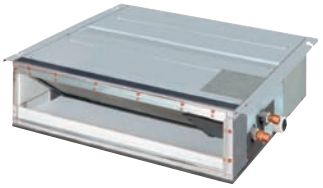
DAIKIN

SiUS12 - 814

Service Manual

SUPER MULTI NX

G-Series



[Applied Models]

- **Inverter Multi : Heat Pump**

SUPER MULTI NX
G-Series

●Heat Pump
Indoor Unit

CTXS09GVJU
CTXS12GVJU
FTXS15DVJU
FTXS18DVJU
FDXS09DVJU
FDXS12DVJU

Outdoor Unit

2MXS18GVJU
4MXS32GVJU

1. Introduction

1.1 Safety Considerations

Read these ***SAFETY CONSIDERATIONS*** carefully before installing air conditioning equipment and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the start-up operation.
Instruct the customer on how to operate and maintain the unit.
Inform customers that they should store this Installation Manual along with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.
Meanings of danger, warning, caution and DANGER, WARNING, CAUTION, and NOTE symbols:

⚠ **DANGER** Indicates an imminently hazardous situation that if not avoided, will result in death or serious injury.

⚠ **WARNING** Indicates a potentially hazardous situation that if not avoided, could result in death or serious injury.

⚠ **CAUTION** Indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ **NOTE** Indicates a situation that may result in equipment or property damage accidents only.

1.1.1 Cautions Regarding Safety of Workers

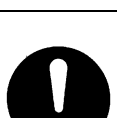
Warning	
Be sure to disconnect the power cable plug from the plug socket before disassembling the equipment for repair. Working on the equipment that is connected to the power supply may cause an electrical shook. If it is necessary to supply power to the equipment to conduct the repair or inspecting 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.	

Warning	
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.	
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.	

Caution	
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 GFCI 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 Using Icons

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

Icon	Type of Information	Description
Note:	Note	A note provides information, techniques, and tips to best understand and utilize the equipment.
Caution	Caution	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices that may cause property damage.
Warning	Warning	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. This signal word should not be used for property damage hazards unless personal injury risk appropriate to this level is also involved.
	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

1.1 Heat Pump Model

Category	Functions	CTXS09/12GVJU	Category	Functions	CTXS09/12GVJU
Basic Function	Inverter (with Inverter Power Control)	○	Health & Clean	Air Purifying Filter	—
	Operation Limit for Cooling (°FDB)	—		Photocatalytic Deodorizing Filter	—
	Operation Limit for Heating (°FWB)	—		Air Purifying Filter with Photocatalytic Deodorizing Function	○
	PAM Control	—		Titanium Apatite Photocatalytic Air-Purifying Filter	—
Compressor	Oval Scroll Compressor	—		Mold Proof Air Filter	○
	Swing Compressor	—		Wipe-clean Flat Panel	○
	Rotary Compressor	—		Washable Grille	—
	Reluctance DC Motor	—		Filter Cleaning Indicator	—
Comfortable Airflow	Power-Airflow Louver	—		Good-Sleep Cooling Operation	—
	Power-Airflow Dual Louvers	○	Timer	24-Hour On/Off Timer	○
	Power-Airflow Diffuser	—		Night Set Mode	○
	Wide-Angle Louvers	○	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○
	Vertical Auto-Swing (Up and Down)	○		Self-Diagnosis (Digital, LED) Display	○
	Horizontal Auto-Swing (Right and Left)	○		Wiring Error Check	—
	3-D Airflow	○		Anticorrosion Treatment of Outdoor Heat Exchanger	—
	Comfort Airflow Mode	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	—
	3-Step Airflow (H/P Only)	—		Flexible Voltage Correspondence	—
Comfort Control	Auto Fan Speed	○		High Ceiling Application	—
	Indoor Unit Quiet Operation	○		*Chargeless	—
	Night Quiet Mode (Automatic)	—		Either Side Drain (Right or Left)	○
	Outdoor Unit Quiet Operation (Manual)	—		Power Selection	—
	INTELLIGENT EYE	○	Remote Control	5-Rooms Centralized Controller (Option)	○
	Quick Warming Function	—		Remote Control Adapter (Normal Open-Pulse Contact) (Option)	○
	Hot-Start Function	○		Remote Control Adapter (Normal Open Contact) (Option)	○
	Automatic Defrosting	—		DIII-NET Compatible (Adapter) (Option)	○
Operation	Automatic Operation	○	Remote Controller	Wireless	○
	Program Dry Function	○		Wired	—
	Fan Only	○			
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	—			
	Inverter POWERFUL Operation	○			
	Priority-Room Setting	—			
	Cooling / Heating Mode Lock	—			
	HOME LEAVE Operation	○			
	Indoor Unit On/Off Switch	○			
	Signal Reception Indicator	○			
	Temperature Display	—			
	Another Room Operation	—			

Note: ○ : Holding Functions
— : No Functions

*** Chargeless = Allowable pipe length before additional refrigerant is necessary.**

Category	Functions	FTXS15/18DVJU	Category	Functions	FTXS15/18DVJU
Basic Function	Inverter (with Inverter Power Control)	○	Health & Clean	Air Purifying Filter	—
	Operation Limit for Cooling (°FDB)	—		Photocatalytic Deodorizing Filter	—
	Operation Limit for Heating (°FWB)	—		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 Louver	—		Filter Cleaning Indicator	—
	Power-Airflow Dual Louvers	○		Good-Sleep Cooling Operation	—
	Power-Airflow Diffuser	—	Timer	24-Hour On/Off Timer	○
	Wide-Angle Louvers	○		Night Set Mode	○
	Vertical Auto-Swing (Up and Down)	○	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○
	Horizontal Auto-Swing (Right and Left)	○		Self-Diagnosis (Digital, LED) Display	○
	3-D Airflow	○		Wiring Error Check	—
	Comfort Airflow Mode	—		Anticorrosion Treatment of Outdoor Heat Exchanger	—
	3-Step Airflow (H/P Only)	—			
Comfort Control	Auto Fan Speed	○	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	○
	Indoor Unit Quiet Operation	○			
	Night Quiet Mode (Automatic)	—		Flexible Voltage Correspondence	—
	Outdoor Unit Quiet Operation (Manual)	—		High Ceiling Application	—
	INTELLIGENT EYE	○		*Chargeless	—
	Quick Warming Function	—		Either Side Drain (Right or Left)	○
	Hot-Start Function	○		Power Selection	—
	Automatic Defrosting	—	Remote Control	5-Rooms Centralized Controller (Option)	○
Operation	Automatic Operation	○		Remote Control Adapter (Normal Open-Pulse Contact) (Option)	○
	Program Dry Function	○			
	Fan Only	○		Remote Control Adapter (Normal Open Contact) (Option)	○
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	—			
	Inverter POWERFUL Operation	○		DIII-NET Compatible (Adapter) (Option)	○
	Priority-Room Setting	—	Remote Controller	Wireless	○
	Cooling / Heating Mode Lock	—		Wired	—
	HOME LEAVE Operation	○			
	Indoor Unit On/Off Switch	○			
	Signal Reception Indicator	○			
	Temperature Display	—			
	Another Room Operation	—			

Note: ○ : Holding Functions
— : No Functions

*** Chargeless = Allowable pipe length before additional refrigerant is necessary.**

Category	Functions	FDXS09/12DVJU	Category	Functions	FDXS09/12DVJU
Basic Function	Inverter (with Inverter Power Control)	○	Health & Clean	Air Purifying Filter	—
	Operation Limit for Cooling (°FDB)	—			
	Operation Limit for Heating (°FWB)	—		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 Louver	—		Washable Grille	—
	Power-Airflow Dual Louvers	—		Filter Cleaning Indicator	—
	Power-Airflow Diffuser	—		Good-Sleep Cooling Operation	—
	Wide-Angle Louvers	—	Timer	24-Hour On/Off Timer	○
	Vertical Auto-Swing (Up and Down)	—		Night Set Mode	○
	Horizontal Auto-Swing (Right and Left)	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○
	3-D Airflow	—		Self-Diagnosis (Digital, LED) Display	○
	Comfort Airflow Mode	—		Wiring Error Check	—
	3-Step Airflow (H/P Only)	—		Anticorrosion Treatment of Outdoor Heat Exchanger	○
Comfort Control	Auto Fan Speed	○			
	Indoor Unit Quiet Operation	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	—
	Night Quiet Mode (Automatic)	—			
	Outdoor Unit Quiet Operation (Manual)	○		Flexible Voltage Correspondence	—
	INTELLIGENT EYE	—		High Ceiling Application	—
	Quick Warming Function	—		*Chargeless	33ft
	Hot-Start Function	○		Either Side Drain (Right or Left)	—
	Automatic Defrosting	—		Power Selection	—
Operation	Automatic Operation	○	Remote Control	5-Rooms Centralized Controller (Option)	○
	Program Dry Function	○		Remote Control Adapter (Normal Open-Pulse Contact) (Option)	○
	Fan Only	○			
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	—		Remote Control Adapter (Normal Open Contact) (Option)	○
	Inverter POWERFUL Operation	○			
	Priority-Room Setting	—		DIII-NET Compatible (Adapter) (Option)	○
	Cooling / Heating Mode Lock	—	Remote Controller	Wireless	○
	HOME LEAVE Operation	○		Wired	—
	Indoor Unit On/Off Switch	○			
	Signal Reception Indicator	○			
	Temperature Display	—			
	Another Room Operation	—			

Note: ○ : Holding Functions
— : No Functions

*** Chargeless = Allowable pipe length before additional refrigerant is necessary.**

Category	Functions	2MXS18GVJU	4MXS32GVJU	Category	Functions	2MXS18GVJU	4MXS32GVJU
Basic Function	Inverter (with Inverter Power Control)	○	○	Health & Clean	Air Purifying Filter	—	—
	Operation Limit for Cooling (°FDB)	14~ 114.8	14~ 114.8		Photocatalytic Deodorizing Filter	—	—
	Operation Limit for Heating (°FWB)	5~ 59.9	5~ 59.9		Air Purifying Filter with Photocatalytic Deodorizing Function	—	—
	PAM Control	○	○		Titanium Apatite Photocatalytic Air-Purifying Filter	—	—
Compressor	Oval Scroll Compressor	—	—		Mold Proof Air Filter	—	—
	Swing Compressor	○	○		Wipe-clean Flat Panel	—	—
	Rotary Compressor	—	—		Washable Grille	—	—
	Reluctance DC Motor	○	○		Filter Cleaning Indicator	—	—
Comfortable Airflow	Power-Airflow Louver	—	—		Good-Sleep Cooling Operation	—	—
	Power-Airflow Dual Louvers	—	—	Timer	24-Hour On/Off Timer	—	—
	Power-Airflow Diffuser	—	—		Night Set Mode	—	—
	Wide-Angle Louvers	—	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	—	—
	Vertical Auto-Swing (Up and Down)	—	—		Self-Diagnosis (Digital, LED) Display	○	○
	Horizontal Auto-Swing (Right and Left)	—	—		Wiring Error Check	○	○
	3-D Airflow	—	—		Anticorrosion Treatment of Outdoor Heat Exchanger	○	○
	Comfort Airflow Mode	—	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	—	—
	3-Step Airflow (H/P Only)	—	—		Flexible Voltage Correspondence	—	—
Comfort Control	Auto Fan Speed	—	—		High Ceiling Application	—	—
	Indoor Unit Quiet Operation	—	—		*Chargeless	98.4ft	131.6ft
	Night Quiet Mode (Automatic)	○	○		Either Side Drain (Right or Left)	—	—
	Outdoor Unit Quiet Operation (Manual)	○	○		Power Selection	—	—
	Intelligent Eye	—	—	Remote Control	5-Rooms Centralized Controller (Option)	—	—
	Quick Warming Function	○	○		Remote Control Adapter (Normal Open-Pulse Contact) (Option)	—	—
	Hot-Start Function	—	—		Remote Control Adapter (Normal Open Contact) (Option)	—	—
	Automatic Defrosting	○	○		DIII-NET Compatible (Adapter) (Option)	—	—
Operation	Automatic Operation	—	—	Remote Controller	Wireless	—	—
	Program Dry Function	—	—		Wired	—	—
	Fan Only	—	—				
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	—	—				
	Inverter POWERFUL Operation	—	—				
	Priority-Room Setting	○	○				
	Cooling / Heating Mode Lock	○	○				
	HOME LEAVE Operation	—	—				
	Indoor Unit On/Off Switch	—	—				
	Signal Reception Indicator	—	—				
	Temperature Display	—	—				
	Another Room Operation	—	—				

Notes: ○ : Holding Functions
— : No Functions

*** Chargeless = Allowable pipe length before additional refrigerant is necessary.**

Part 2
Specifications

1. Specifications

1.1 Indoor Units

Wall Mounted Indoor Units

60Hz 208-230V

Model			CTXS09GVJU		CTXS12GVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			9kBtu/h Class		12kBtu/h Class	
Front Panel Color			White		White	
Air Flow Rates	cfm (m³/min)	H	388 (11.0)	400 (11.3)	388 (11.0)	400 (11.3)
		M	335 (9.5)	357 (10.1)	335 (9.5)	357 (10.1)
		L	283 (8.0)	314 (8.9)	283 (8.0)	314 (8.9)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	40		40	
	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	0.18	0.2	0.18	0.2
Power Consumption (Rated)		W	40	45	40	45
Power Factor		%	96.6	97.8	96.6	97.8
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		inch (mm)	11-7/16 × 31-5/16 × 9-3/8" (291 x 795 x 238 mm)		11-7/16 × 31-5/16 × 9-3/8" (291 x 795 x 238 mm)	
Packaged Dimensions (H×W×D)		inch (mm)	11 × 33-1/16 × 13-5/16" (279 x 840 x 338 mm)		11 × 33-1/16 × 13-5/16" (279 x 840 x 338 mm)	
Weight		Lbs	20 lbs (20 kg)		20 lbs (20 kg)	
Gross Weight		Lbs	29 lbs (13.2 kg)		29 lbs (13.2 kg)	
Operation Sound	H/M/L	dBA	44/40/35	44/39/34	45/41/36	45/40/35
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection	Liquid	inch (mm)	ϕ 1/4" (6.4 mm)		ϕ 1/4" (6.4 mm)	
	Gas	inch (mm)	ϕ 3/8" (9.5 mm)		ϕ 3/8" (9.5 mm)	
	Drain	inch (mm)	ϕ 11/16" (17.5 mm)		ϕ 11/16" (17.5 mm)	
Drawing No.			3D058830		3D058831	

60Hz 230V

Model			FTXS15DVJU		FTXS18DVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			15kBtu/h Class		18kBtu/h Class	
Front Panel Color			White		White	
Air Flow Rates	cfm (m³/min)	H	519 (14.7)	515 (14.6)	549 (15.5)	609 (17.2)
		M	436 (12.3)	459 (13.0)	476 (13.5)	529 (15.0)
		L	353 (10.0)	402 (11.4)	402 (11.4)	448 (12.7)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	43		43	
	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	0.18		0.18	
Power Consumption (Rated)		W	40		40	
Power Factor		%	96.6		96.6	
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		inch (mm)	11-7/16 × 41-5/16 × 9-3/8" (291 x 1049 x 238 mm)		11-7/16 × 41-5/16 × 9-3/8" (291 x 1049 x 238 mm)	
Packaged Dimensions (H×W×D)		inch (mm)	13-1/4 × 45-3/16 × 14-7/16" (337 x 1148 x 367 mm)		13-1/4 × 45-3/16 × 14-7/16" (337 x 1148 x 367 mm)	
Weight		Lbs (kg)	26.5 lbs (12 kg)		26.5	
Gross Weight		Lbs (kg)	38 lbs (17 kg)		38	
Operation Sound	H/M/L	dBA	45/41/36	44/40/35	45/41/36	44/40/35
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection	Liquid	inch (mm)	ϕ 1/4" (6.4 mm)		ϕ 1/4" (6.4 mm)	
	Gas	inch (mm)	ϕ 1/2" (12.7 mm)		ϕ 1/2" (12.7 mm)	
	Drain	inch (mm)	ϕ 11/16" (17.5 mm)		ϕ 11/16" (17.5 mm)	
Drawing No.			3D056381		3D056382	

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

Slim Concealed Ceiling-Mounted Indoor Units

60Hz 230V

Model			FDXS09DVJU		FDXS12DVJU	
			Cooling	Heating	Cooling	Heating
Rated Capacity			9kBtu/h Class		12kBtu/h Class	
External Static Pressure		Pa	30		30	
Air Flow Rates	cfm	H	305	305	305	305
		M	280	280	280	280
		L	260	260	260	260
Fan	Type		Sirocco Fan		Sirocco Fan	
	Motor Output	W	62		62	
	Speed	Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.52	0.52	0.52	0.52
Power Consumption (Rated)		W	72	72	72	72
Power Factor		%	60.2	60.2	60.2	60.2
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H×W×D)		inch (mm)	7-7/8 × 27-9/16 × 24-7/16" (200 x 700 x 621 mm)		7-7/8 × 27-9/16 × 24-7/16" (200 x 700 x 621 mm)	
Packaged Dimensions (H×W×D)		inch (mm)	10-13/16 × 30-1/4 × 36-5/16" (272 x 768 x 906 mm)		10-13/16 × 30-1/4 × 36-5/16" (272 x 768 x 906 mm)	
Weight		Lbs (kg)	47 lbs (21.3 kg)		47 lbs (21.3 kg)	
Gross Weight		Lbs (kg)	64 lbs (29 kg)		64 lbs (29 kg)	
Operation Sound	H/M/L	dBA	35/33/31	35/33/31	35/33/31	35/33/31
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Piping Connection	Liquid	inch (mm)	ϕ 1/4" (6.4 mm)		ϕ 1/4" (6.4 mm)	
	Gas	inch (mm)	ϕ 3/8" (9.5 mm)		ϕ 3/8" (9.5 mm)	
	Drain	inch (mm)	O.D.1-1/32, I.D.25/32		O.D.1-1/32, I.D.25/32	
Drawing No.			3D051781A		3D051782A	

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

1.2 Outdoor Units

60Hz 208-230V

Model			2MXS18GVJU	
			Cooling	Heating
Capacity		kW	—	
Power Consumption		W	—	
Running Current		A	—	
Casing Color			Ivory White	
Compressor	Type		Hermetically Sealed Swing Type	
	Model		2YC45EXD	
	Motor Output	W	1,380	
Refrigerant Oil	Model		FVC50K	
	Charge	oz	26.5	
Refrigerant	Type		R-410A	
	Charge	Lbs	5.73	
Air Flow Rate	m^3/min	H	49	41
		M	—	—
		L	43	39
	cfm	H	1,730	1,448
		M	—	—
		L	1,518	1,377
Fan	Type		Propeller	
	Motor Output	W	53	
Starting Current		A	10.6	
Dimension (H×W×D)		inch (mm)	28-15/16 × 32-1/2 × 11-13/16” (736 x 825.5 x 300 mm)	
Packaged Dimension (H×W×D)		inch (mm)	15-3/8 × 31-7/16 × 39-5/16” (390.5 x 951 x 999 mm)	
Weight		Lbs (kg)	139 lbs (63 kg)	
Gross Weight		Lbs (kg)	144 lbs (65 kg)	
Operation Sound	(Sound Pressure)	dBA	50	51
Piping Connection	Liquid	inch (mm)	ϕ 1/4” (6.4 mm)× 2	
	Gas	inch (mm)	ϕ 3/8” (9.5 mm) × 2	
	Drain	inch (mm)	ϕ11/16” (17.4 mm)	
Heat Insulation			Both Liquid & Gas Pipes	
No. of Wiring Connection			3 for Power Supply, 4 for Interunit Wiring	
Max. Piping Length		ft (m)	164’ (50 m) (for Total of Each Room)	
			82’ (25 m) (for One Room)	
Amount of Additional Charge		oz/ft (gram/m)	0.22 oz / 6.2 grams (98.4 ft/ 30 m or more)	
Max. Installation Height Difference		ft (m)	49.2 ft (15 m) (between Indoor Unit and Outdoor Unit)	
			24.6 ft (7.5 m) (between Indoor Units)	
Drawing No.			3D058840	

Note:

1. The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor ; 80°FDB/67°FWB Outdoor ; 95°FDB/75°FWB	Indoor ; 70°FDB/60°FWB Outdoor ; 47°FDB/43°FWB	25 ft (7.5 m)

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

60Hz 208-230V

Model				4MXS32GVJU	
				Cooling	Heating
Capacity			kW	—	
Power Consumption			W	—	
Running Current			A	—	
Casing Color				Ivory White	
Compressor	Type			Hermetically Sealed Swing Type	
	Model			2YC63EXD	
	Motor Output		W	1,920	
Refrigerant Oil	Model			FVC50K	
	Charge		oz	26.5	
Refrigerant	Type			R-410A	
	Charge		Lbs	6.83	
Air Flow Rate	m^3/min		H	58.4	52.1
			M	52.1	52.1
			L	46.5	13.0
	cfm		H	2,062	1,840
			M	1,840	1,840
			L	1,642	459
Fan	Type			Propeller	
	Motor Output		W	66	
Starting Current			A	18.0	
Dimension (H×W×D)			inch (mm)	30-5/16 × 35-7/16 × 12-5/8" (769.9 x 900 x 320.6 mm)	
Packaged Dimension (H×W×D)			inch (mm)	35-7/8 × 37-11/16 × 15-15/16" (911.2 x 958.4 x 412.8 mm)	
Weight			Lbs (kg)	168 lbs (76.2 kg)	
Gross Weight			Lbs (kg)	196 lbs (88.9 kg)	
Operation Sound	(Sound Pressure)		dBA	52	54
Piping Connection	Liquid		inch (mm)	ϕ 1/4" (6.4 mm) × 4	
	Gas		inch (mm)	ϕ 3/8" (9.5 mm) × 1, ϕ 1/2" (12.7 mm) × 1, ϕ 5/8" (15.8 mm) × 2	
	Drain		inch (mm)	ϕ 1	
Heat Insulation				Both Liquid & Gas Pipes	
No. of Wiring Connection				3 for Power Supply, 4 for Interunit Wiring	
Max. Piping Length			ft / m	230 ft /70 m (for Total of Each Room)	
				82 ft / 25 m (for One Room)	
Amount of Additional Charge			oz/ft	0.22 (131.6 ft / 40.1 m or more)	
Max. Installation Height Difference			ft / m	49.2 / 15 m) (between Indoor Unit and Outdoor Unit)	
				24.6 (7.5 m) (between Indoor Units)	
Drawing No.				3D058873A	

Note:

1. The data are based on the conditions shown in the table below.

Cooling	Heating	Piping Length
Indoor ; 80°FDB/67°FWB Outdoor ; 95°FDB/75°FWB	Indoor ; 70°FDB/60°FWB Outdoor ; 47°FDB/43°FWB	25 ft (7.5 m)

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

Part 3
Printed Circuit Board Connector Wiring Diagram

1. Printed Circuit Board Connector Wiring Diagram

1.1 Indoor Unit

1.1.1 CTXS09/12GVJU, FTXS15/18DVJU

Connectors

PCB(1) (Control PCB) (indoor unit)

1)	S1	Connector for fan motor
2)	S6	Connector for swing motor (horizontal blades)
3)	S8	Connector for swing motor (vertical blades)
4)	S21	Connector for centralized control (HA)
5)	S26	Connector for buzzer PCB
6)	S28	Connector for signal receiver PCB
7)	S32	Connector for heat exchanger thermistor
8)	S35	Connector for Intelligent Eye sensor PCB

PCB(2) (Signal Receiver PCB)

1)	S29	Connector for control PCB

PCB(3) (Buzzer PCB)

1)	S27	Connector for control PCB
2)	S38	Connector for display PCB

PCB(4) (Display PCB)

1)	S37	Connector for buzzer PCB

PCB(5) (INTELLIGENT EYE sensor PCB)

1)	S36	Connector for control PCB

Note: Other designations

PCB(1) (Control PCB) (indoor unit)

1)	V1	Varistor
2)	JA	Address setting jumper
	JB	Fan speed setting when compressor is OFF on thermostat
	JC	Power failure recovery function
		∗ Refer to page 229 for detail.
3)	FU1	Fuse (3.15A)
4)	LED A	LED for service monitor (green)

PCB(2) (Signal Receiver PCB)

1)	SW1	Forced operation ON/OFF switch

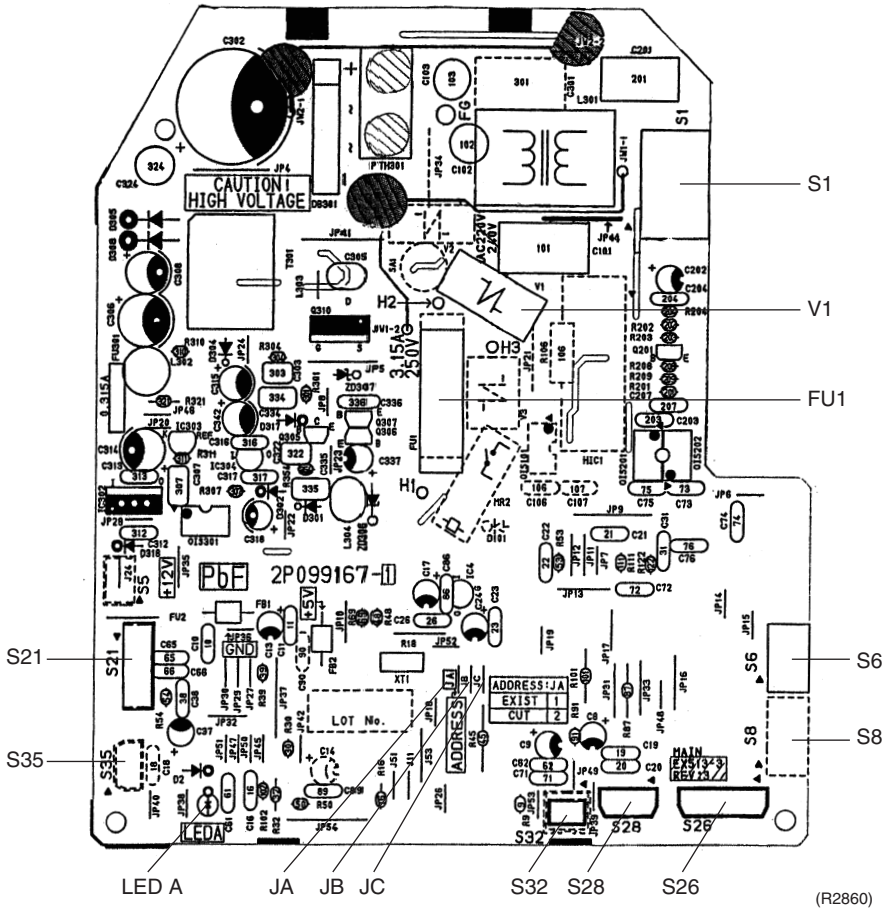
PCB(3) (Buzzer PCB)

1)	RTH1	Room temperature thermistor

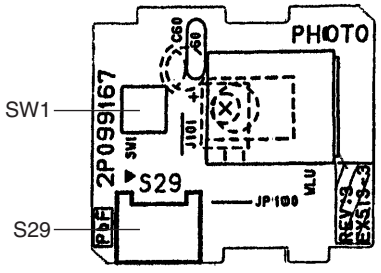
PCB(4) (Display PCB)

1)	LED1	LED for operation (green)
2)	LED2	LED for timer (yellow)
3)	LED3	LED for Home Leave operation (red)

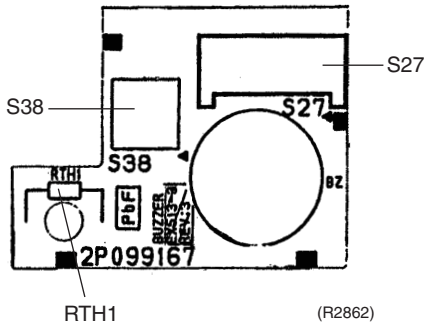
PCB(1): Control PCB (indoor unit)



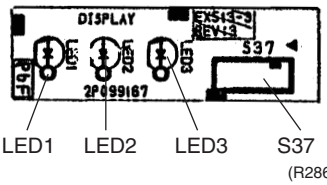
PCB(2): Signal Receiver PCB



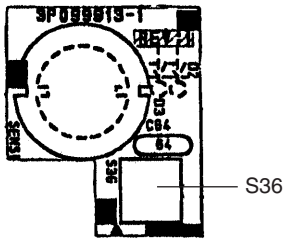
PCB(3): Buzzer PCB



PCB(4): Display PCB



PCB(5): INTELLIGENT EYE sensor PCB



1.1.2 FDXS09/12DVJU

Connectors

PCB (1) (Control PCB)

1) S1 Connector for fan motor
2) S7 Connector for fan motor
3) S21 Connector for centralized control
4) S26 Connector for display PCB
5) S32 Connector for room temp/heat exchanger thermistor

PCB (2) (Display PCB)

1) S1 Connector for control PCB

Note: Other designations

PCB (1) (Control PCB)

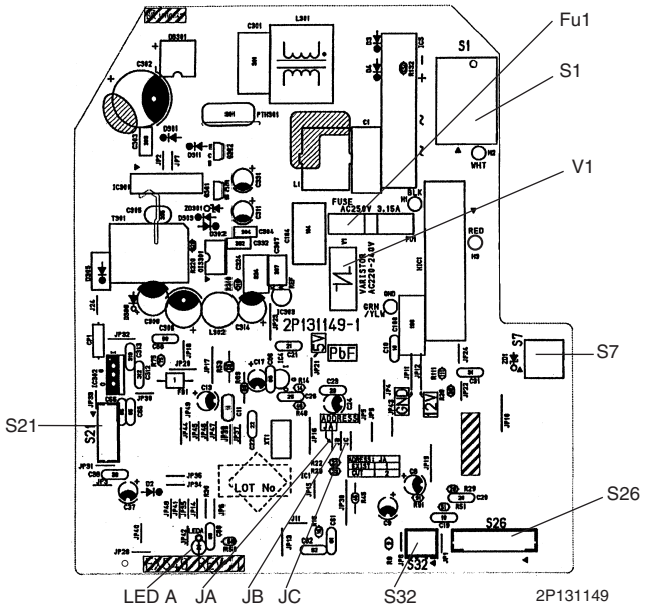
1) V1 Varistor
2) JA Address setting jumper
   JB Fan speed setting when compressor is OFF on thermostat.
   JC Power failure recovery function.
   ∗ Refer to page 229 for more detail
3) LED A LED for service monitor (green)
4) FU1 Fuse (3.15A)

PCB (2) (Display PCB)

1) SW1 Forced operation ON/OFF switch
2) LED1 LED for operation (Green)
3) LED2 LED for timer (Yellow)
4) LED3 LED for HOME LEAVE Operations (Red)
5) RTH1 Room temperature thermistor

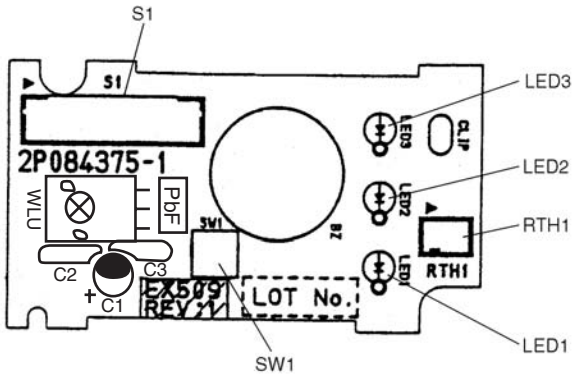
PCB Detail

PCB (1): Control PCB



PCB Detail

PCB (2): Display PCB



2P084375

1.2 Outdoor Unit

1.2.1 2MXS18GVJU

Connectors

Control PCB
Service Monitor PCB

1) S10	Connector for S11 on MID1
2) S20	Connector for electronic expansion valve coil A port
3) S21	Connector for electronic expansion valve coil B port
4) S31	Connector for CN14 on SPM
5) S32	Connector for CN11 on SPM
6) S33	Connector for S34 on inverter PCB (MID2)
7) S40	Connector for overload protector
8) S51	Connector for S52 on service monitor PCB
9) S52	Connector for S51 on PCB
10) S71	Connector for S72 on inverter PCB (MID2)
11) S80	Connector for four-way valve
12) S90	Connector for thermistors (outdoor air, heat exchanger, and discharge pipe)
13) S91	Connector for fin thermistor
14) S92	Connector for gas pipe thermistor
15) S93	Connector for liquid pipe thermistor
16) S101	Connector for S102 on service monitor PCB
17) S102	Connector for S101 on PCB
18) LED A, LED1 to 4	Service monitor LED
19) FU2	Fuse (3.15 A)
20) V2, V5	Varistor

MID 1

1) S11	Connector for S10 on PCB
2) FU1	Fuse (30A)
3) V3	Varistor

Inverter PCB (MID 2)

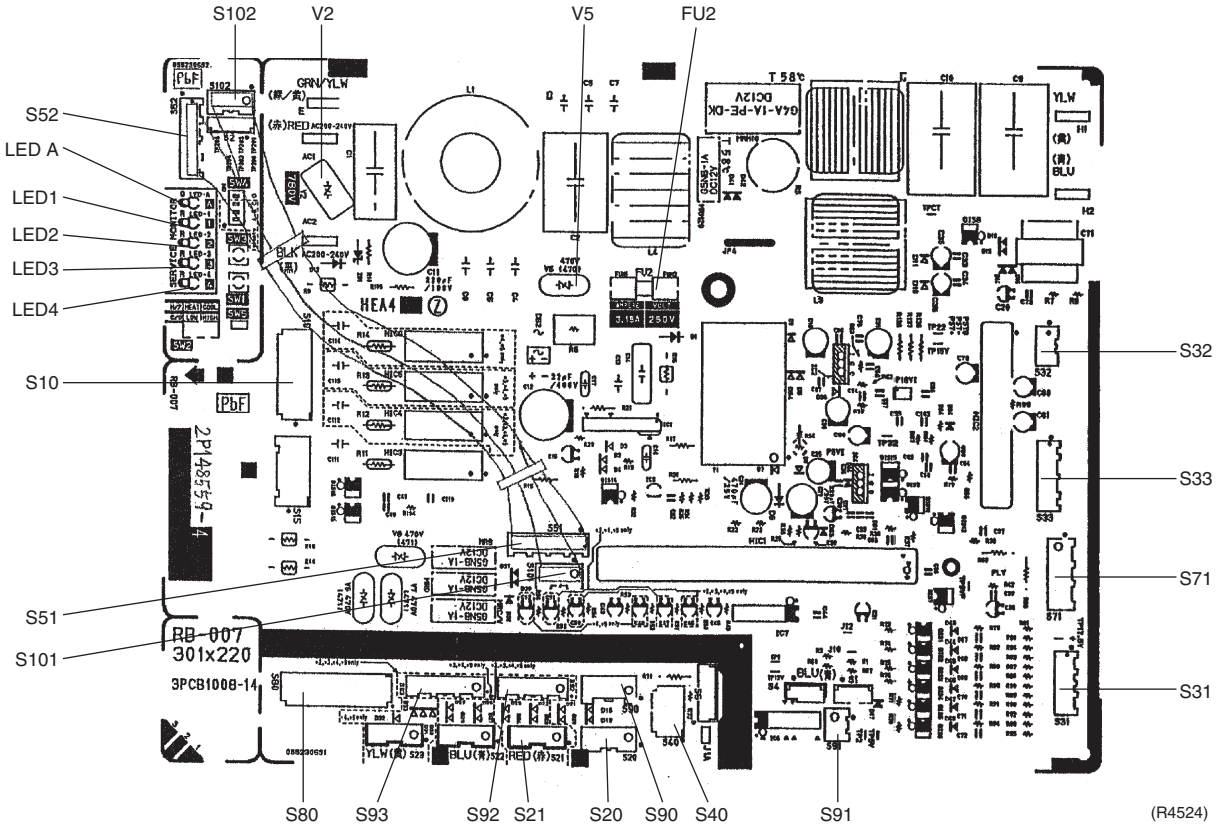
1) S34	Connector for S33 on PCB
2) S70	Connector for fan motor
3) S72	Connector for S71 on PCB
4) FU201	Fuse (3.15A)

SPM

1) CN11	Connector for S32 on PCB
2) CN14	Connector for S31 on PCB

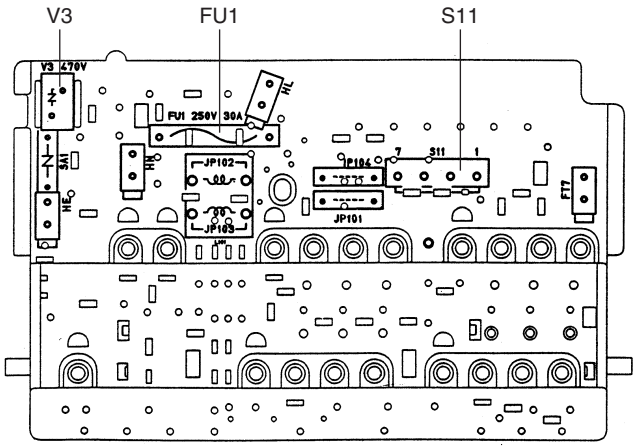
Control PCB

Service Monitor PCB



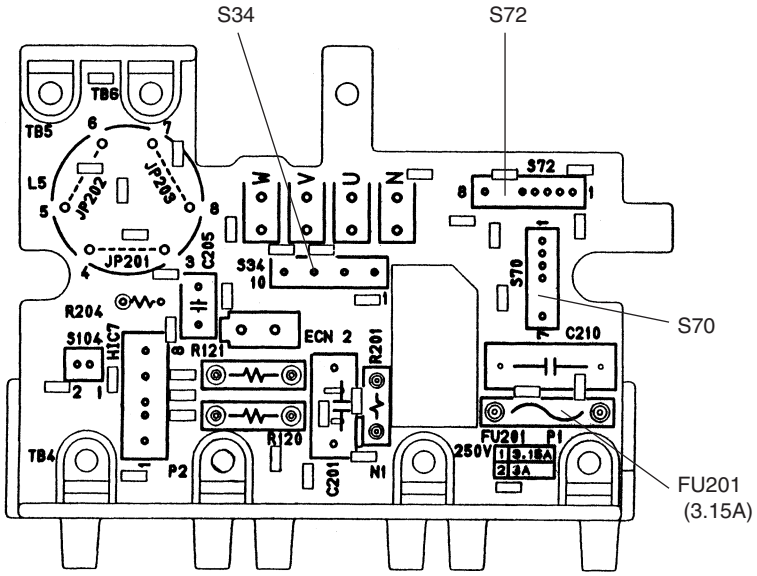
(R4524)

MID1



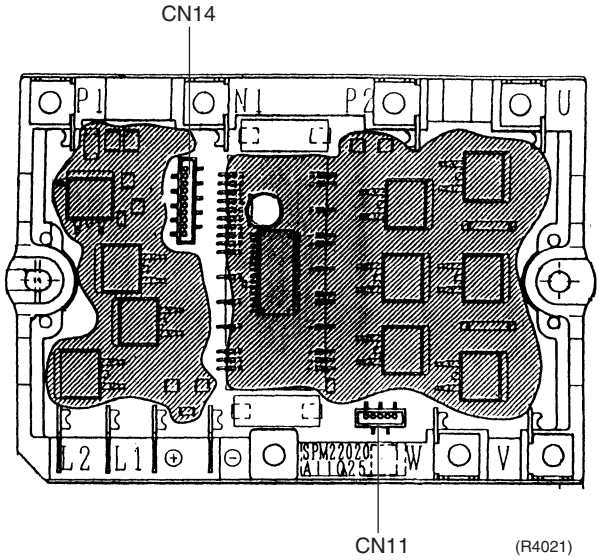
(R4019)

Inverter PCB (MID2)



(R4020)

SPM



(R4021)

1.2.2 4MXS32GVJU

Connectors

PCB(1)(Main PCB)

1)	S10	Connector for terminal strip (indoor-outdoor transmission)
2)	S15	Connector for COOL / HEAT mode lock
3)	S20	Connector for electronic expansion valve coil A port (white)
4)	S21	Connector for electronic expansion valve coil B port (red)
5)	S22	Connector for electronic expansion valve coil C port (blue)
6)	S23	Connector for electronic expansion valve coil D port (yellow)
7)	S40	Connector for overload protector
8)	S51, S101	Connector for service monitor PCB
9)	S70	Connector for fan motor
10)	S80	Connector for four-way valve coil
11)	S90	Connector for thermistors (outdoor air, heat exchanger, and discharge pipe)
12)	S92	Connector for gas pipe thermistor
13)	S93	Connector for liquid pipe thermistor
14)	AC1, AC2	Connector for terminal strip (power supply)
15)	HR1, HR2	Connector for reactor

PCB(2)(Service Monitor PCB)

1)	S52, S102	Connector for control PCB

Note: Other Designations

PCB(1)(Main PCB)

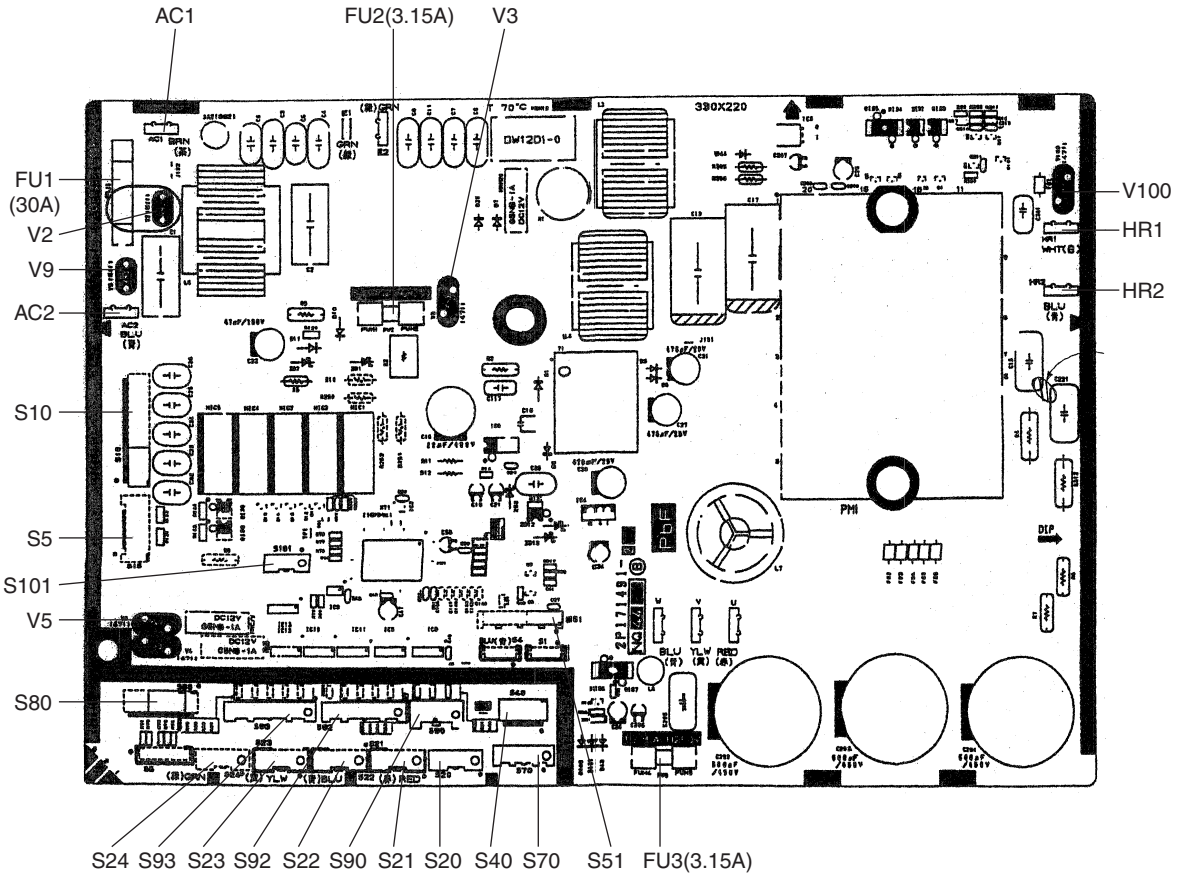
1)	FU1	Fuse (30A)
2)	FU2, FU3	Fuse (3.15A)
3)	V2, V3, V5 V9, V100	Varistor

PCB(2)(Service Monitor PCB)

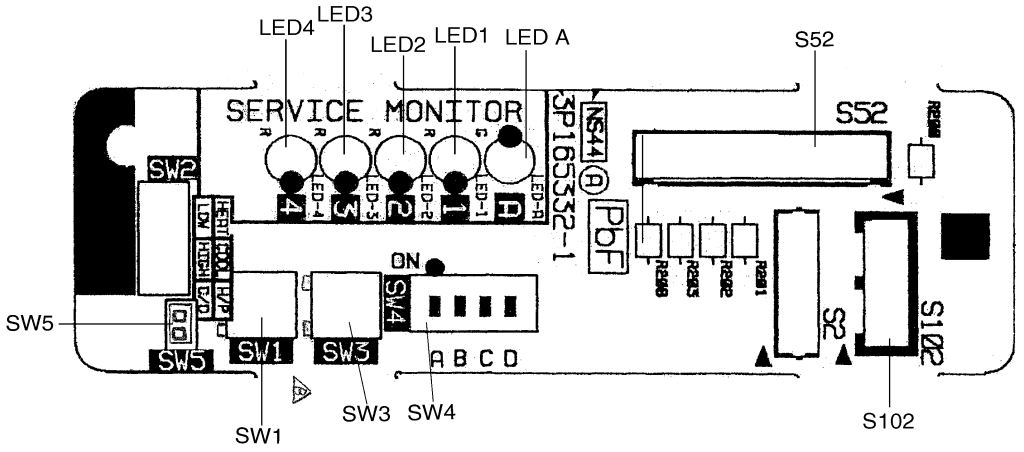
1)	LED A	Service monitor LED (green)
2)	LED1 - LED4	Service monitor LED (red)
3)	SW1	Forced operation ON/OFF switch
4)	SW3	Wiring error check switch
5)	SW4	Priority room setting switch
6)	SW5	Night quiet-mode setting switch

PCB Detail

PCB(1): Main PCB



PCB(2): Service Monitor PCB



Part 4
Function and Control

1. Main Functions

Note: Check the list of 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 / heating operation

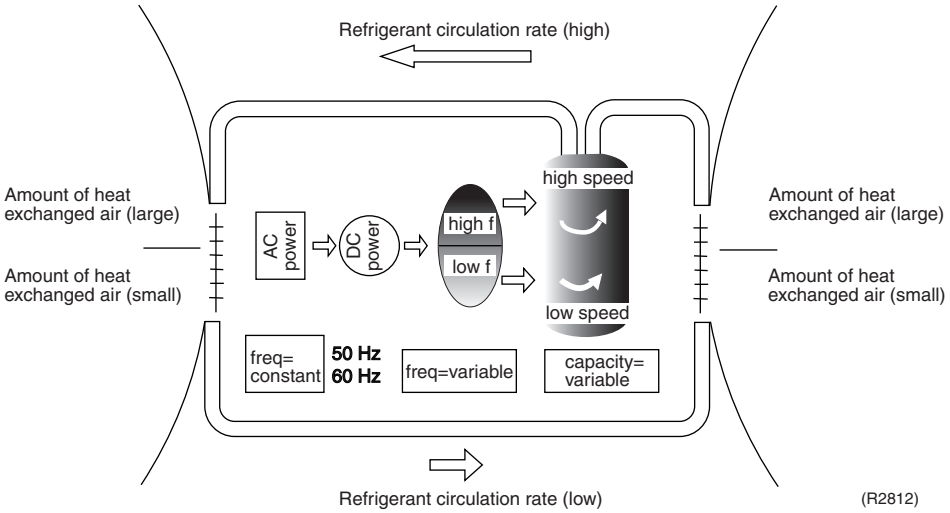
Inverter Principle

To regulate the capacity, 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 increased refrigerant circulation. This leads to a higher amount of heat exchange per unit. ■ When the frequency decreases, the rotation speed of the compressor decreases resulting in decreased refrigerant circulation. This leads to a lower amount of the heat exchange per unit.

Drawing of Inverter

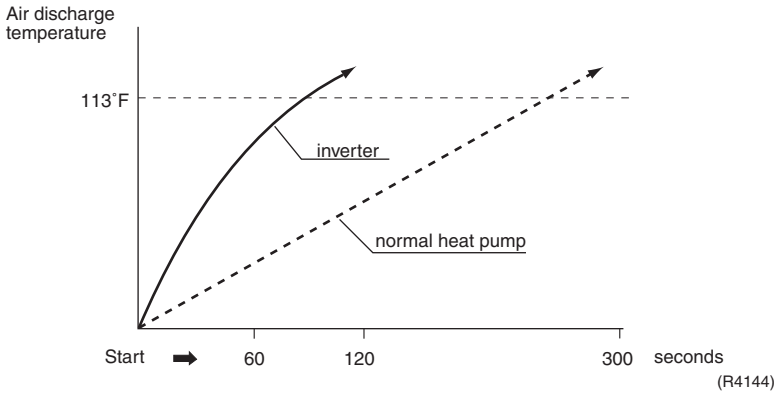
The following drawing shows a schematic view of the inverter principle:



Inverter Features

The inverter provides the following features:

- System capacity can be modulated according to changes of the outdoor temperature and the indoor cooling/heating load.
- Heating/Cooling Set Point is quickly reached
  By quickly increasing the compressor rotational speed at system startup, the heat/cool set pont is rapidly achieved.



- During extremely cold weather, the high heating capacity is maintained even when the outdoor temperature is 30 degrees or lower .
- Comfortable air conditioning room temperature is maintained.
  A constant adjustment of the compressor frequency and EEV maintains the room temperature within a narrow range of the setpoint.
- Energy savings in both the heating and cooling modes are achieved.
  As the system nears temperature set pont, the compressor frequency is reduced, which in turn reduces the compressor speed to enable energy savings while maintaining a comfortable room temperature.

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 43.
High	■ Input current control. Refer to page 44. ■ Compressor protection function. Refer to page 43. ■ Heating Peak-cut control. Refer to page 45. ■ Freeze-up protection. Refer to page 45. ■ Defrost control. Refer to page 47.

Forced Cooling / Heating Operation

For more information, refer to ***FORCED OPERATION MODE*** on page 55.

1.2 Power-Airflow Dual Louvers, Wide Angle Louvers and Auto-Swing

Power-airflow Dual Louvers

The large louvers send a large volume of air downwards, providing optimum control for cooling, heating, and dry mode.

Heating Mode

During heating mode, the large louver directs warm air downwards where it then can pervade the entire room.

Cooling Mode

During cooling mode, the louver retracts into the indoor unit. Then, cool air can pervade the entire room.

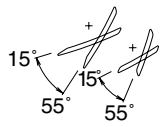
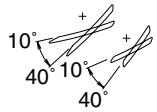
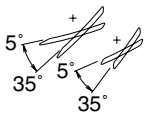
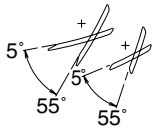
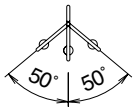
Wide-Angle Louvers

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

Auto-Swing

In case of the Wall Mounted Indoor Unit:

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

Vertical Swing (up and down)				Horizontal Swing (right and left)
Heating	Cooling	Dry	Fan	Heating, Cooling
 (R2813)	 (R2814)	 (R2815)	 (R2816)	 (R2817)

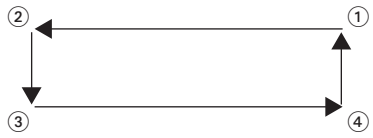
Outline of 3-D Airflow

In case of the Wall Mounted Indoor Unit:

Alternative repetition of vertical and horizontal swing motions enables uniform airconditioning of the entire room.

Detail of the Action

When the horizontal and vertical louvers are both set to auto mode, the airflows are alternated, providing a full range of air conditioning. The order of swing motion is such that it turns counterclockwise, starting from the right upper point as viewed to the front side of the indoor unit.



(R1024)

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 the troubleshooting for fan motor on page 118.

Phase Steps

Phase control and fan speed control contains 9 steps: LLL, LL, SL, L, ML, M, MH, H and HH.
In automatic operation, the step **SL** is not available.

Step	Cooling	Heating	Dry mode
LLL (Heating thermostat OFF)	 (R2818)	 (R2818)	750 - 1000 rpm (During powerful operation : 1050 rpm)
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:

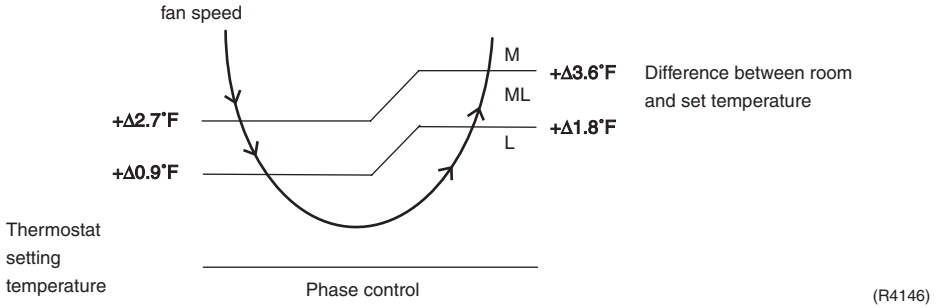
1. During powerful operation, the fan operates H tap + 50 - 90 rpm.
2. Fan stops during defrost operation.

