

TECHNICAL DATA & SERVICE MANUAL

SANYO

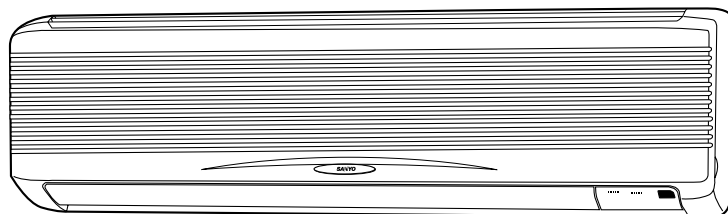
FILE NO.

KS2462R / C2462R, CL2462R

SPLIT SYSTEM AIR CONDITIONER

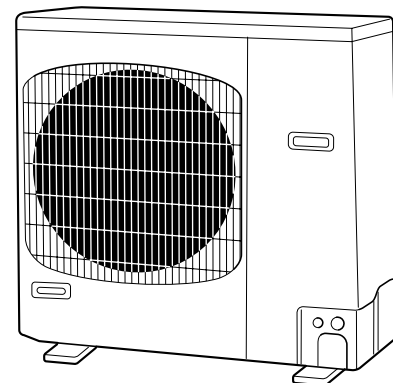
INDOOR MODEL No.	PRODUCT CODE No.	OUTDOOR MODEL No.	PRODUCT CODE No.
KS2462R	854 019 00	C2462R	854 019 01
		CL2462R	854 019 02

Indoor Unit



KS2462R

Outdoor Unit



C2462R
CL2462R

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

KS2462R / C2462R

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

KS2462R / CL2462R

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

2. SPECIFICATIONS

1-1 Unit Specifications

MODEL No.	Indoor Unit		KS2462R			
	Outdoor Unit		C2462R			
POWER SOURCE			230 - 208 V / 1 Phase / 60 Hz			
PERFORMANCE			Cooling			
Capacity	BTU / h		27,000		26,000	
	kW		7.912		7.619	
Air circulation (Hi)	Cu.ft. / min.		559		519	
Moisture removal (High)	Pints / h		6.5		6.4	
ELECTRICAL RATINGS						
Voltage rating	VAC		230		208	
Available voltage range	VAC		187 – 253			
Running amperes*	A		10.2		10.9	
Max. running amperes**	A		12.5		13.5	
Power input	W		2,240		2,200	
Power factor	%		95.5		97.0	
S.E.E.R	BTU / Wh		13.0		13.0	
Max. starting amperes	A		61		61	
FEATURES						
Controls			Microprocessor			
Timer			ON/OFF 24-hours & Program			
Fan speed Indoor / Outdoor			3 and Automatic control / 2 (Auto)			
Air deflection	Horizontal / Vertical		– / Automatic			
Air filter			Washable, easy access			
Remote controller (Accessory)			RCS - 1PS4U - G			
Refrigerant control			Capillary tube			
Refrigerant tubing connections			Flare type			
Compressor			Scroll			
Operation sound	Indoor - Hi/Me/Lo	dB - A	48 / 42 / 38			
	Outdoor - Hi	dB - A	55			
REFRIGERANT TUBING						
Limit of tubing length	ft. (m)		132 (40)			
Limit of tubing length at shipment	ft. (m)		23 (7)			
Limit of elevation difference between the two units	ft. (m)		50 (15)			
Refrigerant tube outer diameter	Narrow tube	in. (mm)	3 / 8 (9.52)			
	Wide tube	in. (mm)	3 / 4 (19.05)			
Refrigerant amount at shipment	lbs. (kg)		R410A - 6.6 (3)			
DIMENSIONS & WEIGHT			Indoor unit		Outdoor unit	
Unit dimensions	Height	in. (mm)	13	(330)	36-5/8	(930)
	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)	39-3/4	(1,010)
	Width	in. (mm)	48-15/32	(406)	39-3/8	(1,000)
	Depth	in. (mm)	15-31/32	(406)	15-3/4	(400)
Net weight	lbs. (kg)		40	(18)	150	(68)
Shipping weight	lbs. (kg)		44	(20)	190	(86.5)
Shipping volume	cu. ft.(m ³)		5.7	(0.162)	14.1	(0.40)

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Cooling:

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

1-1 Unit Specifications

MODEL No.	Indoor Unit		KS2462R	
	Outdoor Unit		CL2462R	
POWER SOURCE			230 - 208 V / 1 Phase / 60 Hz	
PERFORMANCE			Cooling	
Capacity	BTU / h		27,000	26,000
	kW		7.912	7.619
Air circulation (Hi)	Cu.ft. / min.		559	519
Moisture removal (High)	Pints / h		6.5	6.4
ELECTRICAL RATINGS				
Voltage rating	VAC		230	208
Available voltage range	VAC		187 – 253	
Running amperes*	A		10.2	10.9
Max. running amperes**	A		12.5	13.5
Power input	W		2,240	2,200
Power factor	%		95.5	97.0
S.E.E.R	BTU / Wh		13.0	13.0
Max. starting amperes	A		61	61
FEATURES				
Controls			Microprocessor	
Timer			1-hour OFF, ON/OFF 12-hours & Program	
Fan speed Indoor / Outdoor			3 and Automatic control / 3 (Auto)	
Air deflection	Horizontal / Vertical		– / Automatic	
Air filter			Washable, easy access	
Remote controller (Accessory)			RCS - 1PS4U - G	
Refrigerant control			Capillary tube	
Refrigerant tubing connections			Flare type	
Compressor			Scroll	
Operation sound	Indoor - Hi/Me/Lo	dB - A	48 / 42 / 38	
	Outdoor - Hi	dB - A	55	
REFRIGERANT TUBING				
Limit of tubing length	ft. (m)		132 (40)	
Limit of tubing length at shipment	ft. (m)		23 (7)	
Limit of elevation difference between the two units	ft. (m)		50 (15)	
Refrigerant tube outer diameter	Narrow tube	in. (mm)	3 / 8 (9.52)	
	Wide tube	in. (mm)	3 / 4 (19.05)	
Refrigerant amount at shipment	lbs. (kg)		R410A - 6.6 (3)	
DIMENSIONS & WEIGHT			Indoor unit	
Unit dimensions	Height	in. (mm)	13 (330)	36-5/8 (930)
	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)	39-3/4 (1,010)
	Width	in. (mm)	48-15/32 (406)	39-3/8 (1,000)
	Depth	in. (mm)	15-31/32 (406)	15-3/4 (400)
Net weight	lbs. (kg)	40 (18)	150 (68)	
Shipping weight	lbs. (kg)	44 (20)	190 (86.5)	
Shipping volume	cu. ft.(m ³)		5.7 (0.162)	14.1 (0.40)

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Cooling:

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

(2) Major Component Specifications

(A) Indoor Unit

MODEL No.		KS2462R	
Source		230 - 208 V / 1 phase / 60 Hz	
Remote controller (Accessory)		RCS - 1PS4U - G	
Controller P. C. B Ass'y		CR - KS2462R	
Control circuit fuse		250 V, 3 A	
Fan			
Type		Cross-flow	
Number ... Dia. and length	in. (mm)	1 ... O.D. 4 (100), L33-3/8 (847)	
Fan motor			
Model		KFG4X - 31B6P-S	
Source		230 - 208 V / 1 phase / 60 Hz	
No. of pole ... r.p.m. (230 V, High)	rpm	4 ... 1,365	
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	
Safety device		Internal	
Operating temperature	Open °F	266 ± 9	
	Close °F	181 ± 27	
Run capacitor	VAC, μF	440 V , 1.5 μF	
Heat exchanger			
Coil		Aluminum plate fin / Copper tube	
Rows ... Fins per inch		2 ... 19.5	
Face area	ft. ² (m ²)	2.30 (0.214)	
Flap Motor			
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

(2) Major Component Specifications (B) Outdoor Unit

MODEL No.		C2462R	
Source		230 - 208 V / 1 phase / 60 Hz	
Compressor		Scroll (Hermetic)	
Model		ZP23K3E	
Source		230 - 208 V / 1 phase / 60 Hz	
Nominal output	W	2,400	
Compressor oil	cc	1,120	
Coil resistance (Ambient temperature 77 °F)	Ω	C - R : 2.28 , C - S : 1.01	
Safety device		Internal type	
Overload relay models		—	
Operating temperature	Open °F	284 ± 9	
	Close °F	156 ~ 189	
Operating ampere (at 77 °F)	A	—	
Run capacitor	VAC, μF	400 V, 40 μF	
Refrigerant amount charged at shipment	lbs. (kg)	R410A : 6.6 (3)	
High pressure switch		ACB - 1UB24W	
Set pressure	OFF MPa	4.15 ⁺⁰ _{-0.15}	
	ON MPa	3.15 ± 0.3	
Fan		Propeller	
Number...diameter	in. (mm)	1 ... 18-3/32 (460)	
Fan speeds		2 (AUTO)	
Fan motor		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		Internal	
Operating temperature	Open °F	248 ± 9	
	Close °F	171 ± 27	
Run capacitor	VAC, μF	440 V, 4 μF	
Heat exchanger		Aluminum plate fin / Copper tube	
Coil		Aluminum plate fin / Copper tube	
Rows ... Fins per inch		2 ... 14.1	
Face area	ft. ² (m ²)	8.72 (0.81)	

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2. SPECIFICATIONS

(2) Major Component Specifications (B) Outdoor Unit

MODEL No.		CL2462R
Source		230 - 208 V / 1 phase / 60 Hz
Controller P.C.B. Ass'y		CR - CL2432 (Microprocessor)
Control circuit fuse		250 V, 3 A
Compressor		Scroll (Hermetic)
Model		ZP23K3E
Source		230 - 208 V / 1 phase / 60 Hz
Nominal output	W	2,400
Compressor oil	cc	1,120
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	284 ± 9
	Close °F	156 ~ 189
Operating ampere (at 77 °F)		—
Run capacitor	VAC, μF	400 V, 40 μF
Crank case heater	V, W	230 V, 30 W
Refrigerant amount charged at shipment		R410A : 6.6 (3)
High pressure switch		ACB - 1UB24W
Set pressure	OFF MPa	4.15 \pm $\begin{matrix} 0 \\ 0.15 \end{matrix}$
	ON MPa	3.15 ± 0.3
Fan		Propeller
Number...diameter	in. (mm)	1 ... 18 - 3/32 (460)
Fan speeds		3 (AUTO)
Fan motor		
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
Operating temperature	Open °F	248 ± 9
	Close °F	171 ± 27
Run capacitor	VAC, μF	440 V, 4 μF
Heat exchange		
Coil		Aluminum plate fin / Copper tube
Rows Fins per inch		2 ... 14.1
Face area	ft. ² (m ²)	8.72 (0.81)

DATA SUBJECT TO CHANGE WITHOUT NOTICE

2. SPECIFICATIONS

(3) Other Component Specifications

(A) Indoor Unit

MODEL No.		KS2462R
Power Transformer		ATR – T5
Rated	Primary	AC 230 V, 60 Hz
	Secondary	AC19 V, 0.5 A
	Capacity	9.5 VA
Coil resistance (Ambient temprature 77 °F)	Ω	Primary (WHT - WHT) : 457.5 Secondary (BRN - BRN) : 3.9
Thermistor cut off temperature		277 °F
Thermistor (Coil sensor)		DTN - TKS131B
Coil resistance	kΩ	32 °F : 15.0 ± 2 %
Thermistor (Room sensor)		DTN - TKS128B
Coil resistance	kΩ	77 °F : 5.0 ± 3 %
Lamp Ass'y		IND - K301AH
Flap Motor		MP24GA2

2. SPECIFICATIONS

(3) Other Component Specifications

(A) Outdoor Unit

MODEL No.	C2462R	
Compressor Motor Magnetic Contactor	FC - 1SUL	
Coil rated	AC 240 V, 60 Hz	
Coil resistance (at 68 °F)	Ω	587 ± 5 %
Contact rated (Main)	AC 240 V, 26 A	
Contact rated (Auxiliary)	AC 240 V, 3 A	
Power Relay	HH62S	
Coil rated	AC 240 V, 60 Hz	
Coil resistance (at 68 °F)	kΩ	17.2
Contact rated	AC 220 V, 5 A	
Thermostat (Coil sensor)	YTB - 4U305F	
Operating Temperature	°F	79 ± 3 OFF 75 $\begin{smallmatrix} +3 \\ -1 \end{smallmatrix}$ ON
Contact rated	200 to 240 V, 1 A	

2. SPECIFICATIONS

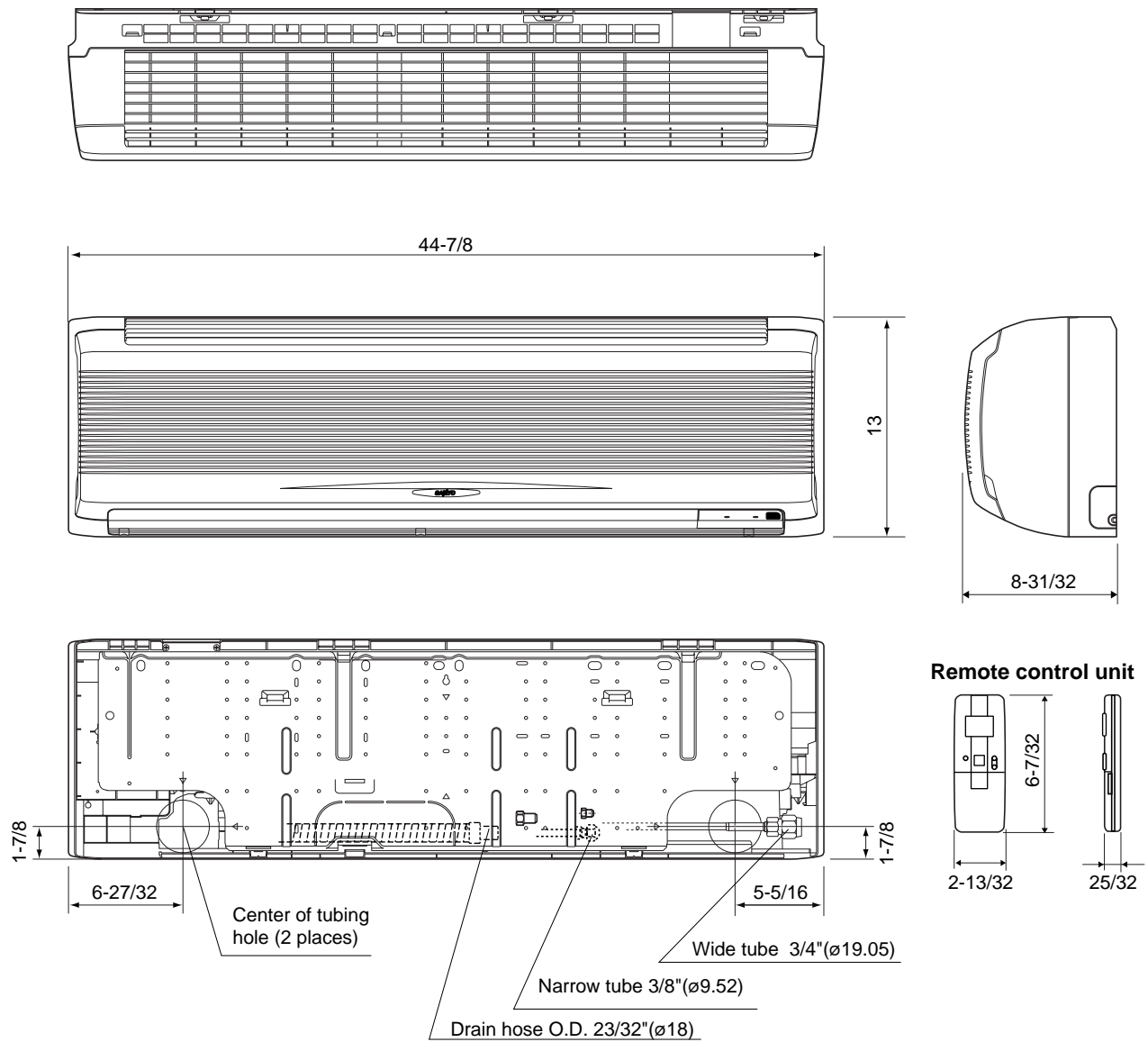
(3) Other Component Specifications

(B) Outdoor Unit

MODEL No.	CL2462R	
Compressor Motor Magnetic Contactor	FC - 1SUL	
Coil rated	AC 240 V, 60 Hz	
Coil resistance (at 77 °F)	Ω	587 ± 5 %
Contact rated (Main)	AC 240 V, 26 A	
Contact rated (Auxiliary)	AC 240 V, 3 A	
Power Relay	HH62S	
Coil rated	AC 240 V, 60 Hz	
Coil resistance (at 77 °F)	kΩ	17.2
Contact rated	AC 220 V, 5 A	
Power Transformer	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
Thermistor (Outdoor Temp. sensor)	PBC - 41E - S4	
Coil resistance	kΩ	14 °F : 23.7 , 50 °F : 9.7 23 °F : 18.8 , 68 °F : 6.5 32 °F : 15.0 , 86 °F : 4.4 41 °F : 12.1 , 104 °F : 3.1 113 °F : 2.6
Solenoid control valve or coil		
Solenoid control valve	VPV - 202DQ50	
Solenoid coil	VPV - MOAQ517B1	

