

SERVICE MANUAL

SANYO

FILE NO.

48RS22N

Indoor Unit

RS2422A+RS2422B

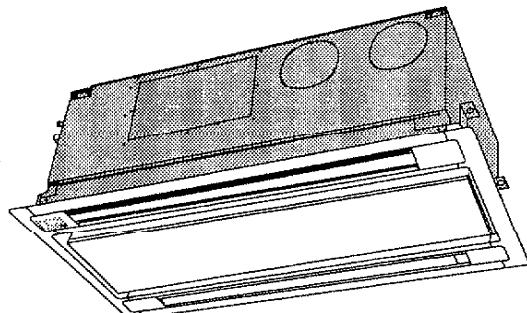
Outdoor Unit

C4822N

SPLIT SYSTEM AIR CONDITIONER

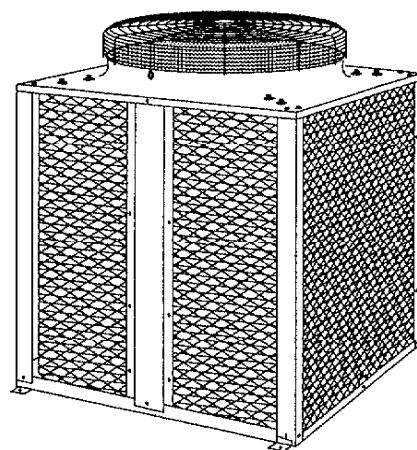
Indoor Model No.	Product Code No.	Outdoor Model No.	Product Code No.
RS2422A	1 854 007 81	C4822N	1 854 010 12
RS2422B	1 854 007 82		

Indoor Unit

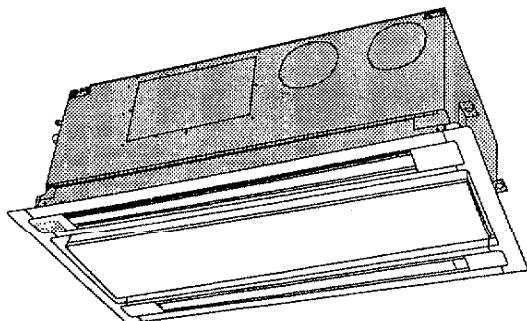


RS2422A

Outdoor Unit



C4822N



RS2422B

SERVICE MANUAL

**48RS22N
(RS2422A + RS2422B / C4822N)**

Note: This air conditioner consists of 2 indoor units and 1 outdoor unit. Each pair of indoor units can be operated at the same time but not independently. Operation is carried out by a single remote control unit.

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

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.

Table of Contents

	Page
1. SPECIFICATIONS	
1-1. Unit Specifications	1
1-2. Tubing Data	2
1-3. Major Component Specifications	3
(1) Indoor and Outdoor Units	3
(a) RS2422A (Indoor Unit)	
(b) RS2422B (Indoor Unit)	
(c) C4822N (Outdoor Unit)	
(1) Indoor Unit	6
(2) Outdoor Unit.....	6
1-4. Other Component Specifications.....	6
2. DIMENSTIONAL DATA	7
3. REFREGERANT FLOW DIAGRAM	10
4. PERFORMANCE CHARTS	
4-1. Operating Current	11
4-2. Operating Pressure.....	12
5. FUNCTION	
5-1. Room Temperature Control	13
5-2. Freeze Prevention	14
5-3. Fan Speed Auto (Indoor Fan).....	14
5-4. Outdoor Fan Speed Control	14
6. ELECTRICAL DATA	
● Schematic Diagram.....	15
● Electric Wiring Diagram (PCB Ass'y)	16
7. TROUBLESHOOTING	
7-1. Check before and after troubleshooting.....	20
(1) Check power supply wiring.....	20
(2) Check inter-unit wiring.....	20
(3) Check power supply	20
(4) Check lead wires and connectors in indoor and outdoor units	20
(5) Reference	21
(a) Condition of general cooling operation	
7-2. Air conditioner does not operate	22
(1) Circuit breaker trips (or fuse blows).....	22
(a) When circuit breaker is set to ON, it trips in a few moments (resetting is not possible)	
(b) Circuit breaker trips in several minutes after turning air conditioner ON	

(2) Neither indoor units nor outdoor unit run.....	24
(a) Power is not supplied	
(b) Check remote control unit	
(c) Check OPERATION selector switch in indoor unit A	
(d) Check high pressure switch in outdoor unit	
(e) Check communication between indoor unit A and indoor unit B	
(3) Only outdoor unit does not run.....	27
(a) Check COOL/FAN selector switch of remote control unit	
(b) Outdoor unit does not run when air conditioner is in following conditions	
(c) Check electro-magnetic contactor	
7-3. A particular component of air conditioner does not operate	29
(1) Only indoor fan does not run.....	29
(2) Only outdoor fan does not run	29
(3) Only compressor does not run	30
7-4. Air conditioner operates, but abnormalities occur.....	31
(1) Poor Cooling.....	31
(2) Excessive Cooling	32
7-5. Indoor (heat exchanger) coil temperature sensor (TH1) is defective	32
(1) Open.....	32
(2) Shortage	32

8. CHECKING ELECTRICAL COMPONENTS

8-1. Measurement of Insulation Resistance	33
(1) Power Supply Wires	33
(2) Indoor Unit	33
(3) Outdoor Unit.....	33
(4) Measurement of Insulation Resistance for Electrical Parts	33
8-2. Checking Continuity of Fuse on PCB Ass'y	34
8-3. Checking Motor Capacitor	34
8-4. Appearance of Electrical Parts	35
(1) Auxiliary Relay.....	35
(2) High Pressure Switch.....	35
(3) Outdoor Air Temperature Thermostat	35

1. SPECIFICATIONS

1-1. Unit Specifications

Model No.	Indoor units		RS2422A+RS2422B
	Outdoor unit		C4822N
Performance	Capacity	BTU/h kW	Cooling 45,000 / 44,000 13.2 / 12.9
	Air circulation (High)	cu. ft./min.	1,000 / 980
	Moisture removal (High)	pints/h	13.2 / 12.9
	Phase, Frequency	Hz	Single, 60
Electrical Rating	Voltage rating	V	230 / 208
	Available voltage range	V	187 to 253
	Running amperes	A	21.5 / 22.1
	Power input	W	4,540 / 4,390
	Power factor	%	92 / 95
	Starting amperes	A	129
	S. E. E. R.	BTU/Wh	10.0 / 10.0
	Controls		Microprocessor
Features	Control unit		Wireless remote control unit
	Temperature control		IC thermostat
	Timer		ON/OFF, 24-hours & Program
	Fan speeds	Indoor / Outdoor	3 and Auto / 1
	Air deflector	Horizontal / Vertical	— / Automatic
	Air filter		Washable, easy access
	Compressor		Scroll
	Refrigerant amount charged at shipment	lbs. (kg)	R22: 11 (5.4)
	Refrigerant control		Capillary tube
	Refrigerant tubing connections		Flare type
	Operation sound	In-Hi / Me / Lo Out-Hi	dB-A 45 / 41 / 37 for 1 unit 65
	Refrigerant tubing size, length, and elevation difference		For details, refer to 1-2. Tubing Data on next page.
	Refrigerant tube kit		Optional
	Accessories		—
Dimensions & Weight			Indoor units (x 2)
	Height	in. (mm)	17-5/16 (440)
	Width	in. (mm)	48-7/32 (1,225)
	Depth	in. (mm)	25-19/32 (650)
	Net weight	lbs. (kg)	113 (50.9)
	Shipping volume	cu. ft. (cu. m)	29.8 (0.837)
	Shipping weight (Approx.)	lbs. (kg)	136 (61.2)
		Outdoor unit	
DATA SUBJECT TO CHANGE WITHOUT NOTICE.			

Remarks: Rating conditions are: Outside air temperature 95°F DB/75°F WB

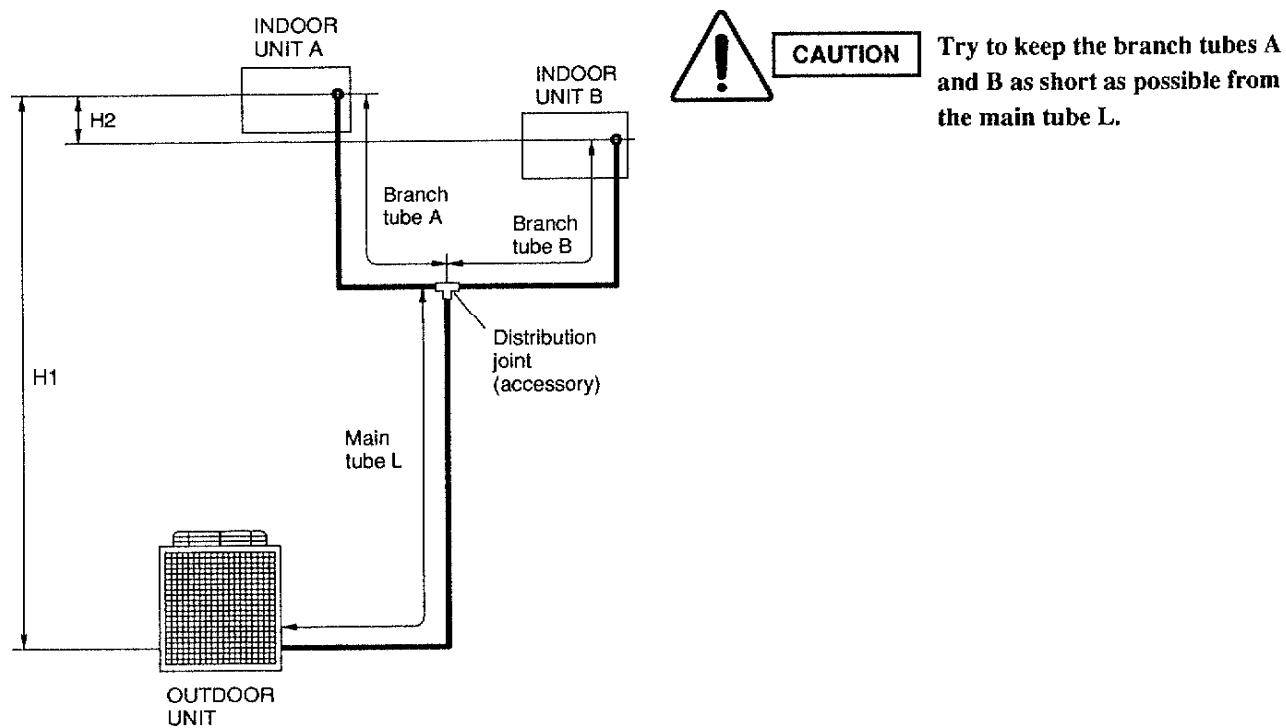
Indoor unit entering air temperature 80°F DB/67°F WB

1-2. Tubing Data

Model No.					C4822N
Tubing Data	Tubing size outer dia.	Narrow tube in. (mm)	Main Branch	3/8" (9.52) 1/4" (6.35)	
		Wide tube in. (mm)	Main Branch	3/4" (19.05) 5/8" (15.88)	
Tubing length	(L+A) or (L+B)	Max. allowable tubing length at shipment ft. (m)	ft. (m)	50 (15)	
		Limit of total tubing length ft. (m)	ft. (m)	130 (40)	
Elevation difference ^{*1}	A, B	Max. tubing length for each branch ft. (m)	ft. (m)	33 (10)	
	H1 H2	Limit of total elevation ft. (m)	ft. (m)	50 (15) 1.6 (0.5)	
Required additional refrigerant (oz/ft.) ^{*2}				0.80	

*¹ Outdoor unit is higher (or lower) than indoor unit.

*² If total tubing length becomes 50 to 130 ft. (max.), charge additional refrigerant (R22) by 0.8 oz/ft. No additional charge of compressor oil is necessary.



1-3. Major Component Specifications

(1) Indoor and Outdoor Units

(a) RS2422A (Indoor Unit)

Unit Model No.			RS2422A
Remote Control Unit			RCS-KS2412W
Controller PCB	Type		POW-TS2422A
	Control circuit fuse		250V, 3A
Switch Ass'y			SW-TS2422
Fan	Type		Centrifugal
	Number ... Dia. and length	in. (mm)	2 ... O.D. 6-11/36 (160), L 9 (230)
Fan Motor	Model ... Number		KFG6Q-51A6P ... 1
	No. of pole ... rpm (230V, High)		6 ... 1,030
	Nominal output	W (H.P.)	50 (1/15)
	Coil resistance (Ambient temp. 68°F)	Ω	WHT - BRN: 104.3 WHT - VLT: 21.4 VLT - ORG: 22.5 ORG - YEL: 307.4 ORG - PNK: 76.1
	Safety devices	Type	Internal
	Operating temp:	Open °F	248 ± 9
		Close °F	171 ± 27
	Run capacitor	μF	2.5
		VAC	440
Heat Exch.	Coil	Aluminum plate fin / Copper tube	
	Rows ... Fins per inch	3 ... 12.7	
	Face area	ft. ² (m ²)	2.58 (0.24)
Panel	Model No.	RS2422RWA	
	Indicator lamp Ass'y	IND-TS2422	
	Model No.	MC8 D	
	Louver motor	Rating	200 to 240V, 60Hz
		No. of pole ... rpm	8 ... 4
	Output	W	3
	Coil resistance (at 77°F)	kΩ	14.9 ± 8%

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

(b) RS2422B (Indoor Unit)

Unit Model No.			RS2422B
Remote Control Unit			—
Controller PCB	Type		POW-TS2422B
	Control circuit fuse		250V, 3A
Switch Ass'y			—
Fan	Type		Centrifugal
	Number ... Dia. and length	in. (mm)	2 ... O.D. 6-11/36 (160), L 9 (230)
Fan Motor	Model ... Number		KFG6Q-51A6P ... 1
	No. of pole ... rpm (230V, High)		6 ... 1,030
	Nominal output	W (H.P.)	50 (1/15)
	Coil resistance (Ambient temp. 68°F)	Ω	WHT – BRN: 104.3 WHT – VLT: 21.4 VLT – ORG: 22.5 ORG – YEL: 307.4 ORG – PNK: 76.1
	Safety devices	Type	Internal
	Operating temp.	Open °F	248 ± 9
		Close °F	171 ± 27
	Run capacitor	μF	2.5
		VAC	440
Heat Exch.	Coil		Aluminum plate fin / Copper tube
	Rows ... Fins per inch		3 ... 12.7
	Face area	ft. ² (m ²)	2.58 (0.24)
Panel	Model No.		RS2422BRWA
	Indicator lamp Ass'y		—
Louver motor	Model No.		MC8 D
	Rating		200 to 240V, 60Hz
	No. of pole ... rpm		8 ... 4
	Output	W	3
	Coil resistance (at 77°F)	kΩ	14.9 ± 8%

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

(c) C4822N (Outdoor Unit)

