DAIKIN

SiBE04 - 704

Service Manual

Inverter Pair
Wall Mounted Type C-Series D-Series

[Applied Models]
- Inverter Pair : Cooling Only
- Inverter Pair : Heat Pump

Inverter Pair
C-Series
D-Series

●Cooling Only

Indoor Unit

FTKS20CAVMB	ATKS20DAVMB
FTKS25CAVMB	ATKS25DAVMB
FTKS35CAVMB	ATKS35DAVMB

Outdoor Unit

RK20E2V1B	ARK20E2V1B
RK25E2V1B	ARK25E2V1B
RK35E2V1B	ARK35E2V1B

●Heat Pump

Indoor Unit

FTXS20CAVMB	ATXS20DAVMB
FTXS25CAVMB	ATXS25DAVMB
FTXS35CAVMB	ATXS35DAVMB

Outdoor Unit

RX20E2V1B	ARX20E2V1B
RX25E2V1B	ARX25E2V1B
RX35E2V1B	ARX35E2V1B

1. Introduction

1.1 Safety Cautions

Cautions and Warnings

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

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

◯ This symbol indicates the prohibited action.
The prohibited item or action is shown in the illustration or near the symbol.

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

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

1.1.1 Cautions Regarding Safety of Workers

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

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

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

1.1.2 Cautions Regarding Safety of Users

Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools may cause an electrical shock, excessive heat generation or fire.	
If the power cable and lead wires have scratches or deteriorated, be sure to replace them. Damaged cable and wires may cause an electrical shock, excessive heat generation or fire.	
Do not use a joined power cable or extension cable, or share the same power outlet with other electrical appliances, since it may cause an electrical shock, excessive heat generation or fire.	
Be sure to use an exclusive power circuit for the equipment, and follow the local technical standards related to the electrical equipment, the internal wiring regulations, and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work may cause an electrical shock or fire.	
Be sure to use the specified cable for wiring between the indoor and outdoor units. Make the connections securely and route the cable properly so that there is no force pulling the cable at the connection terminals. Improper connections may cause excessive heat generation or fire.	
When wiring between the indoor and outdoor units, make sure that the terminal cover does not lift off or dismount because of the cable. If the cover is not mounted properly, the terminal connection section may cause an electrical shock, excessive heat generation or fire.	
Do not damage or modify the power cable. Damaged or modified power cable may cause an electrical shock or fire. Placing heavy items on the power cable, and heating or pulling the power cable may damage the cable.	
Do not mix air or gas other than the specified refrigerant (R410A / R22) in the refrigerant system. If air enters the refrigerating system, an excessively high pressure results, causing equipment damage and injury.	
If the refrigerant gas leaks, be sure to locate the leaking point and repair it before charging the refrigerant. After charging refrigerant, make sure that there is no refrigerant leak. If the leaking point cannot be located and the repair work must be stopped, be sure to perform pump-down and close the service valve, to prevent the refrigerant gas from leaking into the room. The refrigerant gas itself is harmless, but it may generate toxic gases when it contacts flames, such as fan and other heaters, stoves and ranges.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment may fall and cause injury.	

Warning	
Check to make sure that the power cable plug is not dirty or loose, then insert the plug into a power outlet securely. If the plug has dust or loose connection, it may cause an electrical shock or fire.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation may cause the equipment to fall, resulting in injury.	For unitary type only 
Be sure to install the product securely in the installation frame mounted on the window frame. If the unit is not securely mounted, it may fall and cause injury.	For unitary type only 
When replacing the coin battery in the remote controller, be sure to disposed of the old battery to prevent children from swallowing it. If a child swallows the coin battery, see a doctor immediately.	

Caution	
Installation of a leakage breaker is necessary in some cases depending on the conditions of the installation site, to prevent electrical shocks.	
Do not install the equipment in a place where there is a possibility of combustible gas leaks. If the combustible gas leaks and remains around the unit, it may cause a fire.	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections may cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame may cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding may cause an electrical shock.	

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

1.2 Used Icons

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

Icon	Type of Information	Description
Note:	Note	A “note” provides information that is not indispensable, but may nevertheless be valuable to the reader, such as tips and tricks.
Caution	Caution	A “caution” is used when there is danger that the reader, through incorrect manipulation, may damage equipment, 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.

Part 1
List of Functions

1. List of Functions

Category	Functions	FTKS20-35CAVMB RK20-35E2V1B	FTXS20-35CAVMB RX20-35E2V1B	Category	Functions	FTKS20-35CAVMB RK20-35E2V1B	FTXS20-35CAVMB RX20-35E2V1B
Basic Function	Inverter (with Inverter Power Control)	○	○	Health & Clean	Air Purifying Filter	—	—
	Operation Limit for Cooling (°CDB)	10 ~46	10 ~46		Photocatalytic Deodorizing Filter	—	—
	Operation Limit for Heating (°CWB)	—	–10 ~20		Air Purifying Filter with Photocatalytic Deodorizing Function	○	○
	PAM Control	—	—		Titanium Apatite Photocatalytic Air-Purifying Filter	—	—
Compressor	Oval Scroll Compressor	—	—				
	Swing Compressor	○	○		Mold Proof Air Filter	○	○
	Rotary Compressor	—	—		Wipe-clean Flat Panel	○	○
	Reluctance DC Motor	—	—		Washable Grille	—	—
Comfortable Airflow	Power-Airflow Flap	—	—		Mold Proof Operation	—	—
	Power-Airflow Dual Flaps	○	○		Heating Dry Operation	—	—
	Power-Airflow Diffuser	—	—		Filter Cleaning Indicator	—	—
	Wide-Angle Louvers	○	○		Good-Sleep Cooling Operation	—	—
	Vertical Auto-Swing (Up and Down)	○	○	Timer	24-Hour On/Off Timer	○	○
	Horizontal Auto-Swing (Right and Left)	—	—		Night Set Mode	○	○
	3-D Airflow	—	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	○
	Comfort Airflow Mode	—	—		Self-Diagnosis (Digital, LED) Display	○	○
	3-Step Airflow (H/P Only)	—	—		Wiring Error Check	—	—
Comfort Control	Auto Fan Speed	○	○		Anticorrosion Treatment of Outdoor Heat Exchanger	○	○
	Indoor Unit Quiet Operation	○	○				
	Night Quiet Mode	—	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	○	○
	Outdoor Unit Quiet Operation	○	○				
	Intelligent Eye	○	○		Flexible Voltage Correspondence	○	○
	Quick Warming Function	—	○		High Ceiling Application	—	—
	Hot-Start Function	—	○		Chargeless	10m	10m
	Automatic Defrosting	—	○		Either Side Drain (Right or Left)	○	○
Operation	Automatic Operation	—	○		Power Selection	—	—
	Programme Dry Function	○	○	Remote Control	5-Rooms Centralized Controller (Option)	○	○
	Fan Only	○	○				
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	—	—		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	○	○
	Inverter Powerful Operation	○	○				
	Priority-Room Setting	—	—		Remote Control Adaptor (Normal Open Contact) (Option)	○	○
	Cooling / Heating Mode Lock	—	—				
	Home Leave Operation	○	○		DIII-NET Compatible (Adaptor) (Option)	○	○
	ECONO Mode	—	—				
	Indoor Unit On/Off Switch	○	○	Remote Controller	Wireless	○	○
	Signal Reception Indicator	○	○		Wired	—	—
	Temperature Display	—	—				
	Another Room Operation	—	—				

Note: ○ : Holding Functions
— : No Functions

Category	Functions	ATKS20-35DAVMB ARK20-35E2V1B	ATXS20-35DAVMB ARX20-35E2V1B	Category	Functions	ATKS20-35DAVMB ARK20-35E2V1B	ATXS20-35DAVMB ARX20-35E2V1B
Basic Function	Inverter (with Inverter Power Control)	○	○	Health & Clean	Air Purifying Filter	—	—
	Operation Limit for Cooling (°CDB)	10 ~46	10 ~46				
	Operation Limit for Heating (°CWB)	—	–10 ~20		Photocatalytic Deodorizing Filter	—	—
	PAM Control	○	○		Air Purifying Filter with Photocatalytic Deodorizing Function	○	○
Compressor	Oval Scroll Compressor	—	—		Titanium Apatite Photocatalytic Air-Purifying Filter	—	—
	Swing Compressor	○	○				
	Rotary Compressor	—	—		Mold Proof Air Filter	○	○
	Reluctance DC Motor	○	○		Wipe-clean Flat Panel	○	○
Comfortable Airflow	Power-Airflow Flap	—	—		Washable Grille	—	—
	Power-Airflow Dual Flaps	○	○		Mold Proof Operation	—	—
	Power-Airflow Diffuser	—	—		Heating Dry Operation	—	—
	Wide-Angle Louvers	○	○		Filter Cleaning Indicator	—	—
	Vertical Auto-Swing (Up and Down)	○	○		Good-Sleep Cooling Operation	—	—
	Horizontal Auto-Swing (Right and Left)	—	—	Timer	24-Hour On/Off Timer	○	○
	3-D Airflow	—	—		Night Set Mode	○	○
	Comfort Airflow Mode	○	○	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○	○
	3-Step Airflow (H/P Only)	—	—		Self-Diagnosis (Digital, LED) Display	○	○
Comfort Control	Auto Fan Speed	○	○		Wiring Error Check	—	—
	Indoor Unit Quiet Operation	○	○		Anticorrosion Treatment of Outdoor Heat Exchanger	○	○
	Night Quiet Mode (Automatic)	—	—				
	Outdoor Unit Quiet Operation (Manual)	○	○	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	○	○
	Intelligent Eye	○	○				
	Quick Warming Function	—	○		Flexible Voltage Correspondence	—	—
	Hot-Start Function	—	○		High Ceiling Application	—	—
	Automatic Defrosting	—	○		Chargeless	10m	10m
Operation	Automatic Operation	—	○		Either Side Drain (Right or Left)	○	○
	Programme Dry Function	○	○		Power Selection	—	—
	Fan Only	○	○	Remote Control	5-Rooms Centralized Controller (Option)	○	○
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	—	—		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	○	○
	Inverter Powerful Operation	○	○				
	Priority-Room Setting	—	—		Remote Control Adaptor (Normal Open Contact) (Option)	○	○
	Cooling / Heating Mode Lock	—	—				
	Home Leave Operation	—	—		DIII-NET Compatible (Adaptor) (Option)	○	○
	ECONO Mode	○	○	Remote Controller	Wireless	○	○
	Indoor Unit On/Off Switch	○	○		Wired	—	—
	Signal Reception Indicator	○	○				
	Temperature Display	—	—				
	Another Room Operation	—	—				

Note: ○ : Holding Functions
— : No Functions

Part 2
Specifications

1. Specifications

1.1 Cooling Only

50Hz 220-230-240V

Models	Indoor Units		FTKS20CAVMB	FTKS25CAVMB	FTKS35CAVMB
	Outdoor Units		RK20E2V1B	RK25E2V1B	RK35E2V1B
Capacity Rated (Min.~Max.)		kW	2.0 (1.2~2.6)	2.5 (1.2~3.0)	3.4 (1.2~3.8)
		Btu/h	6,800 (4,100~8,900)	8,500 (4,100~10,200)	11,600 (4,100~13,000)
		kcal/h	1,720 (1,030~2,240)	2,150 (1,030~2,580)	2,920 (1,030~3,270)
Running Current (Rated)		A	3.3-3.2-3.1	4.4-4.2-4.0	5.1-4.9-4.7
Power Consumption Rated (Min.~Max.)		W	580 (300~860)	770 (300~1,070)	1,060 (300~1,300)
Power Factor		%	79.9-78.8-78.0	79.5-79.7-80.2	94.5-94.1-94.0
COP (Rated)		W/W	3.45 (4.00~3.02)	3.25 (4.00~2.80)	3.21 (4.00-2.92)
Piping Connections	Liquid	mm	ϕ6.4	ϕ6.4	ϕ6.4
	Gas	mm	ϕ9.5	ϕ9.5	ϕ9.5
	Drain	mm	ϕ18.0	ϕ18.0	ϕ18.0
Heat Insulation			Both Liquid and Gas Pipes	Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Max. Interunit Piping Length		m	15	15	15
Max. Interunit Height Difference		m	10	10	10
Chargeless		m	10	10	10
Amount of Additional Charge of Refrigerant		g/m	20	20	20
Indoor Units			**FTKS20CAVMB**	**FTKS25CAVMB**	**FTKS35CAVMB**
Front Panel Color			White	White	White
Air Flow Rate	m³/min (cfm)	H	7.7 (272)	7.7 (272)	7.7 (272)
		M	5.9 (208)	5.9 (208)	6.0 (212)
		L	4.2 (148)	4.2 (148)	4.4 (155)
		SL	3.6 (127)	3.6 (127)	3.8 (134)
Fan	Type		Cross Flow Fan	Cross Flow Fan	Cross Flow Fan
	Motor Output	W	18	18	18
	Speed	Steps	5 Steps, Quiet, Auto	5 Steps, Quiet, Auto	5 Steps, Quiet, Auto
Air Direction Control			Right, Left, Horizontal, Downward	Right, Left, Horizontal, Downward	Right, Left, Horizontal, Downward
Air Filter			Removable / Washable / Mildew Proof	Removable / Washable / Mildew Proof	Removable / Washable / Mildew Proof
Running Current (Rated)		A	0.19-0.18-0.17	0.19-0.18-0.17	0.19-0.18-0.17
Power Consumption (Rated)		W	40	40	40
Power Factor		%	95.7-96.6-98.0	95.7-96.6-98.0	95.7-96.6-98.0
Temperature Control			Microcomputer Control	Microcomputer Control	Microcomputer Control
Dimensions (HxWxD)		mm	273x784x195	273x784x195	273x784x195
Packaged Dimensions (HxWxD)		mm	325x834x258	325x834x258	325x834x258
Weight		kg	7.5	7.5	7.5
Gross Weight		kg	11	11	11
Operation Sound	H/M/L/SL	dBA	38 / 32 / 25 / 22	38 / 32 / 25 / 22	39 / 33 / 26 / 23
Sound Power	H	dBA	56	56	57
Outdoor Units			**RK20E2V1B**	**RK25E2V1B**	**RK35E2V1B**
Casing Color			Ivory White	Ivory White	Ivory White
Compressor	Type		Hermetically Sealed Swing Type	Hermetically Sealed Swing Type	Hermetically Sealed Swing Type
	Model		1YC23NXD	1YC23NXD	1YC23NXD
	Motor Output	W	600	600	600
Refrigerant Oil	Type		FVC50K	FVC50K	FVC50K
	Charge	L	0.375	0.375	0.375
Refrigerant	Type		R-410A	R-410A	R-410A
	Charge	kg	0.80	0.80	1.00
Air Flow Rate	m³/min (cfm)	H	36.2 (1,278)	36.2 (1,278)	33.5 (1,183)
		L	25.7 (907)	25.7 (907)	23.4 (826)
Fan	Type		Propeller	Propeller	Propeller
	Motor Output	W	23	23	23
Running Current (Rated)		A	3.11-3.02-2.93	4.21-4.02-3.83	4.91-4.72-4.53
Power Consumption (Rated)		W	540	730	1,020
Power Factor		%	78.9-77.7-76.8	78.8-79.0-79.4	94.4-94.0-93.8
Starting Current		A	3.5	4.4	5.4
Dimensions (HxWxD)		mm	550x765x285	550x765x285	550x765x285
Packaged Dimensions (HxWxD)		mm	617x882x363	617x882x363	617x882x363
Weight		kg	30	30	32
Gross Weight		kg	35	35	38
Operation Sound	H / L	dBA	46 / 43	46 / 43	47 / 44
Sound Power	H	dBA	61	61	62
Drawing No.			3D056540	3D056541	3D056542

Note: ■ The data are based on the conditions shown in the table below.

Cooling	Piping Length
Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	7.5m

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

50Hz 220-230-240V

Models	Indoor Units		ATKS20DAVMB	ATKS25DAVMB
	Outdoor Units		ARK20E2V1B	ARK25E2V1B
Capacity Rated (Min.~Max.)		kW	2.0 (1.2~2.6)	2.5 (1.2~3.0)
		Btu/h	6,800 (4,100~8,900)	8,500 (4,100~10,200)
		kcal/h	1,720 (1,030~2,240)	2,150 (1,030~2,580)
Running Current (Rated)		A	3.3-3.2-3.1	4.4-4.2-4.0
Power Consumption Rated (Min.~Max.)		W	580 (300~860)	770 (300~1,070)
Power Factor		%	79.9-78.8-78.0	79.5-79.7-80.2
COP Rated (Min.~Max.)		W/W	3.45 (4.00~3.02)	3.25 (4.00~2.80)
Piping Connections	Liquid	mm	ϕ6.4	ϕ6.4
	Gas	mm	ϕ9.5	ϕ9.5
	Drain	mm	ϕ18.0	ϕ18.0
Heat Insulation			Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Max. Interunit Piping Length		m	15	15
Max. Interunit Height Difference		m	10	10
Chargeless		m	10	10
Amount of Additional Charge of Refrigerant		g/m	20	20
Indoor Units			**ATKS20DAVMB**	**ATKS25DAVMB**
Front Panel Color			White	White
Air Flow Rate	m³/min (cfm)	H	7.7 (272)	7.7 (272)
		M	5.9 (208)	5.9 (208)
		L	4.2 (148)	4.2 (148)
		SL	3.6 (127)	3.6 (127)
Fan	Type		Cross Flow Fan	Cross Flow Fan
	Motor Output	W	18	18
	Speed	Steps	5 Steps, Quiet, Auto	5 Steps, Quiet, Auto
Air Direction Control			Right, Left, Horizontal, Downward	Right, Left, Horizontal, Downward
Air Filter			Removable / Washable / Mildew Proof	Removable / Washable / Mildew Proof
Running Current		A	0.19-0.18-0.17	0.19-0.18-0.17
Power Consumption		W	40	40
Power Factor		%	95.7-96.6-98.0	95.7-96.6-98.0
Temperature Control			Microcomputer Control	Microcomputer Control
Dimensions (H×W×D)		mm	273×784×195	273×784×195
Packaged Dimensions (H×W×D)		mm	325×834×258	325×834×258
Weight		kg	7.5	7.5
Gross Weight		kg	11	11
Operation Sound	H/M/L/SL	dBA	38/32/25/22	38/32/25/22
Sound Power		dBA	56	56
Outdoor Units			**ARK20E2V1B**	**ARK25E2V1B**
Casing Color			Ivory White	Ivory White
Compressor	Type		Hermetically Sealed Swing Type	Hermetically Sealed Swing Type
	Model		1YC23NXD	1YC23NXD
	Motor Output	W	600	600
Refrigerant Oil	Type		FVC50K	FVC50K
	Charge	L	0.375	0.375
Refrigerant	Type		R-410A	R-410A
	Charge	kg	0.8	0.8
Air Flow Rate (H/L)	m³/min		36.2/25.7	36.2/25.7
	cfm		1,278/907	1,278/907
Fan	Type		Propeller	Propeller
	Motor Output	W	23	23
Running Current (Rated)		A	3.11-3.02-2.93	4.21-4.02-3.83
Power Consumption (Rated)		W	540	730
Power Factor		%	78.9-77.7-76.8	78.8-79.0-79.4
Starting Current		A	3.5	4.4
Dimensions (H×W×D)		mm	550×765×285	550×765×285
Packaged Dimensions (H×W×D)		mm	617×882×363	617×882×363
Weight		kg	30	30
Gross Weight		kg	35	35
Operation Sound	H/L	dBA	46/43	46/43
Sound Power	H	dBA	61	61
Drawing No.			3D056546	3D056547

Note: ■ The data are based on the conditions shown in the table below.

Cooling	Piping Length
Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	7.5m

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

50Hz 220-230-240V

Models	**Indoor Units**		**ATKS35DAVMB**
	Outdoor Units		**ARK35E2V1B**
Capacity Rated (Min.~Max.)		kW	3.4 (1.2~3.8)
		Btu/h	11,600 (4,100~13,000)
		kcal/h	2,920 (1,030~3,270)
Running Current (Rated)		A	5.1-4.9-4.7
Power Consumption Rated (Min.~Max.)		W	1,060 (300~1,300)
Power Factor		%	94.5-94.1-94.0
COP Rated (Min.~Max.)		W/W	3.21 (4.00~2.92)
Piping Connections	Liquid	mm	ϕ 6.4
	Gas	mm	ϕ 9.5
	Drain	mm	ϕ18.0
Heat Insulation			Both Liquid and Gas Pipes
Max. Interunit Piping Length		m	15
Max. Interunit Height Difference		m	10
Chargeless		m	10
Amount of Additional Charge of Refrigerant		g/m	20
Indoor Units			**ATKS35DAVMB**
Front Panel Color			White
Air Flow Rate	m³/min (cfm)	H	7.7 (272)
		M	6.0 (212)
		L	4.4 (155)
		SL	3.8 (134)
Fan	Type		Cross Flow Fan
	Motor Output	W	18
	Speed	Steps	5 Steps, Quiet, Auto
Air Direction Control			Right, Left, Horizontal, Downward
Air Filter			Removable / Washable / Mildew Proof
Running Current		A	0.19-0.18-0.17
Power Consumption		W	40
Power Factor		%	95.7-96.6-98.0
Temperature Control			Microcomputer Control
Dimensions (H×W×D)		mm	273×784×195
Packaged Dimensions (H×W×D)		mm	325×834×258
Weight		kg	7.5
Gross Weight		kg	11
Operation Sound	H/M/L/SL	dBA	39/33/26/23
Sound Power		dBA	57
Outdoor Units			**ARK35E2V1B**
Casing Color			Ivory White
Compressor	Type		Hermetically Sealed Swing Type
	Model		1YC23NXD
	Motor Output	W	600
Refrigerant Oil	Type		FVC50K
	Charge	L	0.375
Refrigerant	Type		R-410A
	Charge	kg	1.0
Air Flow Rate (H/L)	m³/min		33.5/23.4
	cfm		1,183/826
Fan	Type		Propeller
	Motor Output	W	23
Running Current (Rated)		A	4.91-4.72-4.53
Power Consumption (Rated)		W	1,020
Power Factor		%	94.4-94.0-93.8
Starting Current		A	5.4
Dimensions (H×W×D)		mm	550×765×285
Packaged Dimensions (H×W×D)		mm	617×882×363
Weight		kg	32
Gross Weight		kg	38
Operation Sound	H/L	dBA	47/44
Sound Power	H	dBA	62
Drawing No.			3D056548

Note: ■ The data are based on the conditions shown in the table below.

Cooling	Piping Length
Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	7.5m

Conversion Formulae
kcal/h=kW×860 Btu/h=kW×3414 cfm=m³/min×35.3

1.2 Heat Pump

50Hz 220-230-240V

Models	Indoor Units		FTXS20CAVMB		FTXS25CAVMB	
	Outdoor Units		RX20E2V1B		RX25E2V1B	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min.~Max.)		kW	2.0 (1.2~2.6)	2.7 (1.2~4.1)	2.5 (1.2~3.0)	3.4 (1.2~4.5)
		Btu/h	6,800 (4,100~8,900)	9,200 (4,100~14,000)	8,500 (4,100~10,200)	11,600 (4,100~15,400)
		kcal/h	1,720 (1,030~2,240)	2,320 (1,030~3,530)	2,150 (1,030~2,580)	2,920 (1,030~3,870)
Running Current (Rated)		A	3.3-3.2-3.1	4.0-3.8-3.6	4.4-4.2-4.0	4.6-4.4-4.2
Power Consumption Rated (Min.~Max.)		W	580 (300~860)	710 (290~1,330)	770 (300~1,070)	940 (290~1,460)
Power Factor		%	79.9-78.8-78.0	80.7-81.2-82.2	79.5-79.7-80.2	92.9-92.9-93.3
COP (Rated)		W/W	3.45 (4.00~3.02)	3.80 (4.14~3.08)	3.25 (4.00~2.80)	3.62 (4.14~3.08)
Piping Connections	Liquid	mm	ϕ6.4		ϕ6.4	
	Gas	mm	ϕ9.5		ϕ9.5	
	Drain	mm	ϕ18.0		ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Interunit Piping Length		m	15		15	
Max. Interunit Height Difference		m	10		10	
Chargeless		m	10		10	
Amount of Additional Charge of Refrigerant		g/m	20		20	
Indoor Units			**FTXS20CAVMB**		**FTXS25CAVMB**	
Front Panel Color			White		White	
Air Flow Rate	m³/min (cfm)	H	7.7 (272)	7.8 (275)	7.7 (272)	7.8 (275)
		M	5.9 (208)	6.5 (230)	5.9 (208)	6.5 (230)
		L	4.2 (148)	5.3 (187)	4.2 (148)	5.3 (187)
		SL	3.6 (127)	4.6 (162)	3.6 (127)	4.6 (162)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	18		18	
	Speed	Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Direction Control			Right, Left, Horizontal, Downward		Right, Left, Horizontal, Downward	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.19-0.18-0.17	0.19-0.18-0.17	0.19-0.18-0.17	0.19-0.18-0.17
Power Consumption (Rated)		W	40	40	40	40
Power Factor		%	95.7-96.6-98.0	95.7-96.6-98.0	95.7-96.6-98.0	95.7-96.6-98.0
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		mm	273×784×195		273×784×195	
Packaged Dimensions (H×W×D)		mm	325×834×258		325×834×258	
Weight		kg	7.5		7.5	
Gross Weight		kg	11		11	
Operation Sound	H/M/L/SL	dBA	38 / 32 / 25 / 22	38 / 33 / 28 / 25	38 / 32 / 25 / 22	38 / 33 / 28 / 25
Sound Power	H	dBA	56	56	56	56
Outdoor Units			**RX20E2V1B**		**RX25E2V1B**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		1YC23NXD		1YC23NXD	
	Motor Output	W	600		600	
Refrigerant Oil	Type		FVC50K		FVC50K	
	Charge	L	0.375		0.375	
Refrigerant	Type		R-410A		R-410A	
	Charge	kg	0.80		0.80	
Air Flow Rate	m³/min (cfm)	H	36.2 (1,278)	32.6 (1,151)	36.2 (1,278)	32.6 (1,151)
		L	25.7 (907)	30.6 (1,080)	25.7 (907)	30.6 (1,080)
Fan	Type		Propeller		Propeller	
	Motor Output	W	23		23	
Running Current (Rated)		A	3.11-3.02-2.93	3.81-3.62-3.43	4.21-4.02-3.83	4.41-4.22-4.03
Power Consumption (Rated)		W	540	670	730	900
Power Factor		%	78.9-77.7-76.8	79.9-80.5-81.4	78.8-79.0-79.4	92.8-92.7-93.1
Starting Current		A	3.5		4.4	
Dimensions (H×W×D)		mm	550×765×285		550×765×285	
Packaged Dimensions (H×W×D)		mm	617×882×363		617×882×363	
Weight		kg	30		30	
Gross Weight		kg	35		35	
Operation Sound	H/L	dBA	46 / 43	47 / 44	46 / 43	47 / 44
Sound Power	H	dBA	61	62	61	62
Drawing No.			3D056543		3D056544	

Note: ■ 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=m³/min×35.3

50Hz 220-230-240V

Models	Indoor Units		FTXS35CAVMB	
	Outdoor Units		RX35E2V1B	
			Cooling	Heating
Capacity Rated (Min.~Max.)		kW	3.4 (1.2~3.8)	3.7 (1.2~5.0)
		Btu/h	11,600 (4,100~13,000)	12,600 (4,100~17,100)
		kcal/h	2,920 (1,030~3,270)	3,180 (1,030~4,300)
Running Current (Rated)		A	5.1-4.9-4.7	4.9-4.7-4.5
Power Consumption Rated (Min.~Max.)		W	1,060 (300~1,300)	1,020 (290~1,590)
Power Factor		%	94.5-94.1-94.0	94.6-94.4-94.4
COP (Rated)		W/W	3.21 (4.00~2.92)	3.63 (4.14~3.14)
Piping Connections	Liquid	mm	ϕ6.4	
	Gas	mm	ϕ9.5	
	Drain	mm	ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes	
Max. Interunit Piping Length		m	15	
Max. Interunit Height Difference		m	10	
Chargeless		m	10	
Amount of Additional Charge of Refrigerant		g/m	20	
Indoor Units			**FTXS35CAVMB**	
Front Panel Color			White	
Air Flow Rate	m³/min (cfm)	H	7.7 (272)	8.1 (286)
		M	6.0 (212)	6.7 (237)
		L	4.4 (155)	5.3 (187)
		SL	3.8 (134)	4.6 (162)
Fan	Type		Cross Flow Fan	
	Motor Output	W	18	
	Speed	Steps	5 Steps, Quiet, Auto	
Air Direction Control			Right, Left, Horizontal, Downward	
Air Filter			Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.19-0.18-0.17	0.19-0.18-0.17
Power Consumption (Rated)		W	40	40
Power Factor		%	95.7-96.6-98.0	95.7-96.6-98.0
Temperature Control			Microcomputer Control	
Dimensions (HxWxD)		mm	273x784x195	
Packaged Dimensions (HxWxD)		mm	325x834x258	
Weight		kg	7.5	
Gross Weight		kg	11	
Operation Sound	H/M/L/SL	dBA	39 / 33 / 26 / 23	39 / 34 / 29 / 26
Sound Power	H	dBA	57	57
Outdoor Units			**RX35E2V1B**	
Casing Color			Ivory White	
Compressor	Type		Hermetically Sealed Swing Type	
	Model		1YC23NXD	
	Motor Output	W	600	
Refrigerant Oil	Type		FVC50K	
	Charge	L	0.375	
Refrigerant	Type		R-410A	
	Charge	kg	1.00	
Air Flow Rate	m³/min (cfm)	H	33.5 (1,183)	30.2 (1,066)
		L	23.4 (826)	28.3 (999)
Fan	Type		Propeller	
	Motor Output	W	23	
Running Current (Rated)		A	4.91-4.72-4.53	4.71-4.52-4.33
Power Consumption (Rated)		W	1,020	980
Power Factor		%	94.4-94.0-93.8	94.6-94.3-94.3
Starting Current		A	5.4	
Dimensions (HxWxD)		mm	550x765x285	
Packaged Dimensions (HxWxD)		mm	617x882x363	
Weight		kg	32	
Gross Weight		kg	38	
Operation Sound	H/L	dBA	47 / 44	48 / 45
Sound Power		dBA	62	63
Drawing No.			3D056545	

Note: ■ 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=m³/min×35.3

50Hz 220-230-240V

Model	Indoor Units		ATXS20DAVMB		ATXS25DAVMB	
	Outdoor Units		ARX20E2V1B		ARX25E2V1B	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min.~Max.)		kW	2.0 (1.2~2.6)	2.7 (1.2~4.1)	2.5 (1.2~3.0)	3.4 (1.2~4.5)
		Btu/h	6,800 (4,100~8,900)	9,200 (4,100~14,000)	8,500 (4,100~10,220)	11,600 (4,100~15,400)
		kcal/h	1,720 (1,030~2,240)	2,320 (1,030~3,530)	2,150 (1,030~2,580)	2,920 (1,030~3,870)
Running Current (Rated)		A	3.3-3.2-3.1	4.0-3.8-3.6	4.4-4.2-4.0	4.6-4.4-4.2
Power Consumption Rated (Min.~Max.)		W	580 (300~860)	710 (290~1,330)	770 (300~1,070)	940 (290~1,460)
Power Factor		%	79.9-78.9-78.0	80.7-81.2-82.2	79.5-79.7-80.2	92.9-92.9-93.3
COP Rated (Min.~Max.)		W/W	3.45 (4.00~3.02)	3.80 (4.14~3.08)	3.25 (4.00~2.80)	3.62 (4.14~3.08)
Piping Connections	Liquid	mm	ϕ6.4		ϕ6.4	
	Gas	mm	ϕ9.5		ϕ9.5	
	Drain	mm	ϕ18.0		ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Interunit Piping Length		m	15		15	
Max. Interunit Height Difference		m	10		10	
Chargeless		m	10		10	
Amount of Additional Charge of Refrigerant		g/m	20		20	
Indoor Unit			**ATXS20DAVMB**		**ATXS25DAVMB**	
Front Panel Color			White		White	
Air Flow Rate	m³/min (cfm)	H	7.7 (272)	7.8 (275)	7.7 (272)	7.8 (275)
		M	5.9 (208)	6.5 (230)	5.9 (208)	6.5 (230)
		L	4.2 (148)	5.3 (187)	4.2 (148)	5.3 (187)
		SL	3.6 (127)	4.6 (162)	3.6 (127)	4.6 (162)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	18		18	
	Speed	Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Direction Control			Right, Left, Horizontal, Downward		Right, Left, Horizontal, Downward	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.19-0.18-0.17	0.19-0.18-0.17	0.19-0.18-0.17	0.19-0.18-0.17
Power Consumption (Rated)		W	40	40	40	40
Power Factor		%	95.7-96.6-98.0	95.7-96.6-98.0	95.7-96.6-98.0	95.7-96.6-98.0
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		mm	273×784×195		273×784×195	
Packaged Dimensions (H×W×D)		mm	325×834×258		325×834×258	
Weight		kg	7.5		7.5	
Gross Weight		kg	11		11	
Operation Sound	H/M/L/SL	dBA	38/32/25/22	38/33/28/25	38/32/25/22	38/33/28/25
Sound Power	H	dBA	56	56	56	56
Outdoor Unit			**ARX20E2V1B**		**ARX25E2V1B**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		1YC23NXD		1YC23NXD	
	Motor Output	W	600		600	
Refrigerant Oil	Model		FVC50K		FVC50K	
	Charge	L	0.375		0.375	
Refrigerant	Model		R-410A		R-410A	
	Charge	kg	0.8		0.8	
Air Flow Rate (H/L)	m³/min		36.2/25.7	32.6/30.6	36.2/25.7	32.6/30.6
	cfm		1,278/907	1,151/1,080	1,278/907	1,151/1,080
Fan	Type		Propeller		Propeller	
	Motor Output	W	23		23	
Running Current (Rated)		A	3.11-3.02-2.93	3.81-3.62-3.43	4.21-4.02-3.83	4.41-4.22-4.03
Power Consumption (Rated)		W	540	670	730	900
Power Factor		%	78.9-77.7-76.8	79.9-80.5-81.4	78.8-79.0-79.4	92.8-92.7-93.1
Starting Current		A	3.5		4.4	
Dimensions (H×W×D)		mm	550×765×285		550×765×285	
Packaged Dimensions (H×W×D)		mm	617×882×363		617×882×363	
Weight		kg	30		30	
Gross Weight		kg	35		35	
Operation Sound	H/L	dBA	46/43	47/44	46/43	47/44
Sound Power	H	dBA	61	62	61	62
Drawing No.			3D056549		3D056550	

Note: ■ 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=m³/min×35.3

50Hz 220-230-240V

Model	Indoor Units		ATXS35DAVMB	
	Outdoor Units		ARX35E2V1B	
			Cooling	Heating
Capacity Rated (Min.~Max.)		kW	3.4 (1.2~3.8)	3.7 (1.2~5.0)
		Btu/h	11,600 (4,100~13,000)	12,600 (4,100~17,100)
		kcal/h	2,920 (1,030~3,270)	3,180 (1,030~4,300)
Running Current (Rated)		A	5.1-4.9-4.7	4.9-4.7-4.5
Power Consumption Rated (Min.~Max.)		W	1,060 (300~1,300)	1,020 (290~1,590)
Power Factor		%	94.5-94.1-94.0	94.6-94.4-94.4
COP		W/W	3.21 (4.00~2.92)	3.63 (4.14~3.14)
Piping Connections	Liquid	mm	ϕ6.4	
	Gas	mm	ϕ9.5	
	Drain	mm	ϕ18.0	
Heat Insulation			Both Liquid and Gas Pipes	
Max. Interunit Piping Length		m	15	
Max. Interunit Height Difference		m	10	
Chargeless		m	10	
Amount of Additional Charge of Refrigerant		g/m	20	
Indoor Unit			ATXS35DAVMB	
Front Panel Color			White	
Air Flow Rate	m³/min (cfm)	H	7.7 (272)	8.1 (286)
		M	6.0 (212)	6.7 (237)
		L	4.4 (155)	5.3 (187)
		SL	3.8 (134)	4.6 (162)
Fan	Type		Cross Flow Fan	
	Motor Output	W	18	
	Speed	Steps	5 Steps, Quiet, Auto	
Air Direction Control			Right, Left, Horizontal, Downward	
Air Filter			Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.19-0.18-0.17	0.19-0.18-0.17
Power Consumption (Rated)		W	40	40
Power Factor		%	95.7-96.6-98.0	95.7-96.6-98.0
Temperature Control			Microcomputer Control	
Dimensions (HxWxD)		mm	273x784x195	
Packaged Dimensions (HxWxD)		mm	325x834x258	
Weight		kg	7.5	
Gross Weight		kg	11	
Operation Sound	H/M/L/SL	dBA	39/33/26/23	39/34/29/26
Sound Power	H	dBA	57	57
Outdoor Unit			ARX35E2V1B	
Casing Color			Ivory White	
Compressor	Type		Hermetically Sealed Swing Type	
	Model		1YC23NXD	
	Motor Output	W	600	
Refrigerant Oil	Model		FVC50K	
	Charge	L	0.375	
Refrigerant	Model		R-410A	
	Charge	kg	1.00	
Air Flow Rate (H/L)	m³/min		33.5/23.4	30.2/28.3
	cfm		1,183/826	1,066/999
Fan	Type		Propeller	
	Motor Output	W	23	
Running Current (Rated)		A	4.91-4.72-4.53	4.71-4.52-4.33
Power Consumption (Rated)		W	1,020	980
Power Factor		%	94.4-94.0-93.8	94.6-94.3-94.3
Starting Current		A	5.4	
Dimensions (HxWxD)		mm	550x765x285	
Packaged Dimensions (HxWxD)		mm	617x882x363	
Weight		kg	32	
Gross Weight		kg	38	
Operation Sound	H/L	dBA	47/44	48/45
Sound Power	H	dBA	62	63
Drawing No.			3D056551	

Note: ■ 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=m³/min×35.3

Part 3
Printed Circuit Board Connector Wiring Diagram

1. Printed Circuit Board Connector Wiring Diagram

1.1 Indoor Unit

Connectors

PCB(1) (Control PCB)
PCB(2) (Signal Receiver PCB)

1)	S1	Connector for fan motor
2)	S6	Connector for swing motor (horizontal blades)
3)	S7	Connector for fan motor (Hall IC)
4)	S21	Connector for centralized control (HA)
5)	S26	Connector for signal receiver PCB
6)	S27	Connector for control PCB
7)	S32	Connector for heat exchanger thermistor
8)	S35	Connector for INTELLIGENT EYE sensor PCB

PCB(3) (INTELLIGENT EYE sensor PCB)

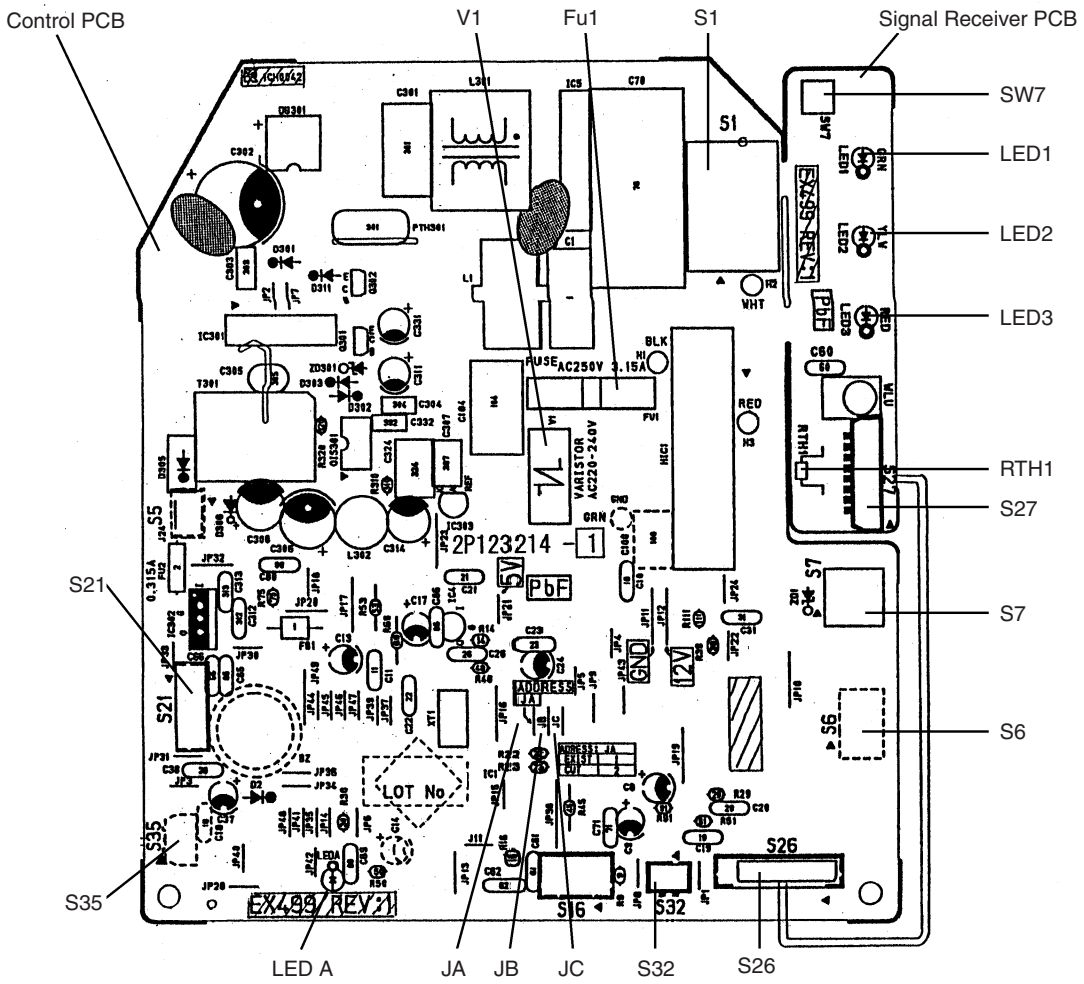
1)	S36	Connector for control PCB

Note: Other designations
PCB(1) (Control PCB)
PCB(2) (Signal Receiver PCB)

1)	V1	Varistor
2)	JA	Address setting jumper
	JB	Fan speed setting when compressor is OFF on thermostat
	JC	Power failure recovery function (auto-restart)
		∗ Refer to page 173 for detail.
3)	SW7	Forced operation ON / OFF switch
4)	LED1	LED for operation (green)
5)	LED2	LED for timer (yellow)
6)	LED3	LED for HOME LEAVE operation (red) (Inverter models only)
7)	LED A	LED for service monitor (green)
8)	FU1	Fuse (3.15A)
9)	RTH1	Room temperature thermistor

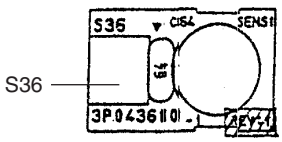
PCB Detail

PCB(1): Control PCB
PCB(2): Signal Receiver PCB



(R4011)

PCB(3): INTELLIGENT EYE sensor PCB



(R3321)

1.2 Outdoor Unit

Connectors

PCB (1) (Filter PCB)

1)	S11	Connector for control PCB

PCB (2) (Control PCB)

1)	S10	Connector for filter PCB
2)	S20	Connector for electronic expansion valve coil
3)	S30	Connector for compressor motor
4)	S40	Connector for overload protector
5)	S70	Connector for fan motor
6)	S80	Connector for four way valve coil
7)	S90	Connector for thermistors (outdoor air, heat exchanger, discharge pipe)
8)	HC3, HC4, HL3, HN3	Connector for filter PCB

Note: Other designations

PCB (1) (Filter PCB)

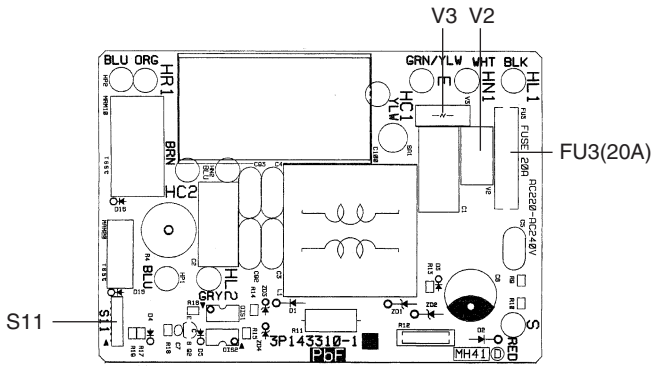
1)	FU3	Fuse (20A)
2)	V2, V3	Varistor

PCB (2) (Control PCB)

1)	FU1, FU2	Fuse (3.15A)
2)	LED A	Service monitor LED (green)
3)	V1	Varistor

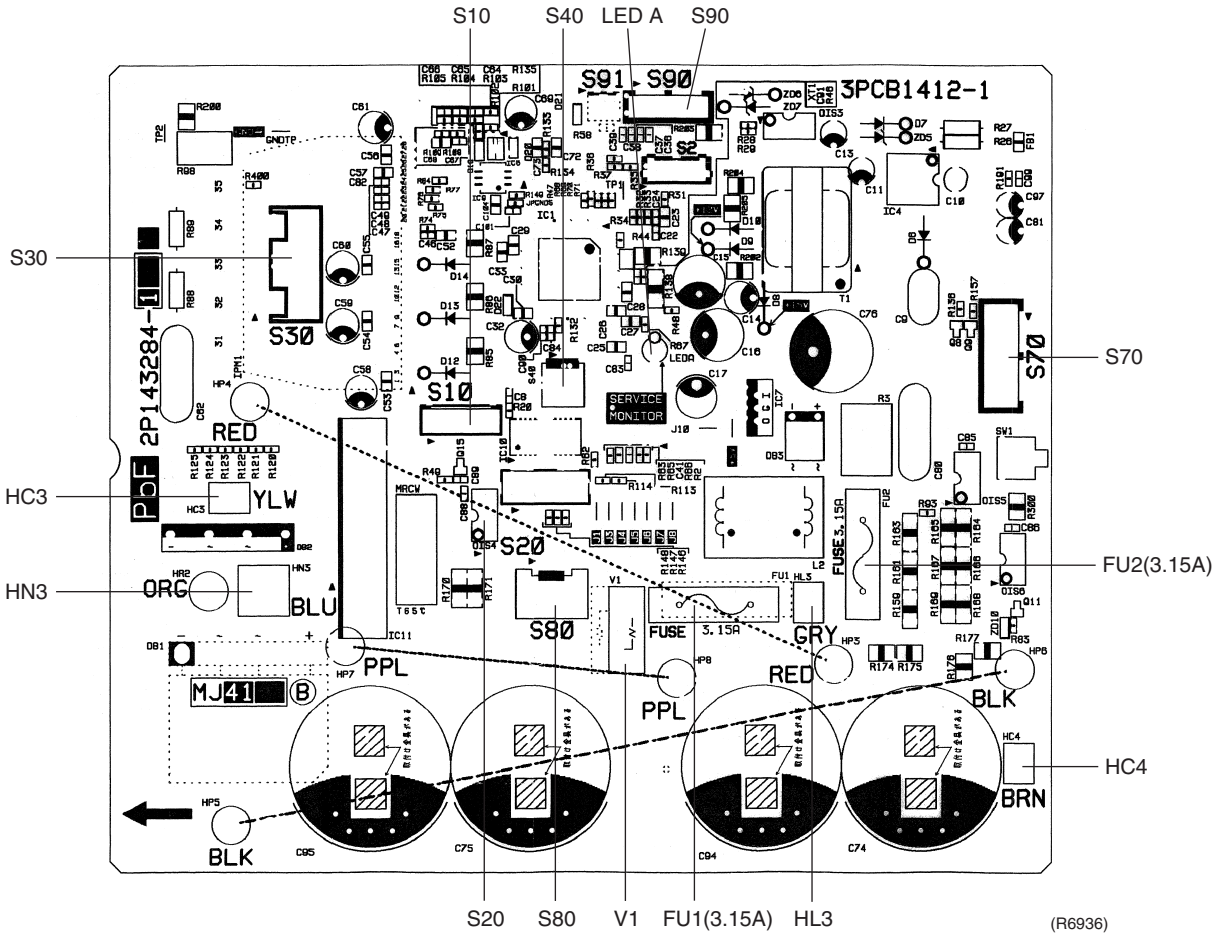
PCB Detail

PCB(1): Filter PCB



(R4293)

PCB(2): Control PCB (outdoor unit)



(R6936)

Part 4
Function and Control

1. Main Functions

Note: See the list of functions for the functions applicable to different models.

1.1 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 operation

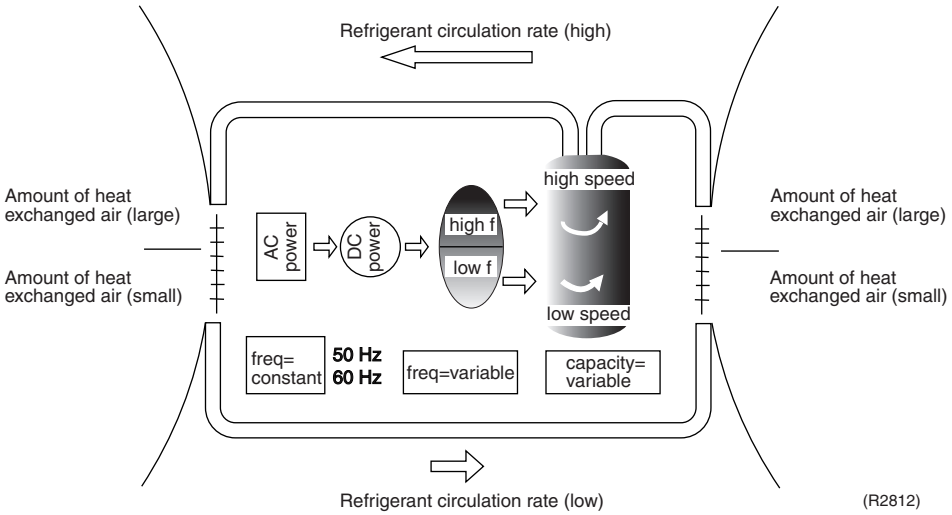
Inverter Principle

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

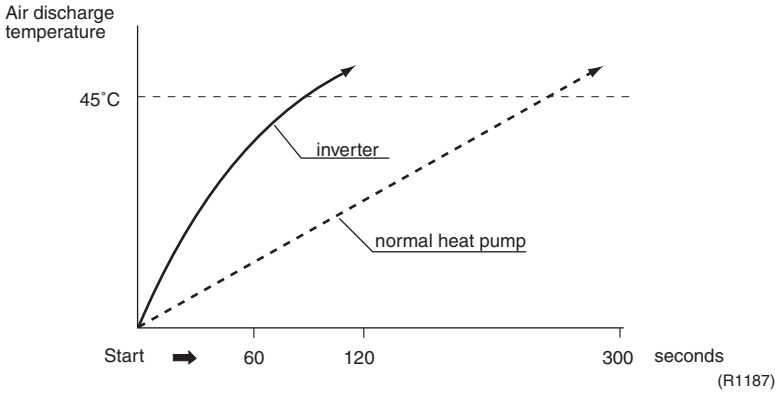
The following drawing shows a schematic view of the inverter principle:



Inverter Features

The inverter provides the following features:

- The regulating capacity can be changed according to the changes in the outdoor air temperature and cooling / heating load.
- Quick heating and quick cooling
  The compressor rotational speed is increased when starting the heating (or cooling). This enables a quick set temperature.



