MITSUBISHI ELECTRIC

Changes for the Better

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

October 2012

No.OCH530

HFC utilized R410A

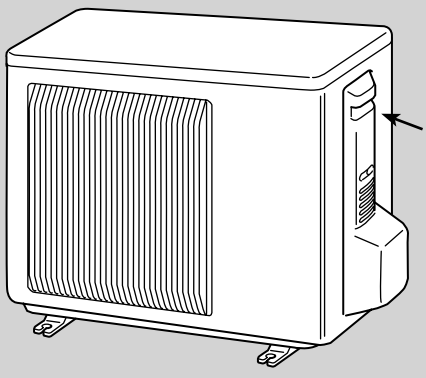
TECHNICAL & SERVICE MANUAL

R410A

Outdoor unit

[Model names]	[Service Ref.]
SUZ-KA25VA3	SUZ-KA25VA3.TH
SUZ-KA35VA3	SUZ-KA35VA3.TH
SUZ-KA50VA3	SUZ-KA50VA3.TH
SUZ-KA60VA3	SUZ-KA60VA3.TH
SUZ-KA71VA3	SUZ-KA71VA3.TH

NOTE:
- This service manual describes technical data of the outdoor units.



SUZ-KA25VA3.TH
SUZ-KA35VA3.TH

CONTENTS

PARTS CATALOG (OCB530)

1 COMBINATION OF INDOOR AND OUTDOOR UNITS

INDOOR UNIT SERVICE MANUAL

	Indoor unit		Outdoor unit Heat pump type SUZ-				
	Service Ref.	Service Manual No.	KA25VA3.TH	KA35VA3.TH	KA50VA3.TH	KA60VA3.TH	KA71VA3.TH
Heat pump without electric heater	SLZ-KA25VA(L).TH	OC320	○	—	—	—	—
	SLZ-KA35VA(L).TH		—	○	—	—	—
	SLZ-KA50VA(L).TH		—	—	○	—	—
	SLZ-KA25VAL2.TH		○	—	—	—	—
	SLZ-KA35VALR3.TH		—	○	—	—	—
	SLZ-KA50VALR3.TH		—	—	○	—	—
	SLZ-KA25VAQ2.TH	OCH493	○	—	—	—	—
	SLZ-KA35VAQR2.TH		—	○	—	—	—
	SLZ-KA50VAQR2.TH		—	—	○	—	—
	SEZ-KD25VA(L)R2.TH	HWE0711 BWE102050	○	—	—	—	—
	SEZ-KD35VA(L)R2.TH		—	○	—	—	—
	SEZ-KD50VA(L)R2.TH		—	—	○	—	—
	SEZ-KD60VA(L)R2.TH		—	—	—	○	—
	SEZ-KD71VA(L)R2.TH		—	—	—	—	○
	SEZ-KD25VAQR2.TH	HWE1008 BWE102040	○	—	—	—	—
	SEZ-KD35VAQR2.TH		—	○	—	—	—
	SEZ-KD50VAQR2.TH		—	—	○	—	—
	SEZ-KD60VAQR2.TH		—	—	—	○	—
	SEZ-KD71VAQR2.TH		—	—	—	—	○

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

2 TECHNICAL CHANGES

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.

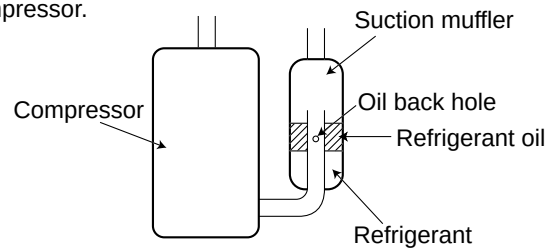
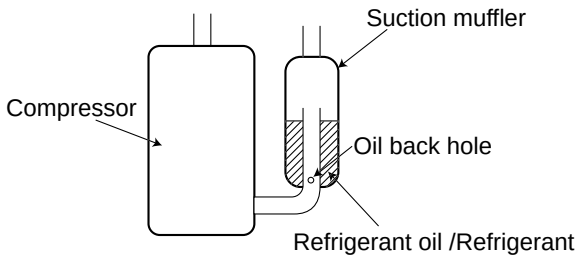
③ For refrigerant piping, use clean, pressure-proof parts/materials specifically designed for R410A. (Refer to 2. Refrigerant piping.)

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

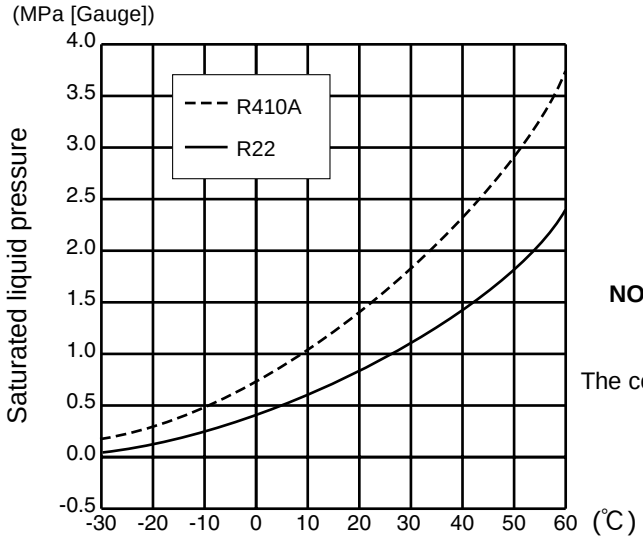
*1: Ozone Depletion Potential : based on CFC-11

*2: Global Warming Potential : based on CO_2

	New Specification	Current Specification
Compressor	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. 	Since refrigerant and refrigerant oil are compatible with each other, refrigerant oil backs to the compressor through the lower position oil back hole. 

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.

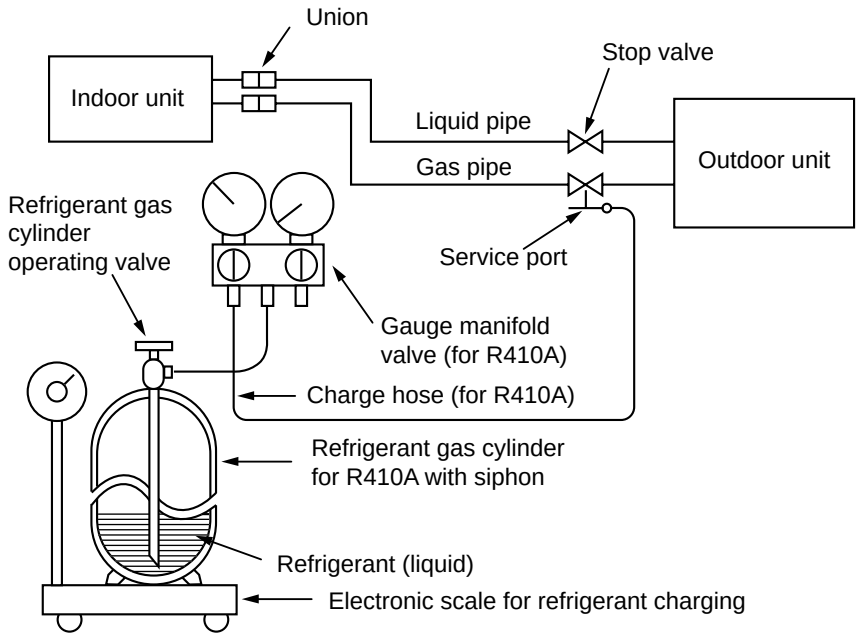
4. Air purge

- 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

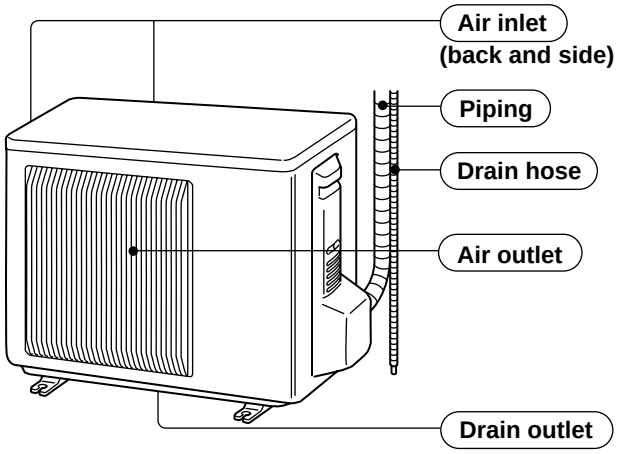
For additional charging, charge the refrigerant from liquid phase of the gas cylinder.

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.

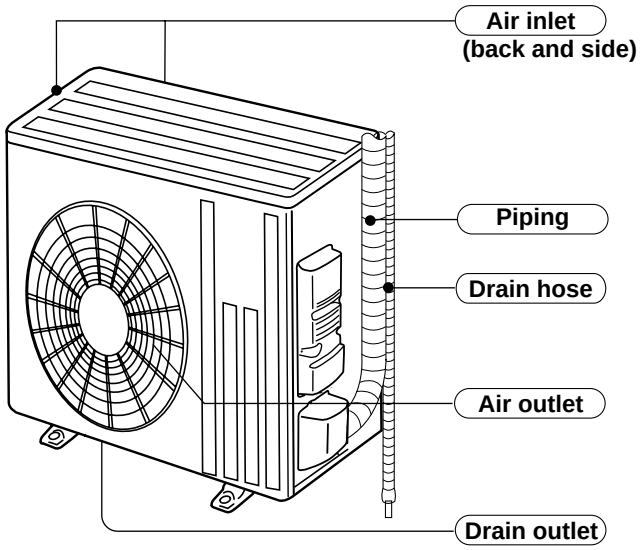


3 PART NAMES AND FUNCTIONS

SUZ-KA25VA3.TH
SUZ-KA35VA3.TH



SUZ-KA50VA3.TH
SUZ-KA60VA3.TH
SUZ-KA71VA3.TH



Model	SUZ-KA·VA3.TH
Drain socket	1

4 SPECIFICATION

Outdoor model					SUZ-KA25VA3.TH	SUZ-KA35VA3.TH	SUZ-KA50VA3.TH	SUZ-KA60VA3.TH	SUZ-KA71VA3.TH
Power supply					Single phase 230V, 50Hz				
Compressor	Model				KNB073FKFMC	KNB092FFAMC	SNB130FGBMT		SNB172FEKMT
	Output			W	550	650	900		1,200
	Current *1	Cooling		A	2.76	4.06	5.58	6.62	8.02
		Heating			3.24	4.09	5.75	6.37	8.13
	Refrigeration oil (Model)			L	0.31 (FV50S)	0.27 (FV50S)	0.35 (FV50S)		0.4 (FV50S)
Fan motor	Model				RC0J50-FA		RC0J60-BD	RC0J60-BC	
	Current *1	Cooling		A	0.24	0.29	0.84	0.84	0.83
		Heating			0.27	0.28	0.93	0.93	0.82
Dimensions W × H × D				mm	800 × 550 × 285		840 × 880 × 330		
Weight				kg	30	35	54	50	53
Special remarks	Air flow *1	Cooling	High	m^3/h	1,806		2,868	3,492	3,426
			Med.		1,806		2,868	3,066	3,006
			Low		1,170	1,038	1,602	1,692	1,512
		Heating	High		2,106		2,778	2,952	2,892
			Med.		1,806	1,770	2,778	2,952	2,892
			Low		1,452	1,326	2,124	2,226	2,280
	Sound level *1	Cooling		dB(A)	47	49	52	55	
		Heating			48	50	52	55	
	Fan speed	Cooling	High	rpm	740	810	840	950	
			Med.		740	810	840		
			Low		740	490	480		450
		Heating	High		860	900	810		
			Med.		740	770	810		
			Low		600	610	620		650
	Fan speed regulator				3				
	Refrigerant filling capacity (R410A)			kg	0.80	1.15	1.45	1.55	1.90

NOTE : Test conditions are based on ISO 5151
Cooling : Indoor D.B. 27°C W.B. 19°C
Outdoor D.B. 35°C
Heating : Indoor D.B. 20°C
Outdoor D.B. 7°C W.B. 6°C
Refrigerant piping length (one way): 5 m
*1 Measured under rated operating frequency.

Specifications and rating conditions of main electric parts

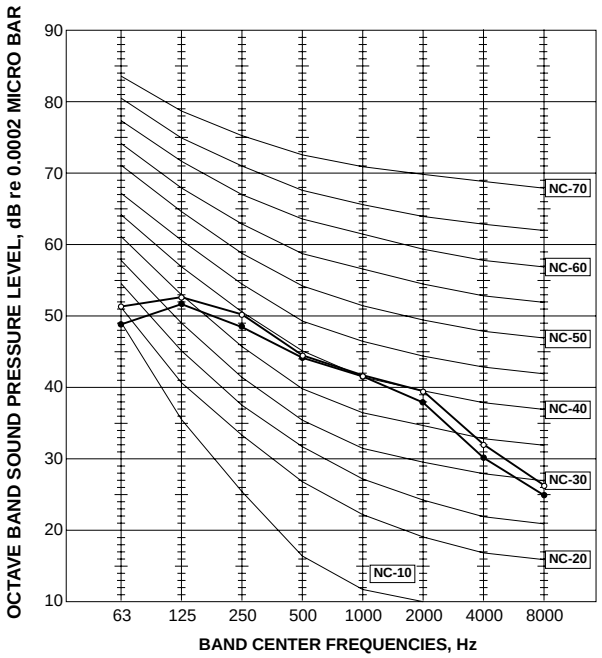
SUZ-KA25VA3.TH SUZ-KA35VA3.TH SUZ-KA50VA3.TH SUZ-KA60VA3.TH SUZ-KA71VA3.TH

Item \ Model		SUZ-KA25VA3.TH	SUZKA35VA3.TH	SUZ-KA50VA3.TH	SUZ-KA60VA3.TH	SUZ-KA71VA3.TH
Smoothing capacitor	(C61)	—	—	620μF 420V	—	—
	(C62, C63)	620μF 420V	620μF 420V	620μF 420V	—	—
	(CB1, 2, 3)	—	—	—	560μF 450V	560μF 350V
Diode module	(DB61)	15A 600V	15A 600V	25A 600V	—	—
Fuse	(F61)	T20A L250V	T20A L250V	T20A L250V	—	—
	(F62)	—	—	—	T20A L250V	T20A L250V
	(F701, F801, F901)	T3.15A L250V	T3.15A L250V	T3.15A L250V	—	—
	(IC700)	15A 600V	15A 600V	20A 600V	—	—
Inteligent power module	(IPM)	—	—	—	20A 600V	
	(IC932)	8A 600V	8A 600V	8A 600V	5A 600V	5A 600V
Power factor controller	(PFC)	—	—	—	20A 600V	20A 600V
	(IC820)	20A 600V	20A 600V	20A 600V	—	—
Expansion valve coil	(LEV)	DC12V				
Reactor	(L61)	18mH	23mH	23mH	—	—
	(L)	—	—	—	340μH 20A	340μH 20A
Current-Limiting PTC thermistoe	(PTC64, PTC65)	33Ω				
Terminal block	(TB1, TB2)	—	—	—	3P	3P
	(TB)	5P	5P	5P	—	—
Relay	(X63)	3A 250V	3A 250V	3A 250V	—	—
	(X64)	20A 250V				
	(X601)	—	—	—	3A 250V	3A 250V
	(X602)	—	—	—	3A 250V	3A 250V
R.V. coil	(21S4)	AC220-240V				

5 NOISE CRITERIA CURVES

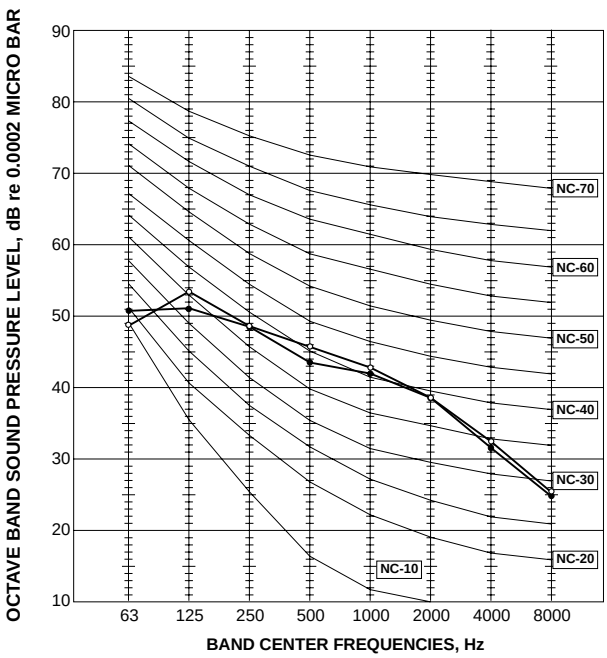
SUZ-KA25VA3.TH

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



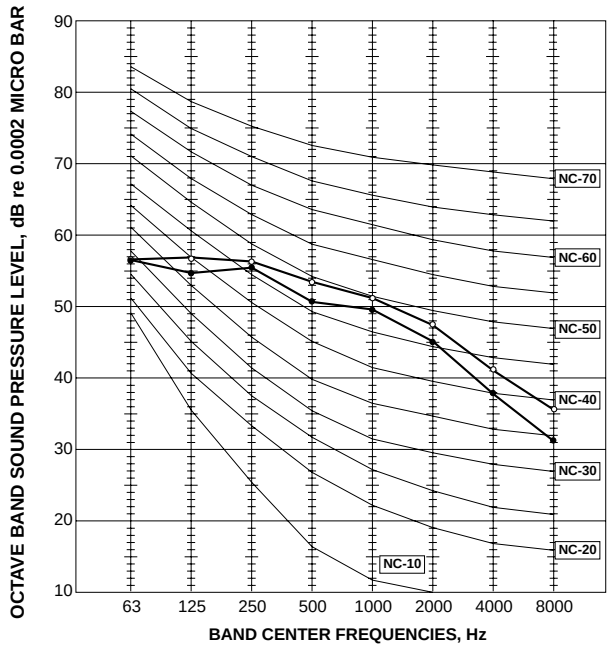
SUZ-KA35VA3.TH

FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High Med.	COOLING	49	●—●
	HEATING	50	○—○



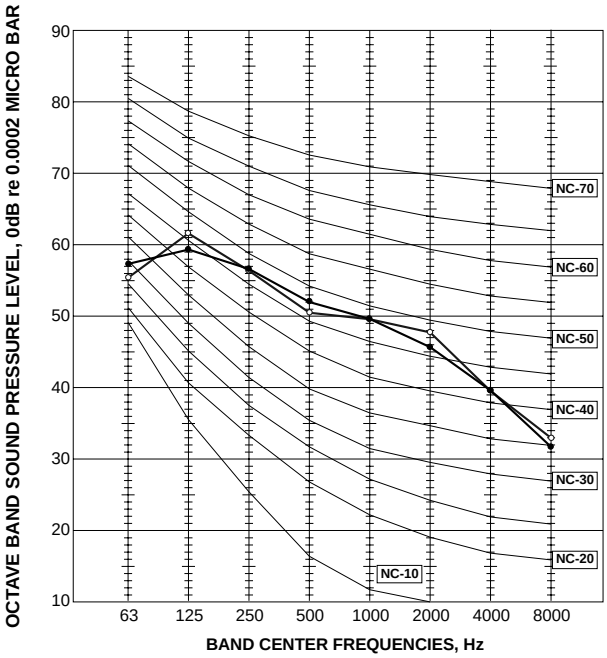
SUZ-KA50VA3.TH

FAN SPEED	FUNCTION	SPL(dB(A))	LINE
High	COOLING	52	●—●
	HEATING	52	○—○

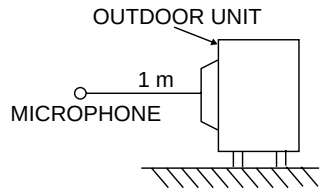


SUZ-KA60VA3.TH SUZ-KA71VA3.TH

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



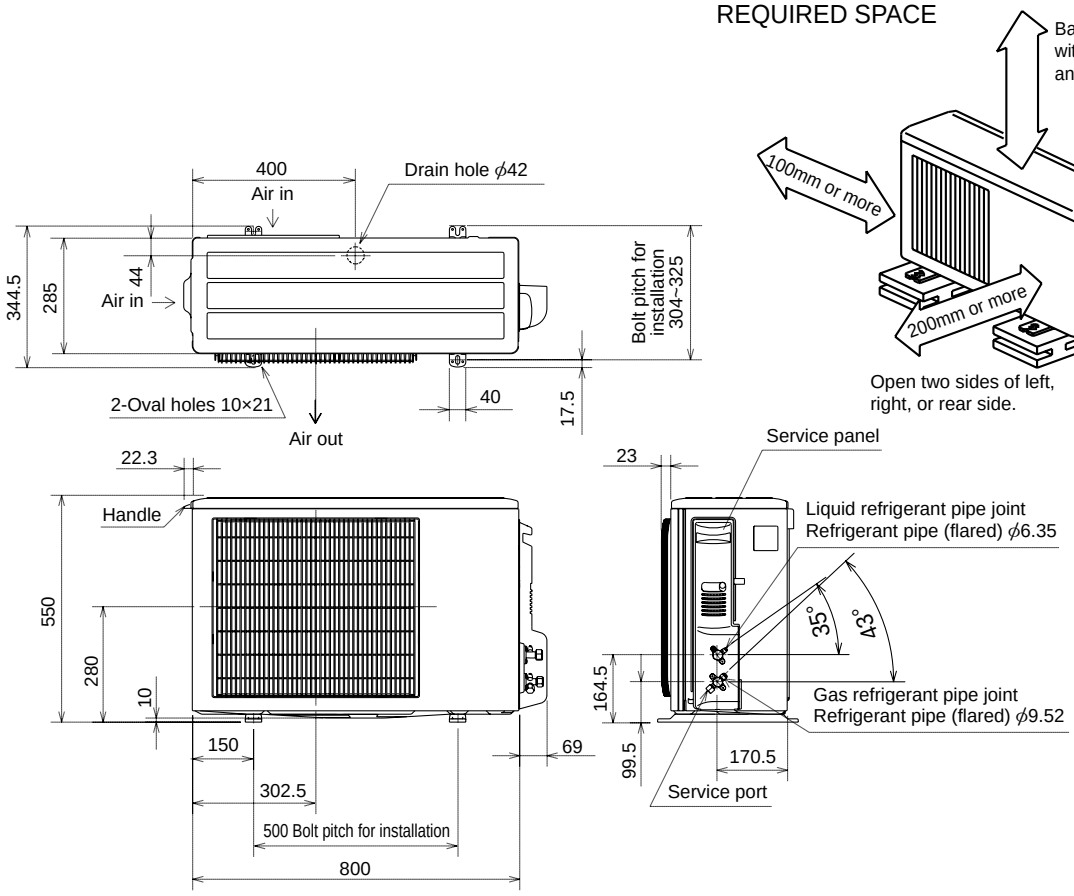
Test conditions
Cooling: Dry-bulb temperature 35°C
Heating: Dry-bulb temperature 7°C
Wet-bulb temperature 6°C

