

# SERVICE MANUAL

# SANYO

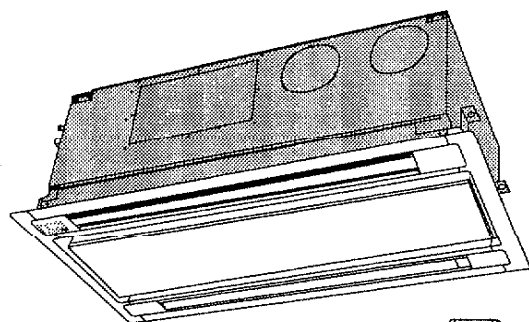
FILE NO.

**48RS22N** Indoor Unit RS2422A+RS2422B / Outdoor Unit C4822N

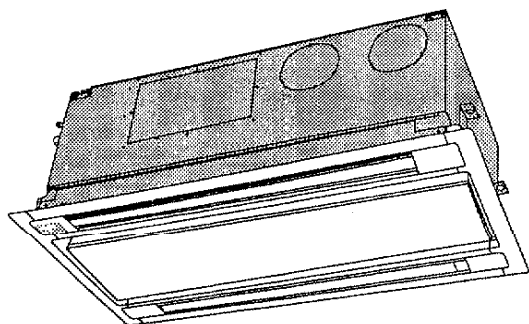
## SPLIT SYSTEM AIR CONDITIONER

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

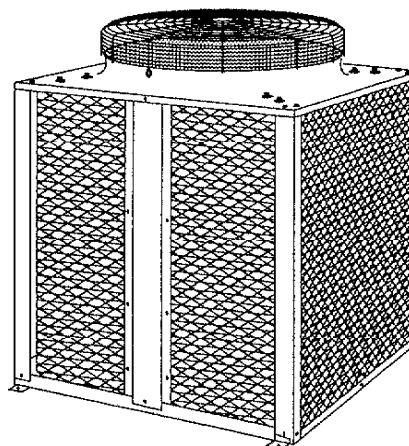


RS2422A



RS2422B

Outdoor Unit



C4822N

# 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.

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# 1. SPECIFICATIONS

## 1-1. Unit Specifications

Model No.		Indoor units	RS2422A+RS2422B	
		Outdoor unit	C4822N	
Performance			Cooling	
	Capacity	BTU/h	45,000 / 44,000	
		kW	13.2 / 12.9	
	Air circulation (High)	cu. ft./min.	1,000 / 980	
	Moisture removal (High)	pints/h	13.2 / 12.9	
Electrical Rating	Phase, Frequency	Hz	Single, 60	
	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	
Features	Controls		Microprocessor	
	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	45 / 41 / 37 for 1 unit	
		Out-Hi	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 (× 2)	Outdoor unit
	Height	in. (mm)	17-5/16 (440)	37-5/8 (955)
	Width	in. (mm)	48-7/32 (1,225)	32-9/32 (820)
	Depth	in. (mm)	25-19/32 (650)	32-9/32 (820)
	Net weight	lbs. (kg)	113 (50.9)	330 (148.5)
	Shipping volume	cu. ft. (cu. m)	29.8 (0.837)	33.0 (0.93)
	Shipping weight (Approx.)	lbs. (kg)	136 (61.2)	365 (164.3)

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

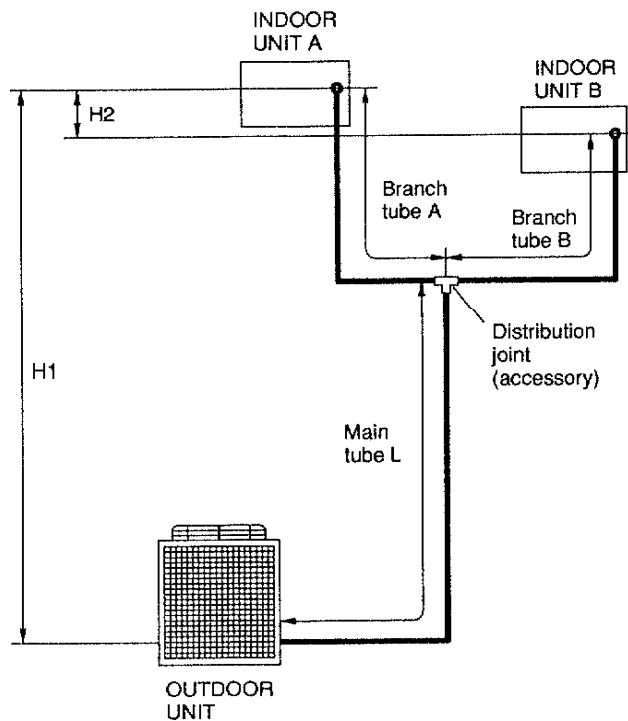
Indoor unit entering air temperature 80°F DB/67°F WB

## 1-2. Tubing Data

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

\*<sup>1</sup> Outdoor unit is higher (or lower) than indoor unit.

\*<sup>2</sup> 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.



**CAUTION**

Try to keep the branch tubes A and B as short as possible from the main tube L.

### 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 $\Omega$ (Ambient temp. 68°F)			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			$\mu$ F	2.5		
				VAC	440		
	Heat Exch.	Coil			Aluminum plate fin / Copper tube		
Rows ... Fins per inch			3 ... 12.7				
Face area ft. <sup>2</sup> (m <sup>2</sup> )			2.58 (0.24)				
Panel	Model No.			RS2422RWA			
	Indicator lamp Ass'y			IND-TS2422			
	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) k $\Omega$		14.9 ± 8%			

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## (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			$\Omega$ WHT – BRN: 104.3			
	(Ambient temp. 68°F)			WHT – VLT: 21.4			
				VLT – ORG: 22.5			
				ORG – YEL: 307.4			
				ORG – PNK: 76.1			
	Safety devices	Type		Internal			
		Operating temp.	Open	$^{\circ}\text{F}$ 248 $\pm$ 9			
Run capacitor	Close		$^{\circ}\text{F}$ 171 $\pm$ 27				
			$\mu\text{F}$ 2.5				
		VAC 440					
Heat Exch.	Coil			Aluminum plate fin / Copper tube			
	Rows ... Fins per inch			3 ... 12.7			
	Face area			ft. <sup>2</sup> (m <sup>2</sup> ) 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)		k $\Omega$ 14.9 $\pm$ 8%					

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

## (c) C4822N (Outdoor Unit)

Unit Model No.				C4822N	
Compressor	Type			Scroll	
	Model ... Number			ZR49K3 - PFV ... 1	
	rpm			3,500	
	Compressor lubricant cc			2,960	
	Coil resistance (Ambient temp. 77°F) Ω			C (W) – R: 0.448 to 0.516 C (W) – S: 1.51 to 1.73	
	Safety devices	Type		Internal	External
		Overload relay models		—	—
		Operating temp.	Open °F	275 ± 9	—
			Close °F	172 ± 27	—
	Operating amp. (Ambient temp. 77°F)		Trips in 2 to 10 sec. at 104A	—	
Run capacitor		μF	60		
		VAC	440		
Crank case heater				230W, 32W	
Fan	Type			Propeller	
	Number ... Dia. in. (mm)			1 ... 25-1/16 (650)	
Fan Motor	Model			KFS8S-201A6P	
	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	
			Close °F	169 ± 27	
	Run capacitor		μF	14	
			VAC	400	
Heat Exch.	Coil			Aluminum plate fin / Copper tube	
	Rows ... Fins per inch			2 ... 12.7	
	Face area ft. <sup>2</sup> (m <sup>2</sup> )			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	$\Omega$ (at 77°F)	Primary (WHT – WHT): $294.0 \pm 15\%$
		Secondary (BRN – BRN): $1.0 \pm 15\%$
Thermal cut-off temp.		259°F, 2A, 250V

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

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

### (2) Outdoor Unit

Auxiliary Relay		MY2F-T1-USTS
Coil rating		AC 240V, 60Hz
Coil resistance	k $\Omega$ (at 77°F)	$18.8 \pm 15\%$
Contact rating		AC 240V, 5A

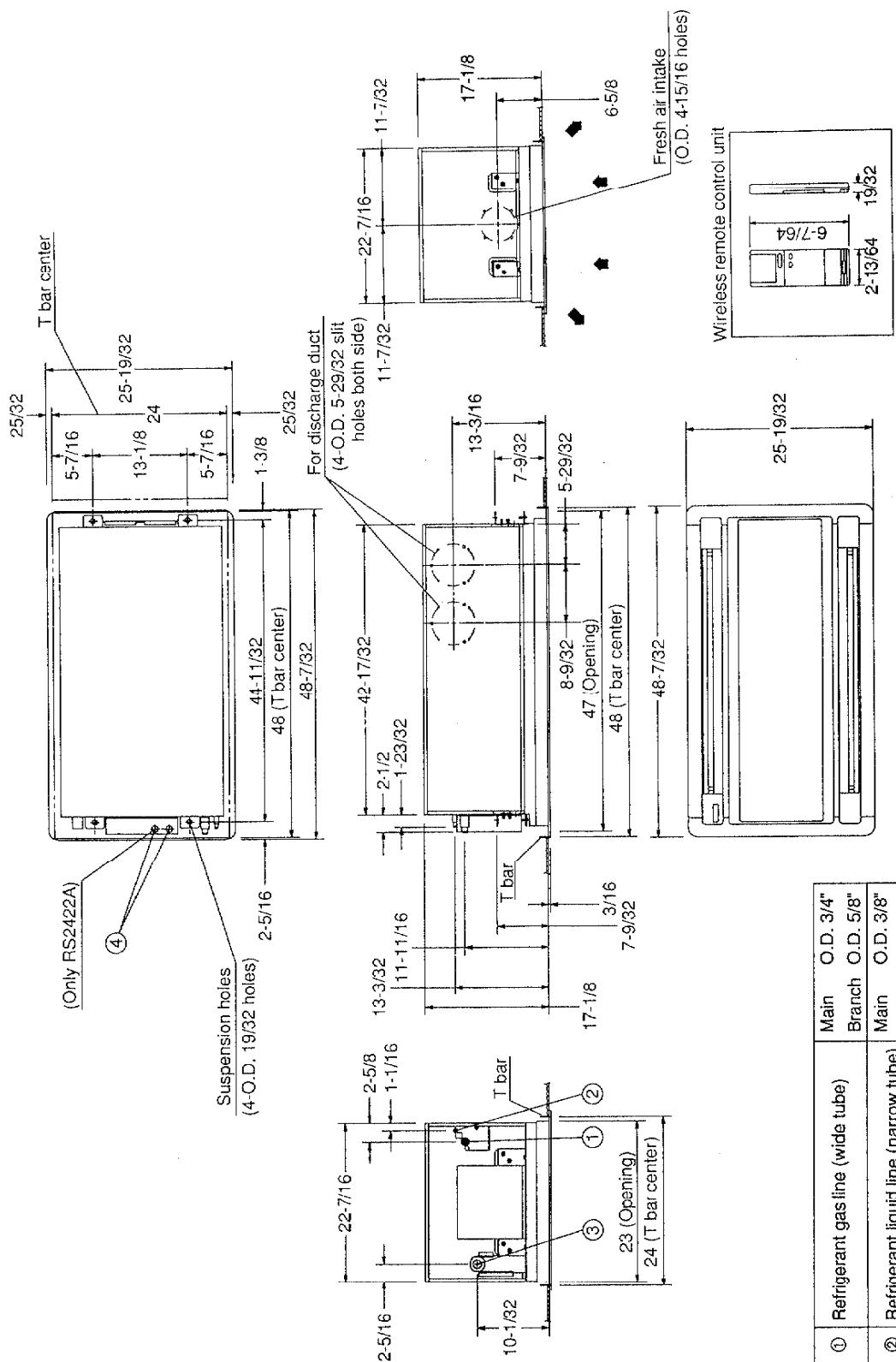
Electro-Magnetic Contactor		SC-2N/UL
Coil rating		AC 230V, 60Hz
Contact rating		AC 240V, 35A

