

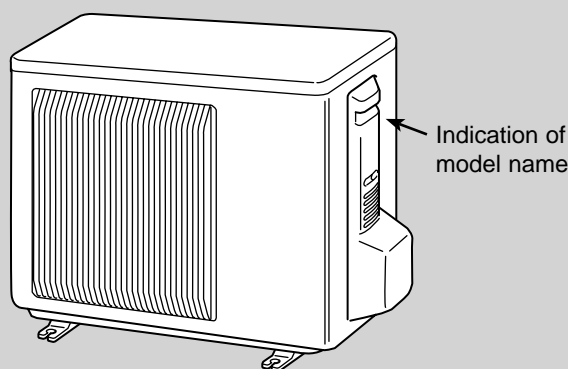


TECHNICAL & SERVICE MANUAL

R410A

Outdoor unit

[model names]	[Service Ref.]
SUZ-KA25VA2	SUZ-KA25VA2.TH
SUZ-KA35VA2	SUZ-KA35VA2.TH
SUZ-KA50VA2	SUZ-KA50VA2.TH
SUZ-KA60VA2	SUZ-KA60VA2.TH
SUZ-KA71VA2	SUZ-KA71VA2.TH



SUZ-KA25VA2.TH
SUZ-KA35VA2.TH

NOTE:

This service manual describes technical data of the outdoor units.
RoHS compliant products have <G> mark on the spec name plate.
For servicing of RoHS compliant products, refer to the RoHS Parts List.

CONTENTS

1. COMBINATION OF INDOOR AND OUTDOOR UNITS.....	2
2. TECHNICAL CHANGES	3
3. PART NAMES AND FUNCTIONS.....	6
4. SPECIFICATION.....	7
5. NOISE CRITERIA CURVES.....	9
6. OUTLINES AND DIMENSIONS.....	10
7. WIRING DIAGRAM.....	13
8. REFRIGERANT SYSTEM DIAGRAM.....	17
9. ACTUATOR CONTROL.....	21
10. SERVICE FUNCTIONS.....	22
11. TROUBLESHOOTING.....	22
12. DISASSEMBLY INSTRUCTIONS.....	63

PARTS CATALOG (OCB472)

1 COMBINATION OF INDOOR AND OUTDOOR UNITS

1-1. INDOOR UNIT SERVICE MANUAL

	Indoor unit		Outdoor unit				
			Heat pump type				
	Service Ref.	Service Manual No.	SUZ-				
KA25VA2.TH			KA35VA2.TH	KA50VA2.TH	KA60VA2.TH	KA71VA2.TH	
Heat pump without electric heater	SLZ-KA25VA(L).TH	OC320	○	—	—	—	—
	SLZ-KA35VA(L).TH		—	○	—	—	—
	SLZ-KA50VA(L).TH		—	—	○	—	—
	SEZ-KD25VA(L).TH	HWE0711	○	—	—	—	—
	SEZ-KD35VA(L).TH		—	○	—	—	—
	SEZ-KD50VA(L).TH		—	—	○	—	—
	SEZ-KD60VA(L).TH		—	—	—	○	—
	SEZ-KD71VA(L).TH		—	—	—	—	○
	MFZ-KA25VA-E4	OB409	○	—	—	—	—
	MFZ-KA35VA-E4		—	○	—	—	—
	MFZ-KA50VA-E4		—	—	○	—	—

(NOTE) • Please refer to the service manual of indoor unit or the technical data book for the combination data.

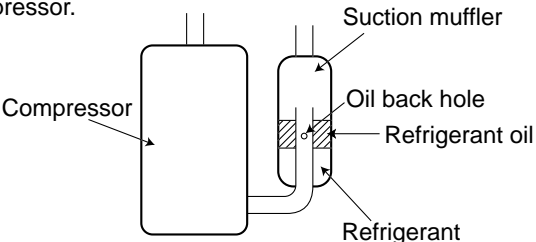
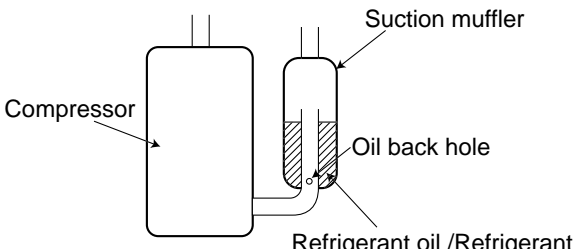
INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

- This room air conditioner adopts an HFC refrigerant (R410A) which never destroys the ozone layer.
- Pay particular attention to the following points, though the basic installation procedure is same as that for R22 conditioners.
 - ① As R410A has working pressure approximate 1.6 times as high as that of R22, some special tools and piping parts/materials are required. Refer to the table below.
 - ② Take sufficient care not to allow water and other contaminations to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminations than R22.
 - ③ For refrigerant piping, use clean, pressure-proof parts/materials specifically designed for R410A. (Refer to 2. Refrigerant piping.)
 - ④ Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

		New refrigerant	Previous refrigerant
Refrigerant	Refrigerant	R410A	R22
	Composition (Ratio)	HFC-32: HFC-125 (50%:50%)	R22 (100%)
	Refrigerant handling	Pseudo-azeotropic refrigerant	Single refrigerant
	Chlorine	Not included	Included
	Safety group (ASHRAE)	A1/A1	A1
	Molecular weight	72.6	86.5
	Boiling point (°C)	-51.4	-40.8
	Steam pressure [25°C](Mpa)	1.557	0.94
	Saturated steam density [25°C](Kg/m³)	64	44.4
	Combustibility	Non combustible	Non combustible
	ODP ※1	0	0.055
	GWP ※2	1730	1700
	Refrigerant charge method	From liquid phase in cylinder	Gas phase
	Additional charge on leakage	Possible	Possible
Refrigerant oil	Kind	Incompatible oil	Compatible oil
	Color	None	Light yellow
	Smell	None	None

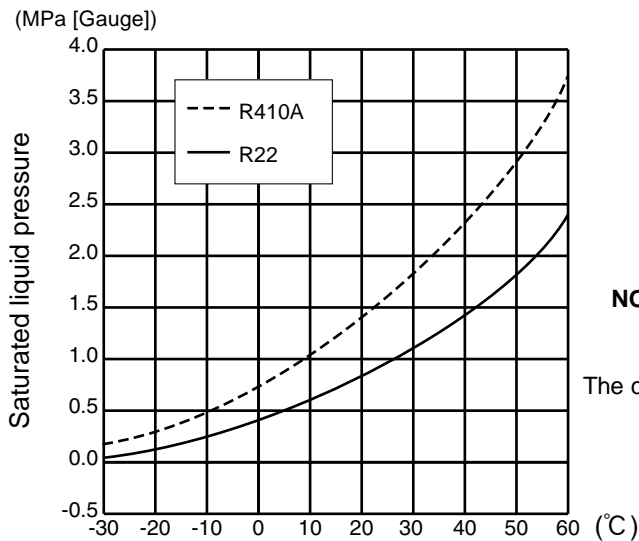
※1: Ozone Depletion Potential : based on CFC-11

※2: Global Warming Potential : based on CO₂

	New Specification	Current Specification
Compressor	<p>The incompatible refrigerant oil easily separates from refrigerant and is in the upper layer inside the suction muffler. Raising position of the oil back hole enables to back the refrigerant oil of the upper layer to flow back to the compressor.</p> 	<p>Since refrigerant and refrigerant oil are compatible with each other, refrigerant oil backs to the compressor through the lower position oil back hole.</p> 

NOTE : The unit of pressure has been changed to MPa on the international system of units (SI unit system).
The conversion factor is: **1 (MPa [Gauge]) =10.2 (kgf/cm² [Gauge])**

Conversion chart of refrigerant temperature and pressure



NOTE: The unit of pressure has been changed to MPa on the international system of units (SI unit system).

The conversion factor is: **1 (MPa [Gauge]) = 10.2 (kgf/cm² [Gauge])**

1. Tools dedicated for the air conditioner with R410A refrigerant

The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.

The diameter of the service port on the stop valve in outdoor unit has been changed to prevent any other refrigerant being charged into the unit. Cap size has been changed from 7/16 UNF with 20 threads to 1/2 UNF with 20 threads.

R410A tools	Can R22 tools be used?	Description
Gauge manifold	No	R410A has high pressures beyond the measurement range of existing gauges. Port diameters have been changed to prevent any other refrigerant from being charged into the unit.
Charge hose	No	Hose material and cap size have been changed to improve the pressure resistance.
Gas leak detector	No	Dedicated for HFC refrigerant.
Torque wrench	Yes	6.35 mm and 9.52 mm
	No	12.7 mm and 15.88 mm
Flare tool	Yes	Clamp bar hole has been enlarged to reinforce the spring strength in the tool.
Flare gauge	New	Provided for flaring work (to be used with R22 flare tool).
Vacuum pump adapter	New	Provided to prevent the back flow of oil. This adapter enables you to use vacuum pumps.
Electronic scale for refrigerant charging	New	It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization

No: Not substitutable for R410A Yes: Substitutable for R410A

2. Refrigerant piping

① Specifications

Use the refrigerant pipes that meet the following specifications.

Pipe	Outside diameter	Wall thickness	Insulation material
	mm	mm	
For liquid	6.35	0.8	Heat resisting foam plastic Specific gravity 0.045 Thickness 8 mm
	9.52	0.8	
For gas	9.52	0.8	
	12.7	0.8	
	15.88	1.0	

- Use a copper pipe or a copper-alloy seamless pipe with a thickness of 0.8 mm. Never use any pipe with a thickness less than 0.8mm, as the pressure resistance is insufficient.

② Flaring work and flare nut

Flaring work for R410A pipe differs from that for R22 pipe.

For details of flaring work, refer to Installation manual "FLARING WORK".

Pipe diameter (mm)	Dimension of flare nut (mm)	
	R410A	R22
6.35	17	17
9.52	22	22
12.7	26	24
15.88	29	27

3. Refrigerant oil

Apply the special refrigerant oil (accessories: packed with indoor unit) to the flare and the union seat surfaces.

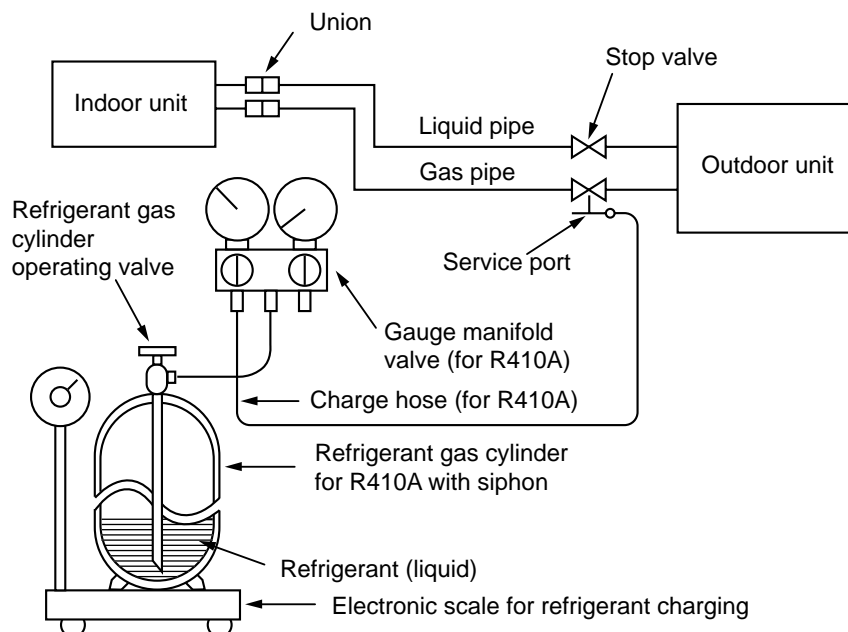
4. Air purge

- Do not discharge the refrigerant into the atmosphere.
Take care not to discharge refrigerant into the atmosphere during installation, reinstallation, or repairs to the refrigerant circuit.
- Use the vacuum pump for air purging for the purpose of environmental protection.

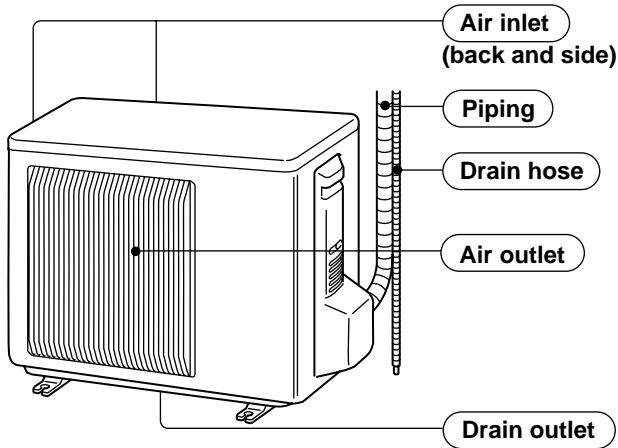
5. Additional charge

For additional charging, charge the refrigerant from liquid phase of the gas cylinder.

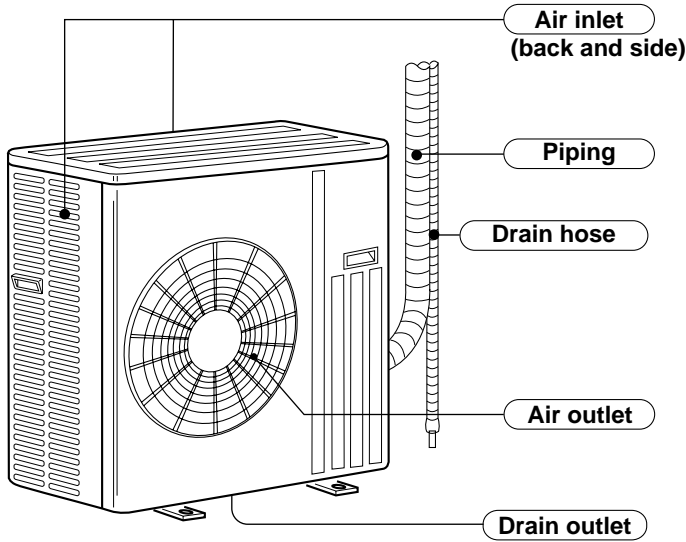
If the refrigerant is charged from the gas phase, composition change may occur in the refrigerant inside the cylinder and the outdoor unit. In this case, ability of the refrigerating cycle decreases or normal operation can be impossible. However, charging the liquid refrigerant all at once may cause the compressor to be locked. Thus, charge the refrigerant slowly.



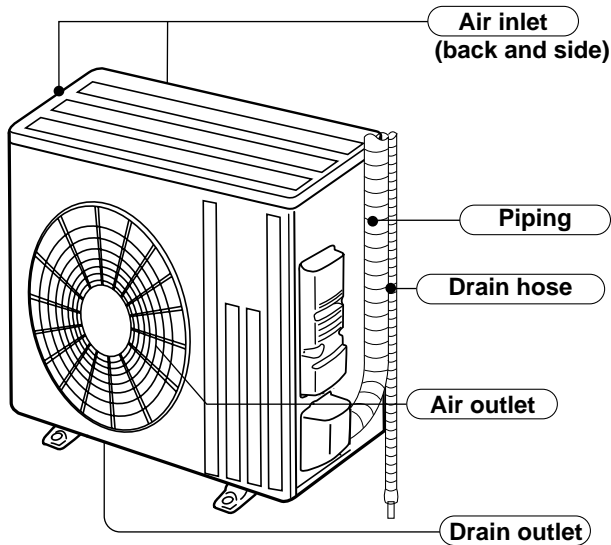
SUZ-KA25VA2.TH SUZ-KA35VA2.TH



SUZ-KA50VA2.TH SUZ-KA60VA2.TH



SUZ-KA71VA2.TH



Model	SUZ-KA25/35VA2.TH	SUZ-KA50/60VA2.TH	SUZ-KA71VA2.TH
① Drain socket	1	1	1
② Drain cap	-	2	-

4

SPECIFICATION

Outdoor Service Ref.		SUZ-KA25VA2.TH		SUZ-KA35VA2.TH		SUZ-KA50VA2.TH		SUZ-KA60VA2.TH		SUZ-KA71VA2.TH		
Function		Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	
Power supply		Single phase 230V, 50Hz		Single phase 230V, 50Hz		Single phase 230V, 50Hz		Single phase 230V, 50Hz		Single phase 230V, 50Hz		
Electrical data	Starting current *1	A	3.65		4.75		6.75		9.75		8.89	
	Compressor motor current *1	A	2.74	3.37	4.22	4.42	6.45	6.05	8.05	9.45	8.00	8.07
	Fan motor current *1	A	0.31	0.28	0.33	0.33	0.30		0.30		0.83	0.82
Compressor	Model	KNB073FFDH(C)		KNB092FFAH(C)		SNB130FGBH(T)		SNB130FGBH(T)		SNB172FEKMT		
	Output	W	550		650		900		900		1200	
	Winding resistance (at 20°C)	Ω	U-V 1.70	U-W 1.70	U-V 1.91	U-W 1.91	U-V 0.98	U-W 0.98	U-V 0.98	U-W 0.98	U-V 1.04	U-W 1.04
Fan motor	Model	RC0J50-DB		RC0J50-DB		RC0J60-AA		RC0J60-AA		RC0J60-BC		
	Winding resistance(at 20°C)	Ω	WHT-BLK 37.0 BLK-RED 37.0 RED-WHT 37.0		WHT-BLK 37.0 BLK-RED 37.0 RED-WHT 37.0		WHT-BLK 15.2 BLK-RED 15.2 RED-WHT 15.2		WHT-BLK 15.2 BLK-RED 15.2 RED-WHT 15.2		WHT-BLK 15.0 BLK-RED 15.0 RED-WHT 15.0	
	Air flow(High/Low*)	m³/h	2,058	1,938	2,004		2,940/1,650*	2,940/2,210*	2,940/1,650*	2,940/2,210*	3,425/3,006	2,892/2,892
Dimensions W×H×D	mm	800×550×285		800×550×285		840×850×330		840×850×330		840×880×330		
Weight	kg	30		33		53		53		53		
Special remarks	Sound level *1	dB	46		47	48	53/51*	55/53*	53/51*	55/53*	55*	55*
	Fan speed(High*/Low*, High*/Med*/Low*)	rpm	810*/650*	880*/810*/650*	840*/760*	880*/800*/630*	840/480*	800/620*	840/480*	800/620*	950/840/450*	810/810/650*
	Fan speed regulator		2	3	2	3	2		2		3	
	Refrigerant filling capacity(R410A)	kg	0.80		1.05		1.60		1.80		1.80	
	Refrigerating oil (Model)	cc	320 (NEO22)		320 (NEO22)		450 (NEO22)		450 (NEO22)		400 (FV50S)	

NOTE : Test conditions are based on ISO 5151

Cooling : Indoor D.B. 27°C W.B. 19°C

Outdoor D.B. 35°C W.B. 24°C

Heating : Indoor D.B. 20°C W.B. 15°C

Outdoor D.B. 7°C W.B. 6°C

Refrigerant piping length (one way): 5m

*1 Measured under rated operating frequency.

* Reference value

Specifications and rating conditions of main electric parts

SUZ-KA25VA2.TH SUZ-KA35VA2.TH
 SUZ-KA50VA2.TH SUZ-KA60VA2.TH
 SUZ-KA71VA2.TH

Item	Model	SUZ-KA25VA2. TH	SUZ0KA35VA2. TH	SUZ-KA50VA2. TH	SUZ-KA60VA2. TH	SUZ-KA71VA2. TH
Current transformer	(CT)	20A			-	-
	(CT1, 2)				ETQ19Z68AY	-
	(CT61)				ETQ19Z53AY	-
	(CT761, CT781)	15A			-	-
Smoothing capacitor	(C61)	-		620 μ F 420V	-	-
	(C62, C63)	620 μ F 420V			-	-
	(CB1, 2, 3)				560 μ F 450V	560 μ F 350V
Diode module	(DB61)	15A 600V		25A 600V	-	-
	(DB65)	25A 600V			-	-
Fuse	(F61)	T20A L250V			-	-
	(F62)				-	T20A L250V
	(F63)				-	-
	(F64)				250V 2A	-
	(F701, F801, F901)	T3.15A L250V				-
	(F911)				250V 1A	-
Inteligent power module	(IPM)	15A 600V		20A 600V	15A 600V	20A 600V
	(HC930)				3A 450V	-
	(IC932)			-		5A 600V
Power factor controller	(PFC)				PS51259-A	20A 600V
Expansion valve coil	(LEV)	DC12V				
High pressure switch	(HPS)				ACB-DB156 (for R2)	-
Reactor	(L61)	23mH				-
	(L)				340 μ H 20A	340 μ H
Current-detecting resistor	(R61)	45m Ω 5W (1 element)	100m Ω 5W (2 elements)			
	(R61, R62)			180m Ω 5W (2 elements)		
	(R64A, R64B)				10 Ω 10W	
	(R825)	25m Ω 5W				
	(R937, R938, R939)	430m Ω 2W				
Resistor	(R937A, R937B)			1.1 Ω 2W	1.1 Ω 2W 2%	-
	(RS1~4)				0.04 Ω 7W	-
Current-Limiting PTC thermistoe	(PTC64, PTC65)	33 Ω			-	33 Ω
Terminal block	(TB1, TB2)	3P				
Relay	(X63)	3A 250V				
	(X64)	20A 250V			20A 250V	20A 250V
	(X601)					3A 250V
	(X602)					3A 250V
Solenoid coil relay	(SSR61)				TLP3506	-
R.V. coil	(21S4)	AC220-240V				
IGBT	(TR821)	30A 600V			-	-

5

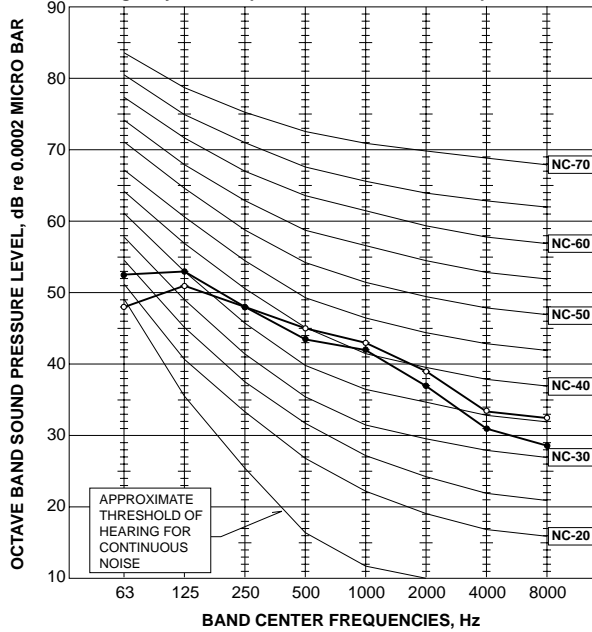
NOISE CRITERIA CURVES

SUZ-KA25VA2.TH

FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High Med.	COOLING	46	●—●
	HEATING	46	○—○

Test conditions,

Cooling : Dry-bulb temperature 35°C Wet-bulb temperature (24°C)
 Heating : Dry-bulb temperature 7°C Wet-bulb temperature 6°C

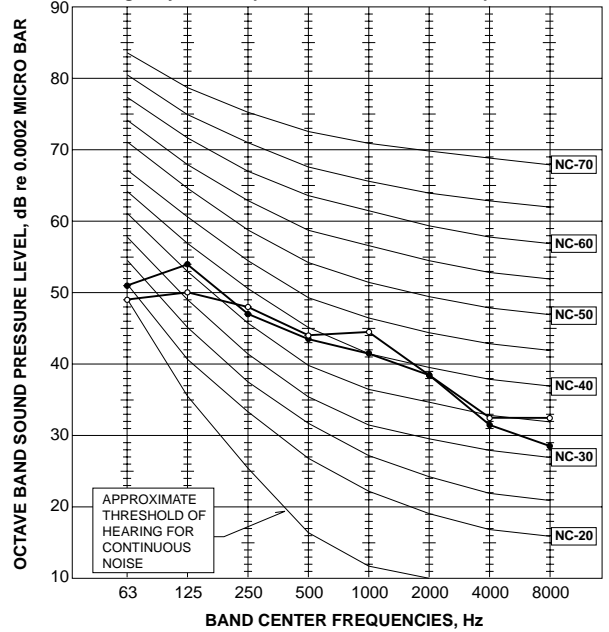


SUZ-KA35VA2.TH

FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High Med.	COOLING	47	●—●
	HEATING	48	○—○

Test conditions,

Cooling : Dry-bulb temperature 35°C Wet-bulb temperature (24°C)
 Heating : Dry-bulb temperature 7°C Wet-bulb temperature 6°C

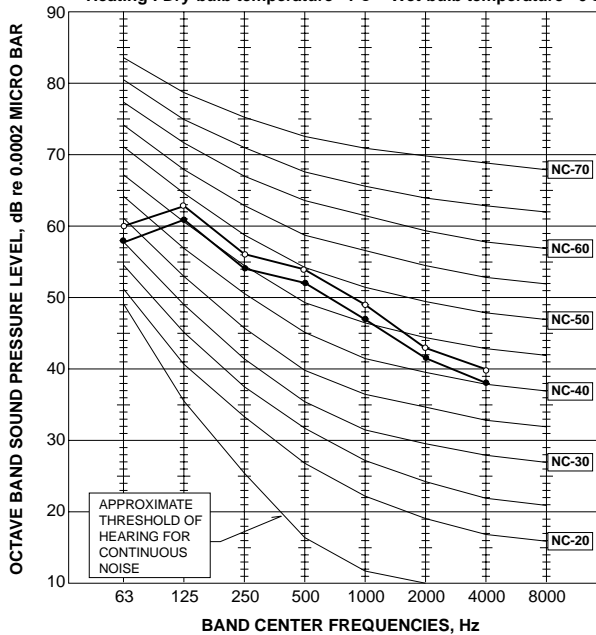


SUZ-KA50VA2.TH SUZ-KA60VA2.TH

FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High	COOLING	53	●—●
	HEATING	55	○—○

Test conditions,

Cooling : Dry-bulb temperature 35°C Wet-bulb temperature (24°C)
 Heating : Dry-bulb temperature 7°C Wet-bulb temperature 6°C

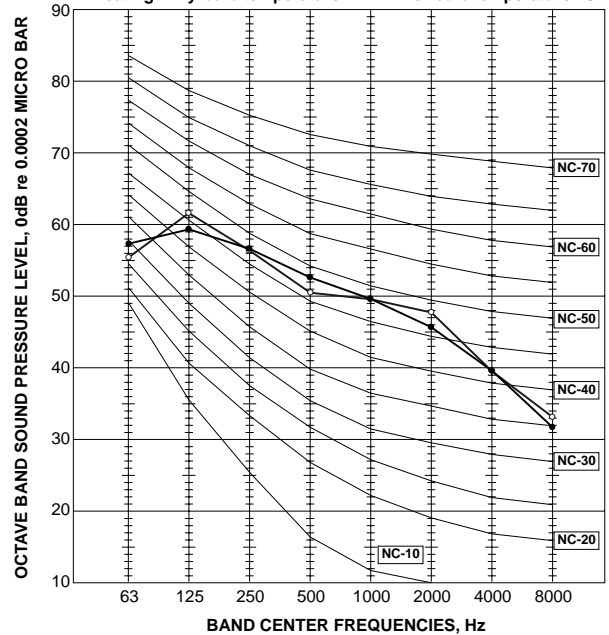


SUZ-KA71VA2.TH

FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High	COOLING	55	●—●
	HEATING	55	○—○

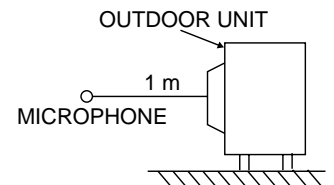
Test conditions,

Cooling : Dry-bulb temperature 35°C Wet-bulb temperature (24°C)
 Heating : Dry-bulb temperature 7°C Wet-bulb temperature 6°C



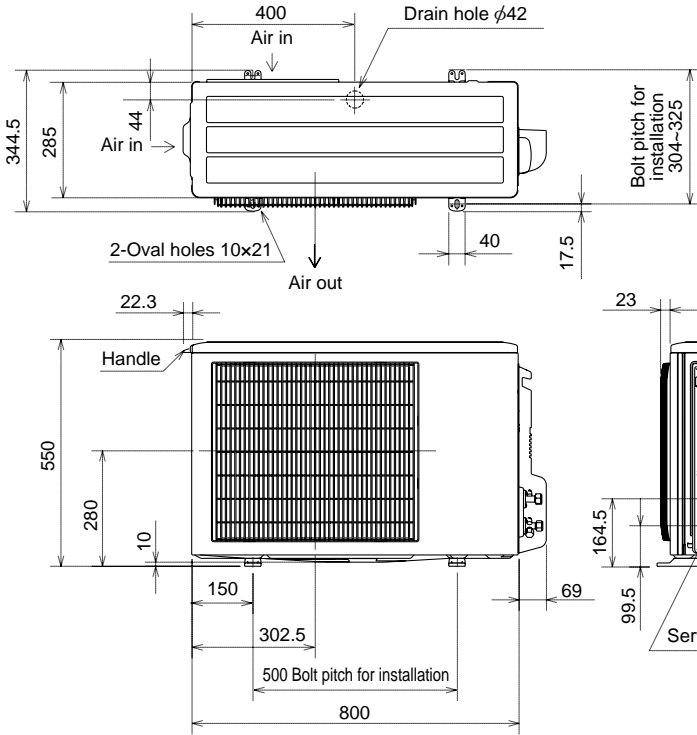
Test conditions

Cooling: Dry-bulb temperature 35°C
 Heating: Dry-bulb temperature 7°C
 Wet-bulb temperature 6°C

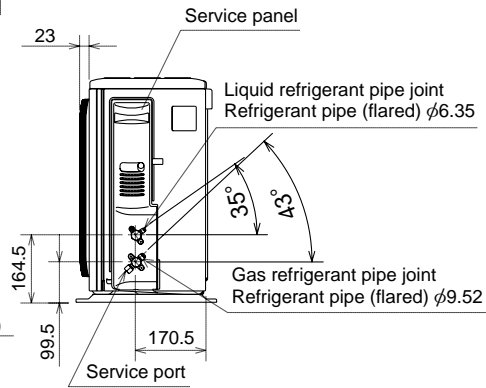
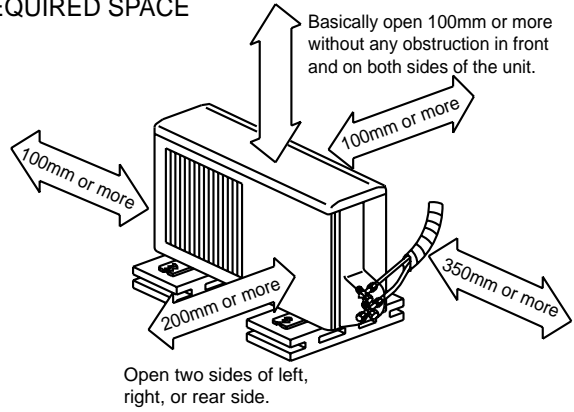


SUZ-KA25VA2.TH SUZ-KA35VA2.TH

Unit: mm



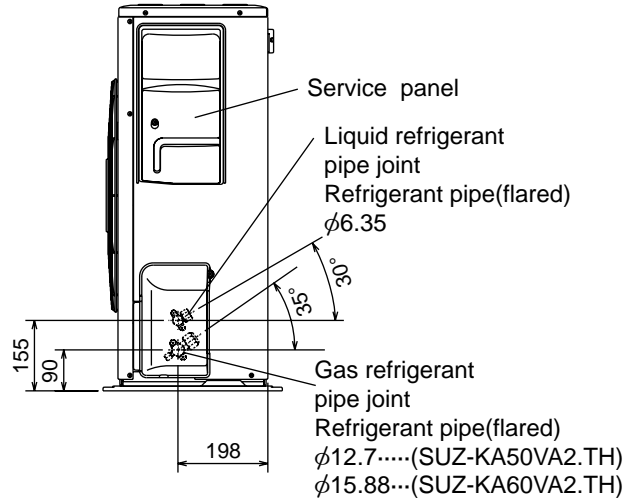
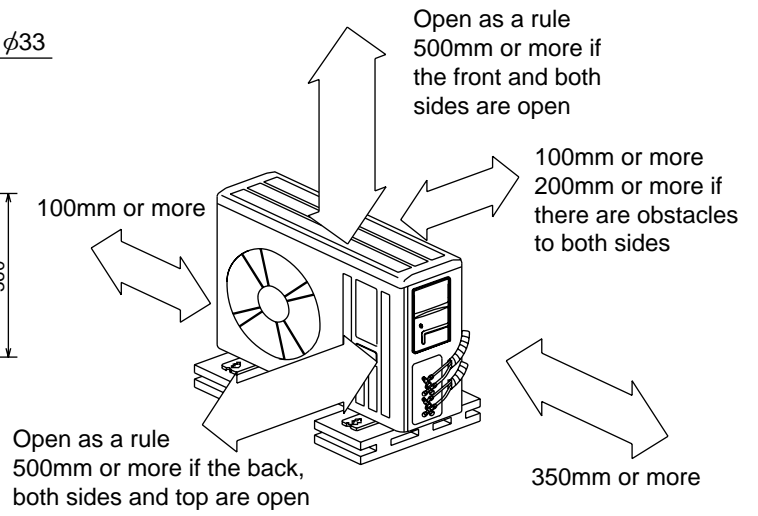
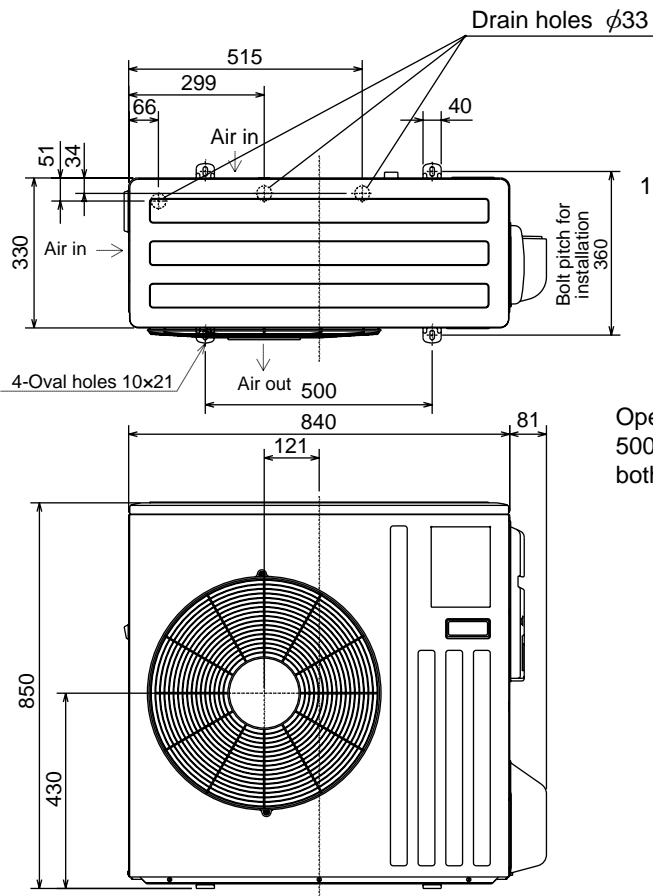
REQUIRED SPACE



