

SPLIT TYPE AIR CONDITIONER

Service Manual

AA-2710

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1.Range & Conditions

1.1 Operating Range

Operating Modes	Temperature	Indoor Temperature	Outdoor Temperature
Cooling	Max.	32°C DB/23°C WB	43°C DB
	Min.	21°C DB/15°C WB	21°C DB

1.2 Operating Conditions

	Rated Operating Conditions	
	Indoor Temperature	Outdoor Temperature
Cooling	27°C DB/19°C WB	35°C DB/24°C WB
Tubing Length (m)	3. 0	
	Max. Operating Value	
	Indoor Temperature	Outdoor Temperature
Cooling	32°C DB/23°C WB	43°C DB/26°C WB
Tubing Length (m)	3. 0	

DB: Dry-bulb temperature

WB: Wet-bulb temperature

2.Specifications

2.1 Unit Specifications

Rated voltage			220V/ 60Hz (single phase)		
Electrical rating			AA-2710		
	Voltage range		198~242V~/60Hz (single phase)		
Features					
	Controls / Temperature control		Microprocessor / I.C thermostat		
	Control unit		Control panel of indoor unit		
	Air filter		Anti-mold, washable		
	Compressor		Rotary-type (Hermetic)		
	Refrigerant		R22		
	Refrigerant control		Capillary tube		
	Pipeline connection manner		Flare		
	Max. pipeline length		m	9	
	Refrigerant tubing diameter	Narrow tube	mm	6.35 (1/4")	
		Wide tube	mm	12.7 (1/2")	

Data subject to change without notice

2.2 Specifications of main parts

2.2.1 Indoor unit

Controller		AA-2710
	Controls / Temperature control	Microprocessor / I.C thermostat
	Control unit	Infrared remote control transmitter
	Fuse	250V T3.15A
Fan &	Fan motor	
	Fan type	Cross-flow fan
	Fan motor model	RPS19E-6
Louver motor		
	Type	Step motor
	Model	24BYJ48-Q1
Heat exchanger		
	Fin	Aluminum
	tube	Copper

Data subject to change without notice

2.2.2 Outdoor unit

Controller PCB		
	Part No.	-
	Fuse	-
Compressor		
	model	QXT-18B (F)
	Safety devices Type	B250-150-241E
	Operating capacitor μ F/ VAC	20
Fan & Fan motor		
	Fan type	Propeller fan
	Fan motor model	YDK36-6D-5
Heat exchanger		
	Fin	Aluminum fin
	tube	Copper

Data subject to change without notice

2.3 Specifications of other parts

Indoor unit

Transformer	
--------------------	--

Thermal resistor	Indoor temperature	KTEC-41-C12
	Coiled pipe	KTM-41-C9
Resistance temperature 25℃	KΩ	10

Power supply length (m) / cross section (mm²)	1.5/1.0
Rated value	10A,250VAC

Power relay	G4A-1A-E 12VDC Or JQX-102F-012	JZC-32F-012-1H1
Coil rated voltage, Current coil resistance(20℃)	12V d.c 200 Ω	12V d.c 300 Ω

Data subject to change without notice

3. Control Specifications

3.1. System source

1.1 Signal input

Temperature sensor signal (indoor temperature , indoor coiled temperature, outdoor coiled temperature); remote control signal; key input.

1.2 Signal output

LED×4 (SI, SCK, RCK or air refresh, operation, pause, timer); louver motor (a, b, c, d); buzzer, compressor, 4-way reversing valve, indoor fan motor (H,L), outdoor fan motor, AUH, air refresh, and other assistant functions.

3.2 Control functions

2.1 Switches input:

Press the Emergency button on the panel when the air conditioner is in the off mode, then the unit will be turned on and work in the “SMART” mode. Press this button again when the unit is running (including test run or in “SMART” mode), the air conditioner will be turned off.

Note:

All the displaying will disappear when turn off the air conditioner by pressing the Emergency button.

2.2 Timing off

“Timing off ” function is only effective when the air conditioner is running. The indoor unit will display “TIMING” when this function is effective. The unit will be turned off at the set time and “ TIMING” signal will disappear. When the user turn off the unit ahead of the set time by remote controller or Emergency button, the “Timing off” function will be canceled.

Note: The set time for Timing off is 1-8 hours.

2.3 Sleep mode:

When the sleep mode is set by remote, the set temperature will increase 1℃ after running 1 hour in Cooling or Dehumidifying mode. Temperature will decrease 1℃ after running 1 hour in heating mode. Note : Display set temperature is unaltered

When the air conditioner runs in sleep mode, the Max. indoor fan speed is set at medium level.

Note: The fan speed is set to be at low level, but the fan speed will turn into medium level when in freeze-prevention mode.

2.4 Unit type and Power

Please refer to PIN function

Note: After changing the unit type, the new unit type should be tested for the relevant function and protection differently according to different unit types.

2.5 Blowing surplus energy function:

The first situation: When the unit is turned off in heating operation, the time for blowing surplus energy is 80 seconds. When $Tr_c < 32^{\circ}\text{C}$, the louver is in position 5 (Fan speed is at low level).

The second situation: When the unit enters defrosting when in heating operation, the time for blowing surplus energy is 30 seconds. When $Tr_c < 32^{\circ}\text{C}$, the louver is in position 5 (Fan speed is at low level).

The third situation: In heating operation, when the unit comes to the set temperature, the compressor will stop. When $Tr_c < 32^{\circ}\text{C}$, the louver is in position 5 (Fan speed is at low level).

The fourth situation: In heating operation, when the unit enters heating overload operation, the compressor will stop, ($Tr_c \geq t^{\circ}\text{C}$ and the compressor continues working for more than 5 minutes, the compressor stops) and blow surplus energy; When the temperature of indoor pipe drops to $E^{\circ}\text{C}$, the unit will exist from overload protection and Indoor fan motor will operate at low level for 80 seconds. When $Tr_c < 32^{\circ}\text{C}$, the louver is in position 5.

The fifth situation: If the unit has the function of starting up automatically when the electricity comes again, the unit will judge before the starting of compressor: When $Tr_c \geq F^{\circ}\text{C}$, the indoor fan motor will run at low level and the louver is in position 5. When $Tr_c \leq 25^{\circ}\text{C}$, the indoor fan motor will stop. The unit will enter freeze-prevention operation after the compressor starts.

2.6 Operation for dryness enzyme-prevention

When the unit is turned off in cooling mode, the indoor unit will continue run in low fan speed for about 3 minutes to remove the partial moisture in the room.

2.7 Compensation for temperature

When enters heating operation, the indoor temperature will decrease 3°C automatically.

3.3 Operating mode

3.1 SMART operation

The unit will judge the operation mode automatically after receiving the SMART signal.

3.1.1 When $Tr \geq 24^{\circ}\text{C}$, turns on the unit in the original condition, the unit will turn into cooling mode.

When $20^{\circ}\text{C} < Tr < 24^{\circ}\text{C}$, the unit will turns into airflow mode.

When $Tr \leq 20^{\circ}\text{C}$, the unit will turns into heating mode.

In airflow mode, when in the condition that it is necessary for cooling or heating more than 1 minute, the unit will turn into cooling or heating mode.

3.1.2 The fan speed is at auto mode and adjustable, the display will change accordingly.

Note: If choosing the airflow mode, the auto airflow is set to be at low level automatically.