3. DIMENSIONAL DATA

(1) Indoor Unit: KS2462R

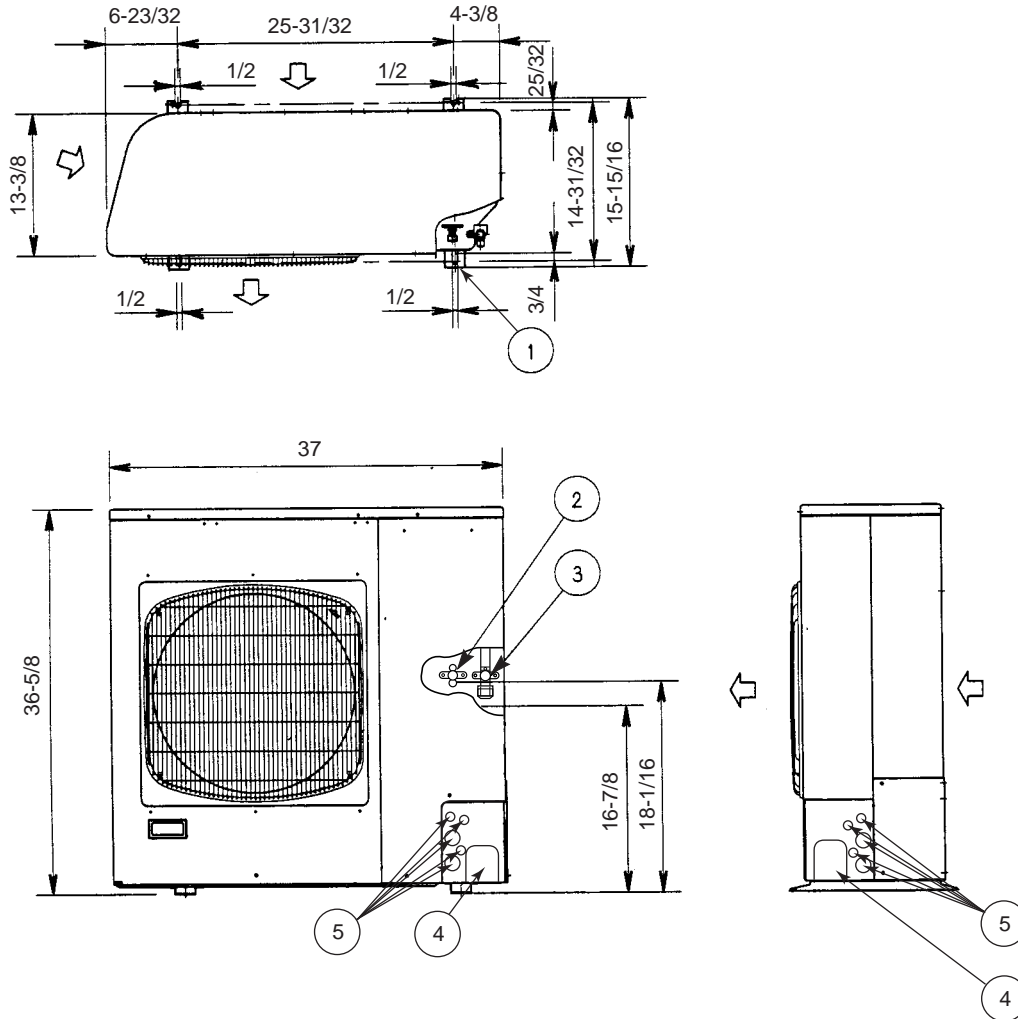


Dimension : inch

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3. DIMENSIONAL DATA

(2) Outdoor Unit: C2462R, CL2462R



Dimension : inch

- ① Hole for anchor bolt (4-R1/4)
- ② Refrigerant tube joint (narrow tube)
Flare connection 3/8 in (9.52 mm)
- ③ Refrigerant tube joint (wide tube)
Flare connection 3/4 in (19.05 mm)
- ④ Refrigerant tubing inlet
- ⑤ Power supply inlet

4. COOLING CAPACITY

① Indoor Unit: KS2462R Outdoor Unit: C2462R

• 230V / 1 phase / 60Hz

RATING CAPACITY :		27,000 BTU / h		AIR FLOW RATE :		559 Cu.ft / min	
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	27,350	26,030	24,520	22,820	20,930
		CI	1.66	1.81	1.97	2.23	2.49
	72(22.2)	SHC	18,460	17,640	16,740	15,760	14,710
	76(24.4)	SHC	20,150	19,340	18,430	17,450	16,400
	80(26.7)	SHC	21,930	21,110	20,210	19,220	18,170
	84(28.9)	SHC	23,620	22,810	21,900	20,920	19,870
	88(31.1)	SHC	25,320	24,500	23,600	22,620	20,930
63 (17.2)		TC	28,380	27,110	25,760	24,220	22,550
		CI	1.67	1.83	2	2.26	2.52
	72(22.2)	SHC	16,130	15,400	14,660	13,840	12,970
	76(24.4)	SHC	17,820	17,100	16,360	15,530	14,670
	80(26.7)	SHC	19,590	18,870	18,130	17,310	16,440
	84(28.9)	SHC	21,290	20,570	19,820	19,000	18,140
	88(31.1)	SHC	22,990	22,260	21,520	20,700	19,830
67 (19.4)		TC	29,460	28,300	# 27,000	25,570	24,000
		CI	1.69	1.85	2.02	2.29	2.55
	72(22.2)	SHC	13,770	13,170	12,510	11,810	11,060
	76(24.4)	SHC	15,470	14,870	14,210	13,510	12,760
	80(26.7)	SHC	17,240	16,640	15,980	15,280	14,530
	84(28.9)	SHC	18,940	18,330	17,680	16,970	16,230
	88(31.1)	SHC	20,630	20,030	19,370	18,670	17,920
71 (21.7)		TC	31,020	29,940	28,780	27,510	26,110
		CI	1.7	1.87	2.05	2.32	2.59
	72(22.2)	SHC	11,500	10,990	10,450	9,870	9,260
	76(24.4)	SHC	13,190	12,680	12,140	11,570	10,950
	80(26.7)	SHC	14,960	14,450	13,920	13,340	12,730
	84(28.9)	SHC	16,660	16,150	15,610	15,040	14,420
	88(31.1)	SHC	18,360	17,850	17,310	16,730	16,120
75 (23.9)		TC	31,640	30,620	29,540	28,300	26,970
		CI	1.74	1.9	2.08	2.35	2.63
	76(24.4)	SHC	10,560	10,120	9,680	9,170	8,650
	80(26.7)	SHC	12,330	11,900	11,450	10,950	10,420
	84(28.9)	SHC	14,020	13,590	13,150	12,640	12,110
	88(31.1)	SHC	15,720	15,290	14,840	14,340	13,810

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. COOLING CAPACITY

① Indoor Unit: KS2462R

Outdoor Unit: C2462R

• 208V / 1 phase / 60Hz

RATING CAPACITY :		26,000 BTU / h		AIR FLOW RATE :		519 Cu.ft / min	
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	26,340	25,060	23,610	21,970	20,150
		CI	1.64	1.79	1.95	2.23	2.52
	72(22.2)	SHC	17,760	16,960	16,080	15,120	14,100
	76(24.4)	SHC	19,360	18,560	17,680	16,720	15,700
	80(26.7)	SHC	21,030	20,230	19,350	18,390	17,370
	84(28.9)	SHC	22,630	21,830	20,950	19,990	18,970
	88(31.1)	SHC	24,230	23,430	22,550	21,590	20,150
63 (17.2)		TC	27,330	26,100	24,800	23,320	21,710
		CI	1.66	1.82	1.98	2.27	2.55
	72(22.2)	SHC	15,540	14,840	14,110	13,310	12,470
	76(24.4)	SHC	17,140	16,430	15,710	14,910	14,070
	80(26.7)	SHC	18,810	18,110	17,380	16,580	15,740
	84(28.9)	SHC	20,410	19,700	18,980	18,180	17,340
	88(31.1)	SHC	22,010	21,300	20,580	19,780	18,940
67 (19.4)		TC	28,370	27,250	# 26,000	24,620	23,110
		CI	1.67	1.83	2	2.29	2.58
	72(22.2)	SHC	13,310	12,720	12,080	11,390	10,670
	76(24.4)	SHC	14,910	14,320	13,680	12,990	12,260
	80(26.7)	SHC	16,580	15,990	15,350	14,660	13,940
	84(28.9)	SHC	18,180	17,590	16,950	16,260	15,540
	88(31.1)	SHC	19,770	19,190	18,550	17,860	17,130
71 (21.7)		TC	29,870	28,830	27,720	26,490	25,140
		CI	1.69	1.85	2.03	2.32	2.62
	72(22.2)	SHC	11,150	10,650	10,130	9,570	8,970
	76(24.4)	SHC	12,750	12,250	11,730	11,170	10,570
	80(26.7)	SHC	14,420	13,920	13,400	12,840	12,240
	84(28.9)	SHC	16,020	15,520	15,000	14,440	13,840
	88(31.1)	SHC	17,620	17,120	16,600	16,040	15,440
75 (23.9)		TC	30,470	29,480	28,440	27,250	25,970
		CI	1.72	1.88	2.06	2.36	2.66
	76(24.4)	SHC	10,240	9,810	9,380	8,890	8,380
	80(26.7)	SHC	11,910	11,480	11,050	10,560	10,050
	84(28.9)	SHC	13,510	13,080	12,650	12,160	11,650
	88(31.1)	SHC	15,110	14,680	14,250	13,760	13,250

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

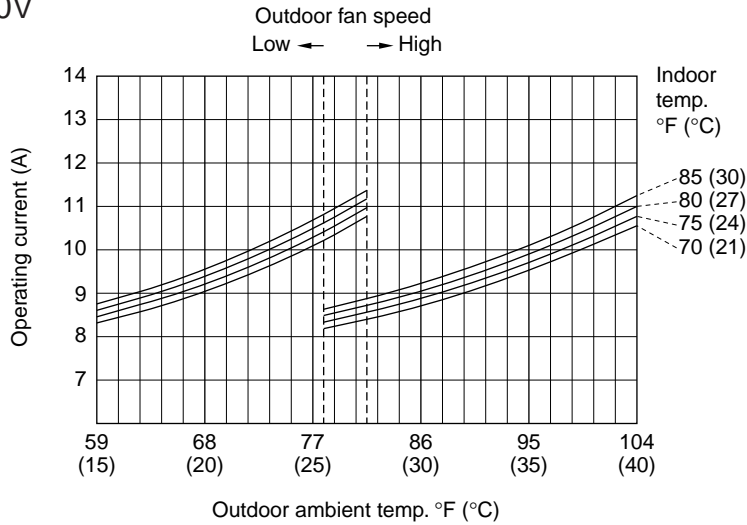
5. PERFORMANCE CHARTS

(1) Operating Current

① Indoor Unit: KS2462R Outdoor Unit: C2462R

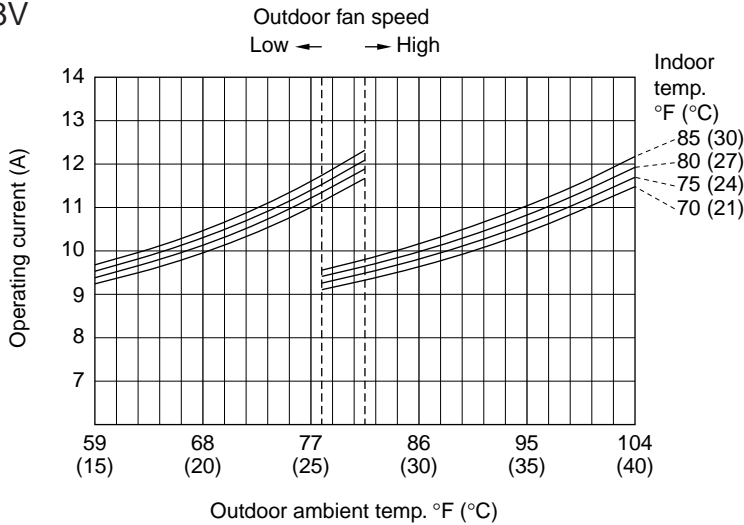
Operating current characteristics versus outdoor ambient temperature and indoor temperature.
(Indoor relative humidity: 50%, Indoor fan speed: High)

