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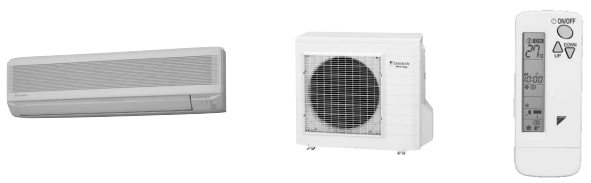
Inverter Pair FTXD-J, FLX-J / RXD-J Series



Wall Mounted Type
●Heat Pump

Indoor Unit	**FTXD50JV1B** **FTXD60JV1B** **FTXD71JV1B**
Outdoor Unit	**RXD50JV1B** **RXD60JV1B** **RXD71JV1B**

Floor / Ceiling Suspended Dual Type
●Heat Pump

Indoor Unit	**FLX50JV1B** **FLX60JV1B**
Outdoor Unit	**RXD50JV1B** **RXD60JV1B**

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1. Introduction

1.1 Safety Cautions

Cautions and Warnings

- Be sure to read the following safety cautions before conducting repair work.
- The caution items are classified into " ⚠ **Warning**" and " ⚠ **Caution**". The " ⚠ **Warning**" items are especially important since they can lead to death or serious injury if they are not followed closely. The " ⚠ **Caution**" items can also lead to serious accidents under some conditions if they are not followed. Therefore, be sure to observe all the safety caution items described below.
- About the pictograms
  - △ This symbol indicates an item for which caution must be exercised.
    The pictogram shows the item to which attention must be paid.
  - ◯ This symbol indicates a prohibited action.
    The prohibited item or action is shown inside or near the symbol.
  - ● This symbol indicates an action that must be taken, or an instruction.
    The instruction is shown inside or near the symbol.
- After the repair work is complete, be sure to conduct a test operation to ensure that the equipment operates normally, and explain the cautions for operating the product to the customer

1.1.1 Cautions in Repair

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

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

1.1.2 Cautions Regarding Products after Repair

⚠ Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	
Be sure to use the specified cable to connect between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections can cause excessive heat generation or fire.	

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⚠ Warning	
When connecting the cable between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section can cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable can cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable can damage the cable.	
Do not mix air or gas other than the specified refrigerant (R22) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leak and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leak cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it can generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

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

1.1.3 Inspection after Repair

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

⚠ Caution	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.	

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Caution	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 Mohm or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

1.1.4 Using Icons

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

1.1.5 Using Icons List

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

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Part 1
List of Function

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1. Functions

1.1 List of Functions

Category	Functions	FTXD50·60·71JV1B RXD50·60·71JV1B	FLX50·60JV1B RXD50·60JV1B	Category	Functions	FTXD50·60·71JV1B RXD50·60·71JV1B	FLX50·60JV1B RXD50·60JV1B
Basic Function	Inverter (with Inverter Power Control)	○	○	Health Health & Clean	Air Purifying Filter with Bacteriostatic, Virustatic & Deodorizing Functions	○	○
	Operation Limit for Cooling (˚C)	-10 ~46	-10 ~46		Longlife Filter	—	—
	Operation Limit for Heating (˚C)	-15 ~18	-15 ~18		Ultra-Longlife Filter (Option)	—	—
	Microprocessor Control	○	○		Photocatalytic Deodorizing Filter	—	—
	PAM Control	○	○		Photocatalytic Filter with UV Lamp	—	—
Compressor	Oval Scroll Compressor (DAIKIN SCROLL)	—	—		Mold Proof Air Filter	○	○
	Swing Compressor (DAIKIN ROTARY)	○	○		Washable Grille	○	—
	Rotary Compressor	—	—		Filter Cleaning Indicator	—	—
	Reluctance DC Motor	○	○		Good-Sleep Cooling Operation	—	—
Comfortable Airflow	Dual Flaps	—	—	Timer	72-Hour On/Off Timer	—	—
	Power-Airflow Dual Flaps	○ 5 Step	—		24-Hour On/Off Timer	○	○
	Power-Airflow Diffuser	○	—		Night Set Mode	○	○
	Wide-Angle Louvers	○ 5 Step	○		Just Fit Thermostatic Timer	—	—
	Vertical Auto-Swing (Up and Down)	○	○	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	○
	Horizontal Auto-Swing (Right and Left)	○	—		Self-Diagnosis (Digital, LED) Display	○	○
	3-D Airflow	○	—		The Remote Controller Loss Prevention with the Chain (Option)	○	○
	3-Step Airflow (H/P Only)	—	—		Wiring-Error Check	—	—
Comfortable Control Comfort Control	Auto Fan Speed	○	○		Anticorrosion Treatment of Outdoor Heat Exchanger	○	○
	Silent Operation Control (Automatic)	—	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	○	○
	Outdoor Unit Silent Operation (Manual)	○	○		Flexible Voltage Correspondence	○	○
	Intelligent Eye	—	—		High Ceiling Application	—	—
	Quick Warming Function	○	○		Chargeless	10m	10m
	Hot-Start Function	○	○	Remote Control	5-Rooms Centralized Controller (Option)	○	○
	Automatic Defrosting	○	○		Remote Control Adaptor (Option) (Normal Open-Pulse)	○	○
Operation	Automatic Operation	○	○		Remote Control Adaptor (Normal Open Contact)	○	○
	Programme Dry Function	○	○		DIII-NET Compatible (Adaptor)	○	○
	Fan Only	—	—	Remote Controller	Wireless	○	○
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	—	—		Wired	—	—
	Inverter Powerful Operation	○	○				
	Priority-Room Setting	—	—				
	Laundry Programme Operation	—	—				
	Home Leave Operation	○	○				
	Power Selection	—	—				
	Indoor Unit On/Off Switch	○	○				
	Signal Reception Indicator	○	○				
	Temperature Display	—	—				

Note: ○ : Holding Functions
— : No Functions

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Part 2
Specifications

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1. Specifications

1.1 Wall Mounted Type

230V, 50Hz

Models	Indoor Units		FTXD50JV1B		FTXD60JV1B	
	Outdoor Units		RXD50JV1B		RXD60JV1B	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min.~Max.)		kW	5.2 (0.9~5.8)	6.5 (0.9~8.0)	6.2 (0.9~7.0)	7.2 (0.9~8.5)
		Btu/h	17,800 (3,100~19,800)	22,200 (3,100~27,300)	21,200 (3,100~24,000)	24,600 (3,100~29,000)
		kcal/h	4,470 (775~4,990)	5,590 (775~6,880)	5,330 (775~6,020)	6,190 (775~7,310)
Moisture Removal		L/h	2.9	—	3.9	—
Running Current (Rated)		A	7.6	8.4	9.7	9.3
Power Consumption Rated (Min.~Max.)		W	1,730 (450~2,300)	1,910 (450~2,800)	2,210 (450~2,900)	2,120 (450~3,300)
Power Factor		%	99.0	98.9	99.1	99.1
COP		W/W	3.01	3.40	2.81	3.40
Piping Connections	Liquid	mm	ϕ6.4		ϕ6.4	
	Gas	mm	ϕ12.7		ϕ15.9	
	Drain	mm	ϕ18.0		ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Indoor Units			**FTXD50JV1B**		**FTXD60JV1B**	
Front Panel Color			Almond White		Almond White	
Air Flow Rate	m^3/min (cfm)	H	12.3 (434)	14.9 (526)	13.0 (459)	16.5 (582)
		M	10.7 (378)	12.8 (452)	11.5 (406)	13.7 (484)
		L	9.1 (321)	10.5 (371)	9.9 (349)	11.1 (392)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	54		54	
	Speed	Steps	5 Steps and Auto		5 Steps and Auto	
Air Direction Control			Right, Left, Horizontal and Downward		Right, Left, Horizontal and Downward	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.18	0.17	0.20	0.20
Power Consumption (Rated)		W	40	38	45	45
Power Factor		%	96.6	97.2	97.8	97.8
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		mm	298×1,050×190		298×1,050×190	
Packaged Dimensions (W×D×H)		mm	1,183×367×289		1,183×367×289	
Weight		kg	12		12	
Gross Weight		kg	16		16	
Operation Sound	H/M/L	dBA	44/40/35	42/37/32	45/41/37	44/39/34
Outdoor Units			**RXD50JV1B**		**RXD60JV1B**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		2YC32YXD		2YC45ZXD	
	Motor Output	W	1,500		1,900	
Refrigerant Oil	Model		SUNISO 4GSD.I.		SUNISO 4GSD.I.	
	Charge	L	0.4		0.75	
Refrigerant	Model		R22		R22	
	Charge	kg	1.15		1.60	
Air Flow Rate (H/L)	m^3/min		48.0/36.0	42.6/31.4	46.5/36.5	45.6/35.0
	cfm		1,694/1,271	1,504/1,108	1,641/1,288	1,610/1,236
Fan	Type		Propeller		Propeller	
	Motor Output	W	53		53	
Running Current (Rated)		A	7.42	8.23	9.50	9.10
Power Consumption (Rated)		W	1,690	1,872	2,165	2,075
Power Factor		%	99.0	98.9	99.1	99.1
Starting Current		A	8.4		9.7	
Dimensions (H×W×D)		mm	735×825×300		735×825×300	
Packaged Dimensions (W×D×H)		mm	929×359×784		929×359×784	
Weight		kg	44		51	
Gross Weight		kg	48		55	
Operation Sound		dBA	47	48	48	49
Drawing No.			3D029183		3D029184	

Notes:
- MAX. interunit piping length: 30m
- MAX. interunit height difference: 20m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor ; 27˚CDB/19˚CWB Outdoor ; 35˚CDB/24˚CWB	Indoor ; 20˚CDB Outdoor ; 7˚CDB/6˚CWB	7.5m

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m^3/min×35.3

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230V, 50Hz

Models	Indoor Units		FTXD71JV1B	
	Outdoor Units		RXD71JV1B	
			Cooling	Heating
Capacity Rated (Min.~Max.)		kW	7.1 (0.9~8.0)	8.5 (0.9~9.5)
		Btu/h	24,300 (3,100~27,300)	29,100 (3,100~32,500)
		kcal/h	6,100 (775~6,880)	7,310 (775~8,170)
Moisture Removal		L/h	4.5	—
Running Current (Rated)		A	11.5	12.0
Power Consumption Rated (Min.~Max.)		W	2,630 (450~3,450)	2,740 (450~3,800)
Power Factor		%	99.4	99.3
COP		W/W	2.70	3.10
Piping Connections	Liquid	mm	ϕ9.5	
	Gas	mm	ϕ15.9	
	Drain	mm	ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes	
Indoor Units			**FTXD71JV1B**	
Front Panel Color			Almond White	
Air Flow Rate	m^3/min (cfm)	H	13.7 (484)	17.3 (611)
		M	11.8 (417)	14.1 (498)
		L	9.9 (349)	11.1 (392)
Fan	Type		Cross Flow Fan	
	Motor Output	W	54	
	Speed	Steps	5 Steps and Auto	
Air Direction Control			Right, Left, Horizontal and Downward	
Air Filter			Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.22	0.22
Power Consumption (Rated)		W	50	50
Power Factor		%	98.8	98.8
Temperature Control			Microcomputer Control	
Dimensions (H×W×D)		mm	298×1,050×190	
Packaged Dimensions (W×D×H)		mm	1,183×367×289	
Weight		kg	12	
Gross Weight		kg	16	
Operation Sound	H/M/L	dBA	46/42/37	46/40/34
Outdoor Units			**RXD71JV1B**	
Casing Color			Ivory White	
Compressor	Type		Hermetically Sealed Swing Type	
	Model		2YC63ZXD	
	Motor Output	W	1,900	
Refrigerant Oil	Model		SUNISO 4GSD.I.	
	Charge	L	0.65	
Refrigerant	Model		R22	
	Charge	kg	1.70	
Air Flow Rate (H/L)	m^3/min		51.5/41.5	45.6/35.6
	cfm		1,818/1,465	1,610/1,257
Fan	Type		Propeller	
	Motor Output	W	53	
Running Current (Rated)		A	11.28	11.78
Power Consumption (Rated)		W	2,580	2,690
Power Factor		%	99.4	99.3
Starting Current		A	12.0	
Dimensions (H×W×D)		mm	735×825×300	
Packaged Dimensions (W×D×H)		mm	929×359×784	
Weight		kg	53	
Gross Weight		kg	57	
Operation Sound		dBA	52	52
Drawing No.			3D029185	

Notes:
- MAX. interunit piping length: 30m
- MAX. interunit height difference: 20m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor ; 27˚CDB/19˚CWB Outdoor ; 35˚CDB/24˚CWB	Indoor ; 20˚CDB Outdoor ; 7˚CDB/6˚CWB	7.5m

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m^3/min×35.3

- The Fan Control of the Outdoor Unit on the Outdoor Conditions Less than 10˚C (In Cool Operation)

		RXD50JV1B	RXD60JV1B	RXD71JV1B
Fan Motor Rotation Speed (rpm)	LL	280	320	320
	LLL	200	200	200
Air Flow Rate (m^3/min)	LL	17.0	19.0	19.0
	LLL	11.0	11.0	11.0
The Outdoor Temperature (˚C)	LL	0˚C~10˚C	0˚C~10˚C	0˚C~10˚C
	LLL	Less than 0˚C	Less than 0˚C	Less than 0˚C

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1.2 Floor / Ceiling Suspended Dual Type

230V 50Hz

Models	Indoor Units		FLX50JV1B		FLX60JV1B	
	Outdoor Units		RXD50JV1B		RXD60JV1B	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min.~Max.)		kW	4.7 (0.9~5.3)	6.1 (0.9~7.5)	5.7 (0.9~6.5)	6.7 (0.9~8.0)
		Btu/h	16,000 (3,100~18,100)	20,800 (3,100~25,600)	19,500 (3,100~22,200)	22,900 (3,100~27,300)
		kcal/h	4,040 (775~4,560)	5,250 (775~6,450)	4,900 (775~5,590)	5,760 (775~6,880)
Moisture Removal		L/h	2.9	—	3.9	—
Running Current (Rated)		A	6.4	8.0	8.7	8.7
Power Consumption Rated (Min.~Max.)		W	1,470 (450~1,950)	1,820 (450~2,630)	1,990 (450~2,670)	2,000 (450~3,300)
Power Factor		%	99.9	98.9	99.5	100.0
COP		W/W	3.20	3.35	2.86	3.35
Piping Connections	Liquid	mm	ϕ6.4		ϕ6.4	
	Gas	mm	ϕ12.7		ϕ15.9	
	Drain	mm	ϕ18.0		ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Indoor Units			**FLX50JV1B**		**FLX60JV1B**	
Front Panel Color			Almond White		Almond White	
Air Flow Rate	m^3/min (cfm)	H	11.4 (402)	12.1 (427)	12.0 (424)	12.8 (452)
		M	9.9 (349)	9.8 (346)	10.6 (374)	10.6 (374)
		L	8.5 (300)	7.5 (265)	9.3 (328)	8.4 (297)
Fan	Type		Sirocco Fan		Sirocco Fan	
	Motor Output	W	34		34	
	Speed	Steps	5 Steps and Auto		5 Steps and Auto	
Air Direction Control			Right, Left, Horizontal and Downward		Right, Left, Horizontal and Downward	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.43	0.42	0.45	0.43
Power Consumption (Rated)		W	96	96	98	96
Power Factor		%	97.1	99.4	94.7	97.1
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		mm	490×1,050×200		490×1,050×200	
Packaged Dimensions (W×D×H)		mm	1,100×566×284		1,100×566×284	
Weight		kg	17		17	
Gross Weight		kg	24		24	
Operation Sound	H/M/L	dBA	47/43/39	46/41/35	48/45/41	47/42/37
Outdoor Units			**RXD50JV1B**		**RXD60JV1B**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		2YC32YXD		2YC45ZXD	
	Motor Output	W	1,500		1,900	
Refrigerant Oil	Model		SUNISO 4GSD.I.		SUNISO 4GSD.I.	
	Charge	L	0.4		0.75	
Refrigerant	Model		R22		R22	
	Charge	kg	1.15		1.60	
Air Flow Rate (H/L)	m^3/min (cfm)	H	48.0 (1,694)	42.6 (1,504)	46.5 (1,641)	45.6 (1,610)
		L	36.0 (1,271)	31.4 (1,108)	36.5 (1,288)	35.0 (1,236)
Fan	Type		Propeller		Propeller	
	Motor Output	W	53		53	
Running Current (Rated)		A	5.97	7.58	8.25	8.27
Power Consumption (Rated)		W	1,374	1,724	1,892	1,904
Power Factor		%	100.0	98.9	99.7	100.0
Starting Current		A	8.0		8.7	
Dimensions (H×W×D)		mm	735×825×300		735×825×300	
Packaged Dimensions (W×D×H)		mm	929×359×784		929×359×784	
Weight		kg	44		51	
Gross Weight		kg	48		55	
Operation Sound		dBA	47	48	48	49
Drawing No.			3D029186		3D029187	

Notes:

- MAX. interunit piping length: 30m
- MAX. interunit height difference: 20m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor ; 27˚CDB/19˚CWB Outdoor ; 35˚CDB/24˚CWB	Indoor ; 20˚CDB Outdoor ; 7˚CDB/6˚CWB	7.5m

- The Fan Control of the Outdoor Unit on the Outdoor Conditions Less than 10˚C (In Cool Operation)

		RXD50JV1B	RXD60JV1B
Fan Motor Rotation Speed (rpm)	LL	280	320
	LLL	200	200
Air Flow Rate (m^3/min)	LL	17.0	19.0
	LLL	11.0	11.0
The Outdoor Temperature (˚C)	LL	0˚C~10˚C	0˚C~10˚C
	LLL	Less than 0˚C	Less than 0˚C

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m^3/min×35.3

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Part 3
Printed Circuit Board Connector Wiring Diagram

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1. Printed Circuit Board Connector Wiring Diagram and Name

1.1 Name of Connectors for Indoor Unit

1)	S6	Connector for Swing Motor (Horizontal Swing)
2)	S7	Connector for Fan Motor
3)	S8	Connector for Swing Motor (Vertical Swing) Wall Mounted Type Only
4)	S21	Connector for Centralized Control
5)	S24	Connector for Display PCB
6)	S25, S27, S36	Connector for Control PCB
7)	S26	Connector for Signal Receiver PCB
8)	S31, S32	Connector for Room Temp. / Heat Exchanger Thermistor
9)	S37	Connector for Power Supply PCB
10)	S201	Connector for Fan Motor

Note: Other Designations

1)	V1	Varistor
2)	J2 / JA	Address Setting Jumper
	JB	Fan Speed Setting Jumper
	JC	Power Failure Recovery Function. * Refer to the next page for more detail.
3)	SW7 (S1W)	Operation Switch
4)	LED3 (GRN)	LED for Operation
5)	LED4 (YLW)	LED for Timer
6)	LED5 (RED)	LED for Home Leave Operation
7)	LED A, LED B	LED for Service Monitor

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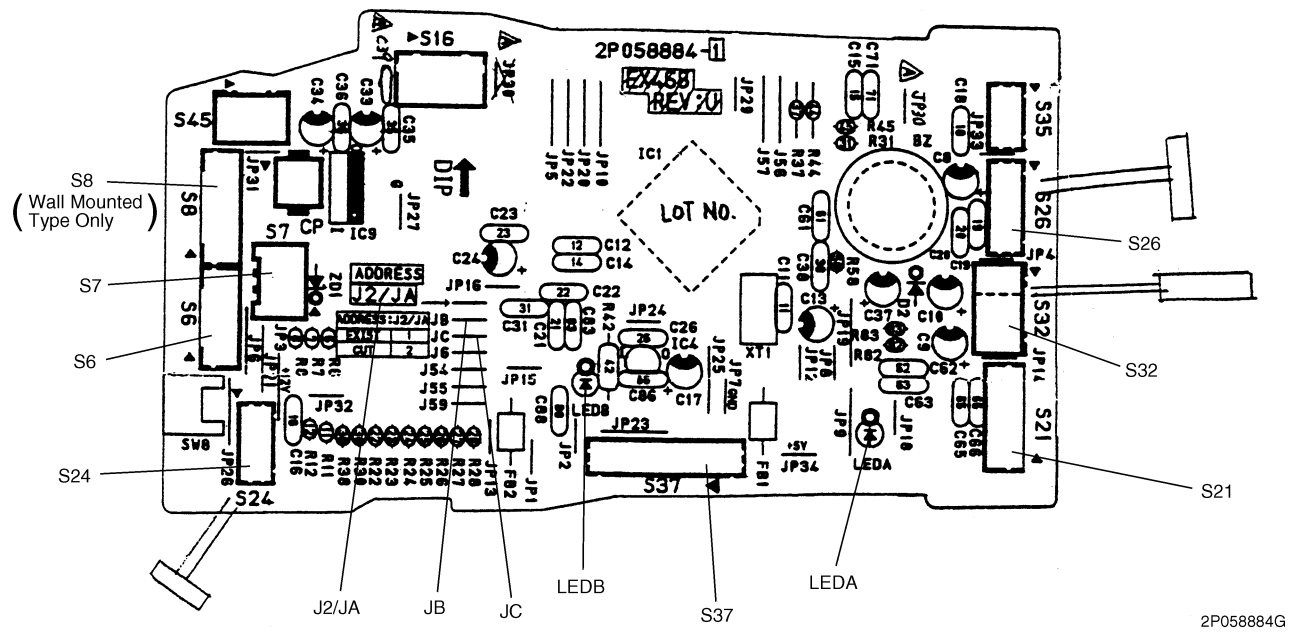
1.2 FTXD50 / 60 / 71J Series

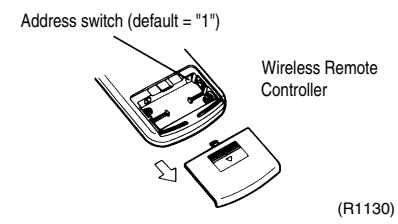
1.2.1 Control PCB Detail (PCB 1)

- PCB is common for both wall mounted type and floor/ceiling suspended dual type except for the connectors which are different in their mating plug.



Jumper (On Indoor PC Board)	Function	When Connected	When Cut
J2 / JA	When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.	1 (★)	2 (★)
JB	Fan speed setting when compressor is OFF on thermostat.	Fan speed setting ; Remote controller setting	Fan rpm is set to “0” <Fan Stop>
JC	Power failure recovery function	Auto start	Unit does not resume operation after recovering from a power failure, timer ON-OFF setting are cleared.

★ Match the numbers printed at the backside of the wireless remote controller and allocate them to each indoor unit.



(R1130)

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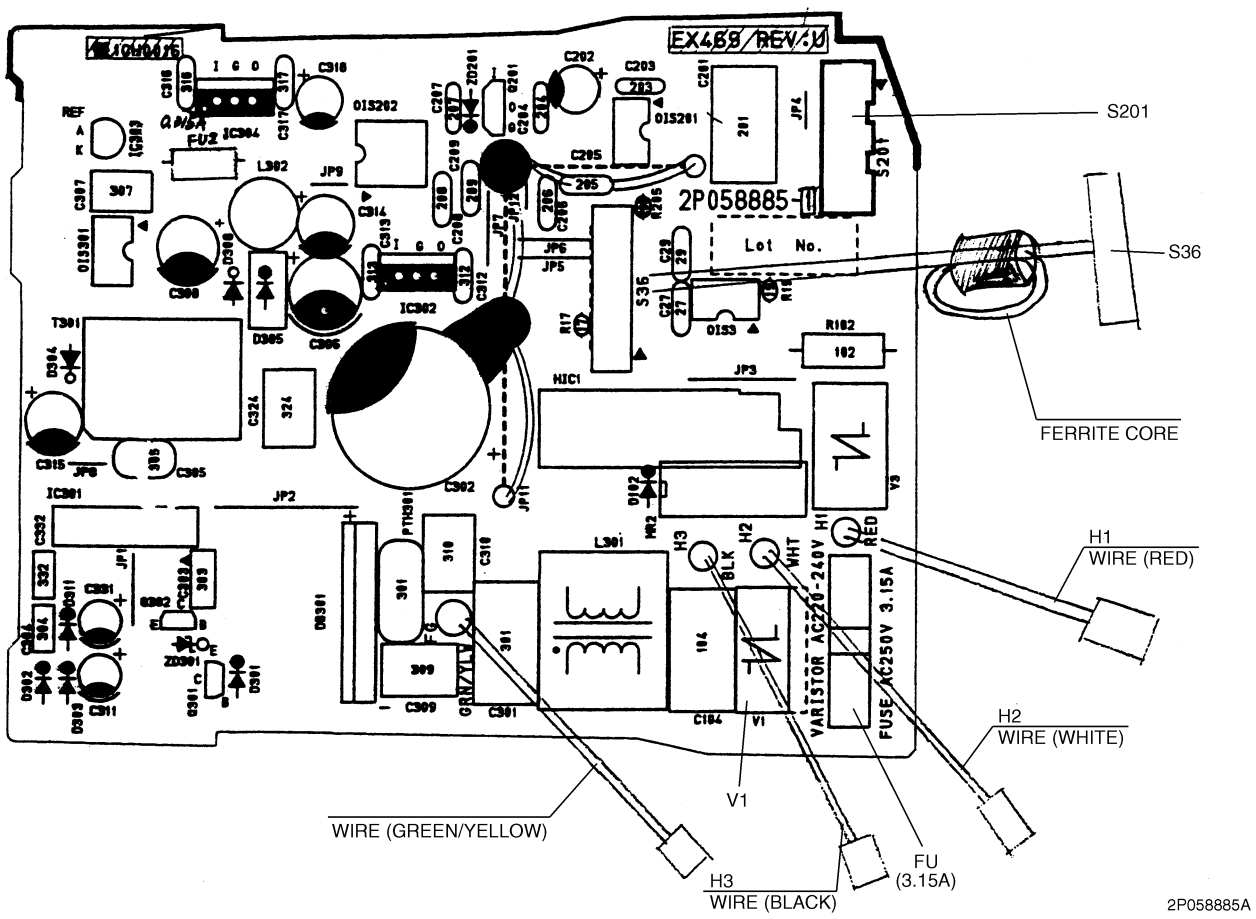
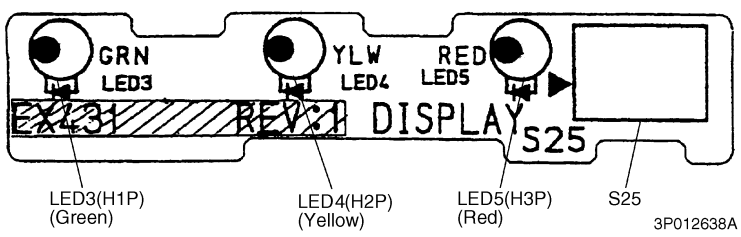
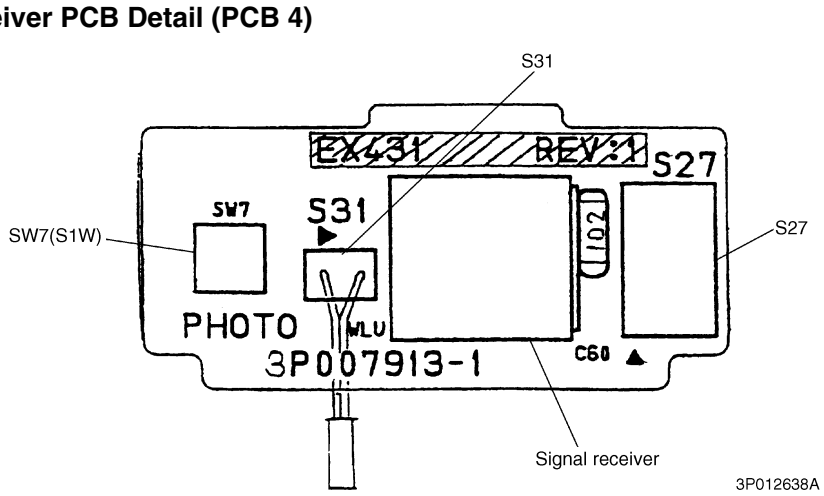
1.2.2 Power Supply PCB Detail (PCB 2)



1.2.3 Display PCB Detail (PCB 3)



1.2.4 Signal Receiver PCB Detail (PCB 4)



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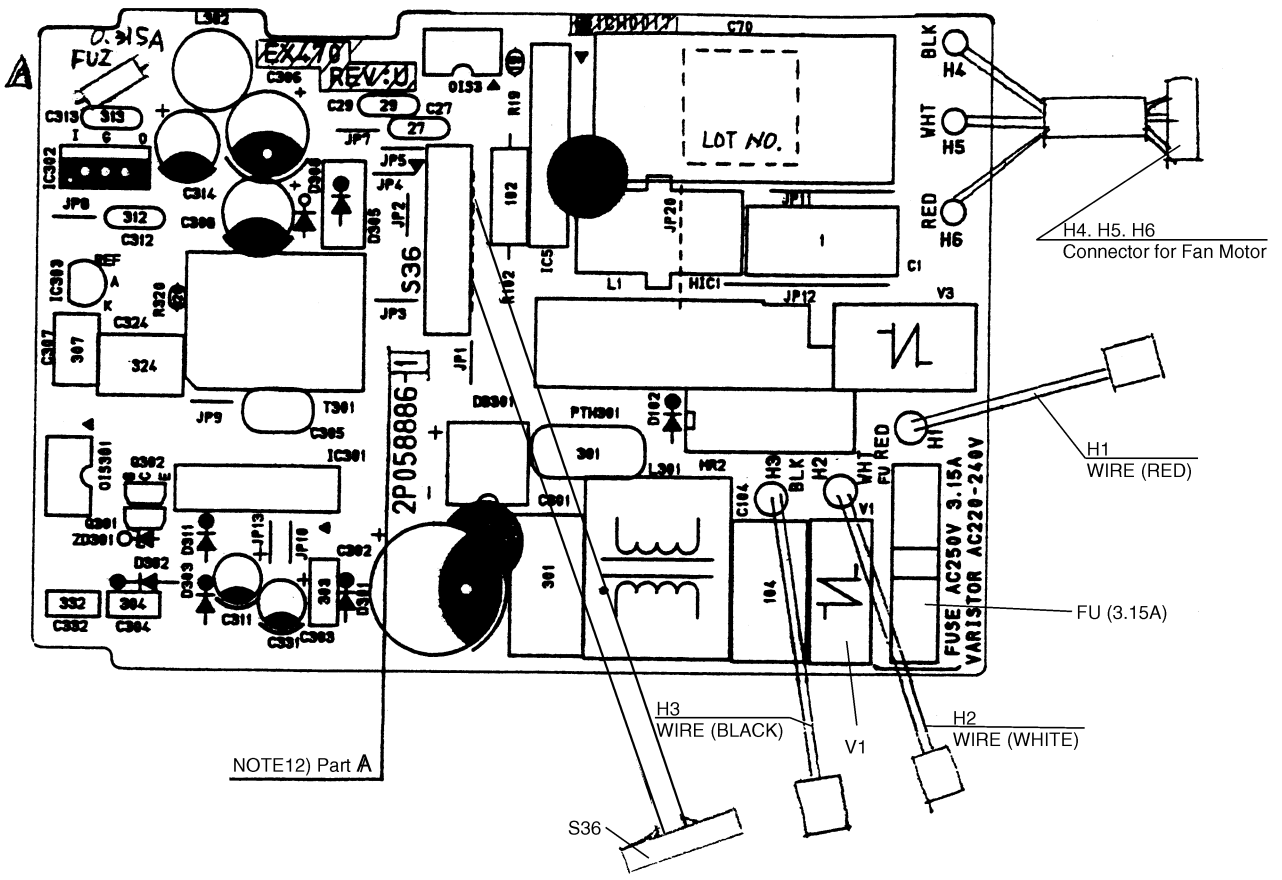
1.3 FLX50 / 60J Series

1.3.1 Control PCB (PCB 1)

Refer to 1.2.1

1.3.2 Power Supply PCB (PCB 2)



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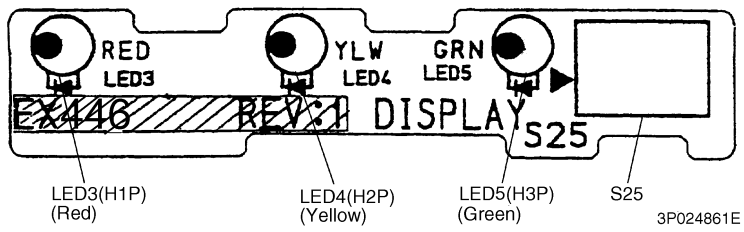
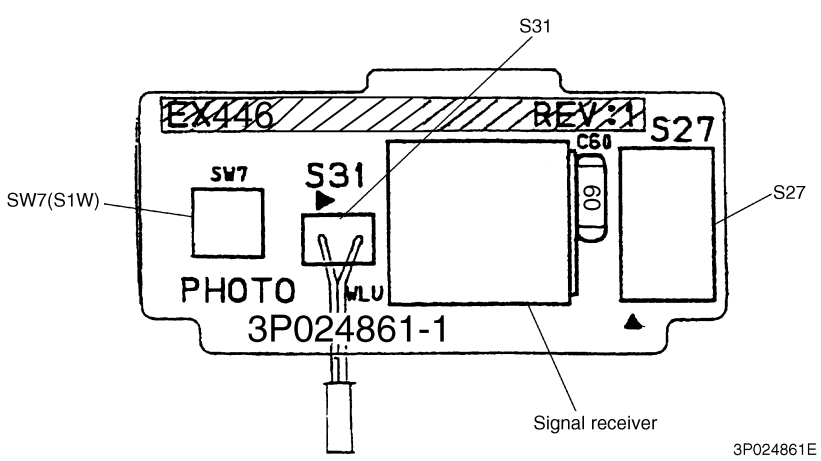
1.3.3 Display PCB Detail (PCB 3)



1.3.4 Signal Receiver PCB Detail (PCB 4)



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1.4 Name of Connectors for Outdoor Unit

1)	S3, S5, S7, S8	Connector for PCB 2
2)	S20, S80	Connector for 4 Way Valve Coil (Heat Pump Only)
3)	S40	Connector for TFU (76˚C)
4)	S50	Connector for Long Piping Jumper
5)	S70	Connector for Fan Motor
6)	S90	Connector for Thermistor
7)	S101	Connector for Active Module
8)	S110	Harness for PCB 1
9)	S200, S210, S220	Connector for PCB 1
10)	S230	Connector for Compressor Motor (UVWN)

Note: Other Designation

1)	V1, V3	Varistor
2)	LED A, LED 1 to 4	Service Monitor LED

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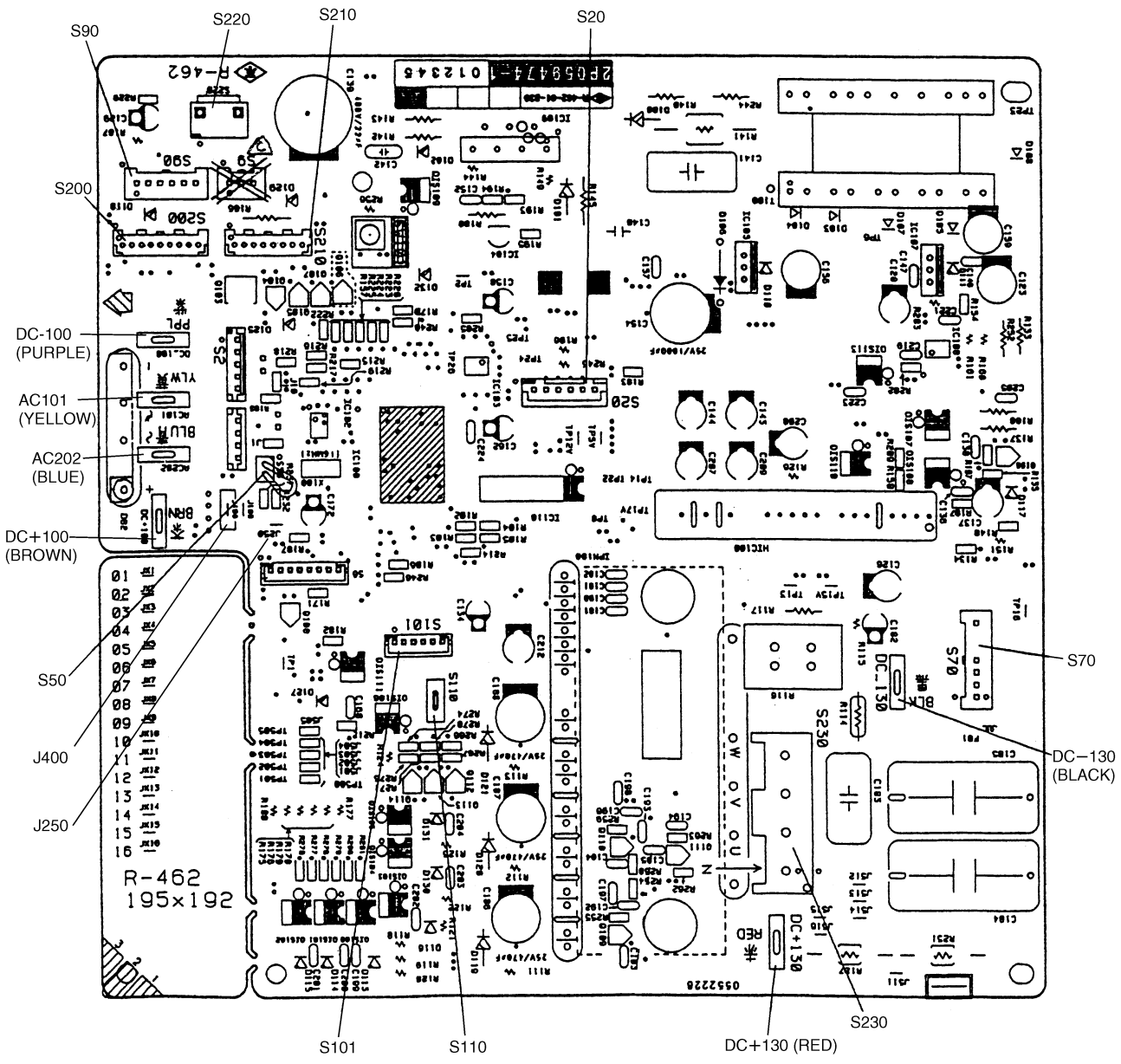
1.5 RXD50 / 60 / 71J Series

1.5.1 Control PCB



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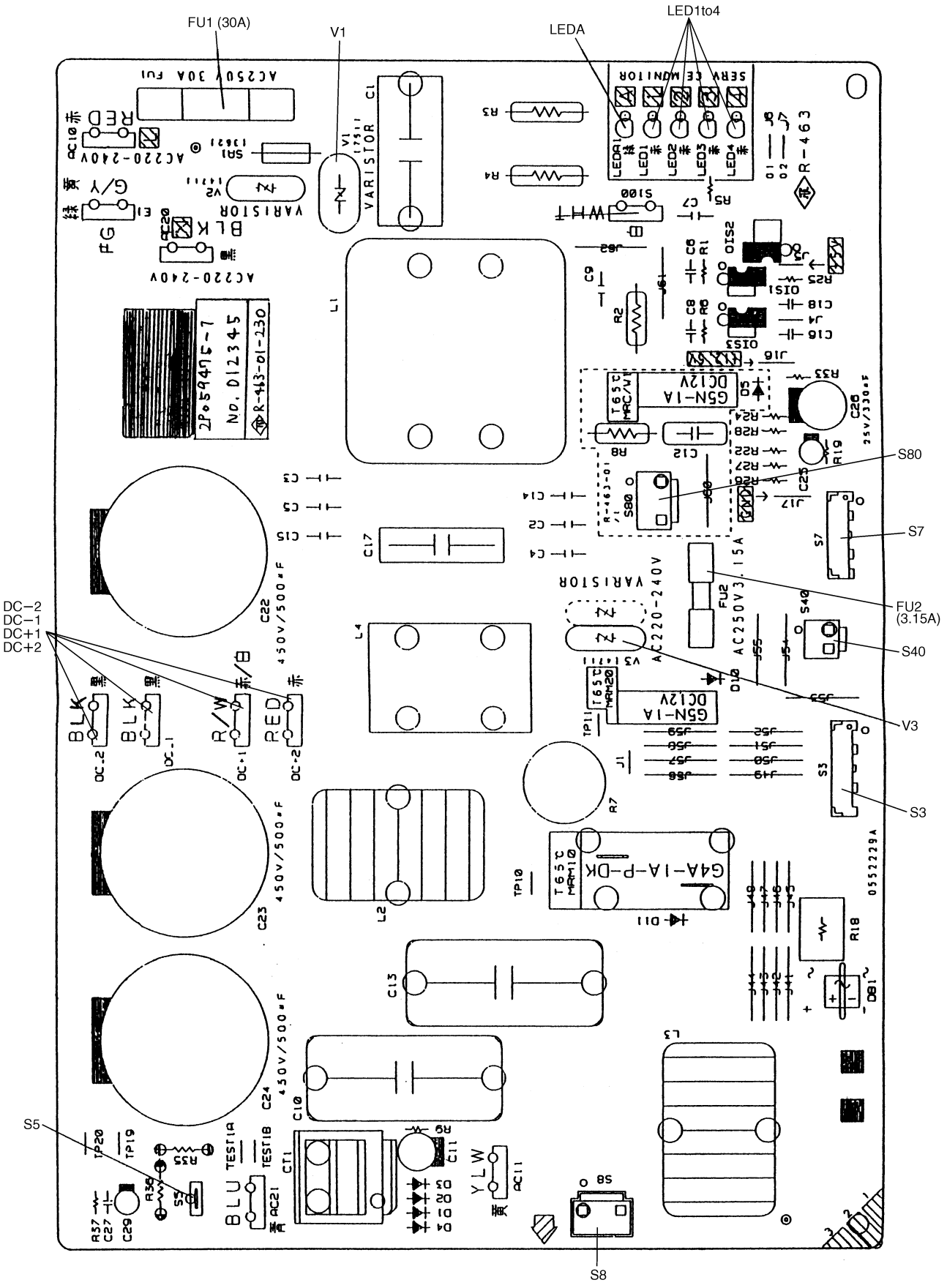
1.5.2 Filter PCB



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Part 4
Main Function

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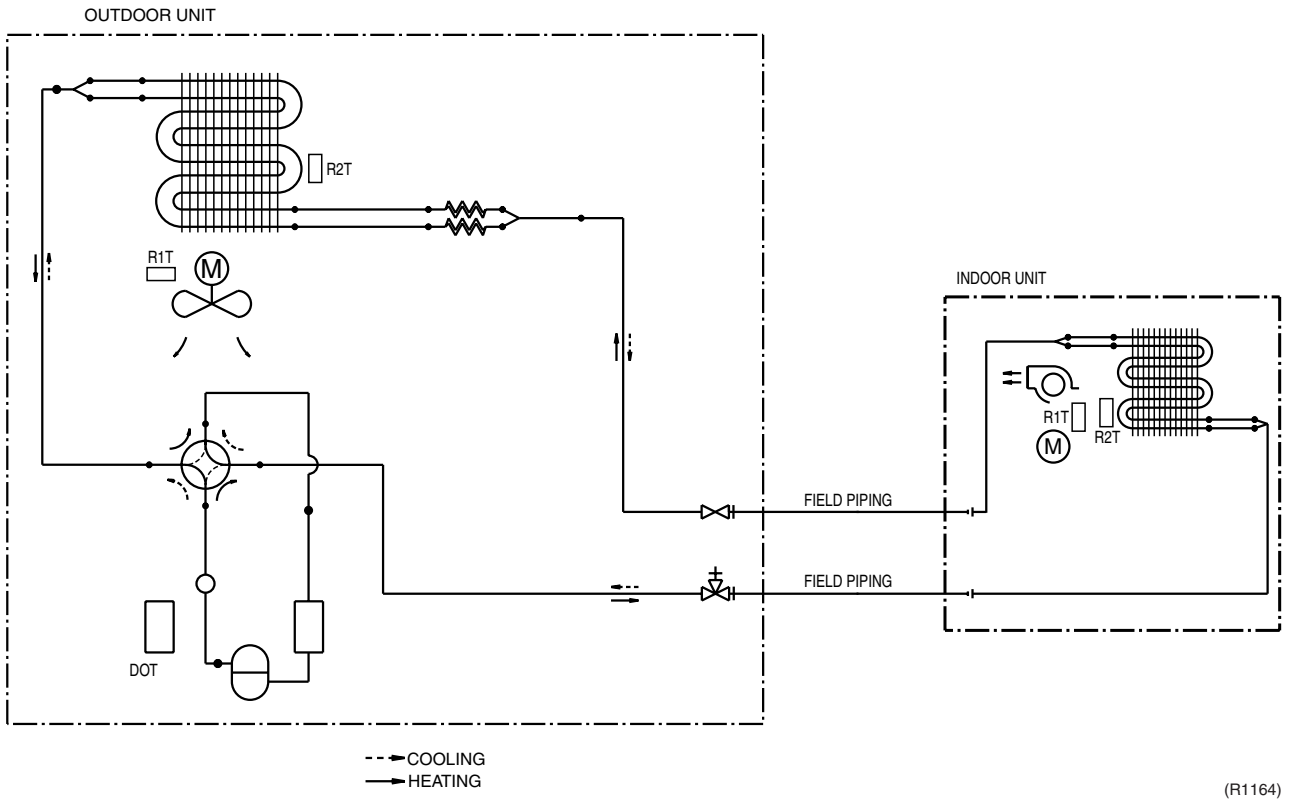
1. General Functions

1.1 Functions of Thermistors

Location of the Thermistors

The thermistors on the drawing below are used to control the system. This control secures a proper cooling and prevents problems of the unit:



(R1164)

Frequency Control

The following table shows the thermistors that control the frequency:

Controls	Outdoor heat exchanger thermistor	Outdoor ambient temperature thermistor	Indoor ambient temperature thermistor	Indoor heat exchanger thermistor	Discharge pipe temperature thermistor
Symbol	R2T	R1T	R1T	R2T	DOT
Freeze-up prevention. Refer to page 36.	—	—	—	○	—
Peak cut. Refer to page 37.	—	—	—	○	—
Defrost. Refer to page 21.	○	○	—	○	—
Input current control. Refer to page 35.	—	○	—	—	—
Dew prevention. Refer to page 42.	—	○	—	○	—
Low outdoor temperature frequency control.	—	○	—	—	—
Discharge pipe temperature control.	—	—	—	—	○

with ○: available functions and — : no available functions.

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1.2 Operating Modes

Modes

There are two operating modes:
- Normal operating mode
- Forced operating mode

Overview

The following table shows the different control modes of the Split inverter room air conditioners:

Mode	Item
Normal Operating Mode	Auto (Heat pump only)
	Cooling
	Dry keep
	Heating (Including Automatic defrost, for Heat pump only)
	Fan (Cooling only)
	Stop mode: ■ Pre-heat operation. Refer to “Pre-heat operation”. ■ Stop
Test Operation	Forced cooling / heating (Forced heating is for Heat pump only)
Forced Operating Mode	Forced cooling

Refer to “Pre-heat operation” on page 30

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1.3 Frequency Principle

Main Control Parameters

The compressor is frequency-controlled during normal operation. The target frequency is set by the following 2 parameters coming from the operating indoor unit:

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

Additional Control Parameters

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

- Frequency restrictions
- Initial settings
- Forced cooling/heating operation

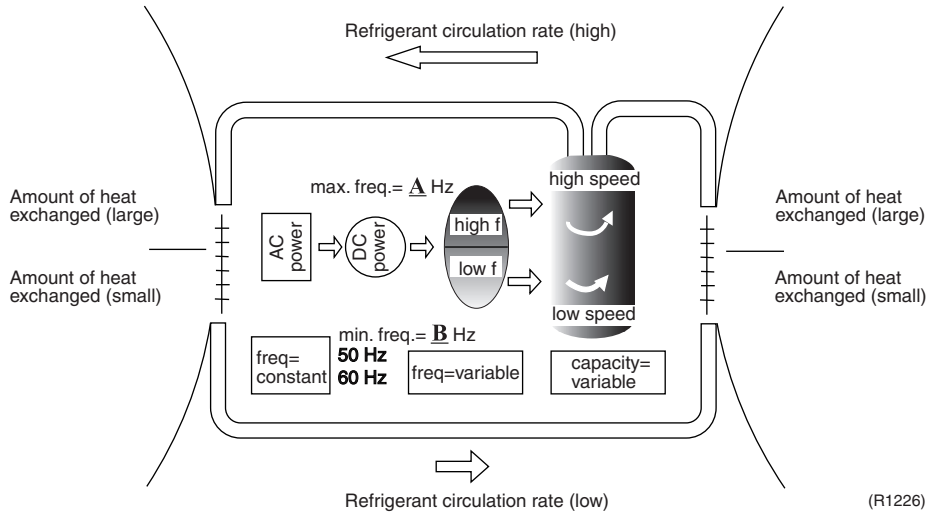
Inverter Principle

To regulate the capacity, a frequency control is needed. The inverter makes it possible to vary the rotation speed of the compressor. The following table explains the conversion principle:

Phase	Description
1	The supplied AC power source is converted into the DC power source for the present.
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 increased refrigerant circulation. This leads to a higher amount of the heat exchange per unit. ■ When the frequency decreases, the rotation speed of the compressor decreases resulting in a decreased refrigerant circulation. This leads to a lower amount of the heat exchange per unit.

