



SiME281906E

R-32

Service Manual

SkyAir



RZF-A Series
Cooling Only 50/60 Hz

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1. Safety Cautions




Be sure to read the following safety cautions before conducting repair work.
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.

	This manual is for the person in charge of maintenance and inspection.		This appliance is filled with R-32.
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Caution Items






The caution items are classified into **Warning** and **Caution**. The **Warning** items are especially important since death or serious injury can result 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.









Pictograms

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

1.1 Warnings and Cautions Regarding Safety of Workers

 Warning	
Do not store equipment in a room with fire sources (e.g., naked flames, gas appliances, electric heaters).	
Be sure to disconnect the power cable from the socket before disassembling equipment for repair. Working on 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 inspect the circuits, do not touch any electrically charged sections of the equipment.	
If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas. 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 gas remaining inside the compressor, the refrigerant gas or refrigerating machine oil discharges when the pipe is disconnected, and it may cause injury.	
If refrigerant gas leaks during repair work, ventilate the area. Refrigerant gas may generate toxic gases when it contacts flames.	
Be sure to discharge the capacitor completely before conducting repair work. The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. A charged capacitor may cause an electrical shock.	

 Warning	
Do not turn the air conditioner on or off by plugging in or unplugging the power cable. Plugging in or unplugging the power cable to operate the equipment may cause an electrical shock or fire.	
Be sure to wear a safety helmet, gloves, and a safety belt when working in a high place (more than 2 m). Insufficient safety measures may cause a fall.	
In case of R-32 / R-410A refrigerant models, be sure to use pipes, flare nuts and tools intended for the exclusive use with the R-32 / R-410A refrigerant. The use of materials for R-22 refrigerant models may cause a serious accident, such as a damage of refrigerant cycle or equipment failure.	
Do not mix air or gas other than the specified refrigerant (R-32 / R-410A / R-22) in the refrigerant system. If air enters the refrigerant system, an excessively high pressure results, causing equipment damage and injury.	

 Caution	
Do not repair electrical components with wet hands. Working on the equipment with wet hands may cause an electrical shock.	
Do not clean the air conditioner with water. Washing the unit with water may cause an electrical shock.	
Be sure to provide an earth / 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 may 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.	
Conduct welding work in a well-ventilated place. Using the welder in an enclosed room may cause oxygen deficiency.	

■ Checking the area

Before beginning work, conduct safety checks to minimise the risk of ignition. When repairing the refrigerating system, take the following precautions before work.

■ Work procedure

Work shall be conducted under a controlled procedure so as to minimise the risk of working in the presence of R-32 or vapour.

■ General working area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.

Work in confined spaces shall be avoided.

The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable materials.

■ Checking for presence of refrigerant

The working area shall be checked with an appropriate refrigerant detector before and during work, to ensure the technician is aware of potentially flammable atmospheres.

Ensure that the leak detection equipment being used is suitable for use with R-32, i.e. non-sparking, adequately sealed or intrinsically safe.

■ Fire extinguishing equipment

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be made available at hand. Prepare a dry powder or CO₂ fire extinguisher adjacent to the working area.

■ No ignition sources

During work on a refrigeration system which involves exposing any piping work that contains or has contained R-32, any sources of ignition shall not be used in a manner that may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept at a safe distance from the site of installation, repairing, or removing space. Before starting work, the area around the equipment shall be examined to make sure that there are no flammable hazard or ignition risks. No Smoking signs shall be displayed.

■ Ventilated area

Ensure that the working area is open or that it is adequately ventilated before work.

Adequate ventilation shall be maintained during the entire period of work.

The ventilation should disperse any released refrigerant and preferably discharge it into the external atmosphere.

■ Checking the refrigeration equipment

Where electrical components are to be changed, the new components shall be fit for the purpose and have the correct specifications.

The manufacturer's maintenance and service guidelines shall be followed at all times.

If there are any unclear points, consult the manufacturer's technical department for assistance.

The following checks shall be applied to any installation work involving R-32:

- The amount of charge is in accordance with the size of the room where the refrigerant containing parts are installed;
- The ventilation machinery and outlets are operating adequately and are not obstructed;
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- Marking on the equipment is visible and legible. Markings and signs that are illegible shall be corrected;
- Refrigeration pipes or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, or the refrigerant containing components are constructed of materials which are inherently resistant to corrosion or are suitably protected against corrosion.

■ Checking electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. In case there is any fault that could endanger safety, no electrical supply shall be connected to the circuit until the fault is satisfactorily dealt with. Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that the equipment is earthed at all times.

■ Repairs to sealed components

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon before the removal of any sealed covers, etc. If it is absolutely necessary to have power supplied to equipment during servicing, continuously operating leak detection shall be installed at the most dangerous point of the system in order to warn of a potentially hazardous situation.

Particular attention shall be paid to the following: ensure that working on electrical components does not alter the casing in such a way that affects the level of protection including damage to cables, excessive number of connections, terminals different from the original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that the equipment is mounted securely.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated before working on them.

■ Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance load to the circuit without ensuring that this will not exceed the permissible voltage and current for the equipment in use.

Only intrinsically safe components can be worked on in the presence of a flammable atmosphere.

The test apparatus shall be of correct rating.

Replace components only with parts specified by the manufacturer. Using other parts may result in ignition of the refrigerant leaked into the atmosphere.

■ Wiring

Check that wiring is not subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of ageing or continuous vibration from sources such as compressors or fans.

■ Detecting of R-32

Under no circumstances shall potential sources of ignition be used in the search for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

■ Leak detection methods

The following leak detection methods can be applied for systems containing R-32. Electronic leak detectors shall be used to detect R-32, but the sensitivity may not be adequate or may need re-calibration (detection equipment shall be calibrated in a refrigerant-free area). Ensure that the detector is not a potential source of ignition and that it is suitable for the refrigerant used. Leak detection equipment shall be set to the percentage of the lower flammability limit (LFL) of the refrigerant and calibrated to fit the refrigerant employed. The appropriate percentage of gas (maximum 25%) shall be confirmed.

Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper piping work.

If a leak is suspected, all naked flames shall be removed or extinguished.

If a refrigerant leakage which requires brazing is found, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the point of the leakage. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

■ Removal and evacuation

When breaking the refrigerant circuit to make repairs or any other purpose, conventional procedures may be used. However, flammability must be taken into consideration. The following procedure shall be adhered to:

- Remove refrigerant;
- Purge the circuit with inert gas;
- Evacuate the inert gas;
- Purge again with inert gas;
- Carry out cutting or brazing of the circuit.

The refrigerant shall be recovered into the correct recovery cylinders. The system shall be cleaned with OFN to render the unit safe. (= Flushing) This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved through breaking the vacuum by filling the system with OFN until the working pressure is achieved, then venting the OFN into the atmosphere, and finally pulling the system down to vacuum again. This process shall be repeated until no refrigerant remains within the system. After the last OFN charge is finished, the system shall be vented down to atmospheric pressure to enable work. This operation is especially important if brazing operations on the piping work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and that there is ventilation available.

■ Charging procedures

In addition to conventional charging procedures, the following requirements shall be met. Ensure that the charging equipment to be used is not contaminated by different refrigerants. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.

- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed before charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.

Before recharging, the system shall be tested for leakage with OFN. On completion of charging, the system shall be tested before commissioning. Follow up leakage test shall be carried out before leaving the site.

■ Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended to train technicians so that all of the refrigerant is recovered safely. In case analysis is required before re-using the reclaimed refrigerant, an oil and refrigerant sample shall be taken before proceeding with decommissioning. It is essential that electrical power is available before work.

- (1) Comprehend the equipment and its operation.
- (2) Isolate the system electrically.
- (3) Before starting work, ensure that:
 - ◆ mechanical handling equipment is available if required, for handling refrigerant cylinders;
 - ◆ protective equipment can be used in compliance with specifications;
 - ◆ the recovery process is supervised by a competent person at all times;
 - ◆ recovery equipment and cylinders conform to the appropriate standards.
- (4) Pump down the refrigerant system, if possible.
- (5) If vacuum can not be ensured, apply a manifold so that refrigerant can be removed from various parts of the system.
- (6) Make sure that the cylinder is situated on the scale before recovery takes place.
- (7) Start the refrigerant recovery device and operate it in accordance with the manufacturer's instructions.
- (8) Do not overfill cylinders. (Do not exceed 80% liquid charge volume).
- (9) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- (10) When the cylinders have been filled correctly and the process is completed, make sure that the cylinders and the equipment are removed from site promptly and all valves on the equipment are closed.
- (11) Recovered refrigerant shall not be charged into another refrigeration system before it has been cleaned and checked.

■ Labelling

Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains R-32.

■ Refrigerant recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended to conduct training so that all refrigerants can be removed safely.













When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are used.




Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used must be designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be equipped with a pressure relief valve and associated shut-off valves in good working order. If possible, empty recovery cylinders shall be cooled in a separate place before recovery is conducted. The recovery equipment shall be in good working order with instructions concerning the equipment at hand, and shall be suitable for the recovery of R-32. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be equipped with leak-free disconnect couplings and in good condition. Before using the recovery device, check that it has undergone proper maintenance, that it is in satisfactory working order, and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant leakage. Consult manufacturer if in doubt.










The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, with the relevant Waste Transfer Note attached. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oil are to be removed, ensure that the refrigerant melted into the oil has been evacuated to an acceptable level to make certain that R-32 does not remain within the oil. The evacuation process shall be carried out before returning the compressor to the supplier. Only electric heating to the compressor body shall be employed to accelerate this process. Oil drained from the system shall be treated safely.

1.2 Warnings and Cautions Regarding Safety of Users





 Warning	
Do not store the equipment in a room with fire sources (e.g., naked flames, gas appliances, electric heaters).	
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.	
If the power cable and lead wires are scratched or have deteriorated, be sure to replace them. Damaged cable and wires may cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it may cause an electrical shock, excessive heat generation or fire.	
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.	
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.	
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.	
Do not damage or modify the power cable. Damaged or modified power cables may cause an electrical shock or fire. Placing heavy items on the power cable, or heating or pulling the power cable may damage it.	
Do not mix air or gas other than the specified refrigerant (R-32 / R-410A / R-22) in the refrigerant system. If air enters the refrigerant system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leaking point and repair it before charging the refrigerant. After charging the refrigerant, make sure that there is no leak. If the leaking point cannot be located and the repair work must be stopped, be sure to pump-down, and close the service valve, to prevent refrigerant gas from leaking into the room. Refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as those from fan type and other heaters, stoves and ranges.	
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 or the installation work is not conducted securely, the equipment may fall and cause injury.	

 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 is dusty or has a loose connection, it may cause an electrical shock or fire.	
When replacing the coin battery in the remote controller, be sure to dispose 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 combustible gas leaks and remains around the unit, it may cause a fire.	
Check to see if parts and wires are mounted and connected properly, and if 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. A corroded installation platform or frame may cause the unit to fall, resulting in injury.	
Check the earth / grounding, and repair it if the equipment is not properly earthed / grounded. Improper earth / grounding may cause an electrical shock.	
Be sure to measure insulation resistance after the repair, and make sure that the resistance is 1 MΩ or higher. Faulty insulation may cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage may cause 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.	

2. Icons Used

The following icons are used to attract the attention of the reader to specific information.

Icon	Type of Information	Description
 Warning	Warning	Warning is used when there is danger of personal injury.
 Caution	Caution	Caution is used when there is danger that the reader, through incorrect manipulation, may damage equipment, lose data, get an unexpected result or have to restart (part of) a procedure.
 Note	Note	Note provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
 Reference	Reference	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.

3. Revision History

Month / Year	Version	Revised contents
10 / 2019	SiME281906E	First edition

Part 1

General Information

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1. Model Names and Power Supply

Indoor unit		Outdoor unit	Power supply intake
Type	Model name	Model name	
Middle and high static pressure duct connection type	FDMF18AVMK	RZF18AVMK	Outdoor unit: 1 phase, 220-240 V, 50/60 Hz
	FDMF24AVMK	RZF24AVMK	
	FDMF30AVMK	RZF30AVMK	
	FDMF36AVMK	RZF36AVMK	

2. External Appearance

Indoor unit



FDMF-A

Outdoor unit



**RZF18AVMK
RZF24AVMK**



**RZF30AVMK
RZF36AVMK**

3. Functions

Category	Function	Indoor unit	FDMF-A		
		Outdoor unit	RZF-A		
		Remote controller	BRC1E62	BRC1E63	BRC4C66
Comfort	Setback		●	●	—
	Quick start		●	●	—
	DC fan motor (Indoor unit)		●	●	●
	Switchable fan speed		● (3 steps)	● (3 steps)	● (2 steps)
	Automatic airflow rate		●	●	—
	Program dry		●	●	●
	Two selectable temperature sensors		●	●	—
	Automatic night-time low noise operation		● (*1)	● (*1)	—
	Year-round cooling applicable		● (*1)	● (*1)	● (*1)
Remote controller	Setpoint auto-reset		●	●	—
	Setpoint range set		●	●	—
	Weekly schedule timer		●	●	—
	Off timer (programmed)		●	●	—
	On/Off timer		—	—	●
	Display automatic OFF		—	●	—
	Backlight		●	●	—
	Multilingual		●	●	—
Cleanliness	Anti-bacterial air filter		● (*2)	● (*2)	● (*2)
	Silver ion anti-bacterial drain pan		●	●	●
Work & servicing	Drain pump mechanism		●	●	●
	Pre-charged		● (*1)	● (*1)	● (*1)
	Long-life filter		● (*2)	● (*2)	● (*2)
	Filter sign		●	●	●
	Low gas pressure detection		● (*1)	● (*1)	● (*1)
	Emergency operation		●	●	●
	Self-diagnosis function		●	●	●
	Service contact display		●	●	—
Control features	Auto-restart		●	●	●
	Control by 2 remote controllers		●	●	●
	Group control by 1 remote controller		●	●	●
	External command control		● (*2)	● (*2)	● (*2)
	Central remote control		● (*2)	● (*2)	● (*2)
	Interlock control with Heat Reclaim Ventilator		●	●	●
	DIII-NET communication standard		● (*2)	● (*2)	● (*2)
Options	High-efficiency filter		● (*2)	● (*2)	● (*2)
Others	Anti-corrosion treated heat exchangers		● (*1)	● (*1)	● (*1)

*The controller BRC1H81 series can also be available.

BRC1H81 series only allows for basic settings and operation.

Advanced settings and operation are performed via the Daikin Control Assistant app.



Note(s)

● : Available

— : Not available

*1 : For outdoor unit

*2 : Option

4. Specifications

Model	Indoor unit		FDMF18AVMK	FDMF24AVMK
	Outdoor unit		RZF18AVMK	RZF24AVMK
Power supply	Indoor unit		1 phase, 220-240 V, 50/60 Hz	1 phase, 220-240 V, 50/60 Hz
	Outdoor unit		1 phase, 220-240 V, 50/60 Hz	1 phase, 220-240 V, 50/60 Hz
	Power supply intake		Indoor/Outdoor unit side	Indoor/Outdoor unit side
Cooling capacity *1 *2		kW	5.3 (3.2-5.6)	7.0 (3.2-8.0)
		Btu/h	18,000 (10,900-19,100)	24,000 (10,900-27,300)
		kcal/h	4,600 (2,800-4,800)	6,100 (2,800-6,900)
Indoor unit			FDMF18AVMK	FDMF24AVMK
Dimensions	H×W×D	mm	300×1,000×700	300×1,000×700
Coil	Type		Cross fin coil	Cross fin coil
	Rows×stages×fin pitch		2×16×1.75	3×16×1.5
	Face area	m ²	0.249	0.249
Fan	Type		Sirocco fan	Sirocco fan
	Motor output	W	230	230
	Airflow rate (H/M/L)	m ³ /min	18/15/12.5	23/19.5/16
	External static pressure	Pa	Rated 30 (30-50) *3	Rated 30 (30-50) *3
Air filter			Nylon filter	Nylon filter
Mass		kg	34	35
Piping connections	Liquid	mm	φ9.5 (Flare)	φ9.5 (Flare)
	Gas	mm	φ15.9 (Flare)	φ15.9 (Flare)
	Drain	mm	VP25 (I.D.φ25×O.D.φ32)	VP25 (I.D.φ25×O.D.φ32)
Remote controller (option)		Wired	BRC1H81W, BRC1H81K, BRC1H81S	BRC1H81W, BRC1H81K, BRC1H81S
		Wireless	BRC4C66	BRC4C66
Outdoor unit			RZF18AVMK	RZF24AVMK
Color			Ivory white	Ivory white
Dimensions	H×W×D	mm	595×845×300	595×845×300
Coil	Type		Cross fin coil	Cross fin coil
	Rows×Stages×Fin pitch		2×26×1.4	2×26×1.4
	Face area	m ²	0.499	0.499
Compressor	Model		2YC40AXD	2YC40AXD
	Type		Hermetically sealed swing type	Hermetically sealed swing type
	Motor output	kW	1.3	1.3
Fan	Type		Propeller fan	Propeller fan
	Motor output	W	60	60
	Airflow rate	m ³ /min	45	45
Mass		kg	40	40
Piping connections	Liquid	mm	φ9.5 (Flare)	φ9.5 (Flare)
	Gas	mm	φ15.9 (Flare)	φ15.9 (Flare)
	Drain	mm	φ18 (Hole)	φ18 (Hole)
Safety devices			High pressure switch, Fuse, OL protection	High pressure switch, Fuse, OL protection
Capacity step		%	Compressor revolution speed control (Inverter type)	Compressor revolution speed control (Inverter type)
Refrigerant control			Electronic expansion valve	Electronic expansion valve
Refrigerant piping	Max. length	m	50	50
	Max. height difference	m	30	30
Refrigerant	Model		R-32	R-32
	Charge (factory charge)	kg	1.3 (Charged for 15 m)	1.3 (Charged for 15 m)
Refrigerant oil	Model		FW68DA	FW68DA
	Charge	L	0.395	0.395
Drawing No.	Specification		3D125105	3D125105

Notes:

*1. The above data are based on the following conditions.

Cooling	Piping Length
Indoor: 27°CDB, 19°CWB Outdoor: 35°CDB, 24°CWB	7.5 m (Horizontal)

Conversion formulae

Btu/h = kW × 3412
kcal/h = kW × 860

*2. Capacities are net, including a deduction for cooling for indoor fan motor heat.

*3. Initial setting is standard.

Model	Indoor unit		FDMF30AVMK	FDMF36AVMK
	Outdoor unit		RZF30AVMK	RZF36AVMK
Power supply	Indoor unit		1 phase, 220-240 V, 50/60 Hz	1 phase, 220-240 V, 50/60 Hz
	Outdoor unit		1 phase, 220-240 V, 50/60 Hz	1 phase, 220-240 V, 50/60 Hz
	Power supply intake		Indoor/Outdoor unit side	Indoor/Outdoor unit side
Cooling capacity *1 *2		kW	8.8 (4.5-10.1)	10.0 (5.0-11.2)
		Btu/h	30,000 (15,400-34,500)	34,000 (17,100-38,200)
		kcal/h	7,600 (3,900-8,700)	8,600 (4,300-9,600)
Indoor unit			FDMF30AVMK	FDMF36AVMK
Dimensions	H×W×D	mm	300×1,400×700	300×1,400×700
Coil	Type		Cross fin coil	Cross fin coil
	Rows×stages×fin pitch		3×16×1.75	3×16×1.75
	Face area	m ²	0.383	0.383
Fan	Type		Sirocco fan	Sirocco fan
	Motor output	W	300	300
	Airflow rate (H/M/L)	m ³ /min	32/27/22.5	40/34/28
	External static pressure	Pa	Rated 30 (30-80) *3	Rated 50 (50-100) *3
Air filter			Nylon filter	Nylon filter
Mass		kg	45	45
Piping connections	Liquid	mm	φ9.5 (Flare)	φ9.5 (Flare)
	Gas	mm	φ15.9 (Flare)	φ15.9 (Flare)
	Drain	mm	VP25 (I.D.φ25×O.D.φ32)	VP25 (I.D.φ25×O.D.φ32)
Remote controller (option)		Wired	BRC1H81W, BRC1H81K, BRC1H81S	BRC1H81W, BRC1H81K, BRC1H81S
		Wireless	BRC4C66	BRC4C66
Outdoor unit			RZF30AVMK	RZF36AVMK
Color			Ivory white	Ivory white
Dimensions	H×W×D	mm	990×940×320	990×940×320
Coil	Type		Cross fin coil	Cross fin coil
	Rows×Stages×Fin pitch		2.5×46×1.4	3×46×1.4
	Face area	m ²	0.89	0.89
Compressor	Model		2YC48AXD	2YC48AXD
	Type		Hermetically sealed swing type	Hermetically sealed swing type
	Motor output	kW	1.6	1.6
Fan	Type		Propeller fan	Propeller fan
	Motor output	W	200	200
	Airflow rate	m ³ /min	65	65
Mass		kg	60	61
Piping connections	Liquid	mm	φ9.5 (Flare)	φ9.5 (Flare)
	Gas	mm	φ15.9 (Flare)	φ15.9 (Flare)
	Drain	mm	φ26 (Hole)	φ26 (Hole)
Safety devices			High pressure switch, Fuse, OL protection	High pressure switch, Fuse, OL protection
Capacity step		%	Compressor revolution speed control (Inverter type)	Compressor revolution speed control (Inverter type)
Refrigerant control			Electronic expansion valve	Electronic expansion valve
Refrigerant piping	Max. length	m	50	50
	Max. height difference	m	30	30
Refrigerant	Model		R-32	R-32
	Charge (factory charge)	kg	2.8 (Charged for 30 m)	2.85 (Charged for 30 m)
Refrigerant oil	Model		FW68DA	FW68DA
	Charge	L	0.425	0.425
Drawing No.	Specification		3D125105	3D125105

Notes:

*1. The above data are based on the following conditions.

Cooling	Piping Length
Indoor: 27°CDB, 19°CWB Outdoor: 35°CDB, 24°CWB	7.5 m (Horizontal)

Conversion formulae

Btu/h = kW × 3412
kcal/h = kW × 860

*2. Capacities are net, including a deduction for cooling for indoor fan motor heat.

*3. Initial setting is standard.

Part 2

Refrigerant Circuit

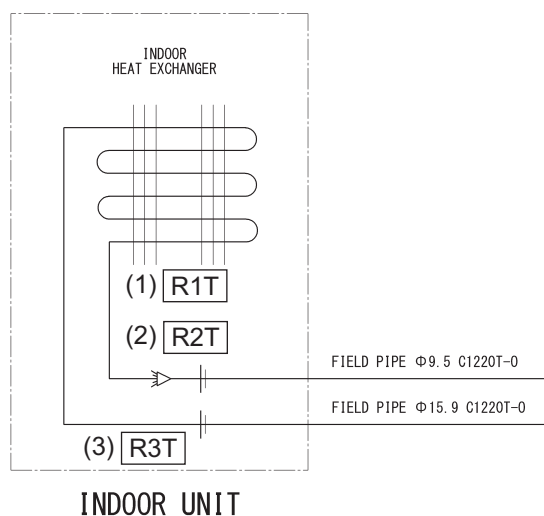
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 - 2.2 30/36 Class24

1. Refrigerant Circuit (Piping Diagrams)

1.1 18/24 Class

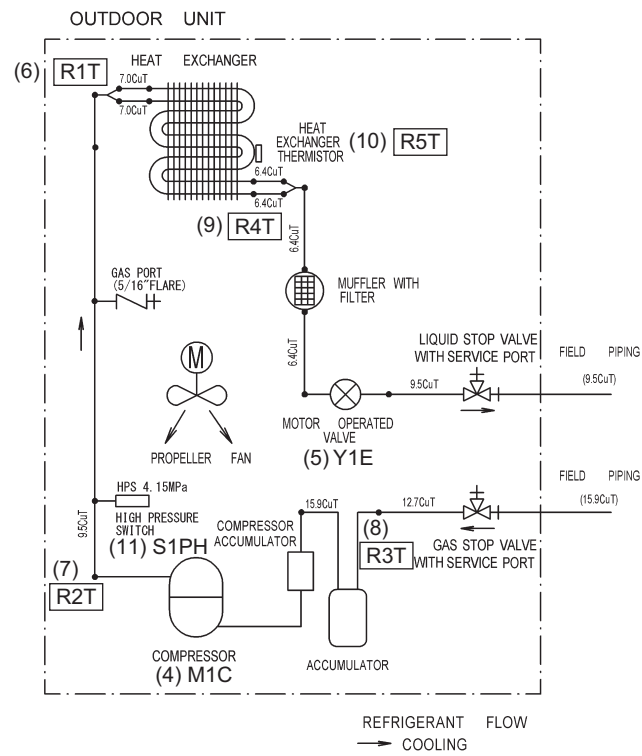
Unit	No. in piping diagram	Electric symbol	Name	Function
Indoor unit	(1)	R1T	Suction air thermistor	Thermostat control, General frequency control
	(2)	R2T	Indoor heat exchanger liquid pipe thermistor	Compressor frequency control (Target Te), Freeze-up control
	(3)	R3T	Indoor heat exchanger middle thermistor	
	—	S1L	Float switch	When the water level reaches its upper limit, the float switch turns OFF.
Outdoor unit	(4)	M1C	Compressor	Inverter drive unit varies compressor operating frequency to control capacity and other factors.
	(5)	Y1E	Electronic expansion valve	Provides control to maintain optimum operating condition for high efficiency.
	(6)	R1T	Outdoor air thermistor	Used for startup condition control and for overall current protection control. (Upper limit current depends on the outdoor air temperature)
	(7)	R2T	Discharge pipe thermistor	Used for discharge pipe temperature protection during compression operation.
	(8)	R3T	Suction pipe thermistor	Used for suction super heat control by electronic expansion valve.
	(9)	R4T	Outdoor heat exchanger distributor pipe thermistor	Used for calculation of outdoor heat exchanger subcooling during cooling operation.
	(10)	R5T	Outdoor heat exchanger middle thermistor	Used for calculation of high pressure during cooling operation. (Calculate Pc by detected temperature and R-32 refrigerant characteristics)
	(11)	S1PH	High pressure switch	The switch is activated at high pressure of 4.15 MPa or more to stop the compressor operation.

■ Piping diagram: Indoor unit



C: 3D119900A

■ Piping diagram: Outdoor unit

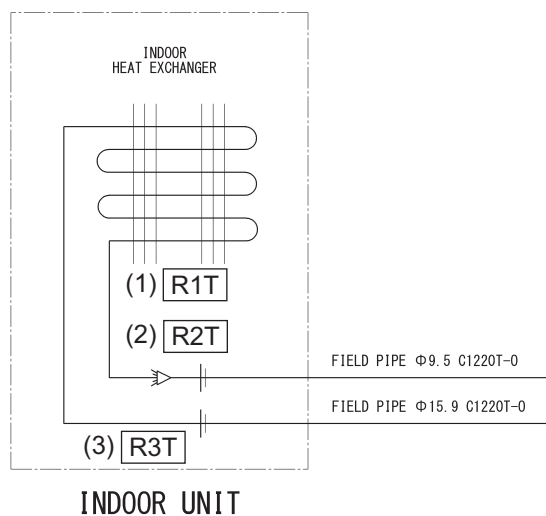


C: 4D113227B

1.2 30/36 Class

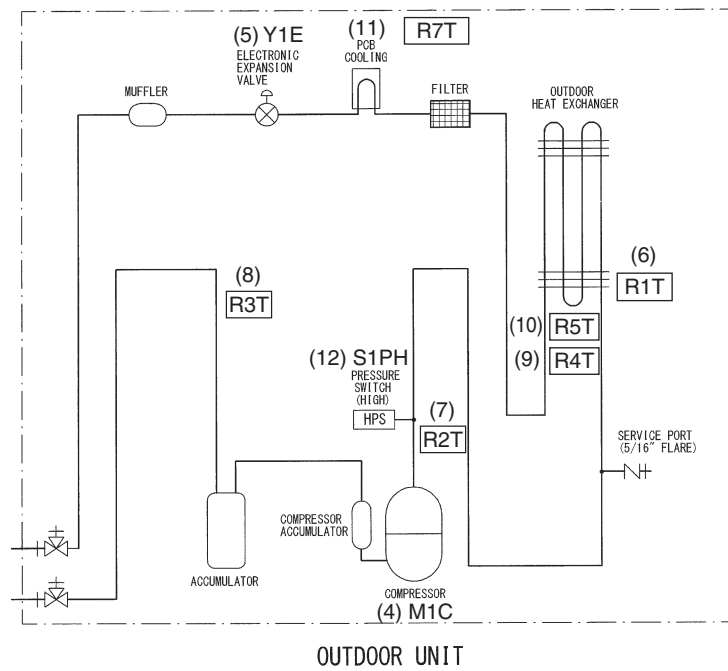
Unit	No. in piping diagram	Electric symbol	Name	Function
Indoor unit	(1)	R1T	Suction air thermistor	Thermostat control, General frequency control
	(2)	R2T	Indoor heat exchanger liquid pipe thermistor	Compressor frequency control (Target Te), Freeze-up control
	(3)	R3T	Indoor heat exchanger middle thermistor	
	—	S1L	Float switch	When the water level reaches its upper limit, the float switch turns OFF.
Outdoor unit	(4)	M1C	Compressor	Inverter drive unit varies compressor operating frequency to control capacity and other factors.
	(5)	Y1E	Electronic expansion valve	Provides control to maintain optimum operating condition for high efficiency.
	(6)	R1T	Outdoor air thermistor	Used for startup condition control and for overall current protection control. (Upper limit current depends on the outdoor air temperature.)
	(7)	R2T	Discharge pipe thermistor	Used for discharge pipe temperature protection during compression operation.
	(8)	R3T	Suction pipe thermistor	Used for suction super heat control by electronic expansion valve.
	(9)	R4T	Outdoor heat exchanger liquid pipe thermistor	Used for calculation of outdoor heat exchanger subcooling during cooling operation.
	(10)	R5T	Outdoor heat exchanger middle thermistor	Used for calculation of high pressure during cooling operation. (Calculate Pc by detected temperature and R-32 refrigerant characteristics.)
	(11)	R7T	Power module thermistor	Used for calculation of IPM (intelligent power module) temperature. (Calculate IPM temperature by detected radiation fin temperature.)
	(12)	S1PH	High pressure switch	The switch is activated at high pressure of 4.15 MPa or more to stop the compressor operation.

■ Piping diagram: Indoor unit



C: 3D119900A

■ Piping diagram: Outdoor unit

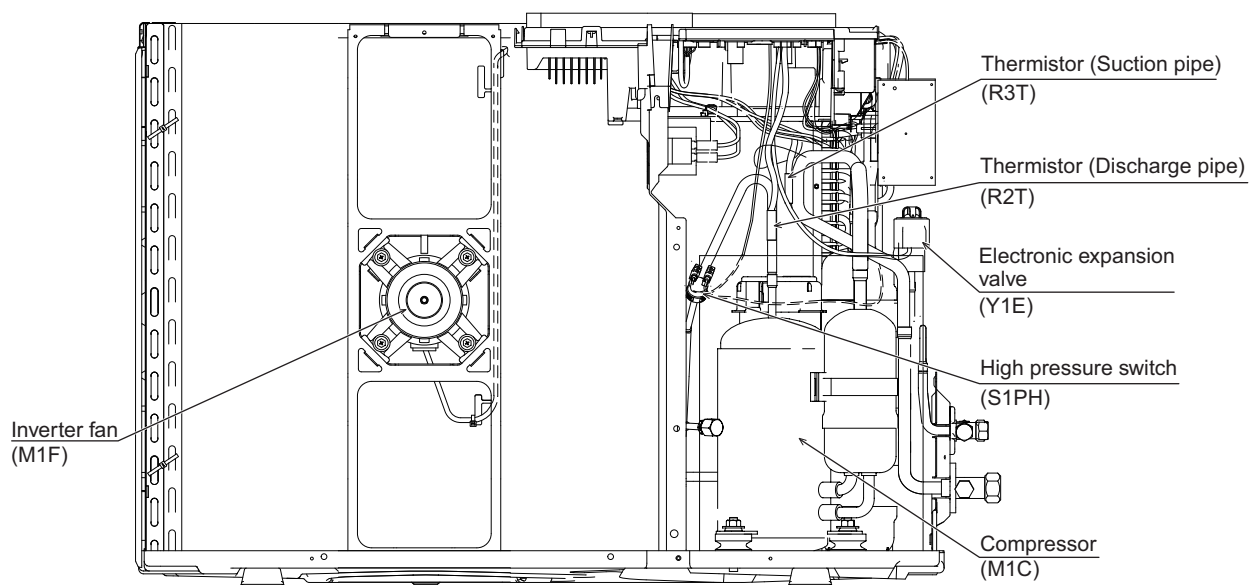


C: 3D111939B

2. Functional Parts Layout

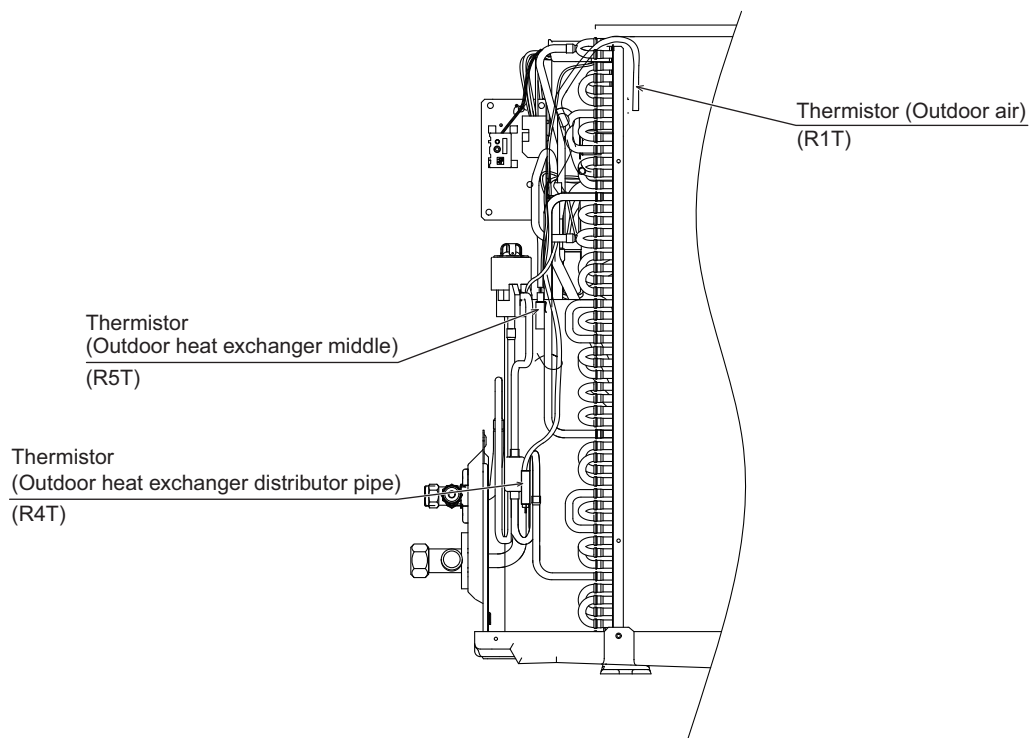
2.1 18/24 Class

Front view



C: 1P578063A

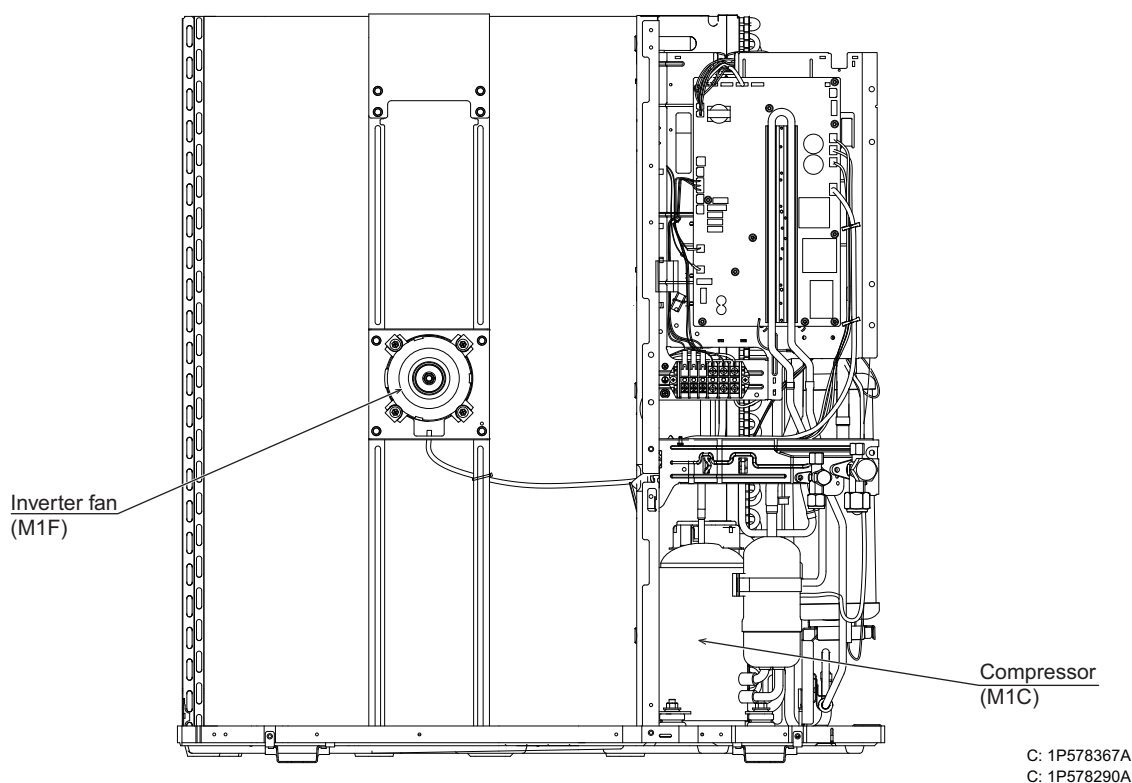
Back view



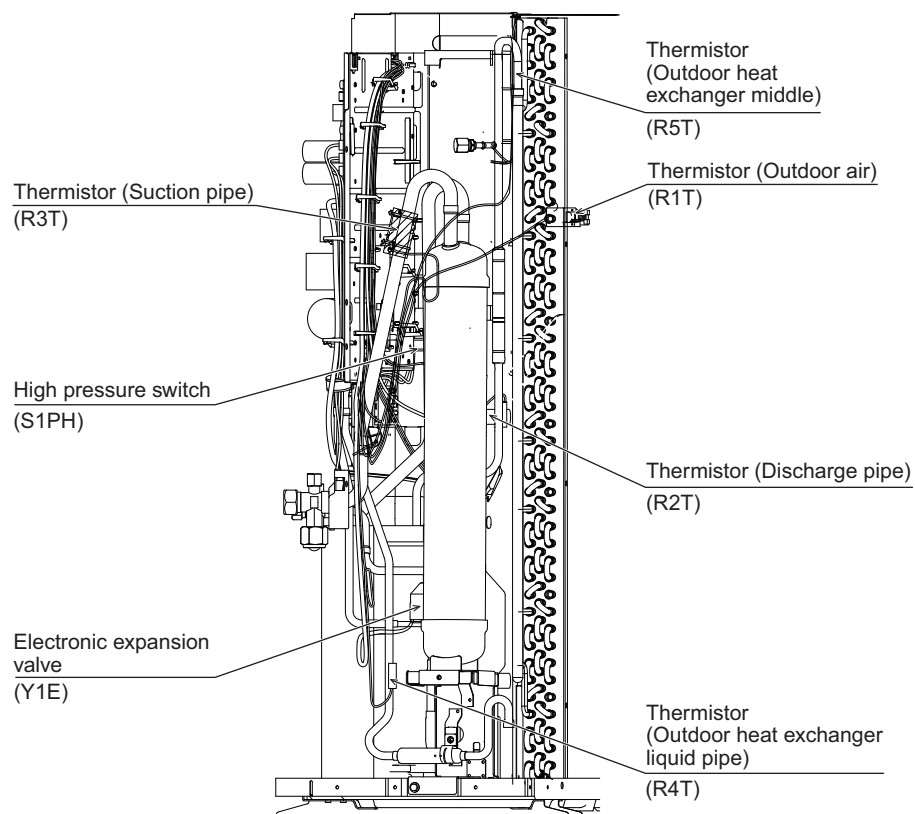
C: 1P578063A

2.2 30/36 Class

Front view



Back view





Part 3

Remote Controller



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1. Applicable Models

1.1 Wired Remote Controller

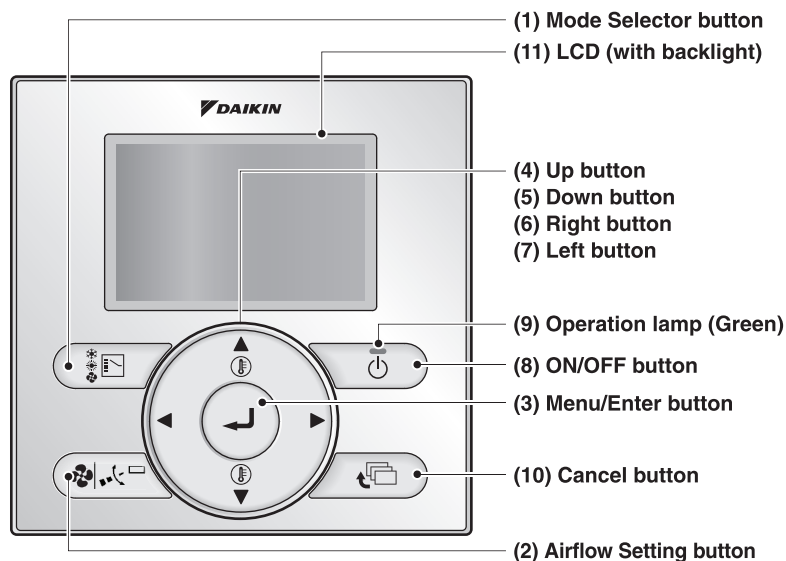
Type	Model name	External appearance
FDMF-A	BRC1E62 BRC1E63	 BRC1E62 BRC1E63
	BRC1H81W BRC1H81K BRC1H81S	

1.2 Wireless Remote Controller

Type	Model name	External appearance	
		Wireless remote controller	Signal receiver unit
FDMF-A	BRC4C66		

2. Names and Functions

2.1 BRC1E62



(1) Mode Selector button

Used to select the operation mode.

(2) Airflow Setting button

Used to indicate the Airflow Rate (Air Volume / Fan Speed) / Airflow Direction screen.

(3) Menu/Enter button

- Used to indicate the Main menu.
(For details of Main menu, refer to the operation manual.)
- Used to enter the selected item.

(4) Up button ▲

- Used to increase the set temperature.
- Used to highlight the item above the current selection.
(The highlighted items will be scrolled through when the button is pressed continuously.)
- Used to change the selected item.

(5) Down button ▼

- Used to decrease the set temperature.
- Used to highlight the item below the current selection.
(The highlighted items will be scrolled through when the button is pressed continuously.)
- Used to change the selected item.

(6) Right button ►

- Used to highlight the next items on the right-hand side.
- Display contents are changed to next screen per page.

(7) Left button ◀

- Used to highlight the next items on the left-hand side.
- Display contents are changed to previous screen per page.

(8) ON/OFF button

- Press to start the system.
- Press this button again to stop the system.

(9) Operation lamp (Green)

This lamp lights up during operation. The lamp blinks if an error occurs.

(10) Cancel button

- Used to return to the previous screen.
- Press and hold this button for 4 seconds or longer to display Service Settings menu.

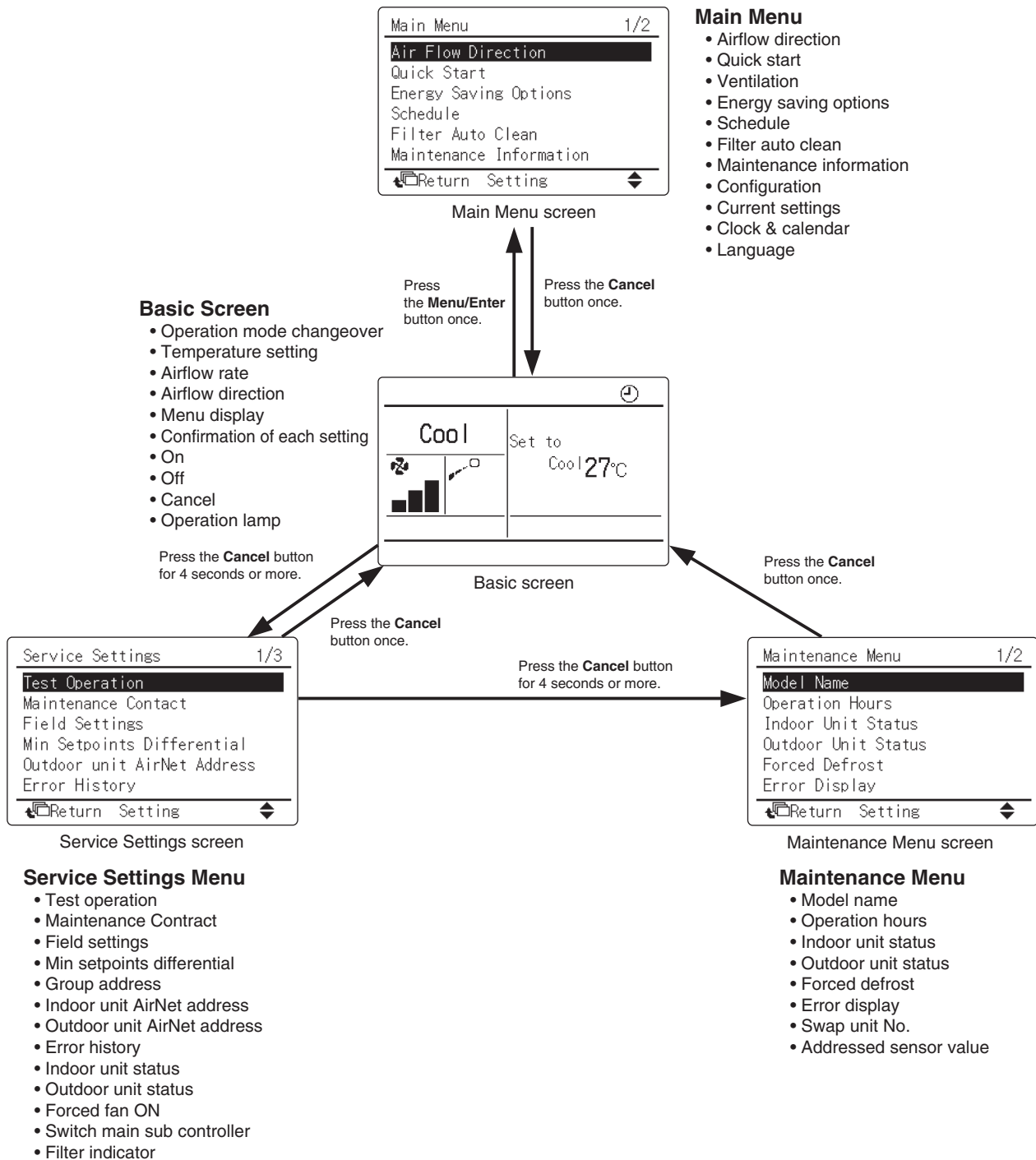
(11) LCD (with backlight)

The backlight will be lit for about 30 seconds by pressing any button.

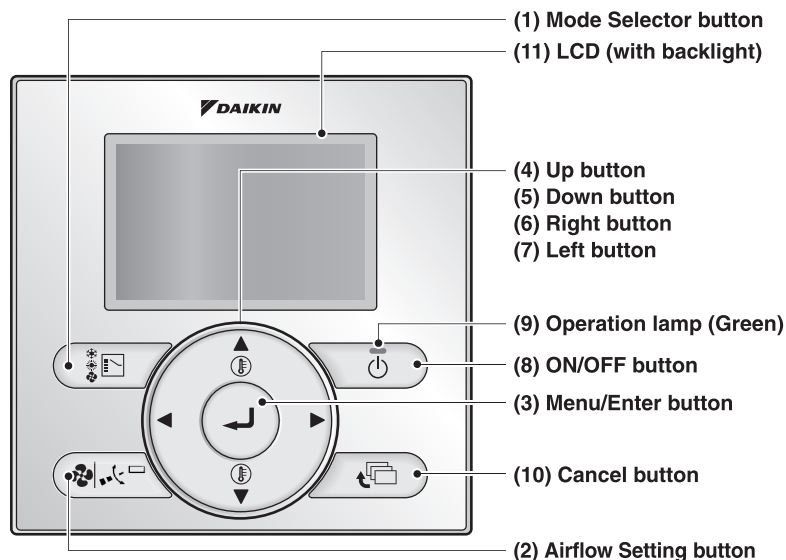
Mode Access Operation

On power-up, the message **Checking the connection. Please stand by.** will be displayed on the remote controller screen. Then that message will disappear and the basic screen will be displayed. To access a mode from the basic screen, refer to the figure below.

When any of the operation buttons is pressed, the backlight will come on and remains lit for about 30 seconds. Be sure to press a button while the backlight is on (this does not apply to the **On/Off** button.)



2.2 BRC1E63



(1) Mode Selector button

Used to select the operation mode.

(2) Airflow Setting button

Used to indicate the Airflow Rate (Air Volume / Fan Speed) / Airflow Direction screen.

(3) Menu/Enter button

- Used to indicate the Main menu.
(For details of Main menu, refer to the operation manual.)
- Used to enter the selected item.

(4) Up button ▲

- Used to increase the set temperature.
- Used to highlight the item above the current selection.
(The highlighted items will be scrolled through when the button is pressed continuously.)
- Used to change the selected item.

(5) Down button ▼

- Used to decrease the set temperature.
- Used to highlight the item below the current selection.
(The highlighted items will be scrolled through when the button is pressed continuously.)
- Used to change the selected item.

(6) Right button ►

- Used to highlight the next items on the right-hand side.
- Display contents are changed to next screen per page.

(7) Left button ◀

- Used to highlight the next items on the left-hand side.
- Display contents are changed to previous screen per page.

(8) ON/OFF button

- Press to start the system.
- Press this button again to stop the system.

(9) Operation lamp (Green)

This lamp lights up during operation. The lamp blinks if an error occurs.

(10) Cancel button

- Used to return to the previous screen.
- Press and hold this button for 4 seconds or longer to display Service Settings menu.

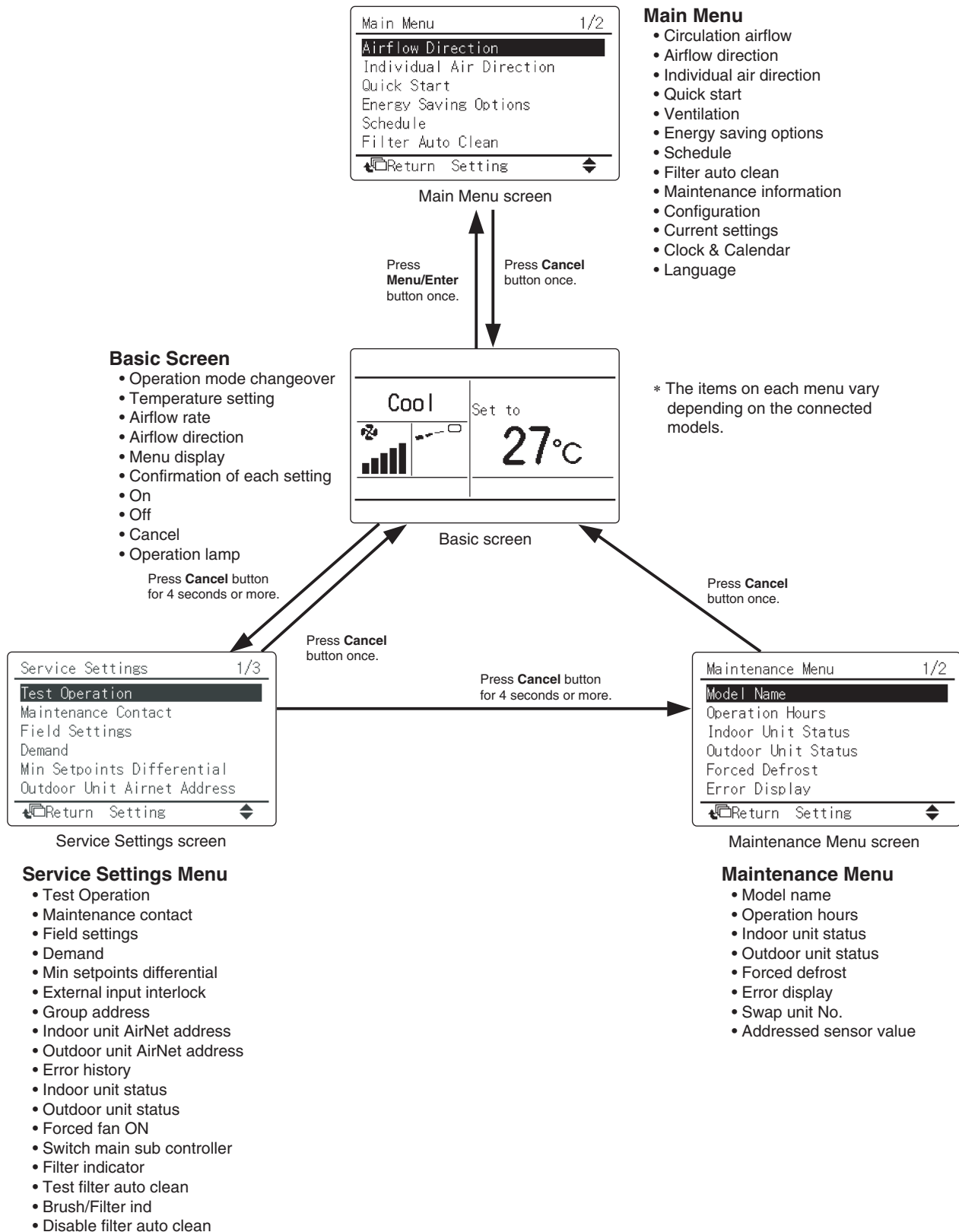
(11) LCD (with backlight)

The backlight will be lit for about 30 seconds by pressing any button.

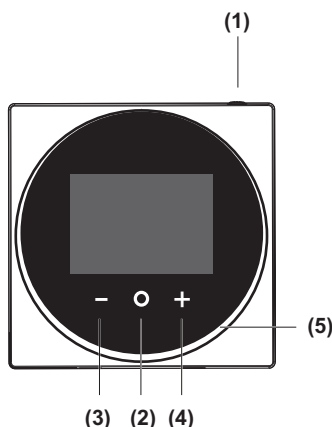
Mode Access Operation

On power-up, the message **Checking the connection. Please stand by.** will be displayed on the remote controller screen. Then that message will disappear and the basic screen will be displayed. To access a mode from the basic screen, refer to the figure below.

When any of the operation buttons is pressed, the backlight will come on and remains lit for about 30 seconds. Be sure to press a button while the backlight is on (this does not apply to the **On/Off** button.)



2.3 BRC1H81 Series



(1) ON/OFF

- When OFF, press to turn ON the system. As a result, the status indicator (5) will turn ON too.
- When ON, press to turn OFF the system. As a result, the status indicator (5) will turn OFF too.

(2) ENTER/ACTIVATE/SET

- From the home screen, enter the main menu.
- From the main menu, enter one of the submenus.
- From their respective submenu, activate an operation/ventilation mode.
- In one of the submenus, confirm a setting.

(3) CYCLE/ADJUST

- Cycle left.
- Adjust a setting (default: decrease).

(4) CYCLE/ADJUST

- Cycle right.
- Adjust a setting (default: increase).



Note(s)

For a full description of the behavior of the status indicator, see the installer and user reference guide.

Home screens

Depending on installer configuration, the controller either has a standard or a detailed home screen. In most cases, the standard home screen gives you only the active operation mode, messages (if any), and the setpoint temperature (in case of Cooling, Heating, or Auto operation mode). The detailed home screen gives you all kinds of information through status icons.

Standard	Detailed
<p>The standard home screen shows a large '25 °C' in the center. Above it is a small icon (1) representing a message. Below it is a small icon (2) representing the active operation mode. At the bottom is a small icon (3) representing the setpoint temperature.</p>	<p>The detailed home screen shows a large '25 °C' in the center. Above it is a small icon (1) representing a message. Below it is a small icon (2) representing the active operation mode. At the bottom is a small icon (3) representing the setpoint temperature. The screen also displays '19°C' in the top right corner and various status icons around the temperature display.</p>

(1) Messages

(2) Active operation mode











(3) Setpoint temperature














Note(s)

The controller is equipped with a power saving function that causes the screen to go blank after a period of inactivity. To make the screen light up again, press one of the buttons.

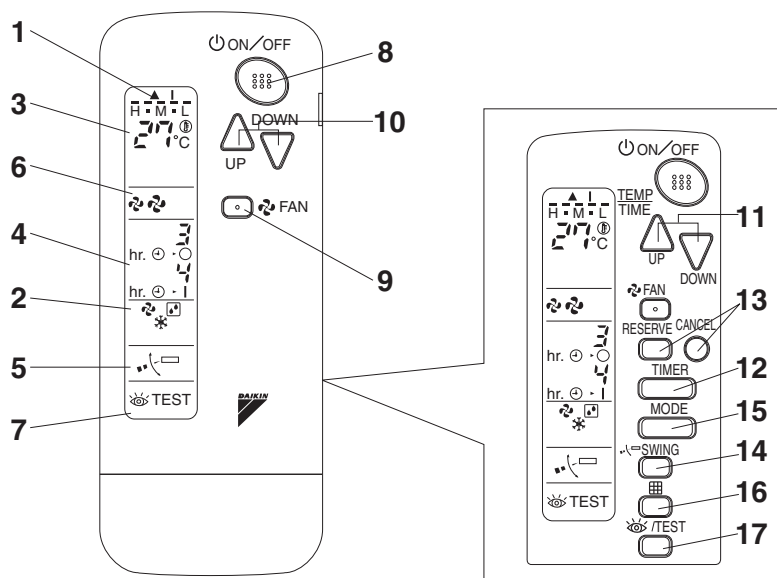
Status icons

Icon	Description
	System operation. Indicates that the system is operating.
	Bluetooth. Indicates that the controller is communicating with a mobile device, for use with the Daikin Control Assistant app.
	Centralized control. Indicates that the system is controlled by central control equipment (optional accessory) and that control of the system by the controller is limited.
	Changeover under centralized control. Indicates that the cooling/heating changeover is under centralized control by another indoor unit, or by an optional cool/ heat selector that is connected to the outdoor unit.
	Defrost/Hot start. Indicates that the defrost/hot start mode is active.
	Timer. Indicates that the schedule timer or OFF timer is enabled.
	Clock not set. Indicates that controller's clock is not set.
	Self-cleaning filter operation. Indicates that self-cleaning filter operation is active.
	Quick Start. Indicates that Quick Start mode is active.
	Test operation. Indicates that Test Operation mode is active.

