




5. Troubleshooting

5-1 Items to be checked first

- 1) The input voltage should be rating voltage $\pm 10\%$ range.
The airconditioner may not operate properly if the voltage is out of this range.
- 2) Is the link cable linking the indoor unit and the outdoor unit linked properly?
The indoor unit and the outdoor unit shall be linked by 5 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner may not operate properly.
- 3) When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

NO	Operation of air conditioner	Explanation
1	The STD operation indication LED blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the INDOOR FAN should operate. In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew
3	Fan speed setting is not allowed in AUTO or DRY mode.  	The speed of the indoor fan is set to LL in DRY mode. Fan speed is 5 steps is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY mode. 	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes (maximum) until the deice is completed.
6	Timer LED only of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
7	The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
8	Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation
9	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.

- 4) Indoor unit observes operation condition of the air conditioner, and displays self diagnosis details on the display panel.

NO	Display	Self Diagnosis
1	STD LED blinking (1Hz)	Restore from power failure (input initial power)
2	TIMER LED blinking (1Hz)	Indoor unit Room sensor Error (open or short)
3	STD and TIMER LED blinking (1Hz)	Indoor unit heat exchanger temperature sensor Error (open or short)
4	NATURE LED blinking (1Hz)	Indoor fan malfunctioning (for speed is Below 450rpm)

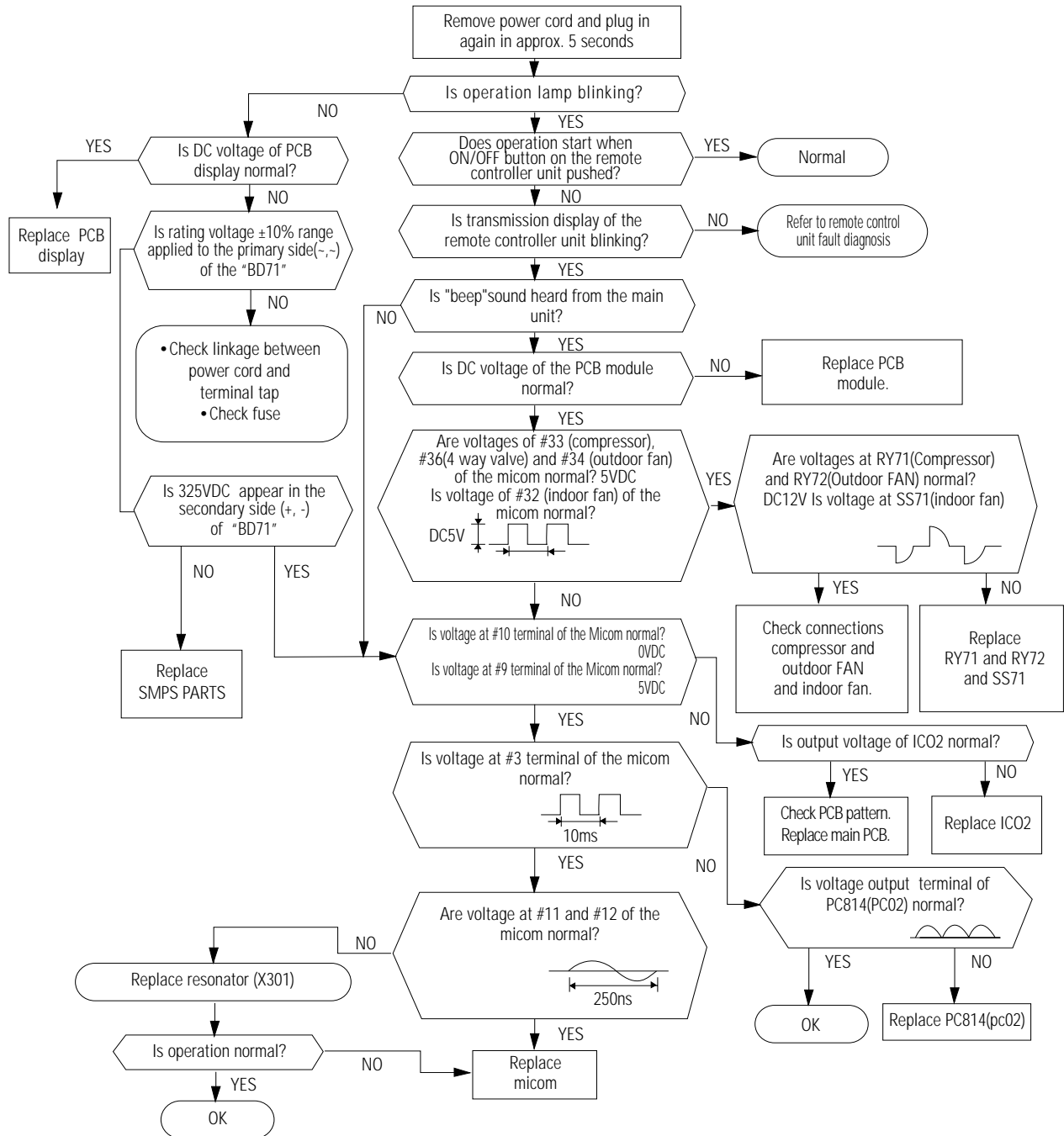
5-2 Fault Diagnosis by Symptom

5-2-1 No Power (completely dead)-Initial diagnosis

1) Checklist :