Drawing of Inverter

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



		A	B
Cooling	50 class	102	32
	60 class	96	28
	71 class	84	28
Heating	50 class	108	54
	60 class	98	40
	71 class	108	34

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1.4 Defrost Control

Principle

When frost deposit on the outdoor heat exchanger has increased in heating operation, change the operation from heating cycle to cooling cycle for defrosting.

Start Conditions

Defrost control is set by the following conditions:

- During heating
- More than 35 minutes after the compressor has started up
- When condition 1 or 2 in the table below are applicable:

Condition	Description
1	■ More than 35 minutes of accumulated running time ■ Less than 90 minutes of accumulated running time ■ Condition 1, 2 or 3 in the table below
2	■ More than 90 minutes of accumulated running time ■ Condition 1, 4 or 5 in the table below

Conditions

The following table shows the different conditions on which defrost control is based:

Conditions	Description
1	$T_{[outdoor\ heat\ exchanger]} < -12^{\circ}C$ for 1 min.
2	■ $T_{[ambient\ outdoor]} < 5^{\circ}C$ ■ $T_{[outdoor\ heat\ exchanger]} < (-5 + T_{[ambient\ outdoor]} \times 0.4)$ ■ check if $T_{[indoor\ heat\ exchanger]}$ decreases 5 times every 10 seconds
3	■ $T_{[ambient\ outdoor]} \geq 5^{\circ}C$ ■ $T_{[outdoor\ heat\ exchanger]} < -3^{\circ}C$ ■ check if $T_{[indoor\ heat\ exchanger]}$ decreases 5 times every 10 seconds
4	■ $T_{[ambient\ outdoor]} < 5^{\circ}C$ for 60 seconds ■ $T_{[outdoor\ heat\ exchanger]} < (-5 + T_{[ambient\ outdoor]} \times 0.4)$ for 60 seconds
5	■ $T_{[ambient\ outdoor]} \geq 5^{\circ}C$ for 60 seconds ■ $T_{[outdoor\ heat\ exchanger]} < -3^{\circ}C$ for 60 seconds

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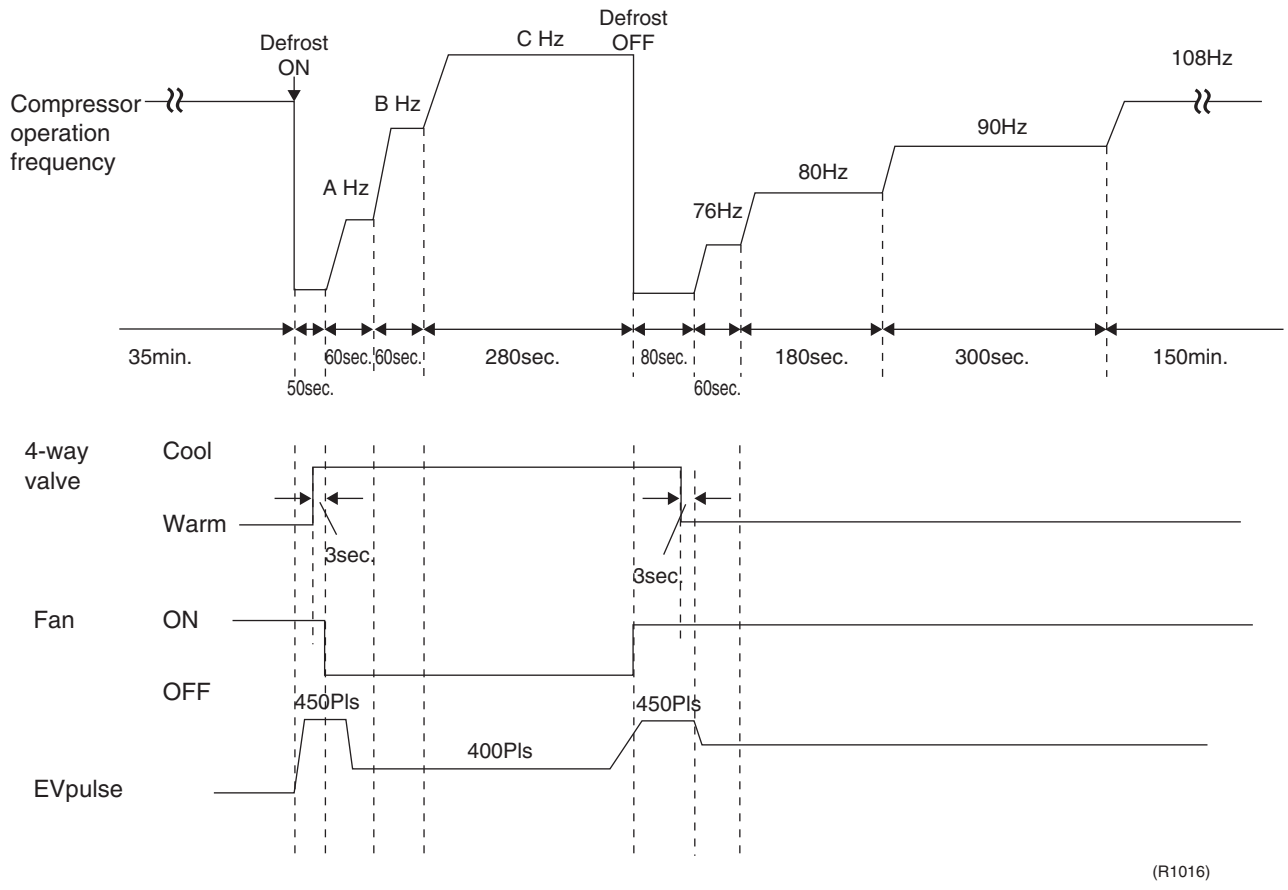
Time Chart



Stop Conditions

Defrost control is ended by the conditions as follows:

- When the maximum time elapses.
- $T_{[heat\ exchanger]} \geq (-1^{\circ}C \times T_{[ambient\ outdoor]}) + 18$, or $T_{[heat\ exchanger]} \geq 20^{\circ}C$.

	Minimum time	Maximum time (including stop time)	Compressor frequency in defrosting			
			Class	A	B	C
T [ambient outdoor] ≥ 0˚C	2 min.	approx. 9 min.	50	74	84	90
			60	66	74	78
			70	58	66	72
T [ambient outdoor] < 0˚C	2 min.	approx. 11 min.	50	78	88	94
			60	70	78	82
			70	62	70	76

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1.5 Forced Operation Mode

1.5.1 J type

Operation by the Operation Buttons Provided at the Unit or the Remote Controller

Item	Forced cooling	Forced heating
Conditions	■ not in the 3-minute stand-by mode ■ normal operation mode ■ outdoor unit off ■ no malfunction in the outdoor unit ■ forced mode: cooling mode.	■ not in the 3-minute stand-by mode ■ normal operation mode ■ outdoor unit off ■ no malfunction in the outdoor unit ■ forced mode: heating mode.
Starting procedure, operating condition	1. Keep pushing the operation switch of the indoor unit for 5 to 10 seconds. 2. Change the remote controller setting to a cooling test operation. (Regarding a way to enter the test operation, refer to the note in a margin below) Possible to enter the forced cooling mode by either way of 1. or 2.. ■ Fix operation frequency to A Hz. ■ Operation-on timer :15 min. ■ Indoor unit's fan : H tap. ■ Swing flap: the latest set position.	With a change of the remote controller setting to a heating test operation, the unit enters the forced heating mode. (Regarding a way to enter the test operation mode, refer to the note in a margin below) ■ Fix operation frequency to B Hz. ■ Operation-on timer :15 min. ■ Indoor unit's fan : H tap. ■ Swing flap: the latest set position.
Reset	1. Push the operation switch of the indoor unit in an usual way. 2. Push the stop button on a remote controller. 3. Operation-on timer : 15 min. overtime.	1. Push the operation switch of the indoor unit in an usual way. 2. Push the stop button on a remote controller. 3. Operation-on timer : 15 min. overtime.

A way to enter the test operation mode by a remote controller.

1. Set on the desirous mode and push ON/OFF button. (operation ON)
2. Press the center of the temperature setting button, and the "Mode" button at the same time. (then a left figure of the liquid crystal temperature's display number starts to blink.)
3. Moreover, push "MODE" button twice. (If the liquid crystal display becomes " T ", the test operation mode will startup under the mode displayed in a liquid crystal.)

Operation by the Switch on the PCB of the Outdoor Unit

Item	Forced cooling
Conditions	■ not in the 3-minute stand-by mode ■ normal operation mode ■ outdoor unit off ■ no malfunction in the outdoor unit ■ forced mode: cooling mode.
Starting procedure, operating condition	1. Press the forced operation switch on the outdoor PCB for not longer than 5 seconds ■ Fix operation frequency to A Hz. ■ Operation-on timer : 60 min. ■ Indoor unit's fan : H tap. ■ Swing flap: the latest set position.
Reset	1. Push the operation switch of the indoor unit again. 2. Operation-on timer : 60 min. overtime. 3. Reset the forced cooling operation mode by either the procedure 1 or the procedure 2.

Class	A	B
50	56	62
60	48	70
71	48	66

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1.6 Flap Control

1.6.1 Wall Mounted J Type

Wide-angle Flap

The large flaps send a large volume of air downwards to the floor. The flap provides an optimum control area in cooling, heating and dry mode.

Diffuser

In heating operation, it supports the function of the large flap and diffuses more warm air down to the floor.

Heating Mode

During heating mode, the large flap enables direct warm air straight downwards. The diffuser presses the warm air above the floor to reach the entire room.

Cooling Mode

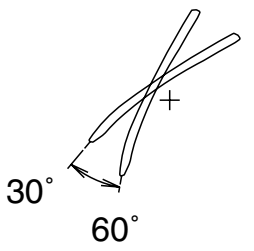
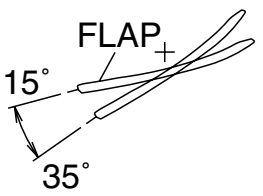
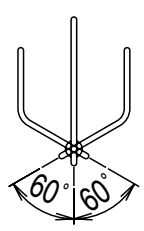
During cooling mode, the diffuser retracts into the indoor unit. Then, cool air can be blown far and pervaded all over the room.

Louvres

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

Auto Swing

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

Item		Description	Drawing
Vertical direction	Heating	The flap swings up and down as shown in the drawing alongside.	 (R1017)
	Cooling, Dry, Fan	The flap swings up and down as shown in the drawing alongside.	 (R1018)
Horizontal direction	Heating, Cooling	The flap swings right and left as shown in the drawing alongside.	 (R1019)

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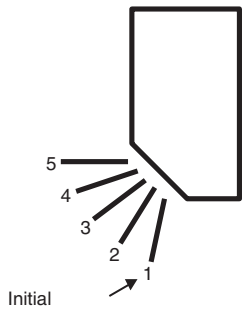
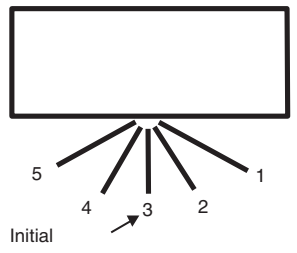
Details of the Action

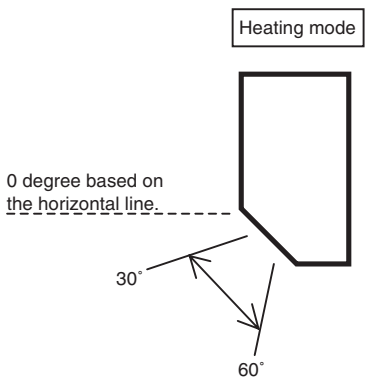
It can be commanded for J type by means of a user setting to select either any one desired position among the five-step directions of air flow adjusted on a remote controller, or Auto-swing.



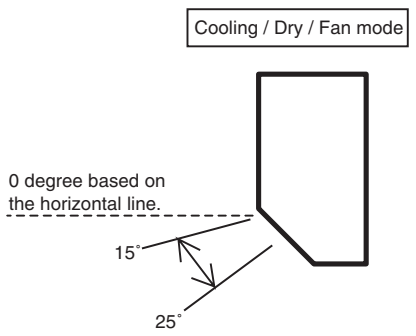


(R1020)

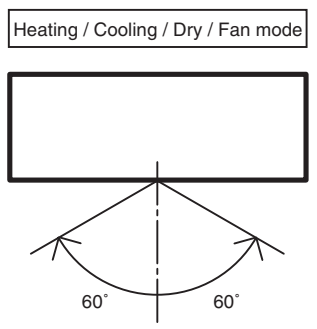
Although the liquid crystal display of the five-step directions of the air flow is common for the modes of Cooling·Dry/Heating as illustrated above, in fact the range of the swing angle is slightly different in every operation mode.
The position a user set will be selected among the five positions calculated through the preliminary and evenly divided into four partitions which were taken from the upper and lower flap angle's range limits of each mode.
When Auto-swing is chosen, the flap swings in the swing range which meets the operation mode selected.



(R1021)



(R1022)



(R1023)

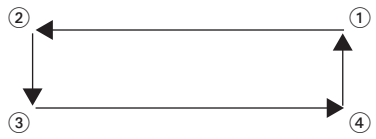
∗ Fan mode is available for the models of cooling-only.

Outline of 3-D Airflow

■ Alternative repetition of vertical and horizontal swing motions enables uniform air-conditioning of the entire room. This function is effective for starting the air conditioner.

Details of the Action

When the horizontal swing and vertical swing are both set to auto mode in J type, the airflow become 3-D airflow and the horizontal swing and vertical swing motions are alternated. The order of swing motion is such that it turns counterclockwise, starting from the right upper point as viewed to the front side of the indoor unit.



(R1024)

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1.6.2 Floor / Ceiling Suspended Dual Type

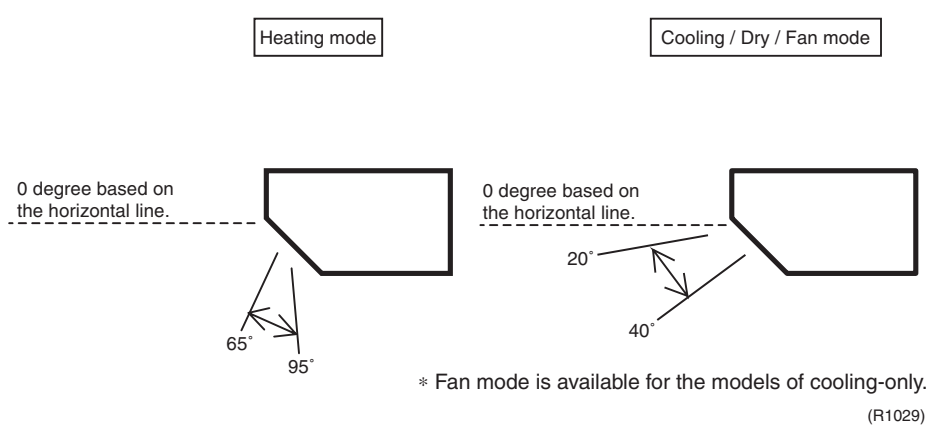
Details of the Action

Caution The direction of airflow in horizontal swing can be set in auto mode or in any position by remote controller. Set the direction of airflow by swing motion stopping operation at a position at which user want to stop the motion while watching the flap.★

★ In the case of floor/ceiling type, since the indication on the liquid crystal display and the actual direction of the flap do not agree depending on the installation pattern, the indication on the remote controller goes out if auto swing is not effected.

Swing Angle Range

Swing angle is common for ceiling type and floor type.
The following description is for the swing angle for ceiling type.



∗ Fan mode is available for the models of cooling-only.

(R1029)

■ The vertical louvre is of manual type. It turns 60 degrees to the right and 60 degrees to the left. It has a movable range of 120 degrees in total.

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1.7 Fan Speed Control for Indoor Units

Control Mode

The airflow rate can be automatically controlled depending on the difference between the set temperature and the room temperature.

Phase Steps

Phase control and fan speed control contains 8 steps: LLL, LL, L, ML, M, MH, H and HH.

Step	Cooling	Heating	Dry mode
LLL (Heating thermostat OFF)	 (R1025)	 (R1025)	FTXD : 50class : 750-1000 (1080) rpm 60class : 750-1040 (1120) rpm 71class : 750-1040 (1120) rpm FLX : 50class : 400-980 (1060) rpm 60class : 400-1060 (1140) rpm ∗ ( ) for powerful operation
LL			
L			
ML			
M			
MH			
H			
HH (Powerful)			

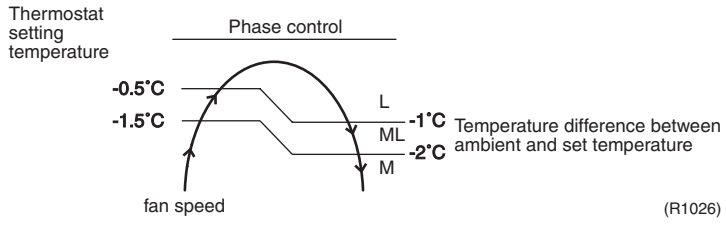
= Within this range the airflow is automatically controlled when the AIRFLOW ADJUSTING button is set to AUTOMATIC

Refer to automatic airflow control on page 27.

Note: Fan stops during defrost operation.

Automatic Air Flow Control for Heating

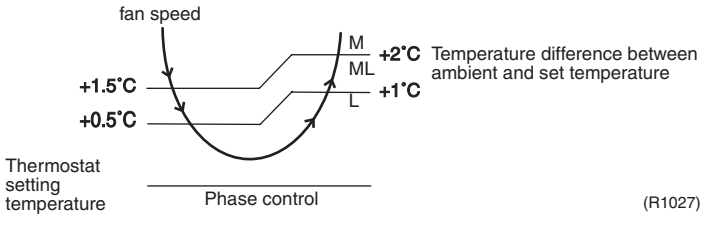
The following drawing explains the principle for fan speed control for heating:



Note: When there is no operation and the night set mode turns on, the step is low. Refer to “Night set mode” on page 31.

Automatic Air Flow Control for Cooling

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



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1.8 Fan Speed Control for Outdoor Units

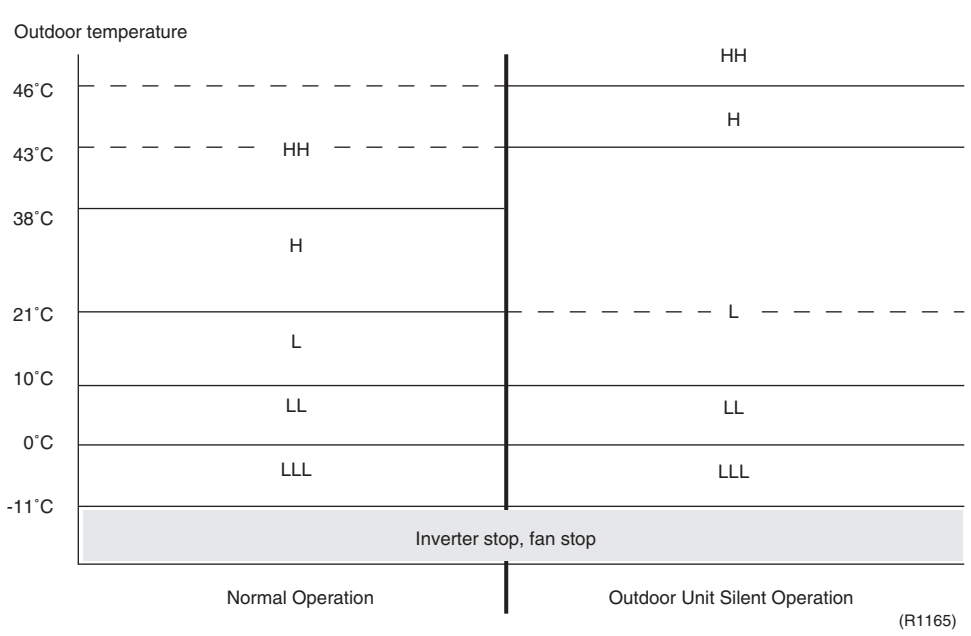
Outline

DC motor is adopted for the outdoor fan, the rotating speed is controlled depending on the condition. In outdoor unit silent operation, the rotating speed is changed further.

Details of the Action

Cooling Operation

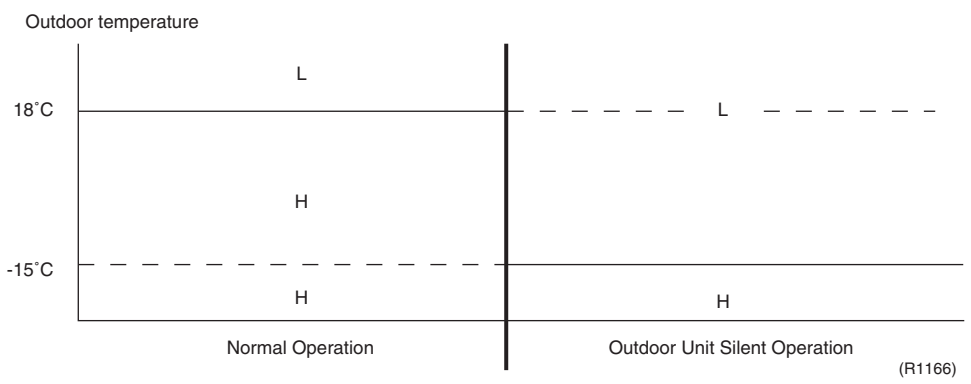
The fan tap is set as follows:



(R1165)

	50 Class	60 Class	71 Class
HH	770 rpm	760 rpm	820 rpm
H	740 rpm	730 rpm	790 rpm
L	580 rpm	580 rpm	650 rpm
LL	280 rpm	320 rpm	320 rpm
LLL	200 rpm	200 rpm	200 rpm

Heating Operation



(R1166)

	50 Class	60 Class	71 Class
H	680 rpm	730 rpm	730 rpm
L	530 rpm	550 rpm	580 rpm

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1.9 Outdoor Unit Silent Operation

Outline

This air conditioner is provided with a switch to prevent next-door neighbors from annoyance of operation noise when it is installed in a heavily built-up area. (The indoor air volume is left as set by user for measure not to annoy neighbors.)

Details of the Action

1. Starting the function

In cooling, heating and auto modes (including stopping), the function starts when the [SILENT] button is pressed.

This button, when pressed during stop, becomes effective when the operation is started.

- The [SILENT] function becomes ineffective during powerful operation in which the performance has priority, as well as in dry mode and fan mode in which the [SILENT] function is ineffective.

2. Details of function

The function includes decrease in the outdoor fan rotating speed and setting of the upper limit of the compressor frequency.

(1) Outdoor fan rotating speed

- Refer to the description in the “Fan Speed Control for Outdoor Units”.

(2) Compressor frequency

In this function, the upper limit of the compressor frequency should be as follows:

Class	Heating	Cooling
50	64 Hz	62 Hz
60	52 Hz	52 Hz
71	46 Hz	46 Hz

3. End of Function

The function ends when the [SILENT] button is pressed again or the powerful operation button is pressed during [SILENT] operation.

- If it is necessary to reduce the outdoor unit operating noise further even in outdoor unit silent operation, the upper limit of the compressor rotating speed can be lowered by cutting the jumper wire on the outdoor PCB.
  Decrease in the compressor rotating speed lowers the performance but gives further 0.5 to 1.0 dB noise reducing effect.
  Refer to the description in the On-site Setting Jumper Wire.

Refer to the description in the On-site Setting Jumper Wire on page 44.

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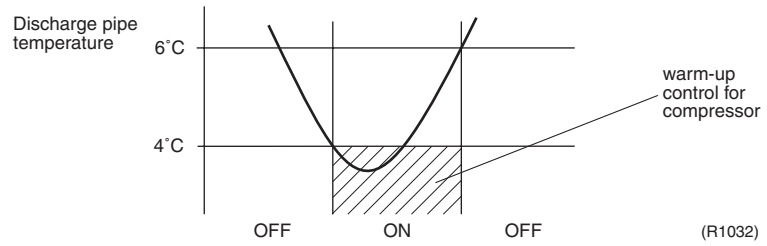
1.10 General Functions

Pre-heat Operation

When the equipment has stopped and $t_{[outside]} < 4^{\circ}C$, the compressor is warmed-up by passing a single-phase (U, V phase) current through the compressor motor to speed up the start. The power consumption is 50~60W.



Hot Start Function

During defrosting or when the thermostat is on in heating mode, if the indoor heat exchanger temperature is < 29˚C, restrict the fan rotating speed to L tap and under to prevent the cold draft.

Dry Mode

The dry mode removes humidity while maintaining the room temperature. The temperature and fan cannot be regulated during dry mode.

<Management>

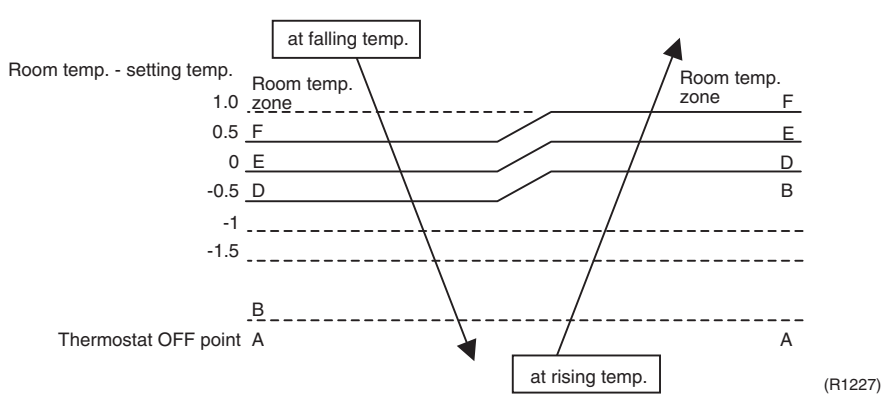
1. Decision of the dry setting temperature

■ When entering the following dry mode,
① Stop → an operation will start with Dry.
② Mode except Dry → changing to dry mode
Thermostat ON/OFF point is decided in accordance with the following conditions.

Room temp. condition at entering Dry.	Set temp. (thermostat ON)	Thermostat OFF temp.
24˚C ≤ Room temp.	Room temp. at the entering.	Room temp. -2˚C at the entering.
18˚C ≤ Room temp. < 24˚C	Room temp. at the entering.	Room temp. -1.5˚C at the entering.
Room temp. < 18˚C	18˚C	17˚C

2. Frequency command

■ The frequency command is decided based on a room temperature zone.
The room temperature zone is decided as follows.



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■ The frequency command for every zone is stated below.
(Please note that an operation will not carry out in the commanded frequency sometimes in case a protection control like a freeze-protection etc. will be actuated.)

Room temperature	Room temp. zone	Command frequency		
		50 Class	60 Class	71 Class
Room temp. < 18˚C	A	0 Hz	0 Hz	0 Hz
	except A	32 Hz	28 Hz	28 Hz
Room temp. ≥ 18˚C	A	0 Hz	0 Hz	0 Hz
	B	32 Hz	28 Hz	28 Hz
	D	32 Hz	28 Hz	28 Hz
	E	30 Hz	30 Hz	28 Hz
	F	36 Hz	34 Hz	30 Hz

3. Required fan speed

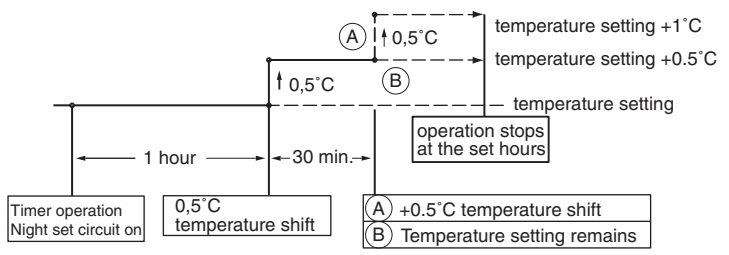
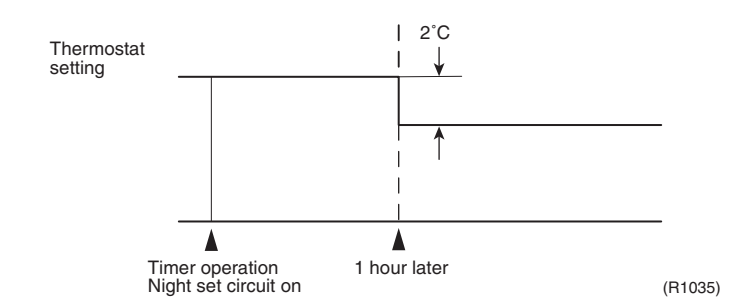
■ Fan speed changes the rotation speed every time when a thermostat switches over ON and OFF.

■ When the thermostat becomes Off, fan continues to operate maximum 10 minutes with low speed so as to prevent dew condensation on the inside of the indoor unit, and then stops.

	Fan rpm (thermostat ON)		
	50 Class	60 Class	71 Class
	Wall Mounted type Floor/Ceiling type	Wall Mounted type Floor/Ceiling type	Wall Mounted type
Thermostat ON	960 / 980rpm	1040 / 1060rpm	1040rpm
Thermostat OFF	750 / 400rpm	750 / 400rpm	750rpm
Thermostat ON and dry on powerful operation	1080 / 1060rpm	1120 / 1140rpm	1120rpm

Night Set Mode

The night set mode is automatically activated when the off timer is set. The set temperature changes as time goes by, the operation frequency is decreased and the operating noise is diminished during sleep.

Item	Description	Drawing
Cooling	The set temperature stays on for one hour, then decreases slightly for economical operation.	 A When the outside temperature is lower than 27˚C and the room temperature is at the set temperature. B When the outside temperature is 27˚C or higher. (R1034)
Heating	The set temperature stays on for one hour, then increases slightly for economical operation.	 (R1035)

* One hour after the OFF-timer is set, the outdoor unit sets the upper limit of the operation frequency at the value close to the rated frequency to reduce the outdoor operating noise.

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1.11 Inverter Powerful Operation

Outline

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

Details of the Control

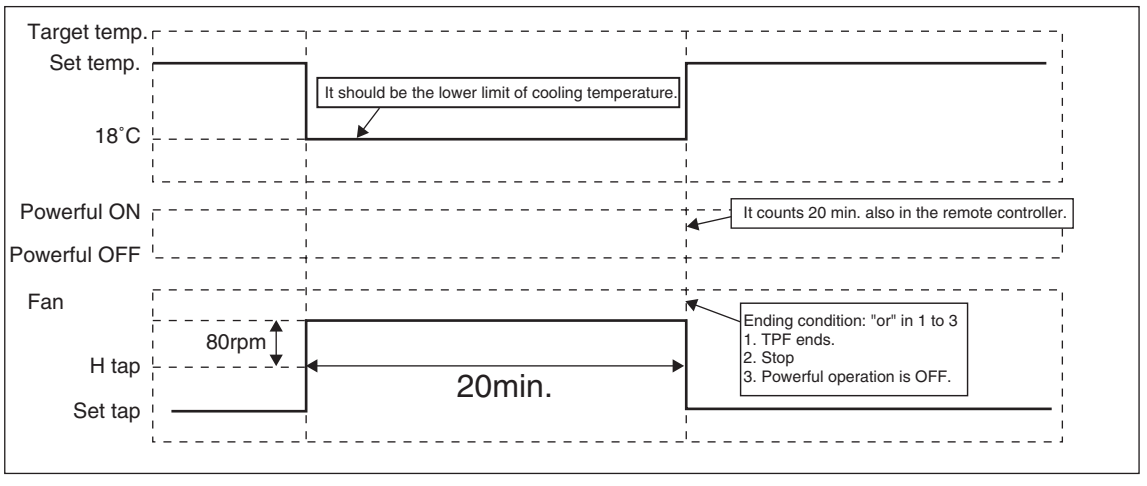
When the powerful operation switch is pressed in each operation mode, the fan rotating speed and set temperature become as follows for 20 min.

Operation Mode	Fan rotating speed	Target set temperature
Cooling	H tap + 80rpm	18˚C
Dry	Dry rotating speed + 80-120rpm	Normally, target temperature in dry operation - Approx. 2˚C
Heating	H tap + 80rpm	30˚C
Fan (Cooling Only Type)	H tap + 80rpm	—
Automatic (Heat Pump Type)	Same as cooling/heating powerful operation	Target is not changed.

Cooling Fan Tap	50 Class (Wall Mounted Type)	60 Class (Wall Mounted Type)	71 Class (Wall Mounted Type)	50 Class (Floor/Ceiling Type)	60 Class (Floor/Ceiling Type)	
LLL (W1)	350	350	350	300	300	
LL (W2)	650	650	650	400	400	← Thermostat off is LL
L (W3C)	1020	1100	1100	1020	1100	
ML (W4C)	1090	1170	1180	1090	1170	
M (W5C)	1170	1240	1270	1170	1240	
MH (W6C)	1240	1310	1360	1240	1310	
H (W7)	1320	1380	1450	1320	1380	
Poweerful	1400	1460	1530	1400	1460	

Heating Fan Tap	50 Class Heating	60 Class Heating	71 Class Heating	50 Class (Floor/Ceiling Type)	60 Class (Floor/Ceiling Type)	
LLL (W1)	350	350	350	300	300	← Thermostat off is LLL
LL (W2)	650	650	650	400	400	
L (W3W)	960	1000	1000	860	940	
ML (W4W)	1040	1090	1110	960	1030	
M (W5W)	1120	1190	1220	1060	1130	
MH (W6W)	1200	1280	1330	1160	1220	
H (W8)	1280	1380	1450	1260	1320	
Poweerful	1360	1460	1530	1340	1400	

Ex.) Powerful operation in cooling mode



(R1167)

Part4.fm Page 33 Thursday, October 18, 2001 2:21 PM

1.12 Home Leave Operation

Outline

In order to respond to the customer's need for immediate heating and cooling of the room after returning home or for house care, a measure to switch the temperature and air volume from that for normal time over to outing time by one touch is provided. (This function responds also to the need for keeping up with weak cooling or heating.)
This time, we seek for simplicity of operation by providing the special temperature and air volume control for outing to be set by the exclusive button.

Details of the Control

1. Starting the Function

The function starts when the [HOME LEAVE] button is pressed in cooling mode or heating mode (including stopping and powerful operation). If this button is pressed while the operation is stopped, the function becomes effective when the operation is started. If this button is pressed in powerful operation, the powerful operation is reset and this function becomes effective.

- The [HOME LEAVE] button is ineffective in dry mode and fan mode.

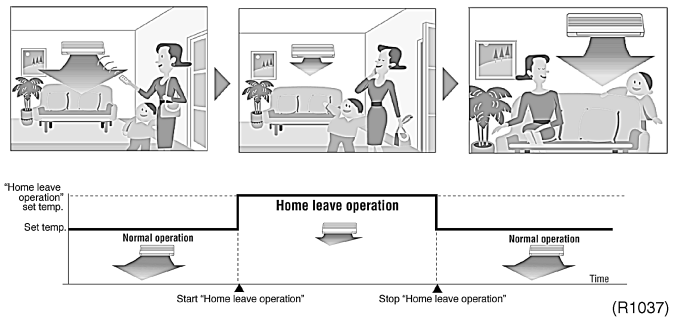
2. Details of the Function

A mark representing [HOME LEAVE] is indicated on the liquid crystal display of the remote controller. The indoor unit is operated according to the set temperature and air volume for HOME LEAVE which were pre-set in the memory of the remote controller.
The LED (Red) of indoor unit representing [HOME LEAVE] lights up. (It goes out when the operation is stopped.)

3. Ending the Function

The function ends when the [HOME LEAVE] button is pressed again during [HOME LEAVE] operation or when the powerful operation button is pressed.

Scene <cooling>



(R1037)

Scene <Heating>

(R1038)

Others

The set temperature and set air volume are memorized in the remote controller. When the remote controller is reset due to replacement of battery, it is necessary to set the temperature and air volume again for [HOME LEAVE].

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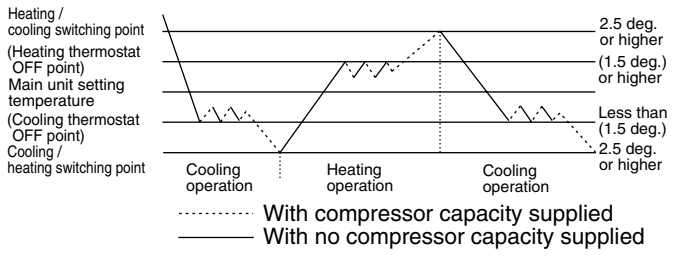
1.13 Automatic Operation

Outline

To maintain the set temperature and set air volume, the operation of air conditioner is switched automatically to cooling or heating within the differentials as follows.
Only the heat pump type model is equipped with this function.

Details of the Function

1. Remote controller setting temperature is set as automatic cooling / heating setting temperature (18 to 30˚C).
2. Operation ON / OFF point and mode switching point are as follows.
   ① Heating → Cooling switching point: Room temperature ≥ Main unit setting temperature +2.5 deg.
   ② Cooling → Heating switching point: Room temperature < Main unit setting temperature –2.5 deg.
   ③ Thermostat ON / OFF point is the same as the ON / OFF point of cooling or heating operation.
3. During initial operation
   Room temperature ≥ Remote controller setting temperature: Cooling operation
   Room temperature < Remote controller setting temperature: Heating operation



(R1039)

However, in the Powerful mode, the guard time should be set separately to prevent hunting in cooling / heating mode.

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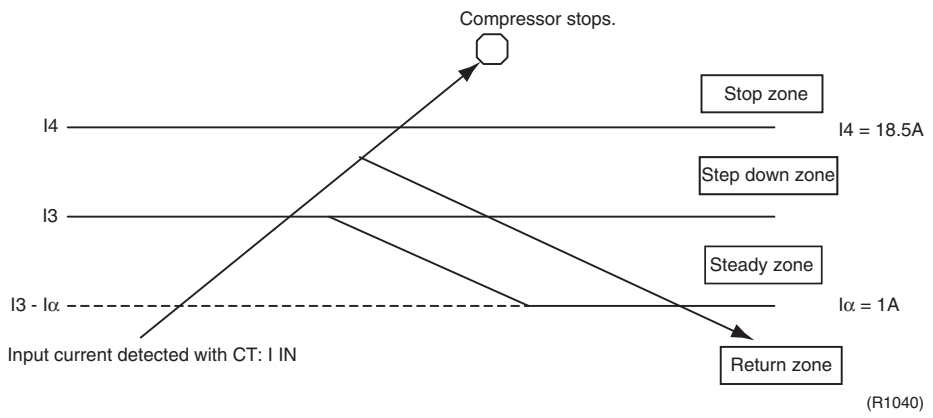
1.14 Input Current Control

Outline

The frequency control will be carried out so that the input current will not exceed the rated value in the zone which is divided by the input current detected with CT as the figure below shows.



- I4, I3, I3-Iα are included in the stop zone, step down, steady zone, respectively.

Details of the Control

1. Frequency control in each zone

- Step down zone (judged as the step down zone with the input current I IN ≥ I3)
  - The upper limit FNYD of the frequency in this control is defined as 'operation frequency - 2 Hz'.
  - After this, the output frequency is dealt with step down by 2 Hz every one second till it will reach the steady zone.
- Steady zone (judged as the step down zone with I3 - Iα ≤ I IN < I3 by step down operation)
  - Keeping the present frequency's upper limit FNYD.
- Return zone (judged as the return zone with I IN < I3 - Iα) (Iα = 1A)
  - Limit of frequency is cancelled.
- Stop zone (judged as the stop zone with I IN ≥ I4)
  - Compressor is stopped and countermeasure for the malfunction is carried out.

2. Current step down : deciding I3

- In cooling mode
  - At outdoor temperature > DOAIC
    I3 = I3C - 0.75 × (outdoor temp. DOAIC) ∗ At POWER FULL, both I3C and I3CPWF are used.
  - At outdoor temperature ≤ DOAIC
    I3 = I3C ∗ At POWER FULL, both I3C and I3CPWF are used.

- In heating mode
  - At outdoor temperature > DOAIW
    I3 = I3W - 0.25 × (outdoor temp. - DOAIW) ∗ At POWER FULL, both I3W and I3WPWF are used.
  - At outdoor temperature ≤ DOAIW
    I3 = I3W ∗ At POWER FULL, both I3W and I3WPWF are used.

(a constant)	50 Class	60 Class	71 Class
I3C	10.50 A	12.50 A	15.25 A
I3CPWF	10.50 A	12.50 A	15.25 A
DOAIC	40.0˚C	37.5˚C	35.5˚C
I3W	17.50 A	17.50 A	17.50 A
I3WPWF	17.75 A	17.75 A	17.75 A
DOAIW	12˚C	12˚C	12˚C

C : Cooling PWF : Powerful W : Heating

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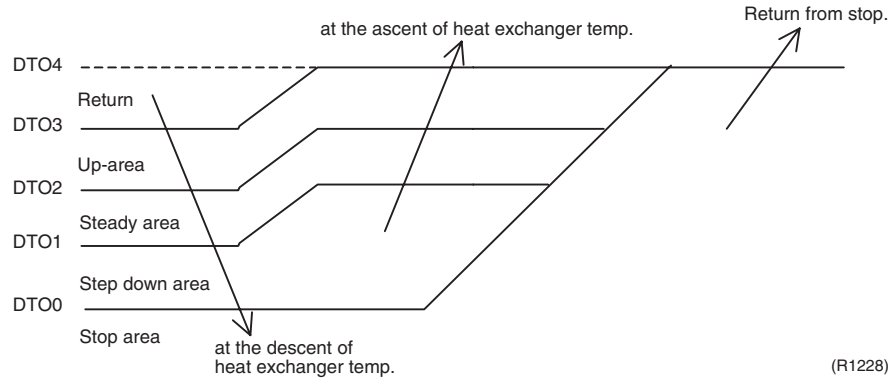
1.15 Freeze up Prevention Function in Cooling

Outline

During Cooling/Dry operation, when the heat exchanger's temperature falls down excessively, the capacity supply will be reduced (frequency step down) so as to prevent freeze of the heat exchanger and the creation of dew on a rotor caused by a excessive capacity supply to the indoor unit.

Details of the Control

- This air conditioner is equipped with a guard timer to retard the anti-freezing control for 6 to 10 min. even when the heat exchange temperature has been lowered, in consideration of unstable condition which may be seen after the operation is started or the thermostat starts to work.
- When 6 to 10 min. elapses, anti-freezing control is conducted for each zone in accordance with the heat exchange temperature.



Setting a constant	50 Class	60 Class	70 Class
DTO4	13˚C		
DTO3	6˚C		
DTO2	5˚C		
DTO1	3˚C		
DTO0	0˚C		

* DTO : Freeze protection temperature of heat exchanger

- The restriction for frequency is not conducted in the return area by means of freeze protection control.
- Frequency is increased approximately every 2 Hz/min. in the up-area.
- Frequency alteration in the steady area is not conducted.
- Frequency - down is carried out in the step down area approximately every 2 ~ 4 Hz/min..
- Compressors stop in the stop area. After compressor stops, fan keeps operating in 700 rpm for H type and 800 rpm for J type (LL operation), aiming at rising heat exchanger's temperature.

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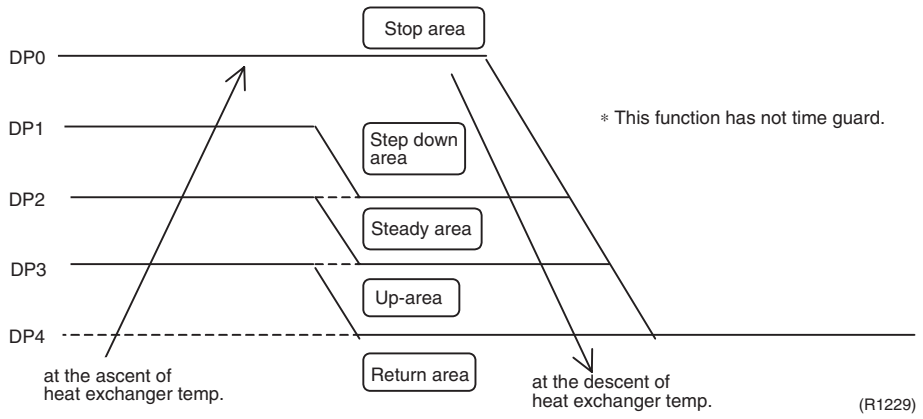
1.16 Peak-Cut Control Function

Outline

In a heating operation, there will be anxiety that a head pressure excessively increases and exceeds the permissible limit in an over load conditions.
For avoiding this fact, when the head pressure increases, frequency step down control is carried out for the protection so that the head pressure will not exceed the permissible limit after detecting the temperature of the indoor unit's heat exchanger.

Details of the Control

- In heating operation, the indoor heat exchange temperature is regarded as condensation temperature to anticipate a high pressure, and such a high pressure is prevented by dropping the frequency before the pressure rises higher than necessary.



Setting a constant	J type
DP0	67˚C
DP1	56˚C
DP2	54˚C
DP3	53˚C
DP4	46˚C

∗ In powerful operation, the temperature of DP1 to DP4 is raised by 1˚C.
∗ DP : Peak cut temperature of heat exchanger

- The restriction for frequency is not conducted in the return area by means of peak-cut control.
- Frequency is increased approximately every 2 Hz/min. in the up-area.
- Frequency alteration in the steady area is not conducted.
- Frequency - down is carried out in the step down area approximately every 2 ~ 4 Hz/20sec..
- Compressors stop in the stop area.

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1.17 4-Way Valve Function Compensation

Outline

When the initial start of compressors is required after power is on or at operation mode's alteration (Cooling/Dry ↔ Heating) that the a switch-over of a 4-way valve takes place, it secures the necessary differential pressure by restricting the operation frequency in the lower limit in a certain period, and the switch-over action is ensured.

Caution To avoid the temperature rise of the 4-way valve coil, the 4-way valve coil is energized in heating operation.

Details of the Control

1. If a 4-way valve is OFF when compressors stop, it will be ON at this time.
2. If a 4-way valve was ON when compressors operated in the last time, it will be ON at this time.
3. At the start of compressors.
4. At the initial start of compressors after power is reset.

In case 1. and 3. are under the simultaneous condition of AND (it indicates Heating) or 2. and 3 are under the simultaneous satisfaction of AND (it indicates Cooling), or condition 4. is adapted, the processing applies A seconds after compressors begin operating and to set B Hz for the lower limit of operation frequency.

