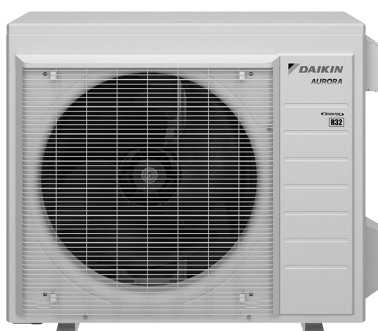


Service Manual

Inverter Pair Wall Mounted Type FTXV-A Series



[Applied Models]

- Inverter Pair : Cooling Only
- Inverter Pair : Heat Pump

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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.	 Refrigerant Safety Group A2L	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 (6.5 ft)). 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.	

■ Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, provisions under **Work procedure to No ignition sources** below shall be completed prior to conducting work on the system.

■ Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

■ General work 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.

■ Checking for presence of refrigerant

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

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

■ Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

■ No ignition sources

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

■ Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

■ Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.

At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

- The actual refrigerant charge is in accordance with the room size within which 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 to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

■ Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

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 there is continuity of earth bonding.

■ Repairs to sealed components

Sealed electrical components shall be replaced.

■ Repair to intrinsically safe components

Intrinsically safe components must be replaced.

■ Cabling

Check that cabling will not be 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 aging or continual vibration from sources such as compressors or fans.

■ Detection of flammable refrigerants

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

The following leak detection methods are deemed acceptable for all refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL (lower flammability limit) of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.

Leak detection fluids are also 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 pipe-work.

Note: Examples of leak detection fluids are

- bubble method,
- fluorescent method agents.

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

If a leakage of refrigerant is found which requires brazing, 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 leak. Removal of refrigerant shall be according to the following clause,

Removal and evacuation.

■ Removal and evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas (optional for A2L);
- evacuate (optional for A2L);

- continuously flush or purge with inert gas when using flame to open circuit;
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

■ Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.

- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigerating system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas.

The system shall be leak-tested on completion of charging but prior to commissioning.

A follow up leak test shall be carried out prior to leaving the site.

■ Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure, ensure that:

- ◆ mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- ◆ all personal protective equipment is available and being used correctly;
- ◆ the recovery process is supervised at all times by a competent person;
- ◆ recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with instructions.

h) Do not overfill cylinders (no more than 80% volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

k) Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

■ Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

■ Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out 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.	

 Warning	
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.	
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.	

 Caution	
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
03 / 2026	SiUS042529E	First edition

Part 1

General Information

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1. Applicable Models

Cooling Only

Indoor Unit	Outdoor Unit
FTXV30AVJU9	RKV30AVJU9
FTXV36AVJU9	RKV36AVJU9

Heat Pump

Indoor Unit	Outdoor Unit
FTXV30AVJU9	RXV30AVJU9
FTXV36AVJU9	RXV36AVJU9

2. Functions

Category	Functions	FTXV Series	
		RKV Series (C/O)	RXV Series (H/P)
Basic Function	Inverter (with inverter power control)	●	●
	Operation limit	Refer to page 137	
	PAM control	●	●
	Standby electricity saving	—	—
Compressor	Swing compressor	●	●
	Reluctance DC motor	●	●
Comfortable Airflow	Power-airflow dual flaps (horizontal blades)	●	●
	Wide-angle louvers (vertical blades)	●	●
	Auto-swing (up and down)	●	●
	Auto-swing (right and left)	●	●
	3-D airflow	●	●
	COMFORT AIRFLOW operation	●	●
Comfort Control	Auto fan speed	●	●
	Switchable fan speed	●	●
	Indoor unit quiet operation	●	●
	QUIET OUTDOOR UNIT operation	●	●
	INTELLIGENT EYE operation (auto energy saving)	●	●
	Hot-start function	—	●
	Automatic defrosting	—	●
Operation	Automatic cooling/heating change-over	—	●
	Program dry operation	●	●
	Fan only	●	●
Lifestyle Convenience	POWERFUL operation (inverter)	●	●
	ECONO operation	●	●
	Indoor unit ON/OFF switch	●	●
	Signal receiving sign	●	●
	R/C with back light	●	●
Health and Cleanliness	Titanium apatite deodorizing filter	●	●
	Mold proof air filter	●	●
	Wipe-clean flat panel	●	●
	Washable grille	—	—
	Removable drain pan	●	●
Timer	WEEKLY TIMER operation	●	●
	24-hour ON/OFF TIMER	●	●
	Count up-down ON/OFF timer	●	●
	NIGHT SET mode	●	●
Worry Free (Reliability & Durability)	Auto-restart (after power failure)	●	●
	Self-diagnosis (Remote controller, LED)	●	●
Flexibility	H/P, C/O compatible indoor unit	●	●
	Chargeless	49.2 ft. (15 m)	49.2 ft. (15 m)
	Either side drain (left or right)	●	●
	Low temperature cooling operation	–22°F (–30°C)	–4°F (–20°C)
	°F/°C changeover R/C temperature display (factory setting: °F)	●	●
Remote Control	Remote control adaptor (normal open pulse contact)	Option	Option
	Remote control adaptor (normal open contact)	Option	Option
	DIII-NET compatible (adaptor)	Option	Option
	Wireless LAN connection	—	—
Remote Controller	Wireless	●	●
	Wired	Option	Option

● : Available

— : Not available

Part 2

Specifications

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1. Specifications

Model	Indoor Unit		FTXV30AVJU9	FTXV36AVJU9
	Outdoor Unit		RKV30AVJU9	RKV36AVJU9
Power Supply			1 ϕ , 208 - 230 V, 60 Hz	1 ϕ , 208 - 230 V, 60 Hz
Capacity Rated (Min. ~ Max.)	Btu/h		31,400 (10,200 ~ 31,400)	34,400 (10,200 ~ 34,400)
Running Current (Rated)	A		15.18 - 13.73	16.97 - 15.35
Power Consumption (Rated)	W		3,140 - 3,140	3,510 - 3,510
Power Factor (Rated)	%		99.4 - 99.4	99.4 - 99.4
SEER2 / HSPF2			19.0 / —	18.0 / —
EER2 (Rated)	Btu/W·h		10.0	9.8
COP2@5°F (Rated)	W/W		—	—
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (6.4)	ϕ 1/4 (6.4)
	Gas	in. (mm)	ϕ 5/8 (15.9)	ϕ 5/8 (15.9)
	Drain	in. (mm)	ϕ 5/8 (16)	ϕ 5/8 (16)
Heat Insulation			Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Max. Interunit Piping Length	ft (m)		98-1/2 (30)	98-1/2 (30)
Max. Interunit Height Difference	ft (m)		65-5/8 (20)	65-5/8 (20)
Chargeless	ft (m)		49-1/4 (15)	49-1/4 (15)
Amount of Additional Charge of Refrigerant	Oz/ft (g/m)		0.22 (20)	0.22 (20)
Indoor Unit			FTXV30AVJU9	FTXV36AVJU9
Front Panel Color			White (N9.5)	White (N9.5)
Airflow Rate	H / M / L / SL	cfm	925 / 794 / 600 / 533	971 / 794 / 600 / 533
		m ³ /min	26.2 / 22.5 / 17.0 / 15.1	27.5 / 22.5 / 17.0 / 15.1
Fan	Type		Cross Flow Fan	Cross Flow Fan
	Drive Input	A	0.39	0.39
	Speed	Steps	1,250 / 1,100 / 880 / 800	1,300 / 1,100 / 880 / 800
Air Direction Control			Right, Left, Horizontal, Downward	Right, Left, Horizontal, Downward
Air Filter			Removable, Washable	Removable, Washable
Running Current (Rated)	A		0.31 - 0.28	0.34 - 0.31
Power Consumption (Rated)	W		57 - 57	62 - 62
Power Factor (Rated)	%		88.4 - 89.0	87.8 - 88.0
Temperature Control			Microcomputer Control	Microcomputer Control
Dimensions (H × W × D)	in. (mm)		12-15/16 × 48-13/16 × 10-15/16 (329 × 1,240 × 278)	12-15/16 × 48-13/16 × 10-15/16 (329 × 1,240 × 278)
Packaged Dimensions (H × W × D)	in. (mm)		15-15/16 × 53-1/8 × 16-9/16 (405 × 1,349 × 421)	15-15/16 × 53-1/8 × 16-9/16 (405 × 1,349 × 421)
Weight (Mass)	lbs (kg)		42 (19)	42 (19)
Gross Weight (Gross Mass)	lbs (kg)		57 (26)	57 (26)
Sound Pressure Level	H / M / L / SL	dB(A)	53 / 47 / 40 / 37	54 / 47 / 40 / 37
Outdoor Unit			RKV30AVJU9	RKV36AVJU9
Casing Color			Ivory White	Ivory White
Heat Exchanger	Fin / Spec. Tube		Waffle Fin / ϕ 7 Hi-XSL Tube	Waffle Fin / ϕ 7 Hi-XSL Tube
Compressor	Type		Hermetically Sealed Swing Type	Hermetically Sealed Swing Type
	Model		2Y260BPAX1A	2Y260BPAX1A
Refrigerant Oil	Type		FW68DA	FW68DA
	Charge	oz (L)	30.43 (0.90)	30.43 (0.90)
Refrigerant	Type		R-32	R-32
	Charge	lbs (kg)	3.68 (1.67)	3.68 (1.67)
Airflow Rate		m ³ /min (cfm)	73.2 (2,585)	81.3 (2,871)
Fan	Type		Propeller	Propeller
	Drive Input	A	17.5	17.6
Running Current (Rated)	A		14.87 - 13.45	16.63 - 15.04
Power Consumption (Rated)	W		3,083 - 3,083	3,448 - 3,448
Power Factor (Rated)	%		99.6 - 99.6	99.7 - 99.8
Dimensions (H × W × D)	in. (mm)		29-1/2 × 34-1/4 × 12-5/8 (750 × 870 × 320)	29-1/2 × 34-1/4 × 12-5/8 (750 × 870 × 320)
Packaged Dimensions (H × W × D)	in. (mm)		32-1/6 × 40-5/16 × 16 (814 × 1,024 × 406)	32-1/6 × 40-5/16 × 16 (814 × 1,024 × 406)
Weight (Mass)	lbs (kg)		128 (136)	128 (136)
Gross Weight (Gross Mass)	lbs (kg)		58 (62)	58 (62)
Sound Pressure Level		dB(A)	57	60
Conditions Based on	Indoor		80.0°FDB (26.7°CDB) / 67.0°FWB (19.4°CWB)	80.0°FDB (26.7°CDB) / 67.0°FWB (19.4°CWB)
	Outdoor		95.0°FDB (35°CDB) / 75°FWB (23.9°CWB)	95.0°FDB (35°CDB) / 75°FWB (23.9°CWB)
	Piping Length		25 ft (7.5 m)	25 ft (7.5 m)
Drawing No.			3D161377	3D161377
Note			SL: The quiet fan level of the airflow setting	SL: The quiet fan level of the airflow setting

Conversion Formulae

kcal/h = kW × 860
 Btu/h = kW × 3412
 cfm = m³/min × 35.3

Model			Indoor Unit		FTXV30AVJU9				FTXV36AVJU9			
			Outdoor Unit		RXV30AVJU9				RXV36AVJU9			
					Cooling		Heating		Cooling		Heating	
Power Supply					1 ϕ , 208 - 230 V, 60 Hz				1 ϕ , 208 - 230 V, 60 Hz			
Capacity Rated (Min. ~ Max.)			Btu/h		31,400 (10,200 ~ 31,400)		34,800 (10,200 ~ 34,800)		34,400 (10,200 ~ 34,400)		36,000 (10,200 ~ 36,000)	
Running Current (Rated)			A		15.19 - 13.73		16.10 - 14.56		16.96 - 15.34		16.78 - 15.17	
Power Consumption (Rated)			W		3,140 - 3,140		3,333 - 3,333		3,510 - 3,510		3,471 - 3,471	
Power Factor (Rated)			%		99.4 - 99.4		99.5 - 99.5		99.5 - 99.5		99.4 - 99.5	
SEER2 / HSPF2					19.0 / 8.1				18.0 / 8.0			
EER2 (Rated)			Btu/W·h		10.0				9.8			
COP2@5°F (Rated)					—				—			
Piping Connections		Liquid	in. (mm)		ϕ 1/4 (6.4)				ϕ 1/4 (6.4)			
		Gas	in. (mm)		ϕ 5/8 (15.9)				ϕ 5/8 (15.9)			
		Drain	in. (mm)		ϕ 5/8 (16)				ϕ 5/8 (16)			
Heat Insulation					Both Liquid and Gas Pipes				Both Liquid and Gas Pipes			
Max. Interunit Piping Length			ft (m)		98-1/2 (30)				98-1/2 (30)			
Max. Interunit Height Difference			ft (m)		65-5/8 (20)				65-5/8 (20)			
Chargeless			ft (m)		49-1/4 (15)				49-1/4 (15)			
Amount of Additional Charge of Refrigerant			Oz/ft (g/m)		0.22 (20)				0.22 (20)			
Indoor Unit					FTXV30AVJU9				FTXV36AVJU9			
Front Panel Color					White (N9.5)				White (N9.5)			
Airflow Rate		H / M / L / SL		cfm	925 / 794 / 600 / 533		1,091 / 900 / 671 / 498		971 / 794 / 600 / 533		1,091 / 900 / 671 / 498	
				m³/min	26.2 / 22.5 / 17.0 / 15.1		30.9 / 25.5 / 19.0 / 14.1		27.5 / 22.5 / 17.0 / 15.1		30.9 / 25.5 / 19.0 / 14.1	
Fan		Type		Cross Flow Fan				Cross Flow Fan				
		Drive Input		0.39				0.39				
		Speed		Steps		1,250 / 1,100 / 880 / 800		1,440 / 1,220 / 960 / 760		1,300 / 1,100 / 880 / 800		1,440 / 1,220 / 960 / 760
Air Direction Control					Right, Left, Horizontal, Downward				Right, Left, Horizontal, Downward			
Air Filter					Removable, Washable				Removable, Washable			
Running Current (Rated)			A		0.31 - 0.28		0.43 - 0.39		0.34 - 0.31		0.43 - 0.39	
Power Consumption (Rated)			W		57 - 57		78 - 78		62 - 62		78 - 78	
Power Factor (Rated)			%		88.4 - 89.0		87.2 - 86.0		87.8 - 88.0		87.2 - 86.0	
Temperature Control					Microcomputer Control				Microcomputer Control			
Dimensions (H × W × D)			in. (mm)		12-15/16 × 48-13/16 × 10-15/16 (329 × 1,240 × 278)				12-15/16 × 48-13/16 × 10-15/16 (329 × 1,240 × 278)			
Packaged Dimensions (H × W × D)			in. (mm)		15-15/16 × 53-1/8 × 16-9/16 (405 × 1,349 × 421)				15-15/16 × 53-1/8 × 16-9/16 (405 × 1,349 × 421)			
Weight (Mass)			lbs (kg)		42 (19)				42 (19)			
Gross Weight (Gross Mass)			lbs (kg)		57 (26)				57 (26)			
Sound Pressure Level		H / M / L / SL		dB(A)	53 / 47 / 40 / 37		54 / 49 / 42 / 35		54 / 47 / 40 / 37		54 / 49 / 42 / 35	
Outdoor Unit					RXV30AVJU9				RXV36AVJU9			
Casing Color					Ivory White				Ivory White			
Heat Exchanger		Fin / Spec. Tube			Waffle Fin / ϕ 7 Hi-XSL Tube				Waffle Fin / ϕ 7 Hi-XSL Tube			
Compressor		Type			Hermetically Sealed Swing Type				Hermetically Sealed Swing Type			
		Model			2Y260BPAX1A				2Y260BPAX1A			
Refrigerant Oil		Type			FW68DA				FW68DA			
		Charge	oz (L)		30.43 (0.90)		30.43 (0.90)		30.43 (0.90)		30.43 (0.90)	
Refrigerant		Type			R-32				R-32			
		Charge	lbs (kg)		3.68 (1.67)		3.68 (1.67)		3.68 (1.67)		3.68 (1.67)	
Airflow Rate			m³/min (cfm)		73.2 (2,585)		73.2 (2,585)		81.3 (2,871)		75.6 (2,669)	
Fan		Type			Propeller				Propeller			
		Drive Input			A				17.6			
Running Current (Rated)			A		14.88 - 13.45		15.67 - 14.17		16.62 - 15.03		16.35 - 14.78	
Power Consumption (Rated)			W		3,083 - 3,083		3,255 - 3,255		3,448 - 3,448		3,393 - 3,393	
Power Factor (Rated)			%		99.6 - 99.6		99.9 - 99.9		99.7 - 99.8		99.8 - 99.8	
Dimensions (H × W × D)			in. (mm)		29-1/2 × 34-1/4 × 12-5/8 (750 × 870 × 320)				29-1/2 × 34-1/4 × 12-5/8 (750 × 870 × 320)			
Packaged Dimensions (H × W × D)			in. (mm)		32-1/6 × 40-5/16 × 16 (814 × 1,024 × 406)				32-1/6 × 40-5/16 × 16 (814 × 1,024 × 406)			
Weight (Mass)			lbs (kg)		128 (136)				128 (136)			
Gross Weight (Gross Mass)			lbs (kg)		58 (62)				58 (62)			
Sound Pressure Level			dB(A)		57		60		60		61	
Conditions Based on		Indoor			80.0°FDB (26.7°CDB) / 67.0°FWB (19.4°CWB)		70.0°FDB (21.1°CDB) / 60.0°FWB (15.6°CWB)		80.0°FDB (26.7°CDB) / 67.0°FWB (19.4°CWB)		70.0°FDB (21.1°CDB) / 60.0°FWB (15.6°CWB)	
		Outdoor			95.0°FDB (35°CDB) / 75°FWB (23.9°CWB)		47°FDB (8.33°CDB) / 43.0°FWB (6.11°CWB)		95.0°FDB (35°CDB) / 75°FWB (23.9°CWB)		47°FDB (8.33°CDB) / 43.0°FWB (6.11°CWB)	
		Piping Length			25 ft (7.5 m)				25 ft (7.5 m)			
Drawing No.					3D161376				3D161376			
Note					SL: The quiet fan level of the airflow setting				SL: The quiet fan level of the airflow setting			

Conversion Formulae

kcal/h = kW × 860
 Btu/h = kW × 3412
 cfm = m³/min × 35.3

Part 3

Printed Circuit Board

Connector Wiring Diagram

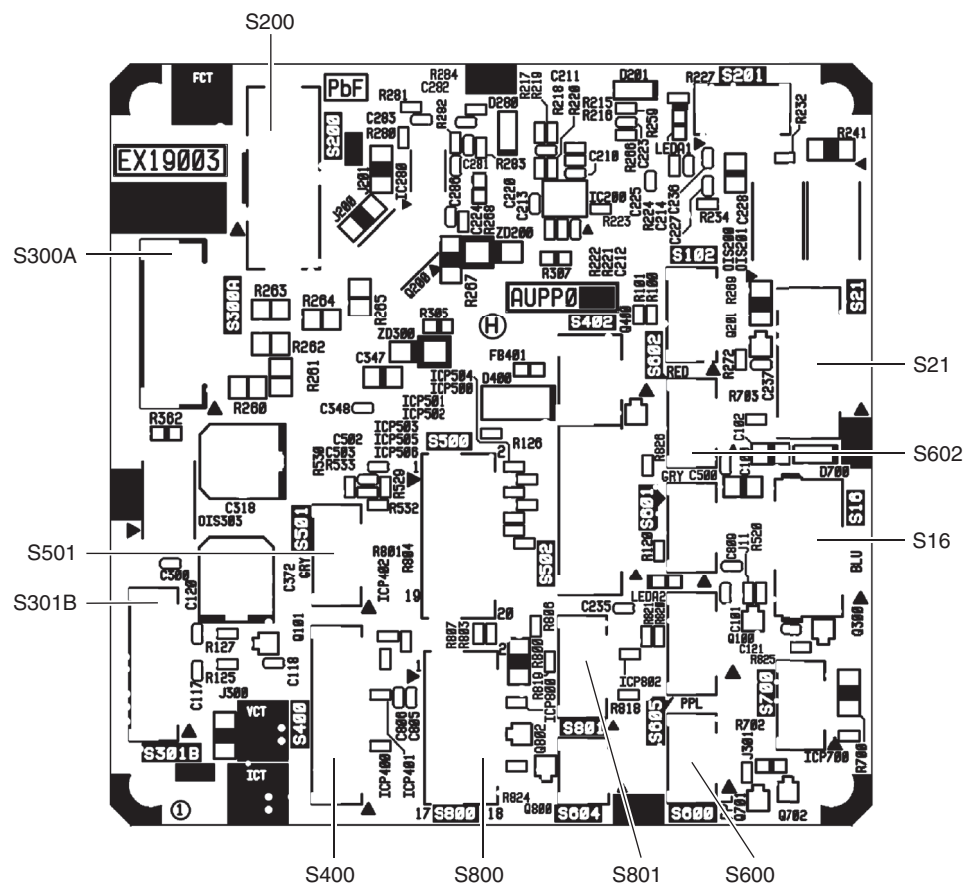
1. Indoor Unit.....19

2. Outdoor Unit.....22

1. Indoor Unit

Control PCB (A1P)

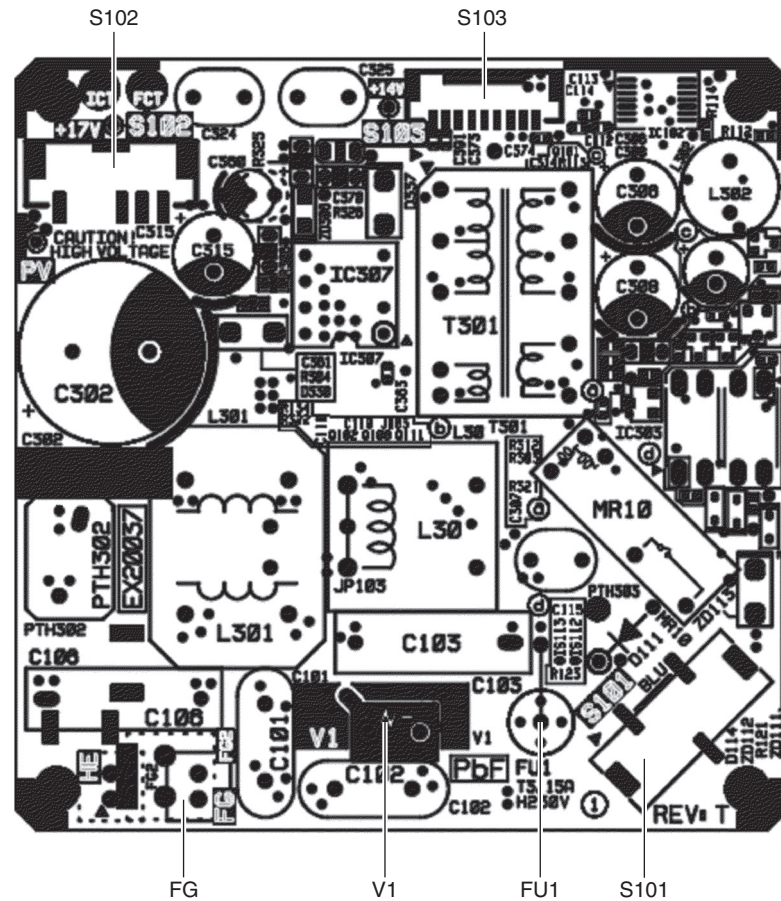
- | | | |
|-----|-----------------|--|
| 1) | S16 | Connector for optional adaptor |
| 2) | S21 | Connector for optional adaptor |
| 3) | S200 | Connector for DC fan motor |
| 4) | S300A,
S301B | Connector for power supply PCB (A2P) |
| 5) | S400 | Connector for swing motors |
| 6) | S501 | Connector for indoor heat exchanger thermistor (R1T) |
| 7) | S600 | Connector for humidity sensor PCB (A4P) |
| 8) | S602 | Connector for INTELLIGENT EYE sensor PCB (A5P) |
| 9) | S800 | Connector for display/signal receiver PCB (A3P) |
| 10) | S801 | Connector for optional adaptor (wireless LAN connection) |



2P628031-55

Power Supply PCB (A2P)

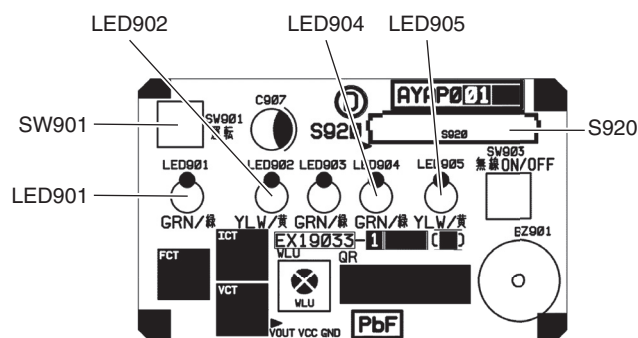
- | | | |
|----|------------|--|
| 1) | S101 | Connector for terminal strip (indoor-outdoor transmission) |
| 2) | S102, S103 | Connector for control PCB (A1P) |
| 3) | FG | Faston tab for terminal strip (frame ground) |
| 4) | FU1 | Fuse (3.15 A, 250 V) |
| 5) | V1 | Varistor |



2P659905-3

**Display/Signal
Receiver PCB
(A3P)**

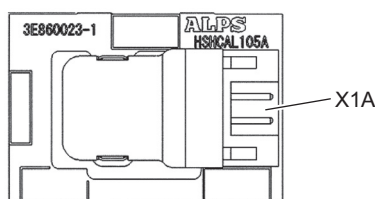
- | | | |
|----|--------|---|
| 1) | S920 | Connector for control PCB (A1P) |
| 2) | SW901 | Indoor unit ON/OFF switch
(Forced cooling operation ON/OFF switch)
Refer to page 123 for details of forced cooling operation. |
| 3) | LED901 | LED for operation (green) |
| 4) | LED902 | LED for timer (yellow) |
| 5) | LED904 | LED for INTELLIGENT EYE (green) |
| 6) | LED905 | LED for wireless LAN connection (yellow) |



3P579849-1

**Humidity Sensor
PCB (A4P)**

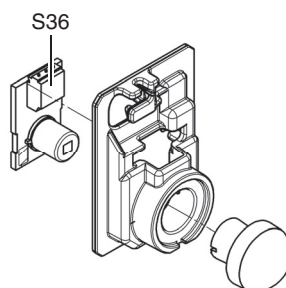
- | | | |
|----|-----|---------------------------------|
| 1) | X1A | Connector for control PCB (A1P) |
|----|-----|---------------------------------|



3E860023-1

**INTELLIGENT
EYE Sensor PCB
(A5P)**

- | | | |
|----|-----|---------------------------------|
| 1) | S36 | Connector for control PCB (A1P) |
|----|-----|---------------------------------|

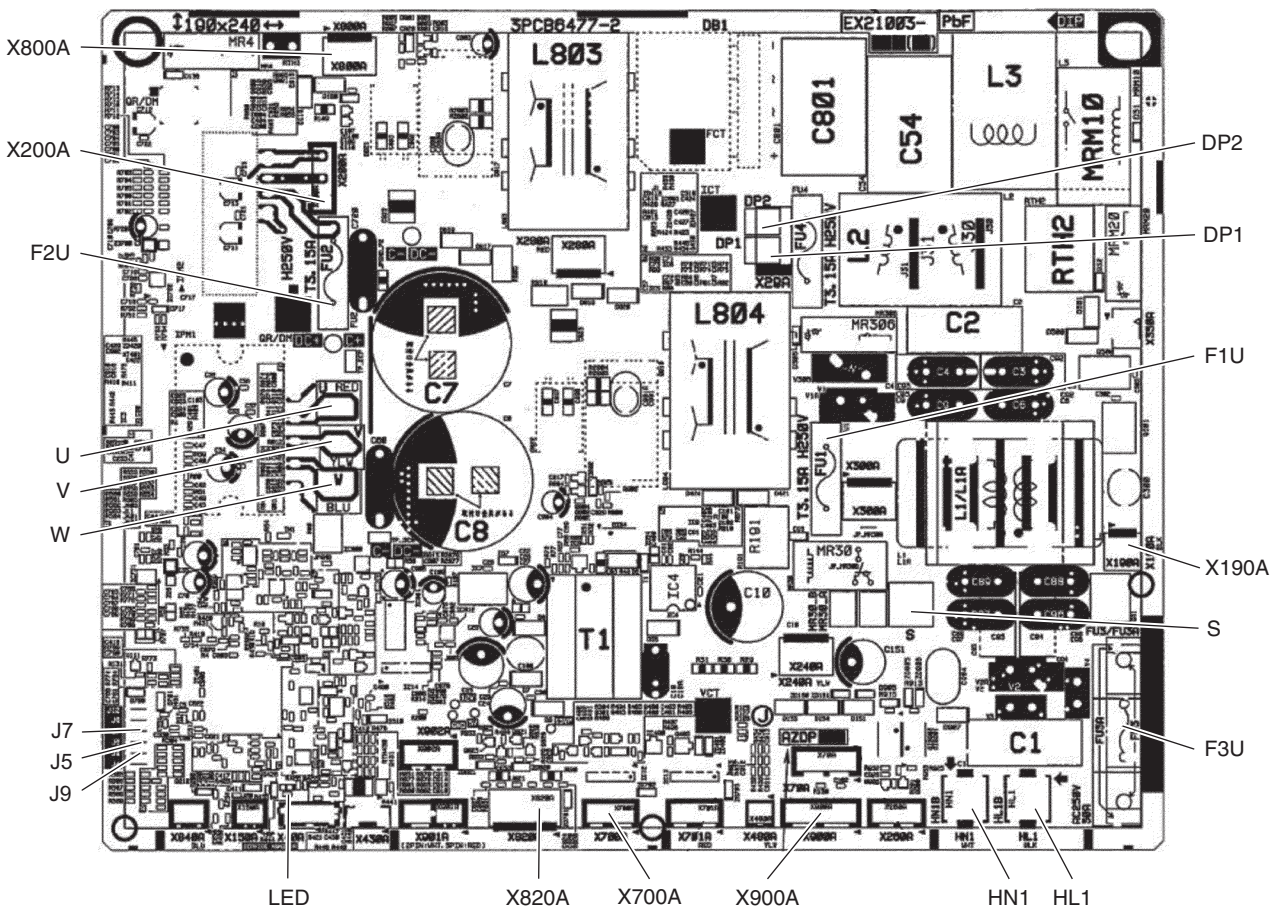


3P629375-1

2. Outdoor Unit

Main PCB (A1P)

- | | | |
|-----|-------------------------|--|
| 1) | X190A | Connector for ground wire |
| 2) | X200A | Connector for DC fan motor |
| 3) | X700A | Connector for electric expansion valve coil (RXV series only) |
| 4) | X800A | Connector for four way valve coil |
| 5) | X820A | Connector for overload protector and high pressure switch |
| 6) | X900A | Connector for thermistors
(outdoor temperature, outdoor heat exchanger, discharge pipe) |
| 7) | S, HL1, HN1 | Faston tab for terminal strip |
| 8) | U, V, W | Faston tab for compressor |
| 9) | DP1, DP2 | Faston tab for drain pan heater (option for RXV series only) |
| 10) | F1U (FU1),
F2U (FU2) | Fuse (3.15 A, 250 V) |
| 11) | F3U (FU3) | Fuse (30 A, 250 V) |
| 12) | J5 | Jumper for warmer airflow setting
Refer to page 129 for details. |
| 13) | J7 | Jumper for facility setting
Refer to page 128 for details. |
| 14) | J9 | Jumper for drain pan heater
Refer to page 129 for details. |
| 15) | LED | LED for service monitor (green) |



2P757473-51



Note

The symbols in the parenthesis are the names written on the PCB.

Part 4

Functions and Control

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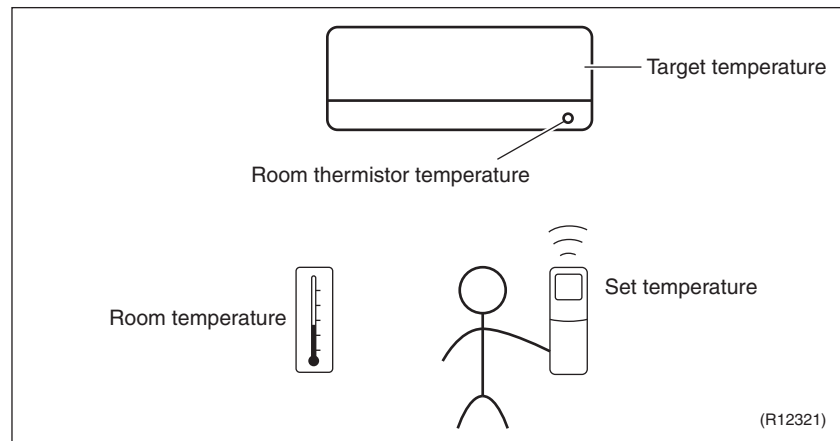
1. Common Functions

1.1 Temperature Control

Definitions of Temperatures

The definitions of temperatures are classified as following.

- Room temperature: temperature of living space of the room
- Set temperature: temperature set by remote controller
- Room thermistor temperature: temperature detected by room temperature thermistor
- Target temperature: temperature determined by microcomputer



Temperature Control

The temperature of the room is detected by the room temperature thermistor. However, there is a difference between the temperature detected by room temperature thermistor and the temperature of living space of the room, depending on the type of the indoor unit or installation condition. In practice, the temperature control is done by the target temperature appropriately adjusted for the indoor unit and the temperature detected by room temperature thermistor.

1.2 Frequency Principle

Control Parameters

The compressor speed is controlled by the following 2 parameters:

- The load condition of the operating indoor unit
- The difference between the room thermistor temperature and the target temperature

The target compressor speed is adapted by additional parameters in the following cases:

- Compressor speed restrictions
- Initial settings
- Forced cooling operation

Inverter Principle

To regulate the capacity, a compressor speed control is needed. The inverter makes it possible to control the rotation speed of the compressor. The followings explain the inverter principle:

Phase 1

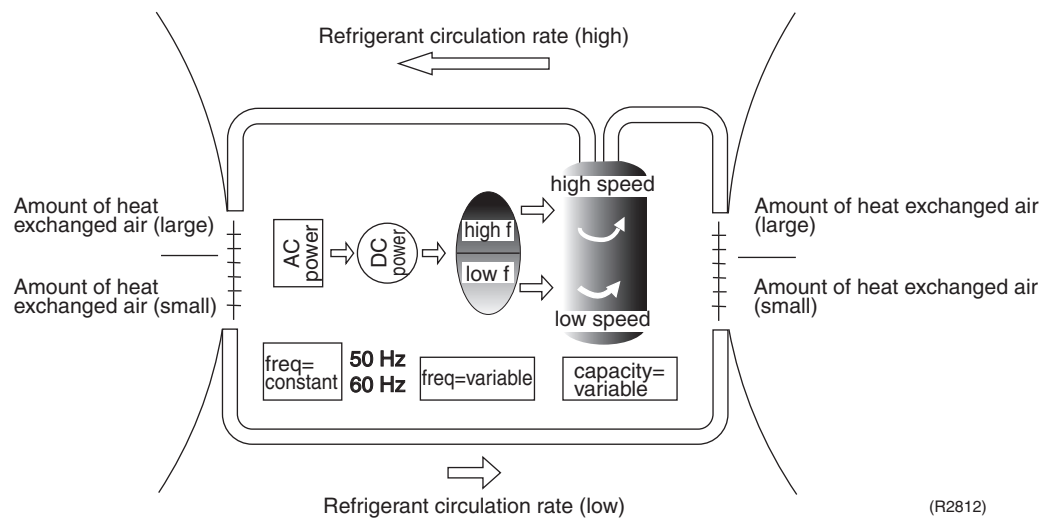
The supplied AC power source is converted into the DC power source for the present.

Phase 2

The DC power source is reconverted into the three phase AC power source with variable frequency.

- When the frequency increases, the rotation speed of the compressor increases resulting in an increase of refrigerant circulation. This leads to a larger amount of heat exchange per unit.
- When the frequency decreases, the rotation speed of the compressor decreases resulting in a decrease of refrigerant circulation. This leads to a smaller amount of heat exchange per unit.

The following drawing shows a schematic view of the inverter principle:



Inverter Features

The inverter provides the following features:

- The regulating capacity can be changed according to the changes in the outdoor temperature and cooling/heating load.
- Quick heating and quick cooling
The rotation speed of the compressor is increased when starting the heating (cooling). This enables to reach the set temperature quickly.
- Even during extreme cold weather, high capacity is achieved. It is maintained even when the outdoor temperature is 2°C (35.6°F).
- Comfortable air conditioning
A fine adjustment is integrated to keep the room temperature constant.
- Energy saving heating and cooling
Once the set temperature is reached, the energy saving operation enables to maintain the room temperature at low power.

Compressor

Speed Limits

The following functions regulate maximum compressor speed:

Low compressor speed

- Four way valve operation compensation. Refer to page 51.

High compressor speed

- Compressor protection function. Refer to page 51.
- Discharge pipe temperature control. Refer to page 52.
- Input current control. Refer to page 53.
- Freeze-up protection control. Refer to page 54.
- Heating peak-cut control. Refer to page 55.
- Defrost control. Refer to page 57.

Forced Cooling Operation

Refer to page 123 for details.

1.3 Airflow Direction Control

Power-Airflow (Dual) Flap(s)

The large flap sends a large volume of air downward to the floor and provides an optimum control in cooling, dry and heating operation.

Cooling/Dry

During cooling or dry operation, the flap retracts into the indoor unit. Then, cool air can be blown far and distributed all over the room.