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 $79 \pm 3$
		ON $75 +3, -1$
Contact rating		AC 200/240V, 1A

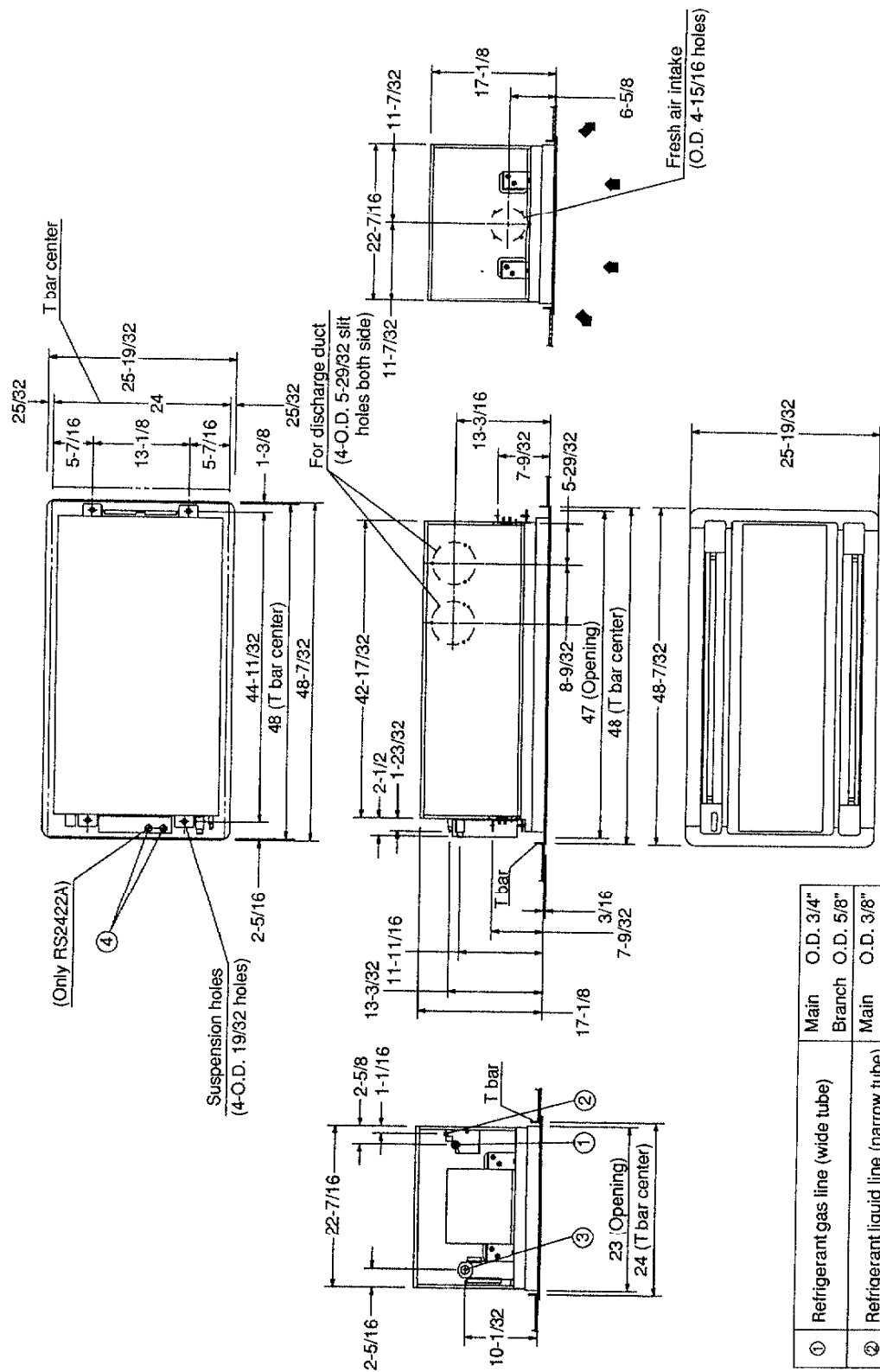
# 2. DIMENSIONAL DATA

Indoor Unit: RS2422A



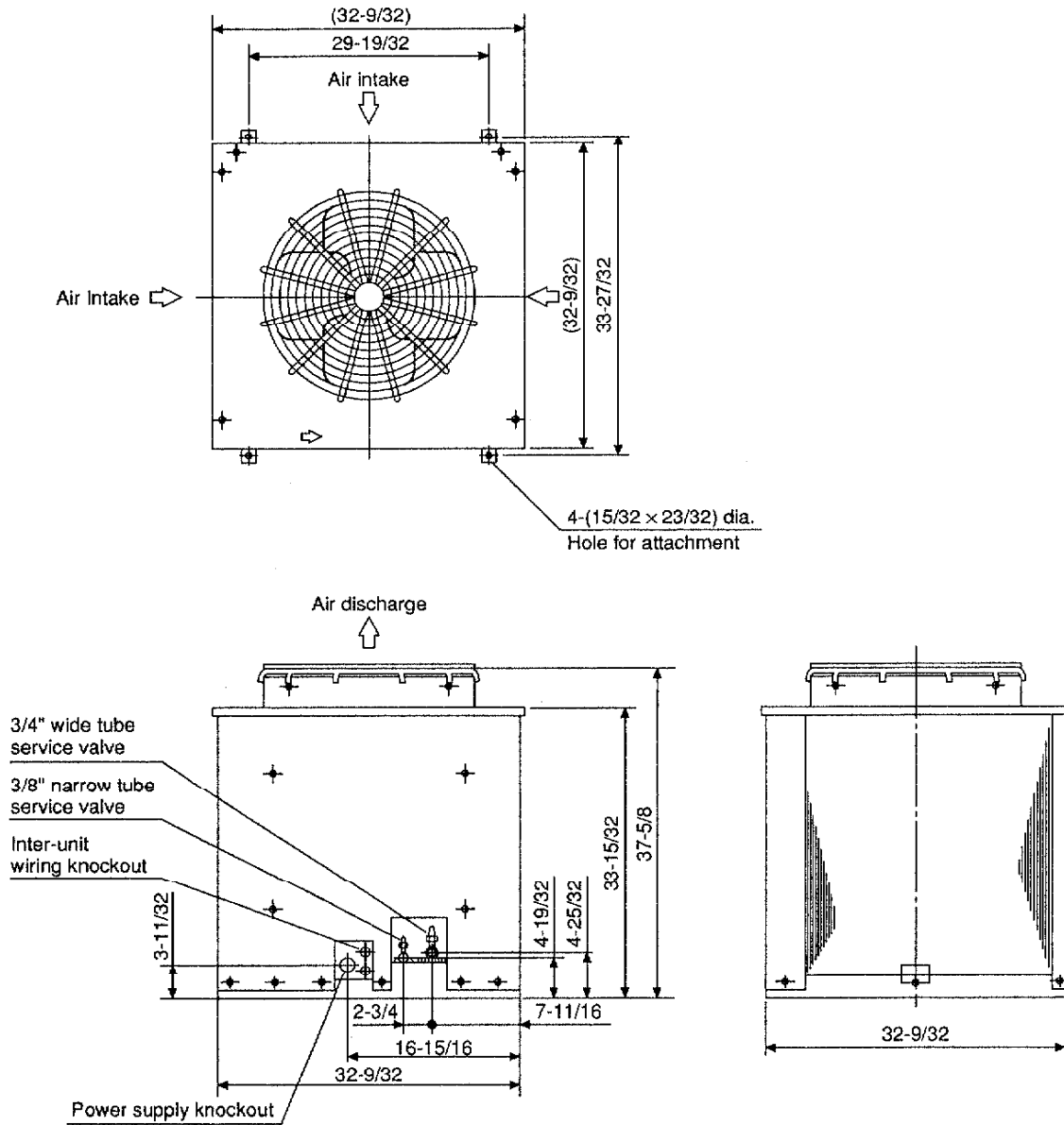
		Main		Branch	
		O.D. 3/4"		O.D. 5/8"	
①	Refrigerant gas line (wide tube)				
②	Refrigerant liquid line (narrow tube)				
③	Drain connection				
④	Power supply				

Indoor Unit: RS2422B



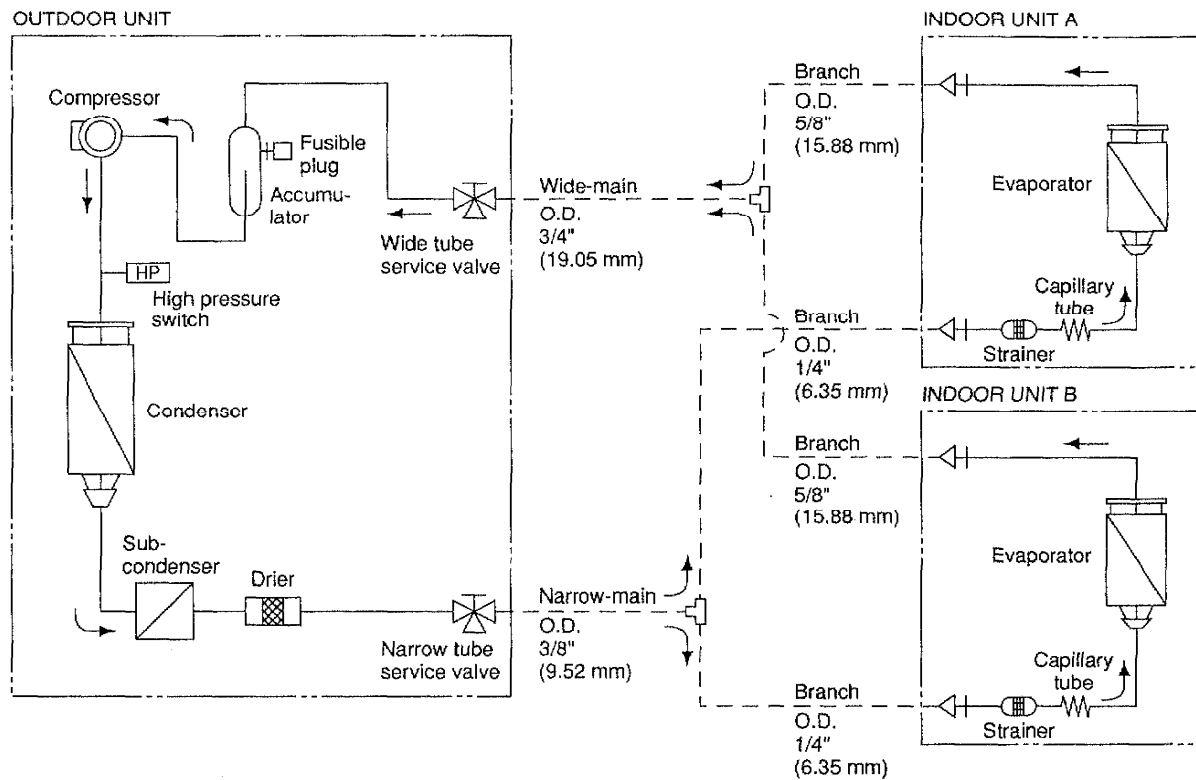
①	Refrigerant gas line (wide tube)	Main	O.D. 3/4"
		Branch	O.D. 5/8"
②	Refrigerant liquid line (narrow tube)	Main	O.D. 3/8"
		Branch	O.D. 1/4"
③	Drain connection		
④	Power supply		