		A (sec)	B (Hz)
Cooling	50~71 Class	60	56
Heating	50 Class	60	56
	60 Class	60	42
	71 Class	60	32

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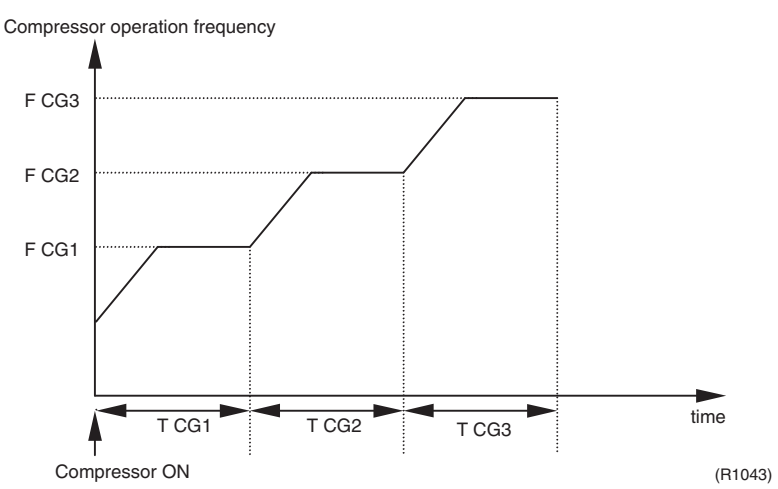
1.18 Compressor Protection Function

Outline

An refrigeration oil level descent and progression of the dilution which will arise at operation of the compressors will be avoided by controlling the upper limit of frequency at the edge of compressor's changeover from OFF to ON as follows.

Processing



1. Frequency control

Set the upper limit of the operation frequency by the controls as follows:

① In starting of compressor, start the timer TCG1 and set the upper limit of output frequency at TCG2 for the time of TCG1.
② When the time of TCG1 expires, start TCG2 timer and set the upper limit of output frequency at TCG2 for the time of TCG2.
③ When the time of TCG2 expires, start TCG3 timer and set the upper limit of output frequency at TCG3 for the time of TCG3.
④ When the time of TCG3 expires, reset the limit of frequency.

2. Others

① When the compressor operation is stopped at the time of starting this function, reset the timer which is counting and reset the limit of frequency.
② These controls are not necessary during defrost control.

	50 Class	60 Class	71 Class
FCG1	58 Hz	42 Hz	32 Hz
FCG2	64 Hz	64 Hz	64 Hz
FCG3	74 Hz	74 Hz	74 Hz
TCG1	120 sec	120 sec	120 sec
TCG2	240 sec	240 sec	240 sec
TCG3	240 sec	240 sec	240 sec

* FCG : Frequency guard for compressor protection
* TCG : Timer guard for compressor protection

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1.19 Wet Operation Protection I (Securing of Differential Pressure and Blown Air Temperature)

Outline

To secure the reliability of the compressor (for dryness of suction refrigerant and differential pressure) which is the primary purpose of the compressor, the lower limit of the output frequency is limited to two stages under the condition of outside air temperature. This time, in addition to this purpose, this function is adopted also for prevention of cold draught by securing the blown air temperature at the time of heating operation by low-temperature out side air.

Processing

1. at the first step

① During operation of compressors.
② Outdoor temperature ≤ DOA1CG
■ If ① and ② are under the simultaneous condition with AND, the lower limit of frequency in this function is set at FCG7.

③ Compressors stop.
④ Outdoor temperature ≥ DOA2CG
■ If ③ and ④ are under the simultaneous condition with OR, the lower limit of frequency at the first step control is cancelled.

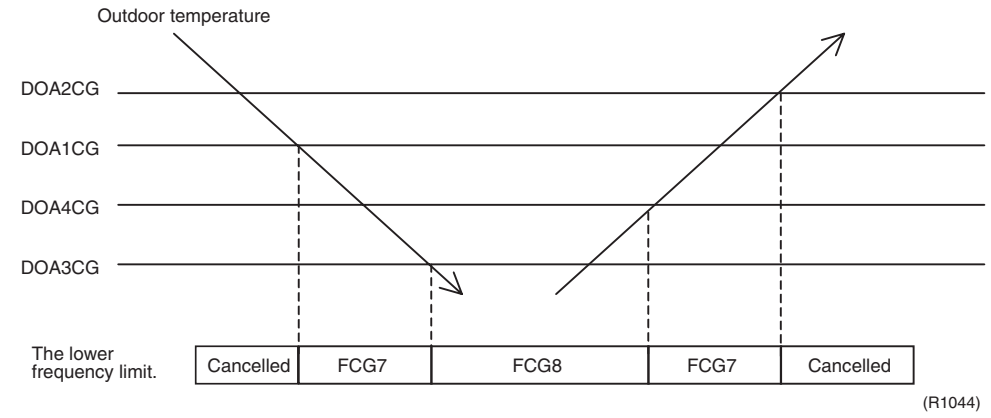
2. at the second step

① During operation of compressors
② Outdoor temperature ≤ DOA3CG
■ If ① and ② are under the simultaneous condition with AND, the lower limit of frequency in this function is set at FCG8.

③ Compressors stop.
④ Outdoor temperature ≥ DOA4CG
■ If ③ and ④ are under the coordinate condition with OR, the lower limit of frequency at the second step control is cancelled.

3. The set of a constant

DOA1CG, DOA2CG, DOA3CG, FCG7 and FCG8 have constants for Cooling /Heating separately and these constants are distinguished with a suffix c/w.



(R1044)

4. Actual constant

(In cooling)	50 Class	60 Class	71 Class
DOA1CGC	18˚C	18˚C	18˚C
DOA2CGC	19˚C	19˚C	19˚C
DOA3CGC	0˚C	0˚C	0˚C
DOA4CGC	1˚C	1˚C	1˚C
FCG7C	58 Hz	48 Hz	36 Hz
FCG8C	62 Hz	52 Hz	38 Hz

(In heating)	50 Class	60 Class	71 Class
DOA1CGW	0˚C	0˚C	0˚C
DOA2CGW	2˚C	2˚C	2˚C
DOA3CGW	-4˚C	-4˚C	-4˚C
DOA4CGW	-2˚C	-2˚C	-2˚C
FCG7W	42 Hz	36 Hz	32 Hz
FCG7W	52 Hz	42 Hz	36 Hz

* DOA : Outdoor air temperature
CGC : Compressor guard for cooling
CGW : Compressor guard for heating
FCG : Frequency guard for compressor protection

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1.20 Wet Operation Protection II (Protection from Differential Pressure)

Outline

Differential pressure generated in low-temperature outside air-cooling operation is secured, and when the differential pressure is lowered below the standard value, the operation of the compressor is once stopped for protection.

Processing

① Cooling or dry mode
② Compressor is in operation.
③ Outside air temperature is lower than 12˚C.
④ Outdoor heat exchange temperature is lower than 18˚C.

■ When the conditions of ① and ② and ③ and ④ are established continuously for 6 minutes,
Stop the compressor operation.
Reset the compressor after waiting for 3 minutes.

Outside temperature and heat exchange temperature at the start of function has been so set that the compressor should be stopped for protection as against the working critical differential pressure 2kg/cm^2 of the compressor. The time of 6 minutes for continuous operation has been set in agreement with 6 minutes preset by the timer for prevention of icing so that the operation factor should not be reduced extremely.

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1.21 Dew Prevention Function

Outline

During Cooling/Dry operation, when the heat exchanger's temperature falls down excessively, the capacity supply will be reduced (frequency step down) so as to prevent dew formation around a discharge grille caused by a excessive capacity supply to an indoor unit.

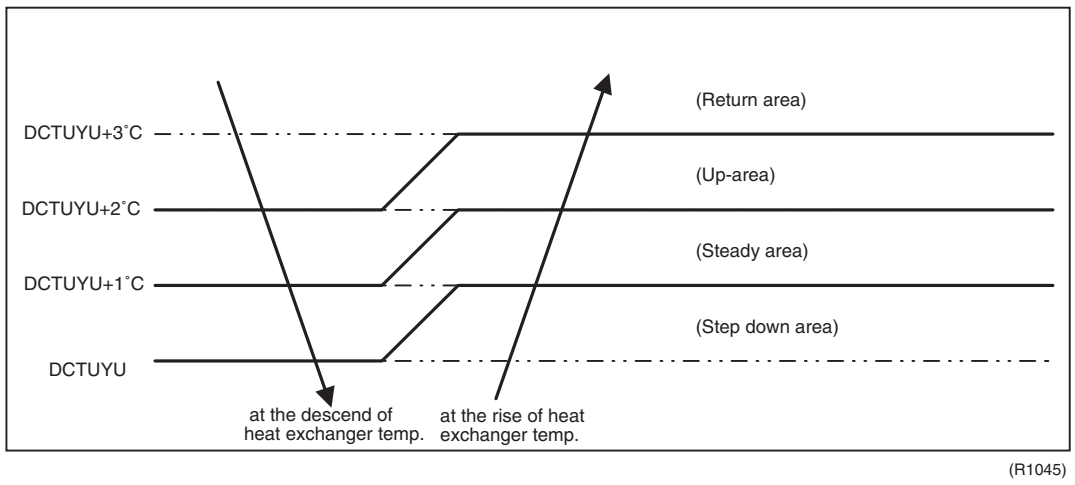
Processing

1. Conditions of beginning/ending for this function.

① Operation mode is in Cooling/Dry.
② Compressors operate.
③ Fan speed < H tap
④ Outdoor temperature ≤ 32˚C
The function to prevent dew condensation will start, if ①②③④ are under the simultaneous condition with AND.

⑤ Operation mode is not in Cooling/Dry.
⑥ Compressors stop
⑦ H tap ≤ fan speed
⑧ Outdoor temperature > 32˚C
The function to prevent dew condensation will be completed, if ⑤⑥⑦⑧ are under the coordinate condition with OR.

2. Control details



(R1045)

- It controls the operation frequency in accordance with the temperature zone in the step down area ~ the return area which are set in every model.
- Frequency limitation by means of freeze protection control will not be carried out in the return area.
- Frequency is increased approximately every 2 Hz/min. in the up-area.
- Frequency alteration will not be conducted in the steady area.
- Frequency - down is carried out in the step down area approximately every 2 ~ 4 Hz/min.

Outdoor Unit	RXD	MX
DCTUYU	Room temp. × 0.94 - 12.0˚C	13˚C

DCTUYU : Heat exchanger temperature of dew condensation sweating prevention

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1.22 Setting for Long Piping

Outline

When the piping length exceeds 10 meters, the target discharge pipe temperature is calculated at a lower level due to pressure loss in the piping system. The target discharge pipe temperature is corrected to a higher level by cutting the jumper wire (S50) for long piping provided on the outdoor control PCB in order to avoid lowering of performance due to insufficient pressure reduction.

Details of the Control

① Setting has been made for long piping (S50 jumper wire is cut).
② Being controlled by motor-operated valve
③ Operating frequency is more than FLONG.

■ When the conditions of ① and ② and ③ are established, raise the target discharge pipe temperature additionally by DLONG.

Setting of Constants

		50~71 Class
Cooling	FLONG	44 Hz
	DLONG	5˚C
Heating	FLONG	66 Hz
	DLONG	5˚C

Refer “Control PCB” on page 14 for S50 Jumper.

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1.23 On-site Setting Jumper Wire

Outline

It is necessary to provide the specifications which may be required for the measures to be taken according to the local circumstances of the installation site. If necessary, such specifications can be adopted easily by cutting the jumper wire provided on the PCB of outdoor unit.

1. Jumper wire for disposal of remaining frost after defrosting operation
By cutting the jumper wire "J400" on the PCB, the compressor operation frequency in defrosting operation is increased by 4Hz and the maximum defrosting time is extended by 90 seconds.

2. Jumper wire for decreasing upper limit frequency in outdoor unit silent operation
By cutting the jumper wire "J250" on the PCB, the compressor operation upper limit frequency in outdoor unit silent operation is decreased by 10Hz and the silencing performance is enhanced.

Refer “Control PCB” on page 14 for J400 Jumper.

Refer “Control PCB” on page 14 for J250 Jumper.

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Part 5
System Configuration

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1. Instruction

1.1 FTXD50 / 60 / 71J

Safety Precautions

- Read the following warnings and cautions carefully before operating the system and use it correctly.
- This manual classifies the precautions to the user into two categories on the right. Be sure to follow all as they are all important to ensure safety.
- After reading this manual, keep it in a place easily accessible to the user for future reference.

⚠ WARNING
Failure to follow a warning is very likely to result in such grave consequences as death or serious injury.

⚠ CAUTION
Failure to follow a caution may result in serious injury or property damage, and in certain conditions, may result in a grave consequence.

WARNING

- **Do not expose your body to the cool (heat) air for a long time, do not cool (heat) the room too much.**
  It will affect your physical conditions and cause health problems.

- **Do not put a finger, a rod or other objects into the air outlet or inlet.**
  As the fan is rotating at a high speed, it will cause injury.

- **Do not attempt to repair, relocate, modify or reinstall the air conditioner by yourself.**
  Incorrect work will cause electric shocks, fire etc. For repairs and reinstallation, consult the shop where you bought the air conditioner.

- **If anything abnormal such as a burning smell occurs, stop the operation immediately and turn the breaker OFF.**
  Continued abnormal operation will cause troubles, electric shocks, fire etc. If anything is abnormal, consult the shop where you bought the air conditioner.

- **If the air conditioner is not cooling or heating properly, the refrigerant may be leaking, so see the dealer where the unit was purchased. Check with a qualified repairman before attempting any repairs, which might accompany addition of refrigerant.**
  The refrigerant used in the air conditioner is safe. Although leaks should not occur, if for some reason any refrigerant happens to leak into the room, make sure it does not come in contact with any flame, such as fan heaters, kerosene heaters, or gas ranges, as this may result noxious substances being generated.

CAUTION

- **Do not use the air conditioner for preservation purposes.**
  Do not use it for preserving precision instruments, foods, plants, animals, works of fine arts etc. Performance or quality may deteriorate and animal or plant life may be shorter.

- **Do not operate the air conditioner with a wet hand.**
  It may cause an electric shock.

- **Ventilate the room from time to time.**
  Be careful especially when using a burning appliance in the same room. Insufficient ventilation may cause shortage of oxygen.

- **Before cleaning, be sure to stop the operation and turn the breaker OFF.**
  As a fan is rotating at a high speed, cleaning during operation may cause injury.

- **After a long use, check the unit stand and fittings for damage.**
  The unit may drop and cause injury if damage is left unrepaired.

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● **Do not stand or sit on the outdoor unit. Do not place any object on the unit.**
The object or the person may fall down or drop, causing injury.

● **Do not place under the indoor or outdoor unit anything which must be kept away from moisture.**
Indoor unit : moisture in the air may condense and drip in certain conditions.
outdoor : during cooling operation, condensation may drip from the piping connections.

● **Do not wash the unit with water.**
It may cause an electric shock.

● **Do not place a burning appliance in places exposed to the air flow from the unit or under the indoor unit.**
It may cause incomplete combustion or deformation of the unit from heat.

● **Do not place a vessel containing water on the unit.**
Water may penetrate into the unit and degrade electrical insulations, resulting in an electric shock.

● **Do not expose plants or animals directly to the air flow.**
It may cause adverse effects on the plant or the animal.

● **Do not block air inlets nor outlets.**
Impaired air flow may result in insufficient performance or troubles.

● **Do not allow children to mount on the outdoor unit or avoid placing any object on it.**
Falling or tumbling may result in injury.

Installation

WARNING

● **Do not attempt to install the air conditioner by yourself.**
Consult the service shop or a qualified technician.
Incorrect work will result in water leakage, electric shocks or fire. For installation, consult the service shop where you bought the unit or a qualified technician.

● **The air conditioner must be earthed.**
Incomplete earthing may result in electric shocks. Do not connect the earth line to a gas pipe, water pipe, lightening rod, or a telephone earth line.

CAUTION

● **Depending on the environment, an earth leakage breaker must be installed.**
Lack of an earth leakage breaker may result in electric shocks.

● **Do not install the air conditioner in places where flammable gas may leak.**
If leaked gas should accumulate near the unit, fire may occur.

● **Arrange the drain hose to ensure smooth drainage.**
Incomplete drainage may cause wetting of the building, furniture etc.

● **Do not connect the air conditioner to a power supply different from the specification.**
It may cause trouble or fire.

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Installation site

■ To install the air conditioner in the following types of environments, consult the shop.
- ● Places with an oily ambient or where steam or soot occurs.
- ● Salty environment such as coastal areas.
- ● Places where sulfide gas occurs such as hot springs.
- ● Places where snow may block the outdoor unit.

The drain from the outdoor unit must be discharged to a place of good drainage.

Consider nuisance to your neighbours from noises

■ For installation, choose a place as described below.
- ● A place solid enough to bear the weight of the unit which does not amplify the operation noise or vibration.
- ● A place from where the air discharged from the outdoor unit or the operation noise will not annoy your neighbours.

Electrical work

● For power supply, be sure to use a separate power circuit dedicated to the air conditioner.

System relocation

● Relocating the air conditioner requires specialized knowledge and skills. Please consult the shop where you bought the air conditioner if relocation is necessary for moving or remodeling.

Note for Multi System

● Precedence-room setting

When setting the preference-room during installation, the indoor unit's operation mode always takes priority.
When the precedence-setting room unit is operated in POWERFUL mode, there are times that air conditioners in other rooms will temporarily stop in order to centralize power to the unit in the room.
Please adjust the precedence-room setting to match your life style. Moreover, for precedence-room settings, please consult the service shop where you bought the unit.

* Precedence-room setting is applied to only 4MX80.

● COOL/HEAT mode

This mode is used to set the unit to only cool or heat. For information on using this mode, consult the service shop where you bought the unit.

* COOL/HEAT mode is applied to only 4MX80.

NOTE

<Note for heat pump multi system>

When two or more indoor units have no precedence-room settings and are set to modes that differ from each other, the indoor unit which is operated first activates, while the other indoor unit does not activate and the OPERATION lamp blinks. (This is not a malfunction.)
An indoor unit that is not in operation will automatically start and operate in the mode in which a previously operated indoor unit was stopped.
However, if the unit in operation provides only COOL and DRY modes, simultaneous operation is possible.

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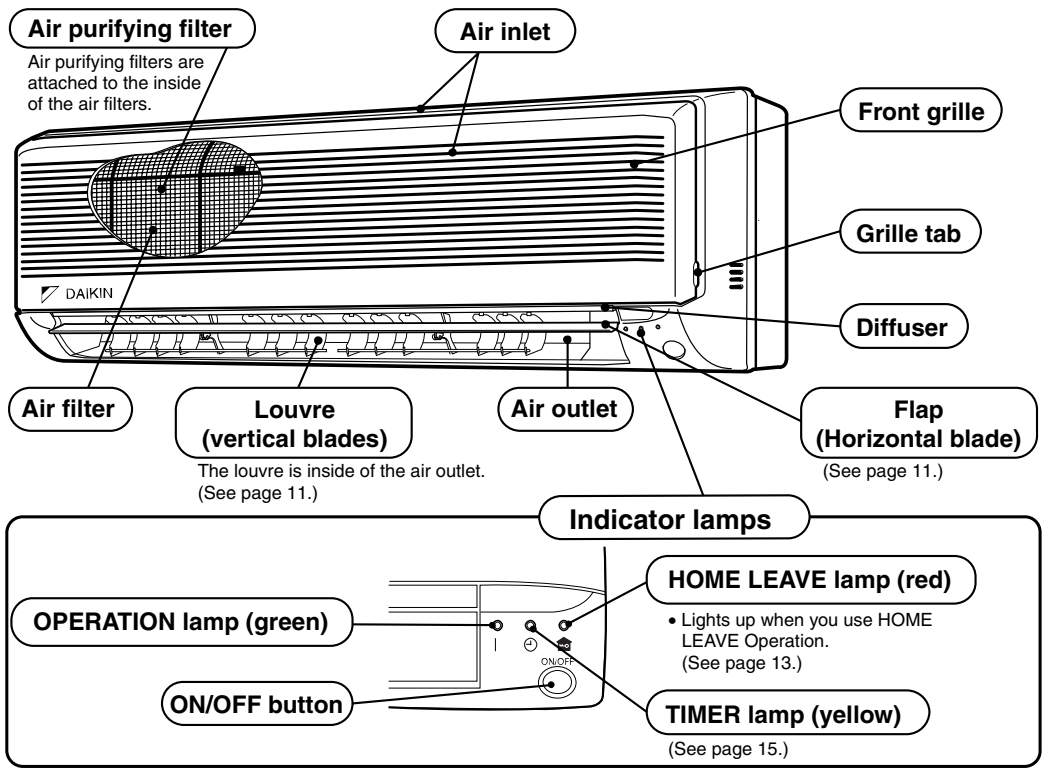
Names of Parts

Indoor unit

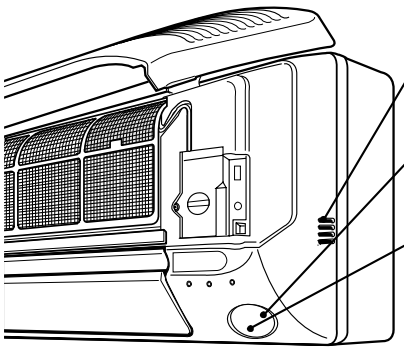


Opening the front grille

How to open the front grille : (See page 9.)

⚠ CAUTION

Before opening the front grille, be sure to stop the operation and turn the breaker OFF. If the power is on, the fan may rotate inside and may cause injury.



Room temperature sensor:

- It senses the air temperature around the unit.

Receiver:

- It receives signals from the remote controller.
- When the unit receives a signal, you will hear a short beep.

ON/OFF button

- Push this button once to start operation. Push once again to stop it.
- The operation mode refer to the following table.

	Mode	Temperature setting	Air flow rate
FTXD	AUTO	25˚C	AUTO

- This button is useful when the remote controller is missing.

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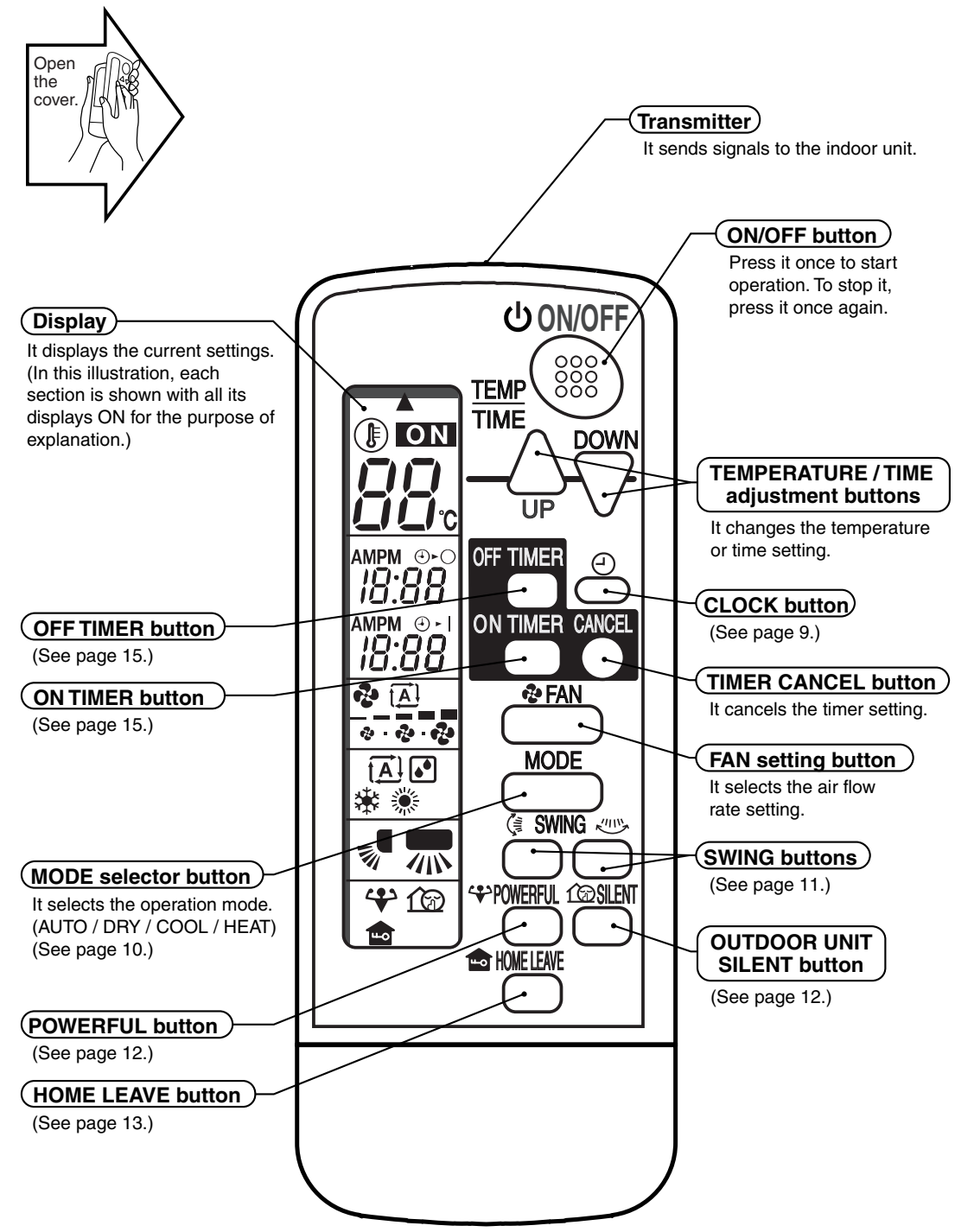
Names of Parts

Remote controller



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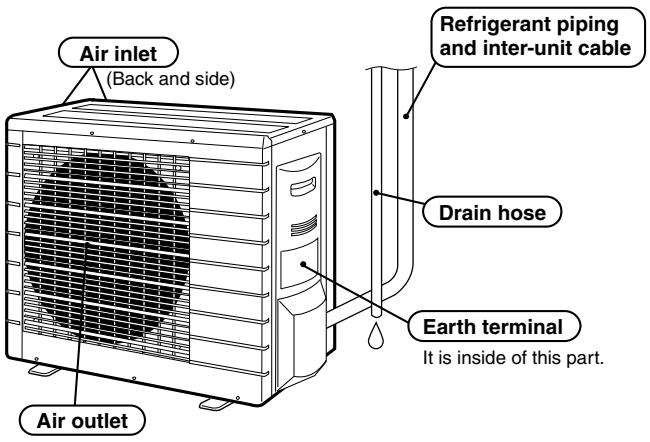
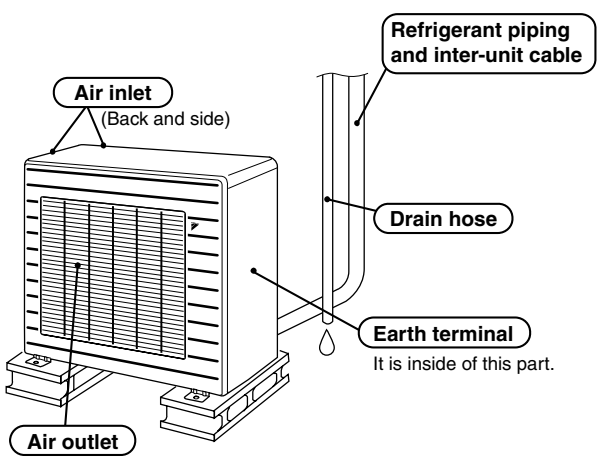
Names of Parts

Outdoor unit



Appearance of the outdoor unit may differ from some models.

<RKD50/60/71J>
<RXD50/60/71J>



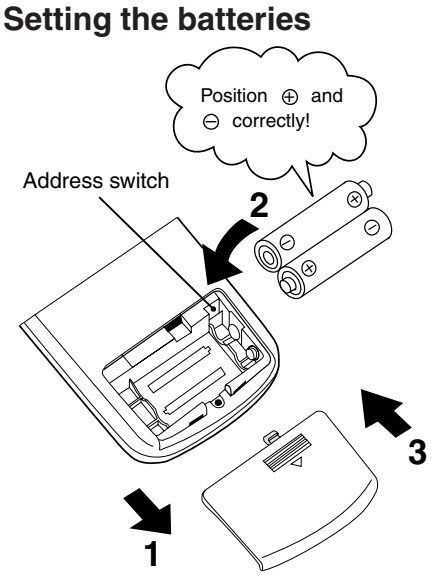
Appearance of the outdoor unit may differ with some models.

<2MK, 3MK, 4MK>
<2MX, 3MX, 4MX>

Preparation Before Operation

Remote controller

■ Setting the batteries



1 Press ▽ with a finger and slide the back cover to take it off.

2 Set two alkaline dry batteries (LR03).

3 Set the back cover as before.
- This will cause the figures on the display to flash. Set the clock at this point.

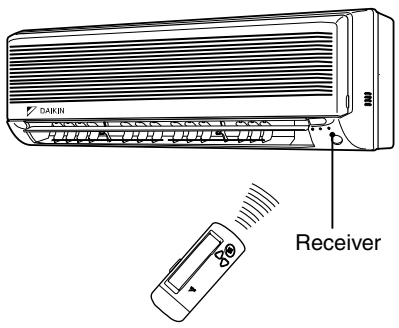
ATTENTION

About batteries

- Always replace two batteries at the same time. Replace them with new ones of an identical type.
- Do not use manganese dry batteries since their use may cause a malfunction.
- If you are not going to use the air conditioner for a long period, take out all the batteries.
- Batteries should last for about a year under normal conditions. When you find the displays unclear and signal communication often failing, replace them with new ones.
- Batteries may be exhausted even before the recommended date of consumption printed on them, if the air conditioner was manufactured many months ago.
- Never try to recharge the batteries.

■ Operating the remote controller

- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is about 7 m.

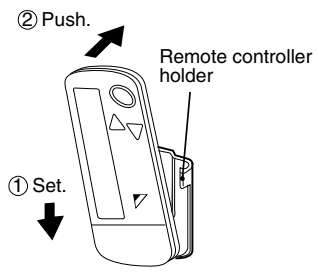


■ To fix the remote controller holder on the wall

1 Choose a place from where the signals reach the unit.

2 Fix the holder to a wall, a pillar, etc. with the screws supplied with the holder.

3 Fit the claw of the holder into the bottom of the remote controller, and push the remote controller onto the wall.



- To remove, pull it upwards.

ATTENTION

About the remote controller

- Never expose the remote controller to direct sunlight.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult the shop if that is the case.
- If the remote control signals happen to operate another appliance, move that appliance to somewhere else, or consult the shop.

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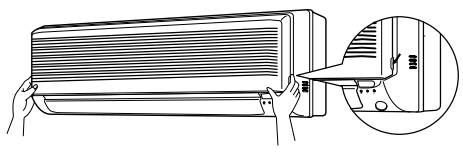
Preparation Before Operation

Indoor unit

■ Setting the air purifying filters

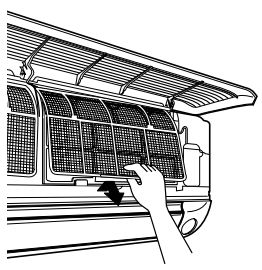
1 Open the front grille.

● Hold the grille by the tabs on the two sides and lift it until it stops with a click. (about 60˚)



2 Pull out the air filters.

● Push upwards the tab at the center of each air filter, then pull it down.



3 Set the air purifying filters.

● Attach an air purifying filter to each air filter. (See page 16 “Care and cleaning”)

4 Set the air filters in their original positions and close the front grille.

● Operation without air filters may result in troubles as dust will accumulate inside the indoor unit.

■ Setting the clock

1 Press (clock) .

AM 0:00 is displayed.

(clock) blinks.

2 Press UP / DOWN to set the clock to the present time.

● Holding down (UP) or (DOWN) button rapidly increases or decreases the time display.

3 Press (clock) .

: blinks.

(Now the clock is set.)

■ Turn the breaker ON

● Turning ON the breaker opens the flap, then closes it again. (This is a normal procedure.)

NOTE

Tips for saving energy

● Be careful not to cool the room too much. Keeping the temperature setting at a moderate level helps save energy.

Recommended temperature setting
For cooling: 26˚C – 28˚C For heating: 20˚C – 24˚C

● Cover windows with a blind or a curtain. Blocking sunlight and air from outdoors increases the cooling effect.

● Clogged air filters cause inefficient operation and waste energy. Clean them once in about every two weeks.

Please note

● The air conditioner always consumes 15 – 35 watts of electricity even while it is not operating.

● If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker OFF.

● Use the air conditioner in the following conditions.

Mode	Operating conditions	If operation is continued out of this range
COOL/ DRY	Outdoor temperature RXD : –10 to 46 ˚C 2~3MX : 21 to 43 ˚C 4MX : 10 to 43 ˚C Indoor temperature : 15 to 28 ˚C Indoor humidity : 80% max. (*1)	• A safety device may work to stop the operation. (In multi system, it may work to stop the operation of the outdoor unit only.) • Condensation may occur on the indoor unit and drip.
HEAT	Outdoor temperature RXD : –15 to 24 ˚C 2~4MX : –10 to 24 ˚C Indoor temperature : 10 to 30 ˚C	• A safety device may work to stop the operation.

(*1) Use in humidity 60% or lower when using the unit at an outdoor temperature of 10˚C or lower.

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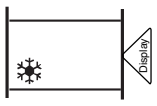
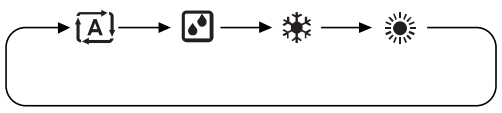
AUTO • DRY • COOL • HEAT Operation

The air conditioner operates with the settings of your choice.
From the next time on, the air conditioner will operate with the same settings.

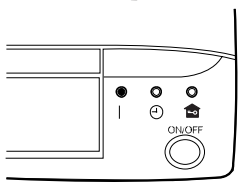
1 Press MODE and select a mode.



● Each pressing of the button advances the mode setting in sequence.



2 Press ON/OFF .



Then OPERATION lamp lights up.

■ To stop:

Press ON/OFF once again.

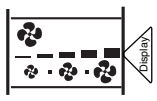
Then OPERATION lamp goes off.

■ To change the temperature setting:

DRY mode	AUTO or HEAT or COOL mode
The temperature setting is not variable.	Press UP to raise the temperature and press DOWN to lower the temperature.
	Set to the temperature you like. 

■ To change the air flow rate setting:

Press FAN.

DRY mode	COOL mode
The air flow rate setting is not variable.	Five levels of air flow rate setting from " " to " "plus " A " are available. 

● At smaller air flow rates, the cooling effect is also smaller.

■ To change the air flow direction:

(See page 11.)

NOTE

<Note on HEAT mode operation>

- Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
- The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
- In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
- During defrosting operation, hot air does not flow out of indoor unit.

<Note on AUTO operation>

- In AUTO operation, the system selects a temperature setting and an appropriate mode (COOL or HEAT) based on the room temperature at the start of the operation.
- The system automatically reselects setting at a regular interval to bring the room temperature to user-seetting level.
- If you do not like AUTO operation, you can select manually, you like the mode and setting.

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Adjusting the Air Flow Direction

You can adjust the air flow direction to increase your comfort.

Adjusting the horizontal blade (flap)

Press SWING.

● Every time the button is pressed, " " appears or disappears.

..... The flap automatically swings up and down.

..... To stop the flap at an angle you like, press SWING.

Adjusting the vertical blade (louvre)

Press SWING.

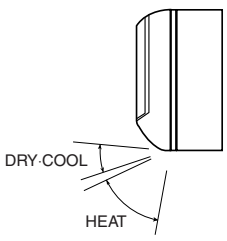
● Every time the button is pressed, " " appears or disappears.

..... The flap automatically swings up and down.

..... To stop the flap at an angle you like, press SWING.

Notes on flap angles

- When [SWING] is selected, the flap swinging range depends on the operation mode. (See the figure.)
- When [SWING] is selected in heating operation, the flap and the diffuse swing up and down in combination.
- The diffuser is kept open in DRY or COOL mode.



3-D air flow

The 3-D air flow function controls the air flow by alternating the horizontal swing (up and down) and vertical swing (left and right).
This provides good air circulation throughout the room and reduces temperature fluctuations.

Press SWING and SWING during the air conditioner is operating.

The up/down and left/right swing displays on the remote controller will move.

■ To cancel 3-D air flow:

Press SWING or SWING.

NOTE

Unless [SWING] is selected, you should set the flap at a downward angle in HEAT mode and at a nearhorizontal angle in COOL or DRY mode to obtain the best performance.

ATTENTION

● Always use a remote controller to adjust the flap angle. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.

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POWERFUL Operation

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity with a touch of a button.

- Pressing the (POWERFUL) button during operation starts POWERFUL operation.
- POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
- During you use “POWERFUL operation”, the other functions will not go on.

1 Press POWERFUL .

■ To cancel POWERFUL operation:

Press POWERFUL .

Notes on POWERFUL operation

- **In COOL and HEAT mode**
  To maximize the cooling and heating effect, the capacity of outdoor unit must be increased and the air flow rate be fixed to the maximum setting.
  The temperature and air flow settings are not variable.
- **In DRY mode**
  The temperature setting is lowered by 3˚C and the air flow rate is slightly increased.

OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT operation lowers the noise-level of the outdoor unit by changing the frequency and fan rpm on the outdoor unit.
This function is convenient when sleeping, etc.

How to use OUTDOOR UNIT SILENT operation

* This function is available in COOL, HEAT, and AUTO modes.
* This function is not available when it is connected to Multi system.

■ To use the “OUTDOOR UNIT SILENT operation”

Press SILENT .

■ To cancel the “OUTDOOR UNIT SILENT operation”

Press SILENT again.

Note on OUTDOOR UNIT SILENT operation

- This function is available in COOL, HEAT, and AUTO modes.
  (This is not available in DRY mode.)
- Using POWERFUL operation (P12) during OUTDOOR UNIT SILENT operation will disengage OUTDOOR UNIT SILENT operation.
- Turning the unit off either with the remote control or by flipping the switch on the unit during OUTDOOR UNIT SILENT operation will shut the unit off. The unit will continue in OUTDOOR UNIT SILENT operation when turned back on.

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HOME LEAVE Operation

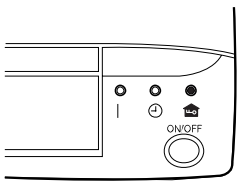
HOME LEAVE operation function is useful when you leave the house or the room.

How to use HOME LEAVE Operation

* This function is only available in COOL and HEAT modes.

■ To use the "HOME LEAVE Operation"

Press HOME LEAVE while the air conditioner is operating.



(The HOME LEAVE lamp lights up.)

■ To cancel the "HOME LEAVE Operation"

Press HOME LEAVE again.

(The HOME LEAVE lamp goes off.)

Before using HOME LEAVE Operation...

● When using HOME LEAVE Operation for the first time, set the temperature and air flow rate for HOME LEAVE Operation.

The initial settings are:

Heating ... Temperature 25˚C Air flow rate AUTO

Cooling ... Temperature 25˚C Air flow rate AUTO

■ How to set the temperature and air flow rate.

1 Press HOME LEAVE.

2 Adjust the set temperature with DOWN UP as you like.

3 Adjust the air flow rate setting with FAN as you like.

* The temperature and air flow rate will be the same as the previous settings starting with the second use.
* If you want to change the settings from the previous use, repeat steps 1 through 3.

What's the HOME LEAVE Operation

● What is HOME LEAVE Operation?

Using HOME LEAVE Operation

During heating... It prevents the temperature in the room from dropping too far on cold winter days by using weak heating operation (*1). Disengaging HOME LEAVE Operation will return the room to the set temperature right away.

During cooling... It prevents the temperature in the room from rising too high on hot summer days by using weak cooling operation (*1). Disengaging HOME LEAVE Operation will return the room to the set temperature right away.

(*1)... You can change the set temperature and air flow rate as you wish. Refer to the "Before using home leave operation" section above on how to change the settings.

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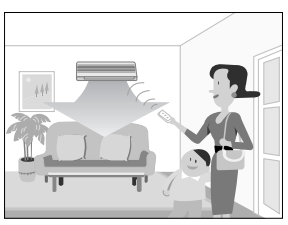
HOME LEAVE Operation

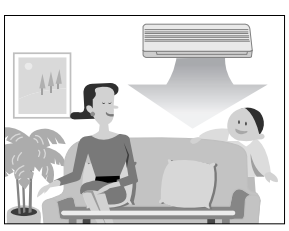
■ Useful at times like these!

1 Every day before you leave the house...



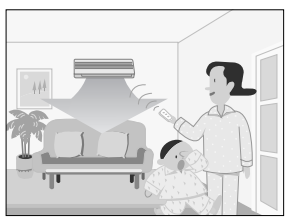
When you go out, push the “HOME LEAVE Operation” button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.

When you return, you will be welcomed by a comfortably air conditioned room.



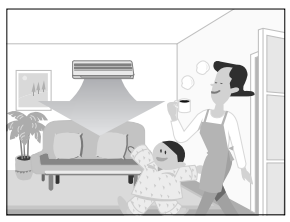
Push the “HOME LEAVE Operation” button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

2 Before bed...



Set the unit to HOME LEAVE Operation before leaving the living room when going to bed.

The unit will maintain the temperature in the room at a comfortable level while you sleep.



When you enter the living room in the morning, the temperature will be just right.
Disengaging HOME LEAVE Operation will return the temperature to that set for normal operation. Even the coldest winters will pose no problem!

NOTE

<Note on HOME LEAVE Operation>

- HOME LEAVE Operation is only available in COOL and HEAT modes. (Cannot be used in AUTO and DRY modes.)
- HOME LEAVE Operation runs in accordance with the operation mode the unit was in before using HOME LEAVE Operation.
- HOME LEAVE Operation can be set within the ranges shown below.
  Temperature: (During heating) 10˚C to 30˚C
  (During cooling) 18˚C to 32˚C
  Air flow rate: 5 steps from weak to strong, or automatic.
- Using POWERFUL operation (P12) during HOME LEAVE Operation will disengage HOME LEAVE Operation.
- Turning the unit off by flipping the switch on the unit during HOME LEAVE Operation will shut the unit off. The unit will continue in HOME LEAVE Operation when turned back on.
- Turning the unit off with the remote control during HOME LEAVE Operation will shut the unit off.
  H/P: HOME LEAVE Operation will be disengaged when the unit is turned back on.

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Timer Operation

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.

OFF TIMER operation

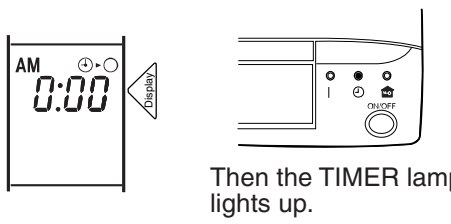
● Check that the clock is correct.
If not, set the clock to the present time. (See page 9.)

1 Press OFF TIMER while the air conditioner is operating.

AM 0:00 is displayed.
blinks.

2 Press DOWN / UP until the time setting reaches the point you like.
● Every pressing of either button increases or decreases the time setting by ten minutes. Holding down either button changes the setting rapidly.

3 Press OFF TIMER once again.



Then the TIMER lamp lights up.

■ To cancel the timer:

Press CANCEL.

Then the TIMER lamp goes off.

Notes on OFF TIMER

● NIGHT SET MODE
When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.5˚C up in COOL) to prevent excessive cooling (heating) for your pleasant sleep.

ON TIMER operation

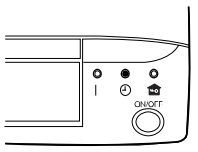
● Check that the clock is correct. If not, set the clock to the present time (See page 9).

1 Press ON TIMER while the air conditioner is not operating.

AM 6:00 is displayed.
blinks.

2 Press DOWN / UP until the time setting reaches the point you like.
● Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3 Press ON TIMER once again.



Then the TIMER lamp lights up.

Combining ON TIMER and OFF TIMER

● A sample setting for combining the two timers is shown below.

(Example)
Present time: 11:00 PM
(The unit operating)
OFF TIMER at 0:00 a.m.
ON TIMER at 7:00 a.m.
) Combined

Notes on ON,OFF TIMER

● When TIMER is set, the present time is not displayed.
● Once you set ON,OFF TIMER, the time setting is kept in the memory. (The memory is canceled when remote controller batteries are replaced.)
● When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user.(Maximum approx. 10 minutes.)

ATTENTION

■ In the following cases, set the timer again.
● After a breaker has turned OFF.
● After a power failure.
● After replacing batteries in the remote controller.

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Care and Cleaning

⚠ CAUTION

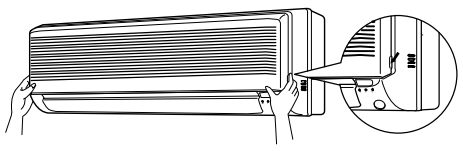
Before cleaning, be sure to stop the operation and turn the breaker OFF.

Cleaning the air filters

(It is recommended to clean them every two weeks.)

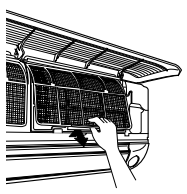
1 Open the front grille.

● Hold the grille by the tabs on the two sides and lift it unitl it stops with a click. (about 60˚)



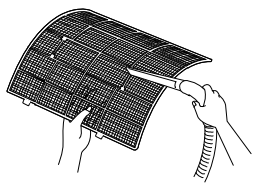
2 Pull out the air filters.

● Push a little upwards the tab at the center of each air filter, then pull it down.

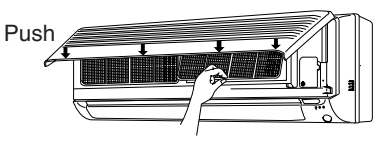


3 Take off the air purifying filters and clean them.

● Wash them with water, or clean them with a vacuum cleaner.
● If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.



4 Set the air purifying filters and the air filters as they were and close the front grille.



● Insert claws of the filters into slots of the front panel. The front grille should lock at both sides and at the point in the middle. Push the grille at the 4 points indicated by ⬇.

NOTE

● In a dusty environment, clean the air filters at least once in every two weeks.
● Operation with dusty air filters lowers the cooling and heating capacity and wastes energy.

Cleaning the indoor and outdoor units and the remote controller

● Wipe them with dry soft cloth.
For cleaning, do not use water hotter than 40˚C, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes nor other hard stuff.

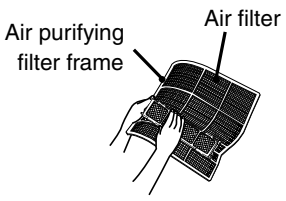
Replacing air purifying filters

(It is recommended to replace them every three months.)

● Air purifying filters need to be replaced regularly.

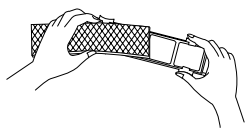
1 Open the front grille and pull out the air filters.

2 Take off the air purifying filters.

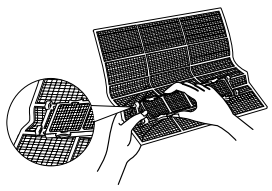


• Hold the recessed parts of the frame and unhook the four claws.

3 Detach the filter element and attach a new one.



4 Attach the air purifying filter.



5 Set the air filters as they were and close the front grille.

(Push the grille at the 4 points, two at both sides and in the middle.)

NOTE

● To order air purifying filters, contact the service shop where you bought the air conditioner.
● Once the air purifying filter element gets dirty, it is not reusable but must be thrown away.
● Operation with dirty air purifying filters :
• cannot clean the air.
• results in poor cooling.
• may cause odour.

Item	Part No.
Air purifying filter (with frame)	KAF918A41
Air purifying filter (without frame)	KAF918A42

Care and Cleaning

Cleaning the front grille

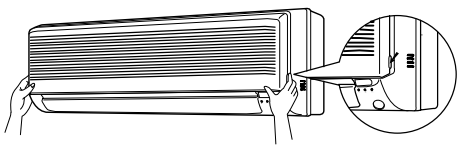
You may remove the front grille for cleaning.

⚠ CAUTION

- When removing or attaching the front grille, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front grille, support the grille securely with hand to prevent it from falling.
- For cleaning, do not use water hotter than 40˚C, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes nor othe hard stuff.
- After cleaning, make sure that the front grille is securely fixed.