- (1) Is input voltage normal?
- (2) Is AC power linked correctly?
- (3) Is output voltage of DC regulator IC KA78L05 (IC02) normal? (4.5VDC-5.5VDC)

2) Troubleshooting procedure

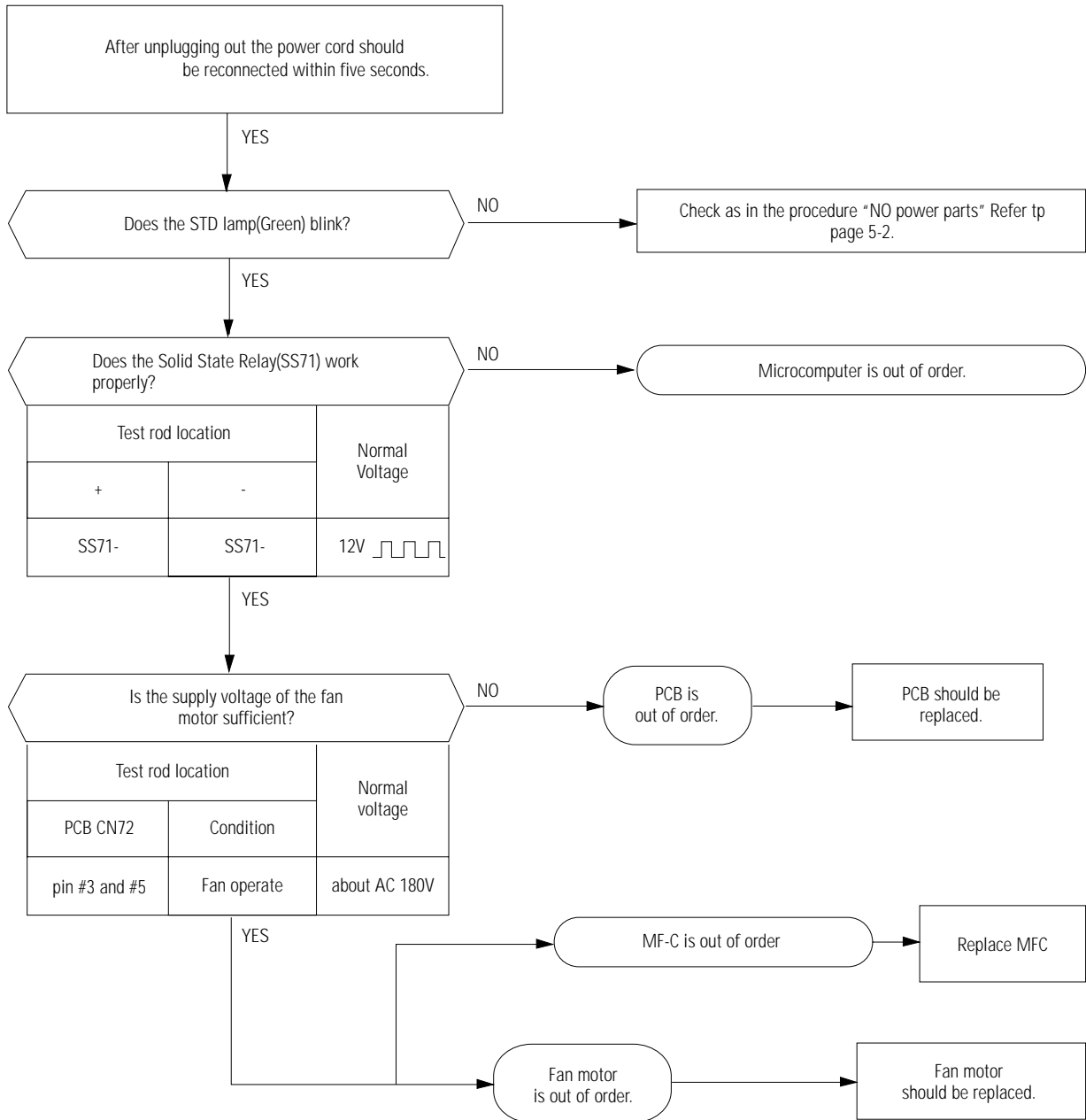


5-2-2 When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

1) Checklist :

- (1) Is the indoor unit fan motor properly connected with the connector (CN72)?
- (2) Is the AC voltage correct?
- (3) Is HALL IC in indoor fan motor properly connected with the connector (CN42)?
- (4) Is the running capacitor (CR71) properly connected with PCB board?