# Outdoor Unit: C4822N



### 3. REFRIGERANT FLOW DIAGRAM

RS2422A + RS2422B / C4822N

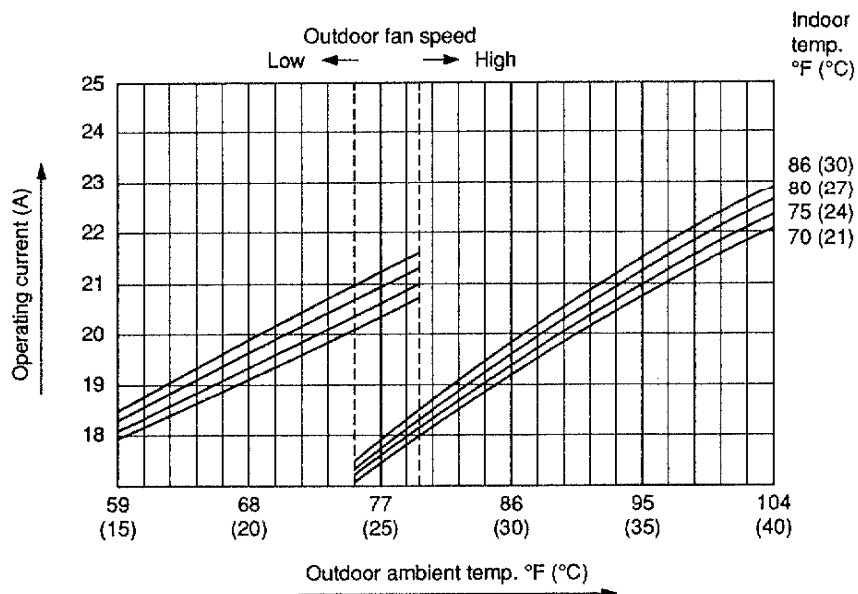


## 4. PERFORMANCE CHARTS

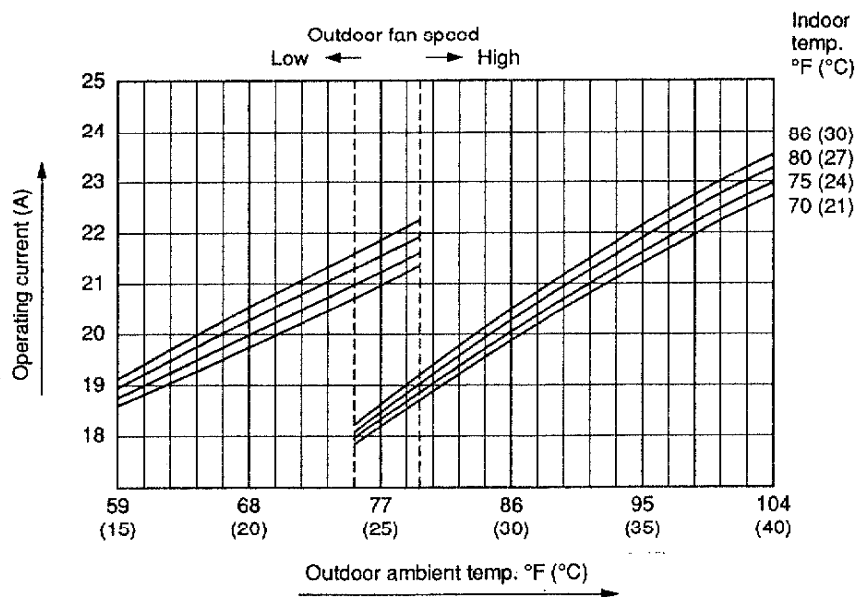
### 4-1. Operating Current

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

230V



208V

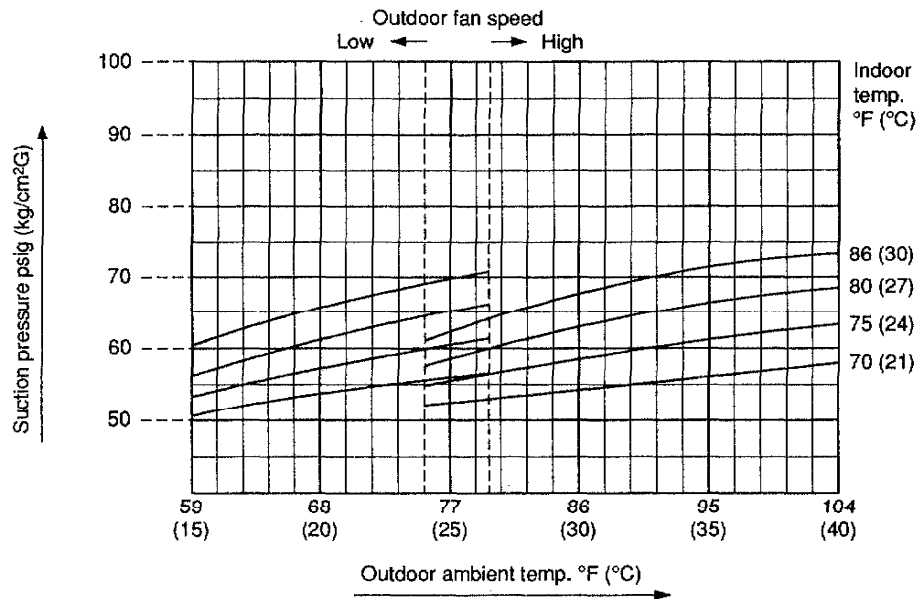


## 4-2. Operating Pressure

### ● Low Pressure

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

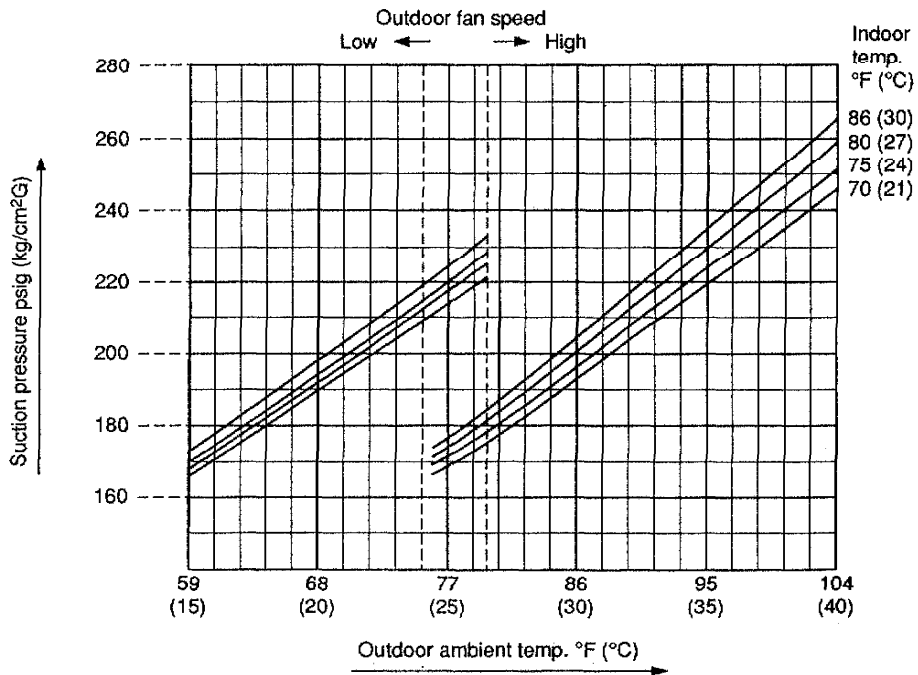
230/208V



### ● High Pressure

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

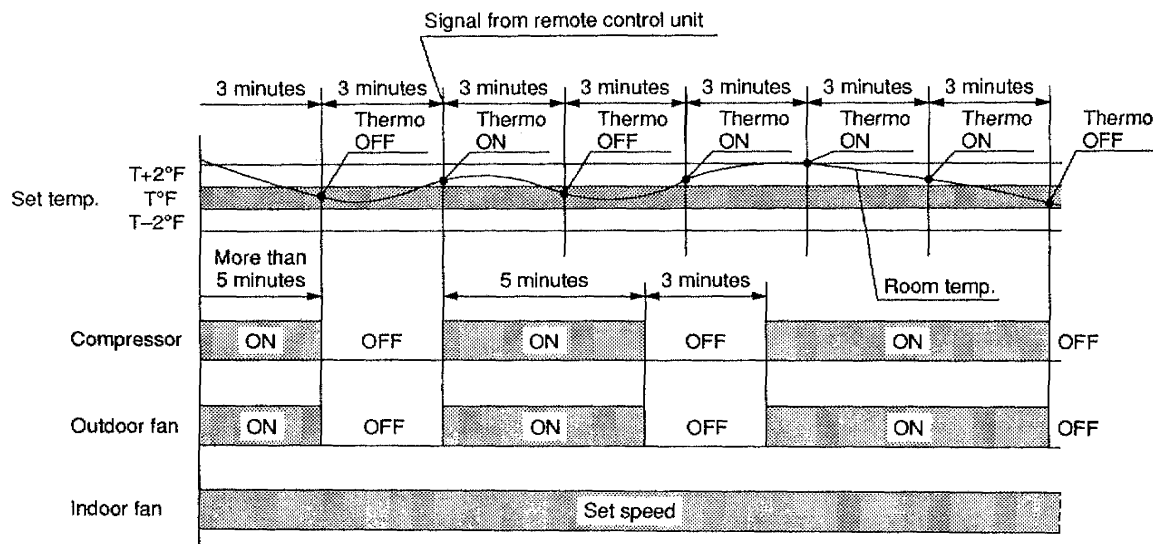
230/208V



## 5. FUNCTION

### 5-1. Room Temperature Control

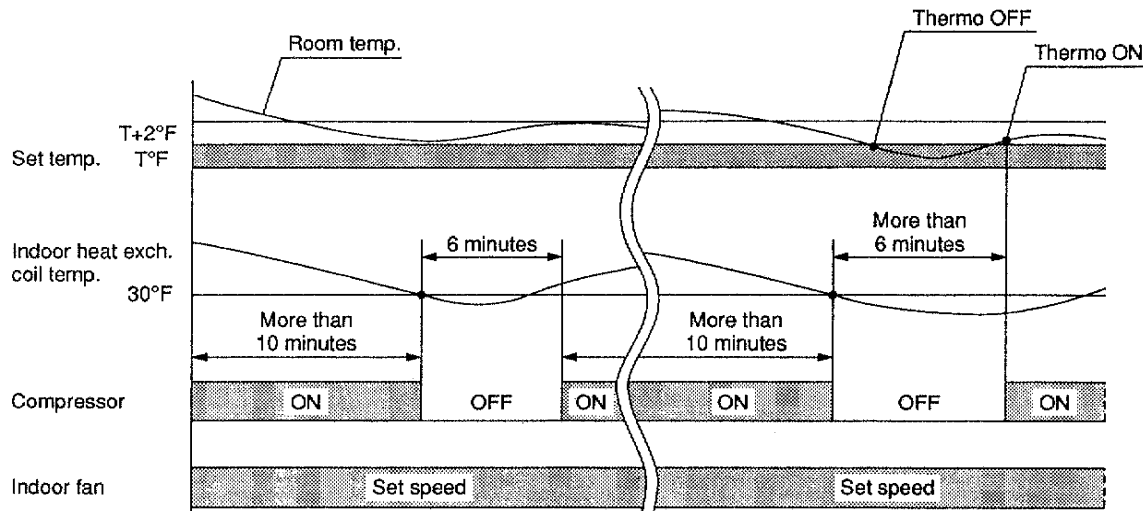
- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 3 minutes by the remote control unit to the controller in the indoor unit.



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

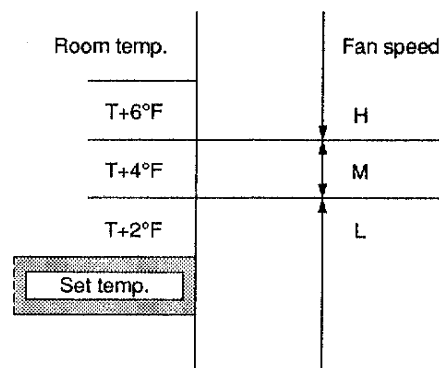
## 5-2. Freeze Prevention

- 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.

