

11. HOW TO DIAGNOSE THE TROUBLE

The pulse motor circuits are mounted to both indoor and outdoor units. Therefore, diagnose troubles according to the trouble diagnosis procedure as described below. (Refer to the check points in servicing written on the wiring diagrams attached to the indoor/outdoor units.)

Table 11-1

No.	Troubleshooting Procedure	Page	No.	Troubleshooting Procedure	Page
1	First Confirmation	69	6	Check Code 1C (Miswiring in indoor/outdoor units) and 1E	82
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◆ Precautions when handling the new inverter (3DV Inverter)

⚠ CAUTION: HIGH VOLTAGEN

The high voltage circuit is incorporated.

Be careful to do the check service, as the electric shock may be caused in case of touching parts on the P.C. board by hand.

The new inverter (3DV inverter) will be incorporated starting with this unit.

(3DV: 3-shunt Discrete Vector control)

◆ The control circuitry has an uninsulated construction.

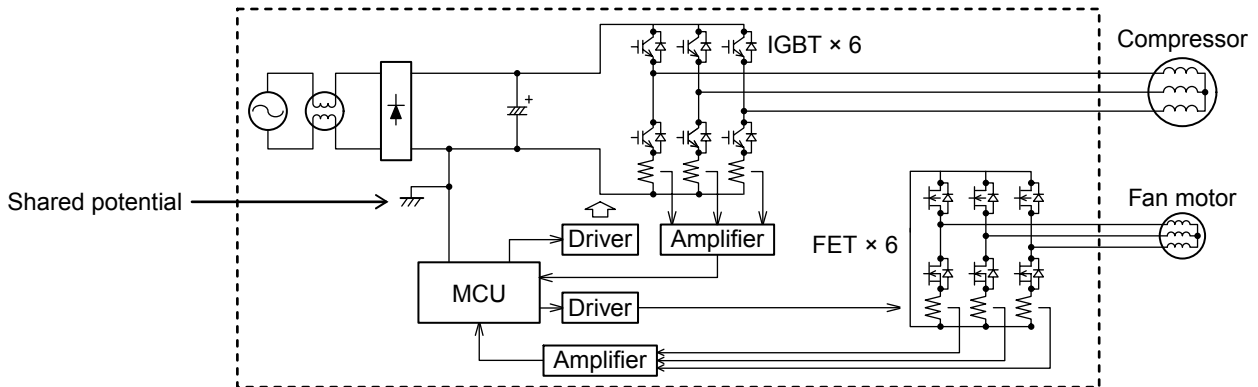


Fig. 11-1

⚠ CAUTION

A high voltage (equivalent to the supply voltage) is also energized to ground through the sensors, PMV and other low-voltage circuits. The sensor leads and other wires are covered with insulated tubes for protection. Nevertheless, care must be taken to ensure that these wires are not pinched.

Take sufficient care to avoid directly touching any of the circuit parts without first turning off the power.

At times such as when the circuit board is to be replaced, place the circuit board assembly in a vertical position.

Laying the board flat on an electrically conductive object (such as the top panel of the air conditioner's outdoor unit) while a charge is still retained by the electrolytic capacitors of the inverter's main circuit may cause short-circuiting between the electrolytic capacitors and secondary circuit components and result in damage to the components.



Fig. 11-2

Do NOT lay the circuit board assembly flat.

◆ Precautions when inspecting the control section of the outdoor unit

NOTE :

A large-capacity electrolytic capacitor is used in the outdoor unit controller (inverter). Therefore, if the power supply is turned off, charge (charging voltage DC280 to 380V) remains and discharging takes a lot of time. After turning off the power source, if touching the charging section before discharging, an electrical shock may be caused. Discharge the electrolytic capacitor completely by using soldering iron, etc.

< Discharging method >

1. Remove the inverter cover (plating) by opening four mounting claws.
2. As shown below, connect the discharge resistance (approx. $100\Omega/40W$) or plug of the soldering iron to voltage between + – terminals of the C14 ("CAUTION HIGH VOLTAGE" is indicated.) electrolytic capacitor on P.C. board, and then perform discharging.

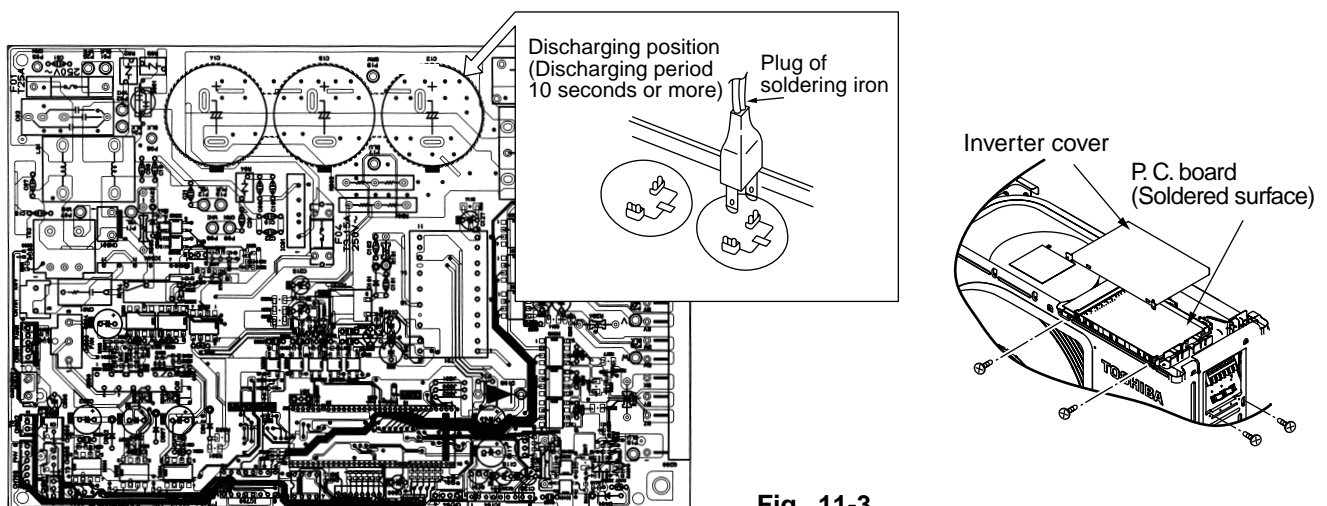


Fig. 11-3

11-1. First Confirmation**11-1-1. Confirmation of Power Supply**

Confirm that the power breaker operates (ON) normally.

11-1-2. Confirmation of Power Voltage

Confirm that power voltage is AC 220–230–240 ± 10%.

If power voltage is not in this range, the unit may not operate normally.

11-1-3. Operation Which is not a Trouble (Program Operation)

For controlling the air conditioner, the program operations are built in the microcomputer as described in the following table.

If a claim is made for running operation, check whether or not it meets to the contents in the following table.

When it does, we inform you that it is not trouble of equipment, but it is indispensable for controlling and maintaining of air conditioner.

Table 11-1-1

No.	Operation of air conditioner	Description
1	When power breaker is turned "ON", the operation indicator (Green) of the indoor unit flashes.	The OPERATION lamp of the indoor unit flashes when power source is turned on. If [START/STOP] button is operated once, flashing stops. (Flashes also in power failure)
2	Compressor may not operate even if the room temperature is within range of compressor-ON.	The compressor does not operate while compressor restart delay timer (3-minutes timer) operates. The same phenomenon is found after power source has been turned on because 3-minutes timer operates.
3	In Dry and ECO mode, FAN (air flow) display does not change even though FAN (air flow select) button is operated.	The air flow indication is fixed to [AUTO].
4	Increasing of compressor motor speed stops approx. 30 seconds after operation started, and then compressor motor speed increases again approx. 30 seconds after.	For smooth operation of the compressor, the compressor motor speed is restricted to Max. 41 rps for 2 minutes, and Max.91 rps for 2 minutes to 3 minutes, respectively after the operation has started.
5	In AUTO mode, the operation mode is changed.	After selecting Cool or Heat mode, select an operation mode again if the compressor keeps stop status for 15 minutes.
6	In HEAT mode, the compressor motor speed does not increase up to the maximum speed or decreases before the temperature arrives at the set temperature.	The compressor motor speed may decrease by high-temp. release control (Release protective operation by temp.-up of the indoor heat exchanger) or current release control.

11-2. Primary Judgment

To diagnose the troubles, use the following methods.

- 1) Judgment by flashing LED of indoor unit
- 2) Self-diagnosis by service check remote controller
- 3) Judgment of trouble by every symptom

Firstly use the method 1) for diagnosis. Then, use the method 2) or 3) to diagnose the details of troubles.

11-3. Judgment by Flashing LED of Indoor Unit

While the indoor unit monitors the operation status of the air conditioner, if the protective circuit operates, the contents of self-diagnosis are displayed with block on the indoor unit indication section.

Table 11-3-1

	Item	Check code	Block display	Description for self-diagnosis
<div style="border: 1px solid black; padding: 5px; width: fit-content;">Indoor indication lamp flashes.</div> <div style="margin-left: 20px;">↓</div> <div style="border: 1px solid black; padding: 5px; width: fit-content;">Which lamp does flash?</div> <div style="margin-left: 20px;">↓</div> <div style="margin-left: 20px;">→</div>	A	—	OPERATION (Green) Flashing display (1 Hz)	Power failure (when power is ON)
	B	00	OPERATION (Green) Flashing display (5 Hz)	Protective circuit operation for indoor P.C. board
	C	01	OPERATION (Green) TIMER (Yellow) Flashing display (5 Hz)	Protective circuit operation for connecting cable and serial signal system
	D	02	OPERATION (Green) FILTER (Orange) Flashing display (5 Hz)	Protective circuit operation for outdoor P.C. board
	E	03	OPERATION (Green) TIMER (Yellow) FILTER (Orange) Flashing display (5 Hz)	Protective circuit operation for others (including compressor)


NOTES :

1. The contents of items B and C and a part of item E are displayed when air conditioner operates.
2. When item B and C, and item B and a part of item E occur concurrently, priority is given to the block of item B.
3. The check codes can be confirmed on the remote controller for servicing.



11-4. Self-Diagnosis by Remote Controller (Check Code)

1. If the lamps are indicated as shown B to E in Table 11-3-1, execute the self-diagnosis by the remote controller.
2. When the remote controller is set to the service mode, the indoor controller diagnoses the operation condition and indicates the information of the self-diagnosis on the display of the remote controller with the check codes. If a fault is detected, all lamps on the indoor unit will flash at 5Hz and it will beep for 10 seconds (Beep, Beep, Beep ...). The timer lamp usually flashes (5Hz) during self-diagnosis.

11-4-1. How to Use Remote Controller in Service Mode



1 Press [] button with a tip of pencil to set the remote controller to the service mode.

- “00” is indicated on the display of the remote controller.

2 Press [] or [] button

If there is no fault with a code, the indoor unit will beep once (Beep) and the display of the remote controller will change as follows :


00 → 01 → 02 ... 1d → 1E → 33

- The TIMER indicator of the indoor unit flashes continuously. (5 times per 1 sec.)
- Check the unit with all 52 check codes (00 to 33) as shown in Table-11-4-1.
- Press [] or [] button to change the check code backward.

If there is a fault, the indoor unit will beep for 10 seconds (Beep, Beep, Beep...).




Note the check code on the display of the remote controller.

