

DAIKIN

SiME281501E

R-410A

Service Manual

INVERTER



RZQ Series Heat Pump R410A 60Hz

**RZQ20 / 24 / 36 / 45LVA
RZQ45 / 48MYL**



TopAir RZQ Series Heat Pump R410A 60Hz

ED Reference

For items below, please refer to Engineering Data.

No.	Item	ED No.	Page	Remarks
1	Specification	EDTW281313A	P. 9-22	
2	Option List	EDTW281313A	P. 70-72	

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



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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 the item for which caution must be exercised.
The pictogram shows the item to which attention must be paid.
 - This symbol indicates the prohibited action.
The prohibited item or action is shown in the illustration or near the symbol.
 - This symbol indicates the action that must be taken, or the instruction.
The instruction is shown in the illustration 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 Cautions Regarding Safety of Workers






 Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for repair. Working on the equipment that is connected to the power supply may cause an electrical shock. 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 is discharged during the repair work, do not touch the discharged refrigerant gas. The refrigerant gas may cause frostbite.	
When disconnecting the suction or discharge pipe of the compressor at the welded section, evacuate 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 may cause injury.	
If the refrigerant gas leaks during the repair work, ventilate the area. The refrigerant gas may 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 may 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 may cause an electrical shock or fire.	







 Warning	
Be sure to wear a safety helmet, gloves, and a safety belt when working at a high place (more than 2 m). Insufficient safety measures may cause a fall accident.	
In case of R410A refrigerant models, be sure to use pipes, flare nuts and tools for the exclusive use of the R410A refrigerant. The use of materials for R22 refrigerant models may cause a serious accident such as a damage of refrigerant cycle as well as an equipment failure.	






 Caution	
Do not repair the electrical components with wet hands. Working on the equipment with wet hands may cause an electrical shock.	
Do not clean the air conditioner by splashing water. Washing the unit with water may 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.	
Be sure to conduct repair work with appropriate tools. The use of inappropriate tools may cause injury.	
Be sure to check that the refrigerating cycle section has cooled down enough before conducting repair work. Working on the unit when the refrigerating cycle section is hot may cause burns.	
Use the welder in a well-ventilated place. Using the welder in an enclosed room may cause oxygen deficiency.	

1.1.2 Cautions Regarding Safety of Users

 Warning	
<p>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 may cause an electrical shock, excessive heat generation or fire.</p>	
<p>If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires may cause an electrical shock, excessive heat generation or fire.</p>	
<p>Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it may cause an electrical shock, excessive heat generation or fire.</p>	
<p>Be sure to use an exclusive power circuit for the equipment, and follow the local 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 may cause an electrical shock or fire.</p>	
<p>Be sure to use the specified cable for wiring 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 may cause excessive heat generation or fire.</p>	
<p>When wiring 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 may cause an electrical shock, excessive heat generation or fire.</p>	
<p>Do not damage or modify the power cable. Damaged or modified power cable may cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable may damage the cable.</p>	
<p>Do not mix air or gas other than the specified refrigerant (R410A / R22) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.</p>	
<p>If the refrigerant gas leaks, be sure to locate the leaking point and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leaking point 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 may generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.</p>	
<p>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 may fall and cause injury.</p>	





 Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet securely. If the plug has dust or loose connection, it may cause an electrical shock or fire.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation may cause the equipment to fall, resulting in injury.	For unitary type only 
Be sure to install the product securely in the installation frame mounted on the window frame. If the unit is not securely mounted, it may fall and cause injury.	For unitary type only 
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 the combustible gas leaks and remains around the unit, it may cause a fire.	
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 may cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame may cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding may cause an electrical shock.	

 Caution	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher. Defective insulation may cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Defective drainage may cause the water to enter the room and wet the furniture and floor.	
Do not tilt the unit when removing it. The water inside the unit may spill and wet the furniture and floor.	
Be sure to install the packing and seal on the installation frame properly. If the packing and seal are not installed properly, water may enter the room and wet the furniture and floor.	For unitary type only 

1.2 Used 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:

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, lose 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.

Part 1

General Information

1. Model Name of Indoor / Outdoor Units	2
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1. Model Name of Indoor / Outdoor Units

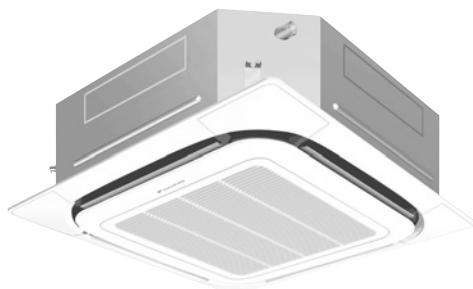
Model series	Indoor unit	Outdoor unit	Power supply intake
Ceiling Mounted Cassette Type (Round Flow)	FCQ20EVA	RZQ20LVA	Outdoor unit: 1 phase, 220V, 60Hz
	FCQ24EVA	RZQ24LVA	
	FCQ36EVA	RZQ36LVA	
	FCQ45EVA	RZQ45LVA	
	FCQ36EVA	RZQ36LVA	Outdoor unit: 3 phase, 220V, 60Hz
	FCQ45EVA	RZQ45LVA	
	FCQ36EVA	RZQ36LVA	Outdoor unit: 3 phase, 380V, 60Hz
	FCQ45EVA	RZQ45LVA	
Duct Connection Middle and High Static Pressure Type	FBQ20EVA	RZQ20LVA	Indoor unit: 1 phase, 220V, 60Hz Outdoor unit: 1 phase, 220V, 60Hz
	FBQ24EVA	RZQ24LVA	
	FBQ36EVA	RZQ36LVA	
	FBQ45EVA	RZQ45LVA	
	FBQ36EVA	RZQ36LVA	Indoor unit: 1 phase, 220V, 60Hz Outdoor unit: 3 phase, 220V, 60Hz
	FBQ45EVA	RZQ45LVA	
	FBQ45EVA	RZQ45MYL	Indoor unit: 1 phase, 220V, 60Hz Outdoor unit: 3 phase, 380V, 60Hz
	FBQ48EVA	RZQ48MYL	



Note: *: New model or changed model

2. External Appearance

Indoor unit



FCQ



FBQ-DA

Wired remote controller



BRC1C61



BRC1D61

Wireless remote controller



**BRC7F632F (for FCQ)
BRC4C62 (for FBQ-DA)**



**Signal receiver unit
(for FCQ)**



**Signal receiver unit
(for FBQ-DA)**

Outdoor unit



**RZQ20LVA
RZQ24LVA**



**RZQ36LVA
RZQ45LVA
RZQ45MYL
RZQ48MYL**

Part 2

Functions

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1. Functions

Items	Features	Indoor unit	FCQ20-45EVA	FBQ20-48EVA
		Outdoor unit	RZQ20-45LVA RZQ45-48MYL	RZQ20-45LVA RZQ45-48MYL
Comfort	Auto swing		○	—
	Swing pattern selection		○	—
	Draft prevention function (heating)		○	—
	Switchable fan speed		○ (2 step)	○ (2 step)
	Auto airflow rate		—	—
	High fan speed mode		—	—
	Program "Dry"		○	○
	High ceiling application		○	—
	Two selectable temperature-sensors (*1)		○	○
	Hot start (after defrost)		○	○
	Year-round cooling applicable		○	○
Remote controller	Weekly schedule timer (*3)		○	○
	On/Off timer (*5)		○	○
Cleanliness	Anti-bacterial air filter		○	○ (*4)
	Mould-proof air filter		—	—
	Silver ion anti-bacterial drain pan		○	○
	Mould-proof drain pan		—	—
Work & servicing	Drain pump mechanism		○	—
	Pre-charged for up to 30 m (*2)		○	○
	Long-life filter		○	○ (*4)
	Filter sign		○	○
	Ceiling soiling prevention		○	—
	Low gas pressure detection (*2)		○	○
	Emergency operation		○	○
	Self-diagnosis function		○	○
Control features	Auto-restart		○	○
	Auto cooling/heating changeover		○	○
	Control by 2 remote controllers		○	○
	Group control by 1 remote controller		○	○
	External command control		○	○
	Centralized remote control		○	○
	Interlock control		○	○
	DIII-NET communication standard		○	○
Options	High-efficiency filter		○	○
	Ultra long-life filter		○	—
	Fresh air intake kit		○	—
Others	Anti corrosion treated heat exchanger (*2)		○	○

- Note:** ○ : Functions exist.
 — : No functions
 *1 : Applicable when wired remote controller is used
 *2 : For the outdoor units
 *3 : Applicable when BRC1D61 is used
 *4 : Option
 *5 : Applicable when BRC1C61 is used

Part 3

Remote Controller

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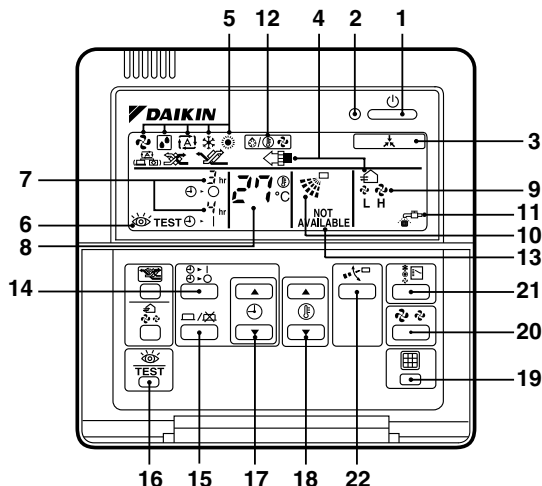
1. Wired Remote Controller



















1.1 Applicable Models


Model Series		FCQ-EV	FBQ-EV
Remote Controller	Heat Pump	BRC1C61	
Wired Remote Controller with Weekly Schedule Timer		BRC1D61	

1.2 Names and Functions

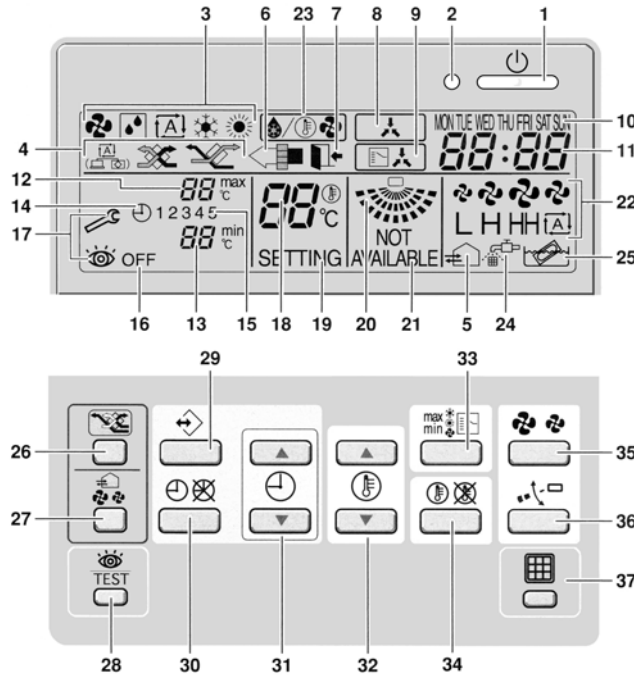
1.2.1 BRC1C61



	ON/OFF BUTTON
1	Press the button and the system will start. Press the button again and the system will stop.
2	OPERATION LAMP (RED) The lamp lights up during operation.
3	DISPLAY “” (UNDER CENTRALIZED CONTROL) When this display shows, the system is UNDER CENTRALIZED CONTROL.
4	DISPLAY “” “” “” “” (VENTILATION/AIR CLEANING) This display shows that the total heat exchange and the air cleaning unit are in operation (These are optional accessories).
5	DISPLAY “” “” “” “” “” (OPERATION MODE) This display shows the current OPERATION MODE. For cooling only type, “  ” (Auto) and “  ” (Heating) are not installed.
6	DISPLAY “ TEST” (INSPECTION/TEST OPERATION) When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.
7	DISPLAY “” (PROGRAMMED TIME) This display shows the PROGRAMMED TIME of the system start or stop.
8	DISPLAY “” (SET TEMPERATURE) This display shows the set temperature.
9	DISPLAY “” (FAN SPEED) This display shows the set fan speed.
10	DISPLAY “” (AIRFLOW FLAP)
11	DISPLAY “” (TIME TO CLEAN AIR FILTER)

12	DISPLAY “” (DEFROST)
	NON-FUNCTIONING DISPLAY If that particular function is not available, pressing the button may display the words “NOT AVAILABLE” for a few seconds.
13	When running multiple units simultaneously the “NOT AVAILABLE” message will only be appear if none of the indoor units is equipped with the function. If even one unit is equipped with the function, the display will not appear.
14	TIMER MODE START/STOP BUTTON
15	TIMER ON/OFF BUTTON
16	INSPECTION/TEST OPERATION BUTTON This button is used only by qualified service persons for maintenance purposes.
17	PROGRAMMING TIME BUTTON Use this button for programming “START and/or STOP” time.
18	TEMPERATURE SETTING BUTTON Use this button for SETTING TEMPERATURE.
19	FILTER SIGN RESET BUTTON
20	FAN SPEED CONTROL BUTTON Press this button to select the fan speed, HIGH or LOW, of your choice.
21	OPERATION MODE SELECTOR BUTTON Press this button to select OPERATION MODE.
22	AIRFLOW DIRECTION ADJUST BUTTON
	NOTE • For the sake of explanation, all indications are shown on the display in the above figure contrary to actual running situations.

1.2.2 BRC1D61



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 an error 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 (Heat Reclaim Ventilator only) (AUTOMATIC, HEAT EXCHANGE, BYPASS).

5 VENTILATION ICON The ventilation icon appears when the ventilation is adjusted with the ventilation amount button (Heat Reclaim Ventilator only). Simultaneously, the ventilation amount is indicated by the fan speed icon (see 22).

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 CENTRALIZED CONTROL ICON This icon indicates that the change-over of the installation is under centralized control assigned to another indoor unit or optional cool/heat selector connected to the outdoor unit (= main 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 The clock display indicates the current time (or the action time when reading or programming the schedule timer).

12 MAXIMUM SET TEMPERATURE The maximum set temperature indicates the maximum set temperature when in limit operation.

13 MINIMUM SET TEMPERATURE 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 

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 AIRFLOW DIRECTION ICON 

This icon indicates the airflow direction (only for installations with motorised airflow flaps).

21 NOT AVAILABLE 

NOT AVAILABLE is displayed whenever a non-installed option is addressed or a function is not available.

22 FAN SPEED ICON 

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 (Heat Reclaim Ventilator only).

26 VENTILATION MODE BUTTON 

The ventilation mode button operates the Heat Reclaim Ventilator; refer to the Heat Reclaim Ventilator manual for more details.

27 VENTILATION AMOUNT BUTTON 

This button sets the ventilation amount; refer to the Heat Reclaim Ventilator manual for more details.

28 INSPECTION/TEST OPERATION BUTTON 

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.

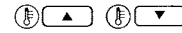
30 SCHEDULE TIMER BUTTON 

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




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),  (Automatic).

36 AIRFLOW DIRECTION ADJUST BUTTON



This button enables to adjust the airflow direction.

37 AIR FILTER CLEANING TIME ICON RESET BUTTON 

This button is used to reset the air filter cleaning time icon.

1.3 MAIN/SUB Setting when Using 2 Remote Controllers

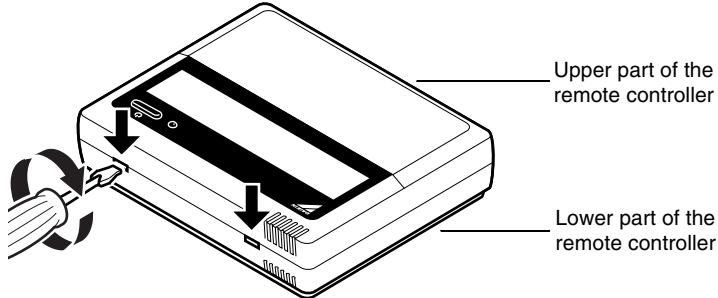
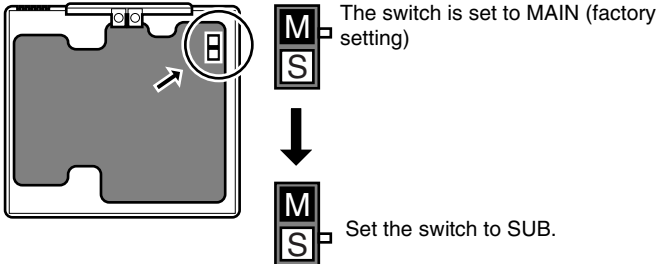
Situation

The MAIN/SUB setting is necessary when 1 indoor unit is controlled by 2 remote controllers. When you use 2 remote controllers (control panel and separate remote controller), set one to MAIN and the other to SUB.

Setting

The remote controllers are set at factory to MAIN, so you only have to change 1 remote controller from MAIN to SUB. To change a remote controller from MAIN to SUB, proceed as follows:

1.3.1 BRC1C61/BRC1D61







Step	Action
1	<p>Insert a flathead screwdriver into the recess between the upper and lower part of the remote controller, as shown in the illustration below. Gently pry off the upper part of the controller, working from the 2 possible positions.</p> 
2	<p>Turn the MAIN/SUB changeover switch on the PCB to "S".</p>  <p>The switch is set to MAIN (factory setting)</p> <p>↓</p> <p>Set the switch to SUB.</p>

1.4 Centralized Control Group No. Setting

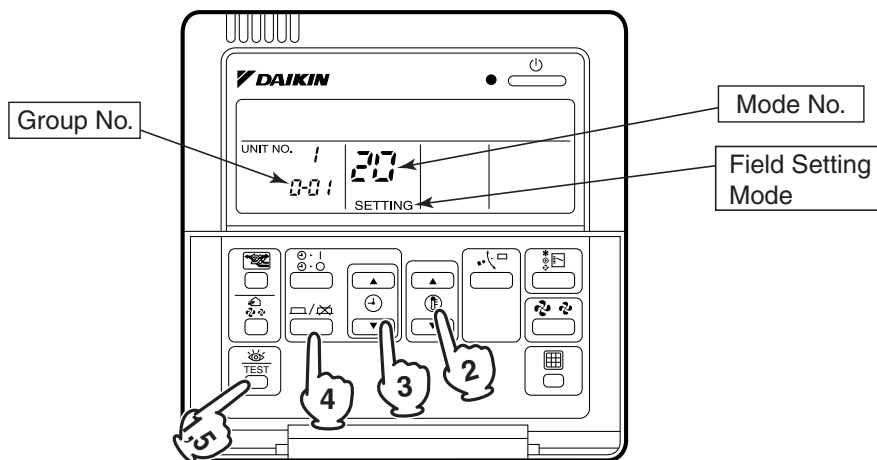
1.4.1 BRC1C61/BRC1D61

In order to conduct the centralized remote control using the central remote controller and the unified ON/OFF controller, Group No. settings should be made by group using the operating remote controller.

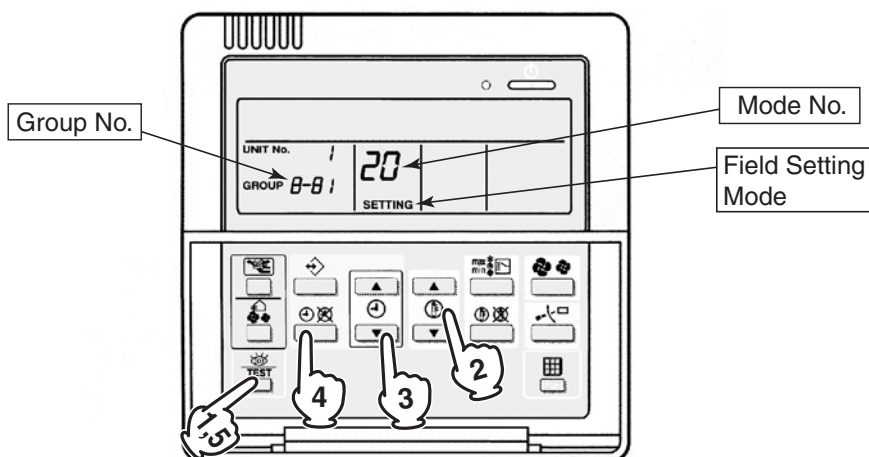
Make Group No. settings for centralized remote control using the operating remote controller.

1. While in normal mode, press and hold the “” button for 4 seconds or more to set the system to "Field Setting Mode".
2. Select the Mode No. “00” with the “” button.
3. Use the “” button to select the Group No. for each group.
(Group numbers increase in the order of 1-00, 1-01, ... 1-15, 2-00, ... 4-15.)
4. Press the “” button or the “” button to set the selected group No.
5. Press the “” button to return to the Normal Mode.

BRC1C61



BRC1D61



Note:

- For setting Group No. of Heat Reclaim Ventilator and wiring adaptor for other air conditioners, etc., refer to the installation manual attached.

NOTICE

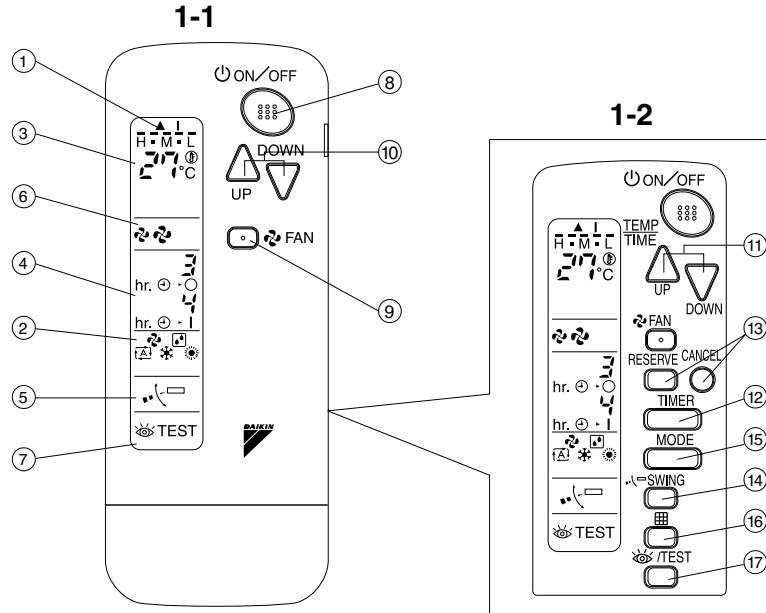
Enter the Group No. and installation place of the indoor unit into the attached installation table. Be sure to keep the installation table with the operation manual for maintenance.

2. Wireless Remote Controller

2.1 Applicable Models

Model Series		FCQ	FBQ-DA
Remote Controller	Heat Pump	BRC7F632F	BRC4C62

2.2 Names and Functions

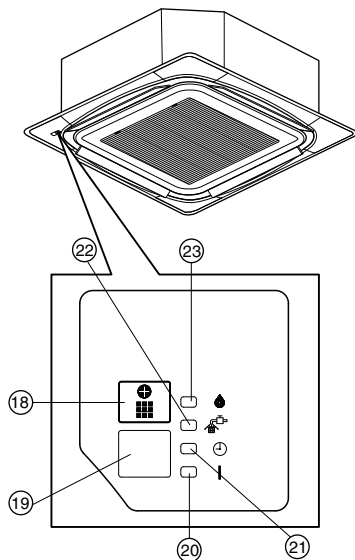


3P107422-11J

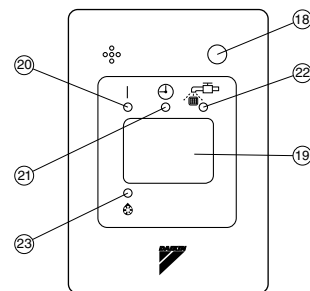
Receiver

FCQ-K/KA

FBQ-DA (separate type)



3P107422-11J



3P107422-21S

1	DISPLAY “▲” (SIGNAL TRANSMISSION)	This lights up when a signal is being transmitted.	14	AIRFLOW DIRECTION ADJUST BUTTON
	DISPLAY “☪” “☉” “☺” “☼” “☽” “☿” (OPERATION MODE)			OPERATION MODE SELECTOR BUTTON
2	DISPLAY “☼” “☽” “☿” (OPERATION MODE)	This display shows the current OPERATION MODE. For cooling only type, “☺” (Auto) and “☼” (Heating) are not installed.	15	Press this button to select OPERATION MODE.
	DISPLAY “☼” “☽” “☿” (OPERATION MODE)			FILTER SIGN RESET BUTTON
3	DISPLAY “$\frac{HEATING}{21.0}$” (SET TEMPERATURE)	This display shows the set temperature.	16	Refer to the section of MAINTENANCE in the operation manual attached to the indoor unit.
	DISPLAY “$\frac{HEATING}{21.0}$” (SET TEMPERATURE)			INSPECTION/TEST OPERATION BUTTON
4	DISPLAY “$\frac{hr. \odot \cdot 3}{hr. \odot \cdot 1}$” (PROGRAMMED TIME)	This display shows PROGRAMMED TIME of the system start or stop.	17	This button is used only by qualified service persons for maintenance purposes.
	DISPLAY “$\frac{hr. \odot \cdot 3}{hr. \odot \cdot 1}$” (PROGRAMMED TIME)			EMERGENCY OPERATION SWITCH
5	DISPLAY “☼” (AIRFLOW FLAP)	This switch is readily used if the remote controller does not work.	18	RECEIVER
	DISPLAY “☼” (AIRFLOW FLAP)			This receives the signals from the remote controller.
6	DISPLAY “☪” “☉” (FAN SPEED)	The display shows the set fan speed.	19	OPERATING INDICATOR LAMP (Red)
	DISPLAY “☪” “☉” (FAN SPEED)			This lamp stays lit while the air conditioner runs. It blinks when the unit is in trouble.
7	DISPLAY “☼ TEST” (INSPECTION/TEST OPERATION)	When the INSPECTION/TEST OPERATION BUTTON is pressed, the display shows the system mode is in.	20	TIMER INDICATOR LAMP (Green)
	ON/OFF BUTTON			This lamp stays lit while the timer is set.
8	ON/OFF BUTTON	Press the button and the system will start. Press the button again and the system will stop.	21	AIR FILTER CLEANING TIME INDICATOR LAMP (Red)
	FAN SPEED CONTROL BUTTON			Lights up when it is time to clean the air filter.
9	FAN SPEED CONTROL BUTTON	Press this button to select the fan speed, HIGH or LOW, of your choice.	22	DEFROST LAMP (Orange)
	TEMPERATURE SETTING BUTTON			Lights up when the defrosting operation has started. (For cooling only type this lamp does not turn ON.)
10	TEMPERATURE SETTING BUTTON	Use this button for SETTING TEMPERATURE (Operates with the front cover of the remote controller closed.)	23	NOTES
	PROGRAMMING TIMER BUTTON			<ul style="list-style-type: none"> For the sake of explanation, all indications are shown on the display in Figure 1 contrary to actual running situations. Fig. 1-2 shows the remote controller with the front cover opened. If the air filter cleaning time indicator lamp lights up, clean the air filter as explained in the operation manual provided with the indoor unit. <p>After cleaning and reinstalling the air filter press the filter sign reset button on the remote controller. The air filter cleaning time indicator lamp on the receiver will go out.</p> <ul style="list-style-type: none"> The Defrost Lamp will blink when power is turned ON. This is not an error.
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			

2.3 Address and MAIN/SUB Setting

Introduction




To set the wireless remote controller, you have to set the address for:

- The receiver of the wireless remote controller
- The wireless remote controller.

Setting the Address for the Receiver



The address for the receiver of the wireless remote controller is factory setting to 1. To change this setting, proceed as follows:

Set the wireless address switch (SS2) on the PCB according to the table below.

Unit No.	No. 1	No. 2	No. 3
Wireless address switch (SS2)			






When using both a wired and a wireless remote controller for 1 indoor unit, the wired controller should be set to MAIN. Therefore, set the MAIN/SUB switch (SS1) of the receiver to SUB.

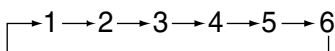
For FCQ, FBQ

MAIN/SUB	MAIN	SUB
MAIN/SUB switch (SS1)		


Setting the Address for the Wireless Remote Controller

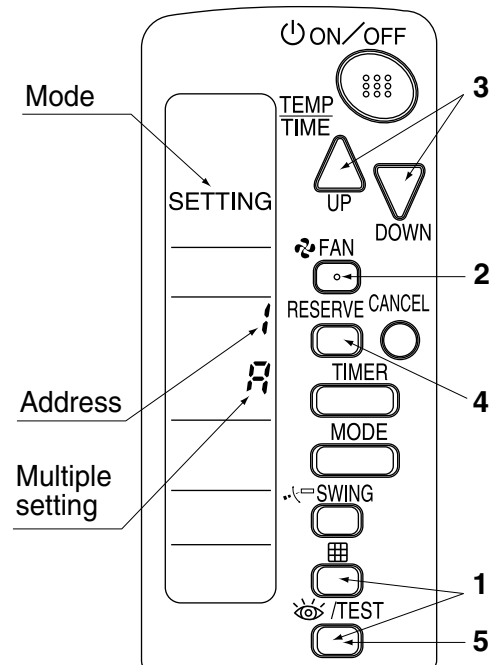
The address for the wireless remote controller is factory setting to 1. To change this setting, proceed as follows:

1. Hold down the “ ” button and the “ /TEST ” button for at least 4 seconds to get the Field Setting mode. (Indicated in the display area in the figure at right.)
2. Press the “ FAN ” button and select a multiple setting (A/b). Each time the button is pressed the display switches between “A” and “b”.
3. Press the “ ” button or “ ” button to set the address.



Address can be set from 1 to 6, but set it to 1 ~ 3 and to same address as the receiver. (The receiver does not work with address 4 ~ 6.)

4. Press the “RESERVE” button to enter the setting.
5. Hold down the “ /TEST ” button for at least 1 second to quit the Field Setting mode and return to the normal display.



Multiple Settings A/b

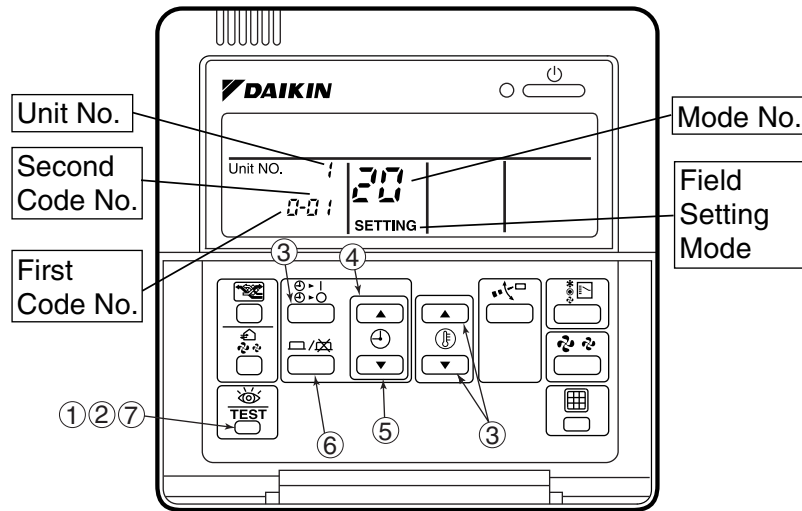
When the indoor unit is being operating by external control (central remote controller, etc.), it sometimes does not respond to ON/OFF and temperature setting commands from this remote controller. Check what setting the customer wants and make the multiple setting as shown below.

Remote controller		FCQ	FBQ	
Multiple setting	Remote controller display	Movement when the operation is controlled by the other air conditioners and equipment	To control other air conditions and units	For other than on left
A: Standard	All items displayed.	When operation changeover, temperature setting or the like is carried out from the remote controller, the indoor unit rejects the instruction. (Signal receiving sound "peeh" or "pick-pick-pick") As a result, a discrepancy between the operation state of the indoor unit and the indication of the remote controller display occurs.	Commands other than ON/OFF and temperature setting accepted. (1 LONG BEEP or 3 SHORT BEEPS emitted)	
b: Multi System	Operations remain displayed shortly after execution.	Since the indication of the remote controller is turned OFF, no discrepancy such as mentioned above occurs.	All commands accepted (2 SHORT BEEPS)	

3. Service Mode

3.1 BRC1C61/BRC1D61

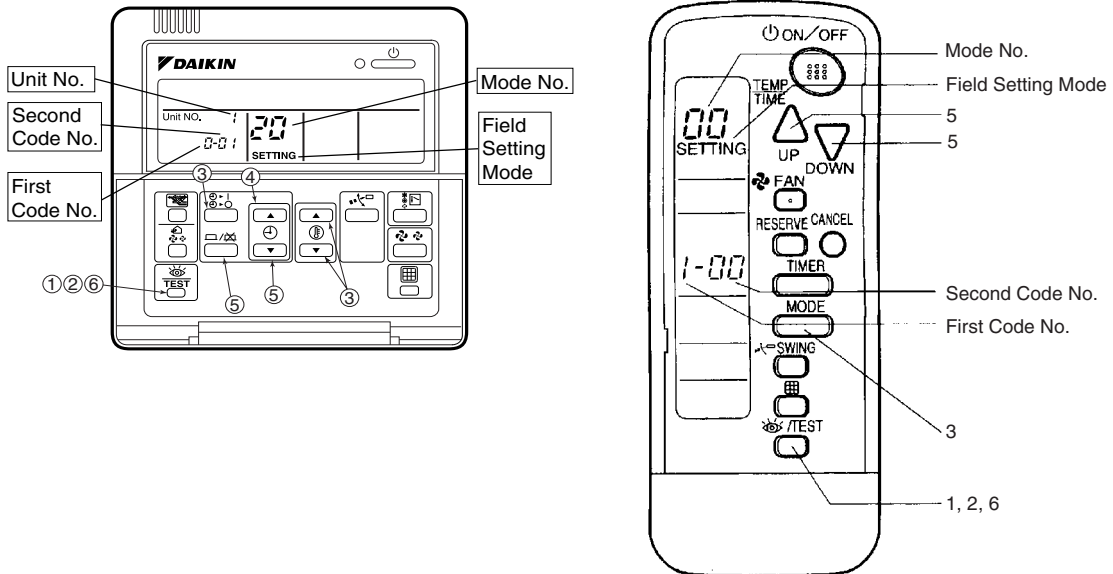
3.1.1 Display Service Data



1. Enter the field setting mode.
Press the INSPECTION/TEST button for 4 seconds or more.
2. Enter the service mode.
After having entered the field setting mode, press the INSPECTION/TEST button for 4 seconds or more.
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 desired error history No. or thermistor data No. with “” or “” button.
6. Each data displays (Refer to the table below display)
7. Return to the normal operation mode.
Press the INSPECTION/TEST button once.

Mode No.	Function	Content and Operation Method	Example of Remote Controller Display
40	Error History	You can change the history with the programming time up-down button.	
41	Thermistor Data Display	Select the display thermistor with the programming time up-down button Display thermistor : Room temperature thermistor in remote controller : Suction air thermistor : Heat exchanger thermistor	

3.1.2 Service Setting



1. Enter the field setting mode.
Press the INSPECTION/TEST operation button for 4 seconds or more.
2. Enter the maintenance mode.
After having entered the field setting mode, press 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. Carry out the necessary settings for each mode. (Only mode 43 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 "Airflow direction" with airflow 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.
Press the INSPECTION/TEST operation button once.

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 airflow direction for each unit individually when using group control. Settings are made using the "airflow 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.	

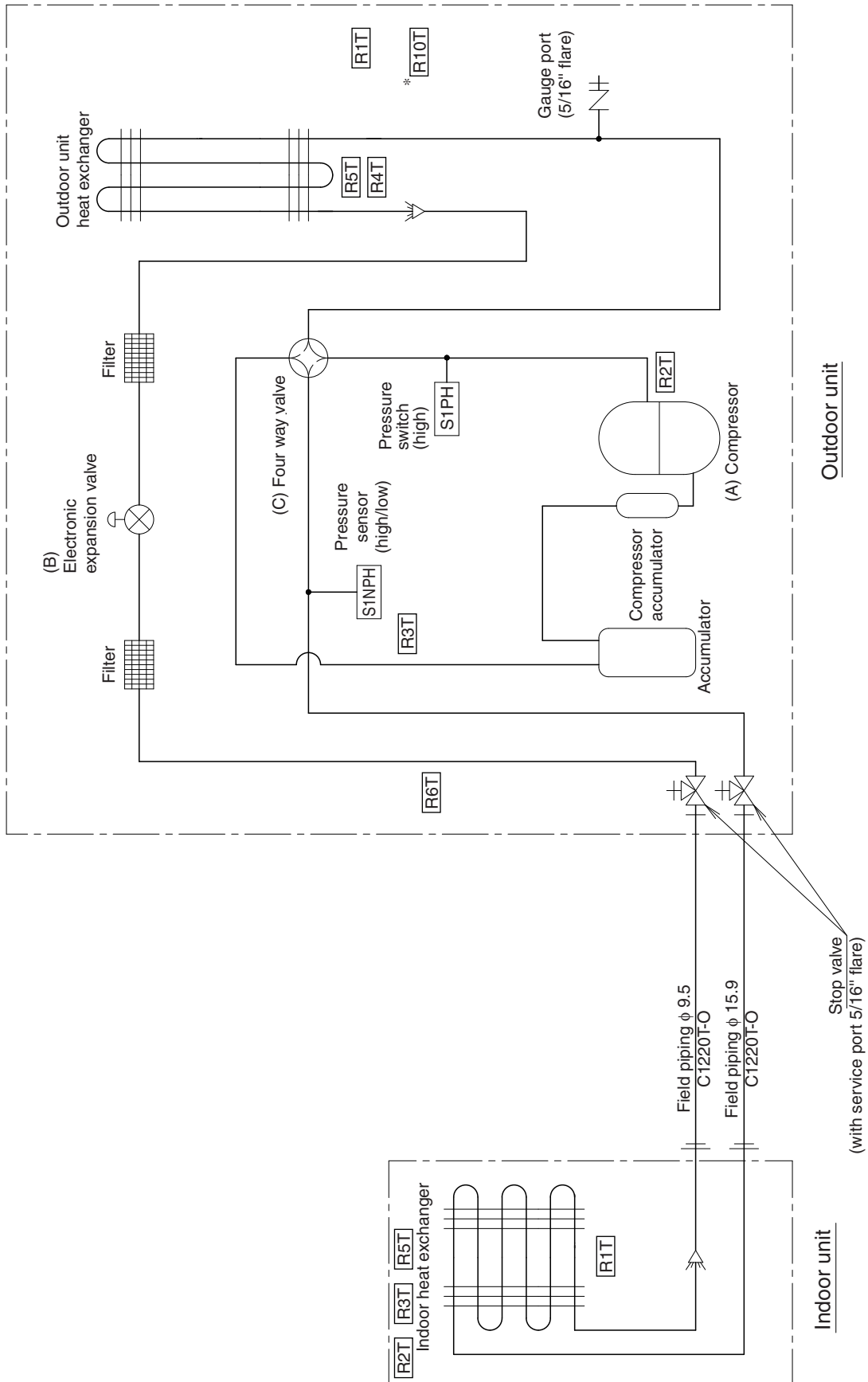
Part 4

Function and Control

1. Functions of Main Components and Thermistors	20
2. Function Outline	23
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1. Functions of Main Components and Thermistors

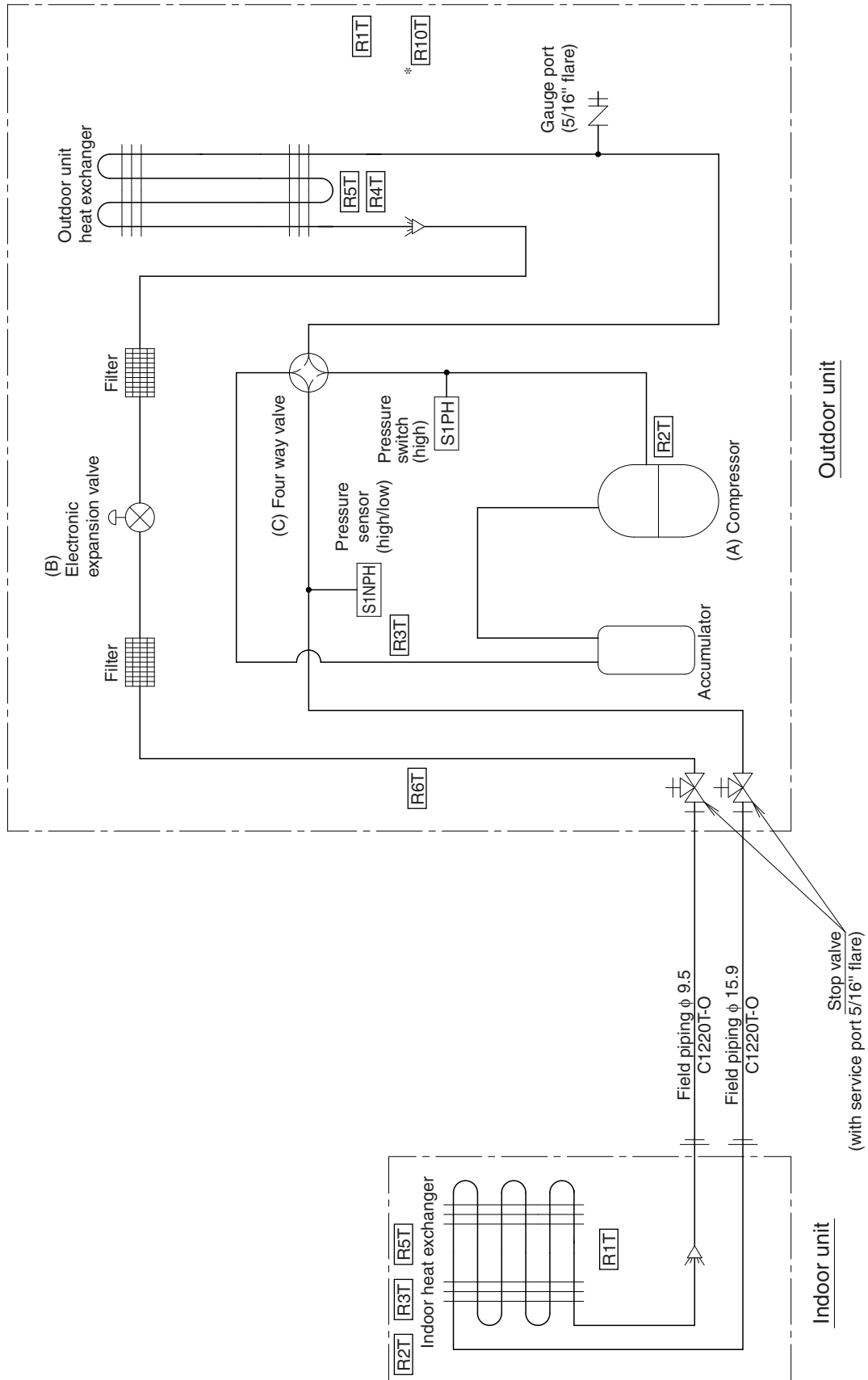
FCQ20EVA / FBQ20EVA + RZQ20LVA
 FCQ24EVA / FBQ24EVA + RZQ24LVA



* This thermistor is near the el. compo. box.

3D058951C

FCQ36EVA / FBQ36EVA + RZQ36LVA
 FCQ45EVA / FBQ45EVA + RZQ45LVA
 FCQ45EVA / FBQ45EVA + RZQ45MYL
 FCQ48EVA / RBQ48EVA + RZQ48MYL



*This thermistor is near the ei. compo. box.

3D060254C

Outdoor Unit**(A) Compressor**

Inverter drive unit varies compressor operating frequency to control capacity and other factors.

(B) Electronic Expansion Valve

Provides control to maintain optimum operating condition for high efficiency.

(C) Four Way Valve (Y1S)

Changes operation of cooling / heating.

Coil energized: heating

Coil not energized: cooling

Outdoor Air Thermistor (R1T)

Used for startup condition control and defrost control.

Discharge Pipe Thermistor (R2T)

Used for discharge pipe temperature protection during compression operation.

Suction Pipe Thermistor (R3T)

Used for suction super heat control by electronic expansion valve.

Heat Exchanger Distributor Pipe Thermistor (R4T)

- Used for calculation of outdoor unit heat exchanger subcooling during cooling operation.
- Used for judgement of the defrost IN and OUT condition.

Intermediate Heat Exchanger Thermistor (R5T)

Used for calculation of high pressure during cooling operation, and low pressure during heating operation.

Liquid Pipe Thermistor (R6T)

Used for calculation of indoor unit heat exchanger subcooling during heating operation.

Radiation Fin Thermistor (R10T)

- Used for outdoor unit fan speed control.
- Used for inverter radiation fin temperature control.
- Used for pressure difference control.

Indoor Unit

FCQ	FBQ	Thermistor
R1T	R1T	Suction air thermistor
R2T	R2T	Heat exchanger thermistor
—	R3T	Discharge air thermistor
—	R5T	NTC thermistor

Indoor Suction Air Thermistor

- Cooling:
- Thermostat control
 - PMV control
 - General frequency control
- Heating:
- Thermostat control
 - PMV control
 - General frequency control

Indoor Heat Exchanger Thermistor

- Cooling:
- Compressor frequency control (target T_e)
 - Inverter current protection control
 - Freeze-up control
- Heating:
- Compressor frequency control (target T_c)
 - Inverter current protection control
 - Hot start control
 - Peak cut-off

Discharge Air Thermistor

Used for discharge air control.

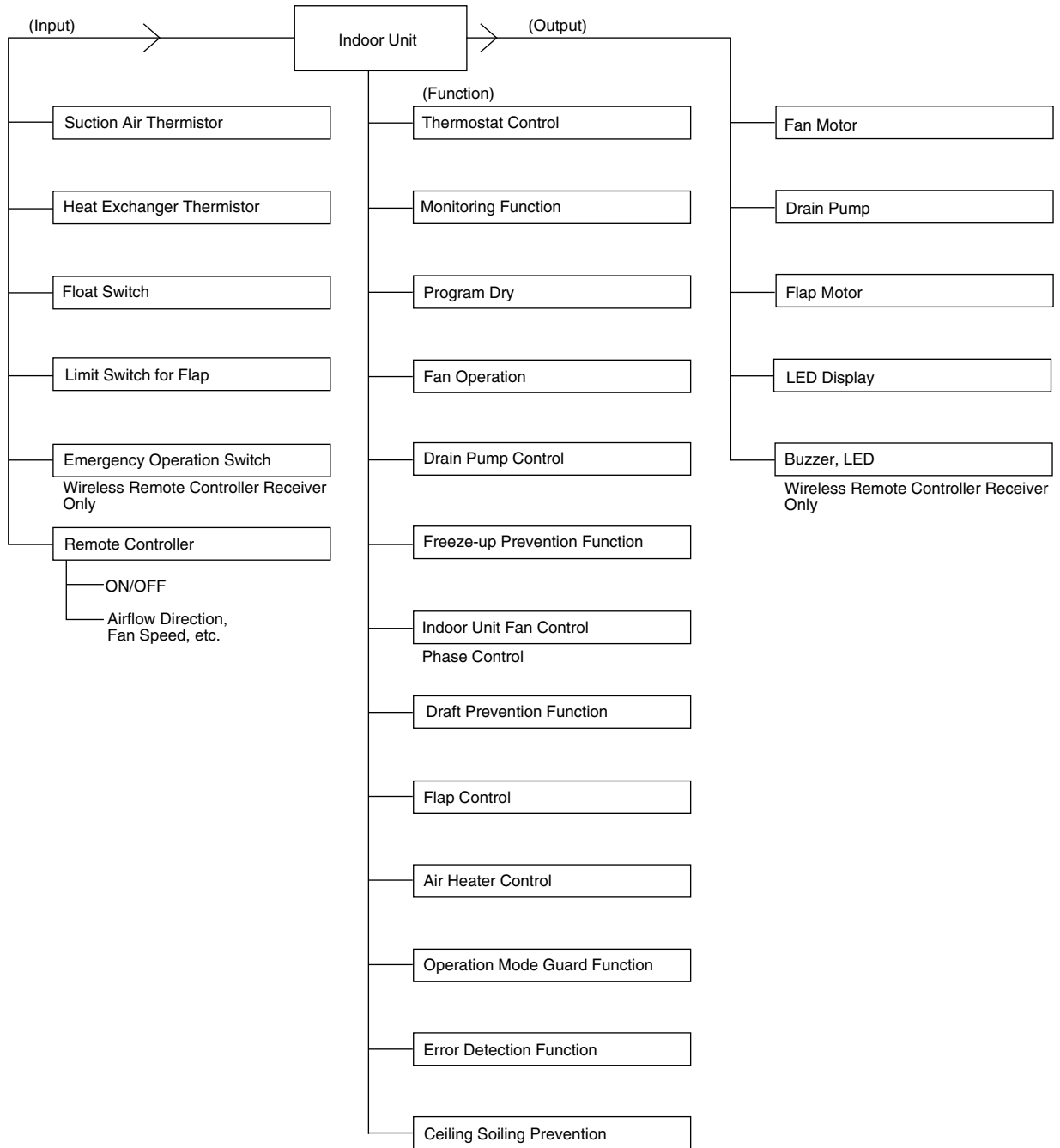
NTC Thermistor

Used for current limiting.

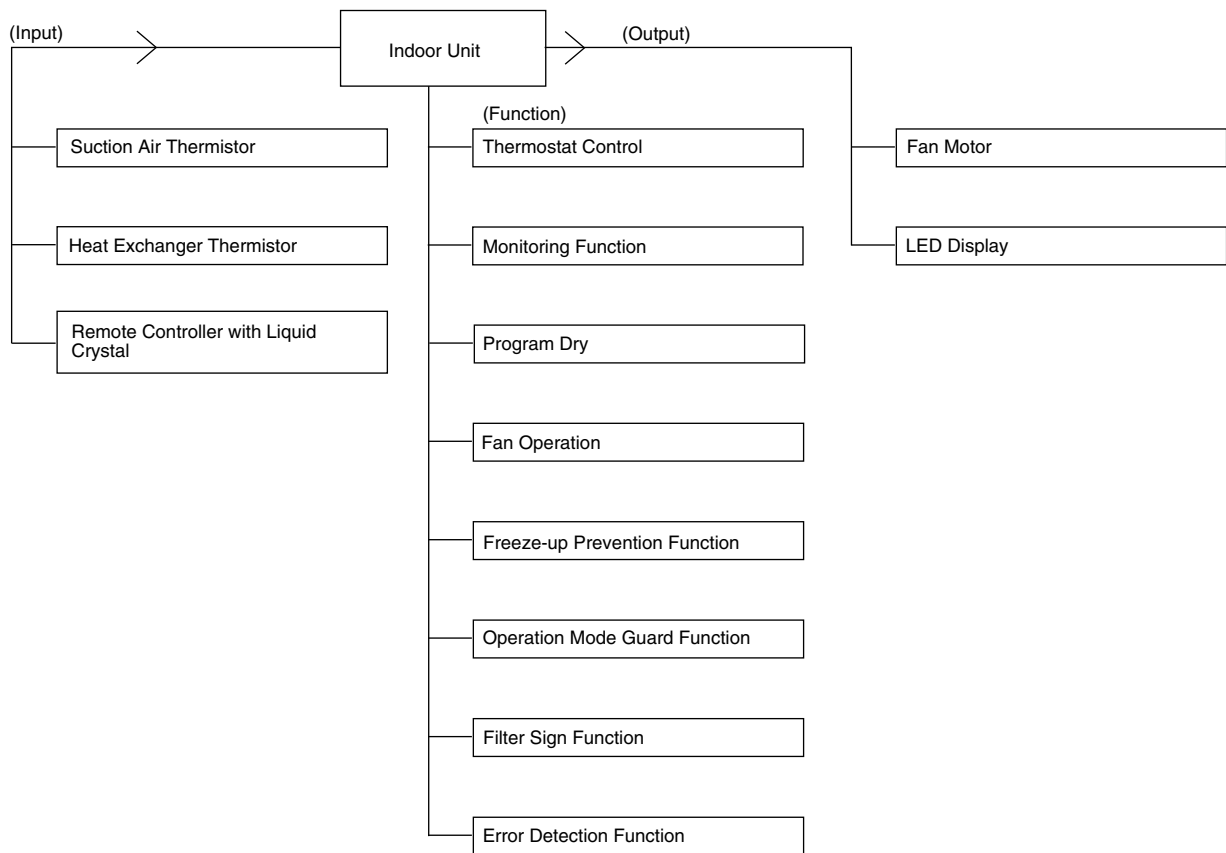
2. Function Outline

2.1 Indoor Unit

FCQ

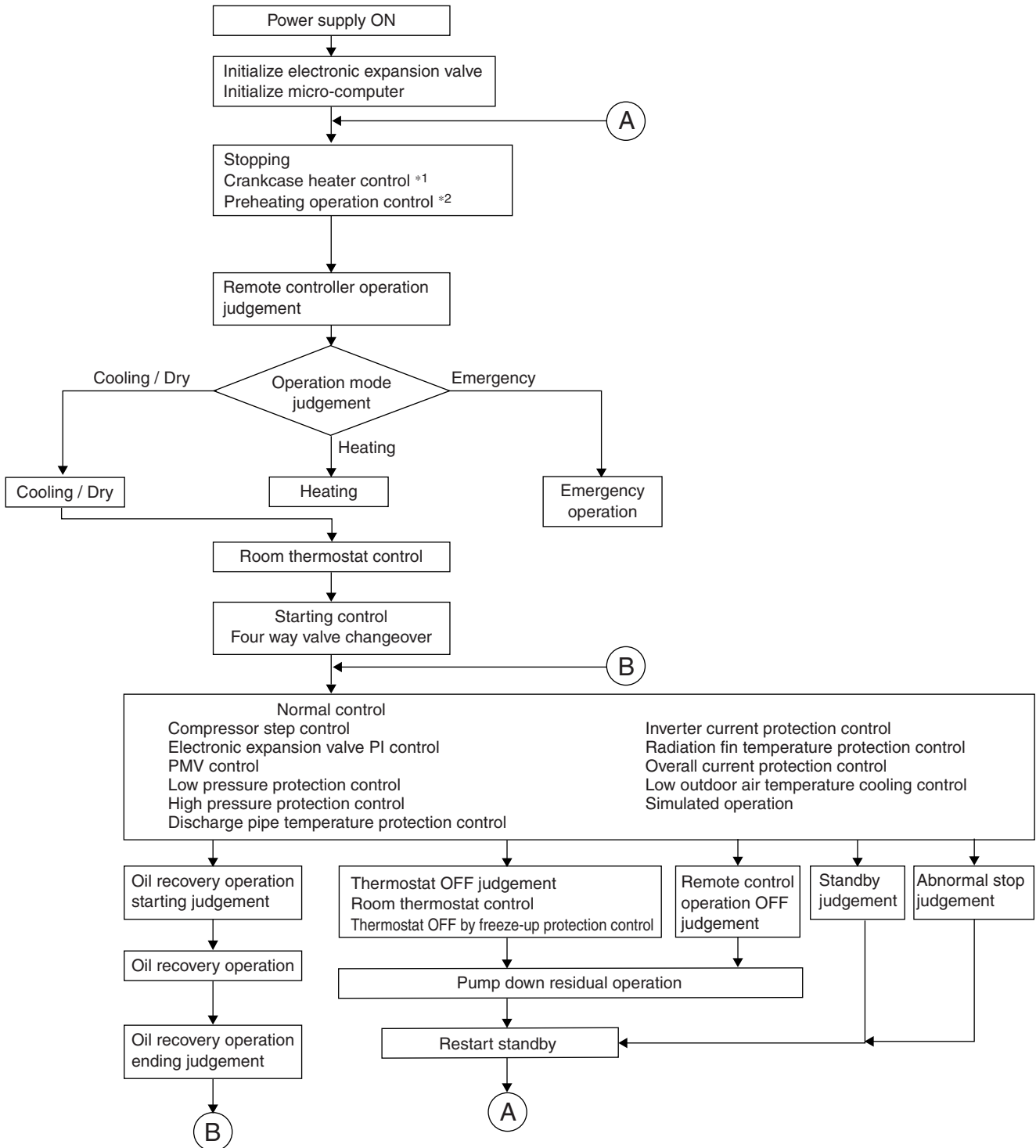


FBQ



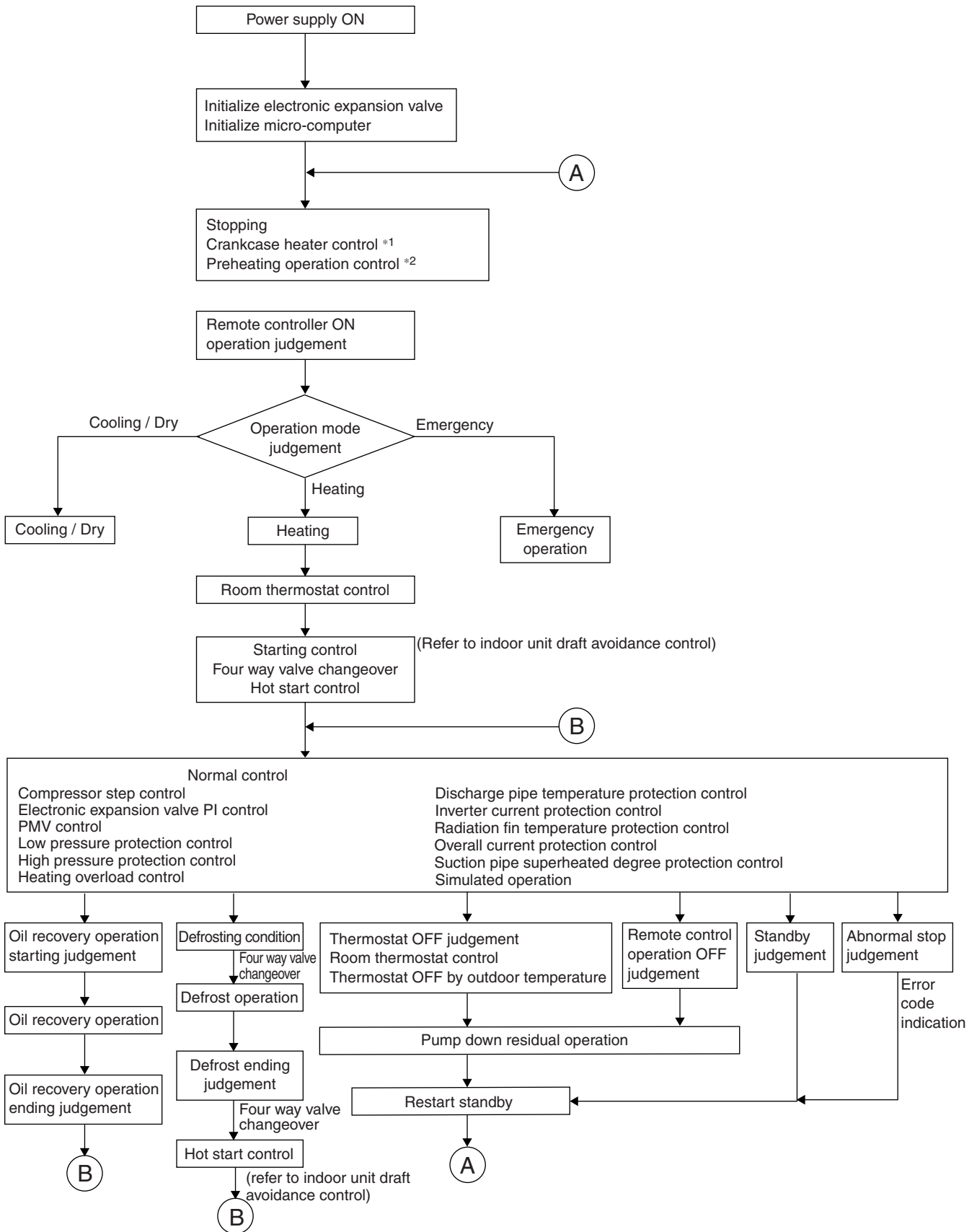
3. Operation Flow Chart

3.1 Cooling / Dry Operation



i Note: *1. Except RZQ20/24LVA
*2. Only for RZQ20/24LVA

3.2 Heating Operation

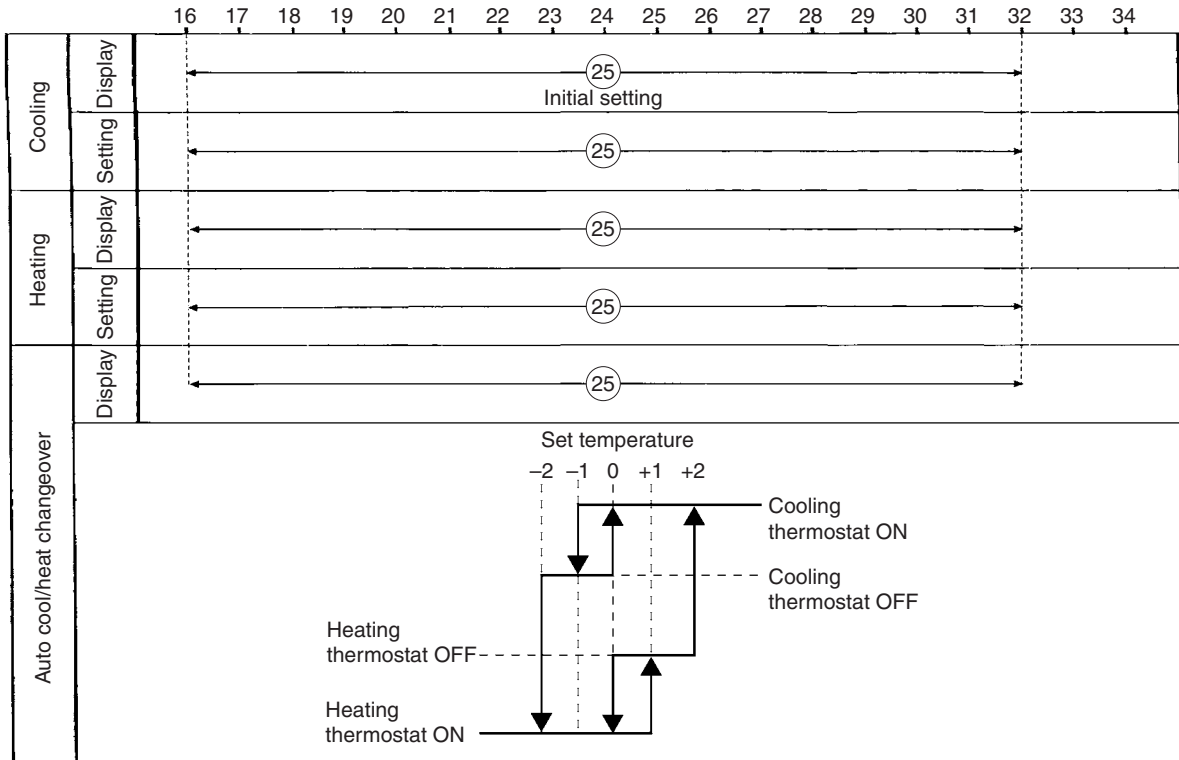


i Note: *1. Except RZQ20/24LVA
*2. Only for RZQ20/24LVA

4. Function Details

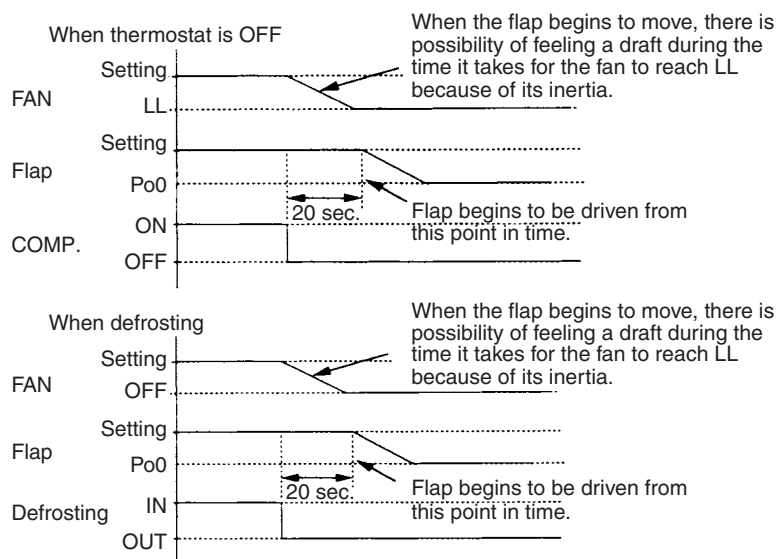
4.1 Indoor Unit

4.1.1 Thermostat Control



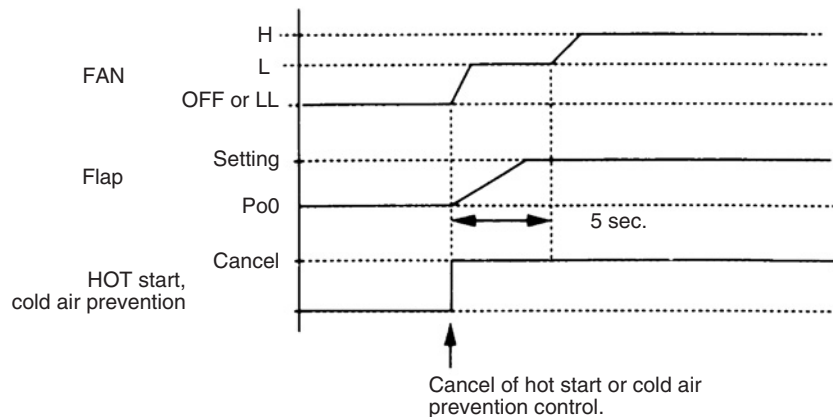
4.1.2 Draft Avoidance Control 1 (FCQ)

Draft is circumvented by delaying transfer of the flap to the Po0 (horizontal) position for a certain amount of time when defrosting and in the heating mode with the thermostat OFF.