SUZ-KA50VA2.TH SUZ-KA60VA2.TH

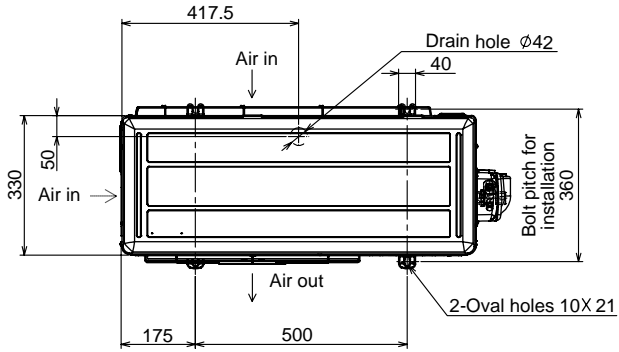
Unit: mm

REQUIRED SPACE

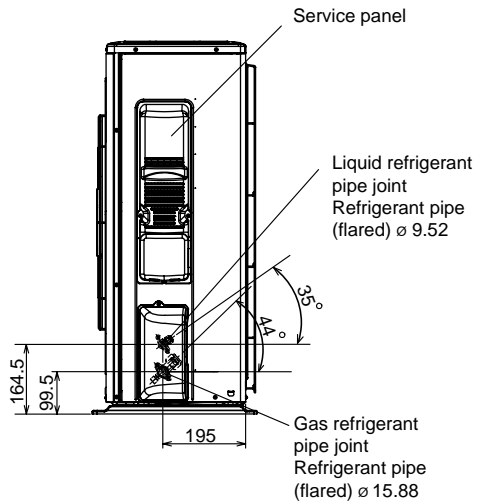
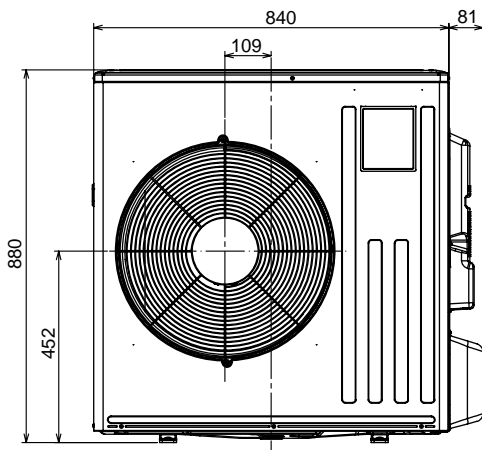
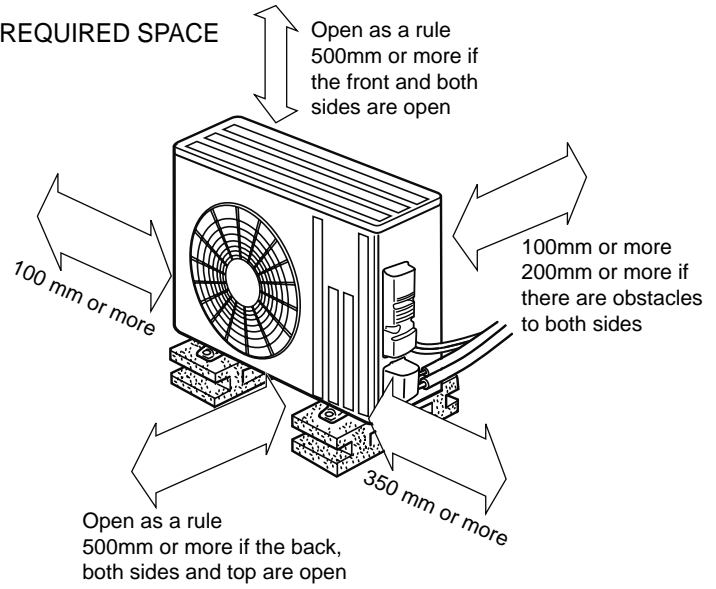


SUZ-KA71VA2.TH

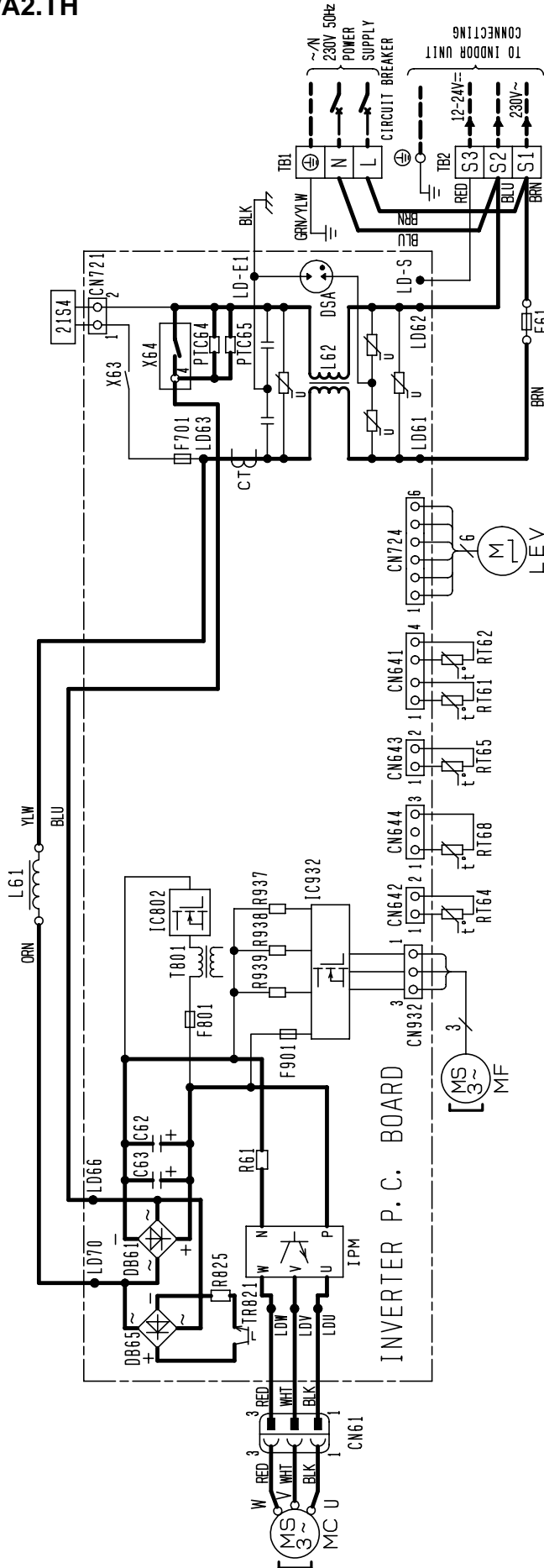
Unit: mm



REQUIRED SPACE



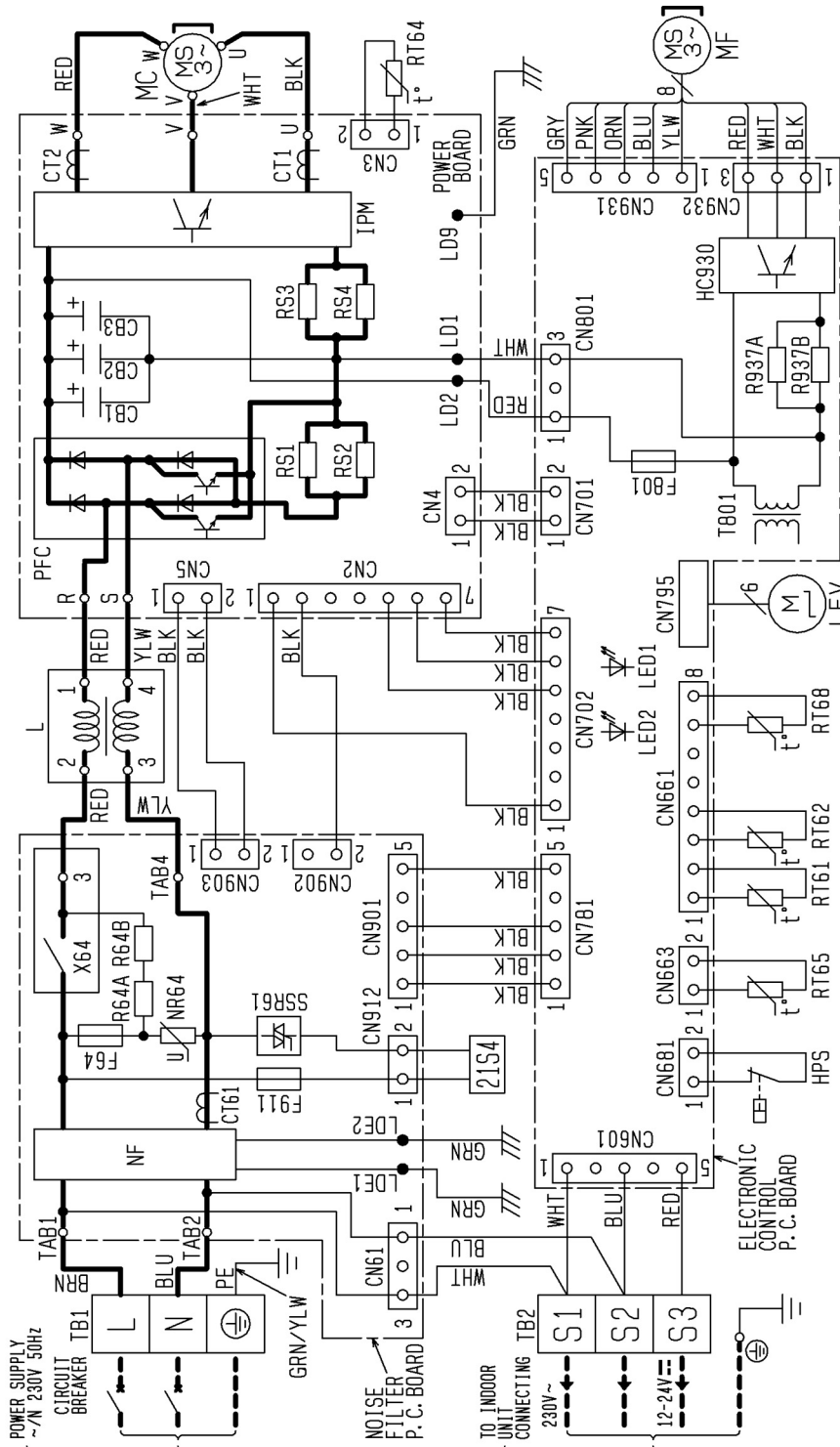
SUZ-KA25VA2.TH
 SUZ-KA35VA2.TH



NOTES:1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
 2. Use copper conductors only. (For field wiring)
 3. Symbols below indicate.
 □□□ : Terminal block

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CT	CURRENT TRANSFORMER	LEV	EXPANSION VALVE COIL	R61	CURRENT-DETECTING RESISTOR
C62, C63	SMOOTHING CAPACITOR	MC	COMPRESSOR	R825, R937	CURRENT-DETECTING RESISTOR
DB61, DB65	DIODE MODULE	MF	FAN MOTOR	R938, R939	CURRENT-DETECTING RESISTOR
DSA	SURGE ABSORBER	PTC64, PTC65	CIRCUIT PROTECTION	TB1, TB2	TERMINAL BLOCK
F61	FUSE (T20AL250V)	RT61	DEFROST THERMISTOR	TR821	SWITCHING POWER TRANSISTOR
F701, F801, F901	FUSE (T3, I5AL250V)	RT62	DISCHARGE TEMP. THERMISTOR	T801	TRANSFORMER
IC802	INTELLIGENT POWER DEVICE	RT64	FIN TEMP. THERMISTOR	X62, X64	RELAY
IPM, IC932	INTELLIGENT POWER MODULE	RT65	AMBIENT TEMP. THERMISTOR	21S4	REVERSING VALVE COIL
L61	REACTOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR.		
L62	CMC COIL				

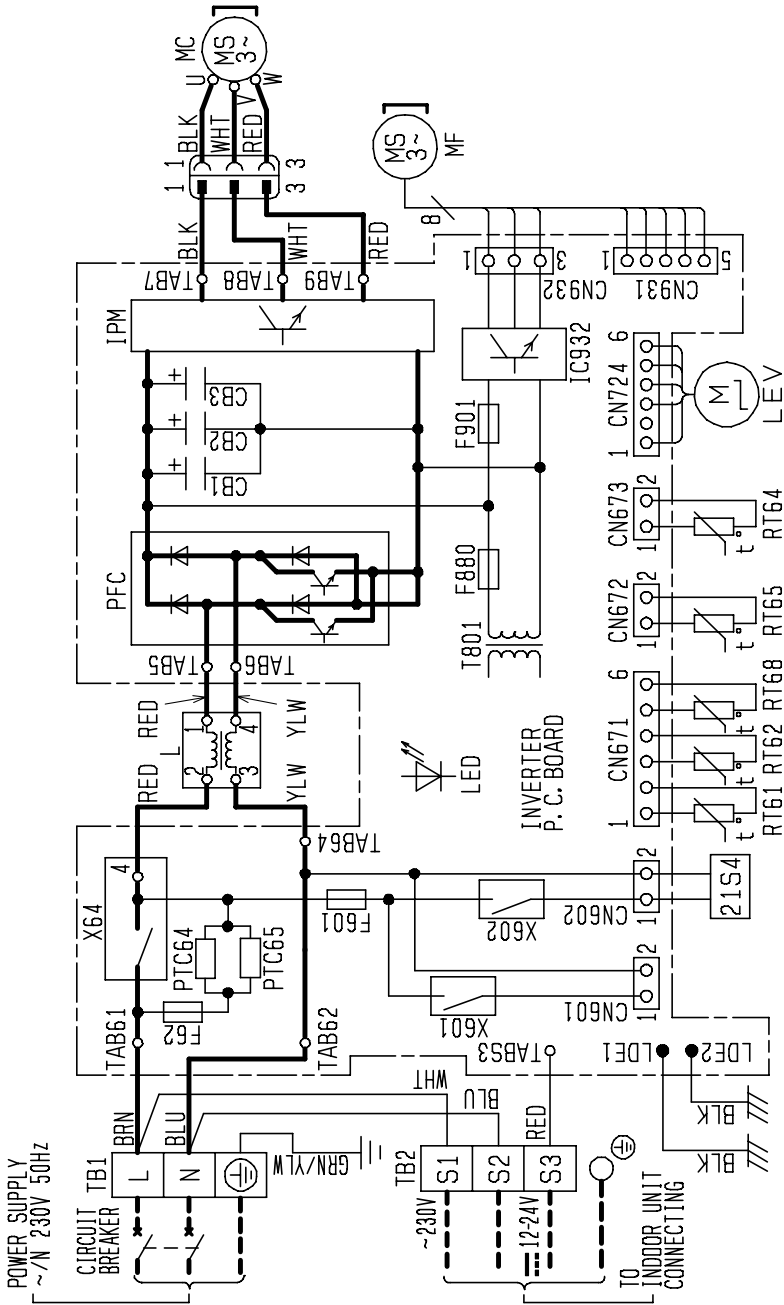
SUZ-KA60VA2.TH



- NOTES:
1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
 2. Use copper conductors only (for field wiring).
 3. Symbols below indicate.
 - : Terminal block

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CB1-3	SMOOTHING CAPACITOR	LEV	EXPANSION VALVE	RT65	AMBIENT TEMP. THERMISTOR
CT1.2	CURRENT TRANSFORMER	MC	COMPRESSOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
CT61	CURRENT TRANSFORMER	MF	FAN MOTOR	R64A,B	RESISTOR
F64	FUSE (T2AL 250V)	NF	NOISE FILTER	R937A, B	RESISTOR
F801	FUSE (T3.15AL 250V)	NR64	VARIABLE RESISTOR	SSR61	SOLENOID COIL RELAY
F911	FUSE (T1AL 250V)	PFC	POWER FACTOR CONTROLLER	TB1	TERMINAL BLOCK
HC930	INTELLIGENT POWER MODULE	RS1-4	RESISTOR	TB2	TERMINAL BLOCK
HPS	HIGH PRESSURE SWITCH	RT61	DEFROST THERMISTOR	T801	TRANSFORMER
IPM	INTELLIGENT POWER MODULE	RT62	DISCHARGE TEMP. THERMISTOR	X64	RELAY
L	REACTOR	RT64	FIN TEMP. THERMISTOR	21S4	REVERSING VALVE COIL

SUZ-KA71VA2.TH



NOTES
 1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
 2. Use copper conductors only for field wiring.
 3. Symbols indicate: : terminal block

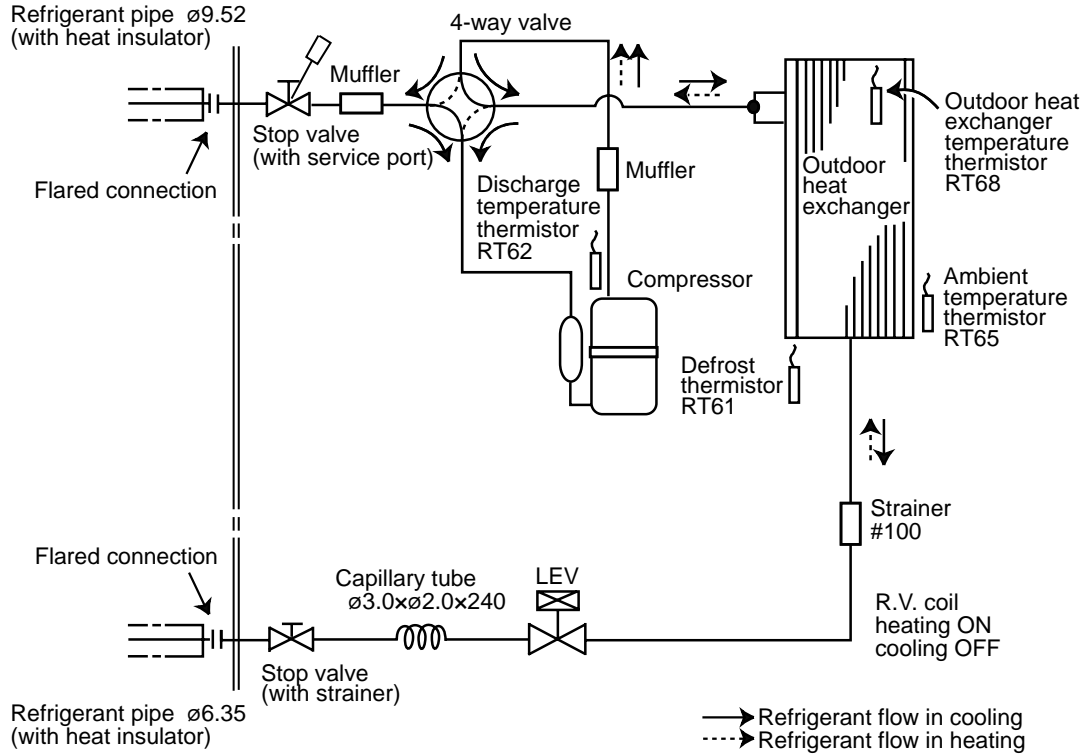
SYMBOL	NAME	SYMBOL	NAME
CBL1~3	SMOOTHING CAPACITOR	PTC65	CIRCUIT PROTECTION
F601	FUSE (T3, 15A/250V)	RT61	DEFROST THERMISTOR
F602	FUSE (T2A/250V)	RT62	DISCHARGE TEMP. THERMISTOR
F603	FUSE (T3, 15A/250V)	RT64	FIN TEMP. THERMISTOR
F604	FUSE (T3, 15A/250V)	RT65	AMBIENT TEMP. THERMISTOR
F605	FUSE (T3, 15A/250V)	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
IPM	INTELLIGENT POWER MODULE	TB1, TB2	TERMINAL BLOCK
L	REACTOR	T801	TRANSFORMER
LEV	EXPANSION VALVE COIL	X601	RELAY
MC	COMPRESSOR	X602	RELAY
MF	FAN MOTOR	X64	RELAY
PFC	POWER FACTOR CONTROLLER	21S4	CIRCUIT PROTECTION
PTC64	CIRCUIT PROTECTION		REVERSING VALVE SOLENOID COIL

8

REFRIGERANT SYSTEM DIAGRAM

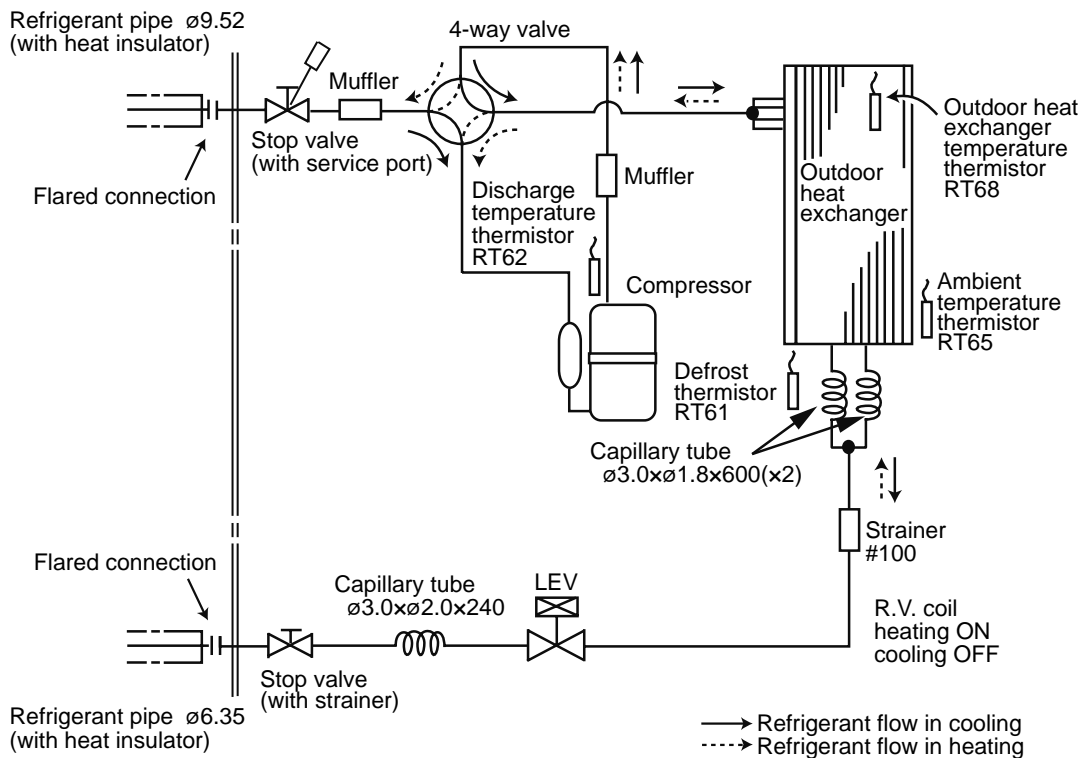
SUZ-KA25VA2.TH

Unit: mm



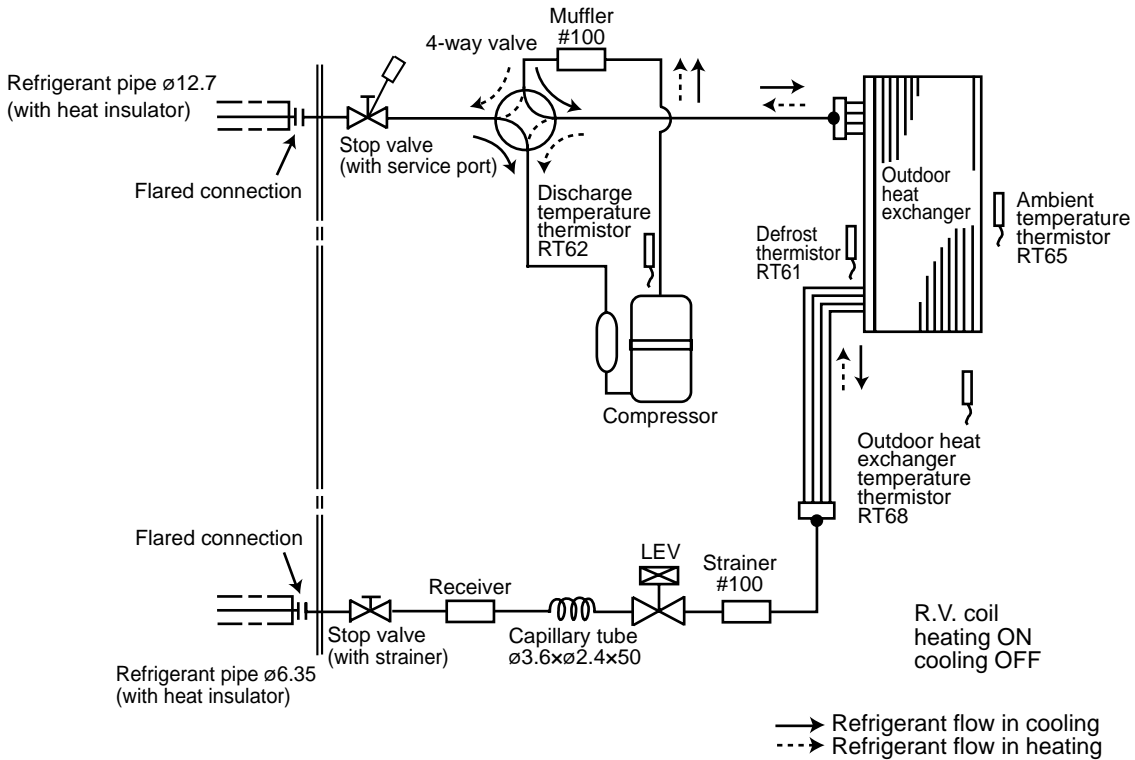
Unit: mm

SUZ-KA35VA2.TH



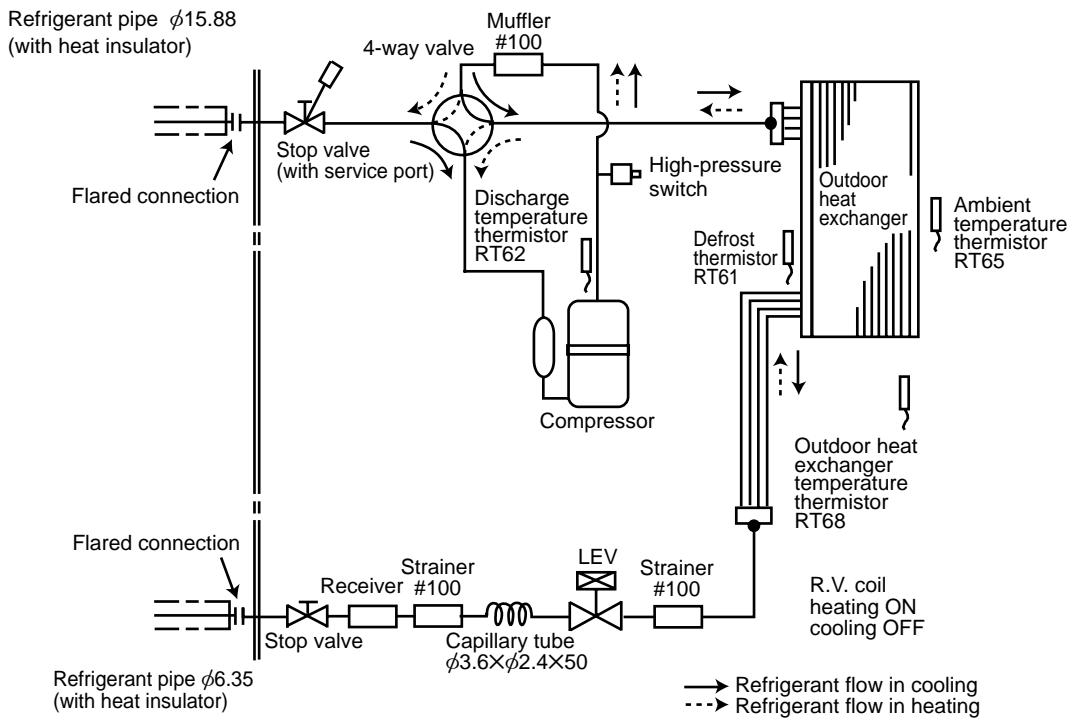
SUZ-KA50VA2.TH

Unit: mm



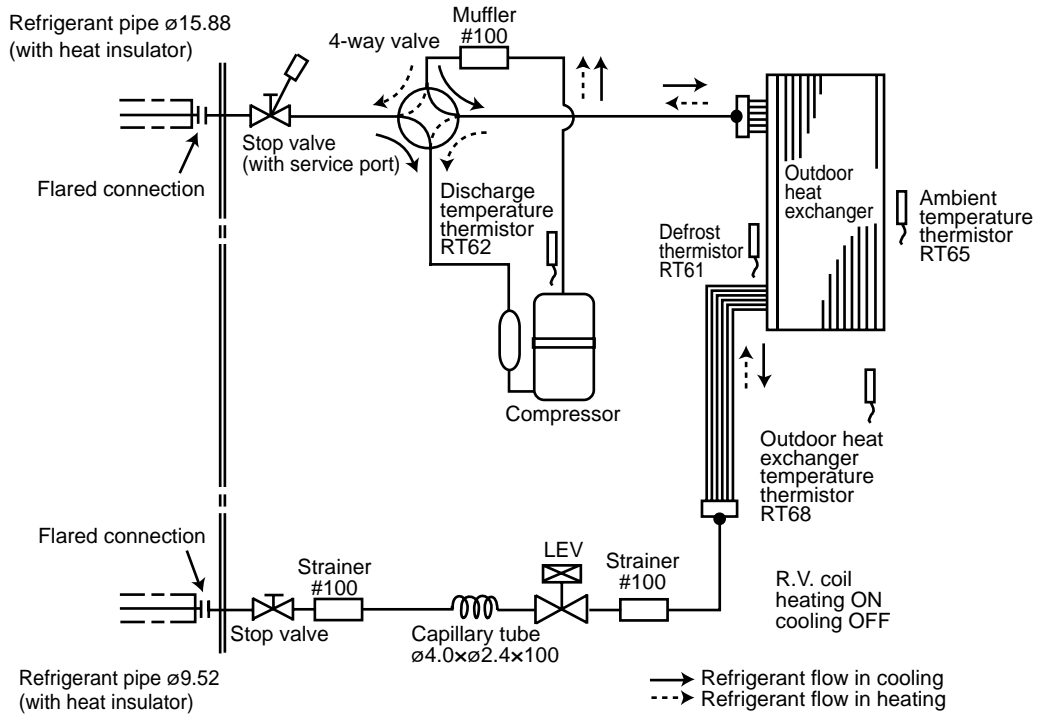
SUZ-KA60VA2.TH

Unit: mm



SUZ-KA71VA2.TH

Unit: mm



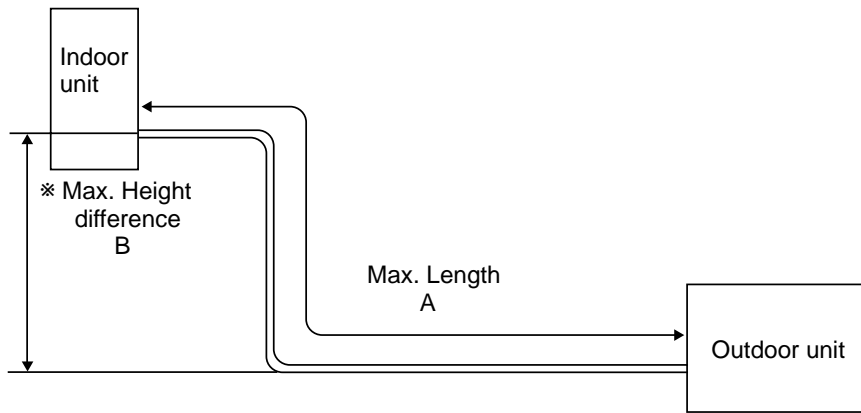
SUZ-KA25VA2.TH SUZ-KA35VA2.TH SUZ-KA50VA2.TH
 SUZ-KA60VA2.TH SUZ-KA71VA2.TH

MAX. REFRIGERANT PIPING LENGTH

Models	Refrigerant piping: m		Piping size O.D: mm	
	Max. Length A	Max. Height difference B	Gas	Liquid
SUZ-KA25VA2.TH	20	12	9.52	6.35
SUZ-KA35VA2.TH			12.7	
SUZ-KA50VA2.TH	30	30(15)	15.88	
SUZ-KA60VA2.TH				
SUZ-KA71VA2.TH			9.52	

() : MFZ-KA50VA-E4

MAX. HEIGHT DIFFERENCE



* Height difference limitations are binding regardless of which unit, indoor or outdoor, is position high.

