SERVICE MANUAL

SAP-K97GS5 + SAP-C97G5

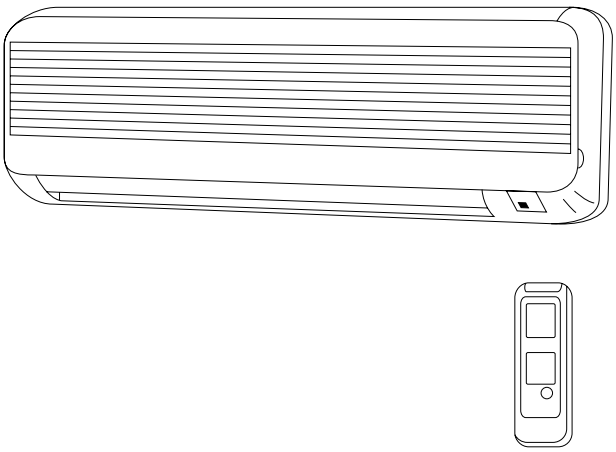
FILE NO.

SPLIT SYSTEM AIR CONDITIONER

Indoor Model No.	Product Code No.	Country of Origin
SAP-K97GS5	1 852 654 85	Japan

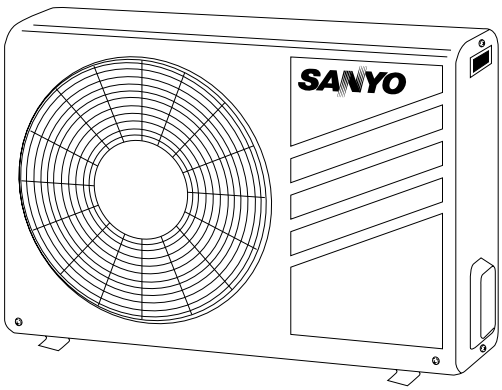
Outdoor Model No.	Product Code No.	Country of Origin
SAP-C97G5	1 852 750 64	Japan

Indoor Unit



SAP-K97GS5

Outdoor Unit



SAP-C97G5

8526481042600

REFERENCE NO. **SM700198**

(W)

IMPORTANT!
Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.

WARNING This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help
These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation
The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

WARNING When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death.**
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting
Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing…
…In a Ceiling or Wall
Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

…In a Room
Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

…In Moist or Uneven Locations
Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

…In an Area with High Winds
Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

…In a Snowy Area (for Heat Pump-type Systems)
Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE:
Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion the refrigerant tubing for your particular model is specified as either "narrow" or "wide" rather than as "liquid" or "gas."

When Servicing
- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

Indoor Unit Model Designation

How to Identify the Model Number and Country Origin of Your Air Conditioner

● Some air conditioner models have been manufactured by our overseas factories in different locations. To do servicing correctly, you must first check the **model number** and also the indication of the **country** in which your air conditioner was produced. In most of the wall-mounted indoor units, a nameplate is located on the bottom of the indoor casing. Refer to Fig. A.

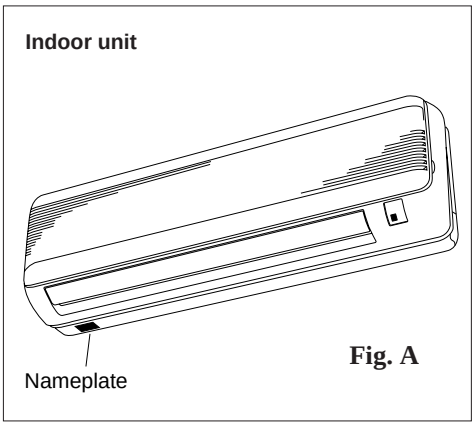
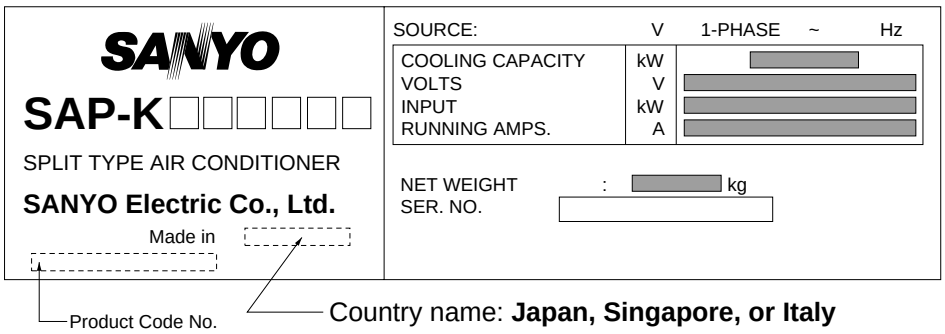


Fig. A

Example of model designation on indoor unit nameplate



Outdoor Unit Model Designation

How to Identify the Model Number and Country Origin of Your Air Conditioner

● Some air conditioner models have been manufactured by our overseas factories in different locations. To do servicing correctly, you must first check the **model number** and also the indication of the **country** in which your air conditioner was produced. In most of Split System units, a nameplate is located on the side plate of the outdoor unit. Refer to Fig. B.

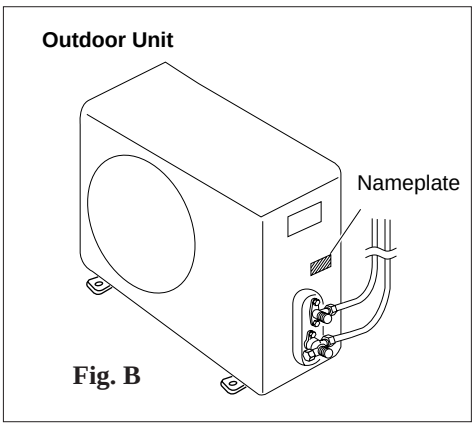


Fig. B

Example of model designation on outdoor unit nameplate

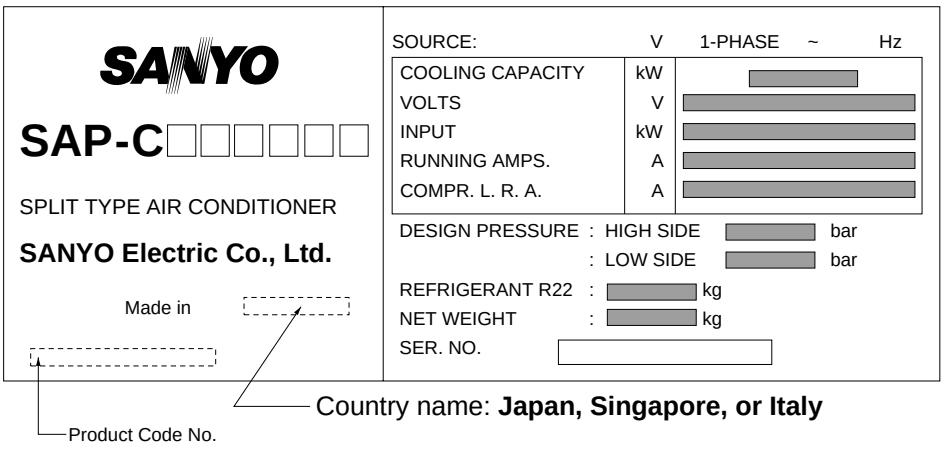


Table of Contents

1. OPERATING RANGE

	Temperature	Indoor Air Intake Temp.	Outdoor Air Intake Temp.
Cooling	Maximum	35°C DB / 22.5°C WB	52°C DB
	Minimum	19°C DB / 14°C WB	19°C DB

2. SPECIFICATIONS

2-1. Unit Specifications

Model No.	Indoor unit		SAP-K97GS5	
	Outdoor unit		SAP-C97G5	
Power Source			220 / 230 / 240V – Single phase – 50Hz	
Performance			Cooling	
	Capacity	kW	2.60 / 2.65 / 2.70	
		BTU/h	8,900 / 9,000 / 9,200	
	Air circulation (High)	m^3/h	450	
	Moisture removal (High)	Liters/h	1.1	
Electrical Rating	Voltage rating	V	220 / 230 / 240	
	Available voltage range	V	198 to 264	
	Running amperes	A	4.0 / 4.0 / 4.0	
	Power input	W	860 / 880 / 900	
	Power factor	%	98 / 96 / 94	
	C.O.P.	W/W	3.0 / 3.0 / 3.0	
	Rocked rotor amperes	A	19 / 20 / 21	
Features	Controls / Temperature control		Microprocessor / I.C. thermostat	
	Control unit		Wireless remote control unit	
	Timer		1-hour OFF / 12-hours ON or OFF	
	Fan speeds	Indoor / Outdoor	3 and Auto / 1	
	Airflow direction (Indoor)	Horizontal	Manual	
		Vertical	Auto	
	Air filter		Washable, easy access	
	Compressor		Rotary (Hermetic)	
	Refrigerant / Amount charged at shipment	g	R22 / 770	
	Refrigerant control		Capillary tube	
	Operation sound	Indoor – Hi / Me / Lo dB-A	40.0 / 34.0 / 31.0	
		Outdoor – Hi dB-A	46.0	
	Refrigerant tubing connections		Flare type	
	Max. allowable tubing length at shipment	m	10	
	Refrigerant tube diameter	Narrow tube mm (in.)	6.35 (1/4)	
		Wide tube mm (in.)	9.52 (3/8)	
	Refrigerant tube kit / Accessories		Optional / Hanging wall bracket	
Dimensions & Weight			Unit dimensions	Package dimensions
	Indoor unit	Height mm	265	208
		Width mm	805	855
		Depth mm	145	326
	Outdoor unit	Height mm	525	585
		Width mm	790	865
		Depth mm	220	320
	Net weight /	Indoor kg	7.5 / 10.0	
	Shipping weight	Outdoor kg	33.0 / 35.5	
	Shipping volume	Indoor / Outdoor m^3	0.06 / 0.16	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:
Indoor air temperature 27°C DB/19°C WB
Outdoor air temperature 35°C DB/24°C WB

2-2. Major Component Specifications

2-2-1. Indoor Unit

Unit Model No.					SAP-K97GS5
Controller PCB	Part No.				POW-K7GS
	Controls				Microprocessor
	Control circuit fuse				250V – 3.15A
Remote Control Unit					RCS-3S1
Fan & Fan Motor	Type				Cross-flow
	Number … Dia. and length			mm	1 … ø 70 / L592
	Fan motor model … Number				KFV2Q-11B5P … 1
	No. of pole … rpm (230V, High)				2 … 1,900
	Nominal output			W	10
	Coil resistance (Ambient temp. 20°C)			Ω	WHT – BRN: 385.3 WHT – VLT: 113.6 VLT – ORG: 37.4 ORG – YEL: 87.8 YEL – PNK: 95.8
	Safety devices	Type			Internal thermal fuse
		Operating temp.	Open	°C	145 ± 2
			Close		—
	Run capacitor			µF	1.0
				VAC	440
Flap Motor	Type				Stepping motor
	Model				MP24GA1
	Rating				DC 12V
	Coil resistance (Ambient temp. 25°C)			Ω	WHT – BLU (respectively 4 wires): 380 ± 7%
Heat Exch. Coil	Coil				Aluminum plate fin / Copper tube
	Rows				2
	Fin pitch			mm	1.4
	Face area			m^2	0.126