- 2-digits alphanumeric will be indicated on the display.
- All indicators on the indoor unit will flash. (5 times per 1 sec.)

3 Press [] button to release the service mode.

- The display of the remote controller returns to as it was before service mode was engaged.

4 Time shortening method.

1. Press [] button while pushing [] button.
2. Press [] button.

Alphanumeric characters are used for the check codes.

5 is 5.	6 is 6.
A is A.	B is B.
C is C.	D is D.

Fig. 11-4-1

11-4-2. Caution at Servicing

1. After servicing, press the START/STOP button to return to the normal mode.
2. After servicing by the check code, turn off breaker of the power supply, and turn on breaker of the power supply again so that memory in the microcomputer returns the initial status.
However, the check codes are not deleted even if the power supply is turned off because they are stored in the fixed memory.
3. After servicing, press [CLR] button under check mode status and then send the check code "7F" to the indoor unit. The error code stored in memory is cleared.

Table 11-4-1

Block distinction		Operation of diagnosis function				Judgment and action
Check code	Block	Check code	Cause of operation	Air conditioner status	Remarks	
00	Indoor P.C. board etc.	01	Short-circuit or disconnection of the room temperature sensor (TA sensor).	Operation continues.	Displayed when error is detected.	1. Check the room temp. sensor. 2. When the room temp. sensor is normal, check P.C. board.
		02	Being out of place, disconnection, short-circuit, or migration of heat exchanger sensor (TC sensor)	Operation continues.	Displayed when error is detected.	1. Check heat exchanger sensor. 2. When heat exchanger sensor is normal, check P.C. board.
		11	Lock of indoor fan or trouble on the indoor fan circuit	All off	Displayed when error is detected.	1. Check the motor. 2. When the motor is normal, check P.C. board.
	Not displayed	12	Trouble on other indoor P.C. boards	Operation continues.	Displayed when error is detected.	Replace P.C. board.
01	Connecting cable and serial signal	04	Return serial signal is not sent to indoor side from operation started. 1) Defective wiring of connecting cable 2) Operation of compressor thermo Gas shortage Gas leak	Operation continues.	Flashes when trouble is detected on Return serial signal, and normal status when signal is reset.	1. When the outdoor unit never operate: 1) Check connecting cable, and correct if defective wiring. 2) Check 25A fuse of inverter P.C. board. 3) Check 3.15A of inverter P.C. board. 2. To display [Other] block during operation, check compressor thermo. operation and supply gas (check gas leak also). 3. Unit operates normally during check. If return serial signal does not stop between indoor terminal board 2 and 3, replace inverter P.C. board. If signal stops between indoor terminal board 2 and 3, replace indoor P.C. board.

Block distinction		Operation of diagnosis function				Judgment and action
Check code	Block	Check code	Cause of operation	Air conditioner status	Remarks	
02	Outdoor P.C. board	14	Inverter over-current protective circuit operates. (Short time)	All off	Displayed when error is detected.	Even if trying operation again, all operations stop immediately. : Replace P.C. board.
		15	Position-detect circuit error or short-circuit between windings of compressor	All off	Displayed when error is detected.	1. Even if connecting lead wire of compressor is removed, position-detect circuit error occurred. : Replace P.C. board. 2. Measure resistance between wires of compressor, and perform short-circuit. : Replace compressor.
		17	Current-detect circuit error	All off	Displayed when error is detected.	Even if trying operation again, all operations stop immediately. : Replace P.C. board.
		18	Being out of place, disconnection or short-circuit of the outdoor heat exchanger sensor (TE) or suction temp. sensor (Ts)	All off	Displayed when error is detected.	1. Check sensors (TE, TS). 2. Check P.C. board.
		19	Disconnection or short-circuit of discharge temp. sensor	All off	Displayed when error is detected.	1. Check discharge temp. sensor (TD). 2. Check P.C. board
		1A	Outdoor fan drive system error	All off	Displayed when error is detected.	Position-detect error, over-current protective operation of outdoor fan drive system, fan lock, etc. : Replace P.C. board or fan motor.
	Not displayed	16	Outdoor heat exchanger temp. sensor error	Operation continues	—	1. Check outdoor temp. sensor (TO). 2. Check P.C. board.
Outdoor P.C. board	1E	Compressor drive output error, Compressor error (lock, missing, etc.), Break down	All off	Displayed when error is detected.	When 20 seconds passed after start-up, position-detect circuit error occurred. : Replace compressor. Trouble on P.M.V.	
03	Others (including compressor)	07	Return serial signal has been sent when operation started, but it is not sent from halfway. 1) Compressor thermo. operation Gas shortage Gas leak 2) Instantaneous power failure	Operation continues	Flashes when trouble is detected on return serial signal, and normal status when signal is reset.	1. Repeat Start and Stop with interval of approx. 10 to 40 minutes. (Code is not displayed during operation.) Supply gas. (Check also gas leak). 2. Unit operates normally during check. If return serial signal does not stop between indoor terminal block 2 and 3, replace inverter P.C. board. If signal stops between indoor terminal block 2 and 3, replace indoor P.C. board.
		1D	Compressor does not rotate. (Current protective circuit does not operate when a specified time passed after compressor had been activated.)	All off	Displayed when error is detected.	1. Trouble on compressor 2. Trouble on wiring of compressor (Missed phase)
		1E	Discharge temp. exceeded 117°C	All off	Displayed when error is detected.	1. Check discharge temp. sensor (TD). 2. Gas leakage 3. Trouble on P.M.V.
		1F	Break down of compressor	All off	Displayed when error is detected.	1. Check power voltage. (220–230–240 V +10%) 2. Overload operation of refrigeration cycle Check installation condition (Short-circuit of outdoor diffuser).
		08	4-way valve inverse error (TC sensor value lowered during heating operation.)	Operation continues	—	1. Check 4-way valve operation.

11-5. Judgment of Trouble by Every Symptom

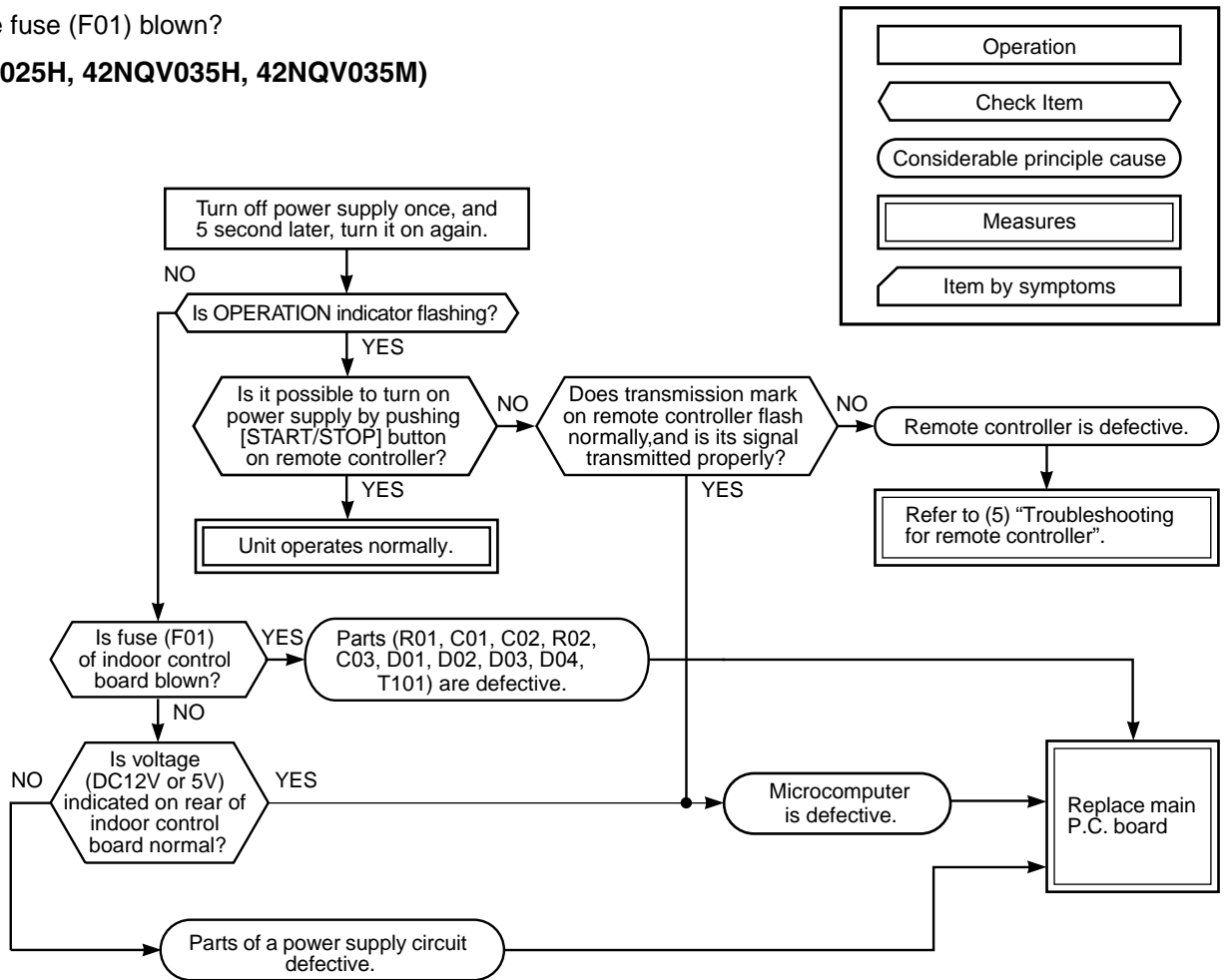
11-5-1. Indoor Unit (Including Remote Controller)

(1) Power is not turned on (Does not operate entirely)

<Primary check>

1. Is the supply voltage normal?
2. Is the normal voltage provided to the outdoor unit?
3. Is the crossover cable connected properly?
4. Is the fuse (F01) blown?

