DAIKIN

SiBE26 - 701

R-410A

Service Manual

SkyAir

RZQ200 · 250C7Y1B

R-410A Heat Pump 50Hz

SkyAir R-410A Heat Pump GQLII 50Hz

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1. Introduction

1.1 Safety Cautions

Cautions and Warnings

- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into "⚠ **Warning**" and "⚠ **Caution**". The "⚠ **Warning**" items are especially important since they can lead to death or serious injury if they are not followed closely. The "⚠ **Caution**" items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms

△ This symbol indicates an item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.

◯ This symbol indicates a prohibited action.
The prohibited item or action is shown inside or near the symbol.

● This symbol indicates an action that must be taken, or an instruction.
The instruction is shown inside or near the symbol.

- After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer

1.1.1 Caution in Repair

⚠ Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for a repair. Working on the equipment that is connected to a power supply can cause an electrical shook. If it is necessary to supply power to the equipment to conduct the repair or inspecting the circuits, do not touch any electrically charged sections of the equipment.	
If the refrigerant gas discharges during the repair work, do not touch the discharging refrigerant gas. The refrigerant gas can cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, release the refrigerant gas completely at a well-ventilated place first. If there is a gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it can cause injury.	
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas can generate toxic gases when it contacts flames.	
The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Be sure to discharge the capacitor completely before conducting repair work. A charged capacitor can cause an electrical shock.	
Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug. Plugging or unplugging the power cable plug to operate the equipment can cause an electrical shock or fire.	

Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands can cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water can cause an electrical shock.	
Be sure to provide the grounding when repairing the equipment in a humid or wet place, to avoid electrical shocks.	
Be sure to turn off the power switch and unplug the power cable when cleaning the equipment. The internal fan rotates at a high speed, and cause injury.	
Do not tilt the unit when removing it. The water inside the unit can spill and wet the furniture and floor.	
Be sure to check that the refrigerating cycle section has cooled down sufficiently before conducting repair work. Working on the unit when the refrigerating cycle section is hot can cause burns.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room can cause oxygen deficiency.	

1.1.2 Cautions Regarding Products after Repair

Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	

Warning	
Be sure to use the specified cable to connect between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections can cause excessive heat generation or fire.	
When connecting the cable between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	
Do not mix air or gas other than the specified refrigerant (R-410A) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If a combustible gas leaks and remains around the unit, it can cause a fire.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water can enter the room and wet the furniture and floor.	For integral units only

1.1.3 Inspection after Repair

Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet all the way. If the plug has dust or loose connection, it can cause an electrical shock or fire.	
If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires can cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it can cause an electrical shock, excessive heat generation or fire.	

Caution	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 Mohm or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

1.1.4 Using Icons

Icons are used to attract the attention of the reader to specific information. The meaning of each icon is described in the table below:

1.1.5 Using Icons List

Icon	Type of Information	Description
Note:	Note	A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
Caution	Caution	A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, loose data, get an unexpected result or has to restart (part of) a procedure.
Warning	Warning	A “warning” is used when there is danger of personal injury.
	Reference	A “reference” guides the reader to other places in this binder or in this manual, where he/she will find additional information on a specific topic.

1.2 PREFACE

Thank you for your continued patronage of Daikin products.

This is the new service manual for Daikin's Year 2007 RZQ-C series Heat Pump System. Daikin offers a wide range of models to respond to building and office air conditioning needs. We are confident that customers will be able to find the models that best suit their needs.

This service manual contains information regarding the servicing of RZQ-C series R-410A Heat Pump System.

May, 2007

After Sales Service Division

SkyAir GQLII Series — Cooling Only —

Model Series

Class		Pair	
		200	250
Indoor Units	FDQ	200B7V3B	250B7V3B
Outdoor Units	RZQ	200C7Y1B	250C7Y1B

Class		Twin	
		100	125
Indoor Units	FCQ	100C7VEB × 2	125C7VEB × 2
	FBQ	100B7V3B × 2	125B7V3B × 2
	FDQ	—	125B7V3B × 2
	FHQ	100BUV1B × 2	125BUV1B × 2
	FUQ	100BUV1B × 2	125BUV1B × 2
	FAQ	100BUV1B × 2	—
Outdoor Units	RZQ	200C7Y1B	250C7Y1B

Class		Triple	
		60	71
Indoor Units	FCQ	60C7VEB × 3	71C7VEB × 3
	FFQ	60BV1B × 3	—
	FBQ	60B7V1 × 3	71B7V3B × 3
	FHQ	60BUV1B × 3	71BUV1B × 3
	FUQ	—	71BUV1B × 3
	FAQ	—	71BUV1B × 3
Outdoor Units	RZQ	200C7Y1B	

Class		Double Twin	
		50	60
Indoor Units	FCQ	50C7VEB × 4	60C7VEB × 4
	FFQ	50BV1B × 4	60BV1B × 4
	FBQ	50B7V1 × 4	60B7V1 × 4
	FHQ	50BUV1B × 4	60BUV1B × 4
Outdoor Units	RZQ	200C7Y1B	250C7Y1B

Part 1
General Information

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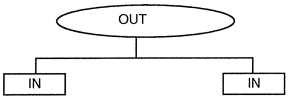
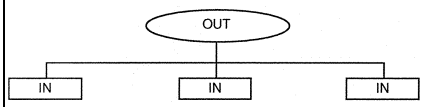
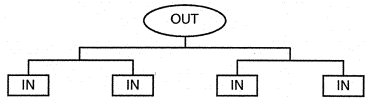
1. Model Name and Power Supply

Indoor Units		Outdoor Units	Power Supply
Ceiling Mounted Cassette Type (Multi Flow)	FCQ50C7VEB	RZQ200C7Y1B	3ϕ, 380-415V, 50Hz
	FCQ60C7VEB	RZQ200C7Y1B	
	FCQ71C7VEB	RZQ200C7Y1B	
	FCQ100C7VEB	RZQ200C7Y1B	
Ceiling Mounted Cassette Type (600x600 Multi Flow)	FFQ50BV1B	RZQ200C7Y1B	
	FFQ60BV1B	RZQ200C7Y1B	
Ceiling Mounted Built-in Type	FBQ50B7V1	RZQ200C7Y1B	
	FBQ60B7V1	RZQ200C7Y1B	
	FBQ71B7V3B	RZQ200C7Y1B	
	FBQ100B7V3B	RZQ200C7Y1B	
High Static Pressure Type	FDQ200B7V3B	RZQ200C7Y1B	
Ceiling Suspended Type	FHQ50BUV1B	RZQ200C7Y1B	
	FHQ60BUV1B	RZQ200C7Y1B	
	FHQ71BUV1B	RZQ200C7Y1B	
	FHQ100BUV1B	RZQ200C7Y1B	
Ceiling Suspended Cassette Type	FUQ71BUV1B	RZQ200C7Y1B	
	FUQ100BUV1B	RZQ200C7Y1B	
Wall Mounted Type	FAQ71BUV1B	RZQ200C7Y1B	
	FAQ100BUV1B	RZQ200C7Y1B	
Ceiling Mounted Cassette Type (Multi Flow)	FCQ60C7VEB	RZQ250C7Y1B	3ϕ, 380-415V, 50Hz
	FCQ125C7VEB	RZQ250C7Y1B	
Ceiling Mounted Cassette Type (600x600 Multi Flow)	FFQ60BV1B	RZQ250C7Y1B	
Ceiling Mounted Built-in Type	FBQ60B7V1	RZQ250C7Y1B	
	FBQ125B7V3B	RZQ250C7Y1B	
High Static Pressure Type	FDQ125B7V3B	RZQ250C7Y1B	
	FDQ250B7V3B	RZQ250C7Y1B	
Ceiling Suspended Type	FHQ60BUV1B	RZQ250C7Y1B	
	FHQ125BUV1B	RZQ250C7Y1B	
Ceiling Suspended Cassette Type	FUQ125BUV1B	RZQ250C7Y1B	

Note: Power Supply Intake : Outdoor Units

2. Possible Combinations and Standard Capacity for Twin, Triple and Double Twin Operation

	Possible Indoor Combination		
	Simultaneous Operation		
	Twin	Triple	Double twin
Outdoor models			
RZQ200C7Y1B	100-100 (KHRQ22M20TA)	60-60-60 71-71-71 (KHRQ250H)	50-50-50-50 (3x KHQ22M20TA)
RZQ250C7Y1B	125-125 (KHRQ22M20TA)	—	60-60-60-60 (3x KHRQ22M20TA)

3. External Appearance

Indoor Units

FCQ

FFQ

FBQ

FDQ

FHQ

FUQ

FAQ

Remote Controller

Wireless Type

BRC7 Type

Wired Type

BRC1D52 Type

Outdoor Units

RZQ200C
RZQ250C

Part 2
Specifications

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1. Specifications

1.1 Outdoor Units

Heat Pump 50Hz Series <RZQ-C>

Model			RZQ200C7Y1B	RZQ250C7Y1B
Power Supply			3 phase 50Hz 380~415V	
★1 Cooling Capacity		kW	20.0	24.1
★2 Heating Capacity		kW	23.0	26.4
Casing Color			Ivory White (5Y7.5/1), E type: Light Camel (2.5Y6.5/1.5)	
Dimensions: (H×W×D)		mm	1,680×930×765	
Heat Exchanger			Cross Fin Coil	
Compressor	Type		Hermetically Sealed Scroll Type	
	Piston Displacement	m³/h	13.72	
	Number of Revolutions	r.p.m	7,980	
	Motor Output (2.2kW/60rps)	kW	3.08×1	
	Starting Method		Soft Start	
Fan	Type		Propeller Fan	
	Motor Output	W	750×1	
	Air Flow Rate	m³/min	171	
	Drive		Direct Drive	
Connecting Pipes	Liquid Pipe	mm	ϕ9.5 (Brazing Connection)	ϕ12.7 (Brazing Connection)
	Gas Pipe	mm	ϕ22.2 (Brazing Connection)	
Weight		kg	183	184
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector, PC board fuse	
Defrost Method			Reversed cycle	
Capacity Control		%	14~100	
Refrigerant	Refrigerant Name		R-410A	
	Charge	kg	8.3	9.3
	Control		Electronic Expansion Valve	
Standard Accessories			Installation Manual, Connection Pipes	

Notes:

★1 Indoor temp. : 27°CDB or 19°CWB / outdoor temp. : 35°CDB / Equivalent piping length : 7.5m, level difference : 0m.
( ) Shows maximum capacity.

★2 Indoor temp. : 20°CDB / outdoor temp. : 7°CDB or 6°CWB / Equivalent piping length : 7.5m, level difference : 0m.
( ) Shows maximum capacity.

2. Electric Characteristics

Unit combination		Power supply					Comp		OFM		IFM	
Indoor	Outdoor	Hz-Volts	Voltage range	MCA	TOCA	MFA	MSC	RLA	kW	FLA	kW	FLA
FCQ50C7VEB ×4	RZQ200C7Y1B	50-400	Max.50Hz 415V Min.50Hz 380V	16.6	18.6	20	—	14.7	0.75	0.7	0.056×4	0.3×4
FCQ60C7VEB ×3	RZQ200C7Y1B	50-400		16.6	18.6	20	—	14.7	0.75	0.7	0.056×3	0.4×3
FCQ71C7VEB ×3	RZQ200C7Y1B	50-400		16.9	18.9	20	—	14.7	0.75	0.7	0.056×3	0.5×3
FCQ100C7VEB ×2	RZQ200C7Y1B	50-400		16.8	18.8	20	—	14.7	0.75	0.7	0.120×2	0.7×2
FFQ50BV1B ×4	RZQ200C7Y1B	50-400		18.2	20.2	25	—	14.7	0.75	0.7	0.055×4	0.7×4
FFQ60BV1B ×3	RZQ200C7Y1B	50-400		17.5	19.5	20	—	14.7	0.75	0.7	0.055×3	0.7×3
FBQ50B7V1 ×4	RZQ200C7Y1B	50-400		18.2	20.2	25	—	14.7	0.75	0.7	0.085×4	0.7×4
FBQ60B7V1 ×3	RZQ200C7Y1B	50-400		18.1	20.1	25	—	14.7	0.75	0.7	0.125×3	0.9×3
FBQ71B7V3B ×3	RZQ200C7Y1B	50-400		18.1	20.1	25	—	14.7	0.75	0.7	0.125×3	0.9×3
FBQ100B7V3B ×2	RZQ200C7Y1B	50-400		17.4	19.4	20	—	14.7	0.75	0.7	0.135×2	1.0×2
FHQ50BUV1B ×4	RZQ200C7Y1B	50-400		17.8	19.8	20	—	14.7	0.75	0.7	0.062×4	0.6×4
FHQ60BUV1B ×3	RZQ200C7Y1B	50-400		17.2	19.2	20	—	14.7	0.75	0.7	0.062×3	0.6×3
FHQ71BUV1B ×3	RZQ200C7Y1B	50-400		17.2	19.2	20	—	14.7	0.75	0.7	0.062×3	0.6×3
FHQ100BUV1B×2	RZQ200C7Y1B	50-400		16.8	18.8	20	—	14.7	0.75	0.7	0.130×2	0.7×2
FUQ71BUV1B ×3	RZQ200C7Y1B	50-400		17.5	19.5	20	—	14.7	0.75	0.7	0.045×3	0.7×3
FUQ100BUV1B×2	RZQ200C7Y1B	50-400		17.6	19.6	20	—	14.7	0.75	0.7	0.090×2	1.1×2
FAQ71BUV1B ×3	RZQ200C7Y1B	50-400		16.3	18.3	20	—	14.7	0.75	0.7	0.043×3	0.3×3
FAQ100BUV1B×2	RZQ200C7Y1B	50-400		16.2	18.2	20	—	14.7	0.75	0.7	0.049×2	0.4×2
FDQ200B7V3B	RZQ200C7Y1B	50-400		15.4	17.4	20	—	14.7	0.75	0.7	0.650	6.8
FCQ60C7VEB ×4	RZQ250C7Y1B	50-400	Max.50Hz 415V Min.50Hz 380V	17.0	19.0	20	—	14.7	0.75	0.7	0.056×4	0.4×4
FCQ125C7VEB×2	RZQ250C7Y1B	50-400		17.4	19.4	20	—	14.7	0.75	0.7	0.120×2	1.0×2
FFQ60BV1B ×4	RZQ250C7Y1B	50-400		18.2	20.2	25	—	14.7	0.75	0.7	0.055×4	0.7×4
FBQ60B7V1 ×4	RZQ250C7Y1B	50-400		19.0	21.0	25	—	14.7	0.75	0.7	0.125×4	0.9×4
FBQ125B7V3B ×2	RZQ250C7Y1B	50-400		18.2	20.2	25	—	14.7	0.75	0.7	0.225×2	1.4×2
FHQ60BUV1B ×4	RZQ250C7Y1B	50-400		17.8	19.8	20	—	14.7	0.75	0.7	0.062×4	0.6×4
FHQ125BUV1B×2	RZQ250C7Y1B	50-400		16.8	18.8	20	—	14.7	0.75	0.7	0.130×2	0.7×2
FUQ125BUV1B×2	RZQ250C7Y1B	50-400		17.6	19.6	20	—	14.7	0.75	0.7	0.090×2	1.1×2
FDQ125B7V3B ×2	RZQ250C7Y1B	50-400		23.8	25.8	32	—	14.7	0.75	0.7	0.500×2	4.2×2
FDQ25OB7V3B	RZQ250C7Y1B	50-400		15.4	17.4	20	—	14.7	0.75	0.7	1.000	7.6

Part 3
Remote Controller

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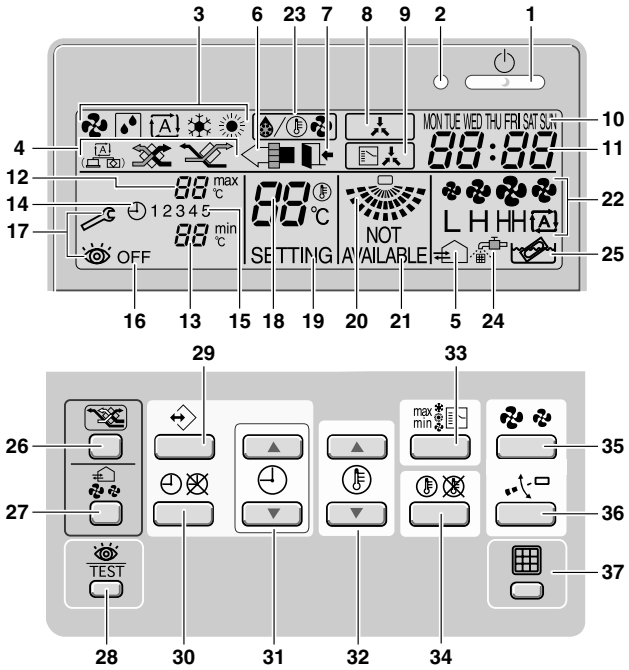
1. Wired Remote Controller

1.1 Features

BRC1D52 Type



1. ON/OFF BUTTON
   Press the ON/OFF button to start or stop the system.
2. OPERATION LAMP ○
   The operation lamp lights up during operation or blinks if a malfunction occurs.
3. OPERATION MODE ICON
   These icons indicate the current operation mode (FAN, DRY, AUTOMATIC, COOLING, HEATING).
4. VENTILATION MODE ICON
   These icons indicate the current ventilation mode (HRV only) (AUTOMATIC, HEAT EXCHANGE, BYPASS).
5. VENTILATION ICON
   The ventilation icon appears when the ventilation is adjusted with the ventilation amount button (HRV only). Simultaneously, the ventilation amount is indicated by the fan speed icon.
6. AIR CLEANING ICON
   This icon indicates that the air cleaning unit (option) is operational.
7. LEAVE HOME ICON
   The leave home icon shows the status of the leave home function.

ON	Leave home is enabled
FLASHING	Leave home is active
OFF	Leave home is disabled

8. EXTERNAL CONTROL ICON
   This icon indicates that another controller with higher priority is controlling or disabling your installation.
9. CHANGE-OVER UNDER CENTRALISED CONTROL ICON
   This icon indicates that the change-over of the installation is under centralised control assigned to another indoor unit or optional cool/heat selector connected to the outdoor unit (= master remote controller).
10. DAY OF THE WEEK INDICATOR MON TUE WED THU FRI SAT SUN
    The day of the week indicator shows the current week day (or the set day when reading or programming the schedule timer).
11. CLOCK DISPLAY 88:88
    The clock display indicates the current time (or the action time when reading or programming the schedule timer).

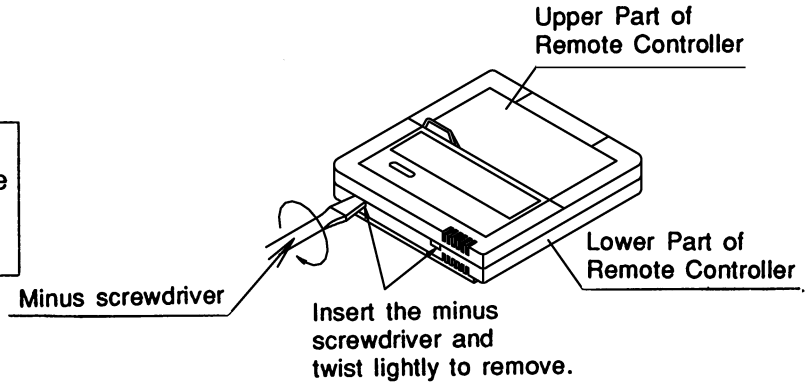
12. MAXIMUM SET TEMPERATURE 88 max °C
    The maximum set temperature indicates the maximum set temperature when in limit operation.
13. MINIMUM SET TEMPERATURE 88 min °C
    The minimum set temperature indicates the minimum set temperature when in limit operation.
14. SCHEDULE TIMER ICON
    This icon indicates that the schedule timer is enabled.
15. ACTION ICONS 1 2 3 4 5
    These icons indicate the actions for each day of the schedule timer.
16. OFF ICON OFF
    This icon indicates that the OFF action is selected when programming the schedule timer.
17. INSPECTION REQUIRED and
    These icons indicate that inspection is required. Consult your installer.
18. SET TEMPERATURE DISPLAY 88 °C
    This indicates the current set temperature of the installation (not shown in LIMIT operation or in FAN or DRY mode).
19. SETTING SETTING
    Not used, for service purposes only.
20. AIR FLOW DIRECTION ICON
    This icon indicates the air flow direction (only for installations with motorised air flow flaps).
21. NOT AVAILABLE NOT AVAILABLE
    NOT AVAILABLE is displayed whenever a non-installed option is addressed or a function is not available.
22. FAN SPEED ICON L H HH A
    This icon indicates the set fan speed.
23. DEFROST/HOTSTART MODE ICON
    This icon indicates that the defrost/hotstart mode is active.
24. AIR FILTER CLEANING TIME ICON
    This icon indicates the air filter must be cleaned. Refer to the manual of the indoor unit.
25. ELEMENT CLEANING TIME ICON
    This icon indicates the element must be cleaned (HRV only).
26. VENTILATION MODE BUTTON
    The ventilation mode button operates the HRV; refer to the manual for more details.
27. VENTILATION AMOUNT BUTTON
    This button sets the ventilation amount; refer to the manual for more details.
28. INSPECTION/TEST OPERATION BUTTON TEST
    Not used, for service purposes only.
29. PROGRAMMING BUTTON
    This button is a multi-purpose button.
    Depending on the previous manipulations of the user, the programming button can have various functions.
30. SCHEDULE TIMER BUTTON
    This button enables or disables the schedule timer.
31. TIME ADJUST BUTTON
    These buttons are used to adjust the clock or, when in programming mode, to adjust the programmed action time. Both buttons have an auto-repeat function.
32. TEMPERATURE ADJUST BUTTONS
    These buttons are used to adjust the current setpoint or, when in programming mode, to adjust the programmed setpoint temperature (step = 1°C). Both buttons are also used to adjust the day of the week.
33. OPERATION CHANGE/MIN-MAX BUTTON max min
    This button is a multi-purpose button. Depending on the previous manipulations of the user, it can have following functions:
    1 select the operation mode of the installation (FAN, DRY, AUTOMATIC, COOLING, HEATING)
    2 toggle between minimum temperature and maximum temperature when in limit operation
34. SETPOINT/LIMIT BUTTON
    This button toggles between setpoint, limit operation or OFF (programming mode only).
35. FAN SPEED BUTTON
    This button toggles between L (Low), H (High), HH (very High), A (Automatic).
36. AIR FLOW DIRECTION ADJUST BUTTON
    This button enables to adjust the air flow direction.
37. AIR FILTER CLEANING TIME ICON RESET BUTTON
    This button is used to reset the air filter cleaning time icon.

1.2 Installation

1. Remove the upper part of remote controller.

Insert minus screwdriver into the slots in the lower part of remote controller (2 places), and remove the upper part of remote controller.

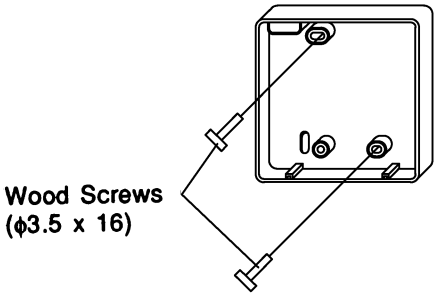
The P C board is mounted in the upper part of remote controller. Be careful not to damage the board with the minus screwdriver.

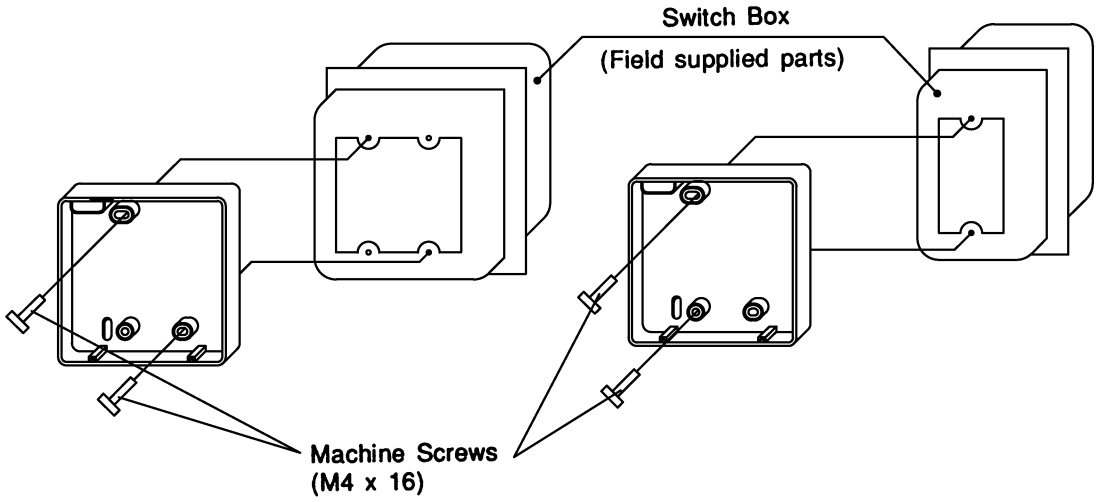


2. Fasten the remote controller.

① For exposed mounting, fasten with the included wood screws (2).

② For flush-mounting, fasten with the included machine screws (2).





For the field supplied switch box, use optional accessories KJB111A or KJB211A.

NOTE

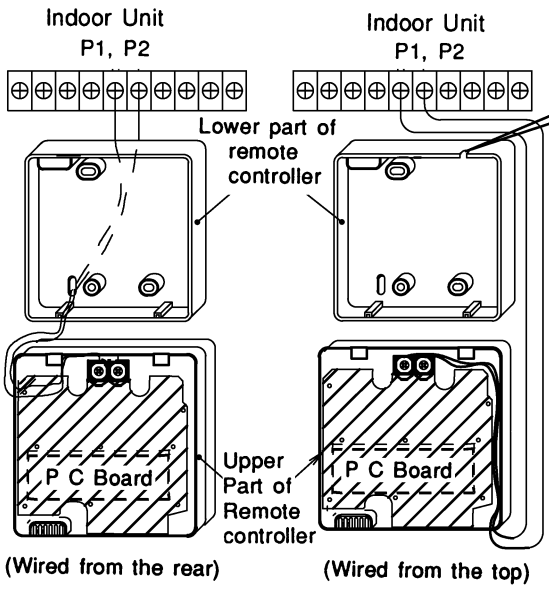
Choose the flattest place possible for the mounting surface. Be careful not to distort the shape of the lower part of remote controller by over-tightening the mounting screws.

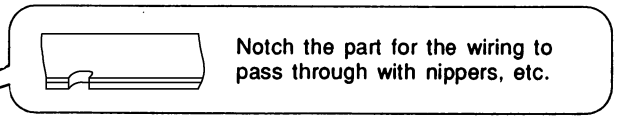
(S1019)

3. Wire the indoor unit.

Connect the terminals on top of the upper part of remote controller(P1, P2), and the terminals of the indoor unit (P1, P2). (P1 and P2 do not have polarity.)

NOTE
When wiring, run the wiring away the power supply wiring in order to avoid receiving electric noise (external noise).

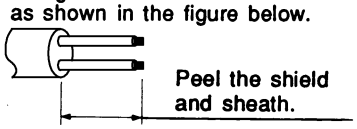




Wiring Specifications

Wiring Type	Sheathed vinyl code or cable (2 wire) (See NOTE 2)
Size	0.75 – 1.25 mm^2

NOTE) 1. Peel the shield and sheath for the part that is to pass through the inside of the remote controller case, as shown in the figure below.



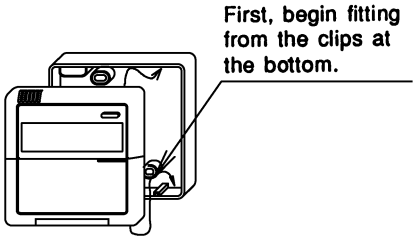
2. Shield wire (2 wire) can be used for remote controller wiring, but it must confirm to EMC (Electromagnetic Compatibility) (Australian regulation).

4. Reattach the upper part of remote controller.

Be careful not to pinch the wiring when attaching.

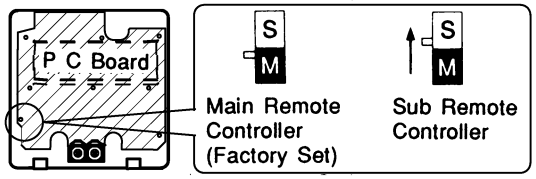
NOTE

1. The switch box and wiring for connection are not included.
2. Do not directly touch the PC board with your hand.



If controlling one indoor unit with two remote controllers

Change the MAIN/SUB changeover switch setting as described below.



Set one remote controller to "main," and the other to "sub."

NOTE

- If controlling with one remote controller, be sure to set it to "main."
- Set the remote controller before turning power supply on.

"88" is displayed for about one minute when the power supply is turned on, and the remote controller cannot be operated in some cases.

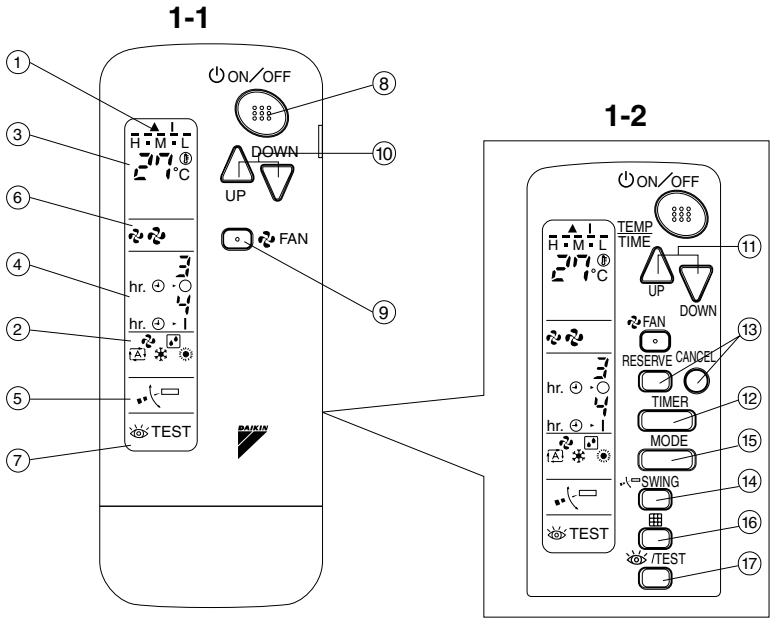
(S1020)

2. Wireless Remote Controller

2.1 Features

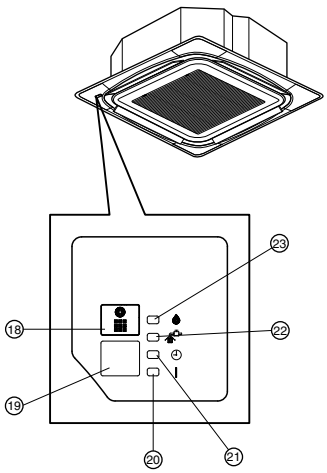
Names and Function

Name of Option		Model Series				
		FCQ-C	FFQ-B	FHQ-BU	FAQ71B	FAQ100B
Remote Controller	H / P	BRC7F532F	BRC7E530W	BRC7E63W	BRC7E618	BRC7C510W

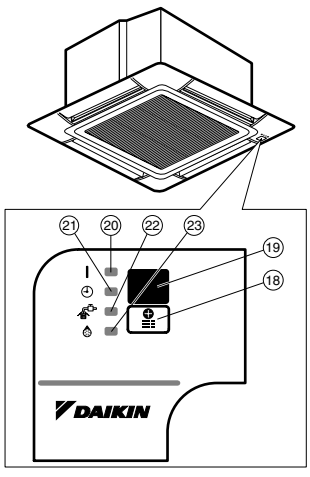


Explanation of Receiver

FCQ-C

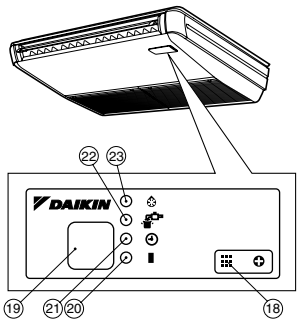


FFQ-B



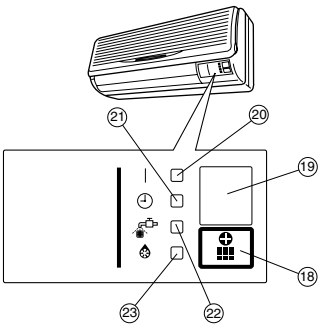
3P107422-1F

FHQ-BU



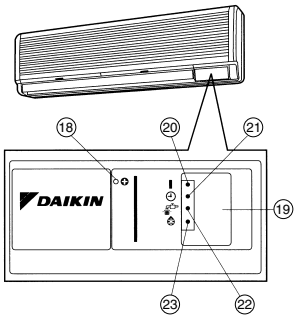
3PA63363-21T

FAQ71B



3PA63363-25Z

FAQ100B



3PA63363-8L

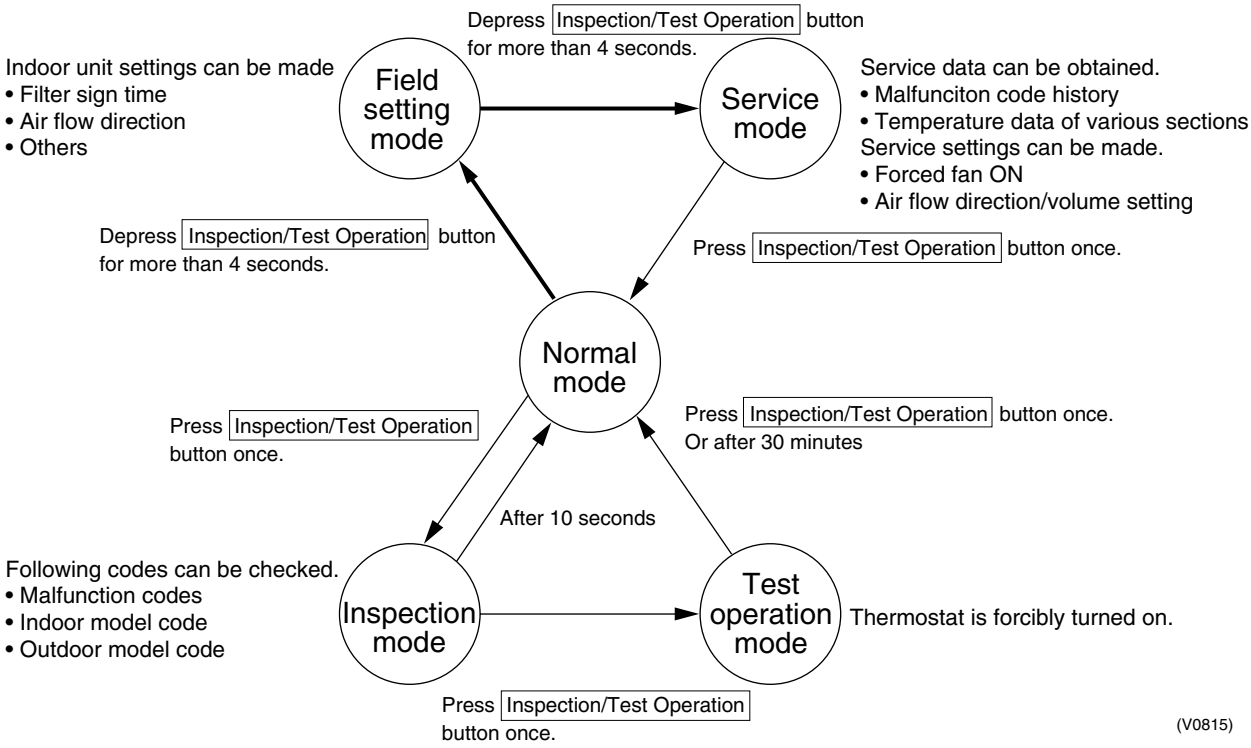
1	**DISPLAY " ▲ " (SIGNAL TRANSMISSION)**
	This lights up when a signal is being transmitted.
2	**DISPLAY " " " " " " " " " " (OPERATION MODE)**
	This display shows the current OPERATION MODE. For straight cooling type, " " (Auto) and " " (Heating) are not installed.
3	**DISPLAY " " (SET TEMPERATURE)**
	This display shows the set temperature.
4	**DISPLAY " " (PROGRAMMED TIME)**
	This display shows PROGRAMMED TIME of the system start or stop.
5	**DISPLAY " " (AIR FLOW FLAP)**
6	**DISPLAY " " " " (FAN SPEED)**
	The display shows the set fan speed.
7	**DISPLAY " TEST " (INSPECTION/ TEST OPERATION)**
	When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.
8	**ON/OFF BUTTON**
	Press the button and the system will start. Press the button again and the system will stop.
9	**FAN SPEED CONTROL BUTTON**
	Press this button to select the fan speed, HIGH or LOW, of your choice.
10	**TEMPERATURE SETTING BUTTON**
	Use this button for SETTING TEMPERATURE (Operates with the front cover of the remote controller closed.)
11	**PROGRAMMING TIMER BUTTON**
	Use this button for programming "START and/or STOP" time. (Operates with the front cover of the remote controller opened.)
12	**TIMER MODE START/STOP BUTTON**
13	**TIMER RESERVE/CANCEL BUTTON**
14	**AIR FLOW DIRECTION ADJUST BUTTON**
15	**OPERATION MODE SELECTOR BUTTON**
	Press this button to select OPERATION MODE.
16	**FILTER SIGN RESET BUTTON**
	Refer to the section of MAINTENANCE in the operation manual attached to the indoor unit.
17	**INSPECTION/TEST OPERATION BUTTON**
	This button is used only by qualified service persons for maintenance purposes.
18	**EMERGENCY OPERATION SWITCH**
	This switch is readily used if the remote controller does not work.
19	**RECEIVER**
	This receives the signals from the remote controller.
20	**OPERATING INDICATOR LAMP (Red)**
	This lamp stays lit while the air conditioner runs. It flashes when the unit is in trouble.
21	**TIMER INDICATOR LAMP (Green)**
	This lamp stays lit while the timer is set.
22	**AIR FILTER CLEANING TIME INDICATOR LAMP (Red)**
	Lights up when it is time to clean the air filter.
23	**DEFROST LAMP (Orange)**
	Lights up when the defrosting operation has started. (For straight cooling type this lamp does not turn on.)

C: 3PA63363-25Z
C: 3PA63363-21T
C: 3P107422-1F
C: 3PA63363-8L

3. Method of Operating Remote Controller

3.1 The INSPECTION / TEST Button

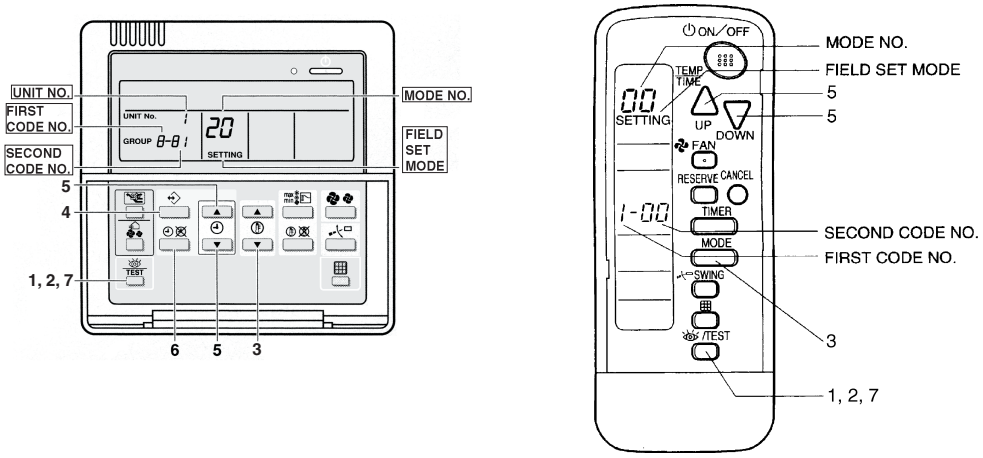
The following modes can be selected by using the [Inspection/Test Operation] button on the remote control.



3.2 Maintenance Mode Setting

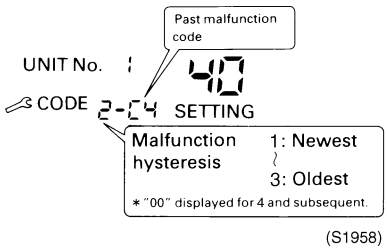
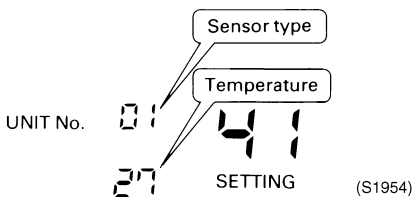
3.2.1 Service Data Confirmation

Procedure



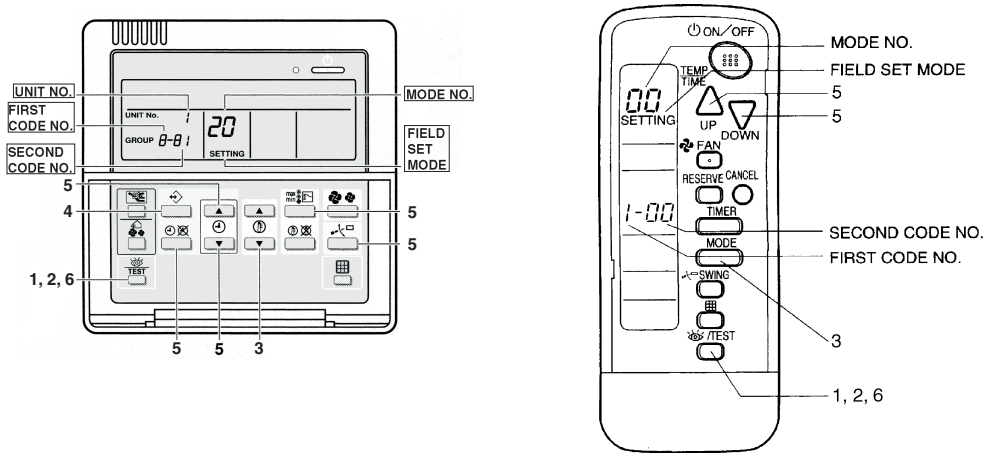
1. Enter the field set mode.
   Continue to push the inspection / test operation button for a minimum of 4 seconds.
2. Enter the service mode.
   After having entered the field set mode, continue to push the inspection / test operation button for a minimum of 4 seconds.
3. Select the mode No.
   Set the desired mode No. with the up/down temperature setting button.
4. Select the unit No.
   Select the indoor unit No. set with the TIME MODE START/STOP button.
5. Select the necessary settings for each mode. (Modes 40 or 41)
6. Select the desired malfunction hysteresis of sensor data display with ▲ or ▼ button. (In case of wireless remote controller, use ▲ UP or ▽ DOWN button.)
   Each data displays (Refer below display)
7. Return to the normal operation mode.
   Press the inspection / test operation button one time.

Table

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
40	Malfunction Hysteresis	You can change the history with the programming time up-down button.	
41	Sensor Data Display	Select the display sensor with the programming time up-down button	
		Display sensor 00 Remote control sensor 01 Suction 02 Heat exchange	

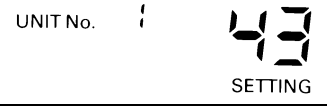
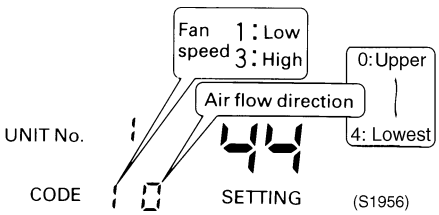
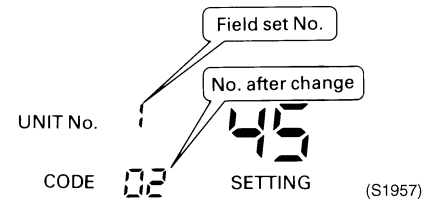
3.2.2 Service Mode Setting

Procedure

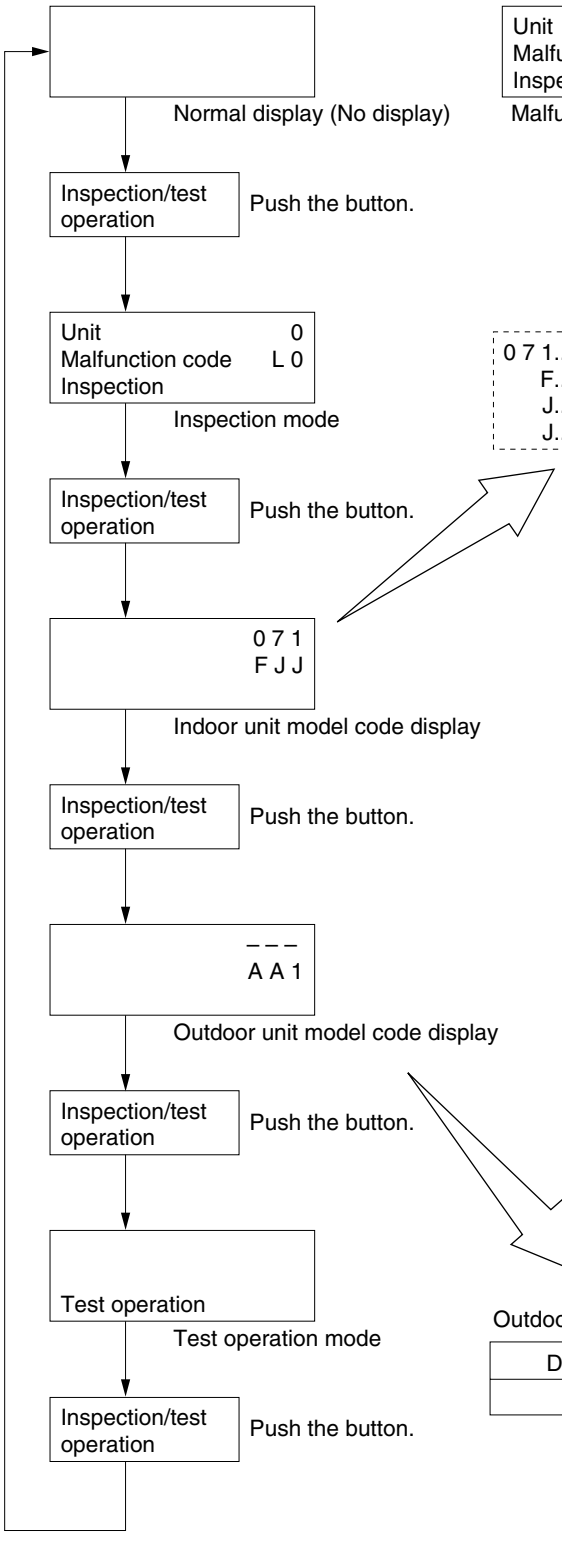


1. Enter the field set mode.
   Continue to push the inspection / test operation button for a minimum of 4 seconds.
2. Enter the maintenance mode.
   After having entered the field set mode, continue to push the inspection / test operation button for a minimum of 4 seconds.
3. Select the mode No. (Mode 43, 44 or 45)
   Set the desired mode No. with the up/down temperature setting button.
4. Select the unit No.
   Select the indoor unit No. set with the TIME MODE START/STOP button.
5. Carry out the necessary settings for each mode. (Mode 43 only possible for wireless remote controller)
   - In case of Mode 43;
     Press TIMER ON / OFF BUTTON to decide the forced Fan ON.
   - In case of Mode 44;
     Set “Fan speed” with FAN SPEED CONTROL BUTTON and “Air flow direction” with AIR FLOW DIRECTION ADJUSTING BUTTON, then press TIMER ON / OFF BUTTON to decide.
   - In case of Mode 45;
     Select the changed unit No. with ▲ or ▼ button, then press TIMER ON / OFF BUTTON to decide.
6. Return to the normal operation mode.
   Tap the inspection / test operation button one time.

Table

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
43	Forced Fan ON	Turns the fan ON for each unit individually.	
44	Individual Setting	Sets fan speed and air flow direction for each unit individually when using group control. Settings are made using the “air flow direction adjust” and “fan speed adjust” buttons.	
45	Unit No. Change	Changes unit No. Set the unit No. after changing with the programming time up-down button.	

3.3 Operation of the Remote Controller's Inspection / Test Operation Button



0 7 1... Capacity code
F... Indoor unit system code
J... Indoor unit type code
J... Progression code

Indoor unit system code

Display	System classification
F	Standard indoor unit

Indoor unit type code

Display	Type	Model
C	Double flow	FCQ
F	Multi flow	FFQ
J	Built-In	FBQ
P	High static pressure	FDQ
H	Ceiling suspended	FHQ
5	Ceiling suspended cassette	FUQ
A	Wall mounted	FAQ

Outdoor model code

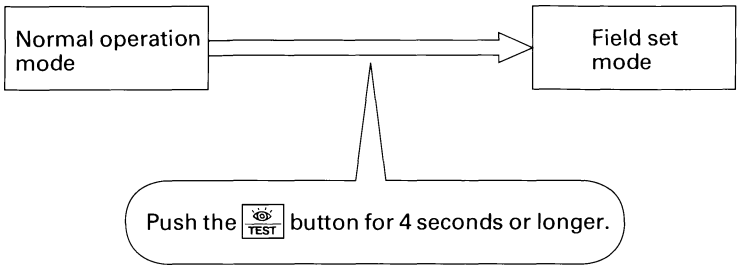
Display	Model
2AA	RZQ-C

(V2775)

3.4 Remote Controller Service Mode

How to Enter the Service Mode

The operation of the Inspection/Test Operation button on the remote controller allows the unit to enter the Test Operation mode.



When the Start/Stop button is pushed after the Test Operation mode is set, test operation starts. ("Test Operation" appears on the remote controller.)

Part 4
Field Setting

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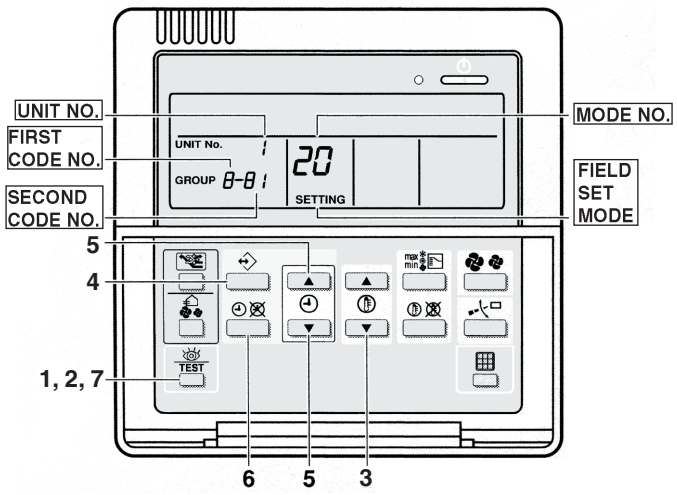
1. Field Setting of Indoor Unit

1.1 Field Setting from Remote Controller

Individual function of indoor unit can be changed from the remote controller. At the time of installation or after service inspection / repair, make the local setting in accordance with the following description.
Wrong setting may cause malfunction.
(When optional accessory is mounted on the indoor unit, setting for the indoor unit may be required to change. Refer to information in the option handbook.)

1.1.1 Wired Remote Controller

BRC1D52 type

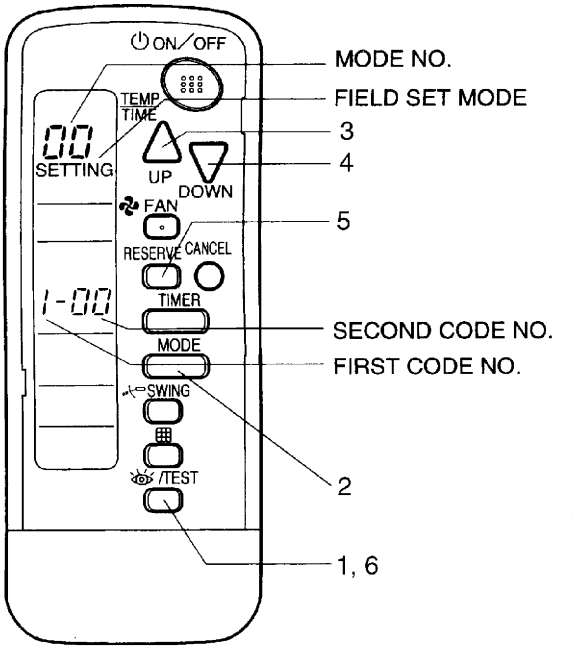


1. When in the normal mode, press the " TEST " button for a minimum of four seconds, and the FIELD SET MODE is entered.
2. Select the desired MODE NO. with the " " button (2).
3. During group control, when setting by each indoor unit (mode No. 20, 21, 22 and 23 have been selected), push the " " button (3) and select the INDOOR UNIT NO to be set. (This operation is unnecessary when setting by group.)
4. Push the " " upper button (4) and select FIRST CODE NO.
5. Push the " " lower button (5) and select the SECOND CODE NO.
6. Push the " " button (6) once and the present settings are SET.
7. Push the " TEST " button (7) to return to the NORMAL MODE.

(Example)
If during group setting and the time to clean air filter is set to FILTER CONTAMINATION, HEAVY, SET MODE NO. to "10" FIRST CODE NO. to "0", and SECOND CODE NO. to "02".

1.1.2 Wireless Remote Controller - Indoor Unit

BRC7 type



(V2770)

1. When in the normal mode, push the " /TEST " button for 4 seconds or more, and operation then enters the "field set mode".
2. Select the desired "mode No." with the " MODE " button.
3. Pushing the " UP " button, select the first code No.
4. Pushing the " DOWN " button, select the second code No.
5. Push the timer " RESERVE " button and check the settings.
6. Push the " /TEST " button to return to the normal mode.

(Example)
When setting the filter sign time to "Filter Dirtiness-High" in all group unit setting, set the Mode No. to "10", Mode setting No. to "0" and setting position No. to "0".

1.2 Setting Contents and Code No. – SkyAir Indoor Unit

Indoor unit settings	Mode No. Note 2	Setting Switch No.	Setting Contents		Second Code No.(Note 3)			
					01	02	03	04
	10(20)	0	Filter contamination heavy/ light (Setting for display time to clean air filter) (Sets display time to clean air filter to half when there is heavy filter contamination.)	Super long life filter	Light Approx. 10,000 hrs.	Heavy Approx. 5,000 hrs.	—	—
				Long life filter	Approx. 2,500 hrs.	Approx. 1,250 hrs.		
				Standard filter	Approx. 200 hrs.	Approx. 100 hrs.		
		1	Long life filter type		Long life filter	Ultra long life filter	—	—
		2	Thermostat sensor in remote controller		Use	No use	—	
		3	Display time to clean air filter calculation (Set when filter sign is not to be displayed.)		Display	No display	—	
	11(21)	0	Setting of the number of units for multi-unit simultaneous operation		Pair	Twin	Triple	Double Twin
		1	Individual setting for multi-unit simultaneous operation		Group	Individual	—	—
		2	Indoor unit fan OFF when cooling/ heating is OFF		(Normal)	Fan OFF	—	—
		4	PMV Control		Permitted	Prohibited	—	
	12(22)	3	Fan speed when heating thermostat OFF		LL	Set Fan Speed	—	—
		5	Automatic restart after power outage reset		OFF	ON	—	—
		6	Fan speed when cooling thermostat OFF		LL	Set Fan Speed	—	—
	13(23)	0	High air outlet velocity (Set when installed in place with ceiling higher than 2.7 m.)		N	H	S	—
		1	Selection of air flow direction (Set when a blocking pad kit has been installed.)		F (4 directions)	T (3 directions)	W (2 directions)	—
		3	Air flow direction adjustment (Set at installation of decoration panel.)		Equipped	Not equipped	—	—
		4	Field set air flow position setting		Draft prevention	Standard	Ceiling Soiling prevention	—
		5	Field set fan speed selection (fan speed control by air discharge outlet for phase control)		Standard	Optional accessory 1	Optional accessory 2	—
		6	External static pressure setting (To be set according to connected duct resistance)		Standard (Standard)	High Static Pressure (High Ceiling Setting)	Low Static Pressure	—
	15(25)	1	Humidification when heating thermostat is OFF		Not equipped	Equipped	—	—
		3	Drain pump humidifier interlock selection		Individual	Interlock	—	—
		5	Field set selection for individual ventilation setting by remote controller		Not equipped	Equipped	—	—
		8	Field set selection for humidifier control by humidity sensor		Not equipped	Equipped	—	—

Notes :

1. Settings are made simultaneously for the entire group, however, if you select the mode No. inside parentheses, you can also set by each individual unit. Setting changes however cannot be checked except in the individual mode for those in parentheses.
2. The mode numbers inside parentheses cannot be used by wireless remote controllers, so they cannot be set individually. Setting changes also cannot be checked.
3. Marked ▭ are factory set.
4. Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
5. “88” may be displayed to indicate the remote controller is resetting when returning to the normal mode.

1.3 Detailed Explanation of Setting Modes

1.3.1 Filter Sign Setting

If switching the filter sign ON time, set as given in the table below.

Set Time

Mode No.	First Code No.	Second Code No.	Filter Specs.			Setting
			Standard	Long Life	Ultra Long Life Filter	
10 (20)	0	01	200 hrs.	2,500 hrs.	10,000 hrs.	Contamination Light
		02	100 hrs.	1,100 hrs.	5,000 hrs.	Contamination Heavy

1.3.2 Ultra-Long-Life Filter Sign Setting

When a Ultra-long-life filter is installed, the filter sign timer setting must be changed.
It blinks based on the “filter cleaning” display interval.

Setting Table

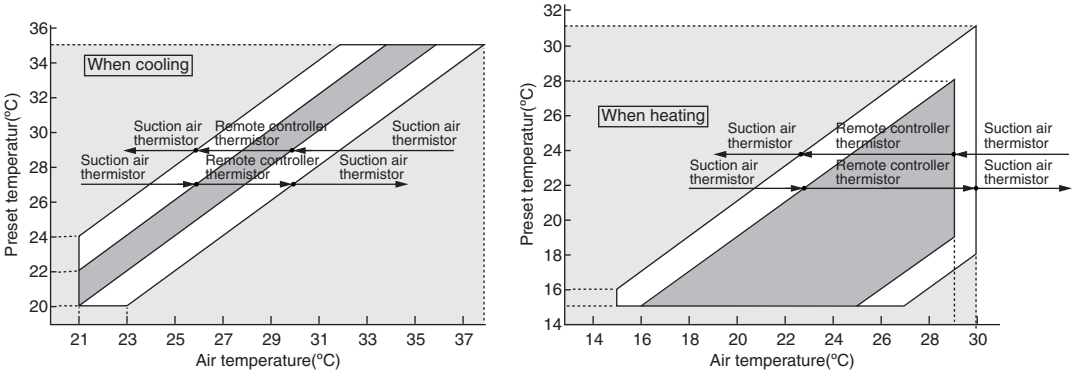
Mode No.	Setting Switch No.	Setting Position No.	Setting
10 (20)	1	01	Long-Life Filter
		02	Ultra-Long-Life Filter

1.3.3 Selection of Thermistor

Select the thermistor to control indoor temperature.

Mode No.	First Code No.	Second Code No.	Thermistor that controls indoor temperature
10 (20)	2	01	Indoor air thermistor for remote controller and suction air thermistor for indoor unit
		02	Suction air thermistor for indoor unit

The factory setting for the Second Code No. is "02" and indoor temperature is controlled by the indoor unit suction air thermistor.
When the Second Code No. is set to "01," the suction air thermistor and the remote controller thermistor are concurrently operated. Their control is shown in the upper right figure.



1.3.4 "Filter Cleaning" Displayed or Not Displayed

Whether or not to display "Filter Cleaning" after operation of certain duration can be selected.

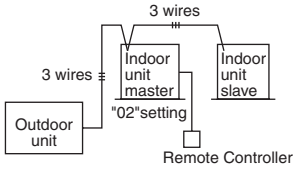
Mode No.	First Code No.	Second Code No.	"Filter Cleaning" Display
10 (20)	3	01	Yes
		02	No

1.3.5 Setting of the Number of Units for Multi-Unit Simultaneous Operation

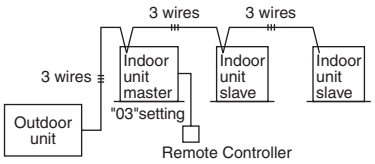
When using multi-unit simultaneous operation, change the Second Code No. according to the number of units connected as shown in the following table. The factory setting for the Second Code No. is "01" (the number of unit connected).

Mode No.	First Code No.	Second Code No.	Setting
11 (21)	0	01	Pair (1)
		02	Twin Multi (2)
		03	Triple-Multi (3)
		04	Double Twin Multi (4)

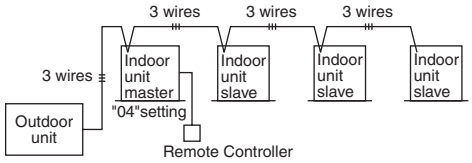
Twin Multi



Triple Multi



Double Twin Malti



Note

1. If there is a setting error, connection error malfunction (display on remote controller: UR) will result. (A detection time of 3 minutes is required after turning on the power.)
2. If different unit models are connected, use the one with the largest number of functions as the master unit.

1.3.6 Individual Setting for Multi-Unit Simultaneous Operation

When master and slave units are set separately, follow the procedure below:

1. For individual setting of a slave unit, switch the Second Code No. to "02" (individual setting). (The factory setting for the Second Code No. is "01" (unified setting).)

Setting	Mode No.	First Code No.	Second Code No.
Unified setting	11 (21)	1	01
Individual setting			02

2. Set the master unit according to the "Field Setting Procedure" section.
3. After the completion of Step 2 above, be sure to turn OFF the power.
4. Remove the remote controller from the master unit and connect to the slave unit.
5. Turn ON the power again and switch the Second Code No. to "02" as done in Step 1.
6. Make all the settings of the slave unit according to the "Field Setting Procedure" section.
7. After the completion of Step 6 above, be sure to turn OFF the power.
8. If there are more than 2 slave unit, repeat Steps 4 through 7.
9. After the completion of the setting of slave units, return the remote controller from the slave units to the master unit to end this procedure.

1.3.7 Fan Speed OFF when Thermostat is OFF

When the cool/heat thermostat is OFF, you can stop the indoor unit fan by switching the setting to “Fan OFF.”

∗ Used as a countermeasure against odor for barber shops and restaurants.

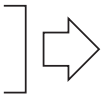
Setting Table

Mode No.	First Code No.	Second Code No.	Setting
11 (21)	2	01	—
		02	Fan OFF

1.3.8 Automatic Operation Mode Control

Selection of the "Automatic Operation Mode" with a remote controller prevents excessive cooling and heating and offers the most comfortable air temperatures.

· Outdoor air temperature
· Indoor air temperature
· Temperature set by remote controller



The ideal target indoor temperature is determined and controlled.