Icon	Description
	Inspection. Indicates that the indoor or outdoor unit is being inspected.
	Periodic inspection. Indicates that the indoor or outdoor unit is being inspected.
	Backup. Indicates that in the system an indoor unit is set as backup indoor unit.
	Individual airflow direction. Indicates that the individual airflow direction setting is enabled.
	Information. Indicates that the system has a message to convey. To see the message, go to the information screen.
	Warning. Indicates that an error occurred, or that an indoor unit component needs to be maintained.
	Demand control. Indicates that the system's energy consumption is being limited, and that it is running with restricted capacity.
	End of demand control. Indicates that the system's energy consumption is no longer being limited, and that it is no longer running with restricted capacity.
	Rotation. Indicates that Rotation mode is active.
	Setback. Indicates that the indoor unit is operating under setback conditions.
	Ventilation. Indicates that a heat reclaim ventilation unit is connected.

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2.4 BRC4C Series



1	DISPLAY ▲ (SIGNAL TRANSMISSION) This lights up when a signal is being transmitted.
2	DISPLAY (OPERATION MODE) This display shows the current OPERATION MODE.
3	DISPLAY (SET TEMPERATURE) This display shows the set temperature.
4	DISPLAY (PROGRAMMED TIME) This display shows programmed time of the system start or stop.
5	DISPLAY (AIR FLOW FLAP)
6	DISPLAY (FAN SPEED) The display shows the set fan speed.
7	DISPLAY TEST (INSPECTION/TEST) When the INSPECTION/TEST button is pressed, the display shows the system mode is in.
8	ON/OFF BUTTON Press the button and the system will start. Press the button again and the system will stop.

9	FAN SPEED CONTROL BUTTON Press this button to select the fan speed, HIGH or LOW, of your choice.
10	TEMPERATURE SETTING BUTTON Use this button for setting temperature (Operates with the front cover of the remote controller closed.)
11	PROGRAMMING TIMER BUTTON Use this button for programming start and/or stop time. (Operates with the front cover of the remote controller opened.)
12	TIMER MODE START/STOP BUTTON
13	TIMER RESERVE/CANCEL BUTTON
14	AIR FLOW DIRECTION ADJUST BUTTON
15	OPERATION MODE SELECTOR BUTTON Press this button to select operation mode.
16	FILTER SIGN RESET BUTTON
17	INSPECTION/TEST BUTTON This button is used only by qualified service persons for maintenance purposes.

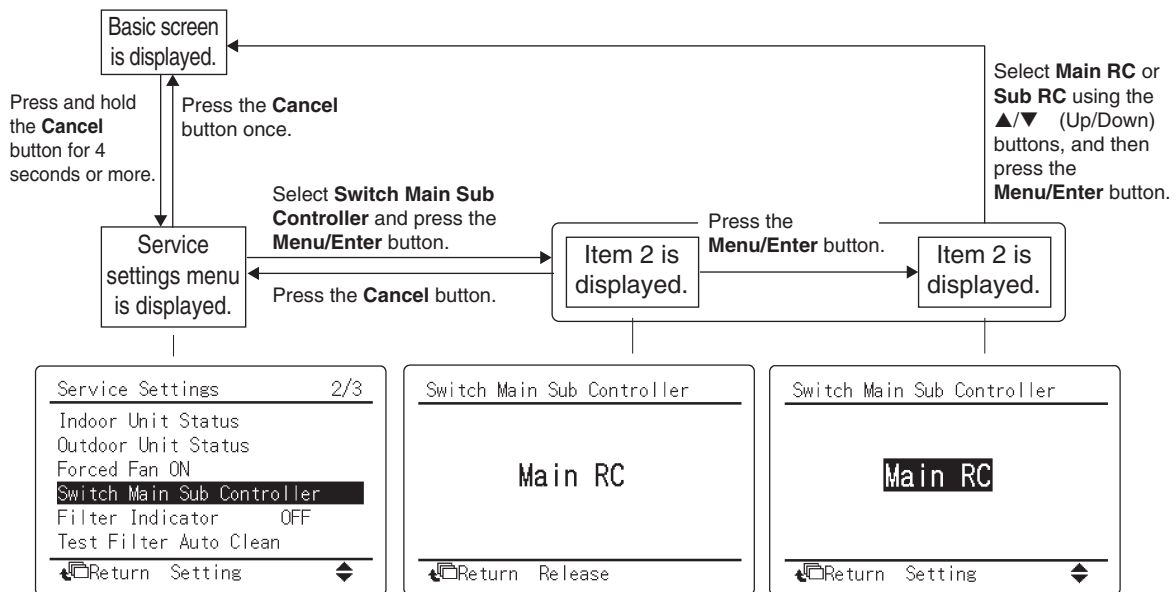
3. Main/Sub Setting

Main/Sub setting is necessary when 1 indoor unit is controlled by 2 remote controllers. The remote controllers are set at factory to Main, so you have to change one remote controller from Main to Sub. To change a remote controller from Main to Sub, proceed as follows:

3.1 Wired Remote Controller (BRC1E62, BRC1E63)

3.1.1 Field Settings

The designation of the main and sub remote controllers can be swapped. Note that this change requires turning the power OFF and then ON again.



3.1.2 When an error occurred

U5: there are 2 main remote controllers when power is turned ON

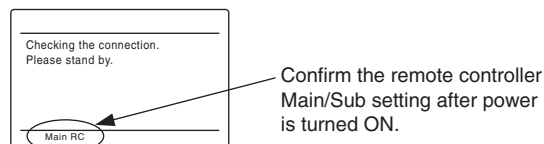
→Change the setting from Main to Sub on the remote controller you want to be Sub.

U8: there are 2 sub remote controller when power is turned ON

→Change the setting from Sub to Main on the remote controller you want to be Main.

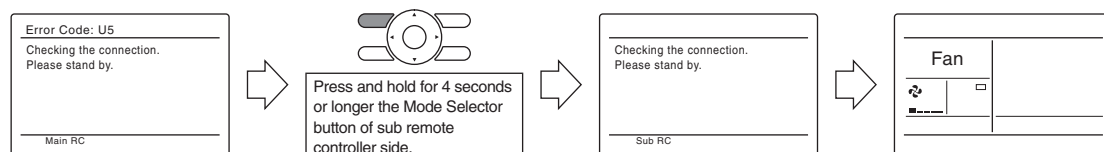
How to confirm Main/Sub setting

The Main/Sub setting of the remote controller is displayed on the bottom of the screen while **Checking the connection. Please stand by.** is displayed.



How to change Main/Sub setting

You may change the Main/Sub setting of the remote controller while **Checking the connection. Please stand by.** is displayed by pressing and holding the **Mode Selector** button for 4 seconds or longer.



Note(s)

1. It is not possible to change the Main/Sub setting from Main to Sub when only one remote controller is connected.

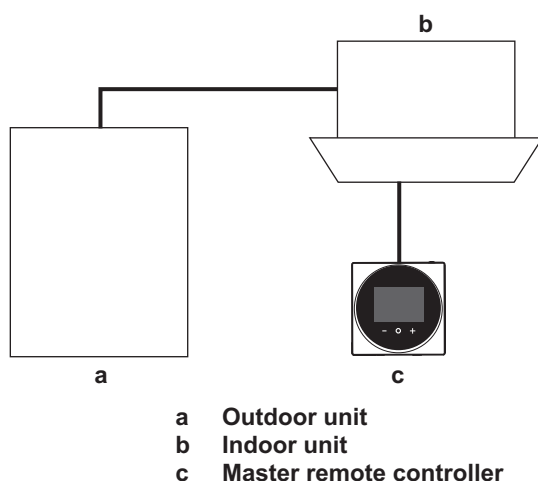
2. When 2 remote controllers are being used, it is not possible to change the setting from Main to Sub if one of the remote controllers is already set as Main.

3.2 Wired Remote Controller (BRC1H81 Series)

When using 1 remote controller

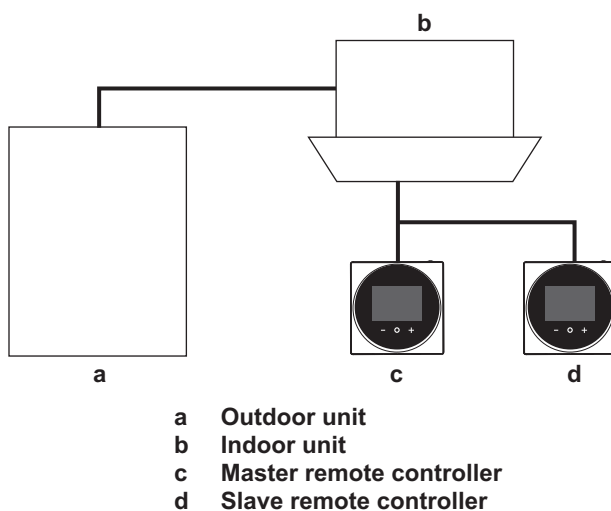
Once the controller is powered, it will automatically start up:

If it is the first and only controller that is connected to the indoor unit, it will automatically get designated as master controller.



When using 2 remote controller


For a second controller to get designated as slave controller, manual action is required.

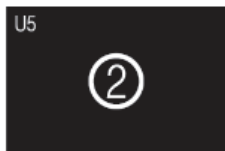


1. Connect a second controller.



Result: It will start up automatically.

2. Wait for a **U5** or **U8** error to appear on the screen.
3. When the **U5** or **U8** error appears, press  and keep it pressed until "2" appears on the screen.



Result: The controller is now designated as slave.



Note(s)

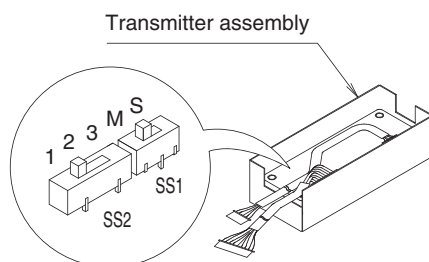
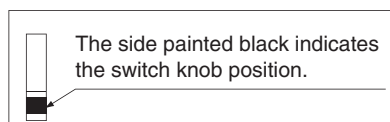
The following functions are not available for slave controllers:

- ♦ Auto operation mode
- ♦ Individual airflow direction
- ♦ Filter auto clean
- ♦ Setback temperature setpoints
- ♦ Draft prevention
- ♦ Duty rotation

3.3 When Wireless Remote Controller is Used Together

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

Main/Sub	Main	Sub
Main/Sub switch (SS1)		



3.4 Address Setting for Wireless Remote Controller




If setting multiple wireless remote controllers to operate in one room, perform address setting for the receiver and the wireless remote controller.

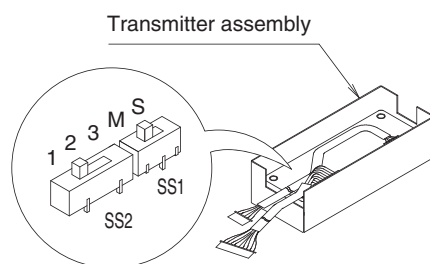
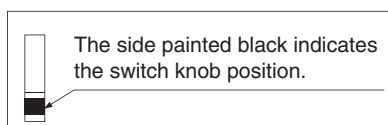
(This includes an individual remote controller control using the group operation.)

(For the wiring for the group operation, please refer to the installation manual attached to the indoor unit and technical guide.)

3.4.1 Setting for Signal Receiver PCB

The address for the receiver is set to 1 at the factory. To change the setting, set the wireless address switch (SS2) on the signal receiver PCB according to the table below.

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



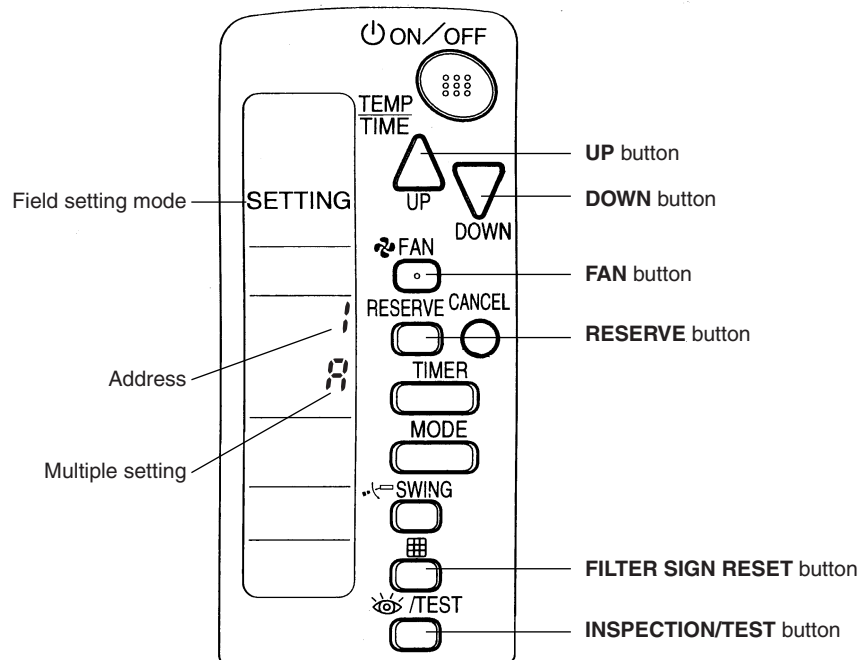
3.4.2 Setting for BRC4C Series

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

1. Press **FILTER SIGN RESET** button and **INSPECTION/TEST** button at the same time for 4 seconds to enter field setting mode. (**SETTING** is indicated on the display.)
2. Press **FAN** button and select **A** or **b**. Each time the button is pressed, the display switches between **A** and **b**.
3. Press **UP** button or **DOWN** button to select an address from 1-3 as same as the receiver. Address can be set from 1-6, but the receiver does not work with addresses 4-6.

1 → 2 → 3 → 4 → 5 → 6

4. Press **RESERVE** button to confirm the setting.
5. Press **INSPECTION/TEST** button for 1 second to return to normal mode.



3.4.3 Multiple Settings A/b

The command such as operation mode or temperature setting by this remote controller will be rejected when the target indoor unit operation is restricted as by an external control such as centralized control.

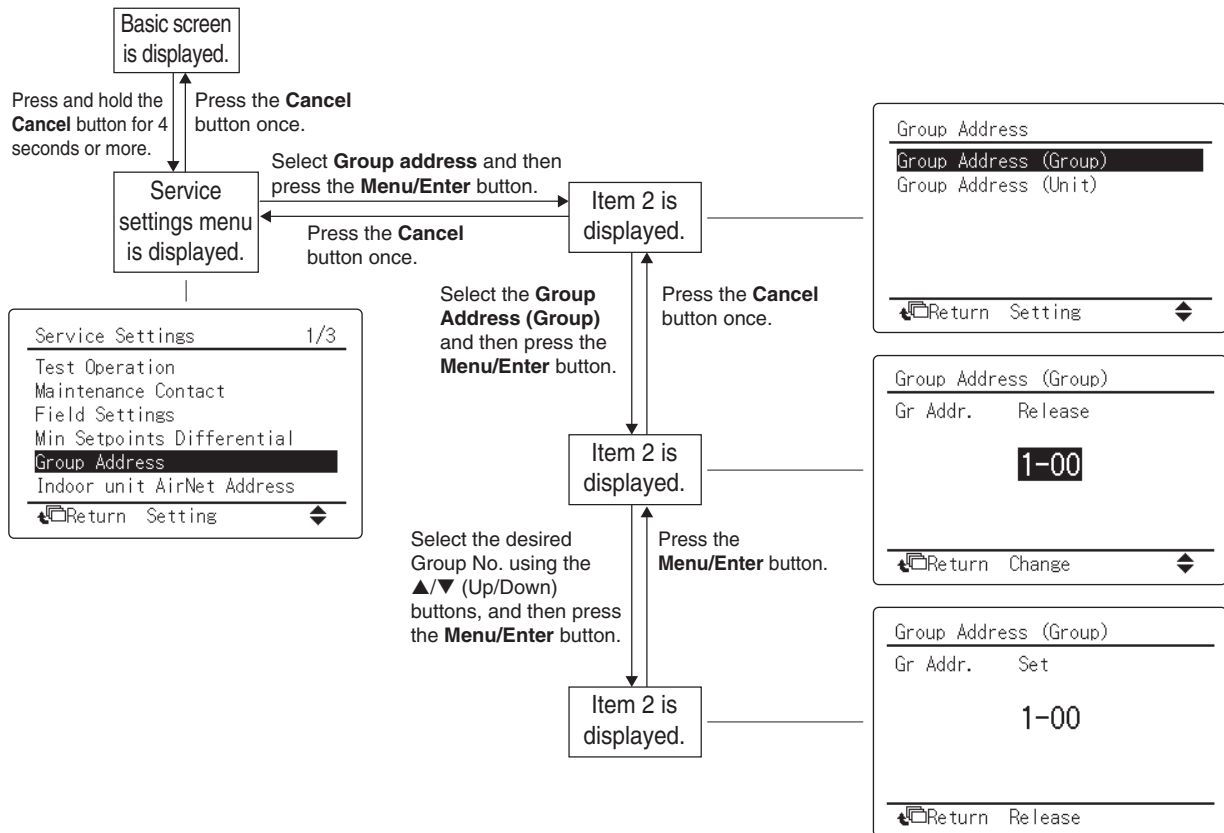
Since the setting acceptance is hard to discriminate with such circumstances there are two setting options provided to enable discriminating by a beeping sound according to the operation: "A: Standard" or "b: Multi System". Set the setting according to the customer's intention.

Remote Controller		Indoor Unit	
Multiple setting	Display on remote controller	Behavior to the remote controller operation when the functions are restricted as by an external control.	Other than the left
A: Standard (factory set)	All items displayed.	Accepts the functions except restricted. (Sounds one long beep or three short beeps) There may be a difference from the indoor unit status with remote controller display.	Accepts all items transmitted (Sounds two short beeps) The remote controller display agrees with the indoor unit status.
b: Multi System	Display only items transmitted for a while.	<When some restricted functions are included in the transmitted items> Accepts the functions except restricted. (Sounds one long beep or three short beeps) There may be a difference from the indoor unit status with remote controller display. <When no restricted function is included> Accepts all items transmitted (Sounds two short beeps) The remote controller display agrees with the indoor unit status.	

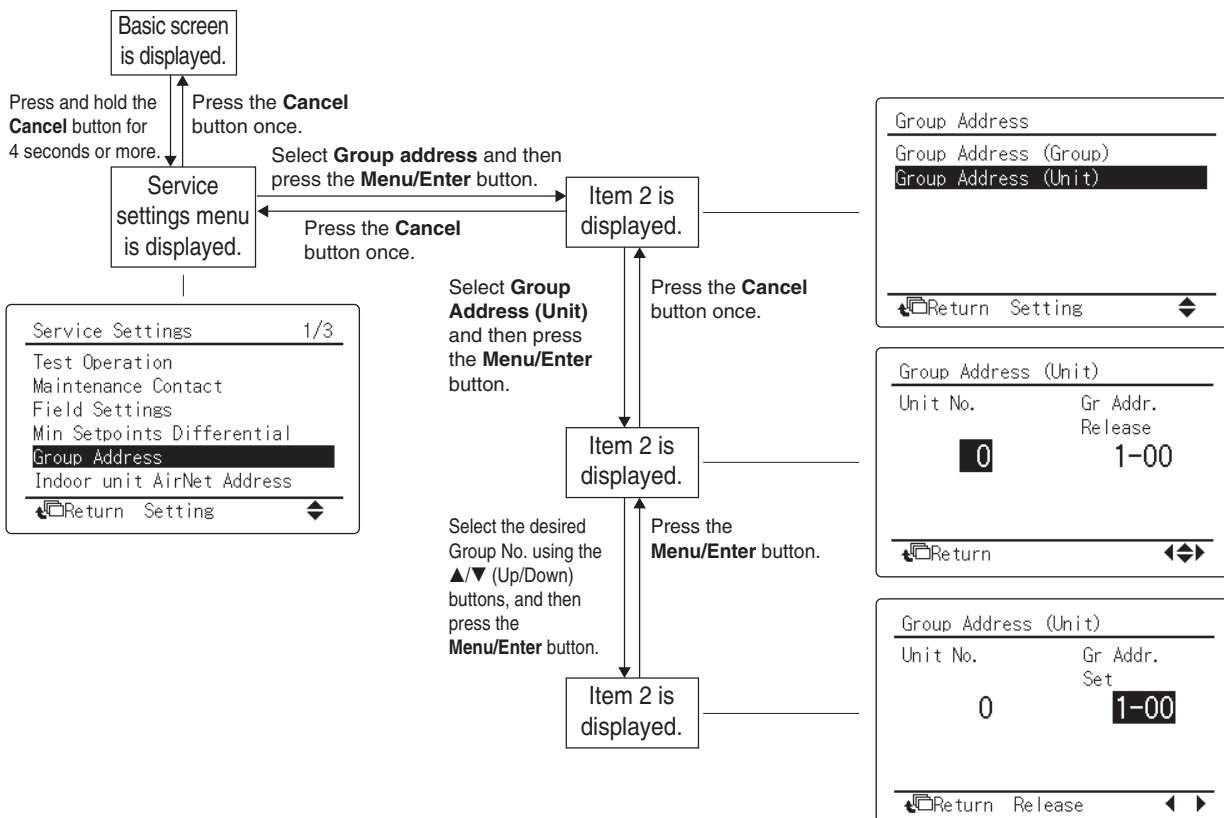
4. Centralized Control Group No. Setting

4.1 BRC1E62, BRC1E63

Group No. Setting (Group)



Group No. Setting (Unit)



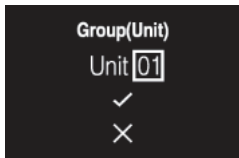
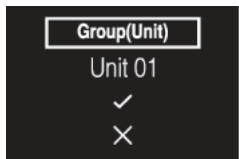
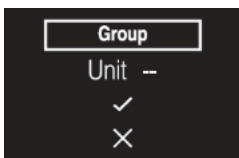
4.2 BRC1H81 Series


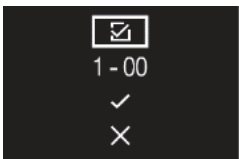
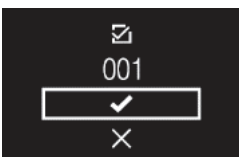
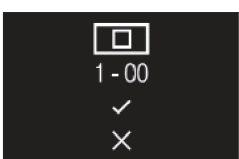
Group address

To control the system with central control equipment, you need to set addresses for:

- ♦ Groups (Group) and/or
- ♦ Units (Group (Unit)).

The Group address menu has two levels. You define groups and/or units in the first level, and set or release addresses for those groups and/or units in the second.

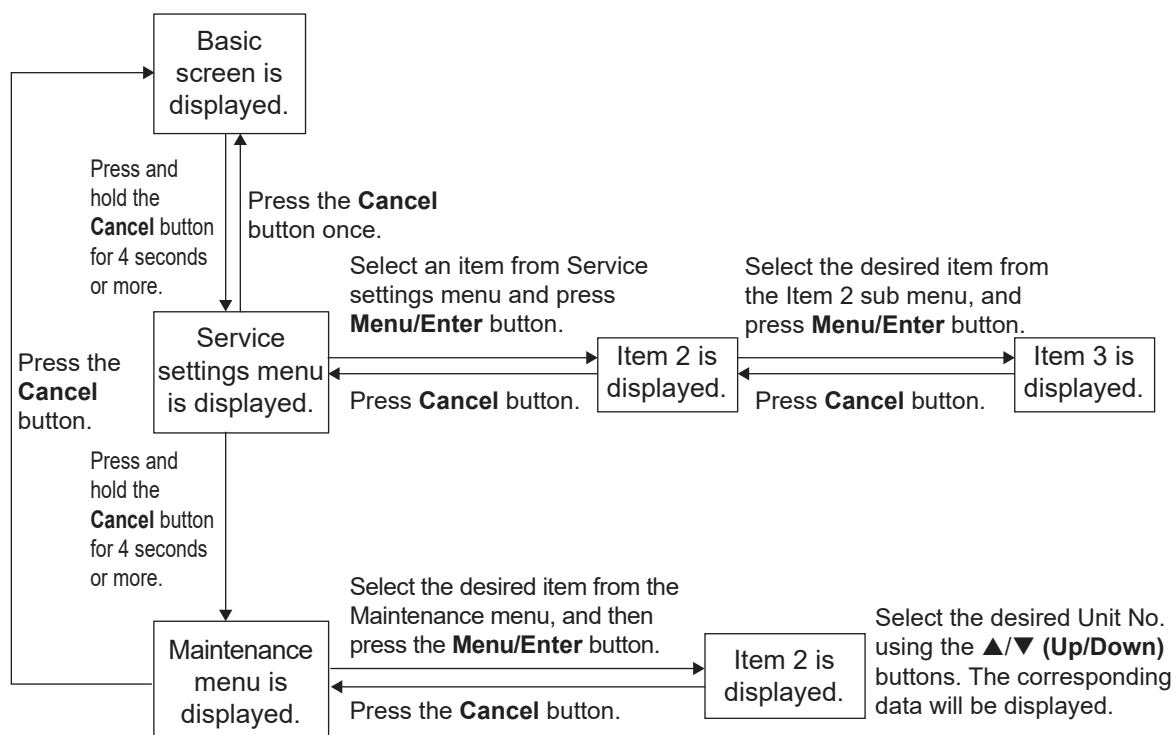
First level	
	Group (Group): A group is a group of indoor units.
	Unit (Group (Unit)): A unit is an individual indoor unit.
	Define the indoor unit for which you want to set an address.

Second level	
	Define an address for the indoor unit.
	To SET an address, make sure <input checked="" type="checkbox"/> is selected
	Apply settings.
	To RELEASE an address that was previously set, change <input checked="" type="checkbox"/> to <input type="checkbox"/> and then apply settings.

5. Service Settings Menu, Maintenance Menu

5.1 BRC1E62, BRC1E63

Operating the remote controller allows service data to be acquired and various services to be set.



5.1.1 Service Settings Menu

Service settings menu	Item 2	Remarks
Test Operation	—	—
Maintenance Contact	None	—
	Maintenance Contact	—, 0 to 9 (in order)
Field Settings	Indoor Unit No.	—
	Mode No.	—
	First Code No.	—
	Second Code No.	—
Demand	Enable/Disable	Enable, Disable
	Settings	40%, 70%
		Start time (by the unit of 30 minutes)
		Ending time (by the unit of 30 minutes)
Min setpoints Differential	None, Single SP, 0 to 8°C	—
Group Address	Group Address (Group)	Gr Addr. Set
	Group Address (Unit)	Unit No., Gr Addr. Set
Indoor unit Airnet Address	Unit No., Address Set	—
Outdoor unit Airnet Address	Unit No., Address Set	—
Error History	RC Error History	Unit No., Error, Date, Time (Up to 10 errors received by the remote controller can be displayed.)
	Indoor Unit Error History	Unit No., Error, Date, Time (Up to 5 errors from the indoor unit error record can be displayed.)
Indoor Unit Status	Unit No.	—
	Th1	Suction air thermistor
	Th2	Heat exchanger thermistor
	Th3	—
	Th4	Discharge air thermistor
	Th5	—
	Th6	—
Outdoor Unit Status	Unit No.	—
	Th1	Outdoor air thermistor
	Th2	Heat exchanger thermistor
	Th3	Discharge pipe thermistor
	Th4	—
	Th5	—
	Th6	—
Forced Fan ON	Unit No.	—
Switch Main Sub controller	—	—
Filter Indicator	—	—
Test Filter Auto Clean	—	—
Brush / Filter Ind	—	—
Disable Filter Auto Clean	No, Yes	—

5.1.2 Maintenance Menu

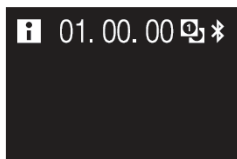
Maintenance Menu	Item 2	Remarks
Model Name	Unit No.	Select the unit number you want to check.
	Indoor unit	The model names are displayed. (A model code may be displayed instead, depending on the particular model.)
	Outdoor unit	
	R-32 mark display	BRC1E63 only
Operation Hours	Unit No.	Select the unit number you want to check.
	Indoor unit operation hours	All of these are displayed in hours.
	Indoor fan operation hours	
	Indoor unit energized hours	
	Outdoor unit operation hours	
	Outdoor fan 1 operation hours	
	Outdoor fan 2 operation hours	
	Outdoor compressor 1 operation hours	
	Outdoor compressor 2 operation hours	
Indoor Unit Status	Unit No.	Select the unit number you want to check.
	FAN	Fan tap
	Speed	Fan speed (rpm)
	FLAP	Airflow direction
	EV	Degree that electronic expansion valve is open (pulse)
	MP	Drain pump ON/OFF
	EH	Electric heater ON/OFF
	Hu	Humidifier ON/OFF
	TBF	Anti-freezing control ON/OFF
	FLOAT	FLOAT SWITCH OPEN/CLOSE
	T1/T2	T1/T2 external input OPEN/CLOSE
	Th1	Suction air thermistor *1
	Th2	Indoor liquid pipe thermistor
	Th3	—
	Th4	—
	Th5	—
	Th6	—
Outdoor Unit Status	Unit No.	Select the Unit No. you want to check.
	FAN step	Fan tap
	COMP	Compressor power supply frequency (Hz)
	EV1	Degree that electronic expansion valve is open (pulse)
	SV1	Solenoid valve ON/OFF
	Pe	Low pressure (MPa), BRC1E63 only
	Pc	High pressure (MPa), BRC1E63 only
	Th1	—
	Th2	—
	Th3	—
	Th4	—
	Th5	—
	Th6	—
Error Display	Display error ON	Displays the error on the screen.
	Display error OFF	Displays neither errors nor warnings.
	Display warning ON	Displays a warning on the screen if an error occurs.
	Display warning OFF	No warning is displayed.
Swap Unit No.	Current Unit No.	A unit No. can be transferred to another.
	Transfer Unit No.	


Maintenance Menu	Item 2	Remarks
Addressed Sensor Value	Unit No.: 0 - 15	Select the unit number you want to check.
	Code 00: 01: 02: 03: 04: 05: 06: 07: 08: 09:	Remote controller thermistor (°C) Suction air thermistor (°C) Heat exchanger liquid pipe thermistor (°C) Heat exchanger gas pipe thermistor (°C) Indoor unit address No. Outdoor unit address No. BS unit address No. Zone control address No. Cooling/Heating batch address No. Demand/low-noise address No.
	Data	The corresponding data will be displayed, based on the Unit No. and Code selected.

*1: Displays suction air temperature after correction for all models.

5.2 BRC1H81 Series

5.2.1 To enter the installer menu













Press  and keep it pressed until the information screen appears. The presence of icons on the information screen depends on operation status. The controller may display more or less icons than are indicated here.



From the information screen, press  and  simultaneously and keep them pressed until you enter the installer menu.

5.2.2 Installer menu

Category	Icon	Settings	Category	Icon	settings
Screen settings		Brightness	Miscellaneous settings		Group address and Airtel address
		Contrast			Extremal input interlock
Status indicator settings		Intensity			Force fan ON
Field settings		Indoor unit field settings			Switch Cooking/Heating master
		Remote controller field settings			Information

Part 4

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1. Function Outline

1.1 Indoor Unit

Input

Input		FDMF-A
Indoor unit	Suction air thermistor (R1T)	●
	Heat exchanger liquid pipe thermistor (R2T)	●
	Heat exchanger middle thermistor (R3T)	●
	Float switch	●
	Fan rotation speed	●
	Emergency operation switch	●
Remote controller	ON/OFF switch	●
	Airflow rate control	●
	Thermistor (Wired remote controller only)	●

Functions and Control

Functions and control	FDMF-A	Reference page
Set temperature and control target temperature	●	51
Thermostat control	●	51
Automatic airflow rate control	●	52
Drain pump control	●	52
Freeze-up prevention control	●	52
Automatic restart	●	53
Monitoring control	●	53

1.2 Outdoor Unit

Input

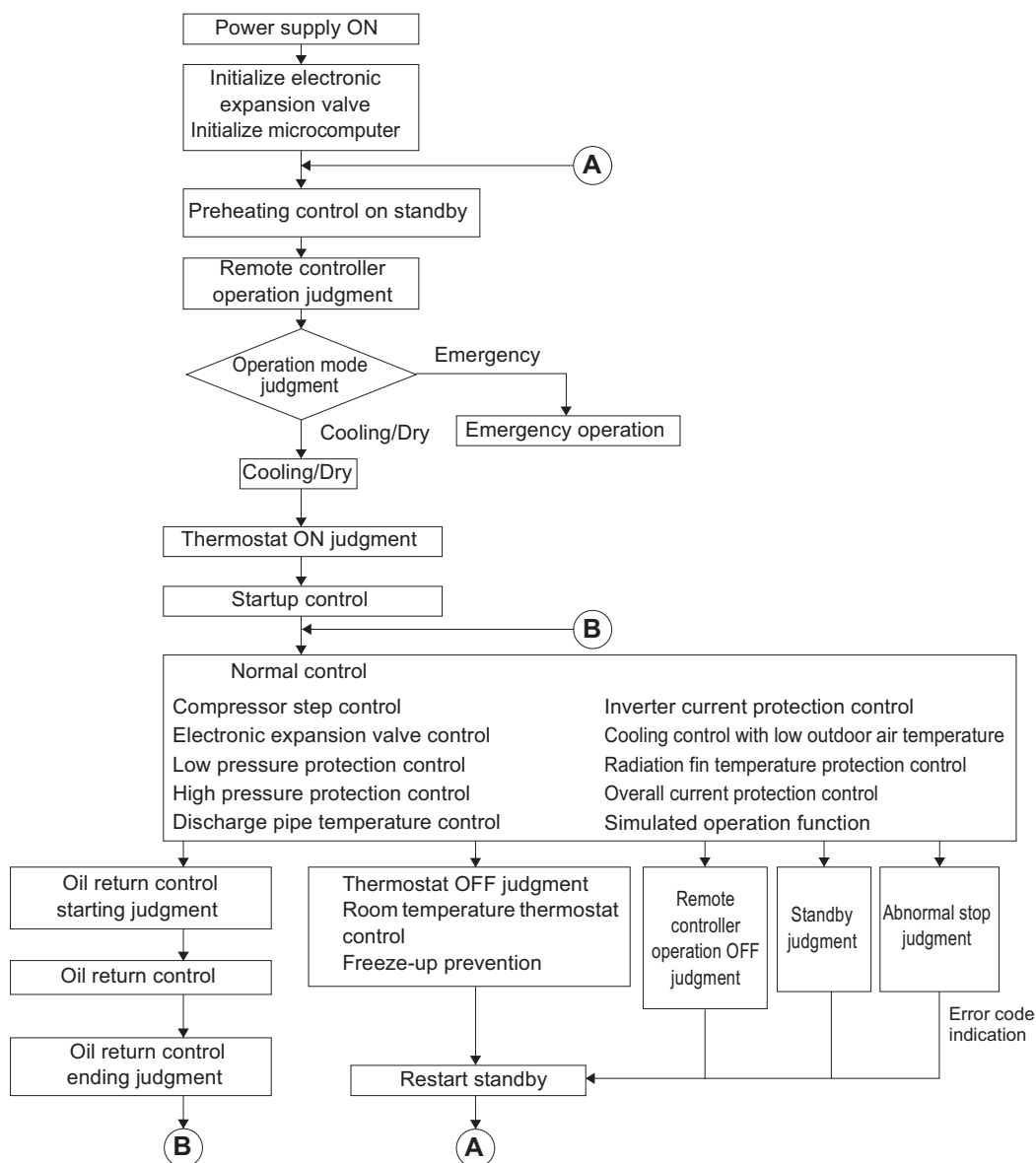
Input
Outdoor air thermistor (R1T)
Discharge pipe thermistor (R2T)
Suction pipe thermistor (R3T)
Heat exchanger thermistor (R4T)
Heat exchanger middle thermistor (R5T)
Power module thermistor (R7T) (RZF30/36AVMK only)
High pressure switch (S1PH)
Current transformer
Indoor unit signal
Setting switch

Functions and Control

Functions and control		Reference page
Stop	Abnormal stop	55
Standby	Restart standby	55
	Preheating control on standby	56
Startup control	Startup control	56
	Room temperature thermostat control	57
	Starting frequency control	57
Function control	Compressor step control	58
	Outdoor fan speed control	59
	Low noise control	60
Protection control	Low pressure protection control	60
	High pressure protection control	61
	Discharge pipe temperature control	62
	Capacitor electrical discharge control	63
	Inverter current protection control	63
	Forced thermostat off	63
	Cooling control with low outdoor air temperature	63
	Overall current protection control	64
	Refrigerant shortage detection control	64
	Piping/wiring mismatch detection control	64
Oil return control etc.	Pump down operation	65
	Oil return control	65
Service function	Emergency operation	65
	Simulated operation function	66
	Test operation control	66

2. Operation Flowchart

2.1 Cooling/Dry Operation



3. Indoor Unit Functions

3.1 Set Temperature and Control Target Temperature

The relationship between remote controller set temperature and control target temperature is described below.

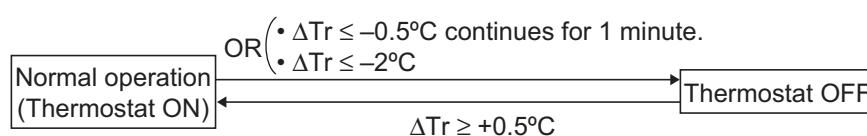
Temperature		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35°	
Cooling	Remote controller set temperature																							
	Control target temperature																							

Examples are given to illustrate a control target temperature that satisfies the remote controller set temperature.

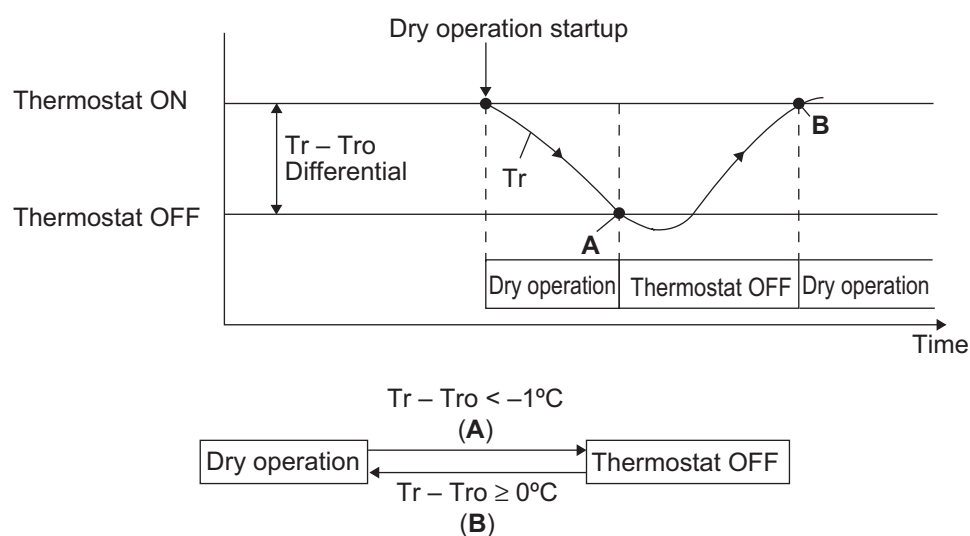
3.2 Thermostat Control

According to a difference between the remote controller set temperature and the actually detected room temperature, the thermostat is turned ON or OFF.

■ Cooling



■ Program Dry



Note(s)

1: The thermistor for room temperature detection depends on the field setting 10 (20)-2.

2: Description of symbols

ΔTr = Detected room temperature – Remote controller set temperature

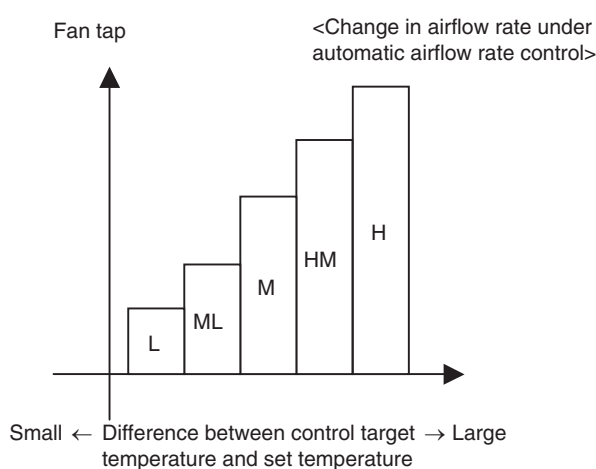
Tro : Detected room temperature at the start of dry operation

Tr : Detected room temperature

3.3 Automatic Airflow Rate Control

The automatic airflow rate control (Five steps from H to L) is based on the difference between control target temperature and set temperature.

		When airflow rate is set	Automatic airflow rate
Cooling	Thermostat ON	Set	The fan tap is determined by the difference between control target temperature and set temperature.
	Thermostat OFF	LL	The fan keeps rotating at the speed as just before the thermostat off
Program Dry	Thermostat ON	L	L
	Thermostat OFF	OFF	OFF
Fan		Set	M
Stop		OFF	OFF



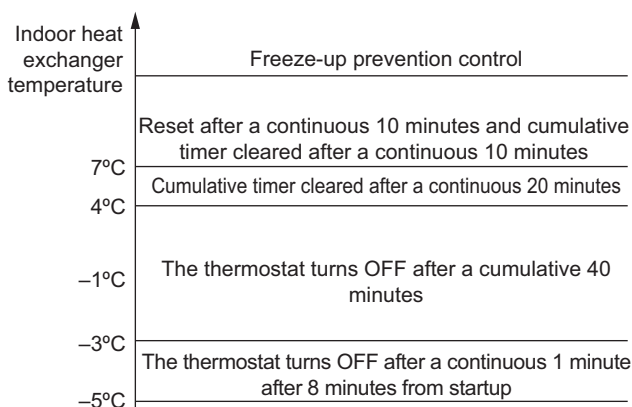
3.4 Drain Pump Control

■ Cooling Operation, Dry Operation

Drain pump normally ON (both during thermostat ON/OFF).

3.5 Freeze-Up Prevention Control

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



3.6 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 fan immediately and the outdoor 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 commando 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 was disconnected for a longer period leave the unit OFF with the power supply connected for about half an hour (See "Preheating Control").

3.7 Monitoring Control

When the indoor fan is turned off while the thermostat for cooling or drying is off, even if the room temperature recovers afterwards and becomes the one that turns the thermostat on, the thermistor cannot detect room temperature because the suction air thermistor is installed inside the indoor unit.

In order to prevent such a condition, this monitoring control has the function of detecting room temperature by operating the fan at certain intervals when the fan is turned off while the thermostat is off.

4. Outdoor Unit Control

4.1 Overview of Outdoor Unit Controls

4.1.1 Cooling 1 (Control while the compressor is OFF)

Actuator	Symbol	Compressor OFF			
		Restart standby	Thermostat OFF standby	Normal stop	Pressure equalization control prior to startup
Compressor	M1C	Restart standby	0 Hz (*1)	OFF (*1)	0 Hz (*1)
Outdoor fan	M1F	Restart standby	Step 0	Step 0	Pressure equalization control prior to startup
Indoor fan	M1F	Instruction not specified	Instruction not specified	Instruction not specified	Control prior to compressor startup (indoor fan)
Electronic expansion valve	Y1E	Controlled by restart standby	0 pulse	0 pulse	Pressure equalization control prior to startup
Remarks		For 3 minutes after compressor is stopped	After restart standby until outdoor unit starts operation (ON) and thermostat ON (OFF)	Outdoor unit in operation: OFF	min. 30 seconds, max. 150 seconds

*1. Compressor frequency instruction

"0 Hz" shows K1M (magnetic contactor for compressor) is ON.

"OFF" shows K1M (magnetic contactor for compressor) is OFF.

4.1.2 Cooling 2 (Control at startup and in operation)

Actuator	Symbol	Compressor ON			
		Startup control		In normal operation	
		Basic control	Protection control	Basic control	Protection control
Compressor	M1C	Startup control	Low pressure protection, High pressure protection, Discharge pipe temperature, Inverter current protection, Overall current protection, Piping/wiring mismatch detection control	Compressor step control	Low pressure protection, High pressure protection, Discharge pipe temperature, Inverter current protection, Cooling control with low outdoor air temperature, Overall current protection, Refrigerant shortage detection, Piping/wiring mismatch detection control
Outdoor fan	M1F	Startup control	Cooling control with low outdoor air temperature	Step 8	Cooling control with low outdoor air temperature
Indoor fan	M1F	Startup control (indoor fan)	—	Constant speed control (indoor fan)	—
Electronic expansion valve	Y1E	Startup control	Discharge pipe temperature control	Electronic expansion valve control	Discharge pipe temperature control
Remarks		min. 2 minutes, max. 5 minutes		—	

4.1.3 Cooling 3 (Oil return control)

Actuator	Symbol	Compressor ON	
		Oil return control	
		Basic control	Protection control
Compressor	M1C	Compressor step control, Oil return control	High pressure protection, Discharge pipe temperature, Inverter current protection, Overall current protection, Piping/wiring mismatch detection control
Outdoor fan	M1F	Oil return control	Cooling control with low outdoor air temperature
Indoor fan	M1F	Oil return control (indoor fan)	—
Electronic expansion valve	Y1E	Electronic expansion valve control (*1)	Discharge pipe temperature control
Remarks		—	

*1. Cooling: Wet operation with lower discharge pipe target temperature

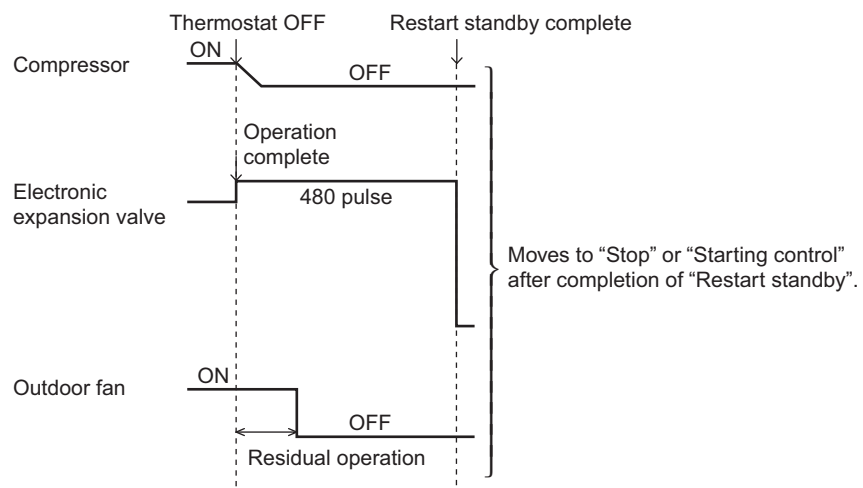
4.2 Abnormal Stop

To protect the compressor, the thermostat turns off and an error is confirmed after a given number of attempts in cases where the following items read abnormal values.

Item	Determination	Retry count
Low pressure	0.12 MPa or less for 5 minutes continuously	10 times in 200 minutes
High pressure	OCP activated or 3.92 MPa or more for 1 minute continuously	15 times in 300 minutes
Discharge pipe temperature	Over 110°C for 15 minutes continuously or over 120°C	10 times in 200 minutes
Power supply	Reverse phase power supply	0 times (no retries)
Compressor body temperature	Over 123°C	0 times (no retries)

4.3 Restart Standby

To prevent compressor from frequent ON/OFF and equalize pressure in refrigerant line, conducts forced thermostat OFF for 3-5 minutes after compressor stopping. Moreover, outdoor fan conducts residual operation for a period of time to expedite equalization and prevent refrigerant stagnation in evaporator.



4.4 Preheating Control on Standby

If the compressor is stopped for long periods of time, warm it up to prevent penetration of refrigerant into the compressor oil.

Starting conditions

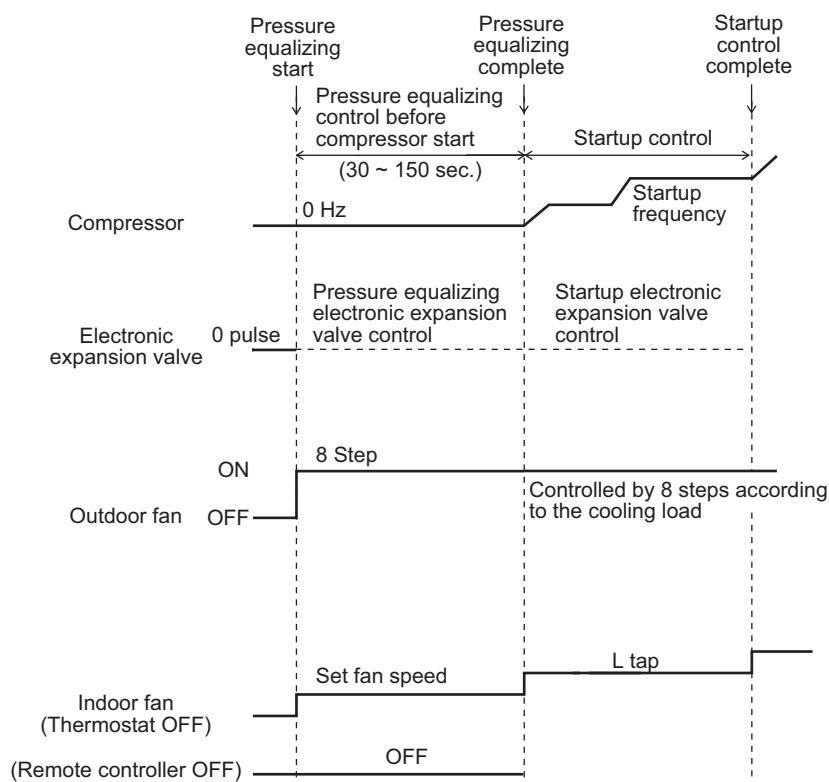
$$\begin{aligned} & \left(\begin{array}{l} \bullet \text{ Compressor stopped} \\ \bullet \text{ Less than 6 hours since power on} \end{array} \right) \\ & \& \left(\text{OR} \left(\begin{array}{l} \bullet \text{ 1 hour or more since compressor stopped} \\ \bullet \text{ Outdoor air temperature not decreasing} \\ \bullet \text{ Discharge pipe temperature} < 40^{\circ}\text{C} \end{array} \right) \right) \end{aligned}$$

Ending conditions

$$\begin{aligned} & \left(\begin{array}{l} \bullet \text{ Thermostat on confirmed} \\ \bullet \text{ 6 hours or more since power on} \end{array} \right) \\ & \& \left(\text{OR} \left(\begin{array}{l} \bullet \text{ Less than 1 hour since compressor stopped} \\ \bullet \text{ Outdoor air temperature is decreasing} \\ \bullet \text{ Discharge pipe temperature} > 43^{\circ}\text{C} \end{array} \right) \right) \end{aligned}$$

4.5 Startup Control

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



4.6 Room Temperature Thermostat Control

The thermostat turns ON or OFF based on the difference between remote controller set temperature and indoor suction temperature.

- Thermostat ON conditions: when $\Delta T \geq +0.5^{\circ}\text{C}$
- Thermostat OFF conditions

$$\text{OR} \left(\begin{array}{l} \& \left(\begin{array}{l} \bullet \Delta T \leq -0.5^{\circ}\text{C} \text{ continuously for 1 minute} \\ \bullet 5 \text{ minutes or more since starting} \end{array} \right. \\ \bullet \Delta T \leq -2^{\circ}\text{C} \text{ (when cooling)} \\ \bullet \Delta T \geq +1.5^{\circ}\text{C} \rightarrow \Delta T \leq -0.5^{\circ}\text{C} \text{ rapid change} \end{array} \right.$$

* ΔT = indoor suction temperature – remote controller set temperature: cooling

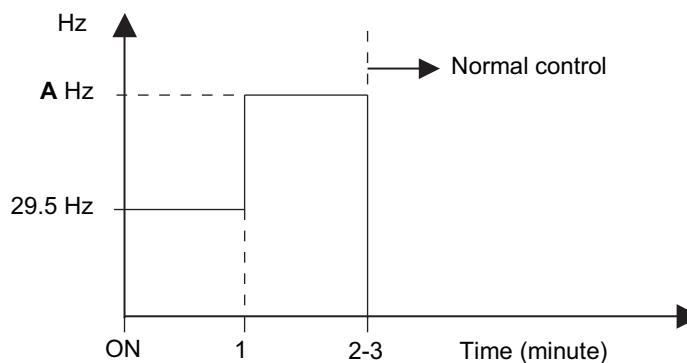
4.7 Starting Frequency Control

Outline

The compressor will start up with a limited fixed frequency value for a specified period of time in order to prevent liquid back to the compressor, and to limit the starting current.

General

The normal startup control time is 2-3 minutes. The maximum starting frequency control time is limited to 5 minutes.



Model name	A (Hz)
All outdoor units	141

4.8 Compressor Step Control

Outline

After starting frequency control function has been terminated, the ideal compressor frequency will be determined by compressor step control.

The compressor operation frequency is controlled in order to keep a constant evaporating temperature in cooling. The frequency can be changed every 20 seconds.

During abnormal situations (e.g. inverter current protection) the frequency also changes by 2 steps, but the 20 seconds interval may be decreased, so a quicker change is possible.

Note

When other control functions are activated (e.g. discharge pipe temperature control), they can change the compressor frequency using other inputs than the ones normally being used by the compressor step control function.

Cooling

In cooling, the target operation frequency will be determined by the indoor Δt and the evaporating temperature.

Δt = Remote controller set temperature – Indoor suction air temperature

Depending on the cooling load, the target evaporating temperature (T_e) will be a value between $4^{\circ}\text{C} \leq T_e \leq 19^{\circ}\text{C}$

Frequency steps

The operating frequency will be a value chosen from a list with fixed frequency settings that is programmed in the unit's memory:

Step	Compressor operation frequency (Hz)	
	RZF18/24AVMK	RZF30/36AVMK
1	—	—
2	—	—
3	—	—
4	—	—
5	—	—
6	—	—
7	—	—
8	46.5	—
9	54	64.5 (*1)
10	63	72
11	72	79.5
12	79.5	88.5
13	88.5	96
14	97.5	105
15	108	111
16	123	123
17	130.5	141
18	141	153
19	156	166.5
20	174	183
21	189	207
22	216	225
23	237	243
24	258	270
25	270	282
26	276	294
27	—	303
28	—	336

*1. 30/36 class lower limit

4.9 Outdoor Fan Speed Control

Fan Speed Control

The outdoor fan speed will be controlled in function of the actual outdoor air temperature, the condensation pressure, pressure difference between low and high pressure and compression ratio.

Fan step table

Step	RZF18/24AVMK	RZF30/36AVMK
0	0	0
1	200	200
2	250	250
3	320	300
4	390	360
5	430	430
6	515	515
7	620	620
8	940	860

4.10 Low Noise Control

A. Setting with remote controller

Night-time low noise setting

Can be configured using the indoor remote controller field setting mode.

By estimating the current time from changes in outdoor temperature, the outdoor fan speed and compressor frequency are automatically controlled for low noise operation during night-time (10 pm to 8 am). (The night-time hours are guidelines.)

B. Setting with demand adapter (sold separately)

Low noise setting by external input

While the LNOP-COM pins on the X801M terminal block of the demand adapter are shorted, low noise operation takes place by controlling the outdoor fan speed and compressor frequency.



Note(s)

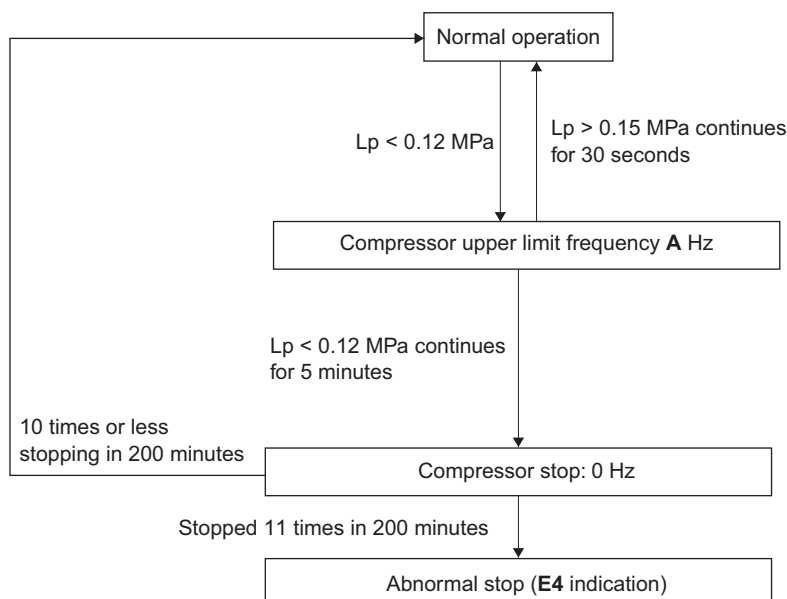
For capacity precedence setting

Selecting "Capacity precedence setting" from the field settings mode of the indoor remote controller will set capacity precedence whether in A. or B. operation, so that low-noise operation will switch to normal operation if the air conditioner load increases.

Canceling capacity precedence setting with low noise setting in place will give precedence to the low noise mode, continuing low noise operation even if the air conditioner load increases.

4.11 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 pressure sensor.