Unit Model No.				C4822N
Type				Scroll
Model ... Number				ZR49K3 - PFV ... 1
rpm				3,500
Compressor lubricant				2,960 cc
Coil resistance (Ambient temp. 77°F)				Ω C (W) – R: 0.448 to 0.516 C (W) – S: 1.51 to 1.73
Compressor	Type	Internal		External
	Overload relay models			—
	Safety devices	Operating temp.	Open °F	275 ± 9
		Close	°F	172 ± 27
	Operating amp. (Ambient temp. 77°F)	Trips in 2 to 10 sec. at 104A		—
Fan	Run capacitor	μF		60
		VAC		440
	Crank case heater			230W, 32W
Fan Motor	Type	Propeller		
	Number ... Dia.	in. (mm)		1 ... 25-1/16 (650)
	Model	KFS8S-201A6P		
Fan Motor	No. of pole ... rpm (230V, High)	8 ... 750		
	Nominal output	W (H.P.)		200 (4/15)
	Coil resistance (Ambient temp. 68°F)		Ω WHT – BRN: 14.4 WHT – YEL: 6.4 YEL – PNK: 10.1	
	Safety devices	Type	Internal	
		Operating temp.	Open °F	248 ± 9
Heat Exch.		Close	°F	169 ± 27
Run capacitor	μF		14	
	VAC		400	
External Finish	Coil	Aluminum plate fin / Copper tube		
	Rows ... Fins per inch	2 ... 12.7		
	Face area	ft. ² (m ²)		17.38 (1.61)
External Finish				Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

1-4. Other Component Specifications

(1) Indoor Unit

Transformer		ATR-H85U
Rated	Primary	AC 220V, 60Hz
	Secondary	11V, 0.727A
	Capacity	8VA
Coil resistance	Ω (at 77°F)	Primary (WHT – WHT): 294.0 ± 15% Secondary (BRN – BRN): 1.0 ± 15%
Thermal cut-off temp.		259°F, 2A, 250V

Thermistor (coil sensor)		PBC-41E-S15
Resistance	kΩ	14°F 23.7 ± 5% 77°F 5.3 ± 5%
		32°F 15.0 ± 5% 86°F 4.4 ± 5%
		50°F 9.7 ± 5% 104°F 3.1 ± 5%
		68°F 6.5 ± 5%

Thermistor (room sensor)		SDT-500B-6
Resistance	kΩ	50°F 10.3 ± 4% 86°F 4.0 ± 4%
		59°F 8.0 ± 4% 104°F 2.6 ± 4%
		68°F 6.3 ± 4% 122°F 1.8 ± 4%
		77°F 5.0 ± 4%

(2) Outdoor Unit

Auxiliary Relay		MY2F-T1-USTS
Coil rating		AC 240V, 60Hz
Coil resistance	kΩ (at 77°F)	18.8 ± 15%
Contact rating		AC 240V, 5A

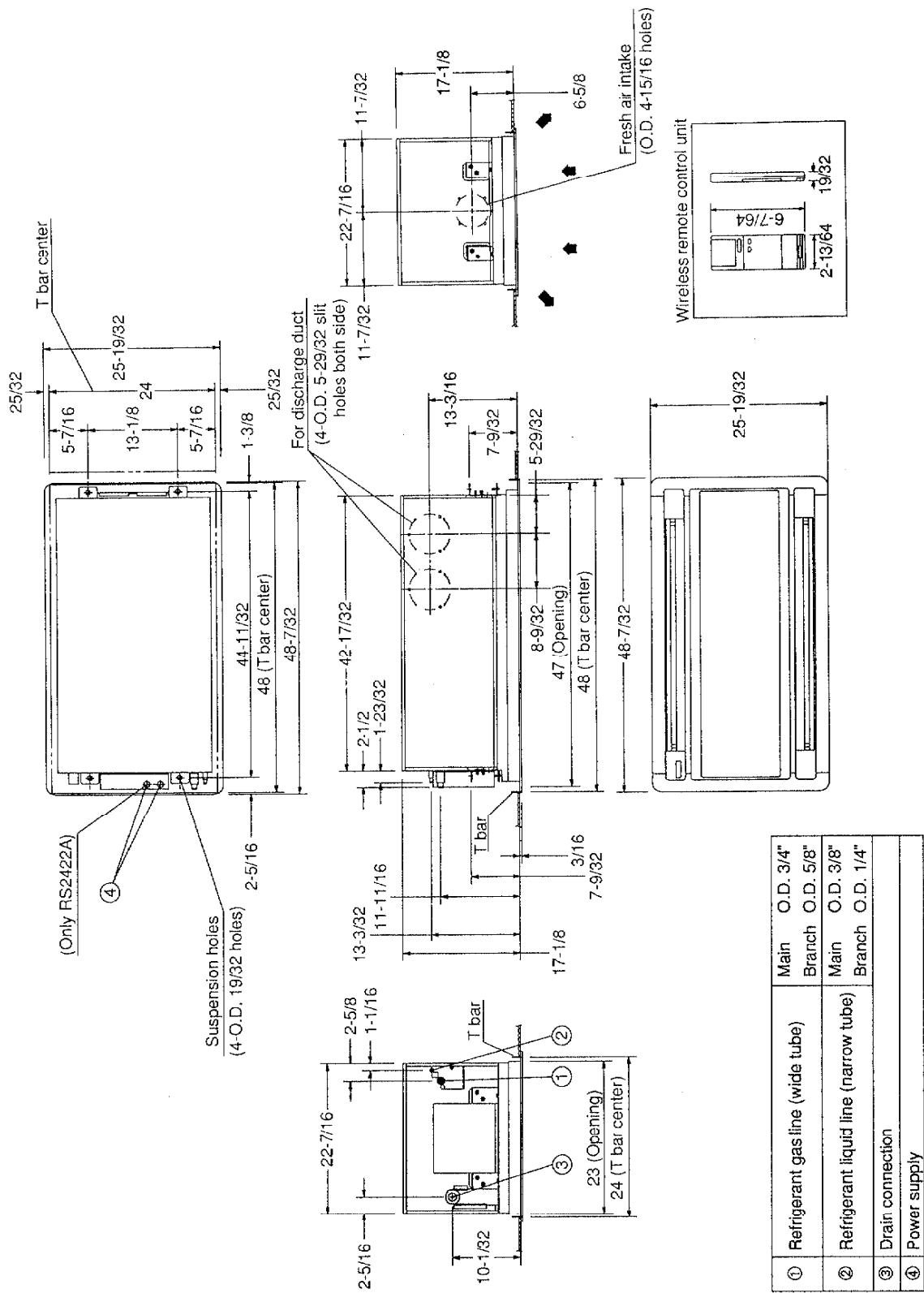
Electro-Magnetic Contactor		SC-2N/UL
Coil rating		AC 230V, 60Hz
Contact rating		AC 240V, 35A

High Pressure Switch		FTB-2UC01
Operating pressure	psig (kg/sq.cm. G)	OFF 412 +14, -7 (29 +1, -0.5) ON Manual
Contact rating		AC 240V, 4A

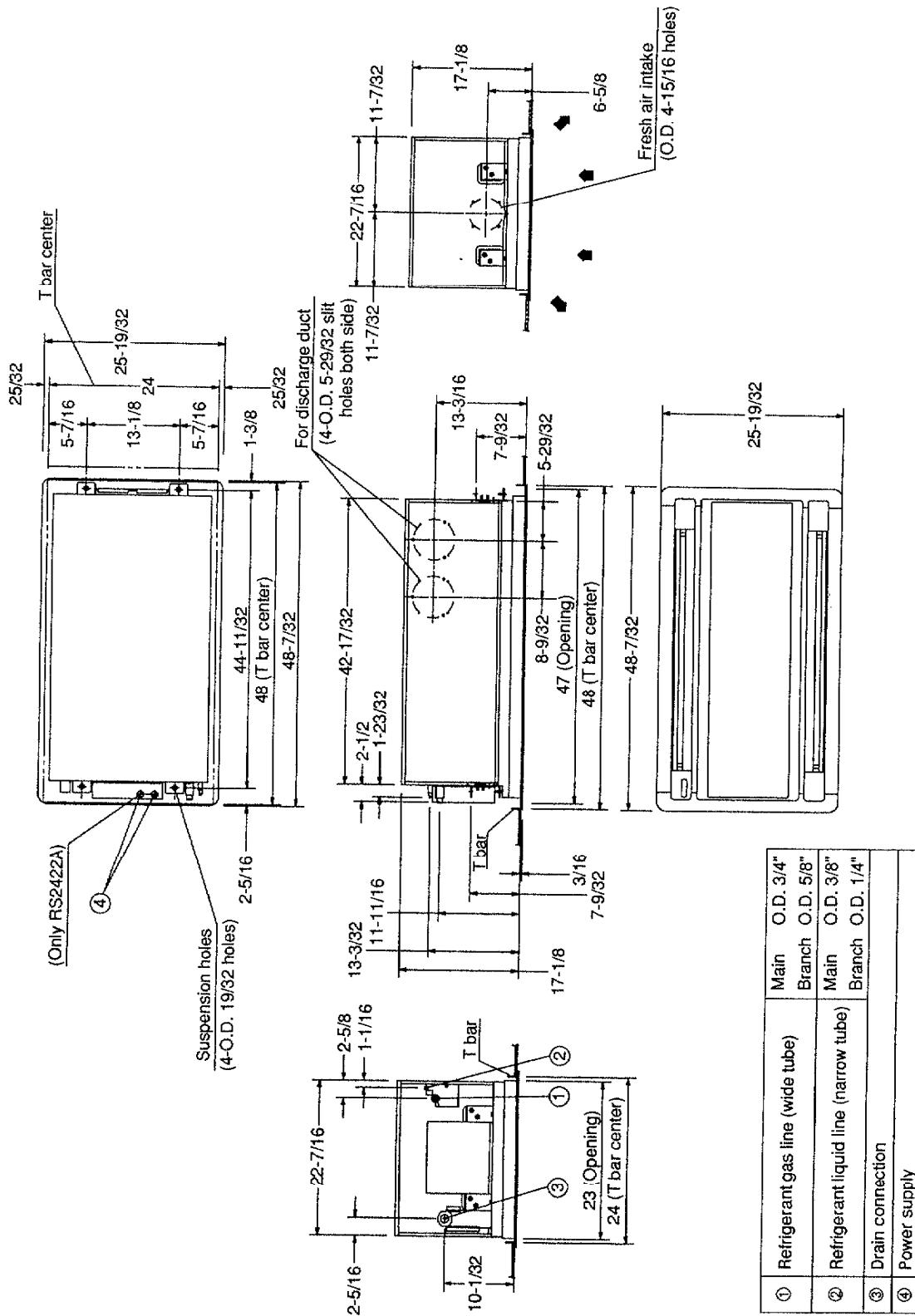
Outdoor Air Temp. Thermostat		YTB-4U201F
Operating temps.	°F	OFF 79 ± 3 ON 75 +3, -1
Contact rating		AC 200/240V, 1A

