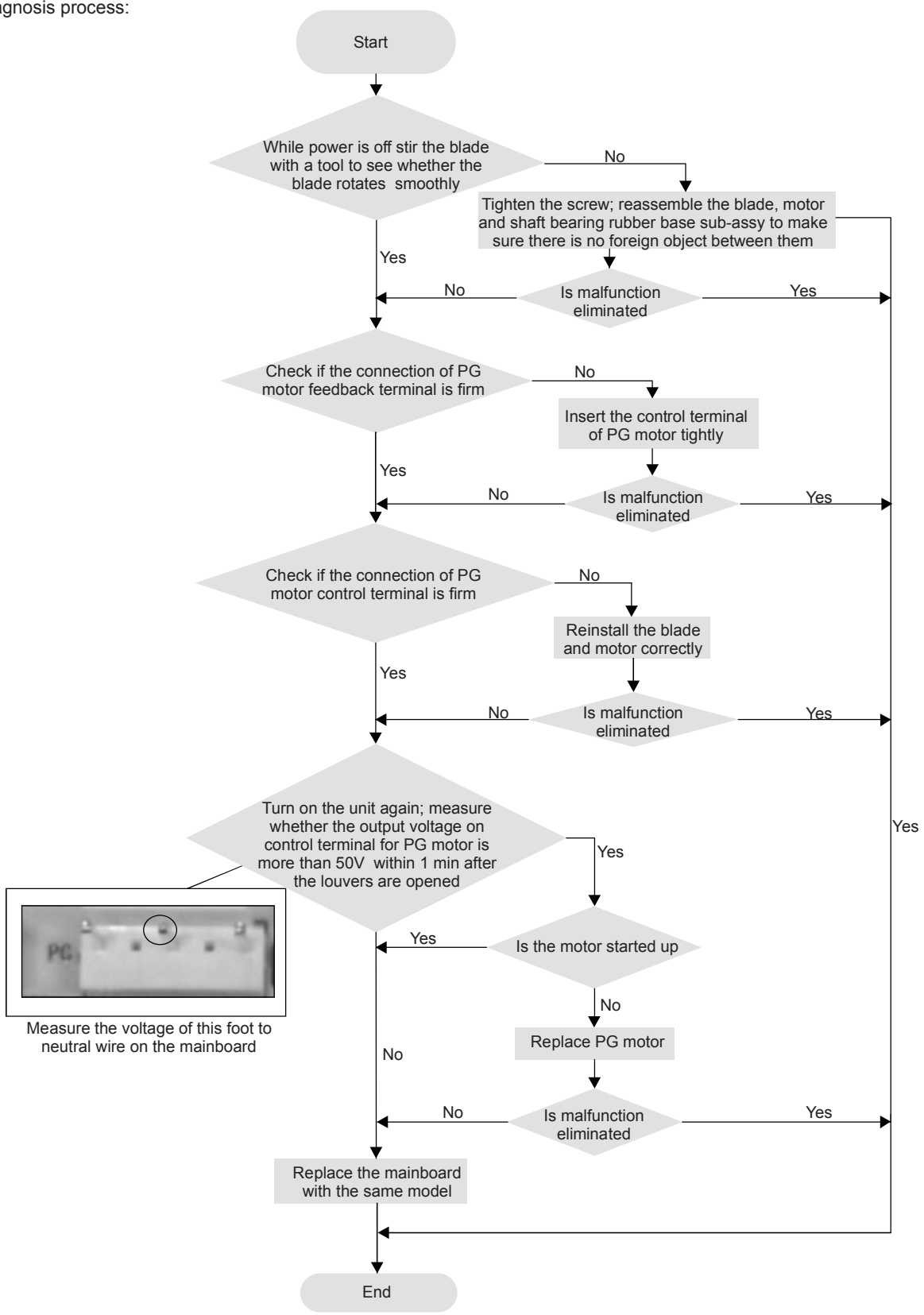
# 8. Maintenance and Troubleshooting

**2. Malfunction of Blocked Protection of IDU Fan Motor H6**

Main detection points:

- Smoothlyls the control terminal of PG motor connected tightly?
- Smoothlyls the feedback interface of PG motor connected tightly?
- The fan motor can't operate?
- The motor is broken?
- Detectioncircuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



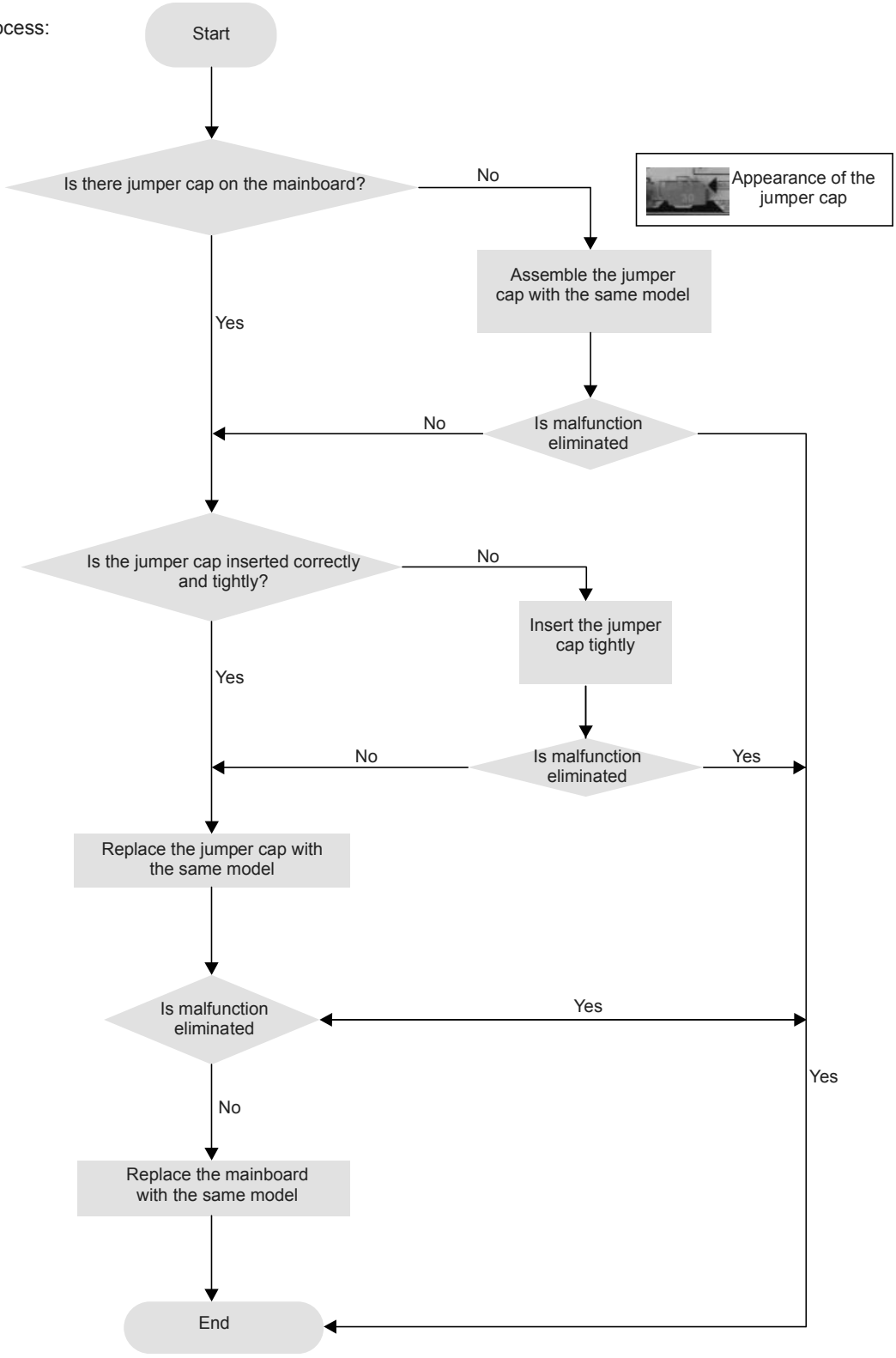
# 8. Maintenance and Troubleshooting

### 3. Malfunction of Protection of Jumper Cap C5

Main detection points:

- Is there jumper cap on the mainboard?
- Is the jumper cap inserted correctly and tightly?
- The jumper is broken?
- The motor is broken?
- Detection circuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



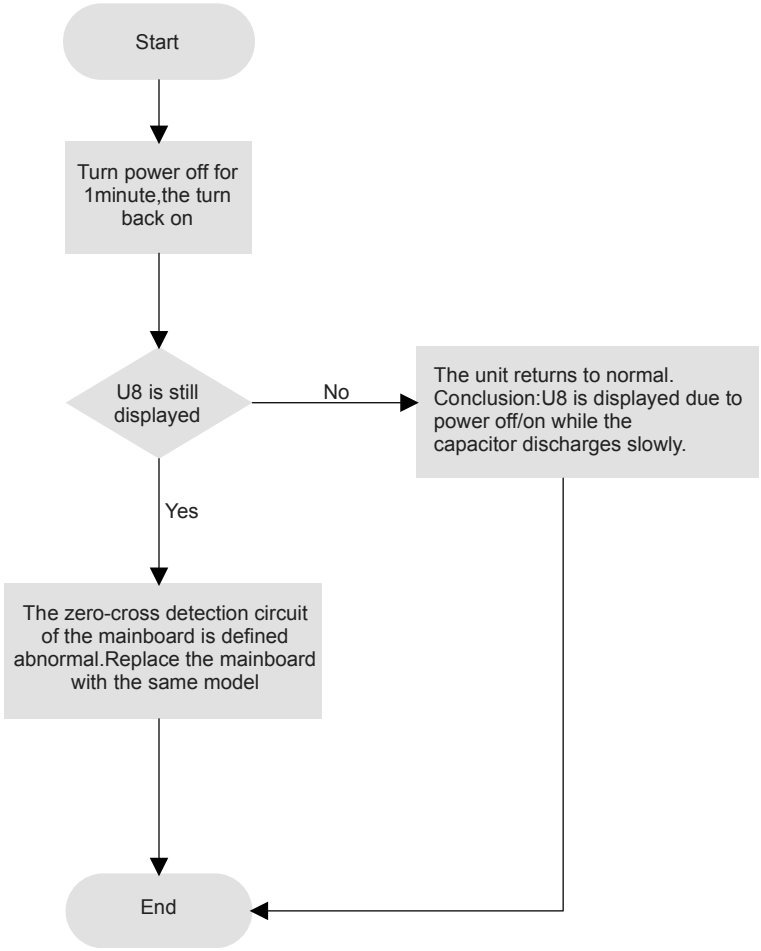
# 8. Maintenance and Troubleshooting

**4. Malfunction of Zero-crossing Inspection Circuit Malfunction of the IDU Fan Motor U8**

Main detection points:

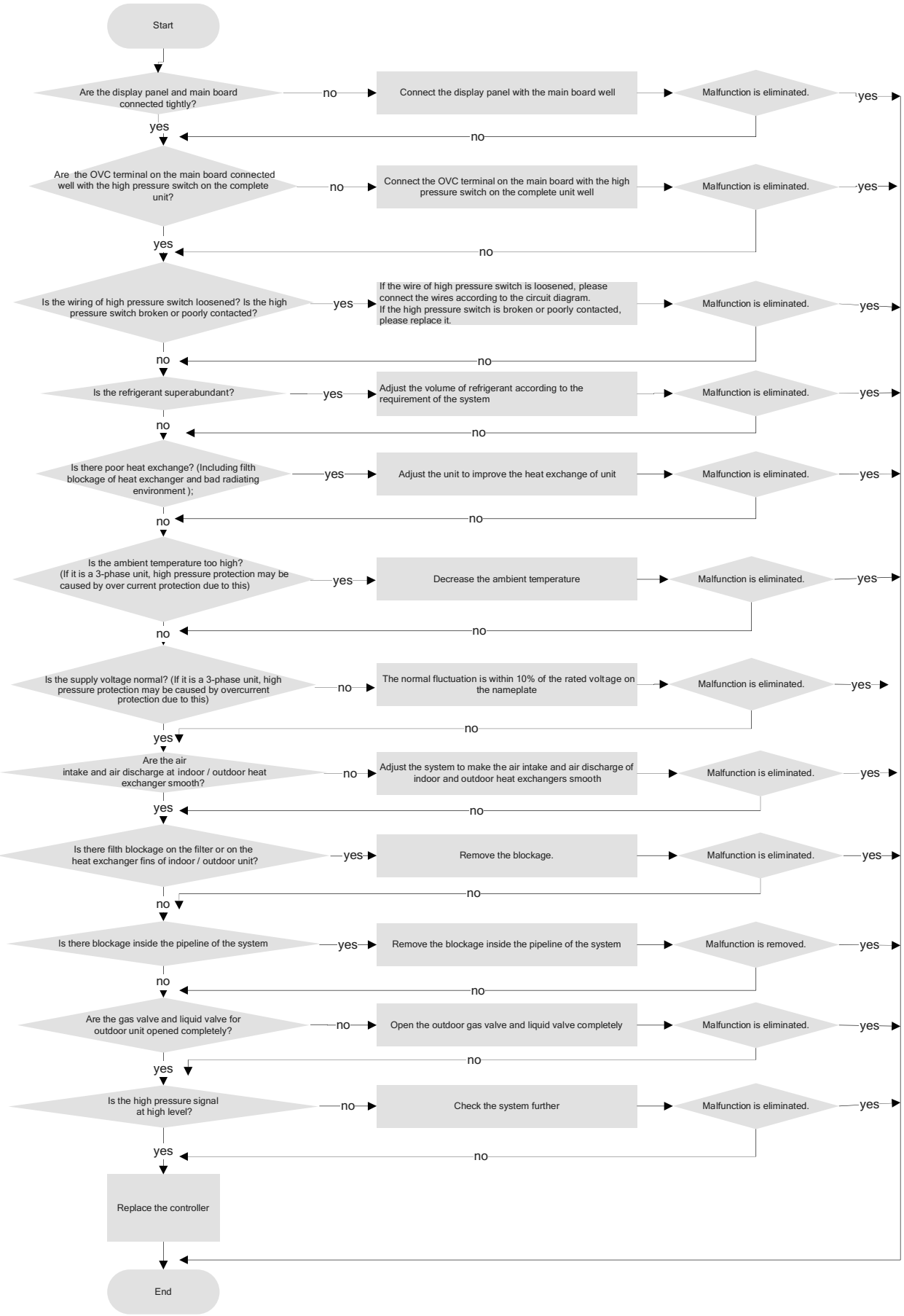
- Instant energization afte de-energization while the capacitordischarges slowly?
- The zero-cross detectioncircuit of the mainboard is defined abnormal?

Malfunction diagnosis process:



# 8. Maintenance and Troubleshooting

### 5. High pressure protection (E1)



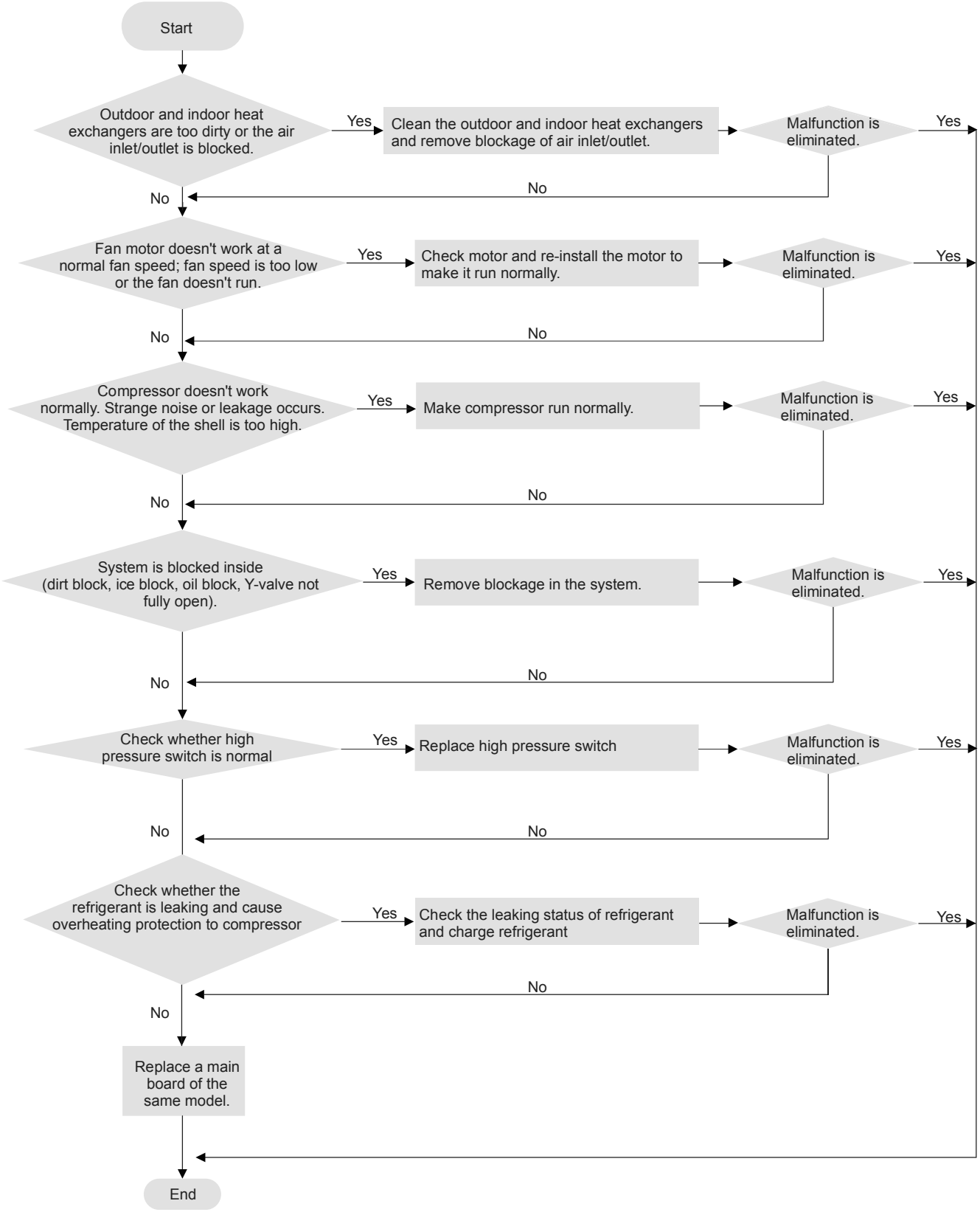
# 8. Maintenance and Troubleshooting

**6. Overload Protection Compressor H3**

Main detection points:

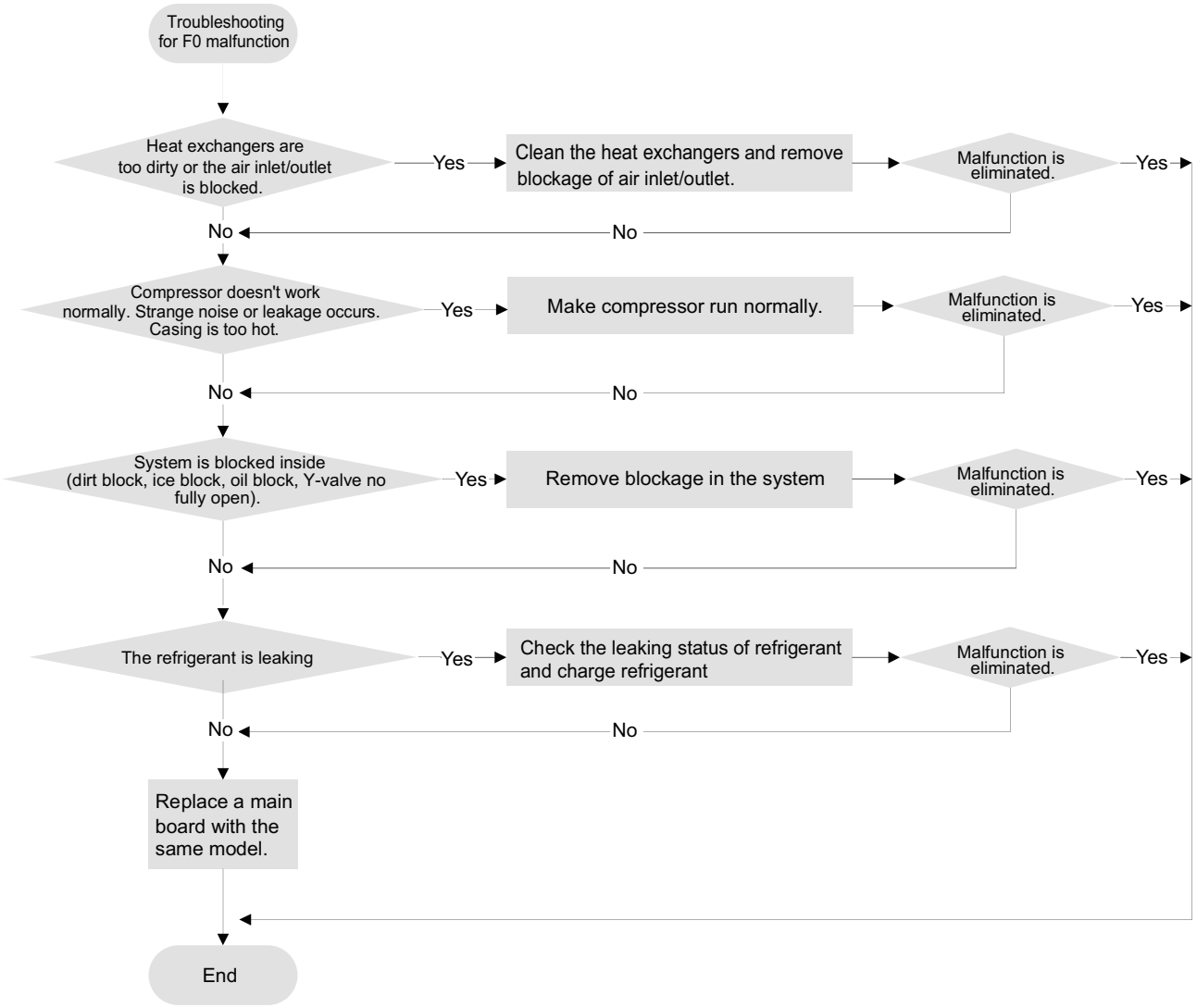
- Heat exchange of unit is not good? (heat exchanger is dirty and unit radiating environment is bad)
- Fan motor is not working?
- Too much load of the system causes high temperature of compressor after working for a long time?
- Whether high pressure switch is normal?
- If the refrigerant is leaked?

Malfunction diagnosis process:



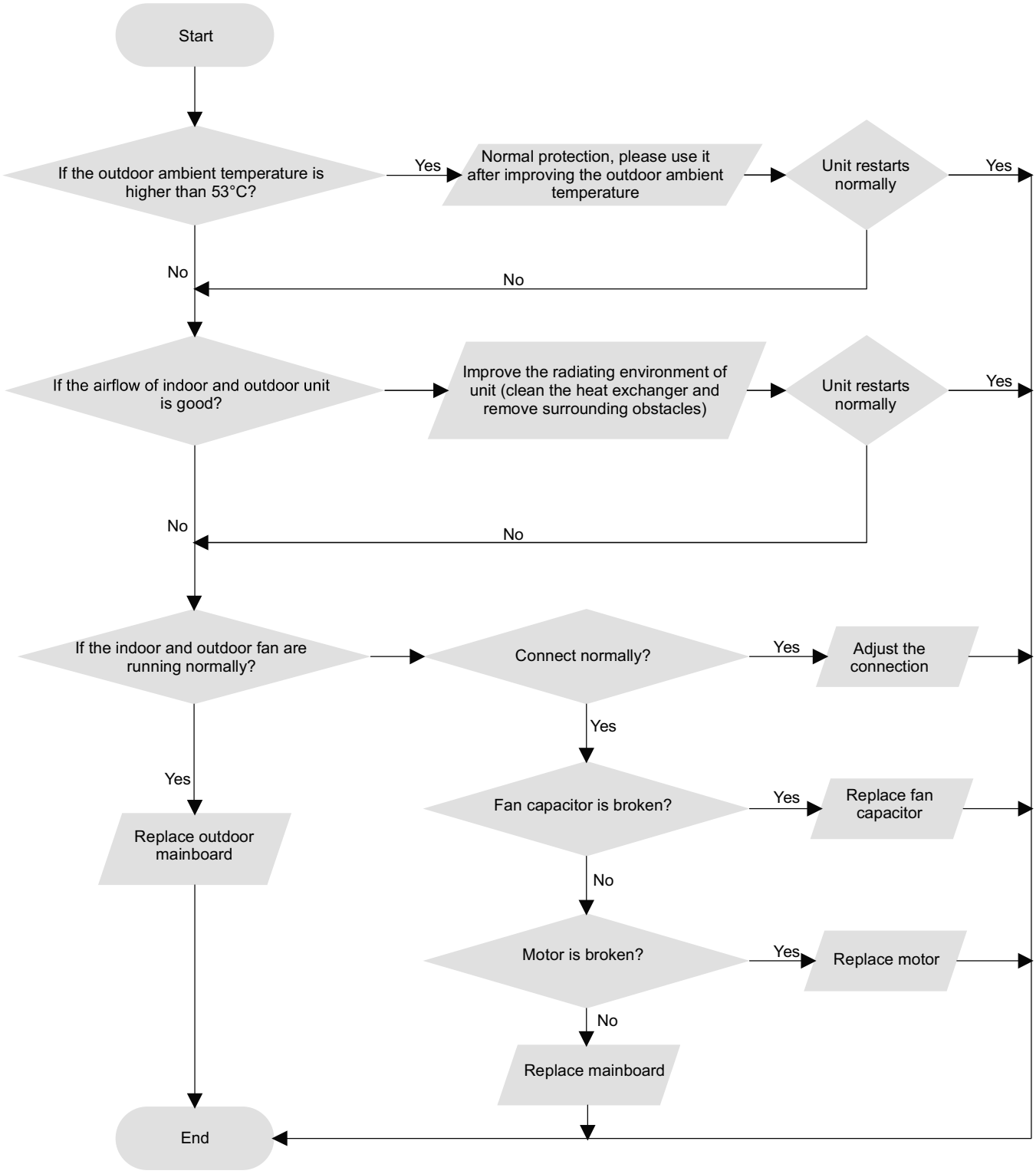
# 8. Maintenance and Troubleshooting

### 7. Malfunction of Insufficient fluorine protection F0



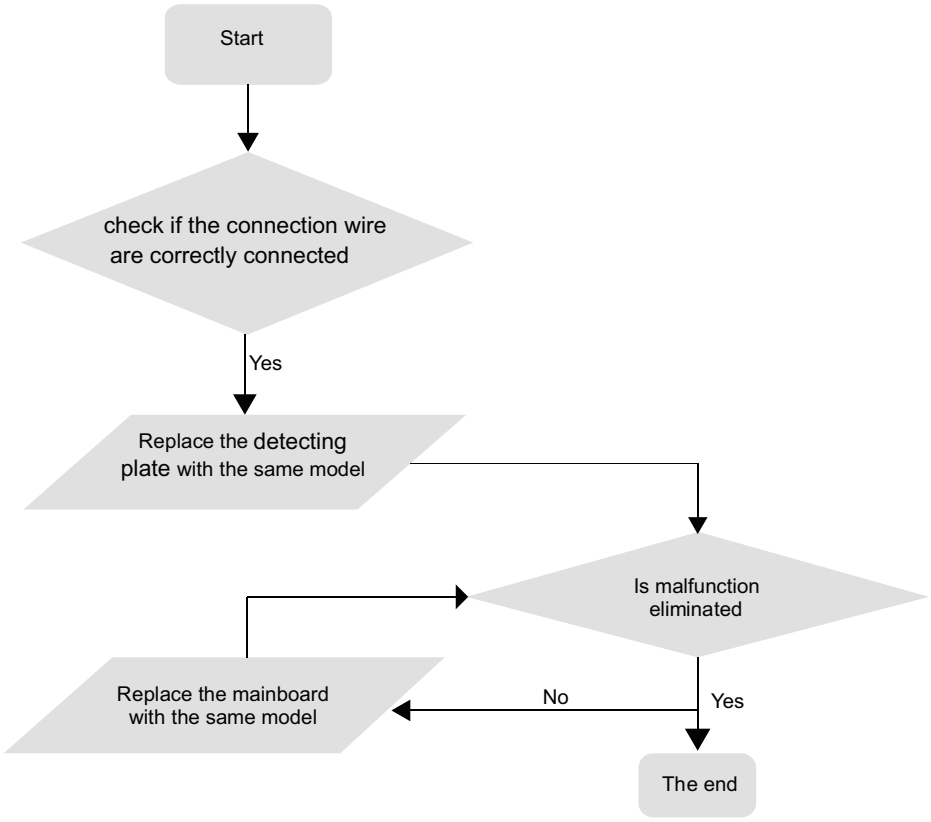
# 8. Maintenance and Troubleshooting

### 8. High Temperature and Overload Protection (AP1 below means control board of outdoor unit) E8



# 8. Maintenance and Troubleshooting

### 9. Malfunction of detecting plate(WIFI) JF



# 8. Maintenance and Troubleshooting

**●Outdoor unit:**

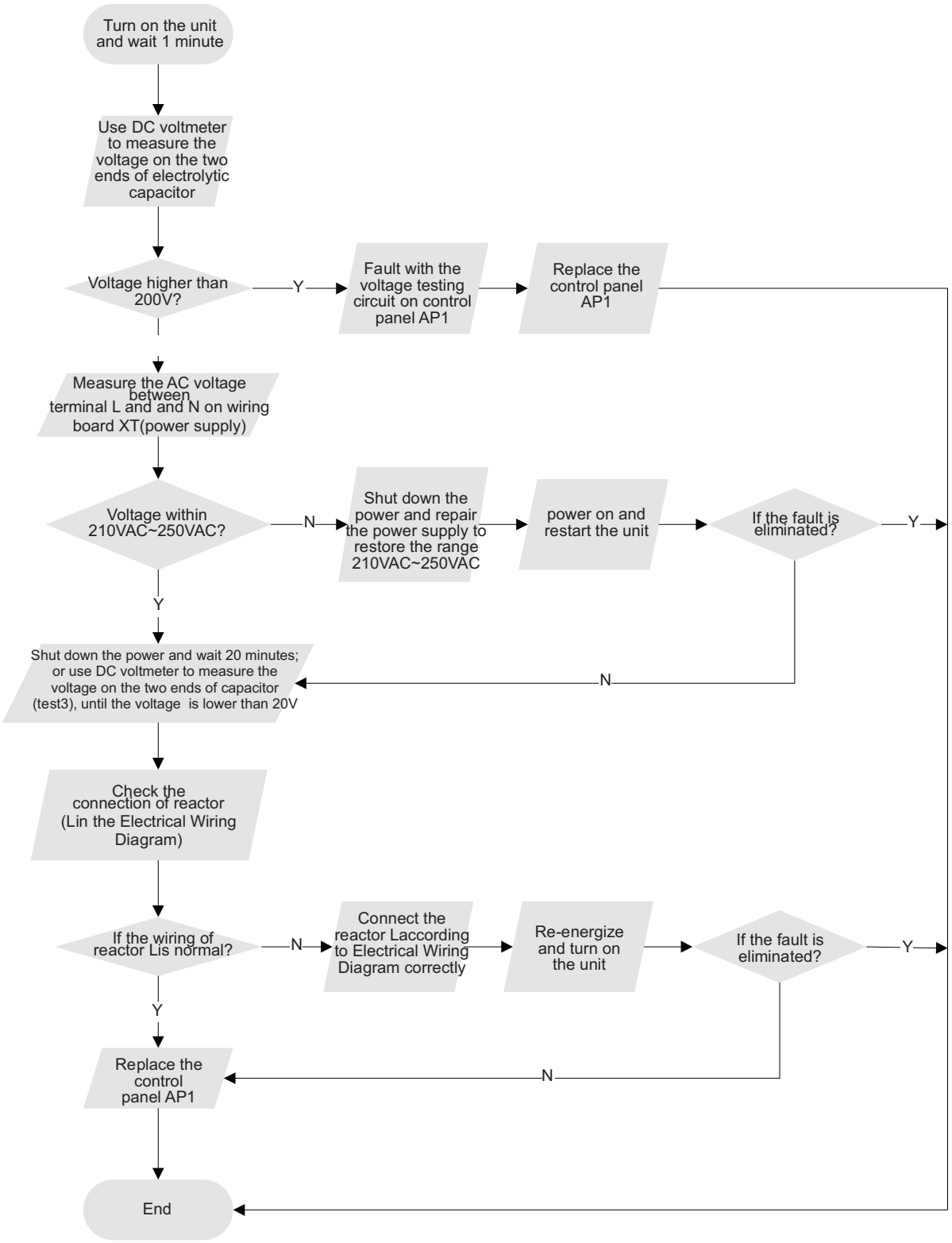
**1.Capacity charging malfunction (outdoor unit malfunction) (AP1 below is control board of outdoor unit)**