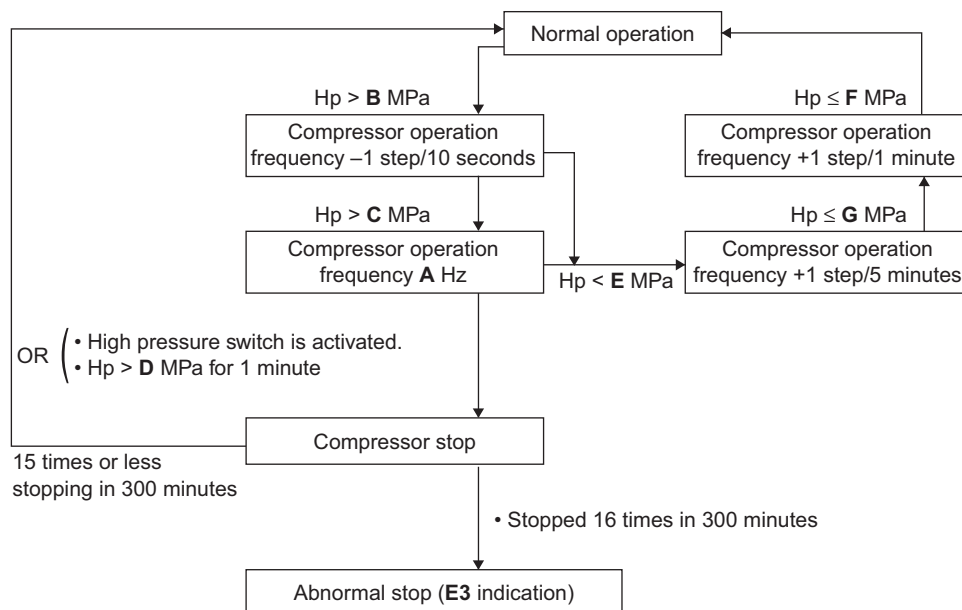


Frequency	RZF18/24AVMK	RZF30/36AVMK
A (Hz)	42	72

4.12 High Pressure Protection Control

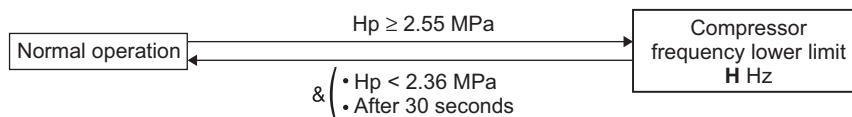
In order to prevent abnormal high pressures in the system and hence avoiding activation of the high pressure safety device the below control function will be activated.

Flowchart



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

In cooling



Parameters

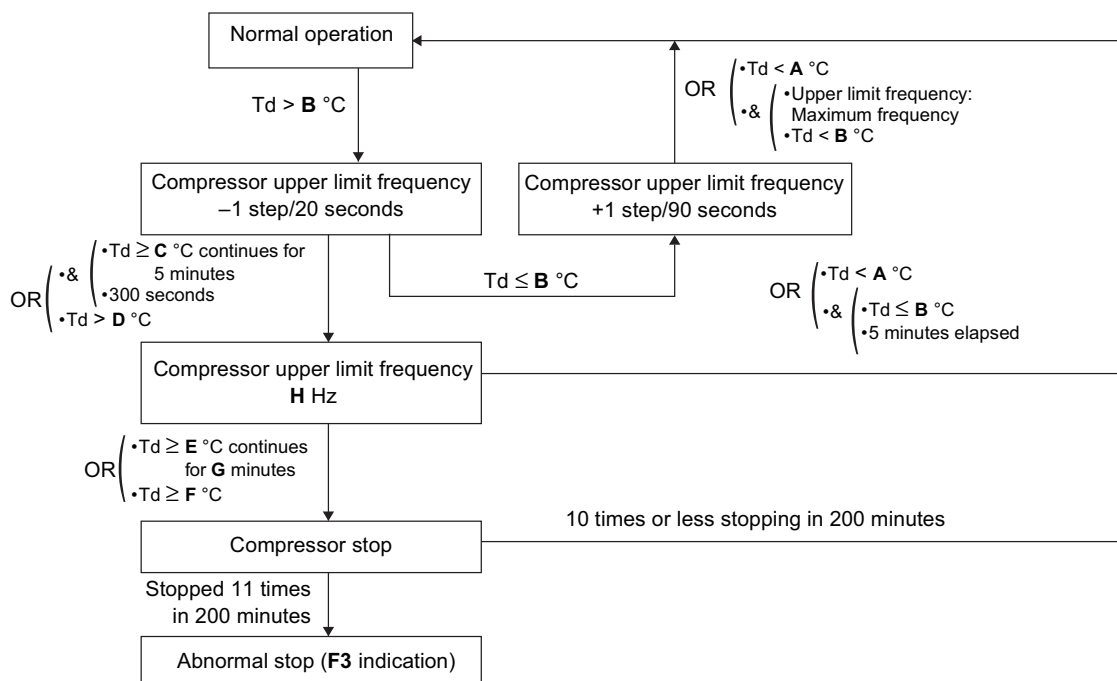
	RZF18/24AVMK	RZF30/36AVMK
A (Hz)	88.5	88.5
B (MPa)	3.67	3.67
C (MPa)	3.77	3.77
D (MPa)	4.02	4.02
E (MPa)	3.62	3.62
F (MPa)	3.39	3.39
G (MPa)	3.52	3.52
H (Hz)	63	64.5

4.13 Discharge Pipe Temperature Control

Outline

The compressor operating frequency will be controlled in order to avoid abnormal high compressor temperatures (see also electronic expansion valve control).
Td: Discharge pipe temperature (°C)

Flowchart



Parameters

	RZF18/24AVMK	RZF30/36AVMK
A (°C)	70	70
B (°C)	105	105
C (°C)	110	110
D (°C)	115	115
E (°C)	110	110
F (°C)	118	120
G (minutes)	15	15
H (Hz)	97.5	108

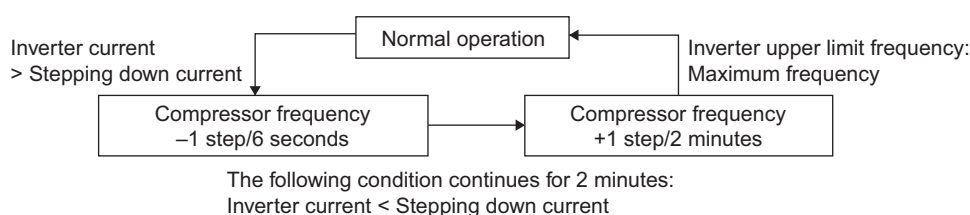
4.14 Capacitor Electrical Discharge Control

Approximately 1 minute after stopping operation (remote controller stop, abnormal stop, retry-type thermostat OFF causing the compressor or outdoor fan motor to stop) an open-phase waveform will be output for capacitor electrical discharge.

After that, the discharge resistor will continue to discharge the capacitor to 0 V. The outdoor unit may hum while this occurs.

4.15 Inverter Current Protection Control

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



	RZF18/24AVMK	RZF30/36AVMK
P (A)	6.6	15.5
Q (A)		
		15.5

4.16 Forced Thermostat OFF

The unit will perform the forced thermostat OFF function in following conditions:

■ Cooling

Thermostat OFF due to freeze-up prevention control.

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



Reference

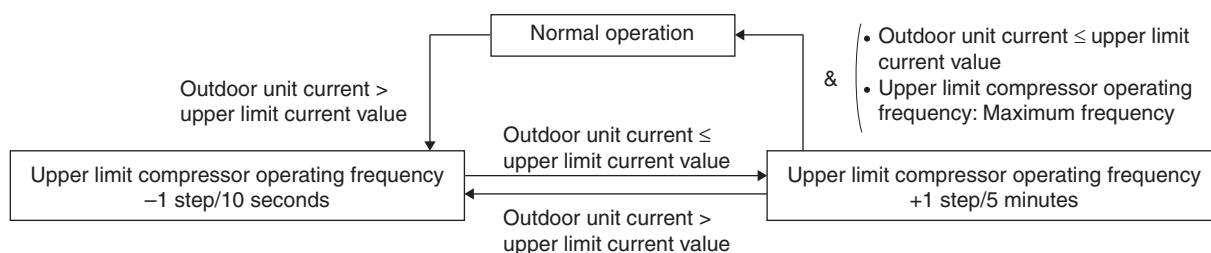
Refer to **Freeze-up Prevention Control** on page 52 .

4.17 Cooling Control with Low Outdoor Air Temperature

To ensure the compression ratio (pressure difference between high and low pressure) at low outdoor air temperature conditions in cooling mode, the outdoor fan and target compressor frequency may be varied.

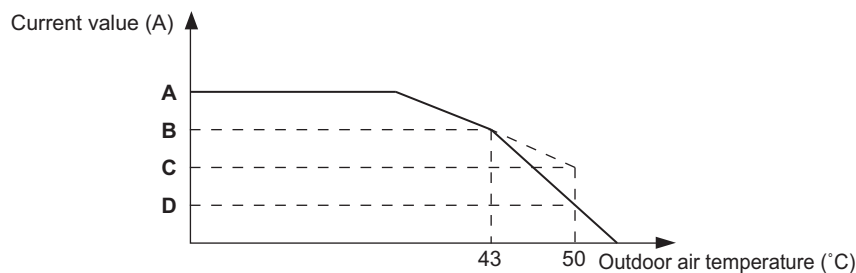
4.18 Overall Current Protection Control

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.



	RZF18/24AVMK	RZF30/36AVMK
A	13.2	18.1
B	13.2	18.1
C	8.0	12.8
D	8.0	12.8

4.19 Refrigerant Shortage Detection Control

If insufficient capacity due to insufficient refrigerant is determined, the remote controller will display error code **U0** and an abnormal stop will occur.

4.20 Piping/Wiring Mismatch Detection Control

If the piping and transmission wiring to the outdoor unit does not match that of the connected indoor unit, the remote controller will display error code **UF** and an abnormal stop will occur.

4.21 Pump Down Operation

Outline

Whenever the units need to be moved or removed, perform a pump down operation before disconnecting the field piping. By performing a pump down operation, all of the refrigerant will be collected in the outdoor unit.

Procedure

Procedure		Precautions
1	Confirm that both the liquid and gas stop valves are open.	—
2	Press the pump down button (18/24 class: BS1; 30/36 class: BS2) on the outdoor unit PCB for 5 seconds.	Compressor and outdoor fan will start operation automatically. Indoor fan may automatically start running. Pay attention to this.
3	Close the liquid stop valve securely for about 2 minutes after the compressor starts operation. Once the compressor operation stops after 2 to 5 minutes, close the gas stop valve securely.	<ul style="list-style-type: none"> • Never leave the outdoor unit unattended with opened front panel when power supply is on. • In case the liquid stop valve is not securely closed during compressor operation, pump down operation cannot be executed.
4	Turn off the power supply.	When you work alone, carry out after closing the front plate. After turning the power supply off, remove the insulation sheet.

Cautions

- Pressing the pump down button (18/24 class: BS1; 30/36 class: BS2) on the outdoor unit PCB may cause the outdoor and indoor fan to start operating automatically.
- Be sure to open the stop valves after the pipe work has been finished. Be sure not to operate the unit with closed stop valves, or the compressor may brake down.

4.22 Oil Return Control

Outline

When the compressor operates for a certain period of time at low frequency, the oil level in the compressor may become low due to incomplete oil return. To prevent damage to the compressor and in worst case avoid compressor lock, an oil return control will be conducted.

Details

During the oil return control the operation frequency of the compressor will be increased for a time period of 5 minutes. Oil recovery operation is only executed in cooling mode.

4.23 Emergency Operation

- Indoor/outdoor transmission does not take place.
- Cooling operation is active for 20 minutes and stopped for 10 minutes, repeating this cycle.
- Other functions take place as per normal control.

4.24 Simulated Operation Function

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

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

Applicable thermistors

- Outdoor air thermistor
- Indoor heat exchanger middle thermistor
- Indoor unit suction air thermistor
- Indoor heat exchanger thermistor

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

Applicable thermistors

- Remote controller thermistor



Note(s)

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

Applicable thermistors

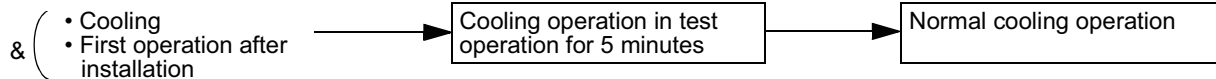
- Suction pipe thermistor
- Discharge pipe thermistor
- Heat exchanger distribution pipe thermistor
- Outdoor heat exchanger middle thermistor

4.25 Test Operation Control

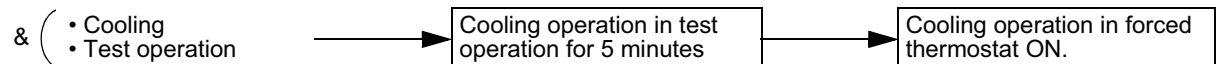
Purpose

When operating the units for the first time after installation, the unit will - depending on the selected operation mode - perform a test operation first.

Situation 1



Situation 2



Note(s)

- When running in test operation mode, the unit will sense on site installation parameters (e.g.: failure to open stop valves,..) and indicate the applicable error code if required.
- If the remote controller shows **E3**, **E4**, **E5**, **L8** or **U0** as an error code, there is possibility that either the stop valve is closed or the airflow outlet is obstructed.
- Check the inter unit branch wiring connection (1-2-3 wiring) when the error code **U4** or **UF** is displayed on the remote controller.
- When the error code **U2** or **A8** is displayed on the remote controller, check for voltage imbalance.
- When the error code **E3**, **E4**, **L4** or **L8** is displayed on the remote controller, there is possibility that the airflow outlet is obstructed.
- When there is no error code display, cooling operation continues without interruption. (However, this control is once again performed after refrigerant is recovered by means of the pump down switch and at the time of the first operation after the outdoor unit PCB replacement.)



Reference

Refer to **Test Operation** on page 92 .

Part 5

Field Settings and Test Operation

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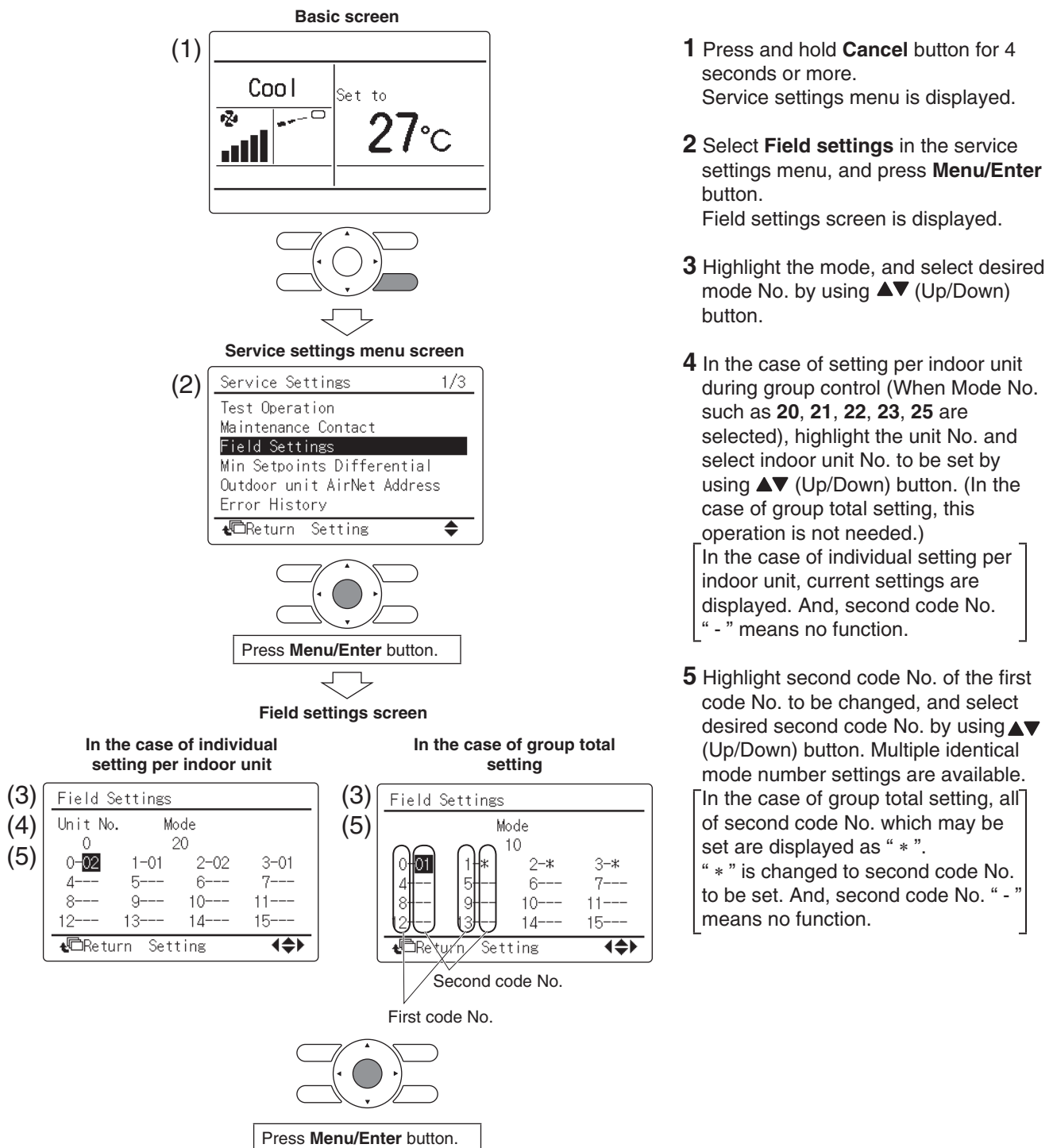
1. Field Settings with Remote Controller

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.)

1.1 BRC1E62, BRC1E63



1 Press and hold **Cancel** button for 4 seconds or more.
Service settings menu is displayed.

2 Select **Field settings** in the service settings menu, and press **Menu/Enter** button.
Field settings screen is displayed.

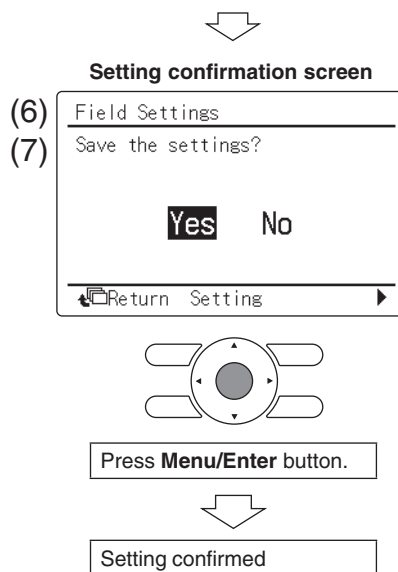
3 Highlight the mode, and select desired mode No. by using **▲▼** (Up/Down) button.

4 In the case of setting per indoor unit during group control (When Mode No. such as **20, 21, 22, 23, 25** are selected), highlight the unit No. and select indoor unit No. to be set by using **▲▼** (Up/Down) button. (In the case of group total setting, this operation is not needed.)

[In the case of individual setting per indoor unit, current settings are displayed. And, second code No. " - " means no function.]

5 Highlight second code No. of the first code No. to be changed, and select desired second code No. by using **▲▼** (Up/Down) button. Multiple identical mode number settings are available.

[In the case of group total setting, all of second code No. which may be set are displayed as " * ".
" * " is changed to second code No. to be set. And, second code No. " - " means no function.]



6 Press **Menu/Enter** button. Setting confirmation screen is displayed.

7 Select **Yes** and press **Menu/Enter** button. Setting details are determined and field settings screen returns.

8 In the case of multiple setting changes, repeat **(3)** to **(7)**.

9 After all setting changes are completed, press **Cancel** button twice.


10 Backlight goes out, and **Checking the connection. Please standby.** is displayed for initialization. After the initialization, the basic screen returns.

⚠ CAUTION

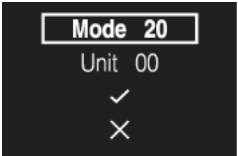
- When an optional accessory is installed on the indoor unit, settings of the indoor unit may be changed. See the manual of the optional accessory.
- For field setting details of the outdoor unit, see installation manual attached to the outdoor unit.

1.2 BRC1H81 Series

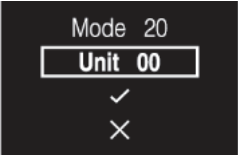
The controller allows for making field settings related to the indoor unit, and to the controller itself.

Screen	Field settings	
	Indoor unit	<ul style="list-style-type: none">▪ Define a mode by setting a Mode number▪ Define the unit to which the setting will apply by setting a Unit number▪ Define the setting by setting a SW number

Field settings are composed of the following components.



1. Modes (Mode),



2. Units (Unit),

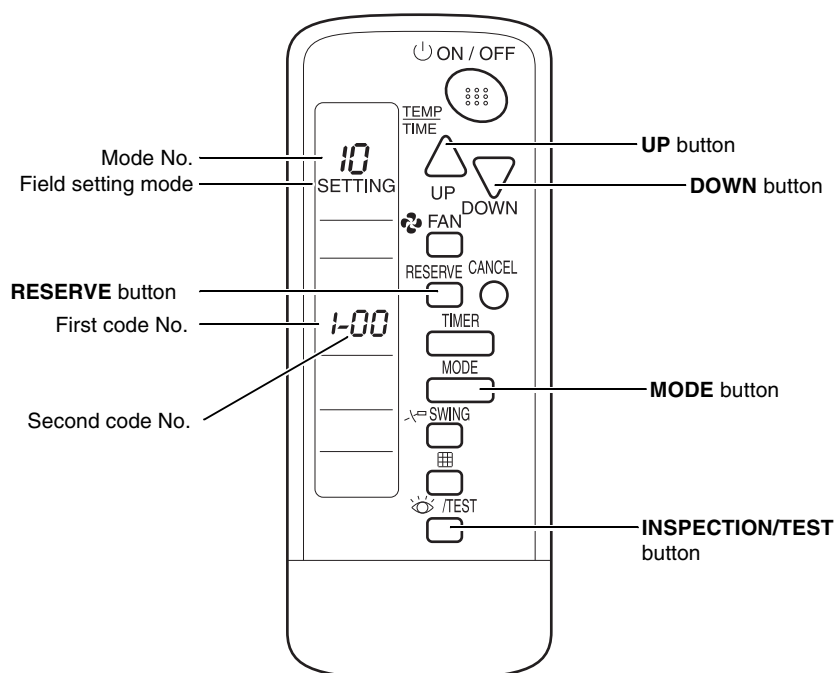


3. Settings (SW),



4. Values for those settings.

1.3 BRC4C Series



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:

1. Press the **INSPECTION/TEST** button for 4 seconds 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 confirm the setting.
6. Press the **INSPECTION/TEST** button to return to the normal mode.

1.4 List of Field Settings for Indoor Unit

★: Factory setting

Mode No. (Note 2)	First Code No.	Description		Second Code No.				Page Reference
				01	02	03	04	
10 (20)	0	Filter cleaning sign interval	Long life filter	<u>Approx. 2,500 hrs.</u> ★	Approx. 1,250 hrs.	—	—	74
			Ultra long life filter	<u>Approx. 10,000 hrs.</u> ★	Approx. 5,000 hrs.	—	—	74
	1	Filter type		<u>Long life filter</u> ★	Ultra long life filter	—	—	74
	2	Thermistor selection		Remote controller + Suction air thermistor	<u>Suction air thermistor</u> ★	—	Remote controller thermistor	74
	3	Filter cleaning sign		<u>Displayed</u> ★	Not displayed	—	—	74
11 (21)	0	Setting number of the connected indoor units as simultaneous operation system		<u>Pair system (1 unit)</u> ★	Simultaneous operation system (2 units)	Simultaneous operation system (3 units)	Double twin multi (4 units)	75
	1	Simultaneous operation system individual setting		<u>Unified setting</u> ★	Individual setting	—	—	75
	2	Fan ON/OFF at thermostat OFF (Cooling)		<u>Keep operating</u> ★	Stop	—	—	75
	7	Airflow adjustment		<u>OFF</u> ★	Completion of airflow adjustment	Start of airflow adjustment	—	76
12 (22)	1	External ON/OFF input		Refer to the page on the right for details.				76
	5	Auto restart after power failure reset		Disabled	<u>Enabled</u> ★	—	—	77
	6	Airflow Setting when cooling thermostat is OFF		LL tap	<u>Set fan speed</u> ★	—	—	77
13 (23)	6	External static pressure		Refer to the page on the right for details.				77
15 (25)	3	Drain pump and humidifier interlock selection		<u>Not interlocked</u> ★	Interlocked	—	—	78
	5	Selection for individual ventilation setting by remote controller		<u>— (Normal)</u> ★	Individual	—	—	78
1b	4	Display of error codes on the remote controller		—	Two-digit display	—	<u>Four-digit display</u> ★	78
1c	0	Room temperature display		Not displayed	<u>Displayed</u> ★	—	—	78
	01 (Note 5)	Thermostat sensor		Indoor unit thermistor	Controller thermistor	—	—	—
	12 (Note 5)	Window contact B1		Do not use	Use	—	—	—
	13 (Note 5)	Key card contact B2		Do not use	Use	—	—	—
1e (Note 5)	02	Setback function		No Setback	Heating only	Cooling only	Heating and Cooling	—



Note(s)

- Settings are made simultaneously for the entire group, however, if you select the mode No. inside parentheses, you can also set by each individual unit. Setting changes however cannot be checked except in the individual mode for those in parentheses.
- The mode numbers inside parentheses cannot be used by wireless remote controllers, so they cannot be set individually. Setting changes also cannot be checked.
- Do not make settings other than those described above. Nothing is displayed for functions the indoor unit is not equipped with.
- 88 or Checking the connection. Please stand by.** may be displayed to indicate the remote controller is resetting when returning to the normal mode.
- BRC1H81 series only

1.4.1 Applicable Field Settings

Setting modes			FDMF-A
10 (20)	0	Filter cleaning sign interval	●
	1	Filter type	●
	2	Thermistor selection	●
	3	Filter cleaning sign	●
11 (21)	0	Setting number of the connected indoor units as simultaneous operation system	●
	1	Simultaneous operation system individual setting	●
	2	Fan ON/OFF at thermostat OFF	●
	7	Airflow adjustment	●
12 (22)	1	External ON/OFF input	●
	5	Auto restart after power failure reset	●
	6	Airflow setting when cooling thermostat is OFF	●
13 (23)	6	External static pressure	●
15 (25)	3	Drain pump-humidifier interlock selection	●
	5	Field setting selection for individual ventilation setting by remote controller	●
1b	4	Display of error codes on the remote controller	●
1c	0	Room temperature display	●
	01	Thermostat sensor	●
	12	Window contact B1	●
	13	Key card contact B2	●
1e	02	Setback function	●

● : Available

— : Not available

1.5 Details of Field Settings for Indoor Unit

1.5.1 Filter Cleaning Sign Interval, Filter Type

When the setting 10 (20)-3 is set to **01** (Displayed), filter cleaning sign is displayed on the remote controller after a certain period of operation time. This setting is used to change the display interval of filter cleaning sign when the filter contamination is heavy.

The filter cleaning sign interval is determined as follows depending on the combination of Mode No. 10 (20)-0 and 10 (20)-1.

Filter cleaning sign interval

★: Factory setting

Setting	10 (20)-1	01: Long life filter★		02: Ultra long life filter	
	Filter contamination heavy/light 10 (20)-0	Light 01★	Heavy 02	Light 01	Heavy 02
Model	FDMF-A	2,500 hrs.★	1,250 hrs.	10,000 hrs.	5,000 hrs.

1.5.2 Remote Controller Thermistor

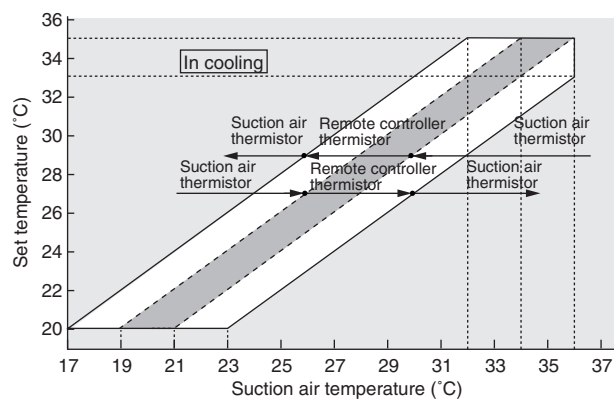
Select the thermistor to control room temperature.

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
10 (20)	2	01	Remote controller thermistor and suction air thermistor for indoor unit
		02★	Suction air thermistor for indoor unit ★
		04	Remote controller thermistor

The Second Code No. is set to **02** at factory setting, where the room temperature is controlled only by the suction air thermistor in the indoor unit.

When the Second Code No. is set to **01**, the room temperature is controlled by the suction air thermistor in the indoor unit and the remote controller thermistor as indicated in the following figure.



1.5.3 Filter Cleaning Sign

Whether or not to display the sign after operation of a certain duration can be selected.

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
10 (20)	3	01★	Displayed★
		02	Not displayed

1.5.4 Setting Number of the Connected Indoor Units as Simultaneous Operation System

When using in simultaneous operation system mode, change the second code No. as shown in table below.

When using in simultaneous operation system mode, refer to "simultaneous operation system individual setting" to set master and slave units separately.

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
11 (21)	0	01★	Pair system (1 unit)★
		02	Simultaneous operation system (2 units)
		03	Simultaneous operation system (3 units)
		04	Double twin multi (4 units)

1.5.5 Simultaneous Operation System Individual Setting

This setting is used to set the master and slave unit separately.

★: Factory setting

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

1.5.6 Fan ON/OFF at Thermostat OFF

When the thermostat is OFF, you can stop the indoor fan.

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
11 (21)	2	01★	Keep operating★
		02	Stop

Airflow Rate (Fan Speed) Setting

The fan speed when cooling thermostat is OFF can be set by combining 11 (21)-2 Fan ON/OFF at Thermostat OFF and 12 (22)-6 Airflow Setting when Cooling Thermostat is OFF as indicated in the following tables.

A through C in the tables indicate the contents as below:

A: OFF for 6 minutes, and then LL for 1 minute

B: OFF for 6 minutes, and then set fan speed for 1 minute

C: OFF for 6 minutes, and then L for 1 minute

In the case of 11 (21)-2-01 (Keep operating)

★: Factory setting

Mode No.	First Code No.	Second Code No.				
		Field Setting				
12 (22)	6	01	02★	03	04	05
		↓	↓	↓	↓	↓
Cooling	At thermostat OFF	LL	Set fan speed	—	A	B
Dry	At thermostat OFF	C	C	—	A	B

In the case of 11 (21)-2-02 (Stop)

★: Factory setting

Mode No.	First Code No.	Second Code No.				
		Field Setting				
12 (22)	6	01	02★	03	04	05
		↓	↓	↓	↓	↓
Cooling	At thermostat OFF	A	B	—	A	B
Dry	At thermostat OFF	C	C	—	A	B

1.5.7 Airflow Adjustment (AUTO)

Make external static pressure setting automatically using automatic airflow adjustment (11 (21)-7), or manually using external static pressure settings (13 (23)-6).

The volume of blow-off air is automatically adjusted to the rated quantity.

Make settings before performing the test operation of the outdoor unit.

Setting procedure

1. Make sure that electric wiring and duct construction have been completed.
In particular, if the closing damper is installed on the way of the duct, make sure that it is open. In addition, make sure that a field-supplied air filter is installed within the air passageway on the suction port side.
2. If there are multiple blow-off and suction ports, adjust the throttle part so that the airflow volume ratio of each suction/blow-off port conforms to the designed airflow volume ratio. In that case, operate the unit with the operation mode "fan". When you want to change the airflow rate, adjust it by pressing the airflow rate control button to select High, Middle or Low.
3. Make settings to adjust the airflow rate automatically.
After setting the operation mode to "fan", enter the field setting mode while operation is stopped and then select the Mode No. 11 (21), set the First Code No. to **7** and the Second Code No. to **03**. After setting, return to the basic screen (to the normal mode in the case of a wireless remote controller) and press the ON/OFF button. Fan operation for automatic airflow adjustment will start with the operation lamp turned ON. Do not adjust the throttle part of the suction and blow-off ports during automatic adjustment. After operation for approximately one to fifteen minutes, airflow adjustment automatically stops with the operation lamp turned OFF.
4. After operation stopped, make sure that the Second Code No. is set to **02** as in the following table by indoor unit with the Mode No. 11 (21). If operation does not stop automatically or the Second Code No. is not set to **02**, return to the step (3) above to make settings again.

★: Factory setting

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

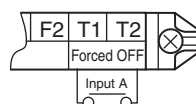


Note(s)

1. Make sure that the external static pressure is within the range of specifications before making settings. If it is outside the range, automatic adjustment fails, which may cause an insufficient airflow volume or leakage of water.
2. If the air passageway including duct or blow-off ports is changed after automatic adjustment, make sure to perform automatic airflow adjustment again.

1.5.8 External ON/OFF Input

This input is used for "ON/OFF operation" and "Protection device input" from the outside. The input is performed from the T1-T2 terminal of the operation terminal block in the electrical component box.



★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
12 (22)	1	01★	ON: Forced OFF (prohibition of using the remote controller) OFF: Permission of using the remote controller★
		02	OFF → ON: Operation ON → OFF: Stop

1.5.9 Auto Restart after Power Failure Reset

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
12 (22)	5	01	Disabled
		02★	Enabled★

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 The air conditioner starts operation suddenly after power failure reset or when the main power supply is turned on again. Consequently, the user might be surprised and wonder why this has happened. In service work, for example, turning off the main power switch while the unit is in operation, and turning on the switch again after the work is completed start unit operation (the fan rotates).

1.5.10 Airflow Setting when Cooling Thermostat is OFF

This is used to set airflow to LL airflow when cooling thermostat is OFF.

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
12 (22)	6	01	LL tap
		02★	Set fan speed★

1.5.11 External Static Pressure Settings

Make external static pressure setting automatically using automatic airflow adjustment (11 (21)-7), or manually using external static pressure settings (13 (23)-6).

■ FDMF18/24/30AVMK

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
13 (23)	6	05★	30 Pa★
		06	40 Pa
		07	50 Pa
		08	60 Pa (*1)
		09	70 Pa (*1)
		10	80 Pa (*1)

Make sure that 11(21)-7 (Airflow adjustment) is set to **01** (OFF).

*1: FDMF30AVMK only

■ FDMF36AVMK

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
13 (23)	6	05★	50 Pa★
		06	60 Pa
		07	70 Pa
		08	80 Pa
		09	90 Pa
		10	100 Pa

Make sure that 11(21)-7 (Airflow adjustment) is set to **01** (OFF).

1.5.12 Drain Pump and Humidifier Interlock Selection

This is used to interlock the humidifier with the drain pump. When water is drained out of the unit, this setting is unnecessary.

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
15 (25)	3	01★	Not interlocked★
		02	Interlocked

1.5.13 Selection for Individual Ventilation Setting by Remote Controller

This is set to perform individual operation of heat reclaim ventilation using the remote controller/central unit when heat reclaim ventilation is built in.

(Switch only when heat reclaim ventilation is built in.)

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
15 (25)	5	01★	— (Normal)★
		02	Individual

1.5.14 Display of Error Codes on the Remote Controller

■ BRC1E Series

Error code (four digits) is displayed for limited products. Select two-digit display if four-digit display is not preferred.

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
1b	4	01	—
		02	Two-digit display
		03	—
		04★	Four-digit display★

1.5.15 Room Temperature Display

■ BRC1E Series

A "Detailed display screen" can be selected as the display screen. This setting is used if you do not want to display "Room temperature display" on the "Detailed display screen".

★: Factory setting

Mode No.	First Code No.	Second Code No.	Contents
1c	0	01	Not displayed
		02★	Displayed★

1.6 List of Field Settings for Outdoor Unit

★: Factory setting

Mode No.	First code No.	Description	Second code No.					Reference page
			01	02	03	04	05	
16 (26) (*1)	0	Night-time low noise operation	==★	Automatic low noise activation	—	—	—	79
	1	Start time and stop time of automatic low noise activation	—	—	10:00 PM-6:00 AM	==★	10:00 PM-8:00 AM	79
	2	High sensible cooling setting	==★	—	Server room setting	Anti-frozen + server room setting (combine)	—	—



Note(s)

- Settings are done in a batch for the group. For this reason, when performing group control using the remote controller from one unit to set individual outdoor units, set each unit separately (for each connected indoor unit no.) using the mode number in parentheses. Checking after changing settings can also only be done using the mode numbers in parentheses. (For group batch control, the display will always read **01** even though the settings have been changed.) Furthermore, when performing control with two remote controllers, field settings using a remote controller can only be done using the main remote controller.
- Do not set any values not shown in the table above.

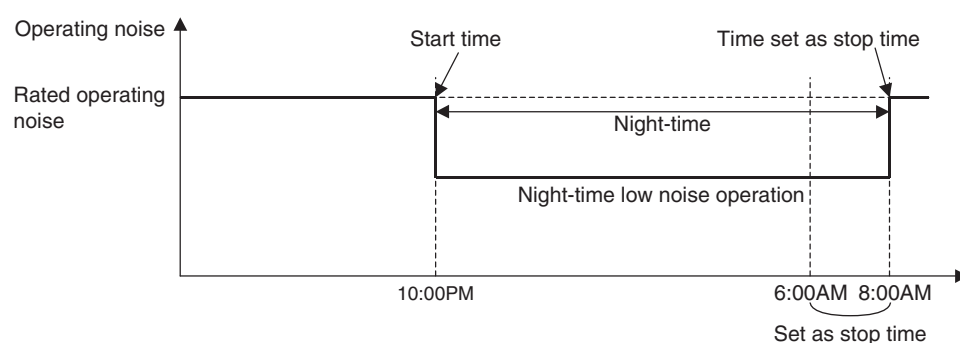
1.6.1 Night-Time Low Noise Setting

This setting allows automatic switching to low noise operation at night.

Start and stop times for low noise operation can also be configured.

- Change the second code number of 16 (26)-0 from **01** to **02** to enable night-time low noise operation.
- Change the second code number of 16 (26)-1 and select a combination of start time and stop time if required.

However, if the clock of the remote controller is not adjusted, the start time and stop time will be estimated roughly based on outdoor temperatures.



2. Field Settings from Demand Adaptor (For 30/36 Class)

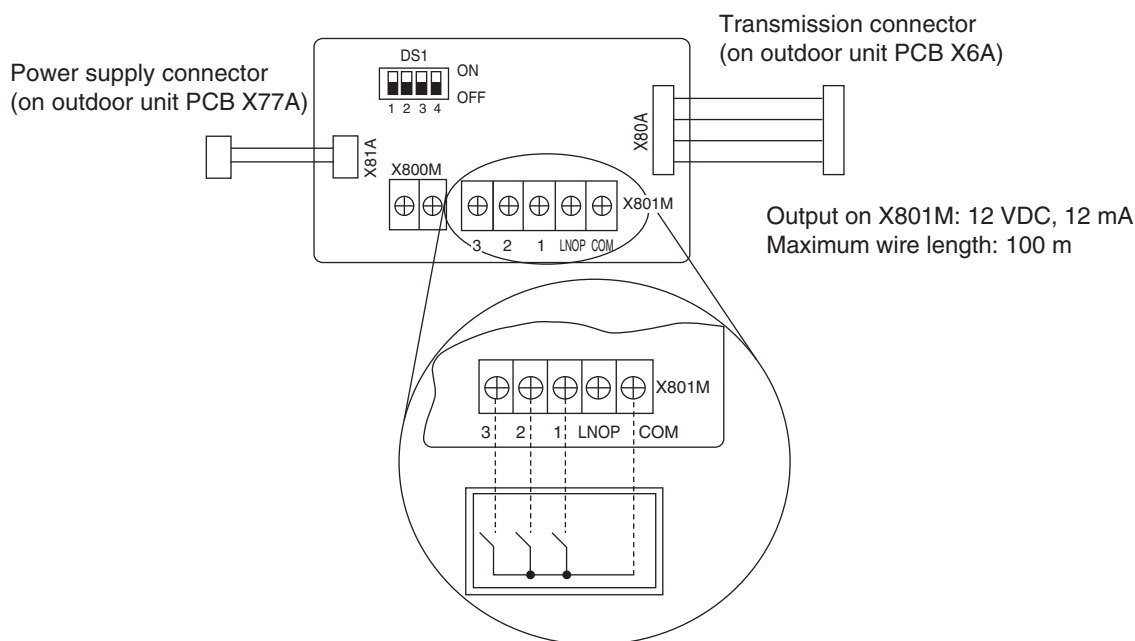
2.1 i-Demand Function





Purpose

Set a limitation towards the power consumption from the system. (e.g. budget control, limit power consumption during peak moments,...)

Setting

1. Connect the power supply connector from X81A on the demand adaptor to X77A on the outdoor unit PCB.
2. Connect the transmission connector from X80A on the demand adaptor to X6A on the outdoor unit PCB.
3. Short-circuit the contacts on the terminal X801M according to the desired demand.
4. Set the dip switch DS1 if required.



Demand	Maximum power consumption	Terminal (X801M)	Dip switch (DS1)				
			1	2	3	4	Switch position
Demand 1	100%	Short-circuit the contacts COM and 1.	ON	ON	OFF	OFF	 ON OFF
	80%		OFF	ON	OFF	OFF	 ON OFF
	70%		ON	OFF	OFF	OFF	 ON OFF
	60%		OFF	OFF	OFF	OFF	 ON OFF (factory setting)
Demand 2	40%	Short-circuit the contacts COM and 2.	—				
Demand 3	Forced thermostat OFF	Short-circuit the contacts COM and 3.	—				

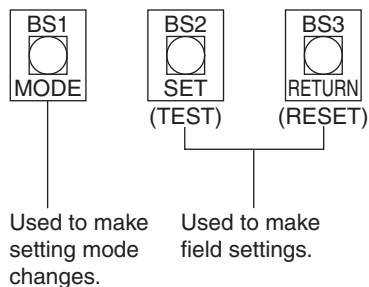
3. Field Settings from Outdoor Unit PCB (For 30/36 Class)

3.1 Setting by BS Buttons

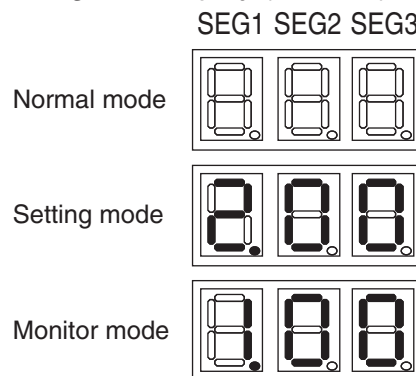
The following settings can be made using the BS buttons on the PCB.

In case of a multi outdoor system, make these settings with the master outdoor unit (settings made with a slave unit are disabled).

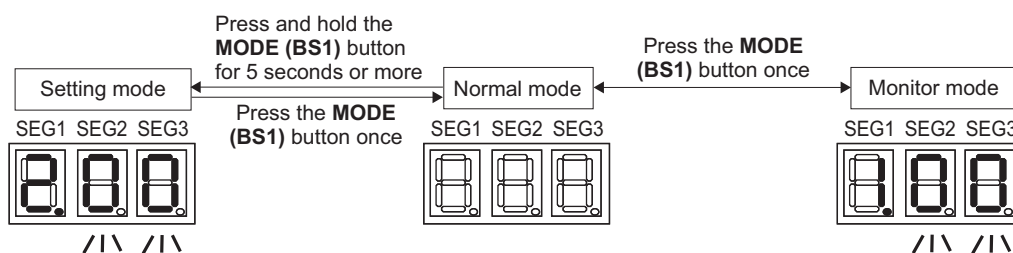
BS buttons



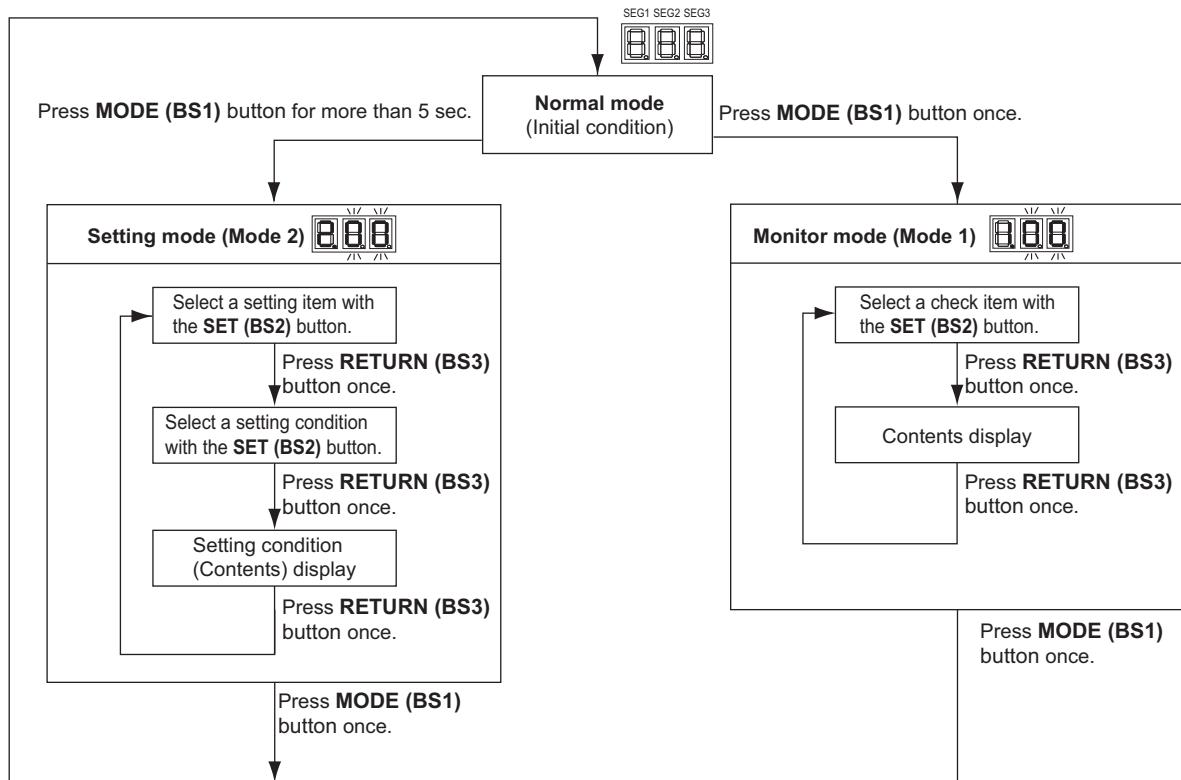
7 segment display (SEG1-3)



- Normal mode:
 - Blank: If no abnormality is detected and initialization of communication was completed.
 - Flashing combination of letter and number (4 digits): Error code detected by outdoor control or trouble by communication.
- Setting mode: Used to make changes to operating status, performance settings or address setting.
- Monitor mode: Used to verify contents of settings, quantity of units, current value of some parameters during operation of outdoor unit.
- Mode changing procedure can be selected using the MODE (BS1) button as shown below:

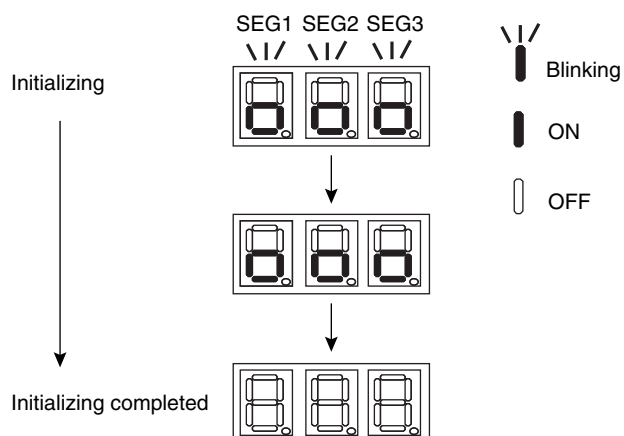


- Selection between normal mode, monitor mode (Mode 1) and setting mode (Mode 2).

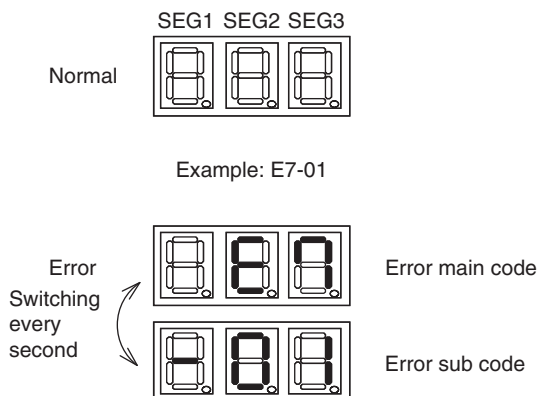


3.2 Normal Mode

1. Indoor/outdoor transmission status: Used to check for the initial status of indoor/outdoor transmission.



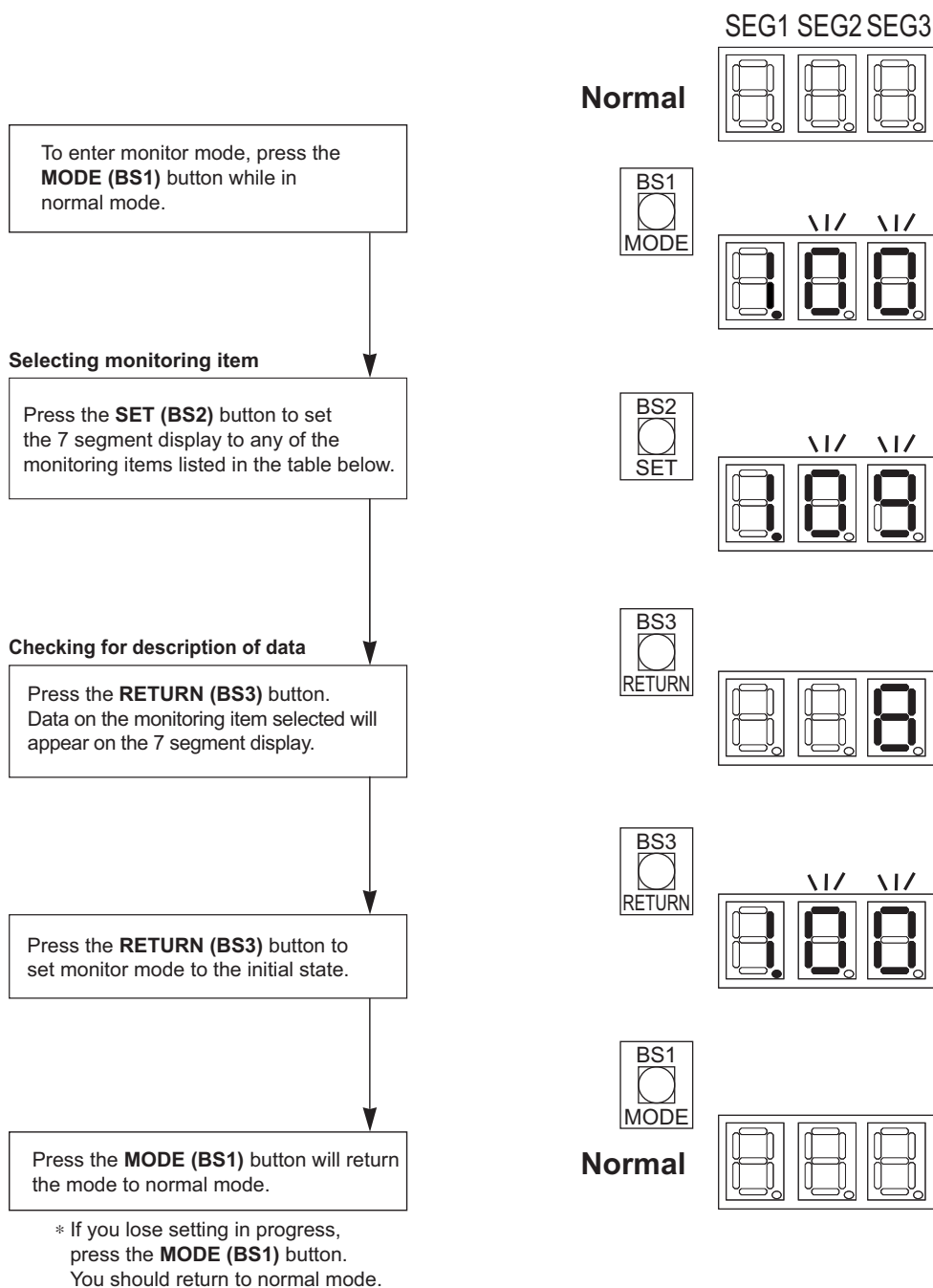
2. Descriptions: Used to display an error content.



3.3 Monitor Mode (Mode 1)

In the monitor mode, information can be retrieved about current operation status (normal, oil return), outdoor unit class, errors/retries, and cause of stepping-down operation.

3.3.1 How to Retrieve Data



Legend Segment

: OFF

: ON

: BLINKS

: hold 5 seconds

3.3.2 Overview of Monitor Mode (Mode 1)

No. (*1)	Item				Contents			
	Description	Display			Description	Display		
		SEG 1	SEG 2	SEG 3		SEG 1	SEG 2	SEG 3
0	Display of quiet operation	:	0	0	Constantly Low noise level 1 Low noise level 2 Low noise level 3			0 1 2 3
1	Display of demand operation	:	0	1	Constantly Demand level 1 Demand level 2 Demand level 3			0 1 2 3
2	Display of oil return control	:	0	2	Constantly During oil return control			0 1
4	Error content (updated)	:	0	4	Display of the error code and the detailed code			
5	Error content (previous error)	:	0	5				
6	Error content (the one before previous)	:	0	6				
9	Drop factor	:	0	9	Normal In the low voltage drop In the high voltage drop In the inverter suction pipe drop In the inverter current drop In the FIN temperature drop In the inverter drop In the comprehensive current drop Others			0 1 2 3 5 6 7 8 9

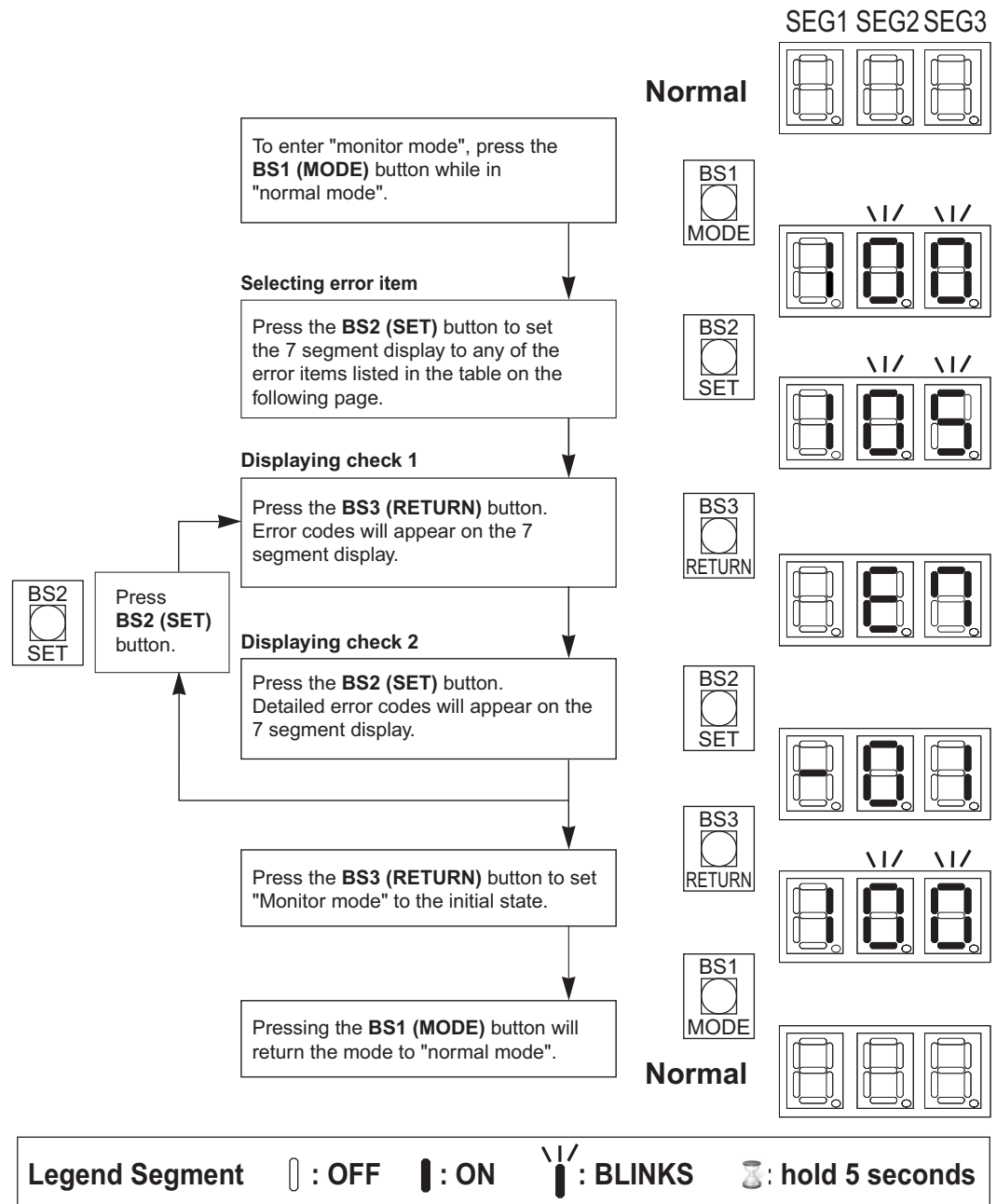
*1: Numbers in the "No." column represent the number of times to press the BS button.

3.3.3 Check for Descriptions of Errors

Follow the procedure described below. This procedure is different than indicated in previous "Monitor mode".