230V



1061_X_S

208V



1062_X_S

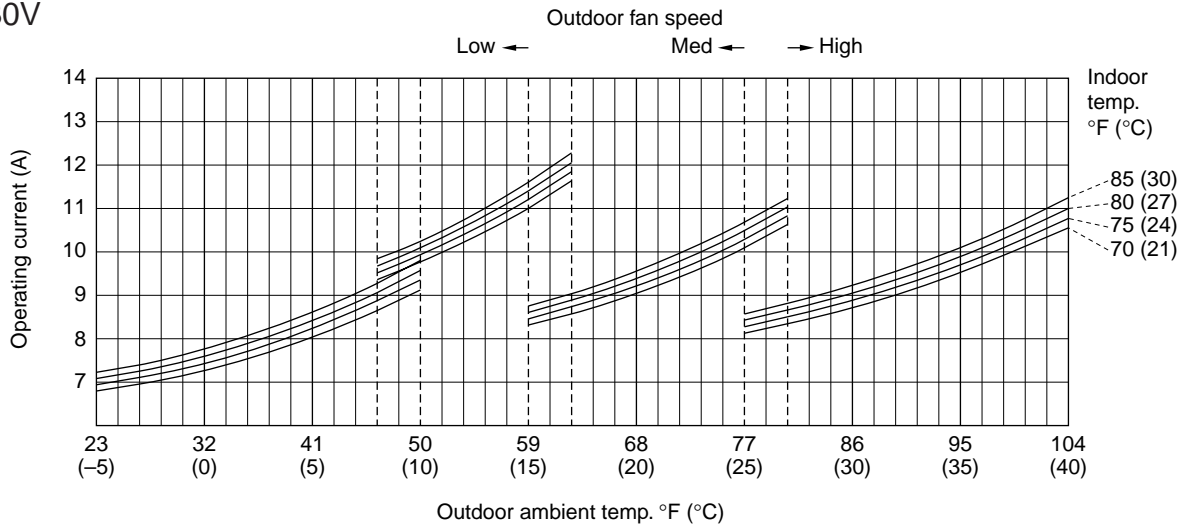
5. PERFORMANCE CHARTS

(1) Operating Current

② Indoor Unit: KS2462R Outdoor Unit: CL2462R

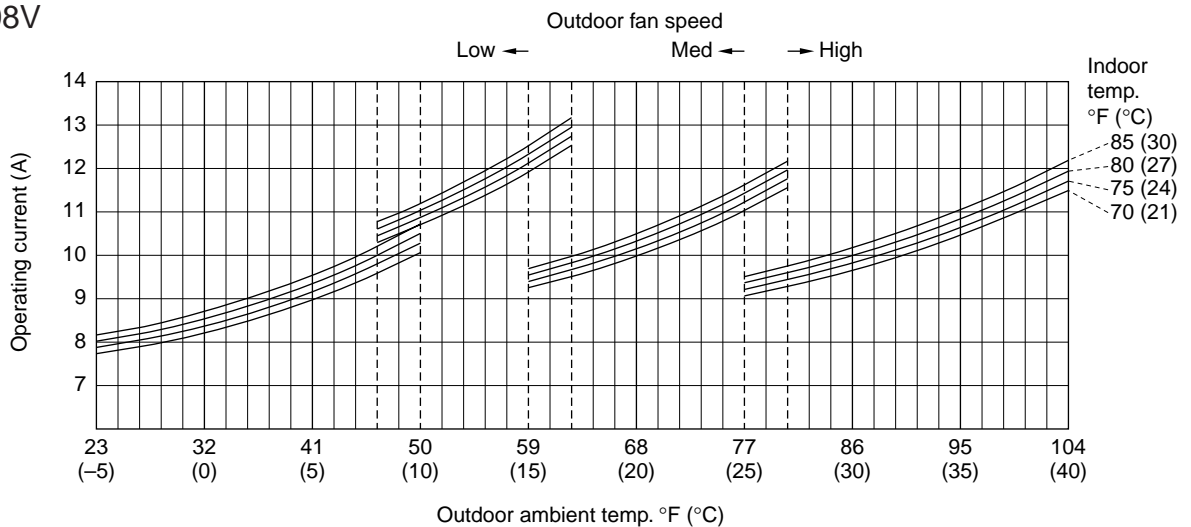
Operating current characteristics versus outdoor ambient temperature and indoor temperature.
(Indoor relative humidity: 50%, Indoor fan speed: High)

230V



1063_X_S

208V



1064_X_S

5. PERFORMANCE CHARTS

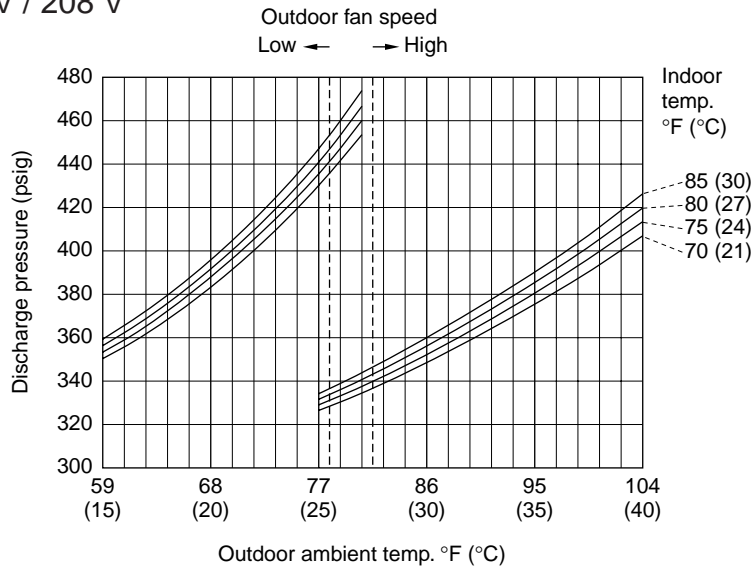
(2) High and Low Pressure

① Indoor Unit: KS2462R Outdoor Unit: C2462R

• High Pressure

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

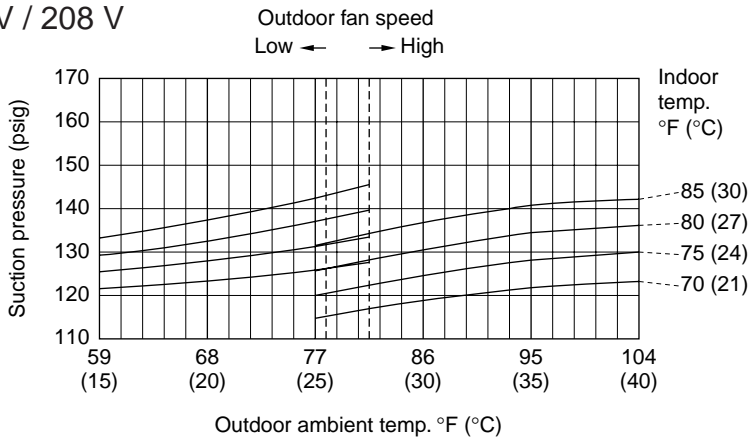
230V / 208 V



• Low Pressure

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

230V / 208 V



5. PERFORMANCE CHARTS

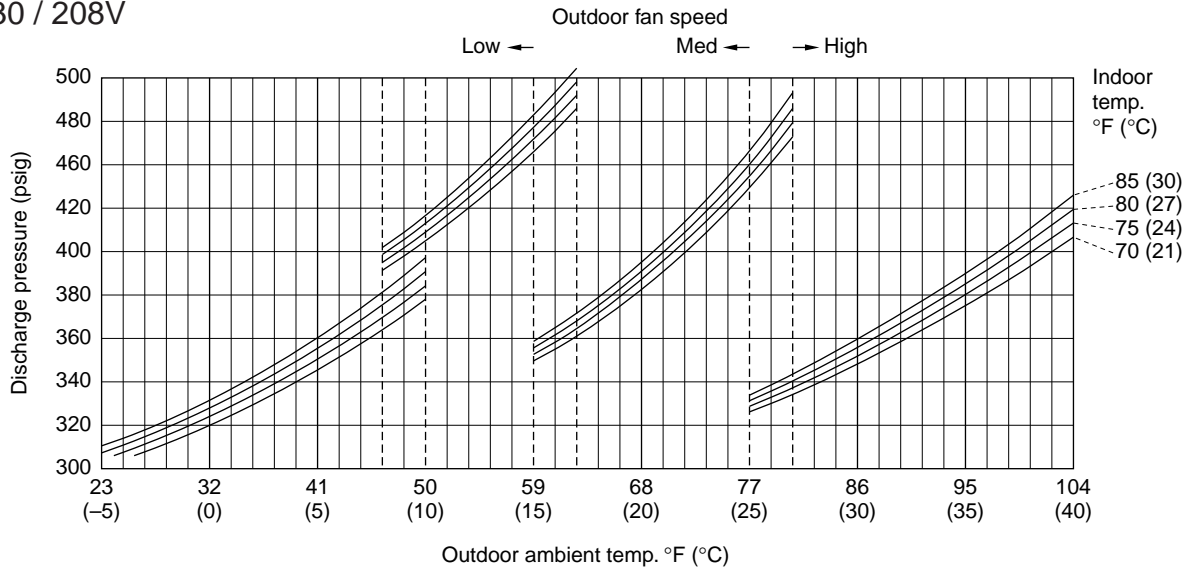
(2) High and Low Pressure

② Indoor Unit: KS2462R Outdoor Unit: CL2462R

• High Pressure

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

230 / 208V

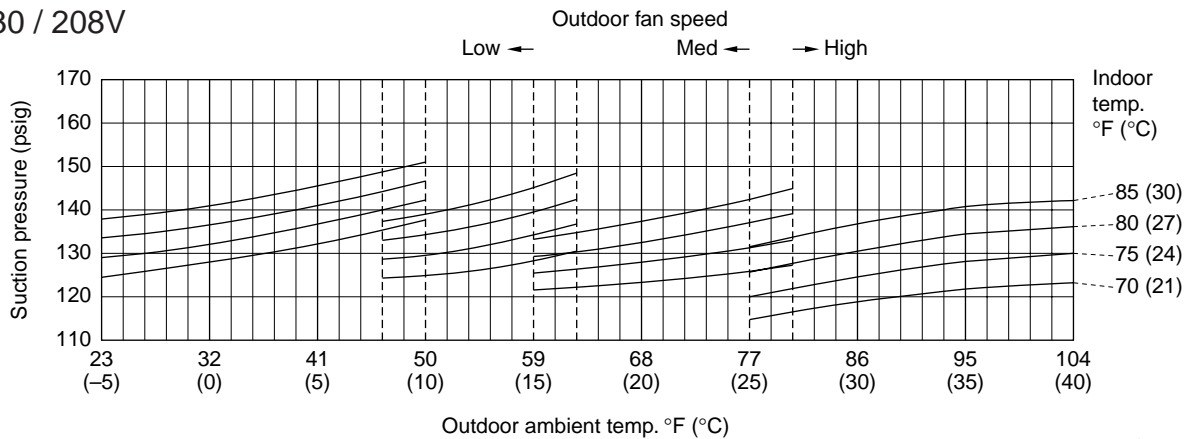


1067_X_S

• Low Pressure

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

230 / 208V



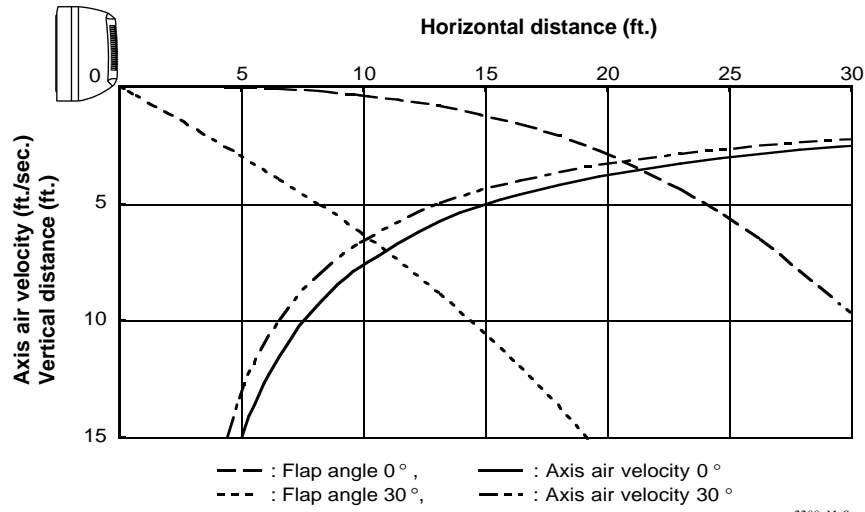
1068_X_S

6. AIR THROW DISTANCE CHART

Indoor Unit: KS2462R

Room air temp. : 80°F (26.7°C)

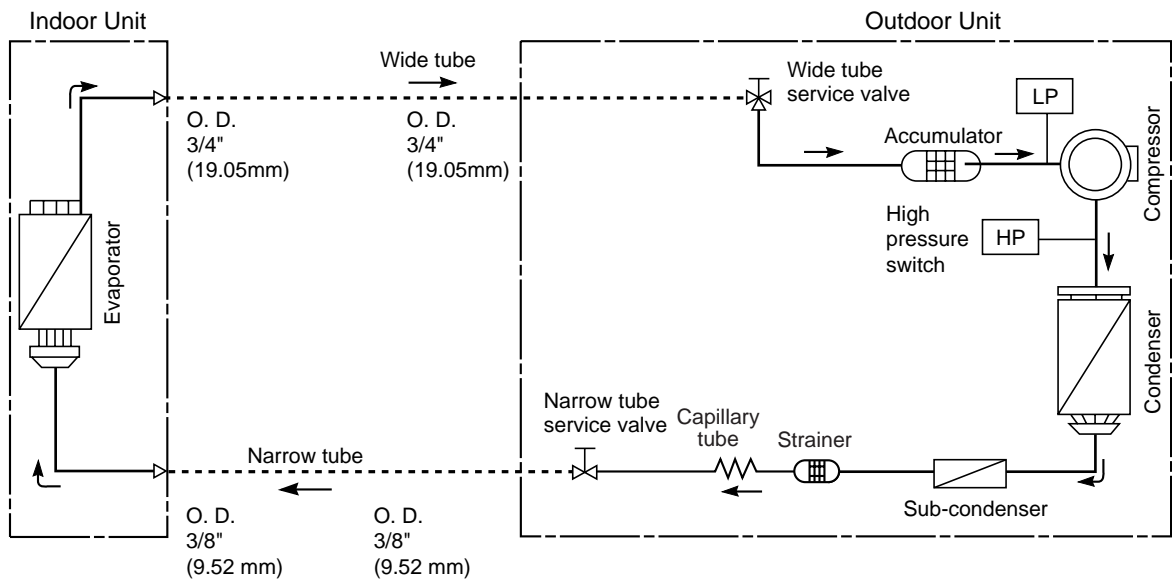
Fan speed : High



7. REFRIGERANT FLOW DIAGRAM

Indoor Unit: KS2462R

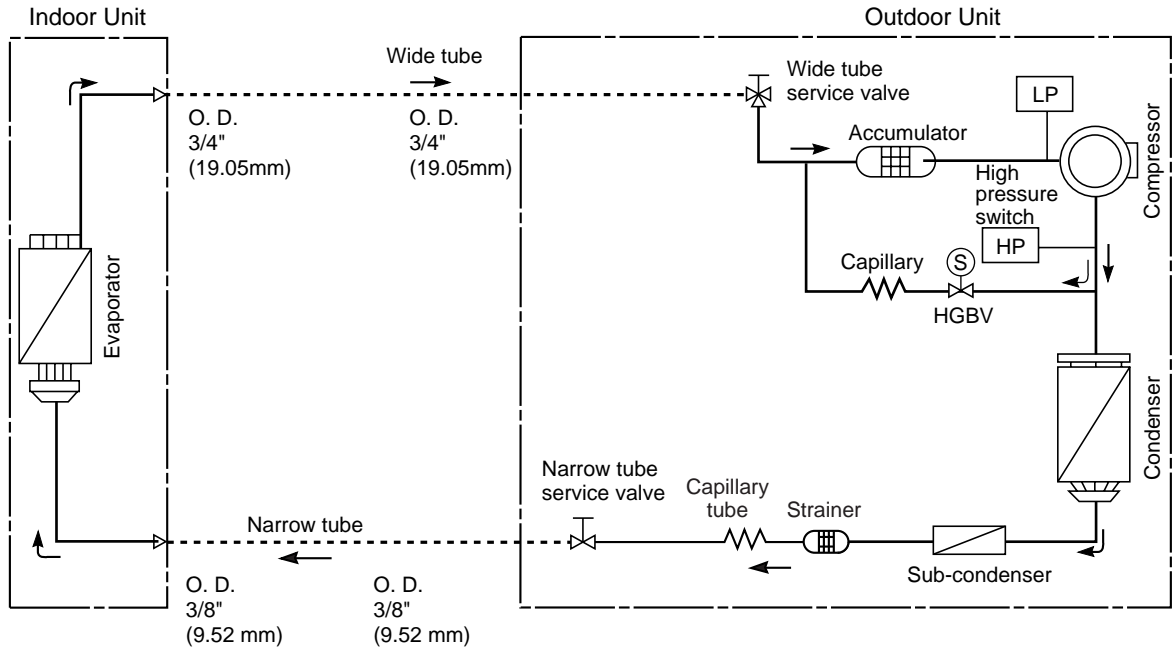
Outdoor Unit: C2462R



2201_M_S

Indoor Unit: KS2462R

Outdoor Unit: CL2462R



2202_M_S

8. 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.