- Even during extreme cold weather, the high capacity is achieved. It is maintained even when the outdoor air temperature is 2°C.
- Comfortable air conditioning
  A detailed adjustment is integrated to ensure a fixed room temperature. It is possible to air condition with a small room temperature variation.
- Energy saving heating and cooling
  Once the set temperature is reached, the energy saving operation enables to maintain the room temperature at low power.

Frequency Limits

The following table shows the functions that define the minimum and maximum frequency:

Frequency limits	Limited during the activation of following functions
Low	■ Four way valve operation compensation. Refer to page 39.
High	■ Input current control. Refer to page 41. ■ Compressor protection function. Refer to page 40. ■ Heating peak-cut control. Refer to page 42. ■ Freeze-up protection control. Refer to page 42. ■ Defrost control. Refer to page 44.

Forced Cooling Operation

For more information, refer to “Forced operation mode” on page 49.

1.2 Air Flow Direction Control

Power-Airflow Dual Flaps

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.

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

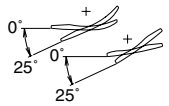
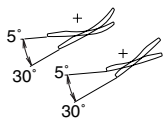
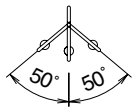
Cooling Mode
During cooling mode, the flap retracts into the indoor unit. Then, cool air can be blown far and pervaded all over the room.

Wide-Angle 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 :

Vertical Swing (up and down)		Horizontal Swing (right and left: manual)
Cooling / Dry / Fan	Heating	Heating, Cooling
 (R2946)	 (R4013)	 (R2817)

1.3 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. This is done through phase control and Hall IC control.

For more information about Hall IC, refer to trouble shooting for fan motor on page 91.

Phase Steps

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

Step	Cooling	Heating
LLL (Heating thermostat OFF)	 (R6932)	 (R5311)
LL (Cooling thermostat OFF)		
L		
ML		
M		
MH		
H		
HH (Powerful)		

= Within this range the airflow rate is automatically controlled when the FAN setting button is set to automatic.

Note:

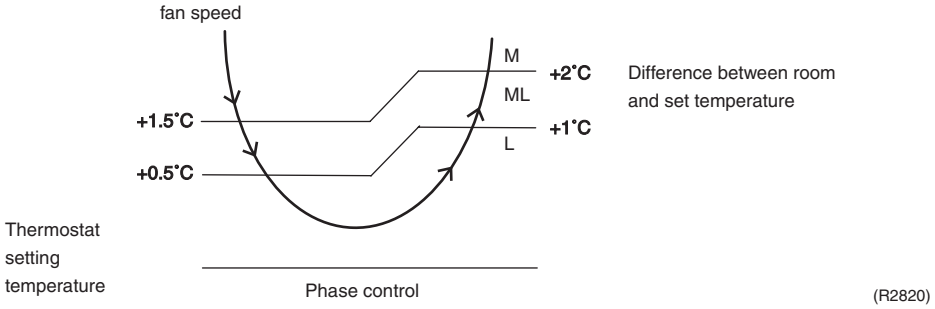
1. During powerful operation, fan operate H tap + 50 - 90 rpm.
2. Fan stops during defrost operation.

Automatic Air Flow Control for Heating

On heating mode, the indoor fan speed will be regulated according to the indoor heat exchanger temperature and the difference between the room temperature and the required set point.

Automatic Air Flow Control for Cooling

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



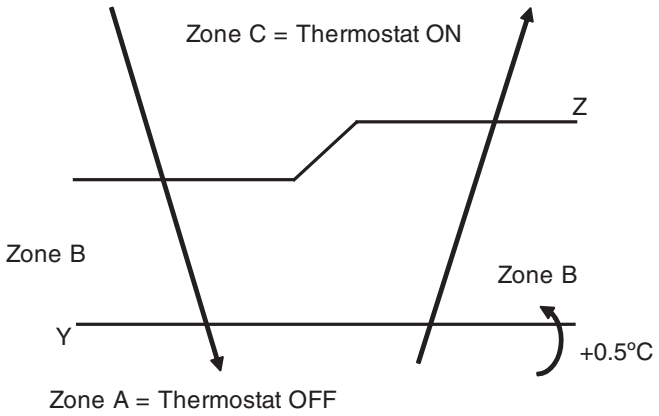
1.4 Programme Dry Function

Programme dry function removes humidity while preventing the room temperature from lowering.
Since the microcomputer controls both the temperature and air flow volume, the temperature adjustment and fan adjustment buttons are inoperable in this mode.

In Case of Inverter Units

The microcomputer automatically sets the temperature and fan settings. The difference between the room temperature at startup and the temperature set by the microcomputer is divided into two zones. Then, the unit operates in the dry mode with an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

Room temperature at startup	Set temperature X	Thermostat OFF point Y	Thermostat ON point Z
24°C or more	Room temperature at startup	X – 2.5°C	X – 0.5°C or Y + 0.5°C (zone B) continues for 10 min.
23.5°C ~ 18°C		X – 2.0°C	X – 0.5°C or Y + 0.5°C (zone B) continues for 10 min.
17.5°C ~	18°C	X – 2.0°C	X – 0.5°C = 17.5°C or Y + 0.5°C (zone B) continues for 10 min.



(R6841)

1.5 Automatic Operation

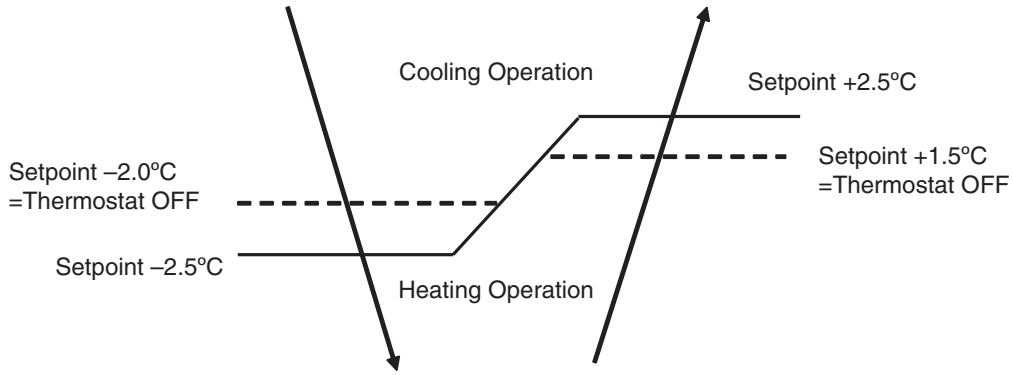
Automatic Cooling / Heating Function (Heat Pump Only)

When the AUTO mode is selected with the remote controller, the microcomputer automatically determines the operation mode from cooling and heating according to the room temperature and setting temperature at the time of the operation startup, and automatically operates in that mode.

The unit automatically switches the operation mode to cooling or heating to maintain the room temperature at the main unit setting temperature.

Detailed Explanation of the Function

1. Remote controller setting temperature is set as automatic cooling / heating setting temperature (18 to 30°C).
2. Main unit setting temperature equals remote controller setting temperature.
3. 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.
4. During initial operation
   Room temperature ≥ Remote controller setting temperature: Cooling operation
   Room temperature < Remote controller setting temperature: Heating operation



(R6842)

Ex: When the set point is 25°C

Cooling Operation → 23°C: Thermostat OFF → 22°C: Switch to Heating Operation

Heating Operation → 26.5°C: Thermostat OFF → 27.5°C: Switch to Cooling Operation

1.6 Thermostat Control

Thermostat control is based on the difference between the room temperature and the setpoint.

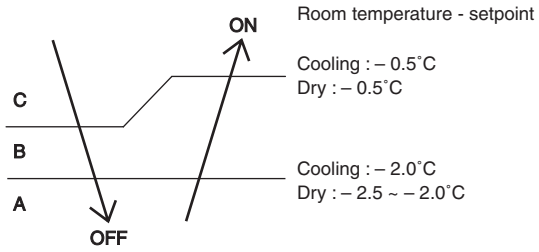
Thermostat OFF Condition

- The temperature difference is in the zone A.

Thermostat ON Condition

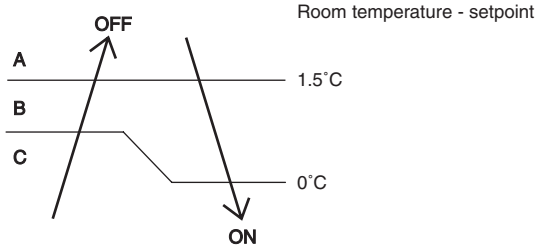
- The temperature difference is above the zone C after being in the zone A.
- The system resumes from defrost control in any zones except A.
- The operation turns on in any zones except A.
- The monitoring time has passed while the temperature difference is in the zone B. (Cooling / Dry : 10 minutes, Heating : 10 seconds)

Cooling / Dry



(R4668)

Heating



(R4669)

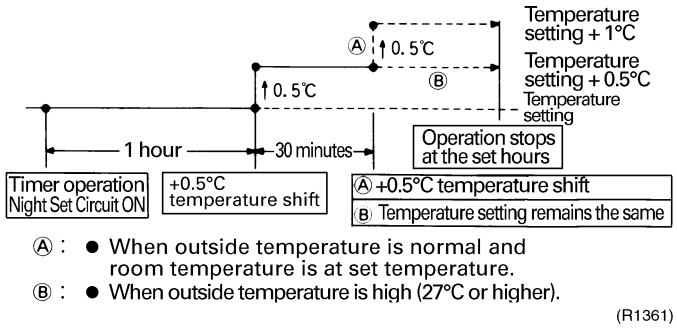
1.7 NIGHT SET Mode

When the OFF timer is set, the NIGHT SET circuit automatically activates.
The NIGHT SET circuit maintains the airflow setting made by users.

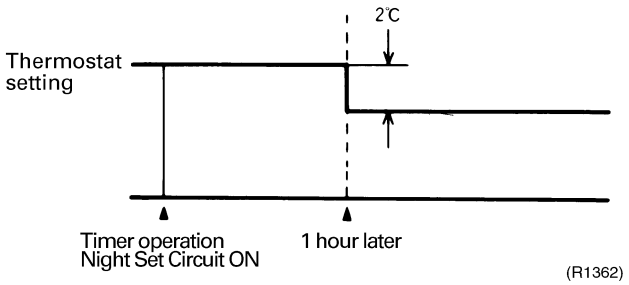
The NIGHT SET Circuit

The NIGHT SET circuit continues heating or cooling the room at the set temperature for the first one hour, then automatically raises the temperature setting slightly in the case of cooling, or lowers it slightly in the case of heating, for economical operations. This prevents excessive heating in winter and excessive cooling in summer to ensure comfortable sleeping conditions, and also conserves electricity.

Cooling Operation



Heating Operation

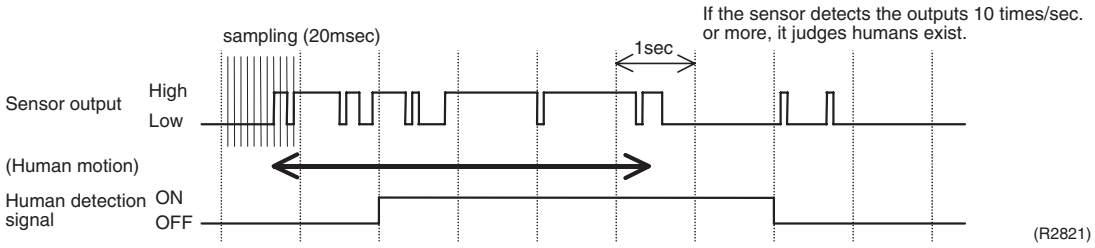


1.8 INTELLIGENT EYE

This is the function that detects existence of humans in the room by a human motion sensor (INTELLIGENT EYE) and reduces the capacity when there is no human in the room in order to save electricity.

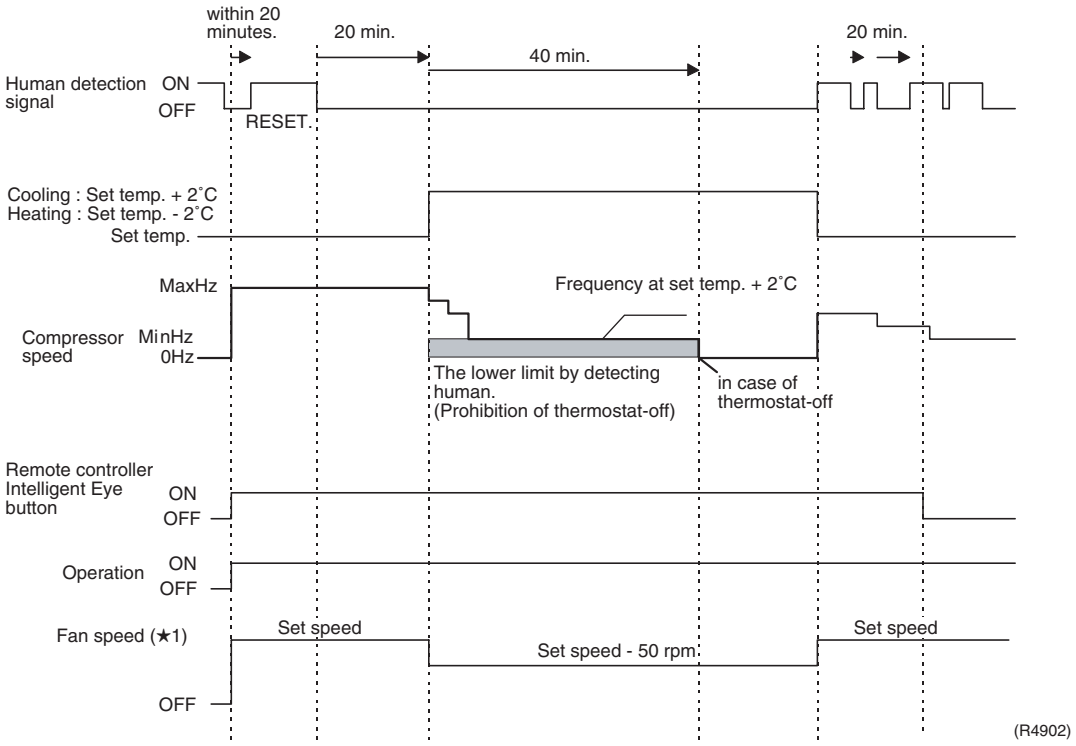
Processing

1. Detection method by Intelligent Eye



- This sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- A microcomputer in an indoor unit carries out a sampling every 20 msec. and if it detects 10 cycles of the wave in one second in total (corresponding to 20msec.× 10 = 100msec.), it judges human is in the room as the motion signal is ON.

2. The motions (for example: in cooling)



- When a microcomputer doesn't have a signal from the sensor in 20 minutes, it judges that nobody is in the room and operates the unit in temperature shifted 2°C from the set temperature. (Cooling / Dry : +2 deg, Heating : –2 deg and Auto : according to the operation mode at that time.)

★1 In case of Fan mode, the fan speed reduces by 50 rpm.

- Since the set temperature is shifted by 2°C higher for 40 minutes, compressor speed becomes low and can realize energy saving operation. But as thermostat is prone to be off by the fact that the set temperature has been shifted, the thermostat-off action is prohibited in 40 minutes so as to prevent this phenomena.
  After this 40 minutes, the prohibition of the thermostat-off is cancelled and it can realize the conditions to conduct thermostat-off depending on the room temperature. In or after this 40 minutes, if the sensor detects human motion detection signal, it let the set temperature and the fan speed return to the original set point, keeping a normal operation.

Others

- The dry operation can't command the setting temperature with a remote controller, but internally the set temperature is shifted by 1°C.

1.9 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.

Detail of the Control

1. Start of 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.

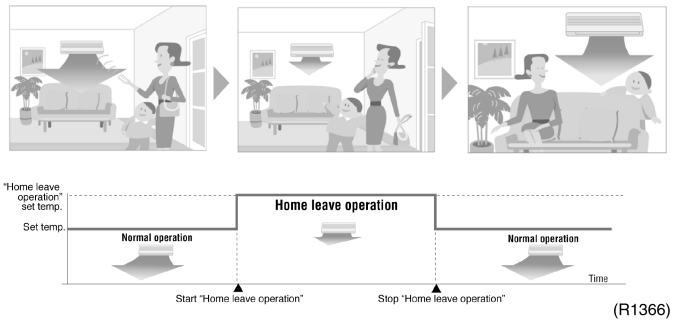
2. Details of Function

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. End of Function

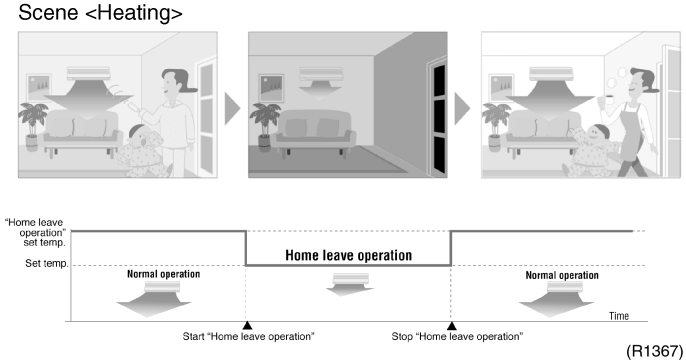
The function ends when the [HOME LEAVE] button is pressed again during [HOME LEAVE] operation or when the powerful operation button is pressed.

Scene <cooling>



(R1366)

Scene <Heating>



(R1367)

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].

1.10 Inverter POWERFUL Operation

Outline

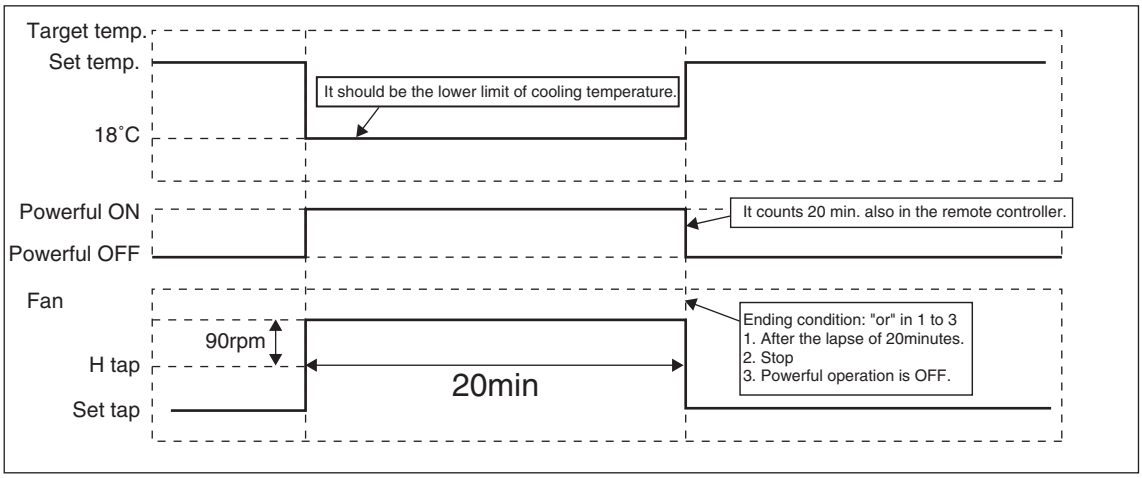
In order to exploit the cooling and heating capacity to full extent, operate the air conditioner by increasing the indoor fan rotating speed and the compressor frequency.

Details of the Control

When POWERFUL button is pushed in each operation mode, the fan speed / setting temperature will be converted to the following states in a period of twenty minutes.

Operation mode	Fan speed	Target set temperature
COOL	H tap + 90 rpm	18°C
DRY	Dry rotating speed + 50 rpm	Normally targeted temperature in dry operation; Approx. –2°C
HEAT	H tap + 90 rpm	30°C
FAN	H tap + 90 rpm	—
AUTO	Same as cooling / heating in Powerful operation	The target is kept unchanged

Ex.) : Powerful operation in cooling mode.



(R4976)

1.11 Other Functions

1.11.1 Hot Start Function

Heat Pump Only

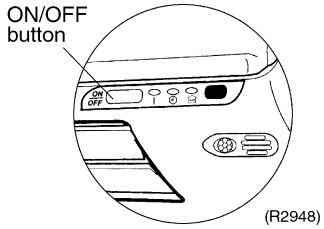
In order to prevent the cold air blast that normally comes when heating is started, the temperature of the heat exchanger of the indoor unit is detected, and either the air flow is stopped or is made very weak thereby carrying out comfortable heating of the room.
*The cold air blast is also prevented using a similar control when the defrosting operation is started or when the thermostat gets turned ON.

1.11.2 Signal Receiving Sign

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

1.11.3 ON/OFF Button on Indoor Unit

An ON/OFF switch is provided on the front panel of the unit. Use this switch when the remote controller is missing or if its battery has run out.
Every press of the switch changes from Operation to Stop or from Stop to Operation



- Push this button once to start operation. Push once again to stop it.
- This button is useful when the remote controller is missing.
- The operation mode refers to the following table.

	Mode	Temperature setting	Air flow rate
Cooling Only	COOL	22ºC	AUTO
Heat Pump	AUTO	25ºC	AUTO

- In the case of multi system operation, there are times when the unit does not activate with this button.

<Forced operation mode>

Forced operation mode will be set by pressing the ON/OFF button for between 5 to 9 sec. while the unit is not operating.

Note: When the ON/OFF button is pressed for 10 sec. or more, the operation will be stopped.
See page 49 for the detail of "Forced Operation Mode".

1.11.4 Air Purifying Filter with Photocatalytic Deodorizing Function

For all indoor units

This filter incorporates the benefits the Air Purifying Filter and Photocatalytic Deodorizing Filter in a single unit. Combining the two filters in this way increases the active surface area of the new filter. This larger surface area allows the filter to effectively trap microscopic particles, decompose odours and deactivate bacteria and viruses even for the high volume of air required to air-condition large living rooms. The filter can be used for approximately 3 years if periodic maintenance is performed.

1.11.5 Mold Proof Air Filter (Prefilter)

For all indoor units

The air filter net is impregnated with a safe, odourless mould preventative to make the filter virtually immune to mould.

1.11.6 Self-Diagnosis Digital Display

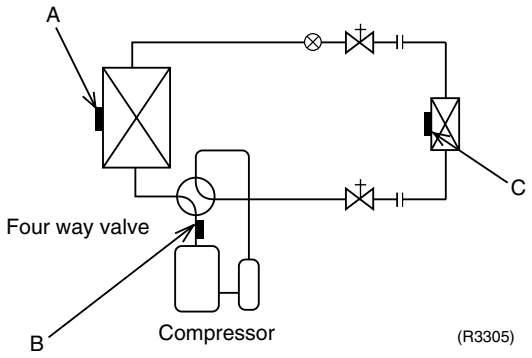
The microcomputer continuously monitors main operating conditions of the indoor unit, outdoor unit and the entire system. When an abnormality occur, the LCD remote controller displays error code. These indications allow prompt maintenance operations.

1.11.7 Auto-restart Function

Even if a power failure (including one for just a moment) occurs during the operation, the operation restarts in the condition before power failure automatically when power is restored. (Note) It takes 3 minutes to restart the operation because the 3-minutes standby function is activated.

2. Function of Thermistor

2.1 Heat Pump Model



A Outdoor Heat Exchanger Thermistor

1. The outdoor heat exchanger thermistor is used for controlling target discharge temperature.
   The system sets a target discharge temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. The outdoor heat exchanger thermistor is used for detecting disconnection of the discharge thermistor when cooling.
   When the discharge pipe temperature becomes lower than the outdoor heat exchanger temperature, the discharge pipe thermistor is judged as disconnected.
3. The outdoor heat exchanger thermistor is used for high pressure protection during cooling operation.

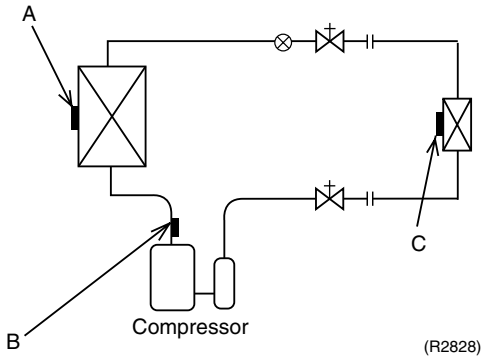
B Discharge Pipe Thermistor

1. The discharge pipe thermistor is used for controlling temperature of the discharge pipe.
   If the temperature of discharge pipe (used in place of the inner temperature of the compressor) rises abnormally, the operating frequency drops or the operation halts.
2. The discharge pipe thermistor is used for detecting disconnection of the discharge thermistor.

C Indoor Heat Exchanger Thermistor

1. The indoor heat exchanger thermistor is used for controlling target discharge temperature.
   The system sets a target discharge temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. The indoor heat exchanger thermistor is used for preventing freezing.
   During the cooling operation, if the temperature drops abnormally, the operating frequency becomes lower, then the operation halts.
3. During heating, the indoor heat exchanger thermistor is used for detecting disconnection of the discharge pipe thermistor.
   When the discharge pipe temperature becomes lower than the indoor heat exchanger temperature, the discharge pipe thermistor is judged as disconnected.
   The indoor heat exchanger thermistor is also used for preventing abnormal high pressure.

2.2 Cooling Only Model



A Outdoor Heat Exchanger Thermistor

1. The outdoor heat exchanger thermistor is used for controlling target discharge temperature. The system sets a target discharge temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. The outdoor heat exchanger thermistor is used for detecting disconnection of the discharge thermistor when cooling.
   When the discharge pipe temperature becomes lower than the outdoor heat exchanger temperature, the discharge pipe thermistor is judged as disconnected.
3. The outdoor heat exchanger thermistor is used for high pressure protection during cooling operation.

B Discharge Pipe Thermistor

1. The discharge pipe thermistor is used for controlling temperature of the discharge pipe. If the temperature of discharge pipe (used in place of the inner temperature of the compressor) rises abnormally, the operating frequency drops or the operation halts.
2. The discharge pipe thermistor is used for detecting disconnection of the discharge thermistor.

C Indoor Heat Exchanger Thermistor

1. The indoor heat exchanger thermistor is used for controlling target discharge temperature. The system sets a target discharge temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. The indoor heat exchanger thermistor is used for preventing freezing.
   During the cooling operation, if the temperature drops abnormally, the operating frequency becomes lower, then the operation halts.

3. Control Specification

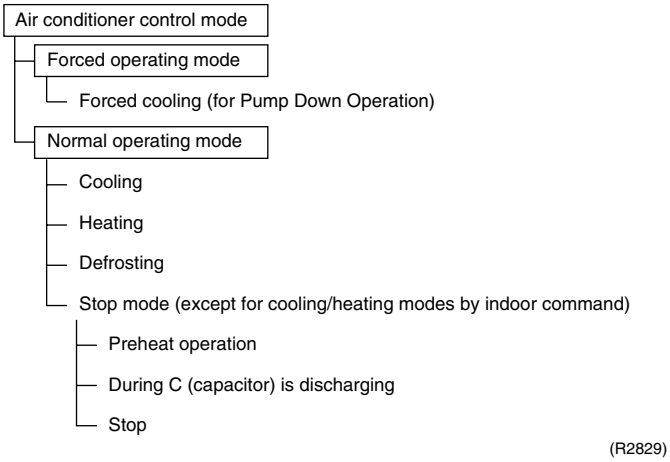
3.1 Mode Hierarchy

Outline

There are two modes; the mode selected in user's place (normal air conditioning mode) and forced operation mode for installation and providing service.

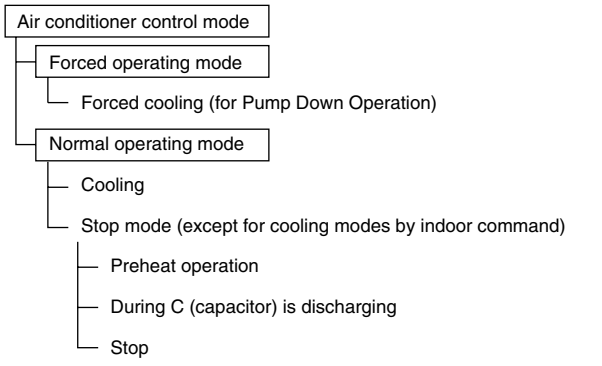
Detail

1. For heat pump model
   There are following modes; stop, cooling (includes drying), heating (include defrosting)



(R2829)

2. For cooling only model
   There are following models; stop and cooling (including drying).



(R2830)

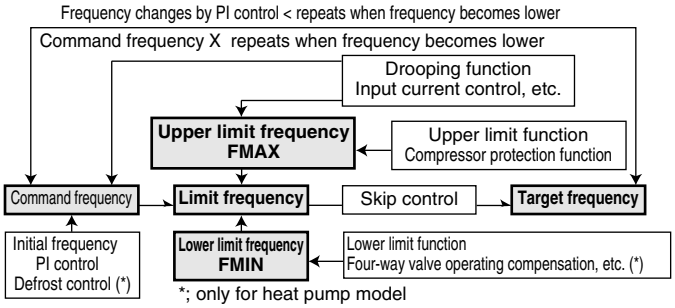
Note: Unless specified otherwise, an indoor dry operation command must be regarded as cooling operation.

3.2 Frequency Control

Outline

Frequency will be determined according to the difference between room and set temperature. The function is explained as follows.

1. How to determine frequency.
2. Frequency command from an indoor unit. (The difference between a room temperature and the temperature set by the remote controller.)
3. Frequency command from an indoor unit.
4. Frequency initial setting.
5. PI control.



(R2831)

Detail

How to Determine Frequency

The compressor's frequency will finally be determined by taking the following steps.

For Heat Pump Model

1. Determine command frequency

- Command frequency will be determined in the following order of priority.

1.1 Limiting frequency by drooping function

- Input current, discharge pipes, peak cutting, freeze-up protection, dew prevention, fin thermistor temperature.

1.2 Limiting defrost control time

1.3 Forced cooling

1.4 Indoor frequency command

2. Determine upper limit frequency

- Set a minimum value as an upper limit frequency among the frequency upper limits of the following functions:
  Compressor protection, input current, discharge pipes, peak cutting, freeze-up protection, defrost.

3. Determine lower limit frequency

- Set a maximum value as an lower limit frequency among the frequency lower limits of the following functions:
  Four way valve operating compensation, draft prevention, pressure difference upkeep.

4. Determine prohibited frequency

- There is a certain prohibited frequency such as a power supply frequency.

For Cooling Only Model

1. Determine command frequency

- Command frequency will be determined in the following order of priority.

1.1 Limiting frequency by drooping function

- Input current, discharge pipes, freeze-up protection, dew prevention, fin thermistor temperature.

1.2 Indoor frequency command

2. Determine upper limit frequency

- Set a minimum value as an upper limit frequency among the frequency upper limits of the following functions:
  Compressor protection, input current, discharge pipes, freeze-up protection, dew prevention, fin thermistor temperature.

3. Determine lower limit frequency

- Set a maximum value as an lower limit frequency among the frequency lower limits of the following functions:
  Pressure difference upkeep.

4. Determine prohibited frequency

- There is a certain prohibited frequency such as a power supply frequency.

Indoor Frequency Command (ΔD signal)

The difference between a room temperature and the temperature set by the remote controller will be taken as the "ΔD signal" and is used for frequency command.

Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal	Temperature difference	ΔD signal
0	∗Th OFF	2.0	4	4.0	8	6.0	C
0.5	1	2.5	5	4.5	9	6.5	D
1.0	2	3.0	6	5.0	A	7.0	E
1.5	3	3.5	7	5.5	B	7.5	F

∗Th OFF = Thermostat OFF

Frequency Initial Setting

<Outline>

When starting the compressor, or when conditions are varied due to the change of the room, the frequency must be initialized according to the ΔD value of the indoor unit and the Q value of the indoor unit.

Q value: Indoor unit output determined from indoor unit volume, air flow rate and other factors.

PI Control (Determine Frequency Up / Down by ΔD Signal)

1. P control

Calculate ΔD value in each sampling time (20 seconds), and adjust the frequency according to its difference from the frequency previously calculated.

2. I control

If the operating frequency is not change more than a certain fixed time, adjust the frequency up and down according to the ΔD value, obtaining the fixed ΔD value.
When the ΔD value is small...lower the frequency.
When the ΔD value is large...increase the frequency.

3. Frequency management when other controls are functioning

- When frequency is drooping;
  Frequency management is carried out only when the frequency droops.
- For limiting lower limit
  Frequency management is carried out only when the frequency rises.

4. Upper and lower limit of frequency by PI control

The frequency upper and lower limits are set depending on indoor unit.
When low noise commands come from the indoor unit or when outdoor unit low noise or quiet commands come from indoor unit, the upper limit frequency must be lowered than the usual setting.

3.3 Controls at Mode Changing / Start-up

3.3.1 Preheating Operation

Outline

Operate the inverter in the open phase operation with the conditions including the preheating command from the discharge pipe temperature.

Detail

Outside temperature ≥ 10°C → Control A (preheating for normal state)
Outside temperature < 10°C → Control B (preheating of increased capacity)

Control A

- ON condition
  Discharge pipe temperature < 10°C
  Fin temperature < 85°C
- OFF condition
  Discharge pipe temperature > 12°C
  Fin temperature ≥ 90°C

Control B

- ON condition
  Discharge pipe temperature < 20°C
  Fin temperature < 85°C
- OFF condition
  Discharge pipe temperature > 22°C
  Fin temperature ≥ 90°C

Note: The power consumption of compressor during preheat operation is 35 W.

3.3.2 Four Way Valve Switching

Outline

Heat Pump Only
During the heating operation current must be conducted and during cooling and defrosting current must not be conducted. In order to eliminate the switching sound (as the four way valve coil switches from ON to OFF) when the heating is stopped, the delay switch of the four way valve must be carried out after the operation stopped.

Detail

The OFF delay of four way valve
Energize the coil for 160 sec after unit operation is stopped.

3.3.3 Four Way Valve Operation Compensation

Outline

Heat Pump Only
At the beginning of the operation as the four way valve is switched, acquire the differential pressure required for activating the four way valve by having output the operating frequency, which is more than a certain fixed frequency, for a certain fixed time.

Detail

Starting Conditions

1. When starting compressor for heating.
2. When the operating mode changes to cooling from heating.
3. When starting compressor for rushing defrosting or resetting.
4. When starting compressor for the first time after the reset with the power is ON.
5. When starting compressor for heating next to the suspension of defrosting.
6. When starting compressor next to the fault of switching over cooling / heating.

Set the lower limit frequency (cooling : 68Hz, heating : 66Hz) for 45 seconds with any conditions 1 through 6 above.

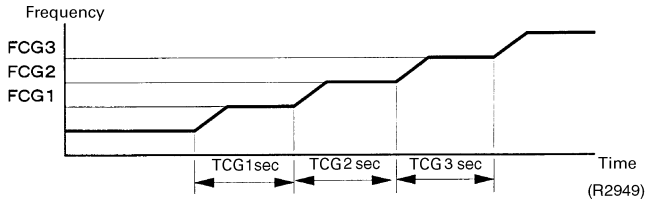
3.3.4 3-minutes Standby

Prohibit to turn ON the compressor for 3 minutes after turning it off.
(Except when defrosting. (Only for Heat Pump Model).)

3.3.5 Compressor Protection Function

When turning the compressor from OFF to ON, the upper limit of frequency must be set as follows. (The function must not be used when defrosting (only for heat pump model).)

FCG 3	88
FCG 2	64
FCG 1	48
TCG 1	240
TCG 2	360
TCG 3	180



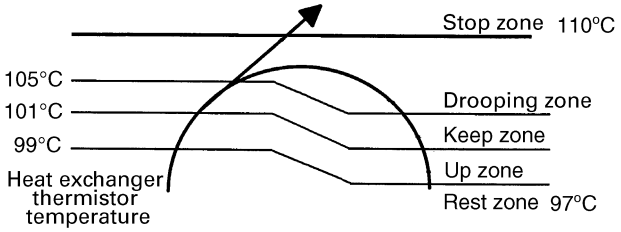
3.4 Discharge Pipe Temperature Control

Outline

The discharge pipe temperature is used as the compressor's internal temperature. If the discharge pipe temperature rises above a certain level, the operating frequency upper limit is set to keep this temperature from going up further.

Detail

Divide the Zone



Management within the Zones

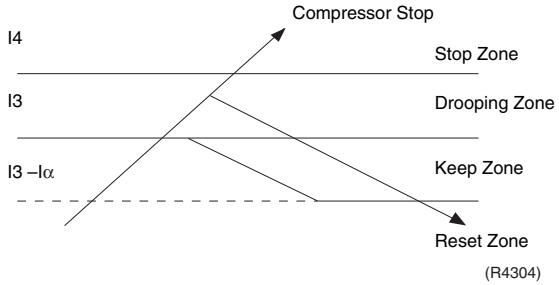
Zone	Control contents
Stop zone	When the temperature reaches the stop zone, stop the compressor and correct abnormality.
Drooping zone	Start the timer, and the frequency will be drooping.
Keep zone	Keep the upper limit of frequency.
Return / Reset zone	Cancel the upper limit of frequency.

3.5 Input Current Control

Outline

The microcomputer calculates the input current during the compressor is running, and set the frequency upper limit from such input current.
In case of heat pump model, this control is the upper limit control function of the frequency which takes priority of the lower limit of four way valve activating compensation.

Detail



Frequency control in each zone

Drooping zone

- The maximum limit of the compressor frequency in this control is defined as operation frequency – 2Hz.
- After this, the output frequency is pulled down by 2Hz every second until it reaches the steady zone.

Keep zone

- The present maximum frequency goes on.

Reset zone

- Limit of the frequency is cancelled.

Stop zone

- After 2.5 s in this zone, the compressor is stopped.

	Cooling		Heating	
	20/25 class	35 class	20/25 class	35 class
I4 (A)	9.25		9.25	
I3 (A)	6.0	7.25	7.5	8.25
I3-Iα (A)	5.25	6.5	6.75	7.5

Limitation of current drooping and stop value according to the outdoor air temperature

1. In case the operation mode is cooling
- The current droops when outdoor air temperature becomes higher than a certain level (model by model).
2. In case the operation mode is heating (only for heat pump model)
- The current droops when outdoor air temperature becomes higher than a certain level (model by model).

3.6 Freeze-up Protection Control

Outline

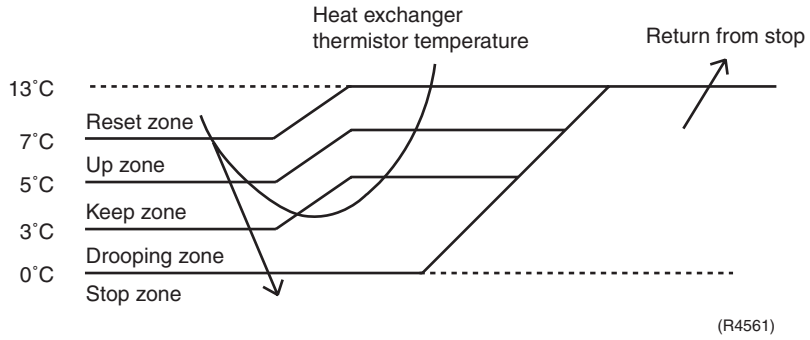
During cooling operation, the signals being sent from the indoor unit allow the operating frequency limitation and then prevent freezing of the indoor heat exchanger. (The signal from the indoor unit must be divided into the zones as the followings.

Detail

Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature after 2 sec from operation start.

Control in Each Zone



3.7 Heating Peak-cut Control

Outline

Heat Pump Only

During heating operation, the signals being sent from the indoor unit allow the operating frequency limitation and prevent abnormal high pressure. (The signal from the indoor unit must be divided as follows.)

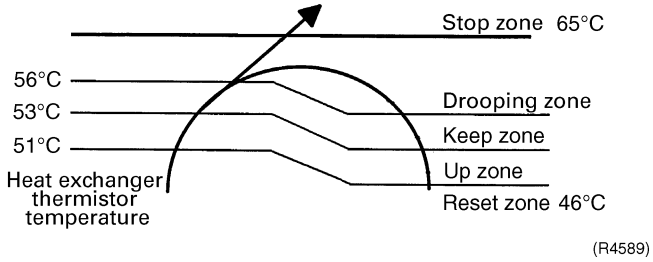
Detail

Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature.

Control in Each Zone

The heat exchange intermediate temperature of indoor unit controls the following.



3.8 Fan Control

Outline

Fan control is carried out according to the following condition.

1. Fan ON control for electric component cooling fan
2. Fan control when defrosting
3. Fan OFF delay when stopped
4. Fan control for maintaining pressure difference
5. Fan control when the compressor starts for heating
6. Fan control in forced operation
7. Fan control in powerful mode
8. Fan control in low noise operation
9. Fan control in quiet mode

Detail

Fan OFF Control when Stopped

- Fan OFF delay for 60 seconds must be made when the compressor is stopped.

3.9 Liquid Compression Protection Function 2

Outline

In order to obtain the dependability of the compressor, the compressor must be stopped according to the conditions of the temperature of the outdoor air and outdoor heat exchanger.

Detail

- Operation stop depending on the outdoor air temperature.

Compressor operation turns OFF under the conditions that the system is in cooling operation and outdoor air temperature is below –10°C.

3.10 Defrost Control

Outline

Heat Pump Only

Defrosting is carried out by the cooling cycle (reverse cycle). The defrosting time or outdoor heat exchanger temperature must be more than its fixed value when finishing.

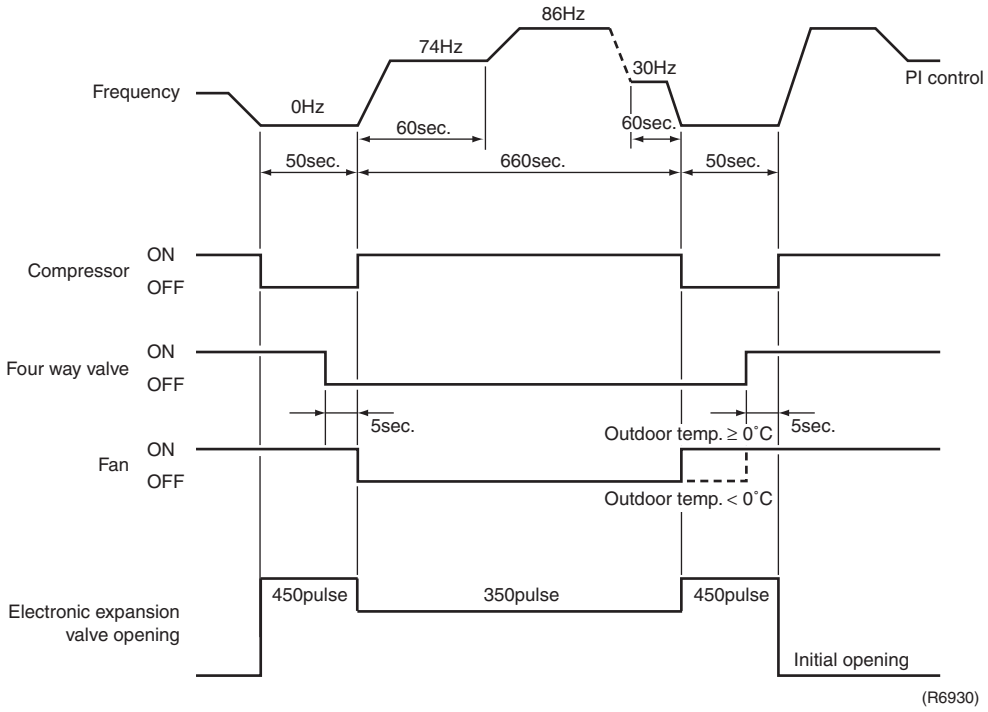
Detail

Conditions for Starting Defrost

The starting conditions must be made with the outdoor air temperature and heat exchanger temperature. Under the conditions that the system is in heating operation, 6 minutes after the compressor is started and more than 28 minutes of accumulated time pass since the start of the operation or ending the defrosting.

Conditions for Cancelling Defrost

The judgment must be made with heat exchanger temperature. (4°C-22°C)



3.11 Electronic Expansion Valve Control

Outline

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

Electronic expansion valve is fully closed

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

Open Control

1. Electronic expansion valve control when starting operation
2. Control when frequency changed
3. Control for defrosting (only for heat pump model)
4. Control when a discharge pipe temperature is abnormally high
5. Control when the discharge pipe thermistor is disconnected

Feedback Control

1. Discharge pipe temperature control

Detail

The followings are the examples of control which function in each mode by the electronic expansion valve control.

Operation pattern	○ : function × : not function	Control when frequency changed	Control for abnormally high discharge pipe temperature
When power is turned ON	Fully closed when power is turned ON	×	×
Cooling operation	Open control when starting	×	○
	(Control of target discharge pipe temperature)	○	○
Stop	Pressure equalizing control	×	×
Heating operation (only for heat pump model)	Open control when starting	×	○
	(Control of target discharge pipe temperature)	○	○
	(Defrost control FD=1) (only for heat pump model)	×	×
Stop	Pressure equalizing control	×	×
Heating operation (only for heat pump model)	Open control when starting	×	○
Control of discharge pipe thermistor disconnection	Continue	×	×
Stop	Pressure equalizing control	×	×

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3.11.1 Fully Closing with Power ON

Initialize the electronic expansion valve when turning on the power, set the opening position and develop pressure equalizing.

3.11.2 Pressure Equalization Control

When the compressor is stopped, open and close the electronic expansion valve and develop pressure equalization.

3.11.3 Opening Limit

Outline

Limit a maximum and minimum opening of the electronic expansion valve.

Detail

- A maximum electronic expansion valve opening : 480 pulses
- A minimum electronic expansion valve opening : 52 pulses

The electronic expansion valve is fully closed in the room where cooling is stopped and is opened with fixed opening during defrosting.

3.11.4 Starting Operation Control

Control the electronic expansion valve opening when the system is starting, and prevent the system to be super heated or moistened.

3.11.5 High Temperature of the Discharge Pipe

When the compressor is operating, if the discharge pipe temperature exceeds a certain value, open the electronic expansion valve and remove the refrigerant to the low pressure side and lower discharge temperature.

3.11.6 Disconnection of the Discharge Pipe Thermistor

Outline

Detect a disconnected discharge pipe thermistor by comparing the discharge pipe temperature with the condensation temperature. If any is disconnected, open the electronic expansion valve according to the outdoor air temperature and the operating frequency and operate for a specified time, and then stop.
After 3 minutes of waiting, restart the unit and check if any is disconnected. If any is disconnected stop the system after operating for a specified time. If the disconnection is detected 5 times in succession, then the system will be down.

Detail

Detect Disconnection

If the timer for open control (810 sec.) is over, and the 9-minute timer for the compressor operation continuation is not counting time, the following adjustment must be made.

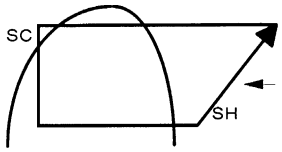
1. When the operation mode is cooling
   When the following condition is fulfilled, the discharge pipe thermistor disconnection is ascertained.
   Discharge pipe temperature +6°C < outdoor heat exchanger temperature
2. When the operation mode is heating
   When the following condition is fulfilled, the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

3.11.7 Control when frequency is changed

When the target discharge pipe temperature control is active, if the target frequency is changed for a specified value in a certain time period, cancel the target discharge pipe temperature control and change the target opening of the electronic expansion valve according to the shift.

3.11.8 Target Discharge Pipe Temperature Control

Obtain the target discharge pipe temperature from the indoor and outdoor heat exchanger temperature, and adjust the electronic expansion valve opening so that the actual discharge pipe temperature become close to that temperature. (Indirect SH control using the discharge pipe temperature)



Set the target discharge pipe temperature as to become an aiming SH.
Regard that the inclination cannot be changed due to the operating condition.

(R1389)

Determine a correction value of the electronic expansion valve compensation and drive it according to the deflection of the target discharge temperature and actual discharge temperature, and the discharge temperature variation by the 20 sec.

3.12 Malfunctions

3.12.1 Sensor Malfunction Detection

Sensor malfunction may occur in the thermistor.

Relating to Thermistor Malfunction

1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Fin thermistor
4. Outdoor air thermistor

3.12.2 Detection of Overload and Over Current

Outline

In order to protect the inverter, detect an excessive output current, and for protecting compressor, monitor the OL operation.

Detail

- **If the OL (compressor head) temperature exceeds 120°C (depending on the model), the compressor gets interrupted.**
- **If the inverter current exceeds 22 A, the compressor gets interrupted too.**

3.12.3 Insufficient Gas Control

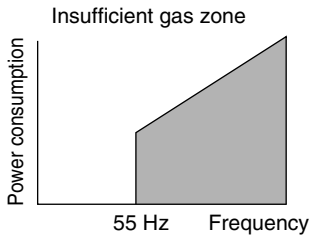
Outline

There are three ways of control to detect insufficient gas.