2) Troubleshooting procedure

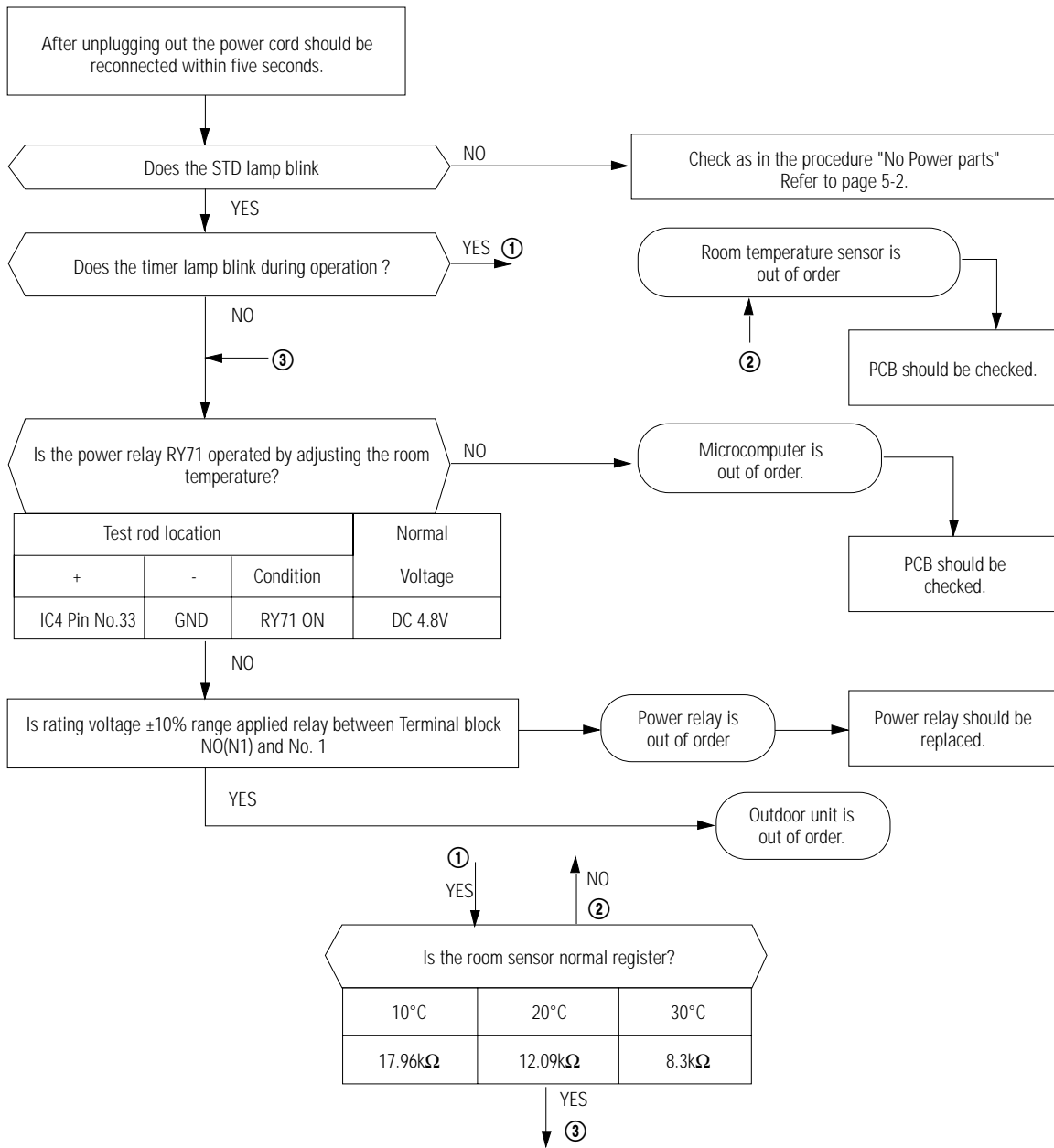


5-2-3 When the Outdoor Unit Does Not Operate. (Initial Diagnosis)

1) Checklist :