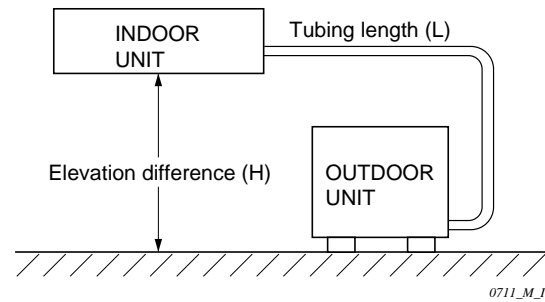


Fig. 1

Table 3

Model	Max. Allowable Tubing Length at Shipment (ft.)	Limit of Tubing Length (L) (ft.)	Limit of Elevation Difference (H) (ft.)	Required Amount of Additional Refrigerant (oz./ft.)*
C2462R, CL2462R	23	132	50	0.43

* If total tubing length becomes 23 to 132 ft. (max.), additional refrigerant (R410A) charge of 0.43 oz./ft. is required. No additional charge of compressor oil is necessary.

8. 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.

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.
- 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.

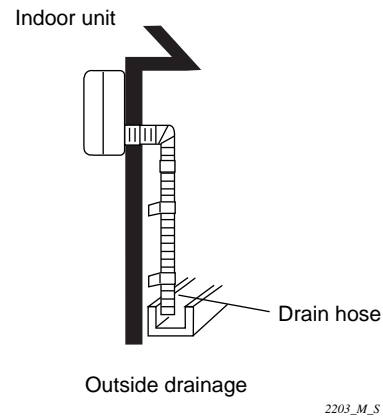
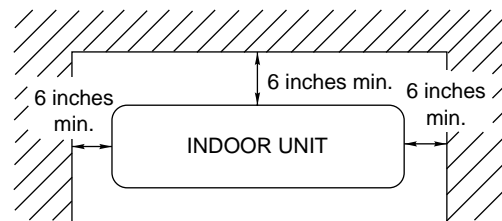


Fig. 2



Front View

Fig. 3a



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

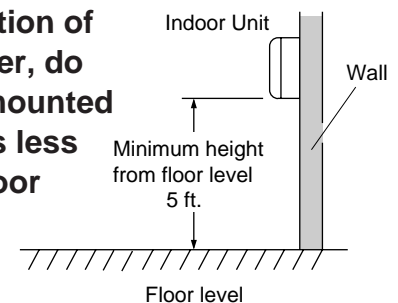


Fig. 3b

8. 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.

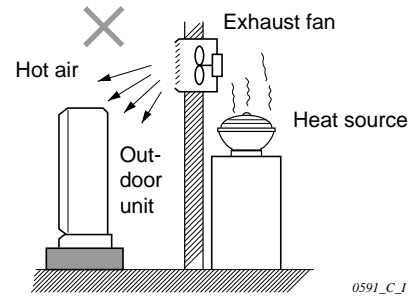


Fig. 4

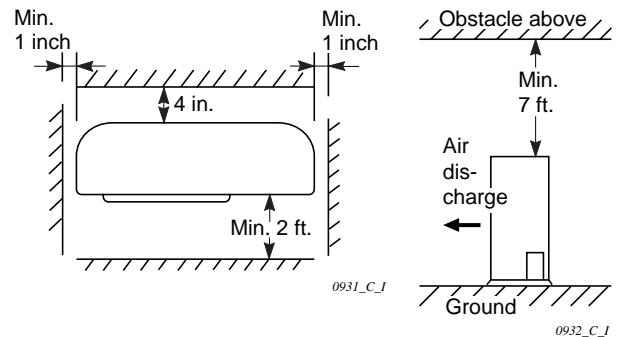


Fig. 5

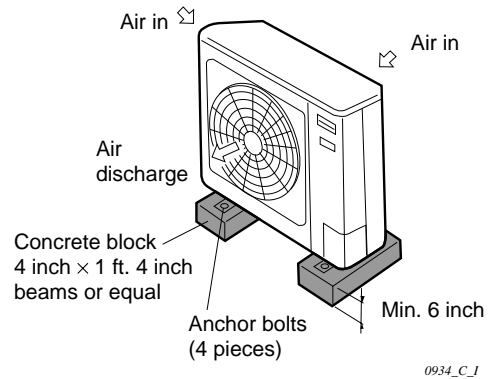


Fig. 6

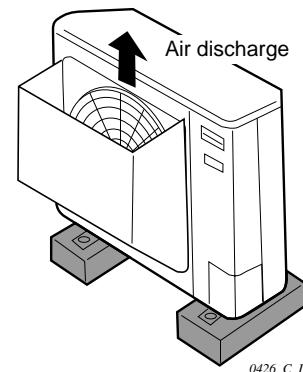


Fig. 7

SM830092

8. INSTALLATION INSTRUCTIONS

Wind Shield for "CL" Model

IMPORTANT

It is recommended to use wind shields for "CL" model (Fig. 5b). "CL" model is designed to use in low outdoor temperature conditions.

General

When the outdoor unit is installed in a position exposed to strong wind (like seasonal winds with low air temperature in winter), a suitable wind shield must be installed on the outdoor unit.

This unit is designed so that the fan of the outdoor unit runs at low speed when the air conditioner is operated at low outdoor air temperatures. When the outdoor unit is exposed to strong wind, the system pressure drops because of the freeze protector.

For outer dimensions of the wind shield, see Fig. 5c.

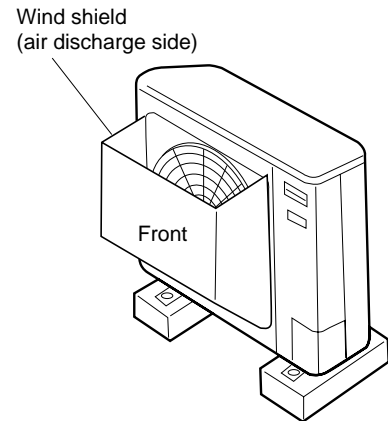
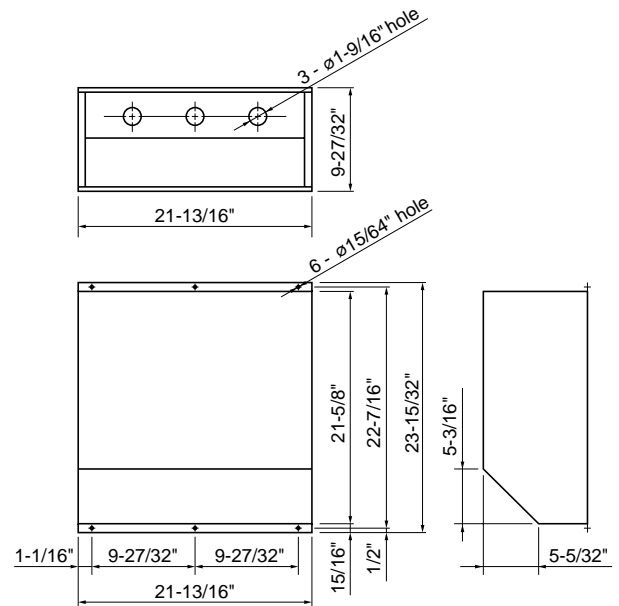


Fig. 5b

Recommended outer dimensions of wind shield (field supply)



CL2462R

Fig. 5c

8. INSTALLATION INSTRUCTIONS

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.

8. INSTALLATION INSTRUCTIONS

7-2. Recommended Wire Length and Wire Diameter for Power Supply System

Models	(A) ^{*1} Power Supply	(B) ^{*1} Inter-unit Wiring AGW #14	Time Delay Fuse or Circuit Capacity
C2462R, CL2462R	64 ft. (AWG #12)	132 ft.	35 A

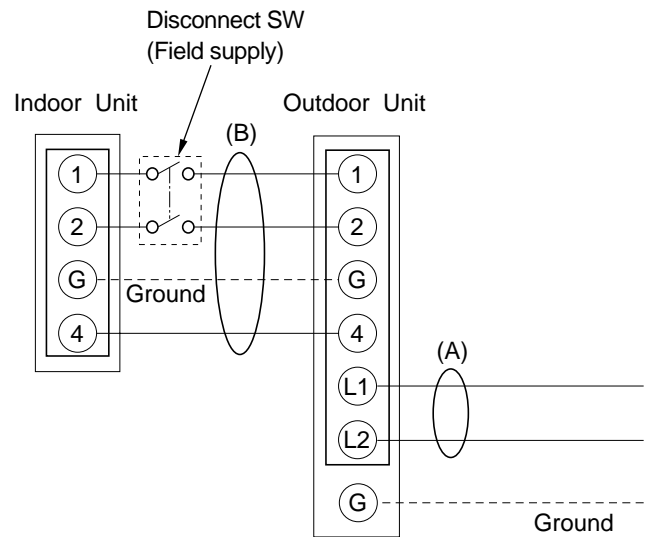
*1 Refer to the Wiring System Diagrams (See below diagram) for the meaning of "A" and "B."
AWG = American Wire Gauge

NOTE

To access the electrical component box, open the air intake grille and remove the electrical component box cover.

7-3. Wiring System Diagram

Outdoor Unit: "C", "CL" models
Single-phase
60 Hz, 208/230 V



9. ELECTRICAL DATA

● Electrical characteristics

Indoor model: KS2462R / Outdoor model: C2462R, CL2462R

		Indoor Unit	Outdoor Unit		Complete Unit
		Fan Motor	Fan Motor	Compressor	
Performance at		230 - 208 V / 1 phase / 60 Hz			
Rating conditions	A	0.38 - 0.37	0.90 - 0.90	8.8 - 9.6	10.1 - 10.9
	kW	0.08 - 0.07	0.18 - 0.17	2.02 - 2.00	2.25 - 2.24
Full load conditions	A	0.38 - 0.37	0.90 - 0.90	11.1 - 12.4	12.4 - 13.7
	kW	0.08 - 0.07	0.18 - 0.17	2.55 - 2.58	2.81 - 2.32
Starting amperes	A	1 - 1	1 - 1	61 - 55	63 - 57

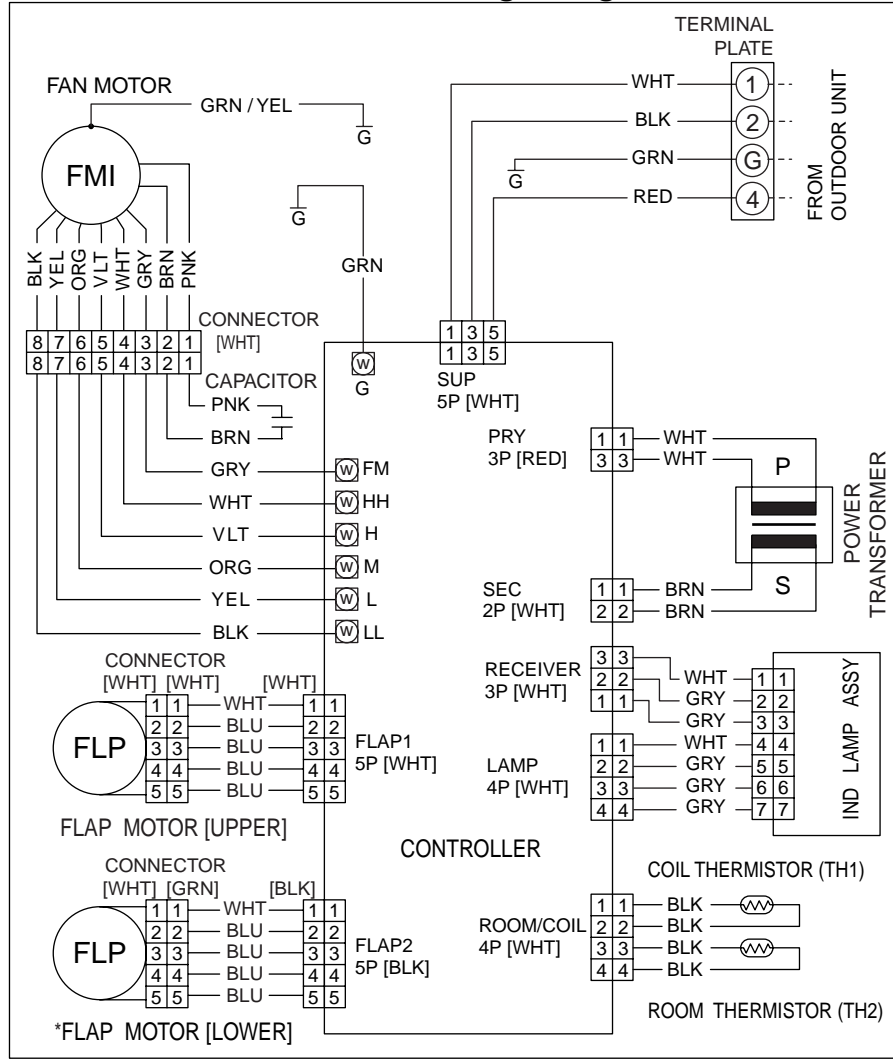
Rating Conditions : Indoor Air Temperature 80 °F DB / 67 °F WB
Outdoor Air Temperature 95 °F DB
Full Load Conditions : Indoor Air Temperature 80 °F DB / 67 °F WB
Outdoor Air Temperature 115 °F DB

10. ELECTRICAL WIRING DIAGRAMS

(1) Indoor Unit

① KS2462R

• Electric Wiring Diagram

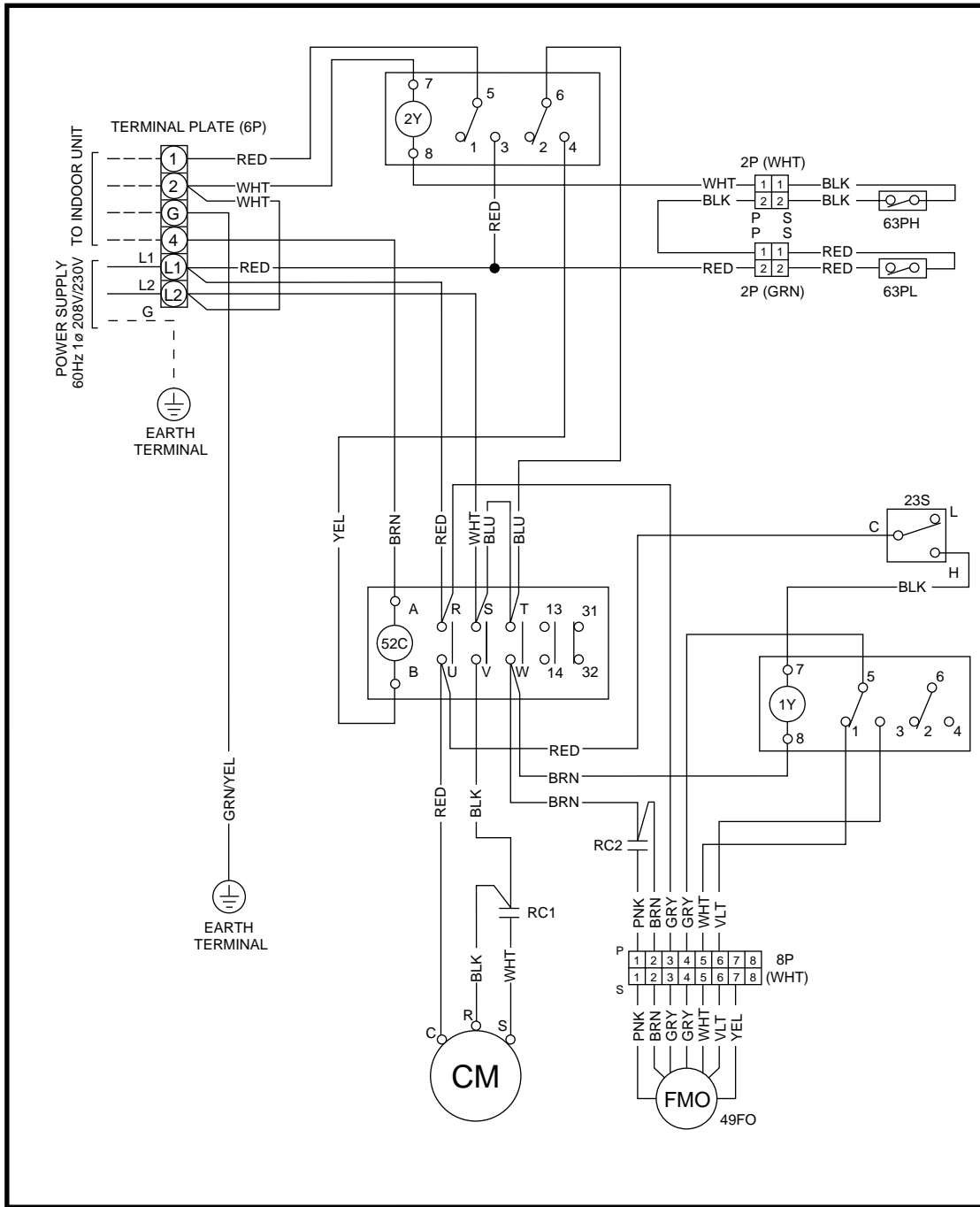


8512-5253-714XX-1 (KS2432A)