I Detecting by power consumption

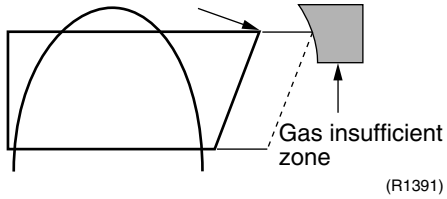
If the power consumption is below the specified value and the frequency is higher than the specified frequency, it is regarded as insufficient gas.

The power consumption is weak comparing with that in the normal operation when gas is insufficient, and gas insufficiency is detected by checking a power consumption.



II Detecting by discharge pipe temperature

If the discharge temperature is higher than the target discharge pipe temperature, and the electronic expansion valve is fully open (480 pulses) more than the specified time, it is regarded as insufficient gas.



III Detecting by the difference of temperature

If the difference between inhale and exhale temperature is smaller than the specified value, it is regarded as insufficient gas.

Refer to “Insufficient Gas” on page 116 for detail.

Detail

I Judgment by power consumption
When an output frequency is exceeds 55 Hz and the input current is less than specified value, the adjustment is made for insufficient gas.

II Judgment by discharge pipe temperature
When discharge pipe temperature is 30°C higher than target value and the electronic expansion value opening is 480 pulses (max.), the adjustment is made for insufficient gas.

III Judgment by the difference of temperature
When the difference of the temperature is smaller than △, it is regarded as insufficient gas.

		△
Cooling	room temperature – indoor heat exchanger temperature	4.0°C
	outdoor heat exchanger temperature – outdoor temperature	4.0°C
Heating	indoor heat exchanger temperature – room temperature	3.0°C
	outdoor temperature – outdoor heat exchanger temperature	3.0°C

3.13 Forced Operation Mode

Outline

Forced operating mode includes only forced cooling.

Detail

Forced Cooling

Item	Forced Cooling
Forced operation allowing conditions	1) The outdoor unit is not abnormal and not in the 3-minute stand-by mode.
	2) The operating mode of the outdoor unit is the stop mode.
	3) The forced operation is ON. The forced operation is allowed when the above “and” conditions are met.
Starting/adjustment	If the forced operation switch is pressed as the above conditions are met.
1) Command frequency	68 Hz
2) Electronic expansion valve opening	It depends on the capacity of the indoor unit.
3) Outdoor unit adjustment	Compressor is in operation.
4) Indoor unit adjustment	The command of forced operation is transmitted to the indoor unit.
End	1) When the forced operation switch is pressed again.
	2) The operation is to end automatically after 15 min.
Others	The protect functions are prior to all others in the forced operation.

3.14 Additional Function

3.14.1 POWERFUL Operation Mode

Compressor operating frequency is increased to PI Max. (Max. Hz of operating room) and outdoor unit airflow rate is increased.

3.14.2 Voltage Detection Function

Power supply voltage is detected each time equipment operation starts.

Part 5
System Configuration

1. System Configuration

After the installation and test operation of the room air conditioner have been completed, it should be operated and handled as described below. Every user would like to know the correct method of operation of the room air conditioner, to check if it is capable of cooling (or heating) well, and to know a clever method of using it.
In order to meet this expectation of the users, giving sufficient explanations taking enough time can be said to reduce about 80% of the requests for servicing. However good the installation work is and however good the functions are, the customer may blame either the room air conditioner or its installation work because of improper handling. The installation work and handing over of the unit can only be considered to have been completed when its handling has been explained to the user without using technical terms but giving full knowledge of the equipment.

2. Instruction

2.1 Safety precautions

Safety precautions

- Keep this manual where the operator can easily find them.
- Read this manual attentively before starting up the unit.
- For safety reason the operator must read the following cautions carefully.
- This manual classifies precautions into WARNINGS and CAUTIONS. Be sure to follow all precautions below: they are all important for ensuring safety.

⚠ WARNING	⚠ CAUTION
If you do not follow these instructions exactly, the unit may cause property damage, personal injury or loss of life.	If you do not follow these instructions exactly, the unit may cause minor or moderate property damage or personal injury.

Never do.

Be sure to earth the air conditioner.

Never touch the air conditioner (including the remote controller) with a wet hand.

Be sure to follow the instructions.

Never cause the air conditioner (including the remote controller) to get wet.

⚠ WARNING

- In order to avoid fire, explosion or injury, do not operate the unit when harmful, among which flammable or corrosive gases, are detected near the unit.
- It is not good for health to expose your body to the air flow for a long time.
- 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 your Daikin dealer for advice and information.

- 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 as of gas heaters, kerosene heaters or gas range.
- If the air conditioner is not cooling (heating) properly, the refrigerant may be leaking, so call your dealer.
  When carrying out repairs accompanying adding refrigerant, check the content of the repairs with our service staff.
- Do not attempt to install the air conditioner by your self. Incorrect work will result in water leakage, electric shocks or fire. For installation, consult the dealer or a qualified technician.
- In order to avoid electric shock, fire or injury, if you detect any abnormally such as smell of fire, stop the operation and turn off the breaker. And call your dealer for instructions.
- Depending on the environment, an earth leakage breaker must be installed. Lack of an earth leakage breaker may result in electric shocks or fire.

⚠ CAUTION

- 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, lightning rod, or a telephone earth line.

- In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.
- Never expose little children, plants or animals directly to the air flow.

2

- Do not place appliances which produce open fire 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 due to the heat.
- Do not block air inlets nor outlets. Impaired air flow may result in insufficient performance or trouble.
- Do not stand or sit on the outdoor unit. Do not place any object on the unit to avoid injury, do not remove the fan guard.
- Do not place anything under the indoor or outdoor unit that must be kept away from moisture. In certain conditions, moisture in the air may condense and drip.
- After a long use, check the unit stand and fittings for damage.
- Do not touch the air inlet and aluminum fins of outdoor unit. It may cause injury.
- The appliance is not intended for use by young children or infirm persons without supervision.
- Young children should be supervised to ensure that they do not play with the appliance.

- To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.
- Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.
- Do not connect the air conditioner to a power supply different from the one as specified. It may cause trouble or fire.
- Arrange the drain hose to ensure smooth drainage. Incomplete draining may cause wetting of the building, furniture etc.
- Do not place objects in direct proximity of the outdoor unit and do not let leaves and other debris accumulate around the unit.
  Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.

- Do not operate the air conditioner with wet hands.

- Do not wash the indoor unit with excessive water, only use a slightly wet cloth.
- Do not place things such as vessels containing water or anything else on top of the unit. Water may penetrate into the unit and degrade electrical insulations, resulting in an electric shock.

Installation site.

■ To install the air conditioner in the following types of environments, consult the dealer.
- 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 dealer if relocation is necessary for moving or remodeling.

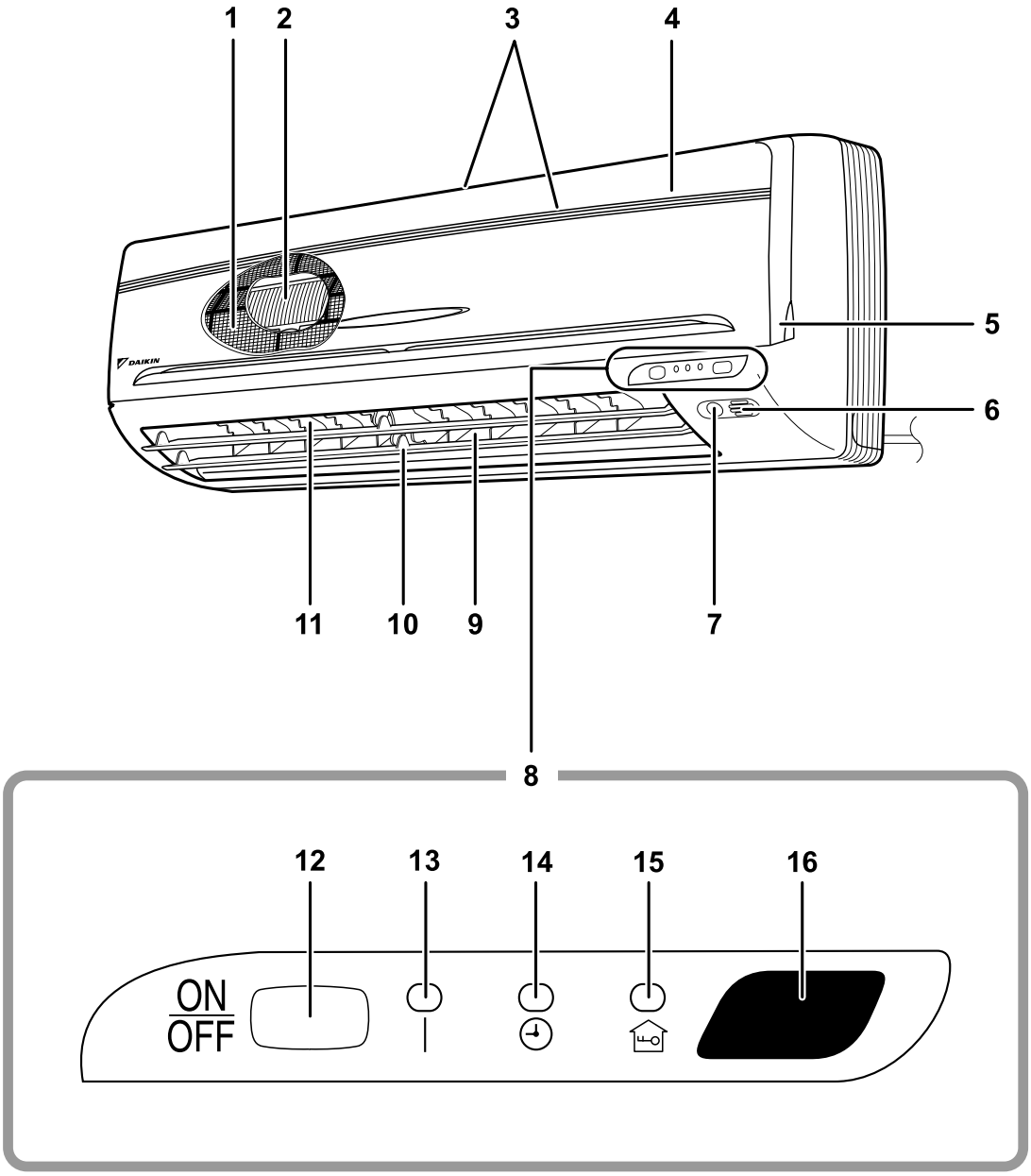
3

2.2 Names of parts

Note: This instruction is appropriate for FTK(X)S models.

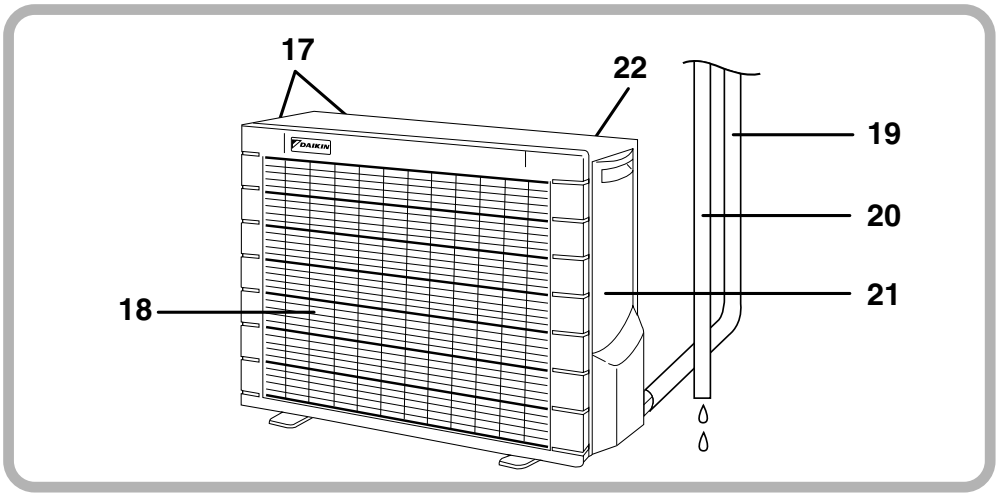
Names of parts

■ Indoor Unit



4

■ Outdoor Unit



■ Indoor Unit

1. **Air filter**
2. **Air purifying filter with photocatalytic deodorizing function:**
   - These filters are attached to the inside of the air filters.
3. **Air inlet**
4. **Front panel**
5. **Panel tab**
6. **Room temperature sensor:**
   - It senses the air temperature around the unit.
7. **INTELLIGENT EYE sensor:**
   - It detects the movements of people and automatically switches between normal operation and energy saving operation. (page 18.)
8. **Display**
9. **Air outlet**
10. **Flaps (horizontal blades):** (page 12.)
11. **Louvers (vertical blades):**
    - The louvers are inside of the air outlet. (page 13.)
12. **Indoor Unit ON/OFF switch:** (page 10.)
    - Push this switch once to start operation. Push once again to stop it.
    - The operation mode refers to the following table.

	Mode	Temperature setting	Air flow rate
FTKS	COOL	22°C	AUTO
FTXS	AUTO	25°C	AUTO

    - This switch is useful when the remote controller is missing.
13. **Operation lamp (green)**
14. **TIMER lamp (yellow):** (page 20.)
15. **HOME LEAVE lamp (red):** (page 16.)
16. **Signal receiver:**
    - It receives signals from the remote controller.
    - When the unit receives a signal, you will hear a short beep.
      - Operation start .....beep-beep
      - Settings changed.....beep
      - Operation stop .....beeeeep

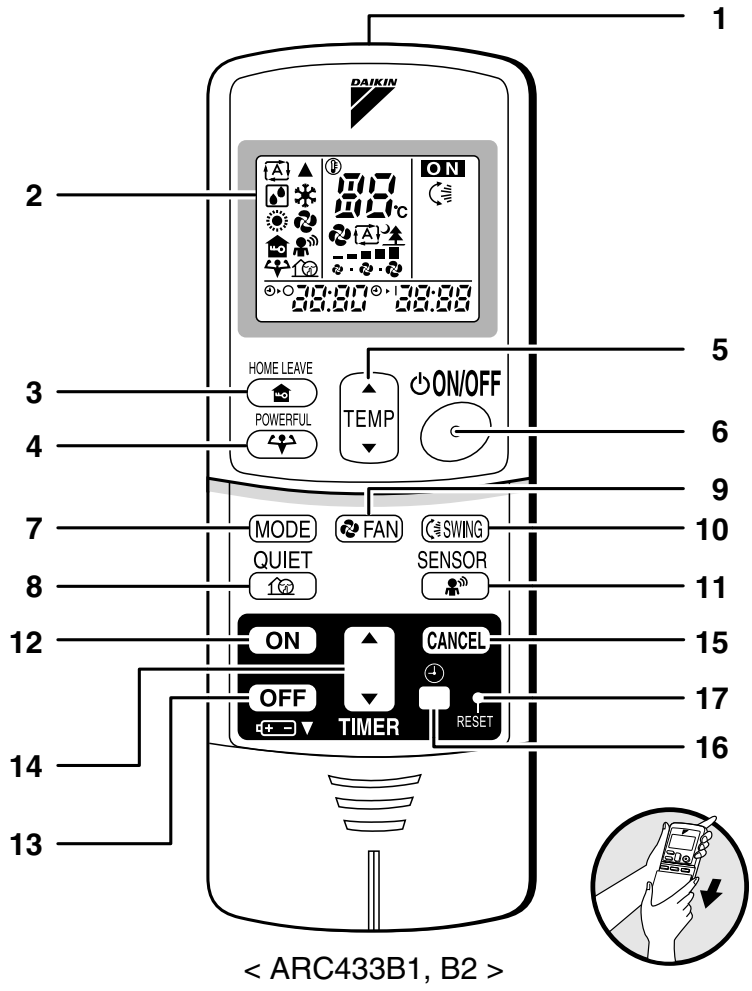
■ Outdoor Unit

17. **Air inlet:** (Back and side)
18. **Air outlet**
19. **Refrigerant piping and inter-unit cable**
20. **Drain hose**
21. **Earth terminal:**
    - It is inside of this cover.
22. **Outside air temperature sensor:** (Back side)
    - It senses the ambient temperature around the unit.

Appearance of the outdoor unit may differ from some models.

5

■ Remote Controller



< ARC433B1, B2 >

1. **Signal transmitter:**
   - It sends signals to the indoor unit.
2. **Display:**
   - It displays the current settings.
     (In this illustration, each section is shown with all its displays ON for the purpose of explanation.)
3. **HOME LEAVE button:**
   HOME LEAVE operation (page 16.)
4. **POWERFUL button:**
   POWERFUL operation (page 14.)
5. **TEMPERATURE adjustment buttons:**
   - It changes the temperature setting.
6. **ON/OFF button:**
   - Press this button once to start operation. Press once again to stop it.
7. **MODE selector button:**
   - It selects the operation mode.
     (AUTO/DRY/COOL/HEAT/FAN) (page 10.)
8. **QUIET button:** OUTDOOR UNIT QUIET operation (page 15.)
9. **FAN setting button:**
   - It selects the air flow rate setting.
10. **SWING button:** (page 12.)
11. **SENSOR button:** INTELLIGENT EYE operation (page 18.)
12. **ON TIMER button:** (page 21.)
13. **OFF TIMER button:** (page 20.)
14. **TIMER Setting button:**
    - It changes the time setting.
15. **TIMER CANCEL button:**
    - It cancels the timer setting.
16. **CLOCK button:** (page 9.)
17. **RESET button:**
    - Restart the unit if it freezes.
    - Use a thin object to push.

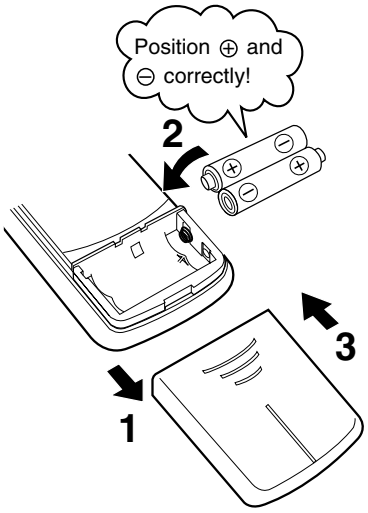
6

2.3 Preparation Before Operation

Preparation Before Operation

■ To set the batteries

1. **Slide the front cover to take it off.**
2. **Set two dry batteries (AAA).**
3. **Set the front cover as before.**



ATTENTION

■ **About batteries**

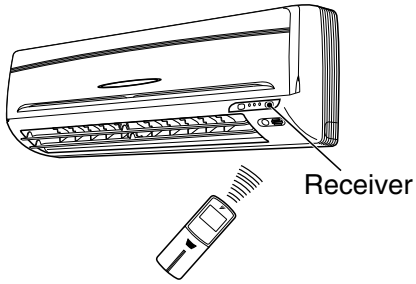
- When replacing the batteries, use batteries of the same type, and replace the two old batteries together.
- When the system is not used for a long time, take the batteries out.
- We recommend replacing once a year, although if the remote controller display begins to fade or if reception deteriorates, please replace with new alkali batteries. Using manganese batteries reduces the lifespan.
- The attached batteries are provided for the initial use of the system.
  The usable period of the batteries may be short depending on the manufactured date of the air conditioner.

7

Preparation Before Operation

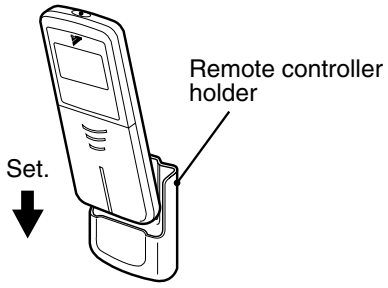
■ To operate the remote controller

- 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, or similar location with the screws procured locally.**
3. **Place the remote controller in the remote controller holder.**



• To remove, pull it upwards.

ATTENTION

■ **About 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 controller signals happen to operate another appliance, move that appliance to somewhere else, or consult the shop.

■ To set the clock

1. **Press “CLOCK button”.**

   0:00 is displayed.

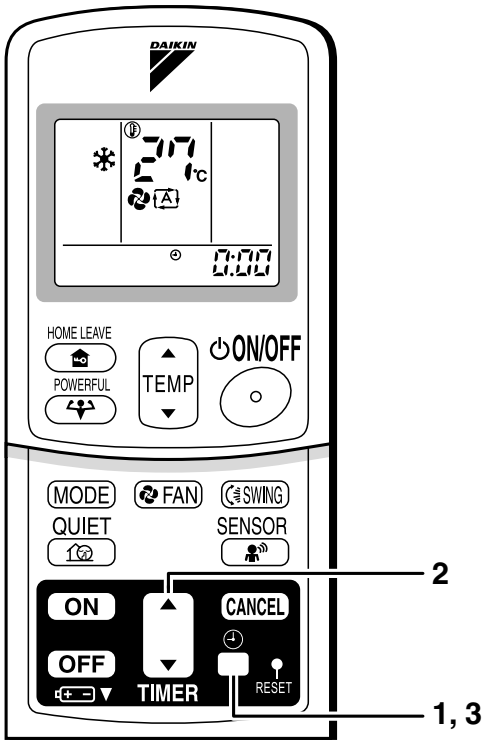
   blinks.

2. **Press “TIMER setting button” to set the clock to the present time.**

   Holding down “ ▲ ” or “ ▼ ” button rapidly increases or decreases the time display.

3. **Press “CLOCK button”.**

   : blinks.



■ 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 (heat) the room too much.
  Keeping the temperature setting at a moderate level helps save energy.
- Cover windows with a blind or a curtain.
  Blocking sunlight and air from outdoors increases the cooling (heating) effect.
- Clogged air filters cause inefficient operation and waste energy. Clean them once in about every two weeks.

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

■ **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.

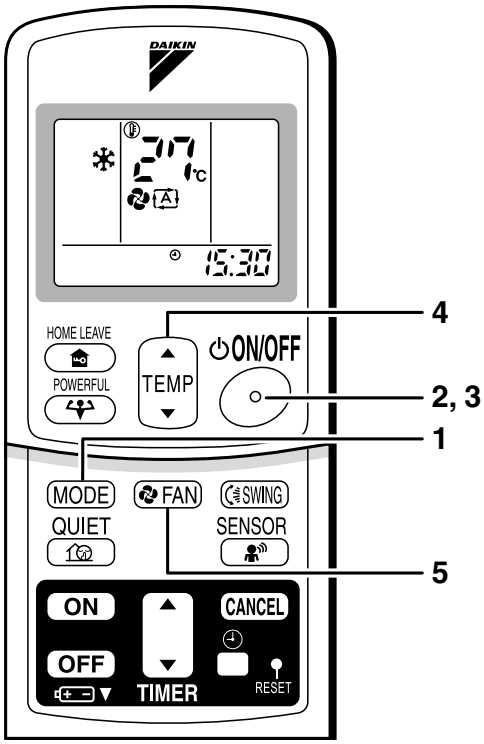
Mode	Operating conditions	If operation is continued out of this range
COOL	Outdoor temperature: 2MK(X)S40 10 to 46˚C 2MXS52 –10 to 46˚C 3/4/5MK(X)S –10 to 46˚C RK(X)S –10 to 46˚C RK(X)H 10 to 46˚C Indoor temperature: 18 to 32 ˚C Indoor humidity: 80% max.	• A safety device may work to stop the operation. (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: 2MXS40 –10 to 15.5˚C 2MXS52 –15 to 15.5˚C 3/4/5MXS –15 to 15.5˚C RXS –15 to 20˚C RXH –10 to 20˚C Indoor temperature: 10 to 30 ˚C	• A safety device may work to stop the operation.
DRY	Outdoor temperature: 2MK(X)S40 10 to 46˚C 2MXS52 –10 to 46˚C 3/4/5MK(X)S –10 to 46˚C RK(X)S –10 to 46˚C RK(X)H 10 to 46˚C Indoor temperature: 18 to 32 ˚C Indoor humidity: 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.

- Operation outside this humidity or temperature range may cause a safety device to disable the system.

2.4 AUTO • DRY • COOL • HEAT • FAN Operation

AUTO · DRY · COOL · HEAT · FAN Operation

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



■ To start operation

1. Press "MODE selector button" and select a operation mode.

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

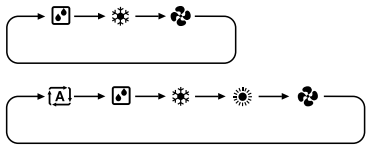
: AUTO

: DRY

: COOL

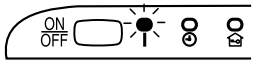
: HEAT

: FAN



2. Press "ON/OFF button".

- The OPERATION lamp lights up.



■ To stop operation

3. Press "ON/OFF button" again.

- Then OPERATION lamp goes off.

■ To change the temperature setting

4. Press "TEMPERATURE adjustment button".

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

10

■ To change the air flow rate setting

5. Press “FAN setting button”.

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

- Indoor unit quiet operation

  When the air flow is set to “ ”, the noise from the indoor unit will become quieter. Use this when making the noise quieter.

  The unit might lose capacity when the air flow rate is set to a weak level.

NOTE

■ **Note on HEAT 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 COOL operation**
- This air conditioner cools the room by blowing the hot air in the room outside, so if the outside temperature is high, performance drops.

■ **Note on DRY operation**
- The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and fan strength, so manual adjustment of these functions is unavailable.

■ **Note on AUTO operation**
- In AUTO operation, the system selects an appropriate operation 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-setting level.
- If you do not like AUTO operation, you can manually select the operation mode and setting you like.

■ **Note on air flow rate setting**
- At smaller air flow rates, the cooling (heating) effect is also smaller.

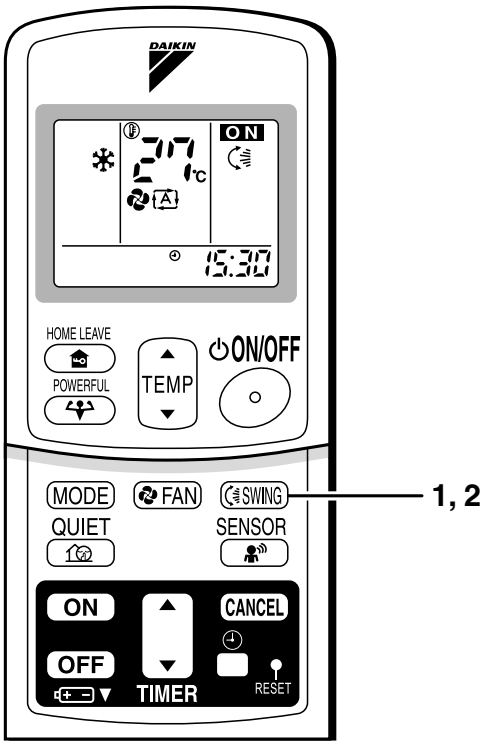
2.5 Adjusting the Air Flow Direction

Adjusting the Air Flow Direction

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

■ To adjust the horizontal blades (flaps)

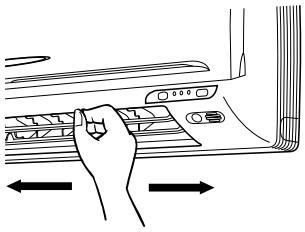
1. **Press “SWING button”.**
   - “ ” is displayed on the LCD and the flaps will begin to swing.
2. **When the flaps have reached the desired position, press “SWING button” once more.**
   - The flap will stop moving.
   - “ ” disappears from the LCD.



12

■ To adjust the vertical blades (louvers)

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

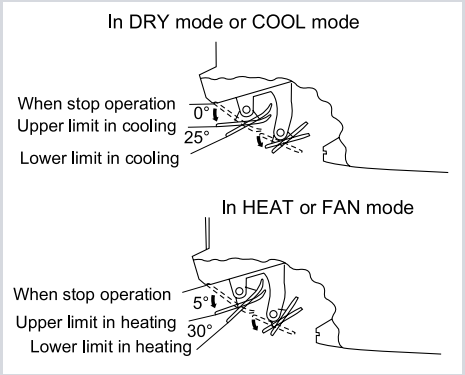


Notes on flaps and louvers angles.

- When " **SWING button** " is selected, the flaps swinging range depends on the operation mode. (See the figure.)

■ **ATTENTION**

- Always use a remote controller to adjust the flaps angle. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Be careful when adjusting the louvers. Inside the air outlet, a fan is rotating at a high speed.

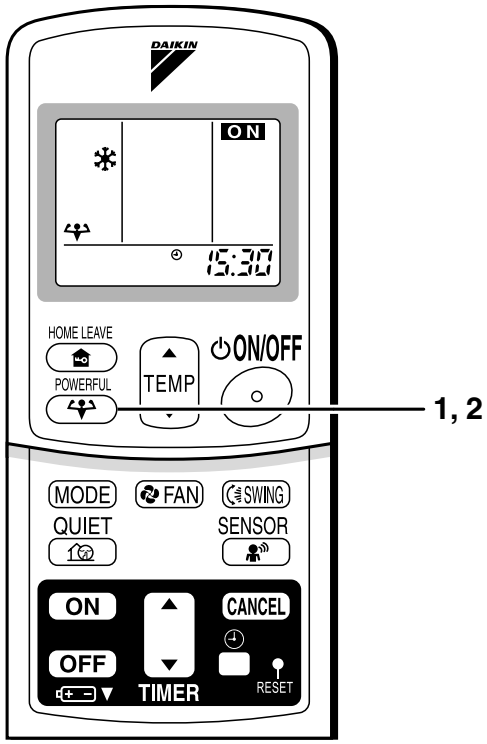


13

2.6 POWERFUL Operation

POWERFUL Operation

POWERFUL operation quickly maximizes the cooling (heating) effect in any operation mode. You can get the maximum capacity.



■ To start POWERFUL operation

1. Press "POWERFUL button".

- POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the settings which were used before POWERFUL operation.
- When using POWERFUL operation, there are some functions which are not available.
- "" is displayed on the LCD.

■ To cancel POWERFUL operation

2. Press "POWERFUL button" again.

- "" disappears from the LCD.

NOTE

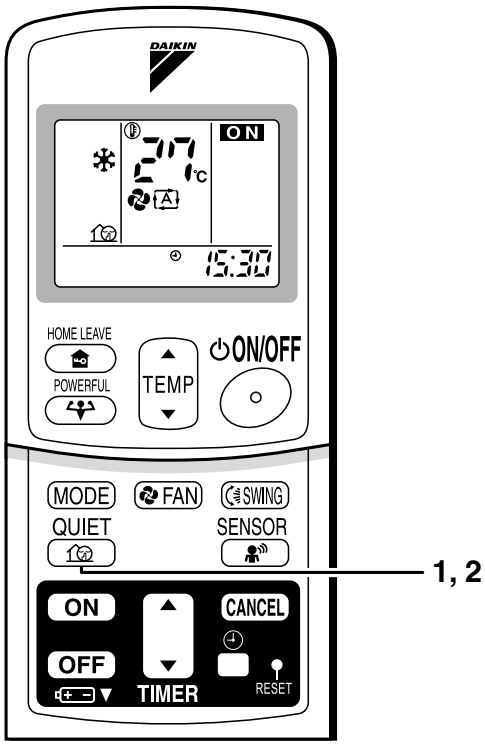
■ **Notes on POWERFUL operation**

- **In COOL and HEAT mode**
  To maximize the cooling (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 2.5˚C and the air flow rate is slightly increased.
- **In FAN mode**
  The air flow rate is fixed to the maximum setting.

2.7 OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET operation lowers the noise level of the outdoor unit by changing the frequency and fan speed on the outdoor unit. This function is convenient during night.



■ To start OUTDOOR UNIT QUIET operation

1. **Press "QUIET button".**
   - " " is displayed on the LCD.

■ To cancel OUTDOOR UNIT QUIET operation

2. **Press "QUIET button" again.**
   - " " disappears from the LCD.

NOTE

■ **Note on OUTDOOR UNIT QUIET operation**

- This function is available in COOL, HEAT, and AUTO modes. (This is not available in FAN and DRY mode.)
- POWERFUL operation and OUTDOOR UNIT QUIET operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.
- If operation is stopped using the remote controller or the main unit ON/OFF switch when using OUTDOOR UNIT QUIET operation, " " will remain on the remote controller display.

2.8 HOME LEAVE Operation

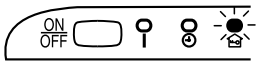
HOME LEAVE Operation

HOME LEAVE operation is a function which allows you to record your preferred temperature and air flow rate settings.

■ To start HOME LEAVE operation

1. Press “HOME LEAVE button” .

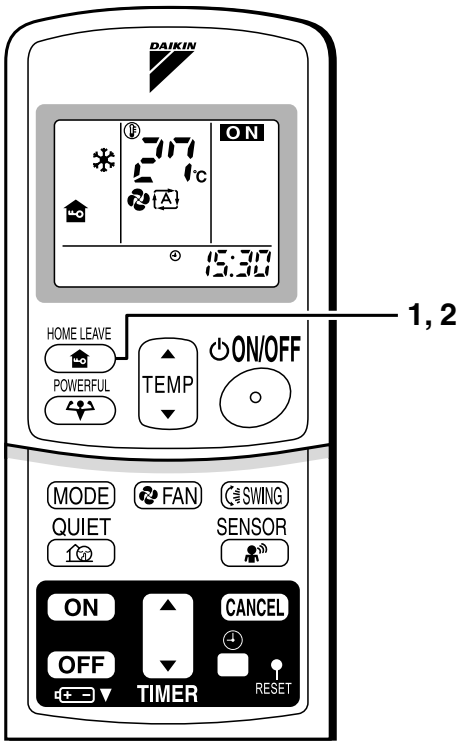
- “ ” is displayed on the LCD.
- The HOME LEAVE lamp lights up.



■ To cancel HOME LEAVE operation

2. Press “HOME LEAVE button” again.

- “ ” disappears from the LCD.
- The HOME LEAVE lamp goes off.



Before using HOME LEAVE operation.

■ **To set the temperature and air flow rate for HOME LEAVE operation**

When using HOME LEAVE operation for the first time, please set the temperature and air flow rate for HOME LEAVE operation. Record your preferred temperature and air flow rate.

	Initial setting		Selectable range	
	temperature	Air flow rate	temperature	Air flow rate
Cooling	25°C	“ ”	18-32°C	5 step, “ ” and “ ”
Heating	25°C	“ ”	10-30°C	5 step, “ ” and “ ”

1. Press “HOME LEAVE button”. Make sure “ ”is displayed in the remote controller display.

2. Adjust the set temperature with “ ▲ ” or “ ▼ ” as you like.

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

Home leave operation will run with these settings the next time you use the unit. To change the recorded information, repeat steps 1 – 3.

■ What's the HOME LEAVE operation?

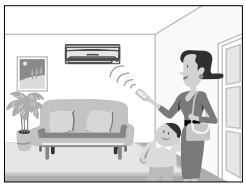
Is there a set temperature and air flow rate which is most comfortable, a set temperature and air flow rate which you use the most? HOME LEAVE operation is a function that allows you to record your favorite set temperature and air flow rate. You can start your favorite operation mode simply by pressing the HOME LEAVE button on the remote controller. This function is convenient in the following situations.

■ Useful in these cases

1.Use as an energy-saving mode.

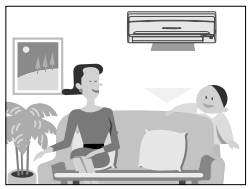
Set the temperature 2-3˚C higher (cooling) or lower (heating) than normal. Setting the fan strength to the lowest setting allows the unit to be used in energy-saving mode. Also convenient for use while you are out or sleeping.

- **Every day before you leave the house...**



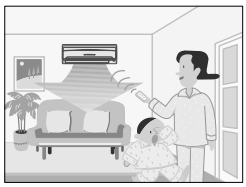
When you go out, push the "HOME LEAVE Operation" button, and the air conditioner will adjust capacity to reach the preset temperature for HOME LEAVE Operation.

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



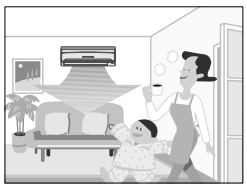
Push the "HOME LEAVE Operation" button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

- **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!

2.Use as a favorite mode.

Once you record the temperature and air flow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to go through troublesome remote control operations.

NOTE

- Once the temperature and air flow rate for HOME LEAVE operation are set, those settings will be used whenever HOME LEAVE operation is used in the future. To change these settings, please refer to the "Before using HOME LEAVE operation" section above.
- HOME LEAVE operation is only available in COOL and HEAT mode. Cannot be used in AUTO, DRY, and FAN mode.
- HOME LEAVE operation runs in accordance with the previous operation mode (COOL or HEAT) before using HOME LEAVE operation.
- HOME LEAVE operation and POWERFUL operation cannot be used at the same time. Last button that was pressed has priority.
- The operation mode cannot be changed while HOME LEAVE operation is being used.
- When operation is shut off during HOME LEAVE operation, using the remote controller or the indoor unit ON/OFF switch, " " will remain on the remote controller display.

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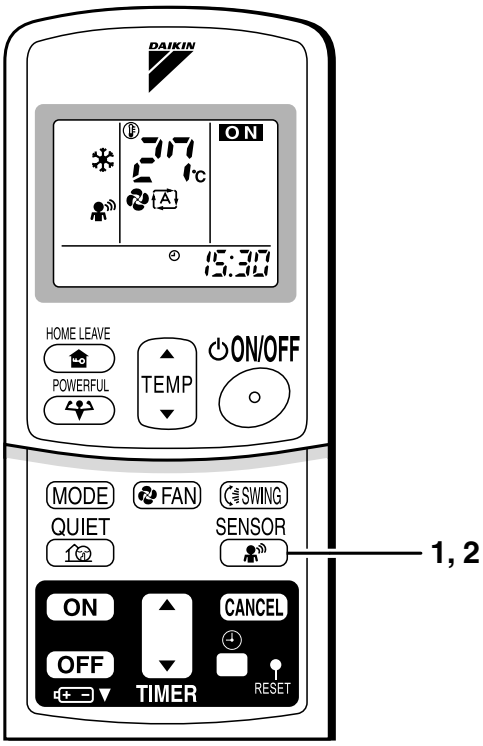
2.9 INTELLIGENT EYE Operation

INTELLIGENT EYE Operation

"INTELLIGENT EYE" is the infrared sensor which detects the human movement.



■ To start INTELLIGENT EYE operation

1. **Press "SENSOR button".**
   - "👤" is displayed on the LCD.

■ To cancel the INTELLIGENT EYE operation

2. **Press "SENSOR button" again.**
   - "👤" disappears from the LCD.

[EX.]

When somebody in the room
- **Normal operation**

⇩

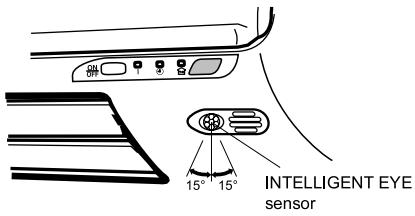
When nobody in the room
- **20 min. after, start energy saving operation.**

⇩

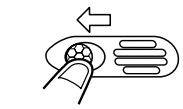
Somebody back in the room
- **Back to normal operation.**

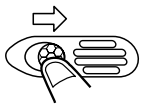
■ To adjust the angle of the INTELLIGENT EYE sensor

• You can adjust the angle of the INTELLIGENT EYE sensor to increase the detection area. (Adjustable angle: 15° to right and left of centre)



- Gently push and slide the sensor to adjust the angle.
- After adjusting the angle, wipe the sensor gently with a clean cloth, being careful not to scratch the sensor.


Moving the sensor to the left

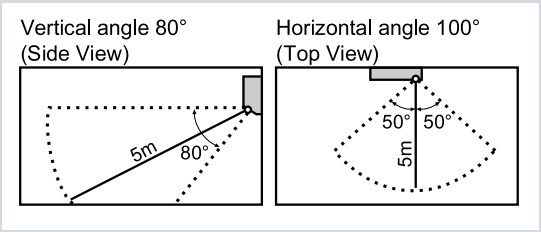

Moving the sensor to the right

“INTELLIGENT EYE” is useful for Energy Saving.

■ **Energy saving operation**
- Change the temperature –2°C in heating / +2°C in cooling / +1°C in dry mode from set temperature.
- Decrease the air flow rate slightly in fan operation. (In FAN mode only)

Notes on “INTELLIGENT EYE”.

- Application range is as follows.



- Sensor may not detect moving objects further than 5m away. (Check the application range)
- Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
- The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
- INTELLIGENT EYE operation will not go on during powerful operation.
- Night set mode (page 20.) will not go on during you use INTELLIGENT EYE operation.

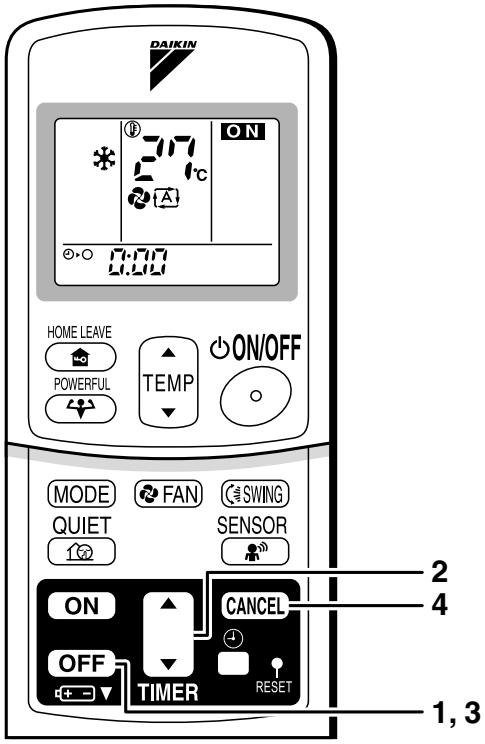
⚠ CAUTION

- Do not place large objects near the sensor.
  Also keep heating units or humidifiers outside the sensor’s detection area. This sensor can detect objects it shouldn’t as well as not detect objects it should.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.

2.10 TIMER Operation

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.



■ To use OFF TIMER operation

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

1. Press “OFF TIMER button”.

0:00 is displayed.

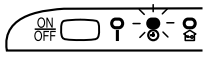
⏲ blinks.

2. Press “TIMER Setting button” 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 “OFF TIMER button” again.

- The TIMER lamp lights up.



■ To cancel the OFF TIMER operation

4. Press “CANCEL button”.

- The TIMER lamp goes off.

NOTE

- 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.

■ **NIGHT SET MODE**

When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.5˚C up in COOL, 2.0˚C down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.

■ To use ON TIMER operation

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

1. Press “ON TIMER button”.

6:00 is displayed.

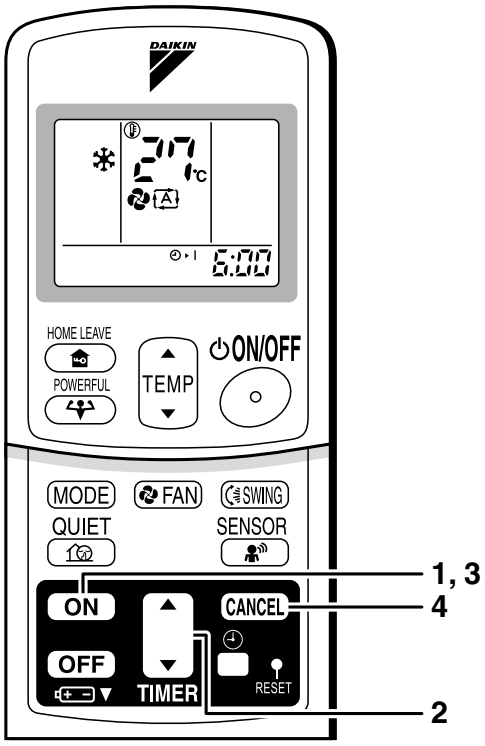
blinks.

2. Press “TIMER Setting button” 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 button” again.

- The TIMER lamp lights up.



■ To cancel ON TIMER operation

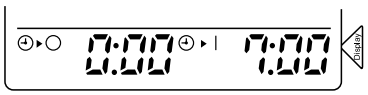
4. Press “CANCEL button”.

- The TIMER lamp goes off.

■ To combine ON TIMER and OFF TIMER

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

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



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.

2.11 Care and Cleaning

Care and Cleaning

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

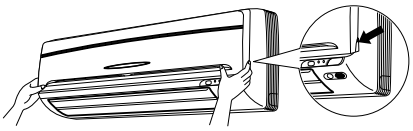
Units

■ Indoor unit, Outdoor unit and Remote controller

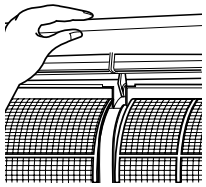
1. Wipe them with dry soft cloth.

■ Front panel

1. Open the front panel.
- Hold the panel by the tabs on the two sides and lift it until it stops with a click.

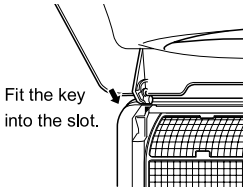


2. Remove the front panel.
- Supporting the front panel with one hand, release the lock by sliding down the knob with the other hand.
- To remove the front panel, pull it toward yourself with both hands.



3. Clean the front panel.
- Wipe it with a soft cloth soaked in water.
- Only neutral detergent may be used.
- In case of washing the panel with water, dry it with cloth, dry it up in the shade after washing.

4. Attach the front panel.
- Set the 3 keys of the front panel into the slots and push them in all the way.
- Close the front panel slowly and push the panel at the 3 points. (1 on each side and 1 in the middle.)
- Check to see if the rotating axis in the upper center section is moving.

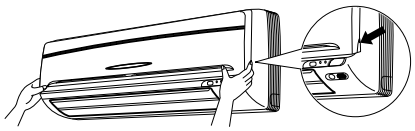


⚠ CAUTION

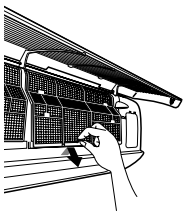
- Don't touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front panel, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front panel, support the panel securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 40˚C, benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes, nor other hand stuff.
- After cleaning, make sure that the front panel is securely fixed.

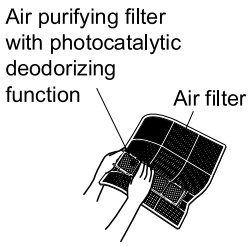
Filters

1. **Open the front panel. (page 24.)**
2. **Pull out the air filters.**
   - Push a little upwards the tab at the center of each air filter, then pull it down.

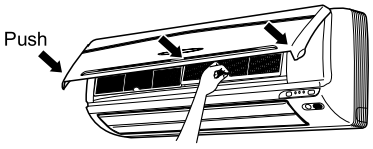


3. **Take off the air purifying filter with photocatalytic deodorizing function.**
   - Hold the recessed parts of the frame and unhook the four claws.
4. **Clean or replace each filter.**
   See figure.



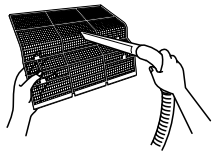


5. **Set the air filter and the air purifying filter with photocalytic deodorizing function as they were and close the front panel.**
   - Insert claws of the filters into slots of the front panel. Close the front panel slowly and push the panel at the 3 points. (1 on each side and 1 in the middle.)

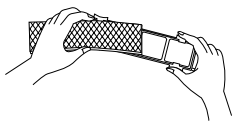


■ Air Filter

1. **Wash the air filters with water or clean them with 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.
   - It is recommended to clean the air filters every two weeks.



■ Air purifying filter with photocatalytic deodorizing function. (gray)



The Air purifying filter with photocatalytic deodorizing function can be renewed by washing it with water once every 6 months. We recommend replacing it once every 3 years.

[Maintenance]

1. **Remove dust with a vacuum cleaner and wash lightly with water.**
2. **If it is very dirty, soak it for 10 to 15 minutes in water mixed with a neutral cleaning agent.**
3. **Do not remove filter from frame when washing with water.**
4. **After washing, shake off remaining water and dry in the shade.**
5. **Since the material is made out of paper, do not wring out the filter when removing water from it.**

[Replacement]

1. **Remove the tabs on the filter frame and replace with a new filter.**
   - Dispose of the old filter as flammable waste.

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 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 only" for several hours on a fine day to dry out the inside.**
   - Press "MODE" button and select "FAN" operation.
   - Press "ON/OFF" button and start operation.
2. **After operation stops, turn off the breaker for the room air conditioner.**
3. **Clean the air filters and set them again.**
4. **Take out batteries from the remote controller.**

NOTE

- Operation with dirty filters:
  (1) cannot deodorize the air. (2) cannot clean the air.
  (3) results in poor heating or cooling. (4) may cause odour.
- To order air purifying filter with photocatalytic deodorizing function contact to the service shop there you bought the air conditioner.
- Dispose of old filters as burnable waste.

Item	Part No.
Air purifying filter with photocatalytic deodorizing function. (with frame) 1 set	KAF918A43
Air purifying filter with photocatalytic deodorizing function. (without frame) 1 set	KAF918A44

2.12 Troubleshooting

Trouble Shooting

These cases are not 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.
Mist comes 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 60 seconds for system protection. ■ While the air conditioner is not in operation: • When the outdoor temperature is very high, the outdoor 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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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 (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? • Is the unit set to the INTELLIGENT EYE mode? (page 18.)
Operation stops suddenly. (OPERATION lamp flashes.)	• 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 flashes, call the service shop where you bought the air conditioner.
An abnormal functioning happens during operation.	• The air conditioner may malfunction with lightning or radio waves. Turn the breaker OFF, turn it ON again and try operating the air conditioner with the remote controller.

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 3 minutes. You should just wait for a while.	■ Lightning If lightning may strike the neighbouring area, stop operation and turn the breaker OFF for system protection.

Disposal requirements

Your air conditioning product is marked with this symbol. This means that electrical and electronic products shall not be mixed with unsorted household waste.

Do not try to dismantle the system yourself: the dismantling of the air conditioning system, treatment of the refrigerant, of oil and of other parts must be done by a qualified installer in accordance with relevant local and national legislation.

Air conditioners must be treated at a specialized treatment facility for re-use, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. Please contact the installer or local authority for more information.

Batteries must be removed from the remote controller and disposed of separately in accordance with relevant local and national legislation.

We recommend periodical maintenance.