- **Schematic Diagram**

OUTDOOR UNIT CA822N

INDOOR UNIT RS2422A

POWER SUPPLY

INDOOR UNIT RS2422B

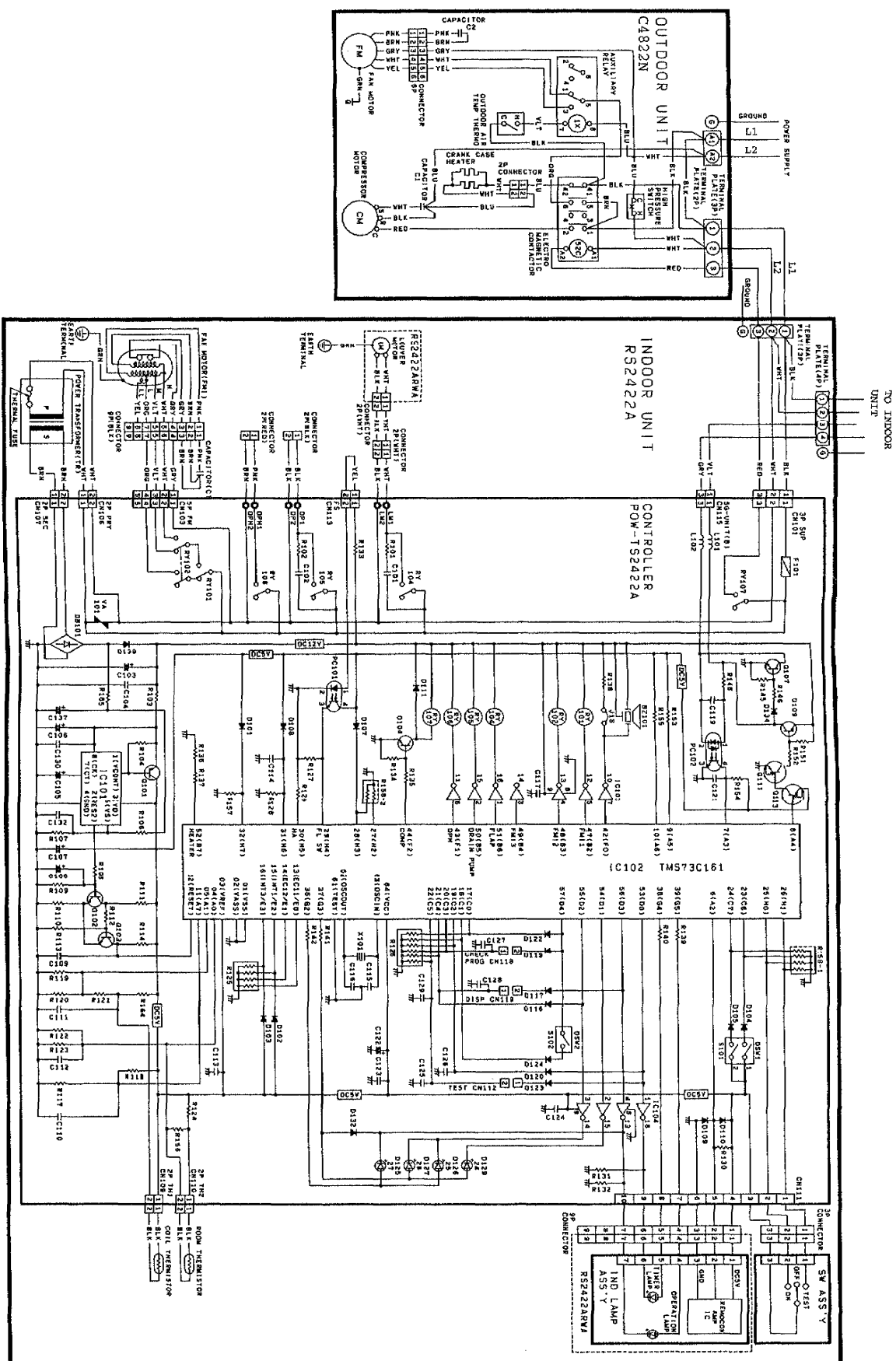
POW-TS2422A

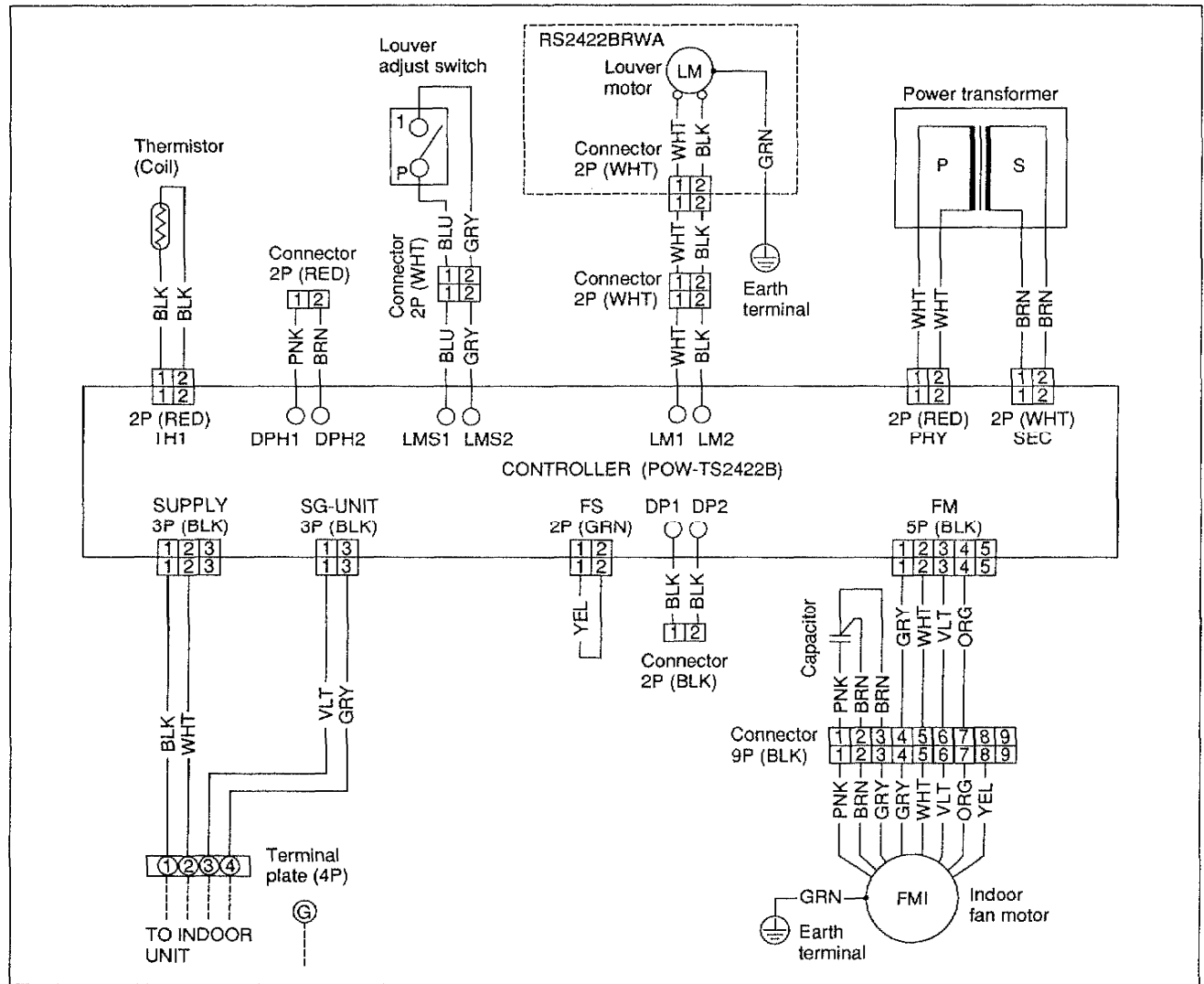
POW-TS2422B

Symbol	Description	Symbol	Description	Symbol	Description
OUTDOOR UNIT	GREEN	INDOOR UNIT	TS242A	INDOOR UNIT	TS242B
CH	GRAN CASE HEATER	LM	LOUVER MOTOR	LM	LOUVER MOTOR
CM	COMPRESSOR MOTOR	PH	DEW PROOF HEATER	PH	DEW PROOF HEATER
QC	COMPRESSOR MOTOR INTERNAL PROTECTOR	PM	INDOOR FAN MOTOR	PM	INDOOR FAN MOTOR
2S	OUTDOOR AIR TEMP. THERMOSTAT	PH	INDOOR FAN MOTOR INTERNAL PROTECTOR	PH	INDOOR FAN MOTOR INTERNAL PROTECTOR
IX	AUXILIARY RELAY	C	CAPACITOR	C	CAPACITOR
PMO	OUTDOOR FAN MOTOR	TR	TRANSFORMER	TR	TRANSFORMER
4FO	OUTDOOR FAN MOTOR INTERNAL PROTECTOR	TH	THERMISTOR (COIL TEMP. SENSOR)	TH	THERMISTOR (COIL TEMP. SENSOR)
CI, C2	CAPACITOR	TH2	THERMISTOR ROOM TEMP. SENSOR	SW1	LOUVER ADJUST SWITCH
6PH	HIGH PRESS. RE. SWITCH	IND	IND LAMP ASS Y IND-1S242	FW-1S242B	CONTROLLER PCB ASS Y
2S	ELECTROMAGNETIC CONTACTOR	SW	SWITCH ASS Y SW-1S242	7	FUSE 250V, 1A
		RC3	WIRELESS REMOTE CONTROL UNIT (CS-RE341M)	4	VARIABLE
		FW-1S242A	CONTROLLER PCB ASS Y	3D	BRIDGE DIODE
		F	FUSE 250V, 1A	3	CAPACITOR
		V	VARIABLE	31	RESISTOR
		BD	BRIDGE DIODE	311, 2	AUXILIARY RELAY
		C	CAPACITOR	314, 5, 6	AUXILIARY RELAY
		R3	RESISTOR		
		RY1, 2	AUXILIARY RELAY		
		RY4, 5, 6, 7	AUXILIARY RELAY		
		Q1	TRANSISTOR		

# ● Electric Wiring Diagram (PCB Assy)

RS2422A / C4822N





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	DSF10TG
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

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	2SA608-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	VARIATOR	SNR681KD14
X101	CRYSTAL	CSA-4MG

## POW-TS2422B

Symbol	Description	Specifications