10. ELECTRICAL WIRING DIAGRAMS

Outdoor Unit C2462R

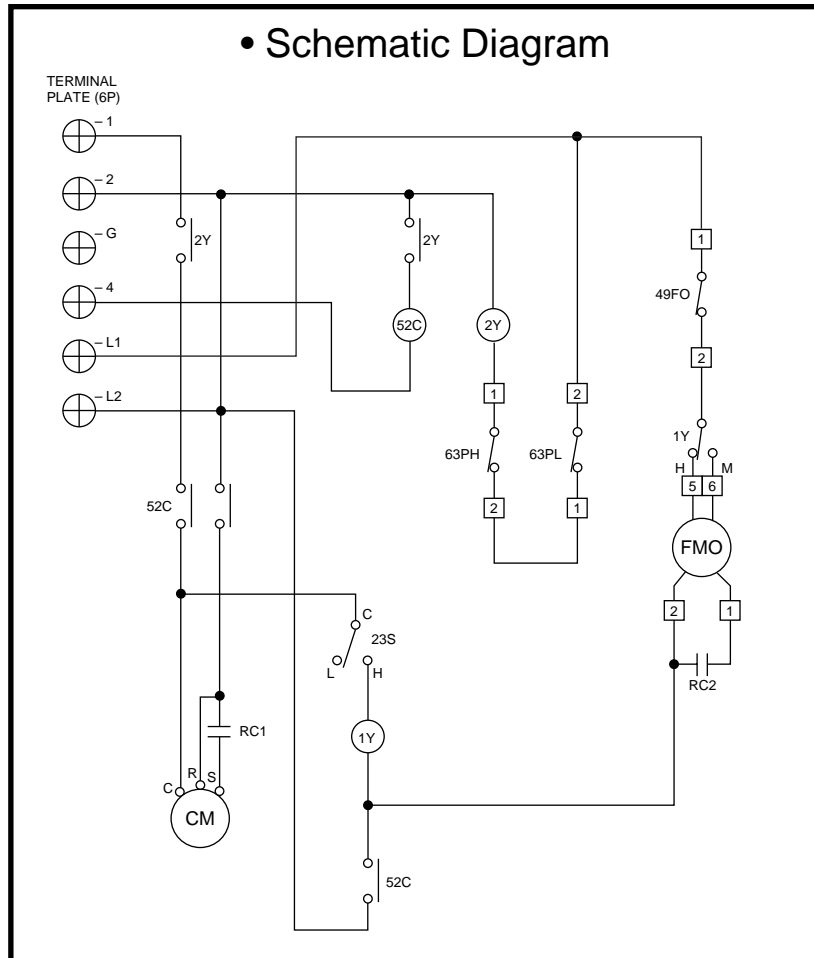
• Electric Wiring Diagram



854-2-5269-160-00-0

10. ELECTRICAL WIRING DIAGRAMS

Outdoor Unit C2462R



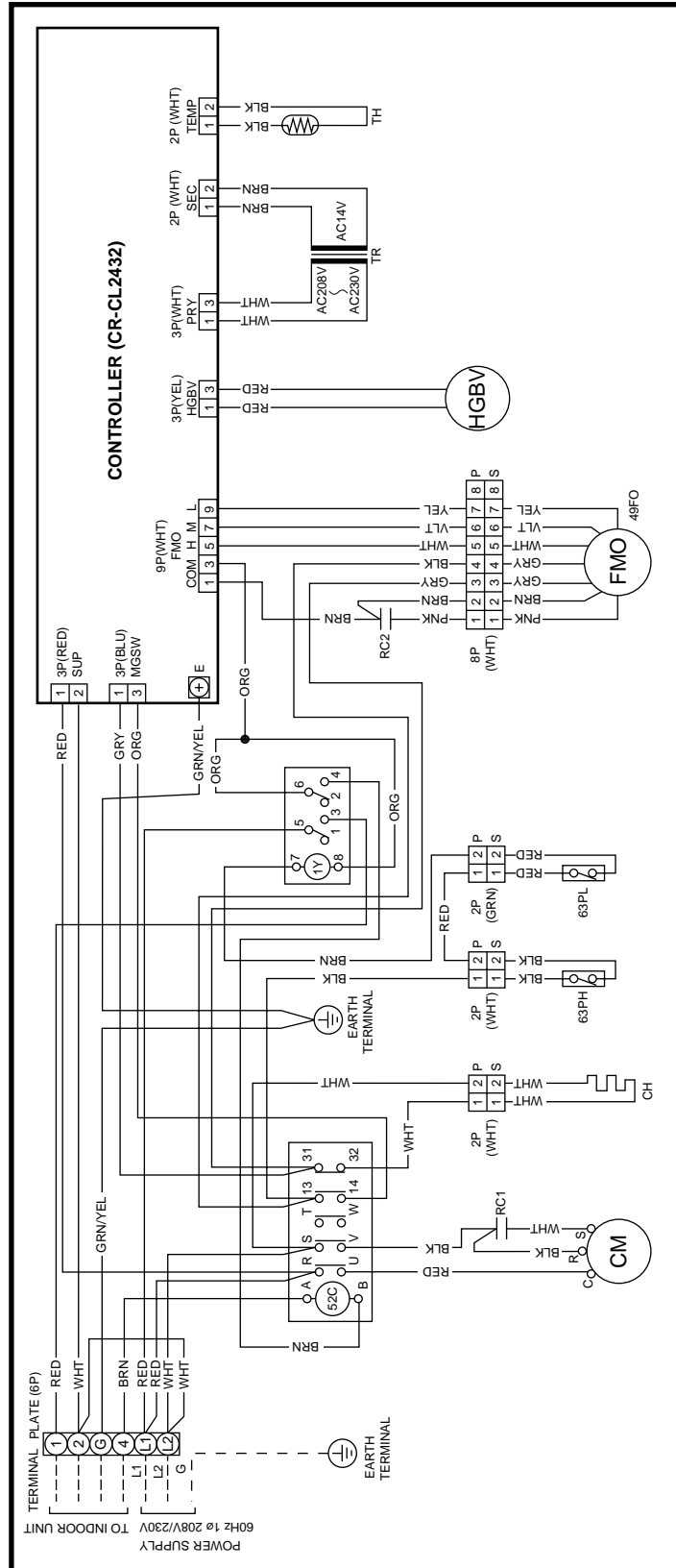
854-2-5269-160-00-0

Symbols	Description
CM	Compressor Motor
FMO	Outdoor Fan Motor
52C	Compressor Motor Magnetic Contactor
49FO	Outdoor Fan Motor Thermal Protector
63PH	High Pressure Switch
63PL	Low Pressure Switch
23S	Fan Speed Control Thermostat
RC1, 2	Running Capacitor
1Y, 2Y	Auxiliary Relay
⊕	Terminal Base
□	Connector

10. ELECTRICAL WIRING DIAGRAMS

Outdoor Unit
CL2462R

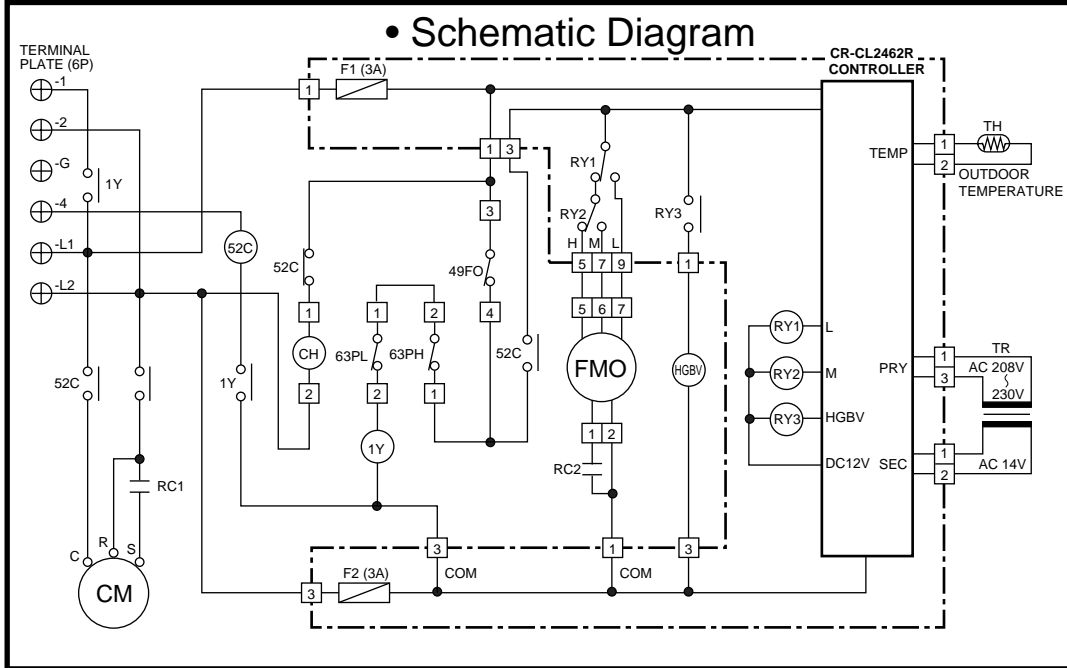
• Electric Wiring Diagram



854-2-5269-159-00-0

10. ELECTRICAL WIRING DIAGRAMS

Outdoor Unit CL2462R



854-2-5269-159-00-0

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

11. 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.

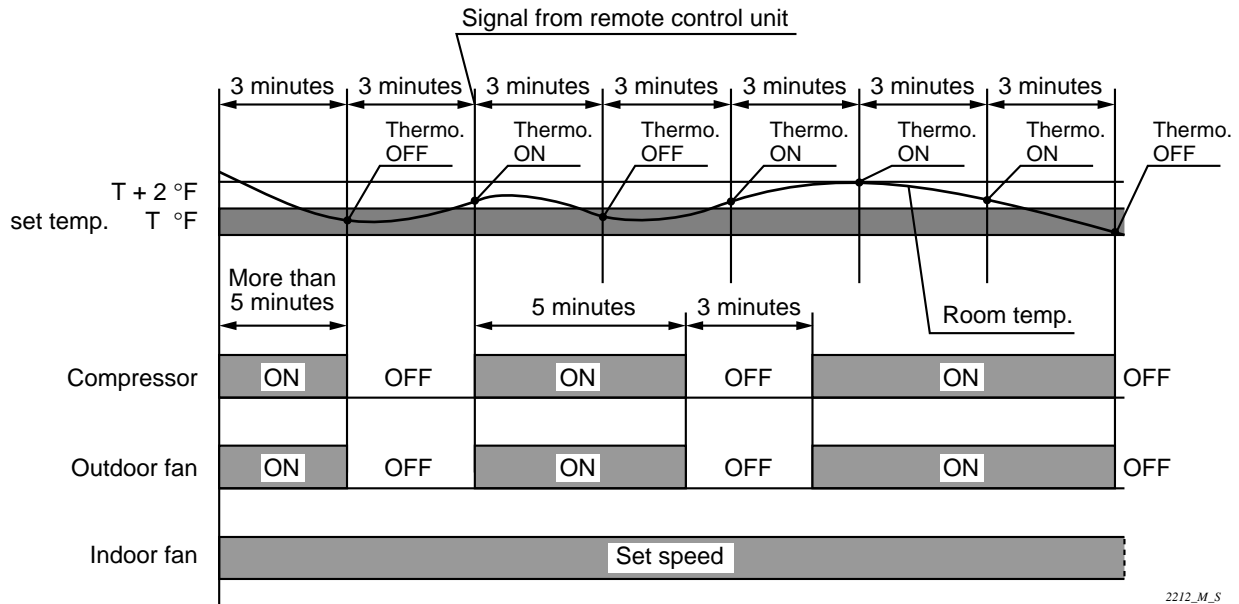


Fig. 11

2212_M_S

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 °F above the set temperature T , ($T + 1$ °F):
Compressor → **ON**
- Thermo OFF:** When the room temperature is equal to or below the set temperature T :
Compressor → **OFF**

11. 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.

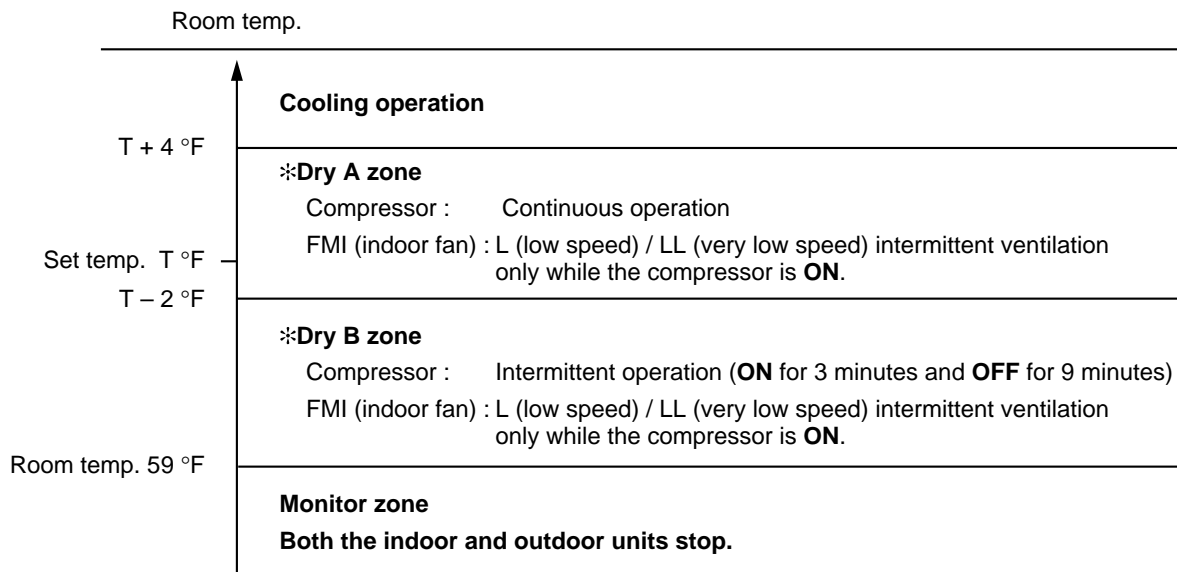


Fig. 12

2213_M_S

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.

11. 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.