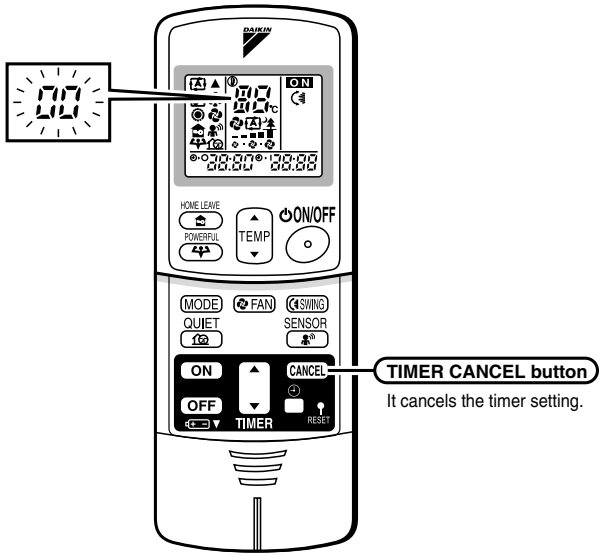
In certain operating conditions, the inside of the air conditioner may get foul after several seasons of use, resulting in poor performance. It is recommended to have periodical maintenance by a specialist aside from regular cleaning by the user. For specialist maintenance, contact the service shop where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

Fault diagnosis.

FAULT DIAGNOSIS BY REMOTE CONTROLLER

In the ARC433 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.**



2. **Press the TIMER CANCEL button repeatedly until a continuous beep is produced.**
   - The code indication changes as shown below, and notifies with a long beep.

	CODE	MEANING
SYSTEM	00	NORMAL
	U0	REFRIGERANT SHORTAGE
	U2	DROP VOLTAGE OR MAIN CIRCUIT OVERVOLTAGE
	U4	FAILURE OF TRANSMISSION (BETWEEN INDOOR UNIT AND OUTDOOR UNIT)
INDOOR UNIT	A1	INDOOR PCB DEFECTIVENESS
	A5	HIGH PRESSURE CONTROL OR FREEZE-UP PROTECTOR
	A6	FAN MOTOR FAULT
	C4	FAULTY HEAT EXCHANGER TEMPERATURE SENSOR
	C9	FAULTY SUCTION AIR TEMPERATURE SENSOR
OUTDOOR UNIT	EA	COOLING-HEATING SWITCHING ERROR
	E5	OL STARTED
	E6	FAULTY COMPRESSOR START UP
	E7	DC FAN MOTOR FAULT
	E8	OPERATION HALT DUE TO DETECTION OF INPUT OVER CURRENT
	F3	HIGH TEMPERATURE DISCHARGE PIPE CONTROL
	F6	HIGH PRESSURE CONTROL (IN COOLING)
	H6	OPERATION HALT DUE TO FAULTY POSITION DETECTION SENSOR
	H8	CT ABNORMALITY
	H9	FAULTY SUCTION AIR TEMPERATURE SENSOR
	J3	FAULTY DISCHARGE PIPE TEMPERATURE SENSOR
	J6	FAULTY HEAT EXCHANGER TEMPERATURE SENSOR
	L4	HIGH TEMPERATURE AT INVERTER CIRCUIT HEATSINK
	L5	OUTPUT OVERCURRENT
	P4	FAULTY INVERTER CIRCUIT HEATSINK TEMPERATURE SENSOR

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 cancel itself if the button is not pressed for 1 minute.

3P194444-1

Part 6
Service Diagnosis

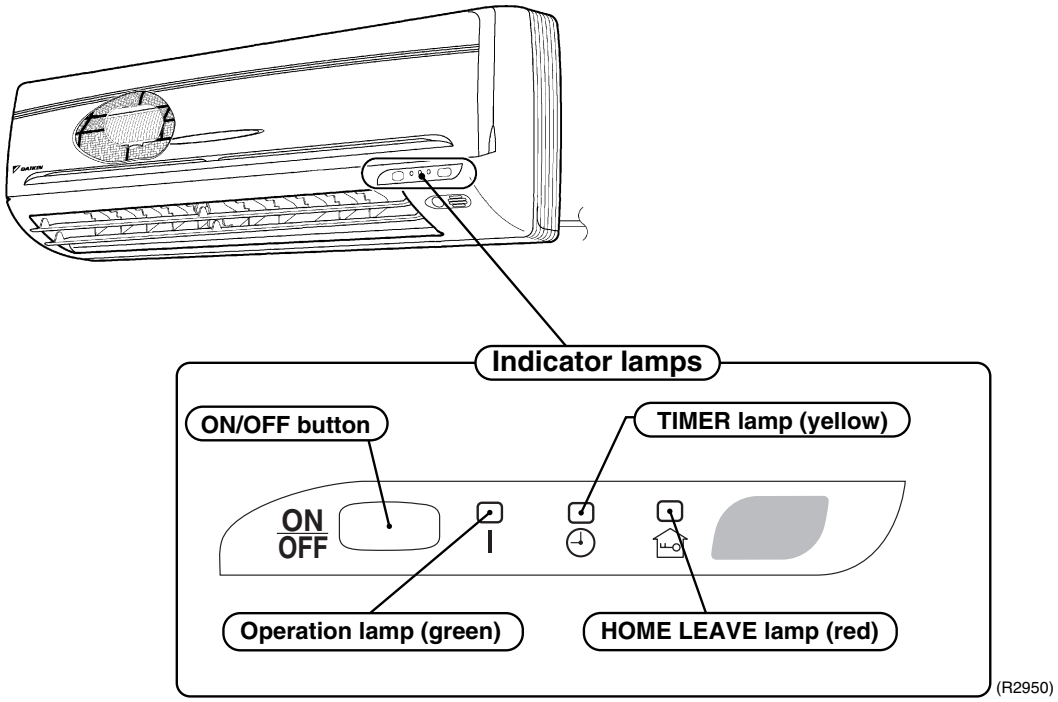
1. Caution for Diagnosis

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



Troubleshooting with LED Indication

The outdoor unit has one green LED (LEDA) on the PCB. The flashing green LED indicates normal condition of microcomputer operation.

2. Problem Symptoms and Measures

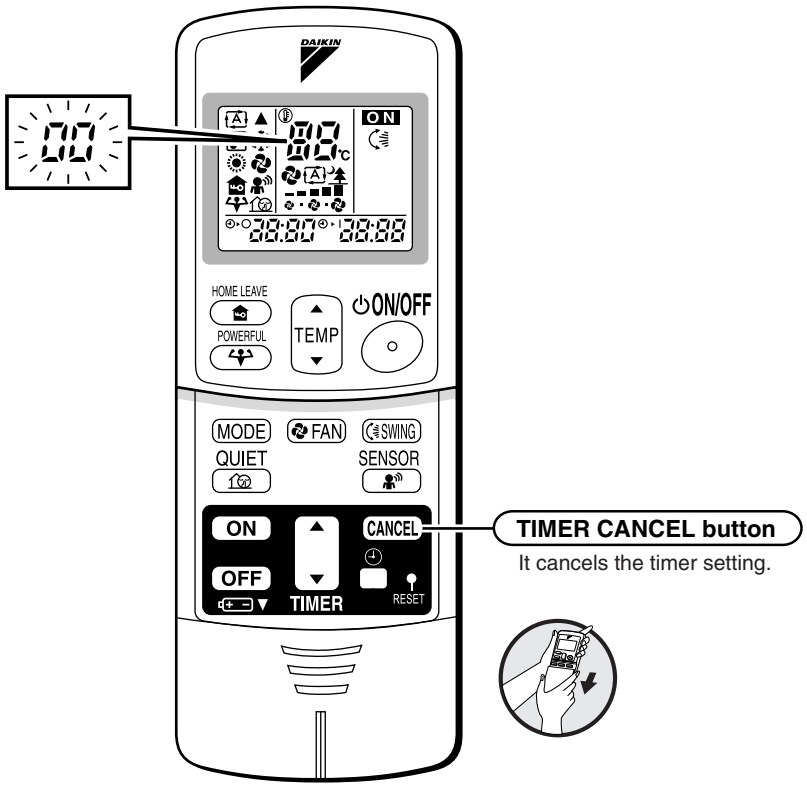
Symptom	Check Item	Details of Measure	Reference Page
None of the Units Operates.	Check the power supply.	Check to make sure that the rated voltage is supplied.	—
	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Check the outdoor air temperature.	Heating operation cannot be used when the outdoor air temperature is 20°C or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 10°C.	—
	Diagnosis with remote controller indication	—	87
	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 outdoor air temperature.	Heating operation cannot be used when the outdoor air temperature is 20°C or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 10°C.	—
	Diagnosis with remote controller indication	—	87
Equipment operates but does not cool, or does not heat (only for heat pump model).	Check for wiring and piping errors in the indoor and outdoor units connection wires and pipes.	Conduct the wiring/piping error check described on the product diagnosis nameplate.	—
	Check for thermistor detection errors.	Check to make sure that the main unit's thermistor has not dismounted from the pipe holder.	—
	Check for faulty operation of the electronic expansion valve.	Set the units to cooling operation, and compare the temperatures of the liquid side connection pipes of the connection section among rooms to check the opening and closing operation of the electronic expansion valves of the individual units.	—
	Diagnosis with remote controller indication	—	87
	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.	—	124
	Check the power transistor.	—	—
	Check the installation condition.	Check to make sure that the required spaces for installation (specified in the Engineering data book, etc.) are provided.	—

3. Service Check Function

In the ARC433B series remote controller, the temperature display sections on the main unit indicate corresponding codes.

Check Method 1

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



<ARC433B1, B2>

(R6933)

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 a long beep.

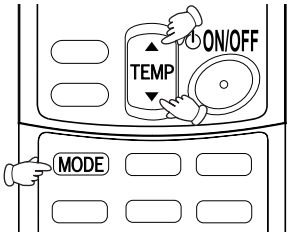
No.	Code	No.	Code	No.	Code
1	00	12	C7	23	H0
2	U4	13	H8	24	E1
3	F3	14	J3	25	P4
4	E6	15	A3	26	L3
5	L5	16	A1	27	L4
6	A6	17	C4	28	H6
7	E5	18	C5	29	H7
8	F6	19	H9	30	U2
9	C9	20	J6	31	UH
10	U0	21	UA	32	EA
11	E7	22	A5	33	AH

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.

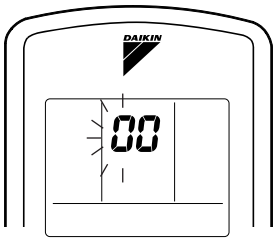
Check Method 2

1. Enter the diagnosis mode.
   Press the 3 buttons (TEMP▲, TEMP▼, MODE) simultaneously.



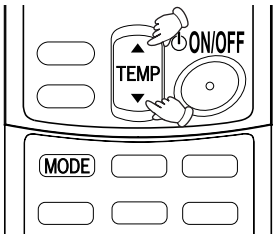
(R4272)

   The digit of the number of tens blinks.
   ★Try again from the start when the digit does not blink.



(R4273)

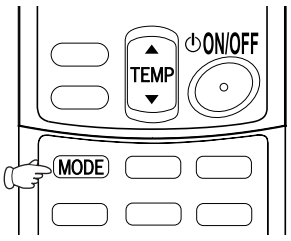
2. Press the TEMP button.
   Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of “beep” or “pi pi”.



(R4274)

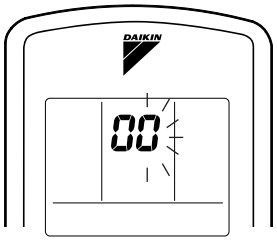
3. Diagnose by the sound.
   ★“pi” : The number of tens does not accord with the error code.
   ★“pi pi” : The number of tens accords with the error code.
   ★“beep” : The both numbers of tens and units accord with the error code. (→See 7.)

4. Enter the diagnosis mode again.
   Press the MODE button.



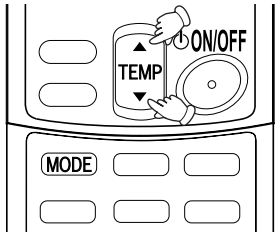
(R4275)

   The digit of the number of units blinks.



(R4276)

5. Press the TEMP button.
   Press TEMP▲ or TEMP▼ and change the digit until you hear the sound of “beep”.

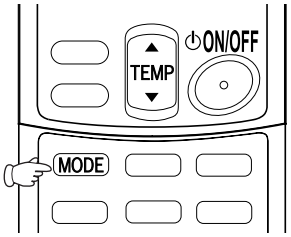


(R4277)

6. Diagnose by the sound.
   ★“pi” : The both numbers of tens and units do not accord with the error code.
   ★“pi pi” : The number of tens accords with the error code.
   ★“beep” : The both numbers of tens and units accord with the error code.

7. Determine the error code.
   The digits indicated when you hear the “beep” sound are error code.
   (Error codes and description → Refer to page 87.)

8. Exit from the diagnosis mode.
   Press the MODE button.



(R4278)

4. Troubleshooting

4.1 Error Codes and Description

	Code Indication	Description	Reference Page
System	00	Normal	—
	U0★	Insufficient gas	116
	U2	Over-voltage detection	118
	U4	Signal transmission error (between indoor and outdoor unit)	93
	UA	Unspecified voltage (between indoor and outdoor unit)	95
Indoor Unit	A1	Indoor unit PCB abnormality	88
	A5	Freeze-up protection control or high pressure control	89
	A6	Fan motor or related abnormality	91
	C4	Heat exchanger temperature thermistor abnormality	92
	C9	Room temperature thermistor abnormality	92
Outdoor Unit	E1	Outdoor unit PCB abnormality	96
	E5★	OL activation (compressor overload)	97
	E6★	Compressor lock	98
	E7	DC fan lock	99
	E8	Input over current detection	100
	EA	Four way valve abnormality	101
	F3	Discharge pipe temperature control	103
	F6	High pressure control in cooling	104
	H0	Compressor system sensor abnormality	106
	H6	Position sensor abnormality	107
	H8	DC voltage/current sensor abnormality	108
	H9	Outdoor air thermistor or related abnormality	109
	J3	Discharge pipe temperature thermistor or related abnormality	109
	J6	Heat exchanger temperature thermistor or related abnormality	109
	L3	Electrical box temperature rise	111
	L4	Radiation fin temperature rise	112
	L5	Output over current detection	114
	P4	Heat radiation fin thermistor or related abnormality	109

★: Displayed only when system-down occurs.

4.2 Indoor Unit PCB Abnormality

Remote Controller Display

A1

Method of Malfunction Detection

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

Malfunction Decision Conditions

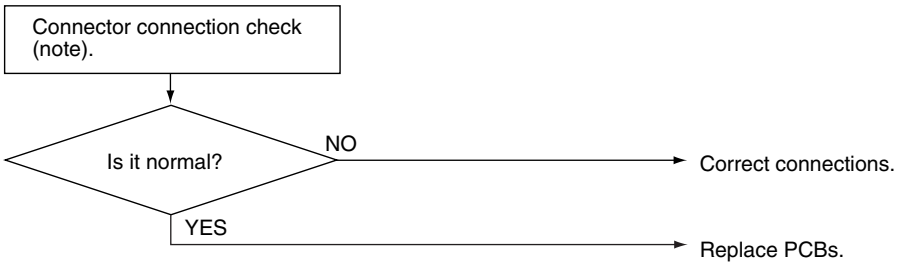
When there is no zero-cross detection in approximately 10 continuous seconds.

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.



(R1400)

Note: Connector Nos. vary depending on models.

Model Type	Connector No.
Wall Mounted Type 20 / 25 / 35 class	Terminal strip~Control PCB

4.3 Freeze-up Protection Control or High Pressure Control

Remote Controller Display

Method of Malfunction Detection

- High pressure control (heat pump model only)
  During heating operations, the temperature detected by the indoor heat exchanger thermistor is used for the high pressure control (stop, outdoor fan stop, etc.)
- Freeze-up 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 65°C
- Freeze-up protection
  When the indoor unit heat exchanger temperature is below 0°C during cooling operation.

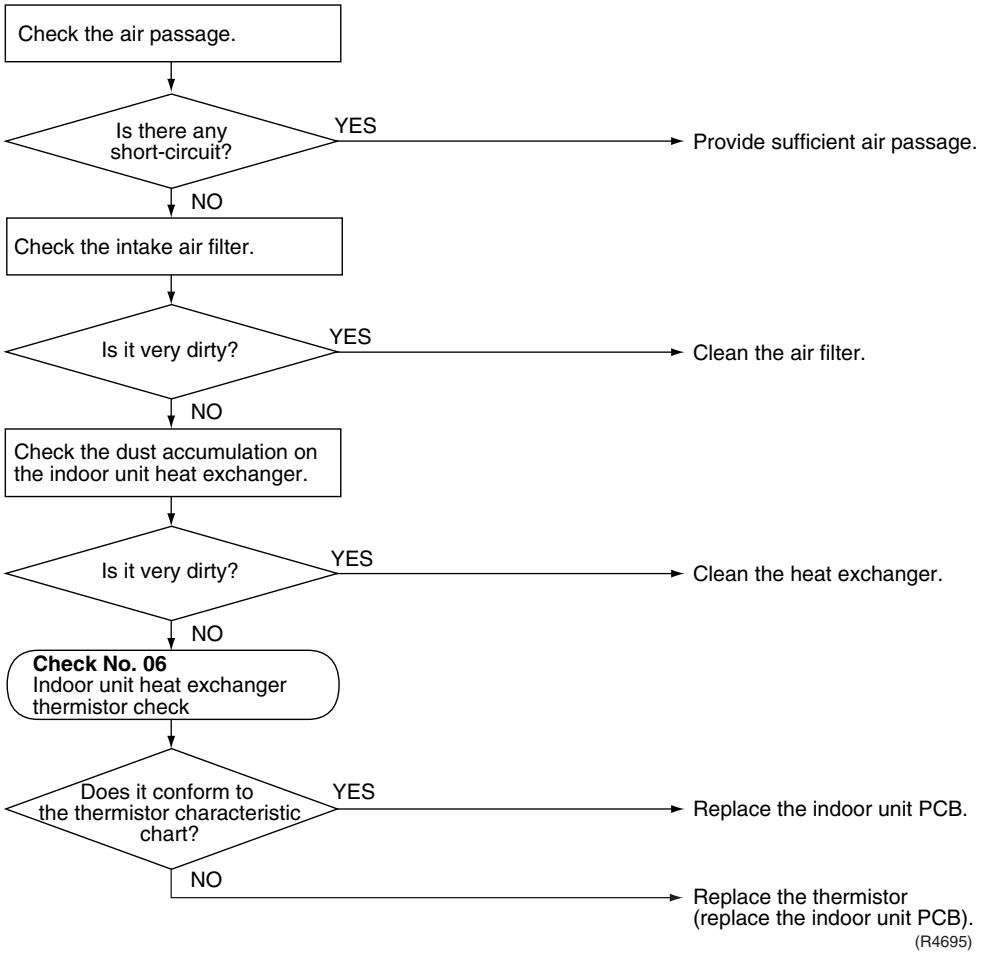
Supposed Causes

- 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.06
Refer to P.121

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



(R4695)

4.4 Fan Motor (AC Motor) or Related Abnormality

Remote Controller 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 does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

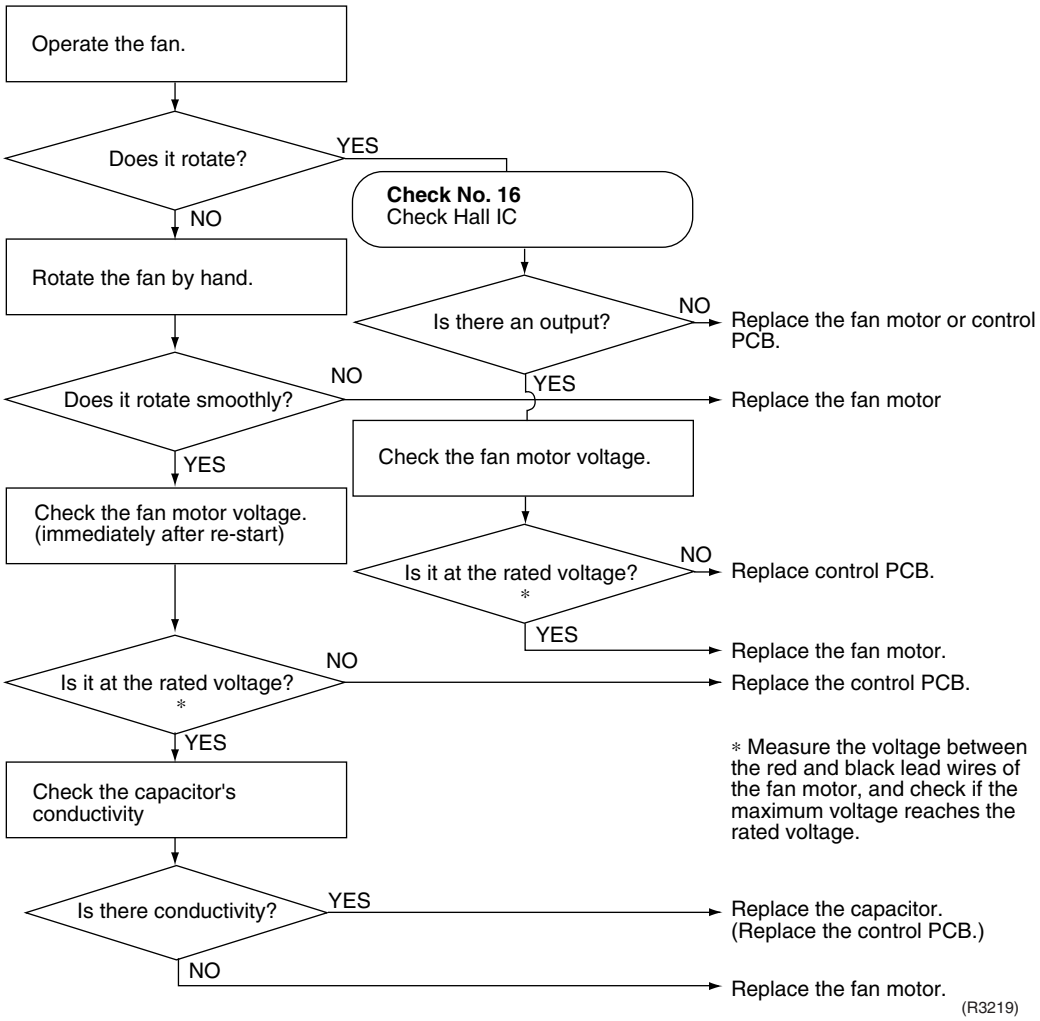
Supposed Causes

- 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.

Troubleshooting

Check No.16
Refer to P.125

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



4.5 Thermistor or Related Abnormality (Indoor Unit)

Remote Controller Display

C4, C9

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).

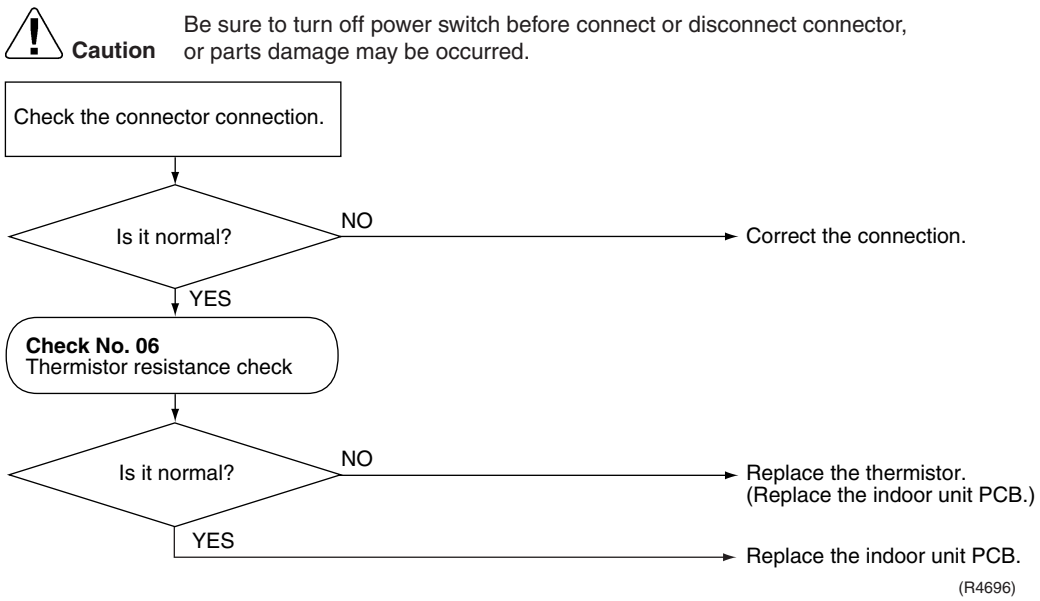
Note: The values vary slightly in some models.

Supposed Causes

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

Troubleshooting

Check No.06
Refer to P.121



C4 : Heat exchanger thermistor
C9 : Room temperature thermistor

4.6 Signal Transmission Error (between Indoor and Outdoor Unit)

Remote Controller Display

U4

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.

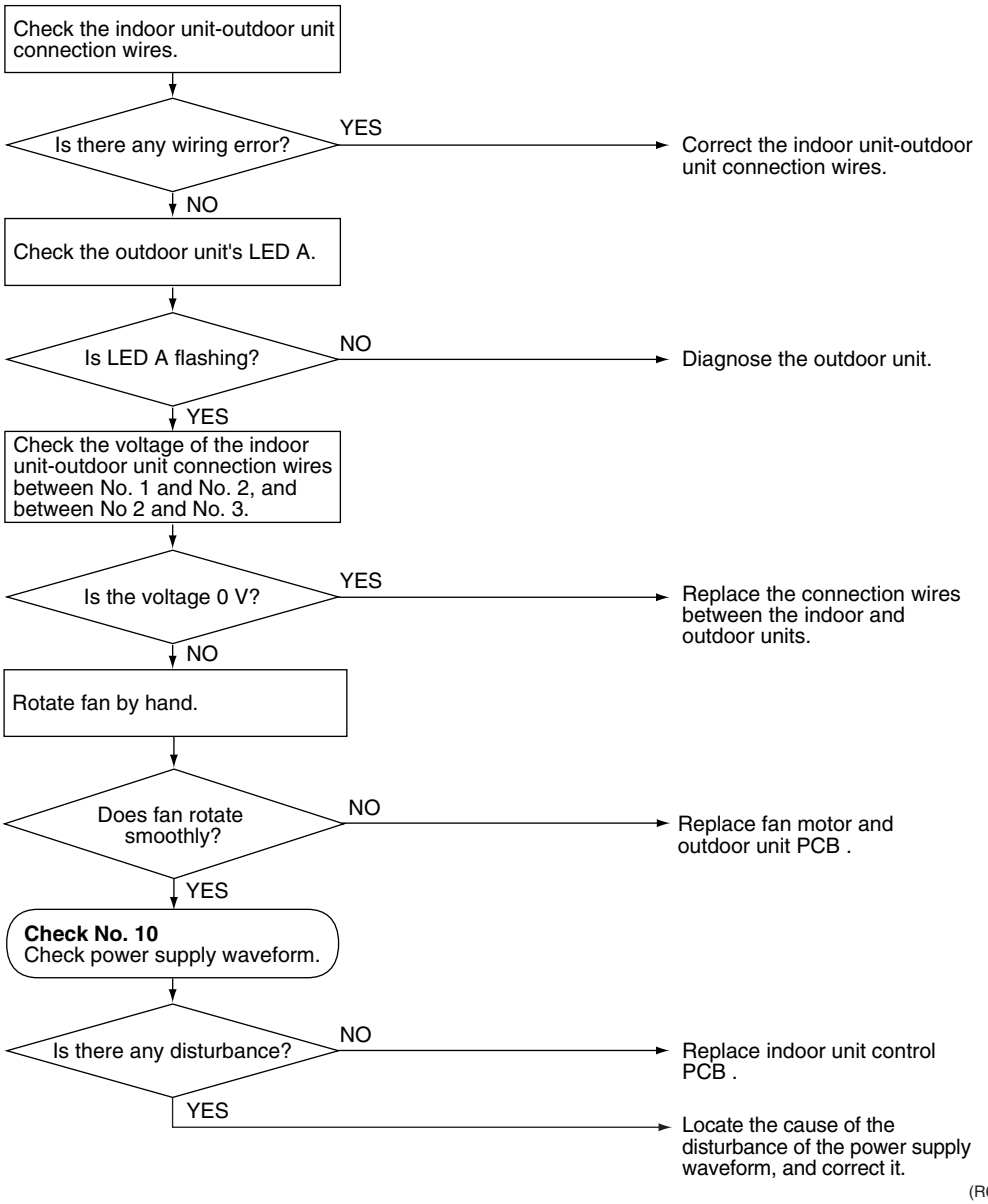
Supposed Causes

- 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).
- Short circuit inside the fan motor winding.

Troubleshooting

Check No.10
Refer to P.123

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



(R6471)

4.7 Unspecified Voltage (between Indoor and Outdoor Units)

Remote Controller Display

UP

Method of Malfunction Detection

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

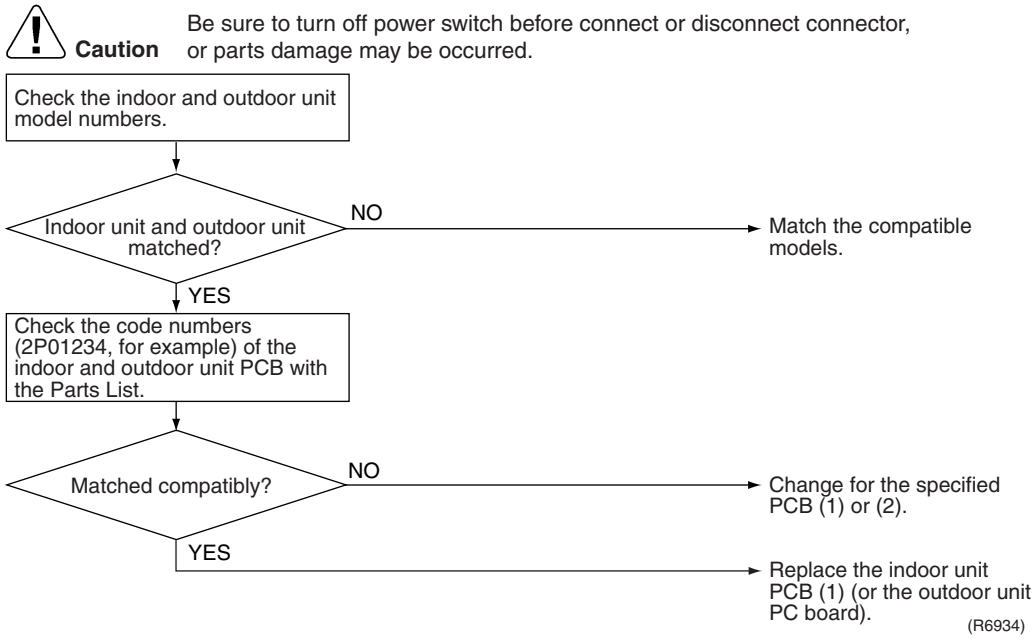
Malfunction Decision Conditions

The pair type and multi type are interconnected.

Supposed Causes

- Wrong models interconnected
- Wrong indoor unit PCB mounted
- Indoor unit PCB defective
- Wrong outdoor unit PCB mounted or defective

Troubleshooting



4.8 Outdoor Unit PCB Abnormality

Remote Controller Display

E1

Method of Malfunction Detection

- The system follows the microprocessor program to make sure it runs normally.
- The system checks to see if the zero-cross signal comes in properly.

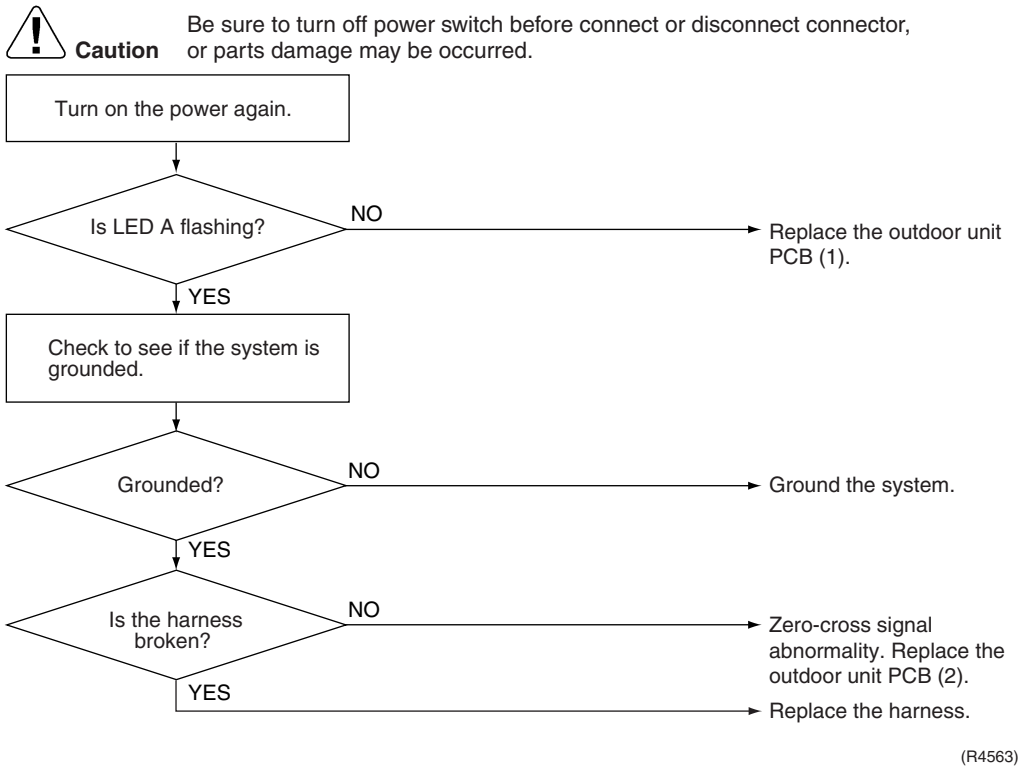
Malfunction Decision Conditions

- The microprocessor program runs out of control.
- The zero-cross signal is not detected.

Supposed Causes

- The microcomputer is out of control due to external factors.
  - Noise
  - Momentary voltage drop
  - Momentary power failure, etc.
- Outdoor unit PCB defective
- Broken harness between PCBs

Troubleshooting



4.9 OL Activation (Compressor Overload)

Remote Controller Display

E5

Method of Malfunction Detection

A compressor overload is detected through compressor OL.

Malfunction Decision Conditions

- If the compressor OL is activated twice, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

* The operating temperature condition is not specified.

Supposed Causes

- Refrigerant shortage
- Four way valve malfunctioning
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

Troubleshooting

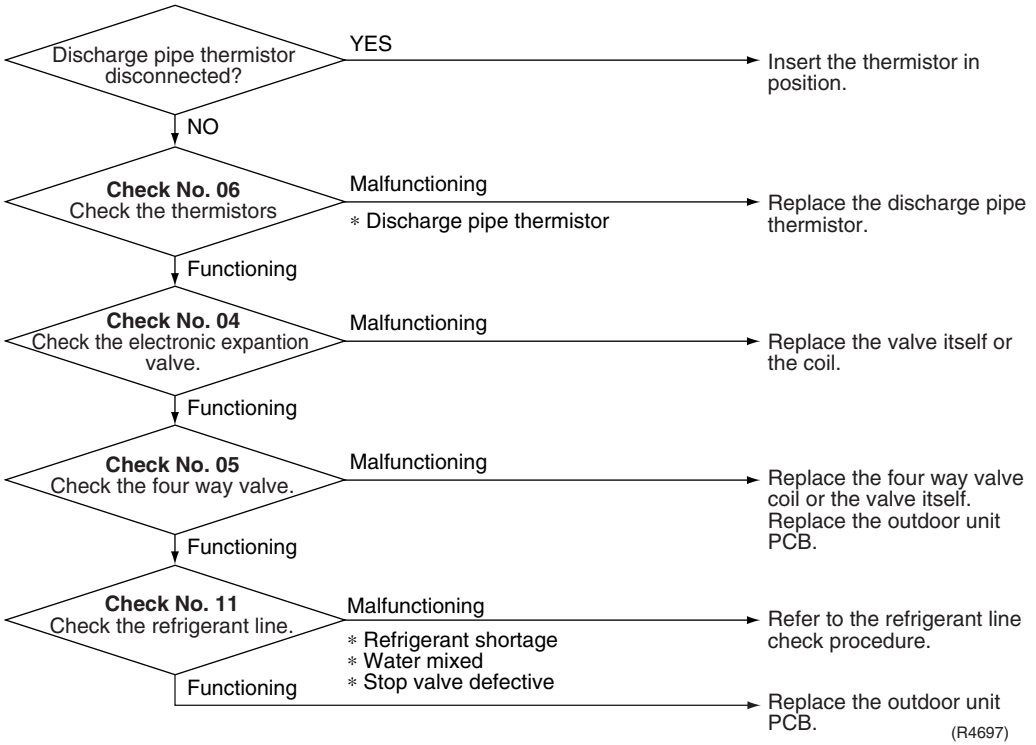
Check No.04 **Refer to P.119**

Check No.05 **Refer to P.120**

Check No.06 **Refer to P.121**

Check No.11 **Refer to P.123**

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



(R4697)

4.10 Compressor Lock

Remote Controller Display

E6

Method of Malfunction Detection

A compressor lock is detected by checking the compressor running condition through the position detection circuit.

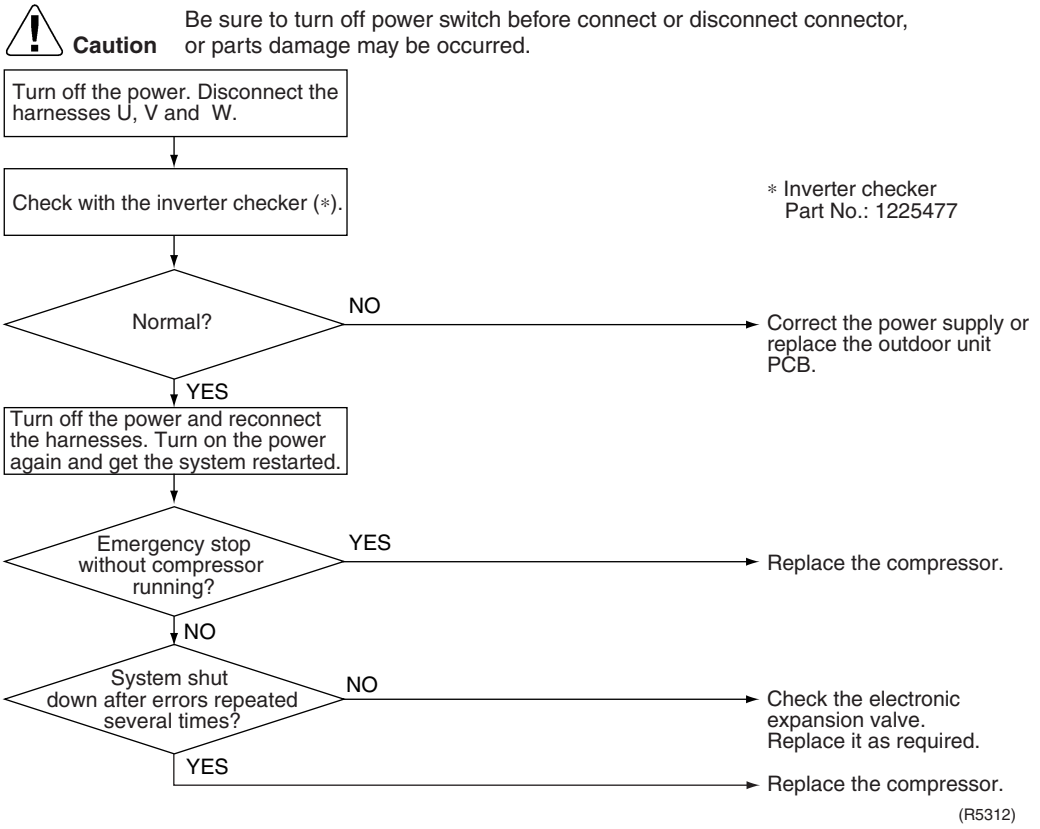
Malfunction Decision Conditions

- The system judges the compressor lock, and stops due to over current.
- The system judges the compressor lock, and cannot operation with position detection within 15 seconds after start up.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 10 minutes (normal)

Supposed Causes

- Compressor locked
- Compressor harness disconnected

Troubleshooting



4.11 DC Fan Lock

Remote Controller Display

E7

Method of Malfunction Detection

A fan motor or related error is detected by checking the high-voltage fan motor rpm being detected by the Hall IC.

Malfunction Decision Conditions

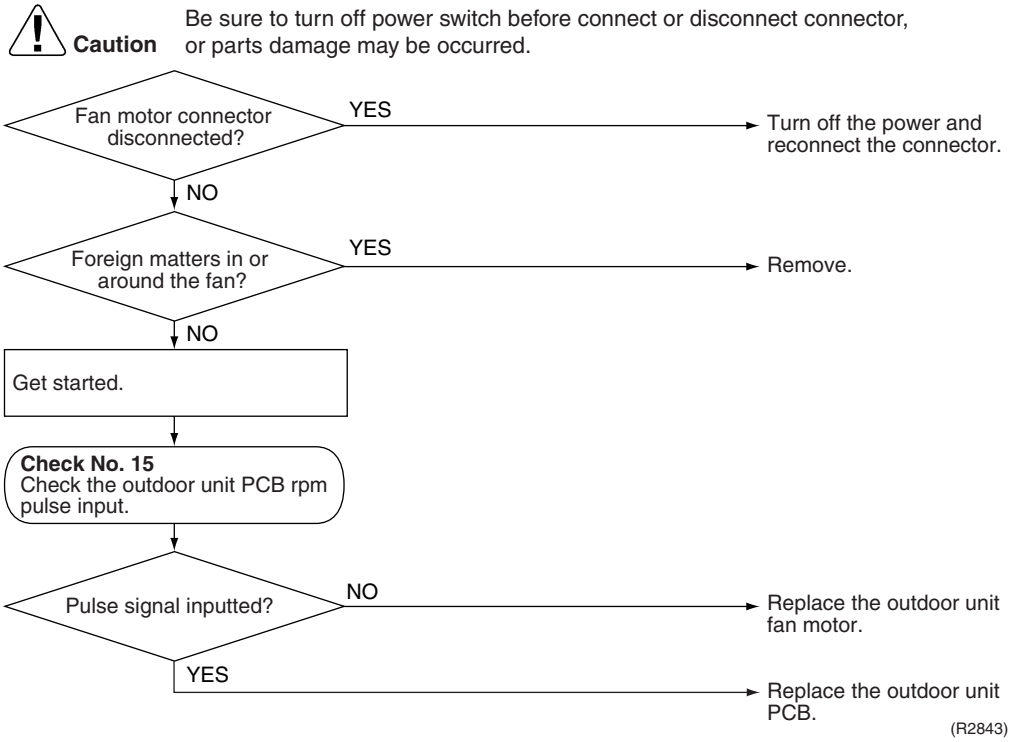
- The fan does not start in 30 seconds even when the fan motor is running.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 10 minutes (normal)

Supposed Causes

- Fan motor breakdown
- Harness or connector disconnected between fan motor and PCB or in poor contact
- Foreign matters stuck in the fan

Troubleshooting

Check No.15
Refer to P.124



4.12 Input Over Current Detection

Remote Controller Display

E8

Method of Malfunction Detection

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

Malfunction Decision Conditions

- The following current with the compressor running continues for 2.5 seconds.
  Cooling / Heating: Above 9.25A

Supposed Causes

- Over-current due to compressor failure
- Over-current due to defective power transistor
- Over-current due to defective outdoor unit PCB
- Error detection due to outdoor unit PCB
- Over-current due to short-circuit

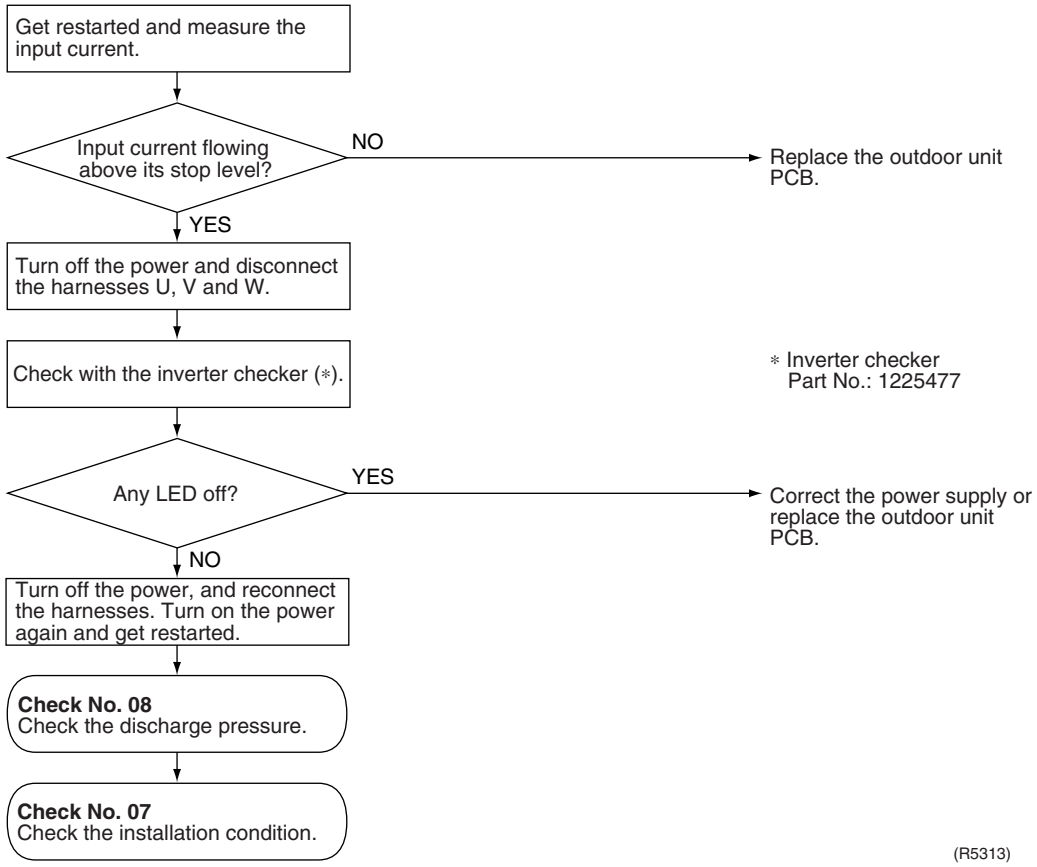
Troubleshooting

Check No.07
Refer to P.122

Check No.08
Refer to P.122

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

∗ An input over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an input over-current, take the following procedure.



(R5313)

4.13 Four Way Valve Abnormality

Remote Controller Display

E8

Method of Malfunction Detection

The indoor air temperature thermistor, the indoor unit heat exchanger thermistor, the outdoor temperature thermistor and the outdoor unit heat exchanger thermistor are checked to see if they function within their normal ranges in the operating mode.

Malfunction Decision Conditions

A following condition continues over 10 minutes after operating 5 minutes.

- Cooling / dry operation
  (room temp. – indoor heat exchanger temp.) < –5°C
- Heating
  (indoor unit heat exchanger temp. – room temp.) < –5°C

Supposed Causes

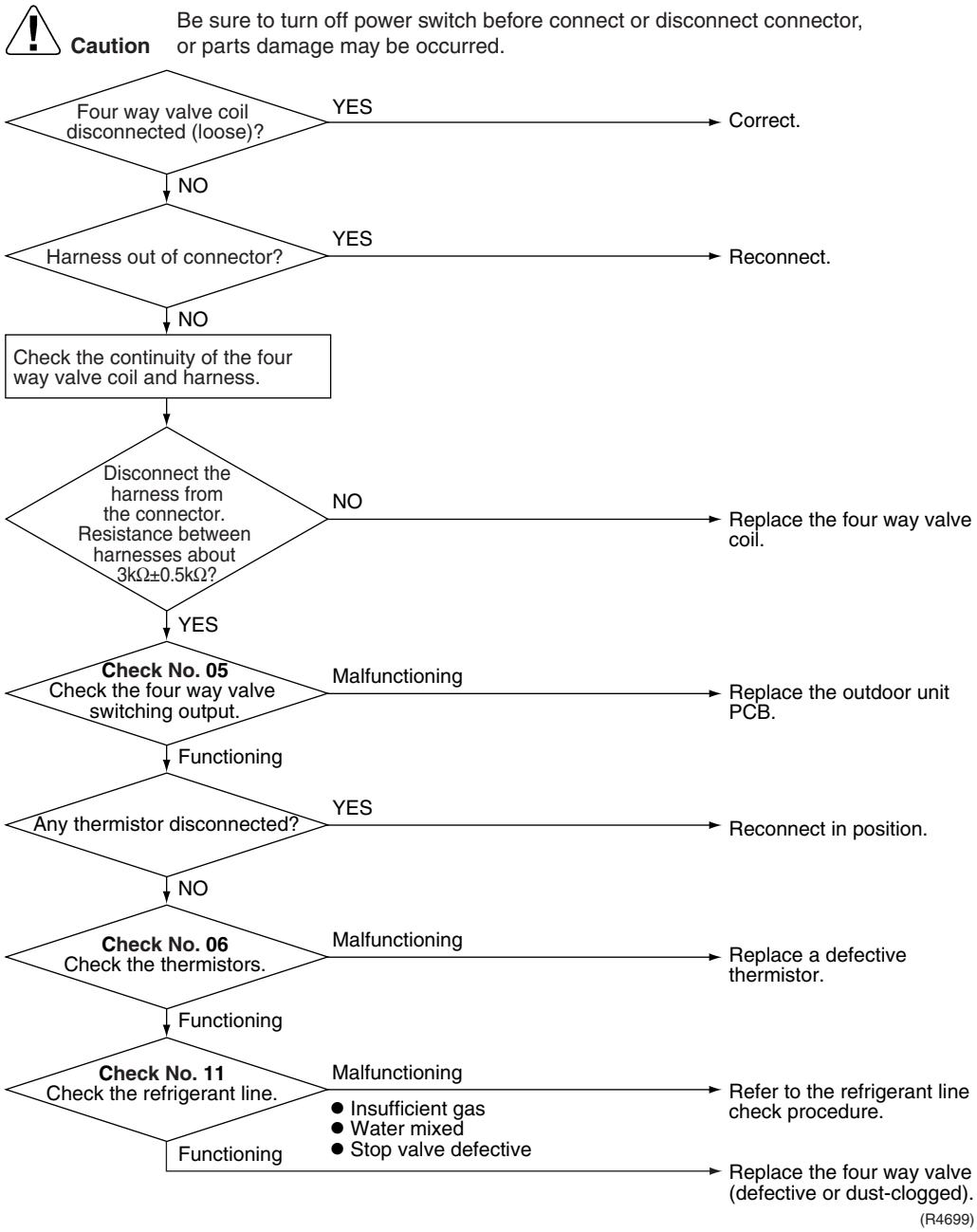
- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Four way valve coil or harness defective
- Four way valve defective
- Foreign substance mixed in refrigerant
- Insufficient gas

Troubleshooting

Check No.05
Refer to P.120

Check No.06
Refer to P.121

Check No.11
Refer to P.123



4.14 Discharge Pipe Temperature Control

Remote Controller Display

F3

Method of Malfunction Detection

The discharge pipe temperature control (stop, frequency drooping, etc.) is checked with the temperature being detected by the discharge pipe thermistor.