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
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
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	LA5693D
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)	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 (CARBON)	10KΩ ±5% 1/4W
R107	RESISTOR (CARBON)	3.6KΩ ±5% 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)	2KΩ ±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)	3.6KΩ ±1% 1/4W
R157	RESISTOR (CARBON)	56KΩ ±5% 1/4W
R158	RESISTOR	56KΩ - 6
R164	RESISTOR (METAL)	10KΩ ±1% 1/4W
RY101	RELAY	LZG-12HE
RY102	RELAY	VB12TBU
RY104	RELAY	LZG-12HE
RY105	RELAY	LZG-12HE
RY106	RELAY	LZG-12HE
VA101	VARISTOR	5NR601KD14
X101	CRYSTAL	CSA-4MG

## 7. TROUBLESHOOTING

### 7-1. Check before and after troubleshooting

#### (1) Check power supply wiring.

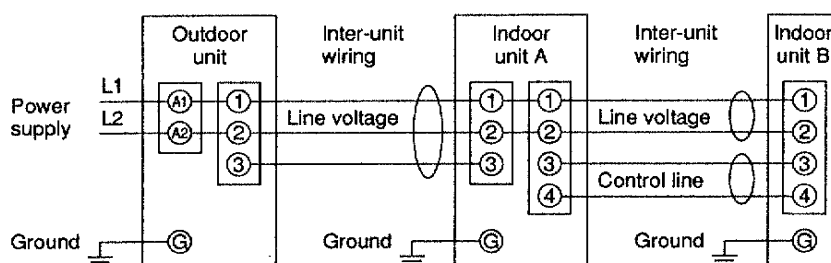
- Check that power supply wires are correctly connected to terminals No. A1 and No. A2 on the 2P terminal plate in the outdoor unit.

#### (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**.

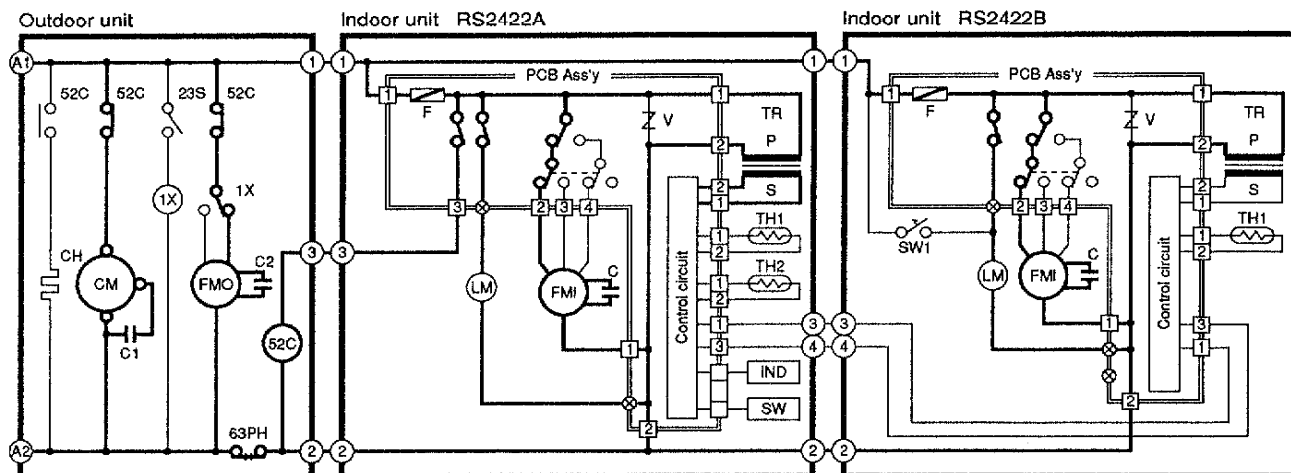
#### (4) Check lead wires and connectors in indoor and outdoor units.

- 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  
 SWEEP button ..... ON  
 Indoor fan speed ..... HIGH  
 Thermo. .... ON  
 Outdoor air temperature..... above 79°F



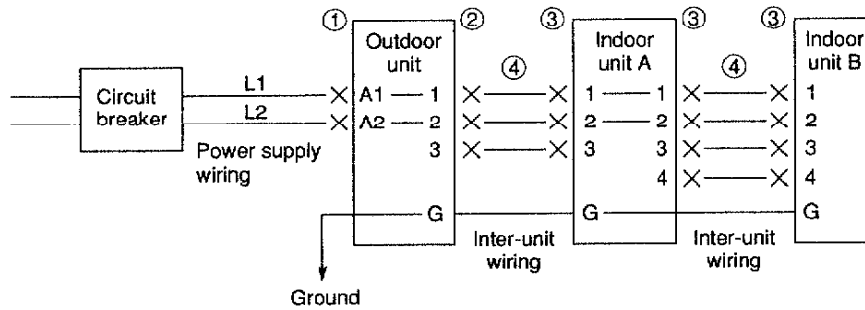
## 7-2. Air conditioner does not operate.

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

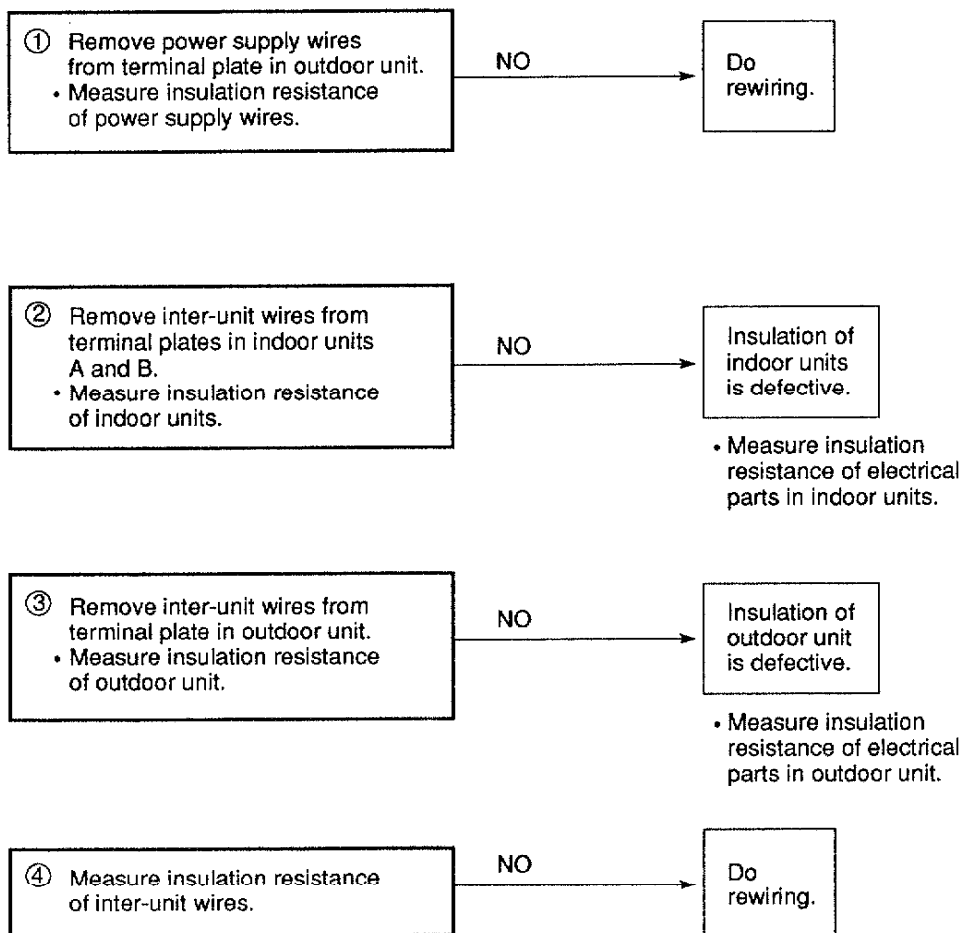
(a) When circuit breaker is set to ON, it trips in a few moments (resetting is not possible).

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

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



\* Set circuit breaker to OFF.



