

# TECHNICAL DATA & SERVICE MANUAL

**SANYO**

FILE NO.

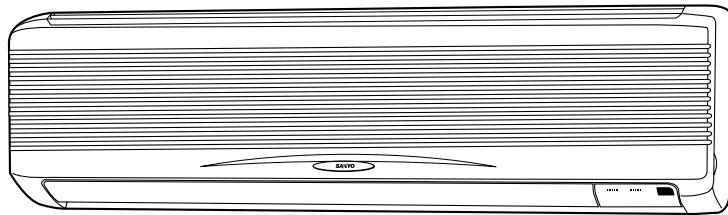
**KS2432A / C2432, CL2432**

Destination: U.S.A.

## SPLIT SYSTEM AIR CONDITIONER

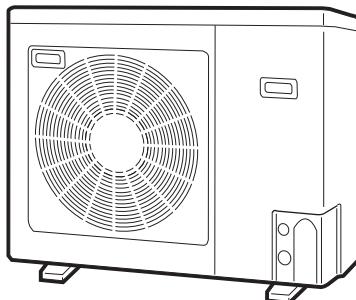
INDOOR MODEL No.	PRODUCT CODE No.	OUTDOOR MODEL No.	PRODUCT CODE No.
KS2432A	852 076 39	C2432	854 013 43
		CL2432	854 013 39

Indoor Unit



KS2432A

Outdoor Unit



C2432  
CL2432

## 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 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

- Ventilate the room well, in the event that refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- 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 when installation is finished. Check that no metal scraps or bits of wiring have been left inside the unit.



**CAUTION**

- Ventilate any enclosed areas when installing or testing the refrigeration system. Contact of refrigerant gas with fire or heat can produce poisonous gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

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## **1. OPERATING RANGE**

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### **KS2432A / C2432**

<b>Temperature</b>	<b>Indoor Air Intake Temp.</b>	<b>Outdoor Air Intake Temp.</b>
Maximum	95 °F DB / 71 °F WB	115 °F DB
Minimum	67 °F DB / 57 °F WB	67 °F DB

### **KS2432A / CL2432**

<b>Temperature</b>	<b>Indoor Air Intake Temp.</b>	<b>Outdoor Air Intake Temp.</b>
Maximum	95 °F DB / 71 °F WB	115 °F DB
Minimum	67 °F DB / 57 °F WB	0 °F DB

## 2. SPECIFICATIONS

---

### (1) Unit Specifications

MODEL No.	Indoor Unit		KS2432A			
	Outdoor Unit		C2432			
<b>POWER SOURCE</b>			230 - 208 V / 1 Phase / 60 Hz			
<b>PERFORMANCE</b>			Cooling			
Capacity	BTU / h	22,800	22,400			
	kW	6.68	6.56			
Air circulation (Hi)	cu.ft. / min.	650 (1,110 m³/h)				
Moisture removal (High)	Pints / h	7.2 (3.4 litter/h)				
<b>ELECTRICAL RATINGS</b>						
Voltage rating	V	230	208			
Available voltage range	V	187 - 253				
Running amperes*	A	10.9	11.5			
Max. running amperes**	A	12.5	13.5			
Power input	W	2,340	2,300			
Power factor	%	93	96			
S.E.E.R	BTU / Wh	10.0	10.0			
Max. starting amperes	A	68	62			
<b>FEATURES</b>						
Controls	Microprocessor					
Timer	1-hour OFF / 12-hours ON or OFF					
Fan speed Indoor / Outdoor	3 and Automatic control / 2 (Auto)					
Air deflection	Horizontal / Vertical					
Air filter	Washable, easy access					
Remote controller (Accessory)	RCS - 1S2U					
Refrigerant control	Capillary tube					
Refrigerant tubing connections	Flare type					
Compressor	Rotary					
Operation sound	Indoor - Hi / Me / Lo Outdoor - Hi	dB - A dB - A	47 / 42 / 38 53			
<b>REFRIGERANT TUBING</b>						
Limit of tubing length	ft. (m)	132 (40)				
Limit of tubing length at shipment	ft. (m)	25 (7.6)				
Limit of elevation difference between the two units	ft. (m)	Outdoor unit is higher than indoor unit: 50 (15) Outdoor unit is lower than indoor unit: 50 (15)				
Refrigerant tube outer diameter	Narrow tube Wide tube	in. (mm) in. (mm)	3 / 8 (9.52) 3 / 4 (19.05)			
Refrigerant amount at shipment	lbs. (kg)	R22 : 5.3 (2.4)				
<b>DIMENSIONS &amp; WEIGHT</b>			Indoor unit	Outdoor unit		
Unit dimensions	Height	in. (mm)	13 (330)	28-15/16 (735)		
	Width	in. (mm)	44-7/8 (1,140)	37 (940)		
	Depth	in. (mm)	8-31/32 (228)	13-3/8 (340)		
Package dimensions	Height	in. (mm)	12-25/32 (325)	32-17/32 (826)		
	Width	in. (mm)	48-15/32 (1,231)	40 (1,016)		
	Depth	in. (mm)	15-31/32 (406)	16-12/32 (416)		
Net weight	lbs. (kg)	40 (18)	150 (68)			
Shipping weight	lbs. (kg)	44 (20)	165 (75)			
Shipping volume	cu.ft. (m³)	5.7 (0.162)	12.3 (0.349)			

Cooling :

DATA SUBJECT TO CHANGE WITHOUT NOTICE

Rating conditions (\*) : Indoor air temperature 80 °F DB / 67 °F WB, Outdoor air temperature 95 °F DB / 75 °F WB  
Full load conditions (\*\*) : Indoor air temperature 80 °F DB / 67 °F WB, Outdoor air temperature 115 °F DB

## 2. SPECIFICATIONS

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### (1) Unit Specifications

MODEL No.	Indoor Unit		KS2432A			
	Outdoor Unit		CL2432			
<b>POWER SOURCE</b>			230 - 208 V / 1 Phase / 60 Hz			
<b>PERFORMANCE</b>			Cooling			
Capacity	BTU / h	22,800	22,400			
	kW	6.68	6.56			
Air circulation (Hi)	cu.ft. / min.	650 (1,110 m³/h)				
Moisture removal (High)	Pints / h	7.2 (3.4 liter/h)				
<b>ELECTRICAL RATINGS</b>						
Voltage rating	V	230	208			
Available voltage range	V	187 - 253				
Running amperes*	A	10.9	11.5			
Max. running amperes**	A	12.5	13.5			
Power input	W	2,340	2,300			
Power factor	%	93	96			
S.E.E.R	BTU / Wh	10.0	10.0			
Max. starting amperes	A	68	62			
<b>FEATURES</b>						
Controls	Microprocessor					
Timer	1-hour OFF / 12-hours ON or OFF					
Fan speed Indoor / Outdoor	3 and Automatic control / 3 (Auto)					
Air deflection	Horizontal / Vertical					
Air filter	Washable, easy access					
Remote controller (Accessory)	RCS - 1S2U					
Refrigerant control	Capillary tube					
Refrigerant tubing connections	Flare type					
Compressor	Rotary					
Operation sound	Indoor - Hi / Me / Lo Outdoor - Hi	dB - A dB - A	47 / 42 / 38 53			
<b>REFRIGERANT TUBING</b>						
Limit of tubing length	ft. (m)	132 (40)				
Limit of tubing length at shipment	ft. (m)	25 (7.6)				
Limit of elevation difference between the two units	ft. (m)	Outdoor unit is higher than indoor unit: 50 (15) Outdoor unit is lower than indoor unit: 50 (15)				
Refrigerant tube outer diameter	Narrow tube Wide tube	in. (mm) in. (mm)	3 / 8 (9.52) 3 / 4 (19.05)			
Refrigerant amount at shipment	lbs. (kg)	R22 : 5.5 (2.5)				
<b>DIMENSIONS &amp; WEIGHT</b>						
Unit dimensions	Height	in. (mm)	13	(330)		
	Width	in. (mm)	44-7/8	(1,140)		
	Depth	in. (mm)	8-31/32	(228)		
Package dimensions	Height	in. (mm)	12-25/32	(325)		
	Width	in. (mm)	48-15/32	(1,231)		
	Depth	in. (mm)	15-31/32	(406)		
Net weight	lbs. (kg)	40	(18)	150 (68)		
Shipping weight	lbs. (kg)	44	(20)	165 (75)		
Shipping volume	cu.ft. (m³)	5.7	(0.162)	12.3 (0.349)		

Cooling :

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Rating conditions (\*) : Indoor air temperature 80 °F DB / 67 °F WB, Outdoor air temperature 95 °F DB / 75 °F WB  
 Full load conditions (\*\*) : Indoor air temperature 80 °F DB / 67 °F WB, Outdoor air temperature 115 °F DB

## **2. SPECIFICATIONS**

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### **(2) Major Component Specifications**

#### **(A) Indoor Unit**

<b>MODEL No.</b>		<b>KS2432A</b>	
<b>Source</b>		<b>230 - 208 V / 1 phase / 60 Hz</b>	
<b>Remote controller (Accessory)</b>		<b>RCS - 1S2U</b>	
<b>Controller P. C. B Ass'y</b>		<b>POW - KS2452</b>	
Control circuit fuse		250 V, 3 A	
<b>Fan</b>			
<b>Type</b>		Cross-flow	
<b>Number ... Dia. and length</b>	in. (mm)	1 ... O.D. 4 (100), L33-3/8 (847)	
<b>Fan motor</b>			
Model		KFG4X - 31B6P-S	
Source		230 - 208 V / 1 phase / 60 Hz	
No. of pole ... r.p.m. (230 V, High)	rpm	4 ... 1,324	
Nominal output	W	30	
Coil resistance (Ambient temperature 68 °F)	Ω	BRW - WHT : 161.2 , ORG - YEL : 26.9 WHT - VLT : 11.6 , YEL - BLK : 22.8 VLT - ORG : 68.7 , BLK - PNK : 115.2	
<b>Safety device</b>		Internal	
Operating temperature	Open °F	266 ± 9	
	Close °F	181 ± 27	
Run capacitor	VAC, µF	440 V, 1.2 µF	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows ... Fins per inch		2 ... 19.5	
Face area	ft. <sup>2</sup> (m <sup>2</sup> )	2.30 (0.214)	
<b>Flap Motor</b>			
Type		Stepping motor	
Model ... Q'ty		MP24GA2 ... 2	
Step angle		5.625 deg / step	
Rating	V	DC 12 V	
Coil resistance (Ambient temperature 77 °F)	Ω	400 ± 7 %	

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## 2. SPECIFICATIONS

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### (2) Major Component Specifications

#### (B) Outdoor Unit

<b>MODEL No.</b>	C2432		
<b>Source</b>	230 - 208 V / 1 phase / 60 Hz		
<b>Compressor</b>	Rotary (Hermetic)		
Model		C - 2R170H6S	
Source		230 - 208 V / 1 phase / 60 Hz	
Nominal output	W	1,700	
Compressor oil	cc	800	
Coil resistance (Ambient temperature 77 °F)	Ω	C - R : 0.885 , C - S : 1.773	
Safety device		Internal type	
Overload relay models		—	
Operating temperature	Open °F	297 ± 9	
	Close °F	198 ± 20	
Operating ampere (at 77 °F)	A	—	
Run capacitor	VAC, μF	400 V, 40 μF	
<b>Refrigerant amount charged at shipment</b>	lbs. (kg)	R22 : 5.3 (2.4)	
<b>High pressure switch</b>		ACB - 1UB11	
Set pressure	OFF kg/cm²	30 <sup>+2.0</sup> <sub>0.5</sub>	
	ON kg/cm²	24 ± 2.0	
<b>Fan</b>		Propeller	
Number...diameter	in. (mm)	1 ... 18-3/32 (460)	
<b>Fan speeds</b>		2 (AUTO)	
<b>Fan motor</b>			
Model		KFC6T - 91D6P	
Source		230 - 208 V / 1 phase / 60 Hz	
No. of pole ... rpm (230 V, High)	rpm	6 ... 879	
Nominal output	W	110	
Coil resistance (Ambient temperature 68 °F)	Ω	BRW - WHT : 67.14 , VLT - YEL : 11.42 WHT - VLT : 64.85 , YEL - PNK : 10.60	
Safety device			
Operating temperature	Open °F	248 ± 41	
	Close °F	171 ± 59	
Run capacitor	VAC, μF	440 V, 4 μF	
<b>Heat exchanger</b>			
Coil		Aluminum plate fin / Copper tube	
Rows ... Fins per inch		2 ... 14.1	
Face area	ft. <sup>2</sup> (m <sup>2</sup> )	6.63 (0.616)	

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## 2. SPECIFICATIONS

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### (2) Major Component Specifications

#### (B) Outdoor Unit

<b>MODEL No.</b>	<b>CL2432</b>				
<b>Source</b>	<b>230 - 208 V / 1 phase / 60 Hz</b>				
<b>Controller P.C.B. Ass'y</b>	CR - CL2432 (Microprocessor)				
Control circuit fuse	250 V, 3 A				
<b>Compressor</b>	Rotary (Hermetic)				
Model	C - 2R170H6S				
Source	230 - 208 V / 1 phase / 60 Hz				
Nominal output	W	1,700			
Compressor oil	cc	800			
Coil resistance (Ambient temperature 77 °F)	Ω	C - R : 0.885 , C - S : 1.773			
Safety device	Internal type				
Overload relay models	—				
Operating temperature	Open °F	297 ± 9			
	Close °F	198 ± 20			
Operating ampere (at 77 °F)	A	—			
Run capacitor	VAC, μF	400 V, 40 μF			
Crank case heater	V, W	230 V, 30 W			
<b>Refrigerant amount charged at shipment</b>	lbs. (kg)	R22 : 5.5 (2.5)			
<b>High pressure switch</b>	ACB - 1UB11				
Set pressure	OFF kg/cm²	30 + 2.0 + 0.5			
	ON kg/cm²	24 ± 2.0			
<b>Fan</b>	Propeller				
Number...diameter	in. (mm)	1 ... 18 - 3/32 (460)			
<b>Fan speeds</b>	3 (AUTO)				
<b>Fan motor</b>					
Model	KFC6T - 91D6P				
Source	230 - 208 V / 1 phase / 60 Hz				
No. of pole .... rpm (230 V, High)	6 ... 879				
Nominal output	W	110			
Coil resistance (Ambient temperature 68 °F)	Ω	BRN - WHT : 67.14 , VLT - YEL : 11.42 WHT - VLT : 64.85 , YEL - PNK : 10.60			
Safety device	Internal type				
Operating temperature	Open °F	248 ± 41			
	Close °F	171 ± 59			
Run capacitor	VAC, μF	440 V, 4 μF			
<b>Heat exchange</b>					
Coil	Aluminum plate fin / Copper tube				
Rows .... Fins per inch	2 ... 14.1				
Face area	ft. <sup>2</sup> (m <sup>2</sup> )	6.63 (0.616)			

DATA SUBJECT TO CHANGE WITHOUT NOTICE

## **2. SPECIFICATIONS**

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### **(3) Other Component Specifications**

#### **(A) Indoor Unit**

MODEL No.		KS2432A
<b>Power Transformer</b>		ATR - T5
Rated	Primary	AC 230 V, 60 Hz
	Secondary	AC19 V, 0.5 A
	Capacity	9.5 VA
Coil resistance (Ambient temperature 77 °F)	Ω	Primary (WHT - WHT) : 457.5 Secondary (BRN - BRN) : 3.9
Thermistor cut off temperature		277 °F
<b>Thermistor (Coil sensor)</b>		DTN - TKS131B
Coil resistance	kΩ	32 °F : 15.0 ± 2 %
<b>Thermistor (Room sensor)</b>		DTN - TKS128B
Coil resistance	kΩ	77 °F : 5.0 ± 3 %
<b>Lamp Ass'y</b>		IND - K301AH
<b>Flap Motor</b>		MP24GA2

## **2. SPECIFICATIONS**

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### **(3) Other Component Specifications**

#### **(A) Outdoor Unit**

MODEL No.		C2432
<b>Compressor Motor Magnetic Contactor</b>		FMCA - 1UL
Coil rated		AC 240 V, 60 Hz
Coil resistance (at 77 °F)	Ω	580 ± 15 %
Contact rated (Main)		AC 230 V, 20 A
Contact rated (Auxiliary)		AC 230 V, 3 A
<b>Power Relay</b>		HH62S
Coil rated		AC 240 V, 60 Hz
Coil resistance (at 77 °F)	kΩ	17.2
Contact rated		AC 220 V, 5 A
<b>Thermostat (Coil sensor)</b>		YTB - 4U305F
Operating Temperature	°F	79 ± 3 OFF 75 ± 3 ON
Contact rated		200 to 240 V, 1 A
<b>Thermistor (PTC)</b>		TDK - 101YV
Rated		
Max. voltage		AC 400 V
Max. ampere		11.5 A
Resistance (at 77 °F)	Ω	100 ± 30 %

## 2. SPECIFICATIONS

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### (3) Other Component Specifications

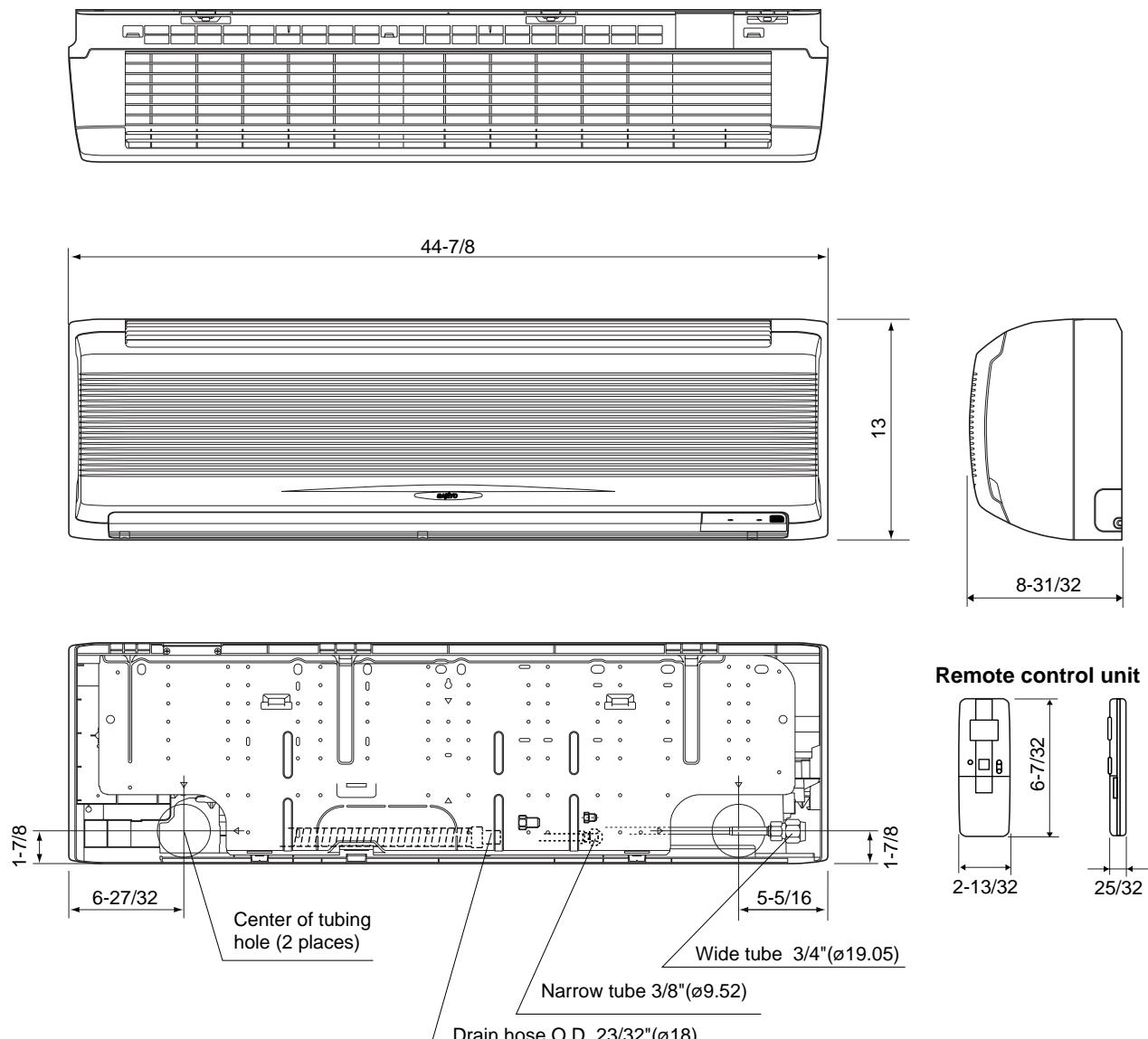
#### (B) Outdoor Unit

MODEL No.		CL2432	
<b>Compressor Motor Magnetic Contactor</b>		FMCA - 1UL	
Coil rated		AC 240 V, 60 Hz	
Coil resistance (at 77 °F)	Ω	580 ± 15 %	
Contact rated (Main)		AC 230 V, 20 A	
Contact rated (Auxiliary)		AC 230 V, 3 A	
<b>Power Relay</b>		HH62S	
Coil rated		AC 240 V, 60 Hz	
Coil resistance (at 77 °F)	kΩ	17.2	
Contact rated		AC 220 V, 5 A	
<b>Power Transformer</b>		ATR - I35B	
Rated			
Primary		AC 220 V, 60 Hz	
Secondary		14 V, 0.2 A	
Capacity		2.8 VAC	
Coil resistance (at 78 °F)	Ω	WHT – WHT : 482.5 , BRN – BRN : 3.95	
Thermal cut off temperature	°F	266	
<b>Thermistor (Outdoor Temp. sensor)</b>		PBC - 41E - S26	
Coil resistance	kΩ	14 °F : 23.7 23 °F : 18.8 32 °F : 15.0 41 °F : 12.1	, 50 °F : 9.7 68 °F : 6.5 86 °F : 4.4 104 °F : 3.1 113 °F : 2.6
<b>Solenoid control valve or coil</b>			
Solenoid control valve		NEV - 603DXFU (HOT GAS BYPASS)	
Solenoid coil		NEV - MOAQ505UB0	
<b>Thermistor (PTC)</b>		TDK – 101YV	
Rated			
Max. voltage		AC 400 V	
Max. ampere		11.5 A	
Resistance (at 77 °F)	Ω	100 ± 20 %	