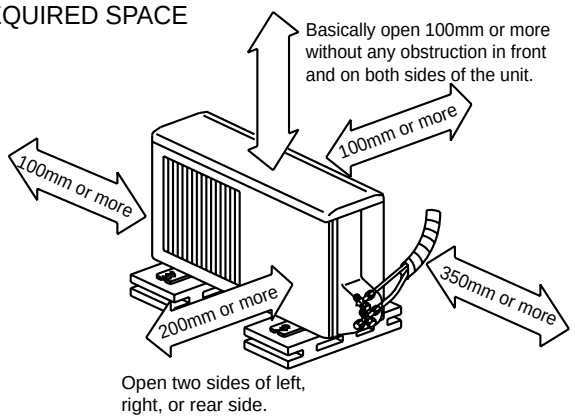


6 OUTLINES AND DIMENSIONS

SUZ-KA25VA3.TH
SUZ-KA35VA3.TH

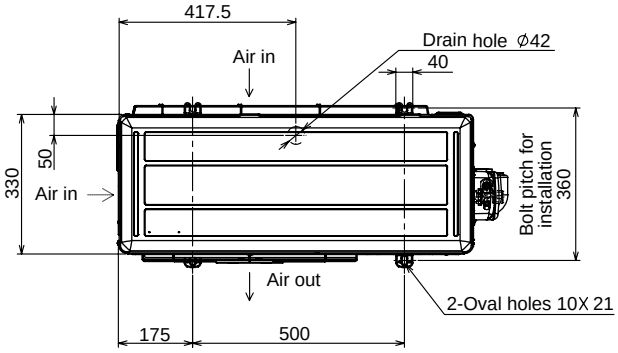
Unit: mm

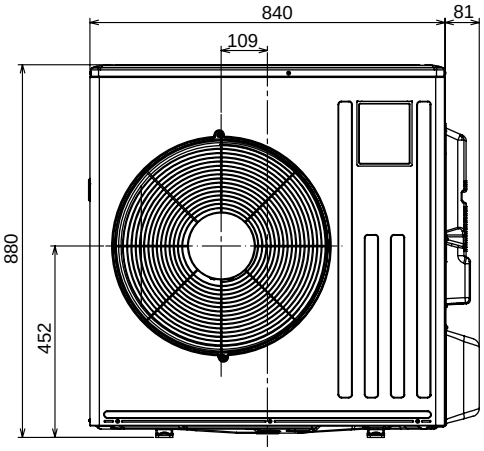


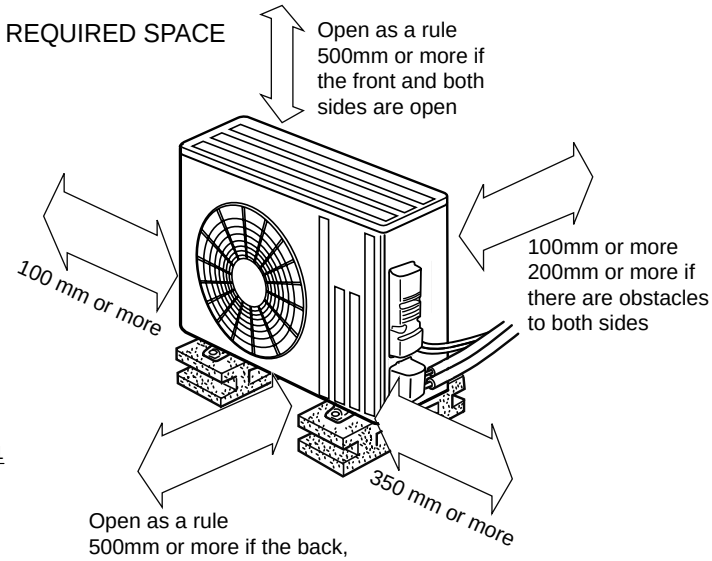


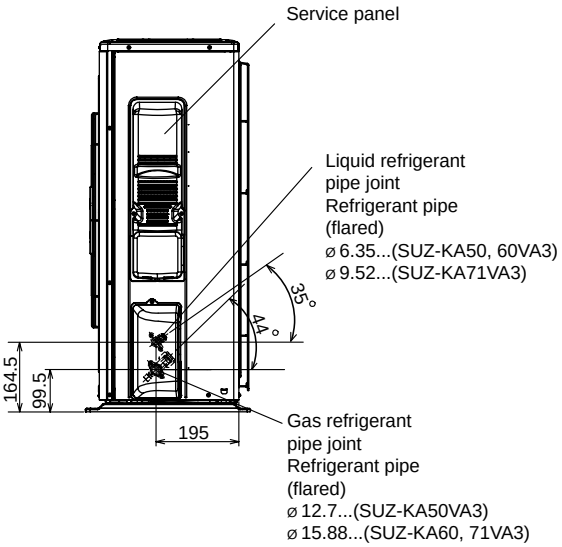
SUZ-KA50VA3.TH
SUZ-KA60VA3.TH
SUZ-KA71VA3.TH

Unit: mm



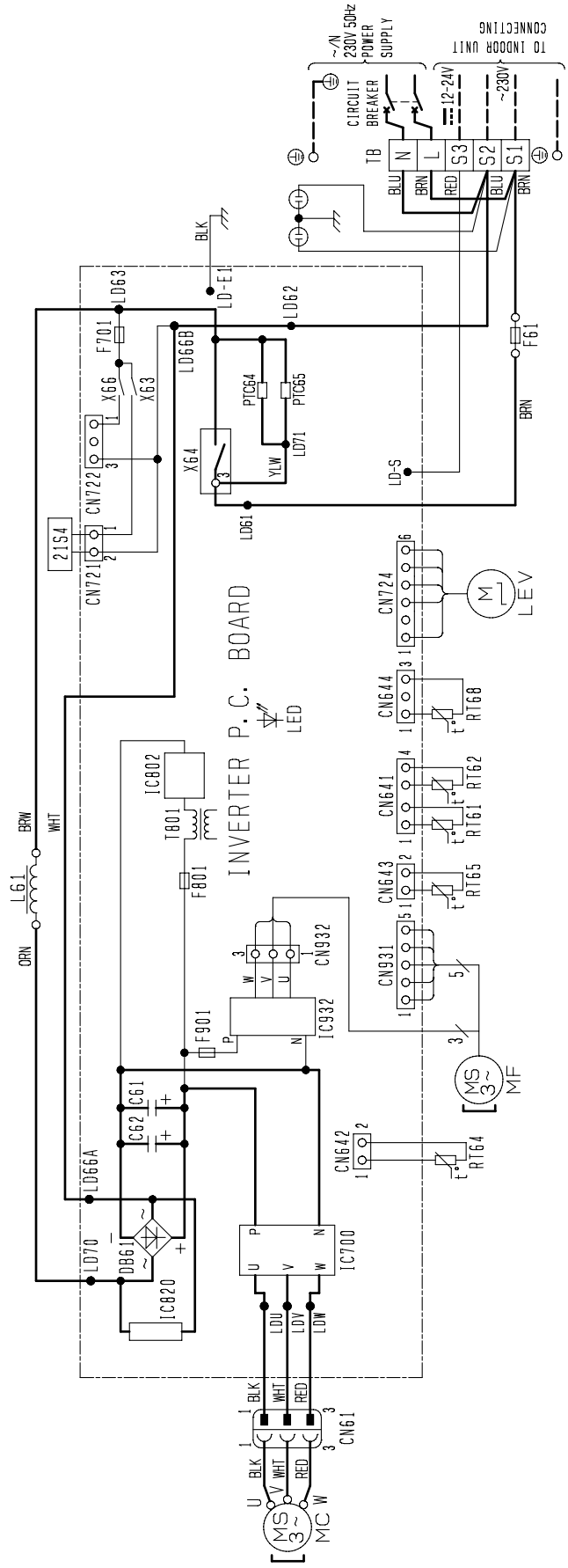






7 WIRING DIAGRAM

SUZ-KA25VA3.TH
SUZ-KA35VA3.TH



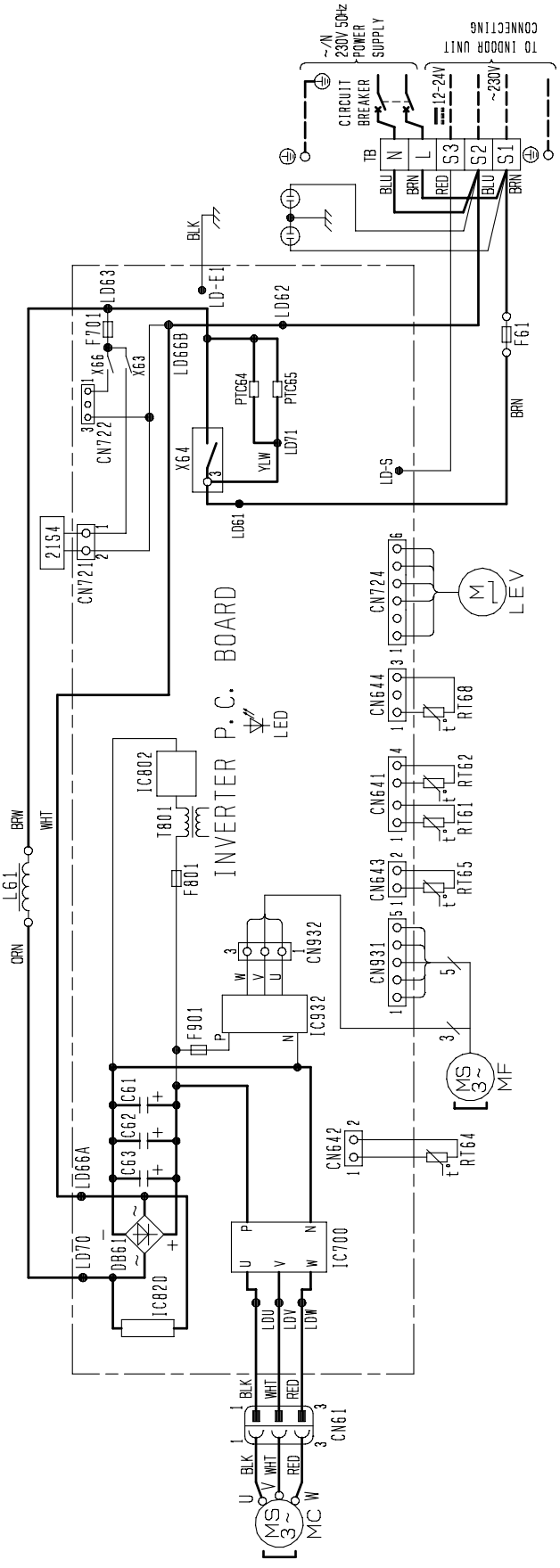
NOTES:
1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only. (For field wiring).

SYMBOL	NAME
CN10	CONNECTOR
CG1, CG2	SMOOTHING CAPACITOR
DB61	DIODE MODULE
F61	FUSE (T20AL250V)
F701, F801, F901	FUSE (T3.15AL250V)
IC700, IC820, IC932	POWER MODULE
IC802	POWER DEVICE
LED	LED

SYMBOL	NAME
LEV	EXPANSION VALVE COIL
L61	REACTOR
MC	COMPRESSOR
MF	FAN MOTOR
PTC64, PTC65	CIRCUIT PROTECTION
RT61	DEFROST THERMISTOR
RT62	DISCHARGE TEMP. THERMISTOR
RT64	FIN TEMP. THERMISTOR

SYMBOL	NAME
RT65	AMBIENT TEMP. THERMISTOR
RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR.
TB	TERMINAL BLOCK
T801	TRANSFORMER
X63, X64, X66	RELAY
21S4	REVERSING VALVE COIL

SUZ-KA50VA3.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).

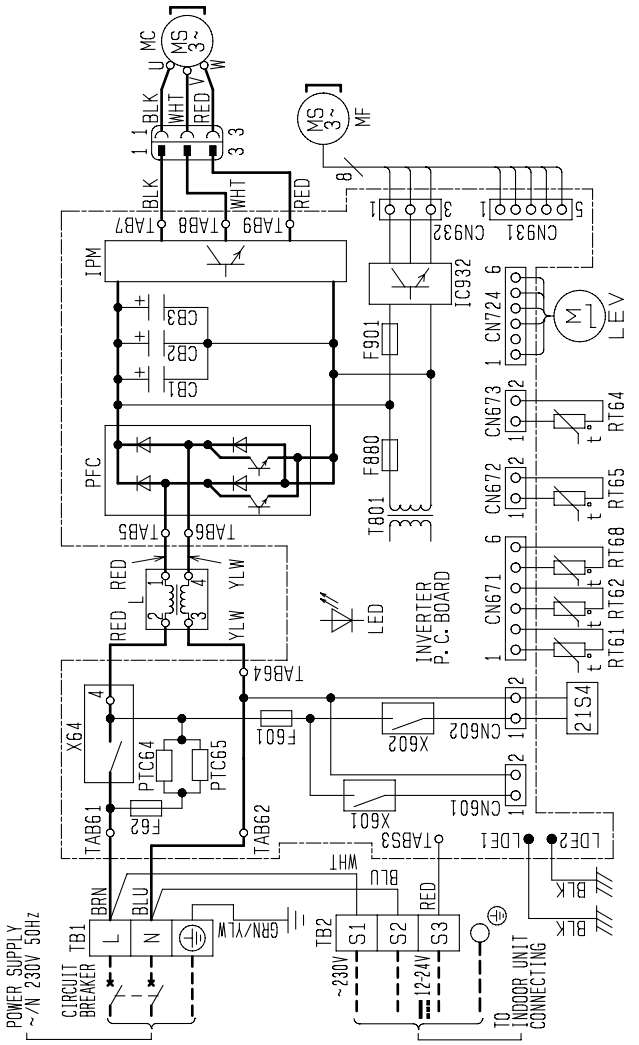
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CN70	CONNECTOR	LEV	EXPANSION VALVE COIL	RT65	AMBIENT TEMP. THERMISTOR
C61, C62, C63	SMOOTHING CAPACITOR	L61	REACTOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR.
DB61	DIODE MODULE	MC	COMPRESSOR		
F61	FUSE (T20AL250V)	MF	FAN MOTOR	TB	TERMINAL BLOCK
F701, F801, F901	FUSE (T3.15AL250V)	PTC64, PTC65	CIRCUIT PROTECTION	T801	TRANSFORMER
IC700, IC820, IC932	POWER MODULE	RT61	DEFROST THERMISTOR	X63, X64	RELAY
IC802	POWER DEVICE	RT62	DISCHARGE TEMP. THERMISTOR	X66	
LED	LED	RT64	FIN TEMP. THERMISTOR	21S4	REVERSING VALVE COIL

SUZ-KA60VA3.TH
SUZ-KA71VA3.TH

SYMBOL	NAME
CB1~3	SMOOTHING CAPACITOR
F601	FUSE(T3.15AL250V)
F62	FUSE(T2AL250V)
F880	FUSE(T3.15AL250V)
F901	FUSE(T3.15AL250V)
IC932	INTELLIGENT POWER MODULE
IPM	INTELLIGENT POWER MODULE
L	REACTOR
LEV	EXPANSION VALVE COIL
MC	COMPRESSOR
MF	FAN MOTOR
PFC	POWER FACTOR CONTROLLER
PTC64	CIRCUIT PROTECTION

SYMBOL	NAME
PTC65	CIRCUIT PROTECTION
RT61	DEFROST THERMISTOR
RT62	DISCHARGE TEMP.THERMISTOR
RT64	FIN TEMP.THERMISTOR
RT65	AMBIENT TEMP.THERMISTOR
RT68	OUTDOOR HEAT EXCHANGER TEMP.THERMISTOR
TB1.TB2	TERMINAL BLOCK
T801	TRANSFORMER
X601	RELAY
X602	RELAY
X64	RELAY
21S4	REVERSING VALVE SOLENOID COIL

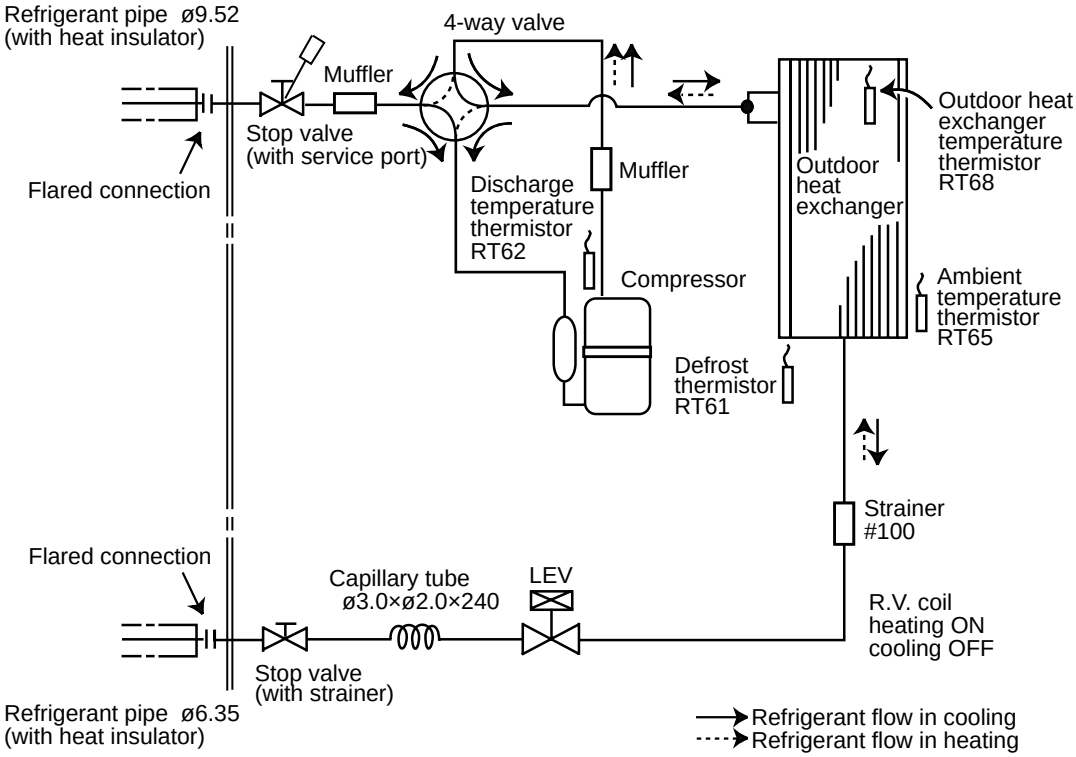
NOTES 1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols indicate. □□□ : Terminal block