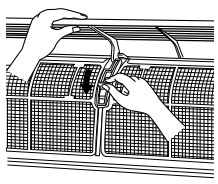
1 Open the front grille.

- Hold the grille by the tabs on the two sides and lift it until it stops with a click.



2 Remove the front grille.

- Supporting the front grille with one hand, release the lock by sliding down the knob with the other hand.
- To remove the front grille, pull it toward yourself with both hands.

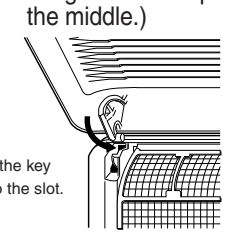


3 Clean the front grille.

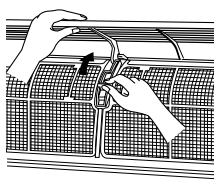
- You may wipe it with a soft cloth soaked in water.
- Only neutral detergent may be used.
- You may wash the grille with water. After washing, dry it with cloth, then dry it up in the shade.

4 Attach the front grille.

- Set the 3 keys of the front grille into the slots and push them in all the way.
- Supporting the front grille with one hand, fit the lock by sliding up the knob with the other hand.
- Close the front grille slowly in this state. (Push the grille at the 3 points, two at both sides and in the middle.)



Fit the key into the slot.



Side up the knob.

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.

Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.

Check that the earth wire is not disconnected or broken.

Check that the drain comes smoothly out of the drain hose during COOL or DRY operation.

- If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

Before a long idle period

1 Operate the fan alone for several hours on a fine day to dry out the inside.

1 Press MODE and select " ❄ ".

2 Press UP / DOWN and set the temperature to 32˚C

3 Press ⏻ ON/OFF .

- Perform this operation when the room temperature is under 28˚C.

2 Clean the air filters and set them again.
3 Take out batteries from the remote controller.
4 Turn OFF the breaker for the room air conditioner.

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Troubleshooting

● **These cases are no troubles.**

The following cases are not air conditioner troubles but have some reasons. You may just continue using it.

Case	Explanation
Operation does not start soon. ● When ON/OFF button was pressed soon after operation was stopped. ● When the mode was reselected.	● This is to protect the air conditioner. You should wait for about 3 minutes.
Hot air does not flow out soon after the start of heating operation.	● The air conditioner is warming up. You should wait for 1 to 4 minutes. (The system is designed to start discharging air only after it has reached a certain temperature.)
The heating operation stops suddenly and a flowing sound is heard.	● The system is taking away the frost on the outdoor unit. You should wait for about 3 to 8 minutes.
The outdoor unit emits water or steam.	■ In HEAT mode • The frost on the outdoor unit melts into water or steam when the air conditioner is in defrost operation. ■ In COOL or DRY mode • Moisture in the air condenses into water on the cool surface of outdoor unit piping and drips.
Mists come out of the indoor unit.	■ This happens when the air in the room is cooled into mist by the cold air flow during cooling operation.
The indoor unit gives out odour.	■ This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the air flow. (If this happens, we recommend you to have the indoor unit washed by a technician. Consult the service shop where you bought the air conditioner.)
The outdoor fan rotates while the air conditioner is not in operation.	■ After operation is stopped: • The outdoor fan continues rotating for another 30 seconds for system protection. ■ While the air conditioner is not in operation: • When the outdoor temperature is very high, the out door fan starts rotating for system protection.
The operation stopped suddenly. (OPERATION lamp is on)	■ For system protection, the air conditioner may stop operating on a sudden large voltage fluctuation. It automatically resumes operation in about 3 minutes.

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Troubleshooting

● **Check again**

Please check again before calling a repair person.

Case	Check
The air conditioner does not operate. (OPERATION lamp is off)	● Hasn't a breaker turned OFF or a fuse blown? ● Isn't it a power failure? ● Are batteries set in the remote controller? ● Is the timer setting correct?
Cooling or Heating effect is poor.	● Are the air filters clean? ● Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? ● Is the temperature setting appropriate? ● Are the windows and doors closed? ● Are the air flow rate and the air direction set appropriately?
Operation stops suddenly. (OPERATION lamp blinks.)	● Are the air filters clean? ● Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? Clean the air filters or take all obstacles away and turn the breaker OFF. Then turn it ON again and try operating the air conditioner with the remote controller. If the lamp still blinks, call the service shop where you bought the air conditioner. ● Are operation modes all the same for indoor units connected to outdoor units in the **multi system**? If not, set all indoor units to the same operation mode and confirm that the lamps blink. Moreover, when the operation mode is in "AUTO", set all indoor unit operation modes to "COOL" or "HEAT" for a moment and check again that the lamps are normal. If the lamps stop blinking after the above steps, there is no malfunction. (See page 12.)
An abnormal functioning happens during operation.	● The air conditioner may malfunction with lightening or radio waves. Turn the breaker OFF, turn it ON again and try operating the air conditioner with the remote controller.

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Troubleshooting

● **Call the service shop immediately.**

⚠ WARNING

■ When an abnormality (such as a burning smell) occurs, stop operation and turn the breaker OFF.
Continued operation in an abnormal condition may result in troubles, electric shocks or fire.
Consult the service shop where you bought the air conditioner.

■ Do not attempt to repair or modify the air conditioner by yourself.
Incorrect work may result in electric shocks or fire.
Consult the service shop where you bought the air conditioner.

If one of the following symptoms takes place, call the service shop immediately.

- **The power cord is abnormally hot or damaged.**
- **An abnormal sound is heard during operation.**
- **The safety breaker, a fuse, or the earth leakage breaker cuts off the operation frequently.**
- **A switch or a button often fails to work properly.**
- **There is a burning smell.**
- **Water leaks from the indoor unit.**

Turn the breaker OFF and call the service shop.

■ After a power failure
The air conditioner automatically resumes operation in about three minutes. You should just wait for a while.

■ Lightening
If lightening may strike the neighbouring area, stop operation and turn the breaker OFF for system protection.

Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.

We recommend periodical maintenance

In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact the service shop where you bought the air conditioner.
The maintenance cost must be born by the user.

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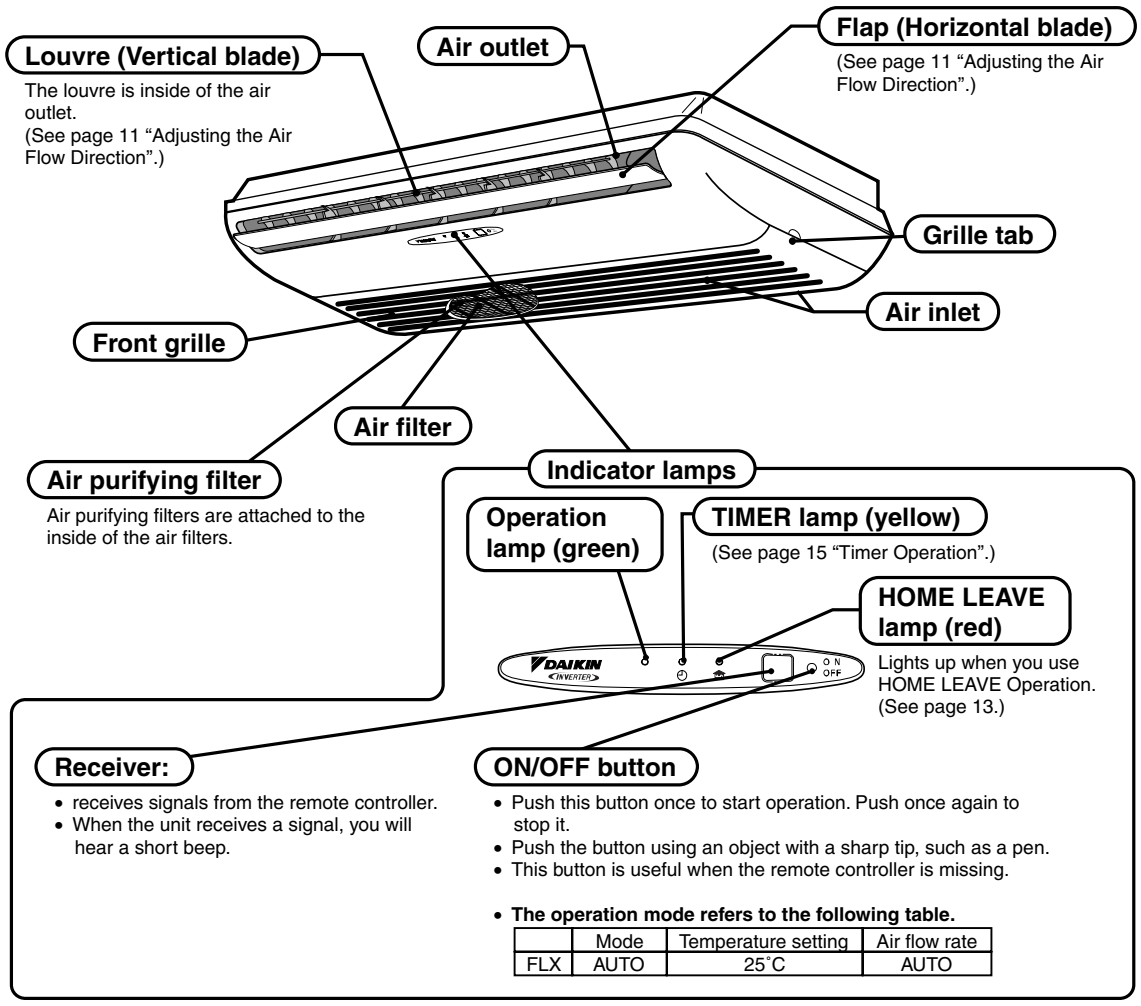
1.2 FLX50 / 60J

Names of Parts

Indoor unit

The indoor unit can be installed either to the ceiling or to a wall. The descriptions contained in this manual show the case when installation is being carried out to the ceiling. (The methods of operation used are the same when installing to a wall.)



	Mode	Temperature setting	Air flow rate
FLX	AUTO	25˚C	AUTO

Opening the front grille

How to open the front grille : (See page 16 “Care and Cleaning”)

⚠ CAUTION

Before opening the front grille, be sure to stop the operation and turn the breaker OFF.

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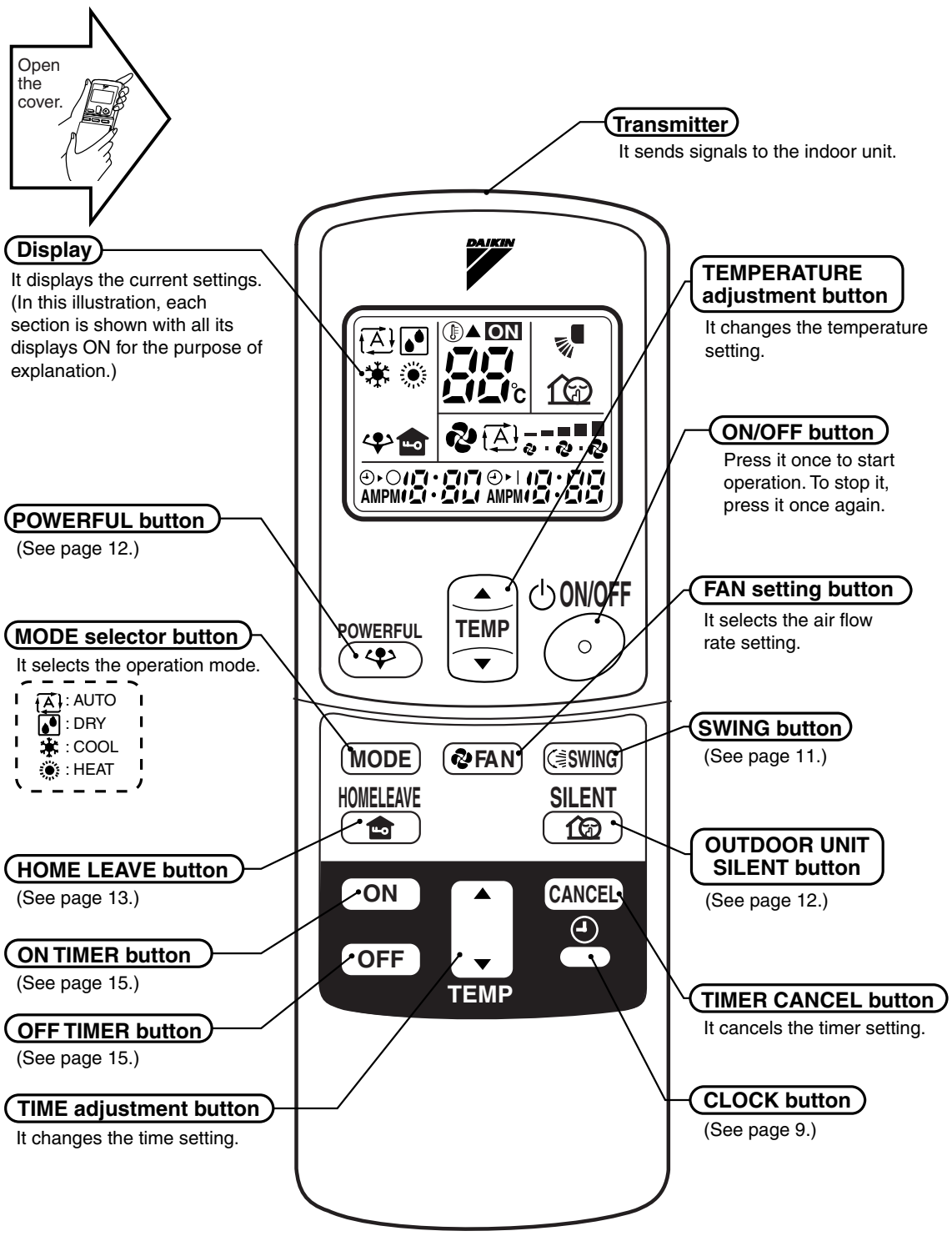
Names of Parts

Remote controller



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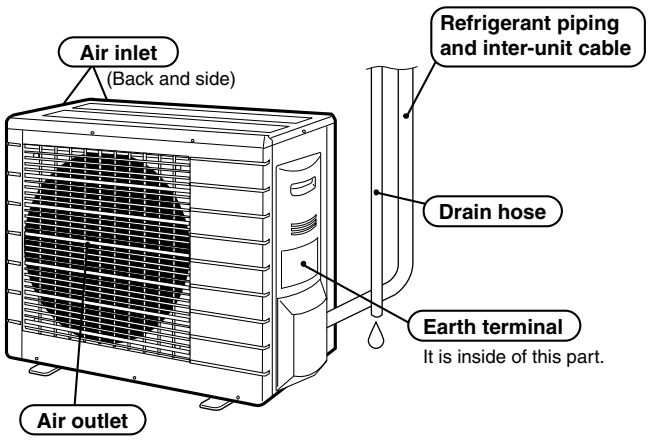
Names of Parts

Outdoor unit



Appearance of the outdoor unit may differ from some models.

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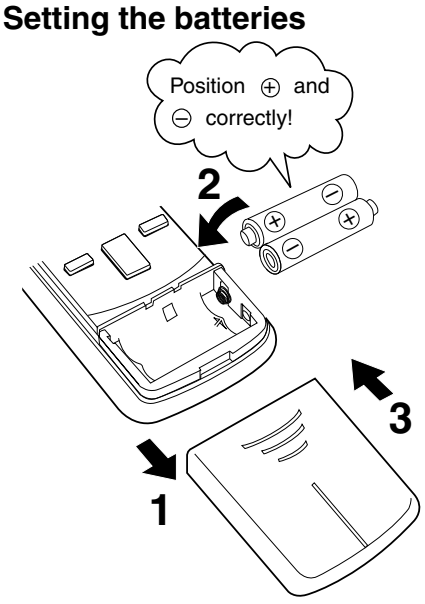
Preparation Before Operation

Remote controller

■ Setting the batteries



1 Press ≈ with a finger and slide the front cover to take it off.

2 Set two alkaline dry batteries (LR03).

3 Set the front cover as before.
- This will cause the figures on the display to flash. Set the clock at this point.

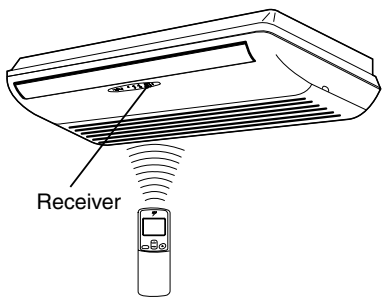
ATTENTION

About batteries

- Always replace two batteries at the same time. Replace them with new ones of an identical type.
- Do not use manganese dry batteries since their use may cause a malfunction.
- If you are not going to use the air conditioner for a long period, take out all the batteries.
- Batteries should last for about a year under normal conditions. When you find the displays unclear and signal communication often failing, replace them with new ones.
- Batteries may be exhausted even before the recommended date of consumption printed on them, if the air conditioner was manufactured many months ago.
- Never try to recharge the batteries.

■ Operating the remote controller

- To use the remote controller, aim the transmitter at the indoor unit. If there is anything to block signals between the unit and the remote controller, such as a curtain, the unit will not operate.
- Do not drop the remote controller. Do not get it wet.
- The maximum distance for communication is about 7 m.

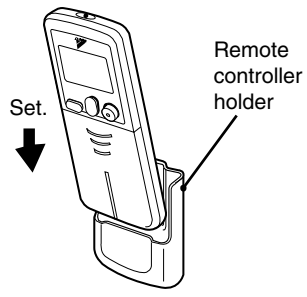


■ To fix the remote controller holder on the wall

1 Choose a place from where the signals reach the unit.

2 Fix the holder to a wall, a pillar, etc. with the screws supplied with the holder.

3 Place the remote control in the remote control holder.



- To remove, pull it upwards.

ATTENTION

About the remote controller

- Never expose the remote controller to direct sunlight.
- Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
- Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult the shop if that is the case.
- If the remote control signals happen to operate another appliance, move that appliance to somewhere else, or consult the shop.

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Preparation Before Operation

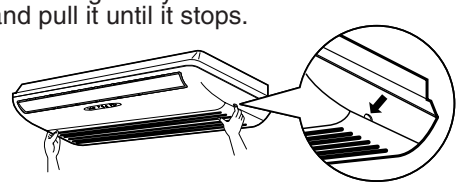
Indoor unit

■ Setting the air purifying filters

● When opening the front grille, use a robust and stable stool and watch your steps carefully.

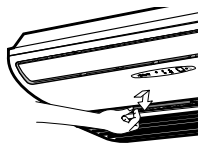
1 Open the front grille.

● Hold the grille by the tabs on the two sides and pull it until it stops.



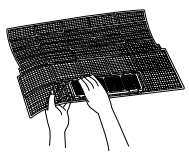
2 Pull out the air filters.

● Push the tab at the center of each air filter, then pull it down.



3 Set the air purifying filters.

● Attach an air purifying filter to each air filter.



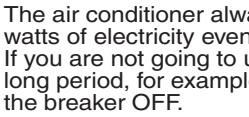
4 Set the air filters in their original positions and close the front grille.

● Push the grille at the 5 points indicated by ⬆.

● Operation without air filters may result in troubles as dust will accumulate inside the indoor unit.

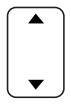
■ Setting the clock

1 Press .



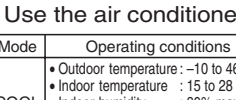
0:00 is displayed.

blinks.

2 Press  to set the clock to the present time.

● Holding down (▲) or (▼) button rapidly increases or decreases the time display.

3 Press .



: blinks.

(Now the clock is set.)

■ Turn the breaker ON

● Turning ON the breaker opens the flap, then closes it again. (This is a normal procedure.)

NOTE

Tips for saving energy

● Be careful not to cool the room too much. Keeping the temperature setting at a moderate level helps save energy.

Recommended temperature setting
For cooling: 26˚C – 28˚C For heating: 20˚C – 24˚C

● Cover windows with a blind or a curtain. Blocking sunlight and air from outdoors increases the cooling effect.

● Clogged air filters cause inefficient operation and waste energy. Clean them once in about every two weeks.

Please note

● The air conditioner always consumes 15 – 35 watts of electricity even while it is not operating.

● If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker OFF.

● Use the air conditioner in the following conditions.

Mode	Operating conditions	If operation is continued out of this range
COOL / DRY	• Outdoor temperature : –10 to 46˚C • Indoor temperature : 15 to 28 ˚C • Indoor humidity : 80% max.(*1)	• A safety device may work to stop the operation. (In multi system, it may work to stop the operation of the outdoor unit only.) • Condensation may occur on the indoor unit and drip.
HEAT	• Outdoor temperature : –15 to 24 ˚C • Indoor temperature : 10 to 30 ˚C	• A safety device may work to stop the operation.

(*1) Use in humidity 60 % or lower when using the unit at an outdoor temperature of 10˚C or lower.

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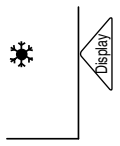
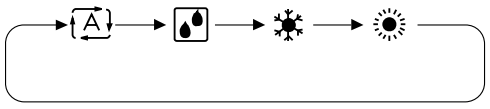
AUTO • DRY • COOL • HEAT Operation

The air conditioner operates with the settings of your choice.
From the next time on, the air conditioner will operate with the same settings.

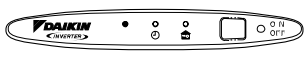
1 Press (MODE) and select a mode.



● Each pressing of the button advances the mode setting in sequence.



2 Press ON/OFF .



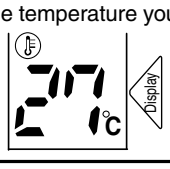
Then OPERATION lamp lights up.

■ To stop:

Press ON/OFF once again.

Then OPERATION lamp goes off.

■ To change the temperature setting:

DRY mode	AUTO or HEAT or COOL mode
The temperature setting is not variable.	Press ▲ to raise the temperature and press ▼ to lower the temperature.
	Set to the temperature you like. 

■ To change the air flow rate setting:

Press (FAN).

DRY mode	AUTO or HEAT or COOL mode
The air flow rate setting is not variable.	Five levels of air flow rate setting from " " to " "plus " A " are available. 

● At smaller air flow rates, the cooling effect is also smaller.

■ To change the air flow direction:

(See page 11.)

NOTE

<Note on HEAT mode operation>

- Since this air conditioner heats the room by taking heat from outdoor air to indoors, the heating capacity becomes smaller in lower outdoor temperatures. If the heating effect is insufficient, it is recommended to use another heating appliance in combination with the air conditioner.
- The heat pump system heats the room by circulating hot air around all parts of the room. After the start of heating operation, it takes some time before the room gets warmer.
- In heating operation, frost may occur on the outdoor unit and lower the heating capacity. In that case, the system switches into defrosting operation to take away the frost.
- During defrosting operation, hot air does not flow out of indoor unit.

<Note on AUTO operation>

- In AUTO operation, the system selects a temperature setting and an appropriate mode (COOL or HEAT) based on the room temperature at the start of the operation.
- The system automatically reselects setting at a regular interval to bring the room temperature to user-seetting level.
- If you do not like AUTO operation, you can select manually, you like the mode and setting.

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Adjusting the Air Flow Direction

You can adjust the air flow direction to increase your comfort.

Adjusting the horizontal blade (flap)

Press (SWING) .

- Every time the button is pressed, " " appears or disappears.

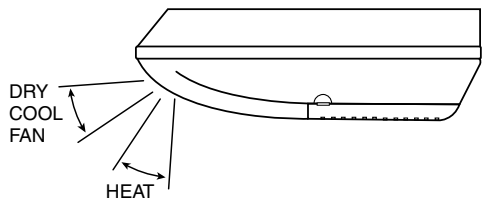
..... The flap automatically swings up and down.

..... To stop the flap at an angle you like, press (SWING) .

No display

Notes on flap angles

- When [SWING] is selected, the flap swinging range depends on the operation mode. (See the figure.)



NOTE

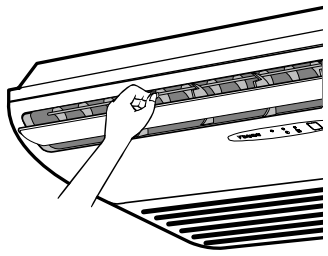
- Unless [SWING] is selected, you should set the flap at a near- horizontal angle in COOL or DRY mode to obtain the best performance.
- In COOL or DRY mode, if the flap is fixed at a downward position, the flap automatically moves in about 60 minutes to prevent condensation on it.

ATTENTION

- Always use a remote controller to adjust the flap angle.
  If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.

Adjusting the vertical blade (louvre)

- When adjusting the louvre, use a robust and stable stool and watch your steps carefully.



Hold the knob and move the louvre.
(You will find a knob on the left side and the right side blades.)

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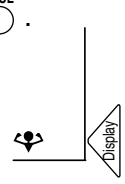
POWERFUL Operation

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity with a touch of a button.

- Pressing the (POWERFUL) button during operation starts POWERFUL operation.
- POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
- During you use “POWERFUL operation”, the other functions will not go on.

1 Press POWERFUL .



■ To cancel POWERFUL operation:

Press POWERFUL .

Notes on POWERFUL operation

- **In COOL and HEAT mode**
  To maximize the cooling and heating effect, the capacity of outdoor unit must be increased and the air flow rate be fixed to the maximum setting.
  The temperature and air flow settings are not variable.
- **In DRY mode**
  The temperature setting is lowered by 3˚C and the air flow rate is slightly increased.

OUTDOOR UNIT SILENT Operation

OUTDOOR UNIT SILENT operation lowers the noise-level of the outdoor unit by changing the frequency and fan rpm on the outdoor unit.
This function is convenient when sleeping, etc.

How to use OUTDOOR UNIT SILENT operation

* This function is available in COOL, HEAT, and AUTO modes.

■ To use the “OUTDOOR UNIT SILENT operation”

Press SILENT .

■ To cancel the “OUTDOOR UNIT SILENT operation”

Press SILENT again.

Note on OUTDOOR UNIT SILENT operation

- This function is available in COOL, HEAT, and AUTO modes.
  (This is not available in DRY mode.)
- Using POWERFUL operation (P12) during OUTDOOR UNIT SILENT operation will disengage OUTDOOR UNIT SILENT operation.
- Turning the unit off either with the remote control or by flipping the switch on the unit during OUTDOOR UNIT SILENT operation will shut the unit off. The unit will continue in OUTDOOR UNIT SILENT operation when turned back on.

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HOME LEAVE Operation

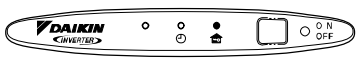
HOME LEAVE operation function is useful when you leave the house or the room.

How to use HOME LEAVE Operation

* This function is only available in COOL and HEAT modes.

■ To use the "HOME LEAVE Operation"

Press HOMELEAVE while the air conditioner is operating.



(The HOME LEAVE lamp lights up.)

■ To cancel the "HOME LEAVE Operation"

Press HOMELEAVE again.

(The HOME LEAVE lamp goes off.)

Before using HOME LEAVE Operation...

● When using HOME LEAVE Operation for the first time, set the temperature and air flow rate for HOME LEAVE Operation.

The initial settings are:

Heating ... Temperature 25˚C Air flow rate AUTO

Cooling ... Temperature 25˚C Air flow rate AUTO

■ How to set the temperature and air flow rate.

1 Press HOMELEAVE.

2 Adjust the set temperature with TEMP as you like.

3 Adjust the air flow rate setting with FAN as you like.

* The temperature and air flow rate will be the same as the previous settings starting with the second use.
* If you want to change the settings from the previous use, repeat steps 1 through 3.

What's the HOME LEAVE Operation

● What is HOME LEAVE Operation?

Using HOME LEAVE Operation

During heating... It prevents the temperature in the room from dropping too far on cold winter days by using weak heating operation (*1). Disengaging HOME LEAVE Operation will return the room to the set temperature right away.

During cooling... It prevents the temperature in the room from rising too high on hot summer days by using weak cooling operation (*1). Disengaging HOME LEAVE Operation will return the room to the set temperature right away.

(*1)... You can change the set temperature and air flow rate as you wish. Refer to the "Before using home leave operation" section above on how to change the settings.

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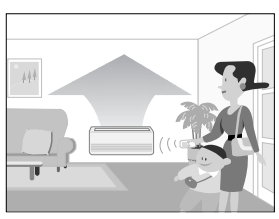
HOME LEAVE Operation

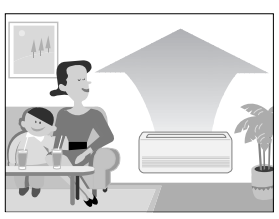
■ Useful at times like these!

1 Every day before you leave the house...



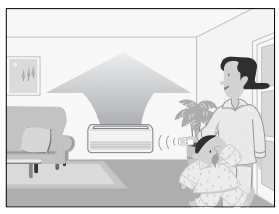
When you go out, push the " HOME LEAVE Operation " button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.

When you return, you will be welcomed by a comfortably air conditioned room.



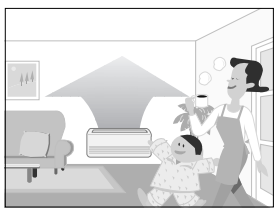
Push the "HOME LEAVE Operation" button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

2 Before bed...



Set the unit to HOME LEAVE Operation before leaving the living room when going to bed.

The unit will maintain the temperature in the room at a comfortable level while you sleep



When you enter the living room in the morning, the temperature will be just right.
Disengaging HOME LEAVE Operation will return the temperature to that set for normal operation. Even the coldest winters will pose no problem!

NOTE

<Note on HOME LEAVE Operation>

- HOME LEAVE Operation is only available in COOL and HEAT modes. (Cannot be used in AUTO, DRY, and FAN modes.)
- HOME LEAVE Operation runs in accordance with the operation mode the unit was in before using HOME LEAVE Operation.
- HOME LEAVE Operation can be set within the ranges shown below.
  Temperature: (During heating) 10 ºC to 30 ºC
  (During cooling) 18 ºC to 32 ºC
  Air flow rate: 5 steps from weak to strong, or automatic.
- Using POWERFUL operation (P12) during HOME LEAVE Operation will disengage HOME LEAVE Operation.
- Turning the unit off by flipping the switch on the unit during HOME LEAVE Operation will shut the unit off. The unit will continue in HOME LEAVE Operation when turned back on.
- Turning the unit off with the remote control during HOME LEAVE Operation will shut the unit off.
  H/P: HOME LEAVE Operation will be disengaged when the unit is turned back on.

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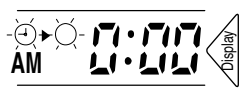
Timer Operation

Timer functions are useful for automatically switching the air conditioner on or off at night or in the morning. You can also use OFF TIMER and ON TIMER in combination.

OFF TIMER operation

● Check that the clock is correct.
If not, set the clock to the present time. (See page 9.)

1 Press (OFF) while the air conditioner is operating.



AM 0:00 is displayed.
🕘▸◯ blinks.

2 Press ▲▼ TEMP until the time setting reaches the point you like.
● Every pressing of either button increases or decreases the time setting by ten minutes. Holding down either button changes the setting rapidly.

3 Press (OFF) once again.

Then the TIMER lamp lights up.

■ To cancel the timer:

Press (CANCEL) .

Then the TIMER lamp goes off.

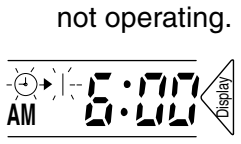
Notes on OFF TIMER

● NIGHT SET MODE
When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.5˚C up in COOL) to prevent excessive cooling for your pleasant sleep.

ON TIMER operation

● Check that the clock is correct. If not, set the clock to the present time (See page 9).

1 Press (ON) while the air conditioner is not operating.



AM 6:00 is displayed.
🕘▸| blinks.

2 Press ▲▼ TEMP until the time setting reaches the point you like.
● Every pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3 Press (ON) once again.

Then the TIMER lamp lights up.

Combining ON TIMER and OFF TIMER

● A sample setting for combining the two timers is shown below.

(Example)
Present time: 11:00 PM
(The unit operating)
OFF TIMER at 0:00 a.m.) Combined
ON TIMER at 7:00 a.m.)

Notes on ON,OFF TIMER

● When TIMER is set, the present time is not displayed.
● Once you set ON,OFF TIMER, the time setting is kept in the memory. (The memory is canceled when remote controller batteries are replaced.)
● When operating the unit via the ON/OFF Timer, the actual length of operation may vary from the time entered by the user.(Maximum approx. 10 minutes.)

ATTENTION

■ In the following cases, set the timer again.
● After a breaker has turned OFF.
● After a power failure.
● After replacing batteries in the remote controller.

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Care and Cleaning

⚠ CAUTION

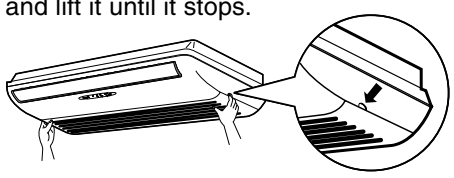
- Before cleaning, be sure to stop the operation and turn the breaker OFF.
- When opening the front grille, use a robust and stable stool and watch your steps carefully.

Cleaning the air filters

(It is recommended to clean them every two weeks.)

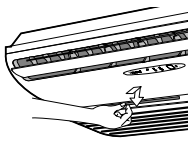
1 Open the front grille.

- Hold the grille by the tabs on the two sides and lift it until it stops.

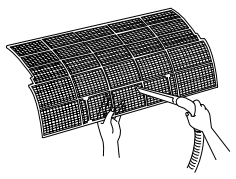


2 Pull out the air filters.

- Push upwards the tab at the center of each air filter, then pull it down.



3 Take off the air purifying filters and clean them.



- Wash them with water, or clean them with a vacuum cleaner.
- If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.

4 Set the air purifying filters and the air filters as they were and close the front grille.

- Insert claws of the filters into slots of the front panel.
- Push the grille at the 5 points. (See page 9 “Indoor unit”.)

NOTE

- In a dusty environment, clean the air filters at least once in every two weeks.
- Operation with dusty air filters lowers the cooling capacity and wastes energy.

Cleaning the indoor and outdoor units and the remote controller

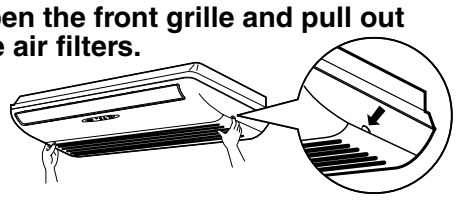
- Wipe them with dry soft cloth.
  For cleaning, do not use water hotter than 40˚C, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes nor other hard stuff.

Replacing air purifying filters

(It is recommended to replace them every three months.)

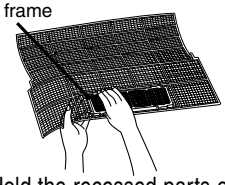
- Air purifying filters need to be replaced regularly.

1 Open the front grille and pull out the air filters.



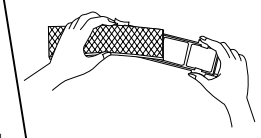
2 Take off the air purifying filters.

Air purifying filter frame

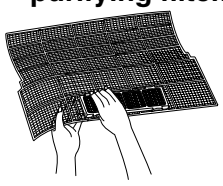


- Hold the recessed parts of the frame and unhook the four claws.

3 Detach the filter element and attach a new one.



4 Attach the air purifying filter.



5 Set the air filters as they were and close the front grille.

(Push the grille at the 5 point.)

NOTE

- To order air purifying filters, contact the service shop where you bought the air conditioner.
- Once the air purifying filter element gets dirty, it is not reusable but must be thrown away.
- Operation with dirty air purifying filters:
  - cannot clean the air.
  - results in poor cooling.
  - may cause odour.

Item	Part No.
Air purifying filter (with frame)	KAF918A41
Air purifying filter (without frame)	KAF918A42

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Care and Cleaning

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.

Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.

Check that the earth wire is not disconnected or broken.

Check that the drain comes smoothly out of the drain hose during COOL or DRY operation.

- If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

Before a long idle period

1 Operate the fan alone for several hours on a fine day to dry out the inside.

1 Press MODE and select " ❄ ".

2 Press TEMP and set the temperature to 32˚C

3 Press ⏻ON/OFF .

- Perform this operation when the room temperature is under 28˚C.

2 Clean the air filters and set them again.

3 Take out batteries from the remote controller.

4 Turn OFF the breaker for the room air conditioner.

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Troubleshooting

● **These cases are no troubles.**

The following cases are not air conditioner troubles but have some reasons. You may just continue using it.

Case	Explanation
Operation does not start soon. ● When ON/OFF button was pressed soon after operation was stopped. ● When the mode was reselected.	● This is to protect the air conditioner. You should wait for about 3 minutes.
Hot air does not flow out soon after the start of heating operation.	● The air conditioner is warming up. You should wait for 1 to 4 minutes. (The system is designed to start discharging air only after it has reached a certain temperature.)
The heating operation stops suddenly and a flowing sound is heard.	● The system is taking away the frost on the outdoor unit. You should wait for about 3 to 8 minutes.
The outdoor unit emits water or steam.	■ In HEAT mode • The frost on the outdoor unit melts into water or steam when the air conditioner is in defrost operation. ■ In COOL or DRY mode • Moisture in the air condenses into water on the cool surface of outdoor unit piping and drips.
Mists come out of the indoor unit.	■ This happens when the air in the room is cooled into mist by the cold air flow during cooling operation.
The indoor unit gives out odour.	■ This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the air flow. (If this happens, we recommend you to have the indoor unit washed by a technician. Consult the service shop where you bought the air conditioner.)
The outdoor fan rotates while the air conditioner is not in operation.	■ After operation is stopped: • The outdoor fan continues rotating for another 30 seconds for system protection. ■ While the air conditioner is not in operation: • When the outdoor temperature is very high, the out door fan starts rotating for system protection.
The operation stopped suddenly. (OPERATION lamp is on)	■ For system protection, the air conditioner may stop operating on a sudden large voltage fluctuation. It automatically resumes operation in about 3 minutes.

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Troubleshooting

● **Check again**

Please check again before calling a repair person.

Case	Check
The air conditioner does not operate. (OPERATION lamp is off)	● Hasn't a breaker turned OFF or a fuse blown? ● Isn't it a power failure? ● Are batteries set in the remote controller? ● Is the timer setting correct?
Cooling or Heating effect is poor.	● Are the air filters clean? ● Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? ● Is the temperature setting appropriate? ● Are the windows and doors closed? ● Are the air flow rate and the air direction set appropriately?
Operation stops suddenly. (OPERATION lamp blinks.)	● Are the air filters clean? ● Is there anything to block the air inlet or the outlet of the indoor and the outdoor units? Clean the air filters or take all obstacles away and turn the breaker OFF. Then turn it ON again and try operating the air conditioner with the remote controller. If the lamp still blinks, call the service shop where you bought the air conditioner.
An abnormal functioning happens during operation.	● The air conditioner may malfunction with lightening or radio waves. Turn the breaker OFF, turn it ON again and try operating the air conditioner with the remote controller.

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Troubleshooting

● **Call the service shop immediately.**

⚠ WARNING

■ When an abnormality (such as a burning smell) occurs, stop operation and turn the breaker OFF.
Continued operation in an abnormal condition may result in troubles, electric shocks or fire.
Consult the service shop where you bought the air conditioner.

■ Do not attempt to repair or modify the air conditioner by yourself.
Incorrect work may result in electric shocks or fire.
Consult the service shop where you bought the air conditioner.

If one of the following symptoms takes place, call the service shop immediately.

- **The power cord is abnormally hot or damaged.**
- **An abnormal sound is heard during operation.**
- **The safety breaker, a fuse, or the earth leakage breaker cuts off the operation frequently.**
- **A switch or a button often fails to work properly.**
- **There is a burning smell.**
- **Water leaks from the indoor unit.**

→ Turn the breaker OFF and call the service shop.

■ After a power failure
The air conditioner automatically resumes operation in about three minutes. You should just wait for a while.

■ Lightening
If lightening may strike the neighbouring area, stop operation and turn the breaker OFF for system protection.

Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.

We recommend periodical maintenance

In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact the service shop where you bought the air conditioner.
The maintenance cost must be born by the user.

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Part 6
Service Diagnosis

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1. Caution for Diagnosis

1.1 Troubleshooting with the Operation Lamp

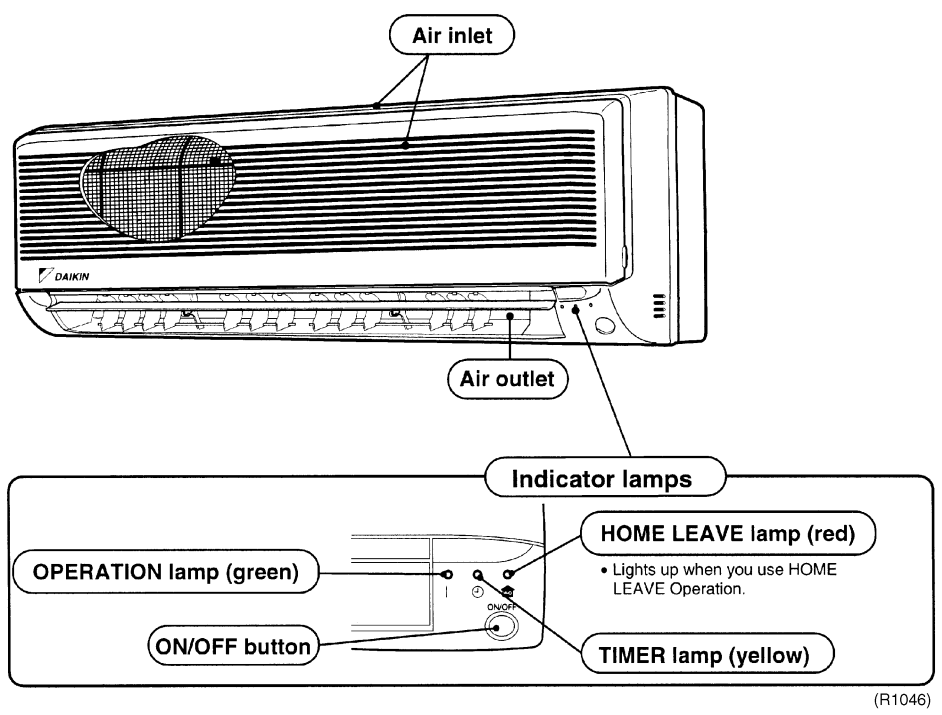
The Operation lamp flashes when any of the following errors is detected.

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

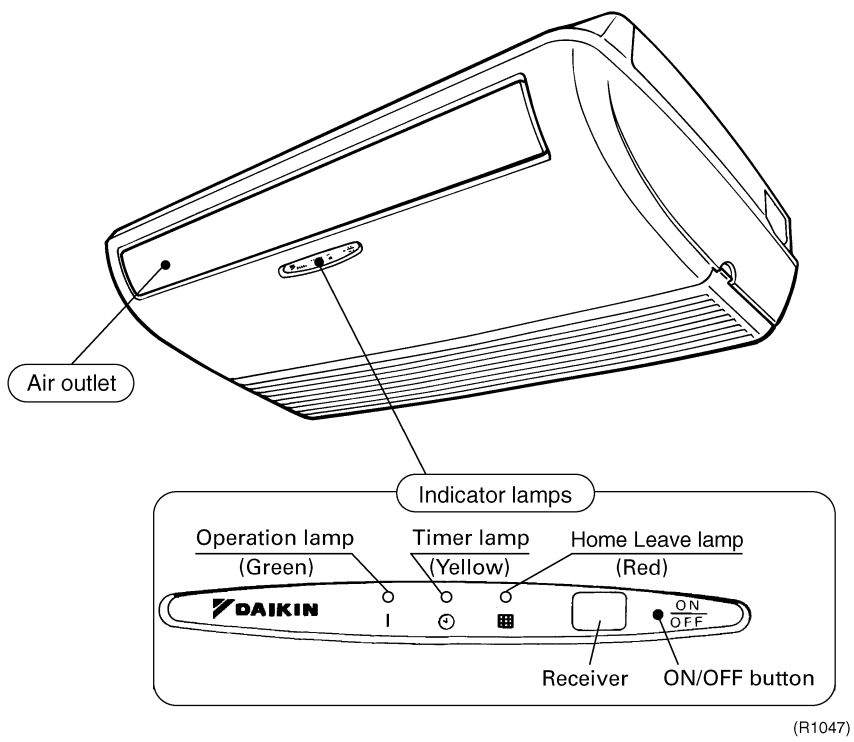
In either case, conduct the diagnostic procedure described in the following pages.

Location of Operation Lamp

Wall Mounted Type



Floor / Ceiling Suspended Dual Type



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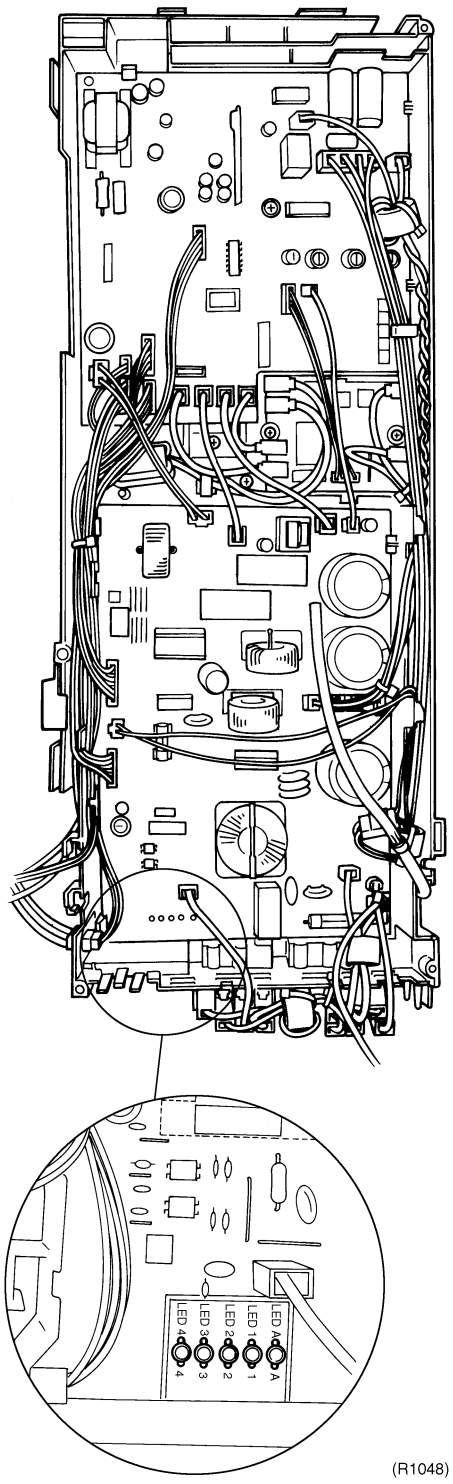
1.2 Troubleshooting with the LED Indication



(R1048)

There are green and red LEDs on the PCB. The flashing green LED indicates normal equipment condition, and the OFF condition of the red LED indicates normal equipment condition.
(Troubleshooting with the green LED)
The LED A of the outdoor unit indicate microcomputer operation condition.
Even after the error is canceled and the equipment operates in normal condition, the LED indication remains.