4.1.3 Draft Avoidance Control 2 (FCQ)

When hot start is canceled or when cold air prevention control is finished, if the fan speed is set to "H," the fan turns at L speed for a certain amount of time, thus avoiding draft while the flap is moving.



4.1.4 Airflow Rate Shift Control

Tc: High pressure equivalent saturation temperature (°C)

The airflow rate of an indoor unit is varied to prevent shutdown due to a rise in the high pressure level. (Airflow rate at heating operation)

ON condition $T_c \geq 58.8^\circ\text{C}$

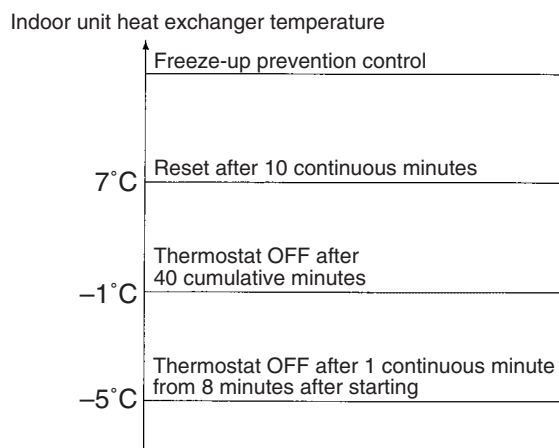
Reset condition $T_c < 50^\circ\text{C}$

Note that the airflow rate is varied for a setting time when the thermostat is ON.

4.1.5 Freeze-up Prevention Control

The thermostat turns OFF under the following temperature conditions to prevent freezing of the indoor unit heat exchanger.

- The electronic expansion valve is controlled to maintain the indoor unit heat exchanger temperature above 0°C.
- The outdoor unit fan speed is reduced to prevent freeze-up prevention control from activating during cooling operation under low outdoor air temperature. (For details, see the section on cooling operation under low outdoor air temperature.)



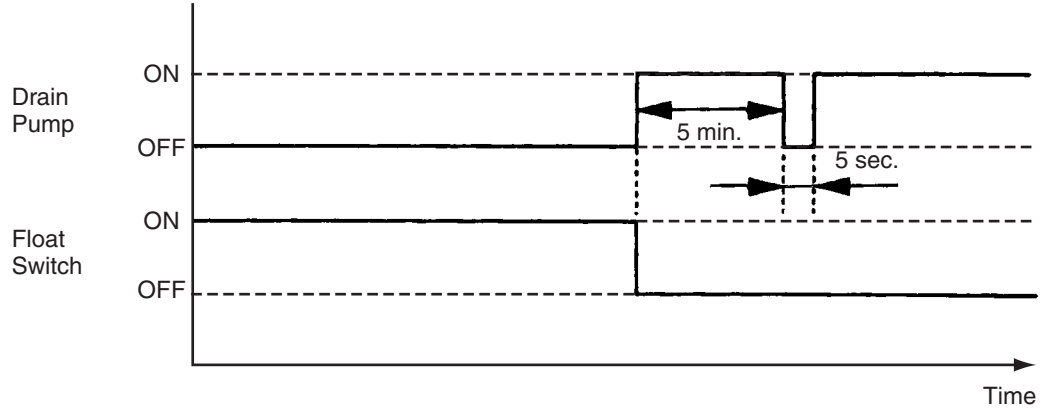
4.1.6 Drain Pump Control (FCQ)

■ Cooling, Program Dry

Normally drain pump ON (Thermostat is both ON or OFF)

■ Heating

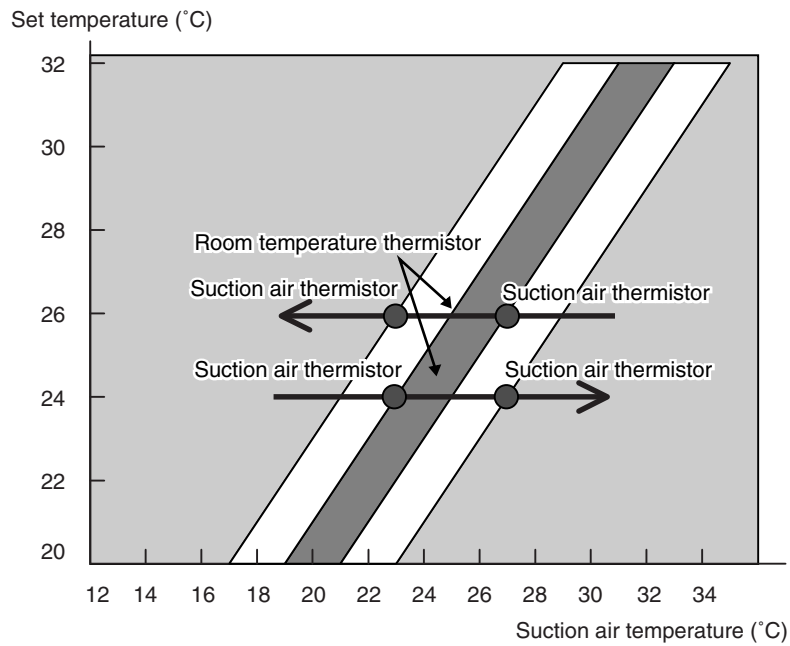
When the following conditions are satisfied, the drain pump turns ON.



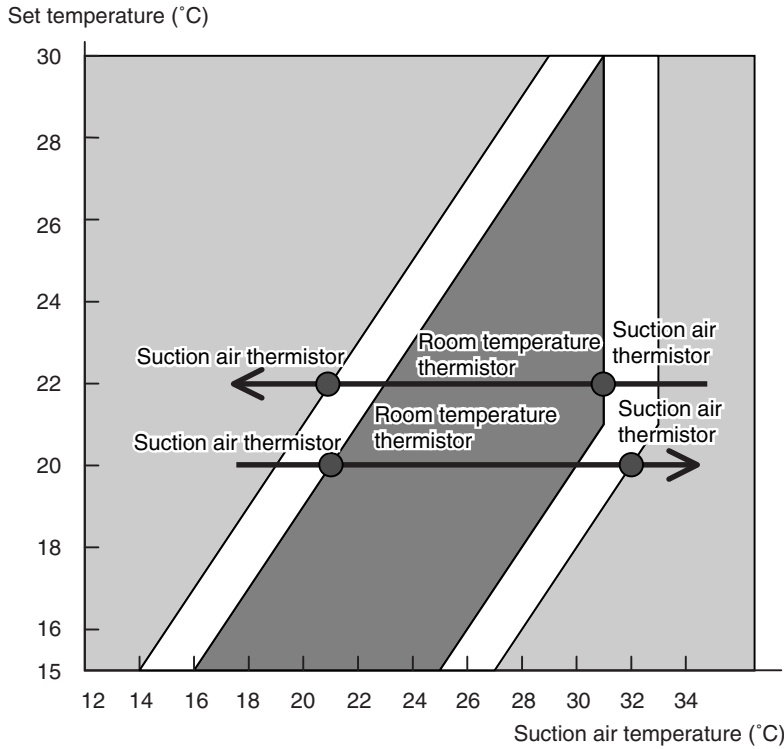
4.1.7 Using Conditions for Remote Controller Thermostat

Temperature is controlled by both the room temperature thermistor in remote controller and suction air thermistor for indoor unit. (This is however limited to when the field setting for the room temperature thermistor in remote controller is set to "Use.")

■ Cooling

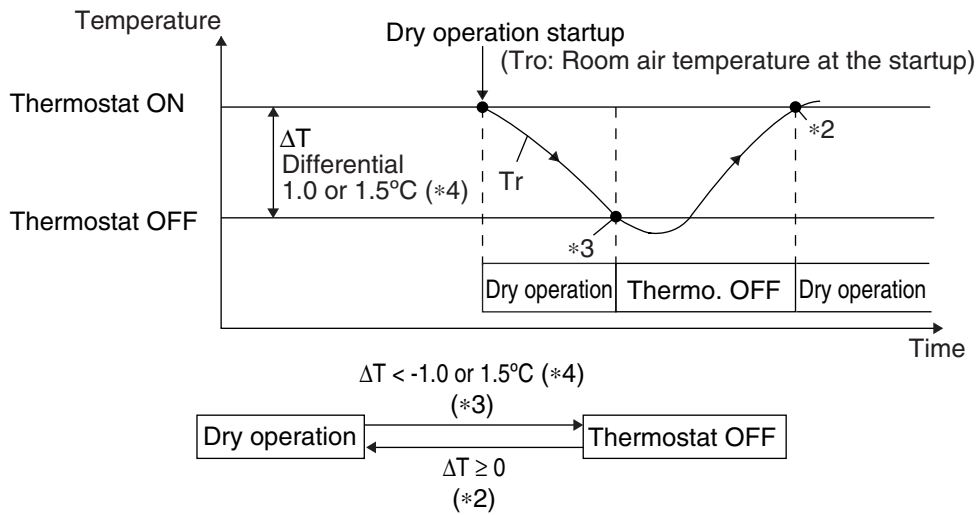


■ Heating



4.1.8 Program Dry Operation Function

According to a difference between the temperature detected when dry operation is started and the actually detected room temperature (*1), the thermostat is turned ON or OFF.



Tr: Room air temperature detected when dry operation is started
 Tr: Room thermistor temperature (detected by room temperature thermistor)
 ΔT: Detected room temperature (Tr) – Room air temperature at the startup (Tro)

*4: This value varies according to the models.

i Note:

- *1: The thermistor to detect room temperature is as follows according to field setting.
 - a. Factory setting: Suction air thermistor in the indoor unit
 - b. When set to remote controller thermistor: Room temperature thermistor in the remote controller

4.1.9 Automatic Restart

Purpose

The purpose of the auto-restart function is to automatically resume the same operating mode as when the unit was operating when the power supply is restored after a power failure.

Do not use the "Automatic Restart" function to daily start/stop the unit.

Precautions when turning OFF power

- When you have to turn OFF the power supply in order to carry out maintenance, make sure to turn the remote control's ON/OFF switch OFF firstly.
- If you turn OFF the power supply while the remote control's ON/OFF switch is still ON, the "automatic restart function" automatically starts the indoor unit fan immediately and the outdoor unit fan starts automatically 3 minutes after the power supply is restarted.
- Do not start/stop the unit by disconnecting the power supply. Stop the unit by stop command from the remote controller or optional controller before disconnecting the power supply. Be sure that the compressor and the outdoor unit fans are stopped before disconnecting the power supply so the "Refrigerant Recovery function" has been finished correctly.
- When restarting the unit after the power supply was disconnected for a longer period leave the unit OFF with the power supply connected for about half an hour (Refer to "Crankcase Heater Control" & "Preheating Operation Control").

4.1.10 Fan and Flap Operations

			Fan	Flap	Remote Controller Indication
				FCQ	
Heating Operation	Hot Start from Defrost	In Swing Operation	OFF	Horizontal	Swing
		In Airflow Direction Setting	OFF	Horizontal	Set Position
	Defrost	In Swing Operation	OFF	Horizontal	Swing
		In Airflow Direction Setting	OFF	Horizontal	Set Position
	Thermostat OFF	In Swing Operation	LL	Horizontal	Swing
		In Airflow Direction Setting	LL	Horizontal	Set Position
	Hot Start from Thermostat OFF (Cold Air Prevention)	In Swing Operation	LL	Horizontal	Swing
		In Airflow Direction Setting	LL	Horizontal	Set Position
	Stop (Error)	In Swing Operation	OFF	Horizontal	—
		In Airflow Direction Setting	OFF	Horizontal	—
Overload Thermostat OFF	In Swing Operation	LL	Horizontal	Swing	
	In Airflow Direction Setting	LL	Horizontal	Set Position	
Cooling Operation	Thermostat ON in Program Dry Mode	In Swing Operation	L	Swing	Swing
		In Airflow Direction Setting	L	Set Position	Set Position
	Thermostat OFF in Program Dry Mode	In Swing Operation	OFF	Swing	Swing
		In Airflow Direction Setting	OFF	Set Position	Set Position
	Cooling Thermostat OFF	In Swing Operation	Setting	Swing	Swing
		In Airflow Direction Setting	Setting	Set Position	Set Position
	Stop (Error)	In Swing Operation	OFF	Horizontal	—
		In Airflow Direction Setting	OFF	Set Position	—
Freeze-up Prevention in Program Dry Mode (Including Cooling Operation)	In Swing Operation	L	Swing	Swing	
	In Airflow Direction Setting	L	Set Position	Set Position	

4.2 Outdoor Unit

4.2.1 Abnormal Stop (Retry Control)

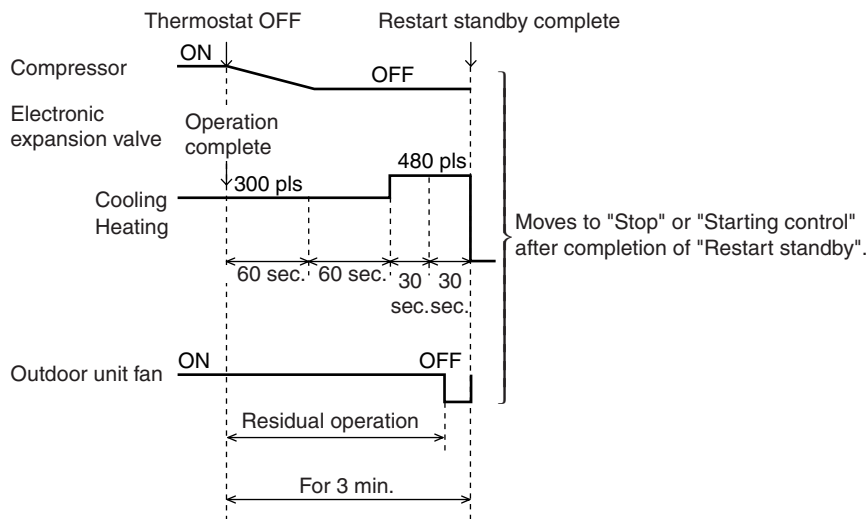
When the following items show abnormal values, the thermostat turns OFF and error is determined based on the number of retry in order to protect the compressor and other devices.

Item	Criteria	Number of retry
Low pressure	0.12 MPa or less continues for 5 minutes	10 times in 200 minutes
High pressure	OCP2 activated or over 3.92 MPa continues for 1 minute	15 times in 300 minutes
Discharge pipe temperature	Temperature over 115°C continues for 10 minutes or temperature exceeds 135°C	10 times in 200 minutes
Power supply	Reverse phase power supply	None (No retry)

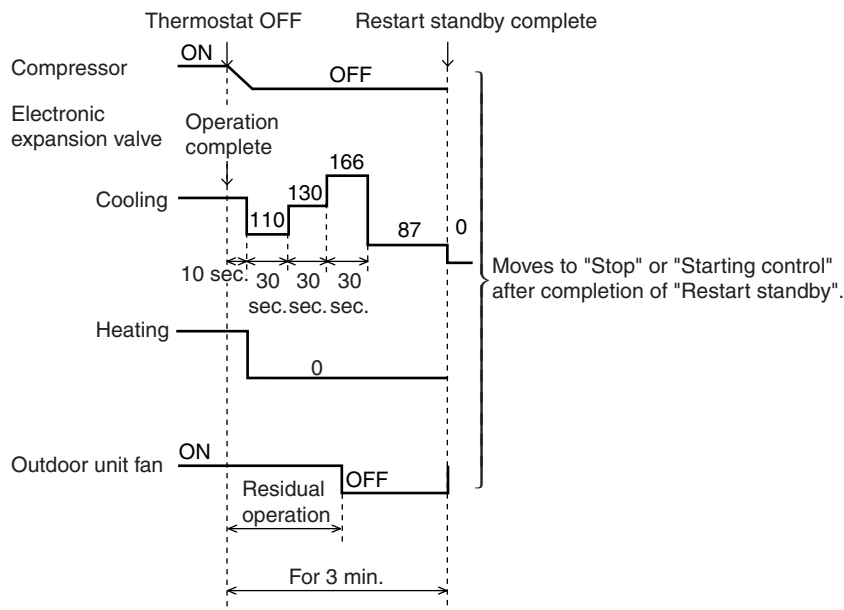
4.2.2 Restart Standby

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

■RZQ20/24LVA

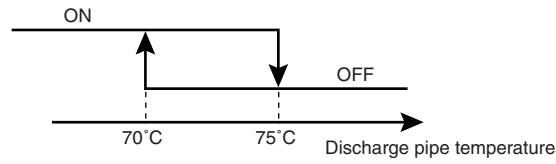


■RZQ36/45LVA, RZQ45/48MYL



4.2.3 Crankcase Heater Control (Except RZQ50/60/71KCVLT)

After the compressor has been turned OFF, the crankcase heater control will be activated in order to avoid refrigerant from dissolving in the compressor oil.



[Ending Condition]

- Discharge pipe temperature $\geq 75^{\circ}\text{C}$
- Thermostat ON

4.2.4 Preheating Operation Control

■ Only for RZQ20/24LVA

Outline

After the compressor has been turned OFF, the preheating operation will be activated in order to avoid refrigerant from dissolving in the compressor oil.

Trigger conditions

Starting conditions

- OR (
 - Power supply ON to first operation
 - 60 minutes or more elapsed after compressor stop
- &
 - Discharge pipe temperature $< 40^{\circ}\text{C}$
 - Outdoor air temperature $< 40^{\circ}\text{C}$

Ending conditions

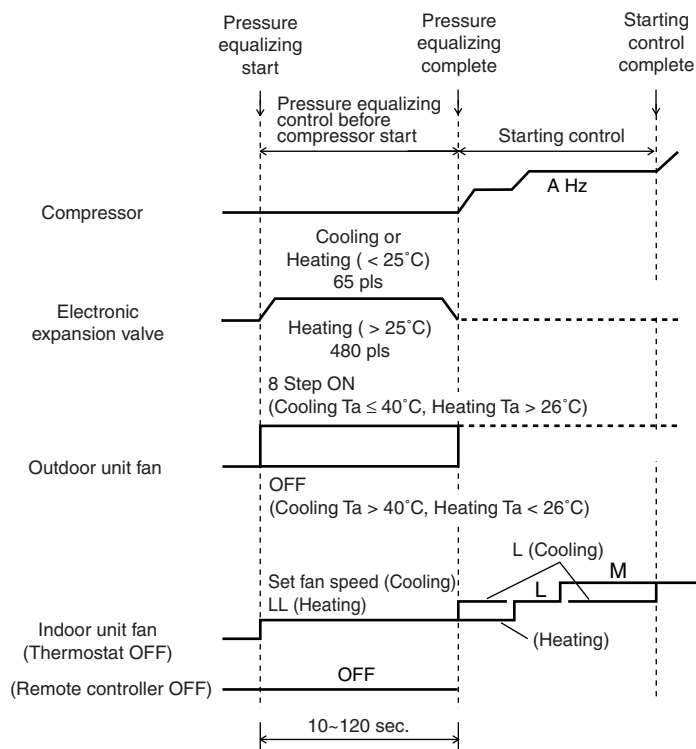
- OR (
 - Discharge pipe temperature $> 43^{\circ}\text{C}$
 - Outdoor air temperature $> 43^{\circ}\text{C}$
 - Thermostat ON confirmation

4.2.5 Starting Control

Starting Control

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

Ta: Outdoor air temperature



	RZQ20/24LVA	RZQ36/45LVA, RZQ45/48MYL
A Hz	118.5 Hz	112 Hz

4.2.6 Frequency Step Control

- Compressor operation frequency is controlled with the following steps in order to make evaporating temperature constant when cooling and make condensing temperature constant when heating.
- The target temperature of evaporation (T_{es}) in cooling varies within the range of $2^{\circ}\text{C} \leq T_{es} \leq 20^{\circ}\text{C}$ in accordance with ΔT_{rs} and indoor air conditioning load.
- The target temperature of condensation (T_{cs}) in heating also varies within the range of $42^{\circ}\text{C} \leq T_{cs} \leq 54^{\circ}\text{C}$.
- The compressor is equipped with capacity control function and switches between unload and full load according to operating conditions.

Step No.	Compressor operation frequency	
	RZQ20/24LVA	RZQ36/45LVA RZQ45/48MYL
1	48.0 Hz	32 Hz
2	52.5 Hz	36 Hz
3	57.0 Hz	41 Hz
4	63.0 Hz	44 Hz
5	69.0 Hz	48 Hz
6	78.0 Hz	52 Hz
7	87.0 Hz	57 Hz
8	97.5 Hz	62 Hz
9	109.5 Hz	67 Hz
10	124.5 Hz	72 Hz
11	139.5 Hz	78 Hz
12	156.0 Hz	84 Hz
13	168.0 Hz	90 Hz
14	183.0 Hz	94 Hz
15	192.0 Hz	98 Hz
16	204.0 Hz	102 Hz
17	216.0 Hz	107 Hz
18	228.0 Hz	112 Hz
19	237.0 Hz	117 Hz
20	246.0 Hz	123 Hz
21	255.0 Hz	131 Hz
22	265.5 Hz	139 Hz
23	282.0 Hz	147 Hz
24	297.0 Hz	155 Hz
25	309.0 Hz	164 Hz
26	327.0 Hz	174 Hz
27	333.0 Hz	184 Hz
28	339.0 Hz	194 Hz
29	345.0 Hz	205 Hz
30	354.0 Hz	216 Hz

4.2.7 General Electronic Expansion Valve Control

When cooling/heating, PI control of electronic expansion valve is conducted to keep heat exchanger outlet subcooled degree constant in order to utilize outdoor unit heat exchanger fully.

SH = R4T - Te

SH: Heat exchanger outlet subcooled degree

R4T: Suction pipe temperature (°C)

Te: Low pressure equivalent saturation temperature (°C)

[When slight wet operation]

Target heat exchanger outlet subcooled degree > Actual heat exchanger outlet subcooled degree

→ The electronic expansion valve will close.

[When slight overheat operation]

Target heat exchanger outlet subcooled degree < Actual heat exchanger outlet subcooled degree

→ The electronic expansion valve will open.

* The value of target heat exchanger outlet subcooled degree varies depending on change of discharge pipe superheated degree of inverter compressor, etc.

4.2.8 “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
 - Temperature set by remote controller
- Calculates and controls the optimum target temperature

4.2.9 Outdoor Unit Fan Speed Control

■ RZQ20/24LVA

Step	Cooling	Heating
	M1F	M1F
0	0 rpm	0 rpm
1	200 rpm	200 rpm
2	250 rpm	250 rpm
3	300 rpm	300 rpm
4	360 rpm	360 rpm
5	430 rpm	430 rpm
6	515 rpm	515 rpm
7	620 rpm	620 rpm
8	830 rpm	745 rpm

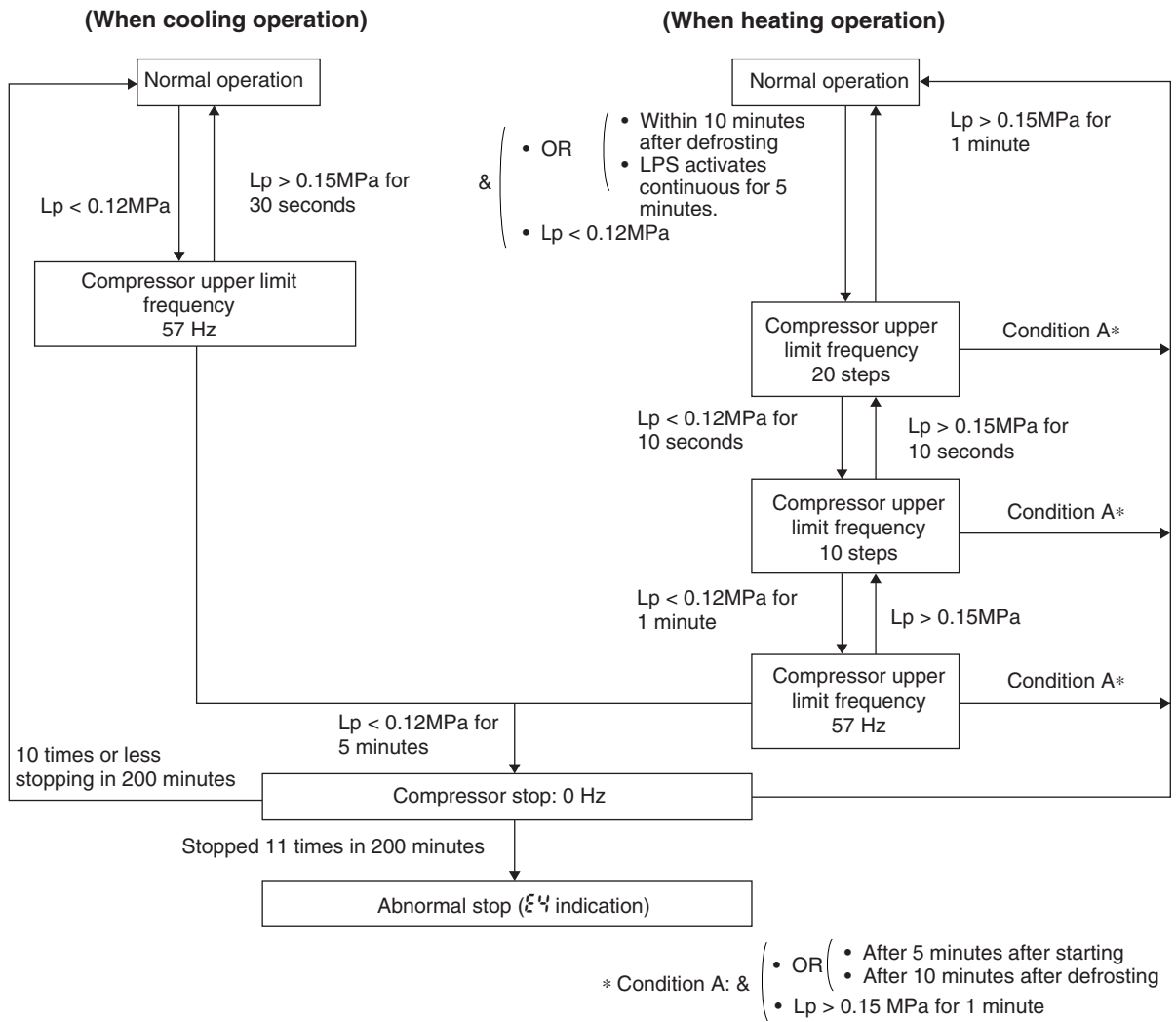
■ RZQ36/45LVA, RZQ45/48MYL

Step	Cooling		Heating	
	M1F	M2F	M1F	M2F
0	0 rpm	0 rpm	0 rpm	0 rpm
1	250 rpm	0 rpm	250 rpm	0 rpm
2	400 rpm	0 rpm	285 rpm	250 rpm
3	285 rpm	250 rpm	335 rpm	300 rpm
4	360 rpm	325 rpm	395 rpm	360 rpm
5	445 rpm	410 rpm	470 rpm	435 rpm
6	545 rpm	510 rpm	560 rpm	525 rpm
7	660 rpm	625 rpm	660 rpm	625 rpm
8	850 rpm	815 rpm	842 rpm	807 rpm

4.2.10 Low Pressure Protection Control

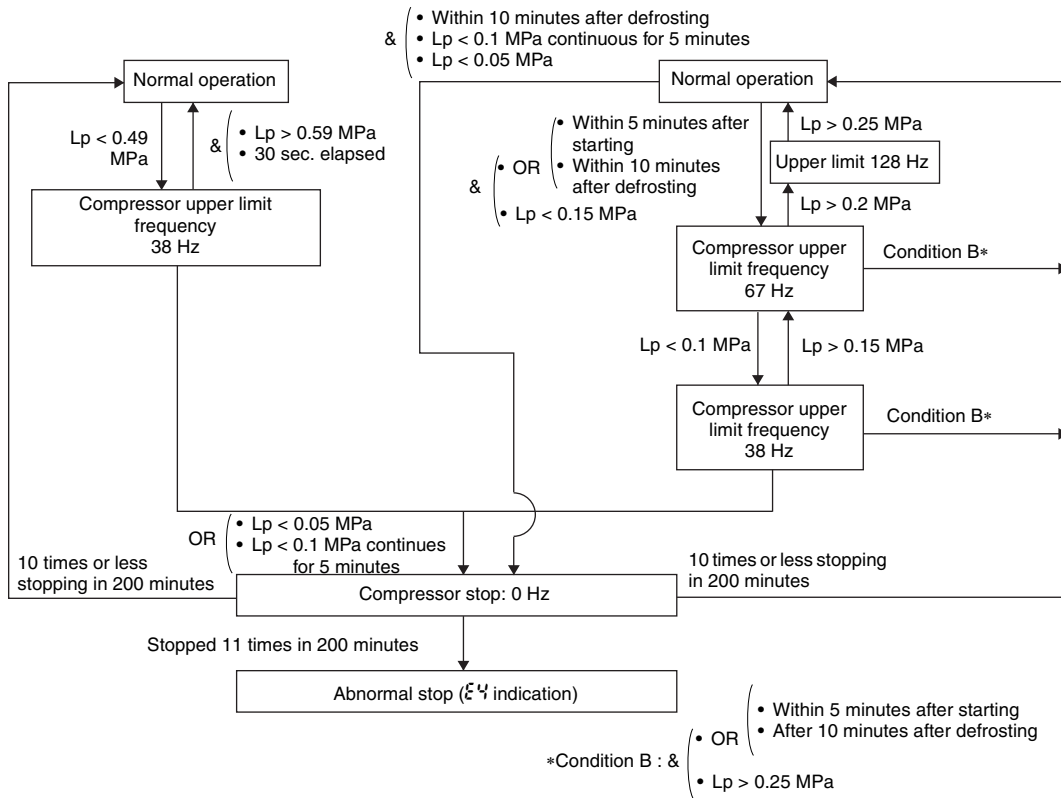
In order to prevent abnormal low pressures in the system, the below control function will be activated. Low pressure is detected by the low pressure sensor.

■ RZQ20/24LVA



■RZQ36/45LVA, RZQ45/48MYL
(When cooling operation)

(When heating operation)



4.2.11 High Pressure Protection Control

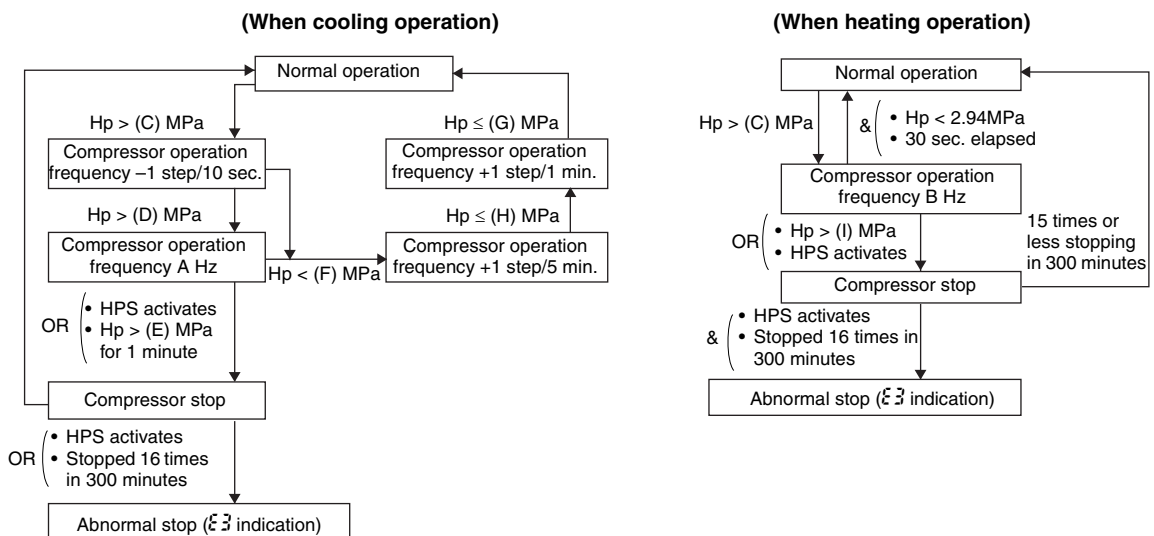
In order to prevent abnormal high pressures in the system and hence avoiding activation of the high pressure safety device the below control function will be activated.

Details

The high pressure value will be calculated from the low pressure, power input and compressor frequency.

- High pressure switch opens at: 4MPa (tolerance: +0 / -0.15)
- High pressure switch closes at: 3MPa (tolerance: +/- 0.15)

Flow Chart

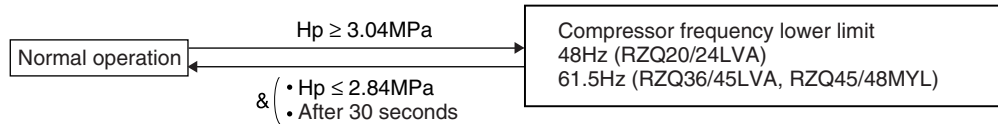


Parameters

	RZQ20/24LVA	RZQ36/45LVA, RZQ45/48MYL
A Hz	118.5 Hz	62 Hz
B Hz	93 Hz	62 Hz
C MPa	3.22 MPa	3.68 MPa
D MPa	3.32 MPa	3.77 MPa
E MPa	3.92 MPa	3.92 MPa
F MPa	3.18 MPa	3.63 MPa
G MPa	2.94 MPa	3.43 MPa
H MPa	3.08 MPa	3.58 MPa
I MPa	3.92 MPa	3.92 MPa

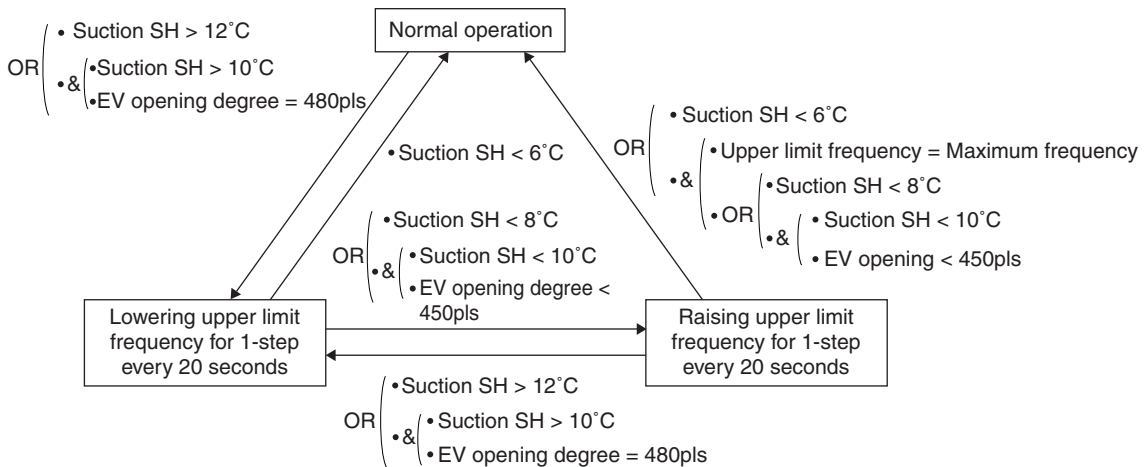
As the bearing resistance limit pressure decreases during slow operation of the compressor, the lower limit of frequency is restricted.

[In cooling/heating]



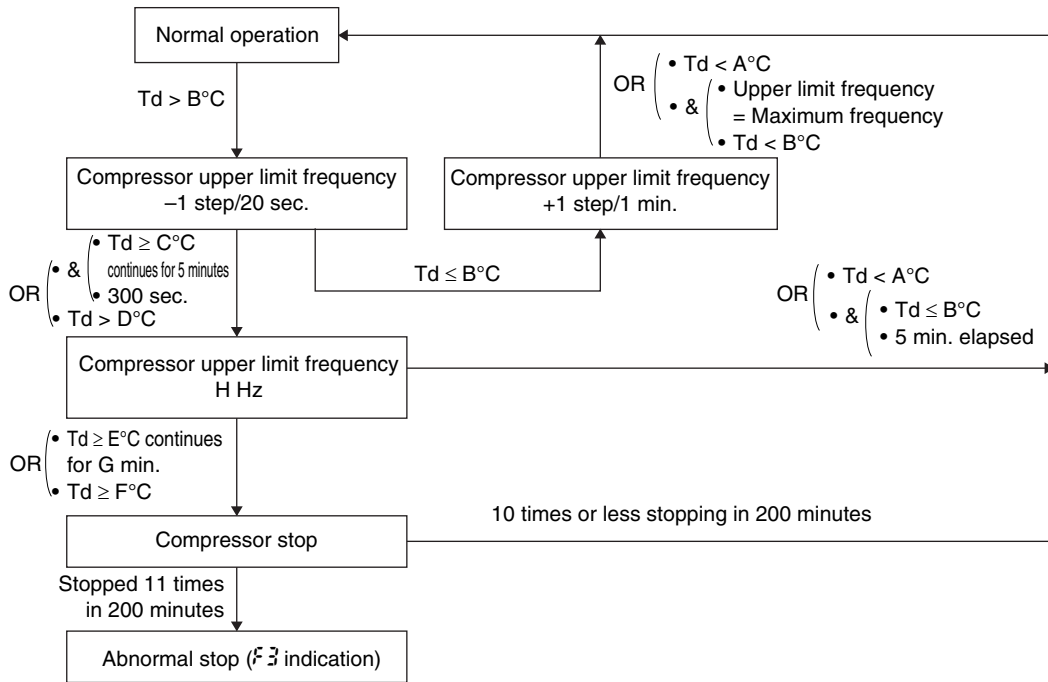
4.2.12 Suction Pipe Superheat Protection Control (Only in Heating)

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.



4.2.13 Discharge Pipe Temperature Control

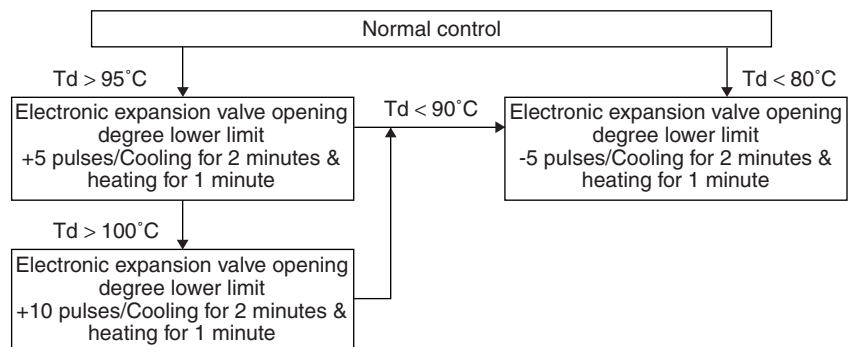
The compressor operating frequency will be controlled in order to avoid abnormal high compressor temperatures (see also electronic expansion valve control).



	RZQ20/24LVA	RZQ36/45LVA, RZQ45/48MYL
A °C	100 °C	100 °C
B °C	105 °C	105 °C
C °C	110 °C	110 °C
D °C	120 °C	120 °C
E °C	110 °C	115 °C
F °C	125 °C	135 °C
G min.	15 min.	10 min.
H Hz	97.5 Hz	62 Hz

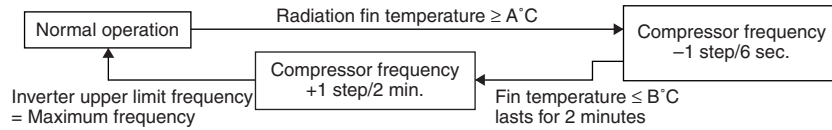
[Electronic expansion valve opening degree control]

Td: Discharge pipe temperature



4.2.14 Inverter Protection by Radiation Fin Temperature

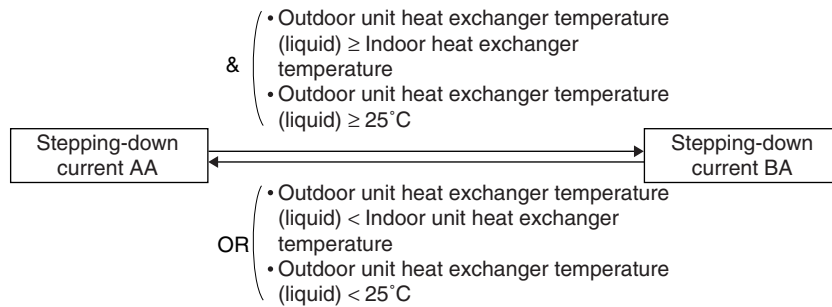
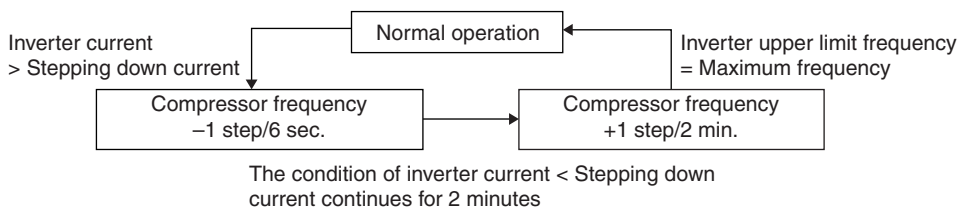
Restricts compressor operation upper limit frequency to prevent compressor from tripping due to radiation fin temperature.



	RZQ20/24LVA	RZQ36/45LVA, RZQ45/48MYL
A°C	80°C	84°C
B°C	84°C	81°C

4.2.15 Inverter Current Protection Control

Restricts compressor operation frequency to prevent compressor from tripping due to inverter overcurrent.



	RZQ20/24LVA	RZQ36/45LVA	RZQ45/48MYL
A	19A	20A	13A
B	16.5A	16.5A	11A

4.2.16 Capacitor Discharging Control

Outputs non-phase waveform for heat exchanger to discharge for about 1 minute after operation OFF (remote controller stop, stop due to error, compressor and outdoor unit fan motor stop with thermostat OFF in the retry system).

4.2.17 Forced Thermostat OFF

Thermostat OFF due to Freeze-up Prevention (Only in Cooling)

Conducts thermostat OFF under the following temperature and period of time to prevent the indoor unit heat exchanger from freezing up.

- & { • Indoor unit heat exchange temperature < -5°C for 1 continuous minute
- Indoor unit heat exchange temperature < -1°C for 40 cumulative minutes

Thermostat OFF due to Outdoor Air Temperature (Only in Heating)

If outdoor air temperature is high, turns OFF thermostat at the following temperature to protect the system.

- RZQ-LV Outdoor air temperature > 32°C
- RZQ-MY Outdoor air temperature > 30°C



"Freeze-up Prevention Control". Refer to P.28.

4.2.18 Low Pressure Difference, Low Compression Protection Control

To ensure the compression ratio under low outdoor air temperature cooling condition and the pressure difference between liquid pressure and low pressure, controls the outdoor unit fan and changes the target value of compressor PI control.

Low Outdoor Air Temperature Control in Cooling

Controls outdoor unit fan under low outdoor air temperature condition to secure pressure difference between high and low pressure.

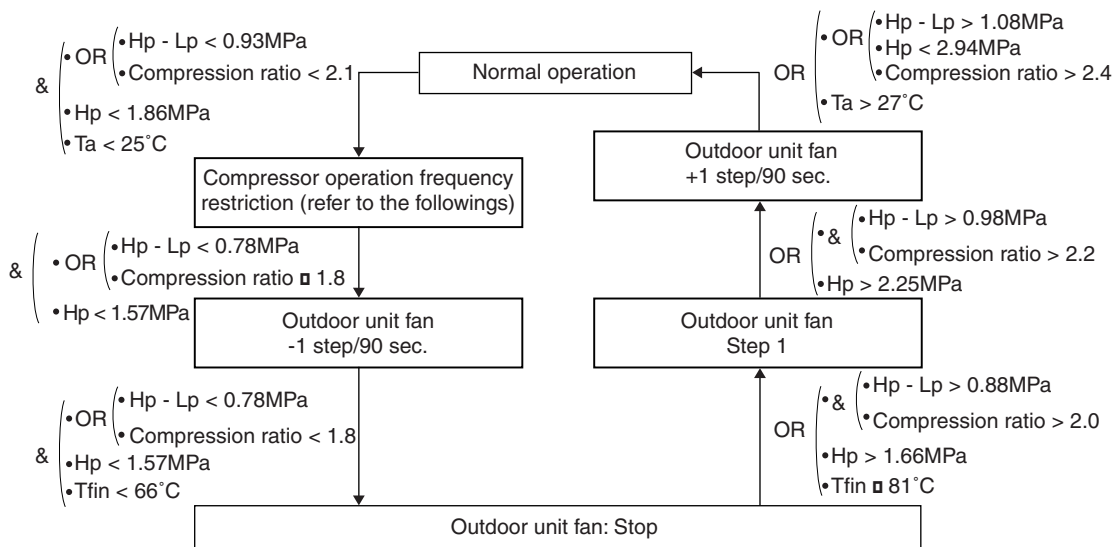
Hp: High pressure

Lp: Low pressure

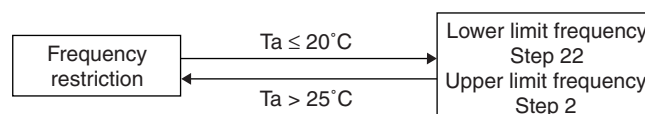
Ta: Outdoor air temperature

Tfin: Radiation fin temperature

■ RZQ20/24/36/45LVA, RZQ45/48MYL

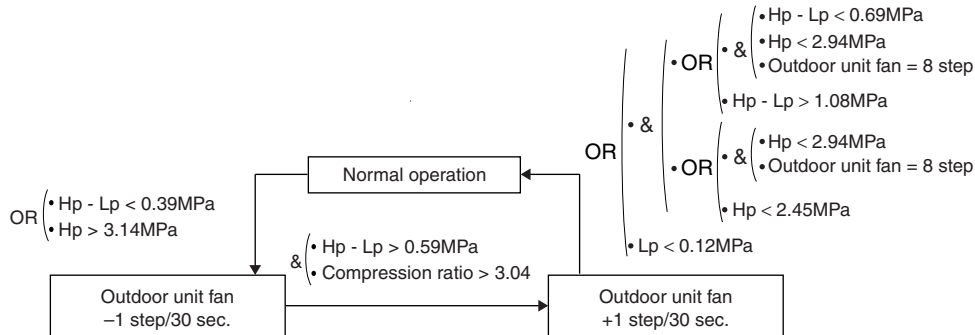


Frequency Restriction



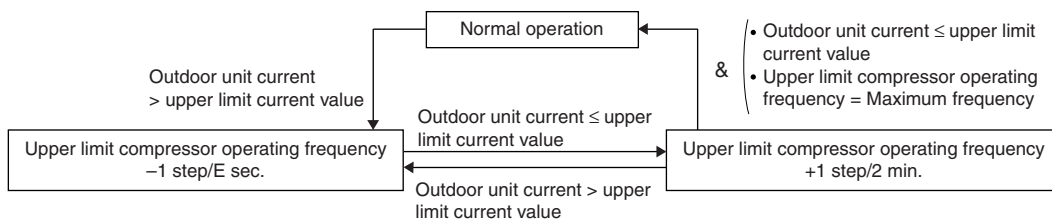
Heating Overload Control

In heating overload condition, controls outdoor unit fan to secure the differential pressure between high and low pressures of compressor.



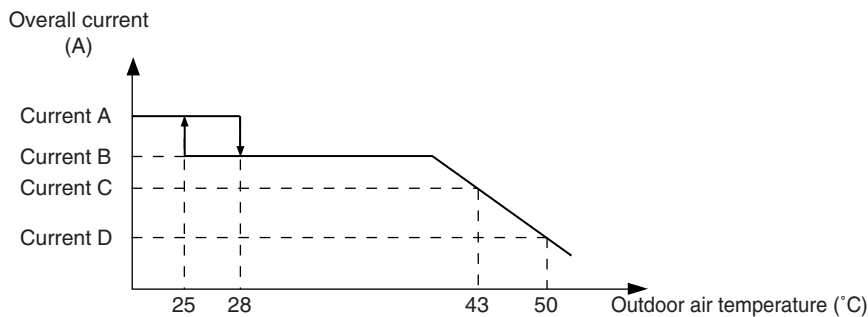
4.2.19 Protection Control by Overall Current

Monitors the overall current and restricts the upper limit compressor operating frequency to prevent circuit breakers from exceeding the rated capacity.



Upper limit current (A)

Takes the following values depending on the outdoor air temperature. Also varies depending on model.



	RZQ20/24LVA	RZQ36/45LVA	RZQ45/48MYL
A A	19.0 A	24.0 A	13.5 A
B A	16.5 A	24.0 A	10.0 A
C A	13.4 A	23.0 A	8.5 A
D A	10.0 A	16.0 A	3.0 A
E sec.	6 sec.	10 sec.	6 sec.

4.2.20 Refrigerant Shortage Detection Control

When it is determined as poor performance due to inadequate refrigerant quantity, error code of “U0” is displayed on the remote controller and the system makes an emergency stop.

(In case of moderate refrigerant shortage, the error code “U0” is displayed when the inspection button is pressed.)

4.2.21 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

	RZQ
Compressor	110 Hz
Electronic expansion valve	0 pls (fixed opening degree)
Solenoid valve for receiver gas purging (SVG)	ON (open)

Ending Condition

OR (

- 30 seconds elapsed with residual operation
- ($L_p < 0.2$ MPa (Cooling)
- ($L_p < 0.1$ MPa (Heating)

4.2.22 Oil Recovery Operation

When compressor operates for extended period of time with low frequency, oil level in compressor may be lowered due to incomplete oil recovery. To prevent the problem, conducts oil recovery operation with higher compressor operation frequency for 5 minutes.

- The interval of oil recovery operation may be shortened when the compressor operates frequently with low frequency.