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

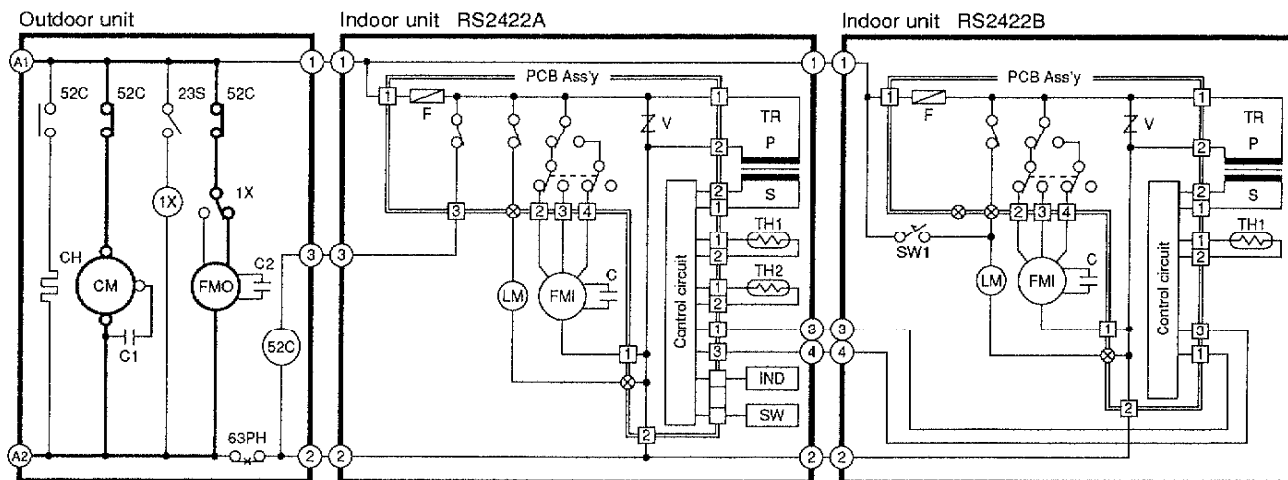
- There is a possibility of short circuit.

• Check capacity of circuit breaker.  
Is capacity of circuit breaker suitable?

Replace it with suitable one (larger capacity).

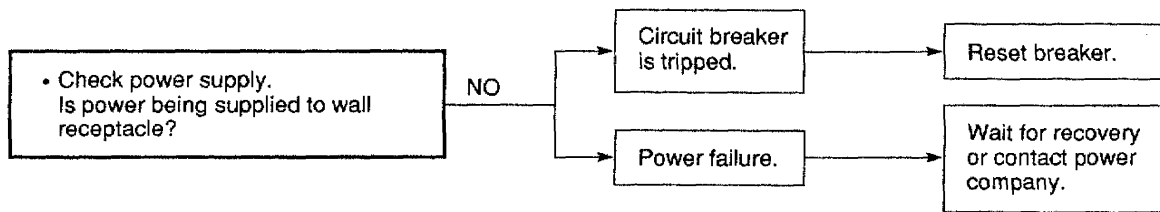
• Measure resistance of compressor motor winding.

• Measure resistance of outdoor fan motor winding.

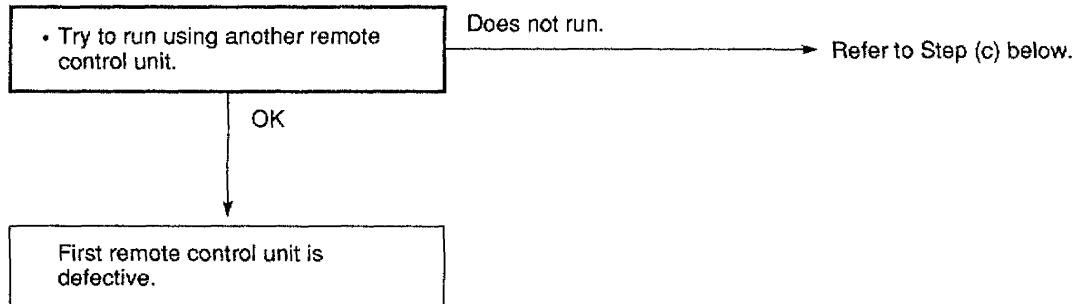


**(2) Neither indoor units nor outdoor unit run.**

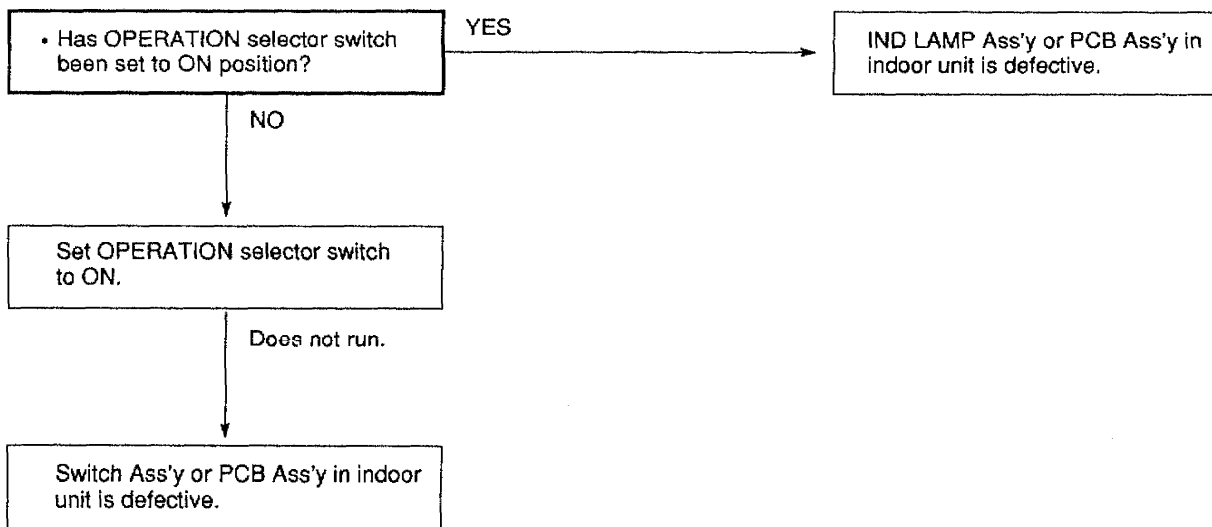
**(a) Power is not supplied.**



**(b) Check remote control unit.**

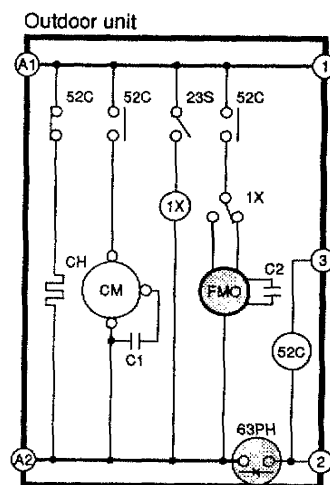
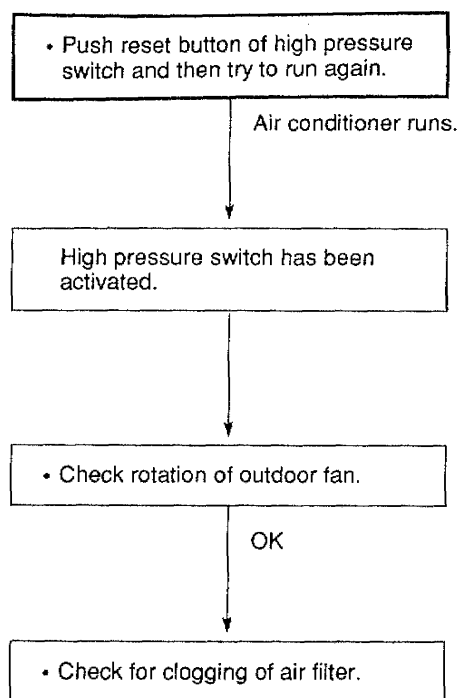


**(c) Check OPERATION selector switch in indoor unit A.**

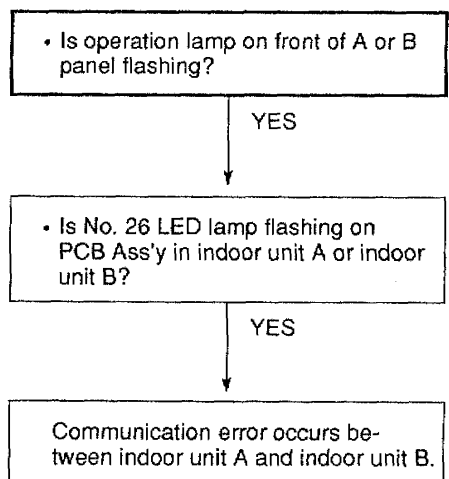


(Neither indoor units nor outdoor unit run.) (cont'd)

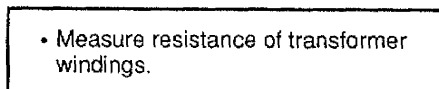
**(d) Check high pressure switch in outdoor unit.**



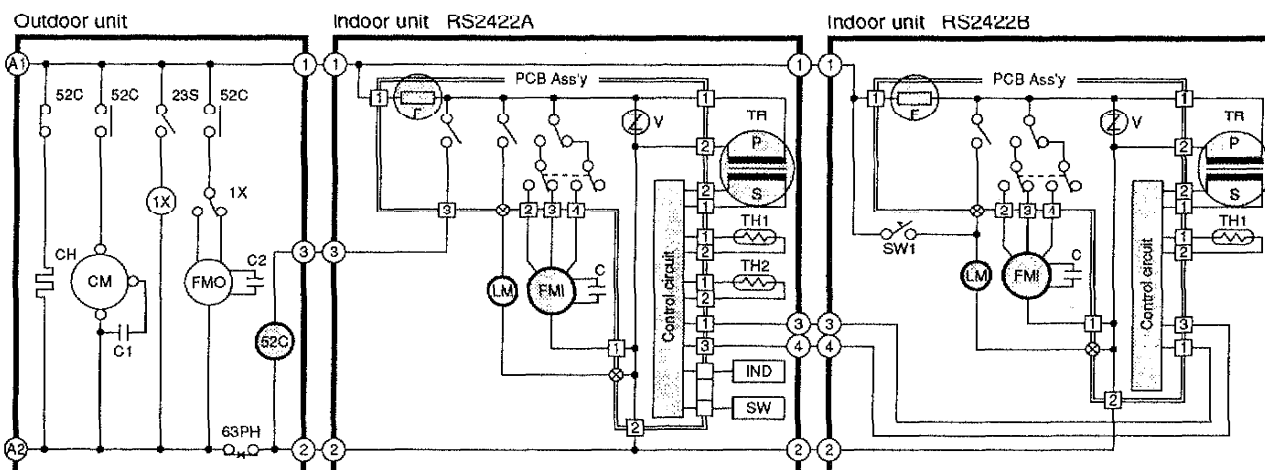
**(e) Check communication between indoor unit A and indoor unit B.**



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

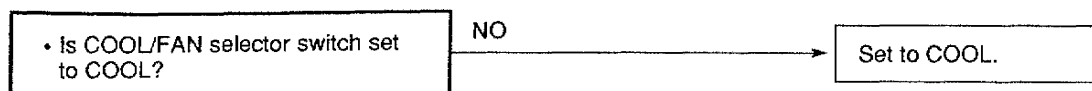


● Check fuse on PCB Ass'y in indoor unit A and indoor unit B.