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2. Problem Symptoms and Measures

Problem Symptom	Check Item	Details of Measure	Page No. to be referred
None of The Units Operates.	Check the power supply.	Check to make sure that the rated voltage is supplied.	—
	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Check the outside air temperature.	Heating operation cannot be used when the outside temperature is 30˚C or higher (only for heat pump model), and cooling operation cannot be used when the outside temperature is below -10 ˚C.	—
	Diagnosis with indoor unit LED indication	—	—
	Diagnosis with outdoor unit LED indication	—	88
	Check the remote controller addresses.	Check to make sure that address settings for the remote controller and indoor unit are correct.	—
Operation Sometimes Stops.	Check the power supply.	A power failure of 2 to 10 cycles can stop air conditioner operation. (Operation lamp OFF)	—
	Check the outside air temperature.	Heating operation cannot be used when the outside temperature is 30˚C or higher (only for heat pump model), and cooling operation cannot be used when the outside temperature is below -10˚C.	—
	Diagnosis with indoor unit LED indication	—	—
	Diagnosis with outdoor unit LED indication	—	88
Some indoor units do not operate.	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Diagnosis with indoor unit LED indication	—	—
	Diagnosis with outdoor unit LED indication	—	88
Equipment operates but does not cool, or does not heat (only for heat pump model).	Check for thermistor detection errors.	Check to make sure that the main unit's thermistor has not dismounted from the pipe holder.	—
	Diagnosis with indoor unit LED indication	—	—
	Diagnosis with outdoor unit LED indication	—	88
	Diagnosis by service port pressure and operating current	Check for insufficient gas.	123
Large Operating Noise and Vibrations	Check the output voltage of the power transistor.	—	121
	Check the power transistor.	—	—
	Check the installation condition.	Check to make sure that the required spaces for installation (specified in the Installation Manual, etc.) are provided.	—

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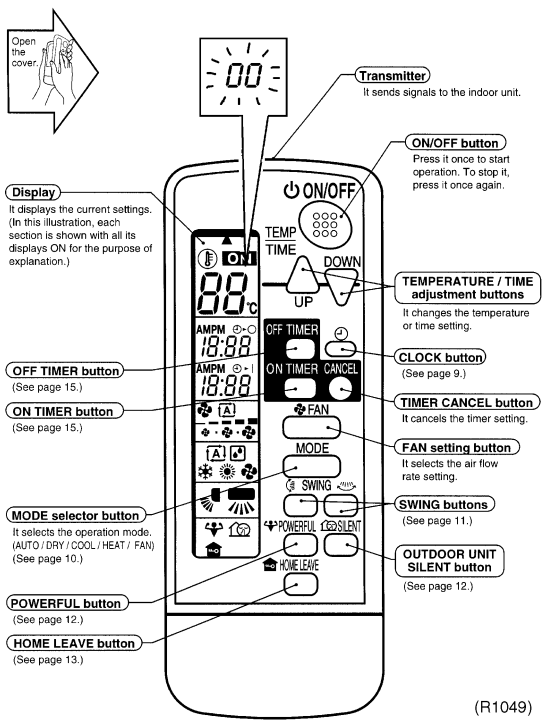
3. Service Check Function

3.1 ARC417 Series

In the ARC417A series, the temperature display sections on the main unit indicate corresponding codes.

1. When the timer cancel button is held down for 5 seconds, a “00” indication flashes on the temperature display section.

< Cover in open position >



2. Press the timer cancel button repeatedly until a continuous beep is produced.

■ The code indication changes in the sequence shown below, and notifies with along beep.

No.	Code	No.	Code	No.	Code	No.	Code
1	00	11	E7	21	UR	31	U1
2	U4	12	C7	22	R5	32	UF
3	F3	13	H8	23	J9		
4	E6	14	J3	24	E8		
5	L5	15	R3	25	P4		
6	R6	16	R1	26	L3		
7	E5	17	C4	27	L4		
8	LC	18	C5	28	H6		
9	C9	19	H9	29	H7		
10	U0	20	J6	30	U2		

Note:
1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.

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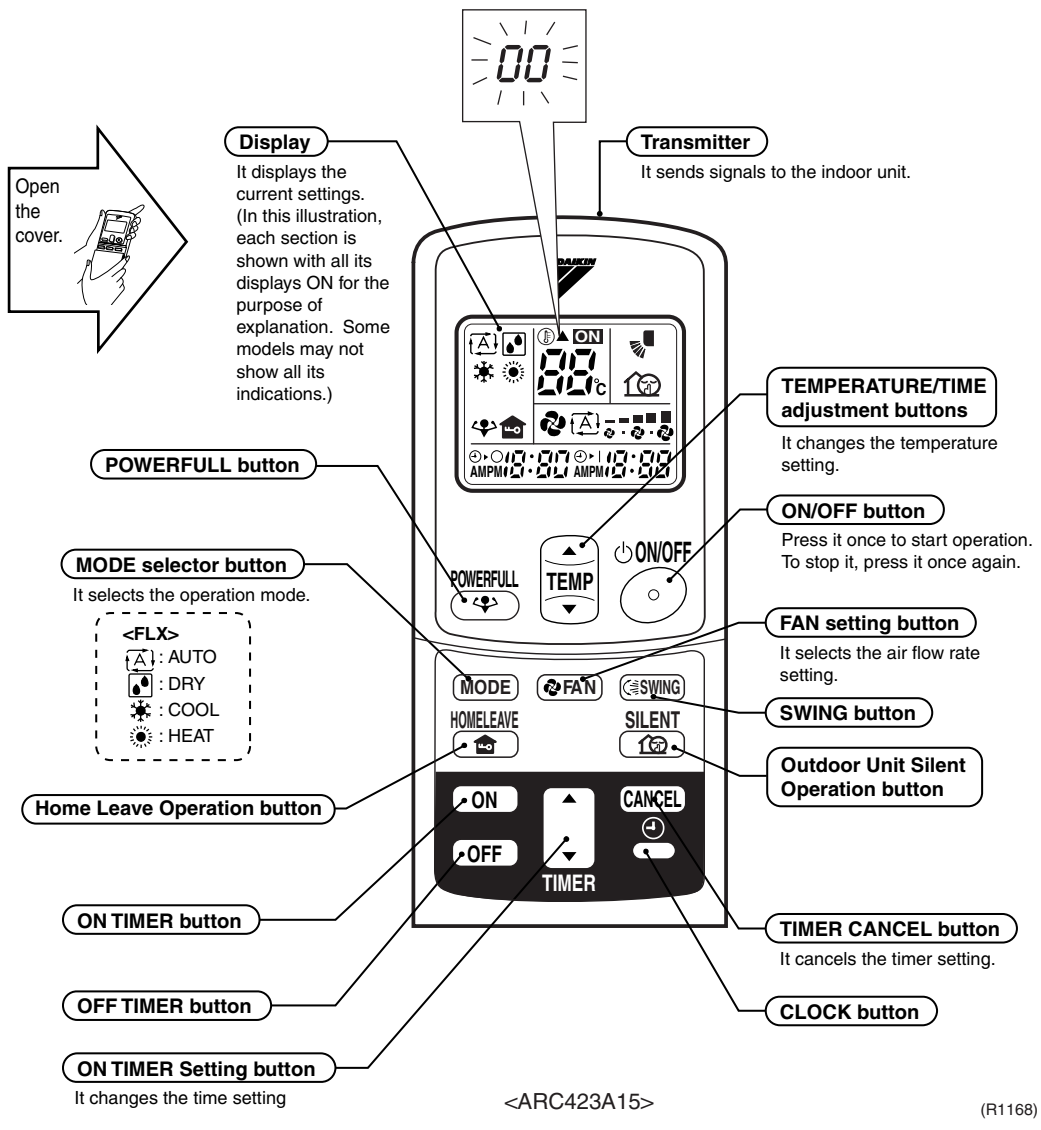
3.2 ARC423 Series

In the ARC423A series, the temperature display sections on the main unit indicate corresponding codes.

1. When the timer cancel button is held down for 5 seconds, a “00” indication flashes on the temperature display section.

< Cover in open position >



<ARC423A15>

(R1168)

2. Press the timer cancel button repeatedly until a continuous beep is produced.

■ The code indication changes in the sequence shown below, and notifies with along beep.

No.	Code	No.	Code	No.	Code	No.	Code
1	00	11	E7	21	UR	31	U1
2	U4	12	C7	22	R5	32	UF
3	F3	13	H8	23	J9		
4	E6	14	J3	24	E8		
5	L5	15	R3	25	P4		
6	R6	16	R1	26	L3		
7	E5	17	C4	27	L4		
8	LC	18	C5	28	H6		
9	C9	19	H9	29	H7		
10	U0	20	J6	30	U2		

Note:
1. A short beep and two consecutive beeps indicate non-corresponding codes.
2. To cancel the code display, hold the timer cancel button down for 5 seconds. The code display also cancels itself if the button is not pressed for 1 minute.

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4. Troubleshooting

4.1 Indoor Units

- : Not used for troubleshooting

∗ : Varies depending on the cases.

Indication on the remote controller	Description of the Fault		Details of fault (Refer to the indicated page.)
00 OR ∗	Indoor unit in normal condition (Conduct a diagnosis of the outdoor unit.)		—
A1	Inverter unit - Faulty indoor unit PCB		89
A5	Operation halt due to the freeze protection function or high pressure control		90
A6	Faulty fan motor (DC motor stop)	DC motor	91
A6	Faulty fan motor (AC motor stop)	AC motor	93
C4	Heat exchanger temperature thermistor or related abnormality		94
C9	Suction air thermistor or related abnormality		94
CA	Discharge air thermistor or related abnormality		94
∗	Faulty indoor unit PCB		95
			96
∗ OR U4	Faulty power supply or indoor unit PCB		97
U4	Signal transmission error (between indoor and outdoor units)		98
UA	Faulty indoor / outdoor power supply specification		99
∗ OR E8	Operation halt due to detection of input overcurrent		106
E5	Stoppage by OL actuation/Melt-down by temperature fuse		102
E6	Opeartion halt due to compressor seizing		104
E7	DC fan motor seizing		105
F3	Abnormal discharge pipe temperature		101
H6	Operation halt due to faulty position detection sensor		108
H8	Operation halt due to detection of CT abnormality		109
H9	Operation halt due to outside air thermistor abnormality		112
J3	Operation halt due to discharge pipe thermistor abnormality, or due to detection of disconnected discharge pipe thermistor		112
J6	Operation halt due to outdoor unit heat exchanger thermistor abnormality		112
L5	Operation halt due to detection of output overcurrent		110
U0	Operation halt due to detection of insufficient gas		113
U2	Main circuit overvoltage or low voltage		115

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4.2 Outdoor Units

☼: ON, ● : OFF, ◑ : Blinks

Green: Flashes when in normal condition
Red: OFF in normal condition
- : Not used for troubleshooting
∗ : Varies depending on the cases.

Outdoor Unit LED Indication					Indication on the remote controller	Description of the Fault	Details of Fault (Refer to the indicated page.)
Green	Red						
A	1	2	3	4			
◑	●	●	●	●	∗	Outdoor unit in normal condition (Conduct a diagnosis of the indoor unit.)	—
◑	☼	●	☼	☼	A5	Operation halt due to cooling high pressure control	100
◑	☼	●	☼	●	E5	Stoppage by OL actuation/Melt-down by temperature fuse	102
◑	●	☼	☼	●	E6	Operation halt due to compressor seizing.	104
◑	☼	☼	☼	☼	E7	DC fan motor seizing	105
◑	●	☼	●	☼	∗ or E8	Operation halt due to detection of input overcurrent.	106
◑	☼	●	☼	●	F3	Abnormal discharge pipe temperature.	101
◑	☼	☼	●	●	H6	Operation halt due to faulty position detection sensor.	108
◑	☼	☼	●	●	H8	Operation halt due to detection of CT abnormality.	109
◑	☼	☼	●	●	H9	Operation halt due to outside air thermistor abnormality.	112
◑	●	●	☼	●	L5	Operation halt due to detection of output overcurrent.	110
◑	☼	☼	●	●	J3	Operation halt due to discharge pipe thermistor abnormality, or due to detection of disconnected discharge pipe thermistor.	112
◑	☼	☼	●	●	J6	Operation halt due to outdoor unit heat exchanger thermistor abnormality.	112
◑	●	●	☼	☼	U0	Operation halt due to detection of insufficient gas.	113
◑	☼	●	●	☼	U2	Stoppage by low voltage of the main circuit (LVP)	115
◑	☼	●	☼	☼	—	Operation halt due to peak cut, freeze protection function or indoor unit icing protection.	(Conduct a diagnosis of the indoor unit.)
☼	—	—	—	—	∗	Faulty outdoor unit PCB	116
●	—	—	—	—	∗	Faulty outdoor unit PCB or signal transmitting/receiving circuit.	117

Note:
1. When a sensor error occurs, check the remote controller display to determine which sensor is malfunctioning.
   If the remote controller does not indicate the error type, conduct the following operation.
   *Turn the power switch off and back on again. If the same LED indication appears again immediately after the power is turned on, the fault is in the thermistor.
   *If the above condition does not result, the fault is in the CT.
2. The indoor unit error indication may take the precedence in the remote controller display.

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4.3 Faulty PCB

Remote Controller Display

A1

Indoor unit LED Display

Method of Malfunction Detection

Evaluation of zero-cross detection of power supply by indoor unit.

Malfunction Decision Conditions

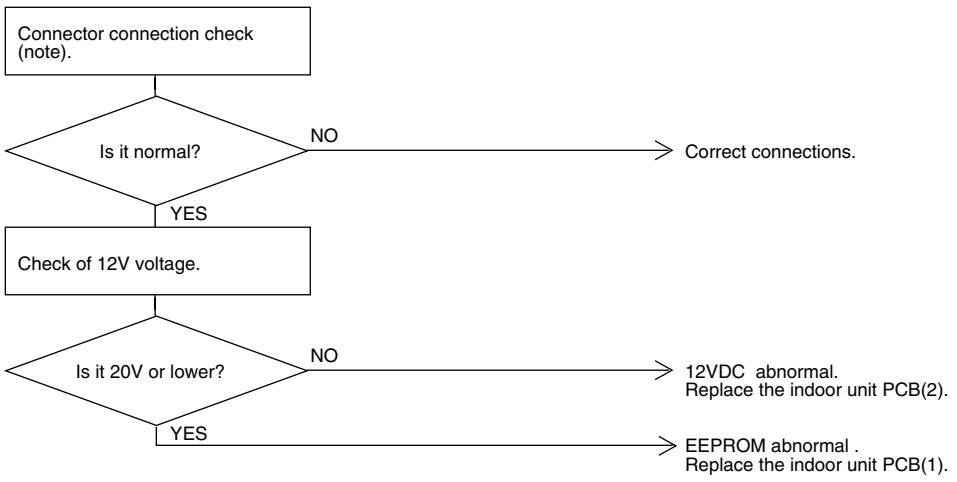
When there is no zero-cross detection in approximately 10 continuous seconds.

Supposed Causes

- Faulty indoor unit PCB
- Faulty connector connection

Troubleshooting

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



(R1169)

Note: Connector numbers vary depending on models.
Control connector.....S37

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4.4 Operation Shutdown Due to High-Pressure Control or Freeze-Up Protection (Thermistor Activation)

Remote Controller Display

A5

Indoor unit LED Display

Method of Malfunction Detection

- High pressure control
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is used for the high pressure control (operation stop)
- The freeze protection control (operation halt) is activated during cooling operation according to the temperature detected by the indoor unit heat exchanger thermistor.

Malfunction Decision Conditions

- High pressure control
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is above 67˚C
- Freeze-Up protection
  When the indoor unit heat exchanger temperature is below 0˚C during cooling operation.

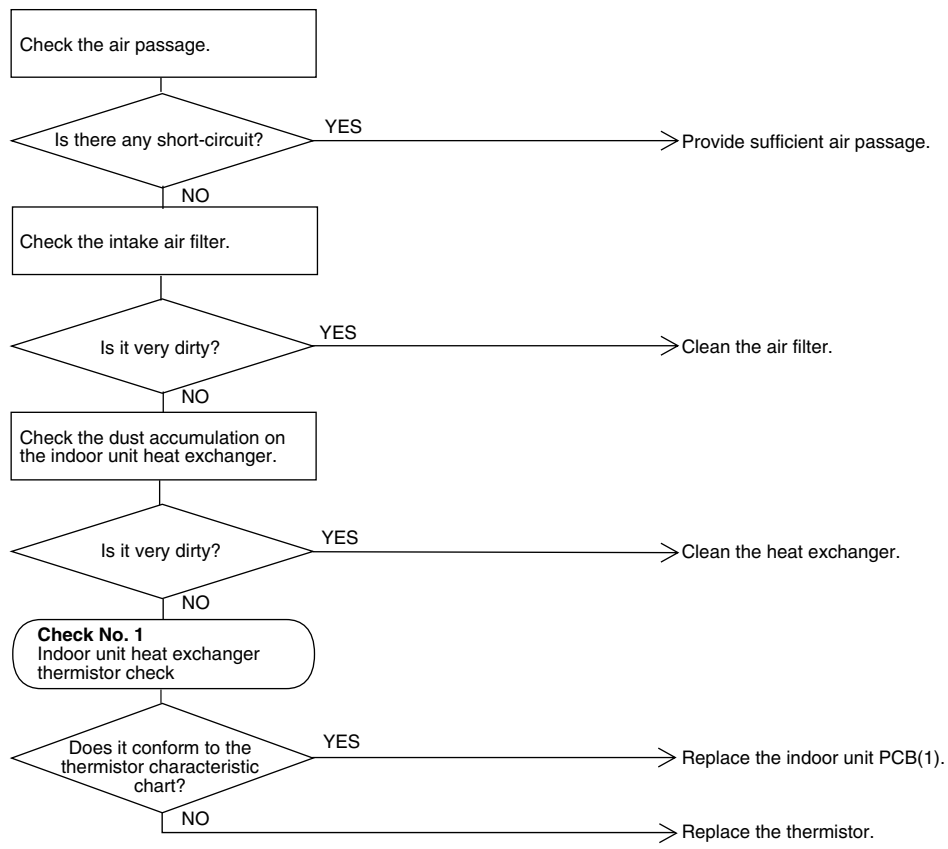
Supposed Causes

- Operation halt due to clogged air filter of the indoor unit.
- Operation halt due to dust accumulation on the indoor unit heat exchanger.
- Operation halt due to short-circuit.
- Detection error due to faulty indoor unit heat exchanger thermistor.
- Detection error due to faulty indoor unit PCB.

Troubleshooting

Check No.1
Refer to P.119

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



(R1170)

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4.5 Operation Halt Due to Fan Motor (DC Motor) or Related Abnormality [Wall Mounted Type]

Remote Controller Display	A6
Indoor unit LED Display	
Method of Malfunction Detection	The rotation speed detected by the hall IC during fan motor operation in high voltage is used to determine abnormal fan motor operation.
Malfunction Decision Conditions	When the detected rotation speed is less than 50% of the H tap under maximum fan motor rotation demand.
Supposed Causes	■ Operation halt due to short circuit inside the fan motor winding. ■ Operation halt due to breaking of wire inside the fan motor. ■ Operation halt due to breaking of the fan motor lead wires. ■ Detection error due to faulty indoor unit PCB (1).

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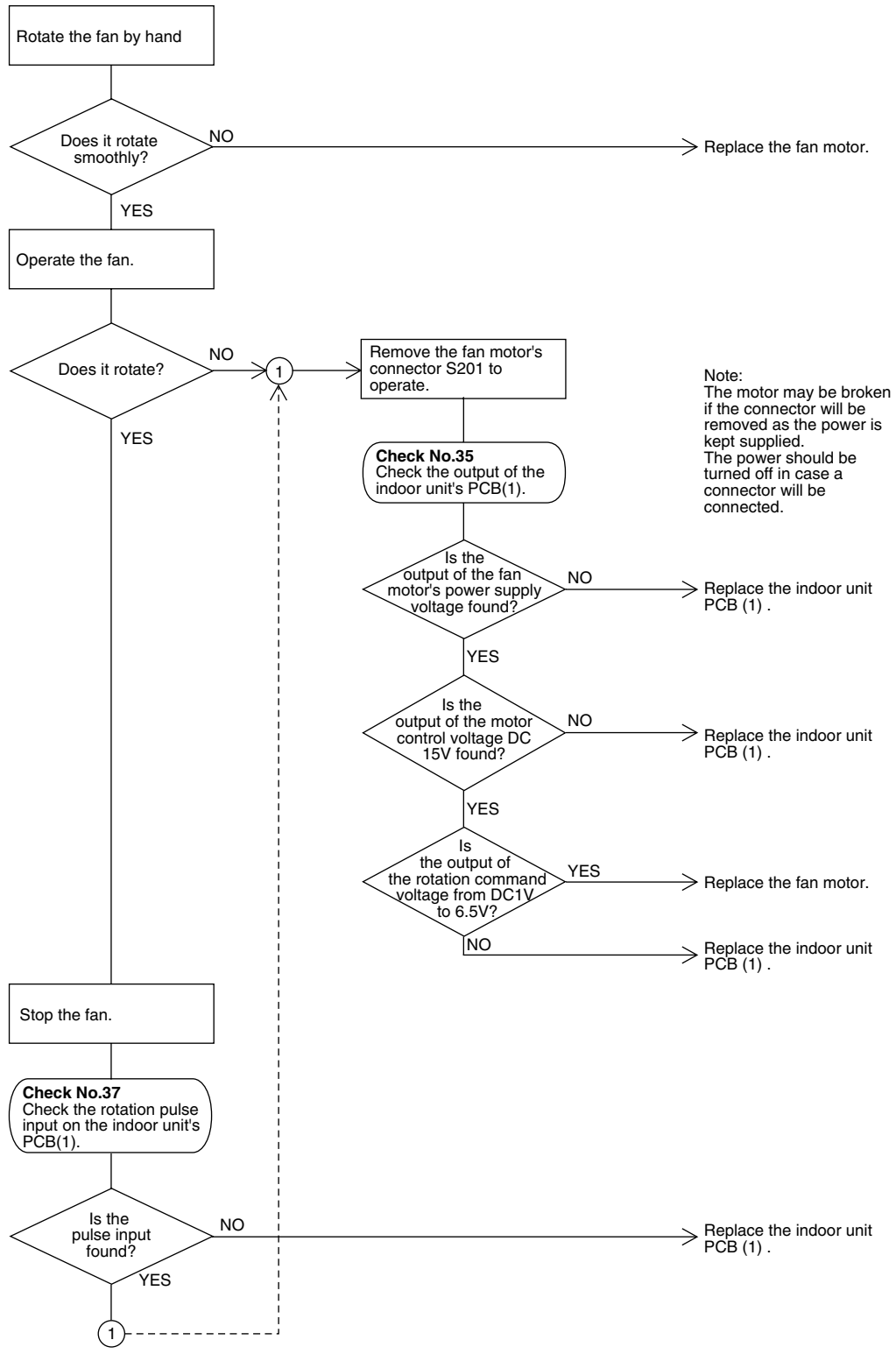
Troubleshooting

Check No.35
Rerer to P.127

Check No.37
Rerer to P.127

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



(R1233)

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4.6 Operation Halt Due to Fan Motor (AC Motor) or Related Abnormality (Floor / Ceiling Suspended Dual Type).

Remote Controller Display

A6

Indoor unit LED Display

Method of Malfunction Detection

The rotation speed detected by the hall IC during fan motor operation is used to determine abnormal fan motor operation.

Malfunction Decision Conditions

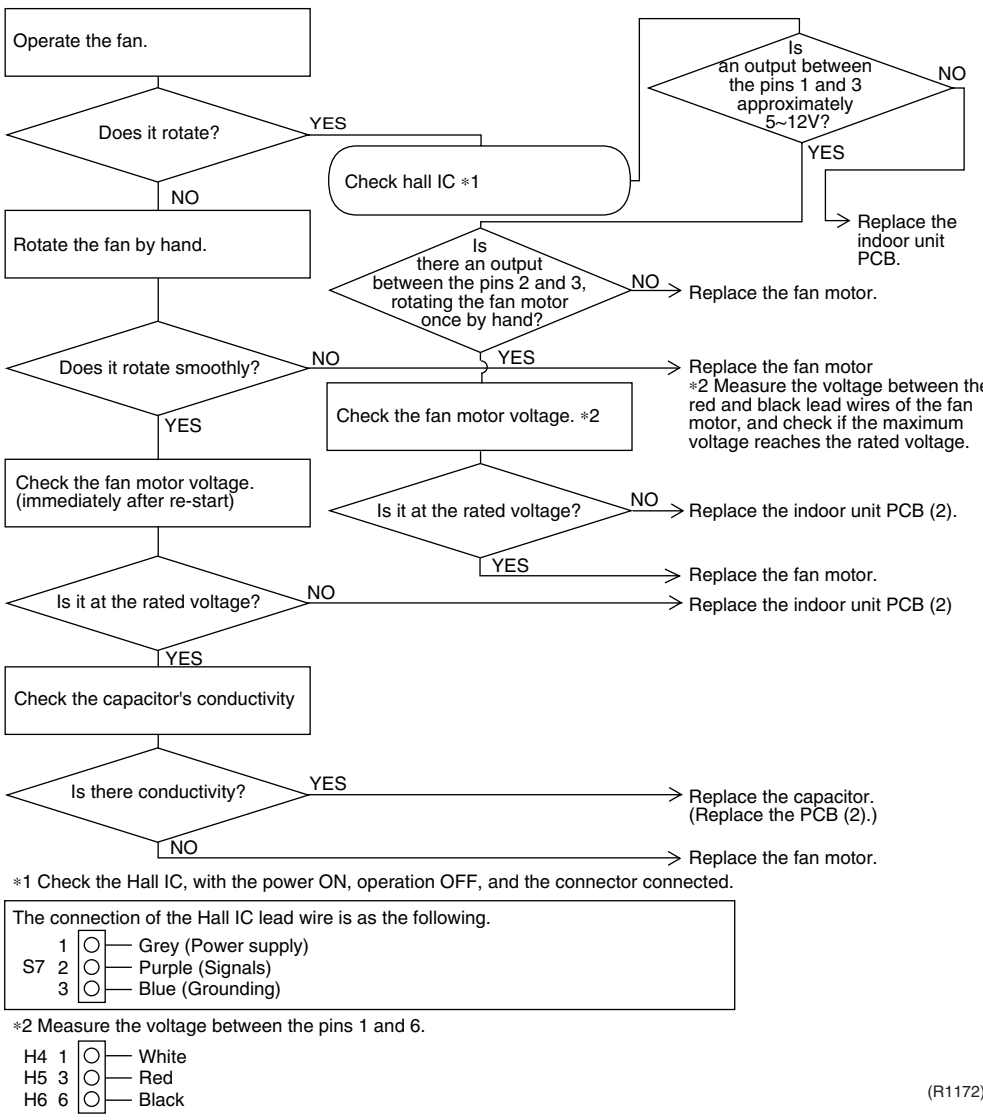
When the detected rotation speed is less than 50% of the H tap under maximum fan motor rotation demand.

Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty indoor unit PCB (2).

Troubleshooting

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



*1 Check the Hall IC, with the power ON, operation OFF, and the connector connected.

The connection of the Hall IC lead wire is as the following.

	1	○	Grey (Power supply)
S7	2	○	Purple (Signals)
	3	○	Blue (Grounding)

*2 Measure the voltage between the pins 1 and 6.

H4	1	○	White
H5	3	○	Red
H6	6	○	Black

(R1172)

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4.7 Operation Halt Due to Detection of Thermistor or Related Abnormality

Remote Controller Display

C4, C9, CA

Indoor unit LED Display

Method of Malfunction Detection

The temperatures detected by the thermistors are used to determine thermistor errors.

Malfunction Decision Conditions

When the thermistor input is more than 4.96 V or less than 0.04 V during compressor operation*.
* (reference)
When above about 212˚C (less than 120 ohms) or below about -50˚C (more than 1,860 kohms).

Note: The values vary slightly in some models.

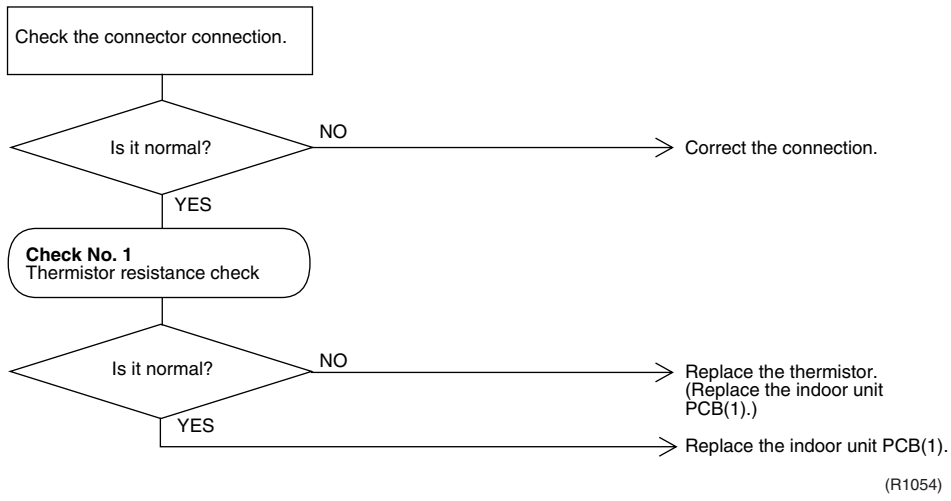
Supposed Causes

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

Troubleshooting

Check No.1
Refer to P.119

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



(R1054)

C4 : Heat exchanger temperature thermistor
C9 : Suction air thermistor
CA : Discharge air thermistor

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4.8 Faulty Indoor Unit PCB

Remote Controller Display

*

Indoor unit LED Display

Method of Malfunction Detection

The proper program operation of the microcomputer is checked by the program.

Malfunction Decision Conditions

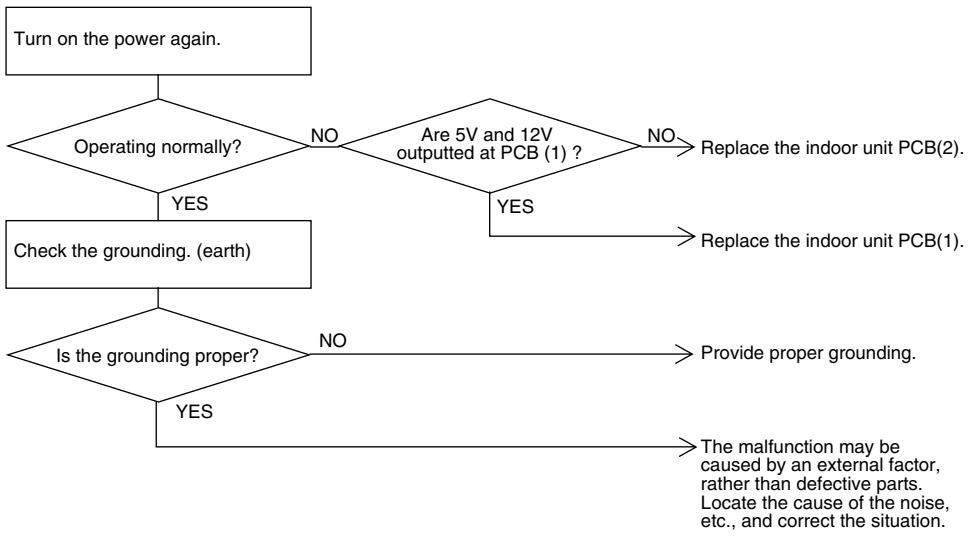
When the microcomputer program does not function properly.

Supposed Causes

- Microcomputer program is in abnormal condition due to an external factor.
  - ∗Noise.
  - ∗Momentary voltage drop.
  - ∗Momentary power failure, etc.
- Faulty indoor unit PCB.

Troubleshooting

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



(R1055)

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4.9 Faulty Indoor Unit PCB

Remote Controller Display

*

Indoor unit LED Display

Method of Malfunction Detection

The condition of the transmission circuit for indoor-outdoor signal transmission is detected.

Malfunction Decision Conditions

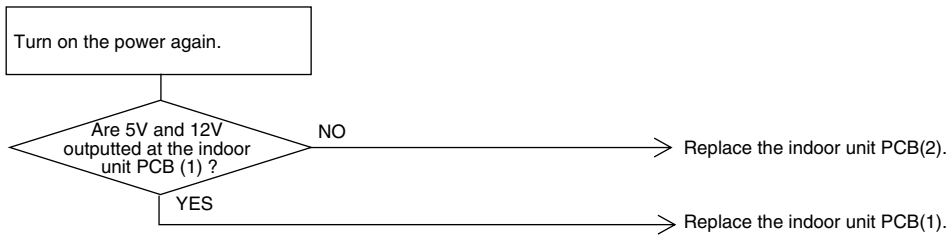
When the transmission circuit remains ON.

Supposed Causes

- Faulty indoor unit PCB

Troubleshooting

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



(R1173)

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4.10 Power Supply Abnormalities or Faulty Indoor PCB

Remote Controller Display

* or U4

Indoor unit LED Display

Method of Malfunction Detection

1. The proper program operation of the microcomputer is checked by the program.
2. In indoor-outdoor signal communications, the indoor unit determines whether the outdoor unit receives signals properly by detecting signals transmitted by the outdoor unit to the indoor unit.

Malfunction Decision Conditions

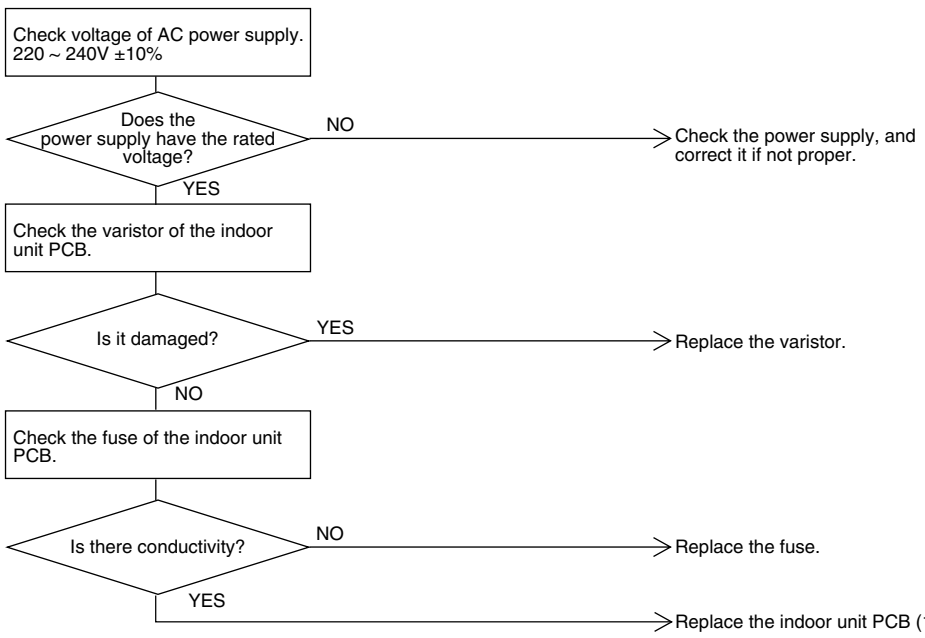
1. When the microcomputer program does not function properly.
2. When the indoor unit determines that the indoor unit does not properly receive signals transmitted by the outdoor unit in indoor-outdoor signal communications.

Supposed Causes

- Display disabled by fault power supply.
- Faulty signal transmitting/receiving circuit in indoor printed circuit boards (1) and (2)
- Microcomputer program is in abnormal condition due to an external factor.
  - Noise.
  - Momentary voltage drop.
  - Momentary power failure, etc.
- Faulty indoor unit PCBs (1) and (2).

Troubleshooting

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



(R1057)

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4.11 Signal Transmission Error (between Indoor and Outdoor Units)

Remote Controller Display

U4

Indoor unit LED Display

Method of Malfunction Detection

The data received from the outdoor unit in indoor unit-outdoor unit signal transmission is checked whether it is normal.

Malfunction Decision Conditions

When the data sent from the outdoor unit cannot be received normally, or when the content of the data is abnormal.

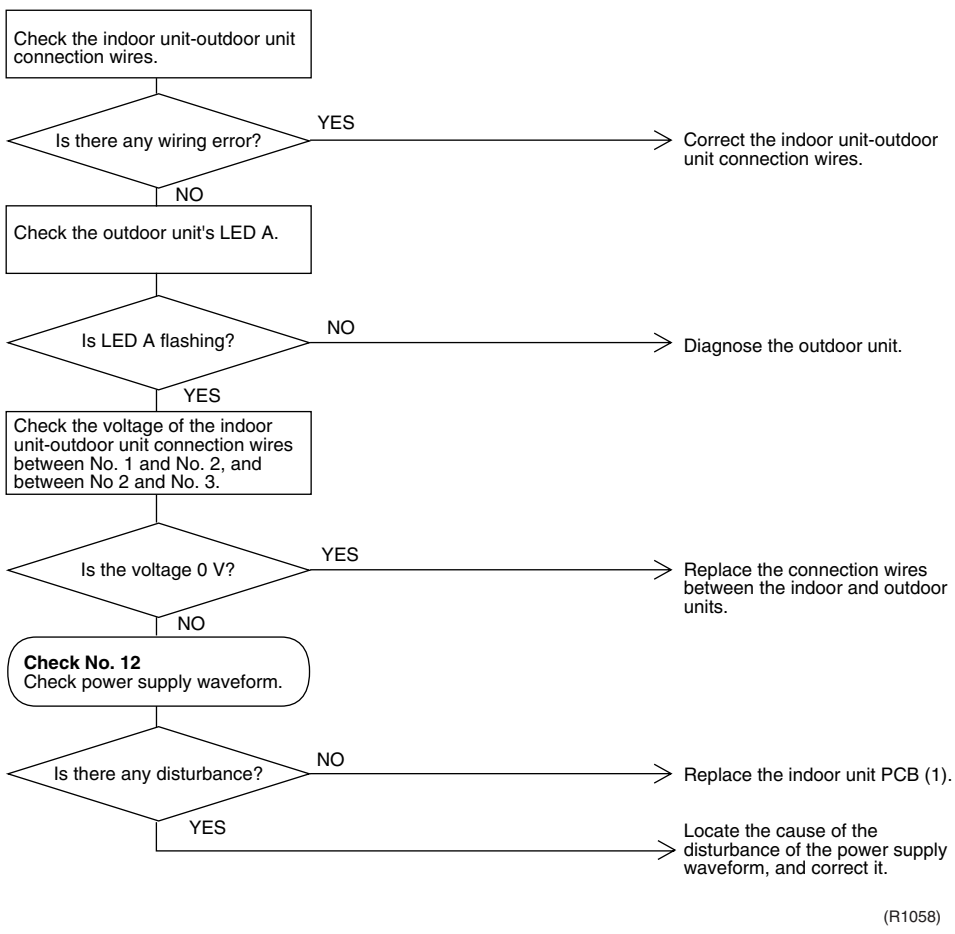
Supposed Causes

- Faulty outdoor unit PCB.
- Faulty indoor unit PCB.
- Indoor unit-outdoor unit signal transmission error due to wiring error.
- Indoor unit-outdoor unit signal transmission error due to disturbed power supply waveform.
- Indoor unit-outdoor unit signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units (wire No. 2).

Troubleshooting

Check No.12
Refer to P.121

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



(R1058)

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4.12 Faulty Indoor / Outdoor Power Supply Specification

Remote Controller Display

UA

Indoor unit LED Display

Method of Malfunction Detection

The indoor/outdoor unit data communication signal is used to detect different power specifications (connection of indoor power receiving unit and outdoor power receiving unit).

Malfunction Decision Conditions

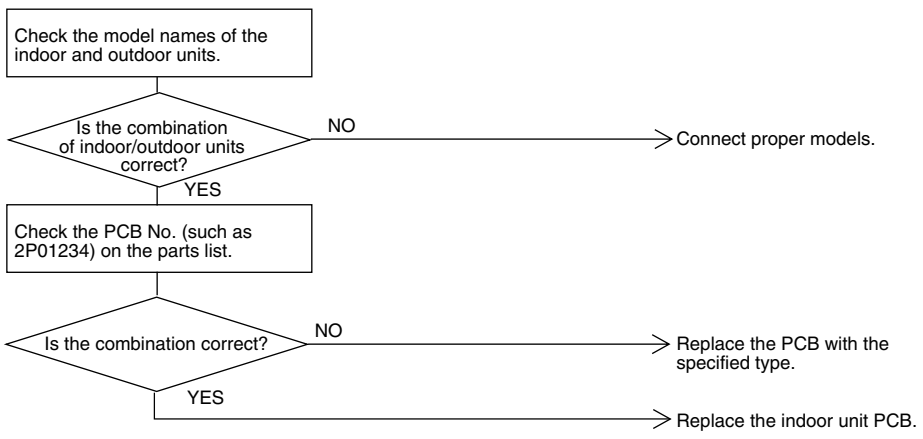
When the indoor power receiving unit is connected to the outdoor power receiving unit.

Supposed Causes

- Connection of improper models
- Installation of wrong PCB
- Faulty PCB

Troubleshooting

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



(R1174)

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4.13 Operation Halt Due to High Pressure Control for Cooling Operation

Remote Controller Display

A5

Outdoor unit LED Display

A ◑ 1 ☼ 2 ● 3 ☼ 4 ☼

Method of Malfunction Detection

During cooling operation, the temperature detected by the defrost thermistor is used for the high pressure control (stop, frequency drooping, etc.).

Malfunction Decision Conditions

When the temperature detected by defrost thermistor exceeds 65˚C during cooling operation. (Malfunction condition canceled when the temperature drops to 54˚C or below)

Supposed Causes

- Insufficient space smaller than required
- Faulty outdoor unit fan
- Faulty electronic expansion valve
- Faulty defrost thermistor
- Faulty PCB
- Faulty stop valve
- Overfilled refrigerant

Troubleshooting

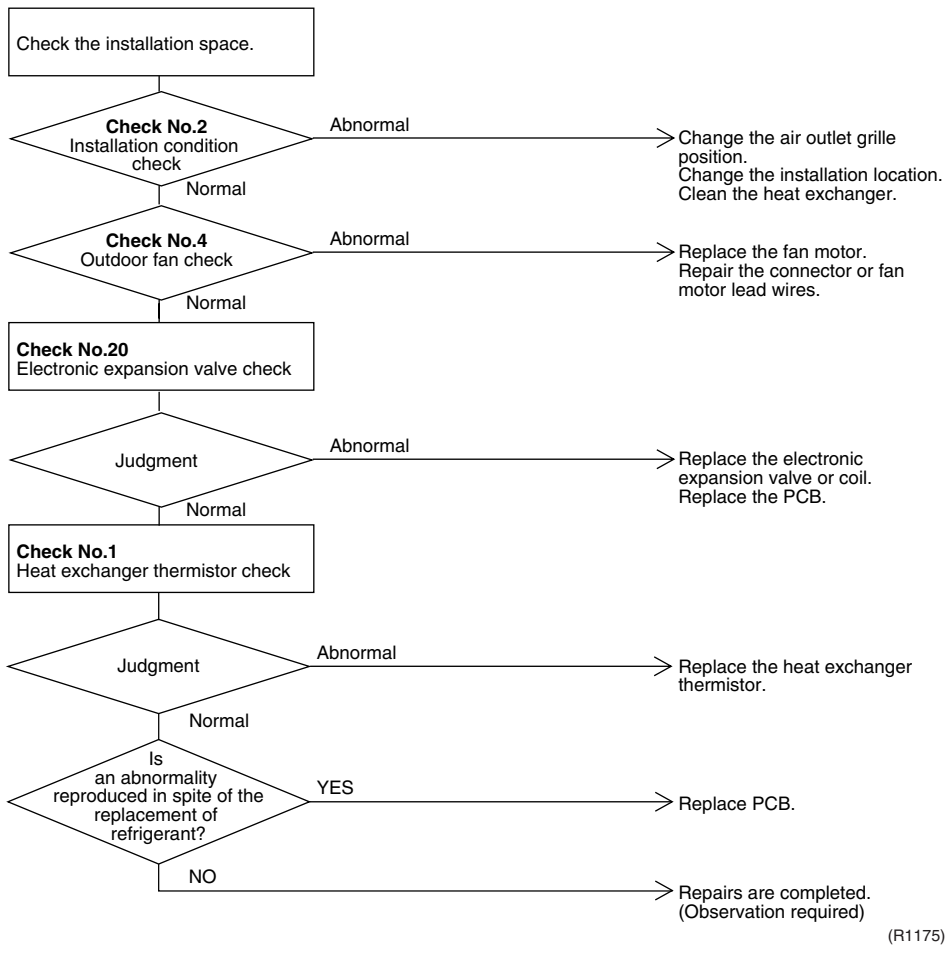
Check No.2
Refer to P.120

Check No.4
Refer to P.120

Check No.20
Refer to P.125

Check No.1
Refer to P.119

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



(R1175)

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4.14 Operation Halt Due to Discharge Pipe Temperature Control

Remote Controller Display

F3

Outdoor unit LED Display

A ◑ 1 ☼ 2 ● 3 ☼ 4 ●

Method of Malfunction Detection

The discharge pipe temperature detected by the discharge pipe thermistor is used for discharge pipe temperature control (stop or frequency step down control) .

Malfunction Decision Conditions

When an operation halt due to discharge pipe temperature error is confirmed 4 times, the system shuts down.
The compressor halts when the temperature detected by the discharge pipe thermistor is ≥ 114˚C.
(It will be released < 85˚C)
The 4-time counter resets itself when no outdoor unit abnormality occurs within 60 minutes of compressor operation (cumulative time) after the error generation.

Supposed Causes

- Activation due to insufficient refrigerant.
- Activation due to disconnected discharge pipe thermistor.
- Activation due to faulty 4-way valve.
- Detection error due to faulty outdoor PCB.
- Activation due to mixing of moisture in the pipes installed at site.
- Activation due to faulty electronic expansion valve.
- Activation due to faulty stop valve.