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-2-2. Outdoor Unit

Unit Model No.					SAP-C97G5	
Compressor	Type				Rotary (hermetic)	
	Compressor model				C-R81H5R 80684245	
	Nominal output			W	800	
	Compressor oil			cc	500	
	Coil resistance (Ambient temp. 25°C)			Ω	C – R: 3.38 C – S: 7.49	
	Safety devices	Type			External (OLR A)	External (OLR T)
		Overload relay			MRA99109-9201	CS-7C115
		Operating temp.	Open	°C	150 ± 5	115 ± 3
			Close	°C	69 ± 11	95 ± 5
		Operating amp. (Ambient temp. 25°C)			Trip in 6 to 16 sec. at 18A	—
	Run capacitor			μF	20.0	
				VAC	400	
Fan & Fan Motor	Type				Propeller	
	Number … Dia.			mm	1 … ø 400	
	Fan motor model … Number				UE6-21D5PB … 1	
	No. of pole … rpm (230V)				6 … 650	
	Nominal output			W	20	
	Coil resistance (Ambient temp. 20°C)			Ω	WHT – BRN: 381.2 WHT – PNK: 395.8	
	Safety devices	Type			Internal thermal fuse	
		Operating temp.	Open	°C	165 ± 3	
			Close		—	
	Run capacitor			μF	1.5	
				VAC	440	
Heat Exch. Coil	Coil				Aluminum plate fin / Copper tube	
	Rows				1	
	Fin pitch			mm	1.3	
	Face area			m^2	0.377	
External Finish					Acrylic baked-on enamel finish	

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-3. Other Component Specifications

2-3-1. Indoor Unit: SAP-K97GS5

Transformer		**ATR-J105**
Rating	Primary	AC 230V, 50Hz
	Secondary	19V, 0.526A
	Capacity	10VA
Coil resistance	Ω (at 21°C)	Primary (WHT – WHT): 205 ± 10%
		Secondary (BRN – BRN): 2.0 ± 10%
Thermal cut-off temp.		150°C

Thermistor (Coil sensor TH1)		**PBC-41E-S4**			
Resistance	kΩ	–20°C	40.1 ± 5%	20°C	6.5 ± 5%
		–10°C	24.4 ± 5%	30°C	4.4 ± 5%
		0°C	15.3 ± 5%	40°C	3.0 ± 5%
		10°C	9.9 ± 5%	50°C	2.1 ± 5%

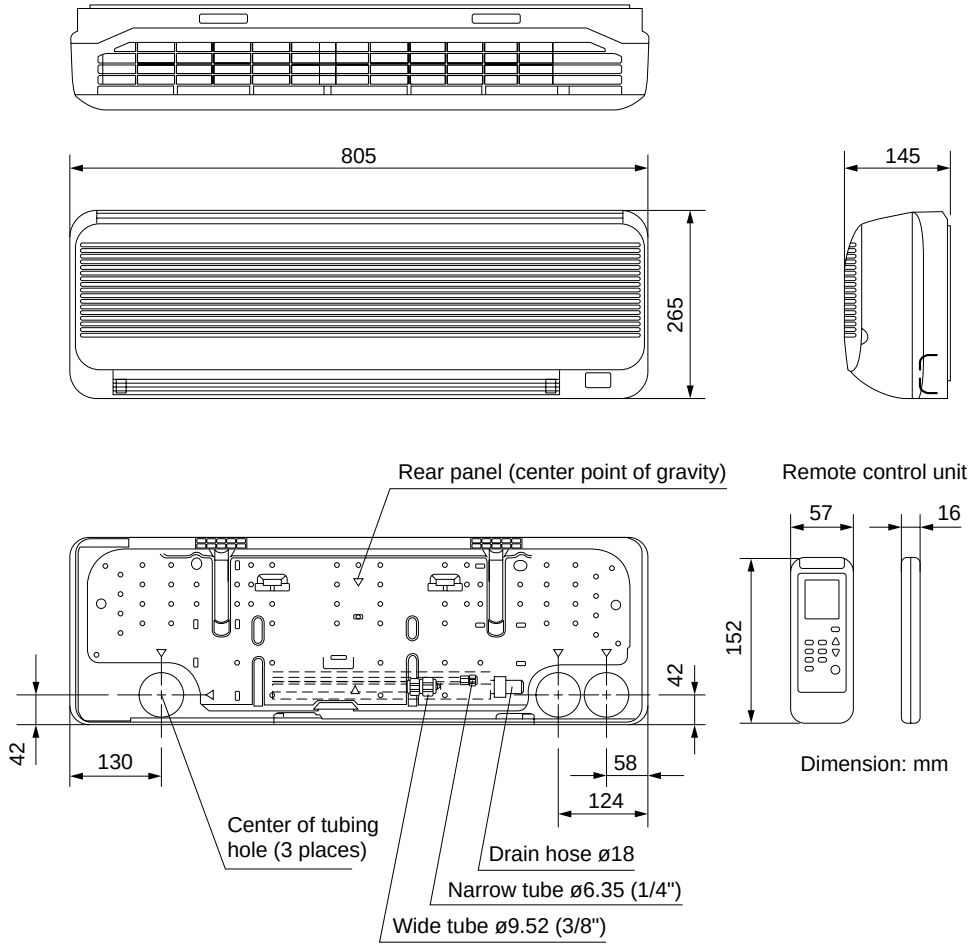
Thermistor (Room sensor TH2)		**KTEC-35-S6**			
Resistance	kΩ	10°C	10.0 ± 4%	30°C	4.0 ± 4%
		15°C	7.9 ± 4%	35°C	3.3 ± 4%
		20°C	6.3 ± 4%	40°C	2.7 ± 4%
		25°C	5.0 ± 4%	50°C	1.8 ± 4%

2-3-2. Outdoor Unit: SAP-C97G5

Power Relay (PR)		G7L-2A-TUB
Coil rating		AC 220/240V, 50Hz
Coil resistance	Ω (at 20°C)	21 ± 15%
Contact rating		AC 220V, 25A

3. DIMENSIONAL DATA

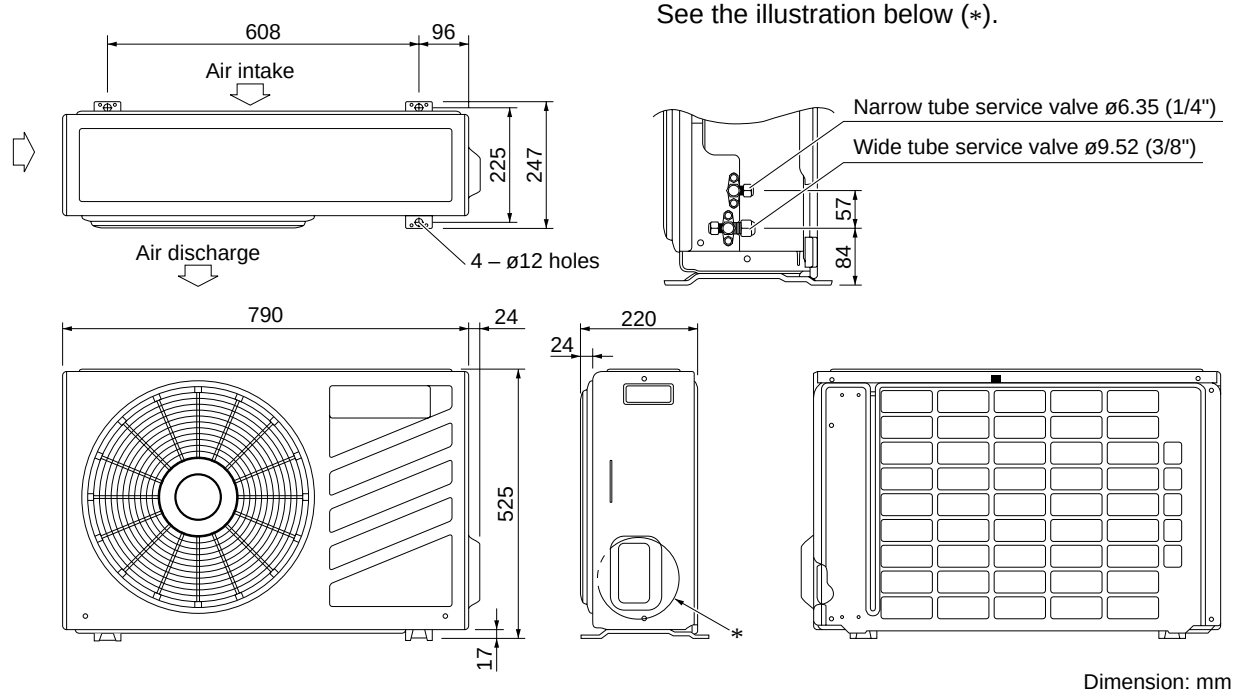
Indoor Unit: SAP-K97GS5



Outdoor Unit: SAP-C97G5

NOTE

<Location of Service Valve>
Service valves are located behind the side panel.
See the illustration below (∗).

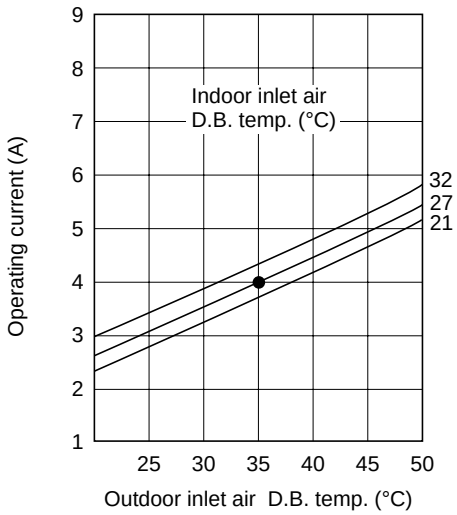


4. PERFORMANCE CHARTS

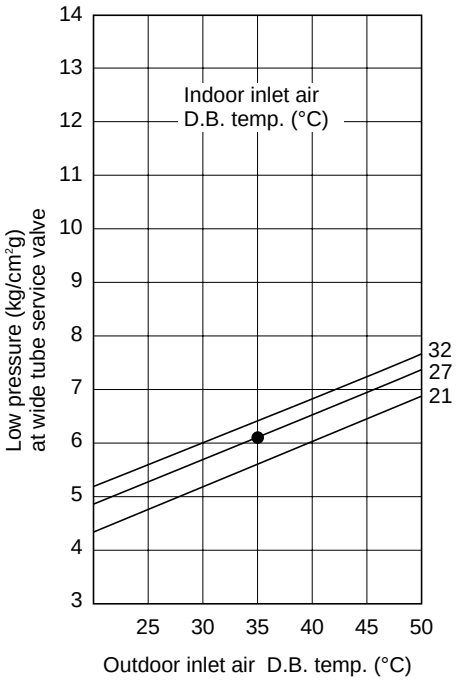
Indoor Unit: SAP-K97GS5 Outdoor Unit: SAP-C97G5

■ **Cooling characteristics**

4-1. Operating Current



4-2. Operating Pressure



NOTE

● .....Points of Rating condition

Black dots in above charts indicate the following rating conditions.