8 REFRIGERANT SYSTEM DIAGRAM

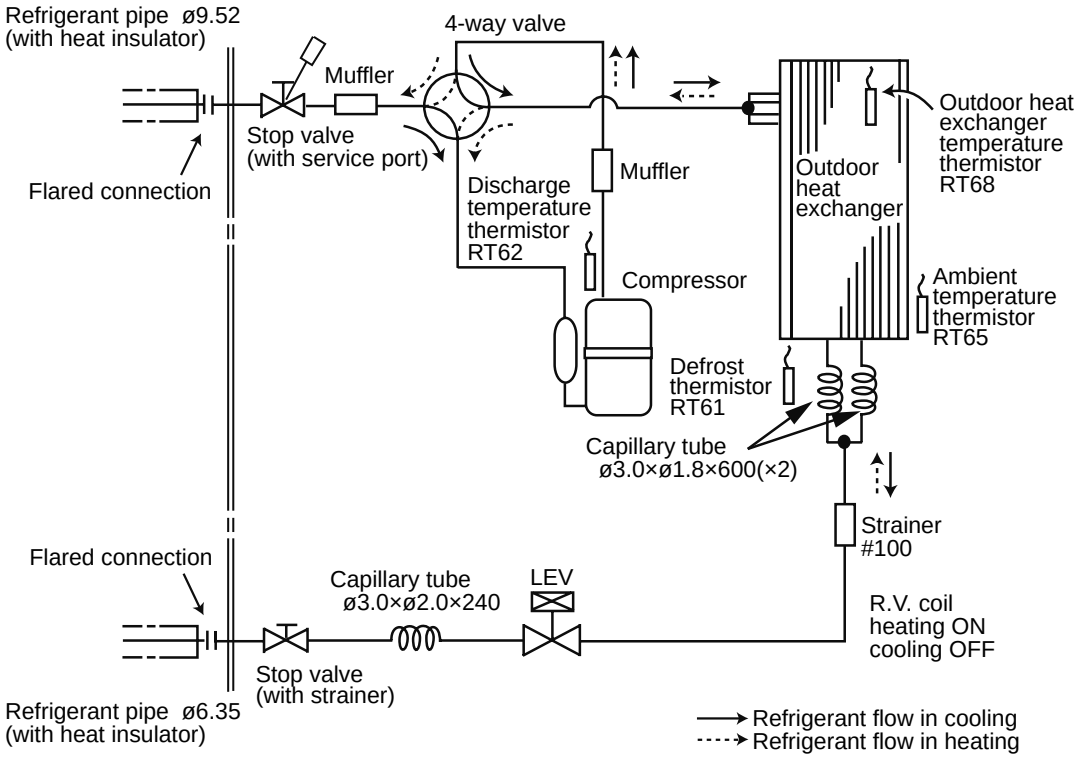
SUZ-KA25VA3.TH

Unit: mm



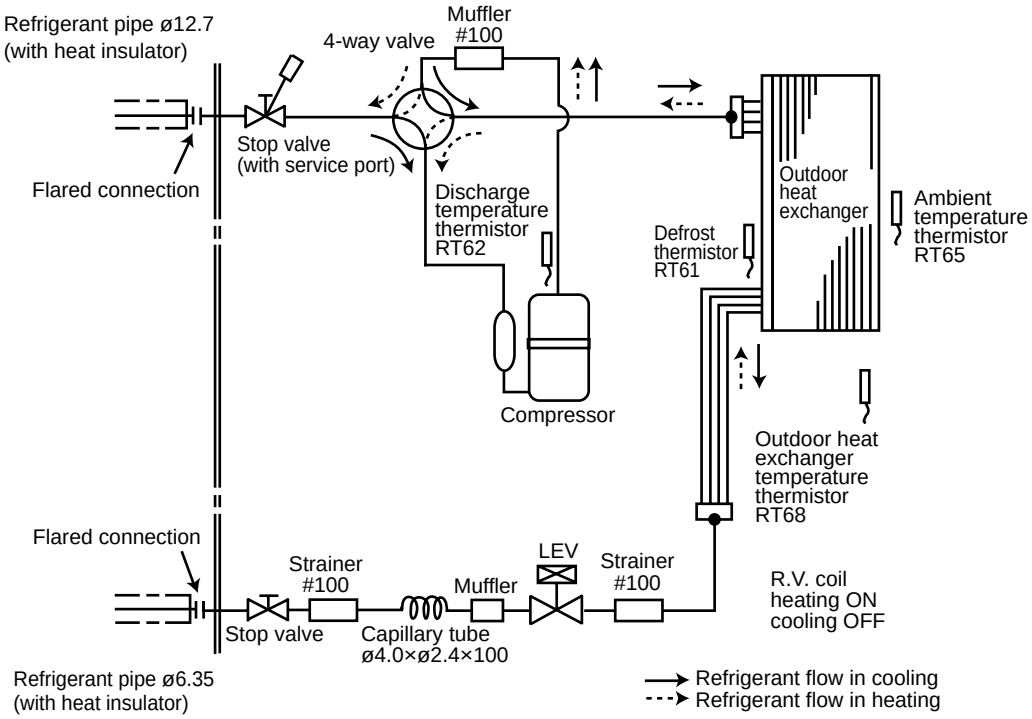
SUZ-KA35VA3.TH

Unit: mm



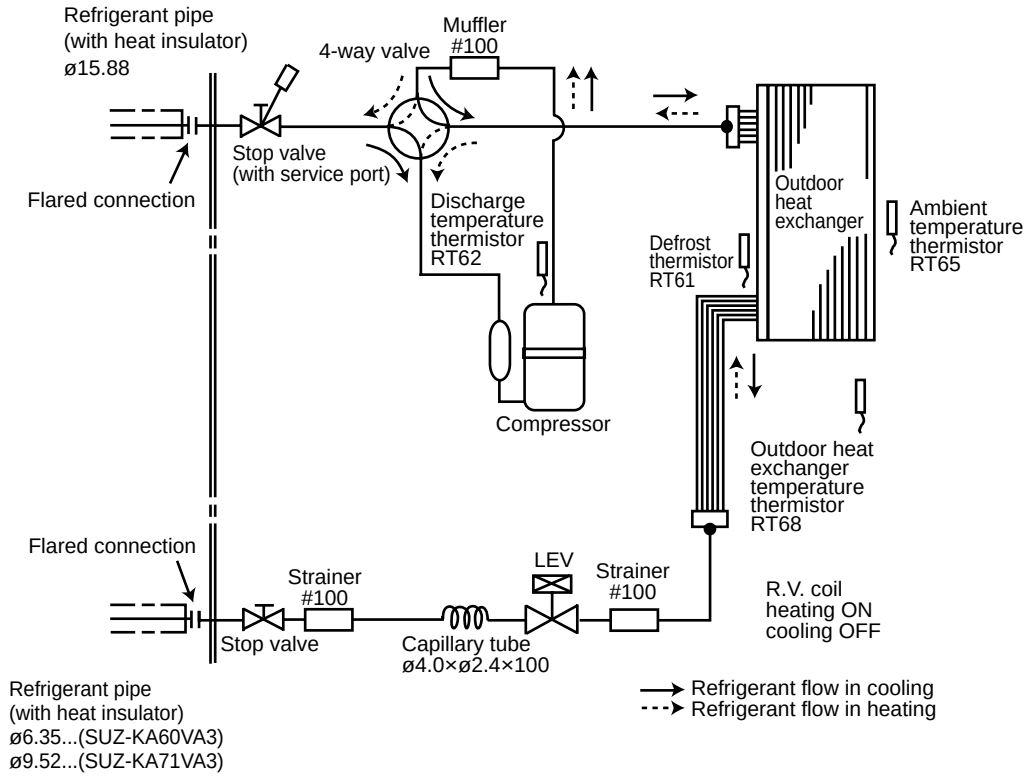
SUZ-KA50VA3.TH

Unit: mm



SUZ-KA60VA3.TH
SUZ-KA71VA3.TH

Unit: mm

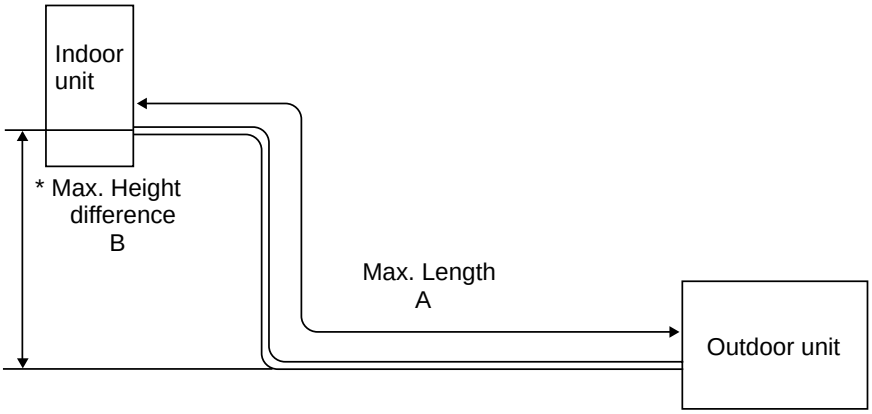


SUZ-KA25VA3.TH SUZ-KA35VA3.TH SUZ-KA50VA3.TH
SUZ-KA60VA3.TH SUZ-KA71VA3.TH

MAX. REFRIGERANT PIPING LENGTH

Models	Refrigerant piping: m		Piping size O.D: mm	
	Max. Length A	Max. Height difference B	Gas	Liquid
SUZ-KA25VA3.TH	20	12	9.52	6.35
SUZ-KA35VA3.TH				
SUZ-KA50VA3.TH	30	30	12.7	
SUZ-KA60VA3.TH			15.88	
SUZ-KA71VA3.TH				9.52

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)									
		7m	8m	9m	10m	11m	12m	13m	14m	15m	20m
SUZ-KA25VA3.TH	800	0	30	60	90	120	150	180	210	240	390
SUZ-KA35VA3.TH	1,150	0	30	60	90	120	150	180	210	240	390

Calculation: Xg=30g/m×(Refrigerant piping length(m)-7)

Models	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
SUZ-KA50VA3.TH	1,600	0	60	160	260	360	460
SUZ-KA60VA3.TH	1,800	0	60	160	260	360	460

Calculation : Xg=20g/m × (Refrigerant piping length(m)–7)

Models	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
SUZ-KA71VA3.TH	1,800	0	165	440	715	990	1,265

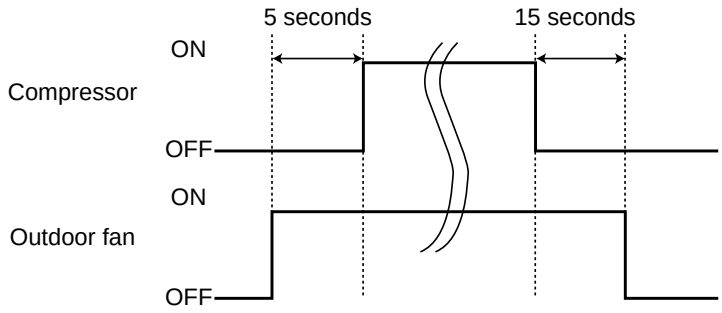
Calculation : Xg=55g/m × (Refrigerant piping length(m)-7)

9 ACTUATOR CONTROL

SUZ-KA25VA3.TH SUZ-KA35VA3.TH SUZ-KA50VA3.TH
SUZ-KA60VA3.TH SUZ-KA71VA3.TH

9-1. OUTDOOR FAN MOTOR CONTROL

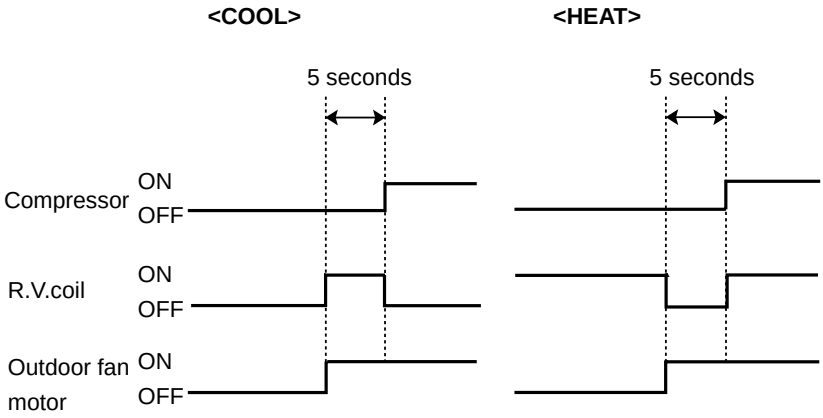
The fan motor turns ON/OFF, interlocking with the compressor.
[ON] The fan motor turns ON 5 seconds before the compressor starts up.
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



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	Indoor fan motor
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	○	○	○		
Outdoor heat exchanger temperature thermistor	Cooling: Low ambient temperature operation	○	○	○		
	Cooling: High pressure protection	○	○	○		

10 SERVICE FUNCTIONS

SUZ-KA25VA3.TH SUZ-KA35VA3.TH
SUZ-KA50VA3.TH SUZ-KA60VA3.TH SUZ-KA71VA3.TH

CHANGE IN DEFROST SETTING

Changing defrost finish temperature

<JS> To change the defrost finish temperature, cut/solder the JS wire of the outdoor inverter P.C. board. (Refer to 11-6-1.)

Jumper wire		Defrost fi nish temperature (°C)		
		SUZ-KA25VA3.TH SUZ-KA35VA3.TH	**SUZ-KA50VA3.TH**	**SUZ-KA60VA3.TH SUZ-KA71VA3.TH**
JS	Soldered (Initial setting)	5	9	10
	None (cut)	10	18	18

11 TROUBLESHOOTING

SUZ-KA25VA3.TH SUZ-KA35VA3.TH
SUZ-KA50VA3.TH SUZ-KA60VA3.TH SUZ-KA71VA3.TH

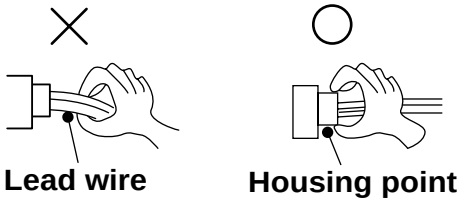
11-1. CAUTIONS ON TROUBLESHOOTING

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.



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. FAILURE MODE RECALL FUNCTION

As this air conditioner has a function to memorize all the failures that had happened, the latest failure detail can be recalled by following the procedures below.
Use this function when the check code is not displayed with wired remote controller or the remote controller at use is wireless type.

11-2-1. Flow chart of the indoor/outdoor unit failure mode recall function

Operational procedure (For wireless remote controller)

Setting up the failure mode recall function

Turn ON the power supply.
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 since all LCD in operation display section of the remote controller is displayed after 3 seconds.

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

Does OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: Either indoor or outdoor unit is abnormal.
Beep sounds are emitted at the same timing of the blinking of OPERATION INDICATOR lamp. *2

No (OFF) → Indoor unit is normal.
There is a possibility that the plasma or outdoor unit is abnormal.
Confirm the failure detail on the LED display of the outdoor controller board.(refer to 11-2-4.)

Yes (Blinks)

Judgment of indoor/outdoor abnormality

Before blinking, does POWER lamp stay ON for 3 seconds?
Stays ON for 3 seconds (without beep): The outdoor unit is abnormal.

Yes → The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point (11-2.3.).
Make sure to check at least two consecutive blinking cycles. *3

No → The indoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point.
Make sure to check at least two consecutive blinking cycles. *2

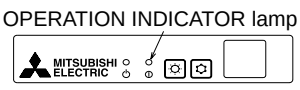
Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
①With the remote controller headed towards the indoor unit, press any button that is not used in this failure mode recall function (e.g. TIMER button) .
OR
①Turn OFF the power supply and turn ON it again.
②Press RESET button of the remote controller.

Repair the defective parts.

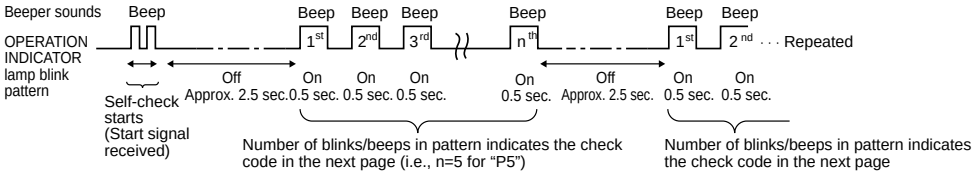
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons since all LCD in operation display section of the remote controller is displayed after 3 seconds.

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

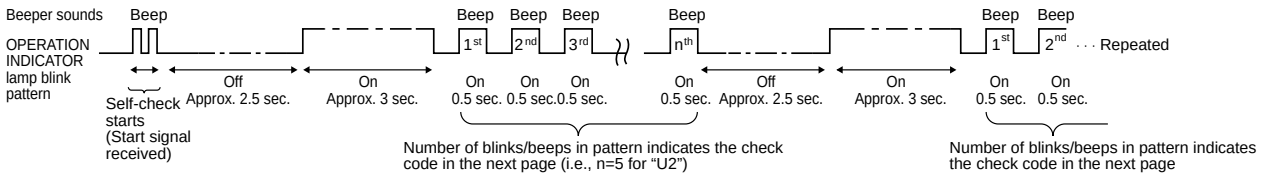


Note1. Make sure to release the failure mode recall function once it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

*2. Blinking pattern when the indoor unit is abnormal:[Output pattern A]

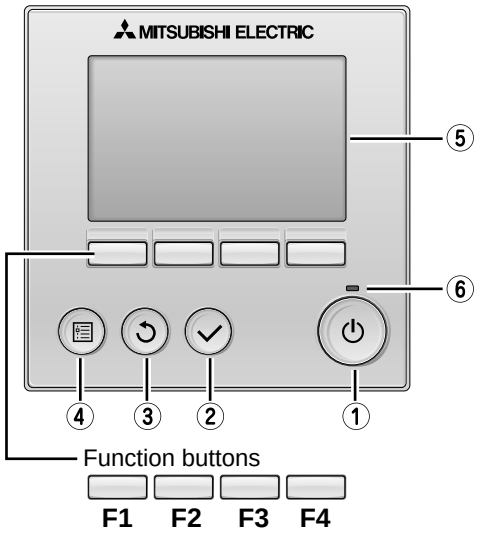


*3.Blinking pattern when the outdoor unit is abnormal:[Output pattern B]



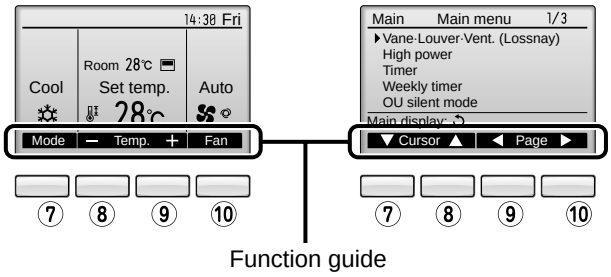
11-2-2. Wired remote controller

■ **PAR-30MAA**



The functions of the function buttons change depending on the screen. Refer to the button function guide that appears at the bottom of the LCD for the functions they serve on a given screen.
When the system is centrally controlled, the button function guide that corresponds to the locked button will not appear.

<Main display> **<Main menu>**



① ON / OFF button

Press to turn ON/OFF the indoor unit.

② SELECT button

Press to save the setting.

③ RETURN button

Press to return to the previous screen.

④ MENU button

Press to bring up the Main menu.

⑤ Backlit LCD

Operation settings will appear.
When the backlight is off, pressing any button turns the backlight on and it will stay lit for a certain period of time depending on the screen.

When the backlight is off, pressing any button turns the backlight on and does not perform its function. (except for the ⏻ (ON / OFF) button)

⑥ ON / OFF lamp

This lamp lights up in green while the unit is in operation. It blinks while the remote controller is starting up or when there is an error.

⑦ Function button F1

Main display : Press to change the operation mode.
Main menu : Press to move the cursor down.

⑧ Function button F2

Main display : Press to decrease temperature.
Main menu : Press to move the cursor up.

⑨ Function button F3

Main display : Press to increase temperature.
Main menu : Press to go to the previous page.

⑩ Function button F4

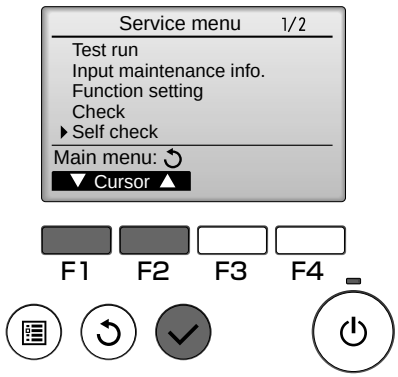
Main display : Press to change the fan speed.
Main menu : Press to go to the next page.

Self check operation

① Select "Service" from the Main menu, and press the ✓ button.

▼

Select "Self check" with the F1 or F2 button, and press the ✓ button.

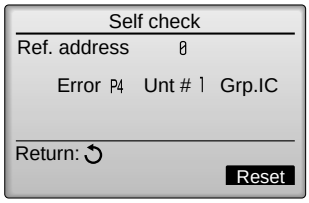


---

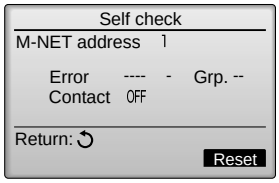
② With the F1 or F2 button, enter the refrigerant address, and press the ✓ button.

---

③ Error code, unit number, attribute will appear.
"-" will appear if no error history is available.



When there is no error history



---

④ <u>Resetting the error history.</u>

Press the F4 button (Reset) on the screen that shows the error history.

▼

A confirmation screen will appear asking if you want to delete the error history.

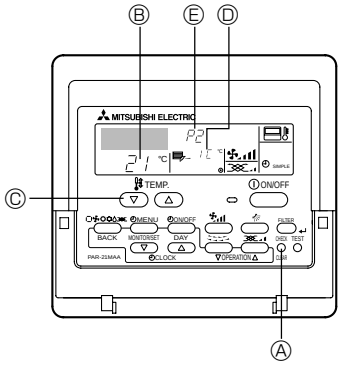
▼

Press the F4 button (OK) to delete the error history.

If deletion fails, "Request rejected" will appear.
"Unit not exist" will appear if no indoor units that are correspond to the entered address are found.

Navigating through the screens
- To go back to the Main menu ..... ⌂ button
- To return to the previous screen ..... ↩ button

■ **PAR-21MAA**



Ⓐ 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 (FB) *	12	Indoor unit control system error (memory error, etc.)	
PL	14	Refrigerant circuit abnormal	
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 (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.

* The check code in the parenthesis indicates PAR-30MAA model.

11-2-4. Outdoor unit failure mode table

SUZ-KA25VA3.TH SUZ-KA35VA3.TH SUZ-KA50VA3.TH

Check code (Wired remote contoller)	Abnormal point (Failure mode/protection)	LED indication (Outdoor P.C. board)	Condition	Remedy	Indoor/outdoor unit failure mode recall function	Outdoor unit failure mode recall function
—	None (Normal)	—	—	—	—	—
—	Indoor/outdoor communication, receiving error	—	Any signals from the inverter P.C. board cannot be received normally for 3 minutes.	•Refer to 11-5. Ⓜ How to check miswiring and serial signal error.	○	○
	Indoor/outdoor communication, receiving error	—	Although the inverter P.C. board sends signal "0", signal "1" has been received 30 consecutive times.	•Refer to 11-5. Ⓜ How to check miswiring and serial signal error.		
UP	Outdoor power system	—	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.	•Reconnect connectors. •Refer to 11-5. Ⓐ"How to check inverter/ compressor". •Check stop valve.	○	○
U3	Discharge temperature thermistor	1-time flash every 2.5 seconds	Thermistor shorts or opens during compressor running.	•Refer to 11-5.Ⓖ "Check of outdoor thermistors". Defective outdoor thermistors can be identified by checking the blinking pattern of LED.	○	○
U4	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	—				
UF	Overcurrent	11-time flash 2.5 seconds OFF	Large current flows into intelligent power module.	•Reconnect compressor connector. •Refer to 11-5.Ⓐ"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.	•Reconnect compressor connector. •Refer to 11-5.Ⓐ"How to check inverter/ compressor".	—	○
U2	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.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-5.Ⓚ"Check of LEV".	—	○
UD	High pressure	—	Temperature indoor coil thermistor exceeds 70°C in HEAT mode. Temperature defrost thermistor exceeds 70°C in COOL mode.	•Check refrigerant circuit and refrigerant amount. •Check stop valve.	—	○
U5	Fin temperature	7-time flash 2.5 seconds OFF	Temperature of fin temperature thermistor on the inverter P.C. board exceeds 75 ~ 86°C.	•Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5.Ⓘ"Check of outdoor fan motor".	—	○
UB	P.C. board temperature		Temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 72 ~ 85°C.			
U8	Outdoor fan motor	—	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	•Refer to 11-5.Ⓘ"Check of outdoor fan motor". Refer to 11-5.Ⓛ"Check of inverter P.C. board".	—	○
FC	Nonvolatile memory data	5-time flash 2.5 seconds OFF	Nonvolatile memory data cannot be read properly.	•Replace the inverter P.C. board.	○	○
U6	Power module	6-time flash 2.5 seconds OFF	The interface short circuit occurs in the output of the intelligent power module (IC700). The compressor winding shorts circuit.	•Refer to 11-5. Ⓐ"How to check inverter/ compressor".		
U7	Discharge temperature	—	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	•Refer to 11-5.Ⓚ"Check of LEV". •Check refrigerant circuit and refrigerant amount.	—	○
UJ	DC voltage	8-time flash 2.5 seconds OFF	DC voltage of inverter cannot be detected normally.	•Refer to 11-5.Ⓐ"How to check inverter/ compressor".	—	○
UH	Each phase current of compressor	9-time flash 2.5 seconds OFF	Each phase current of compressor cannot be detected normally.			
UE	Stop valve (Closed valve)	14-time flash 2.5 seconds OFF	Closed valve is detected by compressor current.	•Check stop valve	○	○

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

SUZ-KA60VA3.TH SUZ-KA71VA3.TH

Check code (Wired remote controller)	Abnormal point (Failure mode / protection)	LED indication (Outdoor P.C. board)	Condition	Remedy	Indoor/outdoor unit failure mode recall function	Outdoor unit failure mode recall function
—	None (Normal)	—	—	—	—	—
UP	Outdoor power system	—	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.	•Reconnect connectors. •Refer to 11-5. ⓔ"How to check inverter/ compressor". •Check stop valve.	○	○
U3	Discharge temperature thermistor	1-time flash every 2.5 seconds	Thermistor shorts or opens during compressor running.	•Refer to 11-5. ⓔ"Check of outdoor thermistors". Defective outdoor thermistors can be identified by checking the blinking pattern of LED.	○	○
U4	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	—				
UF	Overcurrent	11-time flash 2.5 seconds OFF	Large current flows into intelligent power module.	•Reconnect compressor connector. •Refer to 11-5. ⓔ"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.	•Reconnect compressor connector. •Refer to 11-5. ⓔ"How to check inverter/ compressor".	—	○
U2	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.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-5. ⓚ"Check of LEV".	—	○
UD	High pressure	—	Temperature of indoor coil thermistor exceeds 70°C in HEAT mode. Temperature of outdoor heat exchanger temperature thermistor exceeds 70°C in COOL mode.	•Check refrigerant circuit and refrigerant amount. •Check stop valve.	—	○
U5	Fin temperature	7-time flash 2.5 seconds OFF	Temperature of fin temperature thermistor on the inverter P.C. board exceeds 75 - 80°C	•Check around outdoor unit. •Check outdoor unit air passage. •Refer to 11-5.ⓘ"Check of outdoor fan motor".	—	○
UB	P.C. board temperature		Temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 70 - 75°C.			
U8	Outdoor fan motor	—	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	•Refer to 11-5.ⓘ"Check of outdoor fan motor". Refer to 11-5.ⓘ"Check of inverter P.C. board".	—	○
FC	Nonvolatile memory data	5-time flash 2.5 seconds OFF	Nonvolatile memory data cannot be read properly.	•Replace the inverter P.C. board.	○	○
U6	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.	•Refer to 11-5. ⓔ"How to check inverter/ compressor".		
U7	Discharge temperature	—	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	•Refer to 11-5. ⓚ"Check of LEV". •Check refrigerant circuit and refrigerant amount.	—	○
UJ	DC voltage	8-time flash 2.5 seconds OFF	DC voltage of inverter cannot be detected normally.	•Refer to 11-5. ⓔ"How to check inverter/ compressor".	—	○
UH	Each phase current of compressor	9-time flash 2.5 seconds OFF	Each phase current of compressor cannot be detected normally.			
UO	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.	•Reconnect compressor connector. •Refer to 11-5. ⓔ"How to check inverter/ compressor".	—	○
UE	Stop valve (Closed valve)	14-time flash 2.5 seconds OFF	Closed valve is detected by compressor current.	•Check stop valve	○	○

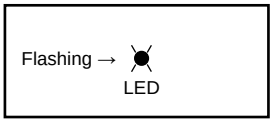
NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-3.).