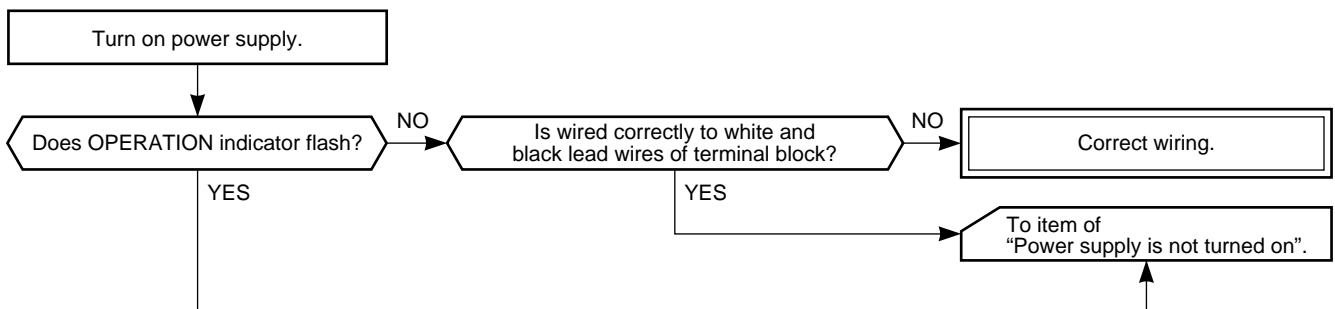
(42NQV025H, 42NQV035H, 42NQV035M)



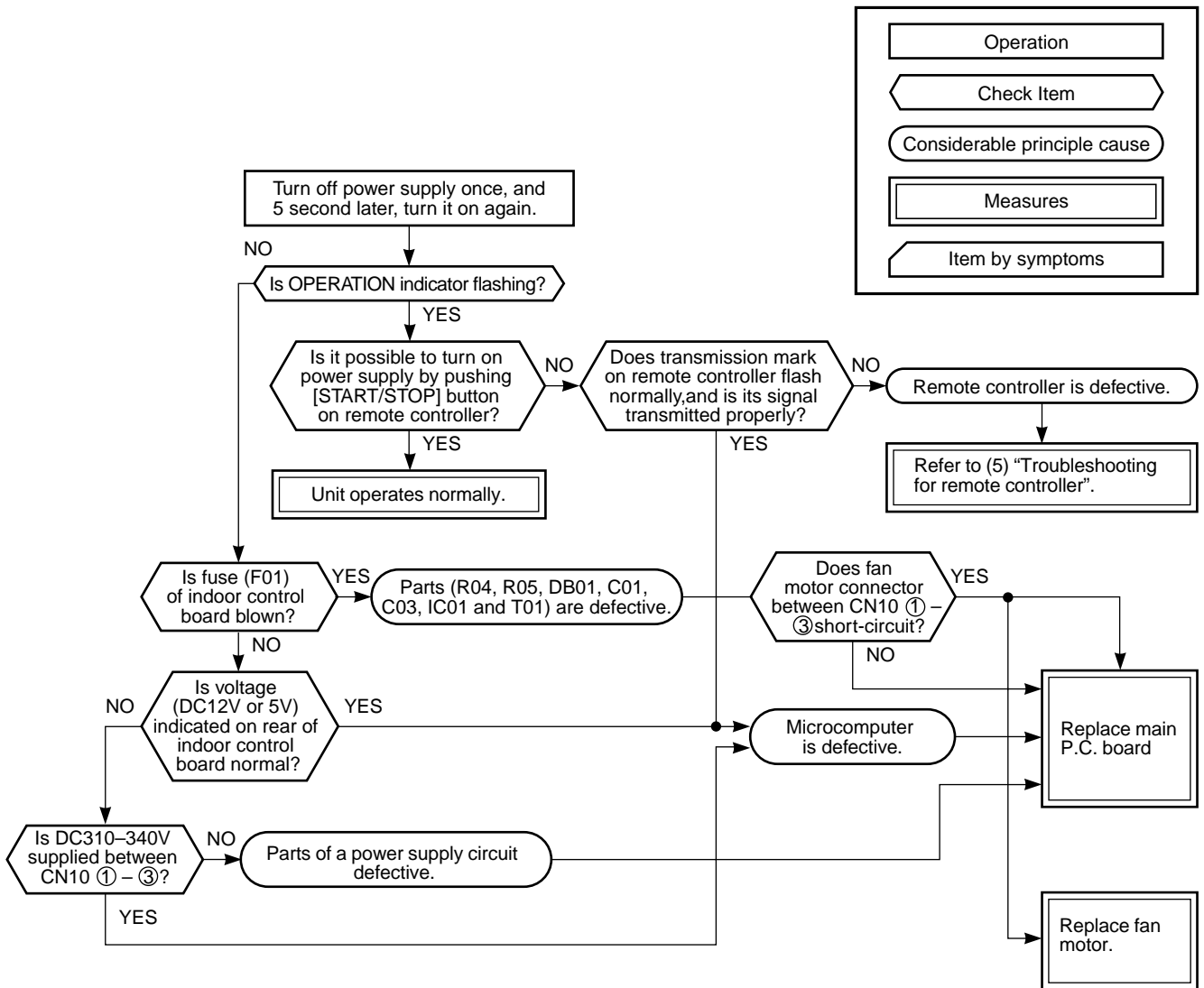
- Be sure to disconnect the motor connector CN31 after shut off the power supply, or it will be a cause of damage of the motor.

(2) Power is not turned on though Indoor P.C. board is replaced

<Confirmation procedure>



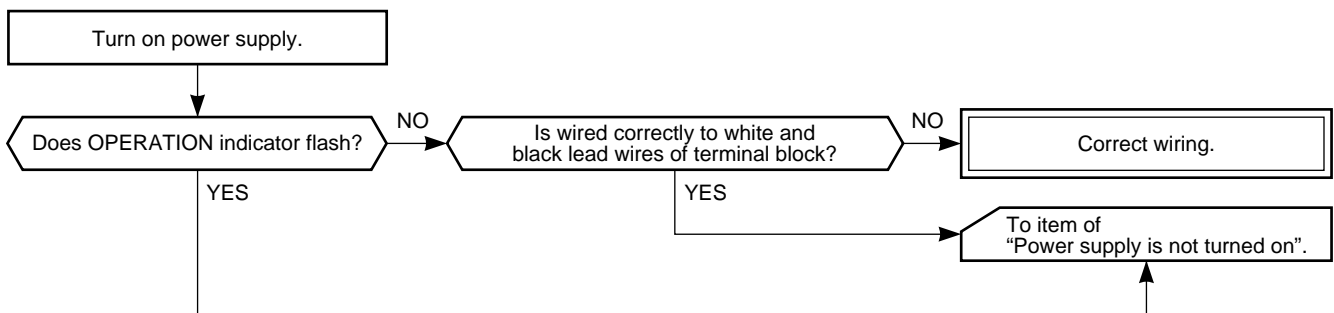
(42NQV045H, 42NQV045M)



- Be sure to disconnect the motor connector CN31 after shut off the power supply, or it will be a cause of damage of the motor.