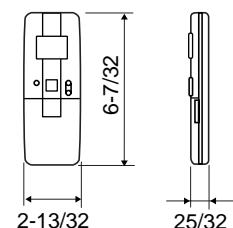
### **3. DIMENSIONAL DATA**

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#### **(1) Indoor Unit: KS2432A**



**Remote control unit**

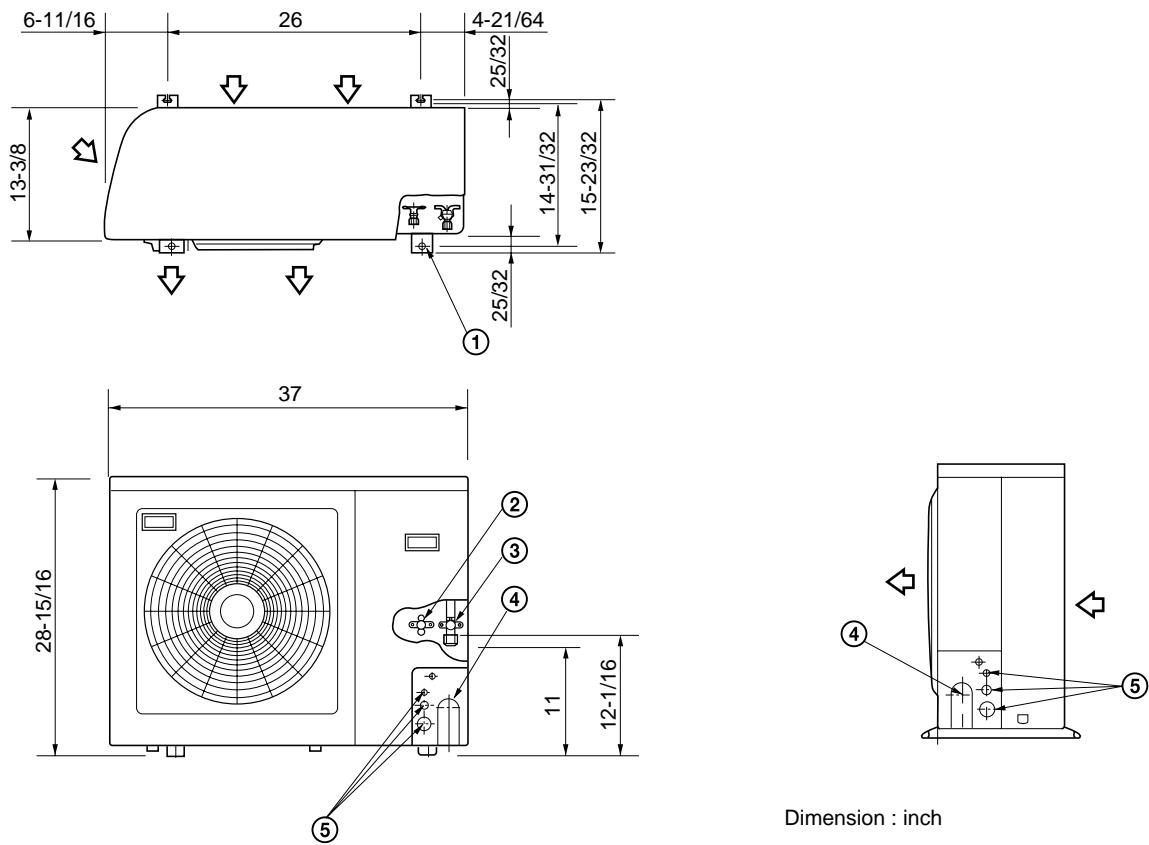


Dimension : inch

2199\_M\_S

### **3. DIMENSIONAL DATA**

#### **(2) Outdoor Unit: C2432, CL2432**



Dimension : inch

- ① Hole for anchor bolt (4-ø1/2)
- ② Refrigerant tube joint (narrow tube)  
Flare connection 1/4 in (6.35 mm)
- ③ Refrigerant tube joint (wide tube)  
Flare connection 3/4 in (19.05 mm)
- ④ Refrigerant tubing inlet
- ⑤ Power supply inlet

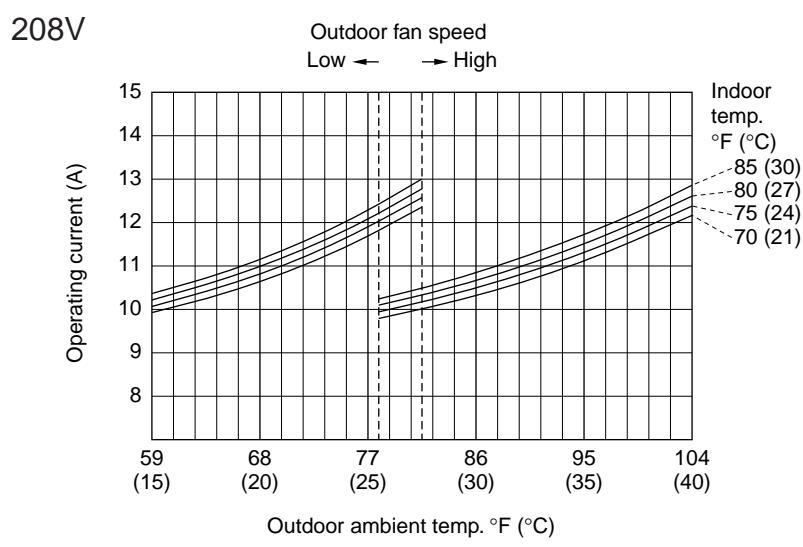
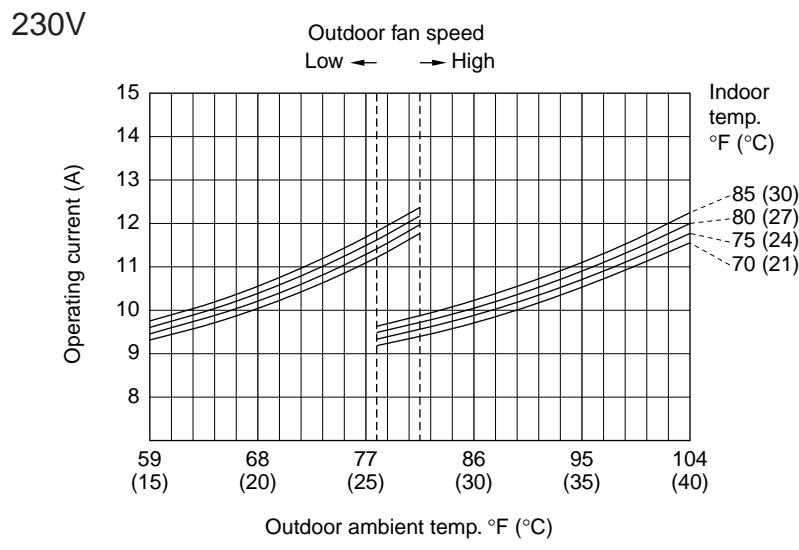
1025\_C\_S

## 4. PERFORMANCE CHARTS

### (1) Operating Current

① Indoor Unit: KS2432A      Outdoor Unit: C2432

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



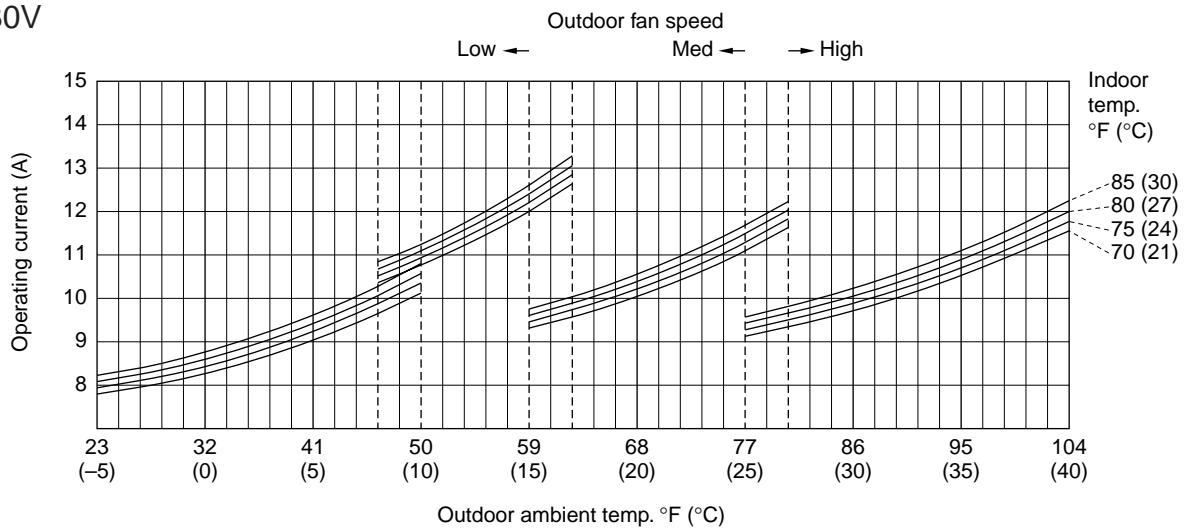
## 4. PERFORMANCE CHARTS

### (1) Operating Current

② Indoor Unit: KS2432A      Outdoor Unit: CL2432

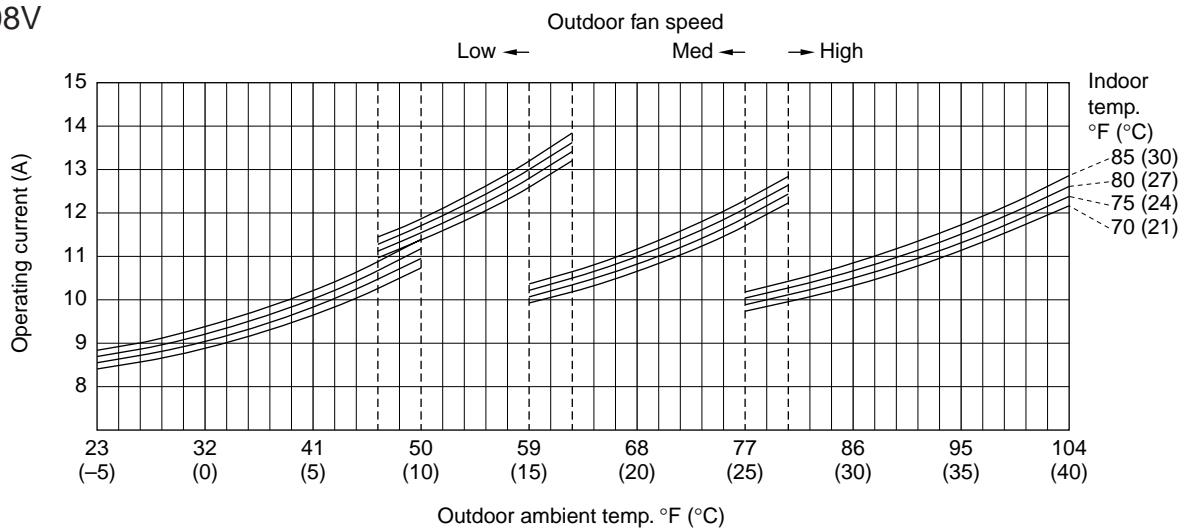
Operating current characteristics versus outdoor ambient temperature and indoor temperature.  
(Indoor relative humidity: 50%, Indoor fan speed: High)