Malfunction Decision Conditions

- If a stop takes place 4 times successively due to abnormal discharge pipe temperature, the system will be shut down.
- If the temperature being detected by the discharge pipe thermistor rises above Ⓐ °C, the compressor will stop. (The error is cleared when the temperature has dropped below Ⓑ °C.)

Stop temperatures	Ⓐ	Ⓑ
(1) above 45Hz (rising), above 40Hz (dropping)	110	97
(2) 30~45Hz (rising), 25~40Hz (dropping)	105	92
(3) below 30Hz (rising), below 25Hz (dropping)	99	86

- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

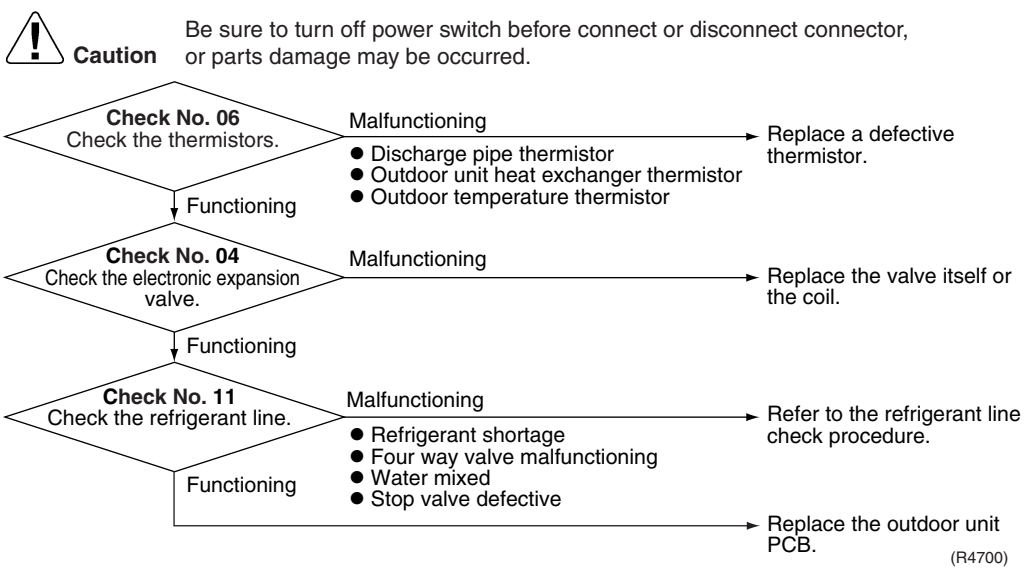
- Refrigerant shortage
- Four way valve malfunctioning
- Discharge pipe thermistor defective
  (heat exchanger or outdoor air temperature thermistor defective)
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

Troubleshooting

Check No.04
Refer to P.119

Check No.06
Refer to P.121

Check No.11
Refer to P.123



4.15 High Pressure Control in Cooling

Remote Controller Display

F6

Method of Malfunction Detection

High-pressure control (stop, frequency drop, etc.) is activated in the cooling mode if the temperature being sensed by the heat exchanger thermistor exceeds the limit.

Malfunction Decision Conditions

Activated when the temperature being sensed by the heat exchanger thermistor rises above 65°C. (The error is cleared when the temperature drops below 54°C.)

Supposed Causes

- The installation space is not large enough.
- Faulty outdoor unit fan
- Faulty electronic expansion valve
- Faulty defrost thermistor
- Faulty outdoor unit PCB
- Faulty stop valve
- Dirty heat exchanger

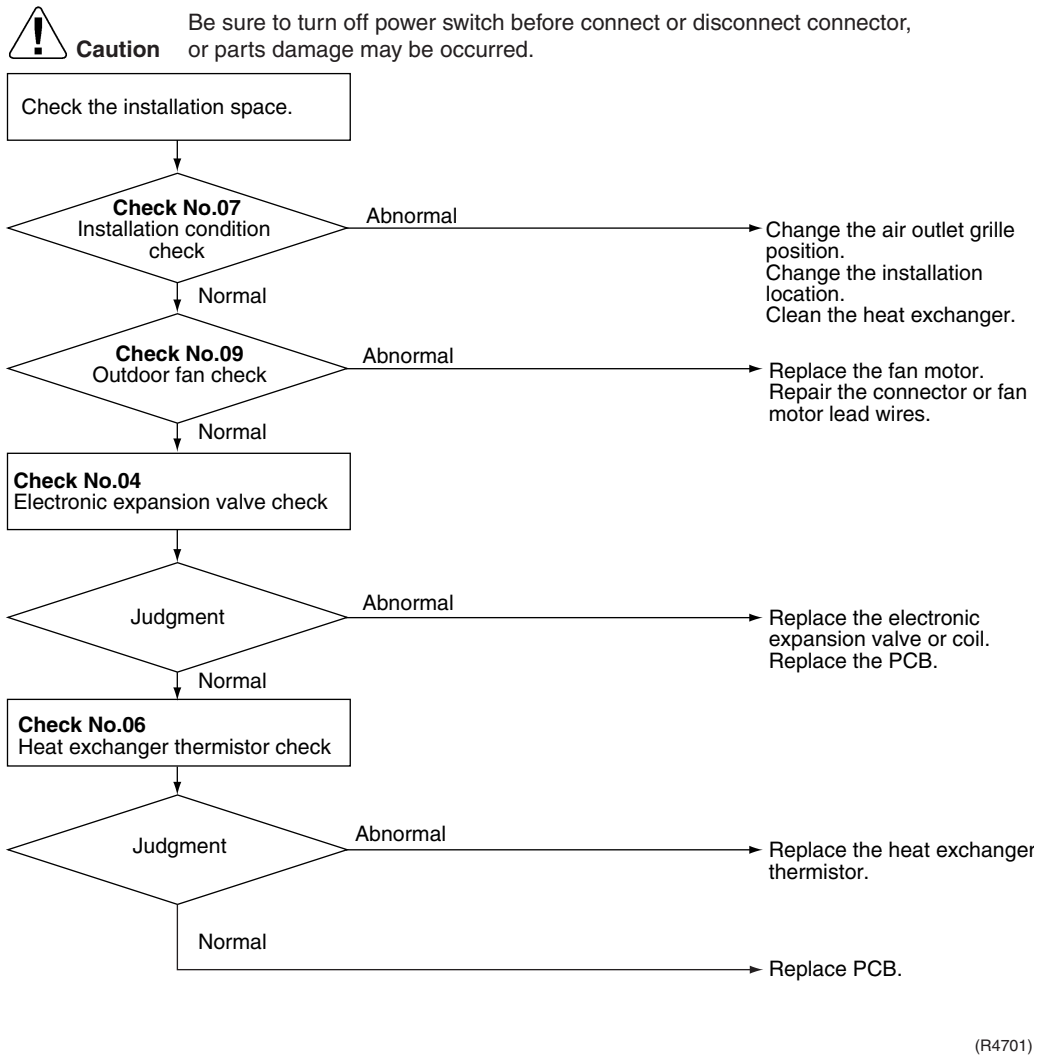
Troubleshooting

Check No.04
Refer to P.119

Check No.06
Refer to P.121

Check No.07
Refer to P.122

Check No.09
Refer to P.123



(R4701)

4.16 Compressor System Sensor Abnormality

Remote Controller Display

H07

Method of Malfunction Detection

- The system checks the DC current before the compressor starts.

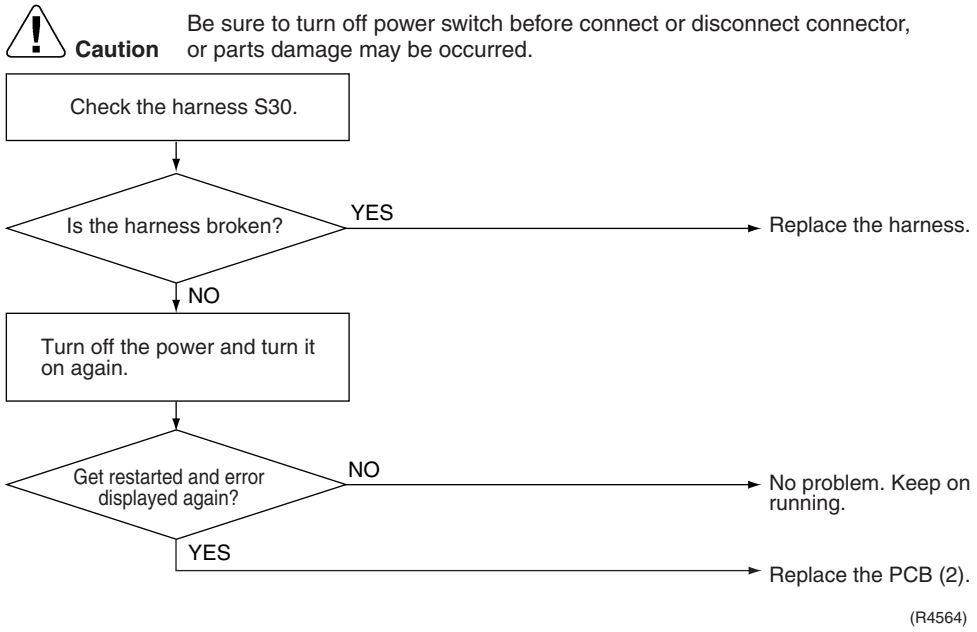
Malfunction Decision Conditions

- If the DC current before compressor start-up is out of the range 0.5-4.5 V (sensor output converted to voltage value) or if the DC voltage before compressor start-up is below 50 V.

Supposed Causes

- PCB defective
- Broken or poorly connected harness

Troubleshooting



4.17 Position Sensor Abnormality

Remote Controller Display

H6

Method of Malfunction Detection

A compressor startup failure is detected by checking the compressor running condition through the position detection circuit.

Malfunction Decision Conditions

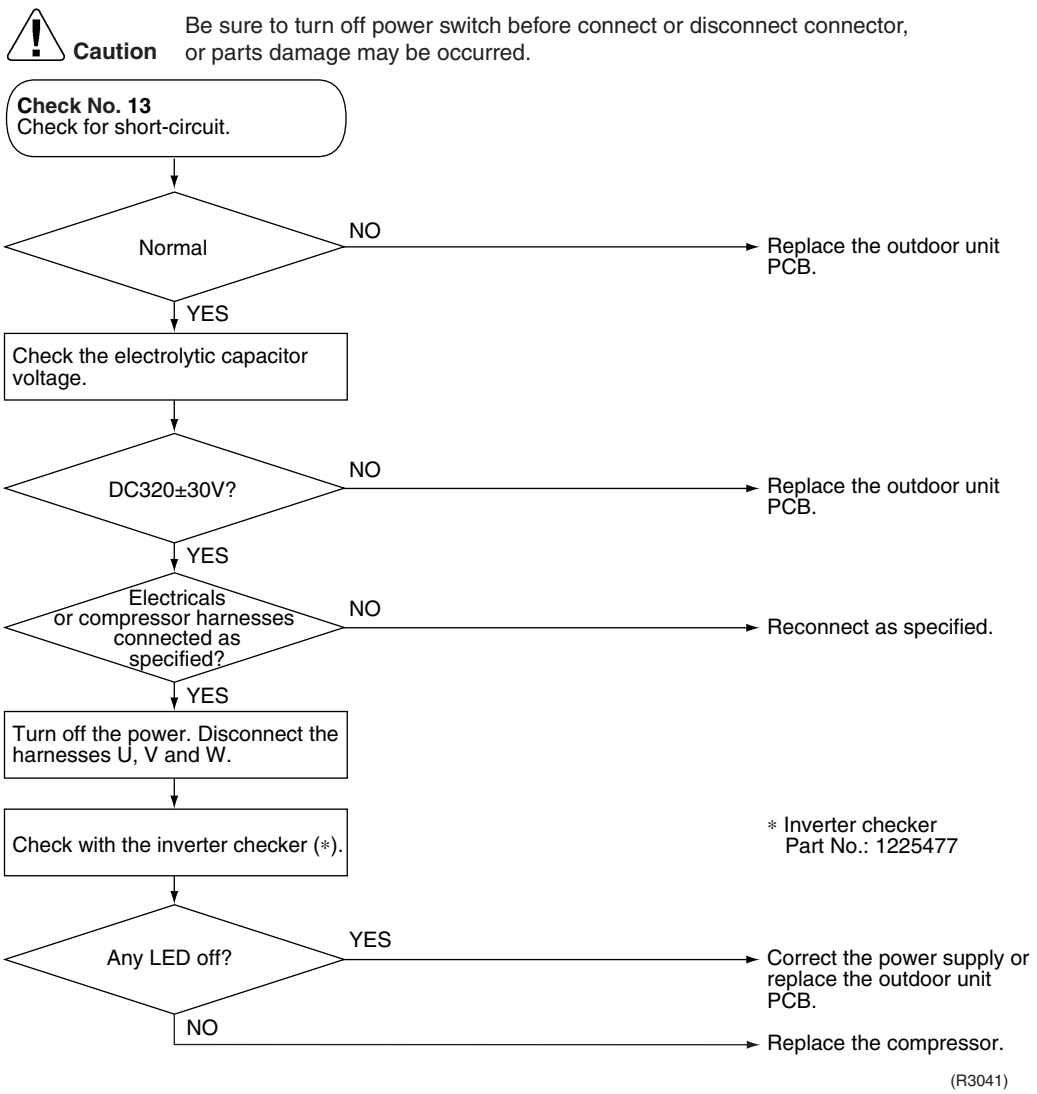
- The compressor fails to start in about 15 seconds after the compressor run command signal is sent.
- The system will be shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 10 minutes (normal)

Supposed Causes

- Compressor relay cable disconnected
- Compressor itself defective
- Outdoor unit PCB defective
- Stop valve closed
- Input voltage out of specification

Troubleshooting

Check No.13
Refer to P.124



4.18 DC Voltage / Current Sensor Abnormality

Remote Controller Display

H8

Method of Malfunction Detection

Detecting abnormality of the DC sensor by the running frequency of compressor and by the input current multiplied DC voltage and current.

Malfunction Decision Conditions

The compressor running frequency is below 52 Hz.
(The input current is also below 0.1 A.)

- If this error repeats 4 times, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

- Outdoor unit PCB defective

Troubleshooting

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

Replace the outdoor unit PCB.

4.19 Thermistor or Related Abnormality (Outdoor Unit)

Remote Controller Display

P4, J3, J6, H9

Method of Malfunction Detection

This type of error is detected by checking the thermistor input voltage to the microcomputer.
[A thermistor error is detected by checking the temperature.]

Malfunction Decision Conditions

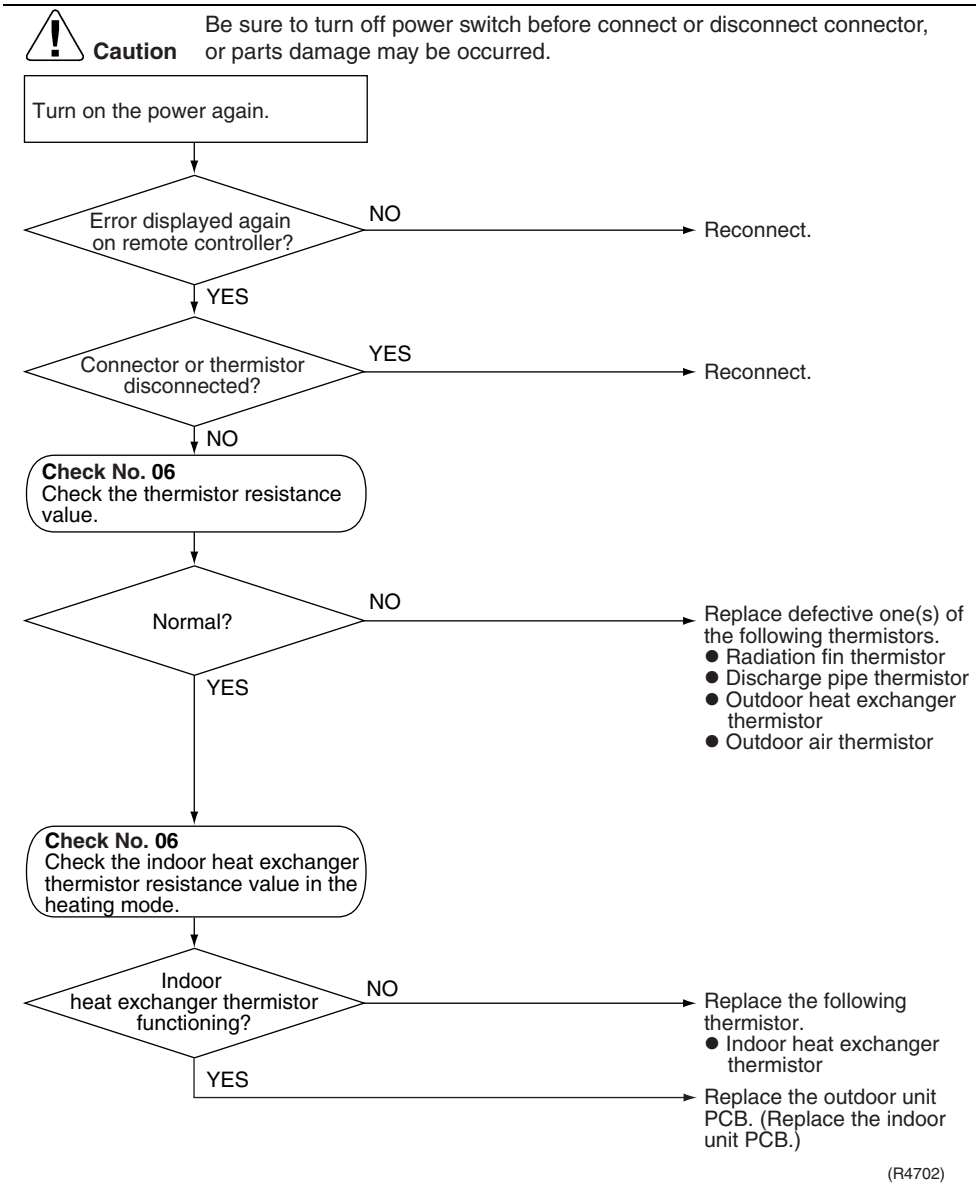
The thermistor input is above 4.96 V or below 0.04 V with the power on.
Error J3 is judged if the discharge pipe thermistor temperature is smaller than the condenser thermistor temperature.

Supposed Causes

- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Indoor unit PCB defective
- Condenser thermistor defective in the case of J3 error (outdoor unit heat exchanger thermistor in the cooling mode, or indoor unit heat exchanger thermistor in the heating mode)

Troubleshooting

Check No.06
Refer to P.121



P4 : Radiation fin thermistor
J3 : Discharge pipe thermistor
J6 : Outdoor heat exchanger thermistor
H9 : Outdoor air temperature thermistor

4.20 Electrical Box Temperature Rise

Remote Controller Display

L3

Method of Malfunction Detection

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

Malfunction Decision Conditions

With the compressor off, the radiation fin temperature is above 80°C. Reset is made when the temperature drops below 70°C.

Supposed Causes

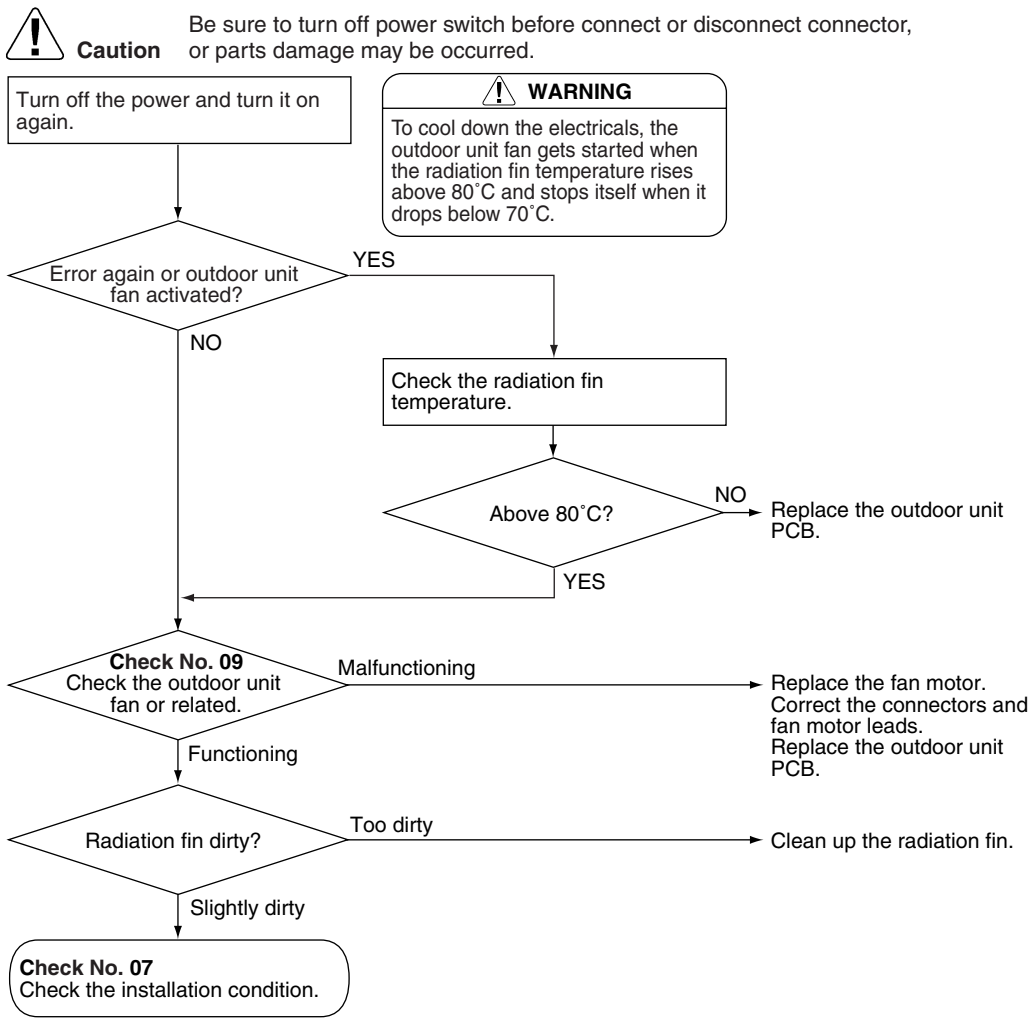
- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective

Troubleshooting

Check No.06
Refer to P.121

Check No.07
Refer to P.122

Check No.09
Refer to P.123



(R6935)

4.21 Radiation Fin Temperature Rise

Remote Controller Display

L4

Method of Malfunction Detection

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

Malfunction Decision Conditions

- If the radiation fin temperature with the compressor on is above 90°C.
- Clearing condition : when the temperature drops below 85°C.
- If a radiation fin temperature rise takes place 4 times successively, the system will be shut down.
- The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

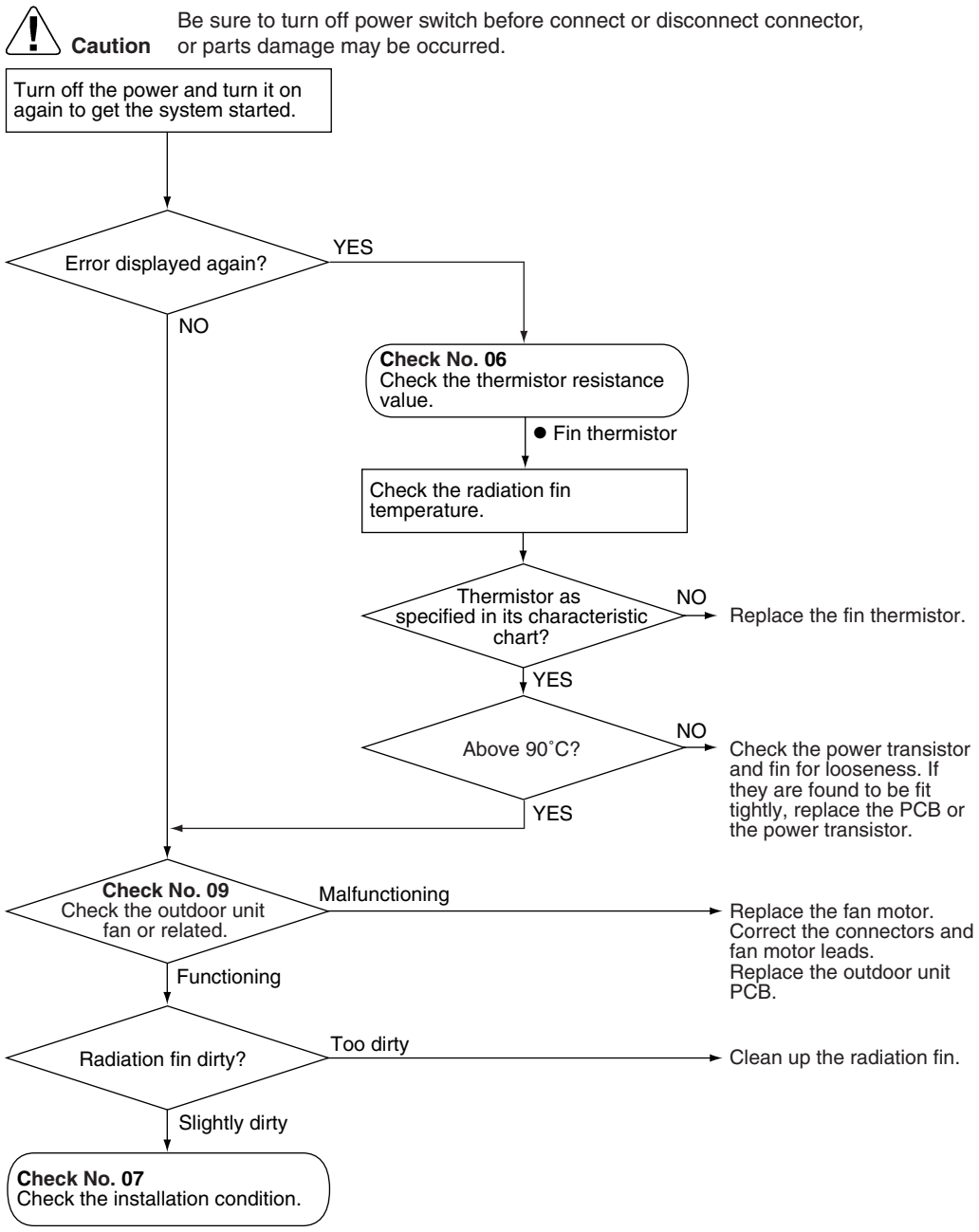
- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective

Troubleshooting

Check No.06
Refer to P.121

Check No.07
Refer to P.122

Check No.09
Refer to P.123



(R4704)

4.22 Output Over Current Detection

Remote Controller Display

L5

Method of Malfunction Detection

An output over-current is detected by checking the current that flows in the inverter DC section.

Malfunction Decision Conditions

- A position signal error occurs while the compressor is running.
- A speed error occurs while the compressor is running.
- An output over-current input is fed from the output over-current detection circuit to the microcomputer.
- The system will be shut down if the error occurs 255 times.
- Clearing condition: Continuous run for about 10 minutes (normal)

Supposed Causes

- Over-current due to defective power transistor
- Over-current due to wrong internal wiring
- Over-current due to abnormal supply voltage
- Over-current due to defective PCB
- Error detection due to defective PCB
- Over-current due to closed stop valve
- Over-current due to compressor failure
- Over-current due to poor installation condition

Troubleshooting

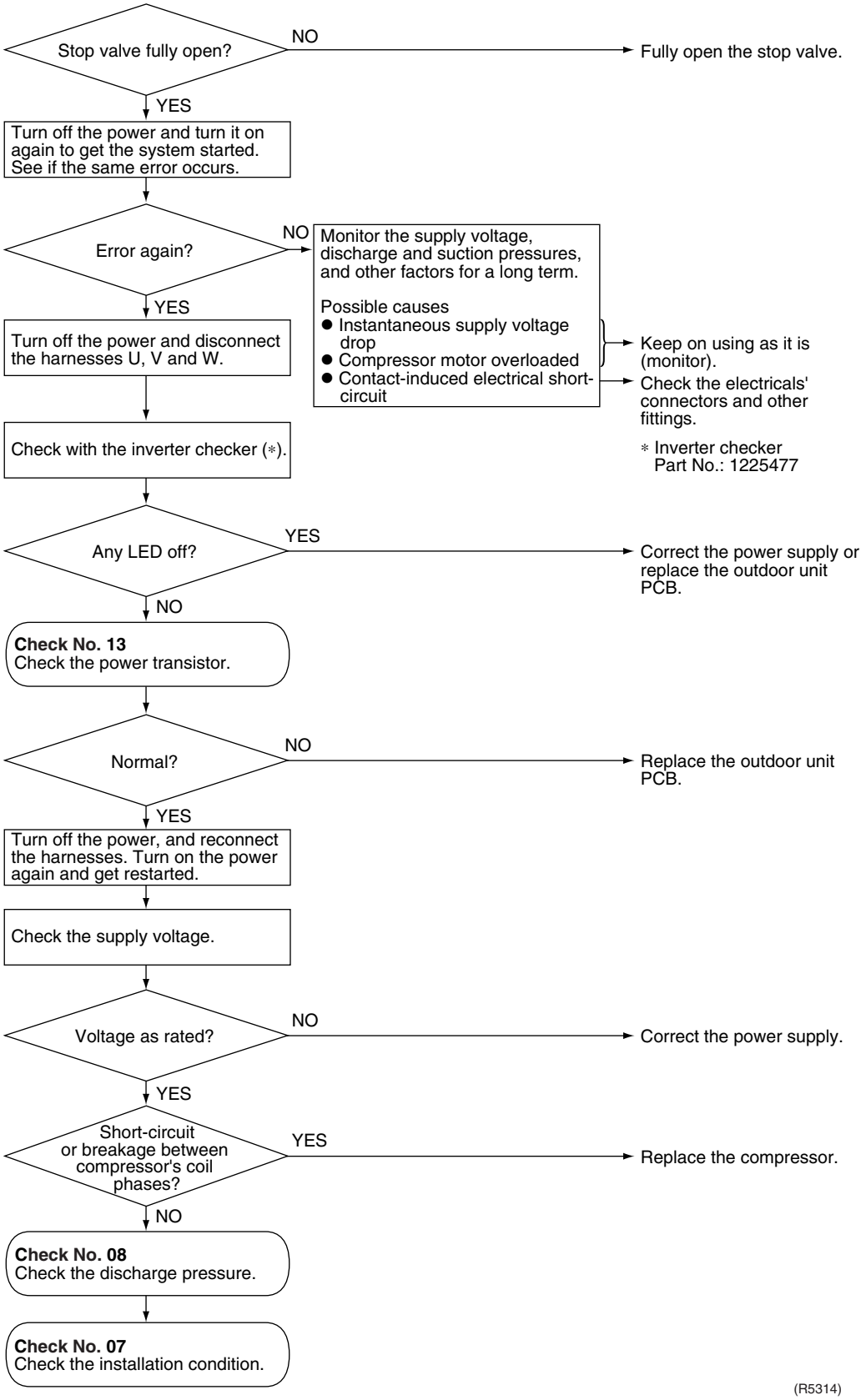
Check No.07
Refer to P.122

Check No.08
Refer to P.122

Check No.13
Refer to P.124

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

∗ An output over-current may result from wrong internal wiring. If the wires have been disconnected and reconnected for part replacement, for example, and the system is interrupted by an output over-current, take the following procedure.



(R5314)

4.23 Insufficient Gas

Remote Controller Display

U0

Method of Malfunction Detection

Gas shortage detection I:
Gas shortage is detected by checking the input current value and the compressor running frequency. If the gas is short, the input current is smaller than the normal value.

Gas shortage detection II:
Gas shortage is detected by checking the discharge temperature and the opening of the electronic expansion valve. If the gas is short, the discharge temperature tends to rise.

Gas shortage detection III:
A gas shortage is detected by checking the difference between inhale and exhale temperature.

Malfunction Decision Conditions

Gas shortage detection I:
The following conditions continue for 7 minutes.
- Input current × input voltage ≤ 640 / 256 × output frequency
- Output frequency > 55 (Hz)

Gas shortage detection II:
The following conditions continue for 80 seconds.
- Target opening of the electronic expansion valve ≥ 480 (pulse)
- Discharge temperature > 255 / 256 × target discharge temperature +30 (°C)

Gas shortage detection III:
When the difference of the temperature is smaller than Δ , it is regarded as insufficient gas.

		Δ
Cooling	room temperature – indoor heat exchanger temperature	4.0°C
	outdoor heat exchanger temperature – outdoor temperature	4.0°C
Heating	indoor heat exchanger temperature – room temperature	3.0°C
	outdoor temperature – outdoor heat exchanger temperature	3.0°C

If a gas shortage error takes place 4 times straight, the system will be shut down. The error counter will reset itself if this or any other error does not occur during the following 60-minute compressor running time (total time).

Supposed Causes

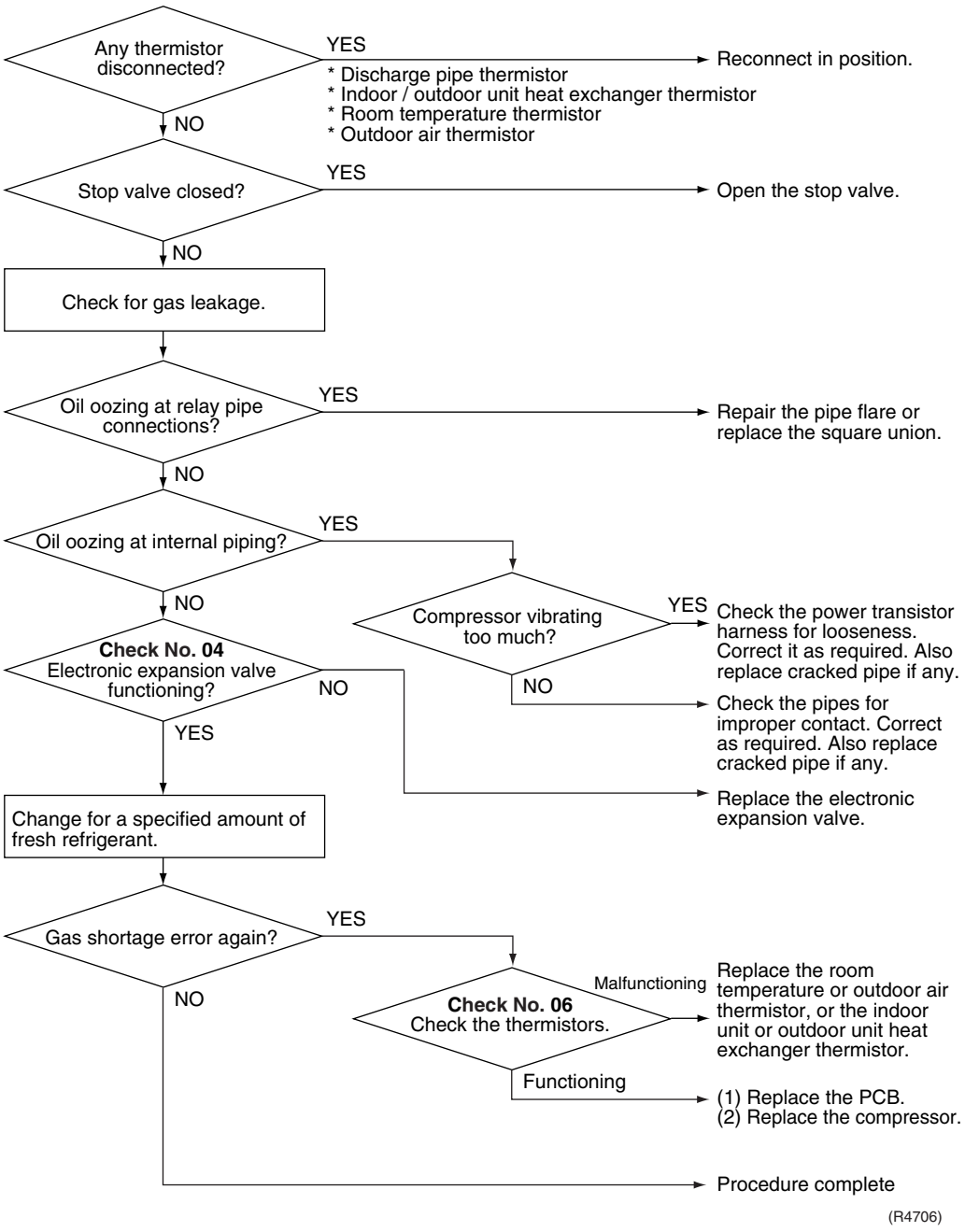
- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Discharge pipe thermistor disconnected, or indoor unit or outdoor unit heat exchanger thermistor disconnected, room or outdoor air temperature thermistor disconnected
- Stop valve closed
- Electronic expansion valve defective

Troubleshooting

Check No.04
Refer to P.119

Check No.06
Refer to P.121

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



(R4706)

4.24 Over-voltage Detection

Remote Controller Display

U2

Method of Malfunction Detection

An abnormal voltage rise is detected by checking the specified over-voltage detection circuit.

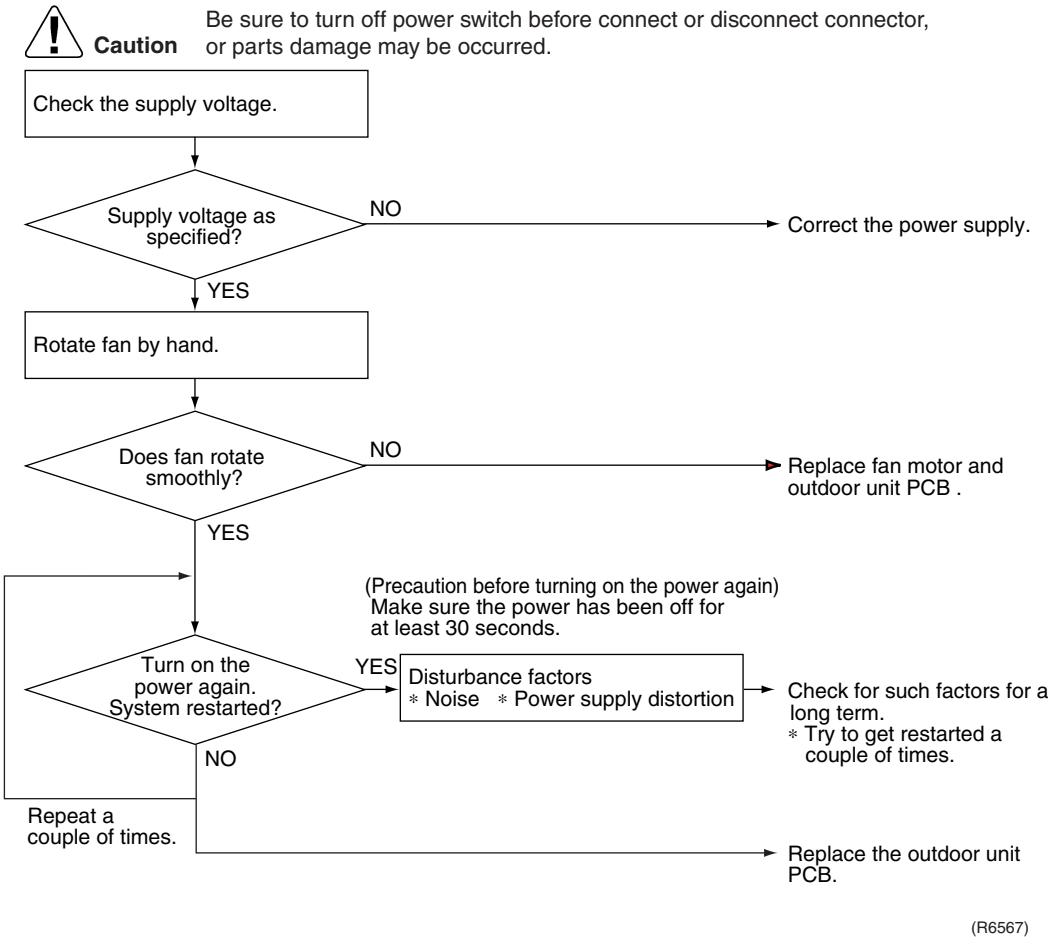
Malfunction Decision Conditions

- An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer (The voltage is over 400V).
- The system will be shut down if the error occurs 255 times.
- Clearing condition: Continuous run for about 10 minutes (normal)

Supposed Causes

- Supply voltage not as specified
- Over-voltage detection circuit defective
- PAM control part(s) defective
- Short circuit inside the fan motor winding.

Troubleshooting



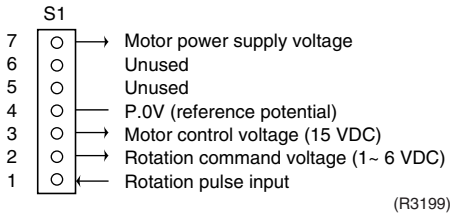
5. Check

5.1 How to Check

5.1.1 Fan Motor Connector Output Check

Check No.01

1. Check connector connection.
2. Check motor power supply voltage output (pins 4-7).
3. Check motor control voltage (pins 4-3).
4. Check rotation command voltage output (pins 4-2).
5. Check rotation pulse input (pins 4-1).

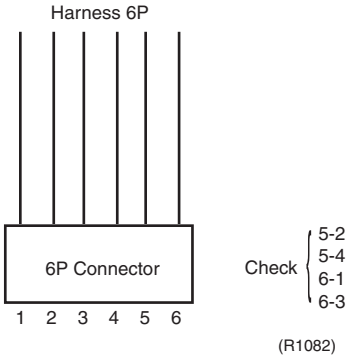


5.1.2 Electronic Expansion Valve Check

Check No.04

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.

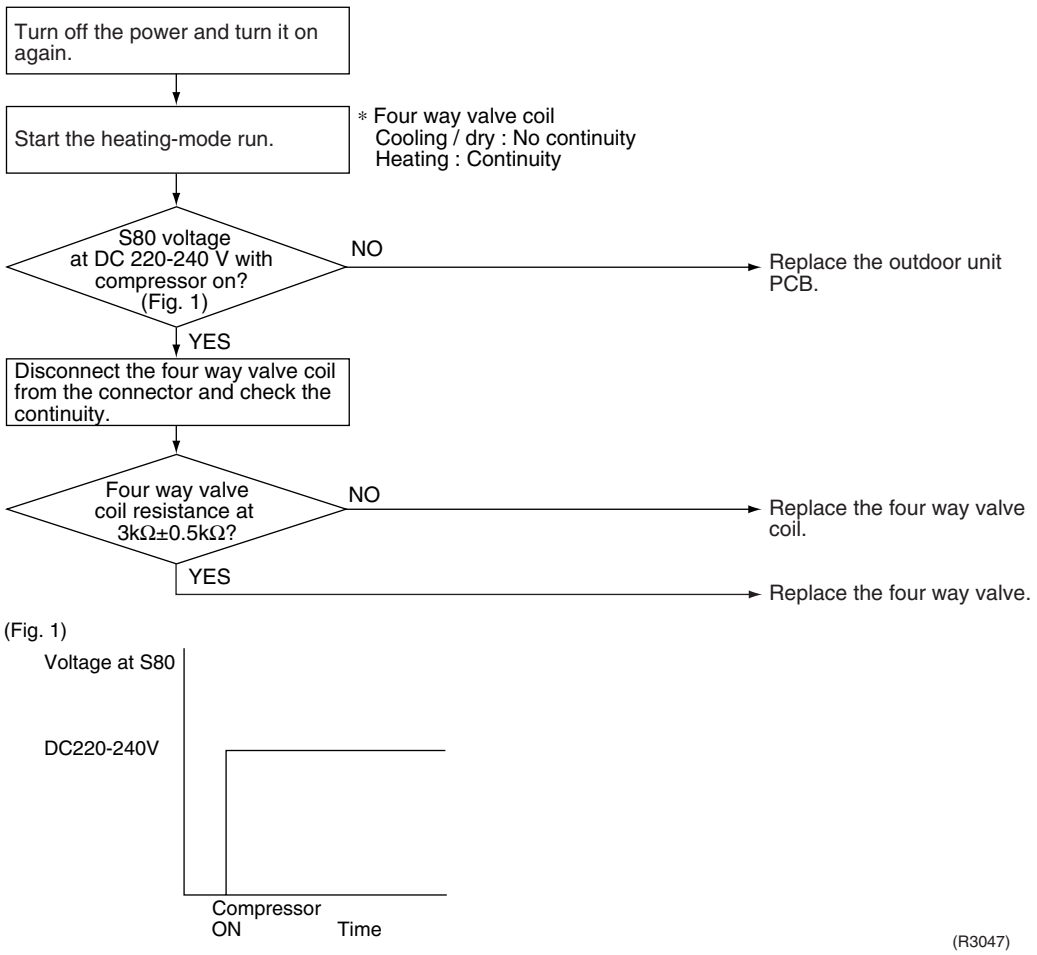


4. If no EV generates latching sound in the above step 2, the outdoor unit PCB is faulty.
5. If the conductivity is confirmed in the above step 2, mount a good coil (which generated latching sound) in the EV unit that did not generate latching sound, and check to see if that EV generates latching sound.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

5.1.3 Four Way Valve Performance Check

Check No.05



(Fig. 1)

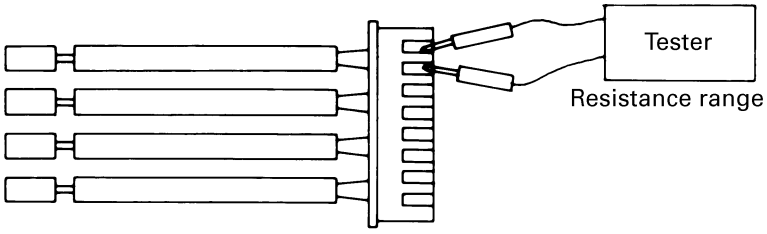
(R3047)

5.1.4 Thermistor Resistance Check

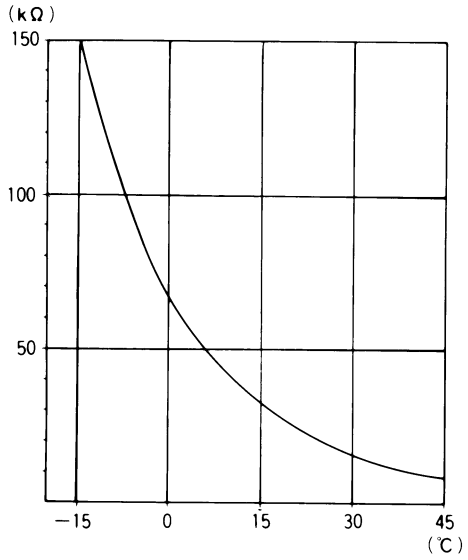
Check No.06

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



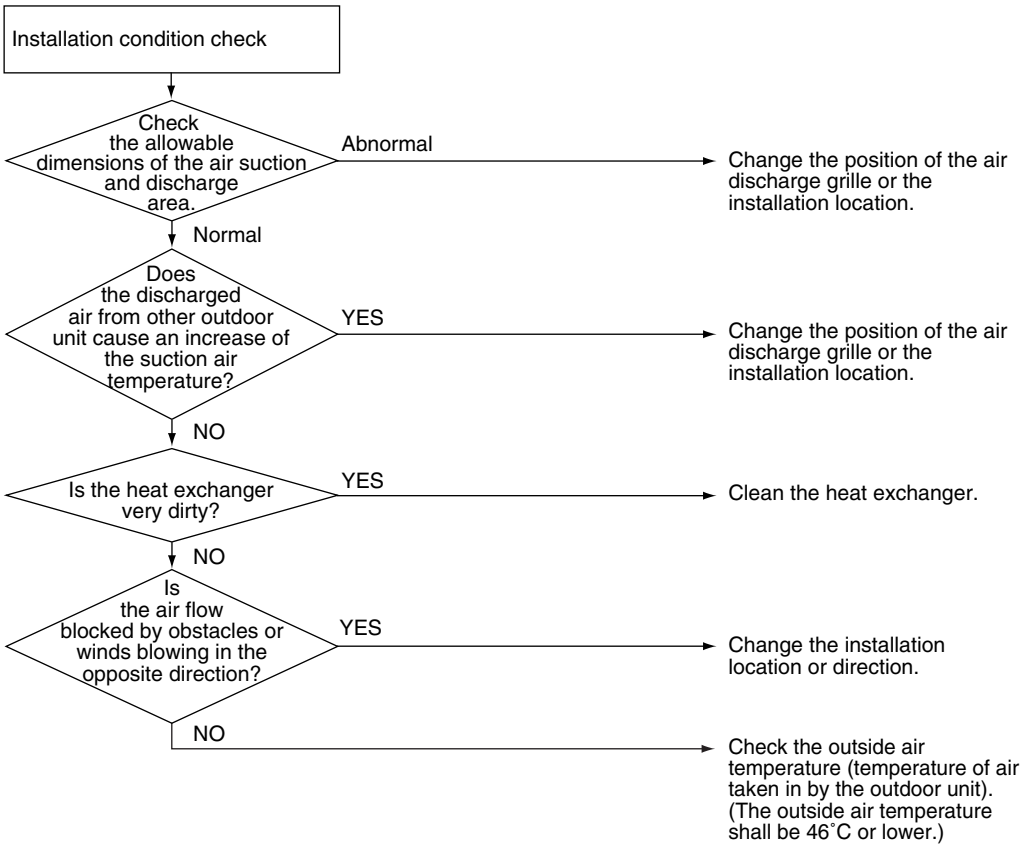
（R25＝20kΩ、B＝3950）



(R1437)

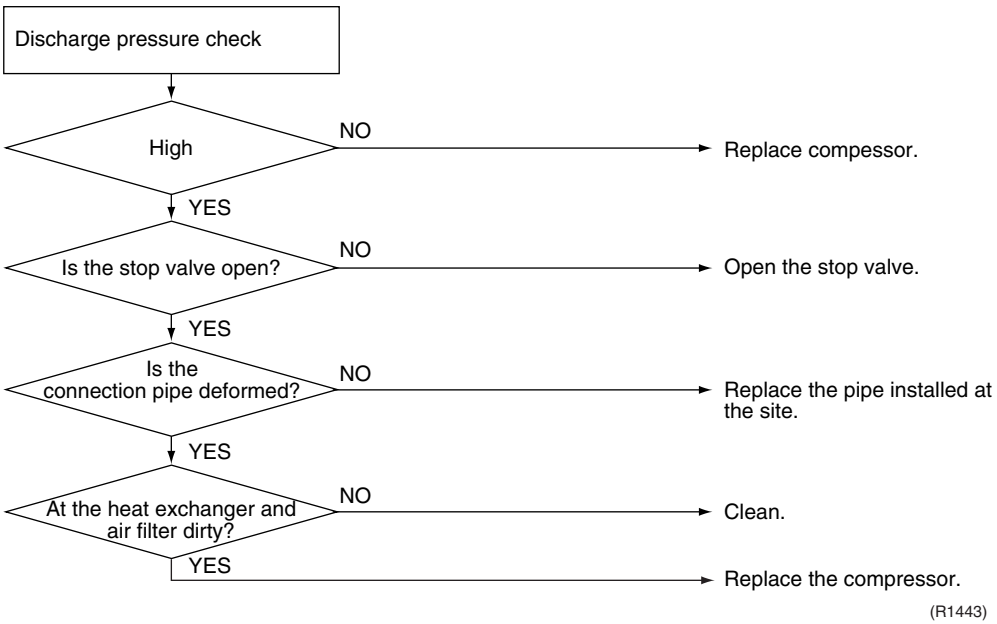
5.1.5 Installation Condition Check

Check No.07



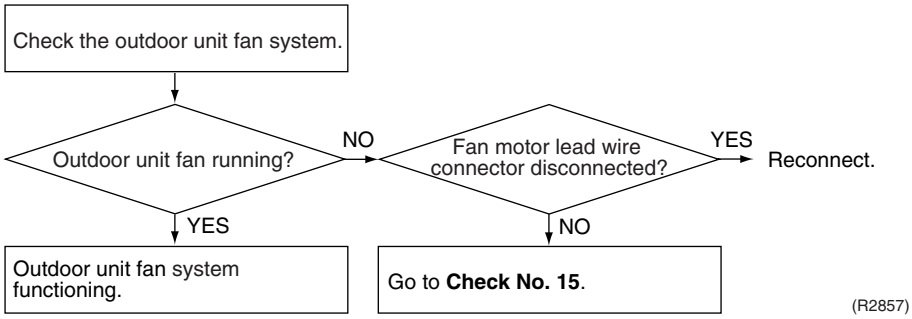
5.1.6 Discharge Pressure Check

Check No.08



5.1.7 Outdoor Unit Fan System Check

Check No.09 **DC motor**



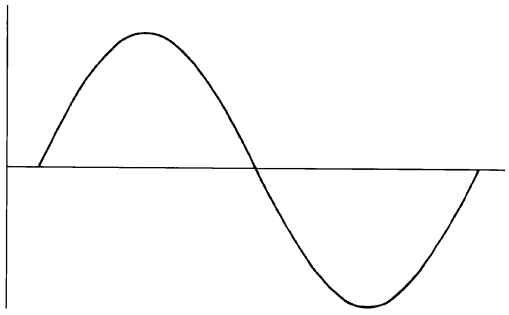
5.1.8 Power Supply Waveforms Check

Check No.10

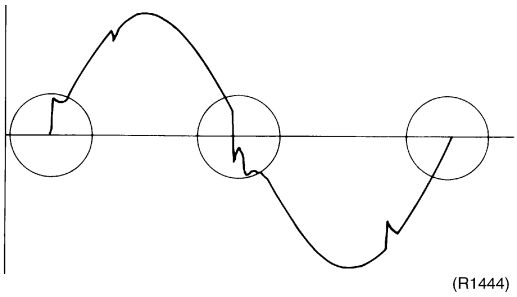
Measure the power supply waveform between pins 1 and 3 on the terminal board, and check the waveform disturbance.