Heating

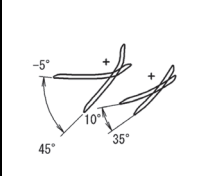
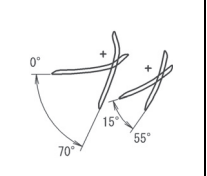
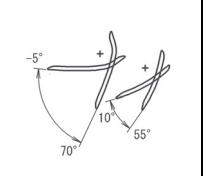
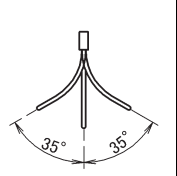
During heating operation, the large flap directs airflow downward to spread the warm air to the entire room.

Wide-Angle Louvers

The louvers, made of elastic synthetic resin, provide a wide range of airflow that guarantees comfortable air distribution.

Auto-Swing

The following table explains the auto-swing process for cooling, dry, heating, and fan:

Flap (up and down)			Louver (right and left)
Cooling/Dry	Heating	Fan	
 R4003783	 R4004310	 R4004309	 R4003881

3-D Airflow

Alternative repetition of vertical and horizontal swing motions enables uniform air-conditioning of the entire room.

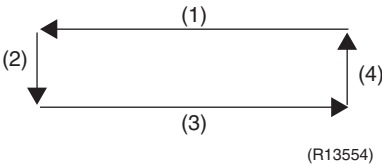
When the horizontal swing and vertical swing are both set to automatic operation, the airflow becomes 3-D airflow. The horizontal and vertical swing motions are alternated and the airflow direction changes in the order shown in the following diagram.

- (1) The vertical blades (louvers) move from the right to the left.

(2) The horizontal blades (flaps) move downward.

(3) The vertical blades (louvers) move from the left to the right.

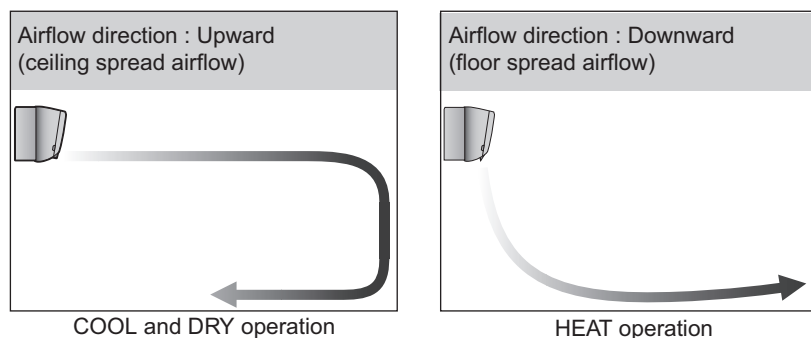
(4) The horizontal blades (flaps) move upward.



1.4 COMFORT AIRFLOW Operation

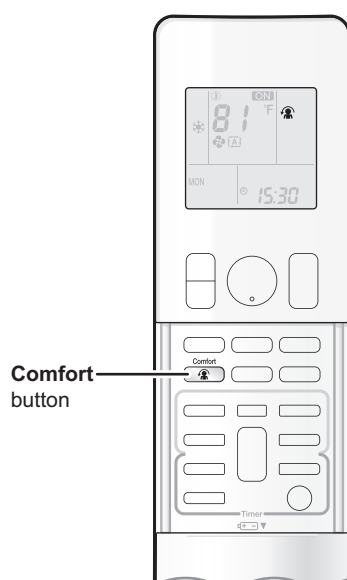
Outline

The flow of air will be in the upward direction while in COOL/DRY operation and in the downward direction while in HEAT operation, which will provide a comfortable wind that will not come in direct contact with people.



R4004311

Operation



To start the operation:

- Press **Comfort** button.

The icon appears on the LCD of the remote controller.

	COOL / DRY operation	HEAT operation	FAN operation
Flaps direction	Goes up	Goes down	Not available
Airflow rate	AUTO		

To stop the operation:

- Press **Comfort** button again.

The icon disappears from the LCD of the remote controller. The flaps will return to the memorized position before the start of COMFORT AIRFLOW operation



Note(s)

- POWERFUL operation and COMFORT AIRFLOW operation cannot be used at the same time.
- The airflow rate will be set to AUTO.
- If the upward and downward airflow direction is selected, the COMFORT AIRFLOW function will be canceled. Priority is given to the function of whichever button is pressed last.
- If there is an obstruction under the air conditioner when using heating, the airflow may not reach the center of the room and the room may be difficult to warm up.

1.5 Fan Speed Control for Indoor Unit

Outline

Phase control and fan speed control contains 9 steps: LLL, LL, SL, L, ML, M, MH, H, and HH. The airflow rate can be automatically controlled depending on the difference between the room thermistor temperature and the target temperature.

Automatic Fan Speed Control

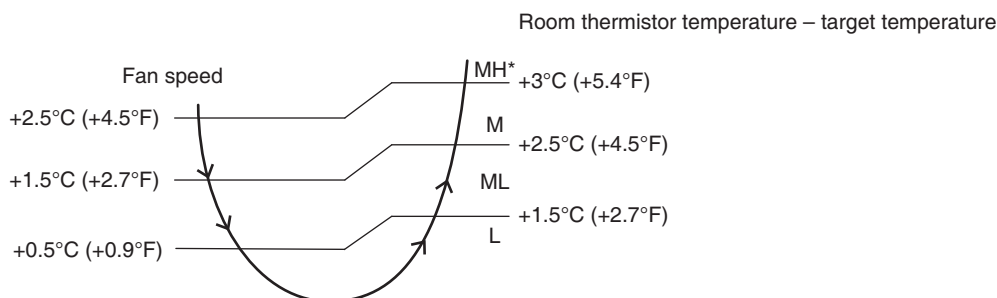
In automatic fan speed operation, the step SL is not available.

Step	Cooling	Heating
LLL		
LL		
L		
ML		
M		
MH		
H		
HH (POWERFUL)		

 = The airflow rate is automatically controlled within this range when **FAN** setting button is set to automatic. R4003512

■ Cooling

The following drawing explains the principle of fan speed control for cooling.



* The upper limit is at M tap in 30 minutes from the operation start. R4004133

■ Heating

In heating operation, the fan speed is regulated according to the indoor heat exchanger temperature and the difference between the room thermistor temperature and the target temperature.



Note(s)

The fan stops during defrost operation.

1.6 Program Dry Operation With Humidity Sensor

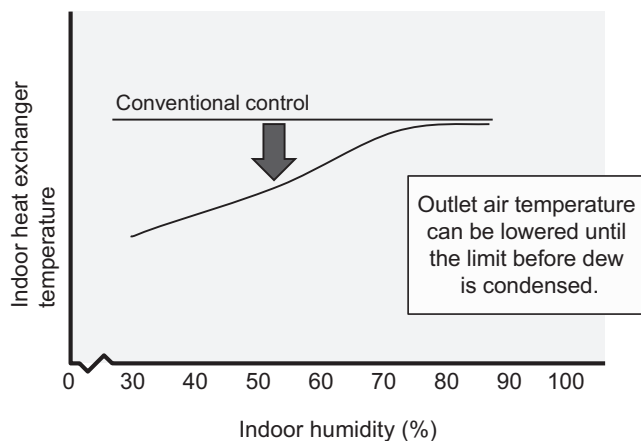
Outline

This function improves the dehumidification amount and realizes the temperature control with low airflow by the humidity sensor.

Details

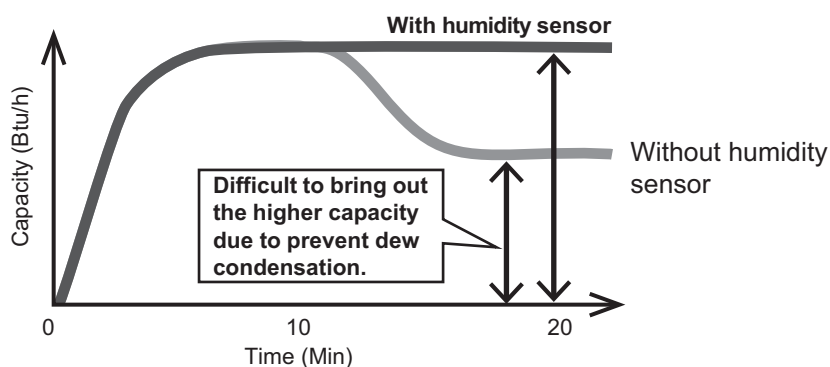
By monitoring the humidity in the room, dehumidifying operation frequency can be controlled at the point before the dew condensation occurs.

The cooling capacity is improved also at low fan speed.



R4003913

■ Cooling capacity



R4003914

1.7 Automatic Cooling/Heating Change-over

Outline

When the automatic operation is selected with the remote controller, the microcomputer automatically determines the operation mode as cooling or heating according to the room temperature and the set temperature at start-up.
The unit automatically switches the operation mode to maintain the room temperature at the set temperature.

Details

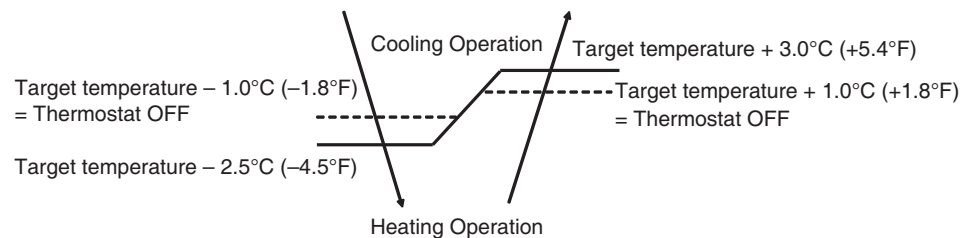
Ts: set temperature (set by remote controller)

Tt: target temperature (determined by microcomputer)

Tr: room thermistor temperature (detected by room temperature thermistor)

C: correction value

1. The set temperature (Ts) determines the target temperature (Tt).
(Ts = 18 ~ 30°C (64.4 ~ 86°F))
2. The target temperature (Tt) is calculated as;
 $Tt = Ts + C$
where C is the correction value.
C = 0°C (0°F)
3. Thermostat ON/OFF point and operation mode switching point are as follows.
 - (1) Heating → Cooling switching point:
 $Tr \geq Tt + 3.0^{\circ}\text{C} (+5.4^{\circ}\text{F})$
 - (2) Cooling → Heating switching point:
 $Tr < Tt - 2.5^{\circ}\text{C} (-4.5^{\circ}\text{F})$
 - (3) Thermostat ON/OFF point is the same as the ON/OFF point of cooling or heating operation.
4. During initial operation
 $Tr \geq Ts$: Cooling operation
 $Tr < Ts$: Heating operation



R4004135

Ex: When the target temperature is 25°C (77°F)

Cooling → 24°C (75.2°F): Thermostat OFF → 22.5°C (72.5°F): Switch to heating

Heating → 26°C (78.8°F): Thermostat OFF → 28°C (82.4°F): Switch to cooling

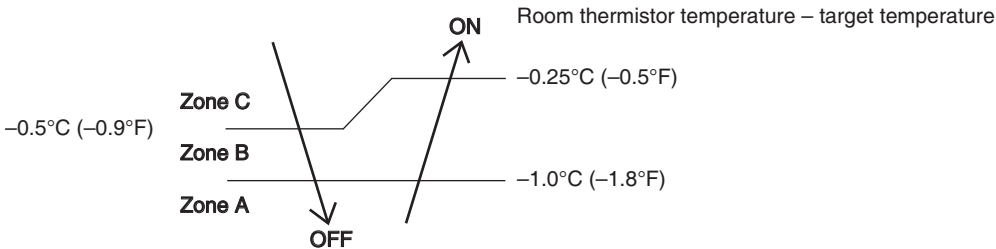
1.8 Thermostat Control

Outline Thermostat control is based on the difference between the room thermistor temperature and the target temperature.

- Details**
- Thermostat OFF Conditions**
- The temperature difference is in the zone A.
- Thermostat ON Conditions**
- The temperature difference returns to the zone C after being in the zone A.
 - The system resumes from defrost control in any zones except A.
 - The operation turns on in any zones except A.
 - The monitoring time has passed while the temperature difference is in the zone B.

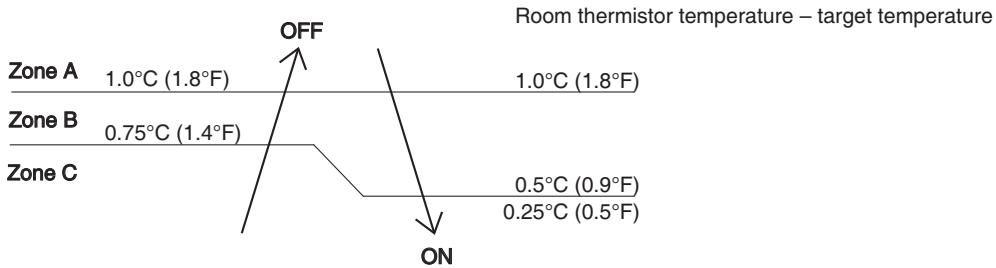
Cooling	Dry	Heating
10 minutes	7.5 minutes	180 seconds

Cooling/Dry



R4004136

Heating



R4004137



Reference Refer to Temperature Control on page 24 for details.

1.9 NIGHT SET Mode

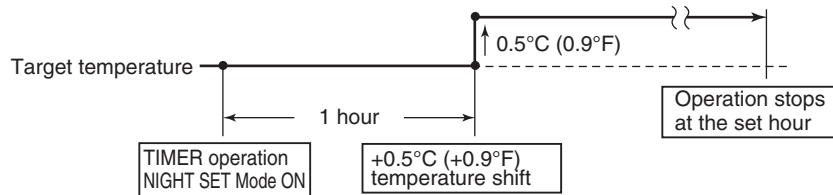
Outline

When the OFF TIMER is set, NIGHT SET mode is automatically activated. NIGHT SET mode keeps the airflow rate setting.

Details

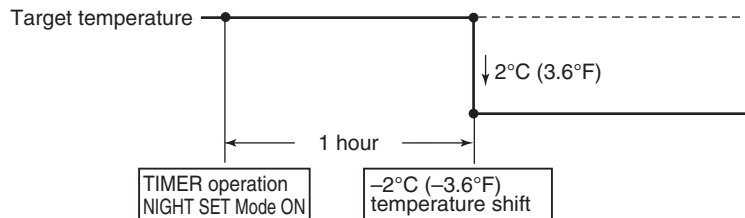
NIGHT SET mode continues operation at the target temperature for the first one hour, then automatically raises the target temperature slightly in the case of cooling, or lowers the target temperature slightly in the case of heating. This prevents excessive cooling in summer and excessive heating in winter to ensure comfortable sleeping conditions, and also conserves electricity.

Cooling



(R23917)

Heating



(R23918)

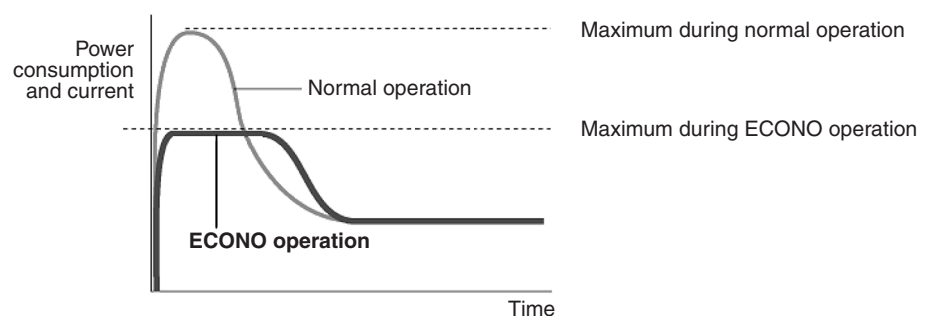
1.10 ECONO Operation

Outline

ECONO operation reduces the maximum operating current and the power consumption. This operation is particularly convenient for energy-saving. It is also a major bonus when breaker capacity does not allow the use of multiple electrical devices and air conditioners. It can be easily activated by pressing **Econo/Quiet** button on the wireless remote controller.

Details

- When this function is activated, the maximum capacity also decreases.
- The remote controller can send the ECONO command when the unit is in cooling, heating, dry, or automatic operation. This function can only be set when the unit is running. To cancel the ECONO operation, press **Econo/Quiet** button several times until the ECONO symbol disappears.
- This function and POWERFUL operation cannot be used at the same time. The latest command has the priority.



(R22012)

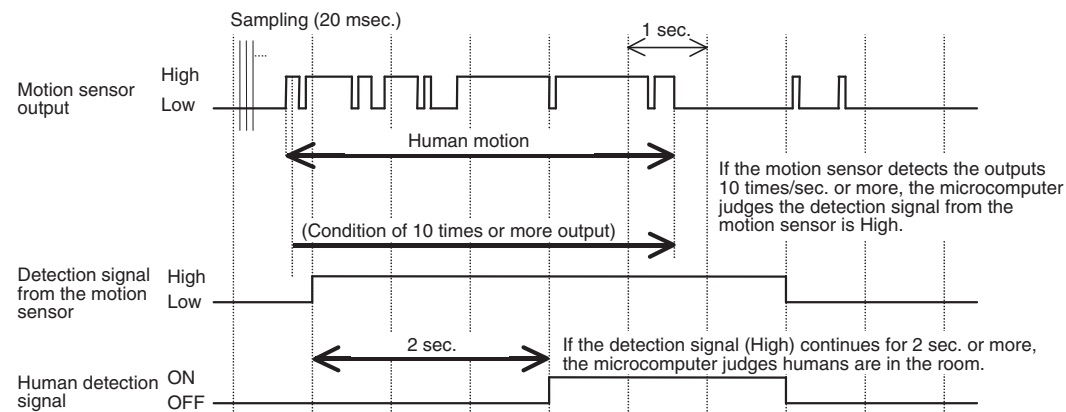
1.11 INTELLIGENT EYE Operation

Outline

This function detects the presence of humans in the room with a motion sensor and reduces the capacity when there is nobody in the room in order to save electricity.

Details

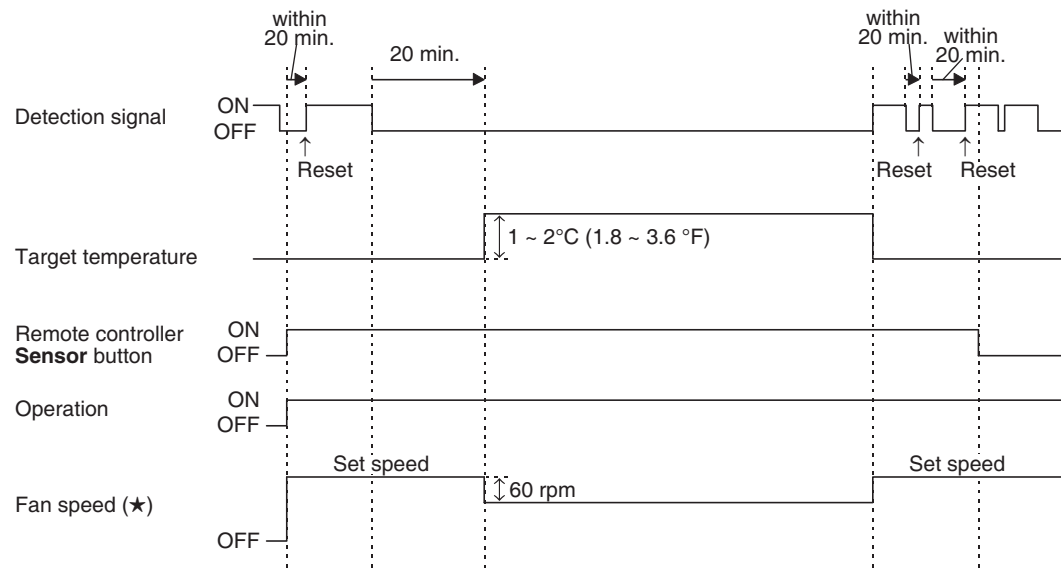
1. INTELLIGENT EYE detection method



R4003811

- The motion sensor detects human motion by receiving infrared rays and sends the pulse wave output.
- The microcomputer in the indoor unit carries out a sampling every 20 msec. If the motion sensor detects 10 times or more of the wave output in one second in total, and the High signal continues for 2 sec., the microcomputer judges humans are in the room as the human detection signal is ON.

2. Motions (in cooling)



R4003436

- ★ In FAN operation, the fan speed is reduced by 60 rpm when no one is in the area.
- When there is no signal from the motion sensor in 20 minutes, the microcomputer judges that nobody is in the room and operates the unit at a temperature shifted from the target temperature. (Cooling/Dry: 1 ~ 2°C (1.8 ~ 3.6°F) higher, Heating: 2°C (3.6°F) lower, Auto: according to the operation mode at that time)



Note(s)

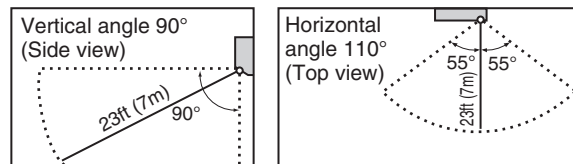
For dry operation, the temperature cannot be set with a remote controller, but the target temperature is shifted internally.

Notes on Energy saving operation

- If no presence detected in the room for 20 minutes, the energy saving operation will start, and the INTELLIGENT EYE lamp goes off.
If human movement is detected again, the INTELLIGENT EYE lamp lights up and energy saving operation terminates.
- This operation changes the temperature by -3.6°F (-2.0°C) in HEAT / $+3.6^{\circ}\text{F}$ ($+2.0^{\circ}\text{C}$) in COOL / $+3.6^{\circ}\text{F}$ ($+2.0^{\circ}\text{C}$) in DRY operation from the set temperature.
When the room temperature exceeds 86°F (30.0°C), the operation changes the temperature by $+1.8^{\circ}\text{F}$ ($+1.0^{\circ}\text{C}$) in COOL / $+1.8^{\circ}\text{F}$ ($+1.0^{\circ}\text{C}$) in DRY operation from the set temperature.
- This operation decreases the airflow rate slightly in FAN operation only.

Notes on INTELLIGENT EYE operation

- Application range is as follows.



- The air conditioner may switch to the energy-saving operation even if there are people in the areas.
This may occur depending on the clothes the people are wearing, if there is no movement of the people in the areas.
- The sensor could also mistakenly detect pets, sunlight, fluttering curtains and light reflected off of mirrors as passers-by.
- The sensor may not detect moving objects further than 23ft (7m) away. (Please see the application range)
- Sensor detection sensitivity changes according to the indoor unit location, the speed of passers-by, temperature range, etc.
- NIGHT SET mode will not switch on during use of INTELLIGENT EYE operation.

1.12 POWERFUL Operation

Outline

In order to exploit the cooling and heating capacity to full extent, the air conditioner can be operated by increasing the indoor fan rotating speed and the compressor speed.

Details

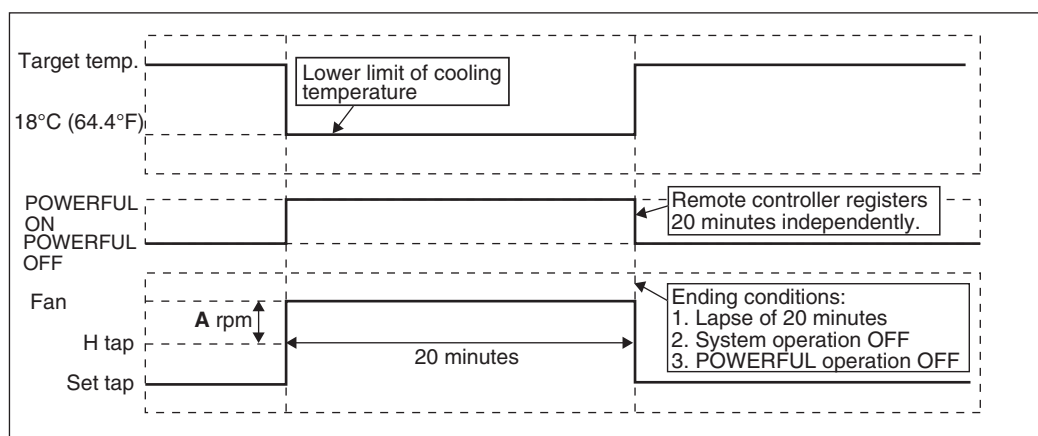
When **POWERFUL** button is pressed, the fan speed and target temperature are converted to the following states for 20 minutes.

Operation mode	Fan speed	Target temperature
COOL	H tap + A rpm	18°C (64.4°F)
DRY	Dry rotating speed + A rpm	Lowered by 2.5°C (4.5°F)
HEAT	H tap + B rpm	31°C (87.8°F)
FAN	H tap + A rpm	—
AUTO	Same as cooling/heating in POWERFUL operation	The target temperature is kept unchanged.

A = 80 rpm

B = 50 rpm

Ex: POWERFUL operation in cooling



(R24589)



Notes

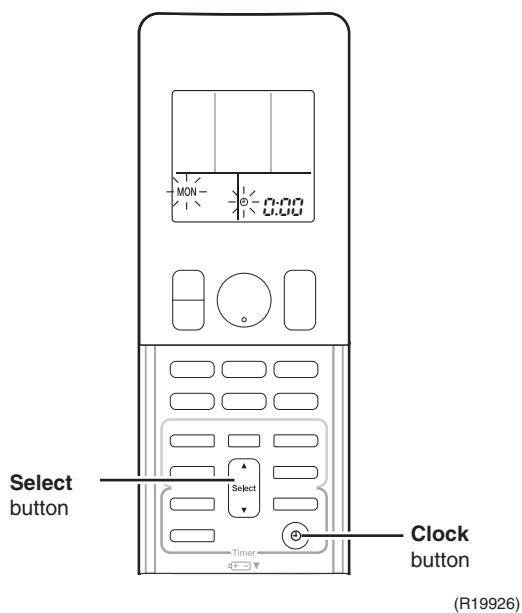
POWERFUL operation cannot be used together with ECONO, COMFORT AIRFLOW or QUIET OUTDOOR UNIT operation.

1.13 Clock Setting

ARC466 Series

The clock can be set by taking the following steps:

1. Press **Clock** button.
→ **0:00** is displayed, then **MON** and ☰ blink.
2. Press **Select ▲** or **Select ▼** button to set the clock to the current day of the week.
3. Press **Clock** button.
→ ☰ blinks.
4. Press **Select ▲** or **Select ▼** button to set the clock to the present time.
Holding down **Select ▲** or **Select ▼** button rapidly increases or decreases the time display.
5. Press **Clock** button to set the clock. Point the remote controller at the indoor unit when pressing the button.
→ : blinks and clock setting is completed.



1.14 WEEKLY TIMER Operation

Outline

Up to 4 timer settings can be saved for each day of the week (up to 28 settings in total). The 3 items: ON/OFF, temperature, and time can be set.

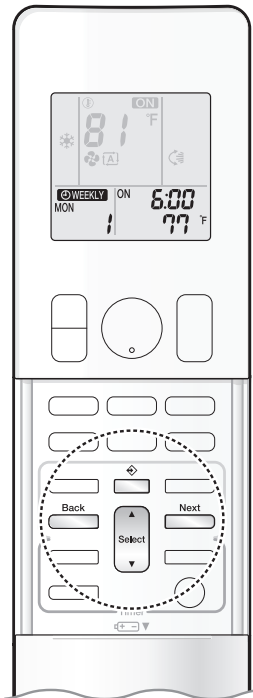
Details

Setting example of the WEEKLY TIMER

The same timer settings are used from Monday through Friday, while different timer settings are used for the weekend.

[Monday]	Make timer settings for programs 1-4. program 1 ON 6:00 8:30 ON program 2 OFF 8:30 OFF program 3 ON 17:30 22:00 ON program 4 OFF 22:00 OFF
[Tuesday] to [Friday]	Use the copy mode to make settings for Tuesday to Friday, because these settings are the same as those for Monday. program 1 ON 6:00 8:30 ON program 2 OFF 8:30 OFF program 3 ON 17:30 22:00 ON program 4 OFF 22:00 OFF
[Saturday]	No timer settings
[Sunday]	Make timer settings for programs 1-4. program 1 ON 8:00 10:00 ON program 2 OFF 10:00 OFF program 3 OFF 19:00 OFF program 4 ON 21:00 ON

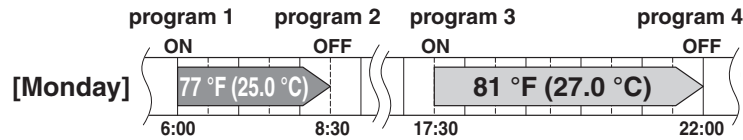
- Up to 4 reservations per day and 28 reservations per week can be set using the WEEKLY TIMER. The effective use of the copy mode simplifies timer programming.
- The use of ON-ON-ON-ON settings, for example, makes it possible to schedule operating mode and set temperature changes. Furthermore, by using OFF-OFF-OFF-OFF settings, only the turn off time of each day can be set. This will turn off the air conditioner automatically if you forget to turn it off.



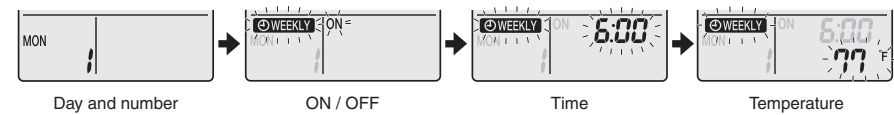
To use WEEKLY TIMER operation

Setting mode

- Make sure the day of the week and time are set.
If not, set the day of the week and time.



Setting Displays



1. Press .

- The day of the week and the reservation number of the current day will be displayed.
- 1 to 4 settings can be made per day.

2. Press to select the desired day of the week and reservation number.

- Pressing  changes the reservation number and the day of the week.

3. Press .

- The day of the week and reservation number will be set.
- “ WEEKLY ” and “ ON ” blink.

4. Press to select the desired mode.

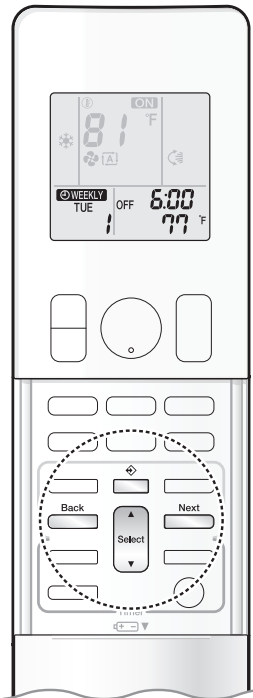
- Pressing  changes the “ ON ” or “ OFF ” setting in sequence.



- In case the reservation has already been set, selecting “ blank ” deletes the reservation.
- Proceed to **STEP 9** if “ blank ” is selected.
- To return to the day of the week and reservation number setting, press .

5. Press .

- The ON / OFF TIMER mode will be set.
- “ WEEKLY ” and the time blink.



6. Press to select the desired time.

- The time can be set between 0:00 and 23:50 in 10-minute intervals.
- To return to the ON / OFF TIMER mode setting, press .
- Proceed to **STEP 9** when setting the OFF TIMER.

7. Press .

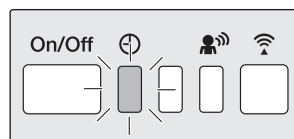
- The time will be set.
- “ WEEKLY” and the temperature blink.

8. Press to select the desired temperature.

- The temperature can be set between 50 °F (10.0 °C) and 90 °F (32.0 °C).
COOL or AUTO: The unit operates at 64 °F (18.0 °C) even if it is set at 50 °F (10.0 °C) to 63 °F (17.0 °C).
HEAT or AUTO : The unit operates at 86 °F (30.0 °C) even if it is set at 87 °F (30.5 °C) to 90 °F (32.0 °C).
- To return to the time setting, press .
- The set temperature is only displayed when the mode setting is on.

9. Press .

- Check for a receiving tone and that the OPERATION lamp blinks twice.
- The TIMER lamp lights orange.
- Temperature and time are set in the case of ON TIMER operation, and the time is set in the case of OFF TIMER operation.
- The next reservation screen will appear.
- To continue further settings, repeat the procedure from **STEP 4**.



Display

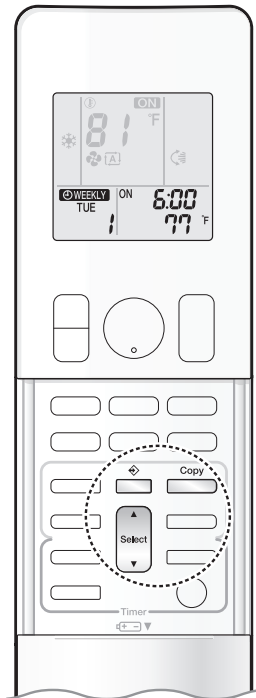
10. Press to complete the setting.

- “ WEEKLY” is displayed on the LCD and WEEKLY TIMER operation is activated.
- A reservation made once can be easily copied and the same settings used for another day of the week. Refer to **Copy mode**.

NOTE

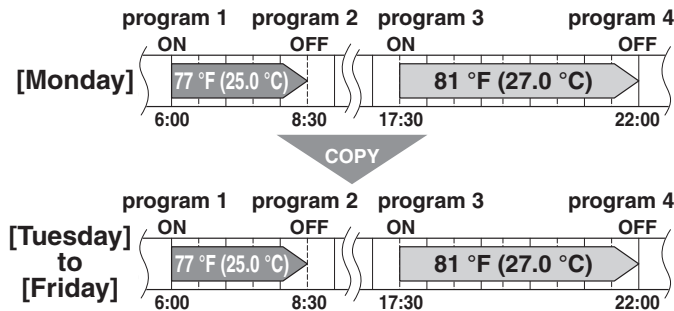
Notes on WEEKLY TIMER operation

- Do not forget to set the clock on the remote controller first.
- The day of the week, ON / OFF TIMER mode, time and set temperature (only for ON TIMER mode) can be set with the WEEKLY TIMER.
When set to ON TIMER mode, operation will begin in the settings used previously for operation mode, temperature, airflow rate, and airflow direction.
- WEEKLY TIMER and ON / OFF TIMER operation cannot be used at the same time. The ON / OFF TIMER operation has priority if it is set while WEEKLY TIMER is still active. The WEEKLY TIMER will enter the standby state, and “ WEEKLY” will disappear from the LCD. When the ON / OFF TIMER is up, the WEEKLY TIMER will automatically become active.
- Turning off the circuit breaker, power failure, and other similar events will render operation of the indoor unit's internal clock inaccurate. Reset the clock.
-  can be used only for the time and temperature settings. It cannot be used to go back to the reservation number.

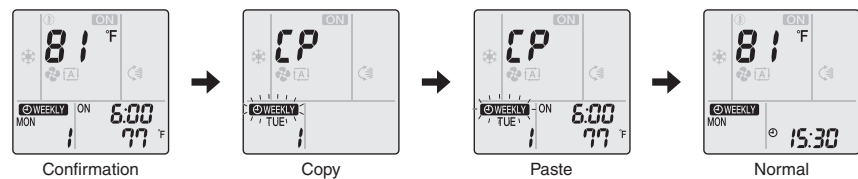


Copy mode

- A reservation made once can be copied to another day of the week. The whole reservation of the selected day of the week will be copied.



Setting Displays



1. Press .

2. Press to confirm the day of the week to be copied.

3. Press .

- The whole reservation of the selected day of the week will be copied.

4. Press to select the destination day of the week.

5. Press .

- Check for a receiving tone and that the OPERATION lamp blinks twice.
- The reservation will be copied to the selected day of the week. The whole reservation of the selected day of the week will be copied.
- To continue copying the settings to other days of the week, repeat **STEP 4** and **STEP 5**.

6. Press to complete the setting.

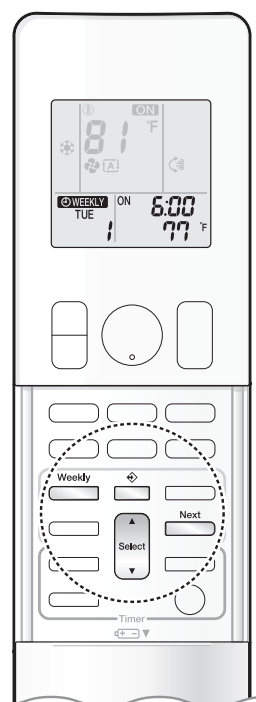
- " WEEKLY" is displayed on the LCD and WEEKLY TIMER operation is activated.

NOTE

Note on COPY MODE

- The entire reservation of the source day of the week is copied in the copy mode.

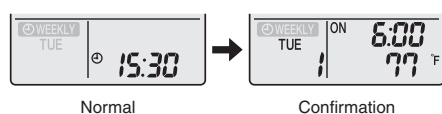
In the case of making a reservation change for any day of the week individually after copying the content of weekly reservations, press and change the settings in the steps of **Setting mode**.



Confirming a reservation

- The reservation can be confirmed.

Setting Displays



1. Press .

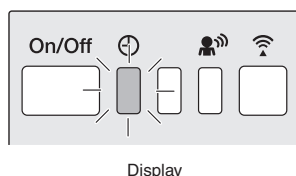
- The day of the week and the reservation number of the current day will be displayed.

2. Press to select the day of the week and the reservation number to be confirmed.

- Pressing  displays the reservation details.
- To change the confirmed reserved settings, select the reservation number and press . The mode is switched to setting mode. Proceed to **Setting mode STEP 4**.

3. Press to exit the confirmation mode.

- " WEEKLY" is displayed on the LCD and WEEKLY TIMER operation is activated.
- The TIMER lamp lights orange.