11-3. TROUBLE SHOOTING CHECK TABLE
SUZ-KA25VA3.TH SUZ-KA35VA3.TH SUZ-KA50VA3.TH

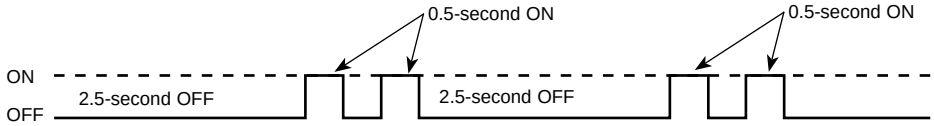
No.	Symptom	LED indication	Abnormal point/ Condition	Condition	Remedy
1	Outdoor unit does not operate.	1-time flash every 2.5 seconds	Outdoor power system	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.	•Reconnect connector of compressor. •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, outdoor heat exchanger 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.	•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.	•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 ~ 86°C or temperature of P.C. board temperature thermistor on the inverter P.C.board exceeds 72 ~ 85°C.	•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.	•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.	•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.	•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	When the input current exceeds approximately 7A(KA25)/ 8A(KA35)/9A(KA42)/12A(KA50), compressor frequency lowers.	The unit is normal, but check the following. •Check if indoor filters are clogged. •Check if refrigerant is short. •Check if indoor/outdoor unit air circulation is short cycled.
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.	
			Frequency drop by defrosting in COOL mode	Indoor coil thermistor reads 8°C or less in COOL mode, compressor frequency lowers.	
17		4-time flash 2.5 seconds OFF	Frequency drop by discharge temperature protection	Temperature of discharge temperature thermistor exceeds 111°C, compressor frequency lowers.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-5.Ⓚ "Check of LEV". •Refer to 11-5.Ⓖ "Check of outdoor thermistors".
18		5-time flash 2.5 seconds OFF	Outside temperature thermistor protection	When the outside temperature thermistor shorts or opens, protective operation without that thermistor is performed.	•Refer to 11-5. Ⓖ Check of outdoor thermistors.
19	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.	•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 PFC (Power factor correction : IC820) or the bus-bar voltage reaches 394 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.
21		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.
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".

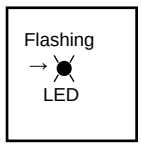


SUZ-KA60VA3.TH SUZ-KA71VA3.TH

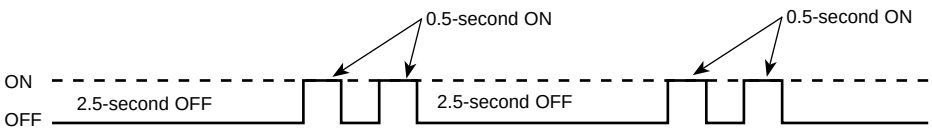
No.	Symptom	LED indication	Abnormal point/ Condition	Condition	Remedy
1	Outdoor unit does not operate.	1-time flash every 2.5 seconds	Outdoor power system	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.	•Reconnect connector of compressor. •Refer to 11-5. ⓐ "How to check inverter/compressor". •Check stop valve.
2			Outdoor thermistors	Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, outdoor heat exchanger temperature 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 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. ⓜ "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.	•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.	•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.	•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	Temperature of indoor coil thermistor exceeds 70°C in HEAT mode. Temperature of outdoor heat exchanger temperature thermistor exceeds 70°C in COOL mode.	•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.	•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.	•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 is nearing breaker capacity. PFC module stops due to overcurrent.	The unit is normal, but check the following. •Check if indoor filters are clogged. •Check if refrigerant is short. •Check if indoor/outdoor unit air circulation is short cycled.
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.	
			Frequency drop by defrosting in COOL mode	Indoor coil thermistor reads 8°C or less in COOL mode, compressor frequency lowers.	
17		4-time flash 2.5 seconds OFF	Frequency drop by discharge temperature protection	Temperature of discharge temperature thermistor exceeds 111°C, compressor frequency lowers.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-5. ⓚ "Check of LEV". •Refer to 11-5. ⓔ "Check of outdoor thermistors".
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.	•Refer to 11-5. ⓚ "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. ⓐ "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



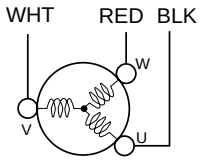
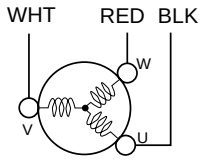
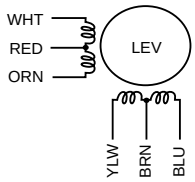
The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".



11-4. TROUBLE CRITERION OF MAIN PARTS (1)

SUZ-KA25VA3.TH SUZ-KA35VA3.TH

<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT61)
Fin temperature thermistor (RT64)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor(RT68)</td><td>Measure the resistance using a tester.

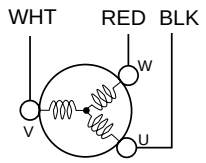
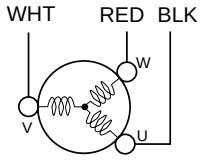
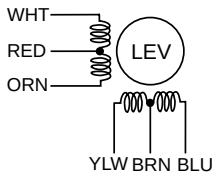
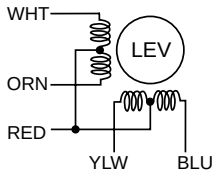
Refer to 11-6. “Test point diagram and voltage”, 11-6-1.
“Inverter P.C. board”, for the chart of thermistor.</td><td></td></tr>
<tr><td>Discharge temperature thermistor (RT62)</td><td>Measure the resistance using a tester.
Before measurement, hold the thermistor with your hands to warm it up.
Refer to 11-6. “Test point diagram and voltage”, 11-6-1.
“Inverter P.C. board”, for the chart of thermistor.</td><td></td></tr>
<tr><td>Compressor</td><td>Measure the resistance between terminals using a tester.
(Temperature : -20°C ~ 40°C)
<table><tr><td></td><td colspan="2">Normal</td></tr><tr><td></td><td>SUZ-KA25VA3.TH</td><td>SUZ-KA35VA3.TH</td></tr><tr><td>U-V
U-W
V-W</td><td>1.36 Ω ~ 1.93 Ω</td><td>1.52 Ω ~ 2.17 Ω</td></tr></table></td><td>  </td></tr>
<tr><td>Outdoor fan motor</td><td>Measure the resistance between terminals using a tester.
(Temperature : -20°C ~ 40°C)
<table><tr><td>Color of the lead wire</td><td>Normal</td></tr><tr><td>WHT - BLK
BLK - RED
RED - WHT</td><td>29 Ω ~ 42 Ω</td></tr></table></td><td>  </td></tr>
<tr><td>R.V. coil (21S4)</td><td>Measure the resistance between terminals using a tester.
(Temperature : -20°C ~ 40°C)
<table><tr><td>Normal</td></tr><tr><td>1.19 kΩ ~ 1.78 kΩ</td></tr></table></td><td></td></tr>
<tr><td>Expansion valve coil (LEV)</td><td>Measure the resistance using a tester.
(Temperature : -20°C ~ 40°C)
<table><tr><td>Color of the lead wire</td><td>Normal</td></tr><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></table></td><td>  </td></tr>
</table>

11-4. TROUBLE CRITERION OF MAIN PARTS (2)

SUZ-KA50VA3.TH SUZ-KA60VA3.TH SUZ-KA71VA3.TH

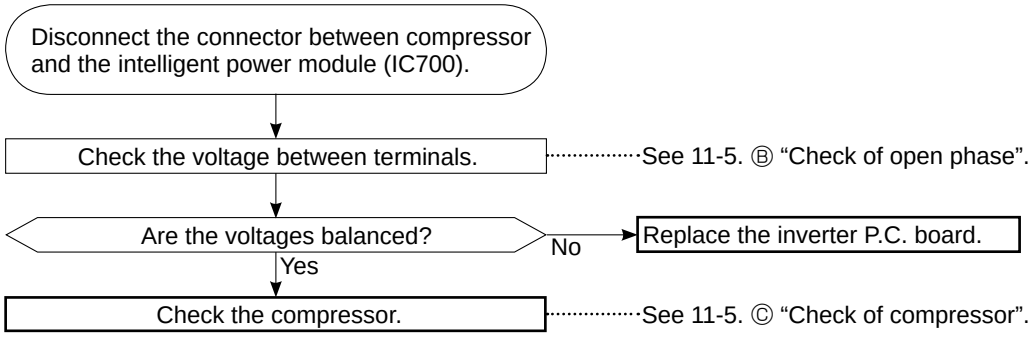
<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT61)
Fin temperature thermistor (RT64)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor (RT68)</td><td>Measure the resistance using a tester.

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.</td><td></td></tr>
<tr><td>Discharge temperature thermistor (RT62)</td><td>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.</td><td></td></tr>
<tr><td>Compressor</td><td>Measure the resistance between terminals using a tester.
(Temperature : -10°C ~ 40°C)
<table><tr><th colspan="2">Normal</th></tr><tr><th>SUZ-KA50/60VA3.TH</th><th>SUZ-KA71VA3.TH</th></tr><tr><td>0.78 Ω ~ 1.11 Ω</td><td>0.92 Ω ~ 1.12 Ω</td></tr></table></td><td> 
</td></tr>
<tr><td>Outdoor fan motor</td><td>Measure the resistance between lead wires using a tester.
(Temperature : -10°C ~ 40°C)
<table><tr><th rowspan="2">Color of the lead wire</th><th>Normal</th></tr><tr><th>SUZ-KA50/60/71VA3.TH</th></tr><tr><td>RED - BLK</td><td rowspan="3">12 Ω ~ 17 Ω</td></tr><tr><td>BLK - WHT</td></tr><tr><td>WHT - RED</td></tr></table></td><td> 
</td></tr>
<tr><td>R.V. coil (21S4)</td><td>Measure the resistance using a tester.
(Temperature : -10°C ~ 40°C)
<table><tr><th>Normal</th></tr><tr><th>SUZ-KA50/60/71VA3.TH</th></tr><tr><td>1.19 kΩ ~ 1.78 kΩ</td></tr></table></td><td></td></tr>
<tr><td rowspan="2">Expansion valve coil (LEV)</td><td>Measure the resistance using a tester.
(Temperature : -10°C ~ 40°C)
SUZ-KA50/60VA3.TH
<table><tr><th>Color of the lead wire</th><th>Normal</th></tr><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></table></td><td> 
</td></tr>
<tr><td>SUZ-KA71VA3.TH
<table><tr><th>Color of the lead wire</th><th>Normal</th></tr><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></table></td><td> 
</td></tr>
</table>

11-5. TROUBLESHOOTING FLOW

Ⓐ How to check inverter/compressor



Ⓑ 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 voltage balance** between the terminals.

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

<< Operation method (Test run operation)>>

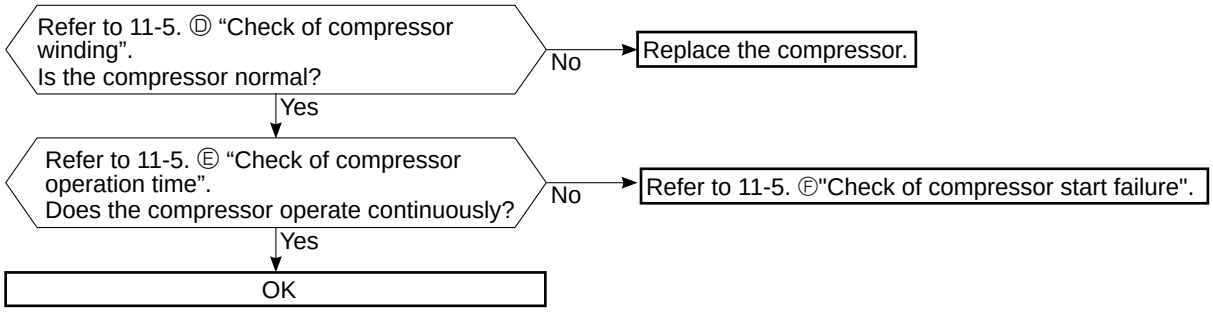
1. Press the EMERGENCY OPERATION switch or the Test button to COOL or HEAT mode.
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor starts at rated frequency in COOL mode or 58Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts.
6. 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)

* Measure AC voltage between the lead wires at 3 points.

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 11-6-1.)

Ⓒ Check of compressor



[SUZ-KA25/35/50VA3.TH]

Ⓓ 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.

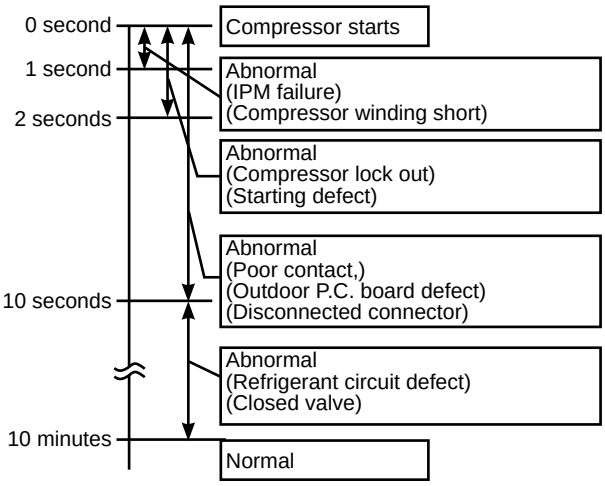
Ⓔ Check of compressor operation time

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

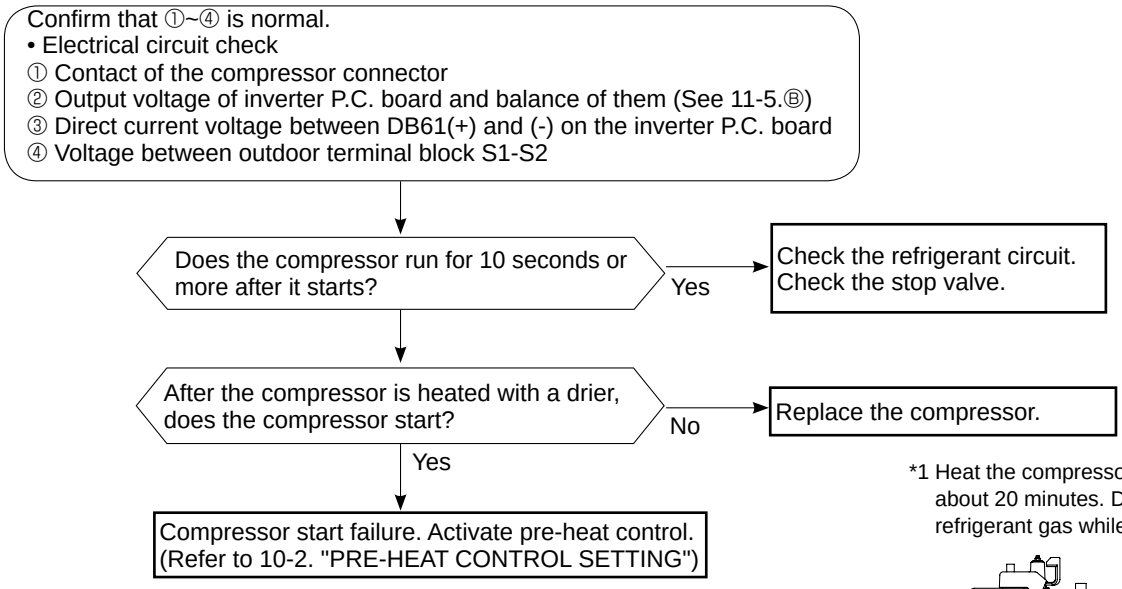
<<Operation method>>
Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit.
(TEST RUN OPERATION : Refer to 11-5 Ⓑ.)

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

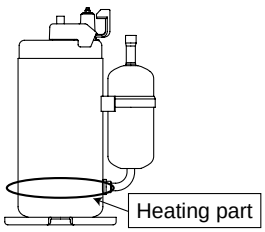
<<Judgement>>



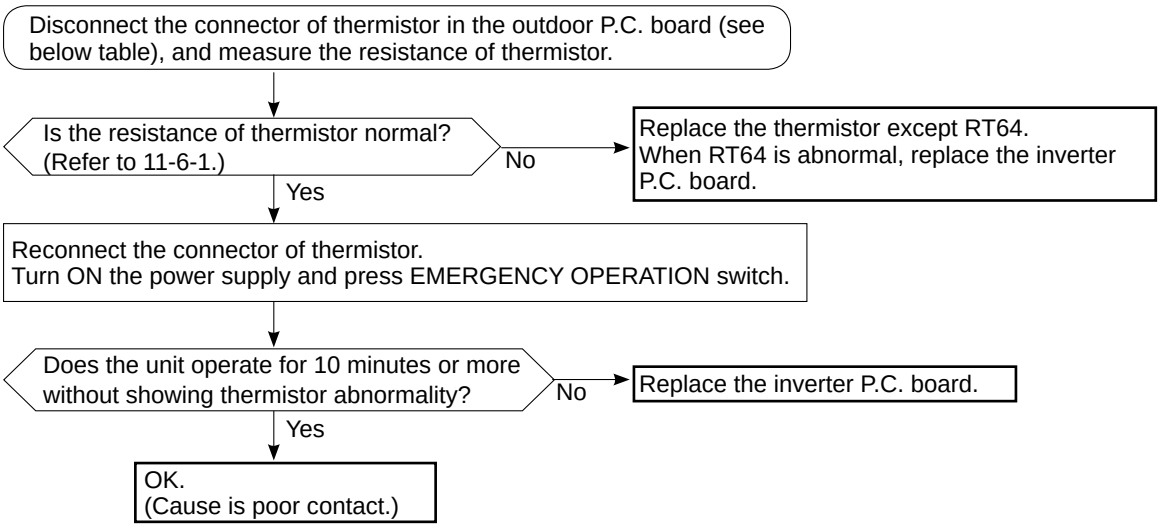
Ⓕ Check of compressor start failure



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



Ⓖ Check of outdoor thermistors

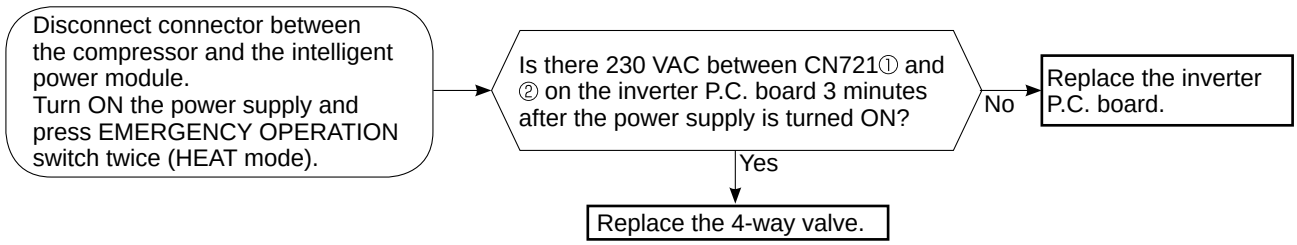


Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN641 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN641 pin3 and pin4	
Fin temperature	RT64	Between CN642 pin1 and pin2	
Ambient temperature	RT65	Between CN643 pin1 and pin2	
Outdoor heat exchanger temperature	RT68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

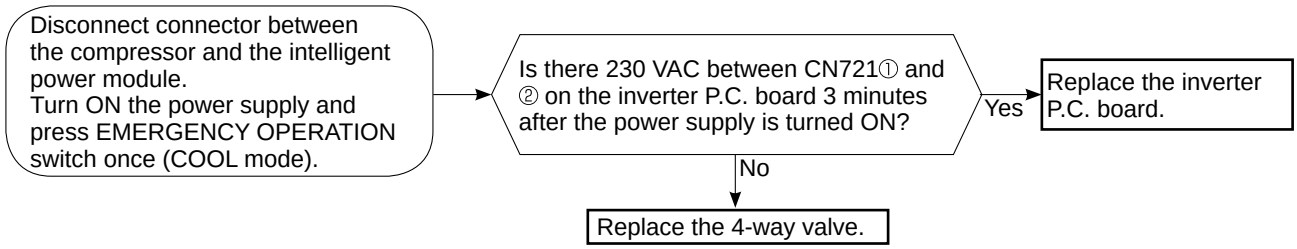
Ⓗ Check of R.V. coil

※ 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.