Automatic Airflow 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 Airflow Control for Cooling

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



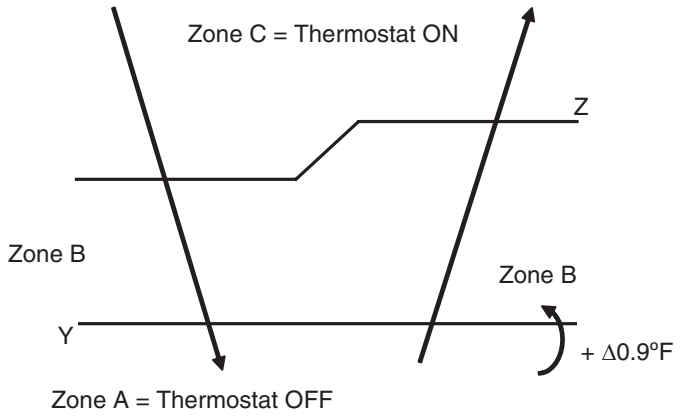
1.4 Program Dry Function

Program dry function removes humidity without lowering the room temperature. Since the microcomputer controls both the temperature and airflow 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. 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
75°F or more	Room temperature at startup	X – Δ4.5°F	X – Δ0.9°F or Y + Δ0.9°F (zone B) continues for 10 min.
74°F ~ 64°F		X – Δ3.6°F	X – Δ0.9°F or Y + Δ0.9°F (zone B) continues for 10 min.
63°F ~	64°F	X – Δ3.6°F	X – Δ0.9°F = 63°F or Y + Δ0.9°F (zone B) continues for 10 min.



(R6972)

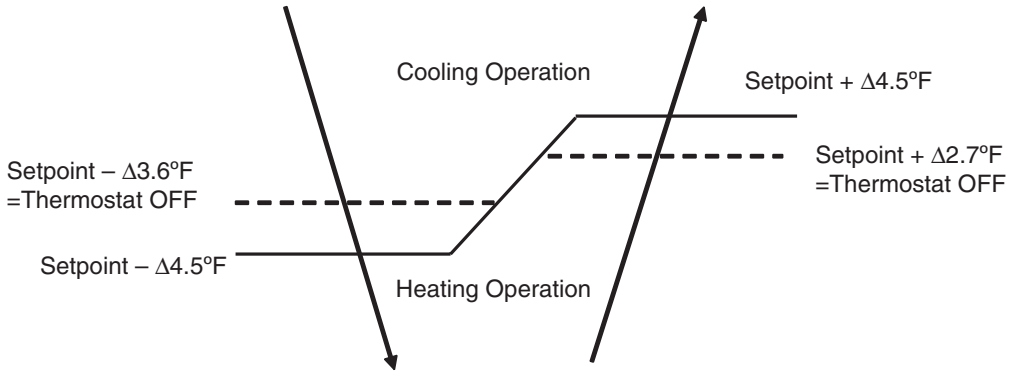
1.5 Automatic Operation

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 (64 to 96°F).
2. Main unit setting temperature equals remote controller setting temperature plus correction value (correction value / cooling: Δ0°F, heating: Δ3.6°F).
3. Operation ON / OFF point and mode switching point are as follows.
   ① Heating → Cooling switching point:
   Room temperature ≥ Main unit setting temperature +Δ4.5°F
   ② Cooling → Heating switching point:
   Room temperature < Main unit setting temperature –Δ4.5°F
   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



(R6973)

Ex: When the set point is 77°F

Cooling Operation → 73.4°F: Thermostat OFF → 72°F: Switch to Heating Operation
Heating Operation → 79.7°F: Thermostat OFF → 81.5°F: Switch to Cooling Operation

1.6 Temperature Control

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

Thermostat OFF Condition

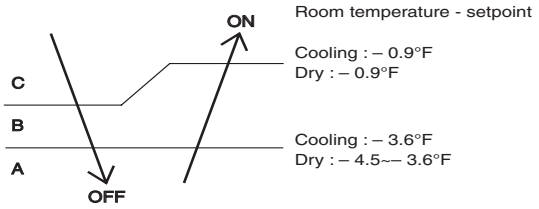
- The temperature difference is in zone A.

Thermostat ON Condition

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

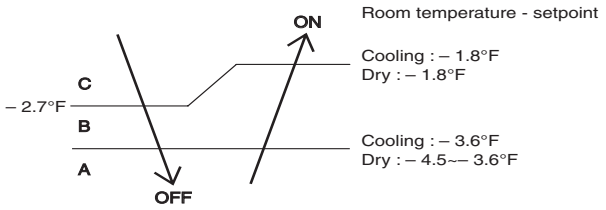
Cooling / Dry

- Wall Mounted Type



(R4668)

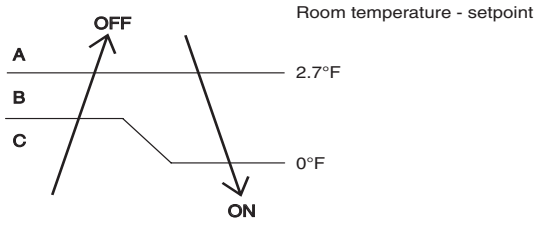
- Slim Duct Concealed Type



(R6032)

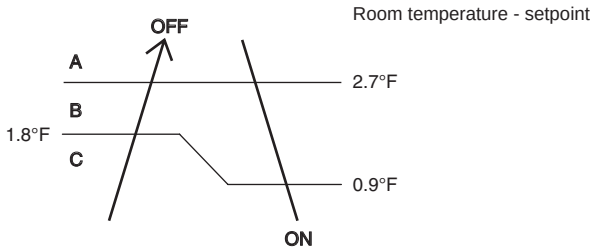
Heating

- Wall Mounted Type



(R4669)

- Slim Duct Concealed Type



(R6033)

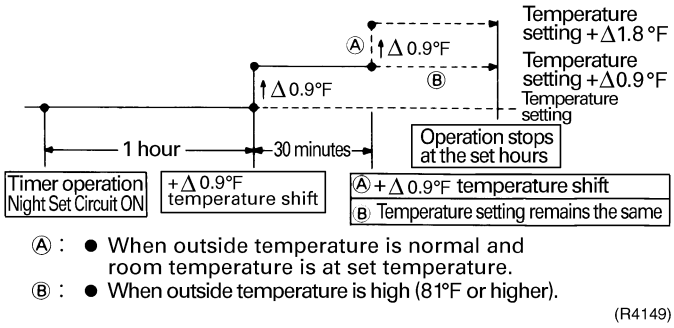
1.7 Night Set Mode

When the OFF timer is set, the Night Set mode automatically activates.
The Night Set mode maintains the airflow setting made by users.

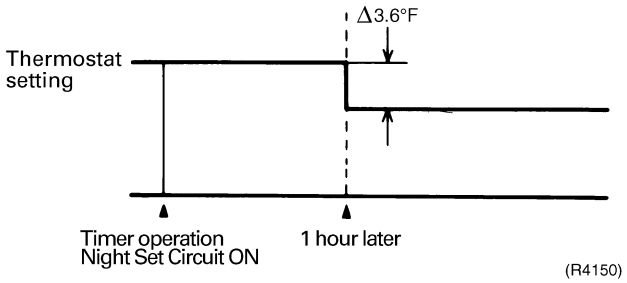
The Night Set Mode

The Night Set mode 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

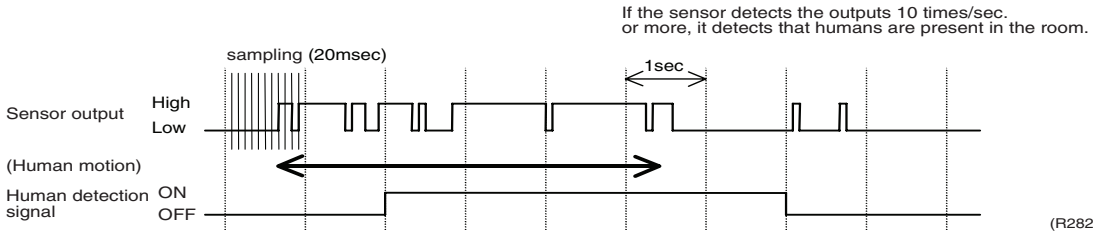


1.8 INTELLIGENT EYE

This is the function that detects existence of humans in the room by a human motion sensor (INTELLIGENT EYE) which serves to reduce capacity and save electricty when no people are present in the room.

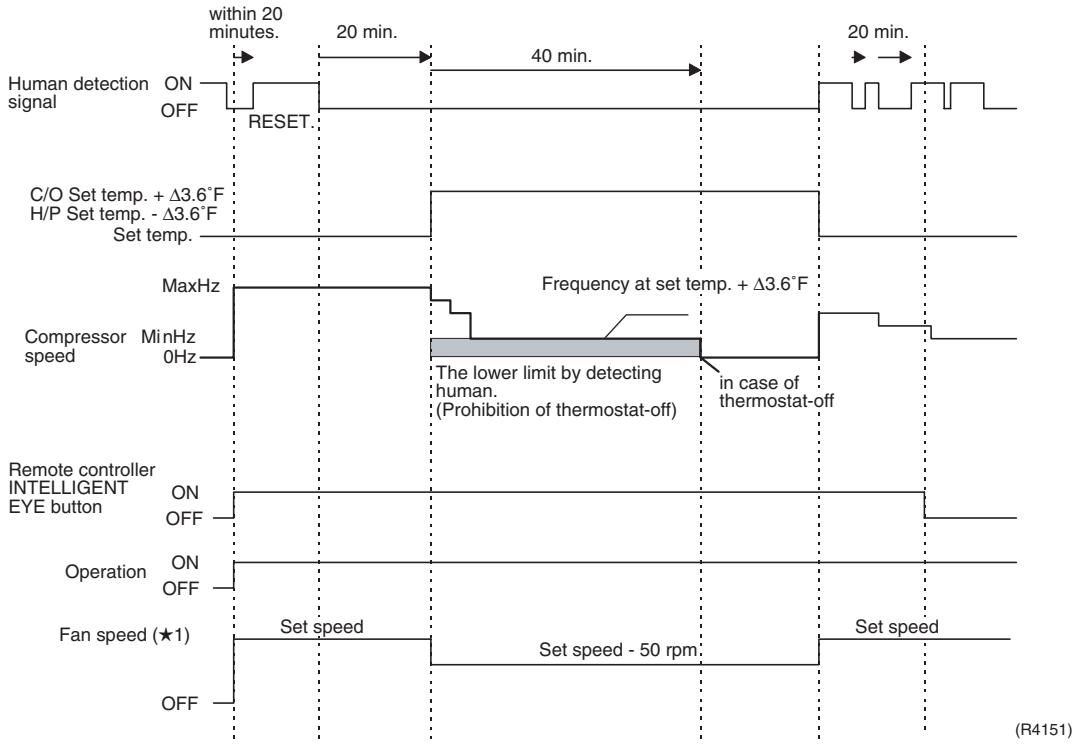
Processing

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 total (corresponding to 20 msec.× 10 = 200 msec.), it determines that a human is in the room as the motion signal is ON.

2. The motions (for example: in cooling)



- When a microcomputer has no signal from the sensor in 20 minutes, it judges that nobody is in the room and operates the unit in temperature shifted Δ3.6°F from the set temperature. (Cooling/Dry : Δ3.6°F higher, Heating : Δ3.6°F lower 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 ∆3.6°F higher for 40 minutes, compressor speed lowers, saving energy. When the space becomes unoccupied long enough for the intelligent eye to shift the unit into setback operation, the equipment is prevented from mechanically satisfying (thermo-OFF) for the first 40 minutes of that occupied mode. During that time the inverter maintains the compressor speed at a minimum frequency.
- After 40 minutes, if ther has not been sufficient heat gain in the sapce, the unit is allowed to go into a thermo-OFF (satisfied condition) where upon the compressor will be forced off.

Others

- The setting temperature cannot be commanded with a remote controller, but internally the set temperature is shifted by ∆1.8°F.

1.9 HOME LEAVE Operation

Outline

Addressing the customer's need for immediate heating and cooling of the room after returning home, or for house maintenance, you may switch the temperature and air volume from normal time to outing time by one touch. This function also stabilizes irregular cooling or heating. .

Details 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

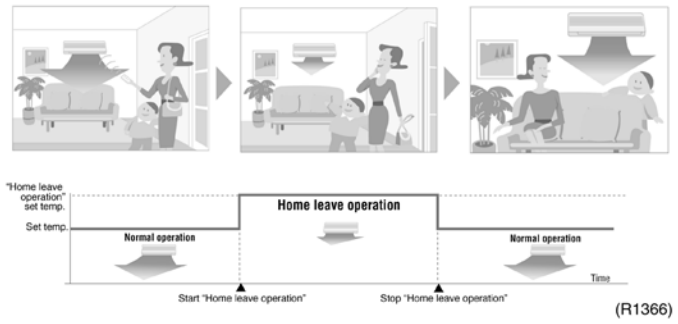
A mark representing [HOME LEAVE] is indicated on the liquid crystal display of the remote controller. The indoor unit is operated according to the set temperature and air volume for HOME LEAVE which were preset in the memory of the remote controller.

The LED (Red) of indoor unit representing [HOME LEAVE] lights up. It goes out when the operation is stopped.

3. End of Function

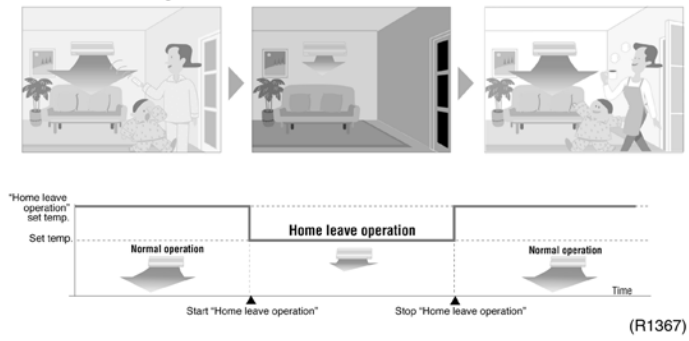
The function ends when the [HOME LEAVE] button is pressed again during [HOME LEAVE] operation or when the powerful operation button is pressed.

Scene <cooling>



(R1366)

Scene <Heating>



(R1367)

Others

The set temperature and set air volume are stored 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

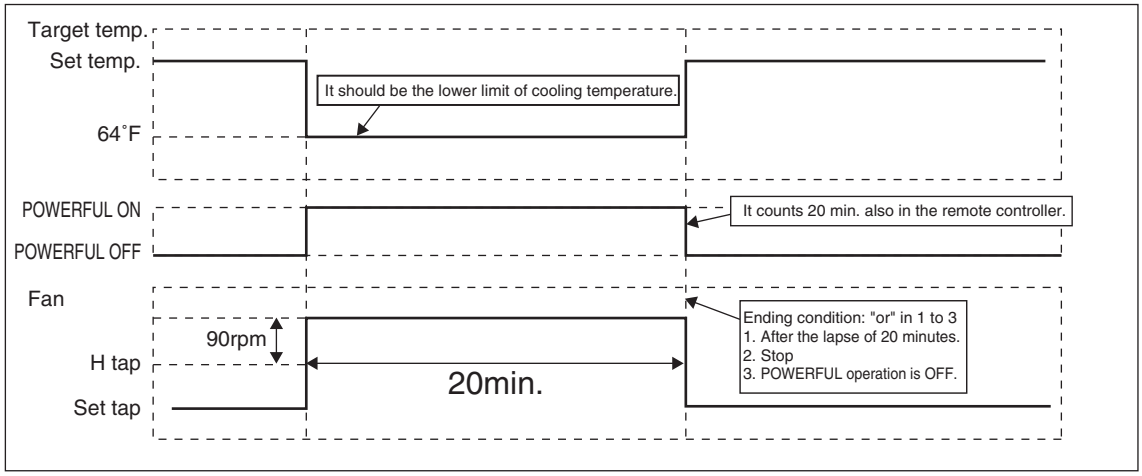
In order to utilize the cooling and heating capacity to full extent, operate the air conditioner by increasing the indoor fan rotating speed and the compressor frequency.

Details of the Control

When the POWERFUL 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
Cooling	H tap + 90 rpm	64°F
Dry	Dry rotating speed + 50 rpm	Normally targeted temperature in dry operation; Approx. -Δ3.6°F
Heating	H tap + 90 rpm	86°F
Fan	H tap + 90 rpm	—
Automatic	Same as cooling /heating in POWERFUL operation	The target is kept unchanged

Ex.) : POWERFUL operation in cooling mode.



(R4575)

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 airflow is stopped or diminished to ensure 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 gis turned ON.

1.11.2 Signal Receiving Sign

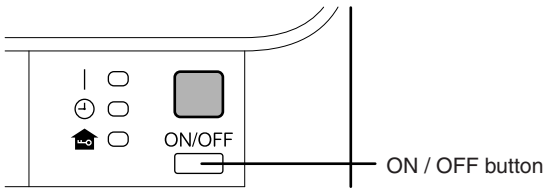
When the indoor unit receives a signal from the remote controller, the unit emits a signal receiving sound.

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.

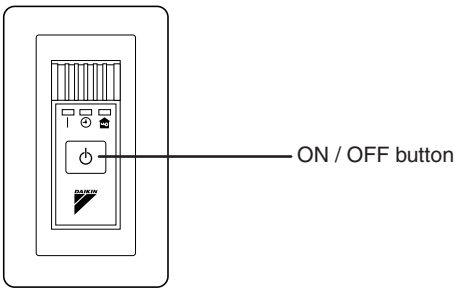
Every press of the switch changes from Operation to Stop or from Stop to Operation

In case of the Wall Mounted Indoor Units



(R2824)

In case of the Slim Concealed Ceiling-Mounted Indoor Units



(R4133)

- 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
Heat Pump	AUTO	77°F	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 is set by pressing the ON/OFF button for between 5 to 9 seconds while the unit is not operating.

Note: When the ON/OFF button is pressed for 10 seconds or more, the operation will be stopped. See page 55 for the detail of ***Forced Operation Mode***.

1.11.4 Air Purifying Filter with Photocatalytic Deodorizing Function

Wall Mounted Indoor Units Only
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 odors and deactivate bacteria and viruses even for the high volume of air required to aircondition large living rooms. The filter can be used for approximately 3 years if periodic maintenance is performed.

1.11.5 Mold-Proof Air Filter

For all indoor units
The filter net is treated with mold-resisting agent TBZ (harmless, colorless, and odorless). Due to this treatment, the amount of mold growth is much less than that of normal filters.

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 occurs, the LCD remote controller displays an error code. These indications allow prompt maintenance operations.

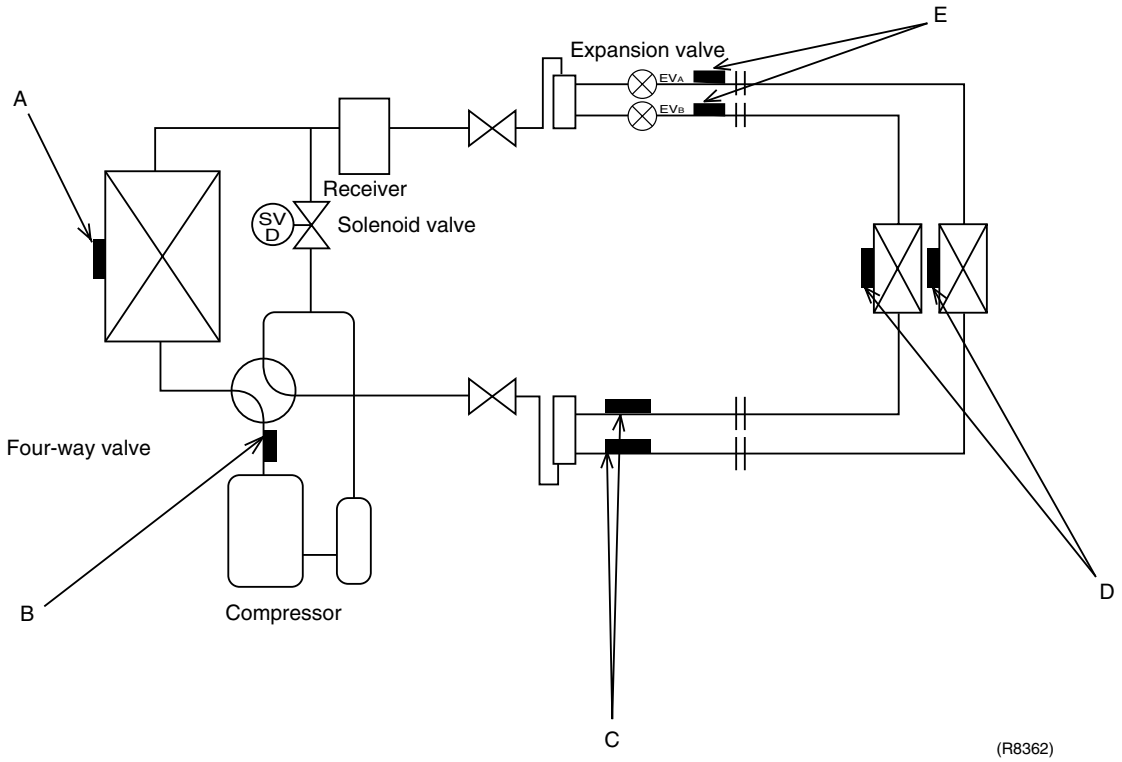
1.11.7 Auto-restart Function

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

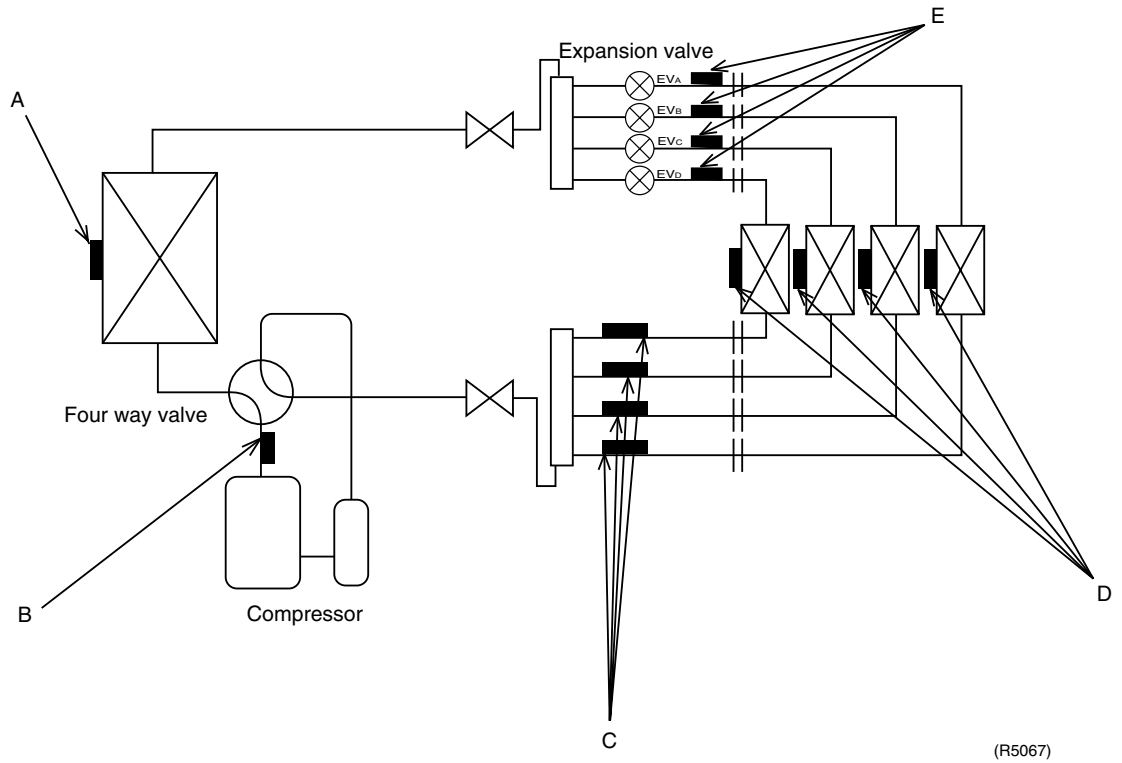
2. Function of Thermistor

2.1 Heat Pump Model

<2MXS18GVJU>



<4MXS32GVJU>



A Outdoor Heat Exchanger Thermistor

1. An outdoor heat exchanger thermistor is used for controlling a target discharge temperature.
   Set a target discharge temperature depending on an outdoor and indoor heat exchanger temperature.
   Control the electronic expansion valve opening so that the target discharge temperature can be obtained.
2. An outdoor heat exchanger thermistor is used for detecting a disconnected discharge pipe thermistor when cooling.
   When the temperature of the discharge piping is lower than the temperature of outdoor heat exchanger, a disconnected discharge pipe thermistor can be detected.

B Discharge Pipe Thermistor

1. Discharge pipe thermistor is used to control a 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 must be halted.
2. A discharge pipe thermistor is used for detecting a disconnected discharge pipe thermistor.

C Gas Pipe Thermistor

1. When cooling: a gas pipe thermistor is used for gas pipe isothermal control.
   Control the electronic expansion valve opening so that a gas pipe temperature in each room becomes equal.

D Indoor Heat Exchanger Thermistor

1. An indoor heat exchanger thermistor is used for controlling target discharge pipe temperature.
   Set a target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature.
   Control the electronic expansion valve so that the target discharge pipe temperature can be obtained.
2. An indoor heat exchanger thermistor is used to prevent freezing.
   During the cooling operation, if the temperature drops abnormally, the operating frequency becomes lower and the operation must be halted.
3. An indoor heat exchanger thermistor is used for anti-icing control.
   During the cooling operation, if the heat exchanger temperature in the room where operation is halted becomes 30°F, or if the room temperature - heat exchanger temperature in the room where operation is halted becomes $\geq \Delta$18°F, it is assumed as icing.
4. During heating: an indoor heat exchanger thermistor is used for detecting a disconnected discharge pipe thermistor.
   When a discharge pipe temperature becomes lower than an indoor heat exchanger temperature, a disconnected discharge-pipe thermistor can be detected.
   The indoor heat exchanger thermistor is also used for preventing abnormally high pressure.
5. An indoor heat exchanger thermistor is used for detecting incorrect wiring.
   During the operation of checking incorrect wiring, refrigerant is passed in order from the port A to detect a heat exchanger temperature, and then wiring and piping will be checked.
6. An indoor heat exchanger thermistor is used for sub-cooling control.
   An actual sub-cooling must be calculated from an indoor liquid pipe temperature and a heat exchanger temperature. The indoor heat exchanger thermistor controls the electronic expansion valve opening to get a target sub-cooling.

E Indoor Liquid Pipe Thermistor

1. When heating: used for a sub-cooling control.
   Calculate an actual sub-cooling from the temperature of indoor liquid pipes and a heat exchanger temperature.
   Actual sub-cooling
   A maximum heat exchanger temperature in each room - adjust the opening of the electronic expansion valve so that the liquid pipe temperature of each room becomes an target sub-cooling.

3. Control Specification

3.1 Mode Hierarchy

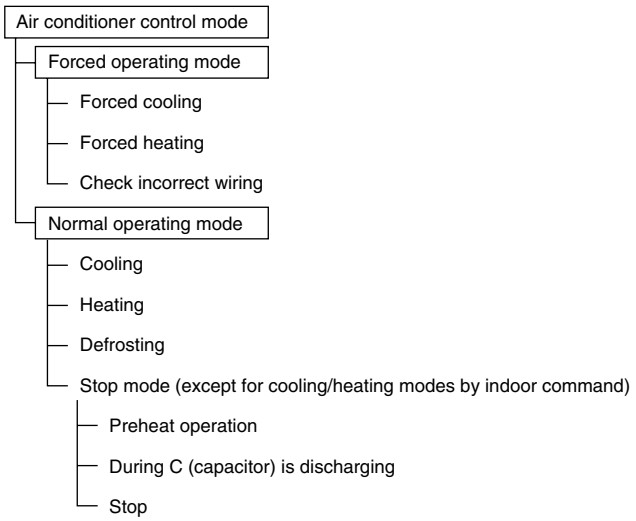
Outline

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

Air Conditioner's Control Mode

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



(R1373)

Note: Unless specified otherwise, an indoor dry operation command must be regarded as cooling operation. An indoor fan operation command cannot be made in a multiple indoor unit. A forced fan command to the indoor unit from the outdoor unit must be made during forced operation.

Determine Operating Mode

Judge the operating mode command set by each room in accordance with the instructing procedure, and determine the operating mode of the system.

The following procedure will be taken as the modes conflict with each other.

*1.The system will follow the mode determined first. (First-push, first-set)

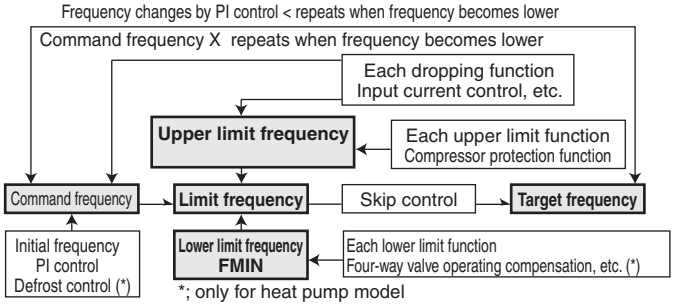
*2.For the rooms set with different mode, select stand-by mode. (Operation lamp flashes)

3.2 Frequency Control

Outline

Frequency that corresponds to each room's capacity will be determined according to the difference in the temperature of each room and the temperature that is set by the remote controller.
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. (The ranked capacity of the operating room).
4. Frequency initial setting.
5. PI control.



(R1375)

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 dropping function

- Input current, discharge pipes, low Hz high pressure limit, peak cutting, freeze-up protection, dew prevention, fin thermistor temperature.

1.2 Limiting defrost control time

1.3 Forced cooling / heating

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, Low Hz high pressure, 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.

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

Indoor Unit Capacity (S value)

The capacity of the indoor unit is an **S value** and is used for frequency command.

Capacity	S value	Capacity	S value
9kBtu	25	15kBtu	50
12kBtu	35	18kBtu	60

Frequency Initial Setting

<Outline>

When starting the compressor, or when conditions are varied due to the change of the operating room, the frequency must be initialized according to the total of a maximum ΔD value of each room and a total value of Q (ΣQ) of the operating room (the room in which the thermos is set to ON).
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 a total of the 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 ΣΔD value, obtaining the fixed ΣΔD value.
   When the ΣΔD value is small...lower the frequency.
   When the ΣΔD value is large...increase the frequency.

   3. Limit of frequency variation width

   When the difference between input current and input current dropping value is less than 1.5 A, the frequency increase width must be limited.

   4. Frequency management when other controls are functioning

- When each frequency is dropping ;
  Frequency management is carried out only when the frequency drops.
- For limiting lower limit
  Frequency management is carried out only when the frequency rises.

   5. Upper and lower limit of frequency by PI control

   The frequency upper and lower limits are set depending on the total of S values of a room.
   When low noise commands come from the indoor unit more than one room or when outdoor unit low noise or quiet commands come from all the rooms, the upper limit frequency must be lower 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 conditions including the preheating command from the indoor temperature, the outdoor air temperature, and the discharge pipe temperature.

Detail

Preheating ON Condition

- When outdoor air temperature is below 51°F and discharge pipe temperature is below 51°F, inverter in open phase operation starts.

OFF Condition

- When outdoor air temperature is higher than 54°F or discharge pipe temperature is higher than 54°F, inverter in open phase operation stops.

3.3.2 Four-Way Valve Switching

Outline of heating operation

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 150 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 from the previous time.
3. When starting compressor for rushing defrosting or resetting.
4. When starting compressor for the first time after the reset with the power ON.
   Set the lower limit frequency to 18 class: 55, 32 class : 28 (model by model) Hz for 70 seconds with the OR conditions with 1 through 4 above.

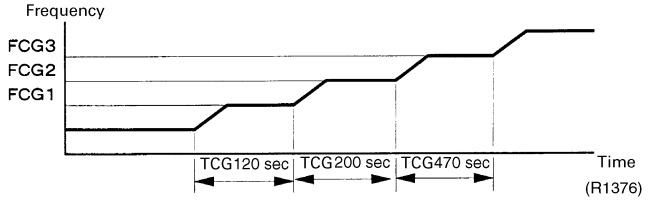
3.3.4 3-Minute Standby

Do not turn ON the compressor for 3 minutes after turning it off, except when defrosting. This pertains only to Heat Pump Models.

3.3.5 Compressor Protection Function

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

FCG 3	80
FCG 2	65
FCG 1	55



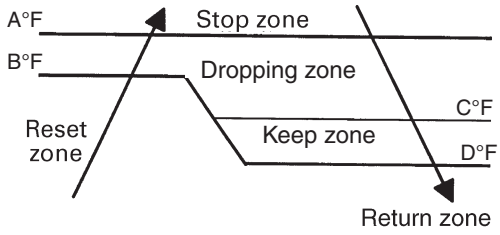
3.4 Discharge Pipe Control

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



(R4576)

A	248
B	231.8
C	228.2
D	224.6

Management within the Zone

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

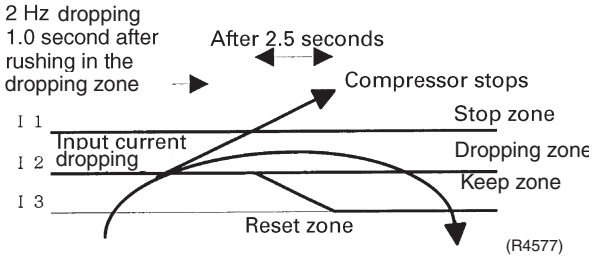
3.5 Input Current Control

Outline

Detect an input current by the CT while the compressor is running, and set the frequency upper limit according to this 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

The frequency control will be made within the following zones.



(R4577)

When a **stop current** continues for 2.5 seconds after rushing on the stop zone, the compressor operation stops.
If a **dropping current** is continues for 1.0 second after rushing on the dropping zone, the frequency will be 2 Hz dropping .
Repeating the above dropping continues until the current rushes on the dropping zone without change.
In the unchanged zone, the frequency limit will remain.
In the return / reset zone, the frequency limit will be cancelled.

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

1. In case the operation mode is cooling:
- The current drops 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 drops when outdoor air temperature becomes higher than a certain level (model by model).

3.6 Freeze-up Protection Control

Outline

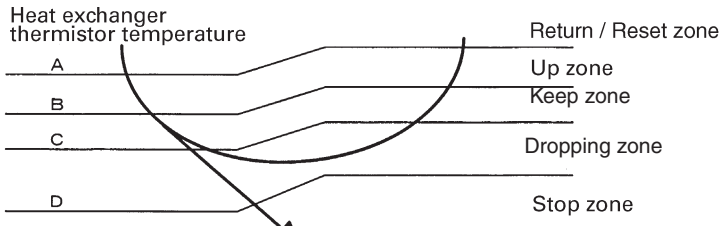
During cooling operation, the signals being sent from the indoor unit allow the operating frequency limitation and then prevent freezing of the indoor heat exchanger. The signal from the indoor unit must be divided into the zones as shown in the following diagram:

Detail

Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature after 2 seconds from operation start and after 30 seconds from changing the number of the operation room.

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 abnormally high pressure. The signal from the indoor unit must be divided as shown in the following diagram:

Detail

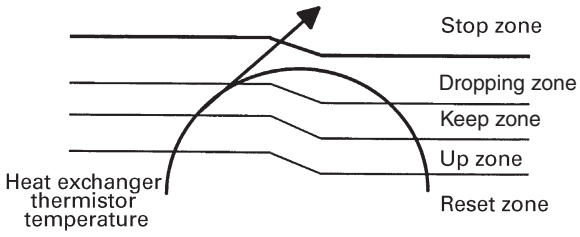
Conditions for Start Controlling

Judge the controlling start with the indoor heat exchanger temperature after 2 minutes from operation start and after (A) seconds from changing number of operation room.

Control in Each Zone

The maximum value of heat exchange intermediate temperatures of each indoor unit controls the following (excluding stopped rooms):

	A
When increase	30
When decrease	2



(R4579)

3.8 Fan Control

Outline

Fan control is carried out with the following conditions present:

1. Fan ON control for electric component cooling fan
2. Fan control when defrosting
3. Fan OFF delay when stopped
4. ON/OFF control when cooling operation
5. Fan control when the number of heated rooms decreases
6. Fan control when forced operation
7. Fan control in indoor / outdoor quiet operation
8. Fan control for pressure difference upkeep

Detail

Fan OFF Control when Stopped

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

Fan control when the number of heating room decreases (Only for Heat Pump Model)

When the outdoor air temperature is more than 50°F, the fan must be turned OFF for 30 seconds.

Tap Control in Indoor / Outdoor Unit Quiet Operation

18 class

1. When Cooling Operation
   When the outdoor air temperature is less than 99°F, the fan tap must be set to L.
2. When Heating Operation
   When the outdoor air temperature is more than 39°F, the fan tap must be turned to L (only for heat pump model).

32 class

1. When Cooling Operation
   The fan tap changes L ⟷ M when the outdoor air temperature is at 64.4°F and M ⟷ H at 99°F.
2. When Heating Operation
   The fan tap changes L ⟷ M when the outdoor air temperature is at 59°F and M ⟷ H at 39°F.

3.9 Moisture 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

Heat Pump Model

- Operation stops 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 14°F.

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 43 minutes (18 class), or 38 minutes (32 class) of accumulated time pass since the start of the operation or ending the defrosting.
When the outdoor air temperature and the outdoor heat exchanger temperature meet the following condition for 60 seconds, the defrost control starts.

A< –(19/256)×B+(45/64)×C
A: outdoor heat exchanger temperature
B: output frequency
C: outdoor air temperature

Conditions for Canceling Defrost

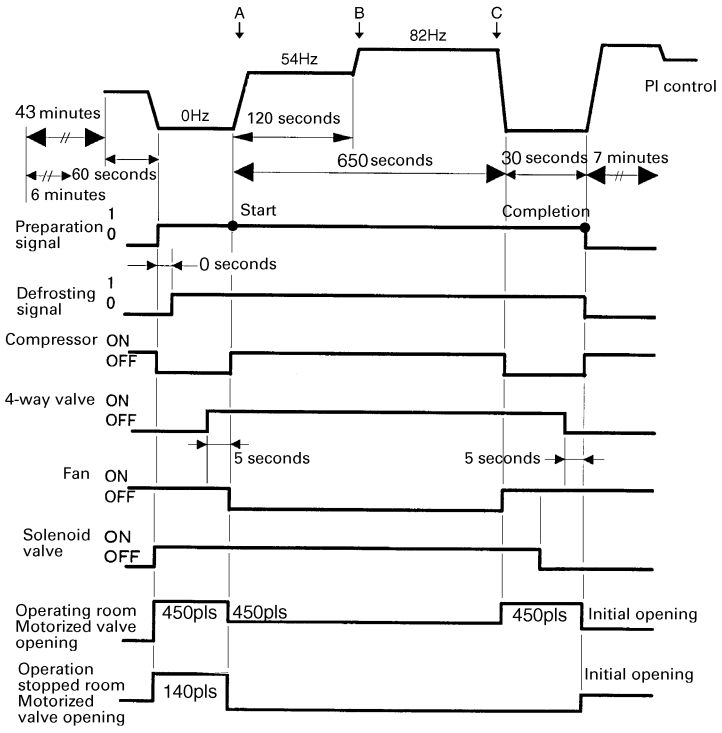
The target heat exchanger temperature as the canceling condition is selected in the range of 39°F<Te<54°F according to the air temperature.

The target heat exchanger temperature = –(45/64)×(ambient temperature)+14

The defrost operation operates 120 seconds after the start. (A→B)
The defrost operation stops at the following conditions.

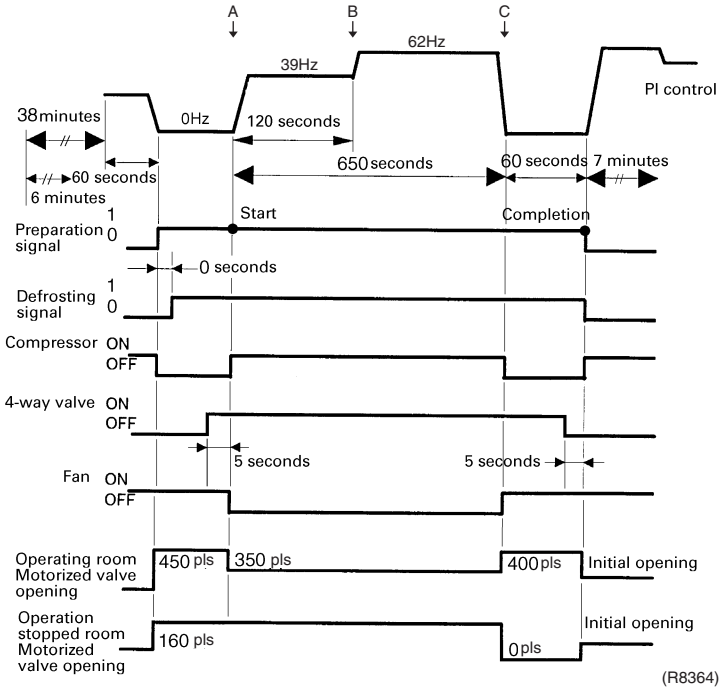
1. When the heat exchanger temperature reaches the target heat exchanger temperature. (B→C)
2. When 650 seconds have passed after the start even if the heat exchanger temperature does not reach the target heat exchanger temperature. (C)

18 class



(R8363)

32 class



3.11 Low Hz High Pressure Limit

Outline

Heat Pump Only

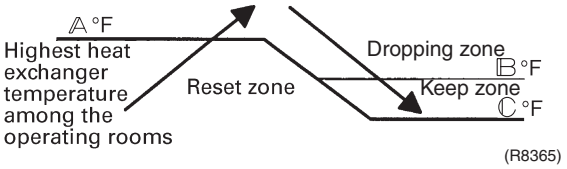
Set the upper limit of high pressure in a low Hz zone. Set the upper limit of the indoor heat exchanger temperature by its operating frequency in Hz. Separate into the following three zones:

1. **Reset zone**
2. **Unchanged zone**
3. **Dropping zone**

The frequency control must be carried out in such zones.

Detail

Separate into Zones



(R8365)

	𝔸	𝔹	ℂ
18 class	140	138	133
32 class	134.6	133	127.4

Note: Dropping: The system stops 2 minutes after staying in the dropping zone.

3.12 Electronic Expansion Valve Control

Outline

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

Electronic expansion valve is fully closed

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

Room Distribution Control

1. Gas pipe isothermal control
2. SC control (only for heat pump Model)
3. Liquid pipe temperature control (with all ports connected and all rooms being air-conditioned)
4. Liquid pipe temperature control for stopped rooms
5. Dew prevention function for indoor motor

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. Oil recovery control
5. Control when a discharge pipe temperature is abnormally high
6. Control when the discharge pipe thermistor is disconnected
7. Control for indoor unit freeze-up protection

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	Gas pipe isothermal control	SC control (only for heat pump model)	Control when frequency changed	Control for abnormally high discharge pipe temperature	Oil recovery control	Indoor freeze-up protection control	Liquid pipe temperature control	Liquid pipe temperature control for stopped rooms	Dew prevention control for indoor rotor
When power is turned ON	Fully closed when power is turned ON	×	×	×	×	×	×	×	×	×
Cooling, 1 room operation	Open control when starting	×	×	×	○	○	○	×	×	×
	(Control of target discharge pipe temperature)	×	×	○	○	○	○	×	×	○
Cooling, 2 rooms operation to Cooling, 4 rooms operation	Control when the operating room is changed	×	×	×	○	○	○	×	×	○
	(Control of target discharge pipe temperature)	○	×	○	○	○	○	×	×	○
Stop	Pressure equalizing control	×	×	×	×	×	×	×	×	×
Heating, 1 room operation (only for heat pump model)	Open control when starting	×	×	×	○	×	×	×	×	×
	(Control of target discharge pipe temperature)	×	○ All rooms ×	○	○	×	×	○ All rooms ○	○ All rooms ×	×
Heating, 2 rooms operation (only for heat pump model)	Control when the operating room is changed	×	×	×	○	×	×	×	×	×
	(Control of target discharge pipe temperature)	×	○ All rooms ×	○	○	×	×	○ All rooms ○	○ All rooms ×	×
	(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	×	○ All rooms ×	×	×	×	×	○ All rooms ○	○ All rooms ×	×
Stop	Pressure equalizing control	×	×	×	×	×	×	×	×	×

(R4581)

3.12.1 Fully Closing with Power ON

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

3.12.2 Pressure Equalization Control

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

3.12.3 Opening Limit

Outline

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

Detail

- A maximum electronic expansion valve opening in the operating room: 450 pulses
- A minimum electronic expansion valve opening in the operating room: 75 pulses

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

3.12.4 Starting Operation Control / Changing Operation Room

Keep the electronic expansion valve from opening when the system is starting or the operating room is changed, to prevent the system from being super heated or humid.

3.12.5 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.

3.12.6 Oil Recovery Function

Outline

The electronic expansion valve opening in the cooling-stopped room must be set to open at a certain time and at a specified interval so that oil does not accumulate in the room where cooling has stopped.

Detail

During cooling operation, every 1 hour continuous operation, the electronic expansion valves in the operation stopped room must be opened by 80 pulses for specified time.

3.12.7 Gas Pipe Isothermal Control During Cooling

When the units are operating in multiple rooms, detect the gas piping temperature and correct the electronic expansion valve opening so that the temperature of the gas pipe in each room becomes identical.

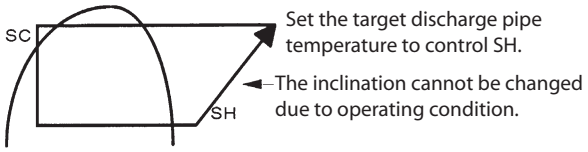
- When the gas pipe temperature > the average gas pipe temperature:
  → open the electronic expansion valve in that room
- When the gas pipe temperature < the average gas pipe temperature:
  → close the electronic expansion valve in that room

The temperatures are monitored every 40 seconds.

3.12.8 Target Discharge Pipe Temperature Control

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

temperature)



(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 20 seconds.

3.12.9 SC Control

Outline

Heat Pump Only

Detect the temperature of liquid pipe and heat exchanger of the rooms and compensate the electronic expansion valve opening so that the SC of each room becomes the target SC.

- When the actual SC is > target SC, open the electronic expansion valve of the room.
- When the actual SC is < target SC, close the electronic expansion valve of the room.

Detail

Start Functioning Conditions

After finishing the open control (660 seconds after the beginning of the operation), control all the electronic expansion valves in the operating room.

Determine Electronic Expansion Valve Opening

Adjust the electronic expansion valve so that the temperature difference between the maximum heat exchanger temperature of connected room and the temperature of liquid pipe thermistor becomes constant.

3.12.10 Disconnection of the Discharge Pipe Thermistor

Outline

Detect a disconnected discharge pipe thermistor by comparing the discharge pipe temperature with the condensation temperature. If 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 disconnected. If disconnected stop the system after operating for a specified time. If the disconnection is detected 4 times in succession, then the system is forced off. .

Detail

Detect Disconnection

If a 660-second timer for open control exceeds the limit, and a 9-minute timer for the compressor operation continuation is not counting time, the following adjustments must be made:

1. When the operation mode is cooling:
   When the discharge pipe temperature is lower than the outdoor heat exchanger temperature, the discharge pipe thermistor disconnection must be ascertained.
2. When the operation mode is heating (only for heat pump model):
   When the discharge pipe temperature is lower than the max temperature of operating room heat exchanger, the discharge pipe thermistor disconnection must be ascertained.
3. Adjustment when the thermistor is disconnected:
   When the compressor-stop repeats a specified time, the system is forced off.

3.12.11Control when frequency is changed

When the target 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 opening of the target electronic expansion valve according to the shift.

3.13 Malfunctions

3.13.1 Sensor Malfunction Detection

Sensor malfunction may occur either in the thermistor or current transformer (CT) system.

Relating to Thermistor Malfunction

1. Outdoor heat exchanger thermistor
2. Discharge pipe thermistor
3. Fin thermistor
4. Gas pipe thermistor
5. Outdoor air temperature thermistor
6. Liquid pipe thermistor

Relating to CT Malfunction

When the output frequency is more than 55 Hz (18 class), or 32 Hz (32 class) and the input current is less than 1.25A (18 class), or 0.5A (32 class), carry out abnormal adjustment.

3.13.2 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 266°F, the compressor will be interrupted.**
- **If the inverter current exceeds 30 A, the compressor will be interrupted.**

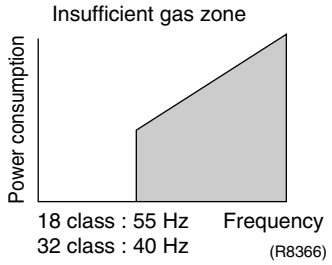
3.13.3 Insufficient Gas Control

Outline

1. Detecting by power consumption

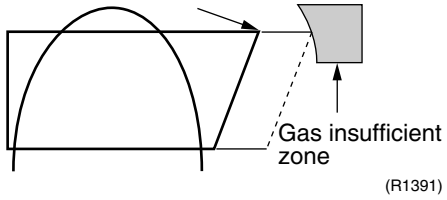
If the power consumption is below the specified value and the frequency is higher than the specified frequency, it is regarded as insufficient gas.

If power consumption is weak compared to normal operation when gas is insufficient, gas insufficiency is detected by checking power consumption.



2. 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 (450 pulses) more than the specified time, it is regarded as insufficient gas.



Refer to ***Insufficient Gas*** on page 151 for details.

3.13.4 Preventing Indoor Freezing

During cooling, if the heat exchanger temperature in the room with stopped operation drops below the specified temperature for the specified time, open the electronic expansion valve in the operation stopped room as specified, and carry out the fully closed operation. After this, if freezing abnormality occurs more than the specified time, the system is forced off due to the abnormality.

3.14 Forced Operation Mode

Outline

Forced operating mode includes functions such as: forced cooling, forced heating, incorrect wiring, incorrect piping check.
Operating mode must be selected by operating the forced-operation switch.

Detail

Forced Cooling, Forced Heating (Only for Heat Pump Model)

Item	Forced Cooling	Forced Heating
Forced-operation conditions	1) The indoor unit is not abnormal, but the indoor unit which is not in the freezing prohibiting zone is present in more than 1 room.	1) The indoor unit is not abnormal. The indoor unit which is not in the peak-cut prohibited zone is present in more than 1 room.
	2) The outdoor unit is not abnormal and not in the 3-minute standby mode.	←
	3) The operating mode of the outdoor unit is the stop mode.	←
	4) The slide selection switch of the forced operation is the cooling mode. The forced operation is allowed during the above circumstances when not in the 3-minute standby mode.	4) The slide selection switch of the forced operation is the heating mode. The forced operation is allowed during the above circumstances when not in the 3-minute standby mode.
Starting / adjustment	If the forced operation switch is pressed as the above conditions are met.	←
1) Determine operating room	All rooms	■ 1 room operation, with the room that can enable operation and its number is the smallest (A>B>C>D). Other rooms operation must be stopped.
2) Command frequency	2YC45: 42 Hz 2YC63: 31Hz	■ 2YC45: 35 Hz (Outdoor air temp: 35.6°F) ■ 2YC63: 26Hz (Outdoor air temp: 35.6°F)
3) Electronic expansion valve opening	It depends on the capacity of the operating indoor unit.	←
4) Outdoor unit adjustment	Compressor is in operation.	←
5) 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.	2) The operation is to end automatically after 60 min.
Others	The protect functions are prior to all others in the forced operation.	←

3.15 Wiring-Error Check

Outline

The convenient Wiring Error Check function is designed for the microcomputer to automatically correct wiring errors.
If local wiring cannot be determined due to buried piping just press the wiring-error check switch that is behind the right-hand panel of the outdoor unit. Even if the connections for Room A and Room B are confused, the system may run. Note that this check function does not work in the following cases:

- For about 1 minute after the power is turned on (during initial setup).
- For 3-minute standby period after the compressor has stopped.
- When the outdoor air temperature is below 41°F.
- If the indoor unit is malfunctioning (also in case of all-room transmission failure).

When the piping and wiring are perfect, there is no need to use this function.

Operation

1. Remove the 5 screws from the service panel (right side panel) and detach the panel.
2. Press the wiring error check switch on the service monitor PCB, and the wiring error check function is activated.
3. In about 10-15 minutes, the checking will end automatically.
4. When the checking is over, the service monitor LED indicators start flashing.

LED	1	2	3	4	Judgment
Status	All flashing at once				Self-correction impossible
	Flashing one after another				Self-correction complete

Self-correction complete…The LED indicators 1 ~ 2 (18 class), or 1 ~ 4 (32 class) flash one after another.
Self-correction impossible…The LED indicators flash all at the same time.

- Transmission failure occurs at any of the indoor units.
- The indoor unit heat exchanger thermistor is disconnected.
- An indoor unit is in trouble (if a trouble occurs during the wiring error checking).

Emergency stop…Any of the LED indicators 1 ~ 4 stays on.

Note:

1. It takes about 10-20 minutes (after pressing the wiring error check switch) to complete the checking. (Wrong wiring between the upper and lower units cannot be self-corrected.)
2. Wrongly connected liquid and gas pipes cannot be self-corrected either. Be sure to make the liquid pipe and the gas pipe in pairs.
3. To force-terminate the wiring error check procedure while in progress, press the wiring error check switch again.
   In this case, the microcomputer's memory gets back to its initial status (Room A wiring → Port A piping, Room B wiring → Port B piping).
4. In replacing the outdoor unit PCB, be sure to use this function.
5. Make the power side setting after doing the wiring error checking. Otherwise, if the wiring is reversed, the air-conditioners being connected are set up in the reverse way.

Basic Knowledge

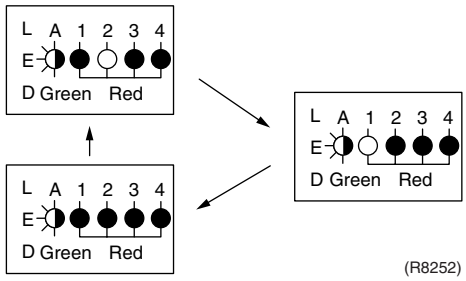
- This function works in this way: Refrigerant flows from Port A and on. The temperatures of the indoor unit heat exchanger thermistors are detected one by one to check the matching between the pipes and wiring.
- With this function on, a freezing (crackling) noise may be heard from the indoor unit. This is not a problem and is happening because the heat exchange temperature is made to drop below 32°F in order to increase the detection accuracy.
- The indoor fan is prompted to turn on and off at the same time.