2. DIMENSIONAL DATA

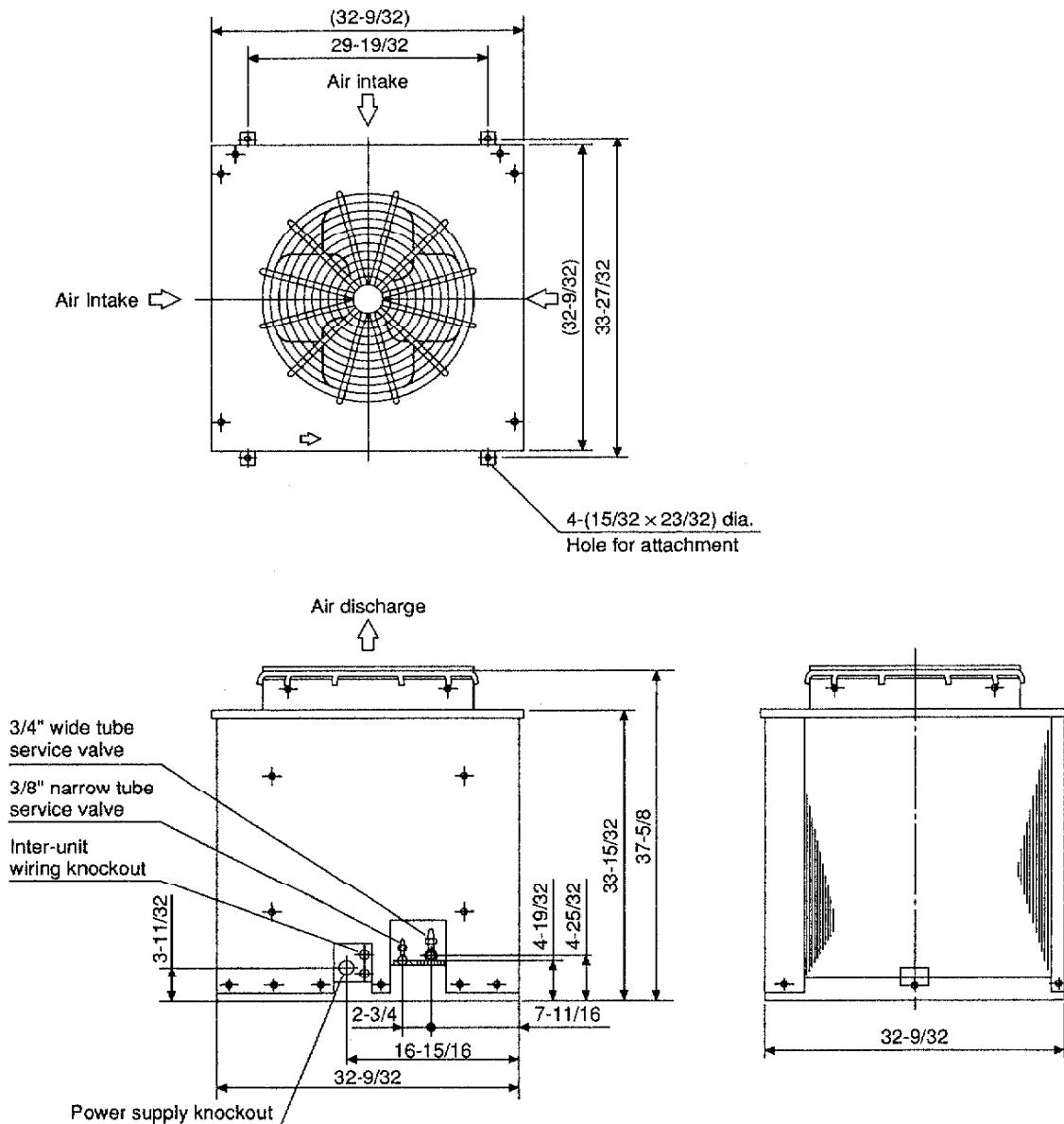
Indoor Unit: RS2422A



Indoor Unit: RS2422B

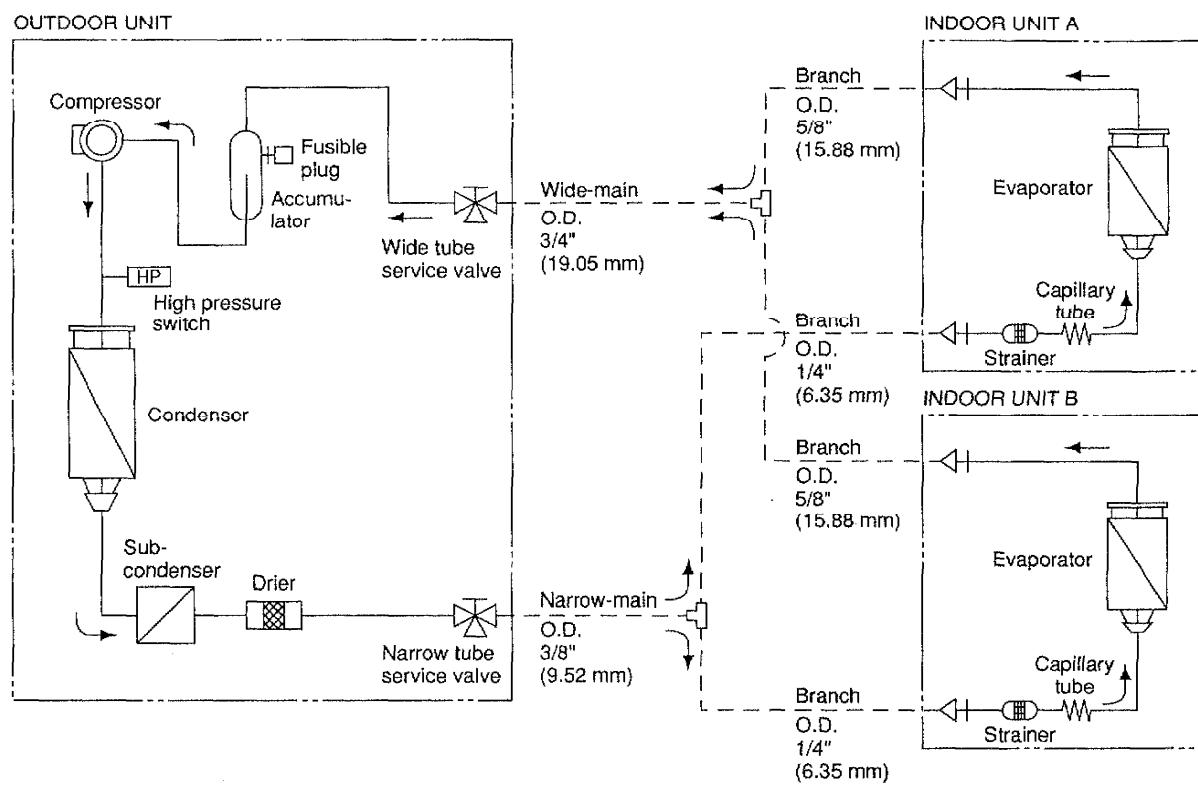


Outdoor Unit: C4822N



3. REFRIGERANT FLOW DIAGRAM

RS2422A + RS2422B / C4822N

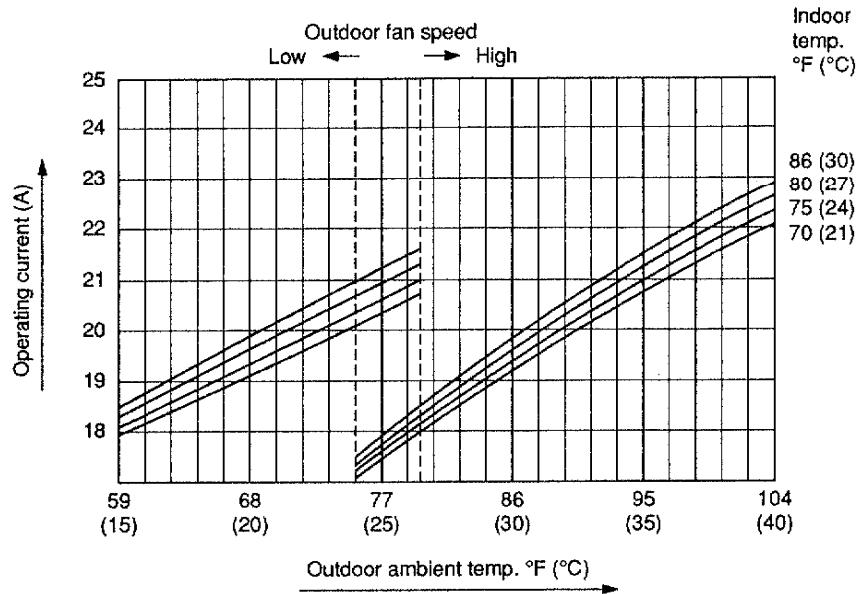


4. PERFORMANCE CHARTS

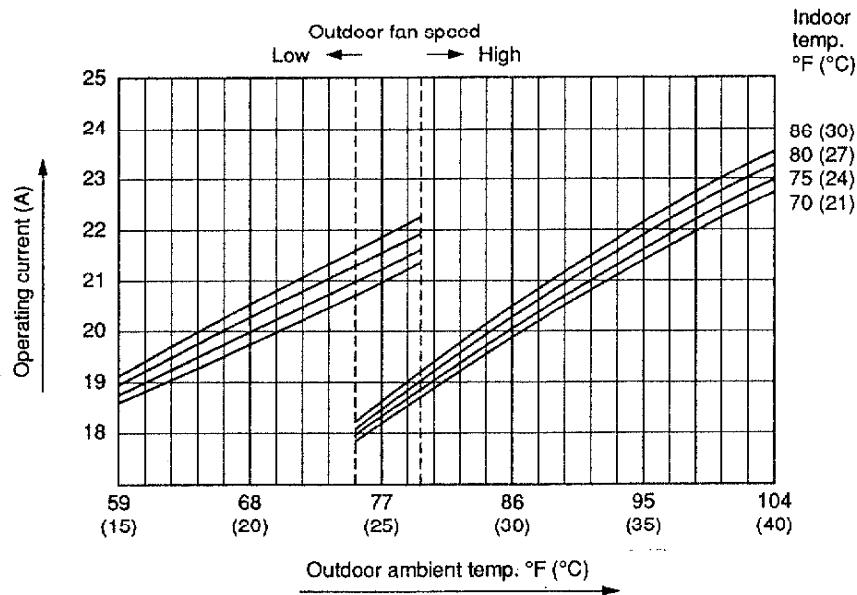
4-1. Operating Current

Operating current characteristics versus outdoor ambient temperature and indoor temperature
(Indoor relative humidity: 50%, Indoor fan speed: High)

230V



208V

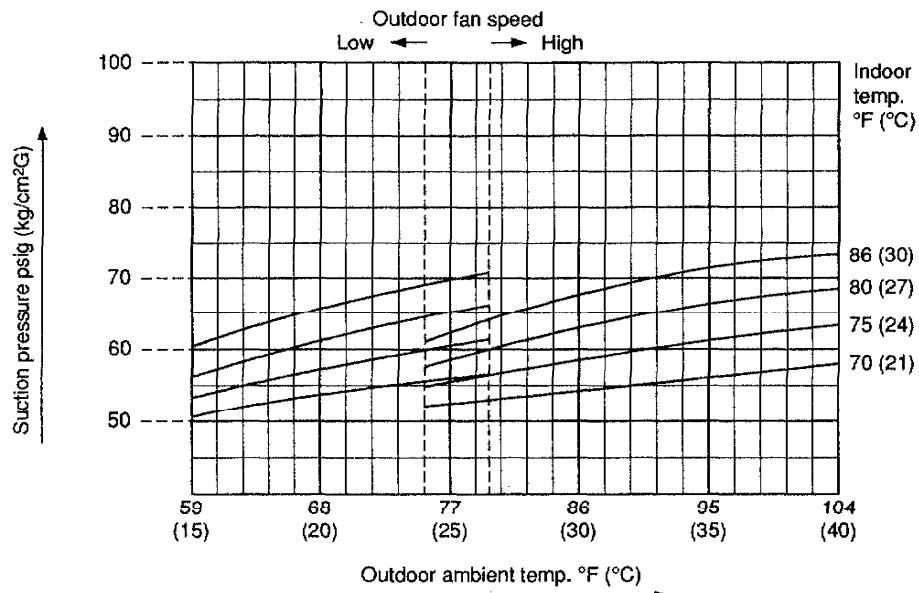


4-2. Operating Pressure

● Low Pressure

Low pressure characteristics versus outdoor ambient temperature and indoor temperature
(Indoor relative humidity: 50%, indoor fan speed: High).

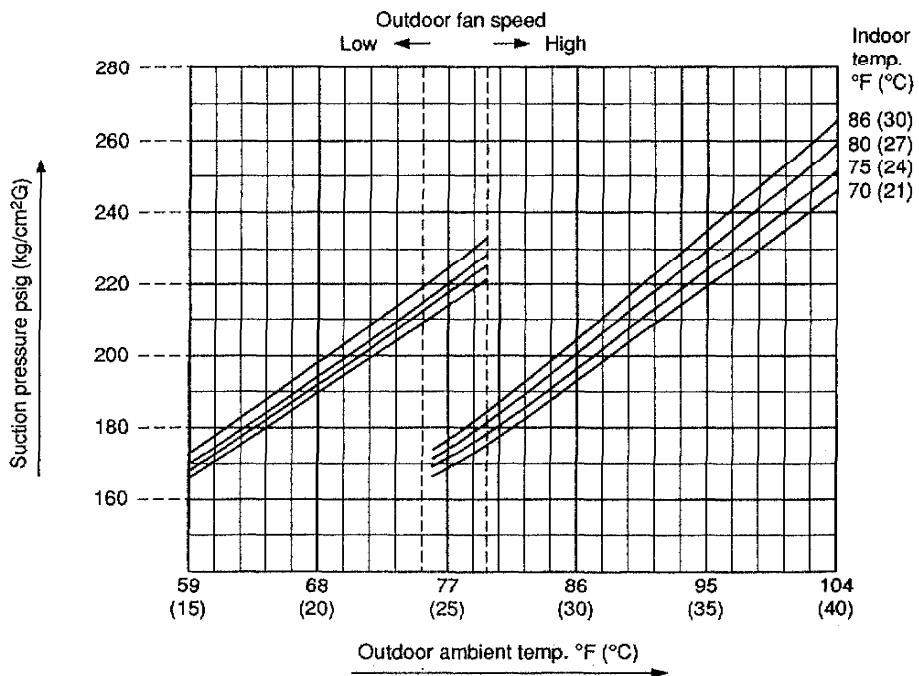
230/208V



● High Pressure

High pressure characteristics versus outdoor ambient temperature and indoor temperature
(Indoor relative humidity: 50%, indoor fan speed: High).

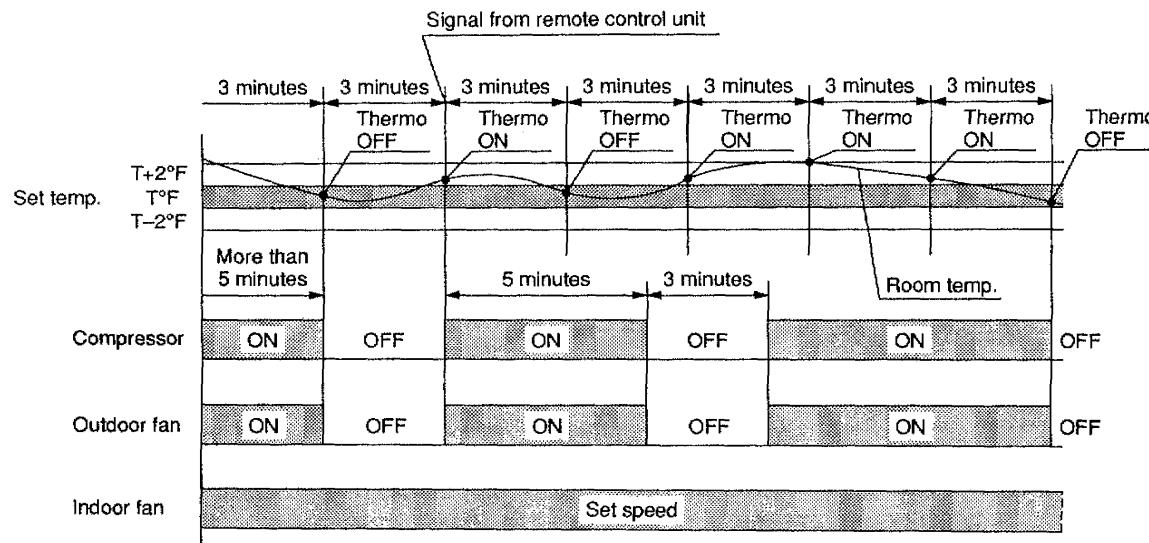
230/208V



5. FUNCTION

5-1. Room Temperature Control

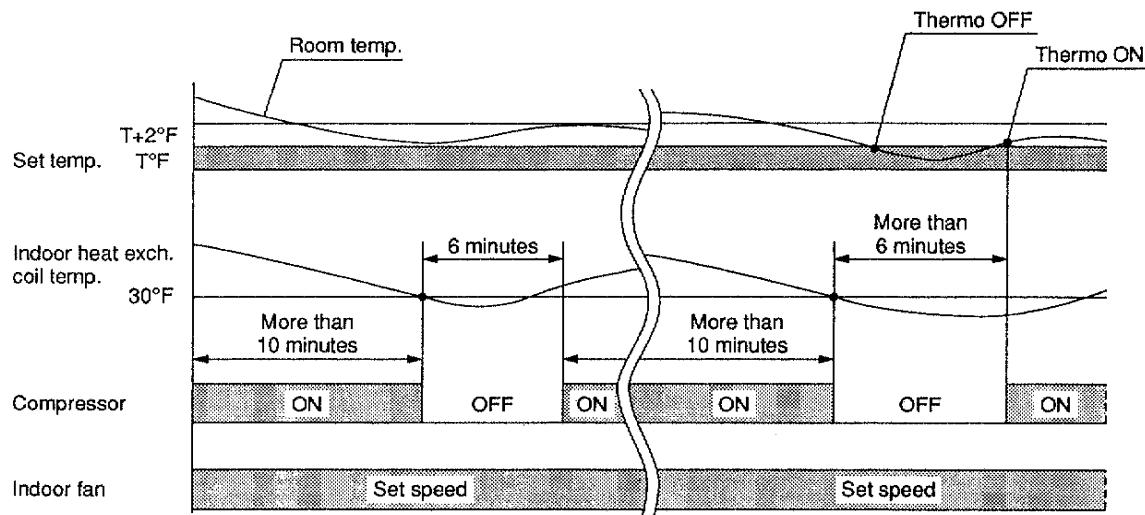
- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 3 minutes by the remote control unit to the controller in the indoor unit.



- 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 $T + 2^{\circ}\text{F}$ ($T^{\circ}\text{F}$ is set temperature).
Compressor → ON
- Thermo OFF : When the room temperature is equal to or below set temperature $T^{\circ}\text{F}$.
Compressor → OFF

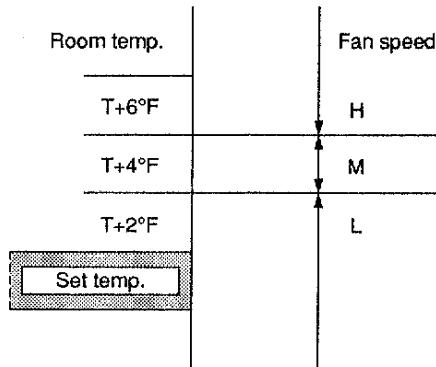
5-2. Freeze Prevention

- 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 30°F, the control circuit stops the compressor for at least 6 minutes.



5-3. Fan Speed Auto (Indoor Fan)

- The fan speed does not change within 1 minute.
- The number shows temperature for REMOCON sensor.