The error codes for forced stop outdoor are:

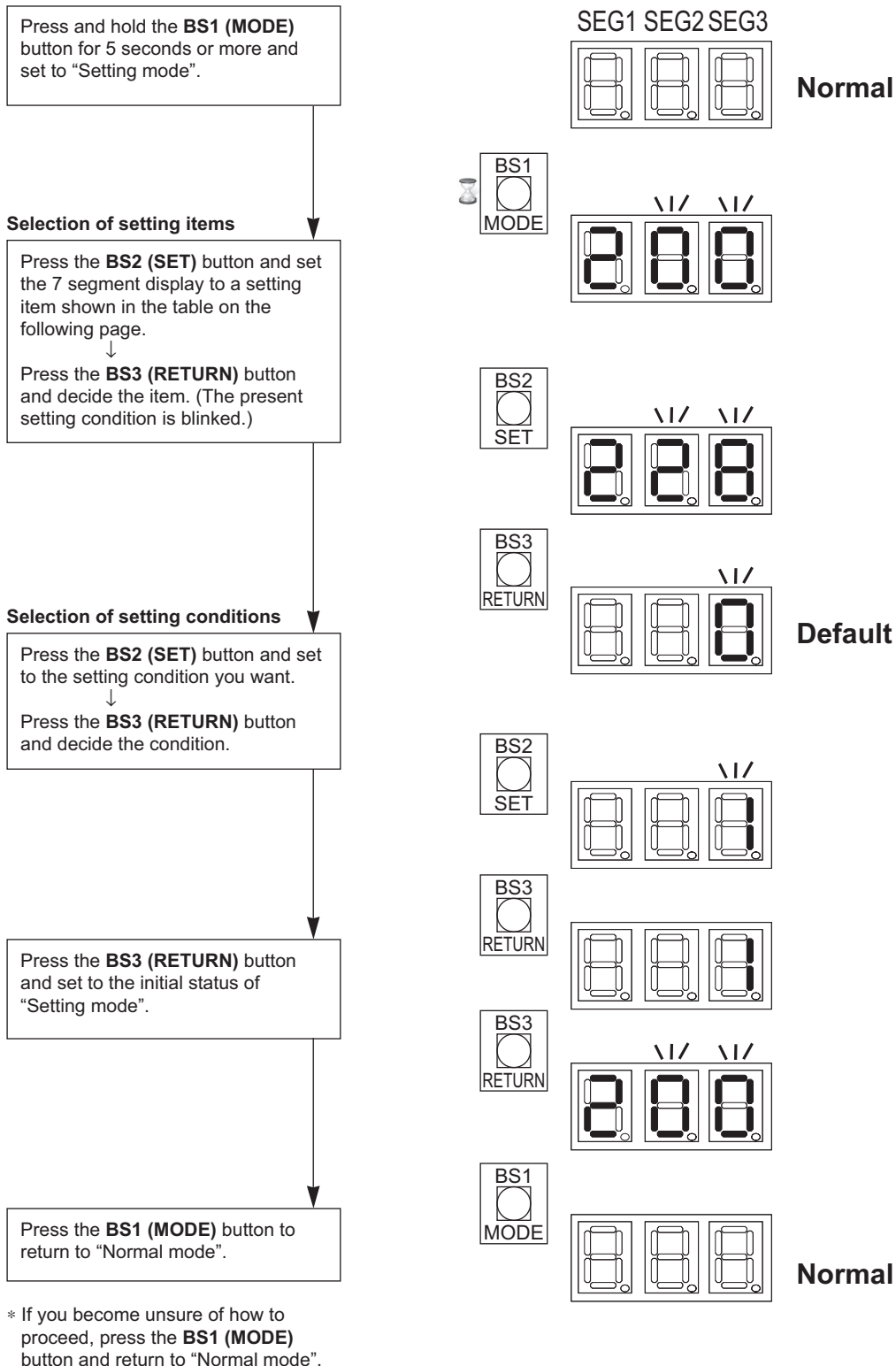
- 4, 5, 6: description of error (outdoor system stopped operation).



- The tables on next pages show a full list of possible error codes displayed on the 3 digit 7 segment display of the outdoor unit. The error code contains an upper and lower digit. To scroll between upper and lower error digit, use the **SET (BS2)** button when the select number in the monitor mode is chosen:
 - No. 4-6 for error: system operated stopped.
- The errors cover problems detected in the outdoor unit or the communication.
- Errors detected on the indoor unit are not shown on the outdoor display. For inspecting error code on indoor unit, please consult:
 - Display of the remote controller connected to the indoor units.
 - If there are no remote controllers, there should be a central control device set up. Prior to start up, make the necessary group number settings on each indoor unit.

3.4 Setting Mode (Mode 2)

Ex.) Setting of Refrigerant Recovery Mode



Legend Segment : OFF : ON : BLINKS : hold 5 seconds

3.4.1 Overview of Setting Mode (Mode 2)

This overview shows the available settings by using the press buttons on the outdoor unit PCB.

No.	Item					Contents			
	Description		Display			Description	Display		
			SEG 1	SEG 2	SEG 3		SEG 1	SEG 2	SEG 3
3	Demand 2 operation	Used to use a targeted power current level when the demand 2 control signal is inputted.	2	0	3	Level 1 (50%) Level 2 (40%) Level 3 (30%)			1 2 3
9	High dehumidification cooling	Used to set high dehumidification cooling (provides greater comfort)	2	0	9	Setting 1 (Tes: 4.5°C) Setting 2 (Tes: 7.5°C) Setting 3 (Tes: 10.5°C)			1 2 3
28	Refrigerant recovery mode	Used to set the system to refrigerant recovery mode (without compressor run).	2	2	8	Refrigerant recovery OFF ON			0 1

* : Setting does not return to factory setting when exit mode 2. To cancel the function, change setting manually to factory setting.

* : Once function is activated “t” appears. To stop current function, press **RETURN (BS3)** button once.

Indication **bold** means factory setting.

4. Emergency Operation

Operation in emergency includes the following (1) to (3).

Understand the purpose and use the appropriate operation.

	Name	Purpose	Procedure	Operation				Remarks
				Thermistor detection	Protection device action	Fan	Drain pump	
(1)	Emergency operation (Forced operation)	Forced operation for servicing	SS1 switch on the indoor unit PCB	—	—	●	●	No temperature control
			DIP switch on the outdoor unit PCB	—	—	●	—	
(2)	Test operation (*1)	Check operation after installation	Test operation with remote controller	—	●	●	●	No temperature control
(3)	Emergency operation	When wireless remote controller is lost	Emergency operation switch on the indoor unit panel	●	●	●	●	Remote controller is disabled. Actuators such as fan and pump operate.

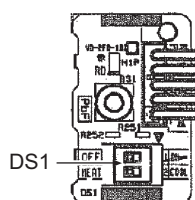


Note(s)

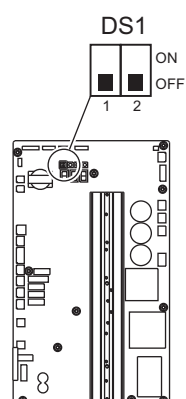
*1. Refer to **Test Operation** on page 92 for details on test operation.

Location of DIP Switch

RZF18/24AVMK



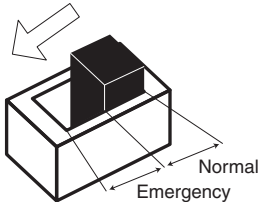
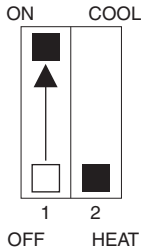
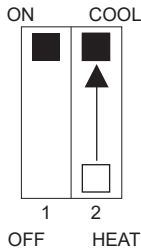
RZF30/36AVMK



DS1-1	ON	Turn ON to conduct emergency operation (forced operation).
	OFF (Factory setting)	
DS1-2	COOL	For emergency operation, flip the switch to COOL for cooling.
	HEAT (Factory setting)	

4.1 Forced Operation

To start forced operation, proceed as follows:

Step	Action
1	Turn OFF the power supply.
2	Flip the emergency switch (DS1-1) on the indoor unit PCB from NORM (Normal, Factory setting) to EMG (Emergency). 
3	Set the DIP switch (DS1-1) on the outdoor unit PCB to ON . 
4	Set the DIP switch (DS1-2) on the outdoor unit PCB to COOL . 
5	Turn ON the power supply to start forced operation.



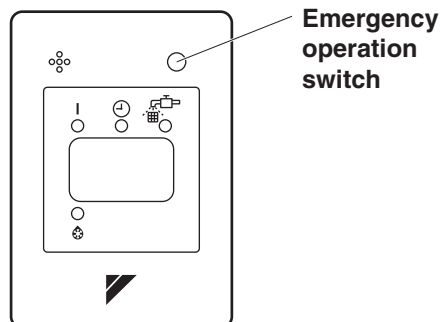
Note(s)

- Emergency operation cannot be carried out when the PCB itself is defective.
- Change the position of the emergency switch only when the power is turned OFF.
- When returning to the normal operation, restore the switch to the original position with the power OFF.
- When safety device is activated in emergency operation, operation is stopped once and restarted in 3 minutes.

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 on the indoor unit. When the remote controller does not work even though the battery low indicator is not lit, contact your dealer.

1. Press the **emergency operation** switch.



2. Press the **emergency operation** switch again to stop operation.

5. Test Operation

5.1 Checks before Test Operation

Before carrying out a test operation, proceed as follows:

	ITEM TO CHECK
Power supply wiring	Is the wiring as mentioned on the wiring diagram? Make sure no wiring has been forgotten and that there are no missing phases or reverse phases.
	Does wiring between units put in and changed in continuation installation?
	Is the unit properly grounded?
	Are any of the wiring attachment screws loose?
	Is the insulation resistance at least 1 MΩ? ● Use a 500 V Megger tester when measuring insulation. ●*Do not use a Megger tester for circuits which except 230 V.
	Is an earth leakage circuit breaker used a current operated type which is compatible to the higher harmonic wave?
	Does the earth leakage circuit breaker have appropriate rated current?
Refrigerant piping	Is the size of the piping appropriate?
	Is the insulation material for the piping attached securely? Are both the liquid and gas pipes insulated?
	Are the stop valves for both the liquid side and the gas side open?
Extra refrigerant	Did you write down the extra refrigerant and the refrigerant piping length?
Indoor unit	Is the indoor unit fully installed? When the test operation is started, the fan automatically begins turning.



Warning

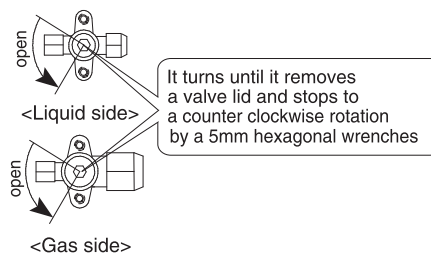
When a power supply is switched ON, when you leave from the outdoor unit, be sure to close the cover plate.

(It becomes the cause of an electric shock.)

5.2 Test Operation

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

1. Open the stop valve cover and check that the liquid and gas sides of the stop valves are open.
<Be sure to close the front plate before the operation (there is a risk of electric shock)>
* 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.
2. Attach the stop valve cover to the outdoor unit and turn the power on at least 6 hours before operating the outdoor unit to protect the compressor.
3. Set up a cooling operation.
4. Perform the test operation.
5. Operate normally.
6. Confirm function of the indoor and outdoor units according to the operation manual.



Service Diagnosis

At the time of a test operation, when the following error code is displayed on remote control, the fault of installation construction can be considered.

Error code	Installation error	Remedial action
E3, E5, U0, L8	A failure of a stop valve to open	"Open" operation of a stop valve
E3, E5, L4, L8	Closing of an air passage	Removing closing thing from air passage
U1	Missing phase, negative phase	2 Phase of power supply 3 Phase (L1, L2, L3 Phase) are replaced
U2	Power supply unbalancing	Unbalanced dissolution
U4, UF	Incorrect connection of field wiring	Correction of wiring
UA	Connection of incompatible indoor unit	Connect appropriate indoor unit (Refer to the catalog)
No indication	Mistake wiring or not connect wiring of power supply, indoor, outdoor, field wiring between indoor unit	To correct wiring or connect correctly

- When error codes other than the above are displayed on remote control, considering that the failure of between an indoor and an outdoor unit may have. For the error codes, refer to **Error Codes and Descriptions** on page 124 .
- The followings can be considered causes when the breaker for power supply trips.
 - ◆ The capacity of a breaker for power supply is smaller than the required capacity of the leakage circuit breaker.
 - ◆ The leakage circuit breaker is not compatible to the higher harmonic wave.
- In case of already checking all equipment that not have any problem, but found air conditioner not cooling. Please re-check Motor operate valve coil not tighten or remove for 1st checking. If normally please re-confirm problem following service manual to solve problem.

Part 6

Service Diagnosis

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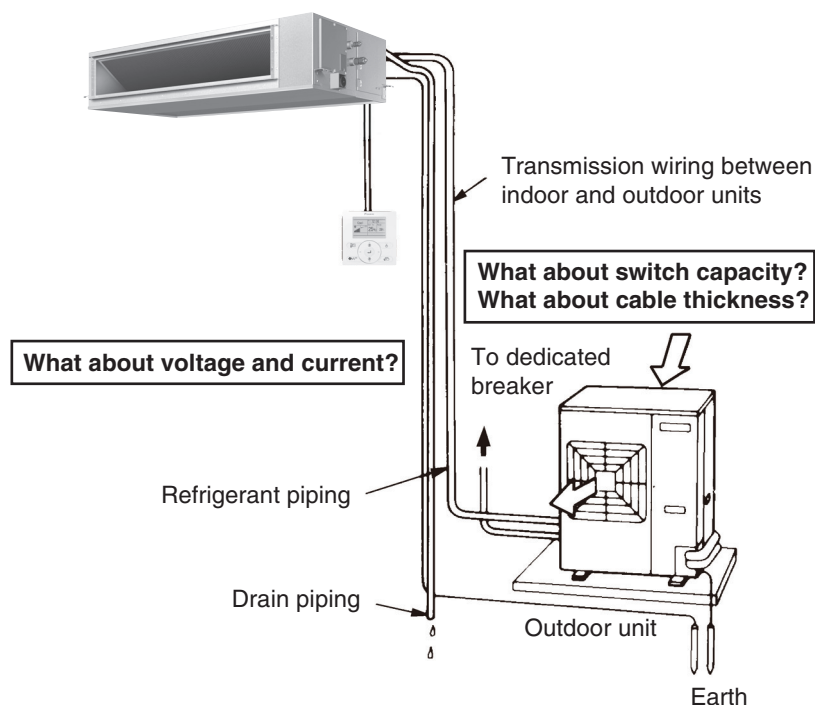
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1. Maintenance Inspection

1.1 Overview

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

Indoor unit



Guidelines for Optimal Operation Condition

The operation value guidelines when operating under standard conditions by pushing the operation button on the remote controller are as given in the table below.

Indoor fan: H tap

—	High pressure (MPa)	Low pressure (MPa)	Discharge pipe temperature (°C)	Suction pipe temperature (°C)	Indoor unit: Temperature differential between suction air and discharge air (°C)	Outdoor unit: Temperature differential between suction air and discharge air (°C)
Cooling	2.62-3.39	0.60-0.98	60-100	-2-10	8-18	7-12

Standard Conditions

—	Indoor	Outdoor
Cooling Operation	27°CDB/19°CWB	35°CDB

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

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

What happens in comparison to normal values is summarized in the table below.
(Measured 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



Note(s)

- *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 low.

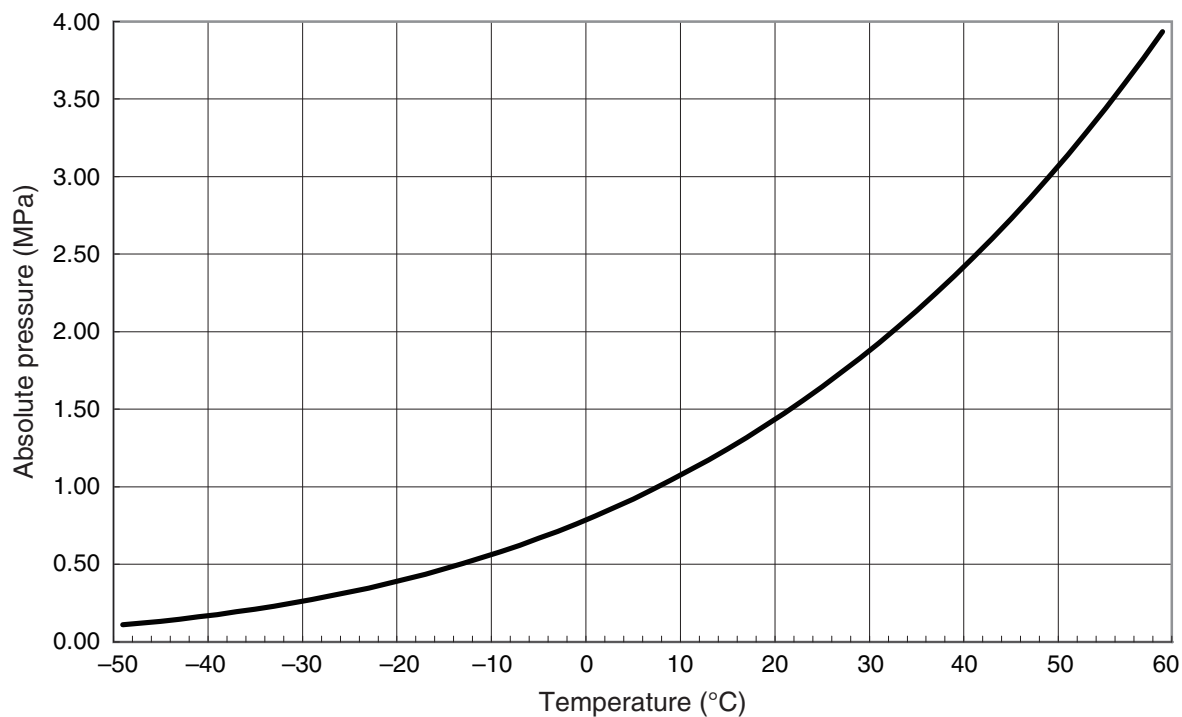
Precautions for maintenance

Item		Attention point	Item	Attention point
Power supply unit and PCB replacement	Inverter drive unit	Replace the PCB components at maintenance. Shut down the power supply when replacing the component. Even if the display lamp on the PCB is off, it may still be energized.	Radiation fin temperature rise	Troubleshooting not required; automatically recovered in 3 minutes. Verifiable by the maintenance mode or the PCB display lamp.
	Outdoor unit main PCB	When replacement, choose a PCB with the right capacity to replace the existing one. The PCB model varies according to the capacity.	Option for installation site	To facilitate electrical component box maintenance, reserve a distance of 400 mm above the outdoor unit. Pay attention to stacking up the units for installation.
Capacitor electric discharge		When interrupting the operation, perform electric discharge of the capacitor charge. Operation will be affected but it is not malfunction.	Instantaneous power failure detection	Other inverters carried out abnormal stop at undervoltage or power failure, as a U2 (power voltage system abnormality), but here H1P alone lights up and the unit recovers automatically, without displaying an error code.
Capacitor residual charge		When maintaining the electrical component box, turn off the power supply and perform the maintenance only after confirming that the capacitor terminal voltage is below 50 VDC. If voltage check is not possible, perform the maintenance 10 minutes after shutting down the power.	Fan residual operation	Once the compressor stops running, the fan however will keep running for 30 seconds for cooling the inverter. When the radiation fin temperature is slightly high, the fan will keep running until the temperature drops.
Warming up		To prevent refrigerant getting into the oil, the inverter will replace the compressor in providing the heating belt with voltage during the shut-down period. The on/off of warming-up is automatic and is determined by reading the air purge pipe temperature and the outdoor temperature. When performing the maintenance, make sure that the power supply is shut down before the maintenance operation.	Replacing the fan motor	After confirming that the fan is not turning, pull out the fan motor plug from the PCB and then perform the operation. When the outdoor fan is rotating because of strong wind, electric shock may happen because of the main PCB capacitor power storage. Start the operation only after making sure that the capacitor terminal voltage is below 50 VDC. To prevent damaging the PCB, please touch the electrical component box earth terminal before pulling out the plug to release the static electricity before the maintenance operation.
Installing a phase-advanced condenser will not improve the power		For a standard unit, power can be improved by capacitor installation. Because an inverter will cause IGBT failure, do not install a phase-advanced condenser.		
Choosing an earth leakage circuit breaker		Please choose the model (higher-order waves) based on the inverter. If what is chosen is not a higher-order wave corresponded earth leakage circuit breaker, malfunction may happen.	DC fan motor	When there is bigger headwind, it will be automatically detected, the fan will be stopped, and natural wind will be used for heat exchange. At this point, the fan motor outputs no voltage. It is not an error.
Pump down operation		When increasing the starting setting value of the low pressure switch/low pressure sensor, the operation once started will not be stopped immediately. In this case, the method of closing the stop valve to activate LPS during cooling cannot be used. Please use pump down switch for refrigerant recovery.	Attention to top plate seal damage	The top-plate seal shape and material differ from those of standard SkyAir series units. The top-plate seal prevents water from penetrating fan or mechanical chambers (electrical components) and condensation from the top-plate from dripping into the switch box. As such, replace the seal if it begins to peel off or is damaged during servicing.

Precautions for refrigerant charging

1. The charging pipe and the manifold tube use R-32 or R-410A products for pressure proof and avoiding contamination with impurities (SUNISO oil, etc.).
2. Be sure to purge with nitrogen when brazing. Apply the specified oil to the flaring part when connecting to the flaring.
3. Airtight test pressure: 4.0 MPa
4. Authentically perform vacuum drying. Add the refrigerant in liquid state at the liquid side.

1.2 Refrigerant Characteristics (R-32)



Temperature (°C)	Absolute pressure (MPa)	Temperature (°C)	Absolute pressure (MPa)	Temperature (°C)	Absolute pressure (MPa)	Temperature (°C)	Absolute pressure (MPa)
-50	0.1101	-20	0.4058	10	1.1069	40	2.4783
-48	0.1216	-18	0.4373	12	1.1742	42	2.6014
-46	0.1340	-16	0.4707	14	1.2445	44	2.7292
-44	0.1474	-14	0.5060	16	1.3179	46	2.8616
-42	0.1619	-12	0.5433	18	1.3946	48	2.9989
-40	0.1774	-10	0.5826	20	1.4746	50	3.1412
-38	0.1941	-8	0.6241	22	1.5579	52	3.2887
-36	0.2120	-6	0.6679	24	1.6448	54	3.4415
-34	0.2311	-4	0.7139	26	1.7353	56	3.5997
-32	0.2516	-2	0.7623	28	1.8295	58	3.7635
-30	0.2734	0	0.8131	30	1.9275	60	3.9332
-28	0.2967	2	0.8665	32	2.0294	62	4.1089
-26	0.3216	4	0.9225	34	2.1353	64	4.2909
-24	0.3480	6	0.9811	36	2.2454	—	—
-22	0.3760	8	1.0426	38	2.3597	—	—

1.3 Refrigerant Recovery Method

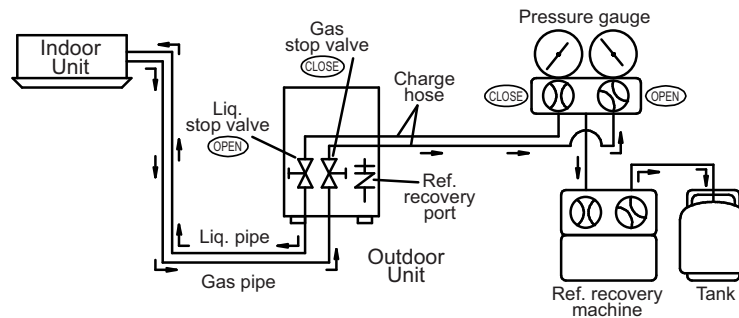
Make sure to recover the refrigerant when replacing components of the refrigerant system. The procedure for refrigerant recovery is as follows.

Note that care must be taken to ensure the temperature does not increase too much during refrigerant recovery for models with a fusible plug. (The fusible plug ejects refrigerant at temperatures of 60°C and over)

Refrigerant recovery procedure

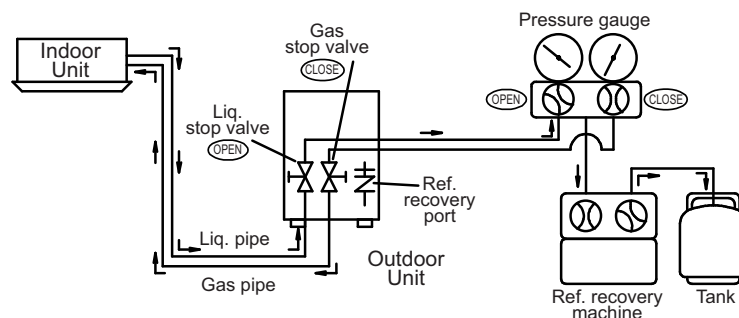
1. Refrigerant recovery from gas pipe (Approximately 1 min)

Close gas stop valve (liquid stop valve: open) and recover refrigerant from gas stop valve port.



2. Refrigerant recovery from liquid pipe (Approximately 1 min)

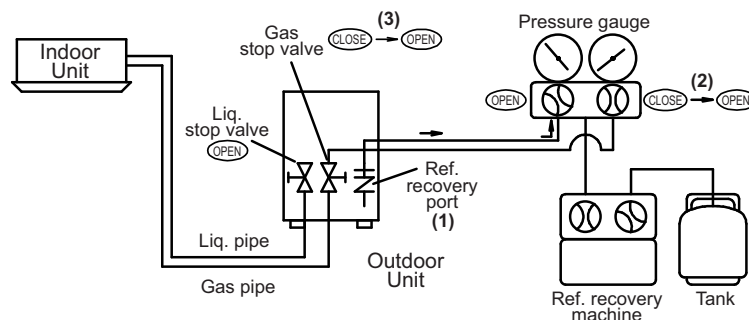
Recover refrigerant from liquid stop valve port.

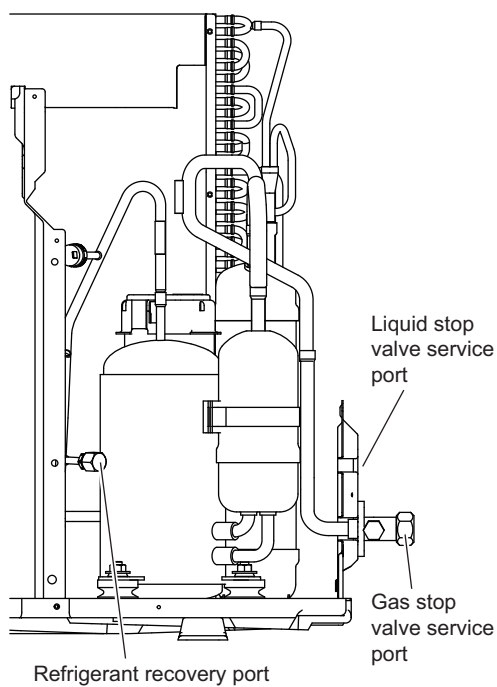
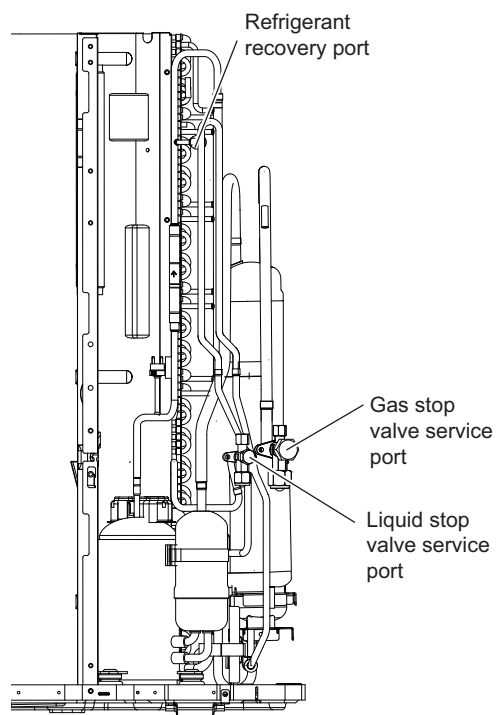


3. Refrigerant recovery from outdoor unit (Approximately 2-3 min)

Recover refrigerant from outdoor unit refrigerant recovery port (1).

If refrigerant recovery port (1) pressure becomes lower than gas stop valve port pressure, refrigerant will be recovered simultaneously from the gas stop valve port. Open gas stop valve (2), and open the gas stop valve port (3) gradually to avoid pressure from rising rapidly.



**RZF18AVMK
RZF24AVMK****RZF30AVMK
RZF36AVMK**

*Illustration is for 30 class as representative.

2. Symptom-Based Troubleshooting

2.1 All Indoor Units

	Symptom	Details of Measures
1	Equipment does not operate.	Refer to page 104.
2	Indoor fan operates, but compressor does not operate.	Refer to page 106.
3	Cooling operation starts but stops immediately.	Refer to page 107.
4	After unit shuts down, it cannot be restarted for a while.	Refer to page 108.
5	Equipment operates but does not provide cooling.	Refer to page 110.
6	Equipment discharges white mist.	Refer to page 112.
7	Equipment produces loud noise or vibration.	Refer to page 113.
8	Equipment discharges dust.	Refer to page 115.
9	Defrost lamp on the receiver for wireless remote controller is blinking.	Refer to page 116.
10	Equipment emits odor.	Odors and cigarette smoke from the room accumulate inside the indoor unit and are discharged with air. Clean the inside of the indoor unit.
11	Indoor fan operates in L tap for 1 minute in program dry mode even if compressor is not operating.	Normal. The monitoring function forcibly operates the fan for 1 minute.
12	Drain pump operates when equipment is not operating.	Normal. The drain pump continues to operate for several minutes after equipment is turned OFF.
13	Remote controller thermistor cannot be used with a group controller.	Normal. Remote controller thermistor cannot be used in group control.
14	When operating in remote controller thermistor, the thermostat turns OFF before temperature of remote control reaches the set temperature.	Normal. Control may be conducted with the suction air temperature (body thermostat), concurrently with the set temperature.
15	When an error occurs on the unit with an individual remote controller during group control with one remote controller, the address display on the individual remote controller shows 0 regardless of the address setting.	Normal. Address display of an individual remote controller is always 0 .
16	The remote controller display goes blank during operation.	This is not a failure. BRC1E63 is designed to turn the display off after a certain amount of time without activity, in order to save power.

2.2 Safety Devices

2.2.1 Indoor Unit

Model	Fuse	
FDMF-A	A1P	F1U (3.15 A, 250 V)
	A2P	F2U (5.0 A, 250 V) F4U (6.3 A, 250 V)

2.2.2 Outdoor Unit

Model	Fuse		High pressure switch
RZF18/24AVMK	A1P	F1U (6.3 A, 250 V) F2U (30 A, 250 V) F6U (3.15 A, 250 V)	S1PH Open: $4.15^{+0}_{-0.15}$ (MPa) Close: 3.2 ± 0.15 (MPa)
RZF30/36AVMK	A1P	F1U (31.5 A, 250 V) F2U, F3U (6.3 A, 250 V) F6U (5 A, 250 V)	

2.3 Equipment does not operate.

Applicable Models

All models

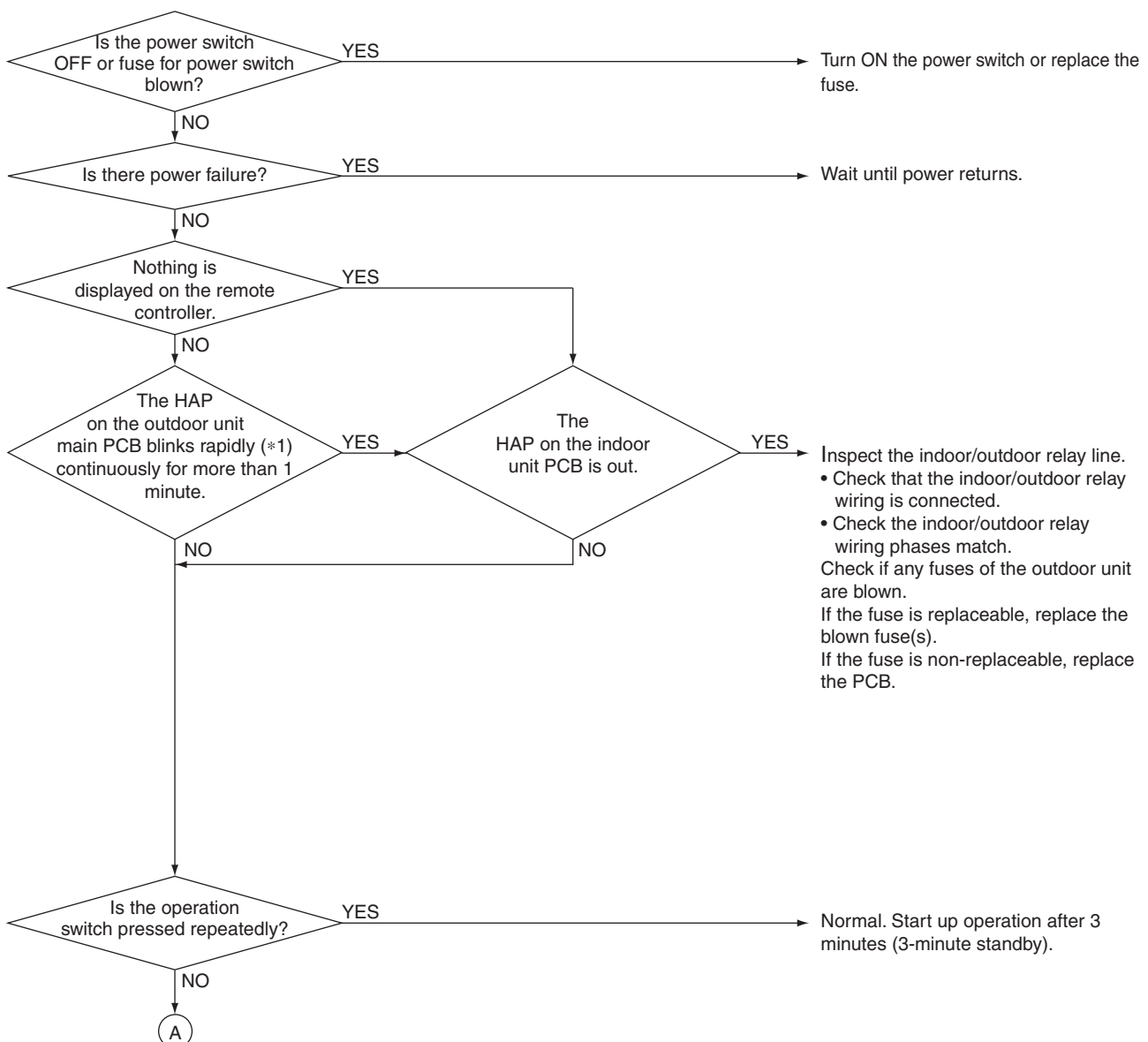
Supposed Causes

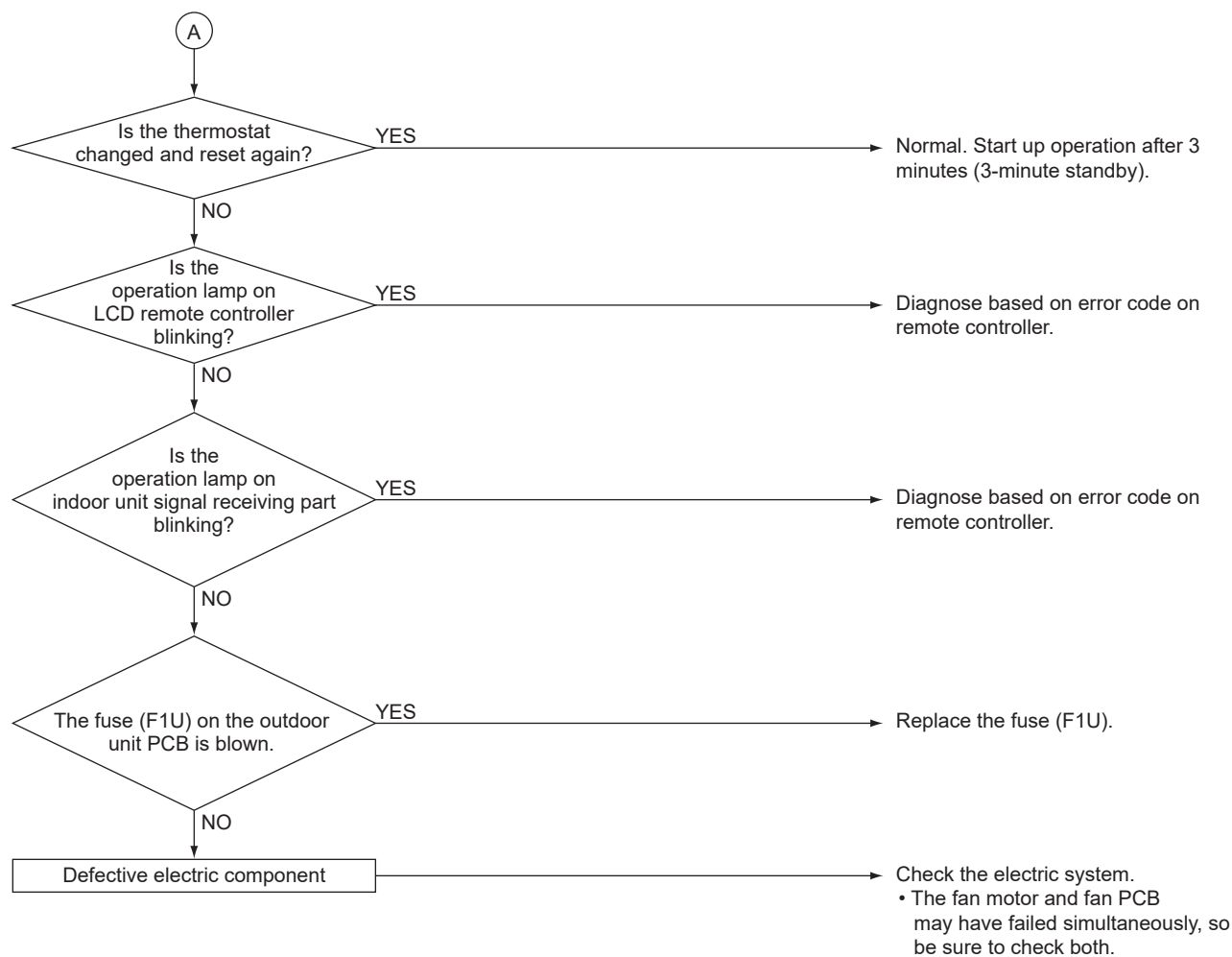
- Fuse blown or disorder of contact in operation circuit
- Defective operation switch or contact point
- Defective high pressure switch
- Defective magnetic contactor for fan motor
- Activation or fault of overcurrent relay for fan motor
- Defective compressor protection thermostat
- Insufficient insulation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

Troubleshooting



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



**Note(s)**

*1. Blinking pattern: 0.2 seconds ON, 0.2 seconds OFF (blinking approximately 25 times in 10 seconds)
(Normally 0.4 seconds ON, 0.4 seconds OFF (blinking approximately 12 times in 10 seconds))

2.4 Indoor fan operates, but compressor does not operate.

Applicable Models

All models

Supposed Causes

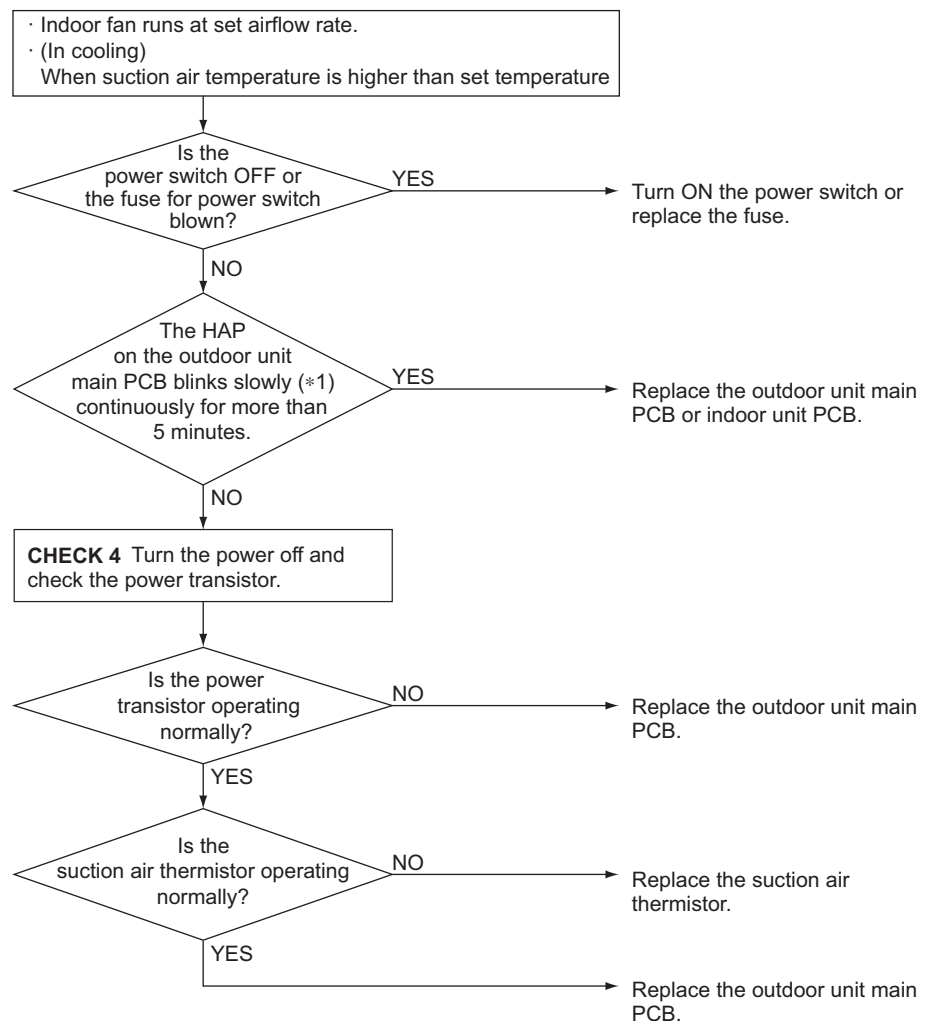
- Fuse blown or disorder of contact in operation circuit
- Defective suction air thermistor
- Defective indoor/outdoor unit PCB
- Defective power transistor

Troubleshooting



Caution

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



Reference

CHECK 4 Refer to page 196.



Note(s)

*1. Blinking pattern: 0.4 seconds ON, 1.2 seconds OFF (blinking approximately 6 times in 10 seconds)
(Normally 0.4 seconds ON, 0.4 seconds OFF (blinking approximately 12 times in 10 seconds))

2.5 Cooling operation starts but stops immediately.

Applicable Models

All models

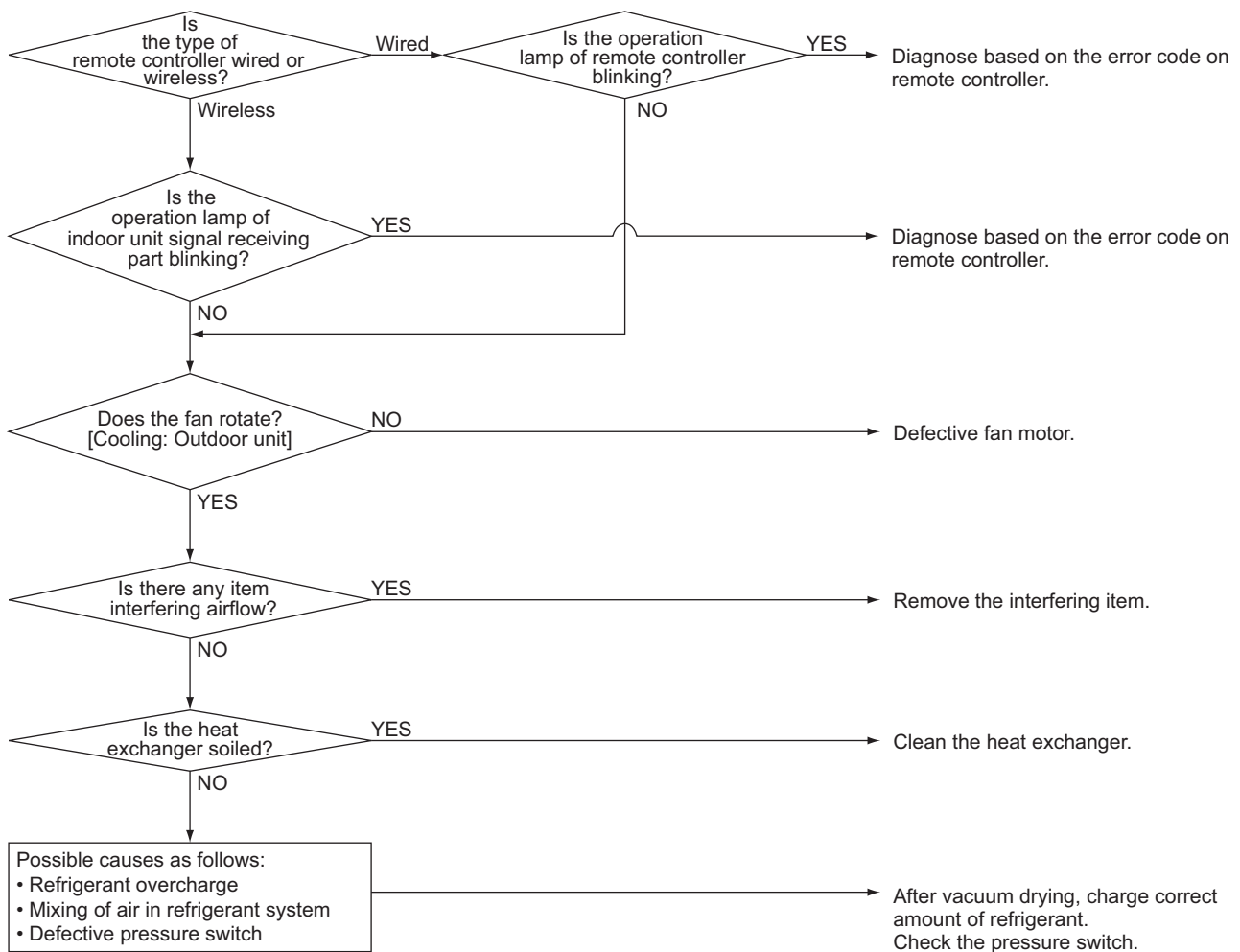
Supposed Causes

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

Troubleshooting



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



2.6 After unit shuts down, it cannot be restarted for a while.

Applicable Models

All models

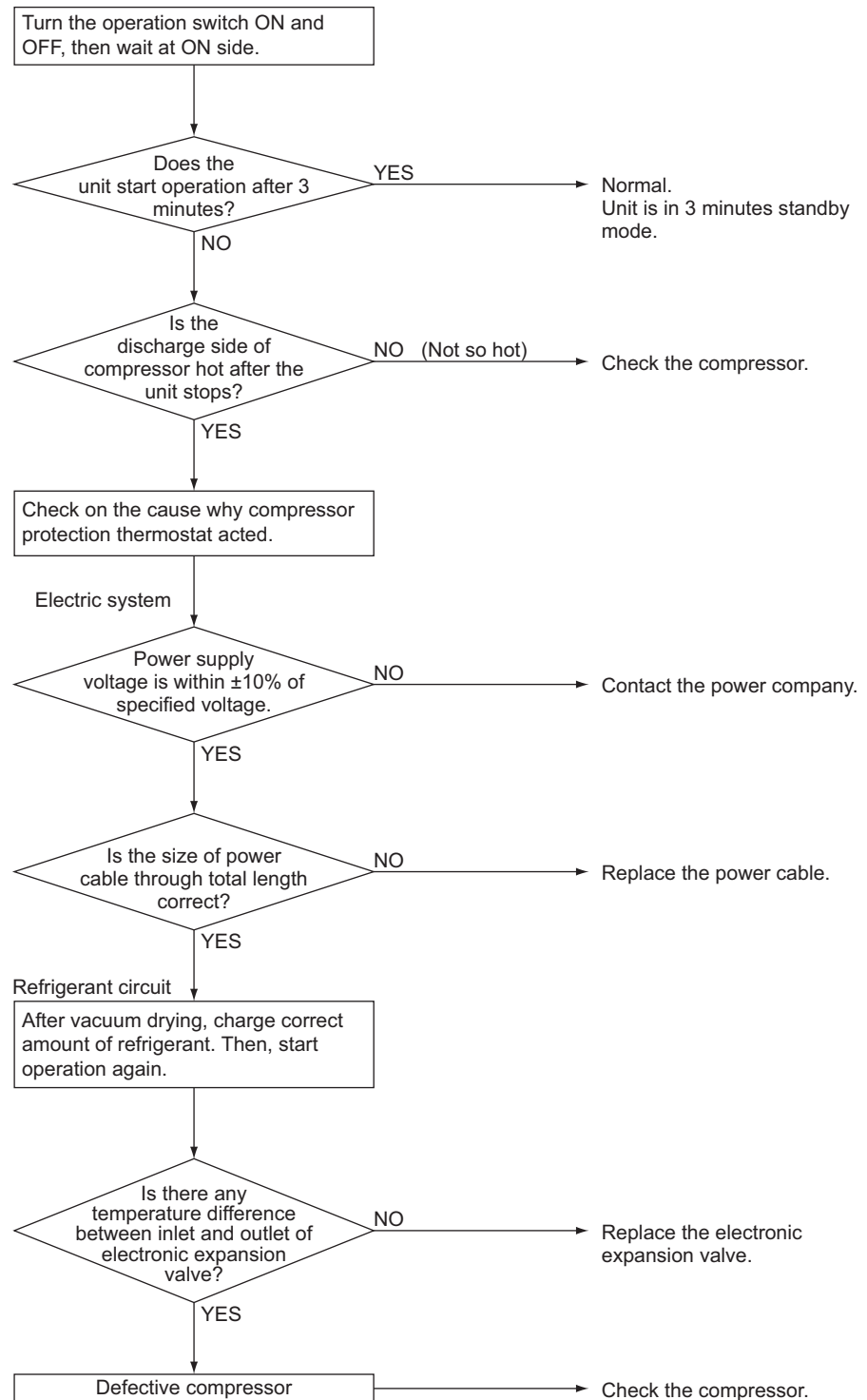
Supposed Causes

- Power voltage or power wire malfunction.
- Compressor protection thermostat may act due to the following reasons;
 - 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.



2.7 Equipment operates but does not provide cooling.

Applicable Models

All models

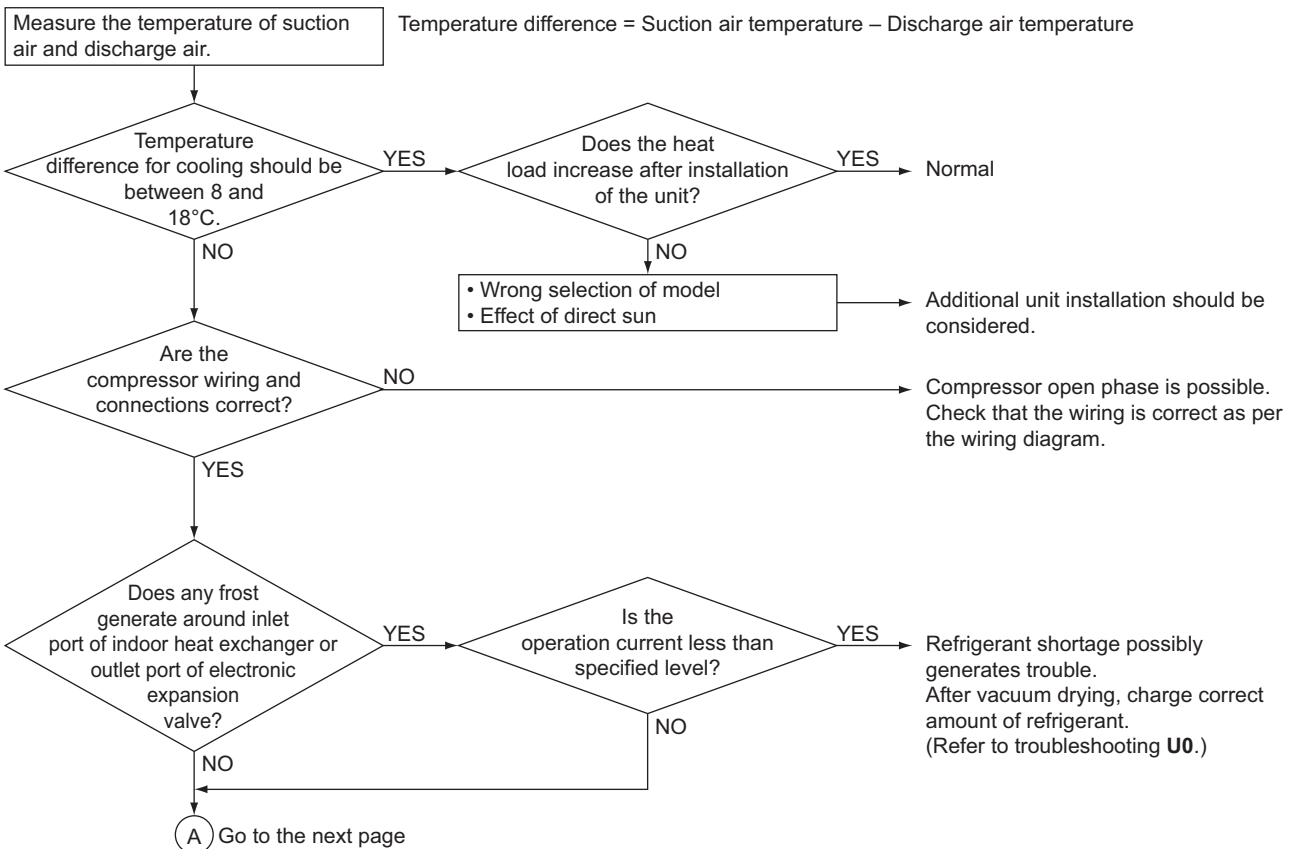
Supposed Causes

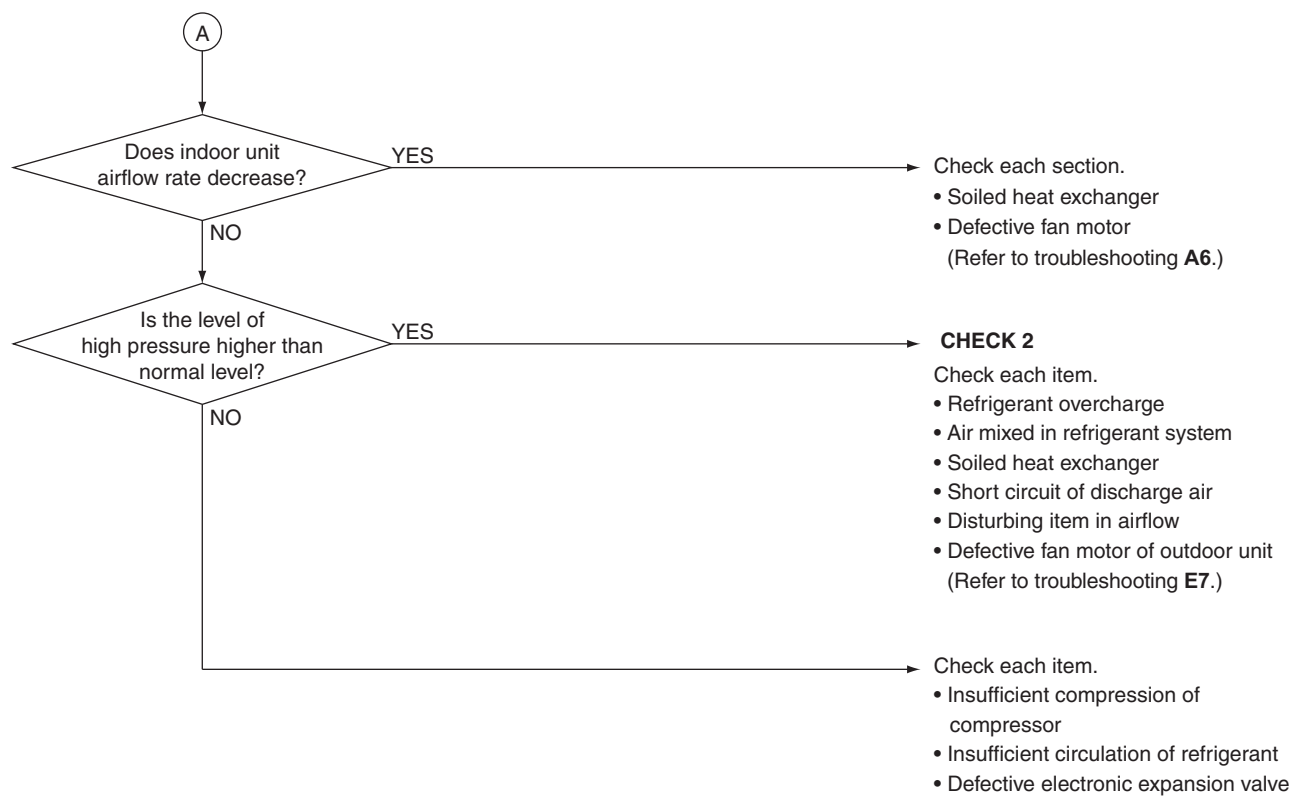
- Wrong selection of model
- Compressor (secondary side) open phase
- Refrigerant shortage
- Insufficient airflow in the indoor unit
- Increase of high pressure
- Insufficient compression of the compressor
- Insufficient circulation of refrigerant
- Defective electronic expansion valve

Troubleshooting



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





Reference

CHECK 2 Refer to page 195.