(2) Power is not turned on though Indoor P.C. board is replaced

<Confirmation procedure>

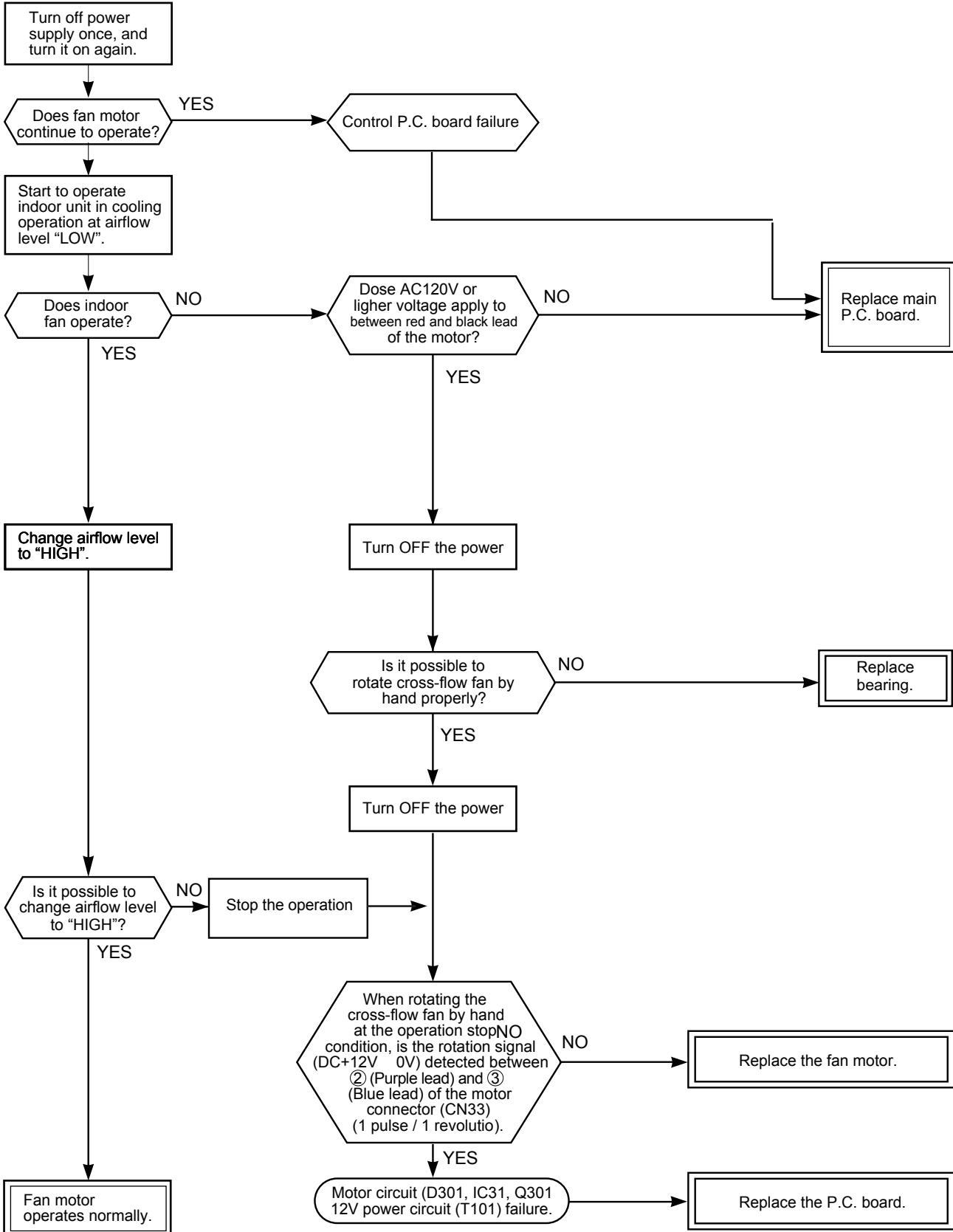


(3) Only the indoor motor fan does not operate

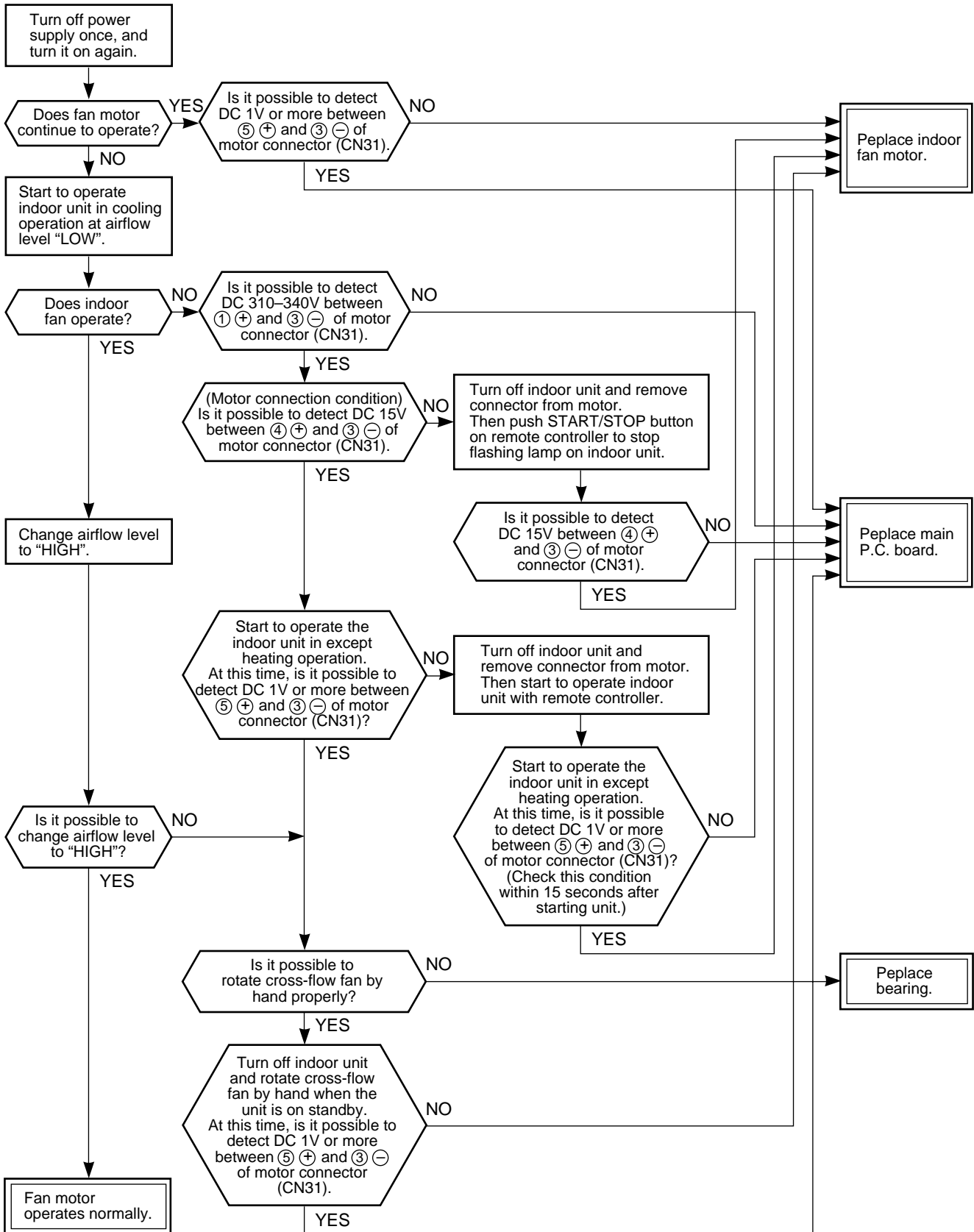
<Primary check>

1. Is it possible to detect the power supply voltage (AC220–240V) between ① and ② on the terminal block?
2. Does the indoor fan motor operate in cooling operation?
(In heating operation, the indoor fan motor does not operate for approximately 10 minutes after it is turned on, to prevent a cold air from blowing in.)

(42NQV025H, 42NQV035H, 42NQV035M)



(42NQV045H, 42NQV045M)



(4) Indoor fan motor automatically starts to rotate by turning on power supply

(For DC fan motor in 42NQV045H, 42NQV045M)

<Cause>

The IC is built in the indoor fan motor. Therefore the P.C. board is also mounted to inside of the motor.

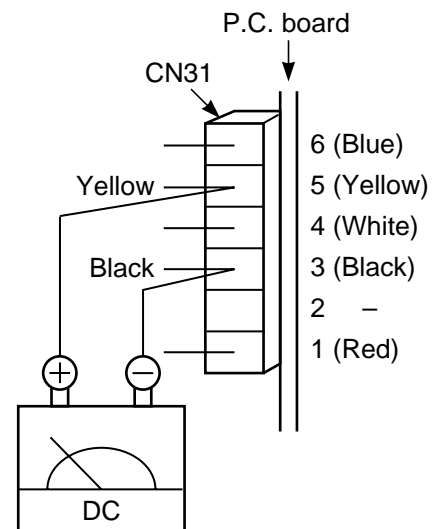
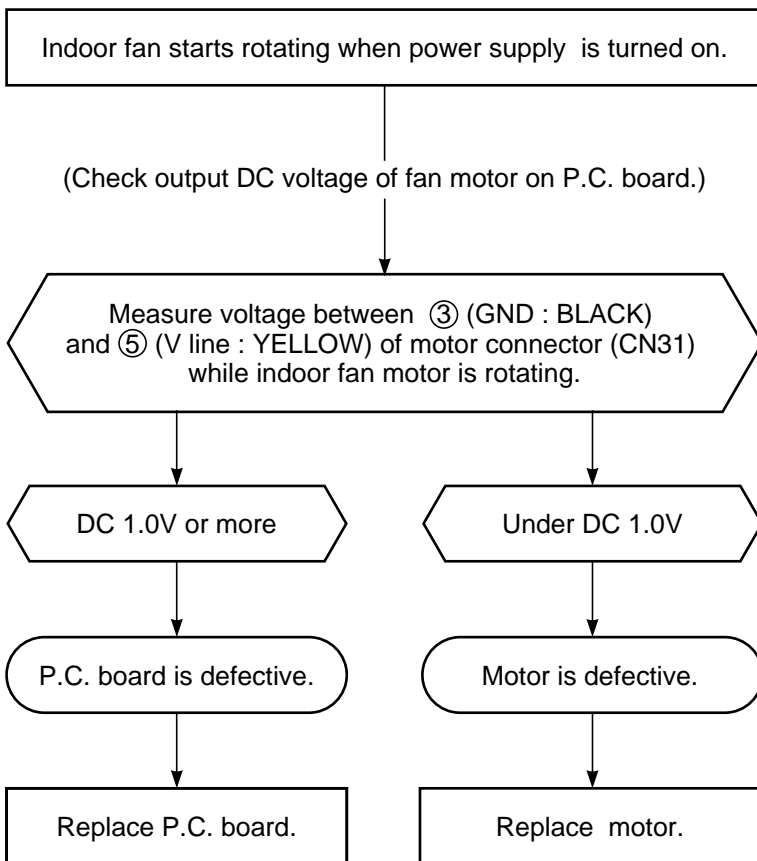
If the P.C. board is soldered imperfectly or the IC is defective, the fan motor may automatically rotate by turning on power supply.

<Inspection procedure>

1. Remove the front panel. (Remove 2 screws.)
2. Remove the cover of the fan motor lead wires.
3. Check DC voltage with CN31 connector while the fan motor is rotating.

NOTE :

- Do not disconnect the connector while the fan motor is rotating.
- Use a thin test rod.



(For AC fan motor in 42NQV025H, 42NQV035H, 42NQV035M)

<Inspection procedure>

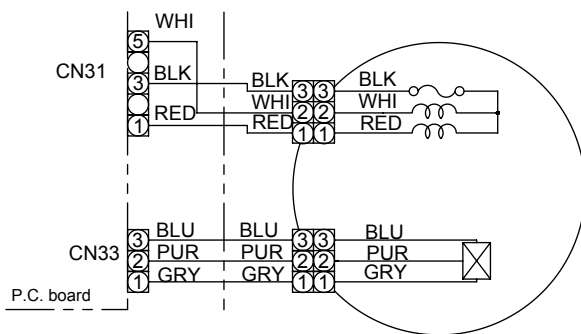
1. Remove the front panel. (Remove 2 screws.)
2. Remove the cover of the fan motor lead wires.
3. Check AC voltage with CN31 connector while the fan motor is rotating.

NOTE :

- Using a tester, measure the resistance value of each winding coil.
- Use a thin test rod.

AFS-220-20-4AR

- Do not disconnect the connector while the fan motor is rotating.
- For P.C. board side, proceed to the item "Only indoor fan does not operate" of "Judgment of Trouble by Every Symptom".

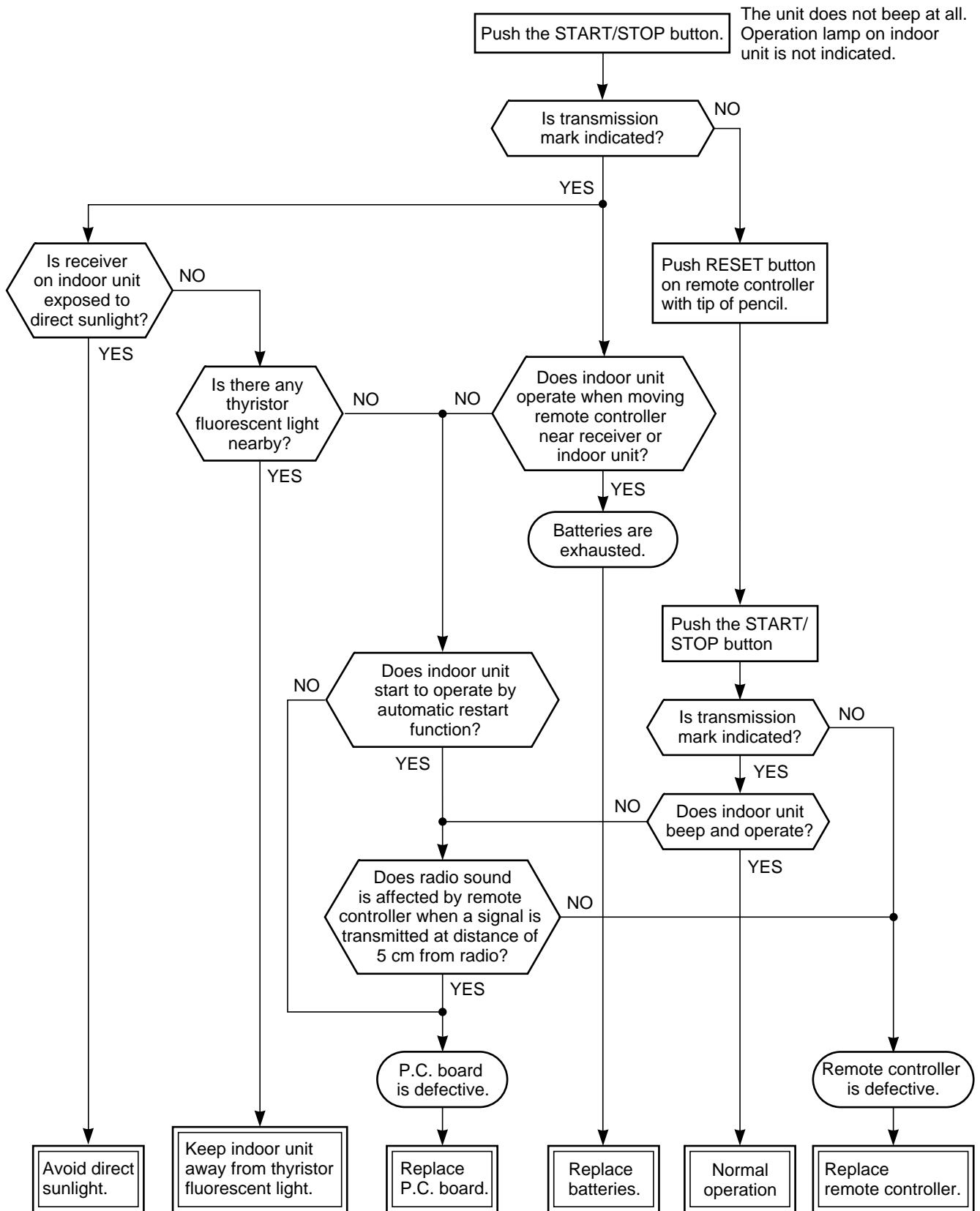


Position (P.C. board)	Resistance value
Between ③ (Black) - ① (Red)	74 ± 15 Ω
Between ③ (Black) - ⑤ (White)	100 ± 20 Ω
Between ① (Red) - ⑤ (White)	174 ± 35 Ω

(5) Troubleshooting for remote controller

<Primary check>

Check that A or B selected on the main unit is matched with A or B selected on the remote controller.