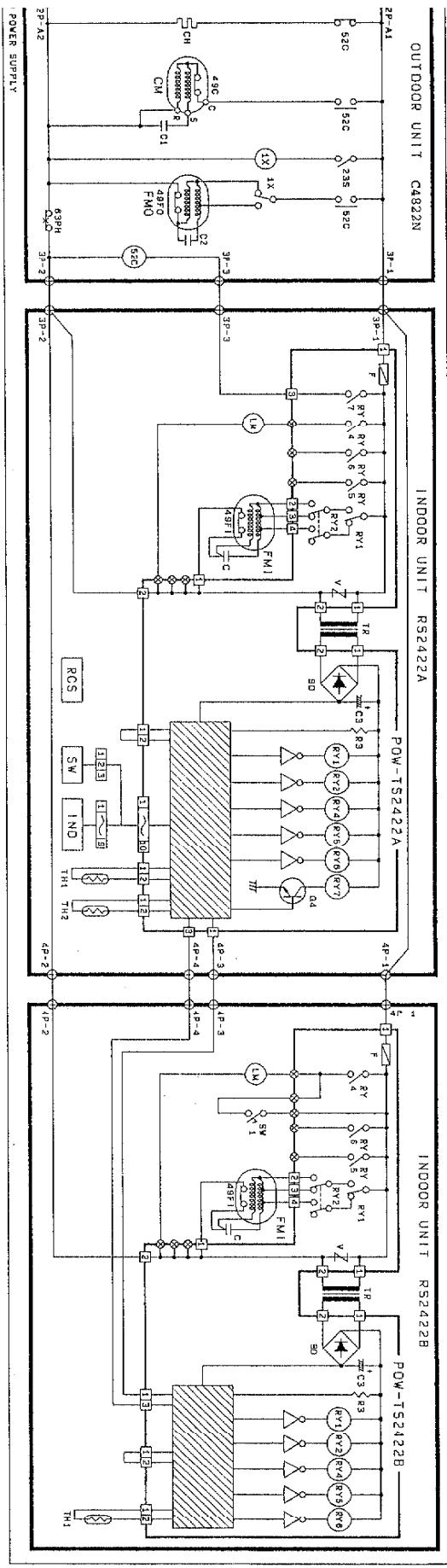


5-4. Outdoor Fan Speed Control

- In low temperature areas, the outdoor fan goes automatically to LOW to prevent freezing.
- When the outdoor air temperature falls below 75°F, the outdoor fan is set to LOW. When the outdoor air temperature rises to 79°F, the outdoor fan is set to HIGH.

6. ELECTRICAL DATA

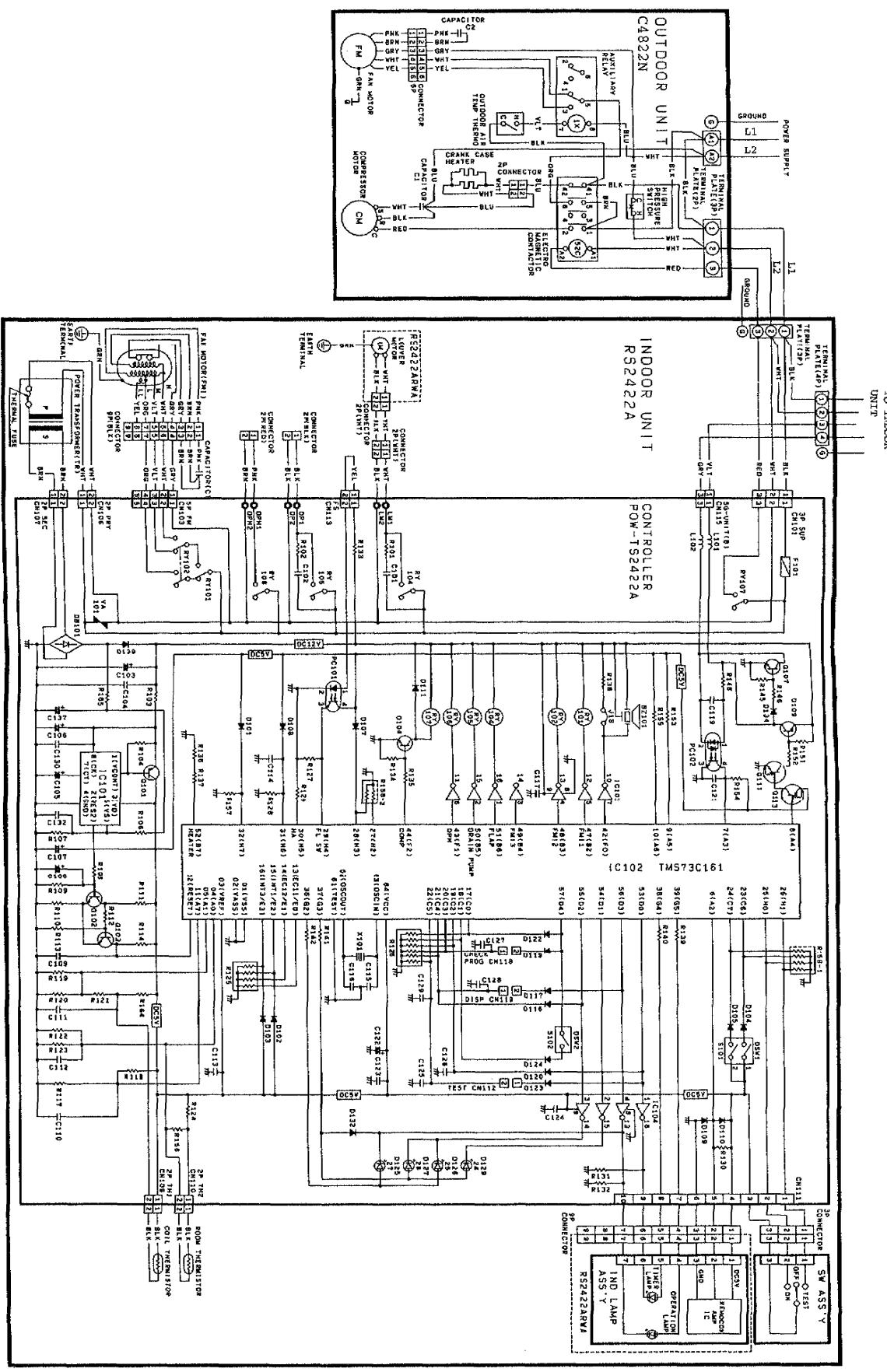
- Schematic Diagram
RS2422A+RS2422B / C4822N



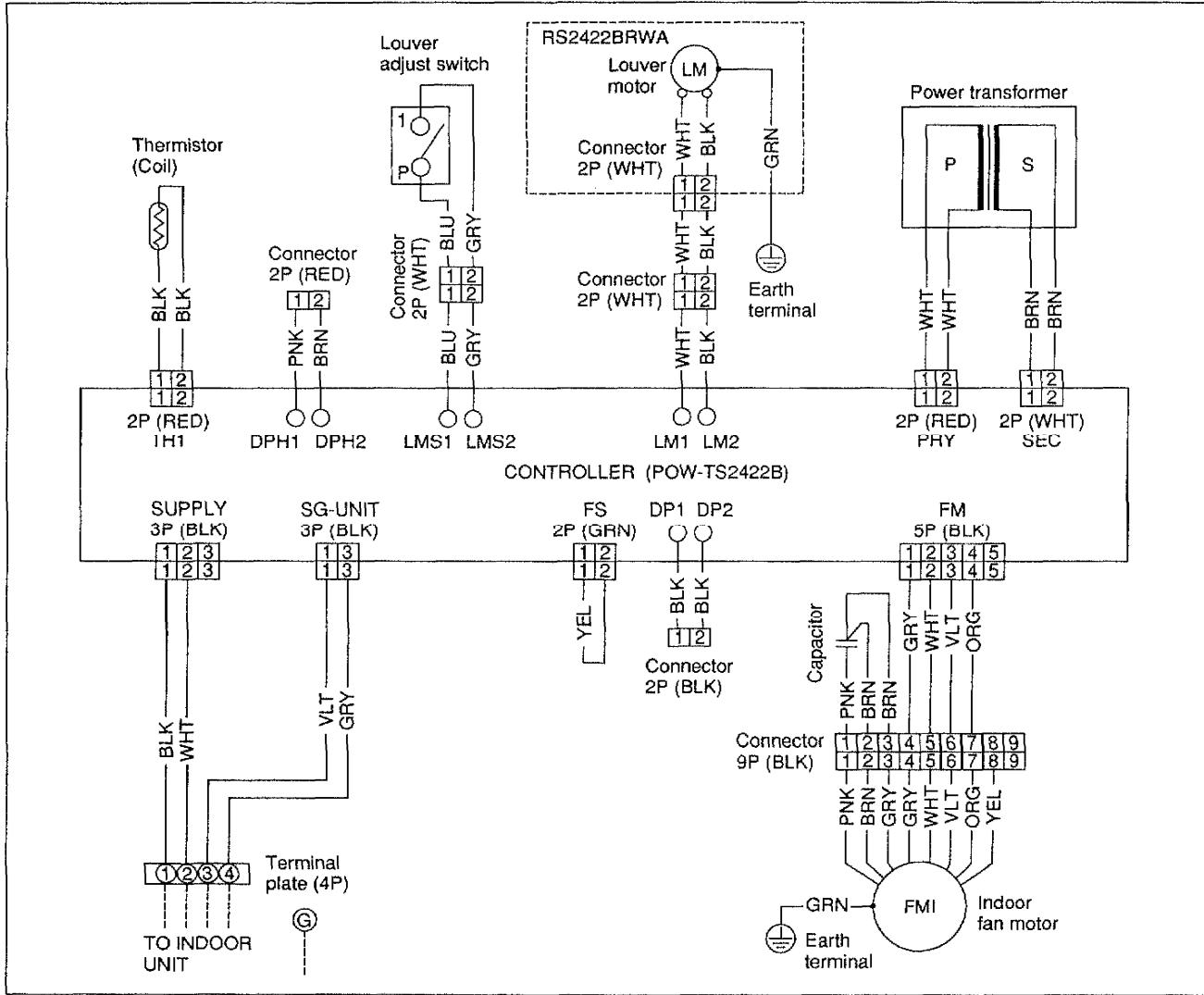
Symbol	Description	Symbol	Description	Symbol	Description
OUDOR UNIT	OUTDOOR UNIT	ND-DOOR PROT.	ND-DOOR PROT. TS2422A	DOOR UNIT	DOOR UNIT TS2422B
CH	CRANK CASE HEATER	LM	LOUVER MOTOR	M	LOUVER MOTOR
CN	COMPRESSOR MOTOR	DPH	DEW PROOF HEATER	DPH	DEW PROOF HEATER
FPC	COMPRESSOR MOTOR INTERNAL PROTECTOR	FM	INDOOR FAN MOTOR	FM	INDOOR FAN MOTOR
2S	OUTDOOR AIR TEMP THERMISTAT	FPH	INDOOR FAN MOTOR INTERNAL PROTECTOR	FPH	INDOOR FAN MOTOR INTERNAL PROTECTOR
IX	AUXILIARY RELAY	C	CAPACITOR	C	CAPACITOR
PMO	OUTDOOR FAN MOTOR	TR	TRANSFORMER	TR	TRANSFORMER
4PQ	OUTDOOR FAN MOTOR INTERNAL PROTECTOR	TH1	TERMINATOR (COIL TEMP. SENSOR)	TH1	TERMINATOR (COIL TEMP. SENSOR)
C1,C2	CAPACITOR	TH2	TERMINATOR (ROOM TEMP. SENSOR)	SW	LOUVER ADJUST SWITCH
6PH	HIGH PRESSURE SWITCH	DD	ND-LAMP SWYD TS2422	POW-TS2422B	CONTROLLER PCB ASSY
SOC	ELECTRO-MAGNETIC CONTACTOR	SW	SWITCH ASSY SW-TS2422	FUSE 25V, 1A	FUSE 25V, 1A
RBS	WBBLASS REMOTE CONTROLLED INFR-RCS-KS2412W	J	VARIABLE		
PON-SENZA	CONTROLLER PCB ASSY	TD	REED, NO/NC		
F	FUSE 20V, 1A	3	CAPACITOR		
V	VARISTOR	3	RESISTOR		
BD	BRIDGE DIODE	3Y1,2	AUXILIARY RELAY		
C	CAPACITOR	3Y4,5,6	AUXILIARY RELAY		
R3	RESISTOR				
RY1,2	AUXILIARY RELAY				
RY4,5,6,7	AUXILIARY RELAY				
Q4	TRANSISTOR				

● Electric Wiring Diagram (PCB Ass'y)

RS2422A / C4822N



RS2422B



POW-TS2422A

Symbol	Description	Specifications
BZ101	BUZZER	PKM24SP3805
C101	CAPACITOR	0.01μF 250V
C102	CAPACITOR	0.01μF 250V
C103	CAPACITOR	2200μF 20% 25V
C104	CAPACITOR	0.1μF 50V
C105	CAPACITOR	1μF 50V
C106	CAPACITOR	10μF 50V
C107	CAPACITOR	220μF 16V
C108	CAPACITOR	1μF 50V
C109	CAPACITOR	0.022μF 25V
C110	CAPACITOR	0.1μF 50V
C111	CAPACITOR	0.1μF 50V
C112	CAPACITOR	0.1μF 50V
C113	CAPACITOR	0.022μF 25V
C114	CAPACITOR	0.010μF 25V
C115	CAPACITOR	0.00003μF 50V
C116	CAPACITOR	0.00003μF 50V
C117	CAPACITOR	0.047μF 50V
C119	CAPACITOR	0.001μF 10% 50V
C121	CAPACITOR	0.001μF 10% 50V
C122	CAPACITOR	100μF 25V
C123	CAPACITOR	0.1μF 50V
C124	CAPACITOR	0.047μF 50V
C125	CAPACITOR	0.022μF 25V
C126	CAPACITOR	0.022μF 25V
C127	CAPACITOR	0.022μF 25V
C128	CAPACITOR	0.022μF 25V
C129	CAPACITOR	0.022μF 25V
C130	CAPACITOR	0.1μF 50V
C131	CAPACITOR	0.047μF 250V
C132	CAPACITOR	1μF 50V
C133	CAPACITOR	0.001μF 50V
C134	CAPACITOR	0.001μF 50V
C137	CAPACITOR	2.2μF 50V
CN101	CONNECTOR	2-173270-3
CN103	CONNECTOR	2-173270-5
CN106	CONNECTOR	8-173270-2
CN107	CONNECTOR	5273-02A
CN109	CONNECTOR	8263B-0202-R
CN110	CONNECTOR	8263B-0202-K
CN111	CONNECTOR	PD054-10M
CN112	CONNECTOR	SB2P-HVQ-CA
CN113	CONNECTOR	5273-02A-GR
CN115	CONNECTOR	8263B-0205-K
CN118	CONNECTOR	8263-0212-6
CN119	CONNECTOR	8263-0212-5
D101 to D105	DIODE	GMA01
D107 to D111	DIODE	GMA01
D116	DIODE	GMA01
D117	DIODE	GMA01
D119	DIODE	GMA01
D120	DIODE	GMA01
D122	DIODE	GMA01
D123	DIODE	GMA01
D124	DIODE	GMA01
D125	DIODE	SLP-181B
D126	DIODE	SLP-181B
D127	DIODE	SLP-181B
D129	DIODE	SLP-181B
D132	DIODE	GMA01
D134	DIODE	GMA01
D136	DIODE	GMA01
D139	DIODE	DSP10TG
DB101	BRIDGE DIODE	DBA10C
F101	FUSE	250V, 3A
IC101	IC	LA5693D
IC102	IC	TMS73C161-C76585AY
IC103	IC	LB1234
IC104	IC	LB1234
L101	COIL	SPO203-R33K
L102	COIL	SPO203-R33K