When "Permitted" is switched to "Prohibited" in the field setting, the "Automatic Operation Mode" cannot be selected with the remote controller.

1.3.9 Fan Speed Changeover when Heating Thermostat is OFF

By setting to “Set Fan Speed,” you can switch the fan speed to the set fan speed when the heating thermostat is OFF.

∗ Since there is concern about draft if using “fan speed up when thermostat is OFF,” you should take the setup location into consideration.

Setting Table

Mode No.	First Code No.	Second Code No.	Setting
12 (22)	3	01	LL Fan Speed
		02	Set Fan Speed

1.3.10 Auto Restart after Power Failure Reset

For the air conditioners with no setting for the function, the units will be left in the stop condition when the power supply is reset automatically after power failure reset or the main power supply is turned on again after once turned off. However, for the air conditioners with the setting (factory setting), the units may start automatically after power failure reset or the main power supply turned on again (return to the same operation condition as that of before power failure).

Setting Table

Mode No.	First Code No.	Second Code No.	Setting
12 (22)	5	01	Not automatic restart
		02	Automatic restart (factory setting)

For the above reasons, when the unit is set enabling to utilize “Auto restart function after power failure reset”, utmost care should be paid for the occurrence of the following situation.

Caution

1. The air conditioner starts operation suddenly after power failure reset or the main power supply turned on again. Consequently, the user might be surprised (with question for the reason why).

2. In the service work, for example, turning off the main power switch during the unit is in operation, and turning on the switch again after the work is completed start the unit operation (the fan rotates).

1.3.11 Fan Speed Changeover when Cooling Thermostat is OFF

By setting to “Set Fan Speed,” you can switch the fan speed to the set fan speed when the cooling thermostat is OFF.

Setting Table

Mode No.	First Code No.	Second Code No.	Setting
12 (22)	6	01	LL Fan Speed
		02	Set Fan Speed

1.3.12 Air Flow Adjustment - Ceiling Height

Make the following setting according to the ceiling height. The setting position No. is set to “01” at the factory.

■ **In the Case of FHQ, FAQ**

Mode No.	Setting Switch No.	Setting Position No.	Setting
13 (23)	0	01	Wall-mounted type: Standard
		02	Wall-mounted type: Slight increase
		03	Wall-mounted type: Normal increase

■ **In the Case of FUQ, FFQ**

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets*
13 (23)	0	01	Standard (N)	Lower than 2.7 m	Lower than 3.0 m	Lower than 3.5 m
		02	High Ceiling (H)	Lower than 3.0 m	Lower than 3.3 m	Lower than 3.8 m
		03	Higher Ceiling (S)	Lower than 3.5 m	Lower than 3.5 m	—

* FFQ can not set two ways outlets.

■ **In the Case of FCQ50~71**

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 2.7 m	Lower than 3.0 m	Lower than 3.5 m
		02	High Ceiling (H)	Lower than 3.0 m	Lower than 3.5 m	Lower than 3.8 m
		03	Higher Ceiling (S)	Lower than 3.5 m	Lower than 3.8 m	—

■ **In the Case of FCQ100~125**

Mode No.	First code No.	Second code No.	Setting	Ceiling height		
				4-way Outlets	3-way Outlets	2-way Outlets
13 (23)	0	01	Standard (N)	Lower than 3.2 m	Lower than 3.6 m	Lower than 4.2 m
		02	High Ceiling (H)	Lower than 3.6 m	Lower than 4.0 m	Lower than 4.2 m
		03	Higher Ceiling (S)	Lower than 4.2 m	Lower than 4.2 m	—

1.3.13 Air Flow Direction Setting

Set the air flow direction of indoor units as given in the table below. (Set when optional air outlet blocking pad has been installed.) The second code No. is factory set to “01.”

Setting Table

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	1	01	F : 4-direction air flow
		02	T : 3-direction air flow
		03	W : 2-direction air flow*

* FFQ can not set two-direction air flow.

1.3.14 Setting of Air Flow Direction Adjustment

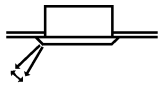
Only the model FBQ has the function.
When only the front-flow is used, sets yes/no of the swing flap operation of down-flow.

Setting Table

Setting	Mode No.	First Code No.	Second Code No.
Down-flow operation: Yes	13 (23)	3	01
Down-flow operation: No			02

1.3.15 Setting of Air Flow Direction Adjustment Range

Make the following air flow direction setting according to the respective purpose.



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Setting Table

Mode No.	First Code No.	Second Code No.	Setting
13 (23)	4	01	Upward (Draft prevention)
		02	Standard
		03	Downward (Ceiling soiling prevention)

* Some indoor models are not equipped with upward draft prevention.

1.3.16 Air Flow Rate Switching at Discharge Grille for Field Air Flow Rate Switching

When the optional parts (high efficiency filter, etc.) is installed, sets to change fan speed for securing air flow rate.
Follow the instruction manual for the optional parts to enter the setting numbers.

1.3.17 Setting of the Static Pressure Selection

Mode No.	First Code No.	Second Code No.	External static pressure
13 (23)	6	01	Standard (15Pa)
		02	High static pressure (44Pa)
		03	Low Static pressure

⇩

Settings for each target model

Model	Second Code No.	Setting conditions
FBQ	01	Ceiling height less than 3 m
	02	Ceiling height between 3 and 3.8 m
FDQ	01	Standard static pressure
	02	High static pressure

1.3.18 Humidification when Heating Thermostat is OFF

When the "Humidification Setting" is selected, the humidifier is turned ON if the suction temperature is 20°C or more while the heater thermostat is OFF. The humidifier is turned OFF when it is 18°C or less.

Mode No.	First Code No.	Second Code No.	Setting
15 (25)	1	01	—
		02	Humidification setting

1.3.19 Interlocked Operation between Humidifier and Drain Pump

When a humidifier is incorporated in the indoor unit, "interlock setting" becomes necessary whenever water is drained inside the unit. When water is drained outside the unit, this setting is unnecessary.

Mode No.	First Code No.	Second Code No.	Setting
15 (25)	3	01	Individual operation of humidifier
		02	Interlocked operation between humidifier and drain pump

2. Field Setting of Outdoor Unit

2.1 Field Setting from Remote Controller

2.1.1 Remote Controller Settings

Field setting, which was conventionally done only from outdoor units, can be partly performed from a remote controller. The setting procedure is same as that for indoor unit.

The table below contains the remote controller settings.

[ ]: Factory settings

Mode No.	First code	Description	Second No.						
			01	02	03	04	05	06	07
16 or 26	0	Select from "Low Night Noise Setting", "Capacity Precedence Setting".	Disabled (Factory setting)	Automatic low noise activation	Low Night Noise setting + Capacity precedence setting	—	—	—	—
	1	Setting of "starting time", and "ending time" for the Low Night Noise Setting.	22h00~ 06h00	22h00~ 08h00	22h00 ~ 06h00	22h00 ~ 08h00 (Factory setting)	20h00 ~ 08h00	22h00~ 08h00	20h00 ~ 08h00
	2	Selection of Flat Installation	Disabled (Factory setting)	—	—	—	Flat installation applicable	—	—
	3		Standard (Factory setting)	Delayed defrost start	Early defrost start	—	—	—	—

Note

1. Setting in Mode No. 16 is group setting. For individual setting of each outdoor unit, use Mode No. 26 and make settings for each indoor unit connected.
2. The factory settings for Second Code No. are shown in the boxes with thick lines in the table above.
3. When returning to Normal Mode, "88" may appear to initialize the remote controller.
4. Do not set anything not shown above.

2.1.2 Field Setting Procedure

1. When in the normal mode, press the " TEST " button for a minimum of four seconds, and the FIELD SET MODE is entered.
2. Select the desired MODE NO. with the " " button (2).
3. During group control, when setting by each indoor unit (mode No. 20, 21, 22 and 23 have been selected), push the " " button (3) and select the INDOOR UNIT NO to be set. (This operation is unnecessary when setting by group.)
4. Push the " " upper button (4) and select FIRST CODE NO.
5. Push the " " lower button (5) and select the SECOND CODE NO.
6. Push the " " button (6) once and the present settings are SET.
7. Push the " TEST " button (7) to return to the NORMAL MODE.

2.1.3 Explanation of Each Setting

Nighttime low noise setting

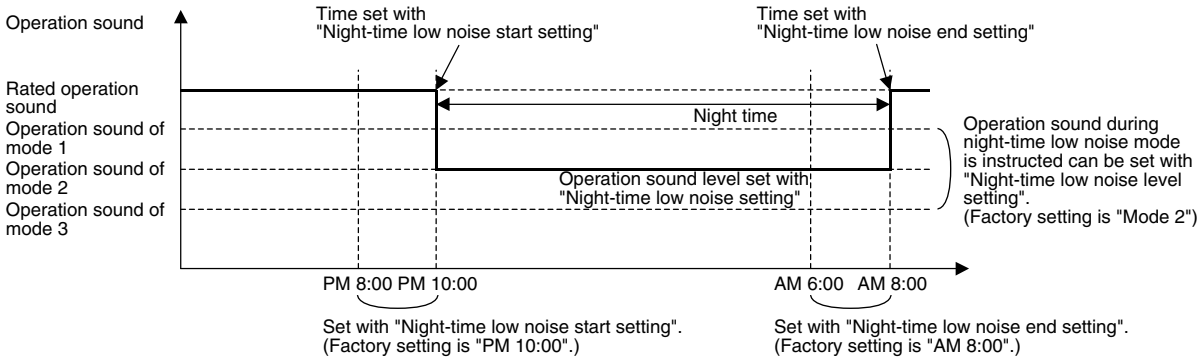
This setting is selected when automatic low noise operation is desired during nighttime. There are three levels for low noise operation and "low noise level 3" is the quietest. Furthermore, start/end time of low noise operation can be set and changed.

Setting position	Remarks	Application
		RZQ200 • 250
Low noise level 1	Quietest	○
Low noise level 2 (factory setting)		○
Low noise level 3		○

Setting procedure

Take the following steps by referring to "Field setting by remote controller" on the previous page.

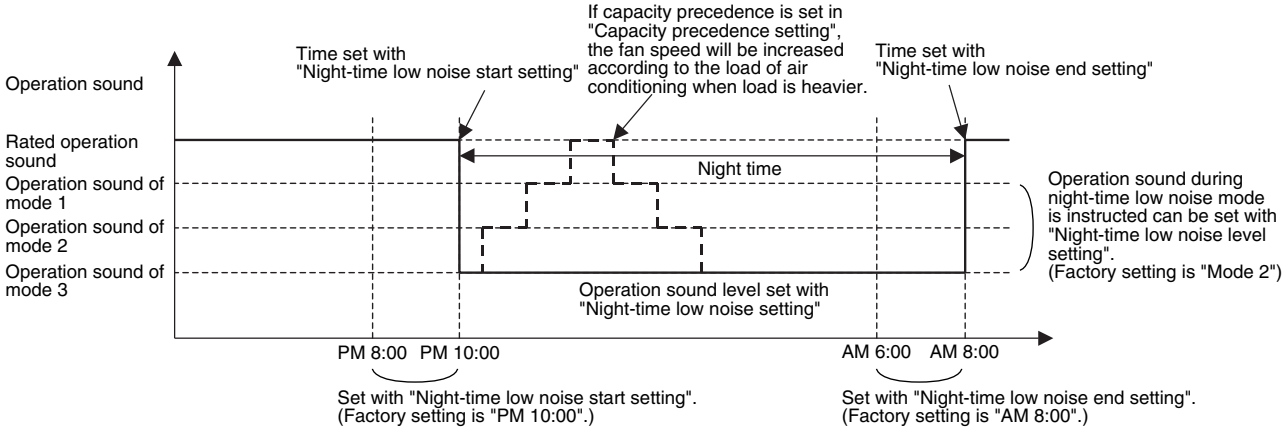
1. Use "the setting switch No. 0" to select "Nighttime low noise setting".
2. Select the most suitable combination of "Low noise level", "Start time" and "End time" from the table using "the setting switch No. 1", as needed. However, "Start time" and "End time" must be regarded as a guide because they are estimated based on the outside air temperature.



Capacity precedence setting

This setting should be selected when you desire to automatically stop the low noise operation and to switch it to normal operation in case where air conditioning load increases.

■ Image of operation when "Nighttime low noise setting" + "Capacity precedence setting" are selected



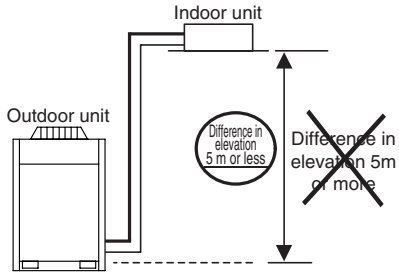
* "Start time" and "End time" must be regarded as a guide because they are estimated based on the outside air temperature.

2.1.4 In Case of Flat Installation

For flat installation where an indoor unit and an outdoor unit are installed with a difference in elevation of less than 5 m, use this setting.
An energy-saving effect is prominent during low cooling operation with outside air (partial load operation).
It is applicable to the installation as shown in the figure below.
Do not change the setting for other installation conditions.
Deficiency in performance may result.

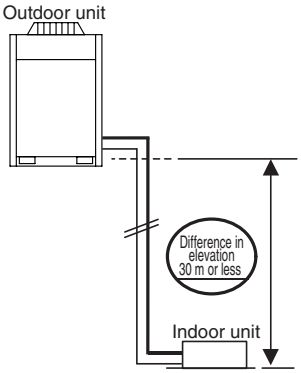
When the indoor unit is installed in an upper position

- A difference in elevation is 5 m or less: ○ (Setting possible)
  A difference in elevation exceeds 5 m: × (Setting impossible)



When the indoor unit is installed in a lower position

- A difference in elevation is 30 m or less: ○ (Setting possible)
  (The maximum difference in elevation between indoor and outdoor units)



Note

1. The energy-saving effect in the flat installation mode is prominent during partial load operation when cooling. (No such an effect during heating)
2. The range of cooling partial load operation, where the energy-saving effect in the flat installation mode is prominent, varies largely depending on the setting of indoor temperature (air conditioning load).
3. The difference in elevation must be 5 m or less; however, the piping can cope with the maximum piping length (or equivalent).
4. The energy-saving effect is prominent even when the indoor unit is installed lower than the outdoor unit.

2.1.5 Setting of Defrost Start Time

Used to set the time to forcedly start defrosting operation
The factory setting for the Second Code No. is "01."

Mode No.	First Code No.	Second Code No.	Setting	Defrosting operation interval (*1)	
				Outside air temperature > -5°C	Outside air temperature ≤ -5°C
16 (26)	3	01	Standard	3 hrs	6 hrs
		02	Delayed Defrost Start	6 hrs	8 hrs
		03	Early Defrost Start	40 min	40 min

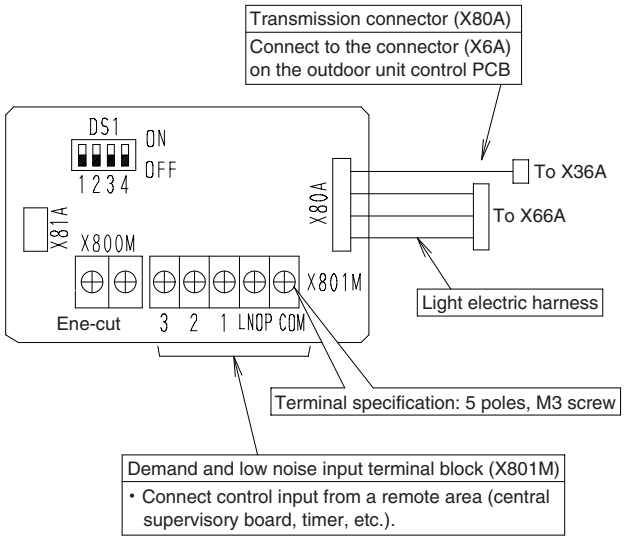
*1: "Defrosting operation interval" is the maximum length of time that heating operation continues. Defrosting operation may start earlier than the preset time depending on operational conditions.

2.2 Field Setting by Demand Adapter

- A demand adapter (optional: KRP58M2) is used to make the following setting for outdoor units.
  1) Setting of demand operation by external input
  2) Setting of low noise operation by external input

Parts and Function

- DS1, X81A and X800M cannot be used for RZQ200 and 250C models.
- For the connection of "sky-ene-cut," use the connector (X14A) on the control board.



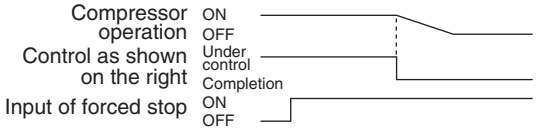
2.2.1 Demand Operation by External Input

If you want to reduce power consumption, perform "demand operation" to forcedly restrict the outdoor unit capacity using a demand adapter (optional: KRP58M2).

[Types of demand operation]

Setting	Demand description
Demand 1	70% of rated power consumption
Demand 2	40% of rated power consumption
Demand 3	Forced thermostat OFF (*)

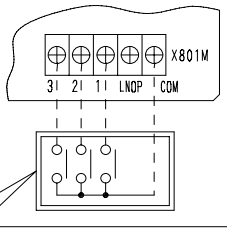
* Forced thermostat OFF
When this setting intervenes the operation mode as shown on the below, the compressor stops after the operation mode as shown on the below completes.



Compressor startup control	Requires approx. 2 minutes
Defrosting operation (during heating)	May require up to approx. 10 minutes
Oil return operation * This is operation to return refrigerant oil to the compressor when load is low and the compressor continues operation for a long period of time with a low frequency.	May require up to approx. 10 minutes
Also in cases other than above, the compressor gradually reduces the frequency and then stops.	May require up to approx. 60 seconds

■ **Setting Procedure**

1. Connect the demand adapter X80A to X36A and X66A on the outdoor unit control PCB.
2. According to the desired demand, short-circuit between the terminals on the demand adapter terminal block X801M.



	Setting procedure
	Terminal block X801M
Demand 1	Short-circuit between "COM" and "1"
Demand 2	Short-circuit between "COM" and "2"
Demand 3	Short-circuit between "COM" and "3"

[Input signals]
Normally a contact
Input current for each contact is approximately 12 mA.
As an input contact, use a contact for minute electric current.
Use the minimum applicable load (operable at 12 VDC or less, 1 mA or less)

[Field wiring specifications]
Recommended cable : sheathed vinyl cables or double-core cables 0.75 - 1.25 mm^2
Wiring length : 100 m or less
In order to prevent a malfunction, separate from power cables.

2.2.2 Low Noise Operation by External Input

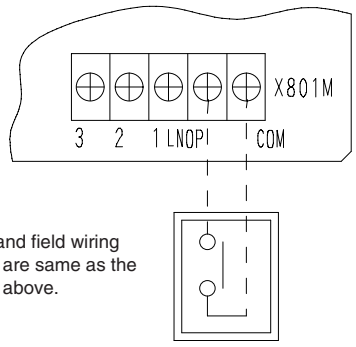
External input enables low noise operation by restricting outdoor fan rotation speed and compressor operation frequency. (Use at night or other time when the load is small.)

■ **Setting procedure**

1. Turn ON the DIP Switch (DS1-3) on the outdoor unit control PCB.
2. Short-circuit between the terminal blocks X801M and COM on the demand adapter. (Low noise operation is performed while being short-circuited.)
3. Low noise level setting can be changed in the field setting with the remote controller, as needed.
4. Furthermore, "Required capacity prior" can be selected in the field setting with the remote controller, as needed.

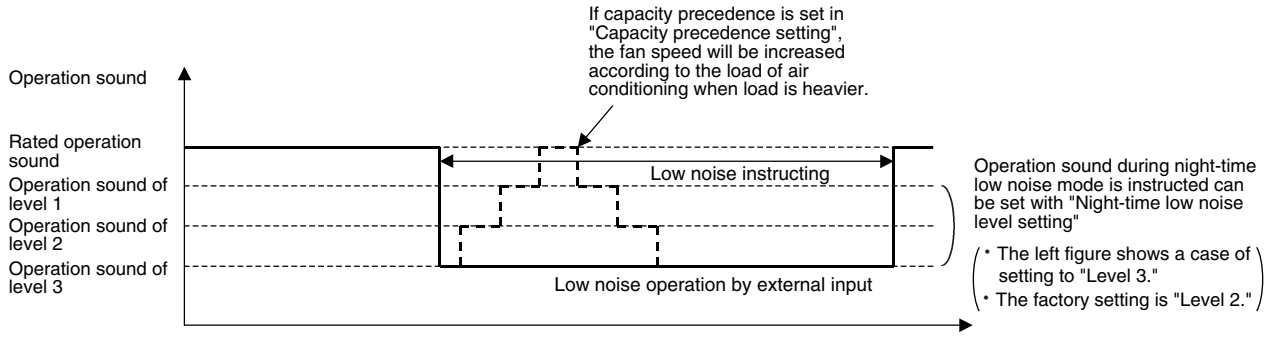
Low noise level

Mode	Description
Mode 1	Low noise level 1
Mode 2	Low noise level 2
Mode 3	Low noise level 3

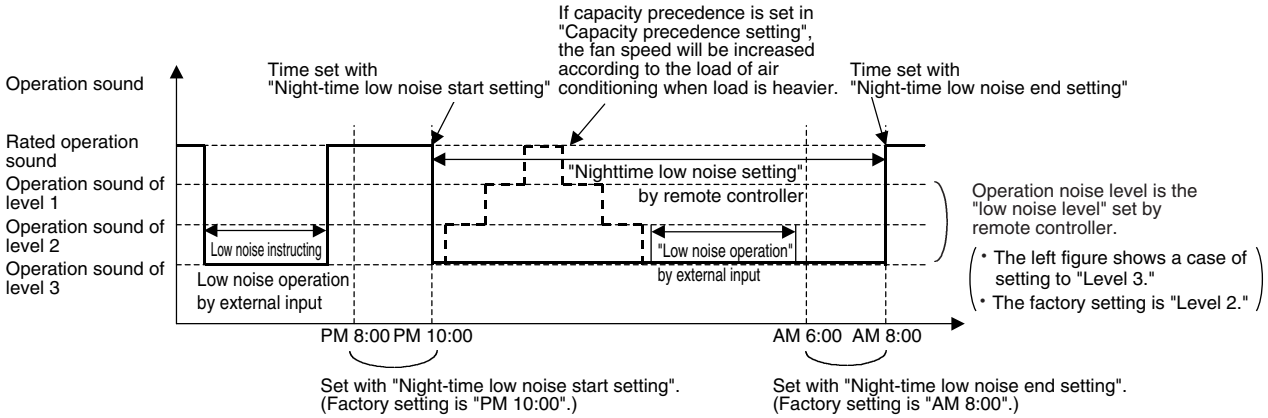


*Input signals and field wiring specifications are same as the specifications above.

■ Image of "Low noise operation" by external input + "Required capacity prior" set by remote controller



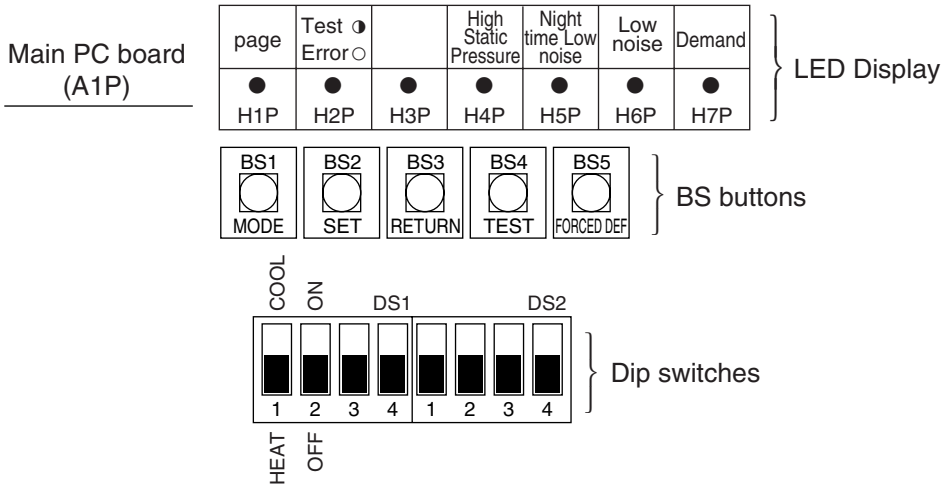
■ Image of "Low noise operation" by external input + operation during "Nighttime low noise setting" and "Required capacity prior" set by remote controller
Image of concurrent operation of A and B



* "Start time" and "End time" must be regarded as a guide because they are estimated based on the outside air temperature.

2.3 Field Setting from Outdoor Unit PC Board

The operation of BS buttons and DIP switches on the PCB (main PCB: A1P) allows the confirmation and setting of various items.



2.3.1 Function of Each Switch

■ **BS buttons**

BS buttons		Description
No.	Name	
BS1	MODE	Used to change the setting mode (Setting mode 1 ⟺ Setting mode 2).
BS2	SET	Used to change settings made by field setting.
BS3	RETURN	Used to change settings made by field setting.
BS4	TEST	Used to perform test operation (available in the Setting mode 1).
BS5	FORCED DEF	Used to perform forced defrosting operation or pump down operation (available in the Setting mode 1).

* The first test operation after installation can be also performed by remote control.

■ **DIP Switches**

DIP Switches		Setting item	Description	
No.	Setting			
DS1-1	ON	Emergency operation	Sets cooling/heating settings during emergency operation.	
	OFF(Factory setting)			
DS1-2	ON		Performs emergency operation.	
	OFF(Factory setting)			
DS1-3	ON	Setting of outside low noise	Controls by outside demand input in operation sound precedence mode. Set to low noise level in "the Setting mode 2", as needed.	
	OFF(Factory setting)			
DS1-4	ON	Setting of high static pressure	Makes settings when an outlet duct is mounted and operated in the high static pressure mode.	
	OFF(Factory setting)			
DS2-1	ON	—	(Do not change the factory setting.)	
	OFF(Factory setting)			
DS2-2	ON	Setting of normal demand	Constantly controls to maintain low power consumption operation.	
	OFF(Factory setting)			
DS2-3	ON	—	(Do not change the factory setting.)	
	OFF(Factory setting)			
DS2-4	ON	Capacity setting	Makes this setting when a spare PCB is mounted.	ON
	OFF(Factory setting)			

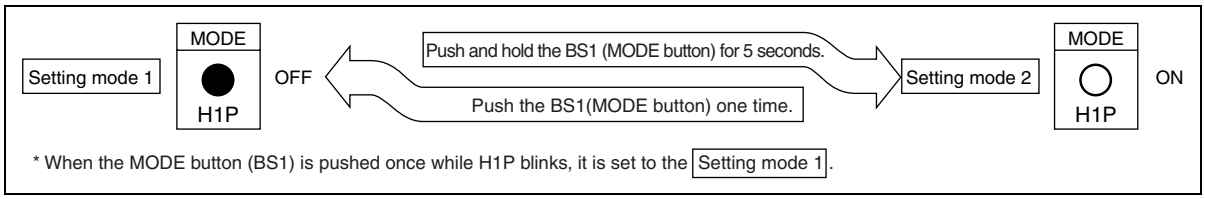
2.3.2 Setting Mode 1 · 2

■ Setting by BS buttons

With "Setting mode 1" and "Setting mode 2", various settings and data can be checked.

■ Procedure for Changing Setting Mode

Using the MODE button, the modes can be changed as follows.



Setting mode 1
- 1.TEST(BS4)
- 2.FORCED DEF(BS5)
- 3.PUMP DOWN(BS5)

Setting mode 2
- 1.Additional refrigerant charge operation --- Used when additional refrigerant cannot be charged while the compressor is stopped.
- 2.Refrigerant recovery mode --- Used when recovering refrigerant by connecting "the refrigerant recovery unit".
- 3.Demand 1 operation --- Used during energy-saving operation by controlling the upper limit of compressor operation frequency.
- 4.Defrost changeover 2 operation --- Used when setting the temperature condition that determines whether defrosting operation starts or not.

Change of Setting Conditions in "Setting Mode 2"

Push and hold the MODE (BS1) button for 5 seconds and set to "Setting mode 2".

<Selection of setting items>

Push the SET (BS2) button and set the LED display to a setting item shown in the table on the right.
↓
Push the RETURN (BS3) button and decide the item. (The present setting condition is blinked.)

No.	Setting Item	LED Display							Condition setting pattern
		H1P	H2P	H3P	H4P	H5P	H6P	H79	
0	Additional refrigerant charge operation	○	●	●	●	●	●	●	ON/OFF
1	Refrigerant recovery mode	○	●	●	●	●	●	○	
7	Demand 1 operation	○	●	●	●	○	○	○	MODE1~3
11	Defrost changeover 2 operation	○	●	●	○	●	○	○	
13	EMG operation 3	○	●	●	○	○	●	○	ON/OFF
14	Back-up operation	○	●	●	○	○	○	●	

The numbers in the "No." column represent the number of times to press the SET (BS2) button.

<Selection of setting conditions>

Push the SET (BS2) button and set to the setting condition you want.
↓
Push the RETURN (BS3) button and decide the condition.

[ON/OFF] Pattern

ON	○	●	●	●	●	○	●
OFF	○	●	●	●	●	●	○

[MODE1~3] Pattern

MODE 1	○	●	●	●	●	●	○
MODE 2 (Factory Setting)	○	●	●	●	●	○	●
MODE 3	○	●	●	●	○	●	●

○ : ON
● : OFF

Push the RETURN (BS3) button and set to the initial status of "Setting mode 2".

2.3.3 Detailed Explanation of Setting Mode 2

■ **Additional refrigerant charge operation**

In case where it is impossible to refill refrigerant when the compressor is stopped, additional refrigerant charge operation is performed.

[Work procedure]

1. First, conduct normal charging.
   Charge refrigerant from the stop valve service port on the liquid side while the outdoor unit is stopped.
   (The stop valves on the liquid and gas sides should be kept closed completely.)

   ∗ Only when the whole amount of refrigerant cannot be charged while the outdoor unit is surely stopped, perform the following operation. (Otherwise, it will cause a problem.)

2. Turn ON the power of the indoor and outdoor units and fully open the gas side stop valve. (Be sure to completely close the liquid side stop valve.)
3. Set the indoor unit to "fan operation".
4. Perform "Additional refrigerant charge operation".

○: ON ●: OFF ◑: BLINK

Operation procedure			LED Display						
			H1P	H2P	H3P	H4P	H5P	H6P	H7P
Push and hold the MODE (BS1) button in the Setting mode 1 for 5 seconds or more and set to the Setting mode 2.			○	●	●	●	●	●	●
Push the SET (BS2) button to set the LED display to "Additional refrigerant charge operation".			○	●	●	●	●	●	●
Push the RETURN (BS3) button. (Present settings are displayed.)			○	●	●	●	●	●	◑
Push the SET (BS2) button to set the LED display (as shown in the table on the right).			○	●	●	●	●	◑	●
Push the RETURN (BS3) button to end setting.			○	●	●	●	●	○	●
Push the RETURN (BS3) button again to start operation.			◑	◑	●	●	●	●	●
Low pressure level (Pe) is displayed during operation.	MPa	0.74≤Pe	○	◑	○	○	○	○	○
		0.59≤Pe<0.74	○	◑	●	○	○	○	○
		0.44≤Pe<0.59	○	◑	●	●	○	○	○
		0.29≤Pe<0.44	○	◑	●	●	●	○	○
		Pe<0.29	○	◑	●	●	●	●	○
Upon the completion of operation (Operation comes to an end after 30 minutes.) (The display of pressure level immediately before stop blinks.)			○ (This state indicates that operation stops when pressure level is 0.25 Mpa or less.)	●	●	●	●	◑	◑
Push the MODE (BS1) button once to end the operation.			●	●	●	●	●	●	●

5. When a prescribed amount of refrigerant is charged, operation ends. If charging is not completed in 30 minutes, make this setting once again to start operation. (When the RETURN button is pushed during additional refrigerant charge operation, operation stops.)
6. Remove the refrigerant charge hose and then fully open the liquid side stop valve.

■ Setting of refrigerant recovery mode

When a refrigerant recovery unit is connected on site to recover refrigerant, fully open the expansion valve of the outdoor unit to help the recovery.

[Work procedure]

1. Stop operation.
2. Turn ON refrigerant recovery mode by performing the following steps.

○: ON ●: OFF ◑: BLINK

Operating procedure		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Push and hold the MODE (BS1) button of "Setting mode 1" for 5 seconds or more and set to "Setting mode 2".		○	●	●	●	●	●	●
Push the SET (BS2) button to set the LED display as shown in the "Refrigerant recovery mode".		○	●	●	●	●	●	○
Push the RETURN (BS3) button once. (Present settings are displayed.)		○	●	●	●	●	●	◑
Push the SET (BS2) button once to set the LED display of refrigerant recovery OFF → ON	Refrigerant recovery OFF	○	●	●	●	●	●	◑
	Refrigerant recovery ON	○	●	●	●	●	◑	●
Push the RETURN (BS3) button twice to complete setting (the electric expansion valve also opens.)		○	●	●	●	●	○	●

3. Connect the refrigerant recovery unit and start refrigerant recovery.
4. Take either of the following steps to cancel the refrigerant recovery mode:

OR
- Return to the initial state by taking the steps above.
- Turn OFF the power of the outdoor unit.

■ Demand 1 Operation

Energy-saving operation is performed by controlling the upper limit of compressor operation frequency through "normal demand setting" made by DIP switches or external contact input.

a. Setting procedure using "normal demand setting"

1. Switch the DIP switch (DS2-2) on the outdoor PCB from OFF to ON.
2. Select from Modes 1 through 3 by taking the following steps using the BS buttons on the outdoor PCB (A1P), as needed.

Setting item	Target power consumption
Mode 1	Approx. 60%
Mode 2 (Factory Setting)	Approx. 70%
Mode 3	Approx. 80%

[Work procedure]

1. Stop operation if it is in operation.
2. Remove the front panel and then switch box cover.
3. Set the mode in "Demand 1 operation".

○: ON ●: OFF ◑: BLINK

Operating procedure		LED Display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Push and hold the MODE (BS1) button of "Setting mode 1" for 5 seconds or more and set to "Setting mode 2".		○	●	●	●	●	●	●
Push the SET (BS2) button three times to set the LED display as shown in the table on the right.		○	●	●	●	○	○	○
Push the RETURN (BS3) button once. (Present settings are displayed.)		○	●	●	●	●	●	●
Push the SET (BS2) button to set the LED display as shown in the table on the right.	Mode 1	○	●	●	●	●	●	◑
	Mode 2 (Factory Settings)	○	●	●	●	●	◑	●
	Mode 3	○	●	●	●	◑	●	●
Push the RETURN (BS3) button twice to make a decision.	Mode 1	○	●	●	●	●	●	○
	Mode 2 (Factory Settings)	○	●	●	●	●	○	●
	Mode 3	○	●	●	●	○	●	●

b. Setting procedure using "external contact input"

Refer to "2.2 Field Setting by Demand Adapter" (P 35).

■ **Defrost Changeover 2 Operation**

Used to shift the temperature that determines whether or not to enter defrosting operation.

	Shifted temperature
MODE 1 (Factory Setting)	—
MODE 2	MODE 1+4°C
MODE 3	MODE 1+6°C

[Work procedure]

1. Stop operation if it is in operation.
2. Remove the front panel and then switch box cover.
3. Set to "Defrost changeover 2 operation".

○: ON ●: OFF ◑: BLINK

Operating procedure		LED Display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Push and hold the MODE (BS1) button of "Setting mode 1" for 5 seconds or more and set to "Setting mode 2".		○	●	●	●	●	●	●
Push the SET (BS2) button three times to set the LED display as shown in the table on the right.		○	●	●	○	●	○	○
Push the RETURN (BS3) button once. (Present settings are displayed.)		○	●	●	●	●	●	●
Push the SET (BS2) button to set the LED display as shown in the table on the right.	Mode 1 (Factory Settings)	○	●	●	●	●	●	◑
	Mode 2	○	●	●	●	●	◑	●
	Mode 3	○	●	●	●	◑	●	●
Push the RETURN (BS3) button twice to make a decision.	Mode 1 (Factory Settings)	○	●	●	●	●	●	○
	Mode 2	○	●	●	●	●	○	●
	Mode 3	○	●	●	●	○	●	●

■ **Pump down operation**

1. Stop operation.
2. Completely close the liquid side stop valve and fully open the gas side stop valve.
3. Set the indoor unit to fan operation.
4. Push and hold the FORCED DEF (BS5) button for 5 seconds or more. (When H2P blinks, the setting is completed. The compressor will soon start operation.)
5. Upon the completion of pump down operation, the unit automatically stops, so immediately close the gas side stop valve completely. (It may continue operation for up to 30 minutes.)
6. Recover refrigerant on the field piping side using the refrigerant recovery unit.
7. Finally, be sure to turn OFF the local switch and turn OFF the power. (After pump down operation, "U4" appears on the remote controller and it is impossible to operate the unit even if the remote controller is turned ON again before turning OFF the power.)

Note: Because this model uses R-410A as refrigerant, residual gas pressure after pump down increases, which is not abnormal.

3. Emergency Operation

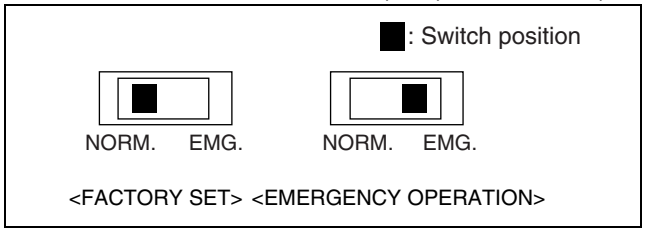
There are three methods for emergency operation.
Select one that best suits its purpose.

	Name	Purpose	Setting procedure	Operation				
				Thermistor detection	Protective unit actuation	Fan	Drain pump	Remarks
(1)	Emergency Operation (Forced operation)	Forced operation for servicing	Use the SS1 switch on the indoor PCB	×	×	○	○	Temperature is not controlled.
			Use the DS switch on the outdoor PCB	×	×	○	—	
(2)	Test Operation	To check operation after installation work	Push the Inspection/Test Operation button of the remote controller 4 times (*)	×	○	○	○	Temperature is not controlled.
(3)	Emergency Operation	When the wireless remote controller is lost	Push "the Emergency Operation" switch on the indoor panel.	○	○	○	○	Remote controller transmission stops, actuators including fan and pump turn ON.

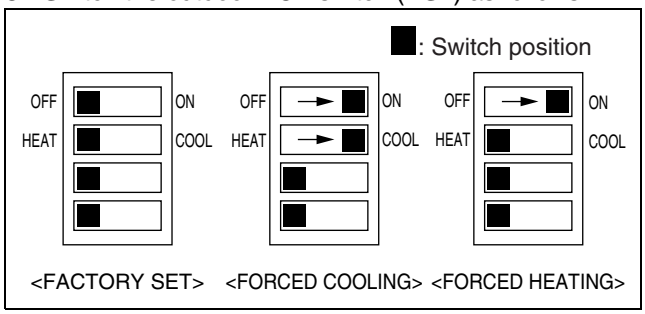
* For the first operation after installation or the operation after main PCB replacement, test operation (forced cooling operation) is always performed for 3 minutes. Then, the operation is automatically switched according to the setting.

3.1 Emergency Operation (Forced Operation) Setting Procedure

1. Turn OFF the power.
2. Switch the indoor PCB switch (SS1) from NORM (normal) to EMG (emergency).



3. Switch the outdoor PCB switch (DS1) as follows:



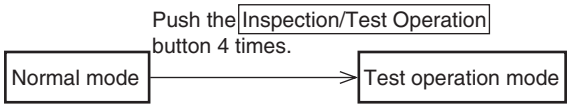
4. When the power is turned ON, operation is forcedly started.

Precautions

1. Before switching the switches, be sure to turn OFF the power.
2. When returning to normal operation, return each switch to the original position after turning OFF the power.
3. If the protective unit is actuated during emergency operation, the operation stops once and then restarts after 3 minutes.
4. In case of PCB failure, emergency operation is unavailable.

3.2 Test Operation Setting Procedure

1. Push the Inspection/Test Operation button on the remote controller 4 times.



2. When the Start/Stop button is pushed after the test operation mode is set, test operation starts.

* The first operation after installation can be set either by field setting (Setting mode 1) using the outdoor PCB or by remote control setting.
The first operation after installation is always cooling operation (test operation control).
Because the test operation control finishes in approximately 3 minutes, continue operation by returning to the normal operation mode.

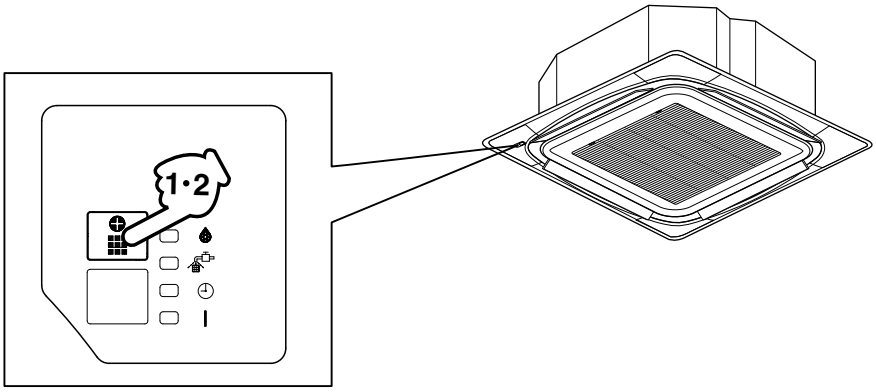
3.3 Emergency Operation (When the Remote Controller is Lost)

When the remote controller does not work due to battery failure or is lost, use this switch which is located beside the discharge grille on the main unit. When the remote controller does not work, but the battery low indicator on it is not lit, contact your dealer.

[START]

1 **To press the emergency operation switch.**

The machine runs in the previous mode.
The system operates with the previously set air flow direction.



[STOP]

2 **Press the EMERGENCY OPERATION switch again.**

Part 5
Function and Operation

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1. Indoor Unit

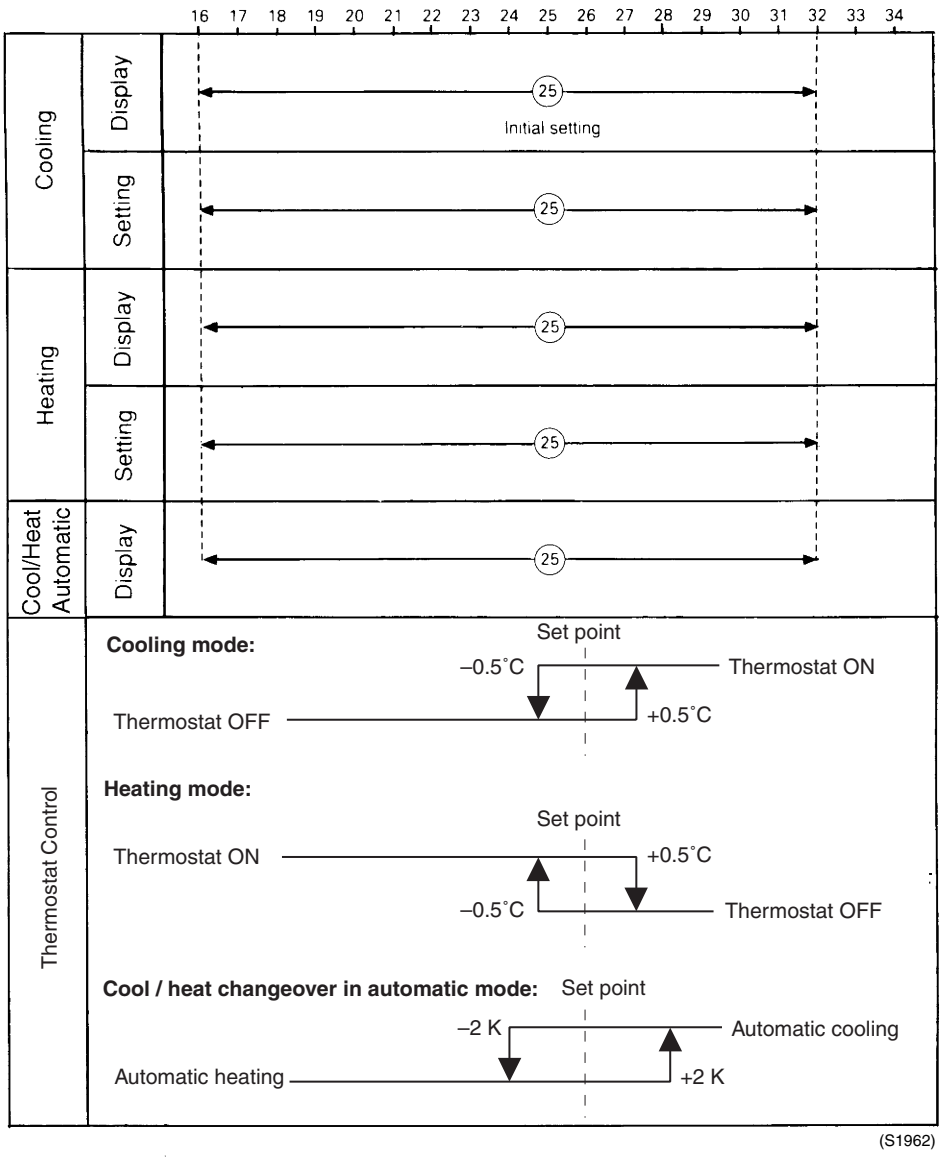
1.1 Function Details

1.1.1 Thermostat Control

Purpose

Based on the information received from the air return sensor, the thermostat control will decide the required operation status of the system.

Thermostat Control



1.1.2 Using Conditions for Remote Controller Thermostat

Applicable

The remote control thermostat is only available in wired remote controls.

Method

Unlike with VRV units, the remote control sensor is standard disabled for sky-air units. The use of the remote control sensor can be enabled by changing field setting 10(20)-2-02 to 10(20)-2-01.

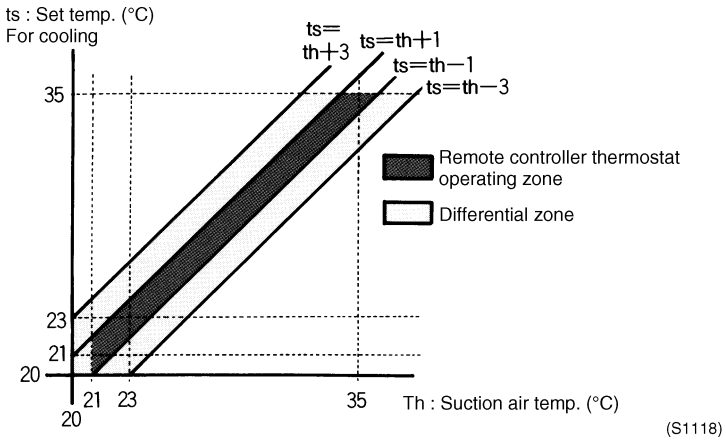
Conditions

The table below contains the condition in which the remote control thermostat is not used:

Condition	The remote controller thermostat is not used when...
1	The remote controller thermostat malfunctions.
2	Group control is used.
3	The set temperature / air suction temperature combination is out of range. (See below graph)

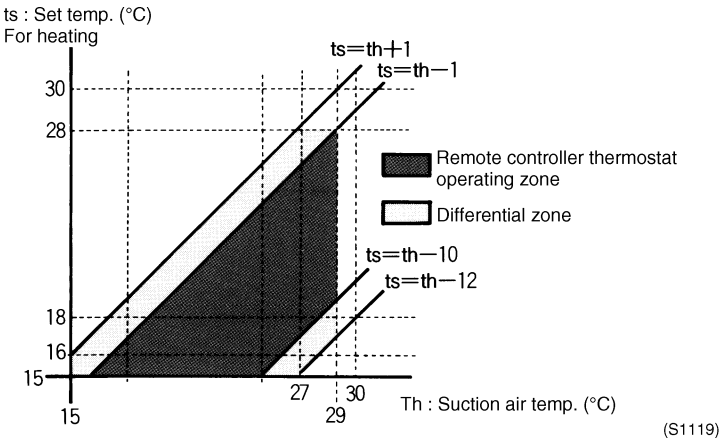
Cooling

The diagram below shows the operation range of the set temperature / air suction temperature combination in cooling operation:



Heating

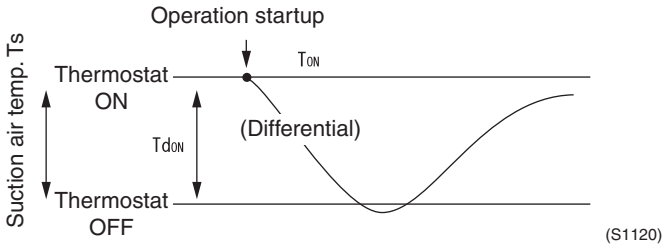
The diagram below shows the operation range of the set temperature / air suction temperature combination in heating operation:



1.1.3 Program Dry Operation Function

Function Detail

The points of thermostat ON or OFF are determined according to the suction air temperature at the startup of unit operation.
The set temperature and flow rate are not displayed on remote controller.



1. Thermostat ON point (TON) according to suction air temp. (Ts).

Suction air temp	TON (°C)	TdON (°C)
Ts≥24°C	Ts	1.5
24°C> Ts≥18°C	Ts	1.0
18°C> Ts	18°C	1.0

2. Operation condition

Compressor condition	ON	OFF
Setting of flow rate	L operation	OFF
Angle of flap	Set angle	Set angle
Air flow direction set with remote controller	Set angle	Set angle

1.1.4 Outdoor Unit Detection Function

Indoor units can be used both for heat pump and cooling only; however the outdoor unit connected is detected whether it is heat pump or cooling only type and a settable operation mode is automatically determined.

- **Settable operation mode**
  Heat pump: Fan /Cooling/Dry (*1)/Automatic/ Heating
  Cooling only: Fan/Cooling/Dry (*1)
  *1: Dry operation is unavailable for FDQ 200 and 250.

1.1.5 Fan Air Volume Control

Settings of air volume for each operation mode when the thermostat is ON/OFF are shown in the table below. The air volume when the thermostat is OFF can be changed by field setting. The table below shows the factory settings:

		Applicable model		
		Models other than the right	FDQ125	FDQ200 · 250
Cooling	Thermostat ON	Setting	Setting	ON
	Thermostat OFF	Setting	LL	ON
Dry	Thermostat ON	L	L	—
	Thermostat OFF	OFF	LL	—
Heating	Thermostat ON	Setting	Setting	ON
	Thermostat OFF	LL	LL	ON
Fan		Setting	Setting	ON
Stop		OFF	OFF	OFF

1.1.6 Fan Airflow Direction Adjustment Control

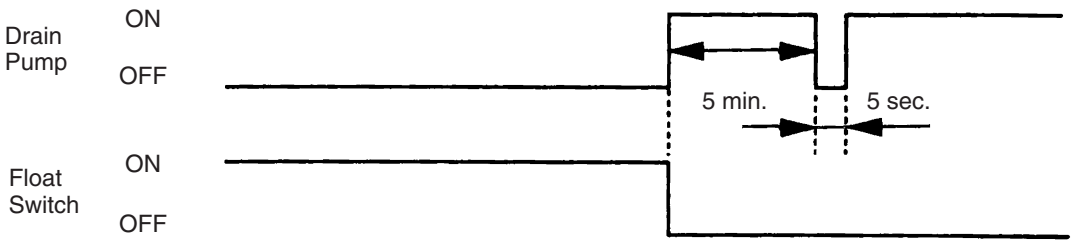
The control of horizontal (or vertical) fans to adjust airflow is shown in the table below:

			FCQ FFQ FBQ FHQ FUQ	FAQ71	FAQ100
Cooling	In Airflow Direction Operation	Thermostat ON	Setting	Setting	Setting
		Thermostat OFF	Setting	Setting	Setting
	In Swing Operation	Thermostat ON	Swing	Swing	Swing
		Thermostat OFF	Swing	Swing	Swing
Dry	In Airflow Direction Operation	Thermostat ON	Setting	Setting	Setting
		Thermostat OFF	Setting	Setting	Setting
	In Swing Operation	Thermostat ON	Swing	Swing	Swing
		Thermostat OFF	Swing	Swing	Swing
Heating	In Airflow Direction Operation	Thermostat ON	Setting	Setting	Setting
		Thermostat OFF	Horizontal	Horizontal	Horizontal
	In Swing Operation	Thermostat ON	Swing	Swing	Swing
		Thermostat OFF	Horizontal	Horizontal	Horizontal
Fan	In Airflow Direction Operation		Setting	Setting	Setting
Stop	In Swing Operation		Swing	Swing	Swing

1.1.7 Drain Pump Control

1. During cooling and program dry operation modes, the drain pump continues operating.

2. During heating operation
   When the following conditions are satisfied, the drain pump turns ON.



1.1.8 Electric Heater Control

Before activating heating overload control, turn OFF the electric heater to avoid elevation of high pressure.

OFF condition: Indoor heat exchanger temperature (Tc)≥52°C
Reset condition: Indoor heat exchanger temperature (Tc)≤47°C

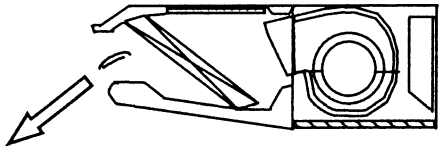
1.1.9 Dew Condensation Prevention Control

(FHQ71·100, FAQ71·100)

In cooling and dry operation, the following control is carried out in order to prevent dew condensation when the horizontal blade blows air downward.

[Start condition]

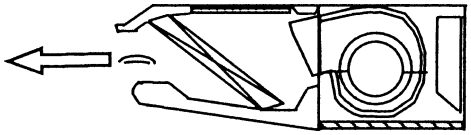
& [• Horizontal blade is set to downward flow
• Cooling operation (compressor operation) continues for A minutes.



	FHQ	FAQ
A	30 min.	20 min.

[Dew condensation prevention control]

Dry operation with horizontal air flow is carried out for one hour (*1).

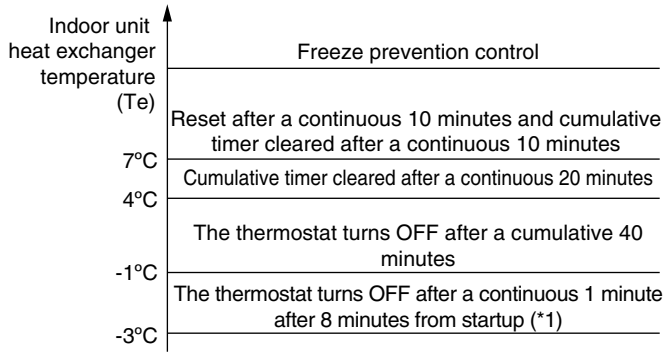


Note

1. When there is any change to heating/fan modes, airflow direction and operation ON/OFF state during dew condensation prevention control, this control is reset.
2. *1: For FAQ71, the air flow is 44 degrees downward from the horizontal direction.

1.1.10 Anti-freezing Control

- Based on the judgment to prevent the indoor heat exchanger from freezing, the thermostat is forcedly turned OFF.



*1 FHQ Only

1.1.11 Monitoring Control

In case where the indoor unit fan is turned OFF while the cooling/heating/dry thermostat is OFF, the thermistor cannot detect the air temperature even when the room temperature subsequently recovers and reaches the temperature to turn ON the thermistor because the indoor unit suction air thermistor is installed within the machine.

In order to avoid such situation, this monitoring control functions to detect indoor air temperature by operating the fan at a certain interval when the fan is turned OFF while the thermostat is OFF.

1.1.12 Defrost Control

If heating operation is continued in low outdoor air temperatures, frost forms on the surface of the outdoor heat exchanger, resulting in a decrease in heating performance. Accordingly, when frost formation reaches a certain level, it automatically switches to cooling cycle for defrosting. When the frost completely melts, normal heating operation resumes.

1.1.13 Cold Air Prevention Control

In order to prevent cold air from blowing toward customers when the indoor heat exchanger temperature is low; for example, at the time of heating startup and after defrosting, this function selects air volume LL tap and fixes airflow to horizontal direction.

2. Outdoor Unit

2.1 Function List

Input Item	
Outdoor unit	Thermistor for Discharge Pipe
	Thermistor for Outdoor Air Temperature
	Thermistor for Heat Exchanger
	Thermistor for Suction Pipe
	Thermistor for Subcooling Heat Exchanger outlet
	Thermistor for Cooling Fin
	High Pressure Switch
	High Pressure Sensor
	Low Pressure Sensor
	Sensor of Inverter current detection
	Indoor Unit Signal

Function control item		Function detail No. (*1)
Malfunction stop	Malfunction stop	2.4.1
Standby	Restart standby	2.4.2.1
	Crankcase heater control	2.4.2.2
Starting Control	Startup control	2.4.3.1
	Room temperature thermostat control	2.4.3.2
	Forced thermostat OFF by outdoor air temperature	2.4.3.3
Function Control	Compressor step control	2.4.4.1
	Electronic expansion valve control	2.4.4.2
	"Automatic operation mode" control (PMV control)	2.4.4.3
	Hot start control (available only in heating operation)	2.4.4.4
	Low noise control	2.4.4.5
	Outdoor unit fan control	2.4.4.6
Protection Control	Low pressure protection control	2.4.5.1
	High pressure protection control	2.4.5.2
	Heating operation high outdoor air temperature control	2.4.5.3
	Discharge pipe temperature protection control	2.4.5.4
	Pump down residual operation	2.4.5.5
	Cooling operation low outdoor air temperature control	2.4.5.6
	Inverter protection control	2.4.5.7
	Control of electric discharge of capacitor	2.4.5.8
	Suction superheat control (available only in heating operation)	2.4.5.9
	Anti-freezing control (available only in cooling operation)	2.4.5.10
Oil Return, Defrosting Operation, etc.	Defrosting operation	2.4.6.1
	Oil recovery operation	2.4.6.2
Maintenance	Emergency operation	2.4.7.1
	Simulated operation function	2.4.7.2
	Test operation control	2.4.7.3

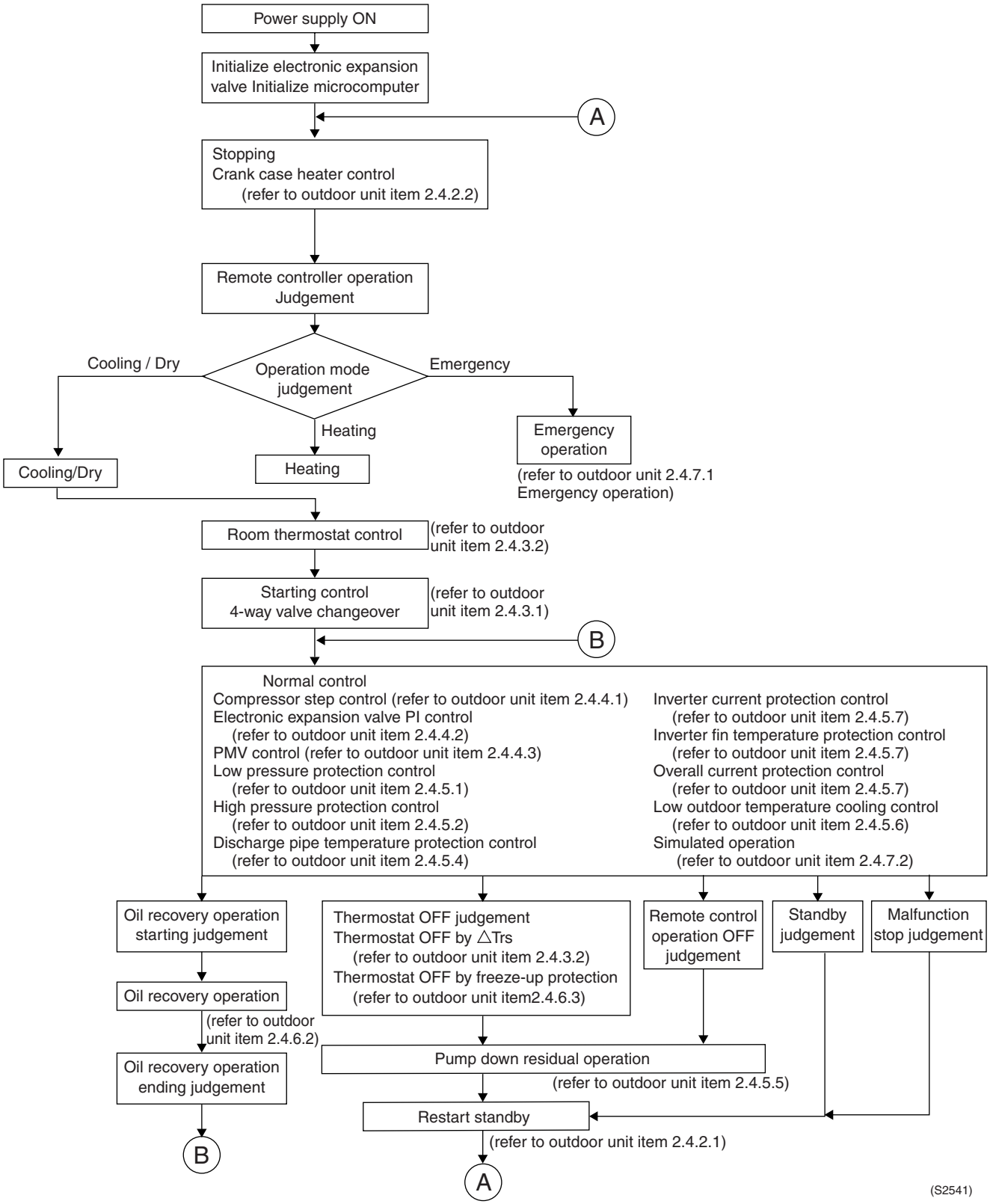
*1: Refer to P.61 for "Detailed Explanation of Each Function."