2.8 Equipment discharges white mist.

Applicable Models

All models

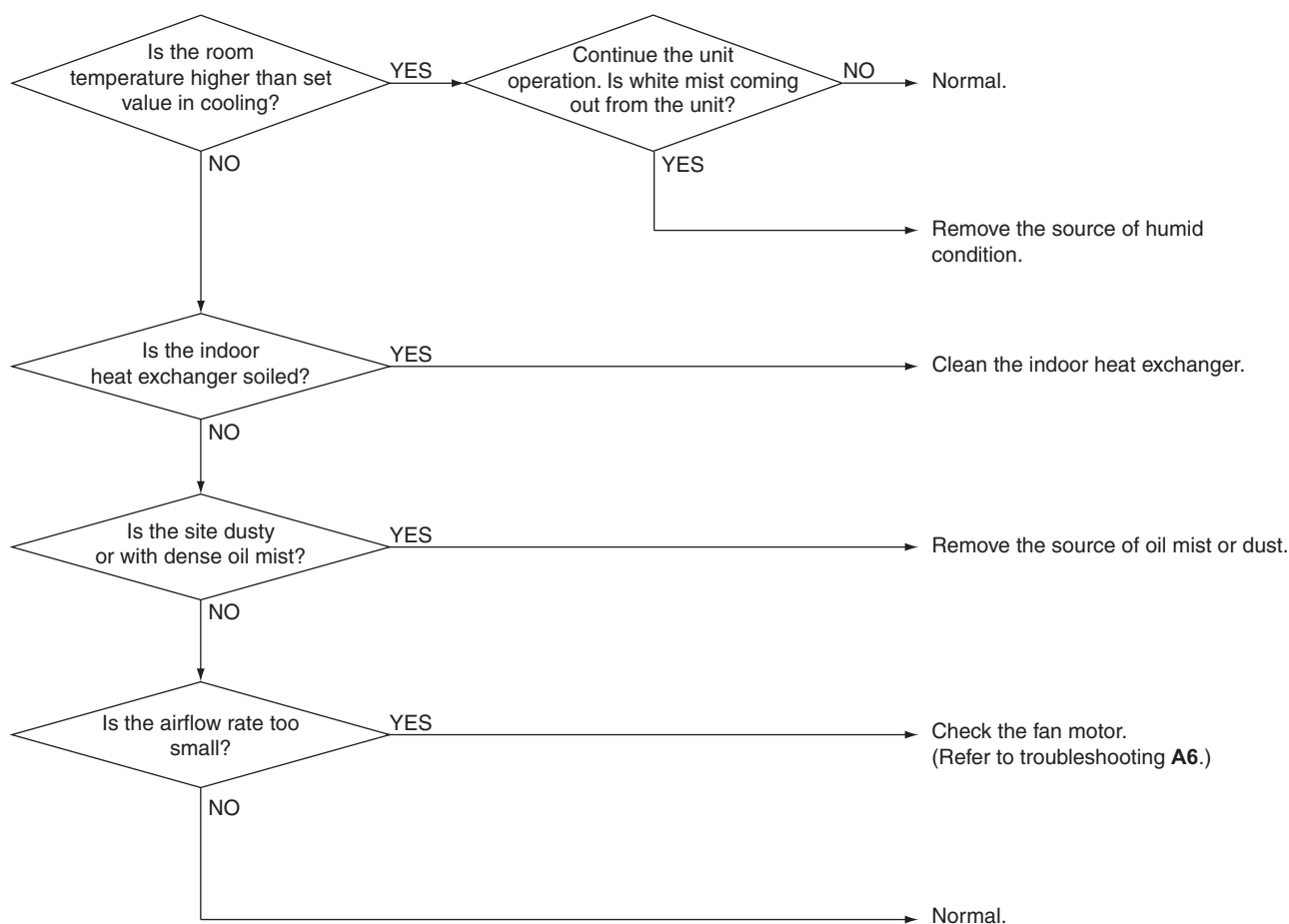
Supposed Causes

- Humid installation site
- Installation site is dirty and with dense oil mists.
- Soiled heat exchanger
- 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

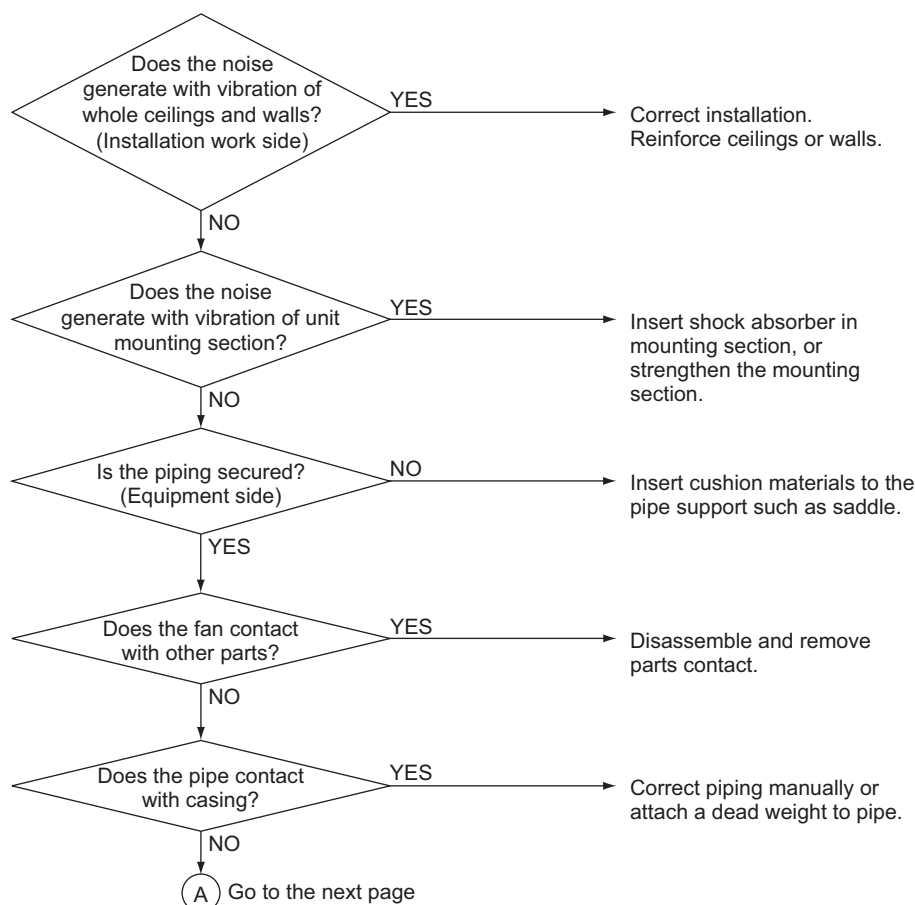
Supposed Causes

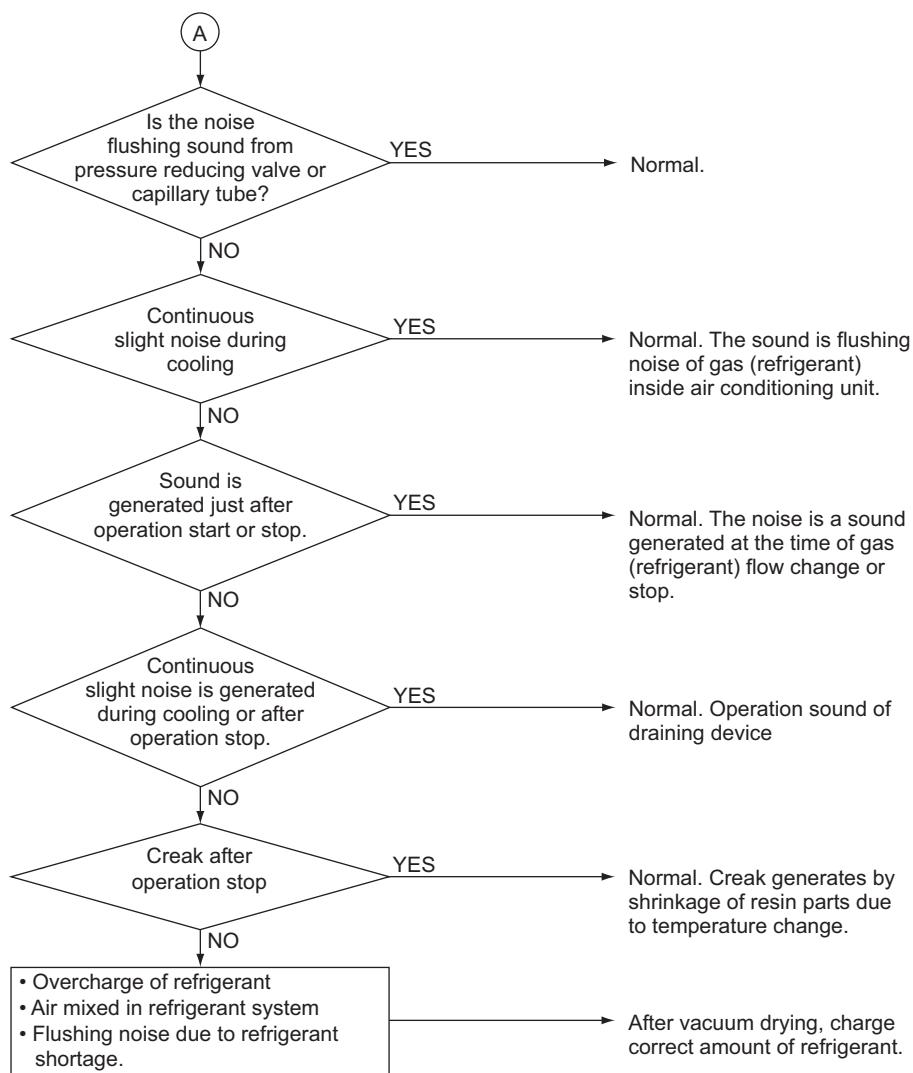
- Improper installation
- Contacts of fan, piping, casing, etc.
- Noise of refrigerant flow
- Operating noise of drain discharge equipment
- Noise of resin components contracting
- Overcharge of refrigerant
- Air interfusion
- Flush noise of insufficient refrigerant (hushing noise)

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.

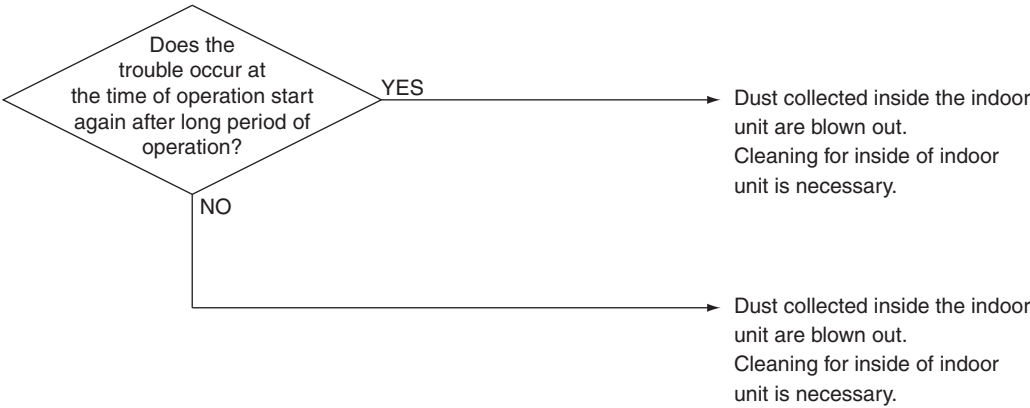
Applicable Models	All models
Supposed Causes	<div><div></div> Carpet spread room</div> <div><div></div> Animal hair</div>

Troubleshooting



Caution

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



2.11 Defrost lamp on the receiver for wireless remote controller is blinking.

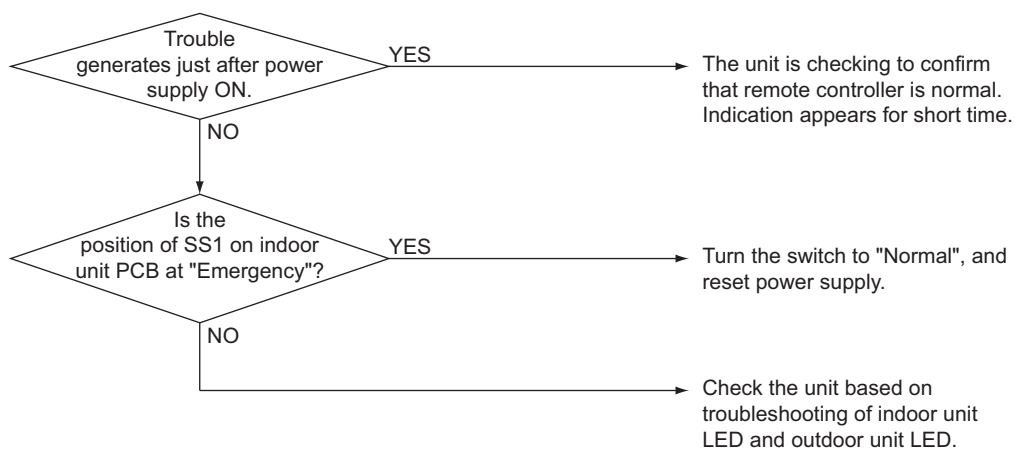
Applicable Models

All models

Troubleshooting


Caution

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



3. Troubleshooting with LED Indications

3.1 Indoor Unit

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

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

Service monitor LED	Description
HAP (Green)	
◐	Indoor unit normal → Outdoor unit troubleshooting
◐	Incorrect transmission wiring between indoor and outdoor unit If outdoor unit's HAP is OFF, proceed outdoor unit's troubleshooting. If outdoor unit's HAP 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(s)

1. Operation halts due to error depending on the model or condition.
2. Troubleshoot by turning OFF the power supply for a minimum of 5 seconds, turning it back ON, and then rechecking the LED display.

3.2 Outdoor Unit

3.2.1 RZF18/24AVMK

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

Service monitor		Description
HAP (Green)	H1P (Orange)	
◐	●	Normal
○	—	Defective outdoor unit main PCB (Note 1)
●	—	Power abnormality or outdoor unit main PCB malfunction (Note 2)
◐	○	Activation of protection device (Note 3)



Note(s)

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 transmission wiring for indoor unit. Then turn ON the power supply. If the HAP on the outdoor unit main PCB blinks after about 10 seconds, the indoor unit PCB is defective.
3. Also check for open phase.

Remark:

The error history continues to indicate the previously generated error until the power supply is turned OFF. Be sure to turn OFF the power supply after inspection.

3.2.2 RZF30/36AVMK

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

Service monitor HAP (Green)	Description
●	Normal
●	Power abnormality or defective outdoor unit main PCB
○	Power abnormality
◐	Abnormal (fast flashing)

The lights will turn off if the system has been finished normally.

In case of abnormality, the error code will be displayed.

To display error code details on seven-segment display

During test operation, seven-segment display will flash **E5**. This is not abnormal.

Measures in case of abnormality

Confirm the error code from remote controller and seven-segment display, then correct the abnormality according to the installation manual, operation manual or service manual. After correcting the abnormality, press the **RETURN (BS3)** button and reset the error code, then carry out the check again and confirm the abnormality is properly corrected. The error code will not be displayed in the remote controller and seven-segment display again.



Caution

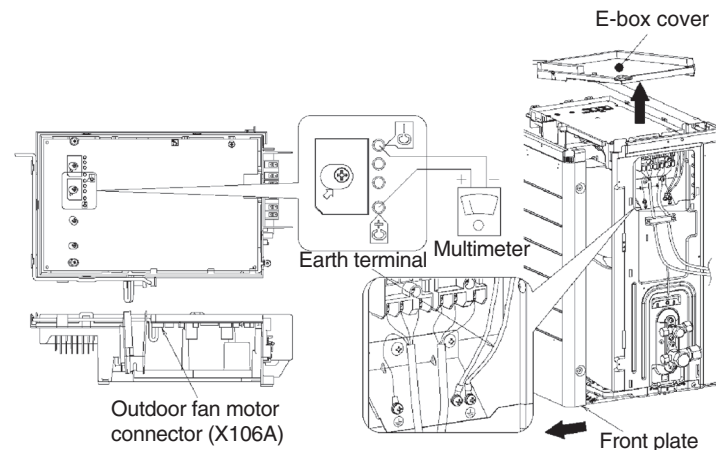
During stand by, power supply is decreased and the outdoor unit main PCB (A1P) LED may be turned OFF.

However, power is still being supplied to terminal block during stand by mode. Be sure to turn power supply OFF while servicing.

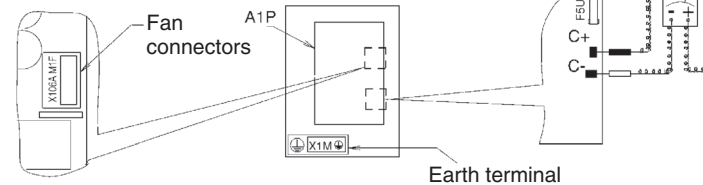
Precautions for maintaining the electrical box

1. Be sure to check using a multimeter that the power supply is turned off at a terminal strip before service inspection.
2. Be aware that temperature of switch boxes can be extremely high.
3. Do not touch the electrical box for another 10 minutes after turning off the circuit breaker. Even after 10 minutes, always measure the voltage at the terminals of main circuit capacitor or electrical parts and make sure that those voltages are 50 VDC or less.
(Always touch the earth terminal first before pulling out or plugging in connectors in order to discharge static electricity. This is to prevent the PCB from being damaged.)

RZF18/24AVMK



RZF30/36AVMK



4. After confirming the main circuit capacitor voltage drop, pull out the outdoor fan connector. Make sure not to touch any live parts during this action. (Strong adverse winds which let the outdoor fan rotate induce a risk of electrical shock because the fan rotation makes the capacitor store electricity.)

Caution when performing other servicing

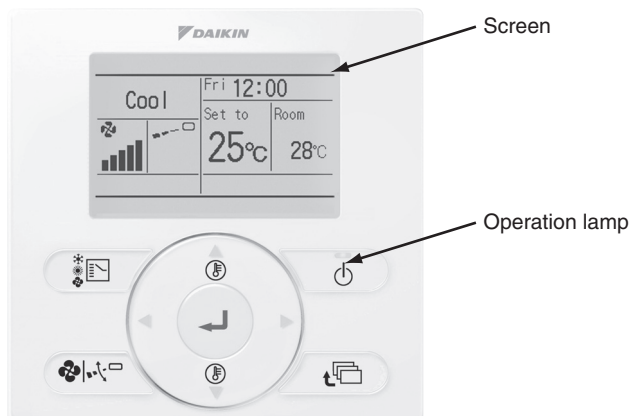
Never connect power supply cables to compressors (U, V, W) or fan motor directly.
(Failure to connect the power supply to the PCB may cause the compressor or fan motor to burn out.)

4. Troubleshooting with Remote Controller

4.1 BRC1E62, BRC1E63

The following will be displayed on the screen when an error (or a warning) occurs during operation.

Check the error code and take the corrective action specified for the particular model.



(1) Check if it is error or warning.

	Operation Status	Display	
Abnormal shutdown	The system stops operating.	The operation lamp (green) starts to blink. The message Error: Push Menu button will blink at the bottom of the screen.	<p>The screen displays 'Cool', 'Sun 9:00', 'Set to 27°C', and 'Room 30°C'. At the bottom, a dashed box contains the text '(Error: Push Menu button)'.</p>
Warning	The system continues its operation.	The operation lamp (green) remains on. The message Warning: Push Menu button will blink at the bottom of the screen.	<p>The screen displays 'Cool', 'Sun 9:00', 'Set to 27°C', and 'Room 30°C'. At the bottom, a dashed box contains the text '(Warning: Push Menu button)'.</p>

(2) Take corrective action.

Press the **Menu/Enter** button to check the error code.

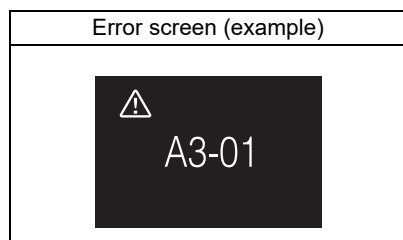


Take the corrective action specific to the model.

Error Code:A6-01		— Error code
Contact Info 0123-456-789		
Indoor Model	FDMF18AVMK	— Applicable model names
Outdoor Model	RZF18AVMK	
Return		

4.2 BRC1H81 Series

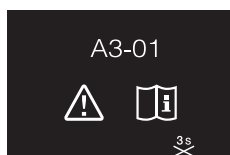
When the system is in error and the controller presents you with an error screen from as soon as you try to enter the main menu, consult your dealer.



4.2.1 Refrigerant leak detection

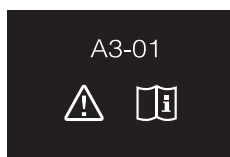
When the system detects a refrigerant leak, an alarm goes off. Stop the alarm and consult your dealer.

To stop the leak detection alarm



1 Press for 3 seconds to stop the alarm.

Result: The alarm stops.

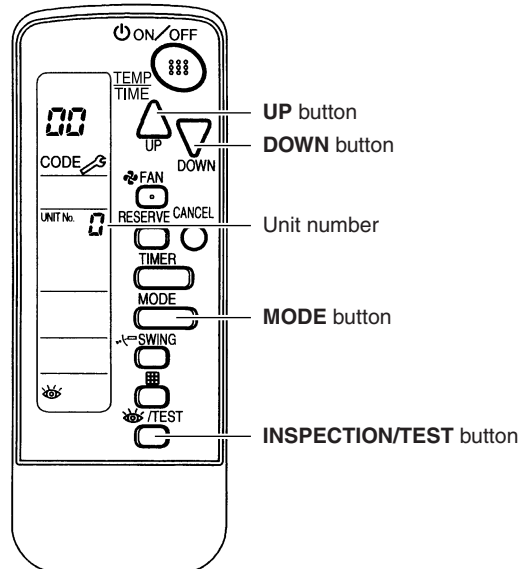



2 Consult your dealer.

4.3 BRC4C Series

If the 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.)




1. Press **INSPECTION/TEST** button to enter inspection mode. Then the figure  blinks on the unit number display.
2. Press **UP** button or **DOWN** button and change the unit number until the receiver of the remote controller starts to beep.

3 short beeps : Follow all steps below.

1 short beep : Follow steps 3 and 4. Continue the operation in step 4 until you hear a continuous beep.

This continuous beep indicates that the error code is confirmed.

Continuous beep : There is no abnormality.

3. Press **MODE** button. The left  (upper digit) indication of the error code blinks.
4. Press **UP** button or **DOWN** button to change the error code upper digit until the receiver of the indoor unit starts to beep.


- The upper digit of the code changes as shown below.



Continuous beep : Both upper and lower digits match. (Error code is confirmed.)

2 short beeps : The upper digit matches but the lower digit does not.

1 short beep : The upper digit does not match.

5. Press **MODE** button. The right  (lower digit) indication of the error code blinks.
6. Press **UP** button or **DOWN** button and change the error code lower digit until the receiver of the indoor unit generates a continuous beep.

- The lower digit of the code changes as shown below.

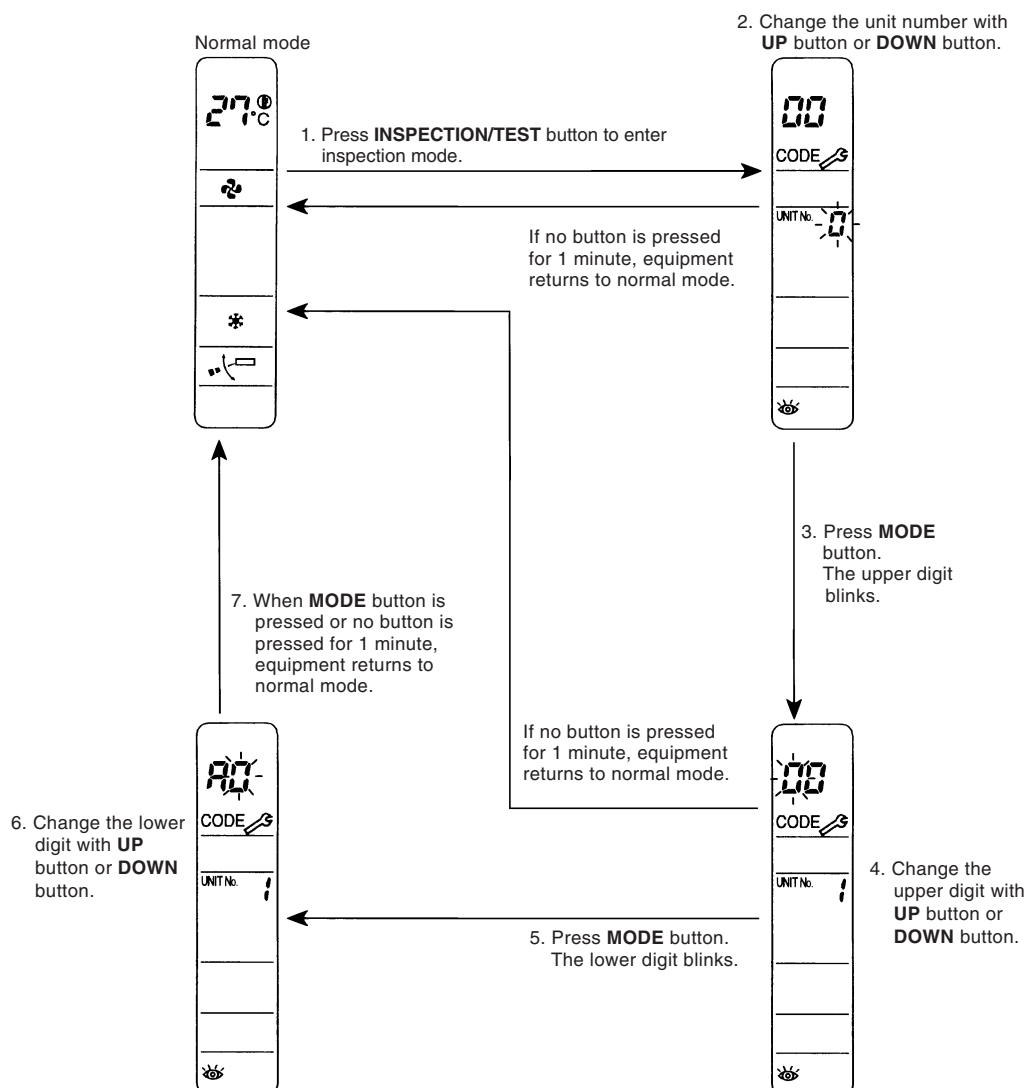


Continuous beep : Both upper and lower digits match. (Error code is confirmed.)

2 short beeps : The upper digit matches but the lower digit does not.

1 short beep : The upper digit does not match.

7. Press **MODE** button to return to the normal mode. If you do not press any button for 1 minute, the remote controller automatically returns to the normal mode.



5. Troubleshooting by Error Code

5.1 Error Codes and Descriptions

	Error Code	Description	Reference Page
Indoor Unit	A0	Error of external protection device	129
	A1	Indoor unit PCB abnormality	130
	A3	Drain water level system abnormality	131
	A6	Indoor fan motor abnormality	132
		The fuse is blown.	—
	A8	Fan PCB abnormality	134
	AF	Humidifier system abnormality	135
	AJ	Defective capacity setting	136
	C1	Transmission error (between indoor unit PCB and fan PCB)	139
	C4	Indoor heat exchanger liquid pipe thermistor abnormality	139
	C5	Indoor heat exchanger middle thermistor abnormality	139
	C6	Combination error between indoor unit PCB and fan PCB	140
	C9	Suction air thermistor abnormality	132
	CJ	Remote controller thermistor abnormality	141
Outdoor Unit	E1	Outdoor unit main PCB abnormality	142
	E3	High pressure abnormality	143
	E4	Low pressure abnormality	145
	E5	Compressor motor lock	146
	E7	Outdoor fan motor abnormality	147
	E9	Electronic expansion valve abnormality	150
	F3	Discharge pipe temperature abnormality	153
	H3	High pressure switch system abnormality	155
	H5	Compressor self-operating thermal protector	156
	H9	Outdoor air thermistor abnormality	157
	J3	Discharge pipe thermistor abnormality	157
	J5	Suction pipe thermistor abnormality	157
	J6	Outdoor heat exchanger distributor pipe thermistor abnormality	157
	J7	Outdoor heat exchanger middle thermistor abnormality	157
	J8	Outdoor heat exchanger liquid pipe thermistor abnormality	157
	L1	Outdoor unit main PCB abnormality	158
	L4	Radiation fin temperature rise	161
	L5	DC output overcurrent	162
	L8	Compressor overcurrent	164
	L9	Compressor startup abnormality	166
	LC	Transmission error between microcomputers on outdoor unit main PCB	168
	P1	PAM circuit error	169
		Open phase or power supply voltage imbalance	170
	P4	Power module thermistor abnormality	171
	PJ	Capacity setting abnormality	172
	U0	Refrigerant shortage	173, 174
	U1	Frequency judgment abnormality	—
	U2	Power supply voltage abnormality	176
System	U4	Transmission error between indoor unit and outdoor unit, outdoor fan motor abnormality	179
	U5	Transmission error between indoor unit and remote controller	184
	U8	Transmission error between main remote controller and sub remote controller	185
	UA	Field setting switch abnormality	186
	UC	Centralized address setting error	188
	UE	Transmission error between centralized controller and indoor unit	189
	UF	Transmission error between indoor units and outdoor units	191

5.2 Error Codes - Sub Codes

If an error code like the one shown below is displayed when the navigation remote controller is in use, make a detailed diagnosis or a diagnosis of the relevant unit referring to the attached list of detailed error codes.

5.2.1 Indoor Unit

Error code	Troubleshooting	
	Description of error	Diagnosis
A0 - 00	Error of external protection device	Protection device connected to the unit is activated. Check for the external protection device.
A6 - 01	Fan motor locked	A locked fan motor current has been detected. Turn the fan by hand to check for the connection of connectors.
A6 - 10	Fan overcurrent error	A fan motor overcurrent has been detected. Check for the connection of the connector between the fan motor and the fan PCB. If the connection is normal, replace the fan motor. If this still cannot solve the error, replace the fan PCB.
A6 - 11	Fan position detection error	An error has been occurred in the detection of position of the fan motor. Check for the connection of the connector between the fan motor and the fan PCB. If the connection is normal, replace the fan motor. If this still cannot solve the error, replace the fan PCB.
A8 - 01	Fan PCB abnormality	Power supply voltage error of the fan PCB has been detected. Check if there is any loose connection or disconnection of connectors, or any source of noise generation in the proximity.
C1 - 01	Transmission error	A transmission error has been detected between the indoor unit PCB and the fan PCB. Check if there is any loose connection or disconnection of transmission connectors.
C4 - 02	Heat exchanger thermistor system abnormality (short circuit)	Short circuit of the thermistor has been detected. Check for the connecting area if there is any clogging of foreign matter.
C4 - 03	Heat exchanger thermistor system abnormality (open circuit)	Disconnection of the thermistor has been detected. Check if there is any loose connection or disconnection of connectors.
C5 - 02	Heat exchanger middle thermistor system abnormality (short circuit)	Short circuit of the thermistor has been detected. Check for the connecting area if there is any clogging of foreign matter.
C5 - 03	Heat exchanger middle thermistor system abnormality (open circuit)	Disconnection of the thermistor has been detected. Check if there is any loose connection or disconnection of connectors.
C6 - 01	Defective combination of indoor unit PCB and fan PCB	A combination of indoor unit PCB and fan PCB is defective. Check whether the capacity setting adaptor is correct and the type of the fan PCB is correct.
C9 - 02	Suction air thermistor system abnormality (short circuit)	Short circuit of the thermistor has been detected. Check for the connecting area if there is any clogging of foreign matter.
C9 - 03	Suction air thermistor system abnormality (open circuit)	Disconnection of the thermistor has been detected. Check if there is any loose connection or disconnection of connectors.

5.2.2 Outdoor Unit

Error code	Troubleshooting	
	Description of error	Diagnosis
E7 - 01	Fan motor M1F lock	Refer to the E7 flowchart and diagnose the appropriate fan, motor or PCB. Connector No.: X106A
E7 - 05	Fan motor M1F instantaneous overcurrent	
E7 - 61	Transmission malfunction between inverters	Transmission malfunction between the compressor inverter and fan inverter. For details, refer to the LC flowchart.
E7 - 63	Fan motor M1F overvoltage error, step-out	Refer to the E7 flowchart and diagnose the appropriate fan, motor or PCB. Connector No.: X106A
F3 - 00	Discharge pipe high temperature error	Refer to the F3 flowchart of each manual and make a diagnosis of the relevant unit based on the Error code shown to the left.
F3 - 23	Compressor self-operating thermal protector abnormality	
H3 - 01	High pressure switch malfunction	The individual high pressure switch may have failed. Check the high pressure switch.
L1 - 01	Instantaneous overcurrent error (while in startup operation)	Refer to the L1 flowchart and make a diagnosis of the relevant unit based on the Error code shown to the left.
L1 - 02	Current sensor error in PCB	
L1 - 03	Current offset error	
L1 - 04	IGBT (*1) error	
L1 - 05	Jumper setting error	
L1 - 06	SP/MP-PAM (*2, 3) overvoltage error	
L1 - 27	Inverter malfunction	The inverter may have failed.
L1 - 31	Internal power output error	Outdoor unit main PCB internal power output error. Check the PCB and fan motors.
L1 - 54	Interleave error	Outdoor unit main PCB internal circuitry may have failed. Refer to the L1 flowchart and diagnose the appropriate PCB.
L8 - 01	Electronic thermal 1 error	Overload current continues for a period of 260 seconds or more. This error is supposed to have resulted from excessive charging of refrigerant, damage caused to the compressor bearing, too high pressure, etc. Check and probe the cause.
L8 - 02	Electronic thermal 2 error	Overload current close to the locked current flowed in the thermal for a period of 5 seconds. This error is supposed to have resulted from closed stop valve, disconnected wire in the compressor motor, etc. Check and probe the cause.
L8 - 03	Drop in compressor revolutions	Compressor load has been increased after startup. This error is supposed to have resulted from instantaneous power failure, liquid back, etc. Check and probe the cause.
L8 - 04	Thunder detection error	Surges caused by thunder
L8 - 05	Inverter limiting current	Excessive limiting current is flowing in the inverter. This error is supposed to have resulted from failure to open the stop valve, excessive charging of refrigerant, clogging in the indoor unit filter stain in the indoor/outdoor heat exchanger etc. Check and probe the cause.
L9 - 01	Stall prevention (current increase)	Overload current has been applied to startup the compressor. This error is supposed to have resulted from high startup differential pressure, liquid back, excessive compressor oil, abnormal compressor coil, seizure of the compressor shaft, etc. Check and probe the cause.
L9 - 02	Stall prevention (startup error)	The compressor has not completed startup operation. This error is supposed to have resulted from high startup differential pressure, liquid back, excessive compressor oil, abnormal compressor coil, seizure of the compressor shaft, defective position detection circuit, etc. Check and probe the cause.
L9 - 03	Inverter open phase abnormality	Refer to the L9 flowchart and make a diagnosis of the relevant unit based on the Error code shown to the left.



Note(s)

- *1. IGBT: IGBT is a power semiconductor device primarily used as an electronic switch.
- *2. SP: Single Pulse
- *3. MP: Multi Pulse

Error code	Troubleshooting	
	Description of error	Diagnosis
LC - 01	Defective wiring	Defective transmission including that caused when the power supply turns ON. This error is supposed to have resulted from (1) defective wire connections around the PCB, (2) defective outdoor unit main PCB, or (3) defective fan motor. Check and probe the cause.
LC - 02	Defective transmission between compressor and microcontroller	There is an error in transmission between the compressor and the outdoor unit main PCB. If the wire connections of the compressor are normal, check for the same of the outdoor unit PCB.
LC - 03	Transmission error (main PCB)	Refer to the LC flowchart and check the wiring status at the relevant location and the PCB.
LC - 04	Transmission error (main PCB)	
LC - 05	Transmission error	
P4 - 01	Power module thermistor malfunction (inverter) (30/36 class only)	Check whether the power module thermistor X111A has come loose.
PJ - 01	Capacity setting undefined	This is an outdoor unit main PCB for repair, but has no capacity setting adaptor connected. Connect a correct capacity setting adaptor to the PCB.
PJ - 04	Defective capacity setting	This error results from a mismatch of signals between the controller in the PCB and the inverter. Check whether the type of the PCB is correct and correct capacity setting adaptor is connected.
U0 - 02	Refrigerant shortage - Outdoor unit (Factor 0)	This error results from a shortage of refrigerant. Refer to the U0 flowchart and make a diagnosis, and then take countermeasures.
U0 - 03	Refrigerant shortage - Outdoor unit (Gas leakage)	This error results from a shortage of refrigerant cause by gas leakage. Charge refrigerant up to the normal refrigerant amount.
U0 - 04	Refrigerant shortage - Outdoor unit (Clogging)	This error results from clogging caused somewhere in the refrigerant piping system. Check for a failure to open the stop valve and clogging in the refrigerant system.
U0 - 12	Refrigerant cooling condensation error	Insufficient refrigerant may have caused the temperature of the refrigerant cooling parts to drop, leading to condensation. Refer to the U0 flowchart to diagnose and handle this error.
U0 - 14	Refrigerant shortage - Outdoor unit (Cooling)	This error results from a shortage of refrigerant. Refer to the U0 flowchart and make a diagnosis, and then take countermeasures.
U1 - 01	Frequency judgment abnormality	Checks for power supply frequency abnormality. Check for faulty power supply wiring.
U2 - 01	Power supply voltage error	This error is supposed to have resulted from undervoltage or overvoltage of the power supply, or defective voltage sensor in the PCB.
U2 - 02	Open phase of power supply	Check for any open phase of the power supply.
U2 - 03	Main circuit capacitor charge error	There is abnormal circuit current flowing in the PCB. If wire connections related to the PCB are normal, replace the outdoor unit main PCB.
U2 - 04	SP/MP - PAM overvoltage error	There is an overvoltage error (Single phase). If wire connections related to the PCB are normal, replace the outdoor unit main PCB.
U2 - 35	AC voltage sensor error	A voltage sensor failure within the PCB has been detected. Refer to the U2 flowchart and diagnose the appropriate PCB.
UA - 01	Incorrect number of indoor units connected	This error will be displayed if the locally-set number of indoor units is different from the detected number of indoor unit.
UA - 02	Multiple master units detected	There are a number of indoor units with a remote controller connected. Connect the remote controller to only one indoor unit.
UA - 03	Excess indoor units connected	This error will be displayed if 5 or more indoor units are connected.
UA - 05	Indoor-outdoor transmission error between slave 1 and outdoor unit	There is an error in transmission between the outdoor unit and slave indoor unit 1. Check for the connection of the jumper between the slave indoor unit (with no remote controller connected) and the outdoor unit.
UA - 07	Indoor-outdoor transmission error between slave 2 and outdoor unit	There is an error in transmission between the outdoor unit and slave indoor unit 2. Check for the connection of the jumper between the slave indoor unit (with no remote controller connected) and the outdoor unit.
UA - 09	Indoor-outdoor transmission error between slave 3 and outdoor unit	There is an error in transmission between the outdoor unit and slave indoor unit 3. Check for the connection of the jumper between the slave indoor unit (with no remote controller connected) and the outdoor unit.

Error code	Troubleshooting	
	Description of error	Diagnosis
UA - 40	Indoor unit combination error	The unit has been combined with an incompatible indoor unit. Recheck the connected model.
UF - 01	Incorrect wiring	There is an error in wire connections for transmission between indoor and outdoor units (judged with the indoor unit). Check for the connections of jumpers 1, 2, and 3 between the indoor and outdoor units.

5.3 Error of External Protection Device

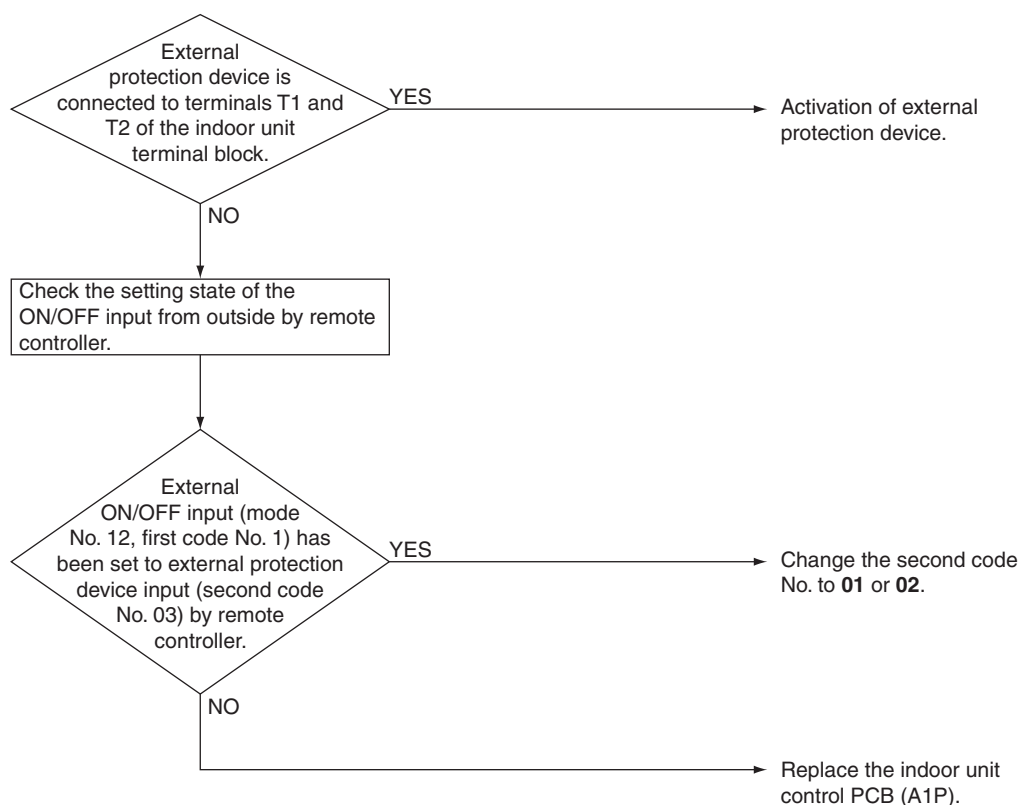
Applicable Models	All indoor unit models
Error Code	A0
Method of Error Detection	Detect open or short circuit between external input terminals in indoor unit.
Error Decision Conditions	An open circuit occurs between external input terminals with the remote controller set to external ON/OFF terminal.
Supposed Causes	<ul style="list-style-type: none"> ■ Activation 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.

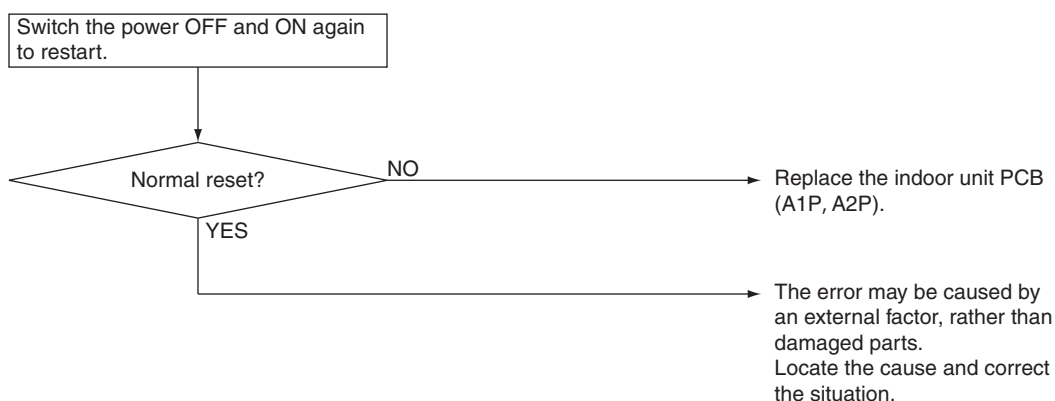


5.4 Indoor Unit PCB Abnormality

Applicable Models	All indoor unit models
Error code	A1
Method of Error Detection	The system checks data from EEPROM.
Error Decision Conditions	<p>The error is generated when the data from the EEPROM is not received correctly.</p> <p>EEPROM (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 EEPROM 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.



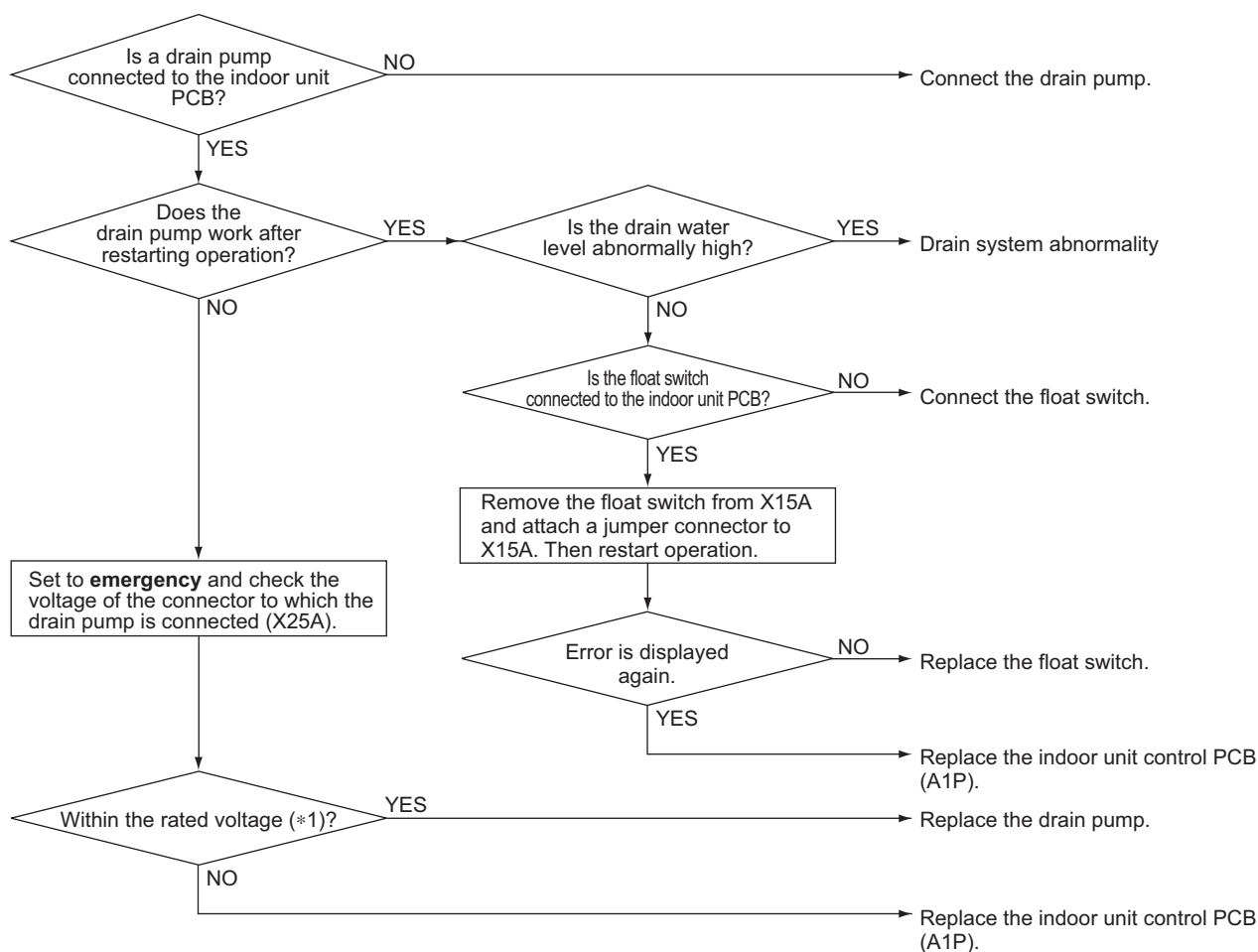
5.5 Drain Water Level System Abnormality

Applicable Models	All indoor unit models
Error code	A3
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(s)

*1.

Model	Voltage of the connector
FDMF-A	13 VDC ±10%

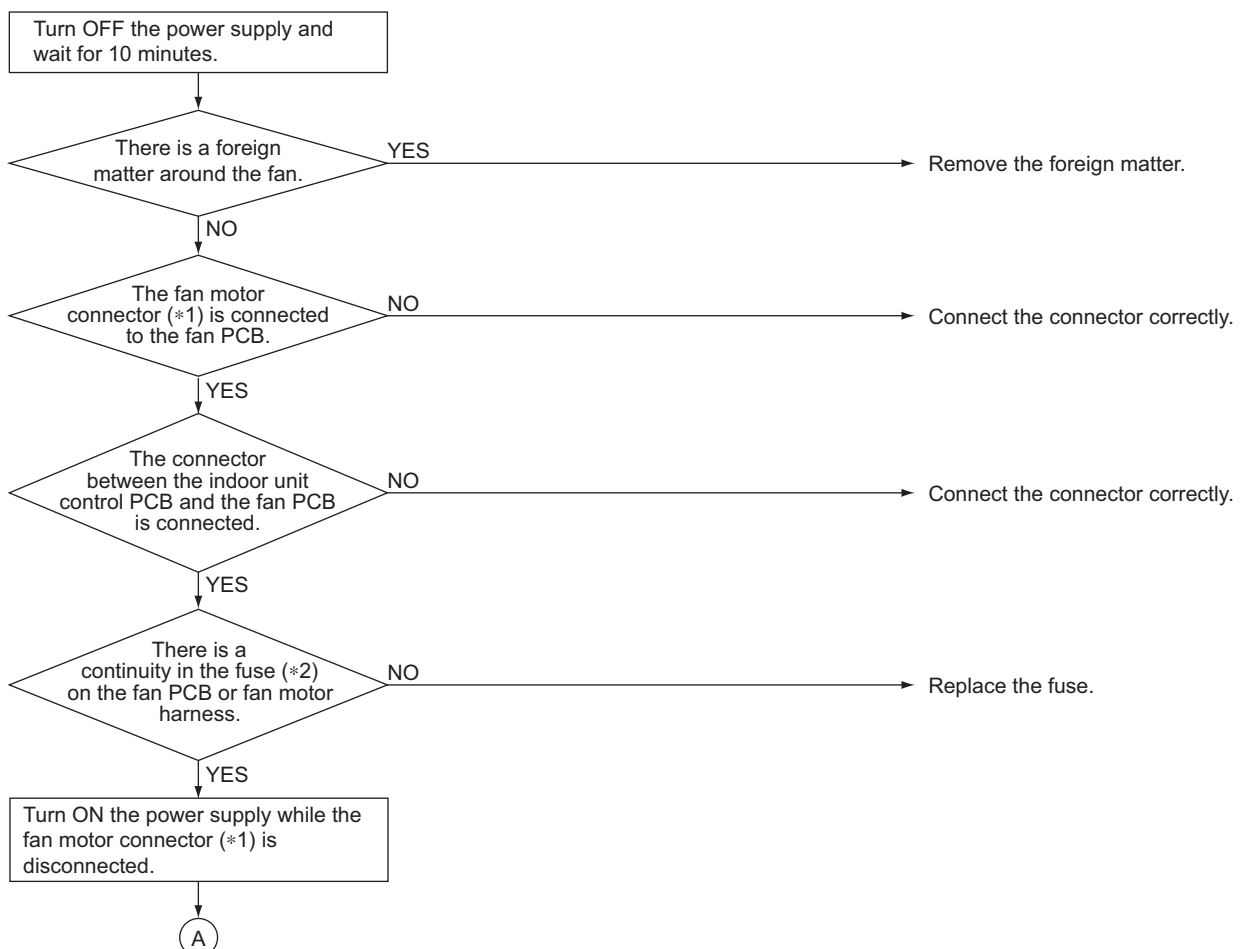
5.6 Indoor Fan Motor Abnormality

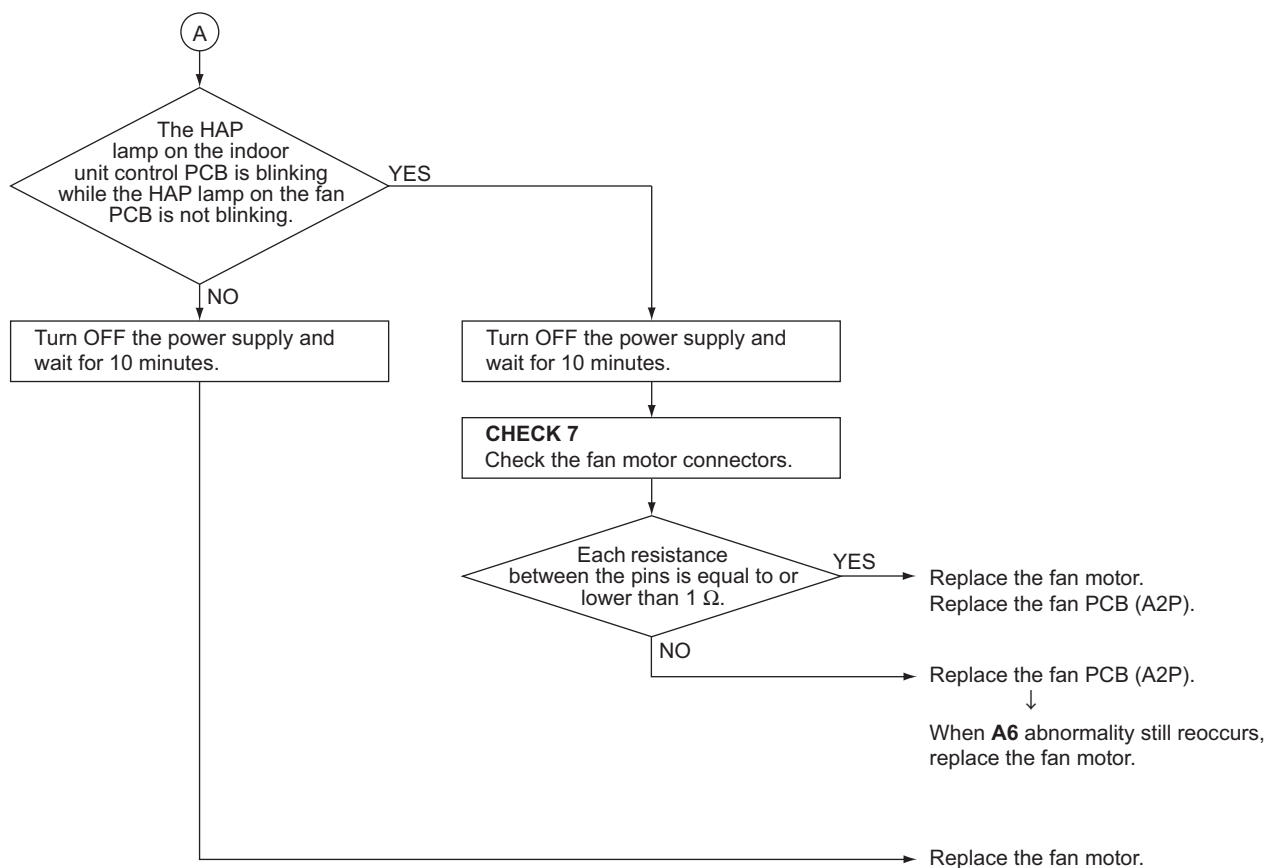
Applicable Models	All indoor unit models
Error code	A6-10, 11
Method of Error Detection	Detection from the current flow on the fan PCB Detection from the rotation speed of the fan motor in operation Detection from the position signal of the fan motor Detection from the current flow on the fan PCB when the fan motor starting operation
Error Decision Conditions	<ul style="list-style-type: none"> ■ An overcurrent flows. ■ The rotation speed is less than a certain level for 6 seconds. ■ A position error in the fan rotor continues for 5 seconds or more.
Supposed Causes	<ul style="list-style-type: none"> ■ Clogged foreign matter ■ Disconnection of fan motor connectors ■ Disconnection of the connector between the indoor unit PCB and the fan PCB ■ Defective fan PCB ■ Defective fan motor ■ No fuse continuity

Troubleshooting



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





i Note(s)

Model	*1 Fan motor connector	*2 Fuse
FDMF-A	X8A	F2U



Reference

CHECK 7 Refer to page 198.

5.7 Fan PCB Abnormality

Applicable Models

All indoor unit models

Error Code

A8

Method of Error Detection

Microcomputer checks the voltage state of the fan PCB.

Error Decision Conditions

Overvoltage or voltage drop is detected on the fan PCB.

Supposed Causes

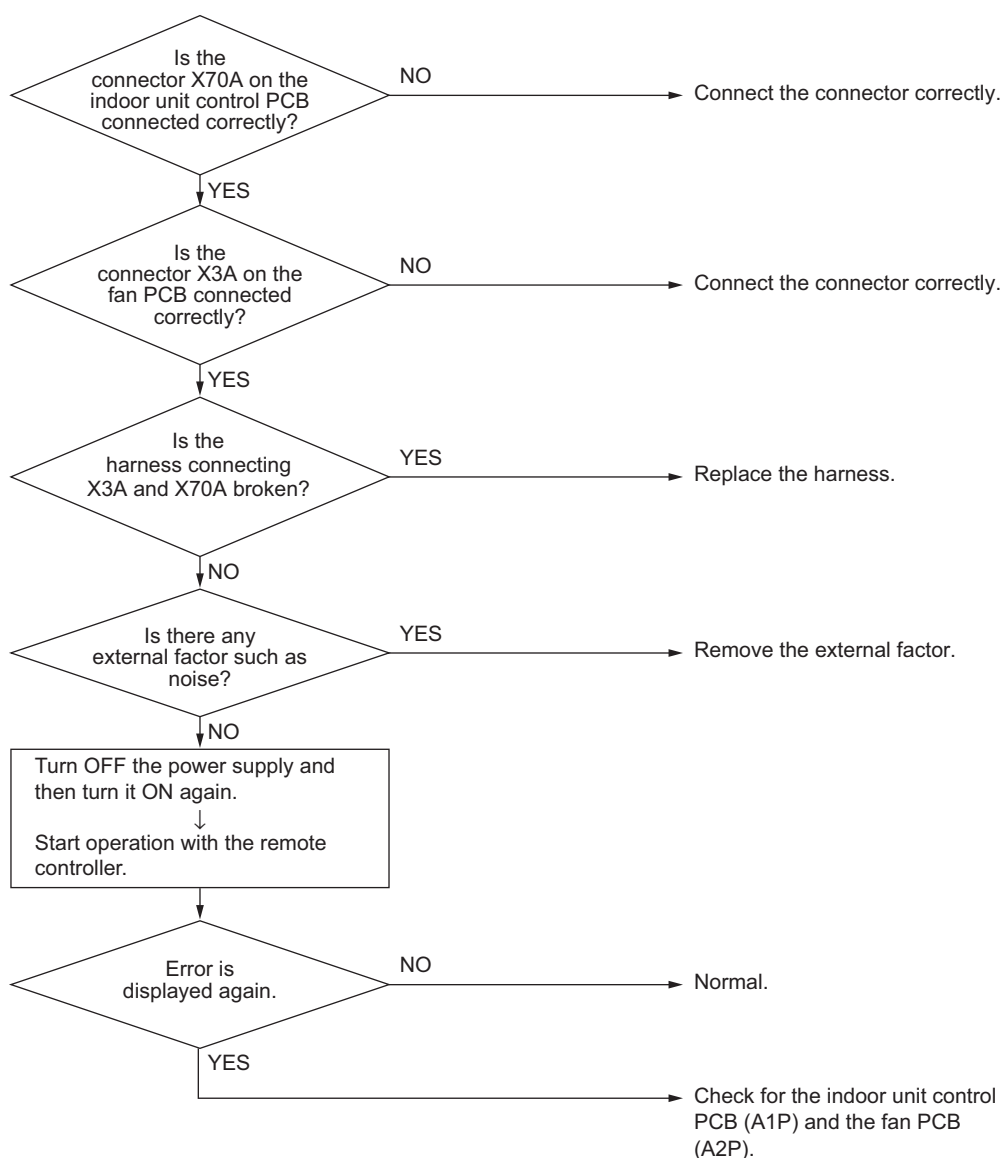
- Defective connection of the power supply connector
- Defective indoor unit PCB
- Defective fan PCB
- External factor such as noise

Troubleshooting



Caution

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



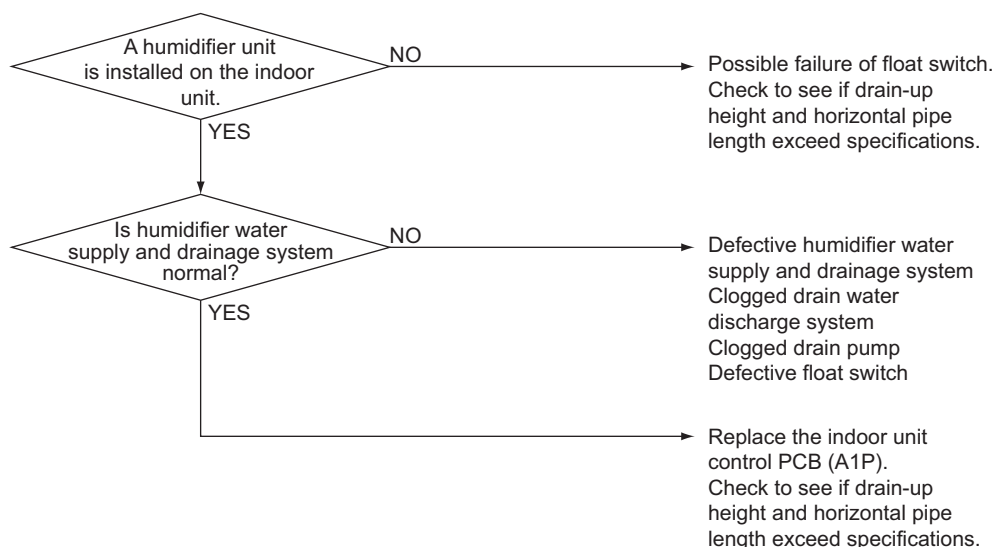
5.8 Humidifier System Abnormality

Applicable Models	All indoor unit models
Error code	AF
Method of Error Detection	Water leakage from the humidifier system is detected based on float switch ON/OFF operation while the compressor is in non-operation.
Error Decision Conditions	The float switch is activated while the compressor is OFF. * Error code is displayed but the system operates continuously.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective humidifier water supply and drainage system ■ Dust clogging in the solenoid valve of humidifier ■ 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.