3.3.3 The airflow direction is swing and adjustable, and the display will change accordingly.

3.3.4 All output (air refresh, AUH, air ventilate, etc.) is effective.

3.3.5 In cooling mode, the original set temperature is $T_s = T_r - 5^{\circ}\text{C}$ and $22^{\circ}\text{C} \leq T_s \leq 27^{\circ}\text{C}$, then the master unit will not change operation mode when the unit enters cooling mode.

If users want to change working condition by remote controller, in case the condition will not conflict with the master unit mode, (such as cooling mode conflicts with AUH mode), the master unit will operate and display in new condition set by remote controller.

3.3.6 In heating operation, when the temperature $T_s = T_r + 8^{\circ}\text{C}$ and $16^{\circ}\text{C} \leq T_s \leq 22^{\circ}\text{C}$, then the master unit will not change operation mode when the unit enters heating mode.

If users want to change working condition by remote controller, in case the condition will not conflict with the master unit mode, the master unit will operate and display in new condition set by remote controller.

3.2 Cooling:

Temperature control range: $16^{\circ}\text{C} - 32^{\circ}\text{C}$; Original value: 24°C ;

Temperature control precision: $\pm 1^{\circ}\text{C}$;

Characters on control:

4-way reversing valve closes:

When $T_r \geq T_s + 1^{\circ}\text{C}$, compressor runs; When $T_r \leq T_s - 1^{\circ}\text{C}$, compressor stops; The control circuit will stop compressor only after it has run at least 5 minutes. The compressor can be restarted 3 minutes later the turn-off.

Fan speed control:

Auto: When $T_r > T_s + 2^{\circ}\text{C}$, high speed;

When $T_s < T_r \leq T_s + 2^{\circ}\text{C}$, medium speed;

When $T_r \leq T$, low speed.

Manual: Users can select the fan speed of high, medium or low level as needed when the air conditioner is in the turn-on status.

Louver adjustment:

Manual (vertical direction): Set the blades position as needed. (Position 1-5 in figure 1.)

Auto (vertical direction): The range of sweeping is in position 2-5, swinging speed is 5 degree/second.

3.3. Dehumidification:

Temperature control range: $16^{\circ}\text{C} - 32^{\circ}\text{C}$; Temperature control precision: $\pm 1^{\circ}\text{C}$;

Characters on control:

4-way reversing valve closes.

When $T_r \geq T_s + 2^{\circ}\text{C}$, the running mode is the same to the cooling operation;

When $T_s - 1^{\circ}\text{C} < T_r < T_s + 2^{\circ}\text{C}$, compressor and outdoor fan motor run continuously. And indoor fan motor runs at low fan speed

When $15^{\circ}\text{C} < T_r < T_s - 1^{\circ}\text{C}$, compressor and outdoor fan motor are working according to 3 minutes working alternating with 9 minutes stopping. Indoor fan motor runs at low fan speed when compressor is running, and it runs at breeze level for 30 seconds later the turn-off of compressor. 30 seconds later, fan

motor will turn off.

When $T_r \leq 15^\circ\text{C}$, indoor and outdoor fan motor will stop running, louver blades (vertical direction) can't be controlled.

Manual operation in vertical direction: When necessary, users can select the position of louver blade in position of 1~5 in Figure 1.

Fan sweep in vertical direction: The range of sweeping is in position 2-5, the fan speed is 5 degree/second.

3.4. Heating

Temperature control range: 16°C - 32°C ; Original value: 24°C ;

Temperature control precision: $\pm 1^\circ\text{C}$;

Characters on control:

4-way reversing valve opens.

When $T_r \leq T_s - 1^\circ\text{C}$, compressor, 4-way reversing valve and outdoor fan motor all open.

When $T_r \geq T_s + 1^\circ\text{C}$, compressor and outdoor fan motor both close; Indoor fan motor is running at low level.

Manual: Users can select the fan speed of high, medium or low level as needed.

Auto: When $T_r < T_s - 2^\circ\text{C}$, high speed; When $T_r \geq T_s - 2^\circ\text{C}$, medium speed;

Louver adjustment:

Manual (vertical direction): Set the blades position as needed. (Position 1-5 in figure 1.)

Auto (vertical direction): The range of sweeping is in position 1-4, fan speed is 5 degree/second.

Compressor control:

The control circuit will stop compressor only after it has run at least 5 minutes. Compressor can be restarted 5 minutes later the turn-off.

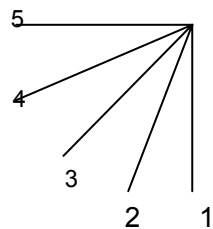


Fig.1

3.5 Fan sweep

In this mode, compressor, 4-way reversing valve and outdoor fan motor all open.

Indoor fan motor can be set at high, medium, low level as needed.

Manual (vertical direction): Set the blades position as needed. (Position 1-5 in Figure 1.)

Fan sweep in vertical direction: The range of sweeping is in position 2-5 in Figure 1, fan speed is 5 degree/second

3.4 Protection function

3.4.1 Delay-starting protection for the compressor

Compress will restart working 3 minutes (5 minutes in HEAT mode) later the turn-off of compressor or power-off to keep the pressure balance of the cooling system.

3.4.2 Cool-airflow-prevention:

In heating operation, the time for compressor running or stopping can not be longer than 5 minutes. When the unit is in operation and the compressor has not been started yet, $Trc \geq F^{\circ}C$, then indoor fan motor runs at low level. (blades is at position 5 and can not be controlled). When $Trc \leq 25^{\circ}C$, the indoor fan motor stops.

In operation, if compressor has been turned on and running time is no longer than 5 minutes,

- A. If $Trc < F^{\circ}C$, indoor fan motor stops.**
- B. $F^{\circ}C \leq Trc \leq 36^{\circ}C$, indoor fan motor runs at low level.**
- C. $Trc > 36^{\circ}C$, indoor fan motor runs at the set level.**

Note: As long as comes into A condition, the unit will not enter A condition even if temp. drops. As long as comes into C condition, the unit will not enter B condition even if temp. drops. Louver blades will come to 5 position automatically and not controllable. During cool-airflow-prevention period, PAUSE (red) indicator will light.

3.4.3 Dew- prevention (cooling&dehumidification mode)

When the louver blades are at the position 1,2,5 as shown in Fig.1 for at least 15 minutes, the blades will come back to 3 position automatically and now the position for louver blades can be adjusted.

Note: There would be no dew-prevention when at high airflow level.

3.4.4 Freeze-prevention: To prevent indoor heat exchanger freezing in COOL and DRY operation.

When $Trc \leq 3^{\circ}C$, the unit will enter freeze-prevention operation. If indoor fan speed is at low or breeze level, it will turn to medium speed automatically; if indoor fan speed is at medium speed, it will turn to high speed; The air conditioner will exit Freeze-prevention operation when $Trc > 10^{\circ}C$, indoor fan motor runs at the set fan speed. Compressor will stop running when it runs at least 10 minutes and $Trc \leq 0^{\circ}C$. If the off-time of compressor is for more than 6 minutes or $Trc \geq 10^{\circ}C$, and the compressor stops running for more than 3 minutes. Compressor and outdoor fan motor will restart working. The air conditioner will exit Freeze-prevention operation, and indoor fan motor is running at the set speed.

3.4.5 Heating overload working:

When $T \geq G^{\circ}C$, indoor fan speed will turn to low level.

If T begins to descend, when $T < H^{\circ}C$ and the time for fan speed transition is longer than 5 minutes, then indoor fan motor returns to normal fan speed.

If T go on ascending, when $T \geq I^{\circ}C$, then compressor stops and outdoor fan motor go on running. Indoor fan

motor turns to low speed; When $T < H^{\circ}\text{C}$, compressor, indoor and outdoor fan motor return to normal running (there is 3 minutes protection for compressor).