230V



1063\_X\_S

208V



1064\_X\_S

## 4. PERFORMANCE CHARTS

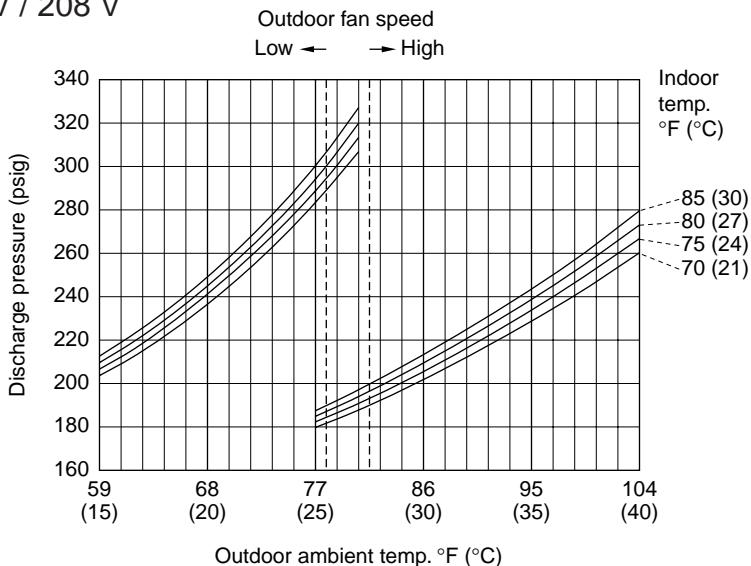
### (2) High and Low Pressure

① Indoor Unit: KS2432A      Outdoor Unit: C2432

#### • High Pressure

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

230V / 208 V

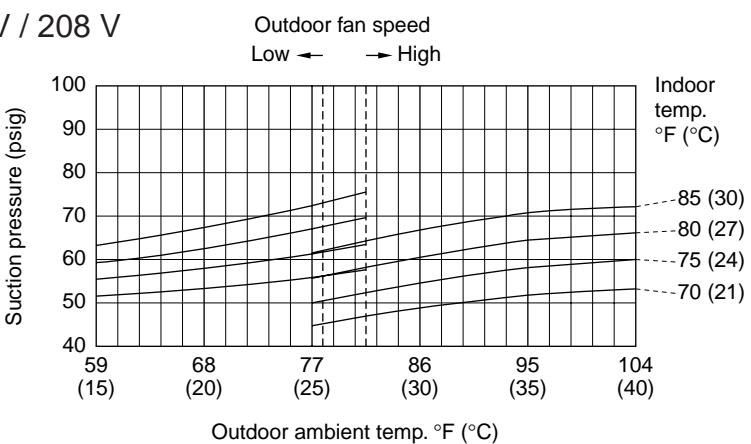


1065\_X\_S

#### • Low Pressure

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

230V / 208 V



1066\_X\_S

## 4. PERFORMANCE CHARTS

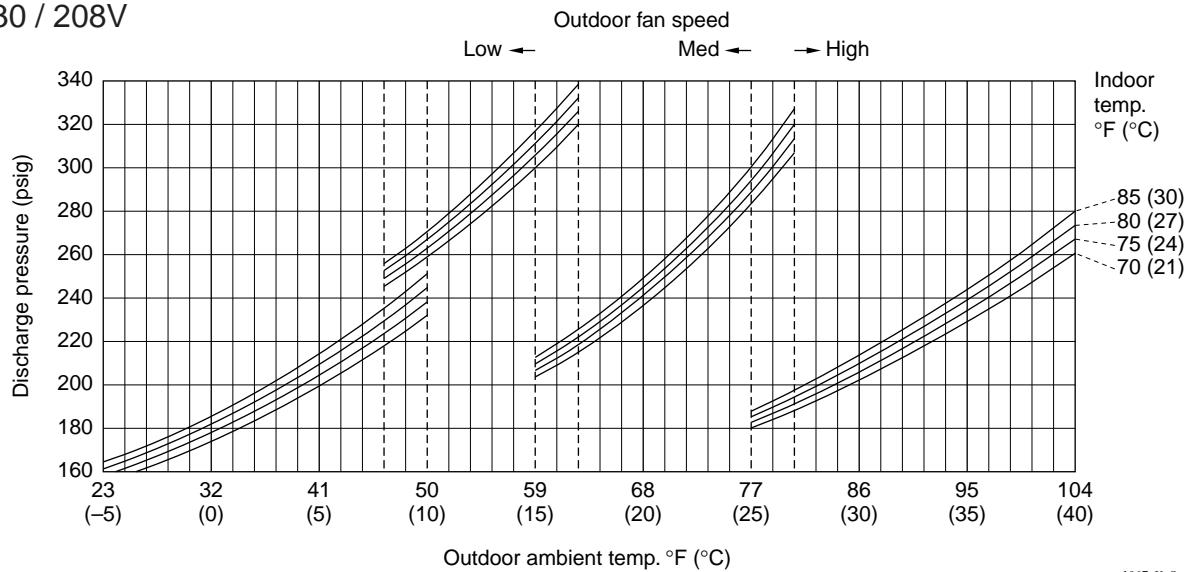
### (2) High and Low Pressure

② Indoor Unit: KS2432A      Outdoor Unit: CL2432

#### • High Pressure

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

230 / 208V

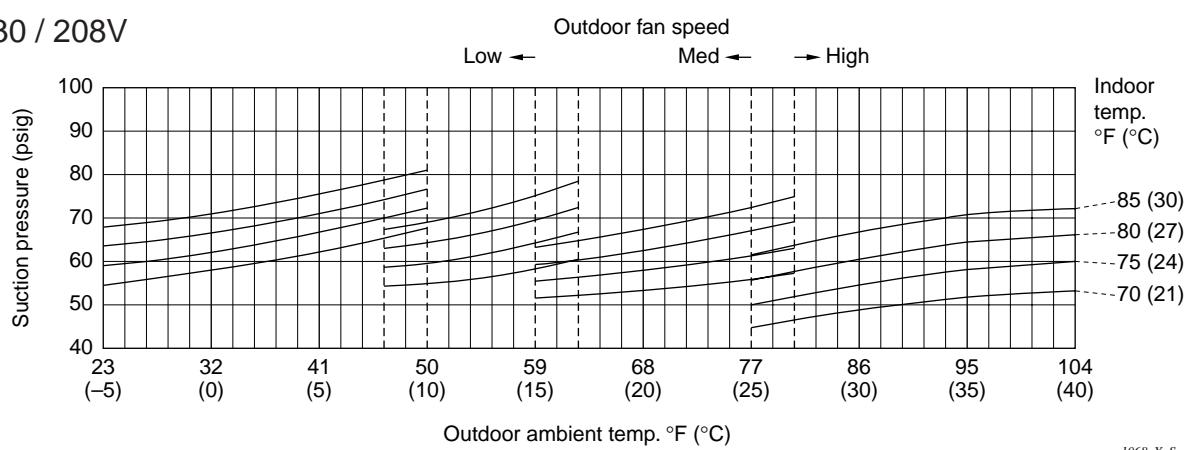


1067\_X\_S

#### • Low Pressure

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

230 / 208V



1068\_X\_S

## 4. PERFORMANCE CHARTS

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### (3) Cooling Capacity

① Indoor Unit: KS2432A      Outdoor Unit: C2432

- 230V / 1 phase / 60Hz

RATING CAPACITY :		22,800 BTU/h		AIR FLOW RATE:			650 CFM			
EVAPORATOR		CONDENSER								
ENT.TEMP. °F(°C)		AMBIENT TEMP. °F(°C)								
WB	DB		75 (23.9)	85 (29.4)	95 (35.0)	105 (40.6)	115 (46.1)			
59 (15.0)		TC	23,100	21,980	20,700	19,270	17,670			
			CI	1.71	1.87	2.04	2.27			
	72(22.2)	SHC	15,940	15,330	14,660	13,920	13,110			
	76(24.4)		17,860	17,250	16,570	15,840	15,030			
	80(26.7)		19,860	19,260	18,580	17,840	17,040			
	84(28.9)		21,780	21,170	20,500	19,270	17,670			
	88(31.1)		23,100	21,980	20,700	19,270	17,670			
63 (17.2)		TC	23,960	22,890	21,750	20,450	19,040			
			CI	1.73	1.9	2.07	2.3			
	72(22.2)	SHC	13,480	12,950	12,390	11,770	11,120			
	76(24.4)		15,400	14,870	14,310	13,690	13,030			
	80(26.7)		17,400	16,870	16,310	15,690	15,040			
	84(28.9)		19,320	18,790	18,230	17,610	16,960			
	88(31.1)		21,240	20,700	20,150	19,530	18,870			
67 (19.4)		TC	24,870	23,890	# 22,800	21,590	20,270			
			CI	1.75	1.91	2.09	2.33			
	72(22.2)	SHC	11,010	10,560	10,080	9,550	8,980			
	76(24.4)		12,930	12,480	11,990	11,470	10,900			
	80(26.7)		14,930	14,490	14,000	13,470	12,900			
	84(28.9)		16,850	16,400	15,920	15,390	14,820			
	88(31.1)		18,770	18,320	17,830	17,300	16,740			
71 (21.7)		TC	26,200	25,290	24,300	23,230	22,050			
			CI	1.76	1.93	2.12	2.36			
	72(22.2)	SHC	8,580	8,200	7,800	7,370	6,900			
	76(24.4)		10,490	10,120	9,710	9,280	8,820			
	80(26.7)		12,500	12,120	11,720	11,290	10,820			
	84(28.9)		14,410	14,040	13,630	13,210	12,740			
	88(31.1)		16,330	15,950	15,550	15,120	14,660			
75 (23.9)		TC	26,720	25,860	24,940	23,890	22,780			
			CI	1.8	1.96	2.15	2.39			
	76(24.4)	SHC	7,820	7,500	7,160	6,780	6,390			
	80(26.7)		9,820	9,500	9,160	8,790	8,390			
	84(28.9)		11,740	11,420	11,080	10,700	10,310			
	88(31.1)		13,660	13,340	13,000	12,620	12,230			

TC : Total Cooling Capacity (BTU / h)

SHC : Sensible Heat Capacity (BTU / h)

CI : Compressor Input (kW)

Rating conditions are

: Outdoor Ambient Temp. 95 °F DB

: Indoor Unit Entering Air Temp. 80 °F DB / 67 °F WB

## 4. PERFORMANCE CHARTS

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### (3) Cooling Capacity

① Indoor Unit: KS2432A      Outdoor Unit: C2432

- 208V / 1 phase / 60Hz

RATING CAPACITY:		22,400 BTU/h		AIR FLOW RATE:		650 CFM					
EVAPORATOR		CONDENSER									
ENT.TEMP. °F(°C)		AMBIENT TEMP. °F(°C)									
WB	DB		75 (23.9)	85 (29.4)	95 (35.0)	105 (40.6)	115 (46.1)				
59 (15.0)		TC	22,690	21,590	20,340	18,930	17,360				
			CI	1.7	1.85	2.02	2.24				
	72(22.2)	SHC	15,730	15,140	14,490	13,760	12,980				
	76(24.4)		17,650	17,060	16,400	15,680	14,900				
	80(26.7)		19,650	19,060	18,410	17,680	16,900				
	84(28.9)		21,570	20,980	20,320	18,930	17,360				
	88(31.1)		22,690	21,590	20,340	18,930	17,360				
63 (17.2)		TC	23,540	22,490	21,370	20,090	18,700				
			CI	1.71	1.88	2.05	2.27				
	72(22.2)	SHC	13,290	12,770	12,230	11,620	10,980				
	76(24.4)		15,200	14,690	14,140	13,540	12,900				
	80(26.7)		17,210	16,690	16,150	15,540	14,900				
	84(28.9)		19,130	18,610	18,070	17,460	16,820				
	88(31.1)		21,040	20,530	19,980	19,380	18,700				
67 (19.4)		TC	24,440	23,480	# 22,400	21,210	19,910				
			CI	1.73	1.89	2.07	2.3				
	72(22.2)	SHC	10,830	10,400	9,920	9,400	8,850				
	76(24.4)		12,750	12,320	11,840	11,320	10,770				
	80(26.7)		14,750	14,320	13,840	13,320	12,770				
	84(28.9)		16,670	16,240	15,760	15,240	14,690				
	88(31.1)		18,590	18,150	17,680	17,160	16,610				
71 (21.7)		TC	25,740	24,840	23,880	22,830	21,660				
			CI	1.75	1.91	2.1	2.33				
	72(22.2)	SHC	8,400	8,030	7,650	7,230	6,770				
	76(24.4)		10,320	9,950	9,560	9,150	8,690				
	80(26.7)		12,330	11,960	11,570	11,150	10,690				
	84(28.9)		14,240	13,870	13,490	13,070	12,610				
	88(31.1)		16,160	15,790	15,400	14,980	14,530				
75 (23.9)		TC	26,250	25,400	24,510	23,480	22,380				
			CI	1.78	1.95	2.13	2.36				
	76(24.4)	SHC	7,660	7,350	7,030	6,660	6,270				
	80(26.7)		9,670	9,350	9,030	8,660	8,270				
	84(28.9)		11,580	11,270	10,950	10,580	10,190				
	88(31.1)		13,500	13,190	12,860	12,500	12,110				

TC : Total Cooling Capacity (BTU / h)

SHC : Sensible Heat Capacity (BTU / h)

CI : Compressor Input (kW)

Rating conditions are

: Outdoor Ambient Temp. 95 °F DB

: Indoor Unit Entering Air Temp. 80 °F DB / 67 °F WB

## 4. PERFORMANCE CHARTS

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### (3) Cooling Capacity

② Indoor Unit: KS2432A      Outdoor Unit: CL2432

- 230V / 1 phase / 60Hz

RATING CAPACITY :		22,800 BTU/h		AIR FLOW RATE:			650 CFM			
EVAPORATOR		CONDENSER								
ENT.TEMP. °F(°C)		AMBIENT TEMP. °F(°C)								
WB	DB		75 (23.9)	85 (29.4)	95 (35.0)	105 (40.6)	115 (46.1)			
59 (15.0)		TC	23,100	21,980	20,700	19,270	17,670			
		CI	1.71	1.87	2.04	2.27	2.5			
	72(22.2)	SHC	15,940	15,330	14,660	13,920	13,110			
	76(24.4)	SHC	17,860	17,250	16,570	15,840	15,030			
	80(26.7)	SHC	19,860	19,260	18,580	17,840	17,040			
	84(28.9)	SHC	21,780	21,170	20,500	19,270	17,670			
63 (17.2)		TC	23,960	22,890	21,750	20,450	19,040			
		CI	1.73	1.9	2.07	2.3	2.53			
	72(22.2)	SHC	13,480	12,950	12,390	11,770	11,120			
	76(24.4)	SHC	15,400	14,870	14,310	13,690	13,030			
	80(26.7)	SHC	17,400	16,870	16,310	15,690	15,040			
	84(28.9)	SHC	19,320	18,790	18,230	17,610	16,960			
67 (19.4)		TC	24,870	23,890	# 22,800	21,590	20,270			
		CI	1.75	1.91	2.09	2.33	2.56			
	72(22.2)	SHC	11,010	10,560	10,080	9,550	8,980			
	76(24.4)	SHC	12,930	12,480	11,990	11,470	10,900			
	80(26.7)	SHC	14,930	14,490	14,000	13,470	12,900			
	84(28.9)	SHC	16,850	16,400	15,920	15,390	14,820			
71 (21.7)		TC	26,200	25,290	24,300	23,230	22,050			
		CI	1.76	1.93	2.12	2.36	2.6			
	72(22.2)	SHC	8,580	8,200	7,800	7,370	6,900			
	76(24.4)	SHC	10,490	10,120	9,710	9,280	8,820			
	80(26.7)	SHC	12,500	12,120	11,720	11,290	10,820			
	84(28.9)	SHC	14,410	14,040	13,630	13,210	12,740			
75 (23.9)		TC	26,720	25,860	24,940	23,890	22,780			
		CI	1.8	1.96	2.15	2.39	2.64			
	76(24.4)	SHC	7,820	7,500	7,160	6,780	6,390			
	80(26.7)	SHC	9,820	9,500	9,160	8,790	8,390			
	84(28.9)	SHC	11,740	11,420	11,080	10,700	10,310			
	88(31.1)	SHC	13,660	13,340	13,000	12,620	12,230			

TC : Total Cooling Capacity (BTU / h)

SHC : Sensible Heat Capacity (BTU / h)

CI : Compressor Input (kW)

Rating conditions are

: Outdoor Ambient Temp. 95 °F DB

: Indoor Unit Entering Air Temp. 80 °F DB / 67 °F WB

## 4. PERFORMANCE CHARTS

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### (3) Cooling Capacity

② Indoor Unit: KS2432A      Outdoor Unit: CL2432

- 230V / 1 phase / 60Hz

(Low Ambient)

RATING CAPACITY :		22800 BTU/h		AIR FLOW RATE :		650 CFM					
EVAPORATOR		CONDENSER									
ENT.TEMP. °F(°C)		AMBIENT TEMP. °F(°C)									
WB	DB		23 (-5)	32 (0)	41 (5)	50 (10)	59 (15)				
59 (15.0)		TC	22380	21510	20790	21860	20710				
		CI	1.65	1.72	1.8	1.84	1.93				
	72	SHC	15550	15080	14720	15280	14680				
	76	SHC	17460	16980	16630	17180	16590				
	80	SHC	19480	19010	18610	19210	18570				
	84	SHC	21390	20910	20550	21110	20510				
	88	SHC	22380	21510	20790	21860	20710				
63 (17.2)		TC	23650	22820	21820	22700	21590				
		CI	1.68	1.76	1.85	1.88	1.97				
	72	SHC	13330	12900	12420	12860	12300				
	76	SHC	15240	14840	14360	14760	14250				
	80	SHC	17260	16820	16350	16780	16230				
	84	SHC	19170	18770	18250	18690	18130				
	88	SHC	21070	20670	20200	20590	20080				
67 (19.4)		TC	25280	24130	23050	23850	22860				
		CI	1.72	1.81	1.91	1.93	2.03				
	72	SHC	11190	10670	10200	10550	10120				
	76	SHC	13090	12580	12100	12460	12020				
	80	SHC	15120	14600	14130	14480	14010				
	84	SHC	17020	16510	16030	16390	15950				
	88	SHC	18970	18410	17940	18290	17860				
71 (21.7)		TC	26740	25400	24130	24840	24170				
		CI	1.77	1.86	1.96	1.97	2.09				
	72	SHC	8810	8250	7740	8020	7740				
	76	SHC	10710	10160	9640	9920	9640				
	80	SHC	12740	12180	11670	11940	11670				
	84	SHC	14640	14090	13570	13850	13570				
	88	SHC	16550	15990	15480	15750	15510				
75 (23.9)		TC	28050	26630	25320	26110	25320				
		CI	1.81	1.92	2.02	2.02	2.14				
	76	SHC	6390	5870	5400	5670	5400				
	80	SHC	8330	7780	7300	7580	7300				
	84	SHC	10320	9800	9290	9600	9290				
	88	SHC	12260	11710	11230	11510	11230				
							11350				

TC : Total Cooling Capacity (BTU / h)

SHC : Sensible Heat Capacity (BTU / h)

CI : Compressor Input (kW)

Rating conditions are

: Outdoor Ambient Temp. 95°F DB

: Indoor Unit Entering Air Temp. 81°F DB / 67 °F WB

## 4. PERFORMANCE CHARTS

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### (3) Cooling Capacity

② Indoor Unit: KS2432A      Outdoor Unit: CL2432

- 208V / 1 phase / 60Hz

RATING CAPACITY:		AIR FLOW RATE:					
EVAPORATOR		CONDENSER					
ENT.TEMP. °F(°C)		AMBIENT TEMP. °F(°C)					
WB	DB		75 (23.9)	85 (29.4)	95 (35.0)	105 (40.6)	115 (46.1)
59 (15.0)		TC	22,690	21,590	20,340	18,930	17,360
		CI	1.7	1.85	2.02	2.24	2.46
	72(22.2)	SHC	15,730	15,140	14,490	13,760	12,980
	76(24.4)	SHC	17,650	17,060	16,400	15,680	14,900
	80(26.7)	SHC	19,650	19,060	18,410	17,680	16,900
	84(28.9)	SHC	21,570	20,980	20,320	18,930	17,360
63 (17.2)		TC	23,540	22,490	21,370	20,090	18,700
		CI	1.71	1.88	2.05	2.27	2.49
	72(22.2)	SHC	13,290	12,770	12,230	11,620	10,980
	76(24.4)	SHC	15,200	14,690	14,140	13,540	12,900
	80(26.7)	SHC	17,210	16,690	16,150	15,540	14,900
	84(28.9)	SHC	19,130	18,610	18,070	17,460	16,820
67 (19.4)		TC	24,440	23,480	# 22,400	21,210	19,910
		CI	1.73	1.89	2.07	2.3	2.52
	72(22.2)	SHC	10,830	10,400	9,920	9,400	8,850
	76(24.4)	SHC	12,750	12,320	11,840	11,320	10,770
	80(26.7)	SHC	14,750	14,320	13,840	13,320	12,770
	84(28.9)	SHC	16,670	16,240	15,760	15,240	14,690
71 (21.7)		TC	25,740	24,840	23,880	22,830	21,660
		CI	1.75	1.91	2.1	2.33	2.56
	72(22.2)	SHC	8,400	8,030	7,650	7,230	6,770
	76(24.4)	SHC	10,320	9,950	9,560	9,150	8,690
	80(26.7)	SHC	12,330	11,960	11,570	11,150	10,690
	84(28.9)	SHC	14,240	13,870	13,490	13,070	12,610
75 (23.9)		TC	26,250	25,400	24,510	23,480	22,380
		CI	1.78	1.95	2.13	2.36	2.6
	76(24.4)	SHC	7,660	7,350	7,030	6,660	6,270
	80(26.7)	SHC	9,670	9,350	9,030	8,660	8,270
	84(28.9)	SHC	11,580	11,270	10,950	10,580	10,190
	88(31.1)	SHC	13,500	13,190	12,860	12,500	12,110

TC : Total Cooling Capacity (BTU / h)

SHC : Sensible Heat Capacity (BTU / h)

CI : Compressor Input (kW)

Rating conditions are

: Outdoor Ambient Temp. 95 °F DB

: Indoor Unit Entering Air Temp. 80 °F DB / 67 °F WB

## 4. PERFORMANCE CHARTS

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### (3) Cooling Capacity

② Indoor Unit: KS2432A      Outdoor Unit: CL2432

• 208V / 1 phase / 60Hz

(Low Ambient)

RATING CAPACITY :		22400 BTU/h		AIR FLOW RATE :				650 CFM				
EVAPORATOR		CONDENSER										
ENT.TEMP. °F(°C)		AMBIENT TEMP. °F(°C)										
WB	DB		23 (-5)	32 (0)	41 (5)	50 (10)	59 (15)	68 (20)				
59 (15.0)	72	TC	21980	21110	20440	21470	20360	21310				
			1.63	1.7	1.78	1.83	1.91	1.83				
	76	SHC	15360	14880	14520	15080	14480	15000				
			17260	16820	16470	16980	16430	16900				
	80	SHC	19280	18810	18450	19010	18410	18930				
			21190	20710	20360	20910	20320	20830				
	84	SHC	21980	21110	20440	21470	20360	21310				
63 (17.2)	72	TC	23210	22420	21470	22300	21190	22220				
			1.67	1.75	1.83	1.86	1.95	1.87				
	76	SHC	13130	12740	12260	12660	12140	12660				
			15040	14640	14210	14600	14050	14560				
	80	SHC	17060	16670	16190	16590	16070	16550				
			18970	18570	18090	18530	17980	18490				
	84	SHC	20870	20470	20040	20440	19880	20400				
67 (19.4)	72	TC	24800	23690	22660	23410	22460	23210				
			1.71	1.8	1.89	1.91	2.01	1.91				
	76	SHC	10990	10480	10040	10360	9960	10280				
			12900	12420	11940	12300	11860	12180				
	80	SHC	14920	14400	13970	14280	13850	14210				
			16820	16350	15870	16190	15790	16110				
	84	SHC	18770	18250	17780	18130	17700	18050				
71 (21.7)	72	TC	26270	24960	23730	24400	23730	24200				
			1.75	1.85	1.95	1.95	2.07	1.96				
	76	SHC	8610	8090	7580	7860	7580	7780				
			10550	10000	9480	9760	9480	9680				
	80	SHC	12540	12020	11510	11780	11510	11710				
			14440	13930	13410	13690	13410	13610				
	84	SHC	16390	15830	15360	15590	15360	15510				
75 (23.9)	76	TC	27540	26150	24880	25670	24880	25160				
			1.8	1.9	2	2	2.12	2.01				
	80	SHC	6230	5710	5240	5520	5240	5360				
			8130	7620	7140	7460	7140	7260				
	84	SHC	10160	9640	9170	9440	9170	9250				
			12060	11550	11070	11390	11070	11190				

TC : Total Cooling Capacity (BTU / h)

SHC : Sensible Heat Capacity (BTU / h)

CI : Compressor Input (kW)

Rating conditions are

: Outdoor Ambient Temp. 95 °F DB

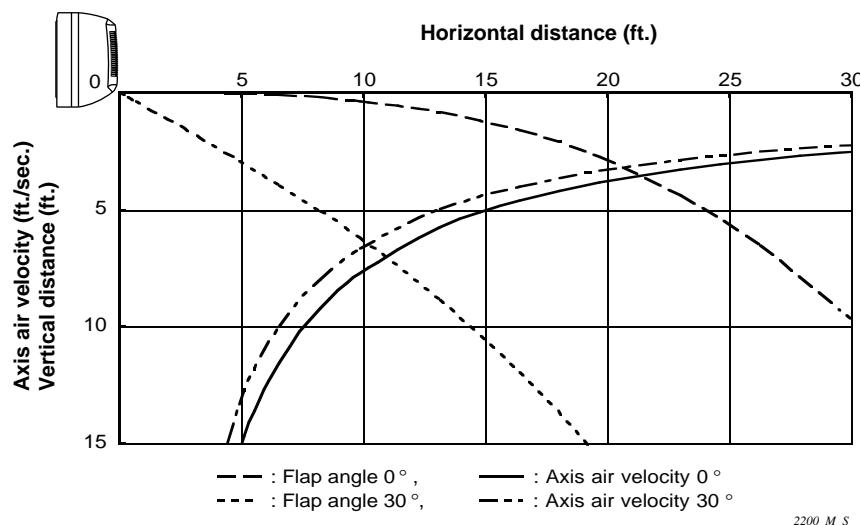
: Indoor Unit Entering Air Temp. 80 °F DB / 67 °F WB