5.9 Defective Capacity Setting

Applicable Models

All indoor unit models

Error code

AJ

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

The capacity code is not saved to the PCB, and the capacity setting adaptor is not connected. A capacity that does not exist for that unit is set.

Supposed Causes

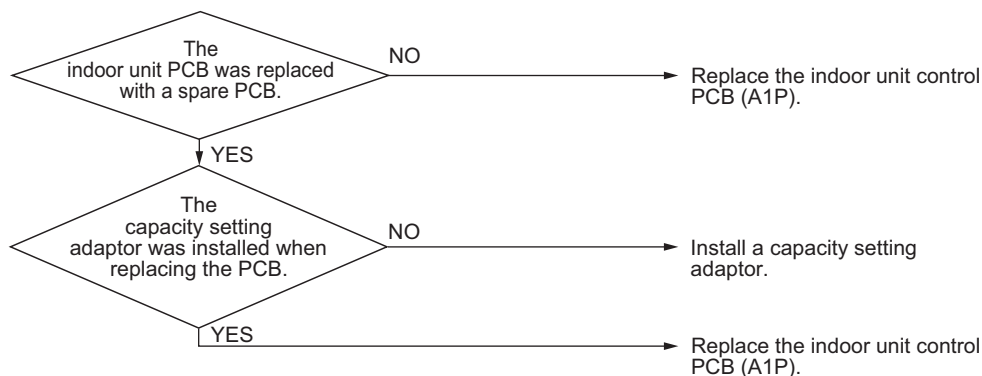
- Defective capacity setting adaptor connection
- Defective indoor unit PCB

Troubleshooting



Caution

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



Note(s)

Type	Model name	Capacity setting adaptor
Middle and high static pressure duct connection type	FDMF18AVMK	J56
	FDMF24AVMK	J80
	FDMF30AVMK	J112
	FDMF36AVMK	J112

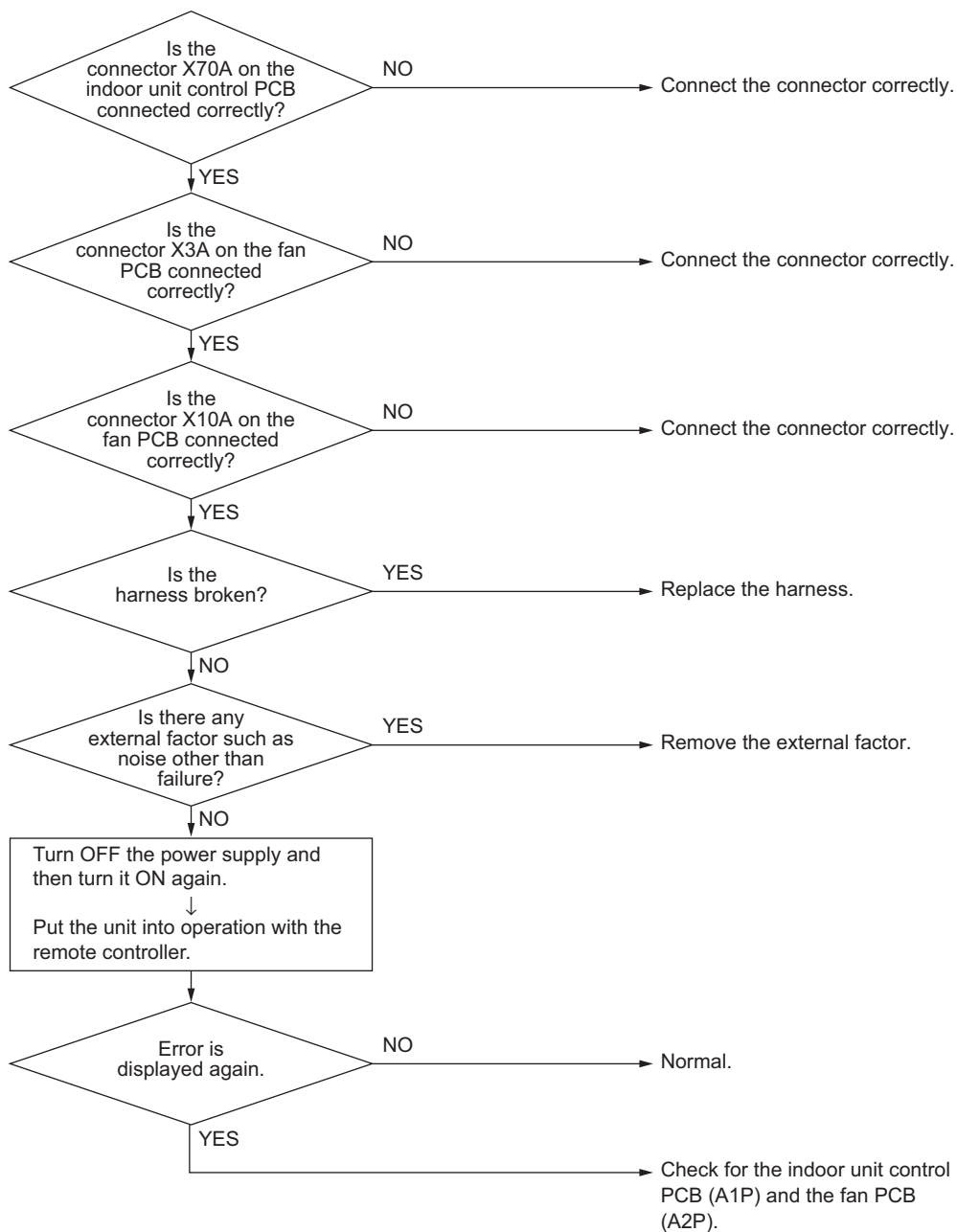
5.10 Transmission Error (between Indoor Unit PCB and Fan PCB)

Applicable Models	All indoor unit models
Error Code	C1-01
Method of Error Detection	Check the condition of transmission between the indoor unit control PCB and the fan PCB using microcomputer.
Error Decision Conditions	Error is decided when transmission between the indoor unit control PCB and the fan PCB has been lost for 15 seconds and the error code will be displayed on the remote controller 60 seconds later.
Supposed Causes	<ul style="list-style-type: none">■ Defective connection of the transmission connector between the indoor unit PCB and the fan PCB■ Defective indoor unit control PCB■ Defective fan PCB■ External factor such as noise

Troubleshooting


Caution

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



5.11 Thermistor Abnormality

Applicable Models

All indoor unit models

Error Code

C4, C5, C9

Method of Error Detection

The error is detected by temperature detected by thermistor.

Error Decision Conditions

The thermistor becomes disconnected or shorted while the unit is running.

Supposed Causes

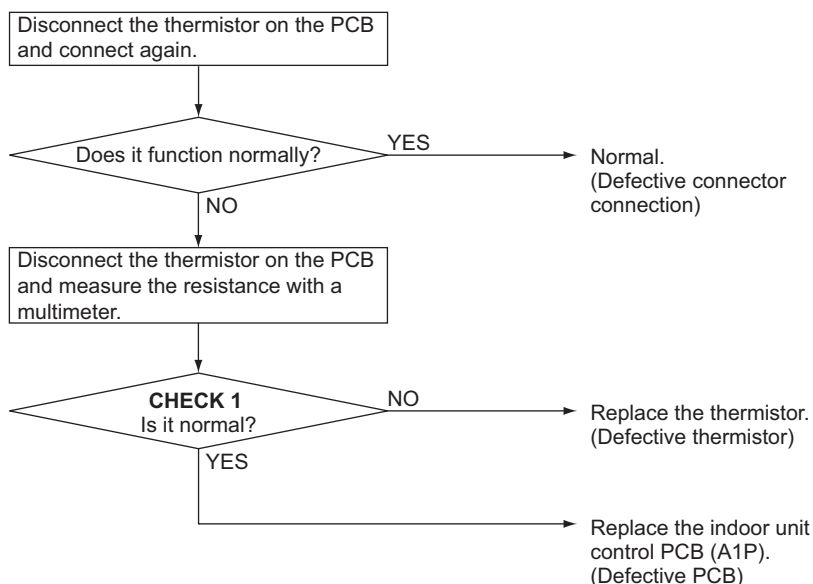
- Defective connector connection
- Defective thermistor
- Defective indoor unit control PCB
- Broken or disconnected wire

Troubleshooting



Caution

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



Note(s)

Error code and thermistor

Error Code	Thermistor	Symbol
C4	Indoor heat exchanger liquid pipe thermistor	R2T
C5	Indoor heat exchanger middle thermistor	R3T
C9	Suction air thermistor	R1T



Reference

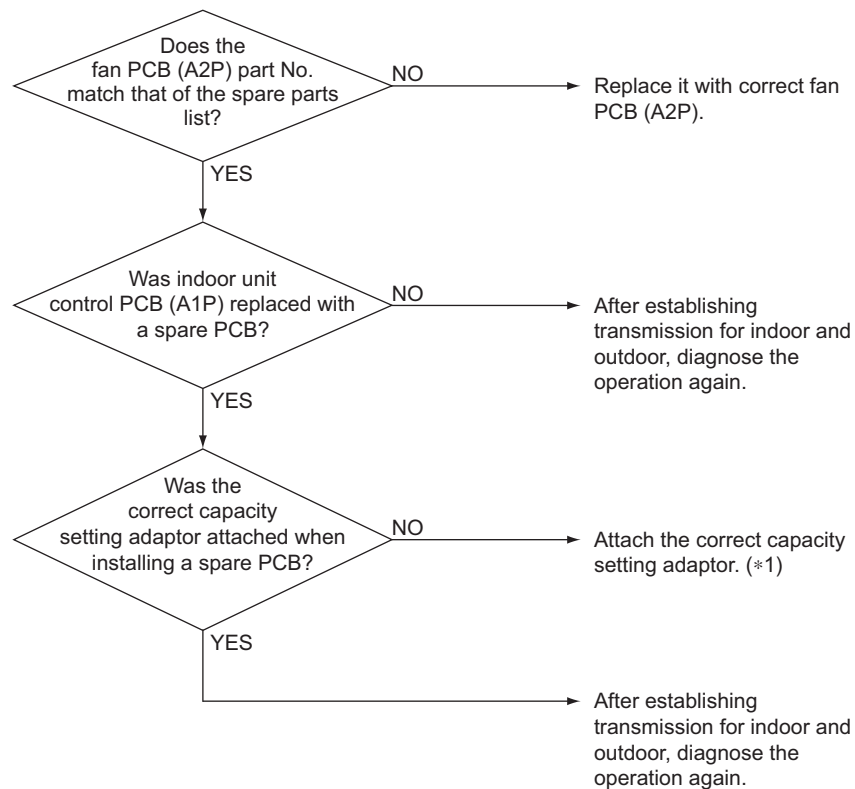
CHECK 1 Refer to page 192.

5.12 Combination Error between Indoor Unit PCB and Fan PCB

Applicable Models	All indoor unit models
Error Code	C6
Method of Error Detection	Conduct open line detection with fan PCB using indoor unit PCB (A1P).
Error Decision Conditions	The communication data of fan PCB is determined as incorrect
Supposed Causes	<ul style="list-style-type: none"> ■ Defective fan PCB ■ Wrong 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(s)

*1. Refer to **Defective Capacity Setting** on page 136.

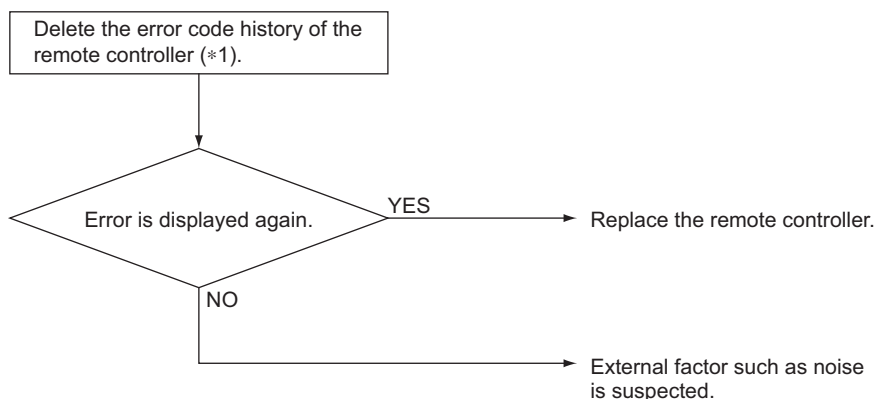
5.13 Remote Controller Thermistor Abnormality

Applicable Models	All indoor unit models
Error Code	CJ
Method of Error Detection	Even the error is detected, the system is available for operation through the indoor suction temperature sensor. Error is detected on the temperature detected by the air temperature sensor of the remote controller.
Error Decision Conditions	The remote controller air temperature thermistor is disconnected or short-circuited in operation. ★ The system continues operation while the error code is displayed.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective remote controller thermistor ■ Defective remote controller PCB ■ External factor such as noise
Troubleshooting	



Caution

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



Note(s)

*1. To delete the history, the **Menu/Enter** button of the remote controller must be pressed and held for 4 seconds in the error code display.

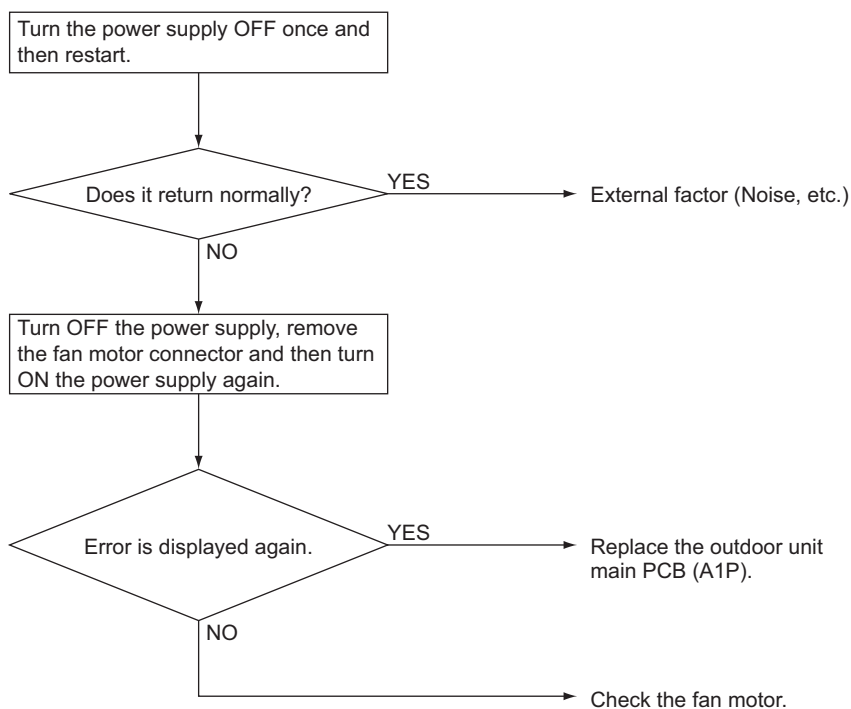
5.14 Outdoor Unit PCB Abnormality

Applicable Models	All outdoor unit models
Error code	E1
Method of Error Detection	Microcomputer checks whether EEPROM is normal.
Error Decision Conditions	EEPROM error when turning the power supply ON.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit main 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.



5.15 High Pressure Abnormality

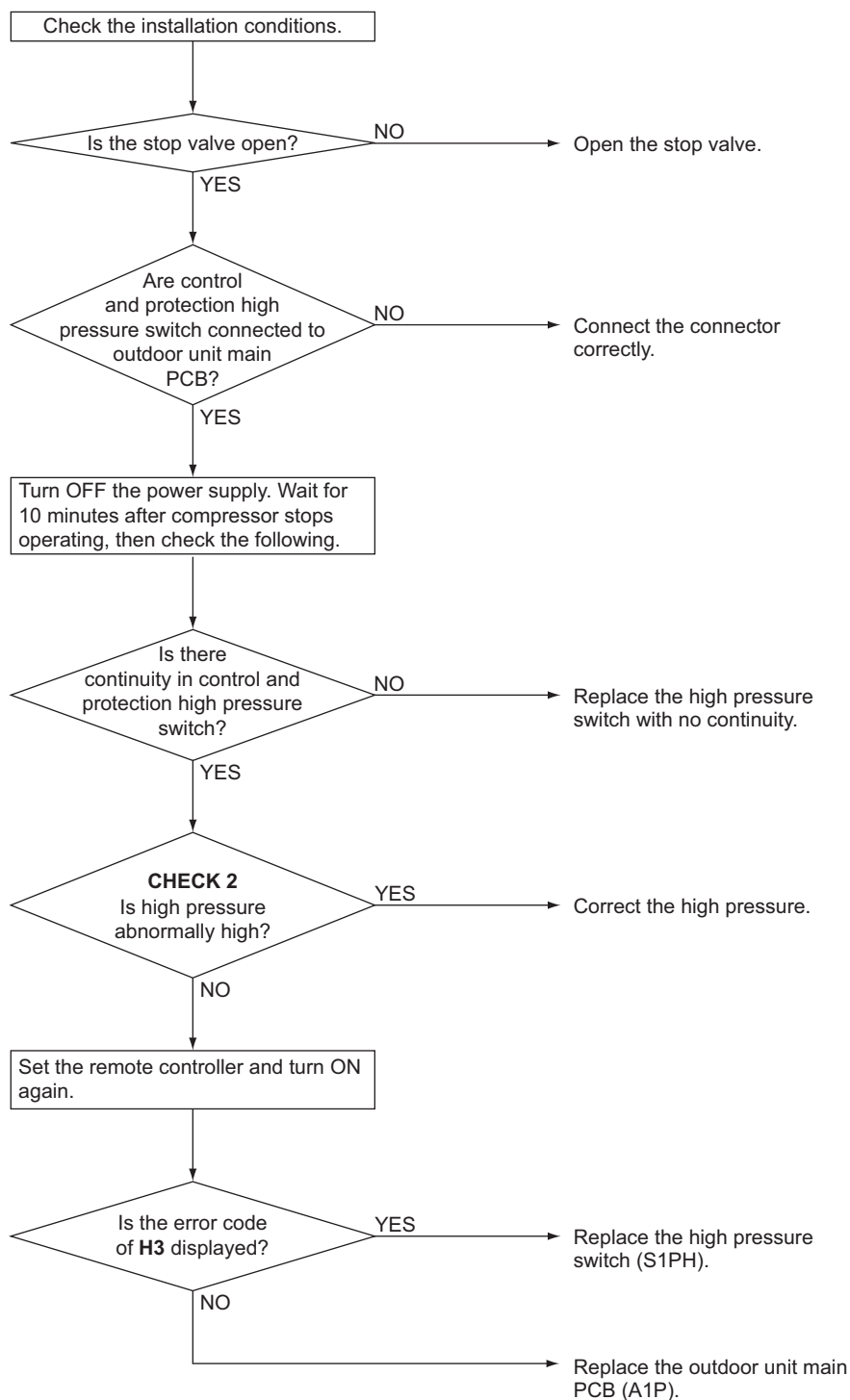
Applicable Models	All outdoor unit models
Error code	E3
Method of Error Detection	Cooling: <ul style="list-style-type: none"> ■ Detects errors by the outdoor heat exchanger thermistor. ■ The protection device circuit checks continuity in the high pressure switch.
Error Decision Conditions	Cooling: <ul style="list-style-type: none"> ■ When the outdoor heat exchanger thermistor detects the following pressure. 3.92 MPa or more continuously for 1 minute (Ref.: Equivalent saturation temperature 62°C) ■ Error is detected when high pressure switch is activated. Operating pressure: 4.15 MPa\pm_{0.15}⁰
Supposed Causes	<ul style="list-style-type: none"> ■ Dirty outdoor heat exchanger ■ Defective outdoor fan motor ■ Overcharge of refrigerant ■ Stop valve is not opened. ■ Defective outdoor unit main PCB

Troubleshooting



Caution

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



Reference

CHECK 2 Refer to page 195.

5.16 Low Pressure Abnormality

Applicable Models

All outdoor unit models

Error Code

E4

Method of Error Detection

Cooling:
 ■ Detect errors by the indoor heat exchanger middle thermistor (R3T).

Error Decision Conditions

When the detection pressure is the following value;
 0.12 MPa or less continues for 5 minutes
 (Ref.: Equivalent saturation temperature -35°C)

Supposed Causes

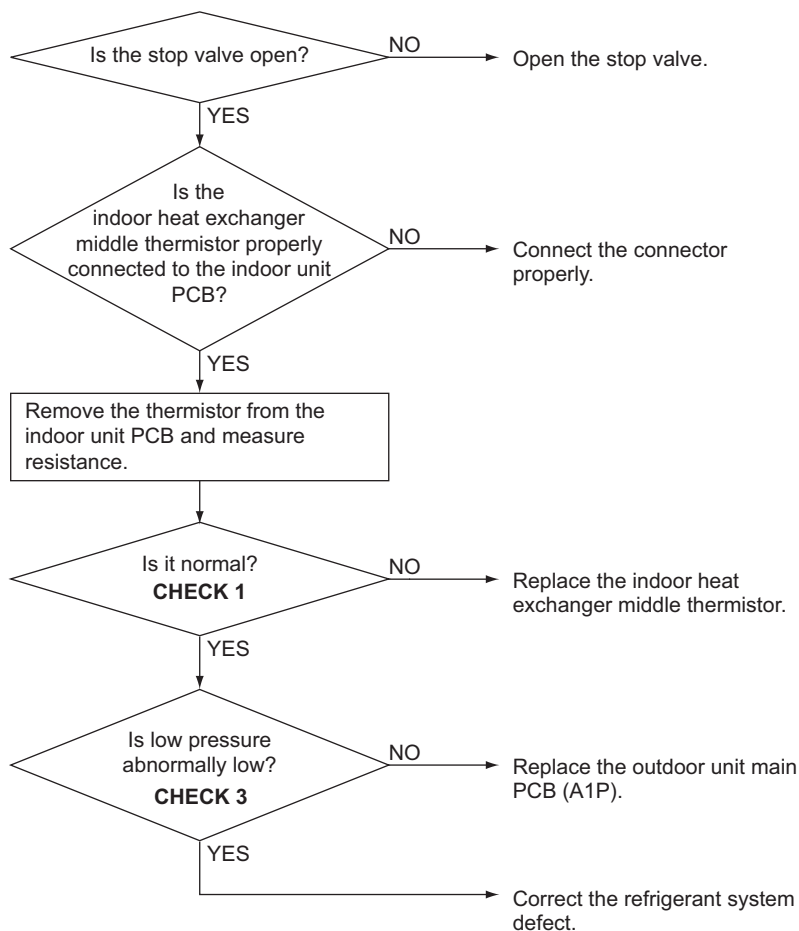
- Stop valve is not opened.
- Disconnection of indoor heat exchanger middle thermistor
- Defective thermistors
- Defective outdoor unit main PCB
- Abnormal drop of low pressure

Troubleshooting



Caution

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



Reference

CHECK 1 Refer to page 192.



Reference

CHECK 3 Refer to page 195.

5.17 Compressor Motor Lock

Applicable Models

All outdoor unit models

Error code

E5

Method of Error Detection

Detect the motor lock when the compressor is energized.

Error Decision Conditions

Motor rotor does not rotate when the compressor is energized.

Supposed Causes

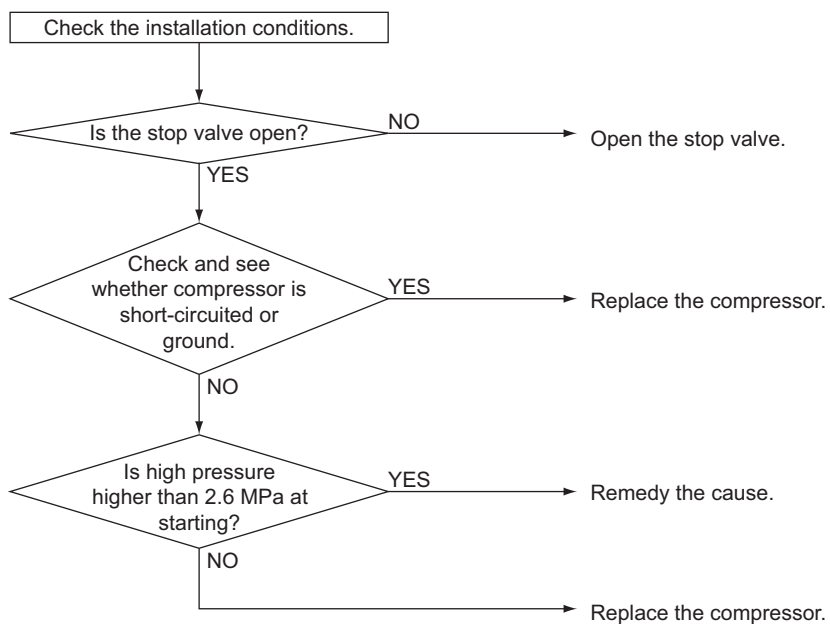
- Compressor lock
- High pressure (2.6 MPa or more) at starting
- Stop valve is not opened.

Troubleshooting



Caution

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



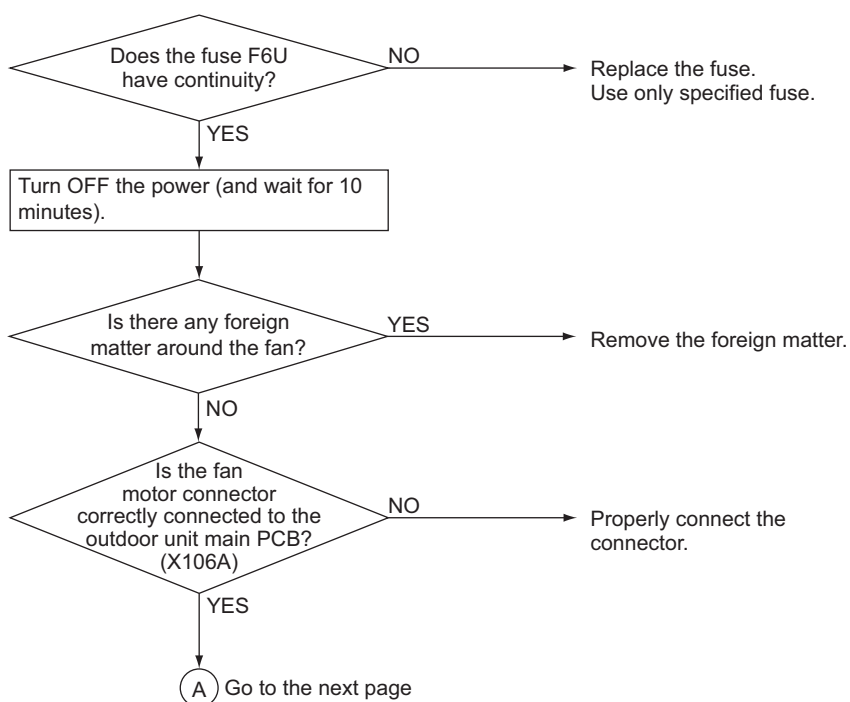
5.18 Outdoor Fan Motor Abnormality

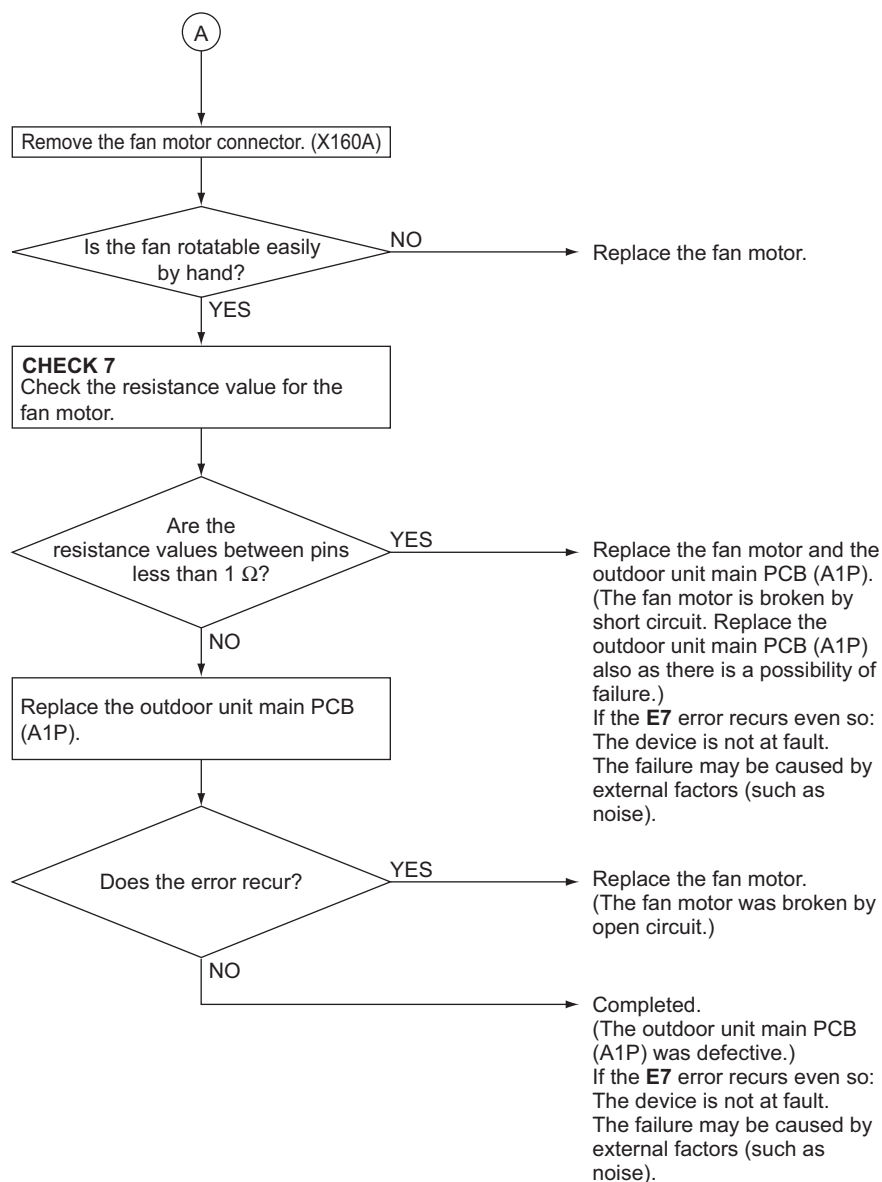
Applicable Models	All outdoor unit models
Error code	E7
Method of Error Detection	Abnormality of fan motor system is detected according to the fan revolution detected by Hall IC when the fan motor runs.
Error Decision Conditions	<ul style="list-style-type: none"> ■ When the fan runs with speed less than a specified one for 15 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 matter tangled. ■ Defective outdoor unit main PCB ■ Blowout of fuse ■ External factor (Noise, etc.)
Troubleshooting	RZF18/24AVMK



Caution

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





Reference

CHECK 7 Refer to page 198.

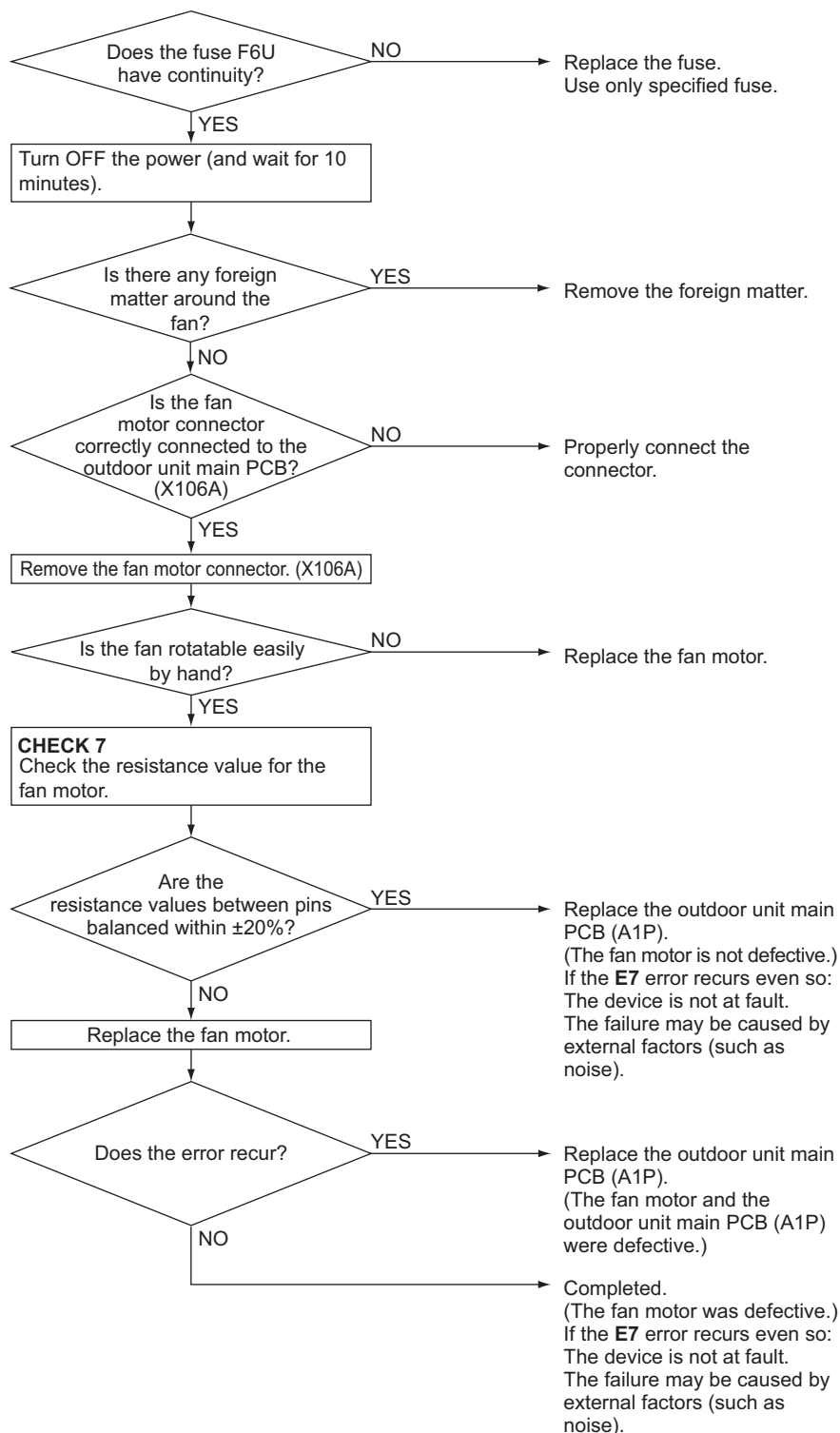
Troubleshooting

RZF30/36AVMK



Caution

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



Reference

CHECK 7 Refer to page 198.

5.19 Electronic Expansion Valve Abnormality

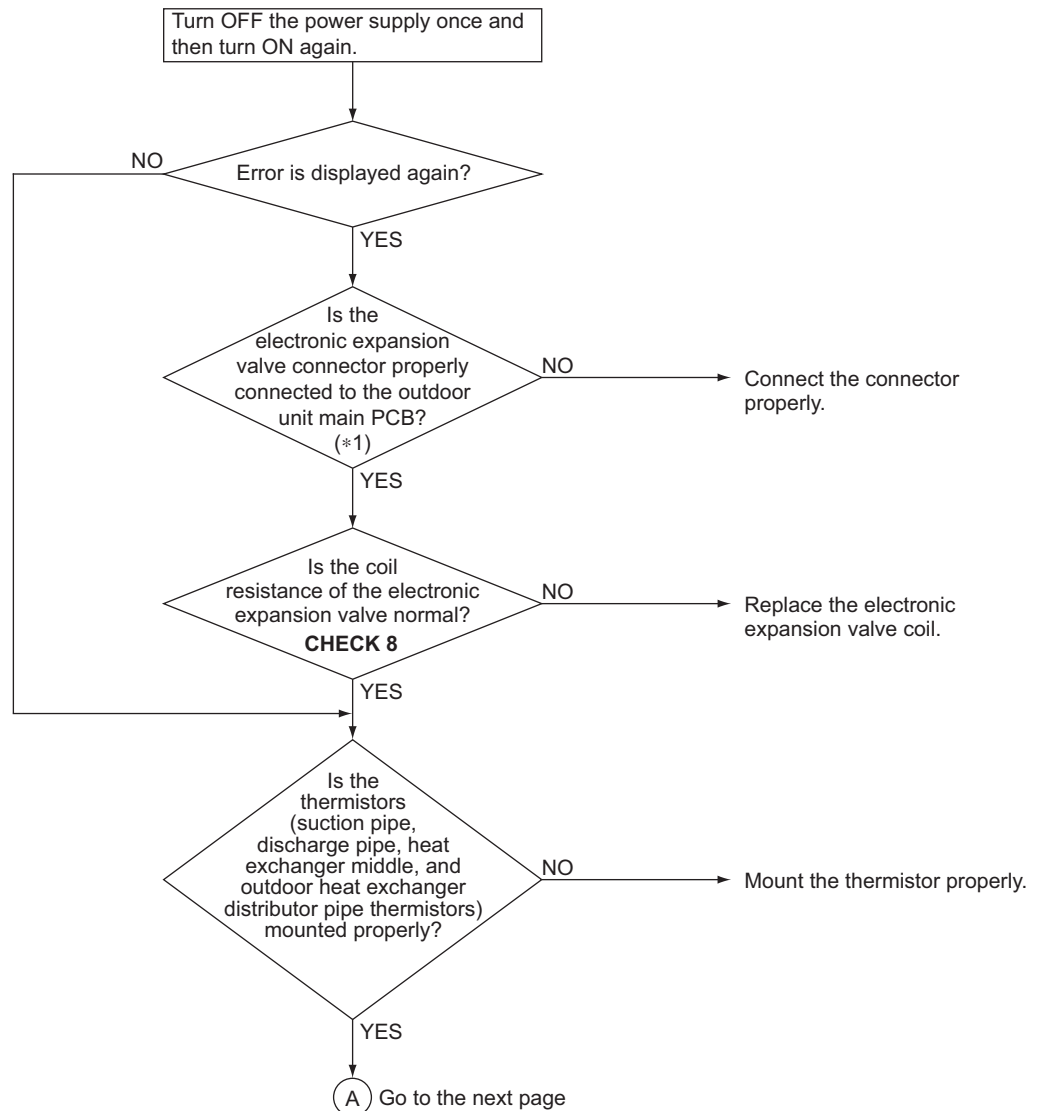
Applicable Models	All outdoor unit models
Error code	E9
Method of Error Detection	<ul style="list-style-type: none"> ■ Detect errors based on check of continuity of the electronic expansion valve. ■ Detect errors by suction pipe superheating degree, discharge pipe superheating degree and electronic expansion valve opening degree. <p>[Suction pipe superheating degree] Cooling: Suction pipe temperature – indoor heat exchanger temperature</p> <p>[Discharge pipe superheating degree] Cooling: Discharge pipe temperature – heat exchanger middle 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 all met; Suction pipe superheating degree < 4°C Discharge pipe superheating degree < 5°C Electronic expansion valve opening degree is minimum.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective electronic expansion valve ■ Broken harness of electronic expansion valve ■ Defective connection of electronic expansion valve connector ■ Defective each thermistor ■ Defective each thermistor mounting ■ Defective outdoor unit main PCB ■ Wet operation

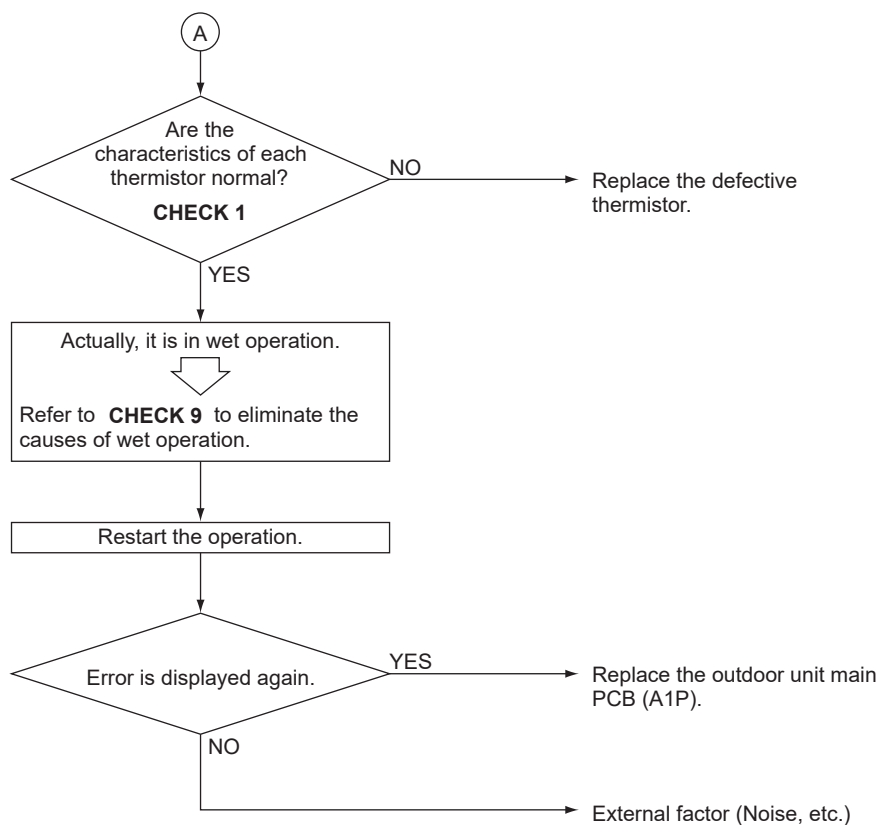
Troubleshooting



Caution

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



**Note(s)**

*1. Connector and PCB

Electronic expansion valve	Connector for electronic expansion valve	PCB
Y1E	X21A	A1P

**Reference****CHECK 1** Refer to page 192.**Reference****CHECK 8** Refer to page 199.**Reference****CHECK 9** Refer to page 200.

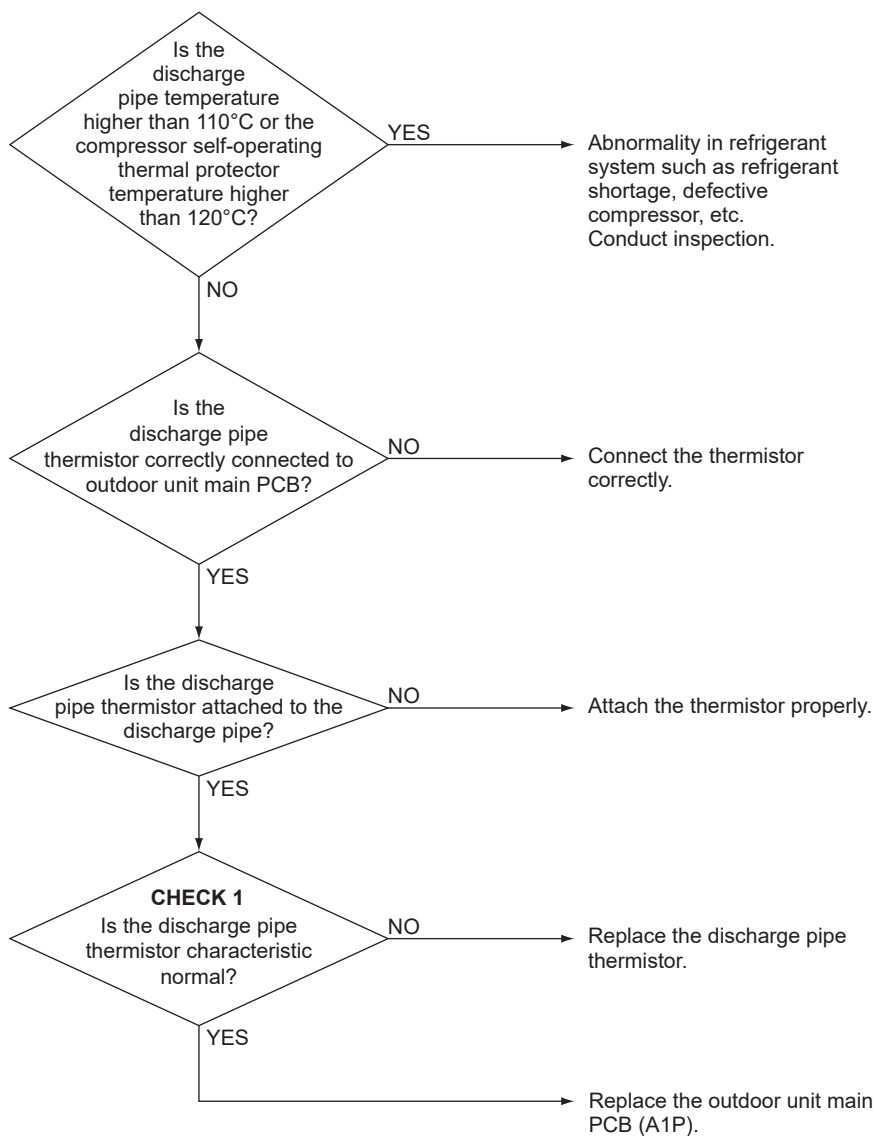
5.20 Discharge Pipe Temperature Abnormality

Applicable Models	All outdoor unit models
Error code	F3
Method of Error Detection	<ul style="list-style-type: none">■ The error is detected according to the temperature detected by the discharge pipe thermistor.■ The error is detected if there is an abnormality in the self-operating thermal protector.
Error Decision Conditions	<ul style="list-style-type: none">■ The discharge pipe temperature rises to an abnormally high level.■ The discharge pipe temperature rises suddenly.■ 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 connector■ Refrigerant shortage■ Defective compressor■ Disconnection of discharge pipe thermistor from discharge pipe■ Defective outdoor unit main PCB

Troubleshooting


Caution

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


Reference

CHECK 1 Refer to page 192.

5.21 High Pressure Switch System Abnormality

Applicable Models

All outdoor unit models

Error code

H3

Method of Error Detection

The protection device circuit checks continuity in the high pressure switch.

Error Decision Conditions

There is no continuity in the high pressure switch when the compressor stops operating.

Supposed Causes

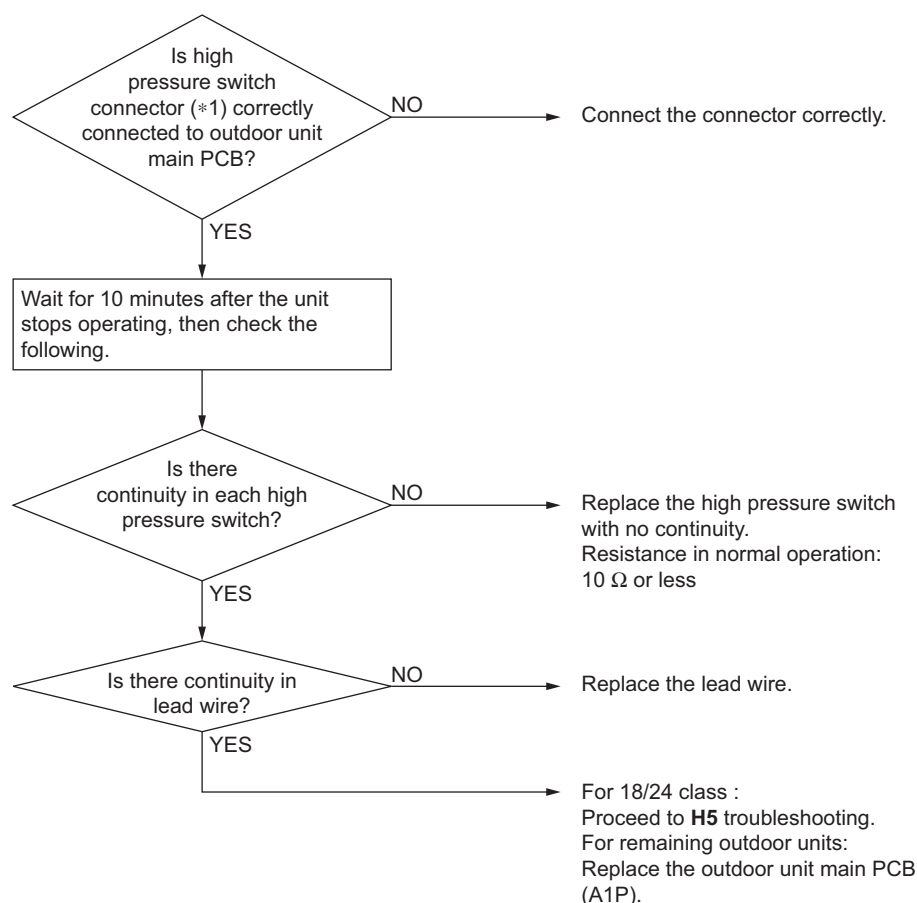
- Defective high pressure switch
- Defective connection of high pressure switch connector
- Defective outdoor unit main PCB
- Disconnected lead wire

Troubleshooting



Caution

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



Note(s)

*1. Connector

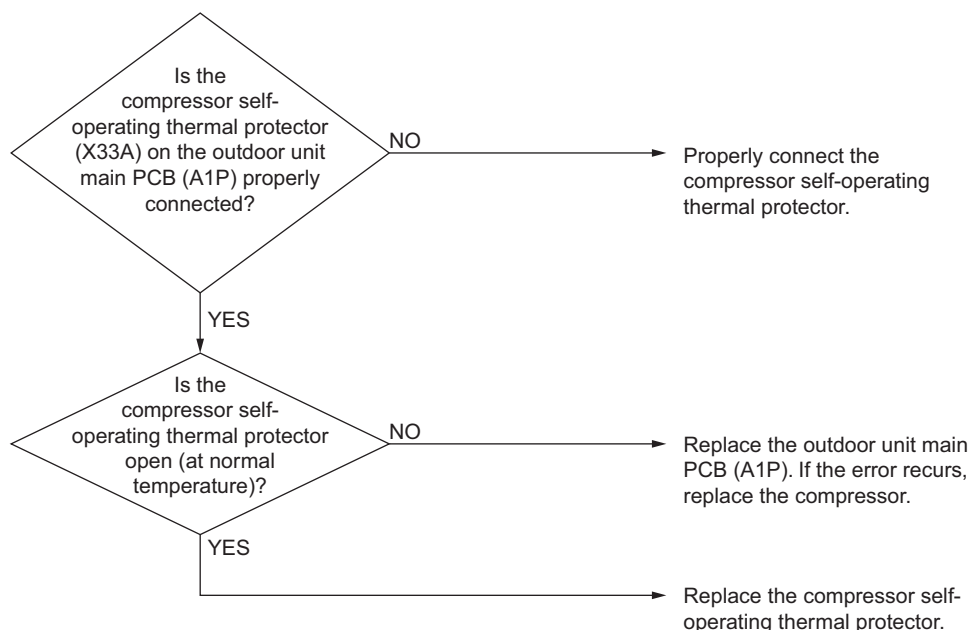
High pressure switch	Connector for high pressure switch	Activation pressure
S1PH	X32A	4.15 MPa

5.22 Compressor Self-Operating Thermal Protector

Applicable Models	All outdoor unit models
Error Code	H5
Method of Error Detection	The error is detected according to the continuity in the compressor self-operating thermal protector.
Error Decision Conditions	There is no continuity in the compressor self-operating thermal protector when the compressor starts operating.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit main PCB ■ Defective compressor self-operating thermal protector
Troubleshooting	


Caution

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



5.23 Thermistor System Abnormality

Applicable Models

All outdoor unit models

Error code

H9, J3, J5, J6, J7, J8

Method of Error Detection

The error is detected according to the temperature detected by each thermistor.

Error Decision Conditions

Thermistor is short-circuited or thermistor harness is broken during operation.

Supposed Causes

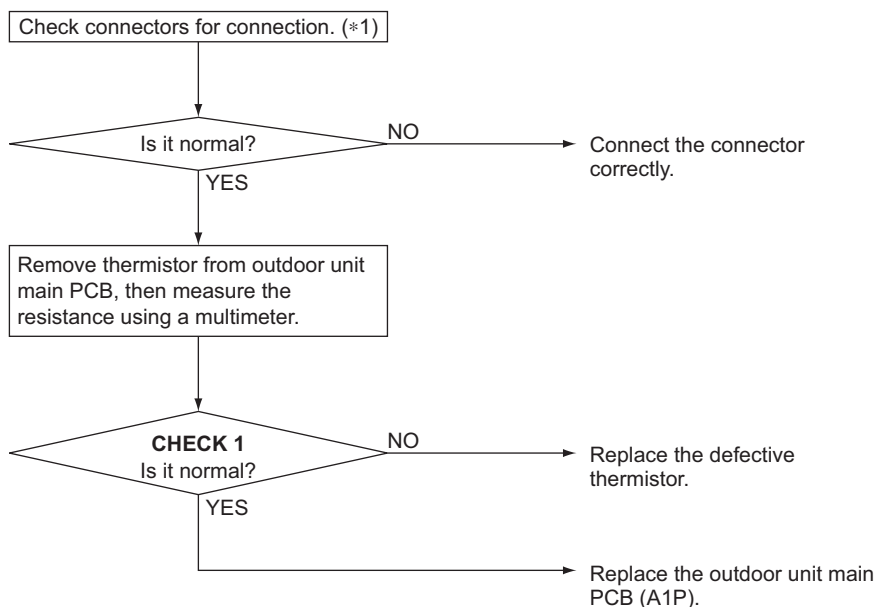
- Defective thermistor
- Defective connection of connector
- Defective outdoor unit main PCB

Troubleshooting



Caution

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



Note(s)

*1. Connector of thermistor


Error Code	Defective Thermistor	RZF18/24AVMK		RZF30/36AVMK	
		Electric Symbol	Connector	Electric Symbol	Connector
H9	Outdoor air thermistor	R1T	X11A	R1T	X11A
J3	Discharge pipe thermistor	R2T	X12A	R2T	X12A
J5	Suction pipe thermistor	R3T	X12A	R3T	X12A
J6	Outdoor heat exchanger distributor pipe thermistor	R4T	X12A	—	—
J7	Outdoor heat exchanger middle thermistor	R5T	X12A	R5T	X12A
J8	Outdoor heat exchanger liquid pipe thermistor	—	—	R4T	X12A



Reference

CHECK 1 Refer to page 192.