3.4.6 Heating overload working: (not available for cooling-only type air conditioner)

When $\text{Trc} \geq A^{\circ}\text{C}$, the unit enters heating overload protection. If indoor fan speed is set at low or breeze level, it will turn to medium speed automatically; if indoor fan speed is set at medium speed, it will turn to high speed; When $\text{Trc} \geq B^{\circ}\text{C}$, outdoor fan motor stops. When indoor pipe temp. drops to $D^{\circ}\text{C}$, outdoor fan motor will restart working. Air conditioner will exit overload protection when Trc drops to $E^{\circ}\text{C}$, compressor restarts working, Indoor fan motor runs at the set fan speed.

When $\text{Trc} \geq C^{\circ}\text{C}$ and the build-up time of compressor running is for more than 5 minutes, compressor will be stopped. When indoor pipe temp. drops to $E^{\circ}\text{C}$, outdoor fan motor will returns to normal running.

Note: When entering heating overload operation, louver blades are in position 3 and return to the original position.

3.4.7 Defrosting:

3.4.7.1 Defrost entry conditions:

Defrost condition has three branches which has something in common:

- ☆ A Compressor is running.
- ☆ B Compressor has been running for more than 10 minutes.

Difference between the three branches:

A. The first branch:

- a. When the temperature of indoor pipe begins to descend, the sum of descending value has reached or exceeded 3°C and the temperature of indoor pipe will not go up in 3 minutes.
- b. The build-up time of compressor running is for more than 40 minutes.
- c. $\text{TOC} < -1^{\circ}\text{C}$
- d. $\text{TRC} - \text{TR} < 18^{\circ}\text{C}$

B. The second branch:

- a. The build-up time of compressor running is for more than 48 minutes.
- b. $\text{T}_{\text{OC}} < -5^{\circ}\text{C}$
- c. The present value is 3°C lower than the lowest value of T_{OC} re in 12 minutes after the unit has started.

C. The third branch:

- a. The build-up time of compressor running is for more than 27 minutes.
- b. $\text{T}_{\text{OC}} < -5^{\circ}\text{C}$ for more than 20 seconds.

Note:

When the system has entered heating overload protection and has not existed from protection, the unit can not enters defrosting; Users can only test defrosting conditions after existing from protection for 3 minutes.

3.4.7.2 Defrosting:

Compressor and outdoor fan motor will stop working after the unit entering defrosting running. 5 seconds later, 4-way reversing valve will close. Another 5 seconds, compressor starts running. When the time of the compressor running is for more than 8 minutes or $T_{oc} \geq 35^{\circ}\text{C}$, compressor stops. 55 seconds later, 4-way reversing valve will open. Another 5 seconds later, compressor and outdoor fan motor will restart working and exit defrosting operation. In defrosting operation, the time of compressor running is at least 3 minutes. Cool-airflow-prevention and blowing residue heat are both effective.

3.4.8 Testing codes:

Code 1 is to set test run (Not effective for "SMART" mode and "DEHUMIDIFICATION" mode. After entering testing run, no matter what is the set temperature or indoor temperature, the unit will run as the set cooling or heating mode and will also not detect stopping condition. The max. running time is 60 minutes.)

Code 2 is to set fast testing.

Code 3 is to set auto-diagnosis.

Code 4 is to cancel the above setting.

There only can be one setting each time in the tests above.

3.4.9 Failure code display and protection

A. Temperature can be checked by codes, code 11 displays room temperature, code 12 displays indoor pipe temperature, code 13 displays outdoor pipe temperature.

B. Code 14 displays abnormal information.

E0 displays normal operation.

P2 displays heating overload.

P3 displays freeze-prevention protection.

F1: The circuit of room temperature sensor is damaged or abnormal.

F2: Indoor pipe.

C. The circuit of room temperature sensor is abnormal---Pause light flashes and the unit stops.

D. The circuit of indoor pipe temperature sensor is abnormal---Timer light flashes and the unit stops.

E. The circuit of outdoor pipe temperature sensor is abnormal---Run light flashes and the unit stops.

3.5 Other functions

3.5.1 Auto-diagnosis

The Auto-diagnosis functions are in the following steps:

Buzzer beeps 1s → no output 0.5s → running indicator lights 0.5s → pause indicator lights 0.5s → timer indicator lights 0.5s → air refresh indicator lights 0.5s → running compressor on 0.5s → outdoor fan motor 0.5s → 4-way reversing valve 0.5s → AUH 0.5s → indoor fan motor high level 0.5s → indoor fan motor medium level 0.5s → indoor fan motor low level 0.5s → air refresh indicator lights 0.5s → FLAP-a 0.5s → FLAP-b 0.5s → FLAP-c 0.5s → FLAP-d 0.5s → no output 0.5s → all output 1s.

3.5.2 Time reducing:

The CPU runs as 60 times as the former speed. (There is no timer reducing function within 1 minute)

3.5.3 AUH

A. Starting conditions for AUH

- a. Having received starting AUH signals from remote controller.
- b. In the heating mode.
- c. The build-up time of compressor is more than 3 minutes.
- d. $T_r \leq 18^{\circ}\text{C}$
- e. $T_s - T_r \geq 3^{\circ}\text{C}$
- f. Indoor fan motor is running at medium or high level.

B. The AUH function will be closed when meets any of the following conditions:

- a. $T_r \geq 18^{\circ}\text{C}$
- b. $T_s - T_r \leq 2^{\circ}\text{C}$
- c. $T_{rc} \geq A - 2^{\circ}\text{C}$
- d. Indoor fan motor stops running or runs at low level.
- e. Entering defrost running.
- f. Having received signals for closing AUH from remote controller.

Note: If AUH stops working because of condition c, users can restart AUH only on condition that indoor pipe temp. $\leq E^{\circ}\text{C}$ and meet all conditions in A.

C. Defrost when AUH is in operation

If AUH is in operation or less than 10 minutes after closing, indoor fan will continue running at low level for 30 seconds when entering defrosting.

D. Switch off unit when AUH is in operation.

If AUH is in operation or less than 10 minutes after closing, indoor fan will continue running for 30 seconds when switching off. The other things are the same to the condition when switching off normally.

3.5.4 Display function:

The central display screen does not display symbols if air conditioner is in off status, but Timer indicator lights when in Timer mode. In the checking and setting conditions, the screen will also display the corresponding state of the unit.

Turn on the master unit, the screen will only display run indicator after 30 seconds. The screen will display all settings if remote control signal is received again, and only display run indicator after receiving the last signal from remote controller 30 seconds later.

Note: The content LBD displays. The screen displays actual operation mode of the unit.

3.5.5 Air refresh function:

Press air refresh button when the unit is in off status, the unit will switch on. Indoor fan motor runs at the set fan speed, air refresh outputs. Press this button again, air refresh function is cancelled and the unit will turn back to the original mode. Press air refresh button if the unit is running, air refresh indicator will light and air refresh output. Press this button again, air refresh function is cancelled and the unit will turn back to

the original running mode.

3.5.6 Quiet Operation

Press “QUIET” button when air conditioner is “FAN SWEEP” status, the indoor fan will run at low level.

Press “AIR REFRESH” button when air conditioner is in off status and set fan speed as quite mode, the indoor fan will run at low level.

In other status, the indoor fan runs at low level.

3.5.7 Restoration function (optional)

To install E²PROM, users do not have to program first and then assemble. As long as installing E²PROM, the unit will have the restoration function after electricity comes again.