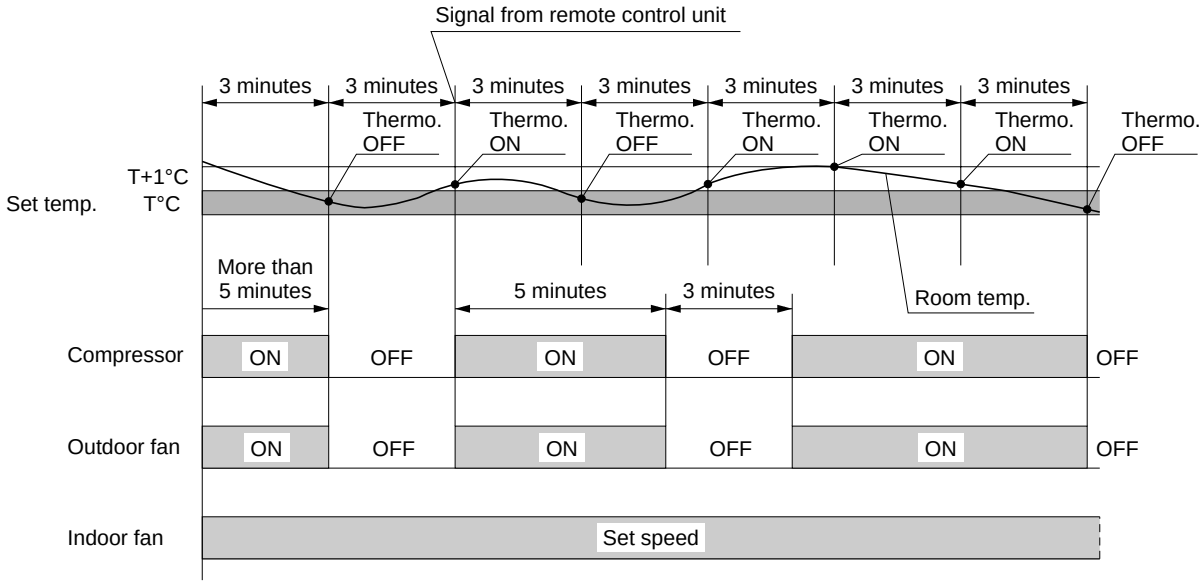
Indoor air temperature 27°C DB/19°C WB

Outdoor air temperature 35°C DB/24°C WB

5. FUNCTION

5-1. Room Temperature Control

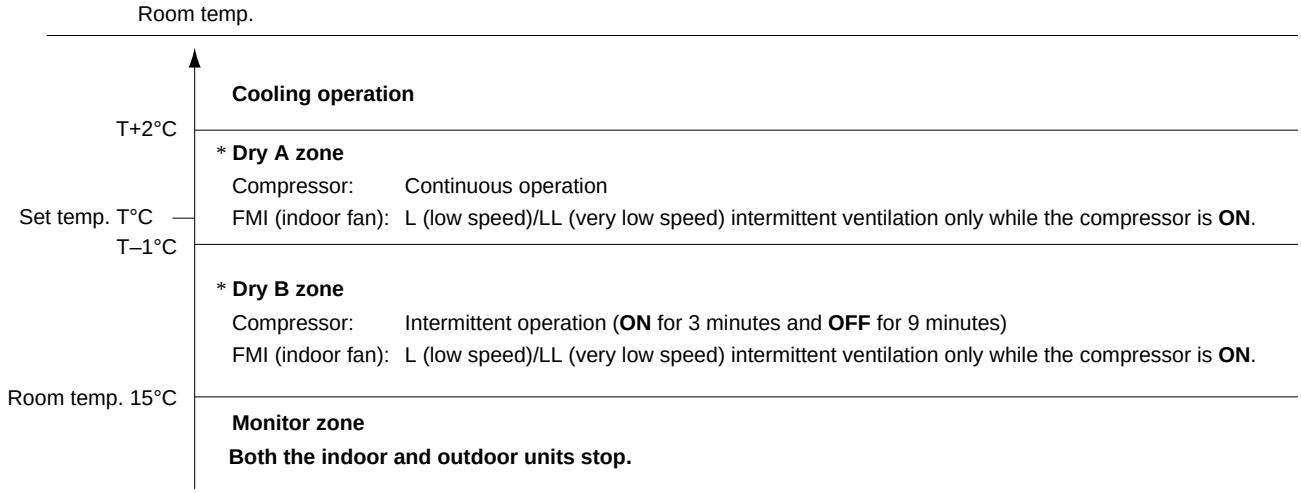
- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 3 minutes by the remote control unit to the controller in the indoor unit.



- The control circuit will not attempt to turn the compressor ON until the compressor has been OFF for at least 3 minutes. To protect the compressor from stalling out when trying to start against the high side refrigerant pressure, the control circuit has a built-in automatic time delay to allow the internal pressure to equalize.
- As a protective measure, the control circuit switches the compressor OFF after 5 minutes or more of compressor operation.
- Thermo. ON : When the room temperature is above T + 1°C (T°C is set temperature).
  Compressor → ON
- Thermo. OFF : When the room temperature is equal to or below set temperature T°C.
  Compressor → OFF

5-2. Dry Operation (Dehumidification)

- Dry operation uses the ability of the cooling cycle to remove moisture from the air, but by running at low level to dehumidify without greatly reducing the room temperature. The air conditioner repeats the cycle of turning ON and OFF automatically as shown in the chart below according to the room temperature.

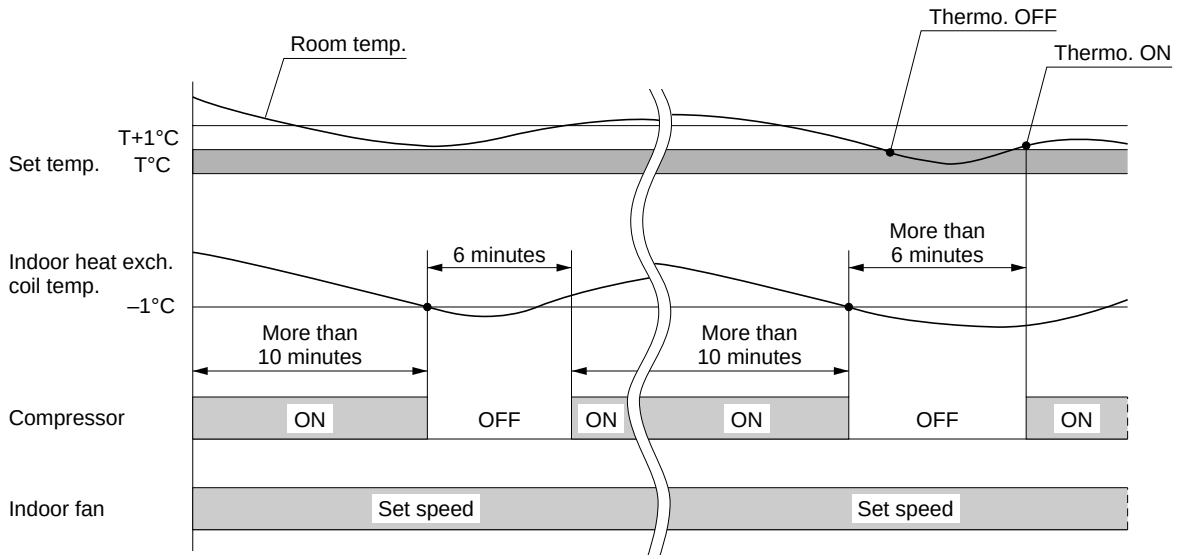


NOTE

- Intermittent ventilation occurs by switching the indoor fan speed between L ↔ LL.
- Dry operation does not occur when the room temperature is under 15°C, which is the monitor zone.
- When the compressor stops, the indoor fan stops as well.

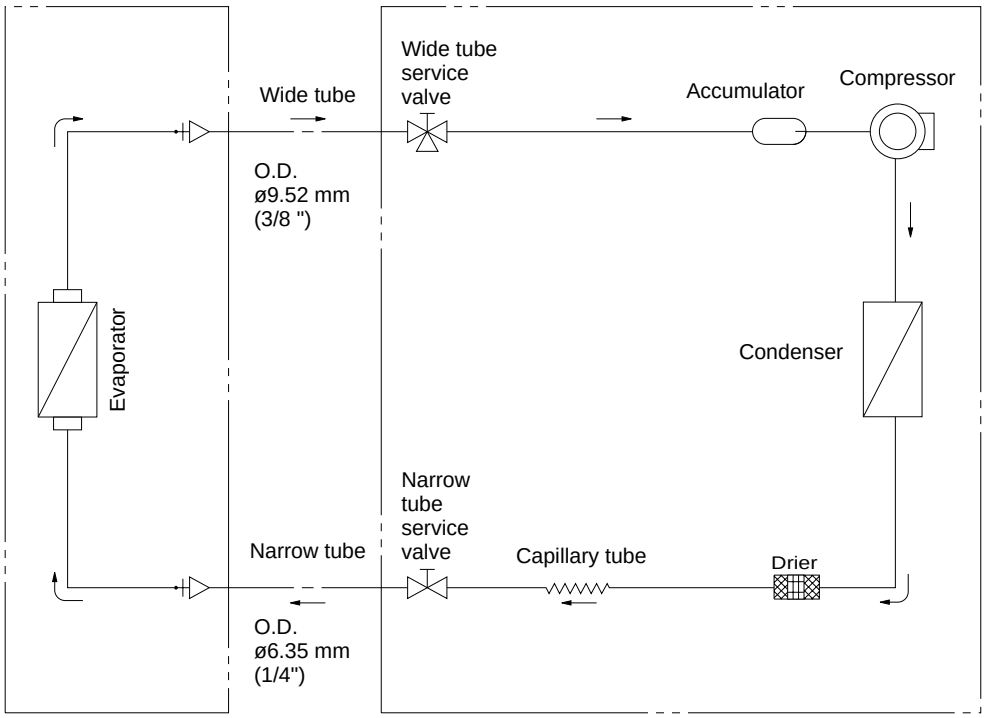
5-3. Freeze Prevention

- This function prevents freezing of the indoor heat exchange coil.
- When the compressor has been running for 10 minutes or more and the temperature of the indoor heat exchange coil falls below –1°C, the control circuit stops the compressor for at least 6 minutes. The compressor does not start again until the temperature rises above 8°C or 6 minutes has elapsed.