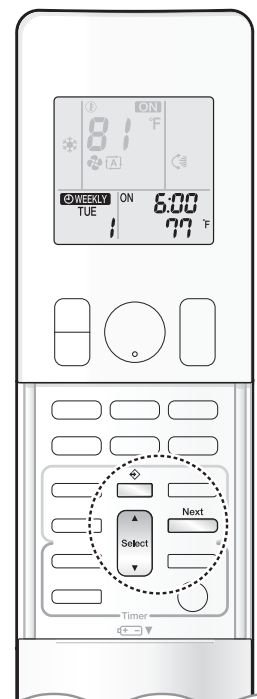
To deactivate WEEKLY TIMER operation

Press while " WEEKLY" is displayed on the LCD.

- " WEEKLY" disappears from the LCD.
- The TIMER lamp goes off.
- To reactivate the WEEKLY TIMER operation, press  again.
- If a reservation deactivated with  is activated once again, the last reservation mode will be used.

NOTE

- If not all the reservation settings are reflected, deactivate the WEEKLY TIMER operation once. Then press  again to reactivate the WEEKLY TIMER operation.



To delete reservations

An individual reservation

1. Press .

- The day of the week and the reservation number will be displayed.

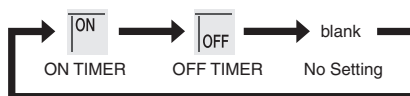
2. Press to select the day of the week and the reservation number to be deleted.

3. Press .

- “ WEEKLY” and “ON” or “OFF” blink.

4. Press until no icon is displayed.

- Pressing  changes the ON / OFF TIMER mode in sequence.
- Selecting “blank” will cancel any reservation you may have.



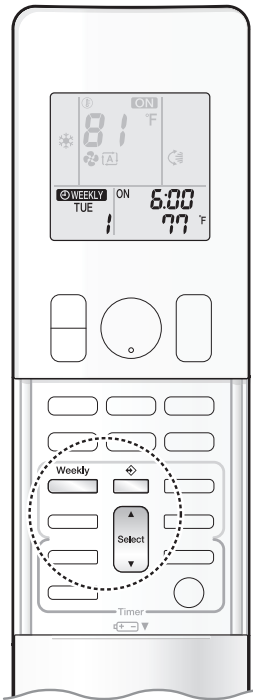
Pressing  puts the sequence in reverse.

5. Press .

- Check for a receiving tone and that the OPERATION lamp blinks twice.
- The selected reservation will be deleted.

6. Press .

- If there are still other reservations, WEEKLY TIMER operation will be activated.



Reservations for each day of the week

- This function can be used for deleting reservations for each day of the week.
- It can be used while confirming or setting reservations.

1. Press .

- The day of the week and the reservation number will be displayed.

2. Press to select the day of the week to be deleted.

3. Hold Weekly for about 5 seconds.

- Check for a receiving tone and that the OPERATION lamp blinks twice.
- The reservation of the selected day of the week will be deleted.

4. Press .

- If there are still other reservations, WEEKLY TIMER operation will be activated.

All reservations

Hold Weekly for about 5 seconds with the normal display.

- Check for a receiving tone and that the OPERATION lamp blinks twice.
- “ WEEKLY” disappears from the LCD.
- The TIMER lamp goes off.
- All reservations will be deleted.
- This operation is not functional while the WEEKLY TIMER setting screen is displayed.

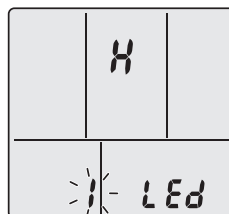
1.15 Brightness Setting of Indoor Unit Display

Outline

The brightness of the indoor unit display can be adjusted as desired. Also, the display can be turned OFF.

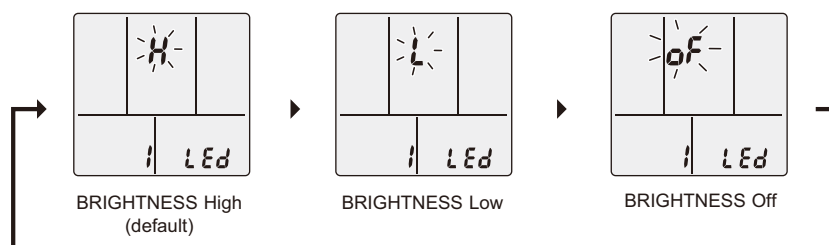
Details

1. Press and hold **Menu** (push 2sec) button for 2 seconds.
LEd appears on the LCD and **1** blinks.
2. Press **Select Up** or **Down** button to select menu number **1**.



3. Press **Menu** (push 2sec) button to confirm the setting.
4. Press **Select Up** or **Down** button and select the desired brightness as follows:

R4003752



5. Press **Menu** (push 2sec) button again to confirm the setting. Brightness will be set to the chosen value.
6. Press **Cancel** button to return to the default screen.



Note(s)

The display automatically returns to the default screen when the remote controller is left untouched for 60 seconds. To return to the default screen immediately, press **Cancel** button twice.

1.16 Other Functions

1.16.1 Hot-Start Function

In order to prevent the cold air blast that normally occurs when heating operation is started, the temperature of the indoor heat exchanger is detected, and the airflow is either stopped or significantly weakened resulting in comfortable heating.



Note

The cold air blast is prevented using similar control when defrost control starts or when the thermostat is turned ON.

1.16.2 Signal Receiving Sign

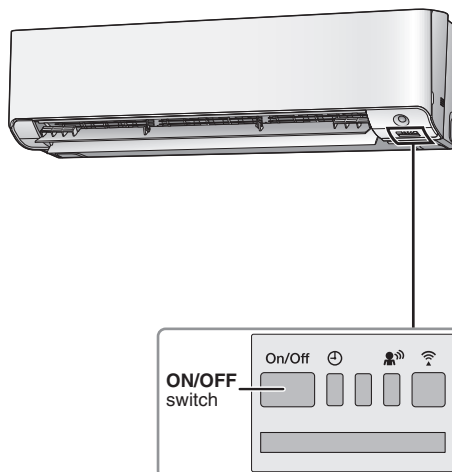
When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

1.16.3 Indoor Unit ON/OFF Switch

Indoor unit **ON/OFF** switch is provided on the display of the unit.

- Press **ON/OFF** switch once to start operation. Press once again to stop it.
- **ON/OFF** switch is useful when the remote controller is missing or the battery has run out.
- The operation mode refers to the following table.

Model	Operation mode	Temperature setting	Airflow rate
Cooling Only	COOL	72°F (22.0°C)	Automatic
Heat Pump	AUTO	72°F (25.0°C)	Automatic



Forced Cooling Operation

Forced cooling operation can be started by pressing **ON/OFF** switch for 5 seconds while the unit is not operating.

Refer to page 123 for details.

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Note

When **ON/OFF** switch is pressed for 10 seconds or more, the forced cooling operation is stopped.

1.16.4 Auto-restart Function

If a power failure (even a momentary one) occurs during the operation, the operation restarts automatically in the same conditions as before when the power supply is restored to the conditions prior to the power failure.

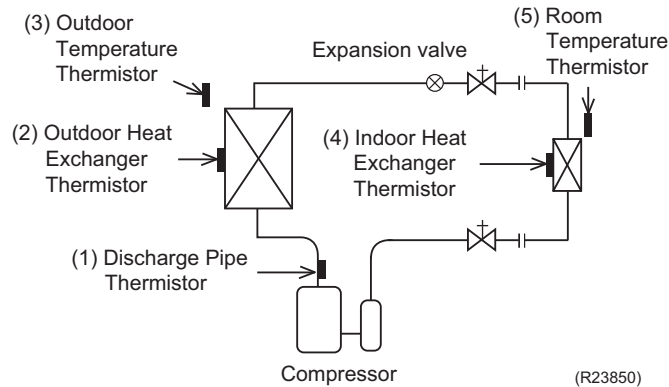


Note

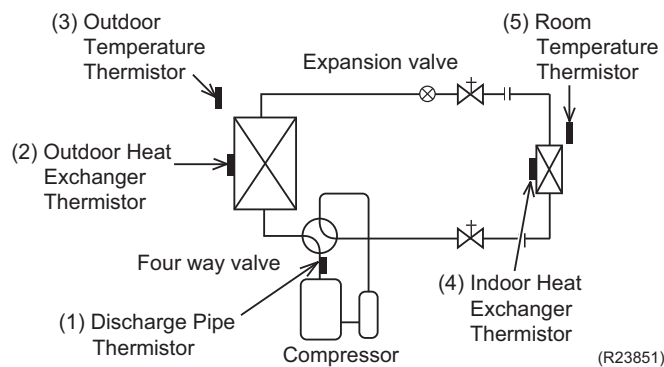
It takes 3 minutes to restart the operation because 3-minute standby function is activated.

2. Thermistor Functions

■ Cooling Only model



■ Heat Pump model



(1) Discharge Pipe Thermistor

- The discharge pipe thermistor is used for controlling discharge pipe temperature. If the discharge pipe temperature (used in place of the inner temperature of the compressor) rises abnormally, the operating compressor speed becomes lower or the operation halts.
- The discharge pipe thermistor is used for detecting disconnection of the discharge pipe thermistor.

(2) Outdoor Heat Exchanger Thermistor

- The outdoor heat exchanger thermistor is used for controlling the target discharge pipe temperature. The system sets the target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge pipe temperature can be obtained.
- In cooling operation, the outdoor heat exchanger thermistor is used for detecting the disconnection of the discharge pipe thermistor. When the discharge pipe temperature drops below the outdoor heat exchanger temperature by more than a certain value, the discharge pipe thermistor is judged as disconnected.
- In cooling operation, the outdoor heat exchanger thermistor is used for high pressure protection.

(3) Outdoor Temperature Thermistor

- The outdoor temperature thermistor detects the outdoor air temperature and is used for refrigerant shortage detection, input current control, outdoor fan control, liquid compression protection function, and so on.

(4) Indoor Heat Exchanger Thermistor

- The indoor heat exchanger thermistor is used for controlling the target discharge pipe temperature. The system sets the target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge pipe temperature can be obtained.

- In cooling operation, the indoor heat exchanger thermistor is used for freeze-up protection control. If the indoor heat exchanger temperature drops abnormally, the operating compressor speed becomes lower or the operation halts.
 - In heating operation, the indoor heat exchanger thermistor is used for detecting the disconnection of the discharge pipe thermistor. When the discharge pipe temperature drops below the indoor heat exchanger temperature by more than a certain value, the discharge pipe thermistor is judged as disconnected.
-

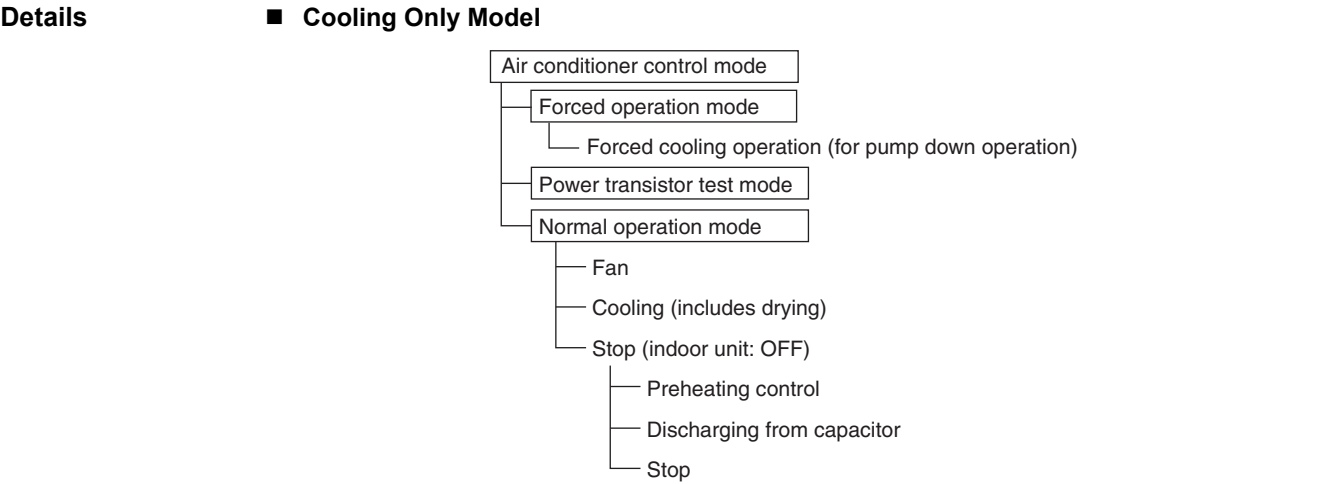
**(5) Room
Temperature
Thermistor**

- The room temperature thermistor detects the room air temperature and is used for controlling the room air temperature.

3. Control Specification

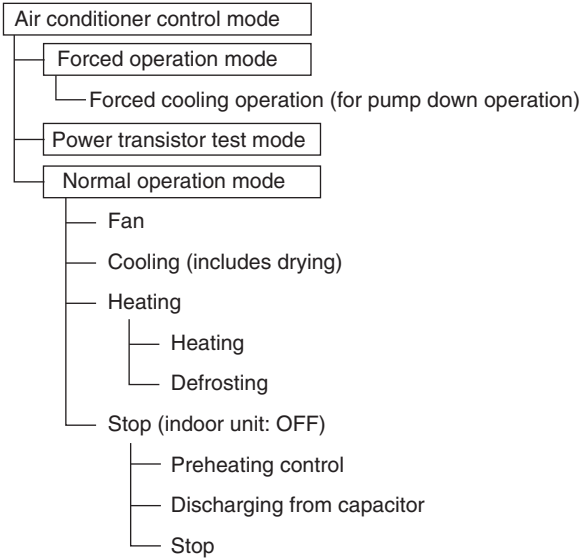
3.1 Mode Hierarchy

Outline The air conditioner control has normal operation mode, forced operation mode, and power transistor test mode for installation and servicing.



R4003638

■ **Heat Pump Model**



R4003562



Note(s)

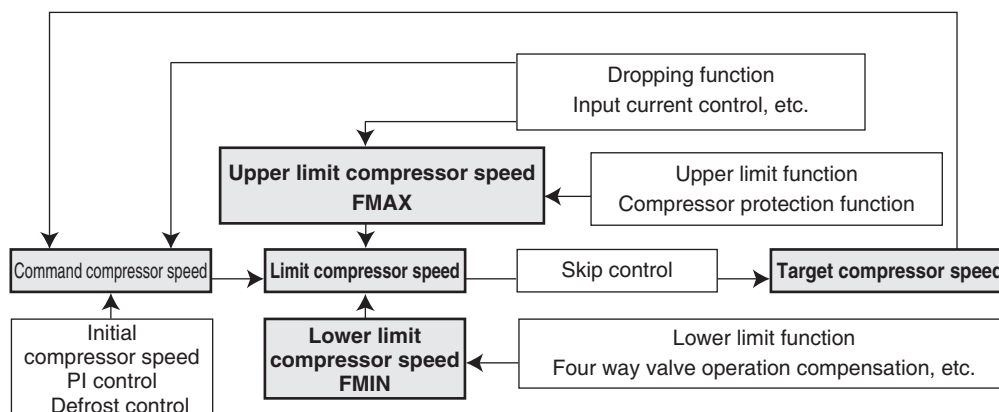
Unless specified otherwise, dry operation command is regarded as cooling operation.

3.2 Compressor Speed Control

Outline

The compressor speed is determined according to the difference between the room thermistor temperature and the target temperature.

When the shift of the compressor speed is less than zero ($\Delta F < 0$) by PI control, the target compressor speed is used as the command compressor speed.



R4004268

Details

1. Determine command compressor speed

Command compressor speed is determined in the following order of priority.

- (1) Limiting defrost control time
- (2) Forced cooling
- (3) Indoor compressor speed command

2. Determine upper limit compressor speed

The minimum value is set as an upper limit compressor speed among the compressor speed upper limits of the following functions:

Compressor protection, input current, discharge pipe temperature, heating peak-cut, freeze-up protection, defrost control.

3. Determine lower limit compressor speed

The maximum value is set as a lower limit compressor speed among the compressor speed lower limits of the following functions:

Four way valve operation compensation, draft prevention, pressure difference upkeep.

4. Determine prohibited compressor speed

There is a certain prohibited compressor speed such as a power supply compressor speed.

Initial Compressor Speed

When starting the compressor, the compressor speed is initialized according to the ΔD value of the indoor unit.

ΔD signal: Indoor compressor speed command

The difference between the room thermistor temperature and the target temperature is taken as the ΔD value and is used for ΔD signal of compressor speed command.

Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal
-1.0°C (-1.8°F)	*OFF	0°C (0°F)	4	2.0°C (3.6°F)	8	4.0°C (7.2°F)	12
-0.75°C (-1.4°F)	1	0.5°C (0.9°F)	5	2.5°C (4.5°F)	9	4.5°C (8.1°F)	13
-0.5°C (-0.9°F)	2	1.0°C (1.8°F)	6	3.0°C (5.4°F)	10	5.0°C (9.0°F)	14
-0.25°C (-0.5°F)	3	1.5°C (2.7°F)	7	3.5°C (6.3°F)	11	5.5°C (9.9°F)	15

Values depend on the type of indoor unit.

* OFF = Thermostat OFF

PI Control**1. P control**

The ΔD value is calculated in each sampling time (20 seconds), and the compressor speed is adjusted according to its difference from the compressor speed previously calculated.

2. I control

If the operating compressor speed does not change for more than a certain fixed time, the compressor speed is adjusted according to the ΔD value.

When ΔD value is low, the compressor speed is lowered.

When ΔD value is high, the compressor speed is increased.

3. Compressor speed control when other controls are functioning

- When compressor speed is dropping:

Compressor speed control is carried out only when the compressor speed drops.

- For limiting lower limit:

Compressor speed control is carried out only when the compressor speed rises.

4. Upper and lower limit of compressor speed by PI control

The compressor speed upper and lower limits are set according to the command of the indoor unit.

When the indoor unit quiet or QUIET OUTDOOR UNIT operation command comes from the indoor unit, the upper limit compressor speed is lower than the usual setting.

3.3 Controls at Mode Changing/Start-up

3.3.1 Preheating Control

Outline

The inverter operation in open phase starts with the conditions of the outdoor temperature, the discharge pipe temperature, the radiation fin temperature and the preheating command from the indoor unit.

Details**■ ON condition**

Discharge pipe temperature < A

Outdoor temperature < 5°C (41°F)

Radiation fin temperature < 85°C (185°F)

■ OFF condition

Discharge pipe temperature > B

Outdoor temperature > 7°C (44.6°F)

Radiation fin temperature > 90°C (194°F)

A: (Outdoor temperature (°C)) × 100/256 + 27(°C)

B: (Outdoor temperature (°C)) × 100/256 + 31(°C)

3.3.2 Four Way Valve Switching

Outline

The four way valve coil is energized/not energized depending on the operation mode.

(Heating: ON, Cooling/Dry/Defrost: OFF)

In order to eliminate the switching sound as the four way valve coil switches from ON to OFF when the heating is stopped, the OFF delay switch of the four way valve is carried out.

Details**OFF delay switch of four way valve**

The four way valve coil is energized for 160* seconds after the operation is stopped.

*10 seconds in heating operation when the outdoor temperature is lower than -9 °C (15.8°F)

3.3.3 Four Way Valve Operation Compensation

Outline

At the beginning of operation as the four way valve is switched, the pressure difference to activate the four way valve is acquired when the output compressor speed is higher than a certain fixed compressor speed, for a certain fixed time.

Details

Starting Conditions

- The compressor starts and the four way valve switches from OFF to ON
- The four way valve switches from ON to OFF during operation
- The compressor starts after resetting
- The compressor starts after the fault of four way valve switching

The lower limit of compressor speed keeps **A** rps for **B** seconds for any of the conditions above. When the outdoor temperature is above **C** in heating, the frequency decreases depending on the outdoor temperature.

		Cooling	Heating
A (rps)		28	30
B (seconds)		70	
C	(°C)	20	
	(°F)	68	

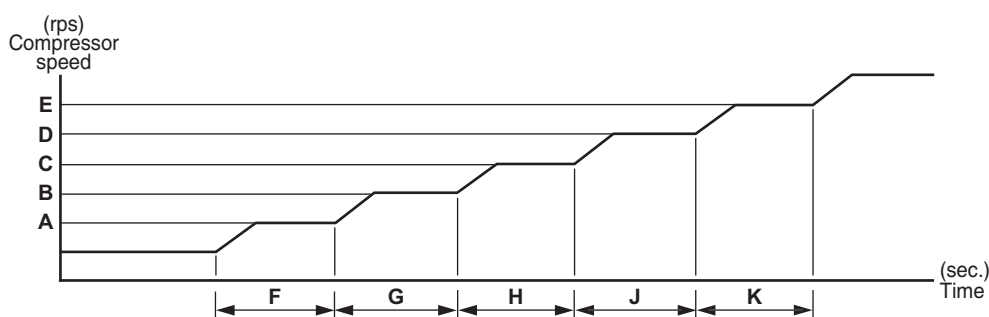
3.3.4 3-Minute Standby

Turning on the compressor is prohibited for 3 minutes after turning off.
The function is not used when defrosting.

3.3.5 Compressor Protection Function

When turning the compressor from OFF to ON, the upper limit of compressor speed is set as follows.

The function is not used when defrosting.



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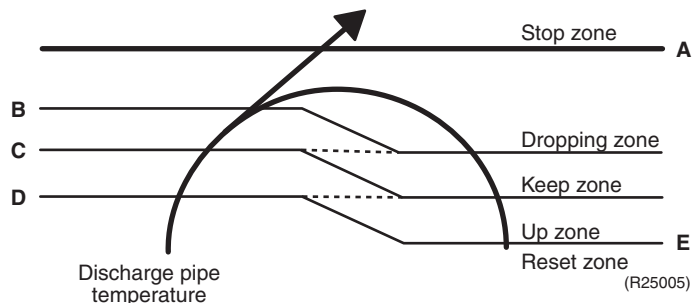
	30/36 class	
	Cooling	Heating
A (rps)	26 ~ 28	30
B (rps)	42	48
C (rps)	56	62
D (rps)	92	80
E (rps)	—	—
F (seconds)	180 ~ 390	450
G (seconds)	180	450
H (seconds)	180	300
J (seconds)	480	470
K (seconds)	—	—

3.4 Discharge Pipe Temperature Control

Outline

The discharge pipe temperature is used as the internal temperature of the compressor. If the discharge pipe temperature rises above a certain level, the upper limit of compressor speed is set to keep the discharge pipe temperature from rising further.

Details



Zone	Control
Stop zone	When the temperature reaches the stop zone, the compressor stops.
Dropping zone	The upper limit of compressor speed decreases.
Keep zone	The upper limit of compressor speed is kept.
Up zone	The upper limit of compressor speed increases.
Reset zone	The upper limit of compressor speed is canceled.

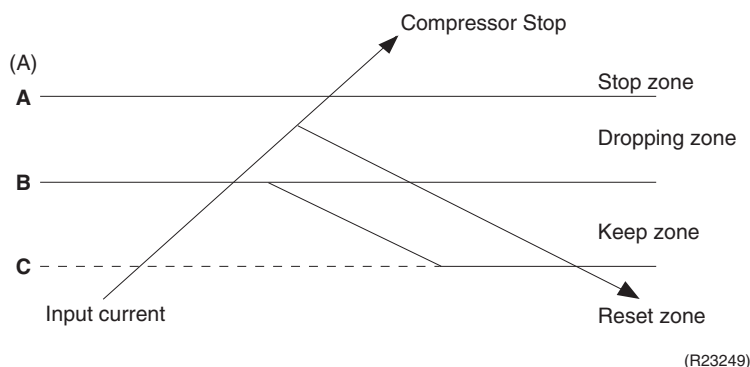
	(°C)	(°F)
A	118	244.4
B	108	226.4
C	103	217.4
D	97	206.6
E	85	185.0

3.5 Input Current Control

Outline

The microcomputer calculates the input current while the compressor is running, and sets the compressor speed upper limit based on the input current.
In case of heat pump models, this control is the upper limit control of the compressor speed and takes priority over the lower limit control of four way valve operation compensation.

Details



Compressor speed control in each zone

Stop zone

- After the input current remains in the stop zone for 2.5 seconds, the compressor is stopped.

Dropping zone

- The upper limit of the compressor speed is defined as operation compressor speed – 2 rps.
- After this, the output compressor speed is lowered by 2 rps every second until it reaches the keep zone.

Keep zone

- The present maximum compressor speed goes on.

Reset zone

- Limit of the compressor speed is canceled.

	Cooling	Heating
A (A)	20	20
B (A)	19	19.25
C (A)	18	18.25

Limitation of current dropping and stop value according to the outdoor temperature

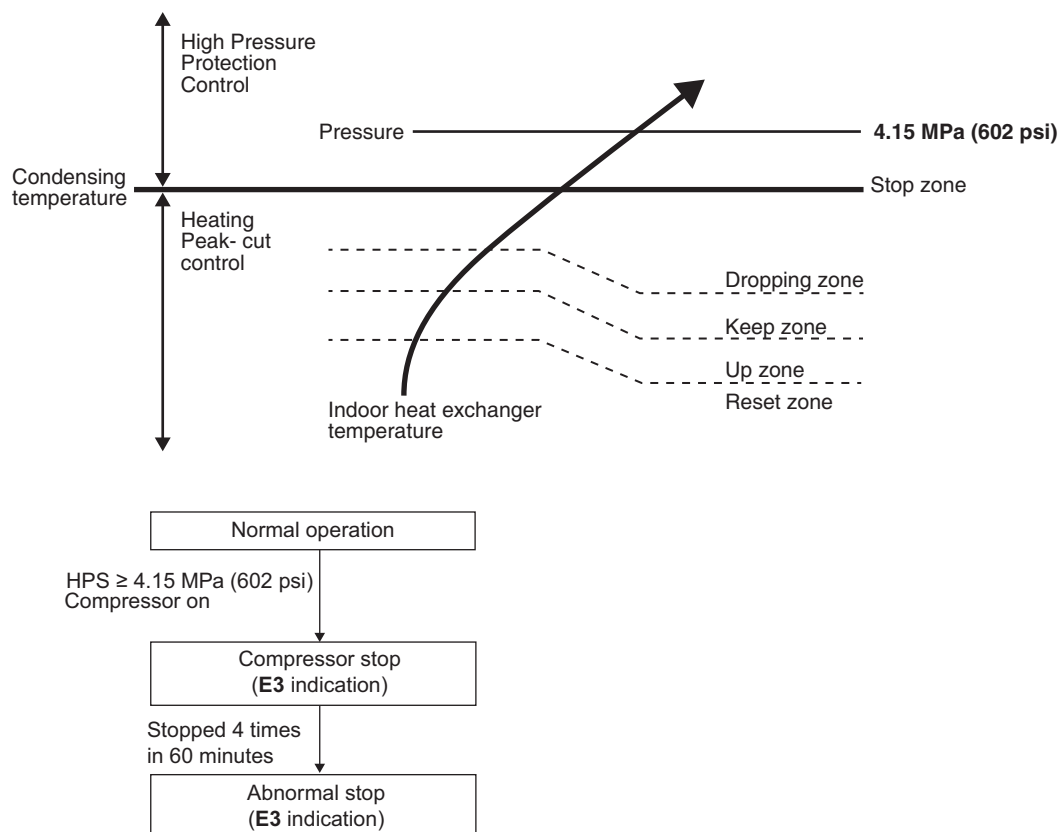
- ♦ The current drops when outdoor temperature becomes higher than a certain level (depending on the model).

3.6 High Pressure Protection Control

Outline

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

Details



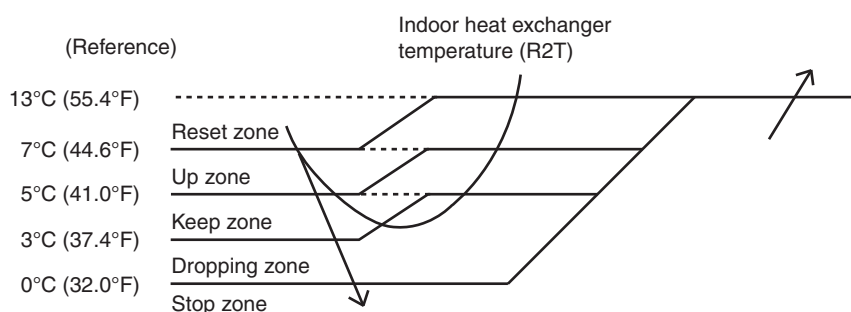
3.7 Freeze-up Protection Control

Outline

During cooling operation, the signal sent from the indoor unit determines the compressor speed upper limit and prevents freezing of the indoor heat exchanger. The signals from the indoor unit are divided into zones.

Details

The operating compressor speed limitation is judged with the indoor heat exchanger temperature.

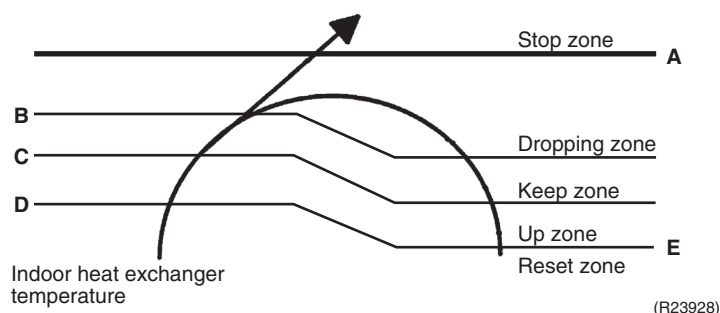


R4003644

3.8 Heating Peak-cut Control

During heating operation, the indoor heat exchanger temperature determines the compressor speed upper limit to prevent abnormal high pressure.

The operating compressor speed limitation is judged with the indoor heat exchanger temperature.



Zone	Control
Stop zone	When the temperature reaches the stop zone, the compressor stops.
Dropping zone	The upper limit of compressor speed decreases.
Keep zone	The upper limit of compressor speed is kept.
Up zone	The upper limit of compressor speed increases.
Reset zone	The upper limit of compressor speed is canceled.

	(°C)	(°F)
A	59	138.2
B ★	55	131.0
C ★	52	125.6
D ★	50	122.0
E	45	113.0

★: The valves might drop when the outdoor temperature is low to protect the compressor.

3.9 Outdoor Fan Control

1. Fan ON control to cool down the electrical box

The outdoor fan is turned ON when the electrical box temperature is high while the compressor is OFF.

2. Fan OFF control during defrosting

The outdoor fan is turned OFF while defrosting.

3. Fan OFF delay when stopped

The outdoor fan is turned OFF 60 ~ 70 seconds after the compressor stops.

4. Fan speed control for pressure difference upkeep

The rotation speed of the outdoor fan is controlled for keeping the pressure difference during cooling operation with low outdoor temperature.

- When the pressure difference is low, the rotation speed of the outdoor fan is reduced.
- When the pressure difference is high, the rotation speed of the outdoor fan is controlled as well as normal operation.

5. Fan speed control during forced operation

The outdoor fan is controlled as well as normal operation during forced operation.

6. Fan speed control during POWERFUL operation

The rotation speed of the outdoor fan is increased during POWERFUL operation.

7. Fan speed control during indoor unit quiet/QUIET OUTDOOR UNIT operation

The rotation speed of the outdoor fan is reduced by the command of the indoor unit quiet/QUIET OUTDOOR UNIT operation.

8. Fan ON/OFF control when operation (cooling, heating, dry) starts/stops

The outdoor fan is turned ON when the operation starts. The outdoor fan is turned OFF when the operation stops.

3.10 Liquid Compression Protection Function

Outline

The compressor stops according to the outdoor temperature for protection.

Details

Operation stops depending on the outdoor temperature.

The compressor turns off under the conditions that the system is in cooling operation and the outdoor temperature is below 0°C (32°F).

However, the operating range can be extended to the lowest temperature of –20°C (–4°F) for heat pump models and –30°C (–22°F) for cooling only models by changing facility setting. Refer to page 128 for details of facility setting.

3.11 Defrost Control

Outline

Defrosting is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than a certain value to finish defrosting.

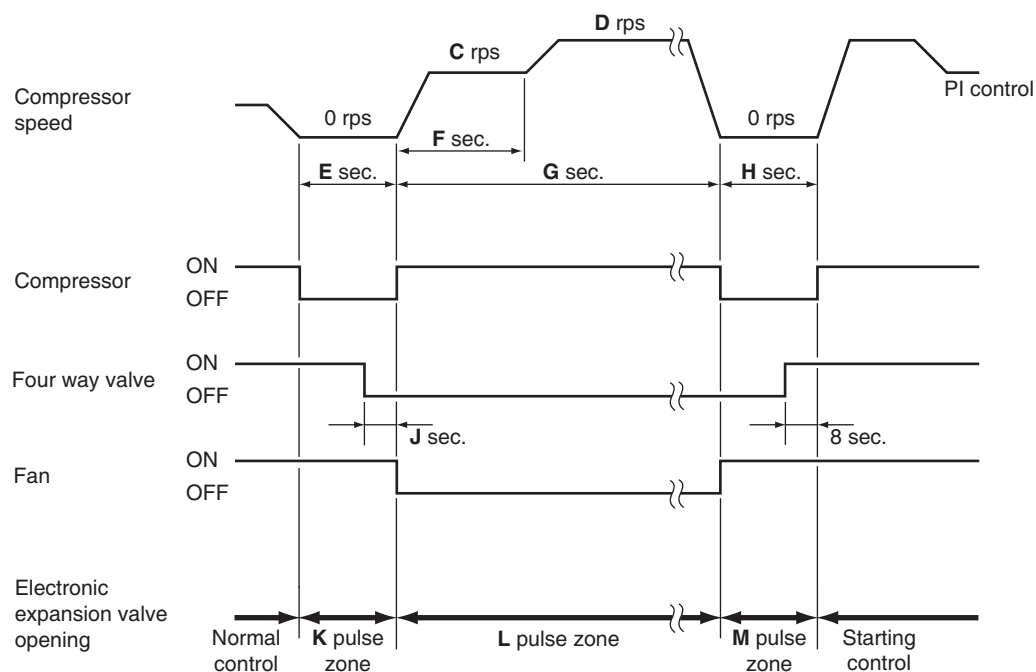
Details

Conditions for Starting Defrost

- The starting conditions are determined with the outdoor temperature and the outdoor heat exchanger temperature.
- The system is in heating operation.
- The compressor operates for 6 minutes.
- More than **A** minutes (depending on the duration of the previous defrost control) of accumulated time have passed since the start of the operation, or ending the previous defrosting.

Conditions for Canceling Defrost

The judgment is made with the outdoor heat exchanger temperature (**B**).



R4004373

A (minute)		48
B	(°C)	4 ~ 12
	(°F)	39.2 ~ 53.6
C (rps)		48
D (rps)		62
E (seconds)		40
F (seconds)		60
G (seconds)		460
H (seconds)		80
J (seconds)		8
K (pulse)		288
L (pulse)		320
M (pulse)		256

3.12 Electronic Expansion Valve Control

Outline

The following items are included in the electronic expansion valve control.

Electronic expansion valve is fully closed

1. Electronic expansion valve is fully closed when turning on the power.
2. Pressure equalizing control

Open Control

1. Electronic expansion valve control when starting operation
2. Electronic expansion valve control when the compressor speed changes
3. Electronic expansion valve control for defrosting
4. Electronic expansion valve control when the discharge pipe temperature is abnormally high
5. Electronic expansion valve control when the discharge pipe thermistor is disconnected

Feedback Control

Target discharge pipe temperature control

Details

The followings are the examples of electronic expansion valve control for each operation mode.

Control Status	Power on ; Compressor stop	Operation start	Compressor speed change under starting control	During target discharge pipe temperature control	Compressor speed change under target discharge pipe temperature control	Discharge pipe thermistor disconnection	Compressor speed change under discharge pipe thermistor disconnection control	During defrost control
Starting operation control	—	●	—	—	—	—	—	—
Control when the compressor speed changes	—	—	●	—	●	—	—	—
Target discharge pipe temperature control	—	—	—	●	—	—	—	—
Discharge pipe thermistor disconnection control	—	—	—	—	—	●	●	—
High discharge pipe temperature control	—	●	●	●	●	—	—	—
Defrost control (heating only)	—	—	—	—	—	—	—	●
Pressure equalizing control	●	—	—	—	—	—	—	—
Opening limit control	—	●	●	●	●	●	●	—

● : Available

— : Not available

R4004374

3.12.1 Initialization as Power Supply On

The electronic expansion valve is initialized (fully closed) when the power is turned on. Then, the valve opening position is set and the pressure is equalized.

3.12.2 Pressure Equalizing Control

When the compressor is stopped, the pressure equalizing control is activated. The electronic expansion valve opens, and develops the pressure equalization.

3.12.3 Opening Limit Control

The maximum and minimum opening of the electronic expansion valve are limited.

Maximum opening (pulse)	490
Minimum opening (pulse)	40

The electronic expansion valve is fully closed when cooling operation stops, and is opened at a fixed degree during defrosting.

3.12.4 Starting Operation Control

The electronic expansion valve opening is controlled when the operation starts, thus preventing superheating or liquid compression.

3.12.5 Control when the Compressor Speed Changes

When the target discharge pipe temperature control is active, if the target compressor speed changes to a specified value in a certain time period, the target discharge pipe temperature control is canceled and the target opening of the electronic expansion valve is changed according to the compressor speed shift.

3.12.6 High Discharge Pipe Temperature Control

When the compressor is operating, if the discharge pipe temperature exceeds a certain value, the electronic expansion valve opens and the refrigerant runs to the low pressure side. This procedure lowers the discharge pipe temperature.