4.2.23 Defrost Operation

Outline

When the unit is operating in heating mode, a defrost operation will be conducted in order to avoid ice formation on the outdoor unit heat exchanger.

Defrost Starting Conditions

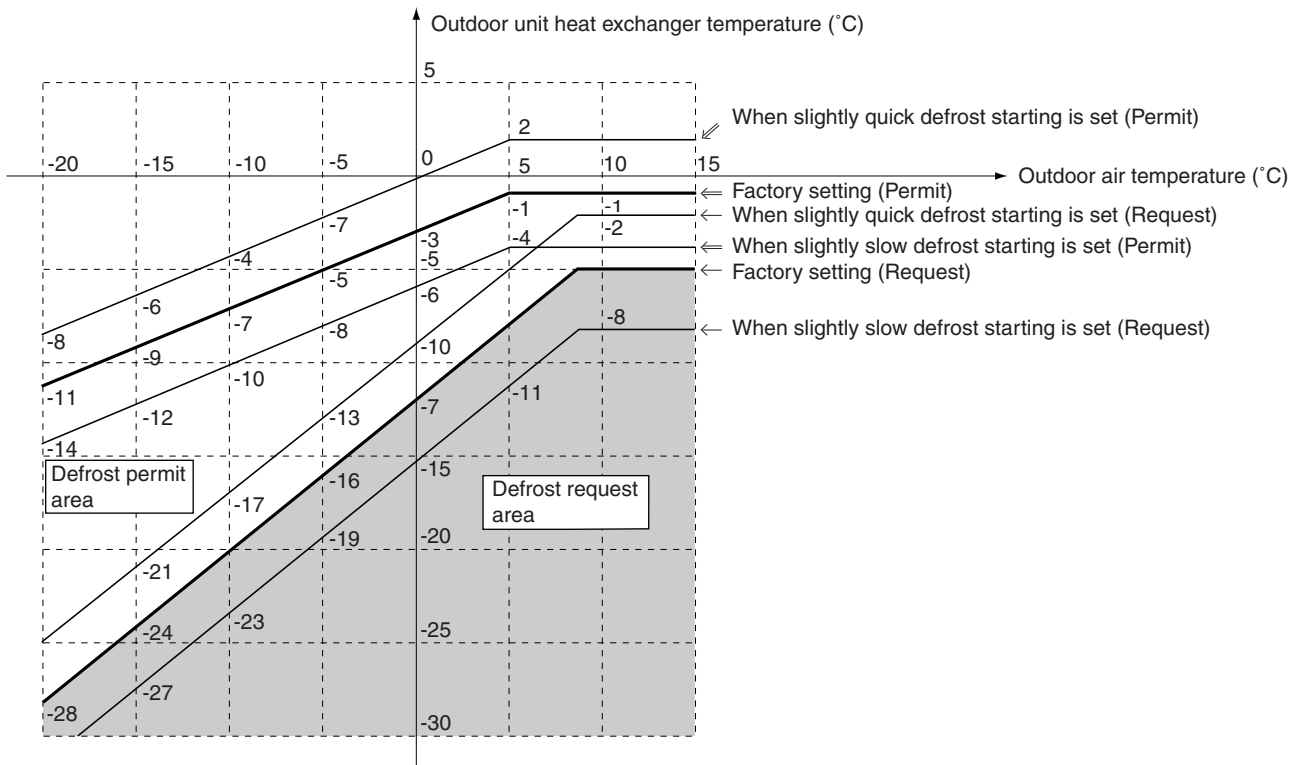
Defrost will start when the following conditions have been realized:

- & (
 - Integrated compressor running time is 25 minutes or more since the completion of the previous defrost operation.
 - OR (
 - Defrost upper limit time A is met.
 - Outdoor unit heat exchanger temperature is within the defrost requesting area.

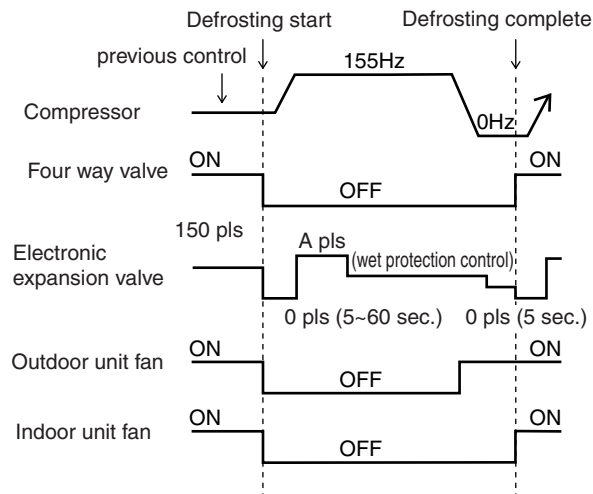
Areas

Defrost upper limit time A

	When quick defrost starting is set 16(26)-3-03	Factory setting 16(26)-3-01	When slow defrost starting is set 16(26)-3-02
Outdoor air temperature > -5°C	40 minutes	2 hours	6 hours
Outdoor air temperature ≤ -5°C	40 minutes	6 hours	8 hours



Defrost control



	A pls
RZQ20/24LVA	480 pls
RZQ36/45LVA, RZQ45/48MYL	250 pls

Defrost Ending Conditions

Defrosting ends when the following conditions have been realized. Note that defrosting can be operated for 10 minutes at longest.

Tb: Outdoor unit heat exchanger temperature

Hp: High pressure

$$\text{OR} \left(\begin{array}{l} \bullet \& \left(\begin{array}{l} \bullet \text{Defrost Time} > 10 \text{ seconds} \\ \bullet \text{Hp} > 2.45 \text{ MPa} \end{array} \right) \\ \bullet \& \left(\begin{array}{l} \bullet \text{Defrost Time} > 1 \text{ minute} \\ \bullet \text{Tb} > 12^\circ\text{C} \end{array} \right) \\ \bullet \& \left(\begin{array}{l} \bullet \text{Defrost Time} > 9 \text{ minutes} \\ \bullet \text{Tb} > 10^\circ\text{C} \end{array} \right) \end{array} \right.$$

4.2.24 Room Thermostat Control

Difference between temperature set by the remote controller and indoor suction air temperature turns ON/OFF the thermostat.

- Condition to turn ON the thermostat: When $\Delta T \geq +0.5^\circ\text{C}$
- Condition to turn OFF the thermostat

$$\text{OR} \left(\begin{array}{l} \bullet \Delta T \leq -0.5^\circ\text{C} \text{ continues for 1 minute} \\ \bullet \Delta T \leq -2^\circ\text{C} \text{ (in cooling)} \\ \quad \Delta T \leq -2.5^\circ\text{C} \text{ (in heating)} \\ \bullet \text{When there is a rapid change from } \Delta T \geq +1.5^\circ\text{C} \text{ to } \Delta T \geq -0.5^\circ\text{C} \end{array} \right.$$

* $\Delta T = \text{Indoor suction air temperature} - \text{Temperature set by the remote controller}$: In cooling

$\Delta T = \text{Temperature set by the remote controller} - \text{Indoor suction air temperature}$: In heating

4.2.25 Simulated Operation Function

■ RZQ20/24LVA

When an error on one of the below thermistors occurs, operation will continue while displaying the applicable alarm on the remote controller. Radiation fin thermistor error is only displayed when pressing the INSPECTION/TEST button on the remote controller.

Applicable thermistors

- Outdoor air thermistor
- Outdoor unit heat exchanger distributor pipe thermistor (Cooling)
- Radiation fin thermistor
- Discharge pipe thermistor
- Indoor unit suction air thermistor



Note: Simulated operation will not be conducted in case the below mentioned thermistors are defective:

- Suction pipe thermistor
- Indoor unit heat exchanger thermistor
- Outdoor unit heat exchanger distributor pipe thermistor (Heating)

■ RZQ36/45LVA

In case of a thermistor error, simulated operation is performed in 2 different ways as shown below even while the error is detected.

A. Operation continues while the error code is displayed on the remote controller.

Applicable thermistors

- Outdoor air thermistor
- Heat exchanger distributor pipe thermistor (Cooling)
- Intermediate heat exchanger thermistor (Heating)
- Liquid pipe thermistor
- Indoor unit suction air thermistor
- Indoor unit heat exchanger thermistor

B. Operation continues even the error is detected. Only when the INSPECTION/TEST button is pressed, the error code is displayed.

Applicable thermistors

- Remote controller thermistor
- Radiation fin thermistor



Note: In case of a thermistor error other than A and B above, a abnormal stop is made and no simulated operation is carried out.

Applicable thermistors

- Suction pipe thermistor
- Discharge pipe thermistor
- Heat exchanger distributor pipe thermistor (Heating)
- Intermediate heat exchanger thermistor (Cooling)

■ RZQ45/48MYL

When an error on one of the below thermistors occurs, operation will continue while displaying the applicable alarm on the remote controller. Radiation fin thermistor error is only displayed when pressing the INSPECTION/TEST button on the remote controller.

- Outdoor air thermistor
- Outdoor air heat exchanger thermistor
- Radiation fin thermistor
- Discharge pipe thermistor
- Indoor unit suction air thermistor
- Indoor heat exchanger thermistor



Note: Simulated operation will not be conducted in case the below mentioned thermistors are defective:

- Suction air thermistor
- Indoor heat exchanger thermistor
- Outdoor air heat exchanger thermistor

Part 5

Field Setting

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1. Test Operation

1.1 Check Items before the Test Operation

	Item to check
Power supply wiring Transmission wiring Earth wiring	Is all wiring laid as instructed? Is all the wiring connected? Are there no missing or reversed phases?
	Is the wiring between units all in the correct order between the units?
	Is the unit completely grounded?
	Are the screws on the wiring attachments all thoroughly in screwed in?
	Has the insulation resistance tested to at least 1 MΩ? <ul style="list-style-type: none"> Use a 500V mega-tester for measuring insulation. Note: Do not use the mega-tester for currents other than 220V.
Refrigerant piping	Is the piping size correct?
	Is the piping insulation applied correctly? Is the liquid and gas side piping all insulated?
	Are the stop valves for both the liquid and gas sides open completely? Operating the unit with the valves shut will break the compressor.
Amount of refrigerant	Did you fill in the additional charging and recharging rate, and piping length on the caution label attached to the rear side of the front panel?
Indoor unit	Is the indoor unit fully installed? <ul style="list-style-type: none"> When the test operation is started, the fan automatically begins turning. If a decoration panel is not attached, make sure that no work is being done on the indoor unit. If you are using the wireless remote controller, do the test operation after attaching the decoration panel to the indoor unit.

1.2 Test Operation

After the indoor and outdoor unit installation, be sure to perform the test operation in accordance with the following procedure.

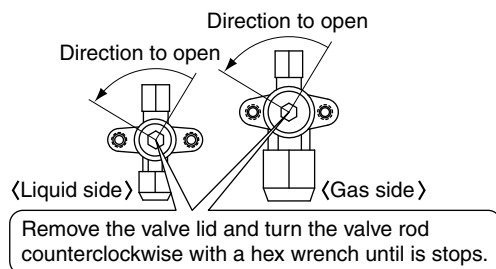
- Open the front panel and check that the liquid and gas sides of the stop valves are open.
<Be sure to close the front panel before the operation (Risk of electric shock)>



Note:

After doing an air-purge with a vacuum pump, the refrigerant pressure may not rise even if the stop valves are opened.

This is because the refrigerant piping path is closed off by the outdoor unit electronic expansion valve, etc. There are no problems if the unit is run.



- Turn the power ON at least 6 hours before operating the unit to protect the compressor.
- Set to cooling operation with the remote controller.
- Press the remote controller's INSPECTION/TEST button 4 times (twice on the wireless remote controller) to enter test operation mode.
Within 10 seconds, press the RUN/STOP button to start the test operation. Check the unit, letting it run at least 3 minutes.



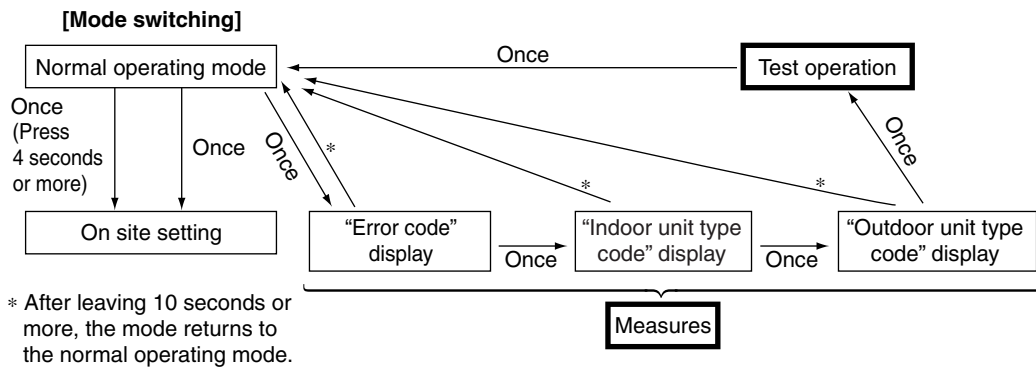
Note:

- In the first operation after installation, the COOL operation is performed for approx. 3 minutes even when the HEAT operation is set. After that, the operation will be switched to the HEAT operation, but this is normal. (The remote controller displays "HEAT operation".)
- When the outdoor air temperature is 24°C or more, the HEAT operation is not performed even if it is set, but this is normal.

5. Press INSPECTION/TEST button and operate normally.
6. Confirm function of unit according to the operation manual.
7. If the decoration panel on the indoor unit has not been installed, turn OFF the power after the test operation.

PRECAUTIONS

- In Step 5. above, the test operation can be started even if test operation mode is set and the RUN/STOP button is pressed in reverse order.
- Refer to the following diagnostic chart if the unit fails to run.
- After the test operation is complete, press the INSPECTION/TEST button once to put the unit in INSPECTION mode. Make sure that the error code “U0” (= normal) is displayed.
If any other error code is displayed, refer to the following diagnostic chart.
- Pressing the INSPECTION/TEST button 4 times returns the unit to normal operating mode.



Service Diagnosis

During the test operation, if the error code shown below is displayed on the remote controller, an installation work error may be the cause.

Error code	Installation work error	Remedial action
E3, E4, L8, U0	Failure to open the stop valve	Open the stop valve.
E3, E4, L4, U8	Closed airflow path	Remove any obstacle to the airflow path.
U1	Phase interruption	Correct the wiring.
U2	Unbalanced power	Balance the power/Correct the wiring.
U4, UF	Improper connection of the continuous wiring	Correct the wiring.
UA	Connection of incompatible indoor unit	Connect appropriate indoor unit (refer to the catalogue).

- If the remote controller displays error codes other than those above, the indoor and outdoor units may be damaged.
For the error codes, please refer to the indoor unit's installation manual.
(Some error codes are not displayed depending on the indoor and outdoor units.)

2. Field Setting from Remote Controller

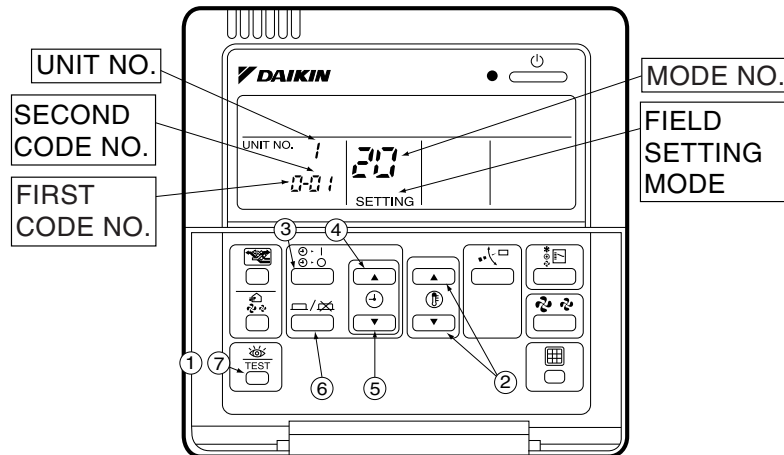
Individual function of indoor unit can be changed from the remote controller. At the time of installation or after service inspection / repair, make the field setting in accordance with the following description.








Wrong setting may cause error.

(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.)

2.1 Wired Remote Controller

2.1.1 BRC1C61/BRC1D61

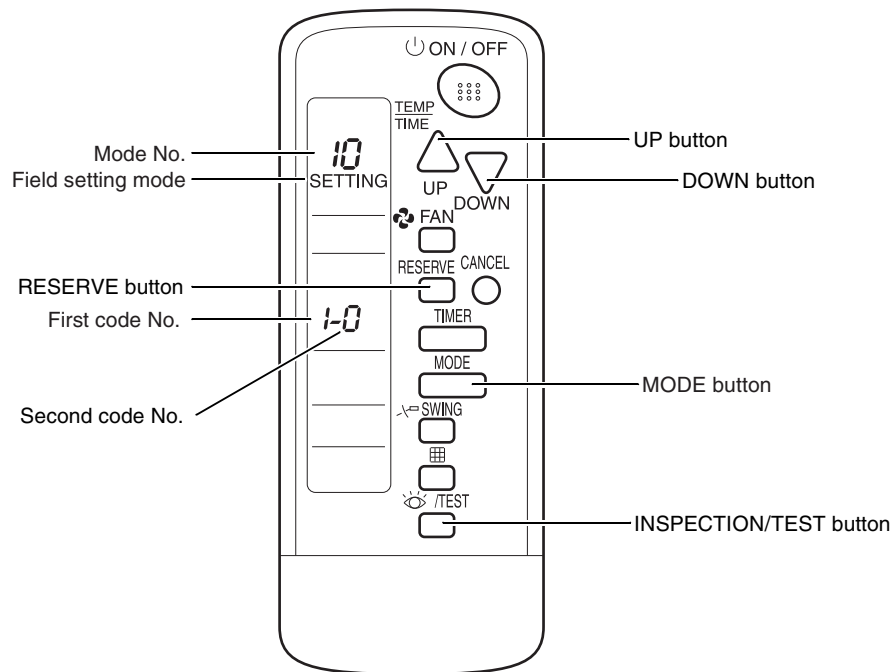


1. When in the normal mode, press the “” button for 4 seconds or more, and the FIELD SETTING MODE is entered.
2. Select the desired MODE NO. with the “” button (2).
3. During group control, when setting by each indoor unit (mode No. 20, 22 and 23 have been selected), press the “” button (3) and select the INDOOR UNIT NO to be set. (This operation is unnecessary when setting by group.)
4. Press the “” upper button (4) and select FIRST CODE NO.
5. Press the “” lower button (5) and select the SECOND CODE NO.
6. Press the “” button (6) once and the present settings are SET.
7. Press the “” 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”.

2.2 Wireless Remote Controller



Setting

To set the field settings, you have to change:

- Mode No.
- First code No.
- Second code No.

To change the field settings, proceed as follows:

Step	Action
1	Hold down the INSPECTION/TEST button for at least 4 s during normal mode to enter the "Field setting mode".
2	Press the MODE button to select the desired "Mode No."
3	Press the UP button to select the "First code No."
4	Press the DOWN button to select the "Second code No."
5	Press the RESERVE button to set the present settings.
6	Press the INSPECTION/TEST button to return to the "Normal mode".

2.3 Setting Contents and Code No. for Indoor Units

■ : Factory settings

Mode No.	First Code No.	Description of the setting		Second Code No.					
				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.)	Ultra 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	Filter type	Long life filter		Ultra long life filter		—	—	
	2	Selection of thermistor	TH1 = remote controller		TH1 = suction air		—	—	
3	Filter display	Display		No display		—	—		
11 (21)	2	Fan OFF at thermostat OFF	LL-speed		OFF		—	—	
	4	PMV Control	Permitted		Prohibited		—	—	
	7	Airflow adjustment	OFF		Completion of airflow adjustment	Start of airflow adjustment	—	—	
12 (22)	3	Fan speed heating thermostat OFF	LL-speed		Set speed		—	—	
	5	Automatic restart	Disabled		Enabled		—	—	
	6	Fan speed when cooling thermostat OFF	LL		Set Fan Speed		—	—	
13 (23)	0	Ceiling height setting	Normal		High		Extra high		
			≤ 2.7 m		2.7~3.0 m		3.0~3.5 m		
	1	Selection of airflow direction (setting for when a blocking pad kit has been installed).	4-way flow		3-way flow		2-way flow		
	4	Airflow direction adjust range setting	Draft prevention		Standard		Ceiling soiling prevention		
6	External static pressure	Normal		High		Low			

2.3.1 Detailed Explanation of Setting Modes

Filter Sign Setting

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

Mode No.	First Code No.	Second Code No.	Standard Filter	Long Life Filter	Ultra Long Life Filter	Setting
10 (20)	0	01	200 hrs.	2,500 hrs.	10,000 hrs.	Contamination Light
		02	100 hrs.	1,250 hrs.	5,000 hrs.	Contamination Heavy

Filter Type

When a ultra long life filter is installed, the filter sign timer setting must be changed.

Mode No.	First Code No.	Second Code No.	Setting
10 (20)	1	01	Long Life Filter
		02	Ultra Long Life Filter

Selection of Thermistor

Select the thermistor to control room temperature.

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

The factory setting for the Second Code No. is "01" and room temperature is controlled by the indoor unit suction air thermistor.

When the Second Code No. is set to "02", room temperature is controlled by the suction air thermistor and remote controller thermistor.

"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	Display
		02	No display

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.

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

Airflow Adjustment (AUTO)

External Static Pressure Settings

Make settings in either method (a) or method (b) as explained below.

(a) Use the airflow auto adjustment function to make settings.

Airflow auto adjustment: The volume of blow-off air is automatically adjusted to the rated quantity.

(b) Select External Static Pressure with Remote Controller Check that 01 (OFF) is set for the "Second Code No." in "Mode No. 21" for airflow adjustment on an indoor unit basis in Table below. The "Second Code No." is set to 01 (OFF) at factory setting. Change the "Second Code No." as shown in Table according to the external static pressure of the duct to be connected.

Mode No.	First Code No.	Second Code No.	Airflow adjustment
11 (21)	7	01	OFF
		02	Completion of airflow adjustment
		03	Start of airflow adjustment

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.

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

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.

Automatic 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 (same as 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).

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).**

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

Setting of Normal Airflow

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

■ In the Case of FCQ20/24

Mode No.	First code No.	Second code No.	Setting	Ceiling height (m)
13 (23)	0	01	Standard • All round outlet	≤ 2.7
		02	High Ceiling (1)	2.7 - 3
		03	Higher Ceiling (2)	3 - 3.5

■ In the Case of FCQ36/45

Mode No.	First code No.	Second code No.	Setting	Ceiling height (m)
13 (23)	0	01	Standard • All round outlet	≤ 3.2
		02	High Ceiling (1)	3.2 - 3.6
		03	Higher Ceiling (2)	3.6 - 4.2

Airflow Direction Setting

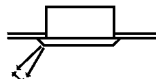
Set the airflow direction of indoor units as given in the table below. (Set when optional air outlet blocking pad has been installed.) The second code No. is factory set to "01."

Setting Table

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

Setting of Airflow Direction Adjustment Range

Make the following airflow direction setting according to the respective purpose.

**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)

External Static Pressure Settings (for FBQ model)

Model No.	First Code No.	Second Code No.	External Static Pressure
13 (23)	6	01	50Pa
		02	60Pa
		03	70Pa
		04	80Pa
		05	90Pa
		06	100Pa
		07	110Pa
		08	120Pa
		09	130Pa
		10	140Pa
		11	150Pa
		12	160Pa
		13	180Pa
		14	200Pa

2.4 Setting Contents and Code No. for Outdoor Units

Remote controller settings

The table below contains the remote controller settings.

■ : Factory setting

Mode No.	First Code No.	Description of the setting	Second Code No.					
			01	02	03	04	05	06
16 (26)	0	Low night noise operation	Disable	Low night noise operation	Capacity priority setting (when using KRP58M51 option)	Low night noise operation + capacity priority	—	—
	1	Low night noise operation start and stop time	—	—	22h00 ~ 06h00 (Level 2)	22h00 ~ 08h00 (Level 2)	20h00 ~ 08h00 (Level 2)	22h00 ~ 08h00 (Level 3)
	3	Defrost starting setting	Standard	Defrost slow starting setting	Defrost quick starting setting	—	—	—



Note:

Level 3 is lowest noise level.

2.4.1 Low Night Noise Operation

Purpose

Lower the operation sound of the outdoor unit.

Setting

Silent Operation can be activated by:

1. Automatic control (By field setting from remote controller)
2. External activation (from optional PCB KRP58M51)

■ Low Night Noise Operation by Automatic Control

Table

Silent operation can be set by field setting from the wired remote controller:

■ : Factory setting

Description	Mode No.	First Code No.	Second Code No.					
			01	02	03	04	05	06
Low night noise Operation	16(26)	0	Disable	Low night noise operation	Capacity priority setting (when using KRP58M51 option)	Low night noise operation + capacity priority	—	—
Low night noise operation start & stop time		1	—	—	22h00 ~ 06h00 (Level 2)	22h00 ~ 08h00 (Level 2)	20h00 ~ 08h00 (Level 2)	22h00 ~ 08h00 (Level 3)

Method

When setting mode 16(26)-0-02, low night noise operation will be carried out by presuming the current time in accordance with the outdoor air temperature.

Automatic mode will start when the outdoor temperature is = average max of last 10 days -5°C and will be conducted for 10 hours.

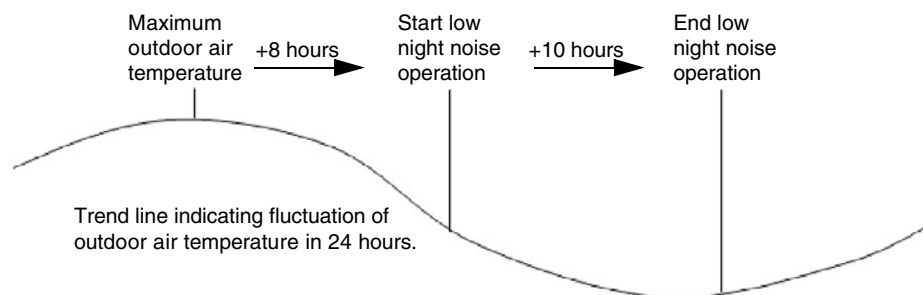
The maximum outdoor air temperature is supposed to occur at 14:00h.

As the time judgement is made in accordance with the outdoor air temperature, the above mentioned timing is an estimation only.

Capacity priority setting

When setting mode 16(26)-0-04, the low night noise operation will be stopped when the heating or cooling load increases. In that case, the operation will return to normal operation. The unit will return to low night noise operation when the heating or cooling load decreases again.

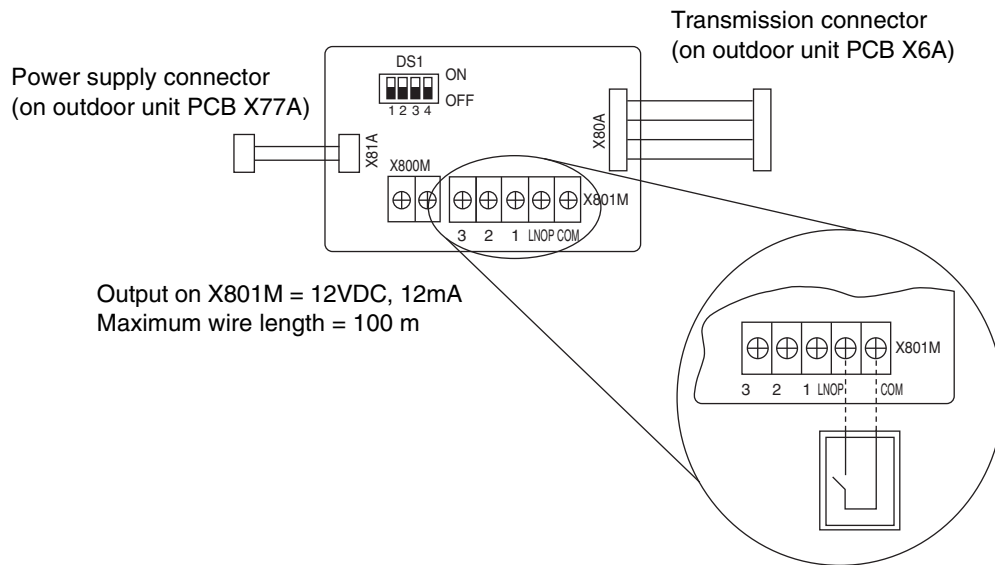
Graph



■ External Activation from Optional PCB

Graph

Low night noise operation can also be activated from the optional PCB (KRP58M51).



Low night noise operation will start when the contact on LNOP-COM is closed and will remain active as long as the contact is closed. No field setting on the outdoor unit or by remote controller is required.

Low night noise operation will be ended when the contact is re-opened.

Use of the KRP58M51 enables the use of an external time clock.

Exceptions

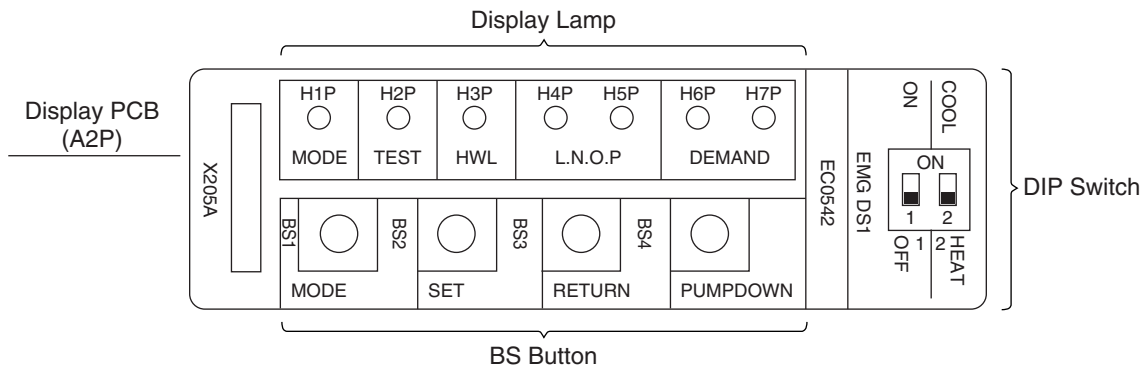
The Low night noise operation will be overruled in the following conditions:

- Pump down residual operation
- Startup control
- Defrost operation
- Oil recovery

3. Field Setting from Outdoor Unit PCB

3.1 Location of DIP Switch and BS Button

Various settings are available by using the DIP switches and the BS buttons on the PCB (Display PCB: A2P).



DIP switches

The table below contains the DIP switch field settings.

DIP switch	Label on PCB	Function
DS1-1	ON/OFF	Switch emergency operation outdoor unit ON/OFF.
DS1-2	Cool / Heat	Select cooling / heating emergency operation.
DS1-3	ON/OFF	Test purposes only. Keep factory setting "OFF".
DS1-4	ON/OFF	Test purposes only. Keep factory setting "OFF".

BS button

The table below contains the BS field setting.

BS	Label on PCB	Function
BS	BS1	Cooling / fan only: Pump down Heating: Forced defrosting function

3.2 Field Setting for Outdoor Unit

3.2.1 Setting by BS buttons

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

(1) Setting mode 1

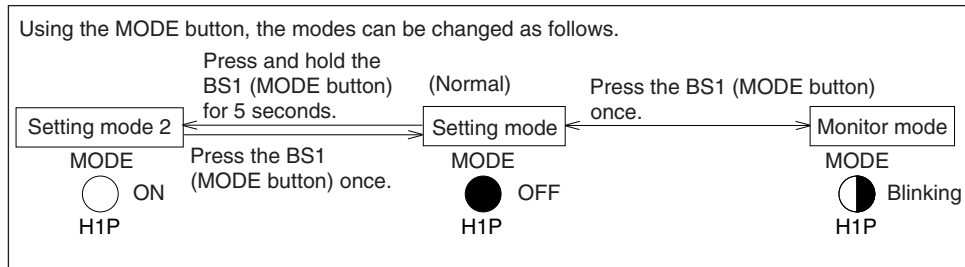
The initial status (normal operation) is "Setting mode 1." This mode indicates operating status. "TEST (test operation)," "HWL (error)," "L.N.O.P (low night noise operation)" or "DEMAND (demand operation)."

(2) Setting mode 2

Each operating status can be modified.

(3) Monitor mode

This mode indicates "oil return operation," "outdoor unit class," "contents of retry," "contents of error," "causes of stepping-down operation," etc.



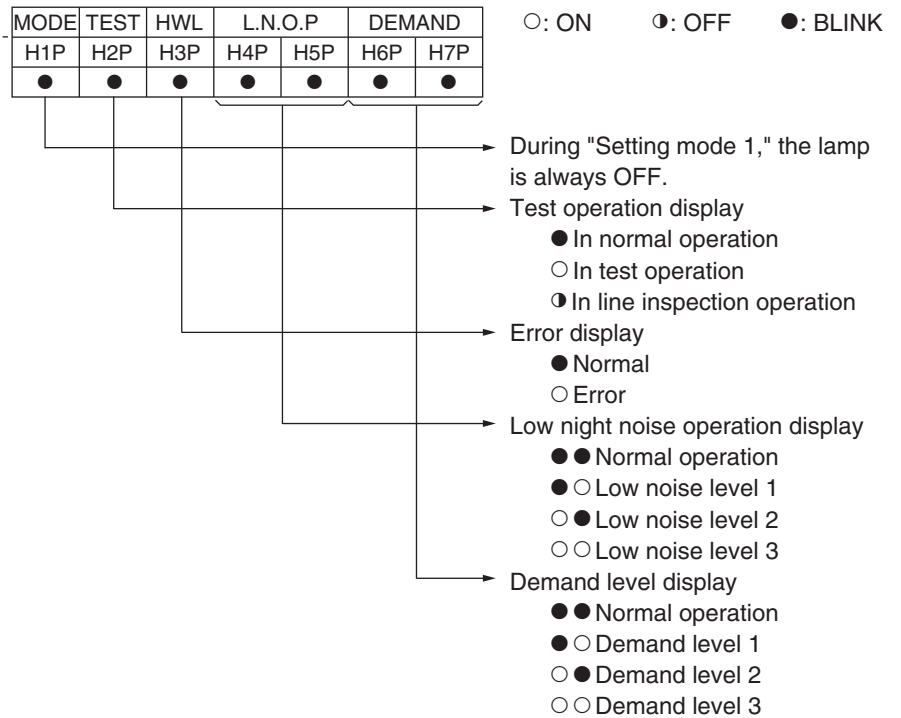
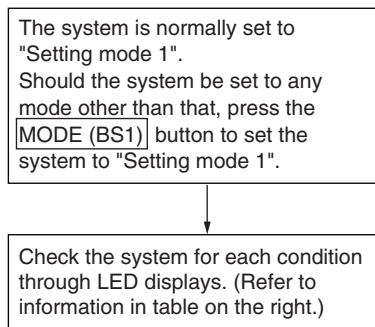
3.2.2 Setting Mode 1

Using this mode, the following conditions can be checked:

- Current operating condition (normal/test operation/line inspection and normal/error)
- Low night noise operating condition (normal/low night noise operation level 1, 2 and 3)
- Demand operating condition (normal/demand level 1, 2 and 3)

These conditions above can be checked by performing the following steps:

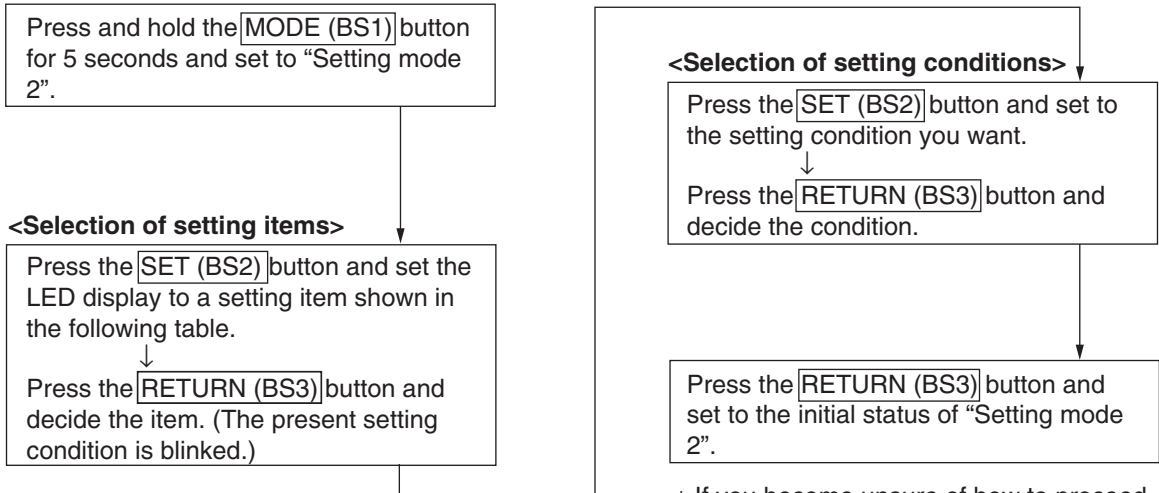
Procedure for checking check items



3.2.3 Setting Mode 2

Outline

In this mode, settings for the following items can be made by using BS buttons.



* If you become unsure of how to proceed, Press the MODE (BS1) button and return to setting mode 1.

No.	Display of setting items							Display of setting condition								
	Setting item	LED display							Setting condition	LED display						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P		H1P	H2P	H3P	H4P	H5P	H6P	H7P
3	Demand 2 operation	○	●	●	●	●	○	○	30% demand 40% demand (factory setting) 50% demand	○	●	●	●	○	●	●
28	Refrigerant recovery mode	○	●	○	○	○	●	●	OFF (factory setting) ON	○	●	●	●	●	●	○

↑ The figures in the columns under "No." represent the number of times to press the SET (BS2) button.

Setting of Demand 2 Operation

With this setting, compressor operation can be controlled to reduce power consumption. (60% - 80% demand is available when a demand adaptor (optional accessory) is used.)

Setting item	Setting condition	Description
Demand 2 operation	30% demand	Operates with 30% of rated power consumption.
	40% demand (factory setting)	Operates with 40% of rated power consumption.
	50% demand	Operates with 50% of rated power consumption.

[Work procedure]

●: OFF ○: BLINK ○: ON

Operating procedure	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press and hold the MODE (BS1) button of "Setting mode 1" for 5 seconds or more and set to "Setting mode 2."	○	●	●	●	●	●	●
Press the SET (BS2) button 3 times to set the LED display as shown in the table on the right.	○	●	●	●	●	○	○
Press the RETURN (BS3) button once. (Present settings are displayed.)	○	●	●	●	●	●	●
Press the SET (BS2) button to set the LED display as shown in the table on the right.	30% of rated power consumption	○	●	●	●	○	●
	40% of rated power consumption	○	●	●	●	●	○
	50% of rated power consumption	○	●	●	●	●	●
Press the RETURN (BS3) button once to make a decision.	30% of rated power consumption	○	●	●	●	○	●
	40% of rated power consumption	○	●	●	●	●	○
	50% of rated power consumption	○	●	●	●	●	○
Press the RETURN (BS3) button once again for execution. (The LED display is in the initial status of "Setting mode 2".)	○	●	●	●	●	●	●
Press the MODE (BS1) button once to return to Setting mode 1 (normal operation).	●	●	●	●	●	●	●

Setting of Refrigerant Recovery Mode

When a refrigerant recovery unit is connected onsite to recover refrigerant, fully open the electronic 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.

● : OFF ◐ : BLINK ○ : ON

Operating procedure	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press and hold the MODE (BS1) button of "Setting mode 1" for 5 seconds or more and set to "Setting mode 2."	○	●	●	●	●	●	●
Press the SET (BS2) button 28 times to set the LED display as shown in the table on the right. (*1)	○	●	○	○	○	●	●
Press the RETURN (BS3) button once. (Present settings are displayed.)	○	●	●	●	●	●	◐
Press the SET (BS2) button once to set the LED display as shown in the table on the right.	○	●	●	●	●	◐	●
Press the RETURN (BS3) button once to make a decision.	○	●	●	●	●	○	●
When the RETURN (BS3) button is pressed once again, the electronic expansion valve opens fully.	○	●	●	●	●	●	●

- (3) Connect a refrigerant recovery unit to perform refrigerant recovery. (For a refrigerant recovery port, refer to the installation manual.)
- (4) Upon completion of refrigerant recovery, turn OFF refrigerant recovery mode by taking the following steps or turning OFF the power of outdoor unit.

Operating procedure	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press the SET (BS2) button 28 times to set the LED display as shown in the table on the right. (*1)	○	●	○	○	○	●	●
Press the RETURN (BS3) button once. (Present settings are displayed.)	○	●	●	●	●	◐	●
Press the SET (BS2) button once to set the LED display as shown in the table on the right.	○	●	●	●	●	●	◐
Press the RETURN (BS3) button once to make a decision.	○	●	●	●	●	●	○
When the RETURN (BS3) button is pressed once again, the electronic expansion valve fully opens.	○	●	●	●	●	●	●

*1: If you become unsure how many times you have pressed the button, press the MODE (BS1) button once to return to "Setting mode 1" and start the operating procedure all over again.

3.2.4 Monitor Mode

In this mode, the following items can be checked by using the BS buttons.

To enter the monitor mode, press the **MODE (BS1)** button when in "Setting mode 1".

<Selection of setting item>

Press the **SET (BS2)** button and set the LED display to a setting item.

<Confirmation on setting contents>

Press the **RETURN (BS3)** button to display different data of set items.

Press the **RETURN (BS3)** button and switches to the initial status of "Monitor mode".

* Press the **MODE (BS1)** button and returns to "Setting mode 1".

No.	Setting item	LED display							Data display
		H1P	H2P	H3P	H4P	H5P	H6P	H7P	
0	Indication of oil return operation	●	●	●	●	●	●	●	See Data display (1).
1	Indication of outdoor unit class	●	●	●	●	●	●	○	See Data display (2).
2	Contents of retry (the latest)	●	●	●	●	●	○	●	See "Error code display" on the next page.
3	Contents of retry (1 cycle before)	●	●	●	●	●	○	○	
4	Contents of retry (2 cycle before)	●	●	●	●	○	●	●	
5	Contents of error (the latest)	●	●	●	●	○	●	○	
6	Contents of error (1 cycle before)	●	●	●	●	○	○	●	See Data display (3).
7	Contents of error (2 cycle before)	●	●	●	●	○	○	○	
10	Indication of causes of stepping-down operation	●	●	●	○	●	○	●	

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

Data display (1)

Display contents	LED display						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
In normal operation	○	●	●	●	●	●	●
In oil return operation	○	●	●	●	●	●	○

Data display (2)

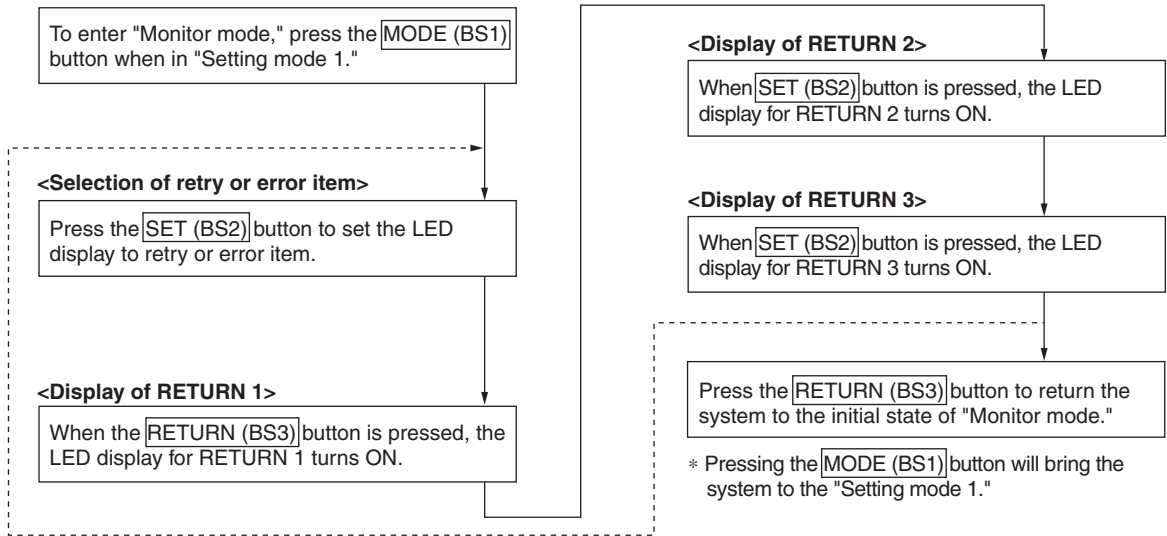
Display contents	LED display						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
No setting	○	●	●	●	●	●	○
RZQ20/24LVA	○	●	●	●	○	○	○
RZQ36LVA	○	●	●	○	●	●	●
RZQ45LVA	○	●	●	○	●	●	○
RZQ45MYL	○	●	●	○	●	●	○
RZQ48MYL	○	●	●	○	●	○	●

Data display (3)

Display contents	LED display						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Normal (not in stepping-down operation)	○	●	●	●	●	●	○
Low pressure stepping-down	○	●	●	●	●	○	●
High pressure stepping-down	○	●	●	●	●	○	○
Inverter discharge pipe stepping-down	○	●	●	●	○	●	●
Inverter current stepping-down	○	●	●	●	○	●	○
Radiation fin temperature stepping-down	○	●	●	●	○	○	●
Inverter stepping-down	○	●	●	●	○	○	○
Overall current stepping-down	○	●	●	○	●	●	●
Other stepping-down	○	●	●	○	●	●	○

3.2.5 List of Contents of Retry and Error

Take the following steps to check contents of retry and error.



○: ON ●: OFF ◐: BLINK

Error code	Contents of retry or error		1							2							3								
			H A P	H 1 P	H 2 P	H 3 P	H 4 P	H 5 P	H 6 P	H 7 P	H A P	H 1 P	H 2 P	H 3 P	H 4 P	H 5 P	H 6 P	H 7 P	H A P	H 1 P	H 2 P	H 3 P	H 4 P	H 5 P	H 6 P
E1	Outdoor unit PCB abnormality		○	○	●	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E3	High pressure abnormality (Detected by the high pressure switch)		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E4	Actuation of pressure sensor		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E5	Compressor motor lock		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E7	Outdoor unit fan motor abnormality	DC motor 1 lock	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		DC motor 2 lock	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Inverter transmission abnormality	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
E9	Electronic expansion valve abnormality	Disconnected electronic expansion valve connector	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Error due to wet conditions	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
F3	Discharge pipe temperature control	Discharge pipe temperature abnormality	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Disconnected discharge pipe thermistor	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H3	High Pressure switch system abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H9	Thermistor system abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J1	Pressure sensor abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J3	Discharge pipe thermistor abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J5	Suction pipe thermistor abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J6	Heat exchanger thermistor abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J7	Intermediate heat exchanger thermistor abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
J8	Liquid pipe thermistor abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L1	Outdoor unit PCB abnormality		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L4	Radiation fin temperature rise		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L5	Output overcurrent detection		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L8	Electronic thermal (Time Lag)		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
L9	Stall prevention (Time Lag)		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
LC	Transmission system abnormality between control and inverter PCB		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○: ON ●: OFF ◐: BLINK

Error code	Contents of retry or error	1							2							3								
		H A P	H 1 P	H 2 P	H 3 P	H 4 P	H 5 P	H 6 P	H 7 P	H A P	H 1 P	H 2 P	H 3 P	H 4 P	H 5 P	H 6 P	H 7 P	H A P	H 1 P	H 2 P	H 3 P	H 4 P	H 5 P	H 6 P
P1	Open phase or power supply voltage imbalance	◐	◐	●	○	◐	●	●	●	◐	◐	○	●	●	●	●	◐	◐	○	○	●	●	●	●
P4	Radiation fin thermistor or related abnormality									◐	◐	○	●	●	◐	●	●	◐	○	○	●	●	●	●
PJ	Defective capacity setting									◐	◐	○	●	◐	◐	●	◐	◐	○	○	●	●	●	●
U0	Refrigerant shortage	Refrigerant shortage warning	◐	◐	●	○	◐	●	●	◐	◐	○	●	●	●	●	◐	◐	○	○	●	●	●	◐
		Refrigerant shortage																◐	◐	○	○	●	●	◐
U2	Power supply voltage abnormality	Inverter undervoltage and overvoltage								◐	◐	○	●	●	●	◐	●	◐	○	○	●	●	●	◐
		SP-PAM overvoltage																◐	◐	○	○	●	●	◐
U4	Transmission error between indoor and outdoor unit									◐	◐	○	●	●	◐	●	●	◐	○	○	●	●	●	●
UA	Field setting switch abnormality									◐	◐	○	●	◐	●	◐	◐	○	○	●	●	●	●	●
UF	Transmission error between indoor and outdoor unit / piping and wiring mismatch / refrigerant shortage													◐	◐	◐	◐	◐	○	○	●	●	●	●

4. Emergency Operation

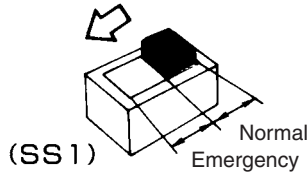
4.1 Forced Operation

Emergency Operation of Indoor Units

You can operate the system manually by changing the setting of the emergency switch (SS1) on the indoor unit's PCB from "Normal" to "Emergency." When switched however the equipment cannot regulate temperature. The table below contains a list by model of actuators for manually operating indoor units in time of emergency.

Model	Fan	Drain Raising
FCQ, FBQ	○	○

■ Method of switching in time of emergency

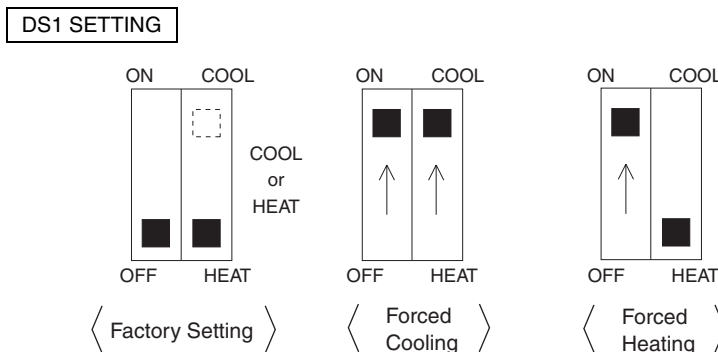


Note:

1. Do not operate from remote controller during emergency operation.
2. Operate the switch only when the power supply is turned OFF.

Emergency Operation of Outdoor Units

Turn OFF the power supply and set the emergency switch to ON and "Heat" for heating or "Cool" for cooling. Operation will be started manually when you restart the power. ("Heat" cannot be set for a cooling only air conditioner.)



Concerning Emergency Operation

If a safety device should be actuated during emergency operation, all actuators are turned OFF. If you reset after waiting for 3 minutes, operation will start again. Emergency operation cannot be carried out if the PCB itself is defective.



Note:

For emergency operation, be sure to set emergency operation for both the indoor and outdoor units. Do not attempt to operate the equipment from the remote controller during emergency operation. Emergency operation is computer-controlled, and therefore cannot be carried out if the micro-computer is not operating properly.

The table below contains a list of actuators for manually operating the equipment in time of emergency.

Actuator	Cooling	Heating
Compressor	ON	ON
Four way valve	OFF	ON
Indoor Unit Fan	H Fan Speed	H Fan Speed
Drain Pump	ON	ON

During emergency heating operation, defrosting is carried out for 3 minutes every hour. (four way valve, outdoor unit fan and indoor unit fan are turned OFF.)

4.2 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 master unit. When the remote controller does not work, but the battery low indicator on it is not lit, contact your dealer.

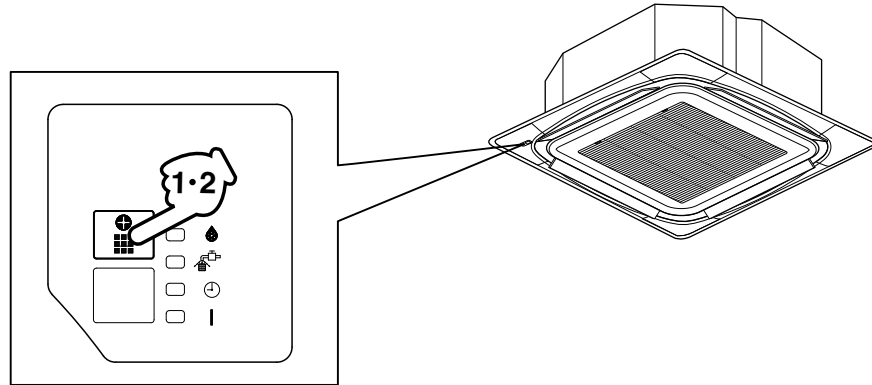
[START]

1

To press the emergency operation switch.

The machine runs in the previous mode.

The system operates with the previously set airflow direction.



[STOP]

2

Press the EMERGENCY OPERATION switch again.

Part 6

Service Diagnosis

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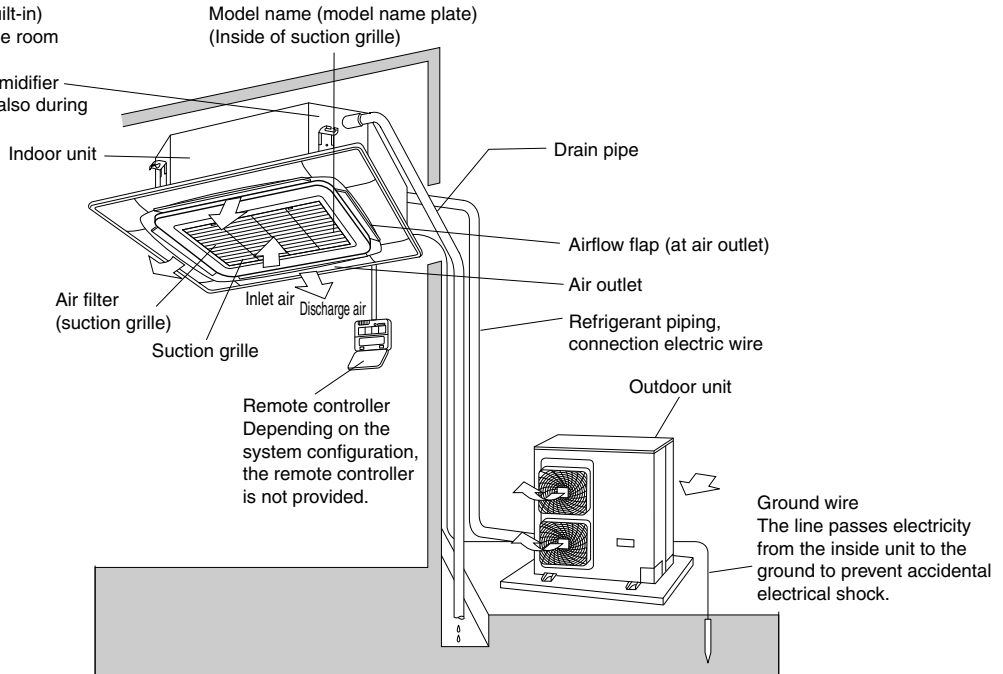
1. Maintenance Inspection

1.1 Overview

When performing maintenance, you should at least perform the following inspections:

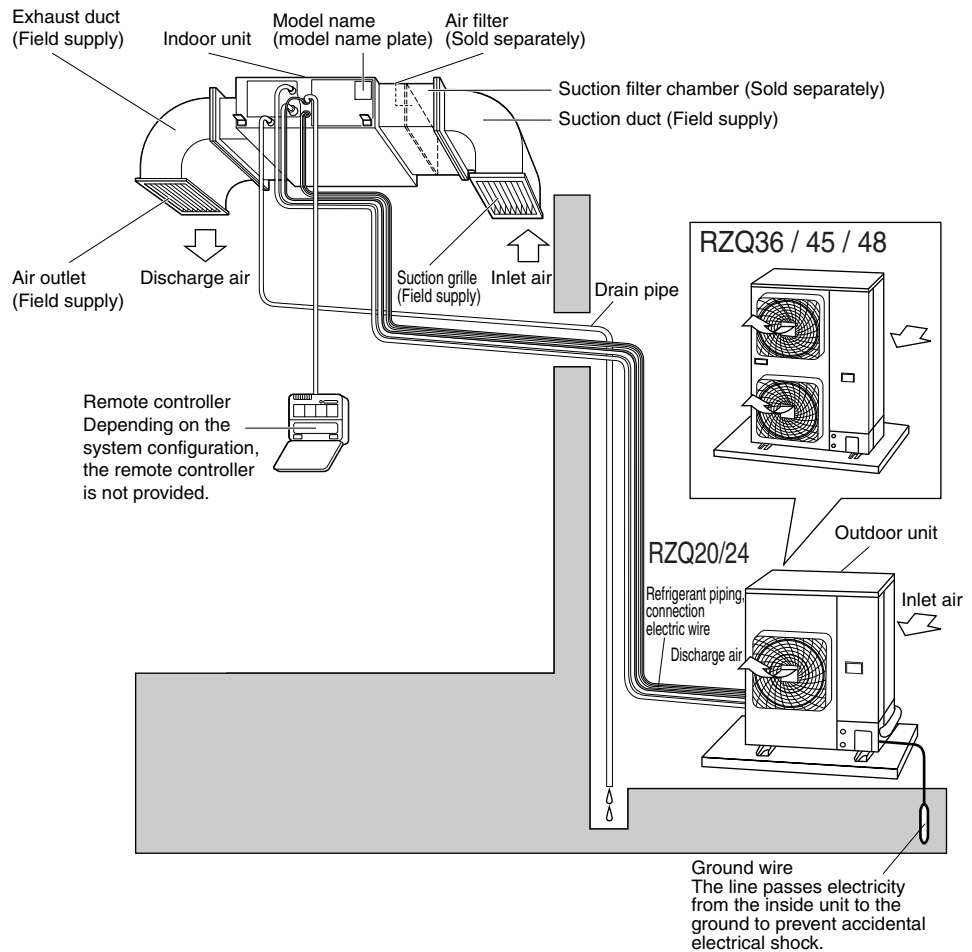
FCQ

Drain pumping out device (built-in)
 Condensate removed from the room during cooling.
 *If the natural evaporative humidifier (option) is installed, it works also during the heating operation.