- 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]

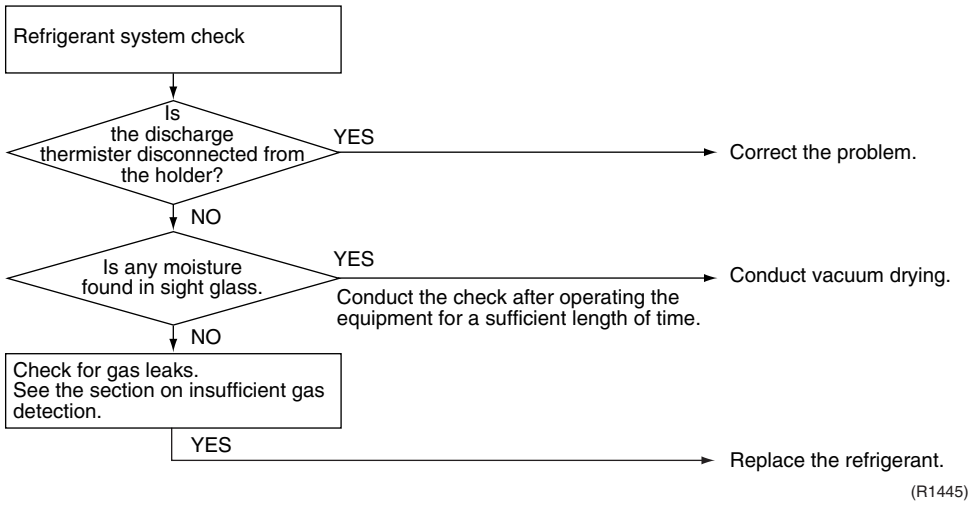


[Fig.2]



5.1.9 Inverter Units Refrigerant System Check

Check No.11



5.1.10 Power Transistor Check

Check No.13

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. To disengage the connector, press the protrusion on the connector.
Then, 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>

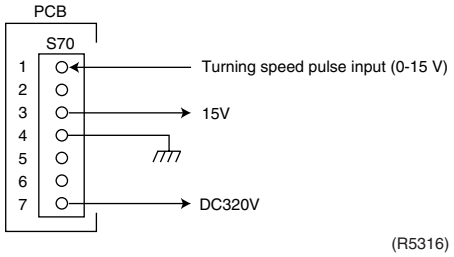
Negative (-) terminal of tester (positive terminal (+) for digital tester)	Power transistor (+)	UVW	Power transistor (-)	UVW
Positive (+) terminal of tester (negative terminal (-) for digital tester)	UVW	Power transistor (+)	UVW	Power transistor (-)
Normal resistance	Several kΩ to several MΩ (*)			
Unacceptable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

5.1.11 Turning Speed Pulse Input on the Outdoor Unit PCB Check

Check No.15

<Propeller fan motor>
Make sure the voltage of 320±30V is being applied.
(1) Stop the operation first and then the power off, and disconnect the connector S70.
(2) Make sure there is about DC 320 V between pins 4 and 7.
(3) With the system and the power still off, reconnect the connector S70.
(4) Make a turn of the fan motor with a hand, and make sure the pulse (0-15 V) appears twice at pins 1 and 4.

If the fuse for fan motor protection is blown out, the outdoor-unit fan may also be in trouble. Check the fan too.
If the voltage in Step (2) is not applied, it means the PCB is defective. Replace the PCB.
If the pulse in Step (4) is not available, it means the Hall IC is defective. Replace the DC fan motor.If there are both the voltage (2) and the pulse (4), replace the PCB.



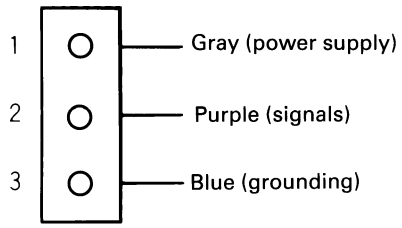
* Propeller fan motor : S70

5.1.12 Hall IC 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.



(R1968)

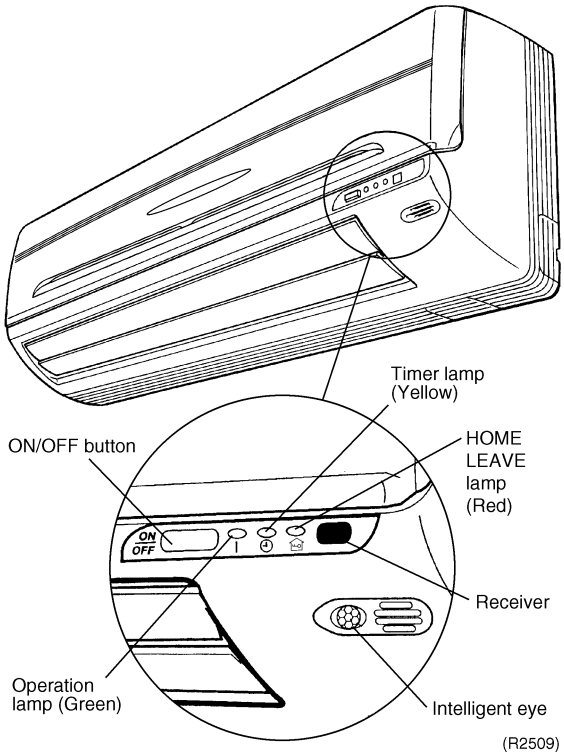
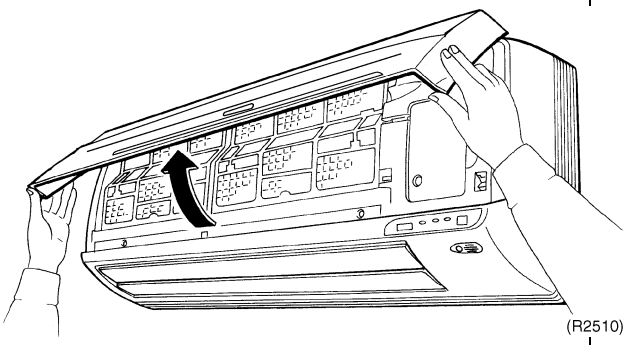
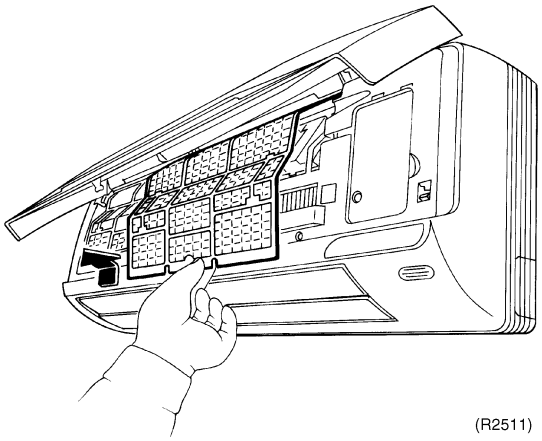
Part 7
Removal Procedure

1. Indoor Unit

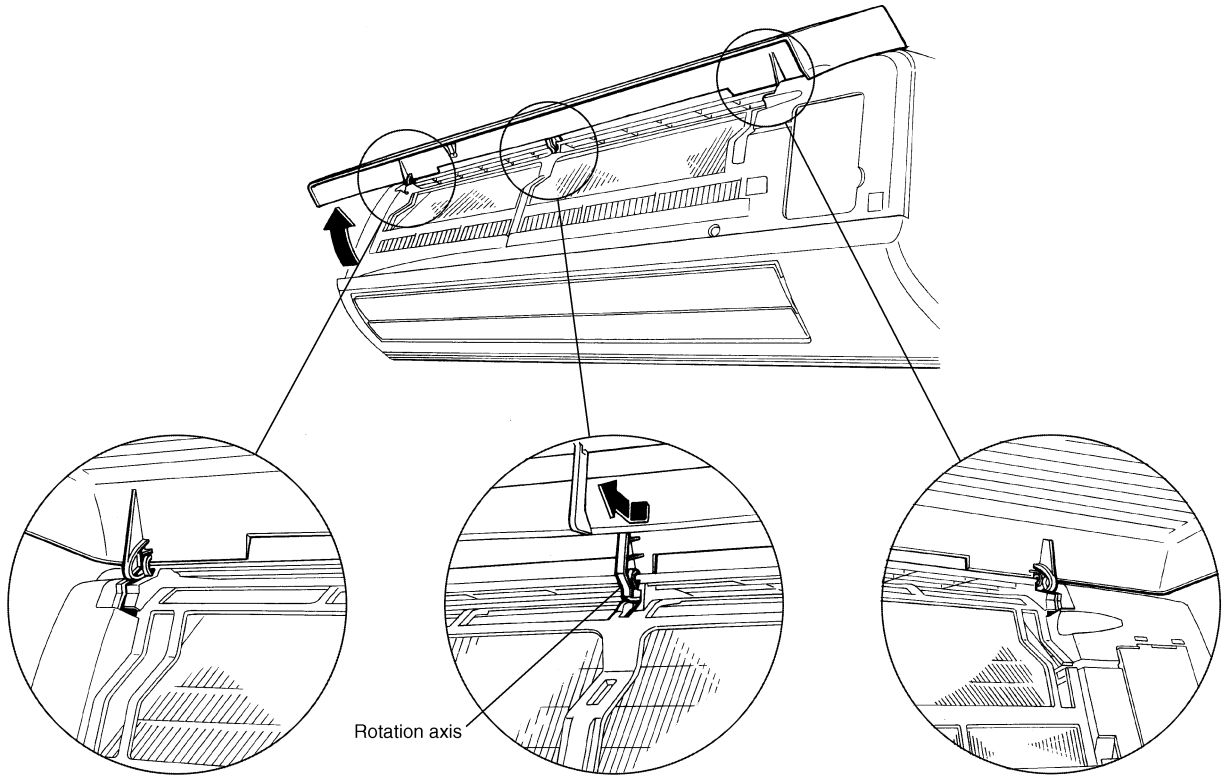
1.1 Removal of Air Filter

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. External features		■ If ON/OFF button is kept pushing for 5 seconds, a forced cooling operation will be carried out for approx. 15 minutes.
2. Removing air filters		
1 Pull protrusions on left and right sides of panel with fingers and open front grille all the way.		
2 Lift center section of air filter and disengage hooks. Remove air filter by pulling forward.		■ Left and right filters are interchangeable. ■ To re-install, insert air filter along the guide.

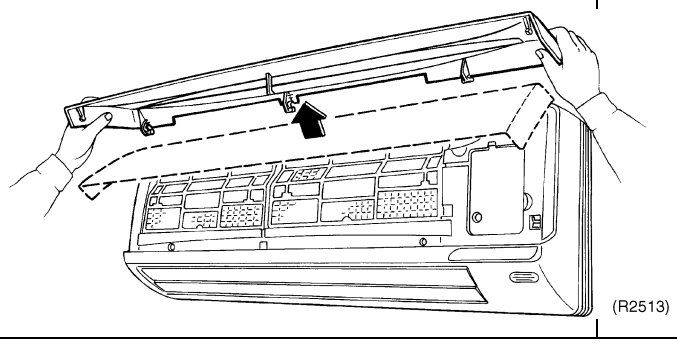
Step	Procedure	Points
3. Opening and shutting front panel		
1	Hook a finger onto the projection part provided on the both sides of the unit's panel and open up the panel to the position higher than it will stop.	Support the front panel by one hand, while remove the rotation axis at the upper center by the other hand. ■ And pull out the front panel forward to remove.



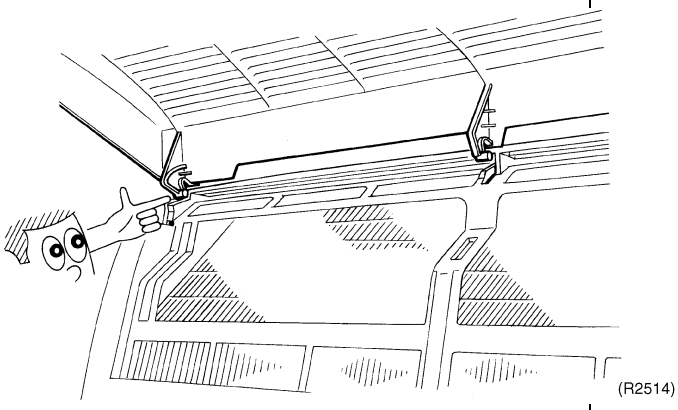
Slide the center rotary axis the left and remove it out.

(R2512)

2	Remove front panel from the unit.	



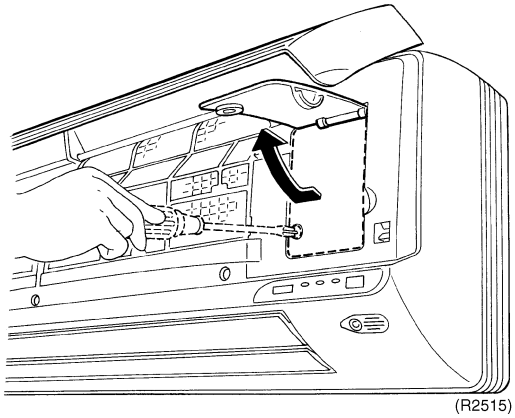
(R2513)

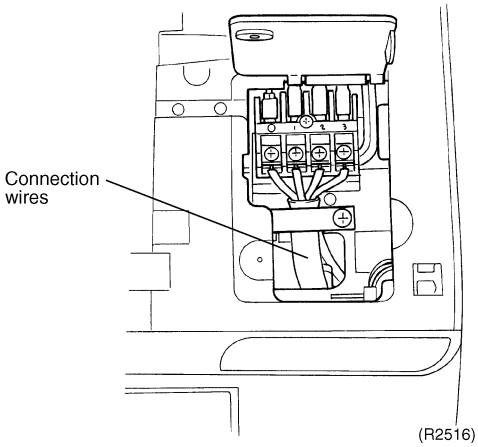
Step	Procedure		Points
3	When restoring the air filter, make sure that the projection parts on the panel are in the guide groove, and then shut the panel.	 (R2514)	

1.2 Removal of Front Grille

Procedure **Warning** **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

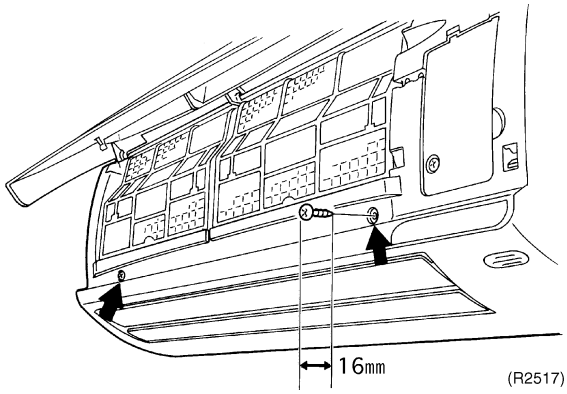
Step	Procedure	Points
1. Opening and closing of service cover		
1	Remove a service cover mounting screw. Open service cover upward	■ A switch for field setting is not provided in particular.


(R2515)

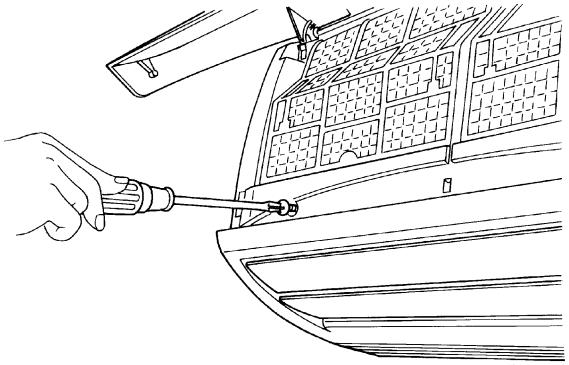


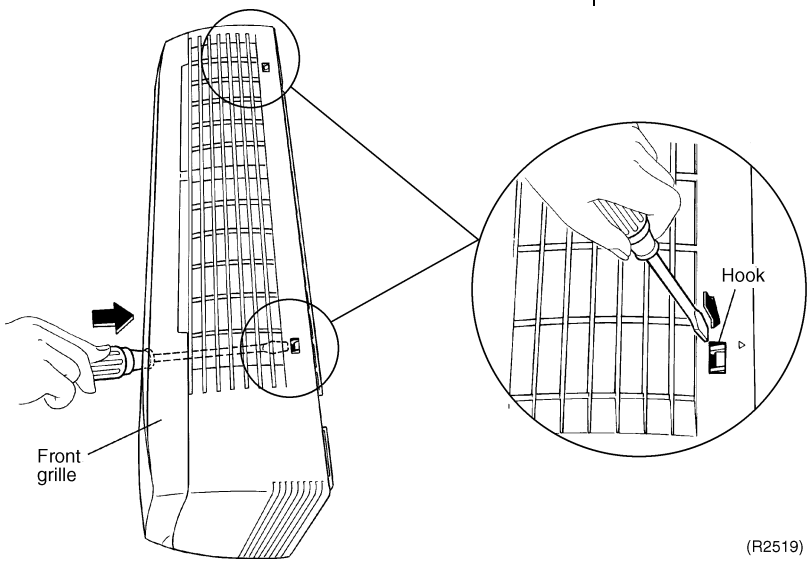
(R2516)

Step	Procedure	Points
2. Removal of front grille assembly.		
1	Remove the 2 screws, in the right and the left, which fix the main body with the front grille.	■ Screw stoppers inside the flap which were equipped in the existing models are not provided.
2	Disengage the 2 hooks on the upper part. In case that the hooks are not pressed from above, remove the front panel and then remove the grille while pushing the hook through a clearance between the front grille and the heat exchanger.	■ At the upper part there are 2 hooks in the left and the right. ■ Disengage the hooks by pressing knobs with a screwdriver.

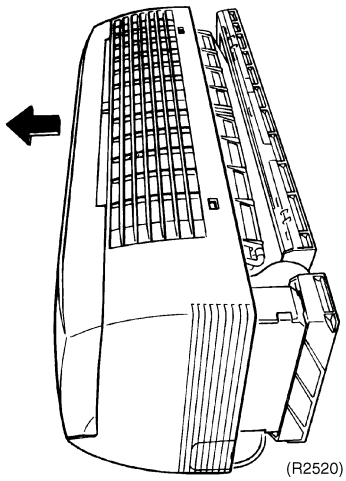
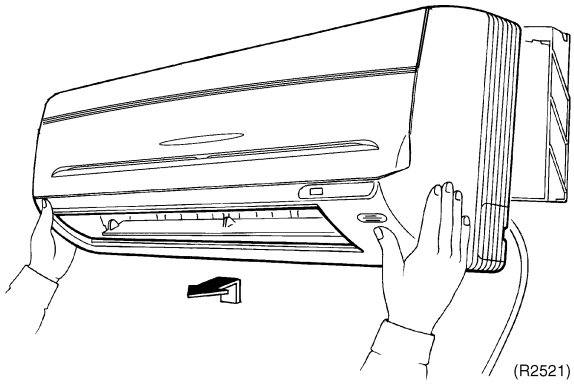


(R2517)


(R2518)



(R2519)

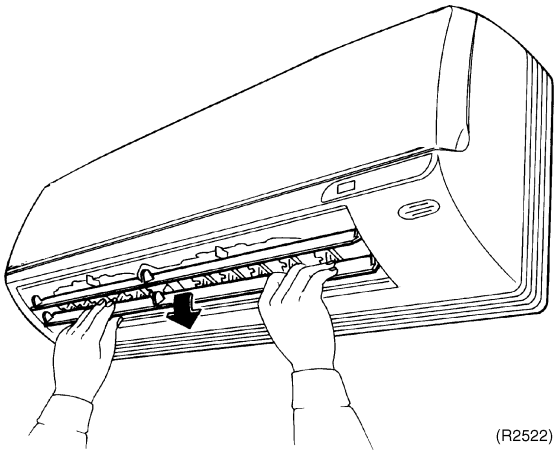
Step	Procedure		Points
3	The front grille can be removed in a manner to pull out the upper part forward and lift up the lower part.	 (R2520)  (R2521)	■ When restoring the grille, Make sure whether each hook is set as it was.

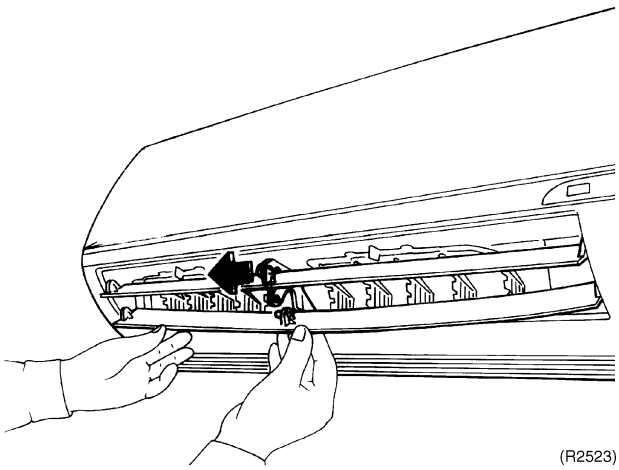
1.3 Removal of Horizontal Blade and Vertical Blade

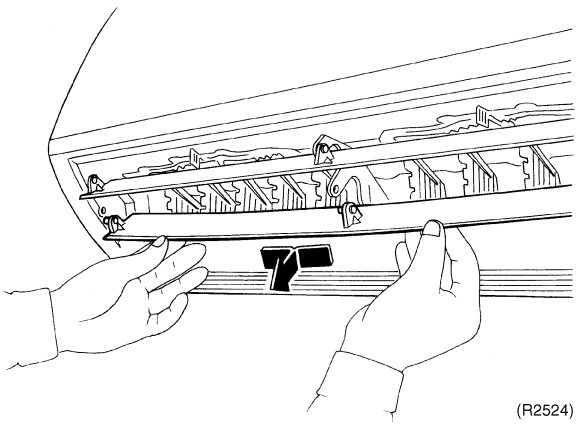
Procedure

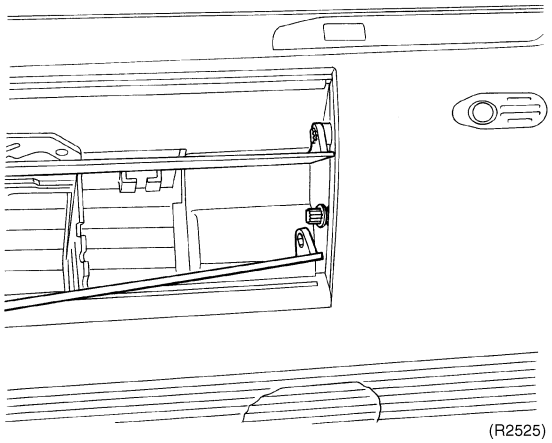
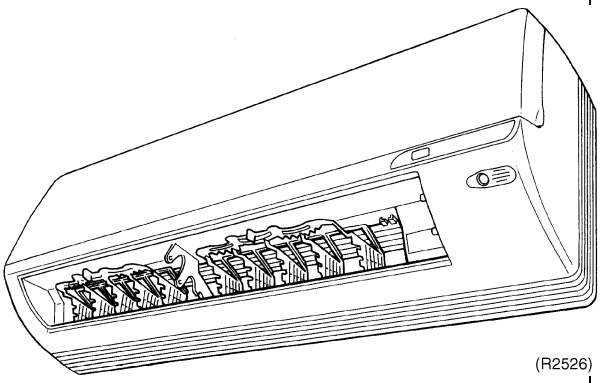
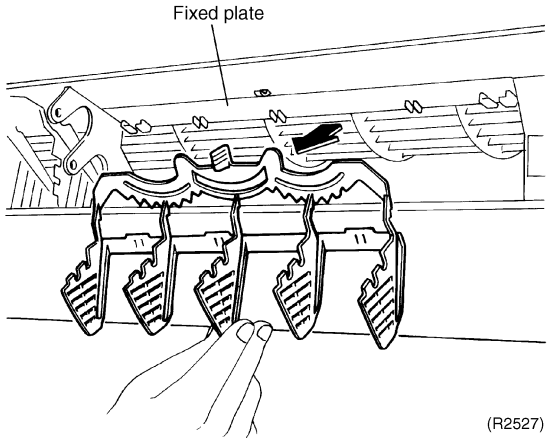
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove horizontal blade.		
1	Lift horizontal blade to open position.	■ Screw stoppers inside the flap which were equipped in the existing models are not provided.
2	Disengage horizontal blade from blade retaining section.	
3	Bend blade slightly and remove it from the unit.	


(R2522)

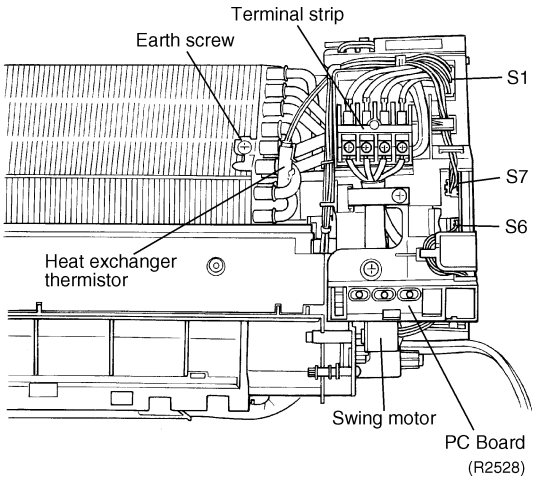
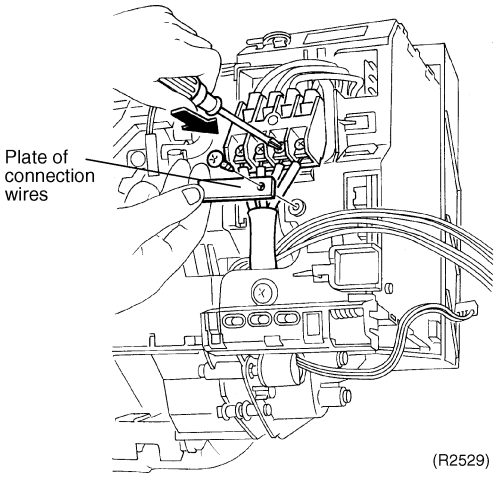
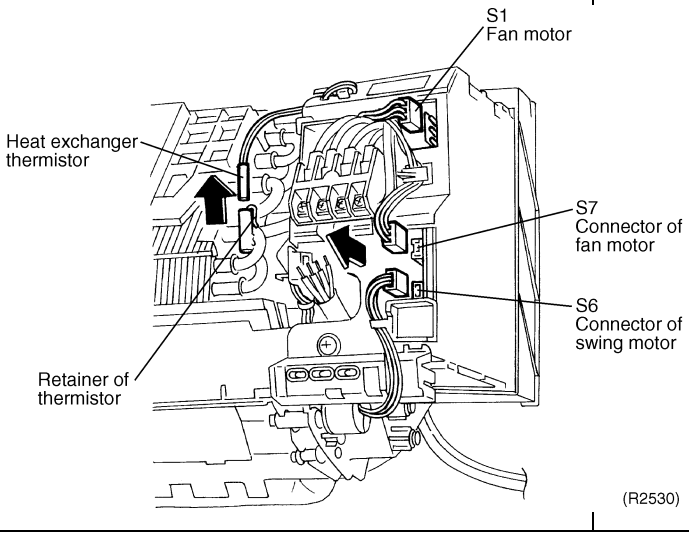

(R2523)

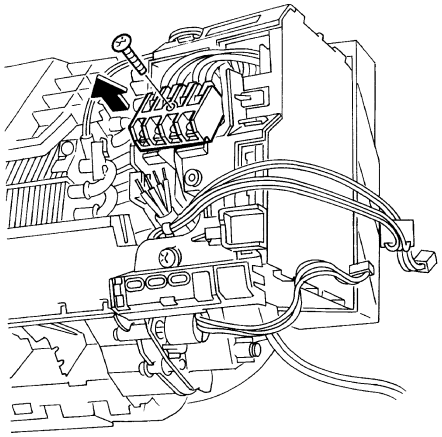
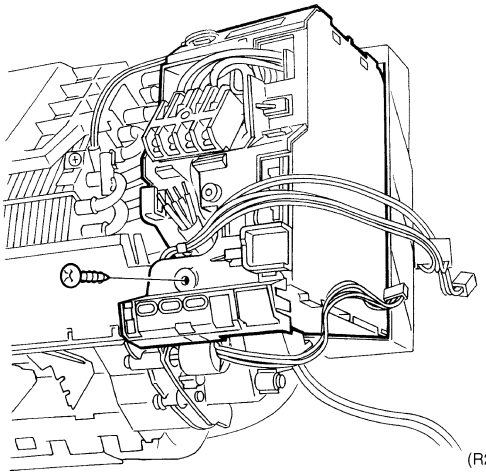

(R2524)

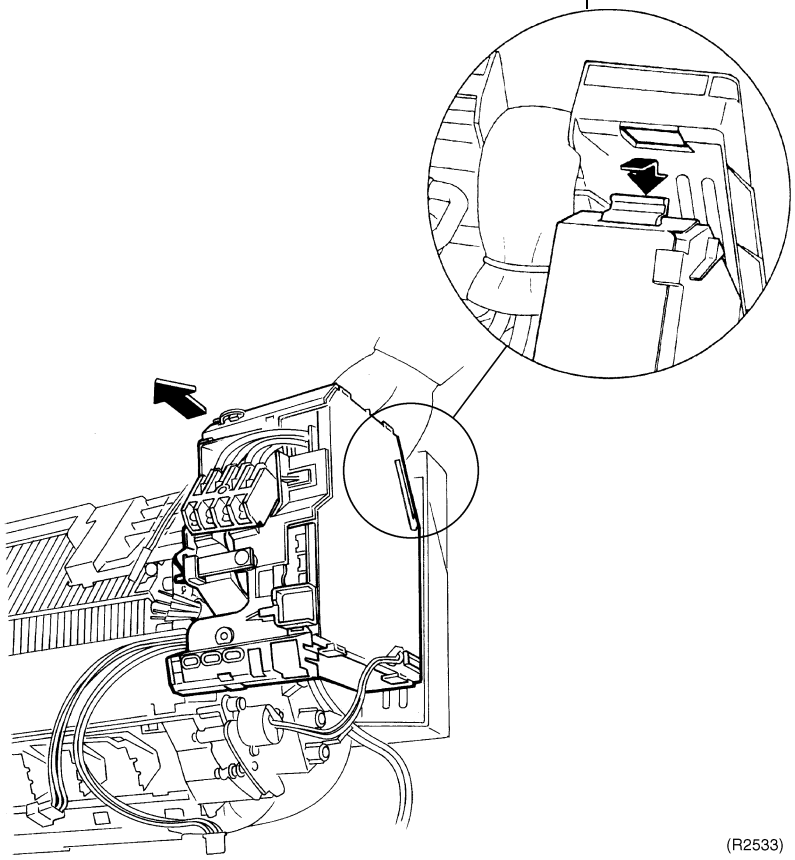
Step	Procedure		Points
		 (R2525)	■ For restoring. 1. Since the key pattern hook is provided on the left side, insert the edge of the blade to the tip while rotating it. 2. Restore the 2 fixed parts of the horizontal blade onto the hook.
2. Removal of vertical blade			
1	Disengage the vertical blade's joint from the fixed plate.	 (R2526)	
2	Remove the blade forward.	 (R2527)	■ Five vertical blades are integrated with the joint rod. (so, only one blade can't be exchanged.)

1.4 Removal of Switch Box, PC Board and Swing Motor

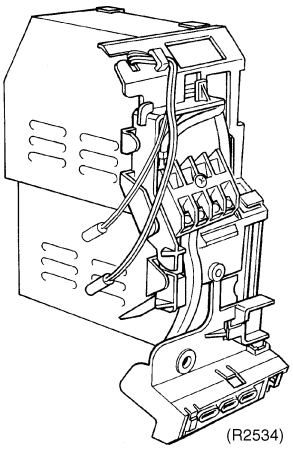
Procedure **Warning** **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

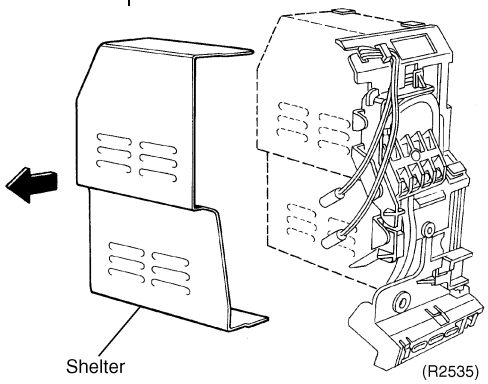
Step	Procedure	Points
■ Remove front grill.		
1. Remove switch box.		■ Pay attention to the direction of the retainer of the thermistor so that the retainer will not touch the harness (same as the existing models.)
1 Disconnect the connection wires.		
2 Disconnect connectors (S1 and S7) of fan motor.		
3 Disconnect one connector (S6) of swing motor.		
4 Remove heat exchanger thermistor.		

Step	Procedure		Points
5	Remove a screw on the terminal strip.	 (R2531)	■ The switch box can be removed instead of disengaging the terminal strip.
6	Remove a screw on the switch box.	 (R2532)	

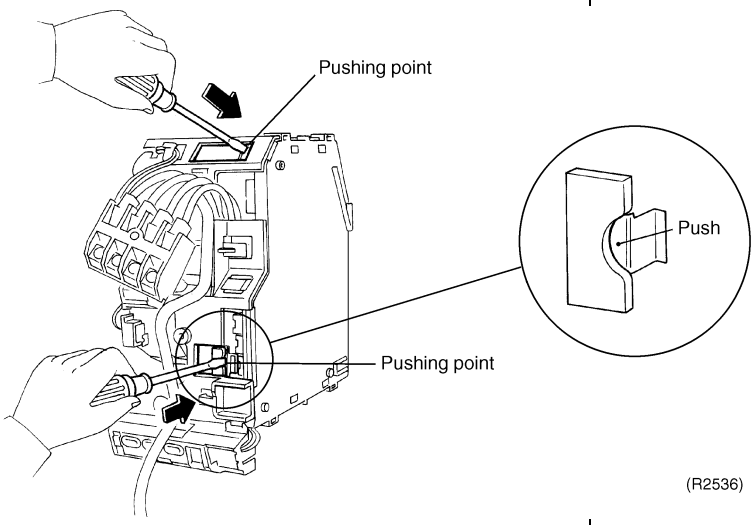
Step	Procedure		Points
7	Pull up the switch box forward to remove.	 (R2533)	■ A hook is provided on the behind.

Step	Procedure	Points
2. Removal of PCB		
1	Remove the shelter.	
2	Disengage the front plate of the switch box. Disengage the knobs by pushing the 2 hooks at the top and the bottom.	
3	Sliding to the left, the front part of the switch box can be removed.	

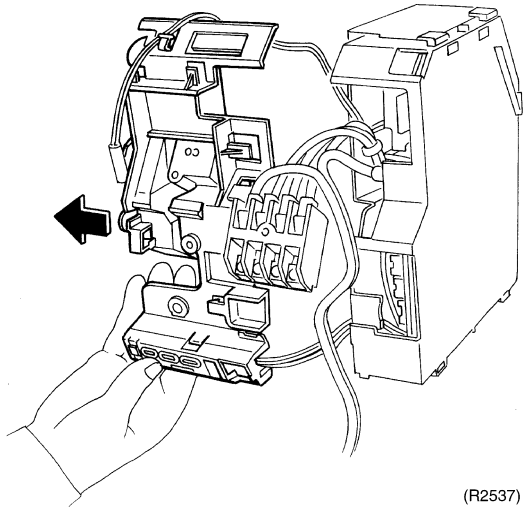

(R2534)



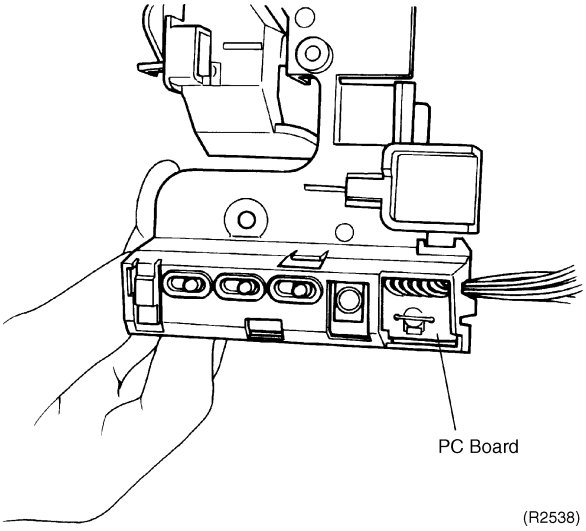
(R2535)

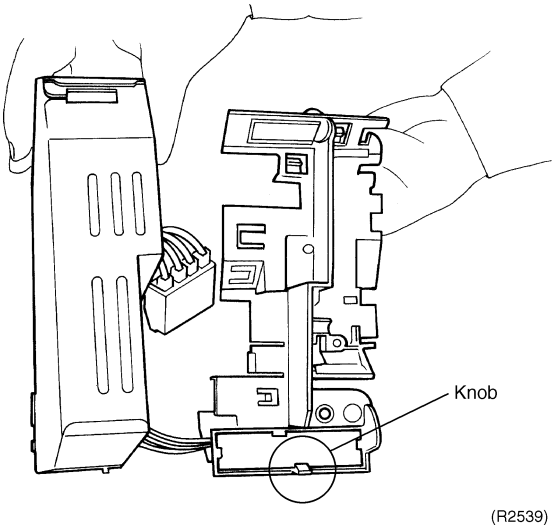


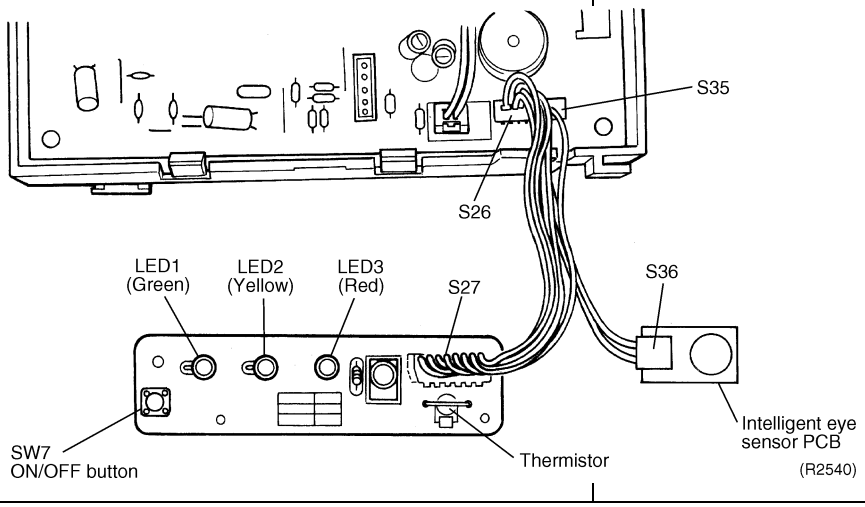
(R2536)

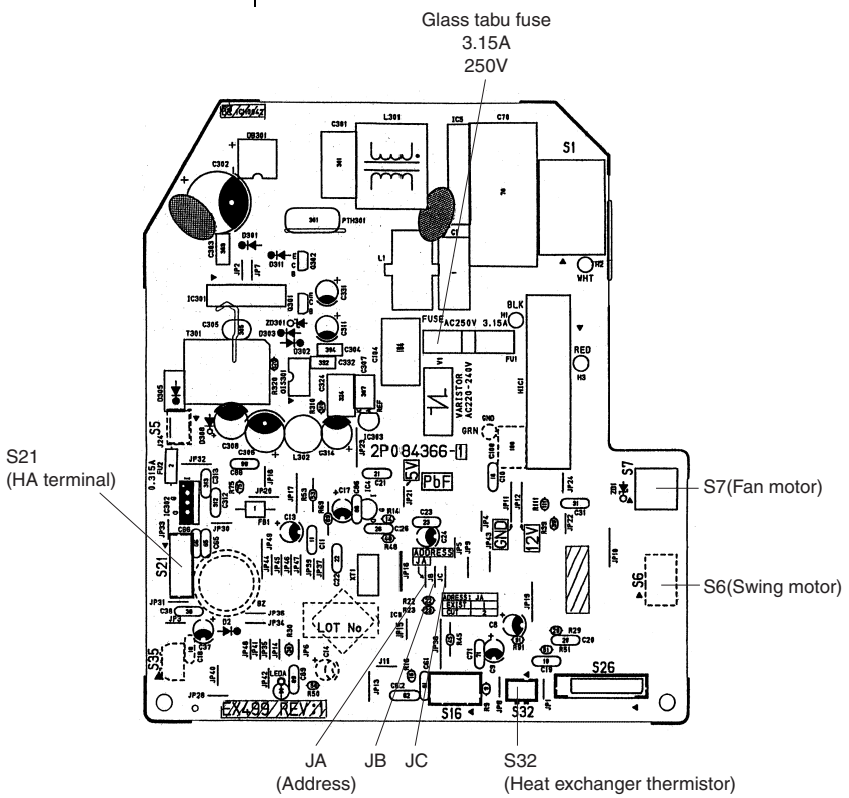
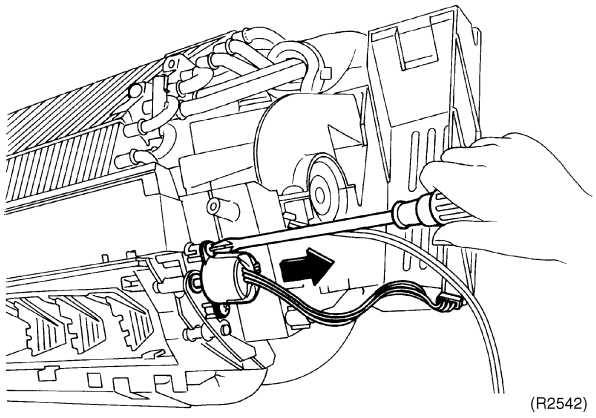
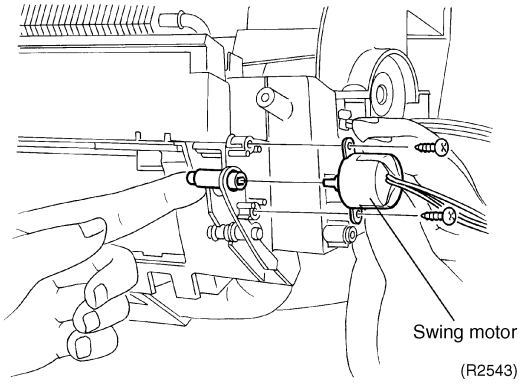

(R2537)

Step	Procedure	Points
4	Disengage the four knobs on the back of the display PCB.	■ LED3 and Intelligent eye sensor PCB are only for inverter models.
5	Display PCB.	





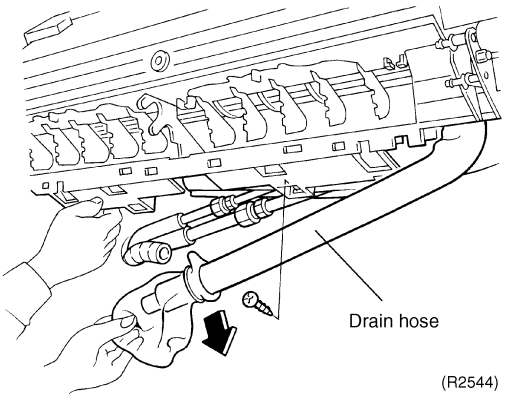
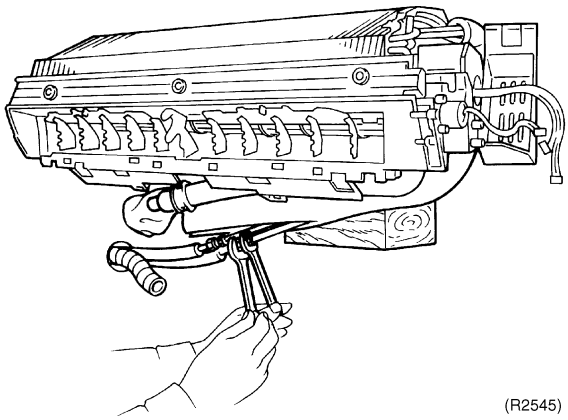


Step	Procedure	Points
6	Control PCB. 	■ The control PCB is integrated with the power supply PCB.
3. Remove swing motor assembly.		■ Provide a supporter so that the joint link will not drop off, in case the horizontal blade assembly is removed.
1 To remove swing motor assembly, remove 2 screws. (Manual adjusting for the vertical blades.)		