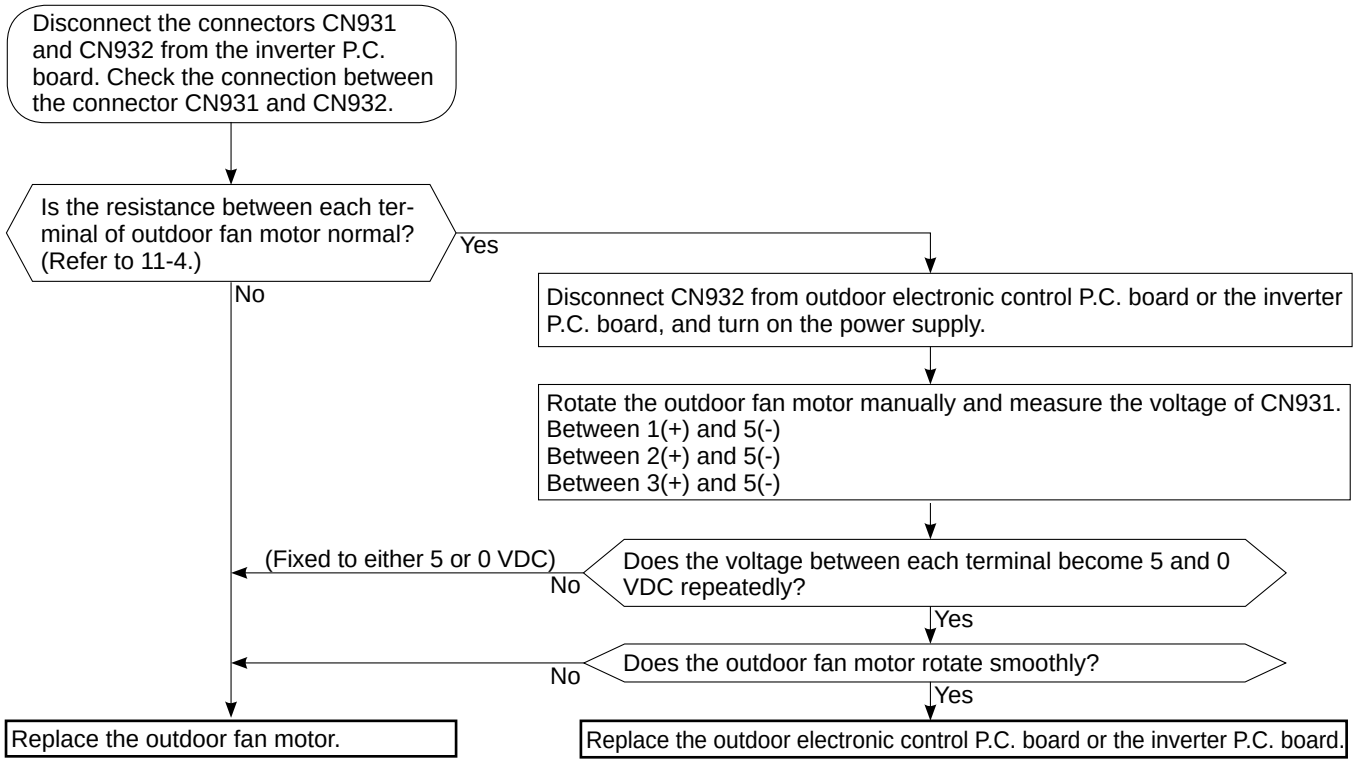


Unit operates HEAT mode even if it is set to COOL mode.

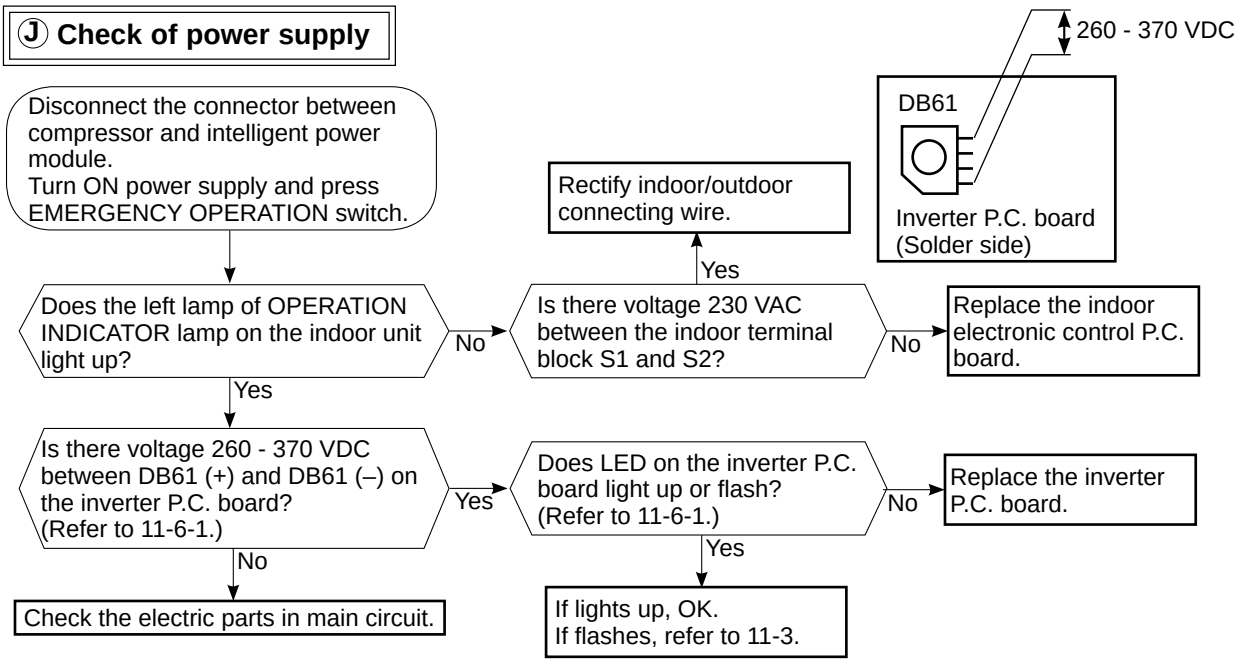


[SUZ-KA25/35/50VA3.TH]

Ⓘ Check of outdoor fan motor



Ⓙ Check of power supply



Ⓚ 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.

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

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

Yes → OK

No

Is LEV coil properly fixed to the expansion valve?

No → Properly fix the LEV coil to the expansion valve.

Yes

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

Yes

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.

No → Replace the inverter P.C. board.

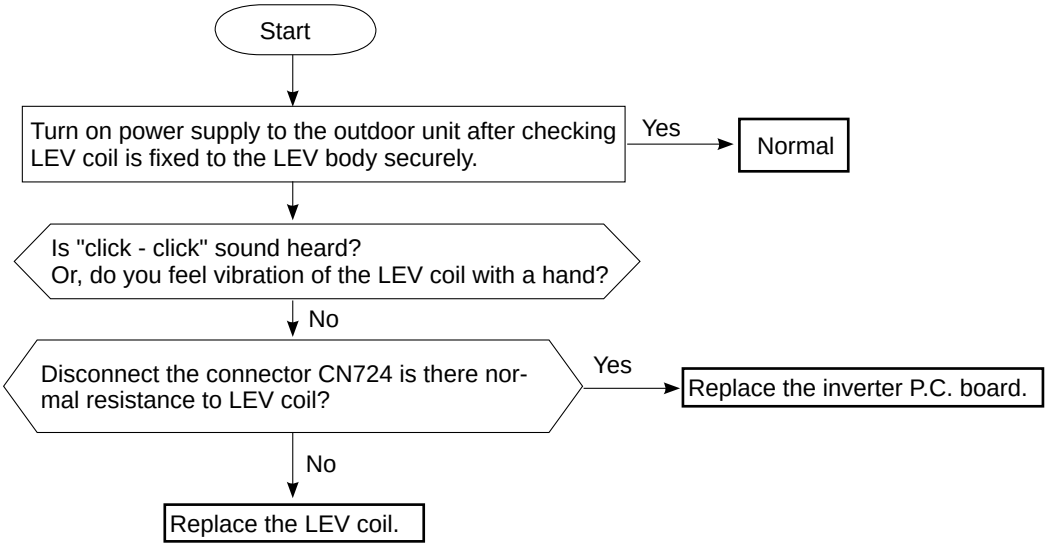
Yes → Replace the expansion valve.

No → Replace the LEV coil.

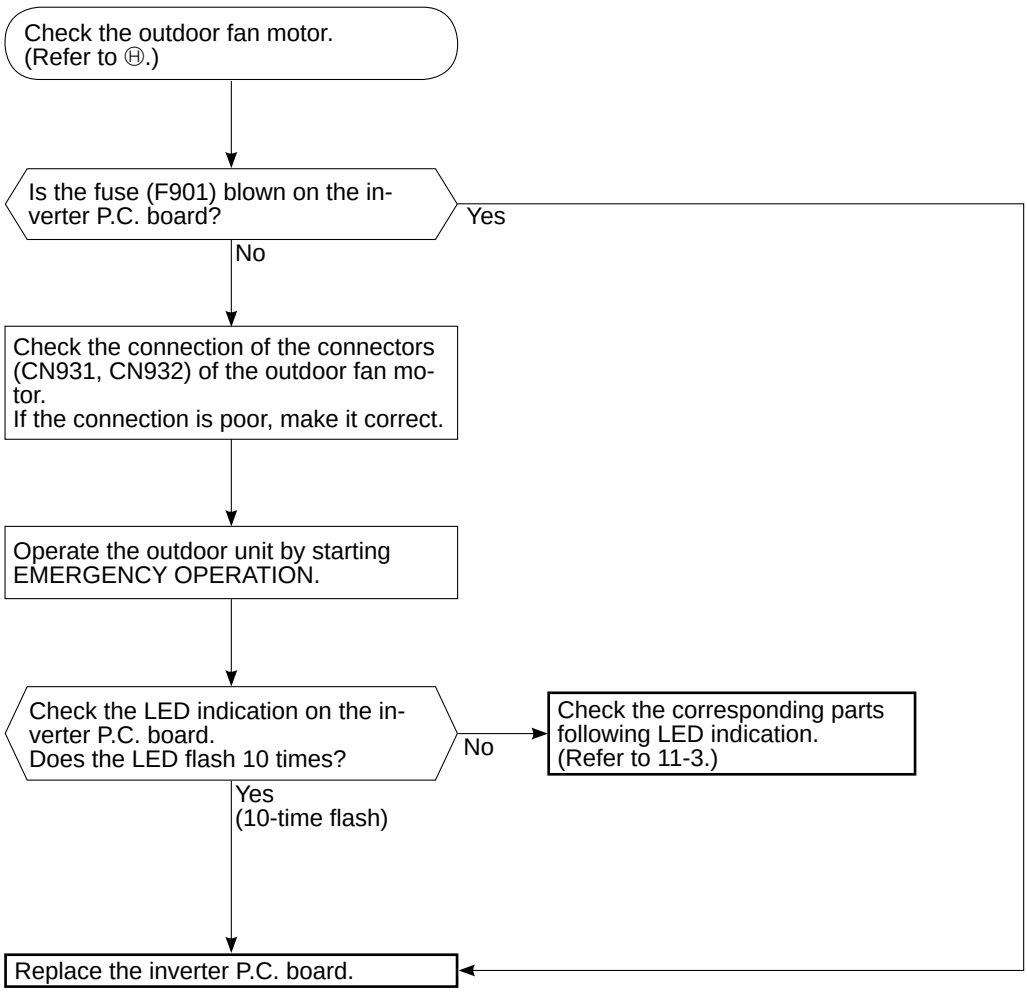
NOTE : After check of LEV, do the undermentioned operations.
1. Turn OFF the power supply and turn ON it again.
2. Press RESET button on the remote controller.

Ⓚ Check of LEV

(For wired remote controller use model)

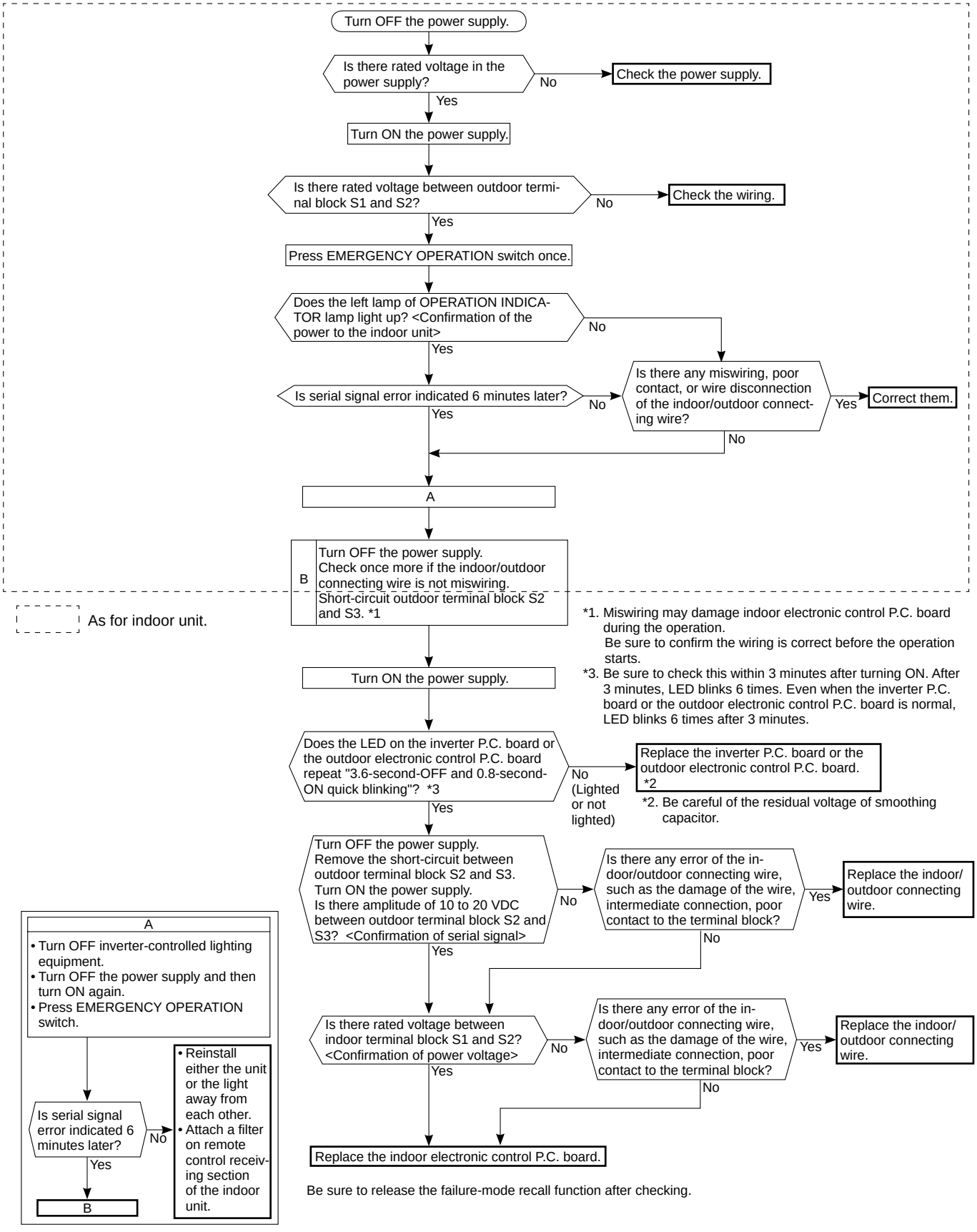


Ⓛ Check of inverter P.C. board



[SUZ-KA25/35/50VA3.TH]

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



*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.

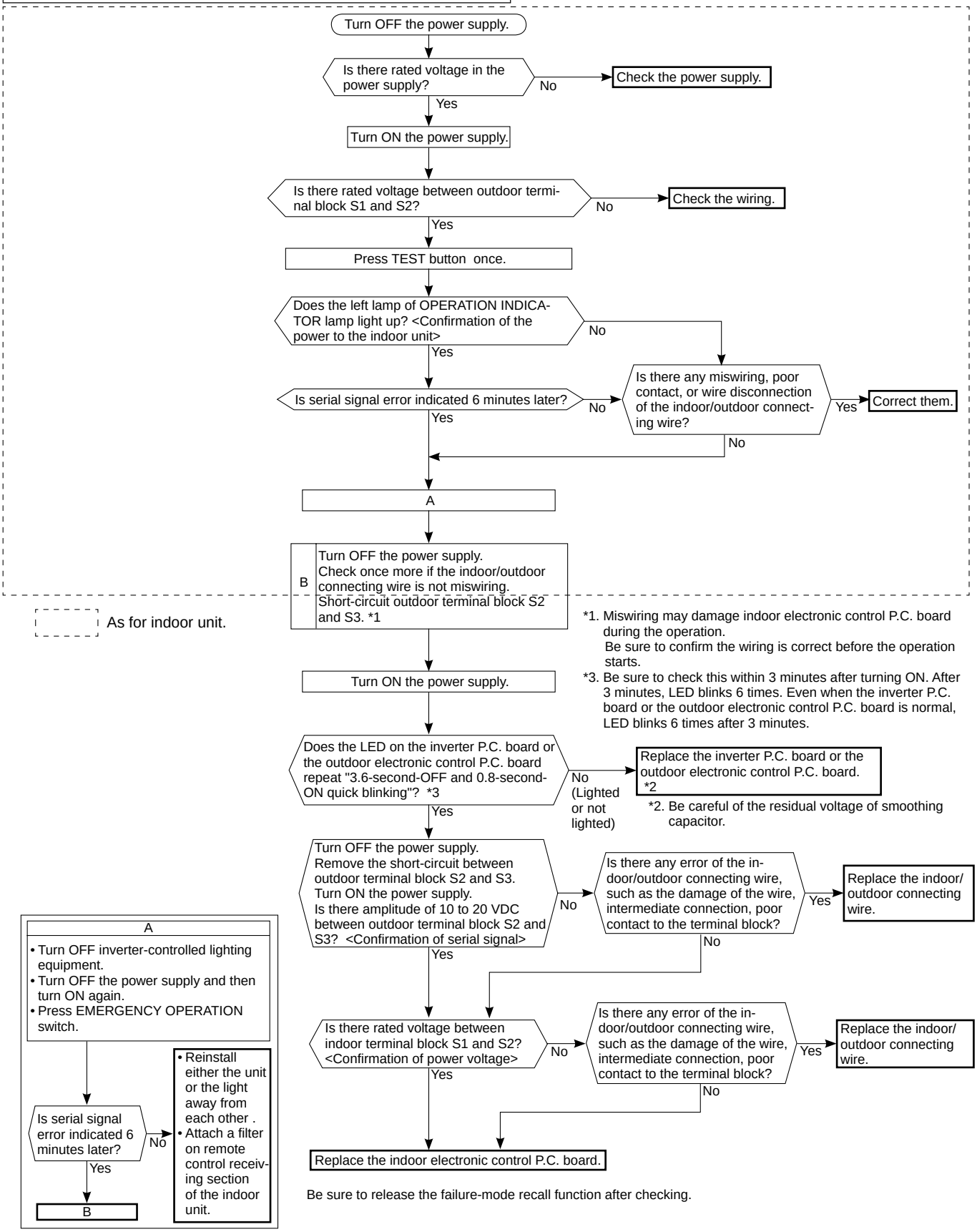
*3. Be sure to check this within 3 minutes after turning ON. After 3 minutes, LED blinks 6 times. Even when the inverter P.C. board or the outdoor electronic control P.C. board is normal, LED blinks 6 times after 3 minutes.

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

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

[SUZ-KA25/35/50VA3.TH]

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



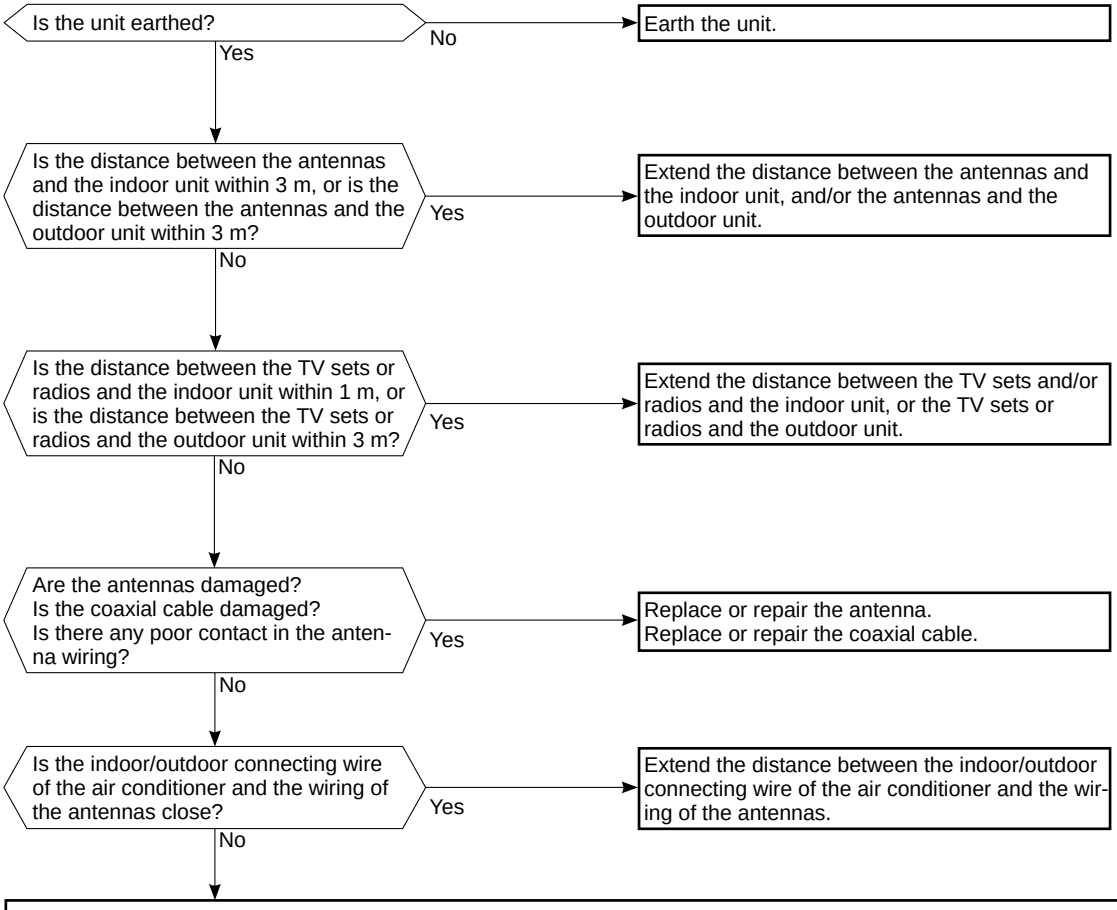
*1. Miswiring may damage indoor electronic control P.C. board during the operation.
Be sure to confirm the wiring is correct before the operation starts.