3P177429-1K

FBQ



3PN07753-9G

Guide Lines for Optimal Operation Condition

The operation value guide lines when operating under standard conditions by pressing the INSPECTION/TEST operation button on the remote controller are as given in the table below.

Indoor unit fan: H tap

	High Pressure	Low Pressure	Discharge Pipe Temperature	Suction Air Temperature	Indoor Unit: Temperature Differential between Suction Air and Discharge Air	Outdoor Unit: Temperature Differential between Suction Air and Discharge Air
Cooling	2.6 MPa ~ 3.4 MPa	0.6 MPa ~ 1.0 MPa	60°C~100°C	-2°C~10°C	8°C~18°C	7°C~12°C
Heating	2.5 MPa ~ 3.26 MPa	0.53 MPa ~ 0.75 MPa	60°C~100°C	-6°C~2°C	14°C~30°C	2°C~6°C

Standard Conditions

	Indoor	Outdoor
Cooling Operation	27°CDB/19°CWB	35°CDB
Heating Operation	20°CDB	7°CDB/6°CWB

During or after maintenance, when the power supply is restarted, 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 for 15 ~ 20 minutes or more after operation starts.)

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	Lower *1	Lower	Lower
Dirt Mixed in Refrigerant	Lower *2	Lower	Lower
Refrigerant (Gas) Shortage	Lower	Lower	Lower
Insufficient Compression	Higher *3	Lower	Lower

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	Lower *1	Lower	Lower
Dirt Mixed in Refrigerant	Lower *2	Lower	Lower
Refrigerant (Gas) Shortage	Lower	Lower	Lower
Insufficient Compression	Higher *3	Lower	Lower



Note:

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

2. Symptom-based Troubleshooting

2.1 Overview

	Symptom	Details of Measures
1	Equipment does not operate.	Refer to P.75
2	Indoor unit fan operates, but compressor does not operate.	Refer to P.76
3	Cooling/heating operation starts but stops immediately.	Refer to P.77
4	After unit shuts down, it cannot be restarted for a while.	Refer to P.78
5	Equipment operates but does not provide cooling.	Refer to P.80
6	Equipment operates but does not provide heating.	Refer to P.81
7	Equipment discharges white mist.	Refer to P.82
8	Equipment produces loud noise or vibration.	Refer to P.83
9	Equipment discharges dust.	Refer to P.84
10	Remote controller LCD displays "88".	Refer to P.84
11	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.
12	Flap operates when power is turned ON.	It is normal. The flap initializes for accurate positioning.
13	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.
14	Fan operates in "M" tap during heating even if remote controller is set to "L" tap.	It is normal. It is caused by the activation of the overload control (airflow shift control).
15	Flap automatically moves during cooling.	It is normal. It is caused by the activation of the dew condensation prevention function or ceiling soiling prevention function.
16	Indoor unit fan operates in "L" tap for 1 minute in "program dry" mode even if compressor is not operating.	It is normal. The monitoring function forcibly operates the fan for 1 minute.
17	Indoor unit fan operates after heating operation stops.	It is normal. The fan operates in the "LL" tap for 60 to 100 seconds to dissipate the residual heat in the heater.
18	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.
19	Horizontal swing 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.
20	Flap remains horizontal even if it is set to swing mode.	It is normal. The flap does not swing in the thermostat OFF mode.
21	When operating in remote control thermostat, the thermostat turns OFF before temperature of remote control reaches the set temperature.	It is normal. The thermostat may be controlled with the suction air temperature (body thermostat), concurrently with the set temperature.

2.2 Equipment does not Operate

Applicable Model All models of TopAir series

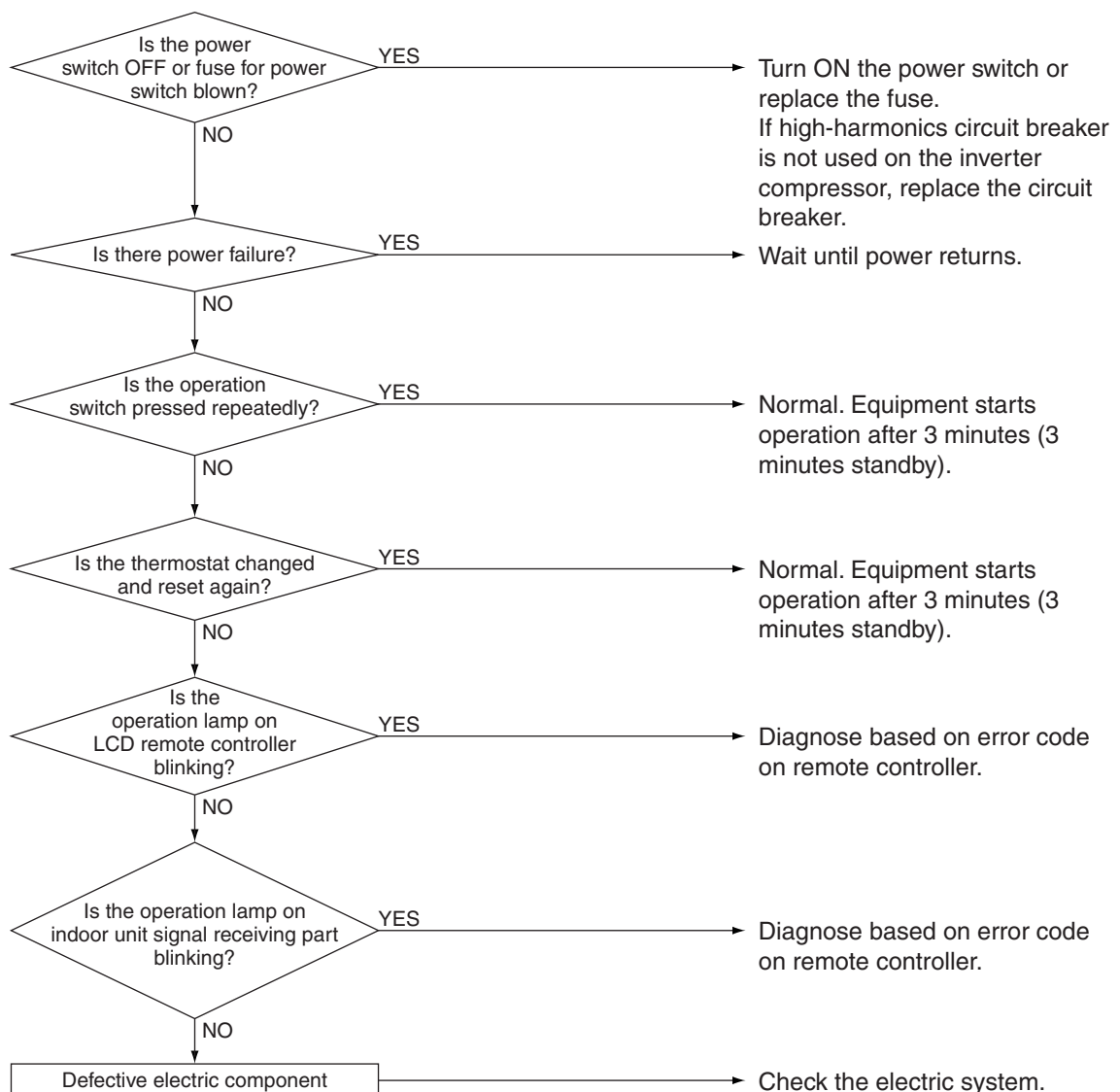
Supposed Causes

- Fuse blown or disorder of contact in operation circuit
- Defective operation switch or contact point
- Defective high pressure switch
- Defective magnetic switch for fan motor
- Activation or fault of overcurrent relay for fan motor
- Defective overcurrent relay for compressor
- Defective compressor protection thermostat
- Insufficient insulation in electric system
- Defective contact point of magnetic switch for compressor
- Defective compressor
- Defective remote controller or low batteries (wireless)
- Incorrect address setting of wireless remote controller

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.3 Indoor Unit Fan Operates, but Compressor does not Operate

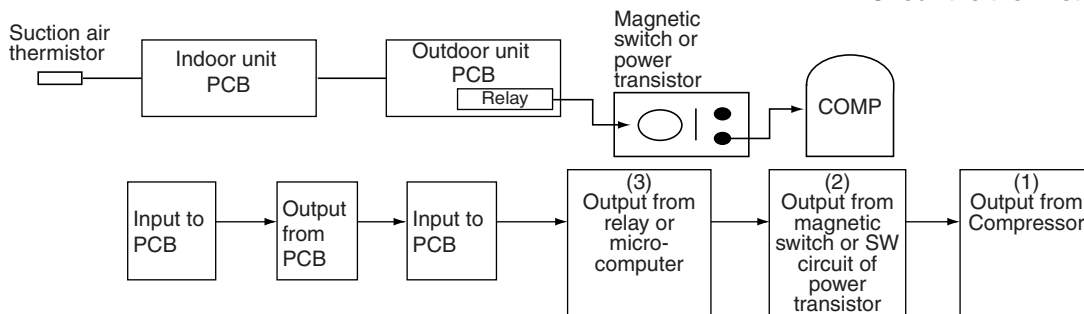
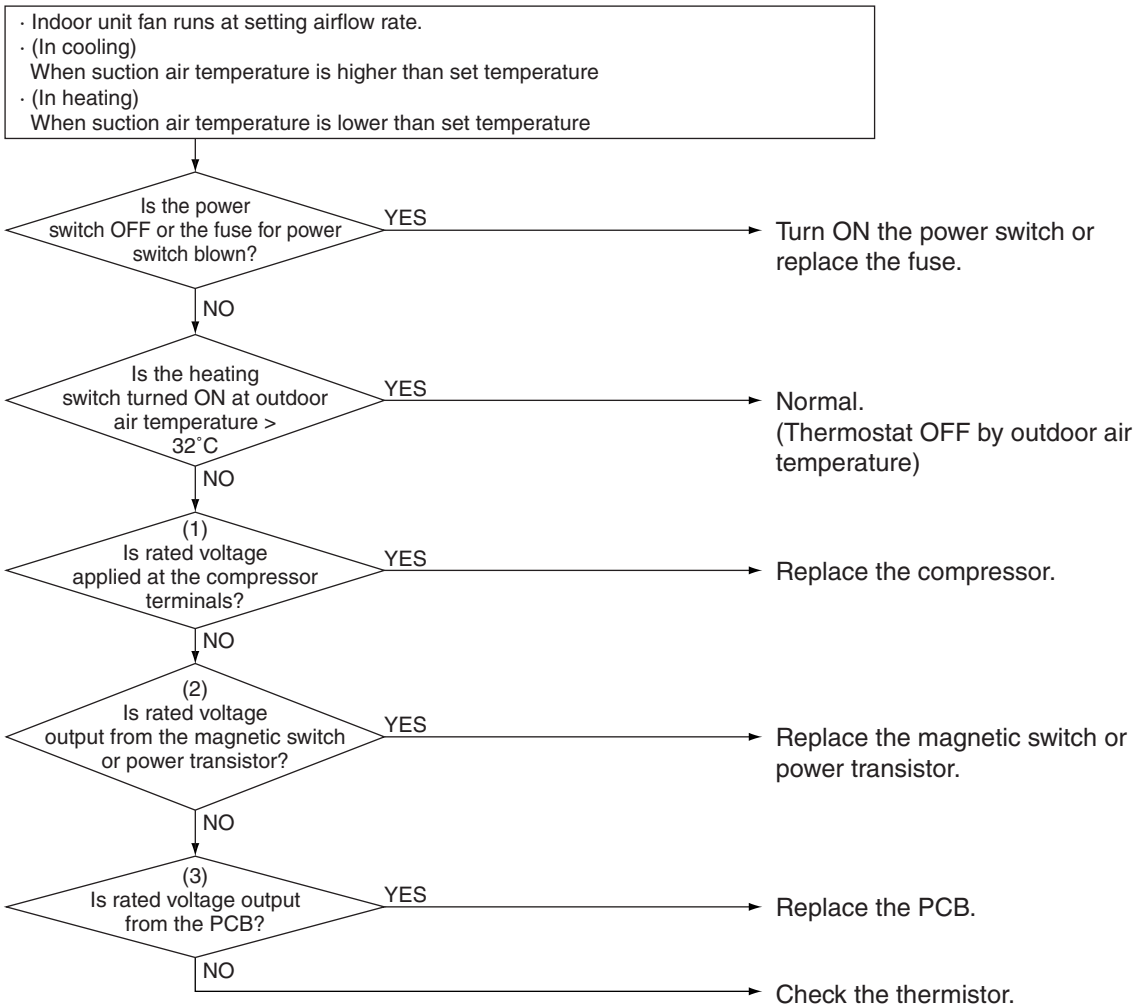
Applicable Model All models of TopAir series

- Supposed Causes**
- Fuse blown or disorder of contact in operation circuit
 - Defective thermistor
 - Defective indoor/outdoor unit PCB
 - Defective magnetic switch
 - Defective power transistor
 - Defective compressor

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.4 Cooling / Heating Operation Starts but Stops Immediately

Applicable Model All models of TopAir series

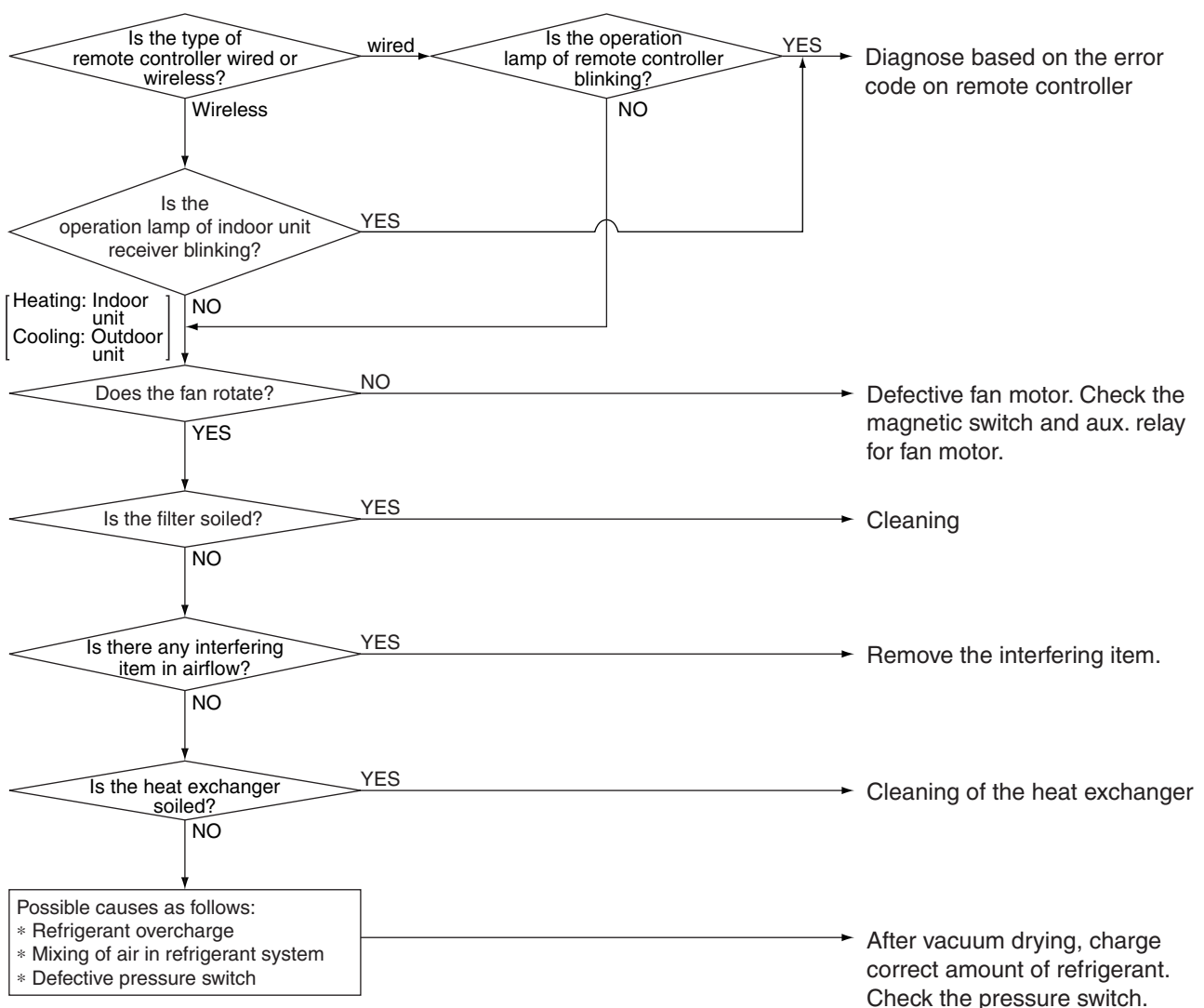
Supposed Causes

- Overcharge of refrigerant
- Air mixed in refrigerant system
- Defective pressure switch
- Defective magnetic switch for outdoor unit fan motor
- Defective aux. relay for outdoor unit fan motor
- Soiled heat exchanger of outdoor unit
- There is an interfering item in airflow of outdoor unit
- Defective 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
- Defective indoor unit fan

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



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

Applicable Model All models of TopAir series

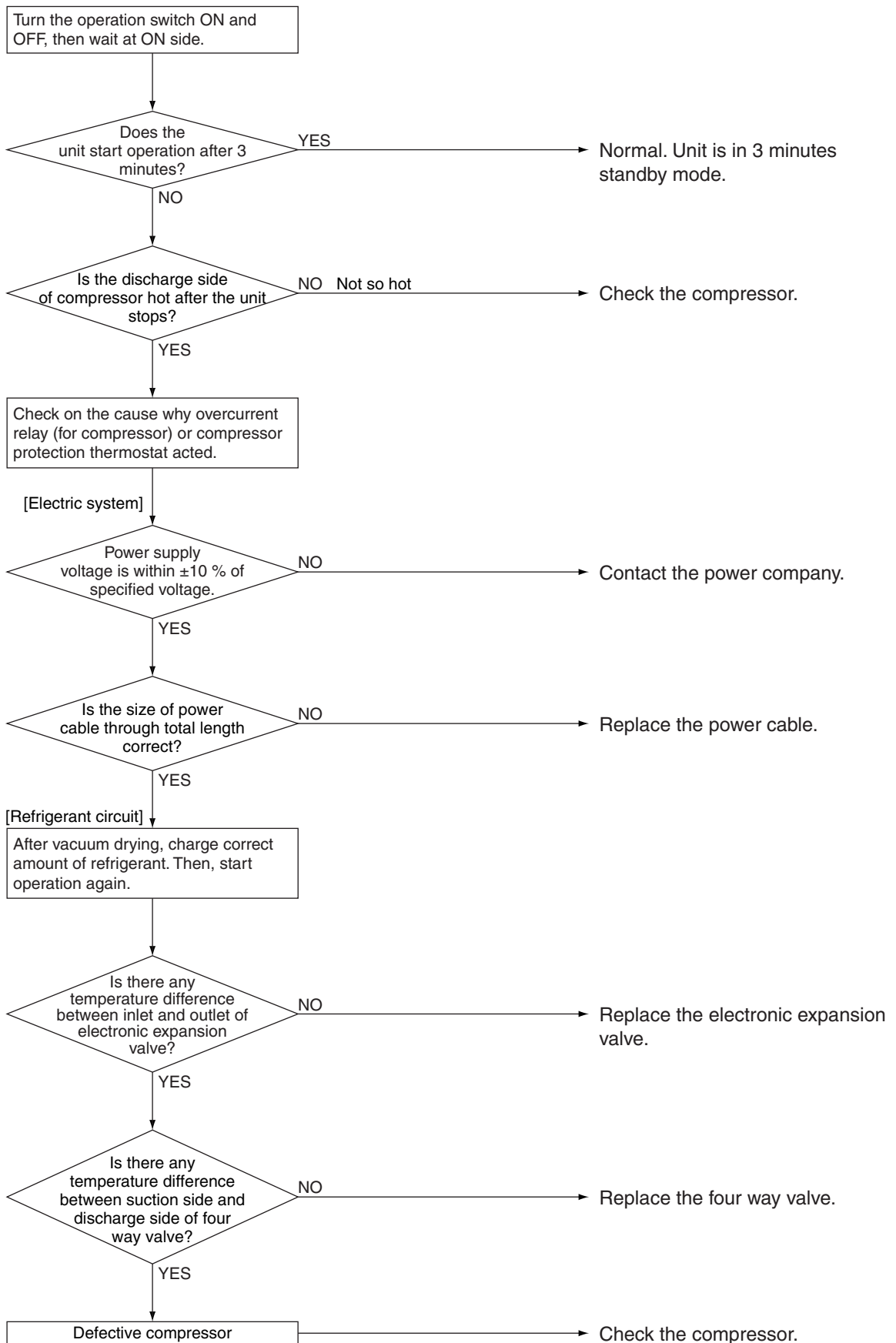
Supposed Causes

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

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.6 Equipment Operates but does not Provide Cooling

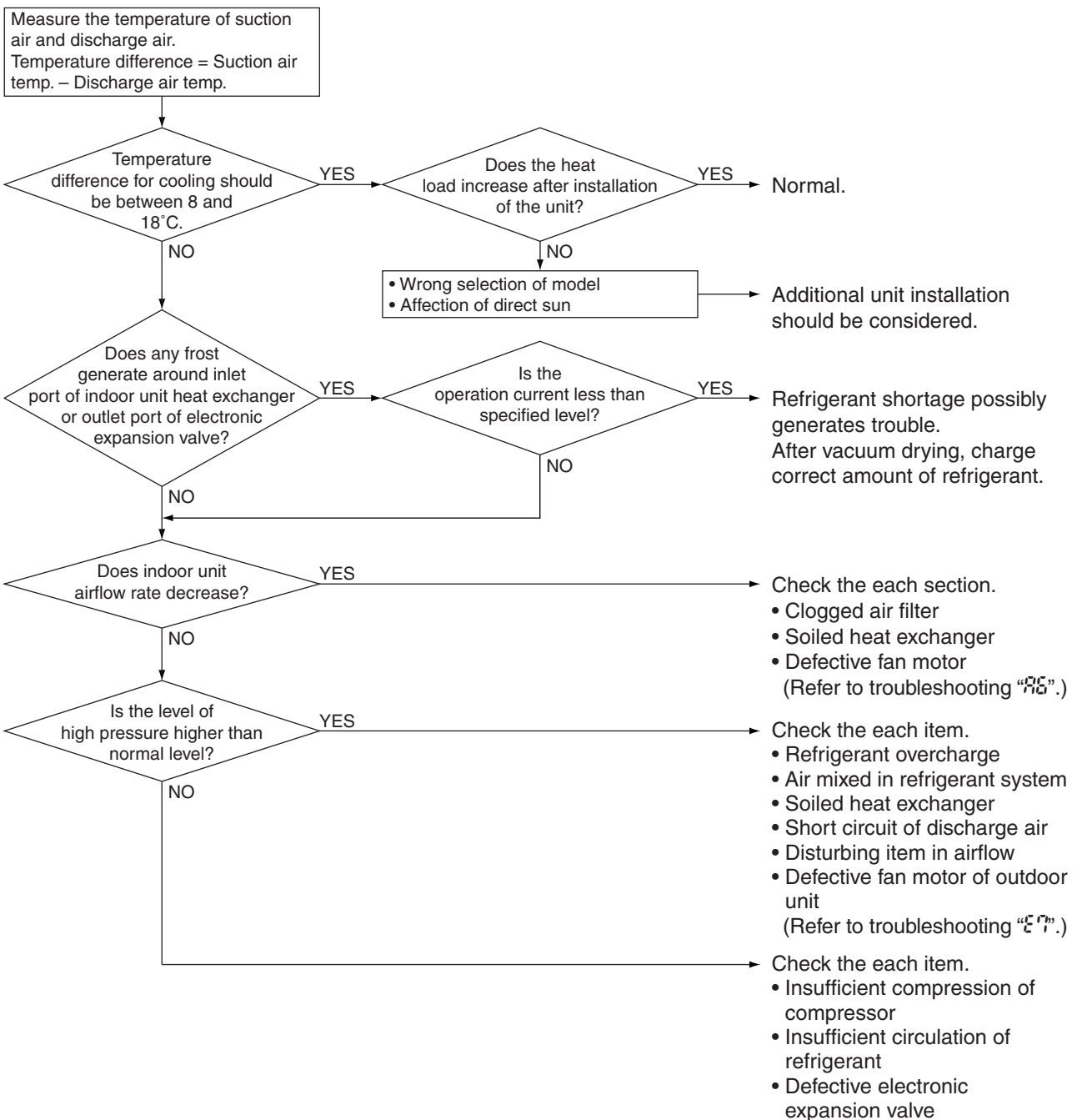
Applicable Models All models of TopAir series

- Supposed Causes**
- Wrong selection of model
 - Refrigerant shortage
 - Insufficient airflow in the indoor unit
 - Increase of high pressure
 - * In addition, the following errors may be conceivable
 - Insufficient compression of the compressor
 - Insufficient circulation of refrigerant
 - Defective electronic expansion valve

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.7 Equipment Operates but does not Provide Heating

Applicable Models

All models of TopAir series

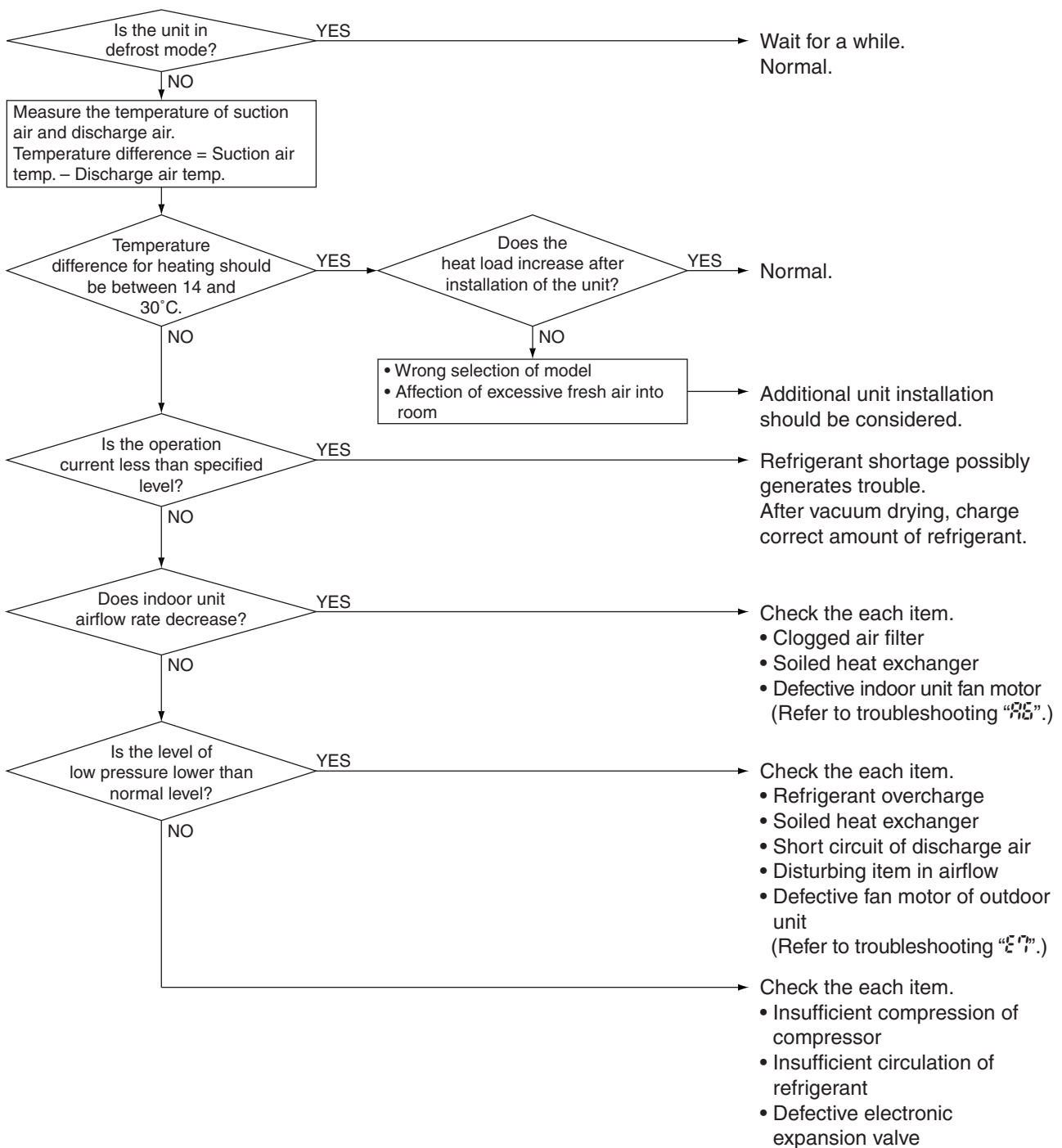
Supposed Causes

- Wrong selection of model
- Refrigerant shortage
- Insufficient airflow in the indoor unit
- Decrease of low pressure
 - * In addition, the following errors may be conceivable
 - Insufficient compression of the compressor
 - Insufficient circulation of refrigerant
 - Defective electronic expansion valve

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.8 Equipment Discharges White Mist

Applicable Model All models of TopAir series

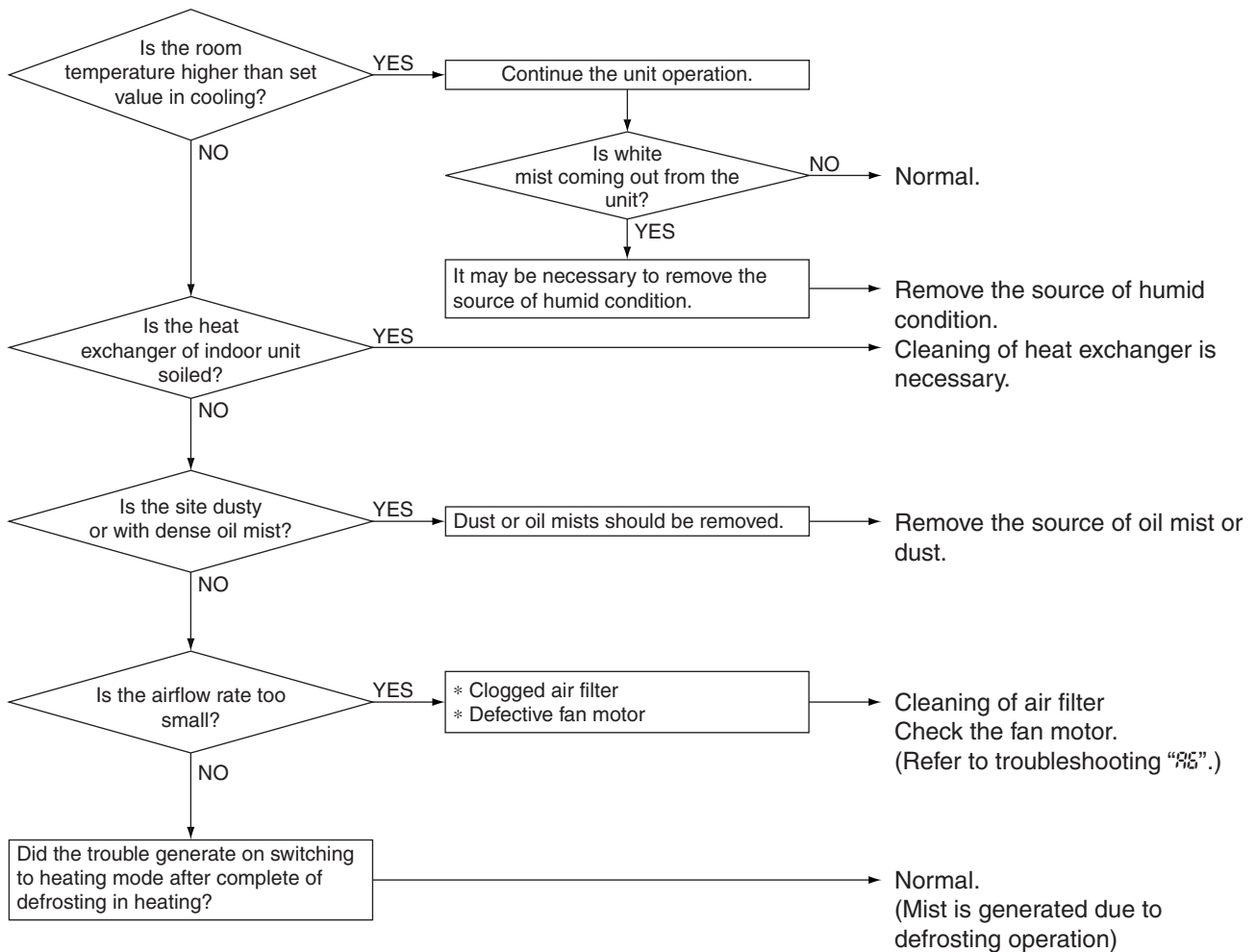
Supposed Causes

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

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.9 Equipment Produces Loud Noise or Vibration

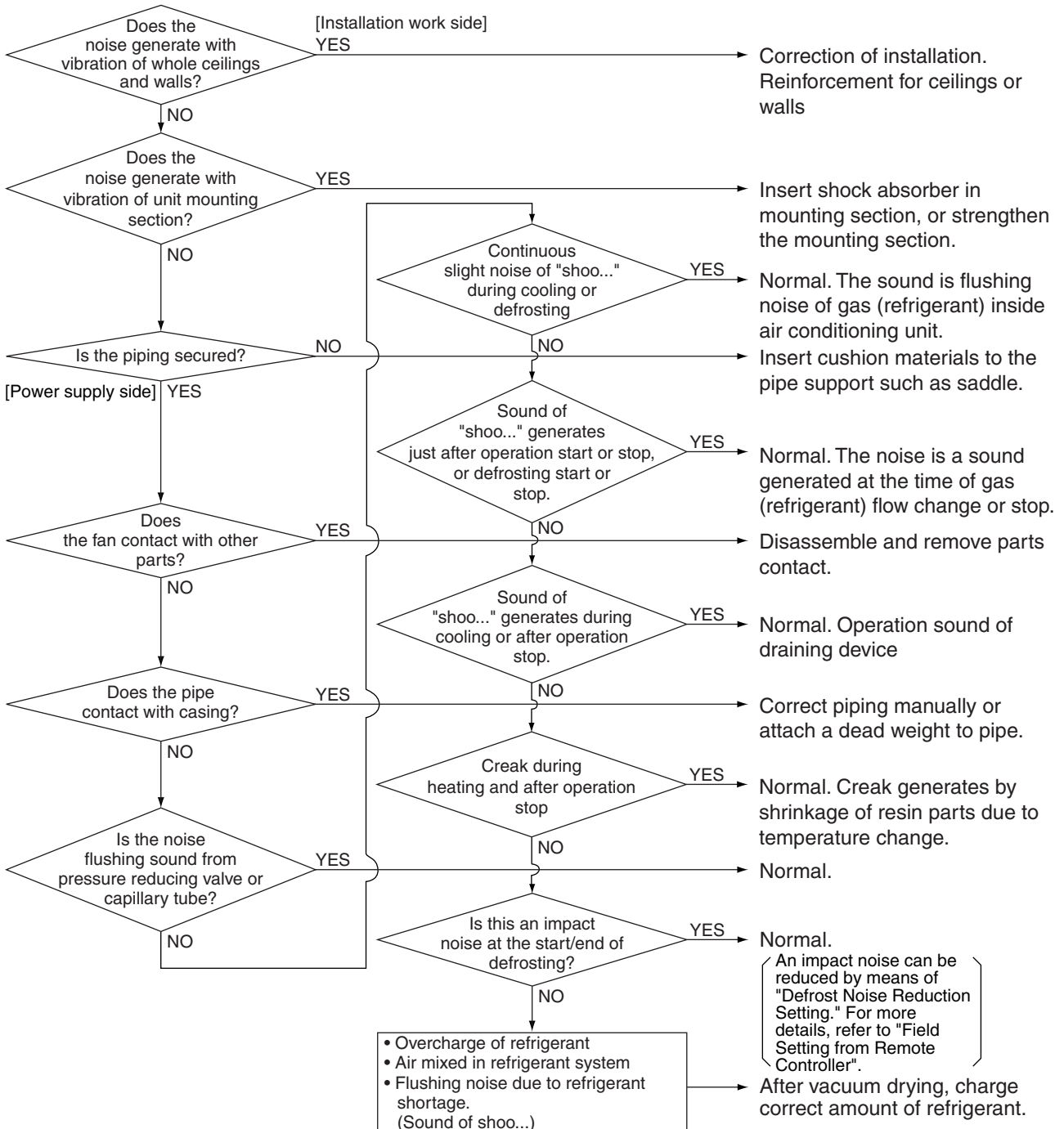
Applicable Models All models of TopAir series

- Supposed Causes**
- Improper installation
 - Contacts of fan, piping, casing, etc.
 - Noise of refrigerant flow
 - Operating noise of drain discharge equipment
 - Noise of resin components contracting
 - * In addition, the following errors may be conceivable
 - Overcharge of refrigerant
 - Air interfusion
 - Flash noise of insufficient refrigerant (hushing noise)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.10 Equipment Discharges Dust

Applicable Model All models of TopAir series

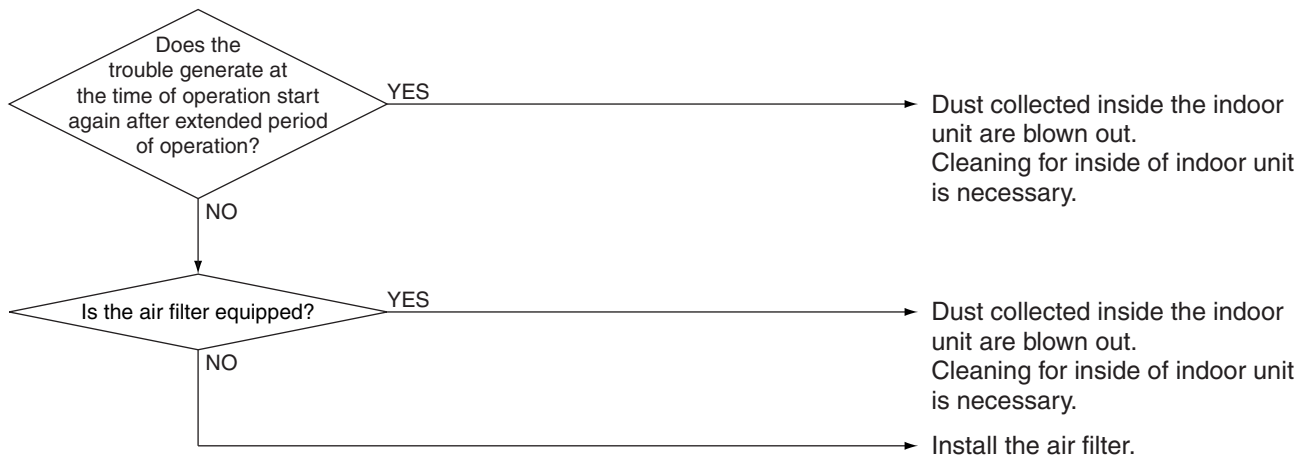
Supposed Causes

- Carpet
- Animal hair
- Application (cloth shop,...)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



2.11 Remote Controller LCD Displays "88"

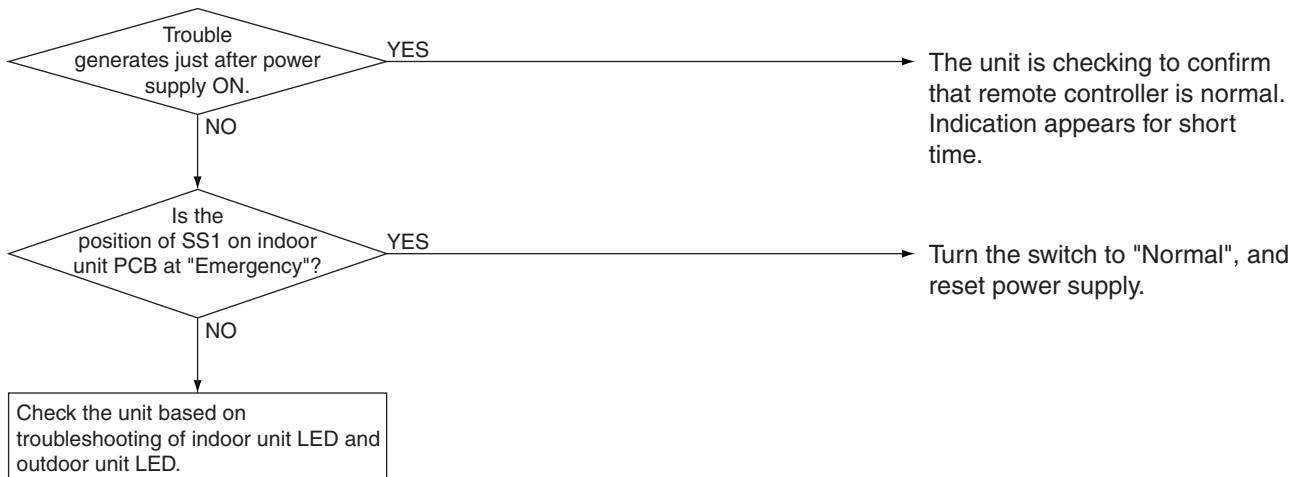
Applicable Model All models of TopAir series

Supposed Causes

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



3. Troubleshooting by LED Indications

3.1 Troubleshooting by LED on the Indoor Unit

Foreword

Troubleshooting can be carried out by service monitor LED (green). (Blinks when normal)

○: LED ON / ●: LED OFF / ◐: LED blinks

Micro computer Normal Monitor	Contents/Processing
HAP (LED-A)	
◐	Indoor unit normal → Outdoor unit troubleshooting
◐	Incorrect transmission wiring between indoor and outdoor unit If outdoor unit's LED-A is OFF, proceed outdoor unit's troubleshooting. If outdoor unit's LED-A blinks, defective wiring or indoor or outdoor unit PCB.
○	Defective indoor unit PCB
●	Defective power supply or defective PCB or broken transmission wire between indoor and outdoor unit.



Note:

1. When the INSPECTION/TEST button of remote controller is pressed, **INSPECTION** display blinks entering **INSPECTION** mode.
2. In the **INSPECTION** mode, when the ON/OFF button is pressed and held for 5 seconds or more, the aforementioned error history display is OFF. In this case, after the error code blinks 2 times, the code display turns to "00" (= Normal) and the unit No. turns to "0". The INSPECTION mode automatically switches to the normal mode (set temperature display).
3. Operation halts due to error depending on the model or condition.
4. Troubleshoot by turning OFF the power supply for a minimum of 5 seconds, restarting, and then rechecking the LED display.

3.2 Troubleshooting by LED on Outdoor Unit PCB

The following diagnosis can be conducted by turning ON the power switch and checking the LED indication on PCB (A1P) of the outdoor unit.

○: LED ON / ●: LED OFF / ◐: LED blinks

LED detection		Description
HAP	H1P	
(Green)	(Red)	
◐	●	Normal
○	—	Defective outdoor unit PCB (Note 1)
●	—	Power supply abnormality, or defective outdoor unit PCB (Note 2)
◐	○	Activation of protection device (Note 3)



Note:

1. Turn OFF the power supply, and turn it ON again after 5 seconds or more. Check the error condition, and diagnose the problem.
2. Turn OFF the power supply. After 5 seconds or more, disconnect the connection wire (2). Then turn ON the power supply. If the HAP on the outdoor unit PCB blinks after about 10 seconds, the indoor unit PCB is defective.
3. Also check for open phase.

Remark:

The error detection monitor continues to indication the previously generated error until the power supply is turned OFF.

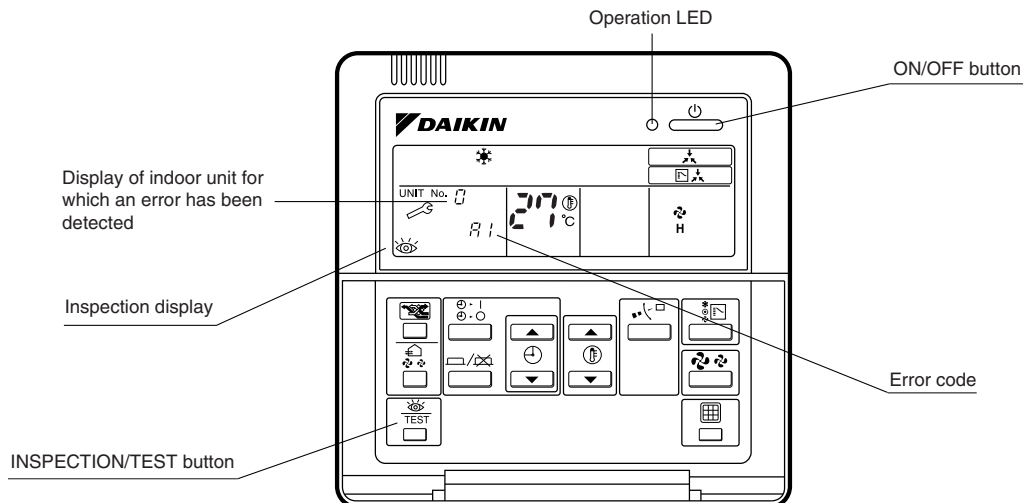
Be sure to turn OFF the power supply after inspection.

4. Troubleshooting by Remote Controller

4.1 Procedure of Self-diagnosis by Remote Controller

4.1.1 Wired Remote Controller — BRC1C61/BRC1D61

If operation stops due to error, the remote controller's operation LED blinks, and error code is displayed. (Even if stop operation is carried out, error contents are displayed when the inspection mode is entered.) The error code enables you to tell what kind of error caused operation to stop. Refer to P.89 for error code and error contents.

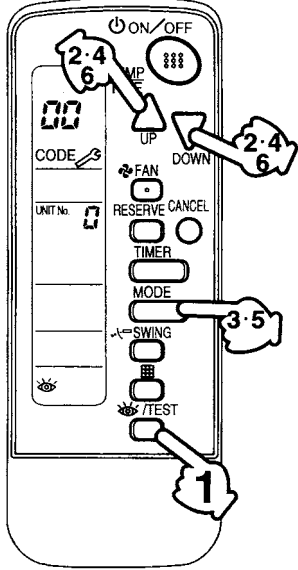
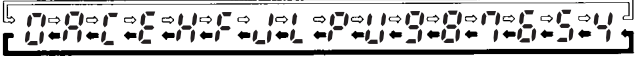



Note:

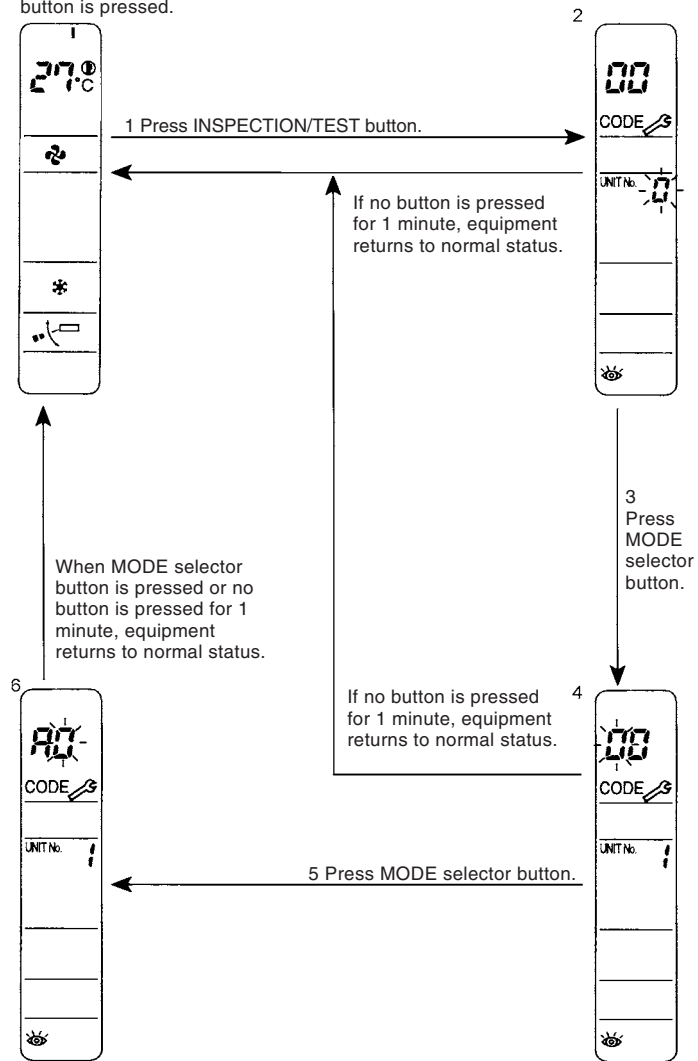
1. Pressing the INSPECTION/TEST button will blink the check indication.
2. While in service mode, holding down the ON/OFF button for a period of 5 seconds or more will clear the failure history indication shown above. In this case, on the codes display, the error code will blink twice and then change to "00" (= Normal), the Unit No. will change to "0", and the operation mode will automatically switch from service mode to normal mode (displaying the set temperature).

4.1.2 Wireless Remote Controller

If unit stops due to an error, the operation indicating LED on the signal receiving part of indoor unit blinks. The error code can be determined by following the procedure described below. (The error code is displayed when an operation error has occurred. In normal condition, the error code of the last problem is displayed.)

<p>1</p>	<p>Press the INSPECTION/TEST button to select "inspection". The equipment enters the inspection mode. The "Unit" indication is displayed and the Unit No. display shows blinking "0" indication.</p>	
<p>2</p>	<p>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 error code is confirmed. Continuous beep : No abnormality.</p>	
<p>3</p>	<p>Press the MODE selector button. The left "0" (upper digit) indication of the error code blinks.</p>	
<p>4</p>	<p>Error code upper digit diagnosis Press the UP or DOWN button and change the error code upper digit until the error code matching buzzer (*2) is generated. ■ The upper digit of the code changes as shown below when the UP and DOWN buttons are pressed.</p> <div style="text-align: center;">  <p>⇒ "UP" button ← "DOWN" button</p> </div> <p>*2 Number of beeps Continuous beep : Both upper and lower digits matched. (Error code confirmed) 2 short beeps : Upper digit matched. 1 short beep : Lower digit matched.</p>	
<p>5</p>	<p>Press the MODE selector button. The right "0" (lower digit) indication of the error code blinks.</p>	
<p>6</p>	<p>Error code lower digit diagnosis Press the UP or DOWN button and change the error code lower digit until the continuous error code matching buzzer (*2) is generated. ■ The lower digit of the code changes as shown below when the UP and DOWN buttons are pressed.</p> <div style="text-align: center;">  <p>⇒ "UP" button ← "DOWN" button</p> </div>	

Normal status
Enters inspection mode from normal status when the INSPECTION/TEST button is pressed.