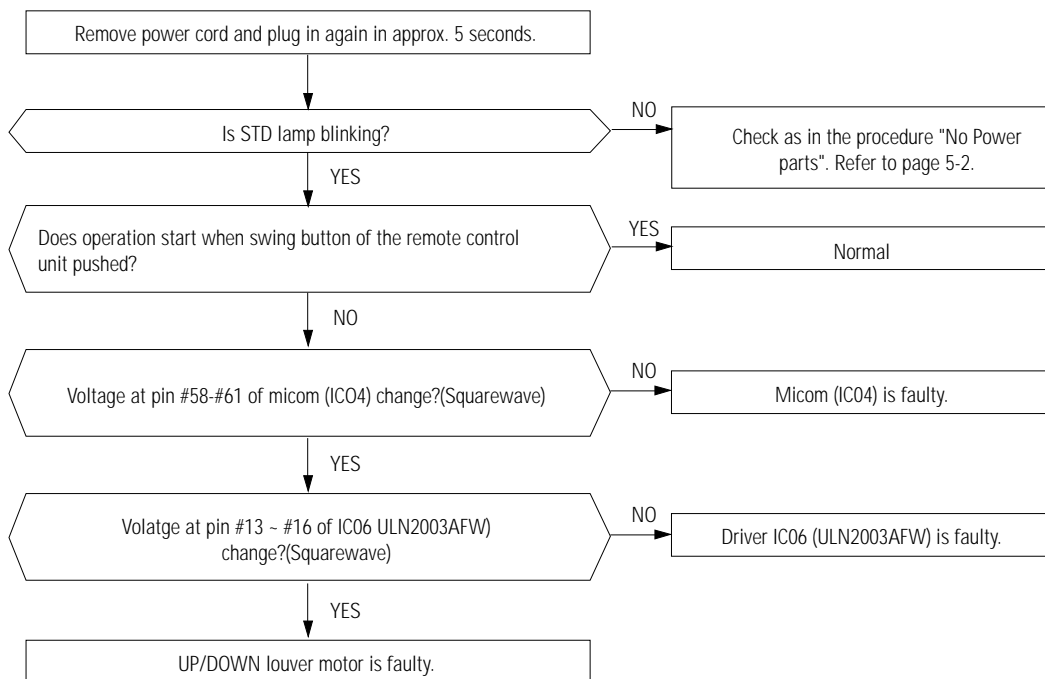
- (1) Is input voltage normal?
- (2) Is the set temperature of the remote control higher than room temperature in COOL mode?
- (3) Is the POWER IN connector (CN71) linked correctly?
- (4) Is the outdoor unit properly connected with the TERMINAL BLOCK connector((N1), 1)?

2) Troubleshooting procedure



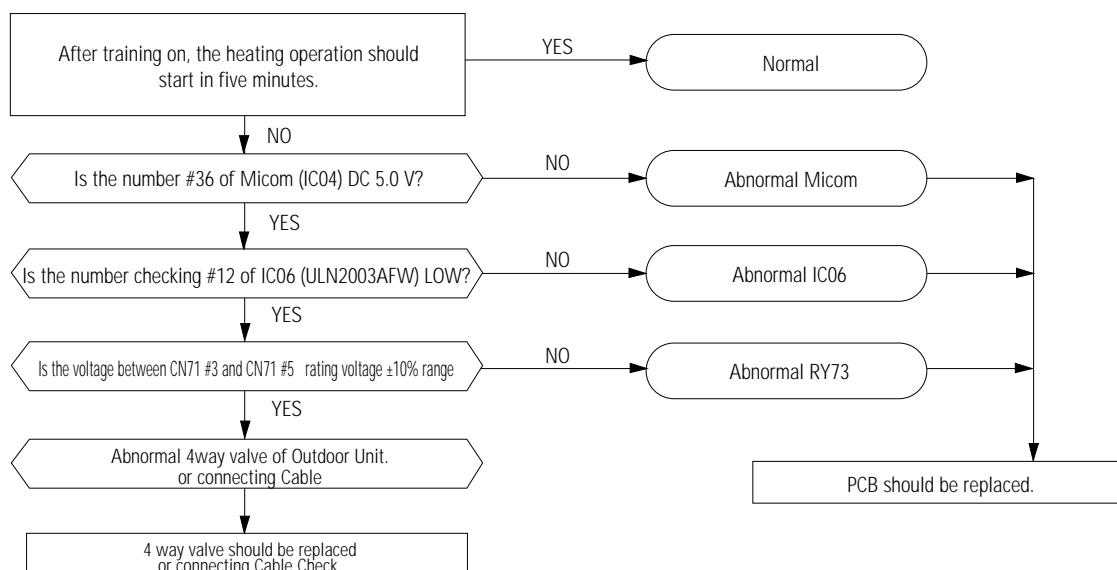
5-2-4 When the UP/DOWN Louver Moter Does Not Operate. (Initial Diagnosis)