*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 or the outdoor electronic control P.C. board is normal, LED blinks 6 times after 3 minutes.

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

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

Ⓝ Electromagnetic noise enters into TV sets or radios

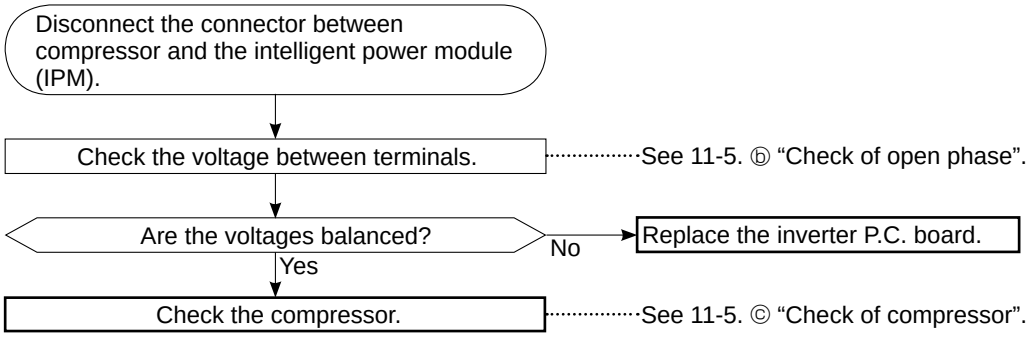


Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the following before asking for service.

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.

[SUZ-KA60/71VA3.TH]

ⓐ How to check inverter/compressor



ⓑ 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.

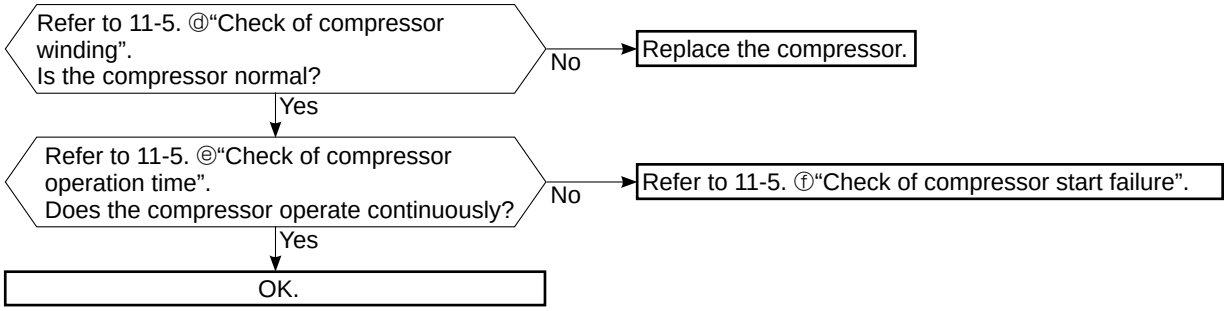
Output voltage is 50 - 130 V. (The voltage may differ according to the tester.)

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

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.)

ⓒ Check of compressor



ⓓ 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.

ⓔ Check of compressor operation time

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

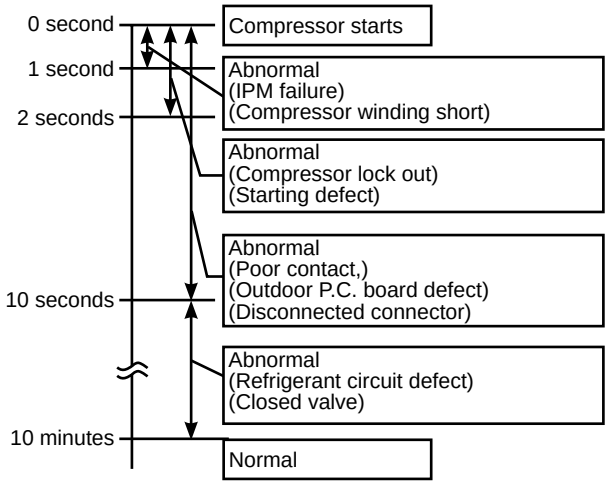
<<Operation method>>

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

<<Measurement>>

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

<<Judgement>>



ⓕ 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 ⓑ.)
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.

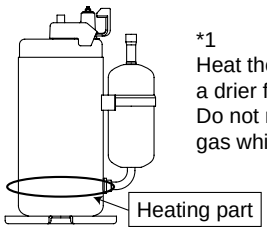
No ↓

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

No → Replace the compressor.

Yes ↓

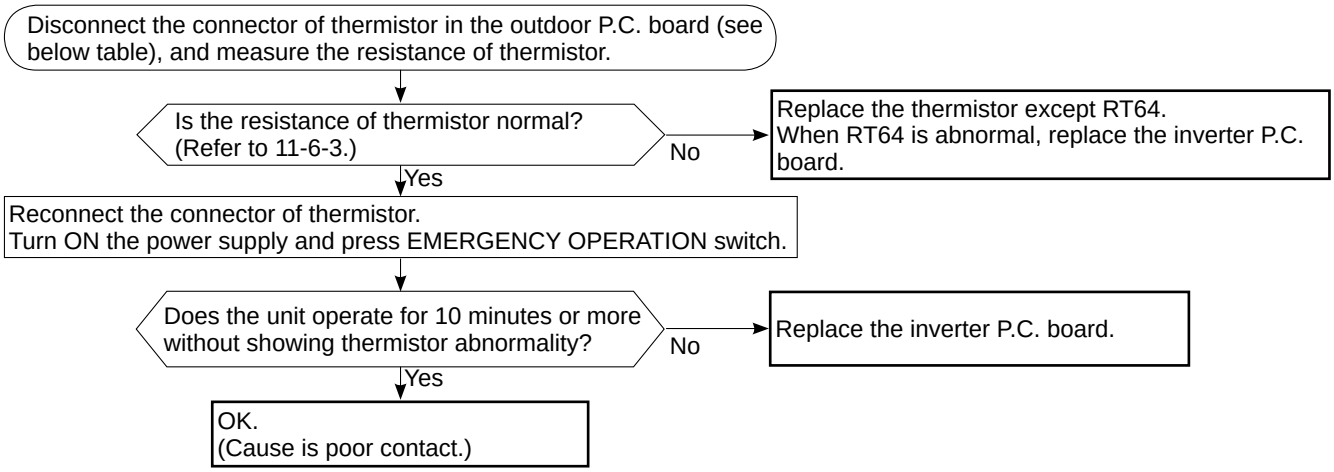
Compressor start failure. Activate pre-heat control.



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

[SUZ-KA60/71VA3.TH]

ⓖ Check of outdoor thermistors

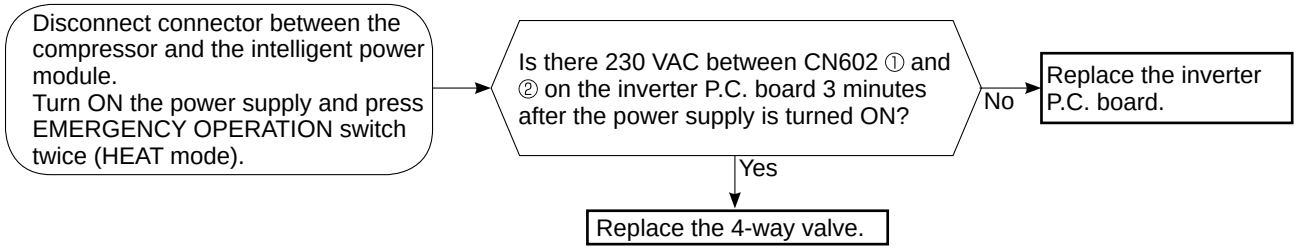


Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN671 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN671 pin3 and pin4	
Fin temperature	RT64	Between CN673 pin1 and pin2	
Ambient temperature	RT65	Between CN672 pin1 and pin2	
Outdoor heat exchanger temperature	RT68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

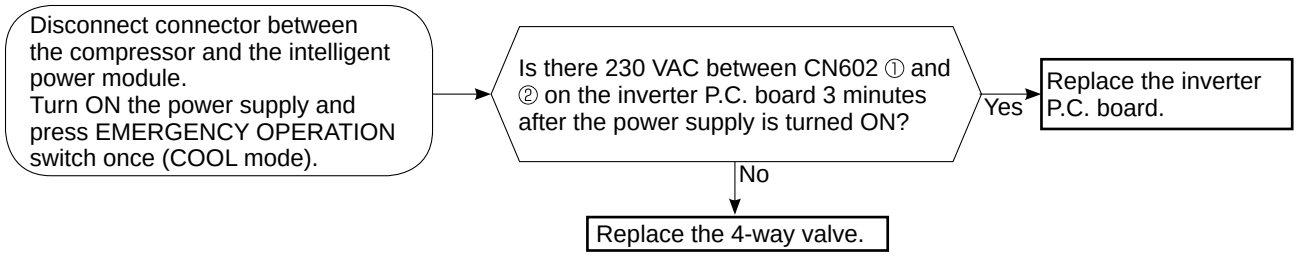
ⓗ Check of R.V. coil

* 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.

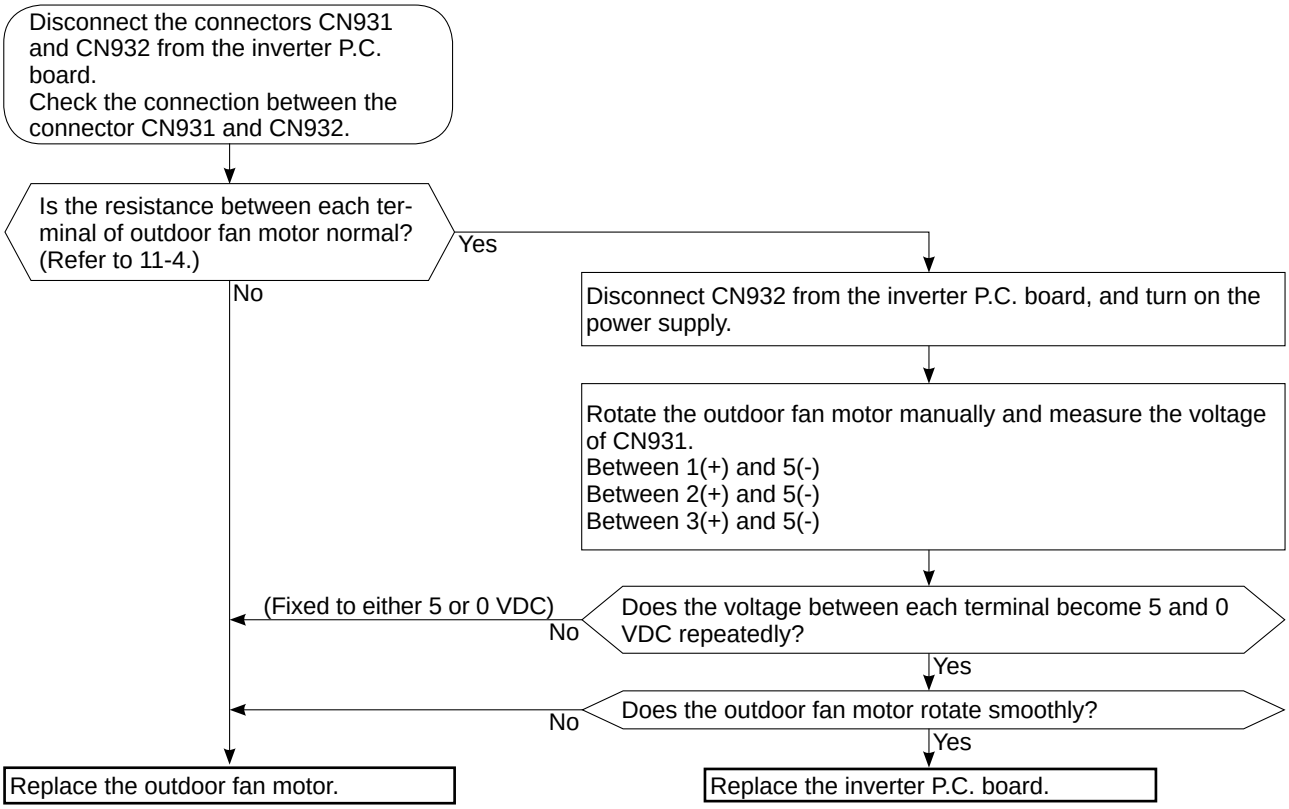
Unit operates COOL mode even if it is set to HEAT mode.



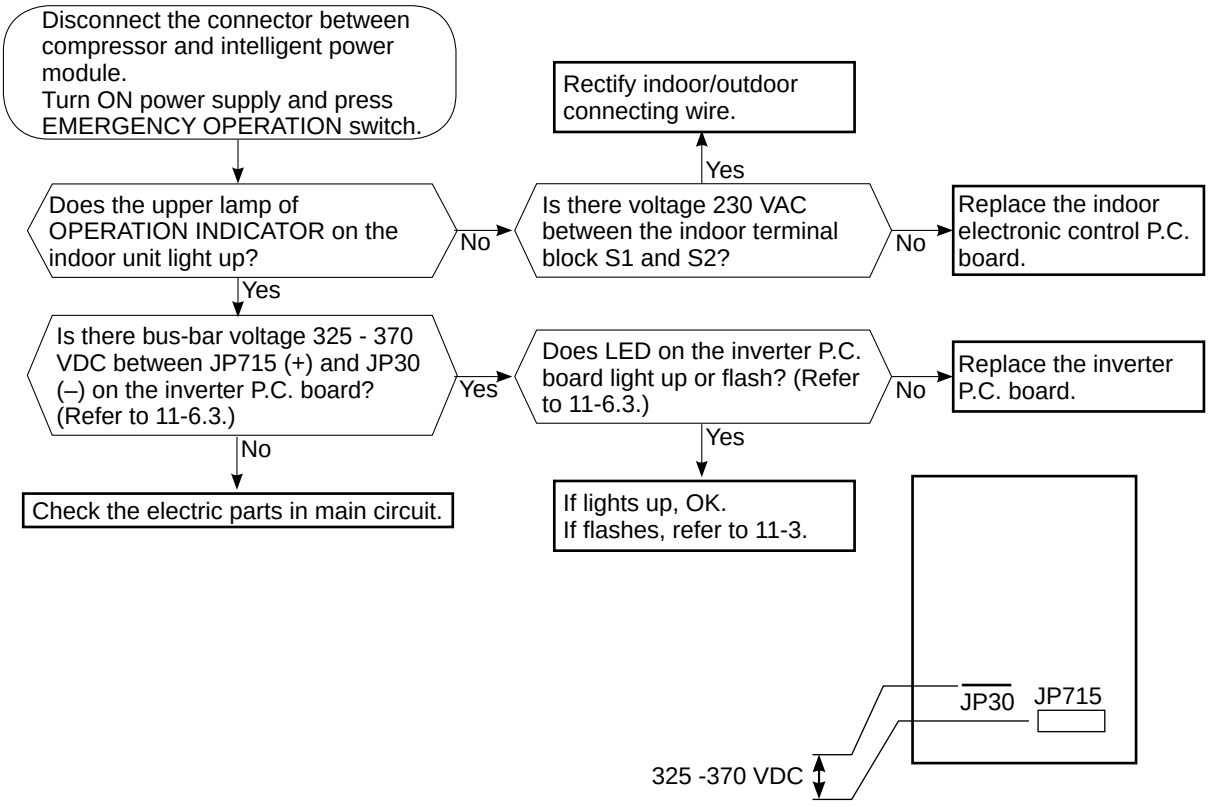
Unit operates HEAT mode even if it is set to COOL mode.



ⓘ Check of outdoor fan motor



Ⓙ Check of power supply

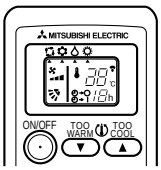


ⓚ Check of LEV

(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.

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

Do you hear the expansion valve "click, click·····"?
Do you feel the expansion valve vibrate on touching it ?
Yes → OK

No

Is LEV coil properly fixed to the expansion valve?
No → Properly fix the LEV coil to the expansion valve.

Yes

Does the resistance of LEV coil have the characteristics? (Refer to 11-4.)
Yes →
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.
No → Replace the inverter P.C. board.

No

Replace the LEV coil.

Yes

Replace the expansion valve.

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.

ⓚ Check of LEV

(For wired remote controller use model)

Start

Turn on power supply to the outdoor unit after checking LEV coil is fixed to the LEV body securely.
Yes → Normal

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

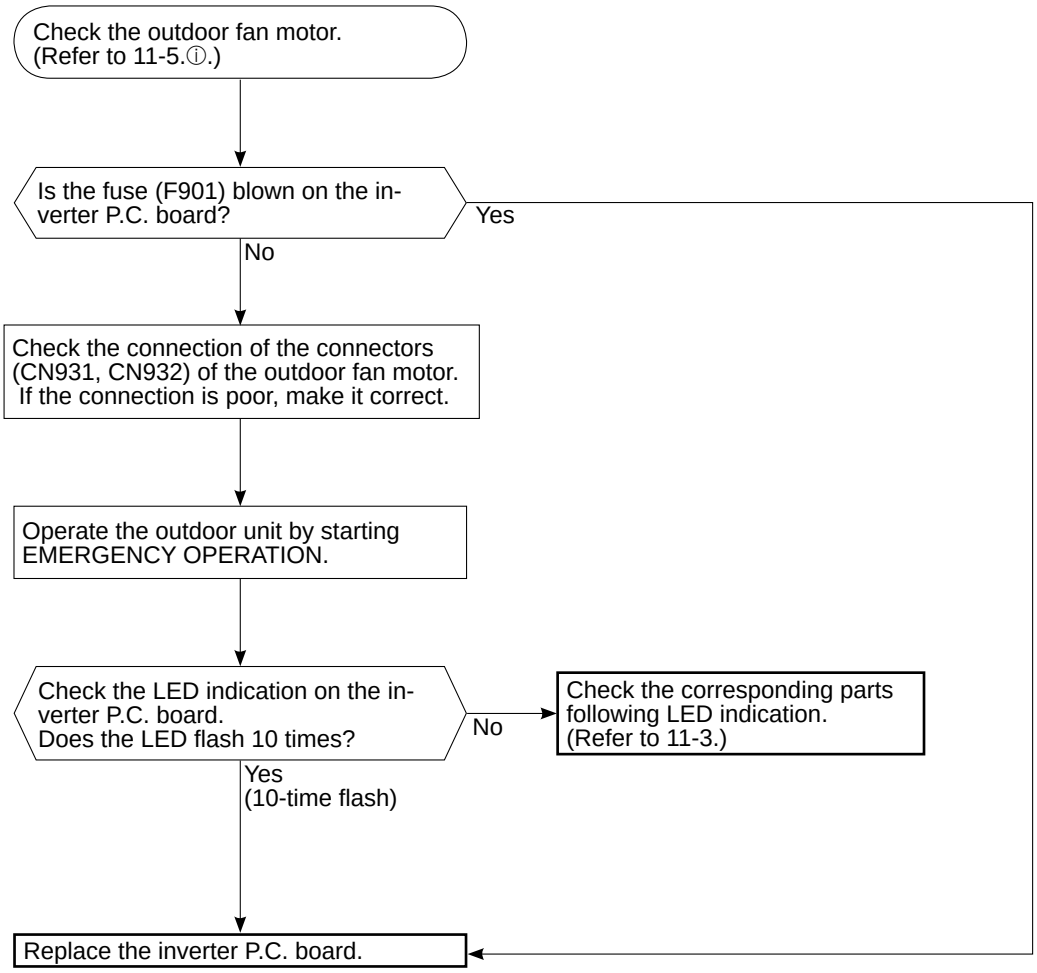
No

Disconnect the connector CN724 is there normal resistance to LEV coil?
Yes → Replace the inverter P.C. board.