Checking the current setting data on the microcomputer memory

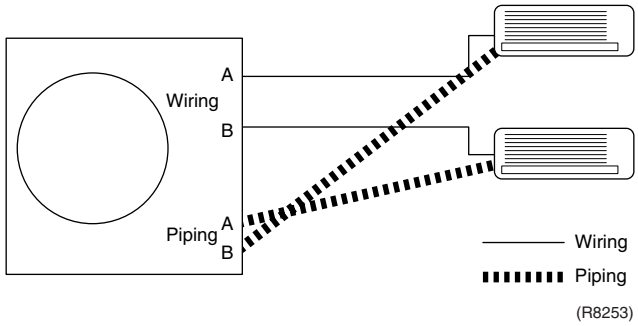
Those data can be checked by looking at the service monitor LED indicators, when the wiring error checking is over, during forced operation, at the stop of the system.
The LED indicators stop flashing when the forced operation is over.
LED1…Room A wiring, LED2…Room B wiring
1st flashing LED…Port A piping, 2nd flashing LED…Port B piping
The first continually lit LED indicates the room that is connected with Port A. The next continually lit LED indicates the one connected with Port B.

Example

If LED indicators are flashing as follows:



The above indicates that Port A is connected with Port B and Port B with Room A (or has self-corrected this way.)



3.16 Additional Functions

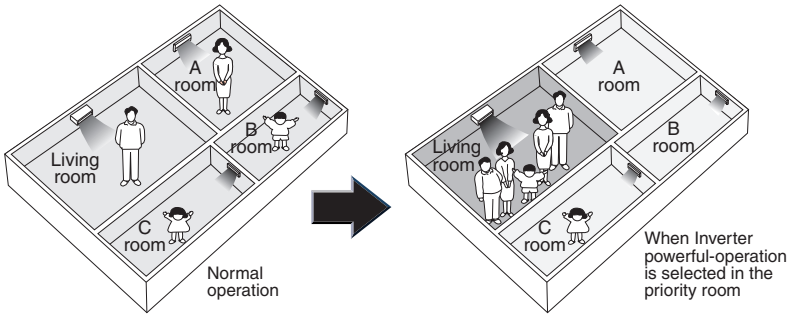
3.16.1 Priority Room Setting

Electronic expansion valves are controlled to provide the unit designated as the priority room with proper distribution considering the capacity of other room units.
(Distribution of capacity: Priority room unit --- ΔD Max., other room units --- ΔD -α)

- Setting method
  Turn off the circuit breaker before changing the setting.
  Only one room can be set as the priority room (By turning ON one of A to D of SW4 on service monitor PCB).
- Control start conditions
  Priority room setting is made.
  AND
  Powerful signal from the priority room unit is received.

Note: The operation mode of the priority room unit has precedence.

- Cancellation of control
  The control function is canceled when the ***Powerful*** operation mode is switched off or 20 minutes elapses after ***Powerful Operation*** started.



The prioritized room will be heated/cooled much more quickly.

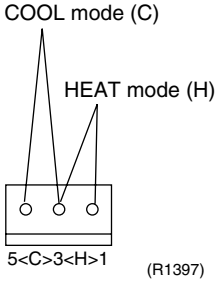
(R1396)

3.16.2 POWERFUL Operation Mode

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

3.16.3 Cooling / Heating Mode Lock

Use the S15 connector to set the unit to only cool or heat.
Setting to only heat (H): Short-circuit pins 1 and 3 of the connector <S15>.
Setting to only cool (C): short-circuit pins 3 and 5 of the connector <S15>.
The following specifications apply to the connector housing and pins.
JST products Housing: VHR-5N
Pin: SVH-21T-1, 1
Note that forced operation is also possible in COOL / HEAT mode.



(R1397)

Part 5
Operation Manual

1. System Configuration

1.1 Operation Instructions

After the installation and test operation of the room air conditioner are completed, it should be operated and handled as described in the following pages. Users need to know how to operate the equipment correctly, and how to maximize efficient use of cooling and heating.

Giving proper instruction to users can reduce about 80% of the requests for servicing. Improper handling of the air conditioner can lead to the assumption that it is malfunctioning or improperly installed. The installation work is only fully complete when the user has been fully informed, in layman terms, how to operate the equipment.

2. Instruction

2.1 Manual Contents and Reference Page

Model Series	Wall Mounted Indoor Units		Slim Concealed Ceiling-Mounted Indoor Units
	CTXS09/12G	FTXS15/18D	FDXS09/12D
Read Before Operation			
Safety Precautions	64	64	64
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Operation			
AUTO, DRY, COOL, HEAT, FAN Operation ★1	77	77	77
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★ 1: Illustrations are for wall mounted type FTXS15/18D.

2.2 Safety Precautions

Safety precautions

Read these SAFETY PRECAUTIONS carefully before installing air-conditioning equipment, and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the startup operation.
Instruct the customer how to operate and maintain the unit.
Inform customers that they should store this manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product.

⚠ 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 follow the instructions.

Be sure to ground the air conditioner.

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

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

⚠ WARNING

- In order to avoid fire, explosion or injury, do not operate the unit when in a harmful environment, among which flammable or corrosive gases, are detected near the unit.
- It is not good for health to expose your body to the airflow for a long time.
- Do not put your finger, a rod or other objects into the air outlet or inlet. As the fan is rotating at a high speed and could, cause injury. Always keep small children away from the unit during operation.
- Do not attempt to repair, relocate, modify or reinstall the air conditioner by yourself. Incorrect work or modifications could cause electric shocks, fire or other damage.
  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 such as gas heaters, kerosene heaters or gas range.
- If the air conditioner is not cooling (heating) properly, the refrigerant may be leaking, contact your authorized dealer or qualified service repairman.
  When making repairs which requires adding refrigerant, consult with your authorized dealer or qualified service repairman.
- Do not attempt to install the air conditioner by yourself. Improper installation could result in water leakage, electric shocks or fire. For installation, consult your authorized dealer or a qualified technician.
- If you detect any abnormal smell or fire, stop the operation and turn off the breaker in order to avoid electric shock, fire or injury. And call your authorized dealer for instructions.

⚠ CAUTION

- The air conditioner must be grounded to the earth. Improper grounding may result in electric shocks. Do not connect the earth grounding wire to a gas pipe, water pipe, lightning rod, or a telephone ground line. Follow all local and state electrical codes.

- Do not use this unit for cooling precision instruments, food, plants, animals or works of art.
- Never expose little children, plants or animals directly to the airflow.
- Do not place appliances which produce an open flame in places exposed to the airflow from the unit or under the indoor unit. It may cause incomplete combustion of appliances or deformation of the indoor unit due to heat.
- Do not block air inlets or outlets. Impaired airflow may result in poor performance or equipment problems.
- Do not stand, sit, or place objects on the outdoor 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 , such as electrical or electronic equipment. In certain conditions, moisture in the air may condense and drip.
- Check the unit stand and fittings for damage annually.
- Do not touch the air inlet and aluminum fins of outdoor unit. It may cause injury and/or damage the heat transfer surface.
- This appliance is NOT intended for use by young children or impaired persons without proper supervision.
- Young children should be supervised to ensure that they DO NOT play with or near the airflow of this appliance.
- Do not pull at the conduit or hang anything on it. Otherwise it will cause fire or electric shock.
- Do not touch the heat exchanger fins. Improper handling may result in injury.
- Do not turn off the power immediately after stopping operation. Always wait at least five minutes before turning off the power. Otherwise, water leakage and trouble may occur.

- To avoid oxygen deficiency, ventilate the room sufficiently if equipment with a burner is used together with the air conditioner.

- To avoid personal injury or equipment damage be sure to stop the operation, turn the breaker off or pull out the supply cord before cleaning or servicing the unit. NOTE: More than one disconnect may be required to shut off all power.
- Do not connect the air conditioner to a power supply different from the one specified. It may cause improper operation or fire.
- Depending on the environment, state and local electrical codes, a ground fault circuit interrupter may be required. Improper grounding or lack of a ground fault circuit interrupter may result in electrical shock, injuries, or death.
- Arrange the drain hose to ensure smooth drainage. Improper drainage may cause water damage to the building, or it's furnishing.
- Depending on the usage environment, water may leak from the air conditioner. If this happens, contact your Daikin Dealer.
- Safely dispose of the packing materials. Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries. Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.
- The remote controller should be installed in such away that children cannot play with it.
- 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 your authorized 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 neighbors 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 neighbors.

Electrical work.

- For power supply, be sure to use a separate power circuit dedicated to the air conditioner. Follow all local and state electrical codes.

System relocation.

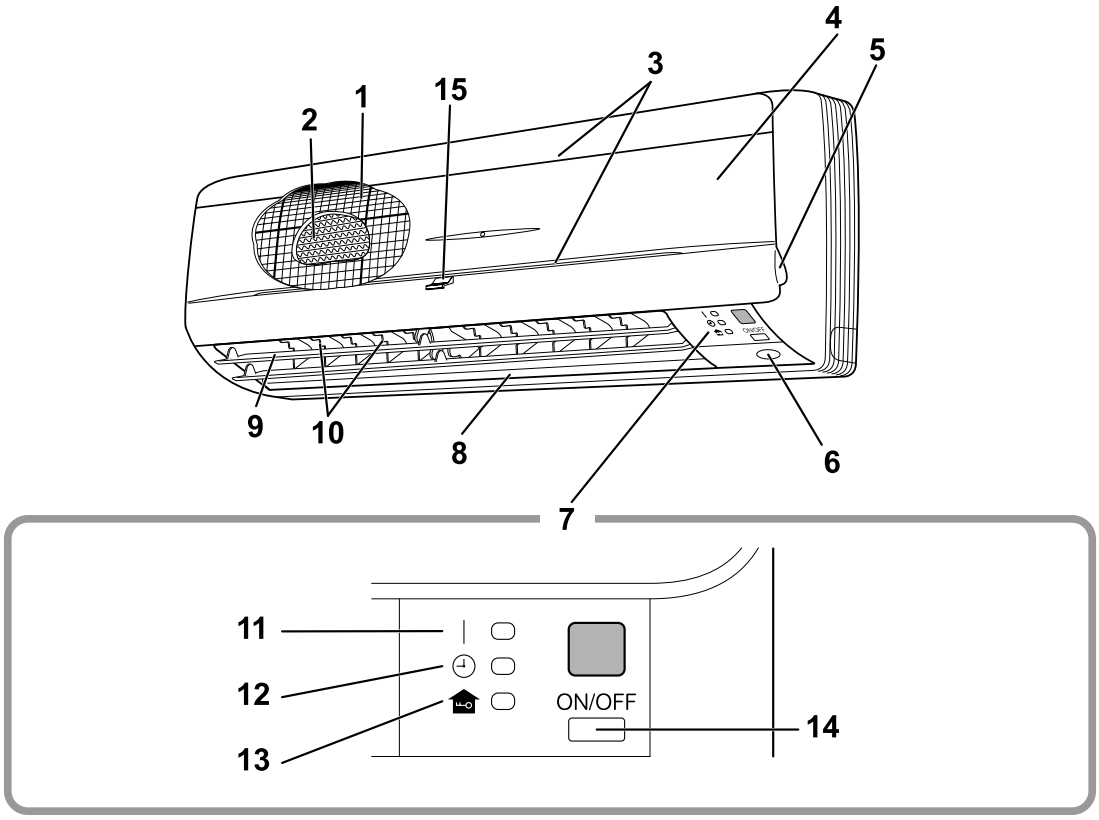
- Relocating the air conditioner requires specialized knowledge and skills. Please consult your authorized dealer if relocation is necessary for moving or remodeling.

2.3 Names of Parts

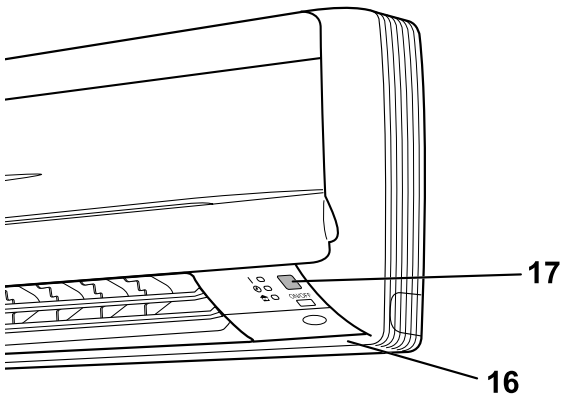
CTXS09/12GVJU

Names of parts

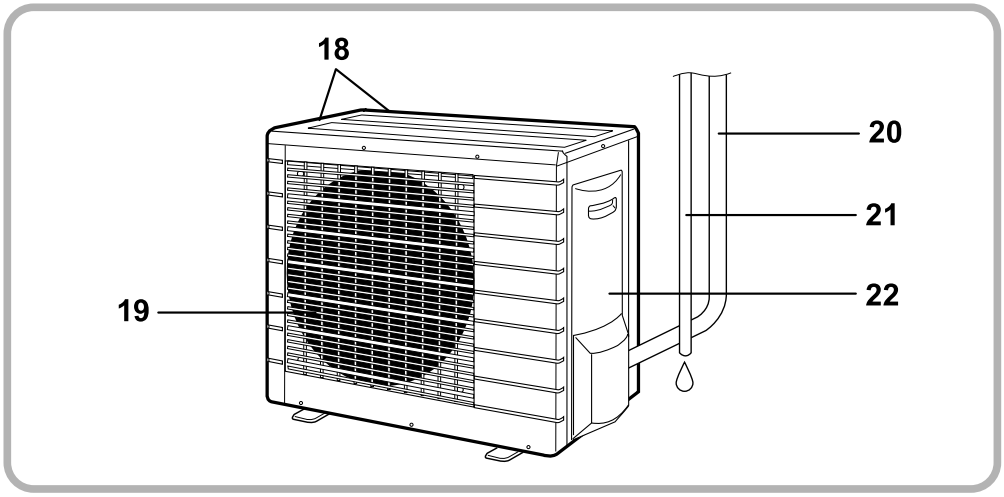
■ Indoor Unit



■ Main unit control panel



■ 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. INTELLIGENT EYE sensor:
- It detects the movements of people and automatically switches between normal operation and energy saving operation.

7. Display

8. Air outlet

9. Fins (horizontal blades)

10. Louvers (vertical blades):
- The louvers are inside of the air outlet.

11. Operation lamp (green)

12. TIMER lamp (yellow)

13. HOME LEAVE lamp (red):
- Lights up when you use HOME LEAVE Operation.

14. Indoor Unit ON/OFF switch:
- Push this switch once to start operation. Push once again to stop it.
- The operation mode refers to the following table.

Mode	Temperature setting	Airflow rate
AUTO	77°F	AUTO

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

15. Packaging materials:
- If any packaging materials are included, please remove before operating.

16. Room temperature sensor:
- It senses the air temperature around the unit.

17. 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

18. Air inlet: (Back and side)

19. Air outlet

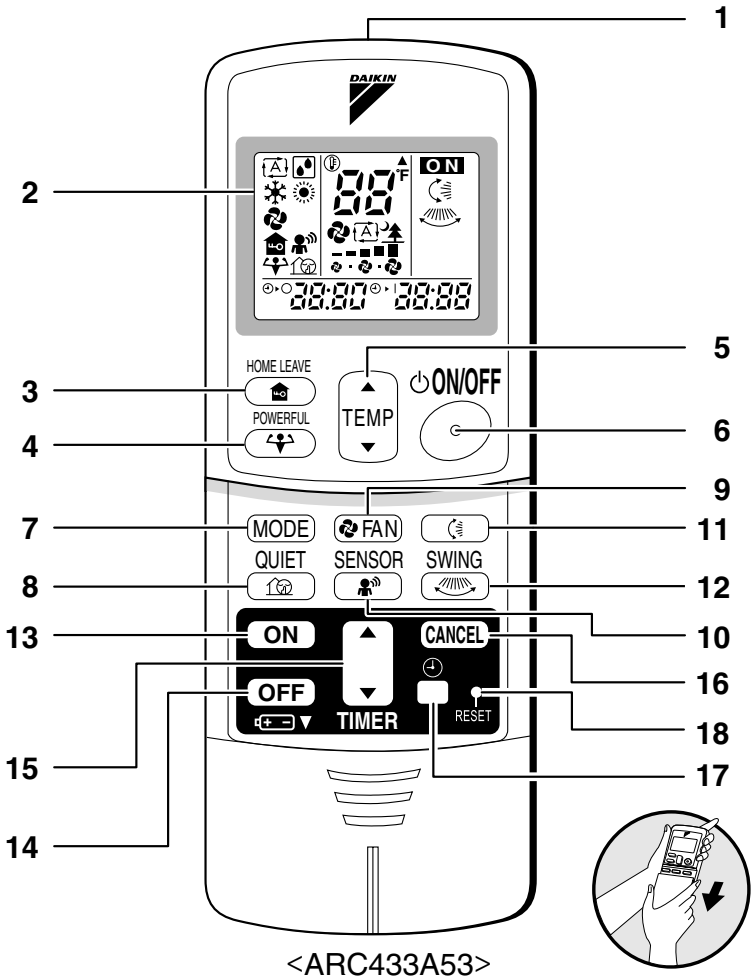
20. Refrigerant piping and inter-unit cable

21. Drain hose

22. Earth grounding terminal:
- It is inside of this cover.

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



<ARC433A53>

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

4. POWERFUL button: (Maximum operation)
POWERFUL operation

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)

8. QUIET button: OUTDOOR UNIT QUIET operation

9. FAN setting button:
- It selects the airflow rate setting.

10. SENSOR button: INTELLIGENT EYE operation

11. SWING button:
- Fin (Horizontal blade)

12. SWING button:
- Louver (Vertical blades)

13. ON TIMER button

14. OFF TIMER button

15. TIMER Setting button:
- It changes the time setting.

16. TIMER CANCEL button:
- It cancels the timer setting.

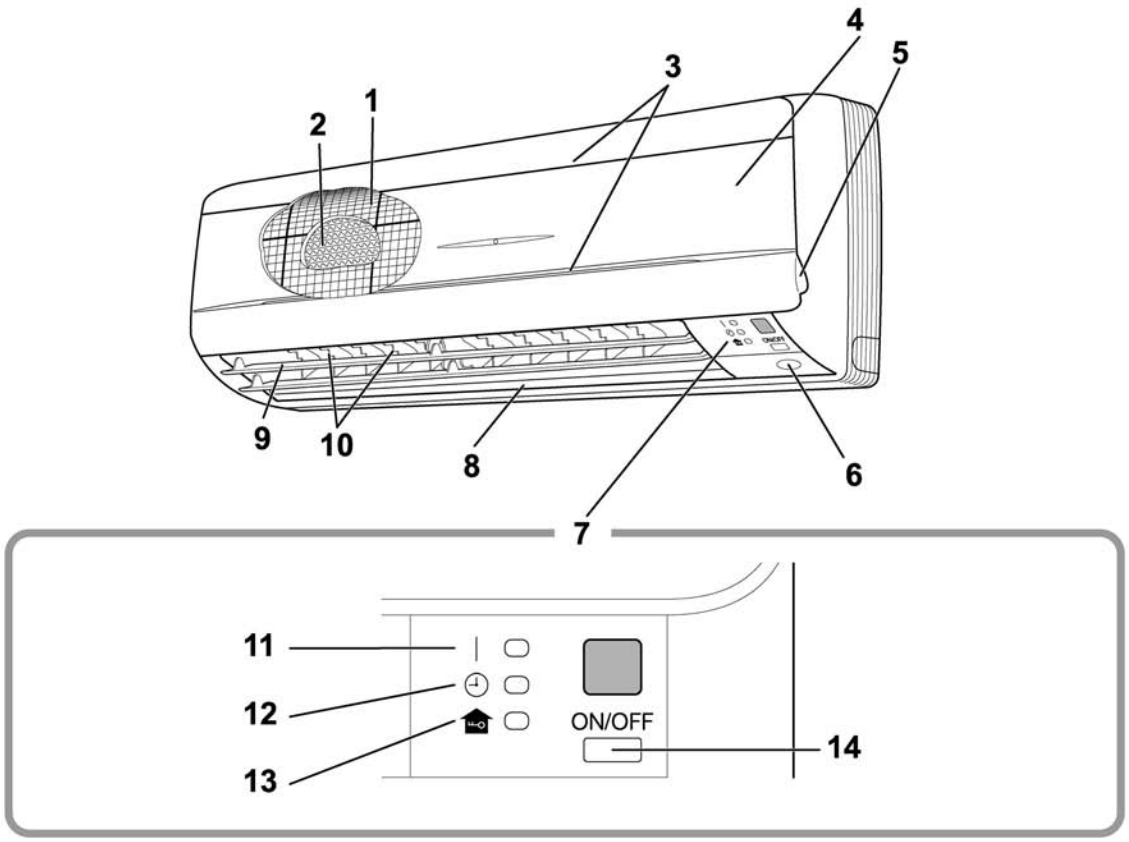
17. CLOCK button

18. RESET button:
- Restart the unit if it freezes.

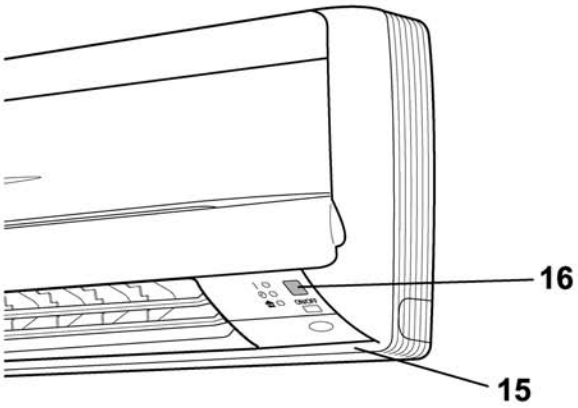
FTXS15/18DVJU

Names of parts

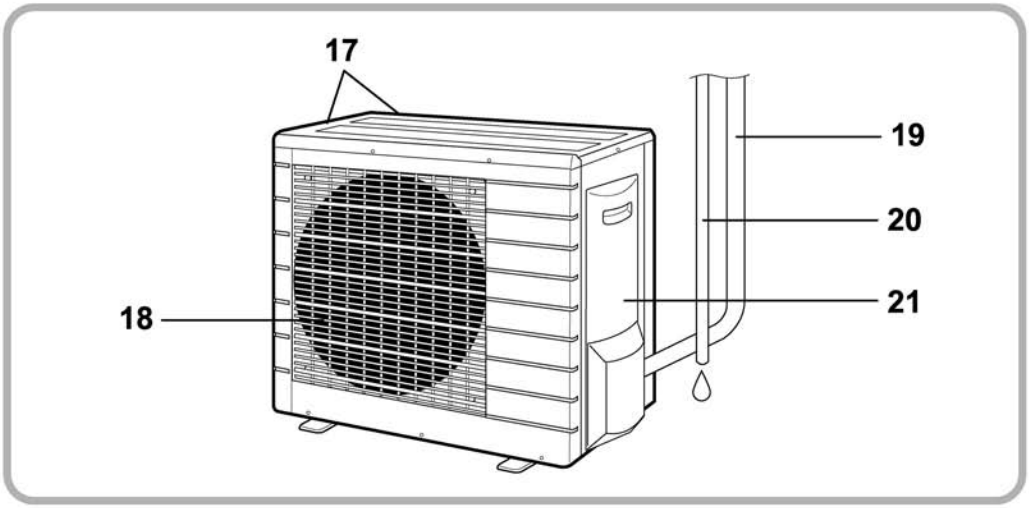
■ Indoor Unit



■ Main unit control panel



■ 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. **INTELLIGENT EYE sensor:**
   - It detects the movements of people and automatically switches between normal operation and energy saving operation.
7. **Display**
8. **Air outlet**
9. **Flaps (horizontal blades)**
10. **Louvers (vertical blades):**
    - The louvers are inside of the air outlet.
11. **Operation lamp (green)**
12. **TIMER lamp (yellow)**
13. **HOME LEAVE lamp (red):**
    - Lights up when you use HOME LEAVE Operation.
14. **Indoor Unit ON/OFF switch:**
    - Push this switch once to start operation. Push once again to stop it.
    - The operation mode refers to the following table.

Mode	Temperature setting	Airflow rate
AUTO	77°F	AUTO

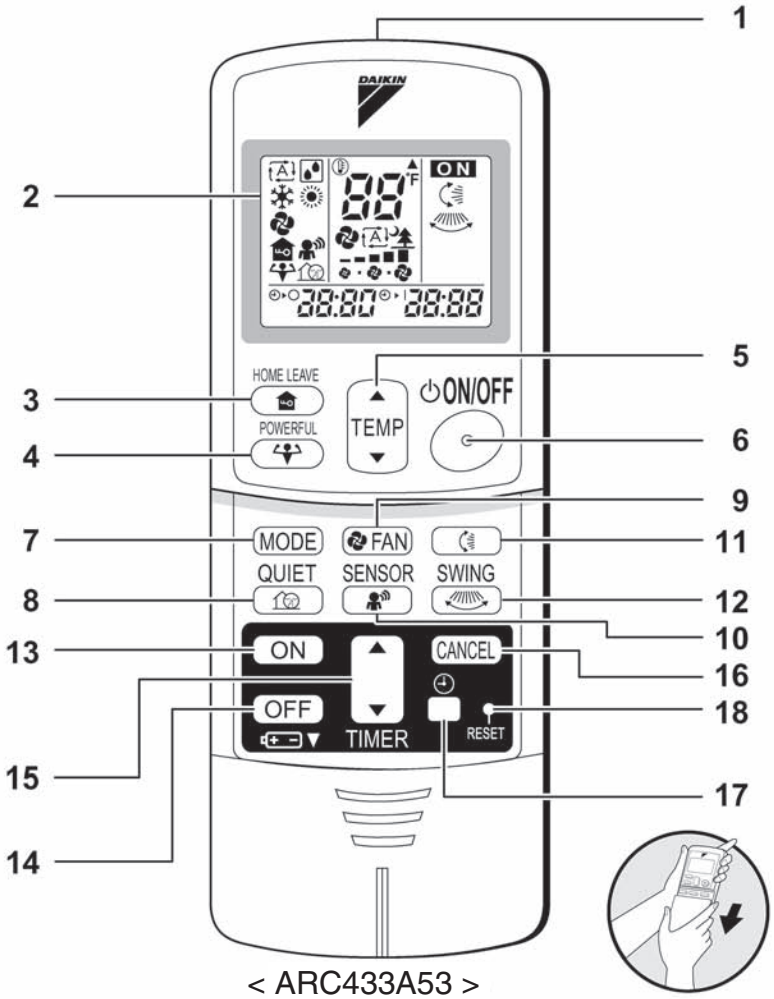
    - This switch is useful when the remote controller is missing.
15. **Room temperature sensor:**
    - It senses the air temperature around the unit.
16. **Signal receiver:**
    - It receives signals from the remote controller.
    - When the unit receives a signal, you will hear a short beep.
      - 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 grounding terminal:**
    - It is inside of this cover.

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



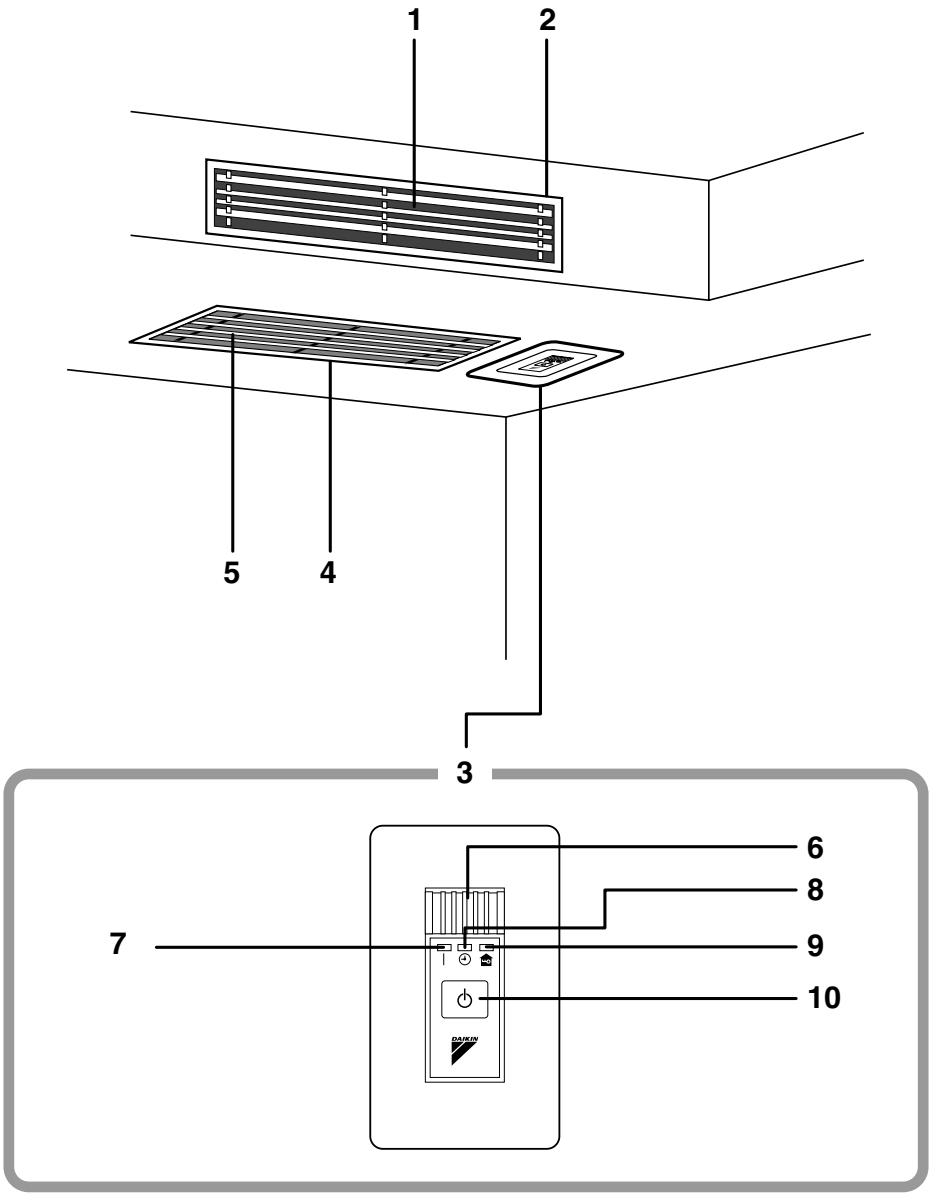
< ARC433A53 >

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
4. **POWERFUL button: (Maximum operation)**
   POWERFUL operation
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)
8. **QUIET button:** OUTDOOR UNIT QUIET operation
9. **FAN setting button:**
   • It selects the airflow rate setting.
10. **SENSOR button:** INTELLIGENT EYE operation
11. **SWING button:**
    • Flap (Horizontal blade)
12. **SWING button:**
    • Louver (Vertical blades)
13. **ON TIMER button**
14. **OFF TIMER button**
15. **TIMER Setting button:**
    • It changes the time setting.
16. **TIMER CANCEL button:**
    • It cancels the timer setting.
17. **CLOCK button**
18. **RESET button:**
    • Restart the unit if it freezes.

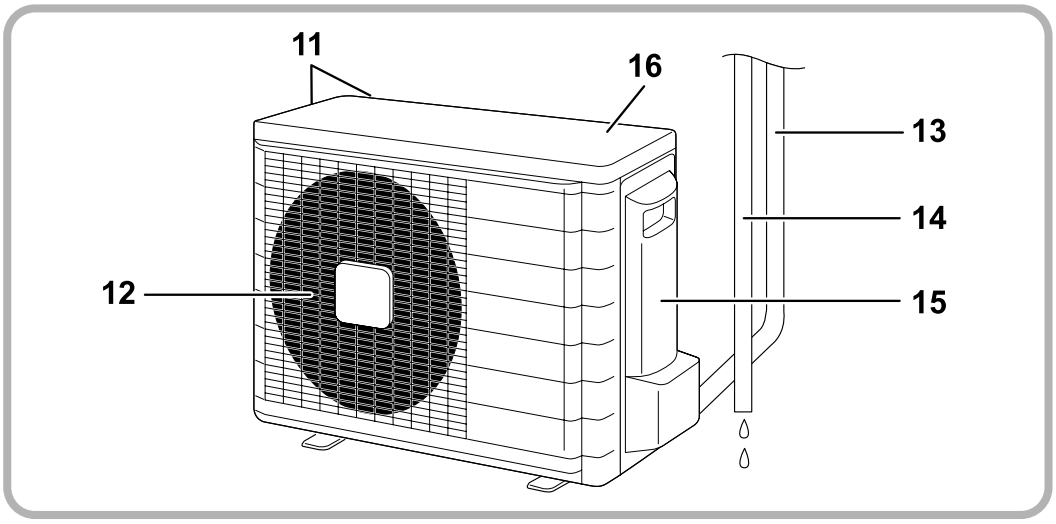
FDXS09/12DVJU

Names of parts

■ Indoor Unit



■ Outdoor Unit



■ Indoor Unit

1. Air outlet

2. Air outlet grille: (Field supply)
- Appearance of the Air outlet grille and Air inlet grille may differ with some models.

3. Receiver

4. Suction grille: (Option)
- Appearance of the suction grille and Air inlet grille may differ with some models.

5. Air inlet

6. Room temperature sensor:
- It senses the air temperature around the unit.

7. Operation lamp (green)

8. TIMER lamp (yellow)

9. HOME LEAVE lamp (red):
- Lights up when you use HOME LEAVE operation.

10. Indoor Unit ON/OFF switch:
- Push this switch once to start operation. Push once again to stop it.
- This switch is useful when the remote controller is missing.

• The operation mode refers to the following table.

Mode	Temperature setting	Air flow rate
AUTO	77°F	AUTO

■ Outdoor Unit

11. Air inlet: (Back and side)

12. Air outlet

13. Refrigerant piping and inter-unit cable

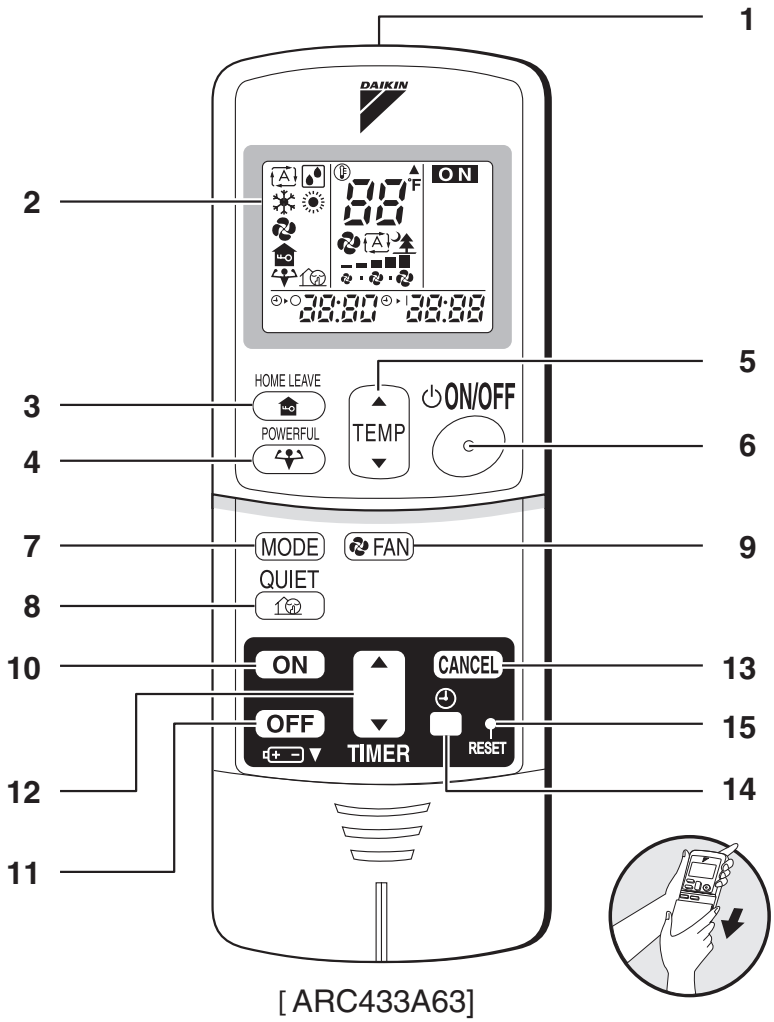
14. Drain hose

15. Grounding terminal:
- It is inside of this cover.

16. Outside air temperature sensor:
- It senses the ambient temperature around the unit.

Appearance of the outdoor unit may differ from some models.

■ Remote Controller



[ARC433A63]

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

4. POWERFUL button:
POWERFUL operation

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)

8. QUIET button: OUTDOOR UNIT QUIET operation

9. FAN setting button:
- It selects the air flow rate setting.

10. ON TIMER button

11. OFF TIMER button

12. TIMER Setting button:
- It changes the time setting.

13. TIMER CANCEL button:
- It cancels the timer setting.

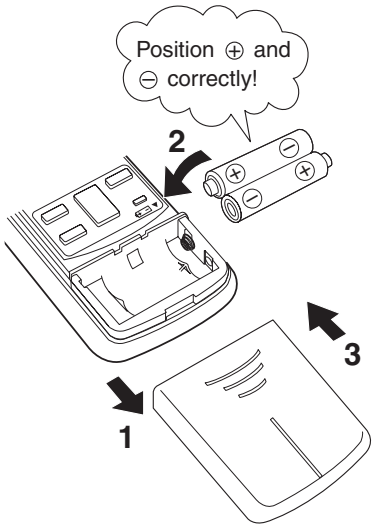
14. CLOCK button

15. RESET button:
- Restart the unit if it freezes.
- Use a thin object to push.

2.4 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

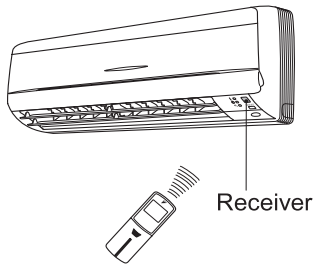
■ About batteries

- 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. In case the remote controller is not used for a long time remove all batteries in order to prevent liquid leak of the battery.
- 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.
- Pressing two or more buttons simultaneously may cause the strange display of the remote controller.
  The remote controller is not malfunction. In this case take the batteries out and reset them.

Preparation Before Operation

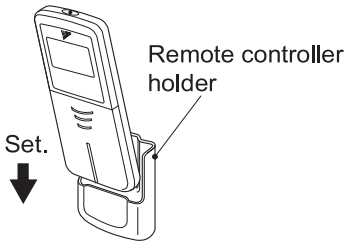
■ To operate the remote controller

- 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 23 Ft.



■ 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 or pillar with the screws supplied with the holder.**
3. **Place the remote controller in the remote controller holder.**



- To remove, pull it upwards.

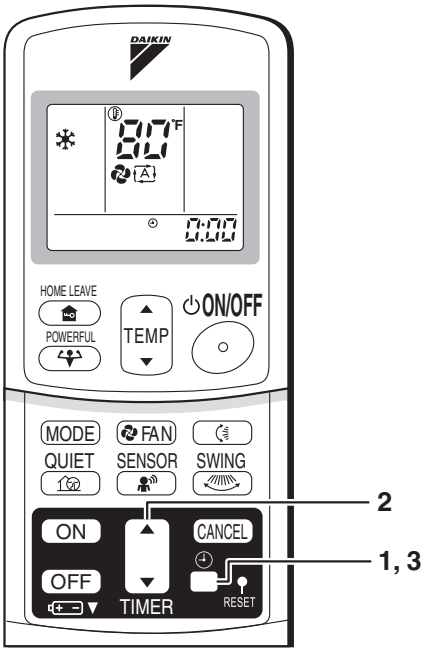
ATTENTION

About remote controller

- Do not put the remote controller in the following places.
  - In direct sunlight.
  - In vicinity of a heater.
- 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 your authorized dealer if that is the case.
- If the remote controller signals happen to operate another appliance, move that appliance to somewhere else, or consult your authorized dealer.

■ 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 every two weeks.

Recommended temperature setting
For cooling: 78°F – 82°F For heating: 68°F – 75°F

■ Please note

- When the main power switch is turned on, some watts of electrictly are being used even when the system 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 to save energy.
- Use the air conditioner in the following conditions.

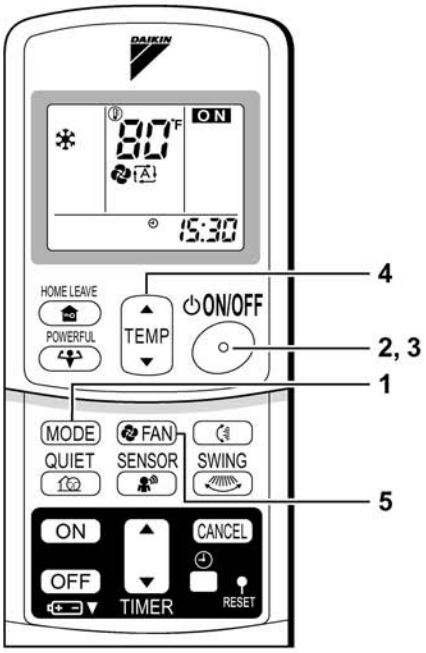
Mode	Operating conditions	If operation is continued out of this range
COOL	Outdoor temperature: 14 to 115 °F Indoor temperature: 64 to 90 °F Indoor humidity: 80% max.	• A safety device may work to stop the operation under 0 °F and over 115 °F outdoor temperature. • See Note 2 for 0 °F to 14 °F operation. • Condensation may occur on the indoor unit and drip.
HEAT	Outdoor temperature: 5 to 64 °F Indoor temperature: 50 to 86 °F	• A safety device may work to stop the operation under 0 °F or over 64 °F outdoor temperature. See the Note 3 for 0 °F to 5 °F.
DRY	Outdoor temperature: 14 to 115 °F Indoor temperature: 64 to 90 °F 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.

2.5 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.

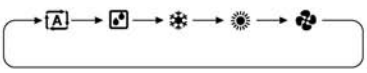


■ To start operation

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

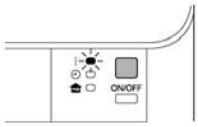
- Each pressing of the button advances the mode setting in sequence.

  : 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. 

■ To change the airflow rate setting

5. Press “FAN setting button”.

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

- Indoor unit quiet operation

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

  The unit might lose capacity when the airflow rate is set to a low 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.

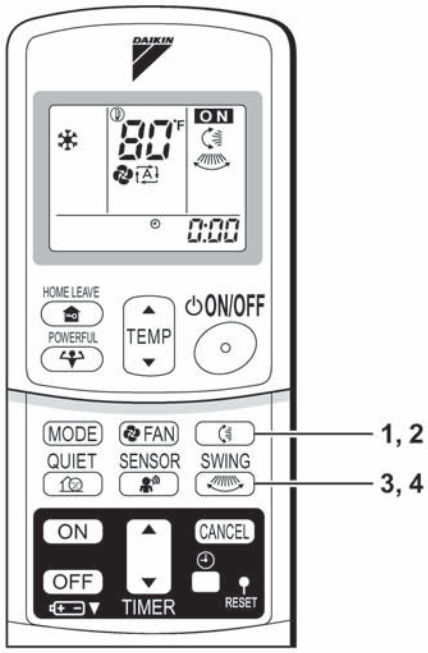
■ Note on airflow rate setting

- At smaller airflow rates, the cooling (heating) effect is also less.

2.6 Adjusting the Airflow Direction

Adjusting the Airflow Direction

You can adjust the airflow direction to increase your comfort.



■ To adjust the horizontal blade (flap)

1. **Press "SWING button ".**
   - " " is displayed on the LCD.
2. **When the flap has reached the desired position, press "SWING button " once more.**
   - The fin will stop moving.

■ To adjust the vertical blades (louvers)

3. **Press "SWING button ".**
   - " " is displayed on the LCD.
4. **When the louvers have reached the desired position, press the "SWING button " once more.**
   - The louvers will stop moving.

■ To 3-D Airflow

Press the "SWING button" and the "SWING button":

the "" and "" display will light up and the flap and louvers will move in turn.

■ To cancel 3-D Airflow

Press either the "SWING button" or the "SWfins button".

Notes on louvers angles

■ ATTENTION

- Always use a remote controller to adjust the louvers angles. In side the air outlet, a fan is rotating at a high speed and may cause bodily injury if fan comes in contact with fingers.

Notes on flaps angles

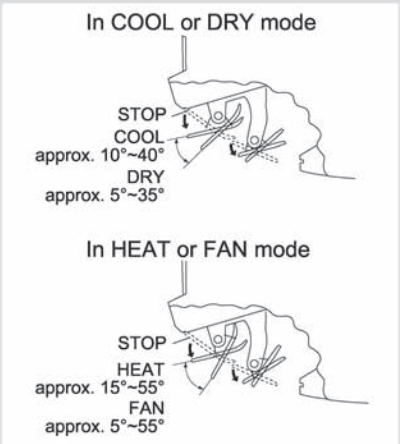
- When **"SWING button"** is selected, the flaps swinging range depends on the operation mode. (See the figure.)

Three-Dimensional (3-D) Airflow

- Using three-dimensional airflow circulates cold air, which tends to collected at the bottom of the room, and hot air, which tends to collect near the ceiling, throughout the room, preventing areas of cold and hot developing.

■ ATTENTION

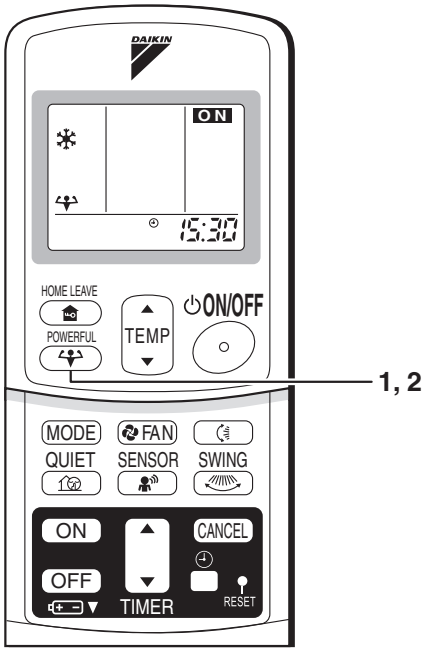
- Always use a remote controller to adjust the flaps angle. If you attempt to move it forcibly with hand when it is swinging, the mechanism may be broken.
- Be careful when adjusting the louvers. Inside the air outlet, fan is rotating at a high speed and may cause bodily injury if fan comes in contact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



2.7 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 that are not available.
- "" is displayed on the LCD.

■ To cancel POWERFUL operation

2. Press "POWERFUL button" again.

- "" disappears from the LCD.

NOTE

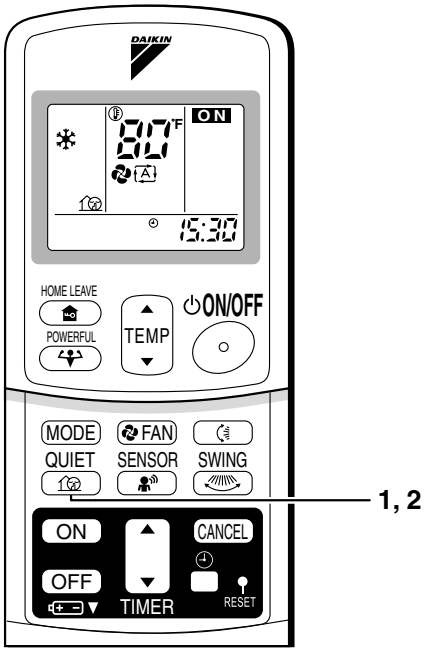
■ Notes on POWERFUL operation

- POWERFUL Operation cannot be used together with QUIET Operation. Priority is given to the function of whichever button is pressed last.
- POWERFUL Operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the " " disappears from the LCD.
- **In COOL and HEAT mode**
  To maximize the cooling (heating) effect, the capacity of outdoor unit must be increased and the airflow rate be fixed to the maximum setting.
  The temperature and airflow settings are not variable.
- **In DRY mode**
  The temperature setting is lowered by 4.5°F and the airflow rate is slightly increased.
- **In FAN mode**
  The airflow rate is fixed to the maximum setting.

2.8 OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET operation lowers the noise level of the outdoor unit by changing the 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 modes.)
- 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.

2.9 HOME LEAVE Operation

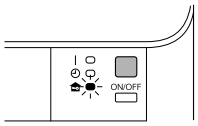
HOME LEAVE Operation

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

■ To start HOME LEAVE operation

1. Press “HOME LEAVE button” .

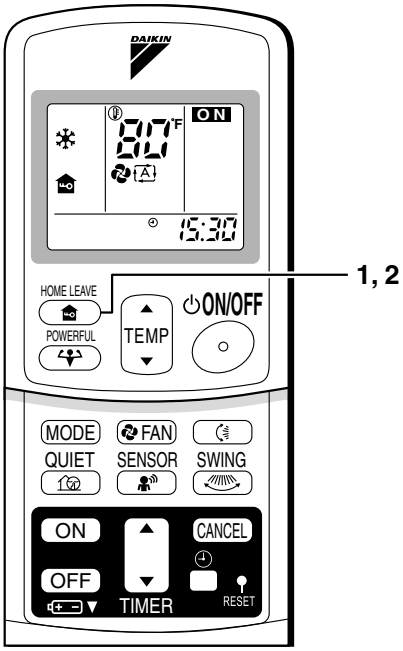
- “ ” is displayed on the LCD.
- The HOME LEAVE lamp lights up.



■ 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 airflow rate for HOME LEAVE operation

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

	Initial setting		Selectable range	
	Temperature	Airflow rate	Temperature	Airflow rate
Cooling	77°F	AUTO	64-90°F	5 step, “ ” and “ ”
Heating	77°F	AUTO	50-86°F	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 airflow 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?

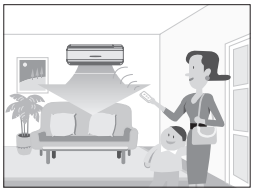
Is there a set temperature and airflow rate which is most comfortable, a set temperature and airflow rate which you use the most? HOME LEAVE operation is a function that allows you to record your favorite set temperature and airflow rate. You can start your favorite operation mode simply by pressing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

■ Useful in these cases

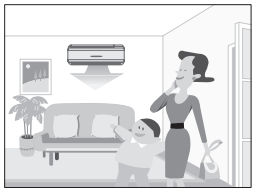
1. Use as an energy-saving mode .

Set the temperature 3-5°F higher (cooling) or lower (heating) than normal. Setting the fan speed to the lowest setting allows the unit to be used in energy-saving mode. Also convenient for use while you are out or sleeping.

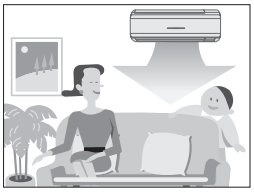
• Every day before you leave the house...



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.

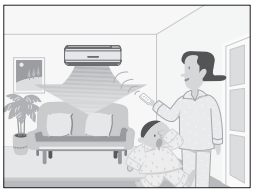


When you return, you will be welcomed by a comfortably air conditioned room.



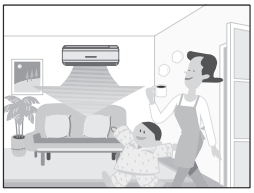
Push the "HOME LEAVE Operation" button again, and the air conditioner will adjust capacity to the set temperature for normal operation.

• 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 airflow rate settings you most often use, you can retrieve them by pressing HOME LEAVE button. You do not have to bother with remote control operations.

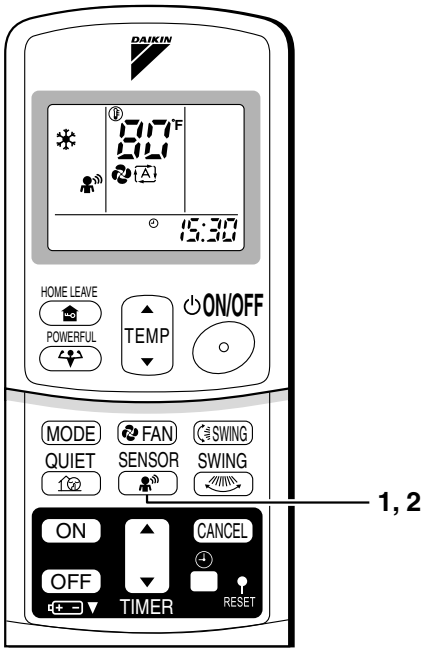
NOTE

- Once the temperature and airflow 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. It 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.

2.10 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 is in the room

- **Normal operation.**

⇩

When nobody is in the room

- **20 min. after, start energy saving operation.**

⇩

When somebody is back in the room

- **Back to normal operation.**

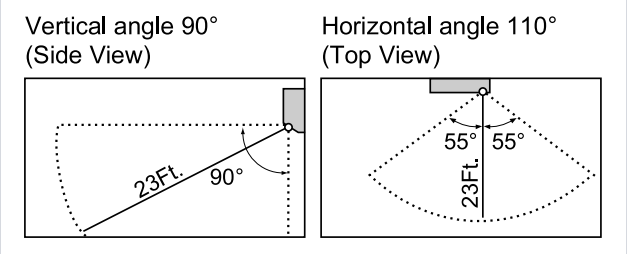
“INTELLIGENT EYE” is useful for Energy Saving

■ **Energy saving operation**

- Change the temperature –3.6°F in heating / +3.6°F in cooling / +1.8°F in dry mode from set temperature.
- Decrease the airflow 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 23Ft. 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 will not go on during your use of INTELLIGENT EYE operation.