- 1) Checklist :
 - (1) Is input voltage normal?
 - (2) Is the UP/DOWN louver motor properly connected with the connector (CN61)?
- 2) Troubleshooting procedure



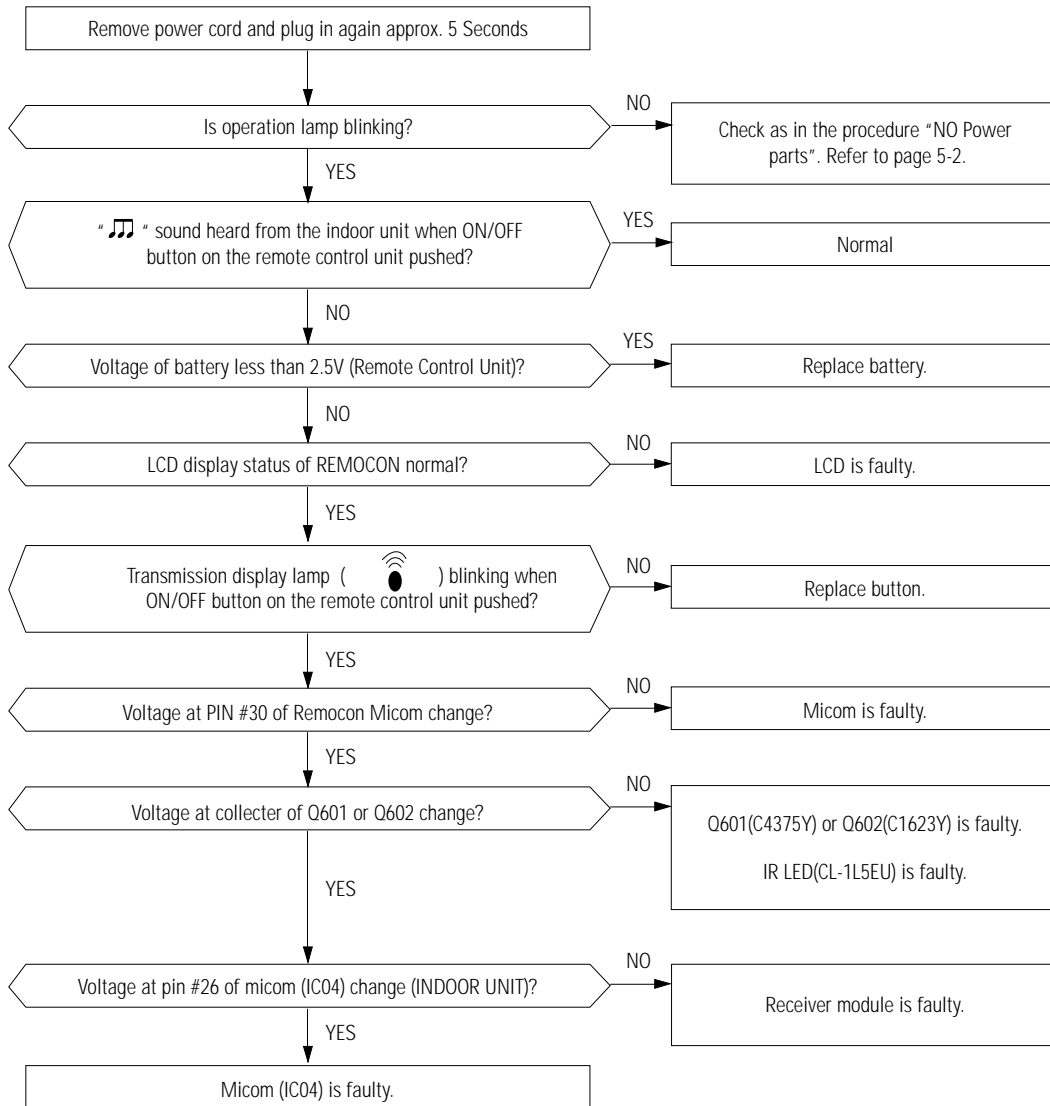
5-2-5 In the mode, When there is no warm air current. Check this first;

- (1) Is the set temperature of Remote Control lower than room temperature in Heat mode?
- (2) Is the Indoor PCB properly connected with the CN71 connector?