ADDITIONAL REFRIGERANT CHARGE (R410A: g)

Models	Outdoor unit precharged	Refrigerant piping length (one way)											
		5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m	20m
SUZ-KA25VA2.TH	800	0	0	0	90	120	150	180	210	240	270	300	450
SUZ-KA35VA2.TH	1,050	0	0	0	90	120	150	180	210	240	270	300	450

Calculation: $Xg=30g/m \times (\text{Refrigerant piping length}(m)-5)$

Models	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
SUZ-KA50VA2.TH	1,600	0	60	160	260	360	460
SUZ-KA60VA2.TH	1,800	0	60	160	260	360	460

Calculation : $Xg=20g/m \times (\text{Refrigerant piping length}(m)-7)$

Models	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
SUZ-KA71VA2.TH	1,800	0	165	440	715	990	1,265

Calculation : $Xg=55g/m \times (\text{Refrigerant piping length}(m)-7)$

SUZ-KA25VA2.TH
SUZ-KA60VA2.TH

SUZ-KA35VA2.TH
SUZ-KA71VA2.TH

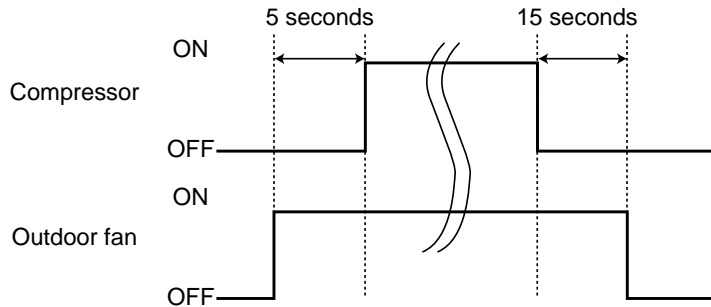
SUZ-KA50VA2.TH

9-1. Outdoor fan motor control

The fan motor turns ON/OFF, interlocking with the compressor.

[ON] The fan motor turns ON 5 seconds before the compressor starts up.

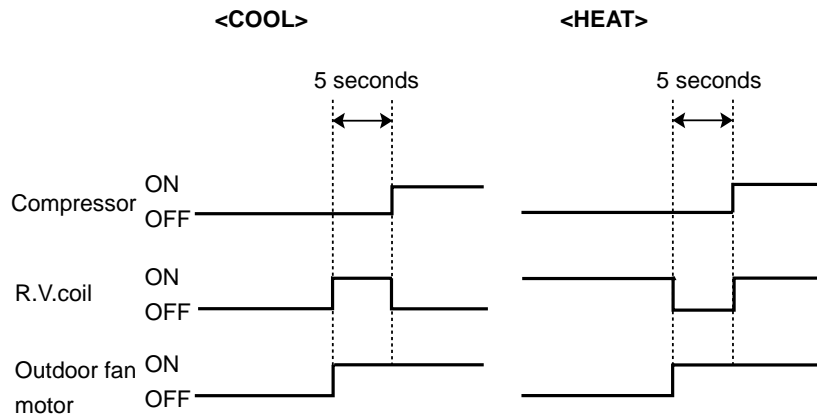
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



9-2. R.V. coil control

Heating ON
Cooling OFF
Dry OFF

NOTE: The 4-way valve reverses for 5 seconds right before start-up of the compressor.



9-3. Relation between main sensor and actuator

Sensor	Purpose	Actuator			
		Compressor	LEV	Outdoor fan motor	R.V.coil
Discharge temperature thermistor	Protection	○	○		
Indoor coil temperature thermistor	Cooling: Coil frost prevention	○			
	Heating: High pressure protection	○	○		
Defrost thermistor	Heating: Defrosting	○	○	○	○
Fin temperature thermistor	Protection	○		○	
Ambient temperature thermistor	Cooling: Low ambient temperature operation	○	○	○	
	Heating: High pressure protection	○	○	○	

10

SERVICE FUNCTIONS

SUZ-KA25VA2.TH SUZ-KA35VA2.TH

CHANGE IN DEFROST SETTING

<JS> When the JS wire of the outdoor Inverter P.C. board is cut/ soldered, the defrost finish temperature is changed.
(Refer to 11-6-1)

Jumper wire		Defrost finish temperature	
		SUZ-KA25VA2.TH	SUZ-KA35VA2.TH
JS	soldered (Initial setting)	5°C	10°C
	none (cut)	8°C	13°C

11

TROUBLESHOOTING

SUZ-KA25VA2.TH
SUZ-KA50VA2.TH

SUZ-KA35VA2.TH
SUZ-KA60VA2.TH

SUZ-KA71VA2.TH

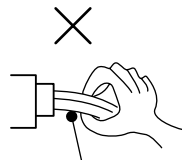
11-1. Cautions on troubleshooting

1. Before troubleshooting, check the following:

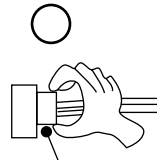
- 1) Check the power supply voltage.
- 2) Check the indoor/outdoor connecting wire for miswiring.

2. Take care the following during servicing.

- 1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and turn off the breaker.
- 2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
- 3) When removing the electrical parts, be careful of the residual voltage of smoothing capacitor.
- 4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
- 5) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



Lead wire

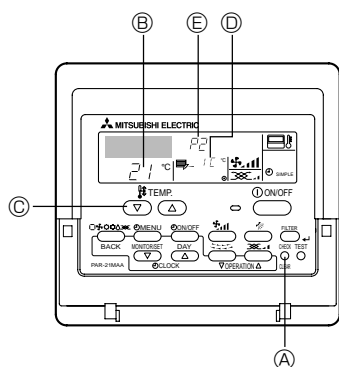


Housing point

3. Troubleshooting procedure

- 1) First, check if the OPERATION INDICATOR lamp is blinking on and off to indicate an abnormality. To make sure, check how many times the abnormality indication is blinking on and off before starting service work.
- 2) Before servicing check that the connector and terminal are connected properly.
- 3) If the electronic control P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
- 4) When troubleshooting, refer to 11-2. and 11-3.

11-2-2. Wired remote controller



- Ⓐ CHECK button
- Ⓑ Refrigerant address
- Ⓒ TEMP. button
- Ⓓ IC: Indoor unit
OC: Outdoor unit
- Ⓔ Check code

- ① Turn on the power.
- ② Press the [CHECK] button twice.
- ③ Set refrigerant address with [TEMP] button if system control is used.
- ④ Press the [ON/OFF] button to stop the self-check.

11-2-3. Failure mode table (Wireless remote controller/Wired remote controller)

[Output pattern A] Errors detected by indoor unit

Wired remote controller	Wireless remote controller	Symptom	Remark
Check code	Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times)		
P1	1	Intake sensor error	
P2	2	Pipe (TH2) sensor error	
P9		Pipe (TH5) sensor error	
E6,E7	3	Indoor/outdoor unit communication error	
P4	4	Drain sensor error/Float switch connector open	
P5	5	Drain pump error	
P6	6	Freezing/Overheating protection operation	
EE	7	Communication error between indoor and outdoor units	
P8	8	Pipe temperature error	
E4, E5	9	Remote controller signal receiving error	
—	10	—	
—	11	—	
Fb	12	Indoor unit control system error (memory error, etc.)	
E0, E3	—	Remote controller transmission error	
E1, E2	—	Remote controller control board error	

[Output pattern B] Errors detected by unit other than indoor unit (outdoor unit, etc.)

Wired remote controller	Wireless remote controller	Symptom	Remark
Check code	Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times)		
E9	1	Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)	For details, check the LED display of the outdoor controller board.
UP	2	Compressor overcurrent interruption	
U3,U4	3	Open/short of outdoor unit thermistors	
UF	4	Compressor overcurrent interruption (When compressor locked)	
U2	5	Abnormal high discharging temperature/insufficient refrigerant	
U1,Ud	6	Abnormal high pressure (63H worked)/Overheating protection operation	
U5	7	Abnormal temperature of heat sink	
U8	8	Outdoor unit fan protection stop	
U6	9	Compressor overcurrent interruption/Abnormal of power module	
U7	10	Abnormality of super heat due to low discharge temperature	
U9,UH	11	Abnormality such as overvoltage or voltage shortage and abnormal synchronous signal to main circuit/Current sensor error	
—	12	—	
—	13	—	
Others	14	Other errors	

- If the beeper does not sound again after the initial two beeps to confirm the self-check start signal was received and the OPERATION INDICATOR lamp does not come on, there are no error records.
- If the beeper sounds three times continuously "beep, beep, beep (0.4 + 0.4 + 0.4 sec.)" after the initial two beeps to confirm the self-check start signal was received, the specified refrigerant address is incorrect.
- On wireless remote controller
The continuous buzzer sounds from receiving section of indoor unit.
Blink of operation lamp
- On wired remote controller
Check code displayed in the LCD.

11-2-4. Outdoor unit failure mode table

SUZ-KA25VA2.TH SUZ-KA35VA2.TH SUZ-KA50VA2.TH

Abnormal point (Failure mode/protection)	LED indication (Outdoor P.C. board)	Condition	Correspondence
None (Normal)	—	—	—
Outdoor power system	—	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started.	<ul style="list-style-type: none"> •Reconnect connectors. •Refer to 11-5. ㉔ "How to check inverter/compressor". •Check stop valve.
Discharge temperature thermistor	1-time flash every 2.5 seconds	Thermistor shorts or opens during compressor running.	<ul style="list-style-type: none"> •Refer to 11-5. ㉔ "Check of outdoor thermistors". Defective outdoor thermistors can be identified by checking the blinking pattern of LED.
Defrost thermistor			
Fin temperature thermistor	3-time flash 2.5 seconds OFF		
P.C. board temperature thermistor	4-time flash 2.5 seconds OFF		
Ambient temperature thermistor	2-time flash 2.5 seconds OFF		
Overcurrent	11-time flash 2.5 seconds OFF	Large current flows into intelligent power module.	<ul style="list-style-type: none"> •Reconnect compressor connector. •Refer to 11-5. ㉔ "How to check inverter/compressor". •Check stop valve.
Compressor synchronous abnormality (Compressor start-up failure protection)	12-time flash 2.5 seconds OFF	Waveform of compressor current is distorted.	<ul style="list-style-type: none"> •Reconnect compressor connector. •Refer to 11-5. ㉔ "How to check inverter/compressor".
Discharge temperature	—	Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Refer to 11-5. ㉔ "Check of LEV".
High pressure	—	Temperature indoor coil thermistor exceeds 70°C in HEAT mode. Temperature defrost thermistor exceeds 70°C in COOL mode.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Check stop valve.
Fin temperature/P.C. board temperature	7-time flash 2.5 seconds OFF	Temperature of fin temperature thermistor on the inverter P.C. board exceeds 75 ~ 80°C, or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 70 ~ 75°C.	<ul style="list-style-type: none"> •Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5. ㉔ "Check of outdoor fan motor".
Outdoor fan motor	—	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	<ul style="list-style-type: none"> •Refer to 11-5. ㉔ "Check of outdoor fan motor". Refer to 11-5. ㉔ "Check of inverter P.C. board".
Nonvolatile memory data	5-time flash 2.5 seconds OFF	Nonvolatile memory data cannot be read properly.	<ul style="list-style-type: none"> •Replace the inverter P.C. board.
Discharge temperature	—	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	<ul style="list-style-type: none"> •Refer to 11-5. ㉔ "Check of LEV". •Check refrigerant circuit and refrigerant amount.
DC voltage	8-time flash 2.5 seconds OFF	DC voltage of inverter cannot be detected normally.	<ul style="list-style-type: none"> •Refer to 11-5. ㉔ "How to check inverter/compressor".
Each phase current of compressor	9-time flash 2.5 seconds OFF	Each phase current of compressor cannot be detected normally.	
Overcurrent Compressor open-phase	10-time flash 2.5 seconds OFF	Large current flows into intelligent power module (IPM). The open-phase operation of compressor is detected. The interphase short out occurs in the output of the intelligent power module (IPM). The compressor winding shorts out.	<ul style="list-style-type: none"> •Reconnect compressor connector. •Refer to 11-5. ㉔ "How to check inverter/compressor".
Stop valve (Closed valve)	14-time flash 2.5 seconds OFF	Closed valve is detected by compressor current.	<ul style="list-style-type: none"> •Check stop valve

NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-3.).

SUZ-KA60VA2.TH

Outdoor LED indication		Abnormal point (Failure mode)	Details of abnormal	Detecting method	Check point	
LED1	LED2					
Lighting	Once	Outdoor thermistors	Discharge temperature thermistor	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	<ul style="list-style-type: none"> • Check the outdoor thermistors. 	
			Defrost thermistor	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes of compressor start-up.		
			Ambient temperature thermistor	When a short or open circuit is detected in the thermistor during operation.		
			Fin temperature thermistor			
			P.C. board temperature thermistor			
	9 times	Outdoor heat exchanger temperature thermistor	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up.	<ul style="list-style-type: none"> • Check the outdoor thermistors. 		
	5 times	Outdoor control system	EEPROM	When nonvolatile memory data cannot be read properly, unit stops.	<ul style="list-style-type: none"> • Replace the outdoor electronic control P.C. board. 	
	6 times	Converter control system	Communication error between P.C. boards	When the communication between boards protection stop is continuously performed twice.	<ul style="list-style-type: none"> • Check the connecting wire between outdoor electronic control P.C. board and power board. 	
			Communication between P.C. boards protection	Communication error occurs between the electronic control P.C.board and power board for more than 10 seconds.		
			Current sensor	Current sensor protection stop is continuously performed twice.		<ul style="list-style-type: none"> • Replace the power board.
Current sensor protection			When a short or open circuit is detected in the current sensor during compressor operating.			
7 times			Zero cross detecting circuit	The protection stop of the zero cross detecting circuit is continuously performed 10 times.		<ul style="list-style-type: none"> • Check the connecting wire among electronic control P.C. board, noise filter P.C. board and power board.
5 times	Zero cross detecting circuit protection	When zero cross signal cannot be detected while the compressor is operating.				
6 times	Goes out	Converter protection	When a failure is detected in the operation of the converter during operation.	<ul style="list-style-type: none"> • Replace the power board. 		
		Bus-bar voltage protection (1)	When the bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating.			
		Bus-bar voltage protection (2) *Even if this protection stop is performed continuously 3 times, it does not mean the abnormality in outdoor power system.	When the bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating.			
Once	Goes out	Overcurrent protection	IPM protection	When overcurrent is detected after 30 seconds of compressor start-up.	<ul style="list-style-type: none"> • Check the connection of the compressor connecting wire. • Check the inverter/ compressor. • Check the stop valve. 	
			Lock protection	When overcurrent is detected within 30 seconds after the compressor gets started.		
3 times	Goes out	Fin temperature/P.C. board temperature overheat	Fin temperature overheat protection	When the fin temperature exceeds 87°C during operation.	<ul style="list-style-type: none"> • Check around outdoor unit. • Check outdoor unit air passage. • Check the outdoor fan motor. 	
4 times	Goes out		P.C. board temperature overheat protection	When the P.C. board temperature exceeds 70°C during operation.		
Lighting	Lighting	Refrigerant system	Discharge temperature overheat protection	When discharge temperature exceeds 116°C.	<ul style="list-style-type: none"> • Check refrigerant circuit and refrigerant amount. • Check the LEV. • Check the outdoor thermistors. 	
		High pressure protection	HPS protection	When high-pressure is detected with the high-pressure switch (HPS) during operation.		<ul style="list-style-type: none"> • Check refrigerant circuit and refrigerant amount. • Check the stop valve.
			High pressure protection (Overheat protection)	When the indoor coil thermistor (TH5) exceeds 70°C in HEAT mode. When the outdoor heat exchanger thermistor exceeds 70°C in COOL mode.		
		Low discharge temperature	Low discharge temperature protection	When the frequency of the compressor is kept 80Hz or more and discharge temperature is kept under 39°C for more than 20 minutes.		<ul style="list-style-type: none"> • Check refrigerant circuit and refrigerant amount. • Check the LEV.
		Outdoor fan	Outdoor fan protection	When outdoor fan has stopped within 30 seconds 3 times in a row after outdoor fan start -up,unit stops.		<ul style="list-style-type: none"> • Check the outdoor fan motor.
Outdoor power system	Outdoor power system	When IPM protection stop or lock protection stop is continuously performed 3 times within 1 minute after the compressor get started, or when converter protection stop or bus-bar voltage protection stop is continuously performed 3 times within 3 minutes after start-up.	<ul style="list-style-type: none"> • Reconnect compressor connector. • Check the inverter/ compressor. • Check the stop valve. • Check the PAM module. 			

NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-3).

SUZ-KA71VA2.TH

Abnormal point (Failure mode / protection)	LED indication (Outdoor P.C. board)	Condition	Correspondence	
None (Normal)	—	—	—	
Outdoor power system	—	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started.	<ul style="list-style-type: none"> •Reconnect connectors. •Refer to 11-5. ② "How to check inverter/compressor". •Check stop valve. 	
Discharge temperature thermistor	1-time flash every 2.5 seconds	Thermistor shorts or opens during compressor running.	<ul style="list-style-type: none"> •Refer to 11-5. ③ "Check of outdoor thermistors". Defective outdoor thermistors can be identified by checking the blinking pattern of LED. 	
Defrost thermistor				
Fin temperature thermistor				3-time flash 2.5 seconds OFF
P.C. board temperature thermistor				4-time flash 2.5 seconds OFF
Ambient temperature thermistor				2-time flash 2.5 seconds OFF
Outdoor heat exchanger temperature thermistor	—	—	—	
Overcurrent	11-time flash 2.5 seconds OFF	Large current flows into intelligent power module.	<ul style="list-style-type: none"> •Reconnect compressor connector. •Refer to 11-5. ② "How to check inverter/compressor". •Check stop valve. 	
Compressor synchronous abnormality (Compressor start-up failure protection)	12-time flash 2.5 seconds OFF	Waveform of compressor current is distorted.	<ul style="list-style-type: none"> •Reconnect compressor connector. •Refer to 11-5. ② "How to check inverter/compressor". 	
Discharge temperature	—	Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Refer to 11-5. ④ "Check of LEV". 	
High pressure	—	Temperature indoor coil thermistor exceeds 70°C in HEAT mode. Temperature defrost thermistor exceeds 70°C in COOL mode.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Check stop valve. 	
Fin temperature/ P.C. board temperature	7-time flash 2.5 seconds OFF	Temperature of fin temperature thermistor on the inverter P.C. board exceeds 75 ~ 80°C, or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 70 ~ 75°C.	<ul style="list-style-type: none"> •Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5. ① "Check of outdoor fan motor". 	
Outdoor fan motor	—	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	<ul style="list-style-type: none"> •Refer to 11-5. ① "Check of outdoor fan motor". •Refer to 11-5. ① "Check of inverter P.C. board". 	
Nonvolatile memory data	5-time flash 2.5 seconds OFF	Nonvolatile memory data cannot be read properly.	<ul style="list-style-type: none"> •Replace the inverter P.C. board. 	
Power module	6-time flash 2.5 seconds OFF	The interphase short circuit occurs in the output of the intelligent power module (IPM). The compressor winding shorts circuit.	<ul style="list-style-type: none"> •Refer to 11-5. ② "How to check inverter/compressor". 	
Discharge temperature	—	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	<ul style="list-style-type: none"> •Refer to 11-5. ④ "Check of LEV". •Check refrigerant circuit and refrigerant amount. 	
DC voltage	8-time flash 2.5 seconds OFF	DC voltage of inverter cannot be detected normally.	<ul style="list-style-type: none"> •Refer to 11-5. ② "How to check inverter/compressor". 	
Each phase current of compressor	9-time flash 2.5 seconds OFF	Each phase current of compressor cannot be detected normally.		
Overcurrent Compressor open-phase	10-time flash 2.5 seconds OFF	Large current flows into intelligent power module (IPM). The open-phase operation of compressor is detected. The interphase short circuit occurs in the output of the intelligent power module (IPM). The compressor winding shorts circuit.	<ul style="list-style-type: none"> •Reconnect compressor connector. •Refer to 11-5. ② "How to check inverter/compressor". 	
Stop valve (Closed valve)	14-time flash 2.5 seconds OFF	Closed valve is detected by compressor current.	<ul style="list-style-type: none"> •Check stop valve 	

NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-3).

11-3. Trouble shooting check table

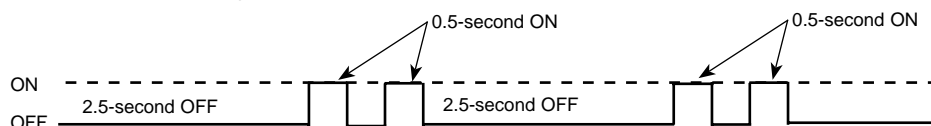
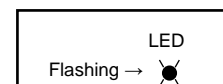
SUZ-KA25VA2.TH SUZ-KA35VA2.TH SUZ-KA50VA2.TH

No.	Symptom	LED indication	Abnormal point/ Condition	Condition	Correspondence	
1	Outdoor unit does not operate.	1-time flash every 2.5 seconds	Outdoor power system	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started, or failure of restart of compressor has repeated 24 times.	<ul style="list-style-type: none"> •Reconnect connector of compressor. •Refer to 11-5. Ⓐ "How to check inverter/compressor". •Check stop valve. 	
2			Outdoor thermistors	Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, P.C. board temperature thermistor or ambient temperature thermistor shorts or opens during compressor running.	•Refer to 11-5. Ⓔ "Check of outdoor thermistors".	
3			Outdoor control system	Nonvolatile memory data cannot be read properly. (The left lamp of OPERATION INDICATOR lamp of the indoor unit lights up or flashes 7-time.)	•Replace inverter P.C. board.	
4		6-time flash 2.5 seconds OFF	Serial signal	The communication fails between the indoor and outdoor unit for 3 minutes.	•Refer to 11-5. Ⓒ "How to check miswiring and serial signal error."	
5		11-time flash 2.5 seconds OFF	Stop valve/ Closed valve	Closed valve is detected by compressor current.	•Check stop valve.	
6		14-time flash 2.5 seconds OFF	Outdoor unit (Other abnormality)	Outdoor unit is defective.	•Refer to 11-2.1. "Flow chart of the detailed outdoor unit failure mode recall function".	
7	'Outdoor unit stops and restarts 3 minutes later' is repeated.	2-time flash 2.5 seconds OFF	Overcurrent protection	Large current flows into intelligent power module, or compressor repeats after 15 seconds when overcurrent protection occurs within 10 seconds after compressor starts. (Repeated 24 times at Maximum)	<ul style="list-style-type: none"> •Reconnect connector of compressor. •Refer to 11-5. Ⓐ "How to check inverter/compressor". •Check stop valve. 	
8		3-time flash 2.5 seconds OFF	Discharge temperature overheat protection	Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Refer to 11-5. Ⓒ "Check of LEV". 	
9		4-time flash 2.5 seconds OFF	Fin temperature/P.C. board temperature thermistor overheat protection	Temperature of fin temperature thermistor on the heat sink exceeds 75 ~ 80°C or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 70 ~ 75°C.	<ul style="list-style-type: none"> •Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5. Ⓔ "Check of outdoor fan motor". 	
10		5-time flash 2.5 seconds OFF	High pressure protection	Indoor coil thermistor exceeds 70°C in HEAT mode. Defrost thermistor exceeds 70°C in COOL mode.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Check stop valve. 	
11		8-time flash 2.5 seconds OFF	Compressor synchronous abnormality	The waveform of compressor current is distorted.	<ul style="list-style-type: none"> •Reconnect connector of compressor. •Refer to 11-5. Ⓐ "How to check inverter/compressor". 	
12		10-time flash 2.5 seconds OFF	Outdoor fan motor	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	<ul style="list-style-type: none"> •Refer to 11-5. Ⓔ "Check of outdoor fan motor." •Refer to 11-5. Ⓒ "Check of inverter P.C. board." 	
13		12-time flash 2.5 seconds OFF	Each phase current of compressor	Each phase current of compressor cannot be detected normally	•Refer to 11-5. Ⓐ "How to check inverter/compressor".	
14		13-time flash 2.5 seconds OFF	DC voltage	DC voltage of inverter cannot be detected normally.	•Refer to 11-5. Ⓐ "How to check inverter/compressor".	
15		Outdoor unit operates.	1-time flash 2.5 seconds OFF	Frequency drop by current protection	Current from power outlet reaches the protection current, and compressor frequency lowers.	The unit is normal, but check the following.
16			3-time flash 2.5 seconds OFF	Frequency drop by high pressure protection	Temperature of indoor coil thermistor exceeds 55°C in HEAT mode, compressor frequency lowers.	<ul style="list-style-type: none"> •Check if indoor filters are clogged. •Check if refrigerant is short. •Check if indoor/outdoor unit air circulation is short cycled.
17				Frequency drop by defrosting in COOL mode	Indoor coil thermistor reads 8°C or less in COOL mode, compressor frequency lowers.	
18		Outdoor unit operates.	4-time flash 2.5 seconds OFF	Frequency drop by discharge temperature protection	Temperature of discharge temperature thermistor exceeds 111°C, compressor frequency lowers.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Refer to 11-5. Ⓒ "Check of LEV". •Refer to 11-5. Ⓔ "Check of outdoor thermistors".
19			7-time flash 2.5 seconds OFF	Low discharge temperature protection	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	<ul style="list-style-type: none"> •Refer to 11-5. Ⓒ "Check of LEV". •Check refrigerant circuit and refrigerant amount.
20			8-time flash 2.5 seconds OFF	PAM protection PAM: Pulse Amplitude Modulation	The overcurrent flows into IGBT (Insulated Gate Bipolar transistor : TR821) or when the bus-bar voltage reaches 320 V or more, PAM stops and restarts.	This is not malfunction. PAM protection will be activated in the following cases; 1 Instantaneous power voltage drop (Short time power failure) 2 When the power supply voltage is high.
		9-time flash 2.5 seconds OFF	Inverter check mode	The connector of compressor is disconnected, inverter check mode starts.	•Check if the connector of the compressor is correctly connected. Refer to 11-5. Ⓐ "How to check inverter/ compressor".	

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 11-6-1. or 11-6-2.
2. LED is lighted during normal operation.

Inverter P.C. board(Parts side)

The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".



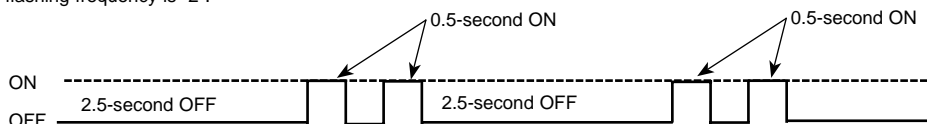
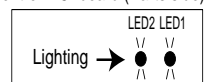
SUZ-KA60VA2.TH

No.	Symptom	Indication		Abnormal point/Condition	Condition	Correspondence	
		LED1 (Red)	LED2 (Yellow)				
1	Outdoor unit does not operate.	Lightning	Twice	Outdoor power system	When IPM protection stop or lock protection stop is continuously performed three times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed three times within 3 minutes after start-up.	<ul style="list-style-type: none"> Check the connection of the compressor connecting wire. Refer to 11-5.⑥ "How to check inverter/compressor". Check the stop valve. 	
2			3 times	Discharge temperature thermistor	When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	<ul style="list-style-type: none"> Refer to 11-5.⑥ "Check of outdoor thermistor". 	
3			4 times	Fin temperature thermistor P.C board temperature thermistor	When a short or open circuit is detected in the thermistor during operation.	<ul style="list-style-type: none"> Refer to 11-5.⑥ "Check of outdoor thermistor". Replace the outdoor electronic control P.C. board. 	
4			5 times	Ambient temperature thermistor Outdoor heat exchanger temperature thermistor Defrost thermistor	When a short or open circuit is detected in the thermistor during operation. When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up. When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes of compressor start-up.	<ul style="list-style-type: none"> Refer to 11-5.⑥ "Check of outdoor thermistor". 	
5			6 times	Serial signal	When the communication fails between the indoor and outdoor unit for 3 minutes.	Refer to 11-5.⑥ "How to check mis-wiring and serial signal error."	
6			7 times	Nonvolatile memory data	When the nonvolatile memory data cannot be read properly.	<ul style="list-style-type: none"> Replace the outdoor electronic control P.C. board. 	
7			8 times	Current sensor	Current sensor protection stop is continuously performed twice.	<ul style="list-style-type: none"> Replace the power board. 	
8			11 times	Communication error between P.C. boards	When the communication protection stop between boards is continuously performed twice.	<ul style="list-style-type: none"> Check the connecting wire between outdoor electronic control P.C. board and power board. 	
9			12 times	Zero cross detecting circuit	The protection stop of the zero cross detecting circuit is continuously performed 10 times.	<ul style="list-style-type: none"> Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board. 	
10			Twice	Goes out	IPM protection	When over-current is detected after 30 minutes of compressor start-up.	<ul style="list-style-type: none"> Reconnect compressor connector. Refer to 11-5.⑥ "How to check inverter/compressor". Check the stop valve. Check the power module (PAM module).
					Lock protection	When over-current is detected within 30 minutes of compressor start-up	
11			3 times	Goes out	Discharge temperature protection	When temperature of discharge temperature thermistor exceeds 116.; compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	<ul style="list-style-type: none"> Check the amount of gas and refrigerant circuit. Refer to 11-5.⑥ "Check of LEV".
12			4 times	Goes out	Fin temperature protection	When the fin temperature exceeds 87°C during operation.	<ul style="list-style-type: none"> Check refrigerant circuit and refrigerant amount. Refer to 11-5.⑥ "Check of LEV".
					P.C. board temperature protection	When the P.C. board temperature exceeds 70°C during operation.	
13			5 times	Goes out	High-pressure protection	When high-pressure is detected with the high-pressure switch (HPS) during operation. When the outdoor heat exchanger temperature exceeds 70°C during cooling or when indoor gas pipe temperature exceeds 70°C during heating.	<ul style="list-style-type: none"> Check around of gas and the refrigerant circuit. Check of stop valve.
14			8 times		Goes out	Converter protection	
15			9 times	Goes out	Bus-bar voltage protection (1)	When the bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating.	<ul style="list-style-type: none"> Replace the power board.
					Bus-bar voltage protection (2)	When the bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating.	
16			13 times	Goes out	Outdoor fan motor	When failure occurs continuously three times within 30 seconds after the fan gets started.	<ul style="list-style-type: none"> Refer to 11-5.⑥ "Check of outdoor fan motor".
17	Lighting	8 times	Current sensor protection	When a short or open circuit is detected in the current sensor during compressor operating.	<ul style="list-style-type: none"> Replace the power board. 		
18	Lighting	11 times	Communication between P.C. boards protection	Communication error occurs between the outdoor electronic control P.C. board and power board for more than 10 seconds.	<ul style="list-style-type: none"> Check the connecting wire between outdoor electronic control P.C. board and power board. 		
19	Lighting	12 times	Zero cross detecting circuit protection	When zero cross signal cannot be detected while the compressor is operating.	<ul style="list-style-type: none"> Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board. 		

NOTE 1. The location of LED is illustrated at the right figure.
2. LED is lighted during normal operation.

Outdoor electronic control P.C. board (Parts side)

The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".