**(3) Only outdoor unit does not run.**

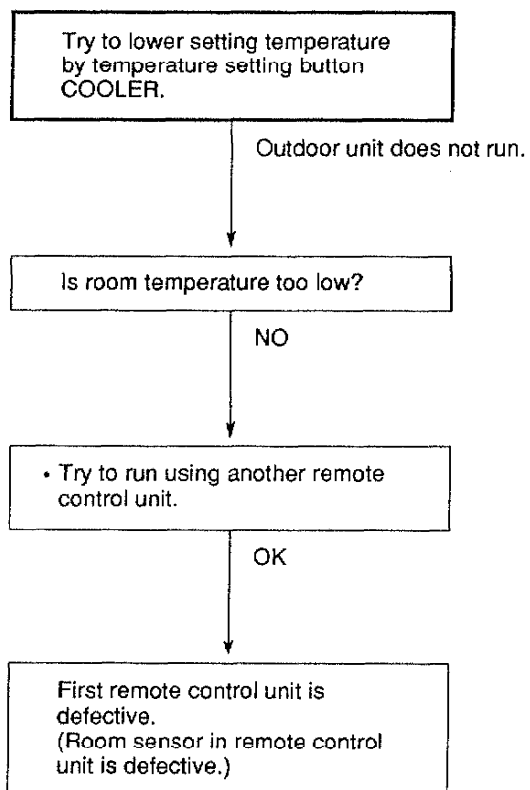
**(a) Check COOL/FAN selector switch of remote control unit.**



**(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**



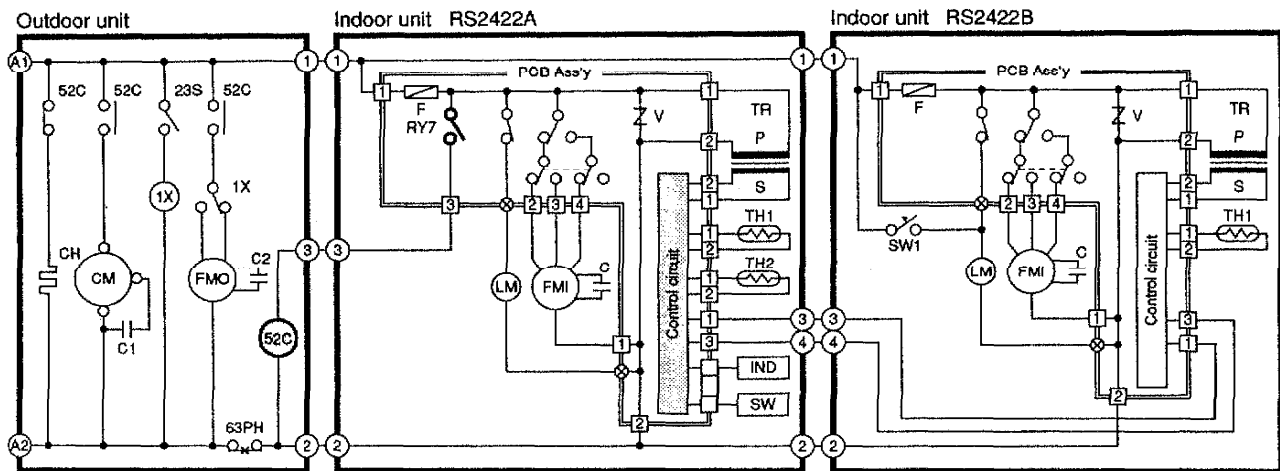
(Only outdoor unit does not run.) (cont'd)

(c) Check electro-magnetic contactor.

- Measure coil resistance of electro-magnetic contactor.

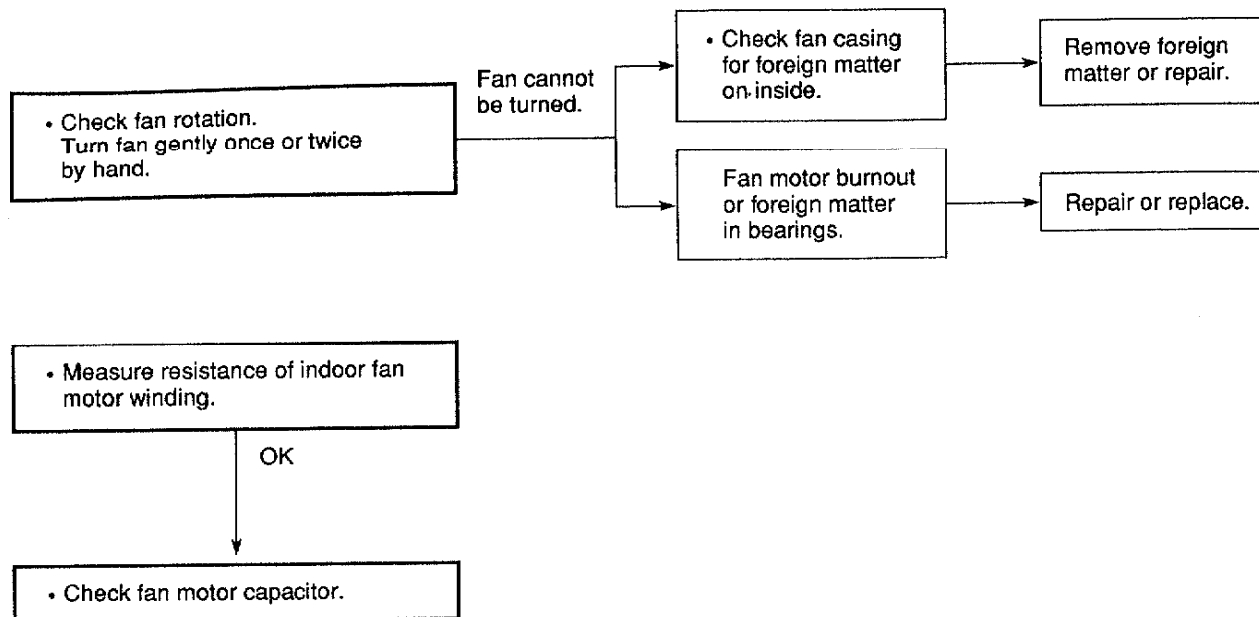
OK

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

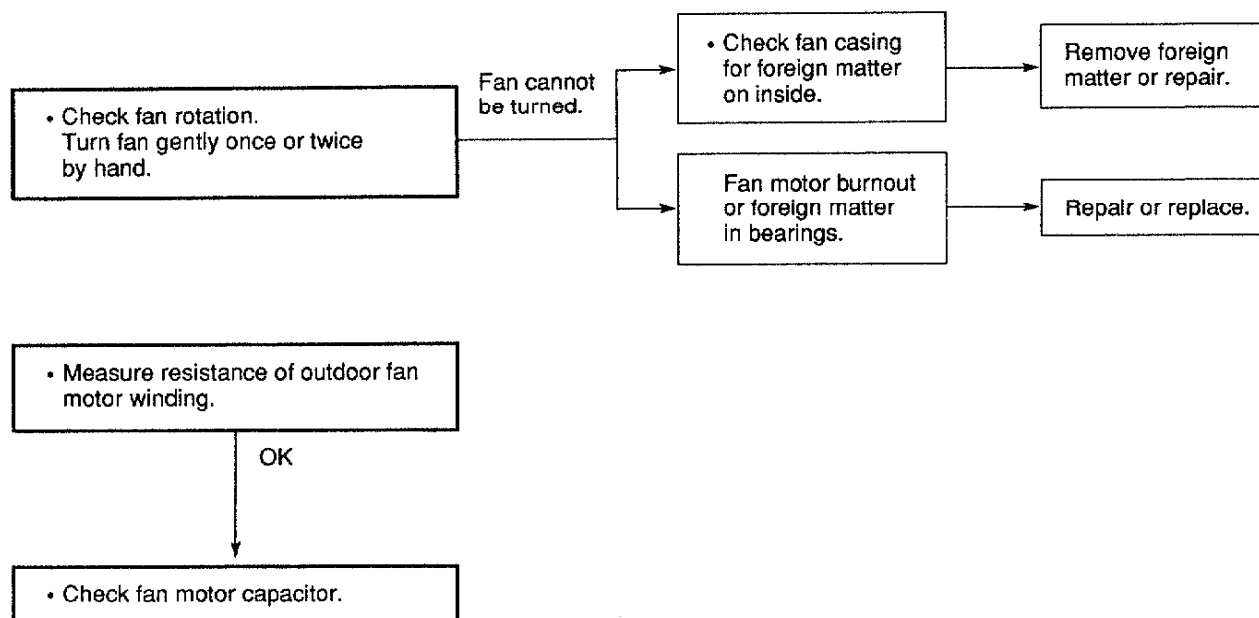


### 7-3. A particular component of air conditioner does not operate.

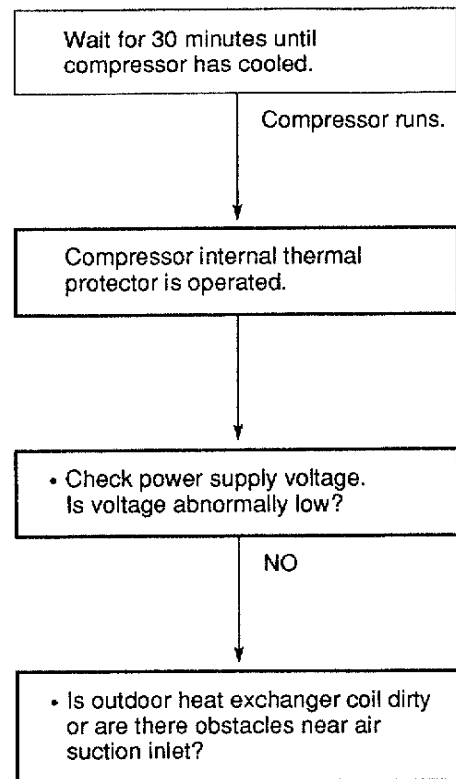
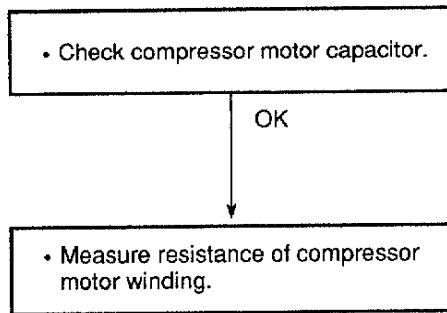
#### (1) Only indoor fan does not run.