4.2 Error Codes and Description

	Remote Controller Display	Contents of Error	Reference Page	
Indoor Unit	A0	Error of external protection device	91	
	A1	Indoor unit PCB abnormality	92	
	A3	Drain water level system abnormality	93	
	A5	Indoor unit fan motor abnormality	95	
	A7	Swing flap motor abnormality / lock	96	
	A8	Abnormal power supply voltage	98	
	AF	Drain system abnormality	99	
	AW	Capacity setting abnormality	100	
	C1	Transmission error between indoor unit PCB and fan PCB	101	
	C4	Heat exchanger thermistor abnormality	103	
	C6	Combination error between indoor unit PCB and fan PCB	104	
	C9	Suction air thermistor abnormality	103	
	CC	Humidity sensor system abnormality	105	
	CU	Room temperature thermistor in remote controller abnormality	106	
	Outdoor Unit	E1	Outdoor unit PCB abnormality	107
E3		High pressure abnormality (detected by the high pressure switch)	108	
E4		Low pressure abnormality	110	
E5		Compressor motor lock	112	
E7		Outdoor unit fan motor abnormality	114	
E9		Electronic expansion valve abnormality	116	
F3		Discharge pipe temperature control error	119	
H3		High pressure switch system abnormality	121	
H9		Outdoor air thermistor abnormality	122	
J1		Pressure sensor abnormality	123	
J3		Discharge pipe thermistor abnormality	122	
J5		Suction pipe thermistor abnormality	122	
J6		Heat exchanger thermistor abnormality	122	
J7		Intermediate heat exchanger thermistor abnormality	122	
J8		Liquid pipe thermistor abnormality	122	
L1		Outdoor unit PCB abnormality	124	
L4		Radiation fin temperature rise	126	
L5		DC output overcurrent	128	
L8		Electronic thermal (time lag)	130	
L9		Stall prevention (time lag)	132	
LC		Transmission error between control and inverter PCB	134 135	
P1		Open phase or power supply voltage imbalance	137	
P4		Radiation fin thermistor (R10T) or related abnormality	138	
PJ		Defective capacity setting	139	
U0		Refrigerant shortage (error)	140 141	
U2		Power supply voltage abnormality	142	
System		U4	Transmission error between indoor unit and outdoor unit	143
		U5	Transmission error between indoor unit and remote controller	146
		U8	Transmission error between MAIN remote controller and SUB remote controller	147
		UR	Field setting switch abnormality	148
	UC	Centralized address setting error	150	
	UF	Transmission error between indoor and outdoor unit / piping and wiring mismatch / refrigerant shortage	151	

4.3 Safety Devices

4.3.1 Outdoor Unit

Model	High pressure switch		Fuse
	Open	Close	
RZQ20/24LVA	4.0 + 0/- 0.15 MPa	3.0 ± 0.15 MPa	6.3A/250V (F1U), 3.15A/250V (F6U)
RZQ36/45LVA			6.3A/250V (F1U, F3U, F4U), 5A/250V (F6U)
RZQ45/48MYL	4.0 + 0/- 0.15 MPa	3.0 ± 0.15 MPa	6.3A/250V (F1U (A1P), F2U, F3U, F4U) 5.0A/250V (F1U (A2P))

4.3.2 Indoor Unit

Model	Thermal protector		Fuse
	Abnormal	Reset (automatic)	
FCQ-EV	—	—	N.A.
FBQ-EV	—	—	6.3A/250V

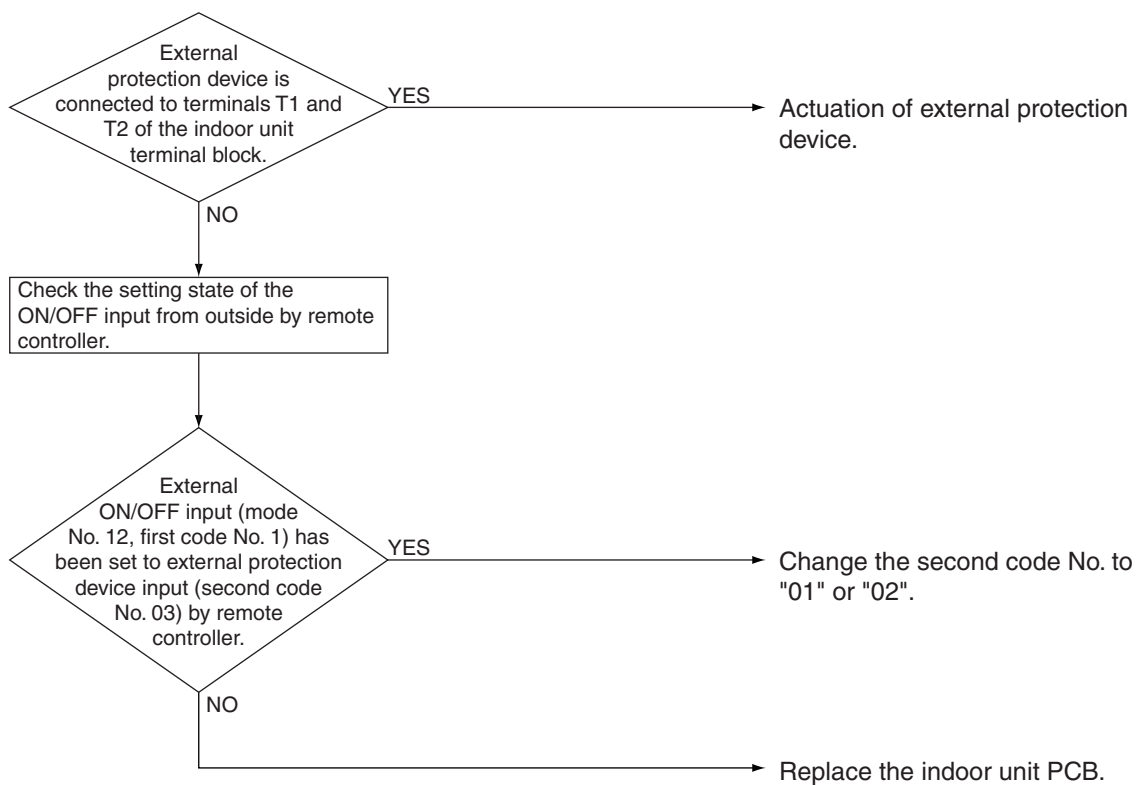
4.4 Error of External Protection Device

Error Code	80
Applicable Models	FCQ
Method of Error Detection	Detect open or short circuit between external input terminals in indoor unit.
Error Decision Conditions	When an open circuit occurs between external input terminals with the remote controller set to "external ON/OFF terminal."
Supposed Causes	<ul style="list-style-type: none"> ■ Actuation of external protection device ■ Improper field setting ■ Defective indoor unit PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



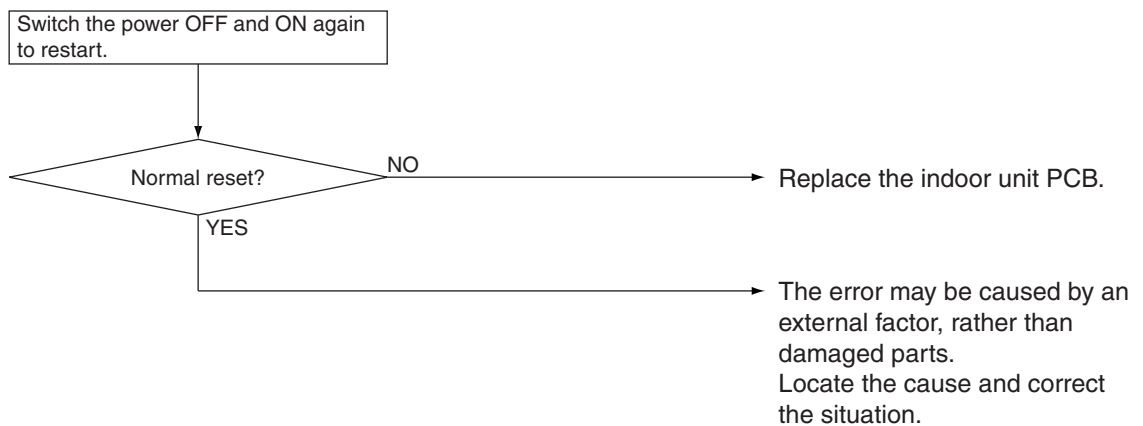
4.5 Indoor Unit PCB Abnormality

Error Code	81
Applicable Models	All indoor models
Method of Error Detection	Check data from E ² PROM.
Error Decision Conditions	<p>The error is generated when the data from the E²PROM is not received correctly.</p> <p>E²PROM (Electrically Erasable Programmable Read Only Memory): A memory chip that holds its content without power. It can be erased, either within the computer or externally and usually requires more voltage for erasure than the common +5 volts used in logic circuits. It functions like non-volatile RAM, but writing to E²PROM is slower than writing to RAM.</p>
Supposed Causes	<ul style="list-style-type: none"> ■ Defective indoor unit PCB ■ External factor (Noise, etc.)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



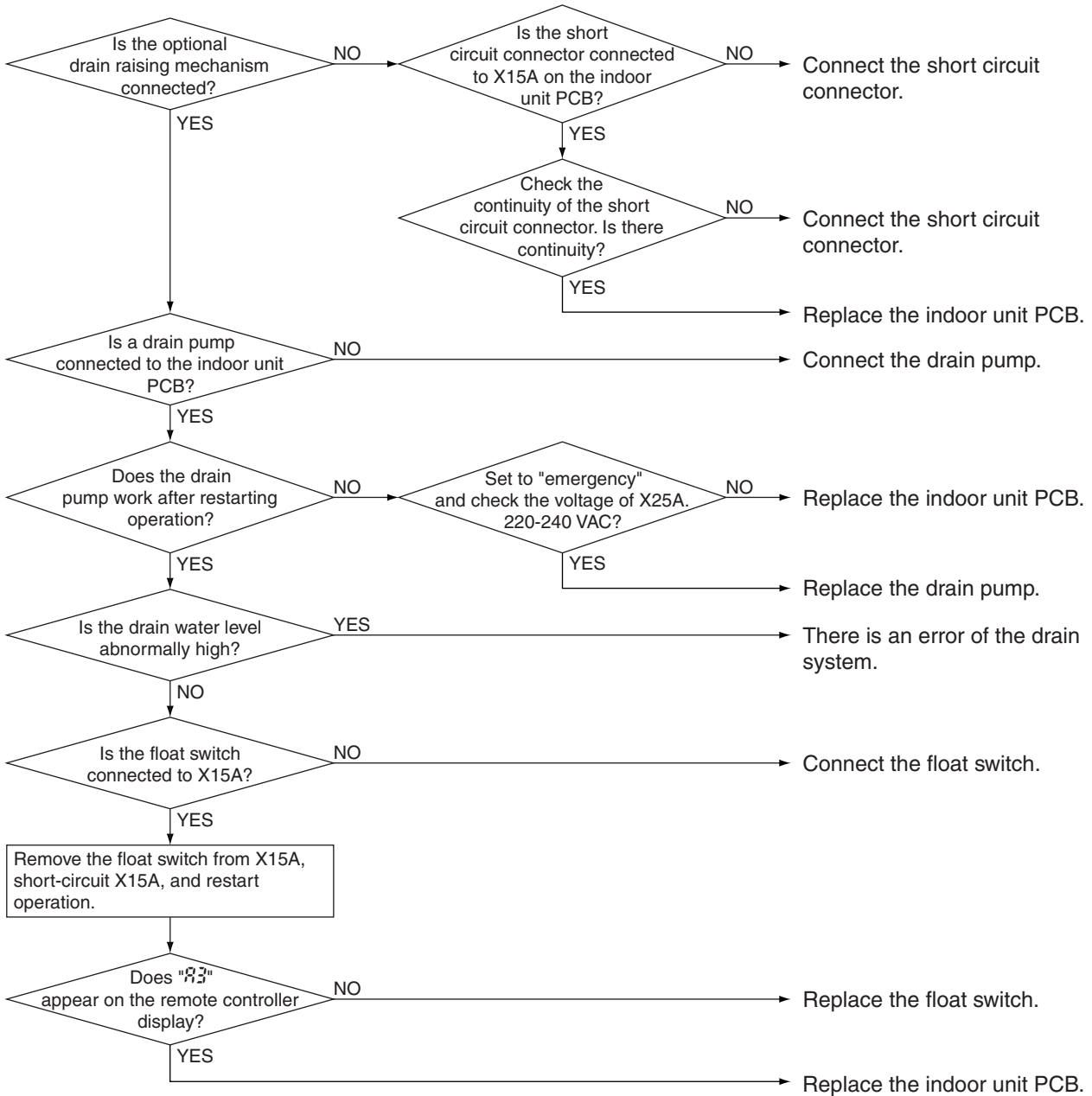
4.6 Drain Water Level System Abnormality

Error Code	83
Applicable Models	All indoor models
Method of Error Detection	By float switch OFF detection
Error Decision Conditions	The error is generated when the water level reaches its upper limit and when the float switch turns OFF.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective drain pump ■ Improper drain piping work ■ Drain piping clogging ■ Defective float switch ■ Defective indoor unit PCB ■ Defective short circuit connector X15A on PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

If "F3" is detected by a PCB which is not mounted with X15A, the PCB is defective.

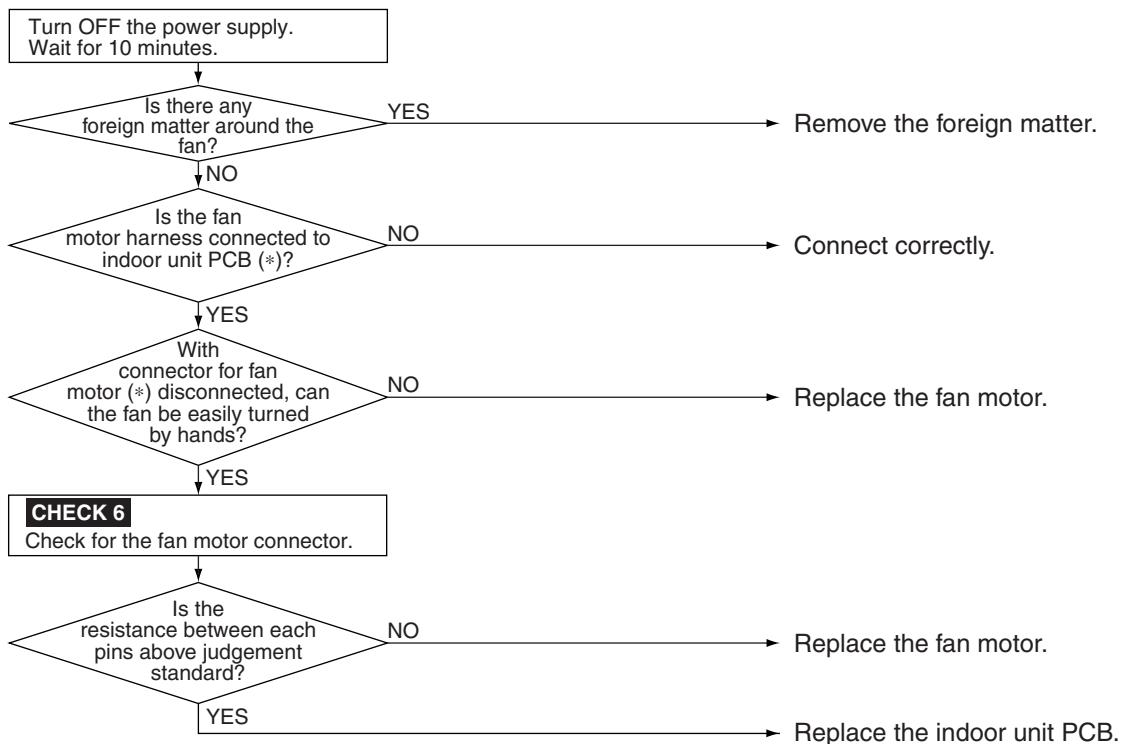
4.7 Indoor Unit Fan Motor Abnormality

Error Code	95
Applicable Models	All indoor models
Method of Error Detection	Detection of abnormal fan revolution by signal from the fan motor
Error Decision Conditions	The error is generated when the fan revolution do not increase while the output voltage to the fan is at its maximum.
Supposed Causes	<ul style="list-style-type: none"> ■ Disconnection, short circuit or disengagement of connector in fan motor harness ■ Defective fan motor (disconnection, poor insulation) ■ Abnormal signal from fan motor (defective circuit) ■ Defective Indoor unit PCB ■ 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. ■ Disconnection of the connector between the high-power PCB and the low-power PCB.

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

* Connector and indoor unit PCB

	Connector for fan motor	PCB
FCQ	X20A	A1P
FBQ	X1A and X2A	A2P



CHECK 6 Refer to P. 158.

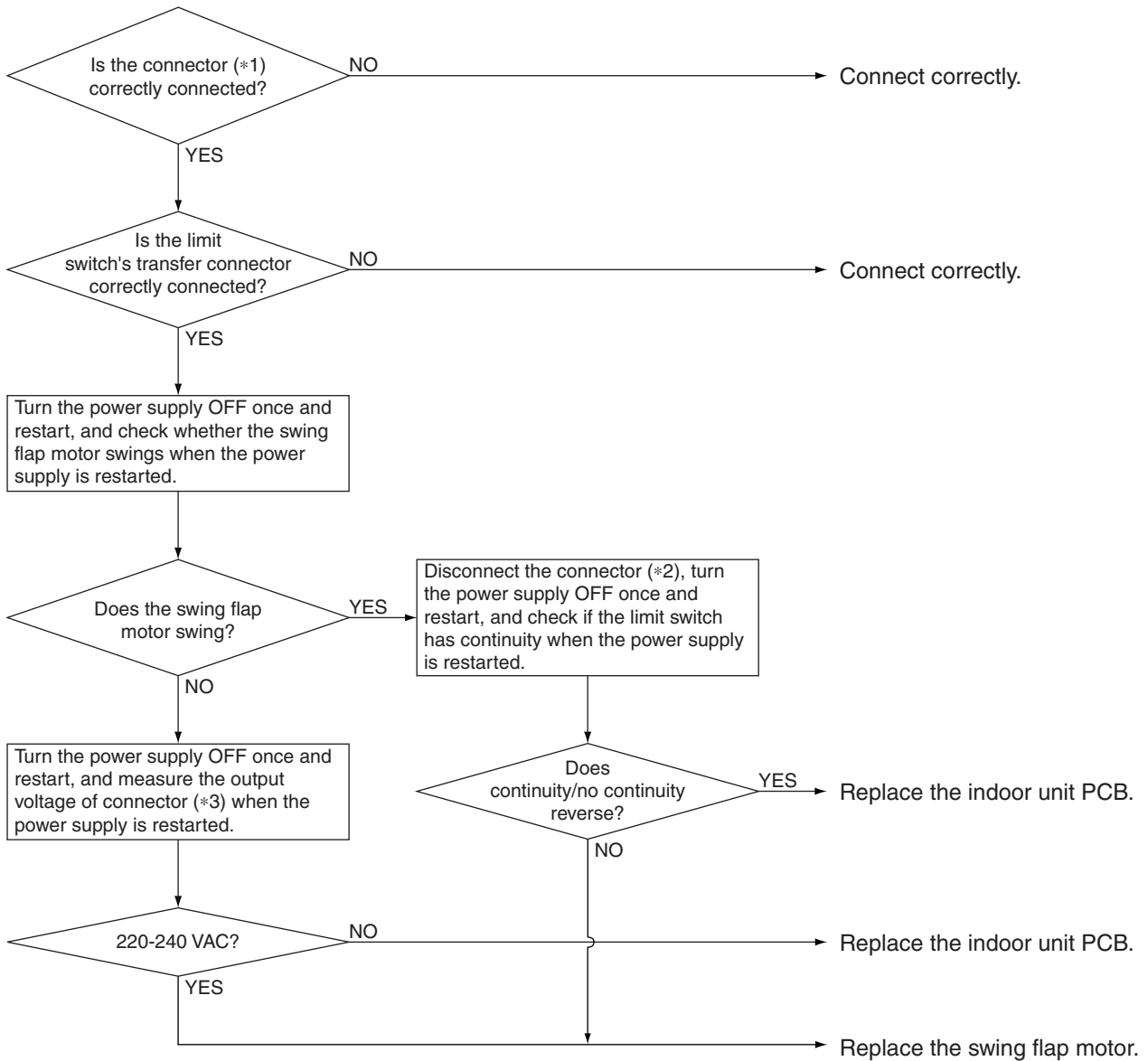
4.8 Swing Flap Motor Abnormality / Lock

Error Code	87
Applicable Models	FCQ
Method of Error Detection	The error is detected by the limit switch when the motor turns.
Error Decision Conditions	When ON/OFF of the micro-switch for position detection cannot be reversed even though the swing flap motor is energized for a specified amount of time (about 30 seconds). *Error code is displayed but the system operates continuously.
Supposed Causes	<ul style="list-style-type: none">■ Defective swing flap motor■ Defective micro-switch■ Defective connector connection■ Defective indoor unit PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

Connector and indoor unit PCB

Model	Connector for swing flap motor			PCB
	*1	*2	*3	
FCQ	X36A	X36A	X36A	A1P

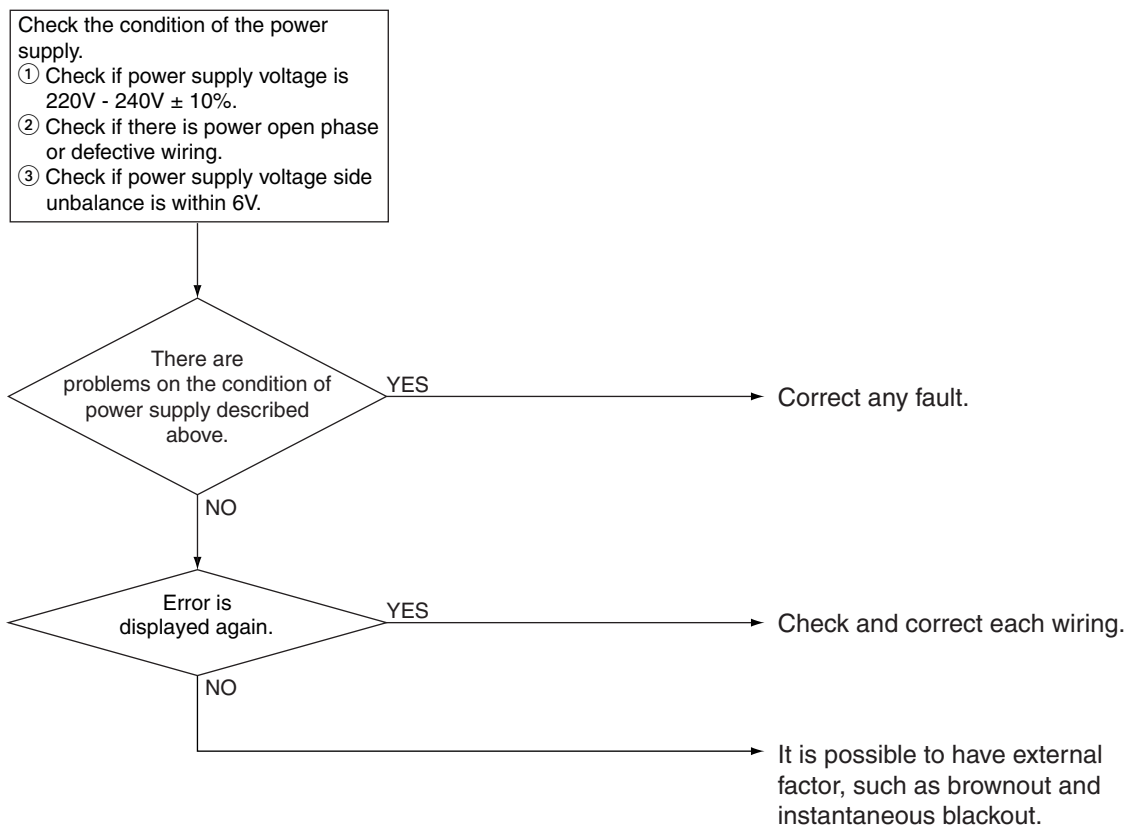
4.9 Abnormal Power Supply Voltage

Error Code	88
Applicable Models	FBQ
Method of Error Detection	Detect error checking the input voltage of fan motor
Error Decision Conditions	When the input voltage of fan motor is 150V and less, or 386V and more
Supposed Causes	<ul style="list-style-type: none"> ■ Power supply voltage error ■ Defective connection on signal line ■ Defective wiring ■ Instantaneous blackout, others

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



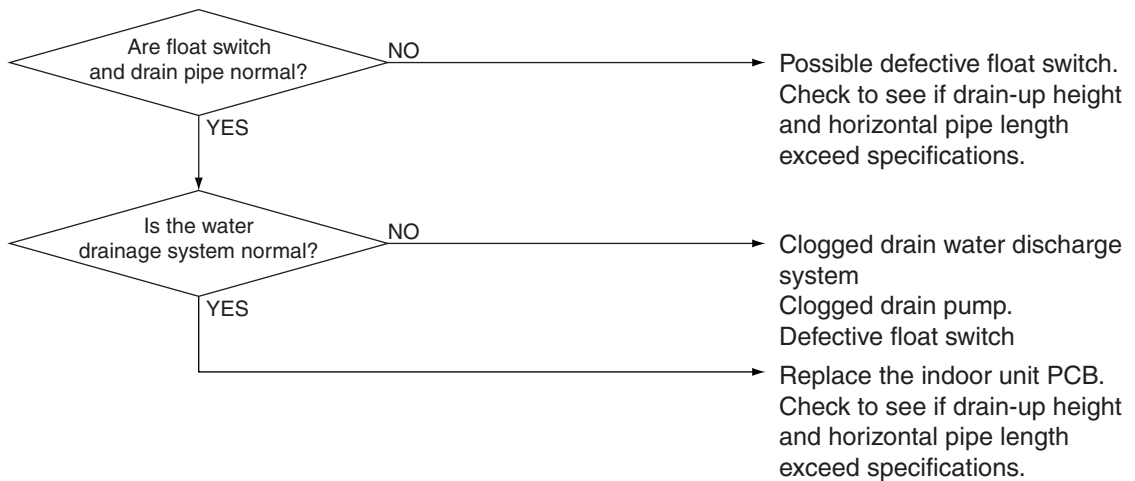
4.10 Drain System Abnormality

Error Code	8F
Applicable Models	All indoor models
Method of Error Detection	Water leakage is detected based on float switch ON/OFF operation while the compressor is in non-operation.
Error Decision Conditions	The float switch changes from ON to OFF while the compressor is OFF. *Error code is displayed but the system operates continuously.
Supposed Causes	<ul style="list-style-type: none"> ■ Error in the drain pipe installation ■ Defective float switch ■ Defective indoor unit PCB ■ Defective connector connection ■ Defective drain pump

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



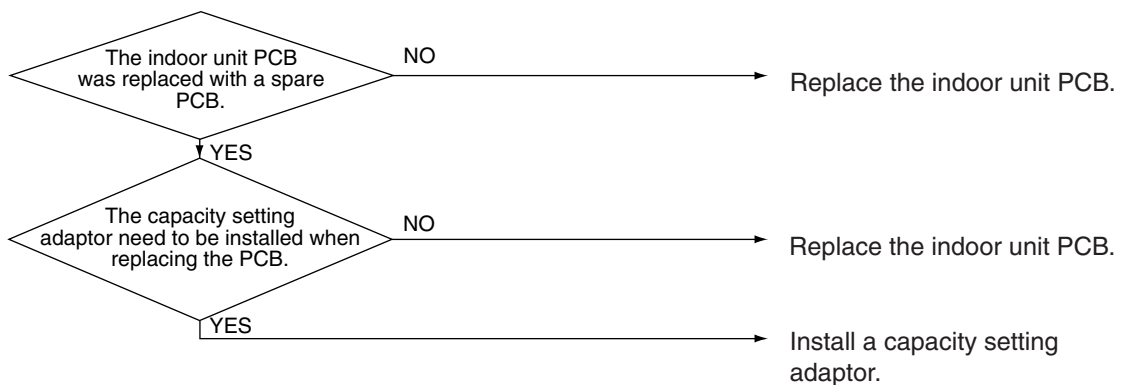
4.11 Capacity Setting Abnormality

Error Code	R1
Applicable Models	All indoor models
Method of Error Detection	Capacity is determined according to resistance of the capacity setting adaptor and the memory inside the IC memory on the indoor unit PCB, and whether the value is normal or abnormal is determined.
Error Decision Conditions	Operation and: When the capacity code is not contained in the PCB memory, and the capacity setting adaptor is not connected.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective capacity setting adaptor connection ■ Defective indoor unit PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



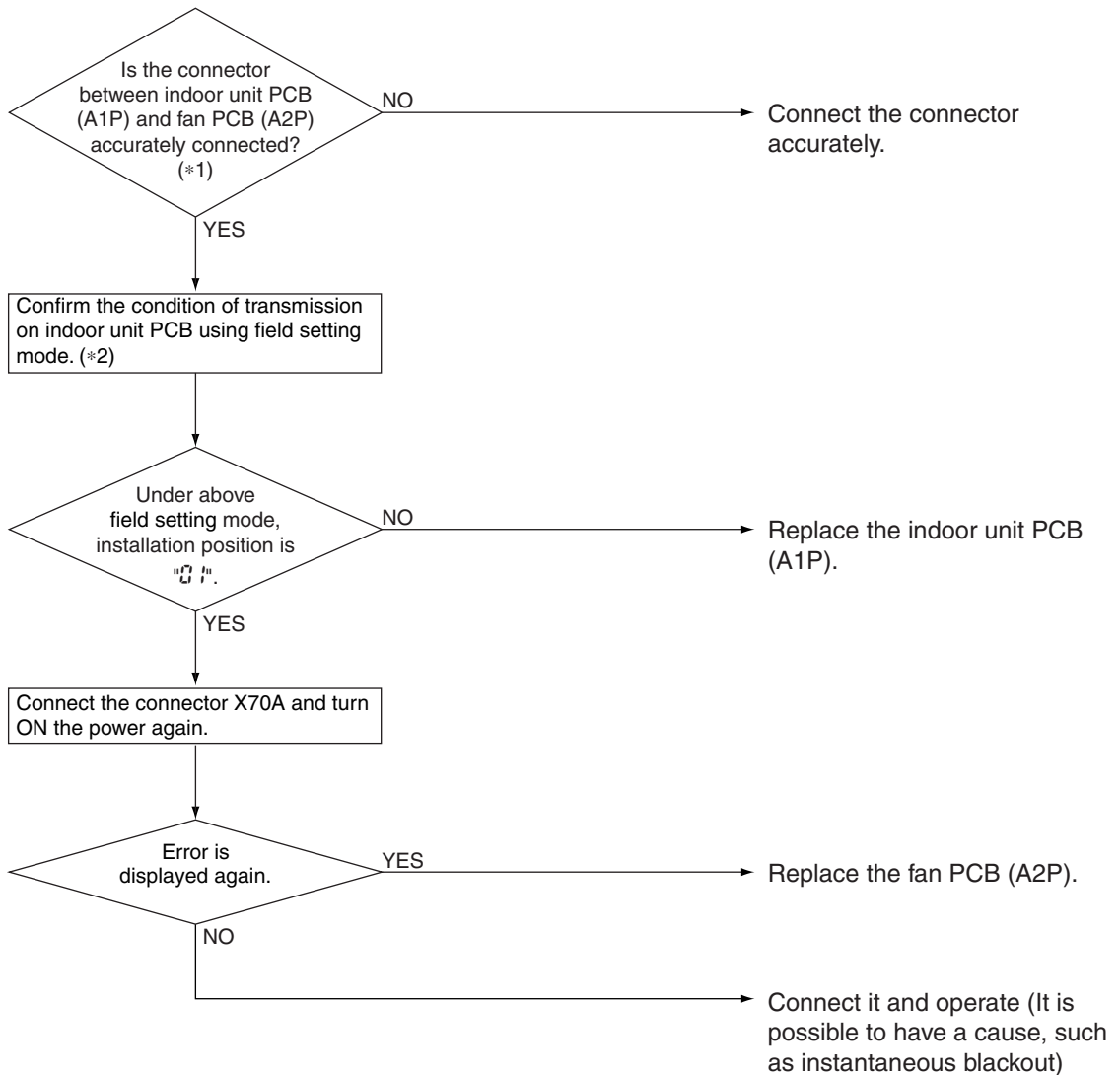
4.12 Transmission Error between Indoor Unit PCB and Fan PCB

Error Code	E1
Applicable Models	FBQ
Method of Error Detection	Check the condition of transmission between indoor unit PCB and fan PCB using computer.
Error Decision Conditions	When normal transmission is not conducted for certain duration.
Supposed Causes	<ul style="list-style-type: none"> ■ Connection error of the connector between indoor unit PCB and fan PCB. ■ Defective indoor unit PCB ■ Defective fan PCB ■ External factor, such as instantaneous blackout.

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Pull out and insert the connector once and check it is absolutely connected.

*2. Method to check transmission part of indoor unit PCB.

① Turn OFF the power and remove the connector X70A of indoor unit PCB (A1P).

② Short circuit X70A.

③ After turning ON the power, check below numbers under field setting remote control. (Confirmation: second code No. at the condition of first code No. 21 on mode No. 41)



Determination	01: Normal
	Other than 01: Transmission defect on indoor unit PCB

* After confirmation, turn OFF the power, take off the short circuit and connect X70A back to original condition.

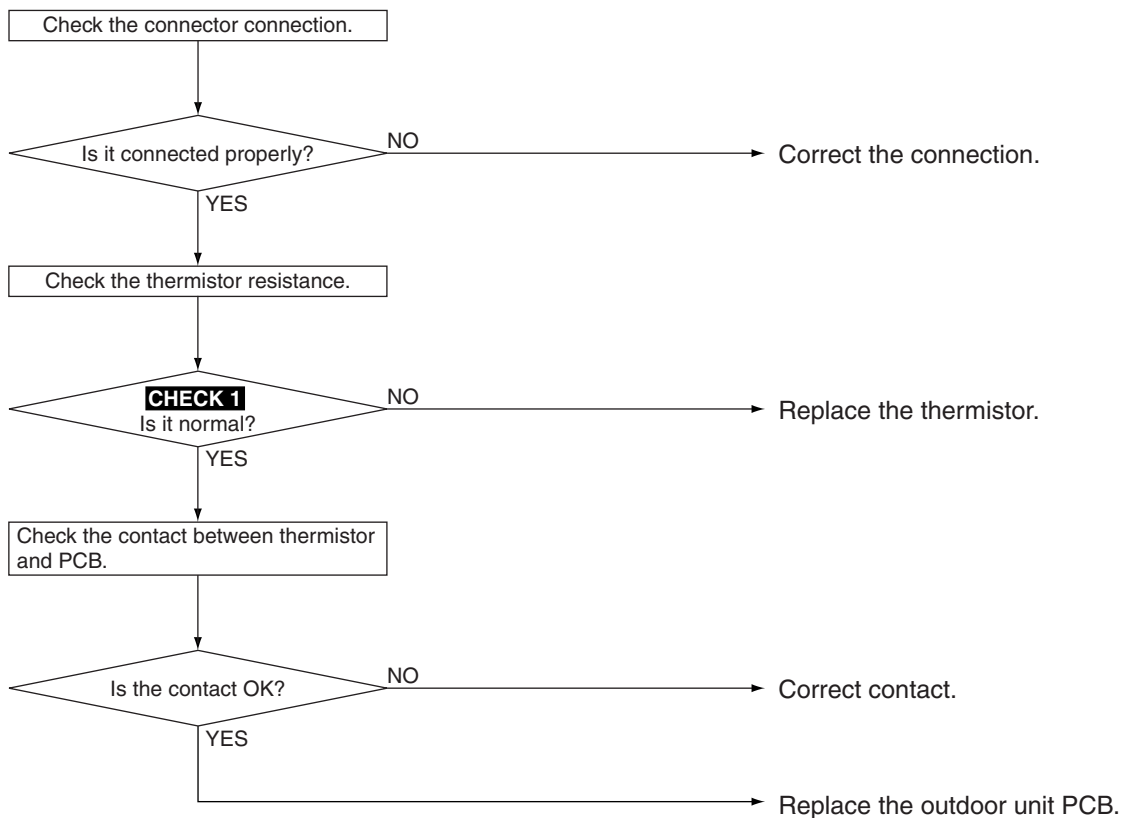
4.13 Thermistor Abnormality

Error Code	U4, U9
Applicable Models	All indoor models
Method of Error Detection	The error is detected by temperature detected by thermistor.
Error Decision Conditions	When the thermistor becomes disconnected or short circuited while the unit is running.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective connector connection ■ Defective thermistor ■ Defective indoor unit PCB ■ Broken or disconnected wire

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



U4: Heat exchanger thermistor (R2T)

U9: Suction air thermistor (R1T)



CHECK 1 Refer to P.152.

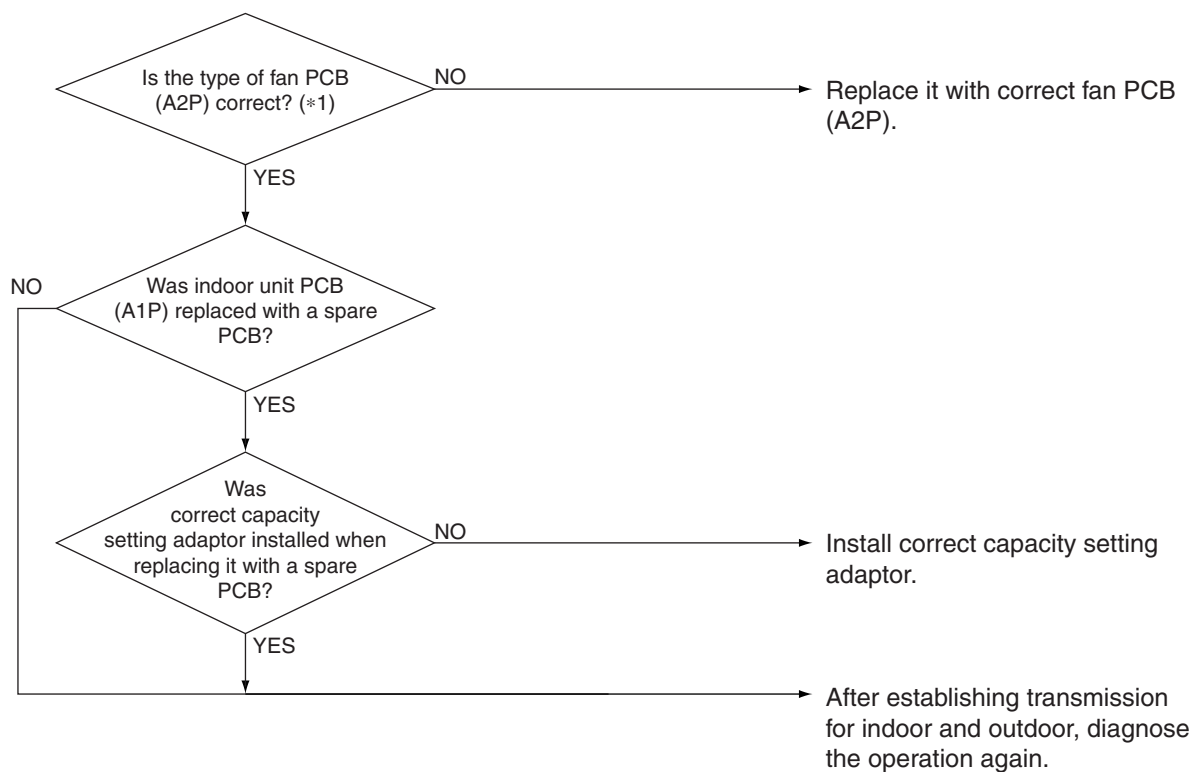
4.14 Combination Error between Indoor Unit PCB and Fan PCB

Error Code	CE
Applicable Models	FBQ
Method of Error Detection	Conduct open line detection with fan PCB using indoor unit PCB (A1P).
Error Decision Conditions	When the communication data of fan PCB is determined as incorrect
Supposed Causes	<ul style="list-style-type: none"> ■ Defective fan PCB ■ Defective connection of capacity setting adaptor. ■ Defective field setting

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note: *1. Type of fan PCB.

Applicable model	Type of fan PCB
FBQ20/24	PC0609-2
FBQ36-48	PC0609-3

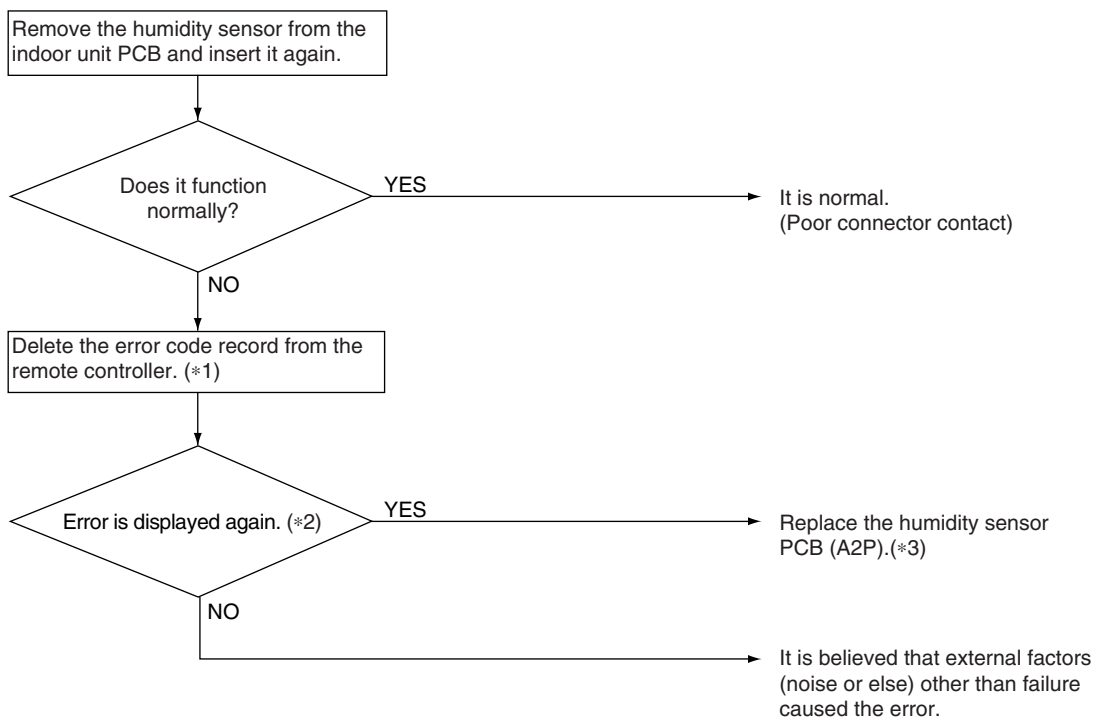
4.15 Humidity Sensor System Abnormality

Error Code	CC
Applicable Models	FCQ
Method of Error Detection	The error is detected according to the humidity (output voltage) detected by humidity sensor.
Error Decision Conditions	The error is generated when the humidity sensor becomes disconnected or shorted when the unit is running. *Error code is displayed but the system operates continuously.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective sensor ■ Broken wire ■ External factor (Noise, etc.)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

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

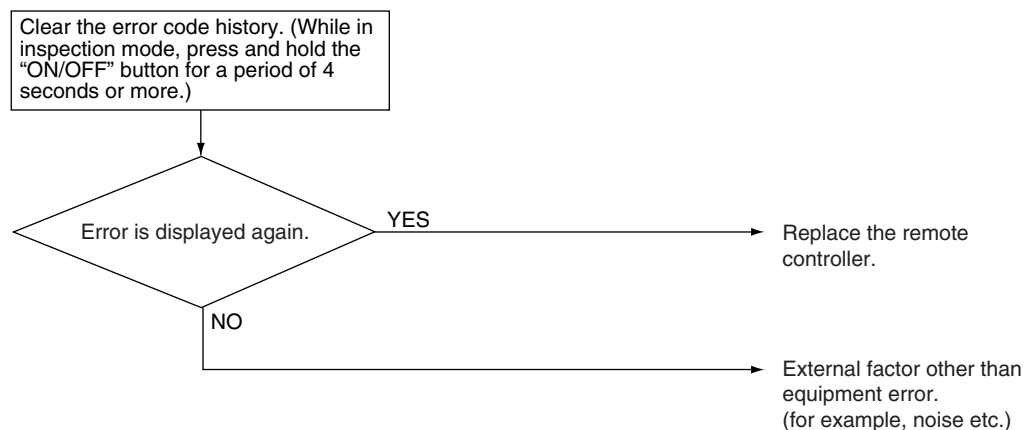
4.16 Room Temperature Thermistor in Remote Controller Abnormality

Error Code	U
Applicable Models	All indoor models
Method of Error Detection	Error detection is carried out by temperature detected by room temperature thermistor in remote controller. (Note:)
Error Decision Conditions	When the room temperature thermistor in remote controller becomes disconnected or shorted while the unit is running. *Error code is displayed but the system operates continuously.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective room temperature thermistor in remote controller ■ Defective remote controller PCB ■ External factor (Noise, etc.)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. How to delete "the history of error codes".

Press the "ON/OFF" button for 4 seconds and more while the error code is displayed in the inspection mode.

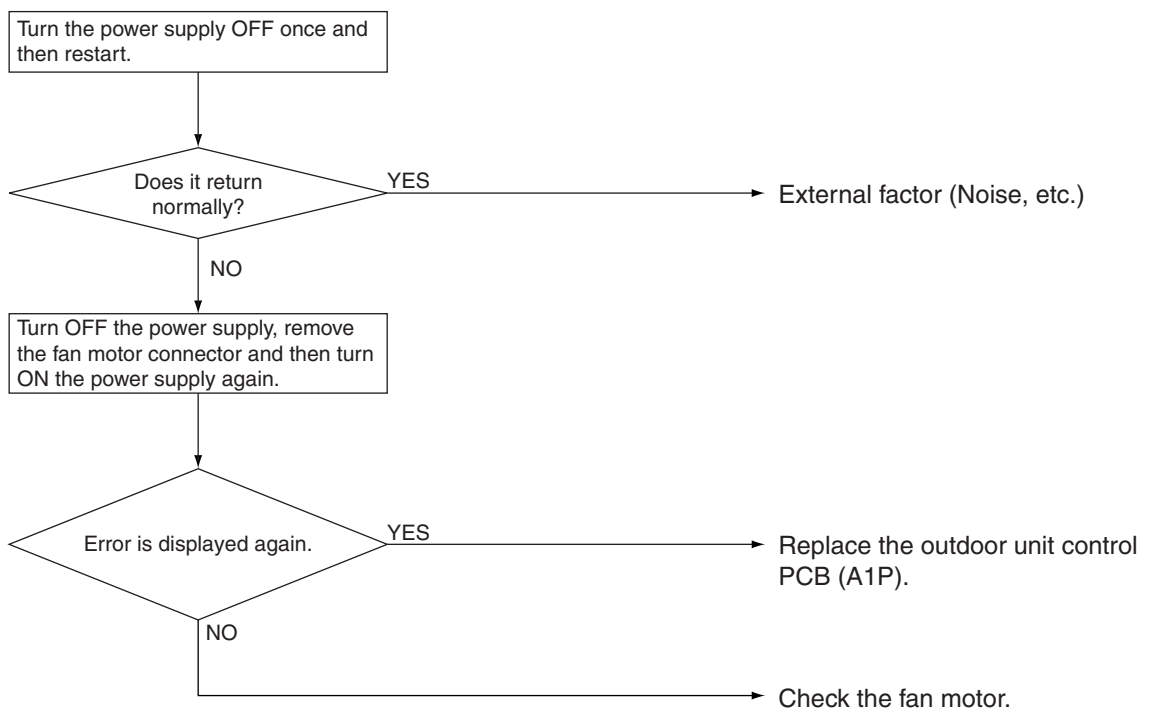
4.17 Outdoor Unit PCB Abnormality

Error Code	E1
Applicable Models	RZQ
Method of Error Detection	Micro-computer checks whether E ² PROM is normal.
Error Decision Conditions	When E ² PROM error when turning the power supply ON
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit PCB ■ Defective fan motor ■ External factor (Noise, etc.)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



4.18 High Pressure Abnormality (Detected by the High Pressure Switch)

Error Code	E3
Applicable Models	RZQ
Method of Error Detection	The protection device circuit checks continuity in the high pressure switch.
Error Decision Conditions	When the high pressure switch is actuated
Supposed Causes	<ul style="list-style-type: none"> ■ Defective high pressure switch ■ Disconnection in high pressure switch harness ■ Defective connection of high pressure switch connector ■ Clogged indoor unit suction filter (in heating) ■ Dirty outdoor unit heat exchanger (in cooling) ■ Defective indoor unit fan motor (in heating) ■ Defective outdoor unit fan motor (in cooling) ■ Overcharge of refrigerant ■ Stop valve is not opened. ■ Defective outdoor unit PCB

High Pressure Switch Settings

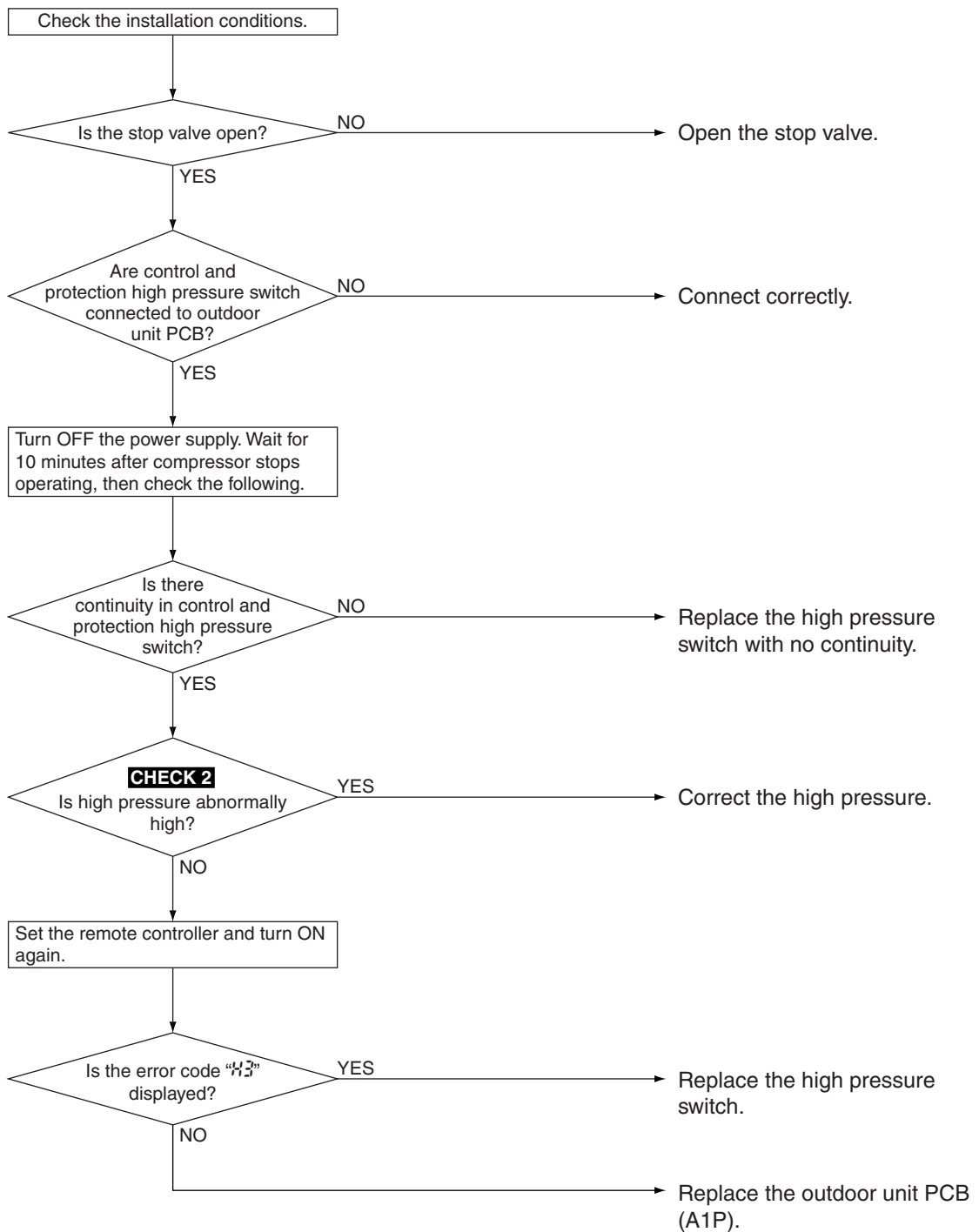
The table below contains the preset high pressure switch values.

Model	High pressure switch		Fuse
	Open	Close	
RZQ20/24LVA	4.0 + 0/- 0.15 MPa	3.0 ± 0.15 MPa	6.3A/250V (F1U), 3.15A/250V (F6U)
RZQ36/45LVA			6.3A/250V (F1U, F3U, F4U), 5A/250V (F6U)
RZQ45/48MYL	4.0 + 0/- 0.15 MPa	3.0 ± 0.15 MPa	6.3A/250V (F1U (A1P), F2U, F3U, F4U) 5.0A/250V (F1U (A2P))

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 2 Refer to P.154.

4.19 Low Pressure Abnormality

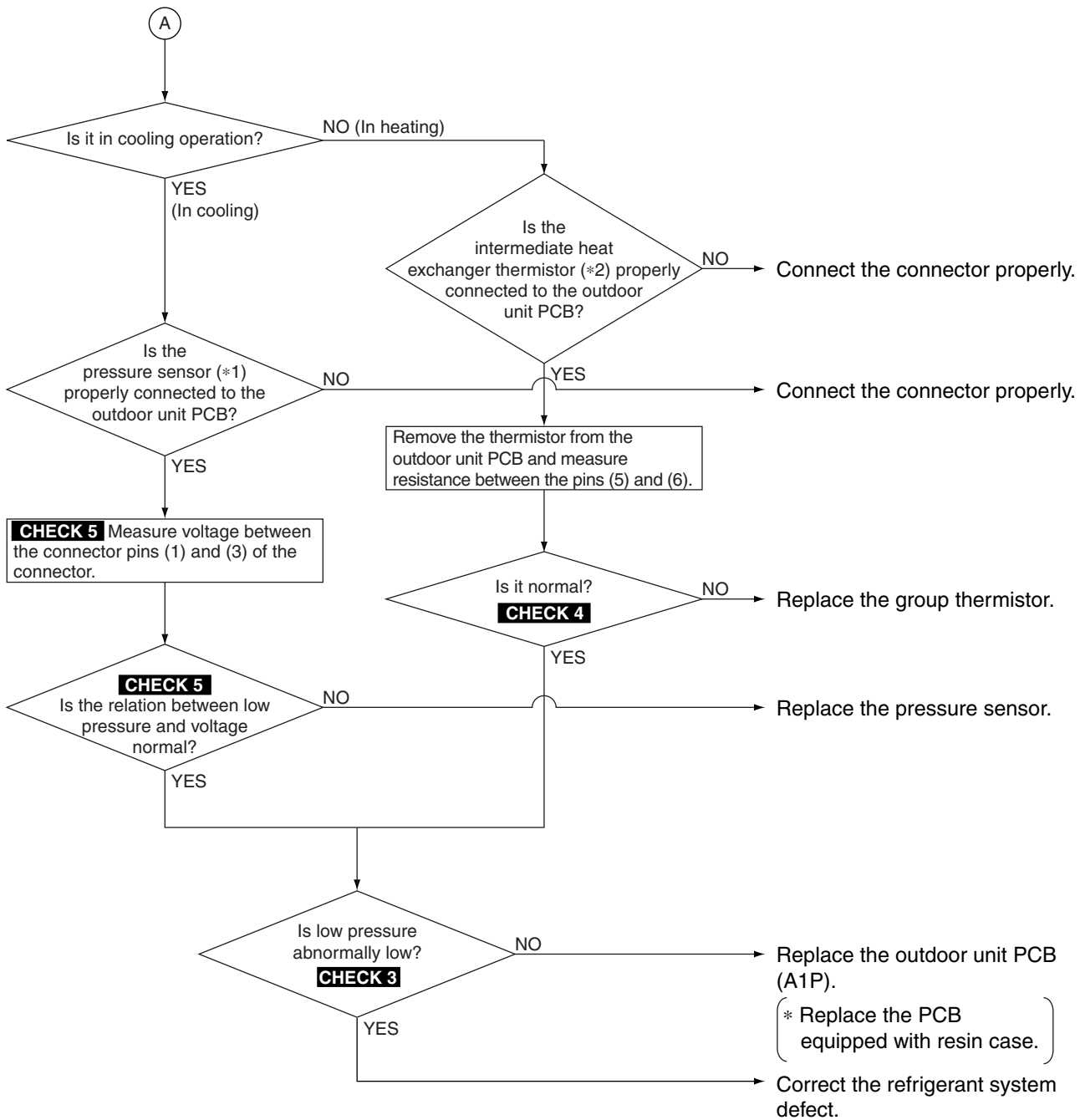
Error Code	E4
Applicable Models	RZQ
Method of Error Detection	<p>[In cooling]</p> <ul style="list-style-type: none"> ■ Detect error by the pressure sensor (S1NPH). <p>[In heating]</p> <ul style="list-style-type: none"> ■ Detect error by the intermediate heat exchanger thermistor (R5T).
Error Decision Conditions	<p>[In cooling]</p> <ul style="list-style-type: none"> ■ When the detection pressure is the following value 0.12MPa or less continues for 5 minutes <p>[In heating]</p> <ul style="list-style-type: none"> ■ When the saturated pressure equivalent to the detection temperature is the following value 0.12MPa or less continues for 5 minutes
Supposed Causes	<ul style="list-style-type: none"> ■ Stop valve is not opened. ■ Defective pressure sensor and intermittent harness ■ Defective outdoor unit PCB ■ Abnormal drop of low pressure (Refrigerant shortage) (Defective refrigerant piping system (liquid pipe system)) (Defective electronic expansion valve)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.





Note:

*1, *2 Connector and outdoor unit PCB

*1 Connector for pressure sensor	*2 Connector for intermediate heat exchanger thermistor	PCB
X17A	X12A	A1P



CHECK 3 Refer to P.155.

CHECK 4 Refer to P.156.

CHECK 5 Refer to P.157.

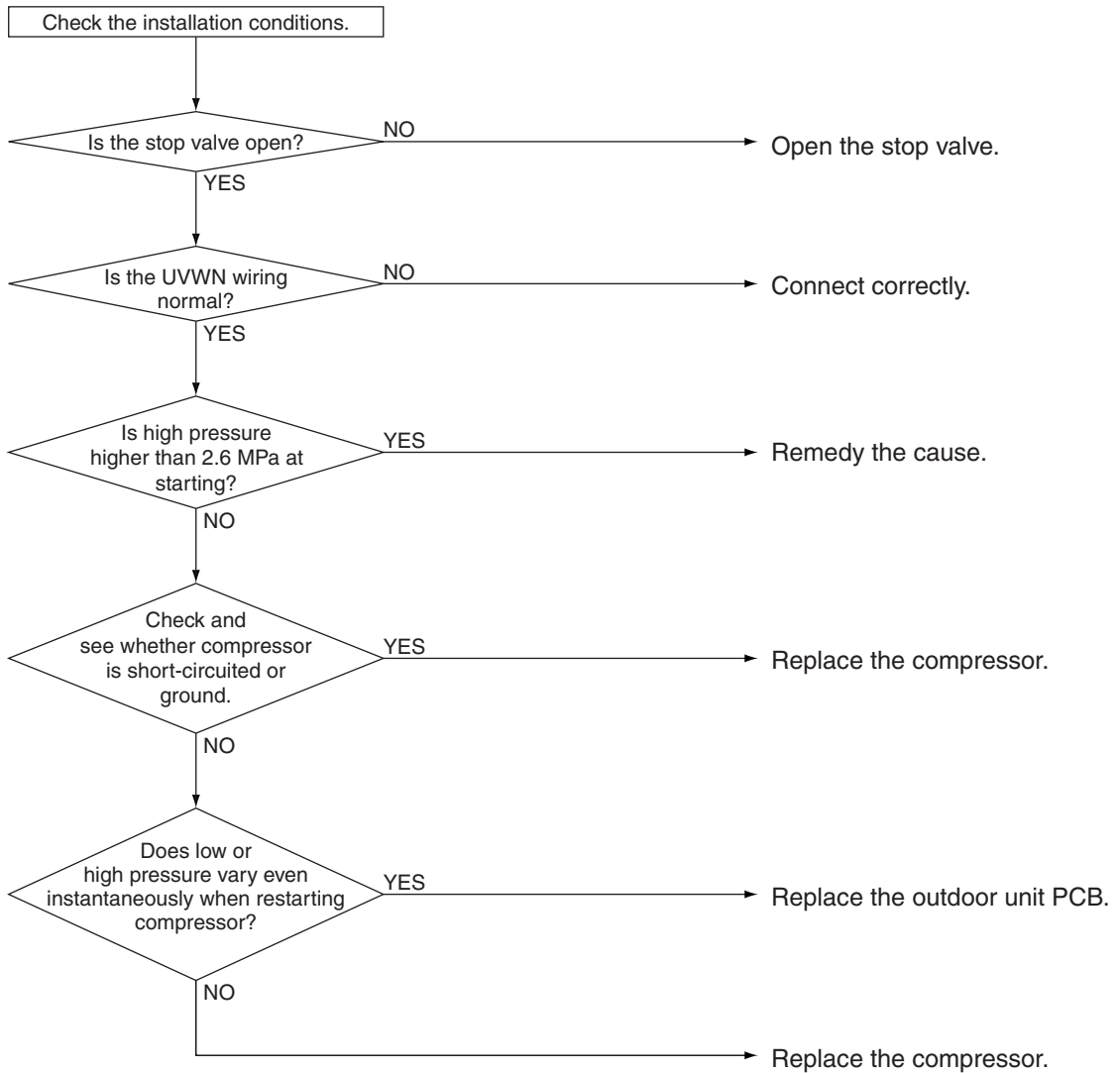
4.20 Compressor Motor Lock

Error Code	E5
Applicable Models	RZQ
Method of Error Detection	Detect the motor lock when the compressor is energized.
Error Decision Conditions	If the motor rotor does not rotate when the compressor is energized.
Supposed Causes	<ul style="list-style-type: none">■ Compressor lock■ High differential pressure (2.6MPa or more) starting■ Incorrect UVWN wiring■ Defective inverter PCB■ Stop valve is not opened.