6. REFRIGERANT FLOW DIAGRAM

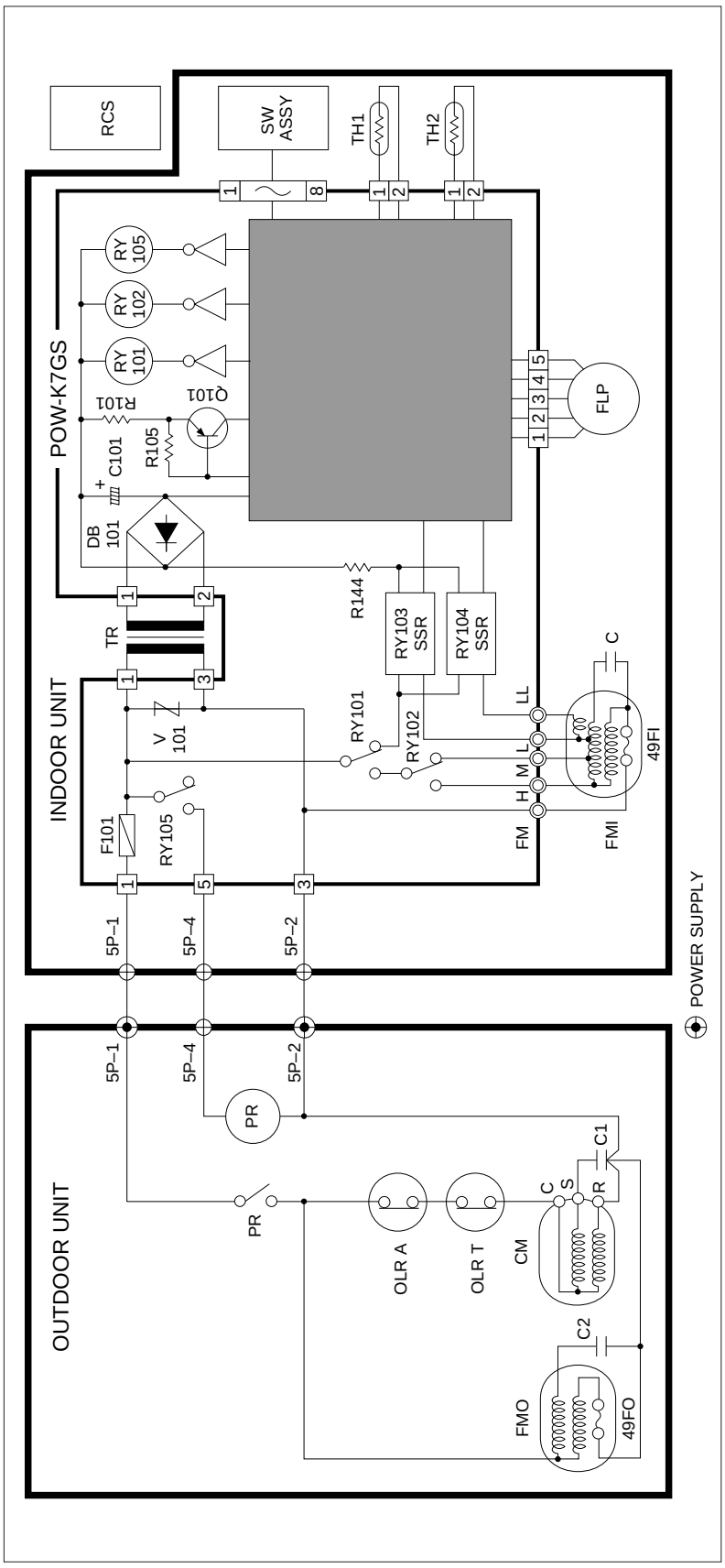
Indoor Unit: SAP-K97GS5 **Outdoor Unit: SAP-C97G5**



7. ELECTRICAL DATA

● Schematic Diagram

Indoor Unit: SAP-K97GS5 **Outdoor Unit: SAP-C97G5**

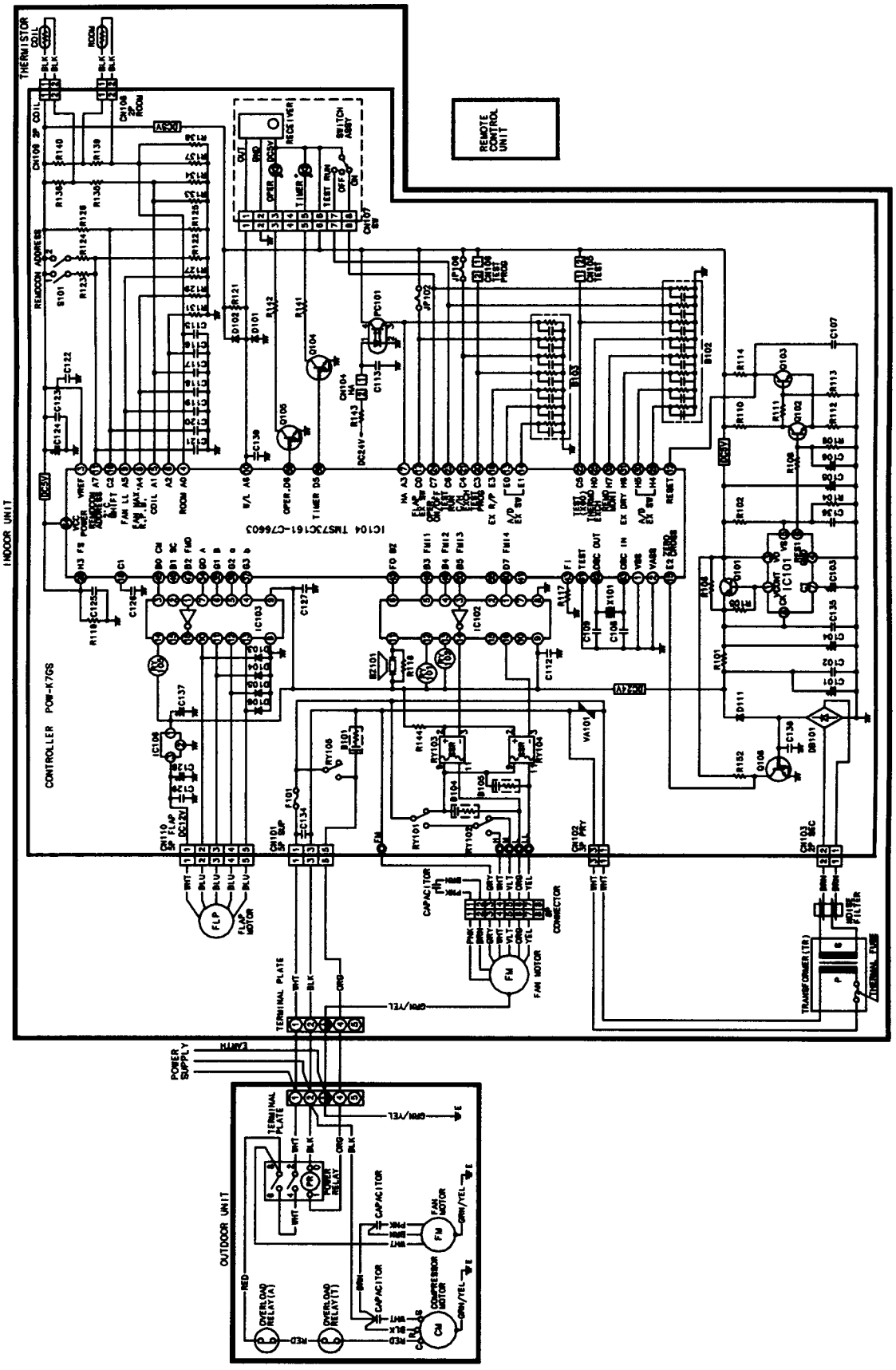


Symbol	Description
OUTDOOR UNIT	
FMO	OUTDOOR FAN MOTOR
49FO	OUTDOOR FAN MOTOR THERMAL FUSE
OLR A	OVERLOAD RELAY (CURRENT)
OLR T	OVERLOAD RELAY (THERMAL)
CM	COMPRESSOR MOTOR
C1, C2	CAPACITOR
PR	POWER RELAY
INDOOR UNIT	
TR	TRANSFORMER
SW ASSY	SWITCH ASS'Y SW-K7GS
TH1	THERMISTOR (COIL TEMP. SENSOR)
TH2	THERMISTOR (ROOM TEMP. SENSOR)

Symbol	Description
FLP	FLAP MOTOR
FMI	INDOOR FAN MOTOR
49FI	INDOOR FAN MOTOR THERMAL FUSE
C	CAPACITOR
POW-K7GS	CONTROLLER
F101	FUSE 250V 3.15A
V101	VARISTOR
DB101	BRIDGE DIODE
C101	CAPACITOR
R101, 105, 144	RESISTOR
Q101	TRANSISTOR
RY101, 102, 105	AUXILIARY RELAY
RY103, 104	SOLID STATE RELAY
RCS	WIRELESS REMOTE CONTROL UNIT RCS-3S1

● Electric Wiring Diagram (PCB Ass'y)

Outdoor Unit: SAP-C97G5 **Indoor Unit: SAP-K97GS5**



● Indoor Controller: POW-K7GS

Symbol	Description	Specifications
B101	COMPOSITE-P	SKV333120
B102	COMPOSITE-P	ARCL9X563J102M
B103	COMPOSITE-P	ARCL8X563J102M
B104	COMPOSITE-P	SKDR250-3332H100
B105	COMPOSITE-P	SKDR250-3332H100
BZ101	BUZZER	CB13PA-XZ
C101	CAPACITOR	2200μF 20% 50V
C102	CAPACITOR	0.1μF 50V
C103	CAPACITOR	1μF 50V
C104	CAPACITOR	10μF 50V
C105	CAPACITOR	220μF 16V
C106	CAPACITOR	2.2μF 50V
C107	CAPACITOR	0.022μF 25V
C108	CAPACITOR	0.000015μF 50V
C109	CAPACITOR	0.000015μF 50V
C112	CAPACITOR	0.047μF 50V
C113	CAPACITOR	0.022μF 25V
C115	CAPACITOR	0.1μF 50V
C116	CAPACITOR	0.1μF 50V
C117	CAPACITOR	0.1μF 50V
C118	CAPACITOR	0.1μF 50V
C119	CAPACITOR	0.1μF 50V
C120	CAPACITOR	0.1μF 50V
C121	CAPACITOR	0.1μF 50V
C122	CAPACITOR	0.022μF 25V
C123	CAPACITOR	0.1μF 50V
C124	CAPACITOR	100μF 16V
C125	CAPACITOR	0.001μF 10% 50V
C126	CAPACITOR	0.047μF 50V
C127	CAPACITOR	0.047μF 50V
C128	CAPACITOR	100μF 25V
C129	CAPACITOR	0.022μF 25V
C134	CAPACITOR	0.047μF 250VA
C135	CAPACITOR	0.01μF 50V
C136	CAPACITOR	0.1μF 50V
C137	CAPACITOR	0.33μF 50V
C138	CAPACITOR	0.022μF 50V
C139	CAPACITOR	0.0001μF 50V
CN101	CONNECTOR	53265-0311
CN102	CONNECTOR	53265-0212
CN103	CONNECTOR	53265-0210
CN104	CONNECTOR	8263-0212-0
CN105	CONNECTOR	MB2P-90H
CN106	CONNECTOR	8263-0212-0
CN107	CONNECTOR	173981-8
CN108	CONNECTOR	5267-02A-X-BL
CN109	CONNECTOR	5267-02A-X-RE
CN110	CONNECTOR	B5B-PH-K-S
D101	DIODE	GMA01
D102	DIODE	GMA01
D103	DIODE	GMA01
D104	DIODE	GMA01
D105	DIODE	GMA01
D106	DIODE	GMA01
D111	DIODE	DFH10TE
DB101	BRIDGE DIODE	DBA10C
F101	FUSE	250V, 3.15A
IC101	IC	LA5693D
IC102	IC	LB1234
IC103	IC	LB1234
IC104	IC	TMS73C161-C76603
IC106	IC	AN7812F
JP102	JUMPER	JP05B
JP106	JUMPER	JP05B
PC101	PHOTOCOUPLER	PC817A
Q101	TRANSISTOR	2SA1289
Q102	TRANSISTOR	2SC536-E
Q103	TRANSISTOR	2SC536-E
Q104	TRANSISTOR	2SC3402
Q105	TRANSISTOR	2SC3402
Q108	TRANSISTOR	2SC3402