2.2 Flow Chart of Outdoor Unit

RZQ

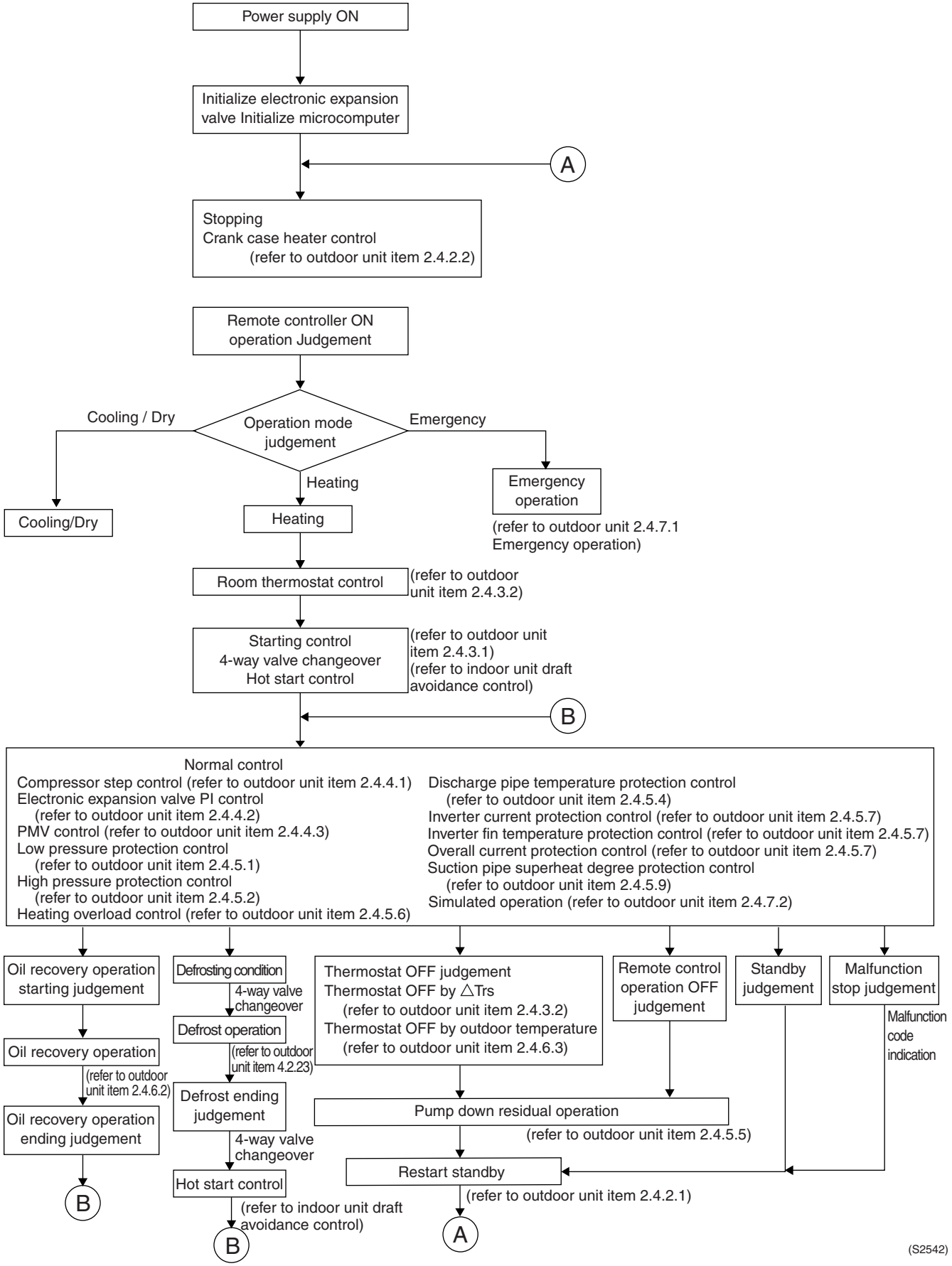
[Cooling/Dry operation]

Note: (Refer to outdoor unit item (X.X.X)) means refer to Outdoor Unit (P. 57 and after) in detailed description of function.



[Heating operation]

Note: (Refer to outdoor unit item X.X.X) means refer to Outdoor Unit (P. 57 and after) in detailed description of function.



2.3 Table of Functions and Operations

2.3.1 Cooling 1 (Control while Compressor is Stopped)

		While compressor is stopped			
		"Restart standby"	Thermostat OFF standby	In normal operation	"Pressure equalization control before startup"
Compressor	M1C [INV]	0Hz (*1)	0Hz (*1)	OFF (*1)	0Hz (*1)
Outdoor unit fan	M1F	"Restart standby"	0 Step	0 Step	"Pressure equalization control before startup"
Indoor unit fan	MF	No instruction	No instruction	No instruction	"Pressure equalization control before startup" (Indoor unit fan)
Electronic expansion valve (main)	Y1E	0	0		0
Electronic expansion valve (subcooling)	Y2E	0	0		0
Four way valve	Y3S	OFF (*2)	OFF (*2)	OFF (*2)	OFF (*2)
Solenoid valve for venting receiver gas	Y2S	OFF	OFF	OFF	OFF
Solenoid valve for hot gas	Y1S	OFF	OFF	OFF	ON
Remarks		3 minutes after the compressor stops	After "Restart standby," between outdoor unit in operation = ON and outdoor unit thermostat ON = OFF	Outdoor unit in operation = OFF	10 seconds at the earliest Up to 1 minute
		*1: In the instruction on inverter compressor frequency, 0 Hz indicates K2 (magnetic contactor for inverter compressor) is ON, OFF indicates K2 (magnetic contactor for inverter compressor) is OFF. *2: While the compressor is stopped when heating is switched to cooling, the previous state is maintained.			

2.3.2 Cooling 2 (Startup Control / Control During Operation)

		Compressor in operation			
		"Startup control"		In normal operation	
		Basic operation	Protection control	Basic operation	Protection control
Compressor	M1C [INV]	"Startup control"	"Low pressure protection control" "High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"	"Compressor step control"	"Low pressure protection control" "High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"
Outdoor unit fan	M1F	"Startup control"	"Cooling operation low outdoor air control"	7 steps	"Cooling operation low outdoor air control" "Outdoor unit fan control"
Indoor unit fan	MF	"Startup control (Indoor unit fan)"	"No instruction"	"Steady control (indoor unit fan)"	
Electronic expansion valve (main)	Y1E	"Startup control" "Electronic expansion valve fixed open degree control"	"Discharge pipe temperature protection control"	"Electronic expansion valve control"	"Discharge pipe temperature protection control"
Electronic expansion valve (subcooling)	Y2E	"Startup control"		"Subcooling electronic expansion valve control"	
Four way valve	Y3S	OFF (*1)		OFF	
Solenoid valve for venting receiver gas	Y2S	OFF		OFF	
Solenoid valve for hot gas	Y1S	ON		OFF	"Low pressure protection control"
Remarks		*1: When the four way valve is ON, switch the four way valve.			

2.3.3 Cooling 3 (Pump Down Residual Operation / Oil Return Operation)

		Compressor in operation			
		"Cooling operation pump down residual operation"		"Oil return operation control"	
		Basic operation	Protection control	Basic operation	Protection control
Compressor	M1C [INV]	124Hz	"High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"	Fmin Cool oil return = Oil return implementation step	"High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"
Outdoor unit fan	M1F	"Pump down residual operation"		7 steps	"Cooling operation low outdoor air control" "Outdoor unit fan control"
Indoor unit fan	MF	"Control before the compressor stops (indoor unit fan)"		"Oil recovery operation control"	No instruction
Electronic expansion valve (main)	Y1E	"EV fixed open degree 2"		"Electronic expansion valve control"	
Electronic expansion valve (subcooling)	Y2E	0		"Subcooling electronic expansion valve control"	
Four way ralve	Y3S	OFF		OFF	
Solenoid valve for venting receiver gas	Y2S	ON		OFF	
Solenoid valve for hot gas	Y1S	"Movement of constant-speed compressor"		OFF	Low pressure protection control
Remarks					

2.3.4 Heating 1 (Control while Compressor is Stopped)

		While compressor is stopped			
		"Restart standby"	Thermostat OFF standby	In normal operation	"Pressure equalization control before startup"
Compressor	M1C [INV]	0Hz (*1)	0Hz (*1)	OFF (*1)	0Hz (*1)
Outdoor unit fan	M1F	According to "Restart standby"	0 Step	0 Step	"Pressure equalization control before startup"
Indoor unit fan	MF	No instruction	No instruction	No instruction	"Pressure equalization control before startup" (Indoor unit fan)
Electronic expansion valve (main)	Y1E	0	0	0	0
Electronic expansion valve (subcooling)	Y2E	0	0	0	0
Four way ralve	Y3S	ON (*2)	ON (*2)	ON (*2)(*3)	ON (*2)(*3)
Solenoid valve for venting receiver gas	Y2S	OFF	OFF	OFF	OFF
Solenoid valve for hot gas	Y1S	ON	OFF	OFF	ON
Remarks		5 minutes after the compressor stops	After "Restart standby," between outdoor unit in operation = ON and outdoor unit thermostat ON = OFF	Outdoor unit in operation = OFF	10 seconds at the earliest Up to 1 minute
		*1: In the instruction on inverter compressor frequency, 0 Hz indicates K2 (magnetic contactor for inverter compressor) is ON. *2: While the compressor is stopped when cooling is switched to heating, the previous state is maintained. *3: For the first operation after turning ON the power, it is OFF.			

2.3.5 Heating 2 (Startup Control / Control during Operation)

		Compressor in operation			
		"Heating startup control		In normal operation	
		Basic operation	Protection control	Basic operation	Protection control
Compressor	M1C [INV]	"Startup control"	"Low pressure protection control" "High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"	"Compressor step control"	"High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"
Outdoor unit fan	M1F	According to "Startup control"	"Heating operation high outdoor air control"	7 Step	"Heating operation high outdoor air control" "Outdoor unit fan control"
Indoor unit fan	MF	"Startup control (indoor unit fan)"	No instruction	No instruction "Steady control (indoor unit fan)"	
Electronic expansion valve (main)	Y1E	"Startup control" "Electronic expansion valve fixed open degree control"	"Discharge pipe temperature protection control"	"Electronic expansion valve control"	"Discharge pipe temperature protection control"
Electronic expansion valve (subcooling)	Y2E	"Startup control"		0	
Four way ralve	Y3S	ON (*)		ON	
Solenoid valve for venting receiver gas	Y2S	OFF		OFF	
Solenoid valve for hot gas	Y1S	ON		OFF	"Low pressure protection control"
Remarks		*: When the four-way valve is OFF, switch the four-way valve.			

2.3.6 Heating 3 (Pump down Residual Operation / Oil Return Operation)

		Compressor in operation			
		"Heating pump down residual operation"		"Oil return operation control"	
		Basic operation	Protection control	Basic operation	Protection control
Compressor	M1C [INV]	124Hz	"High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"	Fmin Hot oil return = Oil return implementation step	"High pressure protection control" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature "
Outdoor unit fan	M1F	"Heating pump down residual operation "		7 steps	"Outdoor unit fan control"
Indoor unit fan	MF	"Control before the compressor stops (indoor unit fan)"			
Electronic expansion valve (main)	Y1E	EV fixed open degree 2 "Electronic expansion valve fixed open degree control"	"Discharge pipe temperature protection control"	"Electronic expansion valve control"	"Discharge pipe temperature protection control"
Electronic expansion valve (subcooling)	Y2E	0		0	
Four way ralve	Y3S	ON		ON	
Solenoid valve for venting receiver gas	Y2S	ON		OFF	
Solenoid valve for hot gas	Y1S	"Movement of constant-speed compressor"	"High pressure temperature protection control"	OFF	"Low pressure protection control"
Remarks					

2.3.7 Heating 4 (Defrosting Operation)

		Compressor in operation			
		"Details of defrost control", "Defrost completion judgment control"			
		Basic operation			Protection control
		"Before defrosting (2 minutes)"	"During defrosting"	After defrosting	
Compressor	M1C [INV]	"Defrost control"	"Defrost control"	"Defrost control"	"Low pressure protection control" "High pressure protection control" "High pressure protection control (cooling)" "Discharge pipe temperature protection control" "Inverter current protection control" "Control by inverter fin temperature"
Outdoor unit fan	M1F	"Outdoor unit fan control"	OFF	"Defrost control"	"Low differential pressure low compression ratio protection"
Indoor unit fan	MF	"Defrost control"	"Defrost control"	"Defrost control"	
Electronic expansion valve (main)	Y1E	"Defrost control"	"Defrost control"	"Defrost control"	"Discharge pipe temperature protection control"
Electronic expansion valve (subcooling)	Y2E	0	0	0	
Four way ralve	Y3S	ON	OFF	ON	
Solenoid valve for venting receiver gas	Y2S	"Defrost control time chart"	ON	"Defrost control time chart"	
Solenoid valve for hot gas	Y1S	"Defrost control time chart"	ON	"Defrost control time chart"	"Low pressure protection control"
Remarks					

2.4 Function Details

2.4.1 Malfunction Stop (Retry Control)

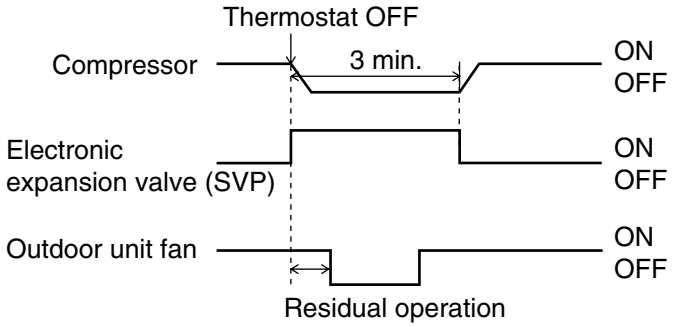
When the following items show abnormal values, the thermostat turns OFF and malfunction is determined based on the number of retry in order to protect the compressor and other devices.

Item	Criteria	Number of retry
Low pressure	0.07 MPa	2 times
High pressure	3.68 MPa	2 times
Discharge pipe temperature	135°C	2 times
Power supply	Negative phase power supply	0 times (No retry)

2.4.2 Stand By

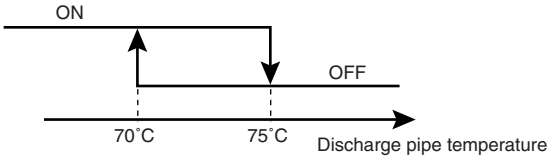
2.4.2.1 Restart Standby

To prevent compressor from frequent ON/OFF and equalize pressure in refrigerant line, conducts forced thermostat OFF for 3 minutes after compressor stopping. Moreover, outdoor unit fan conducts residual operation for a period of time to expedite equalization and prevent refrigerant from entering in evaporator.



2.4.2.2 Crank Case Heater Control

When compressor stops for extended period of time, crank case heater control is conducted in order to prevent refrigerant from dissolving in compressor oil.

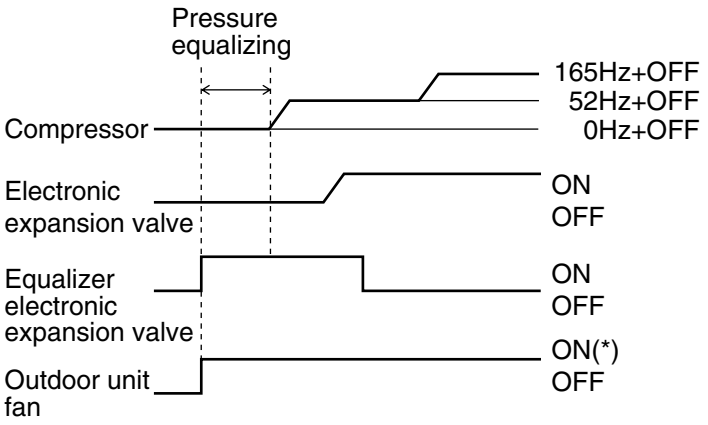


Note According to the ambient temperature and the condition, it may control also except the above-mentioned discharge pipe temperature.
(For standby-power-requirement reduction.)

2.4.3 Startup Control

2.4.3.1 Startup Control

When compressor start up, the starting frequency is fixed for specified period of time at low frequency to prevent returning of refrigerant.



* According to startup condition, the outdoor unit fan may be turned OFF.

2.4.3.2 Room Temperature Thermostat Control

When the following conditions are met, the thermostat turns ON or OFF.

[Condition for thermostat ON]

ΔT≥0°C

[Conditions for thermostat OFF]

OR
- ΔT≤-1.0°C continues for 30 seconds.
- In cooling operation, ΔT≤-2.5°C
- In heating operation, ΔT≤-3.0°C

Where, each ΔT value is as follows:

(In cooling)

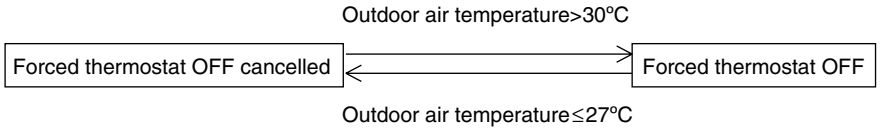
ΔT=Indoor suction air temperature (°C) - Temperature set by remote controller (°C)

(In heating)

ΔT= Temperature set by remote controller (°C) - Indoor suction air temperature (°C)

2.4.3.3 Thermostat OFF by Outdoor Air Temperature (in Heating Operation Only)

In case where the outside air temperature is higher than the operating range during heating operation, the outdoor unit thermostat is forcedly turned OFF to prevent the protection device from being actuated or avoid a sensor error.



2.4.4 Function Control

2.4.4.1 Compressor Step Control

In order to control capacity, the compressor operation is controlled according to the following steps:
<RZQ200 · 250C>

Step No.	Comp. operation frequency	Step No.	Comp. operation frequency
1	52Hz	14	143Hz
2	57Hz	15	158Hz
3	62Hz	16	165Hz
4	68Hz	17	177Hz
5	74Hz	18	189Hz
6	81Hz	19	202Hz
7	88Hz	20	210Hz
8	96Hz	21	218Hz
9	104Hz	22	232Hz
10	110Hz	23	*248Hz
11	116Hz	24	*266Hz
12	124Hz	25	*280Hz
13	133Hz		

*RZQ250C only (RZQ200C: STEP1~23, RZQ250C: STEP1~25)

2.4.4.2 Electronic Expansion Valve PI Control

When cooling/heating, PI control of electronic expansion valve is conducted to make heat exchanger outlet subcool degree (SH) constant in order to utilize outdoor unit heat exchanger (evaporator) fully.

SH=R4T-Te Te: Low pressure equivalent saturation temperature (°C)
R4T: Suction pipe temperature (°C)

[When slight wet operation]

Target heat exchanger outlet subcool degree > Heat exchanger outlet subcool degree
→Electronic expansion valve closes

[When slight overheat operation]

Target heat exchanger outlet subcool degree < Heat exchanger outlet subcool degree
→Electronic expansion valve opens

- The value of target heat exchanger outlet subcool degree varies depending on change of discharge pipe superheat degree of inverter compressor, etc.

2.4.4.3 “Automatic Operation Mode” Control (PMV Control)

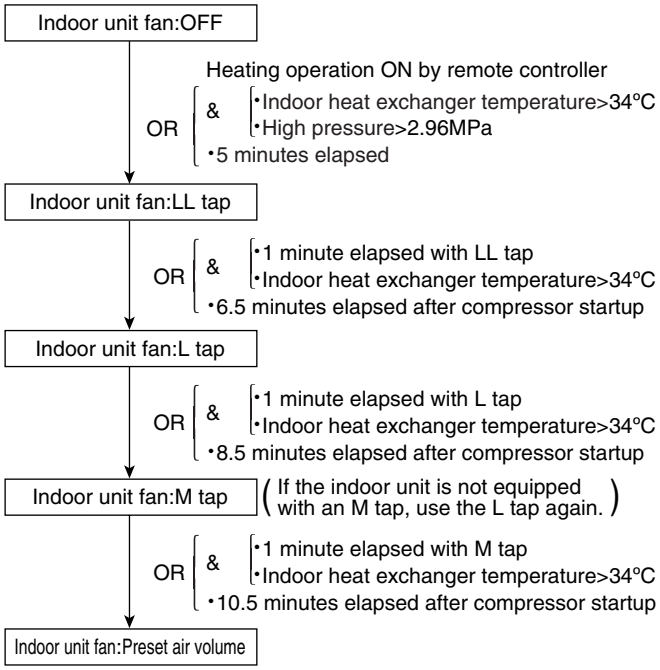
When selecting “Automatic Operation Mode” with the remote controller, conducts the most comfortable operation in which you do not feel too cool or too hot.

- Outdoor air temperature
- Indoor air temperature
- Remote controller set temperature

⇨ Calculates and controls the optimum indoor temperature

2.4.4.4 Hot Start Control (in Heating Operation Only)

The indoor unit fan is controlled to prevent cold air flow and secure a starting capacity when starting up heating operation or completing defrosting.



2.4.4.5 Low Noise Control

A. In case of setting by remote controller (nighttime automatic low noise setting)
Using remote control setting, the current time is estimated based on the change in outdoor air temperature to perform low noise operation by automatically limiting the outdoor unit fan rotation speed and compressor operation frequency during nighttime (22:00 - 8:00) (The nighttime hours should be regarded as a guide.)

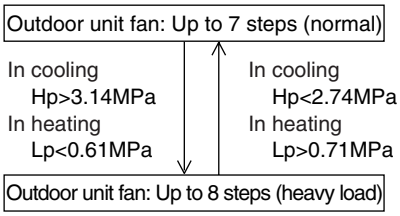
B. In case of contact input (manual low noise setting)
Low noise operation is performed by limiting the outdoor unit fan rotation speed and compressor operation frequency during a short circuit between T1 and T2 of the terminal block X1M on the outdoor PC board.

C. In case of required capacity prior
When required capacity prior is set using the remote controller, if air conditioning load increases in the case of A or B above, low noise operation is suspended and normal operation is performed.
When required capacity prior is not set, low noise operation continues even if air conditioning load increases.

2.4.4.6 Outdoor Unit Fan Control

For continuing efficient operation, when high pressure elevates during cooling or low pressure decreases during heating, fan air volume is increased.

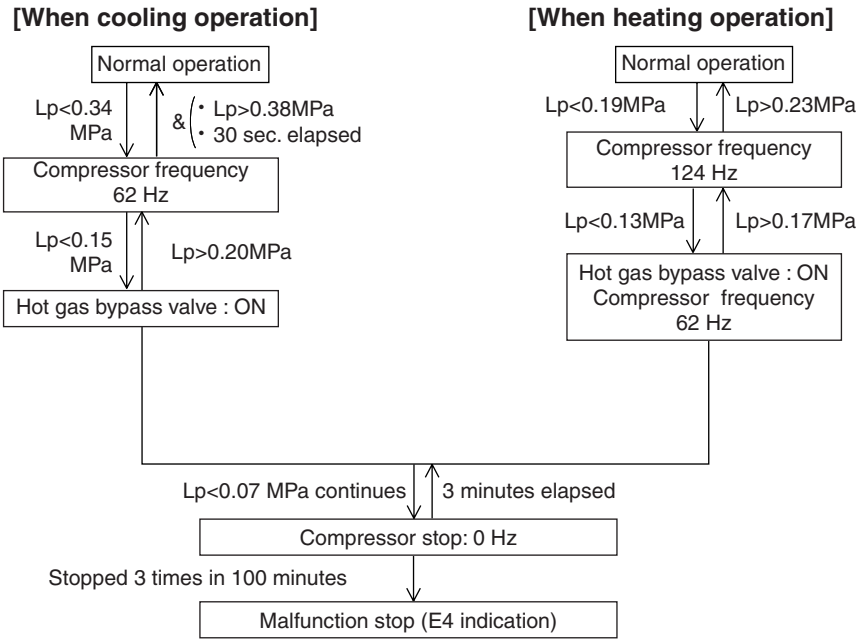
<In case of RZQ200 and 250C>



2.4.5 Protection Control

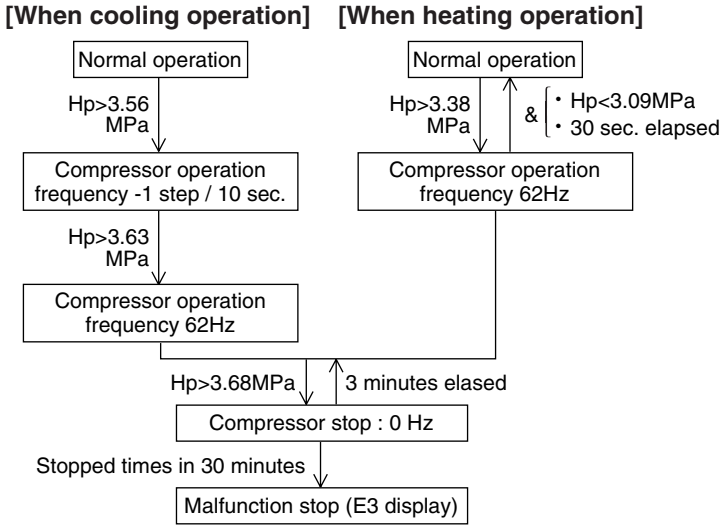
2.4.5.1 Low Pressure Protection Control

Drooping control and protection control below mentioned are conducted to prevent low pressure from abnormal lowering.



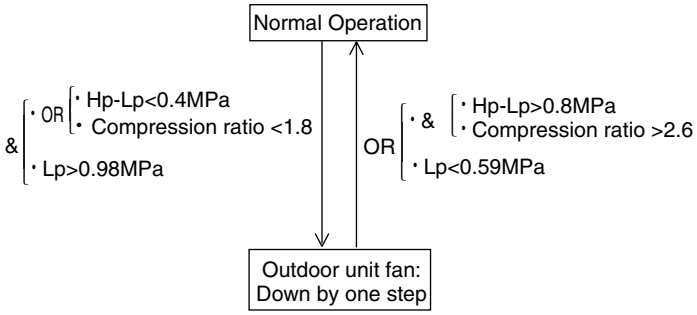
2.4.5.2 High Pressure Protection Control

Drooping control and protection control below mentioned are conducted to prevent high pressure from abnormal rising and activation of protection devices.



2.4.5.3 Heating Operation High Outdoor Air Temperature Control

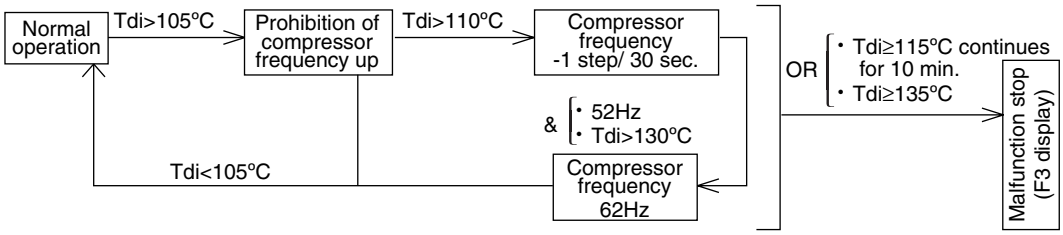
Under heating overload conditions, the outdoor unit fan is controlled to protect the compressor.



2.4.5.4 Discharge Pipe Temperature Protection Control

Controls discharge pipe temperature and compressor operation frequency to prevent compressor internal temperature from abnormal rising.

[Inverter compressor]



Tdi: Inverter compressor discharge pipe temperature (°C)

2.4.5.5 Pump Down Residual Operation

Conducts pump down residual operation when compressor stops to collect refrigerant in evaporator for preventing liquid refrigerant from remaining in the evaporator.

[Contents of control]

Compressor:124Hz

Electronic expansion valve: 0 pls (fixed opening degree)

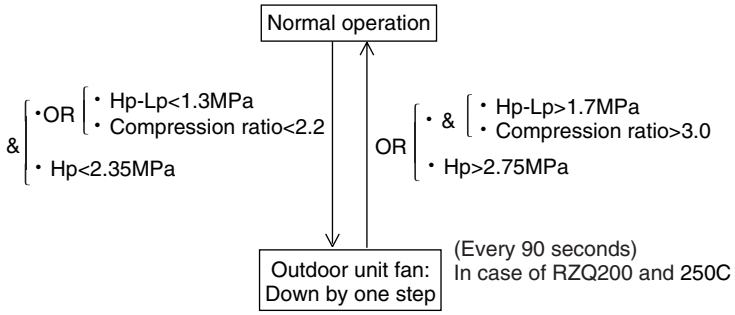
Solenoid valve for receiver gas purging (SVG): ON (open)

[Ending condition]

OR
- 60 seconds elapsed with residual operation
- LP<0.27 MPa (when cooling)
  LP<0.14 MPa (when heating)

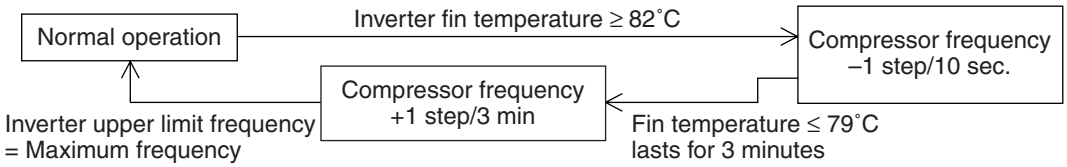
2.4.5.6 Cooling Operation Low Outdoor Air Temperature Control

Under low outdoor air temperature conditions during cooling operation, the outdoor unit fan is controlled to maintain high pressure and secure refrigerant flow.



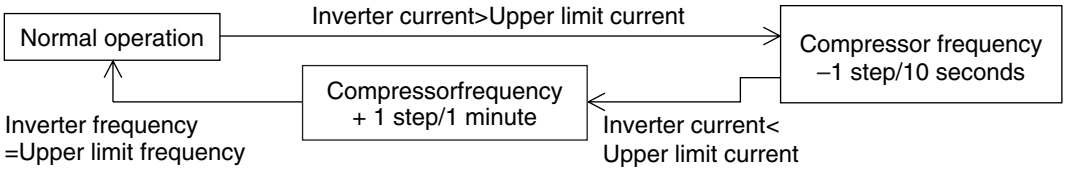
2.4.5.7 Control by Inverter Fin Temperature

Restricts compressor operation upper limit frequency to prevent compressor from tripping due to inverter fin temperature.



Control by current detection

The compressor frequency upper limit is limited to prevent trip caused by inverter overcurrent.



Upper limit current: 14.7A

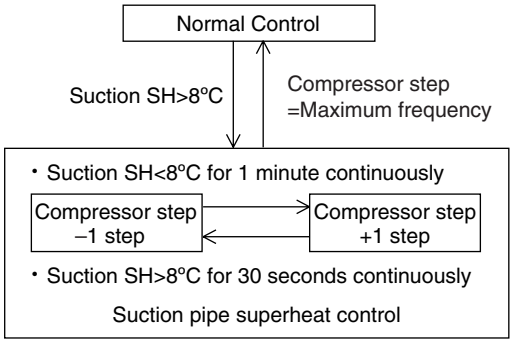
2.4.5.8 Control of Electric Discharge of Capacitor

The capacitor is discharged for one minute after K2 is turned OFF for 40S (remote control stop, malfunction stop, compressor and outside unit fan motor are stopped with retry system thermostat OFF).

During this operation, operational noise may be heard from the outdoor unit.

2.4.5.9 Suction Pipe Superheat Protection Control (in Heating Operation Only)

In heating operation, controls compressor operating frequency to prevent oil from remaining in the outdoor unit heat exchanger by the continuous operation of compressor at high superheated degree of the suction pipe.



2.4.5.10 Anti-freeze Control (in Cooling Operation Only)

The thermostat is turned OFF when temperature and time meet the following conditions to prevent the indoor heat exchanger from freezing:

OR
- Indoor heat exchanger temperature < -5°C for 1 minute continuously
- Indoor heat exchanger temperature < -1°C for an accumulated 40 minutes

2.4.6 Oil Return, Defrosting Operation, etc.

2.4.6.1 Defrosting Operation

When heating operation, defrost operation is conducted to melt frost on outdoor unit heat exchanger.

[Defrost starting condition]

■ Intelligent type
Defrosting starts when the following conditions have been realized.

&
- Th2 ≤-3°C
- Th2≤0.4 ×Ta-5°C

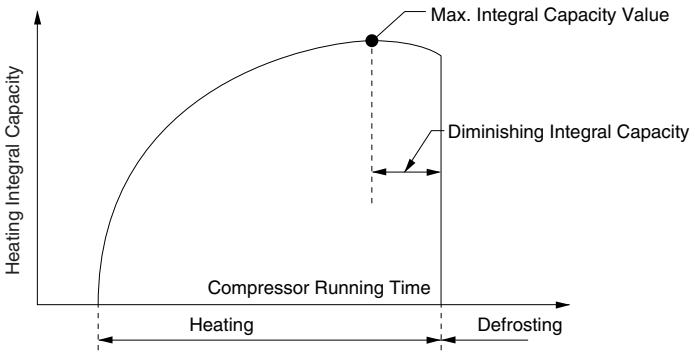
- OR
  - Defrost upper limit time A is met
  - &
    - Accumulated heating capacity is decreasing.
    - Thermostat ON continues for 5 minutes or more.

"Frost upper limit time A" is determined as follows according to the "Field setting by remote controller" (see P58).

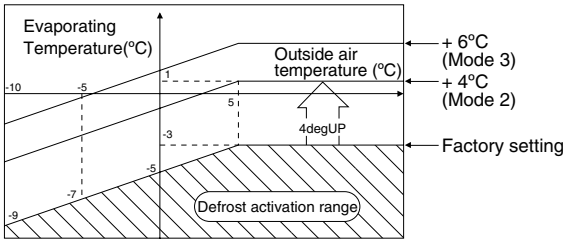
Upper limit duration A of frost

The following table shows the upper limit duration A of frost according to defrost start setting conditions (indoor remote controller field setting mode).

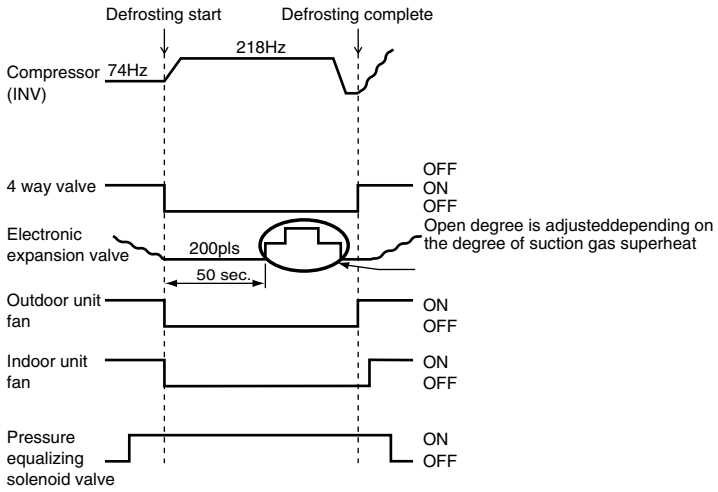
		Early defrost start setting	Factory set	Late defrost start setting
A value	Outdoor air temp. > -5°C	40 minutes	3 hours	6 hours
	Outdoor air temp. ≤ -5°C	40 minutes	6 hours	8 hours



Defrost activation temperature
Using field setting switches (see P69), the temperature to activate defrosting can be shifted as follows:



When defrosting conditions are met during heating operation, the indoor unit is demanded defrosting and the following control is performed:
[Defrost control]



[Defrost ending condition]
If the following conditions are met in one minute after defrosting starts, defrosting operation ends, however, the maximum length of operation is 10 minutes.

OR
- OR
  - Outdoor heat exchanger temperature (Tb) ≥10°C
  - Discharge pipe temperature (Tdi, Tds) ≥105°C
- Discharge pressure (Hp)>3.04MPa

2.4.6.2 Oil Recovery Operation

A prolonged operation of the compressor under low frequency may result in insufficient oil level because of poor oil recovery. For this reason, oil recovery operation is performed for 10 minutes while increasing the compressor operation frequency (INV=165 Hz).
Oil recovery operation is available only in cooing operation.

2.4.7 Servicing Function

2.4.7.1 Emergency Operation

- No transmission between outdoor and indoor units available
- A cycle of a 20-minute operation and a 10-minute stop is repeated in cooling operation.
- Defrosting operation is performed once in 1 hour in heating operation.
- Other controls are same as those performed in normal operation.

2.4.7.2 Simulated Operation Function

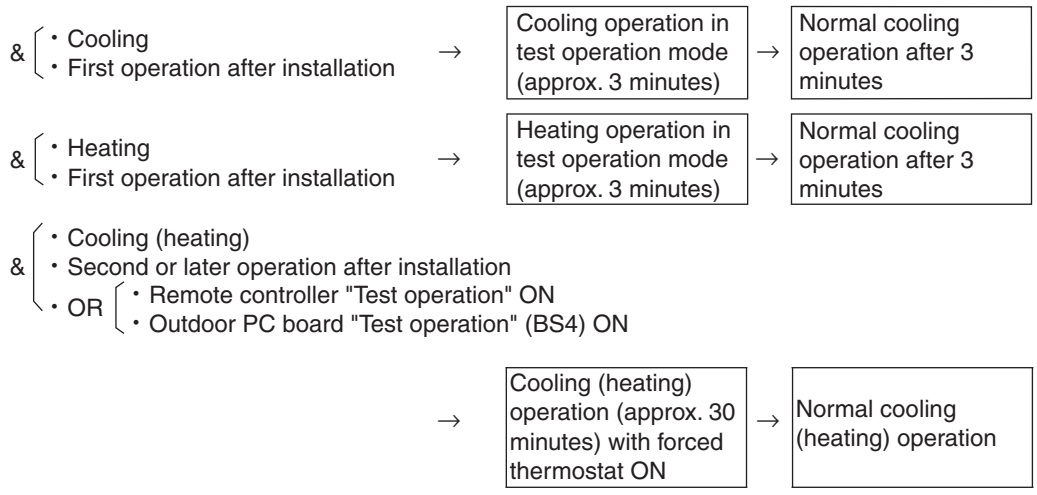
When a malfunction occurs in the following thermistors, simulated operation is carried out while the malfunction is displayed on the remote controller.
(In case of a fin thermistor malfunction, error display appears only when the INSPECTION/ TEST Operation button on the remote controller is pushed.)

- Outside air thermistor
- Outside heat exchanger thermistor
- Fin thermistor

* In case of a malfunction in the low pressure sensor, high pressure sensor, discharge pipe thermistor (for inverter), thermistor for subcooling heat exchanger or suction pipe thermistor, a malfunction stop is made and no simulated operation is performed.

2.4.7.3 Test Operation Control

- Cooling operation in the "Test operation mode" is always carried out for 3 minutes in the first operation after installation.
- When the "Test operation" button on the remote controller or the outside PC board is turned ON, forced thermostat ON operation is performed.



- In the "test operation mode", instant malfunction confirmation is conducted to detect a failure in field installation, such as a stop valve is not open. When malfunction code "U0" is displayed, check the field installation conditions such as a stop valve is not open.
- Normal operation starts automatically 3 minutes after the start of test operation.
  If the "test operation mode" is set with the remote controller, cooling operation continues in the test operation mode.
  If the test operation mode is cancelled after an elapse of 3 minutes from the start of test operation, it is switched to normal operation.
  (This control is implemented again in the first operation after refrigerant recovery by the pump down switch.)

3. List of Electrical and Functional Parts

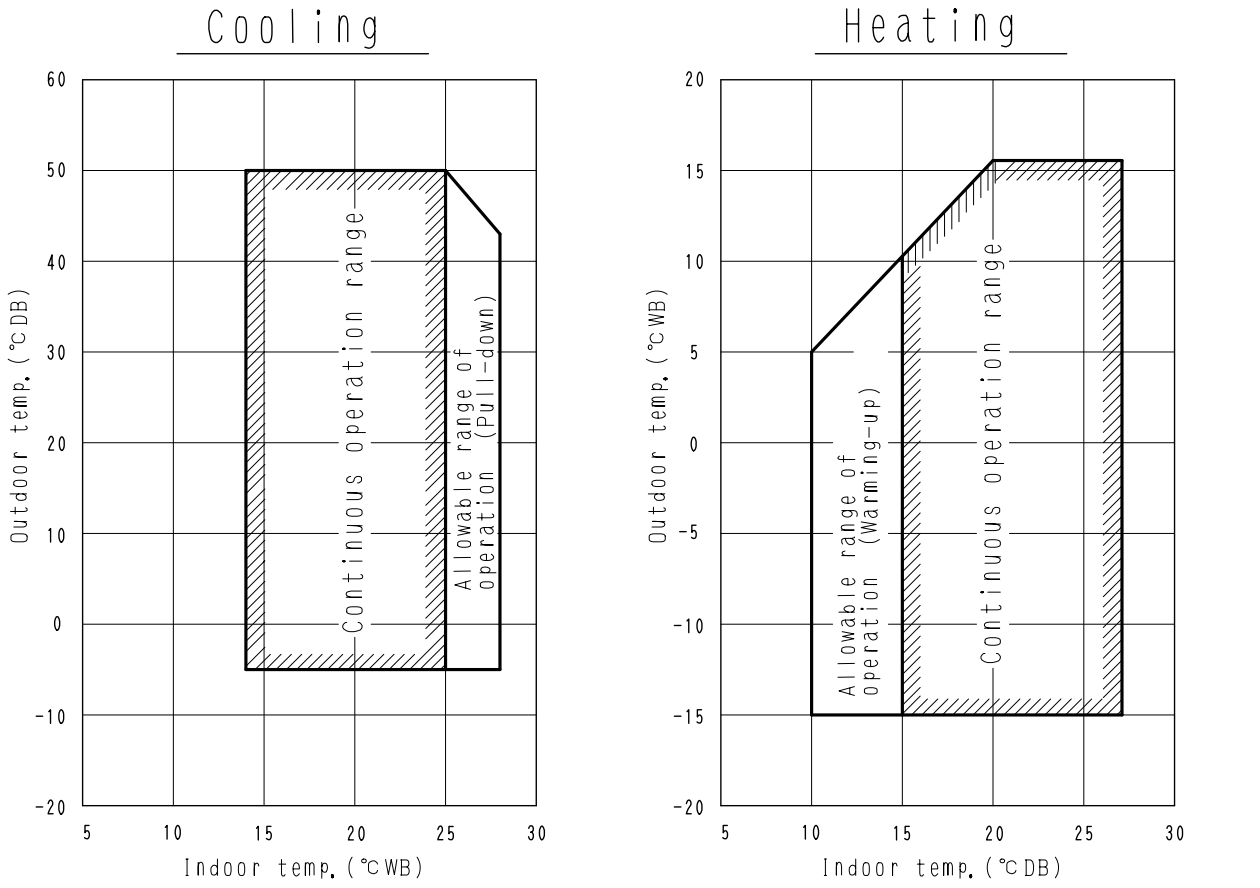
3.1 Outdoor Unit

RZQ200 · 250C7Y1B

Item	Name		Symbol	Model	
				RZQ200C7Y1B	RZQ250C7Y1B
Compressor	Inverter	Type	M1C	JT1GCVDKR@T	
		OC protection device		14.7A	
Fan	Fan motor	Output	M1F	0.75kW	
		OC protection device		3A	
PC board	For main		A1P	EC0676	
	For noise filrer		A2P	FN354-H-1	
	For inverter power supply		A3P	PC0509-1	
	For fan driver		A4P	PC0511-1	
	For QA transfer		A6P	EC0663	
Function	Electronic expansion valve(Main)		Y1E	Fully closed: 0 pulse, Fully open: 480 pulse	
	Electronic expansion valve(Subcool)		Y2E	Fully closed: 0 pulse, Fully open: 480 pulse	
Pressure protection	High pressure switch	For M1C	S1PH	OFF: 4.0MPa ON: 3.0MPa	
	Low pressure sensor		S1NPL	OFF: 0.07MPa	
	Fusible plug		—	70~75°C	
Temperature protection	Discharge gas temperature protection(Disharge gas thermistor)		R3T	OFF: 135°C	
	Inverter fin temperature protection(Radiator fin thermistor)		R1T	OFF: 87°C	
Others	Fuse	For main PC board	F1U	T 3.15A 250V	
			F2U	T 3.15A 250V	
		For noise filter PC board	F400U	T 6.3A 250V	
		For QA transfer PC board	F3U	T 6.3A 250V	

4. Operation Range

4.1 Operation Limits



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Part 6
Troubleshooting

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1. Maintenance Inspections

1.1 Optimal Operation Condition

Guide Lines for Optimal Operation Condition

The operation value guide lines when operating under standard conditions **(at Rated frequency)** by pushing the test run button on the remote controller are as given in the table below.

Indoor Unit Fan: "H" Operation Compressor: Rated Frequency

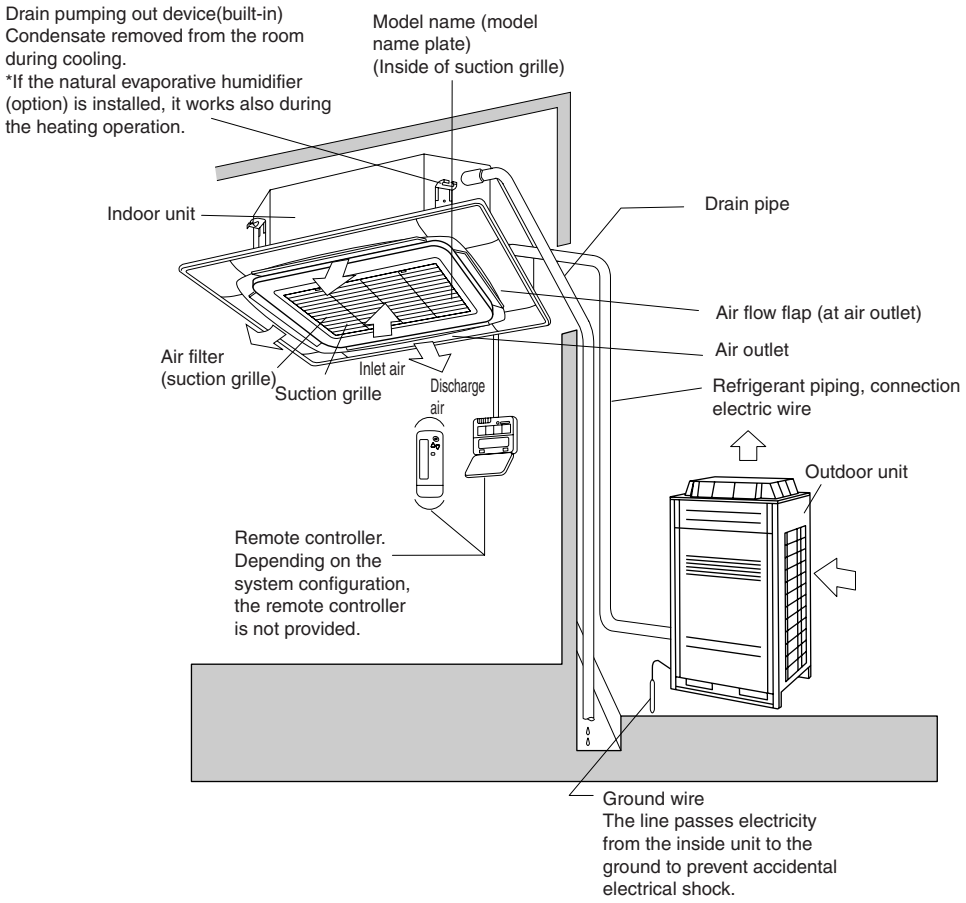
	High Pressure (Mpa)	Low Pressure (Mpa)	Discharge Pipe Temperature (°C)	Suction Temperature (°C)	Indoor Unit Side: Differential Between Suction Temperature and Discharge Temperature (°C)	Outdoor Unit Side: Differential Between Suction Temperature and Discharge Temperature (°C)
Cooling	2.62~3.39	0.60~0.98	60~100	–2~10	8~18	7~12
Heating	2.53~3.27	0.53~0.75	60~100	–6~2	14~30	2~6

Note: Figures given inside parentheses are in unit of kg/cm²

Standard Conditions

	Indoor Unit Conditions	Outdoor Unit Conditions
Cooling Operation	27°C DB/19°C WB	35°C DB
Heating Operation	20°C DB	7°C DB/6°C WB

- During or after maintenance, when the power supply is turned back on, operation restarts automatically by the "auto restart function." Please exercise the proper caution.



Correlation of Air-Conditioner's Operation Status and Pressure / Running Current

What happens in comparison to normal values is summarized in the table below.
(Measured from 15 ~ 20 minutes or more after operation starts.)

When Cooling

Air-Conditioner Status	Low Pressure	High Pressure	Running Current
Air Filter Fouling	Lower	Lower	Lower
Short Circuit of Indoor Unit Inlet/ Outlet Air	Lower	Lower	Lower
Outdoor Unit Fin Fouling	Higher	Higher	Higher
Short Circuit of Outdoor Unit Inlet/ Outlet Air	Higher	Higher	Higher
Air Mixed in Refrigerant	Higher	Higher	Higher
Water Mixed in Refrigerant	∗1 Lower	Lower	Lower
Dirt Mixed in Refrigerant	∗2 Lower	Lower	Lower
Lack of Refrigerant (Gas)	Lower	Lower	Lower
Unsatisfactory Compression	∗3 Higher	Lower	Lower

When Heating

Air-Conditioner Status	Low Pressure	High Pressure	Running Current
Air Filter Fouling	Higher	Higher	Higher
Short Circuit of Indoor Unit Inlet/ Outlet Air	Higher	Higher	Higher
Outdoor Unit Fin Fouling	Lower	Lower	Lower
Short Circuit of Outdoor Unit Inlet/ Outlet Air	Lower	Lower	Lower
Air Mixed in Refrigerant	Higher	Higher	Higher
Water Mixed in Refrigerant	∗1 Lower	Lower	Lower
Dirt Mixed in Refrigerant	∗2 Lower	Lower	Lower
Lack of Refrigerant (Gas)	Lower	Lower	Lower
Unsatisfactory Compression	∗3 Higher	Lower	Lower

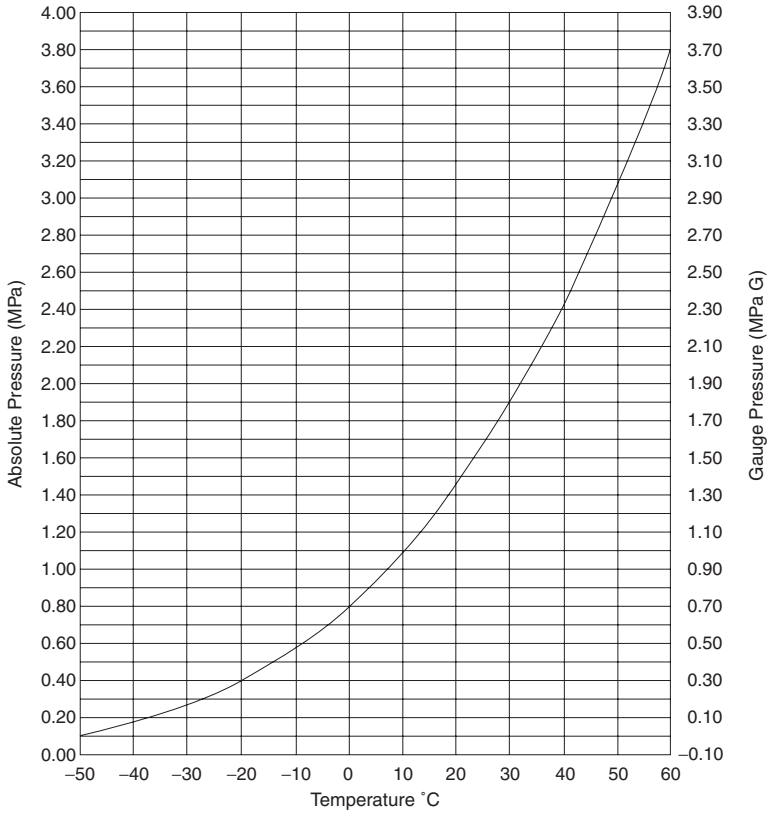
Notes:

1. ∗1. Water in the refrigerant freezes inside the capillary tube or expansion valve, and is basically the same phenomenon as pump down.
2. ∗2. Dirt in the refrigerant clogs filters inside the piping, and is basically the same phenomenon as pump down.
3. ∗3.Pressure differential between high and low pressure becomes slight.

Items		Key points	Items	Key points
Power supply section and PC board replacement	Inverter PC board	To replace the PC board assembly with service parts, follow the procedure shown below. [Procedure] 1. Disconnect all connectors and terminals connected to the PC board. 2. Unfasten the screws that fix the plastic PC board box. 3. Dismount the Inverter PC board assembly from the sheet metal part. 4. Mount a new inverter PC board assembly to the sheet metal part. 5. Connect the connectors and terminals.	Instantaneous power failure detection	Insufficient voltage and instantaneous power failure resulted in an operation shutdown due to “U2” error (supply voltage abnormality).
	Control PC board	When replacing to a spare control PC board, install a capacity setting adapter to meet the capacity. The capacity is written in E^2PROM at factory but not in the spare control PC board.	Fan residual operation	The fan operates for about 30 seconds to cool the inverter after the compressor stops operating. If the fin temperature is high, the fan will keep operating until the fin temperature lowers.
Electric discharge of capacitor		During the compressor stops operating, controls the electric discharge of capacitor. In this case, a noise may be heard, while it is not an abnormal status.	Fan motor replacement	Before replacing the fan motor, make sure that the fan is not operating and disconnect the fan motor connector from the PC board. If the fan is operating, the fan motor generates power to supply voltage to the PC board circuit. Further, make sure that the voltage between the capacitor terminals of the main circuit is 50 V or less before replacing the fan motor. To prevent the PC board from damage, touch the grounding terminal of the switch box by hands without fail to relieve static electricity from yourself right before detaching the connector.
Residual electric charge of capacitor		Before conducting maintenance of the switch box, turn off the power switch, and make sure that the voltage between the capacitor terminals is 50 VDC or less. If it is not possible to check the voltage, wait for 10 minutes or more before servicing.	DC fan motor	If the contrary winds blow hard, the contrary winds are automatically detected to stop the fan and conduct heat exchange utilizing the natural wind. In this case, the fan motor may not output voltage, while such an operating status is not abnormal.
Not possible to improve power factor by installation of phase-advance capacitor		On standard models, it was possible to increase the power factor by installing a capacitor. On inverter models, installation of a capacitor can damage the IGBT. Be sure not to install a capacitor on inverter models.	Pump down operation	The LPS cannot be activated by closing the stop valve while in cooling operation. Be sure to use the "Pump Down Switch" to collect the refrigerant. Because refrigerant gas remains in the field piping, be sure to collect residual gas using a refrigerant recovery unit.
Selection of leakage breaker		Select a leakage breaker (high-harmonics/high-frequency non-operating type) designed for inverters. If the leakage breaker is not designed for inverters, high frequency can result in a malfunction.	Pay attention to damaged sealing materials on the top panel	Top panel sealing materials have a function to prevent water from entering from the fan chamber to the mechanical chamber (electrical components) and dew condensation water on the top panel from dropping on the switch box. Therefore, if delamination and breakage of sealing materials occurs during servicing, replace them.
Fin temperature increase		Does not result in malfunction stop, and the unit will automatically reset after standby for 3 minutes. The fin temperature increase can be checked by service mode or LED on the PC board.		

* Capacity setting is made with DIP switches on the PC board. For more information, refer to "Maintenance and Repair Manual".

1.2 Refrigerant Saturation Curve (R-410A)



Temp. (°C)	Absolute Pressure (MPa)	Temp. (°C)	Absolute Pressure (MPa)	Temp. (°C)	Absolute Pressure (MPa)	Temp. (°C)	Absolute Pressure (MPa)
–50	0.11	–20	0.40	10	1.09	40	2.42
–48	0.12	–18	0.43	12	1.15	42	2.54
–46	0.13	–16	0.46	14	1.22	44	2.67
–44	0.15	–14	0.50	16	1.29	46	2.80
–42	0.16	–12	0.54	18	1.37	48	2.93
–40	0.18	–10	0.57	20	1.45	50	3.07
–38	0.19	–8	0.61	22	1.53	52	3.21
–36	0.21	–6	0.66	24	1.61	54	3.36
–34	0.23	–4	0.70	26	1.70	56	3.51
–32	0.25	–2	0.75	28	1.79	58	3.64
–30	0.27	0	0.80	30	1.89	60	3.83
–28	0.29	2	0.85	32	1.99	62	4.00
–26	0.32	4	0.91	34	2.09	64	4.17
–24	0.34	6	0.96	36	2.20		
–22	0.37	8	1.02	38	2.31		

1.3 Cautions in Handling New Refrigerant

1.3.1 Refrigerant and Refrigerant Oil

While the performance of refrigerant R-410A is almost equivalent to that of refrigerant R-22 and R-407C, its working pressure is approximately 1.4 times higher than them. Therefore, servicing and tools necessary for piping of them are different.

Refrigerant	R-410A	R-407C	R-22
Single/Mixture	Pseudo-azeotropic refrigerant mixture	Non-azeotropic refrigerant mixture	Single refrigerant
Saturation pressure (50°C)	2.96MPa (Gauge)	2.11MPa (Gauge)	1.84MPa (Gauge)
Refrigerant oil	Synthetic oil (Ether oil)	Synthetic oil (Ether oil)	Mineral oil (Suniso)

1.3.2 Required Tools

Special tools are required to carry out service work for the refrigerant circuit on units using the new refrigerant. Select tools referring to the following table.

Usage	Tool	Compatibility			Remarks
		R-410A	R-407C	R-22	
Refrigerant piping work	Pipe cutter	○			■ Compatible and dividable
	Flaring tool	○			
	Expanding tool (Expander)	○			
	Pipe bender	○			
	Torque wrench	○	○		■ The outside diameter of a flare nut is different.
	Piping oil	○		○	■ Refrigeration oil for R-22 is different.
Checking gas leakage	Gas leakage detector	○		○	■ Device for R-22 cannot be used.
Air tight test	Nitrogen	○			■ Compatible and dividable
	Welder	○			
	Gage manifold	○	○	○	■ Refrigeration oil for R-22 is different.
	Charge hose	○	○	○	■ Screw specifications for R-407C are different.
Vacuum drying ~ Refrigerant additional charging	Vacuum pump	○			■ Compatible and dividable; however, must be equipped with a backflow prevention function when the pump is stopped.
	Charging cylinder	×	×	○	■ Unusable because it is non-azeotropic
	Charging mouthpiece	○	○	○	■ Sealing materials are different those for R-22. ■ Screw specifications are different those for R-407C.
	Scale for refrigerant charging	○			■ Used in place of a charging cylinder

1.3.3 Piping Connection

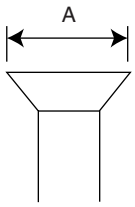
- Since stricter prevention of impurity incorporation is required for new refrigerant, be sure to blow nitrogen during brazing work.
- In addition to brazing, pipe curing and vacuum drying must be surely performed in order to prevent impurity incorporation into the piping system and at the same time more complete construction management must be carried out.
- According to model, the diameter of liquid and gas pipes is one size smaller.

	R-410A		R-407C	
Capacity	Liquid pipe	Gas pipe	Liquid pipe	Gas pipe
40	ϕ6.4×t0.8	ϕ12.7×t0.8	ϕ6.4×t0.8	ϕ12.7×t0.8
45	ϕ6.4×t0.8	ϕ12.7×t0.8	ϕ6.4×t0.8	ϕ12.7×t0.8
50	ϕ6.4×t0.8	ϕ12.7×t0.8	ϕ6.4×t0.8	ϕ12.7×t0.8
56	ϕ6.4×t0.8	ϕ12.7×t0.8	ϕ9.5×t0.8	ϕ15.9×t1.0
63	ϕ6.4×t0.8	ϕ12.7×t0.8	ϕ9.5×t0.8	ϕ15.9×t1.0
80	ϕ9.5×t0.8	ϕ15.9×t1.0	ϕ9.5×t0.8	ϕ15.9×t1.0
112	ϕ9.5×t0.8	ϕ15.9×t1.0	ϕ9.5×t0.8	ϕ19.1×t1.0
140	ϕ9.5×t0.8	ϕ15.9×t1.0	ϕ9.5×t0.8	ϕ19.1×t1.0
160	ϕ9.5×t0.8	ϕ15.9×t1.0	ϕ9.5×t0.8	ϕ19.1×t1.0
224	ϕ9.5×t0.8	ϕ25.4×t1.0	ϕ12.7×t0.8	ϕ25.4×t1.0
280	ϕ12.7×t0.8	ϕ25.4×t1.0	ϕ15.9×t1.0	ϕ28.6×t1.2

1.3.4 Flaring and Flare Nut

Precautions for flaring

- Ensure chamfering (filing). Furthermore, pay utmost care not to leave chips inside of piping.
- Apply an appropriate coating of refrigeration machine oil to the inner and outer surfaces of the flare nut to prevent any leaks. Furthermore, be sure to use synthetic oil (e.g. ether oil, ester oil, alkylbenzene oil, or their mixed oil) as the refrigeration machine oil.
- For flaring for R-410A units, the flare nut is changed from Class 1 Class 2 due to use of high-pressure refrigerant. (Excessive fastening will result in cracks in the flare nut.)



(mm)

Pipe diameter	A	
	Class 2 (R-410A)	Class 1 (R-22, R-407C)
ϕ 6.4	8.7~9.1	9.0
ϕ 9.5	12.8~13.2	13.0
ϕ 12.7	16.2~16.6	16.2
ϕ 15.9	19.3~19.7	19.4
ϕ 19.1	(Reference) 24	23.7

- For conventional flaring, a protrusion allowance of 0 to 0.5 mm was provided for piping. To respond to the R-410A refrigerant, provide the allowance of 1.0 to 1.5 mm for the piping, and then conduct flaring. (Only apply this method to the clutch type.)

Specifications of flare nut

- The flare nut for R-410A is also changed from Class 1 Class 2 due to use of high-pressure refrigerant.
- Due to the change to Class 2, the flare nut outline of ϕ15.9 mm is changed. (The fastening torque remains unchanged.)
- Use the flare nut that comes with the product.

Nominal size: 1/2", used for ϕ12.7-mm piping	24→26	16→19
Nominal size: 5/8", used for ϕ15.9-mm piping	27→29	20→22

1.3.5 Refrigerant Charge

- Charge the new refrigerant in the liquid state through the service port of stop valve on the liquid side (outdoor unit). Conduct vacuum drying using vacuum pump, and never conduct flushing during refrigerant charging.