NOTE : After replacing batteries, push the RESET button with a tip of a pencil.

11-5-2. Wiring Failure (Interconnecting and Serial Signal Wire)

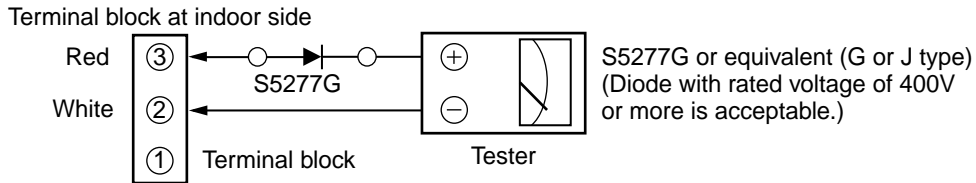
(1) Outdoor unit does not operate

1) Is the voltage between ② and ③ of the indoor terminal block varied?

Confirm that transmission from indoor unit to outdoor unit is correctly performed based upon the following diagram.

NOTE:

- Measurement should be performed 2 minutes and 30 seconds after starting of the operation.
- Be sure to prepare a diode for judgment.



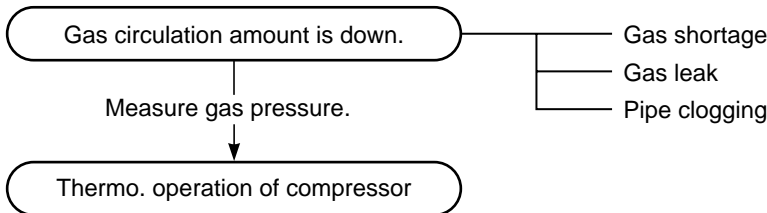
Normal time : Voltage swings between DC15 and 60V.Inverter Assembly check (11-8-1.)

Abnormal time : Voltage does not vary.

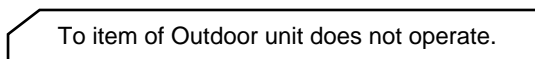
(2) Outdoor unit stops in a little while after operation started

<Check procedure> Select phenomena described below.

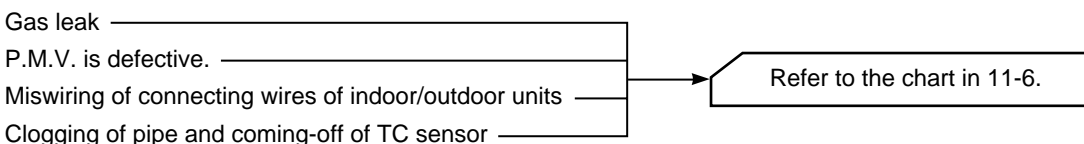
1) The outdoor unit stops 10 to 20 minutes after operation started, and 10 minutes or more are required to restart the unit.



2) If the unit stops once, it does not operate until the power will be turned on again.

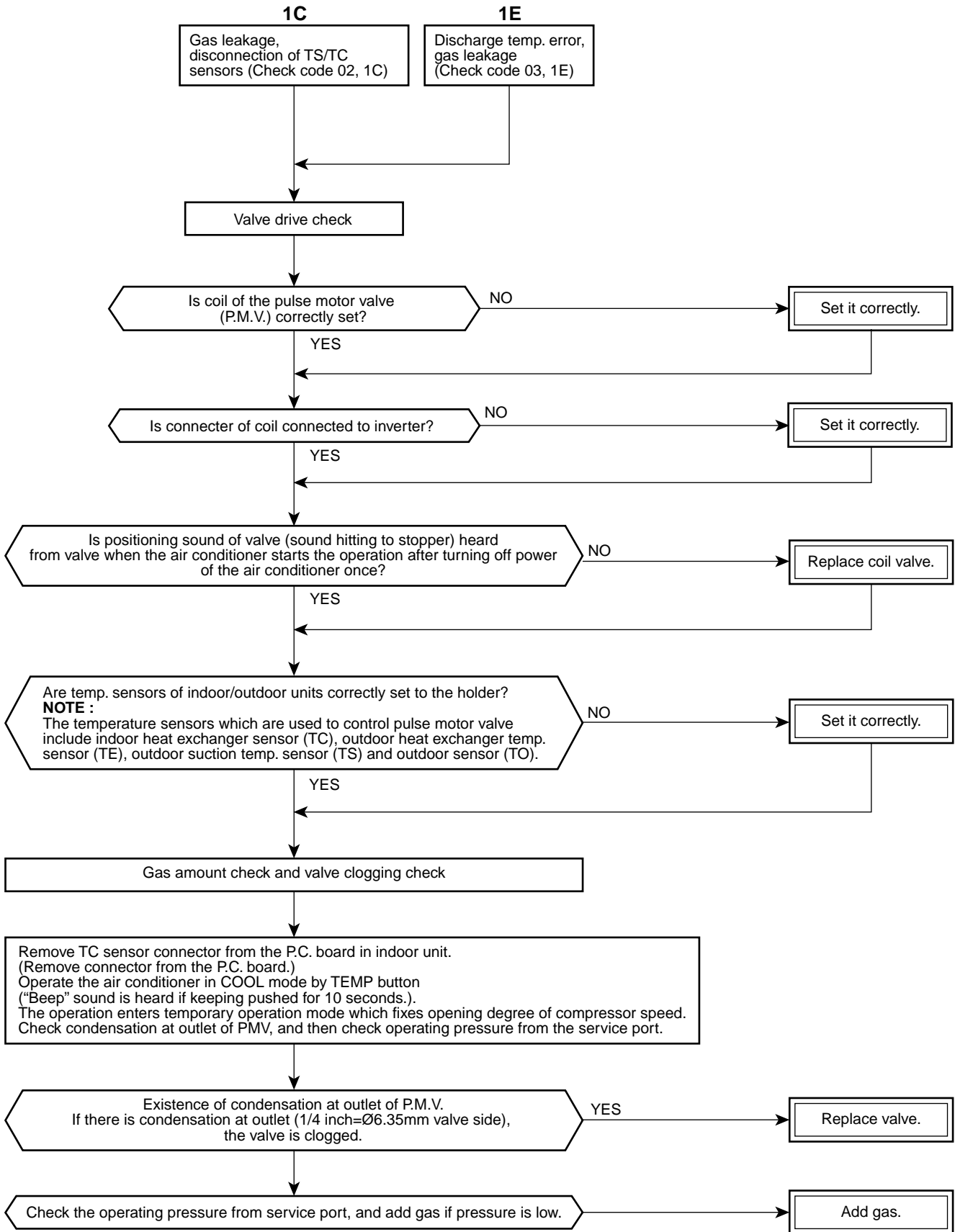


3) The outdoor unit stops 10 minutes to 1 hour after operation started, and an alarm is displayed. (Discharge temp. error check code 03, 1E Sensor temp. error check code 02, 1C)



11-6. Check Code 1C (Miswiring in indoor/outdoor units) and 1E

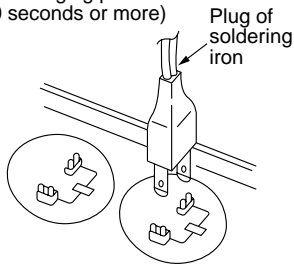
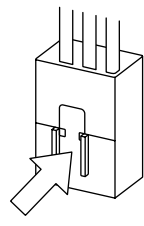
<Check procedure>

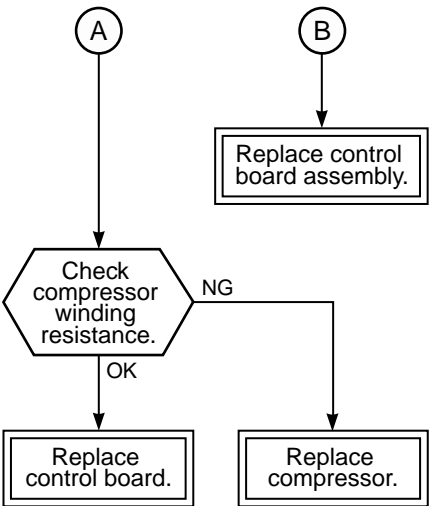


11-7. How to Diagnose Trouble in Outdoor Unit

11-7-1. Summarized Inner Diagnosis of Inverter Assembly

Table 11-7-1

Diagnosis/Process flowchart	Item	Contents	Summary		
<pre> graph TD Start[Remove connector of compressor.] --> CheckFuse{{Check 25A fuse (Part No.F01).}} CheckFuse -- NG --> ReplaceFuse[Replace fuse.] ReplaceFuse --> CheckDB01{{Check electrolytic capacitor, diode block (DB01), etc.}} CheckDB01 -.-> CheckFuse CheckFuse -- OK --> CheckVoltage{{Check terminal voltage of electrolytic capacitor.}} CheckVoltage -- NG --> CheckDB01_2{{Check electrolytic capacitor, diode (DB01), etc.}} CheckDB01_2 -.-> CheckVoltage CheckVoltage -- OK --> FanRotate{{Does outdoor fan rotate?}} FanRotate -- YES --> A((A)) FanRotate -- NO --> CheckCN300{{Remove connector CN300 of outdoor fan motor, and using a tester, check resistance value between every phases at motor side.}} CheckCN300 -- NG --> ReplaceMotor[Replace outdoor fan motor.] CheckCN300 -- OK --> B((B)) </pre>	<p>Preparation</p> <p>Check</p> <p>Check</p> <p>Operation</p> <p>Measurement</p> <p>Check</p> <p>Stop</p> <p>Check Measurement</p>	<p>Turn "OFF" the power supply breaker, and remove 3P connector which connects inverter and compressor.</p> <ul style="list-style-type: none"> Check whether 25A fuse on the control board assembly is blown or not. (F01) <p>Turn on the power breaker, and operate the air conditioner in COOL mode by time shortening.</p> <p>Measure terminal voltage of the electrolytic capacity.</p> <table border="1" data-bbox="829 1545 1061 1624"> <tr> <td>500μF:400WV x 3</td> </tr> <tr> <td>760μF:400WV x 3</td> </tr> </table> <p>After operation, turn off the power breaker after 2 minutes 20 seconds passed, and discharge the electrolytic capacitor by soldering iron. Check voltage between motor phases.</p> <ul style="list-style-type: none"> Is not winding between ①-②, ②-③, or ①-③ opened or short-circuited? Is not frame grounded with ①, ②, or ③? 	500μF:400WV x 3	760μF:400WV x 3	<p>If fuse was blown, be sure to check the electrolytic capacitor and diode block. (DB01)</p> <ul style="list-style-type: none"> Connect discharge resistance (approx. 100Ω, 40W) or soldering iron (plug) between +, - terminals of the electrolytic capacitor (500μF or 760μF) of C14 (with printed CAUTION HIGH VOLTAGE) on P.C. board. <p>Discharging position (Discharging period 10 seconds or more)</p>  <p>OK if 500μF or 760μF → DC280 to 380V</p> <p>Remove CN300 while pushing the part indicated by an arrow because CN300 is a connector with lock.</p>  <p>→ Resistance between phases should be approx. 55 to 77Ω</p> <p>→ Should be 10MΩ or more.</p>
500μF:400WV x 3					
760μF:400WV x 3					

Diagnosis/Process flowchart	Item	Contents	Summary
 <pre> graph TD A((A)) --> D{Check compressor winding resistance.} B((B)) --> B1[Replace control board assembly.] D -- OK --> B2[Replace control board.] D -- NG --> B3[Replace compressor.] </pre>	<p>Check</p> <p>Operation</p>	<p>Check winding resistance between phases of compressor, and resistance between outdoor frames by using a tester.</p> <ul style="list-style-type: none"> • Is not grounded. • Is not short-circuited between windings. • Winding is not opened. <p>Remove connector CN300 of the outdoor fan motor, turn on the power supply breaker, and perform the operation. (Stops though activation is prompted.)</p> <p>Check operation within 2 minutes 20 seconds after activation stopped.</p>	<p>→ OK if 10MΩ or more</p> <p>} → OK if 0.51Ω → 0.57Ω (Check by a digital tester.)</p>

11-8. How to Check Simply the Main Parts

11-8-1. How to Check the P.C. Board (Indoor Unit)

(1) Operating precautions

- 1) When removing the front panel or the P.C. board, be sure to shut off the power supply breaker.
- 2) When removing the P.C. board, hold the edge of the P.C. board and do not apply force to the parts.
- 3) When connecting or disconnecting the connectors on the P.C. board, hold the whole housing. Do not pull at the lead wire.