POW-TS2422A

Symbol	Description	Specifications
PC101	PHOTOCOUPLER	PC817A
PC102	PHOTOCOUPLER	PC814A
Q101	TRANSISTOR	2SA1289
Q102	TRANSISTOR	2SC536-E
Q103	TRANSISTOR	2SC536-E
Q104	TRANSISTOR	2SC536-E
Q107	TRANSISTOR	2SC536-E
Q109	TRANSISTOR	2SA691-E
Q111	TRANSISTOR	2SC3402
Q113	TRANSISTOR	2SA1423
R101	RESISTOR (OXIDE)	100Ω ±5% 1W
R102	RESISTOR (OXIDE)	100Ω ±5% 1W
R103	RESISTOR (OXIDE)	5.6Ω ±5% 1W
R104	RESISTOR (CARBON)	390Ω ±5% 1/4W
R106	RESISTOR (METAL)	15KΩ ±1% 1/4W
R107	RESISTOR (METAL)	3.6KΩ ±1% 1/4W
R108	RESISTOR (CARBON)	27KΩ ±5% 1/4W
R109	RESISTOR (CARBON)	22KΩ ±5% 1/4W
R110	RESISTOR (CARBON)	560Ω ±5% 1/4W
R111	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R112	RESISTOR (CARBON)	5.6KΩ ±5% 1/4W
R113	RESISTOR (CARBON)	8.2KΩ ±5% 1/4W
R114	RESISTOR (CARBON)	4.7KΩ ±5% 1/4W
R116	RESISTOR (METAL)	4.3KΩ ±1% 1/4W
R117	RESISTOR (METAL)	1KΩ ±1% 1/4W
R119	RESISTOR (METAL)	8.2KΩ ±1% 1/4W
R120	RESISTOR (METAL)	10KΩ ±1% 1/4W
R121	RESISTOR (METAL)	620Ω ±1% 1/4W
R122	RESISTOR (METAL)	9.1KΩ ±1% 1/4W
R123	RESISTOR (METAL)	6.8KΩ ±1% 1/4W
R124	RESISTOR (METAL)	180Ω ±1% 1/4W
R125	RESISTOR	56KΩ -4
R126	RESISTOR	56KΩ -6
R127	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R128	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R129	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R130	RESISTOR (CARBON)	100KΩ ±5% 1/4W
R131	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R132	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R133	RESISTOR (CARBON)	5.6KΩ ±5% 1/4W
R134	RESISTOR (CARBON)	2.2KΩ ±5% 1/4W
R135	RESISTOR (CARBON)	1KΩ ±5% 1/4W
R136	RESISTOR (CARBON)	2.2KΩ ±5% 1/4W
R137	RESISTOR (CARBON)	1KΩ ±5% 1/4W
R138	RESISTOR (CARBON)	20KΩ ±5% 1/4W
R139	RESISTOR (CARBON)	270Ω ±5% 1/4W
R140	RESISTOR (CARBON)	270Ω ±5% 1/4W
R141	RESISTOR (CARBON)	270Ω ±5% 1/4W
R142	RESISTOR (CARBON)	270Ω ±5% 1/4W
R145	RESISTOR (CARBON)	2.2KΩ ±5% 1/4W
R146	RESISTOR (CARBON)	1KΩ ±5% 1/4W
R148	RESISTOR (CARBON)	1KΩ ±5% 1/4W
R151	RESISTOR (CARBON)	2.2KΩ ±5% 1/4W
R152	RESISTOR (CARBON)	2.2KΩ ±5% 1/4W
R153	RESISTOR (CARBON)	10KΩ ±5% 1/4W
R154	RESISTOR (CARBON)	10KΩ ±5% 1/4W
R155	RESISTOR (CARBON)	10KΩ ±5% 1/4W
R156	RESISTOR (METAL)	15KΩ ±1% 1/4W
R157	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R158	RESISTOR	56KΩ -6
R164	RESISTOR (METAL)	10KΩ ±1% 1/4W
R165	RESISTOR (METAL)	1.8KΩ ±1% 1/4W
RY101	RELAY	LZG-12HE
RY102	RELAY	VB12TBU
RY104	RELAY	LZG-12HE
RY105	RELAY	LZG-12HE
RY106	RELAY	LZG-12HE
RY107	RELAY	LZG-12HE
S101	SWITCH	JKS1120-4-2 (DSW1)
S102	SWITCH	JKS1120-4-1
VA101	VARISTOR	SNR681KD14
X101	CRYSTAL	CSA-4MG

POW-TS2422B

Symbol	Description	Specifications	
C101	CAPACITOR	0.01 μ F	250V
C102	CAPACITOR	0.01 μ F	250V
C103	CAPACITOR	2200 μ F	20% 25V
C104	CAPACITOR	0.1 μ F	50V
C105	CAPACITOR	1 μ F	50V
C106	CAPACITOR	10 μ F	50V
C107	CAPACITOR	220 μ F	16V
C108	CAPACITOR	1 μ F	50V
C109	CAPACITOR	0.022 μ F	25V
C110	CAPACITOR	0.1 μ F	50V
C111	CAPACITOR	0.1 μ F	50V
C112	CAPACITOR	0.1 μ F	50V
C113	CAPACITOR	0.022 μ F	25V
C114	CAPACITOR	0.010 μ F	25V
C115	CAPACITOR	0.00003 μ F	50V
C116	CAPACITOR	0.00003 μ F	50V
C117	CAPACITOR	0.047 μ F	50V
C119	CAPACITOR	0.001 μ F	10% 50V
C121	CAPACITOR	0.001 μ F	10% 50V
C122	CAPACITOR	100 μ F	25V
C123	CAPACITOR	0.1 μ F	50V
C124	CAPACITOR	0.047 μ F	50V
C126	CAPACITOR	0.022 μ F	25V
C127	CAPACITOR	0.022 μ F	25V
C128	CAPACITOR	0.022 μ F	25V
C129	CAPACITOR	0.022 μ F	25V
C130	CAPACITOR	0.1 μ F	50V
C131	CAPACITOR	0.047 μ F	250V
C132	CAPACITOR	1 μ F	50V
C133	CAPACITOR	0.001 μ F	50V
C134	CAPACITOR	0.001 μ F	50V
CN101	CONNECTOR	2-173270-3	
CN103	CONNECTOR	2-173270-5	
CN106	CONNECTOR	8-173270-2	
CN107	CONNECTOR	5273-02A	
CN109	CONNECTOR	8263B-0202-R	
CN113	CONNECTOR	5273-02A-GR	
CN115	CONNECTOR	8263B-0205-K	
CN118	CONNECTOR	8263-0212-6	
CN119	CONNECTOR	8263-0212-5	
D101	DIODE	GMA01	
D102	DIODE	GMA01	
D103	DIODE	GMA01	
D107 to D110	DIODE	GMA01	
D115	DIODE	GMA01	
D116	DIODE	GMA01	
D117	DIODE	GMA01	
D119	DIODE	GMA01	
D120	DIODE	GMA01	
D122	DIODE	GMA01	
D125	DIODE	SLP-181B	
D126	DIODE	SLP-181B	
D127	DIODE	SLP-181B	
D129	DIODE	SLP-181B	
D132	DIODE	GMA01	
D134	DIODE	GMA01	
D136	DIODE	GMA01	
D138	DIODE	SLP-481B	
DB101	BRIDGE DIODE	DBA10C	
F101	FUSE	250V, 3A	
IC101	IC	LA5603D	
IC102	IC	TMS73C161-C76585AY	
IC103	IC	LB1234	
IC104	IC	LB1234	

POW-TS2422B

Symbol	Description	Specifications	
L101	COIL	SP0203-R33K	
L102	COIL	SP0203-R33K	
PC101	PHOTOCOUPLER	PC817A	
PC102	PHOTOCOUPLER	PC814A	
Q101	TRANSISTOR	2SA1289	
Q102	TRANSISTOR	2SC536-E	
Q103	TRANSISTOR	2SC536-E	
Q107	TRANSISTOR	2SC536-E	
Q109	TRANSISTOR	2SA608-E	
Q111	TRANSISTOR	2SC3402	
Q113	TRANSISTOR	2SA1423	
R101	RESISTOR (OXIDE)	100 Ω $\pm 5\%$ 1W	
R102	RESISTOR (OXIDE)	100 Ω $\pm 5\%$ 1W	
R103	RESISTOR (OXIDE)	5.6 Ω $\pm 5\%$ 1W	
R104	RESISTOR (CARBON)	390 Ω $\pm 5\%$ 1/4W	
R106	RESISTOR (CARBON)	10K Ω $\pm 5\%$ 1/4W	
R107	RESISTOR (CARBON)	3.6K Ω $\pm 5\%$ 1/4W	
R108	RESISTOR (CARBON)	27K Ω $\pm 5\%$ 1/4W	
R109	RESISTOR (CARBON)	22K Ω $\pm 5\%$ 1/4W	
R110	RESISTOR (CARBON)	560 Ω $\pm 5\%$ 1/4W	
R111	RESISTOR (CARBON)	4.7K Ω $\pm 5\%$ 1/4W	
R112	RESISTOR (CARBON)	5.6K Ω $\pm 5\%$ 1/4W	
R113	RESISTOR (CARBON)	8.2K Ω $\pm 5\%$ 1/4W	
R114	RESISTOR (CARBON)	4.7K Ω $\pm 5\%$ 1/4W	
R116	RESISTOR (METAL)	4.3K Ω $\pm 1\%$ 1/4W	
R117	RESISTOR (METAL)	1K Ω $\pm 1\%$ 1/4W	
R119	RESISTOR (METAL)	8.2K Ω $\pm 1\%$ 1/4W	
R120	RESISTOR (METAL)	10K Ω $\pm 1\%$ 1/4W	
R121	RESISTOR (METAL)	620 Ω $\pm 1\%$ 1/4W	
R122	RESISTOR (METAL)	9.1K Ω $\pm 1\%$ 1/4W	
R123	RESISTOR (METAL)	6.8K Ω $\pm 1\%$ 1/4W	
R124	RESISTOR (METAL)	180 Ω $\pm 1\%$ 1/4W	
R125	RESISTOR	56K Ω -4	
R126	RESISTOR	56K Ω -6	
R127	RESISTOR (CARBON)	56K Ω $\pm 5\%$ 1/4W	
R129	RESISTOR (CARBON)	56K Ω $\pm 5\%$ 1/4W	
R129	RESISTOR (CARBON)	56K Ω $\pm 5\%$ 1/4W	
R130	RESISTOR (CARBON)	100K Ω $\pm 5\%$ 1/4W	
R131	RESISTOR (CARBON)	56K Ω $\pm 5\%$ 1/4W	
R132	RESISTOR (CARBON)	56K Ω $\pm 5\%$ 1/4W	
R133	RESISTOR (CARBON)	5.6K Ω $\pm 5\%$ 1/4W	
R134	RESISTOR (CARBON)	2.2K Ω $\pm 5\%$ 1/4W	
R135	RESISTOR (CARBON)	1K Ω $\pm 5\%$ 1/4W	
R136	RESISTOR (CARBON)	2.2K Ω $\pm 5\%$ 1/4W	
R137	RESISTOR (CARBON)	1K Ω $\pm 5\%$ 1/4W	
R138	RESISTOR (CARBON)	2K Ω $\pm 5\%$ 1/4W	
R141	RESISTOR (CARBON)	270 Ω $\pm 5\%$ 1/4W	
R142	RESISTOR (CARBON)	270 Ω $\pm 5\%$ 1/4W	
R145	RESISTOR (CARBON)	2.2K Ω $\pm 5\%$ 1/4W	
R146	RESISTOR (CARBON)	1K Ω $\pm 5\%$ 1/4W	
R148	RESISTOR (CARBON)	1K Ω $\pm 5\%$ 1/4W	
R151	RESISTOR (CARBON)	2.2K Ω $\pm 5\%$ 1/4W	
R152	RESISTOR (CARBON)	2.2K Ω $\pm 5\%$ 1/4W	
R153	RESISTOR (CARBON)	10K Ω $\pm 5\%$ 1/4W	
R154	RESISTOR (CARBON)	10K Ω $\pm 5\%$ 1/4W	
R155	RESISTOR (CARBON)	10K Ω $\pm 5\%$ 1/4W	
R156	RESISTOR (METAL)	3.6K Ω $\pm 1\%$ 1/4W	
R157	RESISTOR (CARBON)	56K Ω $\pm 5\%$ 1/4W	
R158	RESISTOR	56K Ω -6	
R164	RESISTOR (METAL)	10K Ω $\pm 1\%$ 1/4W	
RY101	RELAY	LZG-12HE	
RY102	RELAY	VB12TBU	
RY104	RELAY	LZG-12HE	
RY105	RELAY	LZG-12HE	
RY106	RELAY	LZG-12HE	
VA101	VARISTOR	SNR601KD14	
X101	CRYSTAL	CSA-4MG	

7. TROUBLESHOOTING

7-1. Check before and after troubleshooting

(1) Check power supply wiring.

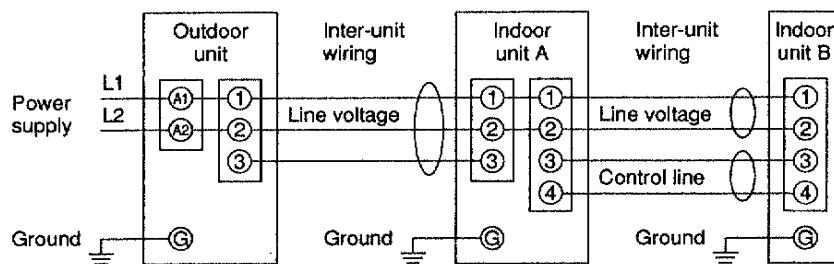
- Check that power supply wires are correctly connected to terminals No. A1 and No. A2 on the 2P terminal plate in the outdoor unit.

(2) Check inter-unit wiring.

- Check that inter-unit wires are correctly connected to indoor unit A from outdoor unit and to indoor unit B from indoor unit A.

Power supply:

60Hz, single-phase, 230/208V



(3) Check power supply.

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



WARNING

If the following troubleshooting must be done with power being supplied, be careful about any uninsulated live part that can cause ELECTRIC SHOCK.