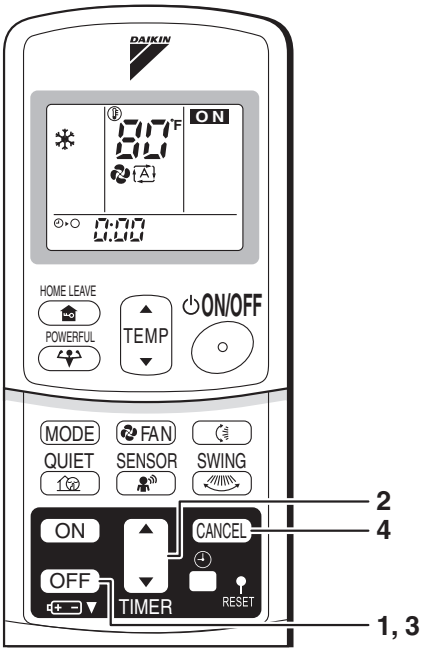
⚠CAUTION

- 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.

2.11 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.

1. Press "OFF TIMER button".

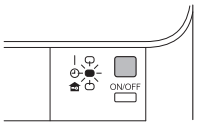
0:00 is displayed.
⊙▸○ blinks.

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 TIME R 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 lost 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 (1°F up in COOL, 3.6°F down in HEAT) to prevent excessive cooling (heating) for pleasant sleep.

■ To use ON TIMER operation

- Check that the clock is correct. If not, set the clock to the present time.

1. Press “ON TIMER button”.

6:00 is displayed.

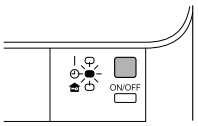
blinks.

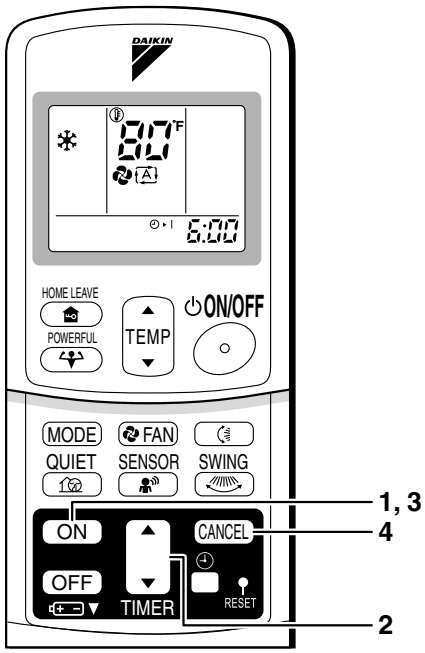
2. Press “TIMER Setting button” until the time setting reaches the point you like.

- 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

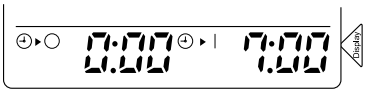
4. Press “CANCEL button”.

- 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.

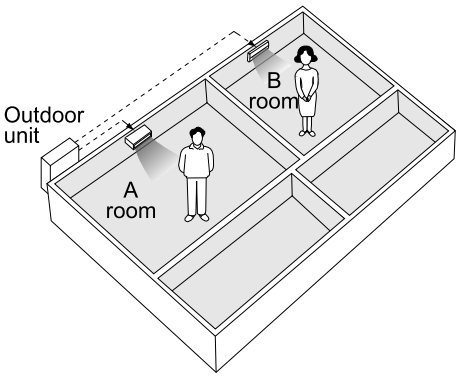
- After a breaker has turned OFF.
- After a power failure.
- After replacing batteries in the remote controller.

2.12 Note for Multi System

Note for Multi System

〈〈 **What is a "Multi System"?**〉〉

This system has one outdoor unit connected to multiple indoor units.



■ Selecting the Operation Mode

1. With the Priority Room Setting present but inactive or not present.

When more than one indoor unit is operating, priority is given to the first unit that was turned on.
In this case, set the units that are turned on later to the same operation mode (*1) as the first unit.

Otherwise, they will enter the Standby Mode, and the operation lamp will flash; this does not indicate malfunction.

(*1)

- COOL, DRY and FAN mode may be used at the same time.
- AUTO mode automatically selects COOL mode or HEAT mode based on the room temperature. Therefore, AUTO mode is available when selecting the same operation mode as that of the room with the first unit to be turned on.

〈**CAUTION**〉

Normally, the operation mode in the room where the unit is first run is given priority, but the following situations are exceptions, so please keep this in mind.

If the operation mode of the first room is **FAN Mode**, then using **Heating Mode** in any room after this will give priority to **heating**. In this situation, the air conditioner running in FAN Mode will go on standby, and the operation lamp will flash.

2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

■ NIGHT QUIET Mode (Available only for cooling operation)

NIGHT QUIET Mode requires initial programming during installation. Please consult your retailer or dealer for assistance.

NIGHT QUIET Mode reduces the operation noise of the outdoor unit during the nighttime hours to prevent annoyance to neighbors.

- The NIGHT QUIET Mode is activated when the temperature drops 9°F or more below the highest temperature recorded that day. Therefore, when the temperature difference is less than 9°F, this function will not be activated.
- NIGHT QUIET Mode reduces slightly the cooling efficiency of the unit.

■ OUTDOOR UNIT QUIET Operation

1. With the Priority Room Setting present but inactive or not present.

When using the OUTDOOR UNIT QUIET operation feature with the Multi system, set all indoor units to OUTDOOR UNIT QUIET operation using their remote controllers.

When clearing OUTDOOR UNIT QUIET operation, clear one of the operating indoor units using their remote controller.

However OUTDOOR UNIT QUIET operation display remains on the remote controller for other rooms. We recommend you release all rooms using their remote controllers.

2. With the Priority Room Setting active.

See "Priority Room Setting" on the next page.

■ Cooling / Heating Mode Lock

The Cooling / Heating Mode Lock requires initial programming during installation. Please consult your authorized dealer for assistance. The Cooling / Heating Mode Lock sets the unit forcibly to either Cooling or Heating Mode. This function is convenient when you wish to set all indoor units connected to the Multi system to the same operation mode.

■ Priority Room Setting

The Priority Room Setting requires initial programming during installation. Please consult your authorized dealer for assistance.

The room designated as the Priority Room takes priority in the following situations;

1. Operation Mode Priority.

As the operation mode of the Priority Room takes precedence, the user can select a different operation mode from other rooms.

〈Example〉

* Room A is the Priority Room in the examples.

When COOL mode is selected in Room A while operating the following modes in Room B:

Operation mode in Room B	Status of Room B when the unit in Room A is in COOL mode
COOL or DRY or FAN	Current operation mode maintained
HEAT	The unit enters Standby Mode. Operation resumes when the Room A unit stops operating.
AUTO	If the unit is set to COOL mode, operation continues. If the unit is set to HEAT mode, it enters Standby Mode. Operation resumes when the Room A unit stops operating.

2. Priority when POWERFUL operation is used.

〈Example〉

* Room A is the Priority Room in the examples.

The indoor units in Rooms A and B are all operating. If the unit in Room A enters POWERFUL operation, operation capacity will be concentrated in Room A. In such a case, the cooling (heating) efficiency of the units in Room B may be slightly reduced.

3. Priority when using OUTDOOR UNIT QUIET operation.

〈Example〉

* Room A is the Priority Room in the examples.

Just by setting the unit in Room A to QUIET operation, the air conditioner starts OUTDOOR UNIT QUIET operation.

You don’t have to set all the operated indoor units to QUIET operation.

2.13 Care and Cleaning

CTXS09/12GVJU

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

Units

To avoid possible bodily injury, units should be shutoff or disconnected before any cleaning or servicing is attempted.

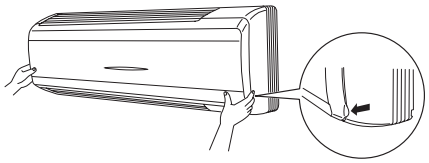
■ Indoor unit, Outdoor unit and Remote controller

1. Wipe them with dry soft cloth.

■ Front panel

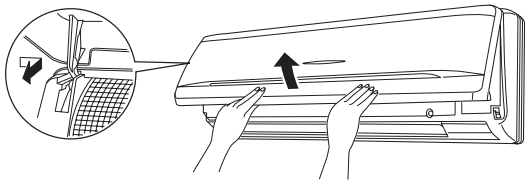
1. Open the front panel.

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



2. Remove the front panel.

- Open the front panel further while sliding it to either the left or right and pulling it toward you. This will disconnect the rotation dowel on one side. Then disconnect the rotation dowel on the other side in the same manner.

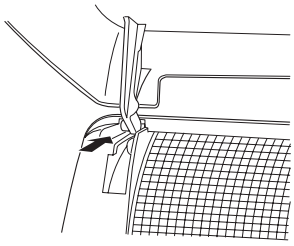


3. Clean the front panel.

- 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.

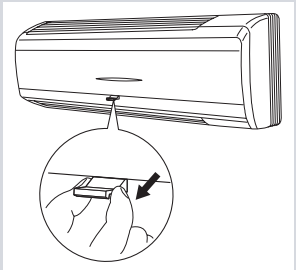
4. Attach the front panel.

- Align the rotation dowels on the left and right of the front panel with the slots, then push them all the way in.
- Close the front panel slowly. (Press the panel at both sides and the center.)



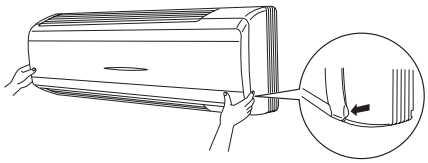
⚠ CAUTION

- When the packaging materials are attached to the front panel, please remove them.
- 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 104 °F, 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.



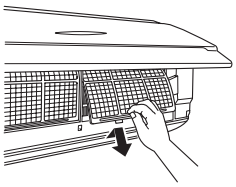
Filters

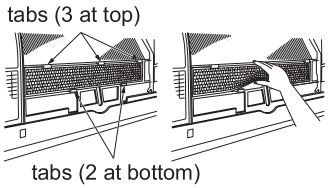
1. **Open the front panel.**



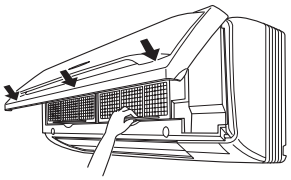
2. **Pull out the air filters.**
   - Push a little upwards the tab at the center of each air filter, then pull it down.

3. **Take off the air-purifying filter with photocatalytic deodorizing function.**
   - Press the top of the air-cleaning filter onto the tabs (3 at top). Then press the bottom of the filter up slightly, and press it onto the tabs (2 at bottom).





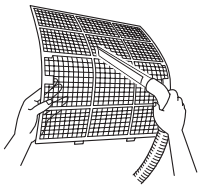
4. **Clean or replace each filter.**
   See figure.



5. **Set the air filter and the air-purifying filter with photocatalytic deodorizing function as they were and close the front panel.**
   - Press the front panel at both sides and the center.

■ 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 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. **After washing, shake off remaining water and dry in the shade.**
4. **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 the units to ensure they are level and secure.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the water drains 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 your authorized dealer.

■ Before a long idle period

1. **Operate the "FAN only" for several hours on a warm day to dry out the inside.**
   - Press "MODE selector button" and select "FAN" operation.
   - Press "ON/OFF button" and start operation.
2. **After operation stops, turn off the electrical circuit breaker for the room air conditioner.**
3. **Remove and clean the air filters. Reinstall filters after cleaning.**
4. **Take out batteries from the remote controller.**
   - When a multi outdoor unit is connected, make sure the heating operation is not used at the other room before you use the fan operation.

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 odor.
- To order air-purifying filter with photocatalytic deodorizing function, contact your authorized dealer where you bought the air conditioner.
- Dispose of old filters as required by local codes.

Item	Part No.
Air-purifying filter with photocatalytic deodorizing function. (without frame) 1 set	KAF952A42

FTXS15/18DVJU

Care and Cleaning

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

Units

To avoid possible bodily injury, units should be shutoff or disconnected before any cleaning or servicing is attempted.

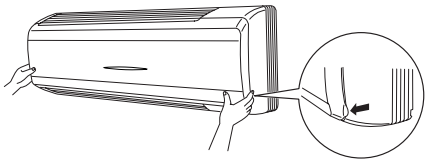
■ Indoor unit, Outdoor unit and Remote controller

1. Wipe them with dry soft cloth.

■ Front panel

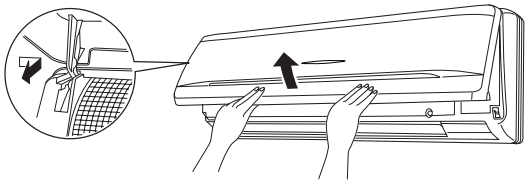
1. Open the front panel.

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



2. Remove the front panel.

- Open the front panel further while sliding it to either the left or right and pulling it toward you. This will disconnect the rotation dowel on one side. Then disconnect the rotation dowel on the other side in the same manner.

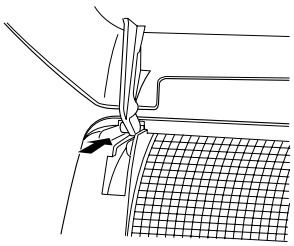


3. Clean the front panel.

- 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.

- Align the rotation dowels on the left and right of the front panel with the slots, then push them all the way in.
- Close the front panel slowly. (Press the panel at both sides and the center.)

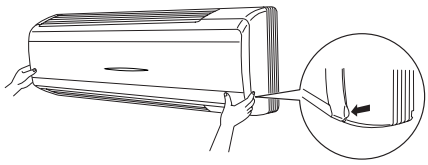


⚠ CAUTION

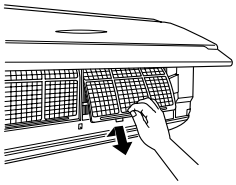
- Don't touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front panel, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front panel, support the panel securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 104 ˚F, 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.

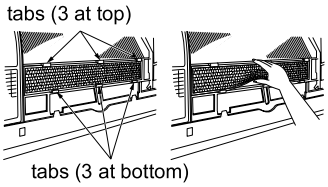
Filters

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

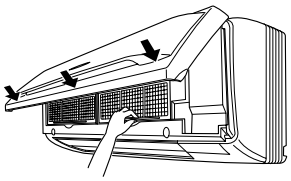


3. **Take off the air-purifying filter with photocatalytic deodorizing function.**
   - Press the top of the air-cleaning filter onto the tabs (3 at top). Then press the bottom of the filter up slightly, and press it onto the tabs (3 at bottom).





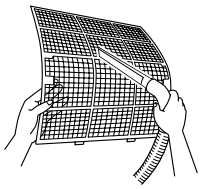
4. **Clean or replace each filter.**
   See figure.



5. **Set the air filter and the air-purifying filter with photocatalytic deodorizing function as they were and close the front panel.**
   - Press the front panel at both sides and the center.

■ 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. **After washing, shake off remaining water and dry in the shade.**
4. **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 the units to ensure they are level and secure.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the water drains 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 your authorized dealer.

■ Before a long idle period

1. **Operate the "FAN only" for several hours on a warm day to dry out the inside.**
   - Press "MODE selector button" and select "FAN" operation.
   - Press "ON/OFF button" and start operation.
2. **After operation stops, turn off the electrical circuit breaker for the room air conditioner.**
3. **Remove and clean the air filters. Reinstall filters after cleaning.**
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 odor.
- To order air-purifying filter with photocatalytic deodorizing function, contact your authorized dealer where you bought the air conditioner.
- Dispose of old filters as required by local codes.

Item	Part No.
Air-purifying filter with photocatalytic deodorizing function. (without frame) 1 set	KAF952A42

FDXS09/12DVJU

Care and Cleaning

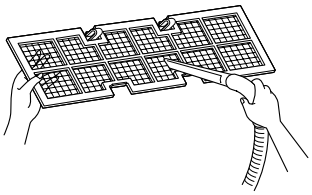
⚠ CAUTION
- **Only a qualified service person is allowed to perform maintenance.**
- **Before cleaning, be sure to stop the operation and turn the breaker OFF.**

■ Cleaning the air filter

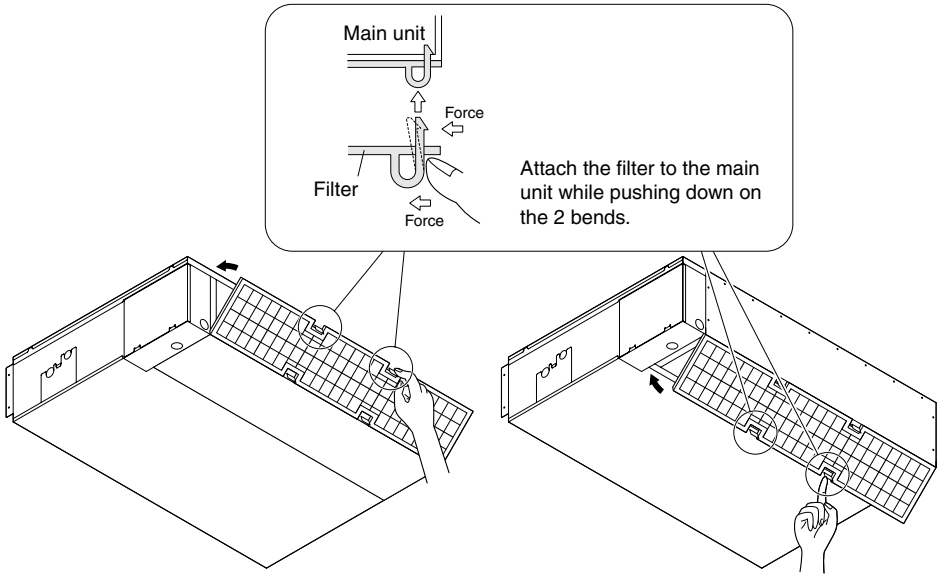
1. Removing the air filter.
- Rear suction
  Pull the bottom side of the air filter backwards, over the 2 bends.
- Bottom suction
  Pull the filter over the 2 bends situated at the backside of the unit.

2. Cleaning the air filter.

Remove dust from the air filter using a vacuum cleaner and gently rinse them in cool water. Do not use detergent or hot water to avoid filter shrinking or deformation. After cleaning dry them in the shade.



3. Replacing the air filter.
- Rear suction
  Hook the filter behind the flap situated at the top of the unit and push the other side gently over the 2 bends.
- Bottom suction
  Hook the filter behind the flap situated at the middle of the unit and push the other side gently over the 2 bends.



■ Cleaning the drain pan

- Clean the drain pan periodically, or drain piping may be clogged with dust and may result in water leakage. Ask your DAIKIN dealer to clean them.
- Prepare a cover locally to prevent any dust in the air around the indoor unit from getting in the drain pan, if there is a great deal of dust present.

CAUTION

- Do not operate the air conditioner without filters, this to avoid dust accumulation inside the unit.
- Do not remove the air filter except when cleaning.
  Unnecessary handling may damage the filter.
- Do not use gasoline, benzene, thinner, polishing powder, liquid insecticide. It may cause discoloring or warping.
- Do not let the indoor unit get wet. It may cause an electric shock or a fire.
- Operation with dusty air filters lowers the cooling and heating capacity and wastes energy.
- The suction grille is optional.
- Do not use water or air of 122°F or higher for cleaning air filters and outside panels.
- Ask your DAIKIN dealer how to clean it.

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 selector button" and select "FAN" operation.
   - Press "ON/OFF button" and start operation.
2. **Clean the air filters and set them again.**
3. **Take out batteries from the remote controller.**
4. **Turn OFF the breaker for the room air conditioner.**

2.14 Troubleshooting

Conditions that appear to be abnormal but are not operational problems.

The following cases are not abnormal problems and you may just continue using it.

Case	Explanation
Operation does not start quickly. • 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 airflow during cooling operation.
The indoor unit gives out odor.	■ This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the airflow. (If this happens, we recommend that you have the indoor unit washed by a technician. Consult your authorized dealer 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.

Check again.

Please check again before calling a repair person.

Case	Check
The air conditioner does not operate. (OPERATION lamp is off.)	• Has a breaker been turned OFF or a fuse blown? • Is there a power failure? • Are fresh batteries installed in the remote controller? • Is the timer setting correct?
Cooling (Heating) effect is poor.	• Are the air filters clean? • Is anything blocking 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 airflow rate and the air direction set appropriately? • Is the unit set to the INTELLIGENT EYE mode?
Operation stops suddenly. (OPERATION lamp flashes.)	• Are the air filters clean? • Is there anything blocking the air inlet or the outlet of the indoor and the outdoor units? Turn the electrical breaker off, clean the air filters or remove obstacles away from inlet and outlet. Then turn the breaker ON again and try operating the air conditioner with the remote controller. If the lamp still blinks, call your authorized dealer where you bought the air conditioner. • Are operation modes all the same for indoor units connected to outdoor units in the **multi system**? If not, set all indoor units to the same operationing mode and confirm that the lamps blink. Moreover, when the operationing mode is in “AUTO”, set all indoor unit operationing modes to “COOL” or “HEAT” for a moment and check again that the lamps are normal. If the lamps stop blinking after the above steps, there is no malfunction.
An abnormal functioning happens during operation.	• The air conditioner may malfunction with lightning or radio waves. Turn the circuit breaker OFF, to reset unit. Then turn it ON again and try operating the air conditioner with the remote controller.

Call your authorized dealer immediately.

⚠ WARNING

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

■ Do not attempt to repair or modify the air conditioner by yourself.
Work performed by untrained persons could result in electric shocks, personal injury, fire, or additional damage to equipment.
Consult your authorized dealer where you bought the air conditioner.

If one of the following symptoms takes place, call your authorized dealer immediately.

■ **The power cord is abnormally hot or damaged.** ■ **An abnormal sound is heard during operation.** ■ **The safety breaker, a fuse, or the ground 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 your authorized dealer.

■ 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 neighboring area, stop operation and turn the breaker OFF for system protection.

Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations. Contact your authorized dealer for assitance.

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 your authorized dealer where you bought the air conditioner.
The maintenance cost must be born by the user.

Part 6
Service Diagnosis

1. Caution for Diagnosis

1.1 Troubleshooting with the Operation Lamp

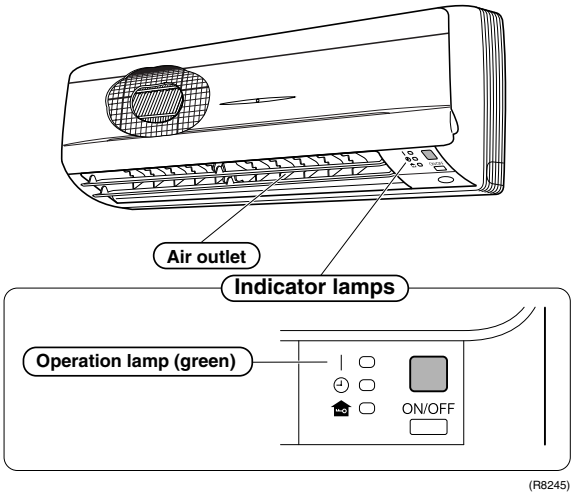
The operation lamp flashes when any of the following errors is detected:

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

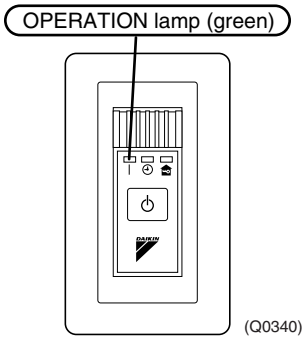
In either case, conduct the diagnostic procedure described in the following pages.

Location of Operation Lamp

In case of CTXS09/12GVJU, FTXS15/18DVJU



In case of FDXS09/12DVJU



Caution: Operation stops suddenly. (Operation lamp blinks.)
Cause of above trouble could be an Operation mode conflict.
Check the following:

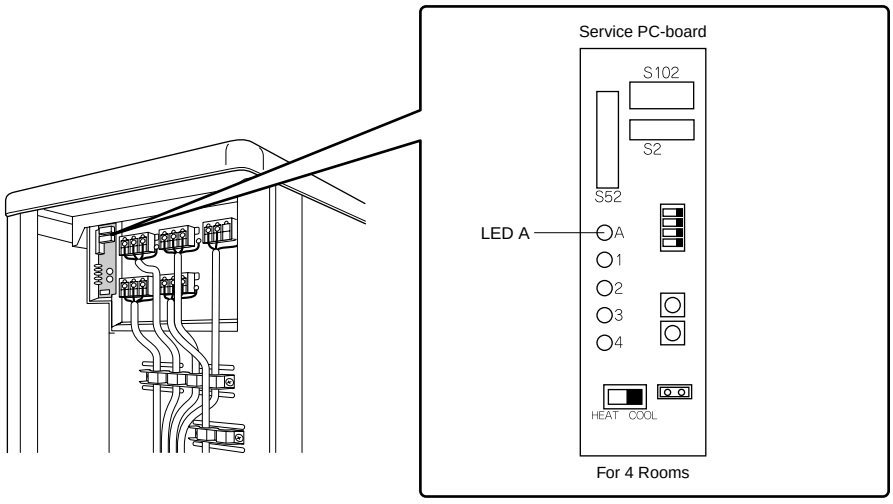
- Are the operation modes all the same for indoor units connected to Multi system outdoor unit? If not set all indoor units to the same operation mode and confirm that the operation lamp is not blinking.
- When the operation mode is in "Auto", set all indoor unit operation mode to "Cool" or "Heat" and check again if the operation lamp is normal.

If the lamp stops blinking after the above steps, there is no malfunction.

★Operation stops and operation lamp blinks only for indoor unit which the different operation mode is set later. (The first set operation mode has priority.)

Troubleshooting with the LED Indication

In case of 4MXS32GVJU



(R6333)

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

2. Problem Symptoms and Measures

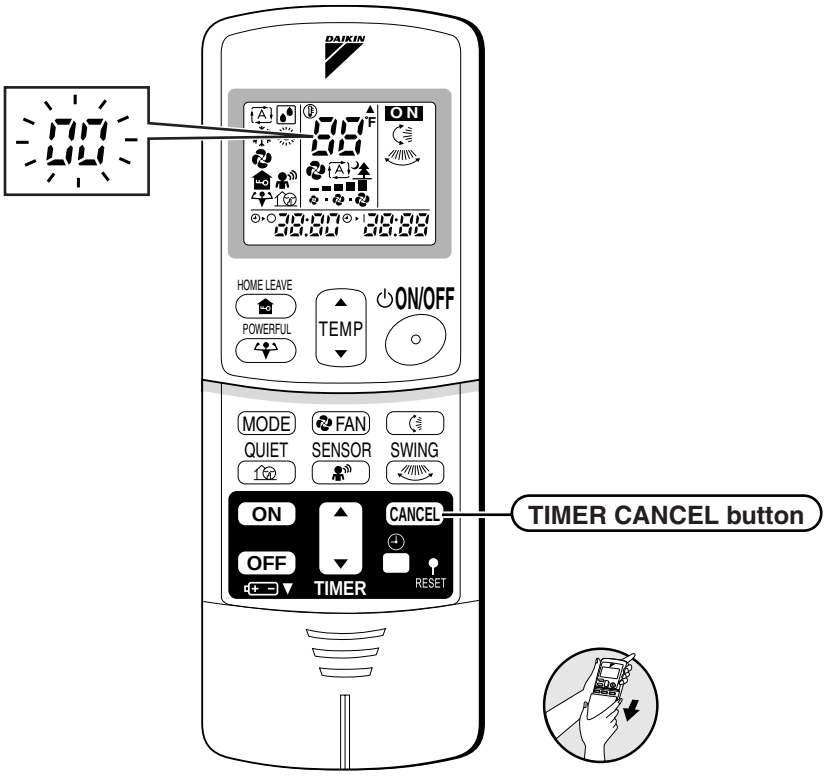
Problem Symptom	Check Item	Details of Measure	Page No. to be referred
None of the units operates.	Check the power supply.	Check to make sure that the rated voltage is supplied.	—
	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Check the outdoor air temperature.	Heating operation cannot be used when the outdoor air temperature is 75.2°F or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 14°F.	—
	Diagnosis with indoor unit LED remote controller indicator codes	—	111
	Diagnosis with outdoor unit LED remote controller indicator codes	—	112
	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 75.2°F or higher (only for heat pump model), and cooling operation cannot be used when the outdoor air temperature is below 14°F.	—
	Diagnosis with indoor unit LED remote controller indicator codes	—	111
	Diagnosis with outdoor unit LED remote controller indicator codes	—	112
Some indoor units do not operate.	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Diagnosis with indoor unit LED remote controller indicator codes	—	111
	Diagnosis with outdoor unit LED remote controller indicator codes	—	112
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 indoor unit LED remote controller indicator codes	—	111
	Diagnosis with outdoor unit LED remote controller indicator codes	—	112
	Check Inverter Units Refrigerant System	Check for insufficient gas.	164
Large operating noise and vibrations	Check the capacitor voltage.	—	165
	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 ARC433 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.



<ARC433A53> (R8367)

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.

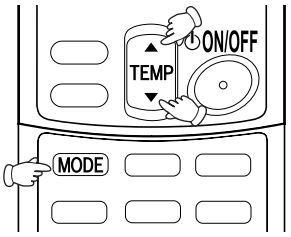
No.	Code	No.	Code	No.	Code
1	00	12	C7	23	H0
2	U4	13	H8	24	E1
3	F3	14	J3	25	P4
4	E6	15	A3	26	L3
5	L5	16	A1	27	L4
6	A6	17	C4	28	H6
7	E5	18	C5	29	H7
8	F6	19	H9	30	U2
9	C9	20	J6	31	UH
10	U0	21	UR	32	ER
11	E7	22	A5	33	AH

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.

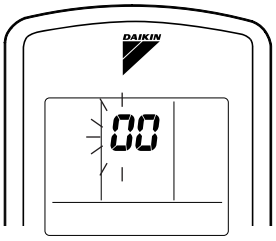
Check Method 2

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



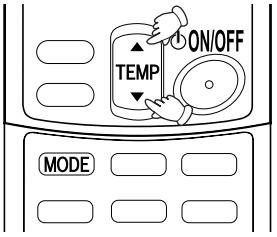
(R4272)

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



(R4273)

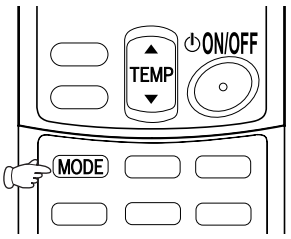
2. Press the TEMP button.
   Press TEMP▲ or TEMP▼ and change the digit until you hear a single beep or two short beeps.



(R4274)

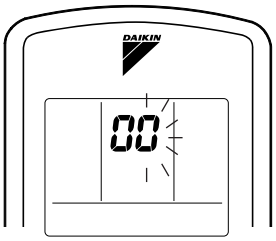
3. Diagnose by the sound.
   ★beep : The first digit (based on a tens/units format) does not match the system error code.
   ★beep-beep: The first digit matches the system error code.
   ★long beeeep: Both first and second digit selections match the system error code. (→See 7.)

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



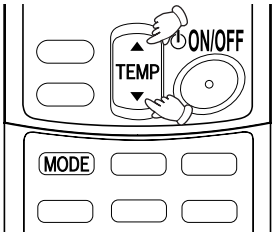
(R4275)

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”.

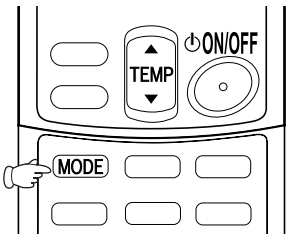


(R4277)

6. Diagnose by the sound.
   ★beep : The first digit (based on a tens/units format) does not match the system error code.
   ★beep-beep: The first digit matches the system error code.
   ★long beeeep: Both first and second digit selections match the system error code.

7. Determine the error code.
   The digits indicated when you hear the beep sound are an error code.
   (Error codes and description → Refer to page 110.)

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



(R4278)

4. Code Indication on the Remote Controller

4.1 Error Codes and Description of Fault

	Code Indication	Description of Problem
System	00	Normal
	U0	Insufficient gas
	U2	Low-voltage detection or over-voltage detection
	U4	Signal transmission error (between indoor and outdoor units)
	U7	Signal transmission error (on outdoor unit PCB)
	U8	Unspecified voltage (between indoor and outdoor units)
	UH	Anti-icing function in other rooms
Indoor Unit	A1	Indoor unit PCB abnormality
	A5	Freeze-up protection function or high pressure control
	A6	Fan motor or related abnormality
	C4	Heat exchanger temperature thermistor abnormality
	C9	Room temperature thermistor abnormality
Outdoor Unit	E5	Freeze-up protection control
	E1	Outdoor unit PCB abnormality
	E5	OL activation (compressor overloaded)
	E6	Compressor lock
	E7	DC fan lock
	E8	Input over current detection
	E8	Four-way valve abnormality
	F3	Discharge pipe temperature control
	F6	High pressure control in cooling
	H0	Compressor sensor system abnormality
	H6	Position sensor abnormality
	H8	CT or related abnormality
	H9	Outdoor air thermistor or related abnormality
	J3	Discharge pipe thermistor or related abnormality
	J6	Heat exchanger thermistor or related abnormality
	J8	Liquid pipe thermistor or related abnormality
	J9	Gas pipe thermistor or related abnormality
	L3	Electrical box temperature rise
	L4	Radiation fin temperature rise
	L5	Output over current detection
	P4	Radiation fin thermistor or related abnormality

5. Troubleshooting

5.1 Indoor Units

- : Not used for troubleshooting
∗ : Varies depending on the cases.

Indication on the remote controller	Description of the Fault		Details of fault (Refer to the indicated page.)
00	Indoor unit in normal condition (Conduct a diagnosis of the outdoor unit.)		—
A1	Indoor unit PCB abnormality		114
A5	Freeze-up protection control or high pressure control (heat pump model only)		115
A6	Fan motor or related abnormality	AC motor (Duct)	117
		DC motor (Duct-free)	118
C4	Heat exchanger thermistor or related abnormality		121
C9	Room temperature thermistor abnormality		121
U4	Signal transmission error (between indoor and outdoor units)		122
UA	Unspecified voltage (between indoor and outdoor units)		124

5.2 Outdoor Units

☼: ON, ● : OFF, ◑ : Blinks

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

Outdoor Unit LED Indication					Indication on the remote controller	Description of The Fault	Reference Page
Green	Red						
A	1	2	3	4			
◑	●	●	●	●	00	Outdoor unit in normal condition (Conduct a diagnosis of the indoor unit.)	—
					UA	Unspecified voltage (between indoor and outdoor units)	157
					UH	Anti-icing function in other rooms	157
◑	●	●	☼	☼	(U0)	Insufficient gas	151
◑	☼	●	●	☼	U2	Low-voltage detection or over-voltage detection	155
◑	●	☼	☼	☼	U7	Signal transmission error (on outdoor unit PCB) ***4MXS Only**	156
◑	☼	●	☼	☼	A5	Freeze-up protection control	125
◑	☼	☼	☼	●	E1	Outdoor unit PCB abnormality ***4MXS Only**	127
◑	☼	●	☼	●	(E5)	OL activation (compressor overload)	128
◑	●	☼	☼	●	(E6)	Compressor lock	129
◑	☼	☼	☼	☼	E7	DC fan lock	130
◑	●	☼	●	☼	E8	Input over current detection	131
◑	☼	●	●	●	EA	Four-way valve abnormality ***2MXS Only**	133
◑	☼	●	☼	●	F3	Discharge pipe temperature control	135
◑	☼	●	☼	☼	F6	High pressure control in cooling	136
◑	☼	☼	●	●	H0	Compressor sensor system abnormality ***4MXS Only**	138
					H8	CT or related abnormality	141
◑	☼	☼	●	●	H6	Position sensor abnormality	140
					H9	Outdoor air thermistor or related abnormality	143
					J3	Discharge pipe thermistor or related abnormality	143
					J6	Heat exchanger thermistor or related abnormality	143
					J8	Liquid pipe thermistor or related abnormality	143
					J9	Gas pipe thermistor or related abnormality	143
					P4	Radiation fin thermistor or related abnormality	143
◑	☼	☼	●	☼	L3	Electrical box temperature rise	145
◑	●	●	●	☼	L4	Radiation fin temperature rise (Protection of driver overheating)	147
◑	●	●	☼	●	L5	Output over current detection	149

Note:

1. The indications in the parenthesis ( ) in the remote controller display column are displayed only when system-down occurs.
2. When a sensor error occurs, check the remote controller display to determine which sensor is malfunctioning.
   If the remote controller does not indicate the error type, conduct the following operation.
   *Turn the power switch off and back on again. If the same LED indication appears again immediately after the power is turned on, the fault is in the thermistor.
   *If the above condition does not occur, the fault is in the CT.
3. The indoor unit error indication may take the precedence in the remote controller display.

5.3 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

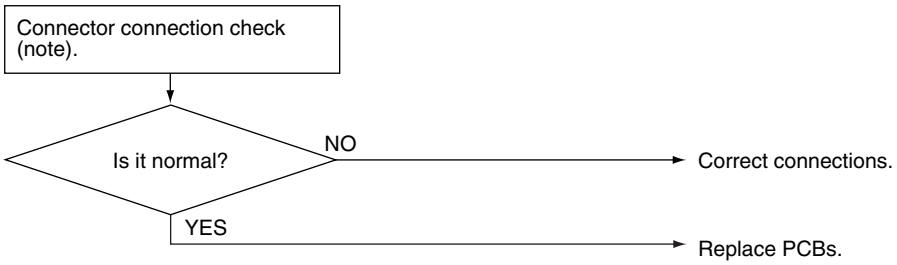
When there is no zero-cross detection in approximately 10 continuous seconds.

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.



(R7130)

Note: Connector Nos. vary depending on models.

Model Type	Connector No.
Duct-free Type / Duct Type	Terminal strip~Control PCB

5.4 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.)
- The 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 149°F
- Freeze-up protection
  When the indoor unit heat exchanger temperature is below 32°F during cooling operation.

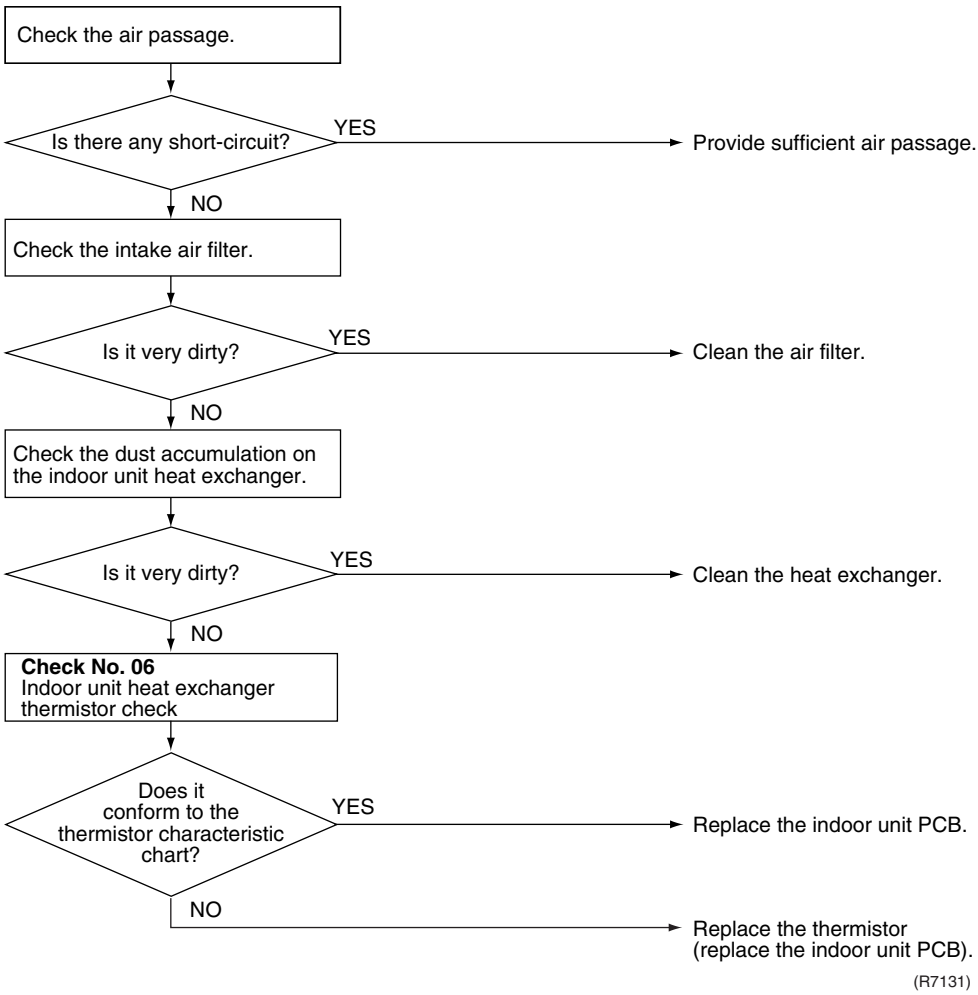
Supposed Causes

- 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.161

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



Note: If the outside temperature is below 14°F in the cooling mode, the system may get interrupted with error 85 displayed. The system will be reset itself, but this stop will be put in the error history memory.

5.5 Fan Motor or Related Abnormality

5.5.1 AC Motor

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

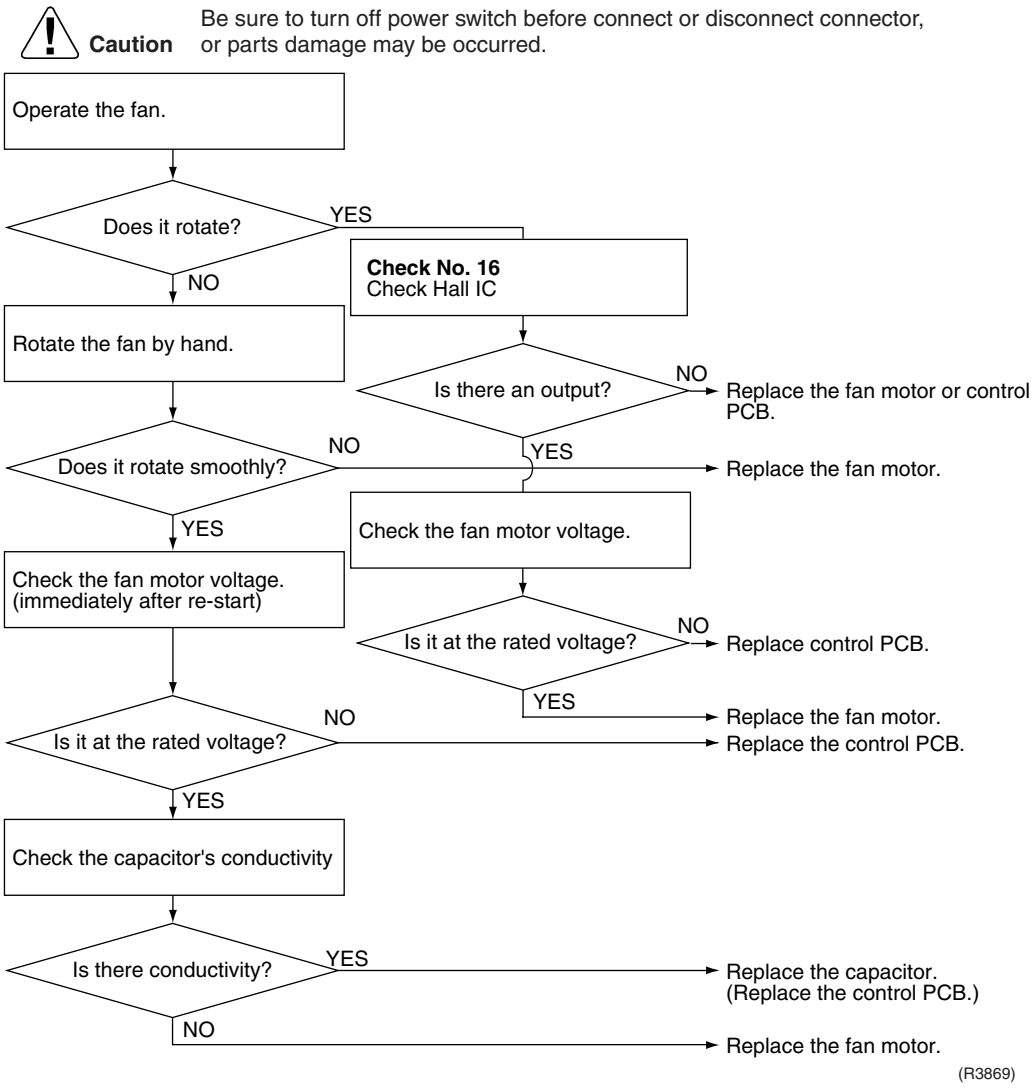
When the detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

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.167



5.5.2 DC Motor

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

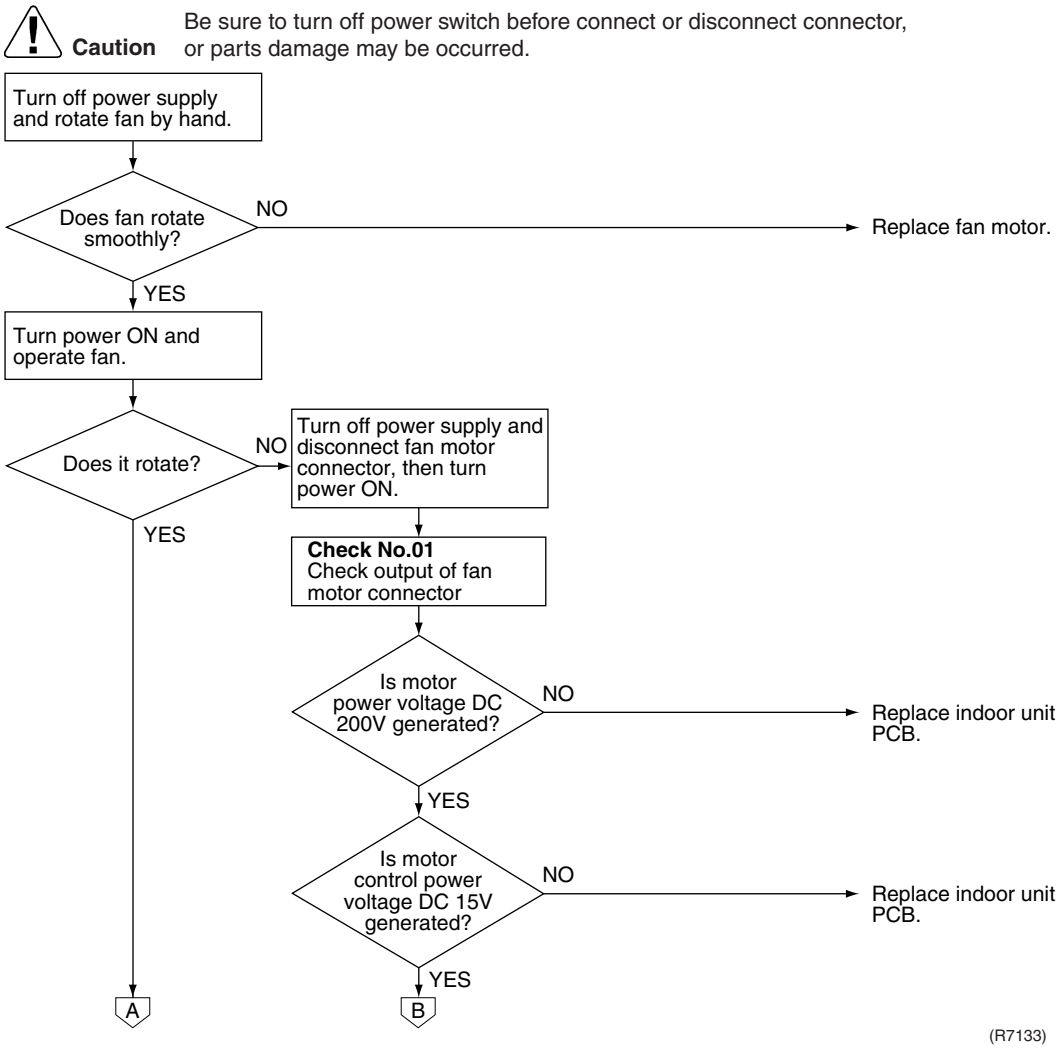
When the detected rotation speed does not reach the demanded rotation speed of the target tap, and is less than 50% of the maximum fan motor rotation speed.

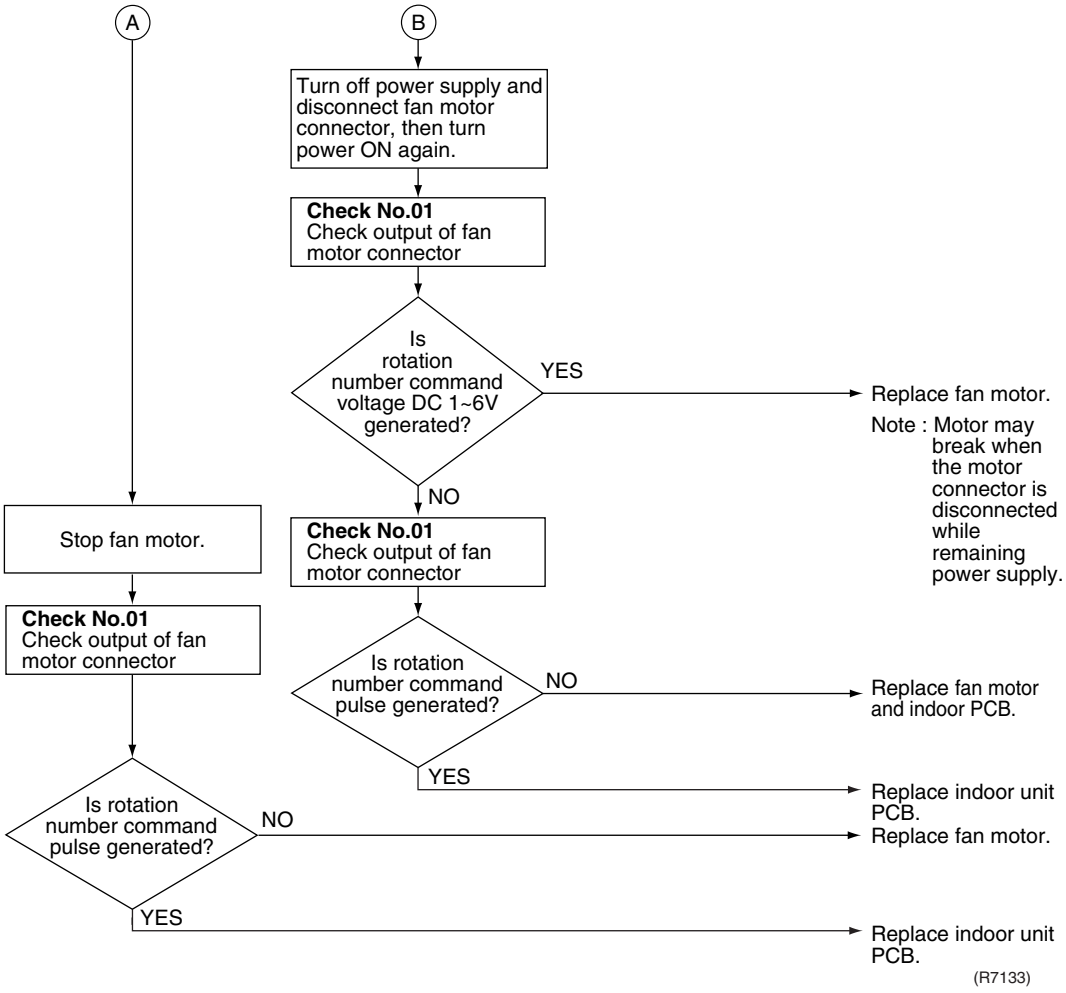
Supposed Causes

- 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.01
Refer to P.158





5.6 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 414°F (less than 120 ohms) or below about –58°F (more than 1,860 kohms).

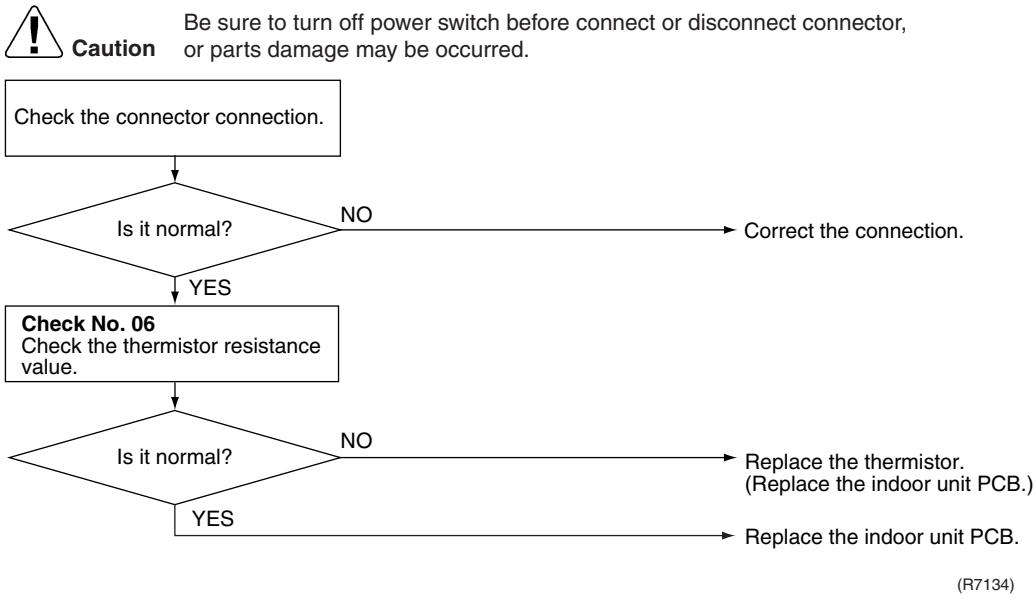
Note: The values vary slightly in some models.