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



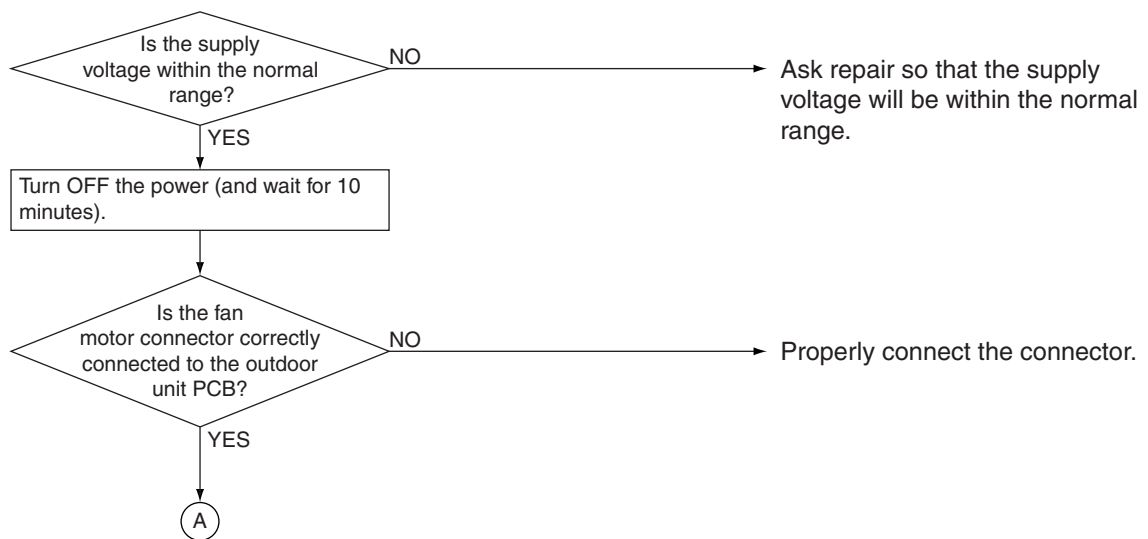
4.21 Outdoor Unit Fan Motor Abnormality

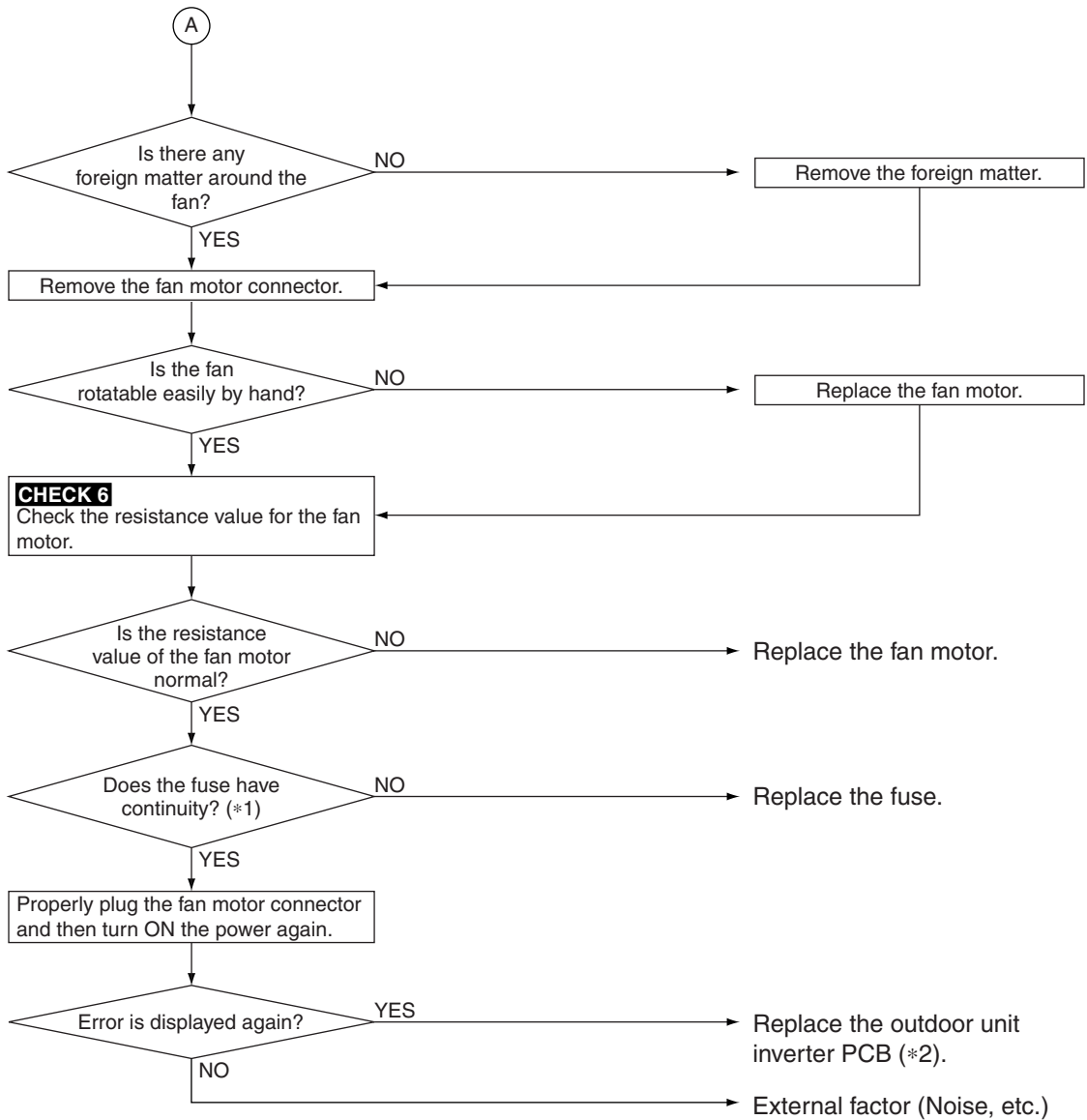
Error Code	E7
Applicable Models	RZQ
Method of Error Detection	Abnormality of fan motor system is detected according to the fan revolution detected by hall IC when the fan motor runs.
Error Decision Conditions	<ul style="list-style-type: none"> ■ When the fan runs with speed less than a specified one for 6 seconds or more when the fan motor running conditions are met ■ When connector detecting fan revolution is disconnected ■ When the error is generated 4 times, the system shuts down.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective fan motor ■ The harness connector between fan motor and PCB is left in disconnected, or defective connector ■ Fan does not run due to foreign matters tangled ■ Defective outdoor unit PCB ■ Blowout of fuse ■ External factor (Noise, etc.)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.





Note:

*1. Continuity of fuse

Model	Fuse	PCB
RZQ20-45LVA	F6U	A1P
RZQ45/48MYL	F1U	A2P



CHECK 6 Refer to P.158.

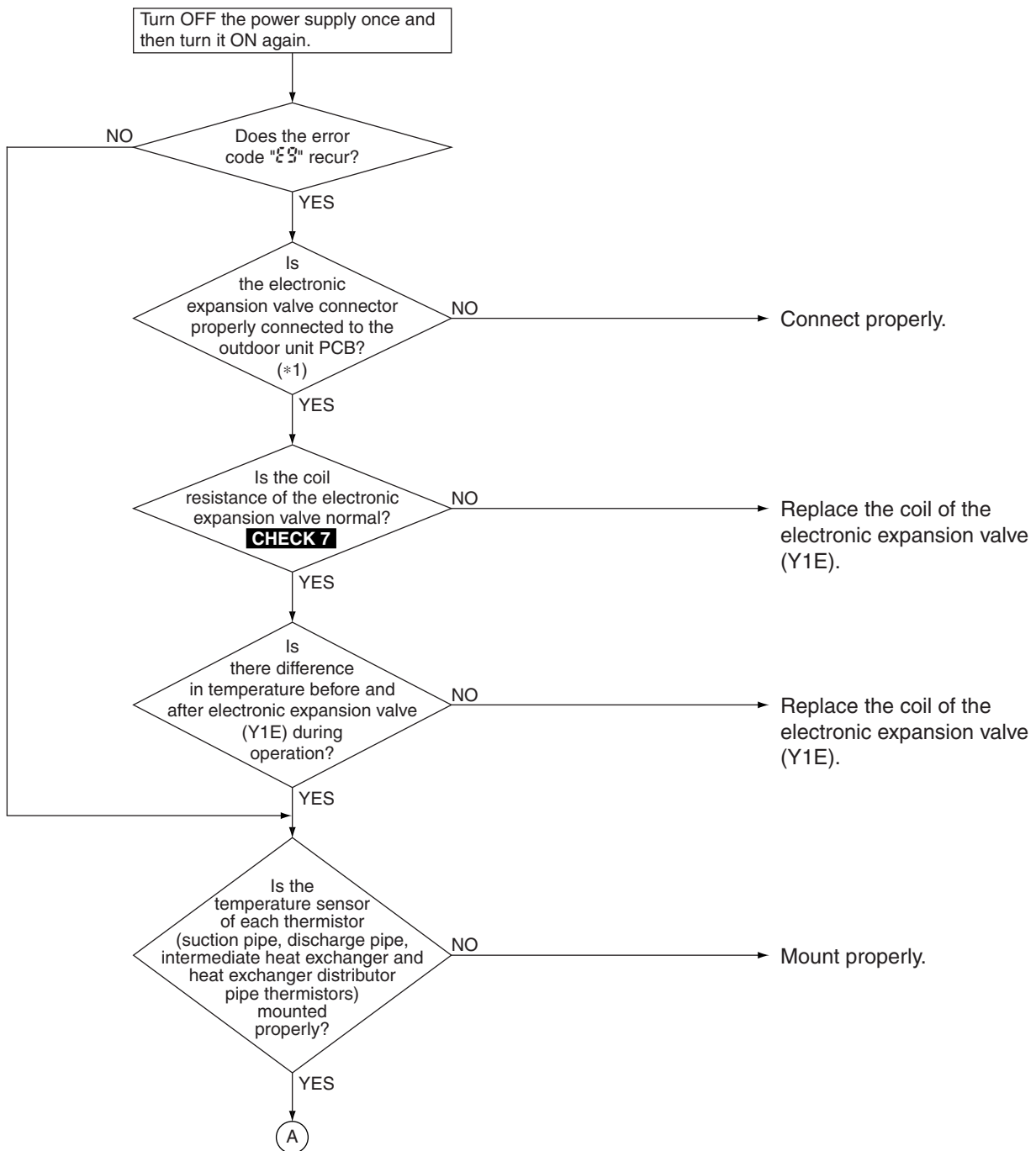
4.22 Electronic Expansion Valve Abnormality

Error Code	E9
Applicable Models	RZQ
Method of Error Detection	<ul style="list-style-type: none"> ■ Detect errors based on check of continuity of the electronic expansion valve. ■ Detect errors by suction pipe superheated degree, discharge pipe superheated degree and electronic expansion valve opening degree. <p>[Suction pipe superheated degree] Cooling: Suction pipe thermistor - low pressure sensor equivalent temperature Heating: Suction pipe thermistor - heat exchanger distributor pipe thermistor</p> <p>[Discharge pipe superheated degree] Cooling: Discharge pipe thermistor - intermediate heat exchanger thermistor Heating: Discharge pipe thermistor - high pressure sensor equivalent temperature</p>
Error Decision Conditions	<ul style="list-style-type: none"> ■ No common power supply when the power is turned ON ■ When the following conditions are established Suction pipe superheated degree < 4°C Discharge pipe superheated degree < 5°C Electronic expansion valve opening degree < Minimum opening degree
Supposed Causes	<ul style="list-style-type: none"> ■ Defective electronic expansion valve ■ Defective solenoid valve ■ Disconnection of electronic expansion valve harness ■ Defective connection of electronic expansion valve connector ■ Defective each thermistor ■ Defective of each thermistor mounting ■ Defective pressure sensor ■ Defective outdoor unit control PCB ■ Wet operation

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



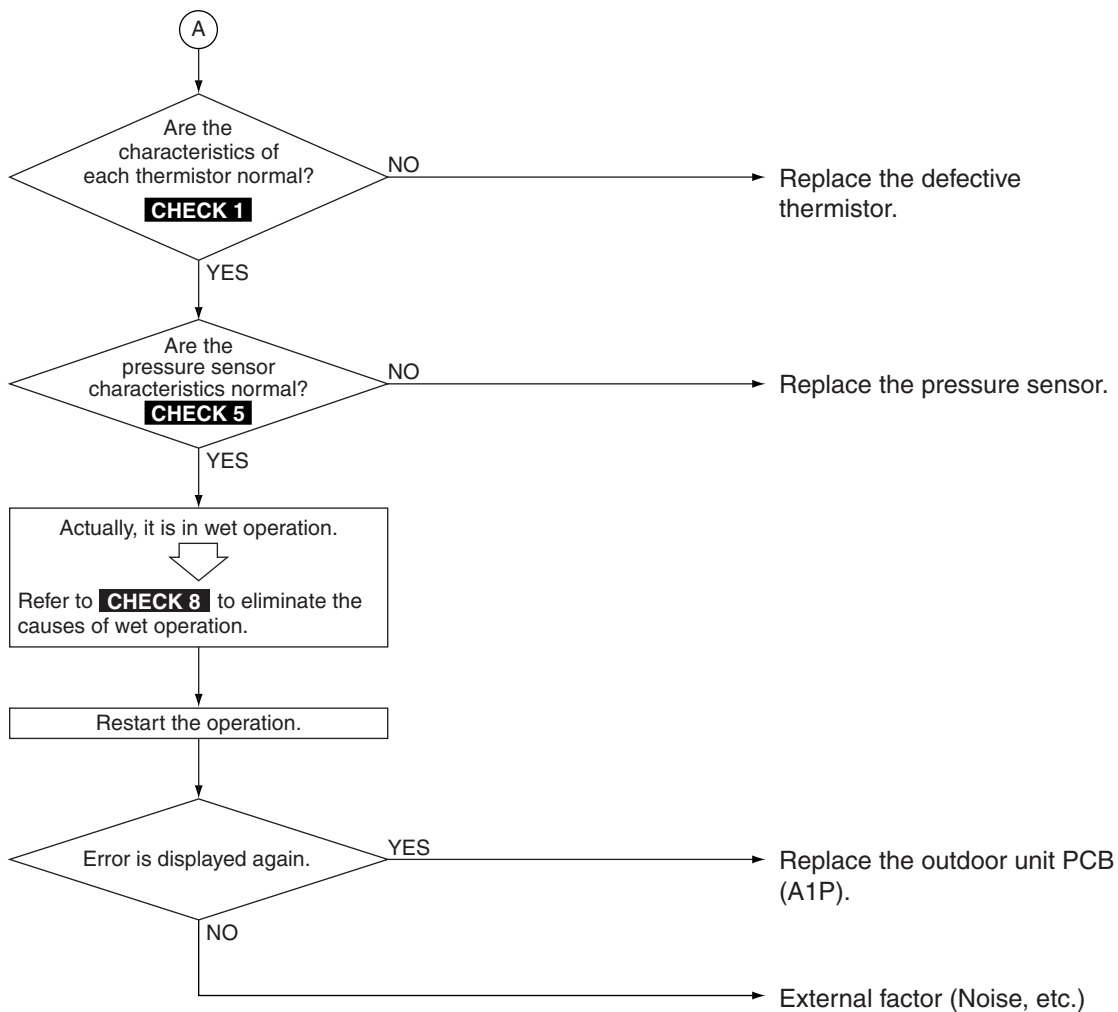
Note:

*1. Connector and outdoor unit PCB

Connector for electronic expansion valve	PCB
X21A	A1P



CHECK 7 Refer to P.158.



CHECK 5 Refer to P.157.

CHECK 1 Refer to P.152.

CHECK 8 Refer to P.159.

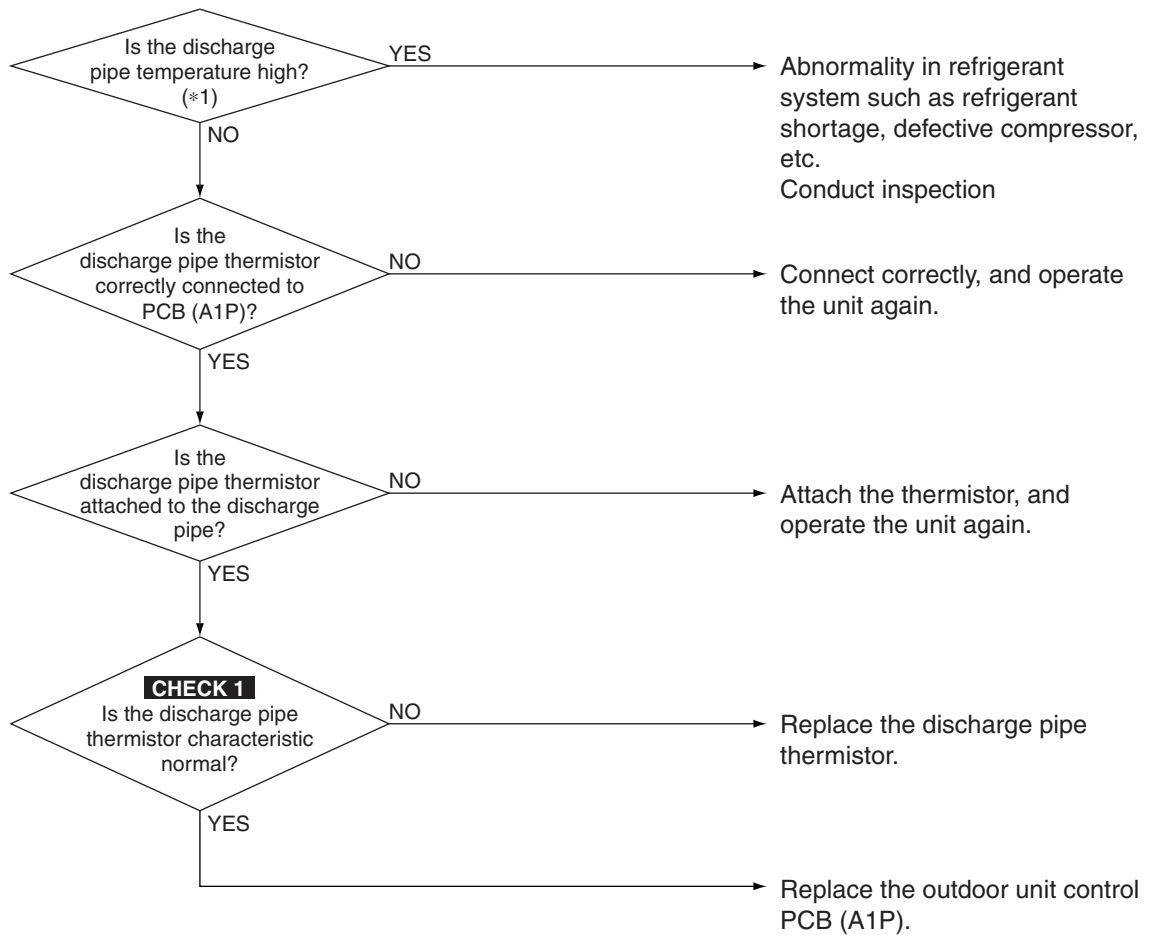
4.23 Discharge Pipe Temperature Control Error

Error Code	F3
Applicable Models	RZQ
Method of Error Detection	The error is detected according to the temperature detected by the discharge pipe thermistor.
Error Decision Conditions	<ul style="list-style-type: none"> ■ When the discharge pipe temperature rises to an abnormally high level ■ When the discharge pipe temperature rises suddenly ■ When the discharge pipe temperature does not rise after operation start
Supposed Causes	<ul style="list-style-type: none"> ■ Defective discharge pipe thermistor ■ Defective connection of discharge pipe thermistor ■ Refrigerant shortage ■ Defective compressor ■ Disconnection of discharge pipe thermistor ■ Defective outdoor unit PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Temperature varies depending on model type.

Model	Temperature
RZQ20/24LVA	110 °C
RZQ36/45LVA	115 °C
RZQ45/48MYL	115 °C



CHECK 1 Refer to P.152.

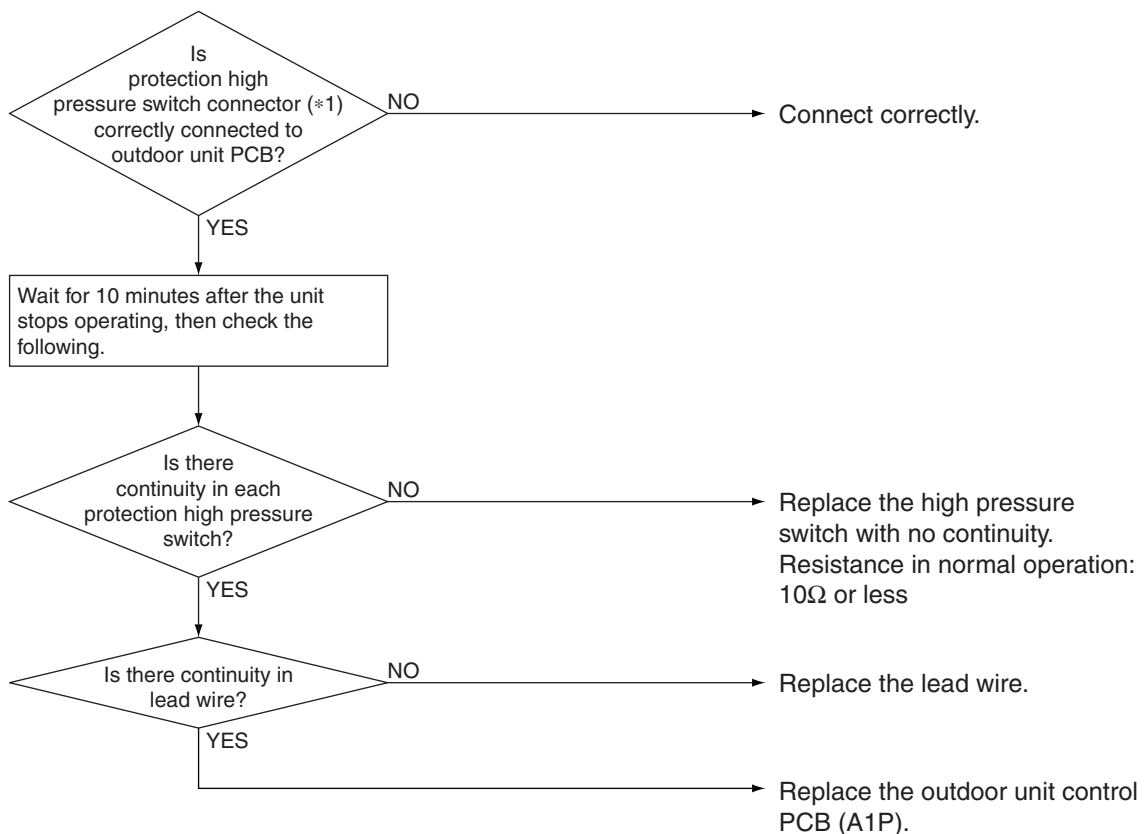
4.24 High Pressure Switch System Abnormality

Error Code	43
Applicable Models	RZQ20/24/36/45LVA RZQ45/48MYL
Method of Error Detection	The protection device circuit checks continuity in the high pressure switch.
Error Decision Conditions	When there is no continuity in the high pressure switch during compressor stops operating.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective high pressure switch ■ Defective connection of high pressure switch connector ■ Defective outdoor unit PCB ■ Disconnected lead wire

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Connector and outdoor unit PCB

Connector for high pressure switch	PCB
X32A	A1P

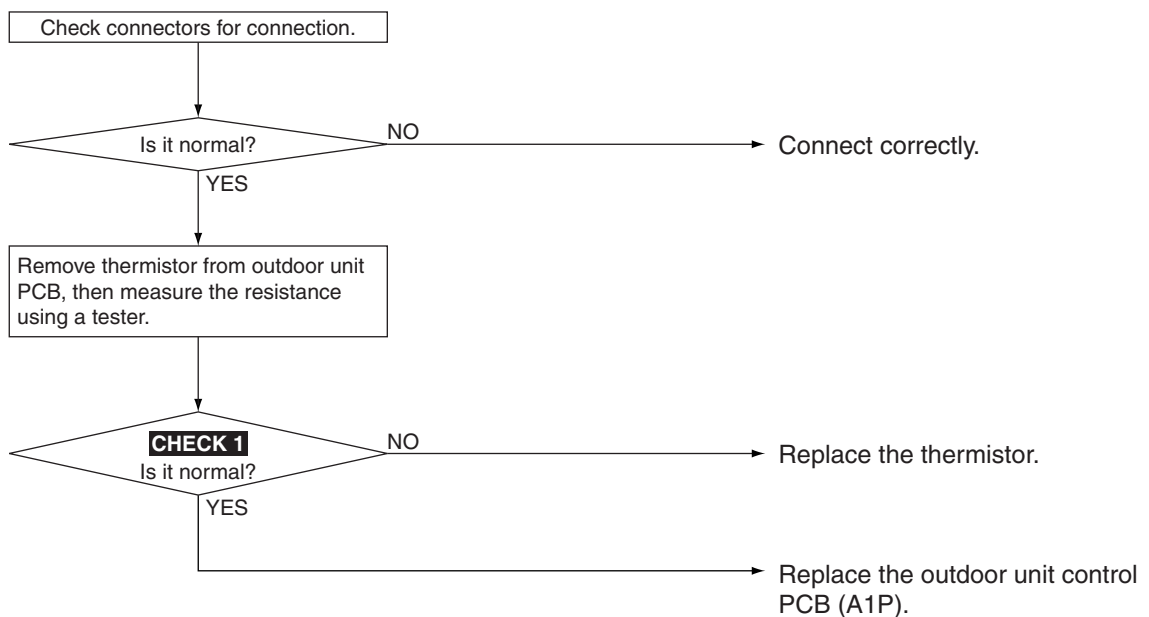
4.25 Thermistor System Abnormality

Error Code	<i>H3, J3, J5, J6, J7, J8</i>
Applicable Models	RZQ
Method of Error Detection	The error is detected according to the temperature detected by each thermistor.
Error Decision Conditions	When thermistor is disconnected or short-circuited during operation
Supposed Causes	<ul style="list-style-type: none"> ■ Defective thermistor ■ Defective connection of connector ■ Defective outdoor unit control PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Error Code	Defective Thermistor	Electric Symbol
<i>H3</i>	Outdoor air thermistor	R1T
<i>J3</i>	Discharge pipe thermistor	R2T
<i>J5</i>	Suction pipe thermistor	R3T
<i>J6</i>	Heat exchanger thermistor	R4T
<i>J7</i>	Intermediate heat exchanger thermistor	R5T
<i>J8</i>	Liquid pipe thermistor	R6T



CHECK 1 Refer to P.152.

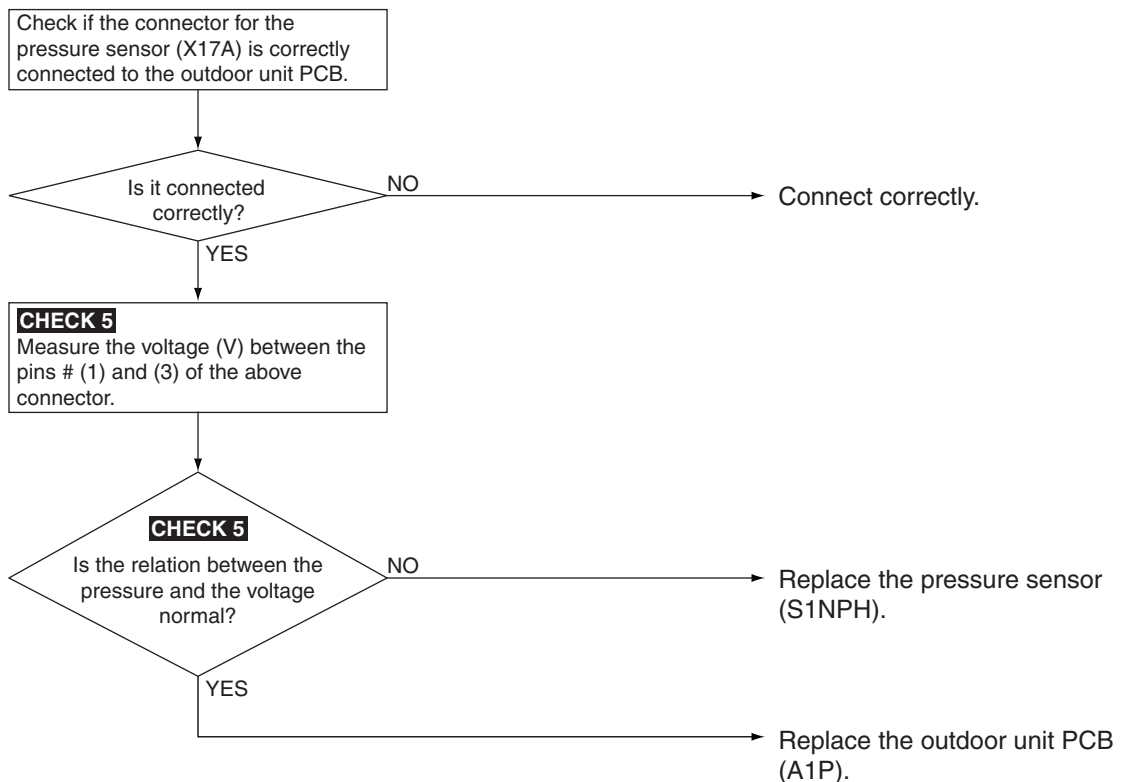
4.26 Pressure Sensor Abnormality

Error Code	U1
Applicable Models	RZQ
Method of Error Detection	The error is detected by the pressure measured with pressure sensor (S1NPH)
Error Decision Conditions	When the detect pressure becomes following; <ul style="list-style-type: none"> • Detected pressure $\leq -0.05\text{MPa}$ continues 185 seconds • Detected pressure $\geq 4.4\text{MPa}$ continues 185 seconds
Supposed Causes	<ul style="list-style-type: none"> ■ Defective pressure sensor ■ Defective outdoor unit PCB ■ Defective connection of connector

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 5 Refer to P.157.

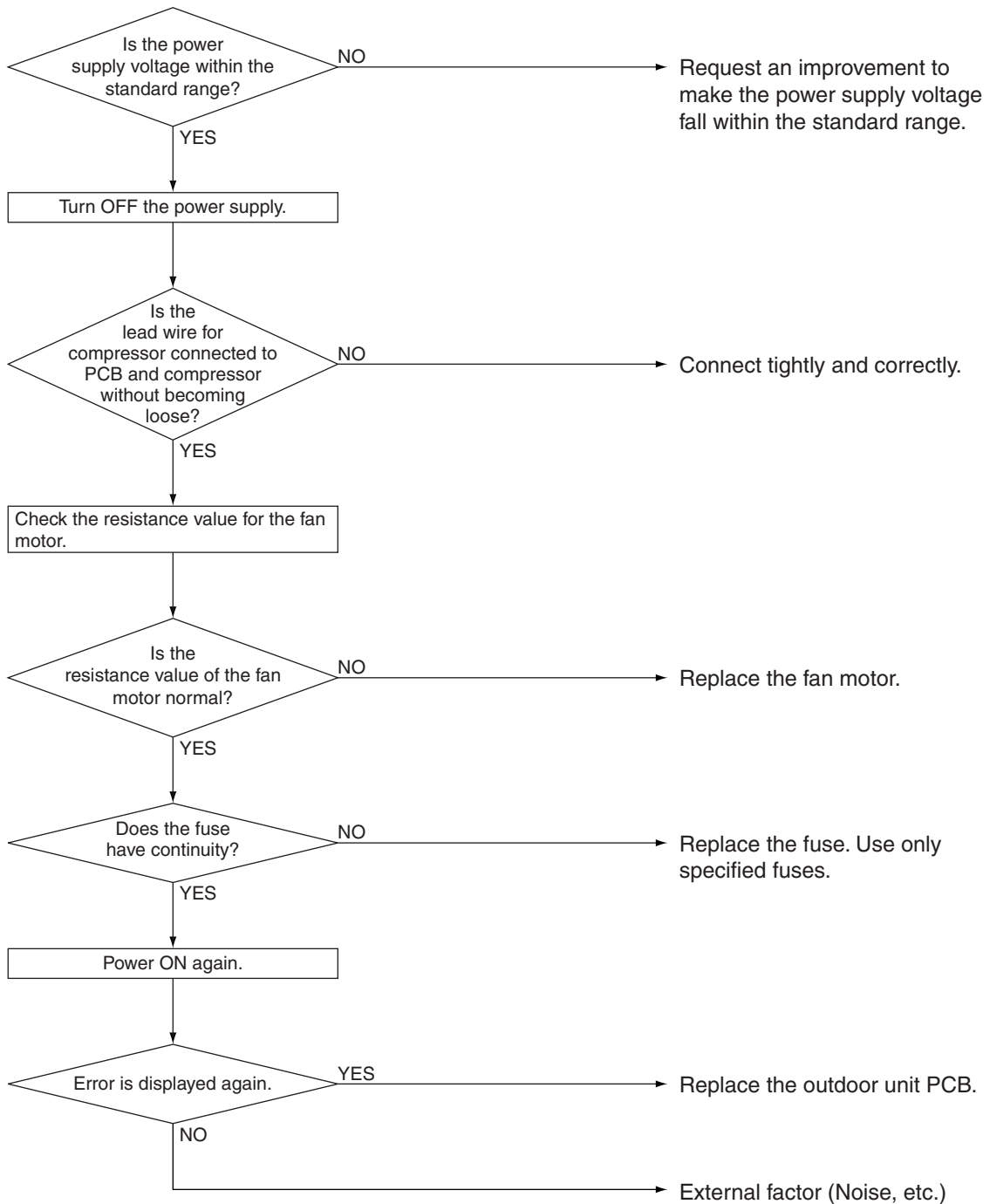
4.27 Outdoor Unit PCB Abnormality

Error Code	L I
Applicable Models	RZQ
Method of Error Detection	<ul style="list-style-type: none"> ■ Detect error by current value during waveform output before compressor startup. ■ Detect error by current sensor value during synchronized operation at the time of startup. ■ Detect error using an SP-PAM series capacitor overvoltage sensor.
Error Decision Conditions	<ul style="list-style-type: none"> ■ When overcurrent is detected at the time of waveform output before operating the compressor ■ When the current sensor error during synchronized operation ■ When overvoltage occurs in SP-PAM ■ In case of IGBT error
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit PCB (A1P) <ul style="list-style-type: none"> • IPM failure • Current sensor failure • SP-PAM failure • Defective of IGBT or drive circuit ■ Defective connection of compressor connector ■ Defective outdoor unit fan motor ■ Broken fuse ■ External factor (Noise, etc.)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



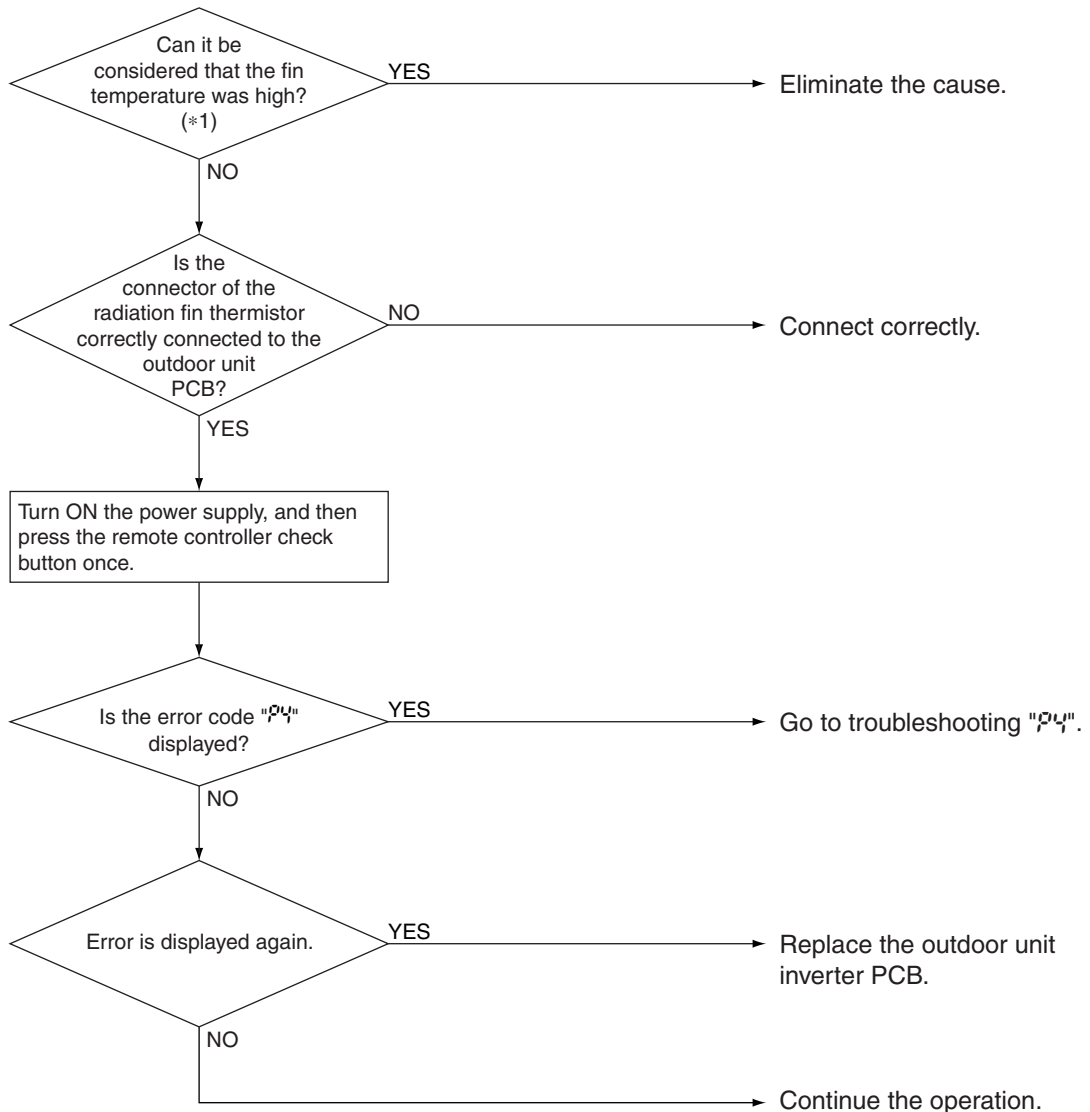
4.28 Radiation Fin Temperature Rise

Error Code	L4
Applicable Models	RZQ
Method of Error Detection	Radiation fin temperature is detected by the radiation fin thermistor.
Error Decision Conditions	When the temperature of the inverter radiation fin rises abnormally due to defective heat dissipation.
Supposed Causes	<ul style="list-style-type: none">■ Defective radiation fin thermistor■ High outdoor air temperature■ Blocked suction opening■ Dirty radiation fin■ Defective outdoor unit inverter PCB■ Activation of fin thermal switch■ Insufficient cooling of inverter radiation fin■ Defective connection of connector

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Radiation fin temperature detection value

Model	Detection	Reset
RZQ20/24LVA	87°C	77°C
RZQ36/45LVA	89°C	79°C
RZQ45/48MYL	76°C	66°C

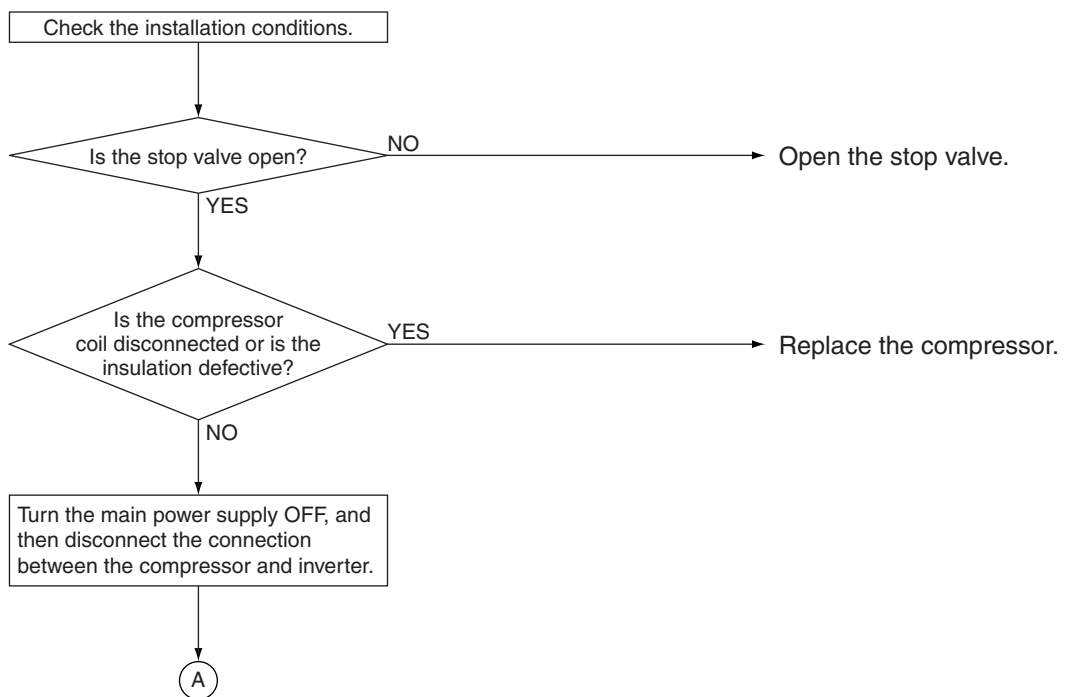
4.29 DC Output Overcurrent

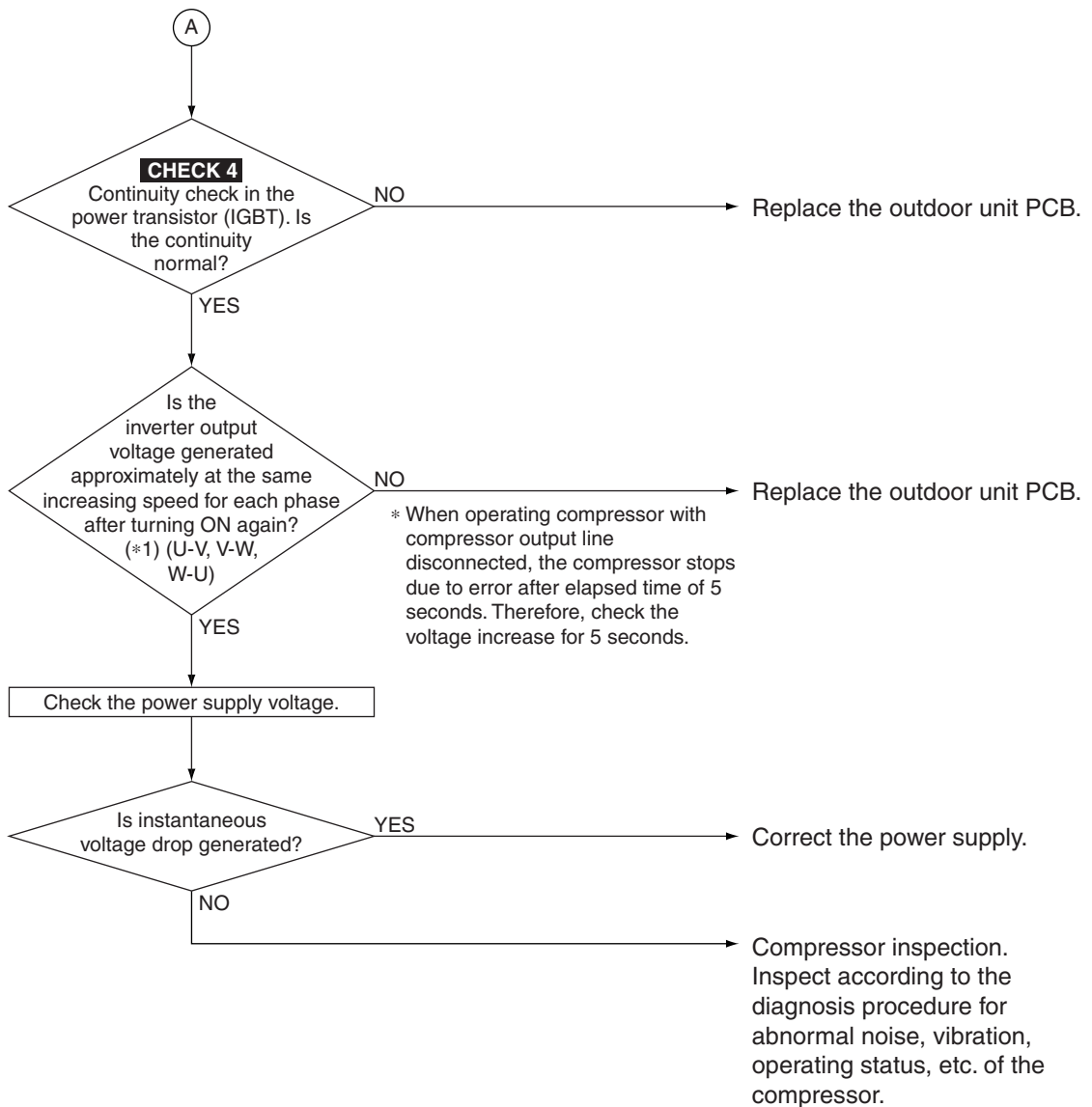
Error Code	U5
Applicable Models	RZQ
Method of Error Detection	The error is detected by converting the current flowing to power transistor into voltage with CT1 (DC current sensor).
Error Decision Conditions	When overcurrent has run to power transistor. (Actuated even by instantaneous overcurrent)
Supposed Causes	<ul style="list-style-type: none"> ■ Defective compressor coil (disconnection, poor insulation) ■ Compressor startup error (mechanical lock) ■ Defective outdoor unit inverter PCB ■ Instantaneous fluctuation of power supply voltage ■ Defective compressor (if bearing is scratched) ■ The stop valve is not opened.

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.





Note:

*1. Approximate value

Model	Instantaneous overcurrent detection value
RZQ20/24LVA	37.0A
RZQ36/45LVA	51.6A
RZQ45/48MYL	32.3A



CHECK 4 Refer to P.156.

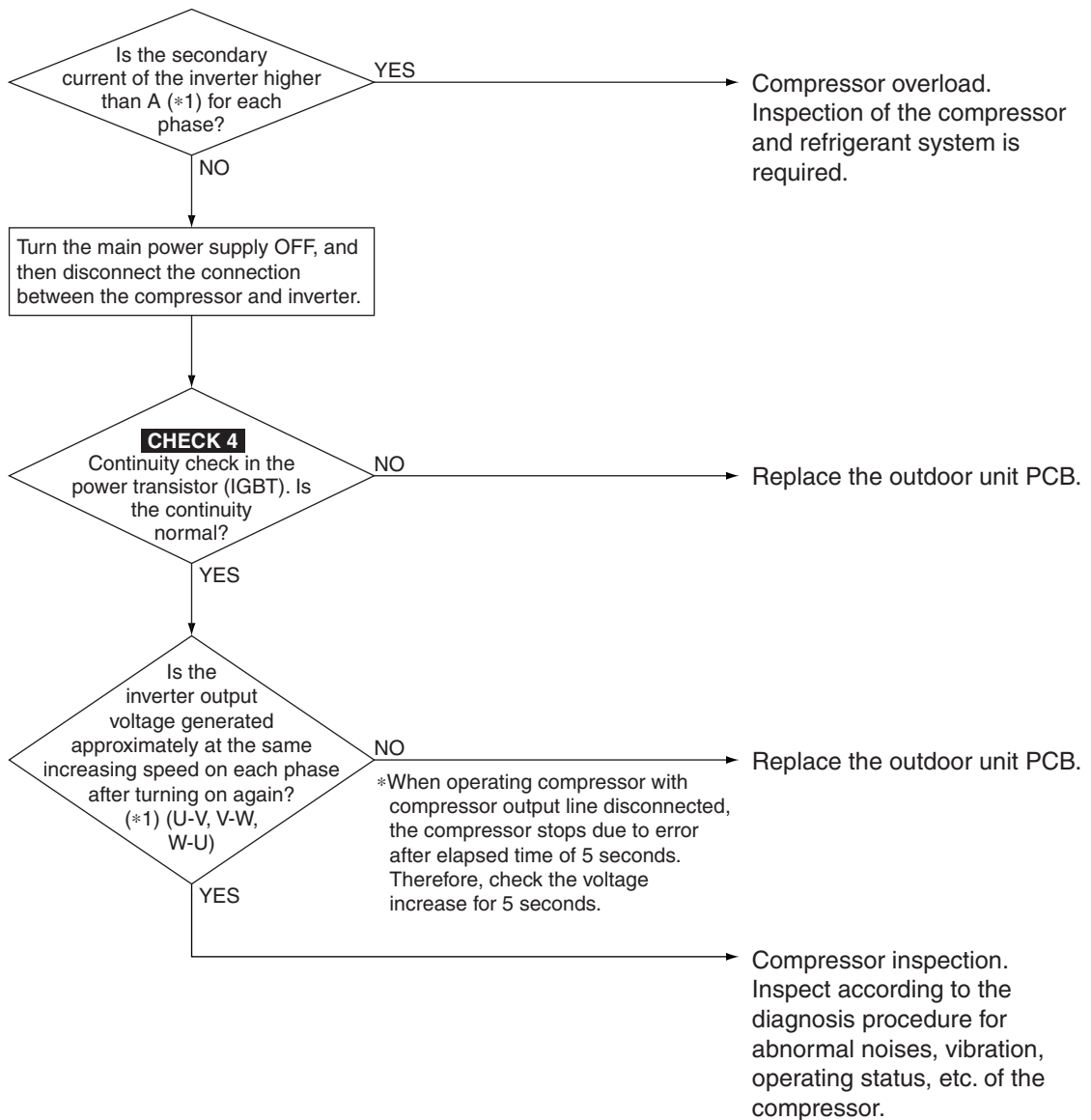
4.30 Electronic Thermal (Time Lag)

Error Code	L8
Applicable Models	RZQ
Method of Error Detection	The error is detected from the current flowing to power transistor into voltage with CT1 (DC current sensor). Inverter PCB detects the disorder of position signal.
Error Decision Conditions	When compressor overload (except for when startup) is detected
Supposed Causes	<ul style="list-style-type: none">■ Compressor overload (during operation)■ Disconnected compressor coil■ Defective outdoor unit inverter PCB■ Defective compressor (if bearing is scratched)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Electronic thermal detection value

Model	Detection value
RZQ20/24LVA	13.7A × 5 seconds or 12.7A × 260 seconds
RZQ36/45LVA	20.0A × 260 seconds
RZQ45/48MYL	13.0A × 5 seconds or 11.0A × 260 seconds



CHECK 4 Refer to P.156.

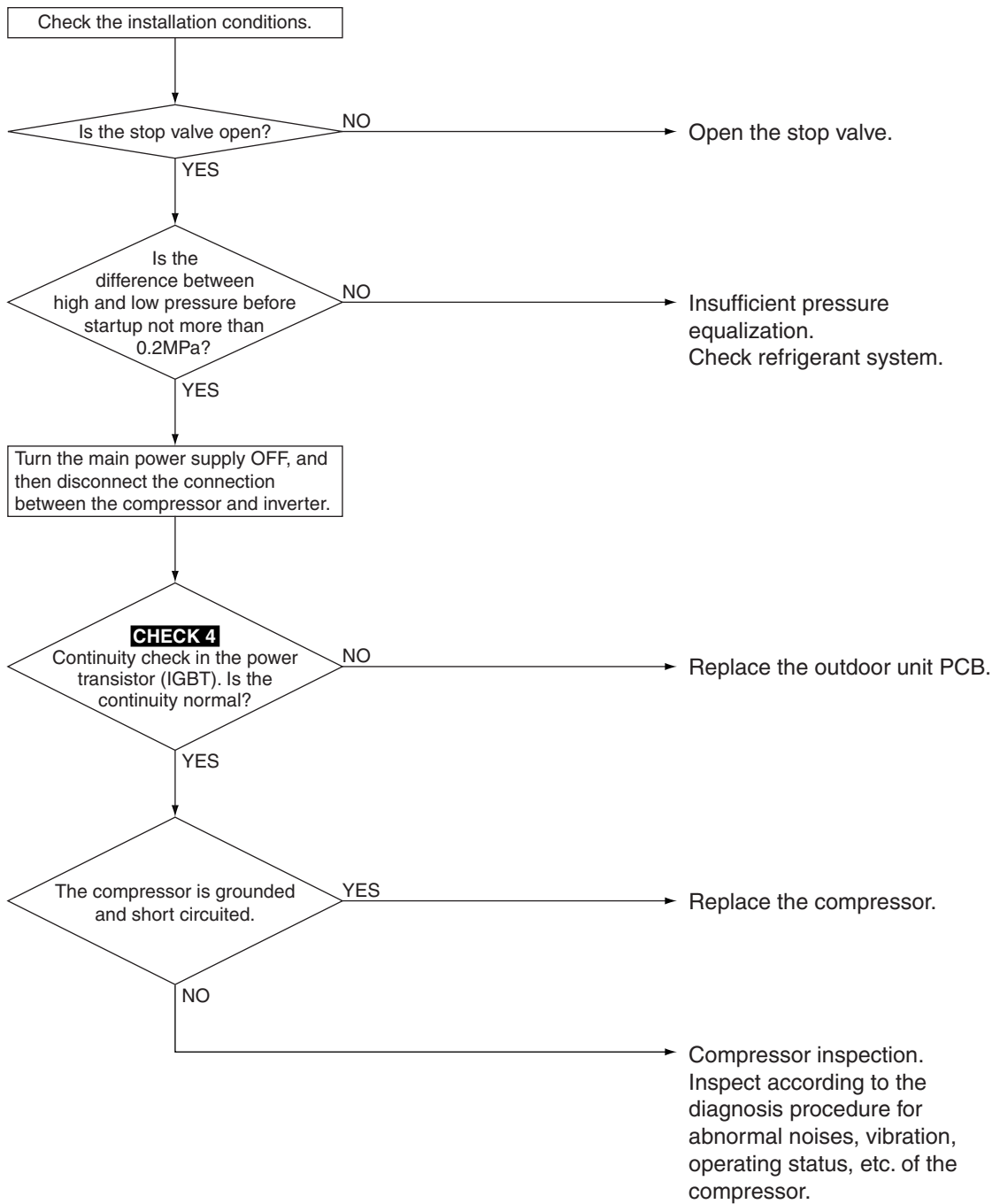
4.31 Stall Prevention (Time Lag)

Error Code	L9
Applicable Models	RZQ
Method of Error Detection	The error is detected from the current flowing to power transistor into voltage with CT1 (DC current sensor). Inverter PCB detects the disorder of position signal.
Error Decision Conditions	When compressor overload (when startup) is detected
Supposed Causes	<ul style="list-style-type: none">■ The stop valve is not opened.■ Pressure differential startup■ Defective outdoor unit inverter PCB■ Defective compressor (lock)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 4 Refer to P.156.