3.12.7 Discharge Pipe Thermistor Disconnection Control

Outline

The disconnection of the discharge pipe thermistor is detected by comparing the discharge pipe temperature with the condensation temperature. If the discharge pipe thermistor is disconnected, the electronic expansion valve opens according to the outdoor temperature and the operation compressor speed, operates for a specified time, and then stops. After 3 minutes, the operation restarts and checks if the discharge pipe thermistor is disconnected. If the discharge pipe thermistor is disconnected, the system stops after operating for a specified time. If the disconnection is detected repeatedly, the system is shut down. When the compressor runs for 60 minutes without any error, the error counter is reset.

Details

Determining thermistor disconnection

When the starting control finishes, the detection timer for disconnection of the discharge pipe thermistor (**A** seconds) starts. When the timer is over, the following adjustment is made.

- When the operation mode is cooling
When the following condition is fulfilled, the discharge pipe thermistor disconnection is ascertained.
Discharge pipe temperature +6°C (+10.8°F) < outdoor heat exchanger temperature
- When the operation mode is heating
When the following condition is fulfilled, the discharge pipe thermistor disconnection is ascertained.
Discharge pipe temperature +6°C (+10.8°F) < indoor heat exchanger temperature

	A (seconds)
Other than below	1020
Heating (When outdoor temperature is below -15°C (5°F))	1800

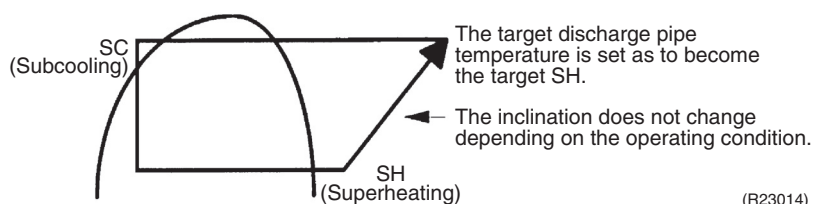
When the thermistor is disconnected

When the disconnection is ascertained, the compressor continues operation for 9 minutes and then stops.

If the compressor stops repeatedly, the system is shut down.

3.12.8 Target Discharge Pipe Temperature Control

The target discharge pipe temperature is obtained from the indoor and outdoor heat exchanger temperature, and the electronic expansion valve opening is adjusted so that the actual discharge pipe temperature becomes close to the target discharge pipe temperature. (Indirect SH (superheating) control using the discharge pipe temperature)



(R23014)

The electronic expansion valve opening and the target discharge pipe temperature are adjusted every **A** seconds. The target discharge pipe temperature is controlled by indoor heat exchanger temperature and outdoor heat exchanger temperature. The opening degree of the electronic expansion valve is adjusted by the following.

- Target discharge pipe temperature
- Actual discharge pipe temperature
- Previous discharge pipe temperature

	30/36 class
A (seconds)	20

★ The time depends on the opening of the electric expansion valve.

3.13 Malfunctions

3.13.1 Sensor Malfunction Detection

Sensor malfunction can be detected in the following thermistor:

1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Radiation fin thermistor
4. Outdoor temperature thermistor

3.13.2 Detection of Overcurrent and Overload

Outline

An excessive output current is detected and the OL temperature is observed to protect the compressor.

Details

- If the OL (compressor head) temperature exceeds 120 ~ 130°C (248 ~ 266°F) (depending on the model), the system shuts down the compressor.
- If the inverter current exceeds 20.0 A (depending on the model), the system shuts down the compressor.
The upper limit of the current decreases when the outdoor temperature exceeds a certain level.

Part 5

Remote Controller

1. Applicable Remote Controller 62

2. ARC466A92 63

1. Applicable Remote Controller

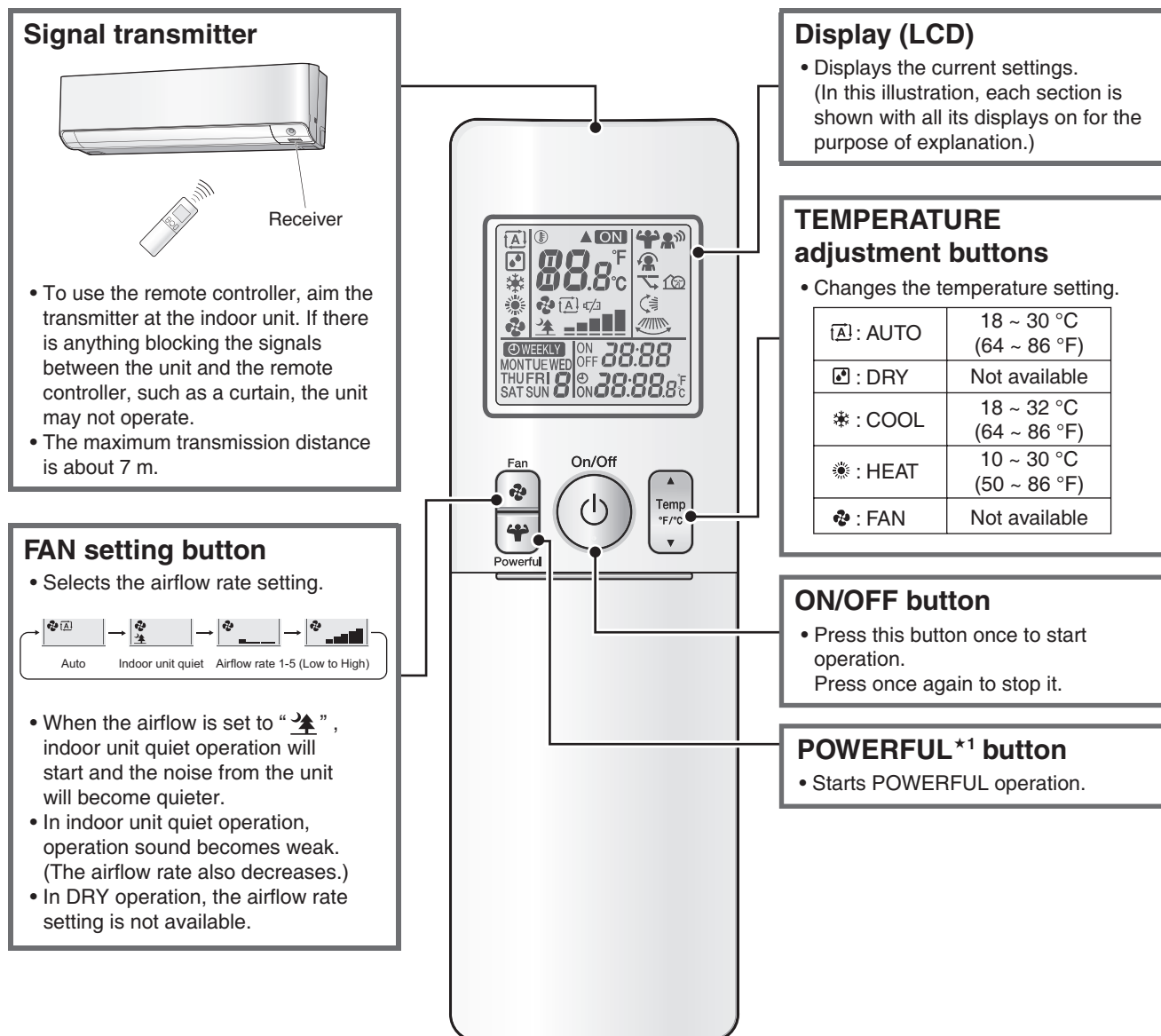
Model Name	Remote Controller	Reference Page
FTXV30AVJU9	ARC466A92	63
FTXV36AVJU9		

**Note**

Refer to the operation manual of applicable model for details. You can download operation manuals from Daikin Business Portal:

Daikin Business Portal → Document Search → Item Category → Installation/Operation Manual
(URL: https://global1d.daikin.com/business_portal/login/)

2. ARC466A92



R5000563



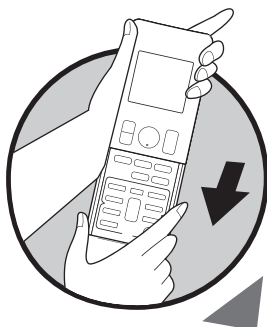
Reference

Refer to the following pages for details.

★1 POWERFUL operation

P.35

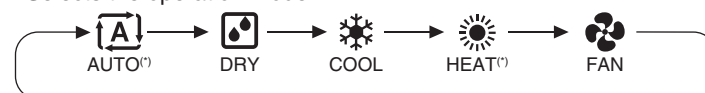
Open the Front Cover



MODE selector button

- Selects the operation mode.

*Heat pump model only



COMFORT*³ button

- Starts COMFORT AIRFLOW operation.

SENSOR button (INTELLIGENT EYE Operation*²)



OFF TIMER button (NIGHT SET mode)

- Press this button and adjust the day and time with **SELECT** button.
- Press this button again to complete TIMER setting.

TIMER CANCEL button

- Cancels the timer setting.
- It cannot be used for WEEKLY TIMER operation.

SELECT button

- Changes the clock, ON/OFF TIMER and WEEKLY TIMER settings.

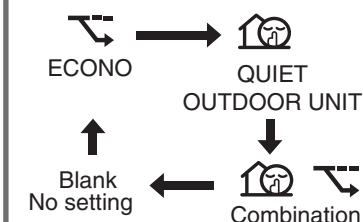
CLOCK*⁷ button

ON TIMER button

- Press this button and adjust the day and time with **SELECT** button.
- Press this button again to complete TIMER setting.

ECONO*⁴ /QUIET button

- Every time you press **ECONO/QUIET** button, the setting changes in the following order.



- QUIET OUTDOOR UNIT operation is not available in FAN and DRY operation.
- QUIET OUTDOOR UNIT operation and POWERFUL operation cannot be used at the same time. Priority is given to the function you pressed last.

SWING*⁵ buttons and MENU button

SWING button

- Adjusts the airflow direction.
- When you press **SWING** button, the flap moves up and down, or (and) the louver moves right and left. The flap (louver) stops when you press **SWING** button again.

MENU button (push 2 seconds)

- Adjusts the display brightness.

WEEKLY buttons (WEEKLY TIMER*⁶ Operation)

Weekly

: WEEKLY button

: PROGRAM button

Copy

: COPY button

Back

: BACK button

Next

: NEXT button



Reference

Refer to the following pages for details.

★2 INTELLIGENT EYE operation P.33

★3 COMFORT AIRFLOW operation P.27

★4 ECONO operation P.32

★5 Auto-swing

P.26

★6 WEEKLY TIMER operation

P.37

★7 Clock setting

P.36

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Part 6

Service Diagnosis

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1. General Problem Symptoms and Check Items

Symptom	Check Item	Measures	Reference Page
The unit does not operate.	Check the power supply.	Check if the rated voltage is supplied.	—
	Check the type of the indoor unit.	Check if the indoor unit type is compatible with the outdoor unit.	—
	Check the outdoor temperature.	Heating/cooling operations are not available when the outdoor temperature is out of the operation limit. Check the reference page for the operation limit.	137
	Diagnose with remote controller indication.	—	72
	Check the remote controller addresses.	Check if address settings for the remote controller and indoor unit are correct.	127
Operation sometimes stops.	Check the power supply.	A power failure of 2 to 10 cycles stops air conditioner operation. (Operation lamp OFF)	—
	Check the outdoor temperature.	Heating/cooling operations are not available when the outdoor temperature is out of the operation limit. Check the reference page for the operation limit.	137
	Diagnose with remote controller indication.	—	72
The unit operates but does not cool, or does not heat.	Check for wiring and piping errors in the connection between the indoor unit and outdoor unit.	—	—
	Check for thermistor detection errors.	Check if the thermistor is mounted securely.	—
	Check for faulty operation of the electronic expansion valve.	Set the unit to cooling operation, and check the temperature of the liquid pipe to see if the electronic expansion valve works.	—
	Diagnose with remote controller indication.	—	72
	Diagnose by service port pressure and operating current.	Check for refrigerant shortage.	—
Large operating noise and vibrations	Check the resistance between the terminals of the power module.	—	120
	Check the power module.	—	—
	Check the installation condition.	Check if the required spaces for installation (specified in the installation manual) are provided.	—

2. Troubleshooting with LED

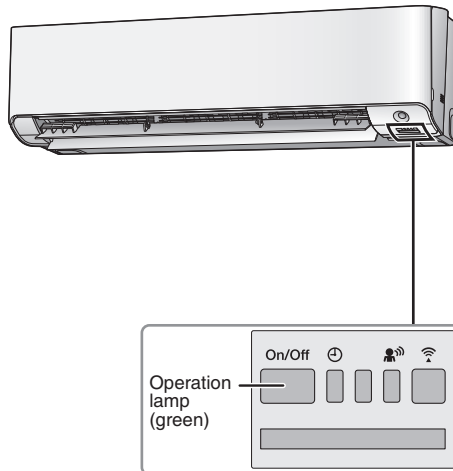
2.1 Indoor Unit

Operation Lamp

The operation lamp blinks when any of the following errors is detected.

1. When a protection device of the indoor or outdoor unit is activated, or when the thermistor malfunctions.
2. When a signal transmission error occurs between the indoor and outdoor units.

In either case, conduct the diagnostic procedure described in the following pages.



R6001402

2.2 Outdoor Unit

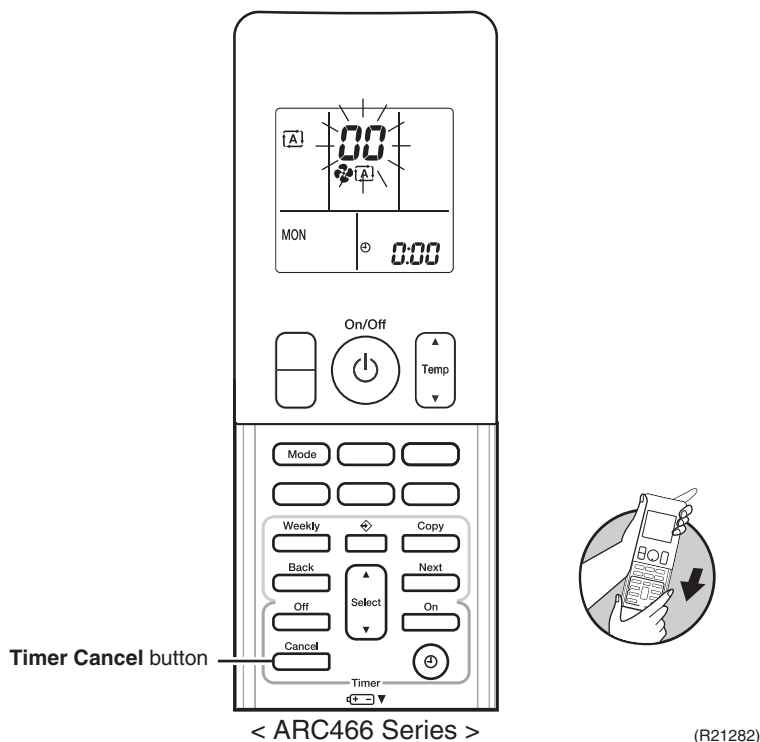
The outdoor unit has one green LED (LED A) on the PCB. When the microcomputer works in order, the LED A blinks. However, the LED A turns OFF while the standby electricity saving function is activated and the power supply is OFF.

Refer to page 22 for the location of LED A.

3. Service Diagnosis

3.1 Method 1

1. When **Timer cancel** button is held down for 5 seconds, **00** is displayed on the temperature display screen.
2. Press **Timer cancel** button repeatedly until a long beep sounds.



i Notes

1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To return to the normal mode, hold **Timer cancel** button down for 5 seconds. When the remote controller is left untouched for 60 seconds, it also returns to the normal mode.
3. Not all the error codes are displayed. When you cannot find the error code, try method 2. Refer to page 70.

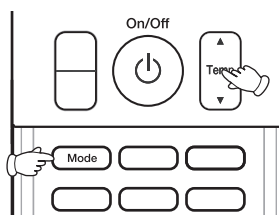
■ The code indication changes in the sequence shown below.

ARC466A92

No.	Code	No.	Code	No.	Code
1	00	17	H8	33	UH
2	A5	18	H9	34	P4
3	E7	19	C9	35	H7
4	F3	20	CC	36	U2
5	F6	21	C4	37	EA
6	L3	22	C5	38	E9
7	L4	23	CH	39	AH
8	L5	24	J3	40	FA
9	U4	25	J6	41	E8
10	E6	26	J8	42	J9
11	H6	27	E5	43	E3
12	H0	28	A1	44	H3
13	A6	29	E1	45	F8
14	U0	30	UA	46	A0
15	C7	31	U3	47	LA
16	A3	32	UF	—	—

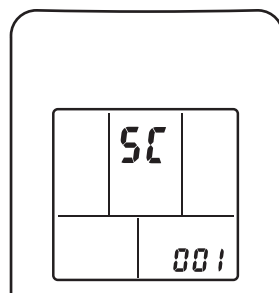
3.2 Method 2

1. Press the center of **Temp** button and **Mode** button at the same time.



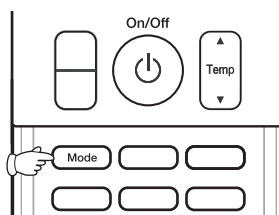
SC is displayed on the LCD.

R6000191



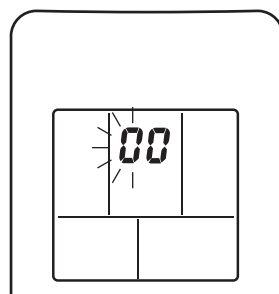
2. Select **SC** (service check) with **Temp Up** or **Temp Down** button.
3. Press **Mode** button to enter the service check mode.

R6000109



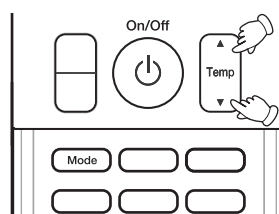
The left-side number blinks.

R6000192



4. Press **Temp Up** or **Temp Down** button and change the number until you hear the two consecutive beeps or the long beep.

R6000111

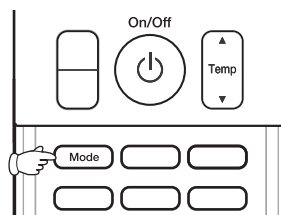


5. Diagnose by the sound.
 - Beep: The left-side number does not correspond with the error code.
 - Two consecutive beeps: The left-side number corresponds with the error code but the right-side number does not.

R6000193

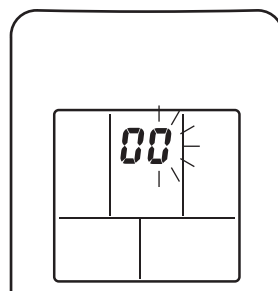
- Long beep: Both the left-side and right-side numbers correspond with the error code.
The numbers indicated when you hear the long beep are the error code.
Refer to page 72.

6. Press **Mode** button.



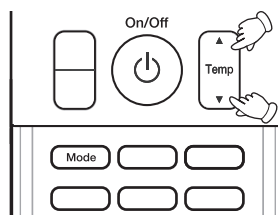
The right-side number blinks.

R6000192



7. Press **Temp Up** or **Temp Down** button and change the number until you hear the long beep.

R6000119



R6000193

8. Diagnose by the sound.

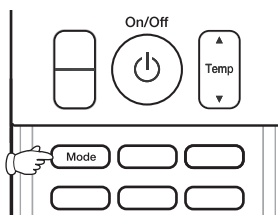
- Beep: The left-side number does not correspond with the error code.
- Two consecutive beeps: The left-side number corresponds with the error code but the right-side number does not.
- Long beep: Both the left-side and right-side numbers correspond with the error code.

9. Determine the error code.

The numbers indicated when you hear the long beep are the error code.
Refer to page 72.

10. Press **Mode** button for 5 seconds to exit from the service check mode.

When the remote controller is left untouched for 60 seconds, it returns to the normal mode also.



R6000192

4. Troubleshooting

4.1 Error Codes and Description

	Error Codes	Description	Reference Page
System	00	Normal	—
	U0★	Refrigerant shortage	—
	U2	Low-voltage detection or over-voltage detection	79
	U4	Signal transmission error (between indoor unit and outdoor unit)	81
	UA	Unspecified voltage (between indoor unit and outdoor unit)	83
Indoor Unit	A1	Indoor unit PCB abnormality	73
	A5	Freeze-up protection control, Heating peak-cut control	74
	A6	Indoor fan motor (DC motor) or related abnormality	75
	C4	Indoor heat exchanger thermistor or related abnormality	77
	C9	Room temperature sensor or related abnormality	78
	CC	Humidity sensor abnormality	78
Outdoor Unit	E1	Outdoor unit PCB abnormality	84
	E3	Actuation of high pressure switch	85
	E5★	OL activation (compressor overload)	86
	E6★	Compressor lock	88
	E7★	DC fan lock	89
	E8	Input overcurrent detection	90
	E9	Electronic expansion valve abnormality	91
	EA	Four way valve abnormality	92
	F3	Discharge pipe temperature control	94
	F6	High pressure control in cooling	95
	F8	System shutdown due to temperature abnormality in compressor	97
	H0	Compressor system sensor abnormality	98
	H3	High pressure switch system abnormality	99
	H6	Position sensor abnormality	100
	H7	Fan IPM temperature error	103
	H8	CT or related abnormality	104
	H9	Outdoor temperature thermistor or related abnormality	105
	J3★	Discharge pipe thermistor or related abnormality	105
	J6	Outdoor heat exchanger thermistor or related abnormality	105
	L3	Electrical box temperature rise	107
	LA	IGBT temperature error	111
	L4	Radiation fin temperature rise	108
	L5★	Output overcurrent detection	109
	P4	Radiation fin thermistor or related abnormality	105
	U7	Signal transmission error (on outdoor unit PCB)	112

★: Displayed only when system down occurs.

4.2 Indoor Unit PCB Abnormality

Error Code

A1

Method of Error Detection

The system checks if the circuit works properly within the microcomputer of the indoor unit.

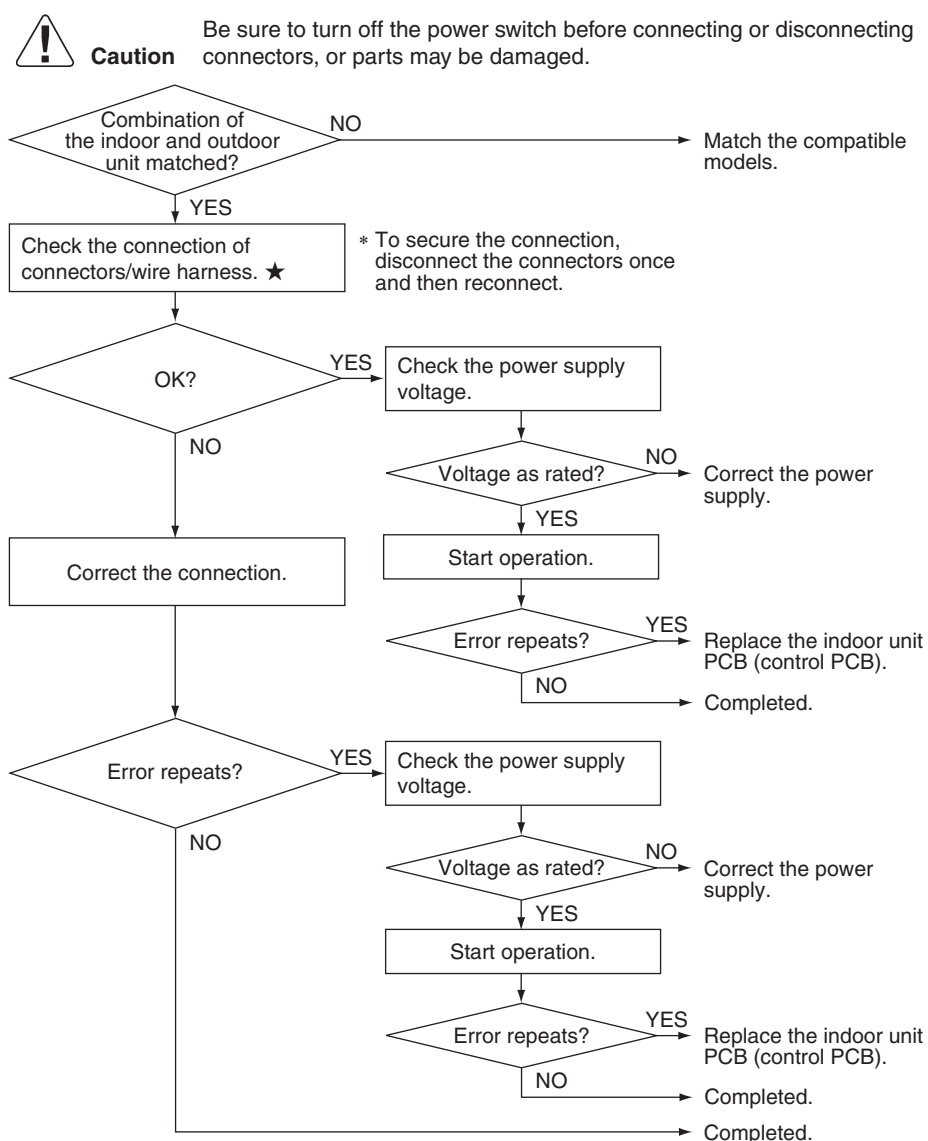
Error Decision Conditions

The system cannot set the internal settings.

Supposed Causes

- Wrong models interconnected
- Defective indoor unit PCB
- Disconnection of connector
- Reduction of power supply voltage

Troubleshooting



R6000615



Note

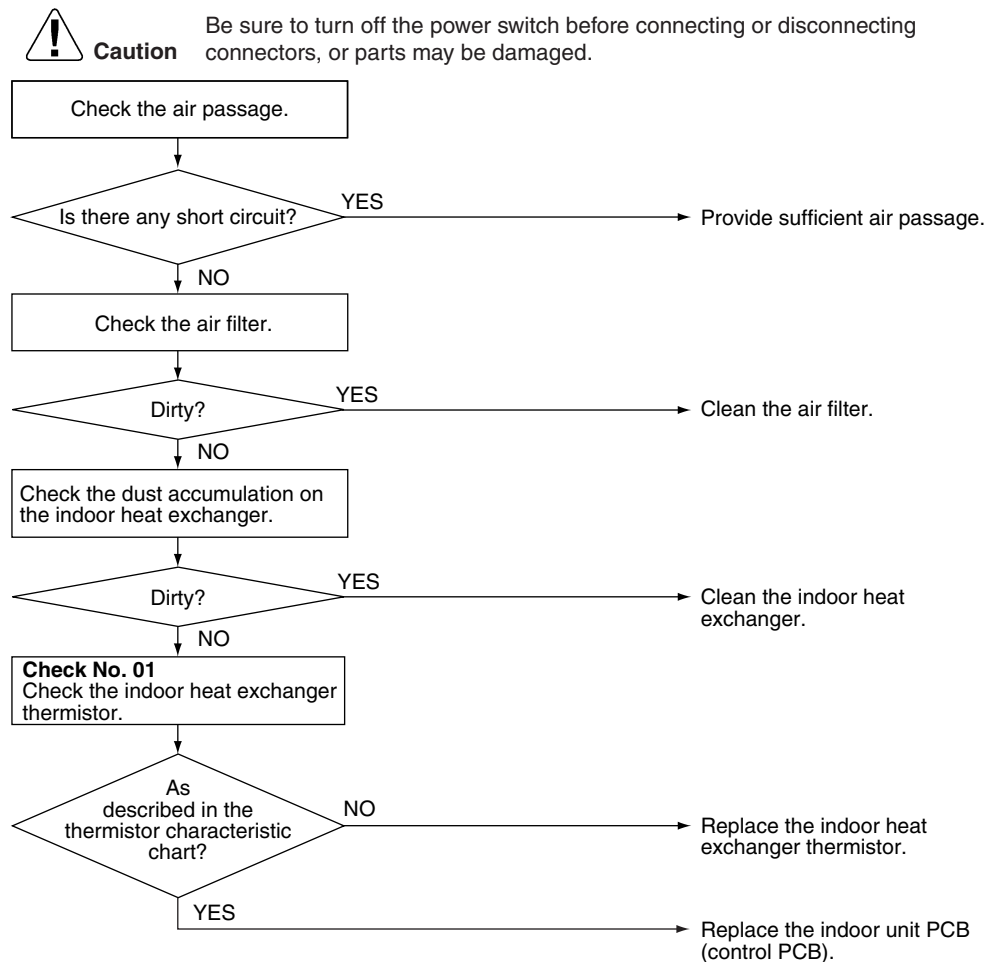
★ Wire Harness (Connector)

Terminal strip ~ Power supply PCB (X101A (S101))
 Power supply PCB (X102A (S102), X103A (S103)) ~ Control PCB (X300A (S300A), X301A (S301B))

4.3 Freeze-up Protection Control, Heating Peak-cut Control

Error Code	A5
Method of Error Detection	■ Freeze-up protection control During cooling operation, the freeze-up protection control (operation halt) is activated according to the temperature detected by the indoor heat exchanger thermistor. ■ Heating peak-cut control During heating operation, the temperature detected by the indoor heat exchanger thermistor is used for the heating peak-cut control (operation halt, outdoor fan stop, etc.)
Error Decision Conditions	■ Freeze-up protection control During cooling operation, the indoor heat exchanger temperature is below 0°C (32°F). ■ Heating peak-cut control During heating operation, the indoor heat exchanger temperature is above 59°C (138.2°F).
Supposed Causes	■ Short-circuited air ■ Clogged air filter of the indoor unit ■ Dust accumulation on the indoor heat exchanger ■ Defective indoor heat exchanger thermistor ■ Defective indoor unit PCB

Troubleshooting



(R20789)



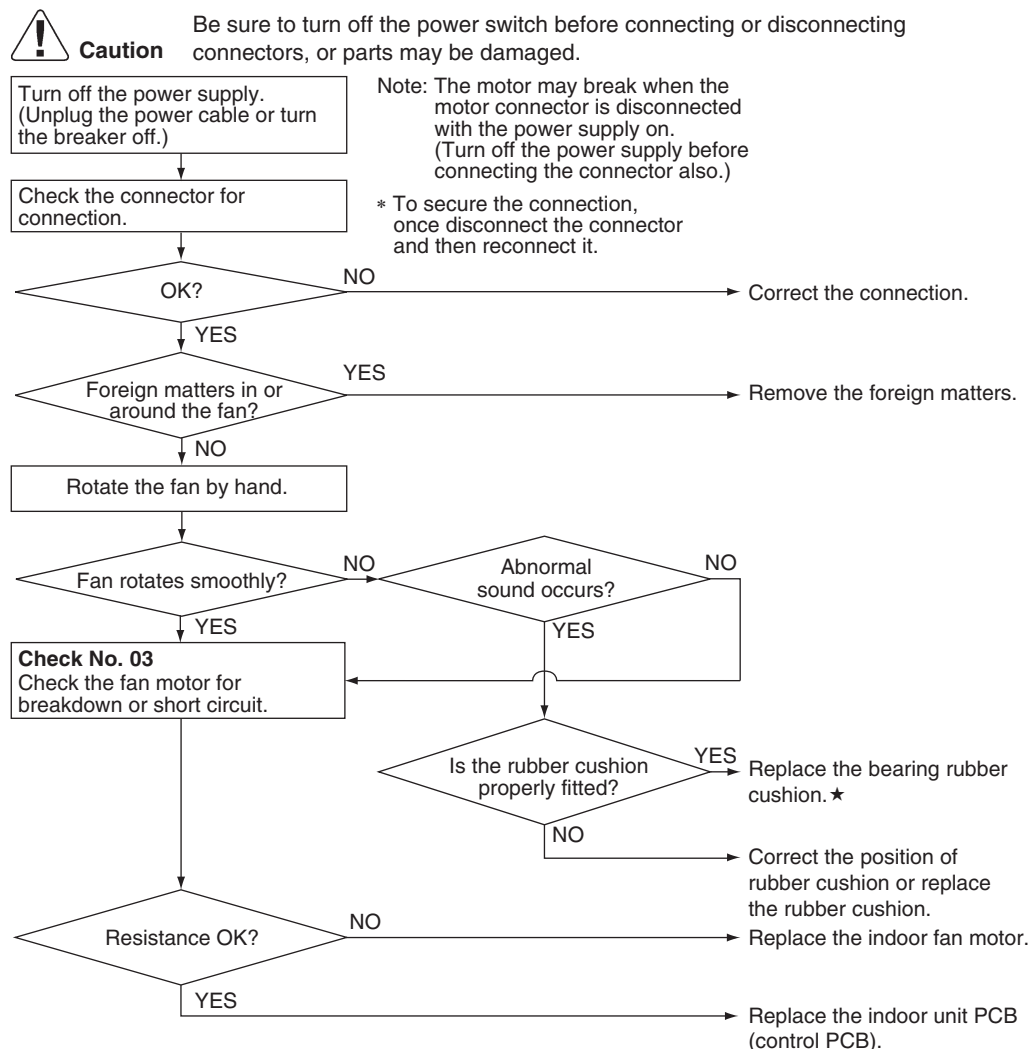
Reference

Check No.01 Refer to P.113

4.4 Indoor Fan Motor (DC Motor) or Related Abnormality

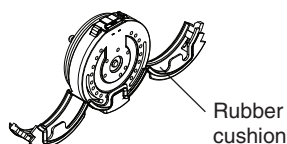
Error Code	A6
Method of Error Detection	The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor operation.
Error Decision Conditions	The detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.
Supposed Causes	■ Remarkable decrease in power supply voltage ■ Layer short inside the fan motor winding ■ Breaking of wire inside the fan motor ■ Breaking of the fan motor lead wires ■ Defective capacitor of the fan motor ■ Defective indoor unit PCB

Troubleshooting



★Rubber cushion

R6000794



R6000768

**Reference****Check No.03** Refer to P.113

4.5 Indoor Heat Exchanger Thermistor or Related Abnormality

Error Code

C4

Method of Error Detection

The temperatures detected by the thermistors determine thermistor errors.

Error Decision Conditions

The voltage between the both ends of the thermistor is either 4.96 V or more, or 0.04 V or less with the power on.