1.3.6 Air Tighteness Test

Refrigerant Recovery Method

Before replacing parts of the refrigerant system, be sure to collect refrigerant. The refrigerant recovery procedure is as follows:

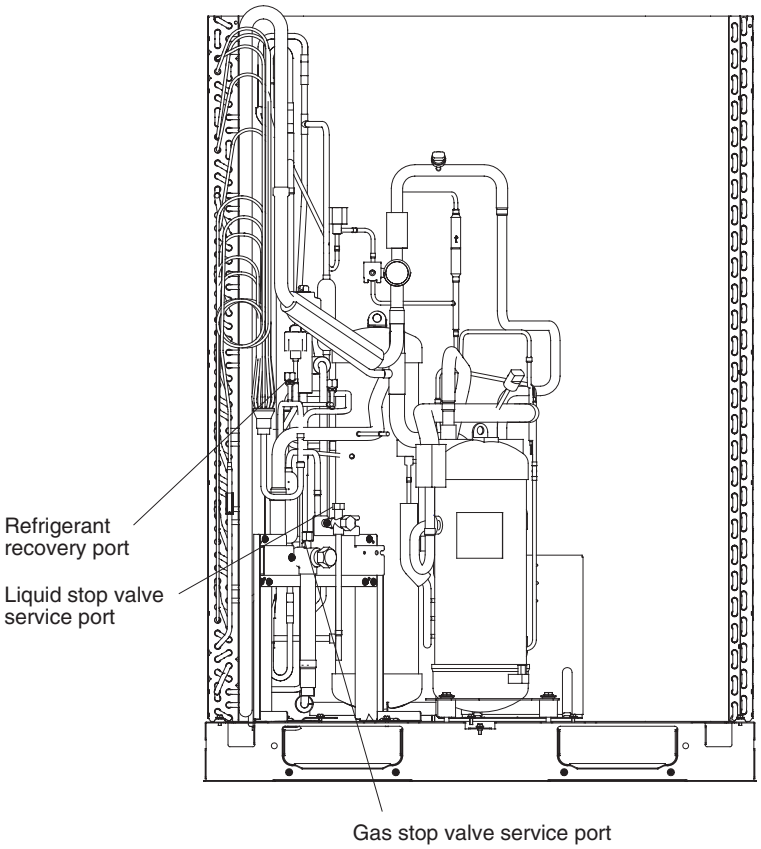
■ **RZQ200 • 250C**

[Refrigerant recovery procedure]

(1) Stop operation.
(2) Confirm that both of liquid side stop valve and gas side stop valve are fully open.
(3) Push and hold the MODE (BS1) button for 5 seconds or more. (→ Setting mode 2)
(4) Push the SET (BS2) button to change the LED display to "Refrigerant recovery mode".
(5) Push the RETURN (BS3) button.
(6) Push the SET (BS2) button to change the LED display to "Electronic expansion valve fully open".
(7) Push the RETURN (BS3) button twice.
(8) Collect refrigerant via the refrigerant recovery port and liquid stop valve service port (or gas stop valve service port) simultaneously using a refrigerant recovery unit.

	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Refrigerant recovery mode	○	●	●	●	●	●	○
Electronic expansion valve fully open	○	●	●	●	●	○	●

○: Light ON
●: Light OFF



2. Troubleshooting Based on Equipment Condition

2.1 Troubleshooting Based on Equipment Condition

	Equipment Condition	Remedy
1	Equipment does not operate.	See 84
2	Fan operates, but compressor does not.	See 85
3	Cooling/heating operation starts but stops immediately.	See 87
4	After equipment shuts down, it cannot be restarted for a while.	See 89
5	Equipment operates but does not provide cooling.	See 90
6	Equipment operates but does not provide heating.	See 92
7	Equipment discharges white mist.	See 93
8	Equipment produces loud noise or shakes.	See 94
9	Equipment discharges dust.	See 95
10	Remote controller LCD displays “88.”	See 96
11	Swing flap does not operate.	See 97
12	Equipment emits odor.	Room smell and cigarette odors accumulated inside the indoor unit are discharged with air. Inside of the indoor unit must be cleaned.
13	Flap operates when power is turned on.	It is normal. The flap initializes for accurate positioning.
14	Change of operation mode causes flap to move.	It is normal. There is a control function that moves the flap when operation mode is changed.
15	Fan operates in “M” mode during heating even if remote controller is set to “Low.”	It is normal. It is caused by the activation of the overload control (airflow shift control).
16	Flap automatically moves during cooling.	It is normal. It is caused by the activation of the dew prevention function or ceiling soiling prevention function.
17	Indoor unit fan operates in “L” mode for 1 minute in microcomputer-controlled dry mode even if compressor is not operating.	It is normal. The monitoring function forcibly operates the fan for one minute.
18	In simultaneous ON/OFF multi-system setup, indoor unit (sub) does not operate in sync with the other indoor unit (main). (Flat, fan, etc.)	It is normal. It is caused by a signal transmission lag.
19	Indoor unit fan operates after heating operation stops.	It is normal. The fan operates in the “LL” mode for 60 to 100 seconds to dissipate the residual heat in the heater.
20	Drain pump operates when equipment is not operating.	It is normal. The drain pump continues to operate for several minutes after equipment is turned off.
21	Horizontal wing sends air to different directions in cooling and heating even if it is set to the same position.	It is normal. The airflow direction in cooling/dry operation is different from that in heating/fan operation.
22	Flap remains horizontal even if it is set to Swing.	It is normal. The flap does not swing in the thermostat OFF mode.
23	The group control remote controller is incapable of setting to remote controller thermostat.	It is normal. Remote controller thermostat setting is unavailable during group control.
24	During operation with a remote controller thermostat, the thermostat turns OFF even before the remote controller temperature reaches the setting.	It is normal. In some cases, it is controlled by preset temperature and suction temperature (body thermostat).
25	When a malfunction occurs in a unit equipped with individual remote controllers during one remote controller group control, individual remote controller address display shows 0 regardless of actual address setting.	It is normal. The address display of individual remote controllers is always 0.

2.2 Equipment does not Operate

Applicable Model

All models of SkyAir series

Error Detection Method

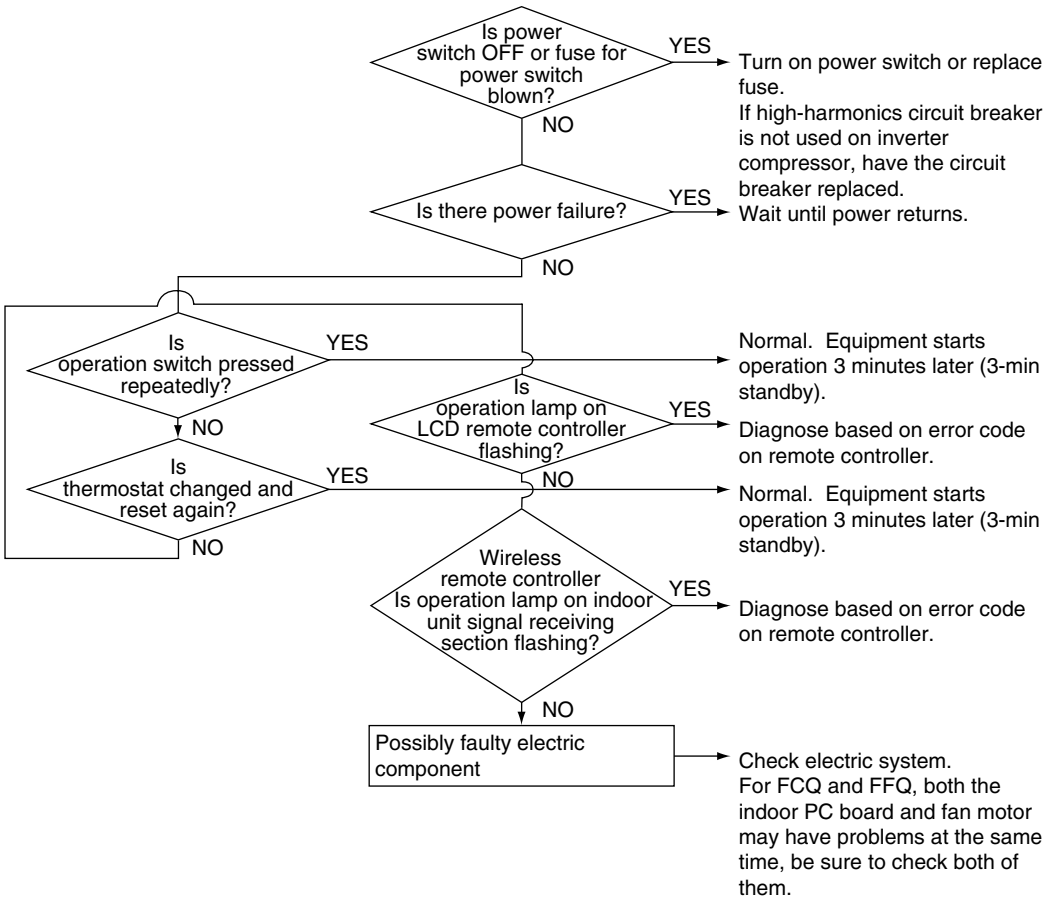
Error Generating Condition

Possible Causes

- Fuse blown or disorder of contact in operation circuit
- Faulty operation switch or contact point
- Faulty high pressure switch
- Faulty magnetic switch for fan motor
- Activation or fault of overcurrent relay for fan motor
- Faulty overcurrent relay for compressor
- Faulty compressor protection thermostat
- Insufficient insulation in electric system
- Faulty contact point of magnetic switch for compressor
- Malfunction of compressor

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.3 Indoor Fan Operates, but Compressor does not

Applicable Model

All models of SkyAir series

Method of Malfunction Detection

Malfunction Decision Conditions

Possible Causes

- Faulty thermistor
- Faulty indoor/outdoor unit PC board
- Faulty magnetic switch
- Faulty power transistor
- Faulty compressor

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

· Indoor unit fan runs at set airflow rate.
· (In cooling operation)
When air thermistor ambient temperature is higher than set temperature
· (In heating operation)
When air thermistor ambient temperature is lower than set temperature

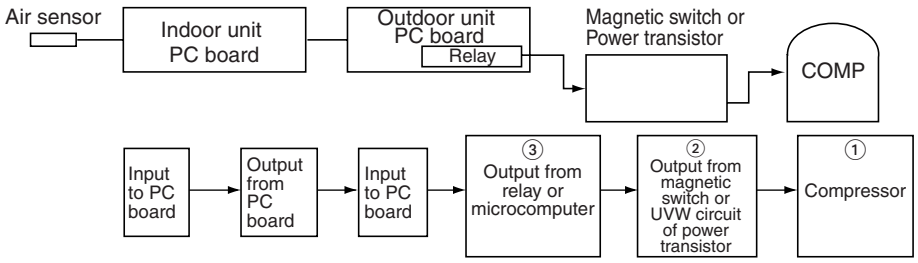
Is the power switch OFF or the fuse for power switch blown?
YES → Turn on the power switch or replace fuse.
NO

Is the heating switch turned on at outdoor temperature ≥27˚C
YES → Normal. (Thermostat OFF by outdoor temperature)
NO

① Is rated voltage applied at the compressor terminals?
YES → Replace the compressor.
NO

② Is rated voltage output from the magnetic switch or power transistor?
YES → Replace the magnetic switch or power transistor.
NO

③ Is rated voltage output from the PC board?
YES → Replace the PC board.
NO → Check the thermistor.



(S2576)

2.4 Cooling/Heating Operation Starts but Stops Immediately

Applicable Model

All models of SkyAir series

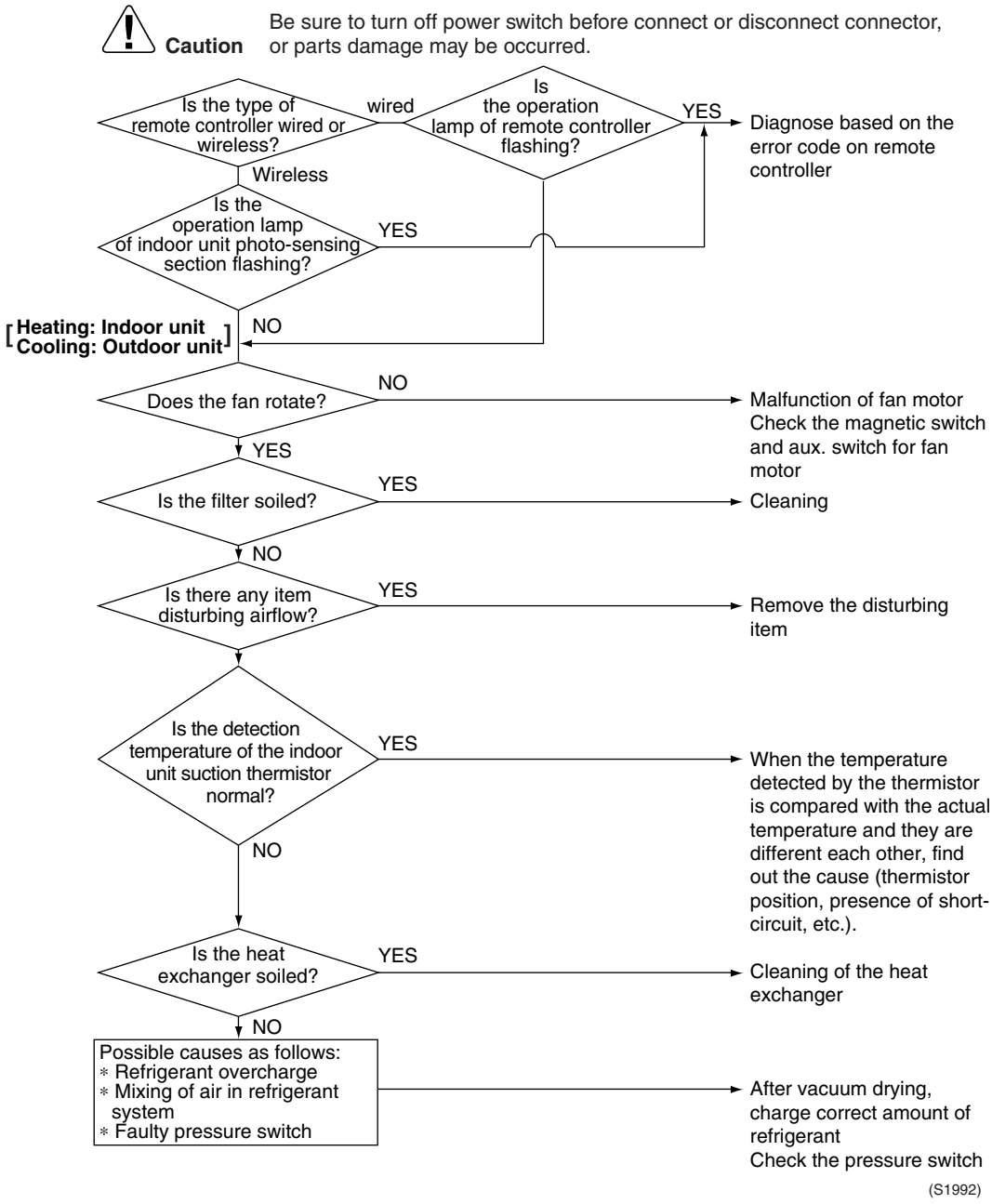
Error Detection Method

Error Generating Condition

Possible Cause

- Excess charge of refrigerant
- Air intrudes into refrigerant system
- Faulty pressure switch
- Faulty magnetic switch for outdoor unit fan motor
- Faulty aux. relay for outdoor unit fan motor
- Soiled heat exchanger of outdoor unit
- There is an interfering item in air flow of outdoor unit
- Malfunction of outdoor unit fan
- Soiled air filter of indoor unit
- Soiled heat exchanger of indoor unit
- There is some interfering item in airflow of indoor unit
- Malfunction of indoor unit fan

Troubleshooting



2.5 After Equipment Shuts Down, It cannot be Restarted for a While

Applicable Model

All models of SkyAir series

Error Detection Method

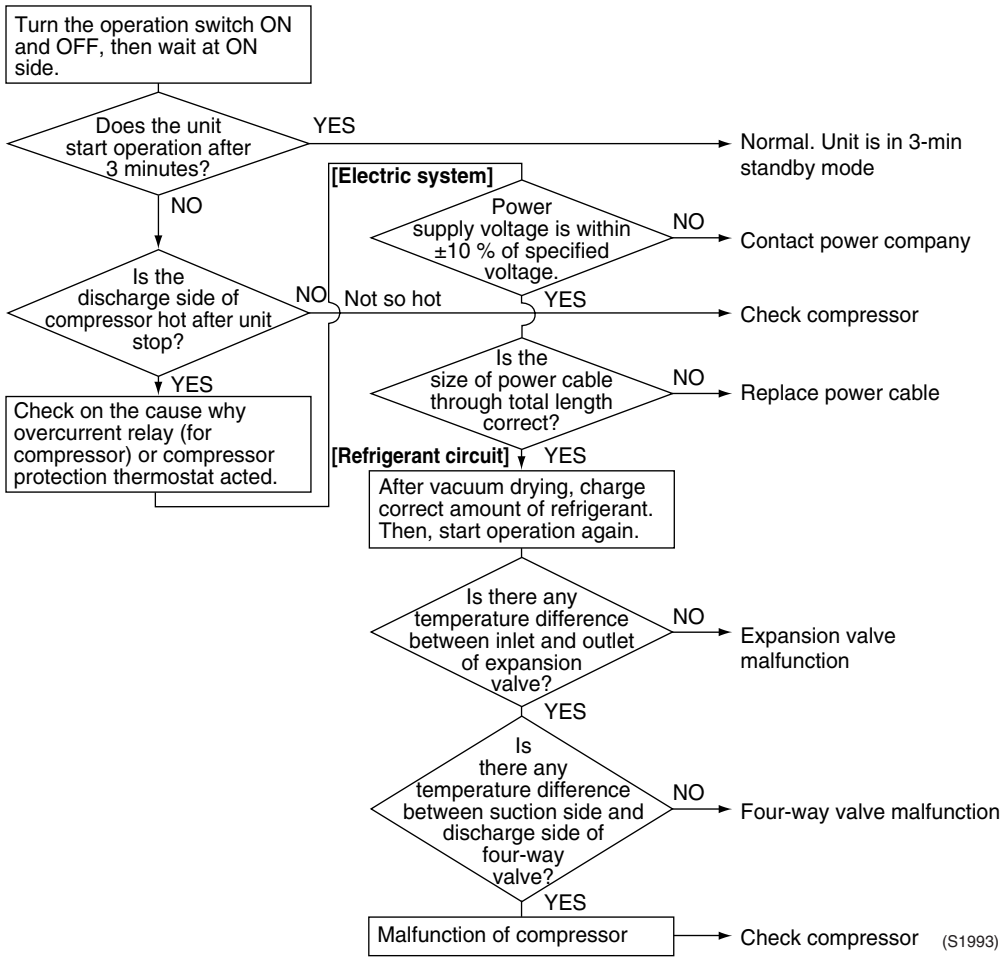
Error Generating Condition

Possible Cause

- Overcurrent relay (for compressor)
- Compressor protection thermostat
- Overcurrent relay may act due to the following reasons
  Lower voltage of power supply
  Excess level of high pressure
  Insufficient size of power cable
  Malfunction of compressor
- Compressor protection thermostat may act due to the following reasons
  Internal leakage of four-way valve (There is no difference between suction and discharge temperature)
  Insufficient compression of compressor
  Incorrect refrigerant
  Faulty expansion valve
  Insufficient circulation of refrigerant

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



2.6 Equipment Operates but does not Provide Cooling

Applicable Model

All models of SkyAir series

Error Detection Method

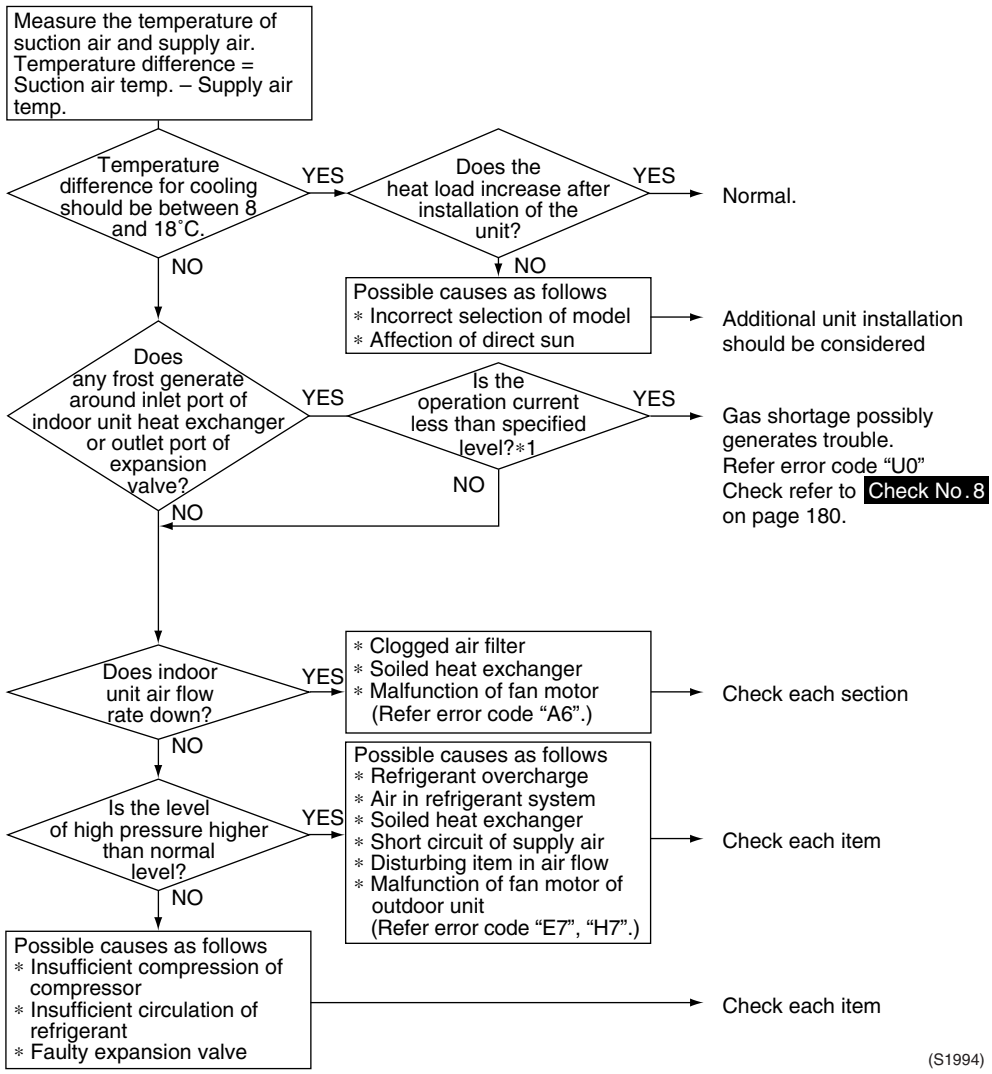
Error Generating Condition

Possible Cause

- Overcurrent relay (for compressor)
- Compressor protection thermostat
- Overcurrent relay (for compressor) may act due to the following reasons
  Lower voltage of power supply
  Excess level of high pressure
  Insufficient size of power cable
  Malfunction of compressor
- Compressor protection thermostat may act due to the following reasons
  Internal leakage of four-way valve (There is no difference between suction and discharge temperature)
  Insufficient compression of compressor
  Incorrect refrigerant
  Faulty expansion valve
  Insufficient circulation of refrigerant

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: For operating current, refer to "Electric characteristics" (on page 9) after checking the field system combination (indoor + outdoor).

2.7 Equipment Operates but does not Provide Heating

Applicable Model

All models of SkyAir series

Error Detection Method

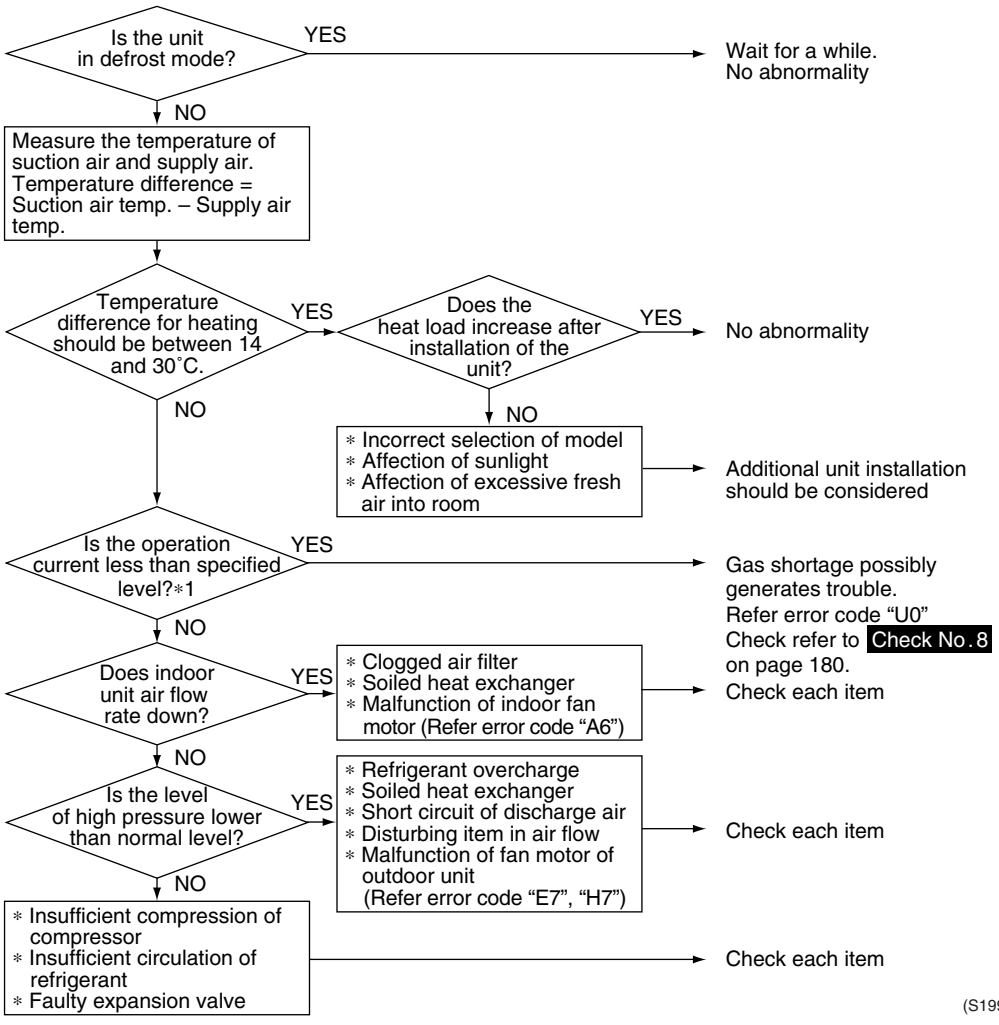
Error Generating Condition

Possible Cause

- Excess charge of refrigerant
- Air intrudes into refrigerant system
- Faulty pressure switch
- Faulty magnetic switch for outdoor unit fan motor
- Faulty aux. relay for outdoor unit fan motor
- Soiled heat exchanger of outdoor unit
- There is an interfering item in air flow of outdoor unit
- Malfunction of outdoor unit fan
- Soiled air filter of indoor unit
- Soiled heat exchanger of indoor unit
- There is some interfering item in airflow of indoor unit
- Malfunction of indoor unit fan

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: For operating current, refer to "Electric characteristics" (on page 9) after checking the field system combination (indoor + outdoor).

2.8 Equipment Discharges White Mist

Applicable Model

All models of SkyAir series

Error Detection Method

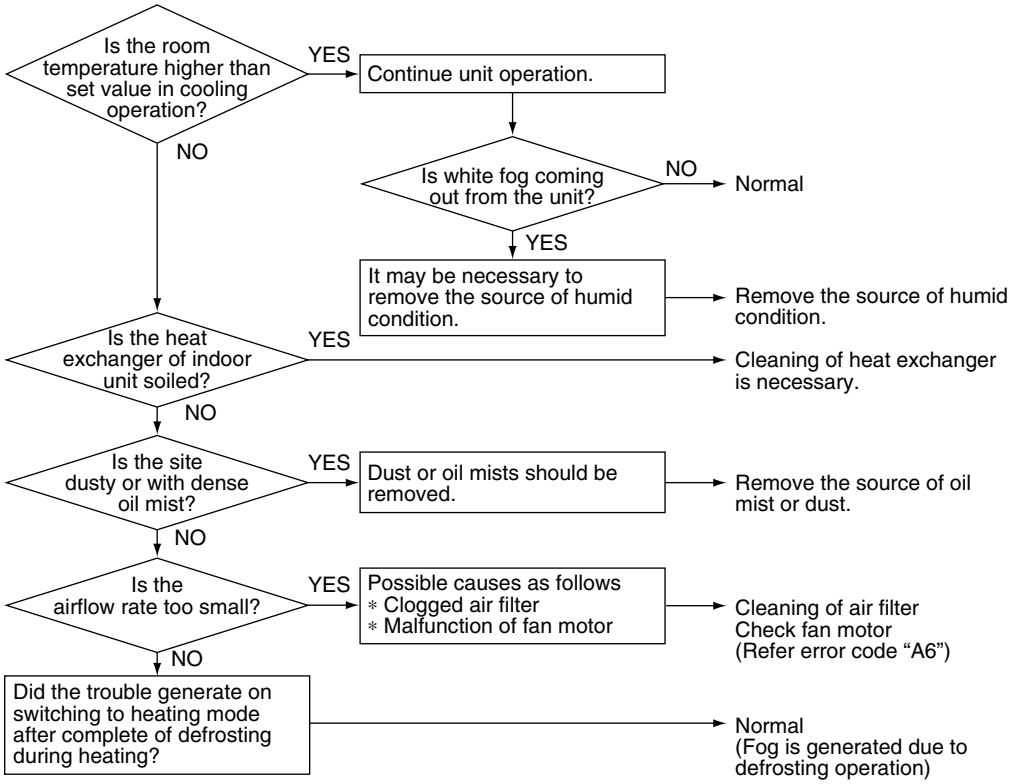
Error Generating Condition

Possible Cause

- Humid installation site
- Installation site is dirty and with dense oil mists.
- Soiled heat exchanger
- Clogged air filter
- Malfunction of fan motor

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(S1996)

2.9 Equipment Produces Loud Noise or Shakes

Applicable Model

All models of SkyAir series

Error Detection Method

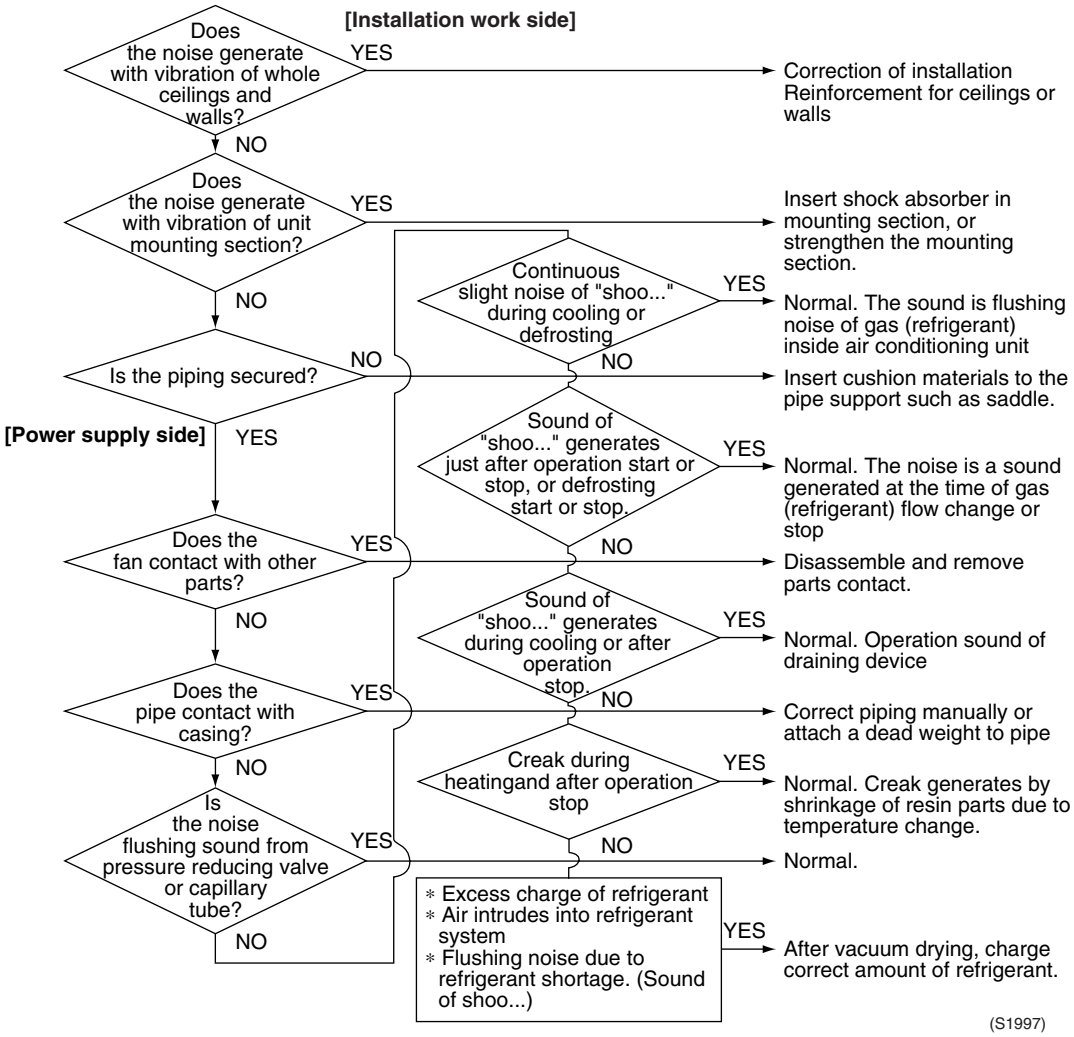
Error Generating Condition

Possible Cause

- Faulty installation
- Excess charge of refrigerant
- Air intrudes into refrigerant system
- Flushing noise due to refrigerant shortage. (Sound of shoo...)

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(S1997)

2.10 Equipment Discharges Dust

Applicable Model

All models of SkyAir series

Error Detection Method

Error Generating Condition

Possible Cause

- Carpet spread room
- Animal's hair

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

(S1998)

2.11 Remote Controller LCD Displays "88"

Applicable Model

All models of SkyAir series

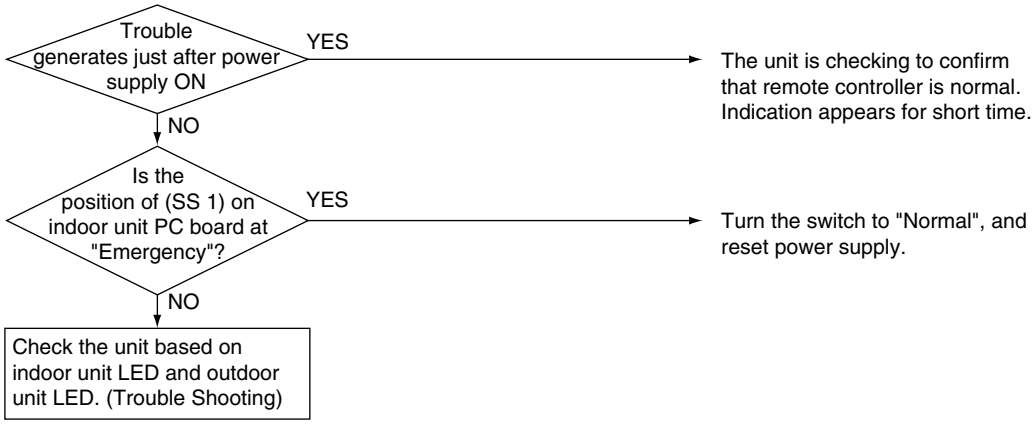
Error Detection Method

Error Generating Condition

Possible Cause

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(S1999)

2.12 Swing Flap does not Move

Applicable Models

FAQ, FBQ, FHQ, FUQ

Error Detection Method

Use the limit switch that turns ON and OFF according to the motor rotation.

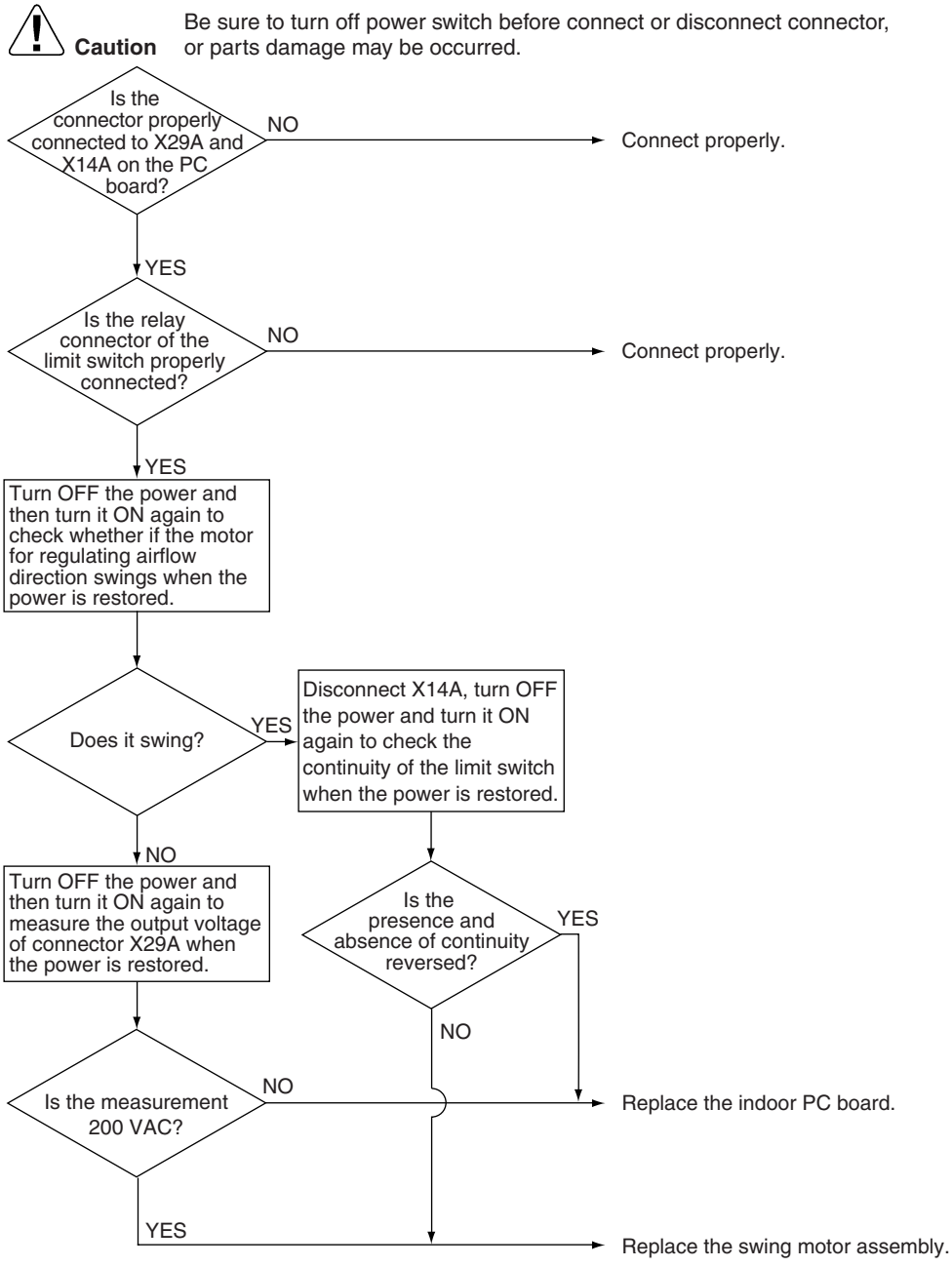
Error Generating Condition

When ON and OFF of the micro-switch for positioning control cannot be switched even when the motor for regulating airflow direction is powered for a certain period of time (approx. 30 seconds).

Possible Cause

- Swing motor failure
- Micro-switch failure
- Connector connection failure
- Indoor PC board failure

Troubleshooting



3. Procedure of Self-Diagnosis by LED

3.1 Troubleshooting by LED on Outdoor Unit PC Board

The following diagnosis can be conducted by turning on the power switch and checking the LED indication on the printed circuit board of the outdoor unit.

☼ : LED on ● : LED off ◑ : LED blinks — : Not used for diagnosis

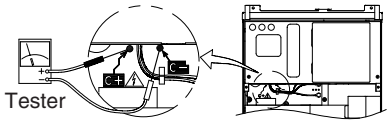
Microcomputer in normal operation	Error detection	Description
HAP	H2P	
(Green)	(Red)	
◑	●	Normal
☼	—	Faulty outdoor unit PC board (Note 1)
●	—	Power supply abnormality, or faulty outdoor unit PC board (Note 2)
◑	☼	Activation of protection device (Note 3)

Notes:

1. Turn off the power switch, and turn it on again after 5 seconds or more. Check the error condition, and diagnose the problem.
2. Turn off the power switch. After 5 seconds or more, disconnect the connection wire (3). Then turn on the power switch. If the HAP on the outdoor unit PC board flashes after about 10 seconds, the indoor unit PC board is faulty.
3. Also check for open phase.
   * The error detection monitor continues to indication the previously generated error until the power switch is turned off.
     Be sure to turn off the power switch after inspection.

Precautions during inverter servicing

1. Do not touch the energized part because of its high voltage for at least 10 minutes after the power is turned OFF.
2. After opening the switch box cover, measure the voltage between the terminals on the power terminal block with a tester to confirm that the power is turned OFF.
   Take measurements at the following spots with a tester to confirm that the main circuit capacitor voltage is 50 VDC or less.



3. For the purpose of preventing damage to PC board, never fail to touch the earth terminal of the electrical equipment box with a hand immediately before plugging or unplugging the connectors to release static electricity from your body.
4. Before starting operation, disconnect the relay connectors X1A and X2A from the motor for the outdoor unit fan. Be careful not to touch the energized part when disconnecting the relay connectors. (When the outdoor unit fan is rotated by strong wind or other reasons, electrical energy is stored in the main circuit capacitor and there may be a risk of electric shock.)
5. After finishing servicing, plug the outdoor unit fan relay connector to the previous positions. Error code "E7" is displayed on the remote controller and normal operation is impossible. For connecting the connectors, refer to the "Electrical Wiring Diagram" plate attached to the back side of the switch box cover.

General precautions during servicing

Precautions during refrigerant refilling

(1) Use charge hoses and gauge manifolds designed for R-410A from the perspective of resistance to pressure and prevention of impurities (SUNISO oil, etc.) from entering.
(2) Be sure to blow nitrogen while brazing.
When connecting the flare, apply ether or ester oil on the flare.
(3) Air tightness test must be conducted at 4.0 MPa.
(4) Be sure to vacuum and dry refrigerant and refrigerant charging must be carried out from the liquid side in the form of liquid.

Precautions when handling the outdoor PC board

Even when not energized, touch a grounded metal part with fingers before touching any part or pattern in order to discharge electricity charged in your body.

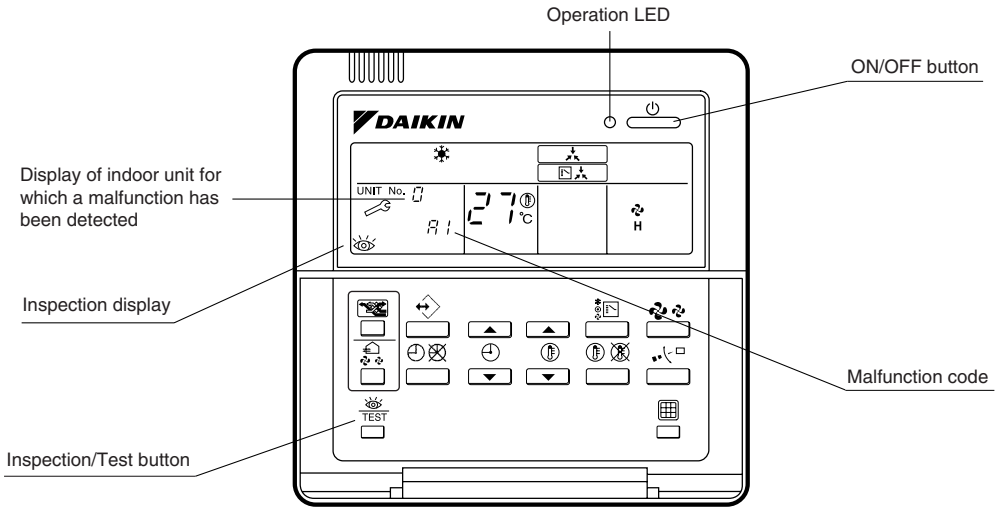
4. Diagnosis by Remote Controller

4.1 Confirm Method of Malfunction Code

4.1.1 Self-diagnosis by Wired Remote Controller

Explanation

If operation stops due to malfunction, the remote controller's operation LED blinks, and malfunction code is displayed. (Even if stop operation is carried out, malfunction contents are displayed when the inspection mode is entered.) The malfunction code enables you to tell what kind of malfunction caused operation to stop. See page 102 for malfunction code and malfunction contents.



Note:

1. Pressing the INSPECTION/TEST button will blink the check indication.
2. While in check mode, pressing and holding the ON/OFF button for a period of five seconds or more will clear the failure history indication shown above. In this case, on the codes display, the malfunction code will blink twice and then change to "00" (=Normal), the Unit No. will change to "0", and the operation mode will automatically switch from check mode to normal mode (displaying the set temperature).

4.1.2 Self-Diagnosis by Wireless Remote Controller

If equipment stops due to a malfunction, the operation indicating LED on the light reception section flashes.
The malfunction code can be determined by following the procedure described below. (The malfunction code is displayed when an operation error has occurred. In normal condition, the malfunction code of the last problem is displayed.)

Procedure

1. Press the INSPECTION/TEST button to select “Inspection.”
   The equipment enters the inspection mode. The “Unit” indication lights and the Unit No. display shows flashing “0” indication.
2. Set the Unit No.
   Press the UP or DOWN button and change the Unit No. display until the buzzer (*1) is generated from the indoor unit.
   ∗1 Number of beeps
   3 short beeps : Conduct all of the following operations.
   1 short beep : Conduct steps 3 and 4.
   Continue the operation in step 4 until a buzzer remains ON. The continuous buzzer indicates that the malfunction code is confirmed.
   Continuous beep : No abnormality.
3. Press the MODE selector button.
   The left “0” (upper digit) indication of the malfunction code flashes.
4. Malfunction code upper digit diagnosis
   Press the UP or DOWN button and change the malfunction code upper digit until the malfunction code matching buzzer (*2) is generated.

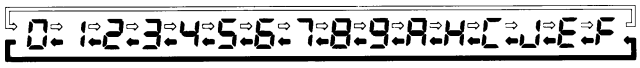
■ The upper digit of the code changes as shown below when the UP and DOWN buttons are pressed.

(S2003)

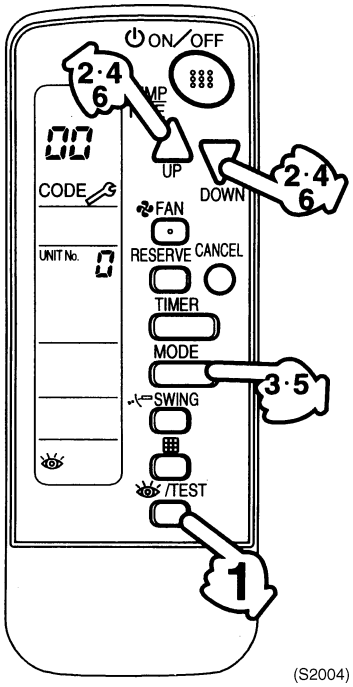
∗2 Number of beeps
Continuous beep : Both upper and lower digits matched.(Malfunction code confirmed)
2 short beeps: Upper digit matched.
1 short beep : Lower digit matched.

5. Press the MODE selector button.
   The right “0” (lower digit) indication of the malfunction code flashes.
6. Malfunction code lower digit diagnosis
   Press the UP or DOWN button and change the malfunction code lower digit until the continuous malfunction code matching buzzer (*2) is generated.

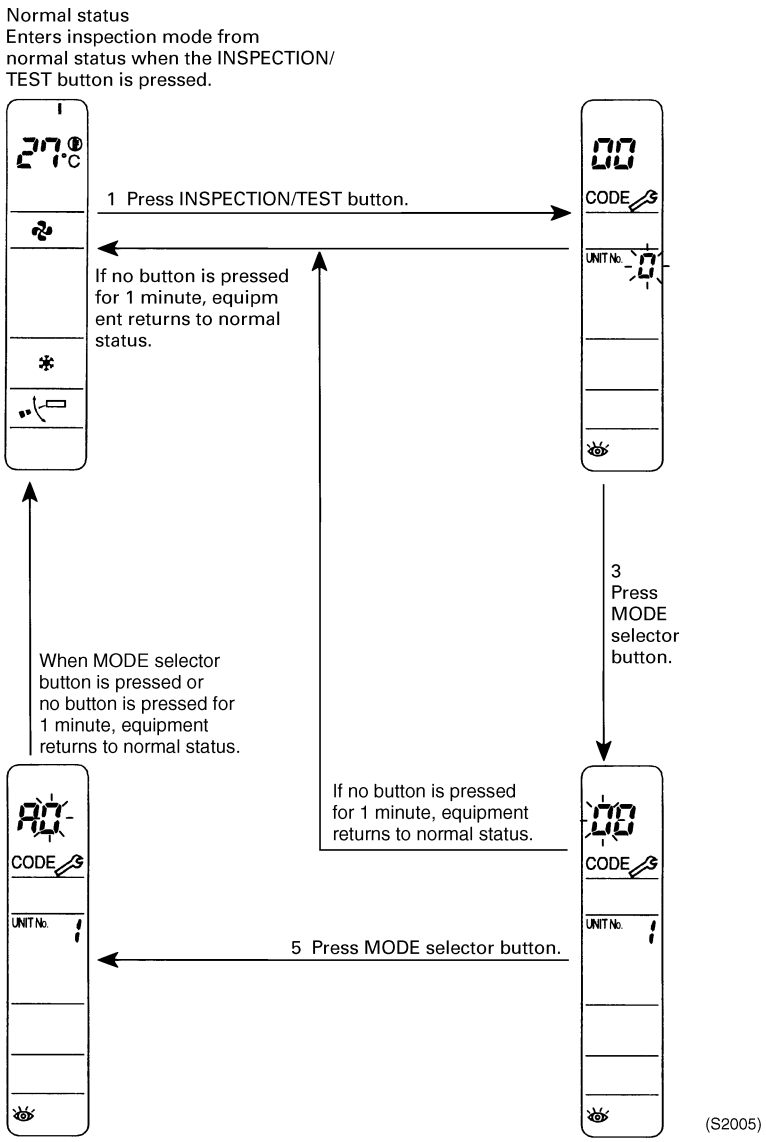
■ The lower digit of the code changes as shown below when the UP and DOWN buttons are pressed.



(S2002)


ON/OFF
2·4
6
UP
DOWN
2·4
6
CODE
FAN
UNIT No.
RESERVE
CANCEL
TIMER
MODE
3·5
SWING
/TEST
1

(S2004)


Normal status
Enters inspection mode from normal status when the INSPECTION/ TEST button is pressed.
1 Press INSPECTION/TEST button.
If no button is pressed for 1 minute, equipm ent returns to normal status.
CODE
UNIT No.
3 Press MODE selector button.
When MODE selector button is pressed or no button is pressed for 1 minute, equipment returns to normal status.
If no button is pressed for 1 minute, equipment returns to normal status.
5 Press MODE selector button.

(S2005)

4.2 Remote Controller Display Malfunction Code and Contents

Malfunction Code	Contents/Processing	Remarks
A1	Failure of PC board ass'y for indoor unit	
A3	Malfunction of drain water level system	
A6	Indoor unit fan motor overload / overcurrent / lock	
A7	Malfunction of swing flap motor	
AF	Abnormal drain water level	Activation of float switch during compressor off.
AJ	Failure of capacity setting	Either capacity data is set incorrectly, or capacity has not been set for the data IC
C4	Malfunction of heat exchanger temperature sensor system	
C9	Malfunction of suction air temperature sensor system	
CC	Malfunction of humidity sensor system	Failure of humidity sensor etc.
CJ	Malfunction of remote control air temperature sensor system	Failure of remote controller air thermistor etc. Unit can be operated by indoor unit thermistor.
E1	Outdoor unit P.C board malfunction	
E3	High pressure malfunction (outdoor unit)	
E4	Abnormality of low pressure (outdoor unit)	Failure of low pressure sensor system. Check if the stop valve open.
E5	Compressor motor lock malfunction	Compressor motor lock on incorrect wiring etc.
E7	Outdoor fan motor lock or outdoor fan instantaneous overcurrent malfunction	
E9	Malfunction of electronic expansion valve (outdoor unit)	
F3	Discharge pipe temperature malfunction (outdoor unit)	
H3	Failure of high pressure switch (outdoor unit)	
H7	Malfunction of outdoor fan motor signal	
H9	Malfunction of outdoor air temperature thermistor system (outdoor unit)	
J3	Malfunction of discharge pipe temperature thermistor system (outdoor unit)	
J5	Suction pipe thermistor malfunction	Failure of suction pipe thermister system
J6	Malfunction of heat exchanger temperature thermistor system in cooling operation (outdoor unit)	
JA	Malfunction of High pressure sensor	
J8	Malfunction of liquid pipe thermistor	
JC	Malfunction of suction pressure sensor	Failure of suction pressure sensor system
L1	Outdoor PC board malfunction	
L4	Radiation fin temperature rise	Malfunction of inverter cooling
L5	Instantaneous over current	Possibility of compressor motor grounding or shortage of motor winding
L8	Electronic overload	Possibility of compressor overload, open circuit in compressor motor
L9	Stall prevention (faulty start-up)	Possibility of compressor seizing
LC	Malfunction of transmission system (between control PC board and inverter PC board)	

Malfunction Code	Contents/Processing	Remarks
P1	Open phase or voltage unbalance	
PJ	Failure of capacity setting (outdoor unit)	Either capacity data is set incorrectly, or capacity has not been set for the data IC
U0	Lack of refrigerant malfunction (low level)	
U0	Lack of refrigerant malfunction (high level)	
U1	Reverse phase power supply	
U2	Abnormal power supply voltage	Including malfunction of K1M, K2M
U4	Failure of transmission (between indoor and outdoor unit)	Transmission between indoor and outdoor unit is not being correctly carried out.
U5	Failure of transmission (between indoor unit and remote controller)	Transmission between indoor and remote controller is not being correctly carried out.
U8	Failure of transmission (between “main” and “sub” remote controller	Transmission between “main” and “sub” remote controller is not being correctly carried out.
U9	Malfunction of Transmission between Indoor and Outdoor units in the same system	
UA	Number of indoor units connected to this system is more than limited etc.	
UC	Address error of central remote controller	
UE	Transmission error (Indoor unit - Centralized controller)	
UF	Transmission error (Indoor unit - Outdoor unit)	

Notes:

; (Error occurs)
Error code displays automatically and system stops.
Inspect and repair it.

; (Caution)
Press “Inspection/Test” button to display “error code”.
The system operates, but be sure to inspect and repair it.

; (Warning)
Error code displays with blinking.
The system operates, but be sure to inspect and repair it.

4.3 "A1" Failure of Indoor Unit PC Board

Remote Controller Display

A1

Applicable Models

All indoor unit models

Method of Malfunction Detection

Check data from E²PROM.

Malfunction Decision Conditions

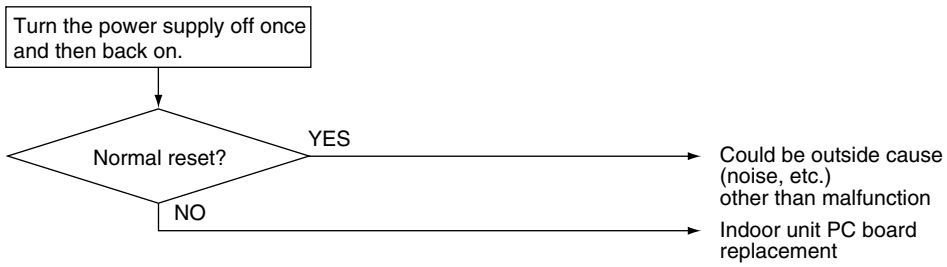
When data could not be correctly received from the E²PROM
E²PROM : Type of nonvolatile memory. Maintains memory contents even when the power supply is turned off.

Supposed Causes

- Failure of PC board

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

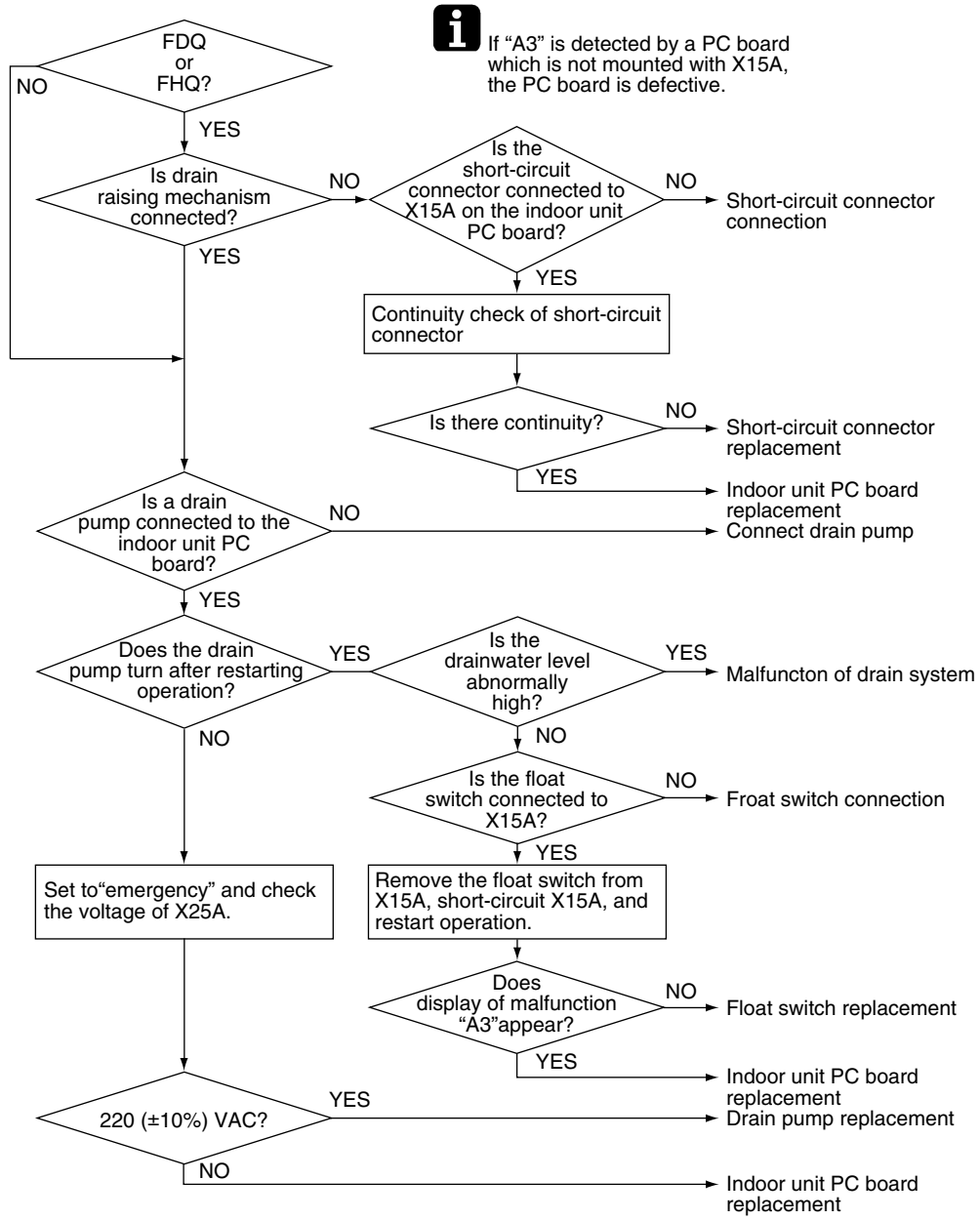


4.4 "A3" Malfunction of Drain Water Level System (Float Type)

Remote Controller Display	A3
Applicable Models	FCQ, FBQ, FDQ, FFQ, FHQ, FUQ
Method of Malfunction Detection	By float switch OFF detection
Malfunction Decision Conditions	When rise of water level is not a condition and the float switch goes OFF.
Supposed Causes	■ Failure of drain pump ■ Improper drain piping work ■ Drain piping clogging ■ Failure of float switch ■ Failure of indoor unit PC board ■ Failure of short-circuit connector

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

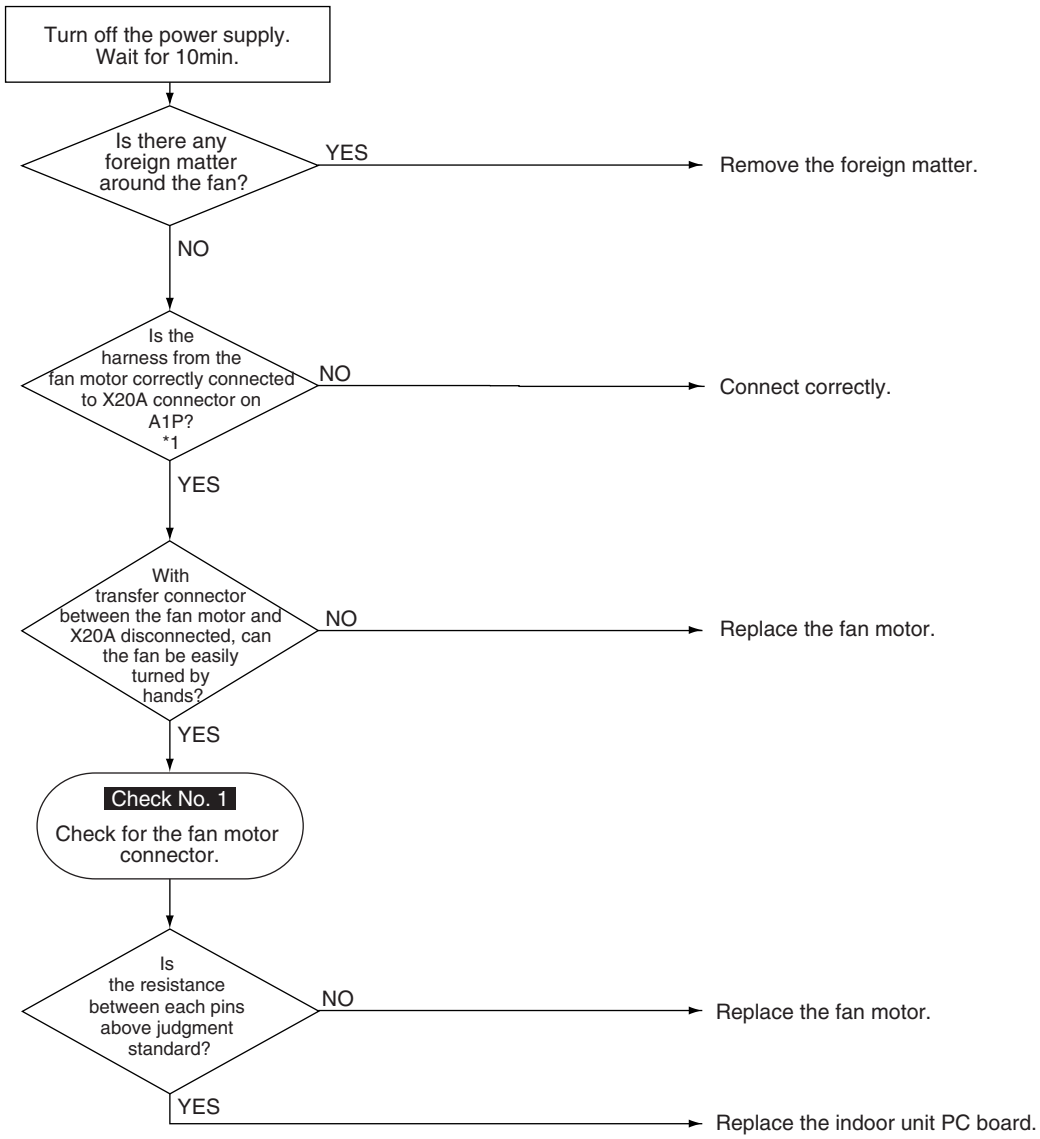


4.5 "A6" Malfunction of Indoor Unit Fan Motor

Remote Controller Display	A6
Applicable Models	FCQ, FAQ
Method of Malfunction Detection	Detection of abnormal fan speed by signal from the fan motor
Malfunction Decision Conditions	When fan speed does not increase
Supposed Causes	■ Disconnection, short circuit or disengagement of connector in fan motor harness ■ Faulty fan motor (disconnection, poor insulation) ■ Abnormal signal from fan motor (faulty circuit) ■ Faulty Indoor unit PC board ■ Instantaneous fluctuation of power supply voltage ■ Fan motor lock (Caused by motor or other external factors) ■ Fan does not turn due to a tangle of foreign matters. ■ The connector between the high-voltage PC board (A1P) and the low-voltage PC board (A2P) is disconnected.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1 When there is a relay connector between the connector (X20A) on the indoor PC board and the fan motor, check if the relay connector is correctly connected.