Symbol	Description	Specifications
R101	RESISTOR (OXIDE)	5.6Ω ±5% 1W
R102	RESISTOR (CARBON)	10KΩ ±5% 1/4W
R104	RESISTOR (CARBON)	3.6KΩ ±5% 1/4W
R105	RESISTOR (CARBON)	390Ω ±5% 1/4W
R106	RESISTOR (OXIDE)	2KΩ ±5% 1W
R108	RESISTOR (CARBON)	27KΩ ±5% 1/4W
R109	RESISTOR (CARBON)	22KΩ ±5% 1/4W
R110	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R111	RESISTOR (CARBON)	5.6KΩ ±5% 1/4W
R112	RESISTOR (CARBON)	560Ω ±5% 1/4W
R113	RESISTOR (CARBON)	8.2KΩ ±5% 1/4W
R114	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R117	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R118	RESISTOR (CARBON)	20KΩ ±5% 1/4W
R119	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R121	RESISTOR (CARBON)	100KΩ ±5% 1/4W
R122	RESISTOR (CARBON)	6.2KΩ ±5% 1/4W
R123	RESISTOR (CARBON)	8.2KΩ ±5% 1/4W
R124	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R125	RESISTOR (CARBON)	47KΩ ±5% 1/4W
R126	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R127	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R129	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R131	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R133	RESISTOR (METAL)	5.1KΩ ±1% 1/4W
R134	RESISTOR (METAL)	6.2KΩ ±1% 1/4W
R135	RESISTOR (METAL)	510Ω ±1% 1/4W
R136	RESISTOR (METAL)	13KΩ ±1% 1/4W
R137	RESISTOR (METAL)	4.3KΩ ±1% 1/4W
R138	RESISTOR (METAL)	15KΩ ±1% 1/4W
R139	RESISTOR (METAL)	15KΩ ±1% 1/4W
R140	RESISTOR (METAL)	330Ω ±1% 1/4W
R141	RESISTOR (CARBON)	1KΩ ±5% 1/4W
R142	RESISTOR (CARBON)	1KΩ ±5% 1/4W
R143	RESISTOR (CARBON)	5.6KΩ ±5% 1/4W
R144	RESISTOR (OXIDE)	1.2KΩ 1W
R152	RESISTOR (CARBON)	1KΩ ±5% 1/4W
RY101	RELAY	VE-24HE-K
RY102	RELAY	VE-24HE-K
RY103	RELAY	S201D01
RY104	RELAY	S201D01
RY105	RELAY	VE-24HME-K
S101	SWITCH	JKS1120-4-2
VA101	VARISTOR	ERZC14DK681W
X101	CRYSTAL	CSA-8. 00MTZ

8. TROUBLESHOOTING

8-1. Check before and after troubleshooting

WARNING

Hazardous voltage can cause ELECTRIC SHOCK or DEATH. Disconnect power or turn off circuit breaker before you start checking or servicing.

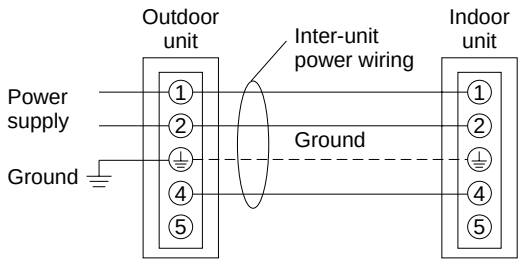
8-1-1. Check power supply wiring.

- Check that power supply wires are correctly connected to terminals No. 1 and No. 2 on the terminal plate in the outdoor unit.

8-1-2. Check inter-unit wiring.

- Check that inter-unit wiring (both the power wiring and control wiring) is correctly connected to the indoor unit from the outdoor unit.

Power supply:
50Hz, single-phase
220/230/240 V



8-1-3. Check power supply.

- Check that voltage is in specified range (±10% of the rating).
- Check that power is being supplied.

8-1-4. Check lead wires and connectors in indoor and outdoor units.

- Check that coating of lead wires is not damaged.
- Check that lead wires and connectors are firmly connected.
- Check that wiring is correct.

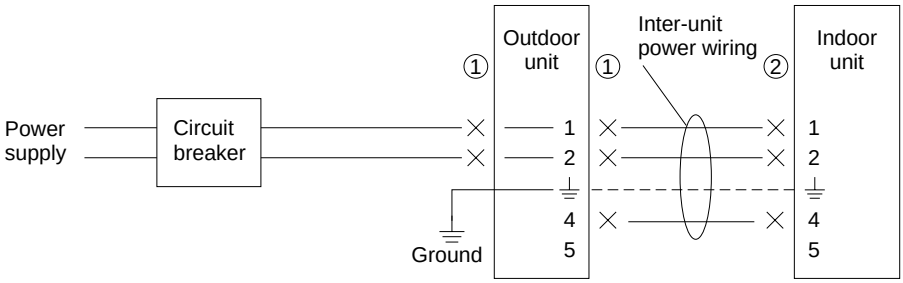
8-2. Air conditioner does not operate.

8-2-1. Circuit breaker trips (or fuse blows).

A. When the circuit breaker is set to ON, it is tripped soon. (Resetting is not possible.)

- There is a possibility of ground fault.
- Check insulation resistance.

If resistance value is 1MΩ or less, insulation is defective (“NO”).



*Set circuit breaker to OFF.

① Remove both power supply wires and inter-unit wires from terminal plate in outdoor unit.
• Measure insulation resistance of outdoor unit.

NO → Insulation of outdoor unit is defective.
• Measure insulation resistance of electrical parts in outdoor unit.

② Remove inter-unit wires from terminal plate in indoor unit.
• Measure insulation resistance of indoor unit.

NO → Insulation of indoor unit is defective.
• Measure insulation resistance of electrical parts in indoor unit.

B. Circuit breaker trips in several minutes after turning the air conditioner on.

- There is a possibility of short circuit.

• Check capacity of circuit breaker.

Capacity of circuit breaker is suitable.

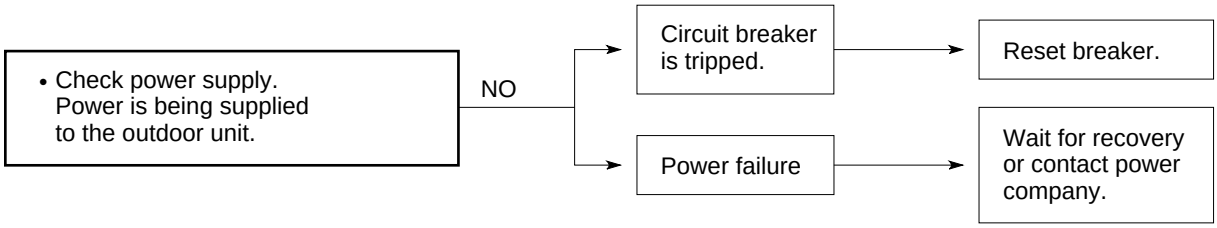
NO → Replace with suitable one (larger capacity).

• Measure resistance of outdoor fan motor winding.

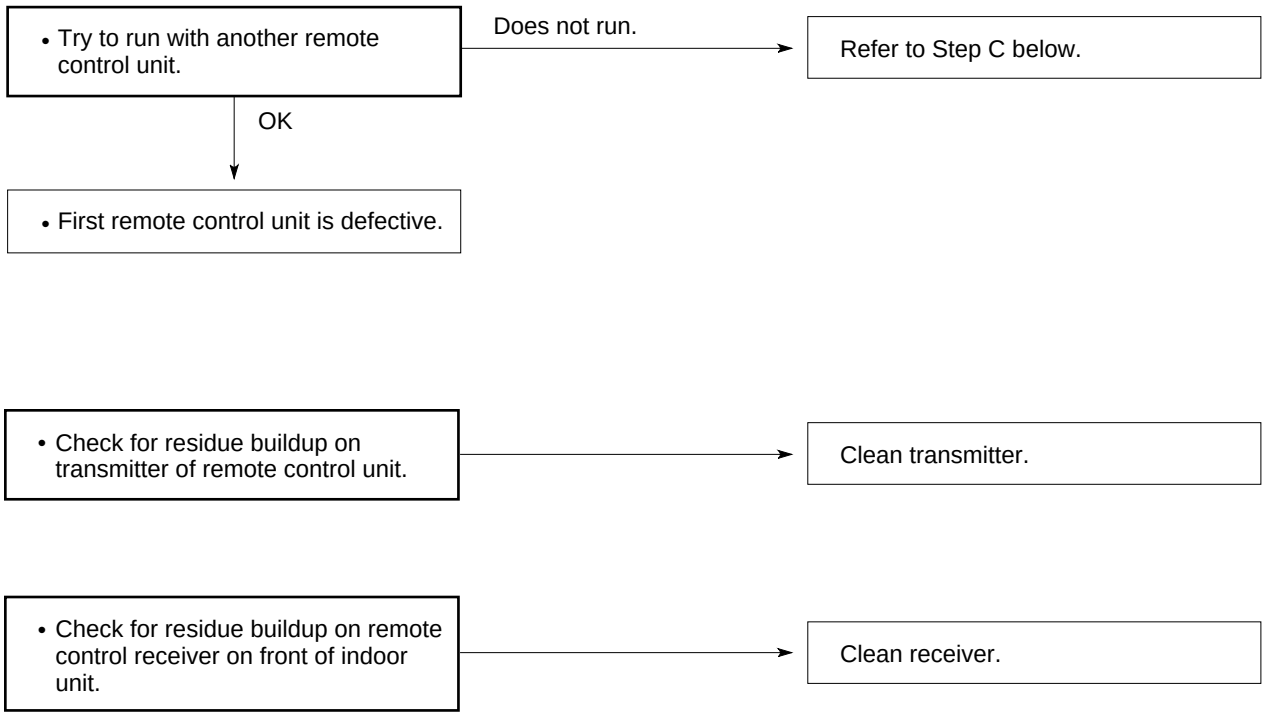
• Measure resistance of compressor motor winding.

8-2-2. Neither indoor nor outdoor unit runs.

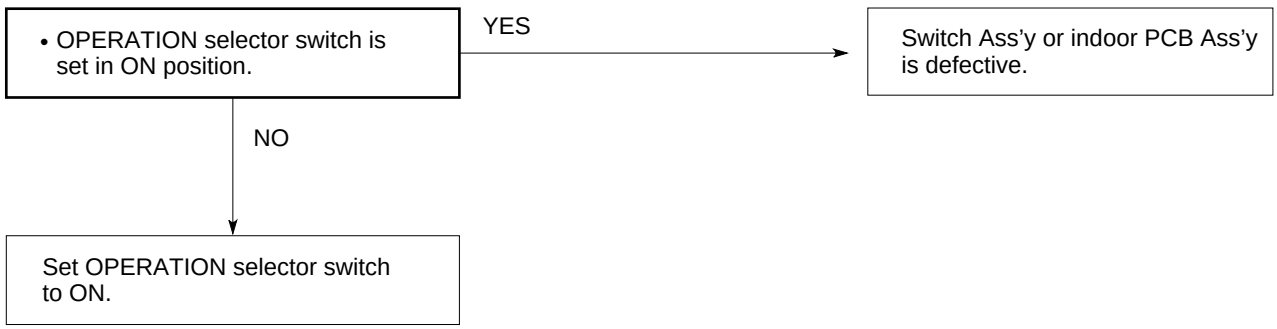
A. Power is not supplied.