5-2-6 If Operation By Remote Control Unit Is Impossible. (Initial Diagnosis)

1) Troubleshooting procedure



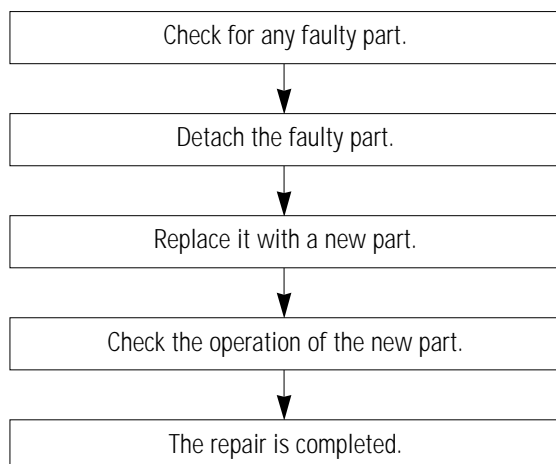
5-3 PCB Inspection

5-3-1 Cautions for Part Replacement

1. The human body carries much static electricity. Before touching a part for repair, replacement or the similar purpose, be sure to touch a grounded metallic portion by hand to let the static electricity go through the metallic portion to the earth. Especially when handling any micro computer or IC, carefully remove such static electricity before touching them.
2. When repairing any part on a work bench, be sure to place an insulative sheet on the bench and always keep the sheet surface neat without any metal fragments. If any such fragment touches a part, a secondary trouble will possibly be caused in the part.
3. Before replacing any parts, be sure to turn off the power supply. If such replacement is done with the power supply kept on, an electric shock, short circuit or destruction of a part may result.
4. During replacement or repair of a part, carefully handle it : The printed circuit board has fine lead wires (jumper wires) and glass-made parts (diode) on its substrate. So if a circuit board is roughly handled, such lead wires and parts will be easily broken or damaged by bending or shock.
5. When soldering the lead wires of any new part, be sure to polish them using an emery paper or the like before soldering them. Since the lead wires of any new part are covered with an oxide film, solder cannot adhere to the lead wires if not polished.
6. When soldering any part, care should be exercised not to apply any high-wattage soldering iron to the part for a long time. Some parts are of so low a heat resistance that they may be broken or have the properties changed if a soldering iron is so applied (Otherwise, the pattern may possibly be separated and raised).
7. The heat of the soldering iron should be transferred to the entire object to be soldered. If the solder pieces are not well fused due to insufficient transfer of the heat from the soldering iron, no satisfactory electrical continuity can be assured even if the soldered objects appear well connected to each other.
8. The solder used should be limited to a minimum. If excessive solder is used, it will cause inter-pattern contact, which may cause malfunction of the circuit.

5-3-2 Procedure

The parts should be replaced in the following procedure.



5-3-3 Detailed Procedure

No.	Malfunction	Checking point (symptoms)	Causes
1	Pull out the power plug from the AC terminal and confirm the fuse on the PCB assembly	1. Is the broken(open)?	<ul style="list-style-type: none"> ▷ Voltage over ▷ Indoor unit fan motor short-circuit
2	Turn the power on.	Voltage check	SMPS circuit is faulty
		1. AC voltage at BD71(-,-)? : rating voltage ± 10% range	▷ SMPS circuit is faulty
		2. DC voltage at BD71(+,-)? : about 325[v] ± 10%	
		3. DC voltage at IC02 : IN-GND → DC12[v] : OUT-GND → DC5[v]	
		4. Voltage waveform at Q201 : collector-GND → squarewave	▷ PC02, R202-R205
3	Set the TURBO mode	Voltage check	SMPS circuit is faulty
		1. check voltage of IC06 (pin#10,pin#8) : relay on → 0.7[v] : relay off → 12[v]	▷ IC06 is faulty
		2. Voltage at terminal block ((N1) -1) → rating voltage	▷ RY71 is faulty