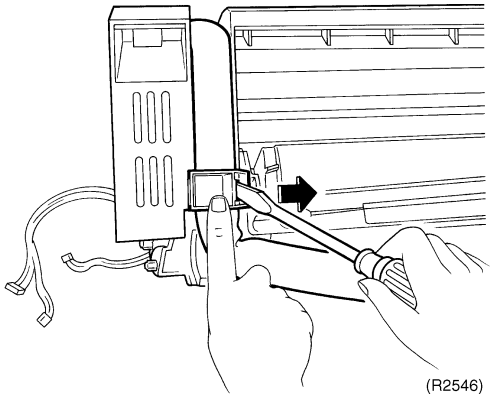
1.5 Removal of Heat Exchanger

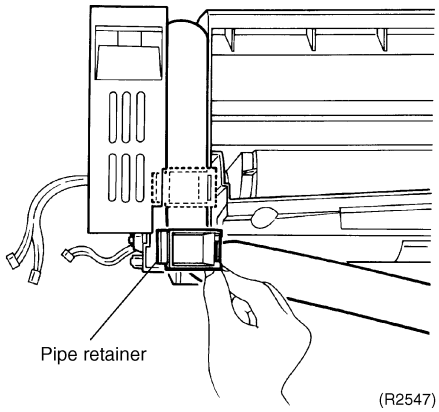
Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

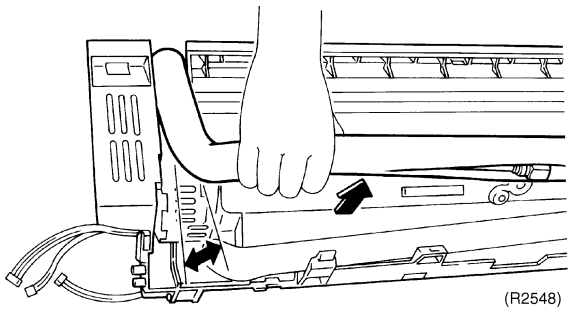
Step	Procedure		Points
■ Conduct pump-down operation. ■ Remove the installation frame from the mounting plate.			**Warning** **If gas leaks, repair the leak location, then connect all refrigerant from the unit. Conduct vacuum drying, and charge proper amount of refrigerant.** **Warning** **Do not mix any gas (including air) other than the specified refrigerant (R-410A) into refrigerating cycle. (Mixing of air or other gas causes abnormal temperature rise in refrigerating cycle, and this results in pipe rupture or personal injuries.)**
1	Remove the drain hose. Make curing so that the residual drain water will not leak out.	 (R2544)	■ Pay attention so that the residual drain will not make a floor dirty. ■ In case that a drain hose is buried inside a wall, remove it after the drain hose in the wall is pulled out.
2	Disengage the insulation tube and disconnect the flare nuts for the gas line and the liquid line.	 (R2545)	■ Use two wrenches to disconnect pipe. ■ After pipes are disconnected, close all pipe openings with caps to prevent dust and moisture from entering pipes.
3	Disengage the indoor unit from the installation plate.		

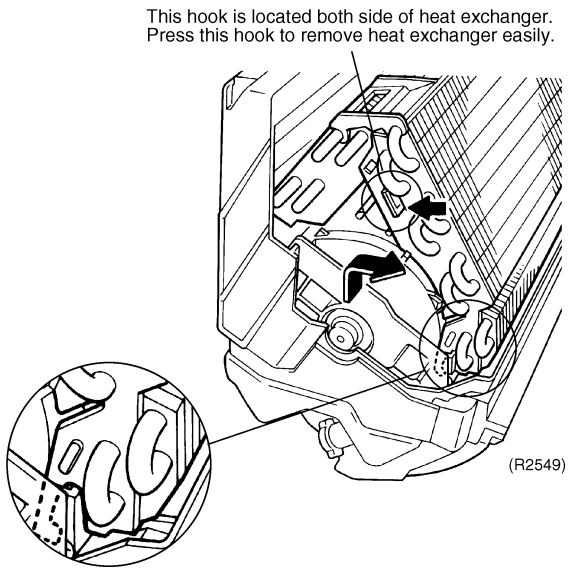
Step	Procedure	Points
4	Disengage the hooks of the pipe retainer on the back.	
5	Pull auxiliary pipe forward to an angle of 10 to 20 degrees.	■ Be careful to prevent pipe deformation.
6	Disengage hooks located right and left side, and pull heat exchanger forward. The hooks are symmetrically placed in the right and the left.	■ Lifting the heat-exchanger slightly upward to the right, the left hook comes to be disengaged easily.


(R2546)

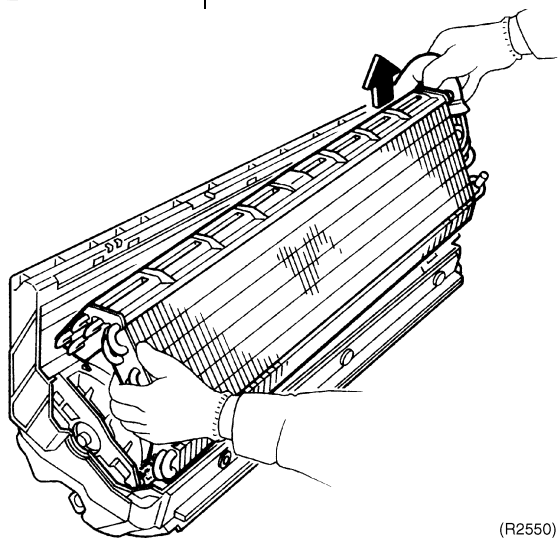


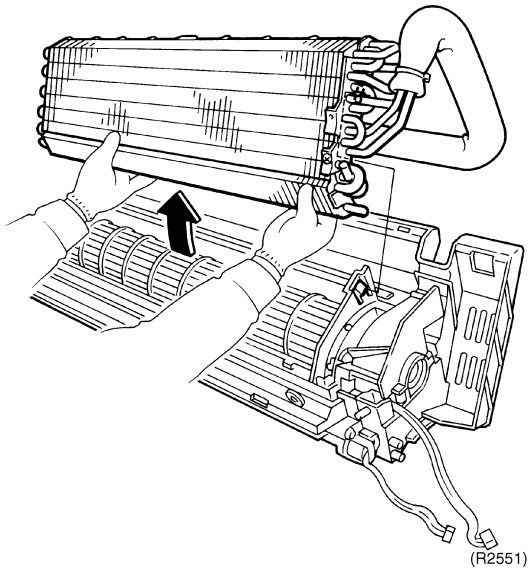
(R2547)


(R2548)



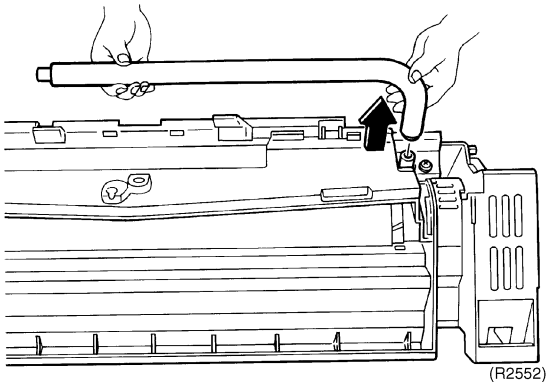
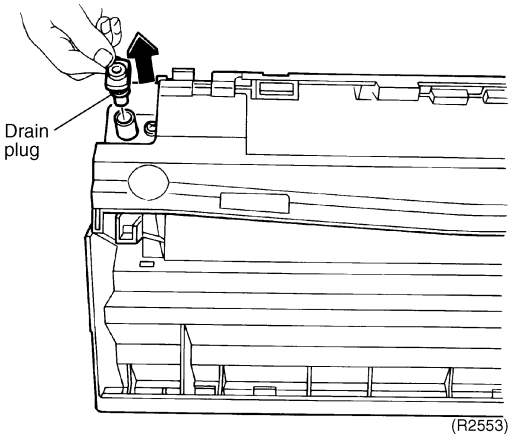
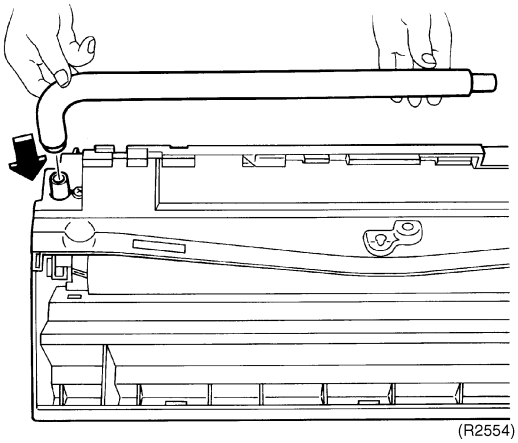
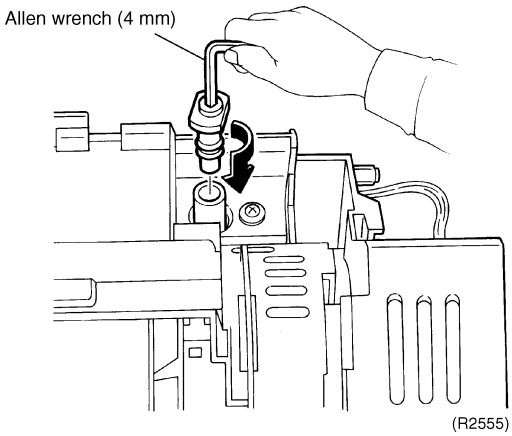
(R2549)


(R2550)

Step	Procedure		Points
7	Lift and remove heat exchanger.	 (R2551)	**Caution** **When removing or re-installing heat exchanger, be sure to wear protective gloves or wrap heat exchanger with cloths. (Fins can cut fingers.)**

1.6 Install of Drain Plug

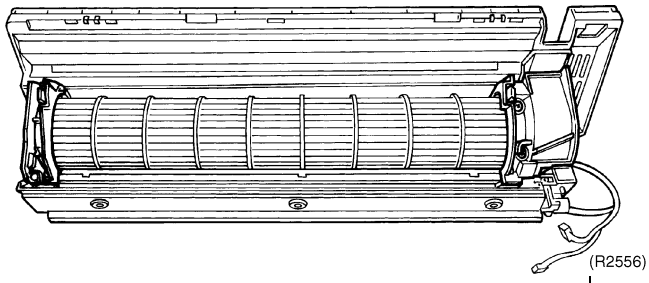
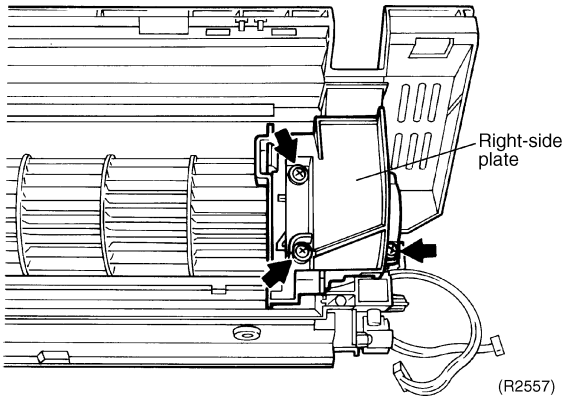
Procedure **Warning** **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

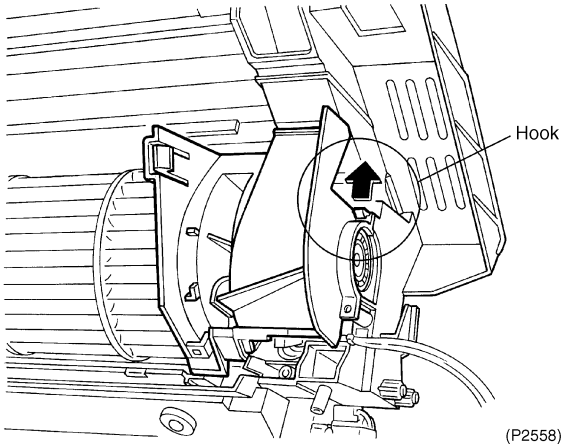
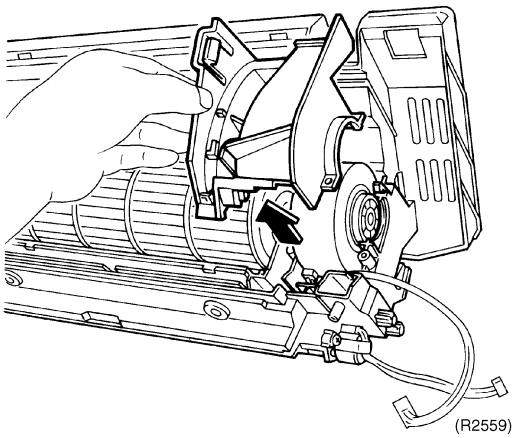
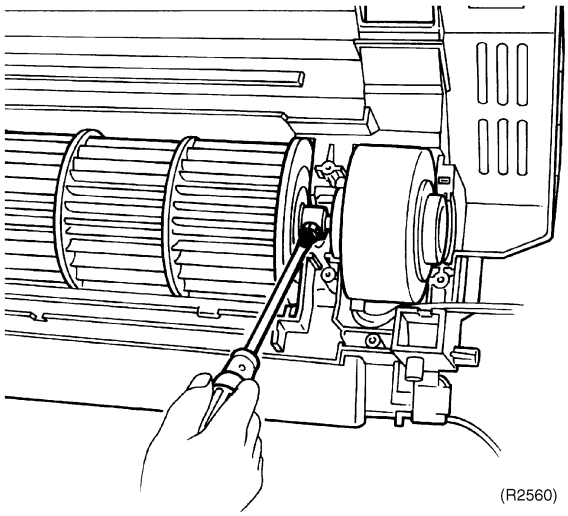
Step	Procedure		Points
1	Disconnect drain hose.	 (R2552)	■ The drain pan is integrated with the bottom plate.
2	Pull out the drain plug in the left on the drain pan by hand.	 (R2553)	
3	Insert the drain hose.	 (R2554)	■ Push it into the inner part firmly.
4	Push the drain plug into the right by Allen wrench.	 (R2555)	■ Push it into the inner part firmly.

1.7 Removal of Fan Rotor and Fan Motor

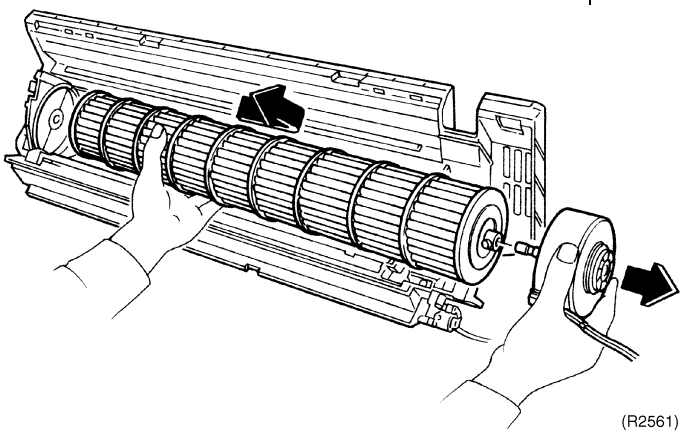
Procedure

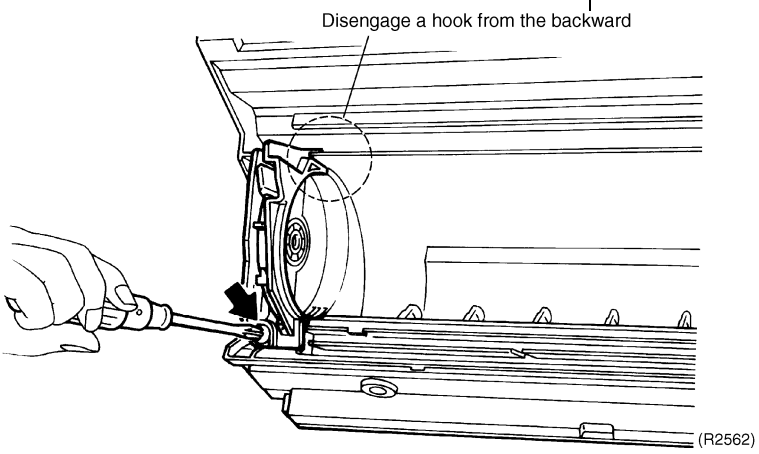
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
■ Remove heat exchanger.	 (R2556)	
1	To remove right side panel, remove three screws.  (R2557)	

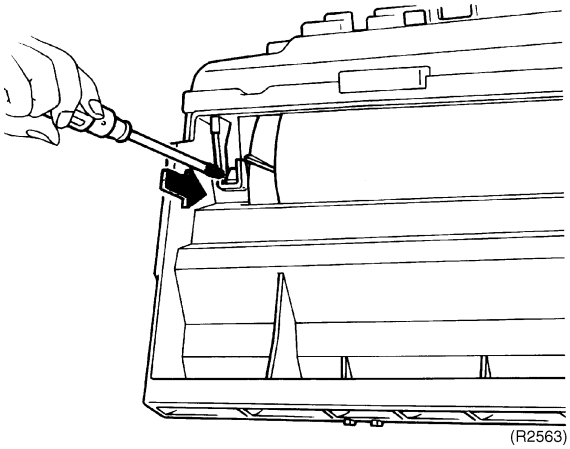
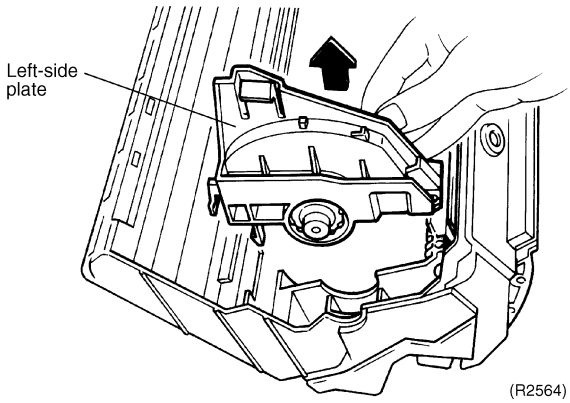
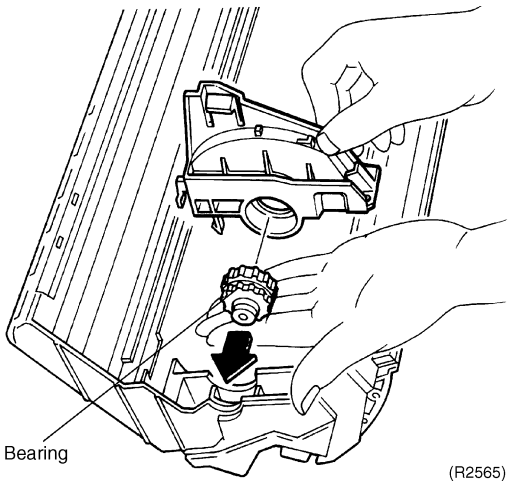
Step	Procedure		Points
2	Disengage hook.	 (P2558)  (R2559)	
3	Loosen the hexagon head set screw on the fan rotor.	 (R2560)	

Step	Procedure	Points
4	Remove the motor and fan rotor.	
5	Remove a screw on the left side panel.	


(R2561)



(R2562)

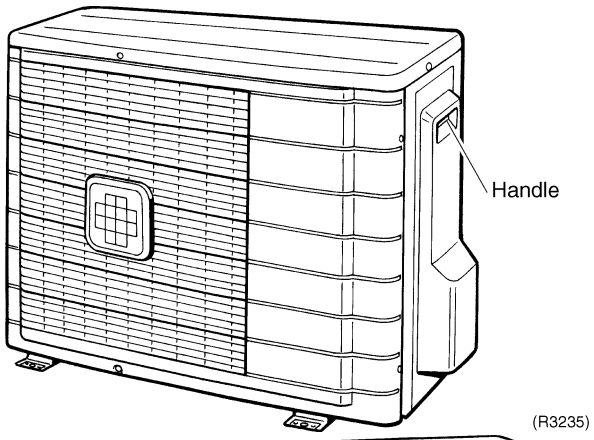
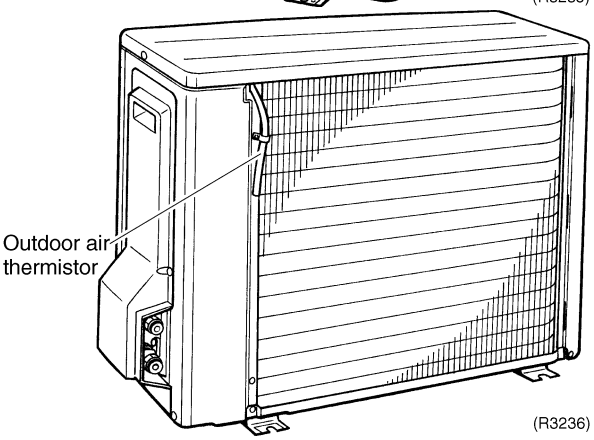
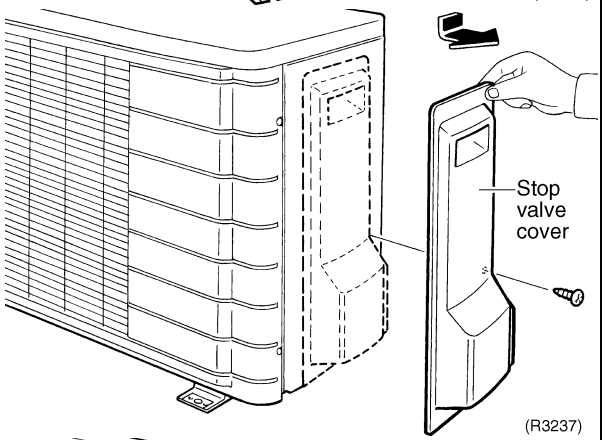
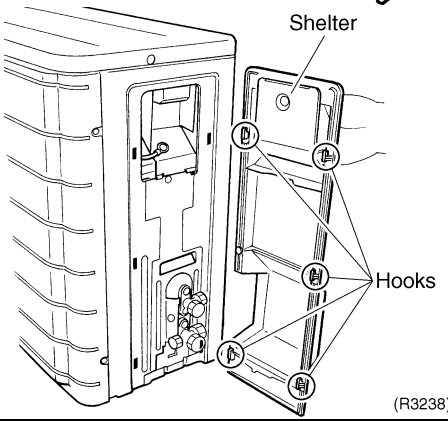
Step	Procedure		Points
6	Disengage a hook from the backward.	 (R2563)	
		 (R2564)	
7	Since the fan bearing is made of rubber, push it strongly off from the inside. The bearing can be removed just as the left-side plate is attached with.	 (R2565)	

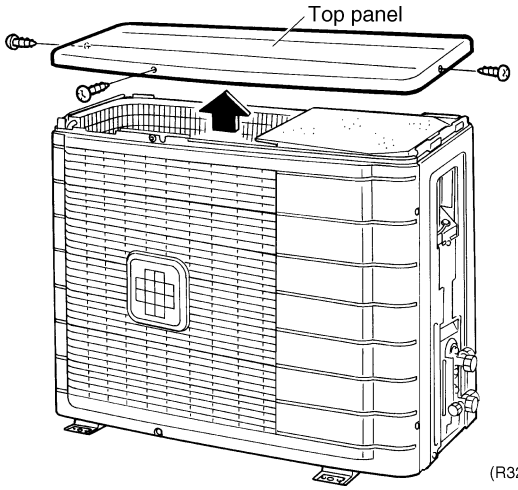
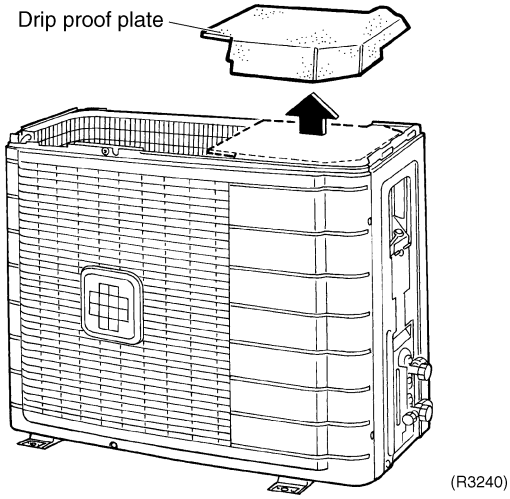
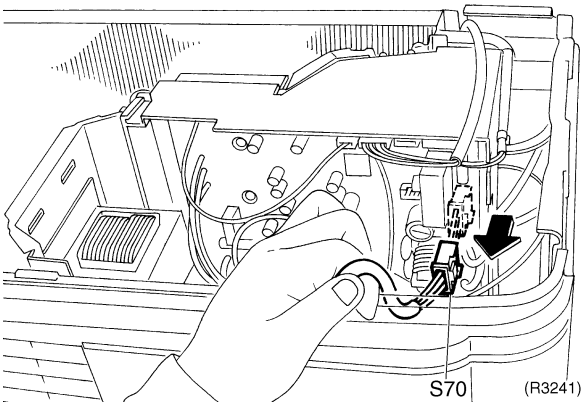
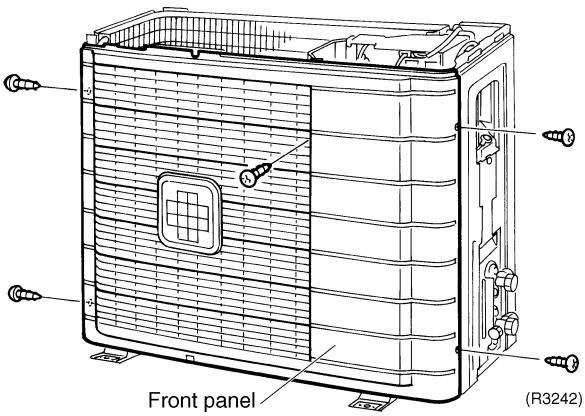
2. Outdoor Unit

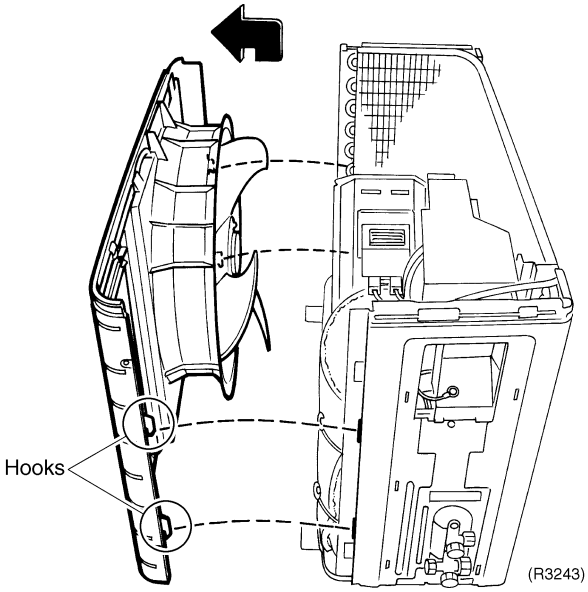
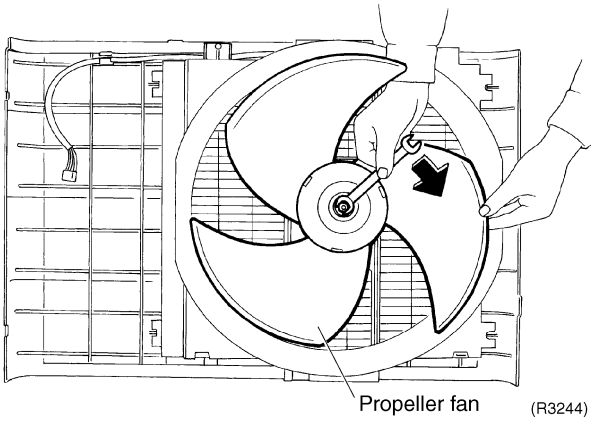
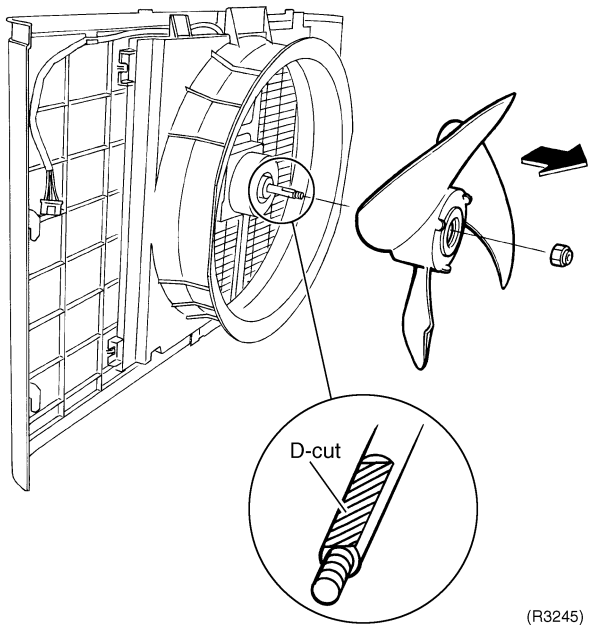
2.1 Removal of Panels and Fan Motor

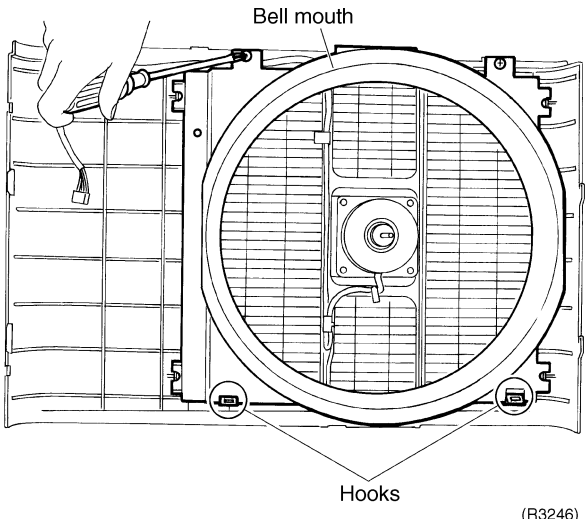
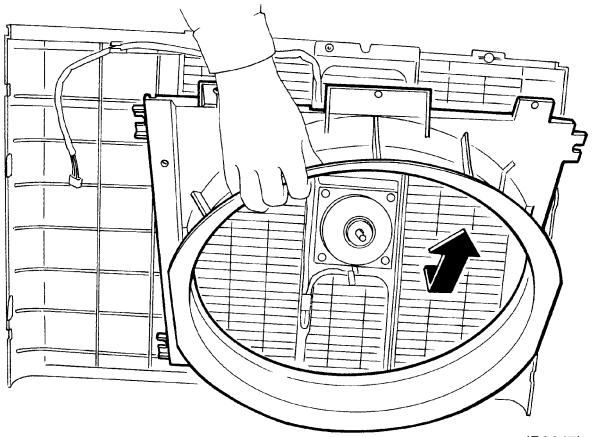
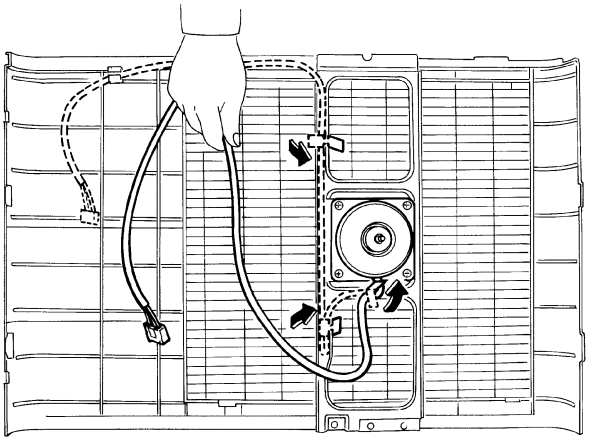
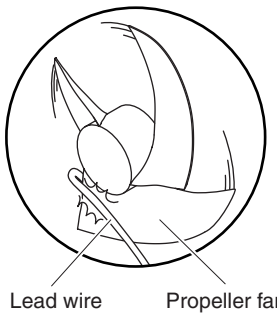
Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

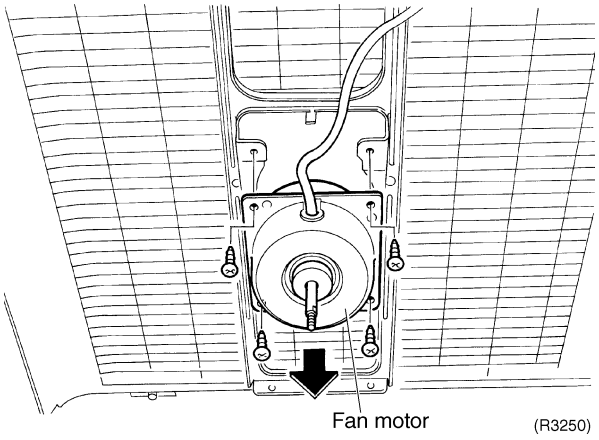
Step	Procedure	Points
1. Features	 (R3235)	
	 (R3236)	■ Take care not to cut your finger by the fins of the heat exchanger.
1 Loosen the screw of the stop valve cover. Pull down the stop valve cover and remove it.	 (R3237)	
	 (R3238)	■ The stop valve cover is united with the shelter. ■ When reassembling, make sure to fit the 5 hooks.

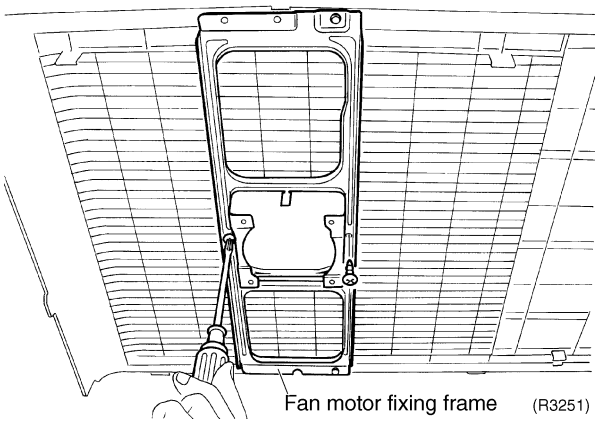
Step	Procedure	Points
2. Remove the panels.		
1 Loosen the 3 screws (front, right, left) and lift the top panel.		
2 Remove the drip proof plate.		
3 Disconnect the connector for fan motor (S70).		■ The fan motor is united with the front panel.
4 Loosen the 5 screws of the front panel.		

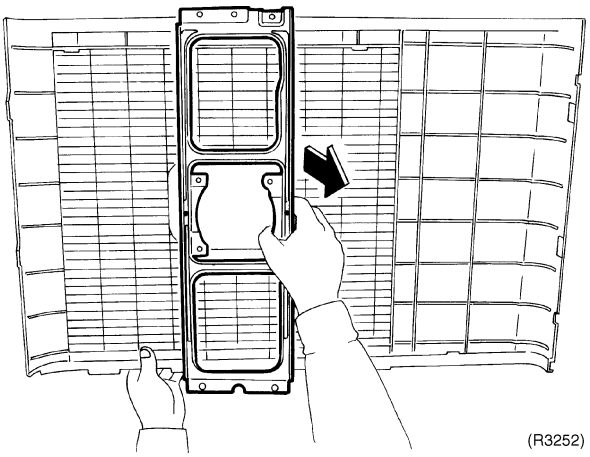
Step	Procedure		Points
5	Undo the hooks. Pull and remove the front panel.		■ The front panel has 4 hooks. ■ The fan motor is united with the front panel.
3. Remove the fan motor.			
1	Unscrew the washer-fitted nut (M10) of the propeller fan with a spanner.		■ The screw has reverse winding.
2	Remove the propeller fan.		■ Align ▼ mark of the propeller fan with D-cut section of the motor shaft when reassembling.

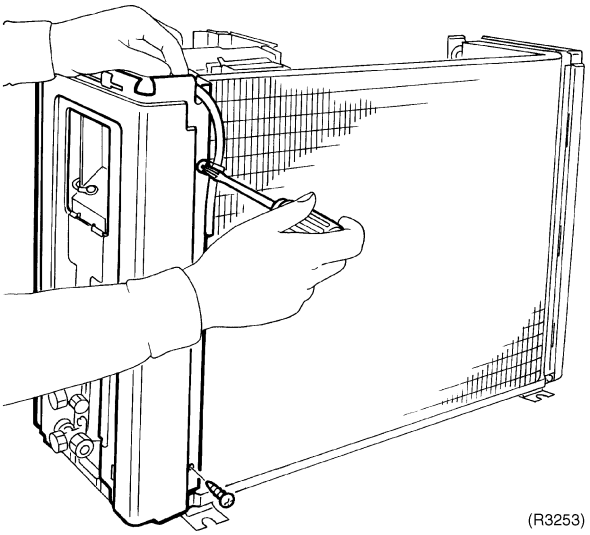
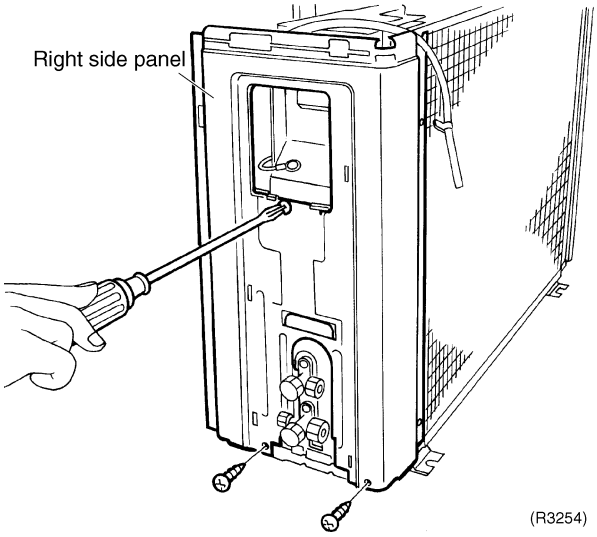
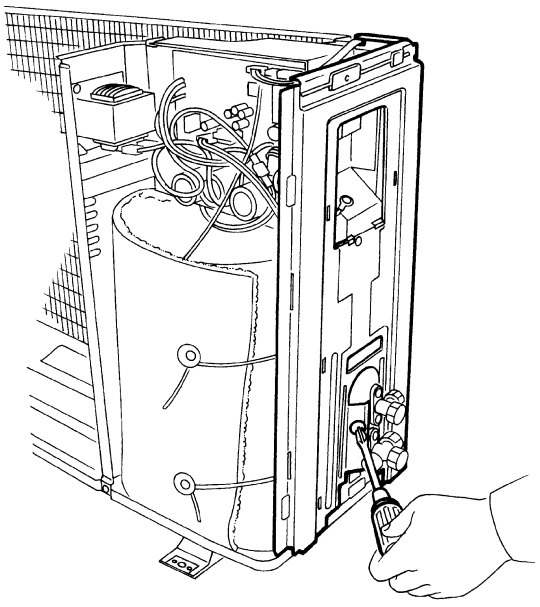
Step	Procedure		Points
3	Loosen the 2 screws and lift the bell mouth to undo the hooks. Remove the bell mouth.	 (R3246)  (R3247)	
4	Loosen the fixing hooks and release the lead wire.	 (R3248)	■ Put the lead wire through the back of the motor when reassembling. (so as not to be entangled with the propeller fan)  (R3249)

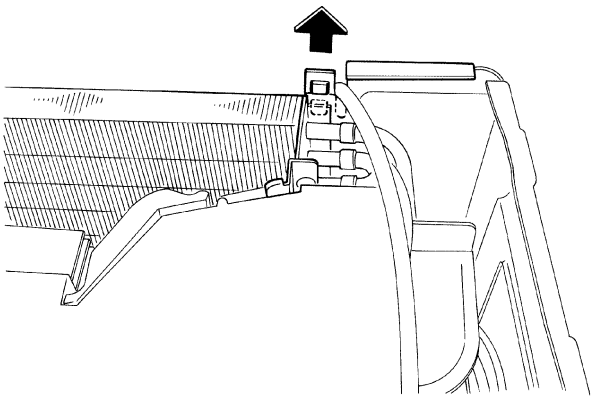
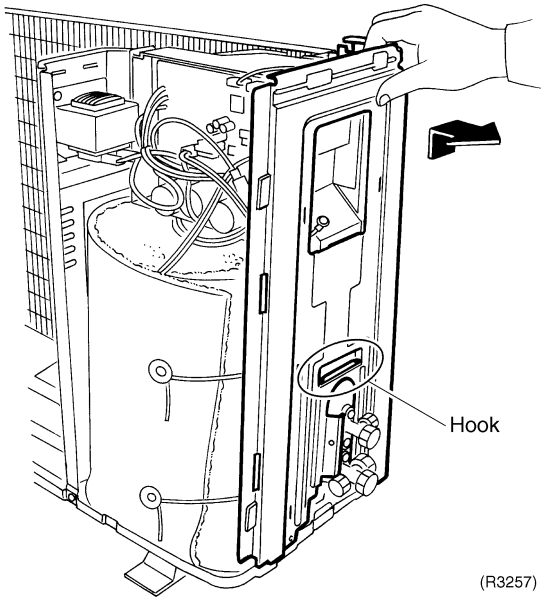
Step	Procedure	Points
5	Loosen the 4 screws to remove the fan motor.	■ M4×16 ■ DC fan motor
6	Loosen the 2 screws to remove the fan motor fixing frame.	







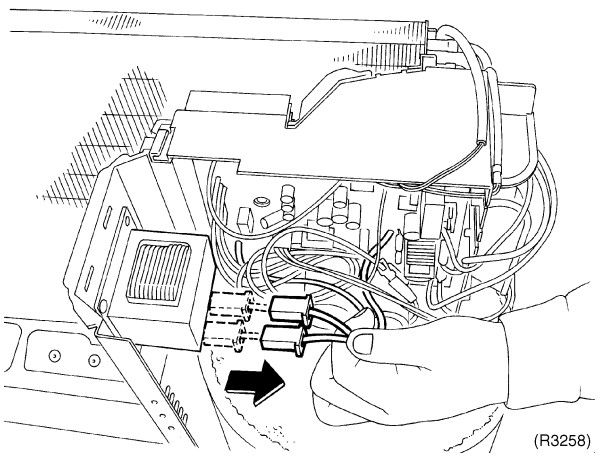
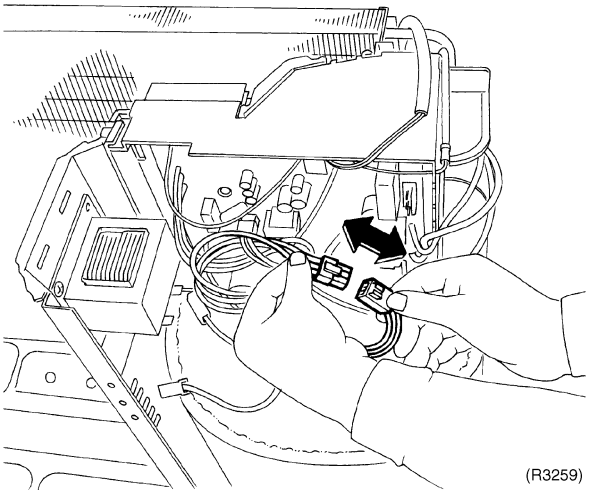
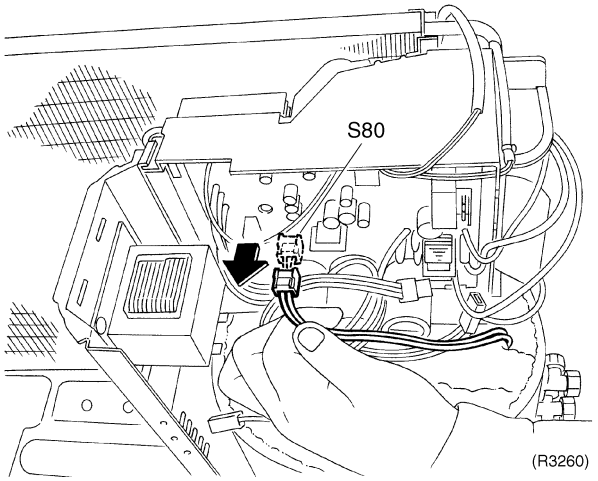
Step	Procedure	Points
4. Remove the right side panel.	 (R3253)	
1 Loosen the 2 screws on the rear side.		
2 Loosen the 3 screws on the right side.	 (R3254)	
3 Loosen the screw and lift the connection port to remove.	 (R3255)	

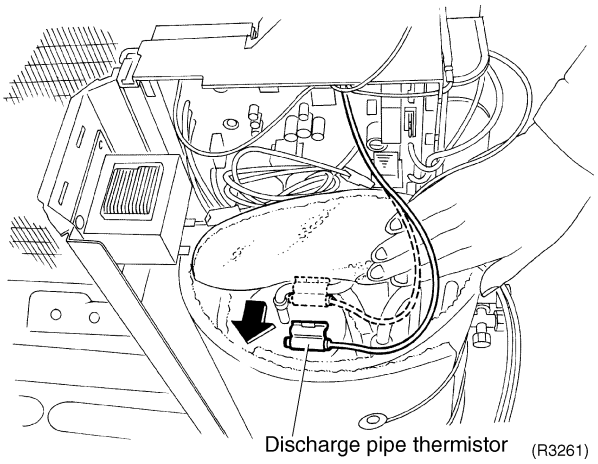
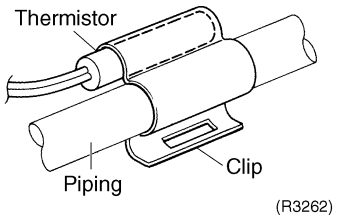
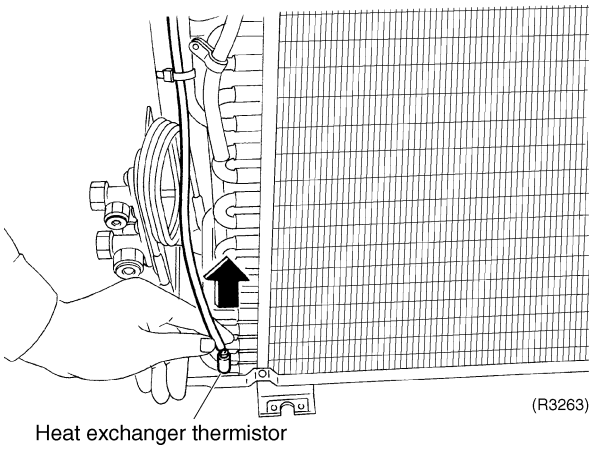
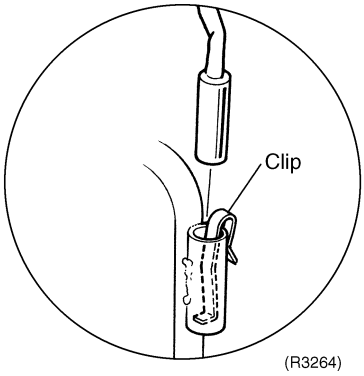
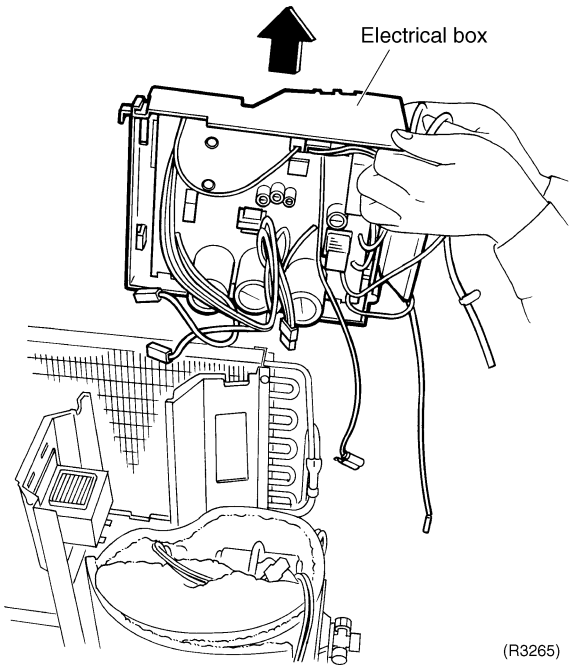
Step	Procedure		Points
		 (R3256)  (R3257)	■ When reassembling, make sure to fit the hook.

2.2 Removal of Electrical Box

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

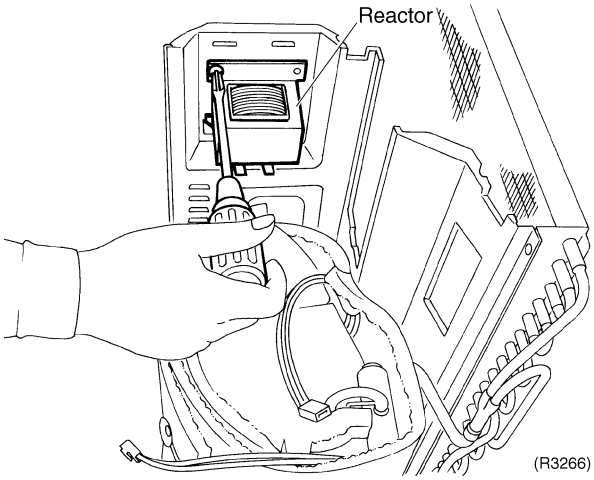
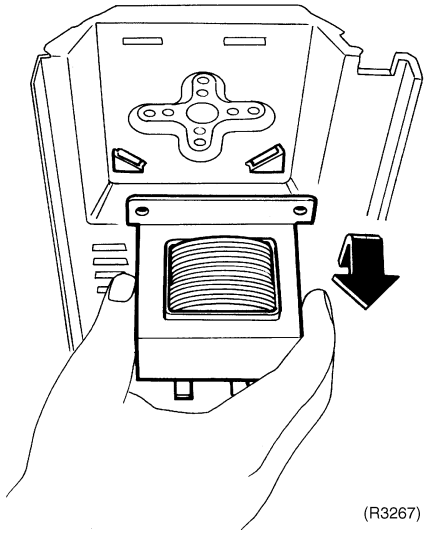
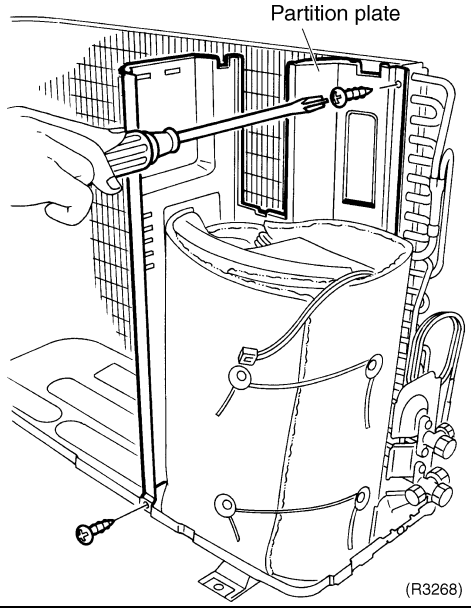
Step	Procedure	Points
■ Remove the top panel. ■ Disconnect the connector for fan motor.	 (R3258)	
1. Remove the electrical box.		
1 Disconnect the 2 reactor harnesses.		
2 Disconnect the relay connector for compressor lead wire.	 (R3259)	
3 Disconnect the connector for four way valve (S80).	 (R3260)	■ When reassembling, coil the excessive lead wire and hang the loop on the hook.