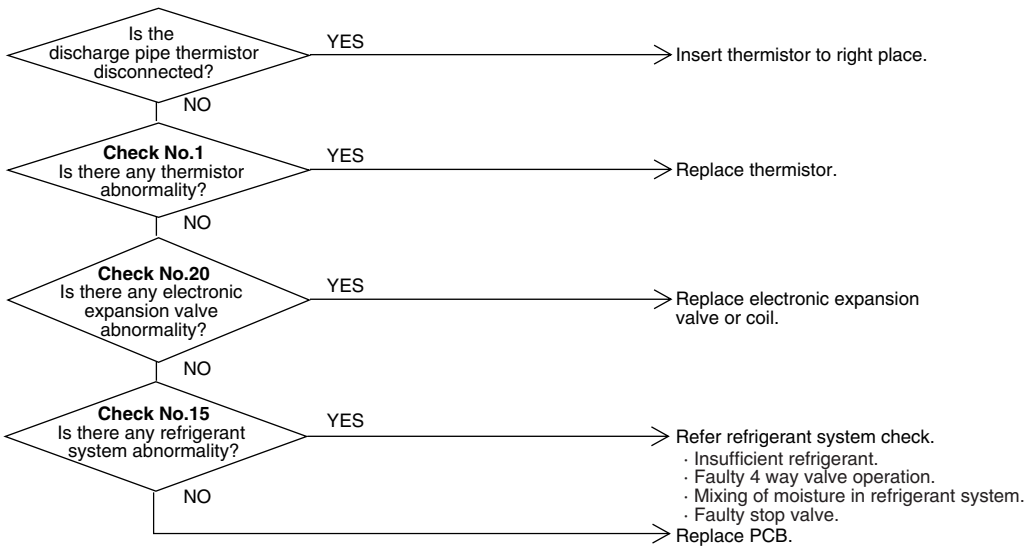
Troubleshooting

Check No.1
Refer to P.119

Check No.20
Refer to P.125

Check No.15
Refer to P.123

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



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4.15 Interrupt Due to OL Action or Thermal Fuse Blow-Out

Remote Controller Display	E5
Outdoor unit LED Display	A ◑ 1 ☼ 2 ● 3 ☼ 4 ●
Method of Malfunction Detection	■ OL action detected by the opening of OL contact. ■ Thermal fuse blown out.
Malfunction Decision Conditions	If an OL action (opening) or thermal fuse blowout signal has come from the OL action or thermal fuse detection circuit to the microcomputer. ■ OL action detected twice, resulting in a shutdown of the system. (The dual-action counter will reset itself if any of the following troubles does not occur for a total one operating hour of the compressor since the interruption: OL failure, radiation fin temperature rise, gas shortage, or compressor failure to start. OL setting : Open at 125±3˚C Closed at 95±10˚C ■ Thermal fuse setting: 76˚C (not reusable once blown out)
Supposed Causes	■ OL action because of refrigerant shortage ■ OL action because of 4-way valve failure ■ Error detection due to an opening of OL contact ■ Error detection due to connector in poor contact ■ Error detection due to broken OL harness ■ Error detection due to outdoor-unit PC board failure ■ OL action because of mixture of tap water in the field ■ Temperature around the terminal block above 76˚C ■ Thermal fuse blown out due to harness in poor contact

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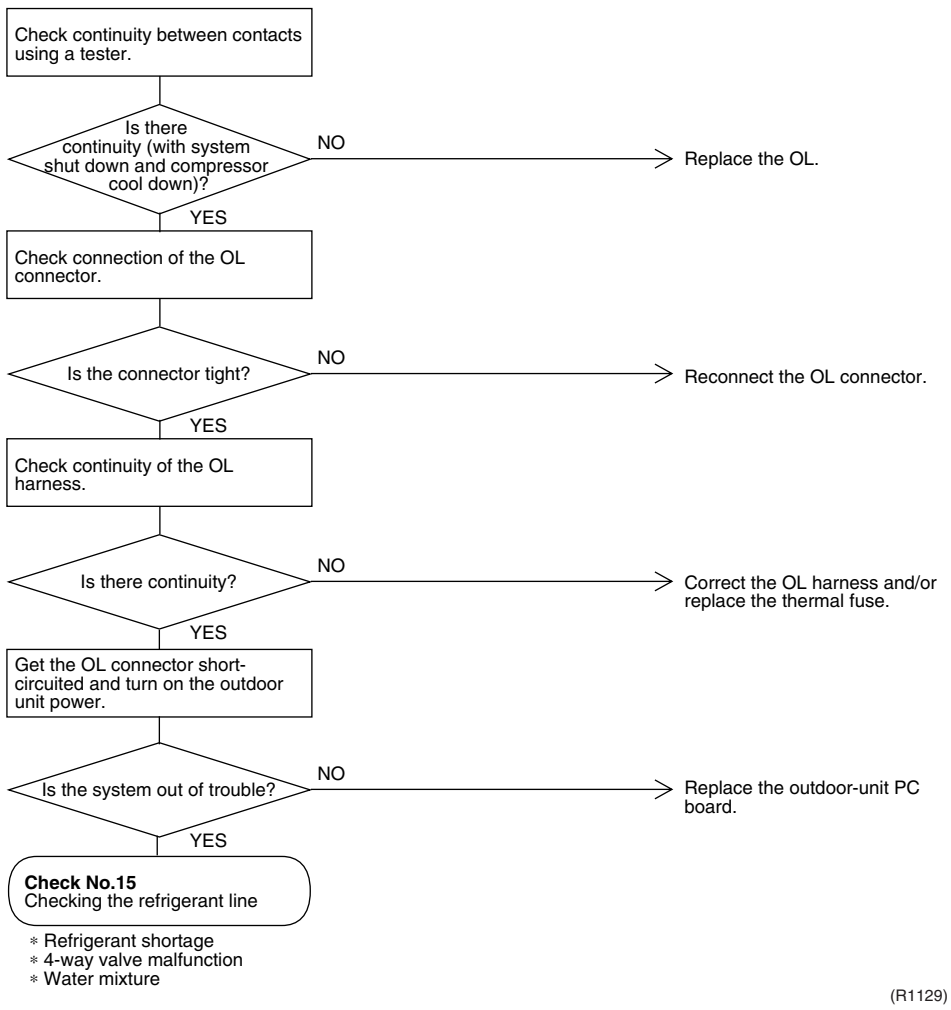
Troubleshooting

Check No.15
Refer to P.123

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



(R1129)

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4.16 Compressor Seizing

Remote Controller Display

E6

Outdoor unit LED Display

A ◑ 1 ● 2 ☼ 3 ☼ 4 ●

Method of Malfunction Detection

Uses a position detection signal which is generated when a compressor lock occurs.

- Compressor rotating condition detected by position detection sensor

Malfunction Decision Conditions

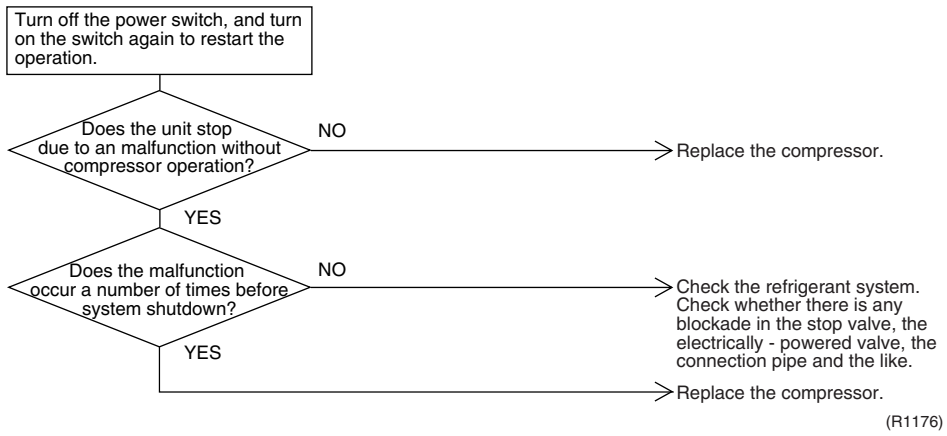
- When a compressor lock judgment is made and the operation stops due to overcurrent.
- When a compressor lock judgment is made and the position detection does not operate within 15 seconds after startup.
- When the system shuts down after 16 times.
- Cancellation condition: 8 continuous minutes of operation (normal)

Supposed Causes

- Compressor lock
- Choking of the refrigerant system

Troubleshooting

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



(R1176)

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4.17 DC Fan Seizing

Remote Controller Display

E7

Outdoor unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ☼ 4 ☼

Method of Malfunction Detection

The number of revolutions detected by the detection circuit during fan motor operation is used to detect fan motor abnormalities.

Malfunction Decision Conditions

- When the fan does not operate within 30 seconds after fan motor operation conditions are met.
- When the rotation detection connector is disconnected.
- When the system shuts down after 16 times.

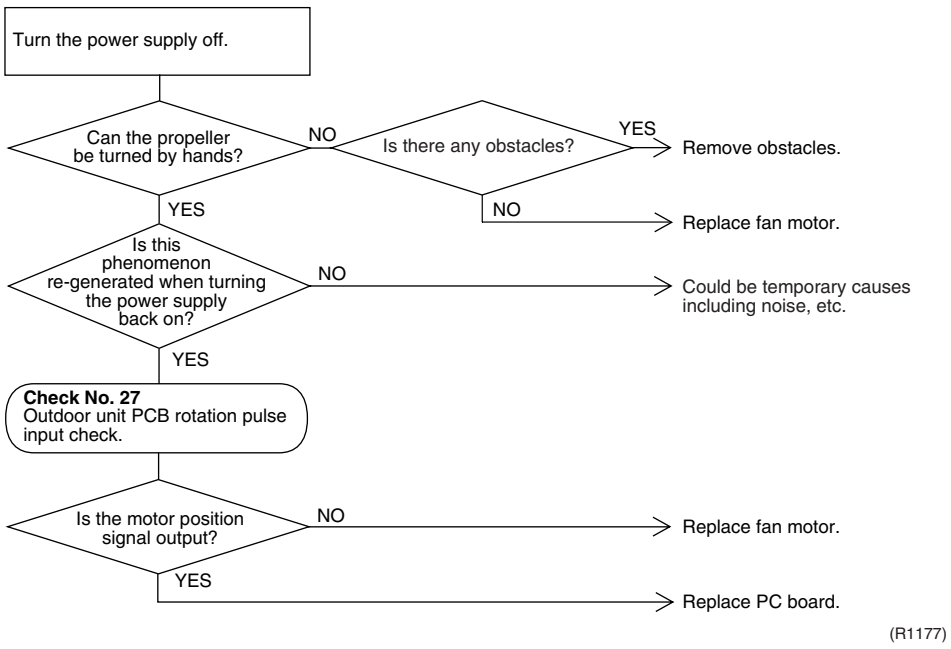
Supposed Causes

- Faulty fan motor
- Disconnected or faulty harness between fan motor and PCB
- Foreign item blocking fan operation
- Cancellation condition: 8 continuous minutes of operation (normal)

Troubleshooting

Check No.27
Refer to P.126

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



(R1177)

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4.18 Operation Halt Due to Detection of Input Over Current

Remote Controller Display

* or E8

Outdoor unit LED Display

A ◑ 1 ● 2 ☼ 3 ● 4 ☼

Method of Malfunction Detection

Input over current is checked using the input current detected by the CT during compressor operation.

Malfunction Decision Conditions

When the CT input remains above the value shown in the below table for 2.5 seconds during compressor operation.

Table for constant

Model	Input current (A)
RXD50·60·71J	18.5

Supposed Causes

- Over current due to faulty compressor.
- Over current due to faulty power transistor.
- Over current due to faulty electrolytic capacitor of the main inverter circuit.
- Over current due to faulty PCB (1).
- Detection error due to faulty PCB (1).
- Over current due to short-circuit.

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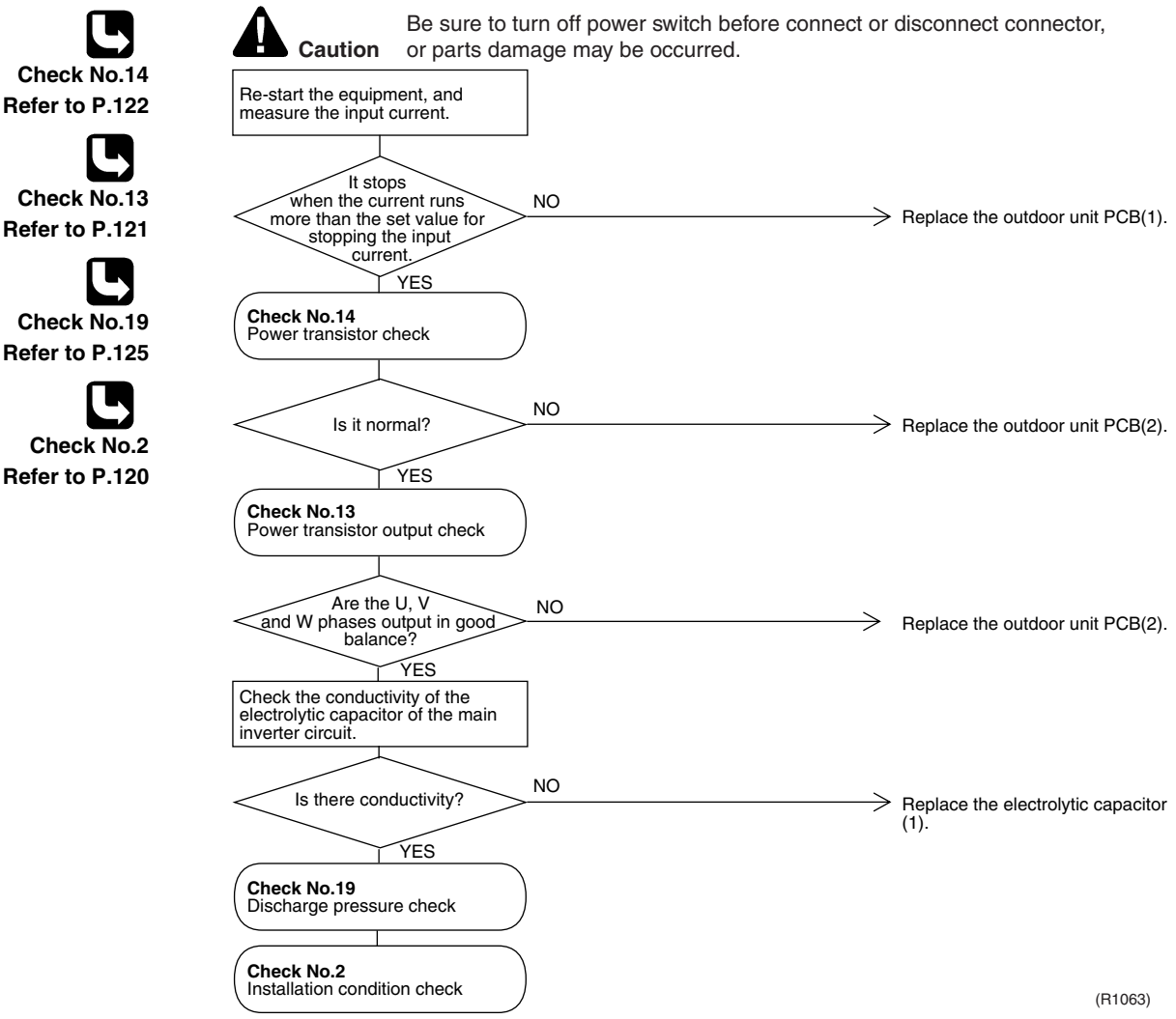
Troubleshooting

* Internal wiring errors can cause an input over current. If the equipment stops due to an input over current after the wires are disconnected and connected again for parts replacement, etc., check for wiring errors.



Check No.14
Refer to P.122

Check No.13
Refer to P.121

Check No.19
Refer to P.125

Check No.2
Refer to P.120

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4.19 Operation Halt Due to Position Detection Sensor

Remote Controller Display

H6

Outdoor unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ●

Method of Malfunction Detection

The position detection unit of electrical parts is used to confirm the compressor rotation information for the detection of compressor startup failures.

Malfunction Decision Conditions

When the compressor does not start rotating within about 15 seconds after operation startup.
Number of times: 16
Cancellation condition: 8 continuous minutes of operation (normal)

Supposed Causes

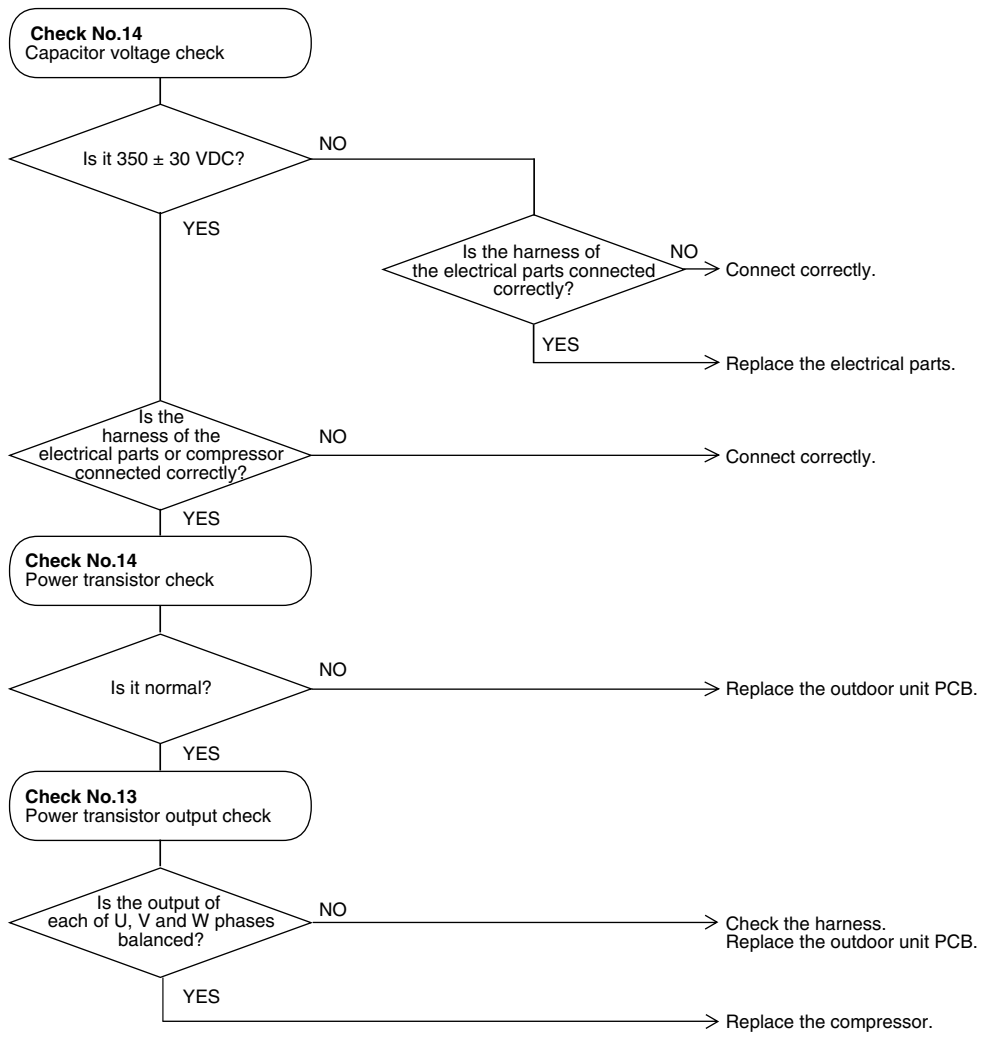
- Erroneous detection due to disconnected compressor relay harness
- Startup failure due to faulty compressor
- Startup failure due to faulty outdoor unit PCB
- Startup failure due to closed stop valve
- Erroneous detection due to faulty outdoor unit PCB
- Abnormal input voltage

Troubleshooting

Check No.14
Refer to P.122

Check No.13
Refer to P.121

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



(R1064)

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4.20 Operation Halt Due to Detection of CT Error

Remote Controller Display

H8

Outdoor unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ●

Method of Malfunction Detection

CT errors are detected using the compressor's operating frequency and the input current detected by the CT.

Malfunction Decision Conditions

When the compressor's operating frequency is more than 56 Hz and the CT input is less than 0.1 V.

* Input current 0.5 A

■ When a CT error is generated 4 times, the system shuts down.

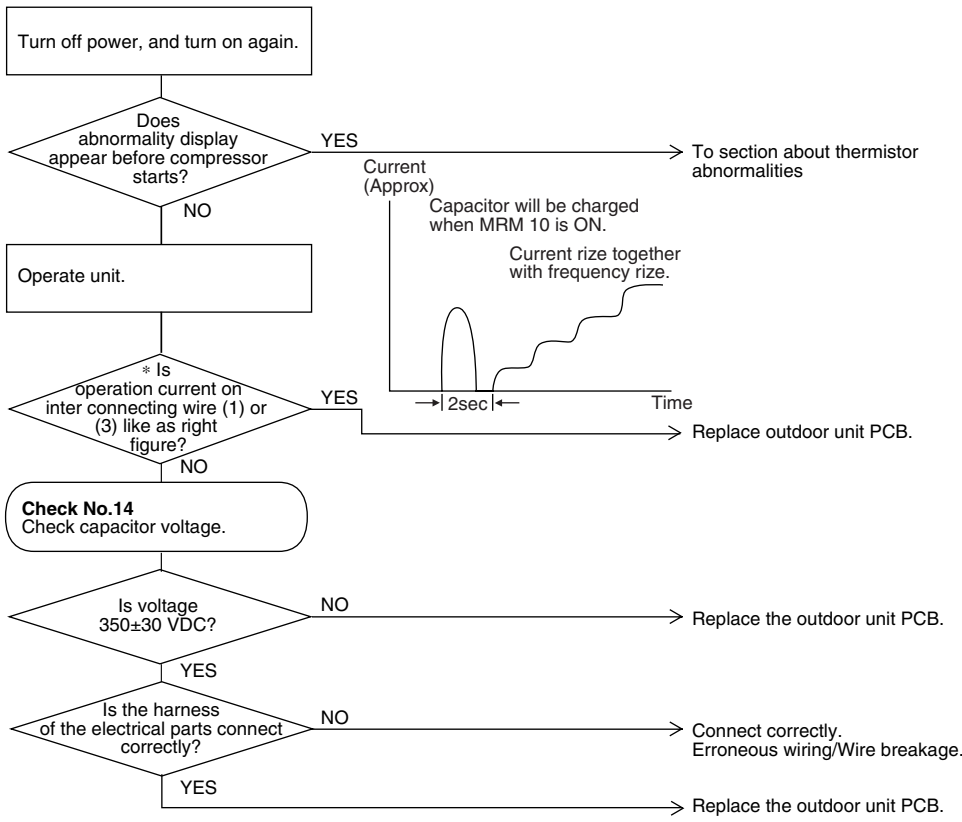
Supposed Causes

- Faulty power transistor
- Breaking of wire or faulty connection of internal wiring
- Faulty outdoor PCB (1).
- Faulty rectifier

Troubleshooting

Check No.14
Refer to P.122

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



(R1178)

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4.21 Output Overcurrent

Remote Controller Display	L5
Outdoor unit LED Display	A ◑ 1 ● 2 ● 3 ☼ 4 ●
Method of Malfunction Detection	Detection of output overcurrent based on current flowing in DCCT. (Inverter direct current part)
Malfunction Decision Conditions	Detection of abnormal position signal during compressor operation. Detection of abnormal speed during compressor operation. When output overcurrent enters microcomputer from output overcurrent detection circuit. When error occurs 16 times, system shuts down. Condition for error counter reset When compressor operates for 8 minutes without output overcurrent.
Supposed Causes	■ Overcurrent due to faulty power transistor. ■ Overcurrent due to faulty internal wiring. ■ Overcurrent due to supply voltage abnormality. ■ Ditection error due to faulty PCB. ■ Overcurrent due to faulty PCB. ■ Overcurrent due to closed stop valve. ■ Overcurrent due to faulty compressor. ■ Overcurrent due to improper installation condition.

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Troubleshooting

Check No.14
Refer to P.122

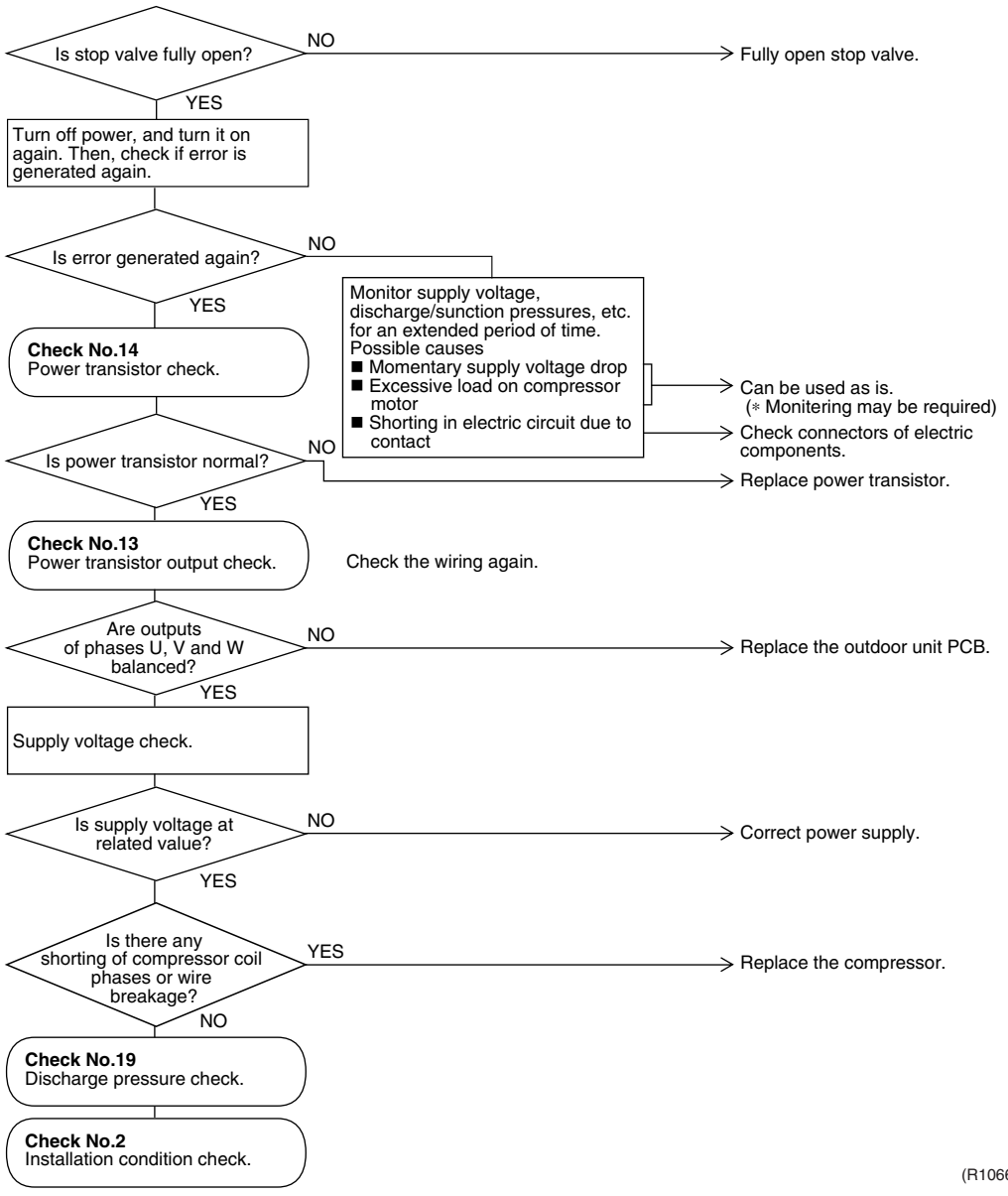
Check No.13
Refer to P.121

Check No.19
Refer to P.125

Check No.2
Refer to P.120

* Erroneous internal wiring can result in output overcurrent in some cases. If system stops due to output overcurrent after parts replacement that requires disconnection of wires, check wiring carefully

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



(R1066)

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4.22 Operation Halt Due to Thermistor Error or Disconnection Detection

Remote Controller Display

J3, J6, H9

Outdoor unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ●

Method of Malfunction Detection

Thermistor errors are detected using thermistor input voltage to micro computor. (Thermistor errors are detected using the temperatures detected by the thermistors.)

Malfunction Decision Conditions

When the thermistor input during compressor operation is more than 4.96 V or less than 0.04 V.
* Value changes depends on models

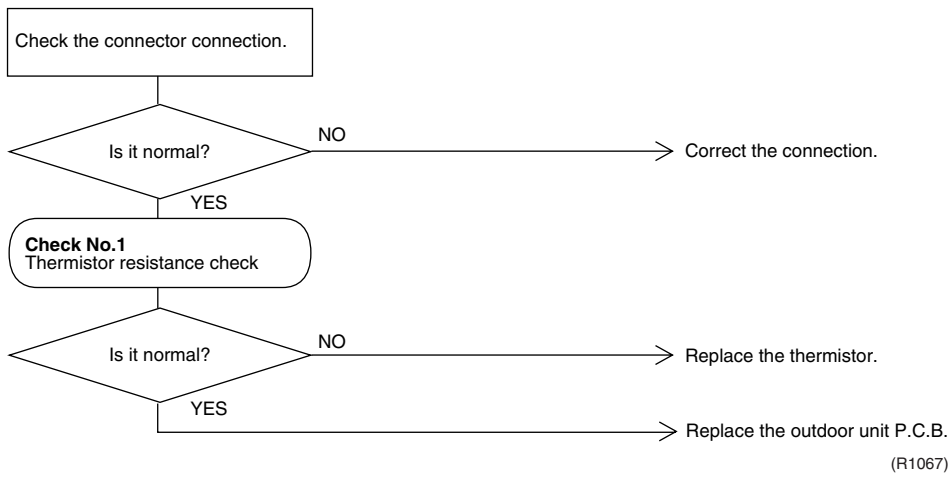
Supposed Causes

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

Troubleshooting

Check No.1
Refer to P.119

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



(R1067)

J3 : Discharge pipe thermistor
J6 : Outdoor unit heat exchanger thermistor
H9 : Outside air thermistor

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4.23 Operation Halt Due to Detection of Insufficient Gas

Remote Controller Display

U0

Outdoor unit LED Display

A ◑ 1 ● 2 ● 3 ☼ 4 ☼

Method of Malfunction Detection

Detection method 1
Gas shortage is detected by the temperature of the discharge pipe which is detected by the discharge pipe thermistor and the opening of the electromagnetic valve.

Malfunction Decision Conditions

Outdoor air temperature < -5˚C
Discharge pipe temperature > 111˚C
Opening of electromagnetic valve ≥ 450 pulses (Full open)

A system shutdown occurs after 4 times.

When a gas shortage malfunction is generated 4 times, the system shuts down. The counter is reset when there is no operation shutdown due to an error (including operation halt due to other cause) for 60 minutes (cumulative time) of compressor operation after the error condition is canceled.

Supposed Causes

- Insufficient gas due to refrigerant leaks.
- Inadequate compression of the compressor.
- Abnormal discharge pipe thermistor.
- Operation with closing stop valve.
- Disconnected or faulty electronic expansion valve.
- Piping error.

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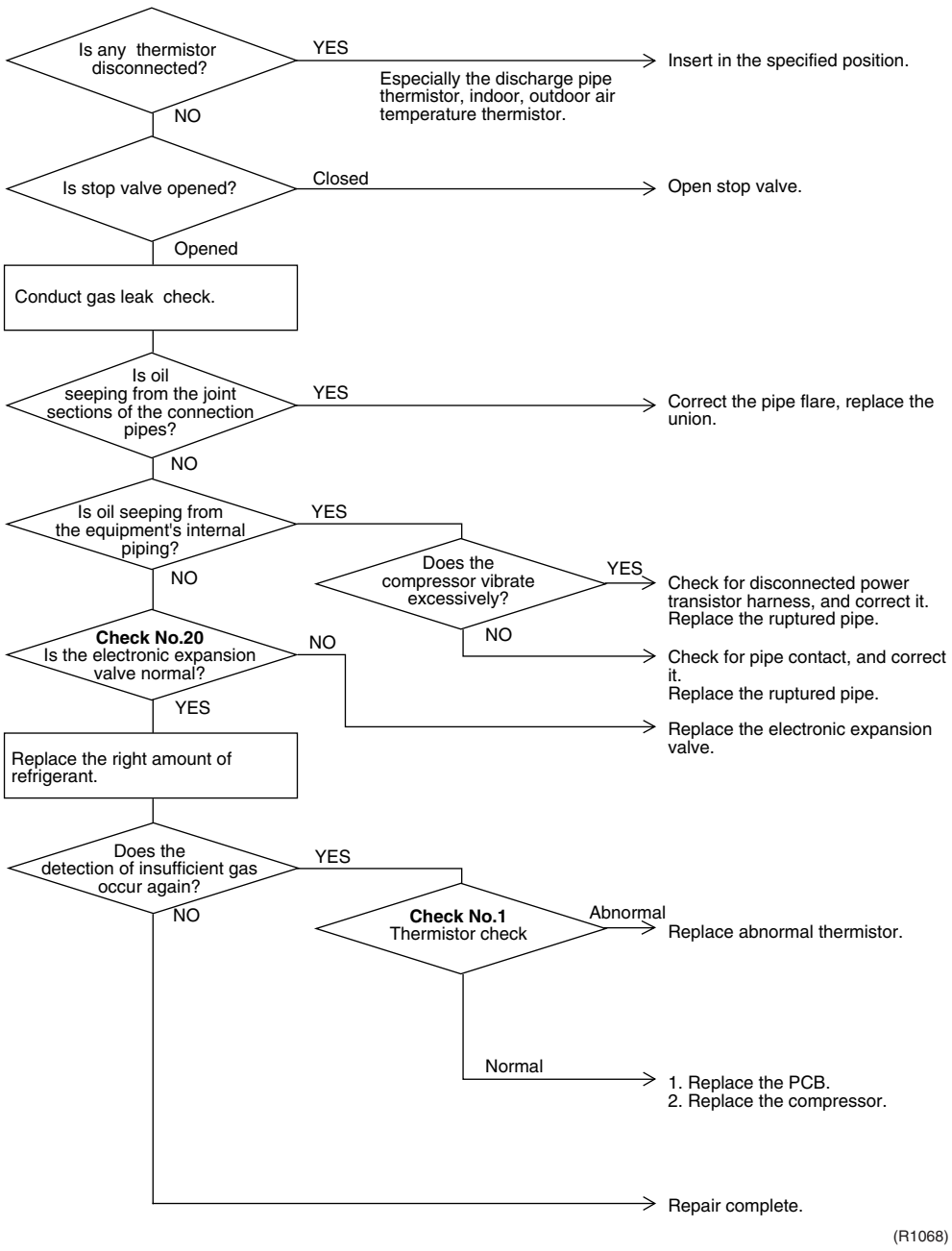
Troubleshooting

Check No.20
Refer to P.125

Check No.1
Refer to P.119

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



(R1068)

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4.24 Detection of Low Voltage (LVP)

Remote Controller Display

U2

Outdoor unit LED Display

A ◑ 1 ☼ 2 ● 3 ● 4 ☼

Method of Malfunction Detection

Abnormal voltage decrease in the DC section.

Malfunction Decision Conditions

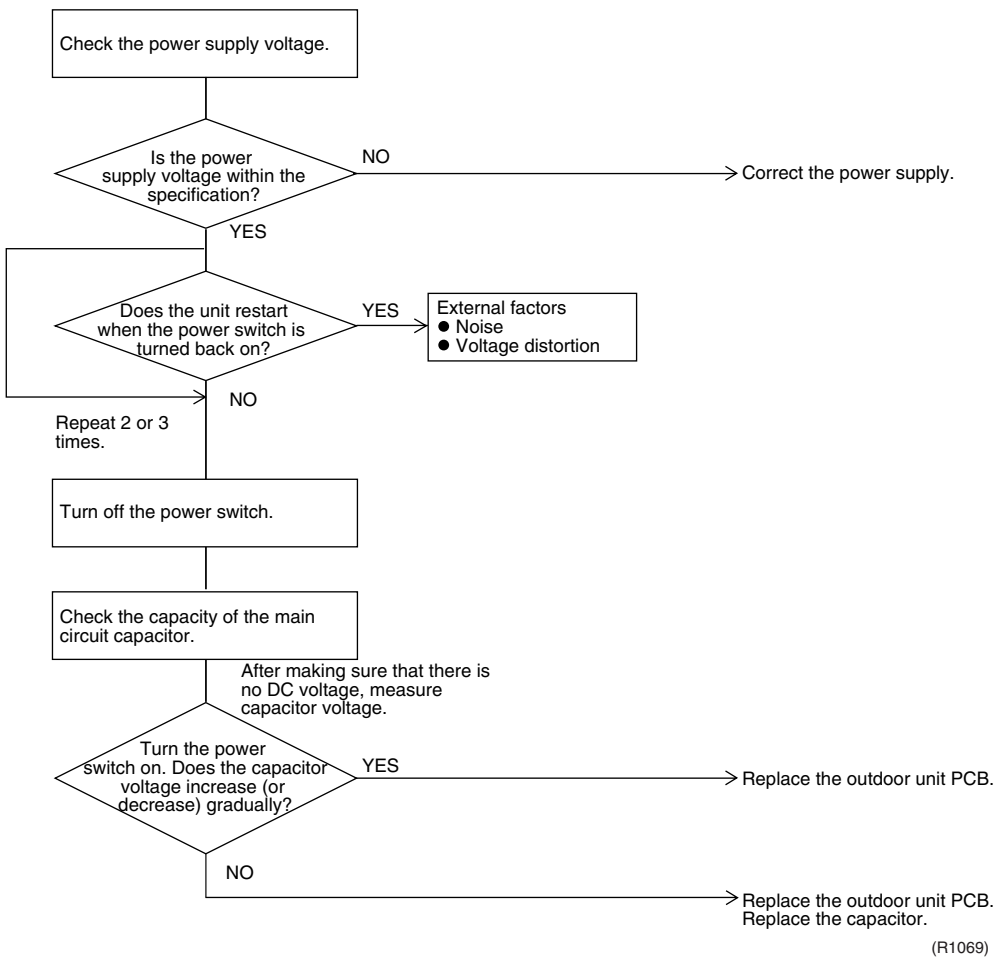
- The system shuts down after low voltage is detected 255 times.
- The malfunction counter is reset when there is no operation shutdown due to an malfunction (including operation halt due to other cause) for 60 minutes (cumulative time) of compressor operation after the malfunction condition is canceled.

Supposed Causes

- Abnormal power supply voltage
- Malfunction of low voltage detection section
- Malfunction of PAM control parts or SSR

Troubleshooting

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



(R1069)

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4.25 Faulty Outdoor Unit PCB

Remote Controller Display

*

Outdoor unit LED Display

A ☼ 1 — 2 — 3 — 4 —

Method of Malfunction Detection

The proper program operation of the microcomputer is checked by the program.

Malfunction Decision Conditions

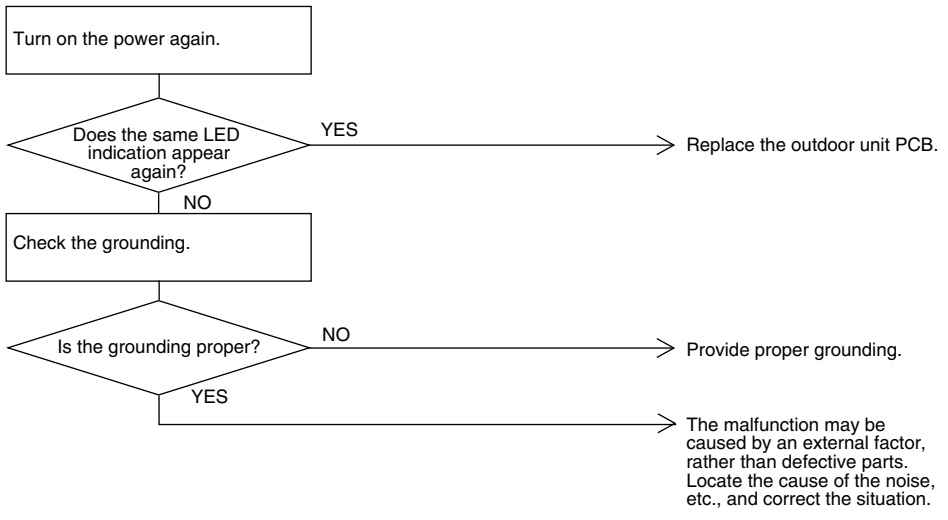
When the microcomputer program does not function properly.

Supposed Causes

- Microcomputer program run-away due to an external factor.
  - ∗Noise
  - ∗Momentary voltage drop
  - ∗Momentary power failure, etc.
- Faulty outdoor unit PCB.

Troubleshooting

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



(R1070)

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4.26 Faulty Outdoor Unit PCB and Transmitting/Receiving Circuit

Remote Controller Display

✻

Outdoor unit LED Display

A ● 1 — 2 — 3 — 4 —

Method of Malfunction Detection

1. The proper program operation of the microcomputer is checked by the program.
2. Signals transmitted from the outdoor unit to the indoor unit are received by the outdoor unit itself in indoor unit -outdoor unit signal transmission mode, and proper receiving of the signals by the indoor unit is checked.
3. Existense of the zero cross signal.

Malfunction Decision Conditions

1. When the microcomputer program does not function properly.
2. When the signals transmitted from the outdoor unit to the indoor unit are received by the outdoor unit itself in indoor unit-outdoor unit signal transmission mode, but not properly.
3. When the zero cross signal is not detected over 10 seconds.

Supposed Causes

- Display disabled by faulty power supply.
- Faulty transmitting / Receiving circuit in outdoor unit PCB.
- Microcomputer program run-away due to an external factor.
  - ∗Noise
  - ∗Momentary voltage drop
  - ∗Momentary power failure, etc.
- Faulty outdoor unit PCB.

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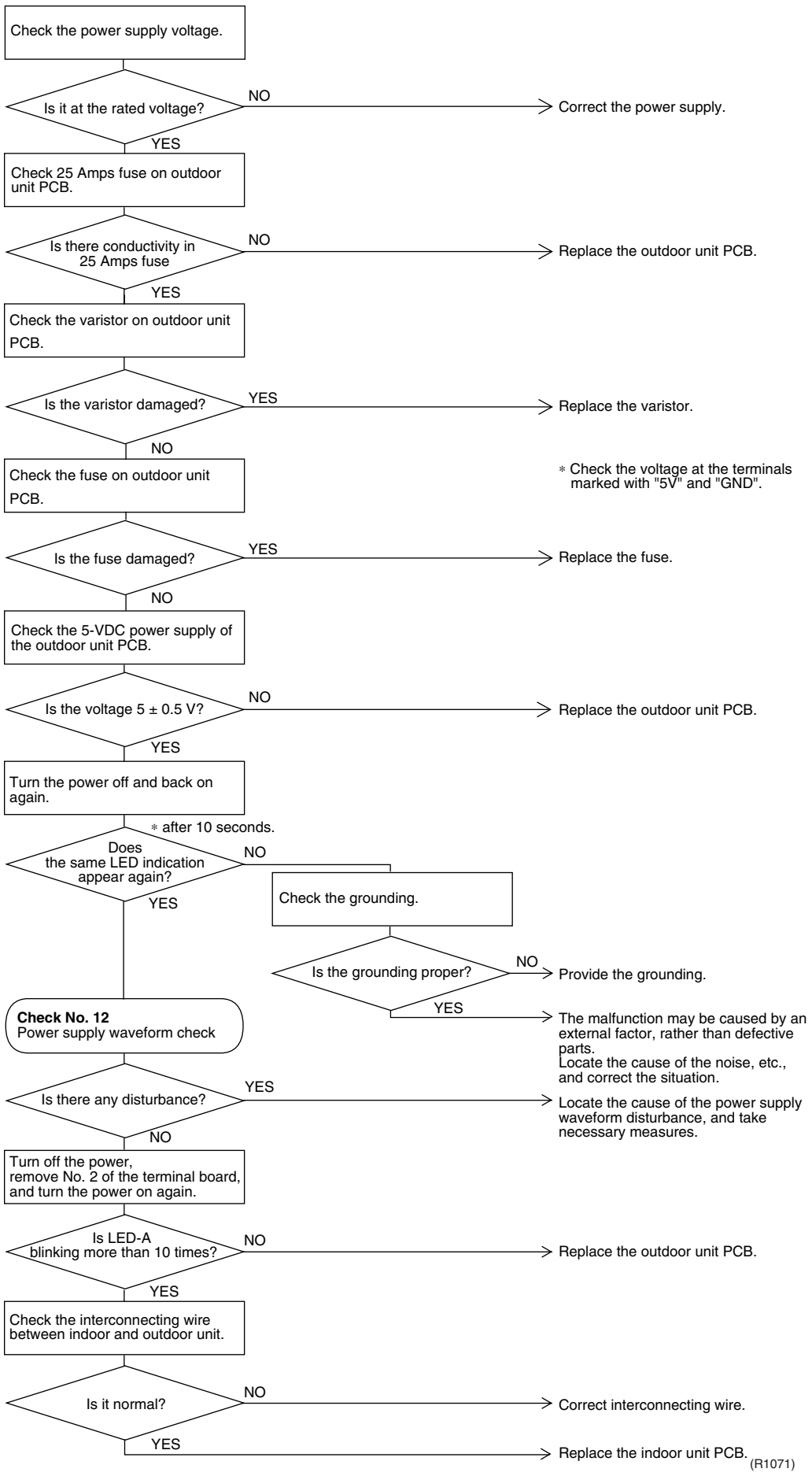
Troubleshooting

Check No.12
Refer to P.121

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



(R1071)

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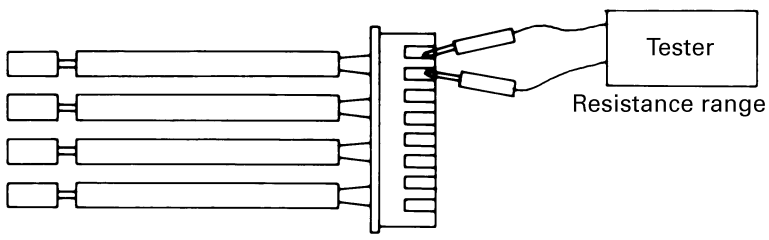
5. Checks

5.1 How to Check

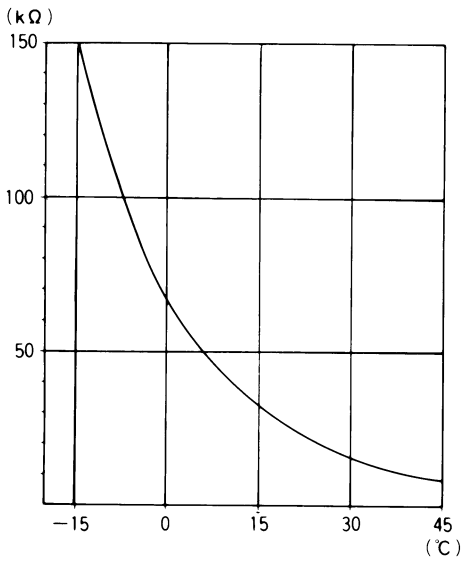
5.1.1 Thermistor Resistance Check

Check No.1 Remove the connectors of the thermistors on the PCB, and measure the resistance of each thermistor using tester.
The relationship between normal temperature and resistance is shown in the graph and the table below.

Thermistor Temperature (˚C)	R25˚C=20kΩ B=3950
-20	211.0 (kΩ)
-15	150
-10	116.5
-5	88
0	67.2
5	51.9
10	40
15	31.8
20	25
25	20
30	16
35	13
40	10.6
45	8.7
50	7.2



（R25＝20kΩ、B＝3950）



(R1074)

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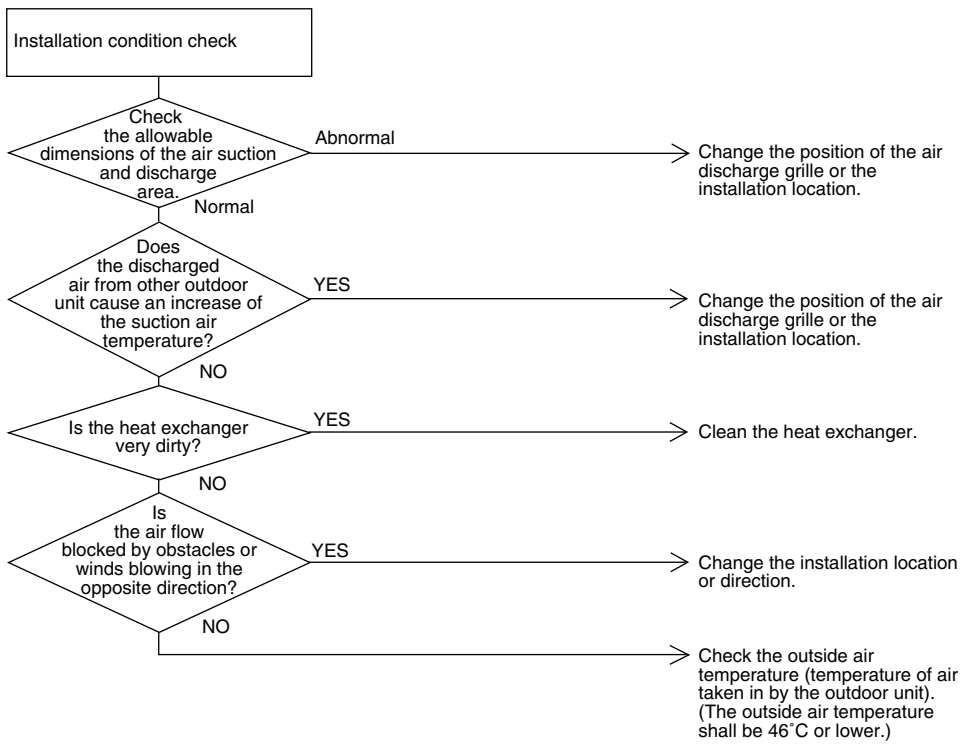
5.1.2 Installation Condition Check

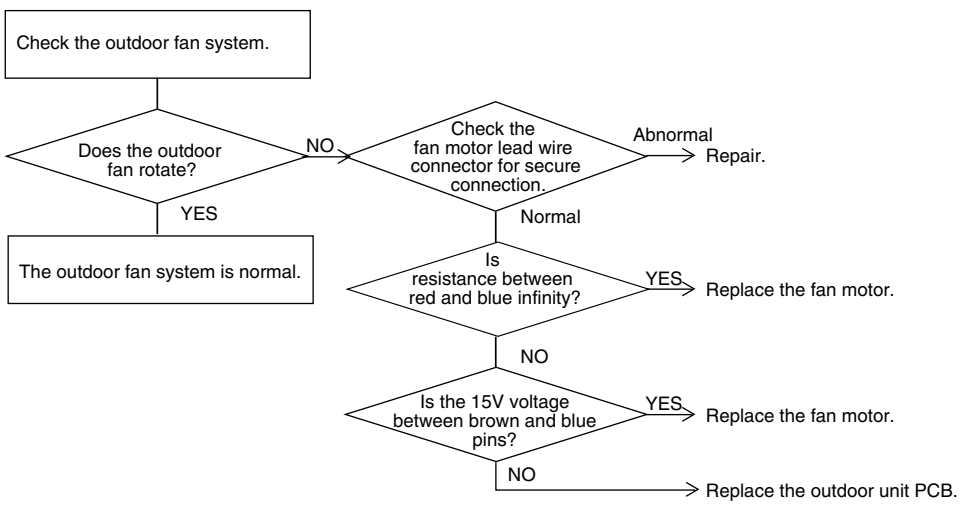
Check No.2



(R1075)

5.1.3 Outdoor Fan System Check (2)

Check No.4



(R1180)

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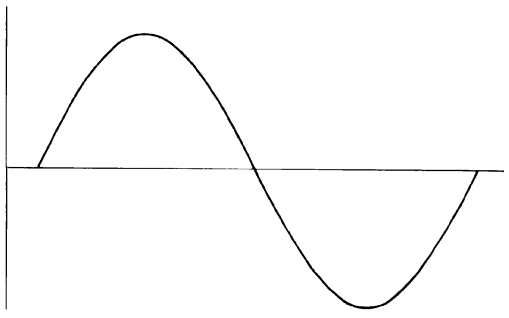
5.1.4 Power Supply Waveforms Check

Check No.12

Measure the power supply waveform between pins 1 and 3 on the terminal board, and check the waveform disturbance.