B. Check remote control unit.



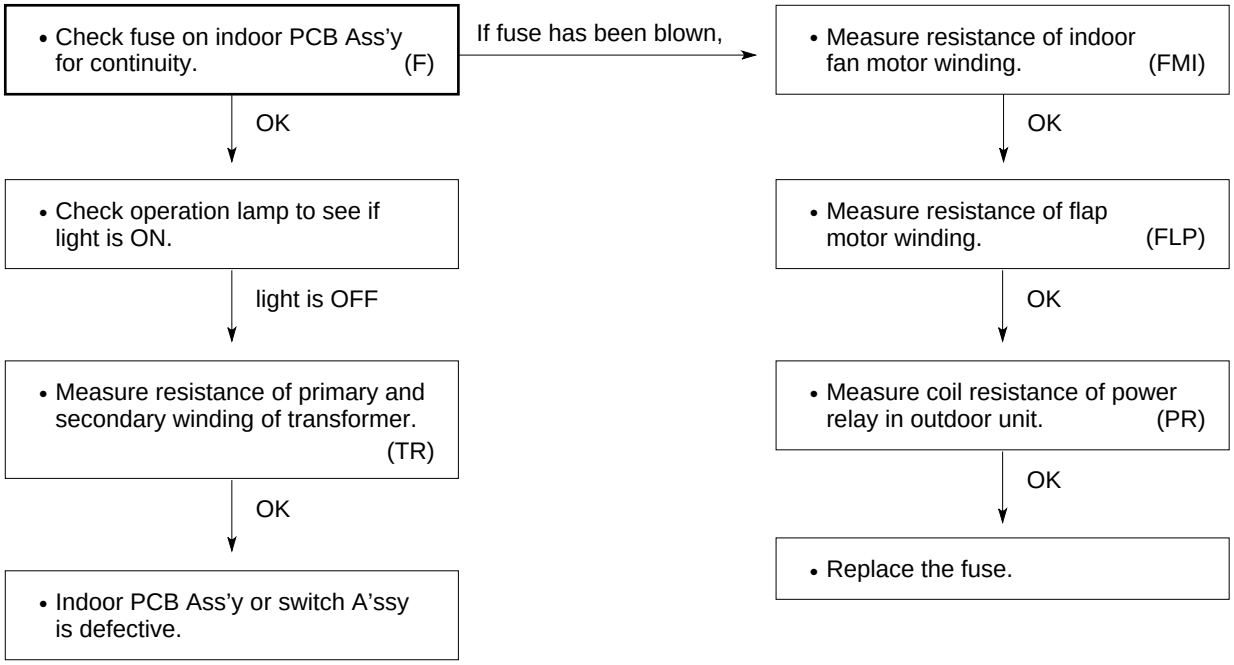
C. Check “OPERATION selector” switch in the indoor unit.



D. Check transformer in indoor unit.

- Measure resistance of primary and secondary winding. (TR)

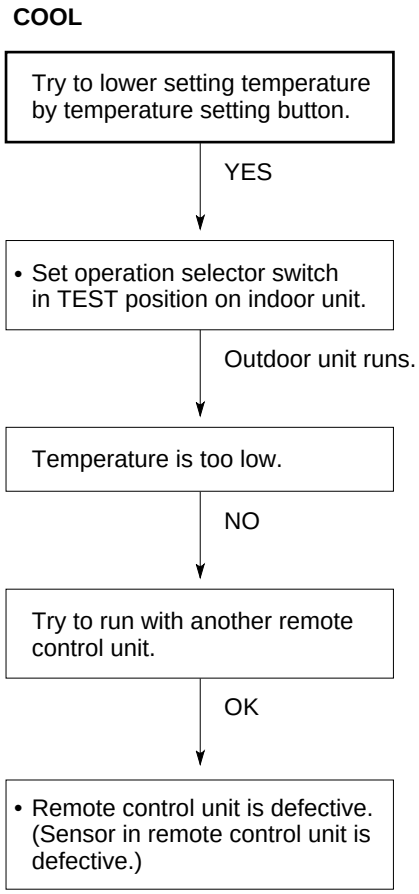
E. Check fuse on the indoor PCB Ass'y.



F. Check TIMER SELECT button on the remote control unit.

8-2-3. Only outdoor unit does not run.

A. Check setting temperature.



IMPORTANT

During normal operation, the operation selector switch must be set in the ON position.

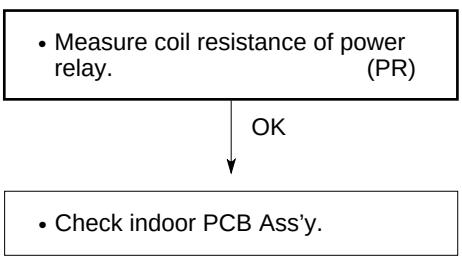
NOTE **A/C SENSOR button**

The meaning of sensor mark on the remote control unit's display:

- If the sensor mark does not appear.....room temperature is detected by REMOTE CONTROL SENSOR.
- If the sensor mark appears.....room temperature is detected by ROOM SENSOR TH2.

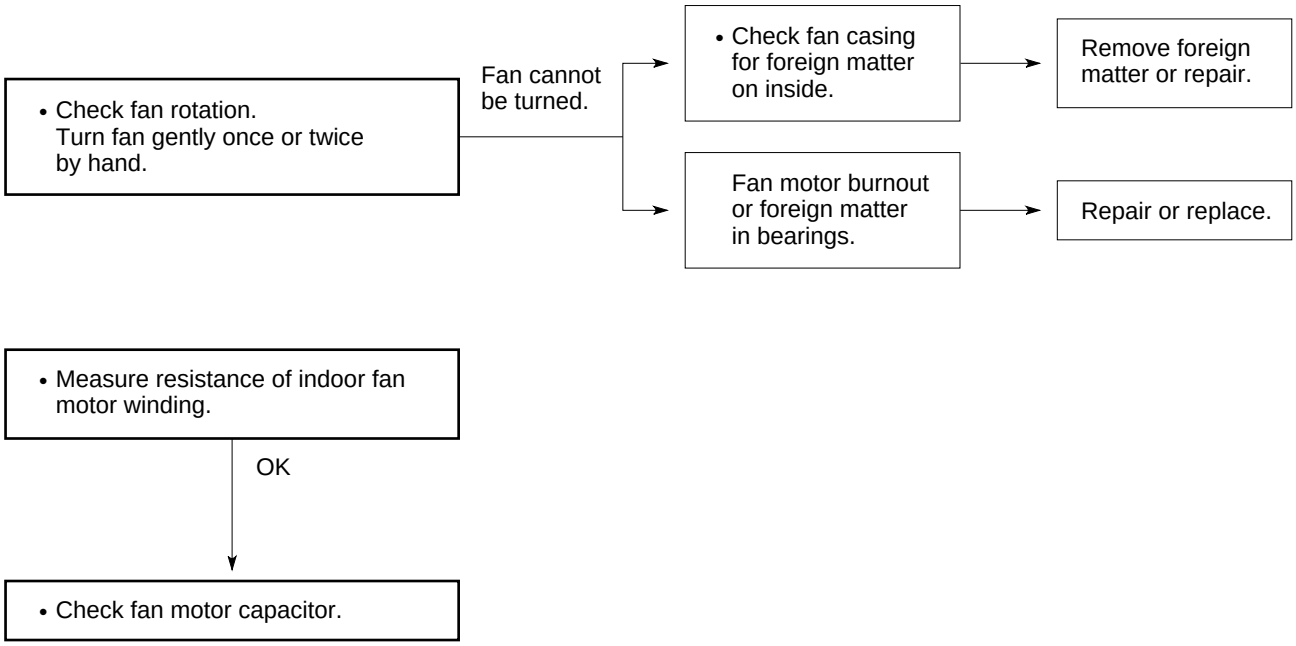
You can choose either "remote control sensor" or "room sensor" by pressing the A/C SENSOR button.

B. Check power relay in outdoor unit.

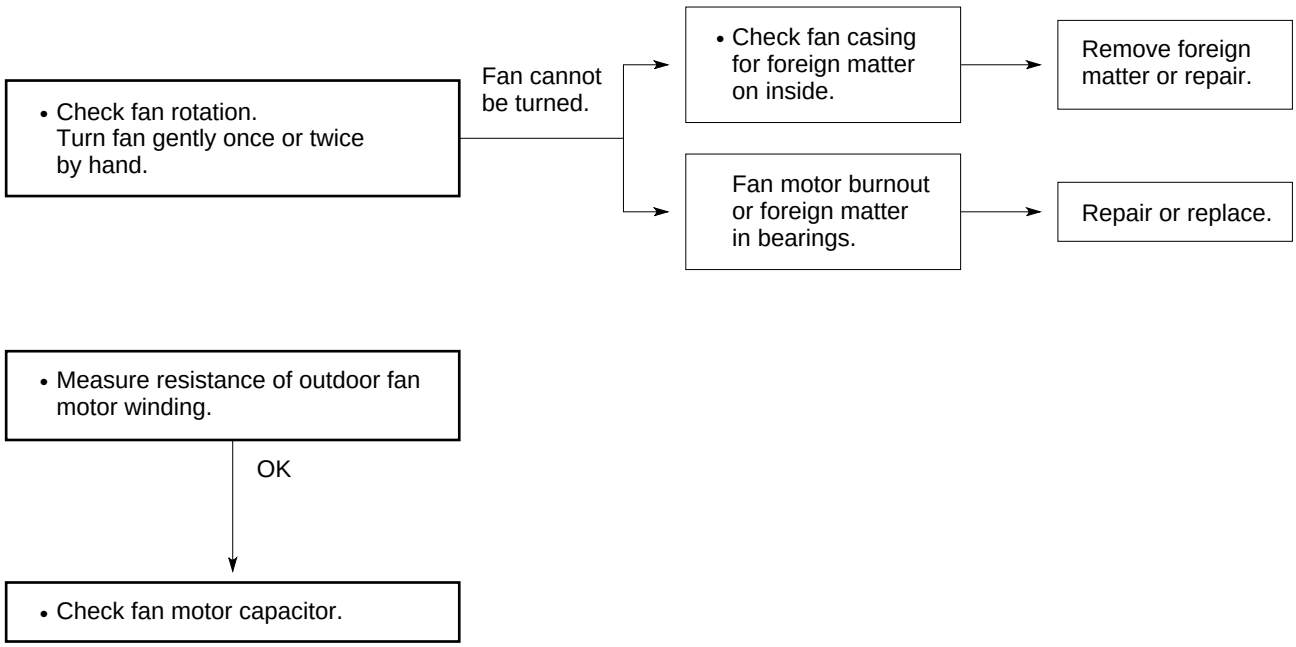


8-3. Some part of air conditioner does not operate.