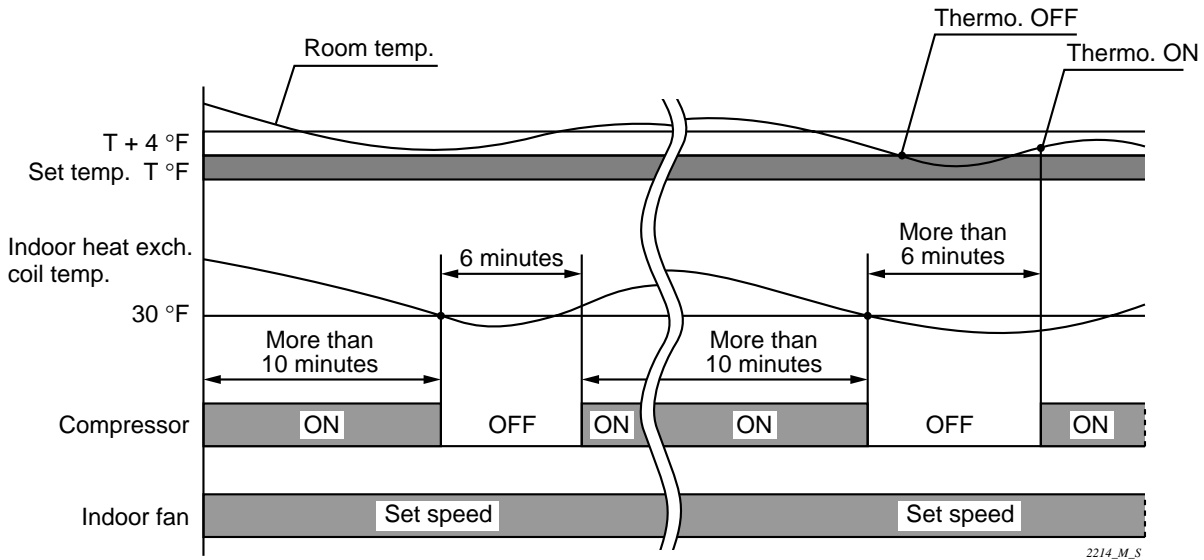


Fig. 13

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.

11. PROCESSES AND FUNCTIONS

(4) Outdoor Fan Speed Control

(1) C2462R 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) CL2462R 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.

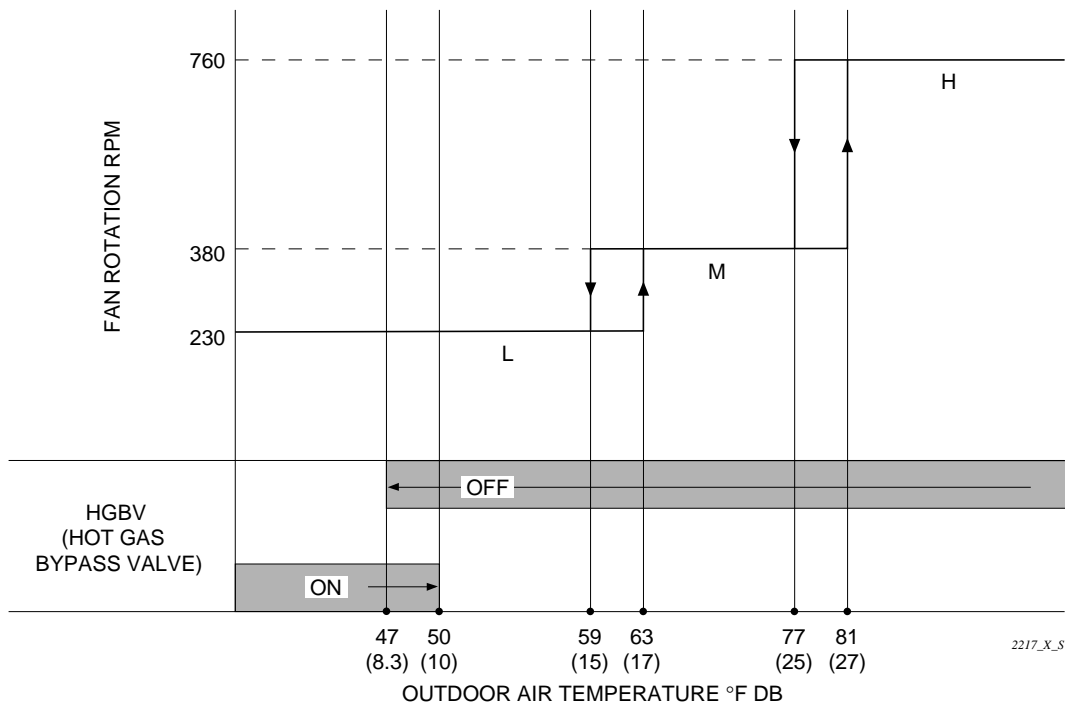


Fig. 14

12. 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

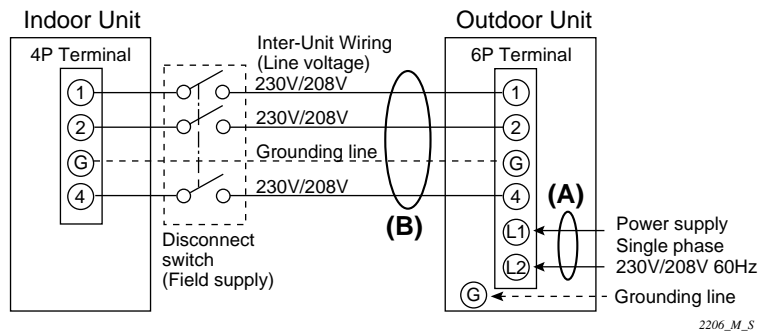


Fig. 15

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

12. SERVICE PROCEDURES

2) Air Conditioner does not Operate

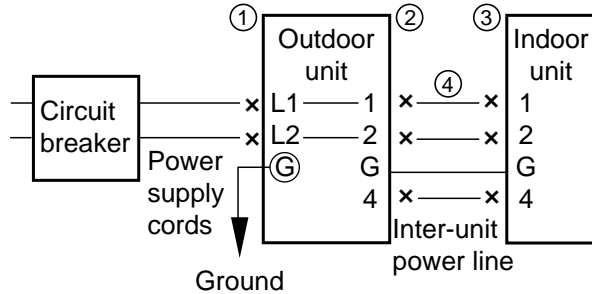
① Circuit breaker trips (or fuse blows).

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

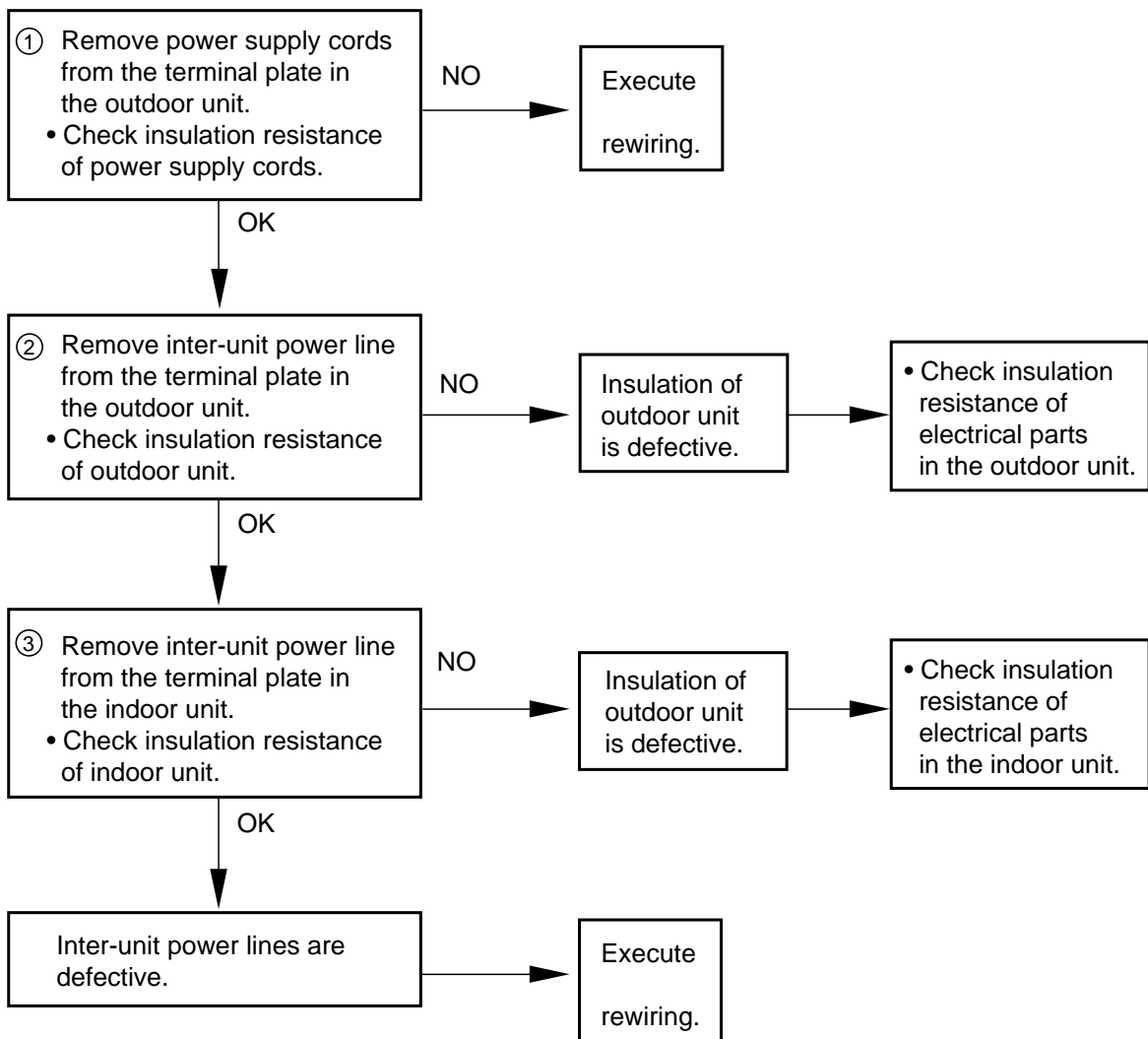
- There is a possibility of ground fault.
- Check insulation resistance.

If resistance value is 2 MΩ or less, it is a defect of insulation.

(Example)



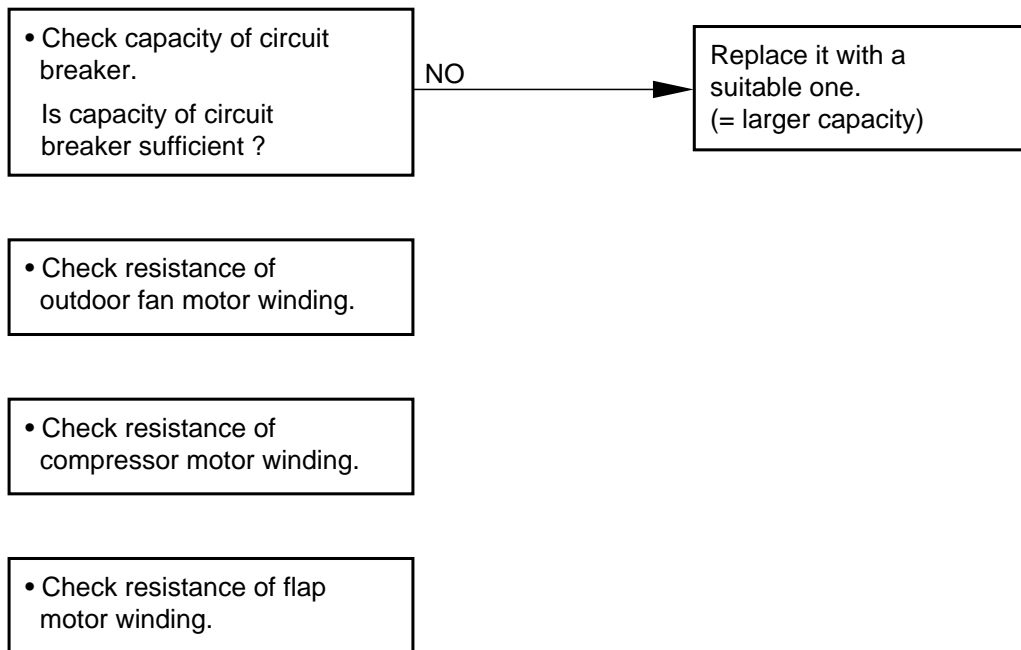
*Set the circuit breaker to OFF.



12. SERVICE PROCEDURES

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

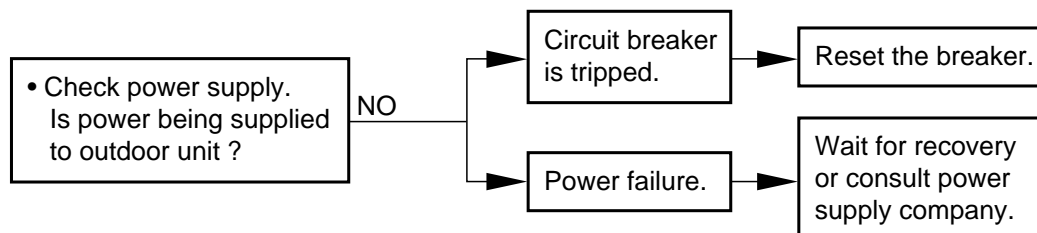
- There is a possibility of short circuit.



2218_X_S

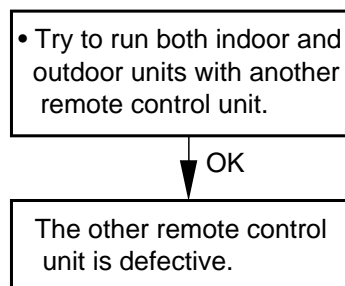
② Neither indoor unit nor outdoor unit runs.

A. Power is not supplied



0615_X_S

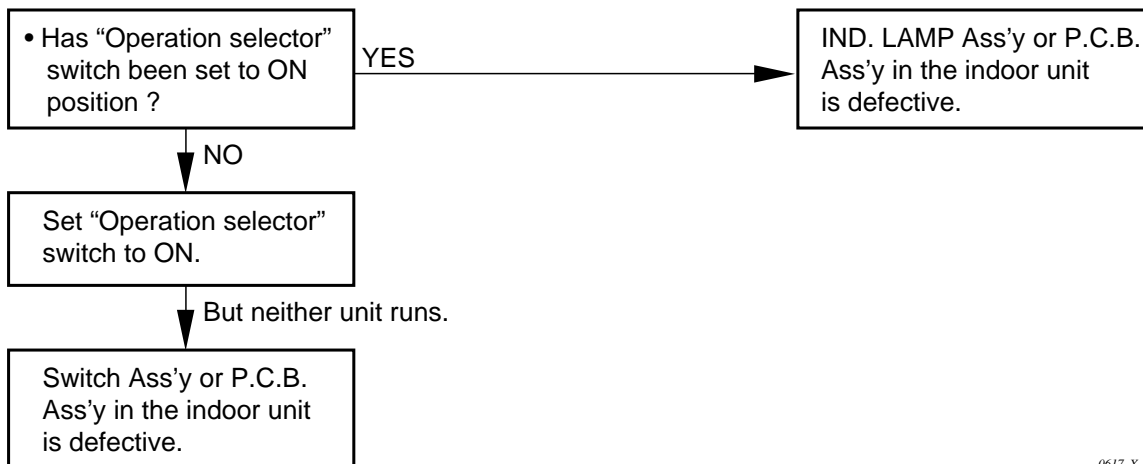
B. Check remote control unit.