Supposed Causes

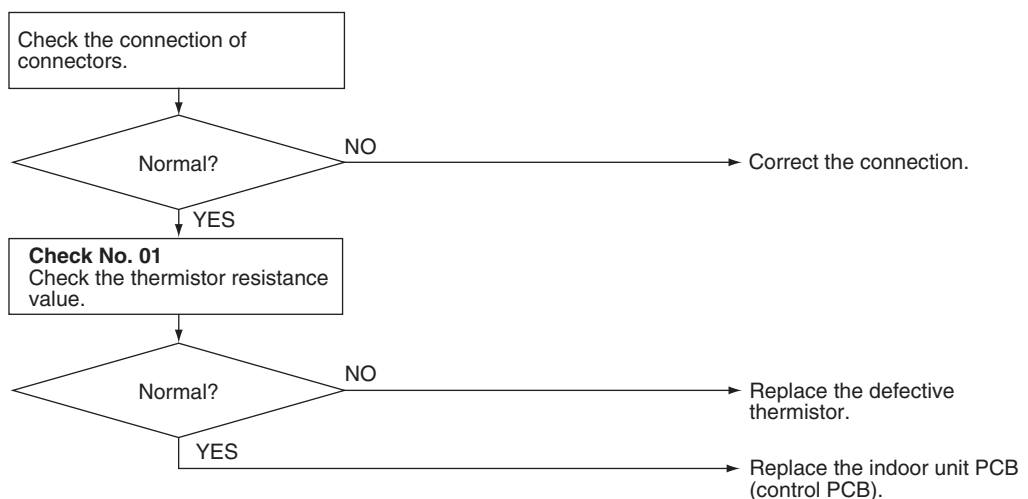
- Disconnection of connector
- Defective thermistor(s)
- Defective indoor unit PCB

Troubleshooting



Caution

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



(R21870)

C4 : Indoor heat exchanger thermistor



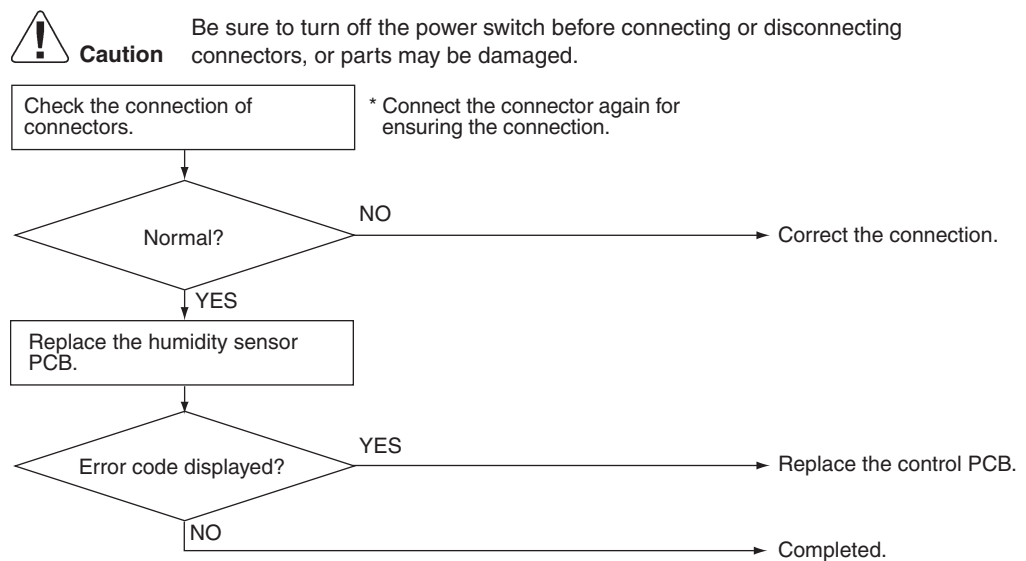
Reference

Check No.01 Refer to P.113

4.6 Room Temperature Sensor Abnormality/Humidity Sensor Abnormality

Error Code	C9, CC
Method of Error Detection	Sensor abnormality is detected by input value.
Error Decision Conditions	The input from the humidity sensor is 4.96 V and more or 0.04 V and less.
Supposed Causes	■ Disconnection of connector ■ Defective humidity sensor ■ Defective indoor unit PCB

Troubleshooting



C9 : Room temperature sensor
CC : Humidity sensor

R6000515

4.7 Low-voltage Detection or Over-voltage Detection

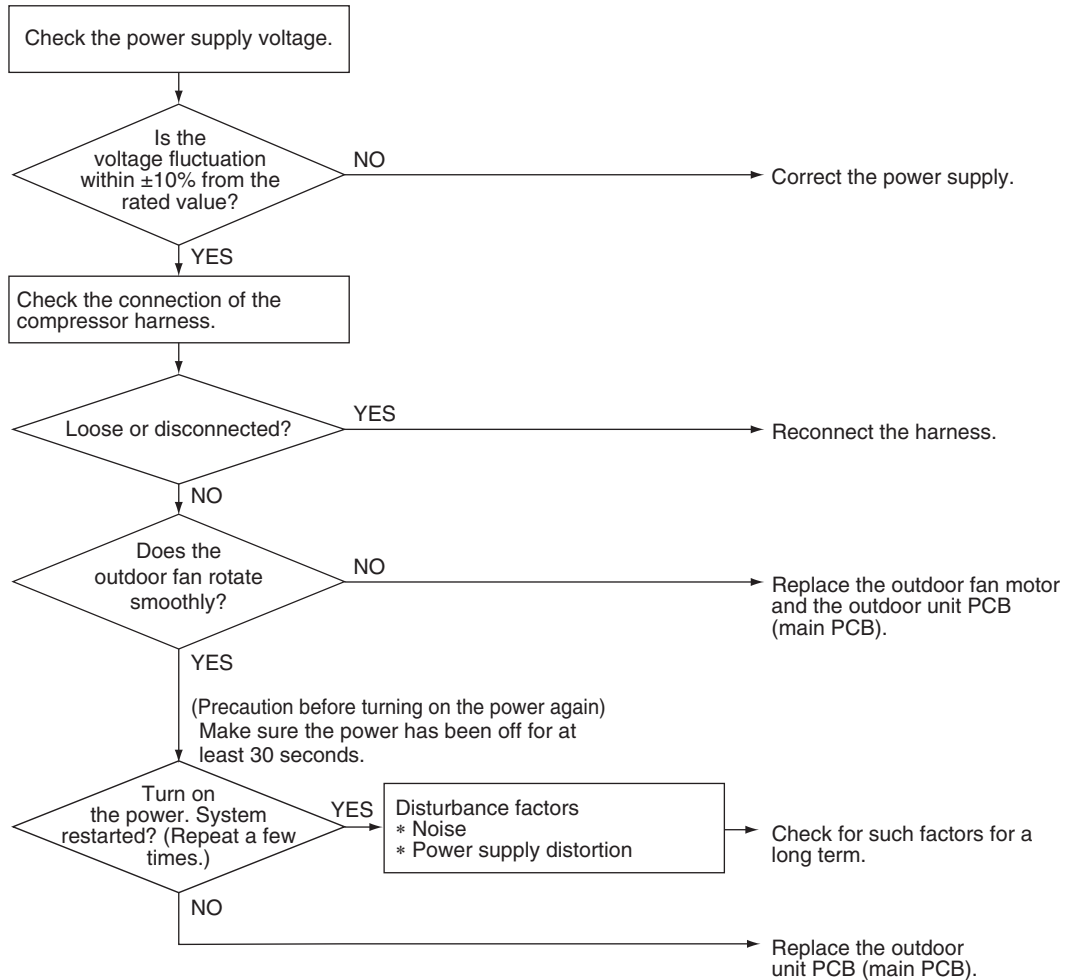
Error Code	U2
Method of Error Detection	Low-voltage detection: An abnormal voltage drop is detected by the DC voltage detection circuit. Over-voltage detection: An abnormal voltage rise is detected by the over-voltage detection circuit.
Error Decision Conditions	Low-voltage detection: ■ The voltage detected by the DC voltage detection circuit is below 170 V (depending on the model). ■ The compressor stops if the error occurs, and restarts automatically after 3-minute standby. Over-voltage detection: ■ An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer (over 458 ~ 478 V, depending on the model). ■ The compressor stops if the error occurs, and restarts automatically after 3-minute standby.
Supposed Causes	■ Power supply voltage out of specification ■ Defective DC voltage detection circuit ■ Defective over-voltage detection circuit ■ Defective PAM control part ■ Disconnection of compressor harness ■ Short circuit inside the fan motor winding ■ Noise ■ Momentary drop of voltage ■ Momentary power failure ■ Defective outdoor unit PCB

Troubleshooting



Caution

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



(R22445)

4.8 Signal Transmission Error (Between Indoor Unit and Outdoor Unit)

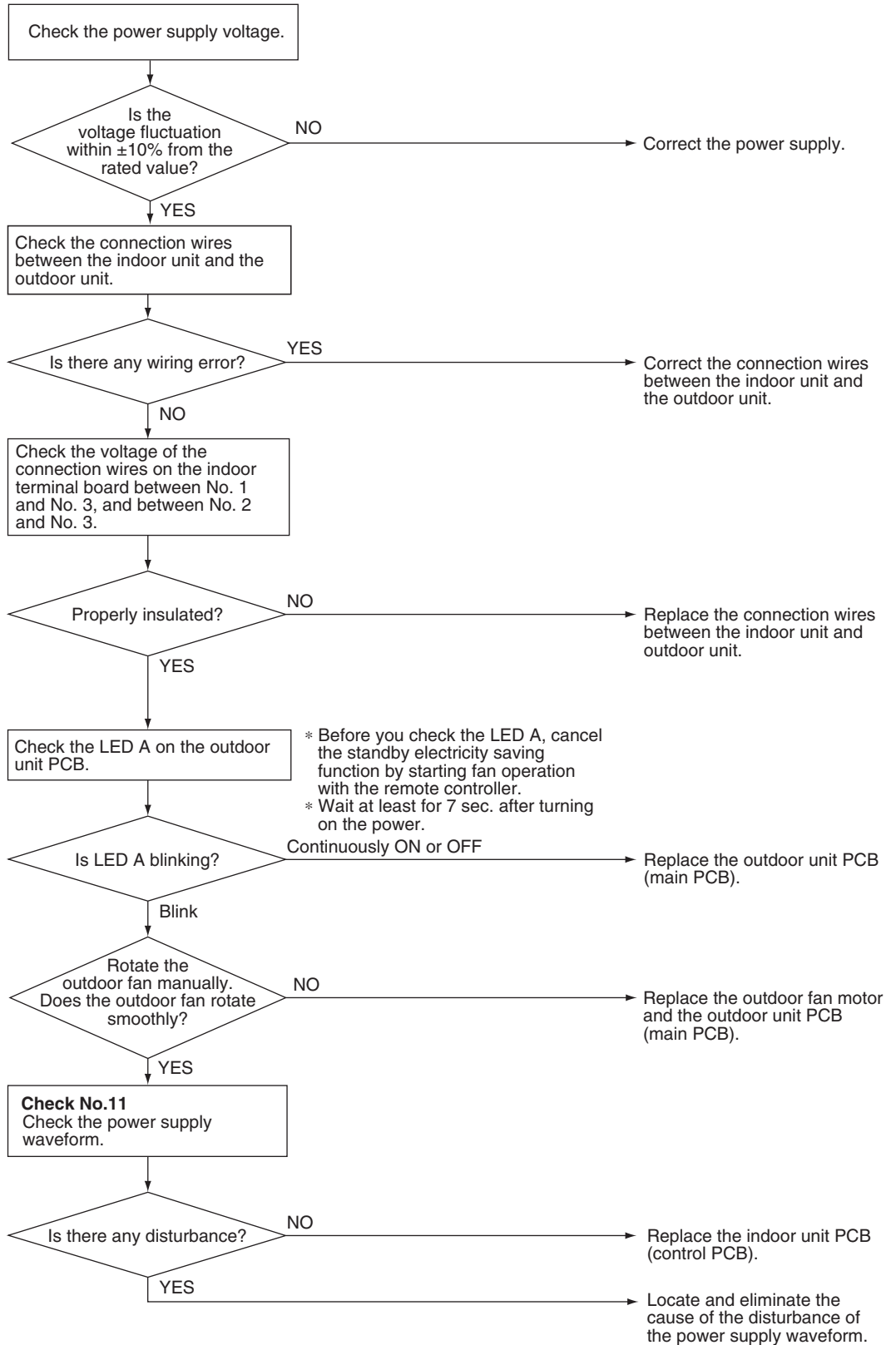
Error Code	U4
Method of Error Detection	The signal transmission data received from the outdoor unit is checked whether it is normal.
Error Decision Conditions	The data sent from the outdoor unit cannot be received normally, or the content of the data is abnormal.
Supposed Causes	■ Power supply voltage out of specification ■ Reduction of power supply voltage ■ Wiring error ■ Breaking of the connection wires between the indoor and outdoor units (wire No. 3) ■ Defective outdoor unit PCB ■ Short circuit inside the fan motor winding ■ Defective indoor unit PCB ■ Disturbed power supply waveform

Troubleshooting



Caution

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



(R23821)



Reference

Check No.11 Refer to P.114

4.9 Unspecified Voltage (Between Indoor Unit and Outdoor Unit)

Error Code

UA

Method of Error Detection

The supply power is detected for its requirements (pair type is different from multi type) by the indoor/outdoor transmission signal.

Error Decision Conditions

The pair type and multi type are interconnected.

Supposed Causes

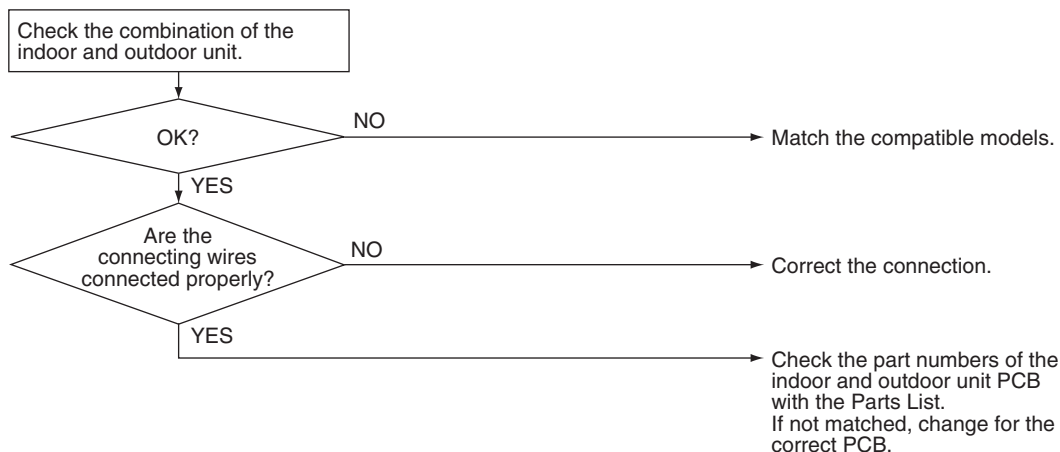
- Wrong models interconnected
- Wrong wiring of connecting wires
- Wrong indoor unit PCB or outdoor unit PCB mounted
- Defective indoor unit PCB
- Defective outdoor unit PCB

Troubleshooting



Caution

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

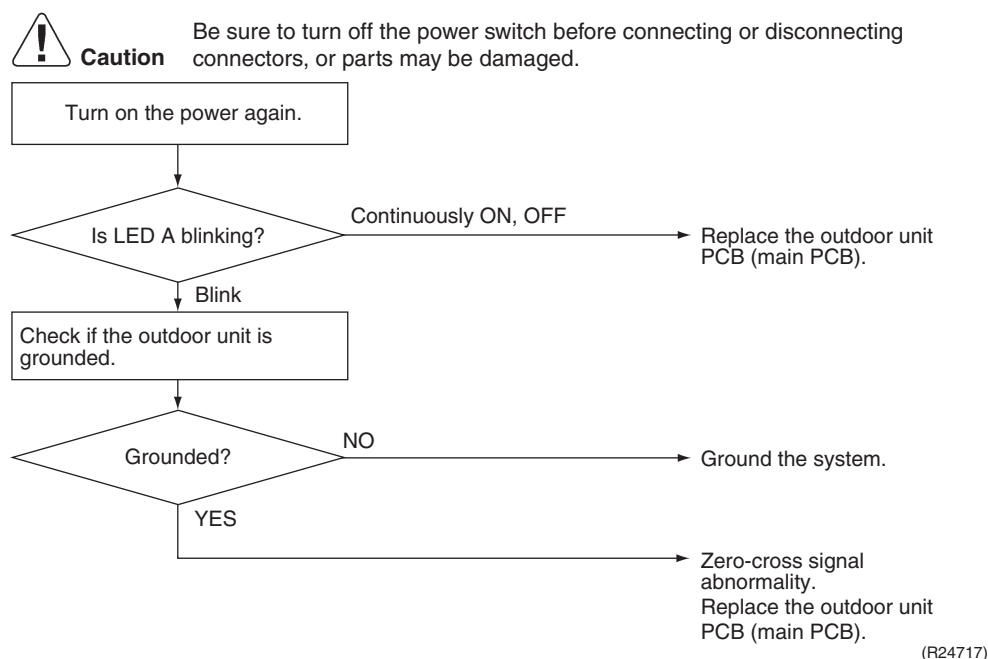


(R23289)

4.10 Outdoor Unit PCB Abnormality

Error Code	E1
Method of Error Detection	■ The system checks if the microprocessor is working in order. ■ The system checks if the zero-cross signal comes in properly.
Error Decision Conditions	■ The microprocessor program runs out of control. ■ The zero-cross signal is not detected.
Supposed Causes	■ Defective outdoor unit PCB ■ Defective electronic expansion valve driver ■ Defective IGBT temperature detection thermistor circuit ■ Defective Fan IPM temperature detection thermistor circuit ■ Noise ■ Momentary drop of voltage ■ Momentary power failure

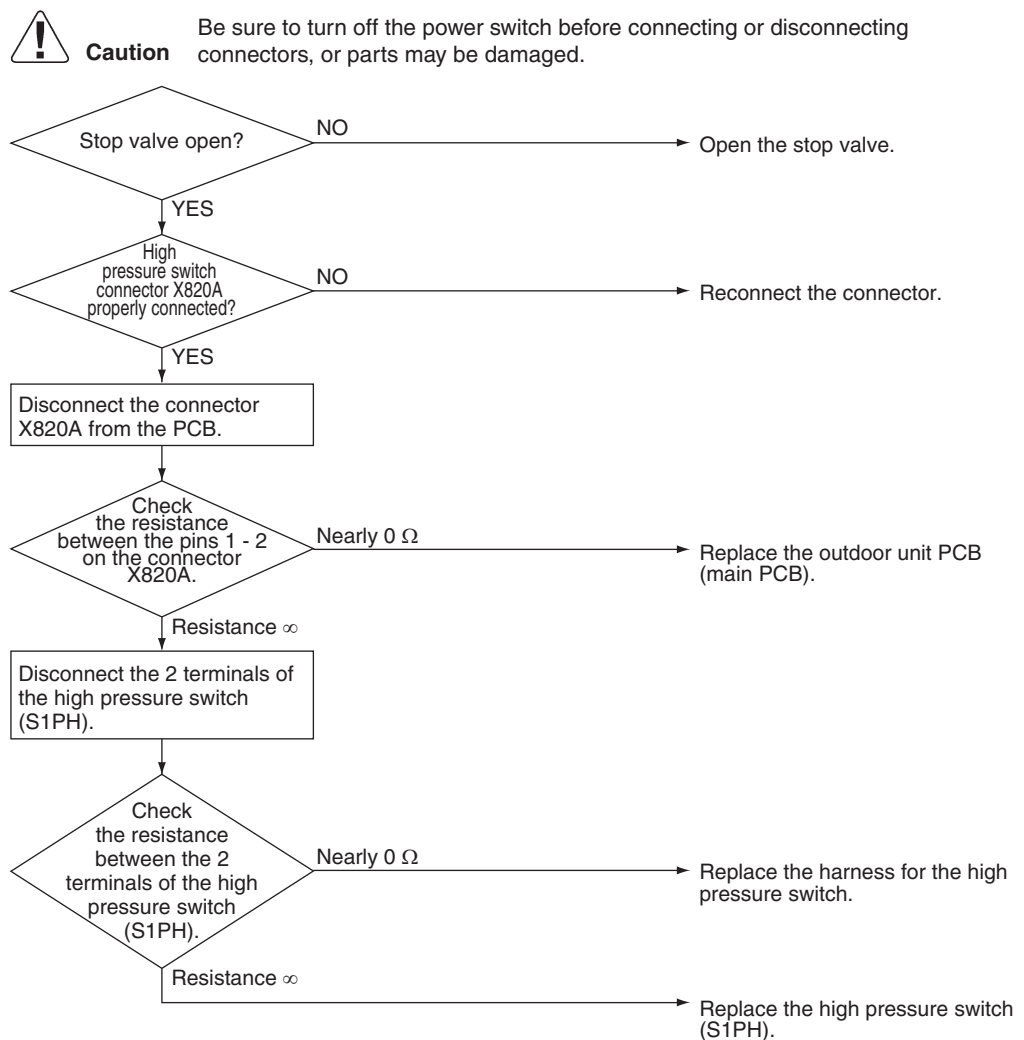
Troubleshooting



4.11 Actuation of High Pressure Switch

Error Code	E3
Method of Error Detection	Abnormality is detected when the contact of the high pressure switch opens.
Error Decision Conditions	■ High pressure switch (S1PH) activating pressure: 4.15 MPa (602 psi) ■ High pressure switch (S1PH) recovery pressure: 3.2 MPa (464 psi)
Supposed Causes	■ Actuation of high pressure switch (S1PH) ■ Closed stop valve ■ Disconnection of connector X820A ■ Disconnection of 2 terminals of high pressure switch (S1PH) ■ Defective outdoor unit PCB ■ Broken S1PH harness ■ Defective high pressure switch (S1PH)

Troubleshooting



R6001401

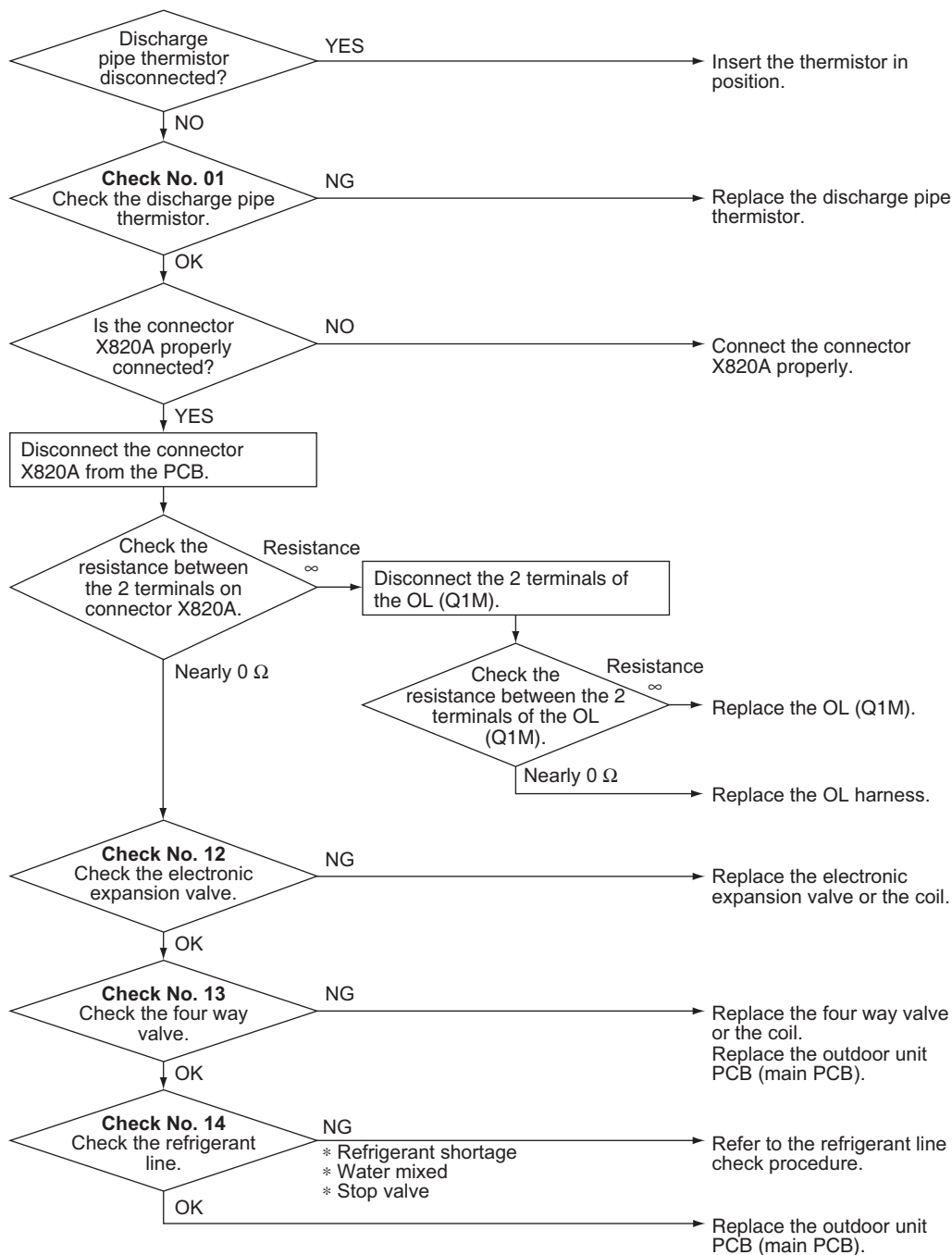
4.12 OL Activation (Compressor Overload)

Error Code	E5
Method of Error Detection	A compressor overload is detected through compressor OL.
Error Decision Conditions	■ If the error repeats, the system is shut down. ■ Reset condition: Continuous run for about 60 minutes without any other error
Supposed Causes	■ Disconnection of discharge pipe thermistor ■ Defective discharge pipe thermistor ■ Disconnection of connector X820A ■ Disconnection of 2 terminals of OL (Q1M) ■ Defective OL (Q1M) ■ Broken OL harness ■ Defective electronic expansion valve or coil ■ Defective four way valve or coil (Heat pump model only) ■ Defective outdoor unit PCB ■ Refrigerant shortage ■ Water mixed in refrigerant ■ Defective stop valve

Troubleshooting

**Caution**

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



R6000950

**Notes**

OL (Q1M) activating temperature: 120 ~ 130°C (248 ~ 266°F)
 OL (Q1M) activating temperature: 110°C (230°F)

**Reference**

Check No.01 Refer to P.113

**Reference**

Check No.12 Refer to P.114

**Reference**

Check No.13 Refer to P.115

**Reference**

Check No.14 Refer to P.116

4.13 Compressor Lock

Error Code

E6

Method of Error Detection

A compressor lock is detected by the current waveform generated when applying high-frequency voltage to the motor.

Error Decision Conditions

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error

Supposed Causes

- Closed stop valve
- Compressor locked
- Disconnection of compressor harness
- Defective electronic expansion valve

Troubleshooting

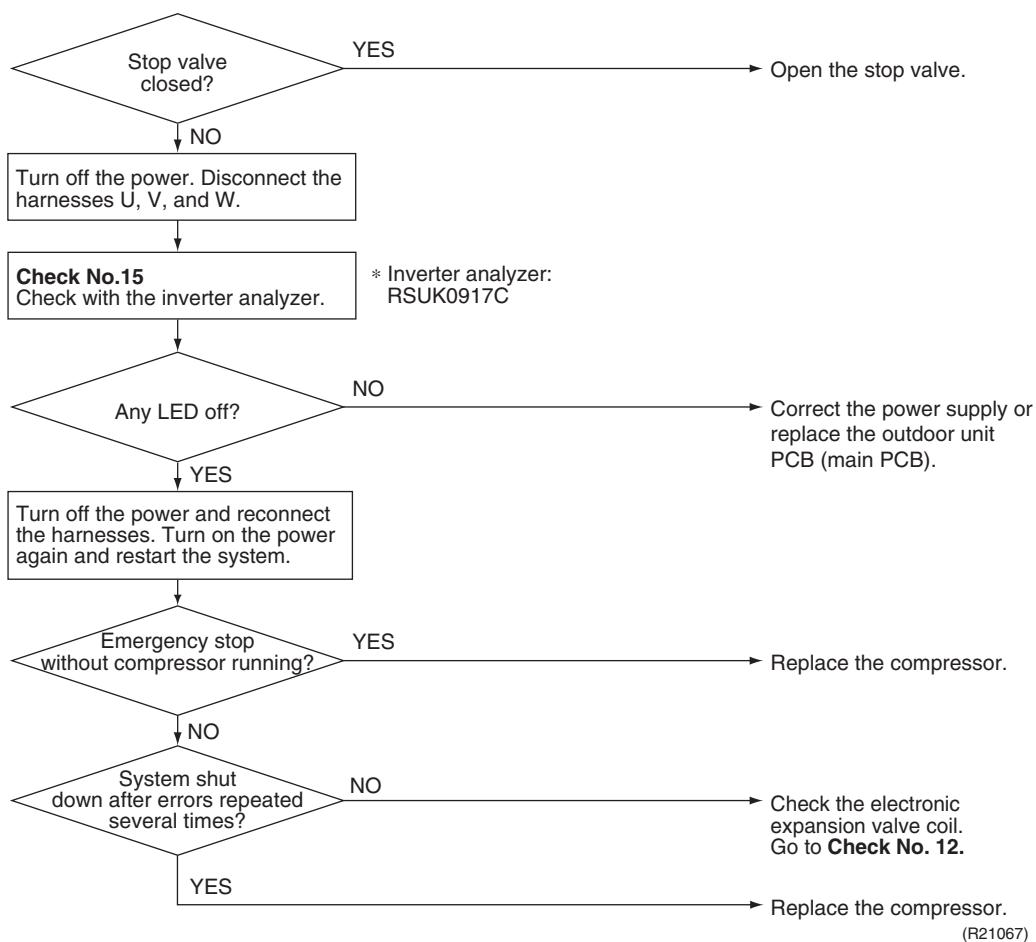


Caution

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

(Precaution before turning on the power again)

Make sure the power has been off for at least 30 seconds.



(R21067)



Reference

Check No.12 Refer to P.114



Reference

Check No.15 Refer to P.116

4.14 DC Fan Lock

Error Code

E7

Method of Error Detection

An error is determined with the high-voltage fan motor rotation speed detected by the Hall IC.

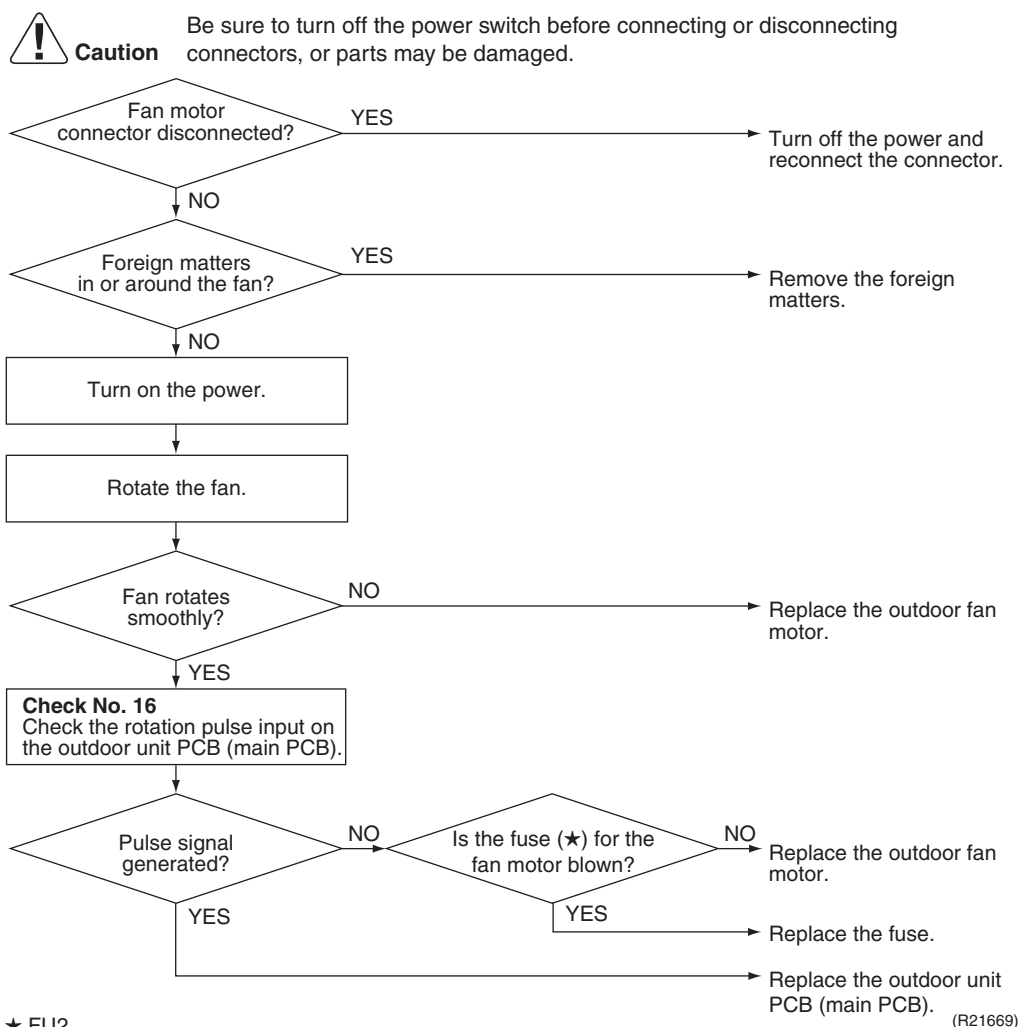
Error Decision Conditions

- The fan does not start in 15 ~ 30 seconds even when the fan motor is running.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes without any other error

Supposed Causes

- Disconnection of the fan motor
- Foreign matter stuck in the fan
- Defective fan motor
- Defective outdoor unit PCB

Troubleshooting



Reference

Check No.16 Refer to P.117

4.15 Input Overcurrent Detection

Error Code

E8

Method of Error Detection

An input overcurrent is detected by checking the input current value with the compressor running.

Error Decision Conditions

The current exceeds about 20 A for 2.5 seconds with the compressor running.
The upper limit of the current decreases when the outdoor temperature exceeds a certain level.

Supposed Causes

- Outdoor temperature is out of operation range.
- Defective compressor
- Defective power module
- Defective outdoor unit PCB
- Short circuit

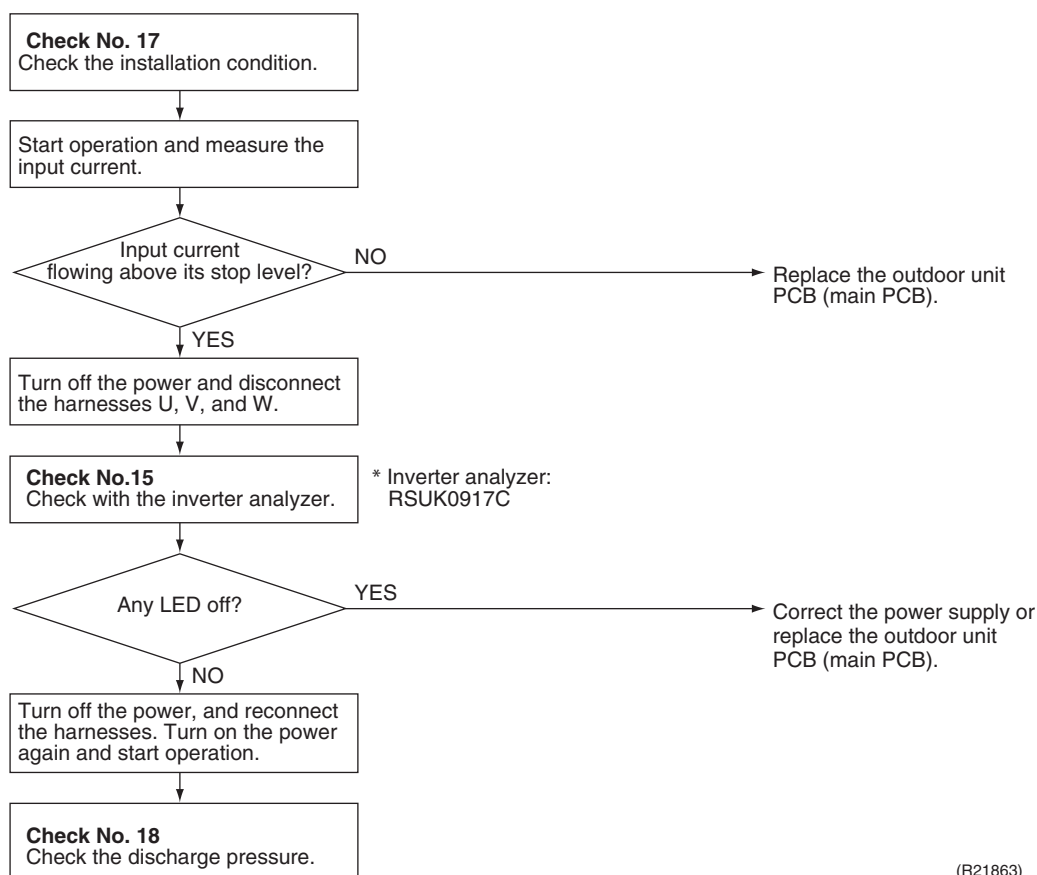
Troubleshooting



Caution

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

* An input overcurrent may result from wrong internal wiring. If the system is interrupted by an input overcurrent after the wires have been disconnected and reconnected for part replacement, check the wiring again.