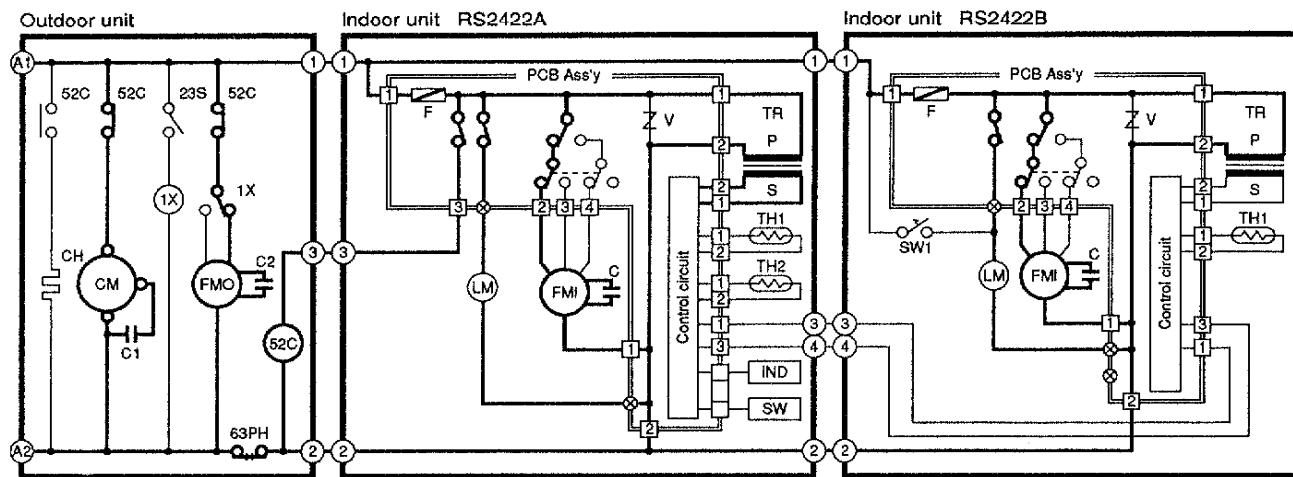
(4) Check lead wires and connectors in indoor and outdoor units.

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

(5) Reference

(a) Condition of general cooling operation

- ON/OFF operation button..... ON
- COOL/FAN selector switch COOL
- SWEET button..... ON
- Indoor fan speed HIGH
- Thermo. ON
- Outdoor air temperature..... above 79°F



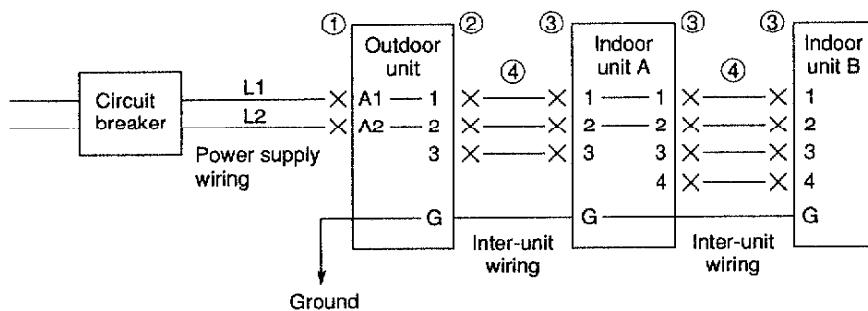
7-2. Air conditioner does not operate.

(1) Circuit breaker trips (or fuse blows).

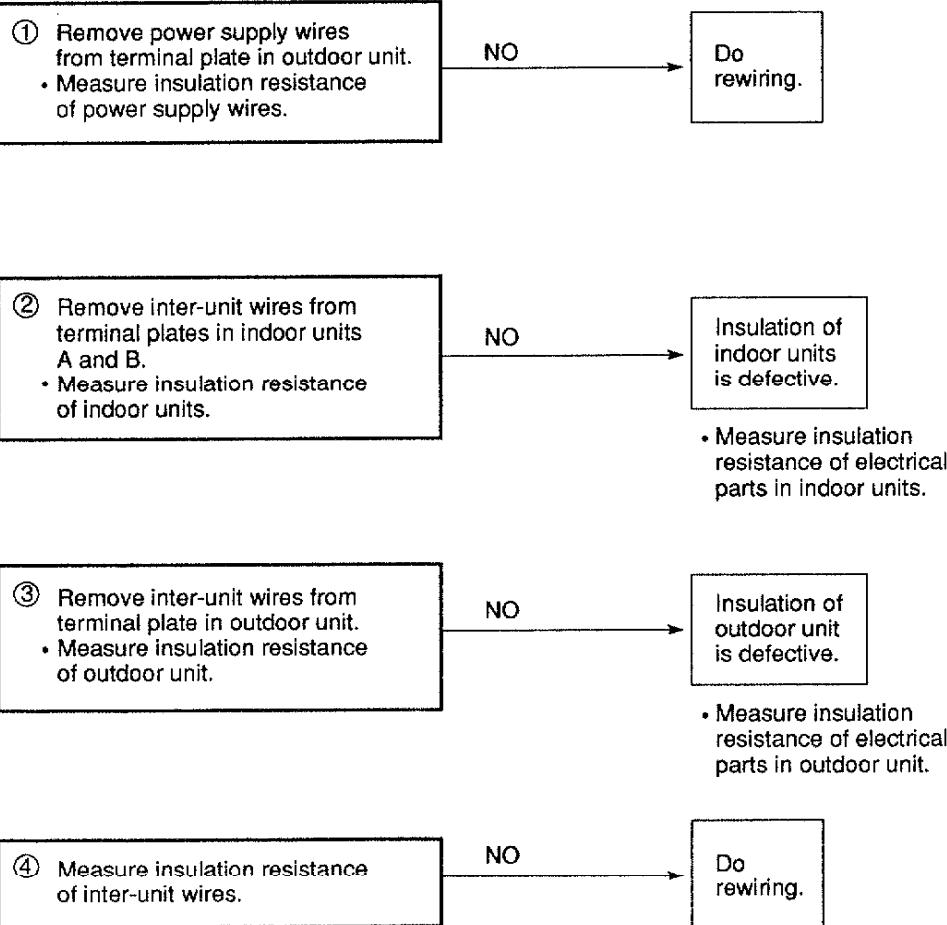
(a) When circuit breaker is set to ON, it trips in a few moments (resetting is not possible).

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

If resistance value is $1M\Omega$ or less, insulation is defective ("NO").

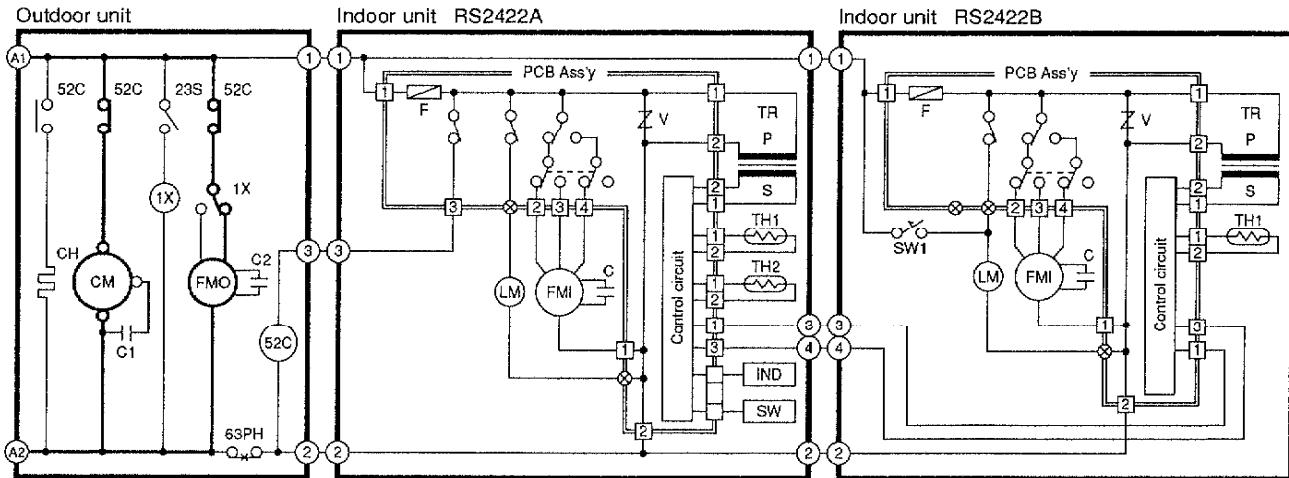
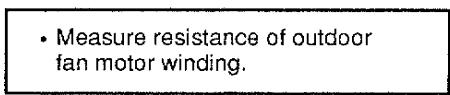
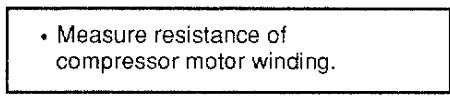
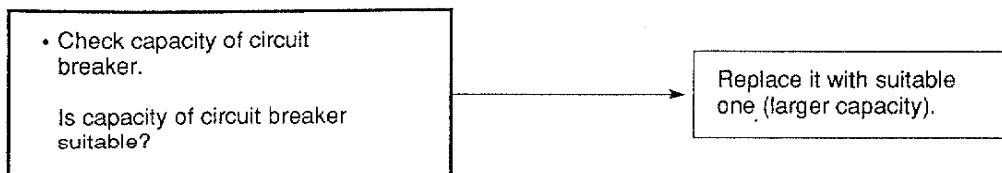


* Set circuit breaker to OFF.



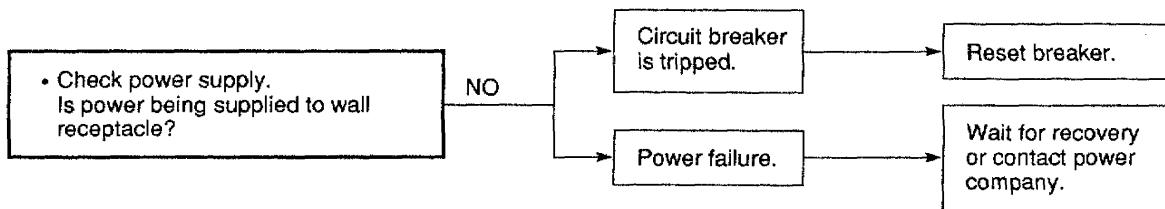
(b) Circuit breaker trips in several minutes after turning air conditioner ON.

- There is a possibility of short circuit.

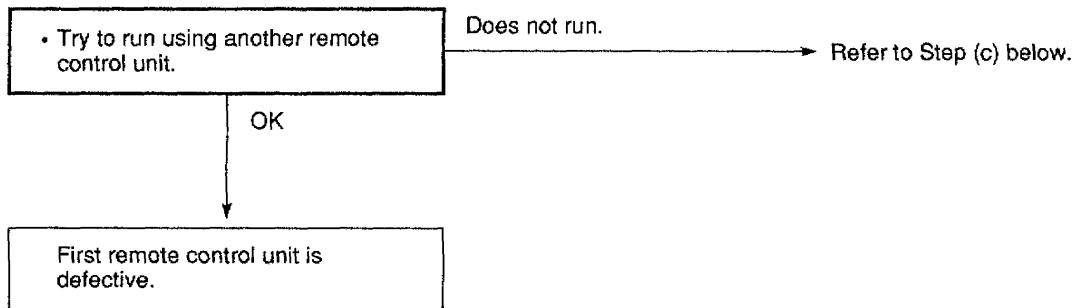


(2) Neither indoor units nor outdoor unit run.

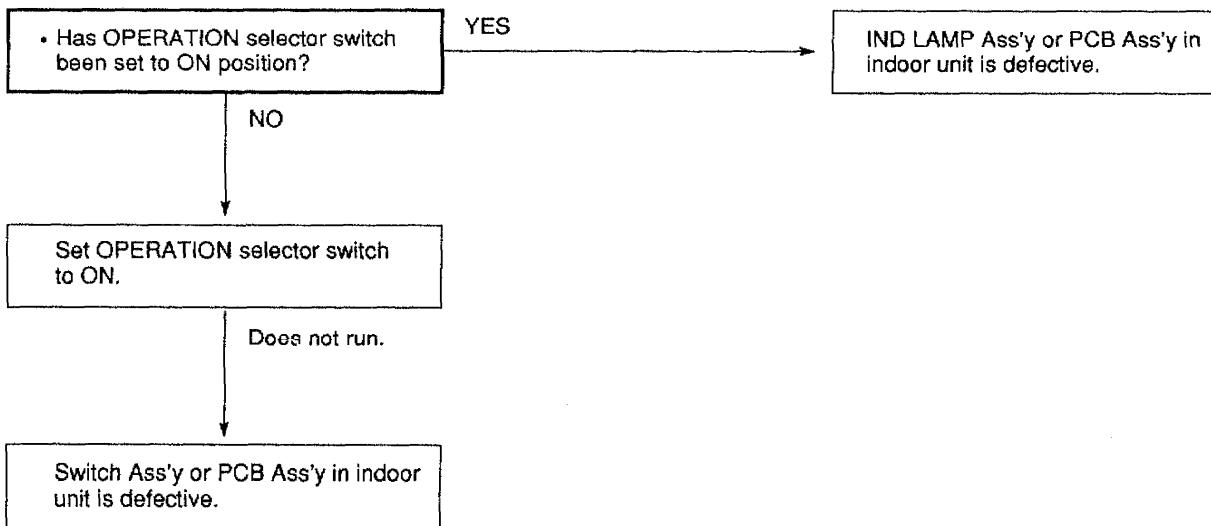
(a) Power is not supplied.



(b) Check remote control unit.

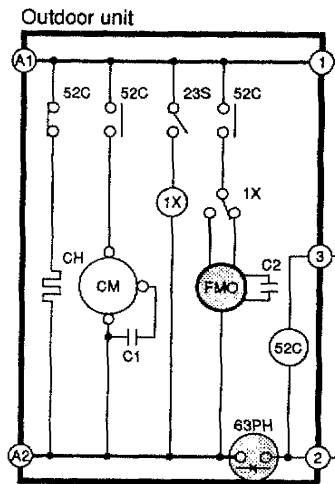
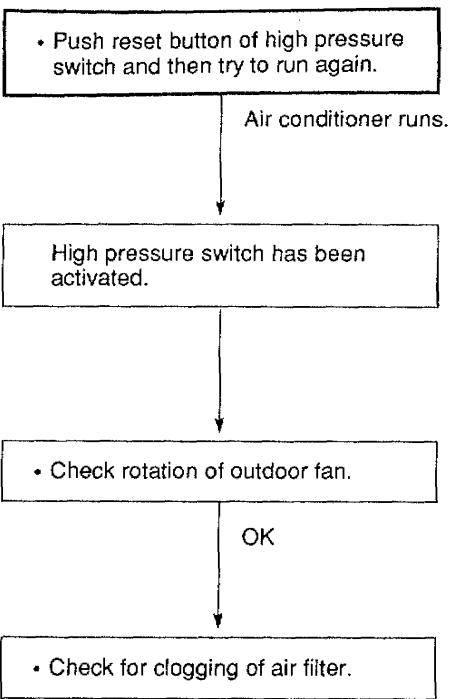


(c) Check OPERATION selector switch in indoor unit A.

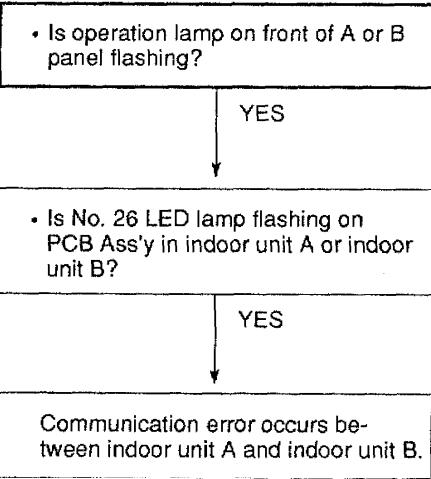


(Neither indoor units nor outdoor unit run.) (cont'd)

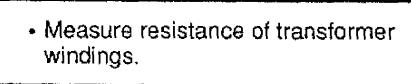
(d) Check high pressure switch in outdoor unit.



(e) Check communication between indoor unit A and indoor unit B.