SUZ-KA60VA2.TH

No.	Symptom	Indication		Abnormal point/Condition	Condition	Correspondence
		LED1 (Red)	LED2 (Yellow)			
20	Outdoor unit operates.	Once	Lighting	Primary current protection	When the input current exceeds 15A.	These symptoms do not mean any abnormality of the product, but check the following points. <ul style="list-style-type: none"> • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
21				Twice	Lighting	
22		3 times	Lighting			
				Defrosting in cooling	When the indoor gas pipe temperature falls 3°C or below during cooling.	
23		4 times	Lighting	Discharge temperature protection	When the discharge temperature exceeds 100°C during operation.	
24	5 times	Lighting	Low discharge temperature protection	When the frequency of the compressor is kept 80Hz or more and the discharge temperature is kept under 39°C for more than 20 minutes.	<ul style="list-style-type: none"> • Refer to 11-5.Ⓔ "Check of LEV". • Check refrigerant circuit and refrigerant amount. 	
25	Outdoor unit operates	9 times	Lighting	Cooling high-pressure protection	When the outdoor heat exchanger temperature exceeds 58°C during operation.	This symptom does not mean any abnormality of the product, but check the following points. <ul style="list-style-type: none"> • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
26		Lighting	Lighting	Inverter check mode	When the unit is operated with emergency operation switch.	—
				Normal	—	—

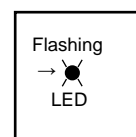
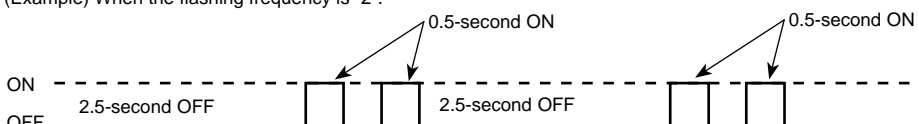
SUZ-KA71VA2.TH

No.	Symptom	LED indication	Abnormal point/Condition	Condition	Correspondence
1	Outdoor unit does not operate.	1-time flash every 2.5 seconds	Outdoor power system	Overcurrent protection stop is continuously performed 3 times within 1 minute after the compressor gets started.	<ul style="list-style-type: none"> •Reconnect connector of compressor. •Refer to 11-5.③ "How to check inverter/compressor". •Check stop valve.
2			Outdoor thermistors	Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, P.C. board temperature thermistor, outdoor heat exchanger temperature thermistor or ambient temperature thermistor shorts or opens during compressor running.	•Refer to 11-5.③ "Check of outdoor thermistors".
3			Outdoor control system	Nonvolatile memory data cannot be read properly. (The upper lamp of OPERATION INDICATOR lamp of the indoor unit lights up or flashes 7-time.)	•Replace inverter P.C. board.
4		6-time flash 2.5 seconds OFF	Serial signal	The communication fails between the indoor and outdoor unit for 3 minutes.	•Refer to 11-5.④ "How to check miswiring and serial signal error."
5		11-time flash 2.5 seconds OFF	Stop valve/ Closed valve	Closed valve is detected by compressor current.	•Check stop valve.
6		14-time flash 2.5 seconds OFF	Outdoor unit (Other abnormality)	Outdoor unit is defective.	•Refer to 11-2.1. "Flow chart of the detailed outdoor unit failure mode recall function".
7	'Outdoor unit stops and restarts 3 minutes later' is repeated.	2-time flash 2.5 seconds OFF	Overcurrent protection	Large current flows into intelligent power module.	<ul style="list-style-type: none"> •Reconnect connector of compressor. •Refer to 11-5.③ "How to check inverter/compressor". •Check stop valve.
8		3-time flash 2.5 seconds OFF	Discharge temperature overheat protection	Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Refer to 11-5.⑧ "Check of LEV".
9		4-time flash 2.5 seconds OFF	Fin temperature /P.C. board temperature thermistor overheat protection	Temperature of fin temperature thermistor on the heat sink exceeds 75 ~ 80°C or temperature of P.C. board temperature thermistor on the inverter P.C.board exceeds 70 ~ 75°C.	<ul style="list-style-type: none"> •Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5.① "Check of outdoor fan motor".
10		5-time flash 2.5 seconds OFF	High pressure protection	Indoor coil thermistor exceeds 70°C in HEAT mode. Defrost thermistor exceeds 70°C in COOL mode.	<ul style="list-style-type: none"> •Check refrigerant circuit and refrigerant amount. •Check stop valve.
11		8-time flash 2.5 seconds OFF	Compressor synchronous abnormality	The waveform of compressor current is distorted.	<ul style="list-style-type: none"> •Reconnect connector of compressor. •Refer to 11-5.③ "How to check inverter/compressor".
12		10-time flash 2.5 seconds OFF	Outdoor fan motor	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	<ul style="list-style-type: none"> •Refer to 11-5.① "Check of outdoor fan motor." •Refer to 11-5.① "Check of inverter P.C. board."
13		12-time flash 2.5 seconds OFF	Each phase current of compressor	Each phase current of compressor cannot be detected normally.	•Refer to 11-5.③ "How to check inverter/compressor".
14		13-time flash 2.5 seconds OFF	DC voltage	DC voltage of inverter cannot be detected normally.	•Refer to 11-5.③ "How to check inverter/compressor".
15	Outdoor unit operates.	1-time flash 2.5 seconds OFF	Frequency drop by current protection	Current from power outlet is nearing breaker capacity. PFC module stops due to overcurrent.	The unit is normal, but check the following.
16		3-time flash 2.5 seconds OFF	Frequency drop by high pressure protection	Temperature of indoor coil thermistor exceeds 55°C in HEAT mode, compressor frequency lowers.	<ul style="list-style-type: none"> •Check if indoor filters are clogged. •Check if refrigerant is short. •Check if indoor/outdoor unit air circulation is short cycled.
17		4-time flash 2.5 seconds OFF	Frequency drop by defrosting in COOL mode	Indoor coil thermistor reads 8°C or less in COOL mode, compressor frequency lowers.	
18	Outdoor unit operates.	7-time flash 2.5 seconds OFF	Low discharge temperature protection	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	<ul style="list-style-type: none"> •Refer to 11-5.⑧ "Check of LEV". •Check refrigerant circuit and refrigerant amount.
19		8-time flash 2.5 seconds OFF	Zero cross detecting circuit	Zero cross signal for PAM control cannot be detected.	This is not malfunction. PAM protection will be activated in the following cases: 1 Instantaneous power voltage drop. (Short time power failure) 2 When the power supply voltage is high.
20		9-time flash 2.5 seconds OFF	Inverter check mode	The connector of compressor is disconnected, inverter check mode starts.	•Check if the connector of the compressor is correctly connected. Refer to 11-5.③ "How to check inverter/compressor".

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 11-6-3.
2. LED is lighted during normal operation.

Inverter P.C. board

The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".

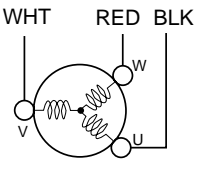
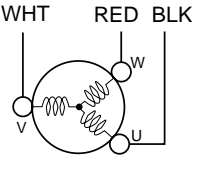
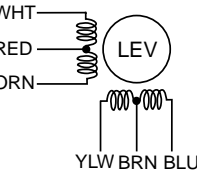


11-4. Trouble criterion of main parts (1)
SUZ-KA25VA2.TH SUZ-KA35VA2.TH

Part name	Check method and criterion	Figure											
Defrost thermistor (RT61) Fin temperature thermistor (RT64) Ambient temperature thermistor (RT65) Outdoor heat exchanger temperature thermistor (RT68)	Measure the resistance using a tester. Refer to 11-6. "Test point diagram and voltage", 11-6-1. "Inverter P.C. board", for the chart of thermistor.												
Discharge temperature thermistor (RT62)	Measure the resistance using a tester. Before measurement, hold the thermistor with your hands to warm it up. Refer to 11-6. "Test point diagram and voltage", 11-6-1. "Inverter P.C. board", for the chart of thermistor.												
Compressor	Measure the resistance between terminals using a tester. (Temperature : -20°C ~ 40°C)												
	<table border="1"> <thead> <tr> <th></th> <th colspan="2">Normal</th> </tr> <tr> <th></th> <th>SUZ-KA25VA2.TH</th> <th>SUZ-KA35VA2.TH</th> </tr> </thead> <tbody> <tr> <td>U-V</td> <td rowspan="3">1.36 Ω ~ 1.93 Ω</td> <td rowspan="3">1.52 Ω ~ 2.17 Ω</td> </tr> <tr> <td>U-W</td> </tr> <tr> <td>V-W</td> </tr> </tbody> </table>		Normal			SUZ-KA25VA2.TH	SUZ-KA35VA2.TH	U-V	1.36 Ω ~ 1.93 Ω	1.52 Ω ~ 2.17 Ω	U-W	V-W	
	Normal												
	SUZ-KA25VA2.TH	SUZ-KA35VA2.TH											
U-V	1.36 Ω ~ 1.93 Ω	1.52 Ω ~ 2.17 Ω											
U-W													
V-W													
Outdoor fan motor	Measure the resistance between terminals using a tester. (Temperature : -20°C ~ 40°C)												
	<table border="1"> <thead> <tr> <th>Color of the lead wire</th> <th>Normal</th> </tr> </thead> <tbody> <tr> <td>WHT - BLK</td> <td rowspan="3">29 Ω ~ 42 Ω</td> </tr> <tr> <td>BLK - RED</td> </tr> <tr> <td>RED - WHT</td> </tr> </tbody> </table>	Color of the lead wire	Normal	WHT - BLK	29 Ω ~ 42 Ω	BLK - RED	RED - WHT						
Color of the lead wire	Normal												
WHT - BLK	29 Ω ~ 42 Ω												
BLK - RED													
RED - WHT													
R.V. coil (21S4)	Measure the resistance between terminals using a tester. (Temperature : -20°C ~ 40°C)												
	<table border="1"> <thead> <tr> <th>Normal</th> </tr> </thead> <tbody> <tr> <td>1.19 kΩ ~ 1.78 kΩ</td> </tr> </tbody> </table>	Normal	1.19 kΩ ~ 1.78 kΩ										
Normal													
1.19 kΩ ~ 1.78 kΩ													
Expansion valve coil (LEV)	Measure the resistance using a tester. (Temperature : -20°C ~ 40°C)												
	<table border="1"> <thead> <tr> <th>Color of the lead wire</th> <th>Normal</th> </tr> </thead> <tbody> <tr> <td>WHT - RED</td> <td rowspan="4">37 Ω ~ 54 Ω</td> </tr> <tr> <td>RED - ORN</td> </tr> <tr> <td>YLW - BRN</td> </tr> <tr> <td>BRN - BLU</td> </tr> </tbody> </table>	Color of the lead wire	Normal	WHT - RED	37 Ω ~ 54 Ω	RED - ORN	YLW - BRN	BRN - BLU					
Color of the lead wire	Normal												
WHT - RED	37 Ω ~ 54 Ω												
RED - ORN													
YLW - BRN													
BRN - BLU													

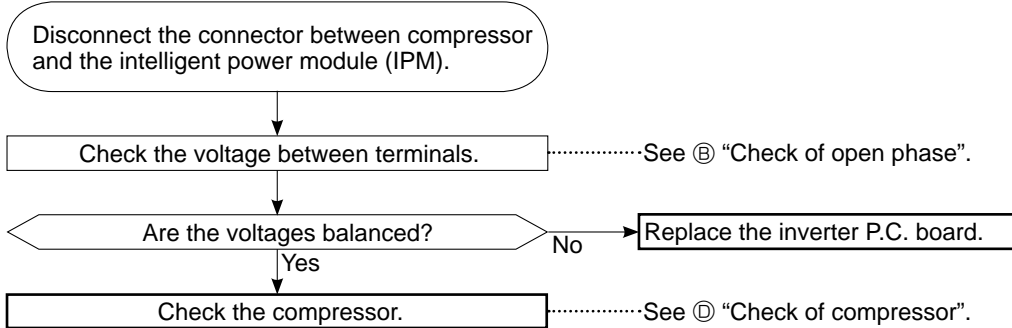
11-4. Trouble criterion of main parts (2)

SUZ-KA50VA2.TH SUZ-KA60VA2.TH SUZ-KA71VA2.TH

Part name	Check method and criterion	Figure										
Defrost thermistor (RT61) Fin temperature thermistor (RT64) Ambient temperature thermistor (RT65) Outdoor heat exchanger temperature thermistor (RT68)	Measure the resistance using a tester. Refer to 11-6. "Test point diagram and voltage", 11-6-4. "Outdoor electronic control P.C. board" or 11-6-2, 11-6-3. "Inverter P.C. board", for the chart of thermistor.											
Discharge temperature thermistor (RT62)	Measure the resistance using a tester. Before measurement, hold the thermistor with your hands to warm it up. Refer to 11-6. "Test point diagram and voltage", 11-6-4. "Outdoor electronic control P.C. board" or 11-6-2, 11-6-3. "Inverter P.C. board", for the chart of thermistor.											
Compressor	Measure the resistance between terminals using a tester. (Temperature : -10°C ~ 40°C) <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">Normal</th> </tr> <tr> <th>SUZ-KA50/60VA2.TH</th> <th>SUZ-KA71VA2.TH</th> </tr> </thead> <tbody> <tr> <td>0.86 Ω ~ 1.06 Ω</td> <td>0.92 Ω ~ 1.12 Ω</td> </tr> </tbody> </table>	Normal		SUZ-KA50/60VA2.TH	SUZ-KA71VA2.TH	0.86 Ω ~ 1.06 Ω	0.92 Ω ~ 1.12 Ω					
Normal												
SUZ-KA50/60VA2.TH	SUZ-KA71VA2.TH											
0.86 Ω ~ 1.06 Ω	0.92 Ω ~ 1.12 Ω											
Outdoor fan motor	Measure the resistance between lead wires using a tester. (Temperature : -10°C ~ 40°C) <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th rowspan="2">Color of the lead wire</th> <th colspan="2">Normal</th> </tr> <tr> <th>SUZ-KA50/60VA2.TH</th> <th>SUZ-KA71VA2.TH</th> </tr> </thead> <tbody> <tr> <td>RED - BLK</td> <td rowspan="3">13.4 Ω ~ 16.4 Ω</td> <td rowspan="3">12 Ω ~ 17 Ω</td> </tr> <tr> <td>BLK - WHT</td> </tr> <tr> <td>WHT - RED</td> </tr> </tbody> </table>	Color of the lead wire	Normal		SUZ-KA50/60VA2.TH	SUZ-KA71VA2.TH	RED - BLK	13.4 Ω ~ 16.4 Ω	12 Ω ~ 17 Ω	BLK - WHT	WHT - RED	
Color of the lead wire	Normal											
	SUZ-KA50/60VA2.TH	SUZ-KA71VA2.TH										
RED - BLK	13.4 Ω ~ 16.4 Ω	12 Ω ~ 17 Ω										
BLK - WHT												
WHT - RED												
R.V. coil (21S4)	Measure the resistance using a tester. (Temperature : -10°C ~ 40°C) <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">Normal</th> </tr> <tr> <th>SUZ-KA50/60VA2.TH</th> <th>SUZ-KA71VA2.TH</th> </tr> </thead> <tbody> <tr> <td>1.32 kΩ ~ 1.62 kΩ</td> <td>1.19 kΩ ~ 1.78 kΩ</td> </tr> </tbody> </table>	Normal		SUZ-KA50/60VA2.TH	SUZ-KA71VA2.TH	1.32 kΩ ~ 1.62 kΩ	1.19 kΩ ~ 1.78 kΩ					
Normal												
SUZ-KA50/60VA2.TH	SUZ-KA71VA2.TH											
1.32 kΩ ~ 1.62 kΩ	1.19 kΩ ~ 1.78 kΩ											
Expansion valve coil (LEV)	Measure the resistance using a tester. (Temperature : -10°C ~ 40°C) SUZ-KA50/60VA2.TH <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Color of the lead wire</th> <th>Normal</th> </tr> </thead> <tbody> <tr> <td>WHT - RED</td> <td rowspan="4">37.4 Ω ~ 53.9 Ω</td> </tr> <tr> <td>RED - ORN</td> </tr> <tr> <td>YLW - BRN</td> </tr> <tr> <td>BRN - BLU</td> </tr> </tbody> </table>	Color of the lead wire	Normal	WHT - RED	37.4 Ω ~ 53.9 Ω	RED - ORN	YLW - BRN	BRN - BLU				
	Color of the lead wire	Normal										
WHT - RED	37.4 Ω ~ 53.9 Ω											
RED - ORN												
YLW - BRN												
BRN - BLU												
SUZ-KA70VA2.TH <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Color of the lead wire</th> <th>Normal</th> </tr> </thead> <tbody> <tr> <td>RED - ORN</td> <td rowspan="4">37 Ω ~ 54 Ω</td> </tr> <tr> <td>RED - WHT</td> </tr> <tr> <td>RED - BLU</td> </tr> <tr> <td>RED - YLW</td> </tr> </tbody> </table>	Color of the lead wire	Normal	RED - ORN	37 Ω ~ 54 Ω	RED - WHT	RED - BLU	RED - YLW					
Color of the lead wire	Normal											
RED - ORN	37 Ω ~ 54 Ω											
RED - WHT												
RED - BLU												
RED - YLW												
High pressure switch (HPS) SUZ-KA60VA2.TH	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">Pressure</th> </tr> </thead> <tbody> <tr> <td>3.7 ± 0.15 MPa</td> <td>Close</td> </tr> <tr> <td>4.8 ^{+0.05}/_{-0.1} MPa</td> <td>Open</td> </tr> </tbody> </table>	Pressure		3.7 ± 0.15 MPa	Close	4.8 ^{+0.05} / _{-0.1} MPa	Open					
Pressure												
3.7 ± 0.15 MPa	Close											
4.8 ^{+0.05} / _{-0.1} MPa	Open											

11-5. Troubleshooting flow

A How to check inverter/compressor



B Check of open phase

- With the connector between the compressor and the intelligent power module disconnected, activate the inverter and check if the inverter is normal by measuring the balance of voltage between the terminals.

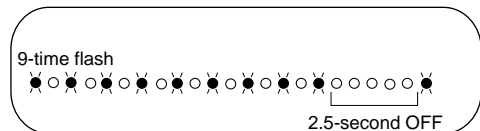
The output voltage values have the tolerance of $\pm 20\%$.

<< Operation method(Test run operation)>>

- Press the EMERGENCY OPERATION switch or the Test button to COOL or HEAT mode.
- Test run operation starts and continues to operate for 30 minutes.
- Compressor starts at rated frequency in COOL mode or 58Hz in HEAT mode.
- Indoor fan operates at High speed.
- After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts.
- To cancel test run operation (EMERGENCY OPERATION), press the EMERGENCY OPERATION switch or the ON/OFF button on remote controller.

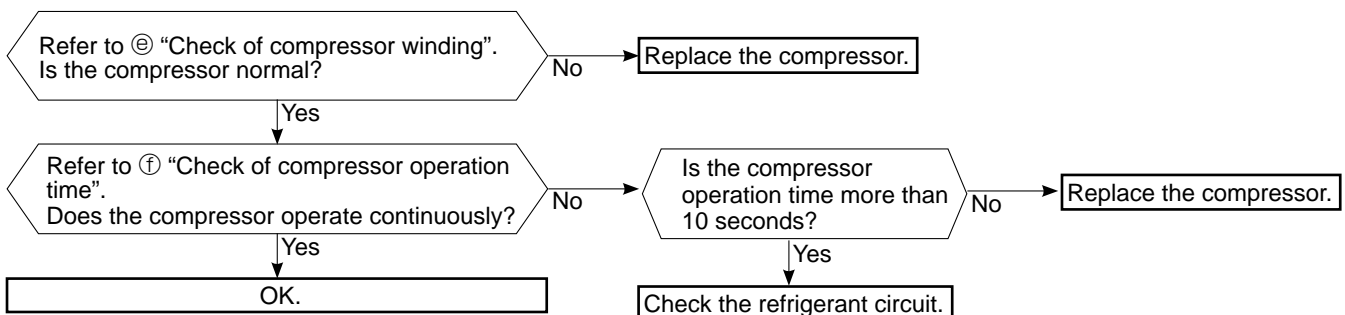
<<Measurement point>>

At 3 points
 BLK (U) - WHT (V)
 BLK (U) - RED (W)
 WHT (V) - RED (W)



- NOTE:**
- Output voltage varies according to power supply voltage.
 - Measure the voltage by analog type tester.
 - During this check, LED of the inverter P.C. board flashes 9 times. (Refer to 11-6-1, 11-6-2)

C Check of compressor

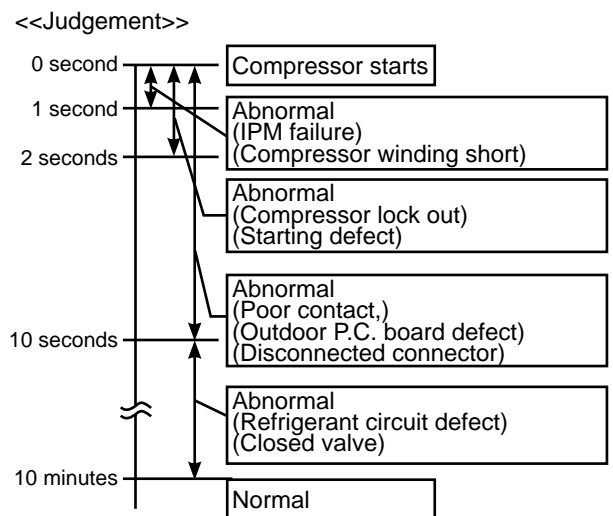


D Check of compressor winding

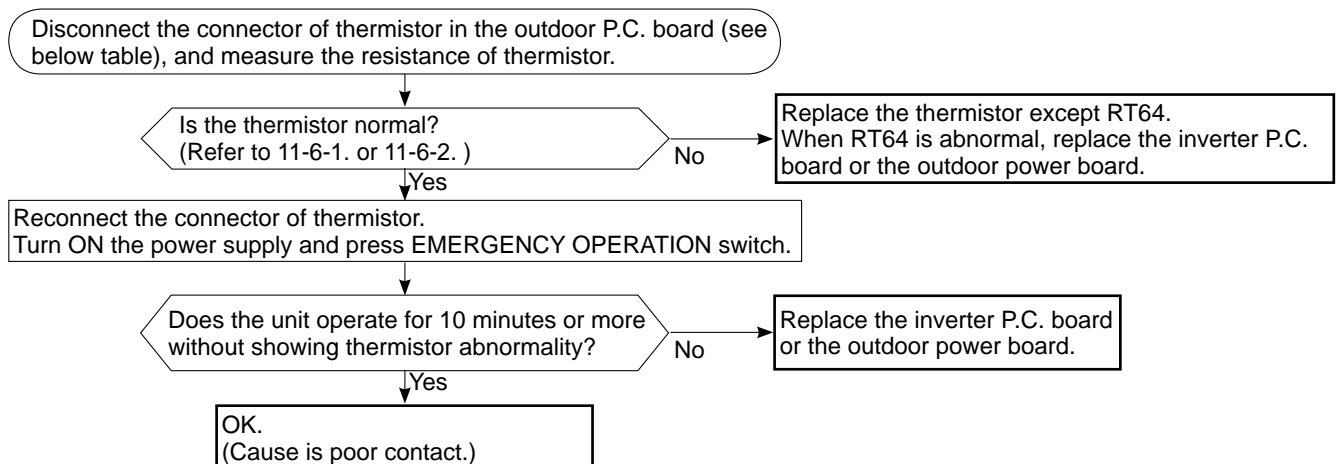
- Disconnect the connector between the compressor and intelligent power module, and measure the resistance between the compressor terminals.
- <<Measurement point>>
 at 3 points
 BLK-WHT
 BLK-RED * Measure the resistance between the lead wires at 3 points.
 WHT-RED
- <<Judgement>>
 Refer to 11-4.
 0 [Ω]Abnormal [short]
 Infinite [Ω]Abnormal [open]
NOTE: Be sure to zero the ohmmeter before measurement.

E Check of compressor operation time

- Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to over current.
- <<Operation method>>
 Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit.
 (TEST RUN OPERATION : Refer to 11-5 ⑥.)
- <<Measurement>>
 Measure the time from the start of compressor to the stop of compressor due to overcurrent.



F Check of outdoor thermistors

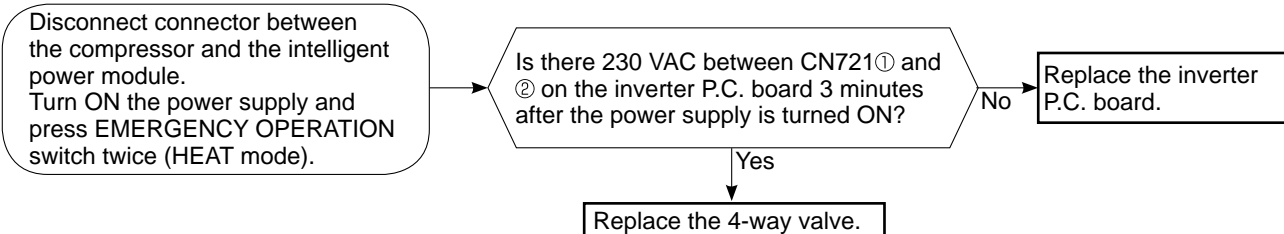


Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN641 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN641 pin3 and pin4	
Fin temperature	RT64	Between CN642 pin1 and pin2	
Ambient temperature	RT65	Between CN643 pin1 and pin2	
Outdoor heat exchanger temperature	RT68	Between CN644 pin1 and pin3	

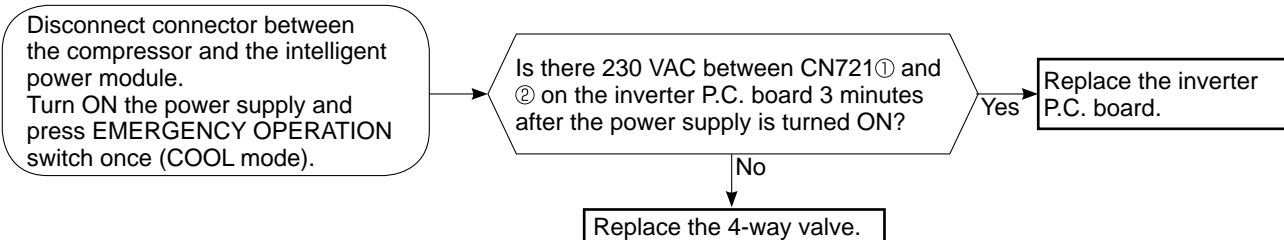
G Check of R.V. coil

- ※ First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 11-4.
- ※ In case CN721 is not connected or R.V. coil is open, voltage is generated between the terminal pins of the connector although any signal is not being transmitted to R.V. coil.
Check if CN721 is connected.

Unit operates COOL mode even if it is set to HEAT mode.

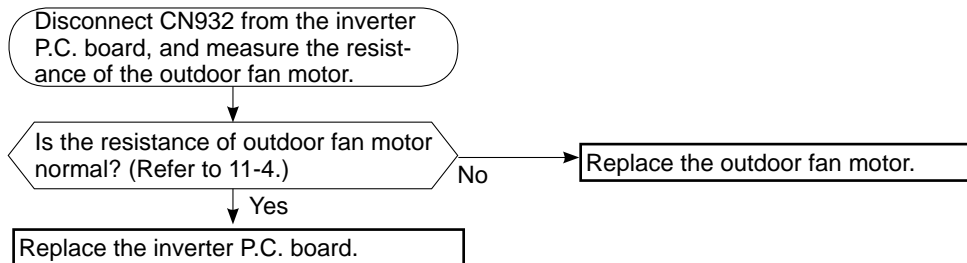


Unit operates HEAT mode even if it is set to COOL mode.

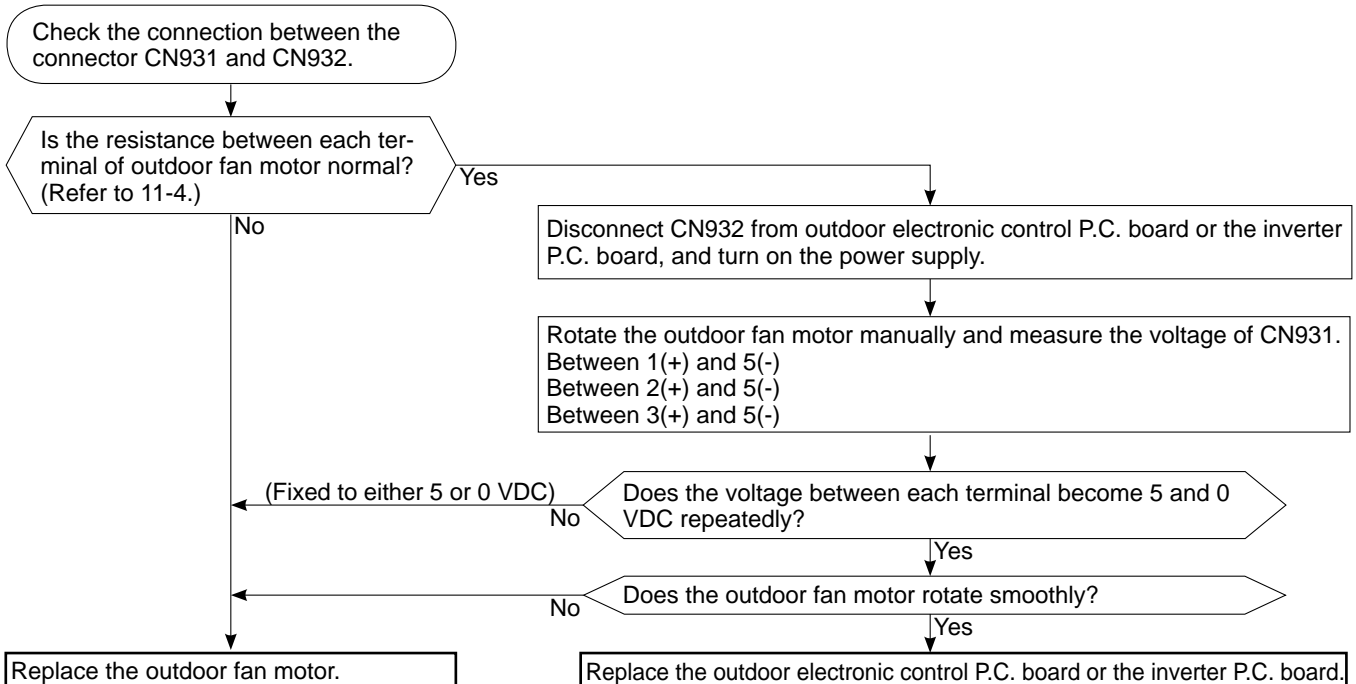


H Check of outdoor fan motor

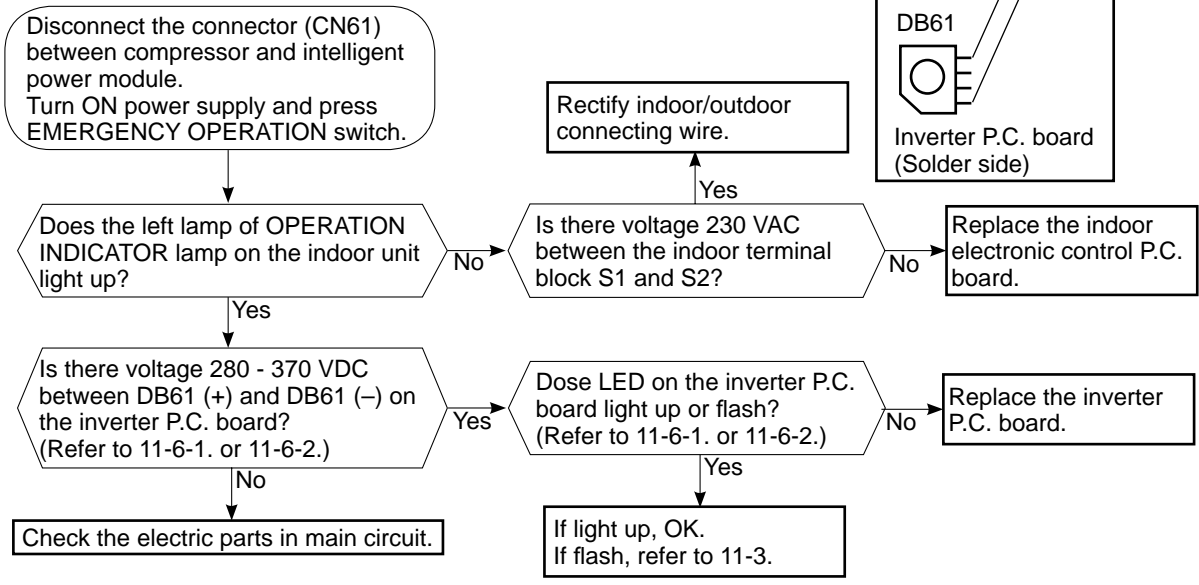
SUZ-KA25/35VA2.TH



SUZ-KA50VA2.TH



I Check of power supply



J Check of LEV (For wireless remote controller use model)

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons after all LCD except the set temperature in operation display section of the remote controller is displayed after 3 seconds.



Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. *1



Expansion valve operates in full-opening direction.

Do you hear the expansion valve "click, click....."?
Do you feel the expansion valve vibrate on touching it?

*1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

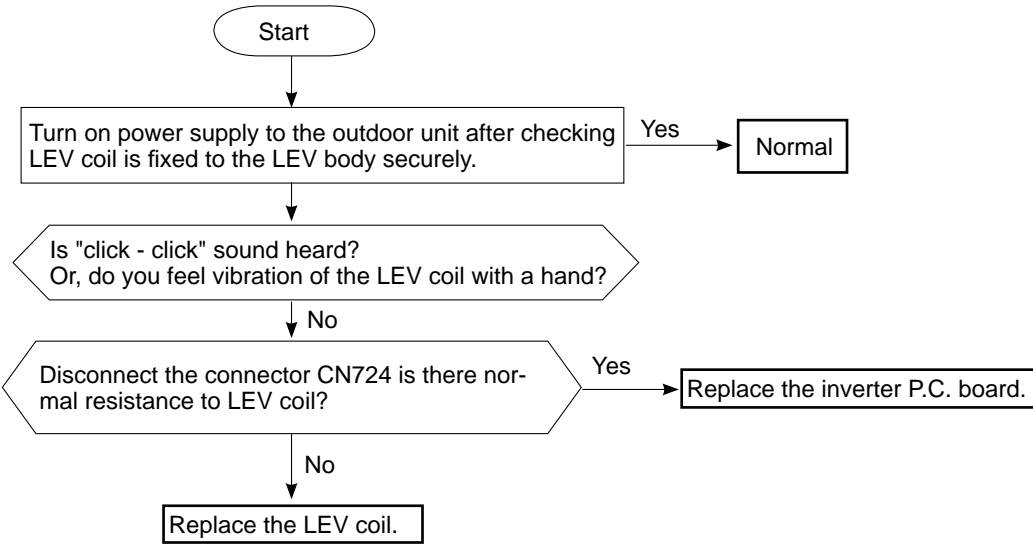
Is LEV coil properly fixed to the expansion valve?

Does the resistance of LEV coil have the characteristics? (Refer to 11-4.)