(R21863)



Reference

Check No.15 Refer to P.116


Reference

Check No.17 Refer to P.118

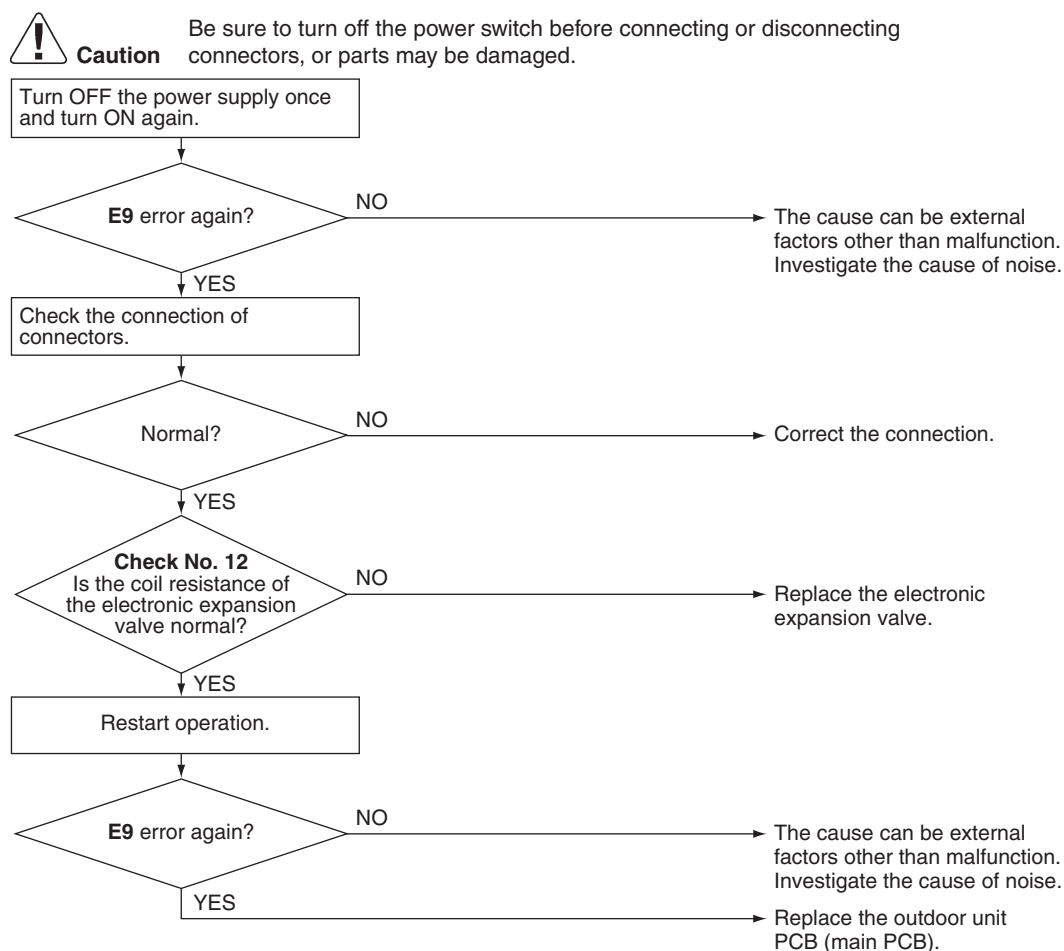

Reference

Check No.18 Refer to P.118

4.16 Electronic Expansion Valve Coil Abnormality

Error Code	E9
Method of Error Detection	Detect errors based on check of continuity of the electronic expansion valve.
Error Decision Conditions	■ High input voltage from electronic expansion valve to the microcomputer due to overcurrent. ■ Low input voltage from electronic expansion valve to the microcomputer due to disconnected connectors.
Supposed Causes	■ Defective electronic expansion coil ■ Broken harness of electronic expansion coil ■ Defective connection of electronic expansion coil connector ■ Defective outdoor unit main PCB

Troubleshooting



R6001235



Reference

Check No.12 Refer to P.114

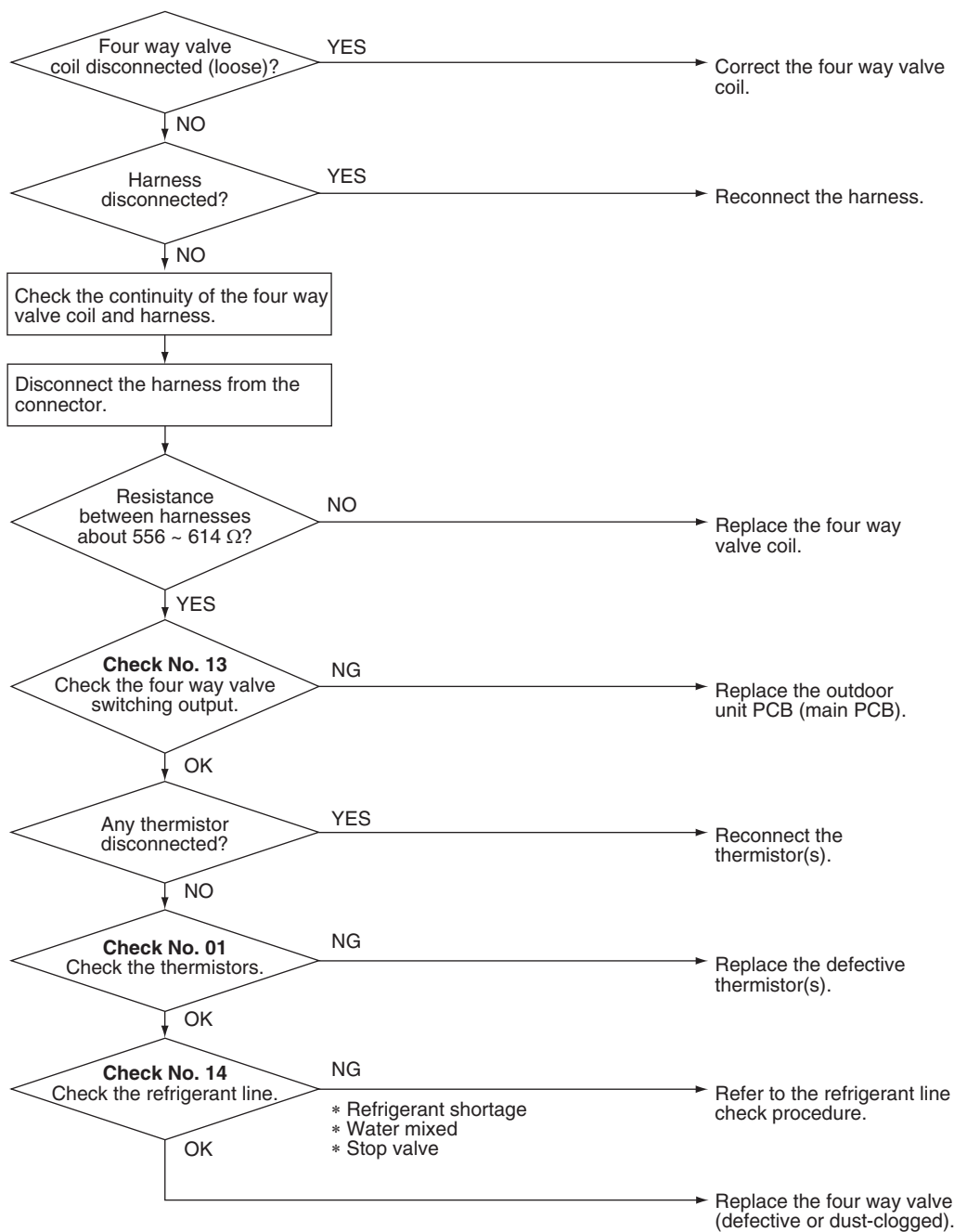
4.17 Four Way Valve Abnormality

Applicable Models	RXV30/36AVJU9						
Error Code	EA						
Method of Error Detection	The room temperature thermistor and the indoor heat exchanger thermistor are checked if they function within their normal ranges in each operation mode.						
Error Decision Conditions	The following condition continues over C seconds after operating for 5 minutes. ■ Cooling/Dry $A - B < -5^{\circ}\text{C}$ ($A - B < -9^{\circ}\text{F}$) ■ Heating $B - A < -5^{\circ}\text{C}$ ($B - A < -9^{\circ}\text{F}$) A: Room thermistor temperature B: Indoor heat exchanger temperature <table border="1"> <thead> <tr> <th>Outdoor temperature</th><th>C (seconds)</th></tr> </thead> <tbody> <tr> <td>-15°C (5°F) or higher</td><td>300</td></tr> <tr> <td>Lower than -15°C (5°F)</td><td>1400</td></tr> </tbody> </table> ■ If the error repeats, the system is shut down. ■ Reset condition: Continuous run for about 60 minutes without any other error	Outdoor temperature	C (seconds)	-15°C (5°F) or higher	300	Lower than -15°C (5°F)	1400
Outdoor temperature	C (seconds)						
-15°C (5°F) or higher	300						
Lower than -15°C (5°F)	1400						
Supposed Causes	■ Disconnection of four way valve coil ■ Defective four way valve, coil, or harness ■ Defective outdoor unit PCB ■ Defective thermistor(s) ■ Refrigerant shortage ■ Water mixed in refrigerant ■ Defective stop valve						

Troubleshooting

**Caution**

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



R6001164



Reference

Check No.01 Refer to P.113

Reference

Check No.13 Refer to P.115

Reference

Check No.14 Refer to P.116

4.18 Discharge Pipe Temperature Control

Error Code

F3

Method of Error Detection

An error is determined with the temperature detected by the discharge pipe thermistor.

Error Decision Conditions

- If the temperature detected by the discharge pipe thermistor rises above **A**, the compressor stops.
- The error is cleared when the discharge pipe temperature has dropped below **B**.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

A		B	
°C	°F	°C	°F
118	244.4	85	185

★ If the compressor speed drops, the temperature is lowered in compensation.

Supposed Causes

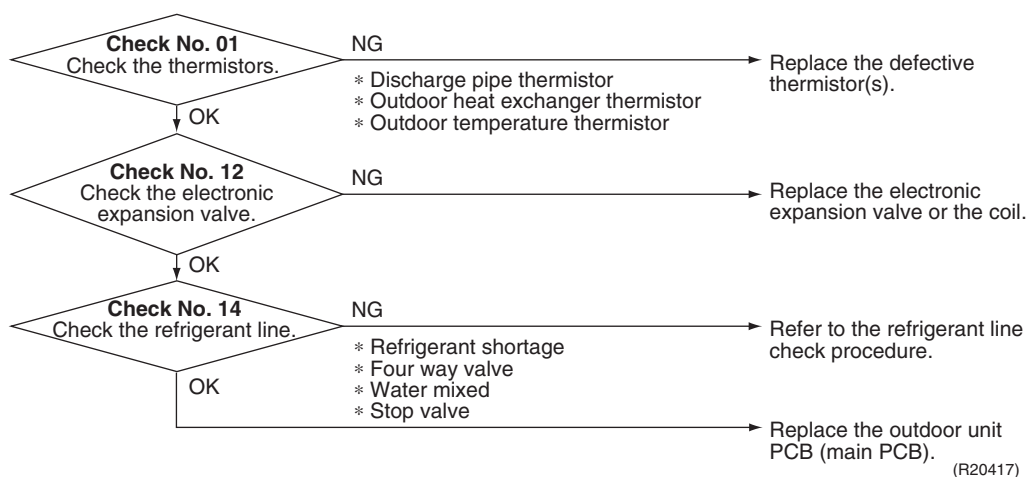
- Defective discharge pipe thermistor
(Defective outdoor heat exchanger thermistor or outdoor temperature thermistor)
- Defective electronic expansion valve or coil
- Refrigerant shortage
- Defective four way valve (Heat pump model only)
- Water mixed in refrigerant
- Defective stop valve
- Defective outdoor unit PCB

Troubleshooting



Caution

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



Reference

Check No.01 Refer to P.113



Reference

Check No.12 Refer to P.114



Reference

Check No.14 Refer to P.116

4.19 High Pressure Control in Cooling

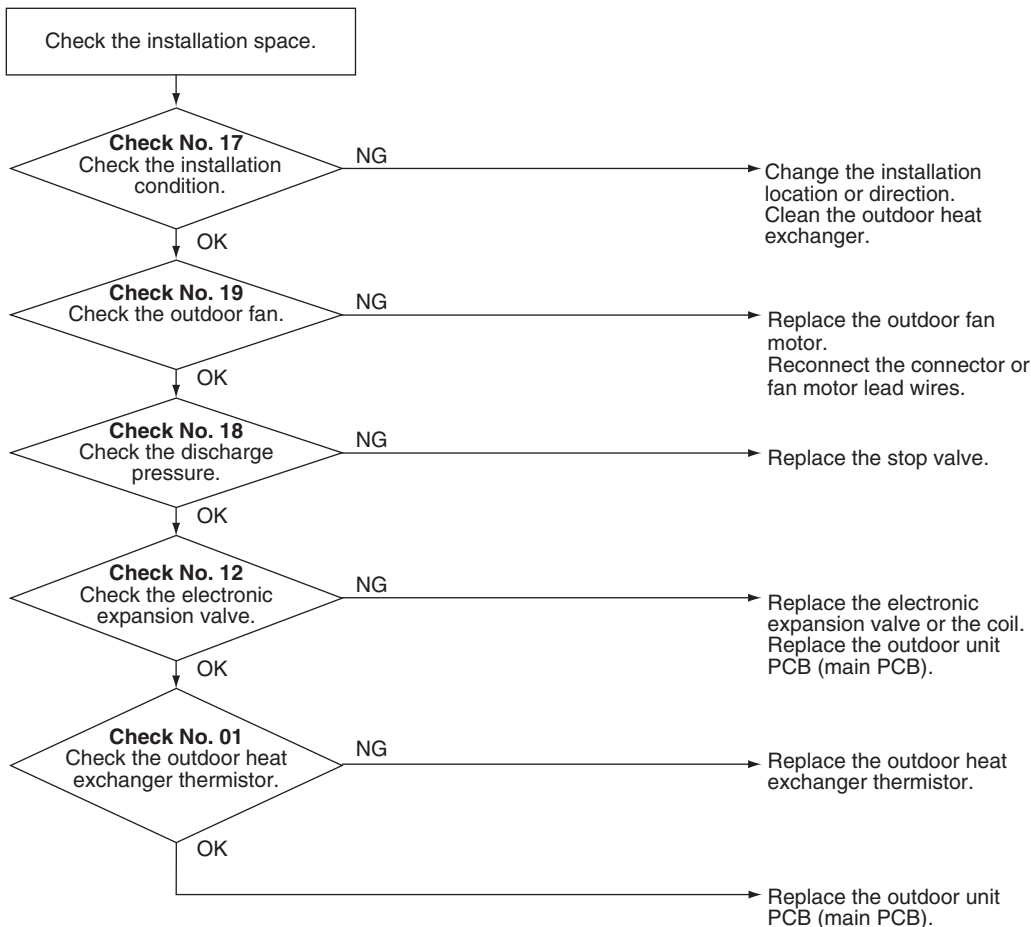
Error Code	F6
Method of Error Detection	High-pressure control (operation halt, compressor speed drop, etc.) is activated in cooling operation if the temperature sensed by the outdoor heat exchanger thermistor exceeds the limit.
Error Decision Conditions	■ The temperature sensed by the outdoor heat exchanger thermistor rises above 60 ~ 62°C (140 ~ 143.6°F) (depending on the model). ■ The error is cleared when the temperature drops below 48.5 ~ 52°C (119.3 ~ 125.6°F) (depending on the model).
Supposed Causes	■ Installation space not large enough ■ Dirty outdoor heat exchanger ■ Defective outdoor fan motor ■ Defective stop valve ■ Defective electronic expansion valve or coil ■ Defective outdoor heat exchanger thermistor ■ Defective outdoor unit PCB

Troubleshooting



Caution

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



(R20418)



Reference

Check No.01 Refer to P.113



Reference

Check No.12 Refer to P.114



Reference

Check No.17 Refer to P.118



Reference

Check No.18 Refer to P.118



Reference

Check No.19 Refer to P.119

4.20 System Shutdown due to Temperature Abnormality in the Compressor

Error Code

F8

Method of Error Detection

Operation is halted when the temperature detected by the discharge pipe thermistor exceeds the determined limit.

Error Decision Conditions

Temperature exceeds the detection threshold of 127.5°C (261.5°F) during forced cooling operation.

Supposed Causes

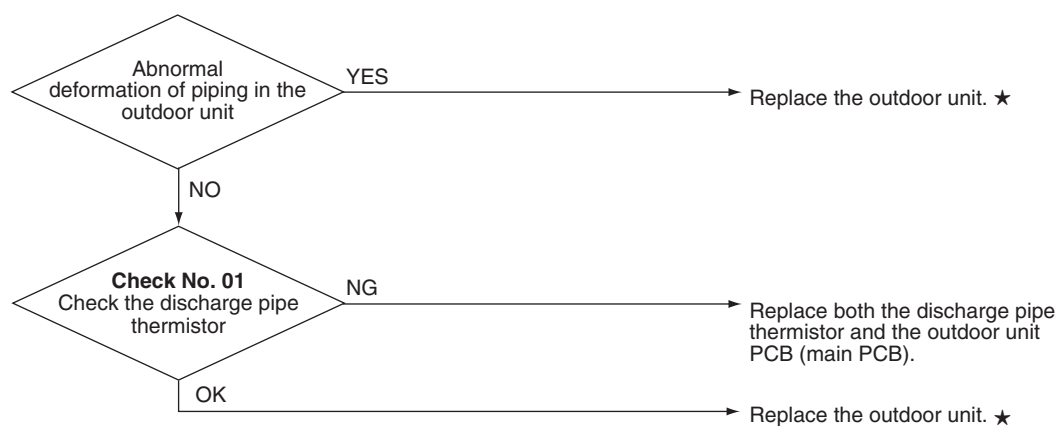
- Abnormal operation due to air intrusion
- Defective discharge pipe thermistor

Troubleshooting



Caution

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



★ Replace the unit as directed in the installation manual, making sure that air does not intrude into the refrigerant piping.

(R23655)



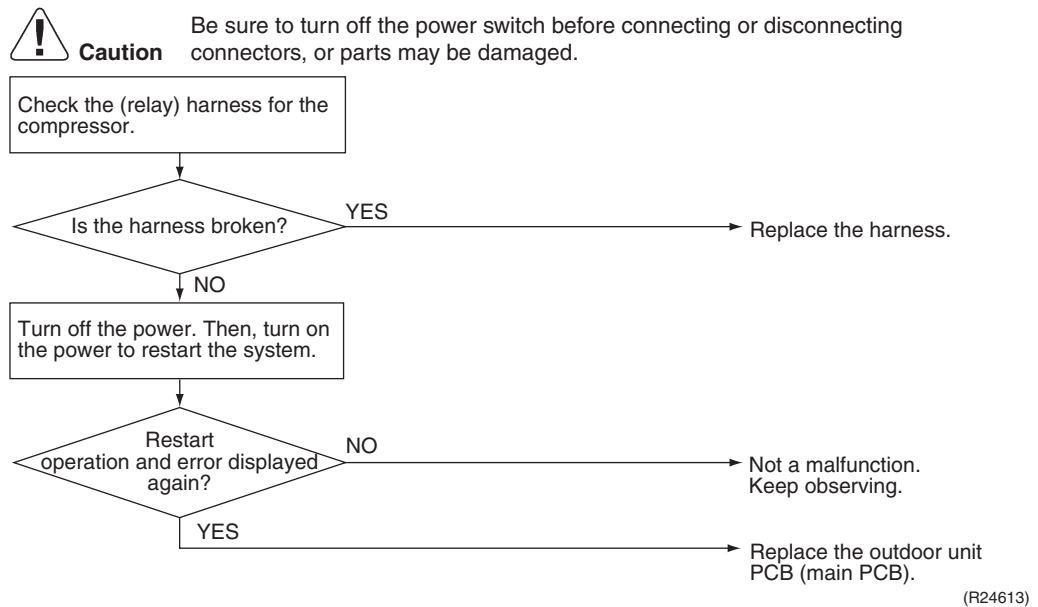
Reference

Check No.01 Refer to P.113

4.21 Compressor Sensor System Abnormality

Error Code	H0
Method of Error Detection	The system checks the DC current before the compressor starts.
Error Decision Conditions	■ The voltage converted from the DC current before compressor start-up is out of the range 0.5 ~ 4.5 V. ■ The DC voltage before compressor start-up is below 50 V.
Supposed Causes	■ Broken or disconnected harness ■ Defective outdoor unit PCB

Troubleshooting



4.22 High Pressure Switch System Abnormality

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

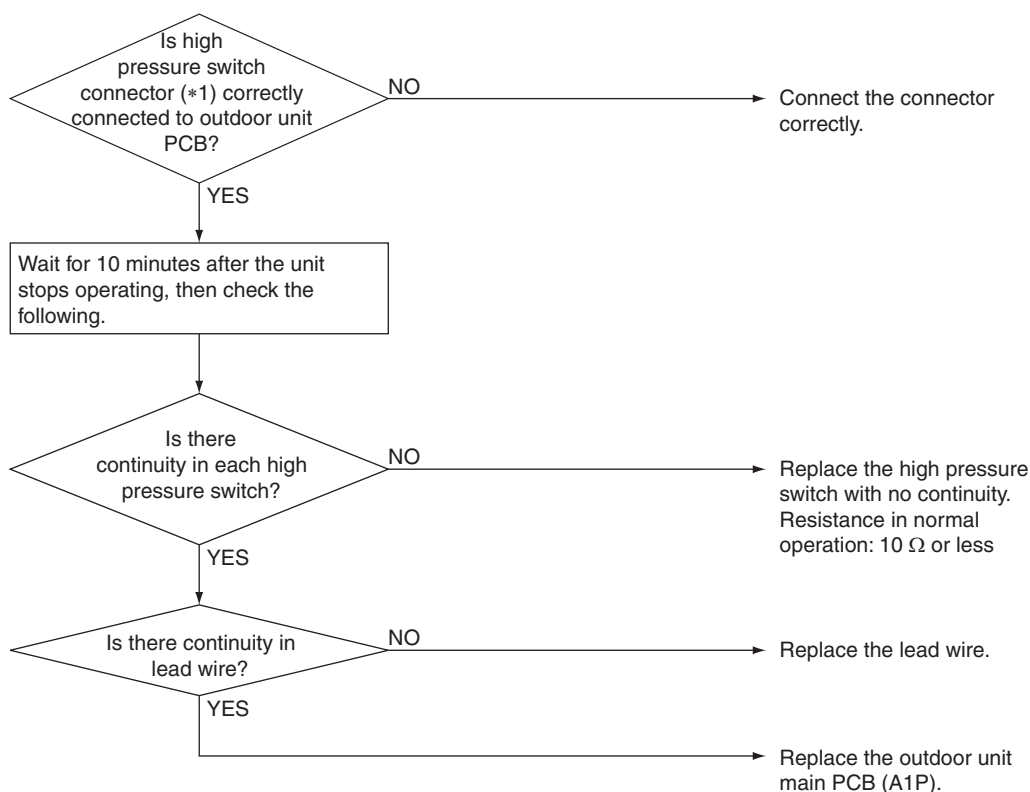
- Defective high pressure switch
- Defective connection of high pressure switch connector
- Defective outdoor unit main PCB
- Disconnected lead wire

Troubleshooting



Caution

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



R6001112



Note(s)

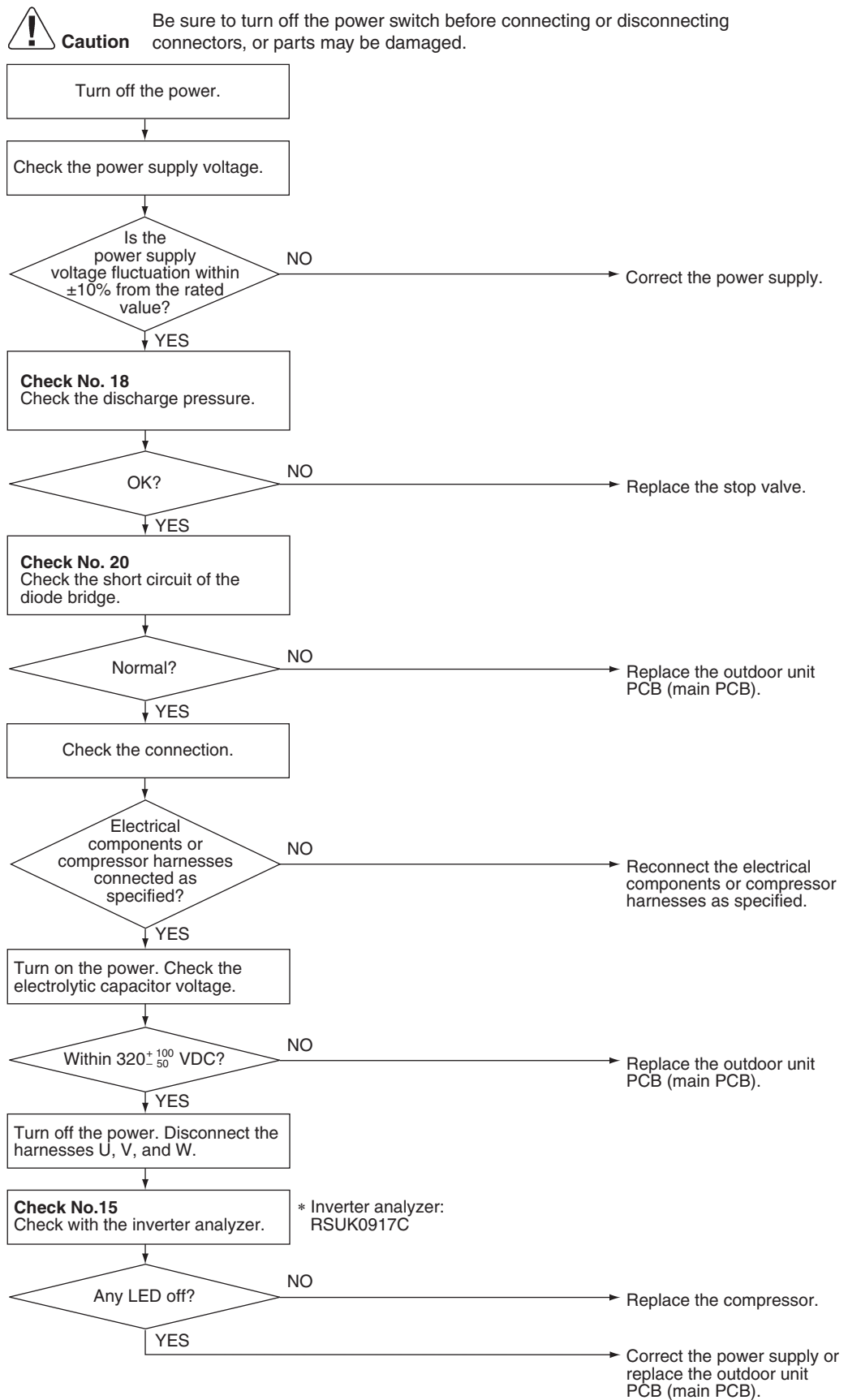
*1. Connector and high pressure switch

High pressure switch	Connector for high pressure switch	Activation pressure
S1PH	X820A	4.15 MPa (602 psi)

4.23 Position Sensor Abnormality

Error Code	H6
Method of Error Detection	A compressor start-up failure is detected by checking the compressor running condition through the position detection circuit.
Error Decision Conditions	■ If the error repeats, the system is shut down. ■ Reset condition: Continuous run for about 11 minutes without any other error
Supposed Causes	■ Power supply voltage out of specification ■ Disconnection of the compressor harness ■ Defective compressor ■ Defective outdoor unit PCB ■ Start-up failure caused by the closed stop valve ■ Input voltage outside the specified range

Troubleshooting



(R22764)



Reference Check No.15 Refer to P.116



Reference Check No.18 Refer to P.118

**Reference****Check No.20** Refer to P.119

4.24 Fan IPM temperature error

Error Code

H7

Method of Error Detection

A radiation fin temperature rise is detected by checking the radiation fin temperature with the compressor on.

Error Decision Conditions

- The radiation fin temperature with the compressor on is above **A**.
- The error is cleared when the temperature drops below **B**.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

	°C	°F
A	100	212
B	90	194

Supposed Causes

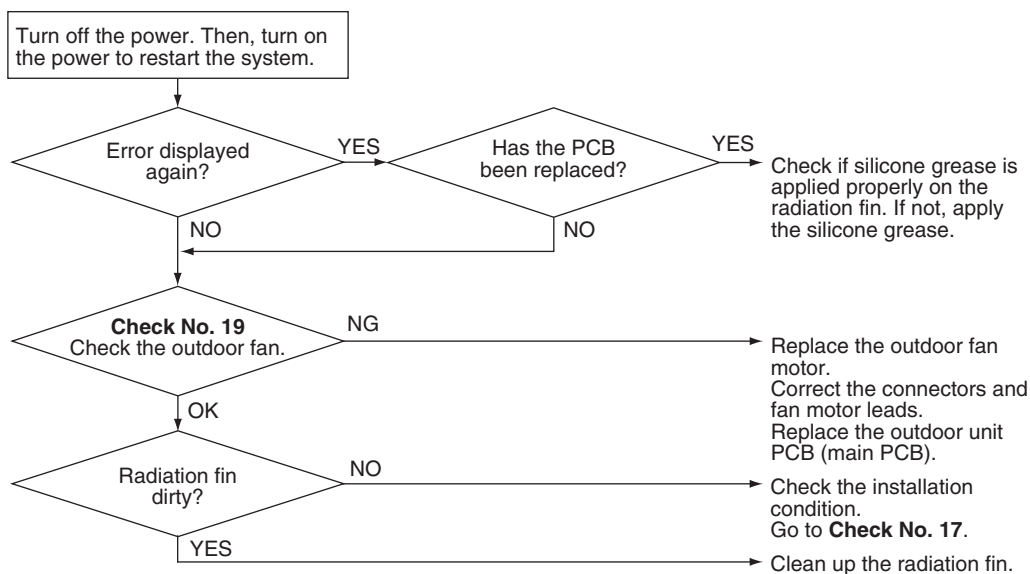
- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB
- Silicone grease not applied properly on the radiation fin after replacing the outdoor unit PCB

Troubleshooting



Caution

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



R6001182



Reference

Check No.17 Refer to P.118



Reference

Check No.19 Refer to P.119

4.25 DC Voltage/Current Sensor Abnormality

Error Code	H8
Method of Error Detection	DC voltage or DC current sensor abnormality is identified based on the compressor running speed and the input current.
Error Decision Conditions	■ If the error repeats, the system is shut down. ■ Reset condition: Continuous run for about 60 minutes without any other error
Supposed Causes	■ Defective outdoor unit PCB
Troubleshooting	

**Caution**

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

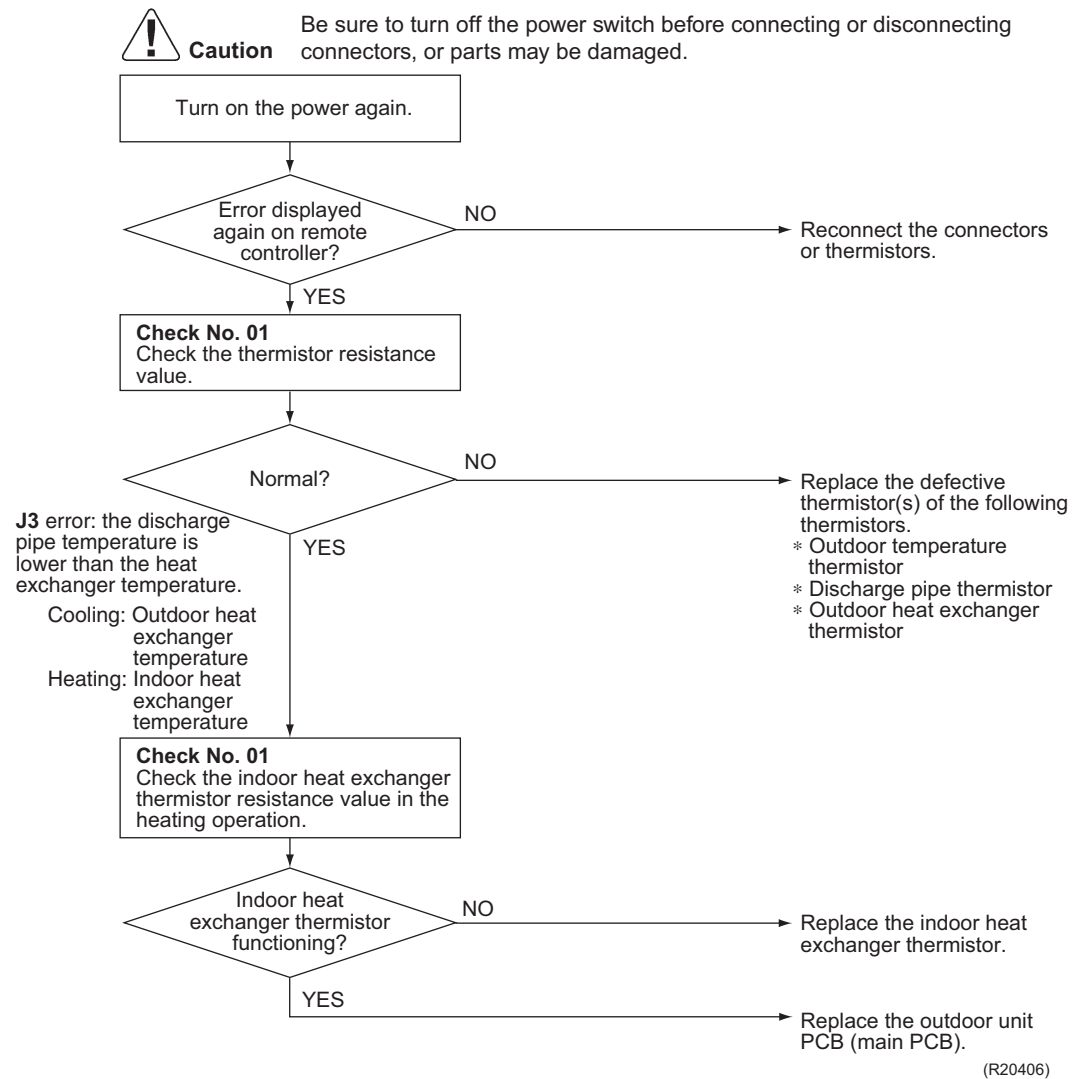
Replace the outdoor unit PCB (main PCB).

4.26 Thermistor or Related Abnormality (Outdoor Unit)

Error Code	H9, J3, J6, P4
Method of Error Detection	This fault is identified based on the thermistor input voltage to the microcomputer. A thermistor fault is identified based on the temperature sensed by each thermistor.
Error Decision Conditions	■ The voltage between the both ends of the thermistor is either 4.96 V or more, or 0.04 V or less with the power on. ■ J3 error is judged if the discharge pipe temperature is lower than the heat exchanger temperature.
Supposed Causes	■ Disconnection of the connector for the thermistor ■ Defective thermistor(s) ■ Defective heat exchanger thermistor in the case of J3 error (outdoor heat exchanger thermistor in cooling operation, or indoor heat exchanger thermistor in heating operation) ■ Defective outdoor unit PCB
Troubleshooting	In case of P4  Caution Be sure to turn off the power switch before connecting or disconnecting connectors, or parts may be damaged. Replace the outdoor unit PCB (main PCB). P4 : Radiation fin thermistor

Troubleshooting

In case of H9, J3, J6



H9 : Outdoor temperature thermistor

J3 : Discharge pipe thermistor

J6 : Outdoor heat exchanger thermistor



Reference

Check No.01 Refer to P.113

4.27 Electrical Box Temperature Rise

Error Code

L3

Method of Error Detection

An electrical box temperature rise is detected by checking the radiation fin thermistor with the compressor off.

Error Decision Conditions

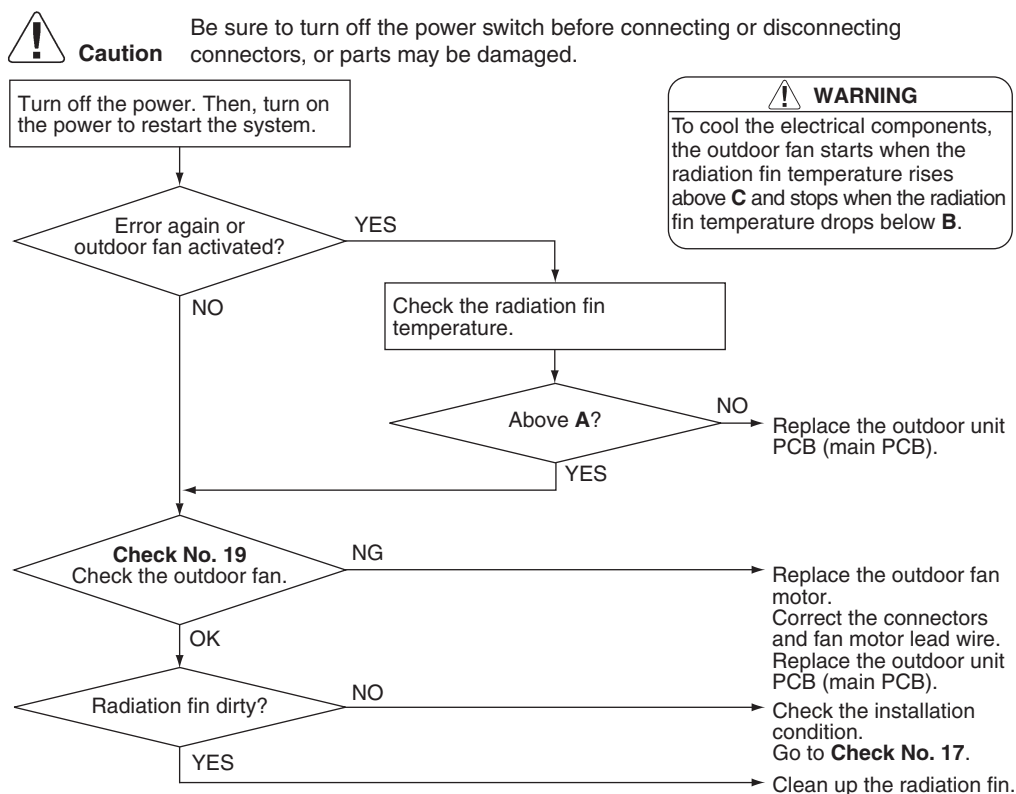
- With the compressor off, the radiation fin temperature is above **A**.
- The error is cleared when the radiation fin temperature drops below **B**.
- To cool the electrical components, the outdoor fan starts when the radiation fin temperature rises above **C** and stops when the radiation fin temperature drops below **B**.

A		B		C	
(°C)	(°F)	(°C)	(°F)	(°C)	(°F)
100	212	70	158	77	170.6

Supposed Causes

- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB

Troubleshooting



(R22998)



Reference

Check No.17 Refer to P.118



Reference

Check No.19 Refer to P.119

4.28 Radiation Fin Temperature Rise

Error Code

L4

Method of Error Detection

A radiation fin temperature rise is detected by checking the radiation fin thermistor with the compressor on.

Error Decision Conditions

- If the radiation fin temperature with the compressor on is above **A**.
- The error is cleared when the radiation fin temperature drops below **B**.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

A		B	
(°C)	(°F)	(°C)	(°F)
95	203	85	185

Supposed Causes

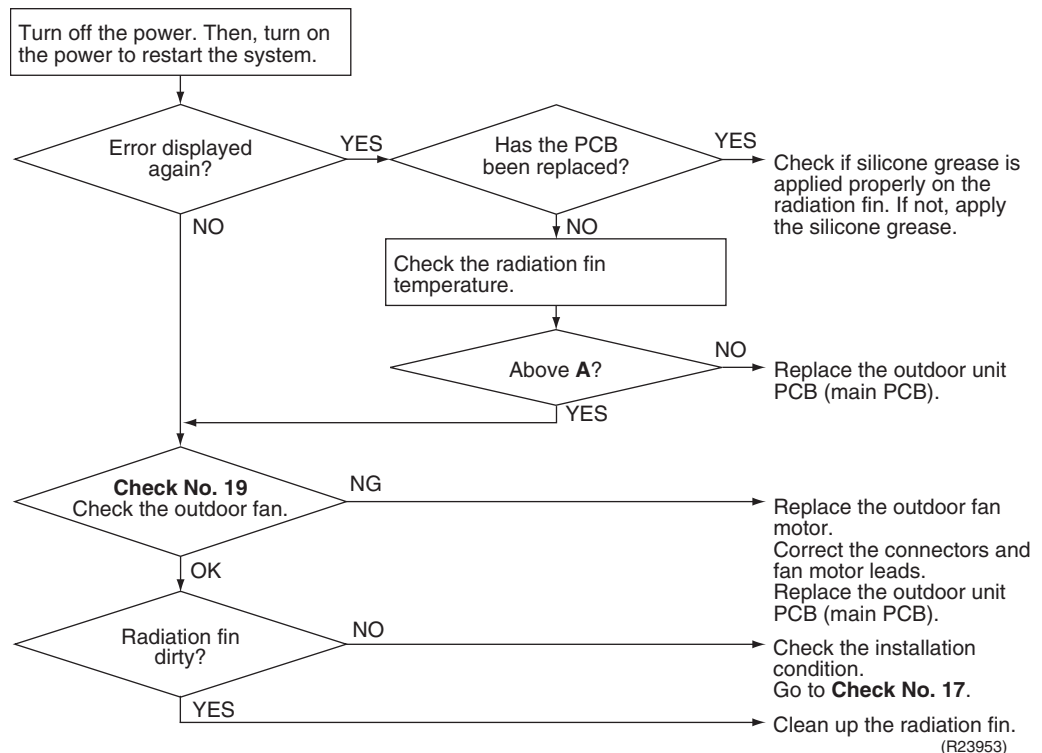
- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB
- Silicone grease not applied properly on the radiation fin after replacing the outdoor unit PCB

Troubleshooting



Caution

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



Note

Refer to Silicone Grease on Power Transistor/Diode Bridge on page 130 for details.