4.6 "A6" Malfunction of Indoor Unit Fan Motor

Remote Controller Display

A6

Applicable Models

FAQ100, FHQ

Method of Malfunction Detection

To be detected based on transmission failure of the signal by the fan motor for detecting the number of rotation

Malfunction Decision Conditions

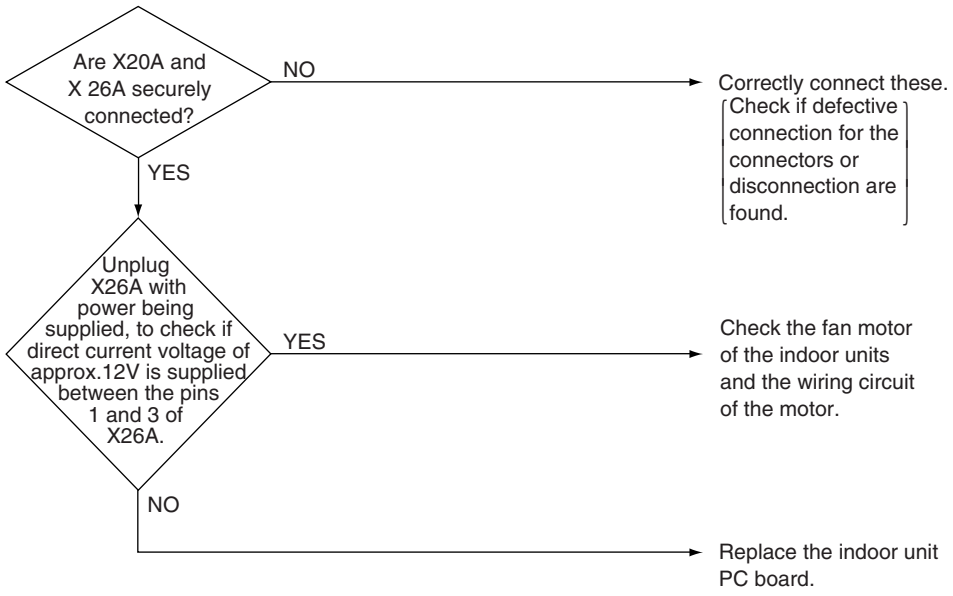
When number of rotation can not be detected even at the maximum output voltage to the fan

Supposed Causes

- Defective indoor unit fan motor
- Disconnection
- Defective contact

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

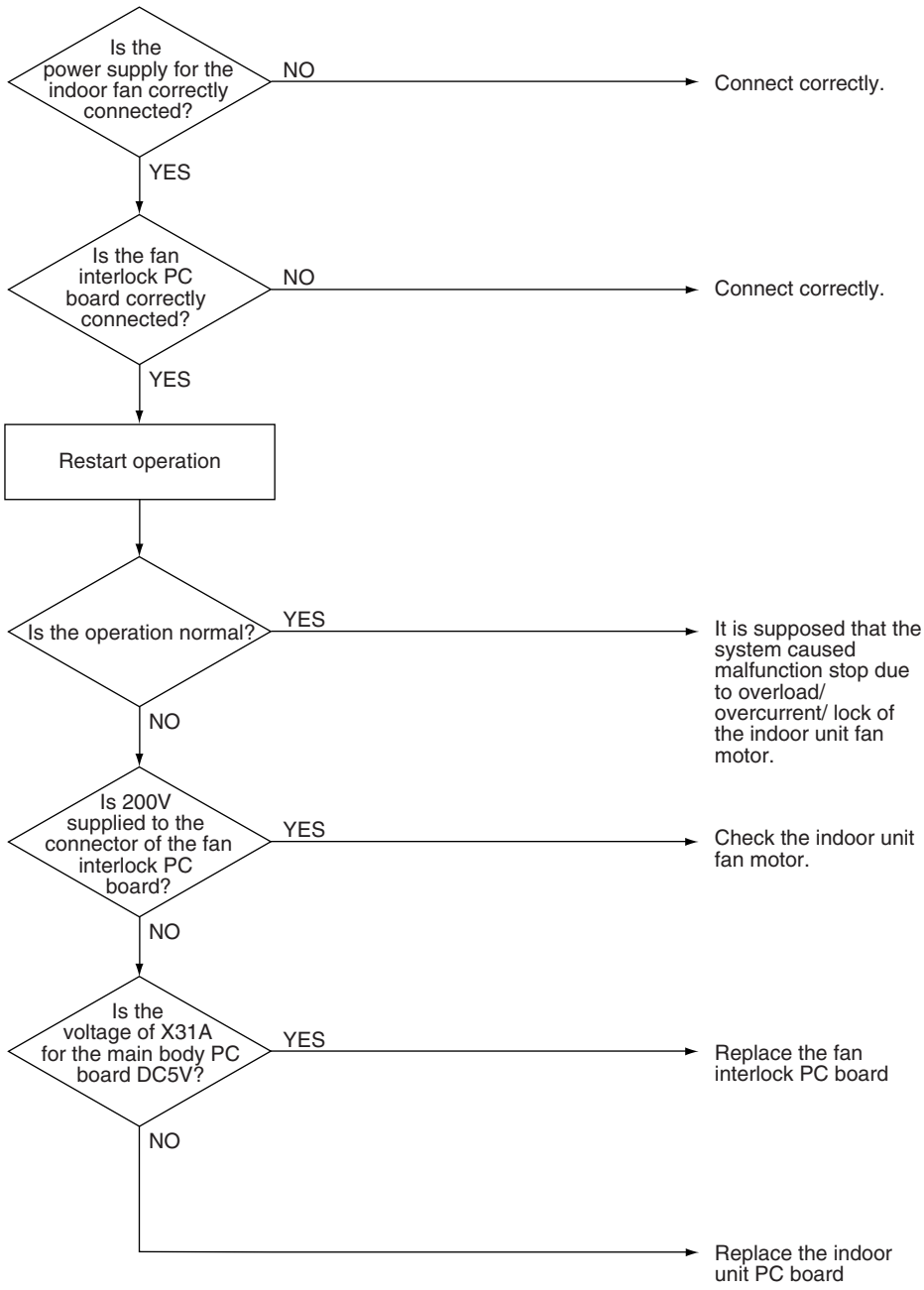


4.7 "A6" Indoor Unit Fan Motor Overload, Overcurrent, Lock

Remote Controller Display	A6
Applicable Models	FDQ200 · 250
Method of Malfunction Detection	Detect the status in which the separate power supply for the fan is cut OFF.
Malfunction Decision Conditions	Unable to detect that separate power supply for the indoor unit fan is turned ON.
Supposed Causes	■ Defective power supply for the indoor unit fan motor ■ Clogging in the drain pipe ■ Protection device for the indoor unit fan is operated. ■ Defective contact for the fan wiring circuit

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.8 "A7" Malfunction of Swing Flap Motor

Remote Controller Display

A7

Applicable Models

FAQ100, FCQ, FBQ, FHQ, FUQ

Method of Malfunction Detection

Make use of the limit switch turning ON/ OFF according to rotation of the motor.

Malfunction Decision Conditions

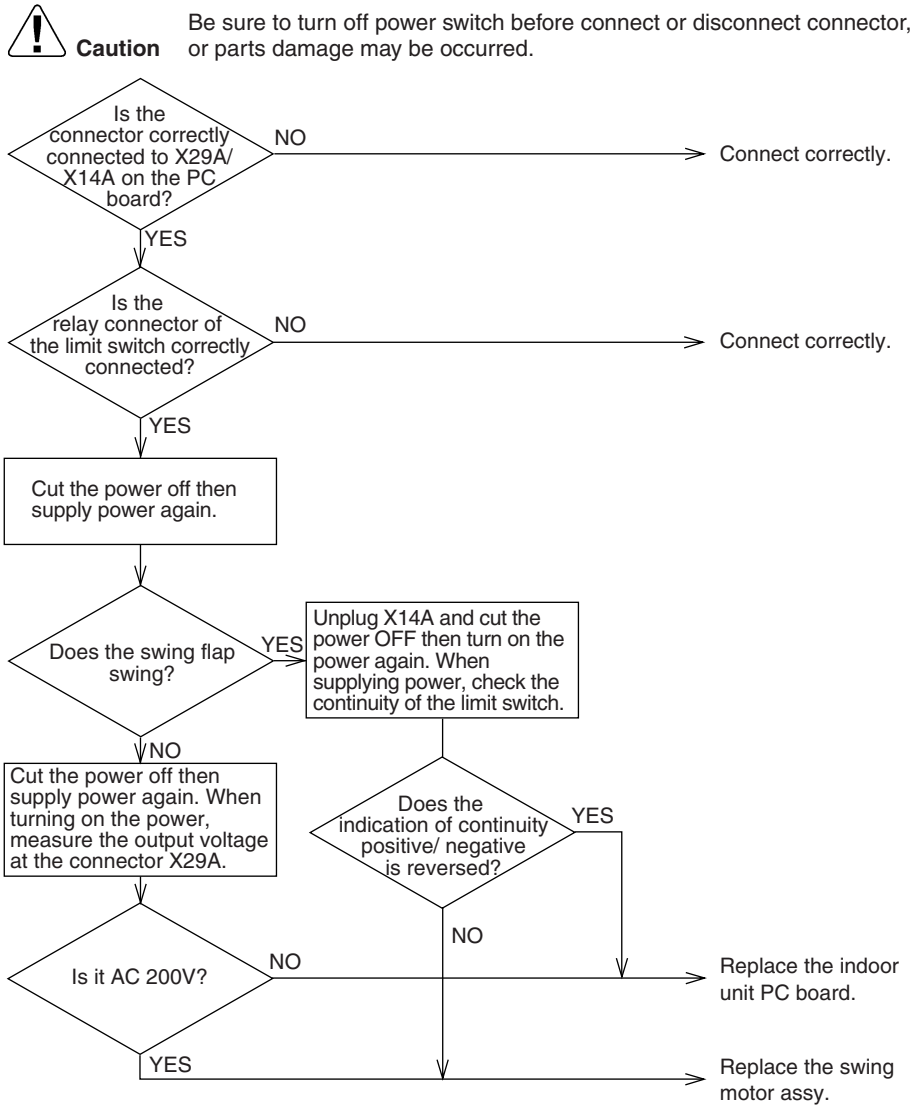
When supplying power to the swing motor for a certain length (approx. 30 seconds) is unable to reverse the micro switch ON/OFF to fix positioning

★Despite the malfunction code being indicated, the system continues operation.

Supposed Causes

- Defective motor
- Defective micro switch
- Defective connection of the connector
- Defective indoor unit PC board

Troubleshooting



4.9 "AF" Failure of Drain System

Remote Controller Display

AF

Applicable Models

FCQ, FBQ, FDQ, FFQ, FUQ

Method of Malfunction Detection

Water leakage is detected based on float switch ON/OFF operation while the compressor is in non-operation.

Malfunction Decision Conditions

When the float switch changes from ON to OFF while the compressor is in non-operation.

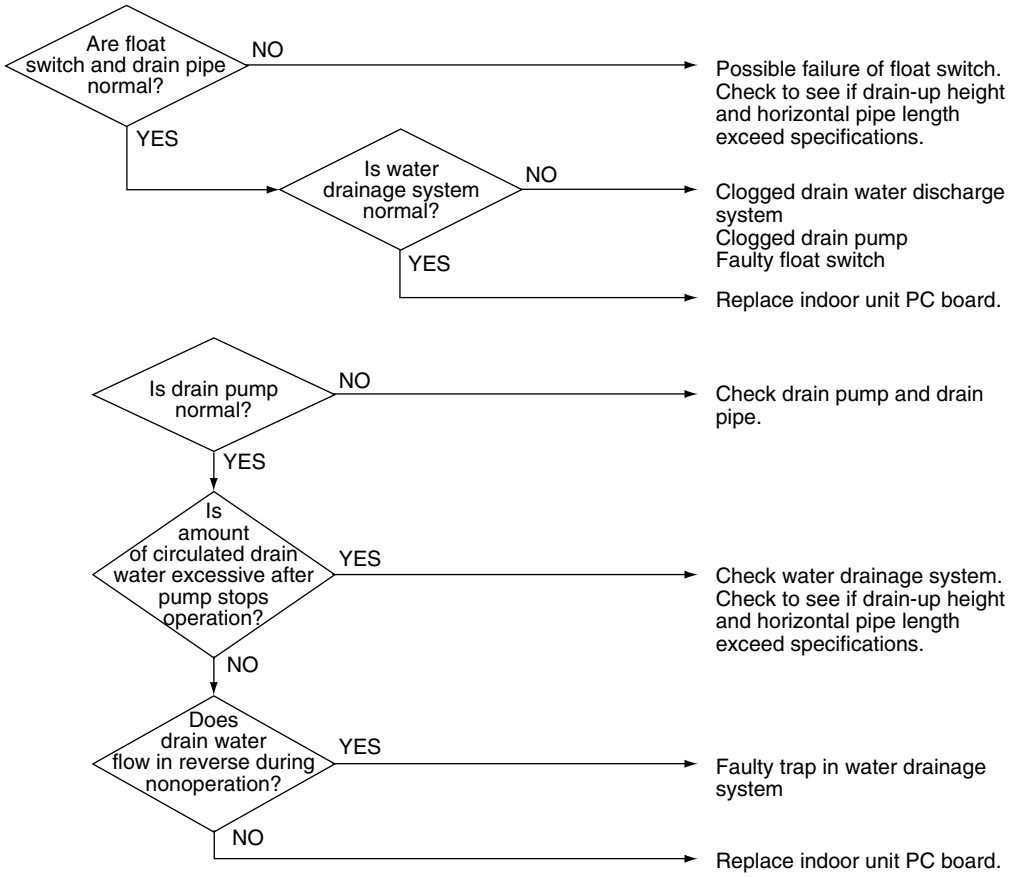
★Despite the malfunction code being indicated, the system continues operation.

Supposed Causes

- Error in drain pipe installation
- Faulty float switch
- Faulty indoor unit PC board
- Dust clogging at the solenoid valve incorporated in the humidifier.

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.10 "RJ" Malfunction of Capacity Determination Device

Remote controller display

RJ

Applicable Models

FAQ, FCQ, FFQ, FHQ, FUQ

Method of Malfunction Detection

Capacity is determined according to resistance of the capacity setting adaptor and the memory inside the IC memory on the indoor unit PC board, and whether the value is normal or abnormal is determined.

Malfunction Decision Conditions

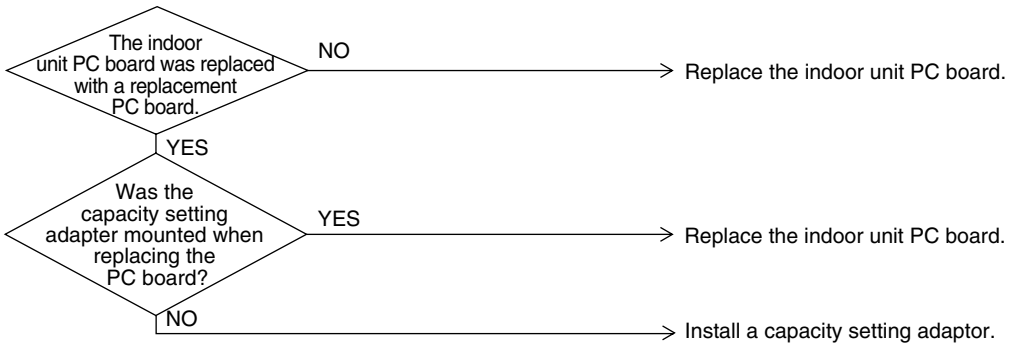
Operation and:
When the capacity code is not contained in the PC board's memory, and the capacity setting adaptor is not connected.

Supposed Causes

- You have forgotten to install the capacity setting adaptor.
- Defect of indoor unit PC board

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(V2783)

4.11 "C4" Malfunction of Heat Exchange Temperature Sensor System

Remote Controller Display

C4

Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by heat exchanger sensor.

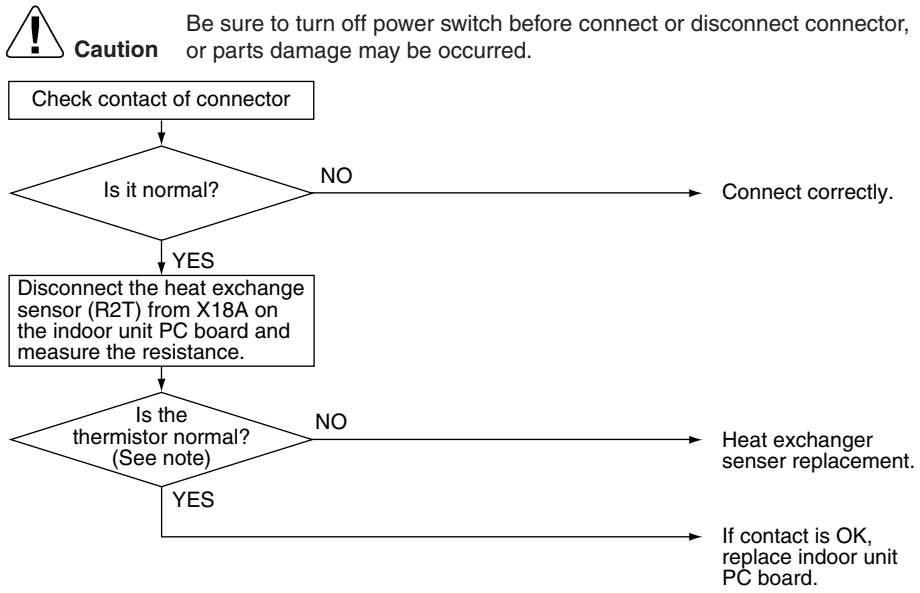
Malfunction Decision Conditions

When the heat exchanger thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Failure of the sensor itself
- Broken or disconnected wire
- Failure of electronic circuitry (indoor unit PC board)
- Failure of connector contact

Troubleshooting



★See Check No. 6 for "Thermistor temperature/Resistance characteristics".

4.12 "C9" Malfunction of Suction Air Temperature Sensor System

Remote Controller Display

C9

Applicable Models

All indoor unit models

Method of Malfunction Detection

Malfunction detection is carried out by temperature detected by suction air temperature sensor.

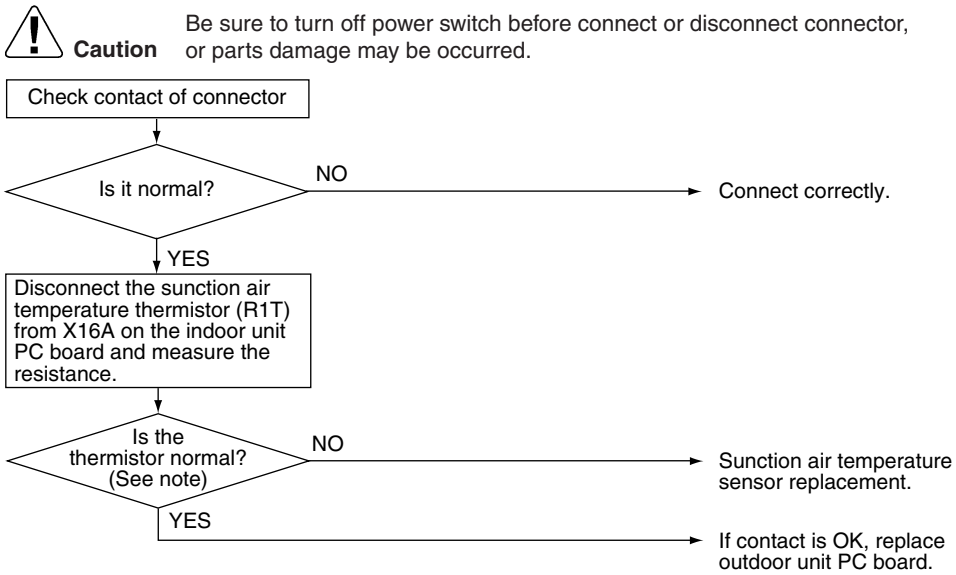
Malfunction Decision Conditions

When the suction air temperature sensor's thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

- Failure of the sensor itself
- Broken or disconnected wire
- Failure of indoor unit PC board
- Failure of connector contact

Troubleshooting



★See Check No. 6 for "Thermistor temperature/Resistance characteristics".

4.13 "CC" Malfunction of Humidity Sensor System

Remote Controller Display

CC

Applicable Models

FCQ

Method of Malfunction Detection

Even if a malfunction occurs, operation still continues.
Malfunction is detected according to the moisture (output voltage) detected by the moisture sensor.

Malfunction Decision Conditions

When the moisture sensor is disconnected or short-circuited

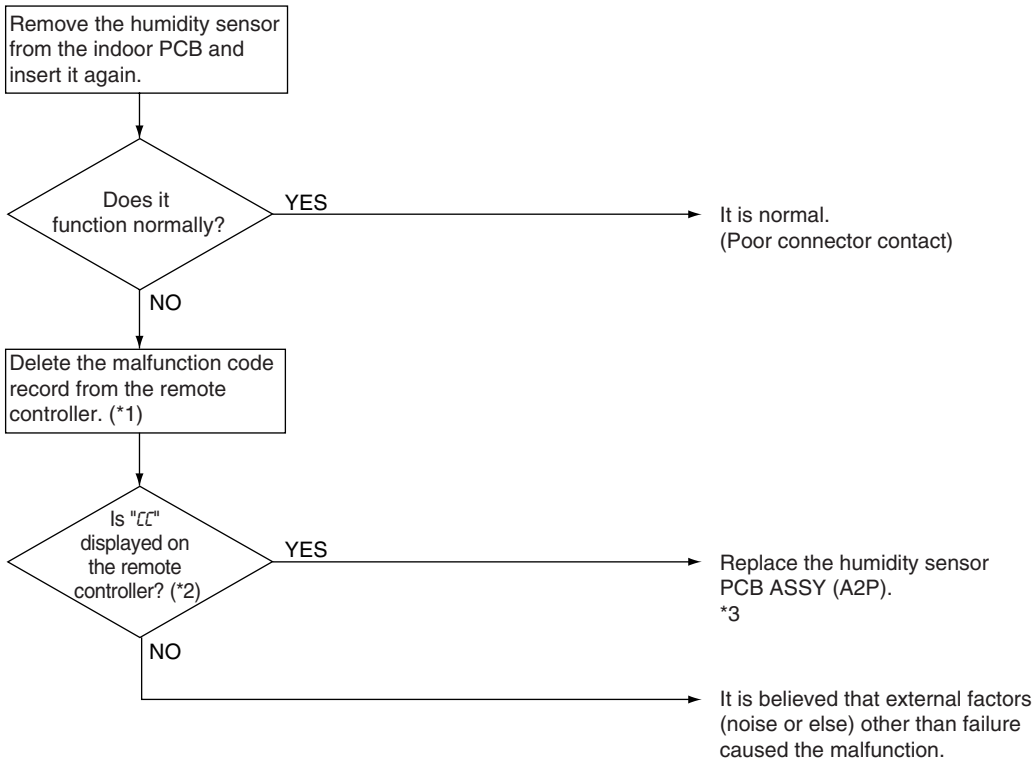
★Despite the malfunction code being indicated, the system continues operation.

Supposed Causes

- Faulty sensor
- Disconnection

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: To delete the record, the ON/OFF button of the remote controller must be pushed and held for 5 seconds in the check mode.
*2: To display the code, the Inspection/Test Operation button of the remote controller must be pushed and held in the normal mode.
*3: If "CC" is displayed even after replacing the humidity sensor PCB ASSY (A2P) and taking the steps *1 and 2, replace the indoor PCB ASSY (A1P).

4.14 "CJ" Malfunction of Remote Controller Air Thermistor

Remote Controller Display

CJ

Applicable Models

All indoor unit models

Method of Malfunction Detection

Even if remote controller thermistor is faulty, system is possible to operate by system thermistor. Malfunction detection is carried out by temperature detected by remote controller thermistor.

Malfunction Decision Conditions

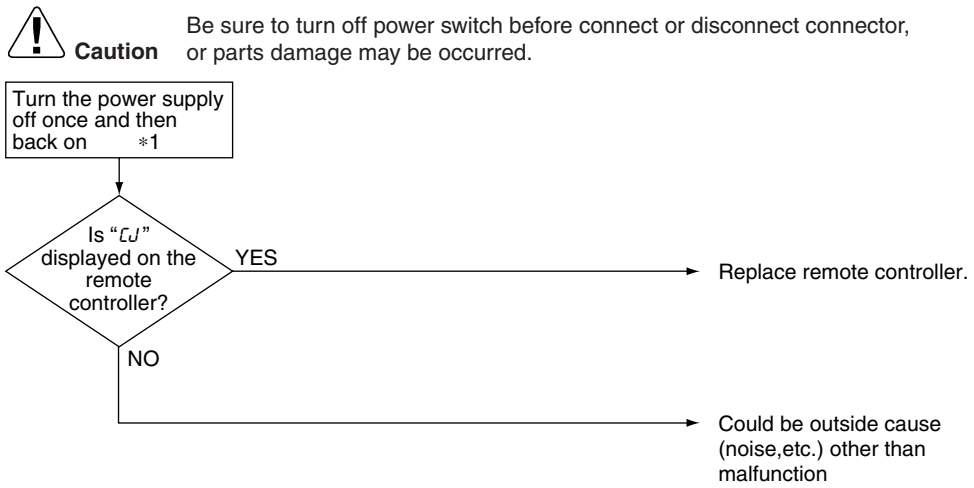
When the remote controller thermistor becomes disconnected or shorted while the unit is running.

★Despite the malfunction code being indicated, the system continues operation.

Supposed Causes

- Failure of sensor itself
- Broken wire

Troubleshooting



*1. To delete this, press "Start/ Stop" button for 5 seconds in the check mode of the remote controller.

4.15 "E1" Failure of Outdoor Unit PC Board

Remote Controller Display

E1

Applicable Models

RZQ

Method of Malfunction Detection

Microcomputer checks whether E^2PROM is normal.

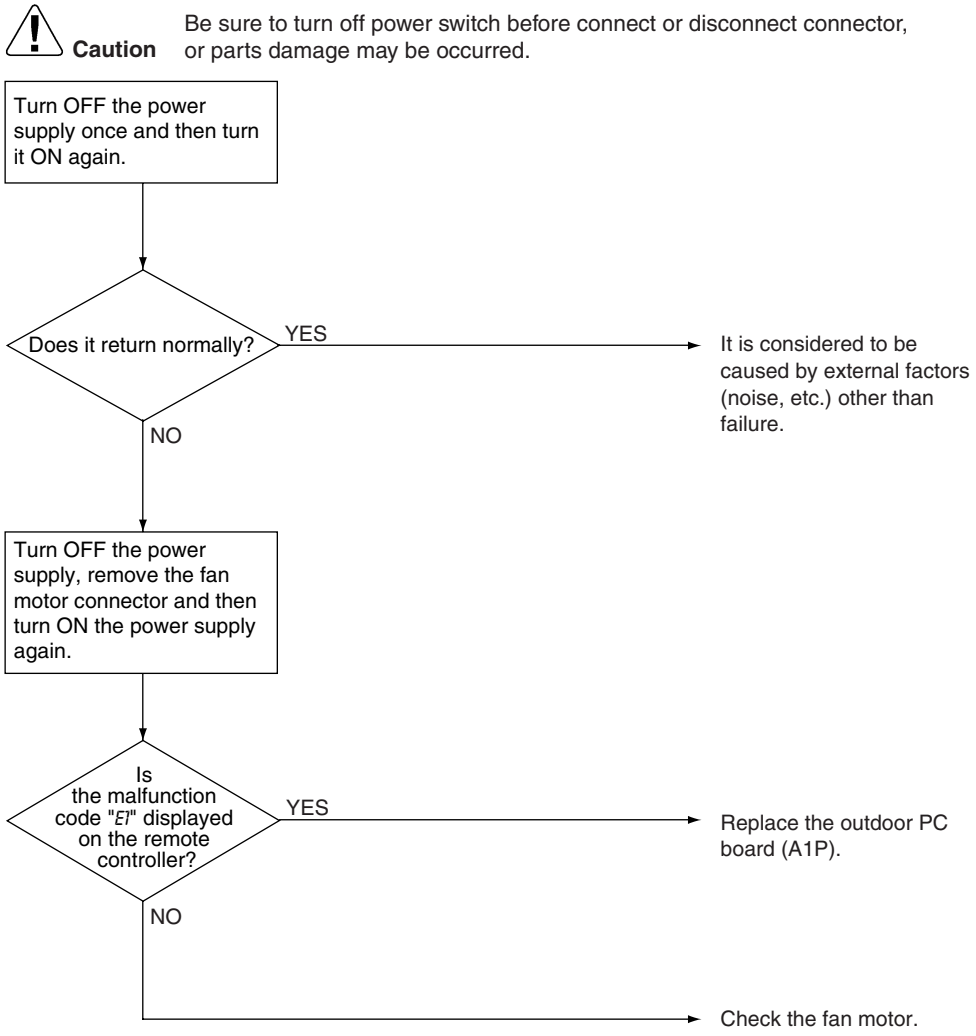
Malfunction Decision Conditions

E^2PROM:
When E^2PROM malfunctions when turning the power supply on

Supposed Causes

- Faulty outdoor unit PC board (A1P)

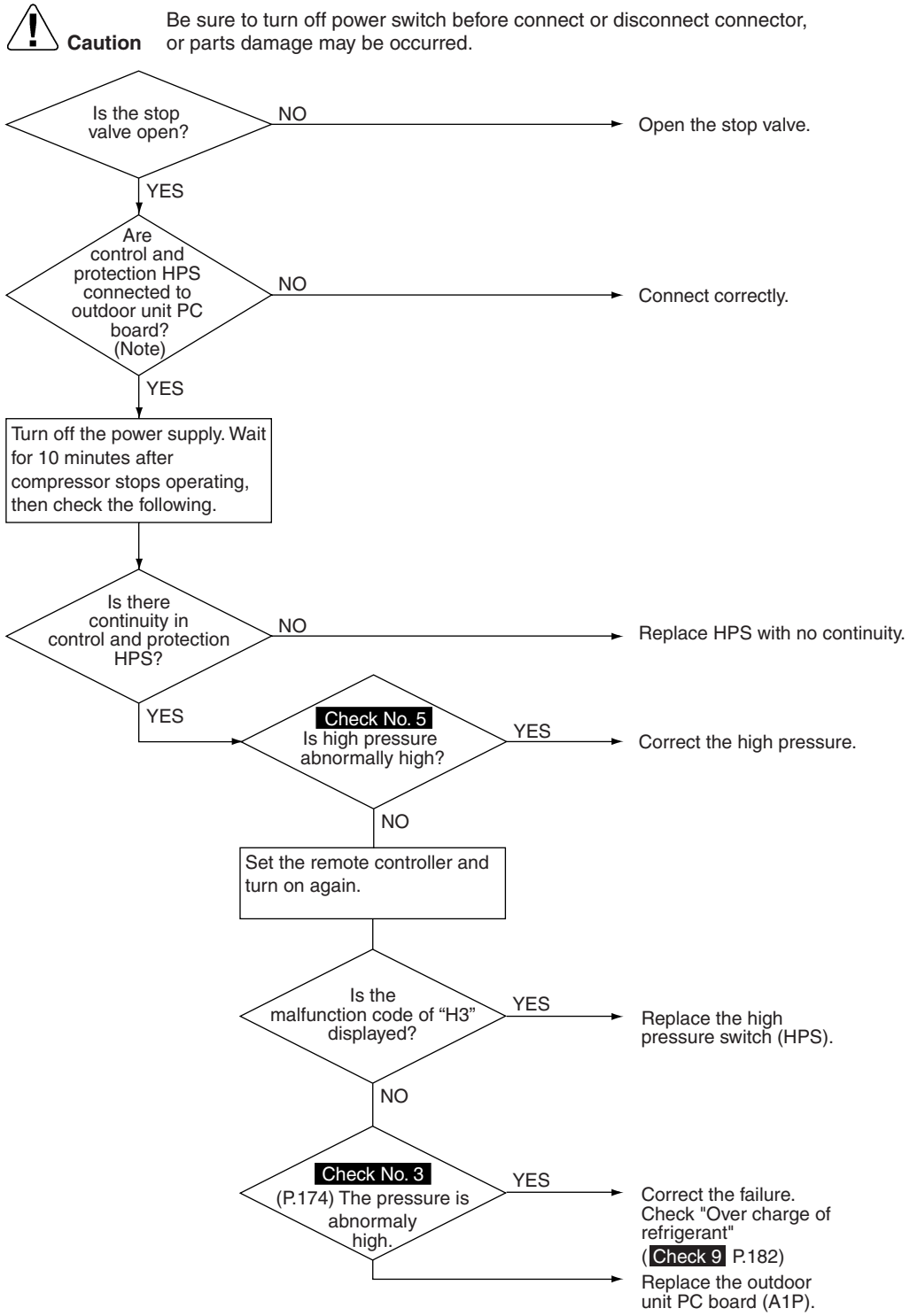
Troubleshooting



4.16 "E3" Abnormal High Pressure Level

Remote Controller Display	E3
Applicable Models	RZQ
Method of Malfunction Detection	Detect continuity of high-pressure switch via protection device circuit
Malfunction Decision Conditions	When the high pressure switch is actuated Actuating pressure: 4.0MPa
Supposed Causes	■ Malfunction of the high-pressure switch ■ Disconnection of the wire harness of the high-pressure switch, faulty wiring of the connector ■ Clogging of the suction filter of the indoor unit (in heating operation) ■ Dirt of the outdoor heat exchanger ■ Defective fan of the outdoor unit (in cooling operation) ■ Defective fan of the indoor unit (in heating operation) ■ Refer to the failure to open the stop valve ■ Refrigerant is over charged

Troubleshooting



*1. The connector for the high pressure switch are as in the table below.

Model	Electric signal	Connector
RZQ200·250C	S1PH	X2A

4.17 "E4" Low Pressure System Malfunction

Remote Controller Display

E4

Applicable Models

RZQ

Method of Malfunction Detection

- Detect malfunctions by the low pressure sensor (S1NPL).

Malfunction Decision Conditions

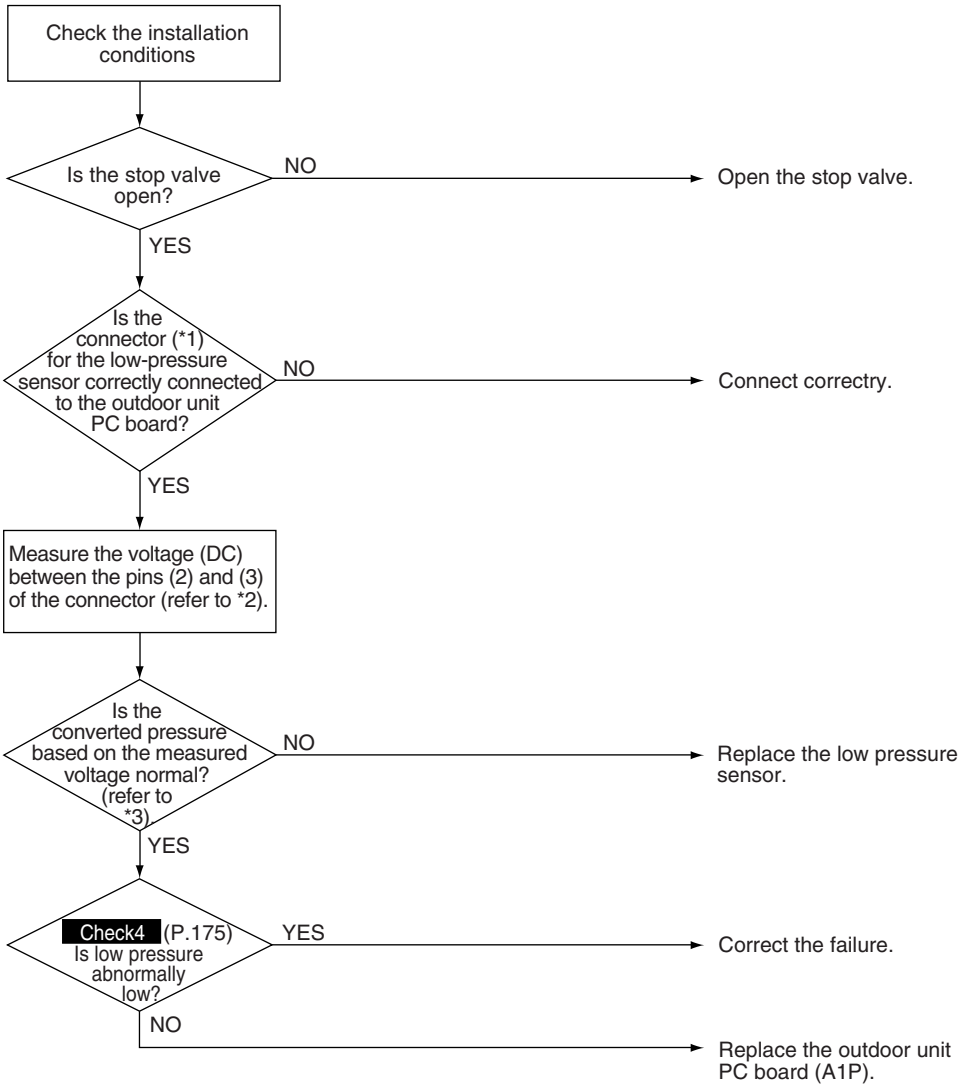
- When the detection pressure is the following value
  Actuating pressure: 0.07MPa

Supposed Causes

- Failure of the low-pressure switch
- Disconnection of the wire harness of the low-pressure switch
- Defective connection of the connector of the low-pressure switch
- Malfunction of the refrigerant piping circuit
- Failure to open the stop valve
- Defective outdoor unit main PC board (A1P)
- Refrigerant shortage

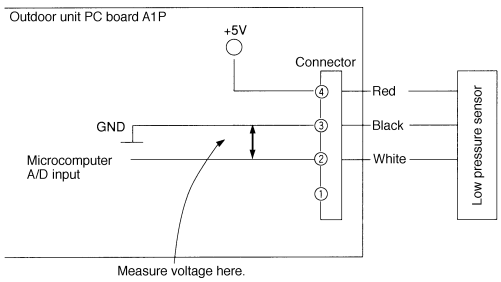
Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

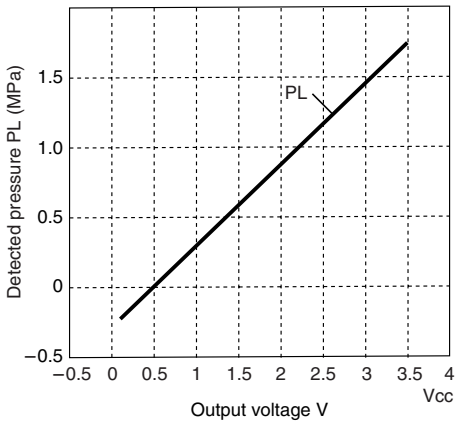


*1: Connector code: X31A

*2: Method of voltage measurement



*3: Pressure/ voltage characteristic of the sensor



PL=0.57V−0.28
PL: detected pressure (Mpa)
V: output voltage (V)

4.18 "E5" Inverter Compressor Motor Lock

Remote Controller Display

E5

Applicable Models

RZQ

Method of Malfunction Detection

Detect the motor lock when the compressor is energized.

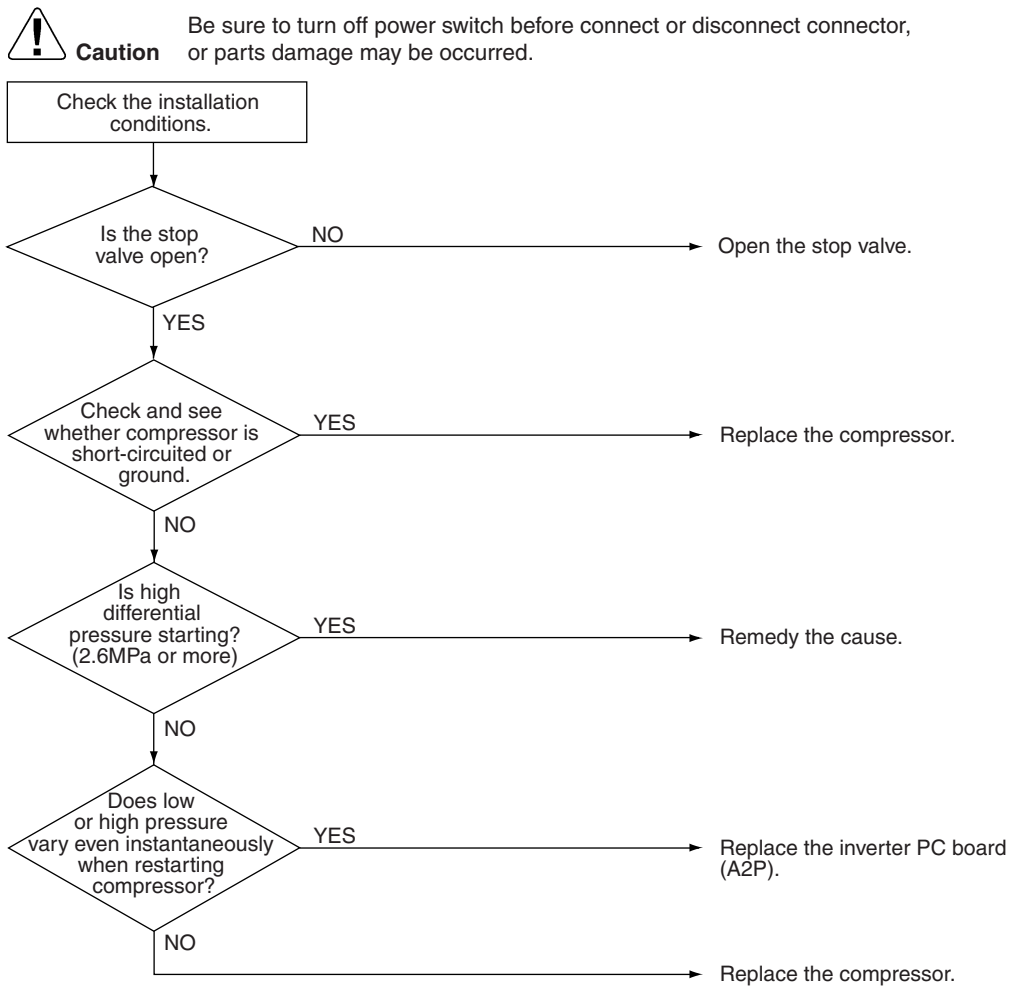
Malfunction Decision Conditions

If the motor rotor does not rotate when the compressor is energized.

Supposed Causes

- Compressor lock
- High differential pressure (2.6MPa or more) starting
- Incorrect UVWN wiring
- Faulty inverter PC board
- Stop valve is left in closed.

Troubleshooting



4.19 "E7" Malfunction of Outdoor Unit Fan Motor

Remote Controller Display	E7
Applicable Models	RZQ
Method of Malfunction Detection	Abnormality of fan motor system is detected according to the fan speed detected by hall IC when the fan motor runs.
Malfunction Decision Conditions	■ When the fan runs with speed less than a specified one for 6 seconds or more when the fan motor running conditions are met ■ When connector detecting fan speed is disconnected ■ When malfunction is generated 4 times, the system shuts down.
Supposed Causes	■ Disconnection of connector ■ Malfunction of fan motor ■ The harness connector between fan motor and PC board is left in disconnected, or faulty connector ■ Fan does not run due to foreign matters tangled ■ Clearing condition: Operate for 5 minutes (normal)

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Cut the power supply to wait for 10 minutes.

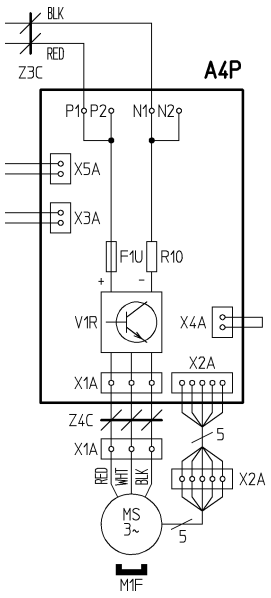
There is a foreign substance found around the object fan.
- YES → Remove the foreign substance.
- NO

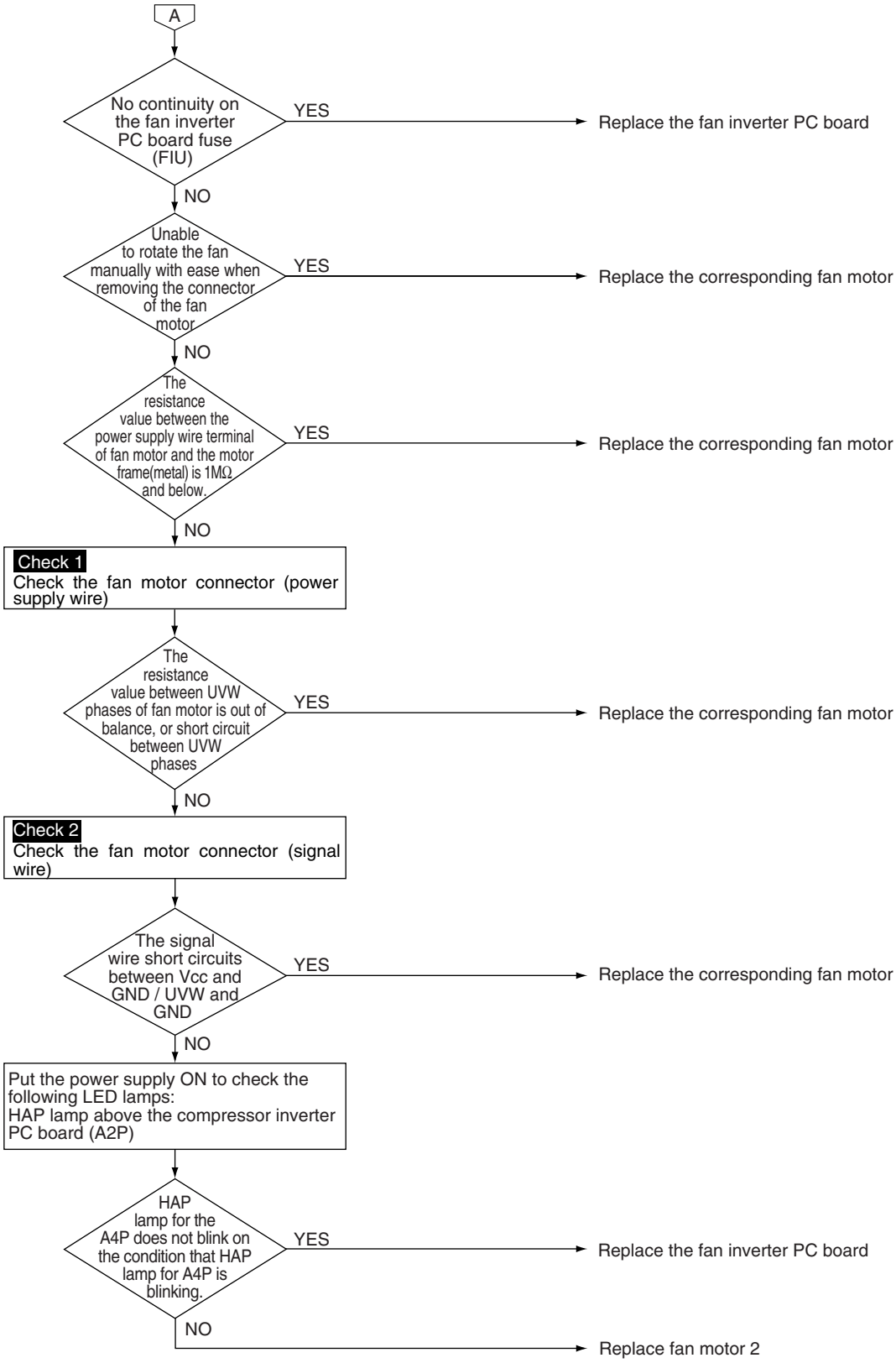
Check the connection of the connector
Fan motor: Relay connector X1A, X2A, or X1A, X2A of the compressor inverter PC board

Disconnection of the connectors is found
- YES → Plug the connector.
- NO

Check the color of the relay
Fan motor: all white for power supply wires and signal wires

Connection error is found in the relay connector.
- YES → Correct the connection of the relay connector.
- NO → A



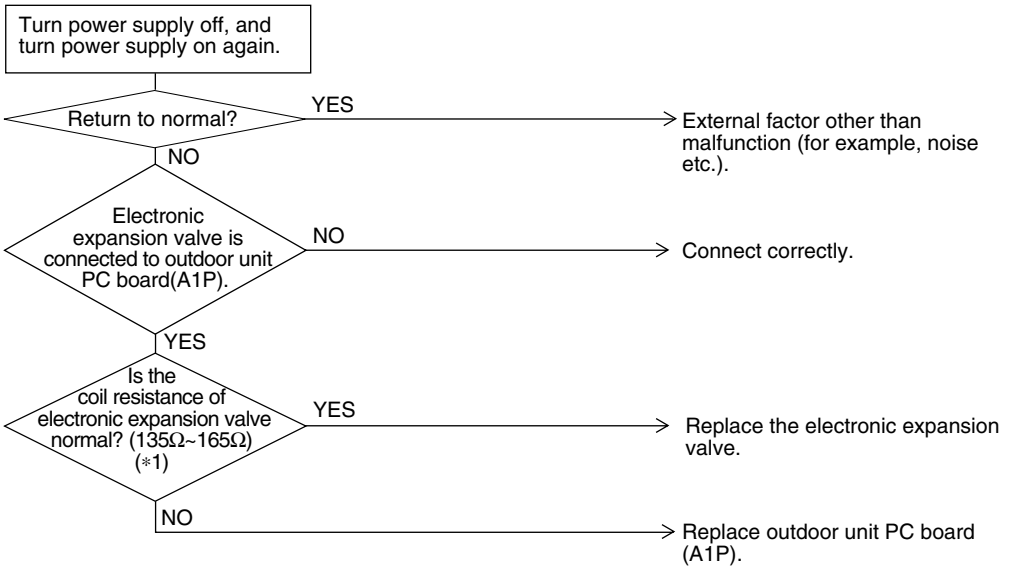

A
No continuity on the fan inverter PC board fuse (FIU)
YES
Replace the fan inverter PC board
NO
Unable to rotate the fan manually with ease when removing the connector of the fan motor
YES
Replace the corresponding fan motor
NO
The resistance value between the power supply wire terminal of fan motor and the motor frame(metal) is 1MΩ and below.
YES
Replace the corresponding fan motor
NO
Check 1
Check the fan motor connector (power supply wire)
The resistance value between UVW phases of fan motor is out of balance, or short circuit between UVW phases
YES
Replace the corresponding fan motor
NO
Check 2
Check the fan motor connector (signal wire)
The signal wire short circuits between Vcc and GND / UVW and GND
YES
Replace the corresponding fan motor
NO
Put the power supply ON to check the following LED lamps:
HAP lamp above the compressor inverter PC board (A2P)
HAP lamp for the A4P does not blink on the condition that HAP lamp for A4P is blinking.
YES
Replace the fan inverter PC board
NO
Replace fan motor 2

4.20 "E9" Malfunction of Moving Part of Electronic Expansion Valve

Remote Controller Display	E9
Applicable Models	RZQ
Method of Malfunction Detection	Check disconnection of connector Check continuity of expansion valve coil
Malfunction Decision Conditions	Error is generated under no common power supply when the power is on.
Supposed Causes	■ Faulty electronic expansion valve ■ Broken wire of the electronic expansion valve harness ■ Faulty connection of the electronic expansion valve connector ■ External factor (noise etc.)

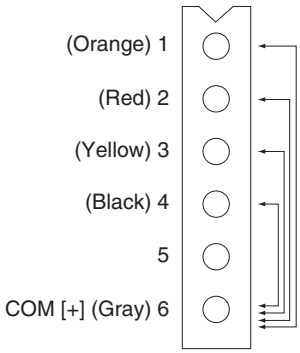
Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



(V3067)

*Make measurement of resistance between the connector pins, and then make sure the resistance falls in the range of 135 ~ 165Ω.



Measuring points	Criteria
1 - 6	40 ~ 50Ω
2 - 6	
3 - 6	
4 - 6	

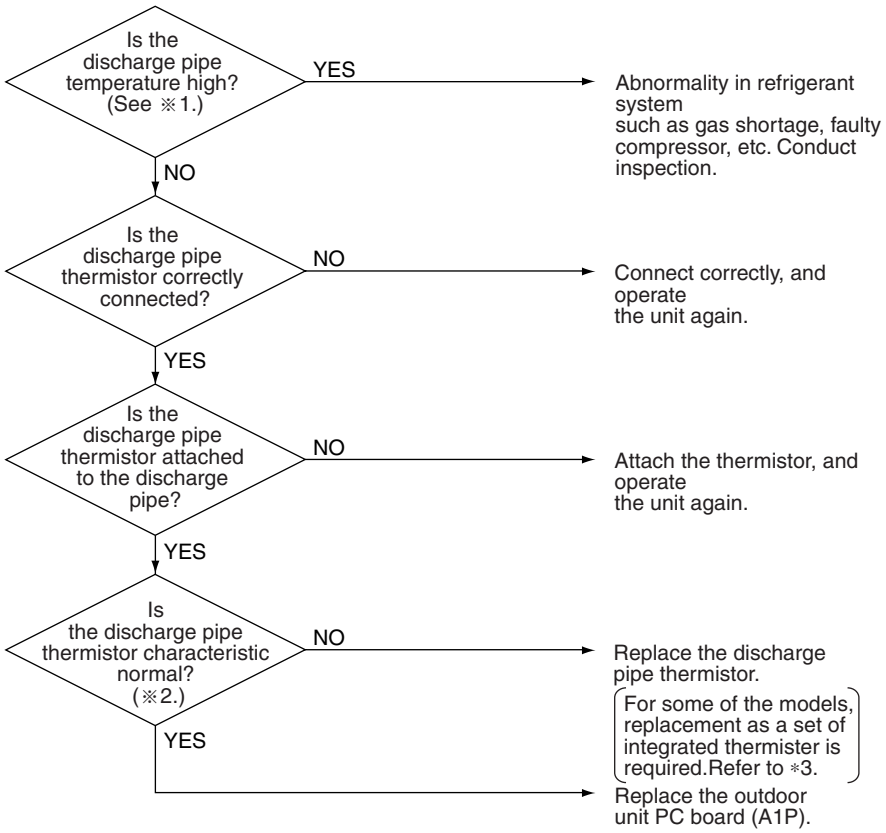
(V3067)

4.21 "F3" Malfunction of Discharge Pipe Temperature

Remote Controller Display	F3
Applicable Models	RZQ
Method of Malfunction Detection	Abnormality is detected according to the temperature detected by the discharge pipe temperature sensor.
Malfunction Decision Conditions	■ When the discharge pipe temperature rises to an abnormally high level (115°C) ■ When the discharge pipe temperature rises suddenly ■ After operation start, the discharge pipe temperature dose not rise.
Supposed Causes	■ Faulty discharge pipe thermistor ■ Faulty connection of discharge pipe thermistor ■ Insufficient refrigerant amount ■ Faulty compressor ■ Disconnection of discharge pipe temperature thermistor piping

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



※1 Temperature varies depending on model type.

Model name	Temperature
RZQ200･250C	115°C

※2 See Check No. 6 for “Thermistor temperature/Resistance characteristics”.

※3 The connector No. of the discharge pipe thermister is shown in the following table.

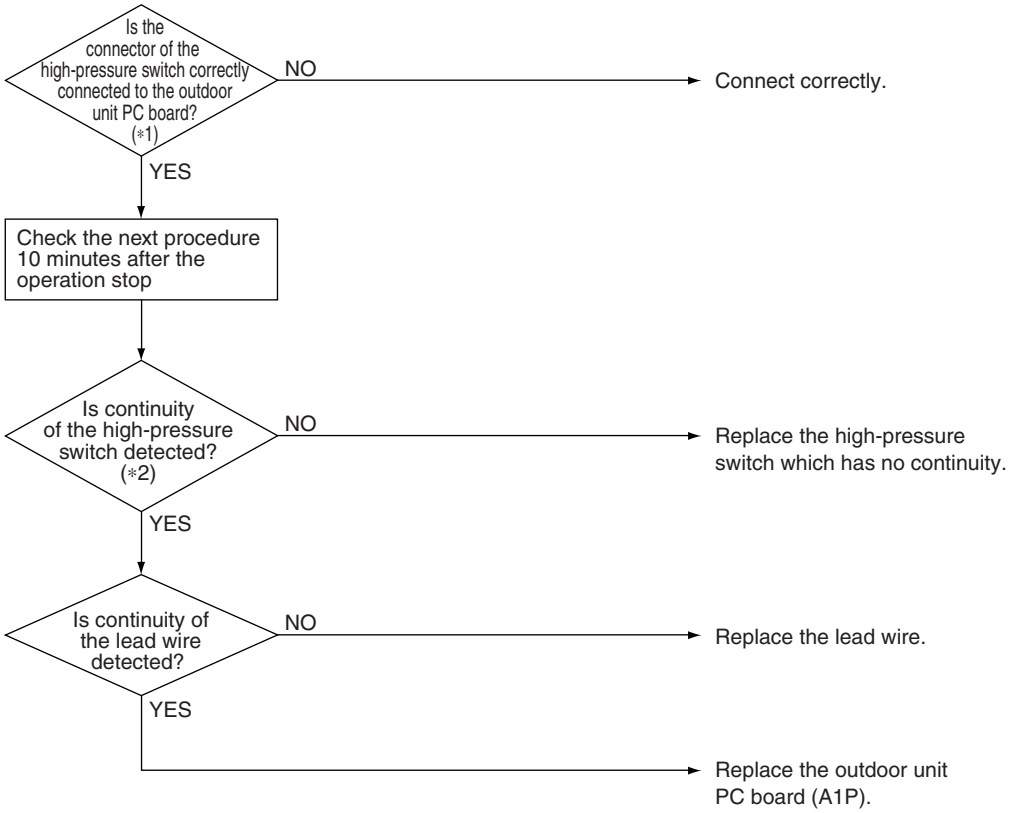
Model name	Symbol	Connector	Pin
RZQ200･250C	R3T	X29A	1-2

4.22 "H3" Abnormal High Pressure Switch

Remote Controller Display	H3
Applicable Models	RZQ
Method of Malfunction Detection	Detect the continuity of the high pressure switch via protection device circuit.
Malfunction Decision Conditions	No continuity is detected at the high pressure switch during operation stop of the compressor.
Supposed Causes	■ Defective high pressure switch ■ Disconnection of the wire harness of the high pressure switch ■ Defective connection of the connector of the high pressure switch ■ Defective PC board for the outdoor unit control circuit ■ Disconnection of the lead wire

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1. The connector No. of the high-pressure switch (protection from high-pressure) is shown in the following table.

Model name	PC board	Electric signal	Connector
RZQ200 · 250C	A1P	S1PH	X2A

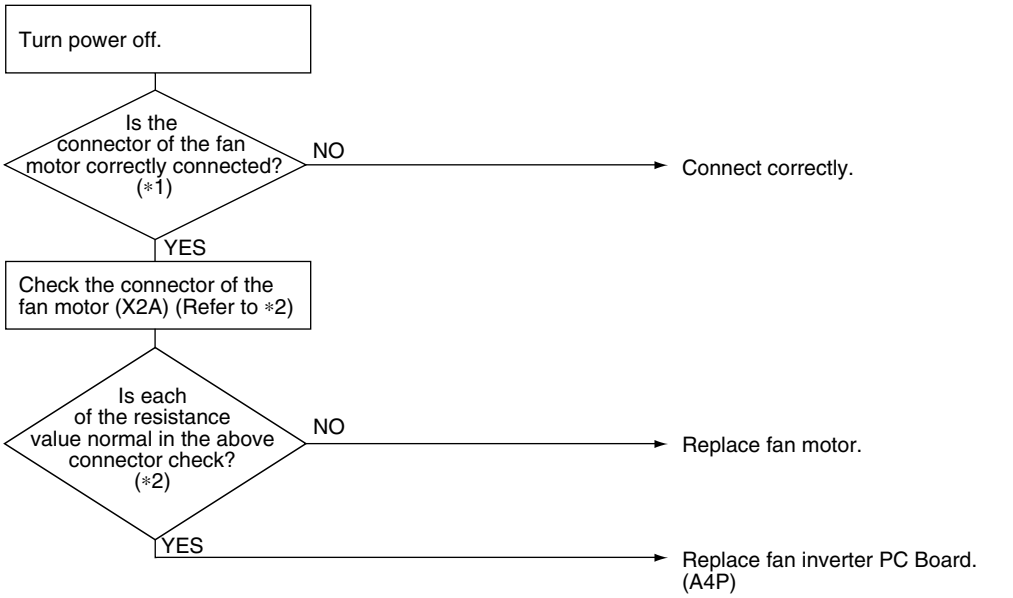
*2. Resistance value in normal operation: 100 Ω and below

4.23 "H7" Abnormal Outdoor Fan Motor Signal

Remote Controller Display	H7
Applicable Models	RZQ
Method of Malfunction Detection	Detection of abnormal signal from fan motor.
Malfunction Decision Conditions	In case of detection of abnormal signal at starting fan motor.
Supposed Causes	■ Abnormal fan motor signal (circuit malfunction) ■ Broken, short or disconnection connector of fan motor connection cable ■ Fan Inverter PC board (A4P) malfunction

Troubleshooting

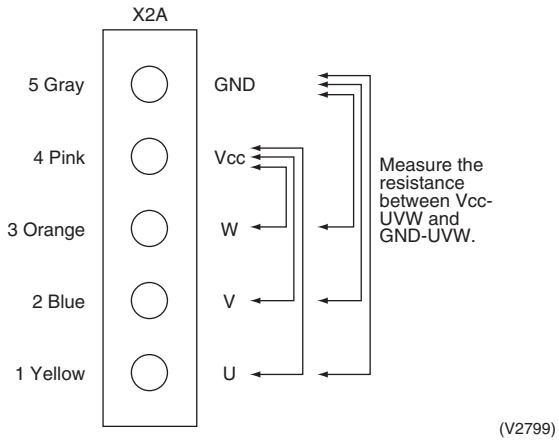
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1: The connector No. of fan motor is shown in the following table.