5.24 Outdoor Unit PCB Abnormality

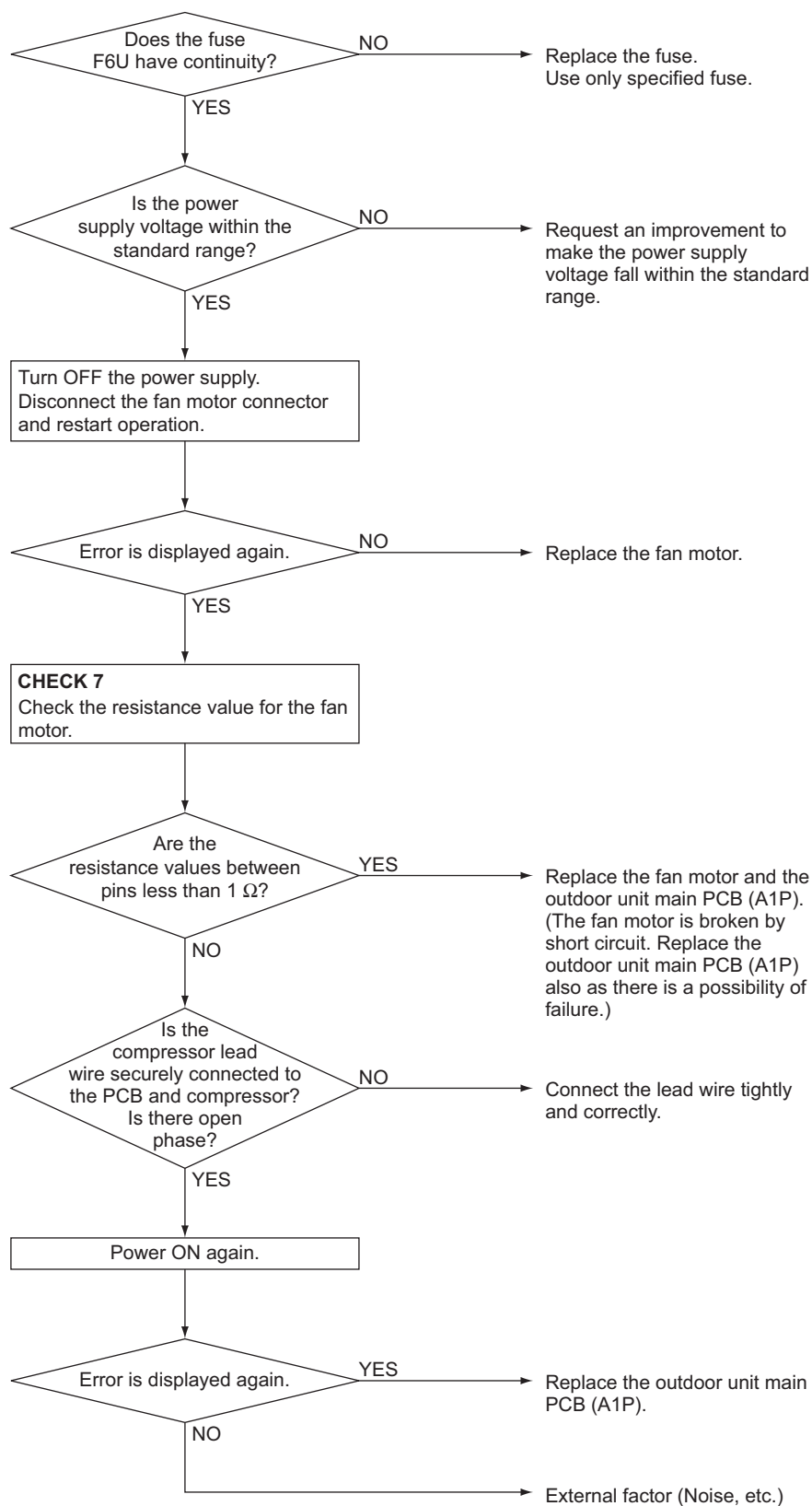
Applicable Models	All outdoor unit models
Error code	L1
Method of Error Detection	<ul style="list-style-type: none"> ■ Detect error by current value during waveform output before compressor startup. ■ Detect error by current sensor value during synchronized operation at the time of startup. ■ Detect error using an PAM series capacitor overvoltage sensor.
Error Decision Conditions	<ul style="list-style-type: none"> ■ Overcurrent is detected at the time of compressor starting. ■ Current sensor error during synchronized operation ■ Overvoltage occurs in PAM. ■ IGBT (*1) error ■ EEPROM error
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit main PCB <ul style="list-style-type: none"> ● IPM (*2) failure ● Current sensor failure ● PAM circuit failure ● Defective IGBT or drive circuit ● Inverter EEPROM failure ■ Defective connection of compressor connector ■ Compressor power supply open phase ■ Defective outdoor fan motor ■ Broken fuse ■ External factor (Noise, etc.)
 Note(s)	<p>*1. IGBT: IGBT is a power semiconductor device primarily used as an electronic switch.</p> <p>*2. IPM: IPM is a semiconductor device for electric power incorporating the drive circuit and self-protection feature of the power device which controls electric power.</p>

Troubleshooting

RZF18/24AVMK

**Caution**

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

**Reference**

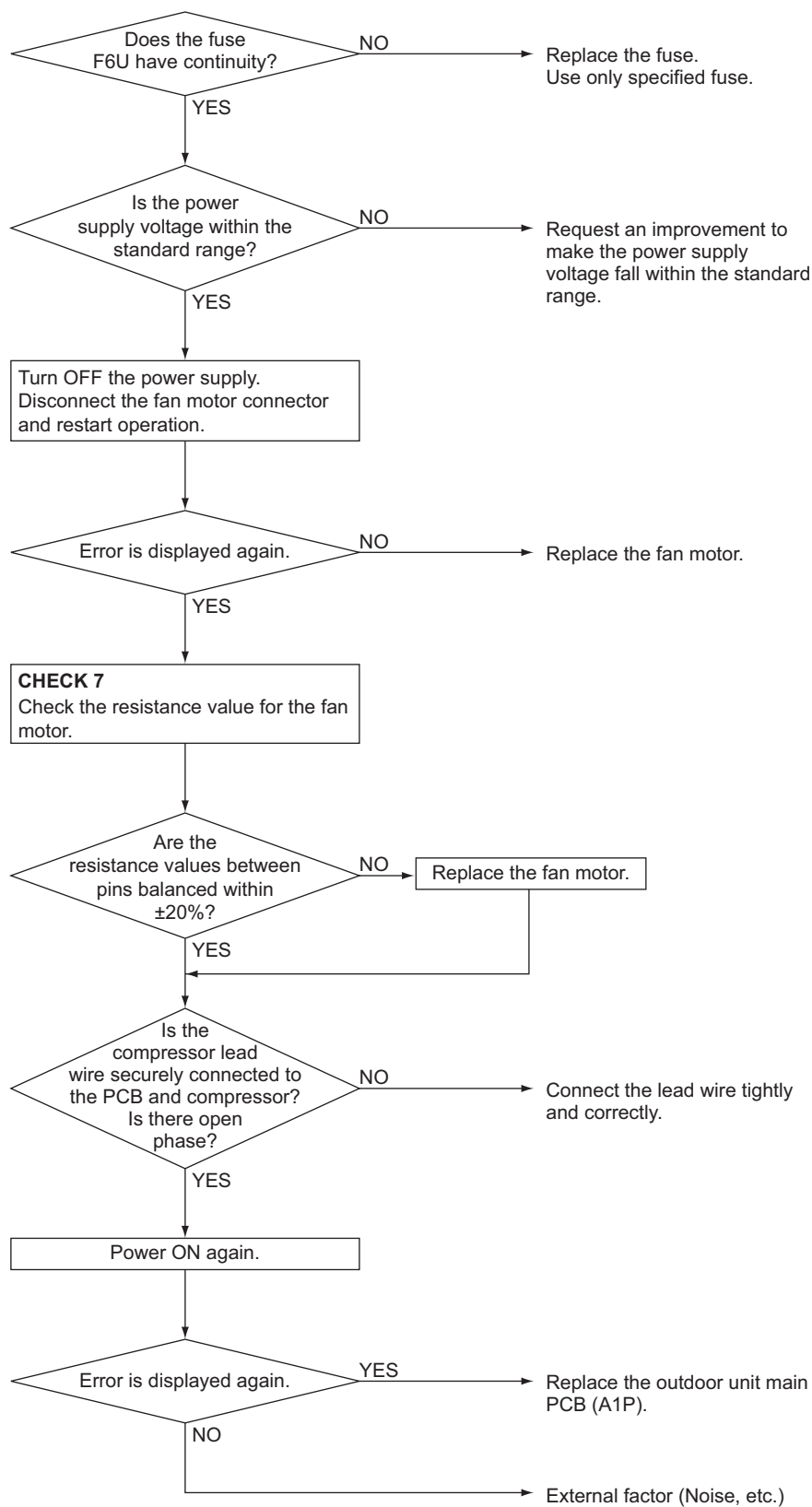
CHECK 7 Refer to page 198.

Troubleshooting

RZF30/36AVMK

**Caution**

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

**Reference**

CHECK 7 Refer to page 198.

5.25 Radiation Fin Temperature Rise

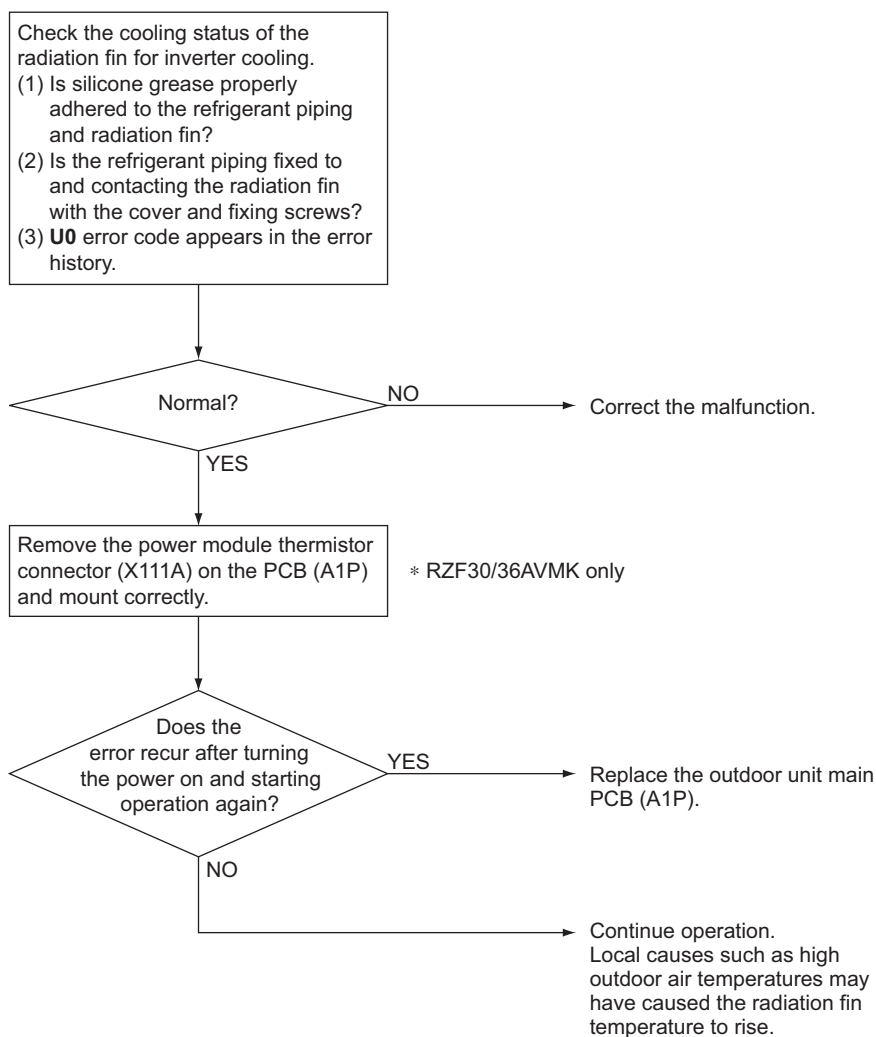
Applicable Models	All outdoor unit models
Error code	L4
Method of Error Detection	Radiation fin temperature is detected by the radiation fin thermistor.
Error Decision Conditions	The temperature of the inverter radiation fin rises abnormally due to defective heat dissipation.
Supposed Causes	<ul style="list-style-type: none"> ■ Silicone grease is not properly adhered to the refrigerant piping and radiation fin. ■ The refrigerant piping is not fixed to or contacting the radiation fin. ■ U0 error (Refrigerant shortage) ■ High outdoor air temperature ■ Defective outdoor unit main PCB

Troubleshooting



Caution

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



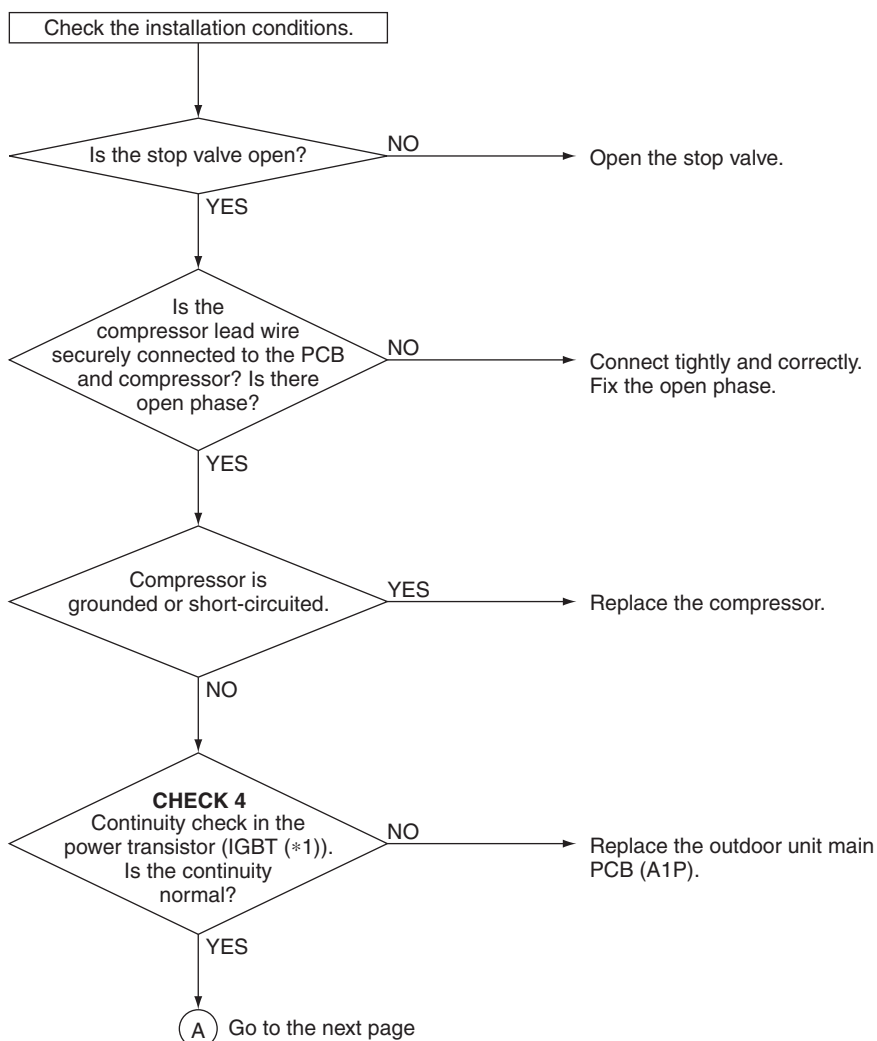
5.26 DC Output Overcurrent

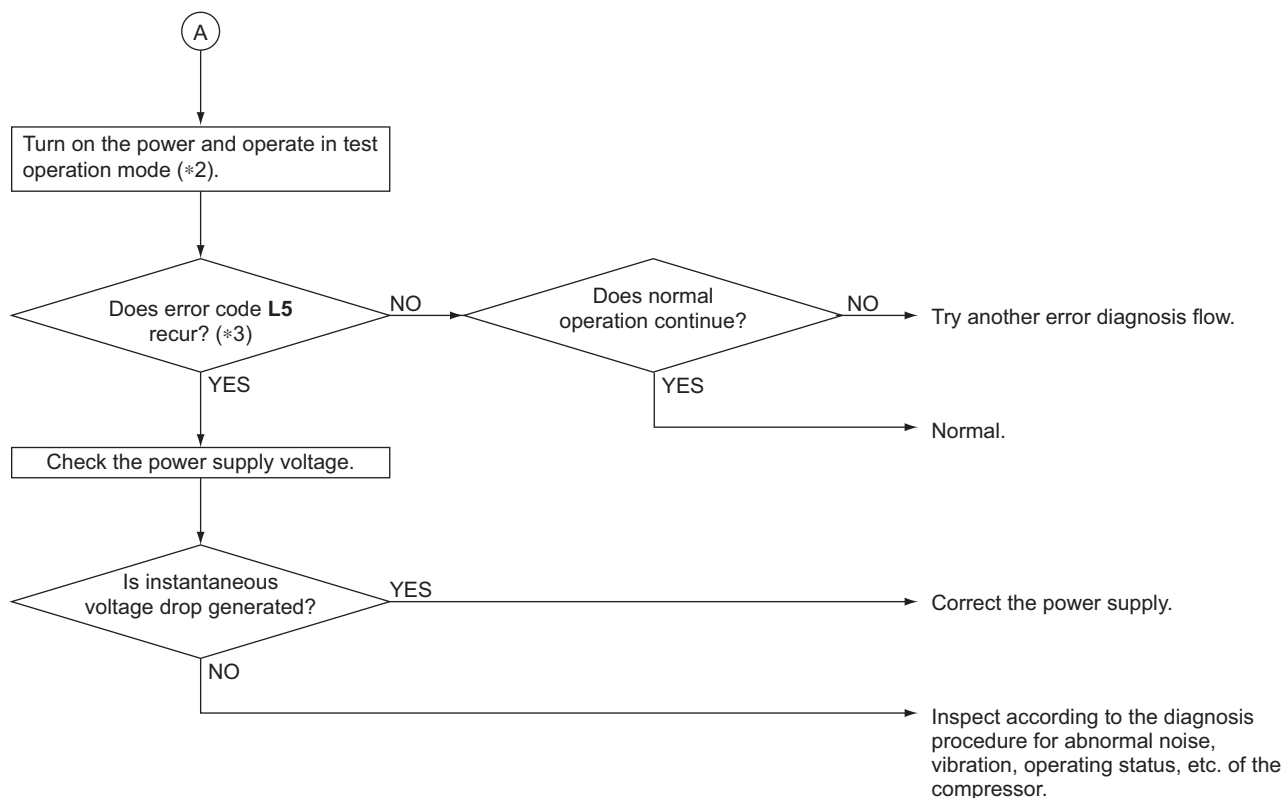
Applicable Models	All outdoor unit models
Error code	L5
Method of Error Detection	The error is detected by converting the current flowing to power transistor into voltage with DC current sensor.
Error Decision Conditions	Overcurrent has run to power transistor. (Actuated even by instantaneous overcurrent)
Supposed Causes	<ul style="list-style-type: none"> ■ Defective compressor coil (disconnection, poor insulation) ■ Compressor startup error (mechanical lock) ■ Defective outdoor unit main PCB ■ Defective compressor (scratched bearing) ■ The stop valve is not opened. ■ Momentary power failure ■ Compressor noise, vibration ■ Compressor power supply open phase

Troubleshooting


Caution

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





Note(s)

- *1. IGBT: IGBT is a power semiconductor device primarily used as an electronic switch.
- *2. In order to operate the compressor reliably, use the remote controller to set the test operation mode. The test operation mode lasts for 30 minutes, then automatically finishes and switches to normal mode. To continue in test operation mode, set the test operation mode once again.
- *3. The unit must be run for at least 30 minutes to confirm the **L5** error.



Reference

CHECK 4 Refer to page 196.

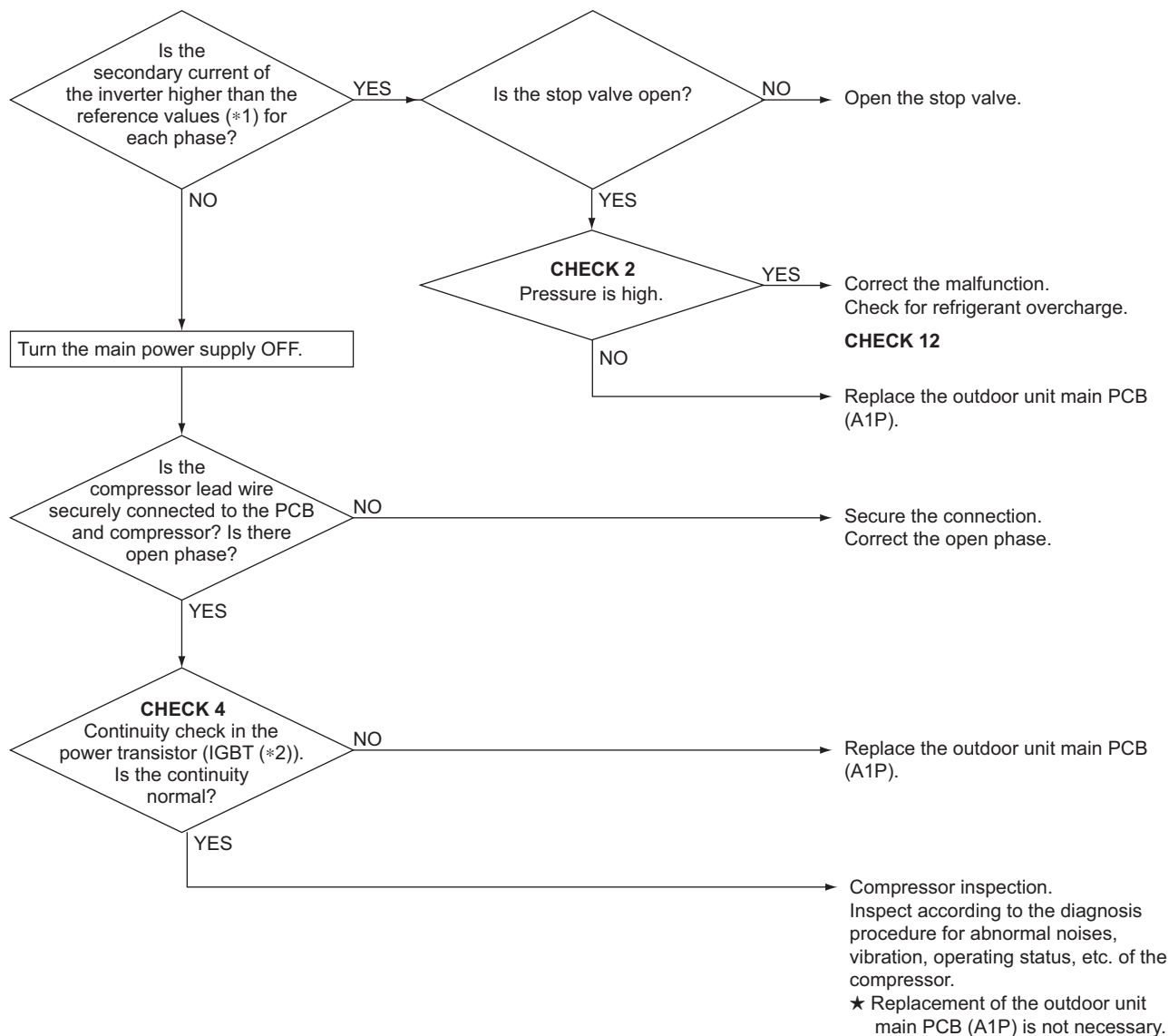
5.27 Compressor Overcurrent

Applicable Models	All outdoor unit models
Error code	L8
Method of Error Detection	The error is detected by converting the current flowing to power transistor into voltage with DC current sensor.
Error Decision Conditions	Compressor overload (except for when startup) is detected.
Supposed Causes	<ul style="list-style-type: none">■ Stop valve is not opened.■ High pressure is too high.■ Defective compressor wiring, compressor open phase■ Broken compressor coil■ Defective outdoor unit main PCB■ Defective compressor (scratched bearing)

Troubleshooting



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



Note(s)

*1. Inverter secondary current reference values:

Model		Detection value
RZF18/24AVMK	Cooling	17.7 A × 260 seconds
RZF30/36AVMK	Cooling	22.1 A × 260 seconds

*2. IGBT: IGBT is a power semiconductor device primarily used as an electronic switch.



Reference

CHECK 2 Refer to page 195.



Reference

CHECK 4 Refer to page 196.



Reference

CHECK 12 Refer to page 203.

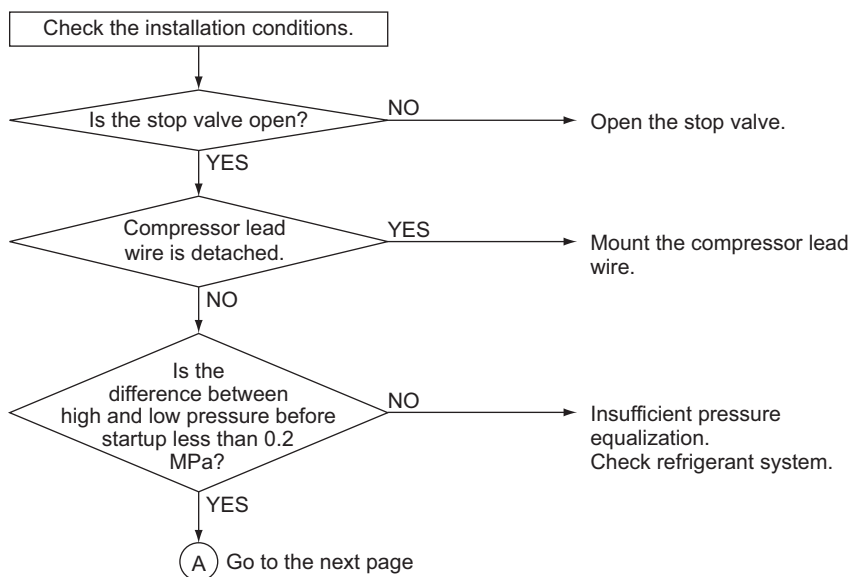
5.28 Compressor Startup Abnormality

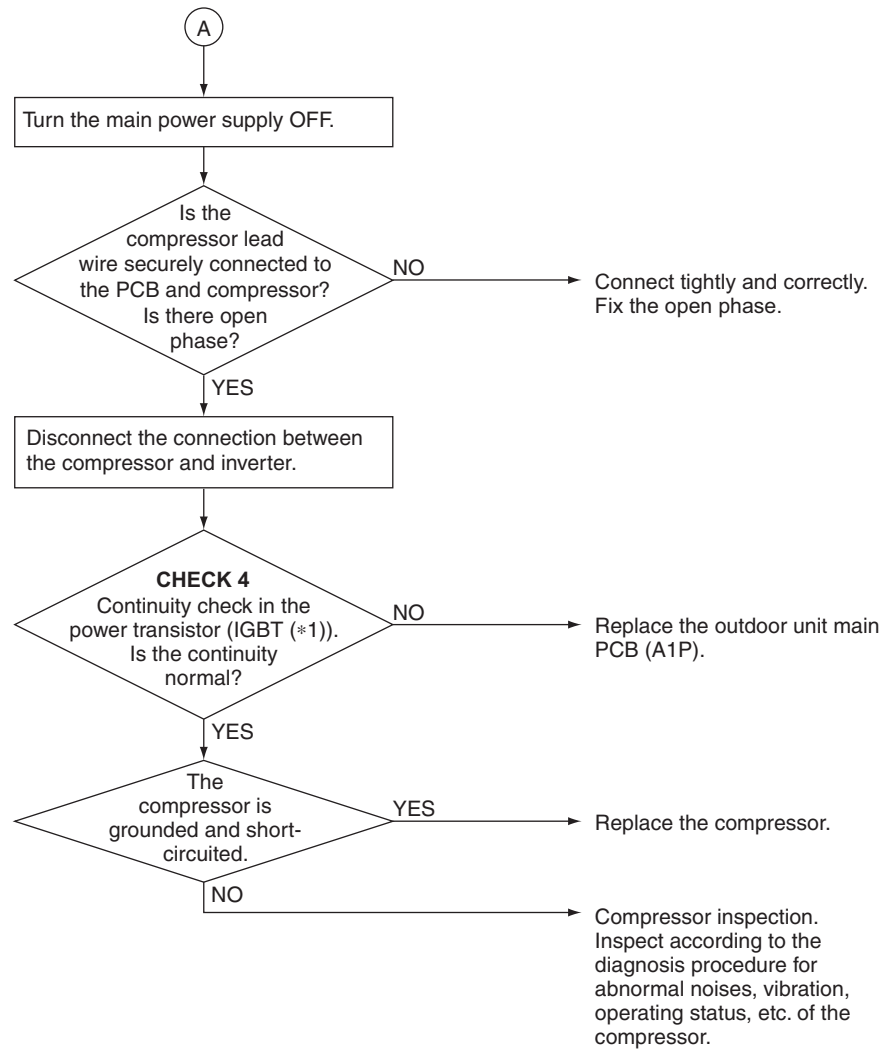
Applicable Models	All outdoor unit models
Error code	L9
Method of Error Detection	The error is detected by converting the current flowing to power transistor into voltage with CT1 (DC current sensor). Outdoor unit main PCB detects the disorder of position signal.
Error Decision Conditions	When overload or load fluctuation is detected at compressor startup.
Supposed Causes	<ul style="list-style-type: none"> ■ The stop valve is not opened. ■ Defective wiring between compressor and inverter ■ Defective compressor wiring, compressor open phase ■ Pressure differential startup (0.9 MPa or more) ■ Defective outdoor unit main PCB ■ Defective compressor (lock)

Troubleshooting


Caution

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





Note(s)

*1. IGBT: IGBT is a power semiconductor device primarily used as an electronic switch.



Reference

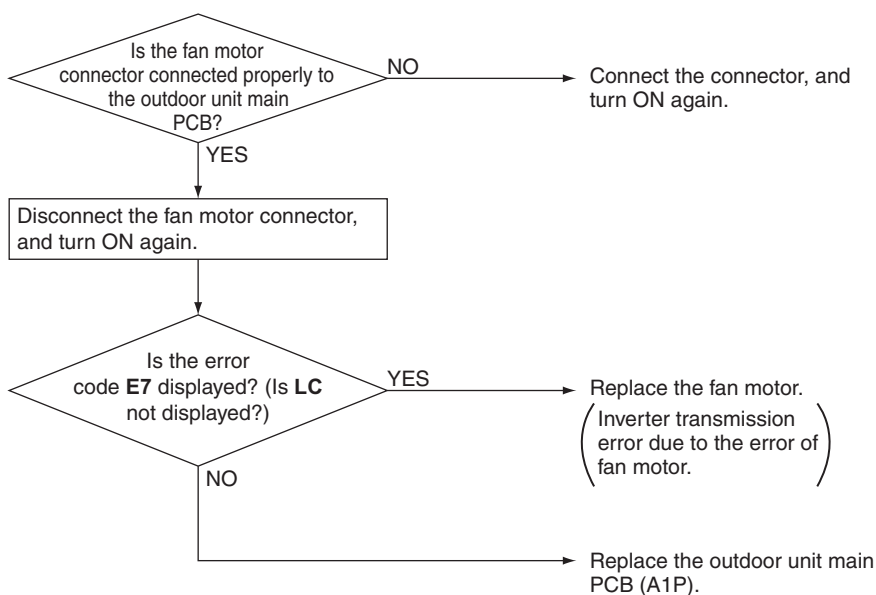
CHECK 4 Refer to page 196.

5.29 Transmission Error between Microcomputers on Outdoor Unit Main PCB

Applicable Models	All outdoor unit models
Error code	LC
Method of Error Detection	Check whether transmission between microcomputers on the outdoor unit main PCB is carried out normally.
Error Decision Conditions	The transmission is not carried out normally in a specified period of time.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit main PCB ■ External factor (Noise, etc.) ■ Defective outdoor fan motor ■ Defective connection of fan motor connector
Troubleshooting	


Caution

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



5.30 PAM Circuit Error

Applicable Models RZF18/24AVMK

Error code **P1**

Method of Error Detection The error is detected according to the voltage waveform of main circuit capacitor built in inverter.

Error Decision Conditions The above voltage waveform fluctuation increases.

Supposed Causes

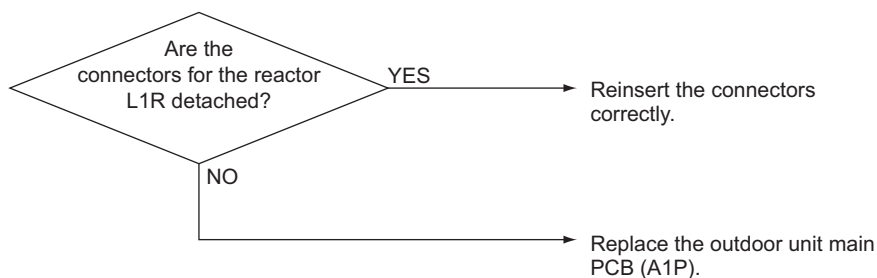
- Reactor connector detached
- Outdoor unit main PCB (A1P) malfunction (PAM circuit failure)

Troubleshooting



Caution

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



5.31 Open Phase or Power Supply Voltage Imbalance

Applicable Models RZF30/36AVMK

Error code **P1**

Method of Error Detection The error is detected according to the voltage waveform of main circuit capacitor built in inverter.

Error Decision Conditions The above voltage waveform fluctuation increases.

Supposed Causes

- Defective outdoor unit main PCB
 - Defective main circuit capacitor
 - 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.

Replace the outdoor unit main PCB (A1P).

5.32 Power Module Thermistor Abnormality

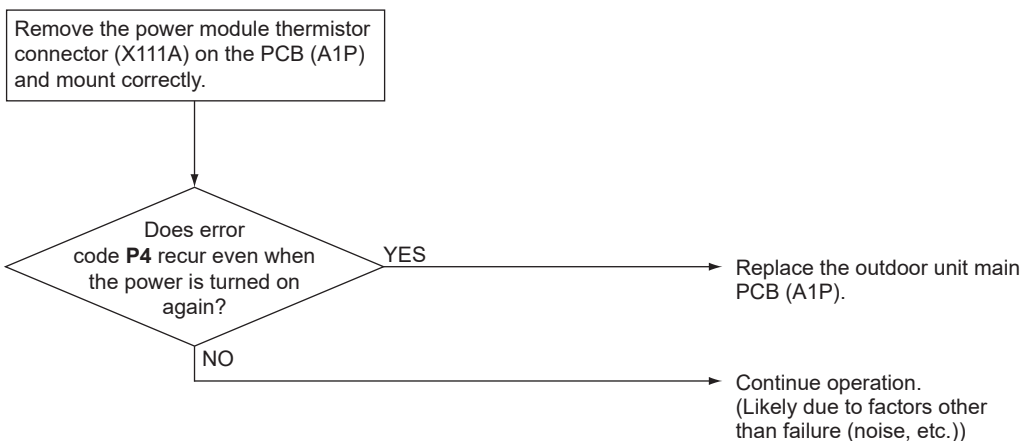
Applicable Models	RZF30/36AVMK
Error code	P4
Method of Error Detection	Detects open or short-circuit of the radiation fin thermistor while the compressor stops operating.
Error Decision Conditions	Open or short-circuit of the radiation fin thermistor is detected while the compressor stops operating.
Supposed Causes	<ul style="list-style-type: none"> ■ Defective outdoor unit main PCB (Defective radiation fin thermistor) ■ External factor (Noise, etc.)

Troubleshooting



Caution

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



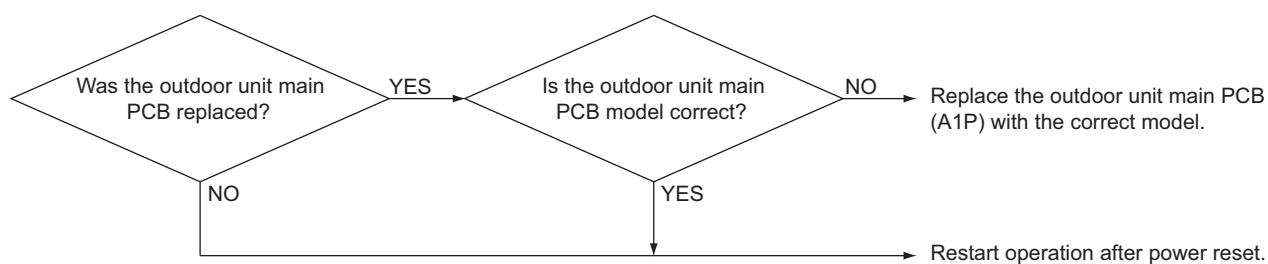
5.33 Capacity Setting Abnormality

Applicable Models	All outdoor unit models
Error code	PJ
Method of Error Detection	Judge whether the combination is correct through communication between the inverter and control microcomputers and the fan and control microcomputers.
Error Decision Conditions	If there is a mismatch in the signals sent between the inverter and control microcomputers, or between the fan and control microcomputers, the error is confirmed. (Error decision is made every time the power supply is turned ON.)
Supposed Causes	<ul style="list-style-type: none"> ■ Outdoor unit main PCB model mistake ■ EEPROM data is not written correctly or cannot be read.

Troubleshooting



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



Note(s)

*1. Capacity setting adaptor is not connected at factory. (Capacity is written in EEPROM.) Capacity data for spare PCB is also written to the EEPROM, so a capacity setting adaptor is not required.

5.34 Refrigerant Shortage (Warning/Alarm)

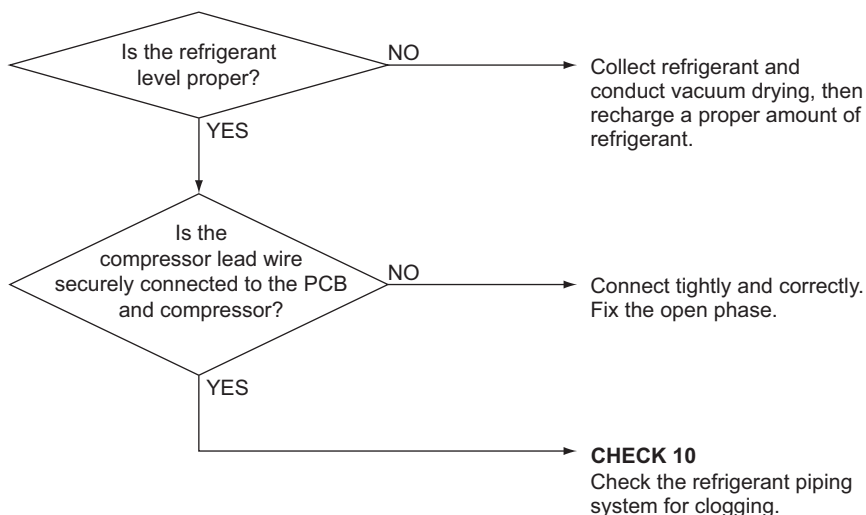
Applicable Models	All outdoor unit models
Error code	U0
Method of Error Detection	Judgment is based on the opening degree of electronic expansion valves as well as individual temperatures and pressures.
Error Decision Conditions	<p>An error code is displayed but system operation continues.</p> <p>Cooling</p> <ul style="list-style-type: none"> ■ Compressor frequency does not increase even though the electronic expansion valve is opened to the fullest extent due to the heavy load. ■ The temperature detected with the outdoor heat exchanger middle thermistor (R5T) does not increase even when operation starts. ■ The temperature detected with the indoor heat exchanger thermistor (R2T) does not decrease even when operation starts.
Supposed Causes	<ul style="list-style-type: none"> ■ Refrigerant shortage ■ Defective compressor wiring, compressor open phase ■ Stop valve is not opened. ■ Clogged refrigerant piping system

Troubleshooting



Caution

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



Reference

CHECK 10 Refer to page 201.

5.35 Refrigerant Shortage (Error)

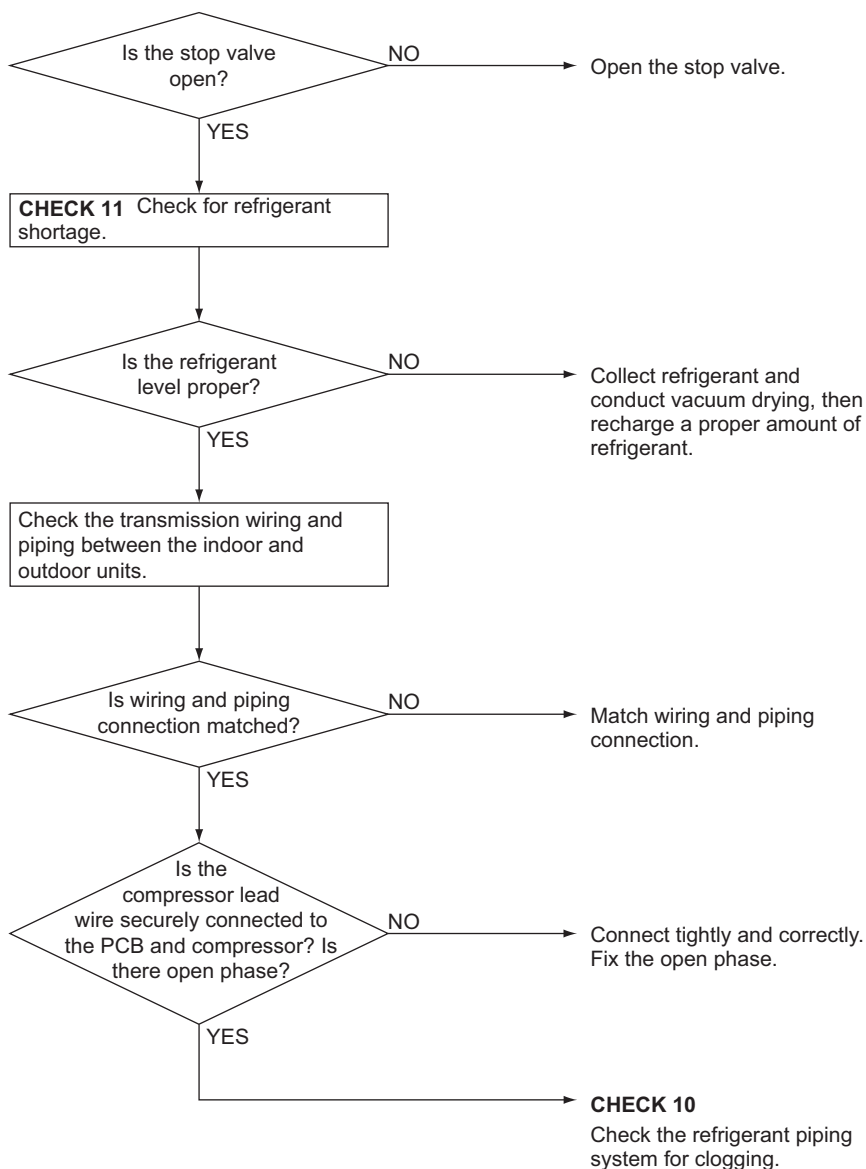
Applicable Models	All outdoor unit models
Error code	U0
Method of Error Detection	Cooling Detection based on difference in temperature between temperature preset by remote controller and suction air temperature, electronic expansion valve opening degree, compressor frequency and low pressure.
Error Decision Conditions	Cooling The conditions below are obtained under a refrigerant shortage warning (*1) <ul style="list-style-type: none"> ■ The evaporation temperature remains far below the target evaporation temperature. ■ The temperature detected with the outdoor heat exchanger middle thermistor (R5T) does not increase even when operation starts. ■ The temperature detected with the indoor heat exchanger thermistor (R2T) does not decrease even when operation starts.. *1. In test operation mode, the conditions are obtained even without a refrigerant shortage warning.
Supposed Causes	<ul style="list-style-type: none"> ■ Refrigerant shortage ■ Defective compressor wiring, compressor open phase ■ Stop valve is not opened. ■ Clogged refrigerant piping system ■ Mismatching of wiring and piping

Troubleshooting



Caution

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



Reference

CHECK 10 Refer to page 201.



Reference

CHECK 11 Refer to page 202.

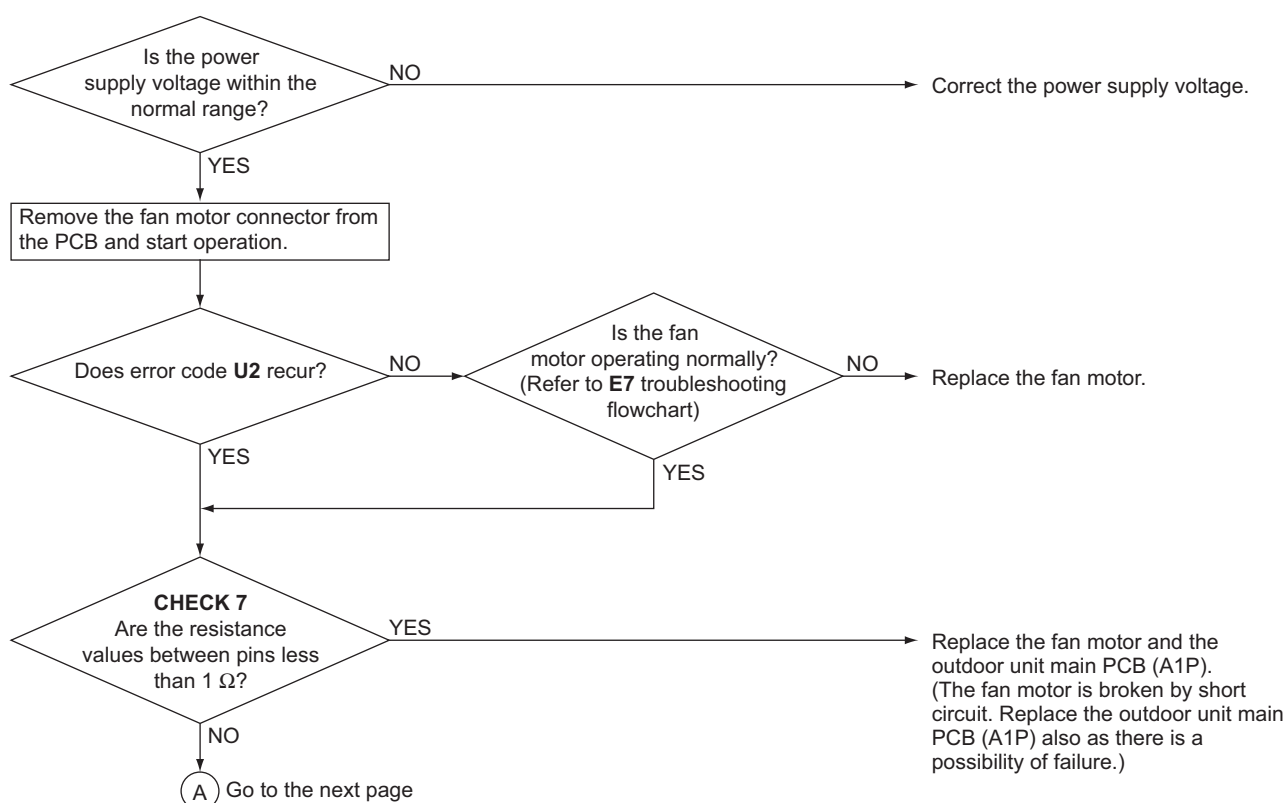
5.36 Power Supply Voltage Abnormality

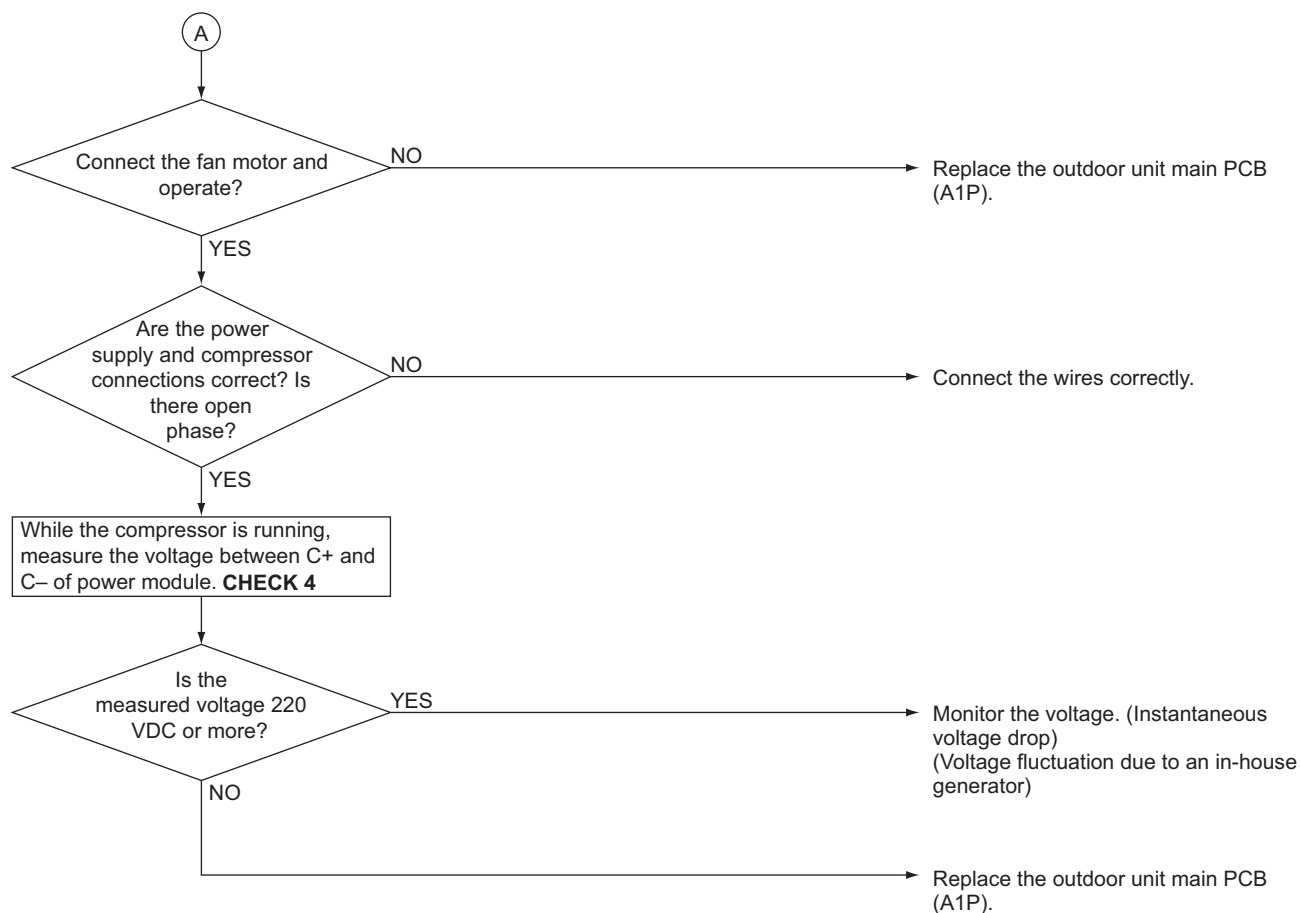
Applicable Models	All outdoor unit models
Error code	U2
Method of Error Detection	The error is detected according to the voltage of main circuit capacitor built in inverter and the power supply voltage.
Error Decision Conditions	The voltage of main circuit capacitor built in inverter and the power supply voltage are detected to be abnormal.
Supposed Causes	<ul style="list-style-type: none"> ■ Dropping power supply voltage ■ Instantaneous power failure ■ Defective outdoor fan motor ■ Defective compressor wiring, compressor open phase ■ Defective outdoor unit main PCB ■ Voltage fluctuation due to an in-house generator

Troubleshooting RZF18/24AVMK



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





Reference **CHECK 4** Refer to page 196.

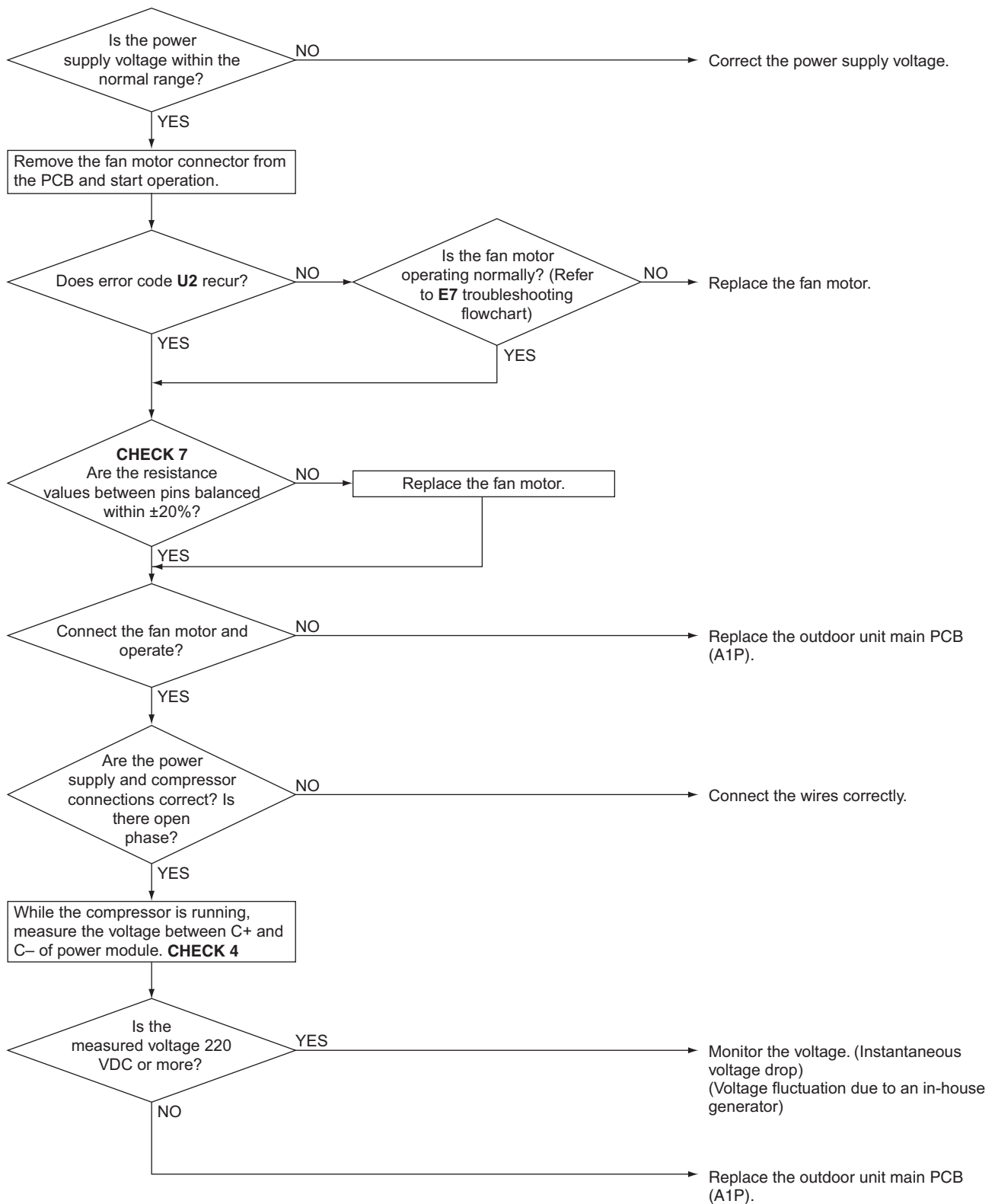


Reference **CHECK 7** Refer to page 198.

Troubleshooting RZF30/36AVMK



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



Reference **CHECK 4** Refer to page 196.



Reference **CHECK 7** Refer to page 198.

5.37 Transmission Error between Indoor Unit and Outdoor Unit, Outdoor Fan Motor Abnormality

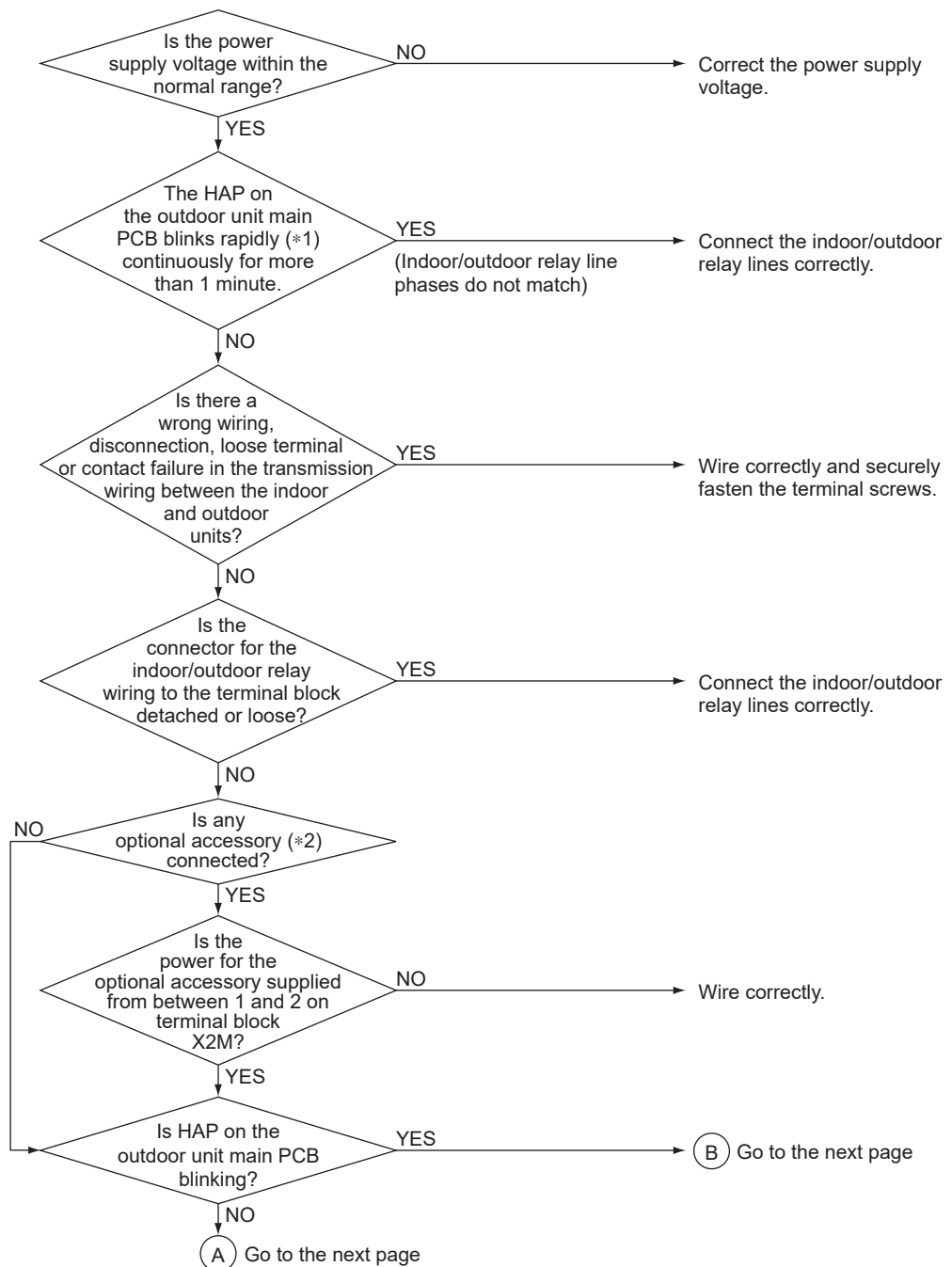
Applicable Models	All indoor unit models All outdoor unit models
Error code	U4
Method of Error Detection	The microcomputer detects transmission error between the indoor and the outdoor unit.
Error Decision Conditions	The normal transmission is not conducted for a certain period of time.
Supposed Causes	<ul style="list-style-type: none">■ Wiring indoor-outdoor transmission wire is incorrect.■ Optional device connection malfunction■ Defective indoor unit PCB■ Defective outdoor unit main PCB■ Defective outdoor fan motor■ External factor (Noise, etc.)■ Defective power supply

Troubleshooting

RZF18/24AVMK

**Caution**

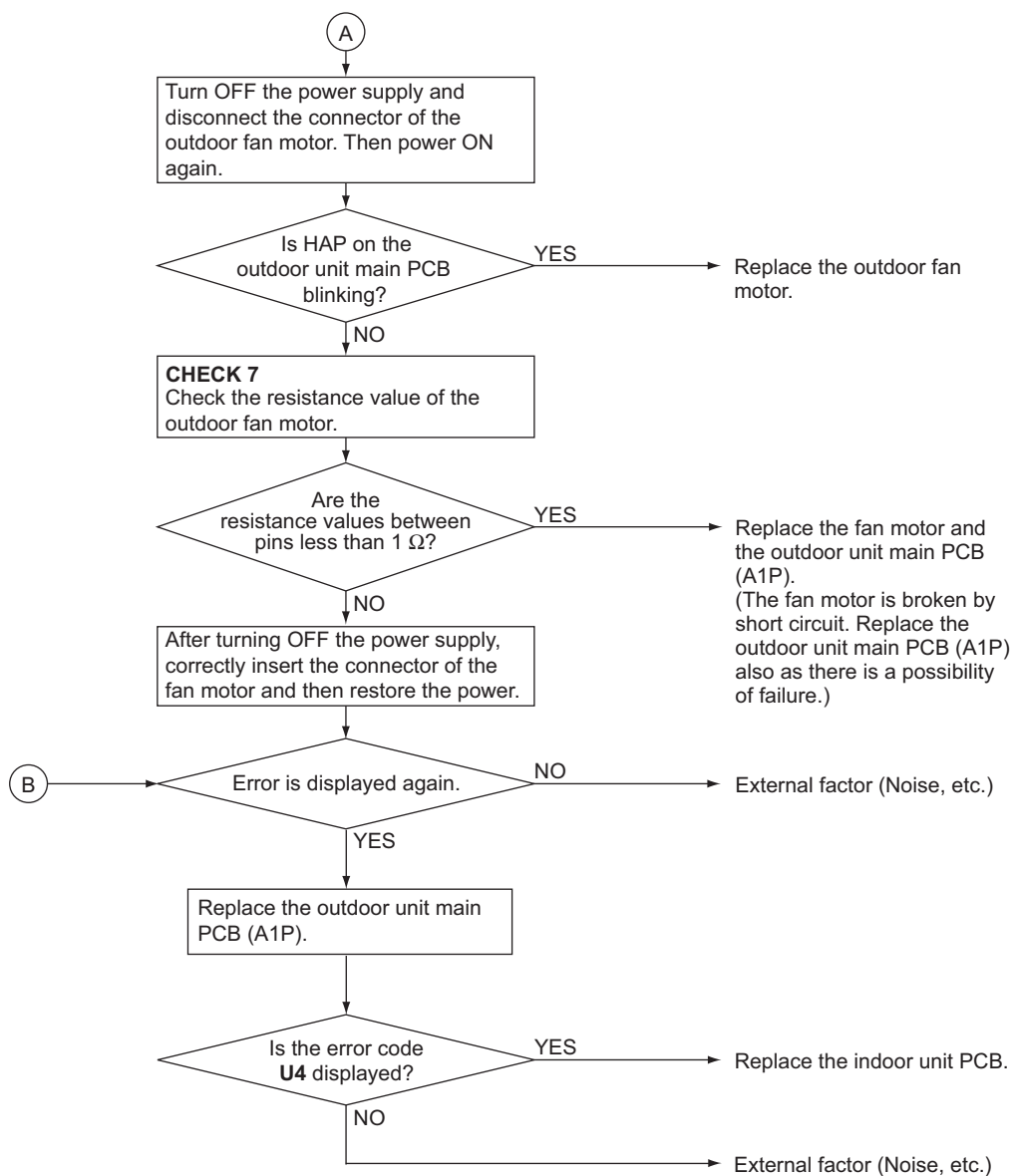
Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged.