(2) Inspection procedures

- 1) When a P.C. board is judged to be defective, check for disconnection, burning, or discoloration of the copper foil pattern or this P.C. board.
- 2) The P.C. board consists of the following 2 parts

a. Main P.C. board part :

DC power supply circuit, Indoor fan motor control circuit, CPU and peripheral circuits, buzzer, and Driving circuit of louver.

b. Indication unit of infrared ray receiving infrared ray receiving circuit, LED :

To check defect of the P.C. board, follow the procedure described below.

(3) Check procedures
(42NQV025H, 42NQV035H, 42NQV035M)

Table 11-8-1

No.	Procedure	Check points	Causes
1	Turn off the power supply breaker and remove the P.C. board assembly from electronic parts base. Remove the connecting cables from the terminal block.	Check whether or not the fuse (F01) is blown.	Impulse voltage was applied or the indoor fan motor short-circuited.
2	Remove the connector of the motor and turn on the power supply breaker. If OPERATION indicator flashes (once per second), it is not necessary to check steps (1 to 3) in the right next column.	Check power supply voltage : 1. Between No. 1 and No. 3 of CN01 (AC 220–240V) 2. Between ⊕ and ⊖ of C03 (DC 310–340V) 3. Between 12V and GND 4. Between 5V and GND	1. The terminal block or the crossover cable is connected wrongly. 2. The capacitor (C01), line filter (L01), resistor (R02), or the diode (D01, D02, D03, D04) is defective. 3. T101 is defective. 4. IC12 and T101 are defective.
3	Push [START/STOP] button once to start the unit. (Do not set the mode to On-Timer operation.)	Check power supply voltage : 1. Between CN51 and No. 1 of CN01 (DC 15–60V)	IC51 and IC52 are defective.
4	Shorten the restart delay timer and start unit.	Check whether or not all indicators (OPERATION, TIMER, FAN-ONLY, FILTER, HI-POWER) for 42NQV035M and (OPERATION, TIMER, FAN-ONLY, FILTER, HI-POWER, NIGHT-LIGHT, 7-SEGMENT) for 42NQV025H, 42NQV035H are lit for 3 seconds and they return to normal 3 seconds later.	The indicators are defective or the housing assembly (CN21) is defective.
5	Push [START/STOP] button once to start the unit, • Shorten the restart delay timer. • Set the operation mode to COOL. • Set the fan speed level to AUTO. • Set the preset temperature much lower than the room temperature. (The unit (compressor) operates continuously in the above condition.)	1. Check whether or not the compressor operates. 2. Check whether or not the OPERATION indicator flashes.	1. The temperature of the indoor heat exchanger is extremely low. 2. The connection of the heat exchanger sensor is loose. (The connector is disconnected.) (CN62) 3. The heat exchanger sensor and the P.C. board are defective. (Refer to Table 11-4-1.) 4. The main P.C. board is defective.
6	If the above condition (No. 5) still continues, start the unit in the following condition. • Set the operation mode to HEAT. • Set the preset temperature much higher than room temperature.	1. Check whether or not the compressor operates. 2. Check whether or not the OPERATION indicator flashes.	1. The temperature of the indoor heat exchanger is extremely high. 2. The connection of the heat exchanger sensor short-circuited. (CN62) 3. The heat exchanger sensor and the P.C. board are defective. (Refer to Table 11-4-1.) 4. The main P.C. board is defective

Table 11-8-1

No.	Procedure	Check points	Causes
7	<p>Connect the motor connector to the motor and turn on the power supply. Start the unit the following condition.</p> <ul style="list-style-type: none"> • Set the fan speed level to HIGH. (The unit (compressor) operates continuously in the above condition in No. 5.) 	<ol style="list-style-type: none"> 1. Check it is impossible to detect the voltage (AC120V or higher voltage) between red and black lead of the motor. 2. The motor does not operate or the fan motor does not rotate with high speed. (But it is possible to receive the signal from the remote controller.) 3. The motor rotates but vibrates strongly. 	<ol style="list-style-type: none"> 1. The indoor fan motor is defective. (Protected operation of P.C. board.) 2. The P.C. board is defective. 3. The connection of the motor connector is loose.

(42NQV045H, 42NQV045M)

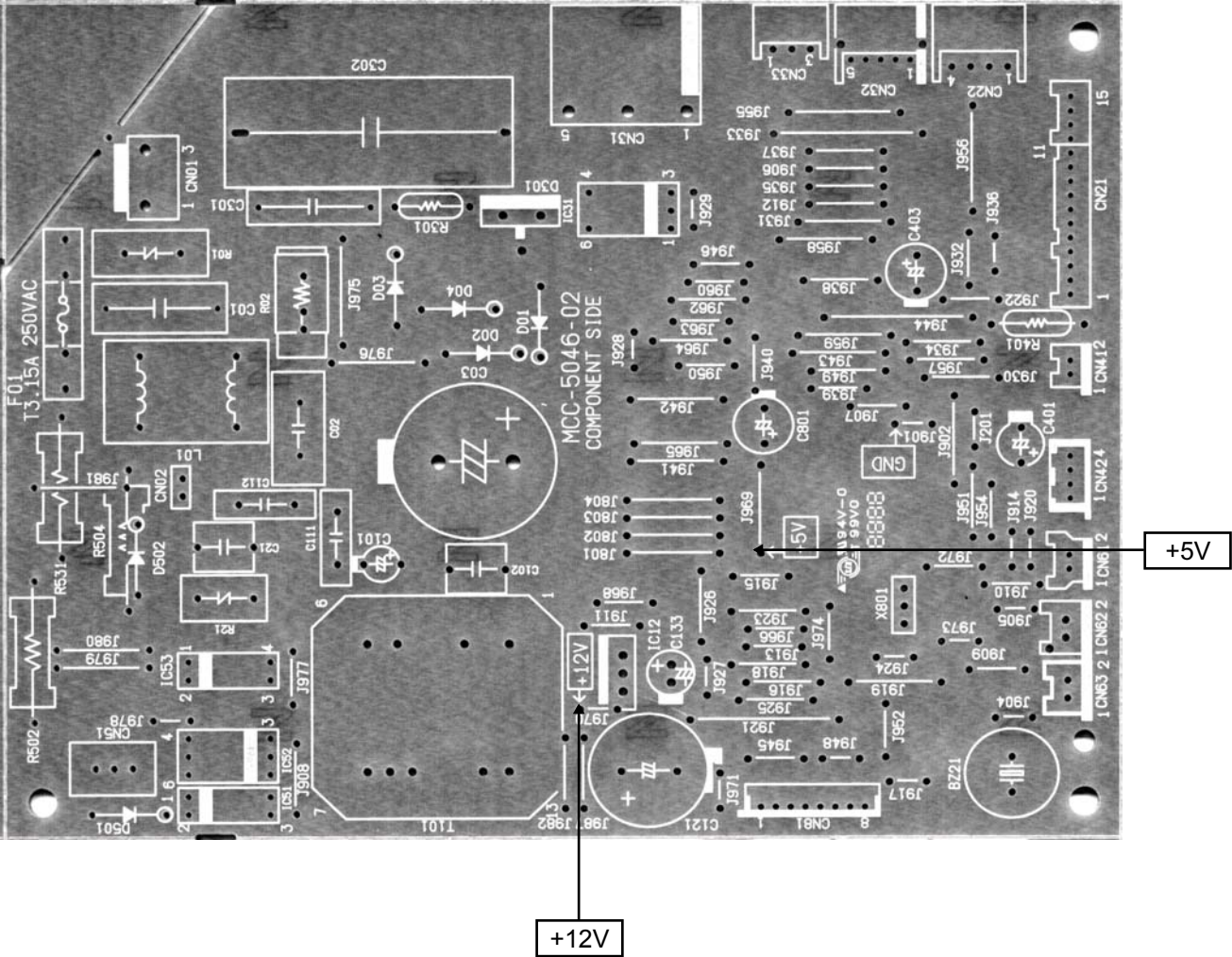
Table 11-8-1

No.	Procedure		
1	Turn off the power supply breaker and remove the P.C. board assembly from electronic parts base. Remove the connecting cables from the terminal block.	Check whether or not the fuse (F01) is blown.	Impulse voltage was applied or the indoor fan motor short-circuited.
2	Remove the connector of the motor and turn on the power supply breaker. If OPERATION indicator flashes (once per second), it is not necessary to check steps (1 to 3) in the right next column.	Check power supply voltage : 1. Between No. 1 and No. 3 of CN23 (AC 220–240V) 2. Between ⊕ and ⊖ of C03 (DC 310–340V) 3. Between ⊖ of C10 and output side of IC08 (DC 15V) 4. Between 12V and GND 5. Between 5V and GND	1. The terminal block or the crossover cable is connected wrongly. 2. The capacitor (C01), line filter (L01), resistor (R02), or the diode (DB01) is defective. 3. IC11, IC13 and T101 are defective. 4. IC11, IC13 and T101 are defective. 5. IC11, IC13, IC14 and T101 are defective.
3	Push [START/STOP] button once to start the unit. (Do not set the mode to On-Timer operation.)	Check power supply voltage : 1. Between CN51 and No. 1 of CN01 (DC 15–60V)	IC51 and IC52 are defective.
4	Shorten the restart delay timer and start unit.	Check whether or not all indicators (OPERATION, TIMER, FAN-ONLY, FILTER, HI-POWER) for 42NQV045M and (OPERATION, TIMER, FAN-ONLY, FILTER, HI-POWER, NIGHT-LIGHT, 7-SEGMENT) for 42NQV045H are lit for 3 seconds and they return to normal 3 seconds later.	The indicators are defective or the housing assembly (CN21) is defective.
5	Push [START/STOP] button once to start the unit, • Shorten the restart delay timer. • Set the operation mode to COOL. • Set the fan speed level to AUTO. • Set the preset temperature much lower than the room temperature. (The unit (compressor) operates continuously in the above condition.)	1. Check whether or not the compressor operates. 2. Check whether or not the OPERATION indicator flashes.	1. The temperature of the indoor heat exchanger is extremely low. 2. The connection of the heat exchanger sensor is loose. (The connector is disconnected.) (CN62) 3. The heat exchanger sensor and the P.C. board are defective. (Refer to Table 11-4-1.) 4. The main P.C. board is defective.
6	If the above condition (No. 5) still continues, start the unit in the following condition. • Set the operation mode to HEAT. • Set the preset temperature much higher than room temperature.	1. Check whether or not the compressor operates. 2. Check whether or not the OPERATION indicator flashes.	1. The temperature of the indoor heat exchanger is extremely high. 2. The connection of the heat exchanger sensor short-circuited. (CN62) 3. The heat exchanger sensor and the P.C. board are defective. (Refer to Table 11-4-1.) 4. The main P.C. board is defective