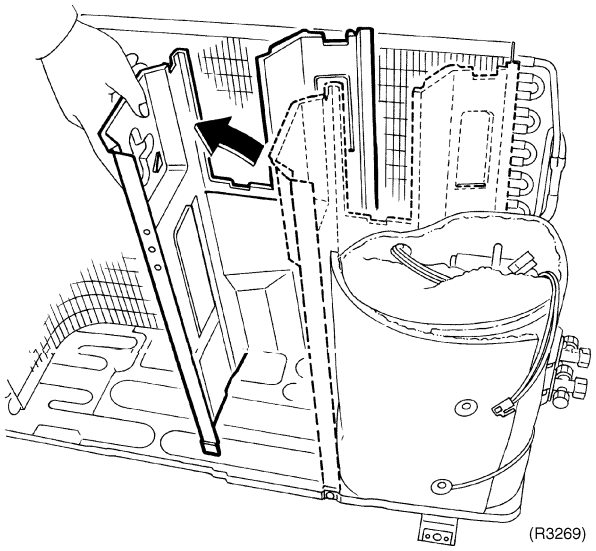
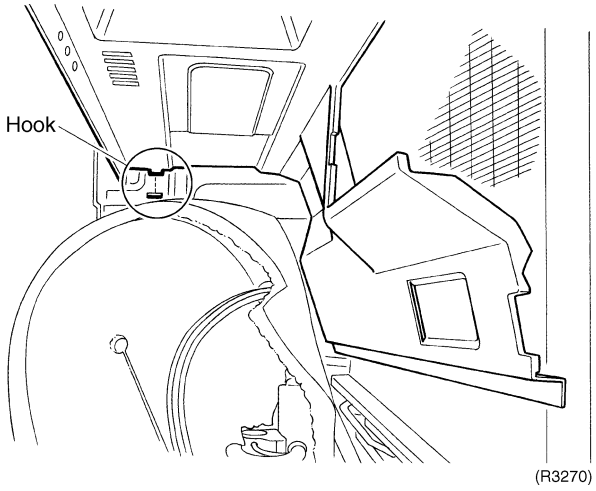
Step	Procedure		Points
4	Release the discharge pipe thermistor.		■ Pay attention so as not to lose the clip for thermistor. 
5	Release the heat exchanger thermistor.		■ Pay attention so as not to lose the clip. 
6	Lift and remove the electrical box.		

2.3 Removal of Reactor and Partition Plate

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

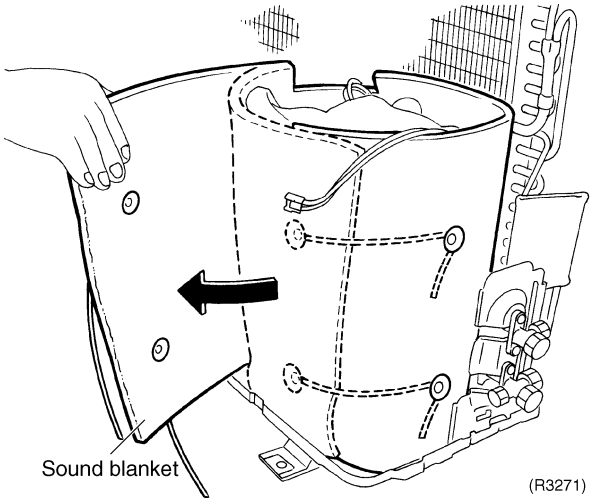
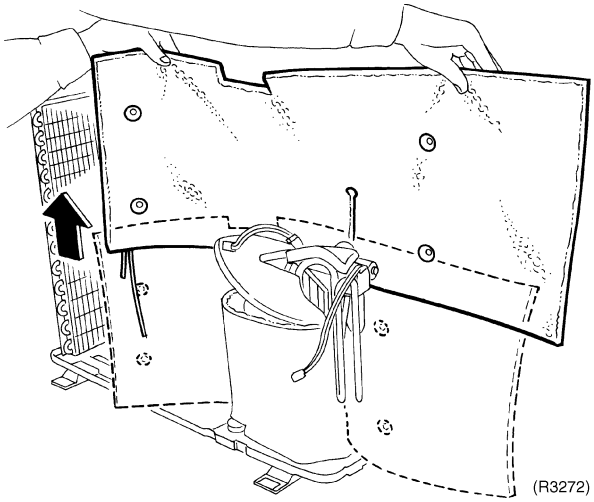
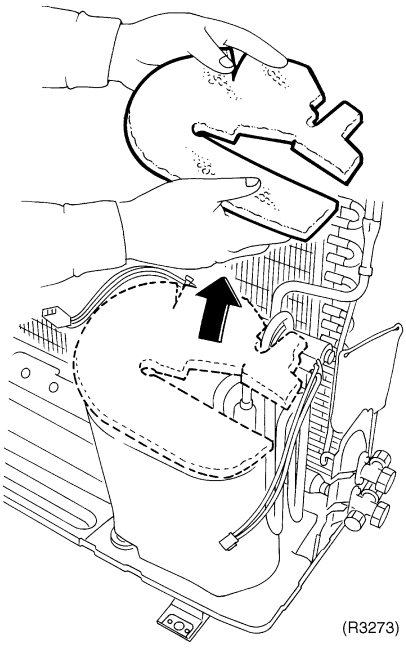
Step	Procedure	Points
■ Remove the outer panels. ■ Remove the electrical box.		
1. Remove the reactor.		
1 Loosen the screw. Lift and remove the reactor.		
2. Remove the partition plate.		
1 Loosen the 2 screws.		

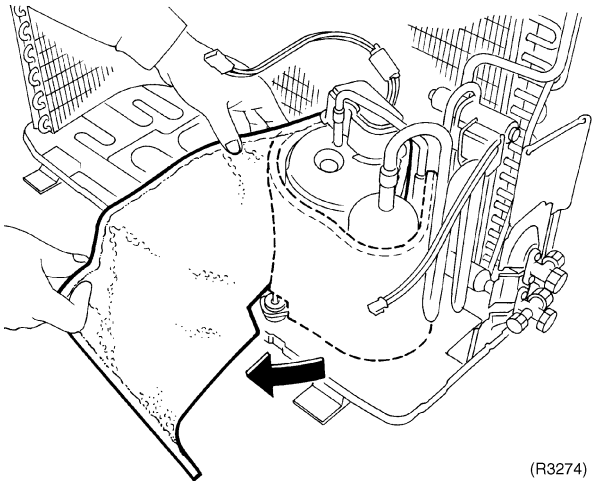
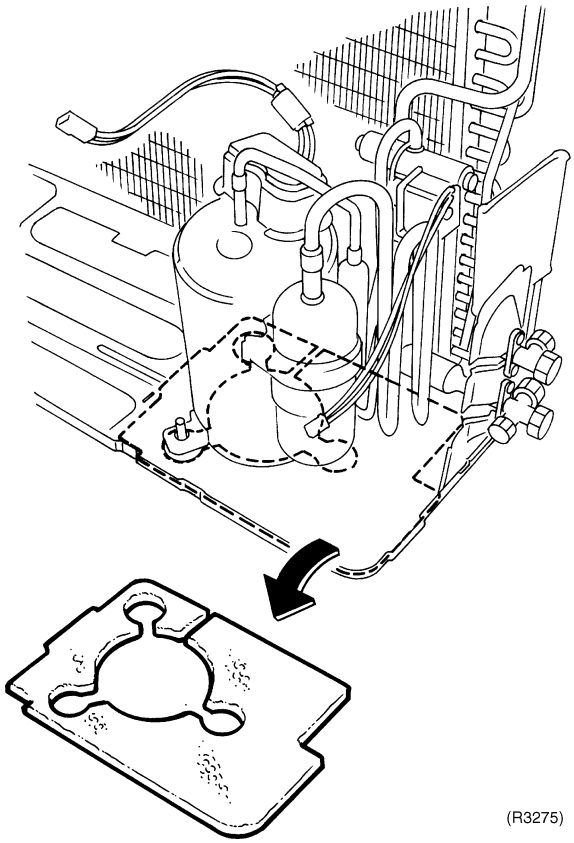
Step	Procedure		Points
2	The partition plate has a hook on the lower side. Lift and pull the partition plate to remove.	 (R3269)  (R3270)	■ When reassembling, fit the lower hook into the bottom frame.

2.4 Removal of Sound Blanket

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
■ Remove the outer panels. ■ Remove the electrical box.		
1. Remove the sound blanket.		
1 Untie the strings and open the sound blanket.		
2 Lift and remove the sound blanket (body) as it is opened.		■ Since the piping ports on the sound blanket are torn easily, remove the blanket carefully.
3 Lift and remove the sound blanket (top).		

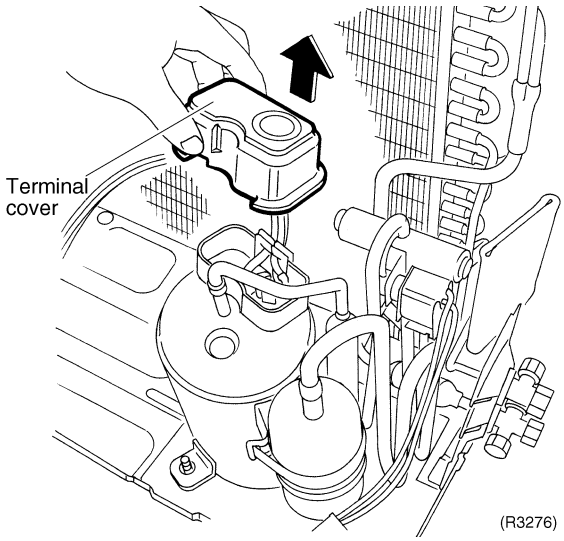
Step	Procedure		Points
4	Pull the sound blanket (inner) out.	 (R3274)	■ Since the piping ports on the sound blanket are torn easily, remove the blanket carefully.
5	Pull the sound blanket (bottom) out.	 (R3275)	

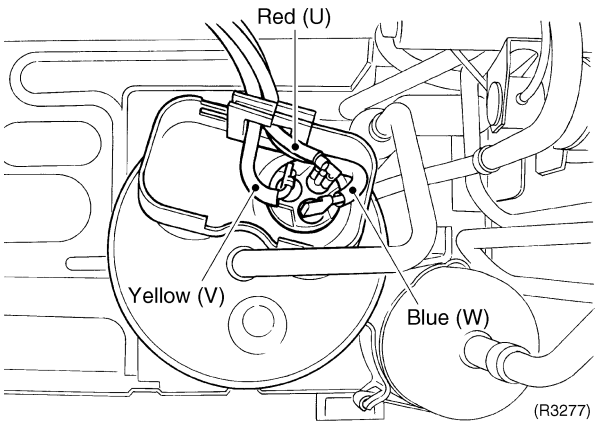
2.5 Removal of Four Way Valve

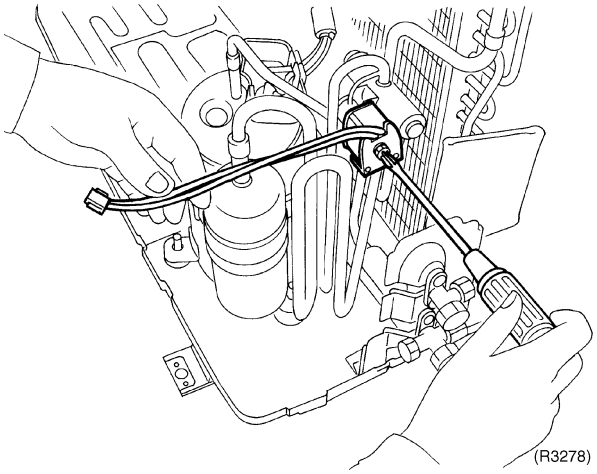
Procedure

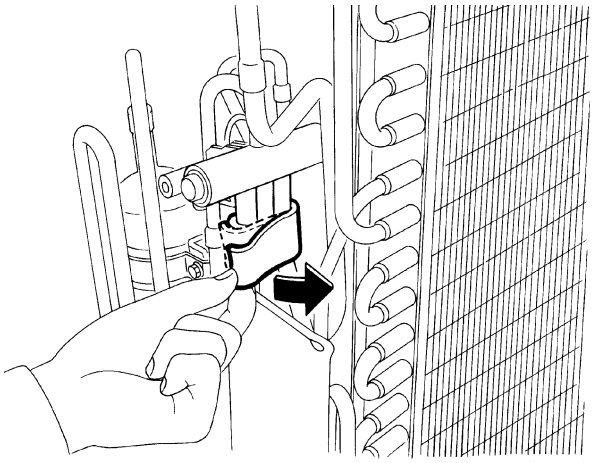
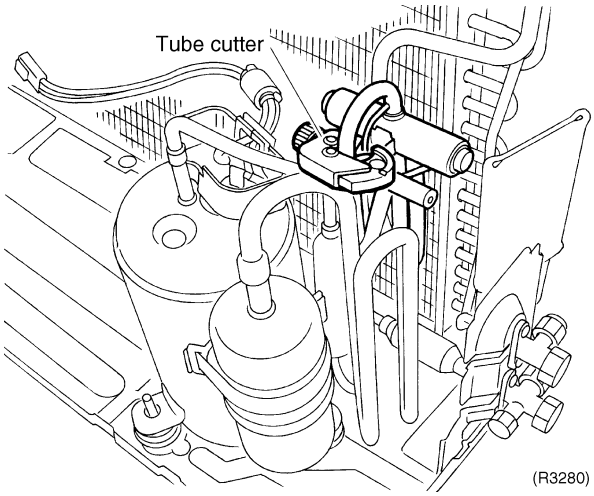
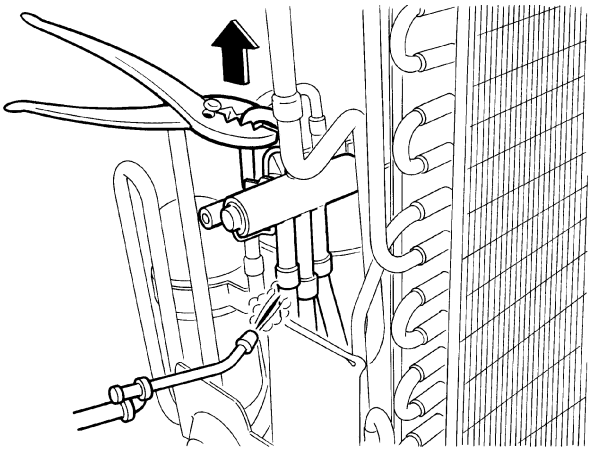
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the peripheries.		
	■ Remove the four way valve and the sheets of putty so as not to burn them.	
1	Remove the terminal cover.	
2	Loosen the screw of the four way valve coil.	■ Be careful so as not to burn the compressor terminals or the name plate. Make a note.





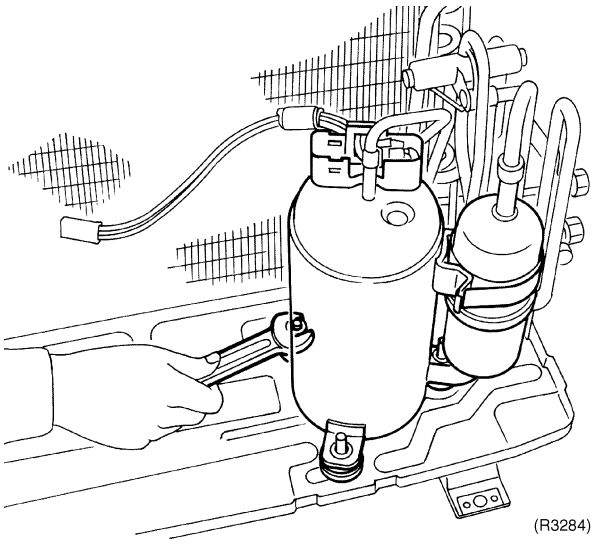
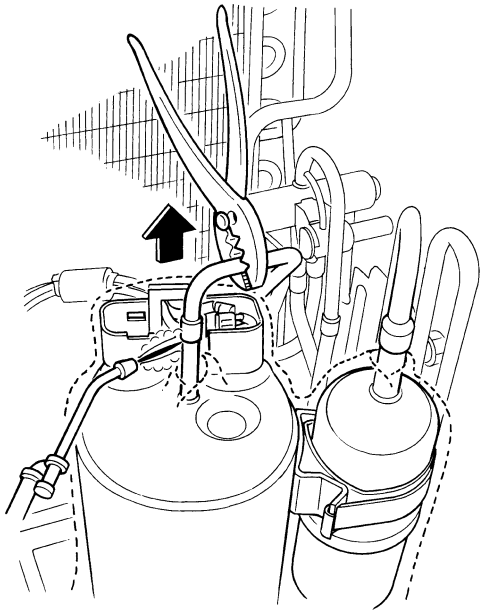


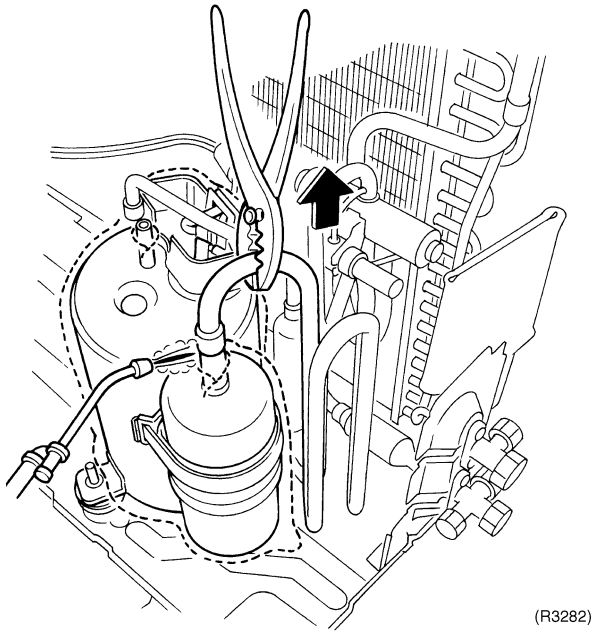
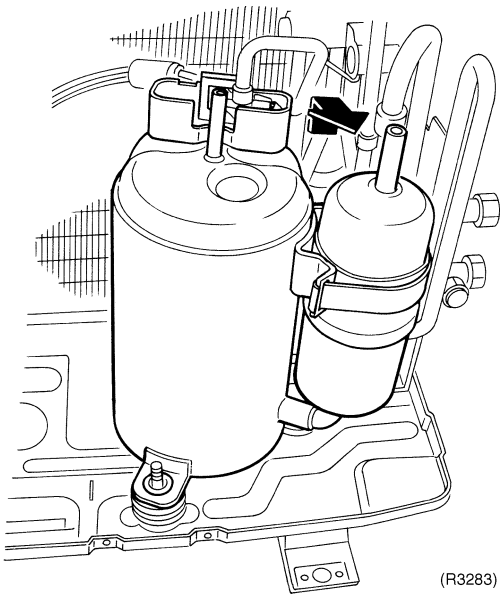
Step	Procedure		Points
3	Remove the sheets of putty. Cut the pipe with a tube cutter.	 (R3279)  (R3280)	
4	Heat up the brazed part and withdraw the piping with pliers.	 (R3281)	■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries. ■ Be careful so as not to break the pipes by pressing it excessively by pliers when withdrawing it.

2.6 Removal of Compressor

Procedure

Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

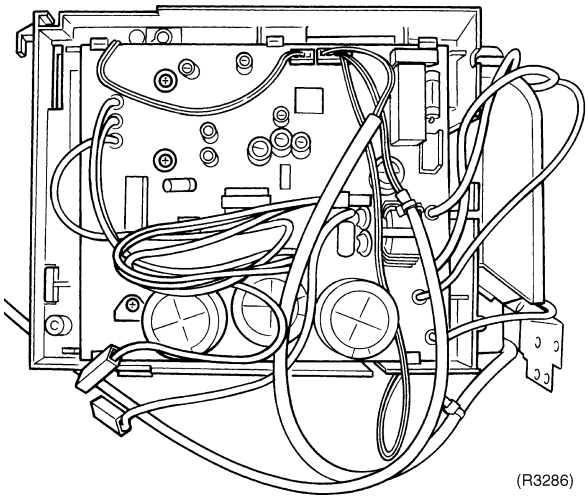
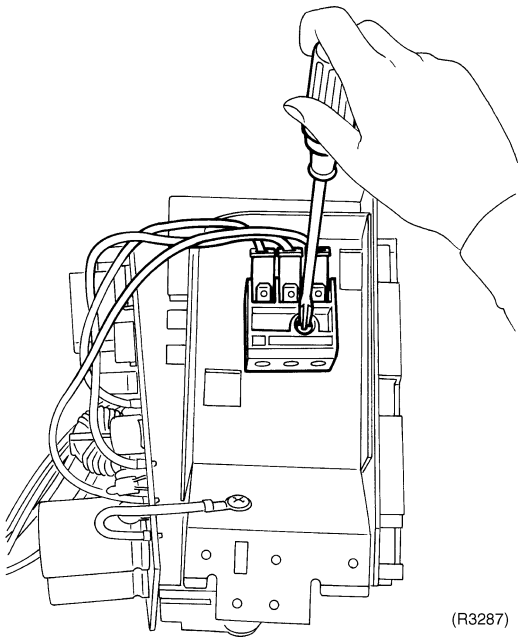
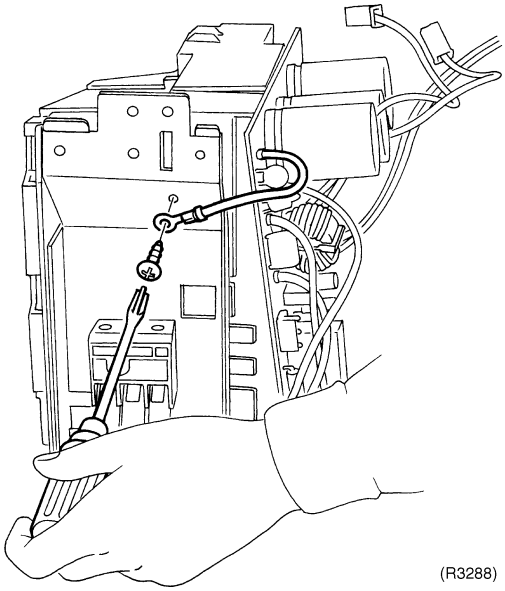
Step	Procedure		Points
1. Remove the compressor.			
1	Unscrew the nut of the compressor. ■ Before working, make sure that the refrigerant is empty in the circuit. ■ Be sure to apply nitrogen replacement when heating up the brazed part.	 (R3284)	**Warning** **Ventilate when refrigerant leaks during the work. (If refrigerant contacts fire, it will cause to arise toxic gas.)** ■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries. ■ Be careful so as not to burn the compressor terminals or the name plate. ■ Be careful so as not to burn the heat exchanger fin. **Warning** **Since it may happen that refrigeration oil in the compressor will catch fire, prepare wet cloth so as to extinguish fire immediately.**
2	Heat up the brazed part of the discharge side and disconnect.	 (R3285)	**In case of the difficulty with gas brazing machine** 1. Disconnect the brazed part where is easy to disconnect and restore. 2. Cut pipes on the main unit by a miniature copper tube cutter in order to make it easy to disconnect. **Cautions for restoration** 1. Restore the piping by non-oxidation brazing. 2. It is required to prevent the carbonization of the oil inside the four way valve and the deterioration of the gaskets affected by heat. For the sake of this, wrap the four way valve with wet cloth and provide water so that the cloth will not be dried and avoid excessive heating. (Keep below 120°C) Note: Do not use a metal saw for cutting pipes by all means because the sawdust come into the circuit.

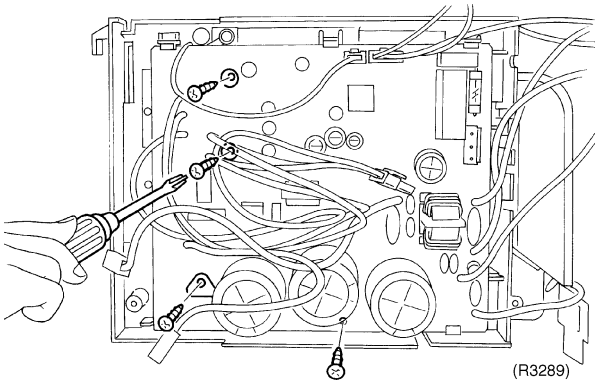
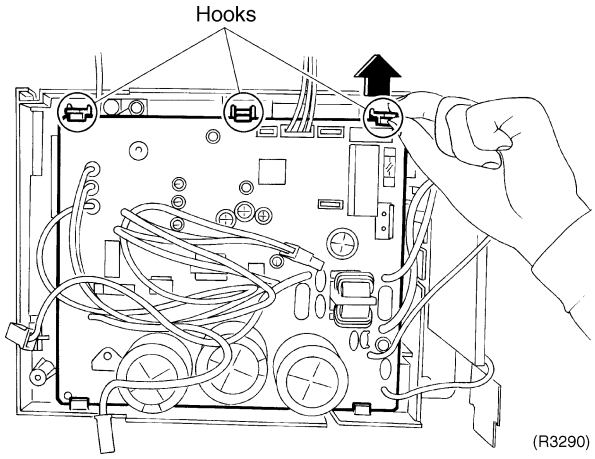
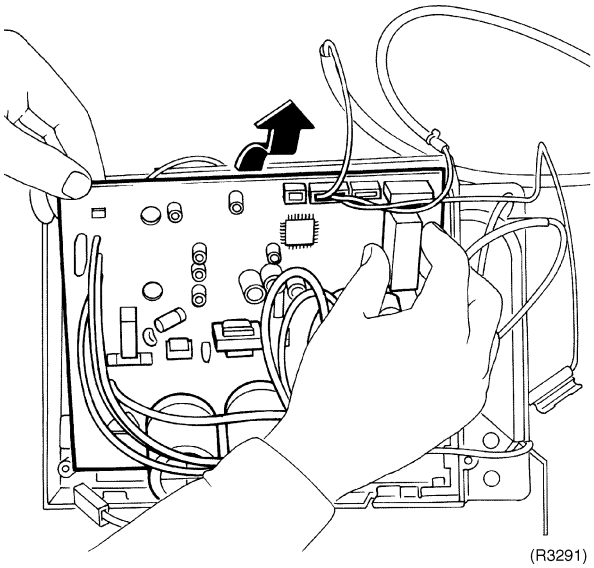
Step	Procedure		Points
3	Heat up the brazed part of the suction side and disconnect.	 (R3282)	
4	Lift the compressor up and remove it.	 (R3283)	

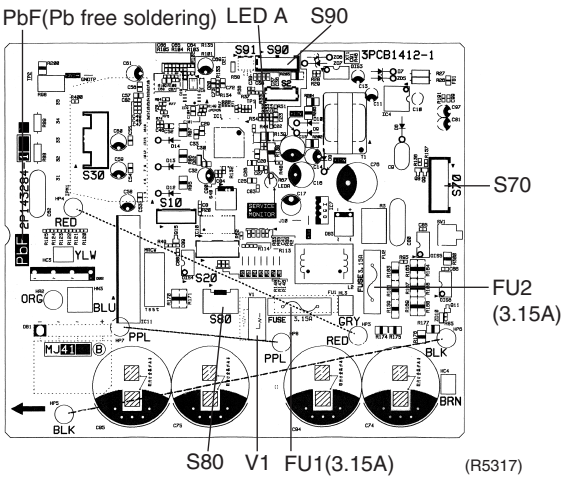
2.7 Removal of PCB

Procedure

Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the PCB.	 (R3286)	■ You can remove the PCB when you disconnect the read wires on the terminal board without removing the electrical box. ■ PbF (Pb free brazing) is adopted.
1 Feature of the PCB		
2 Loosen the screw on the terminal board.	 (R3287)	
3 Release the earth terminal.	 (R3288)	

Step	Procedure		Points
4	Loosen the 4 screws.	 (R3289)	
5	Undo the 3 hooks on the upper side.	 (R3290)	
6	Lift and pull out the PCB.	 (R3291)	

Step	Procedure		Points
7	Feature of the PCB S70: fan motor S80: four way valve S90: thermistor (outdoor air, heat exchanger, discharge pipe)		■ See page 17 for detail.

Part 8
Others

1. Others

1.1 Test Run from the Remote Controller

For Heat pump

In cooling mode, select the lowest programmable temperature; in heating mode, select the highest programmable temperature.

- Trial operation may be disabled in either mode depending on the room temperature.
- After trial operation is complete, set the temperature to a normal level. (26°C to 28°C in cooling mode, 20°C to 24°C in heating mode)
- For protection, the system disables restart operation for 3 minutes after it is turned off.

For Cooling Only

Select the lowest programmable temperature.

- Trial operation in cooling mode may be disabled depending on the room temperature. Use the remote control for trial operation as described below.
- After trial operation is complete, set the temperature to a normal level (26°C to 28°C).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

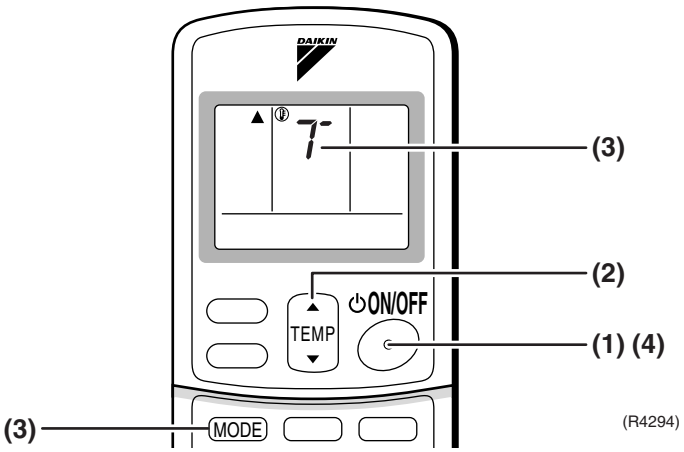
Trial Operation and Testing

1. Measure the supply voltage and make sure that it falls in the specified range.
2. Trial operation should be carried out in either cooling or heating mode.
3. Carry out the test operation in accordance with the Operation Manual to ensure that all functions and parts, such as louver movement, are working properly.

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

Trial operation from Remote Controller

(1) Press ON/OFF button to turn on the system.
(2) Simultaneously press centre of TEMP button and MODE buttons.
(3) Press MODE button twice.
("T" will appear on the display to indicate that Trial Operation mode is selected.)
(4) Trial run mode terminates in approx. 30 minutes and switches into normal mode. To quit a trial operation, press ON/OFF button.



1.2 Jumper Settings

1.2.1 When Two Units are Installed in One Room

When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

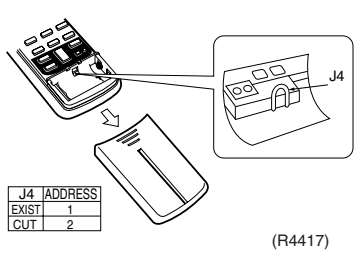
How to set the different addresses

■ Control PCB of the indoor unit

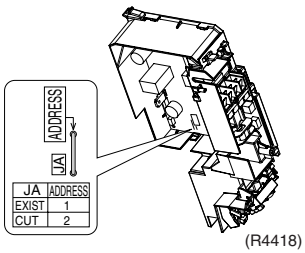
(1) Remove the front grille. (3 screws)
(2) Remove the electrical box (1-screw).
(3) Remove the drip proof plate. (4 tabs)
(4) Cut the address jumper JA on the control PCB.

■ Wireless remote controller

(1) Slide the front cover and take it off.
(2) Cut the address jumper J4.



(R4417)



(R4418)

1.2.2 Jumper Setting

Jumper (On indoor control PCB)	Function	When connected (factory set)	When cut
JC	Power failure recovery function	Auto-restart	Unit does not resume operation after recovering from a power failure. Timer ON-OFF settings are cleared.
JB	Fan speed setting when compressor is OFF on thermostat. (effective only at cooling operation)	Fan speed setting ; Remote controller setting	Fan rpm is set to “0” <Fan stop>

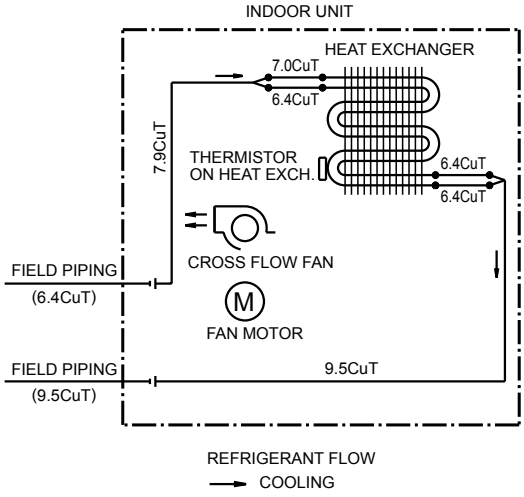
Part 9
Appendix

1. Piping Diagrams

1.1 Indoor Units

1.1.1 Cooling Only

FTKS20/25/35CAVMB, ATKS20/25/35DAVMB



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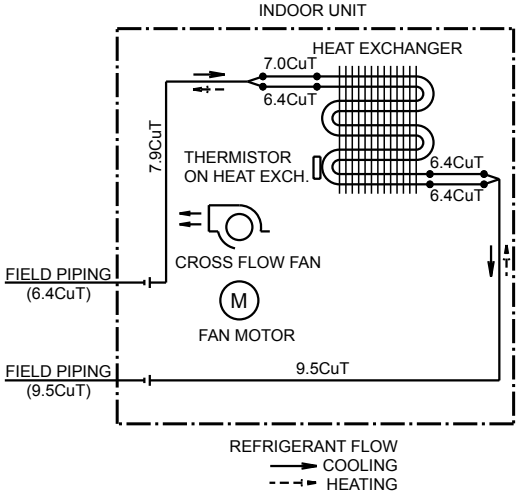
1.1.2 Heat Pump

FTXS20/25/35CAVMB, ATXS20/25/35DAVMB



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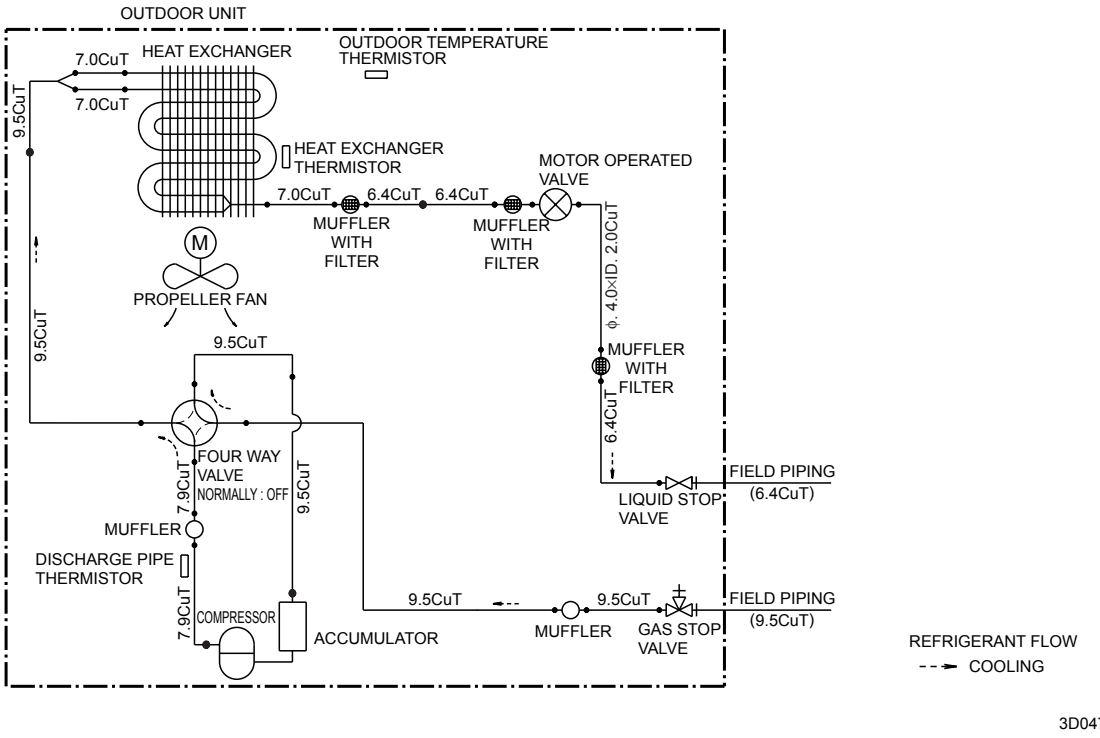
1.2 Outdoor Units

1.2.1 Cooling Only

RK20/25E2V1B, ARK20/25E2V1B



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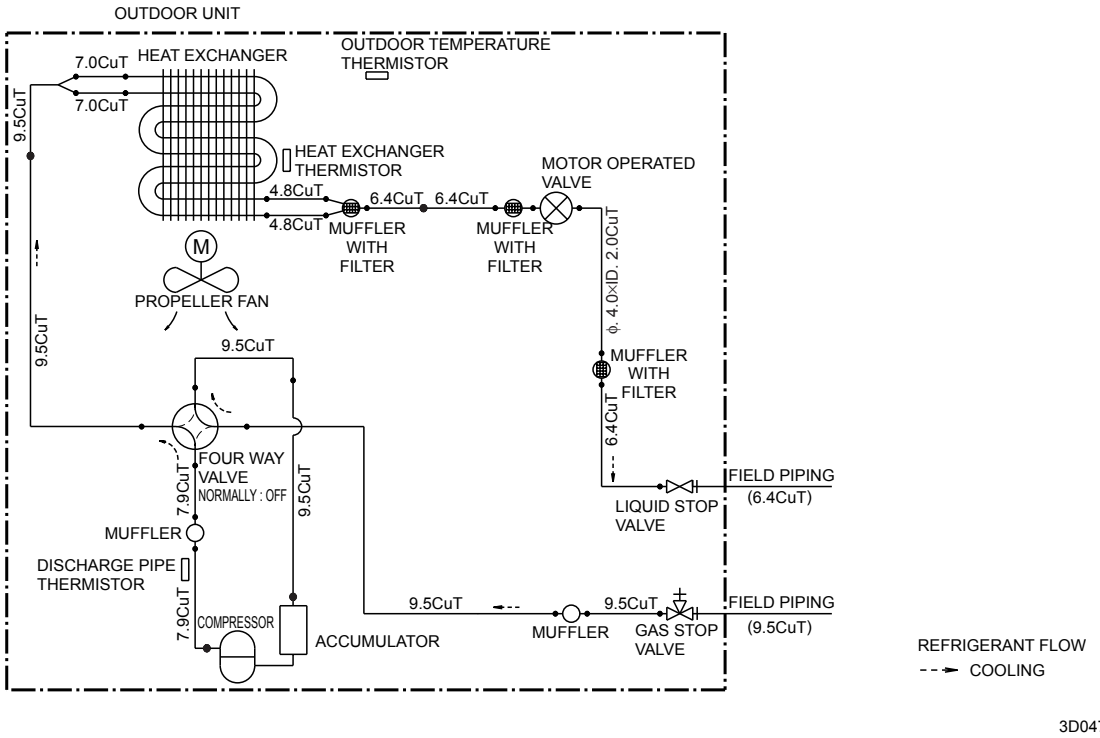
RK35E2V1B, ARK35E2V1B



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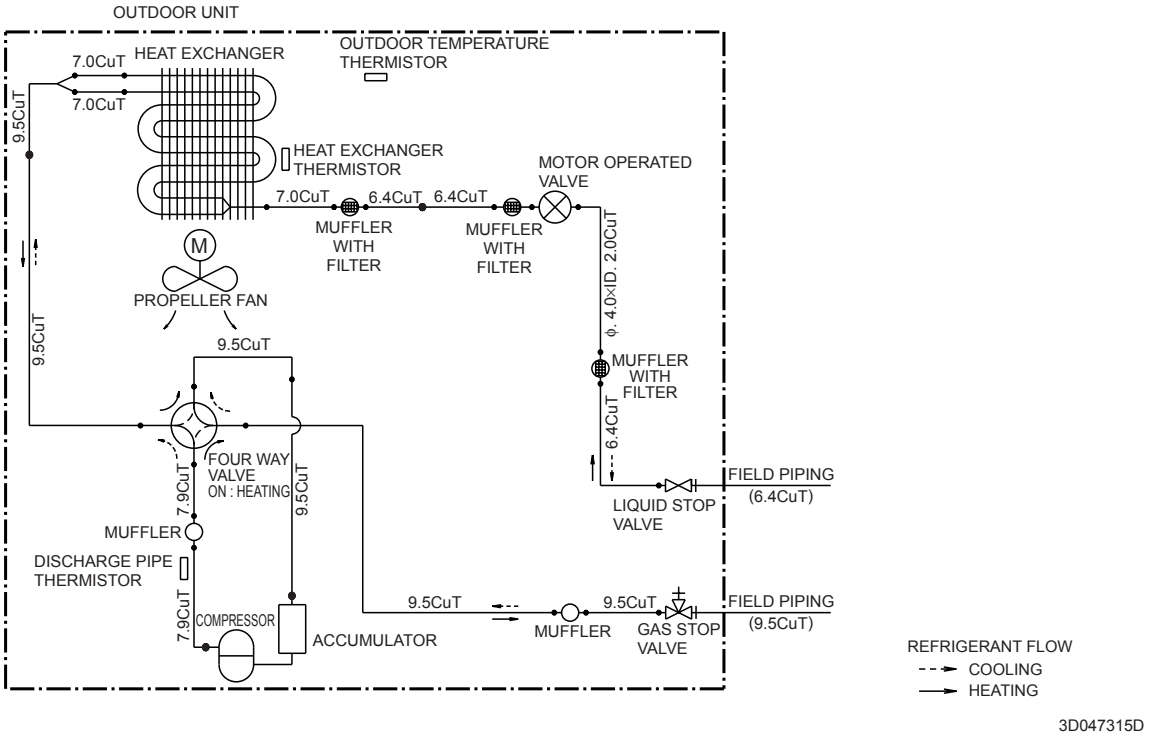
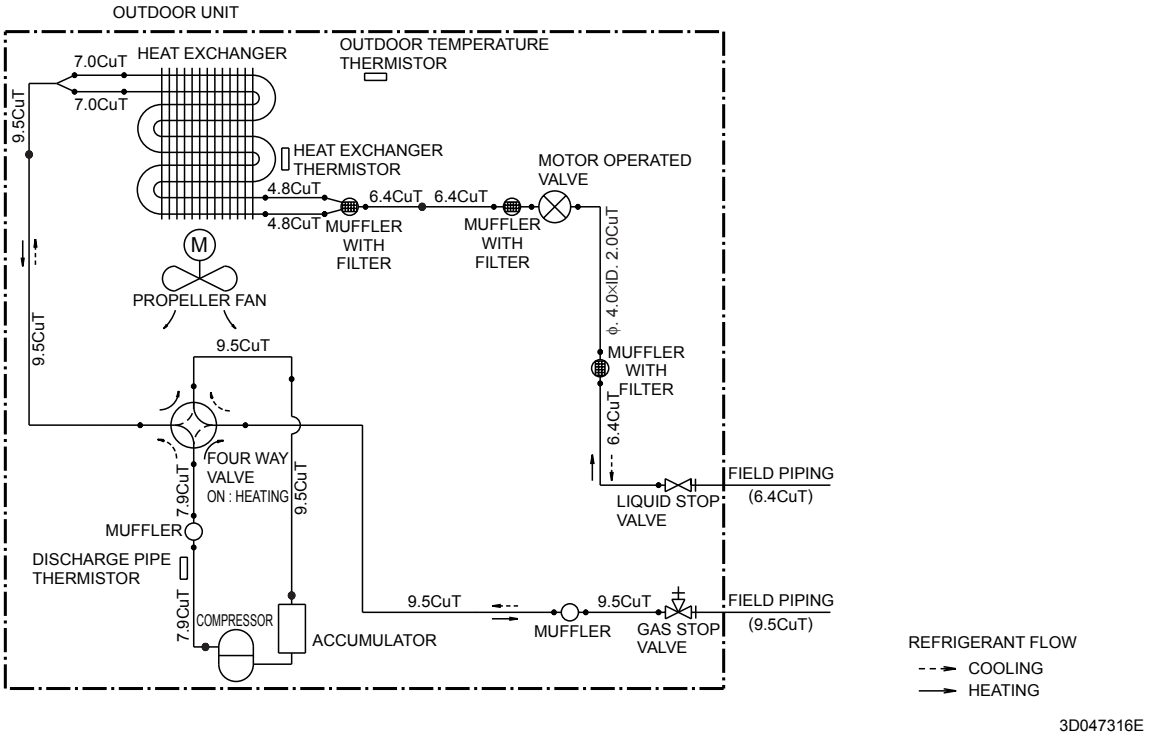
1.2.2 Heat Pump

RX20/25E2V1B, ARX20/25E2V1B



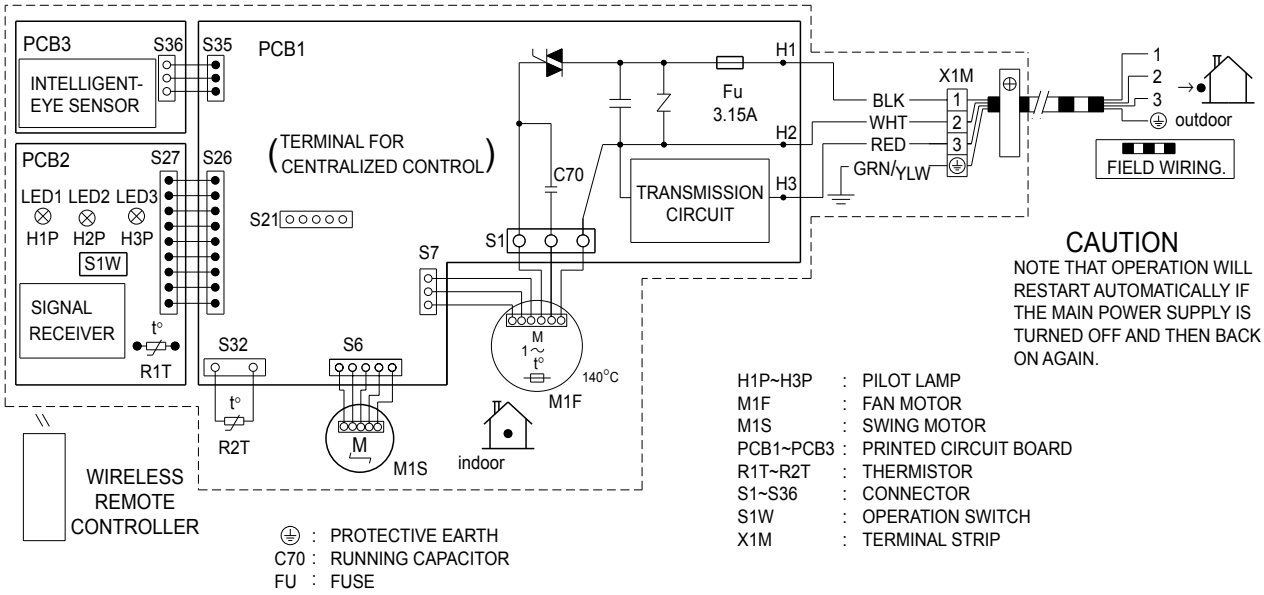
RX35E2V1B, ARX35E2V1B



2. Wiring Diagrams

2.1 Indoor Units

FTK(X)S20/25/35CAVMB, ATK(X)S20/25/35DAVMB



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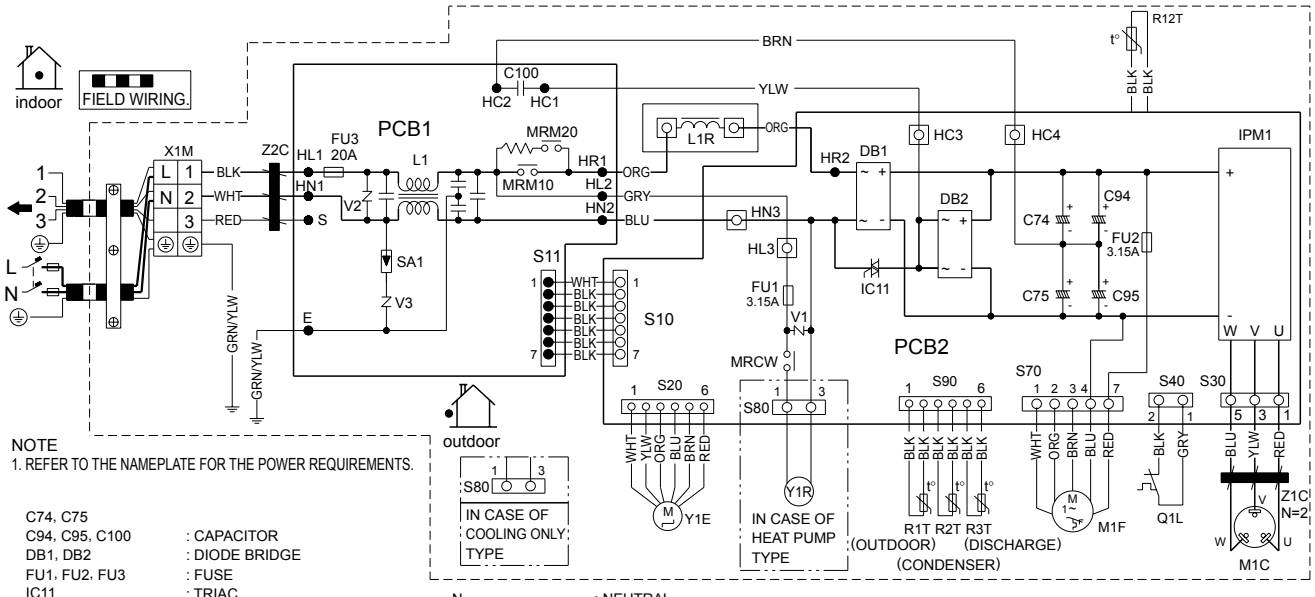
2.2 Outdoor Units

RK(X)20/25/35E2V1B, ARK(X)20/25/35E2V1B



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Warning

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

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

Cautions on product corrosion

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

JMI-0107

JQA-1452

About ISO 9001

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

EC99J2044

About ISO 14001

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

Dealer

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