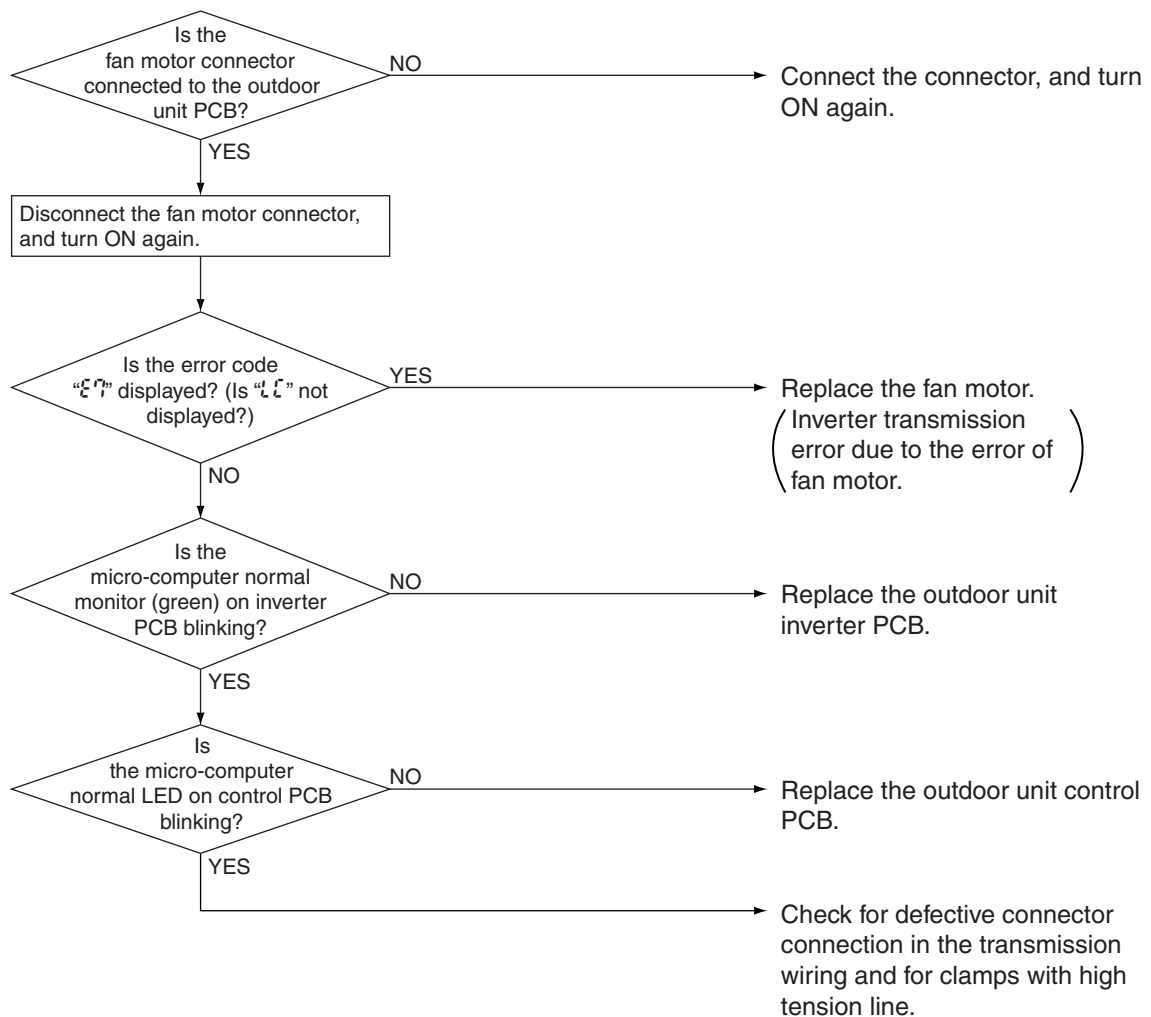
4.32 Transmission Error between Control and Inverter PCB

Error Code	U _U
Applicable Models	RZQ20-45LVA
Method of Error Detection	Check whether transmission between control and inverter PCB is carried out normally.
Error Decision Conditions	When the transmission is not carried out in a specified period of time or longer
Supposed Causes	<ul style="list-style-type: none"> ■ Incorrect transmission wiring between control and inverter PCB/insufficient contact in wiring ■ Defective control and inverter PCB ■ External factor (Noise, etc.) ■ Defective outdoor unit fan motor ■ Defective of fan motor connector contact

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



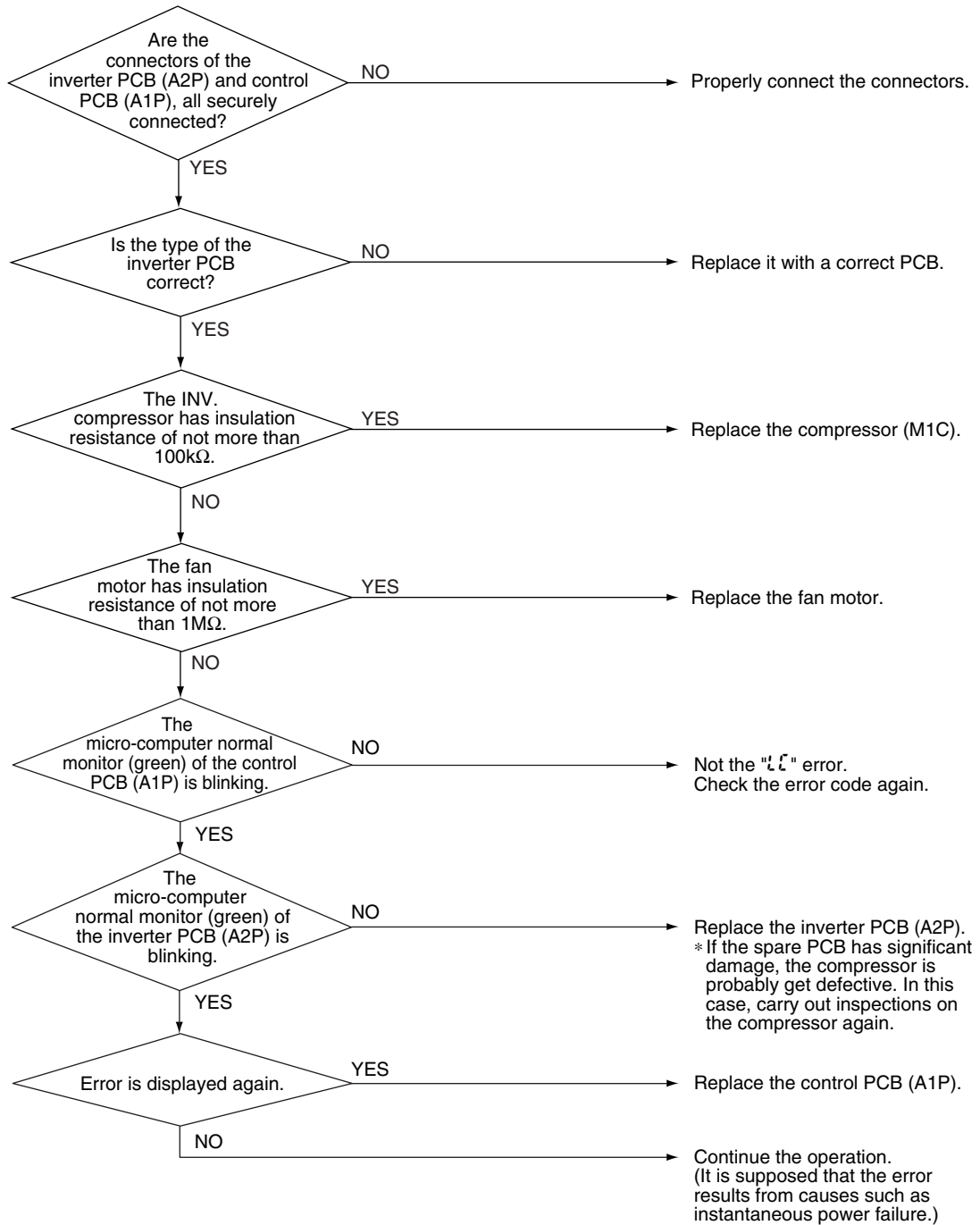
4.33 Transmission Error between Control and Inverter PCB

Error Code	U _U
Applicable Models	RZQ45/48MYL
Method of Error Detection	Check the communication state between inverter PCB and control PCB by micro-computer.
Error Decision Conditions	When the correct communication is not conducted in certain period
Supposed Causes	<ul style="list-style-type: none">■ Defective connection between the inverter PCB and control PCB■ Defective control PCB (transmission section)■ Defective inverter PCB■ Defective noise filter■ Defective fan inverter■ Incorrect type of inverter PCB■ Defective INV. compressor■ Defective fan motor■ External factor (noise etc.)

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



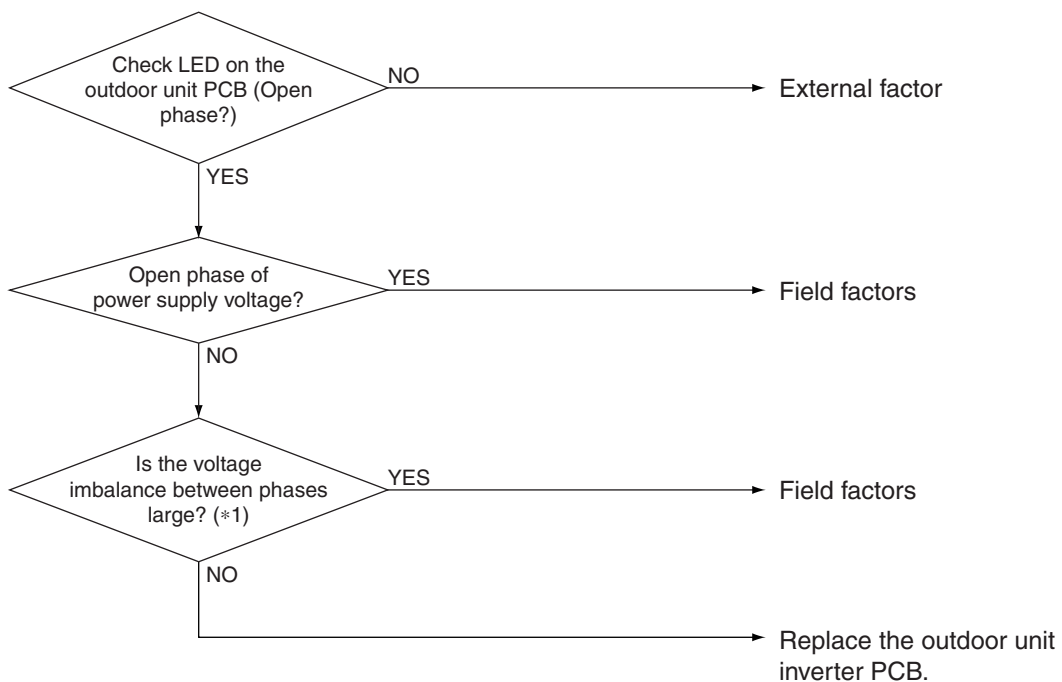
4.34 Open Phase or Power Supply Voltage Imbalance

Error Code	P1
Applicable Models	RZQ
Method of Error Detection	The error is detected according to the voltage waveform of main circuit capacitor built in inverter.
Error Decision Conditions	When the aforementioned voltage waveform becomes identical with the waveform of the power supply open phase.
Supposed Causes	<ul style="list-style-type: none"> ■ Open phase ■ Voltage imbalance between phases ■ Defective outdoor unit inverter PCB <ul style="list-style-type: none"> • Defective main circuit capacitor • Power unit (Disconnection in diode module) • Defective magnetic relay • Improper main circuit wiring

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Target: ±10V between phases

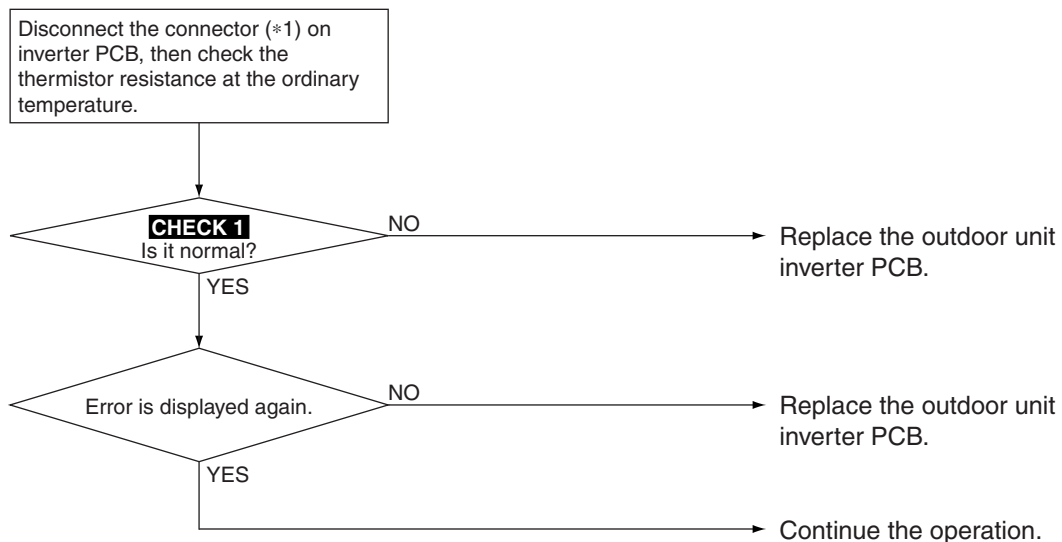
4.35 Radiation Fin Thermistor (R10T) or Related Abnormality

Error Code	P4
Applicable Models	RZQ
Method of Error Detection	Detection by open or short circuit of the radiation fin thermistor during the compressor stops operating.
Error Decision Conditions	When open or short circuit of the radiation fin thermistor is detected during the compressor stops operating
Supposed Causes	<ul style="list-style-type: none"> ■ Defective radiation fin thermistor ■ Defective outdoor unit PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Connector and indoor unit PCB

Model	Connector for radiation fin thermistor	PCB
RZQ20-45LVA	X111A	A1P
RZQ45/48MYL	X111A	A2P



CHECK 1 Refer to P.152.

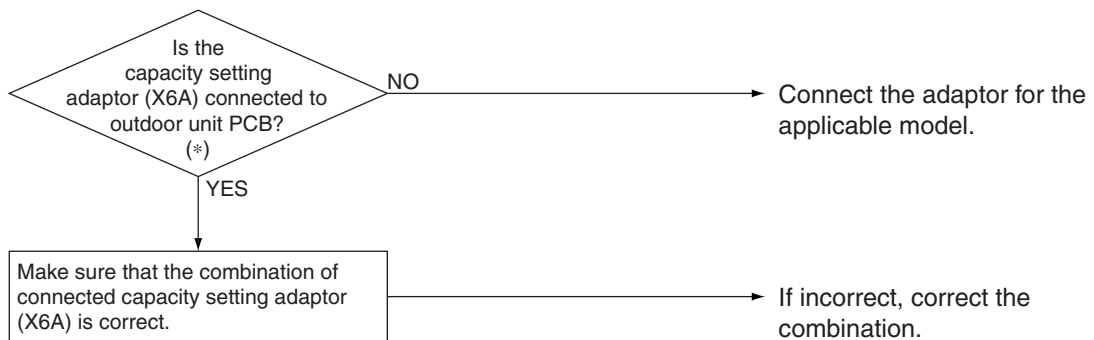
4.36 Defective Capacity Setting

Error Code	P1
Applicable Models	RZQ
Method of Error Detection	Check whether set value written in E ² PROM (at factory) or set value of capacity setting adaptor (for replacement) is the same as outdoor unit capacity.
Error Decision Conditions	When the set value on E ² PROM differs from the outdoor unit capacity or a capacity setting adaptor except for PCB applicable models is installed. (Error decision is made only when turning the power supply ON.)
Supposed Causes	<ul style="list-style-type: none"> ■ Improper set value of E²PROM ■ Improper capacity setting adaptor ■ Defective outdoor unit PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

* Capacity setting adaptor is not connected at factory. (Capacity is written in E²PROM.) Capacity setting adaptor is required only when the PCB was replaced with a spare PCB.

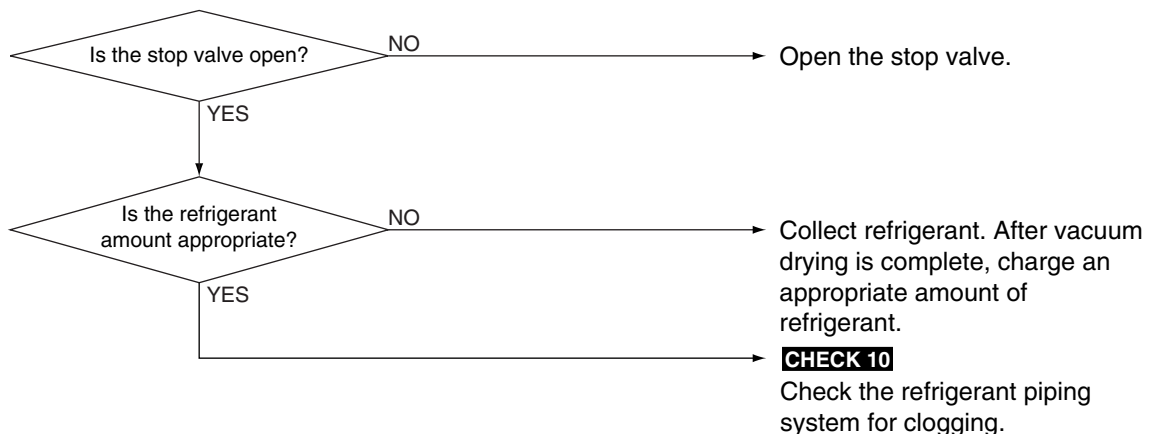
4.37 Refrigerant Shortage (Error)

Error Code	U0
Applicable Models	RZQ20/24LVA RZQ45/48MYL
Method of Error Detection	The error is detected according to the electronic expansion valve opening degree and measured temperatures and pressures.
Error Decision Conditions	(In cooling) When the electronic expansion valve opens fully, and low pressure is 0.25 MPa or less continuously for 30 minutes. (In heating) When the electronic expansion valve opens fully and the suction superheat is large (more than 20°C) continuously for 60 minutes.
Supposed Causes	<ul style="list-style-type: none"> ■ The stop valve is not opened. ■ Insufficient refrigerant amount ■ Clogged refrigerant piping system

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

* Refrigerant shortage alarm is indicated but operation continues.



CHECK 10 Refer to P.161.

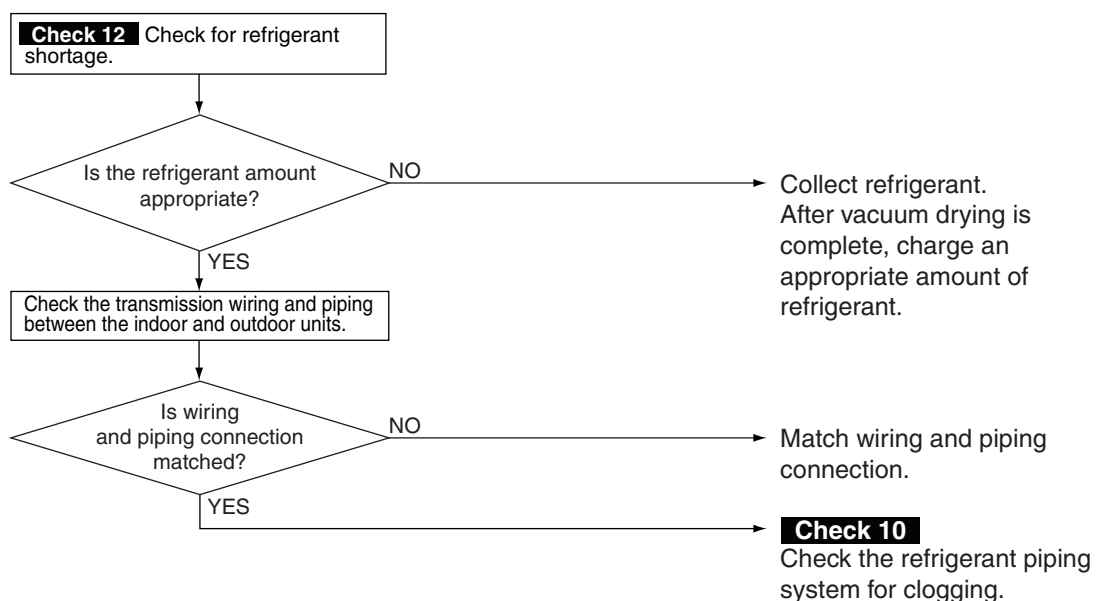
4.38 Refrigerant Shortage

Error Code	U7
Applicable Models	RZQ100-140KCVLT RZQ100-140KCTLT
Method of Error Detection	(In cooling) Detection based on difference in temperature between set temperature by remote controller and suction air temperature for indoor unit, electronic expansion valve opening degree, compressor frequency and low pressure. (In heating) Detection based on difference in temperature between set temperature by remote controller and suction air temperature for indoor unit, electronic expansion valve opening degree during the control of suction air superheating, high pressure, indoor heat exchanger temperature and indoor suction air temperature.
Error Decision Conditions	(In cooling) When compressor frequency does not increase even though the load is heavy because the electronic expansion valve is opened to the fullest extent [If low pressure drops when the compressor is at 41Hz, error is confirmed.] (In heating) When suction gas superheated degree is large, compressor frequency is low and the electronic expansion valve is opened to the fullest extent even though heat load is heavy [If high pressure is lower than saturated pressure for indoor heat exchanger temperature (or indoor suction air temperature), error is confirmed.]
Supposed Causes	<ul style="list-style-type: none"> ■ Refrigerant shortage ■ Clogged refrigerant piping system ■ Defective wiring and piping ■ The stop valve is not opened.

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



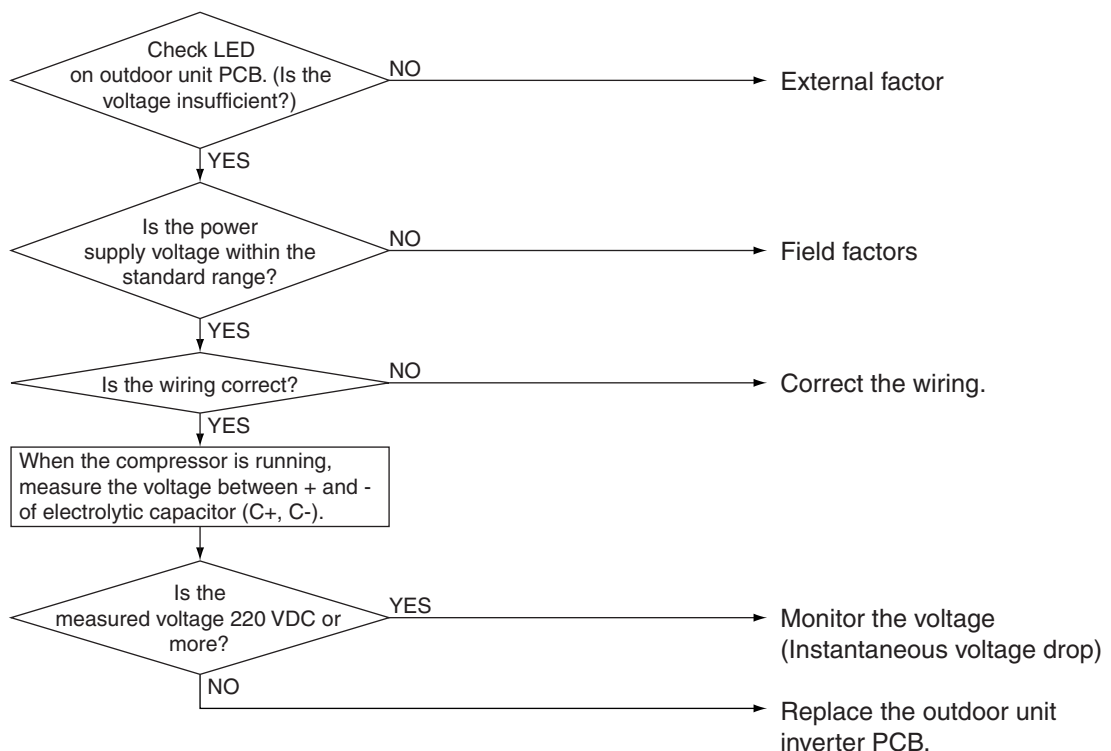
4.39 Power Supply Voltage Abnormality

Error Code	U2
Applicable Models	RZQ
Method of Error Detection	The error is detected according to the voltage of main circuit capacitor built in the inverter and power supply voltage.
Error Decision Conditions	When the voltage of main circuit capacitor built in the inverter and power supply voltage drop or when the power failure of several tens of ms or more is generated. * Remote controller does not decide the abnormality.
Supposed Causes	<ul style="list-style-type: none"> ■ Drop in power supply voltage (180 V or less) ■ Instantaneous power failure ■ Inverter open phase (Phase T) ■ Defective outdoor unit inverter PCB ■ Defective outdoor unit fan motor

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



4.40 Transmission Error between Indoor Unit and Outdoor Unit

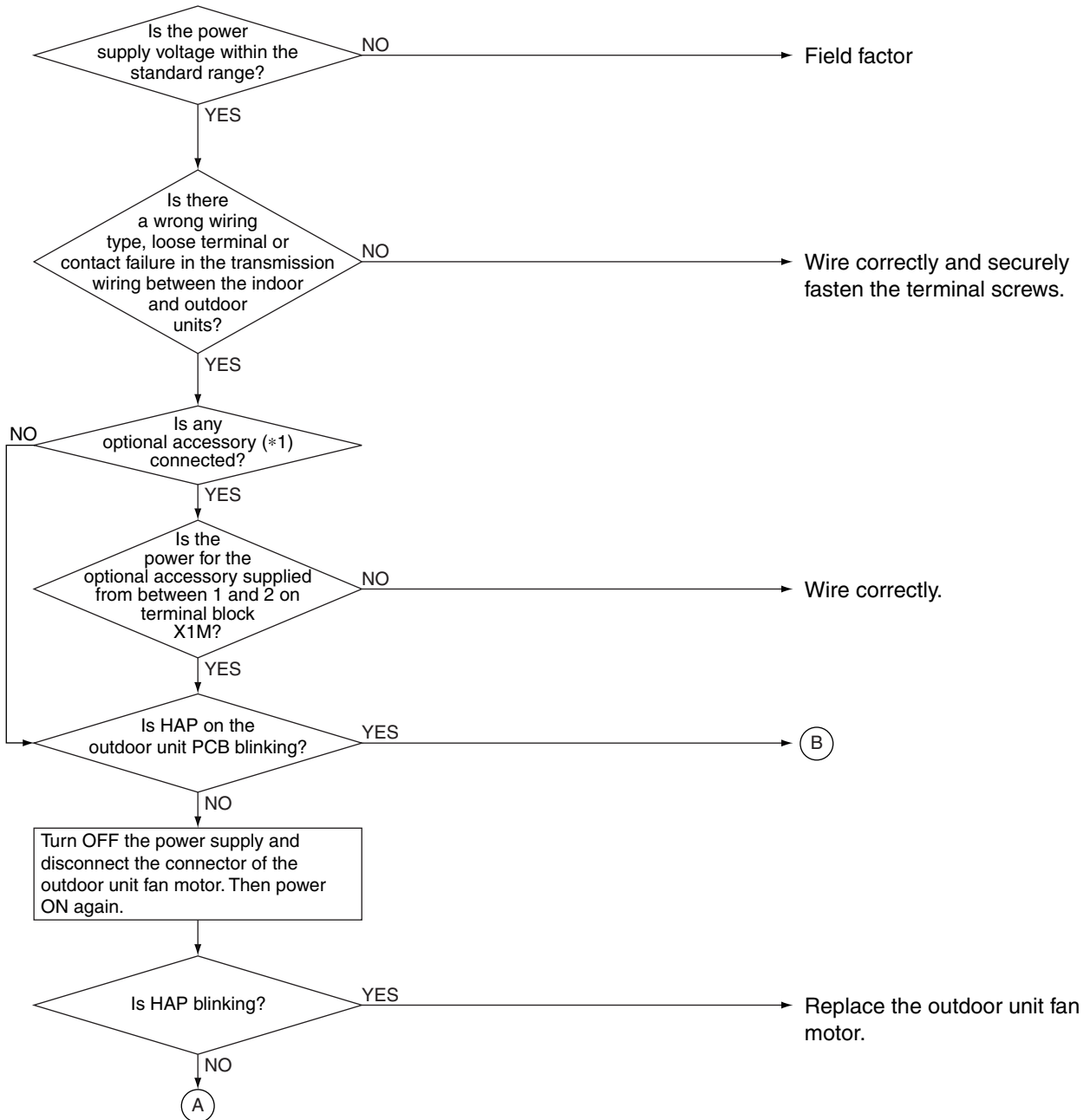
Error Code	U4
Applicable Models	RZQ
Method of Error Detection	The error is generated when the micro-processor detects that the transmission between the indoor and the outdoor unit is not normal over a certain amount of time.
Error Decision Conditions	When the normal transmission is not conducted for a given period of time or more
Supposed Causes	<ul style="list-style-type: none"> ■ Wiring indoor-outdoor transmission wire is incorrect ■ Defective indoor unit PCB ■ Defective outdoor unit PCB ■ Burning out fuse ■ Defective fan motor ■ External factor (Noise, etc.) ■ Defective power supply

Troubleshooting

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

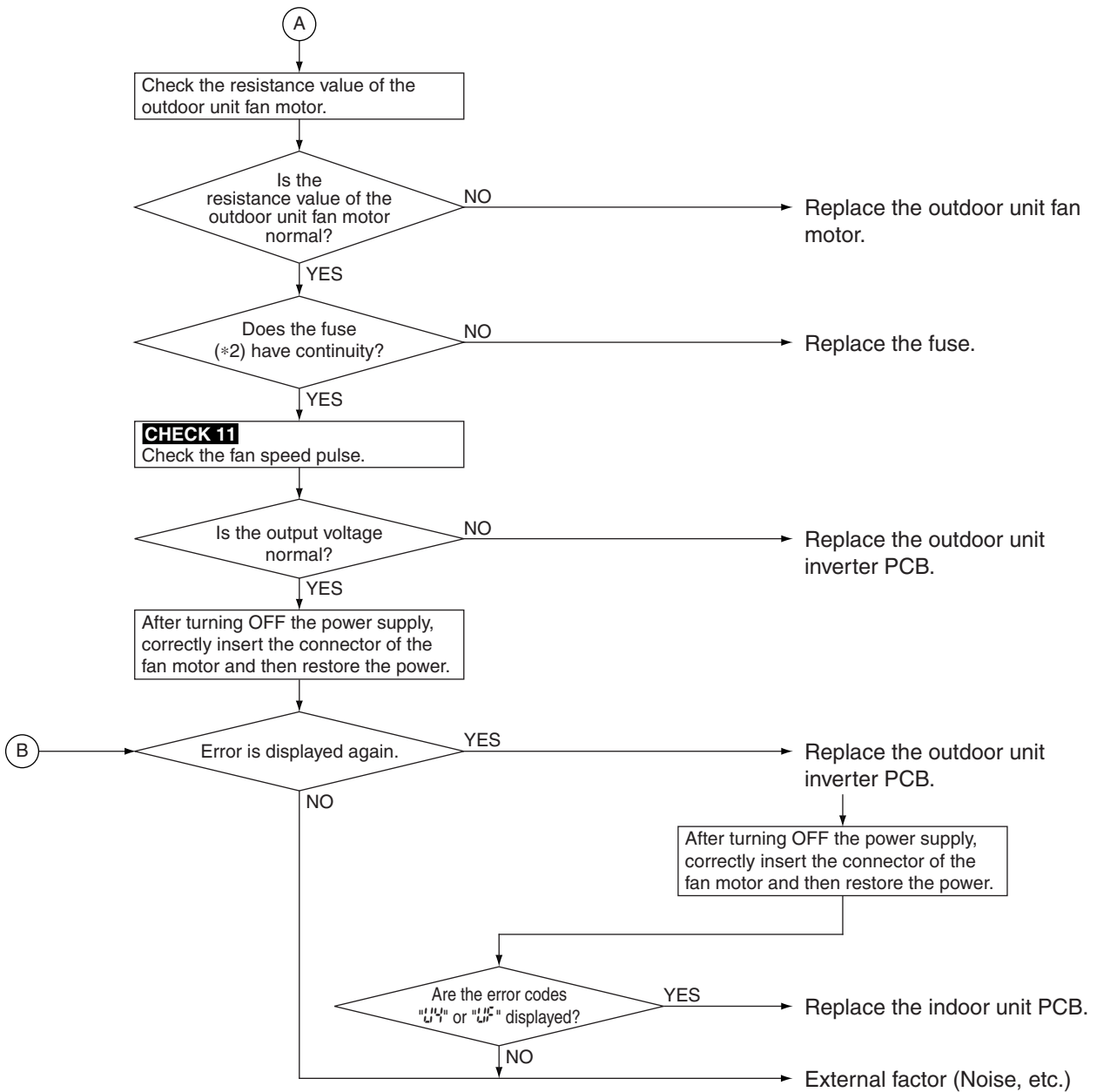


Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



Note:

*1. Optional accessories refer to adaptor for wiring, auto grill and other accessories.



Note:

*2. Connector and indoor unit PCB

Model	Connector for fuse	PCB
RZQ20-45LVA	F6U	A1P
RZQ45/48MYL	F1U	A2P



CHECK 11 Refer to P.162.

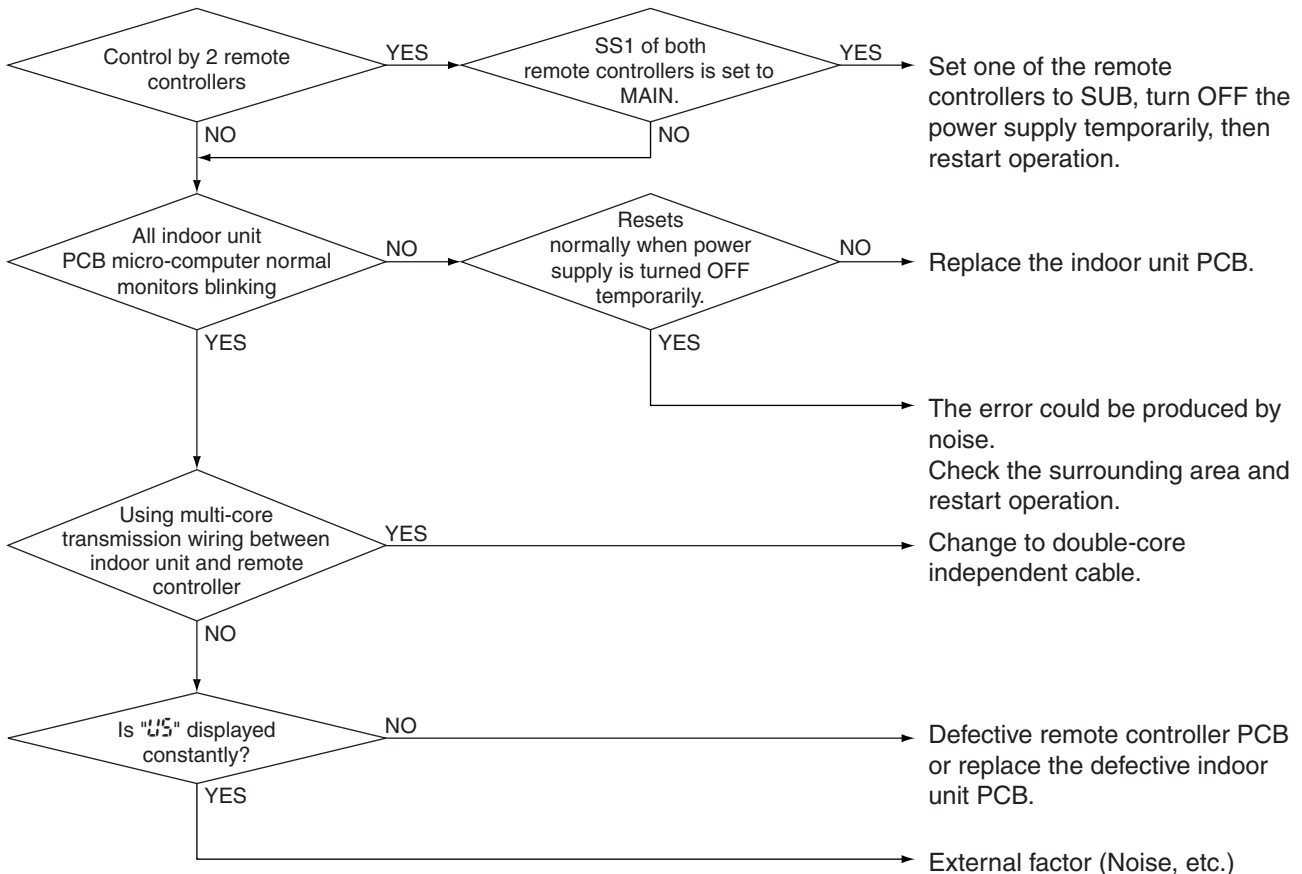
4.41 Transmission Error between Indoor Unit and Remote Controller

Error Code	U5
Applicable Models	All indoor models
Method of Error Detection	Micro-computer checks if transmission between indoor unit and remote controller is normal.
Error Decision Conditions	The error is generated when the micro-processor detects that the transmission between the indoor unit and the remote controller is not normal over a certain amount of time.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective remote controller ■ Defective indoor unit PCB ■ External factor (Noise, etc.) ■ Connection of 2 main remote controllers (when using 2 remote controllers).

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



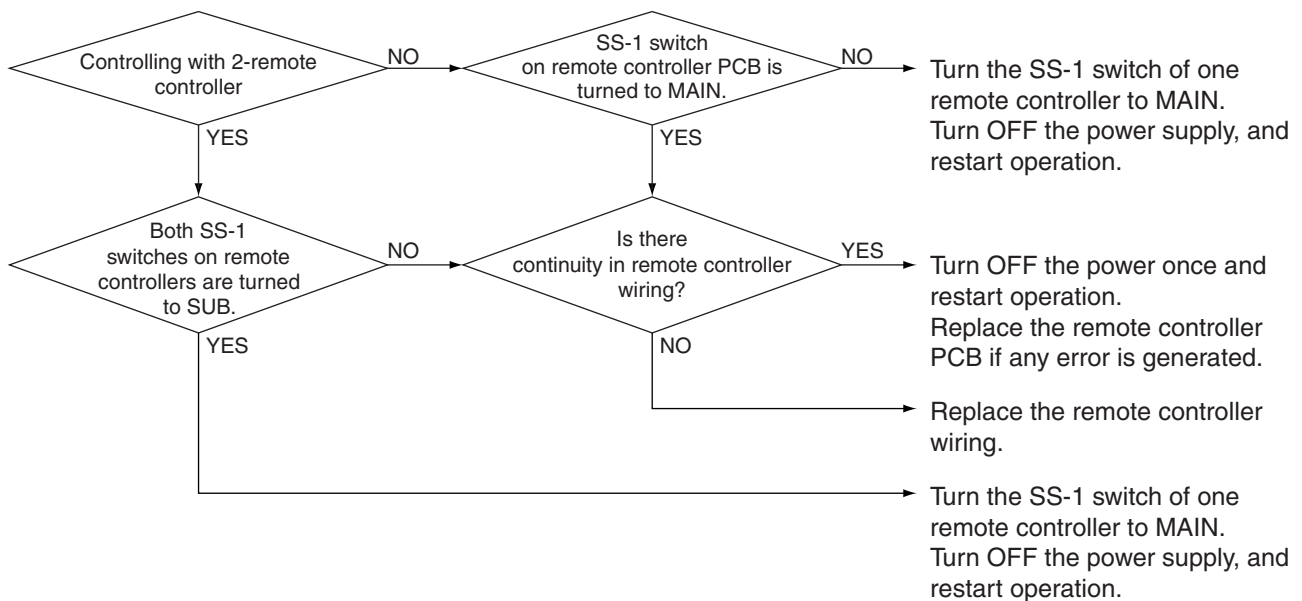
4.42 Transmission Error between MAIN Remote Controller and SUB Remote Controller

Error Code	U8
Applicable Models	All indoor models
Method of Error Detection	In case of controlling with 2 remote controllers, check the system using micro-computer if signal transmission between indoor unit and remote controller (main and sub) is normal.
Error Decision Conditions	The error is generated when, in case of controlling with 2 remote controllers, the micro-processor detects that the transmission between the indoor unit and the remote controllers (MAIN and SUB) is not normal over a certain amount of time.
Supposed Causes	<ul style="list-style-type: none"> ■ Transmission error between MAIN remote controller and SUB remote controller ■ Connection among SUB remote controllers ■ Defective remote controller PCB

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



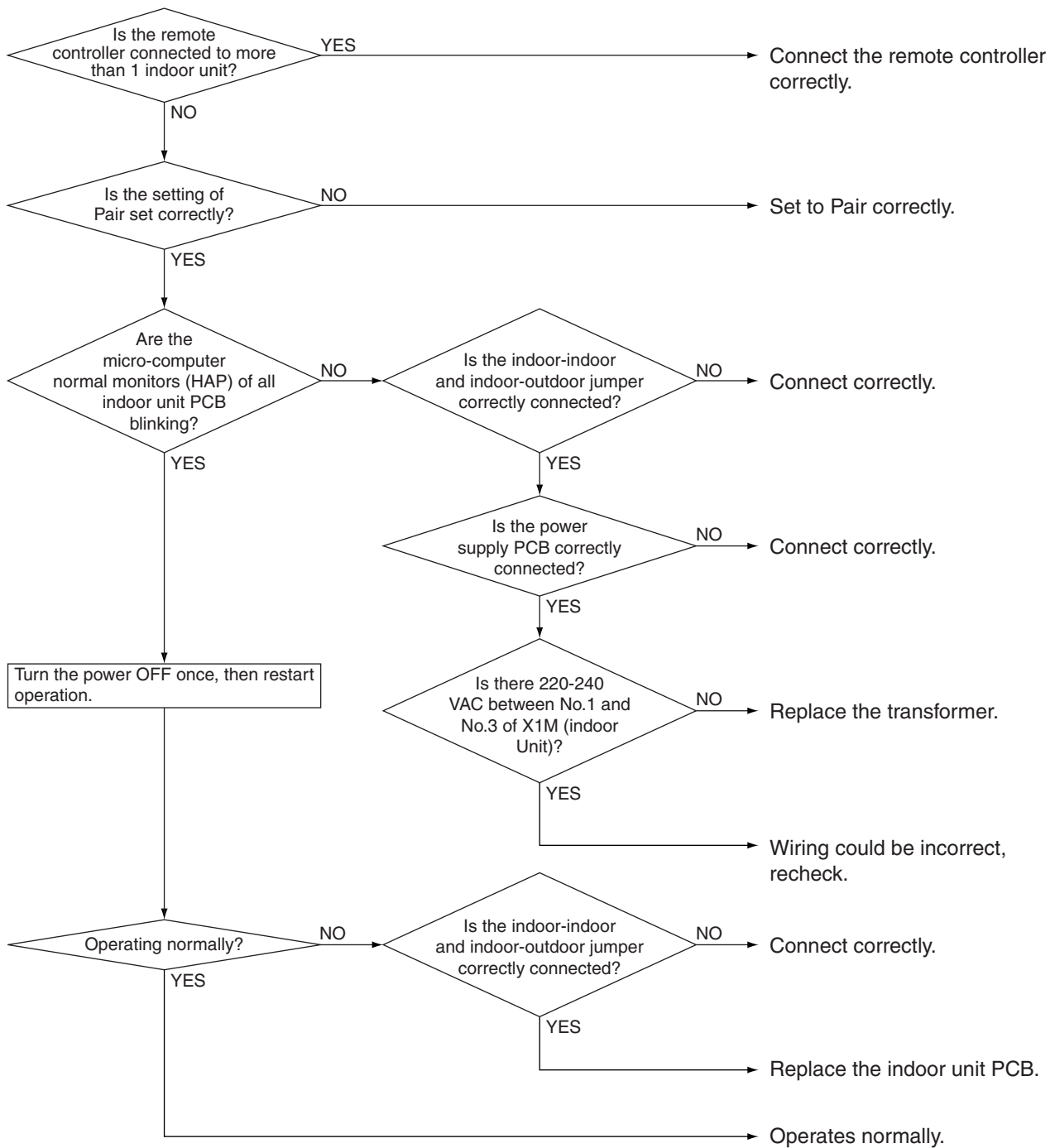
4.43 Field Setting Switch Abnormality

Error Code	U8
Applicable Models	All indoor models
Error Decision Conditions	The error is generated when incorrect field settings have been set for pair.
Supposed Causes	<ul style="list-style-type: none">■ Defective indoor or outdoor unit PCB■ Defective power supply PCB■ Indoor-outdoor, indoor-indoor unit transmission wiring■ Defective remote controller wiring

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



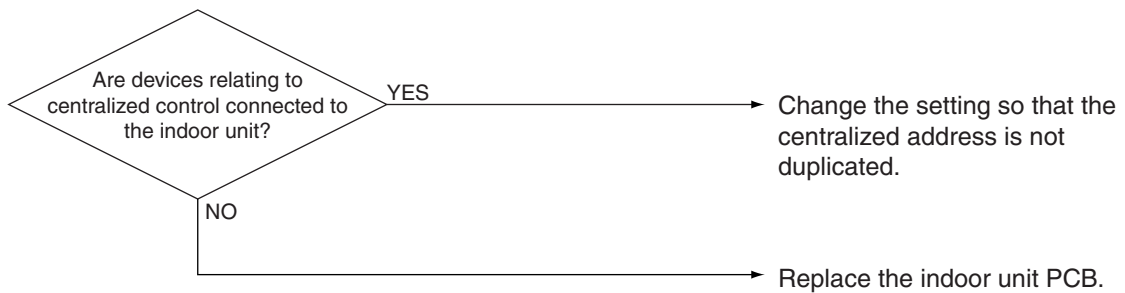
4.44 Centralized Address Setting Error

Error Code	U ¹ U ²
Applicable Models	All indoor models
Method of Error Detection	Indoor unit micro-computer detects and judges the centralized address signal according to the transmission between indoor units.
Error Decision Conditions	When the micro-computer judges that the centralized address signal is duplicated
Supposed Causes	<ul style="list-style-type: none"> ■ Defective centralized address setting ■ Defective indoor unit PCB


Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



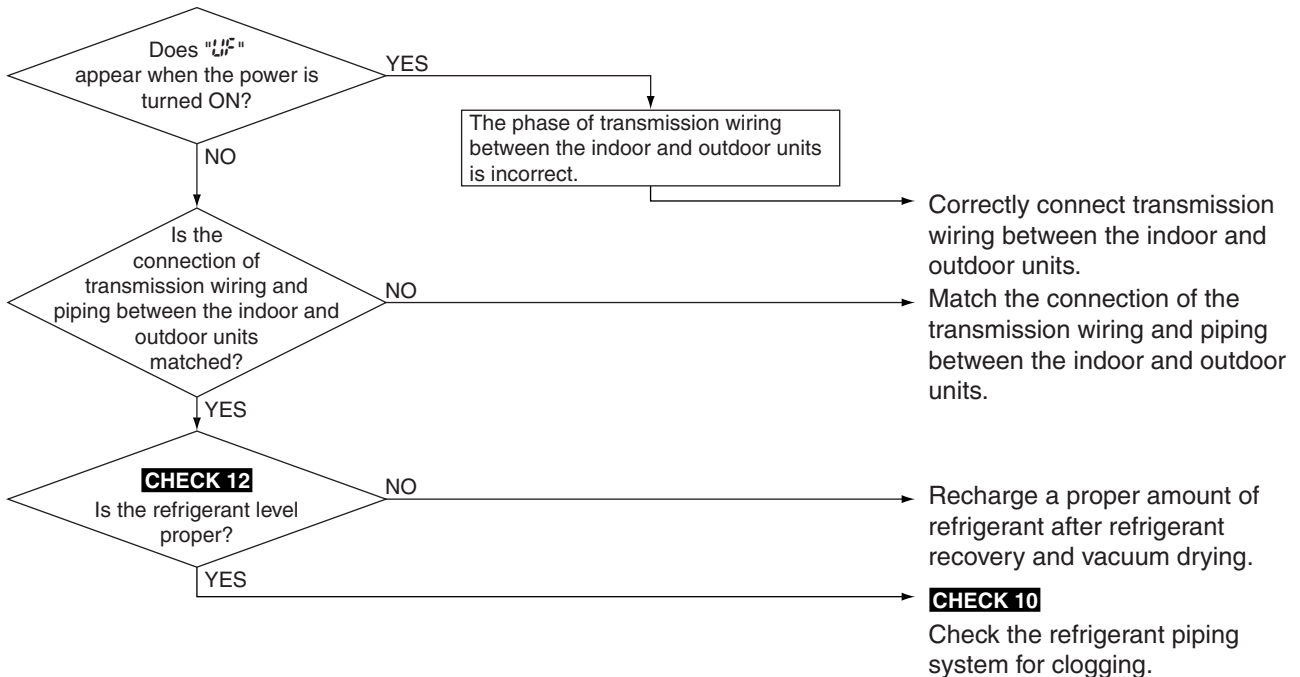
4.45 Transmission Error between Indoor and Outdoor Unit / Piping and Wiring Mismatch / Refrigerant Shortage

Error Code	
Applicable Models	RZQ
Method of Error Detection	<p>Check the transmission between the indoor and outdoor units with a micro-computer when the power turned ON.</p> <p>Detect by checking the following temperature differences during compressor operation.</p> <p>A: Difference in temperature detected by the indoor heat exchanger thermistor (R2T) and the indoor suction air thermistor (R1T)</p> <p>B: Difference in evaporating temperature (Te) (or condensing temperature (Tc) during heating operation) detected by the indoor heat exchanger thermistor (R2T) and the compressor sensor</p>
Error Decision Conditions	<p>When the transmission wiring between the indoor and outdoor units is incorrect</p> <p>When the following conditions continue for 20 minutes during compressor operation</p> <p>A: $R2T - R1T < 4^{\circ}\text{C}$, and</p> <p>B: $R2T - T_e$ (or T_c during heating operation) $> 14^{\circ}\text{C}$ (24°C during heating operation)</p>
Supposed Causes	<ul style="list-style-type: none"> ■ Defective transmission wiring between the indoor and outdoor units ■ Mismatching of wiring and piping ■ Refrigerant shortage ■ Clogged refrigerant piping system

Troubleshooting



Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.



CHECK 10 Refer to P.161.

CHECK 12 Refer to P.163.

4.46 Check

CHECK 1 Check the Thermistors

Thermistors

If the cause of the problem is related to the thermistors, then the thermistors should be checked prior to changing the PCB.

For more information about these thermistors, refer to:

- “Wiring Diagrams” on P.167.
- “Functions of Main Components and Thermistors” on P.20.

Overview of Thermistors

The table below contains an overview of the thermistors:

Indoor

FCQ	FBQ	Thermistor	Table (on following page)
R1T	R1T	Suction air thermistor	2
R2T	R2T	Heat exchanger thermistor	2
—	R3T	Discharge air thermistor	3
—	R5T	NTC thermistor	2

Outdoor

RZQ	Thermistor	Table (on following page)
R1T	Outdoor air thermistor	2
R2T	Discharge pipe thermistor	3
R3T	Suction pipe thermistor	2
R4T	Heat exchanger thermistor	2
R5T	Intermediate heat exchanger thermistor	2
R6T	Liquid pipe thermistor	2
R10T	Radiation fin thermistor	1

Checking

To check the thermistors, proceed as follows:

Step	Action
1	Disconnect the thermistor from the PCB
2	Read the temperature and the resistor value.
3	Check if the measured values correspond with the values in the table on the following pages.

Thermistor Resistance / Temperature Characteristics

Table 1

T°C	kΩ
-30	354.1
-25	259.7
-20	192.6
-15	144.2
-10	109.1
-5	83.25
0	64.10
5	49.70
10	38.85
15	30.61
20	24.29
25	19.41
30	15.61
35	12.64
40	10.30
45	8.439
50	6.954
55	5.761
60	4.797
65	4.014
70	3.375
75	2.851
80	2.418
85	2.060
90	1.762
95	1.513
100	1.304
105	1.128
110	0.9790
115	0.8527
120	0.7450
125	0.6530
130	0.5741

3PA61998L (AD92A057)

Table 2

T°C	kΩ
-30	361.7719
-25	265.4704
-20	196.9198
-15	147.5687
-10	111.6578
-5	85.2610
0	65.6705
5	50.9947
10	39.9149
15	31.4796
20	25.0060
25	20.0000
30	16.1008
35	13.0426
40	10.6281
45	8.7097
50	7.1764
55	5.9407
60	4.9439
65	4.1352
70	3.4757
75	2.9349
80	2.4894
85	2.1205
90	1.8138
95	1.5575
100	1.3425
105	1.1614

3SA48001 (AD87A001J)

Table 3

T°C	kΩ
-30	3257.371
-25	2429.222
-20	1827.883
-15	1387.099
-10	1061.098
-5	817.9329
0	635.0831
5	496.5712
10	391.0070
15	309.9511
20	247.2696
25	198.4674
30	160.2244
35	130.0697
40	106.1517
45	87.0725
50	71.7703
55	59.4735
60	49.5180
65	41.4168
70	34.7923
75	29.3499
80	24.8586
85	21.1360
90	18.0377
95	15.4487
100	13.2768
105	11.4395
110	9.8902
115	8.5788
120	7.4650
125	6.5156
130	5.7038
135	5.0073
140	4.4080
145	3.8907
150	3.4429

3SA48006 (AD87A001J)

CHECK 2 Evaluation of Abnormal High Pressure

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.

In Cooling

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

In Heating

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

CHECK 3 Evaluation of Abnormal Low Pressure

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.

In Cooling

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

In Heating

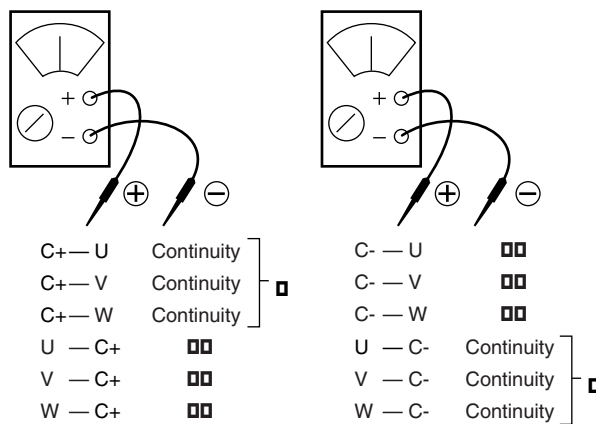
Check items (Possible causes)	Judgement
Does the outdoor unit fan run normally?	Visual inspection
Is the outdoor unit heat exchanger clogged?	Visual inspection
Is the outdoor unit installed under such conditions that short circuit easily occurs?	Visual inspection
Is there clogging before or after the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

CHECK 4 Check for Power Transistor

Judgement according to the continuity check by using an analog tester:

- (1) Do not touch the charged area (high voltage) for 10 minutes after turning the power supply OFF.
- (2) If you must touch such an area, make sure that the power supply voltage of power transistor is 50 V or less.
- (3) Disconnect the connector of the outdoor unit fan motor.
When the outdoor unit fan is rotating against a strong wind, the heat exchanger is charged and electric shock may result. Therefore, disconnect the connector from the outdoor unit fan motor after confirming that the outdoor unit fan has stopped.
- (4) Before measuring the continuity, disconnect the connection between compressor and power transistor.
- (5) Measure the continuity in the following procedure.
[Judgement] Normal if the continuity check results in the following.

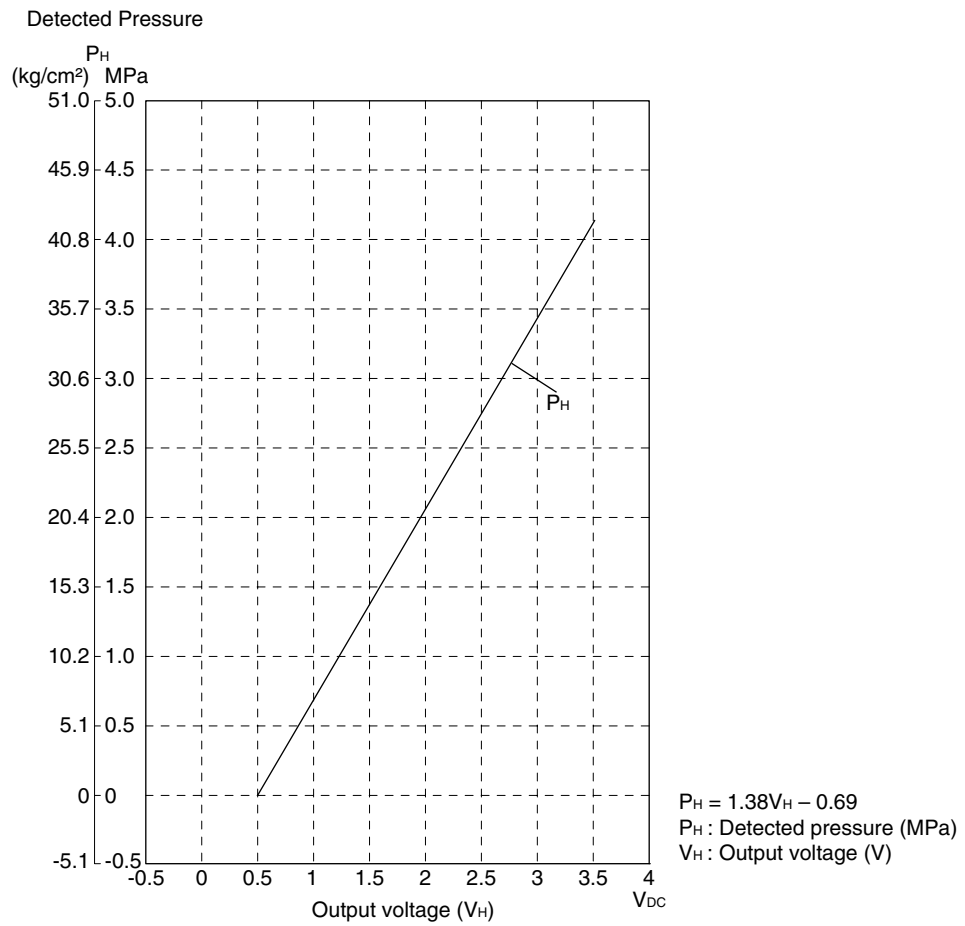
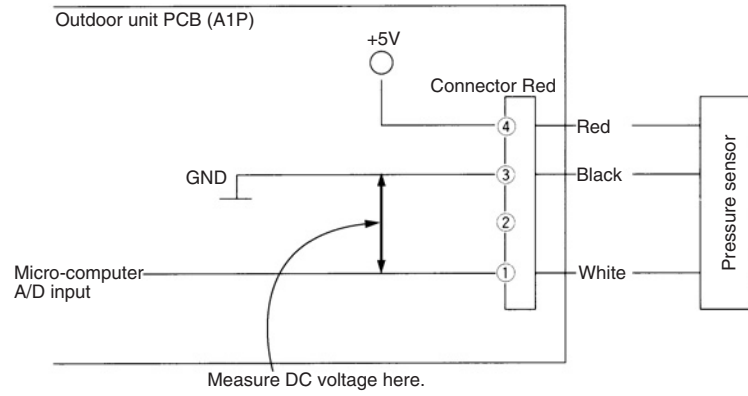
Power transistor (on inverter PCB)



- Note:**
- * If there is continuity, the resistance should be the same as each phase.
 - * If a digital tester is used for the measurement of continuity, ∞ and continuity may be reversed.

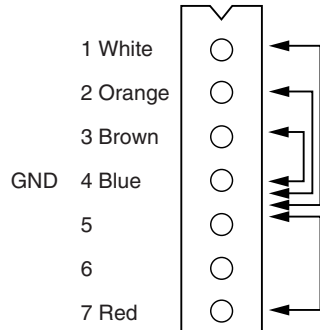
CHECK 5 Check Pressure Sensor

Measure the voltage (DC) between pins 1 and 3 of the connector.



CHECK 6 Fan Motor Signal Line

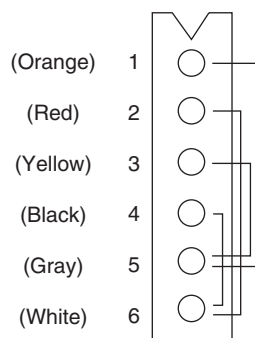
- (1) Turn the power supply OFF.
- (2) With the fan motor connector disconnected, measure the resistance between each pin, then make sure that the resistance is more than the value mentioned in the following table.