#### (2) Only outdoor fan does not run.

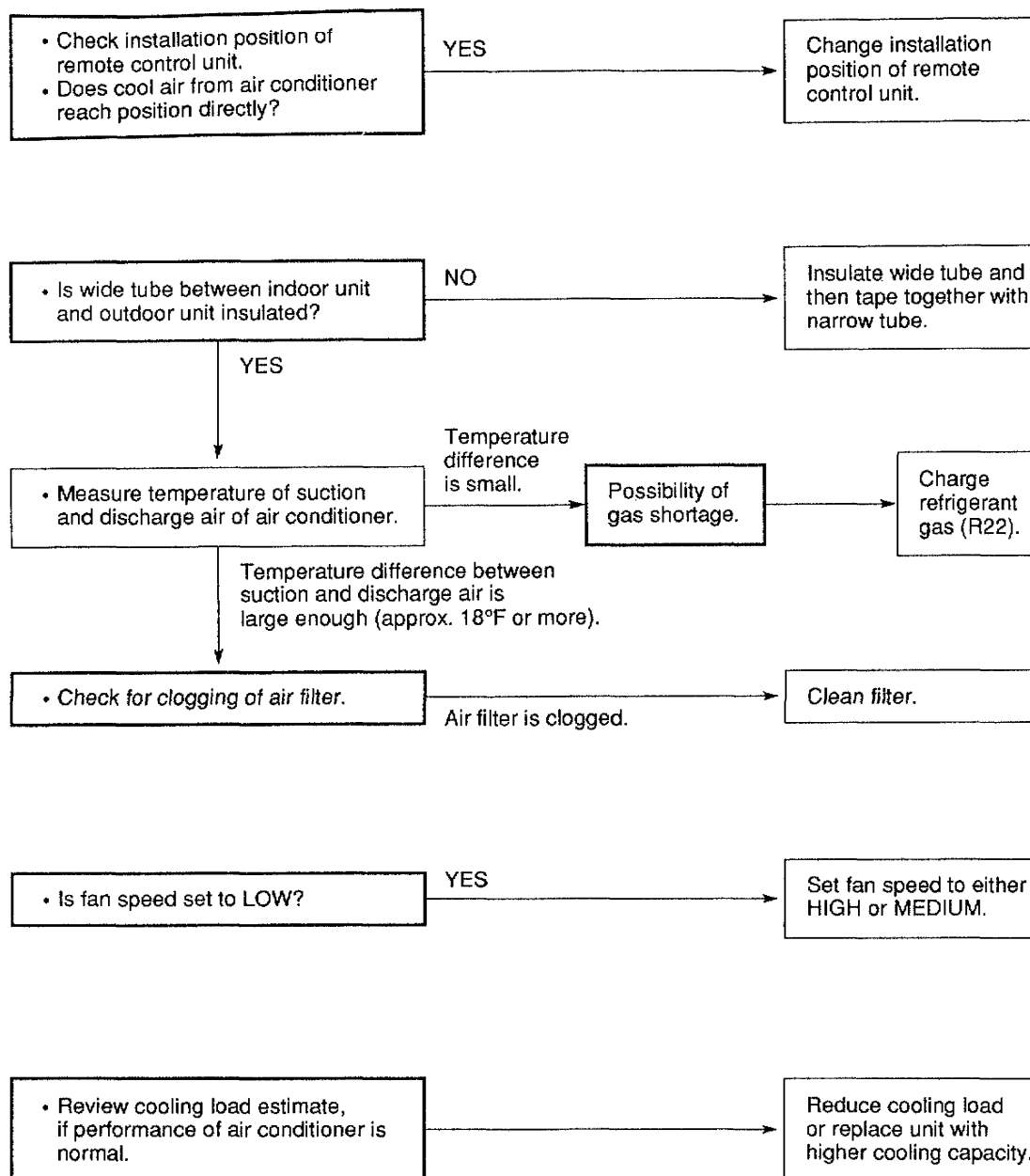


**(3) Only compressor does not run.**

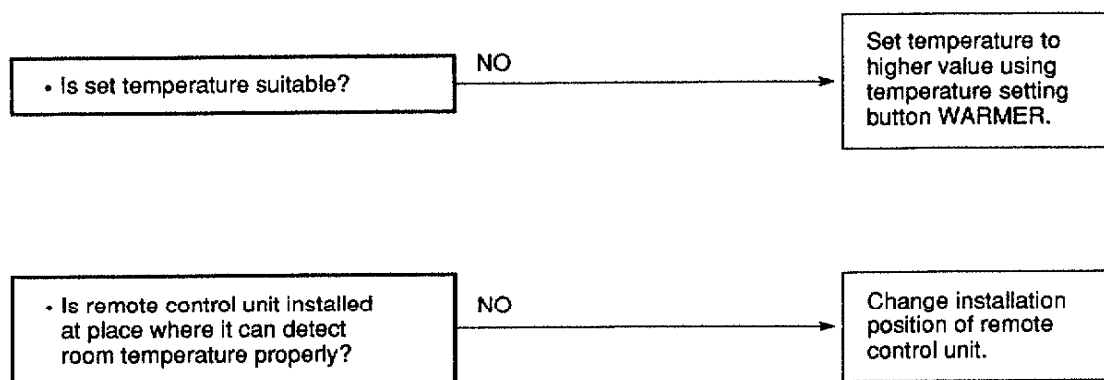


## 7-4. Air conditioner operates, but abnormalities occur.

### (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 MΩ.

#### (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.

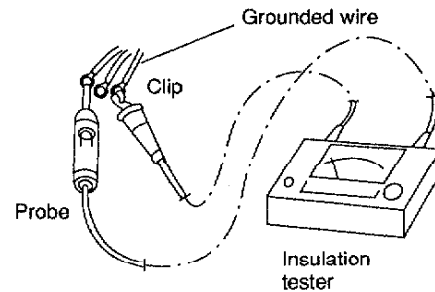


Fig. 1

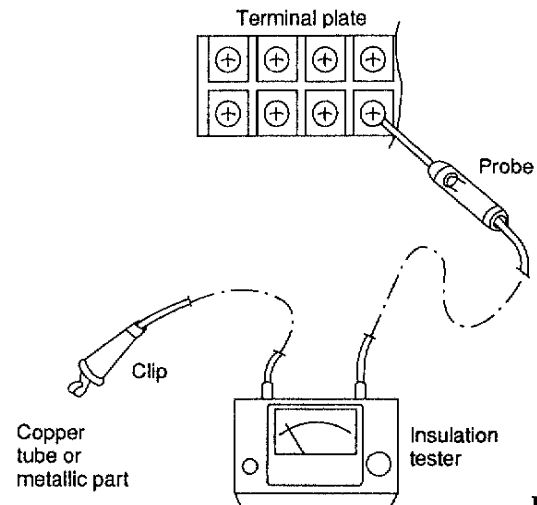


Fig. 2

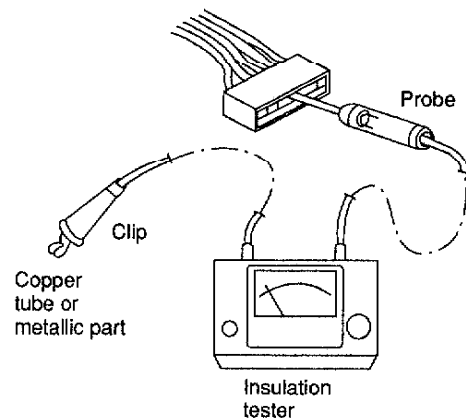


Fig. 3

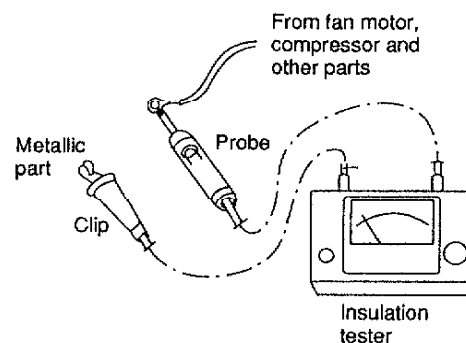


Fig. 4

## 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

1. Remove the PCB Ass'y from the electrical component box.
2. 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)
3. 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.

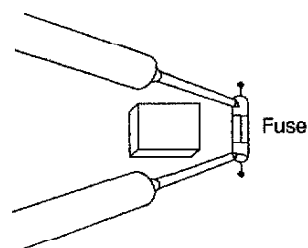


Fig. 5

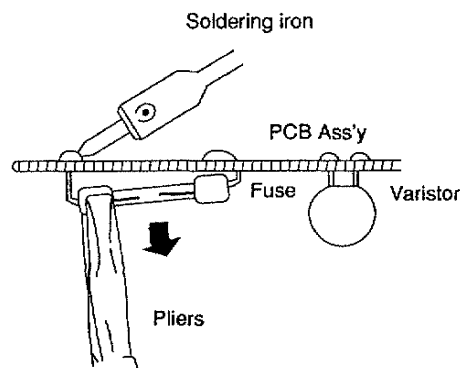


Fig. 6

## 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.

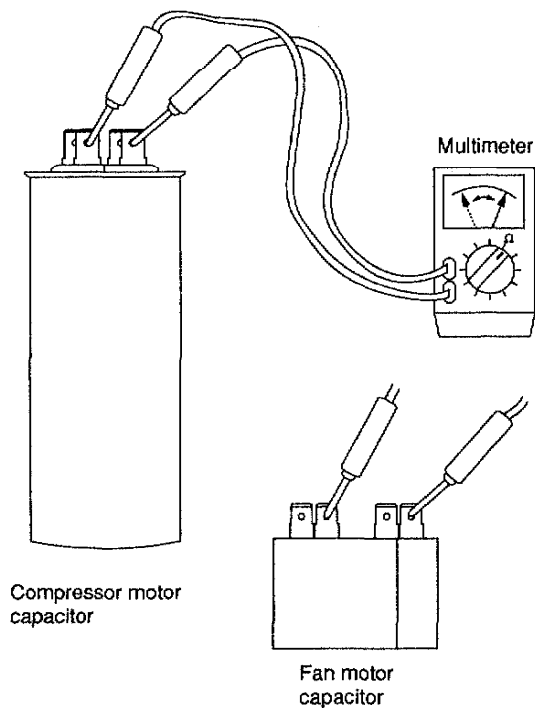


Fig. 7

8-4. Appearance of Electrical Parts

(1) Auxiliary Relay

MY2F-T1-USTS

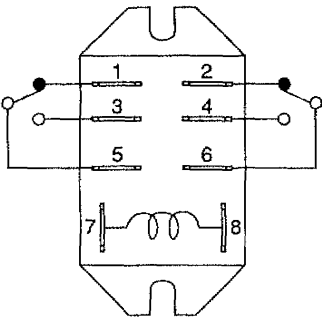


Fig. 8

(2) High Pressure Switch

FTB-2UC01

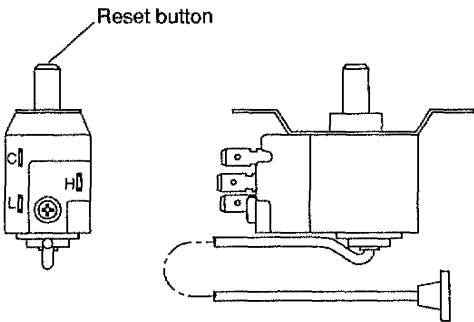


Fig. 9

(3) Outdoor Air Temperature Thermostat

YTB-4U201F

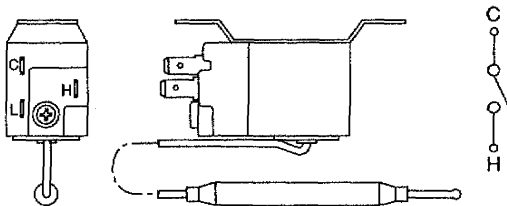


Fig. 10