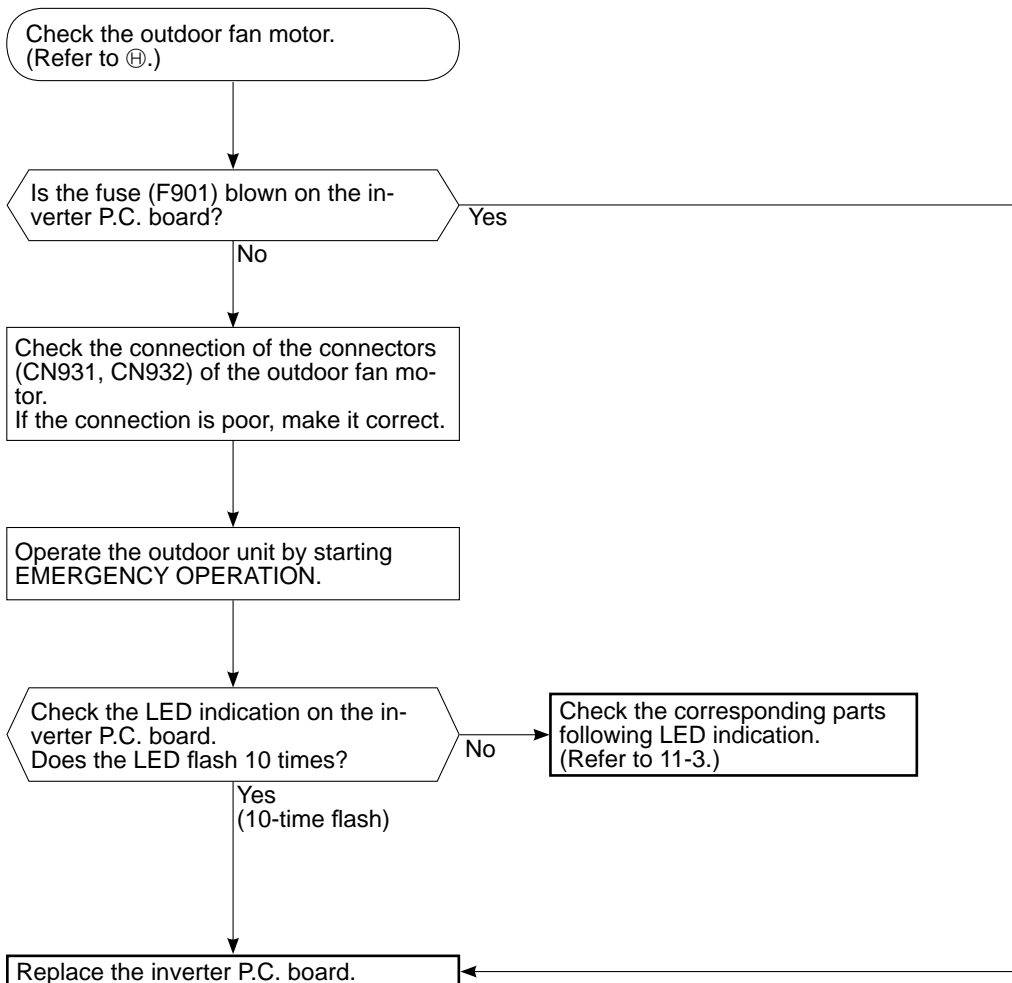
Measure each voltage between connector pins of CN724 on the inverter P.C. board.
1. Pin③(-) — Pin①(+)
2. Pin④(-) — Pin①(+)
3. Pin⑤(-) — Pin①(+)
4. Pin⑥(-) — Pin①(+)
Is there about 3 ~ 5 VAC between each?
NOTE: Measure the voltage by an analog tester.

NOTE : After check of LEV, do the undermentioned operations.
1. Turn OFF the power supply and turn ON it again.
2. Press RESET button on the remote controller.

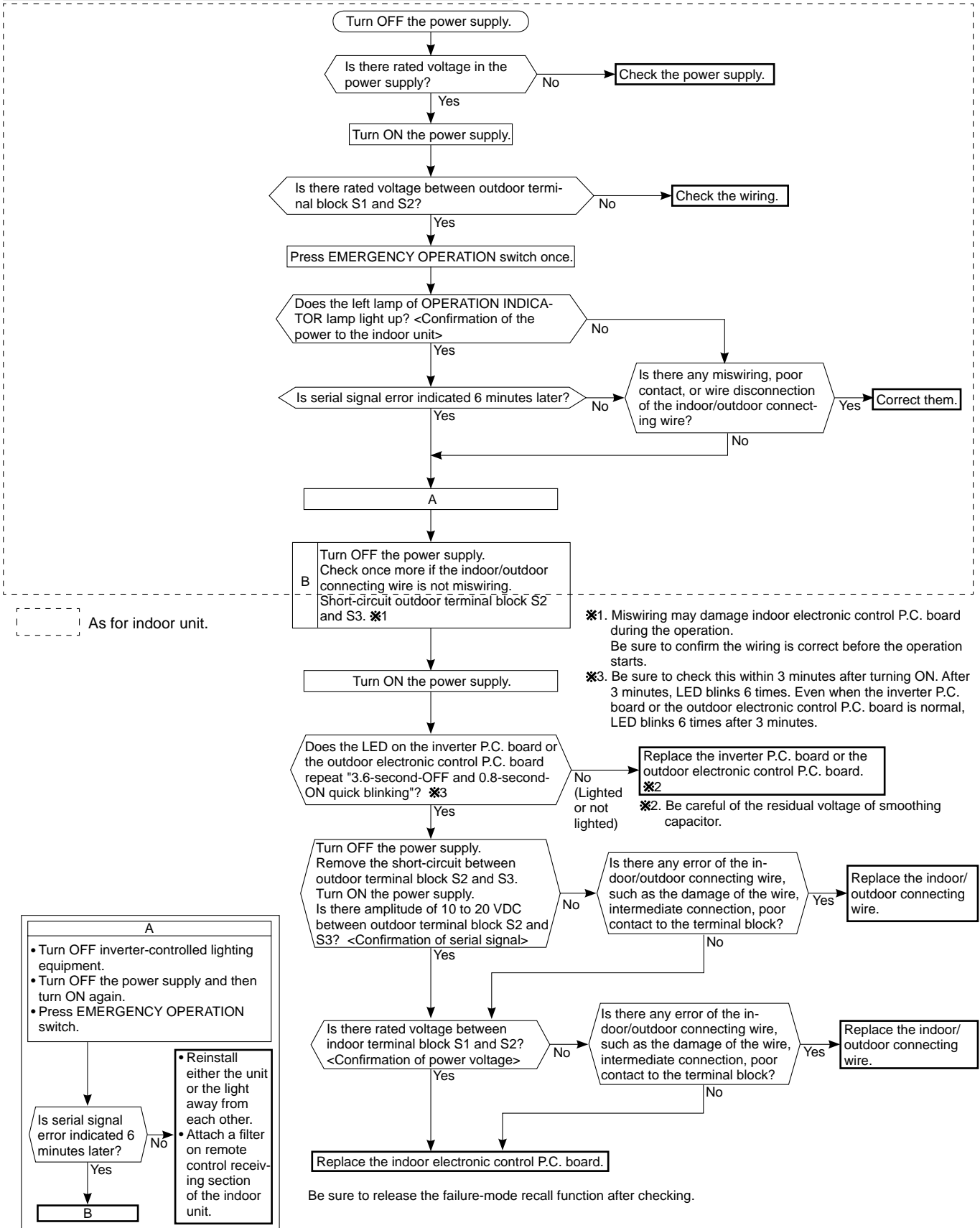
J Check of LEV (For wired remote controller use model)



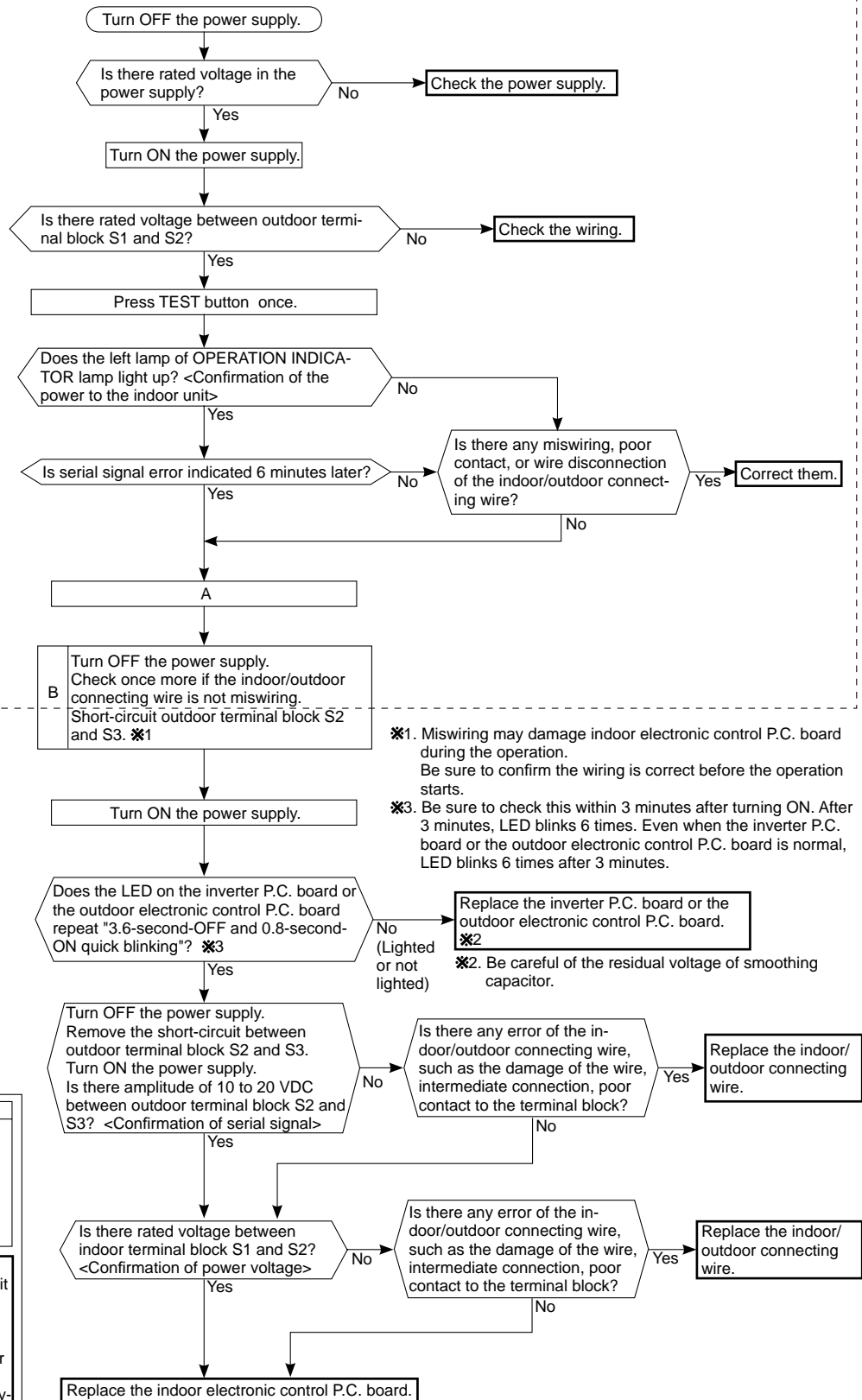
K Check of inverter P.C. board



L How to check miswiring and serial signal error (For wireless remote controller use model)



Ⓛ How to check miswiring and serial signal error (For wired remote controller use model)



As for indoor unit.

*1. Miswiring may damage indoor electronic control P.C. board during the operation. Be sure to confirm the wiring is correct before the operation starts.
 *2. Be careful of the residual voltage of smoothing capacitor.
 *3. Be sure to check this within 3 minutes after turning ON. After 3 minutes, LED blinks 6 times. Even when the inverter P.C. board or the outdoor electronic control P.C. board is normal, LED blinks 6 times after 3 minutes.

A

- Turn OFF inverter-controlled lighting equipment.
- Turn OFF the power supply and then turn ON again.
- Press EMERGENCY OPERATION switch.

↓

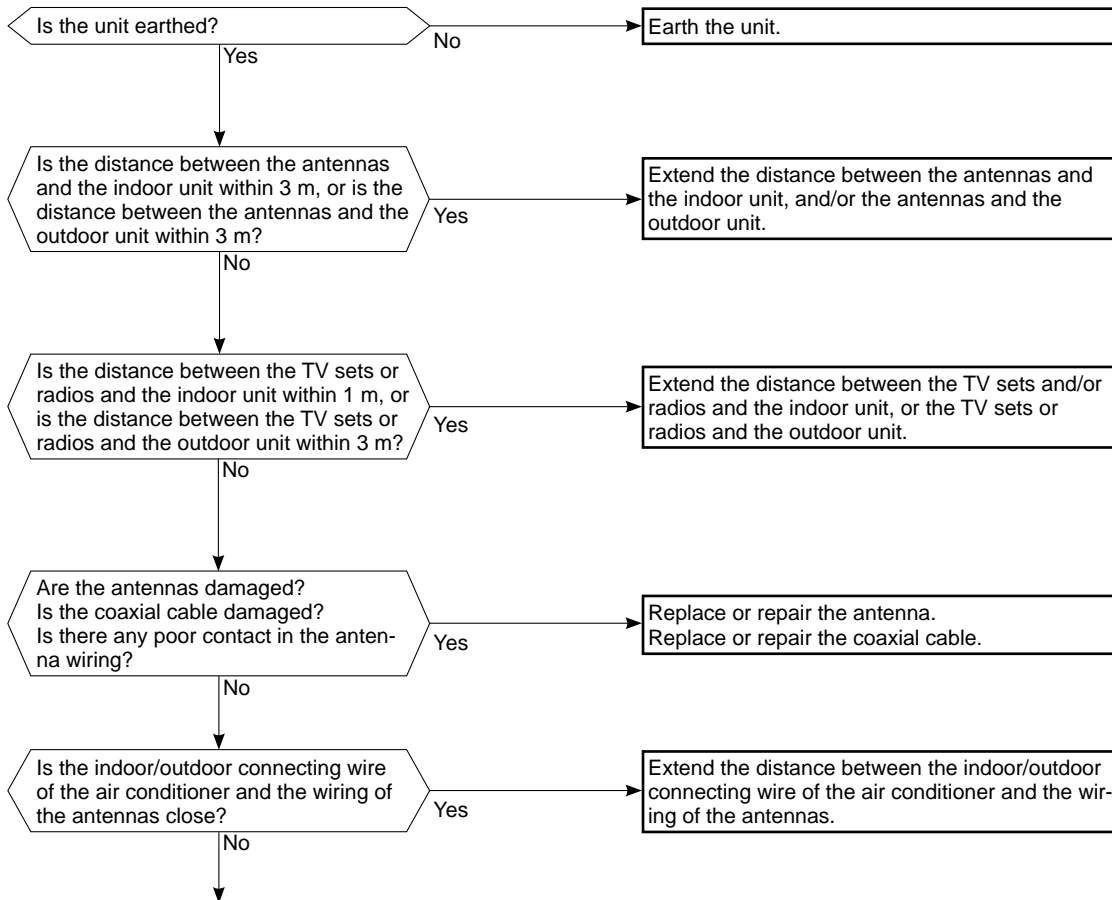
Is serial signal error indicated 6 minutes later?

No → [] Yes → []

B

- Reinstall either the unit or the light away from each other.
- Attach a filter on remote control receiving section of the indoor unit.

Be sure to release the failure-mode recall function after checking.

M Electromagnetic noise enters into TV sets or radios


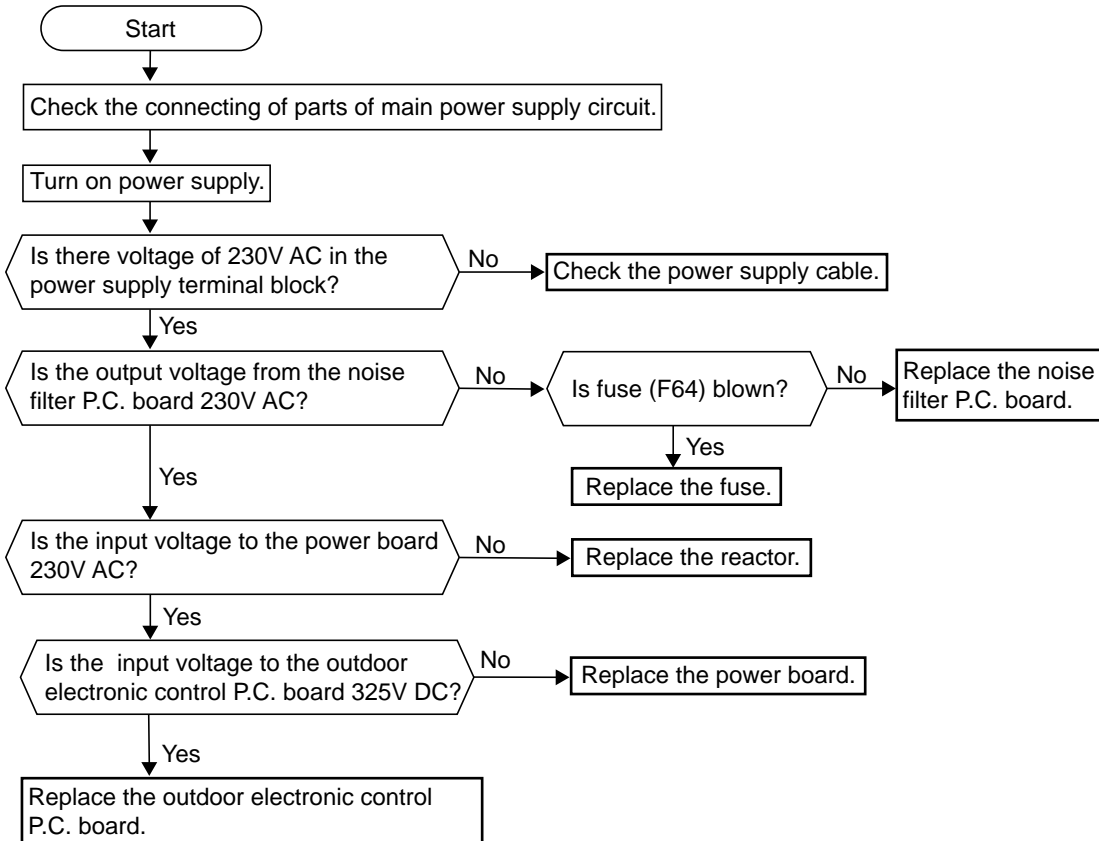
Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).

Check the following before asking for service.

1. Devices affected by the electromagnetic noise
TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of ;
indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, earth wire, antennas, wiring from antennas, receiver
5. Electric field intensity of the broadcast station affected by the electromagnetic noise
6. Presence or absence of amplifier such as booster
7. Operation condition of air conditioner when the electromagnetic noise enters in
 - 1) Turn OFF the power supply once, and then turn ON the power supply. In this situation, check for the electromagnetic noise.
 - 2) Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power ON, and check for the electromagnetic noise.
 - 3) After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
 - 4) Press OPERATE/STOP (ON/OFF) button on the remote controller for power OFF, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation, check for the electromagnetic noise.

Outdoor unit does not operate. (LED display: display OFF)

N Check of power supply

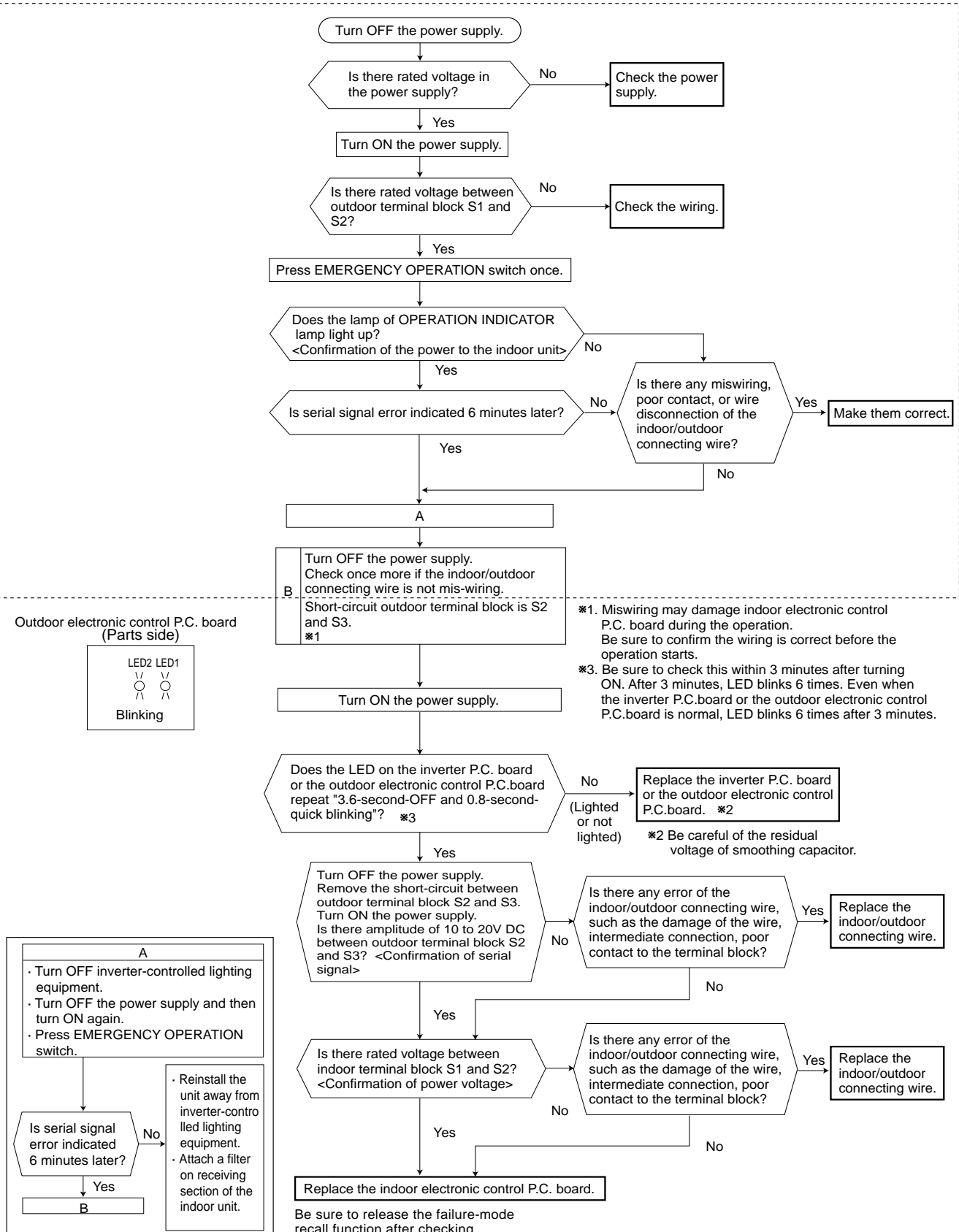


- When unit cannot operate neither by the remote controller nor by EMERGENCY OPERATION switch.
Indoor unit does not operate.
- Outdoor unit does not operate.

① How to check miswiring and serial signal error (when outdoor unit does not work)

(For wireless remote controller use model)

As for indoor unit.

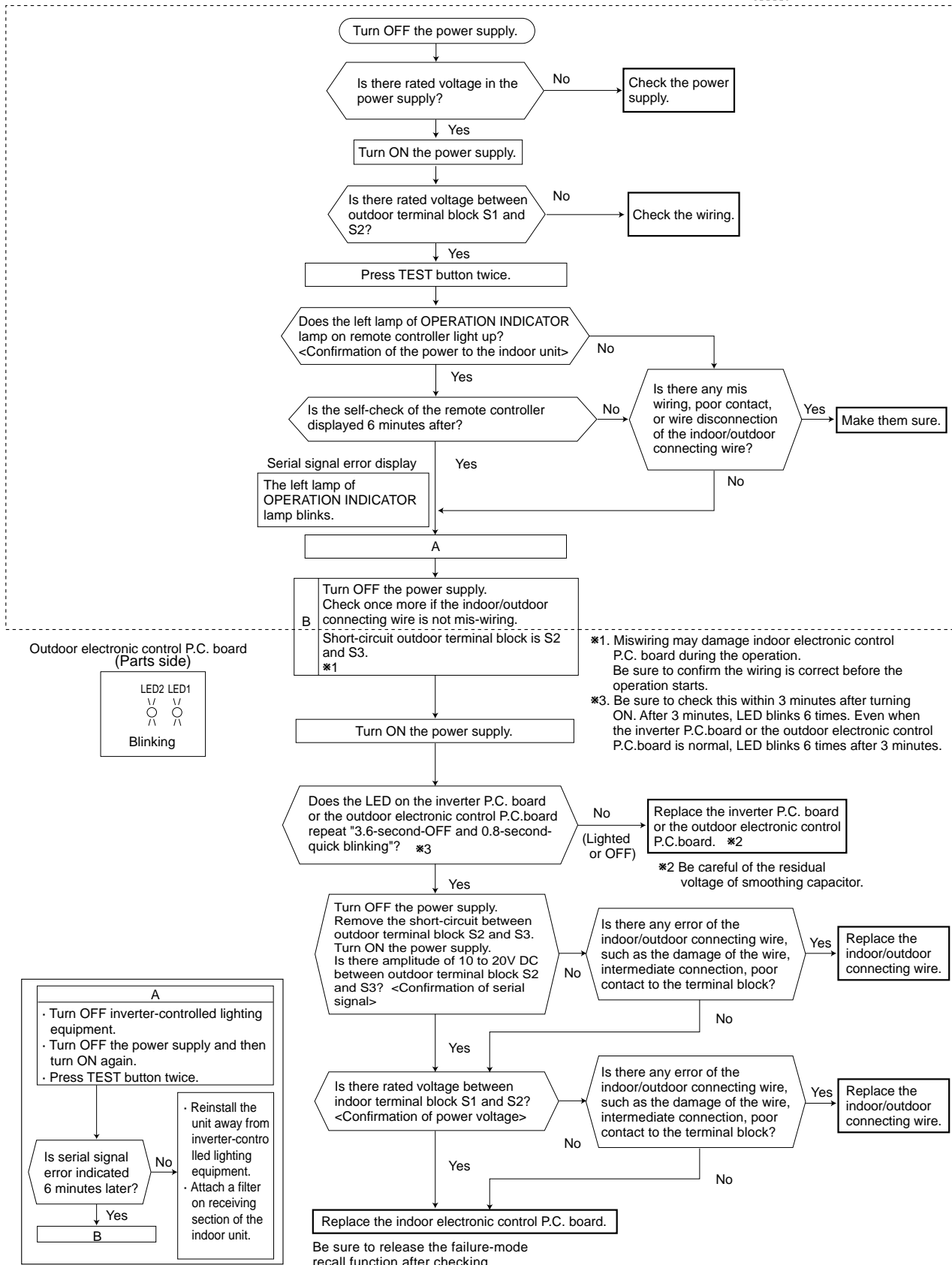


- When unit cannot operate neither by the remote controller.
Indoor unit does not operate.
- Outdoor unit does not operate.

① How to check miswiring and serial signal error (when outdoor unit does not work)

(For wired remote controller use model)

As for indoor unit.



The cooling operation or heating operation does not operate. (LED display: Both LED1 and LED2 lighting)

P Check of R.V. coil

• When heating operation does not work.

1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in HEAT mode.

Is there voltage of 230V AC between pin1 and pin 2 at connector CN912? *

Yes

Turn off power supply of indoor and outdoor unit.

Disconnect the connector CN912 in noise filter P. C. board. Is there normal resistance to R.V. coil?

No

Replace the R.V. coil.

Yes

Replace the 4-way valve.

No

1. Turn off power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in HEAT mode.

Is there voltage 12V DC between the connector CN781 pin 5 (+) and pin 3 (-)?

No

Replace the electronic control P.C. board.

Yes

Replace the noise filter P.C. board.

• When cooling operation does not work.

1. Disconnect the lead wire leading to the compressor.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in COOL mode.

Is there voltage of 230V AC between pin1 and pin 2 at connector CN912? *

Yes

1. Turn off power supply of indoor and outdoor unit, and disconnect the connector CN781 in the outdoor electronic control P.C. board.
2. 3 minutes after turning on the power supply, start EMERGENCY OPERATION in COOL mode.

Is there voltage 12V DC between the connector CN781 pin 5 (+) and pin 3 (-)?

No

Replace the noise filter P.C. board.

Yes

Replace the outdoor electronic control P.C. board.

No

Replace the 4-way valve.

* If the connector CN912 is not connected or R.V. coil is open, voltage occurs between terminals even when the control is OFF.

- When cooling, heat exchanger of non-operating indoor unit frosts.
- When heating, non-operating indoor unit get warm.

Q Check of LEV

LED display:

LED1	LED2
Lighting	Lighting
6 time	Goes out

Turn on power supply to the outdoor unit after checking LEV coil is mounted to the LEV body securely.

Is "click - click" sound heard?
Or, do you feel vibration of the LEV coil with a hand?

Yes → Normal

No

Disconnect the connector CN795.
Is there normal resistance to LEV coil?

Yes → Replace the outdoor electronic control P.C. board.

No

Replace the LEV coil.

- When heating, room does not get warm.
- When cooling, room does not get cool.

R How to check inverter/ compressor

LED display:

LED1	LED2
Lighting	Lighting
Lighting	Twice
Twice	Goes out

Disconnect the terminal of the compressor. 3 minutes after turning on the power supply, start EMERGENCY OPERATION.

Measure the voltage between each lead wire leading to the compressor.
U (BLK) - V (WHT)
V (WHT) - W (RED)
W (RED) - U (BLK)
Is voltage output on right table?

- ※
- After the outdoor fan starts running, wait for 1 minutes or more before measuring the voltage.
 - The output voltage values have the tolerance of $\pm 20\%$.

COOL	HEAT
150V (48Hz)	170V (64Hz)

Yes

Is output balanced?

No → Replace the power board.

Yes

Is the input voltage to the outdoor electronic control P.C. board 370V or more?

No → Replace the power board.

Yes

Turn off power supply of indoor and outdoor unit, and measure the compressor winding resistance between the compressor terminals.
Is the resistance between each terminal normal?

No → Replace the compressor.

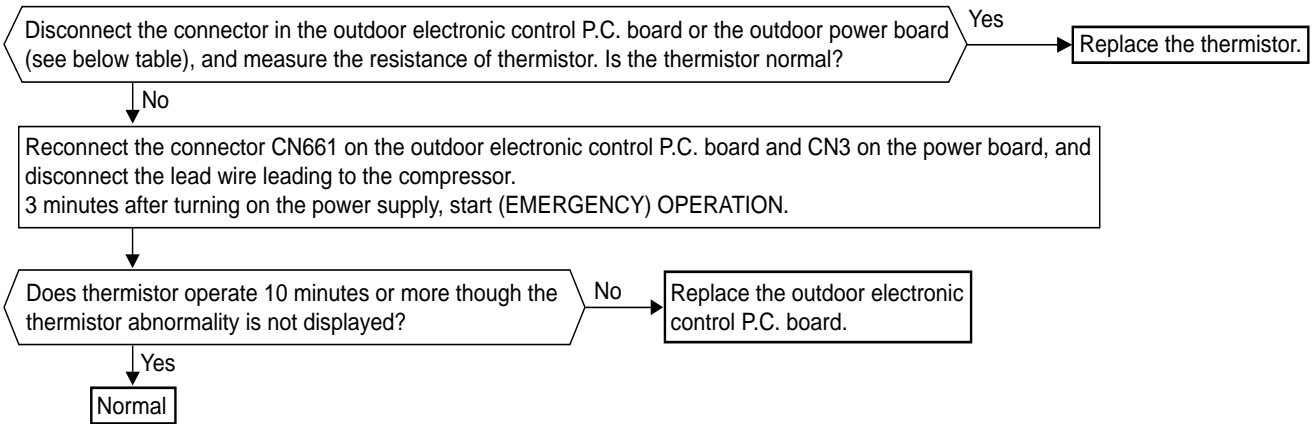
Yes

Reconnect the lead wire of compressor, and turn on power supply to indoor and outdoor unit.
3 minutes later, starts EMERGENCY OPERATION.

Clarify the causes by counting time until the inverter stops.
0 to 10 seconds: compressor rare short
10 to 60 seconds: compressor lock
60 seconds to 5minutes: refrigerant circuit defective
5 minutes or more: normal

• When thermistor is abnormal.