0616_X_S

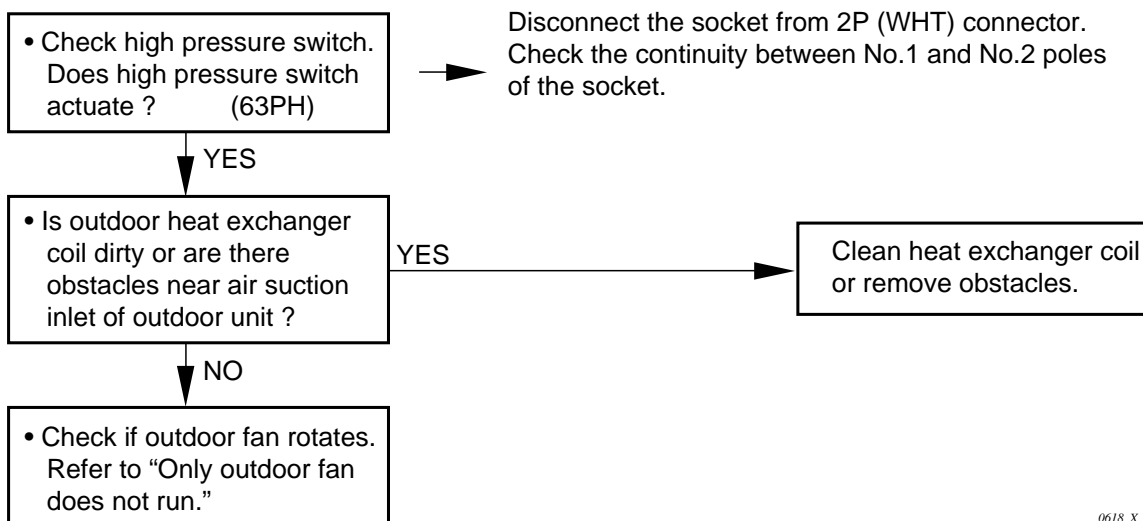
12. SERVICE PROCEDURES

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

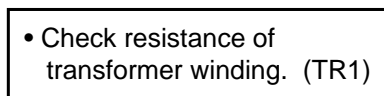


D. Check compressor motor protectors.

(a) High pressure switch (63PH)



E. Transformer in indoor unit.



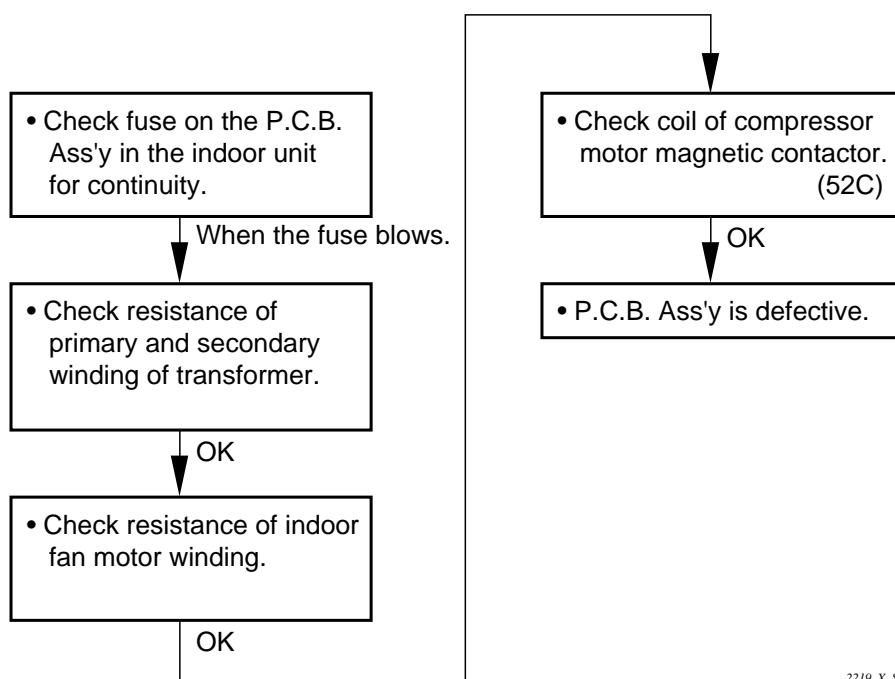
12. SERVICE PROCEDURES

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.

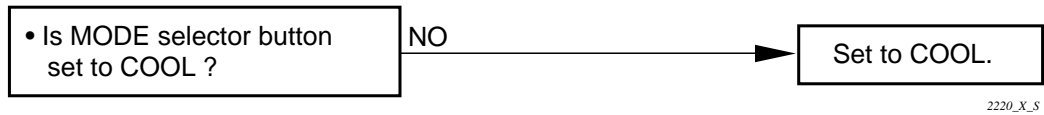


2219_X_S

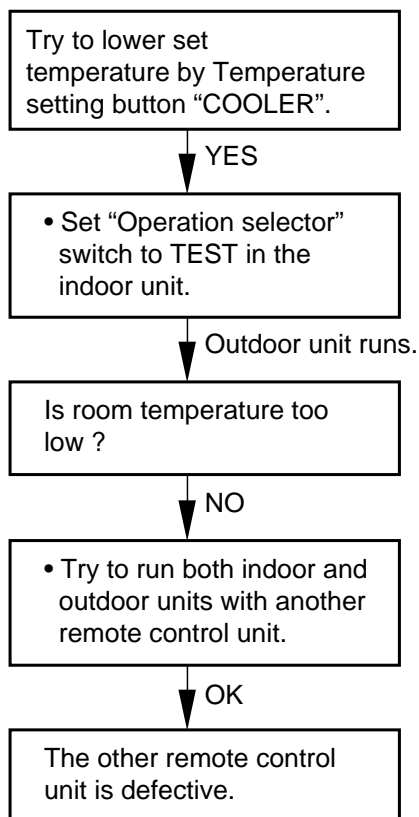
12. SERVICE PROCEDURES

3) Outdoor Unit does not Run.

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



B. Check set temperature.



12. SERVICE PROCEDURES

C. Check compressor motor magnetic contactor.

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

1035_X_S

D. Check indoor unit P.C.B.

- Check P.C.B. Ass'y.

- Check voltage between terminals No.2 and No.4 at terminal plate.

↓ No voltage appears.

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

0628_X_S

E. Check outdoor unit P.C.B. (CL2462R Type)

- Check P.C.B. Ass'y.

- Check voltage between terminals L1 and L2 at terminal plate.

↓ No voltage appears.

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

1036_X_S

12. SERVICE PROCEDURES

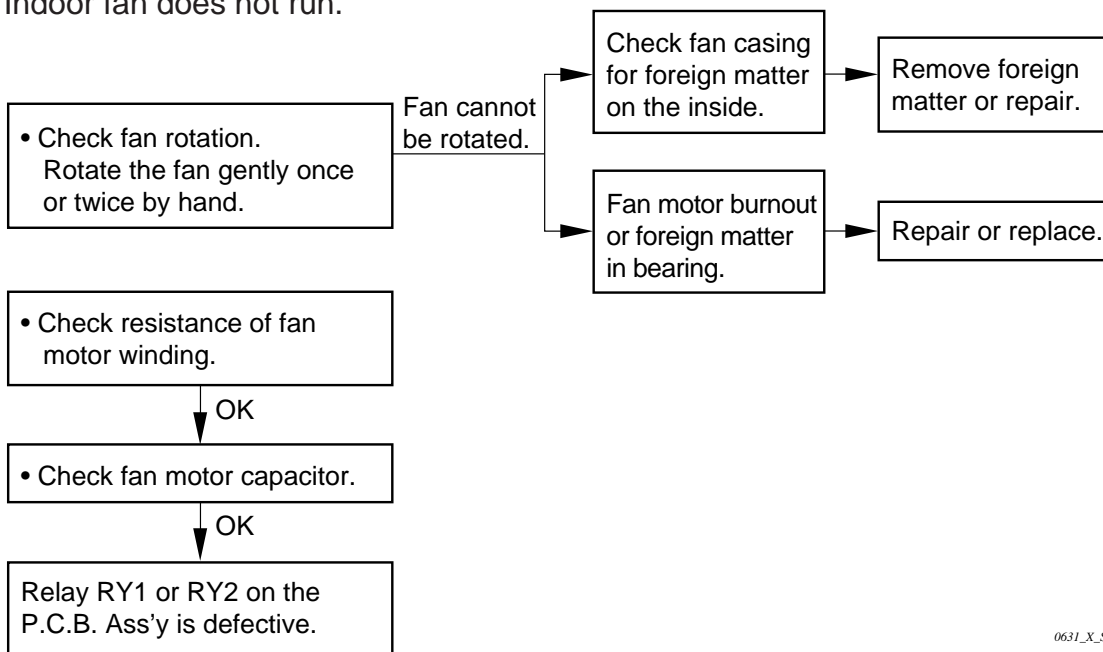
- 4) **Indoor Unit does not Run.**
 (Indoor fan and flap motor do not run.)

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

0630_X_S

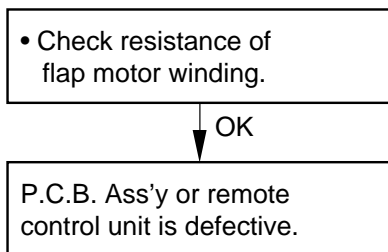
- 5) **Some Part does not Operate.**

- A. Indoor fan does not run.



0631_X_S

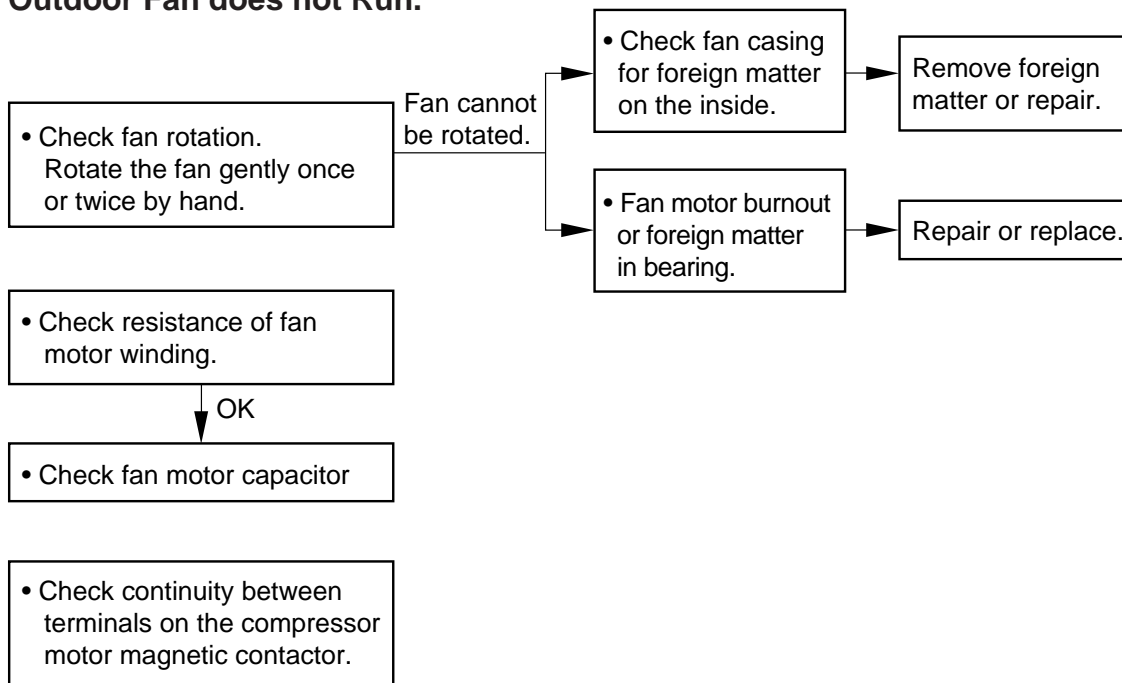
- B. Flap motor does not run.



2222_X_S

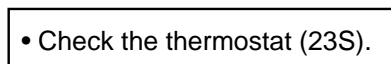
12. SERVICE PROCEDURES

6) Outdoor Fan does not Run.



0633_X_S

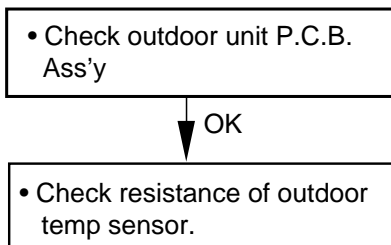
7) Outdoor Fan Speed is not Switched from High to Low even when the Outdoor Temperature Falls below 78 °F. (C2462R Type)



1037_X_S

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

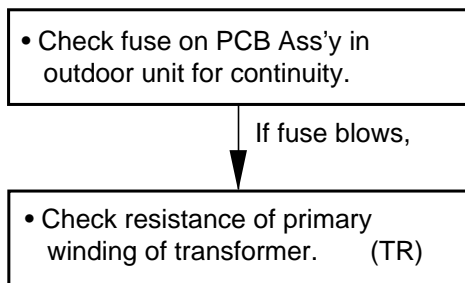
Outdoor Fan Speed is not Switched from Med to Low even when the Outdoor Temperature Falls below 59 °F. (CL2462R Type)



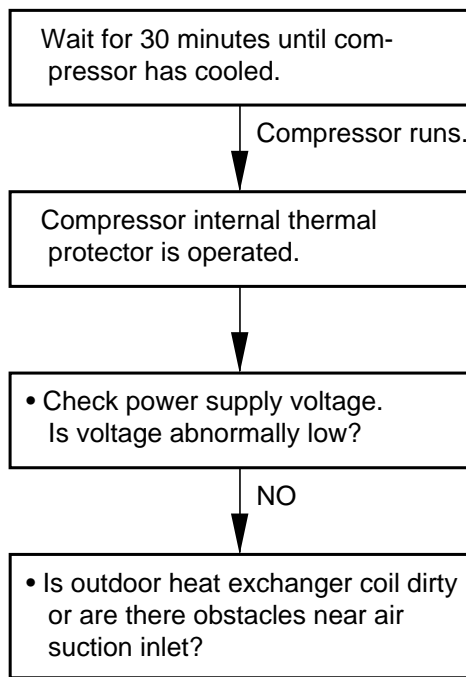
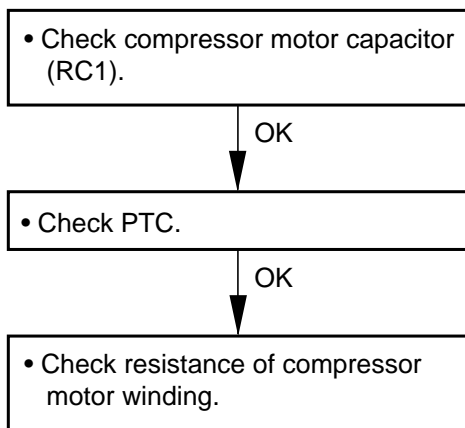
0722_X_S

12. SERVICE PROCEDURES

9) Outdoor Fan does not Run for CL2462R.