3.5.8 Restoration (optional)

Mode
Fan speed
On/Off status
Dew-prevention symbol
Fan sweep symbol
Sleep symbol
Quiet symbol
AUH symbol
Air refresh symbol
Set temperature
Louver position

3.5.9 The second function button

The second function for “AIR REFRESH” button:

Press “AIR REFRESH” button and hold on, and finish the test condition after 5 seconds. When entering this mode, the original value is 00 for each entry. The second function is only effective for temperature control button, on/off button, and air refresh button. Other buttons are not effective for the second function.

The second function for “AUH” button:

Press “AUH” button and hold on for 5 seconds, the unit will enter dew-prevention function. At the same time, the unit gives a buzz sound. This button is only effective in Cooling and Dehumidification mode. Users can set or cancel this function by pressing this button. (Y2 model gives tacit consent automatically to start dew-prevention function.)

3.5.10 Demonstration Mode: (Blank unit)

When electrified, the unit runs at medium level if the unit has not received the signal from remote controller.

Pause indicator lights 1s→running indicator lights 1s→timer indicator lights 1s→air refresh indicator lights 1s →Pause indicator lights 1s→……; The display screen displays every 11,22,33,44,55,66,77,88,99,00 1s circularly.

After receiving the signal from the remote controller, the unit will operate by the signal.

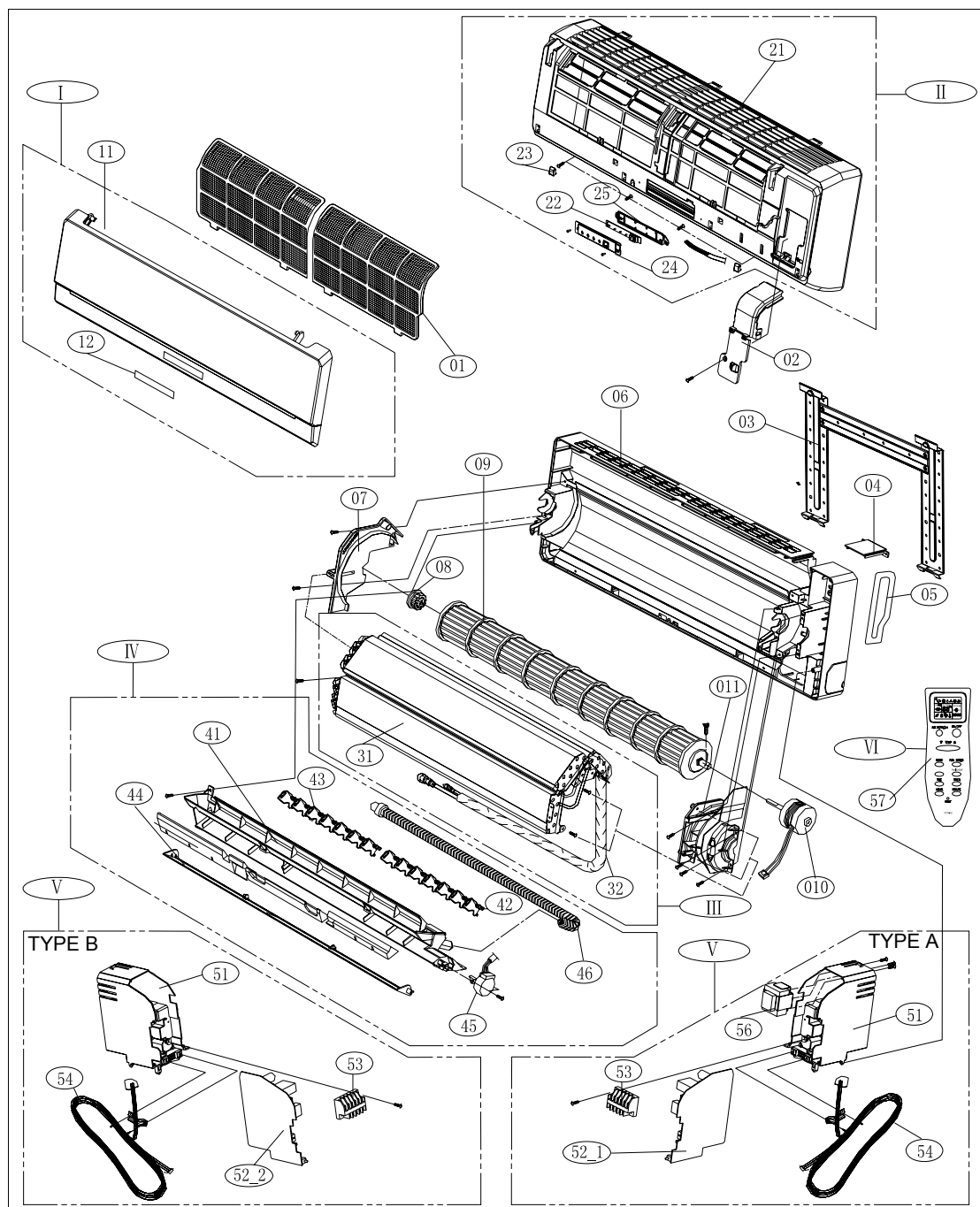
During the courts of demonstration, all signals of outdoor unit are ineffective.

3.6. Temperature table of protecting point

MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N
AA-2710	54	57	70	48	46	34	42	28	53	41	23	53	43	53