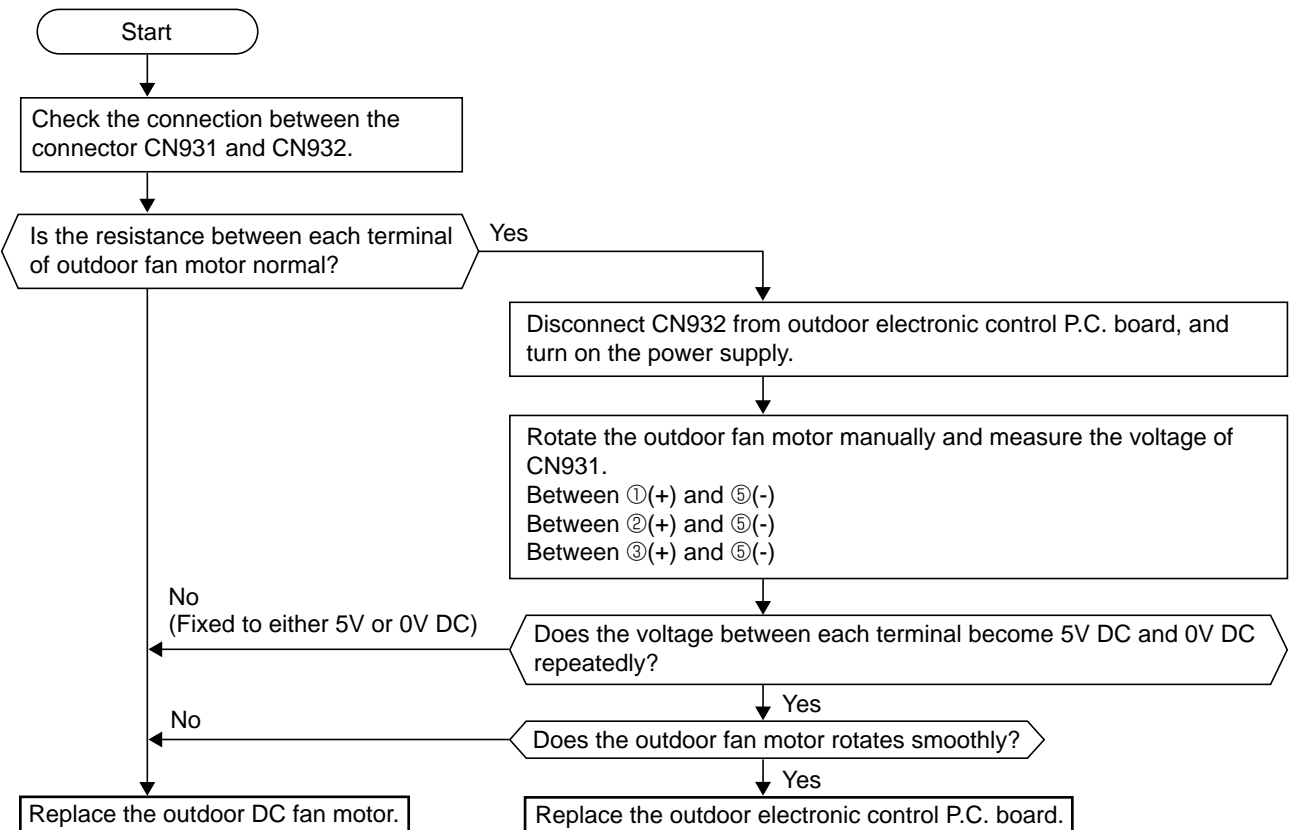
⑤ Check of outdoor thermistors



Thermistor	Symbol	Connector, Pin No.
Defrost thermistor	RT61	Between CN661 pin1 and pin2 on the outdoor electronic control P.C. board
Discharge temperature thermistor	RT62	Between CN661 pin3 and pin4 on the outdoor electronic control P.C. board
Outdoor heat exchanger temperature thermistor	RT68	Between CN661 pin7 and pin8 on the outdoor electronic control P.C. board
Fin temperature thermistor	RT64	Between CN3 pin1 and pin2 on the outdoor power board
Ambient temperature thermistor	RT65	Between CN663 pin1 and pin2 on the outdoor electronic control P.C. board

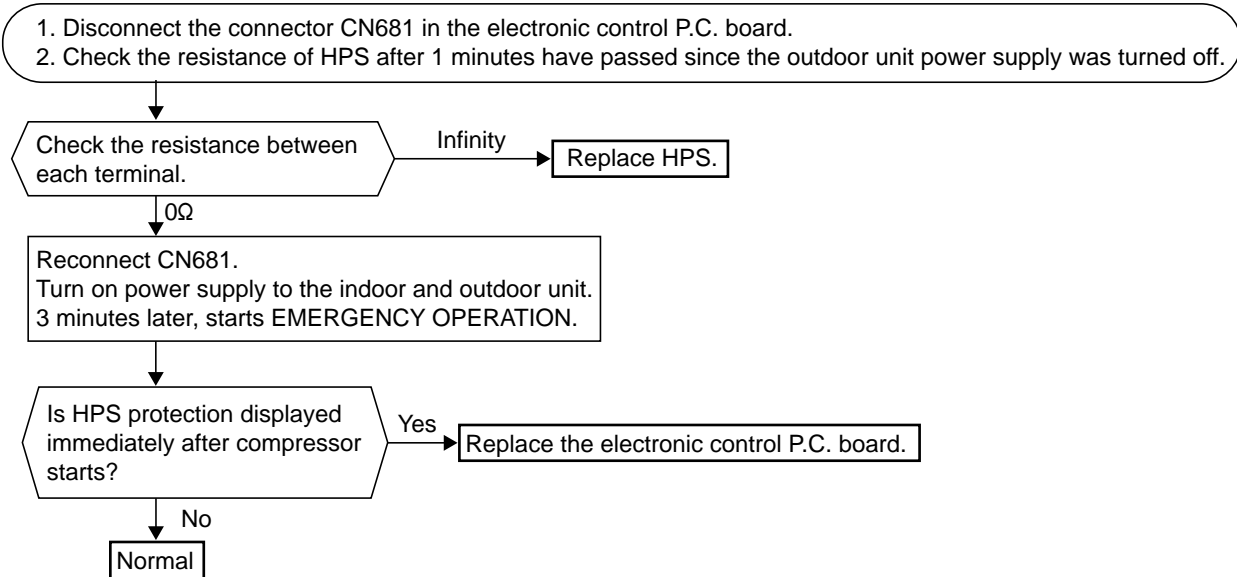
• Fan motor does not operate or stops operating shortly after starting the operation.

⑧ Check of outdoor fan motor



• When the operation frequency does not go up from lowest frequency.

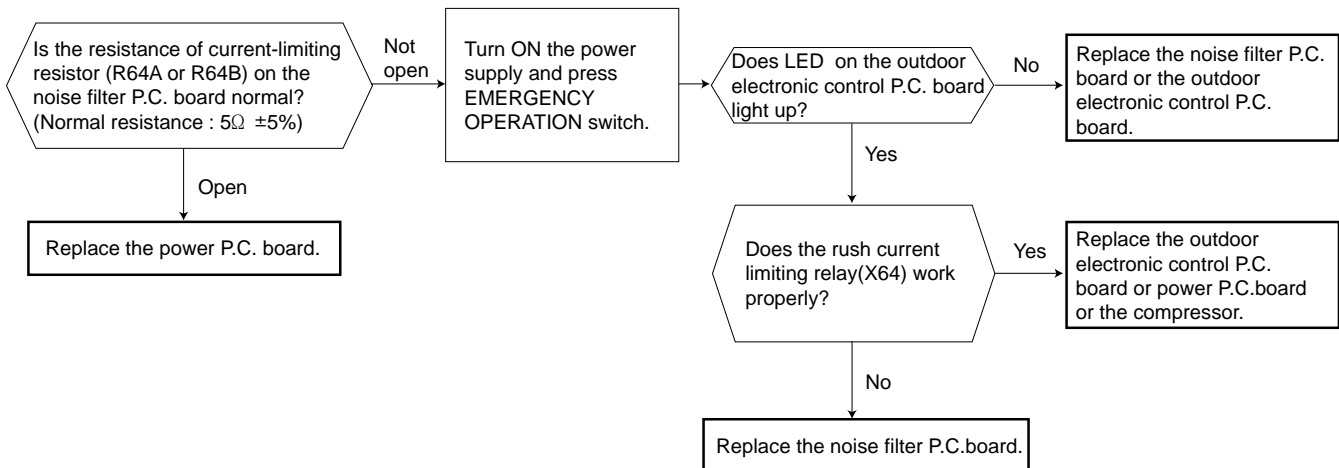
U Check of HPS



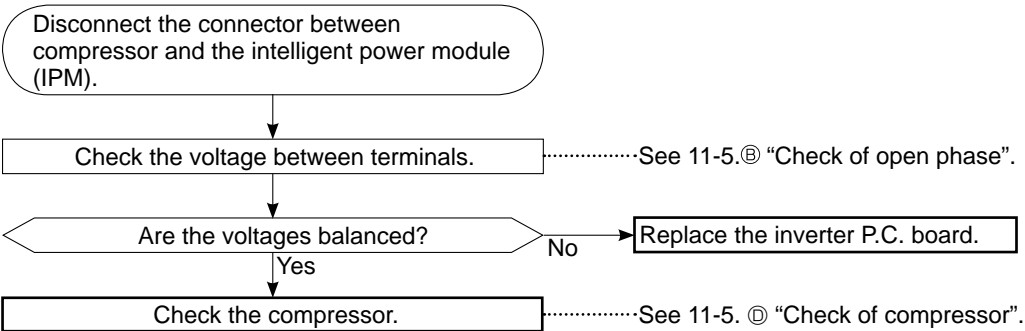
• Outdoor unit does not operate at all, or stops immediately due to overcurrent.

V Check of current-limiting resistor

When the current-limiting resistor is open, the rush current limiting relay (X64) may not work properly.



a) How to check inverter/compressor



b) Check of open phase

- With the connector between the compressor and the intelligent power module disconnected, activate the inverter and check if the inverter is normal by measuring the balance of voltage between the terminals.

Output voltage is 50 - 130 V. (The voltage may differ according to the tester.)

<< Operation method(Test run operation)>>

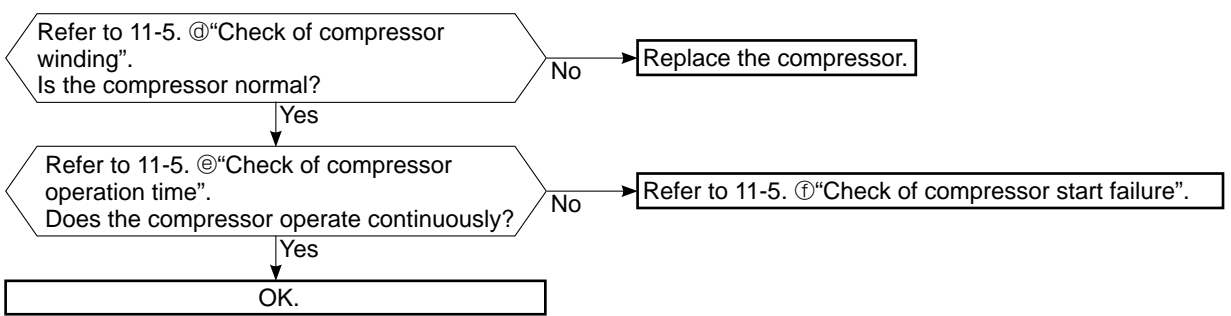
1. Press EMERGENCY OPERATION switch to start COOL or HEAT mode (COOL: Press once, HEAT: Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor operates at rated frequency in COOL mode or 74 Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts (operation frequency of compressor varies).
6. To cancel test run operation (EMERGENCY OPERATION), press EMERGENCY OPERATION switch or any button on remote controller.

<<Measurement point>>

- At 3 points
- BLK (U)-WHT (V) ※ Measure AC voltage between the lead wires at 3 points.
- BLK (U)-RED (W)
- WHT(V)-RED (W)

- NOTE:**
1. Output voltage varies according to power supply voltage.
 2. Measure the voltage by analog type tester.
 3. During this check, LED of the inverter P.C. board flashes 9 times. (Refer to 11-6.3.)

c) Check of compressor



d Check of compressor winding

• Disconnect the connector between the compressor and intelligent power module, and measure the resistance between the compressor terminals.

<<Measurement point>>

at 3 points

BLK-WHT

BLK-RED

WHT-RED

※ Measure the resistance between the lead wires at 3 points.

<<Judgement>>

Refer to 11-4.

0 [Ω]Abnormal [short]

Infinite [Ω]Abnormal [open]

NOTE: Be sure to zero the ohmmeter before measurement.

e Check of compressor operation time

• Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to over current.

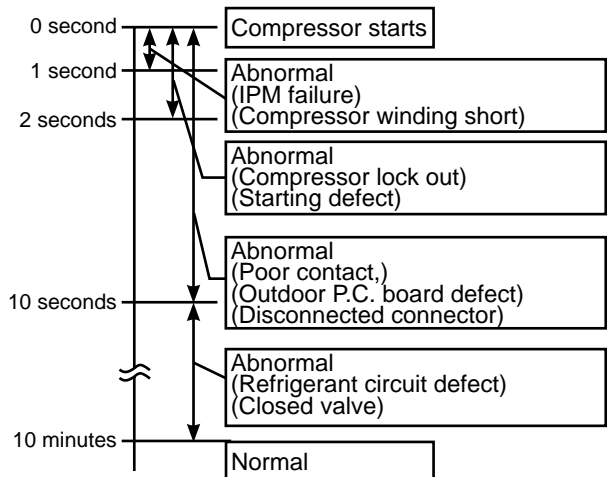
<<Operation method>>

Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION: Refer to 11-5 ⑥.)

<<Measurement>>

Measure the time from the start of compressor to the stop of compressor due to overcurrent.

<<Judgement>>



f Check of compressor start failure

Confirm that ①~④ is normal.

• Electrical circuit check

①. Contact of the compressor connector

②. Output voltage of inverter P.C. board and balance of them (See 11-5 ⑥.)

③. Direct current voltage between JP715(+) and JP30(-) on the inverter P.C.board

④. Voltage between outdoor terminal block S1-S2

Does the compressor run for 10 seconds or more after it starts?

Yes

Check the refrigerant circuit.
Check the stop valve.

No

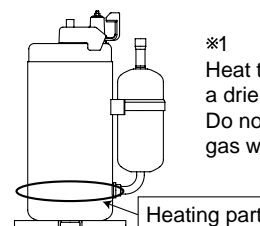
After the compressor is heated with a drier, does the compressor start? ※1

No

Replace the compressor.

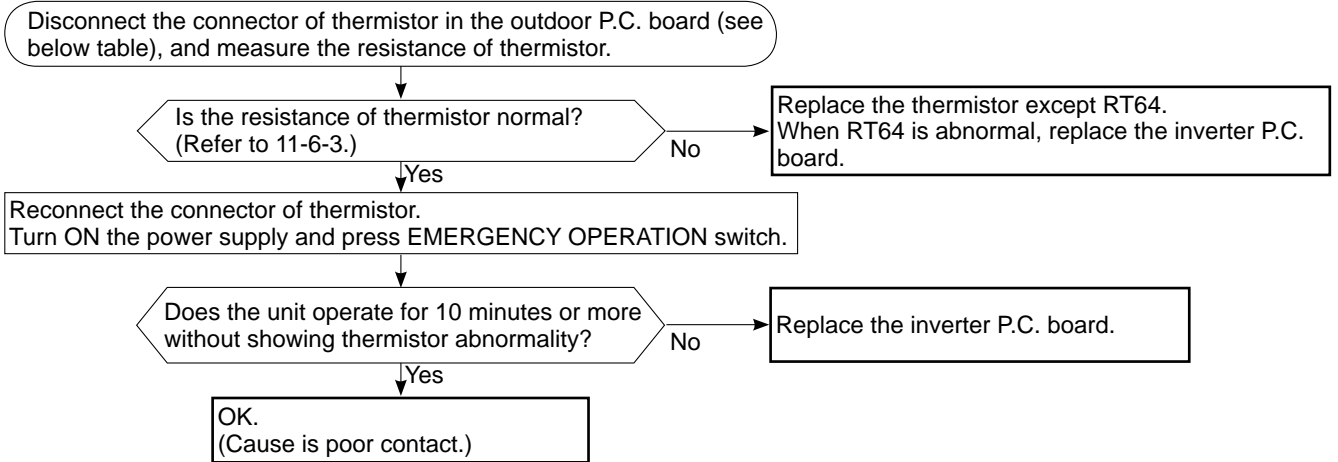
Yes

Compressor start failure. Activate pre-heat control.



※1 Heat the compressor with a drier for about 20 minutes. Do not recover refrigerant gas while heating.

g Check of outdoor thermistors

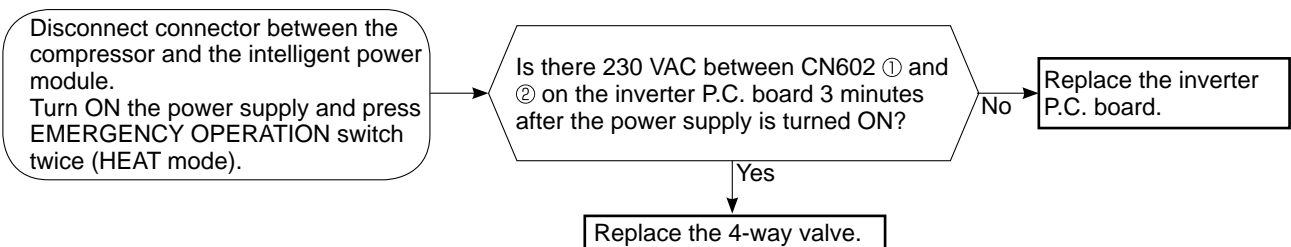


Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN671 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN671 pin3 and pin4	
Fin temperature	RT64	Between CN673 pin1 and pin2	
Ambient temperature	RT65	Between CN672 pin1 and pin2	
Outdoor heat exchanger temperature	RT68	Between CN671 pin5 and pin6	

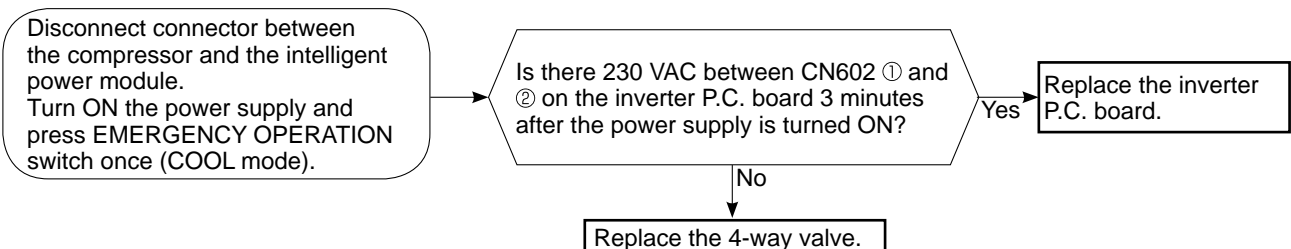
h Check of R.V. coil

- ※ First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 11-4.
- ※ In case CN602 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil. Check if CN602 is connected.

Unit operates COOL mode even if it is set to HEAT mode.



Unit operates HEAT mode even if it is set to COOL mode.



i Check of outdoor fan motor

Disconnect the connectors CN931 and CN932 from the inverter P.C. board.
Check the connection between the connector CN931 and CN932.

Is the resistance between each terminal of outdoor fan motor normal?
(Refer to 11-4.)

Yes

Disconnect CN932 from the inverter P.C. board, and turn on the power supply.

Rotate the outdoor fan motor manually and measure the voltage of CN931.
Between 1(+) and 5(-)
Between 2(+) and 5(-)
Between 3(+) and 5(-)

Does the voltage between each terminal become 5 and 0 VDC repeatedly?

Yes

Does the outdoor fan motor rotate smoothly?

Yes

Replace the inverter P.C. board.

No

(Fixed to either 5 or 0 VDC)

No

No

Replace the outdoor fan motor.

j Check of power supply

Disconnect the connector between compressor and intelligent power module.
Turn ON power supply and press EMERGENCY OPERATION switch.

Does the upper lamp of OPERATION INDICATOR on the indoor unit light up?

No

Rectify indoor/outdoor connecting wire.

Yes

Is there voltage 230 VAC between the indoor terminal block S1 and S2?

No

Replace the indoor electronic control P.C. board.

Is there bus-bar voltage 325 - 370 VDC between JP715 (+) and JP30 (-) on the inverter P.C. board?
(Refer to 11-6.3.)

Yes

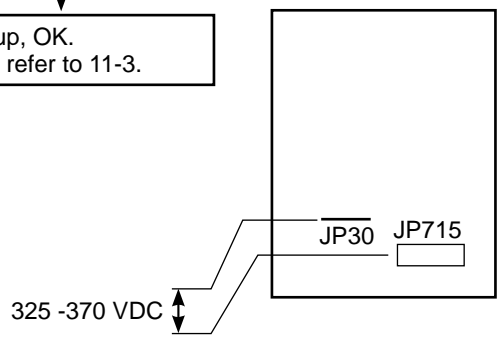
Does LED on the inverter P.C. board light up or flash?
(Refer to 11-6.3.)

No

Replace the inverter P.C. board.

Check the electric parts in main circuit.

If light up, OK.
If flash, refer to 11-3.

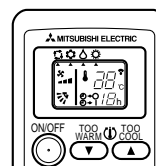


(k) Check of LEV (For wireless remote controller use model)

Turn ON the power supply.
 <Preparation of the remote controller>
 ① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
 ② First, release RESET button.
 And release the other two buttons after all LCD except the set temperature in operation display section of the remote controller is displayed after 3 seconds.



Press OPERATE/STOP (ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1



Expansion valve operates in full-opening direction.

Do you hear the expansion valve "click, click....." ?
 Do you feel the expansion valve vibrate on touching it ?

※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

Is LEV coil properly fixed to the expansion valve?

Does the resistance of LEV coil have the characteristics? (Refer to 11-4.)

Measure each voltage between connector pins of CN724 on the inverter P.C. board.
 1. Pin③(-) — Pin①(+)
 2. Pin④(-) — Pin①(+)
 3. Pin⑤(-) — Pin①(+)
 4. Pin⑥(-) — Pin①(+)
 Is there about 3 - 5 VAC between each?
NOTE: Measure the voltage by an analog tester.

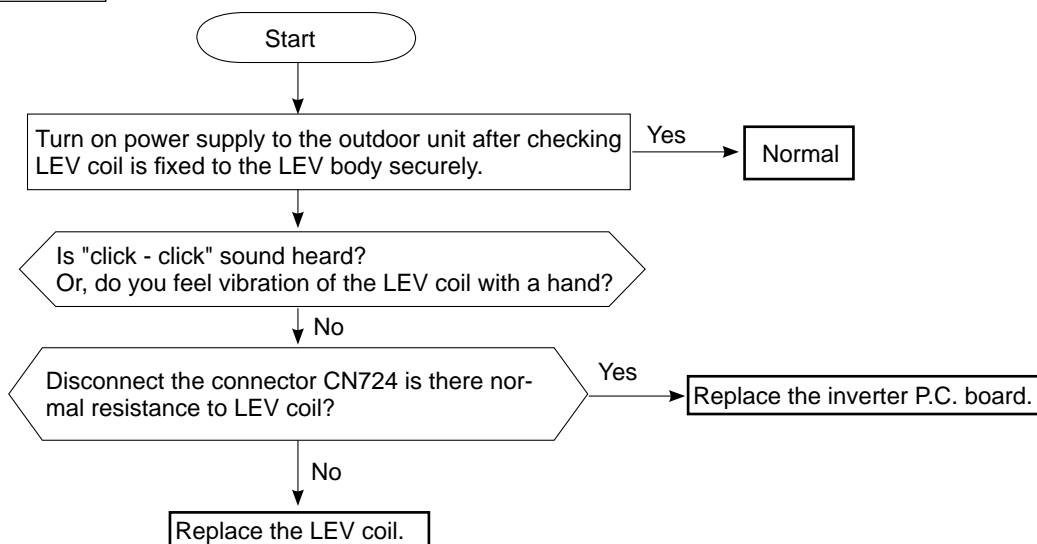
Replace the LEV coil.

Replace the expansion valve.

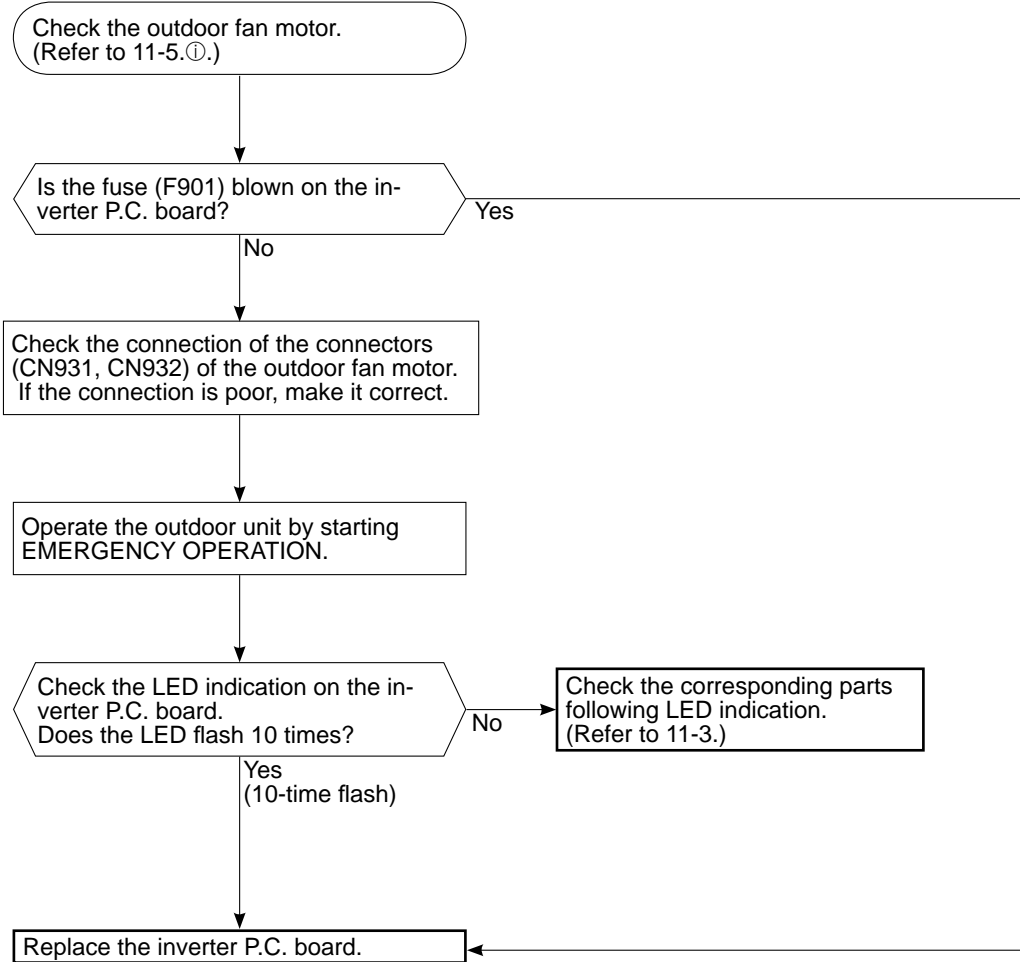
Replace the inverter P.C. board.

NOTE: After check of LEV, do the undermentioned operations.
 1. Turn OFF the power supply and turn it ON again.
 2. Press RESET button on the remote controller.

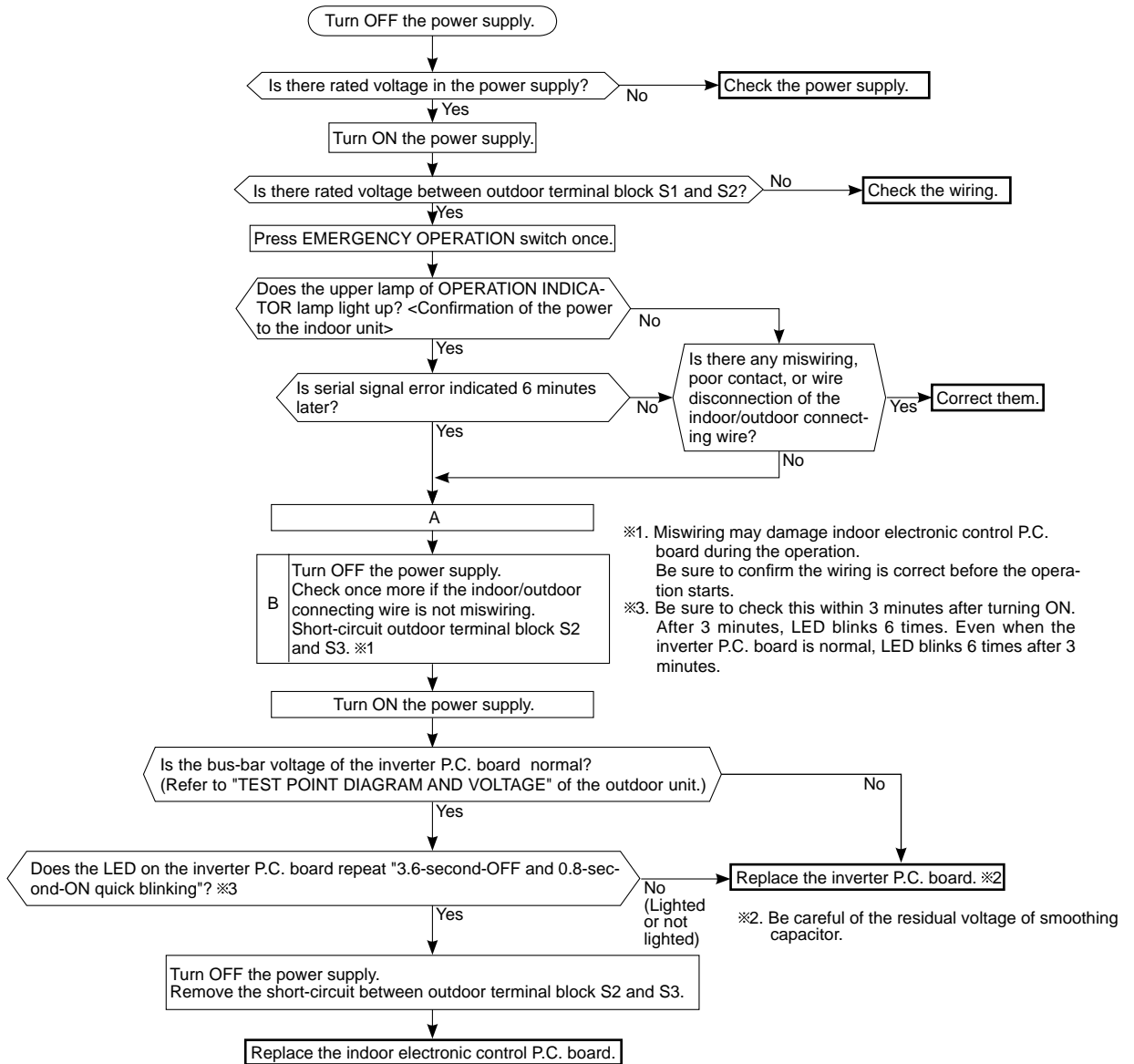
(k) Check of LEV (For wired remote controller use model)



① Check of inverter P.C. board

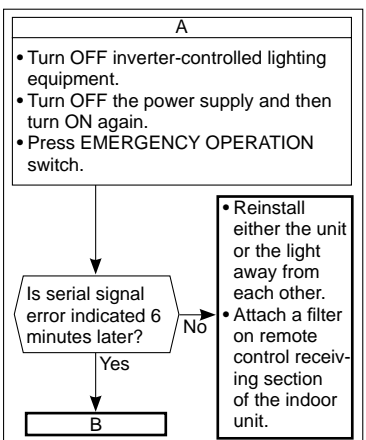


m How to check miswiring and serial signal error

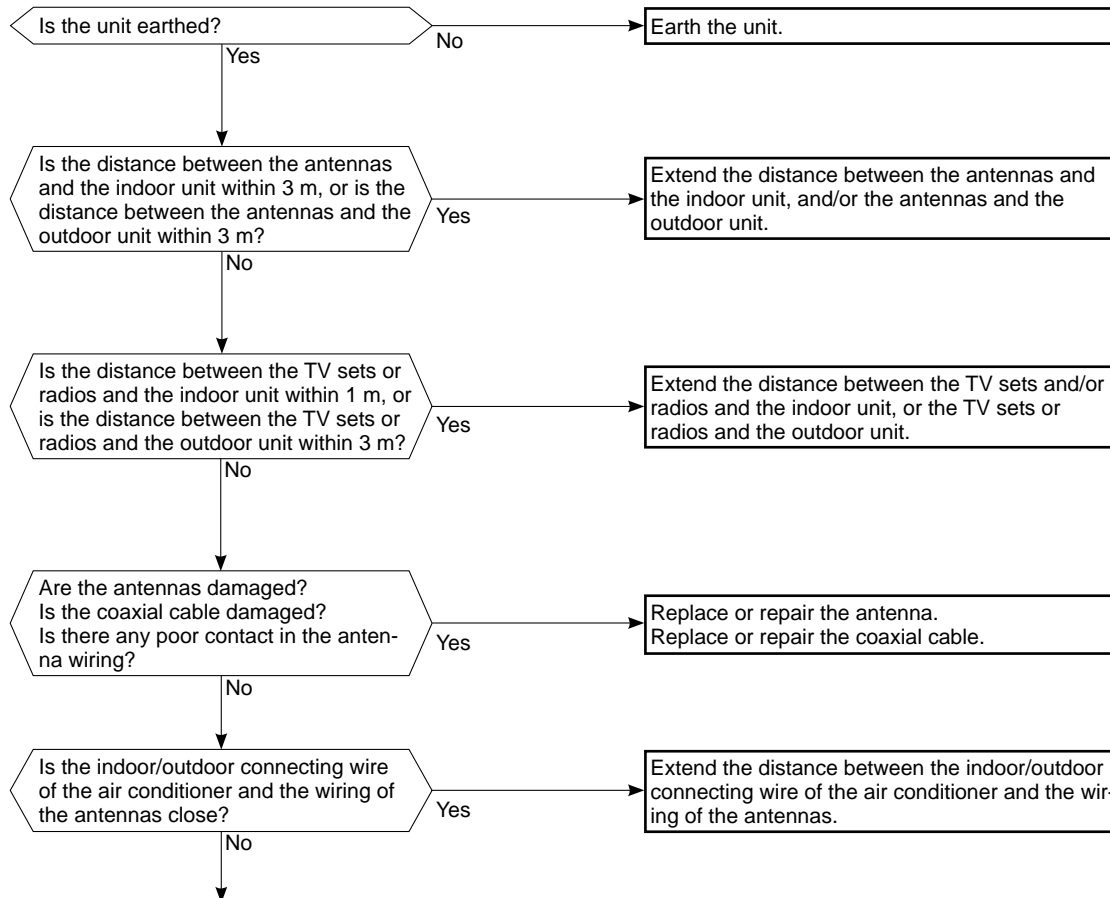


※1. Miswiring may damage indoor electronic control P.C. board during the operation. Be sure to confirm the wiring is correct before the operation starts.
 ※3. Be sure to check this within 3 minutes after turning ON. After 3 minutes, LED blinks 6 times. Even when the inverter P.C. board is normal, LED blinks 6 times after 3 minutes.