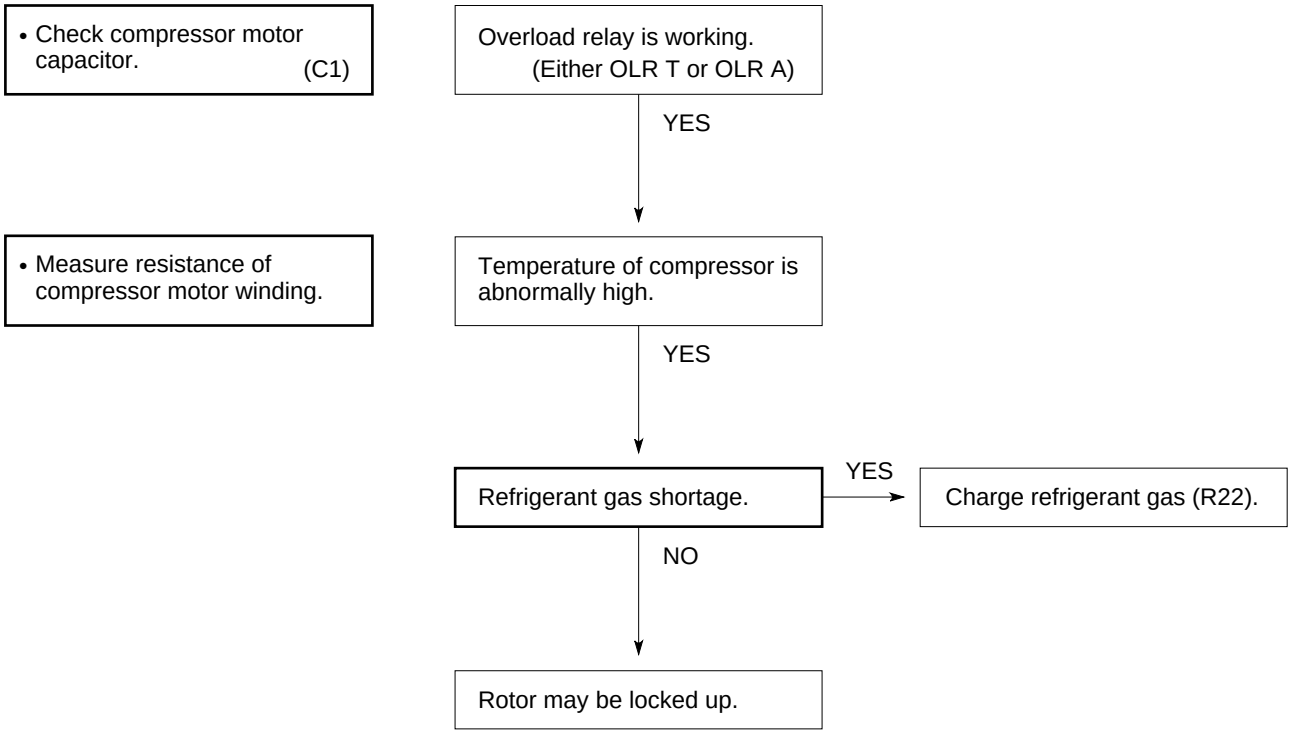
8-3-1. Only indoor fan does not run.



8-3-2. Only outdoor fan does not run.



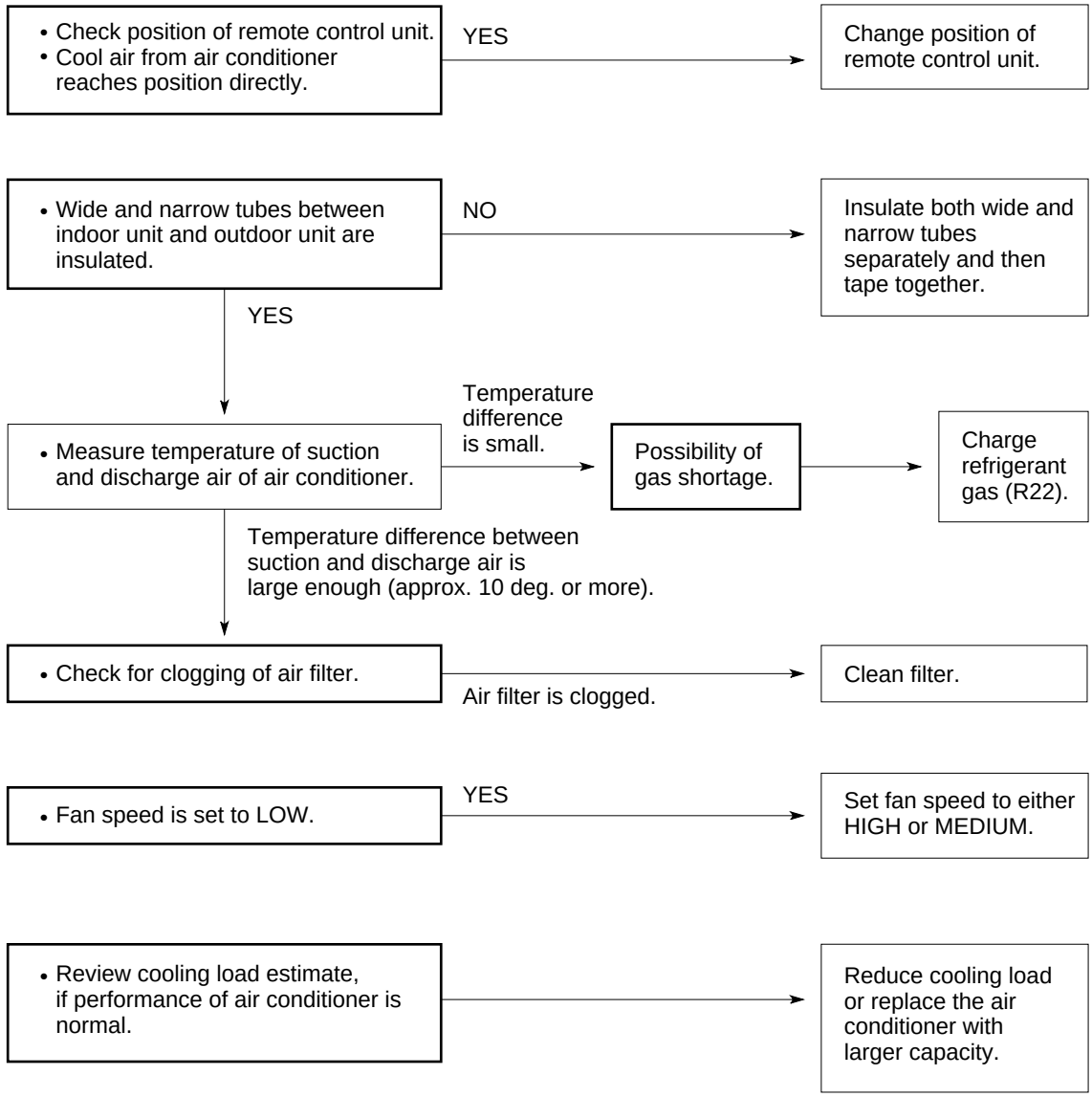
8-3-3. Only compressor does not run.



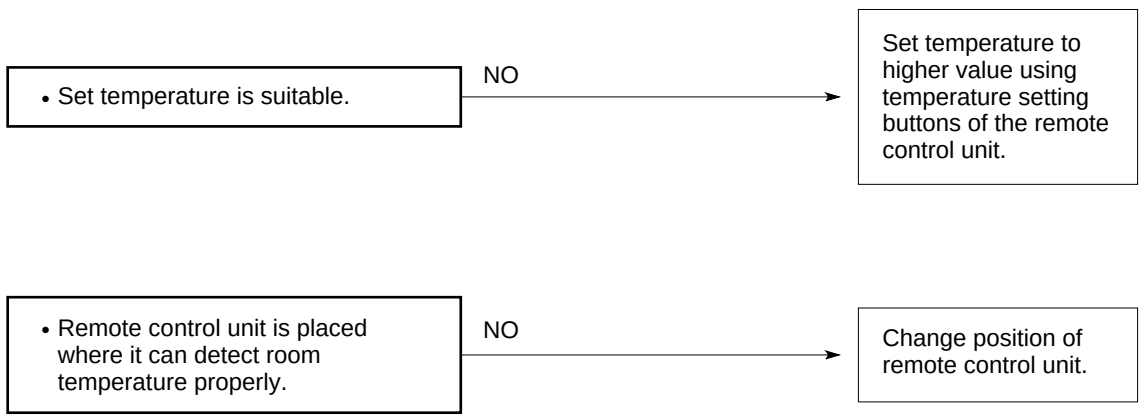
8-3-4. Only flap motor does not run.

8-4. Air conditioner operates, but abnormalities are observed.

8-4-1. Poor cooling

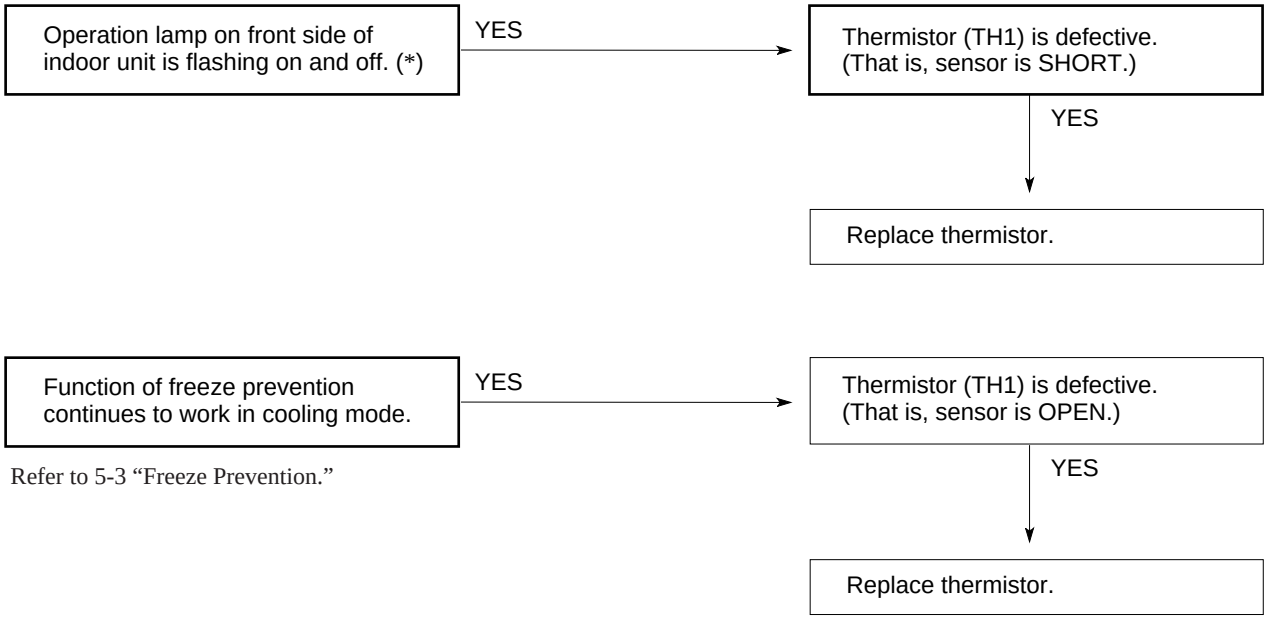


8-4-2. Excessive cooling



8-5. If a sensor is defective.