Model	PC board	Symbol	Connector
RZQ200 · 250C	A4P	M1F	X1A / X2A

*2: Measurement of resistance and judgment criteria for the fan motor
(1) Turn off the power
(2) In the condition that the connector or the relay connector disconnected, measure the resistance between Vcc - UVW and between GND- UVW of the connector on the motor side (5 cores) to check if the resistance at each position is balanced. (within ± 20%)

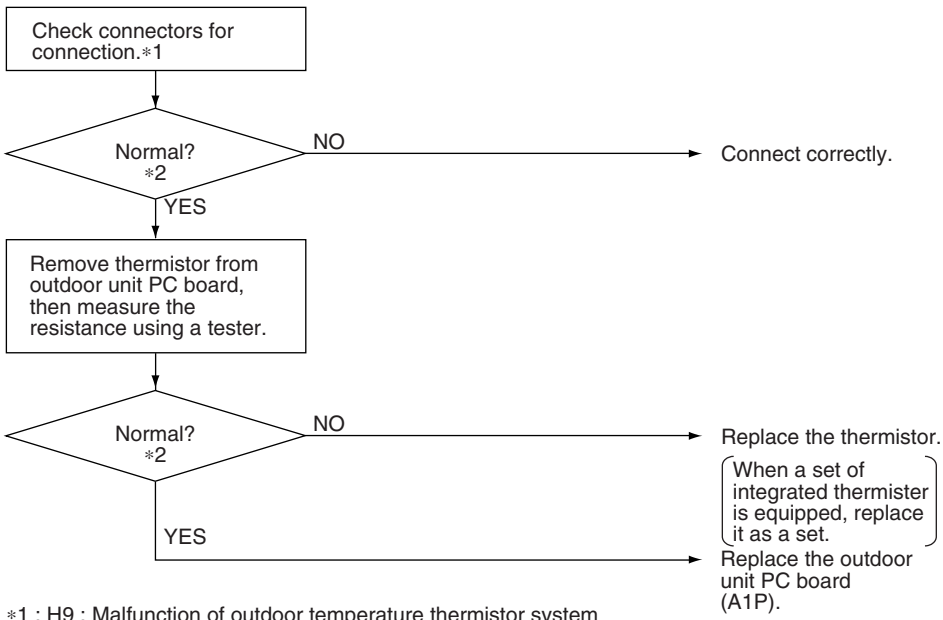


4.24 "H9" "J3" "J5" "J6" "J7" "J8" Malfunction of Thermistor System

Remote Controller Display	H9, J3, J5, J6, J7, J8
Applicable Models	RZQ
Method of Malfunction Detection	Abnormality is detected according to the temperature detected by each individual thermistor.
Malfunction Decision Conditions	When thermistor is disconnected or short-circuited during operation
Supposed Causes	■ Faulty thermistor ■ Faulty connection of connector ■ Faulty outdoor unit PC board (control PC board)

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



*1 : H9 : Malfunction of outdoor temperature thermistor system
J3 : Malfunction of discharge pipe thermistor system
J5 : Malfunction of suction pipe thermistor system
J6 : Malfunction of heat exchange thermistor
J9 : Malfunction of thermister circuit at the outlet of subcooloing heat exchanger

★See Check No. 6 for “Thermistor temperature/Resistance characteristics”.

*2 : The number of each thermister and the connector

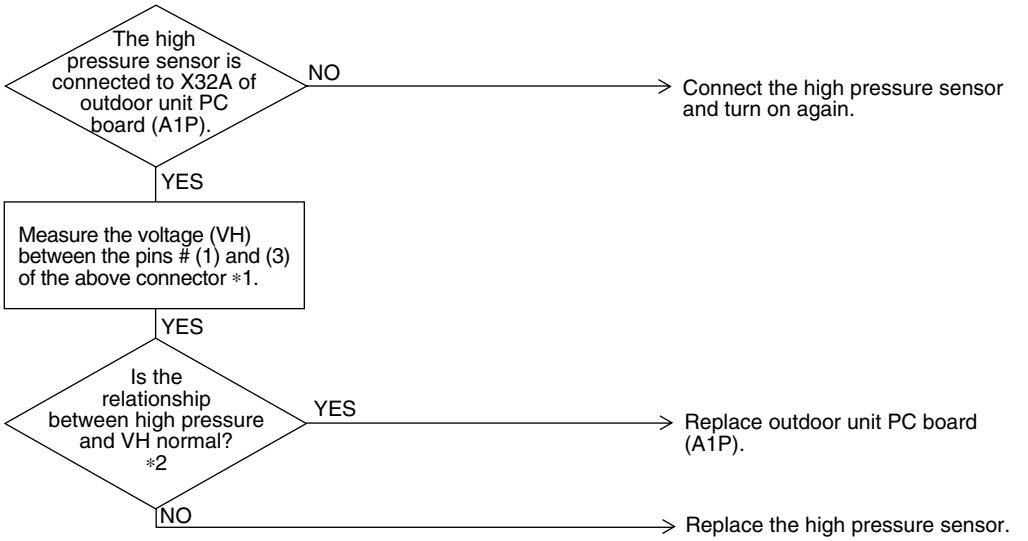
Name	Connector			RZQ 200・250C
	Symbol	Connector No.	Pin No.	
Outdoor air thermistor	R1T	X18A	—	○
Suction pipe thermistor	R2T	X30A	1-2	○
Discharge pipe thermistor	R3T	X29A	—	○
Heat exchanger thermistor	R4T	X30A	3-4	○
Subcooling heat exchanger outlet thermistor	R5T		5-6	○

4.25 "JA" Malfunction of High Pressure Sensor

Remote Controller Display	JA
Applicable Models	RZQ
Method of Malfunction Detection	Malfunction is detected from the pressure detected by the high pressure sensor.
Malfunction Decision Conditions	When the high pressure sensor is short circuit or open circuit.
Supposed Causes	■ Defect of high pressure sensor ■ Connection of low pressure sensor with wrong connection. ■ Defect of outdoor unit PC board.

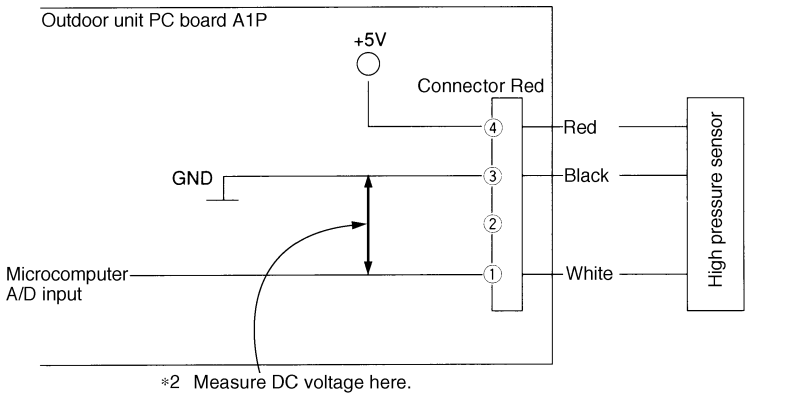
Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



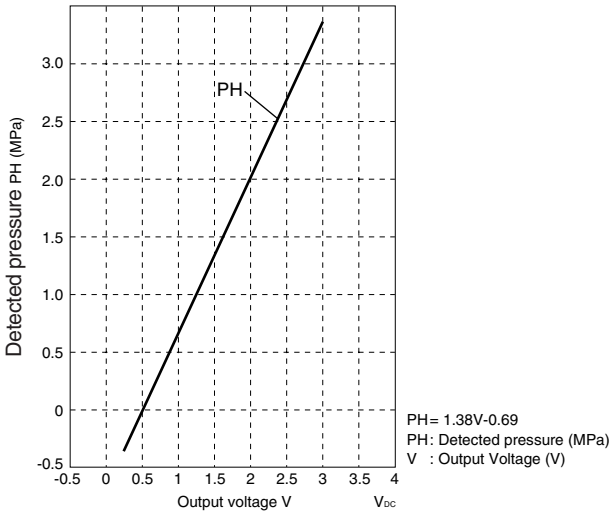
(V2806)

*1: Voltage measurement point



(V2807)

*2: "Pressure Sensor", pressure / voltage characteristics table.

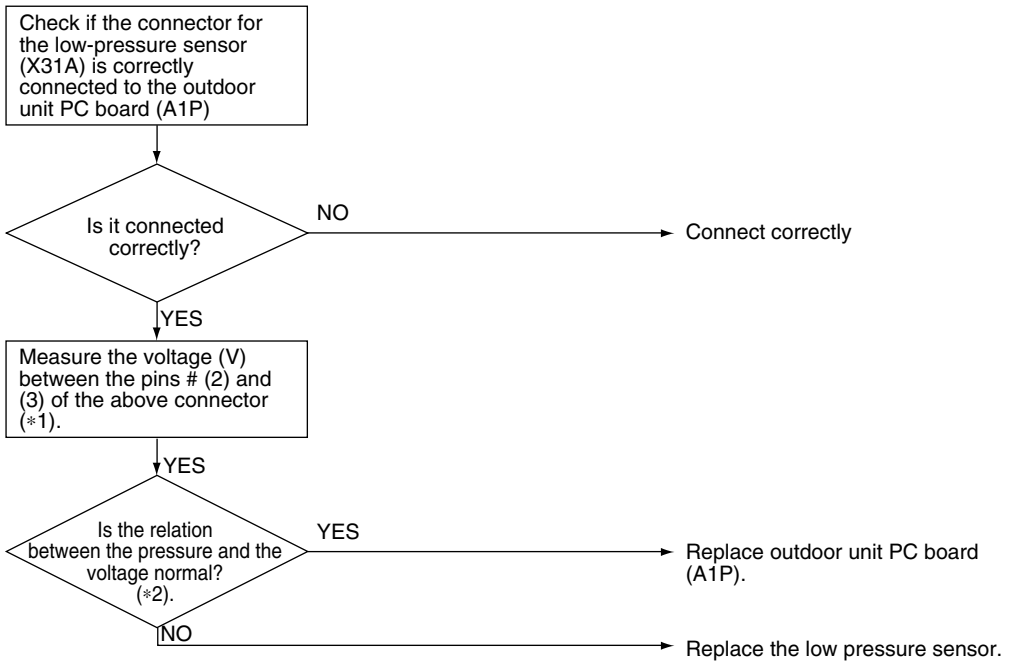


4.26 "JC" Malfunction of Low Pressure Sensor

Remote Controller Display	JC
Applicable Models	RZQ
Method of Malfunction Detection	Malfunction is detected from pressure detected by low pressure sensor.
Malfunction Decision Conditions	When the low pressure sensor is short circuit or open circuit.
Supposed Causes	■ Defect of low pressure sensor ■ Connection of high pressure sensor with wrong connection. ■ Defect of outdoor unit PC board.

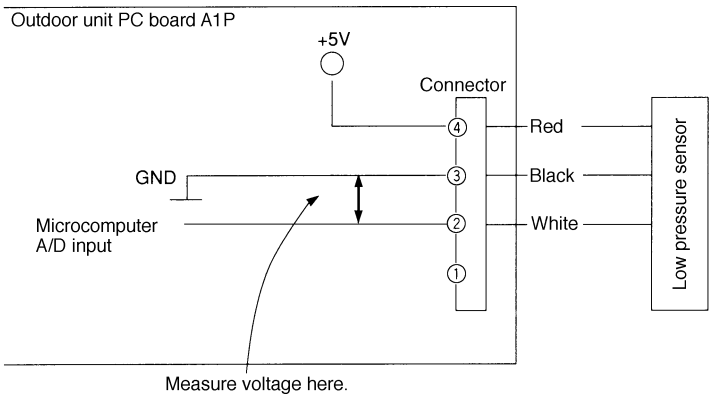
Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

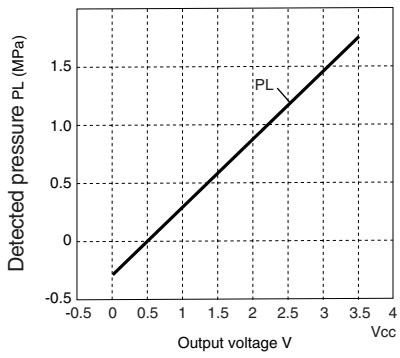


(V2808)

*1: Voltage measurement point



*2: "Pressure Sensor", pressure/voltage characteristics table.



PL = 0.57V-0.28
PL : Detected pressure (MPa)
V : Output Voltage (V)

4.27 "L1" Faulty Outdoor Inverter PC board

Remote Controller Display

L1

Applicable Models

RZQ

Method of Malfunction Detection

- Detect malfunctions by current value during waveform output before compressor startup.
- Detect malfunctions by current sensor value during synchronized operation at the time of startup.

Malfunction Decision Conditions

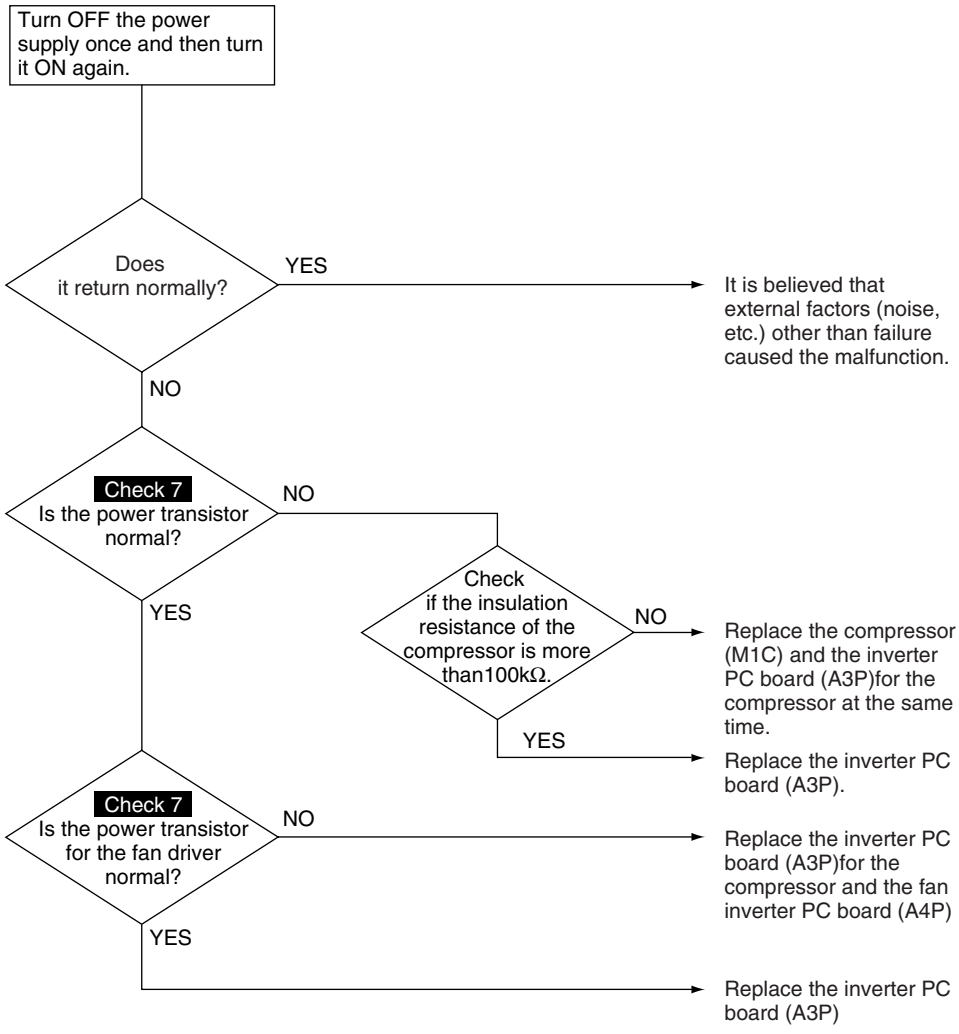
- In case of overcurrent (OCP) during waveform output
- When the current sensor malfunctions during synchronized operation
- In case of IPM malfunction

Supposed Causes

- Faulty outdoor inverter PC board (A3P)
  - IPM failure
  - Current sensor failure
  - Failure of IGBT or drive circuit

Troubleshooting

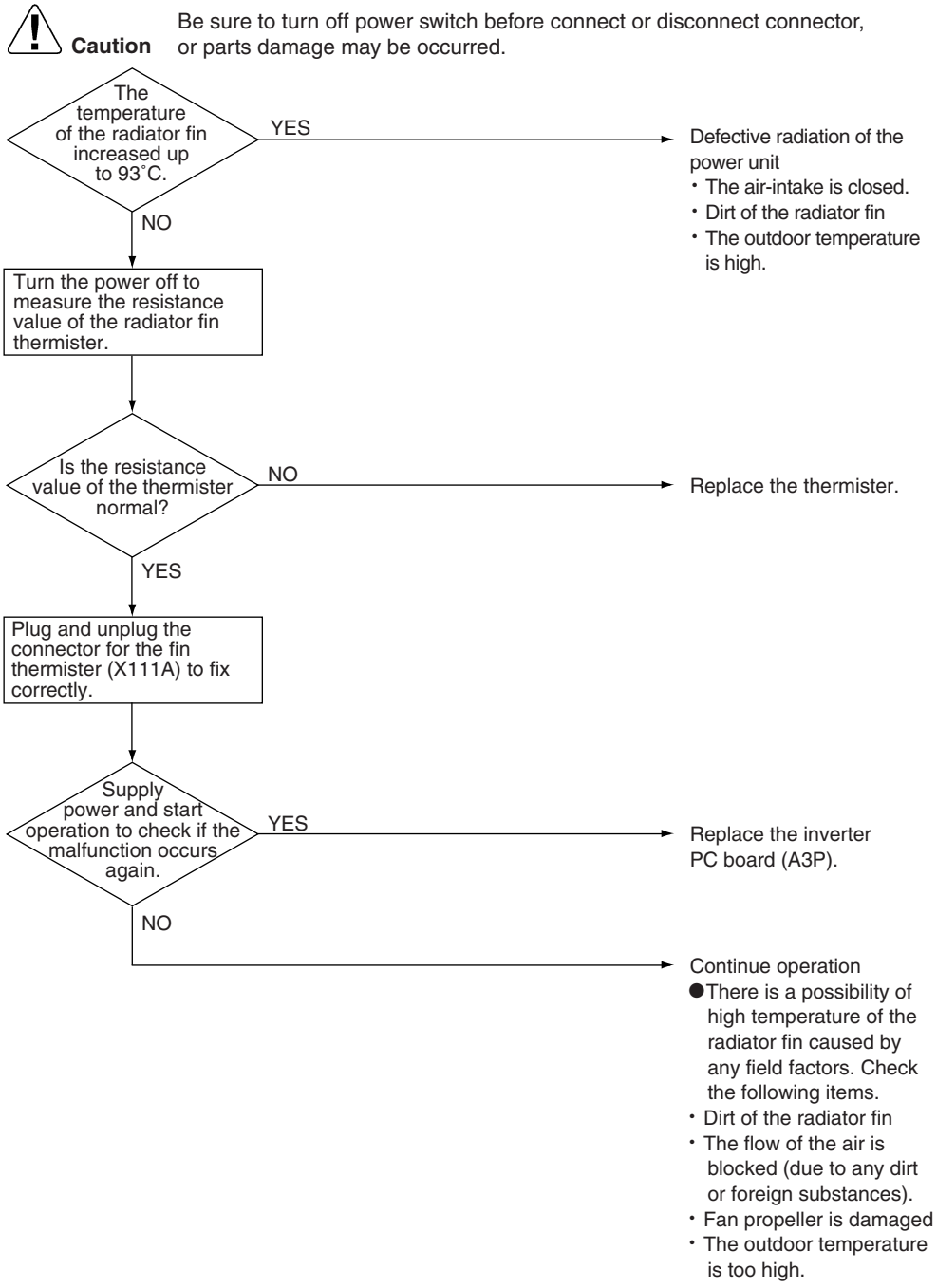
Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.28 "L4" Radiation Fin Temperature Increased

Remote Controller Display	L4
Applicable Models	RZQ
Method of Malfunction Detection	Fin temperature is detected by the thermistor of the radiation fin.
Malfunction Decision Conditions	
Supposed Causes	■ Activation of fin thermal switch (93°C or more) ■ Faulty outdoor unit inverter PC board ■ Faulty fin thermistor

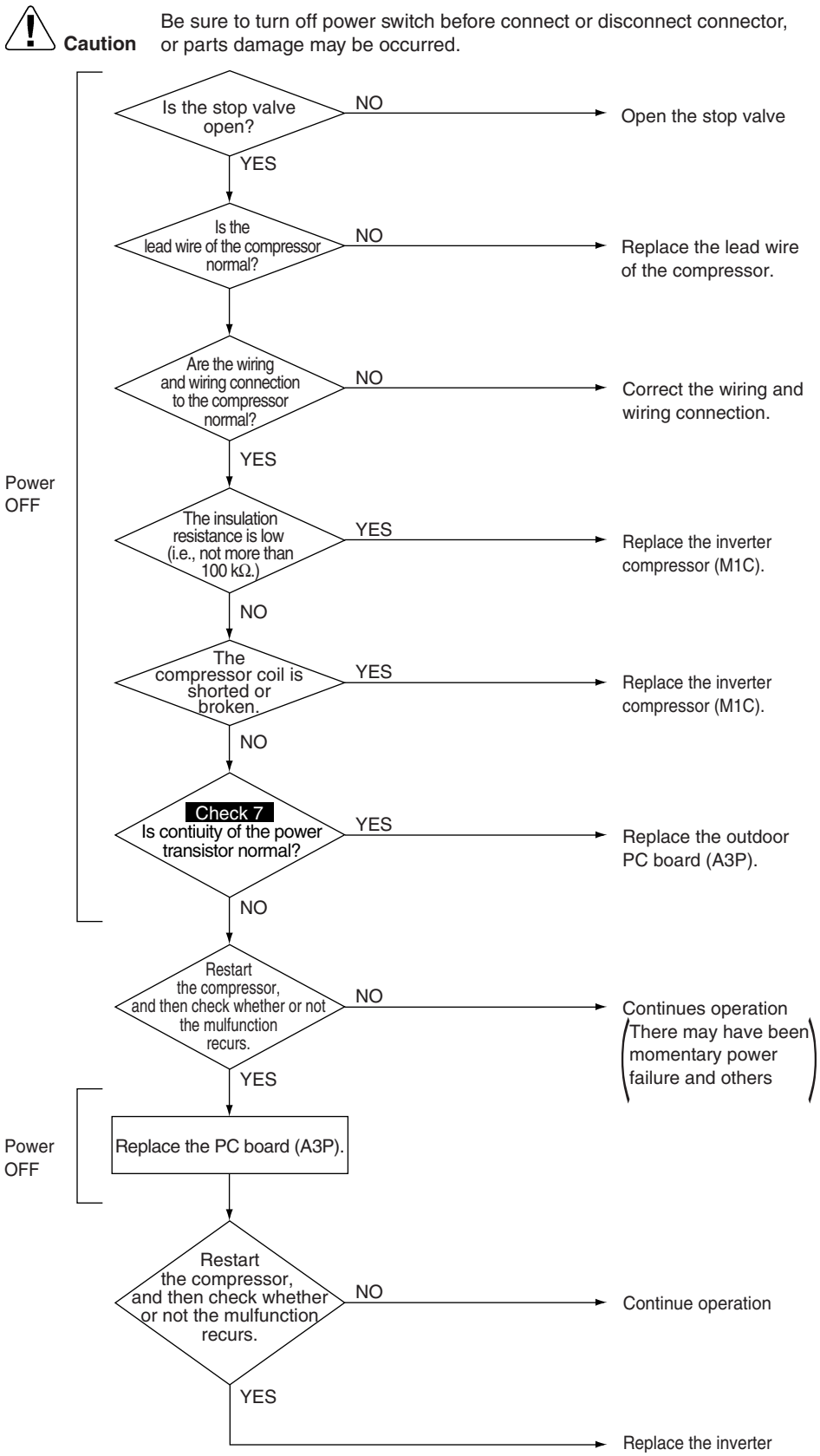
Troubleshooting



4.29 "L5" Momentary Overcurrent of Inverter Compressor

Remote Controller Display	L5
Applicable Models	RZQ
Method of Malfunction Detection	Malfunction is detected by converting the current flowing in the power transistor.
Malfunction Decision Conditions	When an excessive current flows in the power transistor (32.3A).
Supposed Causes	■ Faulty compressor coil (disconnection, poor insulation) ■ Compressor startup malfunction (mechanical lock) ■ Faulty outdoor inverter PC board ■ Instantaneous power failure ■ Lightning surge

Troubleshooting

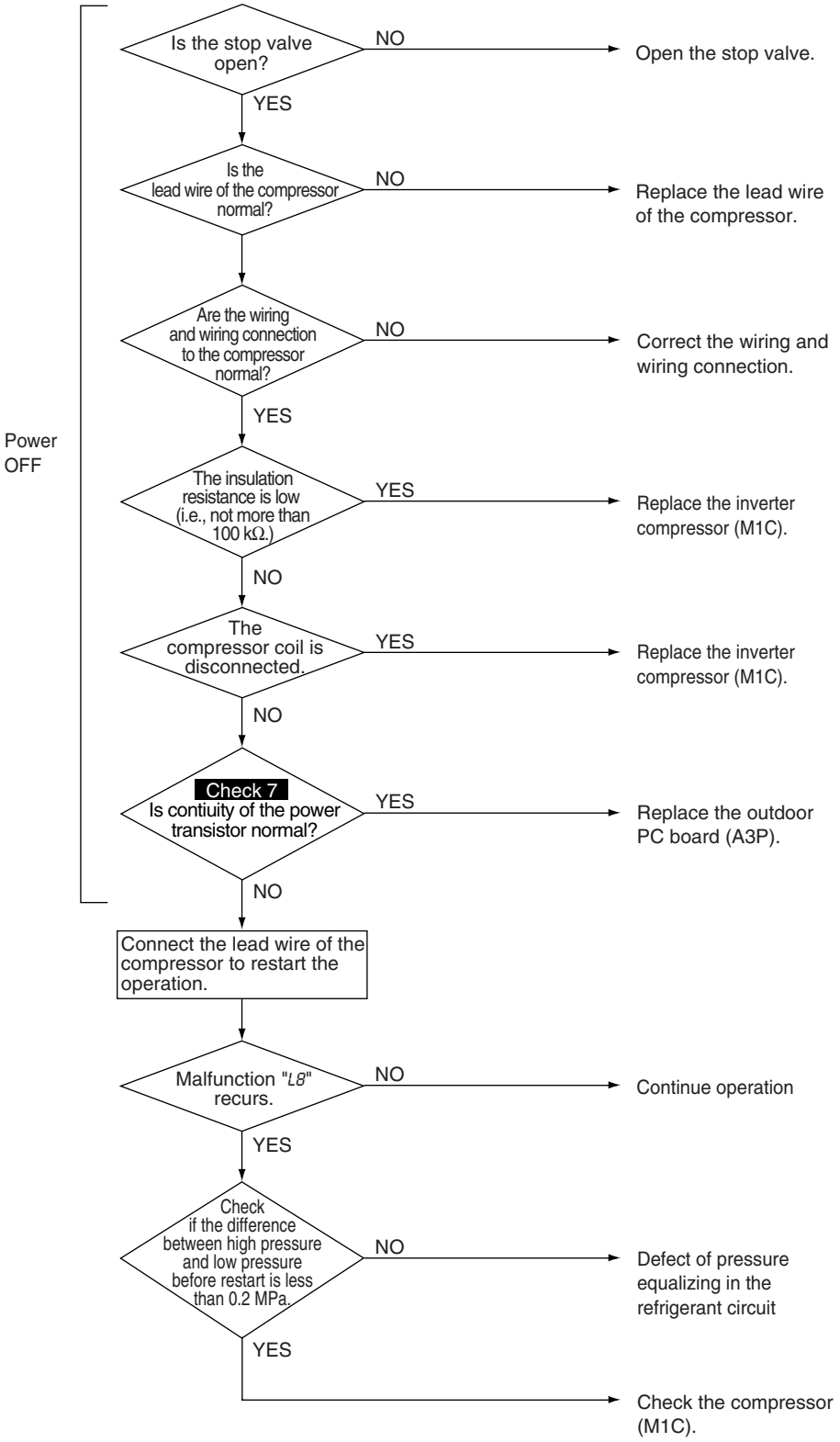


4.30 "L8" Inverter Compressor Overcurrent

Remote Controller Display	L8
Applicable Models	RZQ
Method of Malfunction Detection	Detect the current flowing at the power transistor.
Malfunction Decision Conditions	When the current at the inverter 2nd side shows the following values: (1) Current of 16.1A and over continues for 5 seconds. (2) Current of 19.0A and over continues for 260 seconds.
Supposed Causes	■ Compressor overload (during operation) ■ Shorted or broken compressor coil ■ Faulty compressor (if bearing is scratched) ■ Faulty inverter PC board

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.31 "L9" Compressor Inverter Start up Error

Remote Controller Display

L9

Applicable Models

RZQ

Method of Malfunction Detection

This malfunction code will be output if overcurrent occurs at the time of startup.

Malfunction Decision Conditions

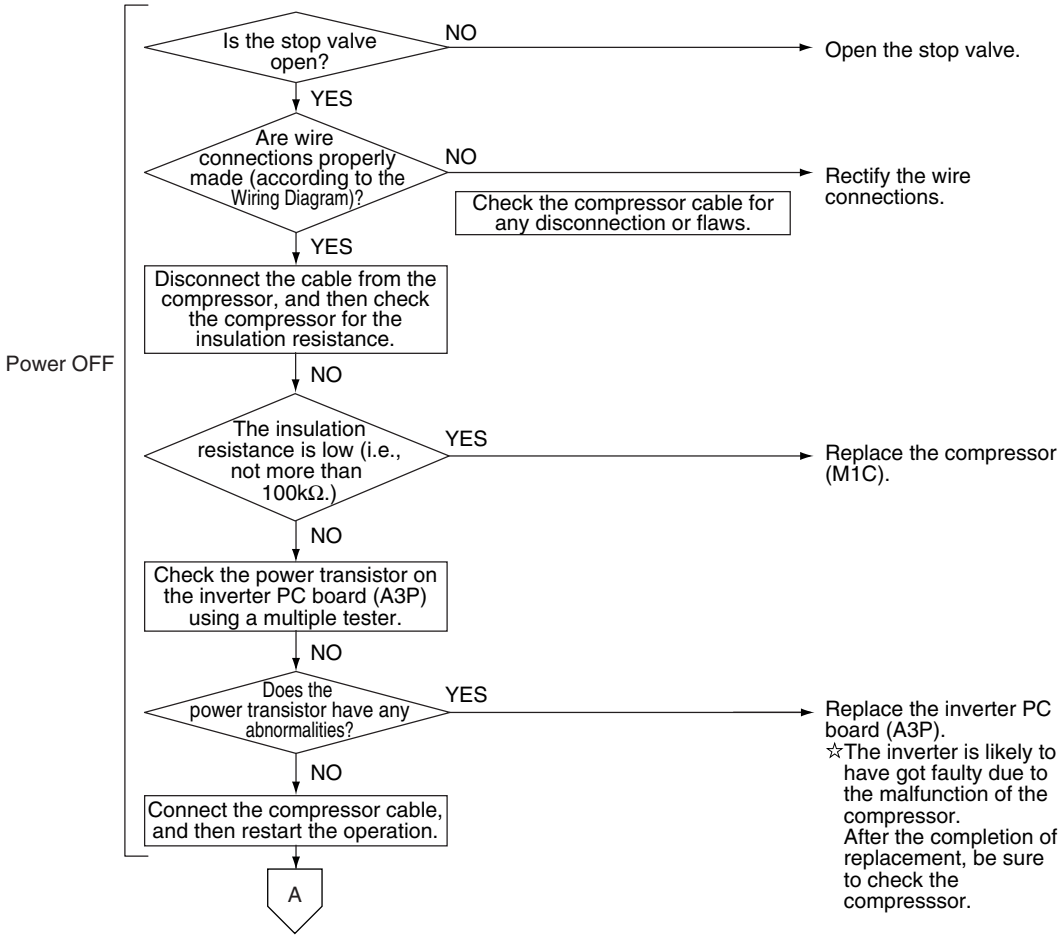
When the startup control is failed.
When an overcurrent is passed to the inverter due to the malfunction of a compressor or electrical system.

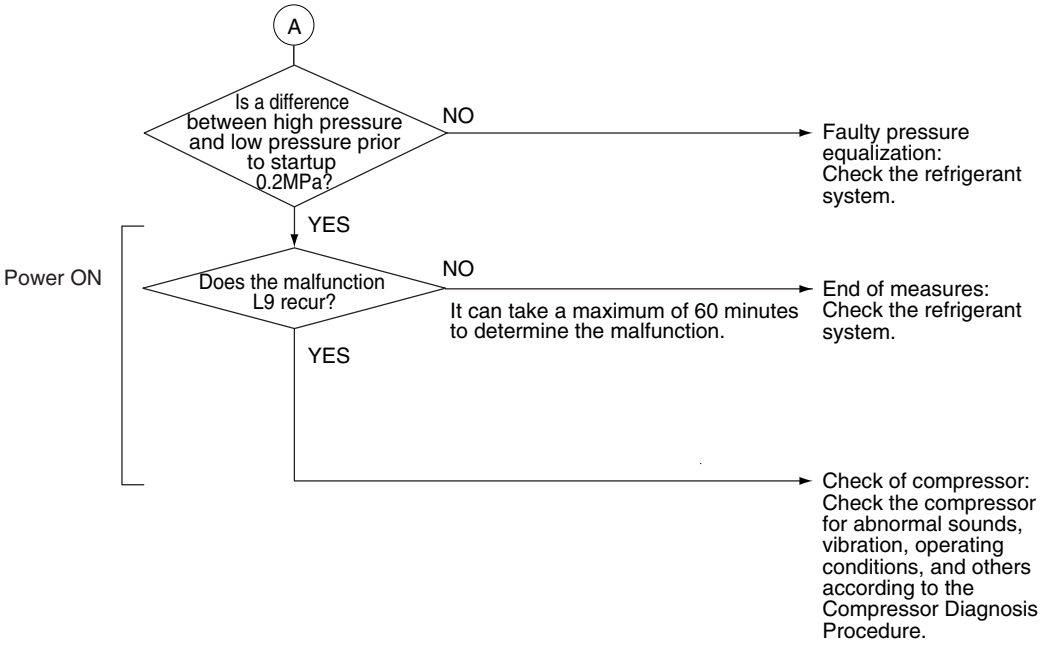
Supposed Causes

- Defect of compressor
- Pressure differential start
- Defect of inverter PC board
- Failure to open the stop valve
- Faulty compressor connection

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.




A
Is a difference between high pressure and low pressure prior to startup 0.2MPa?
NO
Faulty pressure equalization: Check the refrigerant system.
YES
Power ON
Does the malfunction L9 recur?
NO
It can take a maximum of 60 minutes to determine the malfunction.
End of measures: Check the refrigerant system.
YES
Check of compressor: Check the compressor for abnormal sounds, vibration, operating conditions, and others according to the Compressor Diagnosis Procedure.

4.32 "LC" Malfunction of Transmission between Inverter and Control PC Board

Remote Controller Display	LC
Applicable Models	RZQ
Method of Malfunction Detection	Check the communication state between inverter PC board and control PC board by micro-computer.
Malfunction Decision Conditions	When the correct communication is not conducted in certain period.
Supposed Causes	■ Malfunction of connection between the inverter PC board and outdoor control PC board ■ Defect of outdoor control PC board (transmission section) ■ Defect of inverter PC board ■ Defect of noise filter ■ Faulty fan inverter ■ Incorrect type of fan inverter ■ Faulty compressor ■ Faulty fan motor

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

Power ON

Are the fan transmission wire connectors (X3A: Black, X4A: Yellow) wrongly connected?
- NO → Connect the connectors to the corresponding color (black or yellow).
- YES ↓

Check whether or not the power supply voltage between L2 and N falls in the range of 220 to 240VAC?
- NO → On-site cause. Correct the wiring.
- YES ↓

Power OFF

Is the type (PC No.) of the fan inverter correct?
- NO → Mount the correct type of fan inverter(PC0511 -1).
- YES ↓

Disconnect the cable from the compressor, and then check the compressor for the insulation resistance.

NO ↓

The insulation resistance is low (i.e., not more than 100kΩ.)
- YES → Replace the compressor (M1C).
- NO ↓

Disconnect the cable from the fan, and then check the fan motor for the insulation resistance.

NO ↓

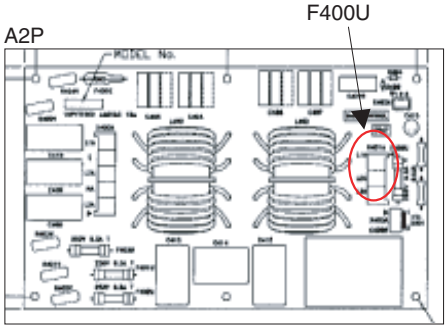
The insulation resistance is low (i.e., not more than 1MΩ.)
- YES → Replace the fan motor (M1F). Replace the fan driver PC board (A4P).
- NO ↓

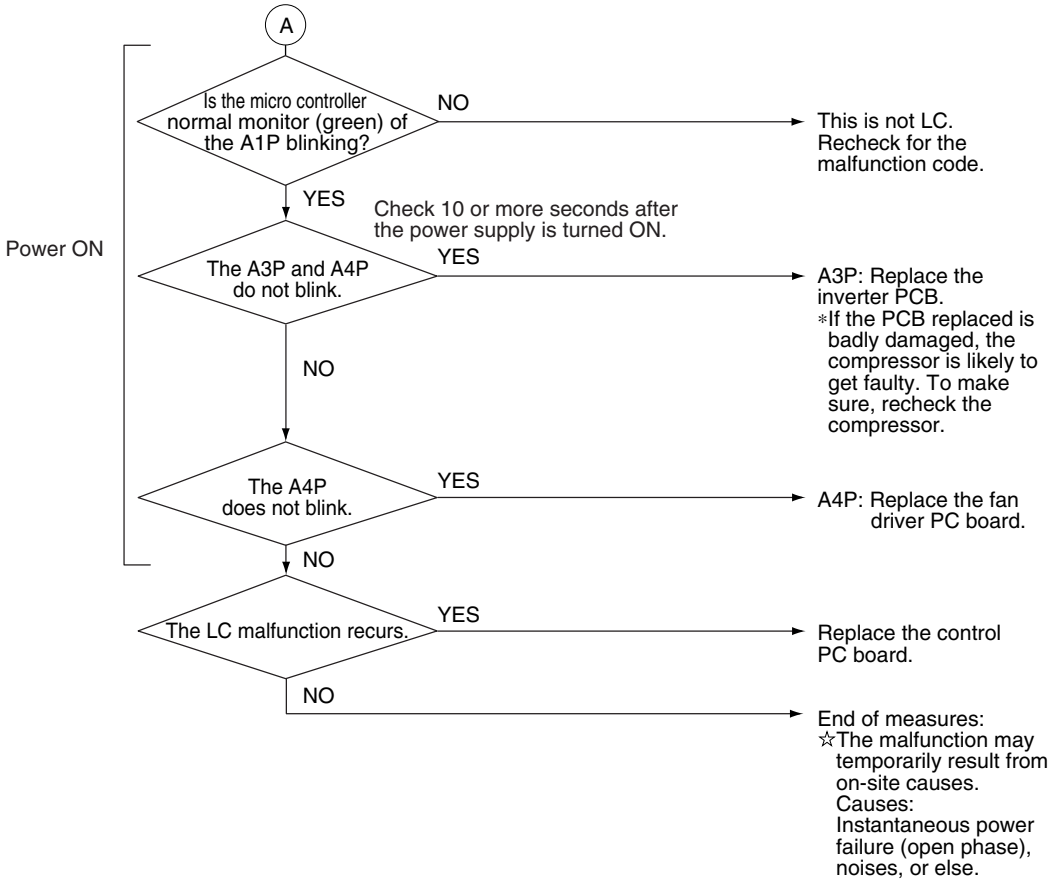
Check for connector connections: Remove and insert the connectors shown below.

[Fan 1]
- A1P X28A ⇔ X6A A3P
- A1P X20A ⇔ X4A A3P
- A3P X61A ⇔ X402A A2P
- A3P X1A ⇔ X403A A2P
- A3P X5A ⇔ X5A A4P
- A3P X41A ⇔ X3A A4P
- A4P X4A Short connector

F400U of the A2P has been molten.
- YES → Replace the noise filter of the A2P.
- NO ↓

A




A
Is the micro controller normal monitor (green) of the A1P blinking?
NO
This is not LC. Recheck for the malfunction code.
YES
Check 10 or more seconds after the power supply is turned ON.
Power ON
The A3P and A4P do not blink.
YES
A3P: Replace the inverter PCB.
*If the PCB replaced is badly damaged, the compressor is likely to get faulty. To make sure, recheck the compressor.
NO
The A4P does not blink.
YES
A4P: Replace the fan driver PC board.
NO
The LC malfunction recurs.
YES
Replace the control PC board.
NO
End of measures:
☆The malfunction may temporarily result from on-site causes.
Causes:
Instantaneous power failure (open phase), noises, or else.

4.33 "P1" Inverter Over-Ripple Protection

Remote Controller Display

P1

Applicable Models

RZQ

Method of Malfunction Detection

Imbalance in supply voltage is detected in PC board.
Imbalance in the power supply voltage causes increased ripple of voltage of the main circuit capacitor in the inverter. Consequently, the increased ripple is detected.

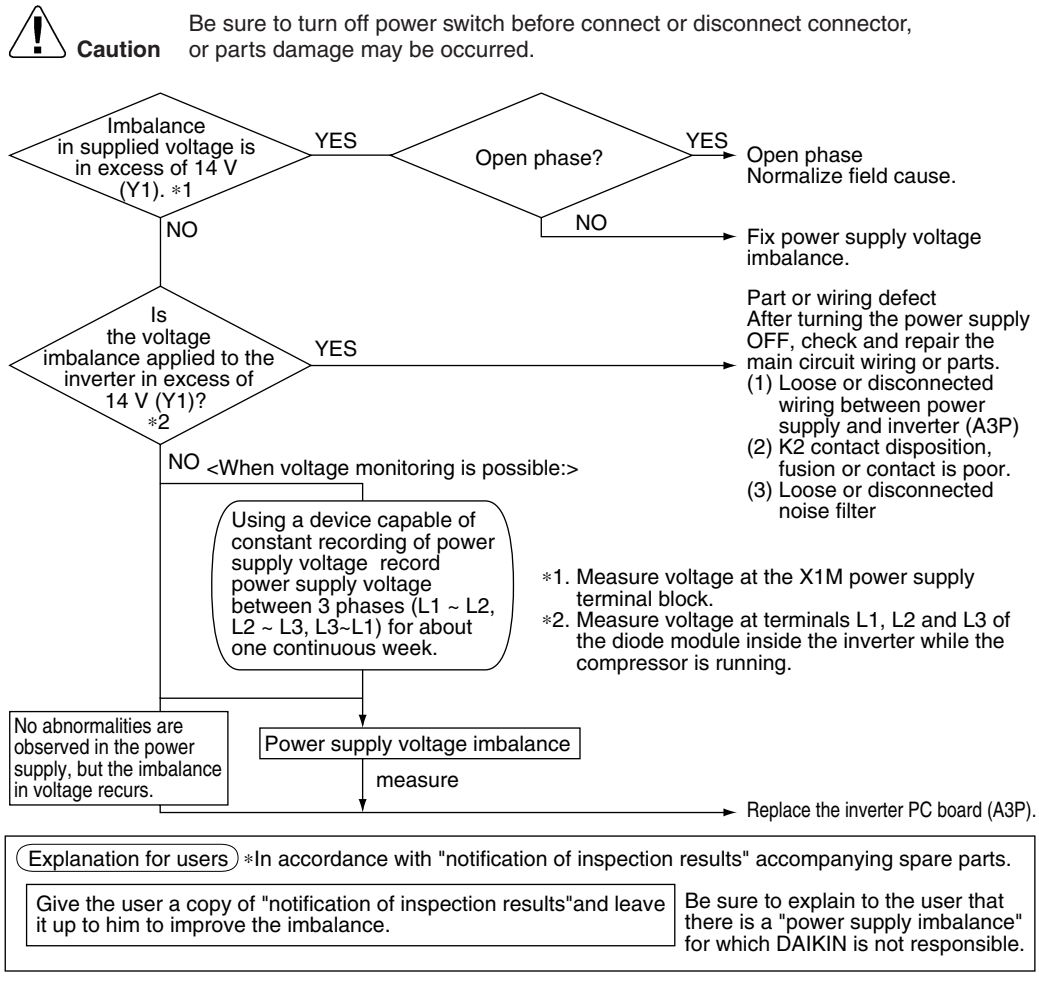
Malfunction Decision Conditions

When the resistance value of thermistor becomes a value equivalent to open or short circuited status.
★ Malfunction is not decided while the unit operation is continued.
"P1" will be displayed by pressing the inspection button.
When the amplitude of the ripple exceeding a certain value is detected for consecutive 4 minutes.

Supposed Causes

- Open phase
- Voltage imbalance between phases
- Defect of main circuit capacitor
- Defect of inverter PC board
- Defect of K2 relay in inverter PC board
- Improper main circuit wiring

Troubleshooting



(V2816)

4.34 "PJ" Defective Combination of Inverter and Fan Driver

Remote Controller Display

PJ

Applicable Models

RZQ

Method of Malfunction Detection

To be detected based on the data transmission with INV.

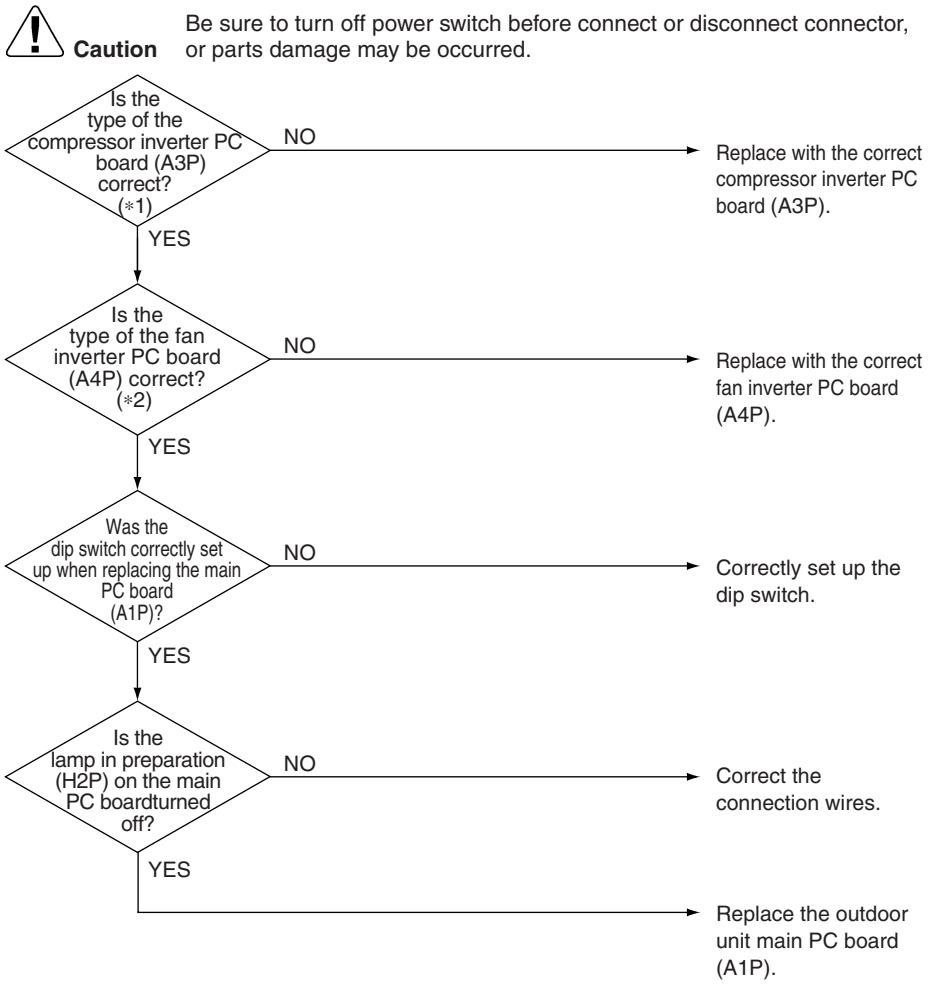
Malfunction Decision Conditions

Judge if the INV PC board type is correct based on the data transmission.

Supposed Causes

- Mismatch of the PC board types
- Field setting error

Troubleshooting



*1. The types of compressor inverter PC board

Type	Corresponding models
PC0509-1	RZQ200·250C

*2. The types of fan inverter PC board

Type	Corresponding models
PC0511-1	RZQ200·250C

4.35 "U0" Gas Shortage (Malfunction)

Remote Controller Display

U0

Applicable Models

RZQ

Method of Malfunction Detection

Judge the malfunction based on the extent of opening, the temperature at each position, and the pressure of the electronic expansion valve.

Malfunction Decision Conditions

[In cooling]

- When low pressure of less than 0.25MPa continues for more than 30 minutes, with the electronic expansion valve full open:

[In heating]

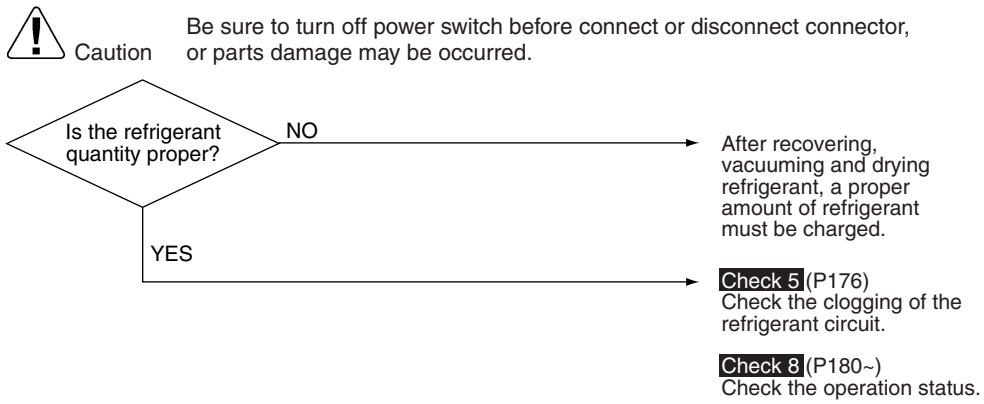
- When large suction overheating (more than 20 degrees) continues for more than 60 minutes, with the electronic expansion valve full open:

★ Malfunction is not decided while the unit operation is continued.

Supposed Causes

- Failure to open the stop valve
- Refrigerant shortage
- Clogging of the refrigerant circuit

Troubleshooting



* Only the alert is given. The system does not stop operation.

4.36 "U1" Reverse Phase

Remote Controller Display

U1

Applicable Model

R(Y)

Method of Malfunction Detection

The reverse phase detection circuit detects the phase of each phase and judge whether it is normal or reverse.

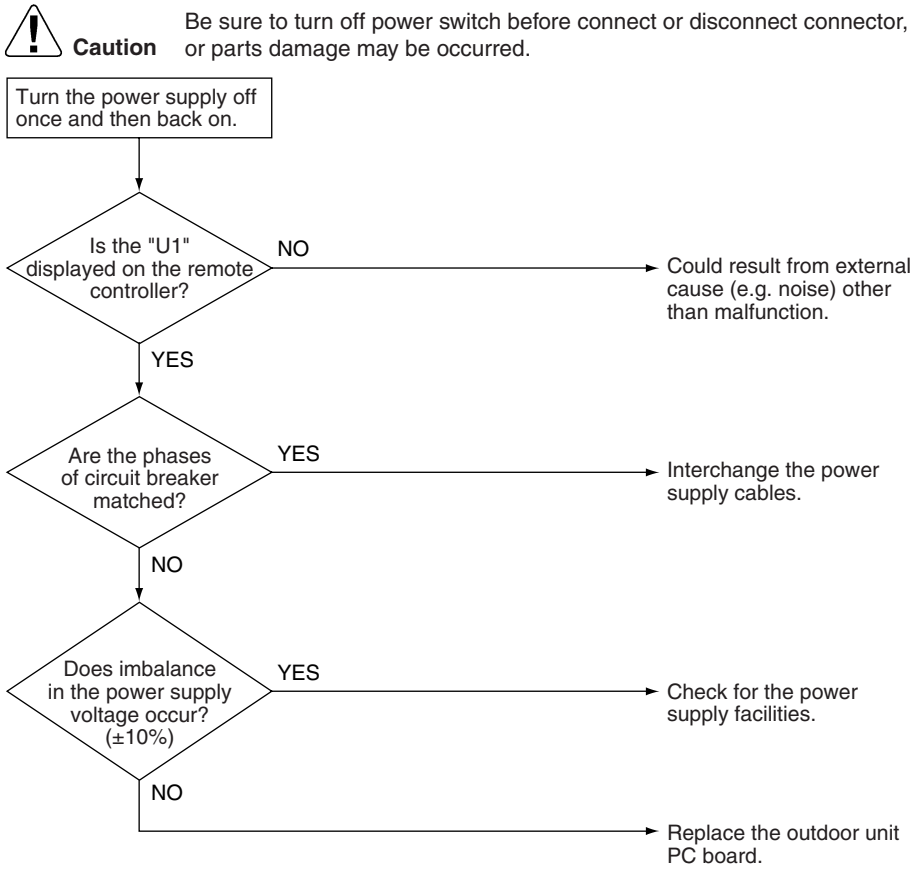
Malfunction Decision Conditions

When the reverse phase is confirmed.

Supposed Causes

- Faulty connection of power supply wiring
- Disconnection in power supply wiring

Troubleshooting



4.37 "U2" Power Supply Insufficient or Instantaneous Failure

Remote Controller Display

U2

Applicable Models

RZQ

Method of Malfunction Detection

Detection of voltage of main circuit capacitor built in the inverter and power supply voltage.

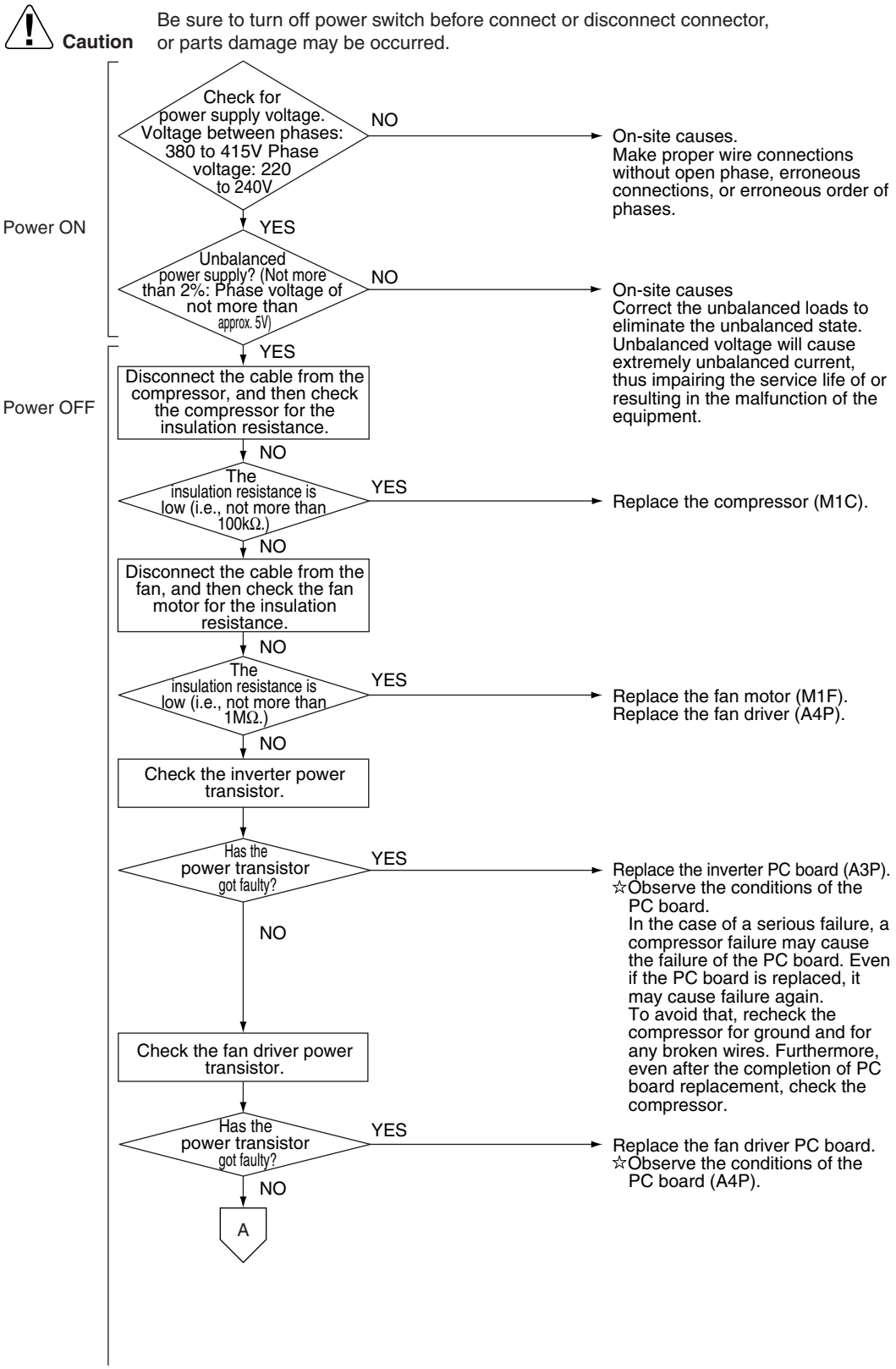
Malfunction Decision Conditions

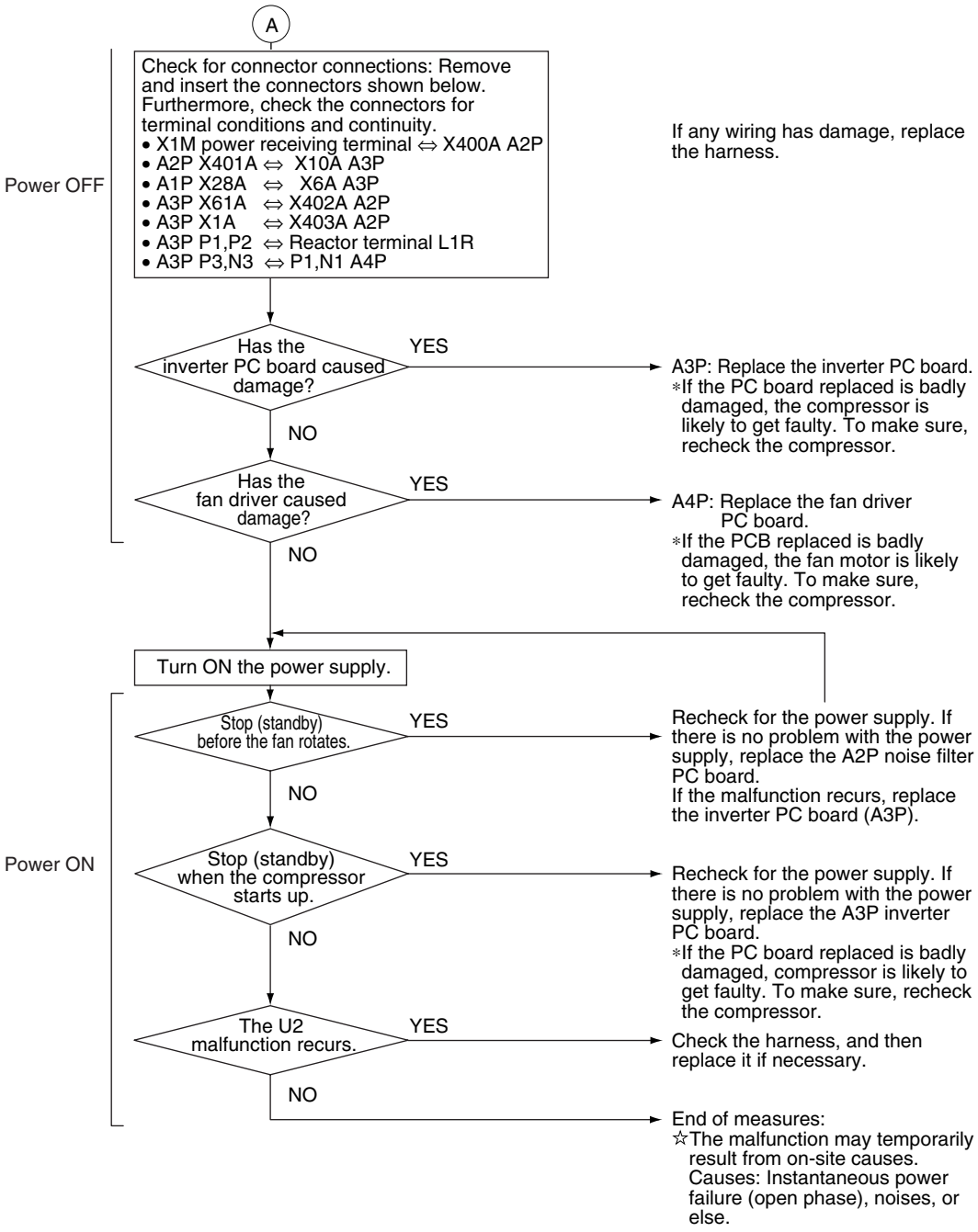
When the voltage aforementioned is not less than 780V or not more than 320V, or when the current-limiting voltage does not reach 200V or more or exceeds 740V.