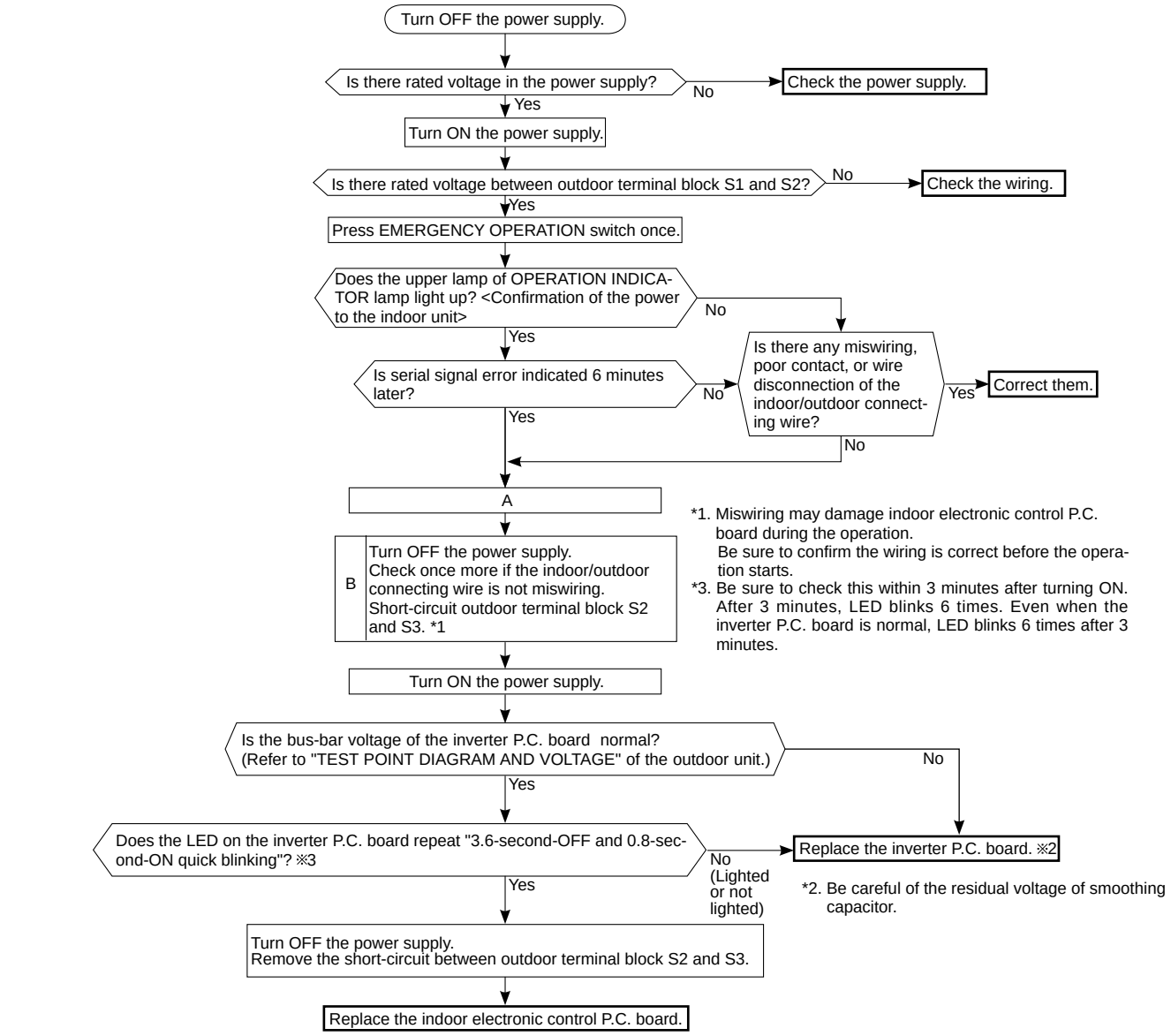
No

Replace the LEV coil.

ⓘ Check of inverter P.C. board



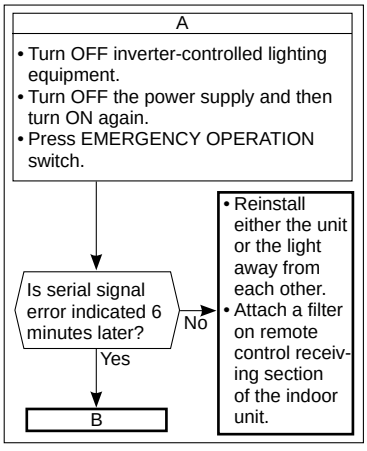
ⓜ How to check miswiring and serial signal error



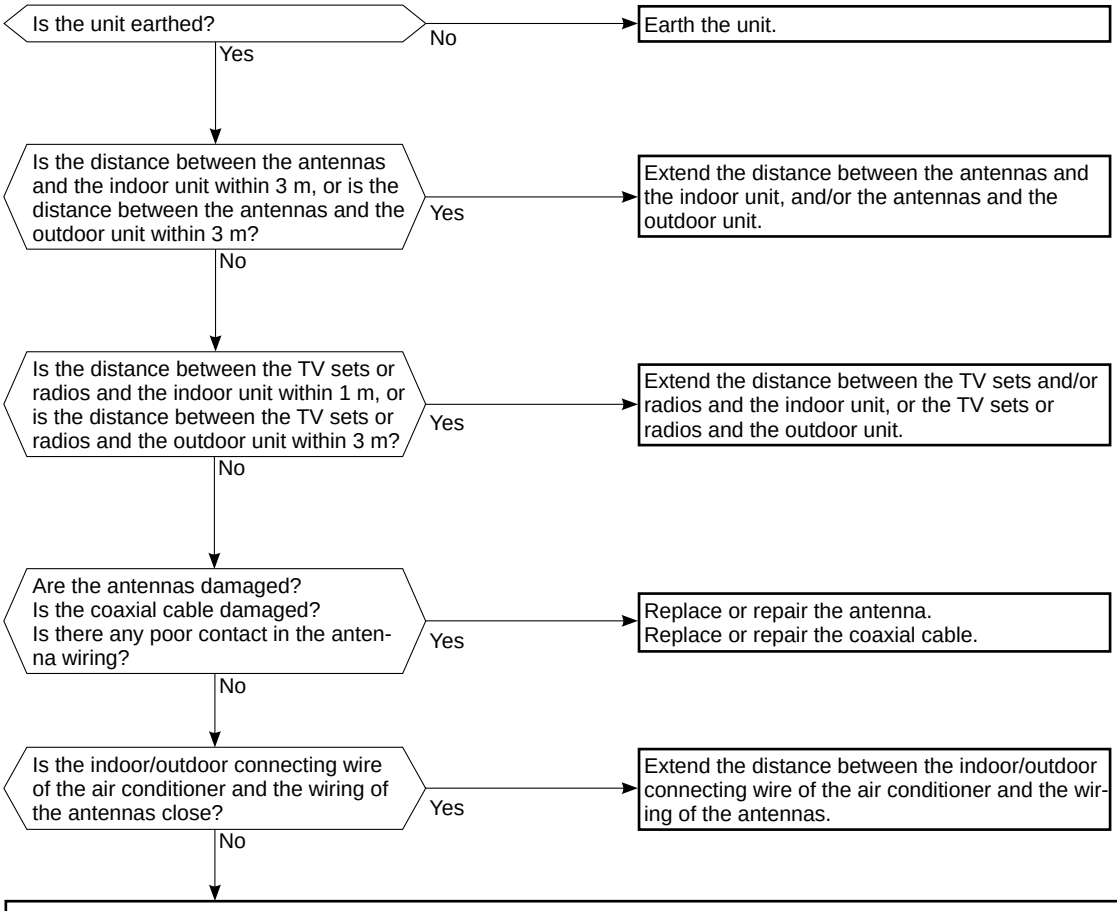
*1. Miswiring may damage indoor electronic control P.C. board during the operation.
Be sure to confirm the wiring is correct before the operation starts.

*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.



ⓝ Electromagnetic noise enters into TV sets or radios



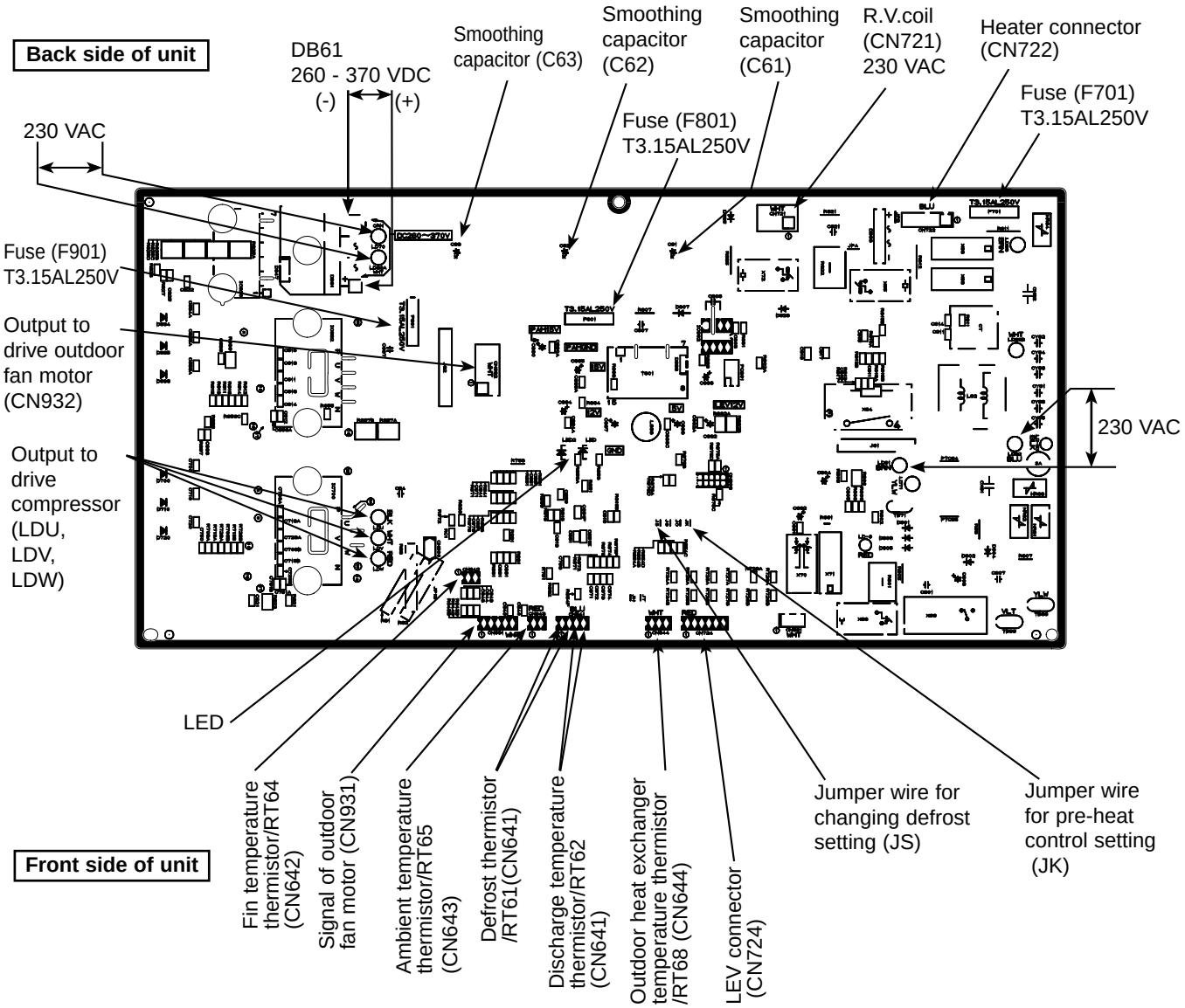
Even if all of the above conditions are fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the following before asking for service.

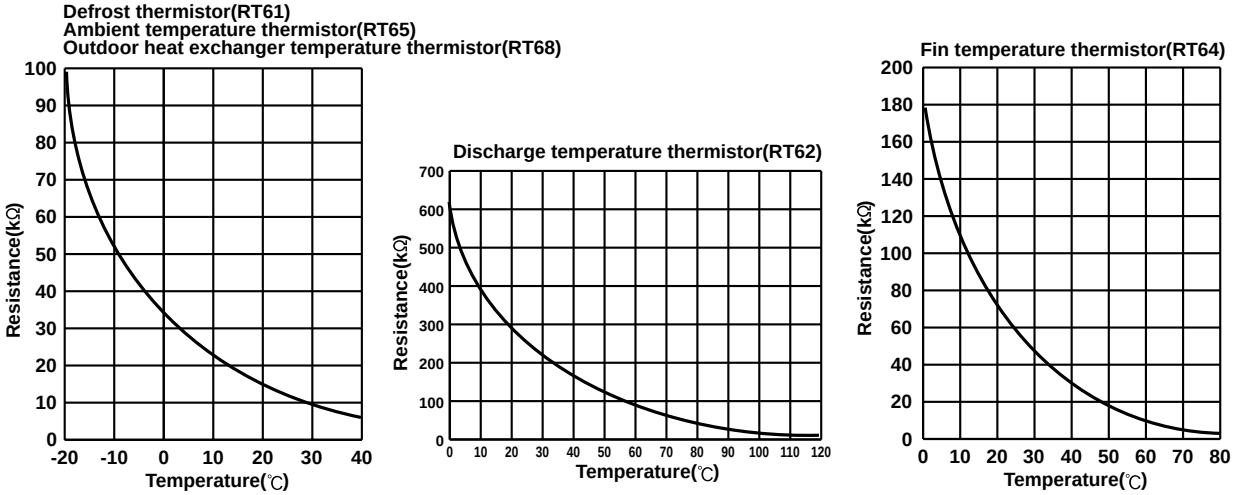
1. Devices affected by the electromagnetic noise
   TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of:
   indoor/outdoor unit of the 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

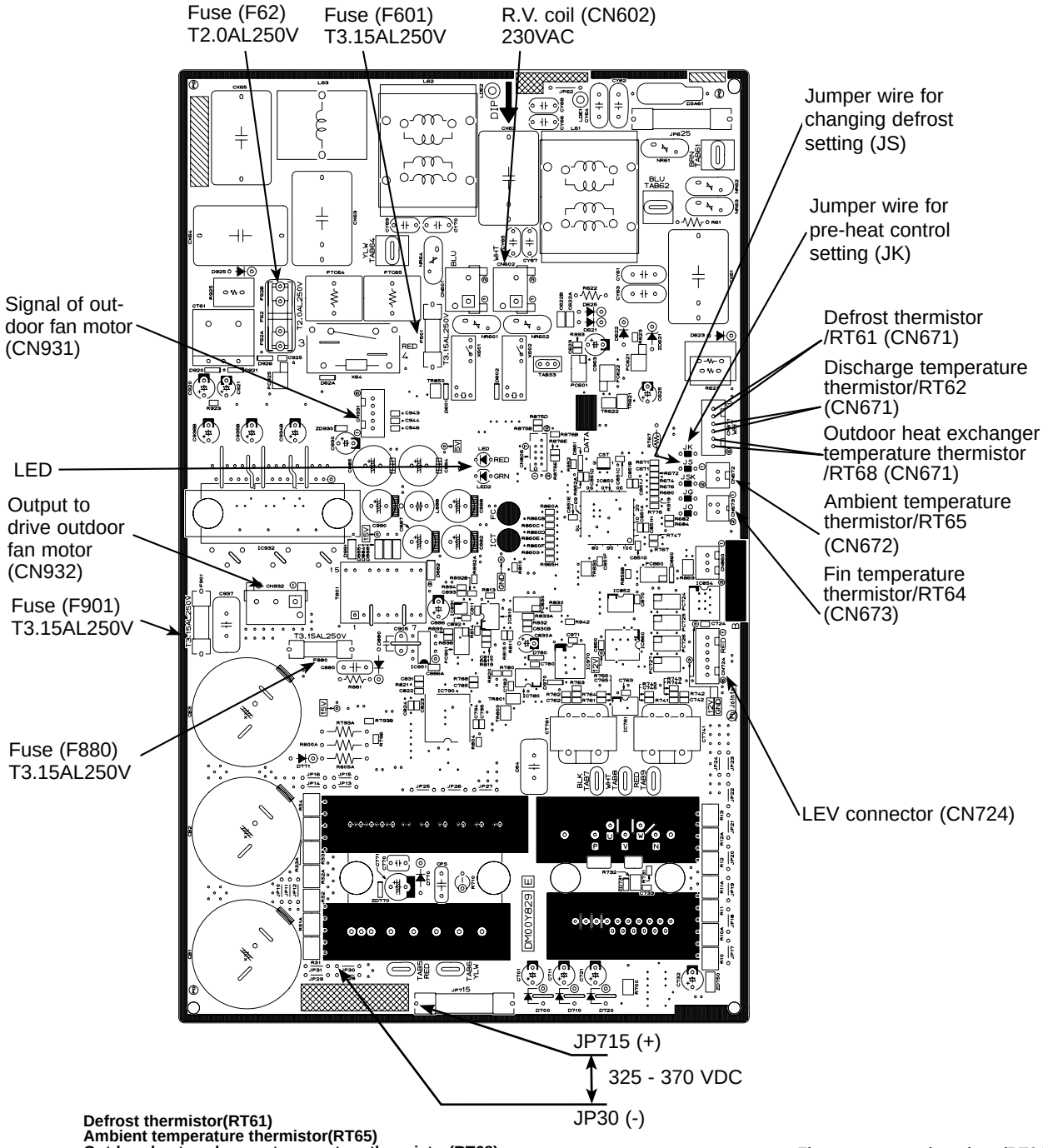
SUZ-KA25VA3.TH SUZ-KA35VA3.TH SUZ-KA50VA3.TH

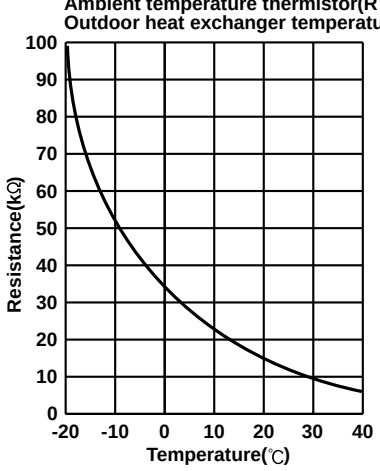


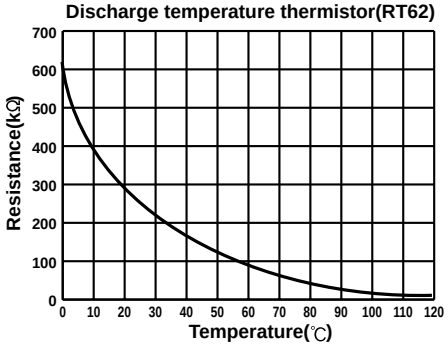


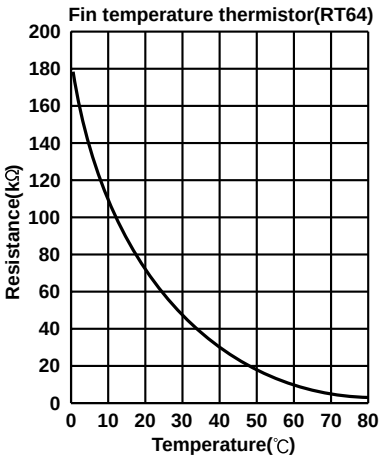
11-6-2. Inverter P.C. board

SUZ-KA60VA3.TH SUZ-KA71VA3.TH







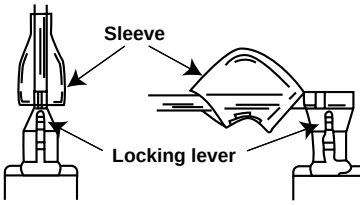


12 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

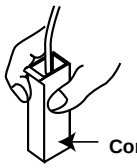
The terminal which has the locking mechanism can be detached as shown below.
There are two types (Refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

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



①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

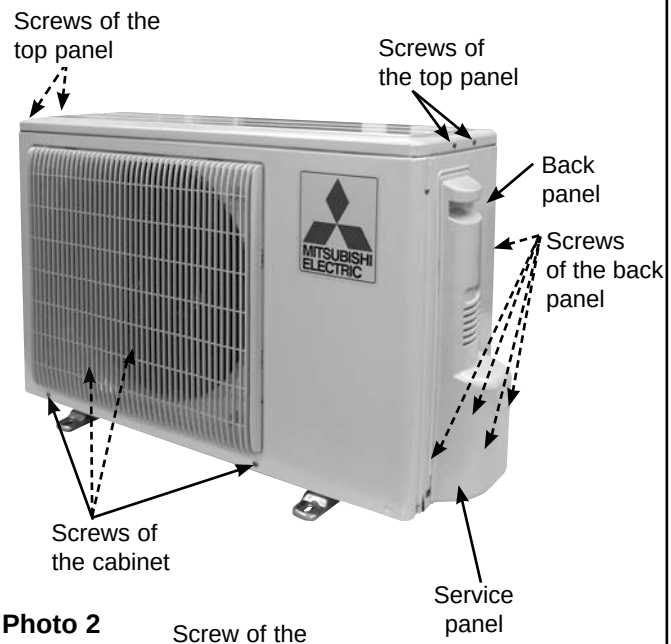
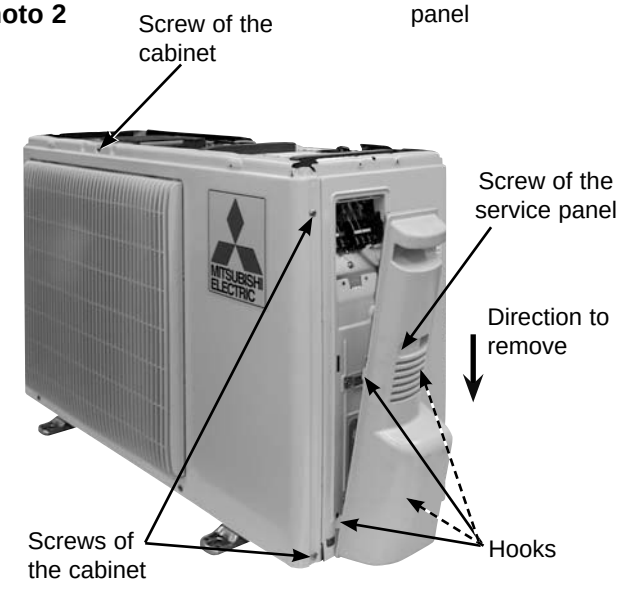
(2) The terminal with this connector has the locking mechanism.