8-5-1. Indoor coil temp. thermistor (TH1) is defective.



Refer to 5-3 “Freeze Prevention.”

NOTE **Alarm Signal (*)**

Operation lamp on the front side of the indoor unit will flash on and off when the indoor coil thermistor is defective. (That is, sensor is SHORT). At the same time the outdoor unit will stop. Indoor unit will operate only for ventilation.

8-5-2. Room temp. thermistor (TH2) is defective.

A. Open

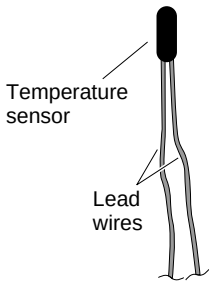
When thermistor opens, the air conditioner will be in the following conditions as the controller tries to detect extremely low room temperature.

In Cooling mode: The air conditioner soon stops and will not start again. (Thermo. OFF)
Neither outdoor fan nor compressor runs.

B. Short

When thermistor is short, the air conditioner will be in the following conditions as the controller tries to detect extremely high room temperature.

In Cooling mode: The air conditioner continues to operate. (Thermo. ON)
Both the outdoor fan and compressor do not stop.
As a result, the room becomes too cold.



Thermistor Structure

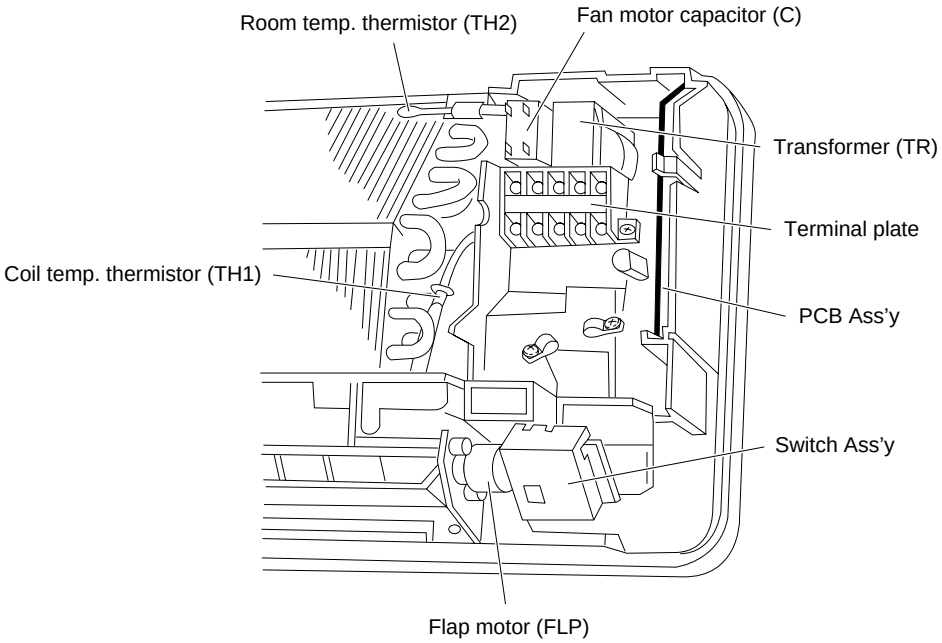
NOTE **Definition of Open or Short Circuit of Sensor (Thermistor)**

Open … A lead wire is broken or disconnected or the circuit inside the temperature sensor is open.

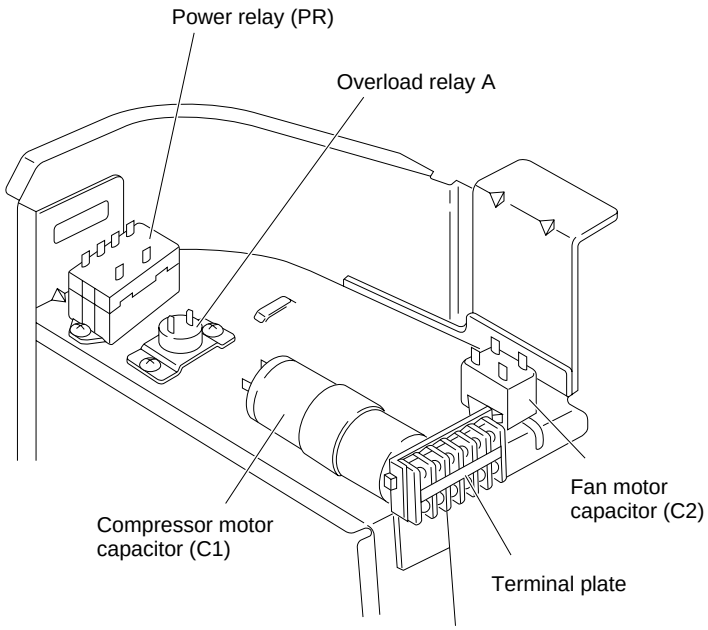
Short … The protective cover of a lead wire has been damaged, and the exposed wire is touching another metal part, or both lead wires have become exposed and are touching each other. Alternatively, the circuit inside the temperature sensor is closed.

9. ARRANGEMENT OF ELECTRICAL COMPONENTS

● Indoor Unit: SAP-K97GS5



● Outdoor Unit: SAP-C97G5



10. CHECKING ELECTRICAL COMPONENTS

10-1. Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds 1MΩ.

10-1-1. Power Supply Wires

Clamp the ground wire of the power supply wires 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)

10-1-2. 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 ①, and then ② on the terminal plate. (Fig. 2)

10-1-3. 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 ①, and then ② on the terminal plate. (Fig. 2)

10-1-4. Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate, PCB Ass'y, capacitor, etc. Similarly disconnect the connector. Then measure the insulation resistance. (Figs. 1 to 4)

Refer to Electric Wiring Diagram.

Note: If the probe cannot enter the poles because the hole is too narrow then use a probe with a thinner pin.

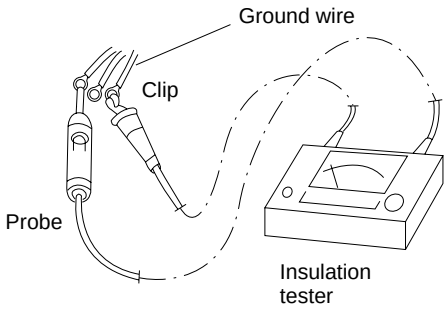


Fig. 1

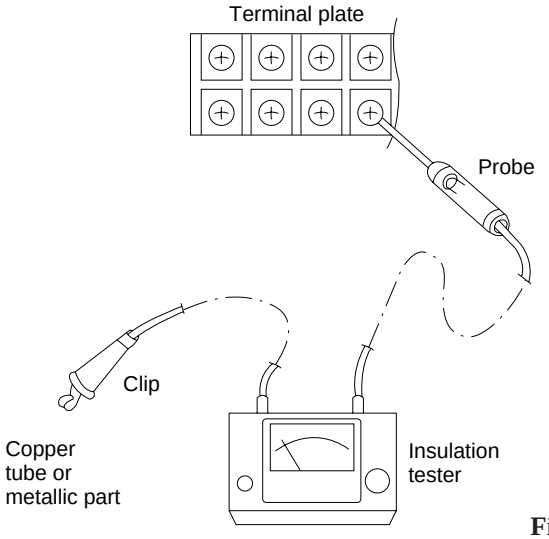


Fig. 2

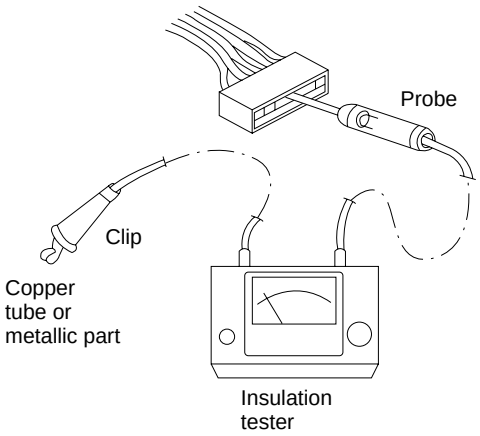


Fig. 3

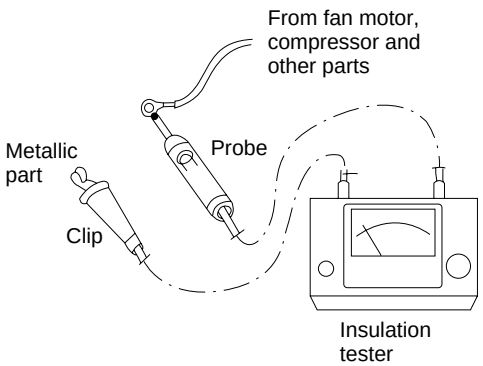


Fig. 4

10-2. 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.

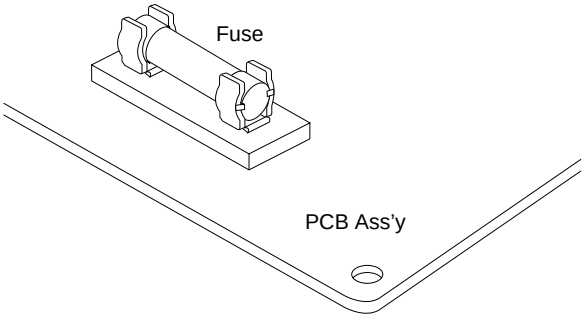


Fig. 5

10-3. 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.

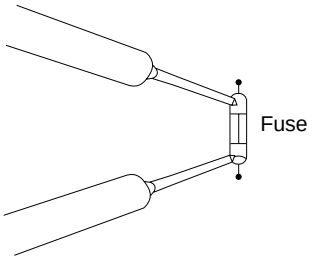


Fig. 6

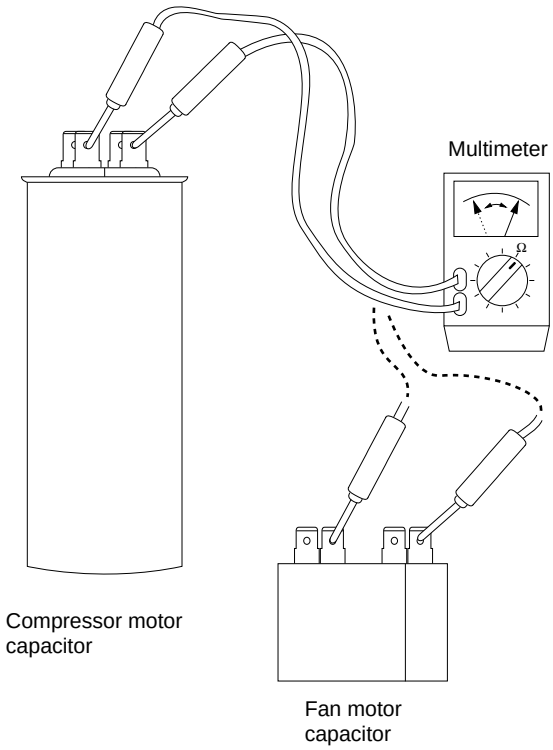


Fig. 7

APPENDIX INSTRUCTION MANUAL

Table of Contents

Ver. 1: K97GS5 + C97G5

SANYO Electric Co., Ltd.
Osaka, Japan
SM700198 12/94/500

Printed in Japan