Supposed Causes

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

Troubleshooting

Check No.06
Refer to P.161



C4 : Heat exchanger temperature thermistor
C9 : Room temperature thermistor

5.7 Signal Transmission Error (between Indoor and Outdoor Units)

Remote Controller Display

Method of Malfunction Detection

The signal transmission data from the outdoor unit to the indoor unit is checked for normal operation.

Malfunction Decision Conditions

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

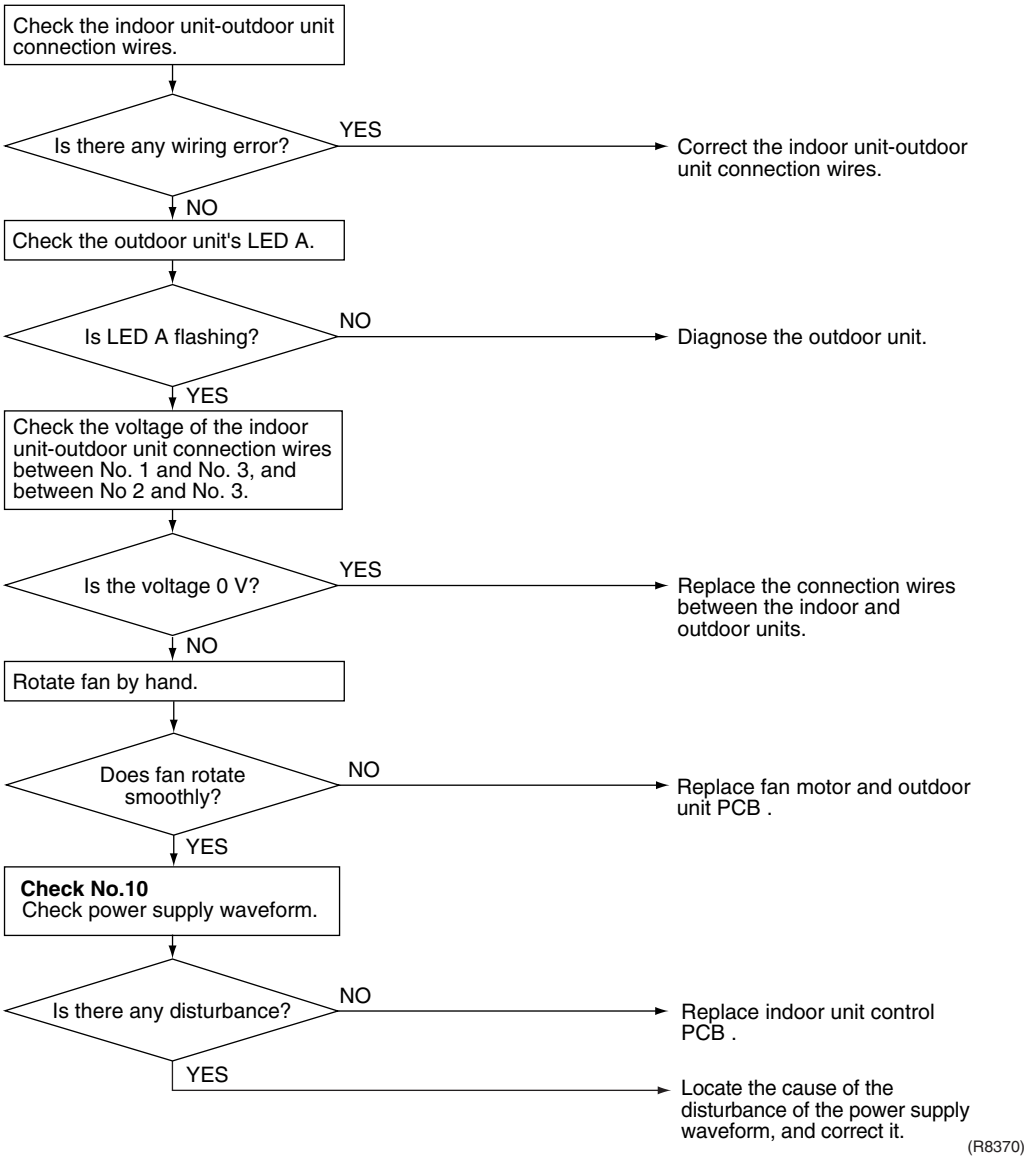
Supposed Causes

- 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. 3).

Troubleshooting

Check No.10
Refer to P.164

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



(R8370)

5.8 Unspecified Voltage (between Indoor and Outdoor Units)

Remote Controller Display

U9

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

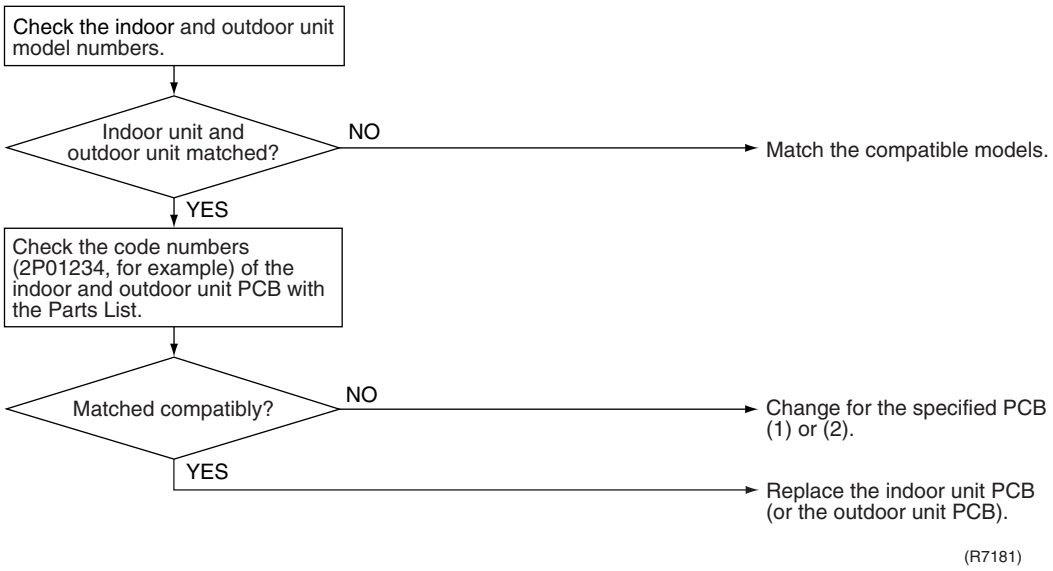
The pair type and multi type are interconnected.

Supposed Causes

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

Troubleshooting

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



(R7181)

5.9 Freeze-up Protection Control

Remote Controller Display

P5

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ● 3 ☼ 4 ☼

Method of Malfunction Detection

Indoor unit icing, during cooling operation, is detected by checking the temperatures sensed by the indoor unit heat exchanger thermistor and room temperature thermistor that are located in a shut-down room.

Malfunction Decision Conditions

In the cooling mode, the following conditions (A) and (B) are kept together for 5 minutes.
(A) Indoor unit heat exchanger temperature ≤ 30°F
(B) Indoor unit heat exchanger temperature ≤ Room temperature Δ–18°F

- If the indoor unit icing protector is activated four times straight, the system will shut down. (The 4-time counter will reset itself if any of the following errors does not occur during the compressor running time (total time): OL, radiation fin temperature rise, gas shortage, and compressor startup.)
  <Total 60 minutes>

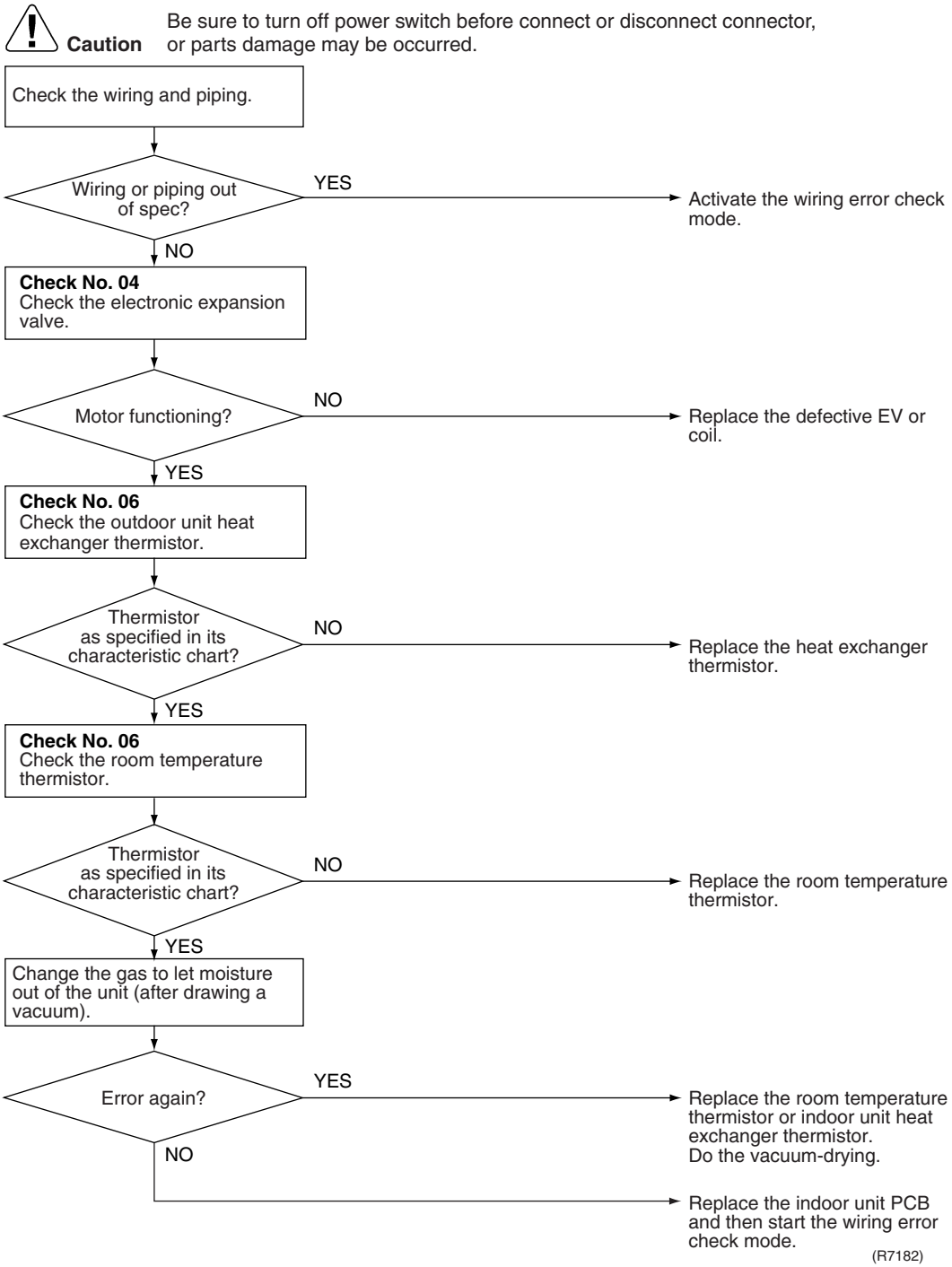
Supposed Causes

- Wrong wiring or piping
- EV malfunctioning in each room
- Short-circuit
- Indoor unit heat exchanger thermistor defective
- Indoor unit thermistor defective

Troubleshooting

Check No.04
Refer to P.159

Check No.06
Refer to P.161



5.10 Outdoor Unit PCB Abnormality

Remote Controller Display

E1

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ☼ 4 ●

Method of Malfunction Detection

Only for 4MXS32GVJU

- Detect within the program of the microcomputer that the program is in normal running order.

Malfunction Decision Conditions

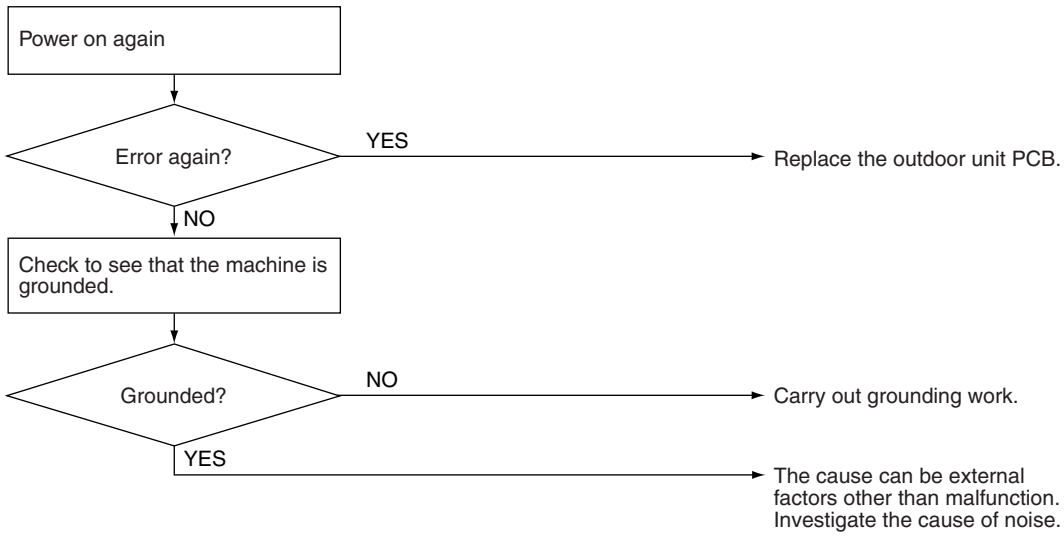
- When the program of the microcomputer is in abnormal running order.

Supposed Causes

- Out of control of microcomputer caused by external factors
  - Noise
  - Momentary fall of voltage
  - Momentary power loss
- Defective outdoor unit PCB

Troubleshooting

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



(R7183)

5.11 OL Activation (Compressor Overload)

Remote Controller Display

E5

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ● 3 ☼ 4 ●

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 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
- Shut-off valve defective

Troubleshooting

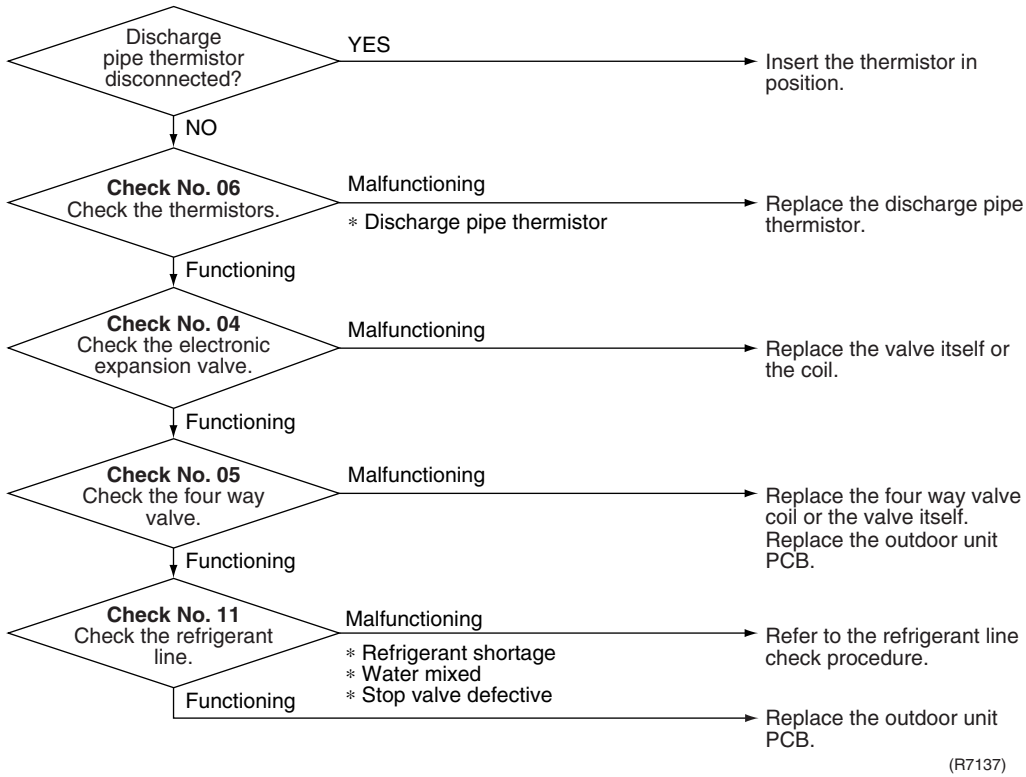
Check No.04
Refer to P.159

Check No.05
Refer to P.160

Check No.06
Refer to P.161

Check No.11
Refer to P.164

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



(R7137)

5.12 Compressor Lock

Remote Controller Display

E6

Outdoor Unit LED Display

A ◑ 1 ● 2 ☼ 3 ☼ 4 ●

Method of Malfunction Detection

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

Malfunction Decision Conditions

- Judging from current waveform generated when high-frequency voltage is applied to the compressor.
- The system will shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 5 minutes (normal)

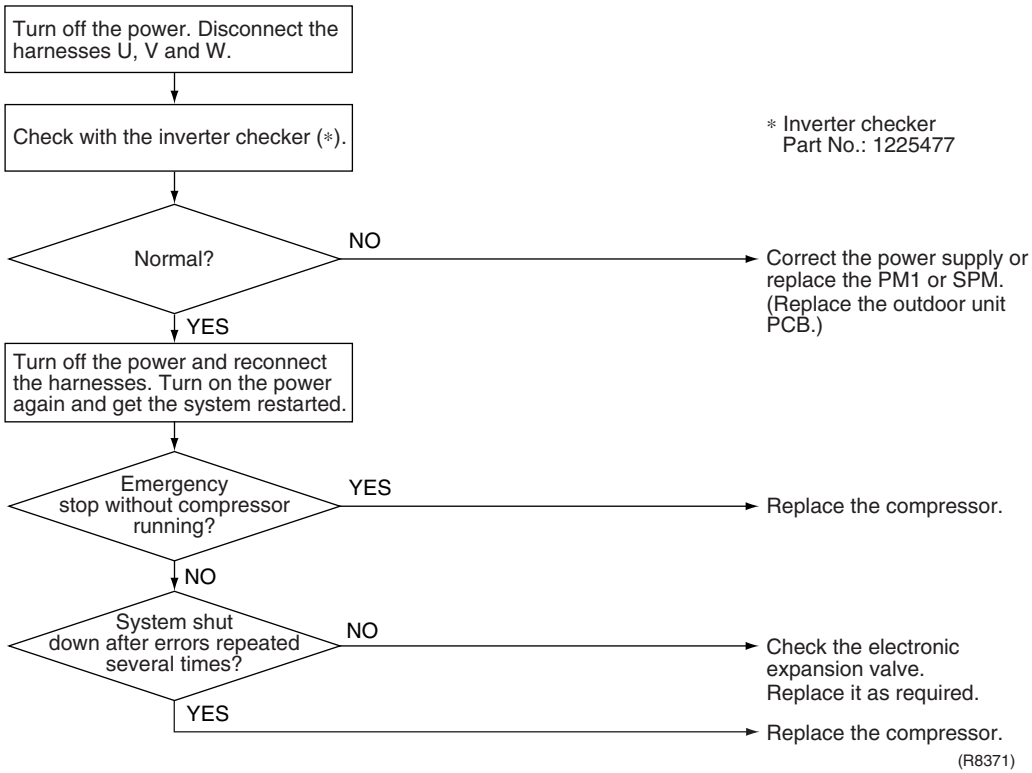
Supposed Causes

- Compressor locked

Troubleshooting

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

(Precaution before turning on the power again)
Make sure the power has been off for at least 30 seconds.



5.13 DC Fan Lock

Remote Controller Display

E7

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ☼ 4 ☼

Method of Malfunction Detection

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

Malfunction Decision Conditions

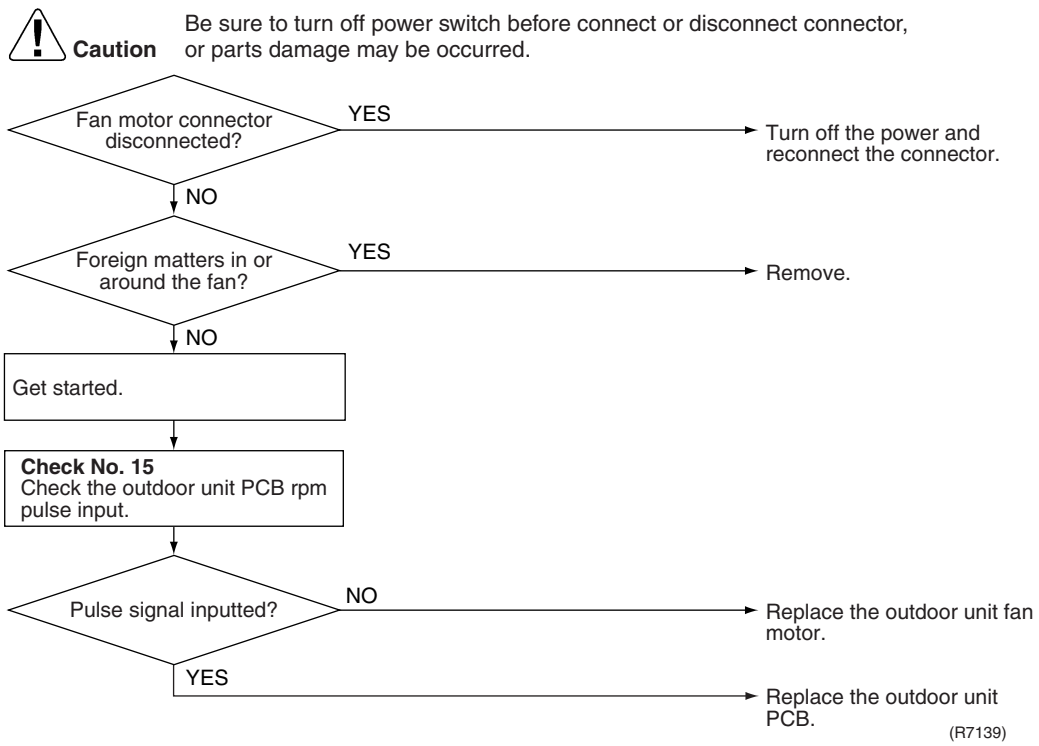
- The fan does not start in 30 seconds even when the fan motor is running.
- The system will shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 5 minutes (normal)

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.166



5.14 Input Over Current Detection

Remote Controller Display

E8

Outdoor Unit LED Display

A ◑ 1 ● 2 ☼ 3 ● 4 ☼

Method of Malfunction Detection

Malfunction is detected by checking the input current value.

Malfunction Decision Conditions

- The input current is at a certain value (depending on the condition) for 2.5 seconds.
- The compressor halts if the error occurs, and restarts automatically after 3 minutes standby.

Supposed Causes

- Overcurrent due to compressor failure
- Overcurrent due to defective power transistor
- Overcurrent due to defective inverter main circuit electrolytic capacitor
- Overcurrent due to defective outdoor unit PCB
- Error detection due to outdoor unit PCB
- Overcurrent due to shortcircuit

Troubleshooting

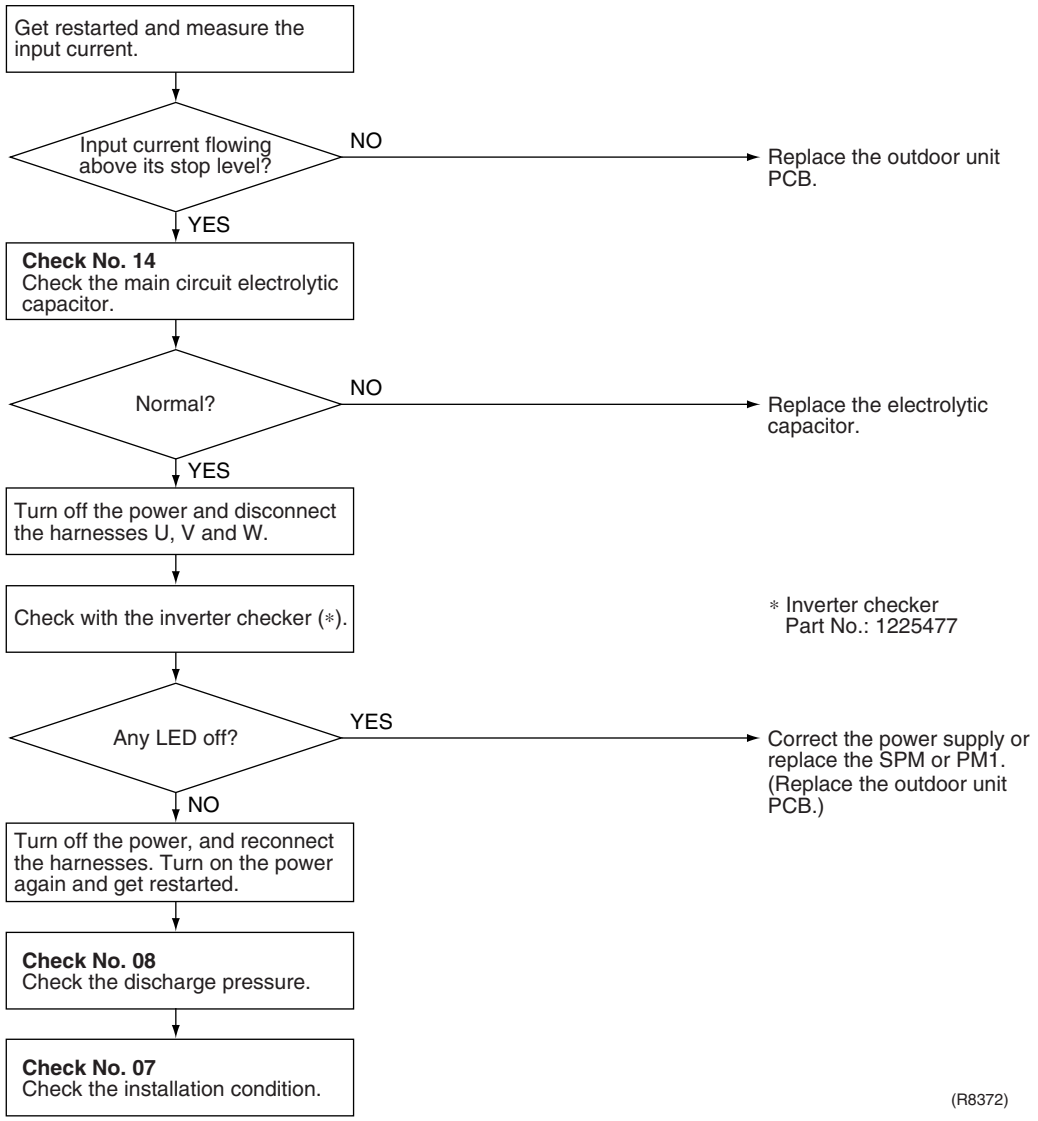
Check No.07
Refer to P.162

Check No.08
Refer to P.163

Check No.14
Refer to P.166

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.



(R8372)

5.15 Four-Way Valve Abnormality

Remote Controller Display

E9

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ● 3 ● 4 ●

Method of Malfunction Detection

Only for 2MXS18GVJU

The liquid pipe 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

Either of the following conditions occurs 3 minutes after the compressor has started.

- Cooling / dry operation
  (Outdoor unit heat exchanger temperature – Liquid pipe temperature) < Δ–9°F
- Heating operation
  (Liquid pipe temperature – Outdoor unit heat exchanger temperature) < Δ0°F

Supposed Causes

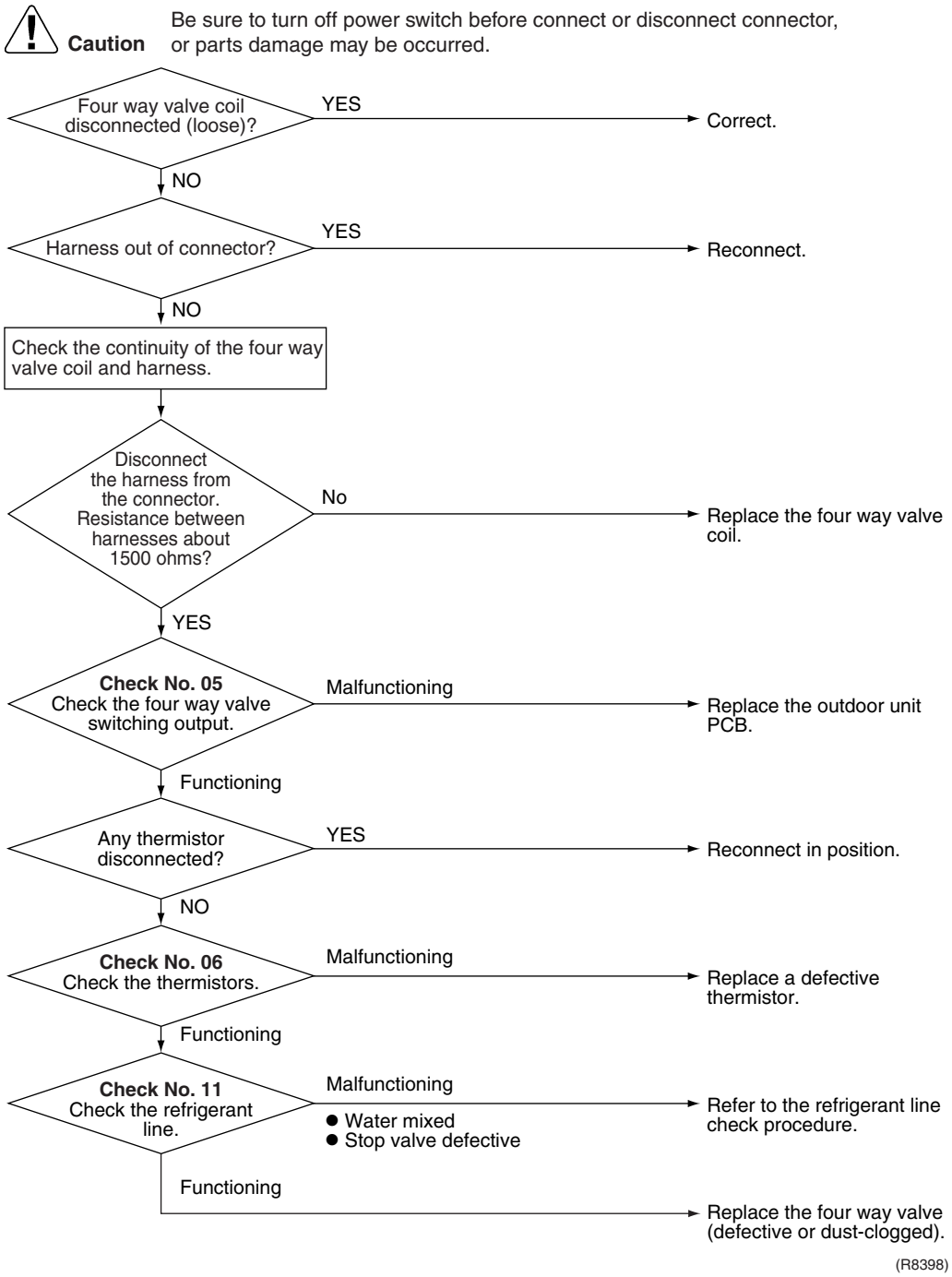
- Connector in poor contact
- Thermistor defective
- Outdoor unit PCB defective
- Four-way valve coil or harness defective
- Four-way valve defective
- Foreign substance mixed in refrigerant

Troubleshooting

Check No.05
Refer to P.160

Check No.06
Refer to P.161

Check No.11
Refer to P.164



5.16 Discharge Pipe Temperature Control

Remote Controller Display

F3

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ● 3 ☼ 4 ●

Method of Malfunction Detection

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

Malfunction Decision Conditions

2YC45, 2YC63

If the temperature being detected by the discharge pipe thermistor rises above 120°C, the compressor will stop. (The error is cleared when the temperature has dropped below 107°C.)

- If the compressor stops 6 times straight due to abnormal discharge pipe temperature, the system will 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
- Four-way valve malfunctioning
- Discharge pipe thermistor defective
  (heat exchanger or outdoor temperature thermistor defective)
- Outdoor unit PCB defective
- Water mixed in the local piping
- Electronic expansion valve defective
- Stop valve defective

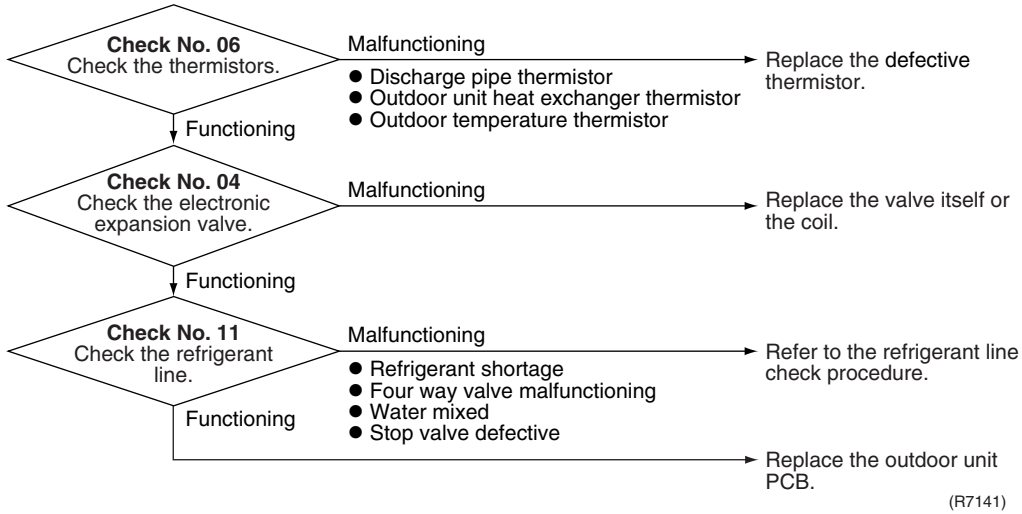
Troubleshooting

Check No.04
Refer to P.159

Check No.06
Refer to P.161

Check No.11
Refer to P.164

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



5.17 High Pressure Control in Cooling

Remote Controller Display

F6

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ● 3 ☼ 4 ☼

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 117.5°F (18 class) or 120.2°F (32 class).

Supposed Causes

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

Troubleshooting

Check No.04
Refer to P.159

Check No.06
Refer to P.161

Check No.07
Refer to P.162

Check No.09
Refer to P.163

5.18 Compressor Sensor System Abnormality

Remote Controller Display

H0

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ●

Method of Malfunction Detection

Only for 4MXS32GVJU

- Fault condition is identified by the supply voltage and the DC voltage which is detected before the compressor startup.
- Fault condition is identified by compressor current which is detected right after the compressor startup.

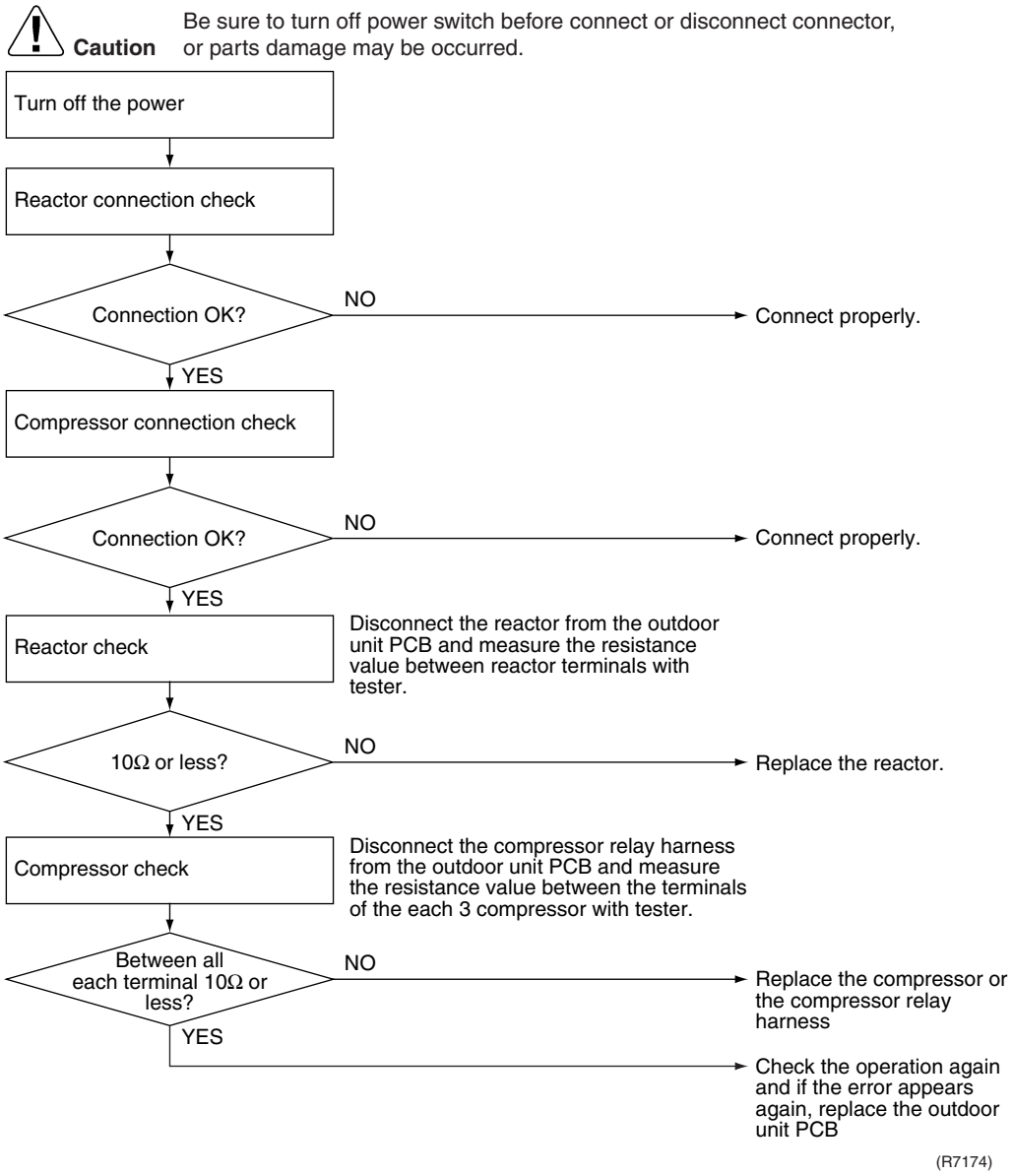
Malfunction Decision Conditions

- The detected valve of the supply voltage and the DC voltage is obviously low or high.
- The compressor current doesn't run when the compressor is started.

Supposed Causes

- Reactor disconnection
- Compressor disconnection
- Outdoor unit PCB defective
- Compressor defective

Troubleshooting



5.19 Position Sensor Abnormality

Remote Controller Display

H6

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ●

Method of Malfunction Detection

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

Malfunction Decision Conditions

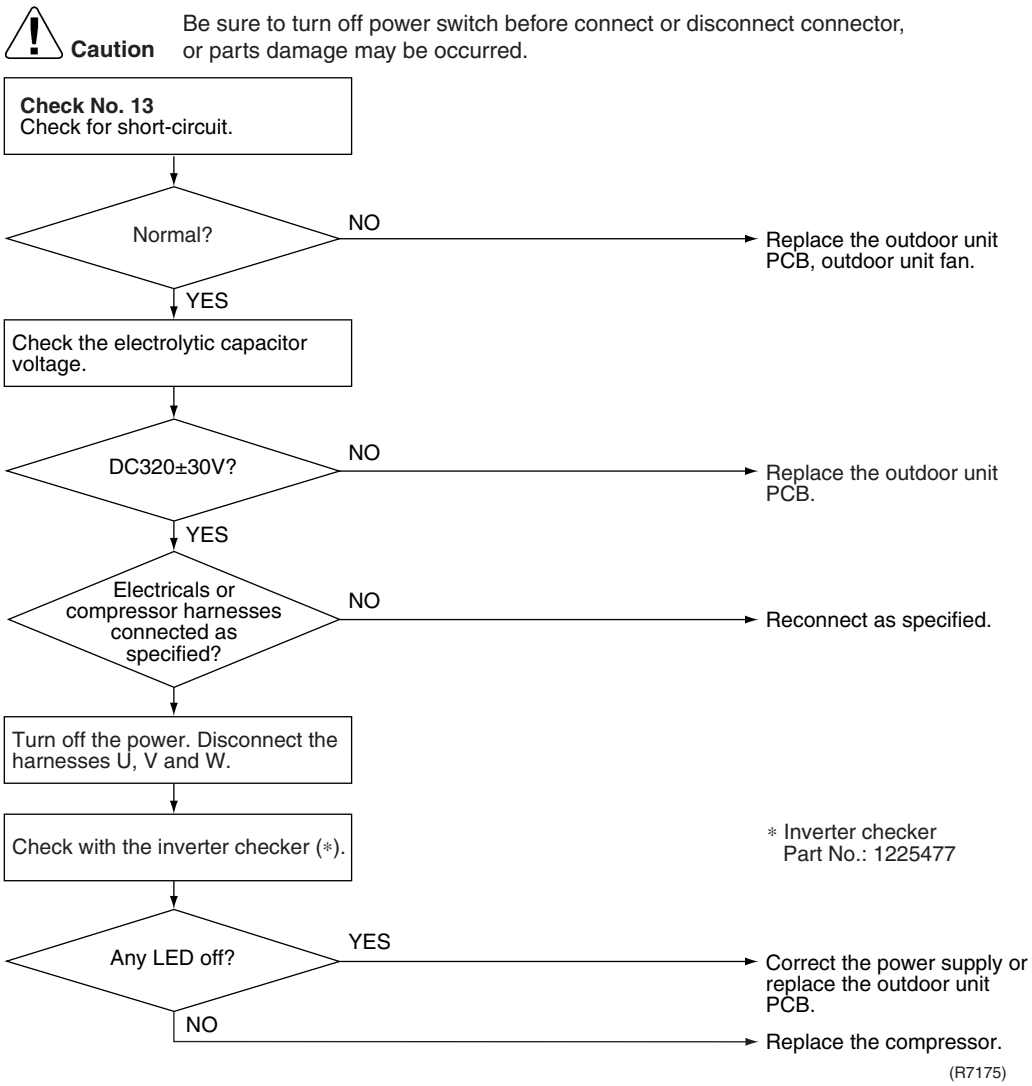
- The system will shut down if the error occurs 8 times.

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.165



5.20 CT or Related Abnormality

Remote Controller Display

H8

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ●

Method of Malfunction Detection

A CT or related error is detected by checking the compressor running frequency and CT-detected input current.

Malfunction Decision Conditions

The compressor running frequency is below 55 Hz (18 class) or 32 Hz (32 class).

- The input current is also below 1.25 A (18 class) or 0.5A (32 class).If this error repeats 4 times, the system will shut down.
- The error counter resets itself if this or any other error does not occur during the following 60-minute compressor total running time.

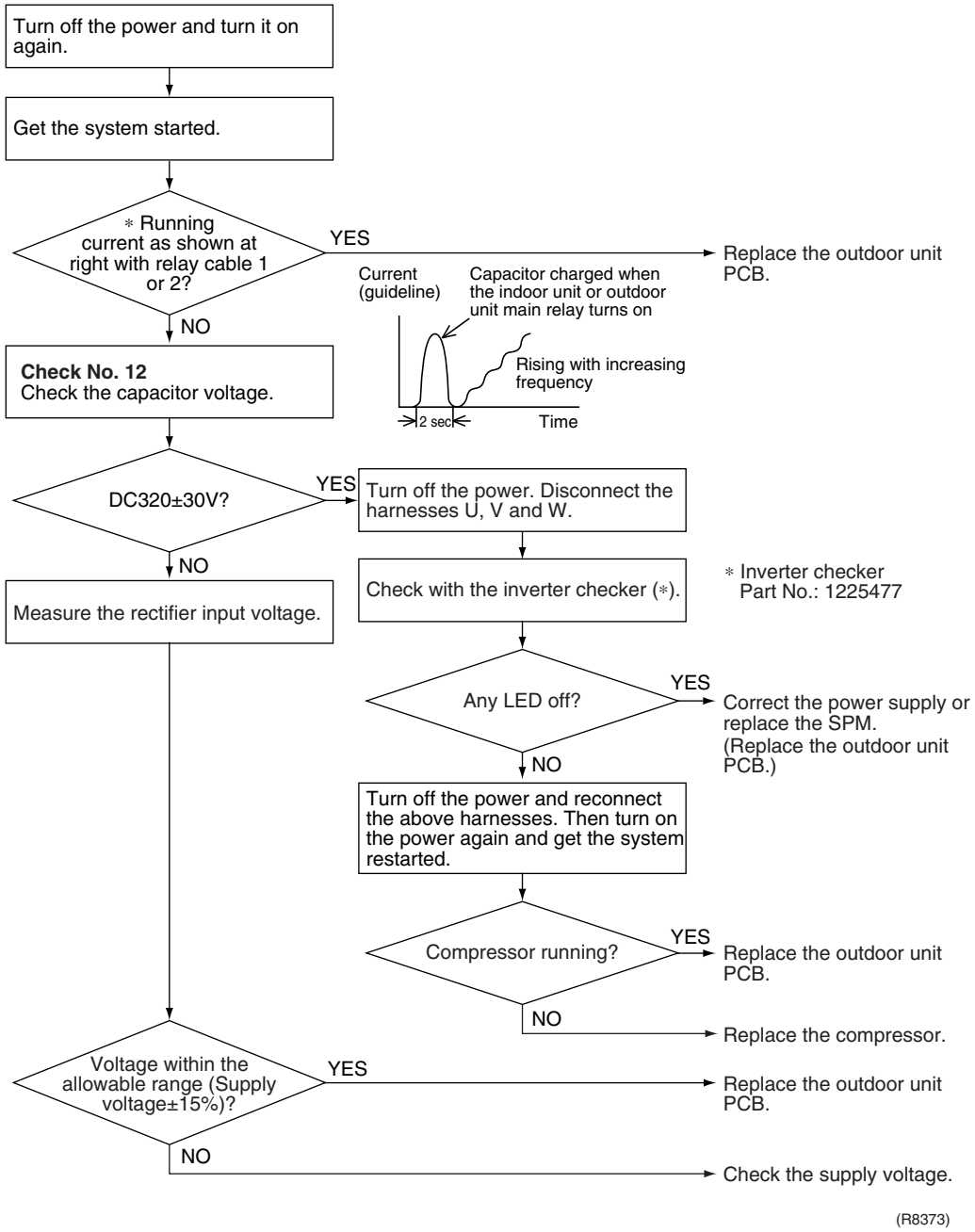
Supposed Causes

- Power transistor defective
- Internal wiring broken or in poor contact
- Reactor defective
- Outdoor unit PCB defective

Troubleshooting

Check No.12
Refer to P.165

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



(R8373)

5.21 Thermistor or Related Abnormality (Outdoor Unit)

Remote Controller Display

P4, J3, J6, J8, J9, H9

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ●

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 being detected by each thermistor.

Malfunction Decision Conditions

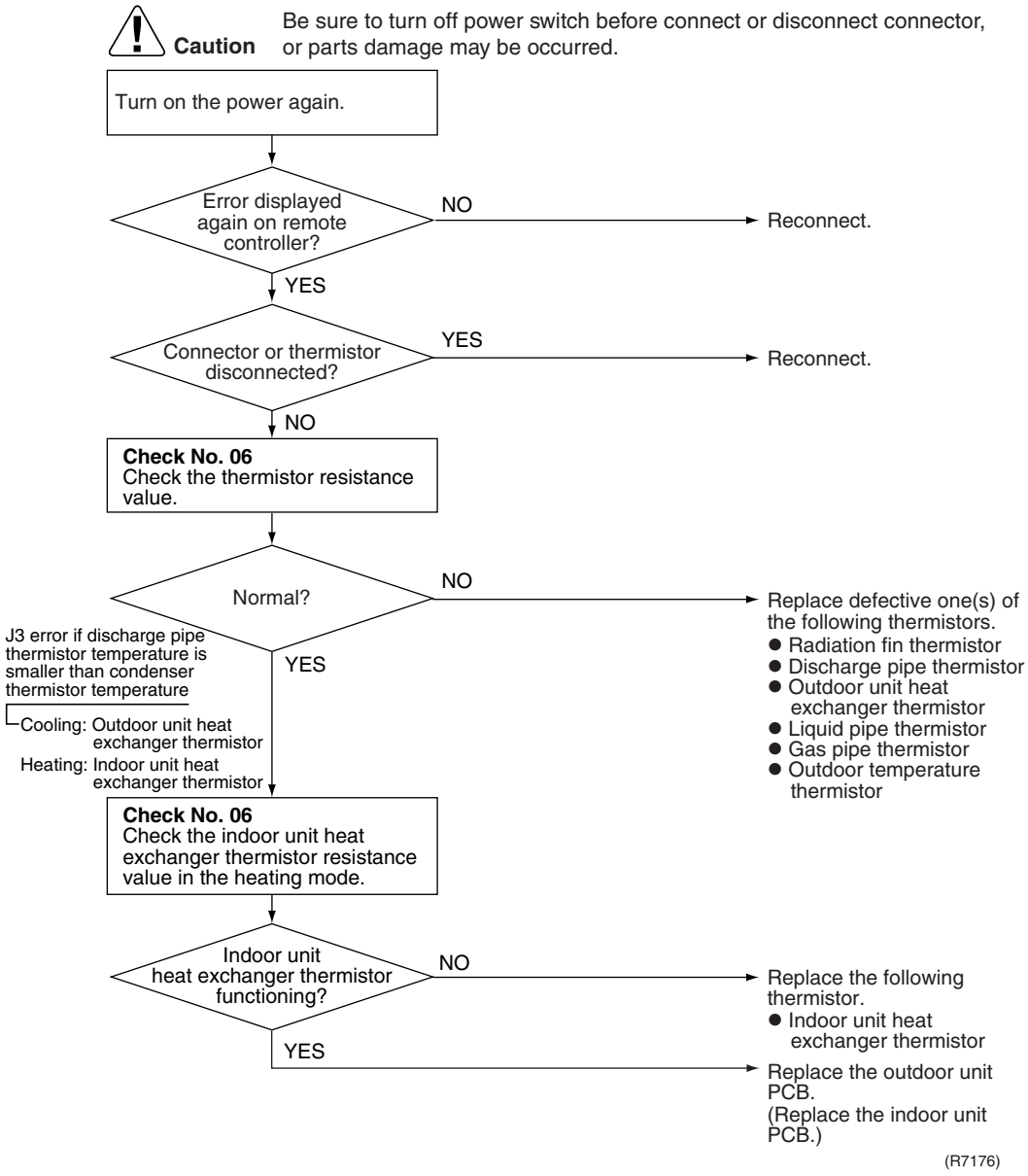
When the thermistor input is above 4.96 V or below 0.04 V with the power on, the *J3* error is judged if the discharge pipe thermistor temperature is smaller than the condenser thermistor temperature, or the system will shut down if all the units are judged with the *J8* error.

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.161



P4 : Radiation fin thermistor
J3 : Discharge pipe temperature thermistor
J6 : Outdoor unit heat exchanger temperature thermistor
J8 : Liquid pipe thermistor
J9 : Gas pipe thermistor
H9 : Outdoor temperature thermistor

5.22 Electrical Box Temperature Rise

Remote Controller Display

L3

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ☼ 3 ● 4 ☼

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 176°F (18 class) or 212°F (32 class). Reset is made when the temperature drops below 158°F.