※2. Be careful of the residual voltage of smoothing capacitor.



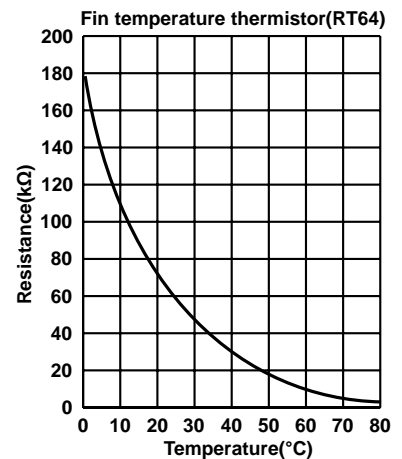
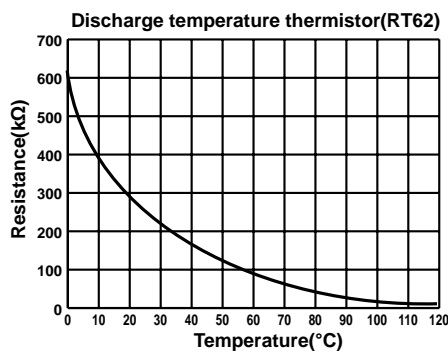
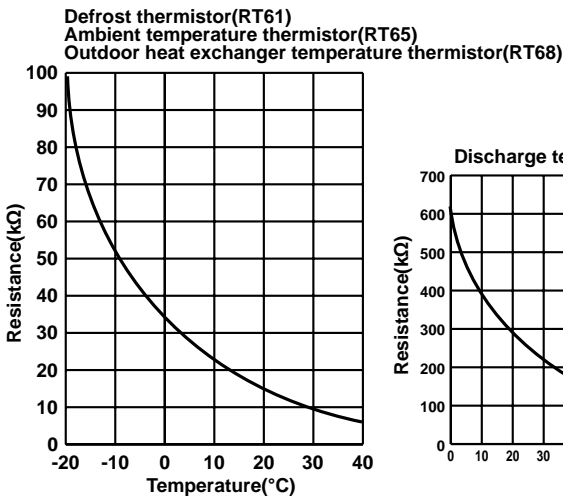
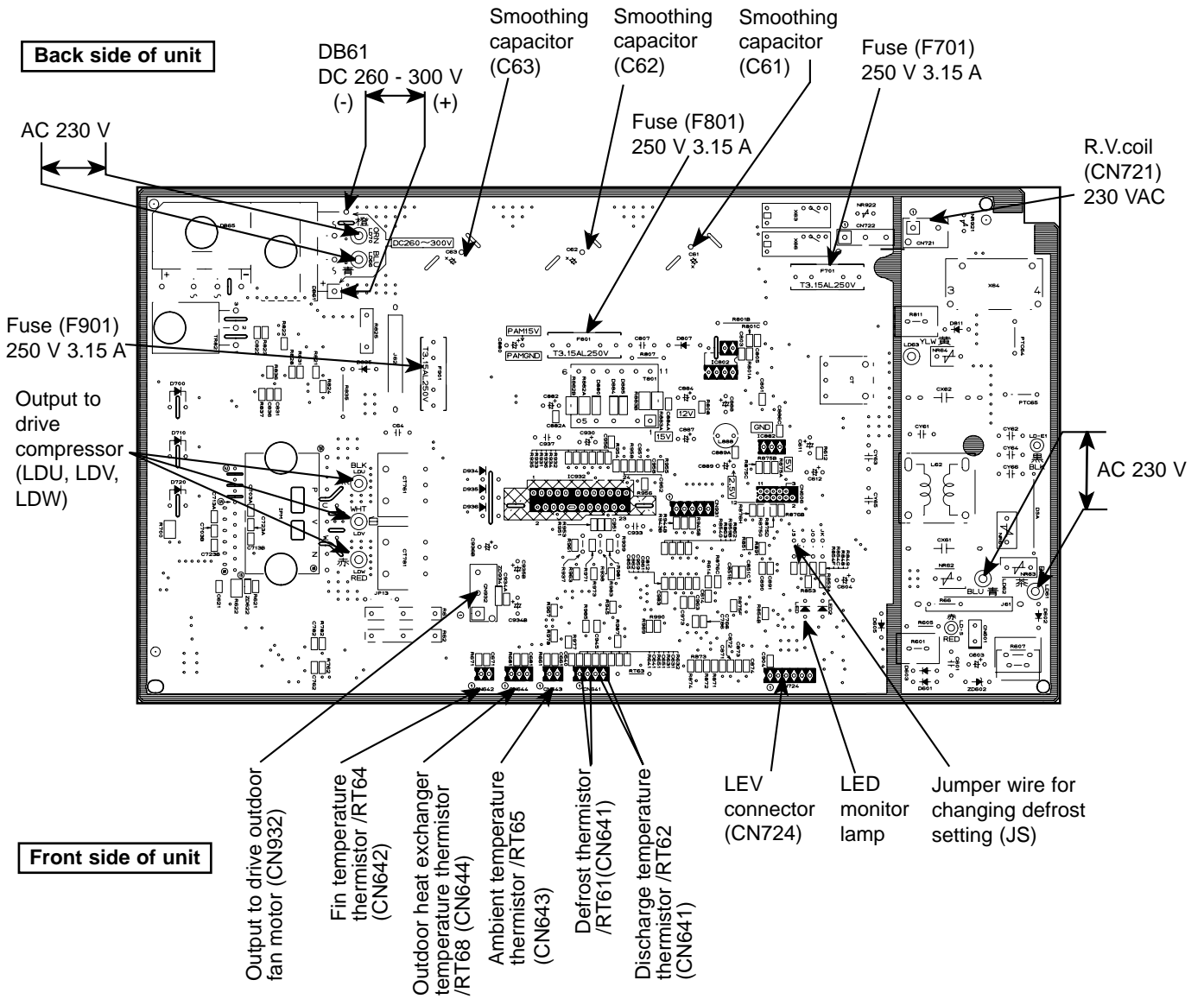
n Electromagnetic noise enters into TV sets or radios



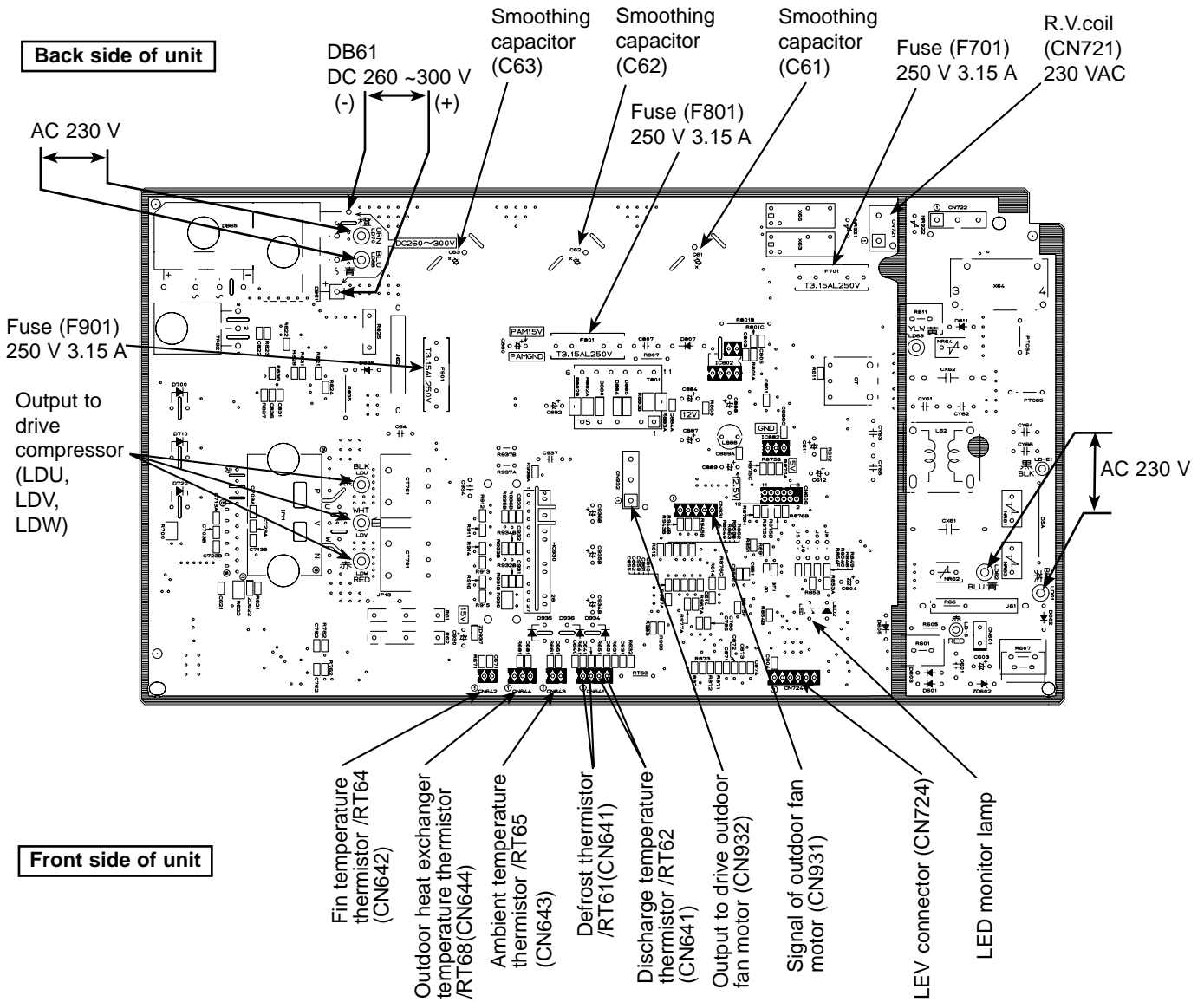
Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the following before asking for service.

1. Devices affected by the electromagnetic noise
TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of:
indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, earth wire, antennas, wiring from antennas, receiver
5. Electric field intensity of the broadcast station affected by the electromagnetic noise
6. Presence or absence of amplifier such as booster
7. Operation condition of air conditioner when the electromagnetic noise enters in
 - 1) Turn OFF the power supply once, and then turn ON the power supply. In this situation, check for the electromagnetic noise.
 - 2) Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power ON, and check for the electromagnetic noise.
 - 3) After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
 - 4) Press OPERATE/STOP (ON/OFF) button on the remote controller for power OFF, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation, check for the electromagnetic noise.

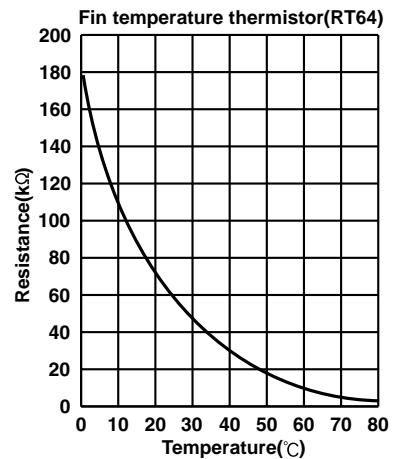
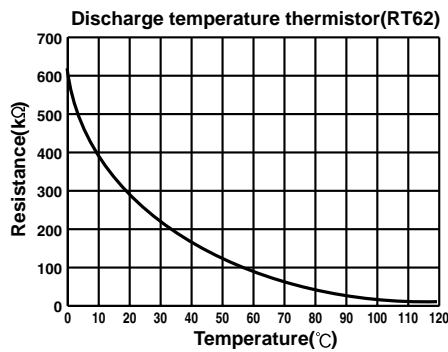
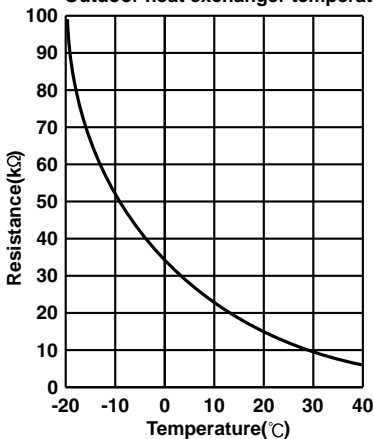
11-6. Test point diagram and voltage
11-6-1. Inverter P.C. board
SUZ-KA25VA2.TH SUZ-KA35VA2.TH



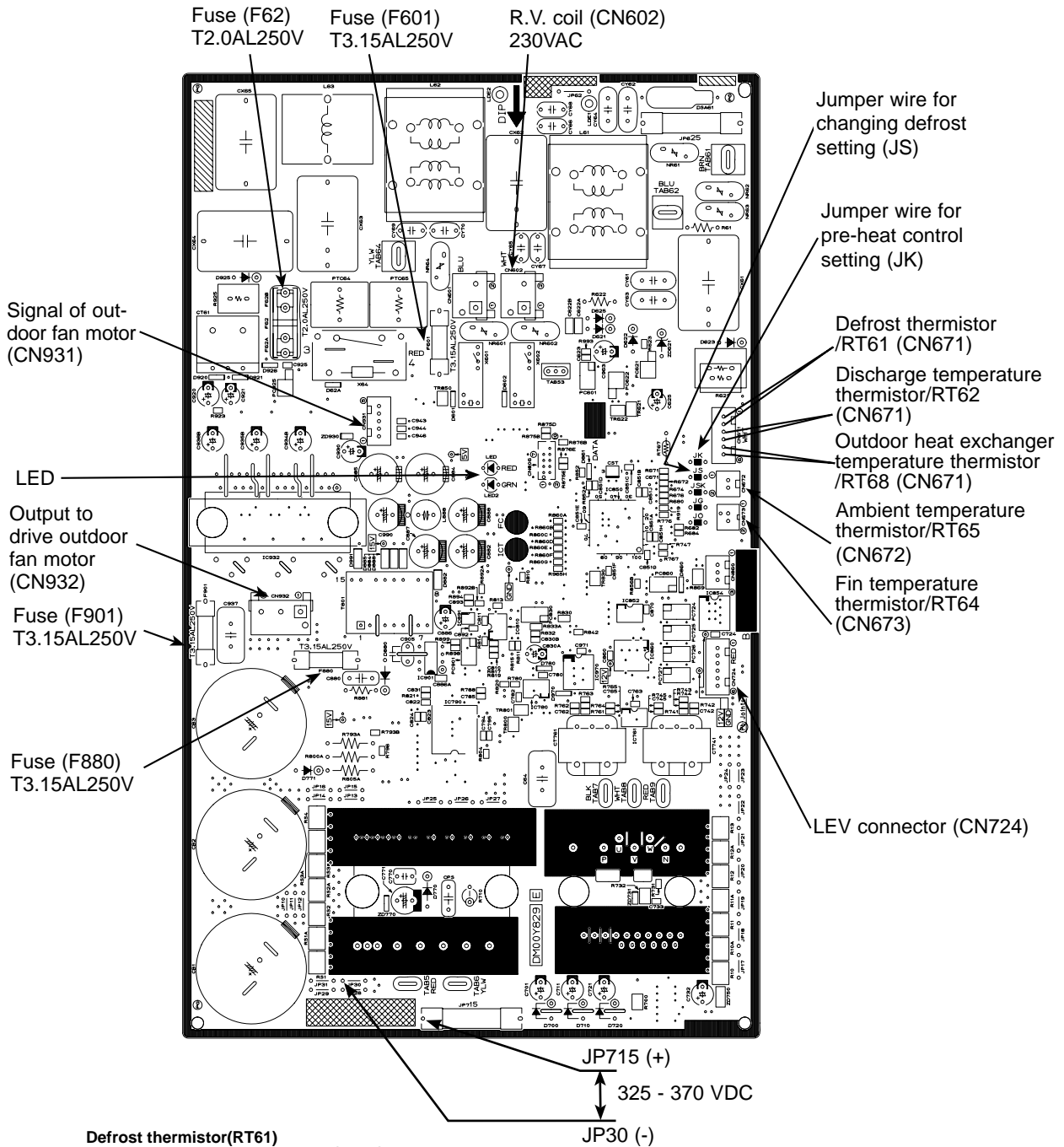
11-6-2. Inverter P.C. board SUZ-KA50VA2.TH



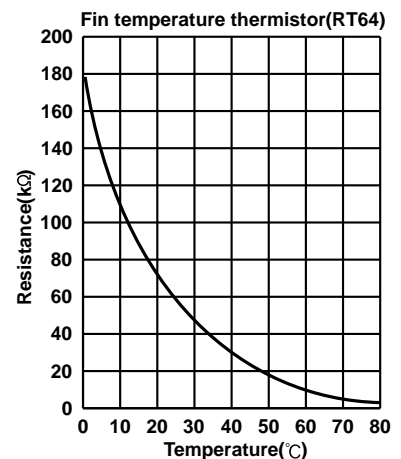
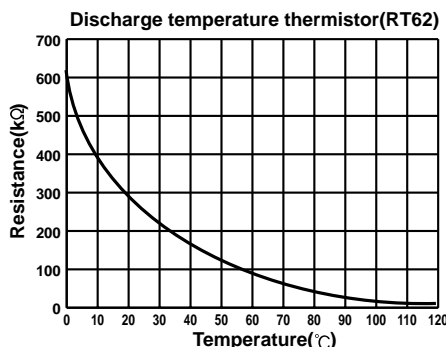
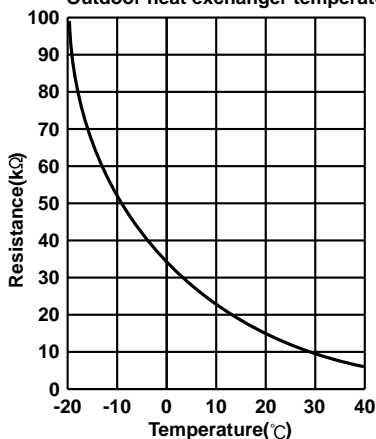
Defrost thermistor(RT61)
Ambient temperature thermistor(RT65)
Outdoor heat exchanger temperature thermistor(RT68)



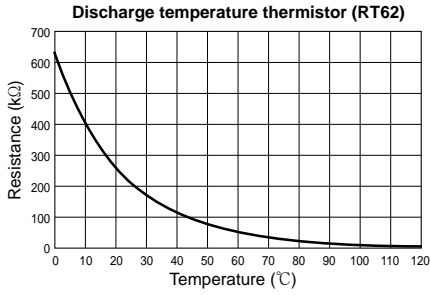
11-6-3. Inverter P.C. board SUZ-KA71VA2.TH



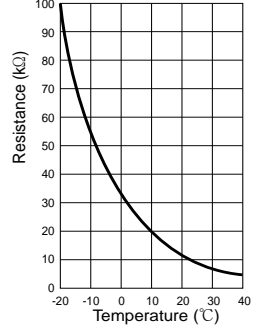
Defrost thermistor(RT61)
Ambient temperature thermistor(RT65)
Outdoor heat exchanger temperature thermistor(RT68)



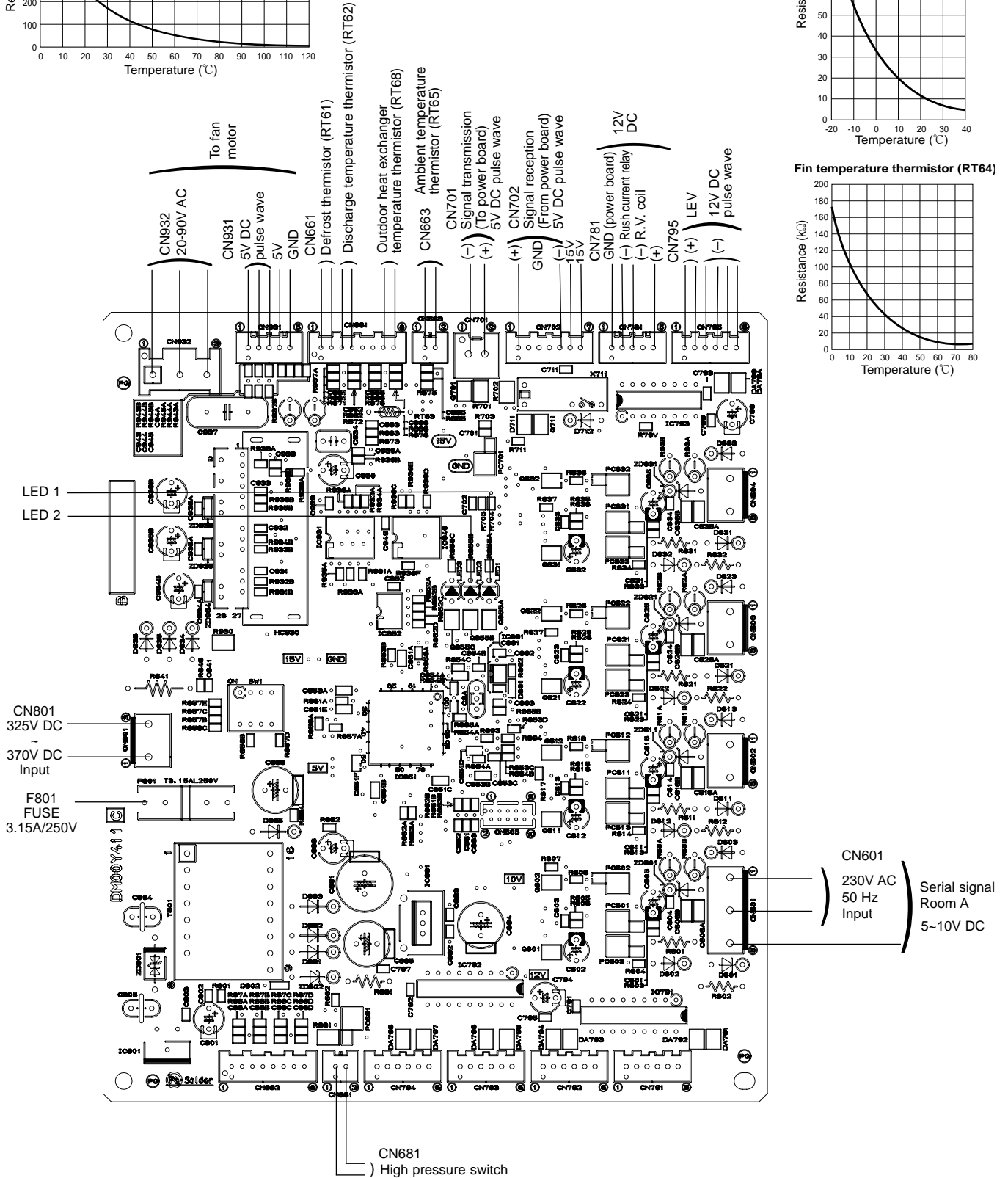
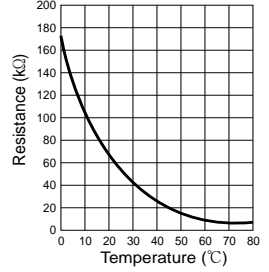
11-6-4. Outdoor electronic control P.C. board SUZ-KA60VA2.TH



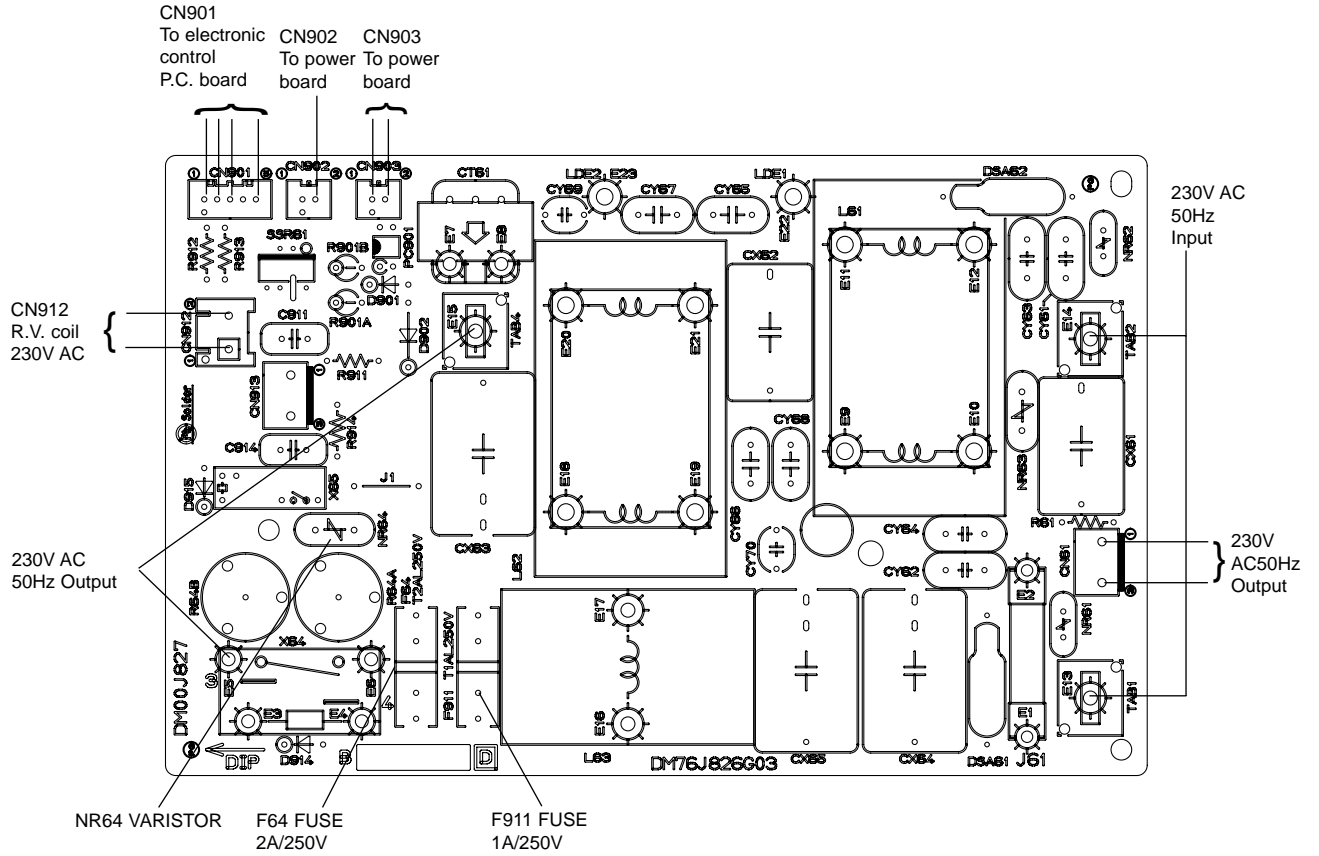
Defrost thermistor (RT61)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor (RT68)



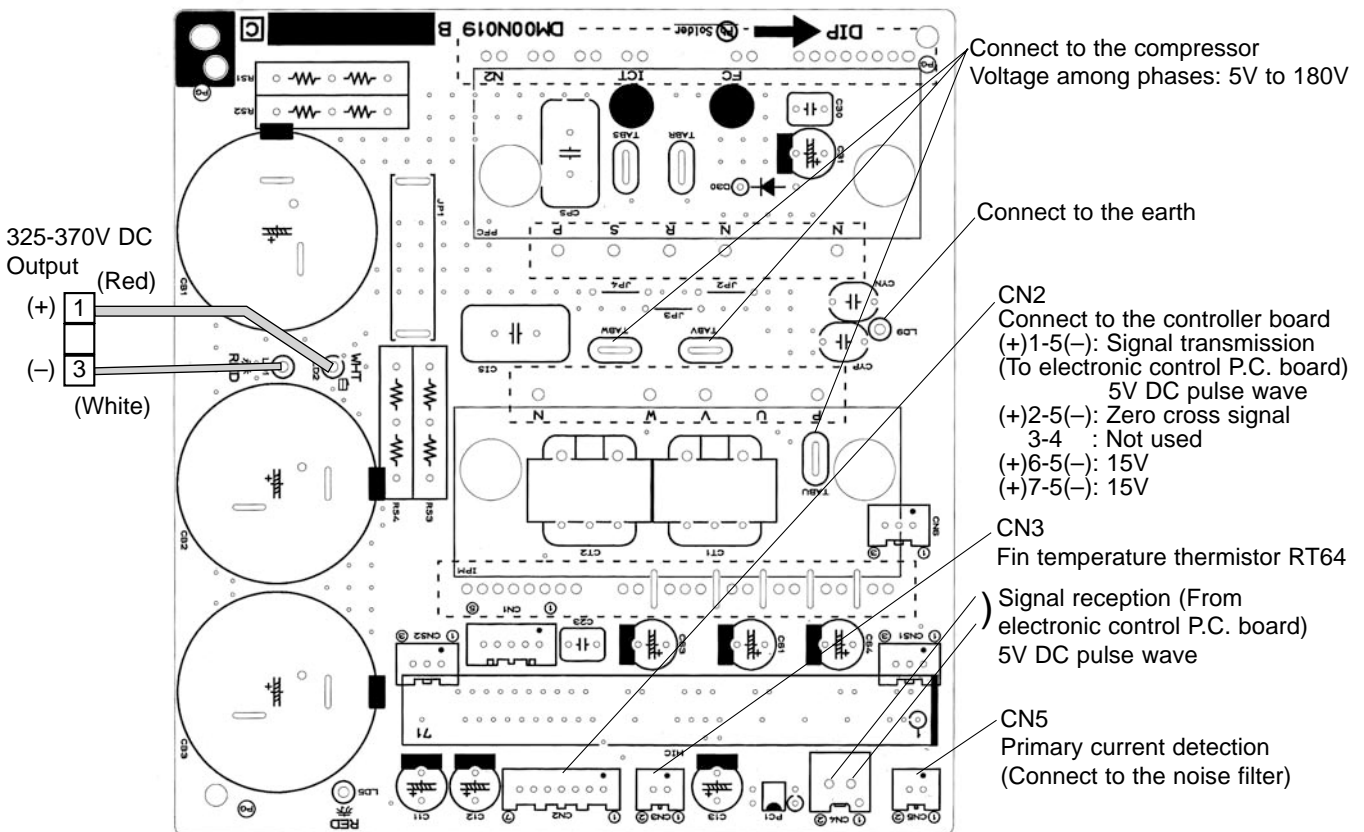
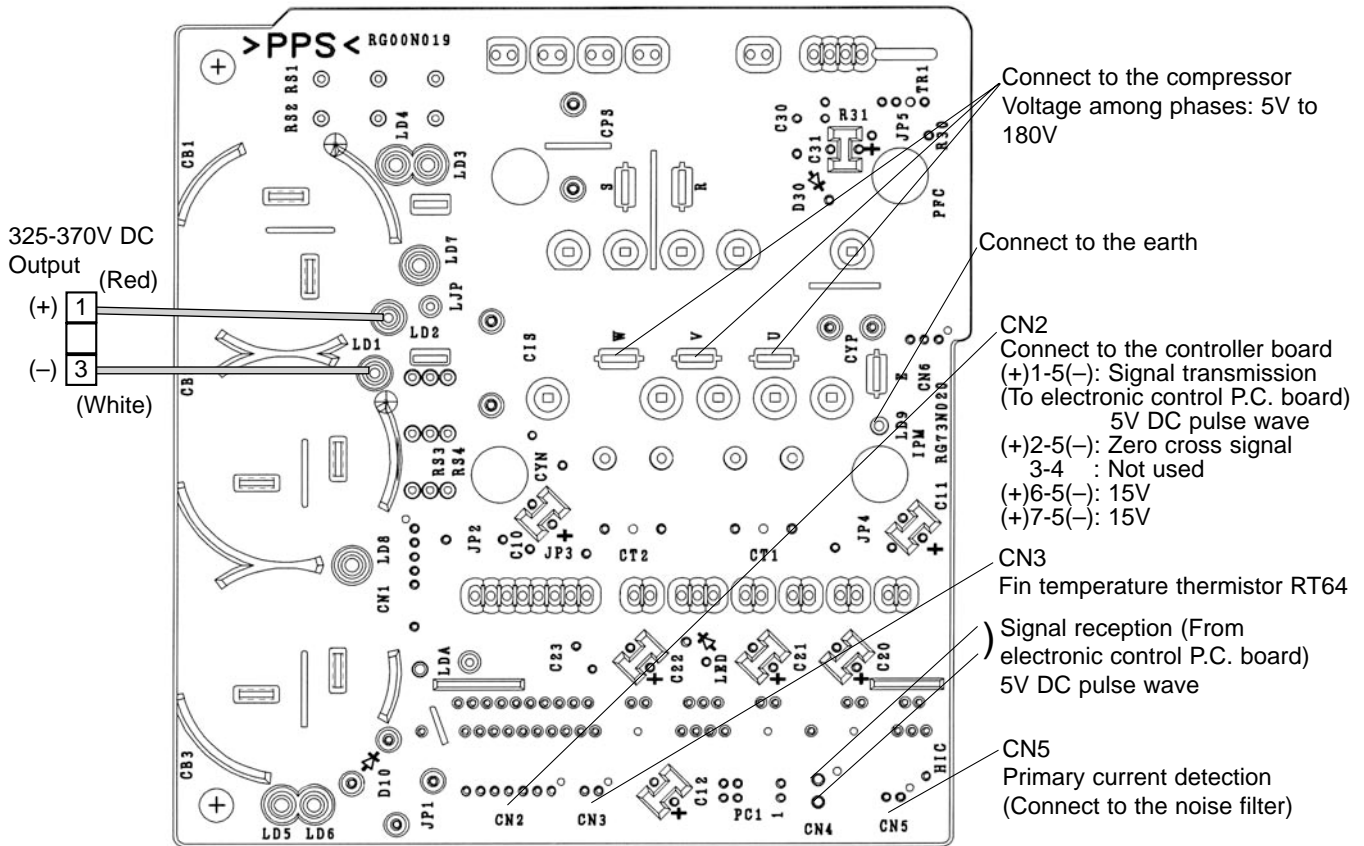
Fin temperature thermistor (RT64)



**11-6-5. Noise filter P.C. board
SUZ-KA60VA2.TH**



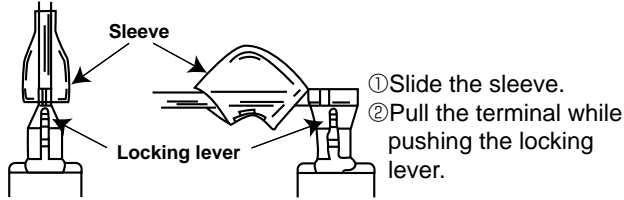
11-6-6. Outdoor power board SUZ-KA60VA2.TH



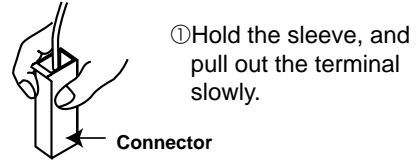
<"Terminal with locking mechanism" Detaching points>

The terminal which has the locking mechanism can be detached as shown below. There are two types (Refer to (1) and (2)) of the terminal with locking mechanism. The terminal without locking mechanism can be detached by pulling it out. Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



(2) The terminal with this connector has the locking mechanism.