## 5. AIR THROW DISTANCE CHART

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Indoor Unit: KS2432A

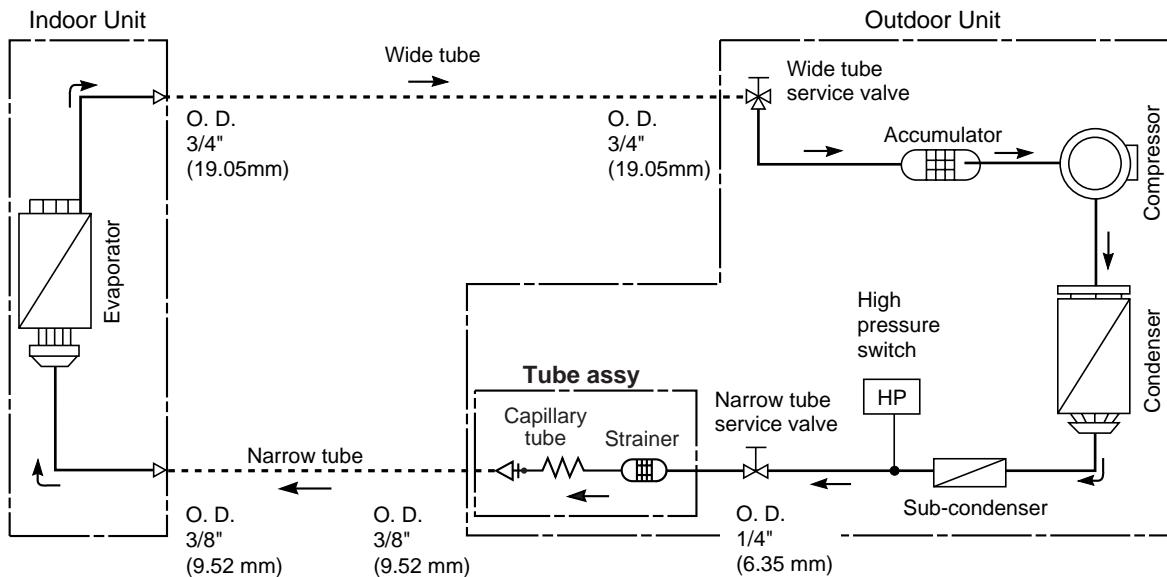
Room air temp. : 80°F (26.7°C)  
Fan speed : High



## 6. REFRIGERANT FLOW DIAGRAM

Indoor Unit: KS2432A

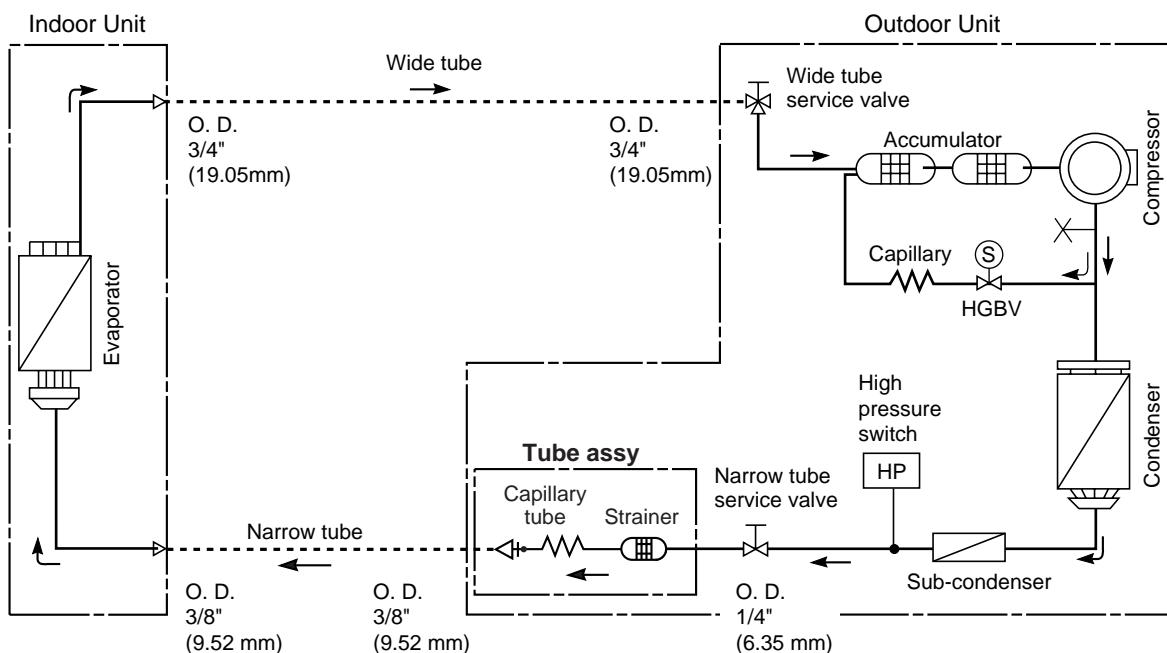
Outdoor Unit: C2432



220J\_M\_S

Indoor Unit: KS2432A

Outdoor Unit: CL2432



2202\_M\_S



**CAUTION**

When indoor unit **KS2432A** is installed with outdoor unit **C2432** or **CL2432**, **connect the Tube Assembly** packed in the indoor unit **KS2432A** to the Narrow Tube Valve in the outdoor unit **C2432** or **CL2432**.

## **6. REFRIGERANT FLOW DIAGRAM**

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### **Insulation of Refrigerant Tubing**

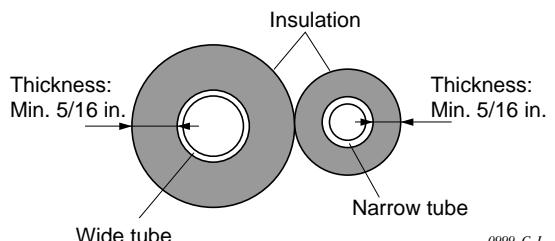
#### **IMPORTANT**

Because capillary tubing is used in the outdoor unit, both the wide and narrow tubes of this air conditioner become cold. To prevent heat loss and wet floors due to dripping of condensation, **both tubes must be well insulated with a proper insulation material**. The thickness of the insulation should be a min. 5/16 in.



**CAUTION**

**After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.**



0999\_C\_I

## 7. INSTALLATION INSTRUCTIONS

### 1) Tubing Length

- Refrigerant tubing between the indoor and outdoor units should be kept as short as possible.
- Select and decide the installation location so that the length of the refrigerant tubing will be within the limits given in Table 1.

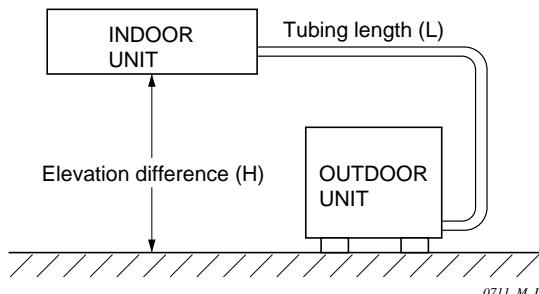


Fig. 1

Table 1

Tubing Data	Model	C2432	CL2432
Tubing size outer dia.	Narrow tube in. (mm)	3/8 (9.52)	
	Wide tube in. (mm)	3/4 (19.05)	
Limit of tubing length	(ft.)	132	
Limit of elevation difference between the 2 units	Outdoor unit is higher than indoor unit (ft.)	50	
	Outdoor unit is lower than indoor unit (ft.)	50	
Max. allowable tubing length at shipment	(ft.)	25	
Required additional refrigerant* <sup>1</sup>	(oz./ft.)	0.27	
Refrigerant charged at shipment	(lbs.)	5.3	5.5

No additional charge of compressor oil is necessary.

\*<sup>1</sup> If total tubing length becomes 25 to 132 ft., charge additional refrigerant (R22) by 0.27 oz./ft..

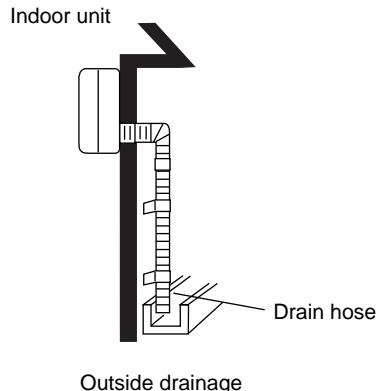
## **7. INSTALLATION INSTRUCTIONS**

### **2) Selecting the Installation Site**

#### **Indoor Unit**

##### **AVOID:**

- areas where leakage of flammable gas may be expected.
- places where large amounts of oil mist exist. (Fig. 2)
- direct sunlight.
- locations near heat sources which may affect performance of the unit.
- locations where external air may enter the room directly. This may cause "sweating" on the air discharge ports, causing them to spray or drip. (Fig. 3)
- locations where the remote control unit will be splashed with water or affected by dampness or humidity.

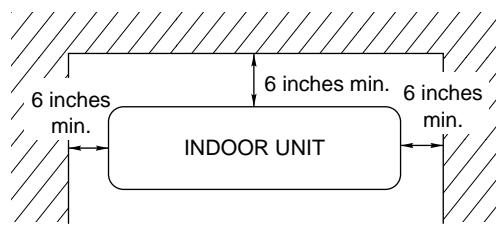


2203\_M\_S

**Fig. 2**

##### **DO:**

- select an appropriate position from which every corner of the room can be uniformly air-conditioned.
- select a location that will hold weight of the unit.
- select a location where the tubing and drain pipe have the shortest run to the outside. (Fig. 2)
- allow room for operation and maintenance as well as unrestricted air flow around the unit. (Fig. 3a and 3b)
- Install the unit within the maximum elevation difference above or below the outdoor unit and within a total tubing length from the outdoor unit as detailed in Table 1 and Fig. 1 on the previous page.



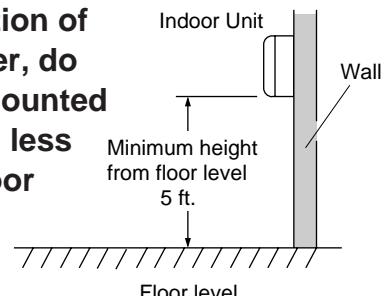
**Front View**

2204\_M\_S

**Fig. 3a**



**For stable operation of the air conditioner, do not install wall-mounted type indoor units less than 5 ft. from floor level.**



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**Fig. 3b**

## 7. INSTALLATION INSTRUCTIONS

### Outdoor Unit

#### AVOID:

- heat sources, exhaust fans, etc. Fig. 4
- damp, humid or uneven locations.

#### DO:

- choose a place as cool as possible.
- choose a place that is well ventilated and outside air temperature does not exceed maximum 115 °F constantly.
- allow enough room around unit for air intake/exhaust and possible maintenance. Fig. 5
- provide a solid base; about 6 inch above ground level to reduce humidity and possible water damage in the unit and decrease service life. Fig. 6
- use lug bolts or equivalent to bolt down unit, reducing vibration and noise.

#### CAUTION

If more than 2 outdoor units are installed in the same location, keep at least 3 meters away from the neighboring unit to avoid influence of air discharge.

#### Air discharge chamber for top discharge

Install the air-discharge chamber in the field when:

- it is difficult to keep a space of minimum 2 ft. between the air-discharge outlet and the obstacle.
- the air-discharge outlet is facing the sidewalk and discharged hot air can annoy the passers-by.

Refer to Fig. 6 and Fig. 7.

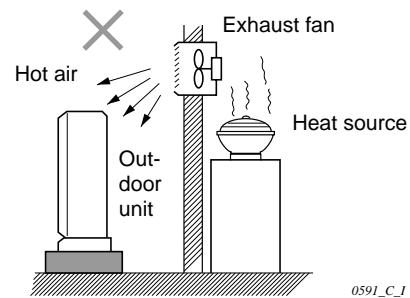


Fig. 4

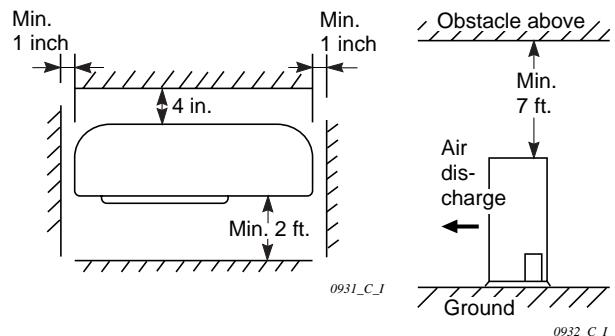


Fig. 5

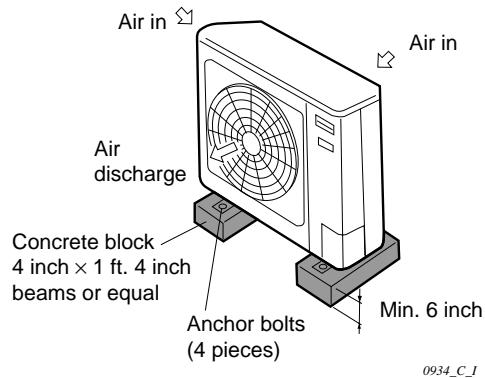


Fig. 6

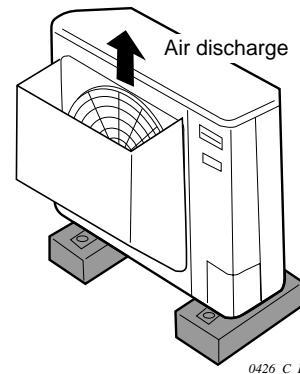
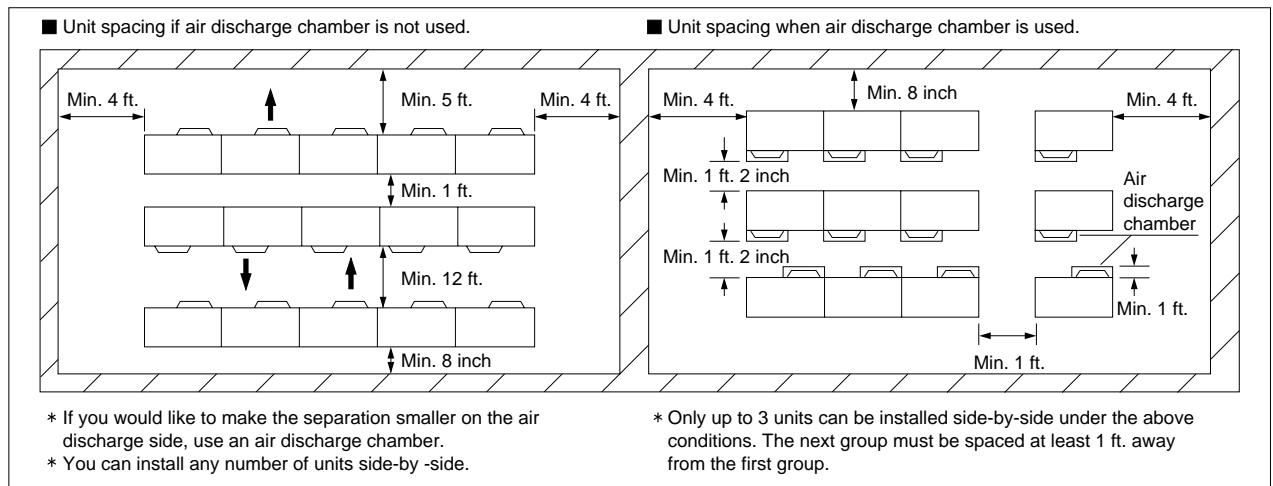


Fig. 7

## 7. INSTALLATION INSTRUCTIONS

### In case of multiple installations



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### 3) Electrical Wiring

#### General Precautions on Wiring

- (1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.
- (2) **Provide a power outlet to be used exclusively for each unit, and a power supply disconnect and circuit breaker for overcurrent protection should be provided in the exclusive line.**
- (3) To prevent possible hazards from insulation failure, the unit must be grounded.
- (4) Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.
- (5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- (6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.
- (7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning. You must ensure that installation complies with all relevant rules and regulations.

## 7. INSTALLATION INSTRUCTIONS

### Recommended Wire Length and Wire Diameter for Power Supply System

Models			(A) <sup>*1</sup> Power Supply AWG #12	(B) <sup>*1</sup> Inter-unit Wiring AWG #14	Time Delay Fuse or Circuit Capacity	Power Supply Terminal Base (Outdoor Unit)	
						Capacity	Max. Wire Diameter
Single-phase	60Hz	C2432 CL2432	69 ft.	164 ft.	30 A	50 A	AWG #6

\*1 Refer to the Wiring System Diagrams (See below diagram) for the meaning of "A", "B".

AWG = American Wire Gauge

### Wiring System Diagram

Outdoor Unit : "C", "CL" models

Single-phase

60 Hz, 230 / 208 V

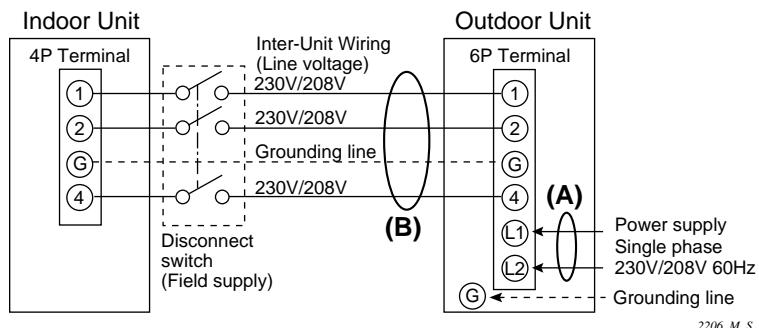


Fig. 8

## 7. INSTALLATION INSTRUCTIONS

### 4) Refrigerant Tubing on Outdoor Unit



CAUTION

To avoid the risk of unit's damage, be sure to install Tube Assy in the outdoor unit as follows.

#### Procedure

- (1) Connect a wide tube (3/4") to the wide tube valve. (Fig. 9a)
- (2) Connect the tube assy, which was packed in the indoor unit carton, to the narrow tube valve.
- (3) Before attaching the tube assy to the mounting valve, wrap the supplied packing A (3/4" × 1-3/8" × T3/16") onto the 5/16" tube of the tube assy to avoid direct contact of the tube assy with the mounting valve. (Fig. 9b, 9c)
- (4) Similarly arrange the supplied packing B (2-3/8" × 1-3/16" × T3/16") on the mounting valve. (Fig. 9b, 9c)
- (5) Insert the clamp in the extracted round hole ( $\varnothing$  3/16") on the mounting valve, and bind the tube assy and packing A. (Fig. 9b)
- (6) Insert the second clamp in the square hole of the mounting valve, and bind it so the tube assy is in contact with packing B. (Fig. 9c)
- (7) Connect the narrow tube (3/8") between the units. When tightening the flare nut, use the double-wrench method. (Torque: 300 to 340 lbs.-in) (Fig. 10)
- (8) After completing the tubing work, check that the tube assy is not in direct contact with the 3/4" tube.