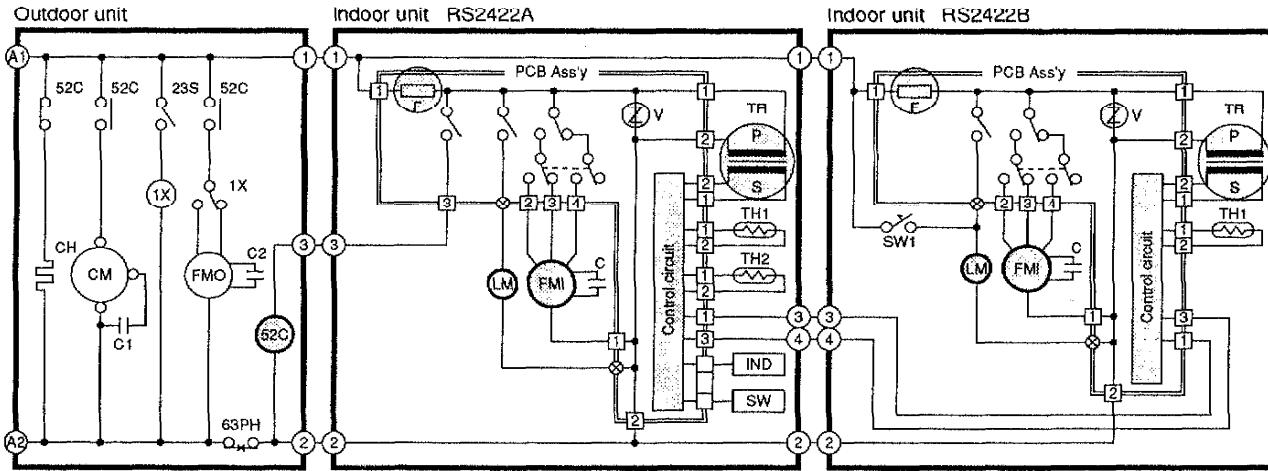
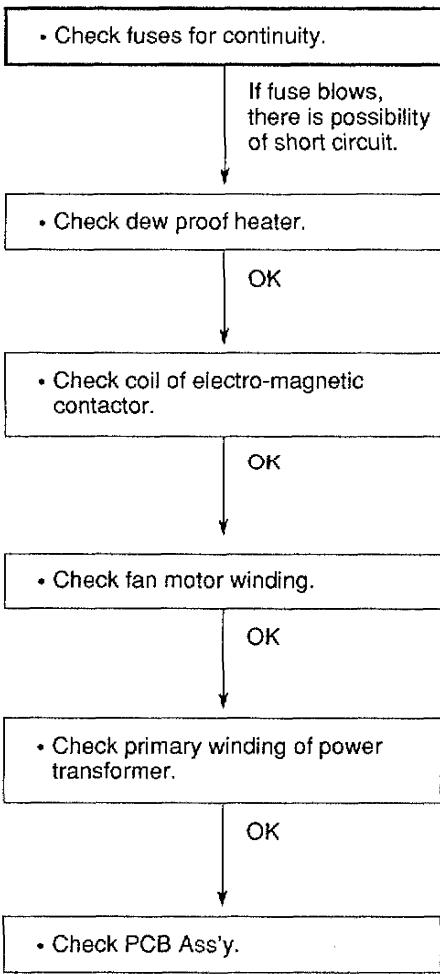


● Check transformers in indoor unit A and indoor unit B.



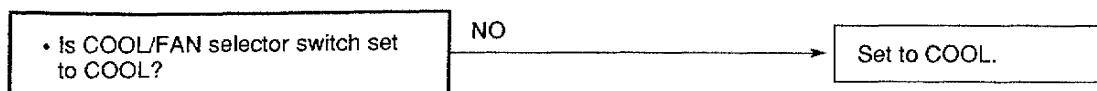
(Neither indoor units nor outdoor unit run.) (cont'd)

● Check fuse on PCB Ass'y in indoor unit A and indoor unit B.



(3) Only outdoor unit does not run.

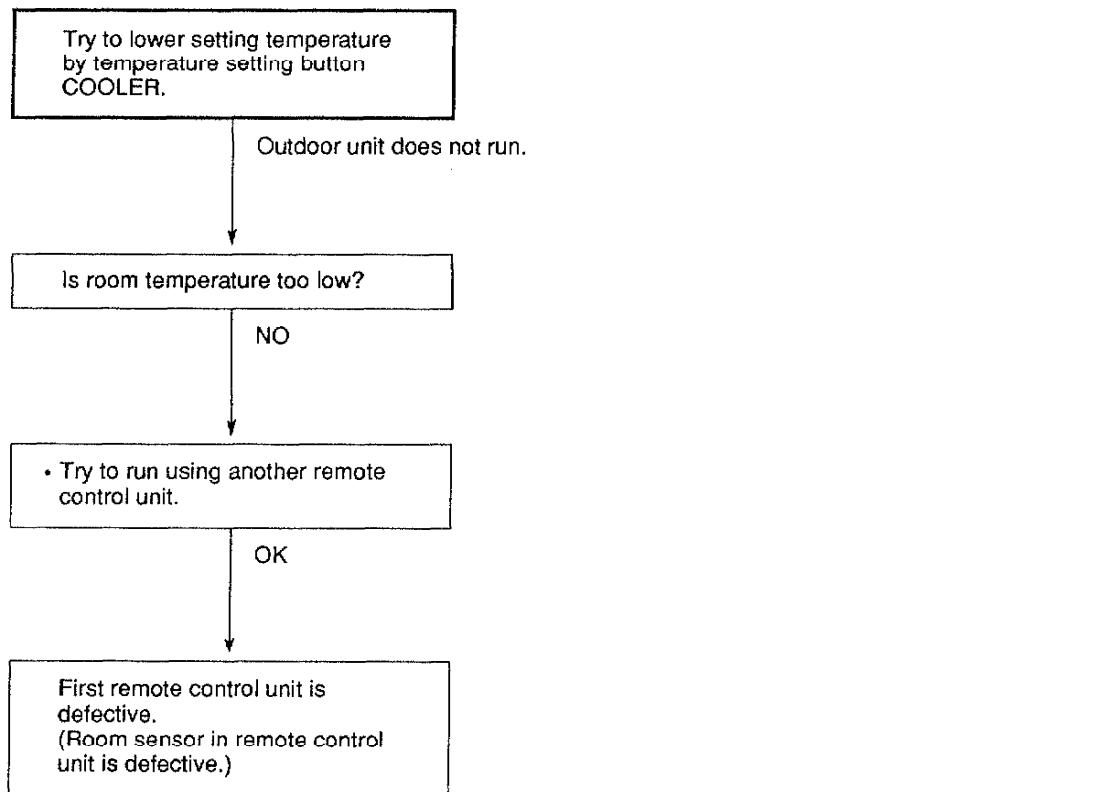
(a) Check COOL/FAN selector switch of remote control unit.



(b) Outdoor unit does not run when air conditioner is in following conditions.

- During thermo OFF (when the room temperature is below the setting temperature).
- During freeze prevention (for at least 6 minutes).

• Check setting temperature



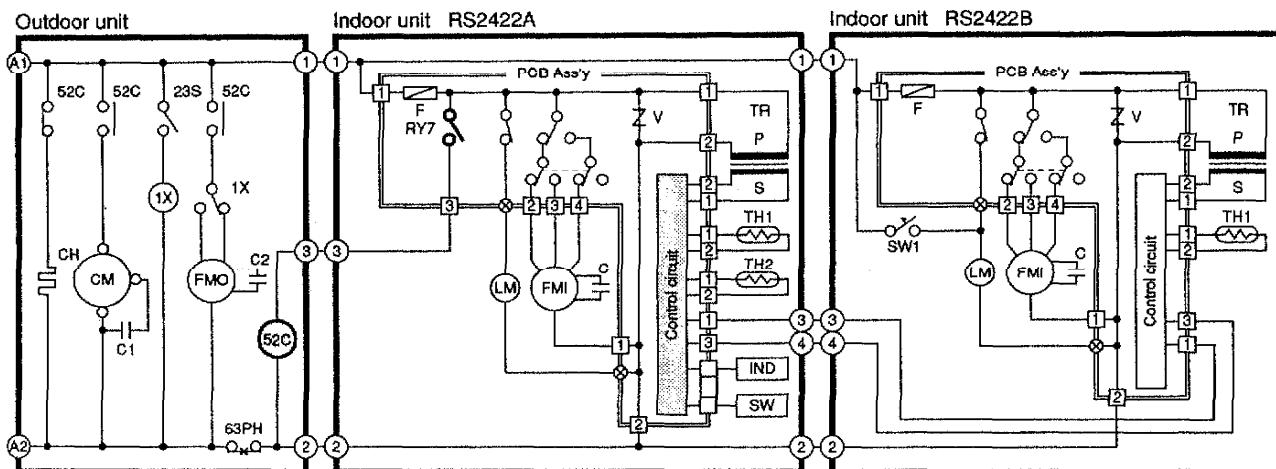
(Only outdoor unit does not run.) (cont'd)

(c) Check electro-magnetic contactor.

- Measure coil resistance of electro-magnetic contactor.

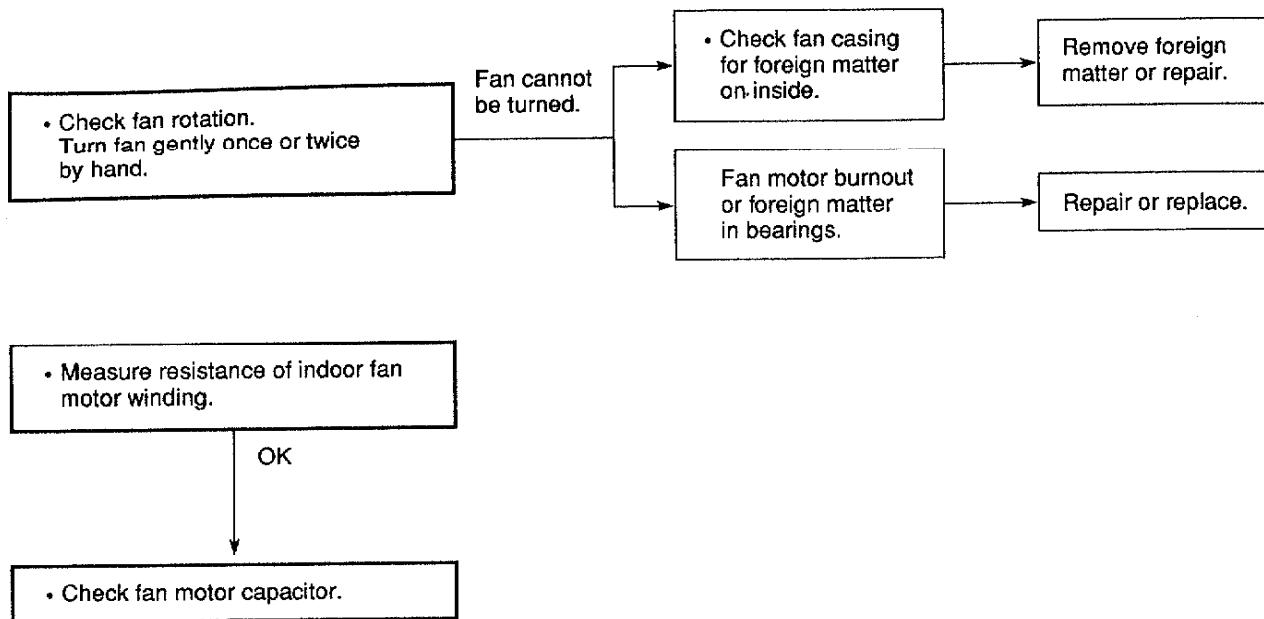
OK

PCB Ass'y in indoor unit A is
defective. (RY7)

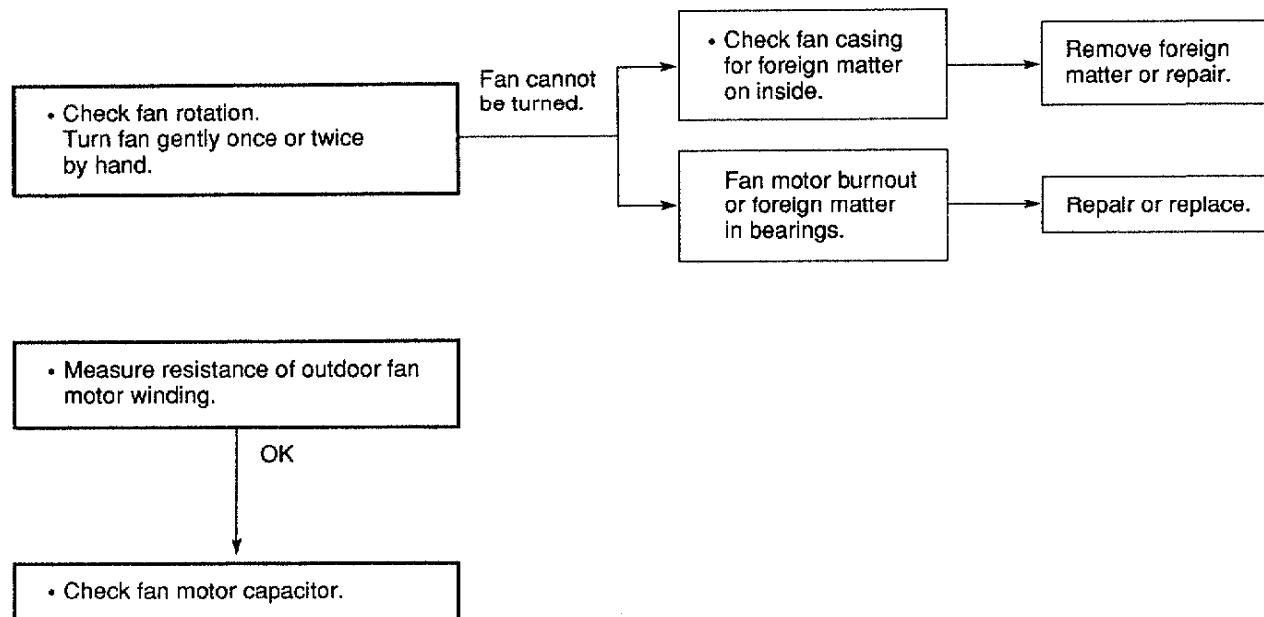


7-3. A particular component of air conditioner does not operate.