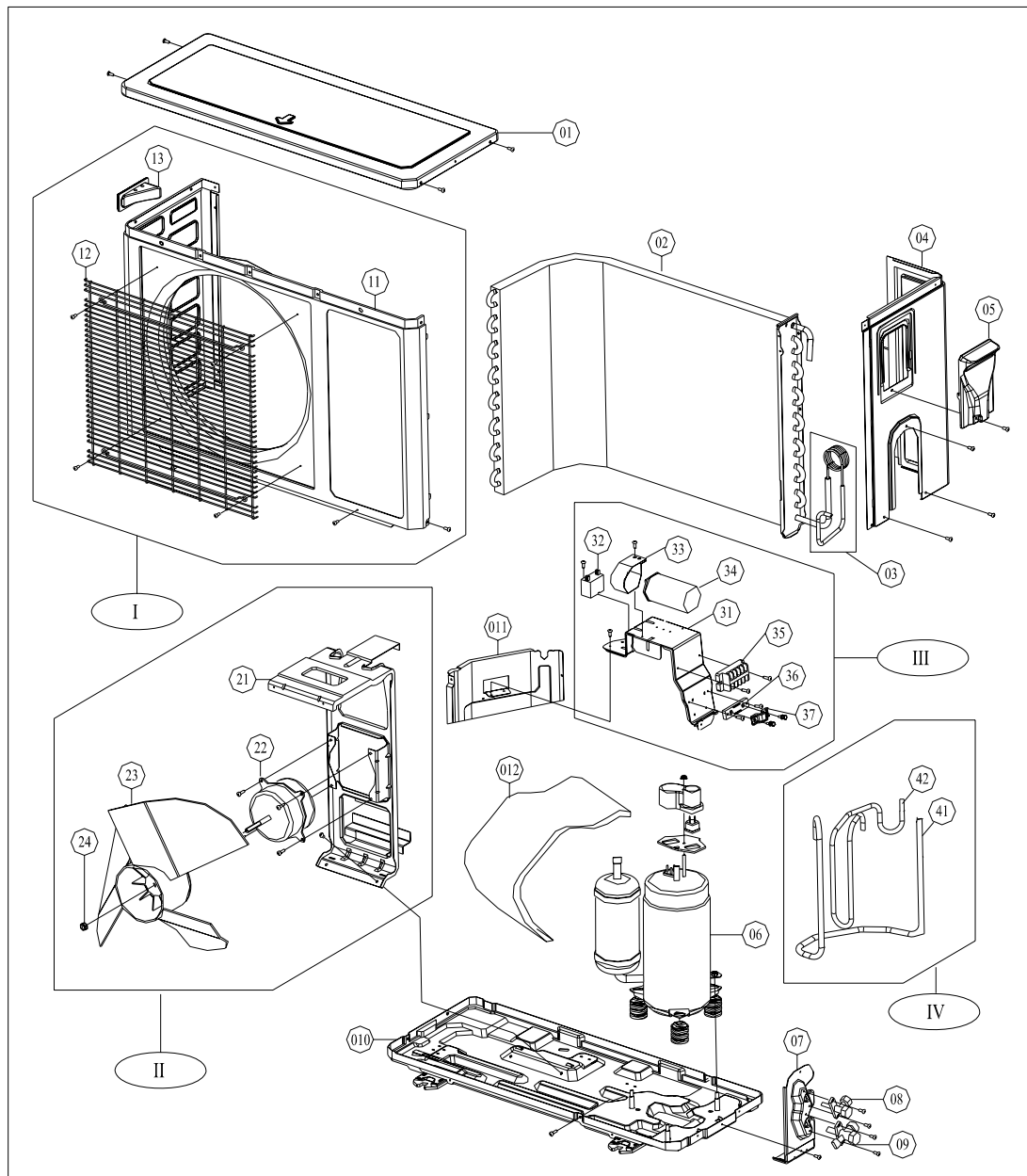
4. Exploded view

4.1 Exploded view for indoor unit



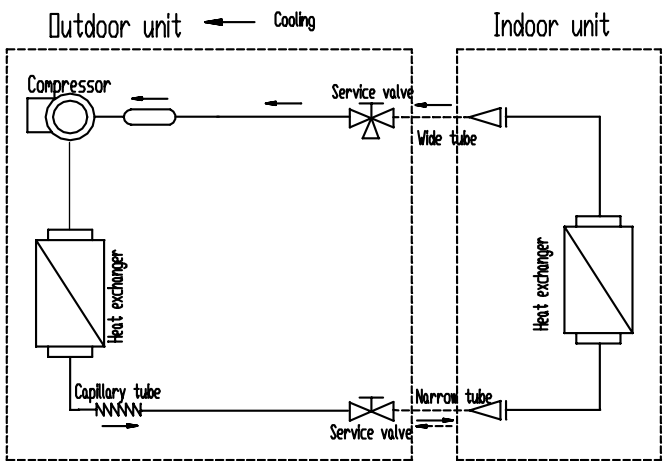
No.	NAME OF PART	No.	NAME OF PART
01	AIR FILTER	25	DISPLAY BOX
02	COVER OF ELECTRIC CONTROL BOX	31	VAPORATOR
03	WALL MOUNTING PLATE	32	ADIABATIC BUSHING
04	TUBE PLATE	41	AIR-GUDING BRACKET
05	TUBE PLATE	42	CONNECTING BAR
06	BOTTOM FRAME SUBASSEMBLY	43	AIR-GUDING BLADE
07	LEFT BRACKET	44	FLAP
08	BEARING SUBASSEMBLY	45	STEP MOTOR
09	CROSS FAN	46	DRAINAGE PIPE
010	FAN MOTOR	51	ELECTRIC CONTROL BOX
011	RIGHT BRACKET	52_1	P.C.B
11	FRONT PANEL	52_2	P.C.B
12	DISPLAY WINDOW	53	CONNECTION TERMINAL BOARD
21	MEDIAL FRAME	54	POWER CORD
22	DISPLAY BOARD	56	TRANSFORMER
23	BOLT COVER	57	REMOTE CONTROL
24	DI SPLAY BOX COVER		

4.2 Exploded view for outdoor unit



No.	NAME OF PART	No.	NAME OF PART
01	COVER PLATE	13	RIGHT HANDLE
02	CONDENSER ASSEMBLY	21	MOTOR BRACKET
03	CAPILLARY ASSEMBLY	22	FAN MOTOR
04	RIGHT SIDE PANEL	23	FAN
05	HANDLE COVER	24	NUT
06	COMPRESSOR	31	ELECTRIC CONTROL BOARD
07	VALVE MOUNTING BOARD	32	FAN MOTOR CAPACITANCE
08	CUT-OFF VALVE (SMALL)	33	CLIP
09	CUT-OFF VALVE(BIG)	34	COMPRESSOR CAPACITANCE
010	CHASSIS ASSEMBLY	35	CONNECTION TERMINAL BOARD
011	PARTITION BOARD	36	LEAD LOWER PRESSURE PLATE
012	SOUND INSULATION ASSEMBLY	37	LEAD UPPER PRESSURE PLATE
11	FRONT PANEL	41	INHALE PIPE
12	FAN COVER	42	EXHAUST PIPE

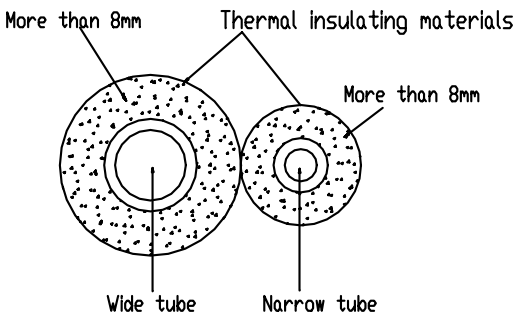
5. Refrigerant Flow Diagram



Tube	Diameter
Narrow tube	Φ6.35mm
Wide tube	Φ12.7mm

Thermal insulating of refrigerant pipeline

To prevent heat loss and condensed water from dropping on the floor, the wide and narrow tube of air conditioner should be wrapped with thermal insulating materials. For using capillary tube, and the tubes are in low temperature, the thickness of thermal insulating materials shall be more than 8mm.

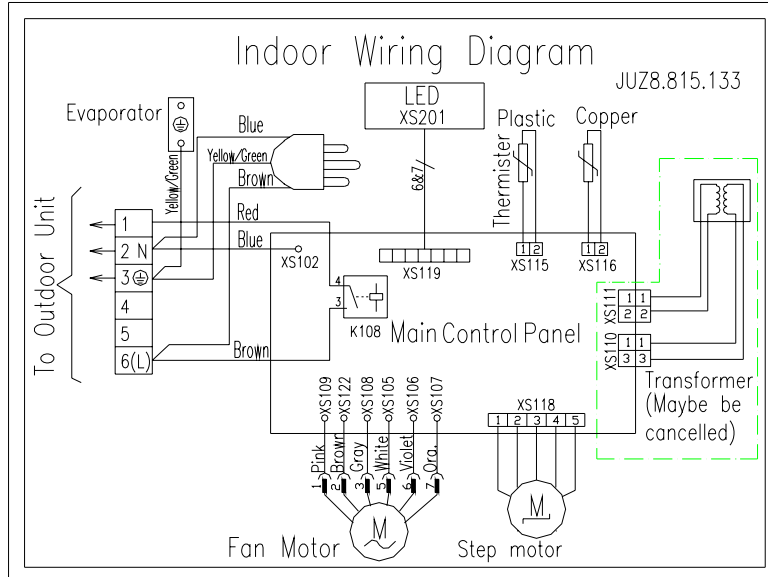


6. Circuit Diagram

6.1 Electrical wiring diagram for indoor unit

Warning

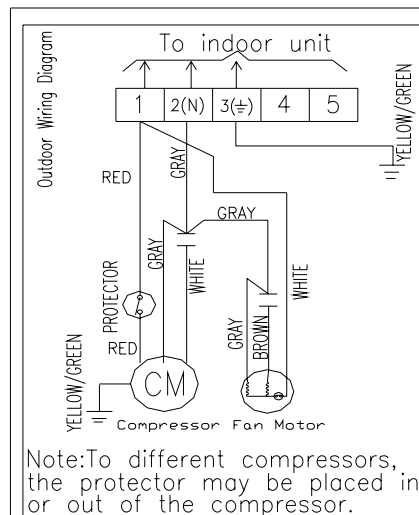
To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.