Supposed Causes

- Power supply insufficient
- Instantaneous power failure
- Open phase
- Defect of inverter PC board
- Defect of outdoor control PC board
- Main circuit wiring defect
- Faulty compressor
- Faulty fan motor
- Faulty connection of signal cable

Troubleshooting




A
Power OFF
Check for connector connections: Remove and insert the connectors shown below. Furthermore, check the connectors for terminal conditions and continuity.
• X1M power receiving terminal ⇔ X400A A2P
• A2P X401A ⇔ X10A A3P
• A1P X28A ⇔ X6A A3P
• A3P X61A ⇔ X402A A2P
• A3P X1A ⇔ X403A A2P
• A3P P1,P2 ⇔ Reactor terminal L1R
• A3P P3,N3 ⇔ P1,N1 A4P
If any wiring has damage, replace the harness.
Has the inverter PC board caused damage?
YES
A3P: Replace the inverter PC board.
∗If the PC board replaced is badly damaged, the compressor is likely to get faulty. To make sure, recheck the compressor.
NO
Has the fan driver caused damage?
YES
A4P: Replace the fan driver PC board.
∗If the PCB replaced is badly damaged, the fan motor is likely to get faulty. To make sure, recheck the compressor.
NO
Turn ON the power supply.
Power ON
Stop (standby) before the fan rotates.
YES
Recheck for the power supply. If there is no problem with the power supply, replace the A2P noise filter PC board.
If the malfunction recurs, replace the inverter PC board (A3P).
NO
Stop (standby) when the compressor starts up.
YES
Recheck for the power supply. If there is no problem with the power supply, replace the A3P inverter PC board.
∗If the PC board replaced is badly damaged, compressor is likely to get faulty. To make sure, recheck the compressor.
NO
The U2 malfunction recurs.
YES
Check the harness, and then replace it if necessary.
NO
End of measures:
☆The malfunction may temporarily result from on-site causes. Causes: Instantaneous power failure (open phase), noises, or else.

4.38 "U4" Malfunction of Transmission (between Indoor and Outdoor Unit)

Remote Controller Display

U4

Applicable Models

RZQ
All models of indoor units

Method of Malfunction Detection

Microcomputer checks if transmission between indoor and outdoor units is normal.

Malfunction Decision Conditions

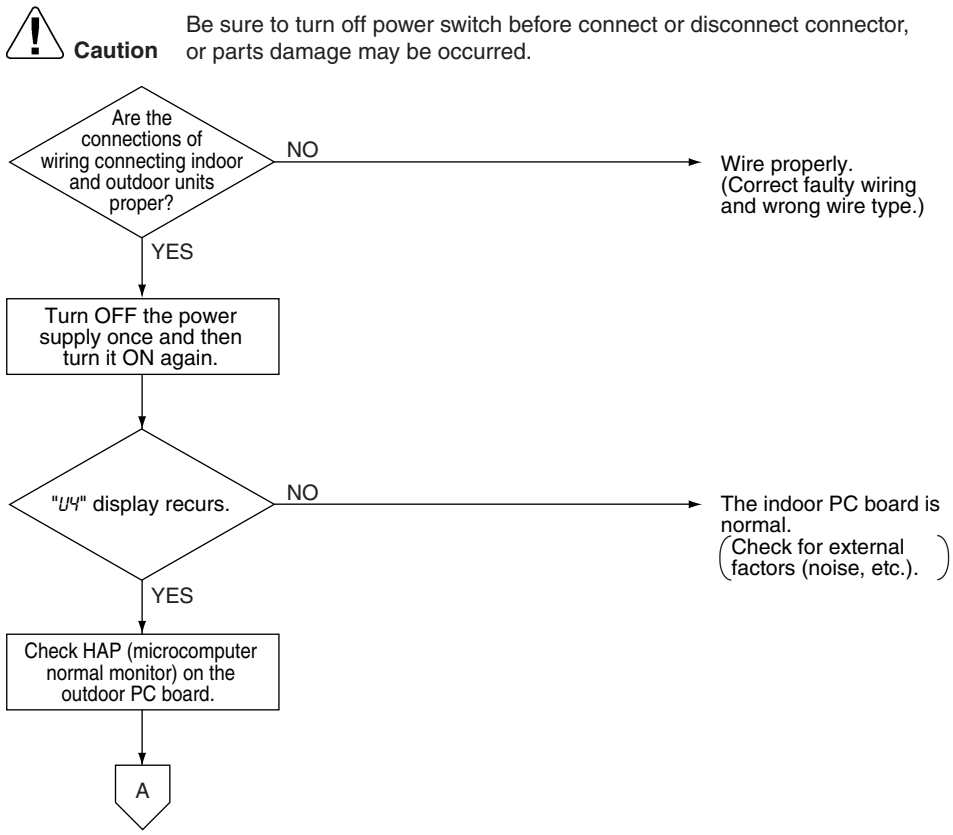
When transmission is not carried out normally for a certain amount of time

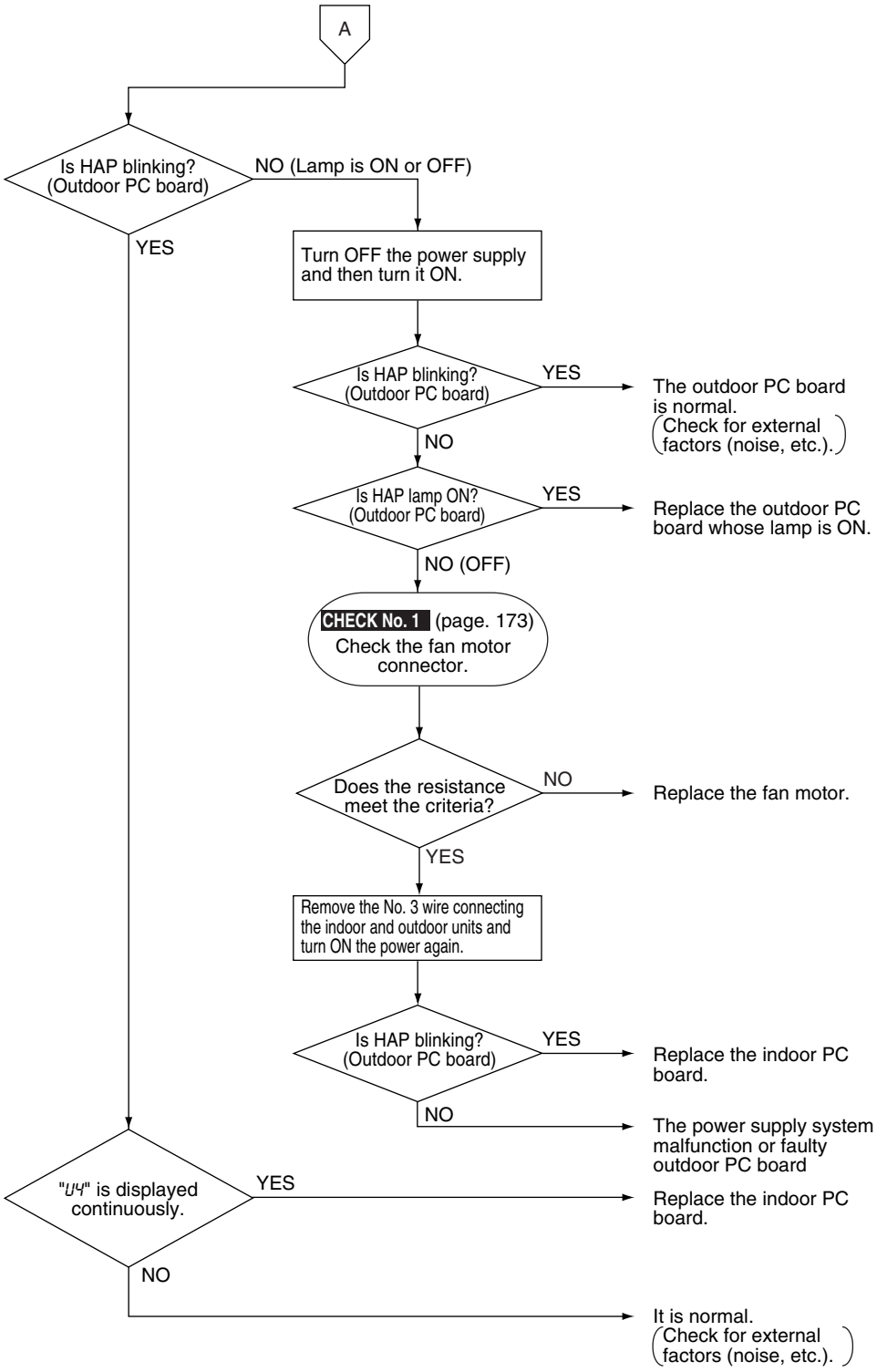
Supposed Causes

- Wiring indoor-outdoor transmission wire is incorrect.
- Outside cause (noise, etc.)
- Failure of indoor unit PC board
- Failure of outdoor unit PC board
- Failure of outdoor unit fan
- Power supply -open phase etc.

Troubleshooting

Diagnosis of incorrect or broken/disconnected wiring
If the LEDs on the indoor unit PC board are off, it indicates that the transmission wiring between indoor and outdoor units may be incorrect or broken/disconnected.




A
Is HAP blinking? (Outdoor PC board)
NO (Lamp is ON or OFF)
YES
Turn OFF the power supply and then turn it ON.
Is HAP blinking? (Outdoor PC board)
YES
The outdoor PC board is normal.
(Check for external factors (noise, etc.).)
NO
Is HAP lamp ON? (Outdoor PC board)
YES
Replace the outdoor PC board whose lamp is ON.
NO (OFF)
CHECK No. 1 (page. 173)
Check the fan motor connector.
Does the resistance meet the criteria?
NO
Replace the fan motor.
YES
Remove the No. 3 wire connecting the indoor and outdoor units and turn ON the power again.
Is HAP blinking? (Outdoor PC board)
YES
Replace the indoor PC board.
NO
The power supply system malfunction or faulty outdoor PC board
"UЧ" is displayed continuously.
YES
Replace the indoor PC board.
NO
It is normal.
(Check for external factors (noise, etc.).)

4.39 "U5" Malfunction of Transmission (between Indoor Unit and Remote Controller)

Remote Controller Display

U5

Applicable Models

All models of indoor units

Method of Malfunction Detection

Microcomputer checks if transmission between indoor unit and remote controller is normal.

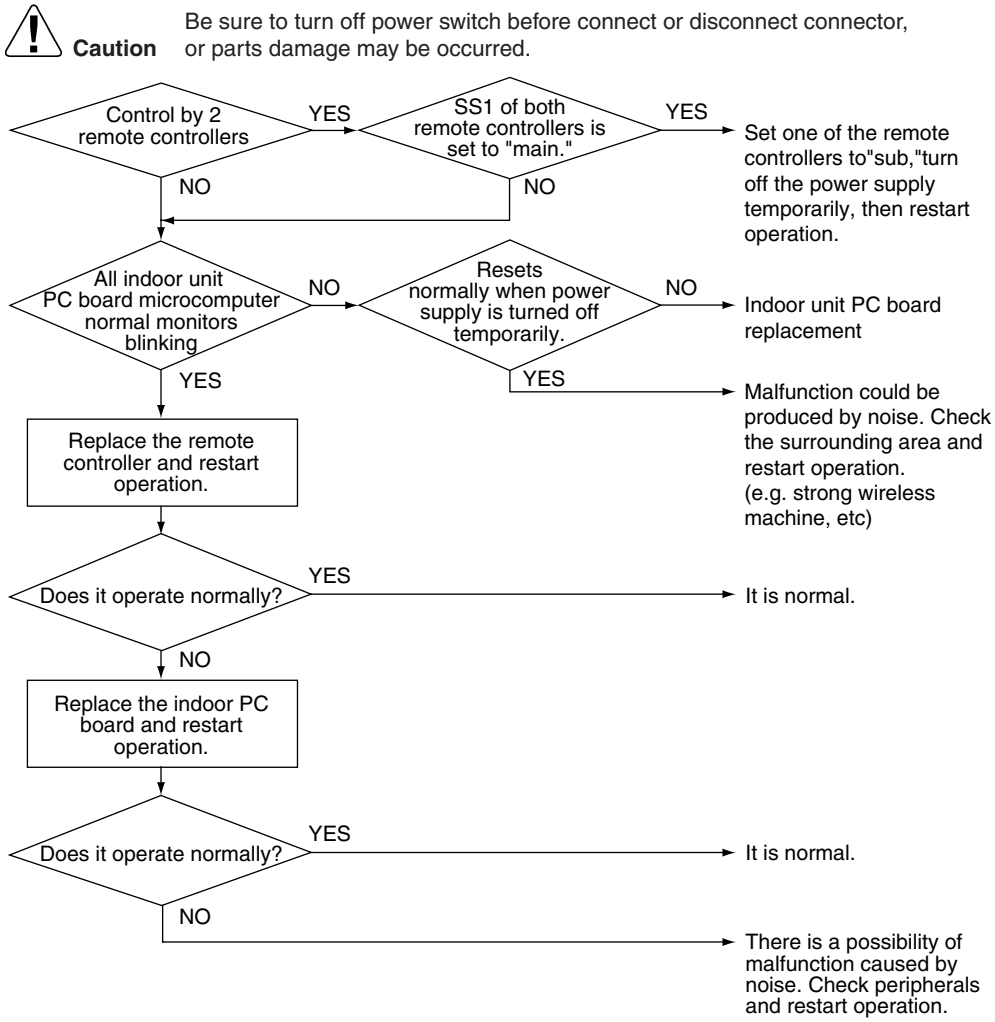
Malfunction Decision Conditions

When transmission is not carried out normally for a certain amount of time

Supposed Causes

- Failure of remote controller
- Outside cause (noise, etc.)
- Connection of 2 master remote controllers (When using 2 remote controllers)

Troubleshooting



4.40 "U8" Transmission Error between Main Remote Controller and Sub Remote Controller

Remote Controller Display

U8

Applicable Models

All models of indoor units

Method of Malfunction Detection

In case of controlling with 2- remote controller, check the system using microcomputer if signal transmission between indoor unit and remote controller (main and sub) is normal.

Malfunction Decision Conditions

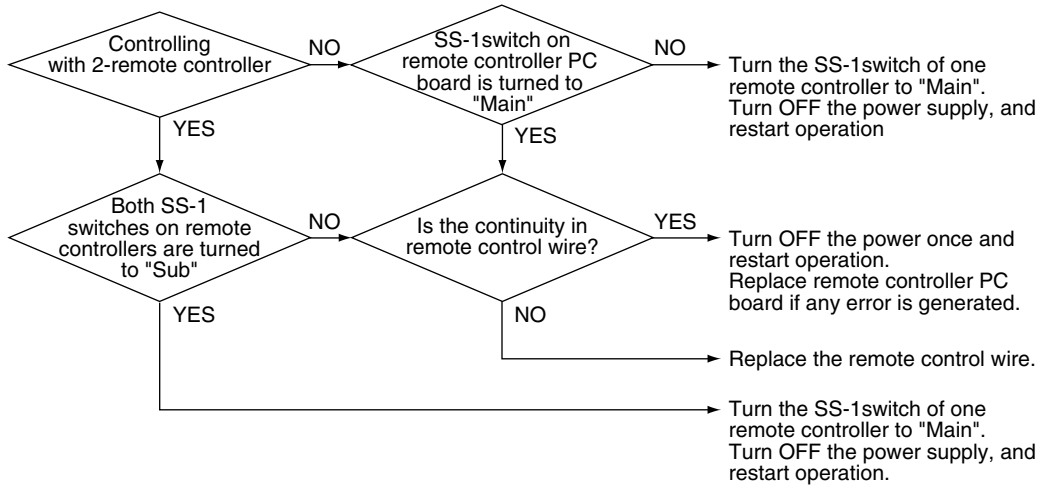
Normal transmission does not continue for specified period.

Supposed Causes

- Transmission error between Main remote controller and Sub remote controller
- Connection among "Sub" remote controllers

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

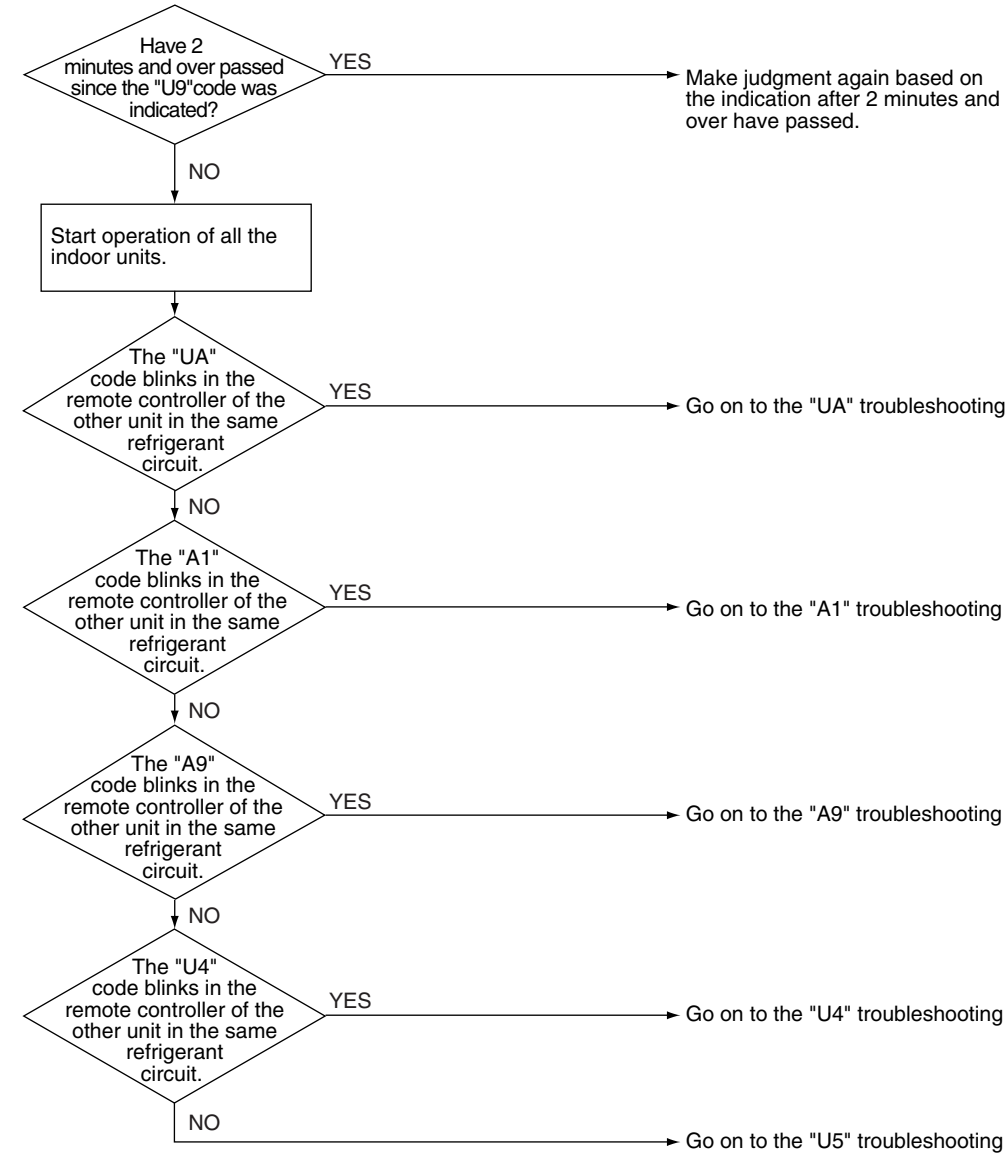


4.41 "U9" Malfunction of Transmission between Indoor and Outdoor Units in the Same System

Remote Controller Display	U9
Applicable Models	All models of indoor units
Method of Malfunction Detection	Detect the malfunction signal of any other indoor unit within the system concerned.
Malfunction Decision Conditions	When the malfunction decision is made on any other indoor unit within the system concerned.
Supposed Causes	■ Malfunction of transmission within or outside of other system ■ Malfunction of electronic expansion valve in indoor unit of other system ■ Defect of PC board of indoor unit in other system ■ Improper connection of transmission wiring between indoor and outdoor unit

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

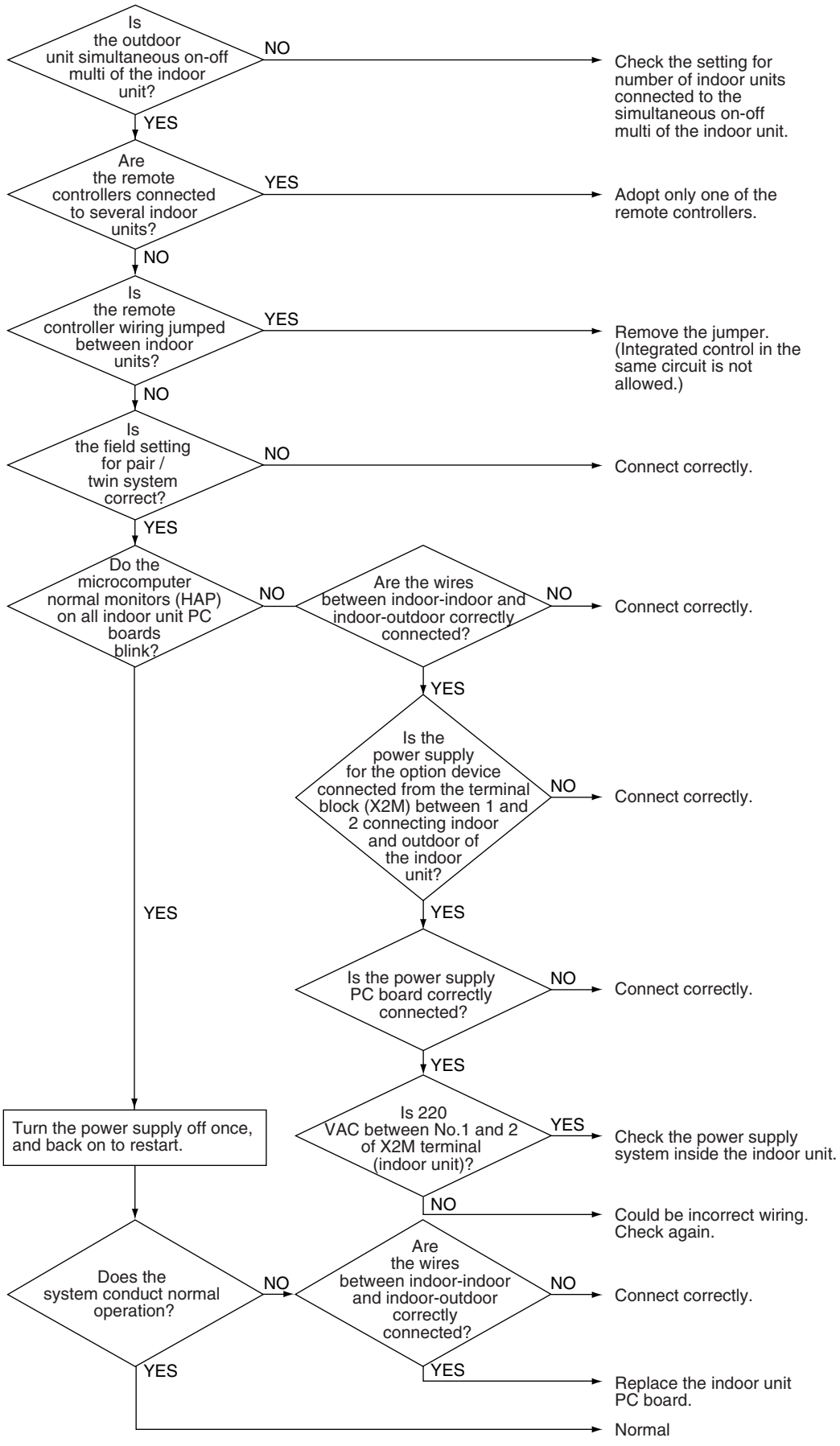


4.42 "UA" Malfunction of Field Setting Switch and Transmission Line

Remote Controller Display	UA
Applicable Models	All models of indoor units
Method of Malfunction Detection	
Malfunction Decision Conditions	Incorrect field setting The number of indoor units connected to this system is more than limited.
Supposed Causes	■ Indoor-Outdoor, Indoor-Indoor transmission line ■ Faulty remote controller wiring

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.43 "UC" Centralized Address Duplicated

Remote Controller Display

UC

Applicable Models

All models of indoor units

Method of Malfunction Detection

Indoor unit microcomputer detects and judges the centralized address signal according to the transmission between indoor units.

Malfunction Decision Conditions

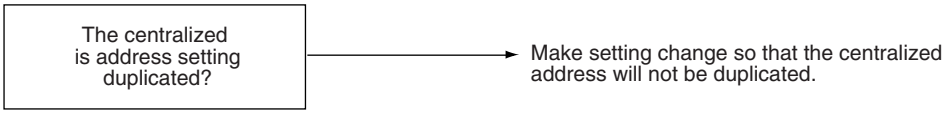
When the microcomputer judges that the centralized address signal is duplicated
★ "UC" error code is displayed, but the system operates continuously.

Supposed Causes

- Faulty centralized address setting
- Faulty indoor unit PC board

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.

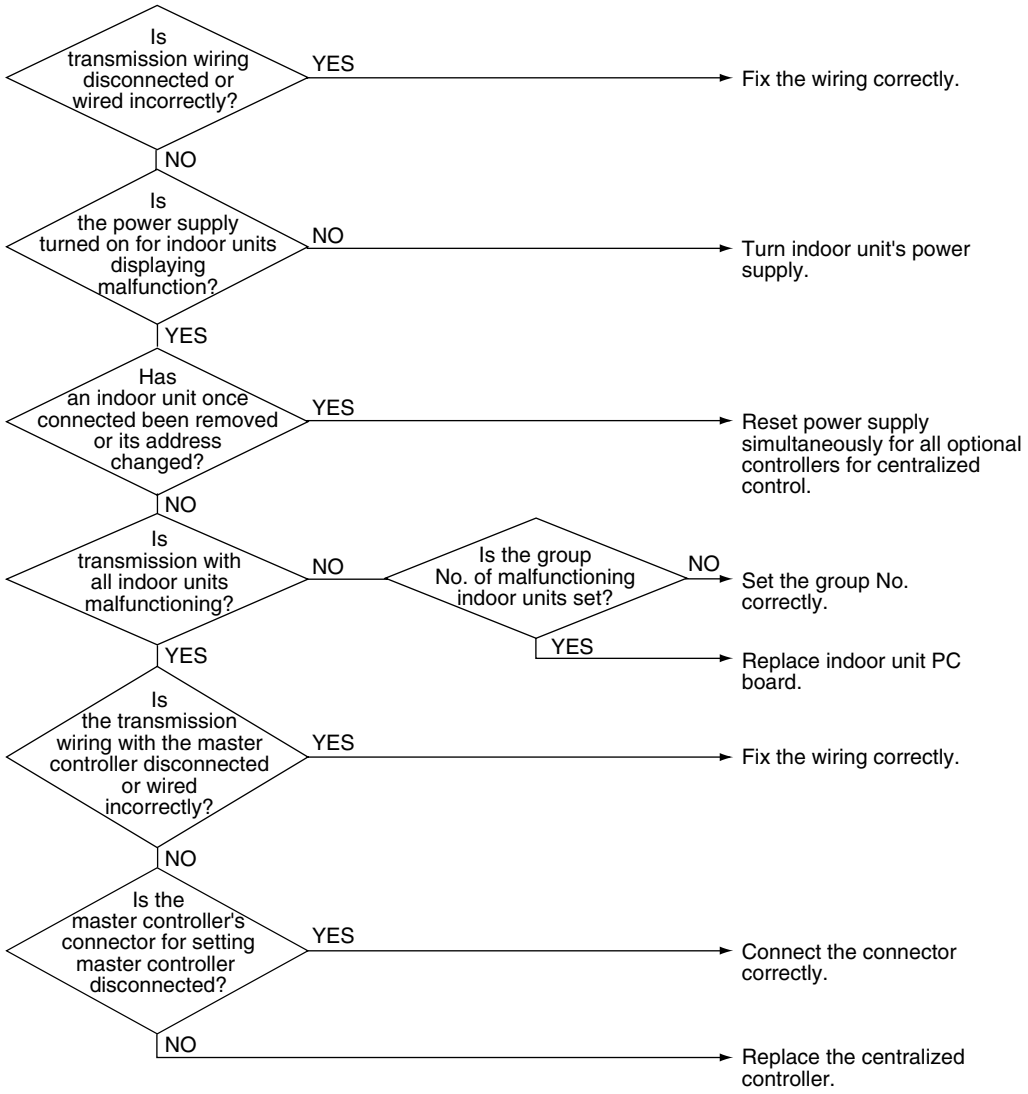


4.44 "UE" Malfunction of Transmission between Centralized Controller and Indoor Unit

Remote Controller Display	UE
Applicable Models	Central remote controller Schedule timer All models of indoor units
Method of Malfunction Detection	Microcomputer checks if transmission between indoor unit and centralized controller is normal.
Malfunction Decision Conditions	When transmission is not carried out normally for a certain amount of time
Supposed Causes	■ Malfunction of transmission between optional controllers for centralized control and indoor unit ■ Defect of indoor unit PC board

Troubleshooting

Caution Be sure to turn off power switch before connect or disconnect connector, or parts damage may be occurred.



4.45 "UF" Transmission System Malfunction (between Indoor and Outdoor Units)

Remote Controller Display

UF

Applicable Models

RZQ

Method of Malfunction Detection

- Check transmission between the indoor and outdoor units with a microcomputer when the power is supplied.

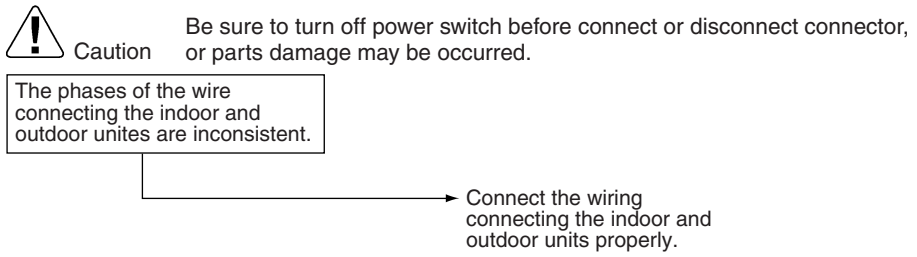
Malfunction Decision Conditions

- When wiring connecting the indoor and outdoor units is not proper.

Supposed Causes

- Poor wiring connecting the indoor and outdoor units

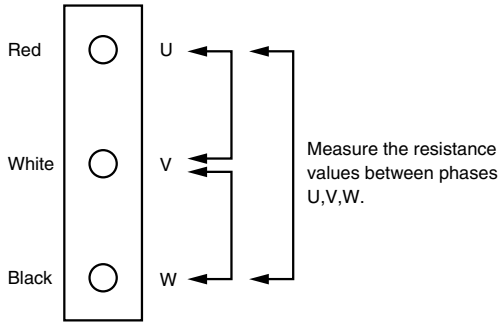
Troubleshooting



Check No. 1

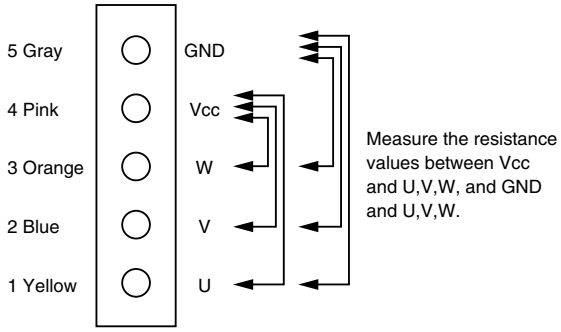
Check on connector of fan motor (Power supply cable)

(1) Turn off the power supply.
Measure the resistance between phases of U,V,W at the motor side connectors (three-core wire) to check that the values are balanced and there is no short circuiting, while connector or relay connector is disconnected.



Check on connector of fan motor (Signal line)

(1) Turn off the power supply.
(2) Measure the resistance between Vcc and each phase of U,V,W, and GND and each phase at the motor side connectors (five-core wire) to check that the values are balanced within the range of ± 20 %, while connector or relay connector is disconnected.
Furthermore, to use a multiple meter for measurement, connect the probe of negative pole to Vcc and that of positive pole to GND.

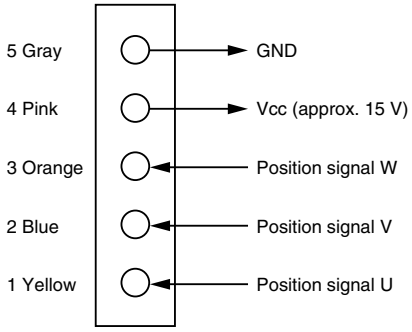


Check No. 2

Check on pulse input of position signal of fan inverter PC board

(1) Disconnect the connector X2A while power supply OFF and operation OFF.
(2) Is the voltage between pins No. 4 and 5 on X2A approx. 15 V after power supply is turned on?
(3) Connect the connector X2A while power supply OFF and operation OFF.
(4) Check below conditions when the fan motor is rotated one turn manually under the condition of operation OFF after power supply is turned ON.
Are the pulse (approx. 0 V and 5 V) generated 4 times between No. 1 and 5 on X2A?
Are the pulse (approx. 0 V and 5 V) generated 4 times between No. 2 and 5 on X2A?
Are the pulse (approx. 0 V and 5 V) generated 4 times between No. 3 and 5 on X2A?

The condition (2) dose not appear → Faulty PC board → Replacing the PC board
The conditions (4) do not appear → Faulty hall IC → Replacing fan motor of outdoor unit



Check No. 3 **If the high pressure is abnormally high**

Conception

Abnormally high pressure level is mostly caused by the condenser side.
The following contents are provided by service engineer based on their field checks.
Further, the number is listed in the order of degree of influence.

a In cooling operation

Check items (Possible causes)	Judgment
1. Does the outdoor unit fan run normally?	1. Visual inspection
2. Is the outdoor unit heat exchanger clogged?	2. Visual inspection
3. Is there clogging before or after the EV (capillary)?	3. Check if there is a temperature difference before and after EV (capillary). Check if the main valve unit of EV operates (by noise, vibration).
4. Is the check valve clogged?	4. Check if there is a temperature difference before and after check valve. →If YES, the check valve is caught.
5. Is the HPS normal?	5. Check continuity by using a tester.
6. Is the outdoor unit installed under such conditions that short circuit easily occurs?	6. Visual inspection
7. Is the piping length 5 meters or less?	7. Visual inspection
8. Does air enter the refrigerant system?	8. Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.
9. Is the refrigerant overcharged?	9. Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

a. In heating operation

Check items (Possible causes)	Judgment
1. Does the indoor unit fan run normally?	1. Visual inspection
2. Is the indoor unit heat exchanger clogged?	2. Visual inspection
3. Is the indoor unit installed under such conditions that short circuit easily occurs?	3. Visual inspection
4. Is there clogging before or after the EV (capillary)?	4. Check if there is a temperature difference before and after EV (capillary). Check if the main valve unit of EV operates (by noise, vibration).
5. Is the check valve clogged?	5. Check if there is a temperature difference before and after check valve. →If YES, the check valve is caught.
6. Is the HPS normal?	6. Check continuity using a tester.
7. Is the piping length 5 meters or less?	7. Visual inspection
8. Does air enter the refrigerant system?	8. Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.
9. Is the refrigerant overcharged?	9. Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

Check No. 4 **If the low pressure is abnormally low**

Conception

Abnormally low pressure level is mostly caused by the evaporator side.
The following contents are provided based on field checking of service engineer.
Further, the number is listed in the order of degree of influence.

a. In cooling operation

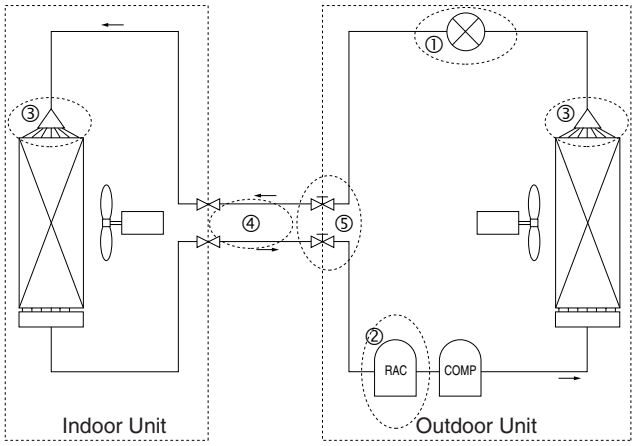
Check items (Possible causes)	Judgment
1. Does the outdoor unit fan run normally?	1. Visual inspection
2. Is the indoor unit filter clogged?	2. Visual inspection
3. Is there clogging before or after the EV (capillary)?	3. Check if there is a temperature difference before and after EV (capillary). Check if the main valve unit of EV operates (by noise, vibration).
4. Is the check valve clogged?	4. Check if there is a temperature difference before and after check valve. →If YES, the check valve is caught.
5. Is the LPS normal?	5. Check continuity using a tester.
6. Is the indoor unit installed under such conditions that short circuit easily occurs?	6. Visual inspection
7. Is the refrigerant gas short?	7. Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

a. In heating operation

Check items (Possible causes)	Judgment
1. Does the outdoor unit fan run normally?	1. Visual inspection
2. Is the outdoor unit heat exchanger clogged?	2. Visual inspection
3. Is the outdoor unit installed under such conditions that short circuit easily occurs?	3. Visual inspection
4. Is there clogging before or after the EV (capillary)?	4. Check if there is a temperature difference before and after EV (capillary). Check if the main valve unit of EV operates (by noise, vibration).
5. Is the check valve clogged?	5. Check if there is a temperature difference before and after check valve. →If YES, the check valve is caught.
6. Is the LPS normal?	6. Check continuity using a tester.
7. Is the refrigerant gas short?	7. Conduct refrigerant collection and vacuum drying, and then add proper amount refrigerant.

Check No. 5 **Check for Clogged Points**

Temperature differences must occur before or after the clogged points!



(S2674)

Check points		Check factor	Causes	Remedies
①	Around expansion mechanism	Temperature difference	· Dust · Choked moisture · Reduced effective pipe diameter due to adherent contamination, etc.	Replace the expansion valve.
②	Accumulator	Frosting	· Choked moisture	Blow a nitrogen gas, and then replace the refrigerant.
③	Distributor	Temperature difference	· Dust · Choked moisture · Reduced effective pipe diameter due to adherent contamination, etc.	Replace the heat exchanger or distributor.
④	Field piping	Temperature difference	· Collapsed pipe	Replace the pipe.
⑤	Stop valve	Temperature difference	· The stop valve is not fully open.	Open the stop valve fully.

Note: RZQ200/250C7Y1B has no accumulator. Please refer to the piping diagram.

Check No. 6 Check for Thermistors

Disconnect the thermistor connector from PC board, then measure the resistance by using a tester.

Thermistor temperature and resistance measurement

Unit : kΩ

Temperature °C	A	B	Temperature °C	A	B
-6.0	90.8	88.0	28.0	17.6	17.0
-4.0	81.7	79.1	30.0	16.2	15.6
-2.0	73.5	71.1	32.0	14.8	4.2
0.0	66.3	64.1	34.0	13.6	13.1
2.0	59.8	57.8	36.0	12.5	12.0
4.0	54.1	52.3	38.0	11.5	11.1
6.0	48.9	47.3	40.0	10.6	10.3
8.0	44.3	42.9	42.0	9.8	9.5
10.0	40.2	38.9	44.0	9.1	8.8
12.0	36.5	35.3	46.0	8.4	8.2
14.0	33.2	32.1	48.0	7.8	7.6
16.0	30.2	29.2	50.0	7.2	7.0
18.0	27.5	26.6	52.0	6.9	6.7
20.0	25.1	24.3	54.0	6.2	6.0
22.0	23.0	22.2	56.0	5.7	5.5
24.0	21.0	20.3	58.0	5.3	5.2
26.0	19.2	18.5	Application	● Heat exchanger (Indoor/ Outdoor units) ● Suction air ● Remote controller ●Air ●Outdoor air ●Suction pipe	●Radiator fin

Temperature (°C)	Discharge Pipe (kΩ)	Temperature (°C)	Discharge Pipe Sensor (kΩ)	Temperature (°C)	Discharge Pipe Sensor (kΩ)	Temperature (°C)	Discharge Pipe Sensor (kΩ)
-6.0	1120.0	40.0	118.7	94.0	15.8	140.0	4.1
-4.0	1002.5	42.0	109.0	96.0	14.8	142.0	3.9
-2.0	898.6	44.0	100.2	98.0	13.9	144.0	3.7
0.0	806.5	46.0	92.2	100.0	13.1	146.0	3.5
2.0	724.8	48.0	84.9	102.0	12.3	148.0	3.3
4.0	652.2	50.0	78.3	104.0	11.5	150.0	3.2
6.0	587.6	52.0	72.2	106.0	10.8	152.0	3.0
8.0	530.1	54.0	66.7	108.0	10.2	154.0	2.9
10.0	478.8	56.0	61.6	110.0	9.6	156.0	2.7
12.0	432.9	58.0	57.0	112.0	9.0	158.0	2.6
14.0	392.0	60.0	52.8	114.0	8.5	160.0	2.5
16.0	355.3	62.0	48.9	116.0	8.0	162.0	2.3
18.0	322.4	64.0	45.3	118.0	7.6	164.0	2.5
20.0	292.9	66.0	42.0	120.0	7.1	166.0	2.1
22.0	266.3	68.0	39.0	122.0	6.7	168.0	2.0
24.0	242.5	70.0	36.3	124.0	6.4	170.0	1.9
26.0	221.0	72.0	33.7	126.0	6.0	172.0	1.9
28.0	201.6	74.0	31.4	128.0	5.7	174.0	1.8
30.0	184.1	76.0	29.2	130.0	5.4	176.0	1.7
32.0	168.3	78.0	27.2	132.0	5.4	178.0	1.6
34.0	154.0	80.0	25.4	134.0	4.8	180.0	1.5
36.0	141.0	82.0	23.7	136.0	4.6		
38.0	129.3	92.0	16.9	138.0	4.3		

Check No. 7

Method of Checking the Inverter's Power Transistors and Diode Modules

Checking failures in power semiconductors mounted on inverter PC board (A3P)

Check the power semiconductors mounted on the inverter PC board by the use of a multiple tester.

<Items to be prepared>

- Multiple tester : Prepare the analog type of multiple tester.
  For the digital type of multiple tester, those with diode check function are available for the checking.

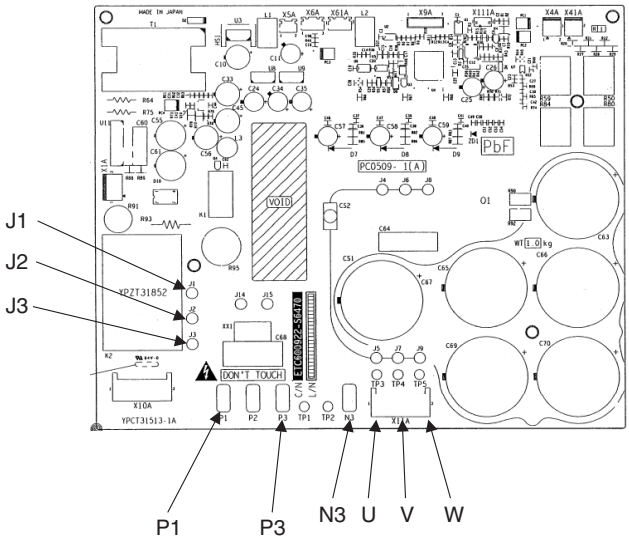
<Test points>

- Turn OFF the power supply. Then, after a lapse of 10 minutes or more, make measurement of resistance.

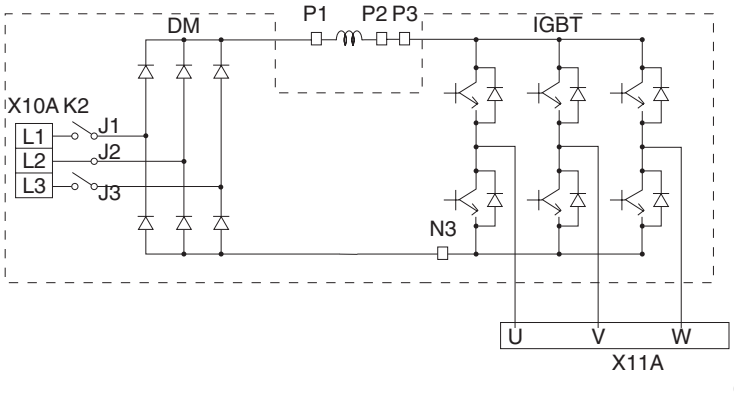
<Preparation>

- To make measurement, disconnect all connectors and terminals.

Inverter PC board



Electronic circuit



(V2895)

- According to the checking aforementioned, it is probed that the malfunction results from the faulty inverter.The following section describes supposed causes of the faulty inverter.
- Faulty compressor (ground leakage)
- Faulty fan motor (ground leakage)
- Entry of conductive foreign particles
- Abnormal voltage (e.g. overvoltage, surge (thunder), or unbalanced voltage)

In order to replace the faulty inverter, be sure to check for the points aforementioned.

1. Power module checking

When using the analog type of multiple tester, make measurement in resistance measurement mode in the x1kΩ range.

No.	Measuring point		Criterion	Remark
	+	-		
1	P3	U	2 to 15kΩ	
2	P3	V		
3	P3	W		
4	U	P3	Not less than 15kΩ (including)	It may take time to determine the resistance due to capacitor charge or else.
5	V	P3		
6	W	P3		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	2 to 15kΩ	
11	V	N3		
12	W	N3		

When using the digital type of multiple tester, make measurement in diode check mode (→|—).

No.	Measuring point		Criterion	Remark
	+	-		
1	P3	U	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
2	P3	V		
3	P3	W		
4	U	P3	0.3 to 0.7V	
5	V	P3		
6	W	P3		
7	N3	U		
8	N3	V		
9	N3	W		
10	U	N3	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
11	V	N3		
12	W	N3		

2. Diode module checking

When using the analog type of multiple tester, make measurement in resistance measurement mode in the x1kΩ range.

No.	Measuring point		Criterion	Remark
	+	-		
1	P1	J1	2 to 15kΩ	
2	P1	J2		
3	P1	J3		
4	J1	P1	Not less than 15kΩ (including)	It may take time to determine the resistance due to capacitor charge or else.
5	J2	P1		
6	J3	P1		
7	N3	J1		
8	N3	J2		
9	N3	J3		
10	J1	N3	2 to 15kΩ	
11	J2	N3		
12	J3	N3		

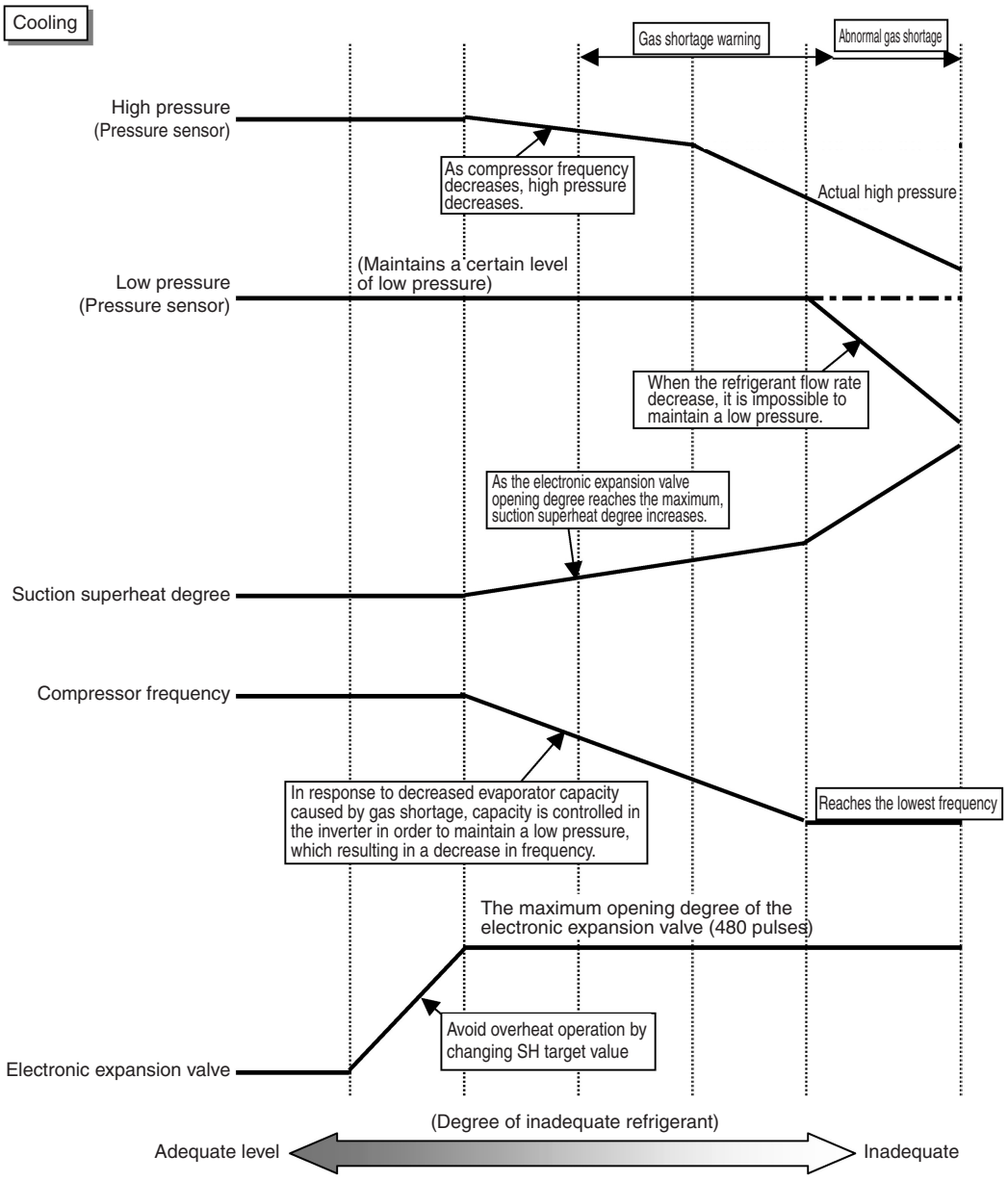
When using the digital type of multiple tester, make measurement in diode check mode (→|—).

No.	Measuring point		Criterion	Remark
	+	-		
1	P1	J1	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
2	P1	J2		
3	P1	J3		
4	J1	P1	0.3 to 0.7V	
5	J2	P1		
6	J3	P1		
7	N3	J1		
8	N3	J2		
9	N3	J3		
10	J1	N3	Not less than 1.2V (including)	It may take time to determine the voltage due to capacitor charge or else.
11	J2	N3		
12	J3	N3		

Check No. 8 **Check for inadequate refrigerant**

As criteria for judging whether refrigerant is inadequate or not, refer to the following operating conditions.

<Diagnosis of inadequate refrigerant>
In cooling operation
(1) As suction superheat degree increases due to gas shortage, the electronic expansion valve tends to open (opens fully) in order to avoid overheat operation.
(2) In response to decreased evaporator capacity caused by gas shortage, capacity is controlled in the inverter in order to maintain low pressure, which results in a decrease in frequency.
(3) Because of (1) and (2) above, the compressor frequency decreases despite a large difference (large load) between temperature set by the remote controller and indoor suction temperature, resulting that cooling capacity becomes unavailable.
(4) If gas shortage worsens, the electronic expansion valve remains fully open and suction superheat degree further increases. In addition, because the compressor frequency drops to the level of the lowest frequency (52 Hz) and the refrigerant flow rate decrease, low pressure cannot be maintained.



<Diagnosis of inadequate refrigerant>

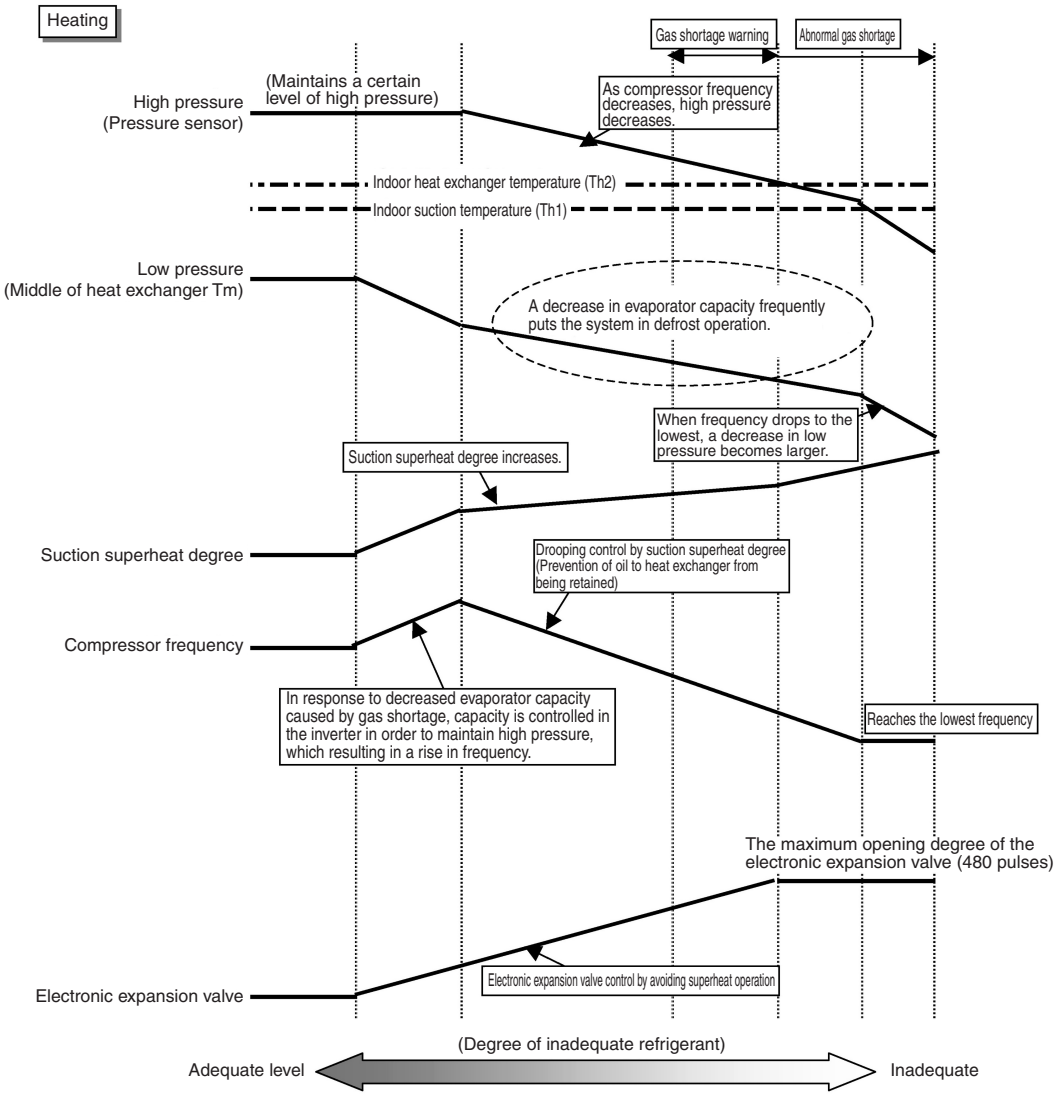
In heating operation

(1) As suction superheat degree increases due to gas shortage, the electronic expansion valve tends to open (opens fully) to avoid overheat operation.

(2) As suction superheat degree increases due to gas shortage, compressor frequency decreases because suction superheat degree is controlled in order to prevent oil to the outdoor heat exchanger from being retained.

(3) Because of (1) and (2) above, evaporator capacity and compressor frequency decrease despite a large difference (large load) between temperature set by the remote controller and indoor suction temperature, resulting that high pressure cannot be maintained and heating capacity becomes unavailable. Also a decrease in evaporator capacity frequently puts the system in defrost operation.

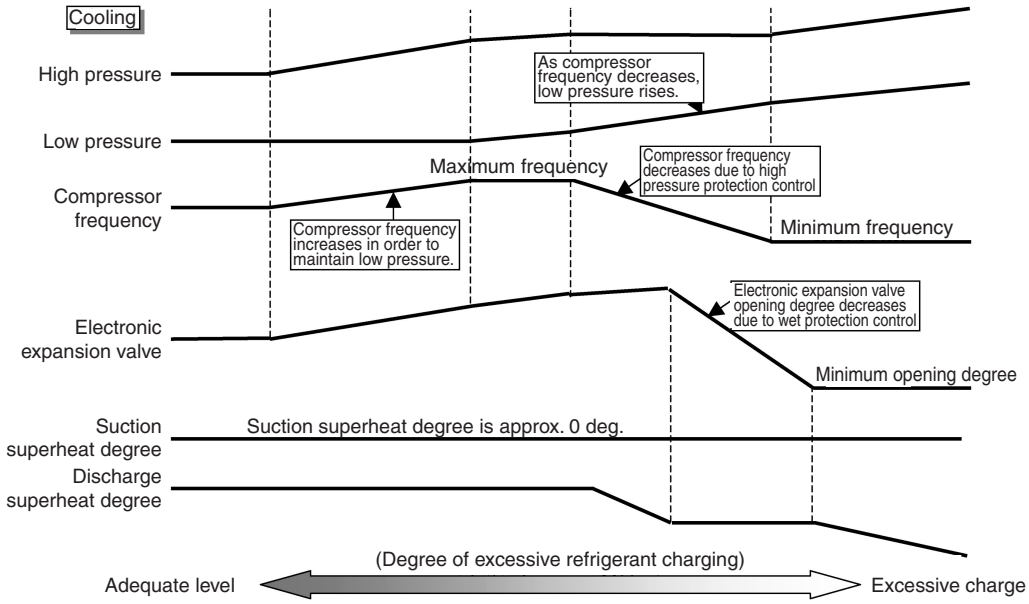
(4) If gas shortage worsens, high pressure becomes smaller than saturated pressure equivalent to indoor heat exchanger temperature (or indoor suction temperature).

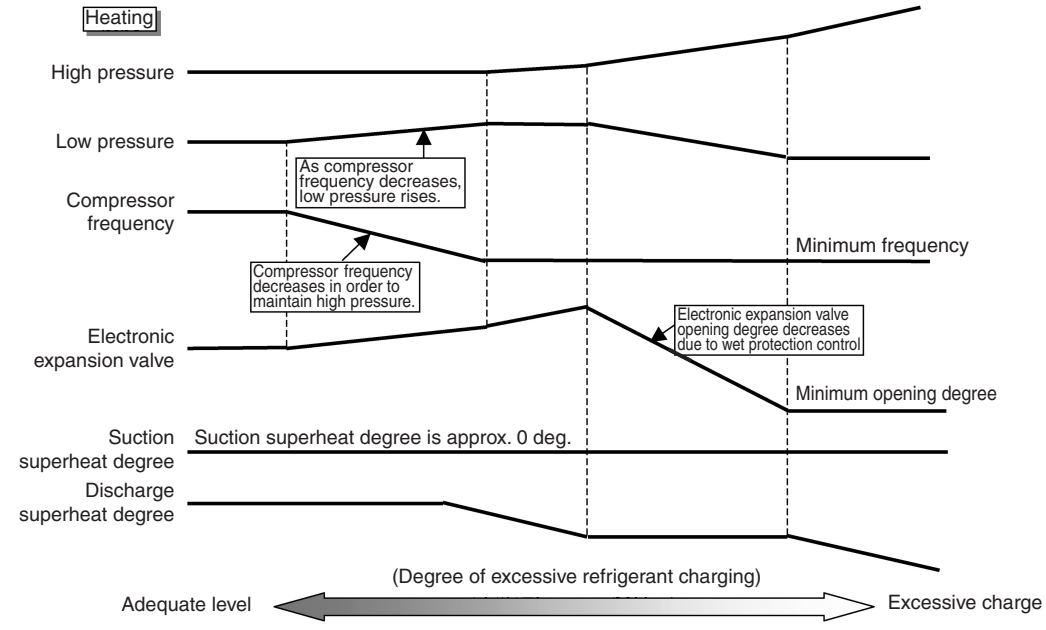


Check No. 9 **Check for excessive refrigerant charging**

As criteria for judging whether refrigerant is excessively charged or not, refer to the following operating conditions.

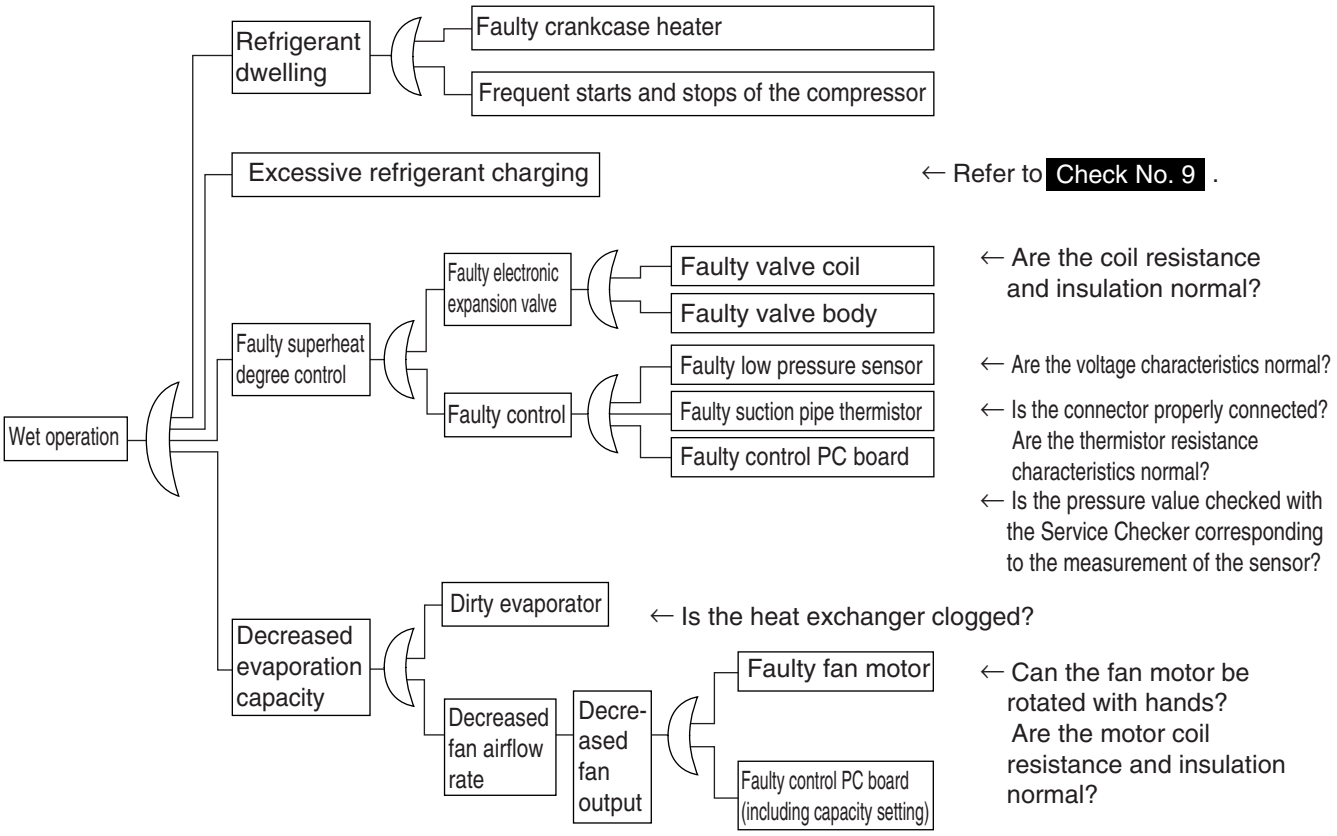
<Diagnosis of excessive refrigerant charging>
In cooling operation
(1) Because high pressure rises due to excessive charging, overload control is carried out and capacity tends to run short.
(2) Considering pressure load, compressor discharge pipe temperature is low.
(3) Subcooled degree of condensate liquid becomes large. Therefore, temperature of blown air passing through subcooled part decreases in heating operation.