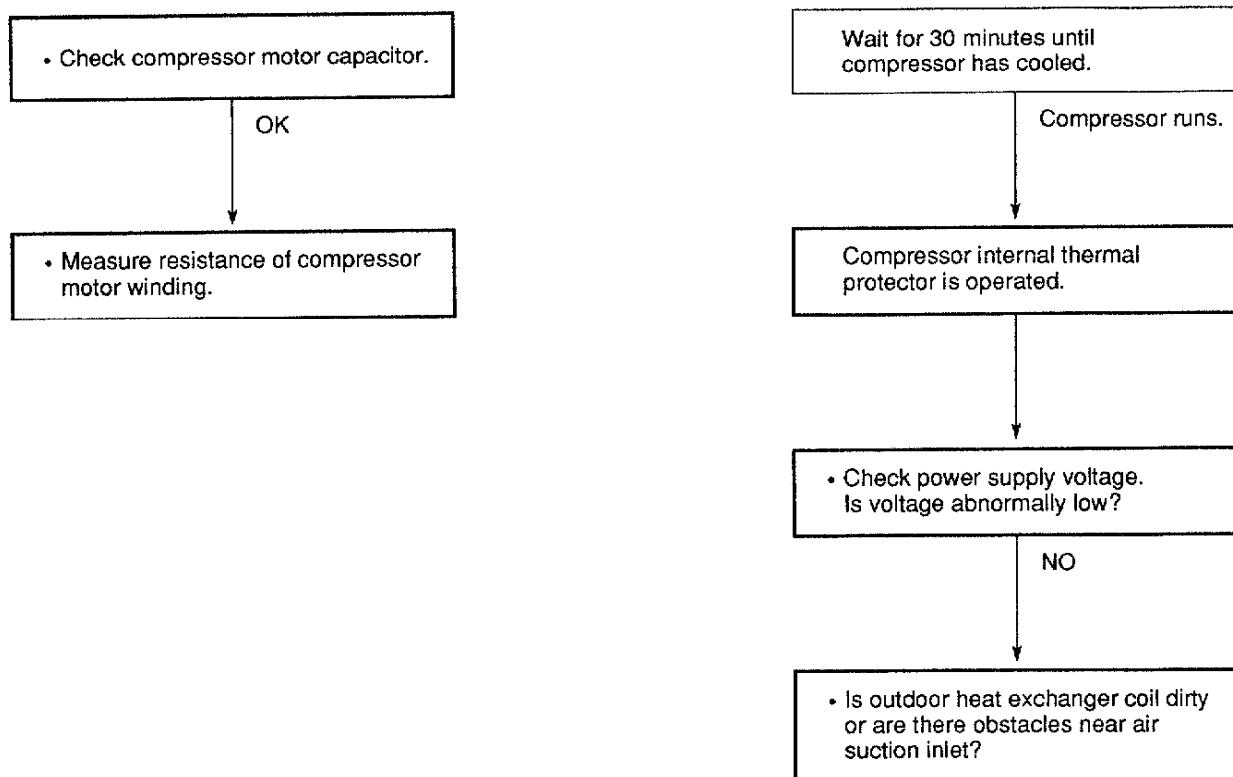
(1) Only indoor fan does not run.



(2) Only outdoor fan does not run.

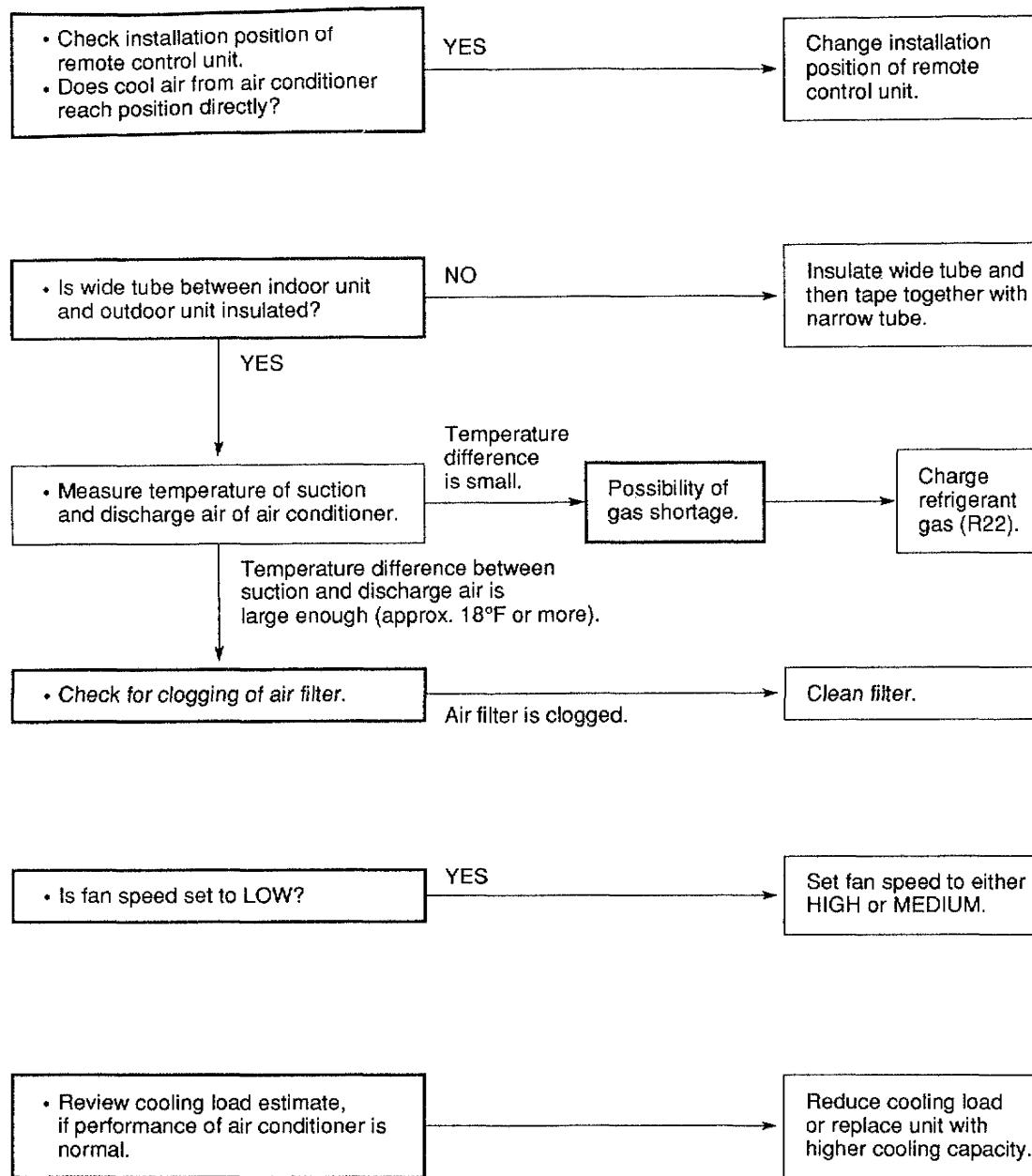


(3) Only compressor does not run.

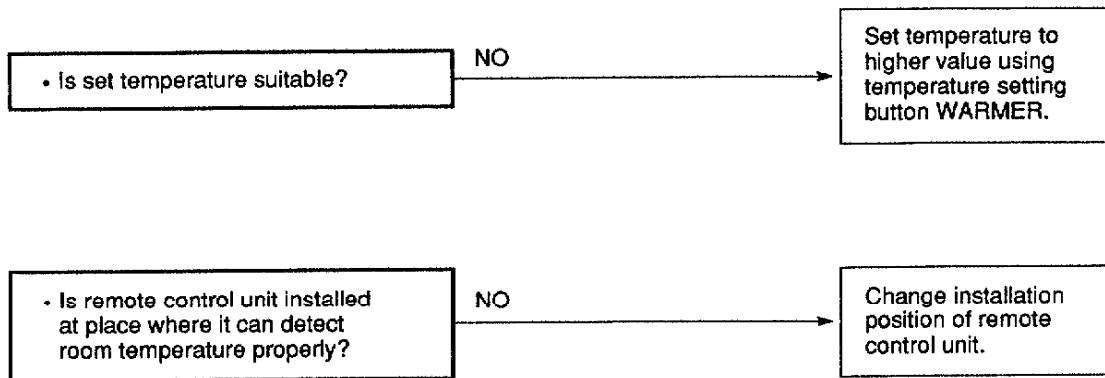


7-4. Air conditioner operates, but abnormalities occur.

(1) Poor Cooling



(2) Excessive Cooling



7-5. Indoor (heat exchanger) coil temperature sensor (TH1) is defective.

(1) Open

Even though the air conditioner does not thermo OFF, compressor and outdoor fan repeat ON for 10 minutes and OFF for 6 minutes.

(2) Shortage

When dehumidified water freezes in the indoor coil, the freeze prevention function does not work.

8. CHECKING ELECTRICAL COMPONENTS

8-1. Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds $1\text{ M}\Omega$.

(1) Power Supply Wires

Clamp the grounded 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 grounded wire and the other power wires. (Fig. 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 3P terminal plate (for RS2422A).

In the case of RS2422B, measure the resistance by placing a probe on ① and then ② on the 4P terminal plate. (Fig. 2)

(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 2P terminal plate. (Fig. 2)

(4) Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from the 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.

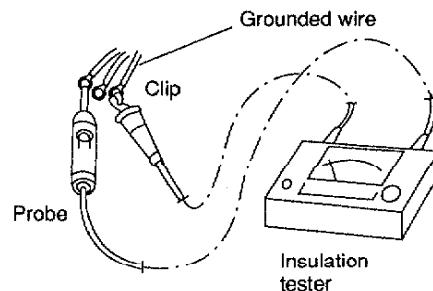


Fig. 1

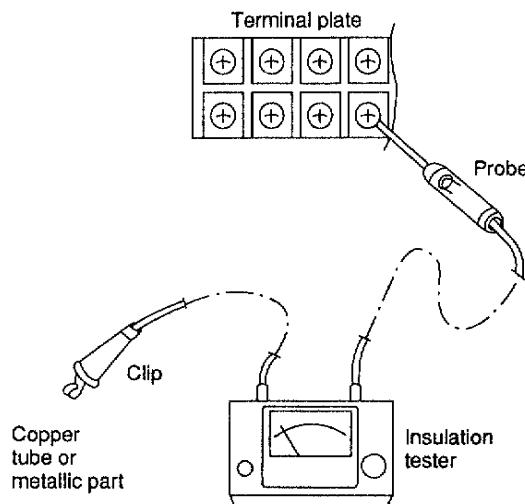


Fig. 2

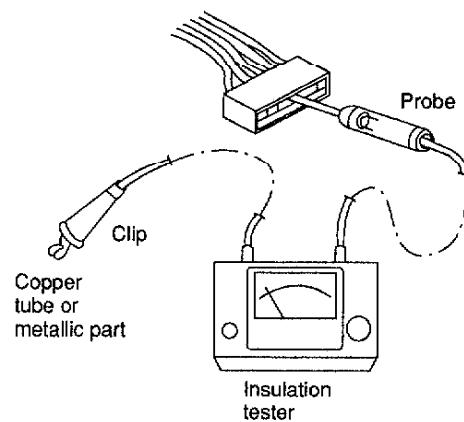


Fig. 3

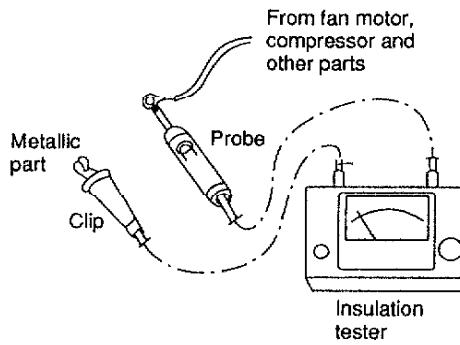


Fig. 4

8-2. Checking Continuity of Fuse on PCB Ass'y

- Check for continuity using a multimeter as shown in Fig. 5.

Note:

Method Used to Replace Fuse on PCB Ass'y

- Remove the PCB Ass'y from the electrical component box.
- Pull out the fuse at the metal clasp using pliers while heating the soldered leads on the back side of the PCB Ass'y with a soldering iron (30W or 60W). (Fig. 6)
- Remove the fuse ends one by one. For replacement, insert a fuse of the same rating and solder it. (Allow time to radiate heat during soldering so that the fuse does not melt.)



CAUTION

When replacing the fuse, be sure not to break down the varistor.

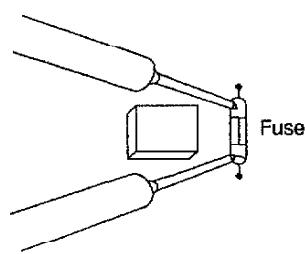


Fig. 5

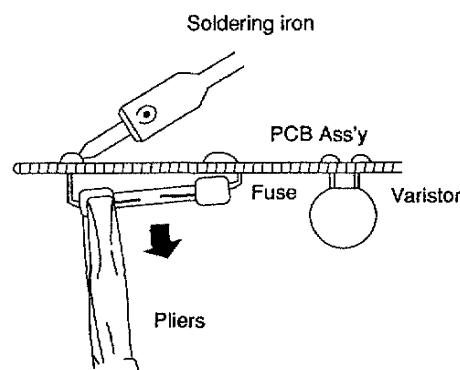


Fig. 6

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.

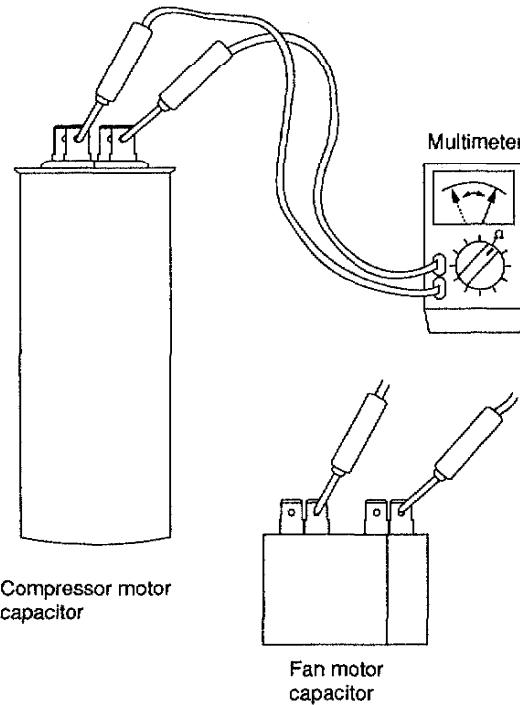


Fig. 7

8-4. Appearance of Electrical Parts

(1) Auxiliary Relay

MY2F-T1-USTS

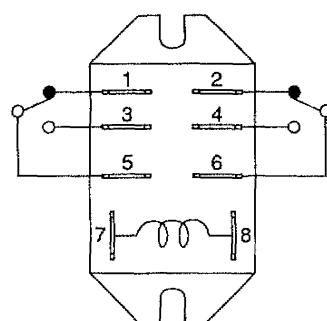


Fig. 8

(2) High Pressure Switch

FTB-2UC01

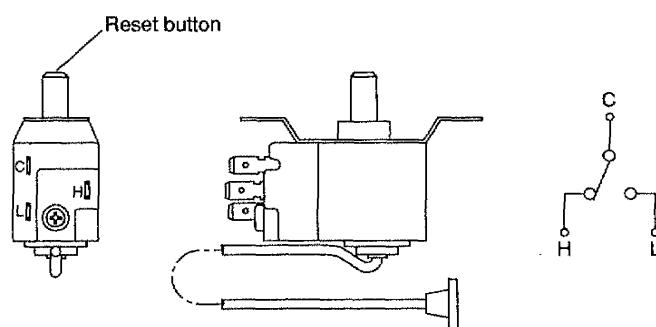


Fig. 9

(3) Outdoor Air Temperature Thermostat

YTB-4U201F

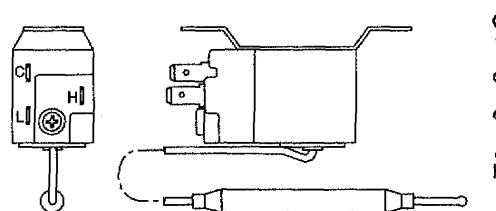


Fig. 10