Main detection point:

● Detect if the voltage of L and N terminal of wiring board is between 210AC-240AC by alternating voltage meter;

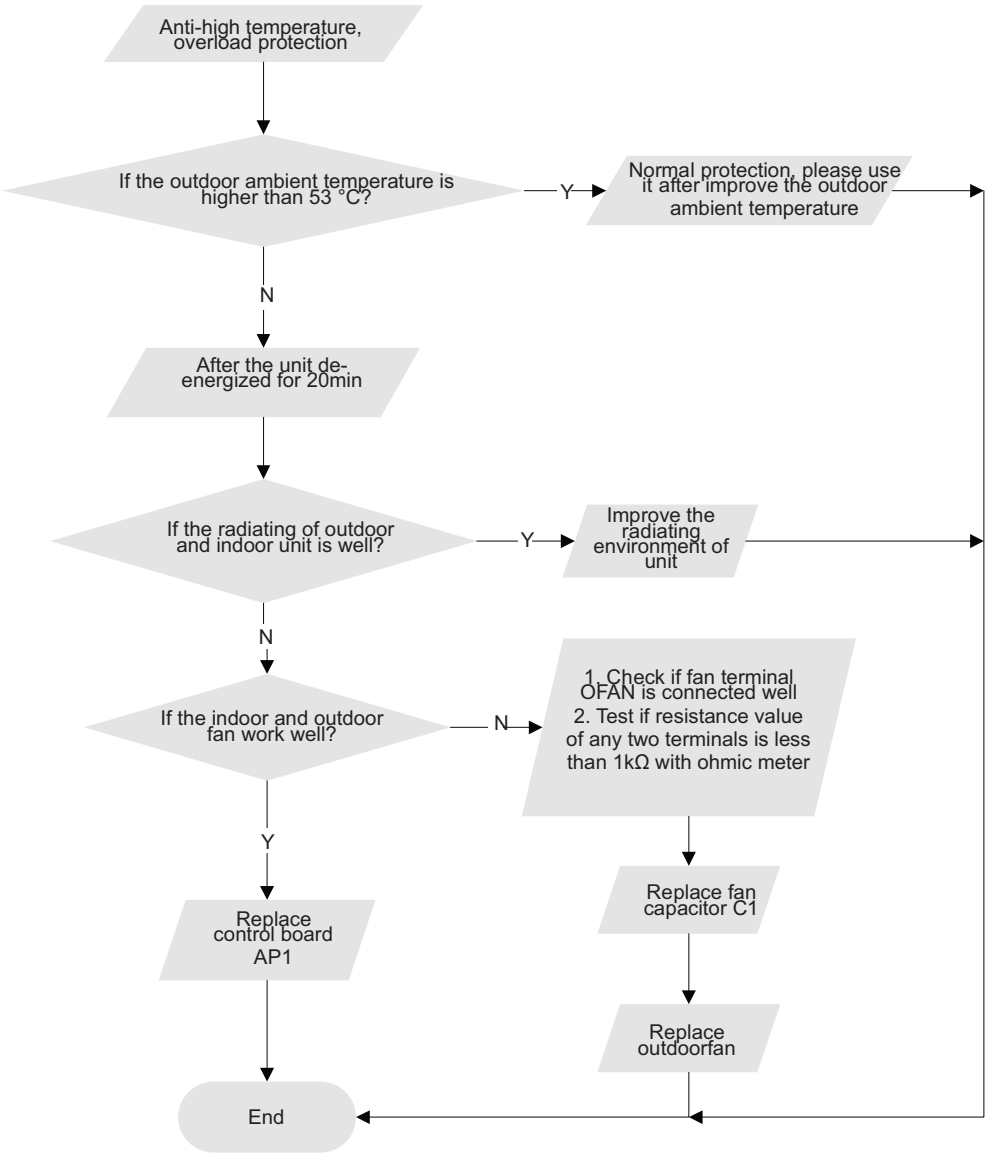
● Is reactor (L) well connected? Is connection wire loosened or pull-out? Is reactor (L) damaged?

Malfunction diagnosis process:



# 8. Maintenance and Troubleshooting

**2.Diagnosis for anti-high temperature, overload protection (AP1 below is control board of outdoor unit)**



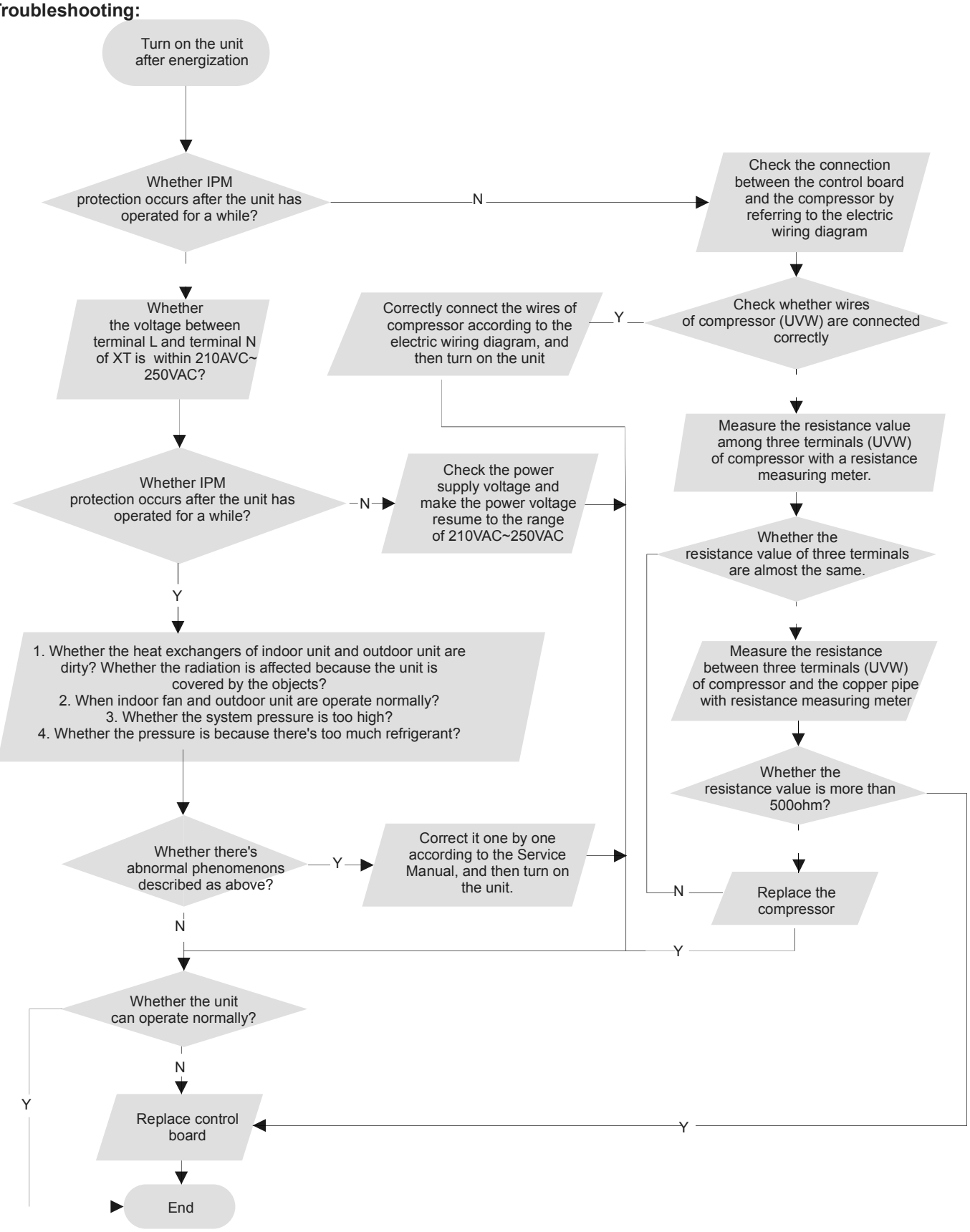
# 8. Maintenance and Troubleshooting

**3.IPM protection, phase current overcurrent (the control board as below indicates the control board of outdoor unit) H5/P5**