Check No. 10 Check for factors causing wet operation

Referring to the Fault Tree Analysis (FTA) shown below, identify the faulty points.



∗: Reference values for superheat degree to be used in the judgment of wet operation
① Suction pipe superheat degree: 4˚C or more ② Discharge pipe superheat degree: 5˚C or less
(The values above must be used only for reference purposes. Even it is operated within the range above, operation may be normal in other conditions.)

Part 7
Appendix

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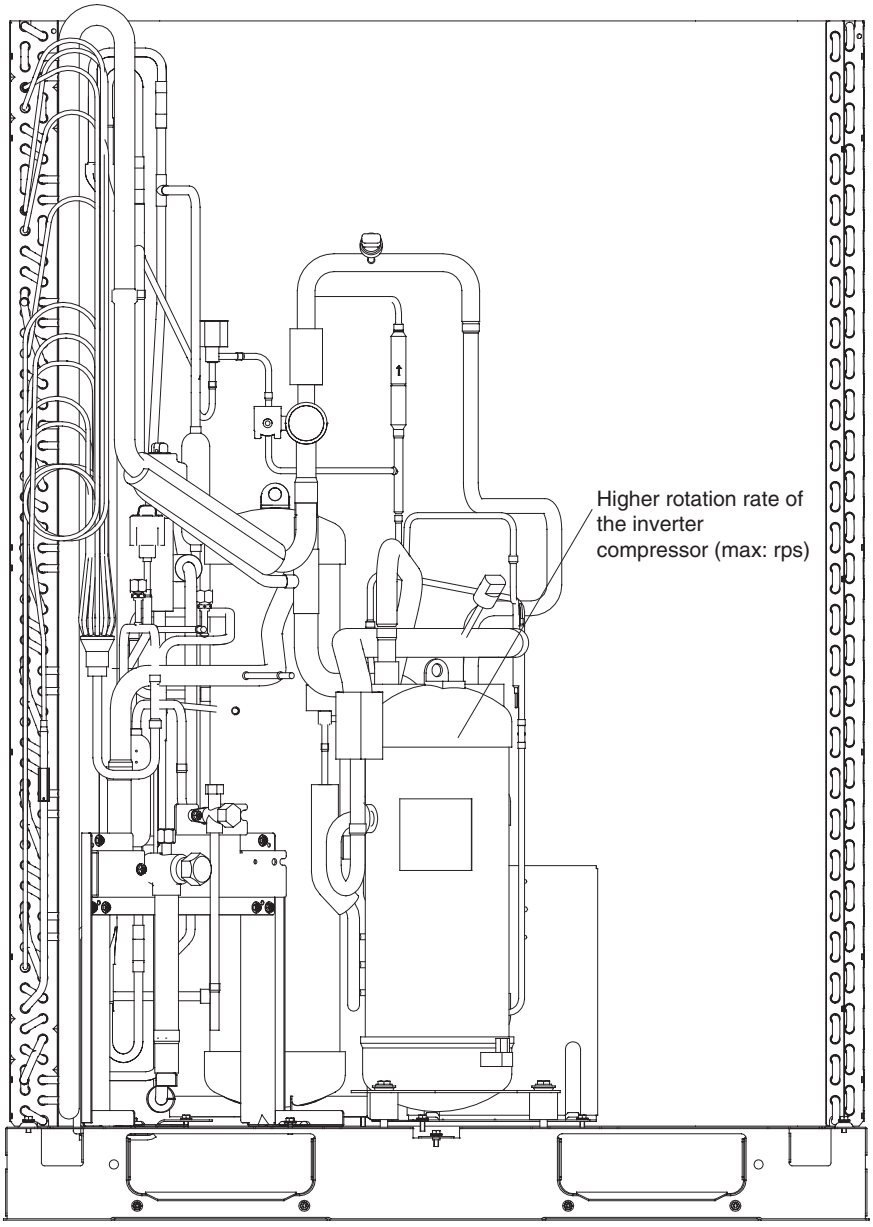
1. Items Improved from the Existing Models

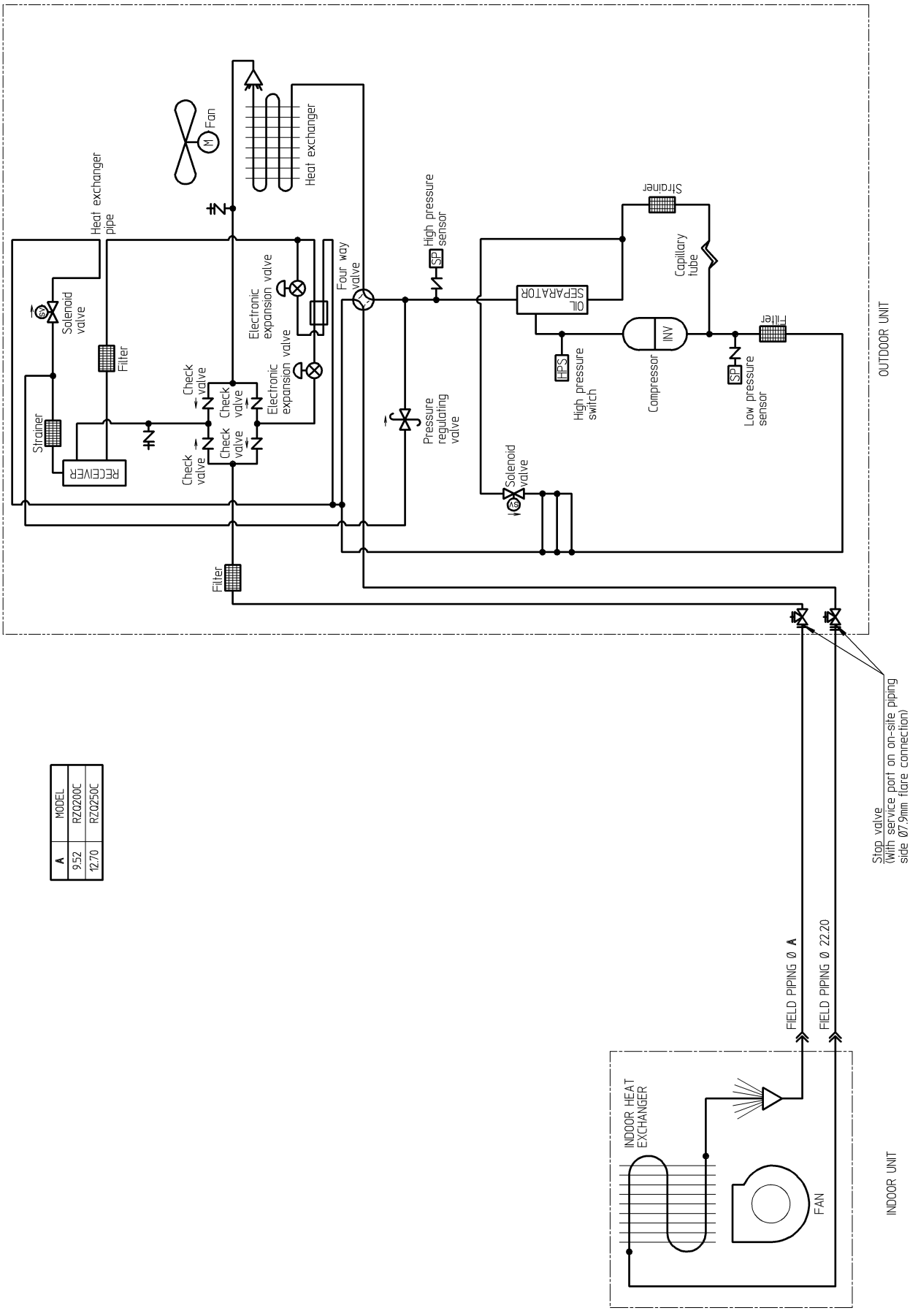
RZQ200 · 250C7Y1B



2. Piping Diagrams

2.1 Pair

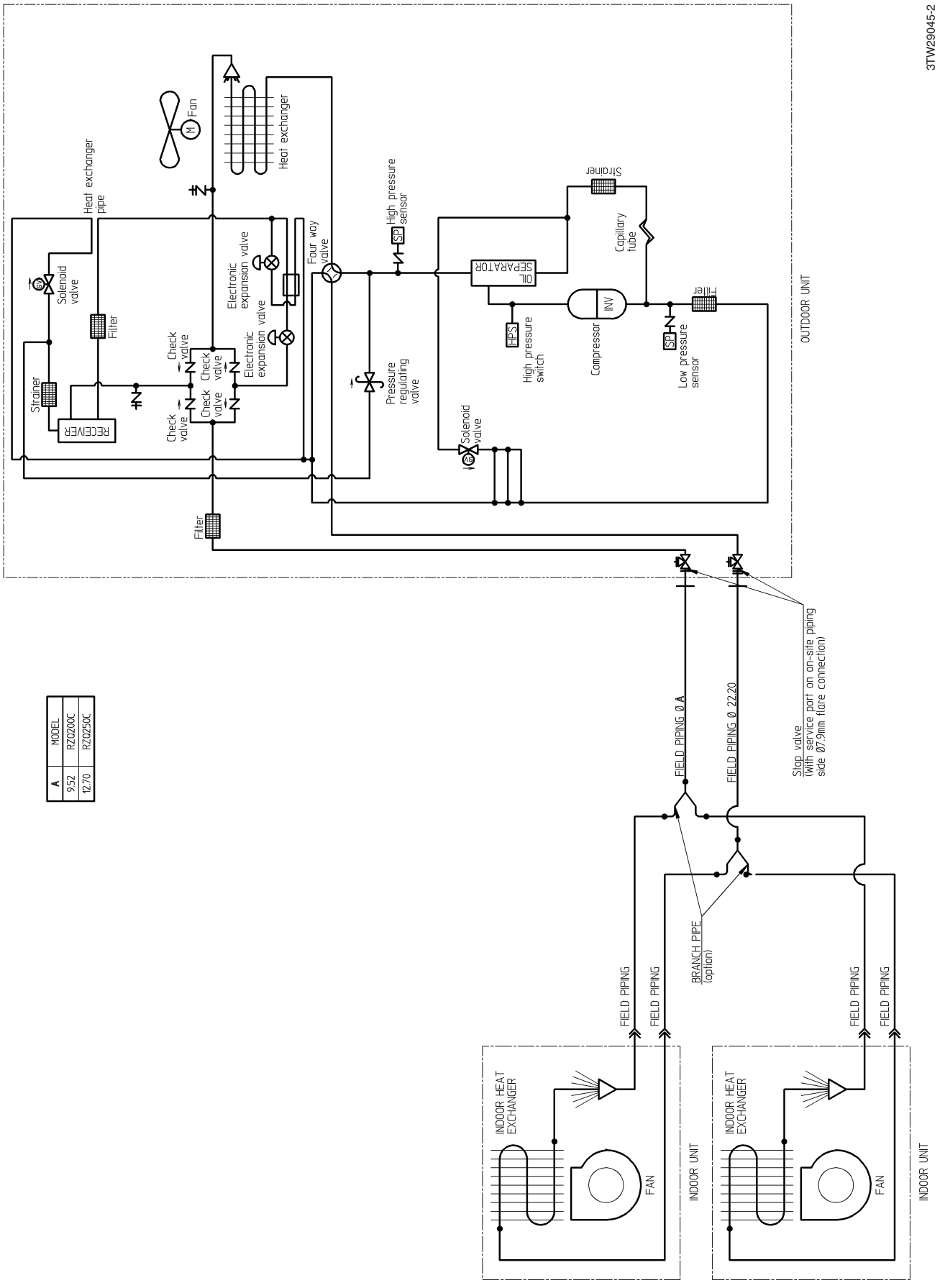
RZQ200 · 250C7Y1B



A	MODEL
9.52	RZQ200C
12.70	RZQ250C

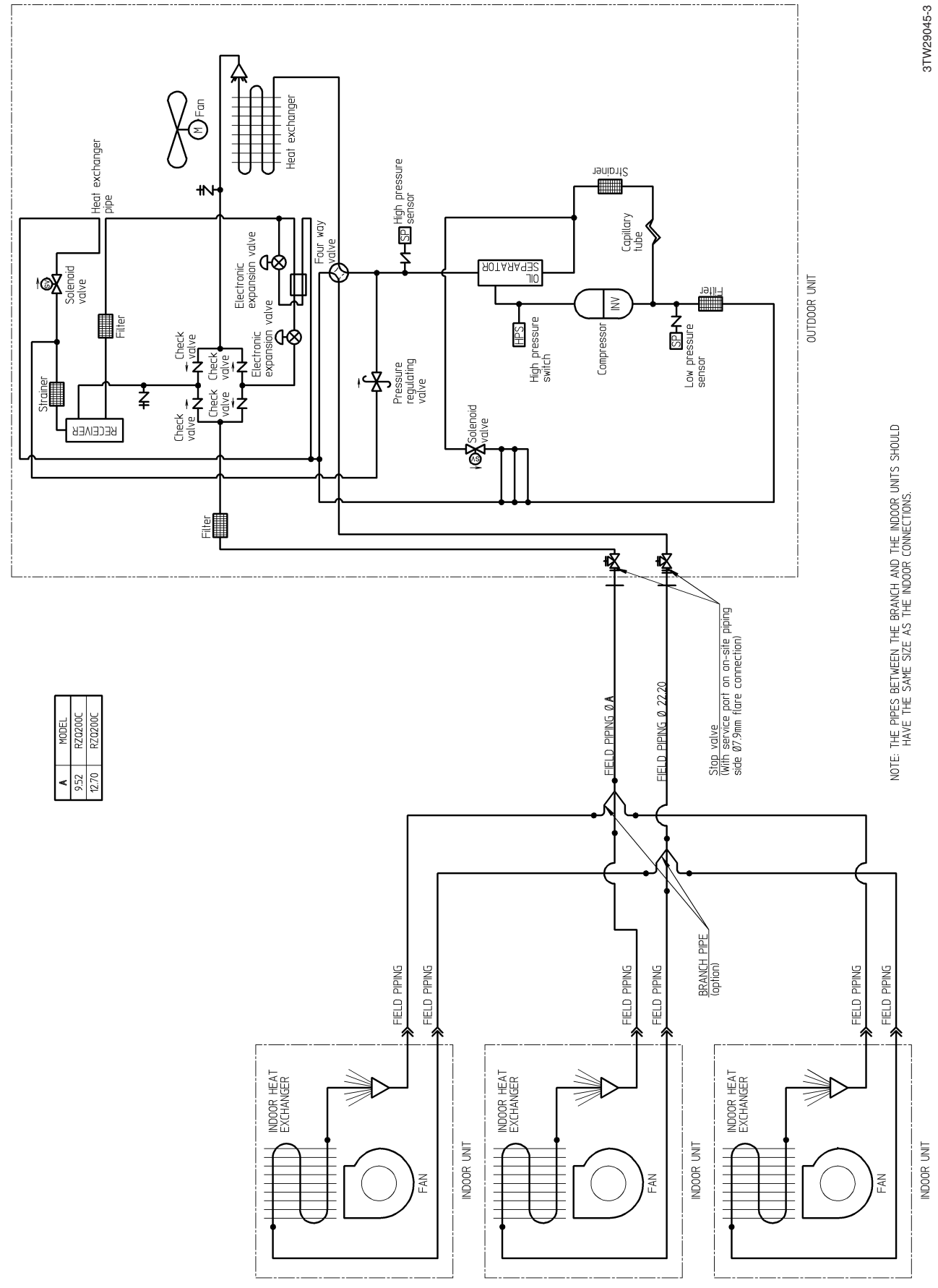
2.2 Twin

RZQ200 · 250C7Y1B



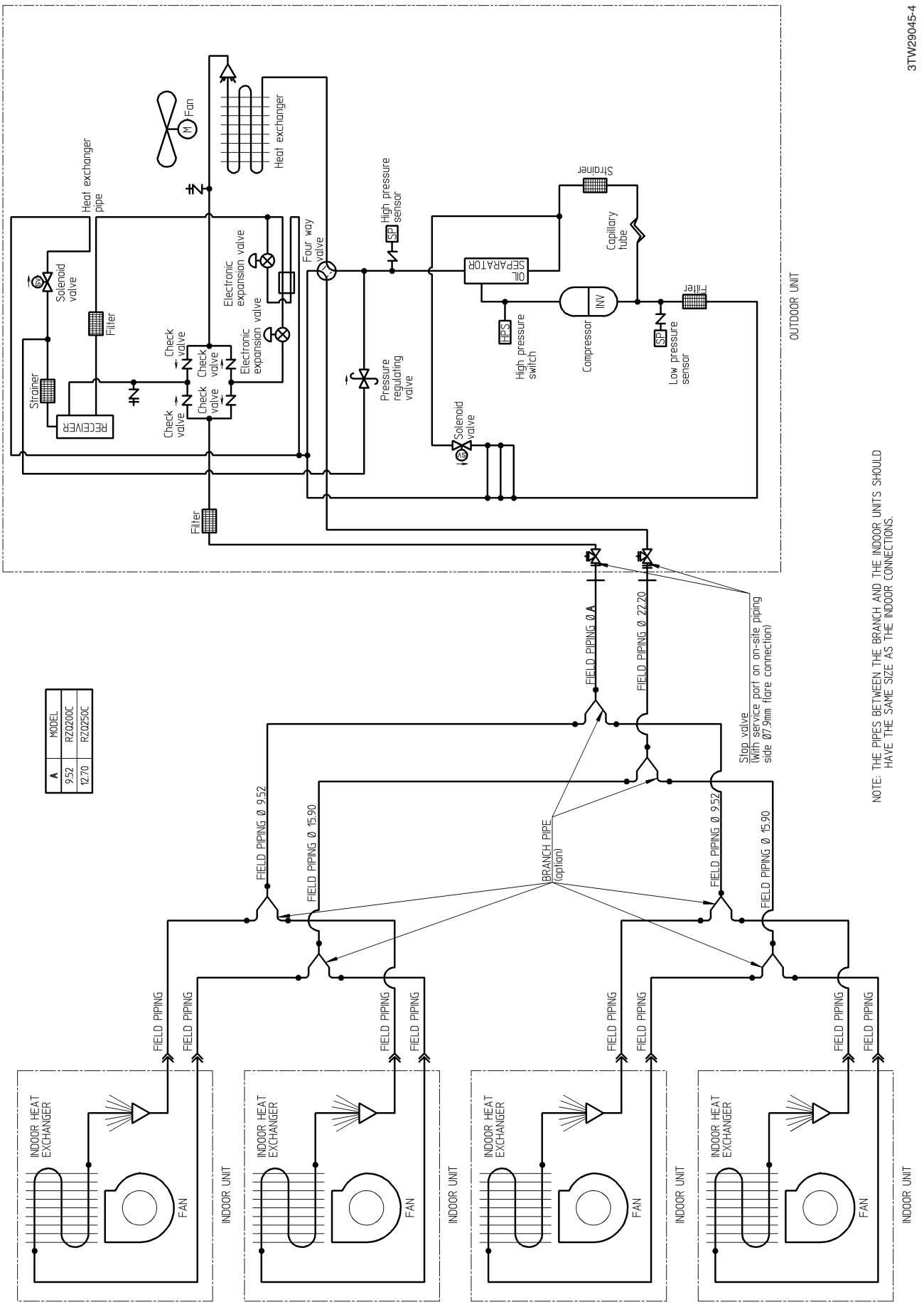
2.3 Triple

RZQ200 · 250C7Y1B



2.4 Double Twin

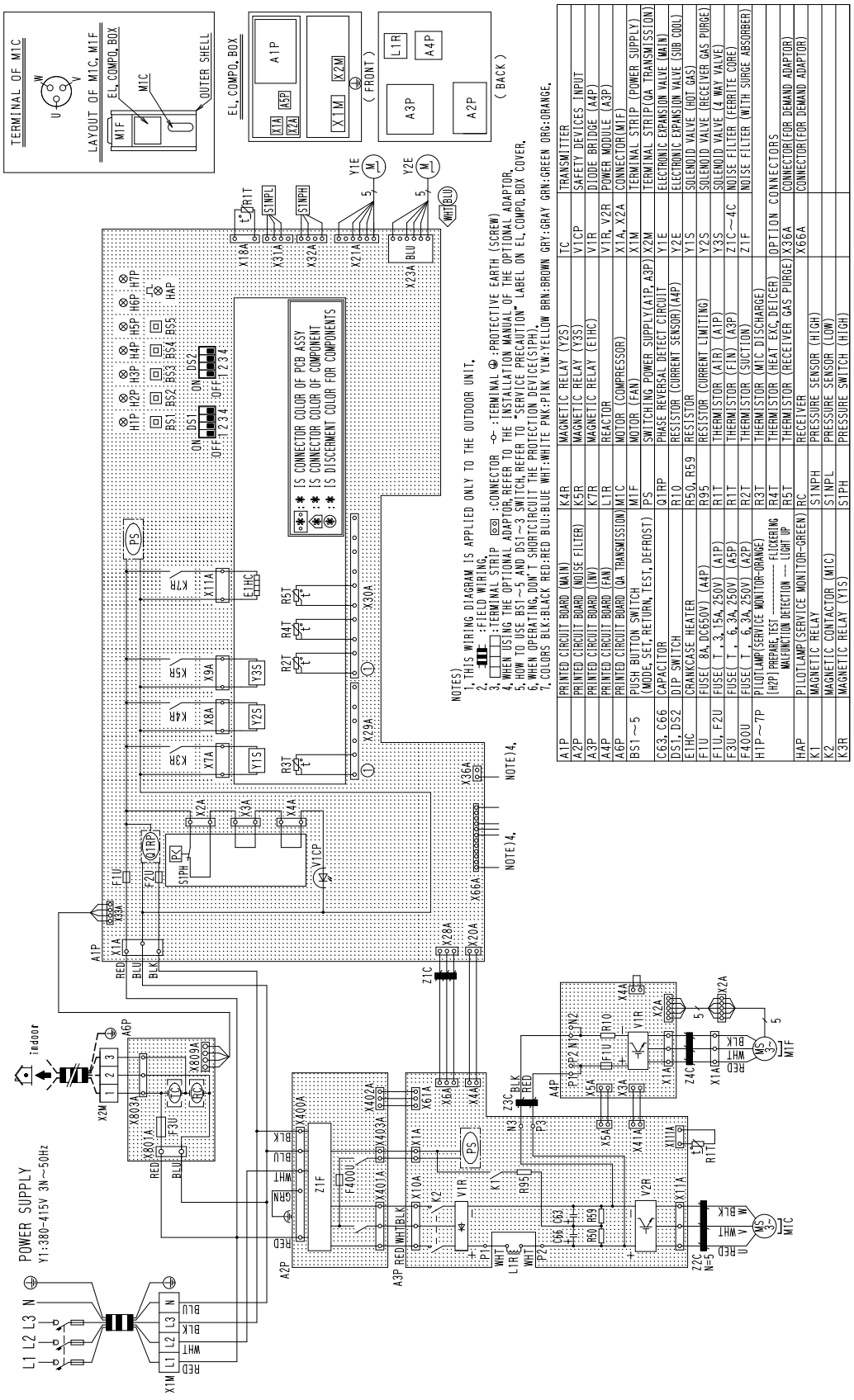
RZQ200 · 250C7Y1B



3. Wiring Diagrams

3.1 Outdoor Unit

RZQ200 · 250C7Y1B



A1P	PRINTED CIRCUIT BOARD (MAIN)	K4R	MAGNETIC RELAY (Y2S)	TC
A2P	PRINTED CIRCUIT BOARD (NOISE FILTER)	K5R	MAGNETIC RELAY (Y3S)	V1CP
A3P	PRINTED CIRCUIT BOARD (INV)	K7R	MAGNETIC RELAY (E1HC)	V1R
A4P	PRINTED CIRCUIT BOARD (FAN)	L1R	REACTOR	V1R, V2R
A6P	PRINTED CIRCUIT BOARD (QA TRANSMISSION)	M1C	MOTOR (COMPRESSOR)	X1A, X2A
BS1~5	PUSH BUTTON SWITCH (MODE, SET, RETURN, TEST, DEFROST)	M1F	MOTOR (FAN)	X1M
C63, C66	CAPACITOR	PS	SWITCHING POWER SUPPLY(A1P, A3P)	X2M
DS1, DS2	DIP SWITCH	Q1RP	PHASE REVERSAL DETECT CIRCUIT	Y1E
E1HC	CRANKCASE HEATER	R10	RESISTOR (CURRENT SENSOR)(A4P)	Y2E
F1U	FUSE(8A, DC650V) (A4P)	R50, R59	RESISTOR	Y1S
F1U, F2U	FUSE(T, 3.15A, 250V) (A1P)	R95	RESISTOR (CURRENT LIMITING)	Y2S
F3U	FUSE(T, 6.3A, 250V) (A5P)	R1T	THERMISTOR (AIR) (A1P)	Y3S
F400U	FUSE(T, 6.3A, 250V) (A2P)	R2T	THERMISTOR (FIN) (A3P)	Z1C~4C
H1P~7P	PILOT LAMP(SERVICE MONITOR-ORANGE) (H2P) PREPARE TEST ---- FLICKERING MALFUNCTION DETECTION --- LIGHT UP	R3T	THERMISTOR (SUCTION)	Z1F
		R4T	THERMISTOR (M1C DISCHARGE)	OPTION CONNECTORS
		R5T	THERMISTOR (HEAT EXC. DEICER)	X36A
HAP	PILOT LAMP(SERVICE MONITOR-GREEN)	RC	THERMISTOR (RECEIVER GAS PURGE)	X66A
K1	MAGNETIC RELAY	S1NPH	RECEIVER	
K2	MAGNETIC CONTACTOR (M1C)	S1NPL	PRESSURE SENSOR (HIGH)	
K3R	MAGNETIC RELAY (Y1S)	S1PH	PRESSURE SENSOR (LOW)	
			PRESSURE SWITCH (HIGH)	

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Part 8
Removal Procedure

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1.8 Procedure for Removal of Thermistor 202

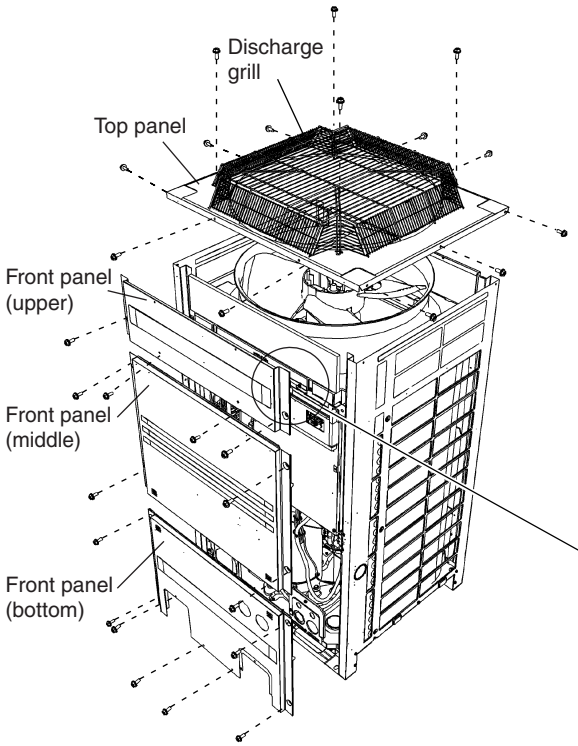
1. RZQ200 · 250C7Y1B

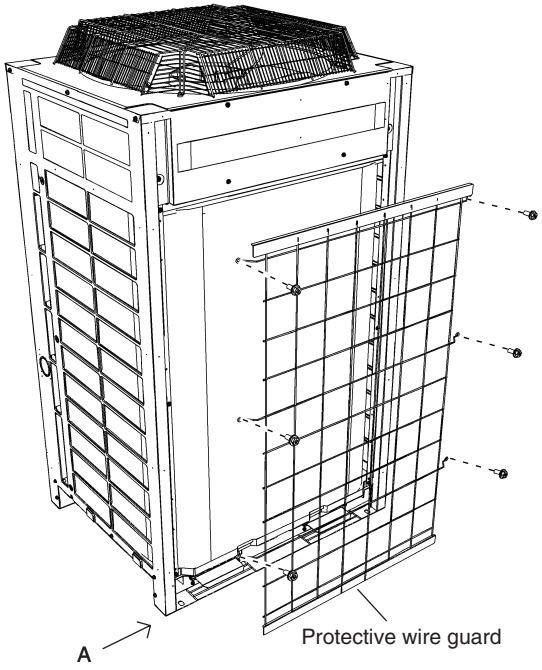
1.1 Procedure for Removal Related to Outside Panel

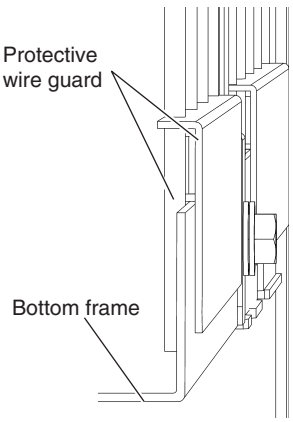
Procedure

⚠ **Warning** **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

Step	Procedure	Points
1. Remove the top panel, etc.		■ It is possible to remove the top panel assembly as a whole without dismounting the discharge grill from the top panel.
1	Unscrew the four screws and pull up the discharge grill.	
2	Unscrew the ten screws and pull up the top panel.	■ When using a stepladder, place it in a secure manner for safe operation.
2. Remove the front panel (upper)		■ There is a hook on the both sides of the front panel (upper).
1	Unscrew the five fixing screws and pull out the front panel (upper).	
3. Remove the front panel		
1	Unscrew the four screws and pull out the front panel (middle).	
2	Unscrew the seven screws and pull out the front panel (bottom).	
4. Remove the protective wire guard		■ View from Arrow A
1	Unscrew the six screws, tilt the upper part of the protective wire guard toward you and pull up the protective wire guard.	



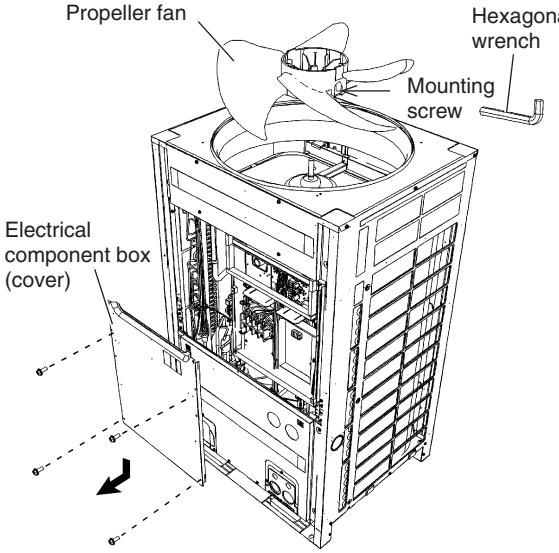
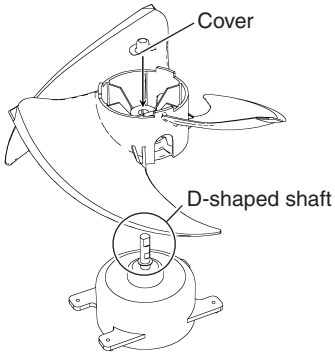
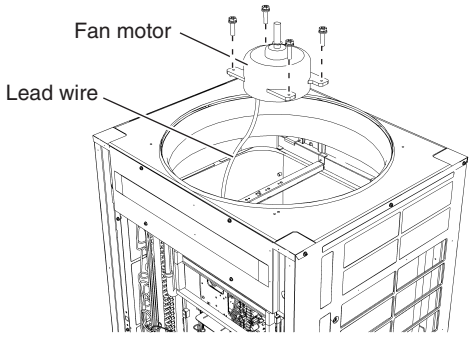
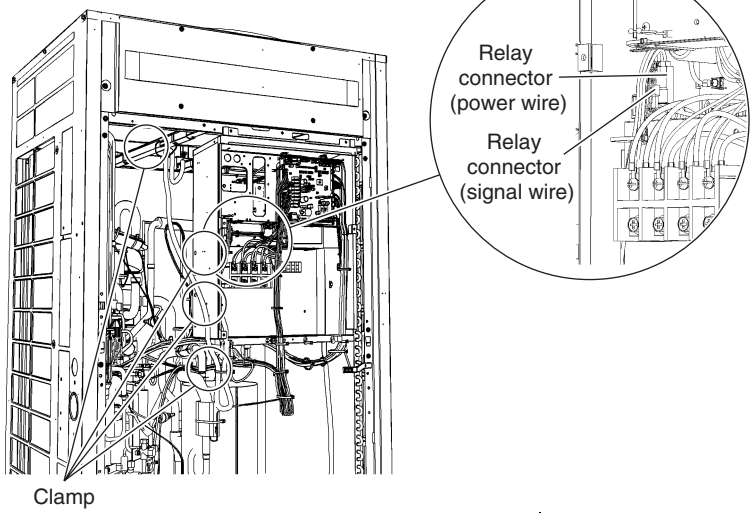




1.2 Procedure for Removal of Fan Motor

Procedure

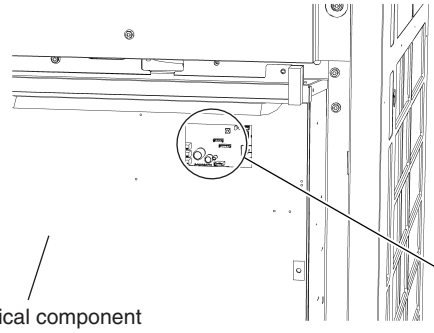
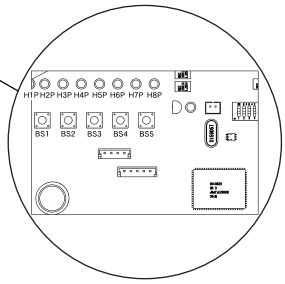
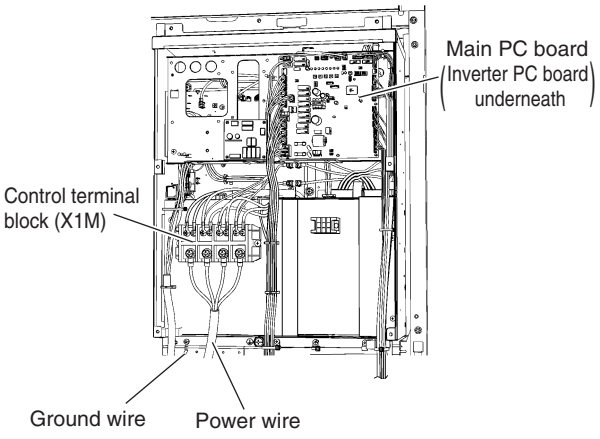
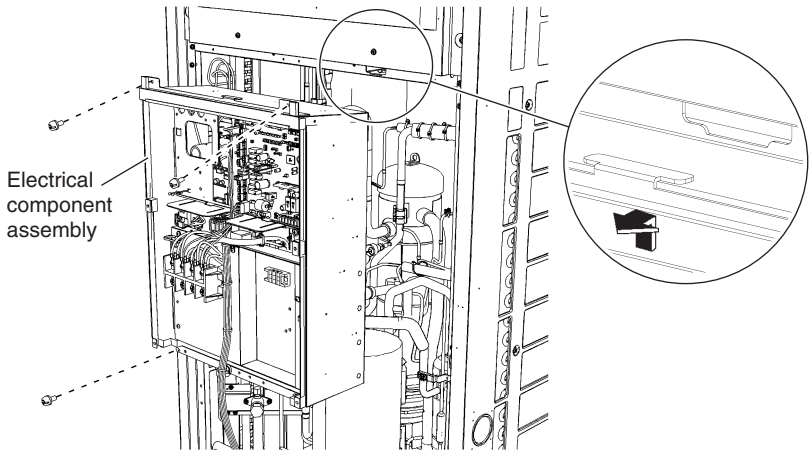
Warning **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

Step	Procedure	Points
■ Remove the top panel assy and front panel (middle) according to the procedure for "Removal Related to Outside Panel".		
1. Remove the propeller fan		
1 Loosen the four mounting screws (M10) using a hexagonal wrench (5mm).		■ Precaution for mounting the fan: The hub has a D-shaped hole. Use the D-shaped cover as a guide when mounting the fan.
2 Pull up the propeller fan.		
2. Remove the fan motor		
1 Unscrew the four screws, and then slide below the electrical component box (cover) to remove it.		
2 Remove the relay connector (X1A, X2A) for the fan motor (M1F).		■ Relay connector joint
3 Remove the tie-wraps that fix the lead wire.		
4 Unscrew the four bolts that fix the fan motor to remove the fan motor.		

1.3 Procedure for Removal of Electrical Component Assembly

Procedure

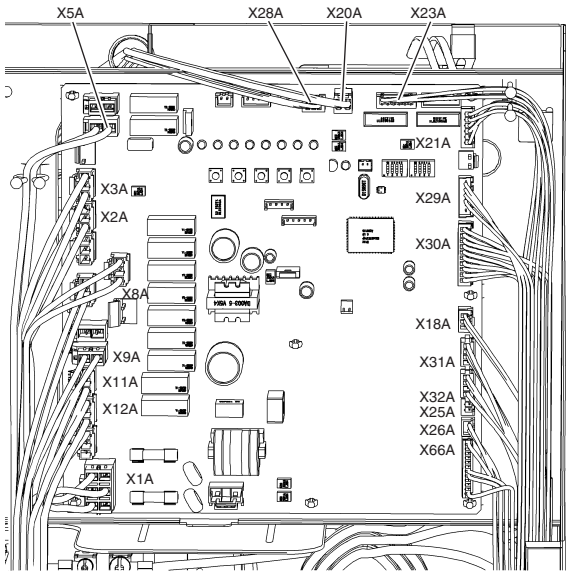
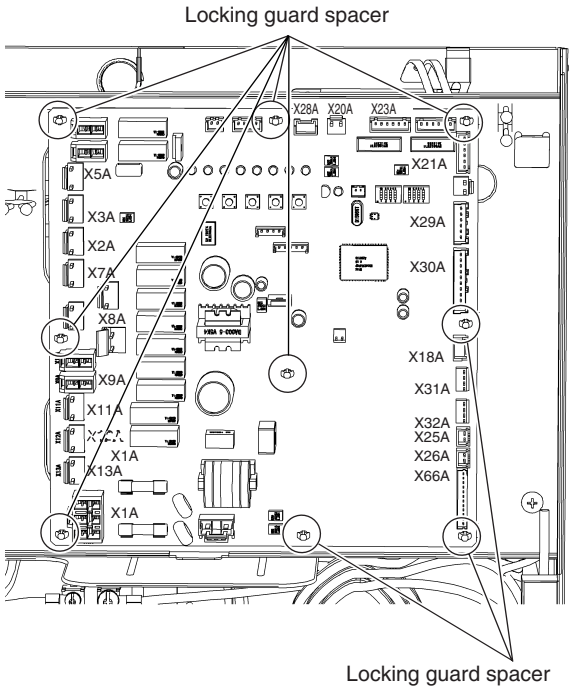
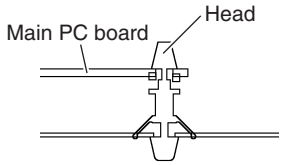
Warning **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

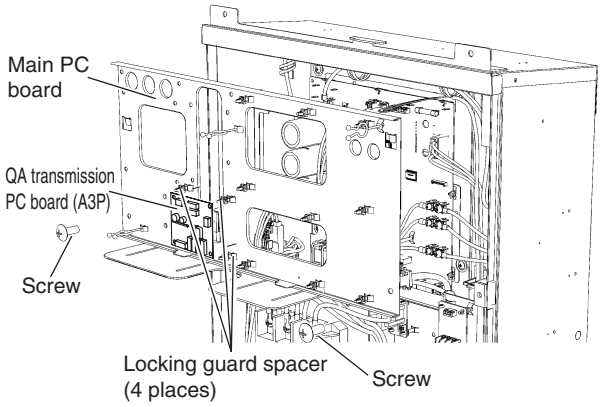
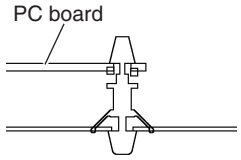
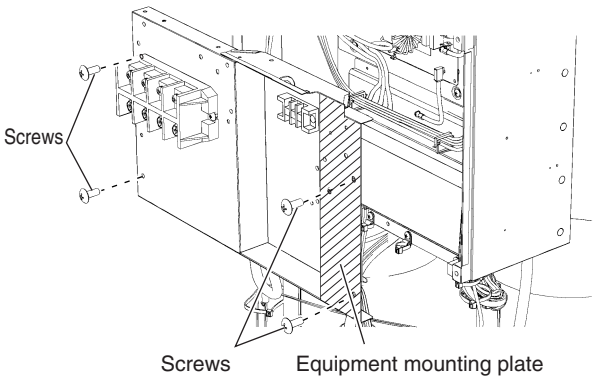
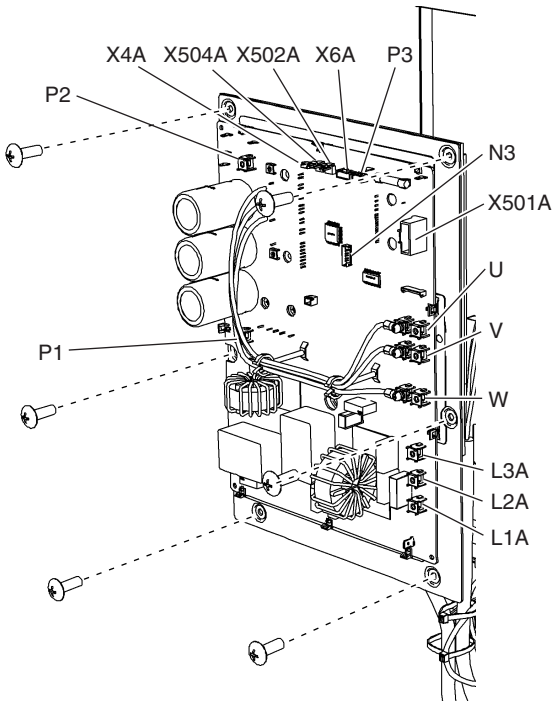
Step	Procedure	Points
■ Remove the front panel (middle, bottom) according to the procedure for "Removal Related to Outside Panel". ■ Unscrew the four screws, and then slide below the electrical component box (cover) to remove it.		■ The operation buttons and LED lamps can be viewed through the inspection hole. 
1. Remove the electrical component assembly		
1 Disconnect the connector from the main PC board(A1P). 2 Disconnect the relay connector for the fan motor (M1F). X1A, X2A 3 Remove the power wire from the terminal block (X1M). (three screws) 4 Disconnect three lead wires from the terminal block for the inverter compressor (M1C). (fasten terminal: 3 places) 5 Remove the indoor/ outdoor wiring from the control terminal block (X2M) on the main PC board. (three screws) 6 Remove the earth screw. 7 Unscrew the three screws and lift the top of the electrical component assembly to remove it.		■ Fix the top of the electrical component box. 

1.4 Procedure for Removal of PC Board

Procedure

Warning **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

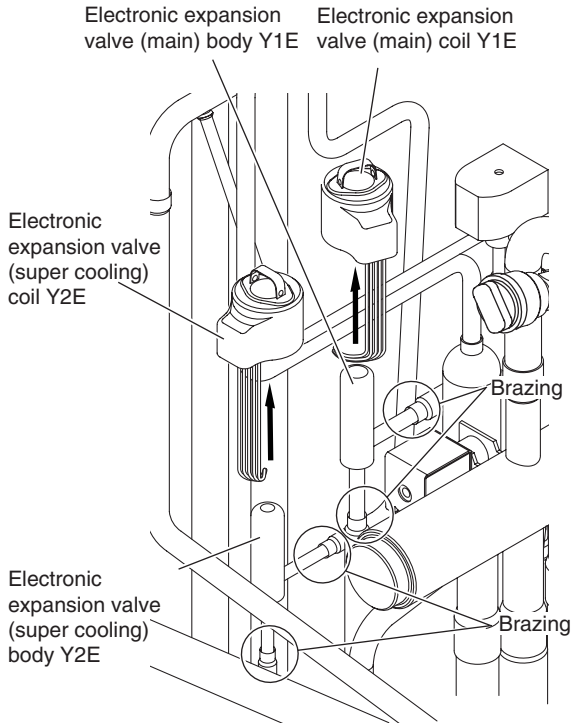
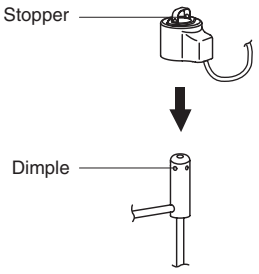
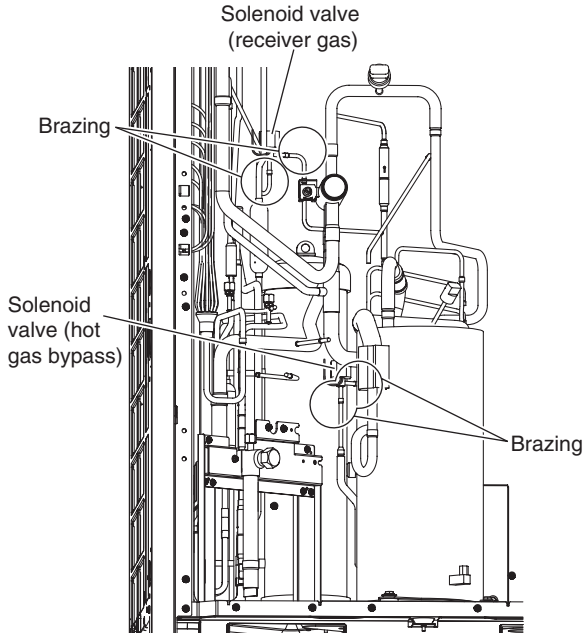
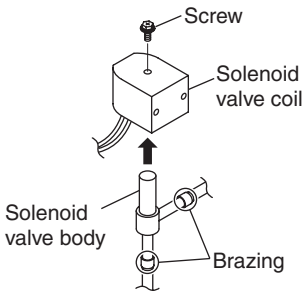
Step	Procedure	Points
■ Remove the front panel (middle) according to the procedure for "Removal Related to Outside Panel". ■ Unscrew the four screws, and then slide below the electrical component box (cover) to remove it.		
1. Remove the main PC board (A1P)		
1 Disconnect all the connectors from the main PC board. a. Connector × 20 b. Screw × 2 – 6		
2 Remove the head of the locking guard spacer to pull out the main PC board (A1P). (9 places)	 Removal from the locking guard spacer 	■ Sectional view of the mounting position of a locking guard spacer 

Step	Procedure	Points
2. Remove the QA transmission PC board (A3P)		■ Locking guard spacer mounting condition 
1 Disconnect the connector from the PC board (A3P). 2 Remove the screw and clamp of the earth wire connects with PC board. 3 Remove the head of locking guard spacer to pull out QA transmission PC board.		
3. Remove the inverter PC board (A2P)		
1 Unscrew the two screws to remove the main PC board mounting plate. 2 Unscrew the four screws to remove the equipment mounting plate. 3 Disconnect all the connectors from the inverter PC board. a. Connector × 9 b. Screws × 8 4 Unscrew the six screws to remove the inverter PC board (A2P).		

1.5 Procedure for Removal of Electronic Expansion Valve and Solenoid Valve

Procedure

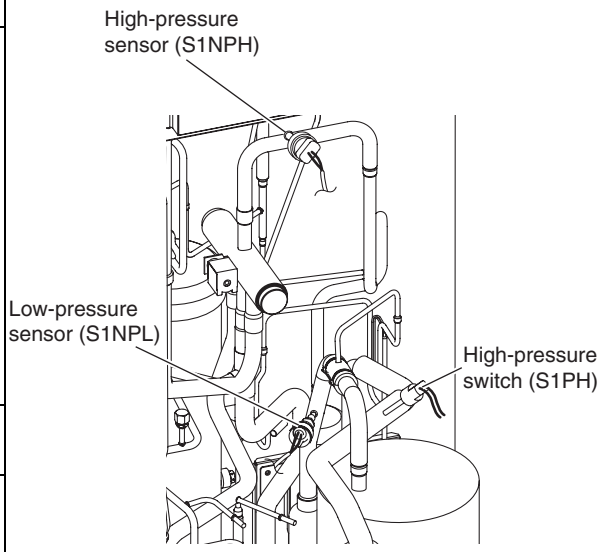
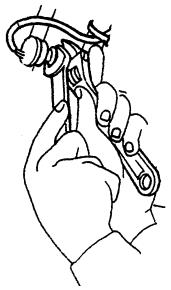
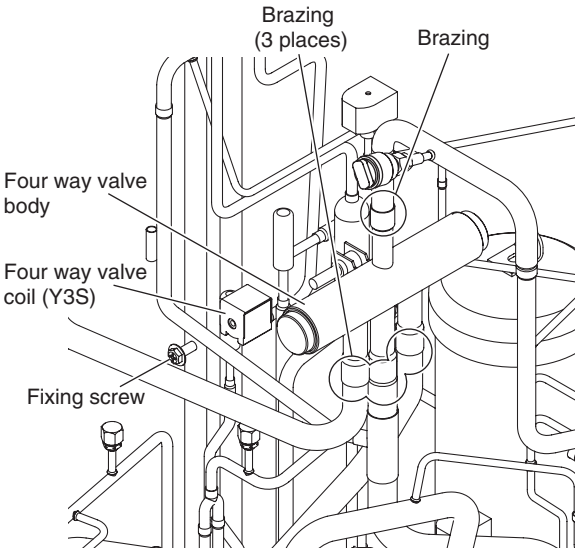
Warning **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

Step	Procedure	Points
1. Remove the electronic expansion valve		Preparations • Remove the front panel according to the procedure for the removal related to the outside panel. • Remove the electrical component box according to the procedure for removing the electrical component assembly. ■ Precaution for mounting the coil for the solenoid valve ⬇ Align the dimple of the solenoid valve and the stopper of the coil for the solenoid valve, and then push them in until you hear them click. 
1 Rotate the electronic expansion valve (main) coil by 20 – 30 degrees and then pull it up.		
2 Remove the brazing from the two places to remove the electronic expansion valve (main) body.		
3 Rotate the electronic expansion valve (super cooling) coil by 20 – 30 degrees and then pull it up.		
4 Remove the brazing from the two places to remove the electronic expansion valve (super cooling) body.		
2. Remove the solenoid valve		■ Removal of the solenoid valve 
1 Unscrew one screw to remove each coil for the solenoid valve.		
2 Remove the brazing from the two places to remove each body of the solenoid valve.		■ Before conducting brazing work, make sure that the refrigerant is completely removed. ■ For mounting the electric expansion valve body, conduct brazing work while cooling the valve with wet cloths or else in order to prevent the electric expansion valve from exceeding a temperature of 120°C.

1.6 Procedure for Removal of Pressure Switch, Pressure Sensor, etc.

Procedure

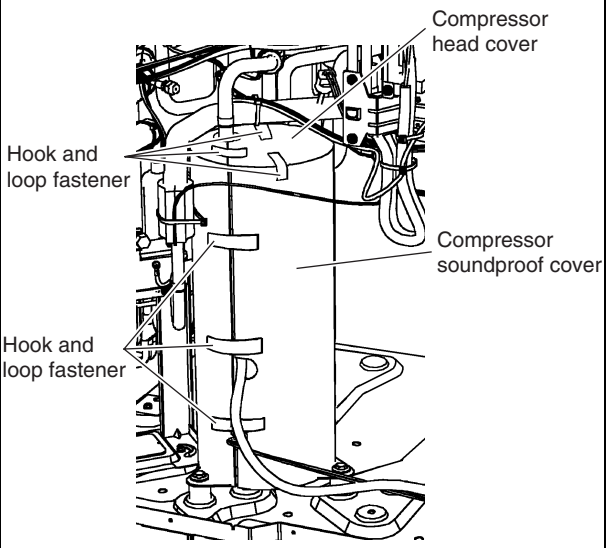
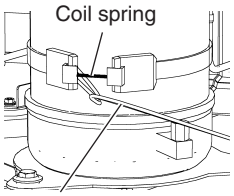
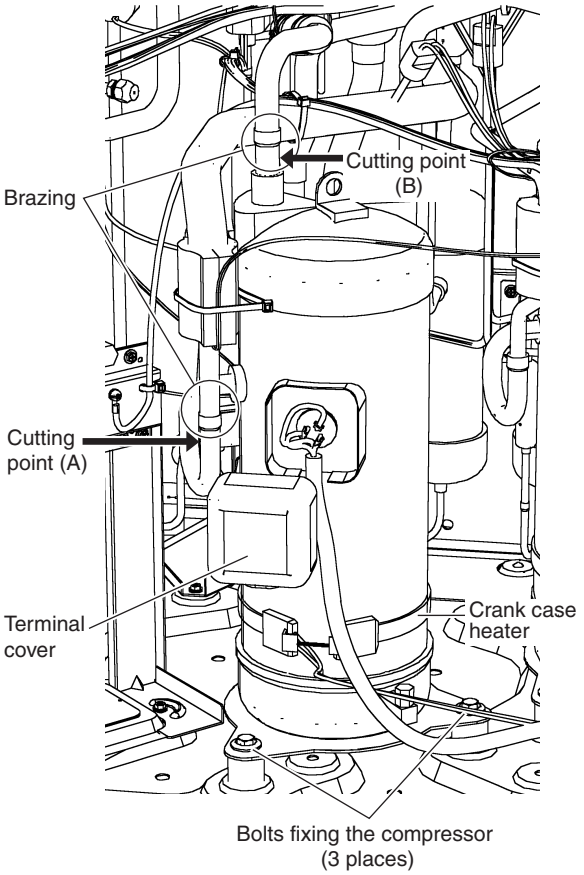
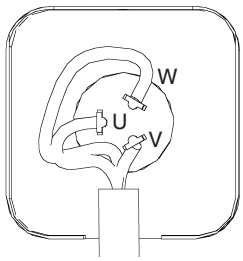
Warning **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

Step	Procedure	Points
1. Remove the pressure switch		Preparations • Remove the front panel according to the procedure for the removal related to the outside panel. • Remove the electrical component box according to the procedure for removing the electrical component assembly. ■ The pressure sensor can be removed without draining the refrigerant. (A check valve is provided.) ■ Use two spanners to remove the low-pressure sensor.
1 Disconnect the connector (X2A) for the high-pressure switch. 2 Remove the brazing from the one place to remove the high-pressure switch.		
2. Remove the pressure sensor		
1 Disconnect the connector (X32A) for the high-pressure sensor. 2 With two spanners, remove the high-pressure sensor. 3 Disconnect the connector (X31A) for the low-pressure sensor.		
3. Remove the four way valve		■ Before conducting brazing work, make sure that the refrigerant is completely removed. ■ Use an iron plate or other materials to protect other wiring from the direct impact of the flame of the gas welding machine. ■ For mounting the four wary valve body, conduct brazing work while cooling the valve with wet cloths or else in order to prevent the four wary valve from exceeding a temperature of 120ºC.
1 Disconnect the connector (X9A) for the four way valve coil. 2 Unscrew the screw to remove the four way valve coil. 3 Remove brazing from the four places and then remove the four way valve body.		

1.7 Procedure for Removal of Compressor

Procedure

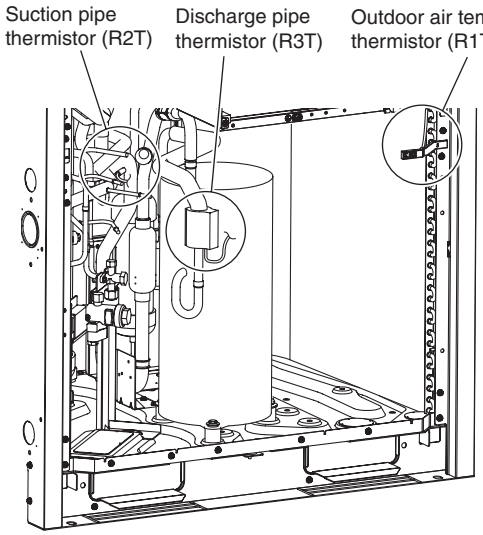
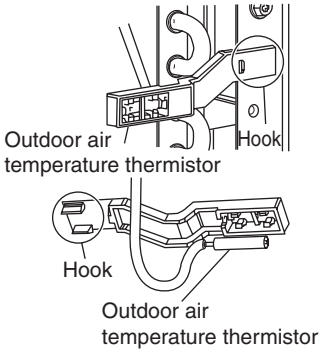
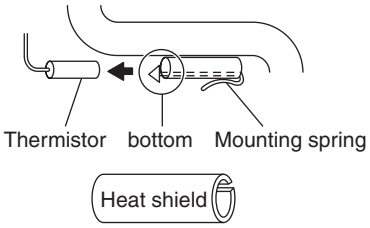
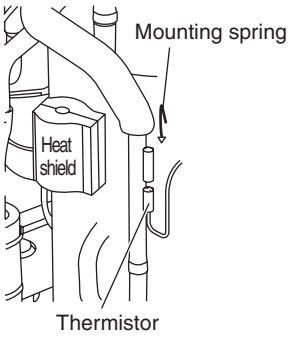
Warning **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

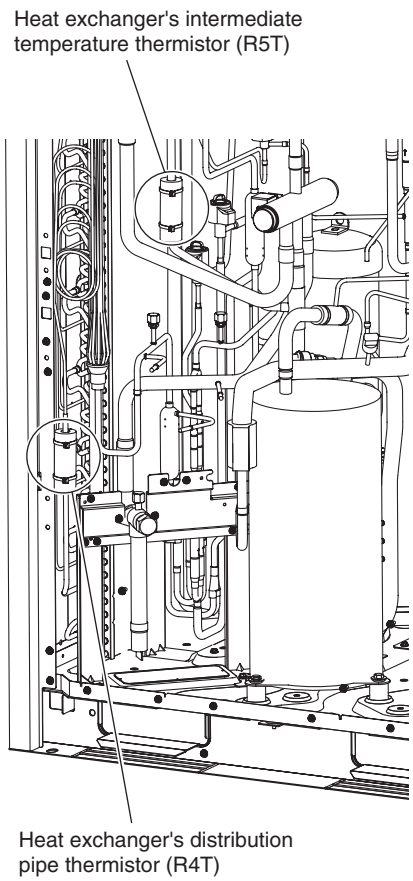
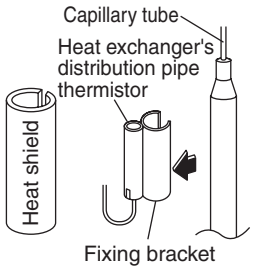
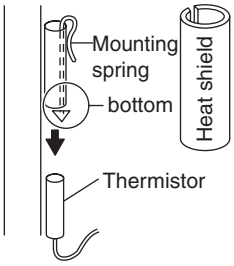
Step	Procedure	Points
1. Remove the soundproof cover		Preparations • Remove the front panel according to the procedure for the removal related to the outside panel. • Remove the electrical component box according to the procedure for removing the electrical component assembly.
1 Remove the hook and loop fastener from the three places to remove the compressor head cover. 2 Remove the hook and loop fastener from the three places to pull out the compressor soundproof cover.		■ Before working, make sure that the refrigerant is completely removed.
2. Remove the crank case heater		■ Precautions for mounting the crank case heater • Avoid overlap with the welded part of the compressor. • Place the coil spring for the heater between the lead wires.
1 Remove the coil spring to pull out the crank case heater.		
3. Remove the compressor		■ Compressor terminal markings
1 Remove the compressor terminal cover. 2 Disconnect the lead wire from the compressor terminal area. 3 Unscrew three bolts that fix the compressor. 4 Cut the discharge pipe (A) and suction pipe (B) using a pipe cutter. 5 Lift the compressor and pull it toward you. 6 Remove brazing from the remaining piping.		 ■ When the piping is cut, oil comes out. Before cutting the piping, place rag under the piping for the purpose of curing.

1.8 Procedure for Removal of Thermistor

Procedure

Warning **Be sure to commence the disassembling work after 10 minutes or more elapsed from all power supplies have been turned off.**

Step	Procedure	Points
■ Remove the front panel (middle, bottom) according to the procedure for "Removal Related to Outside Panel".		■ Removal of the outdoor air temperature thermistor 
1. Remove the outdoor air temperature thermistor		
1 Apply the principle of leverage to remove the clamps. 2 Pull out the fixture from the outdoor air temperature thermistor.		
2. Remove the suction pipe thermistor		■ Removal of the suction pipe thermistor 
1 Cut the clamps (2 places) for the heat shield. 2 Push the lower part of the mounting spring to pull out the suction pipe thermistor.		
3. Remove the discharge pipe thermistor		■ Removal of the discharge pipe thermistor 
1 Cut the clamps (one place) for the heat shield. 2 Push the lower part of the mounting spring to pull out the discharge pipe thermistor.		

Step	Procedure	Points
4. Remove the heat exchanger's distribution pipe thermistor		■ Removal of the heat exchanger's distribution pipe thermistor 
1 Cut the clamps (2 places) for the heat shield. 2 Pull hard the heat exchanger's distribution pipe thermistor together with the fixing bracket toward you.		
5. Remove the heat exchanger's intermediate temperature thermistor		■ Removel of the heat exchanger's intermediate temperature thermistor 
1 Cut the clamps (2 places) for the heat shield. 2 Push the lower part of the fixing spring to pull out the heat exchanger's intermediate temperature thermistor.		

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Warning

- Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries, Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirm with your local authorised importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorised parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any enquiries, please contact your local importer, distributor and/or retailer.

Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.

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JQA-1452

About ISO 9001

ISO 9001 is a plant certification system defined by the International Organization for Standardization (ISO) relating to quality assurance. ISO 9001 certification covers quality assurance aspects related to the "design, development, manufacture, installation, and supplementary service" of products manufactured at the plant.

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About ISO 14001

ISO 14001 is the standard defined by the International Organization for Standardization (ISO) relating to environmental management systems. Our group has been acknowledged by an internationally accredited compliance organisation as having an appropriate programme of environmental protection procedures and activities to meet the requirements of ISO 14001.

Dealer

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