6.2 Electrical wiring diagram for outdoor unit

Warning

To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.



7 Troubleshooting

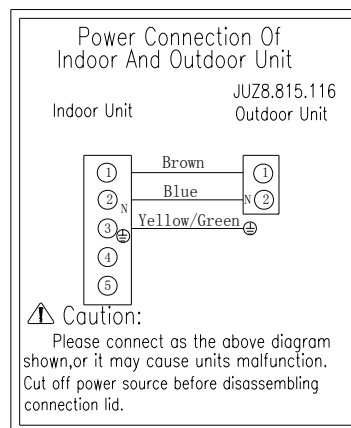
7.1 Check before troubleshooting

Warning:

High-voltage will result in electric shock or death.
Always cut off the power before checking and maintaining.

7.1.1 Check power line

To check whether the power line is connected correctly to the terminal No 1 which is on the terminal block of the indoor unit



7.1.2 Check unit wiring

To check whether the inter-unit wires are connected correctly.

7.1.3 Check power supply

To check whether the power supply is in the specified range.

7.1.4 Check connector and lead wire of indoor and outdoor units.

To check whether the insulating cover of the lead wire is damaged.

To check whether the lead wire and the connector are connected well

To check wires.

7.2 The air conditioner does not work

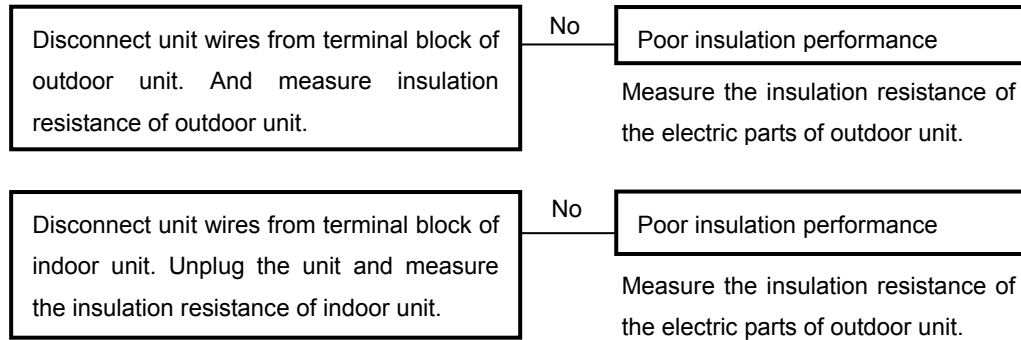
7.2.1 Leakage protector is open or fuse is burnt.

A. Setting leakage protector to "ON", it opens immediately (can not reset).

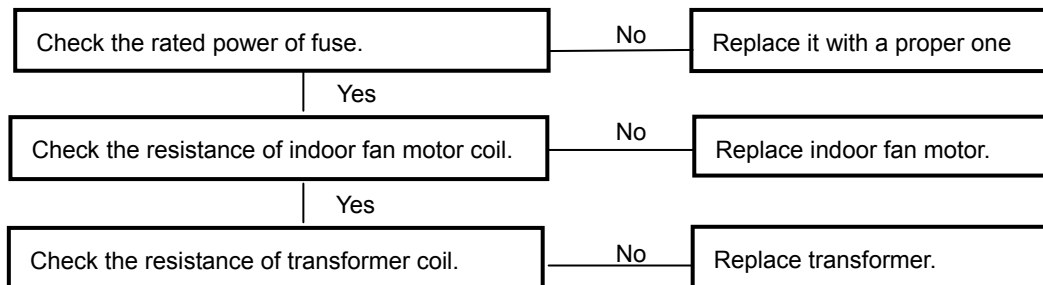
There is possibility of ground fault.

Check insulation resistance (The insulation resistance shall be more than $2M\Omega$).

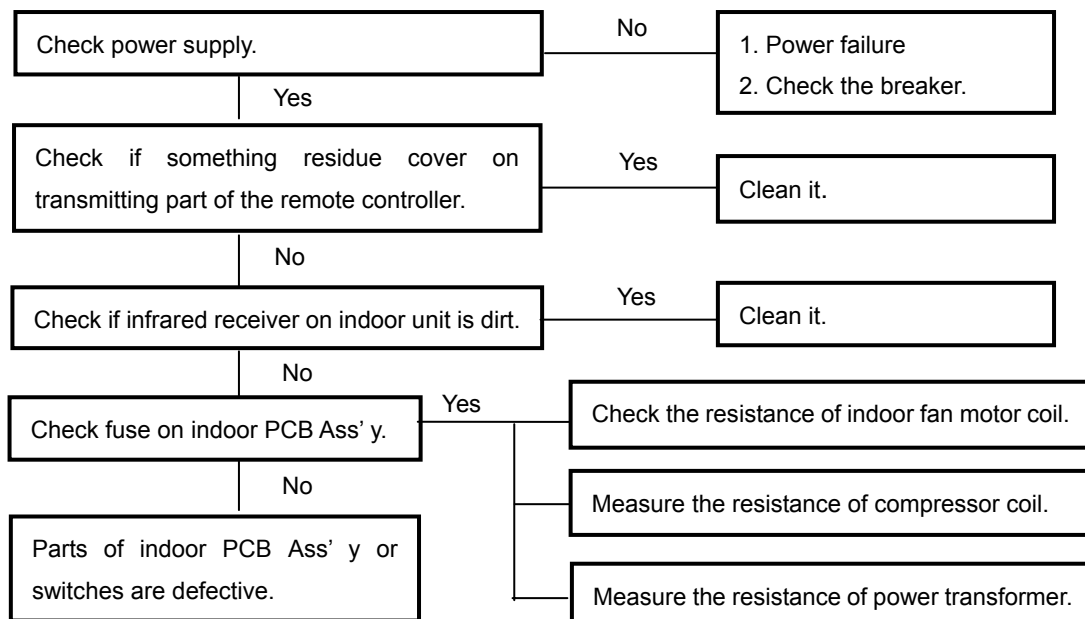
B. Leakage protector is **OFF**.