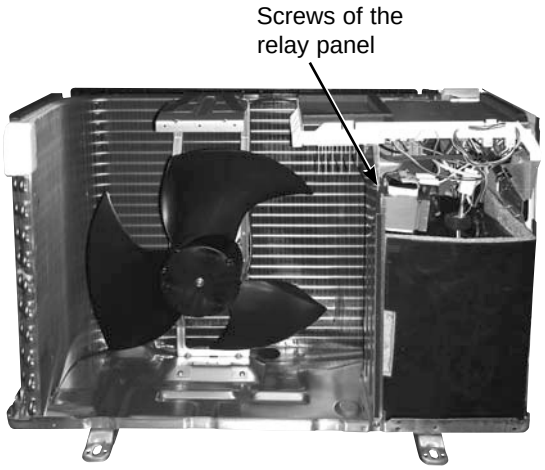
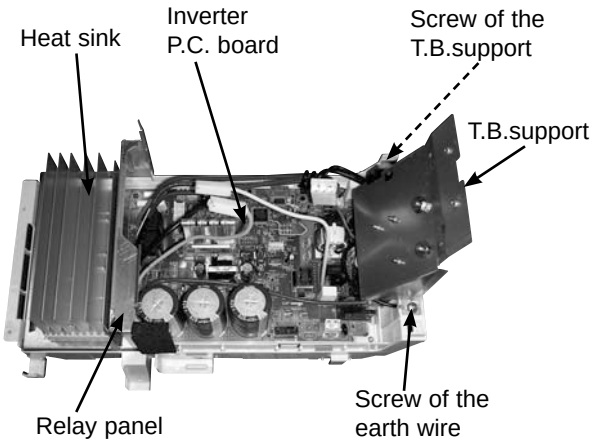


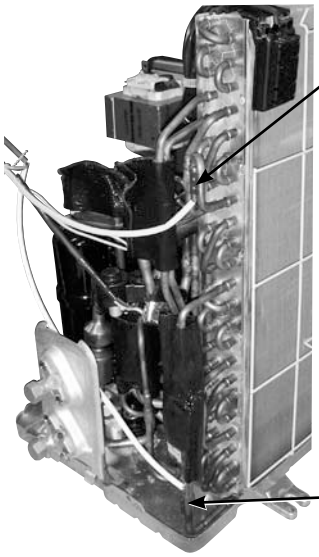
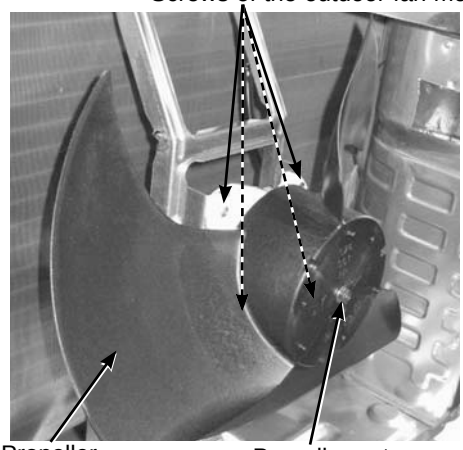
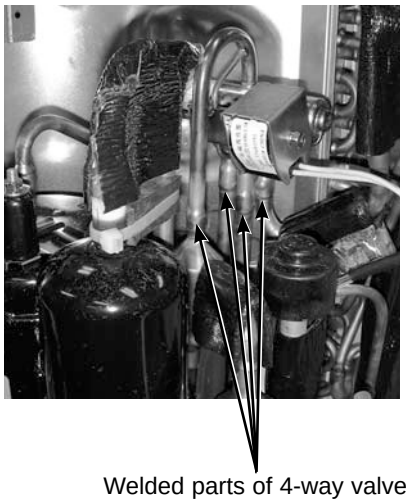
①Hold the sleeve, and pull out the terminal slowly.

SUZ-KA25VA3.TH SUZ-KA35VA3.TH
OUTDOOR UNIT

NOTE: Turn OFF power supply before disassembling.

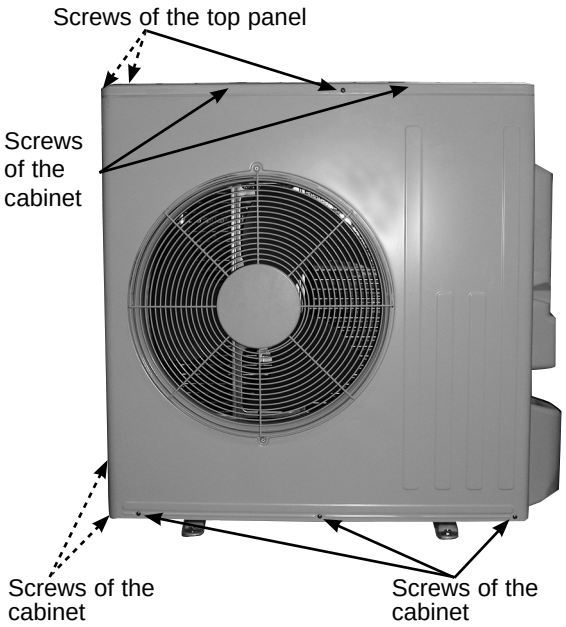
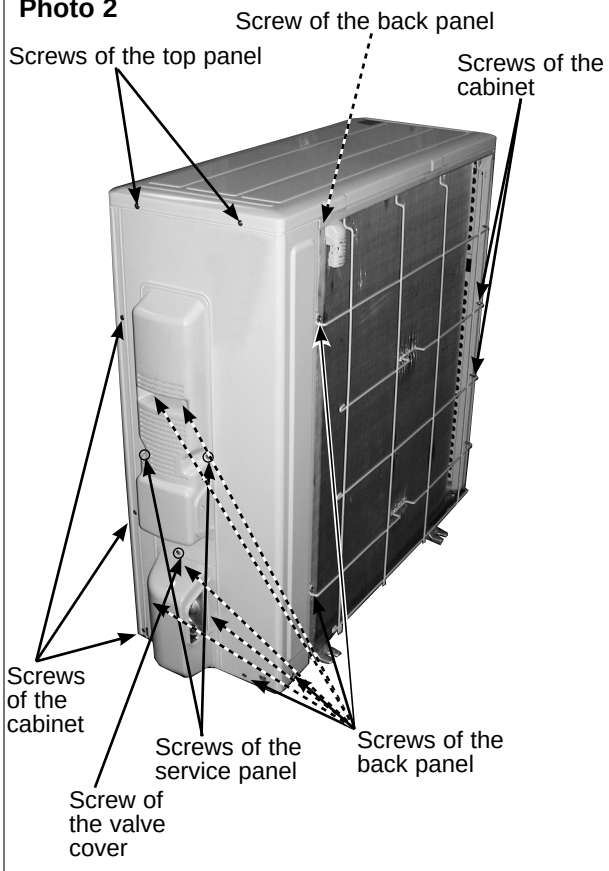
OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screw fixing the service panel. (2) Pull down the service panel and remove it. (3) Disconnect the power supply and indoor/outdoor connecting wire. (4) Remove the screws fixing the top panel. (5) Remove the top panel. (6) Remove the screws fixing the cabinet. (7) Remove the cabinet. (8) Remove the screws fixing the back panel. (9) Remove the back panel.	**Photo 1**  **Photo 2** 

OPERATING PROCEDURE	PHOTOS
2. Removing the inverter assembly, inverter P.C. board (1) Remove the cabinet and panels. (Refer to procedure 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.	**Photo 3**  **Photo 4 (Inverter assembly)** 
3. Removing R.V. coil (1) Remove the cabinet and panels. (Refer to procedure 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 procedure 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.	**Photo 5** 

OPERATING PROCEDURE	PHOTOS
5. Removing outdoor fan motor (1) Remove the cabinet and panels. (Refer to procedure 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.	**Photo 6** 
6. Removing the compressor and 4-way valve (1) Remove the cabinet and panels. (Refer to procedure 1.) (2) Remove the inverter assembly. (Refer to procedure 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)	**Photo 7**  **Photo 8** 

SUZ-KA50VA3.TH

NOTE: Turn OFF power supply before disassembly.

OPERATING PROCEDURE	PHOTOS
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) 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.	**Photo 1**  **Photo 2** 

OPERATING PROCEDURE

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

(1) Remove the cabinet and panels. (Refer to procedure 1.)
(2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN721 (R.V. coil)
CN931, 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.
(4) Remove the screws fixing the heat sink support and the separator.
(5) Remove the fixing screws of the terminal block support and the back panel.
(6) Remove the inverter assembly.
(7) Remove the screw of the earth wire, screw of the P.C. board cover and screws of the terminal block support.
(8) Remove the heat sink support from the P.C. board support.
(9) Remove the screw of the inverter P.C. board and the inverter P.C. board from the P.C. board support.

3. Removing R.V. coil

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

PHOTOS

Photo 3

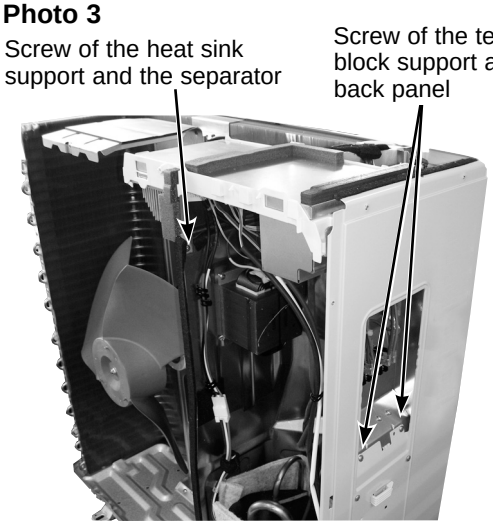


Photo 4

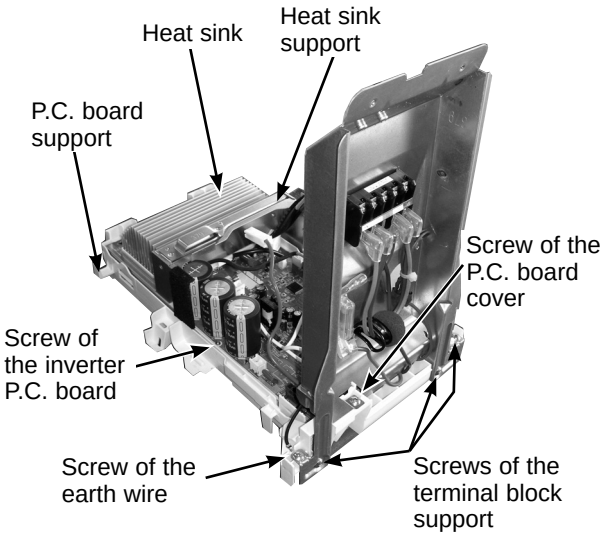
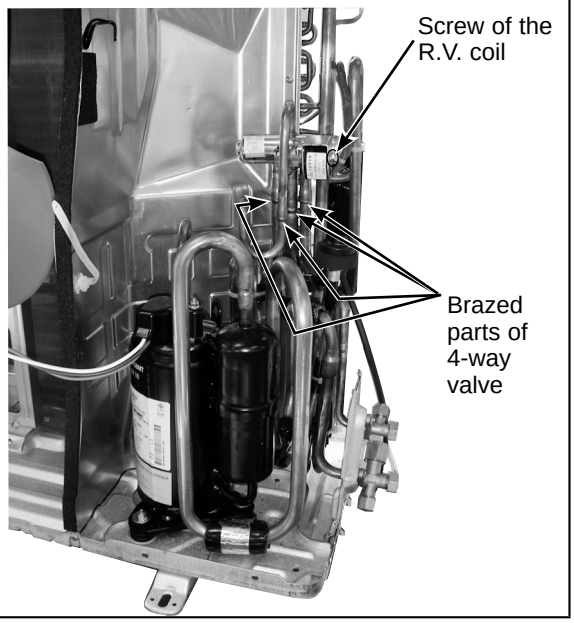
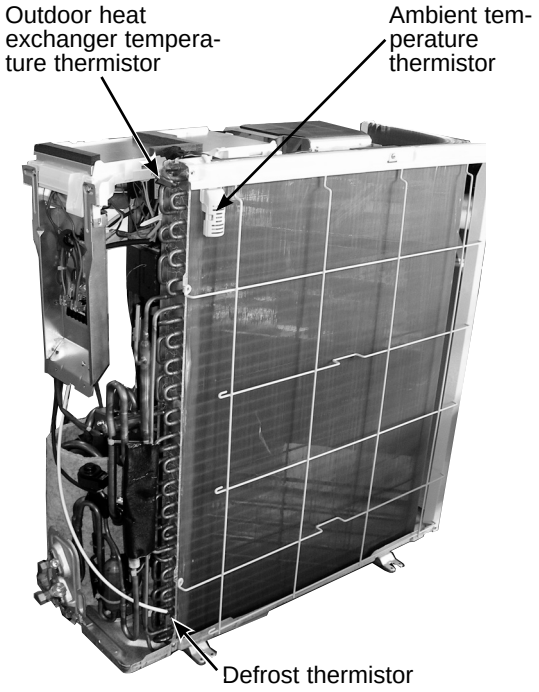
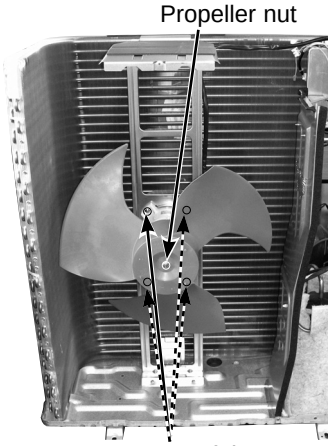
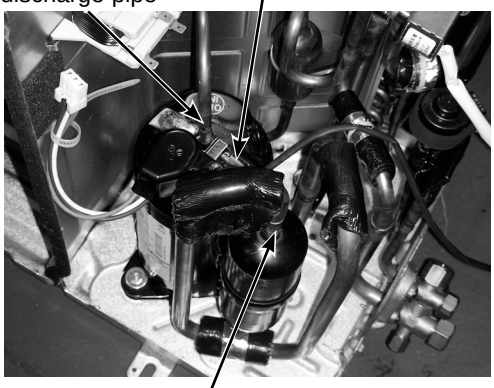


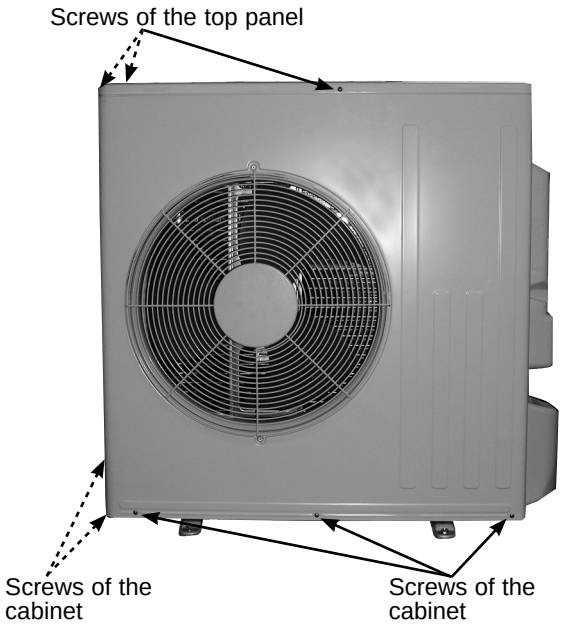
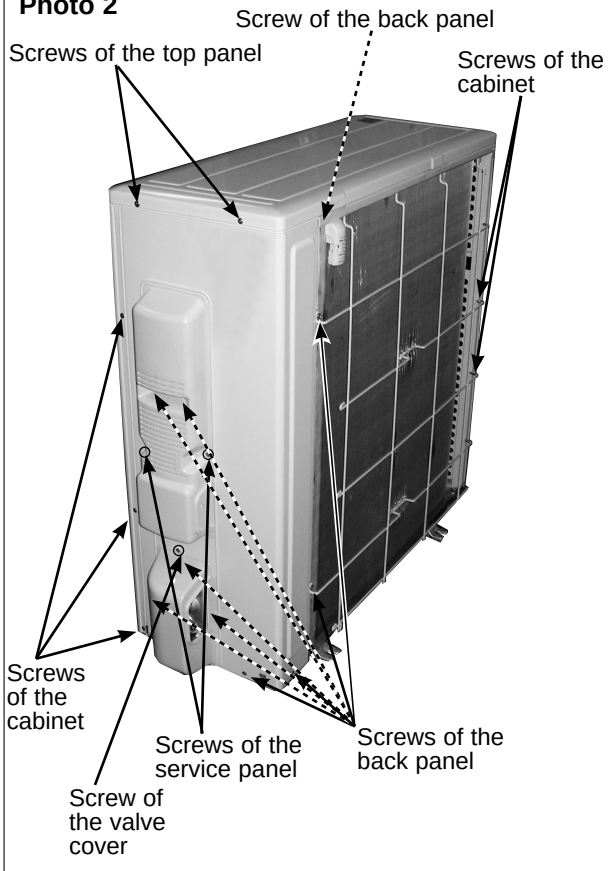
Photo 5

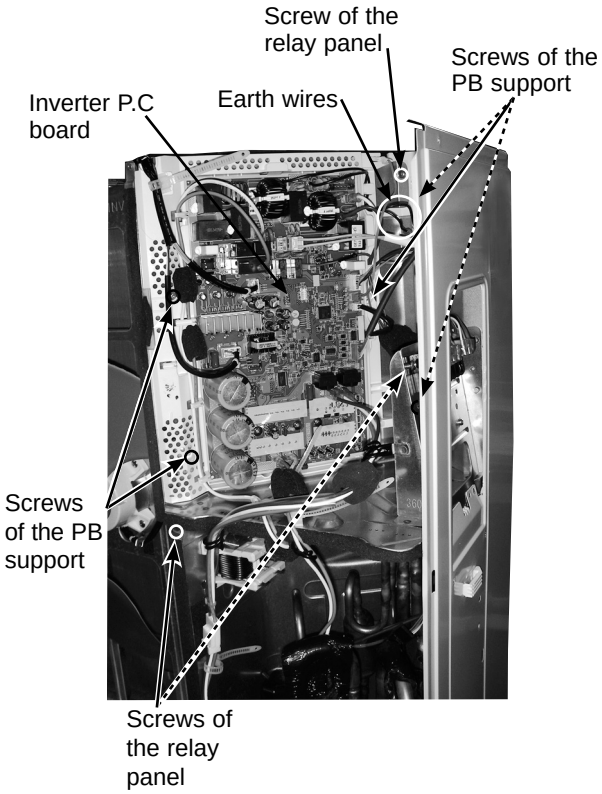
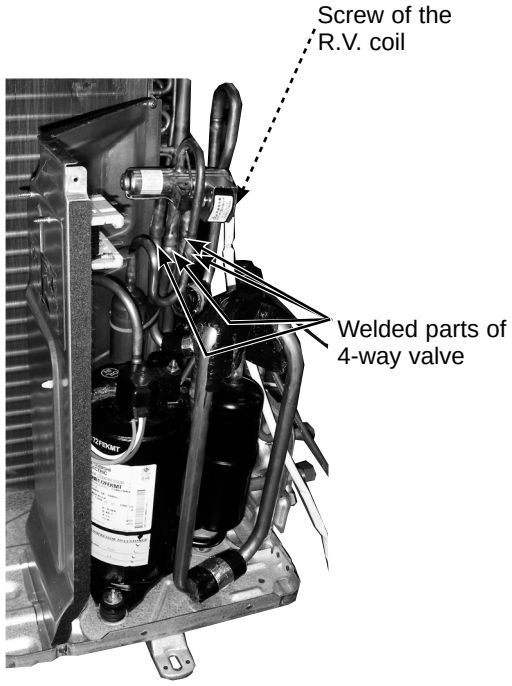


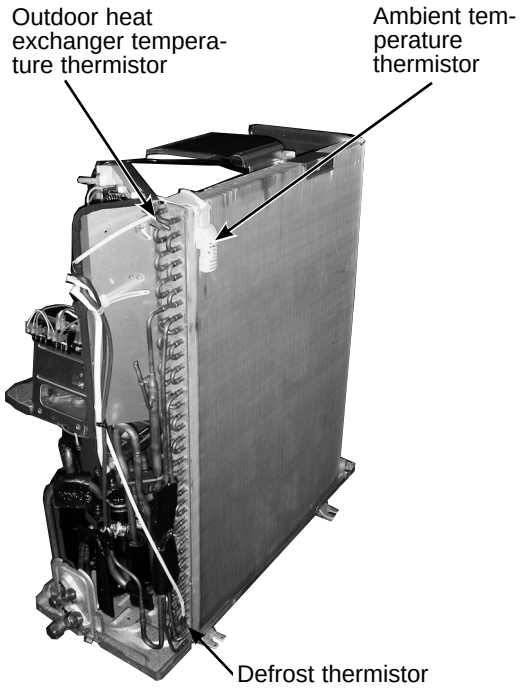
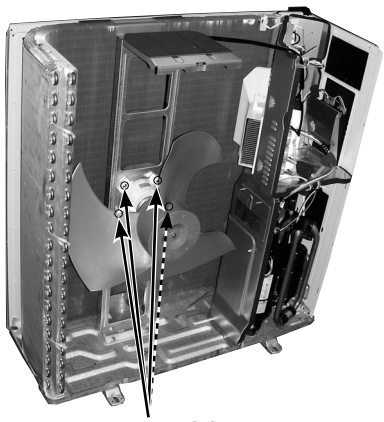
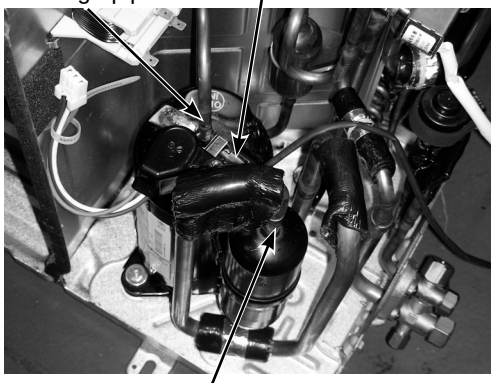
OPERATING PROCEDURE	PHOTOS
4. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor (1) Remove the cabinet and panels. (Refer to procedure 1.) (2) Disconnect the lead wire to the reactor and the following connectors: <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. (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.	**Photo 6** 
5. Removing outdoor fan motor (1) Remove the top panel, cabinet and service panel. (Refer to procedure 1.) (2) Disconnect the following connectors: <Inverter P.C. board> CN931 and CN932 (Fan motor) (3) Remove the propeller nut. (4) Remove the propeller. (5) Remove the screws fixing the fan motor. (6) Remove the fan motor.	**Photo 7** 
6. Removing the compressor and 4-way valve (1) Remove the top panel, cabinet and service panel. (Refer to procedure 1.) (2) Remove the back panel. (Refer to procedure 1.) (3) Remove the inverter assembly. (Refer to procedure 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 brazed part of the suction and the discharge pipe connected with compressor. (6) Remove the compressor nuts. (7) Remove the compressor. (8) Detach the brazed part of 4-way valve and pipe. (Photo 5)	**Photo 8** 

SUZ-KA60VA3.TH
SUZ-KA71VA3.TH

NOTE: Turn OFF power supply before disassembling.

OPERATING PROCEDURE	PHOTOS
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) 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.	**Photo 1**  **Photo 2** 

OPERATING PROCEDURE	PHOTOS
2. Removing the inverter assembly, inverter P.C. board (1) Remove the cabinet and panels. (Refer to procedure 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.	**Photo 3** 
3. Removing R.V. coil (1) Remove the cabinet and panels. (Refer to procedure 1.) (2) Disconnect the following connector: <Inverter P.C. board> CN602 (R.V. coil) (3) Remove the R.V. coil.	**Photo 4** 

OPERATING PROCEDURE	PHOTOS
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 procedure 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 heart 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.	**Photo 5** 
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.	**Photo 6** 
6. Removing the compressor and 4-way valve (1) Remove the top panel, cabinet and service panel. (Refer to procedure 1.) (2) Remove the back panel. (Refer to procedure 1.) (3) Remove the inverter assembly. (Refer to procedure 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)	**Photo 7** 

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO100-8310, JAPAN

Distributed in Oct. 2012 No.OCH530
Made in Japan

New publication, effective Oct. 2012
Specifications are subject to change without notice.