Reference

Check No.17 Refer to P.118



Reference

Check No.19 Refer to P.119

4.29 Output Overcurrent Detection

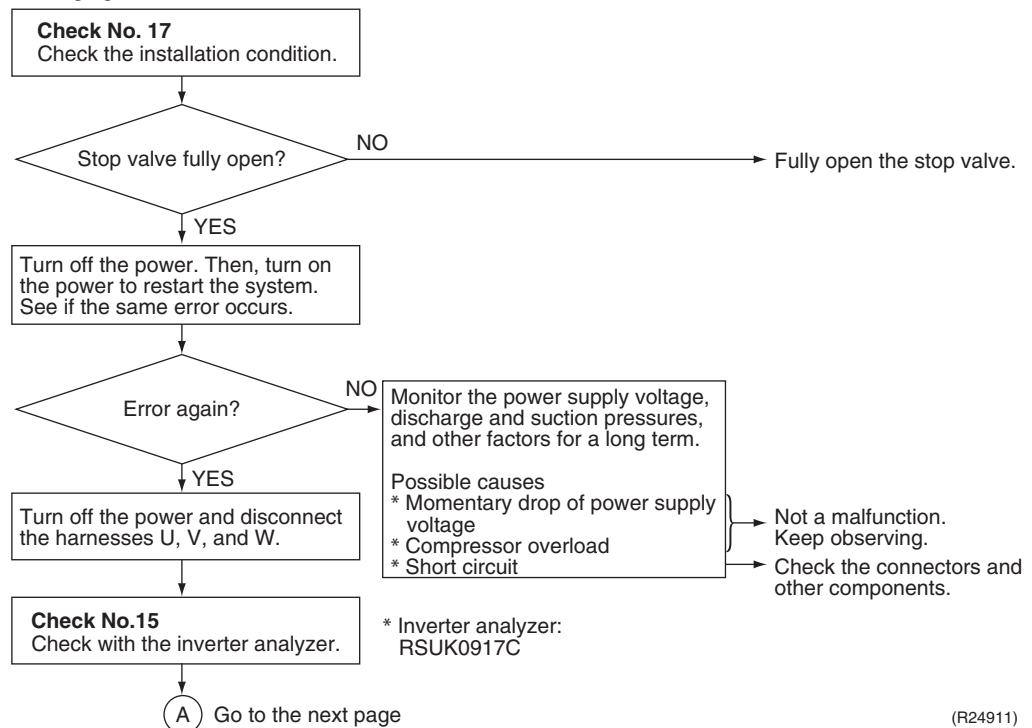
Error Code	L5
Method of Error Detection	An output overcurrent is detected by checking the current that flows in the inverter DC section.
Error Decision Conditions	■ A position signal error occurs while the compressor is running. ■ A rotation speed error occurs while the compressor is running. ■ An output overcurrent signal is fed from the output overcurrent detection circuit to the microcomputer. ■ If the error repeats, the system is shut down. ■ Reset condition: Continuous run for about 11 minutes without any other error
Supposed Causes	■ Poor installation condition ■ Closed stop valve ■ Defective power module ■ Wrong internal wiring ■ Abnormal power supply voltage ■ Defective outdoor unit PCB ■ Power supply voltage out of specification ■ Defective compressor

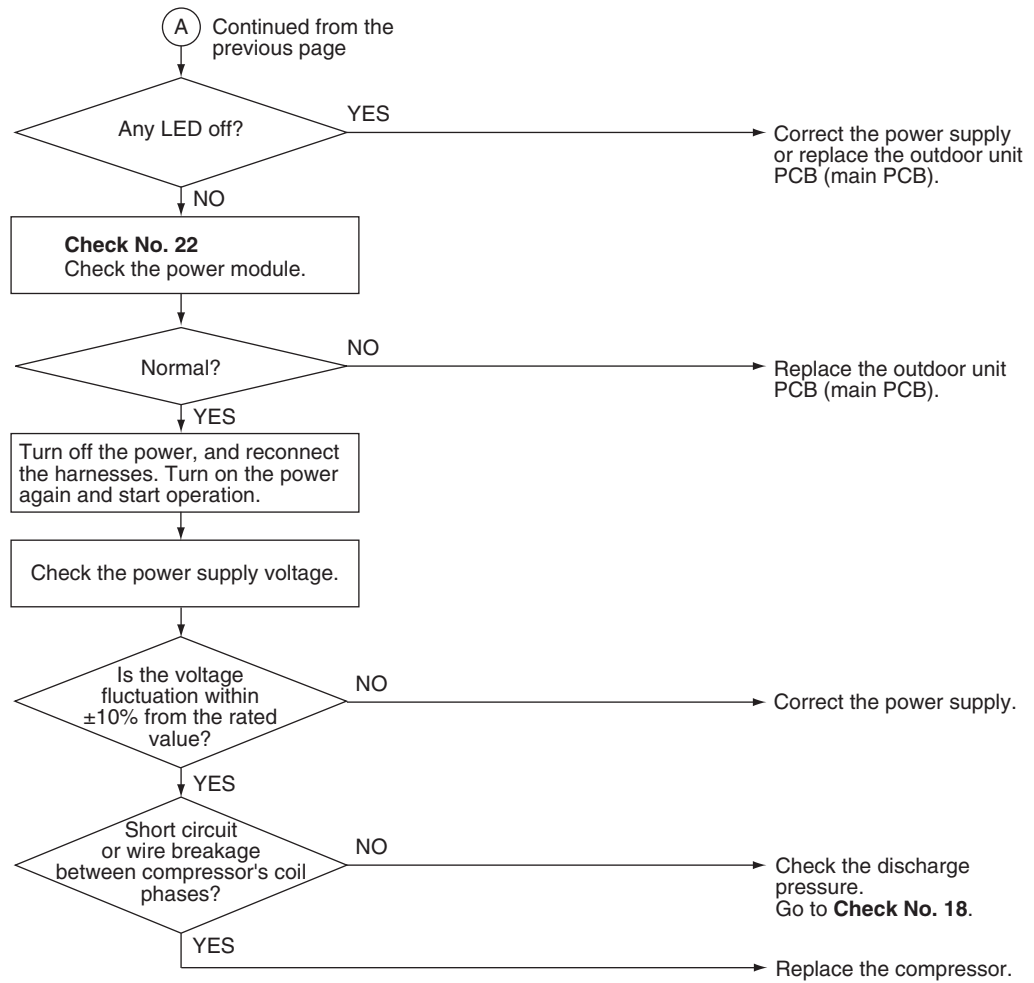
Troubleshooting


Caution

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

* An output overcurrent may result from wrong internal wiring. If the system is interrupted by an output overcurrent after the wires have been disconnected and reconnected for part replacement, check the wiring again.





(R24912)

-  **Reference** **Check No.15** Refer to P.116
-  **Reference** **Check No.17** Refer to P.118
-  **Reference** **Check No.18** Refer to P.118
-  **Reference** **Check No.22** Refer to P.120

4.30 IGBT temperature error

Error Code

LA

Method of Error Detection

A radiation fin temperature rise is detected by checking the radiation fin temperature with the compressor on.

Error Decision Conditions

- The radiation fin temperature with the compressor on is above **A**.
- The error is cleared when the temperature drops below **B**.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

	°C	°F
A	120	248
B	100	212

Supposed Causes

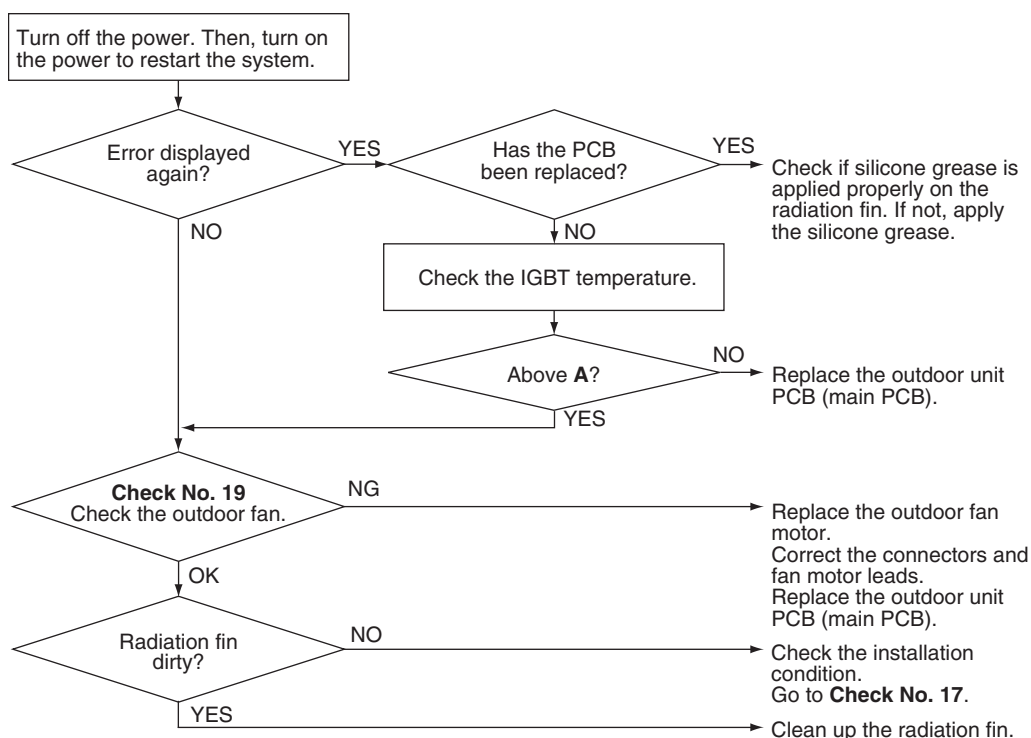
- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB
- Silicone grease not applied properly on the radiation fin after replacing the outdoor unit PCB

Troubleshooting



Caution

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



R6001154



Reference

Check No.17 Refer to P.118



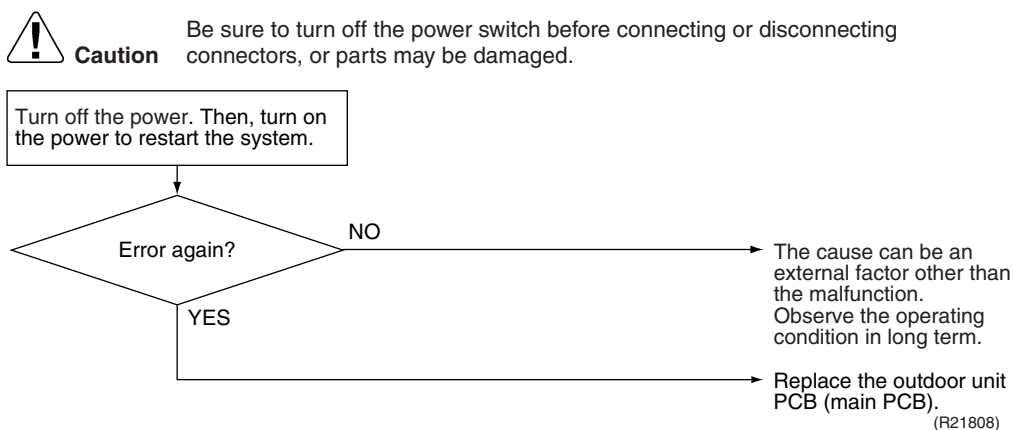
Reference

Check No.19 Refer to P.119

4.31 Signal Transmission Error on Outdoor Unit PCB

Error Code	U7
Method of Error Detection	Communication error between microcomputer mounted on the main PCB and PM1.
Error Decision Conditions	■ The abnormality is determined when the data sent from the PM1 cannot be received for 9 seconds. ■ The error counter is reset when the data from the PM1 can be successfully received.
Supposed Causes	■ Defective outdoor unit PCB

Troubleshooting



5. Check

5.1 Thermistor Resistance Check

Check No.01

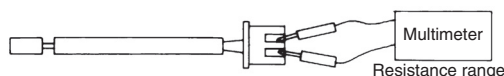
Measure the resistance of each thermistor using multimeter.

The resistance values are defined by below table.

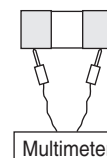
If the measured resistance value does not match the listed value, the thermistor must be replaced.

- Disconnect the connector of thermistor ASSY from the PCB to measure the resistance between the pins using multimeter.
- To check the thermistor soldered on a PCB, disconnect the PCB from other PCB/parts, and measure the resistance between the both ends of soldered thermistor.

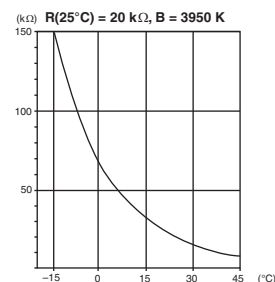
Thermistor ASSY



Soldered thermistor



Thermistor temperature (°C)	R(25°C) = 20 kΩ B = 3950 K
-20	197.8
-15	148.2
-10	112.1
-5	85.60
0	65.93
5	51.14
10	39.99
15	31.52
20	25.02
25	20.00
30	16.10
35	13.04
40	10.62
45	8.707
50	7.176



R6000734



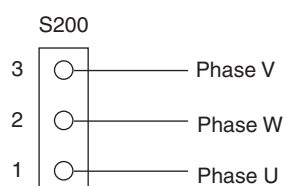
Note

When replacing the defective thermistor(s), replace the thermistor as ASSY.

5.2 Indoor Fan Motor Connector Check

Check No.03

- Fan motor wire breakdown/short circuit check
 1. Check the connector for connection.
 2. Turn the power off.
 3. Check if each resistance at the phases U - V and V - W is 12.3 Ω - 11.9 Ω.



R6001148

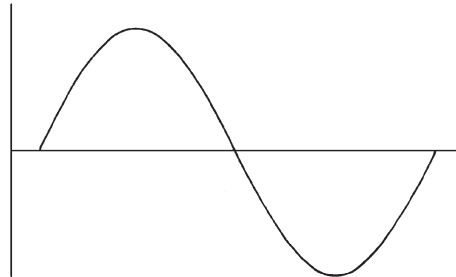
5.3 Power Supply Waveform Check

Check No.11

Measure the power supply waveform between No. 1 and No. 2 on the terminal strip, and check the waveform disturbance.

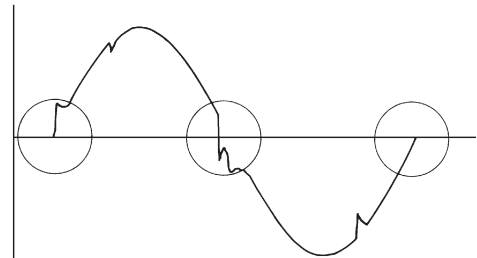
- Check if the power supply waveform is a sine wave (Fig.1).
- Check if there is waveform disturbance near the zero-cross (sections circled in Fig.2).

[Fig.1]



(R1736)

[Fig.2]



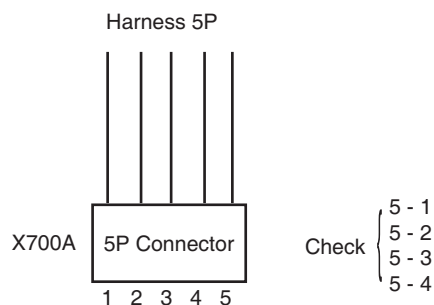
(R1444)

5.4 Electronic Expansion Valve Check

Check No.12

Conduct the following to check the electronic expansion valve (EV).

1. Check if the EV connector is correctly connected to the PCB.
2. Turn the power off and on again, and check if the EV generates a latching sound.
3. If the EV does not generate a latching sound in the step 2 above, disconnect the connector and check the continuity using a multimeter.
4. Check the continuity between the pins 5 - 1, 5 - 2, 5 - 3, 5 - 4. If there is no continuity between the pins, the EV coil is faulty.
5. If the continuity is confirmed in step 3, the outdoor unit PCB (main PCB) is faulty.



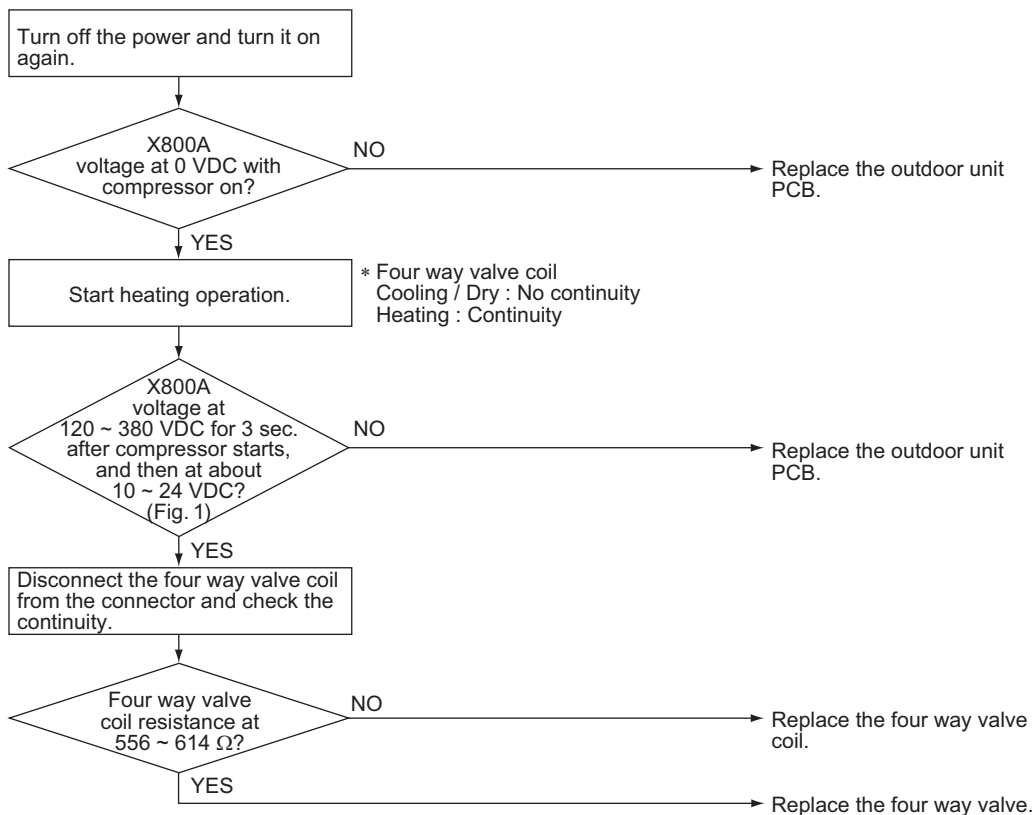
R6000952

5.5 Four Way Valve Performance Check

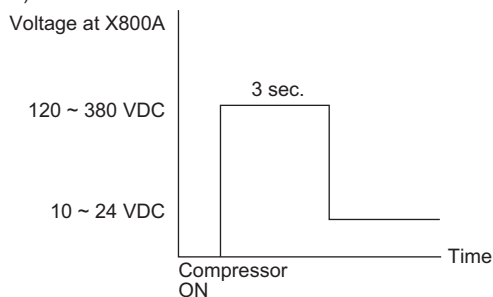
Check No.13

< Caution on resetting the power supply >

* Be sure to wait for 30 sec. or more after turning off the power.



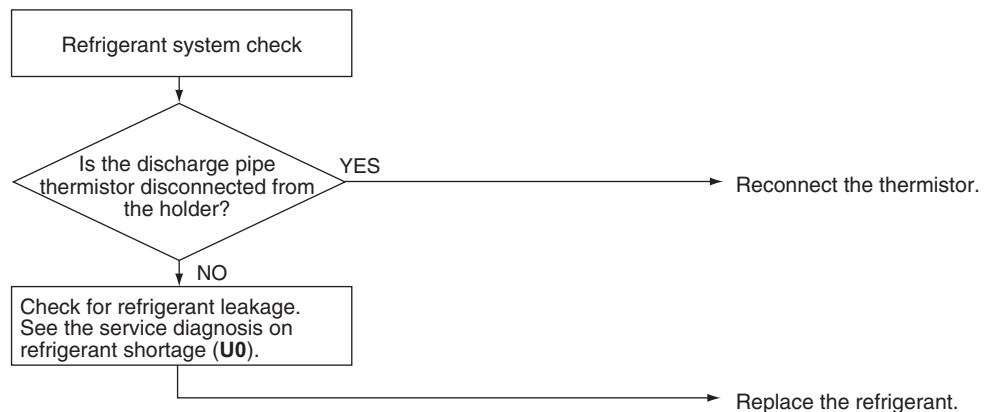
(Fig. 1)



R6001225

5.6 Inverter Unit Refrigerant System Check

Check No.14



R6000874

5.7 Inverter Analyzer Check

Check No.15

■ Characteristics

Inverter analyzer: RSUK0917C

If an abnormal stop occurs due to compressor startup failure or overcurrent output when using an inverter unit, it is difficult to judge whether the stop is caused by the compressor failure or some other failure (main PCB, power module, etc.). The inverter analyzer makes it possible to judge the cause of trouble easily and securely. (Connect an inverter analyzer as a quasi-compressor instead of compressor and check the output of the inverter.)

■ Operation Method

Step 1

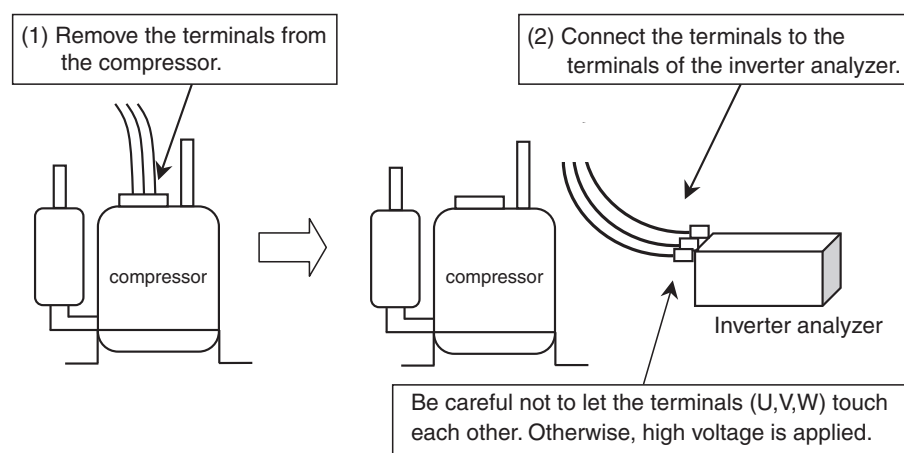
Be sure to turn the power off.

Step 2

Install an inverter analyzer instead of a compressor.

Note:

Make sure the charged voltage of the built-in smoothing electrolytic capacitor drops to 10 VDC or below before carrying out the service work.



(R22731)

Reference:

If the terminals of the compressor are not FASTON terminals (difficult to remove the wire on the

terminals), it is possible to connect wires available on site to the outdoor unit from output side of PCB. (Do not connect them to the compressor at the same time, otherwise it may result in incorrect detection.)

Step 3

Activate power transistor test operation from the indoor unit.

1. Turn the power on.
2. Select FAN operation with **Mode** button on the remote controller.
3. Press the both of **Temp** button and **Mode** button at the same time.
4. Select **T** with **Temp Up** or **Temp Down** button.
5. Press **Mode** button to start the power transistor test operation.

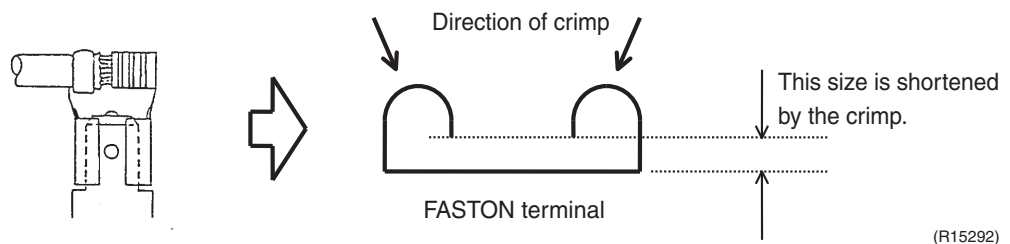
■ Diagnose method (Diagnose according to 6 LEDs lighting status)

1. If all the LEDs are lit uniformly, the compressor is defective.
Replace the compressor.
2. If the LEDs are not lit uniformly, check the power module.
Refer to **Check No.22**.
3. If NG in **Check No.22**, replace the power module.
(Replace the main PCB. The power module is united with the main PCB.)
If OK in **Check No.22**, check if there is any solder cracking on the PCB.
4. If any solder cracking is found, replace the PCB or repair the soldered section.
If there is no solder cracking, replace the PCB.



Caution

1. When the output compressor speed is low, the LEDs blink slowly. As the output compressor speed increases, the LEDs blink quicker. (The LEDs look like they are lit.)
2. On completion of the inverter analyzer diagnosis, be sure to re-crimp the FASTON terminals. Otherwise, the terminals may be burned due to loosening.

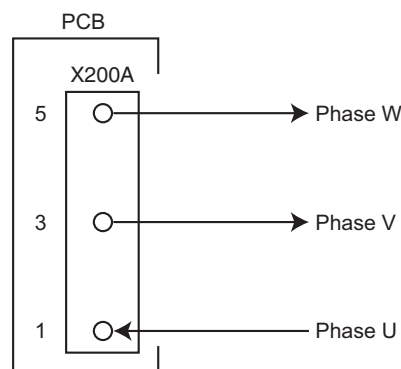


5.8 Outdoor Fan Motor Check

Check No.16

Outdoor fan motor

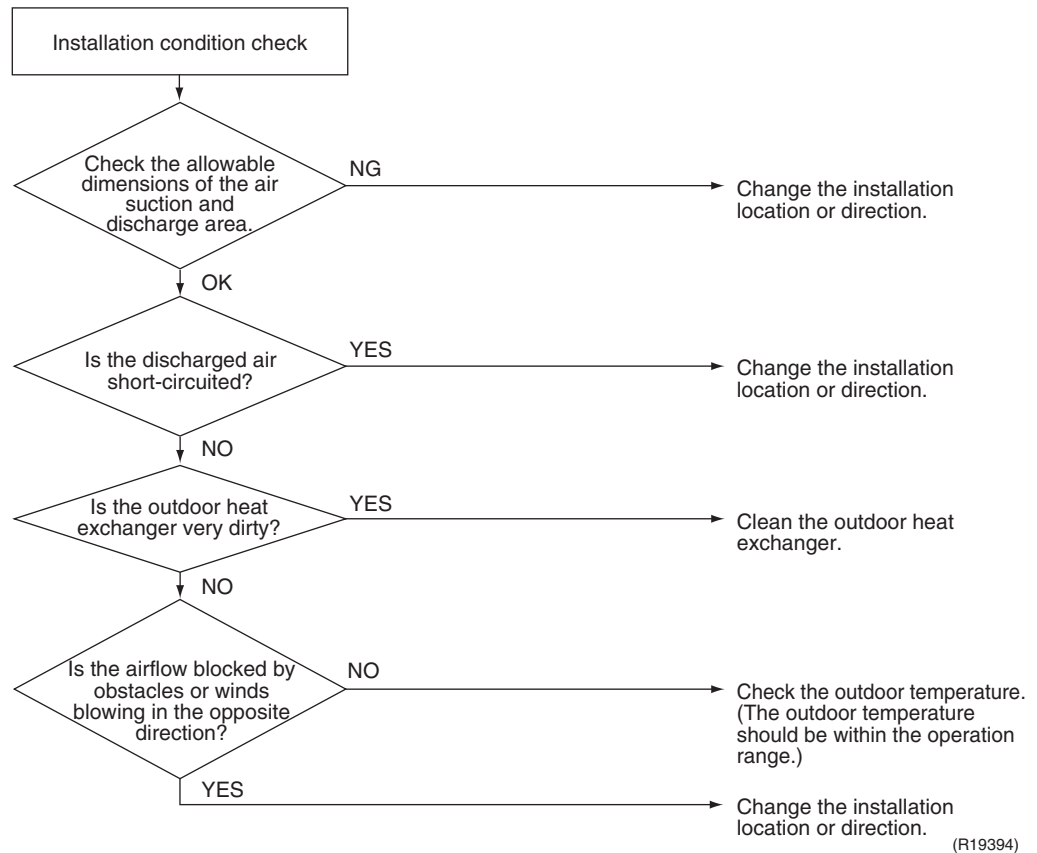
Check if the sinusoidal voltage is generated between pins 1 - 3 and 3 - 5 when the fan motor is manually rotated once.



R6001127

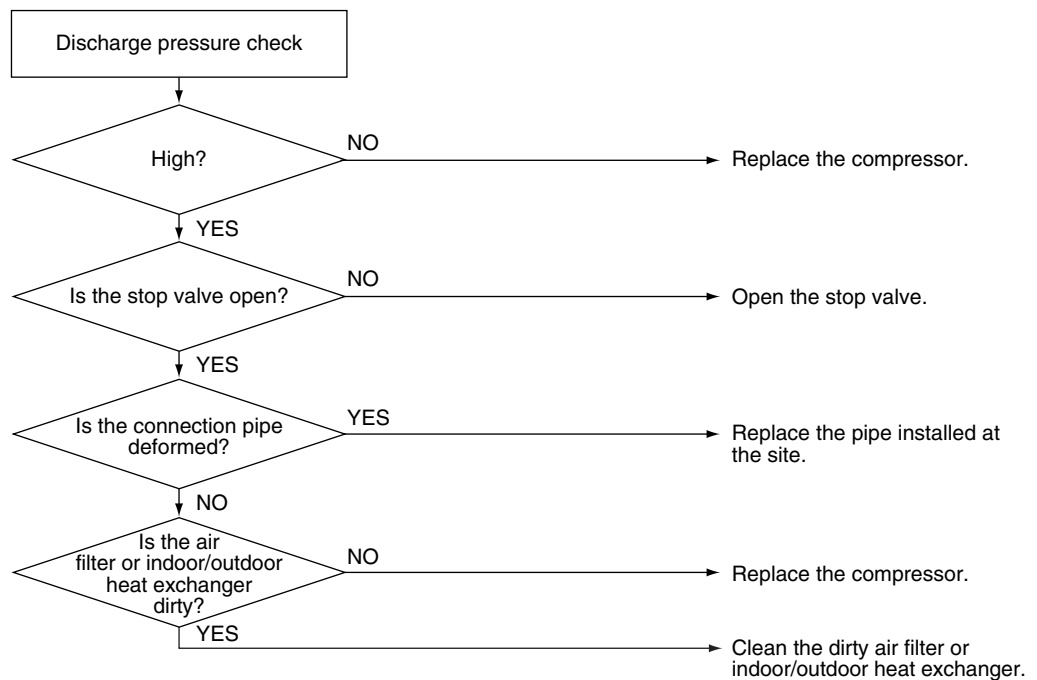
5.9 Installation Condition Check

Check No.17



5.10 Discharge Pressure Check

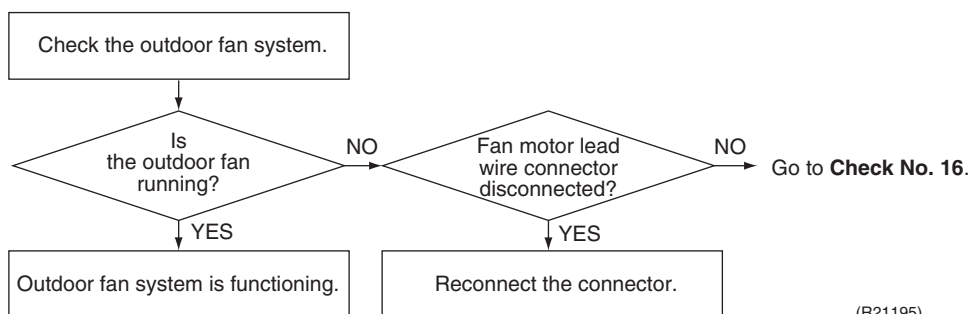
Check No.18



5.11 Outdoor Fan System Check

Check No.19

DC motor



(R21195)

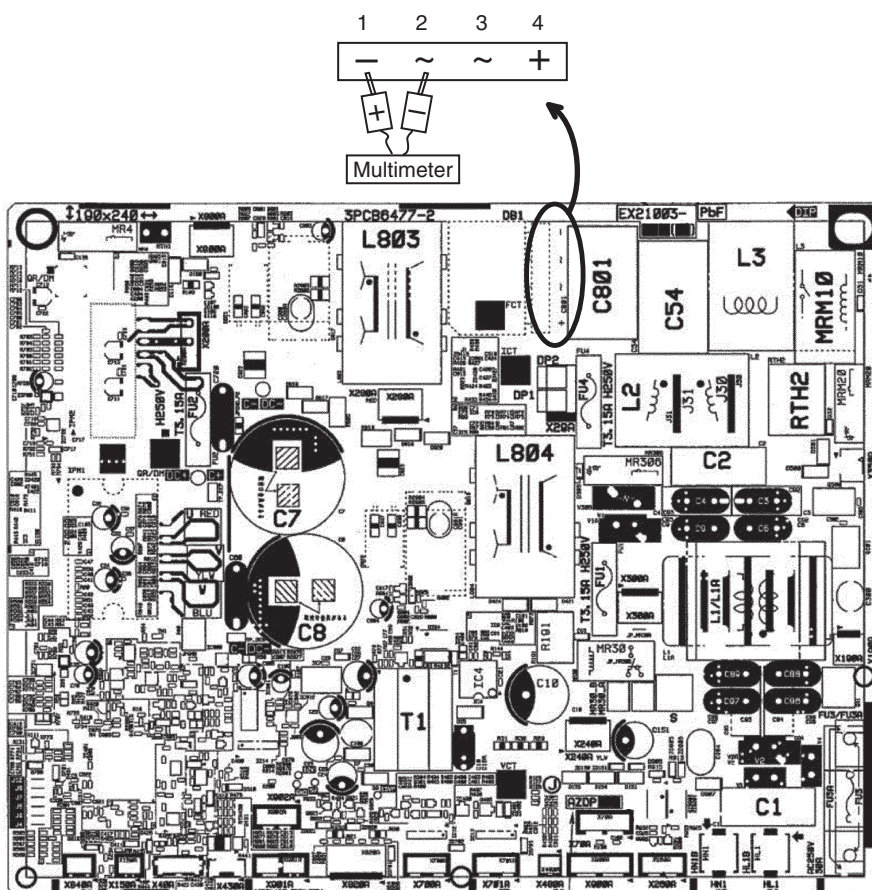
5.12 Main Circuit Short Check

Check No.20

Check to make sure that the voltage between (+) and (–) of the diode bridge (DB1) is about 0 V before checking.

- Measure the resistance between the pins of the DB1 referring to the table below.
- If the resistance is ∞ or less than 1 k Ω , short circuit occurs on the main circuit.

Positive terminal (+) of digital multimeter	~ (2, 3)	+ (4)	~ (2, 3)	– (1)
Negative terminal (–) of digital multimeter	+ (4)	~ (2, 3)	– (1)	~ (2, 3)
Resistance is OK.	several k Ω ~ several M Ω			
Resistance is NG.	0 Ω or ∞			



R6001398

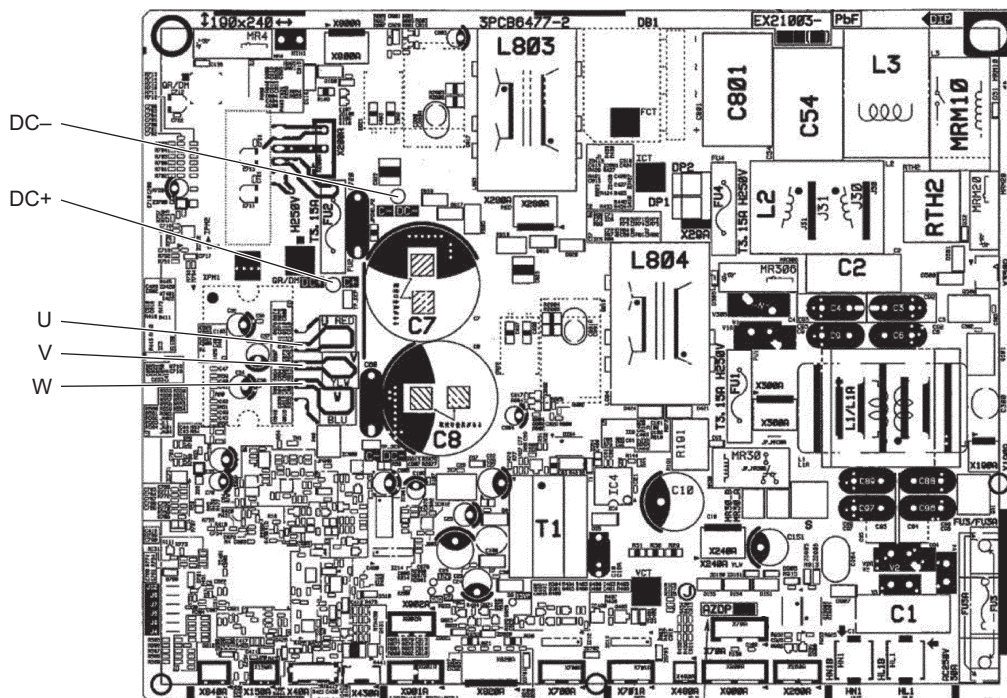
5.13 Power Module Check

Check No.22

Check to make sure that the voltage between (+) and (–) of the power module is about 0 V before checking.