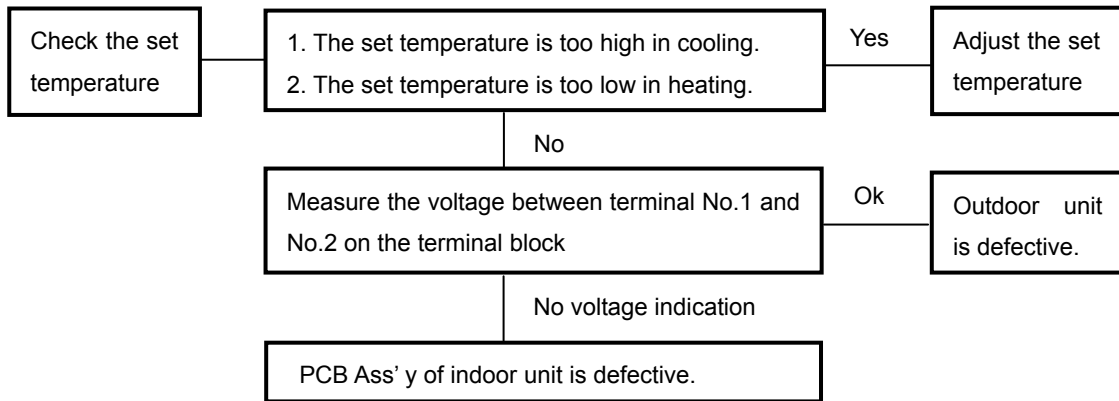
C. The fuse is open in several minutes after turning air conditioner on.



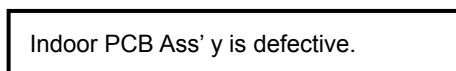
7.2.2 The indoor and outdoor units do not work.



7.2.3 Only outdoor unit does not work.

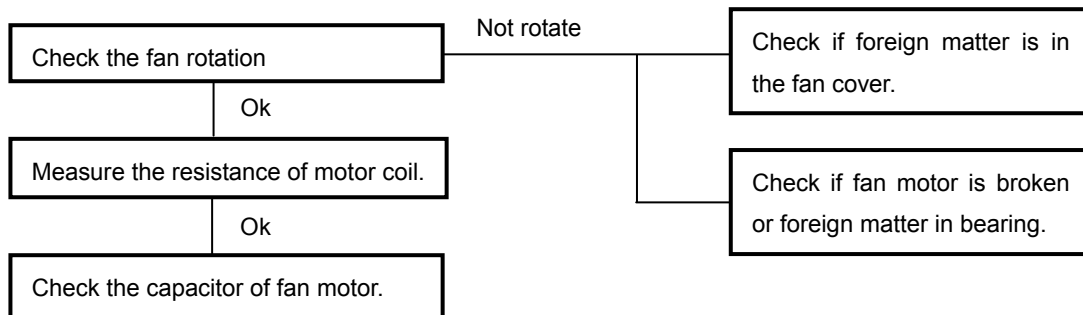


7.2.4 Indoor unit does not work.

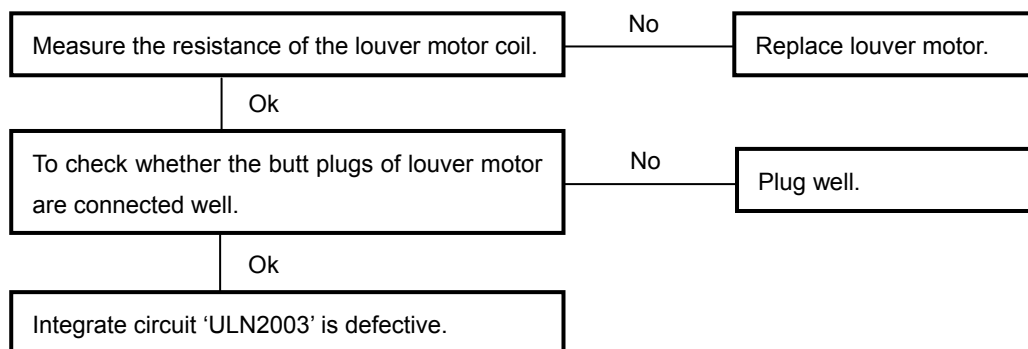


7.3 Some parts of the air conditioner do not work

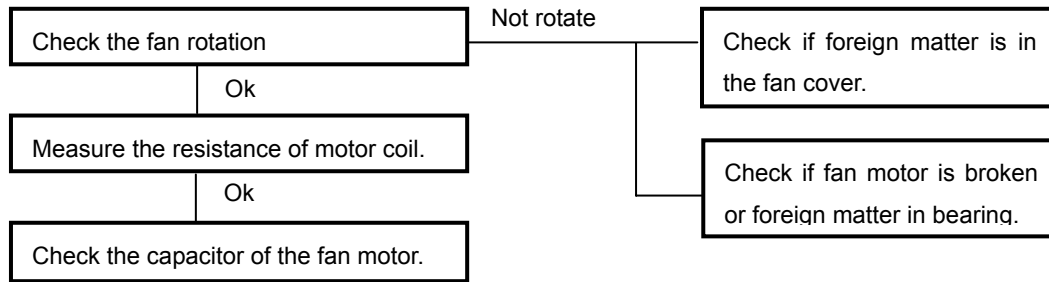
7.3.1 Only indoor fan does not work.



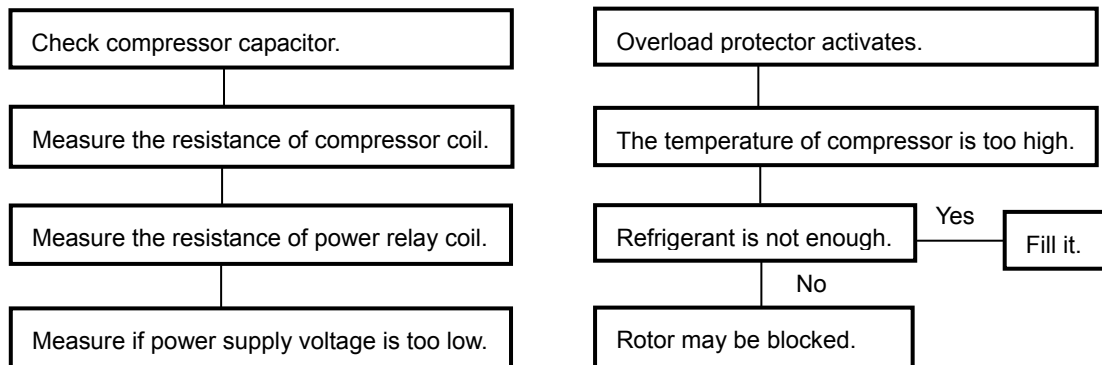
7.3.2 Only louver motor does not run.