Supposed Causes

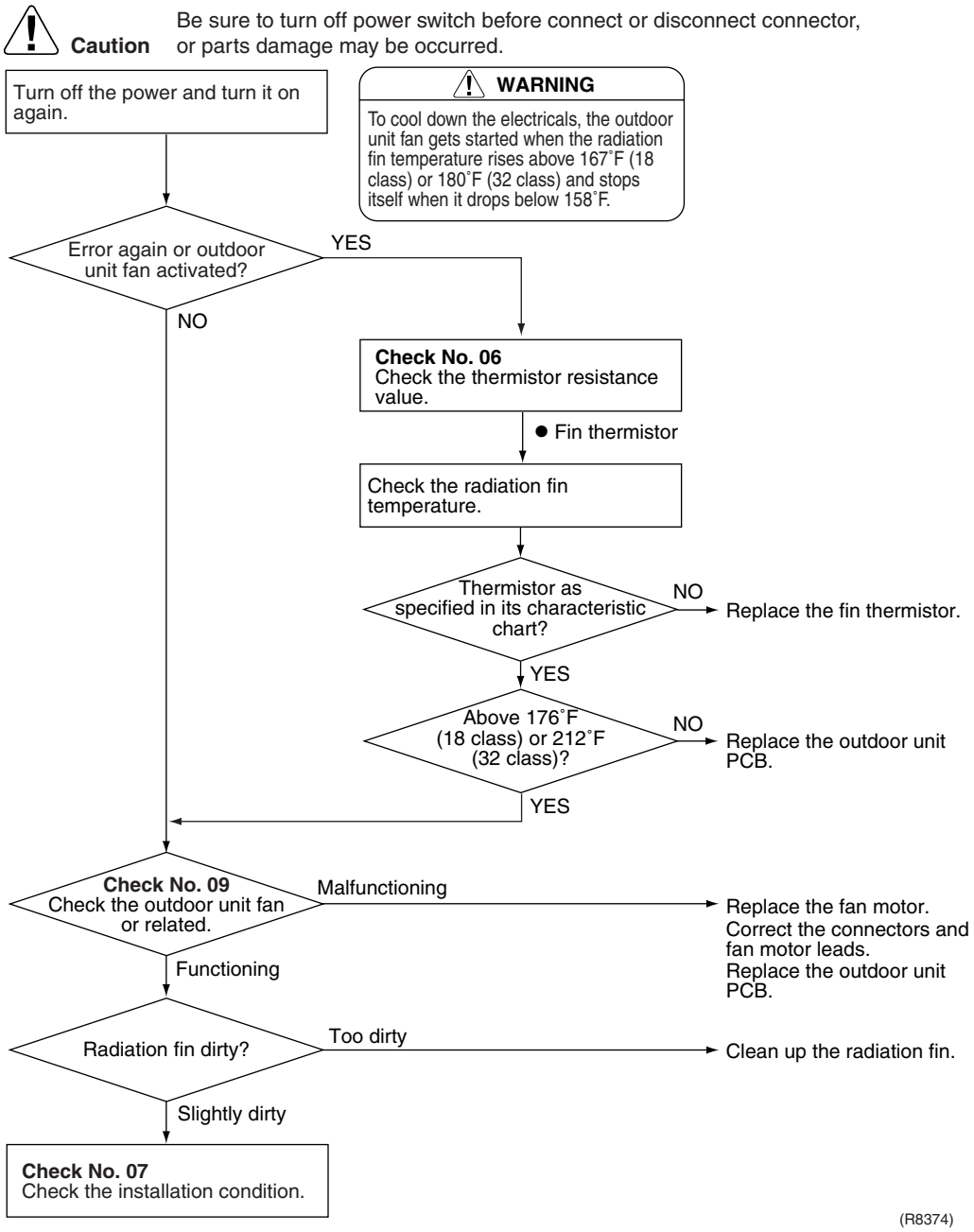
- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to shortcircuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective

Troubleshooting

Check No.06
Refer to P.161

Check No.07
Refer to P.162

Check No.09
Refer to P.163



5.23 Radiation Fin Temperature Rise

Remote Controller Display

L4

Outdoor Unit LED Display

A ◑ 1 ● 2 ● 3 ● 4 ☼

Method of Malfunction Detection

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

Malfunction Decision Conditions

- The radiation fin temperature with the compressor on is above 194°F (18 class) or 221°F (32 class).
- The error is cleared when the temperature drops below 185°F (18 class) or 206.6°F (32 class).
- If a radiation fin temperature rise takes place 255 times successively, the system will 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

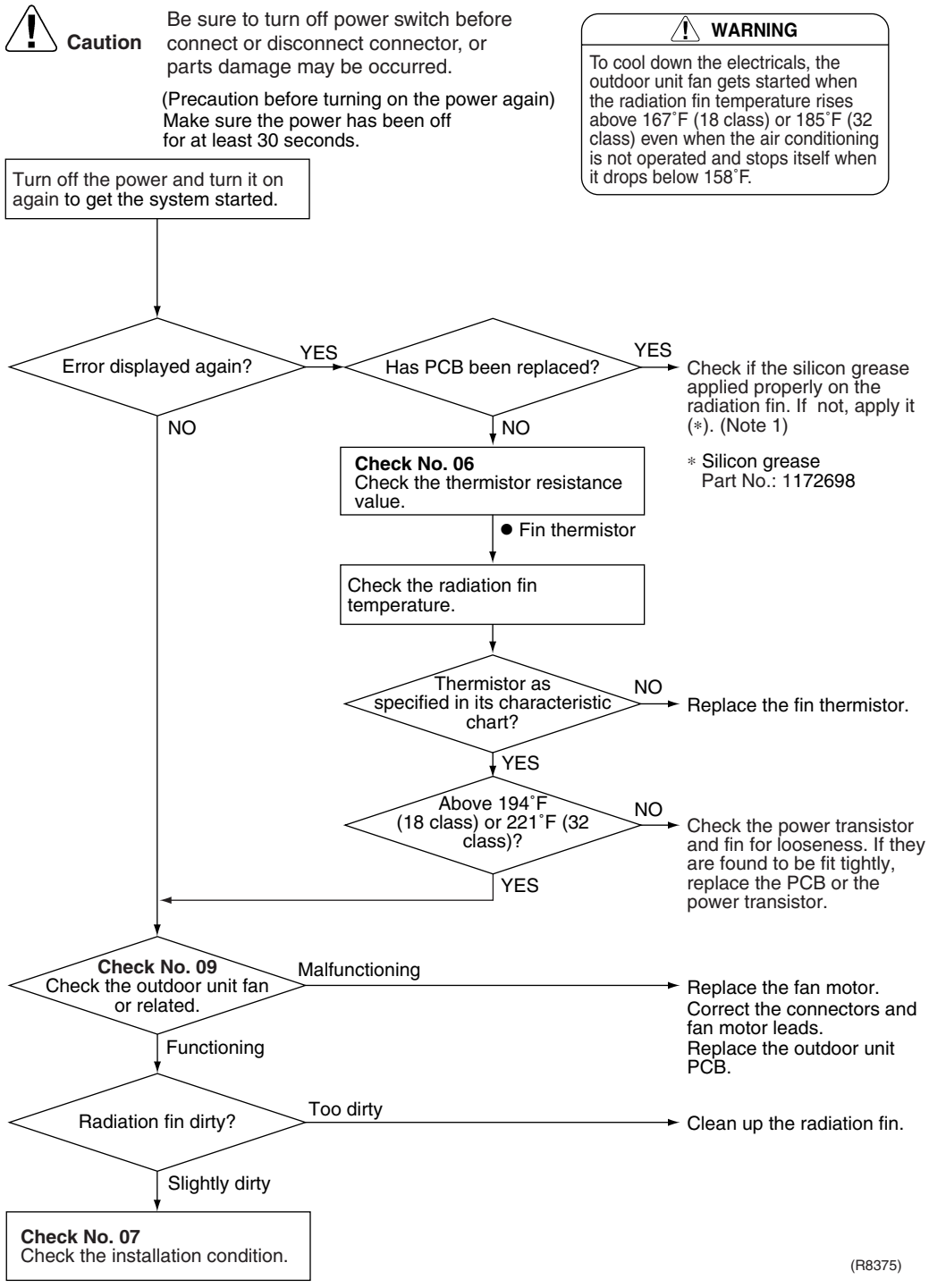
- Fin temperature rise due to defective outdoor unit fan
- Fin temperature rise due to short-circuit
- Fin thermistor defective
- Connector in poor contact
- Outdoor unit PCB defective
- Silicon grease is not applied properly on the heat radiation fin after replacing outdoor unit PCB

Troubleshooting

Check No.06
Refer to P.161

Check No.07
Refer to P.162

Check No.09
Refer to P.163



Note: Refer to ***1.3 Application of Silicon grease to a power transistor and a diode bridge*** on Page 230.

5.24 Output Over Current Detection

Remote Controller Display

L5

Outdoor Unit LED Display

A ◑ 1 ● 2 ● 3 ☼ 4 ●

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 shut down if the error occurs 16 times.
- Clearing condition: Continuous run for about 5 minutes (normal)

Supposed Causes

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

Troubleshooting

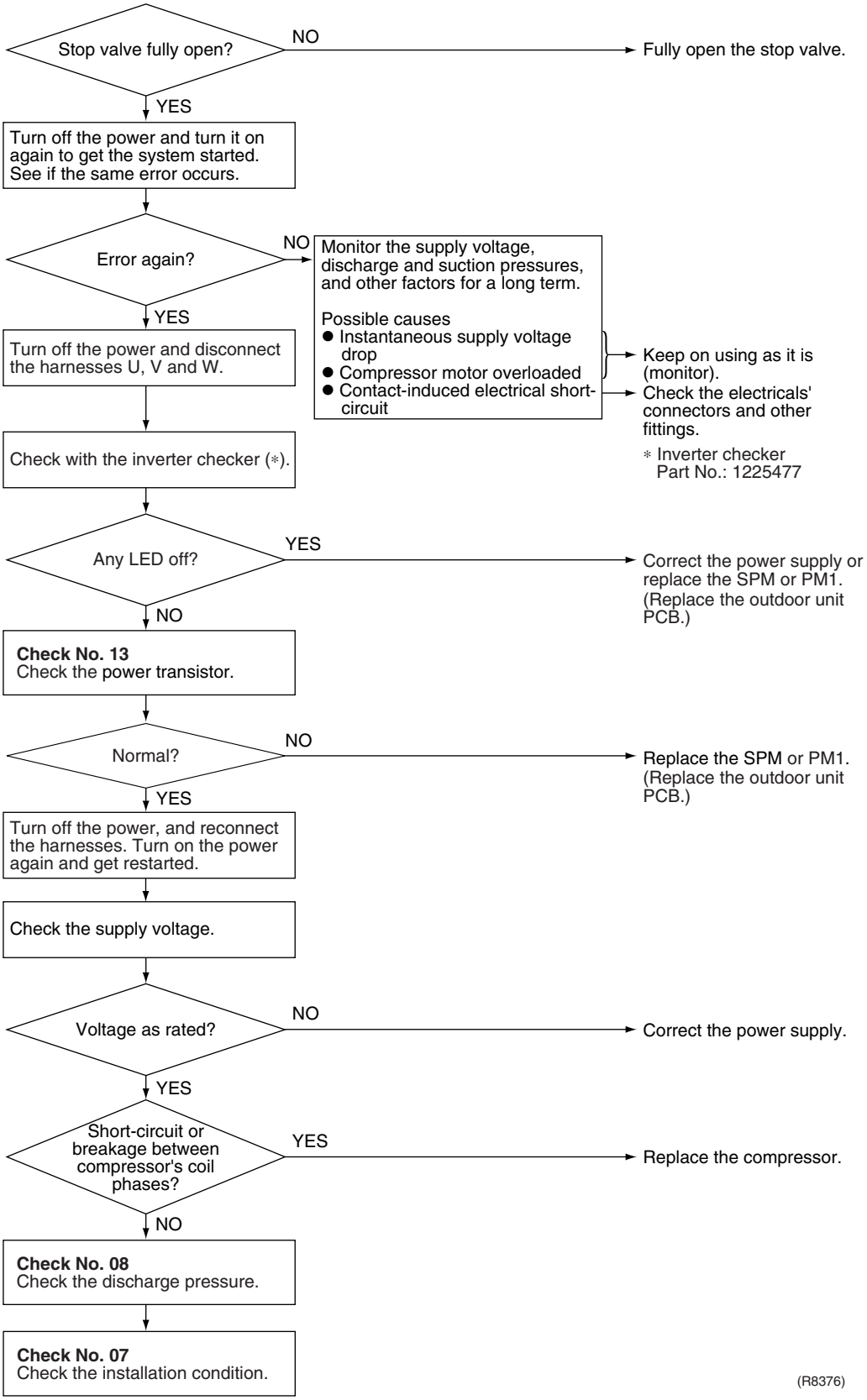
Check No.07
Refer to P.162

Check No.08
Refer to P.163

Check No.13
Refer to P.165

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.



5.25 Insufficient Gas

5.25.1 18 Class

Remote Controller Display

Outdoor Unit LED Display

A ◑ 1 ● 2 ● 3 ☼ 4 ☼

Method of Malfunction Detection

Gas shortage detection I :
A gas shortage is detected by checking the CT-detected input current value and the compressor running frequency.

Gas shortage detection II :
A gas shortage is detected by checking the difference between indoor unit heat exchanger temperature and room temperature as well as the difference between outdoor unit heat exchanger temperature and room temperature.

Malfunction Decision Conditions

Gas shortage detection I :
The following conditions continue for 7 minutes.
DC current × DC voltage < 1756 / 256 (A/Hz) × Compressor running frequency + 50
However, when the status of running frequency > 55 (Hz) is kept on for a certain time.
Note : The values are different from model to model.

Gas shortage detection II :
The following conditions continue for 80 seconds.

- Target opening of the electronic expansion valve ≥ 450 (pulse)
- Cooling: discharge temperature > 255 / 256 × target discharge temperature +20 (°C)
  Heating: discharge temperature > 255 / 256 × target discharge temperature +40 (°C)

If a gas shortage error takes place 4 times straight, the system will 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

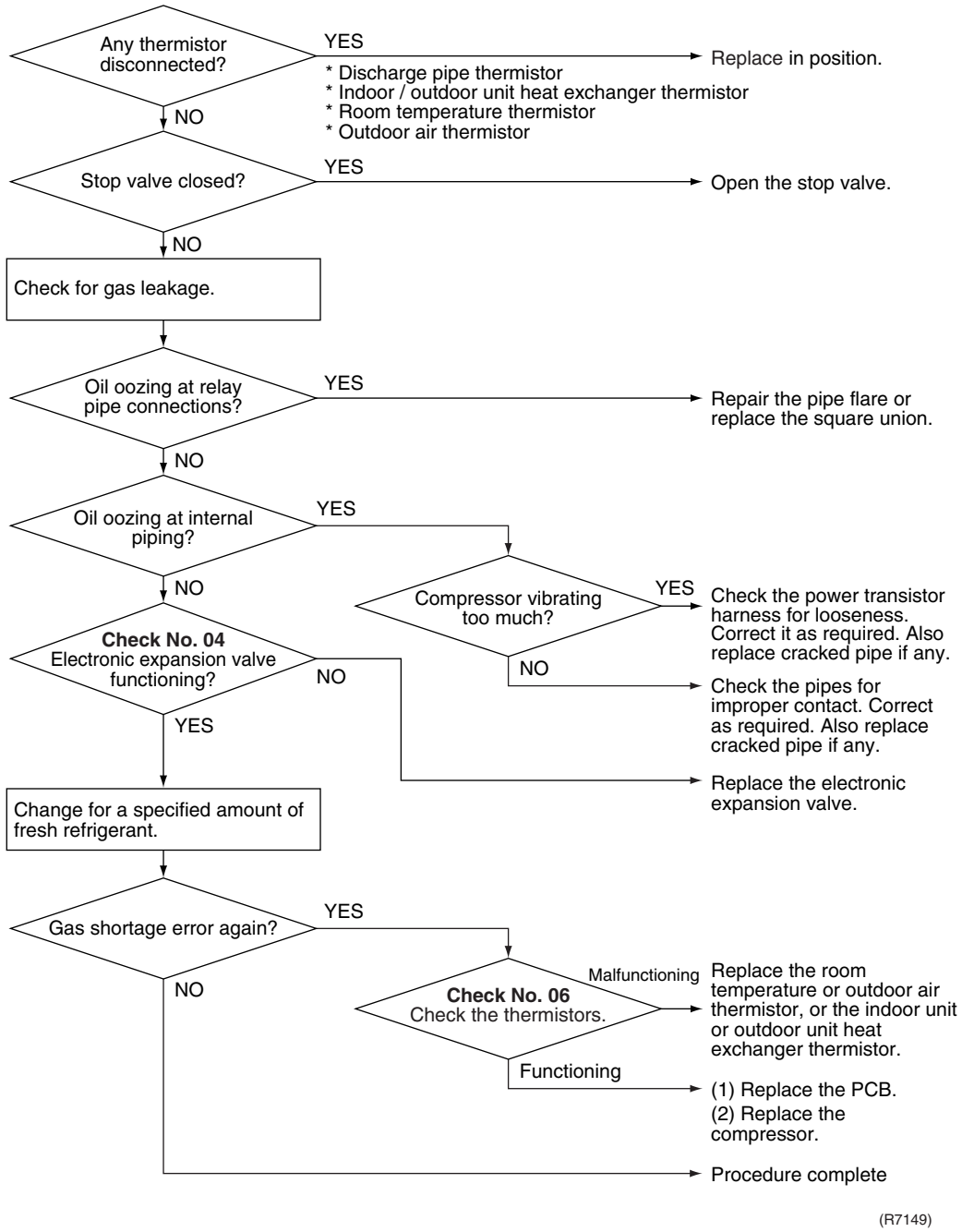
- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Discharge pipe thermistor disconnected, or indoor unit or outdoor unit heat exchanger thermistor disconnected, room or outside air temperature thermistor disconnected
- Stop valve closed
- Electronic expansion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

Troubleshooting

Check No.04
Refer to P.159

Check No.06
Refer to P.161

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



(R7149)

5.25.2 32 Class

Remote Controller Display

Outdoor Unit LED Display

A ◑ 1 ● 2 ● 3 ☼ 4 ☼

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.

Malfunction Decision Conditions

Gas shortage detection I (typical value) :
The following conditions continue for 7 minutes.
- DC current ≤ 0.027 × output frequency + 2.0
- Output frequency > 40 (Hz)

Gas shortage detection II :
The following conditions continue for 80 seconds.
- Target opening of the electronic expansion valve ≥ 450 (pulse)
- Cooling: discharge temperature > 255 / 256 × target discharge temperature +20 (°C)
  Heating: discharge temperature > 255 / 256 × target discharge temperature +40 (°C)

If a gas shortage error takes place 4 times straight, the system will 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

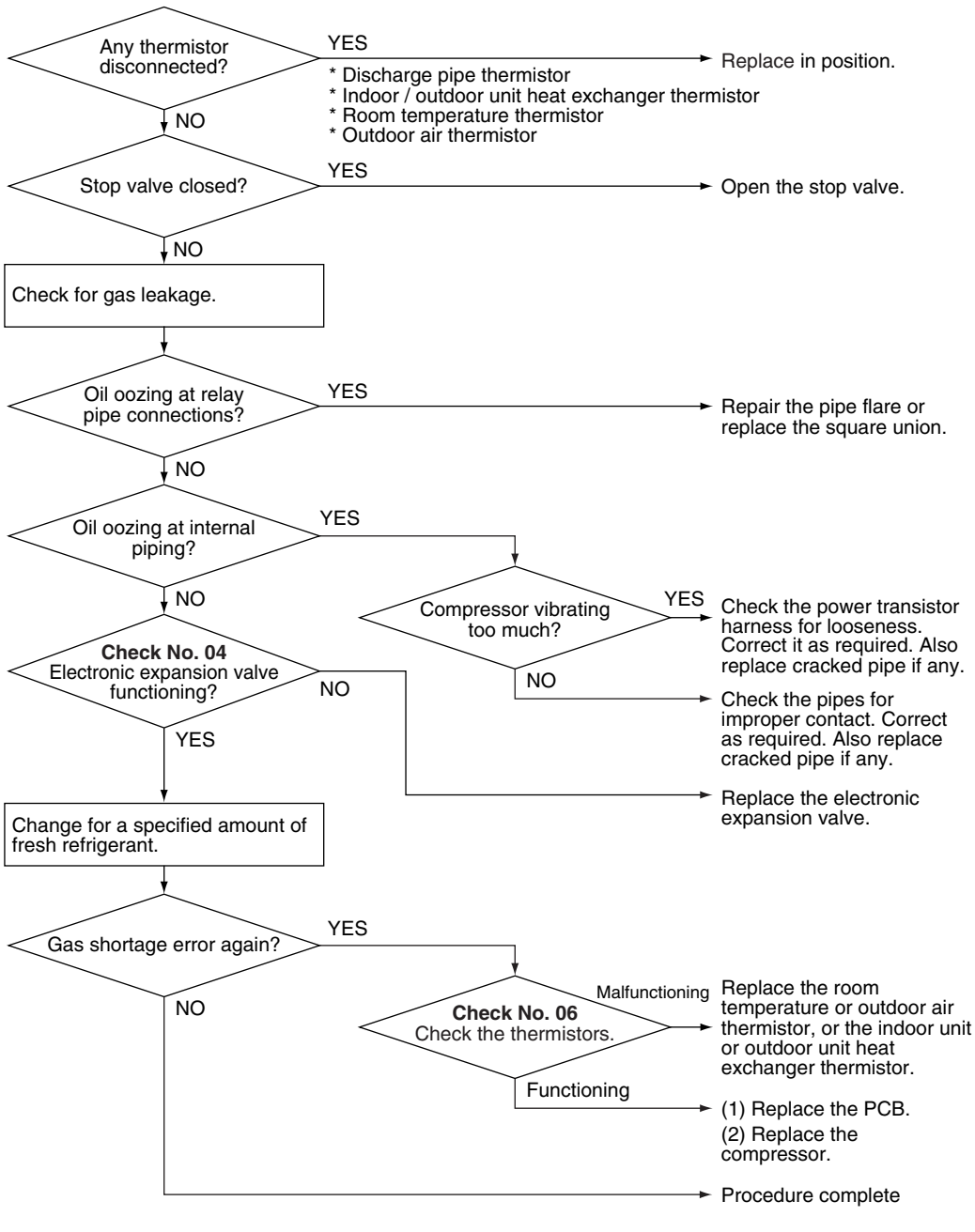
- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Discharge pipe thermistor disconnected, or indoor unit or outdoor unit heat exchanger thermistor disconnected, room or outside air temperature thermistor disconnected
- Stop valve closed
- Electronic expansion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

Troubleshooting

Check No.04
Refer to P.159

Check No.06
Refer to P.161

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



(R7149)

5.26 Low-voltage Detection or Over-voltage Detection

Remote Controller Display

U2

Outdoor Unit LED Display

A ◑ 1 ☼ 2 ● 3 ● 4 ☼

Method of Malfunction Detection

An abnormal voltage rise or drop is detected by checking the detection circuit or DC voltage detection circuit.

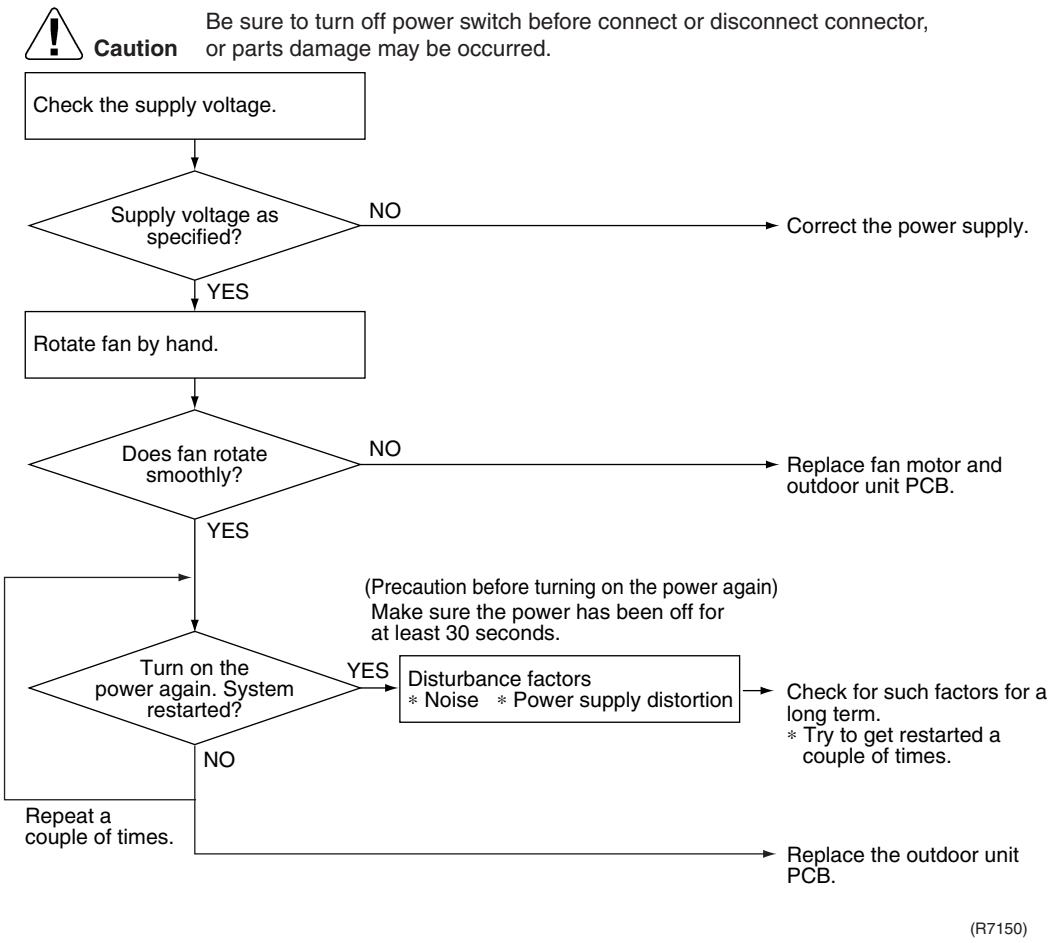
Malfunction Decision Conditions

- An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer, or the voltage being detected by the DC voltage detection circuit is judged to be below 150 V for 0.1 second.
- The system will shut down if the error occurs 16 times (only for low-voltage detection).
- Clearing condition: Continuous run for about 60 minutes (normal)

Supposed Causes

- Supply voltage not as specified
- Over-voltage detector or DC voltage detection circuit defective
- PAM control part(s) defective

Troubleshooting



(R7150)

5.27 Signal Transmission Error (on Outdoor Unit PCB)

Remote Controller Display

U7

Outdoor Unit LED Display

A ◑ 1 ● 2 ☼ 3 ☼ 4 ☼

Method of Malfunction Detection

Only for 4MXS32GVJU

Communication error between microcomputer mounted on the main PCB and PM1.

Malfunction Decision Conditions

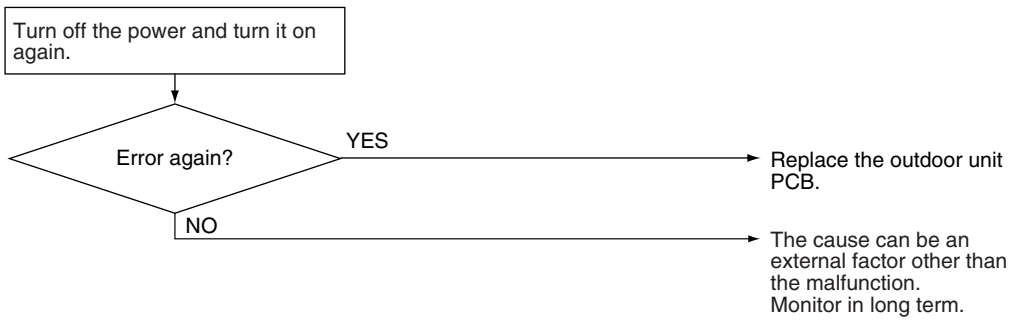
- When the data sent from the PM1 can not be received successively for 9 sec.
- The abnormality is determined if the above fault conditions occurs once
- Fault counter is reset when the data from the PM1 can be successfully received.

Supposed Causes

- Defective outdoor unit PCB

Troubleshooting

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



(R7185)

5.28 Anti-icing Function in Other Rooms / Unspecified Voltage (between Indoor and Outdoor Units)

Remote Controller Display

U9, UH

Outdoor Unit LED Display

A ◑ 1 ● 2 ● 3 ● 4 ●

Method of Malfunction Detection

A wrong connection is detected by checking the combination of indoor and outdoor units on the microcomputer.

Malfunction Decision Conditions

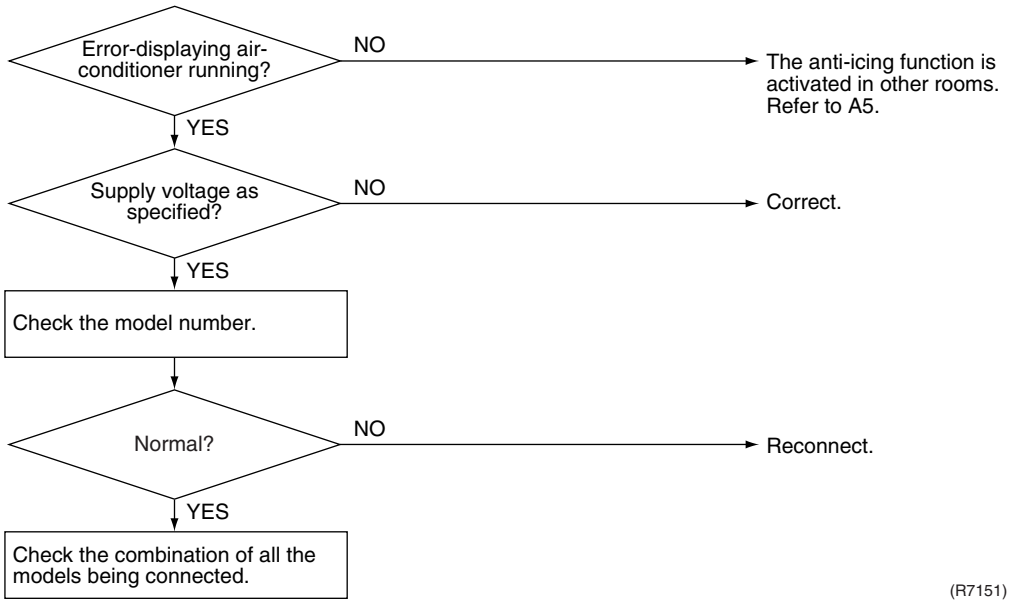
- Operation halt due to the anti-icing function in other rooms
- Operation halt due to unspecified internal and/or external voltages
- Operation halt due to mismatching of indoor and outdoor units

Supposed Causes

- Operation halt due to the anti-icing function in other rooms
- Wrong connections at the indoor unit
- PCB wrongly connected

Troubleshooting

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



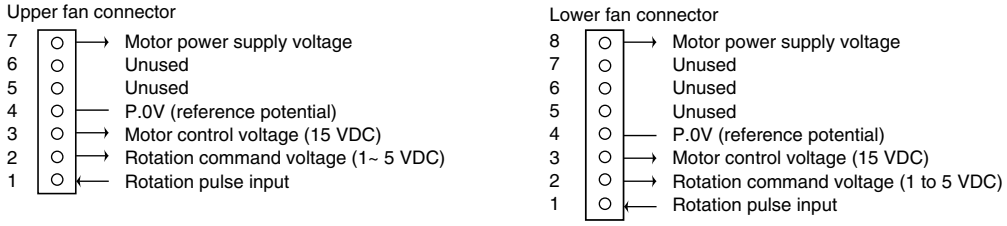
6. Check

6.1 How to Check

6.1.1 Fan Motor Connector Output Check

Check No.01

1. Check connector connection.
2. Check motor power supply voltage output (pins 4-7 and 4-8).
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).



(R1224)

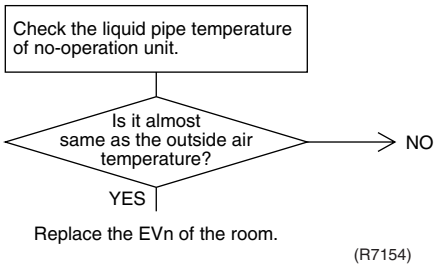
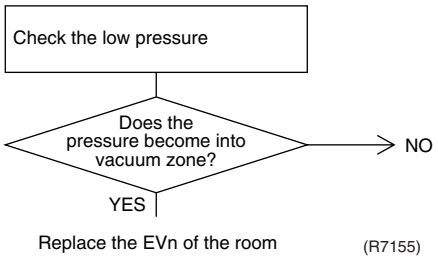
6.1.2 Electronic Expansion Valve Check

Check No.04

Conduct the following steps to check the electronic expansion valve (EV):

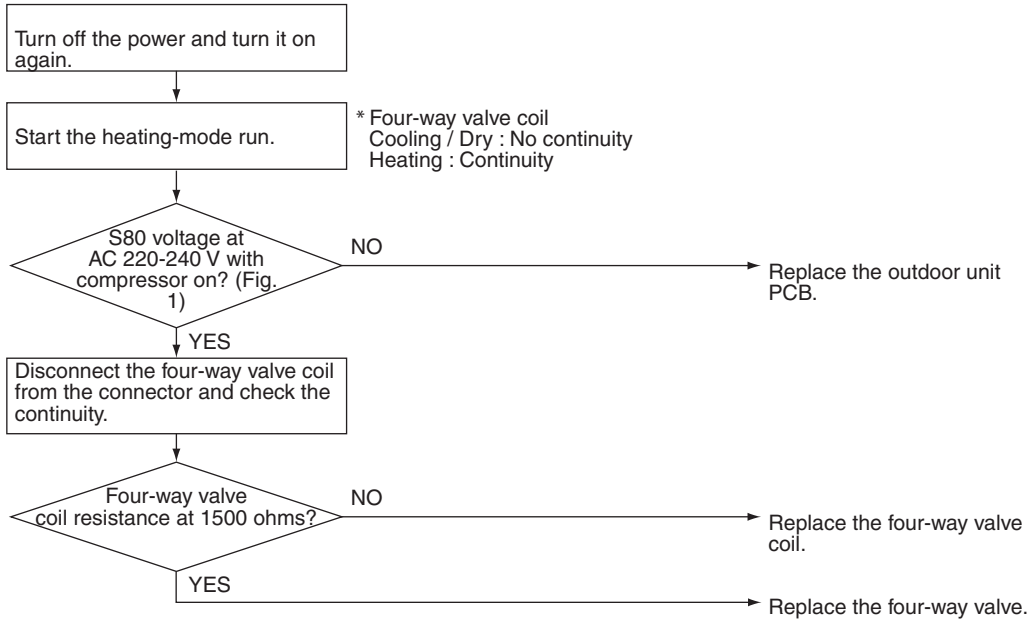
1. Check to see if the EV connector is correctly inserted in the PCB. Compare the EV unit and the connector number.
2. Turn the power off and back on again, and check to see if all the EVs generate a latching sound.
3. If any of the EVs do not generate a latching noise in the above step 2, disconnect 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 a 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 the latching sound) in the EV unit that did not generate latching sound, and check to see if that EV generates the latching sound.
   ∗If the latching sound is generated, the outdoor unit PCB is faulty.
   ∗If the latching sound is not generated, the EV unit is faulty.

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

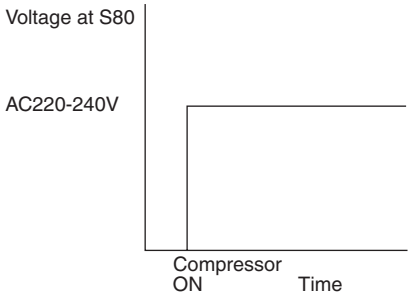
Valve Body Condition (Symptom)	Check Method / Measure
(1) Valve body catches at fully opened or half opened position. (Symptom) Cooling: ■Water leakage at the no-operation unit ■Flow noise of refrigerant in the no-operation unit ■Operation halt due to icing protection Heating: ■The unit does not heat ■Refrigerant flow rate varies by unit (Discharge air temperatures are different by room) ■Peak cut	Reset power supply and conduct cooling operation unit by unit. 
(2) Valve body catches at complete close position. (Symptom) Cooling: ■The only unit having a problem does not cool the room . ■When the only faulty unit is in operation, the unit makes pump down. (The low pressure of the unit becomes vacuum) ■IT is activated. ■Abnormal discharge pipe temperature Heating: Insufficient gas due to liquid refrigerant stagnation inside the faulty indoor unit (Only for heat pump model) ■The unit does not heat the room. ■IT is activated. ■Abnormal discharge pipe temperature	Reset power supply and conduct cooling operation unit by unit. 
(3) Valve does not open fully. (Symptom) ■The unit does not cool nor heat (only for heat pump model). ■IT is actuated. ■Abnormal discharge pipe temperature	Check the number of rotations of the shaft and check if it is 5-1/2 from full open to complete close using a manual coil for the electronic expansion valve. When the number of rotations of the shaft is less than the above value, the valve may catch anywhere on the body.

6.1.3 Four-Way Valve Performance Check

Check No.05



(Fig. 1)



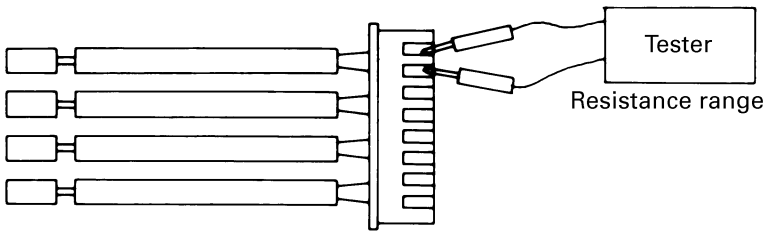
(R8378)

6.1.4 Thermistor Resistance Check

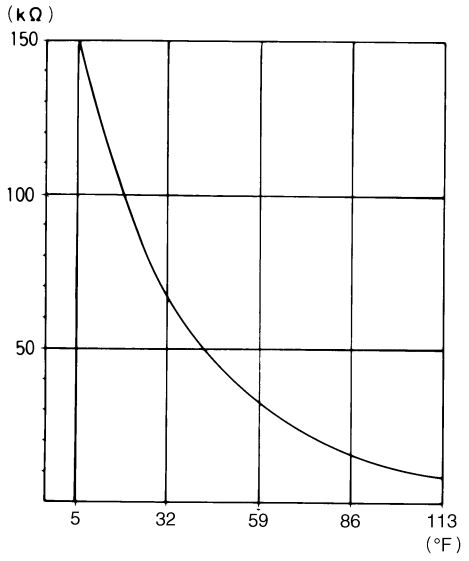
Check No.06

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 (°F)	R77°F=20kΩ B=3950
4	211.0 (kΩ)
5	150
14	116.5
23	88
32	67.2
41	51.9
50	40
59	31.8
68	25
77	20
86	16
95	13
104	10.6
113	8.7
122	7.2



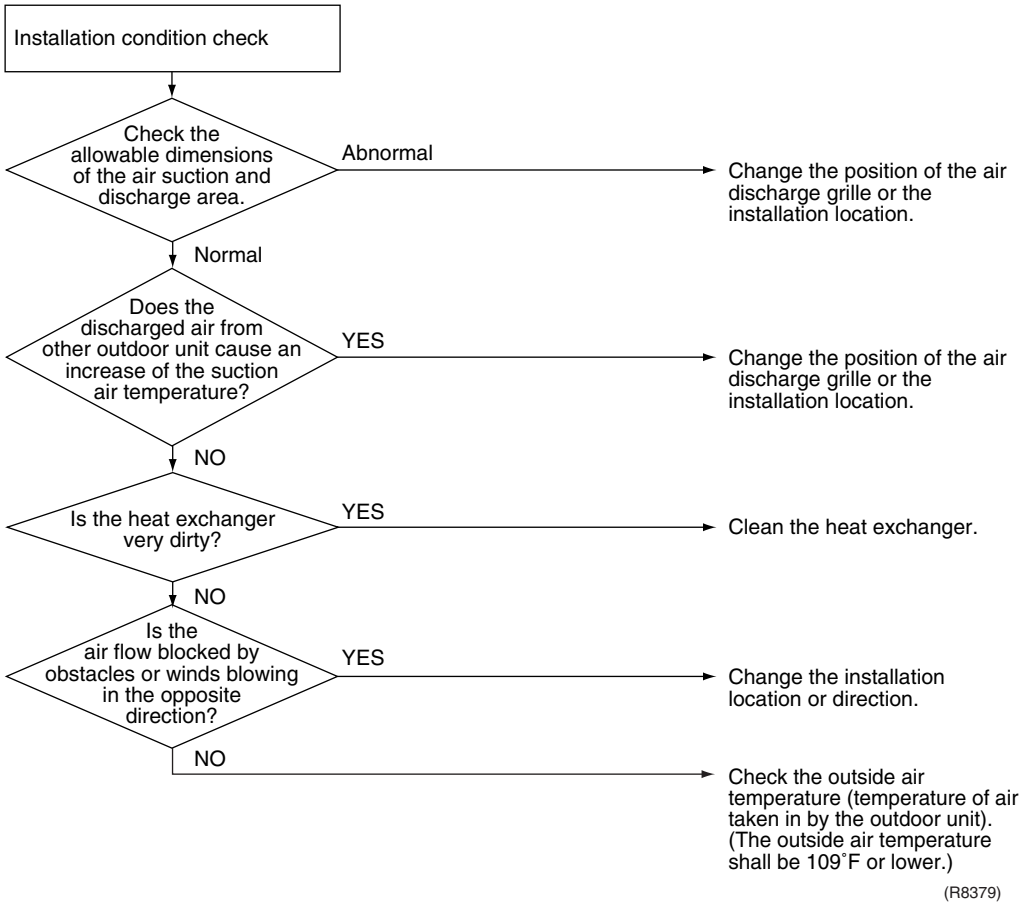
（R77°F＝20kΩ、B＝3950）



(R4159)

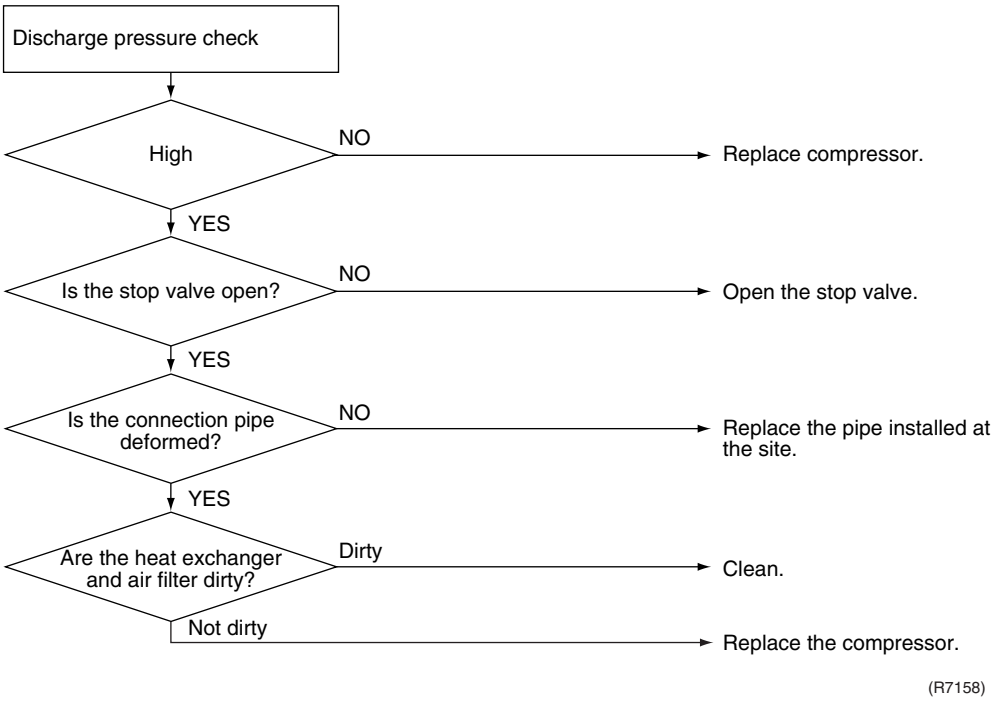
6.1.5 Installation Condition Check

Check No.07



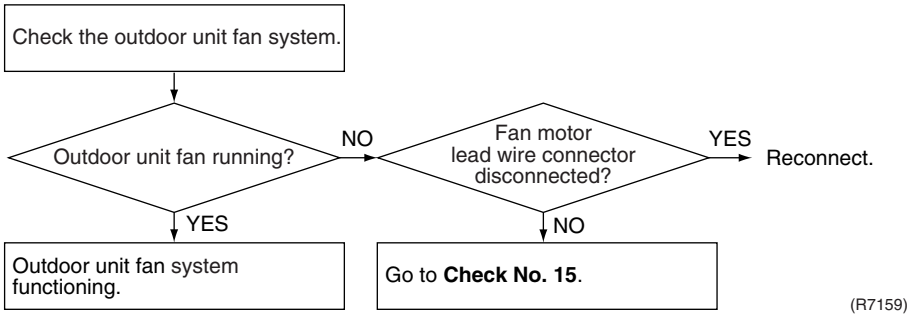
6.1.6 Discharge Pressure Check

Check No.08



6.1.7 Outdoor Unit Fan System Check (With DC Motor)

Check No.09



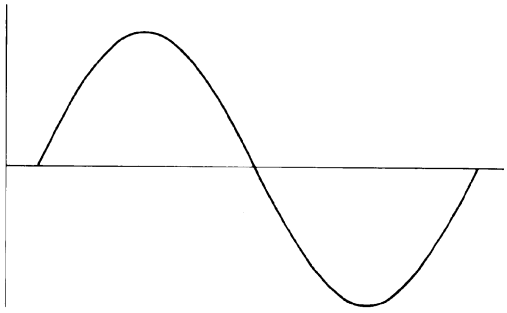
6.1.8 Power Supply Waveforms Check

Check No.10

Measure the power supply waveform between pins 1 and 2 on the terminal board, and check the waveform disturbance.

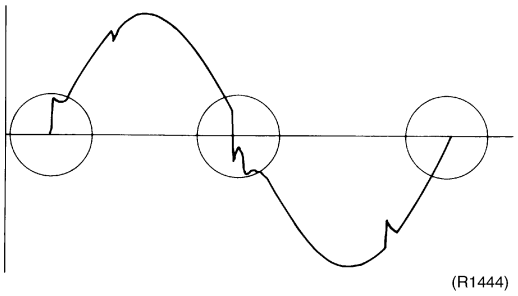
- Check to see if the power supply waveform is a sine wave (Fig.1).
- Check to see if there is waveform disturbance near the zero cross (sections circled in Fig.2)

[Fig.1]



(R1736)

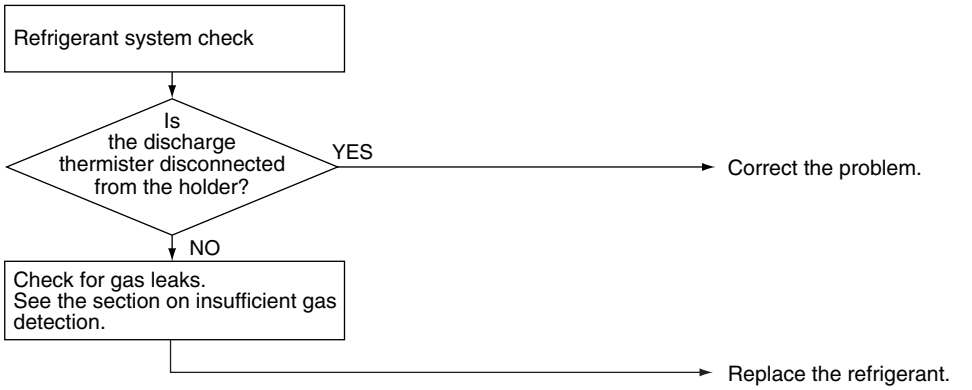
[Fig.2]



(R1444)

6.1.9 Inverter Units Refrigerant System Check

Check No.11



(R8380)

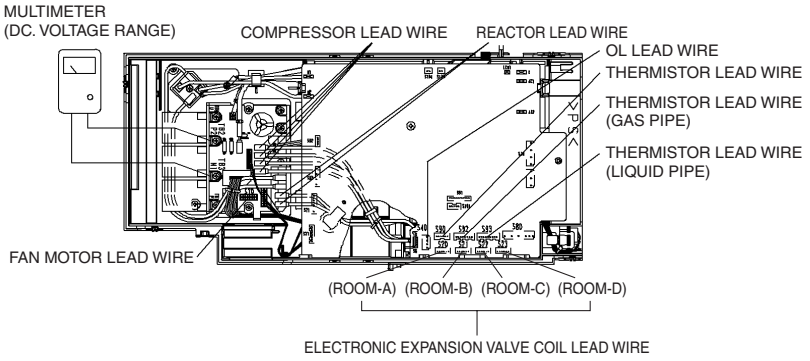
6.1.10 Capacitor Voltage Check

Check No.12

Before checking the capacitor voltage, be sure to check the main circuit for short-circuit.

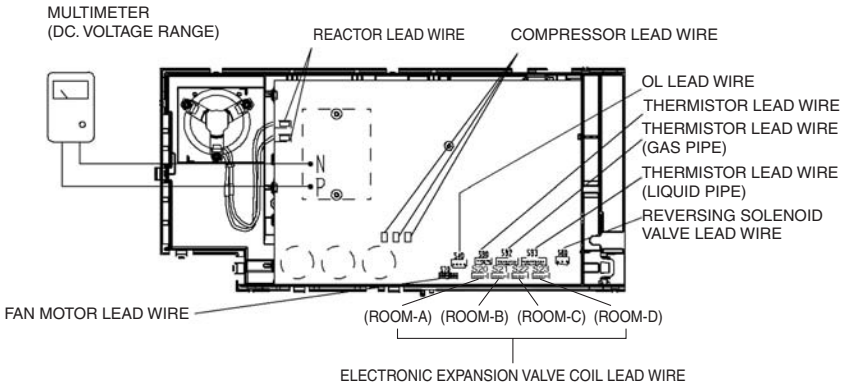
- Checking the capacitor voltage
- With the circuit breaker still on, measure the voltage according to the drawing of the model in question. Be careful never to touch any live parts.

18 class



(R6335)

32 class



(R6334)

6.1.11 Power Transistor Check

Check No.13

- Checking the power transistor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If unavoidably necessary to touch a live part, make sure the power transistor's supply voltage is below 50 V using the tester.
- For the UVW, make measurements at the Faston terminal on the board or the relay connector.

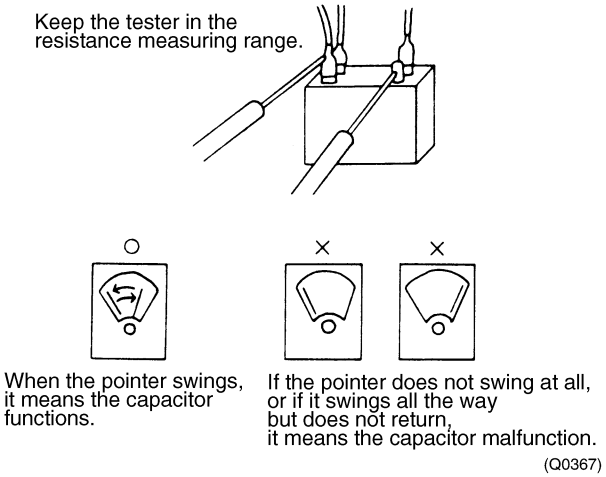
Tester's negative terminal	Power transistor (+)	UVW	Power transistor (–)	UVW
Tester's positive terminal	UVW	Power transistor (+)	UVW	Power transistor (–)
Normal resistance	Several kohms to several Mohms			
Abnormal resistance	0 or ∞			

6.1.12 Main Circuit Electrolytic Capacitor Check

Check No.14

■ Checking the main circuit electrolytic capacitor

- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If unavoidably necessary to touch a live part, make sure there is no DC voltage using the tester.
- Check the continuity with the tester. Reverse the pins and make sure there is continuity.

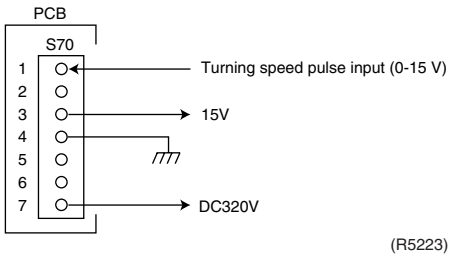


6.1.13 Turning Speed Pulse Input on the Outdoor Unit PCB Check

Check No.15

<Propeller fan motor>
Make sure the voltage of DC 320±30V is being applied.
(1) Stop the operation first and then the power, 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 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

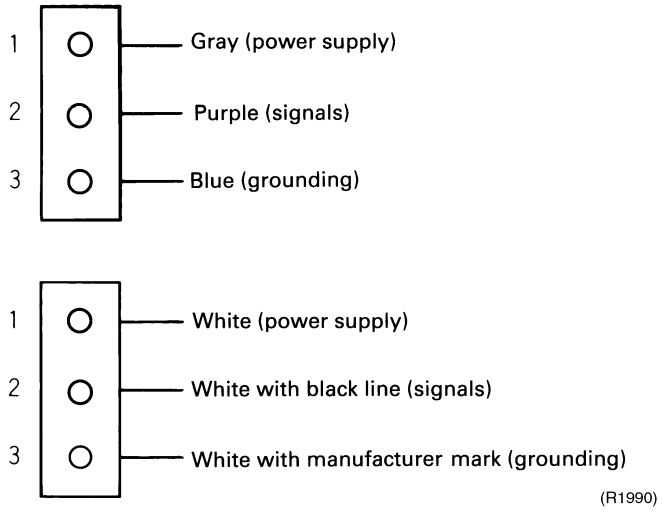
6.1.14 Hall IC Check

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.

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



Part 7
Removal Procedure

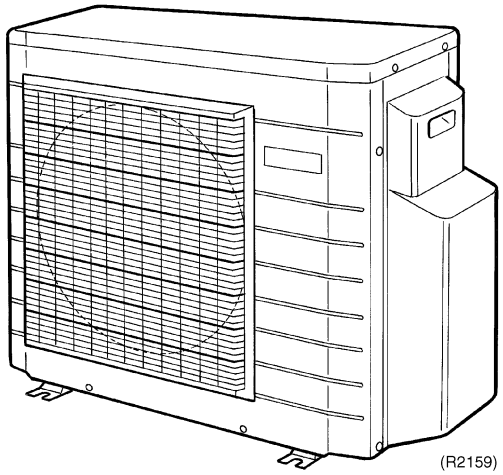
1. Outdoor Unit – 2MXS18GVJU

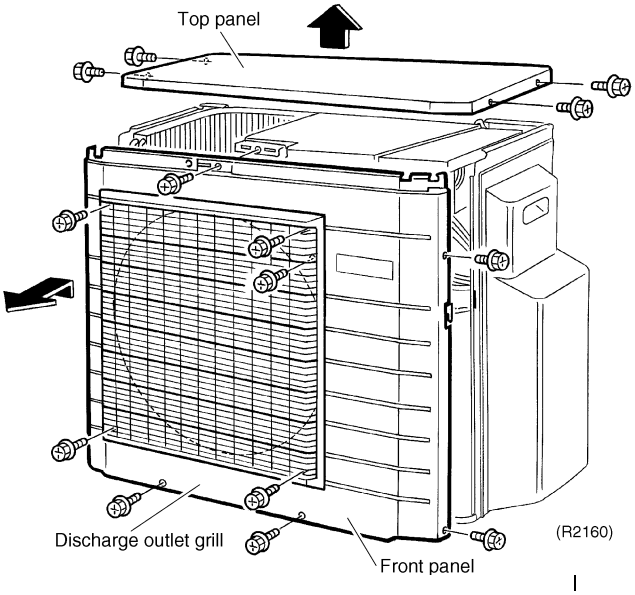
1.1 Removal of Outer Panels

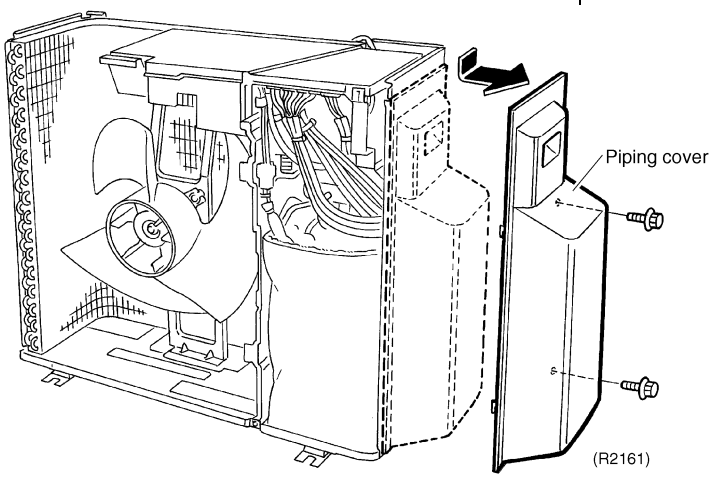
Procedure

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

Step	Procedure	Points
1	External appearance.	
2	Remove 4 screws of the top panel and 6 screws of the front panel.	
3	Remove 4 screws of the discharge outlet grill.	
4	Remove 2 screws of the piping cover.	