5-4 Fault Diagnosis of Major Parts

Parts	Diagnosis																	
Temp.Sensor	Measure resistance with a tester.																	
Heat ex. Sensor	Normal	<table border="1"> <tr> <td>Ambient temperature</td> <td>15°C</td> <td>20°C</td> <td>25°C</td> <td>30°C</td> <td>35°C</td> <td>40°C</td> </tr> <tr> <td>Resistance of thermistor[kΩ]</td> <td>14.68</td> <td>12.09</td> <td>10</td> <td>8.31</td> <td>6.94</td> <td>5.83</td> </tr> </table>	Ambient temperature	15°C	20°C	25°C	30°C	35°C	40°C	Resistance of thermistor[kΩ]	14.68	12.09	10	8.31	6.94	5.83		
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Resistance of thermistor[kΩ]	14.68	12.09	10	8.31	6.94	5.83												
	Abnormal	∞, 0Ω ... open or short																
Indoor Fan Motor	Measure resistance between terminals (CN72) with a tester																	
	Normal	<p>At ambient temperature (10°C ~ 30°C)</p> <table border="1"> <tr> <td>between</td> <td>Voltage</td> <td></td> </tr> <tr> <td>Red, Blue</td> <td>410±10%</td> <td>Main</td> </tr> <tr> <td>Red, Yellow</td> <td>325±10%</td> <td>Sub</td> </tr> </table>	between	Voltage		Red, Blue	410±10%	Main	Red, Yellow	325±10%	Sub							
between	Voltage																	
Red, Blue	410±10%	Main																
Red, Yellow	325±10%	Sub																
	Abnormal	∞, 0Ω ... open or short																
	Measure the voltage between ground and signal wire of the fan motor																	
	Normal	<table border="1"> <tr> <td>between</td> <td>Voltage</td> </tr> <tr> <td>Gray, Orange</td> <td>0.5V~4.5V</td> </tr> <tr> <td>Yellow, Orange</td> <td>5V</td> </tr> </table>	between	Voltage	Gray, Orange	0.5V~4.5V	Yellow, Orange	5V										
between	Voltage																	
Gray, Orange	0.5V~4.5V																	
Yellow, Orange	5V																	
	Abnormal	Abnormal if voltage does not change from 0V to 5V.																
Outdoor Fan Motor	Normal	<p>At ambient temperature (10°C ~ 30°C)</p> <table border="1"> <tr> <td></td> <td>***7(*8)**</td> <td>***5(*6)(*9)(*0)**</td> <td></td> </tr> <tr> <td>between</td> <td colspan="2">Resistance</td> <td></td> </tr> <tr> <td>Black, Red</td> <td>304±10%</td> <td>360±10%</td> <td>Main</td> </tr> <tr> <td>Black, White</td> <td>289±10%</td> <td>257±10%</td> <td>Sub</td> </tr> </table>		***7(*8)**	***5(*6)(*9)(*0)**		between	Resistance			Black, Red	304±10%	360±10%	Main	Black, White	289±10%	257±10%	Sub
	***7(*8)**	***5(*6)(*9)(*0)**																
between	Resistance																	
Black, Red	304±10%	360±10%	Main															
Black, White	289±10%	257±10%	Sub															
	Abnormal	∞, 0Ω ... open or short																
Stepping Motor (UP/DOWN swing motor)	Measure resistance between red wire and each terminal.																	
	Normal	Approx. 380Ω at ambient temperature (20°C ~30°C)																
	Abnormal	∞, 0Ω ... open or short																

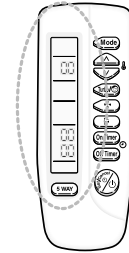
5-5 Set up the Model option

The Method for Setting up the model option with remocon

- **It is necessary to set up option code after replacing the main-PCB as a service parts.**
Make sure that you can set up the option of code the remote controller after you replace the main PBA otherwise, the unit won't be working properly and all LED lamps on display will be flickering.

Step 1 : Preparing the remocon to main PCB option set

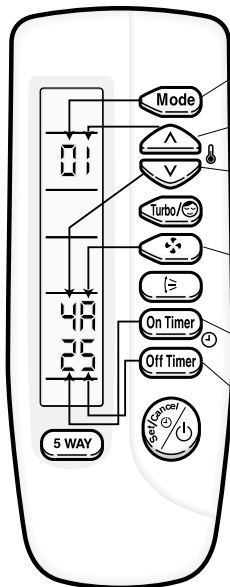
- 1st Remove the battery from the remocon.
- 2nd Press the temperature raise/down button simultaneously and insert the battery again.
- 3rd Make sure the remocon display shown as $\square\square\square\square$.



Step 2 : Second stage preparation of the remocon option set.

※ **Note** ; In case the wrong letter has been selected, continue to press the button until the correct letter appears.

- 1st If the first stage number "1" appears on the display, proceed to the second stage.
- 2nd Every time the ① and ⑦ button, "1" and "7" each continue to appear.
- 3rd Whenever pressing the ②, ③, ④, ⑤, ⑥, ⑧, ⑨, ⑩, ⑪, ⑫ button, the number increase from 0~9(0123456789) and A, b, C, d, E, F each time.



① If the first number is 1, it is correct otherwise press **Mode** until 1 appear.