**SUZ-KA25VA2.TH
OUTDOOR UNIT**

SUZ-KA35VA2.TH

NOTE: Turn OFF power supply before disassembling.

OPERATING PROCEDURE	PHOTOS
<p>1. Removing the cabinet</p> <ol style="list-style-type: none"> (1) Remove the screw fixing the service panel. (2) Pull down the service panel and remove it. (3) Disconnect the power supply and indoor/outdoor connecting wire. (4) Remove the screws fixing the top panel. (5) Remove the top panel. (6) Remove the screws fixing the cabinet. (7) Remove the cabinet. (8) Remove the screws fixing the back panel. (9) Remove the back panel. 	<p>Photo 1</p> <p>Photo 2</p>

OPERATING PROCEDURE

2. Removing the inverter assembly, inverter P.C. board

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN721 (R.V. coil)
CN932 (Fan motor)
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN644 (Outdoor heat exchanger temperature thermistor)
CN724 (LEV)
- (3) Remove the compressor connector (CN61).
- (4) Remove the screws fixing the relay panel. (Photo 3)
- (5) Remove the inverter assembly. (Photo 4)
- (6) Remove the screw of the earth wire and screw of the T.B.support. (Photo 4)
- (7) Remove the relay panel from the inverter assembly.
- (8) Remove the inverter P.C. board from the relay panel.

3. Removing R.V. coil

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the following connectors:
<Inverter P.C. board>
CN721 (R.V. coil)
- (3) Remove the R.V. coil. (Photo 5)

4. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN644 (Outdoor heat exchanger temperature thermistor)
- (3) Pull out the discharge temperature thermistor from its holder. (Photo 5)
- (4) Pull out the defrost thermistor from its holder. (Photo 6)
- (5) Pull out the outdoor heat exchanger temperature thermistor from its holder. (Photo 6)
- (6) Pull out the ambient temperature thermistor from its holder.

PHOTOS

Photo 3

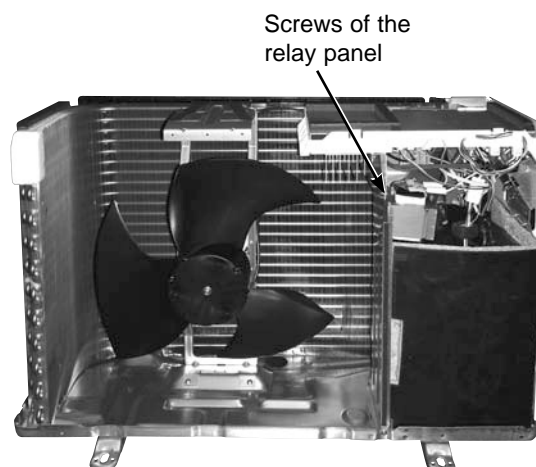


Photo 4 (Inverter assembly)

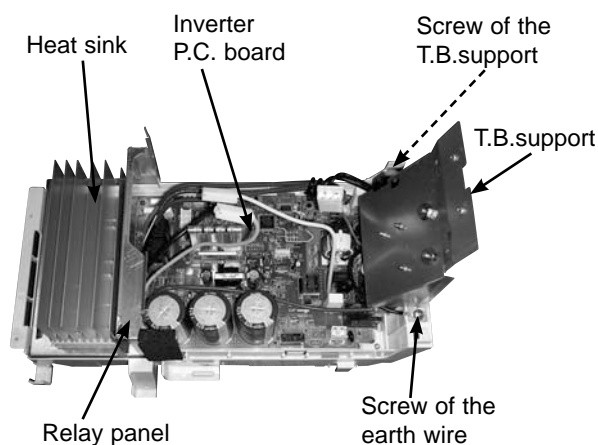


Photo 5



OPERATING PROCEDURE

5. Removing outdoor fan motor

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the following connectors:
<Inverter P.C. board>
CN932 (Fan motor)
- (3) Remove the propeller nut. (Photo 7)
- (4) Remove the propeller. (Photo 7)
- (5) Remove the screws fixing the fan motor. (Photo 7)
- (6) Remove the fan motor.

6. Removing the compressor and 4-way valve

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Remove the inverter assembly. (Refer to 2.)
- (3) Recover gas from the refrigerant circuit.
NOTE: Recover gas from the pipes until the pressure gauge shows 0 kg/cm² (0 MPa).
- (4) Detach the welded part of the suction and the discharge pipe connected with compressor.
- (5) Remove the nuts of compressor legs.
- (6) Remove the compressor.
- (7) Detach the welded part of pipes connected with 4-way valve. (Photo 8)

PHOTOS

Photo 6

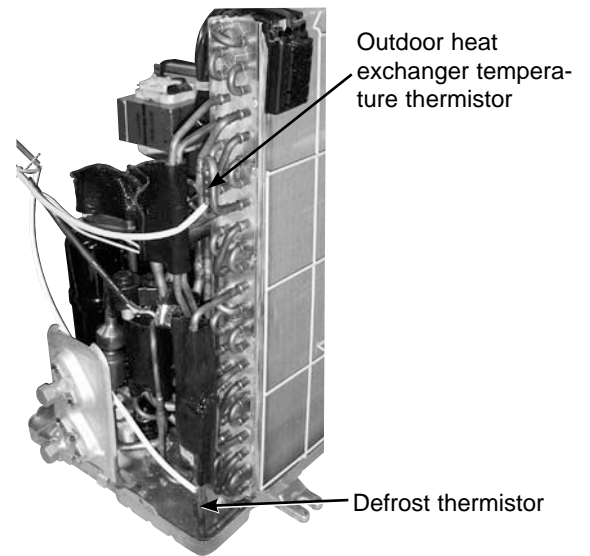


Photo 7

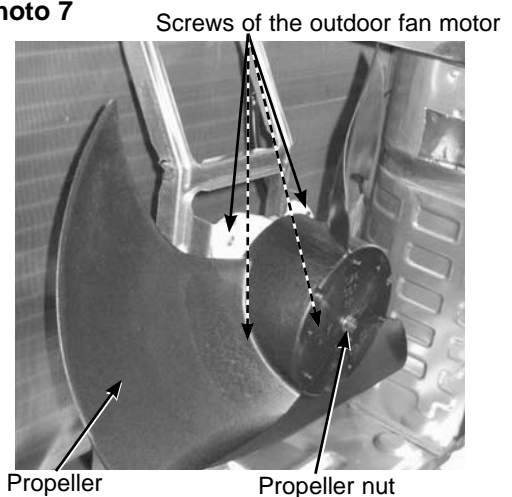
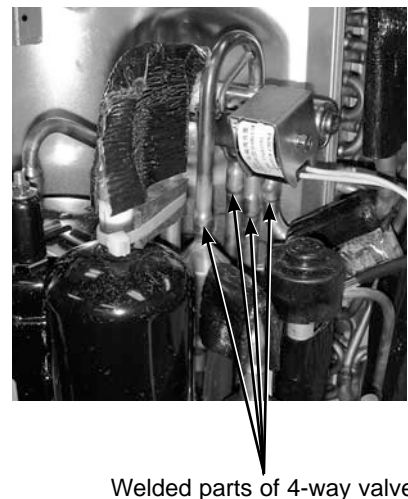


Photo 8



SUZ-KA50VA2.TH

SUZ-KA60VA2.TH

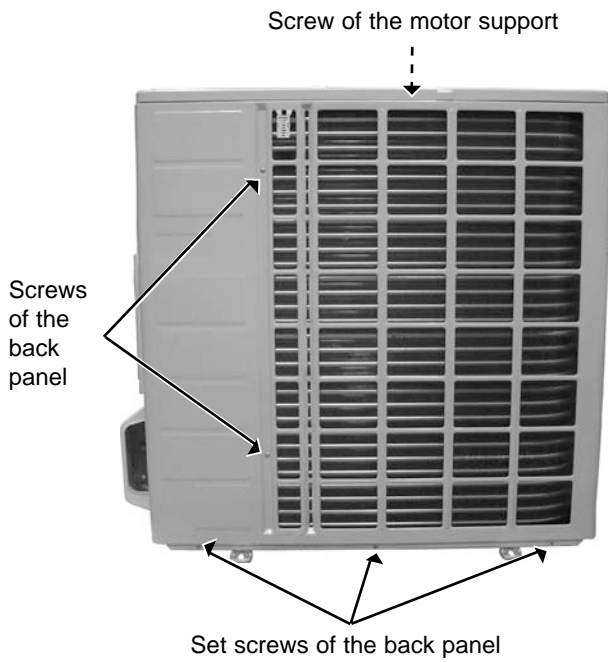
NOTE: Turn OFF power supply before disassembling.

OPERATING PROCEDURE

1. Removing the cabinet

- (1) Remove the screws of the service panel.
- (2) Remove the screws of the top panel.
- (3) Remove the screw of the valve cover.
- (4) Remove the service panel.
- (5) Remove the top panel.
- (6) Remove the valve cover.
- (7) Remove the screws of the cabinet.
- (8) Remove the cabinet.
- (9) Remove the screws of the back panel.
- (10) Remove the back panel.

Photo 3



PHOTOS

Photo 1

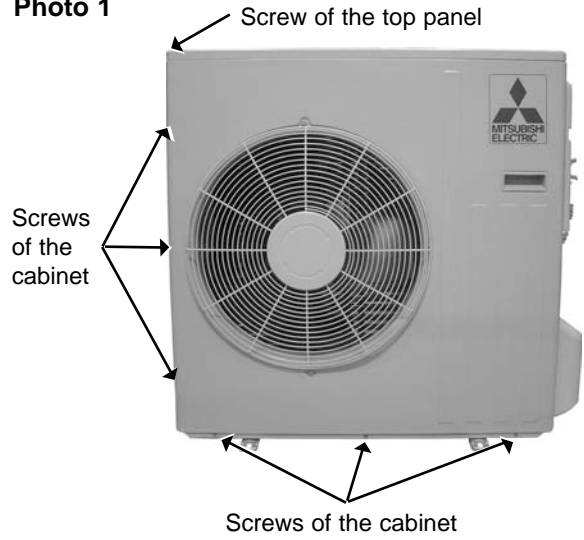
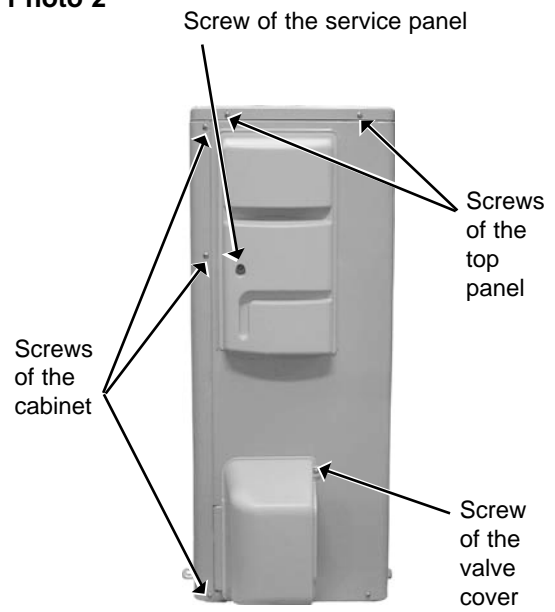


Photo 2



OPERATING PROCEDURE

2. Removing the inverter assembly, inverter P.C. board and power board (for SUZ-KA50VA2.TH)

- (1) Remove the top panel, cabinet, service panel and back panel. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors;
 - <Inverter P.C. board>
 - CN721 (R.V.coil)
 - CN932 (Fan motor)
 - CN641 (Defrost thermistor and discharge temperature thermistor)
 - CN643 (Ambient temperature thermistor)
 - CN644 (Outdoor heat exchanger temperature thermistor)
 - CN724 (LEV)
- (3) Remove the compressor connector (CN61).
- (4) Remove the screws fixing the relay panel. (Photo 5)
- (5) Remove the inverter assembly. (Photo 6)
- (6) Remove the screw of the earth wire and screw of the T.B.support. (Photo 6)
- (7) Remove the screw of the PB fixture.
- (8) Remove the relay panel from the PB support.
- (9) Remove the inverter P.C. board from the inverter assembly.

(for SUZ-KA60VA2.TH)

- (1) Remove the top panel, cabinet, service panel and back panel. (Refer to 1.)
- (2) Disconnect the following connectors;
 - <Electronic control P.C. board>
 - CN931 and CN932 (Fan motor)
 - CN795 (LEV)
 - CN661 (Discharge temperature thermistor, defrost thermistor and outdoor heat exchanger temperature thermistor)
 - <Noise filter P.C. board>
 - CN912 (4-way valve)
- (3) Remove the compressor connector.
- (4) Remove the screws fixing the relay panel.
- (5) Remove the inverter assembly.
- (6) Disconnect all connectors and lead wires on the electronic control P.C. board.
- (7) Remove the electronic control P.C. board from the inverter assembly.
- (8) Remove the screws fixing the power board assembly.
- (9) Disconnect all connectors and lead wires on the power board.
- (10) Remove the power board from the inverter assembly.
- (11) Disconnect all connectors and lead wires on the noise filter P.C. board.
- (12) Remove the noise filter P.C. board from the inverter assembly.

3. Removing R.V. coil

- (1) Remove the top panel, cabinet and service panel. (Refer to 1)
- (2) Remove the back panel. (Refer to 1.)
- (3) Disconnect the following connectors;
 - for SUZ-KA50VA2.TH**
 - <inverter P.C. board>
 - CN721 (R.V. coil)
 - for SUZ-KA60VA2.TH**
 - <Noise filter P.C. board>
 - CN912 (R.V. coil)
- (4) Remove the R.V. coil. (Photo 11)

PHOTOS

Photo 4

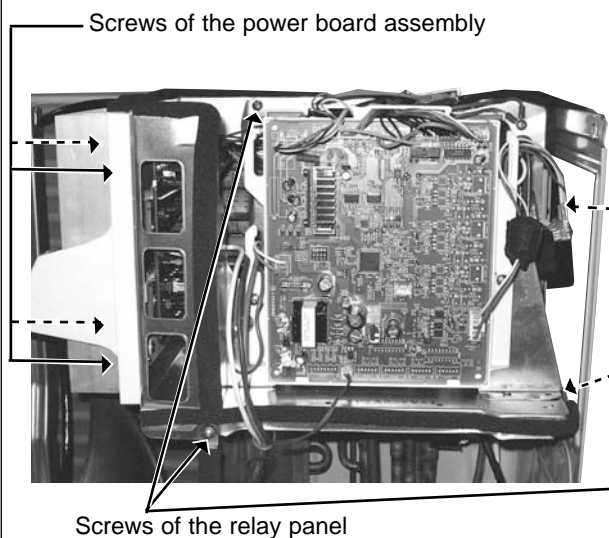


Photo 5 (SUZ-KA50VA2.TH)

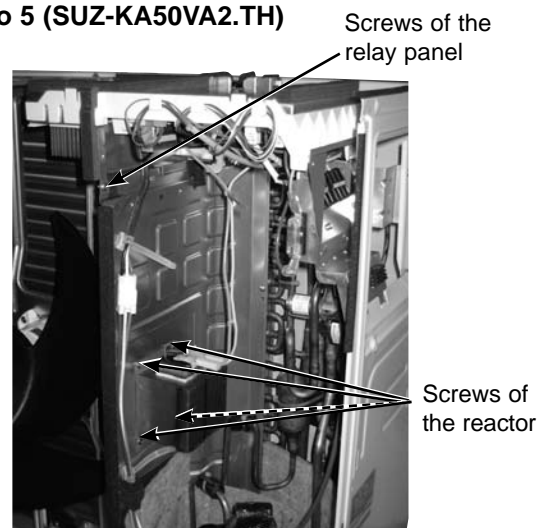
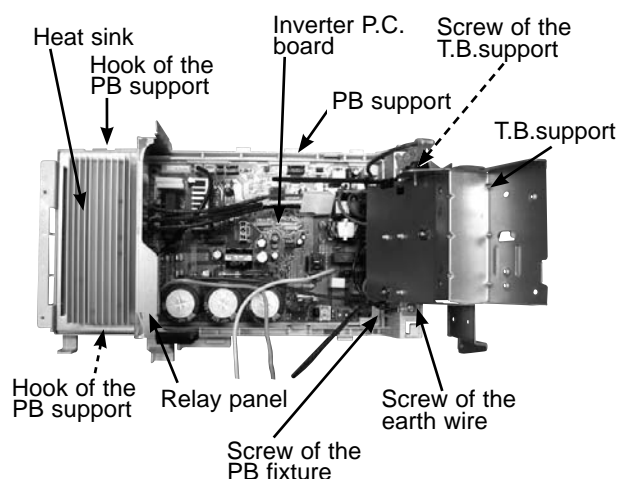


Photo 6 (SUZ-KA50VA2.TH)



OPERATING PROCEDURE

4. Removing the defrost thermistor, discharge temperature thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor

- (1) Remove the top panel, cabinet and service panel.
(Refer to 1.)
- (2) Remove the back panel. (Refer to 1.)
- (3) Remove the inverter assembly. (Refer to 2.)
- (4) Pull out the defrost thermistor from its holder. (Photo 8)
- (5) Pull out the discharge temperature thermistor from its holder. (Photo 7)
- (6) Pull out the outdoor heat exchanger temperature thermistor from its holder. (Photo 8)
- (7) Pull out the ambient temperature thermistor from its holder. (Photo 8)

PHOTOS

Photo 7

Discharge temperature thermistor

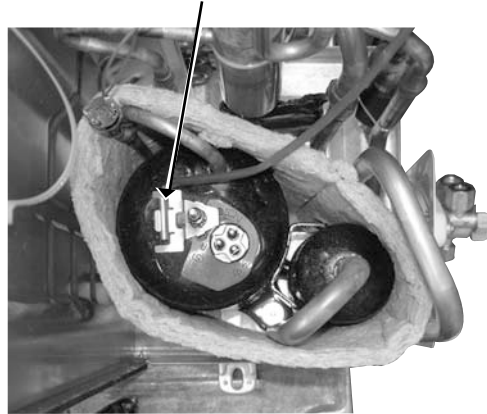
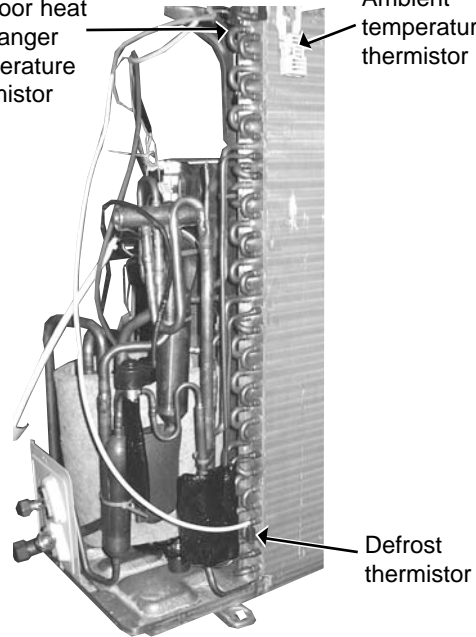


Photo 8

Outdoor heat exchanger temperature thermistor

Ambient temperature thermistor



5. Removing outdoor fan motor

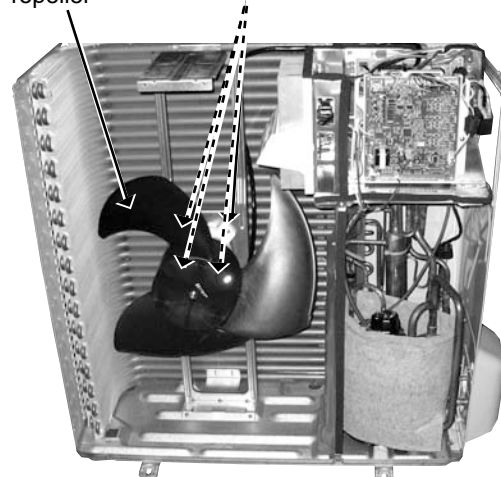
- (1) Remove the top panel, cabinet and service panel.
(Refer to 1.)
- (2) Remove the back panel. (Refer to 1.)
- (3) Disconnect the following connectors;
for SUZ-KA50VA2.TH
<Inverter P.C. board>
CN931 and CN932 (Fan motor)

for SUZ-KA60VA2.TH
<Electric control P.C. board>
CN931 and CN932 (Fan motor)
- (4) Remove the propeller.
- (5) Remove the screws fixing the fan motor.
- (6) Remove the fan motor

Photo 9

Screws of the outdoor fan motor

Propeller



OPERATING PROCEDURE

6. Removing the compressor and 4-way valve

(1) Remove the top panel, cabinet and service panel.
(Refer to 1.)

(2) Remove the back panel. (Refer to 1.)

(3) Remove the inverter assembly. (Refer to 2.)

(4) Recover gas from the refrigerant circuit.

NOTE: Recover gas from the pipes until the pressure gauge shows 0 kg/cm² (0 MPa).

(5) Detach the welded part of the suction and the discharge pipe connected with compressor. (Photo 11)

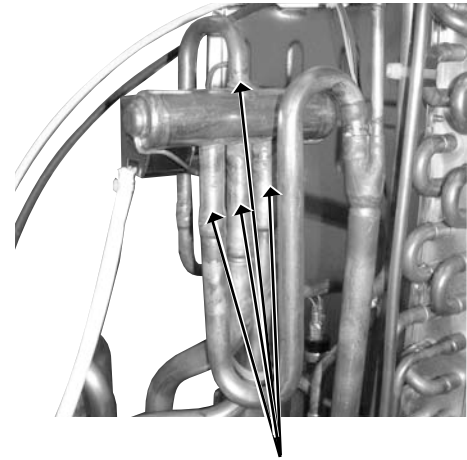
(6) Remove the compressor nuts.

(7) Remove the compressor.

(8) Detach the welded part of 4-way valve and pipe. (Photo 10)

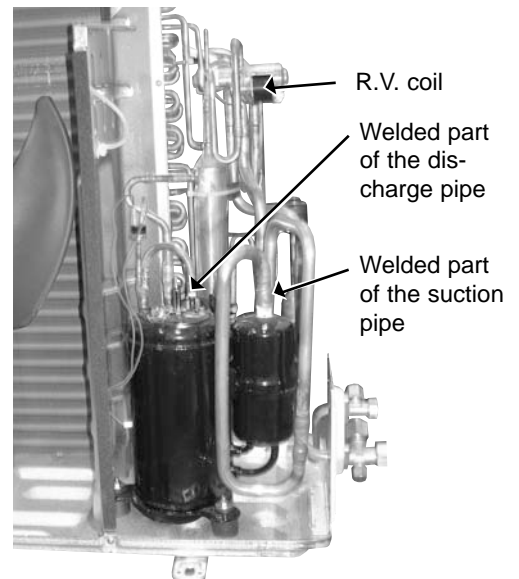
PHOTOS

Photo 10



Welded parts of 4-way valve

Photo 11



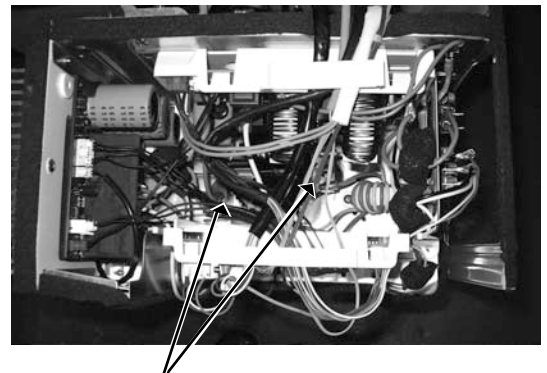
7. Removing the reactor

(1) Remove the top panel. (Refer to 1.)

(2) Disconnect the reactor lead wire.

(3) Remove the screws of the reactor, and remove the reactor.



Photo 12



Screws of the reactor

SUZ-KA71VA2.TH

NOTE: Turn OFF power supply before disassembling.

OPERATING PROCEDURE	PHOTOS
<p>1. Removing the cabinet</p> <ol style="list-style-type: none">(1) Remove the screws of the service panel.(2) Remove the screws of the top panel.(3) Remove the screw of the valve cover.(4) Remove the service panel.(5) Remove the top panel.(6) Remove the valve cover.(7) Disconnect the power supply and indoor/outdoor connecting wire.(8) Remove the screws of the cabinet.(9) Remove the cabinet.(10) Remove the screws of the back panel.(11) Remove the back panel.	<p>Photo 1</p>  <p>Screws of the top panel</p> <p>Screws of the cabinet</p> <p>Screws of the cabinet</p> <p>Photo 2</p>  <p>Screw of the back panel</p> <p>Screws of the top panel</p> <p>Screws of the cabinet</p> <p>Screws of the cabinet</p> <p>Screws of the service panel</p> <p>Screws of the back panel</p> <p>Screw of the valve cover</p>

OPERATING PROCEDURE

2. Removing the inverter assembly, inverter P.C. board

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN602 (R.V. coil)
CN931, CN932 (Fan motor)
CN671 (Defrost thermistor, discharge temperature thermistor and outdoor heat exchanger temperature thermistor)
CN672 (Ambient temperature thermistor)
CN724 (LEV)
- (3) Remove the compressor connector.
- (4) Remove the screws fixing the relay panel.
- (5) Remove the relay panel.
- (6) Remove the earth wires and the lead wires of the inverter P.C. board.
- (7) Remove the screw of the PB support.
- (8) Remove the inverter P.C. board from the relay panel.

3. Removing R.V. coil

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the following connector:
<Inverter P.C. board>
CN602 (R.V. coil)
- (3) Remove the R.V. coil.

PHOTOS

Photo 3

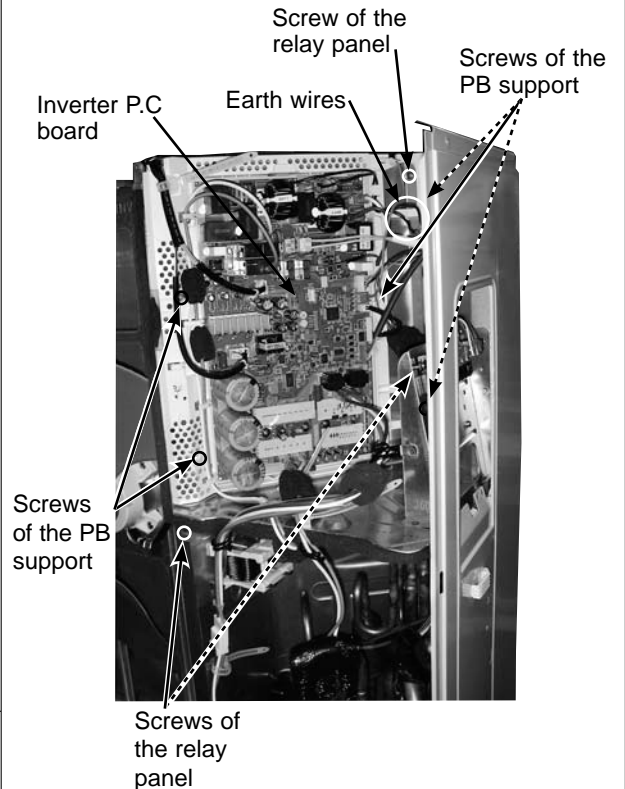
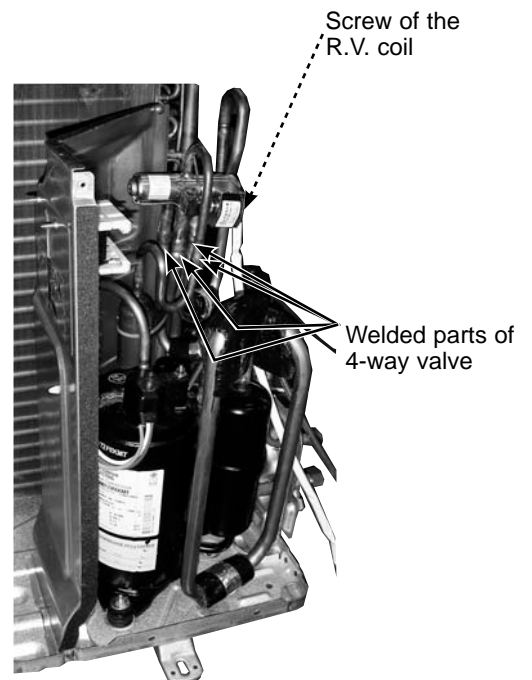


Photo 4



OPERATING PROCEDURE

4. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN671 (Defrost thermistor, discharge temperature thermistor and outdoor heat exchanger temperature thermistor)
CN672 (Ambient temperature thermistor)
- (3) Pull out the discharge temperature thermistor from its holder. (Photo 7)
- (4) Pull out the defrost thermistor from its holder.
- (5) Pull out the outdoor heat exchanger temperature thermistor from its holder.
- (6) Pull out the ambient temperature thermistor from its holder.

5. Removing outdoor fan motor

- (1) Remove the top panel, cabinet and service panel. (Refer to 1.)
- (2) Disconnect the following connectors:
<Inverter P.C. board>
CN931 and CN932 (Fan motor)
- (3) Remove the propeller.
- (4) Remove the screws fixing the fan motor.
- (5) Remove the fan motor.

6. Removing the compressor and 4-way valve

- (1) Remove the top panel, cabinet and service panel. (Refer to 1.)
- (2) Remove the back panel. (Refer to 1.)
- (3) Remove the inverter assembly. (Refer to 2.)
- (4) Recover gas from the refrigerant circuit.
NOTE: Recover gas from the pipes until the pressure gauge shows 0 kg/cm² (0 MPa).
- (5) Detach the welded part of the suction and the discharge pipe connected with compressor.
- (6) Remove the compressor nuts.
- (7) Remove the compressor.
- (8) Detach the welded part of 4-way valve and pipe. (Photo 4)

PHOTOS

Photo 5

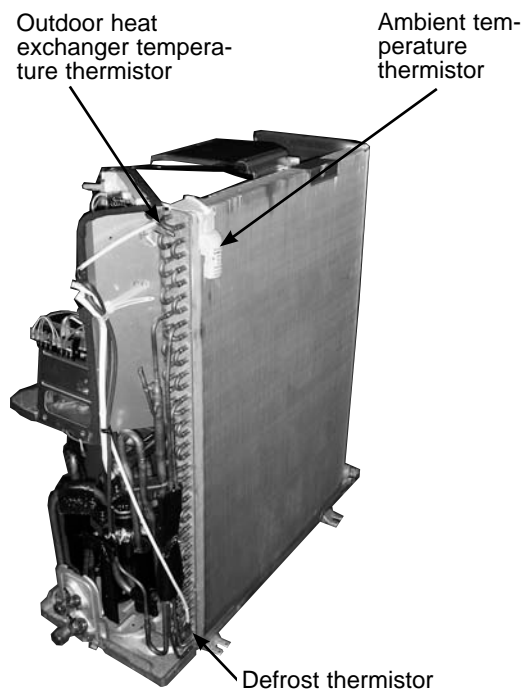


Photo 6

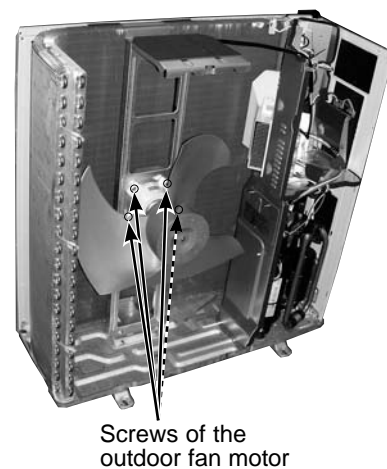


Photo 7