Measurement point	Judgement
1 - 4	1M Ω or more
2 - 4	100k Ω or more
3 - 4	100 Ω or more
4 - 7	100k Ω or more

CHECK 7 Electronic Expansion Valve Connector and Coil Resistance Criteria

(RZQ36/45LVA, RZQ45/48MYL)



Measurement point	Judgement
1 - 5	40~50 Ω
3 - 5	
2 - 6	
4 - 6	

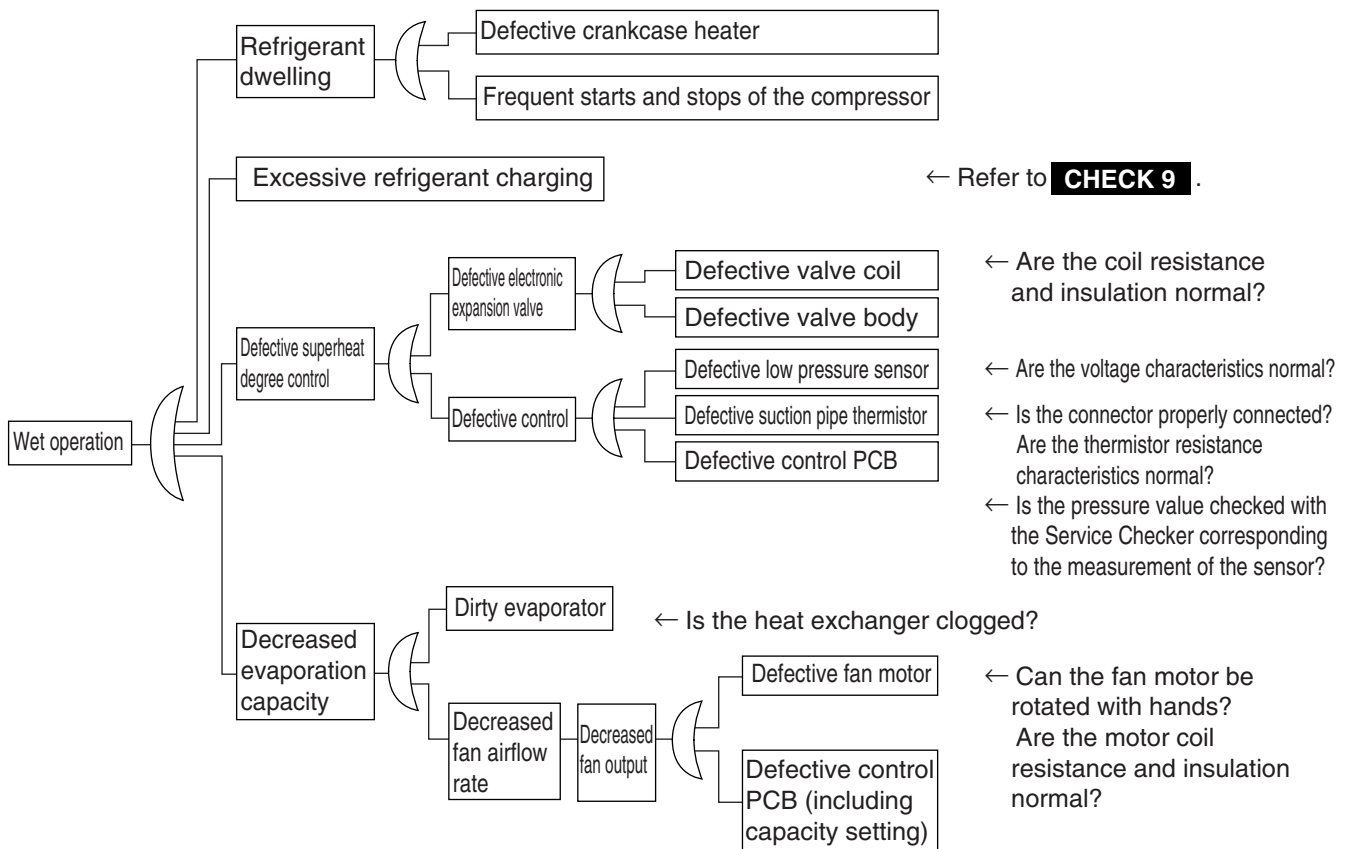
(RZQ20/24LVA)



Measurement point	Judgement
1 - 6	40~50 Ω
2 - 6	
3 - 6	
4 - 6	

CHECK 8 Check for Factors Causing Wet Operation

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



Note:

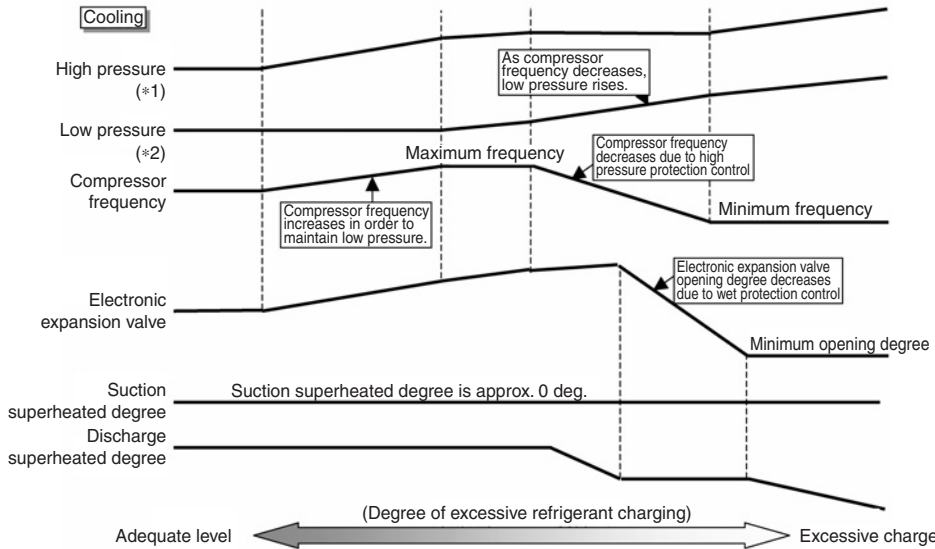
- *: Reference values for superheated degree to be used in the judgement of wet operation
- ① Suction pipe superheated degree: 4°C or more
- ② Discharge pipe superheated degree: 5°C or less
- (The values above must be used only for reference purposes. Even it is operated within the range above, operation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

CHECK 9 Check for Excessive Refrigerant Charging

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

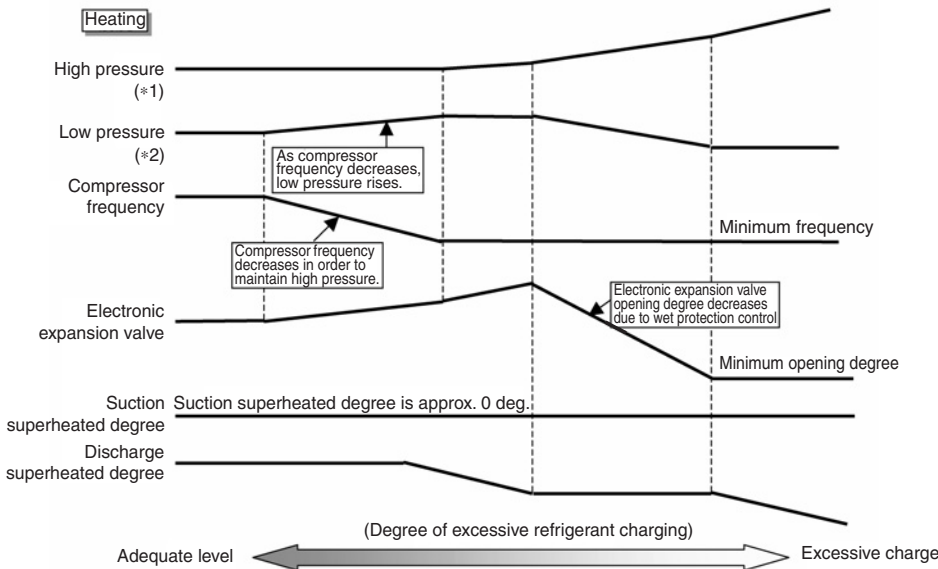
<Diagnosis of excessive refrigerant charging>

- (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.



Cooling

Model	RZQ
*1 High Pressure	Intermediate heat exchanger thermistor (*3)
*2 Low Pressure	Pressure sensor



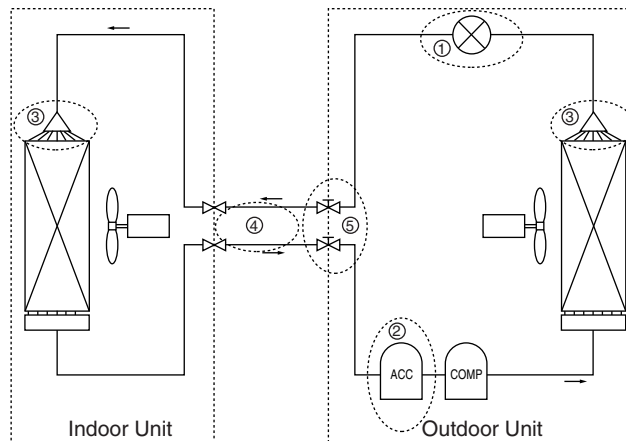
Heating

Model	RZQ
*1 High Pressure	Pressure sensor
*2 Low Pressure	Intermediate heat exchanger thermistor (*3)

*3 This measured temperature is used to calculate the equivalent saturation pressure of the refrigerant. (Refer to P.165.)

CHECK 10 Clogged Points

Temperature differences must occur before or after the clogged points!

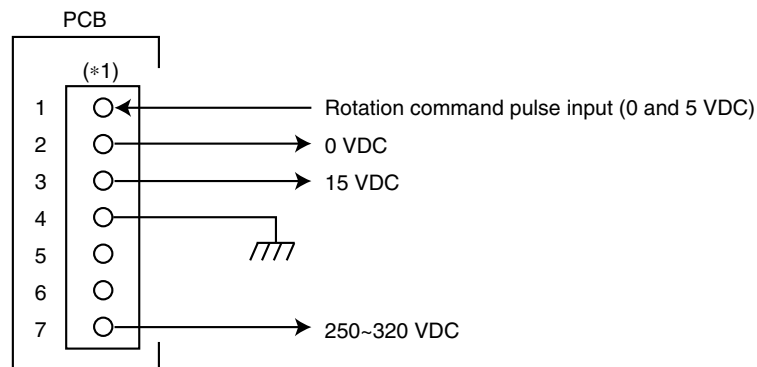


Check points		Check factor	Causes	Remedies
1	Around expansion mechanism	Temperature difference	<ul style="list-style-type: none"> ● Dust ● Choked moisture ● Reduced effective pipe diameter due to adherent contamination, etc. 	Replace the electronic expansion valve.
2	Accumulator	Frosting	<ul style="list-style-type: none"> ● Choked moisture 	Blow a nitrogen gas, and then replace the refrigerant.
3	Distributor	Temperature difference	<ul style="list-style-type: none"> ● Dust ● Choked moisture ● Reduced effective pipe diameter due to adherent contamination, etc. 	Replace the heat exchanger or distributor.
4	Field piping	Temperature difference	<ul style="list-style-type: none"> ● Collapsed pipe 	Replace the pipe.
5	Stop valve	Temperature difference	<ul style="list-style-type: none"> ● The stop valve is not fully open. 	Open the stop valve fully.

CHECK 11 Fan Speed Pulse

- (1) Set operation OFF and power OFF. Disconnect the connector (*1).
- (2) Check that the voltage between the pins 3 - 4 is about 15 VDC.
- (3) Check that the voltage between the pins 1 - 4 is about 5 VDC.
- (4) Keep operation OFF and power OFF. Connect the connector (*1).
- (5) Check whether 2 pulses (0 and 5 VDC) are output 4 times at the pins 1 - 4 when the fan motor is rotated 1 turn by hand.

Check	Measure
If NG in steps 2 and 3	Defective PCB Replace the outdoor unit PCB.
If NG in step 5	Defective Hall IC Replace the outdoor unit fan motor.
If OK in steps 2, 3 and 5	Replace the outdoor unit PCB.

**Note:**

*1. Connector and outdoor unit PCB

Model	Connector for fan motor (*1)
RZQ20/24	X106A
RZQ36-48	X106A (Upper fan) X107A (Lower fan)

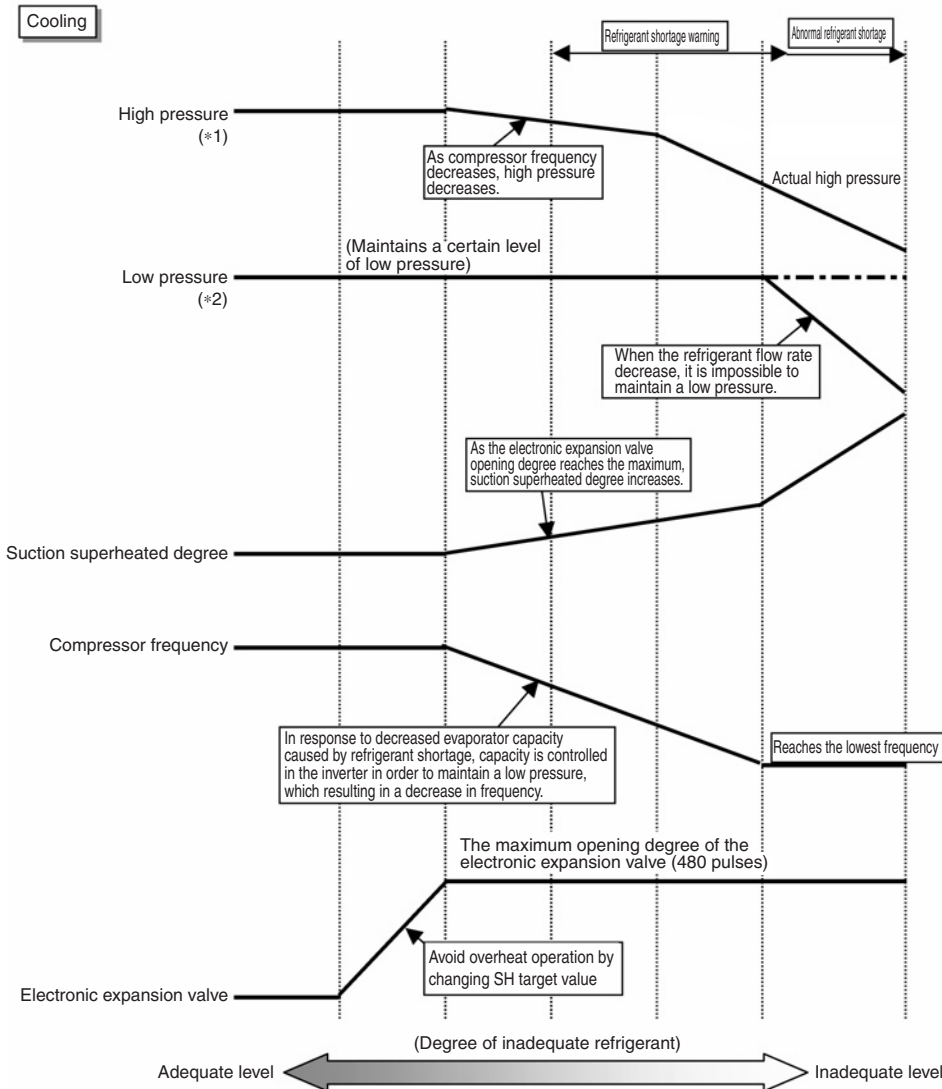
CHECK 12 Check for Inadequate Refrigerant

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

<Diagnosis of inadequate refrigerant>

In cooling

- (1) As suction superheated degree increases due to refrigerant 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 refrigerant 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 air temperature, resulting that cooling capacity becomes unavailable.
- (4) If refrigerant shortage worsens, the electronic expansion valve remains fully open and suction superheated 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.



Cooling

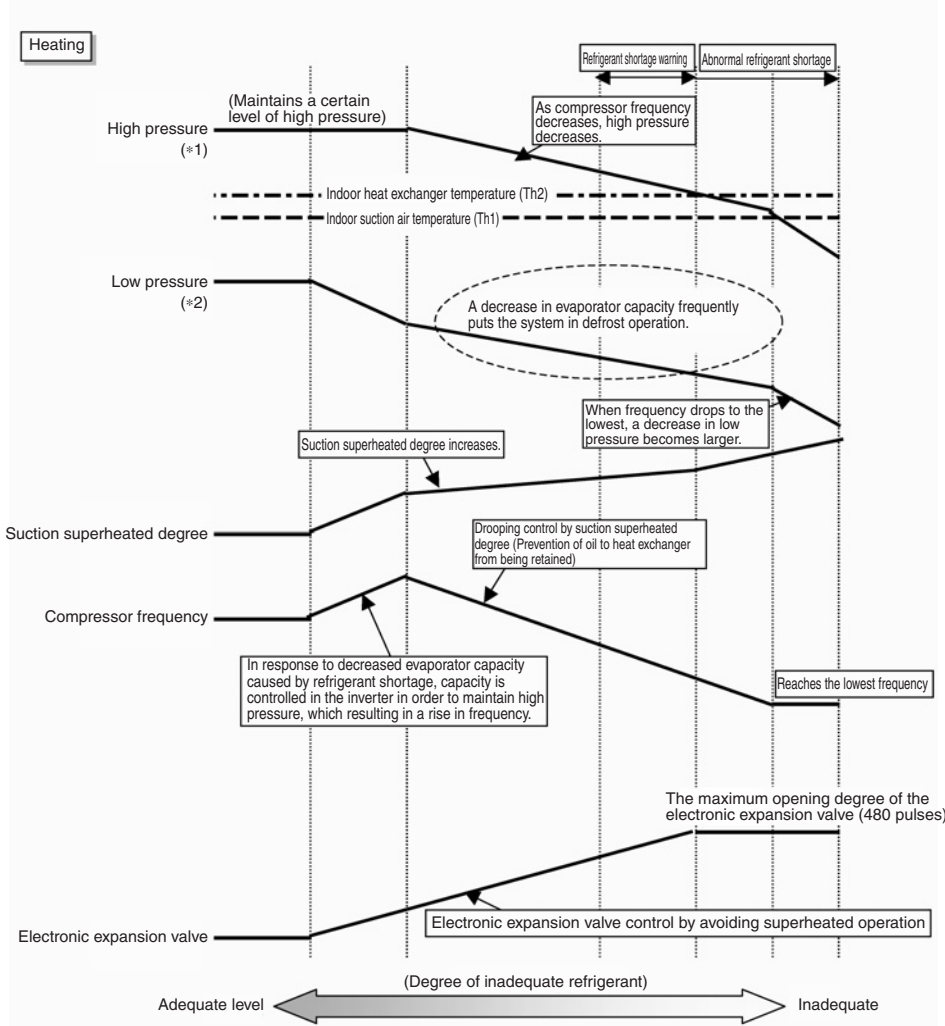
Model	RZQ
*1 High Pressure	Intermediate heat exchanger thermistor (*3)
*2 Low Pressure	Pressure sensor

*3 This measured temperature is used to calculate the equivalent saturation pressure of the refrigerant. (Refer to P.165.)

<Diagnosis of inadequate refrigerant>

In heating

- (1) As suction superheated degree increases due to refrigerant shortage, the electronic expansion valve tends to open (opens fully) to avoid overheat operation.
- (2) As suction superheated degree increases due to refrigerant shortage, compressor frequency decreases because suction superheated degree is controlled in order to prevent oil to the outdoor unit 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 air 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 refrigerant shortage worsens, high pressure becomes smaller than saturated pressure equivalent to indoor heat exchanger temperature (or indoor suction air temperature).



Heating

Model	RZQ
*1 High Pressure	Pressure sensor
*2 Low Pressure	Intermediate heat exchanger thermistor (*3)

*3 This measured temperature is used to calculate the equivalent saturation pressure of the refrigerant. (Refer to P.165.)

CHECK 13 Thermodynamic characteristic of R410A

DAIREP ver2.0

Temperature (°C)	Steam pressure (kPa)		Density (kg/m ³)		Specific heat at constant pressure (kJ/kgK)		Specific enthalpy (kJ/kg)		Specific entropy (kJ/kgK)	
	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-70	36.13	36.11	1410.7	1.582	1.372	0.695	100.8	390.6	0.649	2.074
-68	40.83	40.80	1404.7	1.774	1.374	0.700	103.6	391.8	0.663	2.066
-66	46.02	45.98	1398.6	1.984	1.375	0.705	106.3	393.0	0.676	2.058
-64	51.73	51.68	1392.5	2.213	1.377	0.710	109.1	394.1	0.689	2.051
-62	58.00	57.94	1386.4	2.463	1.378	0.715	111.9	395.3	0.702	2.044
-60	64.87	64.80	1380.2	2.734	1.379	0.720	114.6	396.4	0.715	2.037
-58	72.38	72.29	1374.0	3.030	1.380	0.726	117.4	397.6	0.728	2.030
-56	80.57	80.46	1367.8	3.350	1.382	0.732	120.1	398.7	0.741	2.023
-54	89.49	89.36	1361.6	3.696	1.384	0.737	122.9	399.8	0.754	2.017
-52	99.18	99.03	1355.3	4.071	1.386	0.744	125.7	400.9	0.766	2.010
-51.58	101.32	101.17	1354.0	4.153	1.386	0.745	126.3	401.1	0.769	2.009
-50	109.69	109.51	1349.0	4.474	1.388	0.750	128.5	402.0	0.779	2.004
-48	121.07	120.85	1342.7	4.909	1.391	0.756	131.2	403.1	0.791	1.998
-46	133.36	133.11	1336.3	5.377	1.394	0.763	134.0	404.1	0.803	1.992
-44	146.61	146.32	1330.0	5.880	1.397	0.770	136.8	405.2	0.816	1.987
-42	160.89	160.55	1323.5	6.419	1.401	0.777	139.6	406.2	0.828	1.981
-40	176.24	175.85	1317.0	6.996	1.405	0.785	142.4	407.3	0.840	1.976
-38	192.71	192.27	1310.5	7.614	1.409	0.792	145.3	408.3	0.852	1.970
-36	210.37	209.86	1304.0	8.275	1.414	0.800	148.1	409.3	0.864	1.965
-34	229.26	228.69	1297.3	8.980	1.419	0.809	150.9	410.2	0.875	1.960
-32	249.46	248.81	1290.6	9.732	1.424	0.817	153.8	411.2	0.887	1.955
-30	271.01	270.28	1283.9	10.53	1.430	0.826	156.6	412.1	0.899	1.950
-28	293.99	293.16	1277.1	11.39	1.436	0.835	159.5	413.1	0.911	1.946
-26	318.44	317.52	1270.2	12.29	1.442	0.844	162.4	414.0	0.922	1.941
-24	344.44	343.41	1263.3	13.26	1.448	0.854	165.3	414.9	0.934	1.936
-22	372.05	370.90	1256.3	14.28	1.455	0.864	168.2	415.7	0.945	1.932
-20	401.34	400.06	1249.2	15.37	1.461	0.875	171.1	416.6	0.957	1.927
-18	432.36	430.95	1242.0	16.52	1.468	0.886	174.1	417.4	0.968	1.923
-16	465.20	463.64	1234.8	17.74	1.476	0.897	177.0	418.2	0.980	1.919
-14	499.91	498.20	1227.5	19.04	1.483	0.909	180.0	419.0	0.991	1.914
-12	536.58	534.69	1220.0	20.41	1.491	0.921	182.9	419.8	1.003	1.910
-10	575.26	573.20	1212.5	21.86	1.499	0.933	185.9	420.5	1.014	1.906
-8	616.03	613.78	1204.9	23.39	1.507	0.947	189.0	421.2	1.025	1.902
-6	658.97	656.52	1197.2	25.01	1.516	0.960	192.0	421.9	1.036	1.898
-4	704.15	701.49	1189.4	26.72	1.524	0.975	195.0	422.6	1.048	1.894
-2	751.64	748.76	1181.4	28.53	1.533	0.990	198.1	423.2	1.059	1.890
0	801.52	798.41	1173.4	30.44	1.543	1.005	201.2	423.8	1.070	1.886
2	853.87	850.52	1165.3	32.46	1.552	1.022	204.3	424.4	1.081	1.882
4	908.77	905.16	1157.0	34.59	1.563	1.039	207.4	424.9	1.092	1.878
6	966.29	962.42	1148.6	36.83	1.573	1.057	210.5	425.5	1.103	1.874
8	1026.5	1022.4	1140.0	39.21	1.584	1.076	213.7	425.9	1.114	1.870
10	1089.5	1085.1	1131.3	41.71	1.596	1.096	216.8	426.4	1.125	1.866
12	1155.4	1150.7	1122.5	44.35	1.608	1.117	220.0	426.8	1.136	1.862
14	1224.3	1219.2	1113.5	47.14	1.621	1.139	223.2	427.2	1.147	1.859
16	1296.2	1290.8	1104.4	50.09	1.635	1.163	226.5	427.5	1.158	1.855
18	1371.2	1365.5	1095.1	53.20	1.650	1.188	229.7	427.8	1.169	1.851
20	1449.4	1443.4	1085.6	56.48	1.666	1.215	233.0	428.1	1.180	1.847
22	1530.9	1524.6	1075.9	59.96	1.683	1.243	236.4	428.3	1.191	1.843
24	1615.8	1609.2	1066.0	63.63	1.701	1.273	239.7	428.4	1.202	1.839
26	1704.2	1697.2	1055.9	67.51	1.721	1.306	243.1	428.6	1.214	1.834
28	1796.2	1788.9	1045.5	71.62	1.743	1.341	246.5	428.6	1.225	1.830
30	1891.9	1884.2	1034.9	75.97	1.767	1.379	249.9	428.6	1.236	1.826
32	1991.3	1983.2	1024.1	80.58	1.793	1.420	253.4	428.6	1.247	1.822
34	2094.5	2086.2	1012.9	85.48	1.822	1.465	256.9	428.4	1.258	1.817
36	2201.7	2193.1	1001.4	90.68	1.855	1.514	260.5	428.3	1.269	1.813
38	2313.0	2304.0	989.5	96.22	1.891	1.569	264.1	428.0	1.281	1.808
40	2428.4	2419.2	977.3	102.1	1.932	1.629	267.8	427.7	1.292	1.803
42	2548.1	2538.6	964.6	108.4	1.979	1.696	271.5	427.2	1.303	1.798
44	2672.2	2662.4	951.4	115.2	2.033	1.771	275.3	426.7	1.315	1.793
46	2800.7	2790.7	937.7	122.4	2.095	1.857	279.2	426.1	1.327	1.788
48	2933.7	2923.6	923.3	130.2	2.168	1.955	283.2	425.4	1.339	1.782
50	3071.5	3061.2	908.2	138.6	2.256	2.069	287.3	424.5	1.351	1.776
52	3214.0	3203.6	892.2	147.7	2.362	2.203	291.5	423.5	1.363	1.770
54	3361.4	3351.0	875.1	157.6	2.493	2.363	295.8	422.4	1.376	1.764
56	3513.8	3503.5	856.8	168.4	2.661	2.557	300.3	421.0	1.389	1.757
58	3671.3	3661.2	836.9	180.4	2.883	2.799	305.0	419.4	1.403	1.749
60	3834.1	3824.2	814.9	193.7	3.191	3.106	310.0	417.6	1.417	1.741
62	4002.1	3992.7	790.1	208.6	3.650	3.511	315.3	415.5	1.433	1.732
64	4175.7	4166.8	761.0	225.6	4.415	4.064	321.2	413.0	1.450	1.722

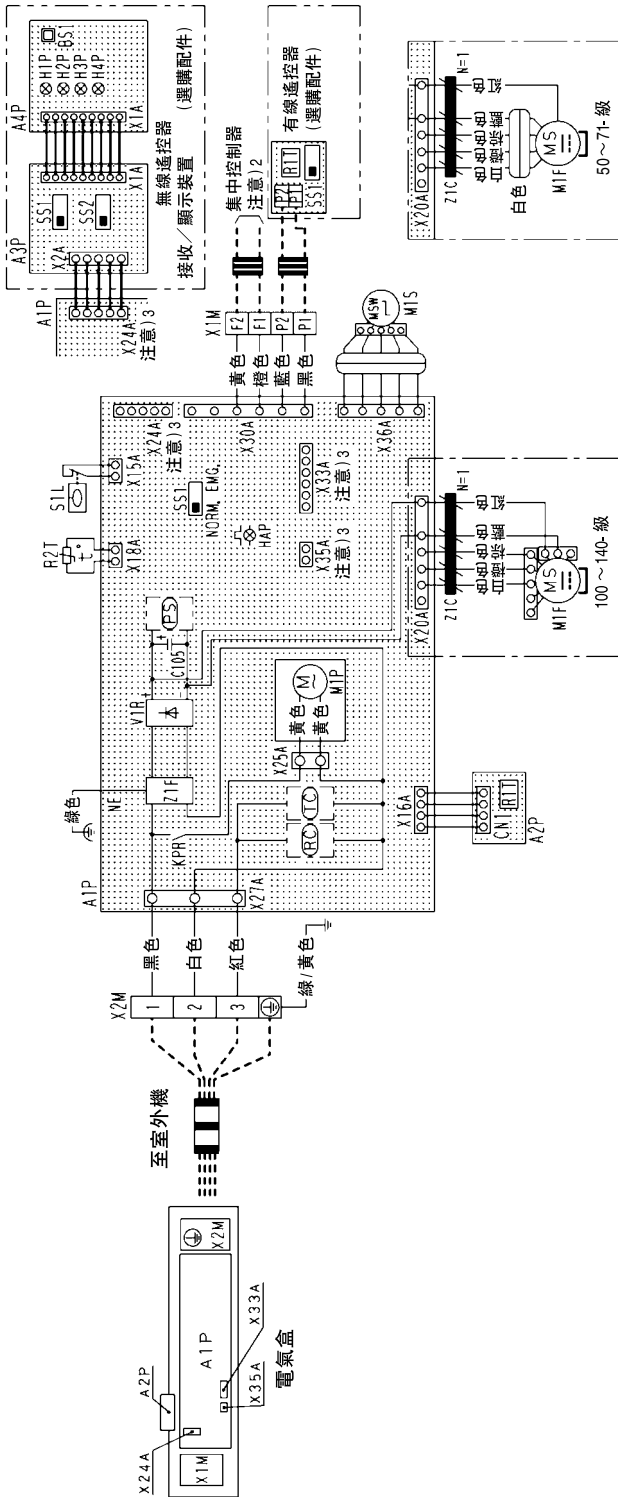
Part 7 Appendix

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1. Wiring Diagrams

1.1 Indoor Units

FCQ50KVLT / FCQ60KVLT / FCQ71KVLT / FCQ100KVLT / FCQ125KAVLT / FCQ140KAVLT



注意)

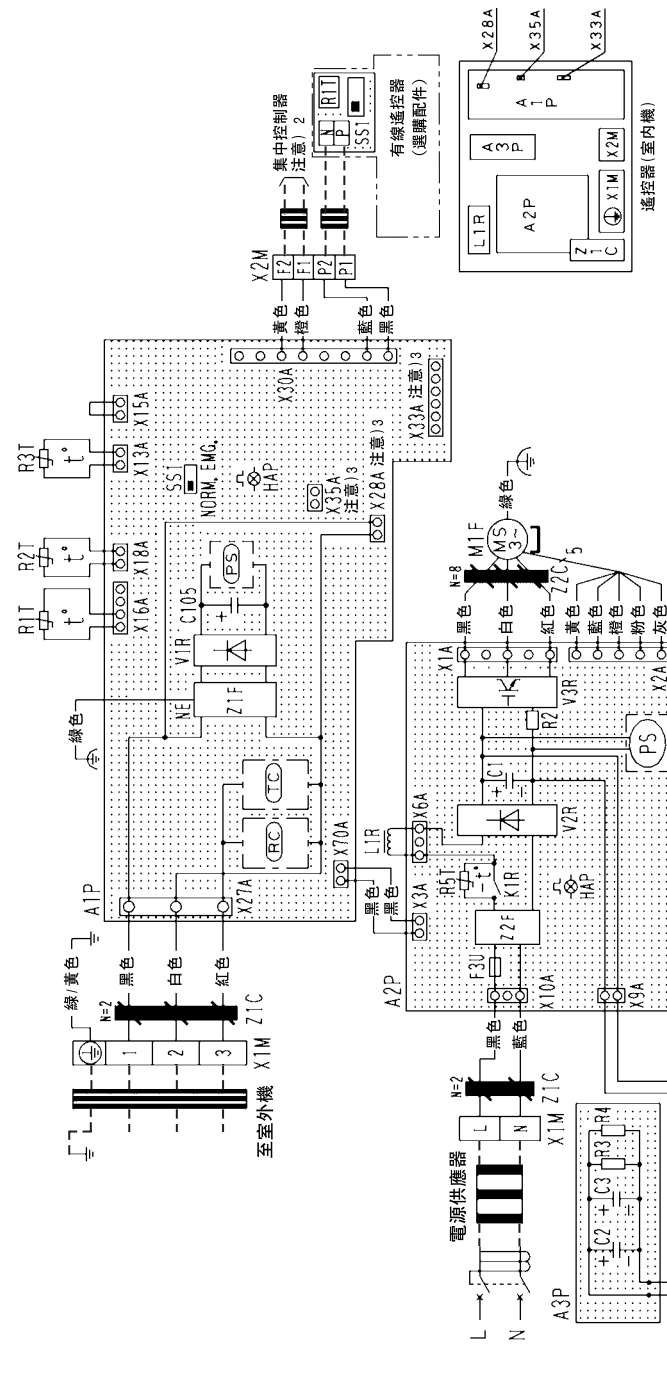
1. □□□□：端子板 □□□□：插接器 □□□□：現場配線
2. 若使用中央集控器時，請參照附帶的安裝說明書，將其連接到空調器上。
3. 使用選購件時，需連接 X24A、X33A、X35A。
4. 遙控器種類因連接的空調系統不同而異，連接前請參看技術資料或產品目錄等。
5. 請根據安裝說明書和技術資料等，確認選擇開關 (SS1、SS2) 的設定方法。

室內機		端子板		選擇開關 (主/從)	
A1P	PC板	Z1C	磁環	SS1	選擇開關 (主/從)
A2P	PC板	Z1F	雜訊濾波器	SS2	選擇開關 (無線位址設定)
C105	電容器	(PS)	電源回路	X24A	選配件用插接器 (無線遙控器)
HAP	發光二極管 (維修監控-綠色)	(RC)	訊號接收回路	X33A	插接器 (配線用轉接頭)
KPR	電磁繼電器 (MIP)	(TC)	訊號傳送回路	X35A	插接器 (詳細控制轉接頭)
M1F	馬達 (室內機風扇)		接收/顯示裝置 (附於無線遙控器內)		有線遙控器
M1P	馬達 (排水泵)		A3P	PC板	熱敏電阻 (空氣)
M1S	馬達 (擺動葉片)		A4P	PC板	選擇開關 (主/從)
R1T	熱敏電阻 (空氣)		BS1	按鈕 (開/關)	
R2T	熱敏電阻 (盤管)		H1P	發光二極管 (開-紅)	
S1L	浮動開關		H2P	發光二極管 (定時-綠)	
SS1	選擇開關 (緊急)		H3P	發光二極管 (過濾器訊號-紅)	
V1R	橋式二極體		H4P	發光二極管 (除霜-橙)	
X1M	端子板				

3P281035B

• This drawing is for reference only.

FBQ50DAVET / FBQ60DAVET / FBQ71DAVET / FBQ100DAVET / FBQ125DAVET / FBQ140DAVET



注意

1. □□□□：端子板 □□□□：插接器 □□□□：現場配線
2. 若使用中央集控器時，請參照附帶的安裝說明書，將其連接到空調機上。
3. 使用選購件時，需連接 X28A、X33A、X35A。
4. 遙控器型號可能根據組合系統的不同而有所差異，連接前，請確認施工材料與產品目錄等。
5. 請根據安裝說明書和技術資料等，確認選擇開關(SS1)的設定方法。

SS1	選擇開關 (緊急)
A1P	室內機 PCB板
A2P	PC板 (風扇用)
A3P	PC板 (電容器用)
C105	電容器 (控制用)
F3U	發光二極管 (服務監控器一綠色) 欠(A1P, A2P)
HAP	電磁繼電器
LIR	電抗器
KIR	馬達 (風扇)
MIF	電源供應切換 欠(A1P, A2P)
PS	電阻 (電流限制)
R1	電阻 (電流限制)
R2	電阻 (電感裝置)
R3	電阻 (放電)
R4	電阻 (轉接器)
R1T	熱敏電阻 (進氣)
R2T	熱敏電阻 (排氣)
R3T	熱敏電阻 (排氣)
R5T	熱敏電阻 (電流限制)

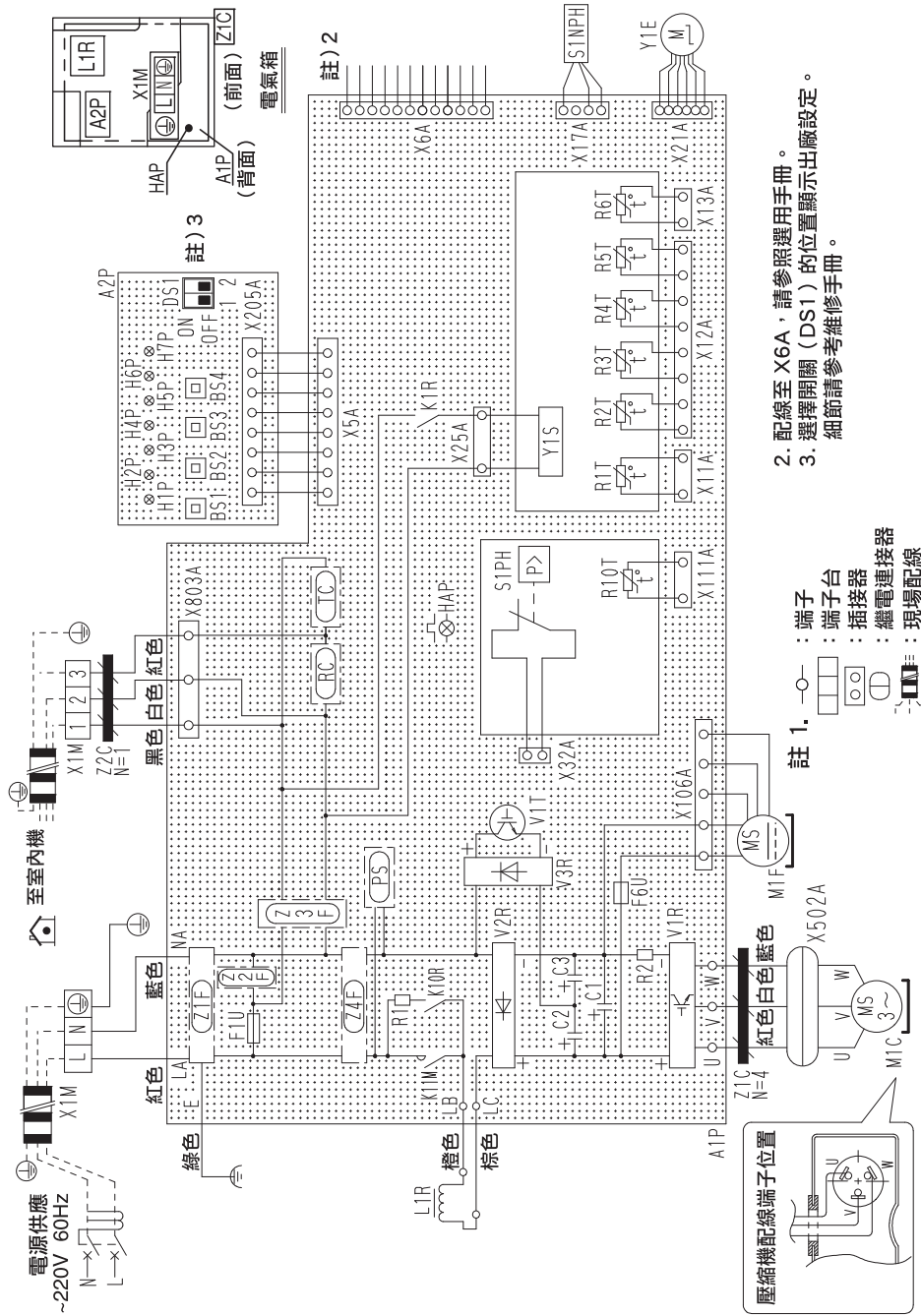
3P281036D

• This drawing is for reference only.

1.2 Outdoor Units

RZQ50KCVLT / RZQ60KCVLT / RZQ71KCVLT

A1P	PC 板
A2P	PC 板
BS1~BS4	按鈕開關
C1~C3	電容器
DS1	指撥開關
F1U	保險絲 (T 6.3A, 250V)
F6U	保險絲 (T 3.15A, 250V)
H1P~H7P(A2P)	指示燈(維修監控: 橙色)
HAP(A1P)	閃爍燈 (維修監控: 綠色)
K11M	電磁接觸器
K10R	電磁繼電器(Y1S)
L1R	電抗器
M1C	馬達(壓縮機)
M1F	馬達(電扇)
PS	電源供應切換
R1	電阻
R2	電阻
R1T	熱敏電阻(空氣)
R2T	熱敏電阻(吐出管)
R3T	熱敏電阻(吸入管)
R4T	熱敏電阻(熱交換器)
R5T	熱敏電阻(中介熱交換器)
R6T	熱敏電阻(液管)
R10T	熱敏電阻(散熱片)
RC	訊號接收回路
S1NPH	壓力感測器
S1PH	高壓開關
TC	訊號傳輸回路
V1R	電源模組
V2R, V3R	橋式二極體
V1T	絕緣閘雙極電晶體電源模組
X1M	端子台
Y1E	電子膨脹閥
Y1S	四通閥
Z1C	雜訊濾波器(突波吸收器)
Z2C	雜訊濾波器(突波吸收器)
Z1F~Z4F	雜訊濾波器

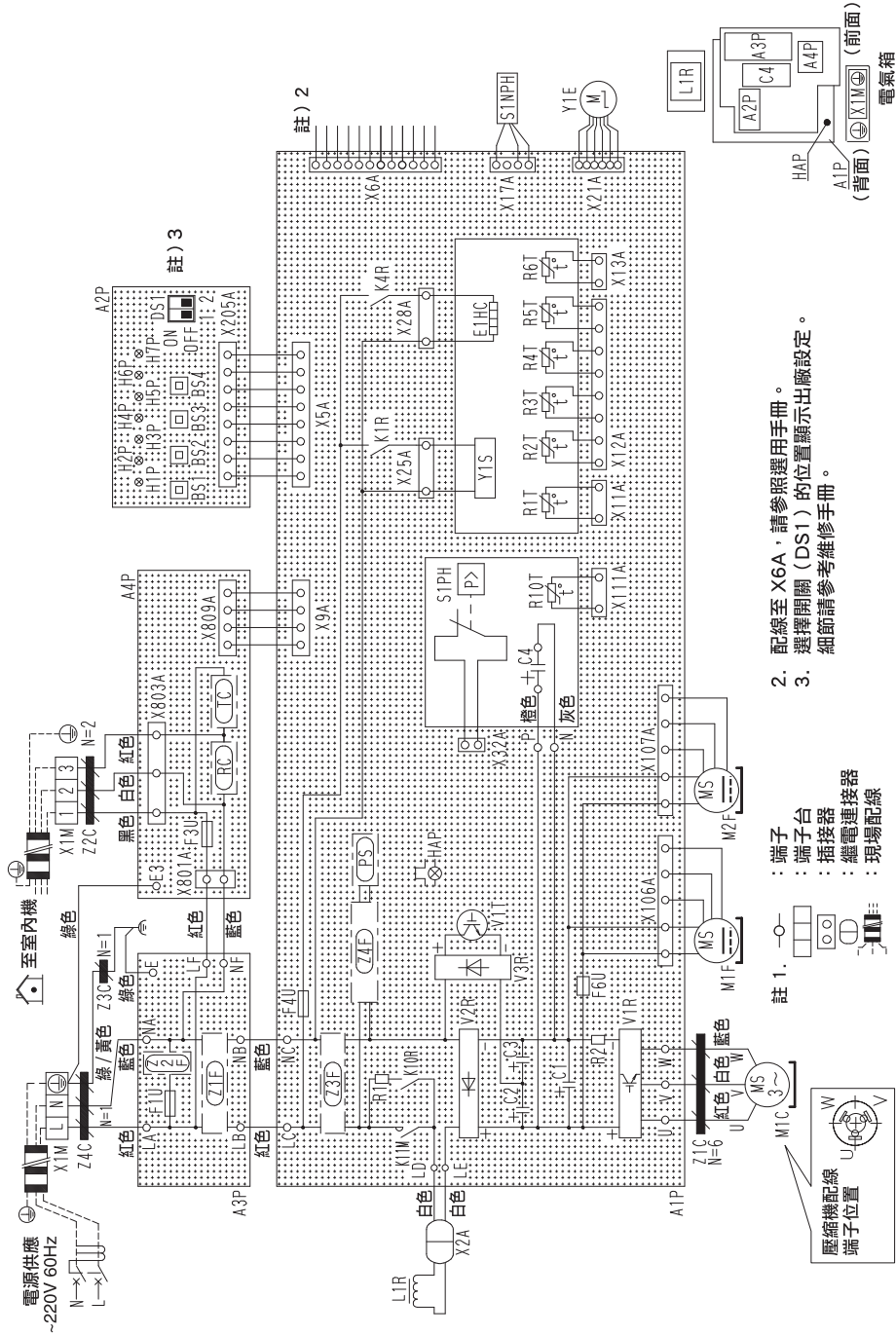


3P280843C

• This drawing is for reference only.

RZQ100KCVLT / RZQ125KCVLT / RZQ140KCVLT

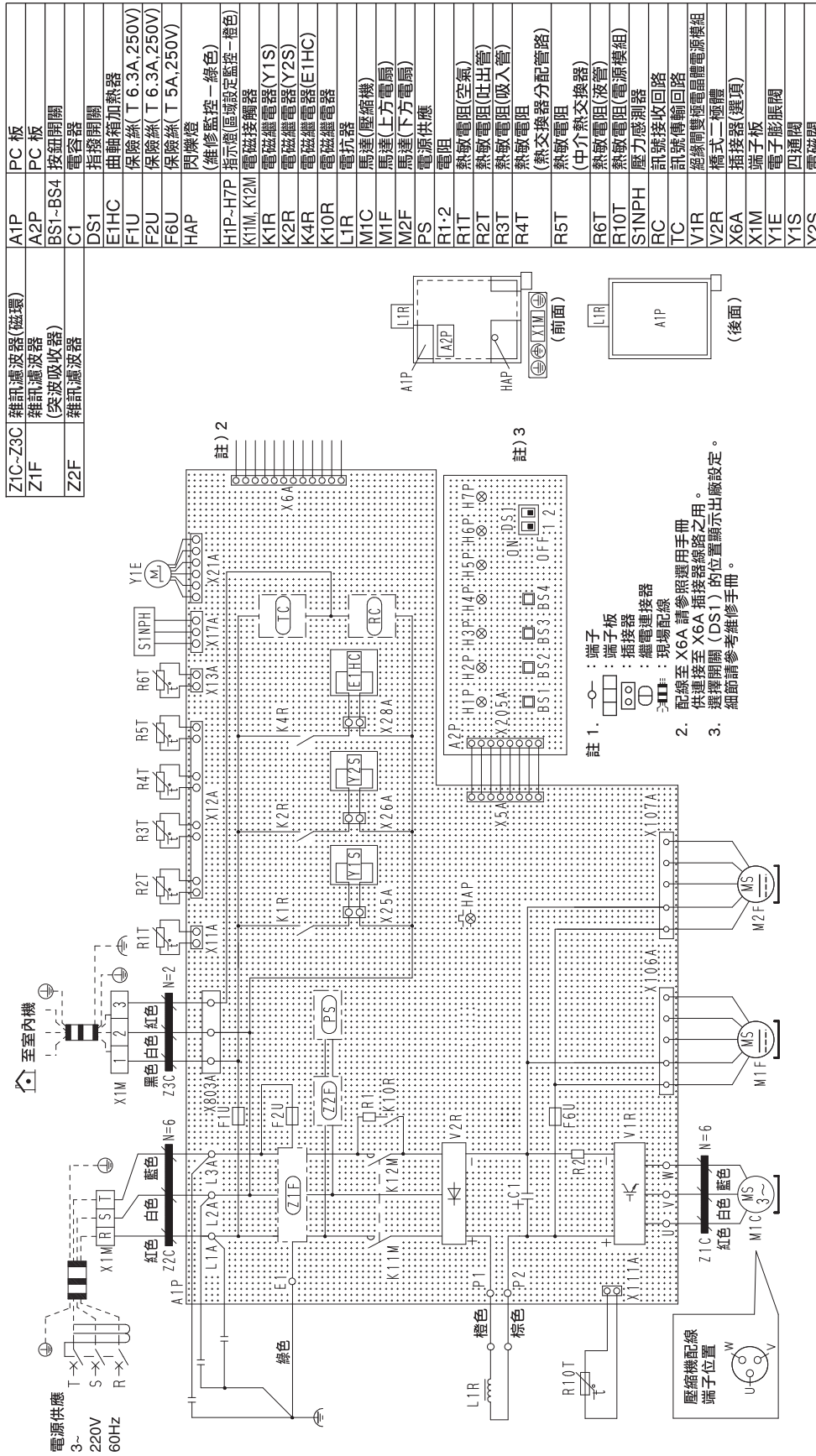
A1P	PC 板
A2P	PC 板
A3P	PC 板
A4P	PC 板
BS1-BS4	按鈕開關
C1-C4	電容器
DST	指撥開關
E1HC	曲軸箱加熱器
F1U, F4U	保險絲 (T 6.3A, 250V)
F6U	保險絲 (T 5.0A, 250V)
H1P~H4P	指示燈 (維修監控：綠色)
HAP(A1P)	內線燈
K11M	電磁接觸器 (維修監控：綠色)
K1R	電磁接觸器 (Y1S)
K4R	電磁接觸器 (E1HC)
K10R	電磁繼電器
L1R	電抗器
M1C	馬達 (壓縮機)
M1F	馬達 (電扇)(上方)
M2F	馬達 (電扇)(下方)
PS	電源供應
R1	電阻
R2	熱敏電阻 (空氣)
R1T	熱敏電阻 (吐出口)
R2T	熱敏電阻 (吸入管)
R3T	熱敏電阻 (熱交換器)
R4T	熱敏電阻 (熱交換器)
R5T	熱敏電阻 (中介熱交換器)
R6T	熱敏電阻 (液管)
R10T	熱敏電阻 (散熱片)
RC	阻容吸收回路
S1NPH	壓力感知器 (高壓)
S1PH	高壓開關
TC	訊號傳輸回路
V1R	電源模組
V2R, V3R	橋式二極體
V1T	絕緣開關雙極電量體電源模組
X1M	端子板漲圈
Y1S	四通閥
Z1C~Z4C	雜訊濾波器 (突波吸收器)
Z1F~Z4F	雜訊濾波器



3P280842B

• This drawing is for reference only.

RZQ100KCTLT / RZQ125KCTLT / RZQ140KCTLT

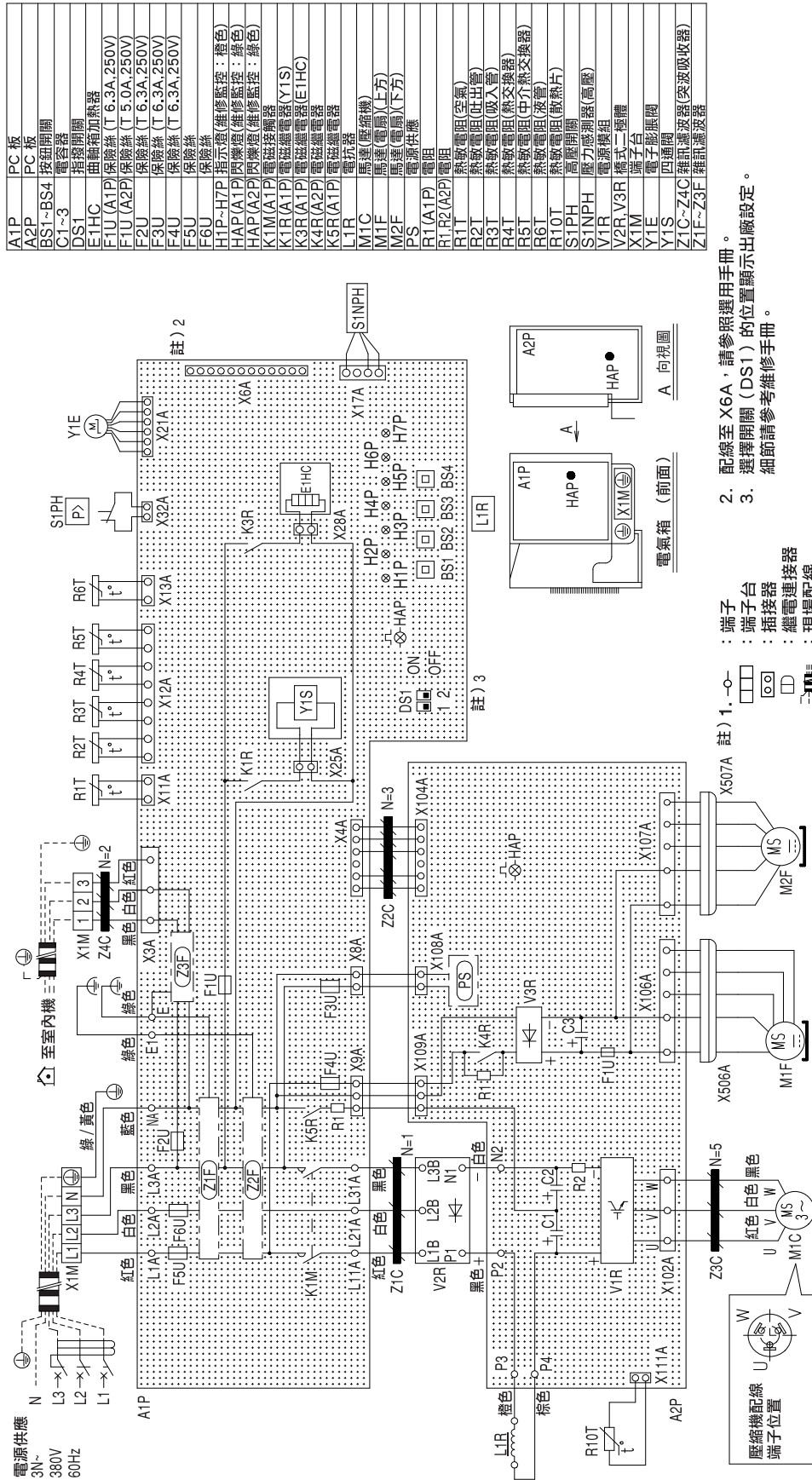


Z1C-Z3C	雜訊濾波器(磁環)	A1P	PC 板
Z1F	雜訊濾波器(突波吸收器)	A2P	PC 板
Z2F	雜訊濾波器	BS1-BS4	按鈕開關
		C1	電容器
		DS1	指撥開關
		E1HC	曲軸箱加熱器
		F1U	保險絲(T 6.3A,250V)
		F2U	保險絲(T 6.3A,250V)
		F6U	保險絲(T 5A,250V)
		HAP	閃爍燈 (維修監控-綠色)
		H1P-H7P	指示燈(區域設定監控-藍色)
		K11M, K12M	電磁接觸器
		K1R	電磁繼電器(Y1S)
		K2R	電磁繼電器(Y2S)
		K4R	電磁繼電器(E1HC)
		K10R	電磁繼電器
		L1R	電抗器
		M1C	馬達(壓縮機)
		M1F	馬達(上方電扇)
		M2F	馬達(下方電扇)
		PS	電源供應
		R1-2	電阻
		R1T	熱敏電阻(空氣)
		R2T	熱敏電阻(吐出管)
		R3T	熱敏電阻(吸入管)
		R4T	熱敏電阻 (熱交換器分配管路)
		R5T	熱敏電阻 (中介熱交換器)
		R6T	熱敏電阻(液管)
		R10T	熱敏電阻(電源模組)
		S1NPH	壓力感知器
		TC	訊號接收回路
		TC	訊號傳輸回路
		V1R	絕緣耐壓電晶體電源模組
		V2R	橋式二極體
		X6A	插接器(選項)
		X1M	端子板
		Y1S	電子膨脹閥
		Y2S	四通閥
		Y2S	電磁閥

3P280841C

• This drawing is for reference only.

RZQ100LUYLT / RZQ125LUYLT / RZQ140LUYLT



A1P	PC板
A2P	PC板
BS1~BS4	按鈕開關
C1~3	電容器
DS1	指撥開關
E1HC	曲柄相加熱器
F1U (A1P)	保險絲 (T 6.3A, 250V)
F1U (A2P)	保險絲 (T 5.0A, 250V)
F2U	保險絲 (T 6.3A, 250V)
F3U	保險絲 (T 6.3A, 250V)
F4U	保險絲 (T 6.3A, 250V)
F5U	保險絲
F6U	保險絲
H1P~H7P	指示燈(維修監控：藍色)
HAP (A1P)	內燈(維修監控：綠色)
HAP (A2P)	內燈(維修監控：綠色)
K1R (A1P)	電磁接觸器
K3R (A1P)	電磁接觸器 (Y1S)
K4R (A2P)	電磁接觸器 (E1HC)
K5R (A1P)	電磁接觸器
L1R	電抗器
M1R	馬達(壓縮機)
M2F	馬達(電扇)(上方)
M2F	馬達(電扇)(下方)
PS	電源供應
R1 (A1P)	電阻
R1 (R2) (A2P)	電阻
R1T	熱敏電阻(空氣)
R2T	熱敏電阻(出入口)
R3T	熱敏電阻(吸入管)
R4T	熱敏電阻(熱交換器)
R5T	熱敏電阻(熱交換器)
R6T	熱敏電阻(液管)
R10T	熱敏電阻(散熱片)
S1PH	高壓開關
S1NPH	高壓開關(高壓)
V1R	電源模組
V2R, V3R	橋式二極體
X1M	端子台
Y1S	電子膨脹閥
Z1C~Z4C	雜訊濾波器(突波吸收器)
Z1F~Z3F	雜訊濾波器

- 1. 配線至 X6A，請參照選用手冊。
- 2. 選擇開關 (DS1) 的位置顯示出廠設定。
- 3. 細節請參考維修手冊。

: 端子台
 : 插接器
 : 繼電接觸器
 : 現場配線

註) 1. -○-
 註) 2. -○-
 註) 3. -○-

電氣箱 (前面)
 A 向視圖

壓縮機配線
 端子位置

Warning



- Daikin products are manufactured for export to numerous countries throughout the world. Prior to purchase, please 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.

Dealer

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