- Disconnect the compressor harness connector from the outdoor unit PCB. To disengage the connector, press the protrusion on the connector.
- Follow the procedure below to measure resistance between the (+) or (–) terminal of the power module and the U, V, or W terminal of the compressor with a multimeter. Evaluate the measurement results referring to the following table.

Positive terminal (+) of digital multimeter	Power module (+)	UVW	Power module (–)	UVW
Negative terminal (–) of digital multimeter	UVW	Power module (+)	UVW	Power module (–)
Resistance is OK.	several k Ω ~ several M Ω			
Resistance is NG.	0 Ω or ∞			



R6001399

Part 7

Trial Operation and Field Settings

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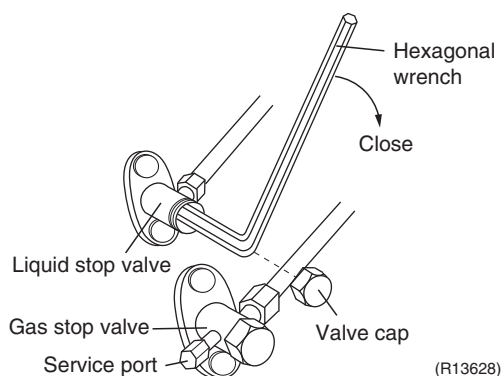
1. Pump Down Operation

Outline

In order to protect the environment, be sure to conduct pump down operation when relocating or disposing of the unit.

Details

1. Remove the valve caps from the liquid stop valve and the gas stop valve.
2. Carry out forced cooling operation.
3. After 5 to 10 minutes, close the liquid stop valve with a hexagonal wrench.
4. After 2 to 3 minutes, close the gas stop valve and stop the forced cooling operation.
5. Attach the valve cap once procedures are complete.



Reference

Refer to Forced Cooling Operation on page 123 for details.

2. Forced Cooling Operation

Outline

The forced cooling operation is allowed when both the following conditions are met.

1. The outdoor unit is not abnormal and not in the 3-minute standby mode.
2. The outdoor unit is not operating.

Protection functions have priority over all other functions during forced cooling operation.

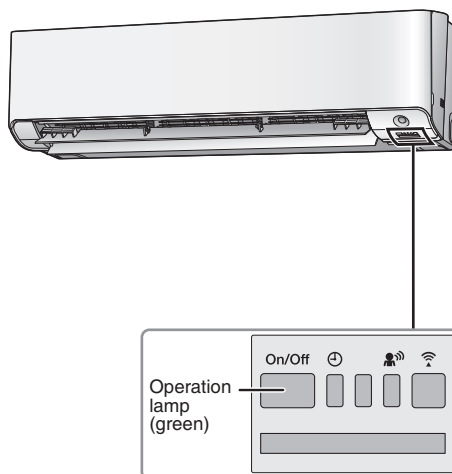
Procedure

■ With indoor unit ON/OFF switch

Press indoor unit **ON/OFF** switch for at least 5 seconds. The operation will start.

Forced cooling operation will stop automatically after about 15 minutes.

To stop the operation, press indoor unit **ON/OFF** switch.



R6001402

3. Trial Operation

Outline

Trial operation should be carried out in either cooling or heating operation.

1. Measure the supply voltage and make sure that it is within the specified range.
2. In cooling operation, select the lowest programmable temperature;
in heating operation, select the highest programmable temperature.
3. Carry out the trial operation following the instructions in the operation manual to ensure that all functions and parts, such as the movement of the louvers, are working properly.
 - To protect the air conditioner, restart operation is disabled for 3 minutes after the system has been turned off.
4. After trial operation is complete, set the temperature to a normal level (78°F to 82°F (26°C to 28°C) in cooling operation, 68°F to 75°F (20°C to 24°C) in heating operation).

When operating the air conditioner in cooling operation in winter, or heating operation in summer, set it to the trial operation mode using the following method.

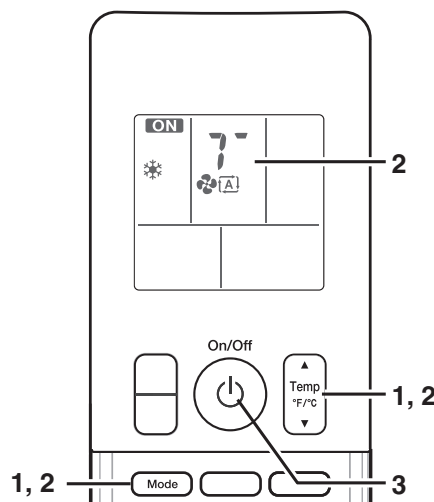
Procedure

1. Press **Temp▲, ▼** buttons and **Mode** button at the same time.
2. Press **Temp▲, ▼** buttons, select "T", and press **Mode** button for confirmation.
3. Press **On/Off** button to turn on the system.

Trial operation will stop automatically after about 30 minutes

To stop the operation, press **On/Off** button.

Some of the functions cannot be used in the trial operation mode.



R7000370



Note(s)

- The air conditioner draws a small amount of power in its standby mode. If the system is not to be used for some time after installation, shut off the circuit breaker to eliminate unnecessary power consumption.
- If the circuit breaker trips to shut off the power to the air conditioner, the system will restore the original operation mode when the circuit breaker is turned on again.

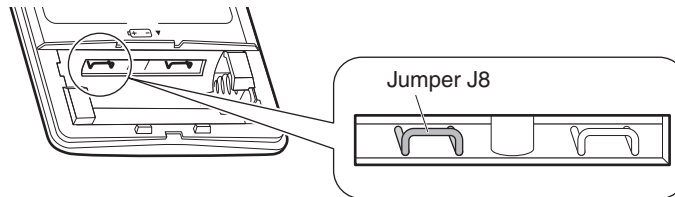
Test Items

Test items	Symptom
Indoor and outdoor units are installed securely.	Fall, vibration, noise
The titanium apatite deodorizing filter is properly attached to the air filter.	Unusual noise, condensation
The air filter is properly attached.	Unusual noise, condensation
No refrigerant gas leaks.	Incomplete cooling/heating function
Refrigerant gas and liquid pipes and indoor drain hose extension are thermally insulated.	Water leakage
Draining line is properly installed.	Water leakage
System is properly grounded.	Electrical leakage
Only specified wires are used for all wiring, and all wires are connected correctly.	No operation or burn damage
Indoor or outdoor unit's air inlet or air outlet are unobstructed.	Incomplete cooling/heating function
Stop valves are opened.	Incomplete cooling/heating function
Indoor unit properly receives remote controller commands.	No operation
Remote controller jumper setting is correct for the type of unit (heat pump or cooling only).	Remote controller malfunctioning
Address settings are correct. (If installing 2 indoor units in the same room.)	Unit not operating
All through-holes are completely sealed with putty.	Ingress of insects etc.

4. Field Settings

4.1 Model Type Settings

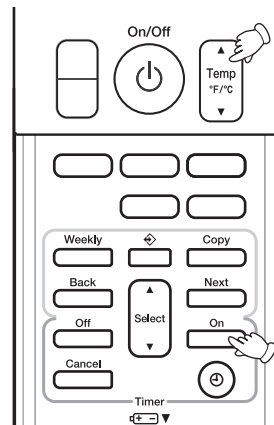
1. Turn on all the fluorescent lamps in the room, if any, and find a location where the remote controller signals are properly received by the indoor unit (within 23 ft (7 m)).
2. Configure according to the type of unit (heat pump or cooling only). The default setting is heat pump.
 - **For heat pump (outdoor unit model: RX)**
No change to jumper setting is required.
 - **For cooling only (outdoor unit model: RK)**
Cut the jumper J8 inside the remote controller.



R7000377

4.2 Temperature Display Switch

- Press the upper side of **Temp** button and **On** button at the same time for 5 seconds to change the unit of temperature display.



R7000378

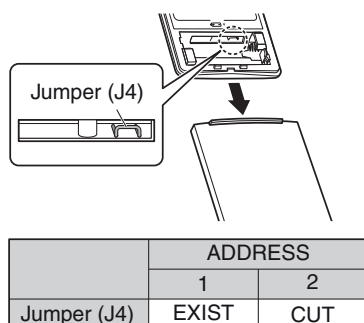
4.3 When 2 Units are Installed in 1 Room

Outline

When 2 indoor units are installed in 1 room, 1 of the 2 indoor units and the corresponding wireless remote controller can be set for different address.

Procedure

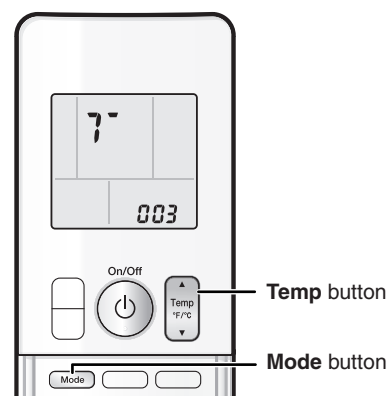
1. Remove the battery cover of the remote controller, and cut the address jumper (J4).
2. Press the center of **Temp** button and **Mode** button on the remote controller at the same time.
3. Select **A** (address setting) with **Temp Up** or **Temp Down** button, and press **Mode** button to enter the address setting mode.
Then, the indoor unit operation lamp blinks for 1 minute.
4. Press the indoor unit **ON/OFF** switch while the operation lamp is blinking.
 - If setting could not be carried out completely while the operation lamp was blinking, carry out the setting process once again from the beginning.
 - After setting, press **Mode** button on the remote controller for 5 seconds to return to the normal mode.



R7000509



R7000511



R7000510



Caution

Replace the remote controller if you cut a jumper unintentionally.

Jumpers are necessary for electronic circuit. Improper operation may occur if you cut any of them.

4.4 Facility Setting (cooling at low outdoor temperature)

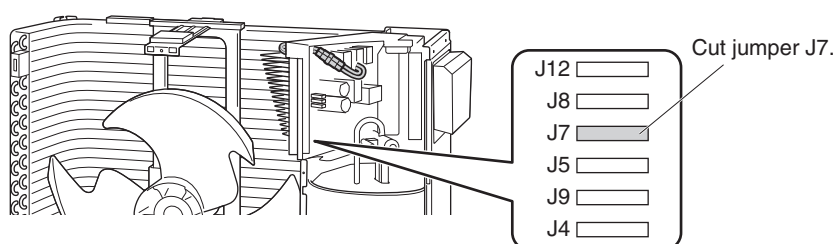
Outline

This function is limited only for facilities (the target of air conditioning is equipment such as computers). Never use it in a residence or office (the space where there is a human).

Details

Cutting jumper 7 (J7) on the PCB will extend the operation range to 14°F (–10°C). Installing an air direction adjustment grille (sold separately) will further extend the operation range to –20°C (–4°F) for heat pump models and –30°C (–22°F) for cooling only models. In these cases, the unit will stop operating if the outdoor temperature falls below –20°C (–4°F) for heat pump models and –30°C (–22°F) for cooling only models, restarting once the temperature rises above this level.

1. Remove the top plate of the outdoor unit. (6 screws)
2. Remove the front plate. (10 screws)
3. Remove the anti-drip cover.
4. Cut the jumper (J7) of the PCB inside.

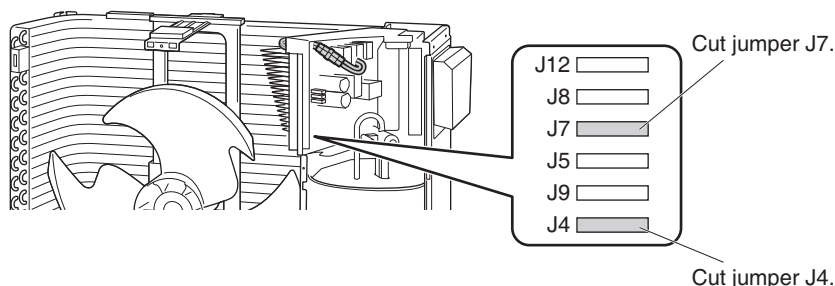


R7000456

Only for RKV30/36 models

Cutting jumper (J4) on the PCB, in addition to jumper (J7), will extend the operating range to –22°F (–30°C). The unit will stop operating if the outdoor temperature falls below –22°F (–30°C), and restart once the temperature rises above this level.

1. Cut jumper (J4) on the PCB in addition to jumper (J7).



R7000522



Note

When the outdoor temperature is below –4°F (–20°C) and J4 is cut (as in this step), it may take up to 3 hours for operation to begin as the system must be warmed up to protect the compressor



Reference

For the location of the jumper, refer to pages 22.



Caution

1. If the outdoor unit is installed where the outdoor heat exchanger of the unit is exposed to direct wind, provide a windbreak wall.
2. Intermittent noises may be produced by the indoor unit due to the outdoor fan turning on and off when using facility settings.
3. Do not place humidifiers or other items which might raise the humidity in rooms where facility settings are being used. A humidifier might cause dew condensation from the indoor unit outlet vent.
4. Use the indoor unit at the highest level of airflow rate.

4.5 Warmer Airflow Setting

Outline

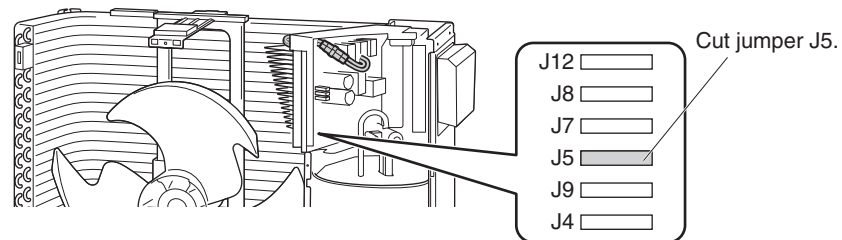
The temperature of discharge airflow in heating operation can be adjusted warmer.

- The room temperature will be high when getting close to the set temperature.
- The discharge airflow does not become warmer in other than heating operation.

Procedure

Warmer airflow can be enabled/disabled from remote controller or outdoor unit.

Cut the jumper (J5) of the PCB inside.



R7000458



Reference

For the location of the jumper, refer to page 22.



Note(s)

Warmer airflow can be enabled from either indoor or outdoor unit.

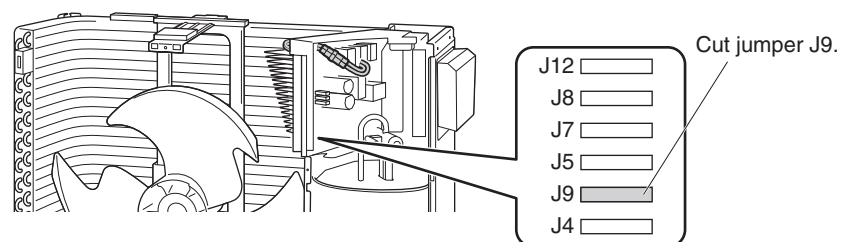
Warmer airflow becomes available when either one of the RC or outdoor unit setting is enabled. For example, if the outdoor unit has the switch for warmer airflow, it can be set even when it is disabled on the indoor unit.

Also, for the wireless remote controller with field setting function, warmer airflow is enabled when set on indoor unit with the remote controller field setting, even when it is disabled on outdoor unit.

4.6 Drain Pan Heater

In high humidity areas or heavy snow areas, it is recommended to attach a drain pan heater to prevent ice build-up from the bottom frame.

1. Attach the drain pan heater in accordance with the installation manual included with the drain pan heater.
2. Cut the jumper (J9) of the PCB inside.



R7000460



Reference

For the location of the jumper, refer to page 22.

5. Silicone Grease on Power Transistor/Diode Bridge

Outline

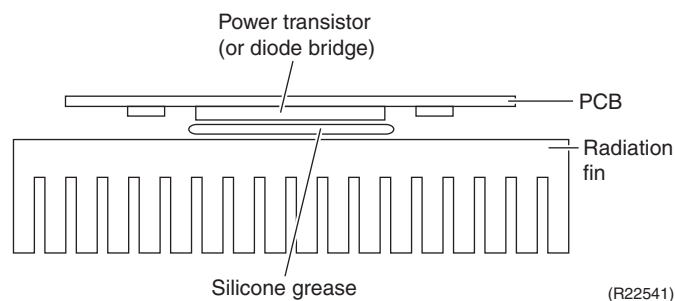
Apply the specified silicone grease to the heat generation part of a power transistor/diode bridge when you replace an outdoor unit PCB. The silicone grease encourages the heat dissipation of a power transistor/diode bridge.

Details

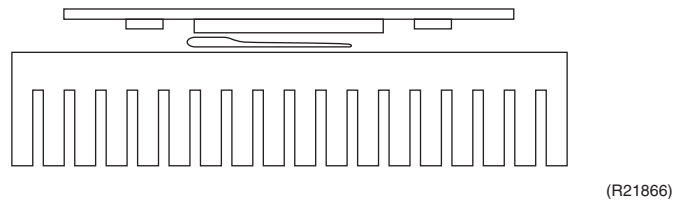
1. Wipe off the old silicone grease completely.
2. Apply the silicone grease evenly. See the illustrations below for examples of application.
3. Tighten the screws of the power transistor/diode bridge.
4. Make sure that the heat generation parts are firmly contacted to the radiation fin.

Note: Smoke emission may be caused by bad heat radiation when the silicone grease is not appropriately applied.

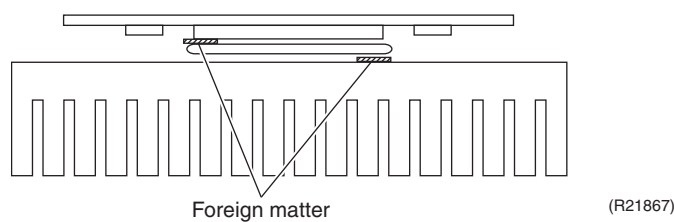
■ OK: Evenly applied



■ NG: Not evenly applied



■ NG: Foreign matter is stuck.



Part 8

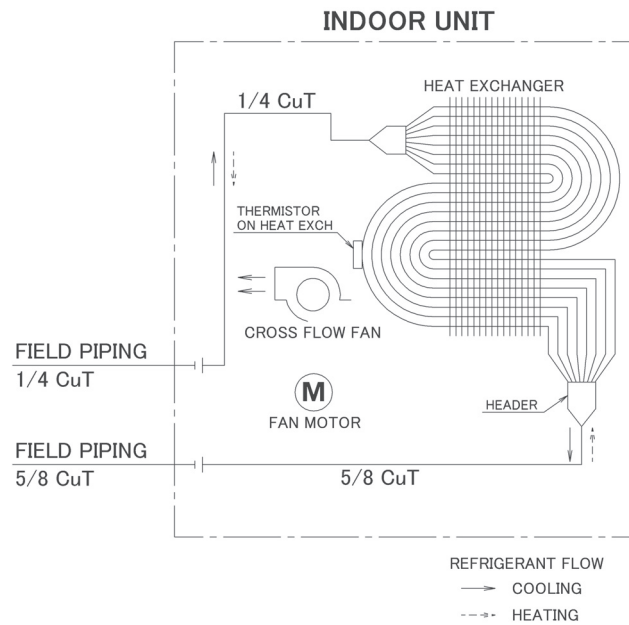
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1. Piping Diagrams

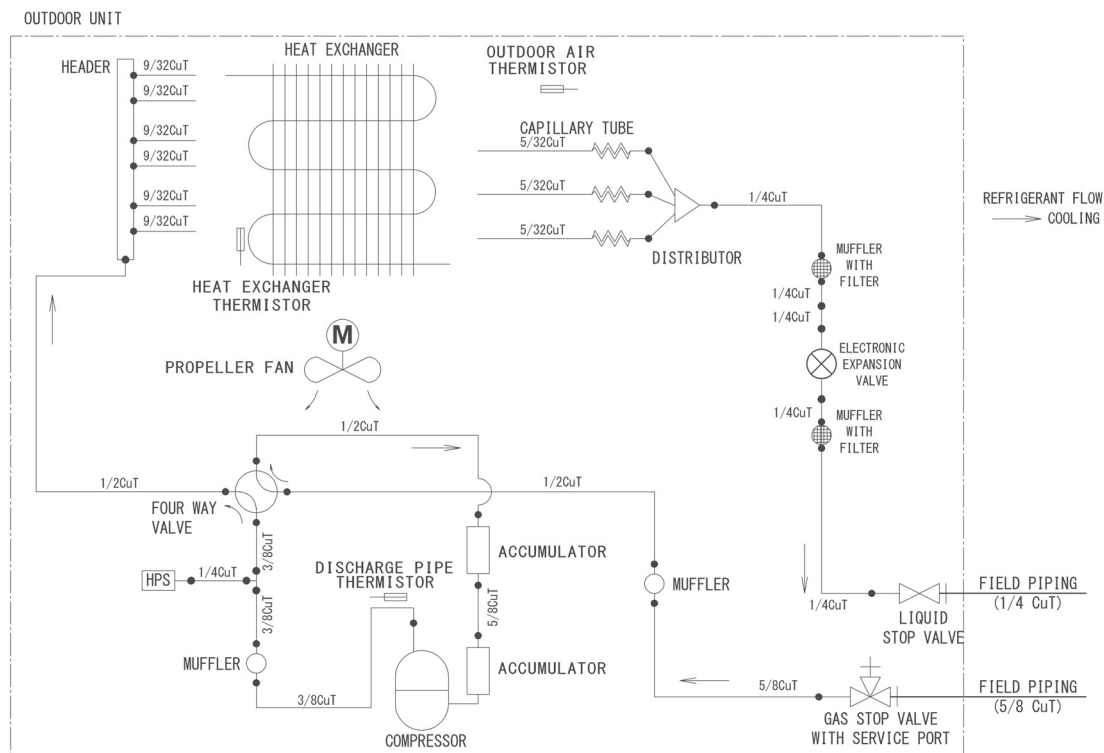
1.1 Indoor Unit

FTXV30/36AVJU9



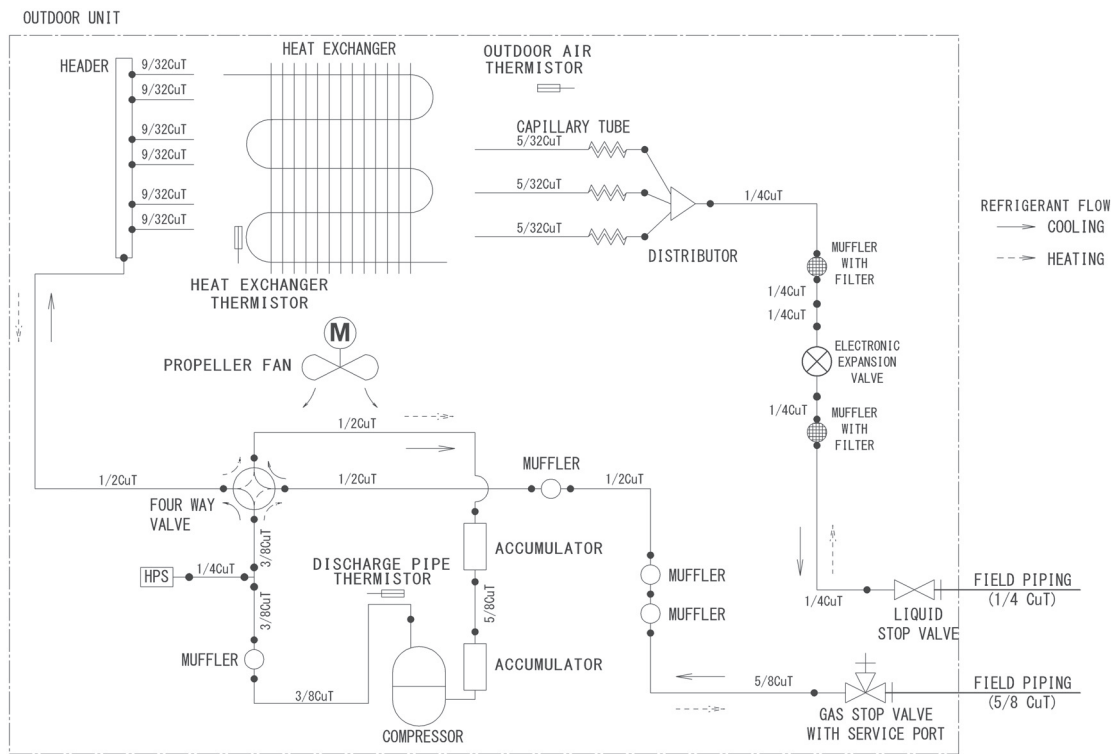
4D160387

1.2 Outdoor Unit

RKV30/36AVJU9

3D158578

RXV30/36AVJU9

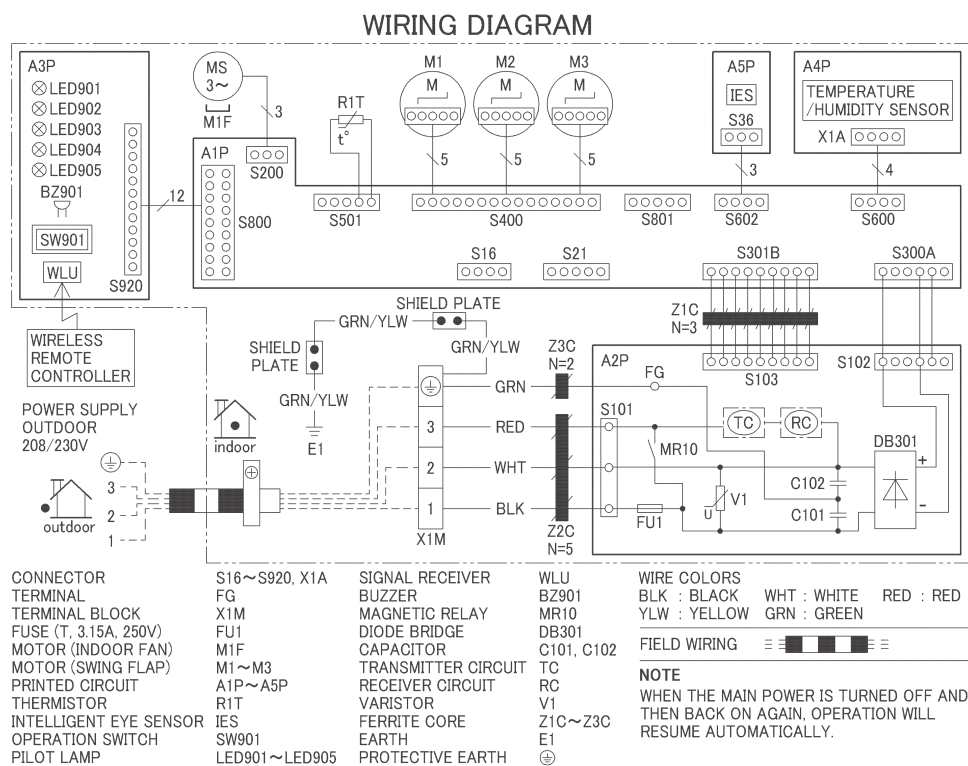


3D160284

2. Wiring Diagrams

2.1 Indoor Unit

FTXV30/36AVJU9



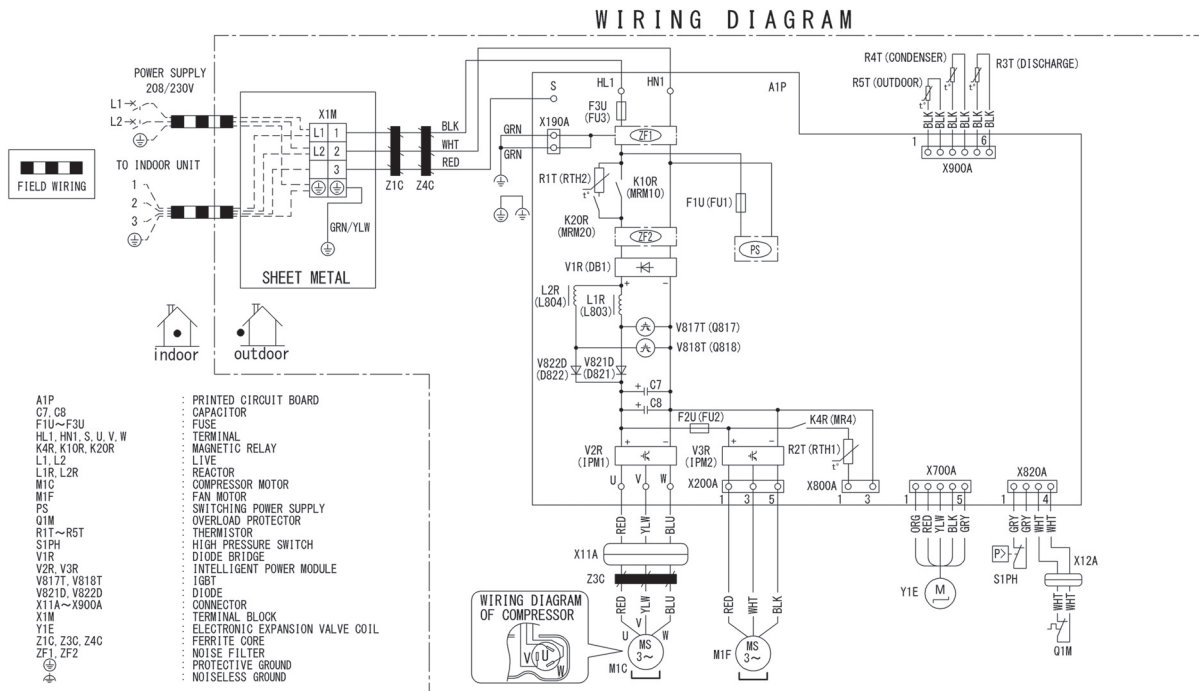
3D157280C



Note(s)

- A1P: Control PCB
 - A2P: Power supply PCB
 - A3P: Display/signal receiver PCB
 - A4P: Humidity sensor PCB
 - A5P: INTELLIGENT EYE sensor PCB
- Refer to page 19 for Printed Circuit Board Connector Wiring Diagram.

2.2 Outdoor Unit

RKV30/36AVJU9

C: 3D152684

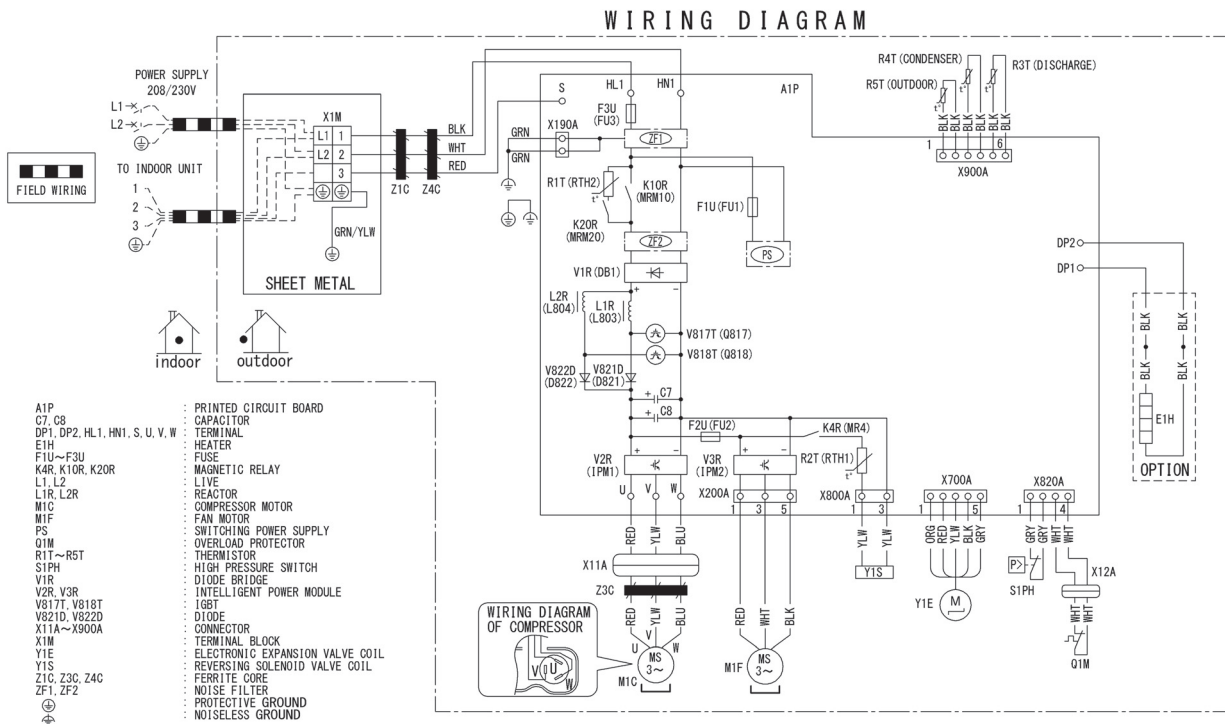


Note(s)

A1P: Main PCB

Refer to page 22 for Printed Circuit Board Connector Wiring Diagram.

RXV30/36AVJU9



C: 3D149181

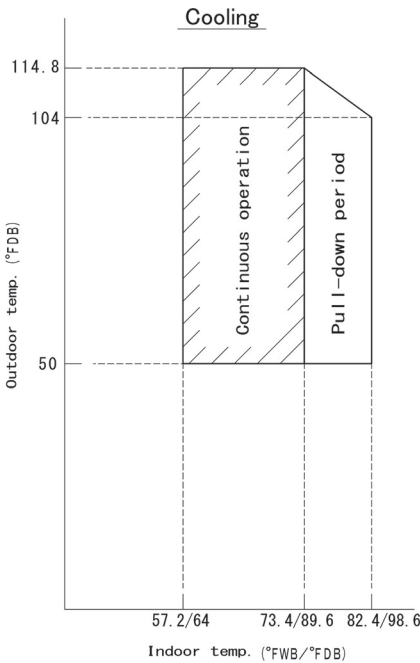
**Note(s)**

A1P: Main PCB

Refer to page 22 for Printed Circuit Board Connector Wiring Diagram.

3. Operation Limit

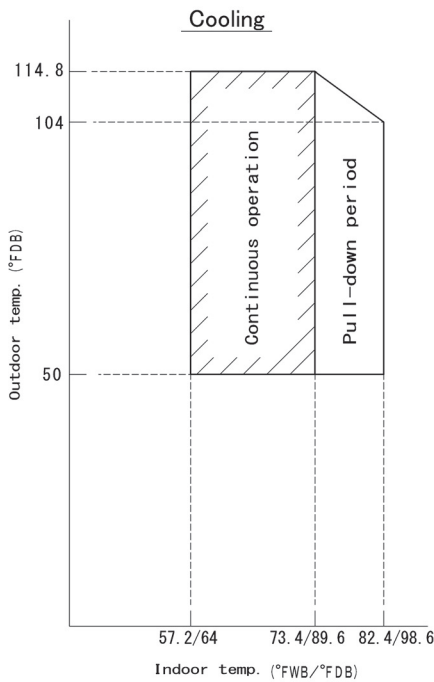
RKV30/36AVJU9



Notes:
1. The graphs are based on the following conditions.
• Equivalent piping length 25ft
• Level difference 0ft
• Air flow rate High

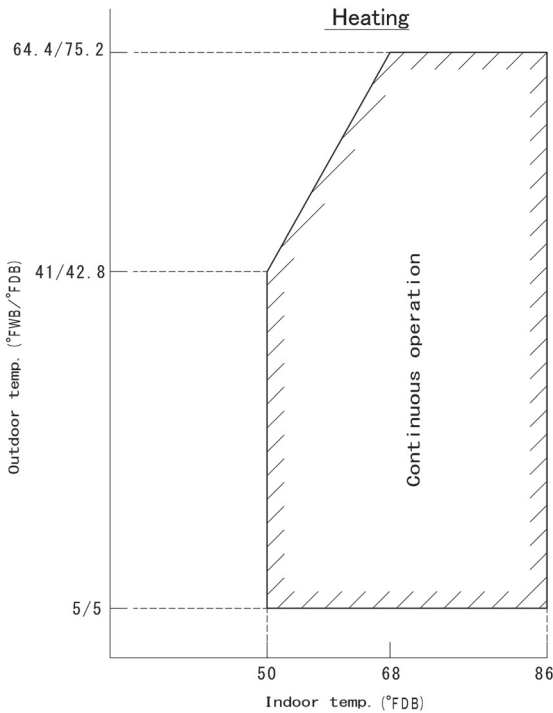
4D161027

RXV30/36AVJU9



Notes:
1. The graphs are based on the following conditions.
• Equivalent piping length 25ft
• Level difference 0ft
• Air flow rate High

3D160695



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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