**Mainly detect:**

**(1) Compressor COMP terminal (2) voltage of power supply (3) compressor**
**(4) Refrigerant-charging volume (5) air outlet and air inlet of outdoor/indoor unit**

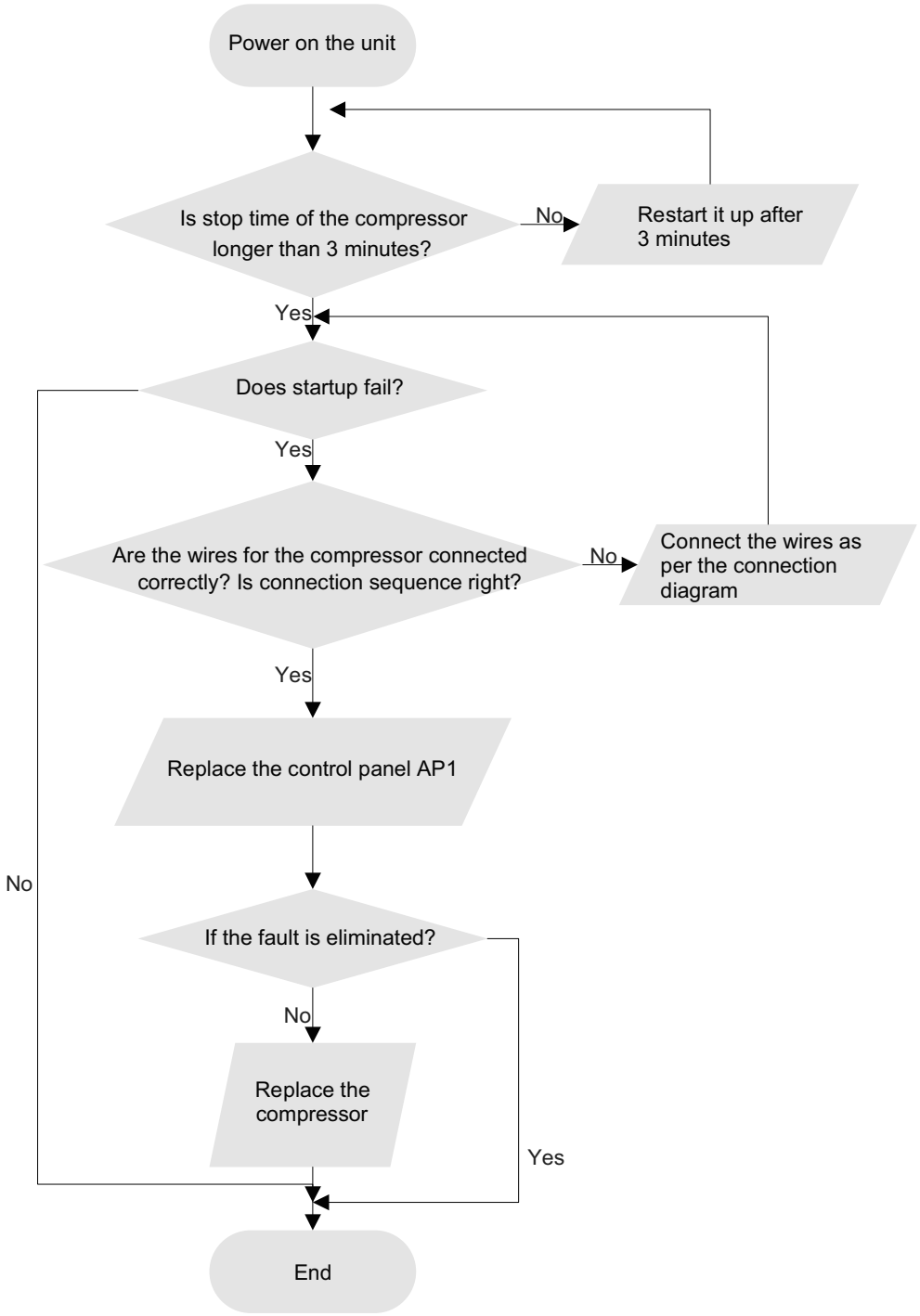
**Troubleshooting:**



# 8. Maintenance and Troubleshooting

**4. Start-up failure (following AP1 for outdoor unit control board)**

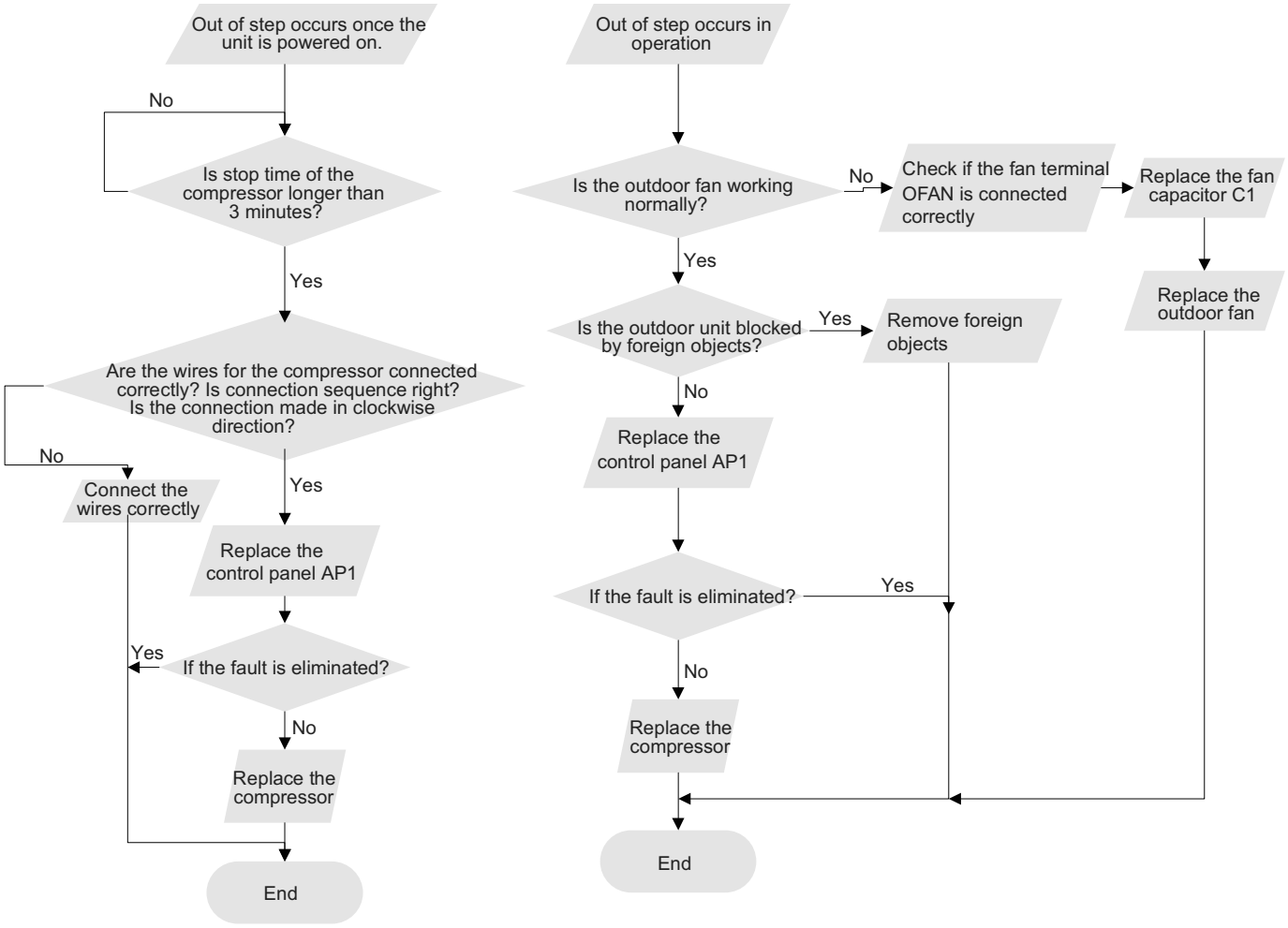
Mainly detect:
●Whether the compressor wiring is connected correct?
●Is compressor broken?
●Is time for compressor stopping enough?
Fault diagnosis process:



# 8. Maintenance and Troubleshooting

**5. Out of step diagnosis for the compressor (AP1 hereinafter refers to the control board of the outdoor unit)**

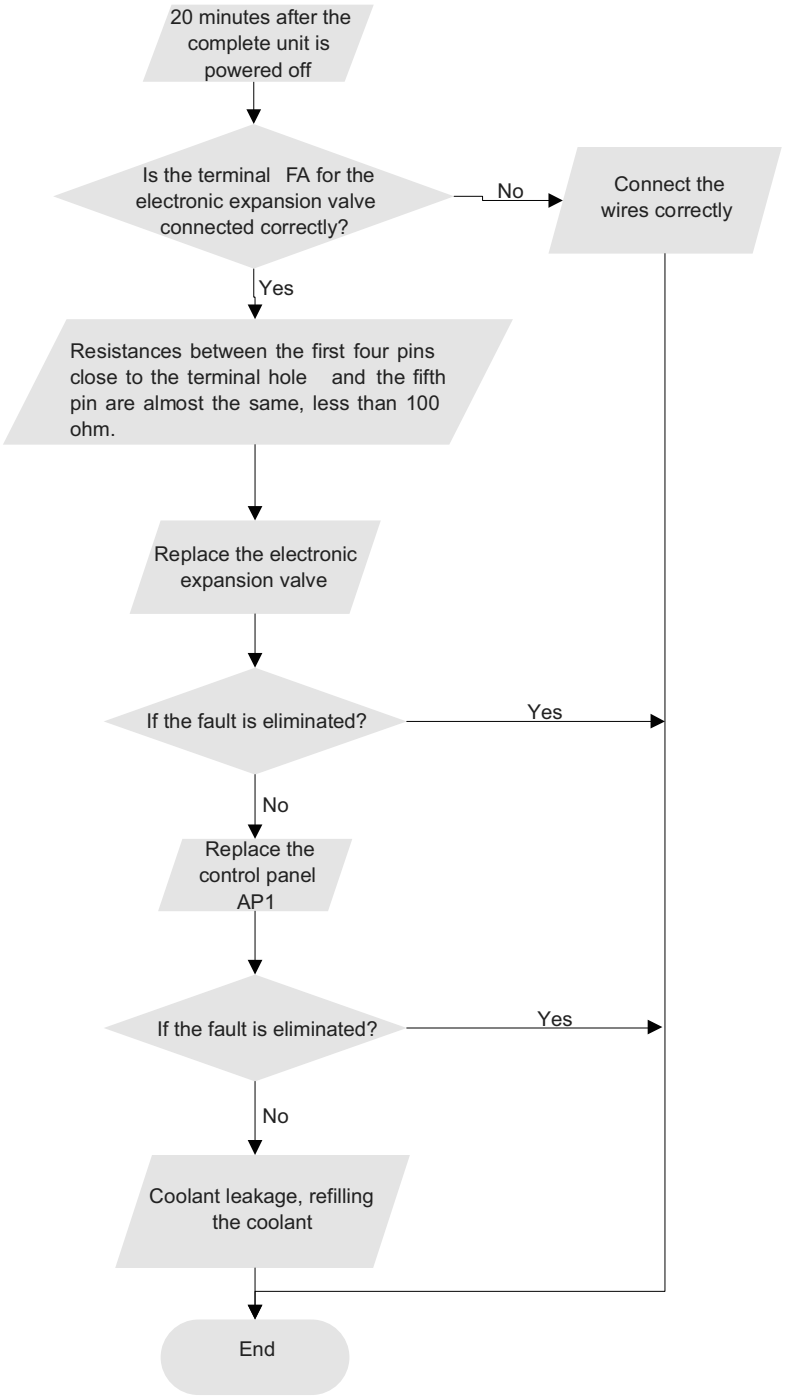
Mainly detect:
●Is the system pressure too high?
●Is the input voltage too low?
Fault diagnosis process:



# 8. Maintenance and Troubleshooting

**6. Overload and air exhaust malfunction diagnosis (following AP1 for outdoor unit control board)**

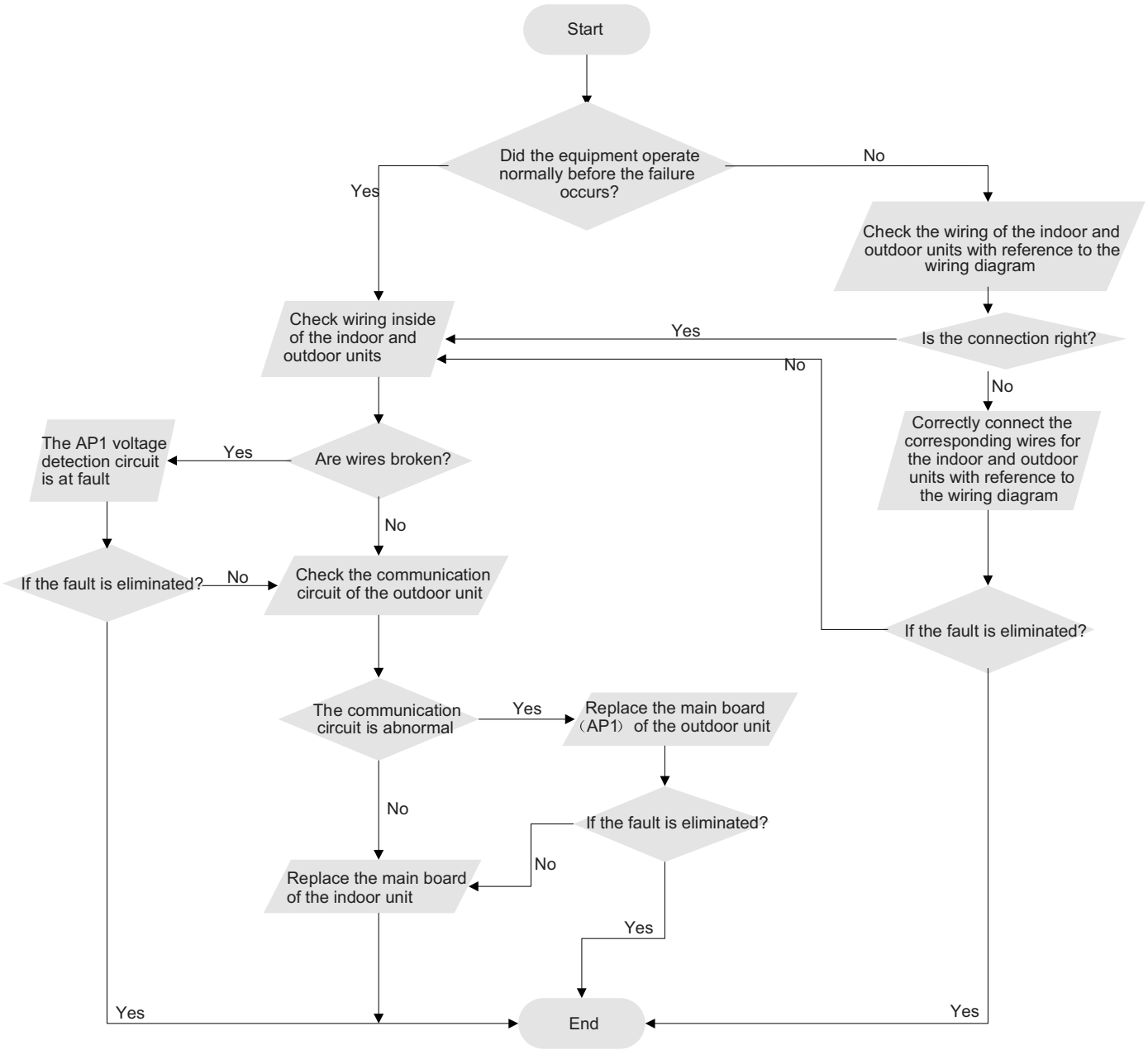
Mainly detect:
●Is the PMV connected well or not? Is PMV damaged?
●Is refrigerant leaked?
Fault diagnosis process:



# 8. Maintenance and Troubleshooting

**7. Communication malfunction: (following AP1 for outdoor unit control board)**

Mainly detect:
●Is there any damage for the indoor unit mainboard communication circuit? Is communication circuit damaged?
●Detect the indoor and outdoor units connection wire and indoor and outdoor units inside wiring is connect well or not, if is there any
damage?
Fault diagnosis process:



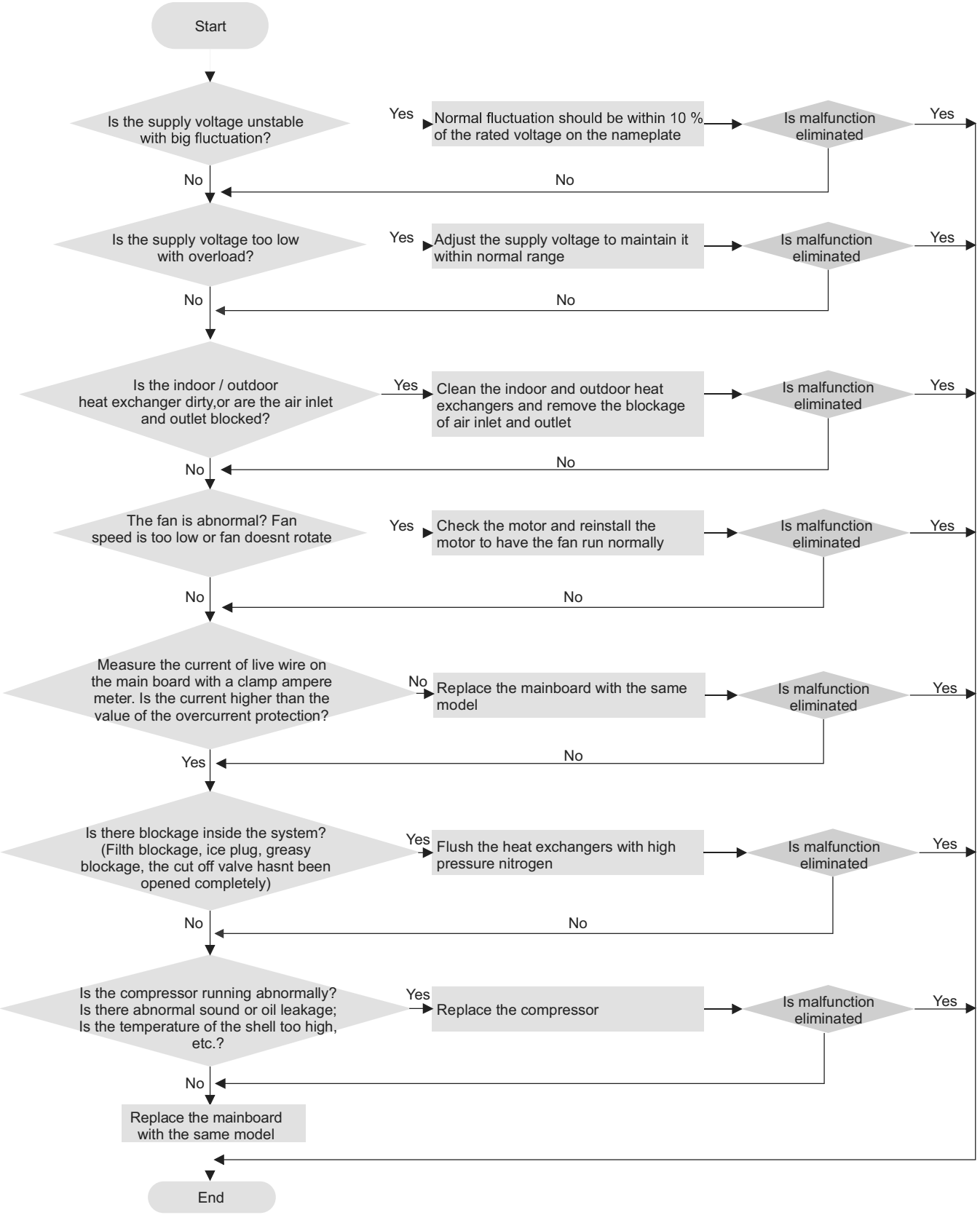
# 8. Maintenance and Troubleshooting

### 8. Malfunction of Overcurrent Protection

Main detection points:

- Is the supply voltage unstable with big fluctuation?
- Is the supply voltage too low with overload?
- Hardware trouble?

Malfunction diagnosis process:



# 8. Maintenance and Troubleshooting

## 8.3 Troubleshooting for Normal Malfunction

### 1. Air Conditioner Can't be Started Up

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

### 2. Poor Cooling (Heating) for Air Conditioner

| Possible Causes | Discriminating Method (Air conditioner Status) | Troubleshooting |
|---|---|---|
| Set temperature is improper | Observe the set temperature on remote controller | Adjust the set temperature |
| Rotation speed of the IDU fan motor is set too low | Small wind blow | Set the fan speed at high or medium |
| Filter of indoor unit is blocked | Check the filter to see its blocked | Clean the filter |
| Installation position for indoor unit and outdoor unit is improper | Check whether the installation postion is proper according to installation requirement for air conditioner | Adjust the installation position, and install the rainproof and sunproof for outdoor unit |
| Refrigerant is leaking | Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Units pressure is much lower than regulated range | Find out the leakage causes and deal with it. Add refrigerant. |
| Malfunction of 4-way valve | Blow cold wind during heating | Replace the 4-way valve |
| Malfunction of capillary | Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unitt pressure is much lower than regulated range. If refrigerant isn't leaking, part of capillary is blocked | Replace the capillary |
| Flow volume of valve is insufficient | The pressure of valves is much lower than that stated in the specification | Open the valve completely |
| Malfunction of horizontal louver | Horizontal louver can't swing | Refer to point 3 of maintenance method for details |
| Malfunction of the IDU fan motor | The IDU fan motor can't operate | Refer to troubleshooting for H6 for maintenance method in details |
| Malfunction of the ODU fan motor | The ODU fan motor can't operate | Refer to point 4 of maintenance method for details |
| Malfunction of compressor | Compressor can't operate | Refer to point 5 of maintenance method for details |

### 3. Horizontal Louver Can't Swing

| Possible Causes | Discriminating Method (Air conditioner Status) | Troubleshooting |
|---|---|---|
| Wrong wire connection, or poor connection | Check the wiring status according to circuit diagram | Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly |
| Stepping motor is damaged | Stepping motor can't operate | Repair or replace stepping motor |
| Main board is damaged | Others are all normal, while horizontal louver can't operate | Replace the main board with the same model |

# 8. Maintenance and Troubleshooting

### 4. ODU Fan Motor Can't Operate

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

### 5. Compressor Can't Operate

| Possible causes | Discriminating method (air conditioner status) | Troubleshooting |
|---|---|---|
| Wrong wire connection, or poor connection | Check the wiring status according to circuit diagram | Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly |
| Capacity of compressor is damaged | Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor. | Replace the compressor capacitor |
| Power voltage is a little low or high | Use universal meter to measure the power supply voltage. The voltage is a little high or low | Suggest to equip with voltage regulator |
| Coil of compressor is burnt out | Use universal meter to measure the resistance between compressor terminals and it's 0 | Repair or replace compressor |
| Cylinder of compressor is blocked | Compressor can't operate | Repair or replace compressor |

### 6. Air Conditioner is Leaking

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

### 7. Abnormal Sound and Vibration

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