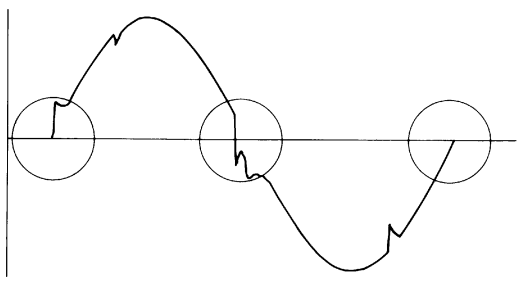
- Check to see if the power supply waveform is a sine wave (Fig.1).
- Check to see if there is waveform disturbance near the zero cross (sections circled in Fig.2)

[Fig.1]



(R1077)

[Fig.2]



(R1078)

5.1.5 Power Transistor Output Check

Check No.13

Measure the output current and voltage of the power transistor.

Output Current Measurement

Remove the front panel, and measure the current in the red, yellow and blue wire harness inside the compressor using a clamp meter.

1. Attach the clamp meter to the red, yellow and blue wire harness, and conduct forced cooling operation.
2. When the output frequency has stabilized, measure the output current of each phase.
3. If the current outputs of all the phase are balanced, it is normal.
4. If even one phase is out of balance, replace the outdoor unit PCB (INV PCB).
5. If the compressor stops before the output frequency stabilizes, measure the output voltage.

Output Voltage Measurement

Remove the front panel, and disconnect the red, yellow and blue wire harness inside the compressor from the terminals. Measure the output voltage of the red, yellow and blue wires using a tester.

1. Remove the compressor wire harness from the PCB.
2. When the LEDs A and 1 start flickering simultaneously by keep pressing the forced operation switch for longer than 5 sec., release the switch.
3. If the voltage of AC150V to 200V is outputted between DC-130 and U, DC-130 and V and DC-130 and W, the PCB is normal.
   Check the wire harnesses form the power transistor up to the compressor (for breakage of wire and erroneous wiring).
4. If the voltage of AC150 to AC200V is not outputted, replace the outdoor PCB (INV P board).

Note:

1. Do not touch the terminals of the red, yellow and blue wires when the power is supplied. (Touching them is very dangerous since a voltage of over 100V is applied.)
2. Do not short-circuit the terminals of the red, yellow, and blue wires.

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5.1.6 Power Transistor Check (Capacitor Voltage Check)

Check No.14

1. Power transistor check

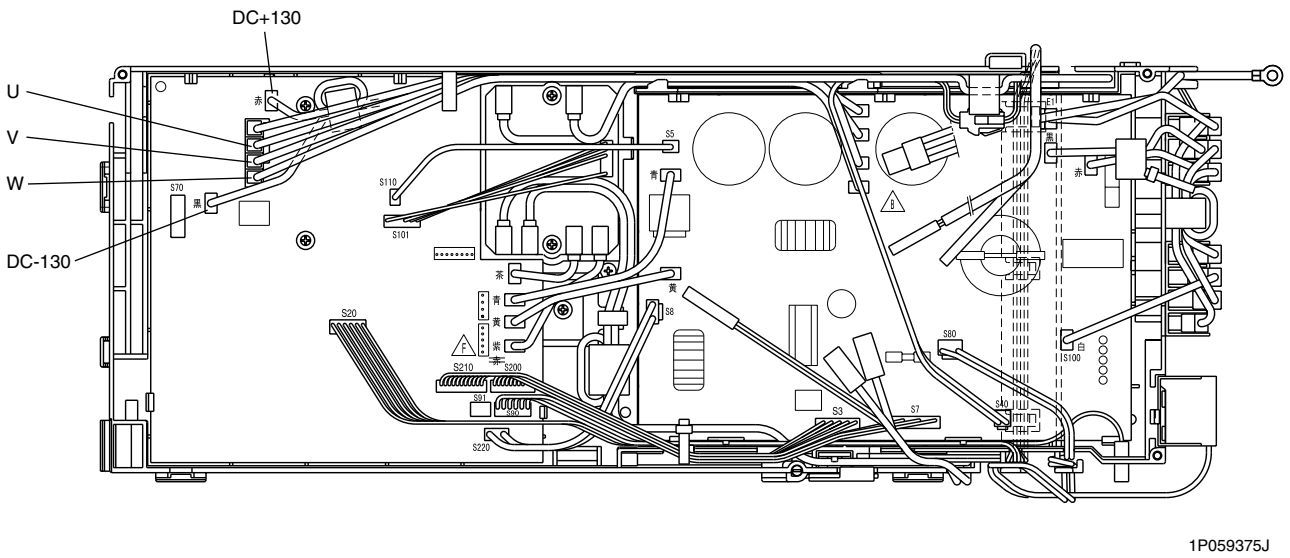
Note: Check to make sure that the voltage between the terminal of Power transistor (+) and (-) is approx. 0 volt before checking power transistor.

< Measuring method >
Disconnect the compressor harness connector from the outdoor unit PCB.
Follow the procedure below to measure resistance between power transistor (+) and (-) and the U, V and W terminals of the compressor connector with a multi-tester. Evaluate the measurement results for a pass/fail judgment.

<Power transistor check>

Negative (-) terminal of tester (positive terminal (+) for digital tester)	DC + 130	UVW	DC - 130	UVW
Positive (+) terminal of tester (negative terminal (-) for digital tester)	UVW	DC + 130	UVW	DC - 130
Normal resistance	Several kΩ to several MΩ (*)			
Unacceptable resistance	Short (0 Ω) or open			

<Measuring positions>



1P059375J

2. Capacitor voltage check

< Measuring method >
Before measuring, operate the unit for several minutes, then shut down the operation by force using the circuit breaker.

- If the unit is shut down using the remote controller instead of the circuit breaker, the capacitor discharges the electric load, thus disallowing accurate measurement.

Note: The charge section is applied with high voltage. Therefore, exercise caution during measurement to prevent electric shock.

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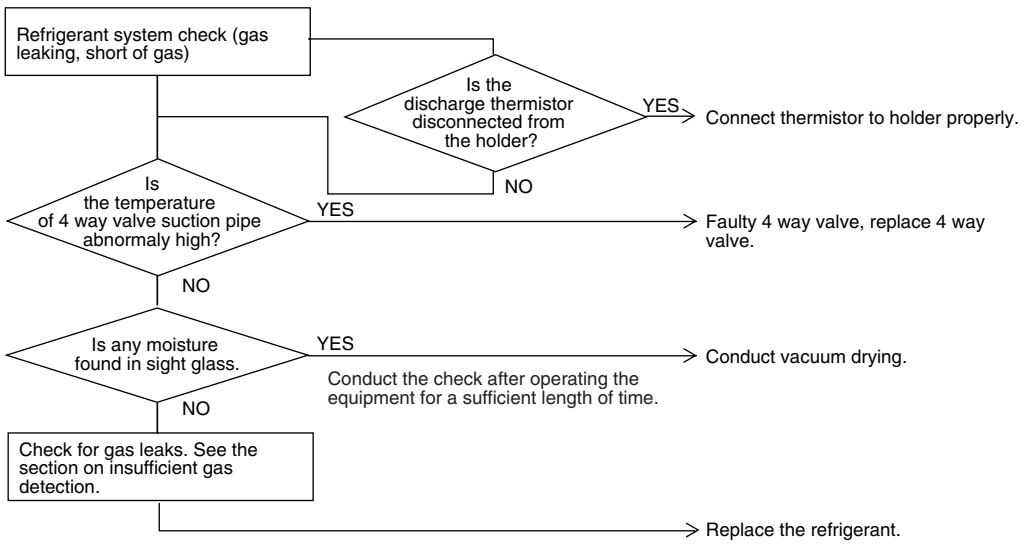
< Measuring positions >

Take measurements at the power transistor (+) and (-) terminals in the same way as described in section 1. Set the multi-tester to DC and VOLTAGE RANGE before measurement.

* Since capacitor (+) and (-) are connected to power transistor (+) and (-), capacitor voltage can be measured at the power transistor (+) and (-) terminals.
* On this P.C.Board, Powertransistor (+) is terminal DC + 1 or DC + 2 and powertransistor (-) is terminal DC - 1 or DC - 2.

5.1.7 Refrigerant System Check

Check No.15



(R1079)

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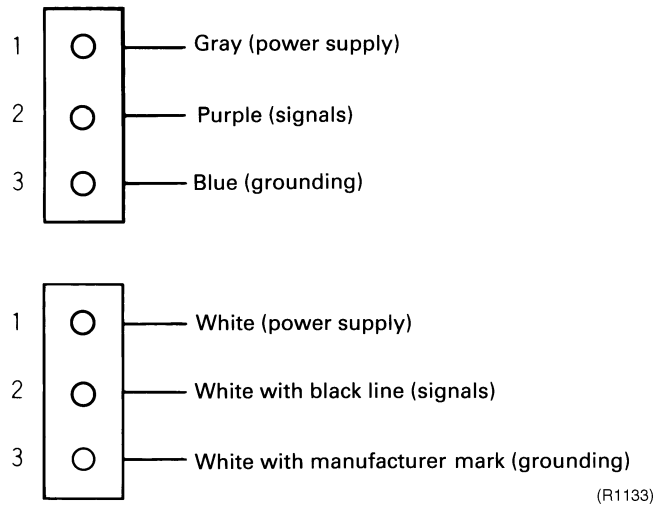
5.1.8 Fan Motor Connector Output Check

Check No.16

1. Check the connector connection.
2. With the power ON, operation OFF, and the connector connected, check the following.
   ∗Output voltage of about 5 V between pins 1 and 3.
   ∗Generation of 3 pulses between pins 2 and 3 when the fan motor is operating.

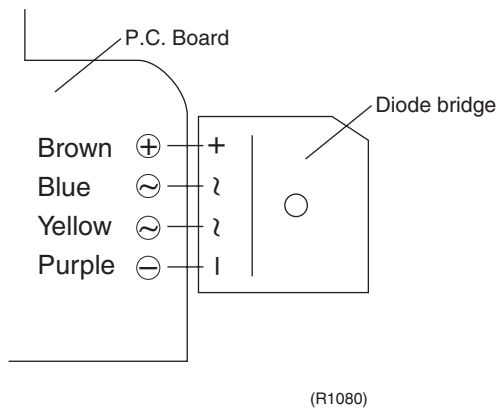
Failure of (1) → faulty PCB → Replace the PCB.
Failure of (2) → faulty hall IC → Replace the fan motor.
Both (1) and (2) result → Replace the PCB.

The connector has 3 pins, and there are two patterns of lead wire colors.



5.1.9 Rectifier Check

Check No.17



There are several different terminal position patterns. Therefore, be sure to check the terminal marks.

Negative (−) terminal of tester (positive terminal (+) for digital tester)	~	+	~	−
Positive (+) terminal of tester (negative terminal (−) for digital tester)	+	~	−	~
Normal resistance	Several KΩ to MΩ	∞	∞	Several KΩ to MΩ
Unacceptable resistance	0 or ∞	0	0	0 or ∞

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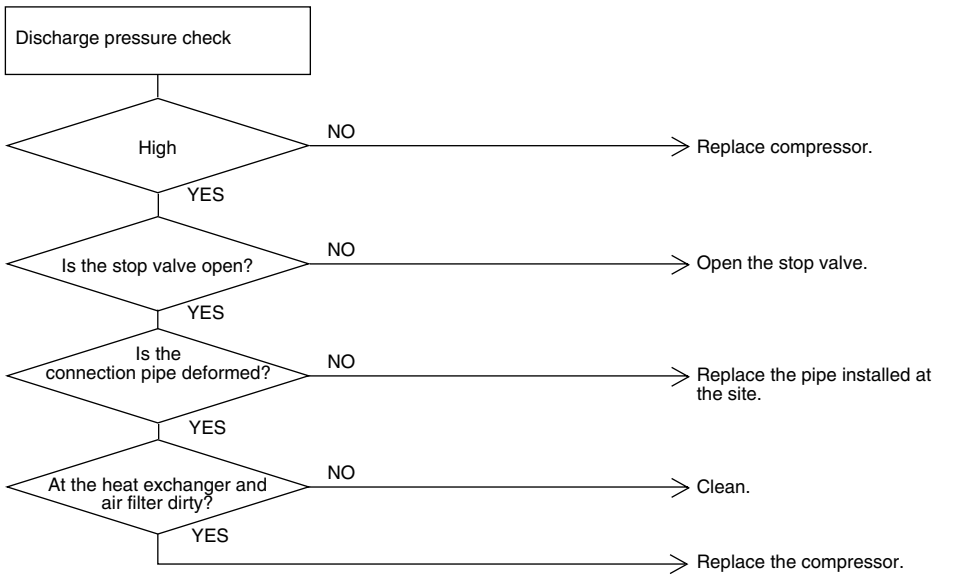
5.1.10 Discharge Pressure Check

Check No.19



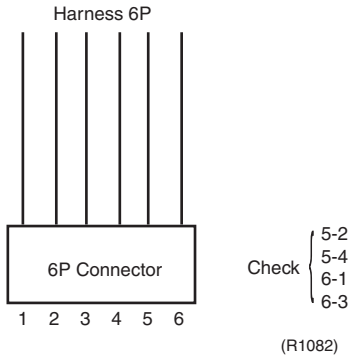
(R1081)

5.1.11 Electronic Expansion Valve Check

Check No.20

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

1. Check to see if the EV connector is correctly inserted in the PCB. Compare the EV unit and the connector number.
2. Turn the power off and back on again, and check to see if all the EVs generate latching sound.
3. If any of the EVs does not generate latching noise in the above step 2, disconnect that connector and check the conductivity using a tester.
   Check the conductivity between pins 1, 3 and 6, and between pins 2, 4 and 5. If there is no conductivity between the pins, the EV coil is faulty.



(R1082)

4. If no EV generates latching sound in the above step 2, the outdoor unit PCB is faulty.
5. If the conductivity is confirmed in the above step 2, mount a good coil (which generated latching sound) in the EV unit that did not generate latching sound, and check to see if that EV generates latching sound.
   ∗If latching sound is generated, the outdoor unit PCB is faulty.
   ∗If latching sound is not generated, the EV unit is faulty.

Note: Please note that the latching sound varies depending on the valve type.

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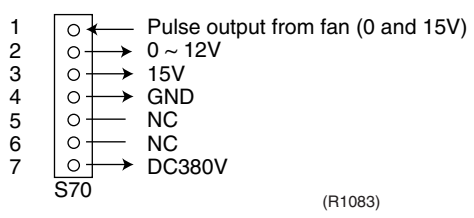
5.1.12 Outdoor Unit PCB Rotation Pulse Input Check

Check No.27

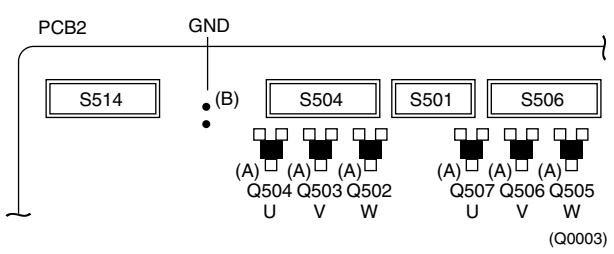
1. Turn OFF the power switch and disconnect the connector S70.
2. Turn ON the power switch and check the voltage at the following positions:
   - Approx. DC15V between the pins No.3 to No.4
   - Approx. DC0V between the pins No.2 to No.4
   - Approx. DC15V between the pins No.1 to No.4
3. Turn OFF the power switch and connect the connector S70.
4. Are the pulses (0V and 15V) outputted between the pin No.2 of 01S108 and the pin No.3 of 01S107 when the power is turned ON and the fan motor is rotated one turn by hand?



1. No voltage at the positions in (2) → PCB defective → Replace PCB.
2. No pulse at the pins in (4) → Hall IC defective → Replace DC fan motor.
3. Voltage of (2) and pulse of (4) are both outputted. → Replace PCB.

5.1.13 Fan Motor Position Signal Check

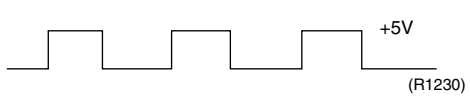
Check No.28



Locations for measurement
(Upper/Lower fans + U-,V-,W-Phase)
Multiple-meter, + side (A)
- side (B)

Measurement method

1. Turn the power supply on.
2. Check the voltage of U-,V-,W-Phase of the above upper and lower fans with fan rotating.
3. The waveform measured will be as shown below.



4. It is OK if , as shown above 3, approximately 5V voltage is turned on and off.

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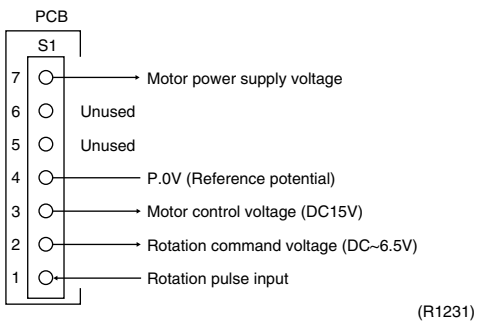
5.1.14 Indoor Unit PCB(1) Output Check

Check No.35

1. Check the connector's connection.
2. Check the output of the motor power supply voltage (pins 4-7).
3. Check the output of the motor's control voltage (pins 3-4).
4. Check the output of the rotation command voltage (pins 2-4).

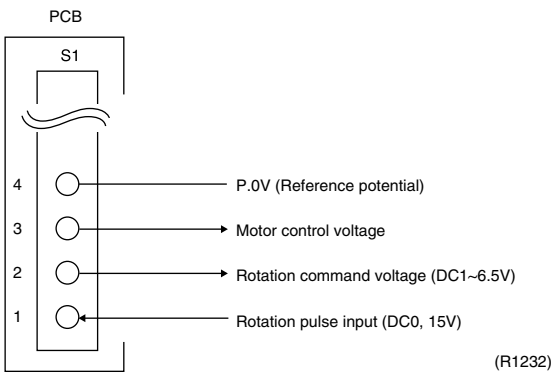


(R1231)

5.1.15 Indoor Unit PCB(1) Rotation Pulse Input Check

Check No.37

1. Check the connector's connection.
2. Set the power supply to ON, and OFF.
3. Check if the pulse inputs are conducted four times or not when rotating the fan motor one cycle by hand. (pins 1-4).



(R1232)

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Part 7
Removal Procedure

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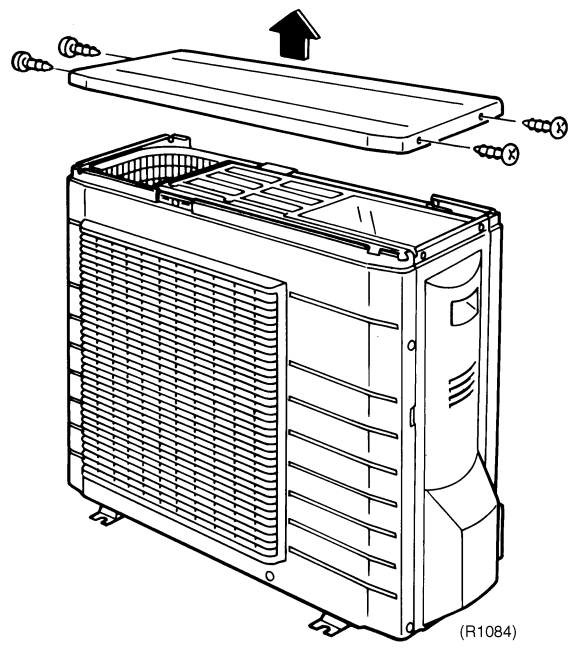
1. For RXD50·60·71J

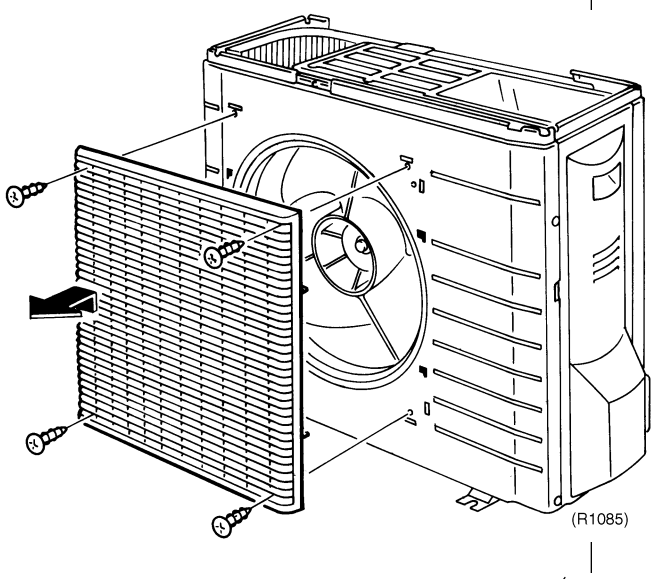
1.1 Removal of Outer Panels and Fan Motor

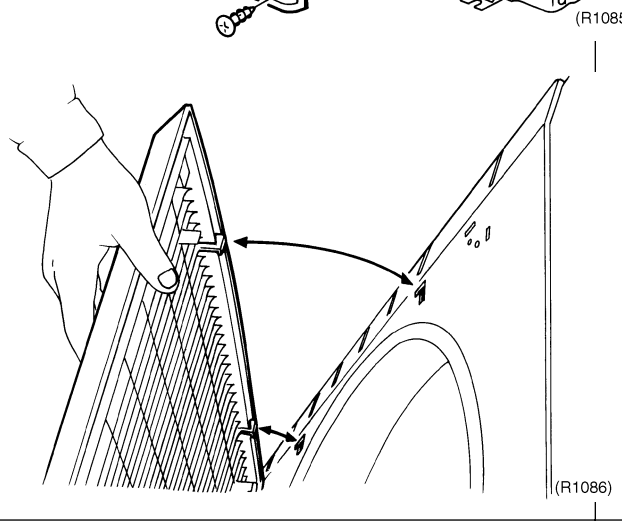
Procedure

Warning Be sure to turn off all power supplies before disassembling work.

Step	Procedure	Points
1. Removing the outer panels		
1	Remove the four screws from the top panel.	
2	Remove the four screws from the blow-off grille and release the grille from the six right and left hooks.	


(R1084)


(R1085)


(R1086)

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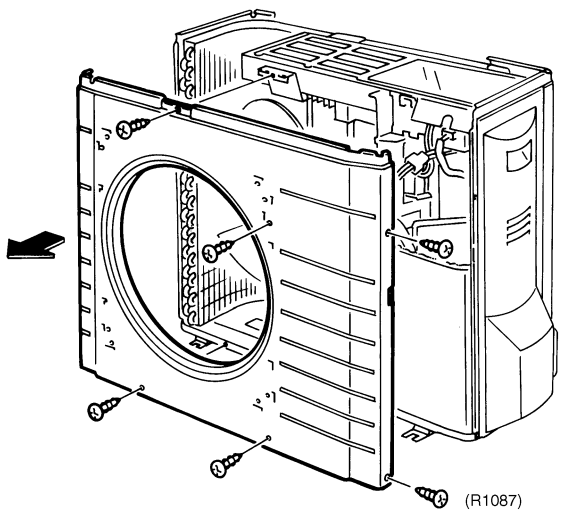
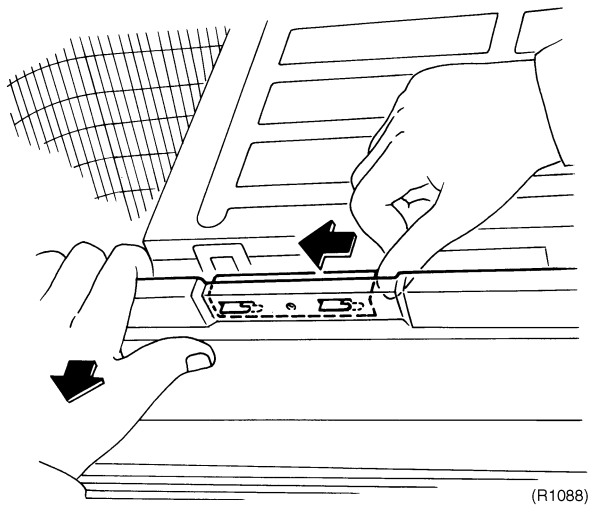
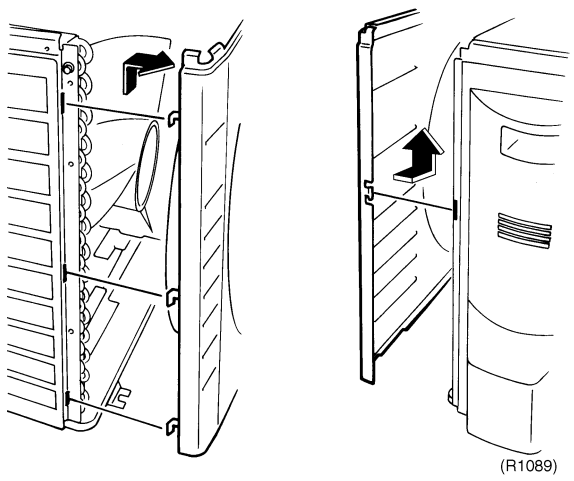
Step	Procedure		Points
3	Remove the six screws from the front panel.	 (R1087)	
4	Undo the hook on the top of the motor mount, and release the front panel from the hook of right side and the three hooks of left side.	 (R1088)	
		 (R1089)	

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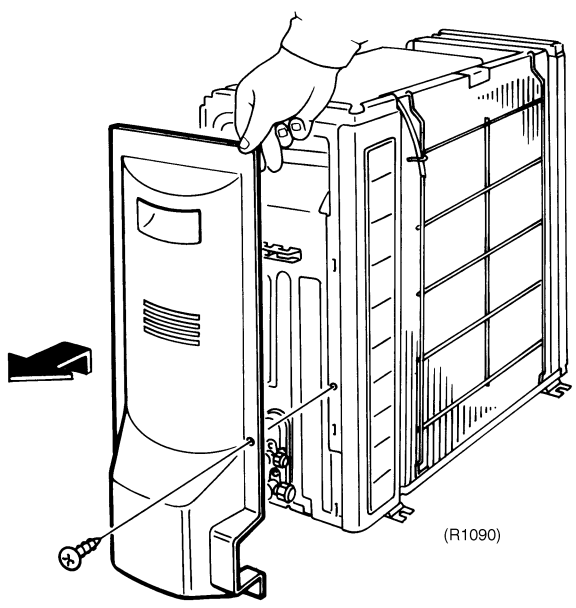
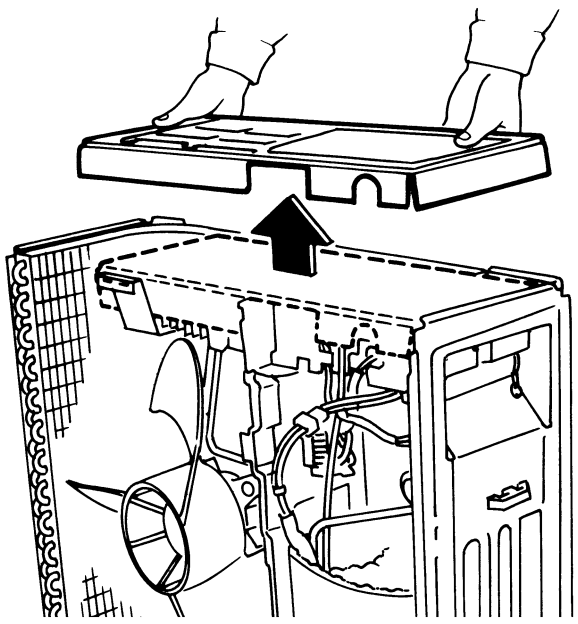
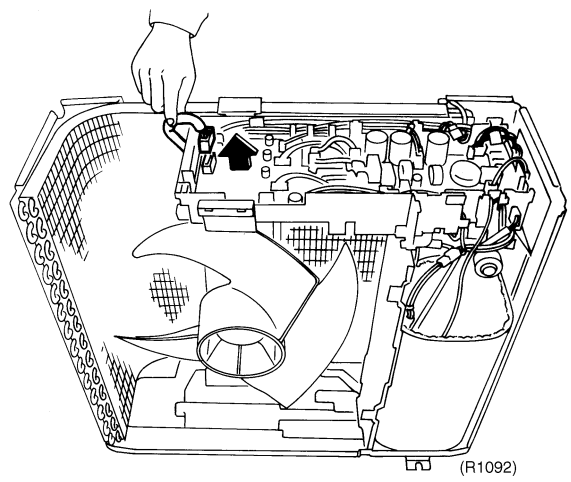
Step	Procedure		Points
5	Remove the screw from the shut-off valve cover.	 (R1090)	
6	Remove the drip proof cover.	 (R1091)	■ Be careful not to lose or damage the drip proof cover. Fit it back into position.
2. Dismounting the fan motor			
1	Disconnect the fan motor connectors from the PCB.	 (R1092)	

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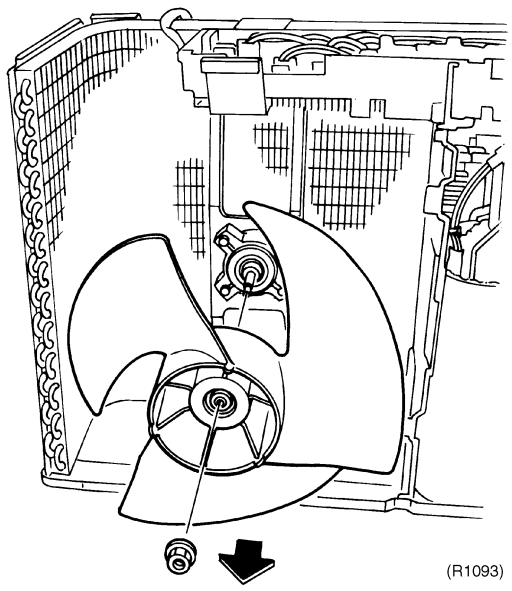
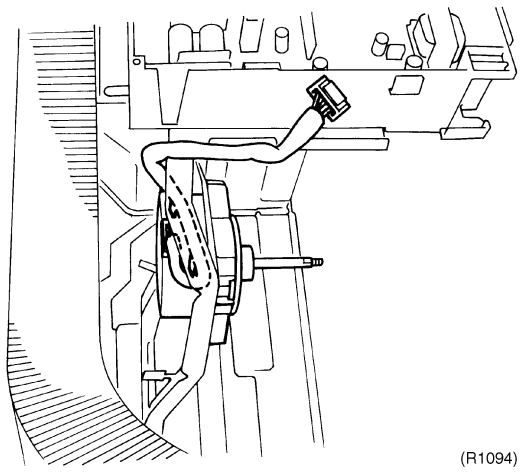
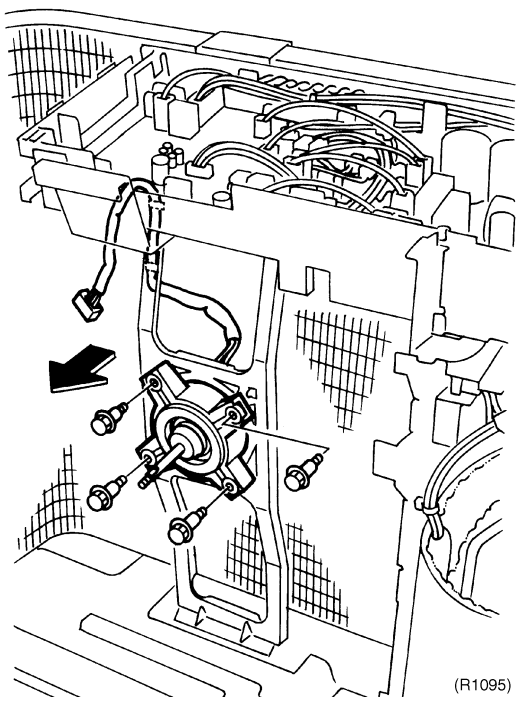
Step	Procedure		Points
2	Remove the washer-fitted nut (M6) from the propeller fan.	 (R1093)	
		 (R1094)	
3	Remove the four screws from the fan motor.	 (R1095)	

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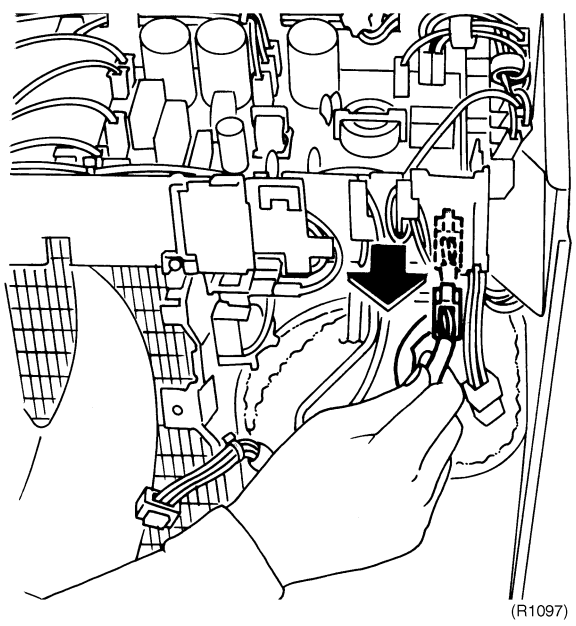
1.2 Removal of Electrical Box

Procedure

Warning Be sure to turn off all power supplies before disassembling work.

Step	Procedure		Points
1	Disconnect the compressor leads.	 (R1096)	
2	Disconnect the motorized valve leads.	 (R1097)	

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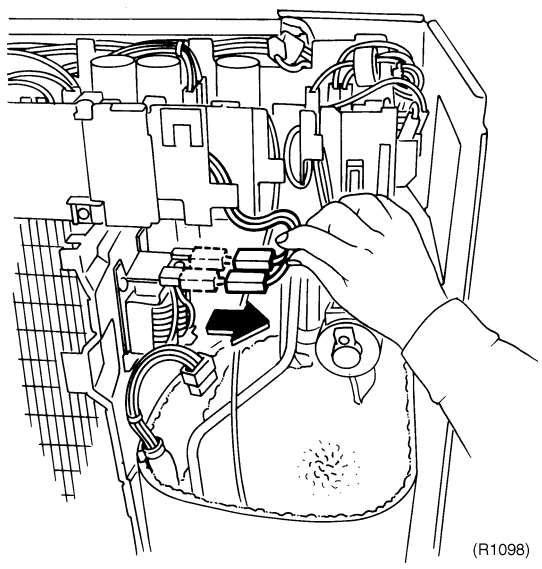
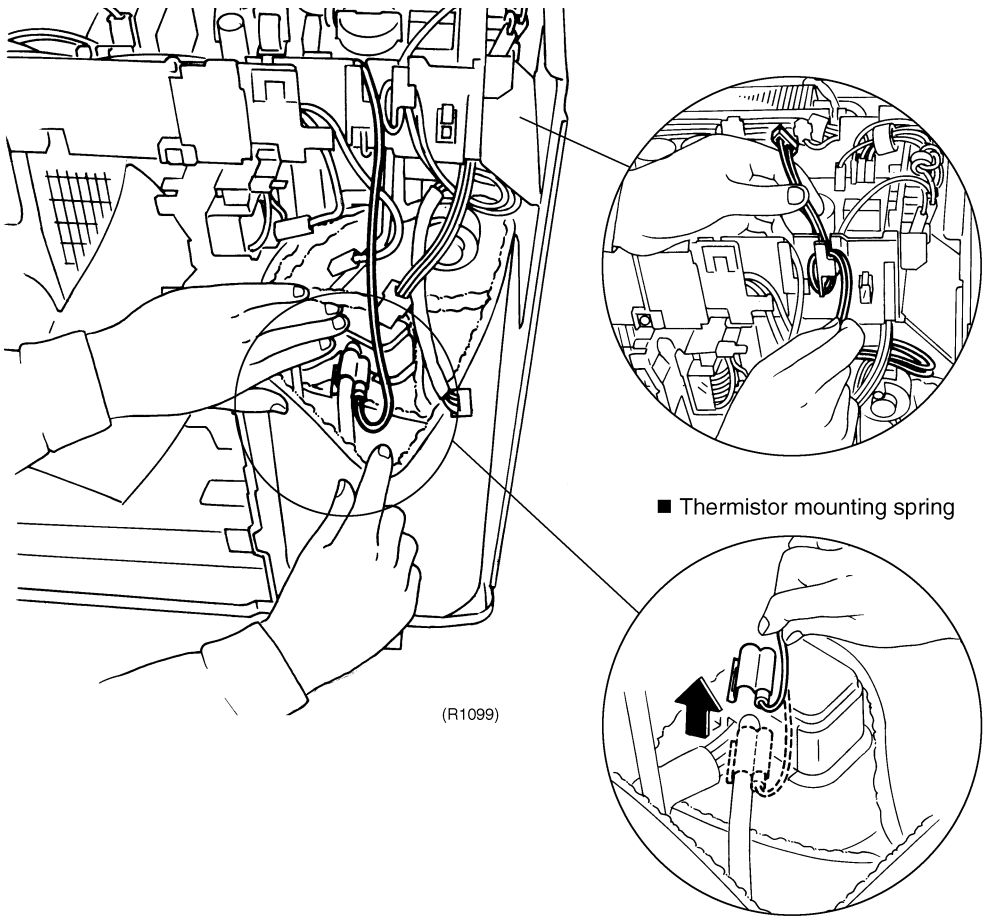
Step	Procedure		Points
3	Disconnect the two connectors of the reactor.	 (R1098)	
4	Disconnect the discharge pipe thermistor.	 (R1099)	■ The lead wire of 4-way valve ■ Thermistor mounting spring

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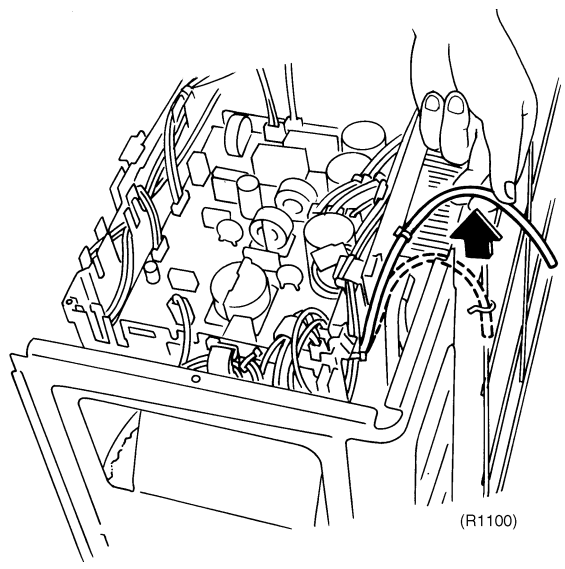
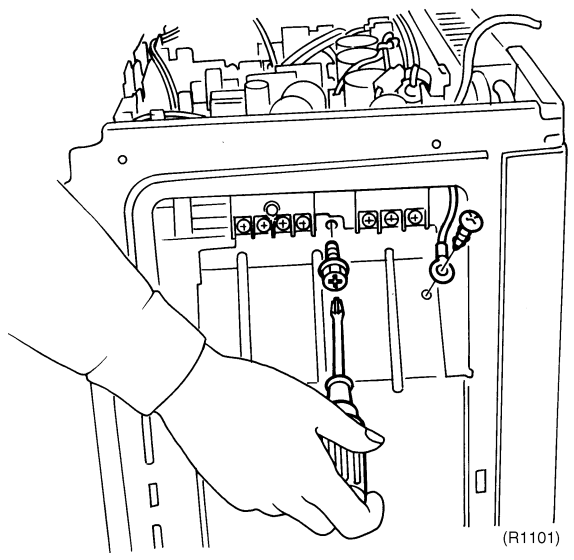
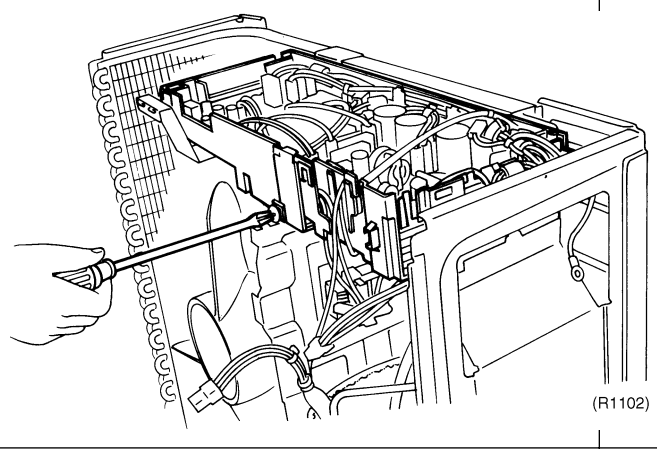
Step	Procedure		Points
5	Disconnect the outdoor air thermistor.	 (R1100)	
6	Remove the screw from the earth terminal.		
7	Remove the two screws from the electrical box.	 (R1101)	
		 (R1102)	

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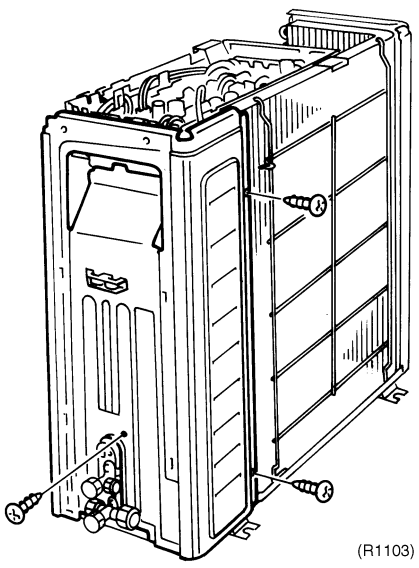
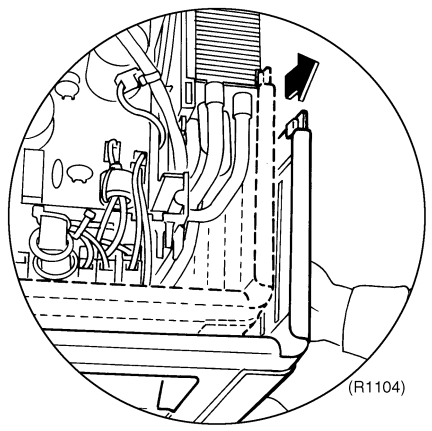
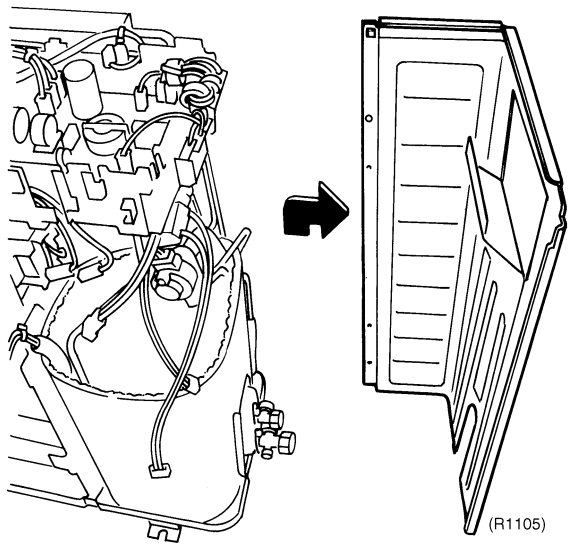
Step	Procedure		Points
8	Remove the three screws from the right-side panel.	 (R1103)	 (R1104)
9	Detach the right-side panel by lifting it up.	 (R1105)	

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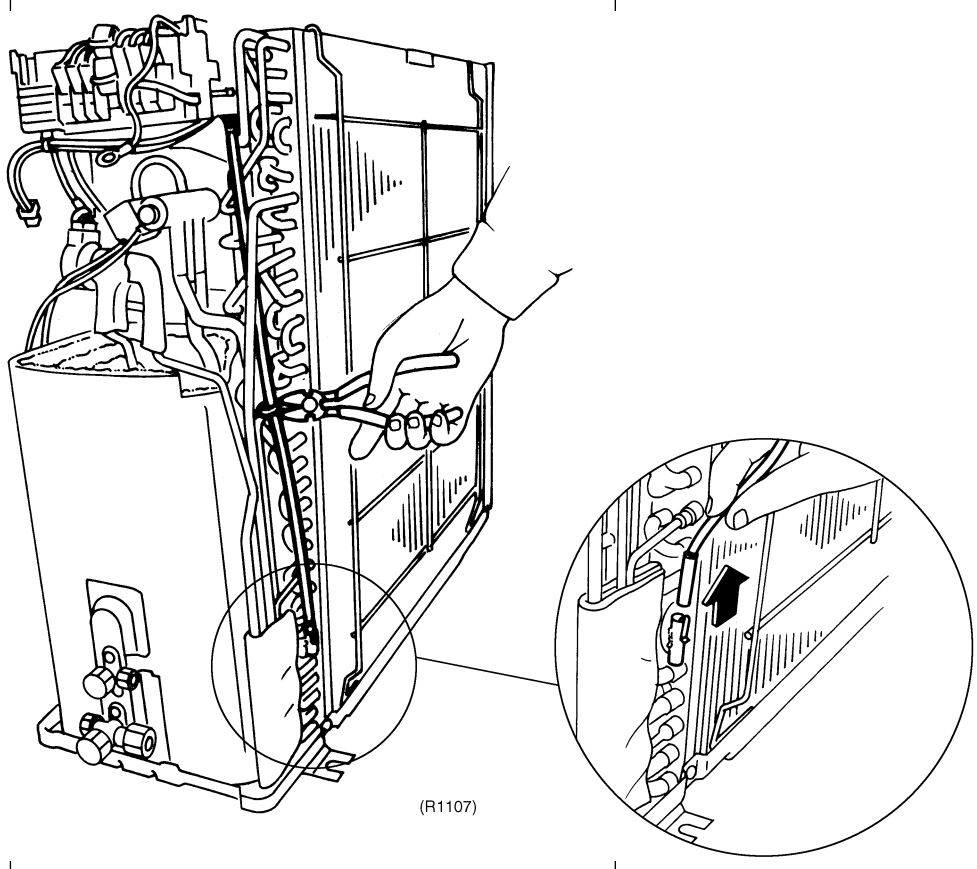
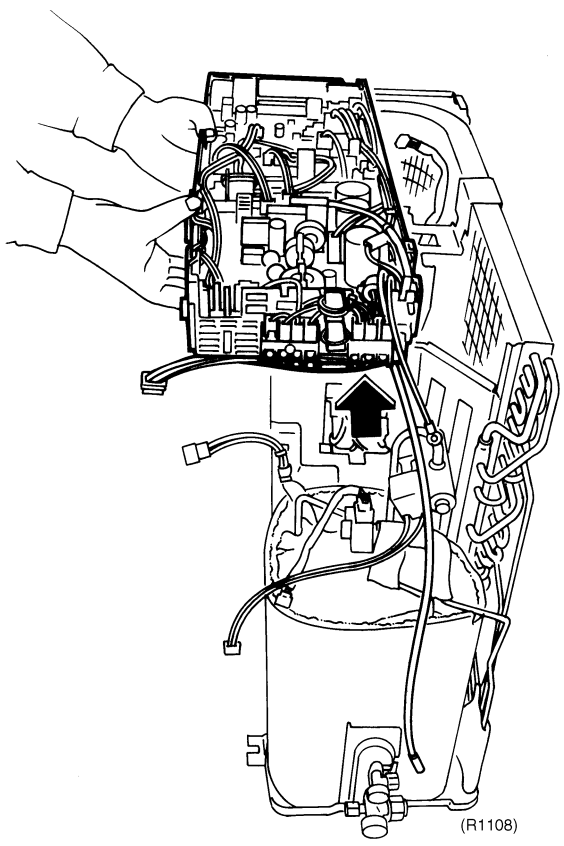
Step	Procedure		Points
10	Disconnect the heat exchanger thermistor.	 (R1107)	■ Thermistor mounting spring
11	Take out the electrical box.	 (R1108)	