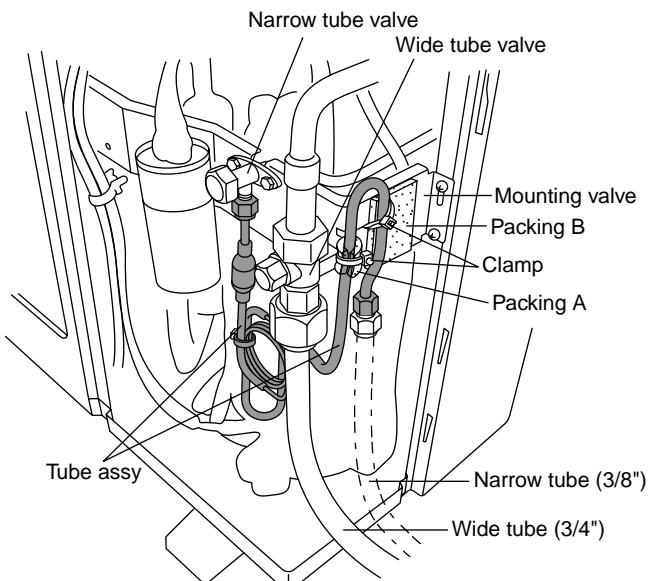


Fig. 9a

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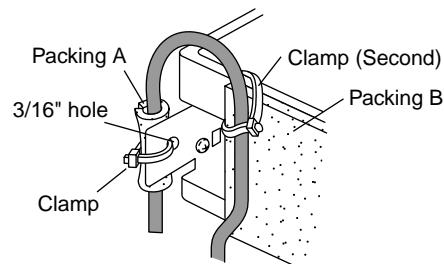


Fig. 9b

2208\_M\_S

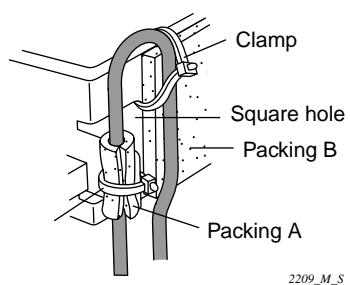


Fig. 9c

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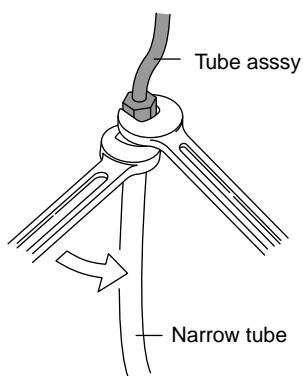


Fig. 10

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## **8. ELECTRICAL DATA**

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### **● Electrical characteristics**

**Indoor model: KS2432A / Outdoor model: C2432, CL2432**

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		230 - 208 V / 1 phase / 60 Hz			
Rating conditions	A	0.34 - 0.33	0.90 - 0.90	9.7 - 10.3	10.9 - 11.5
	kW	0.07 - 0.06	0.18 - 0.17	2.09 - 2.07	2.34 - 2.30
Full load conditions	A	0.34 - 0.33	0.90 - 0.90	11.3 - 12.3	12.5 - 13.5
	kW	0.07 - 0.06	0.18 - 0.17	2.56 - 2.52	2.81 - 2.75
Starting amperes	A	1 - 1	1 - 1	66 - 60	68 - 62

Rating Conditions : Indoor Air Temperature 80 °F DB / 67 °F WB  
Outdoor Air Temperature 95 °F DB

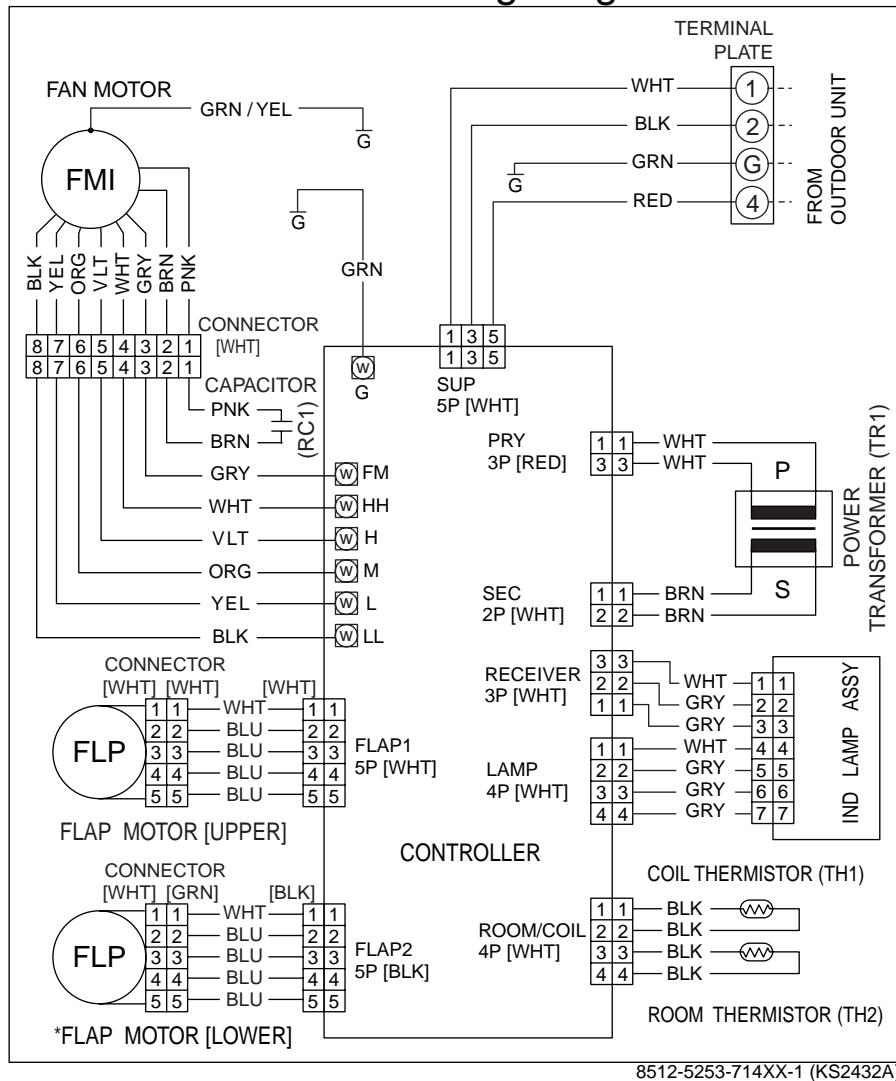
Full Load Conditions : Indoor Air Temperature 80 °F DB / 67 °F WB  
Outdoor Air Temperature 115 °F DB

## **9. ELECTRICAL WIRING DIAGRAMS**

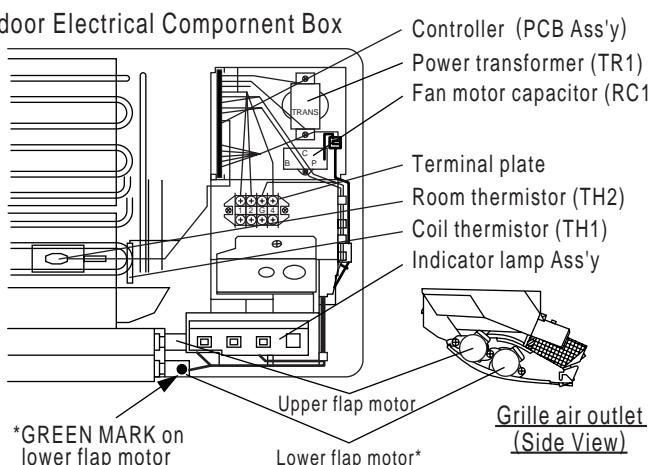
## **(1) Indoor Unit**

① KS2432A

- Electric Wiring Diagram



#### ■ Indoor Electrical Component Box



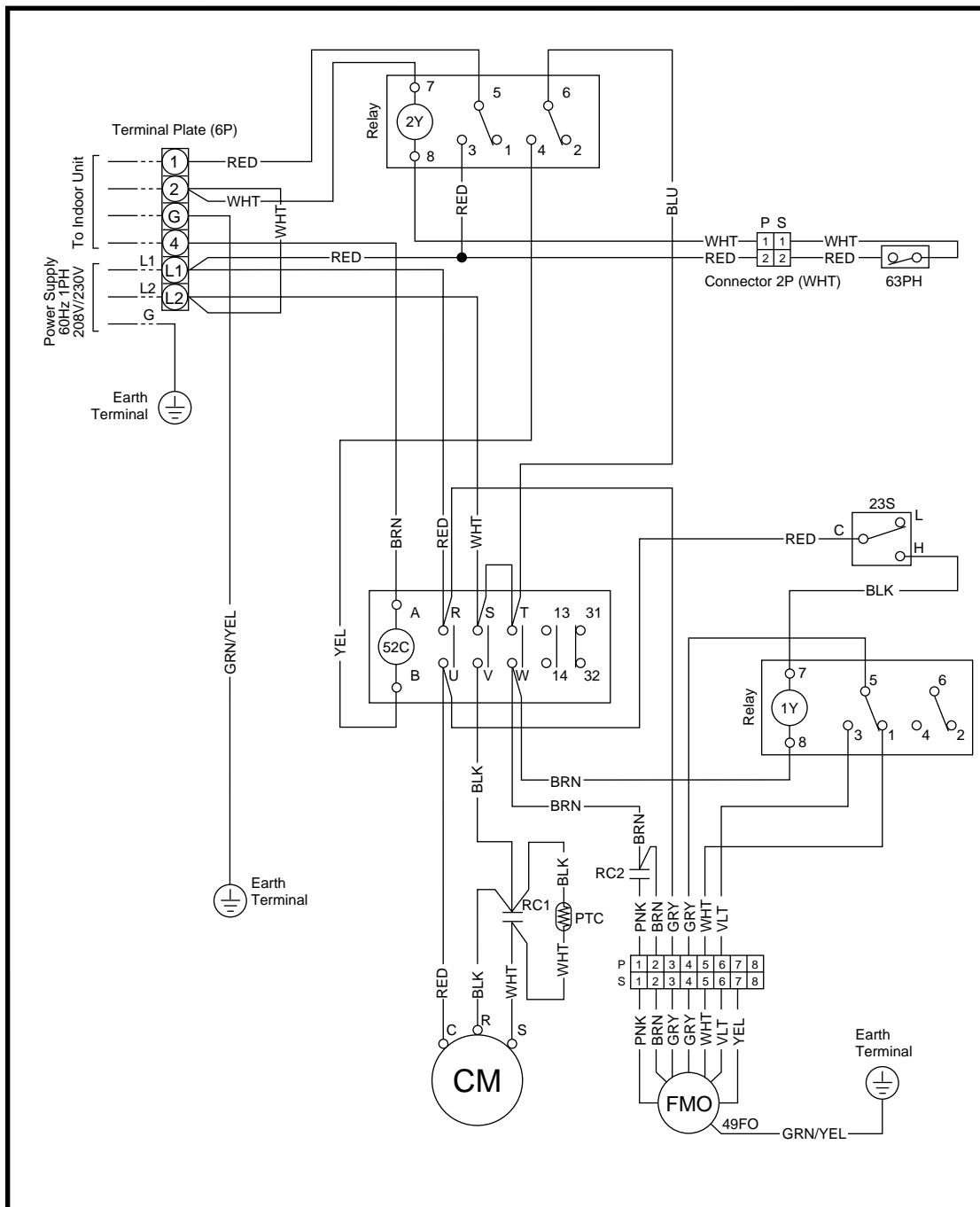
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## 9. ELECTRICAL WIRING DIAGRAMS

### (2) Outdoor Unit

① C2432

#### • Electric Wiring Diagram

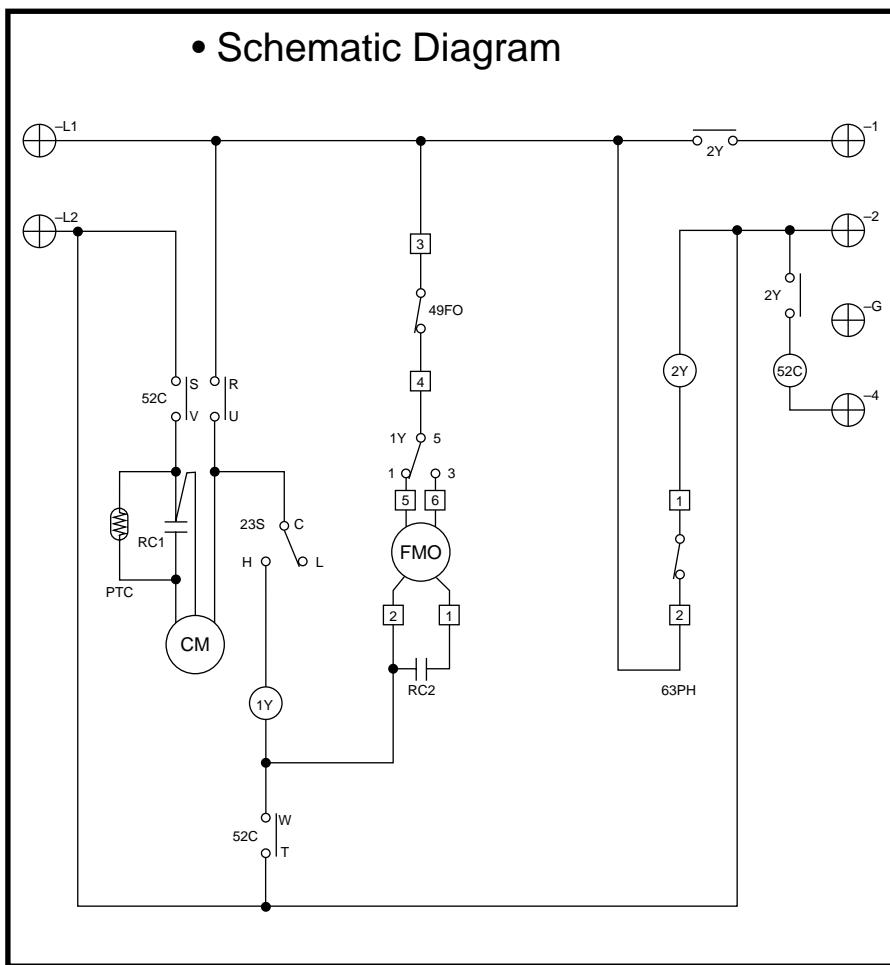


© 854-2-5268-594-00-0 (C2432)

## 9. ELECTRICAL WIRING DIAGRAMS

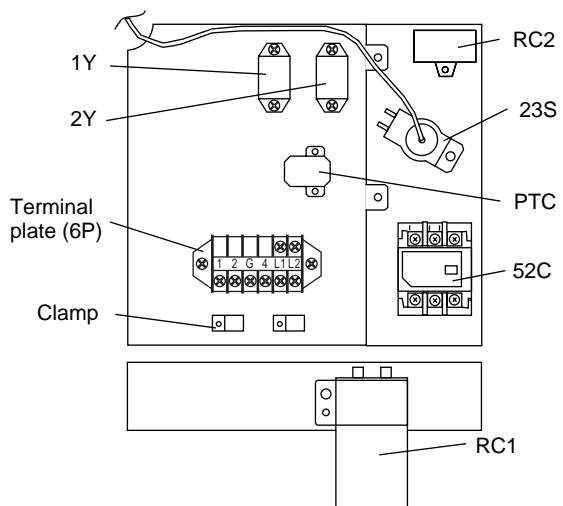
### (2) Outdoor Unit

#### ① C2432



Symbols	Description
CM	Compressor motor
FMO	Outdoor Fan Motor
49FO	Outdoor Fan Motor Thermal Protector
52C	Compressor Motor Magnetic Contactor
63PH	High Pressure Switch
23S	Fan Speedcontrol Thermostat
RC1, 2	Running Capacitor
PTC	PTC Thermistor
1Y, 2Y	Auxiliary Relay
□	Connector
⊕	Terminal Plate

■ Outdoor Electrical Component Box

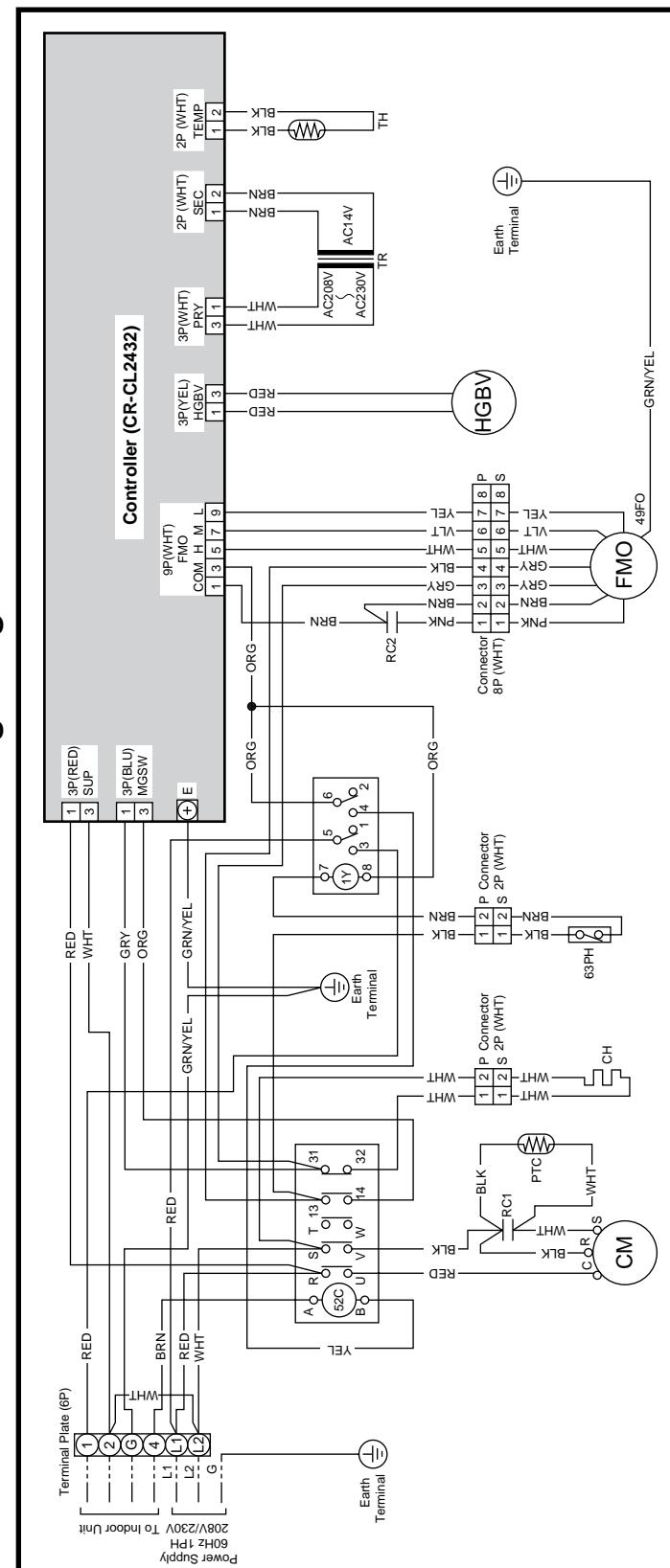


© 854-2-5268-594-00-1(C2432)

## **9. ELECTRICAL WIRING DIAGRAMS**

## (2) Outdoor Unit

② CL2432



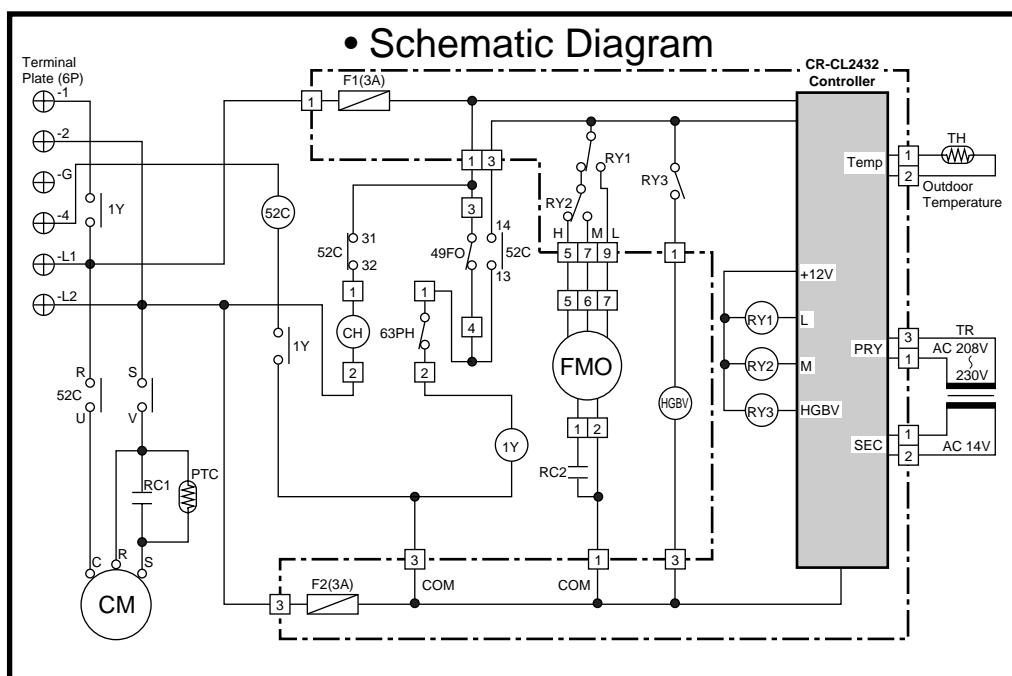
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- Electric Wiring Diagram

## 9. ELECTRICAL WIRING DIAGRAMS

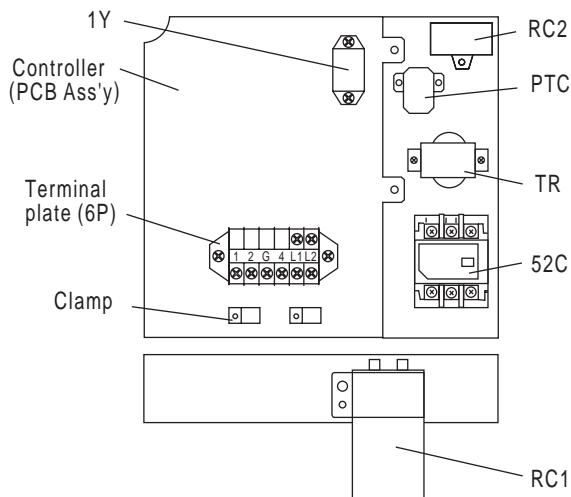
### (2) Outdoor Unit

#### ② CL2432



Symbols	Description
CM	Compressor Motor
CH	Crankcase Heater
FMO	Outdoor Fan Motor
49FO	Outdoor Fan Motor Thermal Protector
52C	Compressor Motor Magnetic Contactor
HGBV	Hot Gas Bypass Valve
PTC	PTC Thermistor
TR	Power Transformer
TH	Thermistor (Outdoor Temperature)
RC1, 2	Running Capacitor
RY1~3	Auxiliary Relay
1Y	Auxiliary Relay
CR-CL2432	Outdoor Controller
F1, 2	Fuse
⊕	Terminal Plate
□	Connector
⊕	Terminal
63PH	High Pressure Switch

■ Outdoor Electrical Component Box



© 854-2-5268-570-00-2 (CL2432)

## 10. PROCESSES AND FUNCTIONS

### (1) Room Temperature Control

The Unit adjusts room temperature by turning the outdoor unit's compressor ON and OFF.