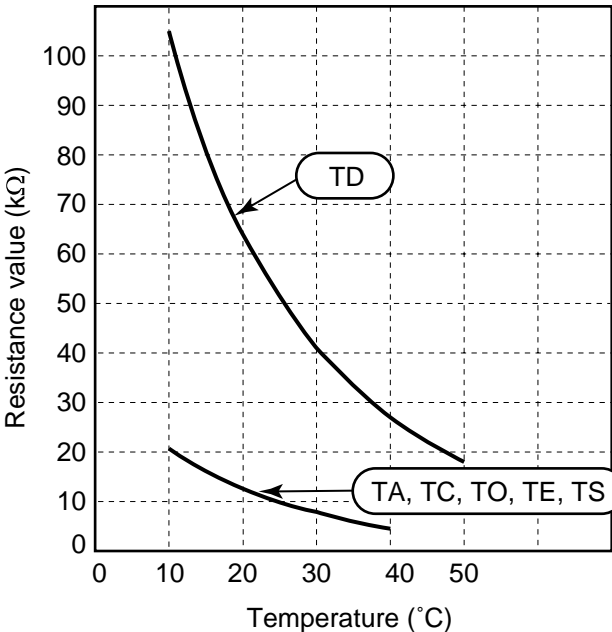
Table 11-8-1

No.	Procedure	Check points	Causes
7	<p>Connect the motor connector to the motor and turn on the power supply. Start the unit the following condition.</p> <ul style="list-style-type: none"> • Set the fan speed level to HIGH. (The unit (compressor) operates continuously in the above condition in No. 5.) 	<ol style="list-style-type: none"> 1. Check it is impossible to detect the voltage (DC 15V) between 3 and 4 of the motor terminals. 2. The motor does not operate or the fan motor does not rotate with high speed. (But it is possible to receive the signal from the remote controller.) 3. The motor rotates but vibrates strongly. 	<ol style="list-style-type: none"> 1. The indoor fan motor is defective. (Protected operation of P.C. board.) 2. The P.C. board is defective. 3. The connection of the motor connector is loose.

11-9. P.C. Board Layout
(42NQV025H, 42NQV035H, 42NQV035M)

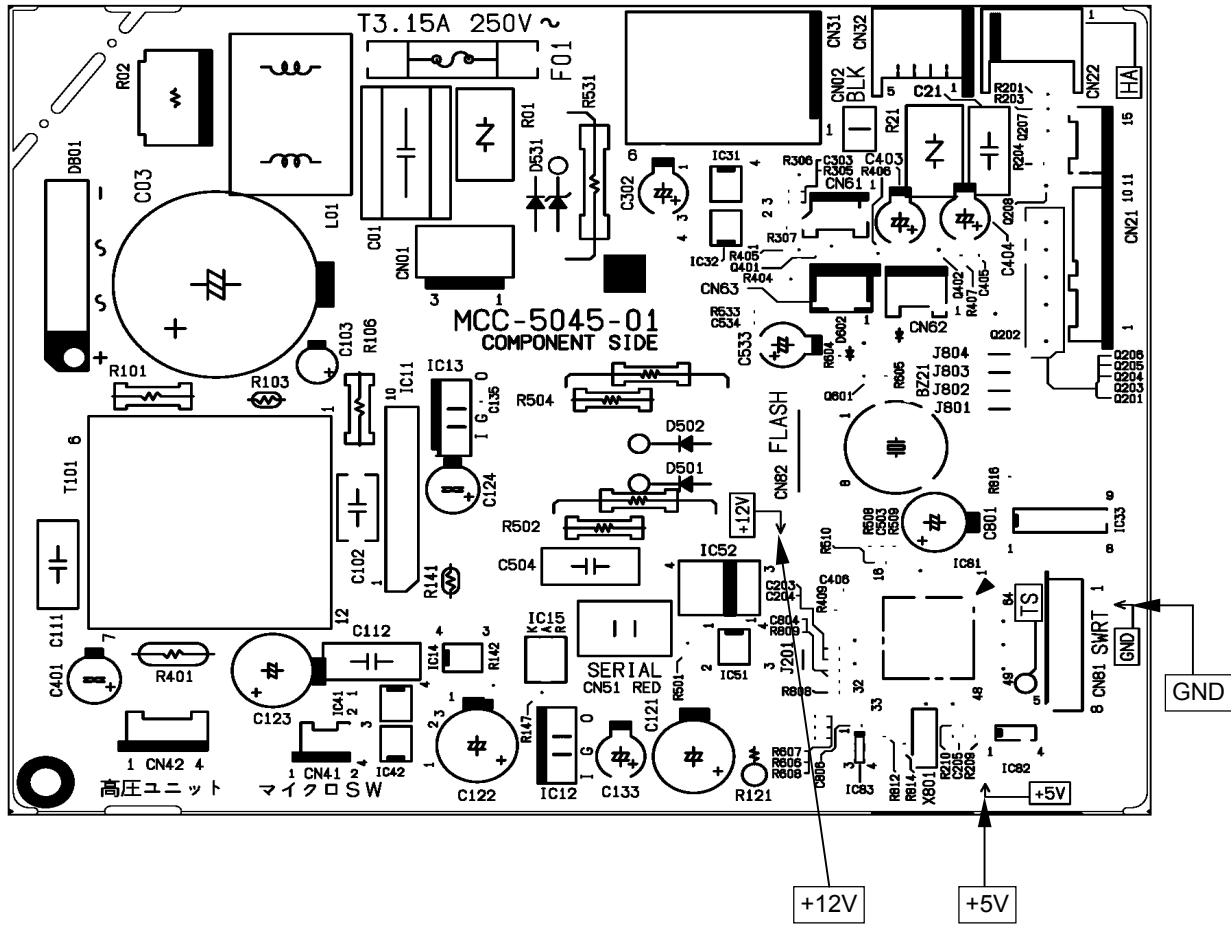


[1] Sensor characteristic table

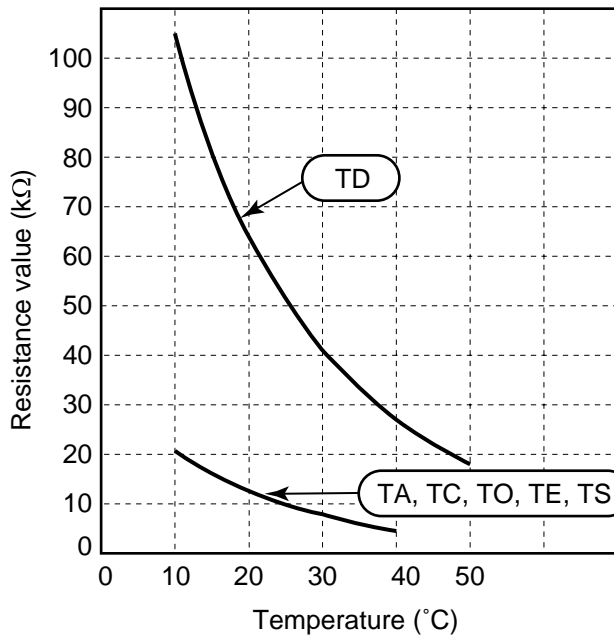


- TD : Discharge temp. sensor
- TA : Room temp. sensor
- TC : Heat exchanger temp. sensor
- TO : Outdoor temp. sensor
- TE : Outdoor heat exchanger temp. sensor
- TS : Suction temp. sensor

(42NQV045H, 42NQV045M)

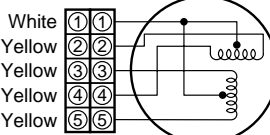


[1] Sensor characteristic table

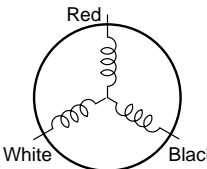
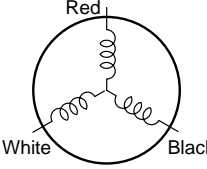
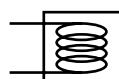
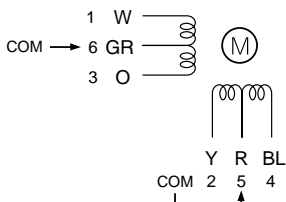


- TD : Discharge temp. sensor
- TA : Room temp. sensor
- TC : Heat exchanger temp. sensor
- TO : Outdoor temp. sensor
- TE : Outdoor heat exchanger temp. sensor
- TS : Suction temp. sensor

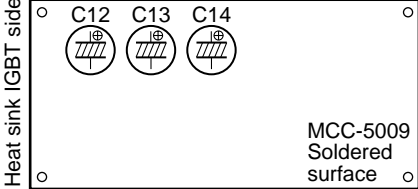
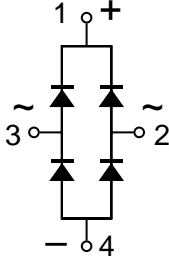
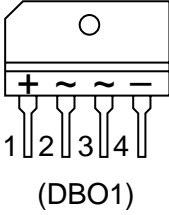
11-9-2. Indoor Unit (Other Parts)

No.	Part name	Checking procedure																					
1	Room temp. (TA) sensor Heat exchanger (TC) sensor	<p>Disconnect the connector and measure the resistance value with tester. (Normal temp.)</p> <table border="1"> <thead> <tr> <th colspan="2">Temperature</th> <th>10°C</th> <th>20°C</th> <th>25°C</th> <th>30°C</th> <th>40°C</th> </tr> </thead> <tbody> <tr> <th>Sensor</th> <th></th> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>TA, TC (kΩ)</td> <td>20.7</td> <td>12.6</td> <td>10.0</td> <td>7.9</td> <td>4.5</td> </tr> </tbody> </table>	Temperature		10°C	20°C	25°C	30°C	40°C	Sensor								TA, TC (kΩ)	20.7	12.6	10.0	7.9	4.5
Temperature		10°C	20°C	25°C	30°C	40°C																	
Sensor																							
	TA, TC (kΩ)	20.7	12.6	10.0	7.9	4.5																	
2	Remote controller	Refer to 11-5-1. (5).																					
3	Louver motor MP24Z3T	<p>Measure the resistance value of each winding coil by using the tester. (Under normal temp. 25°C)</p>  <table border="1"> <thead> <tr> <th>Position</th> <th>Resistance value</th> </tr> </thead> <tbody> <tr> <td>1 to 2</td> <td rowspan="4">250 ± 20Ω</td> </tr> <tr> <td>1 to 3</td> </tr> <tr> <td>1 to 4</td> </tr> <tr> <td>1 to 5</td> </tr> </tbody> </table>	Position	Resistance value	1 to 2	250 ± 20Ω	1 to 3	1 to 4	1 to 5														
Position	Resistance value																						
1 to 2	250 ± 20Ω																						
1 to 3																							
1 to 4																							
1 to 5																							
4	Indoor fan motor	Refer to 11-5-1. (3) and (4).																					