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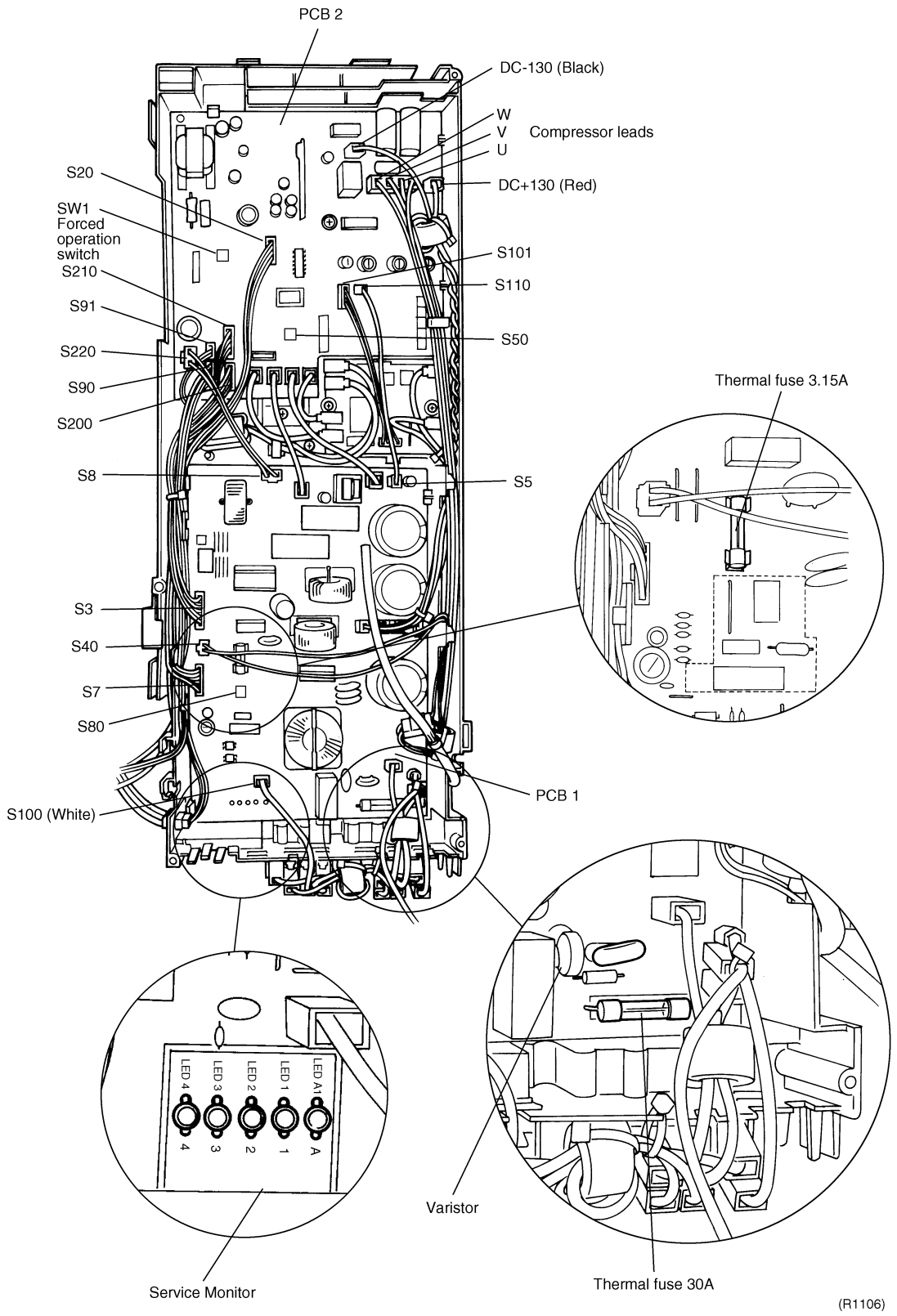
Step	Procedure	Points
12	Components layout	



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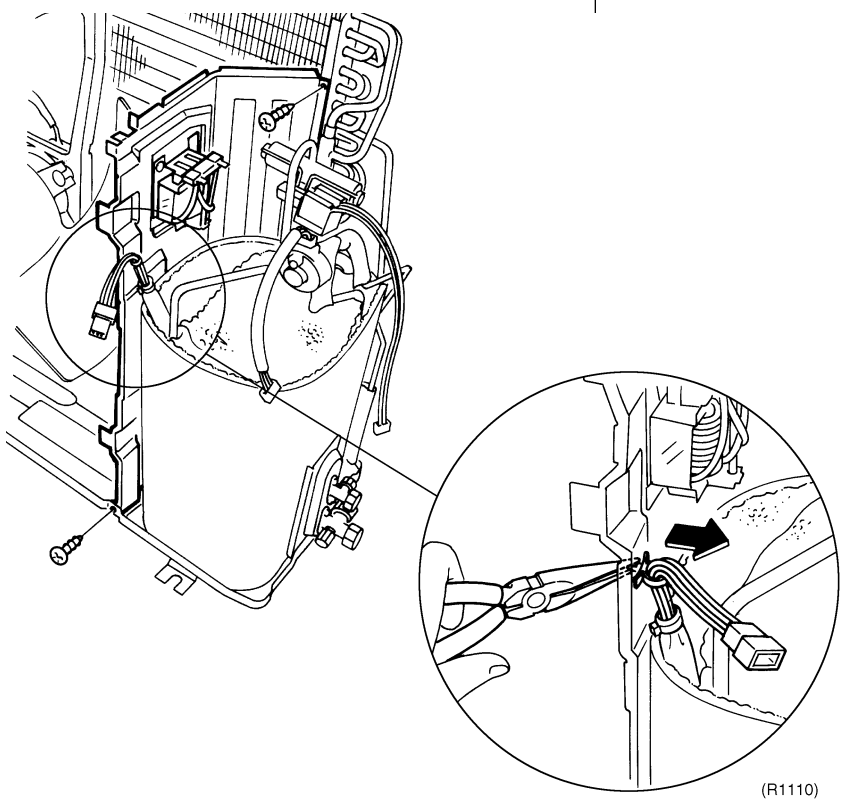
1.3 Removal of Partition Board and Reactor

Procedure

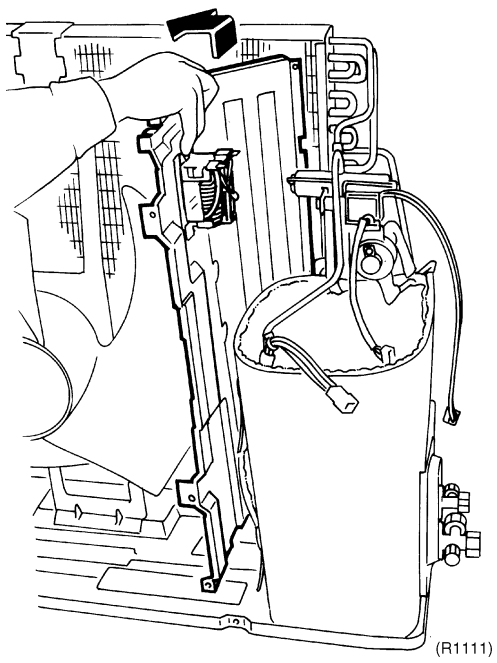
Warning **Be sure to turn off all power supplies before disassembling work.**

Step	Procedure	Points
1. Removing the partition board		
1	Disconnect the compressor leads from the fixture (wire clip).	
2	Remove the two screws from the partition board.	

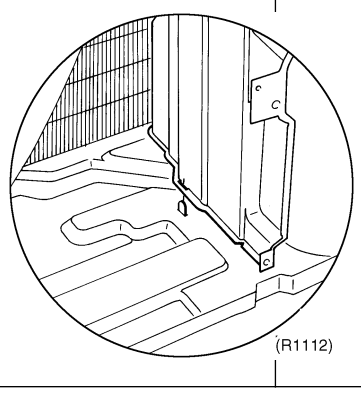


(R1110)

3	Pull up the partition board to detach.	
4	When remounting the partition board, engage the hook in position on the bottom frame.	



(R1111)



(R1112)

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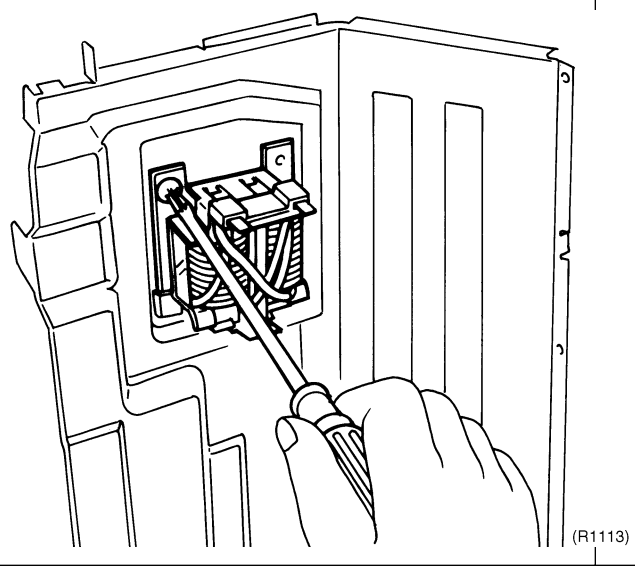
Step	Procedure	Points
2. Removing the reactor		
1	Remove the screw from the reactor.	



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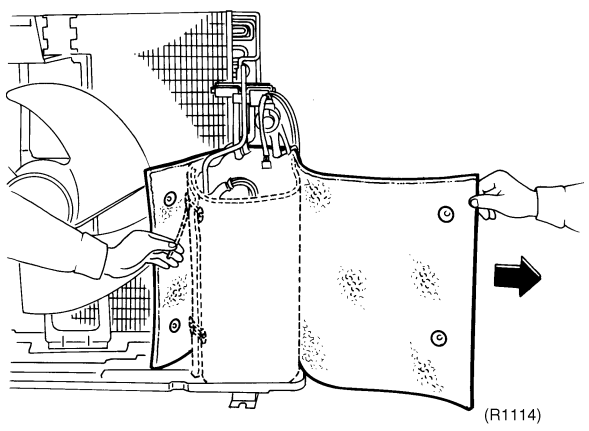
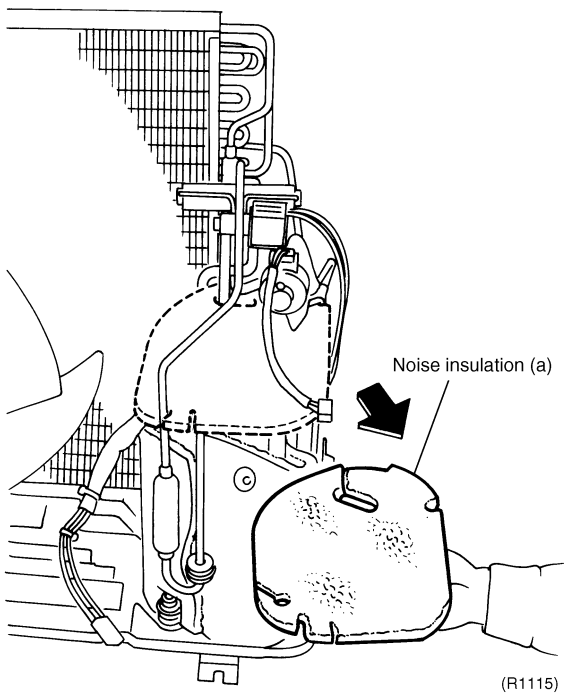
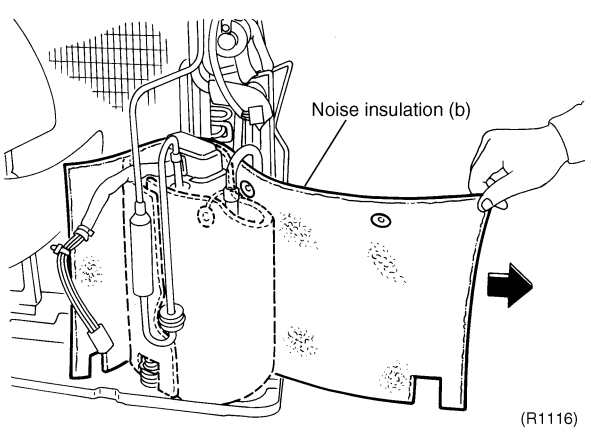
1.4 Removal of Sound Insulation for Compressor

Procedure

Warning **Be sure to turn off all power supplies before disassembling work.**

Step	Procedure		Points
1	Undo the sound insulation fixture string and draw out the sound insulation.	 (R1114)	
2	Draw out the sound insulation (a) from the top of the compressor.	 (R1115)	
3	Undo the fixture string of the sound insulation (b) and draw it out.	 (R1116)	

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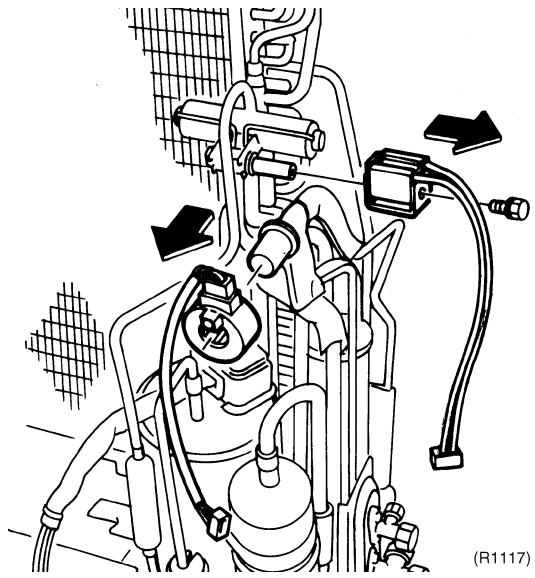
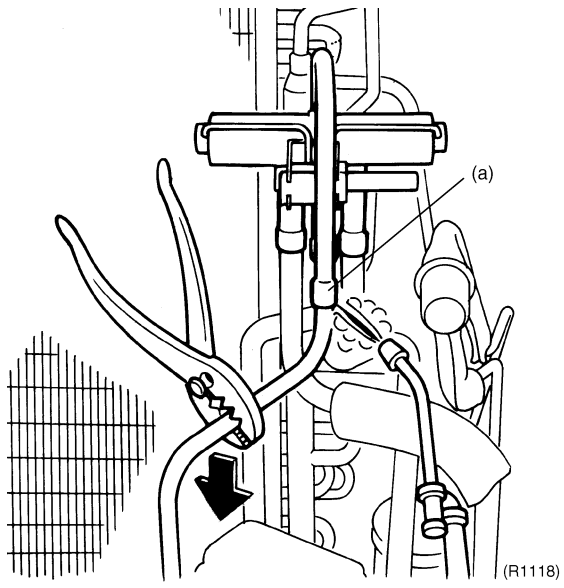
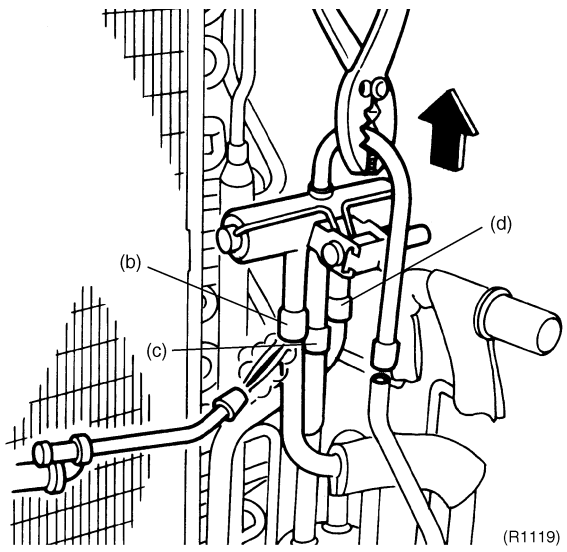
1.5 Removal of 4-way Valve

Procedure

Warning Be sure to turn off all power supplies before disassembling work.

Step	Procedure	Points
■ Before taking this procedure, make sure there is no refrigerant gas left in the refrigerant pipes.	 (R1117)	**Warning** If refrigerant gas leaks during the job, ventilate the room. (Bear in mind that if the refrigerant gas is exposed to open flames, noxious gas may be generated.)
Be careful not to allow flames of a gas welding rod to affect the parts around the 4-way valve. To do this, place welding protective sheets or iron plates around.		**Caution** Be careful not to get yourself burnt with the 4-way valve, pipes and other parts that are heated by the gas welding rod.
1 Remove the screw from the 4-way valve coil. 2 To protect the motorized valve coil, detach it out of position. 3 Get rid of the brazing by heating it up at the points (a), (b), (c) and (d) in this order.	 (R1118)  (R1119)	**Reassembling precautions** 1. Use non-oxidizing brazing method. If nitrogen gas is not available, braze the parts speedily. 2. Avoid deterioration of the packings due to carbonization of oil inside the 4-way valve or thermal influence. For this purpose, wrap the 4-way valve with wet cloth. Splash water over the cloth against becoming too hot (keep it below 120˚C). ■ In pulling the pipes, be careful not to overtighten them with pliers. The pipes may get deformed. **If the gas welding machine fails to remove the 4-way valve, take the steps below.** 1. Disconnect the brazed pipe sections that are readily easy to separate and join together later. 2. With a small copper tube cutter, cut off the internal pipes to easily take out the 4-way valve. **Note:** Never use a hack saw. Cuttings may come into the pipes.

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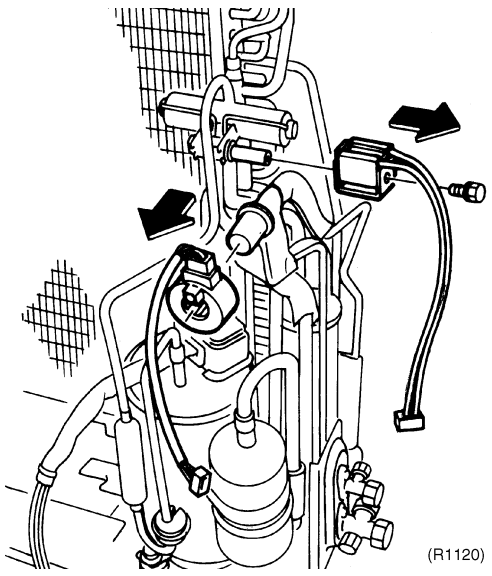
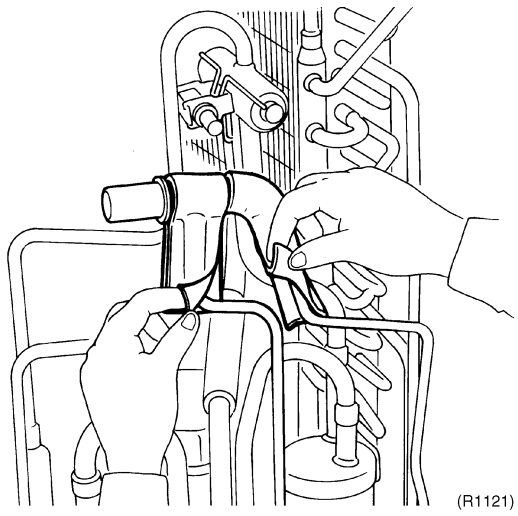
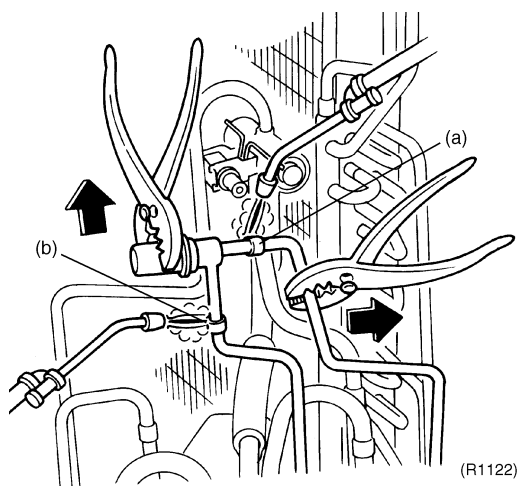
1.6 Removal of Motorized Valve

Procedure

Warning Be sure to turn off all power supplies before disassembling work.

Step	Procedure		Points
1 2	Remove the motorized valve coil. Remove the 4-way valve coil.	 (R1120)	
3	Remove the putty.	 (R1121)	
4	Get rid of the brazing at the points (a) and (b) in this order.	 (a) (b) (R1122)	**Warning** If refrigerant gas leaks during the job, ventilate the room. (Bear in mind that if the refrigerant gas is exposed to open flames, noxious gas may be generated.) **Caution** Be careful not to get yourself burnt with the pipes and other parts that are heated by the gas welding rod. ■ Be careful not to burn the heat exchanger fins.
Reassembling precautions			
Wrap the 4-way valve with wet cloth. Splash water over the cloth against becoming too hot.			

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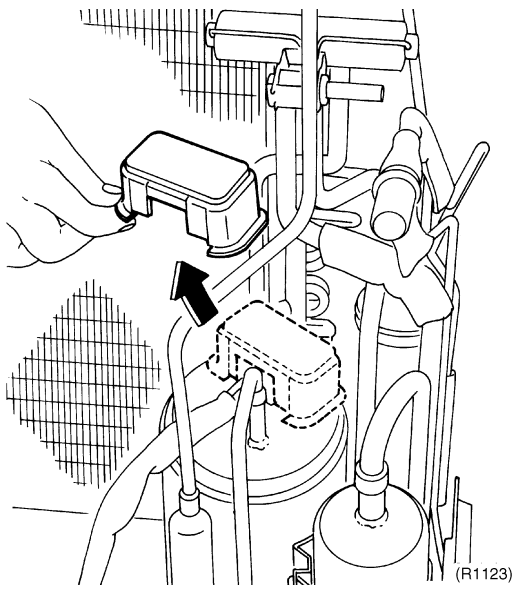
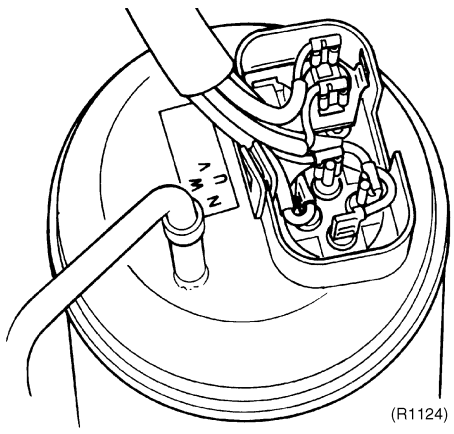
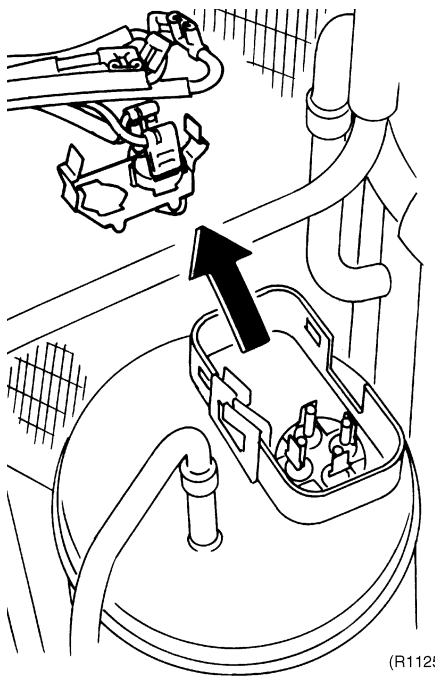
1.7 Removal of Compressor

Procedure

Warning **Be sure to turn off all power supplies before disassembling work.**

Step	Procedure		Points
1. Removing the peripherals			
1	To avoid burning damage by gas welding rod, detach the terminal cover, disconnect the compressor leads, and dismount the partition board. As precaution, keep the contents in memorandum.	 (R1123)  (R1124)  (R1125)	■ Be careful to avoid burning the compressor terminals or the nameplate.

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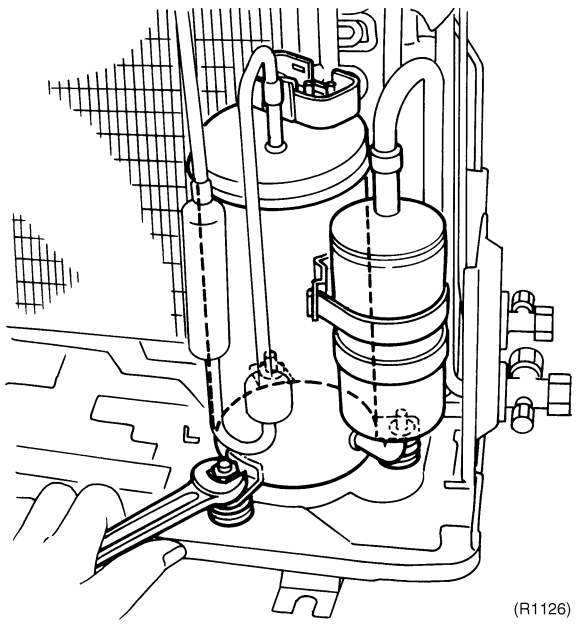
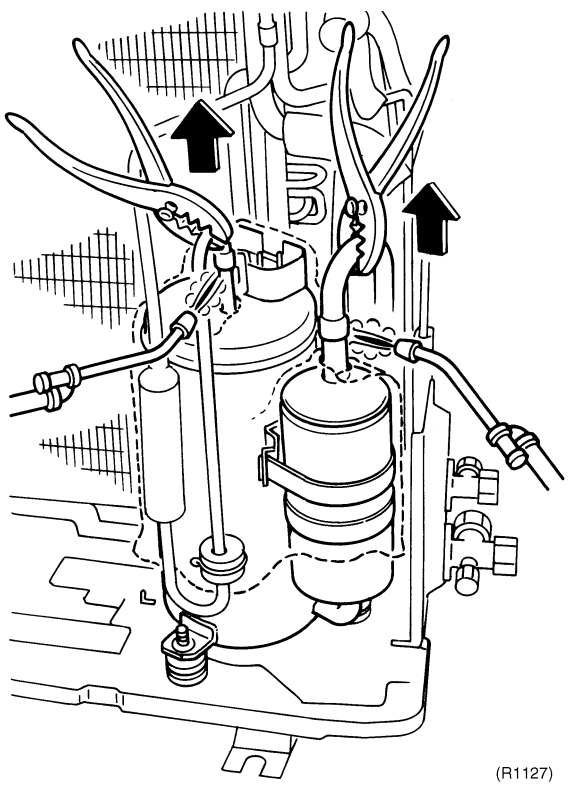
Step	Procedure		Points
2	There is one nut for the compressor.	 (R1126)	
3	Remove the nut with spanner.		
■ **Before taking this procedure, make sure there is no refrigerant gas left in the refrigerant pipes.**		 (R1127)	**Warning** The compressor's refrigerating machine oil may catch fire. Have wet cloth at hand for quickly putting out the fire.
■ **When heating up the brazed parts, make sure to carry out the N_2 replacement.**			**Warning** If refrigerant gas leaks during the job, ventilate the room. (Bear in mind that if the refrigerant gas is exposed to open flames, noxious gas may be generated.)
1	Disconnect the brazed section of the discharge pipe.		**Caution** Be careful not to get yourself burnt with the pipes and other parts that are heated by the gas welding rod.
2	Disconnect the brazed section of the suction pipe.		
3	Dismount the compressor.		

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Part 8
Appendix

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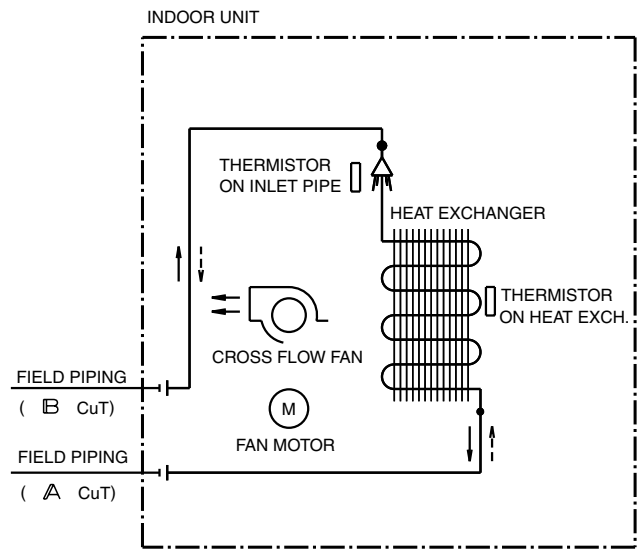
1. Piping Diagrams

1.1 Indoor Units

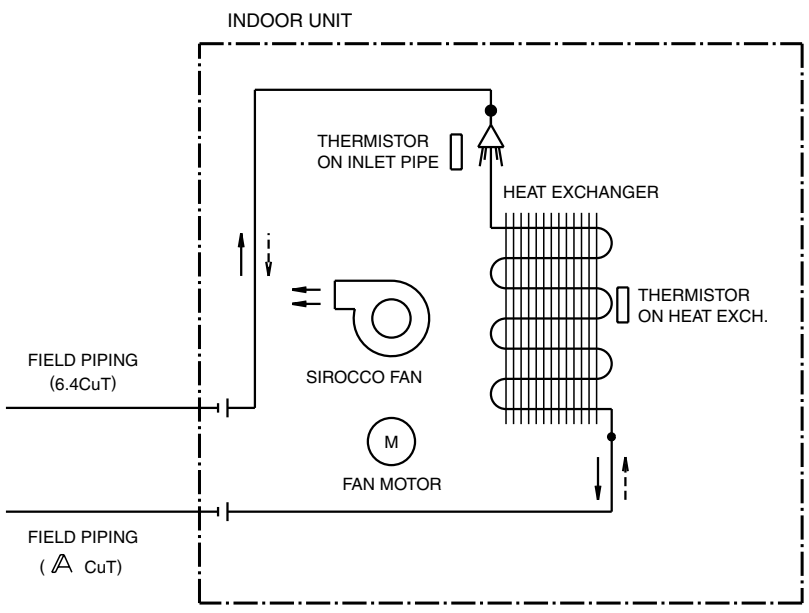
FTXD50JV1B / FTXD60JV1B / FTXD71JV1B



	A	B
FTXD50-	12.7	6.4
FTXD60-	15.9	6.4
FTXD71-	15.9	9.5

4D024820A

FLX50JV1B / FLX60JV1B



	A
FLX50-	12.7
FLX60-	15.9

4D024817A

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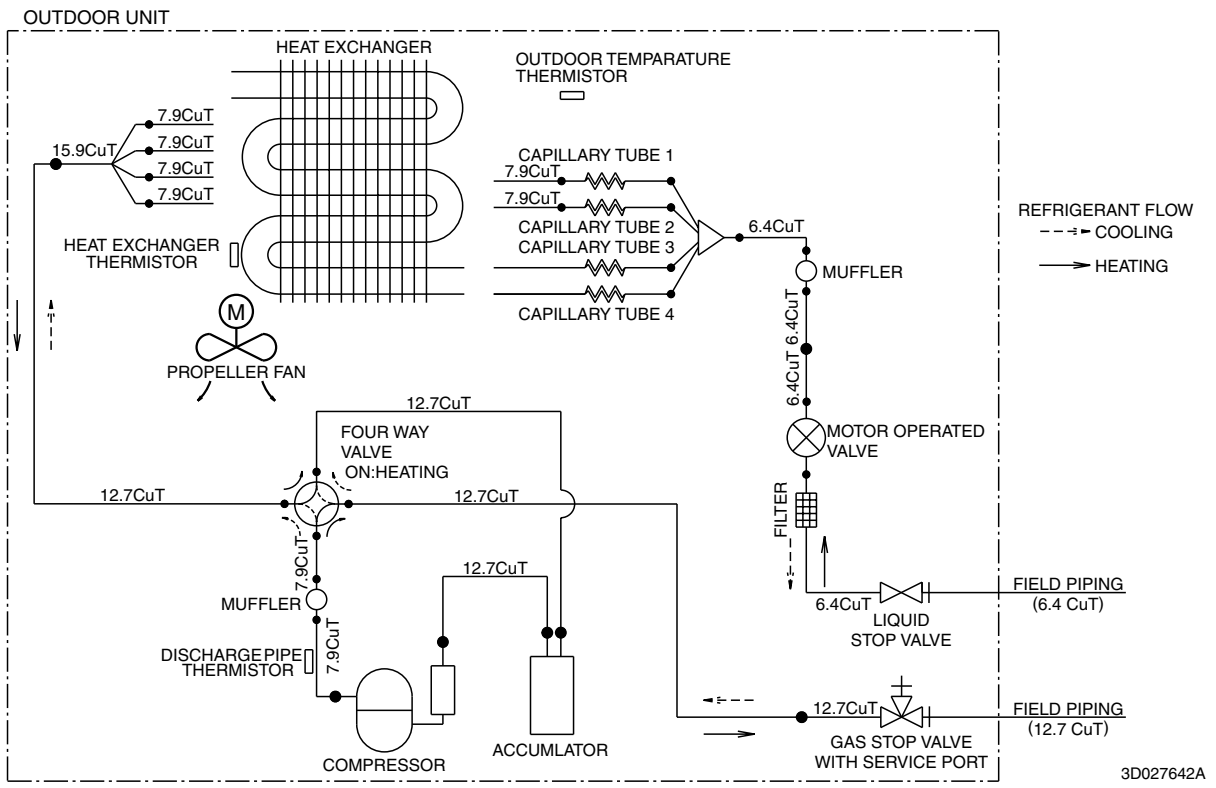
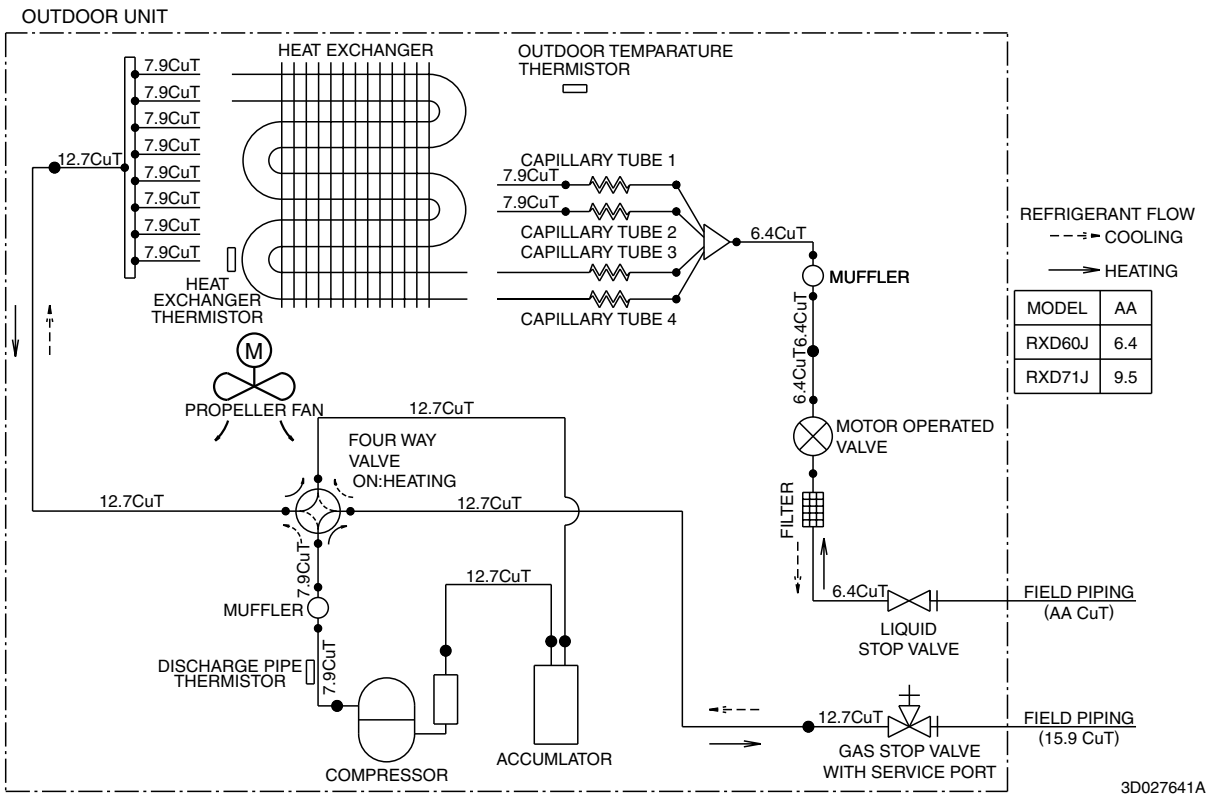
1.2 Outdoor Units

RXD50JV1B



RXD60JV1B / RXD71JV1B



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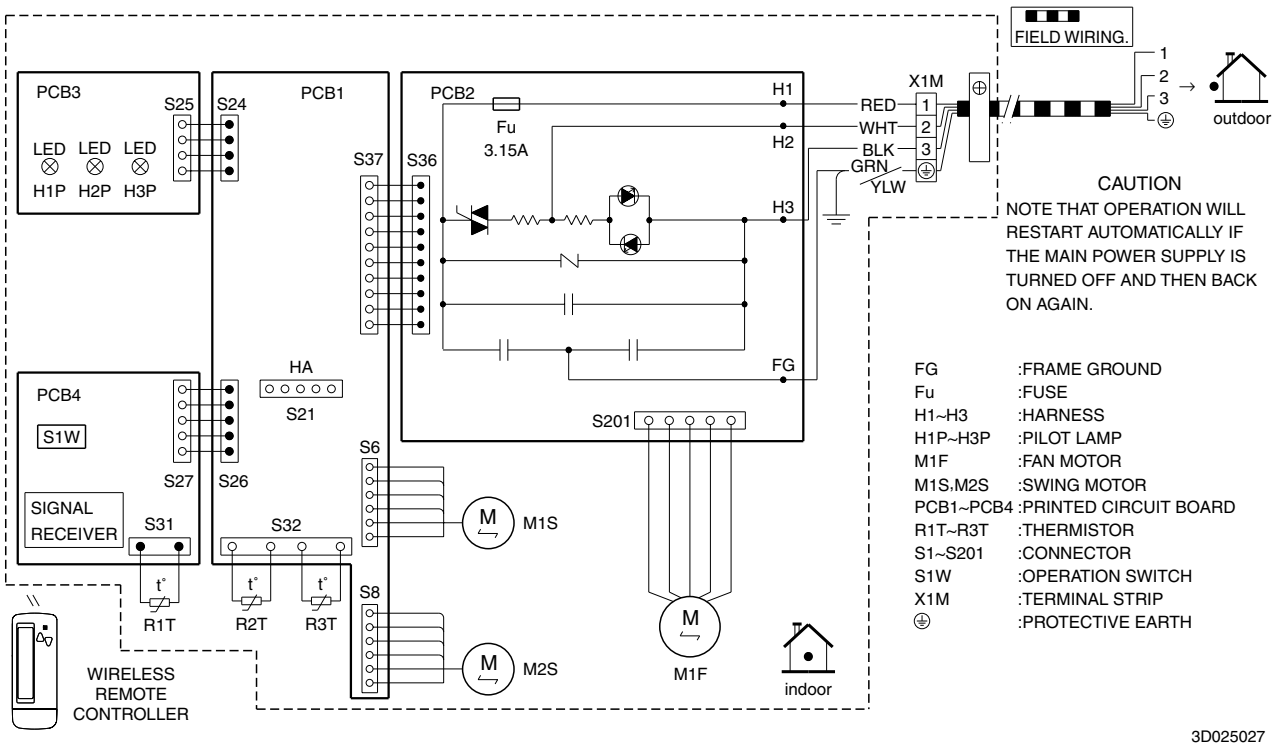
2. Wiring Diagrams

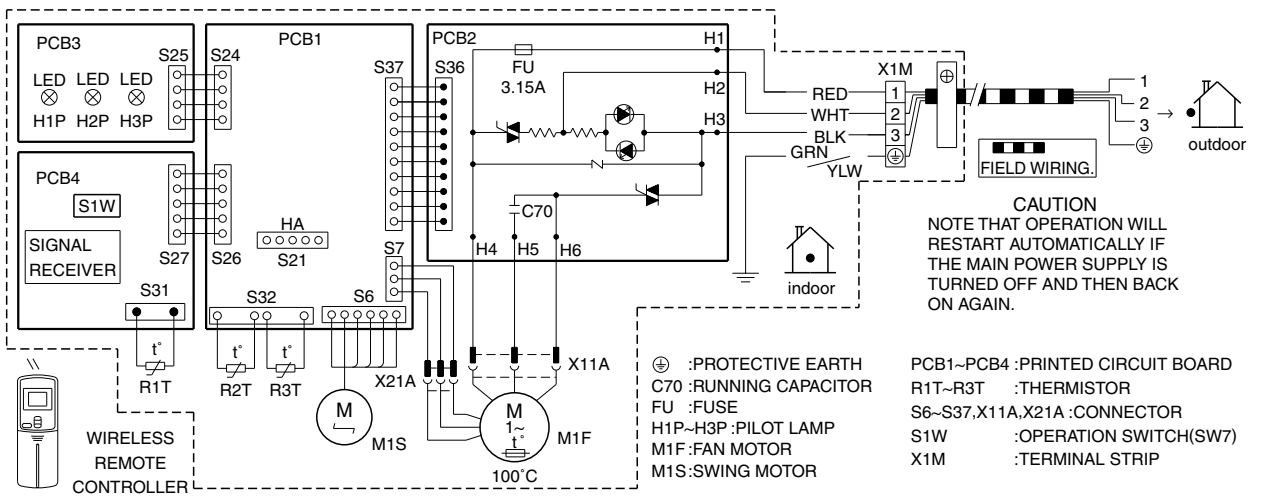
2.1 Indoor Units

FTXD50JV1B / FTXD60JV1B / FTXD71JV1B



3D025027

FLX50JV1B / FLX60JV1B



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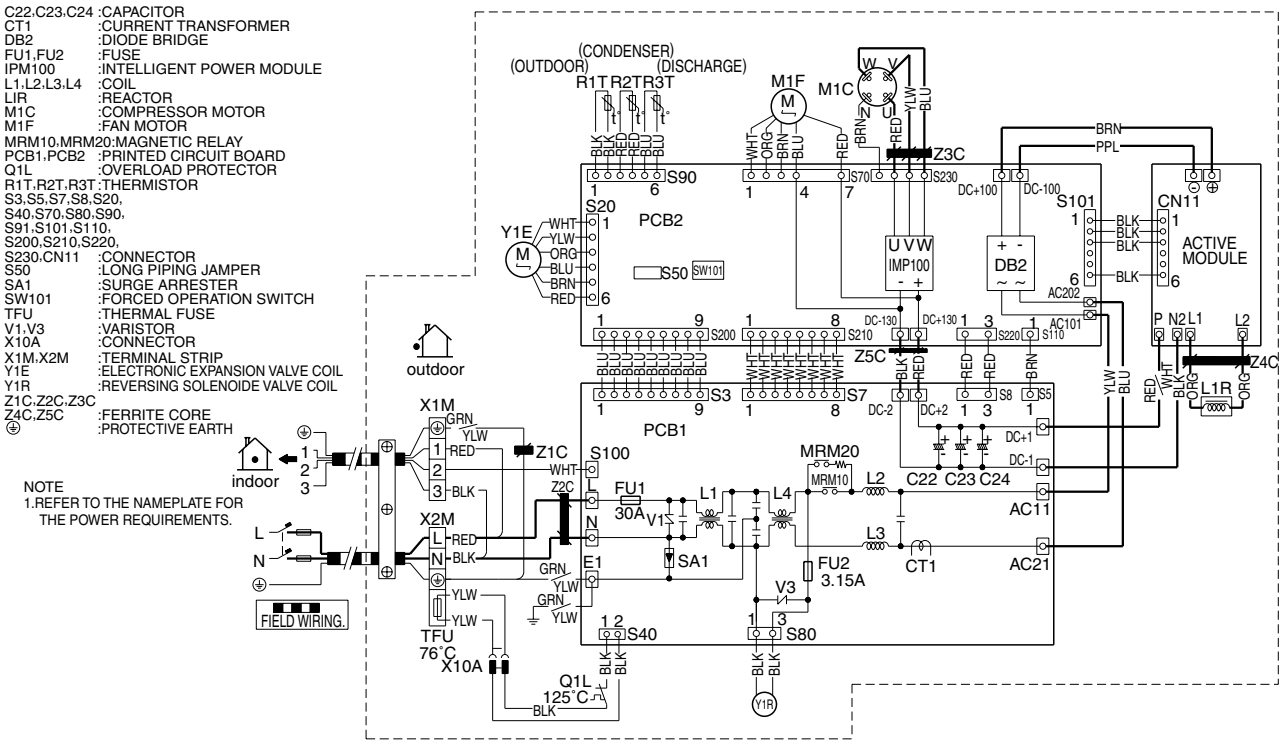
2.2 Outdoor Units

RXD50JV1B / RXD60JV1B / RXD71JV1B

C22,C23,C24 :CAPACITOR
CT1 :CURRENT TRANSFORMER
DB2 :DIODE BRIDGE
FU1,FU2 :FUSE
IPM100 :INTELLIGENT POWER MODULE
L1,L2,L3,L4 :COIL
LIR :REACTOR
M1C :COMPRESSOR MOTOR
M1F :FAN MOTOR
MRM10,MRM20:MAGNETIC RELAY
PCB1,PCB2 :PRINTED CIRCUIT BOARD
Q1L :OVERLOAD PROTECTOR
R1T,R2T,R3T :THERMISTOR
S3,S5,S7,S8,S20,
S40,S70,S80,S90,
S91,S101,S110,
S200,S210,S220,
S230,CN11 :CONNECTOR
S50 :LONG PIPING JAMPER
SA1 :SURGE ARRESTER
SW101 :FORCED OPERATION SWITCH
TFU :THERMAL FUSE
V1,V3 :VARISTOR
X10A :CONNECTOR
X1M,X2M :TERMINAL STRIP
Y1E :ELECTRONIC EXPANSION VALVE COIL
Y1R :REVERSING SOLENOIDE VALVE COIL
Z1C,Z2C,Z3C
Z4C,Z5C :FERRITE CORE
⏚ :PROTECTIVE EARTH

NOTE
1.REFER TO THE NAMEPLATE FOR THE POWER REQUIREMENTS.



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Drawings & Flow Charts

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