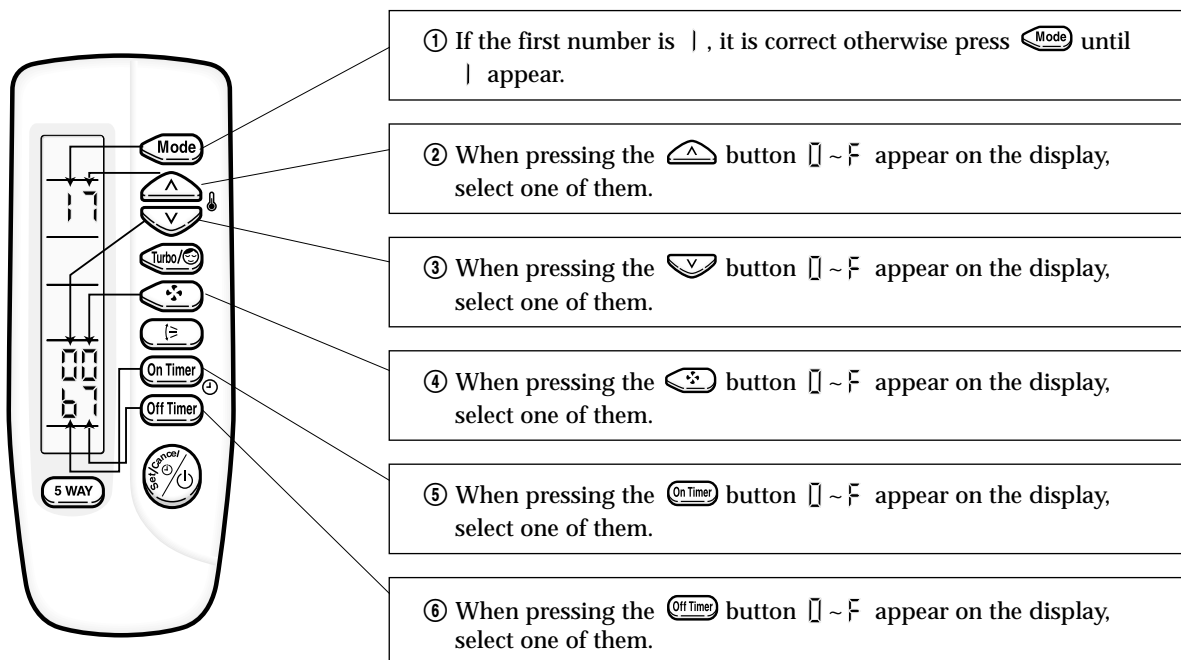
② When pressing the **Up Arrow** button 0 ~ F appear on the display, select one of them.

③ When pressing the **Down Arrow** button 0 ~ F appear on the display, select one of them.

④ When pressing the **Turbo** button 0 ~ F appear on the display, select one of them.

⑤ When pressing the **On Timer** button 0 ~ F appear on the display, select one of them.

⑥ When pressing the **Off Timer** button 0 ~ F appear on the display, select one of them.



Step 3 : Reconfirming option set after completion

(in case of ex. 014A25-1700b7)

After pressing **Mode** selector for the □ mode, the display shown as 01 48 25.

After pressing **Mode** selector for the | mode, the display shown as 17 00 b7.

Step 4 : Pressing the ON/OFF button (⏻)

When pressing the operation ON/OFF key with the direction of remote controller for unit, the sound “Ding” or “Diriring” is heard and the first LED lamp on the left side is flickering at the same time, then the input of option is completed. (If the diriring sound isn’t heard, try again pressing the ON/OFF button.)

Step 5 : Unit operation test-run

First, Remove the battery from the remote controller.

Second, Re-insert the battery into the remote controller.

Third, Press ON/OFF key with the direction of remote controller for set.

• Error Mode

- 1st If all lamps of indoor unit are flickering, Plug out and plug in again and pressing ON/OFF key to retry.
- 2nd If the unit is not working properly or all lamps are continuously flickering after setting the option code, see if the correct option code is set up for it’s model.

<Table of the option code>

MODEL	OPTION CODE
AQ12*5MB	017725-17021d
AQ12*6MB	007725-17021d
AQ12*5ME	017626-17021d
AQ12*6ME	007626-17021d
AQ09*5ME SH09Z*5	016A25-1700d9
AQ09*6ME SH09Z*6	006A25-1700d9
AQ09*5MED SH09Z*5D	016024-1700EA
AQ09*6MED SH09Z*6D	006024-1700EA
AQ07*5ME / AQ07*5MED SH07Z*5 / SH07Z*5D	014A25-1700b7
AQ07*6ME / AQ07*6MED SH07Z*6 / SH07Z*6D	004A25-1700b7
AQ09*7ME SH09Z*7	016825-1700d9
AQ09*8ME SH09Z*8	006825-1700d9
AQ07*7ME SH07Z*7	014825-170067
AQ07*8ME SH07Z*8	004825-170067
AQ12*9ME SH12Z*9	017d25-17021d
AQ12*0ME SH12Z*0	007d25-17021d
AQ12*A(B)ME SH12Z*A(B)X	007227-17023F