This process is controlled by the **thermostat** located in the indoor unit.

The figures shows how each part of the system performs when the room temperature changes and the thermostat activates the compressor to start (**thermo ON**) or stop (**thermo OFF**). Fig. 1 shows about the cooling cycle.

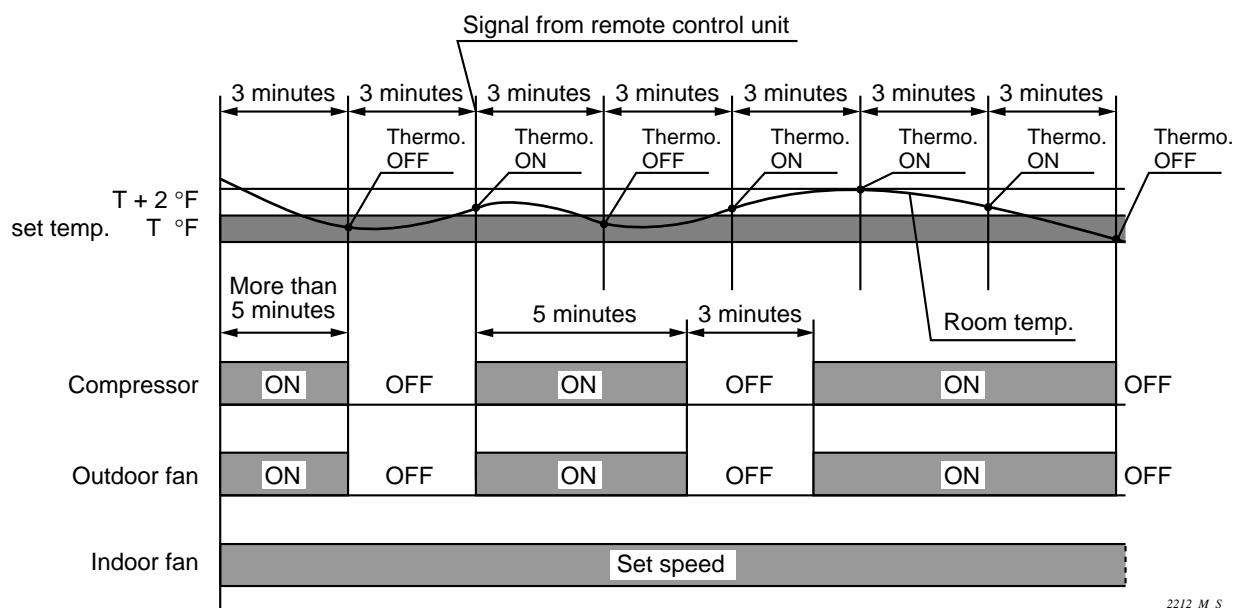


Fig. 11

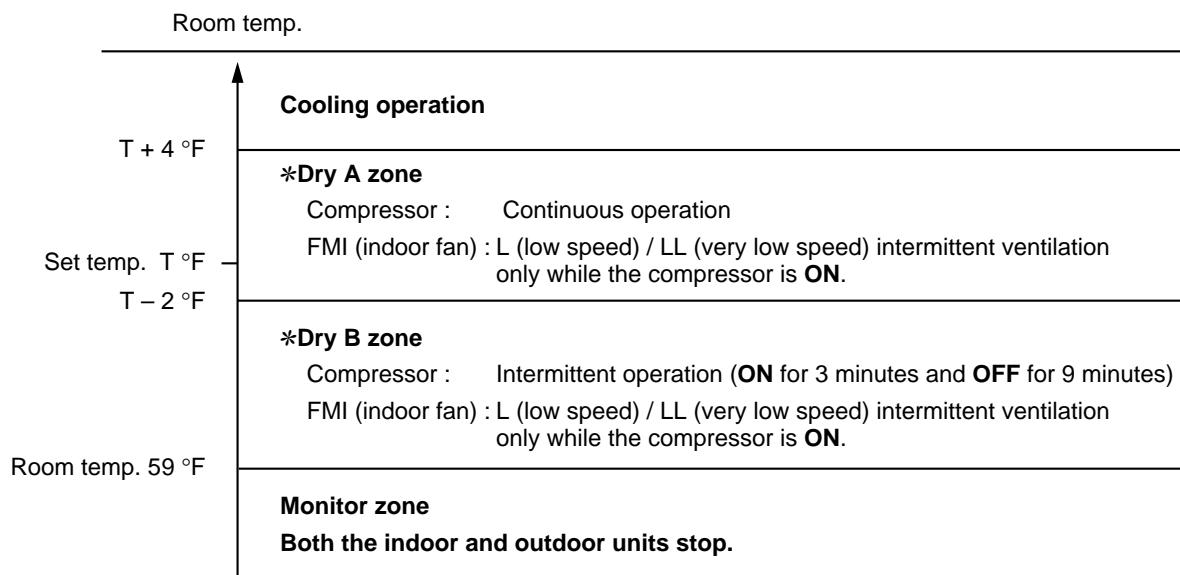
#### Chart Summary and Explanations

- Once the compressor **starts**, it keeps running for 5 minutes.
- Once the compressor **stops**, it will not start running again for 3 minutes.
- If you **change** the operation mode during the cooling cycle, the control circuit **stops** the compressor for 3 minutes.
- For 5 minutes after the compressor is first turned on, and for 3 minutes after it is turned off, the compressor is not controlled by the room sensor.
- Thermo ON:** When room temperature rises  $1^{\circ}\text{F}$  above the set temperature  $T^{\circ}$ , ( $T^{\circ}+1^{\circ}\text{F}$ ):  
Compressor → **ON**
- Thermo OFF:** When the room temperature is equal to or below the set temperature  $T^{\circ}$ :  
Compressor → **OFF**

## **10. PROCESSES AND FUNCTIONS**

### **(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.



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**Fig. 12**

#### **NOTE**

- Intermittent ventilation occurs by switching the indoor fan speed between L ↔ LL.
- Dry operation does not occur when the room temperature is under 59°F, which is the monitor zone.
- When the compressor stops, the indoor fan stops as well.

## 10. PROCESSES AND FUNCTIONS

### (3) Freeze Prevention

Freeze Prevention keeps the indoor heat exchange coil from freezing. Freezing reduces the efficiency of the unit, and frost buildup on the coil blocks cool air circulation from the indoor unit's fan.

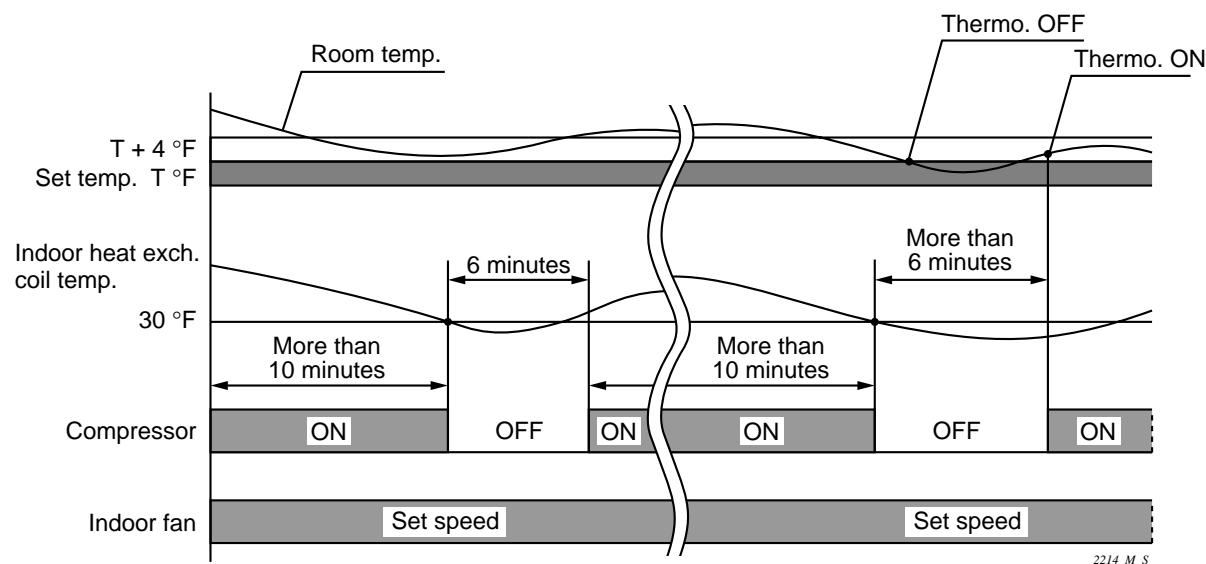


Fig. 13

#### Chart Summary and Explanations

- ❑ When the compressor has been running for 6 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. The compressor does not start again until the temperature rises above 46°F or 6 minutes has elapsed.

## **10. PROCESSES AND FUNCTIONS**

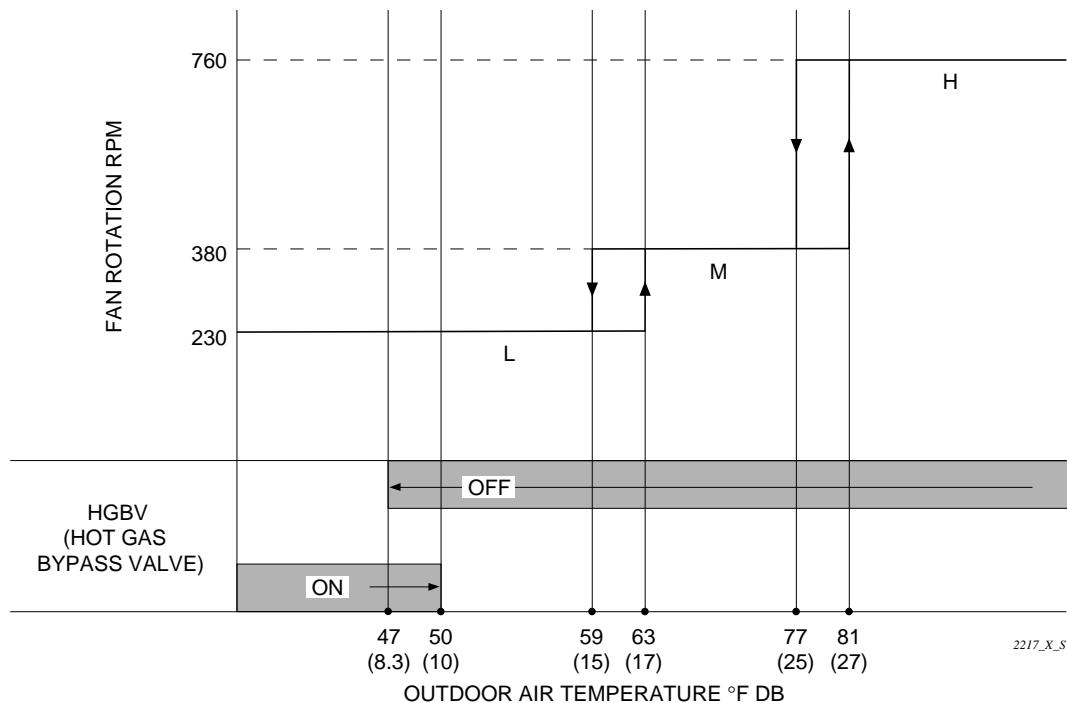
### **(4) Outdoor Fan Speed Control**

#### **(1) C2432 Type**

- In low outdoor temperature, the outdoor fan is set automatically from HIGH to LOW to prevent the indoor heat exchanger from freezing.
- When the outdoor temperature falls below 78 °F, the outdoor fan is set from HIGH to LOW automatically. When the outdoor temperature rises to 82 °F, the outdoor fan is set from LOW to HIGH automatically.

#### **(2) CL2432 Type**

- In low outdoor temperature, the outdoor fan is set automatically from HIGH to MED, LOW to prevent the indoor heat exchanger from freezing.
- When the outdoor temperature falls below 77 °F, the outdoor fan is set from HIGH to MED automatically. When the outdoor temperature rises to 81 °F, the outdoor fan is set from MED to HIGH automatically.
- When the outdoor temperature falls below 59 °F, the outdoor fan is set from MED to LOW automatically. When the outdoor temperature rises to 63 °F, the outdoor fan is set from LOW to MED automatically.
- When the outdoor temperature falls below 50 °F, the hot gas bypass valve opens and keeps the pressures up by allowing some hot gas to be bypassed to the suction of the compressor. Refer to “6. REFRIGERANT FLOW DIAGRAM”.



**Fig. 14**

## **11. SERVICE PROCEDURES**

### **(1) Troubleshooting**

#### **1) Check before and after Troubleshooting**

Many problems may happen because of wiring or power supply problems, so you should check these areas first. Problems here can cause false results in some of the other tests, and so should be corrected first.

#### **① Check power supply wiring**

##### **(a) Single-phase**

- Check that power supply wires are correctly connected to L1 and L2 on the 6P terminal in the outdoor unit.

#### **② Check inter-unit wiring**

- Check that inter-unit wiring (AC 230 - 208 V Line voltage) is correctly connected between the indoor unit and outdoor unit.

Single-phase outdoor unit

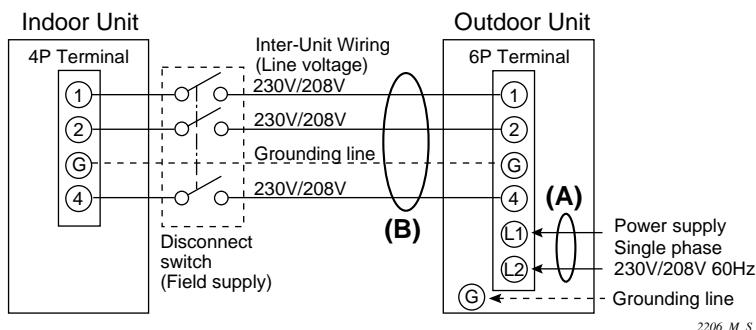


Fig. 15

#### **③ Check power supply**

- Check that voltage is within the 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 not to touch any uninsulated live part that can cause ELECTRIC SHOCK.

#### **④ Check the lead wires and connectors in indoor and outdoor units.**

- Check that the sheath of lead wires is not damaged.
- Check that the lead wires are firmly connected at the terminal plate.
- Check that the wiring is correct.

#### **⑤ Reference**

- Condition of general cooling operation (Thermo. ON)  
SWEEP ..... ON  
Indoor fan speed .... HIGH

## 11. SERVICE PROCEDURES

### 2) Air Conditioner does not Operate

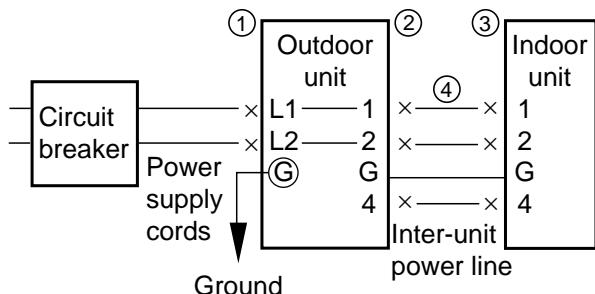
#### ① Circuit breaker trips (or fuse blows).

##### (a) When the circuit breaker is set to ON, it is tripped soon.

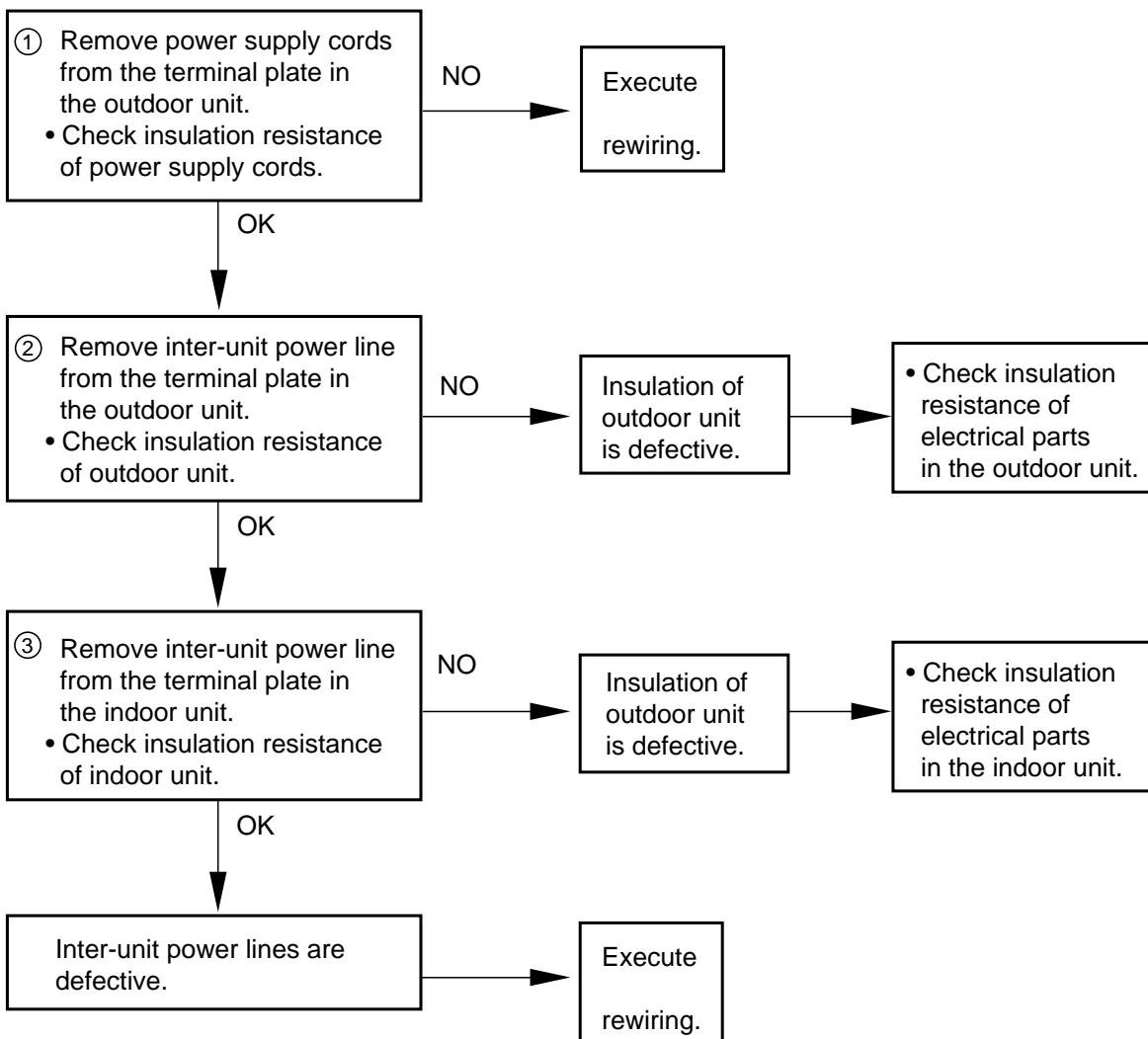
- There is a possibility of ground fault.
- Check insulation resistance.