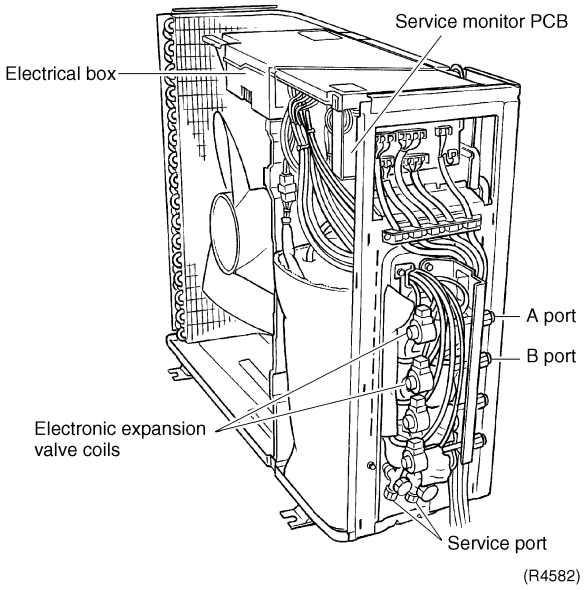


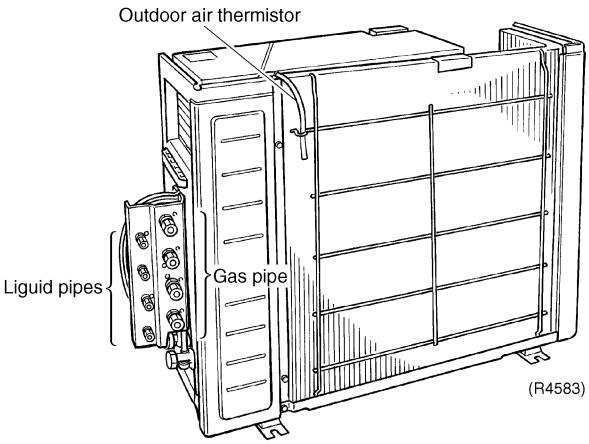
1.2 Removal of Electrical BOX

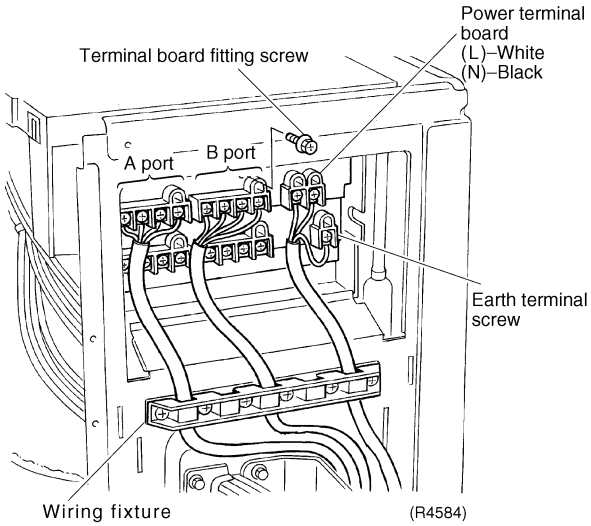
Procedure

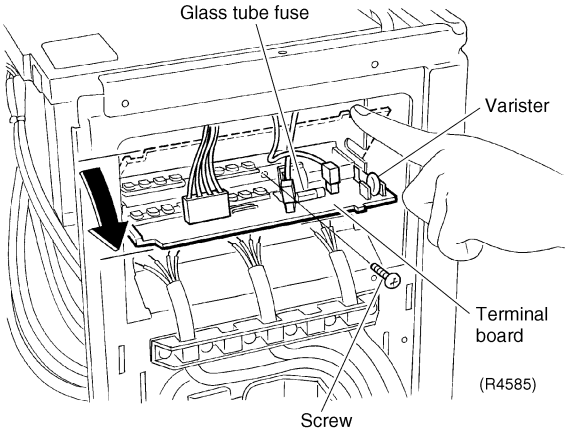
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

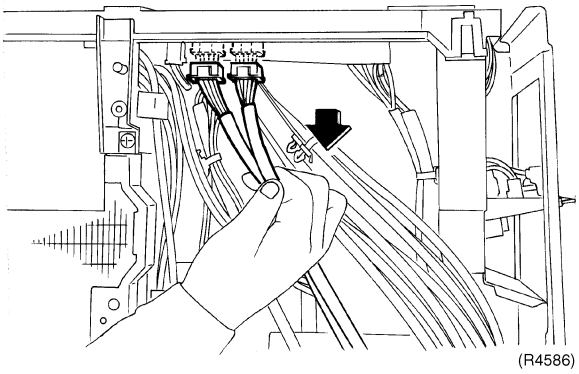
Step	Procedure	Points
1. Removing the tie wires		■ 2MXS18GVJU has only 2 ports.
1	The figure shows the tie pipe connections.	■ Remove the piping in the backward direction.
2	Remove the terminal board fitting screw.	■ Match the colours of the tie wires to A, B, C and D ports as follows. (1) - Black Power (2) - White Power (3) - Red Transmission ■ Wires are fixed to the terminal board with screws. ■ Terminal board is made of integral moulded resin.





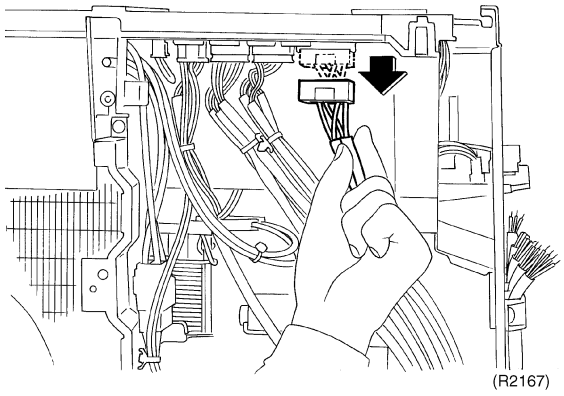


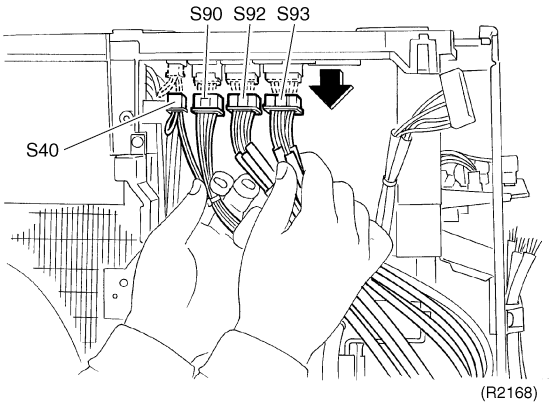
<table>
<tr><th>Step</th><th colspan="2">Procedure</th><th>Points</th></tr>
<tr><td>3</td><td>Pull out the terminal board to open.</td><td> 
</td><td>■ Glass tube fuse and varistor cannot be replaced individually because lead-free soldering is provided.</td></tr>
<tr><td colspan="2">2. Remove each wire harness</td><td rowspan="4"></td><td rowspan="4"></td></tr>
<tr><td>1</td><td>Disconnect 2 connectors of the electronic expansion valve lead wires.</td></tr>
<tr><td>2</td><td>Remove the four-way valve connector S80.</td></tr>
<tr><td>3</td><td>Disconnect the thermistor connector and the overload relay connector.</td></tr>
</table>



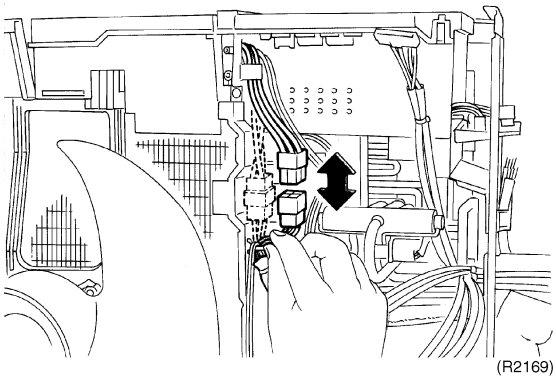
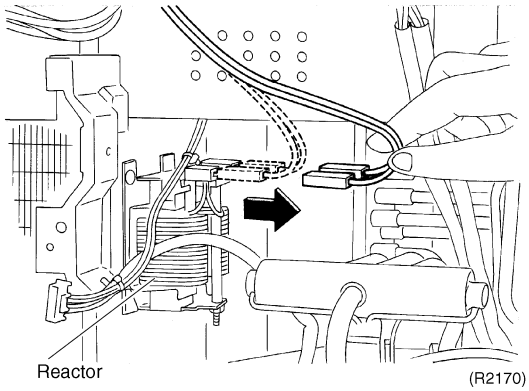
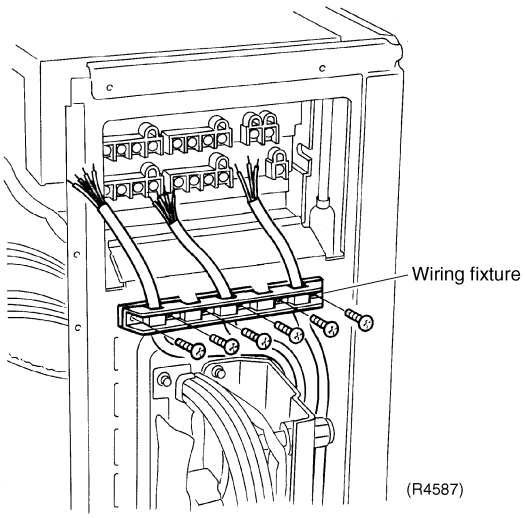
Connector	Electronic expansion valve No.	Harness length
S20 (White)	EVA	630
S21 (Red)	EVB	730

■ When reconnecting, make sure to match the wire to the correct connector.

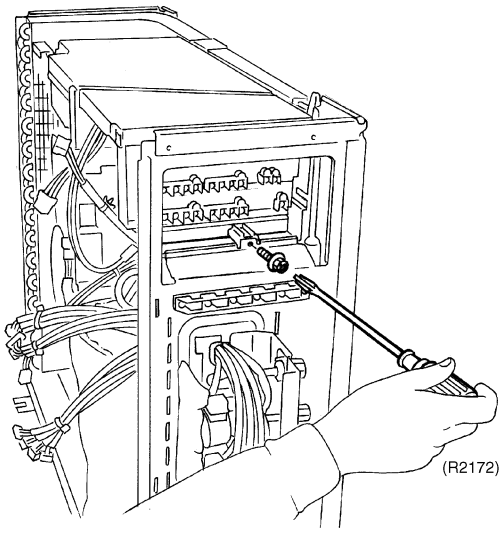


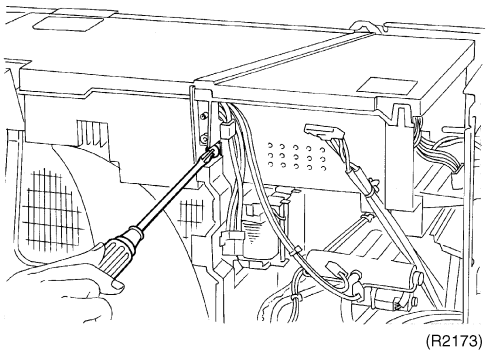


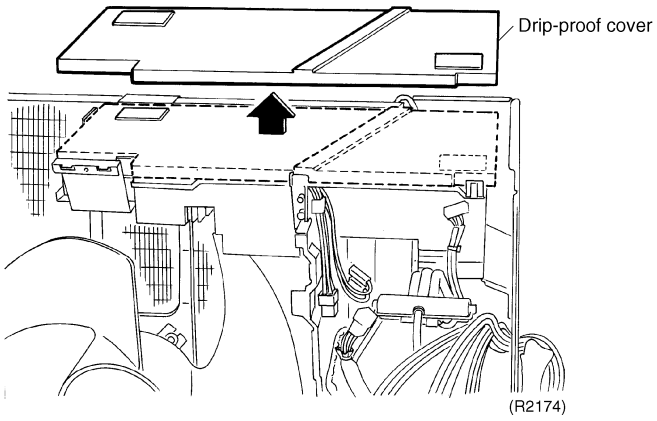
S40:Overload relay
S90:Thermistor
(Outdoor air, heat exchanger, discharge pipe)
S92:Gas pipe thermistor
S93:Liquid pipe thermistor

Step	Procedure		Points
4	Disconnect the compressor relay connector.	 (R2169)	
5	Remove the reactor lead wire.	 Reactor (R2170)	
3. Removing the wiring fixture			
1	Remove 6 screws of the wiring fixture.	 Wiring fixture (R4587)	

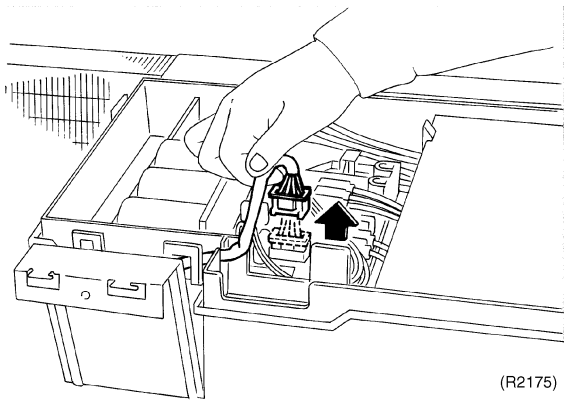
Step	Procedure	Points
4. Removing the electrical box.		
1	Remove 1 screw of the electrical box.	
2	Remove 1 screw of the electrical box.	
3	Remove the drip-proof cover.	
4	Disconnect the fan motor lead wire.	

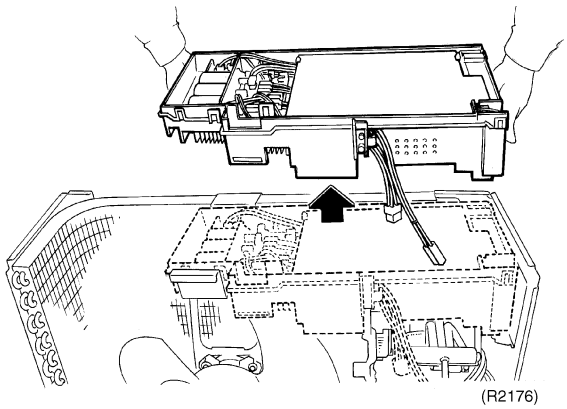

(R2172)


(R2173)



(R2174)


(R2175)

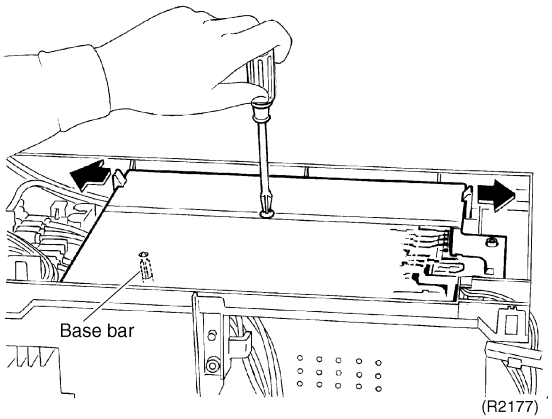
Step	Procedure		Points
5	Lift up the electrical box and dismount it.	 (R2176)	

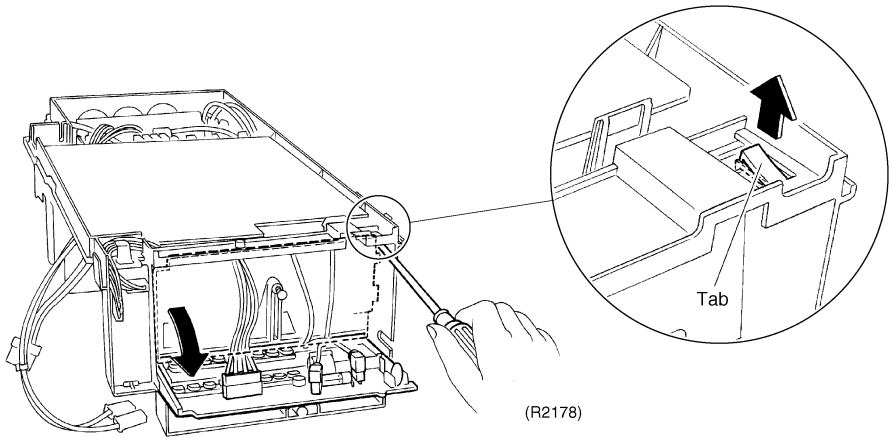
1.3 Removal of PCB

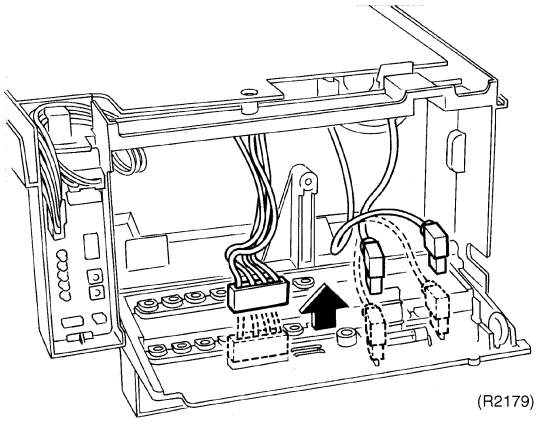
Procedure

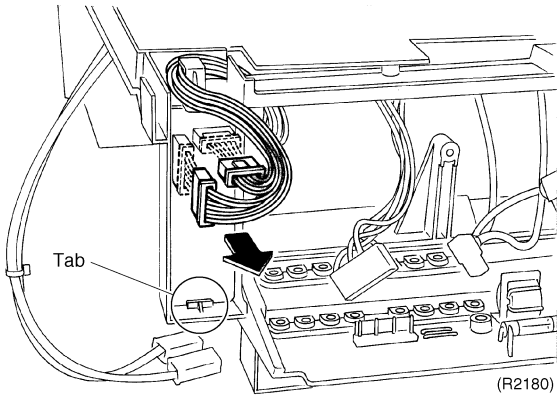
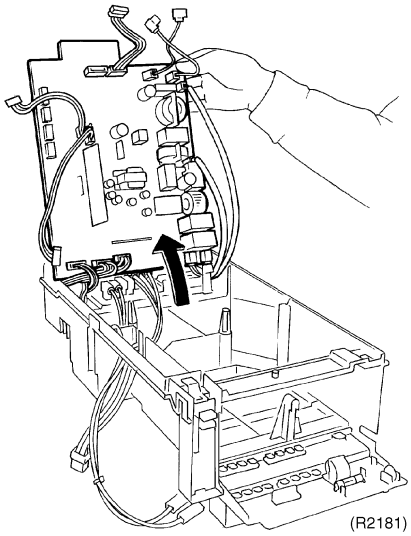
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Removing the controller PCB:		
1	Remove 1 screw of the PCB, and release two tabs.	
2	Release the tabs of the terminal board, and open the terminal board.	
3	Disconnect each connector on the back of the terminal board.	

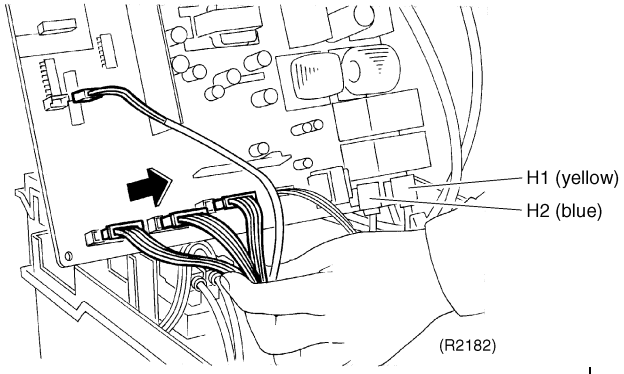


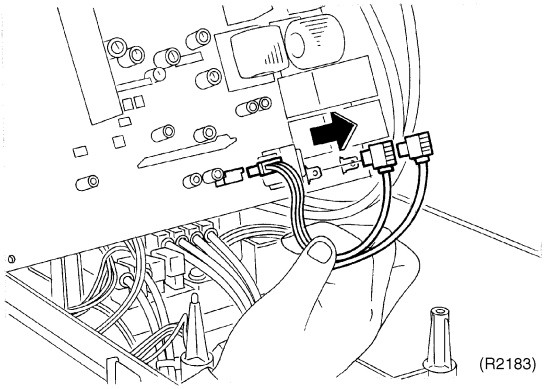


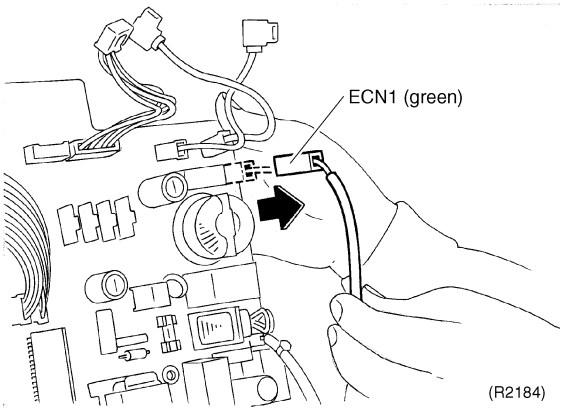


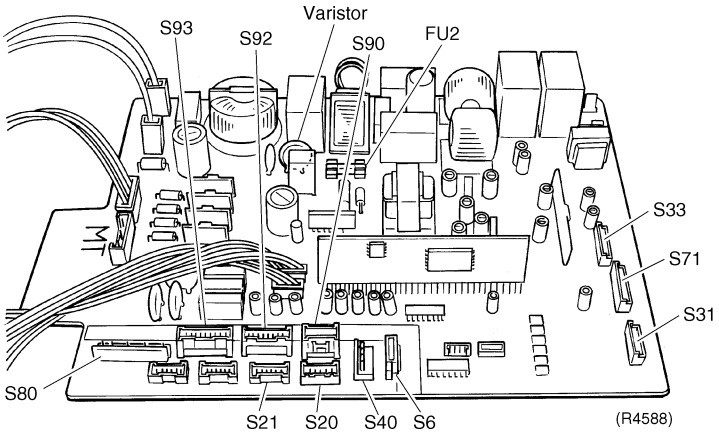
Step	Procedure		Points
4	Disconnect the service monitor PCB connector.		■ Release the tab to remove the service monitor PCB.
5	Lift up the control PCB.		

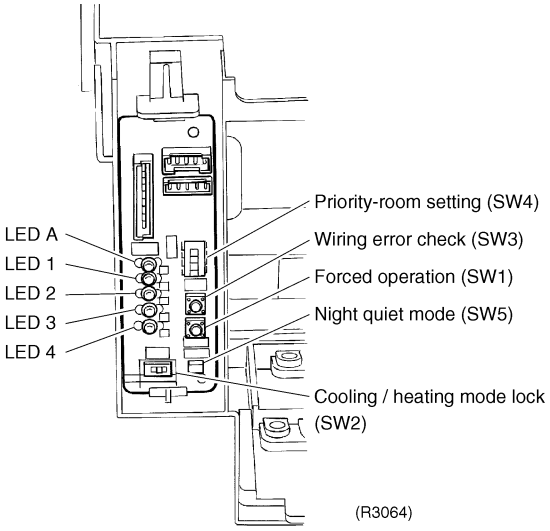
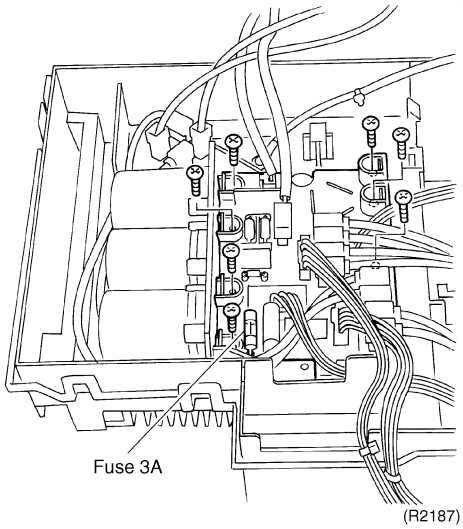
Step	Procedure	Points
6	Disconnect each wire harness connector linked to the control PCB. S31 (Pin 9): To CN14 S32 (Pin 5): To CN11 S33 (Pin 10): To S34 S71 (Pin 8): To S72	
7	The figure shows the control PCB.	■ Glass tube fuse 3A









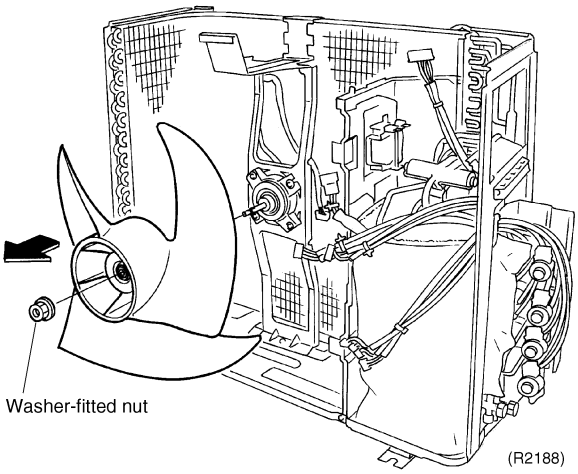
Step	Procedure	Points
2. Removing the service monitor PCB		
1 The figure shows the service monitor PCB.		
3. Removing the inverter PCB.		
1 Remove the 7 screws of the inverter PCB.		

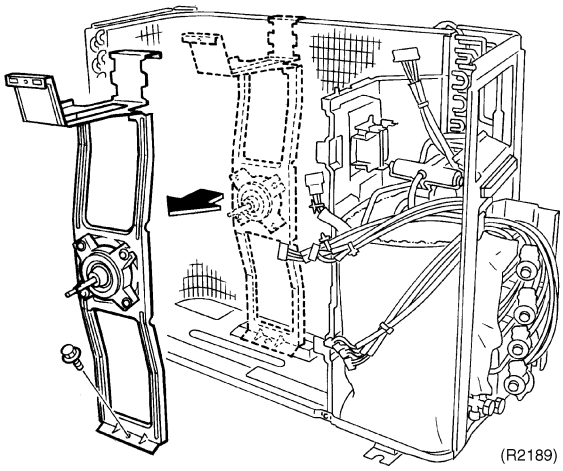
1.4 Removal of Fan Motor

Procedure

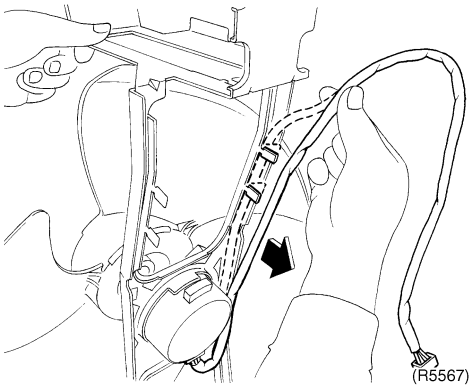
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

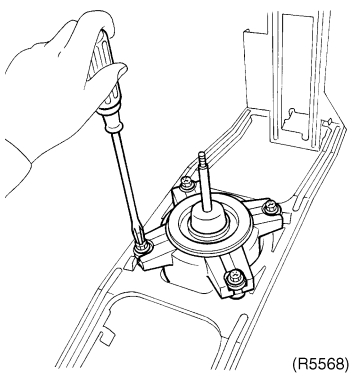
Step	Procedure	Points
■ Remove the fan motor lead wire connector.		■ For reassembling, align ▼ mark of propeller fan with D-cut section of motor shaft.
1	Remove the propeller fan by removing the washer-fitted nut.	■ Mount the propeller fan while positioning ● mark to the top.
2	Remove the fan motor. Remove 1 screw of the fan motor mount.	■ When reassembling, fix the lead wire to avoid contact with the propeller fan.
3	Disconnect the lead wire by releasing the 2 clamps fixing the wire. Remove 4 screws of the fan motor.	





(Backside)

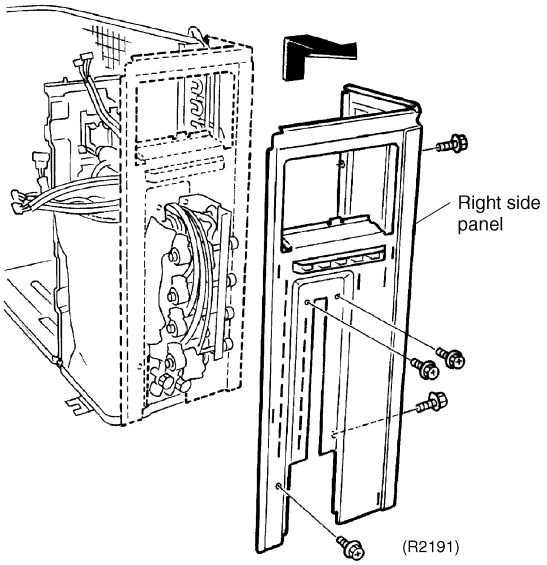
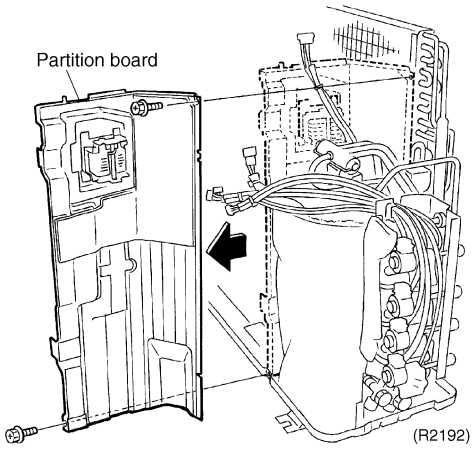




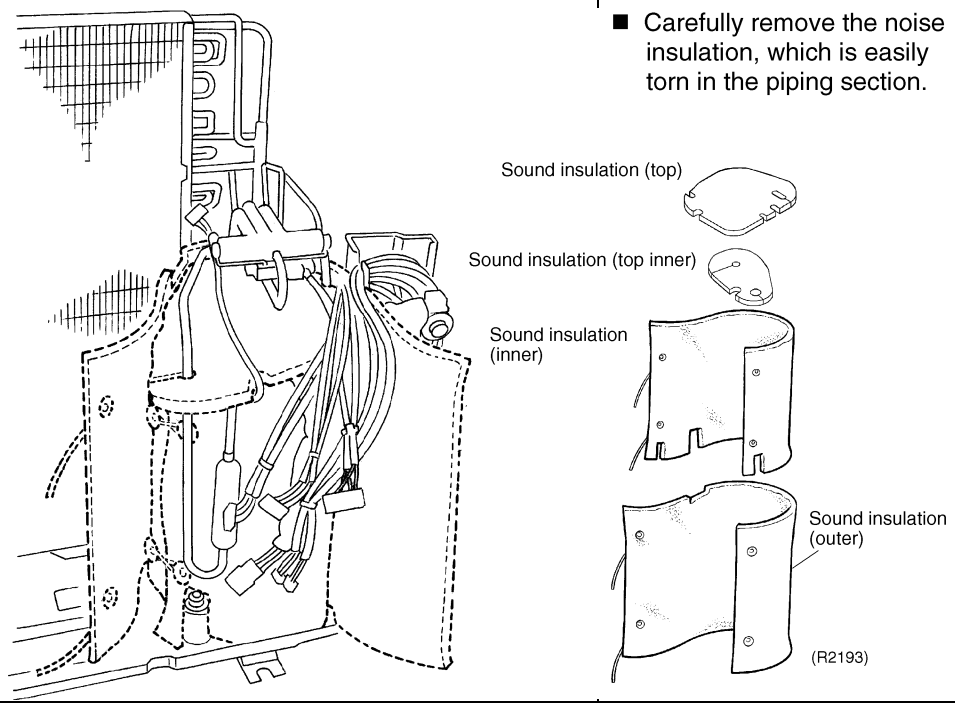
1.5 Removal of Sound Insulation

Procedure

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

Step	Procedure		Points
1	Remove 5 screws of the right side panel.		
2	Remove 2 screws of the partition board, and remove the board.		

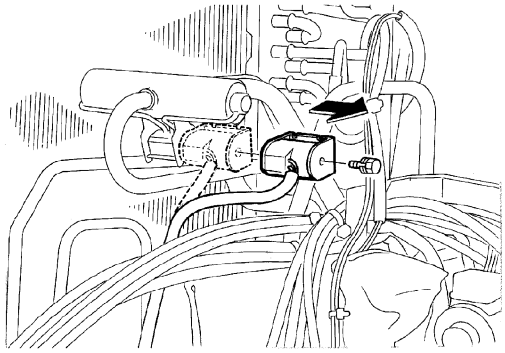
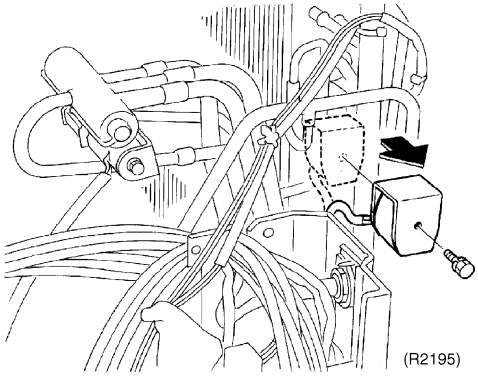
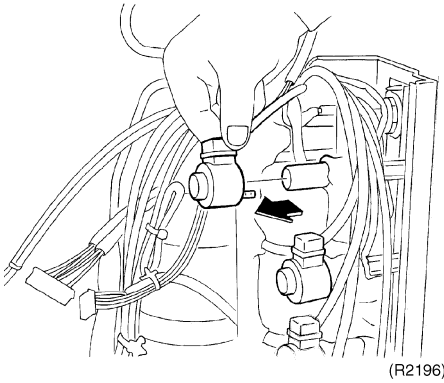
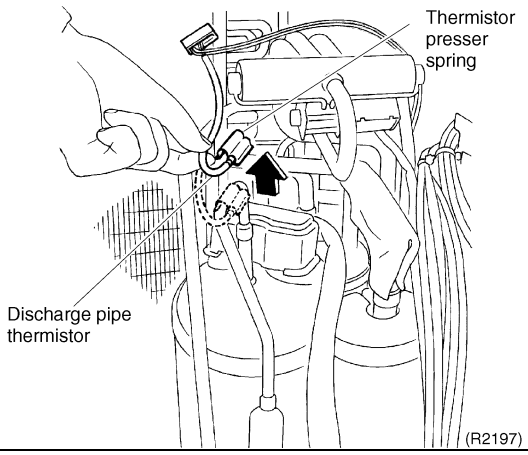
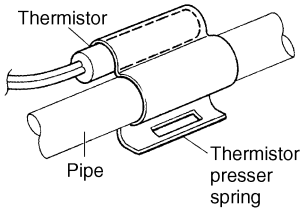
Step	Procedure	Points
3	Remove the noise insulation (top, outer and inner).	■ Carefully remove the noise insulation, which is easily torn in the piping section.

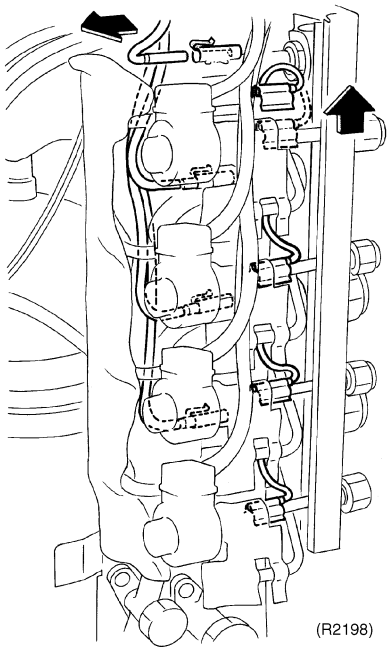
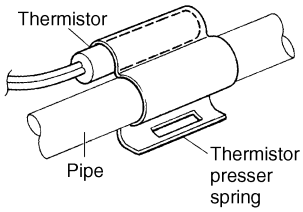
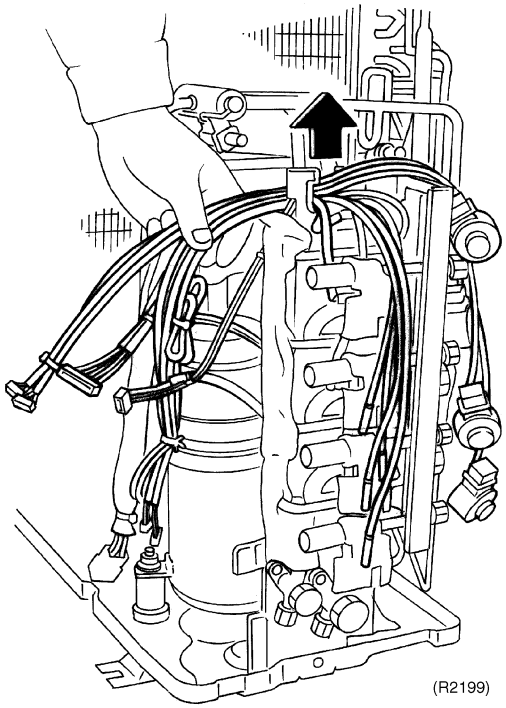


1.6 Removal of Four-Way Valve Coil, Solenoid Valve Coil, Electronic Expansion Valve Coil and Thermistor

Procedure

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

Step	Procedure		Points
1	Remove 1 screw of the four-way valve coil.	 (R2194)	
2	Remove one screw of the solenoid valve coil.	 (R2195)	
3	Remove the electronic expansion valve coil for each room.	 (R2196)	■ Place the thermistor so that its end comes up to the end of the presser spring.
4	Release the thermistor presser spring, and remove the discharge pipe thermistor.	 (R2197)	■ Be careful not to lose the presser spring for the discharge pipe thermistor. 

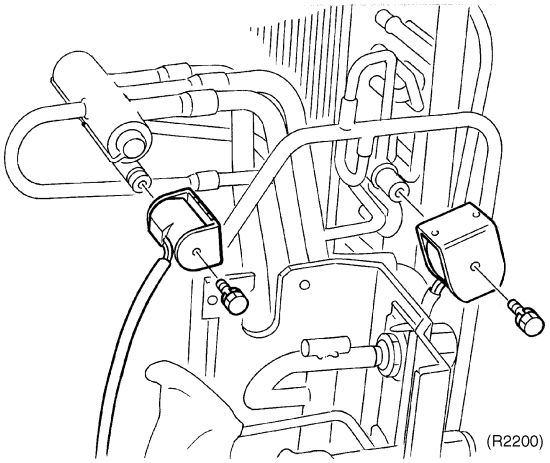
Step	Procedure		Points
5	Take off the putty, and remove each thermistor.	 (R2198)	■ Place the thermistor so that its end comes up to the end of the presser spring. ■ Be careful not to lose the presser spring for the discharge pipe thermistor.  ■ 2MXS18GVJU has only 2 ports.
6	Remove the wire harness.	 (R2199)	S90: ■ Outdoor air thermistor (Blue) ■ Heat exchanger thermistor (Gray) ■ Discharge pipe thermistor (Black) S92: Gas pipe thermistor ■ Room A (Black) ■ Room B (Gray) S93: Liquid pipe thermistor ■ Room A (Black) ■ Room B (Gray)

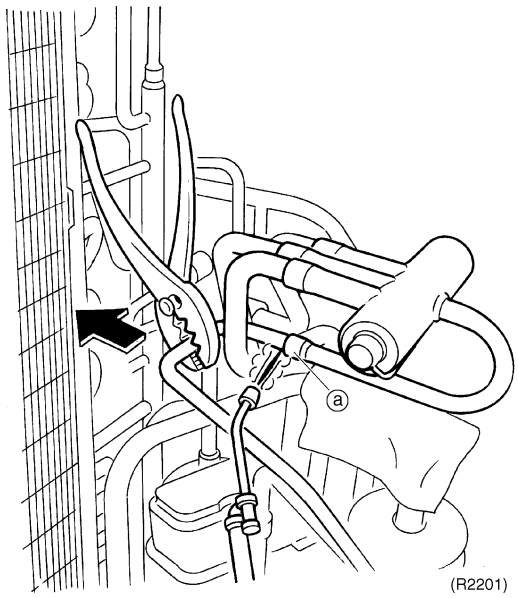
1.7 Removal of Four-Way Valve, Solenoid Valve and Shunt

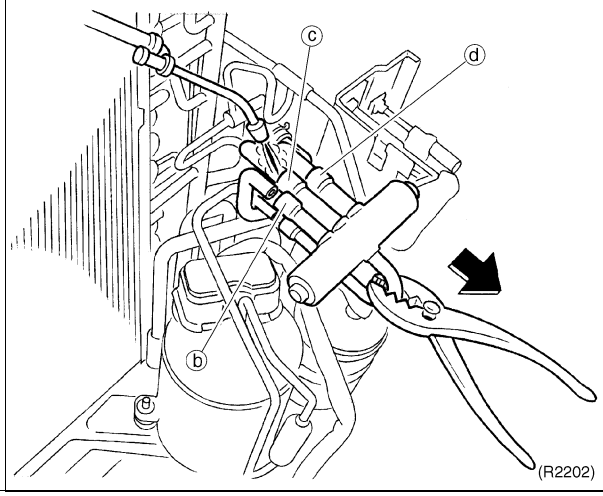
Procedure

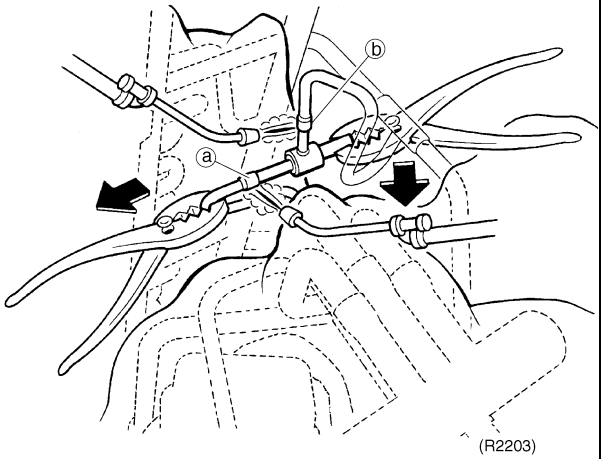
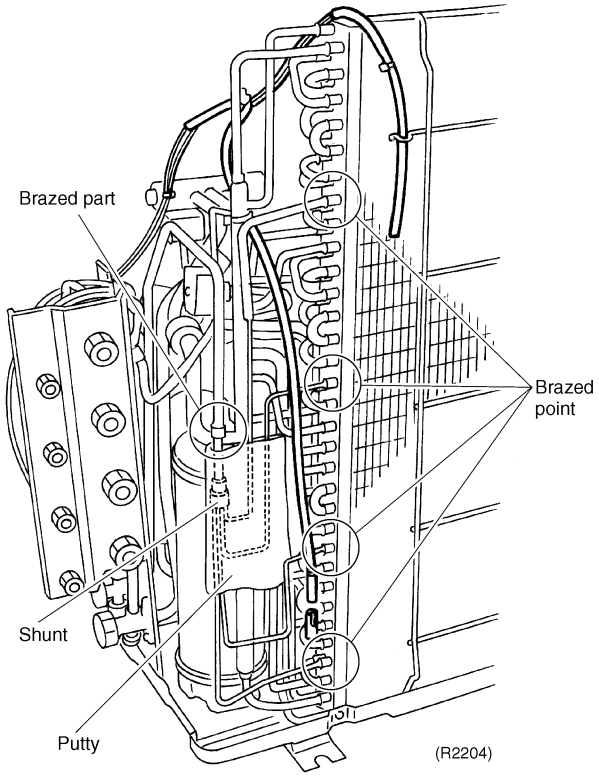
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1	Remove 1 screw of the four-way valve coil.	**Reassembling precautions** 1. Use non-oxidizing brazing method. If nitrogen gas is not available, braze the parts speedily. 2. Avoid deterioration of the gaskets due to carbonization of oil inside the four-way valve or thermal influence. For this purpose, wrap the four-way valve with wet cloth. Splash water over the cloth against becoming too hot (keep it below 248°F). ■ In pulling the pipes, be careful not to over-tighten them with pliers. The pipes may get deformed. If the gas welding machine fails to remove the four-way valve, take the steps below. 1. Disconnect the brazed pipe sections that are readily easy to separate and join together later. 2. With a small copper tube cutter, cut off the internal pipes to easily take out the four-way valve. **Note:** Never use a hack saw. The sawdust may come into the circuit.
2	Remove 1 screw of the solenoid valve coil.	
	■ Before taking this procedure, make sure there is no refrigerant gas left in the refrigerant pipes.	
3	Place welding protective sheet or iron plate around the four-way valve to prevent the flames of a gas welding rod from affecting the valve.	
4	Heat the four brazed points of the four-way valve. Disconnect the point (a) first.	
5	Disconnect the points (b) and (c).	
6	Disconnect the point (d).	







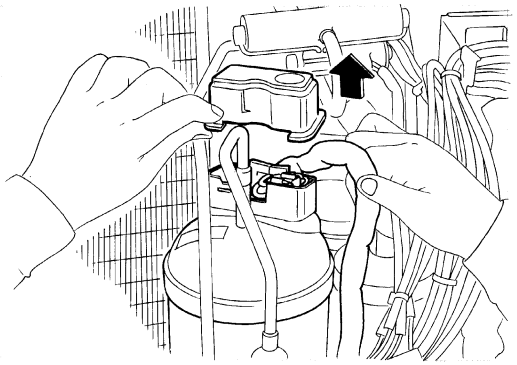
Step	Procedure	Points
■ Before taking this procedure, make sure there is no refrigerant gas left in the refrigerant pipes.		**Caution** Be careful not to burn yourself with the pipes and other parts that are heated by the gas welding rod. **Warning** If refrigerant gas leaks during the job, ventilate the room. Bear in mind that if the refrigerant gas is exposed to open flames, noxious gas may be generated.
7 Disconnect the 2 brazed points (a) and (b) in this order. 8 Remove the putty of the shunt. 9 Disconnect the 5 brazed points of the shunt.		**Reassembling precautions** Wrap the solenoid valve body with a wet cloth. Splash water over the cloth before it is dried to prevent the valve from being overheated.

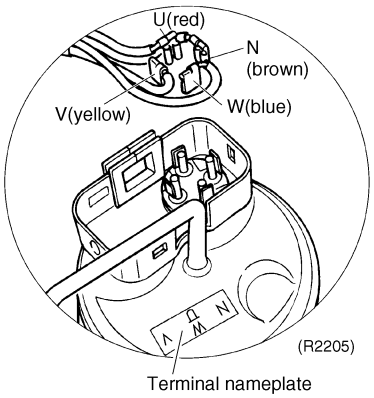
1.8 Removal of Compressor

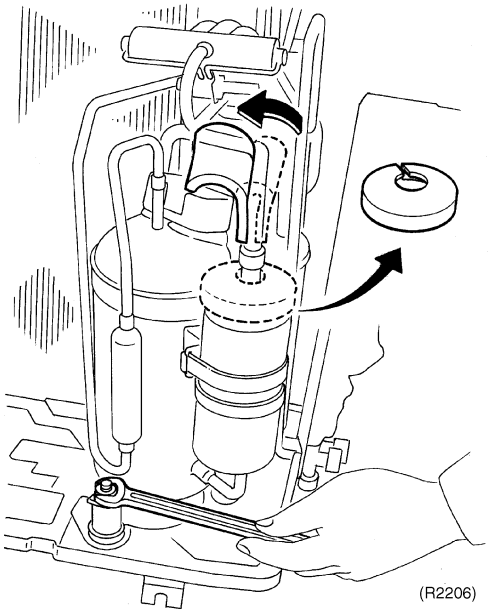
Procedure

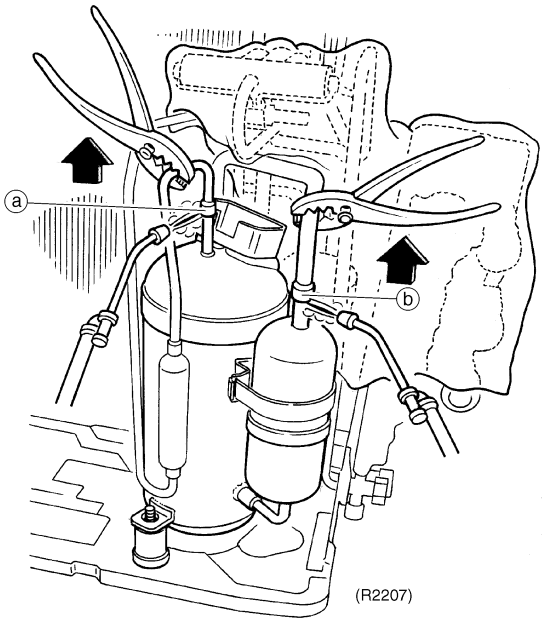
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1	Remove the terminal cover.	
2	Disconnect the compressor lead wire.	As a precaution, label the connections. .
3	Remove the 2 sheets of putty.	■ Be careful to avoid burning the compressor terminals or the nameplate.
4	There is one nut fixing the compressor. Remove the nut with an open-end spanner.	
■ Make sure there is no refrigerant gas left inside the refrigerant pipes before starting the job.		







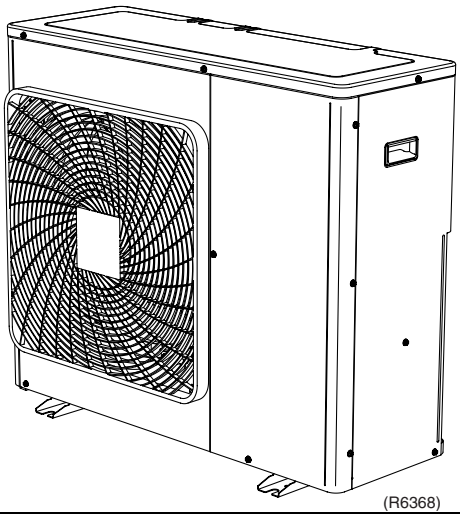
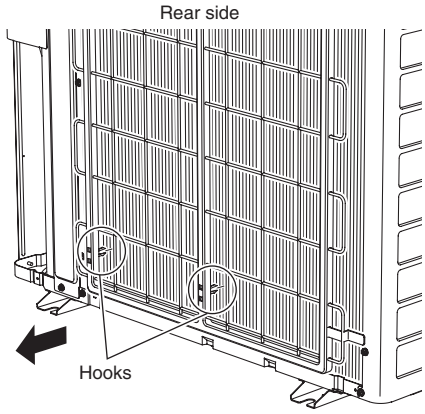
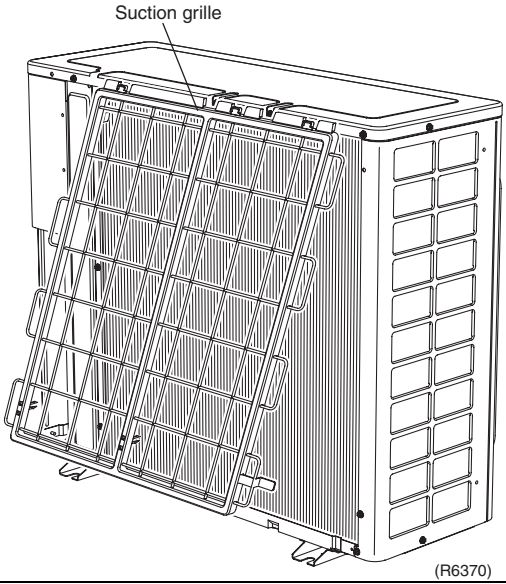
Step	Procedure		Points
■ When heating up the brazed parts, make sure to carry out the N2 replacement.			**Warning** The compressor's refrigerating machine oil may catch fire. Have wet cloth at hand for quickly putting out the fire. **Warning** If refrigerant gas leaks during the job, ventilate the room. Bear in mind that if the refrigerant gas is exposed to open flames, n[illegible]s gas may be generated. **Caution** Be careful not to burn yourself with the pipes and other parts that are heated by the gas welding rod.
1	Disconnect the brazed part (a) at discharge side of the compressor.		
2	Disconnect the brazed part (b) at suction side of the compressor.		