11-9-3. Outdoor Unit

No.	Part name	Checking procedure																																
1	Compressor (Model : DA111A1F-20F1) 38NYV035H, 38NYV045H, 38NYV045M (Model : DA89X1C-23FZ) 38NYV025H, 38NYV035M	<p>Measure the resistance value of each winding by using the tester.</p>  <table border="1"> <thead> <tr> <th rowspan="2">Position</th> <th colspan="2">Resistance value</th> </tr> <tr> <th>DA111A1F-20F1</th> <th>DA89X1C-1F-23FZ</th> </tr> </thead> <tbody> <tr> <td>Red - White</td> <td rowspan="3">0.88 to 0.98Ω</td> <td rowspan="3">1.04 to 1.16Ω</td> </tr> <tr> <td>White - Black</td> </tr> <tr> <td>Black - Red</td> </tr> </tbody> </table> <p style="text-align: right;">Under 20°C</p>	Position	Resistance value		DA111A1F-20F1	DA89X1C-1F-23FZ	Red - White	0.88 to 0.98Ω	1.04 to 1.16Ω	White - Black	Black - Red																						
Position	Resistance value																																	
	DA111A1F-20F1	DA89X1C-1F-23FZ																																
Red - White	0.88 to 0.98Ω	1.04 to 1.16Ω																																
White - Black																																		
Black - Red																																		
2	Outdoor fan motor (Model : ICF-140-43-4R)	<p>Measure the resistance value of winding by using the tester.</p>  <table border="1"> <thead> <tr> <th>Position</th> <th>Resistance value</th> </tr> </thead> <tbody> <tr> <td>Red - White</td> <td>20 to 22Ω</td> </tr> <tr> <td>White - Black</td> <td>20 to 22Ω</td> </tr> <tr> <td>Black- Red</td> <td>20 to 22Ω</td> </tr> </tbody> </table>	Position	Resistance value	Red - White	20 to 22Ω	White - Black	20 to 22Ω	Black- Red	20 to 22Ω																								
Position	Resistance value																																	
Red - White	20 to 22Ω																																	
White - Black	20 to 22Ω																																	
Black- Red	20 to 22Ω																																	
3	4-way valve coil (Model : VHV)	<p>Measure the resistance value of winding by using the tester.</p>  <table border="1"> <thead> <tr> <th>Resistance value</th> </tr> </thead> <tbody> <tr> <td>1435 ± 144Ω</td> </tr> </tbody> </table> <p style="text-align: right;">Under 20°C</p>	Resistance value	1435 ± 144Ω																														
Resistance value																																		
1435 ± 144Ω																																		
4	Pulse motor valve coil (Model : C12A01A)	<p>Measure the resistance value of winding by using the tester.</p>  <table border="1"> <thead> <tr> <th>Position</th> <th>Resistance value</th> </tr> </thead> <tbody> <tr> <td>Gray - White</td> <td>43 to 49Ω</td> </tr> <tr> <td>Gray - Orange</td> <td>43 to 49Ω</td> </tr> <tr> <td>Red- Yellow</td> <td>43 to 49Ω</td> </tr> <tr> <td>Red- Blue</td> <td>43 to 49Ω</td> </tr> </tbody> </table> <p style="text-align: right;">Under 20°C</p>	Position	Resistance value	Gray - White	43 to 49Ω	Gray - Orange	43 to 49Ω	Red- Yellow	43 to 49Ω	Red- Blue	43 to 49Ω																						
Position	Resistance value																																	
Gray - White	43 to 49Ω																																	
Gray - Orange	43 to 49Ω																																	
Red- Yellow	43 to 49Ω																																	
Red- Blue	43 to 49Ω																																	
5	Outdoor temperature sensor (TO), discharge temperature sensor (TD), suction temperature sensor (TS), outdoor heat exchanger temperature sensor (TE)	<p>Disconnect the connector, and measure resistance value with the tester. (Normal temperature)</p> <table border="1"> <thead> <tr> <th colspan="2">Temperature</th> <th>10°C</th> <th>20°C</th> <th>25°C</th> <th>30°C</th> <th>40°C</th> <th>50°C</th> </tr> </thead> <tbody> <tr> <th>Sensor</th> <th></th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>TD (kΩ)</td> <td>100</td> <td>64</td> <td>50</td> <td>41</td> <td>27</td> <td>18</td> </tr> <tr> <td></td> <td>TO,TS,TE (kΩ)</td> <td>20.7</td> <td>12.6</td> <td>10.0</td> <td>7.9</td> <td>4.5</td> <td>—</td> </tr> </tbody> </table>	Temperature		10°C	20°C	25°C	30°C	40°C	50°C	Sensor									TD (kΩ)	100	64	50	41	27	18		TO,TS,TE (kΩ)	20.7	12.6	10.0	7.9	4.5	—
Temperature		10°C	20°C	25°C	30°C	40°C	50°C																											
Sensor																																		
	TD (kΩ)	100	64	50	41	27	18																											
	TO,TS,TE (kΩ)	20.7	12.6	10.0	7.9	4.5	—																											

11-9-4. Checking Method for Each Part

No.	Part name	Checking procedure												
1	Electrolytic capacitor (For boost, smoothing)	<ol style="list-style-type: none"> 1. Turn OFF the power supply breaker. 2. Discharge all three capacitors completely. 3. Check that safety valve at the bottom of capacitor is not broken. 4. Check that vessel is not swollen or exploded. 5. Check that electrolytic liquid does not blow off. 6. Check that the normal charging characteristics are shown in continuity test by the tester. <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="border: 1px solid black; padding: 5px; width: 200px;"> <p style="text-align: center; margin: 0;">Case that product is good</p> <p style="margin: 0;">Pointer swings once, and returns slowly. When performing test once again under another polarity, the pointer should return.</p> </div> </div> <p style="margin-top: 10px;">C12, C13, C14 → 500μF or 760μF/400V</p>												
2	Diode block	<ol style="list-style-type: none"> 1. Turn OFF the power supply breaker. 2. Completely discharge the four electrolytic capacitors. 3. Remove the diode block from the PCB (which is soldered in place). 4. Use a multimeter with a pointer to test the continuity, and check that the diode block has the proper rectification characteristics. <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>(DBO1)</p> </div> <div style="border: 1px solid black; padding: 5px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Tester rod</th> <th rowspan="2" style="text-align: center;">Resistance value in good product</th> </tr> <tr> <th style="text-align: center;">+</th> <th style="text-align: center;">-</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">~ 2</td> <td rowspan="2" style="text-align: center;">+ 1</td> <td rowspan="4" style="text-align: center; vertical-align: middle;">∞</td> </tr> <tr> <td style="text-align: center;">~ 3</td> </tr> <tr> <td rowspan="2" style="text-align: center;">- 4</td> <td style="text-align: center;">~ 2</td> </tr> <tr> <td style="text-align: center;">~ 3</td> </tr> </tbody> </table> <p style="margin-top: 5px;">10 to 20 Ω when the multimeter probe is reversed</p> </div> </div>	Tester rod		Resistance value in good product	+	-	~ 2	+ 1	∞	~ 3	- 4	~ 2	~ 3
Tester rod		Resistance value in good product												
+	-													
~ 2	+ 1	∞												
~ 3														
- 4	~ 2													
	~ 3													

11-10. How to Simply Judge Whether Outdoor Fan Motor is Good or Bad

1. Symptom

- Outdoor fan motor does not rotate.
- Outdoor fan motor stops within several tens seconds though it started rotating.
- Outdoor fan motor rotates or does not rotate according to the position where the fan stopped, etc.

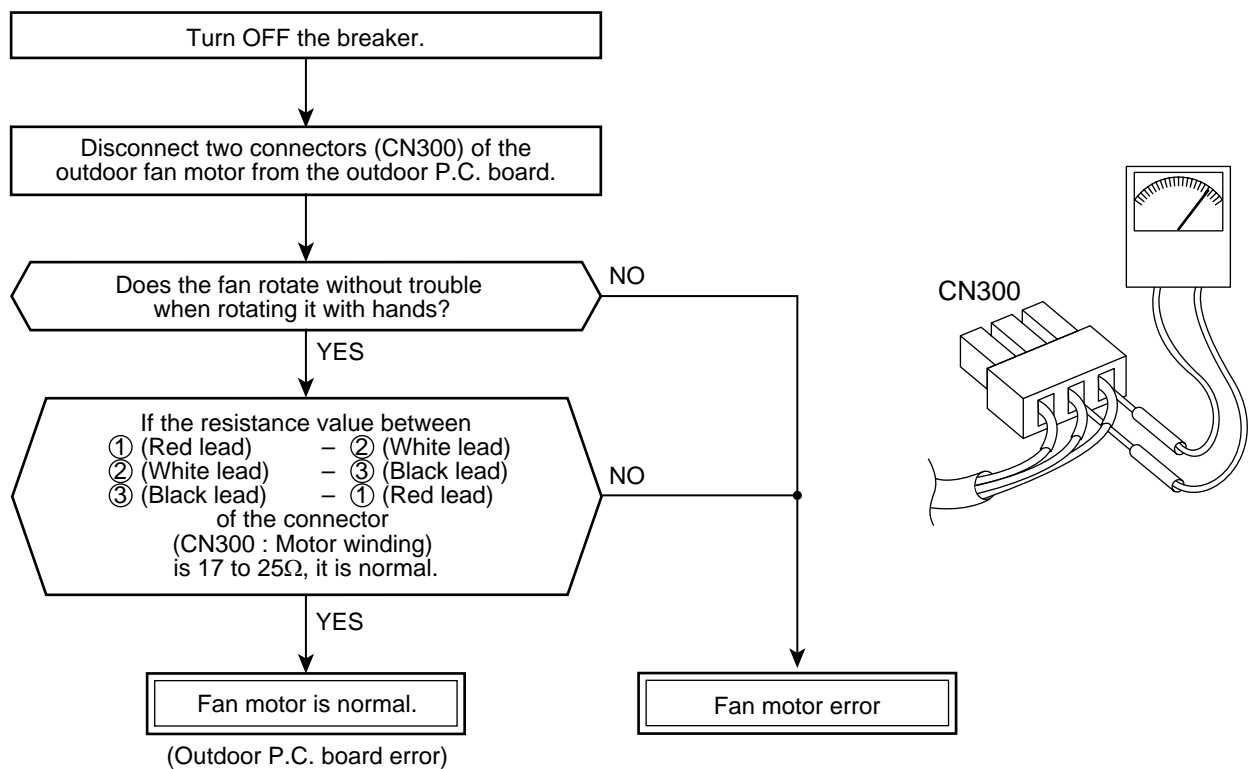
Remote controller check code "02 : Outdoor block, 1A : Outdoor fan drive system error"

2. Cause

The following causes are considered when the outdoor fan motor does not normally rotate.

- 1) Mechanical lock of the outdoor fan motor
- 2) Winding failure of the outdoor fan motor
- 3) Position-detect circuit failure inside of the outdoor fan motor
- 4) Motor drive circuit failure of the outdoor P.C. board

3. How to simply judge whether outdoor fan motor is good or bad



NOTE :

However, GND circuit error inside of the motor may be accepted in some cases when the above check is performed.

When the fan motor does not become normal even if P.C. board is replaced, replace the outdoor fan motor.