If resistance value is  $2 \text{ M}\Omega$  or less, it is a defect of insulation.

(Example)

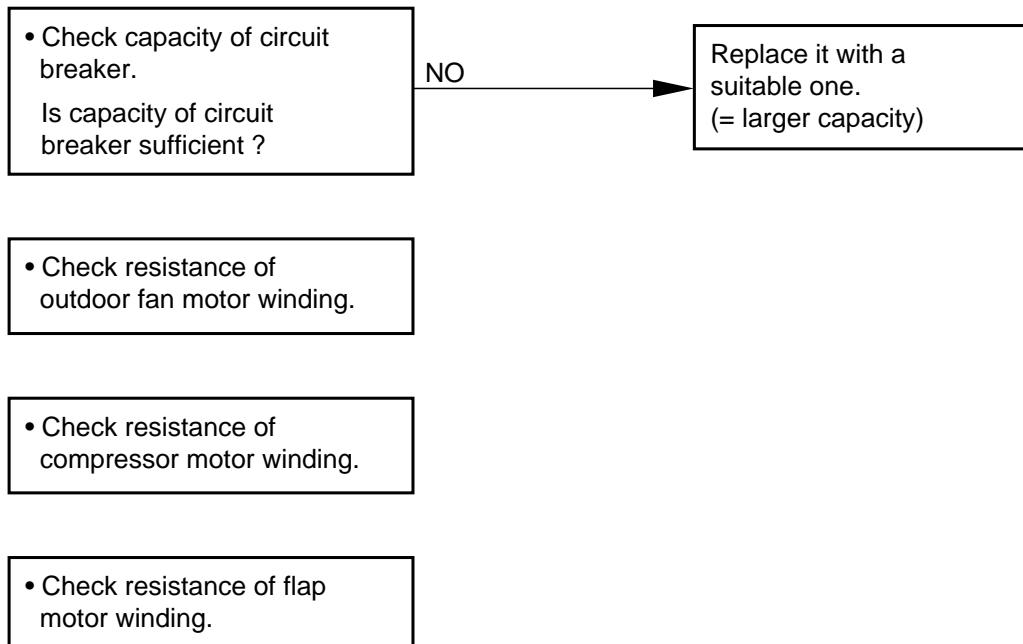


\*Set the circuit breaker to OFF.



## 11. SERVICE PROCEDURES

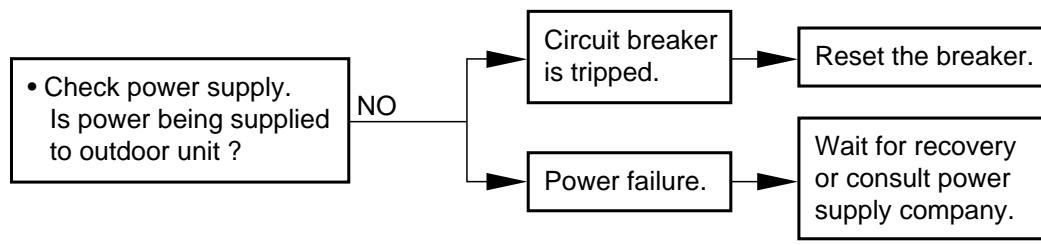
- (b) Circuit breaker trips in several minutes after turning the air conditioner on.
- There is a possibility of short circuit.



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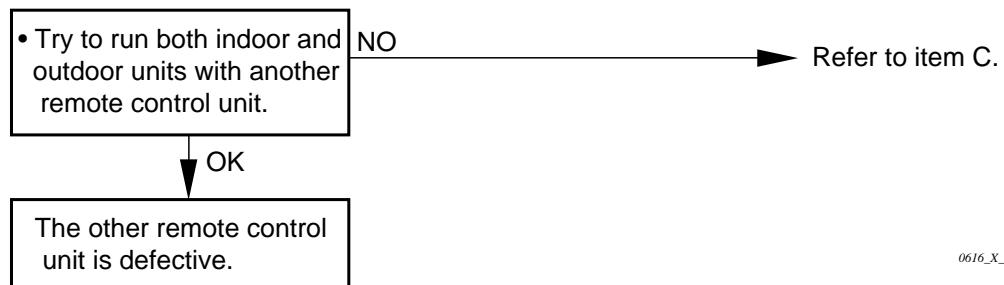
② Neither indoor unit nor outdoor unit runs.

- A. Power is not supplied



0615\_X\_S

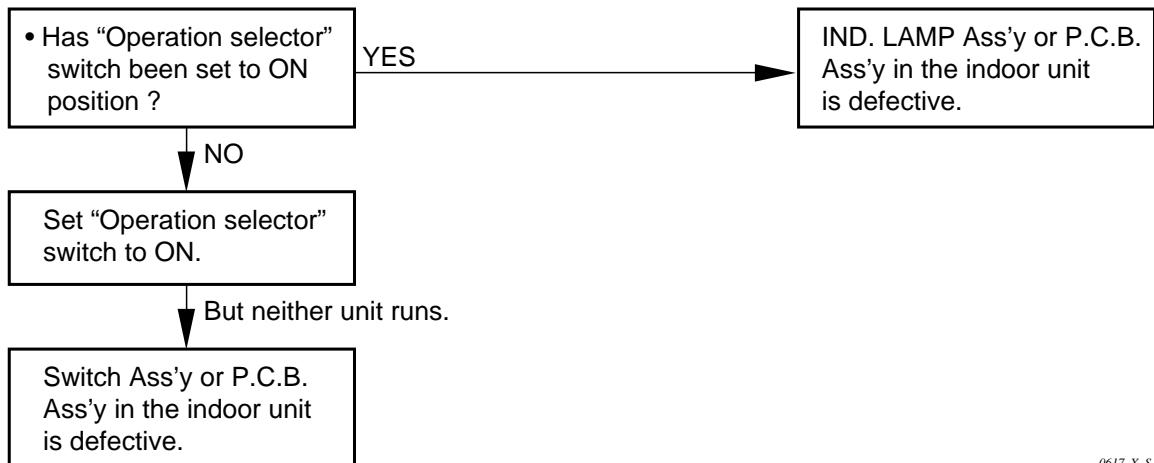
- B. Check remote control unit.



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## 11. SERVICE PROCEDURES

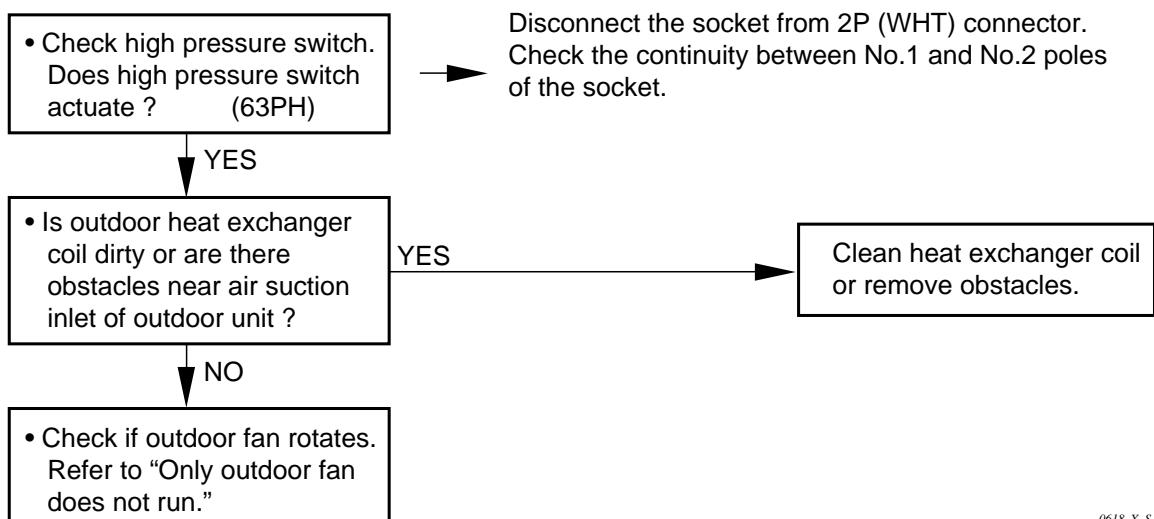
C. Check "Operation selector" switch in the indoor unit.



0617\_X\_S

D. Check compressor motor protectors.

(a) High pressure switch (63PH)



0618\_X\_S

E. Transformer in indoor unit.

- Check resistance of transformer winding. (TR1)

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## 11. SERVICE PROCEDURES

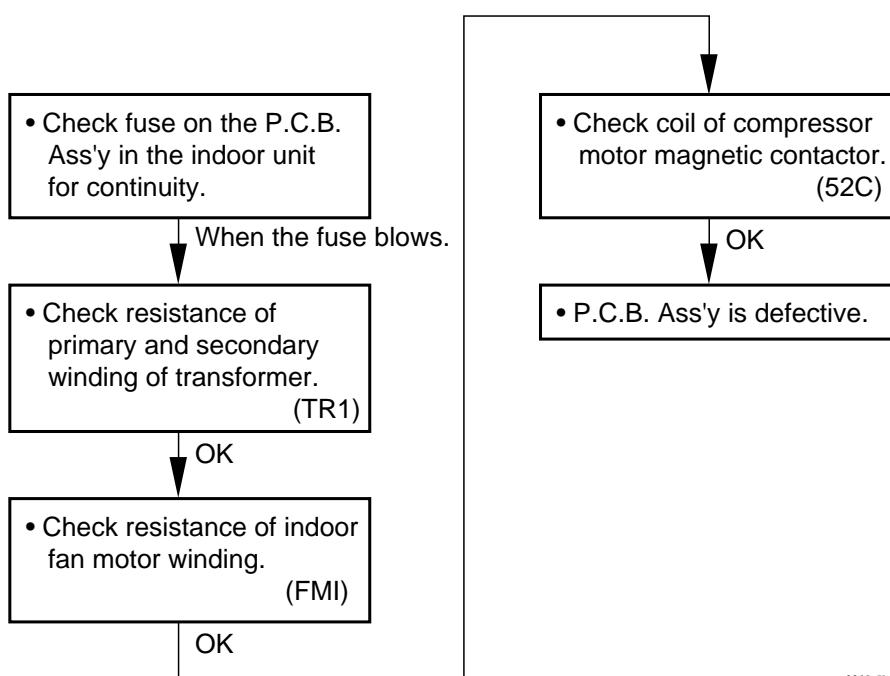
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F. Check auxiliary relay. (1Y or 2Y)

- Check coil resistance of auxiliary relay.  
(1Y or 2Y)

0620\_X\_S

G. Check fuse on the P.C.B. Ass'y in the indoor unit.



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## 11. SERVICE PROCEDURES

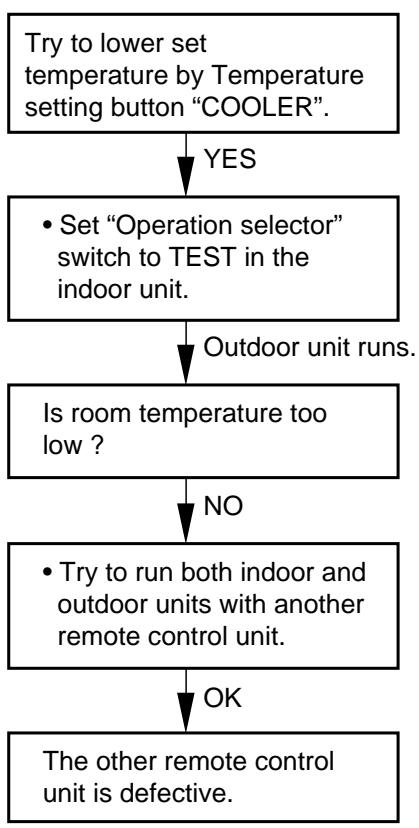
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### 3) Outdoor Unit does not Run.

A. Check COOL / FAN selector switch in the remote control unit.



B. Check set temperature.



## **11. SERVICE PROCEDURES**

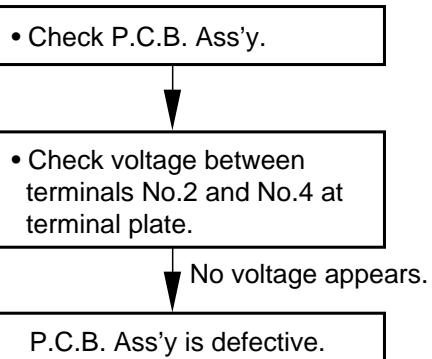
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C. Check compressor motor magnetic contactor.

- Check coil resistance of compressor motor magnetic contactor. (52C)

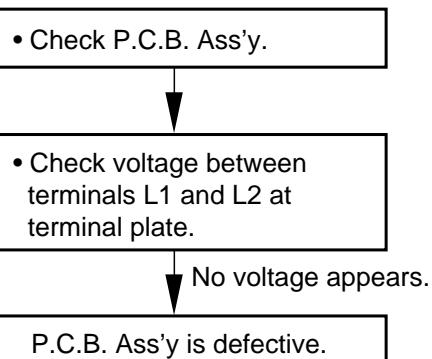
*I035\_X\_S*

D. Check indoor unit P.C.B.



*0628\_X\_S*

E. Check outdoor unit P.C.B. (CL2432 Type)



*I036\_X\_S*

## **11. SERVICE PROCEDURES**

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### **4) Indoor Unit does not Run.**

(Indoor fan and flap motor do not run.)

P.C.B. Ass'y is defective.

0630\_X\_S

### **5) Some Part does not Operate.**

#### A. Indoor fan does not run.

- Check fan rotation.  
Rotate the fan gently once or twice by hand.

Fan cannot be rotated.

Check fan casing for foreign matter on the inside.

Remove foreign matter or repair.

Fan motor burnout or foreign matter in bearing.

Repair or replace.

- Check resistance of fan motor winding.

OK

- Check fan motor capacitor.

OK

Relay RY1 or RY2 on the P.C.B. Ass'y is defective.

0631\_X\_S

#### B. Flap motor does not run.

- Check resistance of flap motor winding.

OK

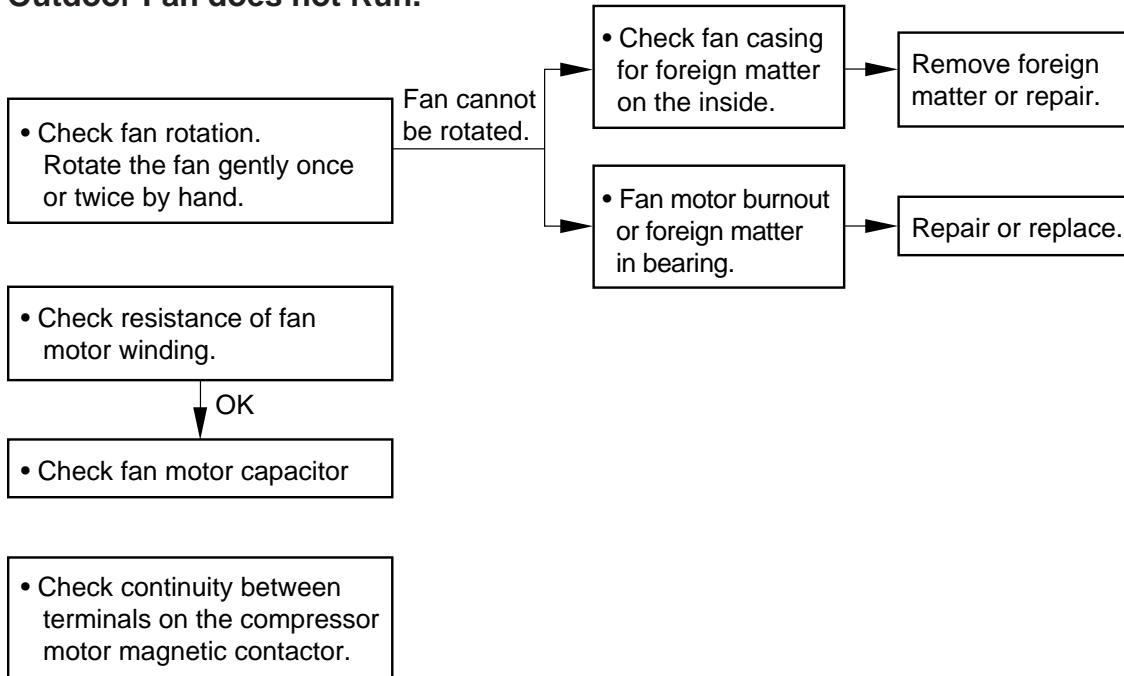
P.C.B. Ass'y or remote control unit is defective.

2222\_X\_S

## **11. SERVICE PROCEDURES**

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### **6) Outdoor Fan does not Run.**



*0633\_X\_S*

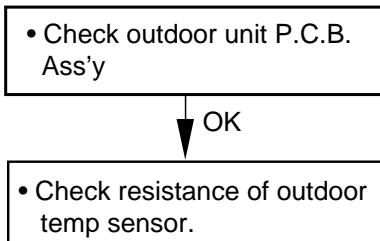
### **7) Outdoor Fan Speed is not Switched from High to Low even when the Outdoor Temperature Falls below 78 °F. (C2432 Type)**

- Check the thermostat (23S).