**Note(s)**

*1. Blinking pattern: 0.2 seconds ON, 0.2 seconds OFF (blinking approximately 25 times in 10 seconds)

(Normally 0.4 seconds ON, 0.4 seconds OFF (blinking approximately 12 times in 10 seconds))

*2. Optional accessories refer to adaptor for wiring, and other accessories.



Reference

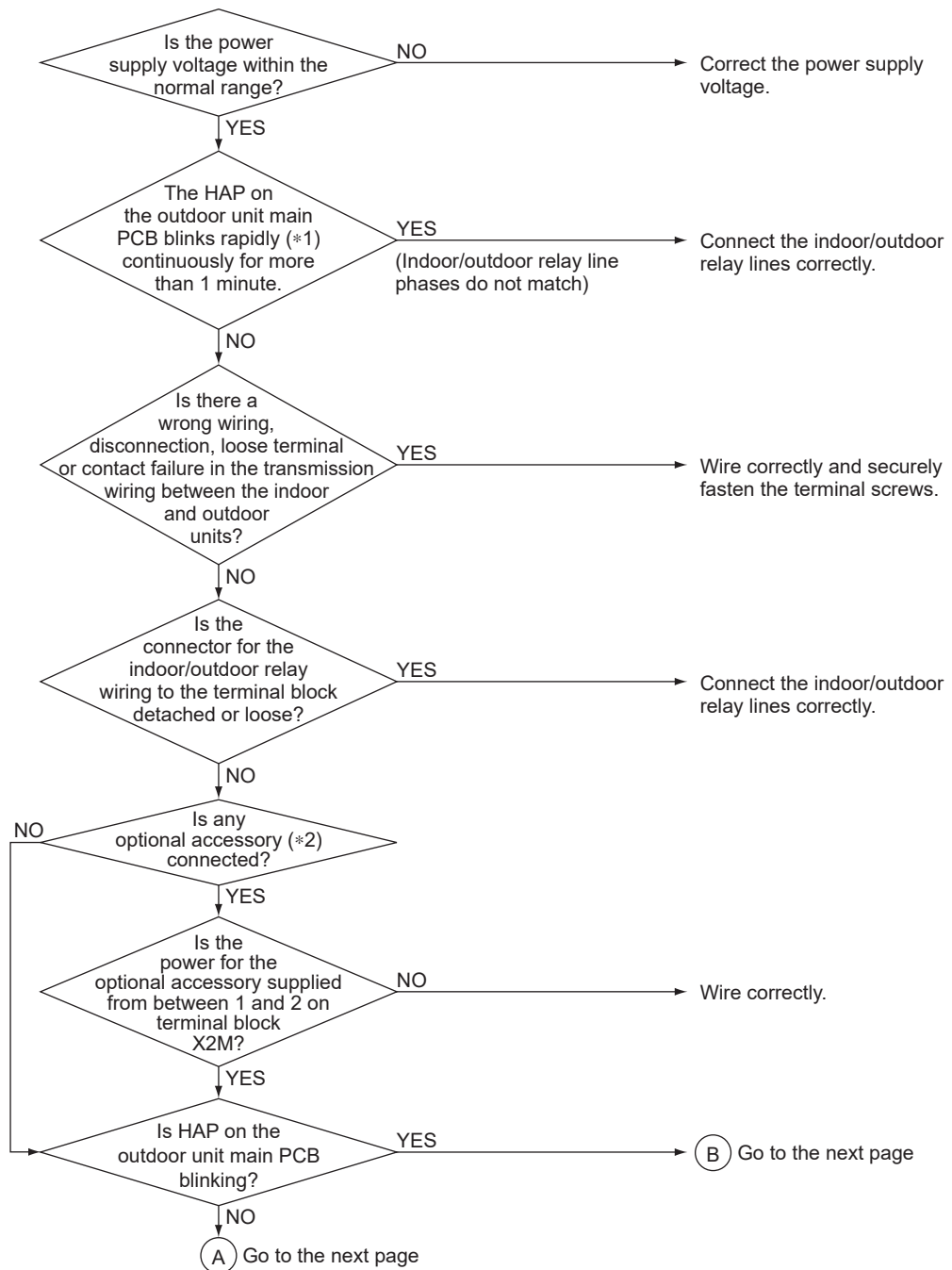
CHECK 7 Refer to page 198.

Troubleshooting

RZF30/36AVMK

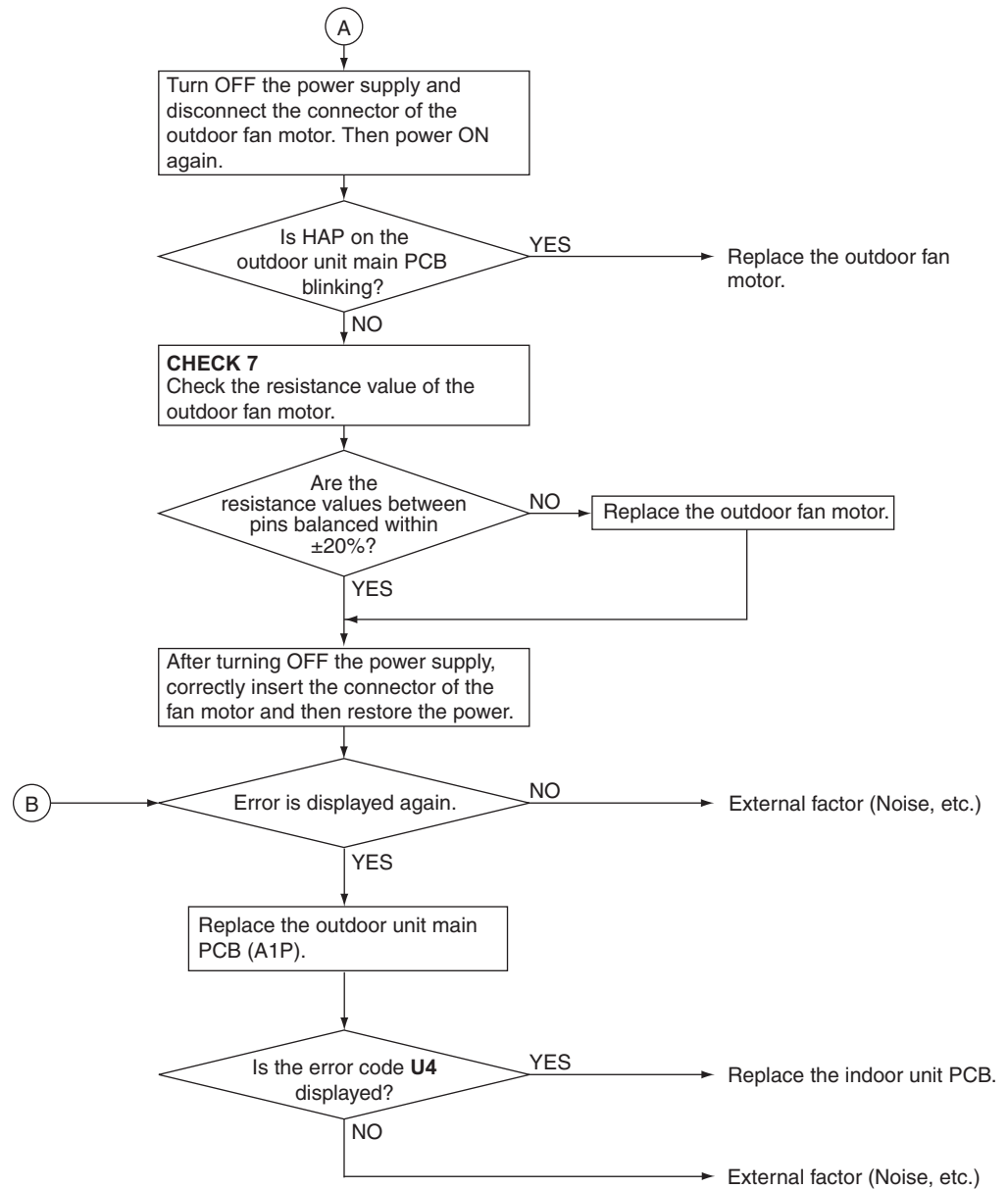
**Caution**

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

**Note(s)**

*1. Blinking pattern: 0.2 seconds ON, 0.2 seconds OFF (blinking approximately 25 times in 10 seconds)
(Normally 0.4 seconds ON, 0.4 seconds OFF (blinking approximately 12 times in 10 seconds))

*2. Optional accessories refer to adaptor for wiring, and other accessories.



Reference CHECK 7 Refer to page 198.

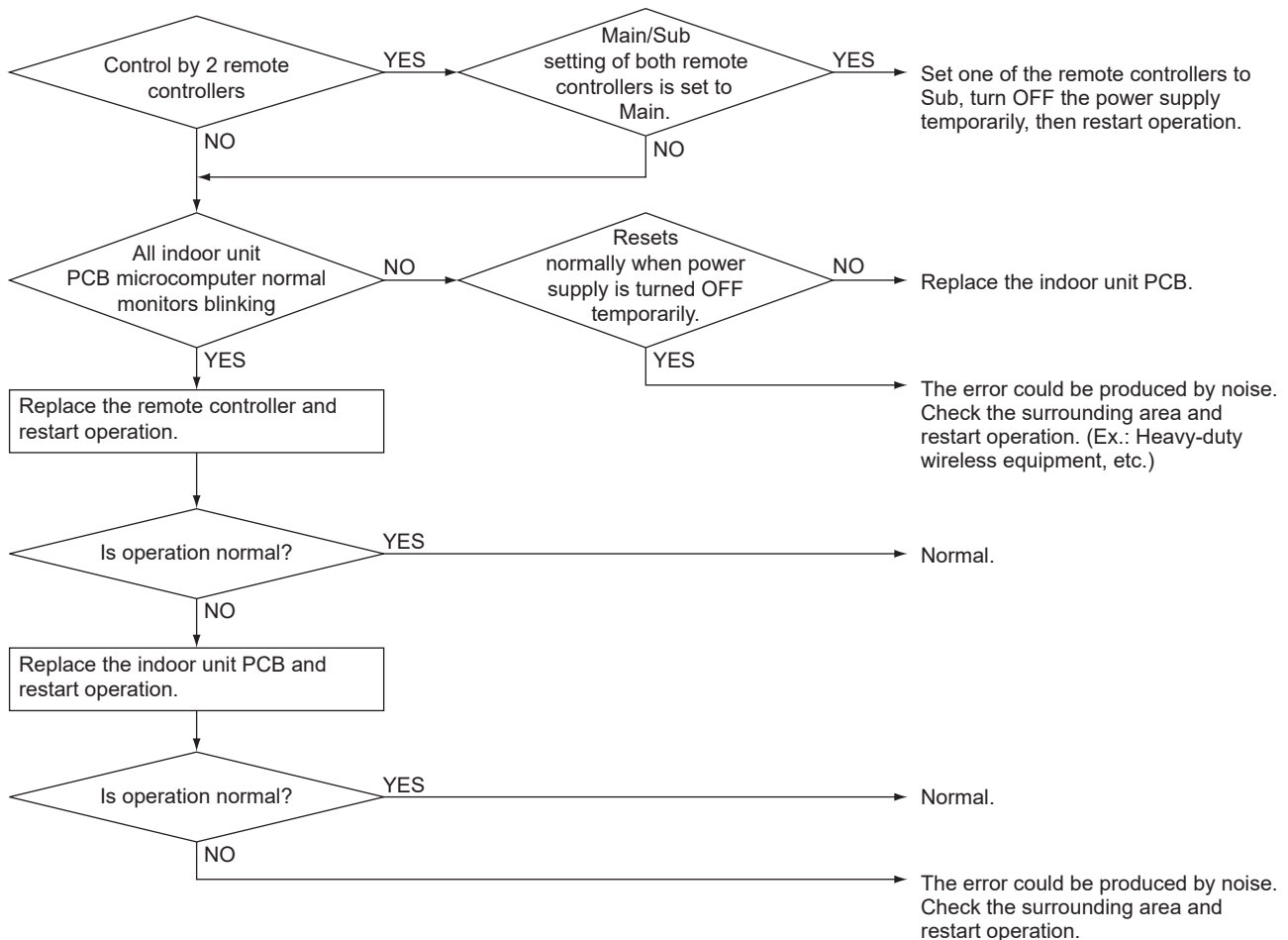
5.38 Transmission Error between Indoor Unit and Remote Controller

Applicable Models	All indoor unit models
Error code	U5
Method of Error Detection	Microcomputer checks if transmission between indoor unit and remote controller is normal.
Error Decision Conditions	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.



Reference Refer to Main/Sub setting on page 34.

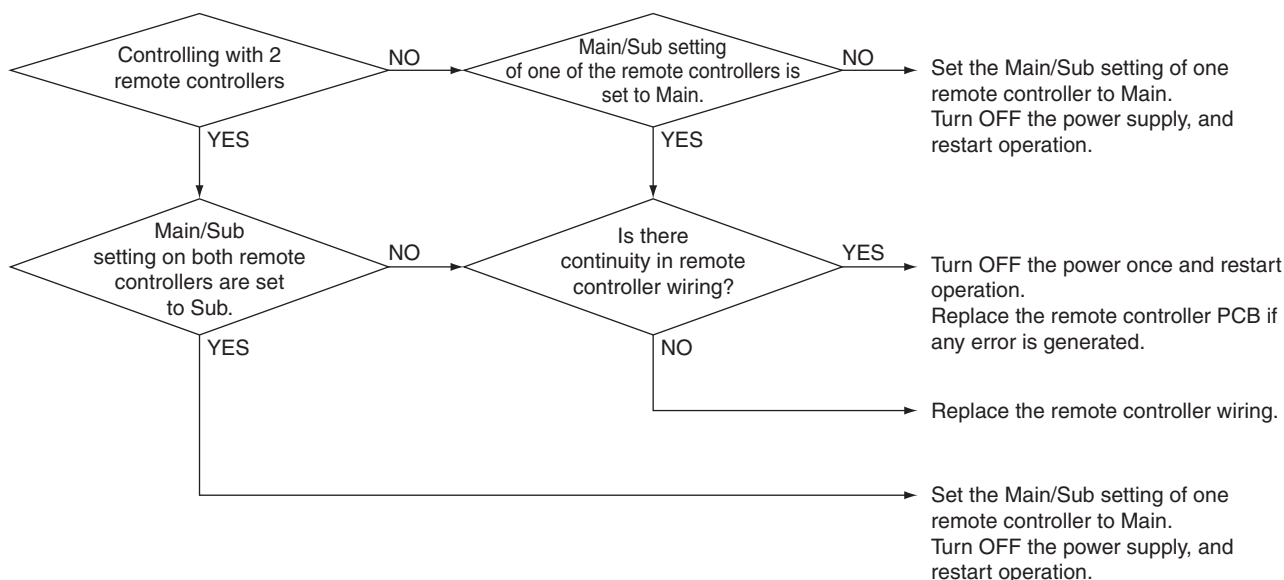
5.39 Transmission Error between Main Remote Controller and Sub Remote Controller

Applicable Models	All indoor unit models
Error code	U8
Method of Error Detection	In case of controlling with 2 remote controllers, check the system using microcomputer if signal transmission between indoor unit and remote controller (main and sub) is normal.
Error Decision Conditions	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"> ■ Remote controller setting malfunction ■ Remote controller wiring disconnection ■ Transmission error between main remote controller and sub remote controller ■ No main remote controller in the system ■ Defective remote controller

Troubleshooting



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



Reference Refer to Main/Sub setting on page 34.

5.40 Field Setting Switch Abnormality

Applicable Models All indoor unit models

Error Code **UA**

Error Decision Conditions

- The indoor unit and outdoor unit combination is incorrect.
- Field settings are not correct.

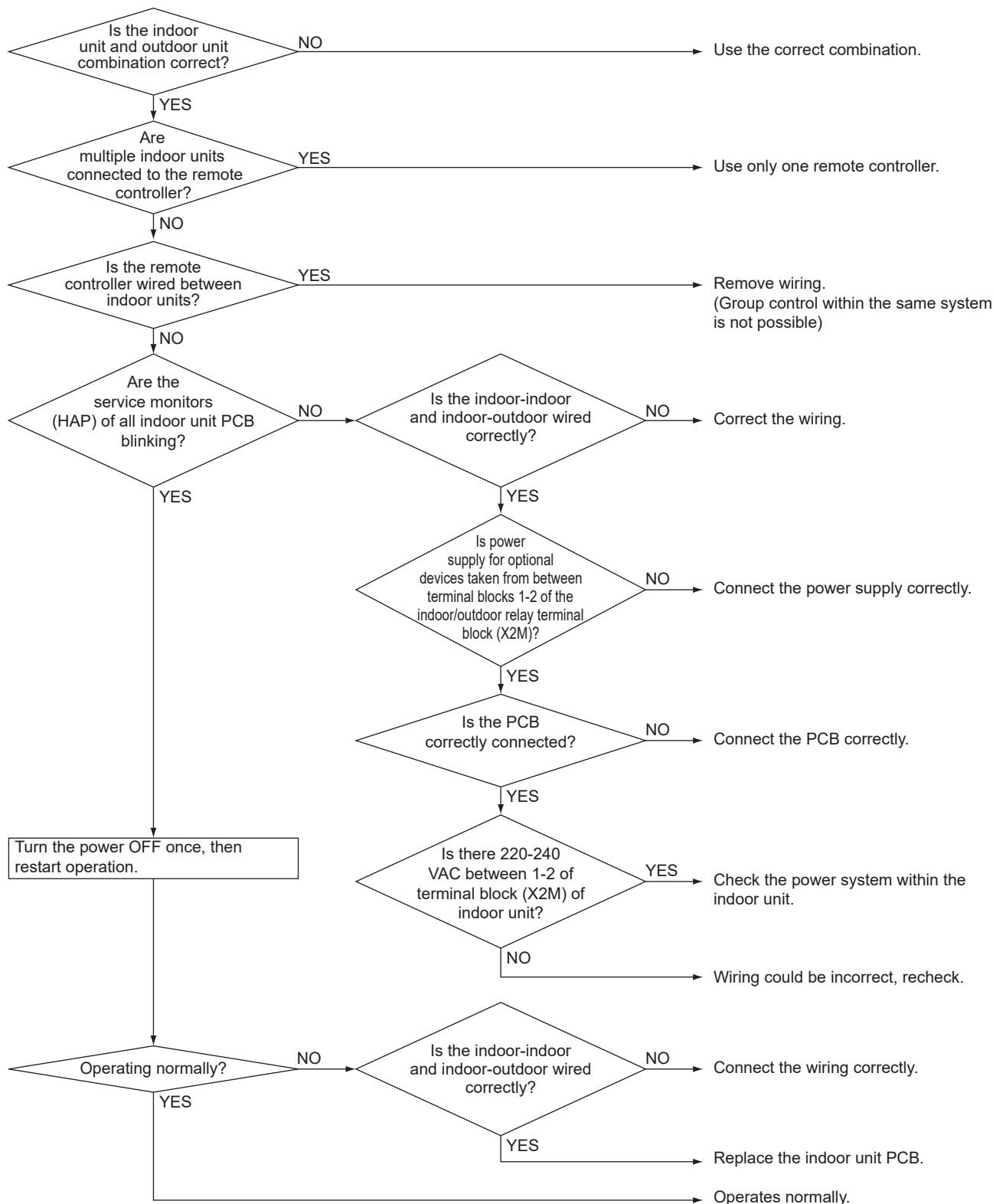
Supposed Causes

- Multiple remote controllers connected
- Defective indoor unit PCB
- Indoor-outdoor, indoor-indoor unit transmission wiring
- Optional device connection malfunction
- Power supply PCB connection malfunction
- Indoor unit power supply malfunction or miswiring
- Miswiring between units
- Defective remote controller wiring

Troubleshooting



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

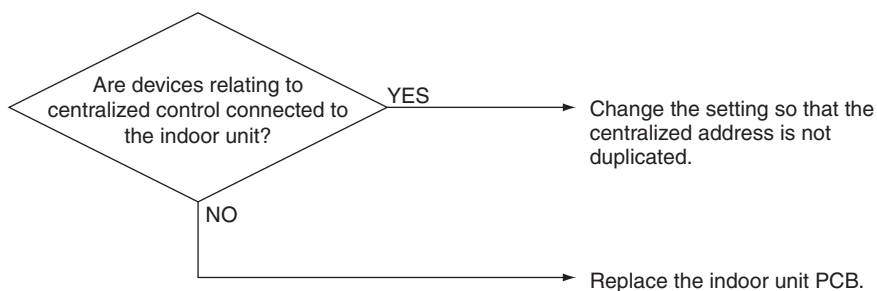


5.41 Centralized Address Setting Error

Applicable Models	All indoor unit models
Error Code	UC
Method of Error Detection	Indoor unit microcomputer detects and judges the centralized address signal according to the transmission between indoor units.
Error Decision Conditions	When the microcomputer judges that the centralized address signal is duplicated An error code is displayed but system operation continues.
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.



5.42 Transmission Error between Centralized Controller and Indoor Unit

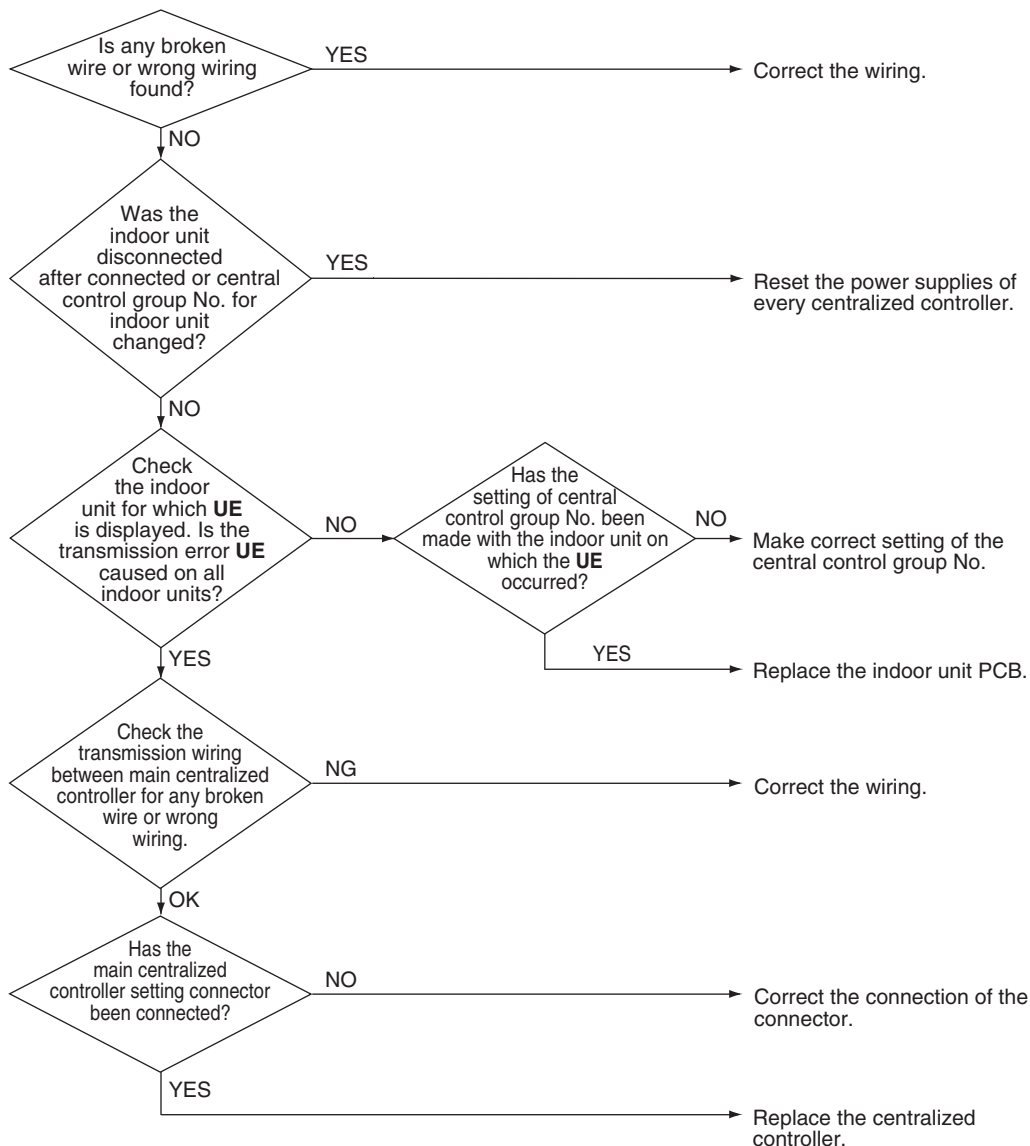
Applicable Models	All indoor unit models Schedule timer Central remote controller
Error Code	UE
Method of Error Detection	Microcomputer checks if transmission between indoor unit and centralized controller is normal.
Error Decision Conditions	Transmission is not carried out normally for a certain amount of time
Supposed Causes	<ul style="list-style-type: none">■ Broken wire or wrong wiring■ Group No. address setting error■ Transmission error between optional controllers for centralized controller and indoor unit■ Defective PCB for central remote controller■ Defective indoor unit PCB

Troubleshooting



Caution

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



5.43 Transmission Error between Indoor Unit and Outdoor Unit

Applicable Models	All outdoor unit models
Error code	UF
Method of Error Detection	Checks the transmission between the indoor and outdoor units with a microcomputer when the power turned ON.
Error Decision Conditions	The transmission wiring between the indoor and outdoor units is incorrect.
Supposed Causes	<p>This is not a failure of the outdoor unit main PCB.</p> <ul style="list-style-type: none">■ Defective transmission wiring between the indoor and outdoor units

Troubleshooting

**Caution**

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

The phase of transmission wiring between the indoor and outdoor units is incorrect.

→ Correctly connect transmission wiring between the indoor and outdoor units.

6. Check

6.1 Thermistor Check

CHECK 1

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

Overview of Thermistors

The table below contains an overview of the thermistors:

Indoor

Thermistor		FDFM-A
R1T	Suction air thermistor	Type B
R2T	Indoor heat exchanger liquid pipe thermistor	Type A
R3T	Indoor heat exchanger middle thermistor	Type L

Outdoor

Thermistor		RZF18/24AVMK	RZF30/36AVMK
R1T	Outdoor air thermistor	Type M	Type E
R2T	Discharge pipe thermistor	Type G	Type G
R3T	Suction pipe thermistor	Type A	Type A
R4T	Outdoor heat exchanger distributor pipe thermistor	Type A	—
	Outdoor heat exchanger liquid pipe thermistor	—	Type A
R5T	Outdoor heat exchanger middle thermistor	Type A	Type A

Checking

To check the thermistors, proceed as follows:

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

Thermistor Resistance / Temperature Characteristics

Thermistor temperature (°C)	Resistance (kΩ)		
	Type A	Type B	Type E
−30	363.8	361.7719	362.4862
−25	266.8	265.4704	265.9943
−20	197.8	196.9198	197.3083
−15	148.2	147.5687	147.8597
−10	112.0	111.6578	111.8780
−5	85.52	85.2610	85.4291
0	65.84	65.6705	65.8000
5	51.05	50.9947	51.0954
10	39.91	39.9149	39.9938
15	31.44	31.4796	31.5417
20	24.95	25.0060	25.0554
25	19.94	20.0000	20.0395
30	16.04	16.1008	16.1326
35	12.99	13.0426	13.0683
40	10.58	10.6281	10.6490
45	8.669	8.7097	8.7269
50	7.143	7.1764	7.1905
55	5.918	5.9407	5.9524
60	4.928	4.9439	4.9536
65	4.123	4.1352	4.1434
70	3.467	3.4757	3.4825
75	—	2.9349	2.9407
80	—	2.4894	2.4943
85	—	2.1205	2.1247
90	—	1.8138	1.8173
95	—	1.5575	1.5605
100	—	1.3425	1.3451
105	—	1.1614	1.1636
Drawing No.	3SA48002 3SA48004 3SA48018 3P064103 (AD94A045)	3SA48001 (AD87A001)	3PA50504 (AD87A001)

*This data is for reference purposes only.

Thermistor temperature (°C)	Resistance (kΩ)		
	Type G	Type L	Type M
−30	4759	359.9	—
−25	3454	265.1	—
−20	2534	197.1	197.7
−15	1877	147.7	148.2
−10	1404	111.8	112.1
−5	1059	85.39	85.60
0	806.5	65.80	65.93
5	618.9	51.13	51.14
10	478.8	40.04	39.99
15	373.1	31.60	31.52
20	292.9	25.11	25.02
25	231.4	20.09	20.00
30	184.1	16.19	16.10
35	147.4	13.12	13.04
40	118.7	10.70	10.62
45	96.13	8.783	8.707
50	78.29	7.248	7.176
55	64.10	6.013	5.947
60	52.76	5.014	4.953
65	43.63	4.202	4.146
70	36.26	3.538	3.487
75	30.27	2.993	2.946
80	25.38	2.542	2.499
85	21.37	2.167	2.130
90	18.06	1.855	1.822
95	15.33	1.595	1.565
100	13.06	1.376	1.349
105	11.17	1.192	—
110	9.585	1.037	—
115	8.254	0.9042	—
120	7.131	0.7914	—
125	6.181	0.6950	—
130	5.374	0.6121	—
135	4.686	0.5408	—
140	4.098	0.4791	—
145	3.594	0.4257	—
150	3.161	0.3792	—
Drawing No.	3SA48009 (AD970175)	3SA48014 (AD100015)	4P275721 (AD030359)

*This data is for reference purposes only.

6.2 High Pressure Check

CHECK 2

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.

Cooling

No.	Check items (Possible causes)	Judgment
1	Does the outdoor fan run normally?	Visual inspection
2	Is the outdoor heat exchanger clogged?	Visual inspection
3	Is there clogging before or after the electronic expansion valve (capillary)?	Check if there is a temperature difference before and after electronic expansion valve (capillary). Check if the main valve unit of electronic expansion valve operates (by noise, vibration).
4	Is the high pressure switch normal?	Check continuity by using a multimeter.
5	Is the outdoor unit installed under such conditions that short circuit easily occurs?	Visual inspection
6	Does air enter the refrigerant system?	Conduct refrigerant collection and vacuum drying, and then recharge proper amount refrigerant.
7	Is the refrigerant overcharged?	Conduct refrigerant collection and vacuum drying, and then recharge proper amount refrigerant.

6.3 Low Pressure Check

CHECK 3

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.

Cooling

No.	Check items (Possible causes)	Judgment
1	Does the indoor fan run normally?	Visual inspection
2	Is the indoor unit filter clogged?	Visual inspection
3	Is there clogging before or after the electronic expansion valve (capillary)?	Check if there is a temperature difference before and after electronic expansion valve (capillary). Check if the main valve unit of electronic expansion valve operates (by noise, vibration).
4	Is the indoor unit installed under such conditions that short circuit easily occurs?	Visual inspection
5	Is the refrigerant shortage?	Conduct refrigerant collection and vacuum drying, and then recharge proper amount refrigerant.

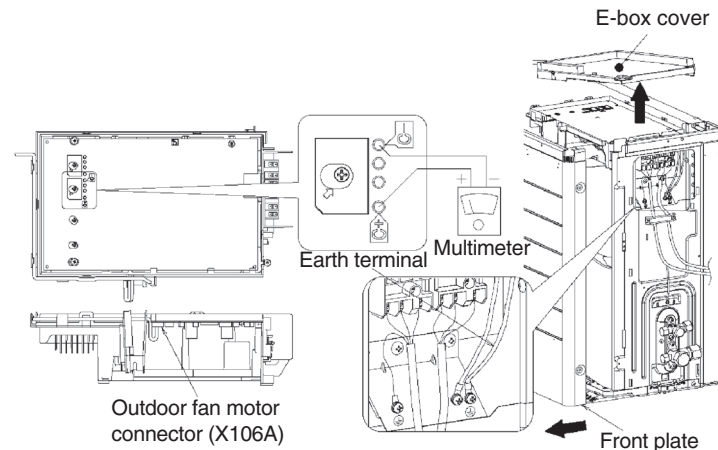
6.4 Power Transistor Check

CHECK 4

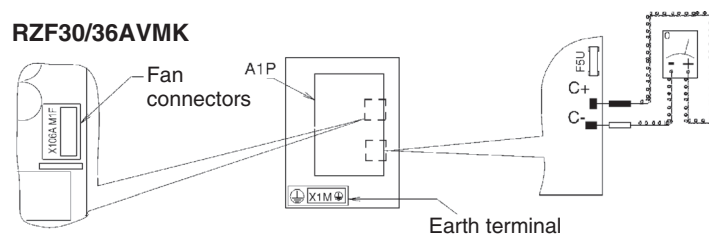
Use a multimeter to measure the resistance to determine if the power transistor is defective or not.

1. Do not touch live parts (high voltage parts) within 10 minutes after turning off the power supply.
2. Touch the earth terminal with your hand to release static electricity. (This is to avoid damaging the PCB.)
3. Use a multimeter to measure the C+ and C- on the PCB to make sure that the residual voltage of the power transistor is under 50 VDC.

RZF18/24AVMK



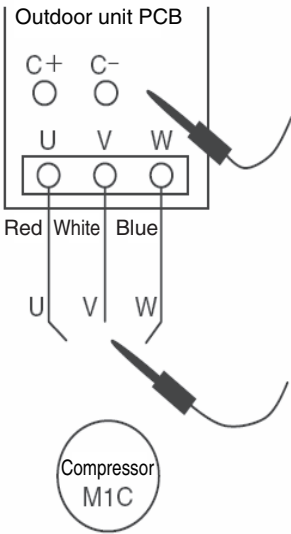
RZF30/36AVMK



4. After verifying the residual voltage, pull out the outdoor fan motor connector.
If a strong wind causes the outdoor fan to rotate, the capacitor may store electricity. Therefore, make sure that the fan is still and then pull out the outdoor fan motor connector.
5. Disconnect the connection wire between the power transistor and the compressor.
Remove the connection wire from the compressor.
At this point, make sure that there is no deformation of the Faston terminal at the front end of the connection wire.

6. Use a multimeter to measure the resistance listed in the table.
- Among the three phases listed in the table, if there is one phase with unbalanced resistance (with a value five times higher than the other values), then the power transistor is defective.
- When normal, all phases have the same resistance value.

Multimeter		Resistance	Multimeter		Resistance
Red (+)	Black (-)	Ω	Red (+)	Black (-)	Ω
C+	U		C-	U	
C+	V		C-	V	
C+	W		C-	W	
U	C+		U	C-	
V	C+		V	C-	
W	C+		W	C-	

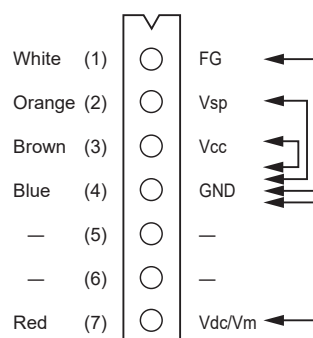


6.5 Fan Motor Connector Check

CHECK 7

FDMF-A, RZF18/24AVMK

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.

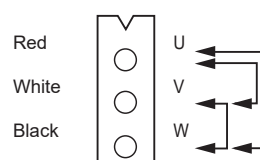


Measuring points	Judgment
1 - 4	1 Ω
2 - 4	1 Ω
3 - 4	1 Ω
7 - 4	1 Ω

RZF30/36AVMK

1. Turn the power supply OFF.
2. Disconnect the fan motor connector from the PCB and measure the resistances between U-V, V-W and W-U.

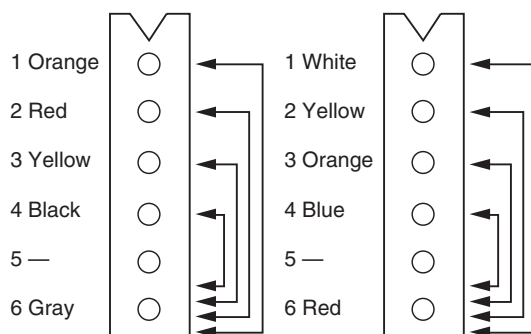
Judgment: Resistances must be balanced within 20%.



6.6 Electronic Expansion Valve Check

CHECK 8

Outdoor unit

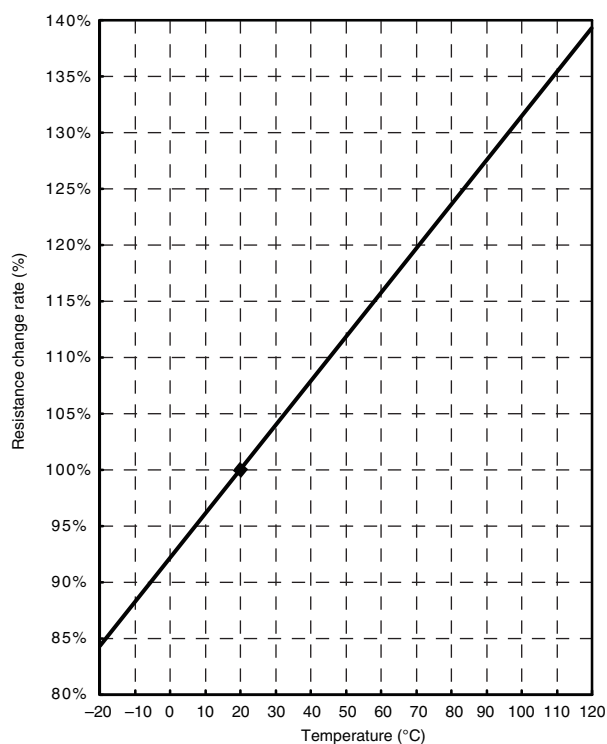


Measurement point	Judgment
1 - 6	35-55 Ω (at 20°C)
2 - 6	
3 - 6	
4 - 6	



Note(s)

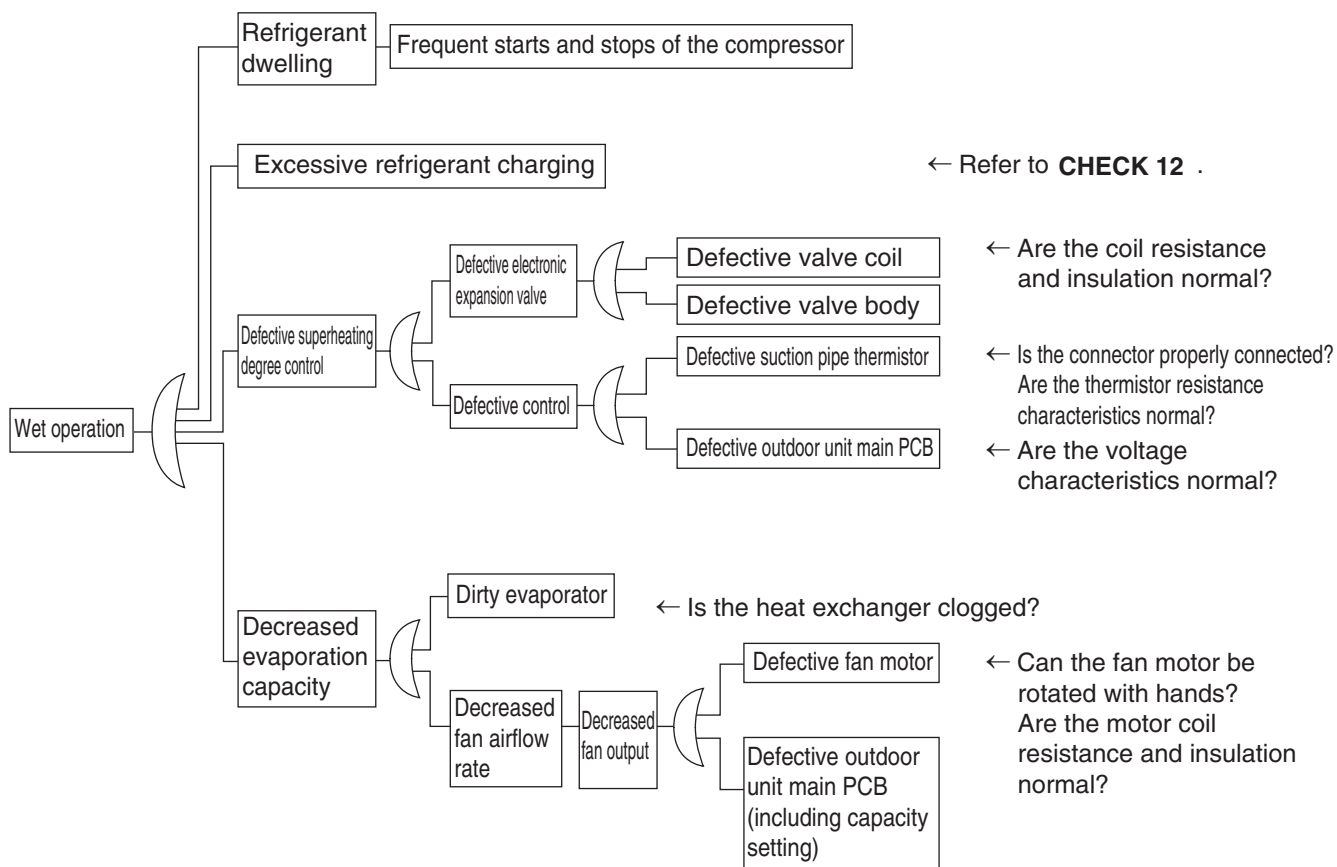
When the temperature is different, correct the resistance value referring to the graph below.



6.7 Wet Operation Check

CHECK 9

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



Note(s)

* Reference values for superheating degree to be used in the judgment of wet operation
 Discharge pipe superheating 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.)



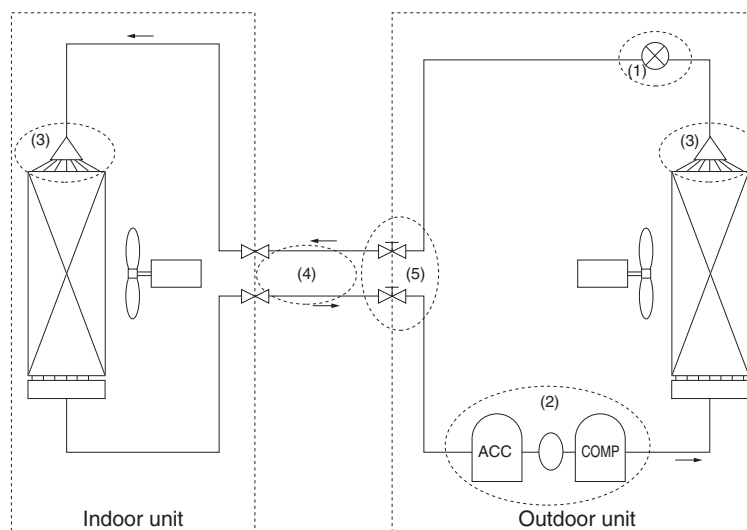
Reference

CHECK 12 Refer to page 203.

6.8 Clogged Points Check

CHECK 10

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 for compressor	Frosting	<ul style="list-style-type: none"> ●Choked moisture 	Blow 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.

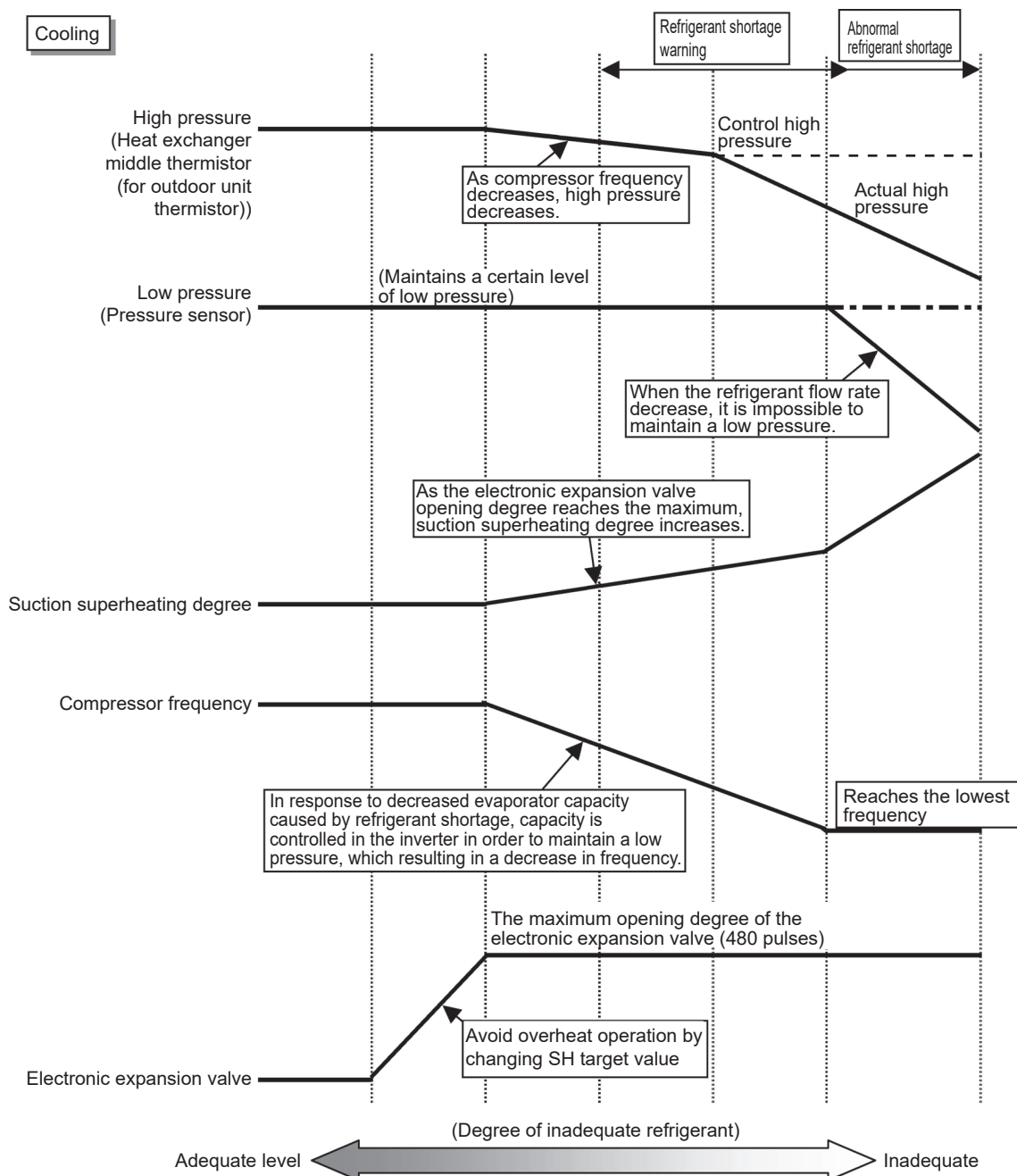
6.9 Refrigerant Shortage Check

CHECK 11

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

Cooling

1. As suction superheating 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 items 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 superheating degree further increases. In addition, because the compressor frequency drops to the level of the lowest frequency, low pressure cannot be maintained.

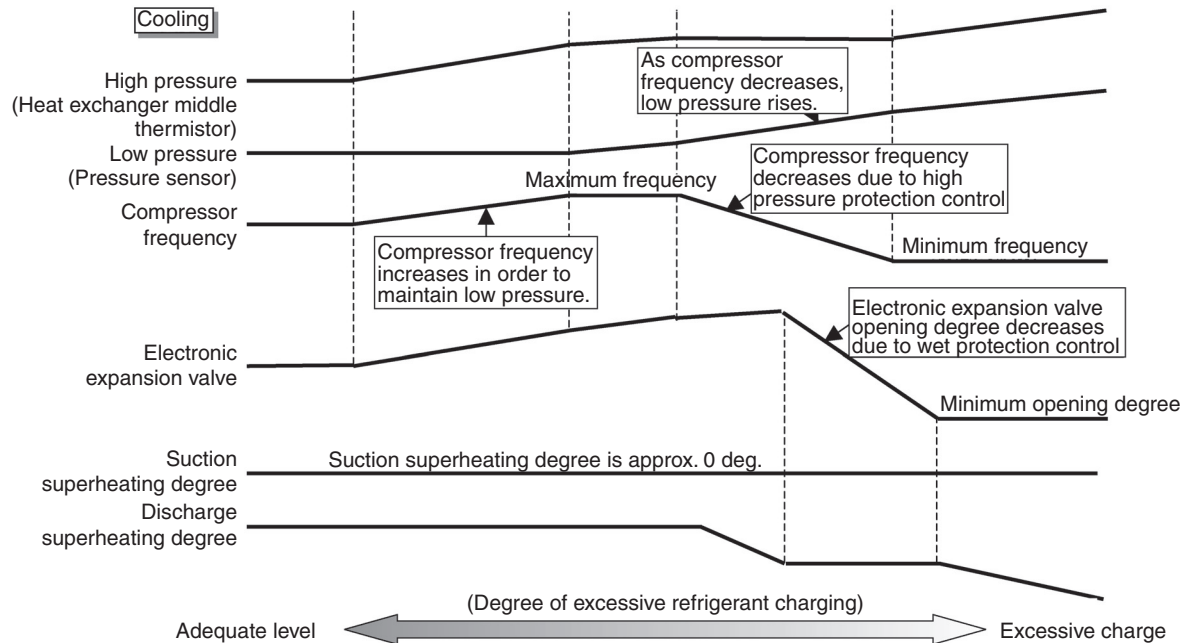


6.10 Refrigerant Overcharge Check

CHECK 12

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

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.



Part 7

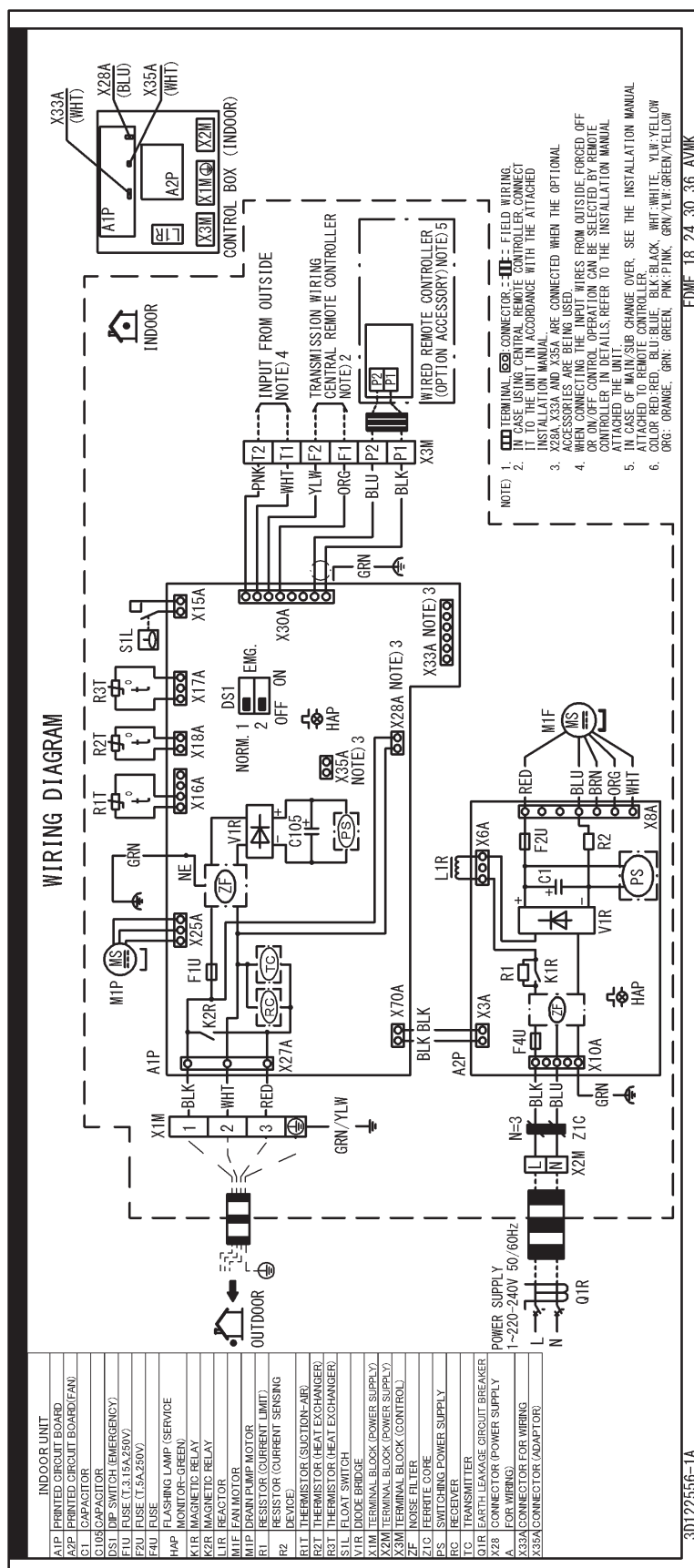
Appendix

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 - 1.2 Outdoor Unit.....206

1. Wiring Diagrams

1.1 Indoor Unit

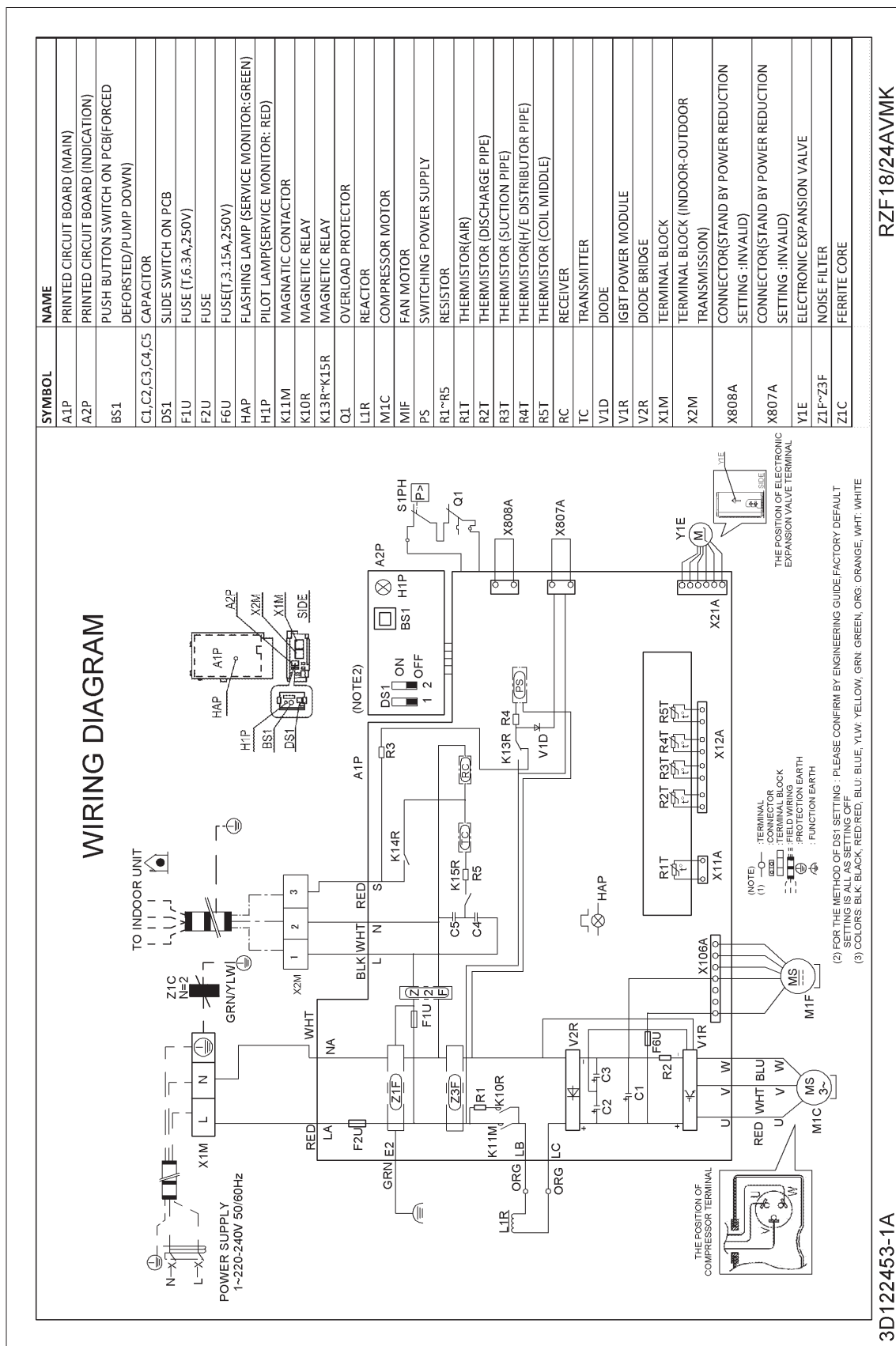
FDMF18/24/30/36AVMK



3D122556A

1.2 Outdoor Unit

RZF18/24AVMK



Warning

- Daikin products are manufactured for export to numerous countries throughout the world. Prior to purchase, please confirm with your local authorized 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 unauthorized 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 inquiries, please contact your local importer, distributor and/or retailer.

Cautions on product corrosion

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

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