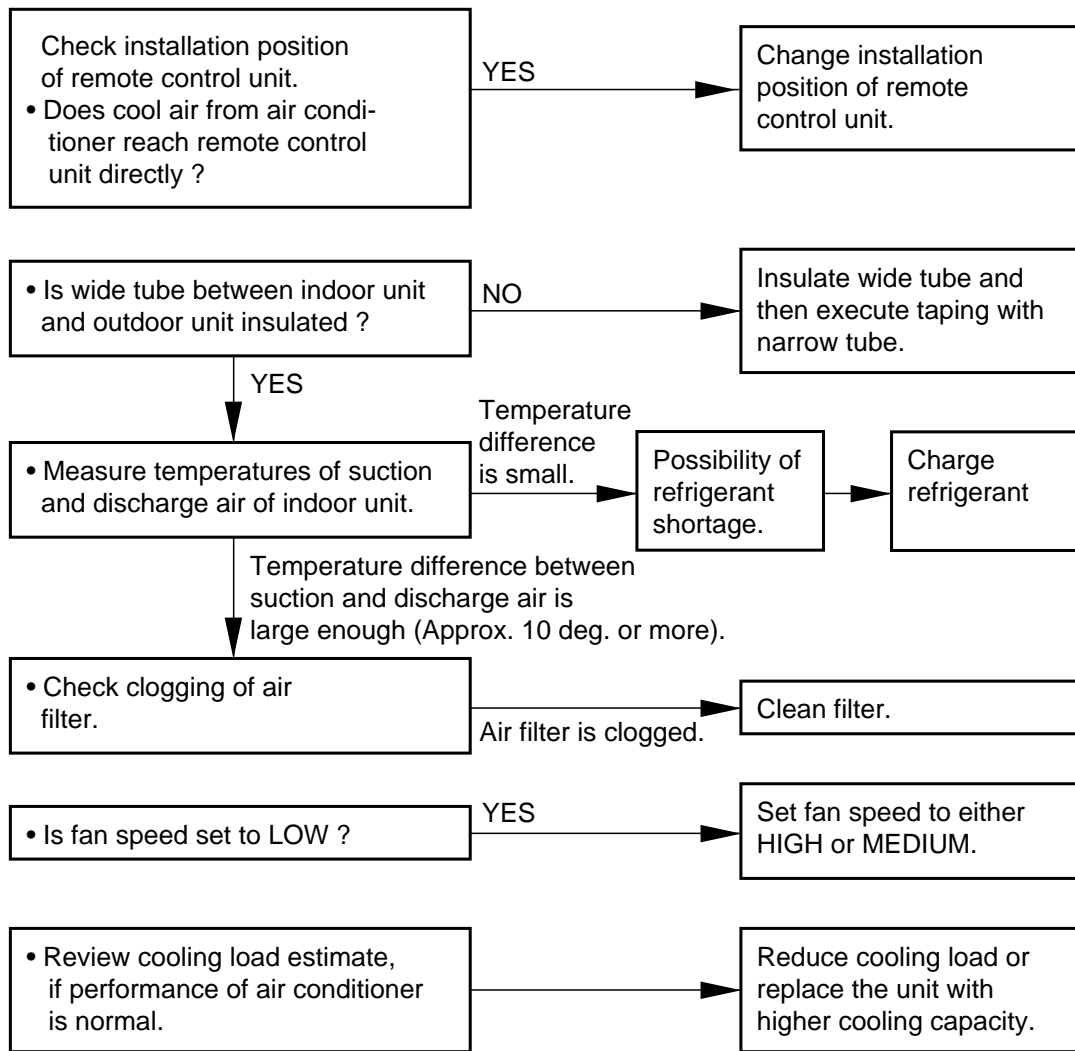


10) Compressor does not Run.



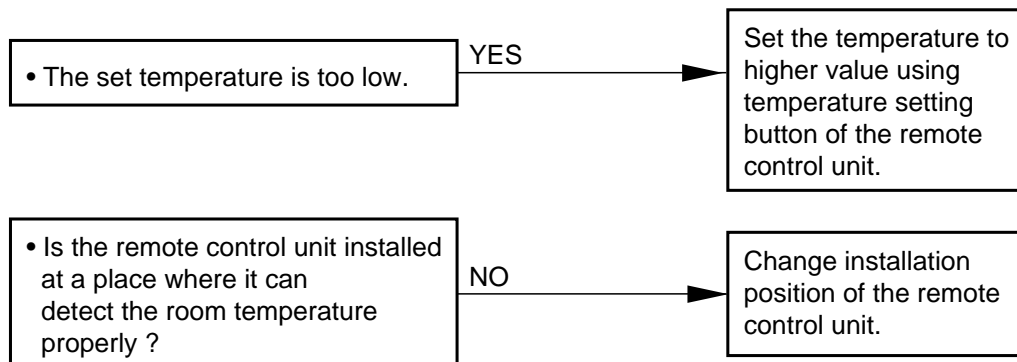
12. SERVICE PROCEDURES

11) Poor Cooling.



1040_X_S

12) Excessive Cooling.



0637_X_S

12. SERVICE PROCEDURES

(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.

12. SERVICE PROCEDURES

(3) Checking the Electrical Components

1) Measurement of Insulation Resistance

- The electrical insulation is acceptable when the resistance exceeds 2 MΩ.

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)

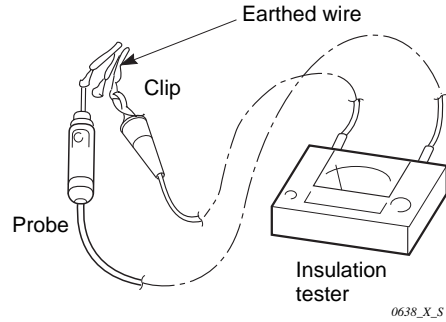


Fig. 16

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)

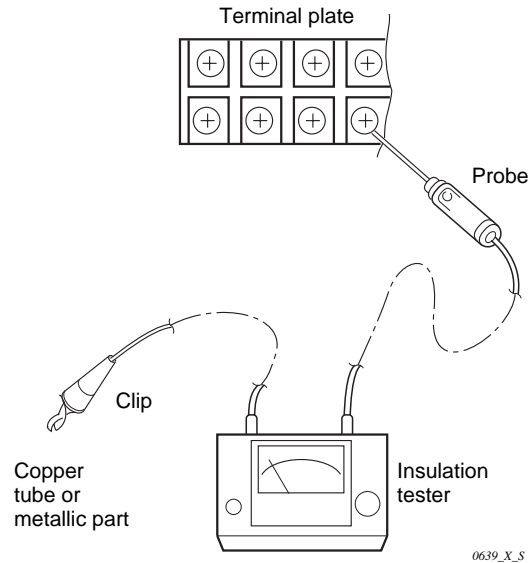


Fig. 17

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.

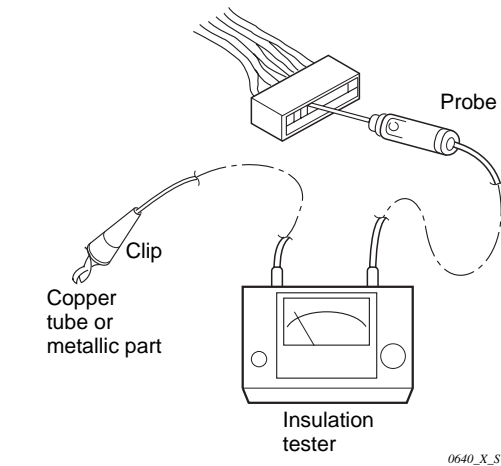


Fig. 18

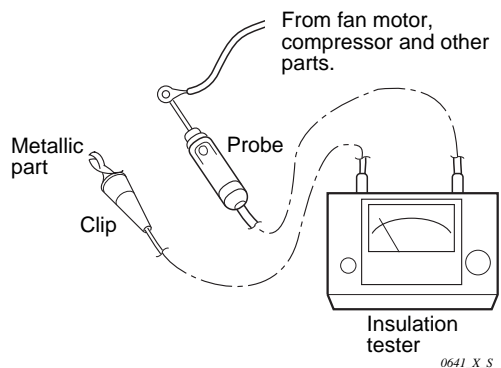


Fig. 19
SM830092

12. SERVICE PROCEDURES

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.

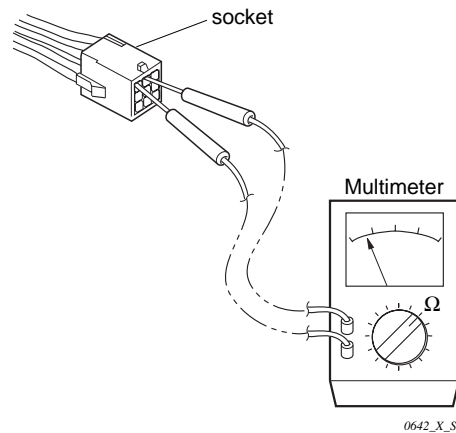


Fig. 20

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.

12. SERVICE PROCEDURES

3) Checking the Electrical Parts

- ① **Power transformerIndoor 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.

- 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.

- 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.

- ④ **Outdoor fan motor (FMO) Outdoor unit** *Measure the coil resistance.
 - Measure the resistance in the same manner as explained above ②.

- 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.

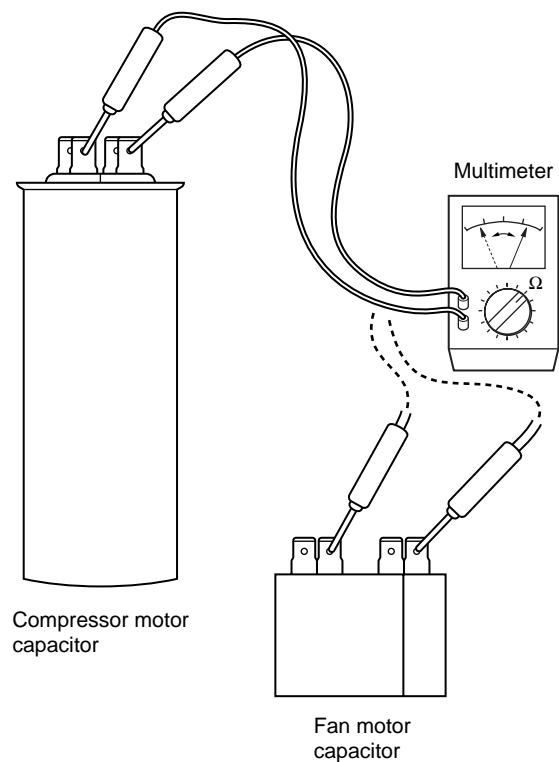


Fig. 21

1041_X_S

SM830092

12. 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.)



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

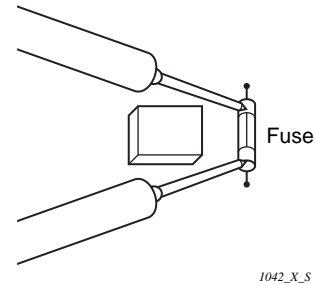


Fig. 22
Soldering iron

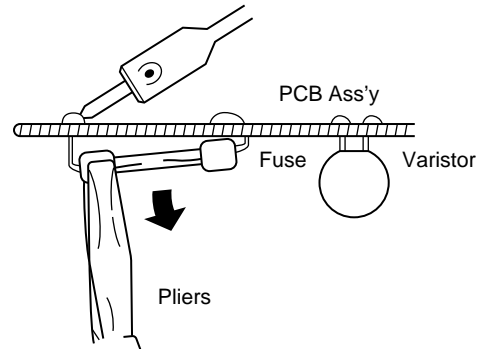


Fig. 23

12. SERVICE PROCEDURES

11. REFRIGERANT R410A: SPECIAL PRECAUTIONS WHEN INSTALLING UNIT

11-1. Characteristics of New Refrigerant R410A

11-1-1. What is New Refrigerant R410A?

R410A is a new refrigerant that contains two types of pseudo-non-azeotropic refrigerant mixture which do not adversely affect the earth's ozone layer. Its refrigeration capacity and energy efficiency are about the same level as the conventional refrigerant, R22.

11-1-2. Components (mixing proportions)

HFC32 (50%) / HFC125 (50%)

11-1-3. Characteristics

- Less toxic, more chemically stable refrigerant
- The composition of refrigerant R410A changes whether it is in a gaseous phase or liquid phase. Thus, when there is a refrigerant leak the basic performance of the air conditioner may be degraded because of a change in composition of the remaining refrigerant. **Therefore, do not add new refrigerant.** Instead, recover the remaining refrigerant with the refrigerant recovery unit. Then, after evacuation, totally recharge the specified amount of refrigerant with the new refrigerant at its normal mixed composition state (in liquid phase).
- When refrigerant R410A is used, the composition will differ depending on whether it is in gaseous or liquid phase, and the basic performance of the air conditioner will be degraded if it is charged while the refrigerant is in gaseous state.

Thus, always charge the refrigerant while it is in liquid phase.



CAUTION

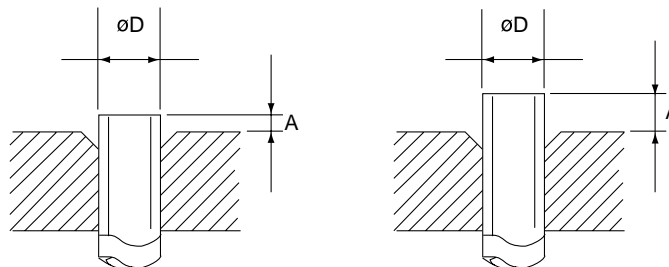
Ether-type oil is used for compressor oil for R410A-type units, which is different from the mineral oil used for R22. Thus more attention to moisture prevention and faster replacement work compared with conventional models are required.

11-2. Checklist Before Installation

Use a clutch-type flare tool for R410A or the conventional flare tool. Note that sizes of the resultant flares differ between these two tools. Where a conventional flare tool is used, make sure to observe A Specification (amount of protrusion).

Diameter of tube (ϕ D)	A Specification	
	Flare tool for R410A	Conventional flare tool (for R22)
$\phi 6.35$ (1/4")	0 – 0.5 mm	1.0 – 1.5 mm
$\phi 19.05$ (3/4")	0 – 0.5 mm	1.0 – 1.5 mm

● Size of flare



Flare tool for R410A

Conventional flare tool (R22)

- **Flare nut:** Because the new refrigerant R410A operates at 1.6 times higher pressure than the conventional refrigerant R22, the flare nuts that came with the unit must be used.

SM830092

12. SERVICE PROCEDURES

- **Tubing precautions**

Refrigerant R410A is more easily affected by dust or moisture compared to R22, thus be sure to temporarily cover the ends of the tubing with caps or tape prior to installation.

Never use 0.7mm-thick copper tubing or tubing which is less than 0.8mm in thickness, since air conditioners with R410A are subject to higher pressure than those using R22 and R407C.

	Outer diameter: mm (inch)	Tubing wall thickness: mm (inch)
Narrow tube	ø6.35 (1/4")	0.8 (0.032)
Wide tube	ø19.05 (3/4")	1.0 (0.042)

- **No addition of compressor oil for R410A**

No additional charge of compressor oil is required.

- **No use of refrigerant other than R410A**

Never use a refrigerant other than R410A.

- **If refrigerant R410A is exposed to fire**

Through welding, etc., toxic gas may be released when R410A refrigerant is exposed to fire. Therefore, be sure to provide ample ventilation during installation work.

- **Caution in case of R410A leak**

Check for possible leak points with the special leak detector for R410A. If a leak occurs inside the room, immediately provide thorough ventilation.

12. SERVICE PROCEDURES

11-3. Tools Specifically for R410A

- For servicing, use the following tools for R410A

Tool Distinction	Tool Name
Tools specifically for R410A	<ul style="list-style-type: none"> ● Gauge manifold ● Charging hose ● Gas leak detector ● Refrigerant cylinder ● Charging cylinder ● Refrigerant recovery unit ● Vacuum pump with anti-reverse flow (*1) (Solenoid valve-installed type, which prevents oil from flowing back into the unit when the power is off, is recommended.) ● Vacuum pump (*2) ... can be used if the following adapter is attached. ● Vacuum pump adapter (reverse-flow prevention adapter) (*3). (Solenoid valve-installed adapter attached to a conventional vacuum pump.) ● Electronic scale for charging refrigerant ● Flare tool
Tools which can be commonly used for R22, R407C, and R410A	<ul style="list-style-type: none"> ● Bender ● Torque wrench ● Cutter, reamer ● Welding machine, nitrogen gas cylinder



CAUTION

- The above tools specifically for R410A must not be used for R22 and R407C. Doing so will cause malfunction of the unit.
- For the above vacuum pump (*1, *2) and vacuum pump adapter (*3), those for R22-type units can be used for R407C-type. However, they must be used exclusively for R410A and never alternately with R22 and R407C.
- To prevent other refrigerants (R22, R407C) from being mistakenly charged to this unit, sizes of the service ports and flare nuts of the narrow tube service valve and wide tube service valve have been altered.

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