*1037\_X\_S*

### **8) Outdoor Fan Speed is not Switched from High to Med even when the Outdoor Temperature Falls below 77 °F.**

**Outdoor Fan Speed is not Switched from Med to Low even when the Outdoor Temperature Falls below 59 °F. (CL2432 Type)**

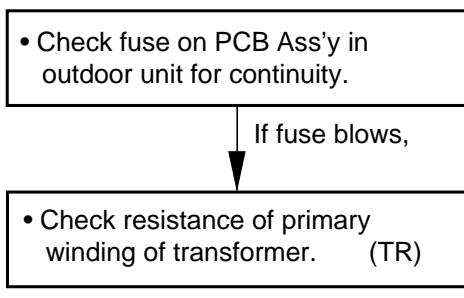


*0722\_X\_S*

## 11. SERVICE PROCEDURES

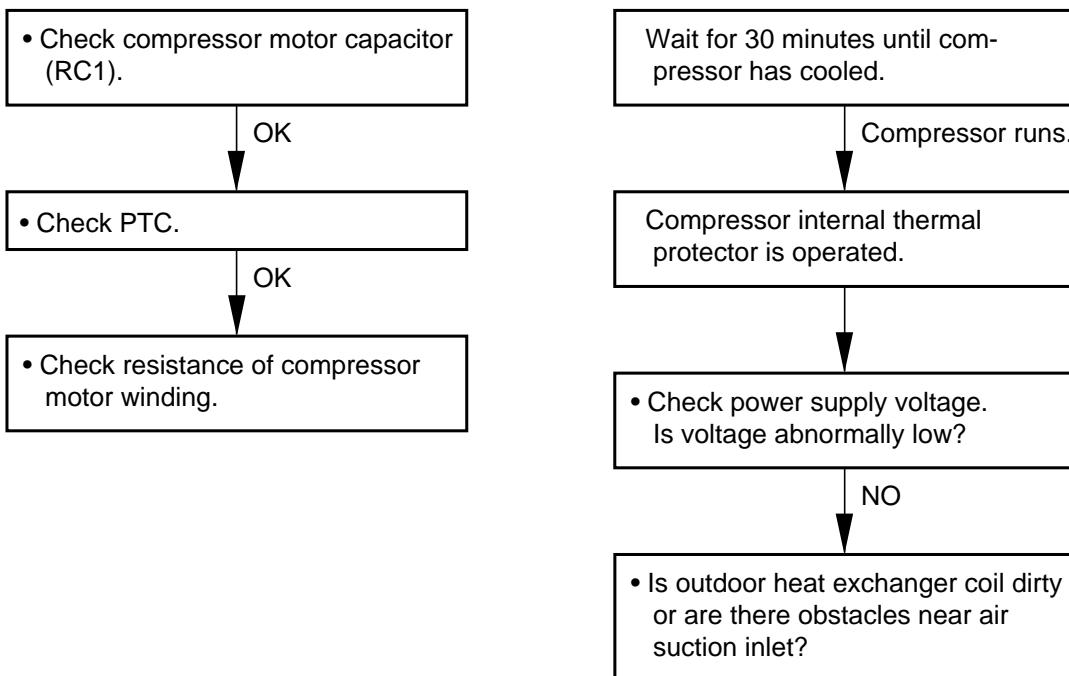
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### 9) Outdoor Fan does not Run for CL2432.



1038\_X\_S

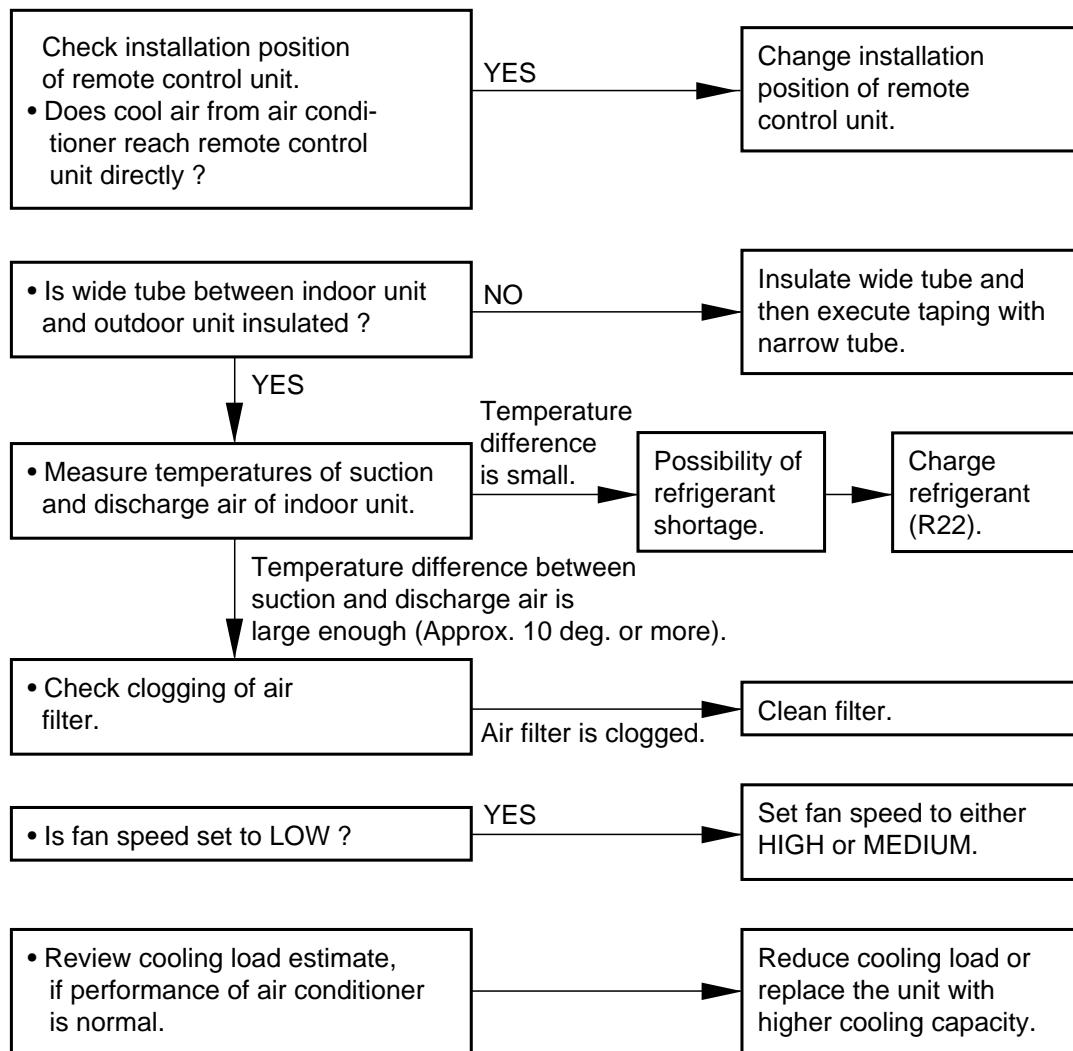
### 10) Compressor does not Run.



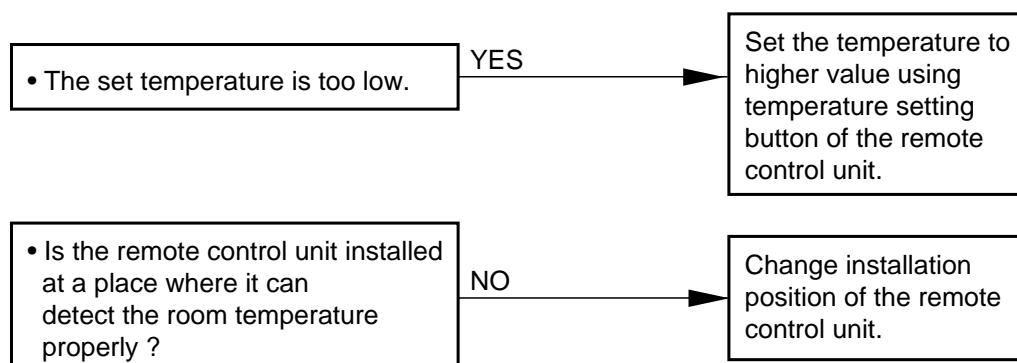
1039\_X\_S

## 11. SERVICE PROCEDURES

### 11) Poor Cooling.



### 12) Excessive Cooling.



## **11. SERVICE PROCEDURES**

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**(2) A Sensor is Defective.**

**① Indoor (heat exchanger) coil temp. Sensor is defective.**

(a) Open (=No continuity in sensor)

Compressor and outdoor fan repeat ON for 10 minutes and OFF for 6 minutes when sensor opens.

(b) Short

“Freeze Prevention” does not operate when dehumidified water is frozen on the indoor coil.

**② Room temp. Sensor (in the remote control unit) is defective.**

(a) Open (=No continuity in sensor)

Neither outdoor fan nor compressor runs.

(b) Short

Outdoor fan and compressor do not stop. — Excessive cooling.

## 11. SERVICE PROCEDURES

### (3) Checking the Electrical Components

#### 1) Measurement of Insulation Resistance

- The electrical insulation is acceptable when the resistance exceeds  $2\text{ M}\Omega$ .

##### ① Power Supply Wires

Clamp the earthed wire of the Power Supply wires with a lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 16)

Then measure the resistance between the earthed wire and the other power wires. (Fig. 16)

##### 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 the terminal plate (Fig. 17)

##### ③ Outdoor Unit

Measure the resistance by placing a probe on the terminal plate in the same manner as explained above ②. (Fig. 17)

#### ④ Measurement of Insulation Resistance for Electrical parts

- Disconnect the connector of the desired electric part from terminal plate, P.C.B. Ass'y, etc. (Fig. 18)
- Similarly, disconnect the lead wires from compressor, capacitor, etc. (Fig. 19)
- Measure the resistance in the same manner as illustrated on the right.

Refer to Electrical Wiring Diagram.

#### NOTE

If the probe does not enter the hole because the hole is too narrow, use a probe with a thinner pin.

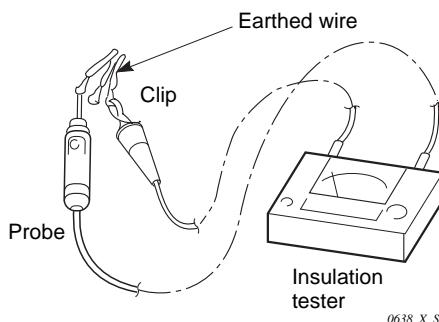


Fig. 16

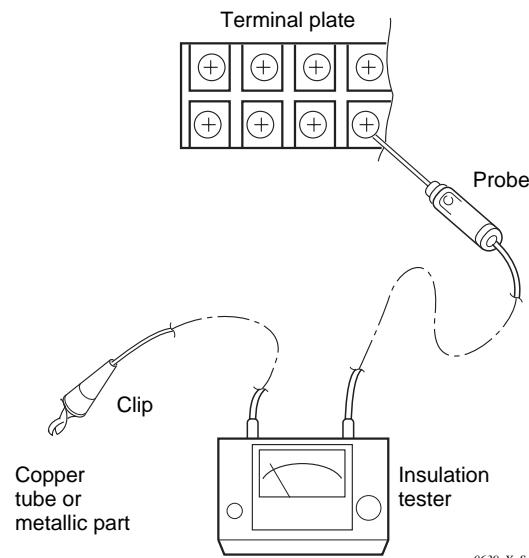


Fig. 17

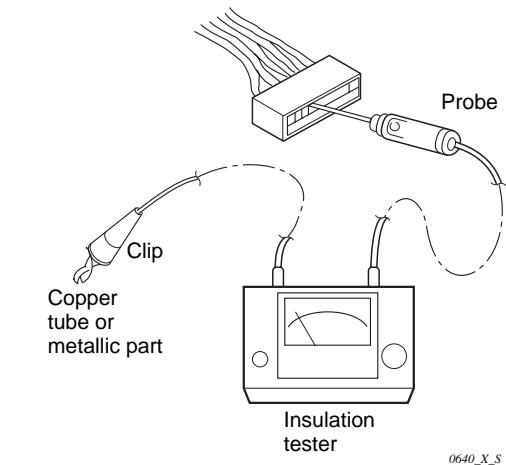


Fig. 18

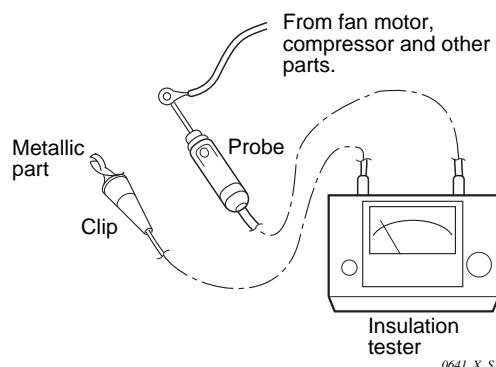


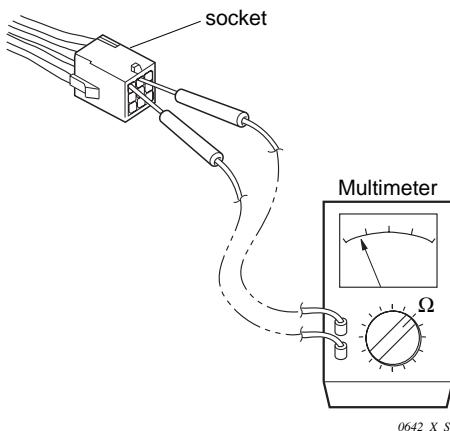
Fig. 19

## **11. SERVICE PROCEDURES**

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### **2) Checking the Protective Devices**

- Disconnect the connector, which consists of P (plug) and S (socket) when you want to check the protective device.
- Then check continuity among plug's (and/or socket's) terminal as in **Fig. 20**.
- The Protective Device is proved normal if there is a continuity between terminals.



**Fig. 20**

#### **① Indoor fan motor thermal protector (49FI) . . . . . Indoor unit**

- Disconnect the connector which leads to the indoor fan motor (FMI).
- Check the socket's terminals.

#### **② Compressor motor thermal protector . . . . . Outdoor unit**

- Disconnect the wires from terminals of compressor.
- Check the terminals of compressor.

#### **③ Outdoor fan motor thermal protector (49FO) . . . . . Outdoor unit**

- Disconnect both the connector which leads to the outdoor fan motor (FMO).
- Check socket's terminal.

## 11. SERVICE PROCEDURES

### 3) Checking the Electrical Parts

#### ① Power transformer (TR1) ..... Indoor unit \*Measure the coil resistance.

- Primary 230-208 V ; Measure the resistance between two WHT lead wire terminals of socket connected to power transformer.
- Secondary 19 V ; Measure the resistance between two BRN lead wires.

Refer to "2. (3) (A) Other component specifications".

#### ② Power transformer (TR) ..... Outdoor unit \*Measure the coil resistance.

- Primary 230-208 V ; Measure the resistance between two WHT lead wire terminals of socket jointed to power transformer.
- Secondary 19 V ; Measure the resistance between two BRN lead wires.

Refer to "2. (3) (B) Other component specifications".

#### ③ Indoor fan motor (FMI) ..... Indoor unit \*Measure the coil resistance.

- Measure the resistance between each terminal of the socket connected to the indoor fan motor.

Refer to "2. (2) (A) Major component specifications".

#### ④ Outdoor fan motor (FMO) ..... Outdoor unit \*Measure the coil resistance.

- Measure the resistance in the same manner as explained above ②.

Refer to "2. (2) (B) Major component specifications".

#### ⑤ Motor capacitor ..... Both in indoor and outdoor unit

- Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in **Fig. 21**. 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.

##### NOTE

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

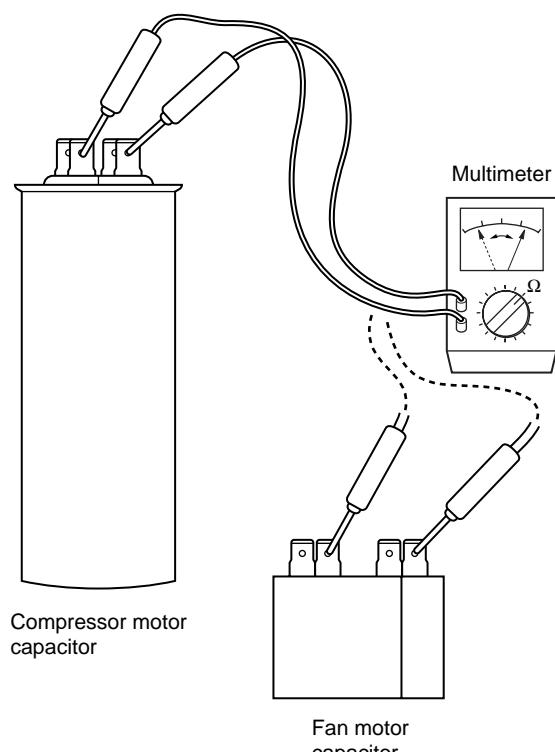


Fig. 21

1041\_X\_S

## 11. SERVICE PROCEDURES

### ⑥ Continuity of fuse on P.C.B. Ass'y

- Check for continuity using a multimeter as shown in Fig. 22.

#### NOTE

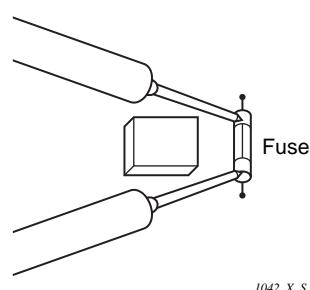
#### Method Used to Replace Fuse on PCB Ass'y

1. Remove the PCB Ass'y from the electrical component box.
2. Remove the fuse from PCB Ass'y using pliers while heating the soldered leads on the back side of the PCB Ass'y with a soldering iron (30W or 60W). (Fig. 23)
3. For replacement, insert a fuse of the same rating to the intended position and solder it.  
(Allow time to radiate heat during soldering so that the fuse does not melt.)



CAUTION

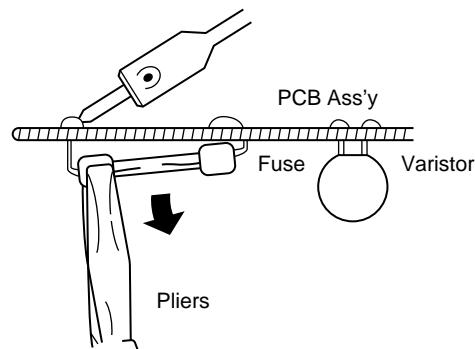
**When replacing the fuse, be sure not to break down the varistor.**



1042\_X\_S

Fig. 22

Soldering iron



1043\_X\_S

Fig. 23

## **12. MAINTENANCE**

## (1) Address Switches

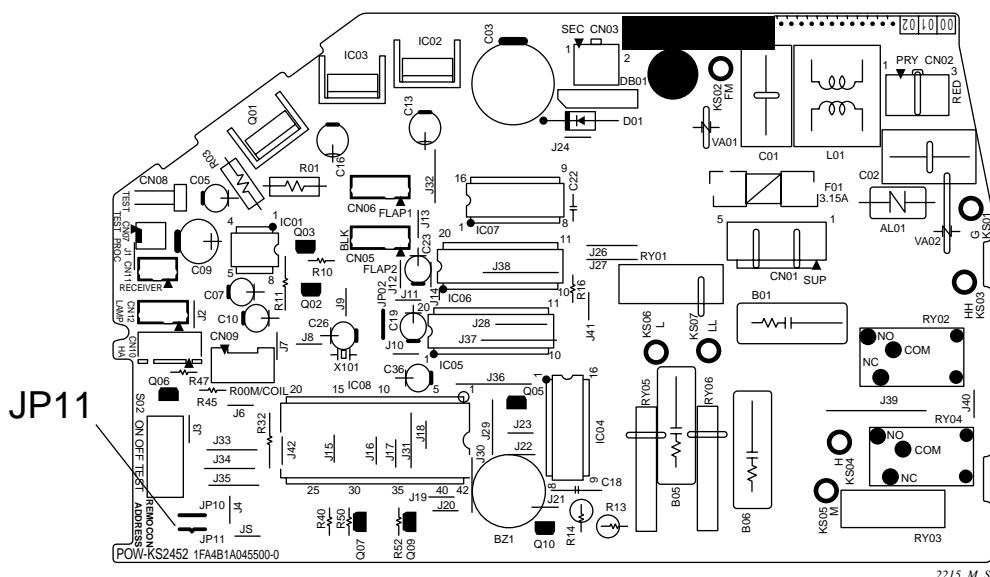
If you are installing more than 1 indoor unit (up to 2) in the same room, it is necessary for you to assign each unit its own address, so each can be operated by its own separate remote control unit. You assign the addresses by matching the *remocon address* on the PCB of each indoor unit with the switch positions of its remote control unit.

**NOTE** Once changed, you cannot restore the original address setting of the remote control unit.

## To Change Address on PCB

- (1) Cut jumper wire (JP11) on the indoor unit PCB.  
Use cutting pliers to cut and disconnect the Jumper wire.

## Control PCB on Indoor Unit



## To Change Address on Remote Control Unit

**NOTE** Remove the batteries before changing the address.

- (1) Change address of the remote control unit to "B" position.
  - (2) After inserting the batteries, press ACL button.