7.3.3 Only outdoor fan motor does not run.

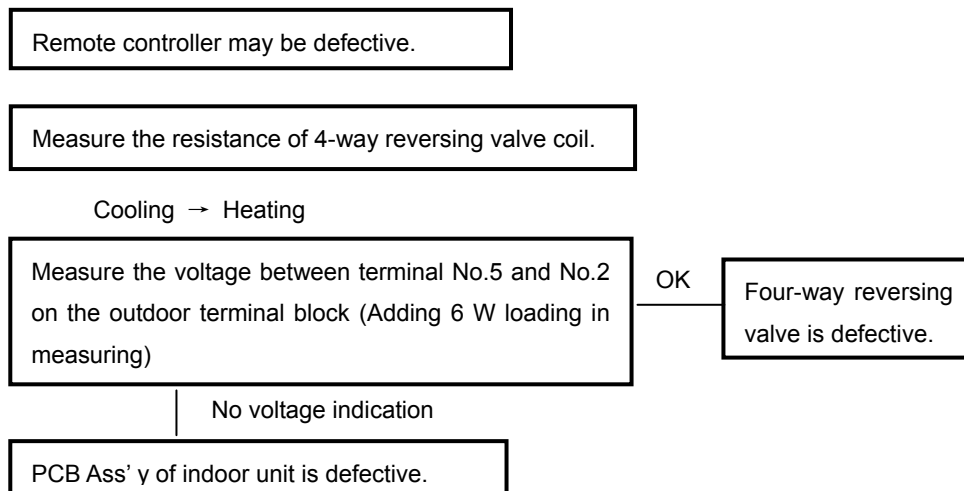


7.3.4 Compressor does not run.

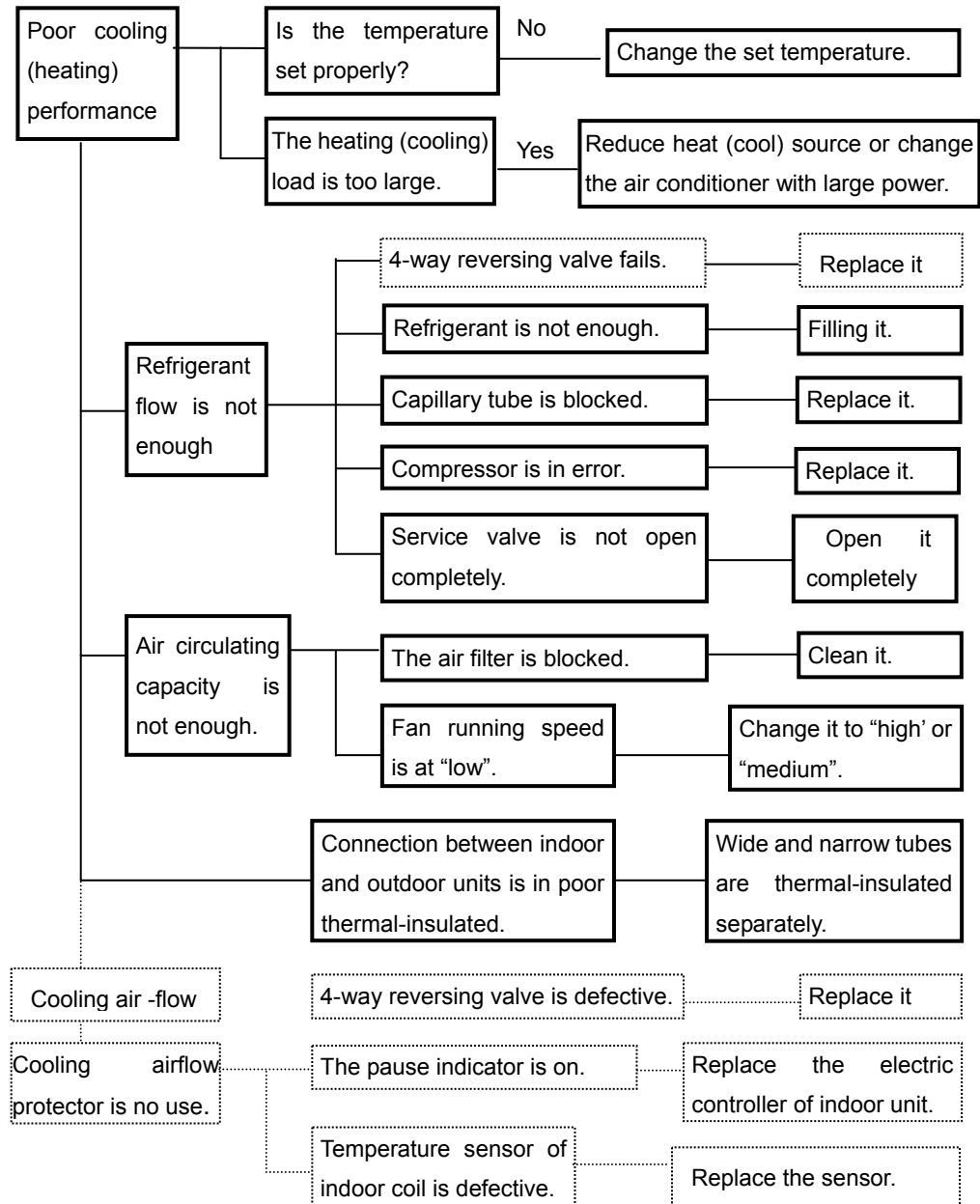


7.4 Air conditioner operates, but abnormalities are observed

7.4.1 Poor shifting between cooling and heating. (Inapplicable for cooling-only type)



7.4.2 Poor cooling or heating phenomena.



NOTE: " " Inapplicable for cooling-only type.

7.4.3 Over cooling or heating.

Check the set temperature.

7.5 Sensor is defective (Check reference 3.4.8)

8. Checking Electrical Components

8.1 Measure insulation resistance

The insulation is in good condition if the resistance exceeds 2 M Ω .

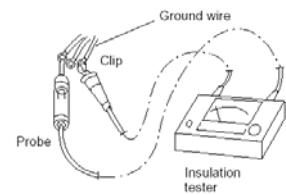


Fig. 1

8.1.1 Power supply wires

Clamp the ground pins of the power plug with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 1)

Then measure the resistance between the ground wire and the other power wire. (Fig. 1)

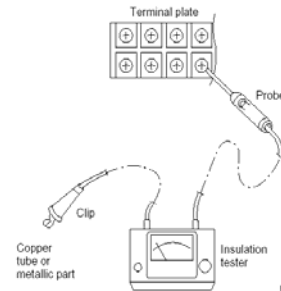


Fig. 2

8.1.2 Indoor unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw on the terminal plate. (Fig. 2)

Note that the ground line terminal should be skipped for the check.

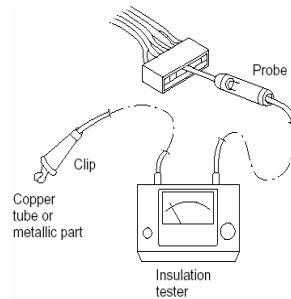


Fig. 3

8.1.3 Outdoor unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw where power supply lines are connected on the terminal plate. (Fig. 2)

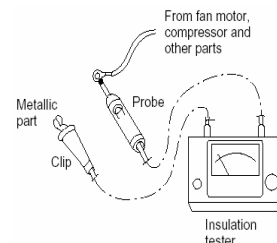


Fig. 4

Note:

Refer to electric wiring diagram.

If the probe can't enter the poles because the hole is too narrow then use a probe with a thinner pin.

8.1.4 Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate, capacitor, etc.

Similarly disconnect the connector. Then measure the insulation resistance. (Fig. 3 and 4)

8.2 Checking continuity of fuse on PCB Ass'y

Remove the PCB ass'y from the electrical component box.
Then pull out the fuse from the PCB ass'y. (Fig. 5)

Check for continuity using a multimeter as shown in Fig. 6

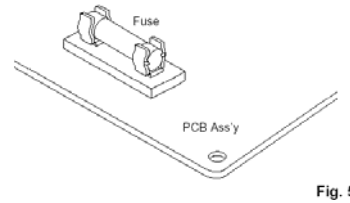


Fig. 5

8.3 Checking motor capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig. 7. Observe the deflection of the pointer setting the resistance measuring range of the multimeter to the maximum value.

The capacitor is "good" if the pointer bounces to a great extent and then gradually returns to its original position.

The range of deflection and deflection time differ according to the capacity of the capacitor.

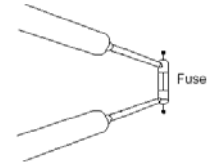


Fig. 6

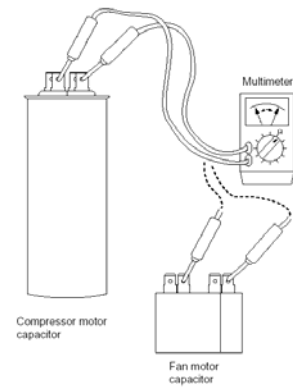


Fig. 7