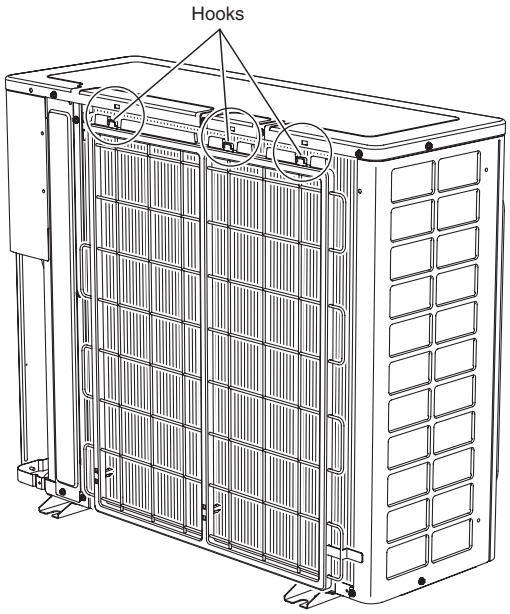
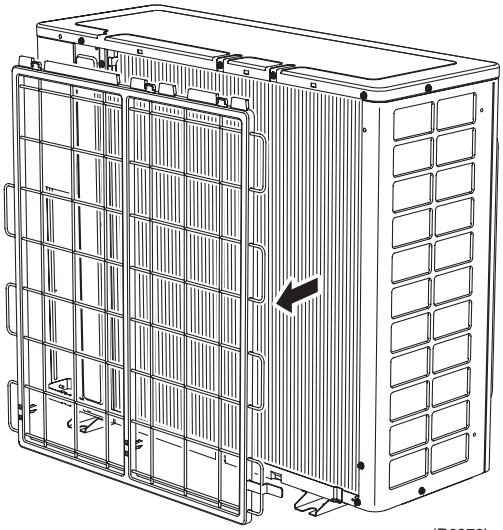
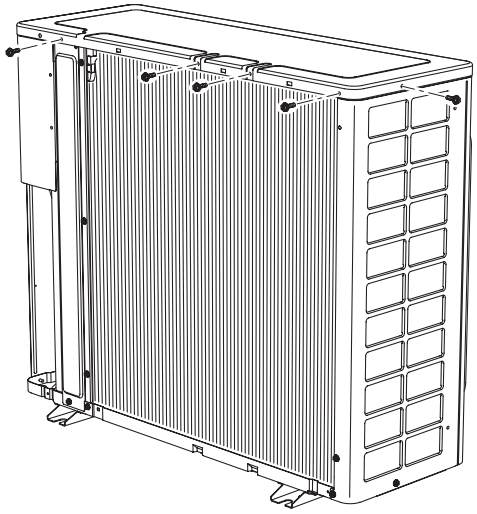
2. Outdoor Unit – 4MXS32GVJU

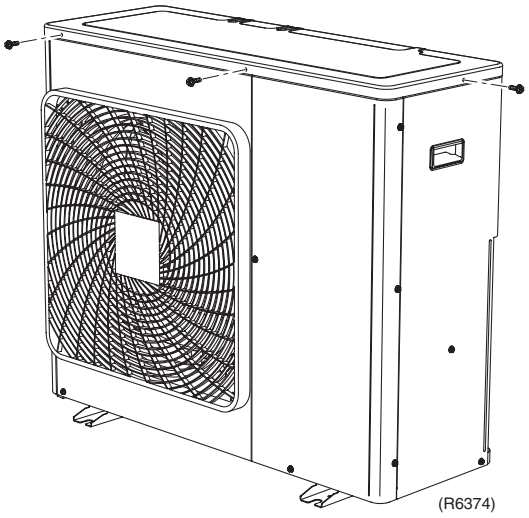
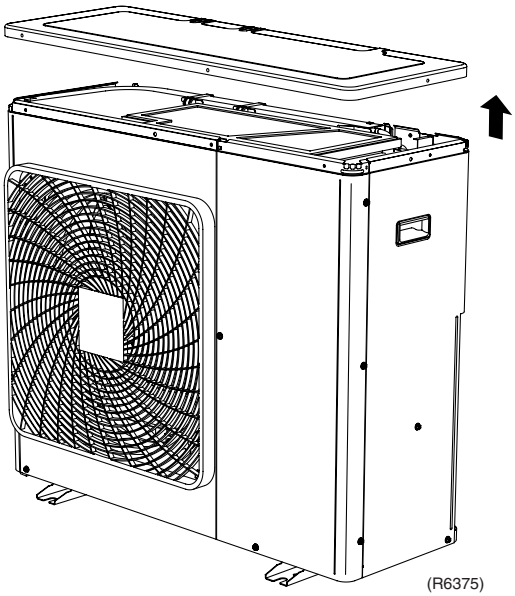
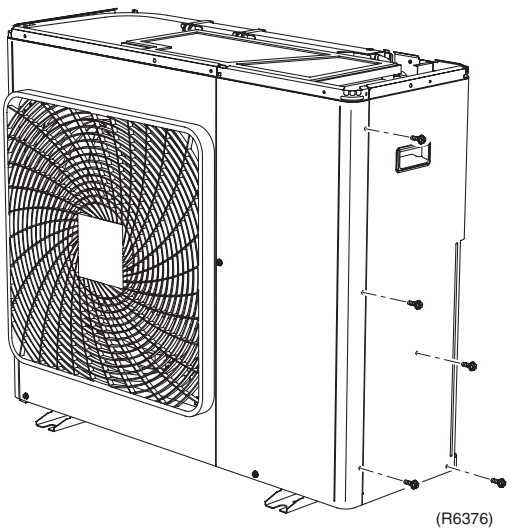
2.1 Removal of Outer Panels

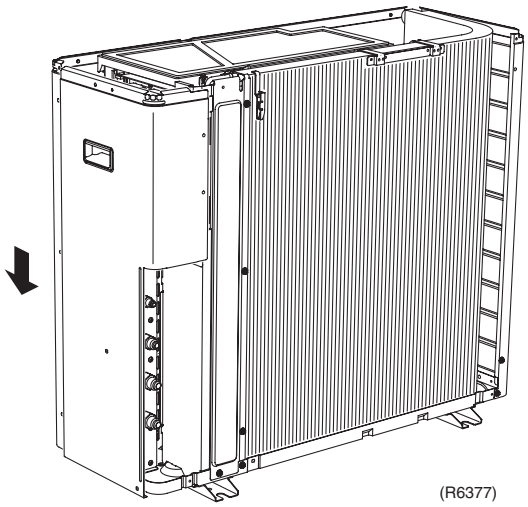
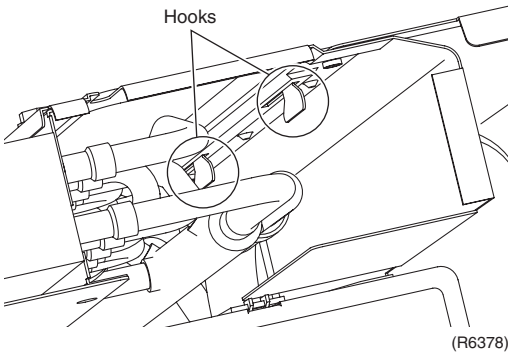
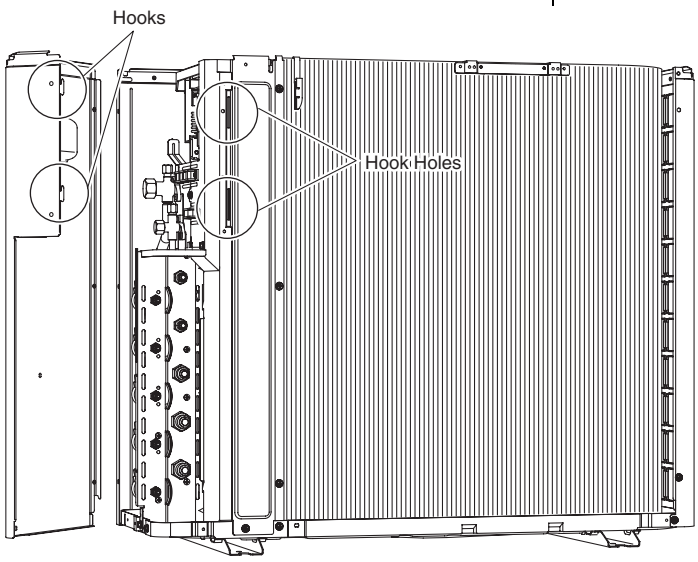
Procedure

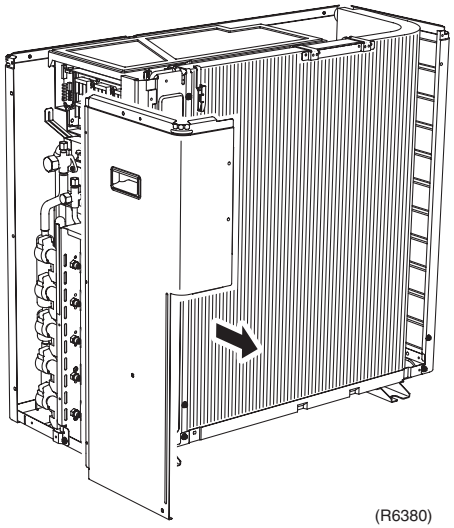
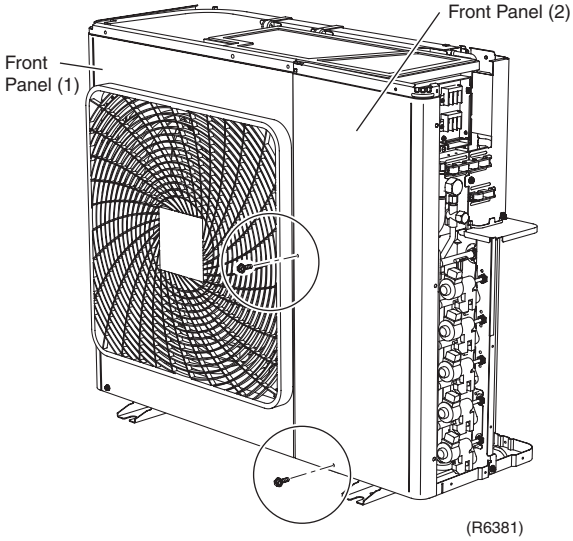
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

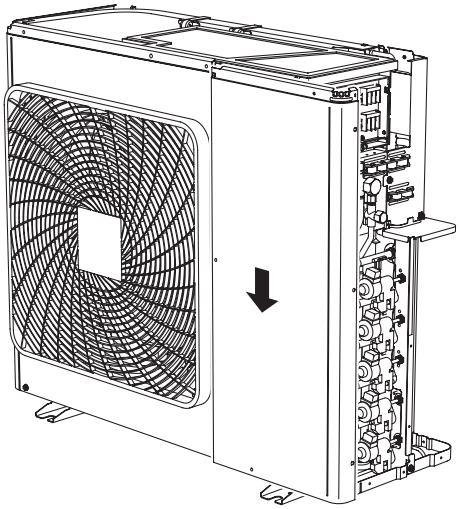
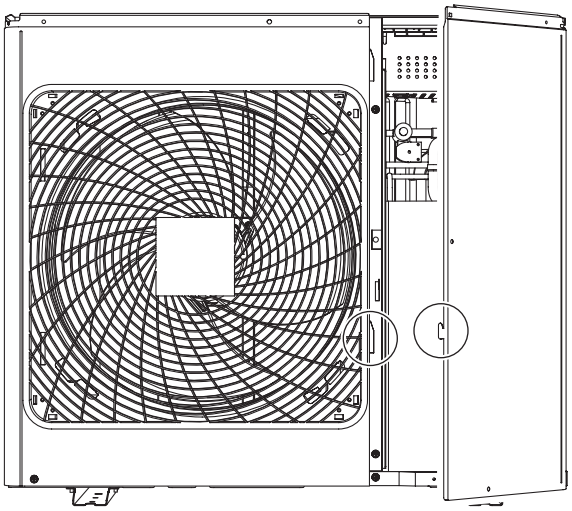
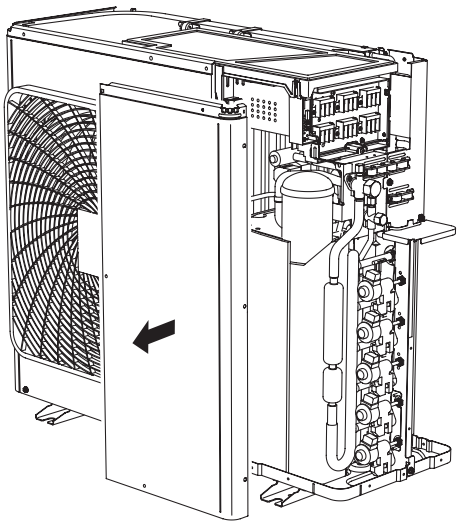
Step	Procedure		Points
1	External appearance from front side.	 (R6368)	■ The illustrations can be different depending on the models.
1. Removing the suction grille.		 (R6369)	■ The hooks are secured in the clearances of the heat exchanger fins.
1	Undo the 2 hooks at the bottom first.	 (R6370)	

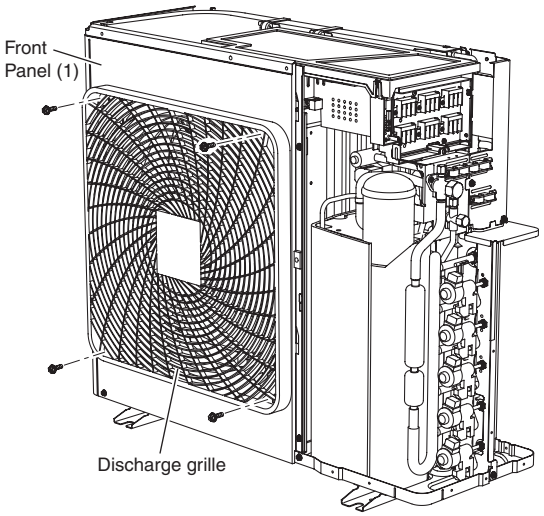
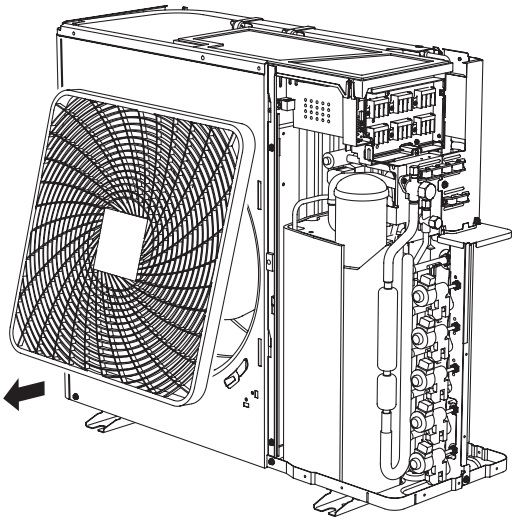
Step	Procedure		Points
2	Next, slide the grille downward to undo the 3 top hooks.	 (R6371)	
3	Remove the suction grille.	 (R6372)	
2. Removing the top panel.			
1	Remove the 4 screws on the back and 1 screw on the left side panel.	 (R6373)	

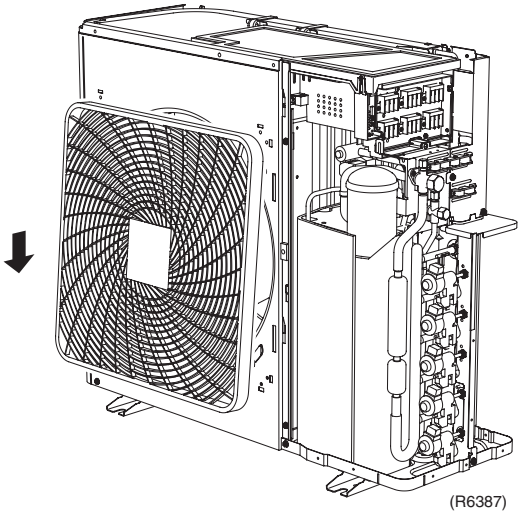
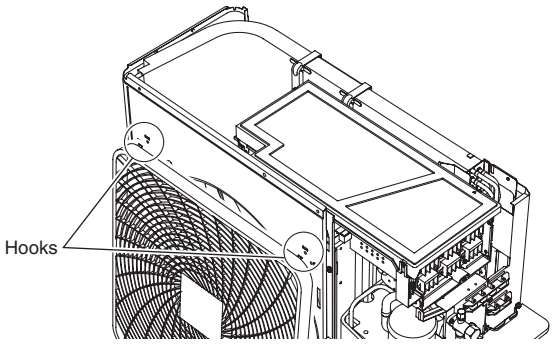
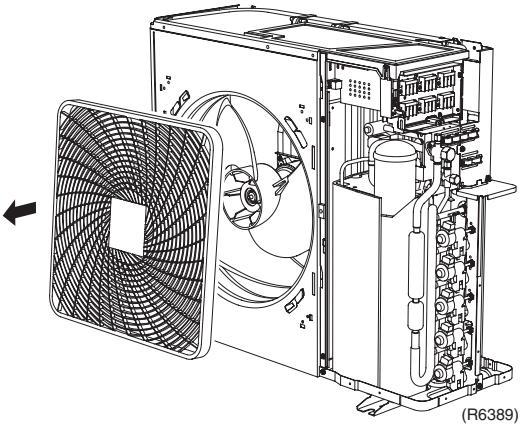
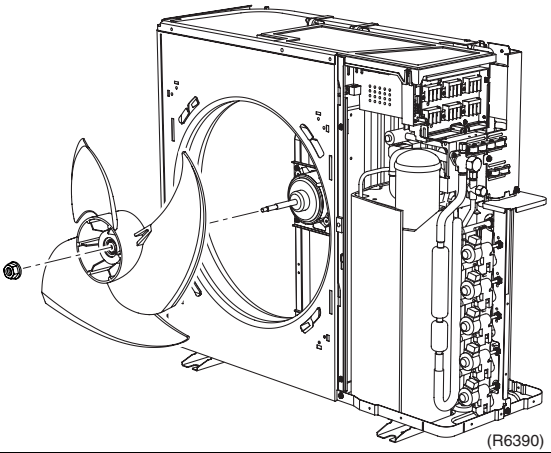
Step	Procedure		Points
2	Remove the 2 screws on the front and 1 screw on the right side panel.	 (R6374)	
3	Lift the top panel and remove it.	 (R6375)	
3. Removing the right side panel.			
1	Remove the 5 screws.	 (R6376)	

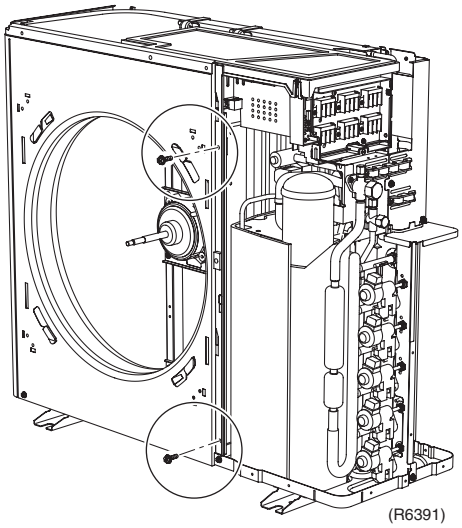
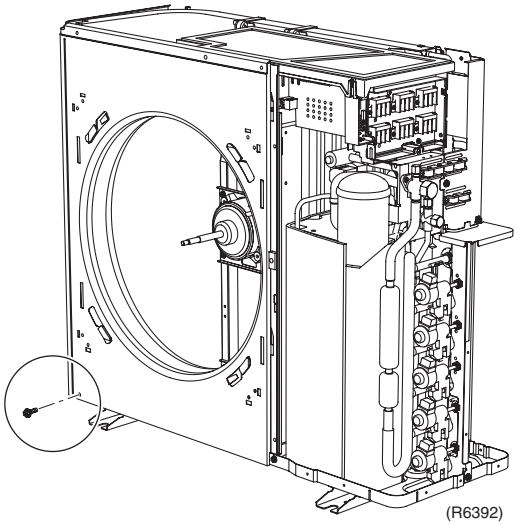
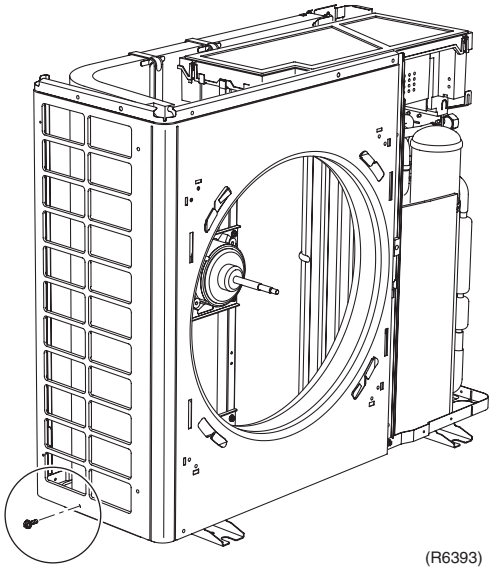
Step	Procedure		Points
2	Slide the panel downward to undo 2 hooks on the back side.	 (R6377)	
		 (R6378)	
		 (R6379)	

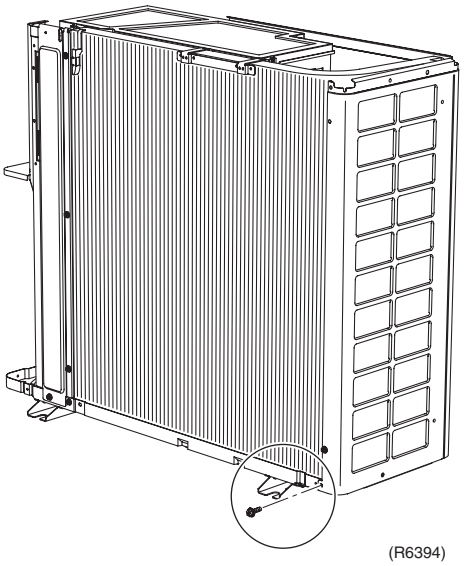
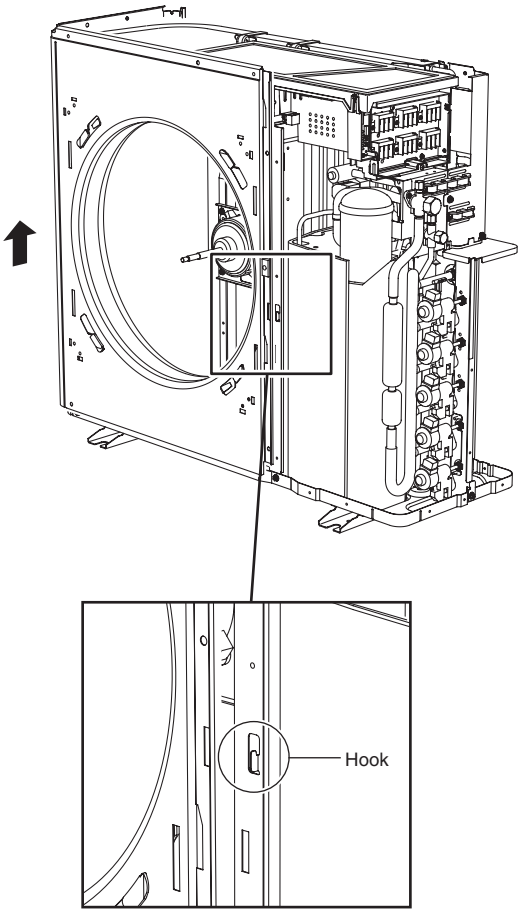
Step	Procedure		Points
3	Remove the right side panel.		
4. Removing the front panel (2)			
1	Remove the 2 screws.		

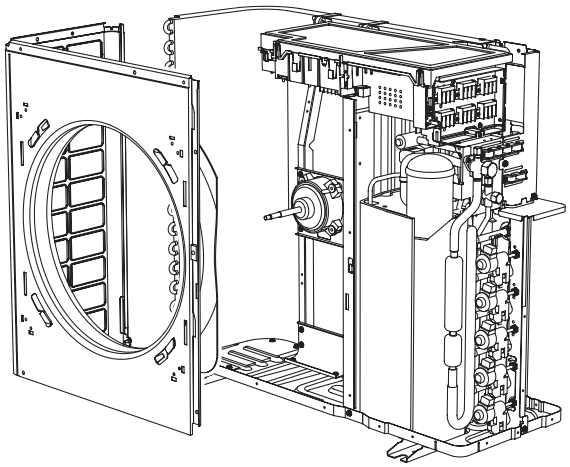
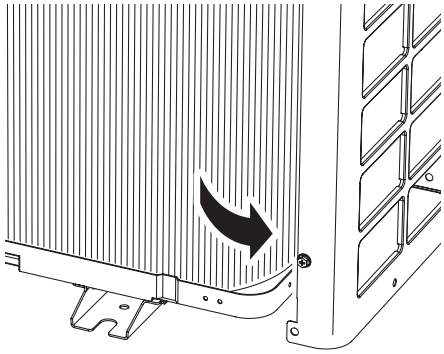
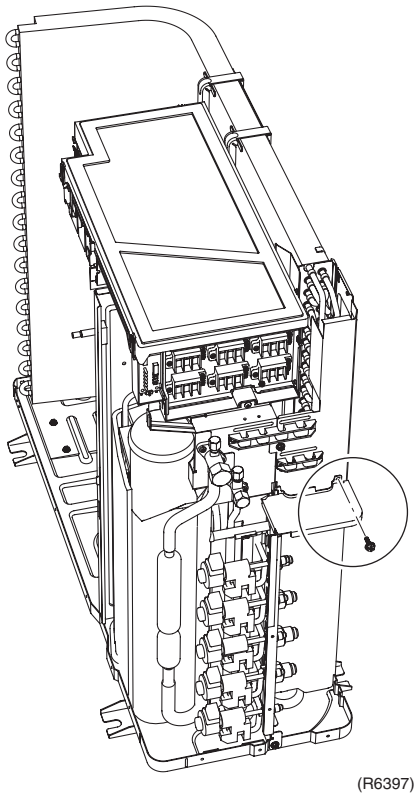
Step	Procedure		Points
2	Slide the panel downward to undo the hook.	 (R6382)	
		 (R6383)	
3	Remove the front panel (2).	 (R6384)	

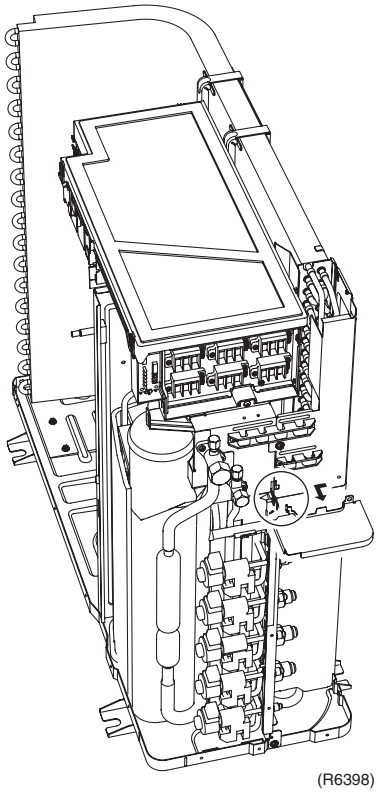
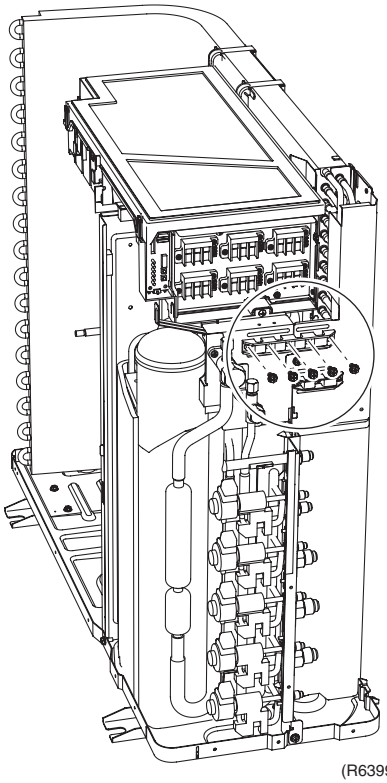
Step	Procedure	Points
5. Removing the front panel (1)	 (R6385)	Remove the discharge grille and propeller fan first to remove the front panel (1).
1 Remove the 4 screws on the discharge grille.		
2 Pull the bottom of the discharge grille toward yourself.	 (R6386)	

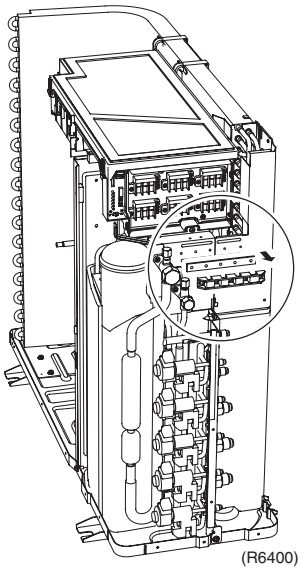
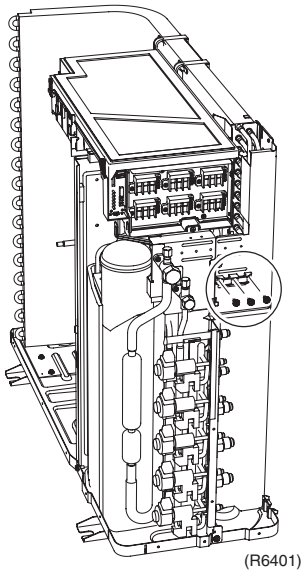
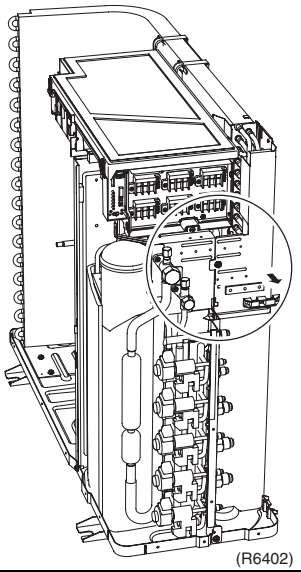
Step	Procedure		Points
3	Next, slide the grille downward to undo the 2 hooks at the top.	 (R6387)	
		 (R6388)	
4	Remove the discharge grille.	 (R6389)	
5	Remove the propeller fan fixing nut.	 (R6390)	Fan fixing nut : M8

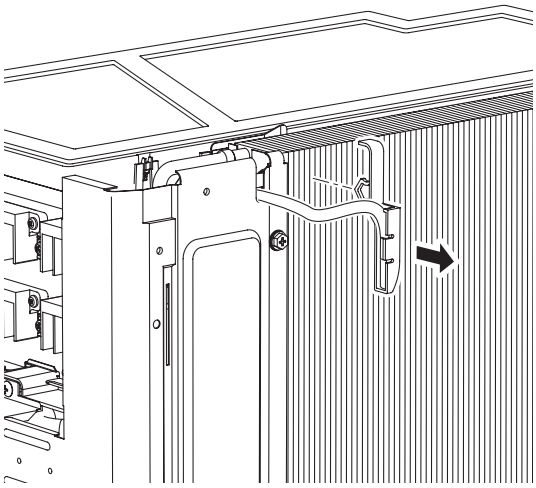
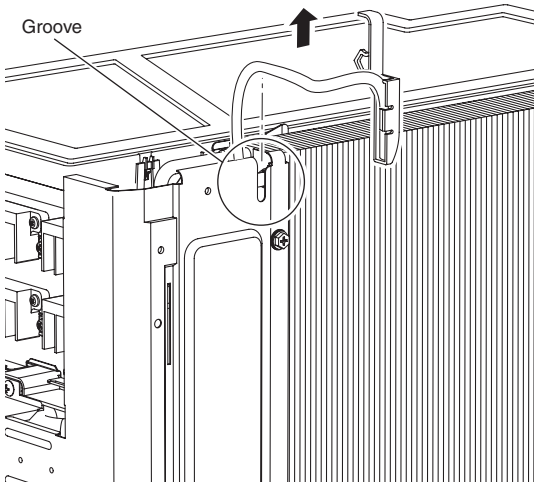
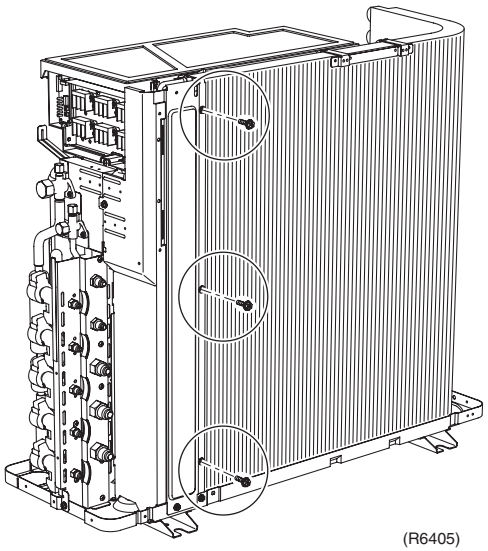
Step	Procedure		Points
6	Remove the 2 fixing screws on the partition plate.	 (R6391)	
7	Remove the screw at bottom left of the front.	 (R6392)	
8	Remove the screw at bottom of the left side.	 (R6393)	

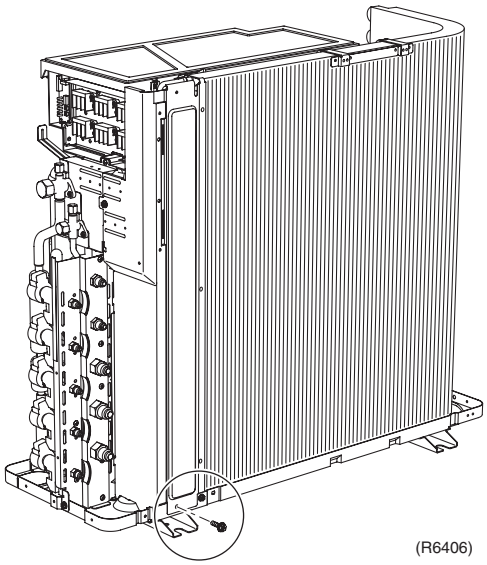
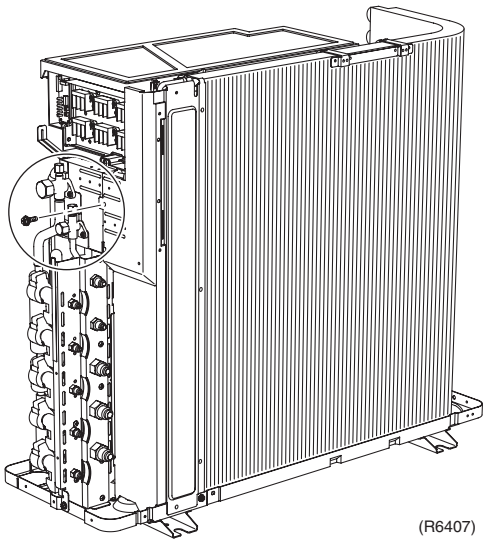
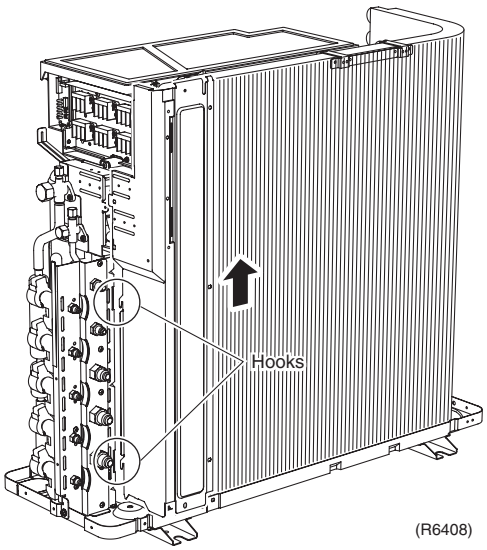
Step	Procedure		Points
9	Remove the screw at bottom of the back side.	 (R6394)	
10	The front panel (1) is provided with a hook on its front. Lift the front panel off position to remove it.	 (R6395)	

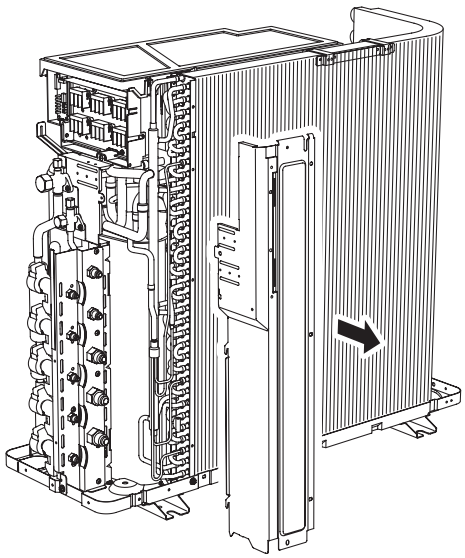
Step	Procedure		Points
11	Remove the front panel (1).	  (R6396)	■ The back has an intricate shape. Be sure to detach carefully.
6. Removing the rear panel			
1	Remove the fixing screw on the partition plate.	 (R6397)	

Step	Procedure		Points
2	Slide the panel leftward to undo the hook, and remove the partition plate.	 (R6398)	
3	Remove the 5 screws.	 (R6399)	

Step	Procedure		Points
4	Remove the wire fixing plate (upper).	 (R6400)	
5	Remove the 3 screws.	 (R6401)	
6	Remove the wire fixing plate (lower).	 (R6402)	

Step	Procedure		Points
7	Undo the holder of the thermistor.	 (R6403)	■ The holder is secured in the clearances of the heat exchanger fins.
		 (R6404)	
8	Remove the 3 fixing screws on the partition plate.	 (R6405)	

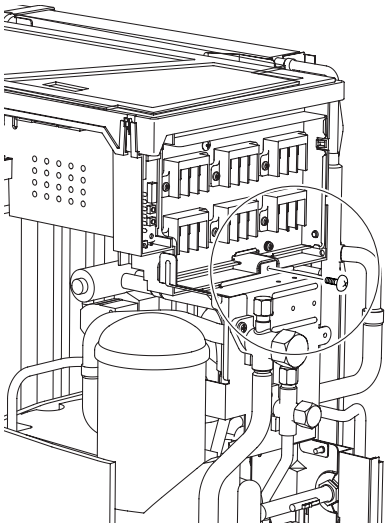
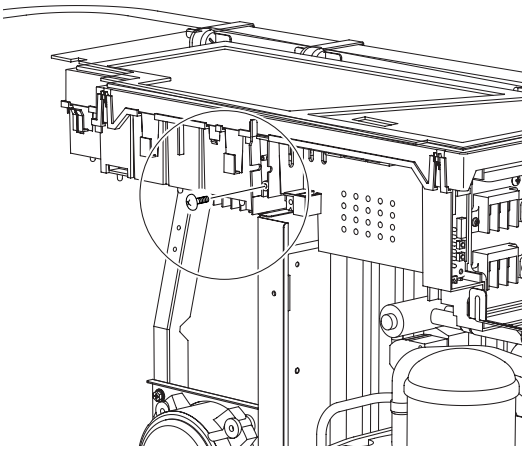
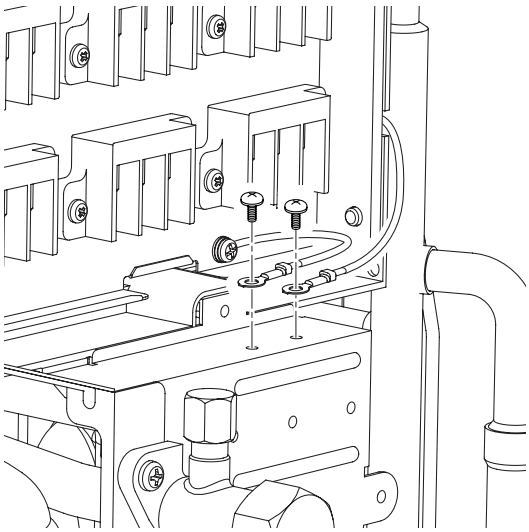
Step	Procedure		Points
9	Remove the fixing screw from the bottom frame.	 (R6406)	
10	Remove the fixing screw from the shut-off valve mounting plate.	 (R6407)	
11	Lift the panel upward to undo the 2 hooks and remove it.	 (R6408)	

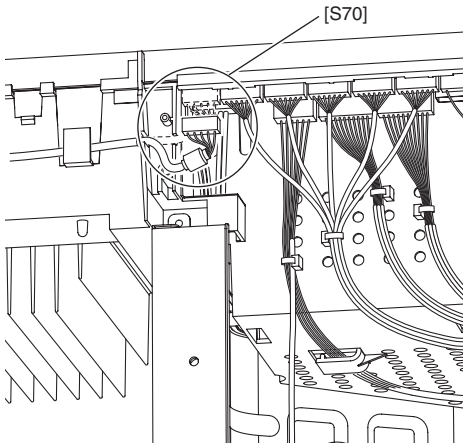
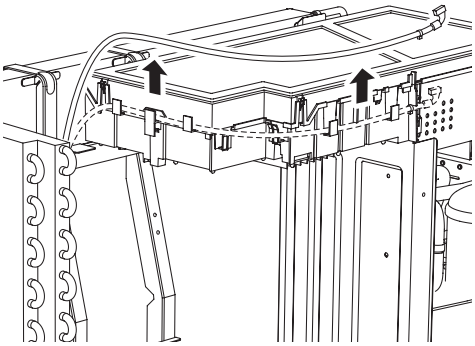
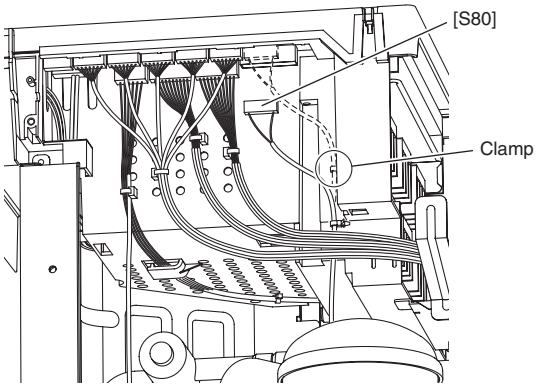
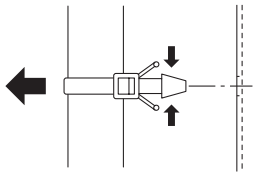
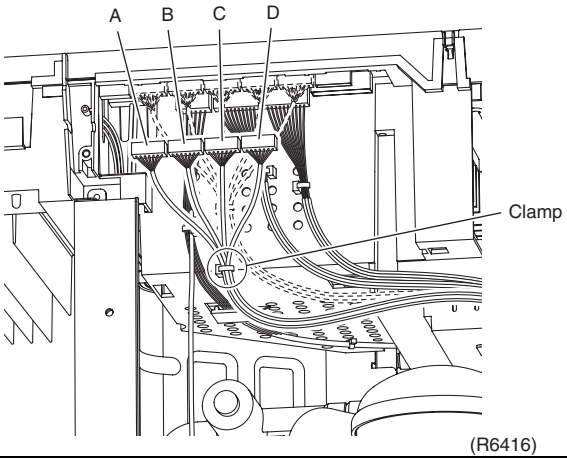
Step	Procedure		Points
12	Remove the rear panel.	 (R6409)	

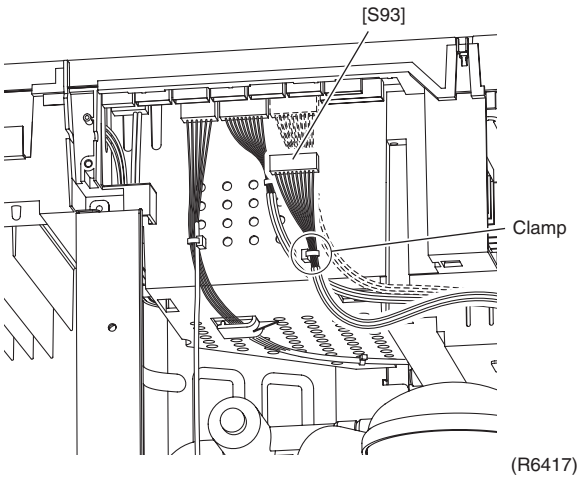
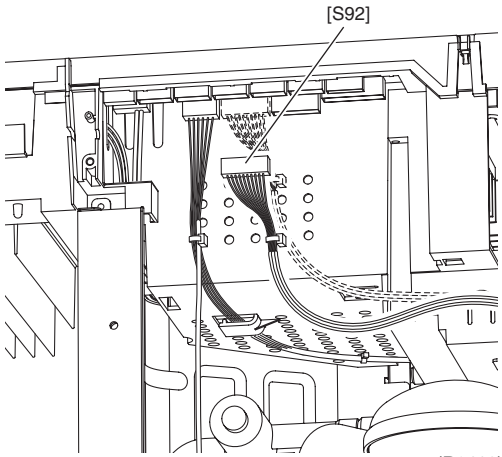
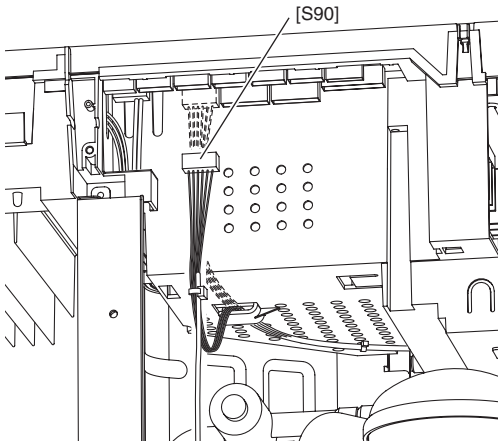
2.2 Removal of the Electrical Box

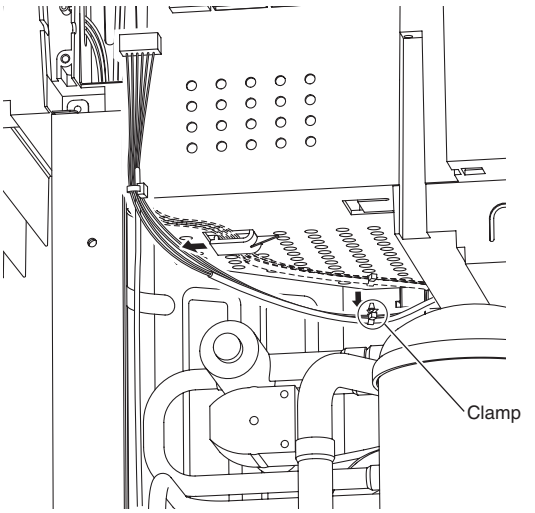
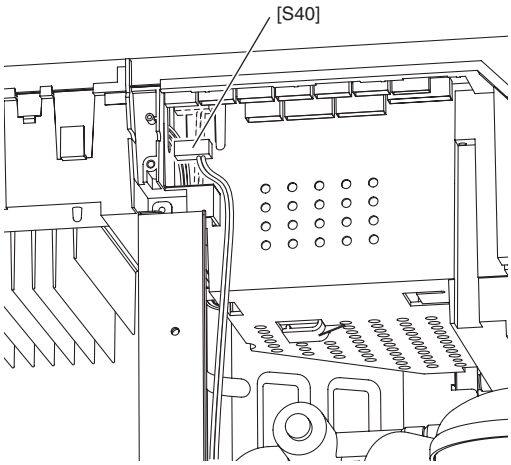
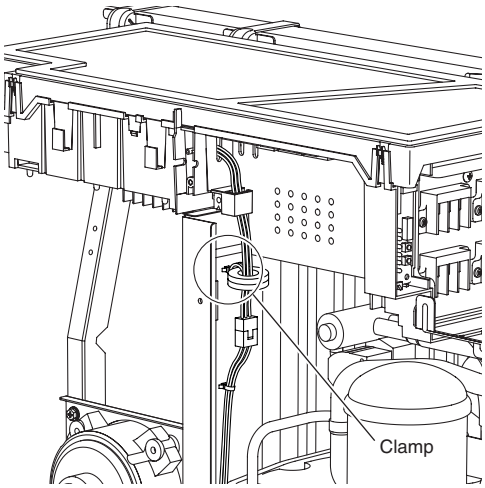
Procedure

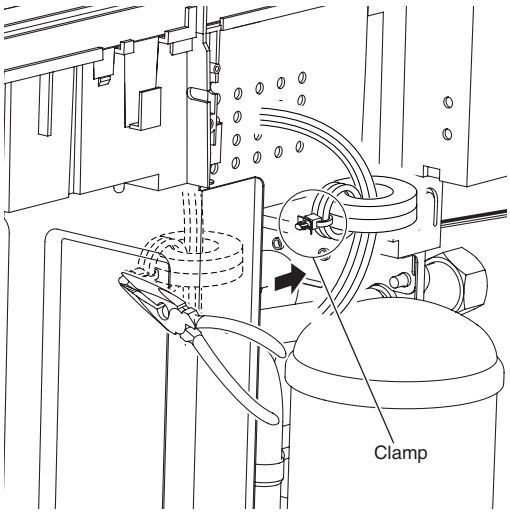
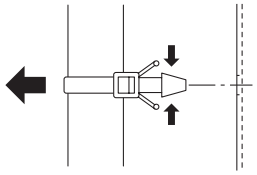
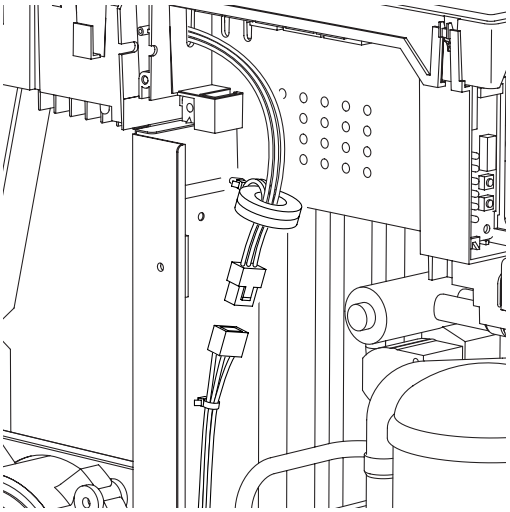
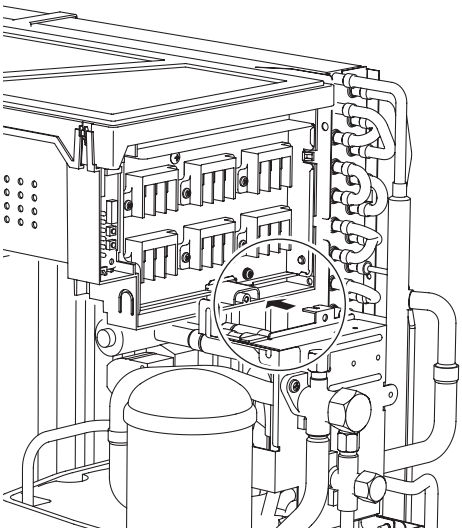
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

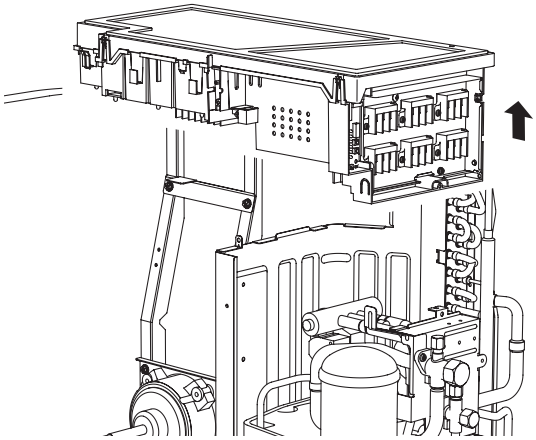
Step	Procedure		Points
1	Remove the fixing screw from the shutoff valve mounting plate.	 (R6410)	
2	Remove the fixing screw on the partition plate.	 (R6411)	
3	Remove the 2 screws to detach the ground wires.	 (R6412)	

Step	Procedure		Points
4	Disconnect the fan motor connector S70.	 (R6413)	
5	Release the fan motor wire harness.	 (R6414)	
6	Disconnect the motorized valve connector S80.	 (R6415)	■ Detach the clamp. ■ Pull the push-mount type out of position. 
7	Disconnect the 4 motorized valve connectors (for Rooms A, B, C and D).	 (R6416)	■ A : Connector S20(white), B : Connector S21(red), C : Connector S22(blue), D : Connector S23(yellow).

Step	Procedure		Points
8	Disconnect the liquid pipe thermistor connector S93.	 (R6417)	
9	Disconnect the gas pipe thermistor connector S92.	 (R6418)	
10	Disconnect the discharge pipe thermistor connector S90.	 (R6419)	

Step	Procedure		Points
11	The wire harness is hooked on the bottom of the electrical box. Unhook it and remove the clamp.	 (R6420)	
12	Disconnect the OL connector S40.	 (R6421)	
13	Remove the OL wire harness and the compressor wire harness together from the partition.	 (R6422)	

Step	Procedure		Points
14	Use long-nose pliers to pull out the clamp.	 (R6423)	■ Detach the clamp. ■ Pull the push-mount type out of position. 
15	Disconnect the relay connector of the compressor.	 (R6469)	
16	First, slide the box leftward to undo the hook on the right side of the box.	 (R6424)	

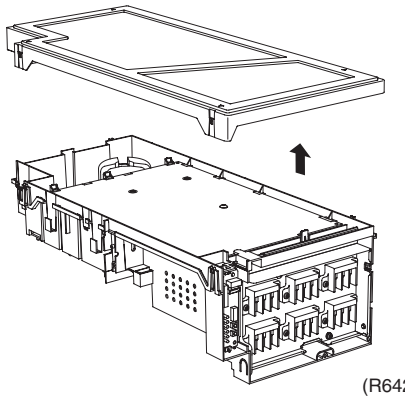
Step	Procedure		Points
17	Lift up the electrical box to remove it.	 (R6425)	

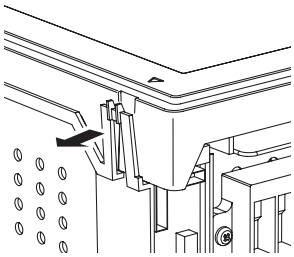
2.3 Removal of PCB

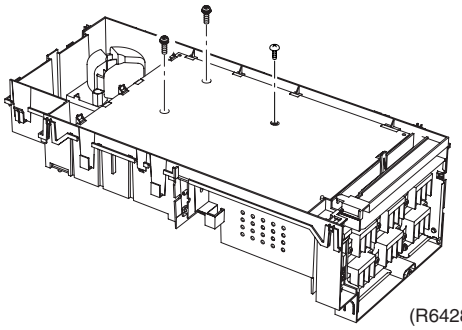
Procedure

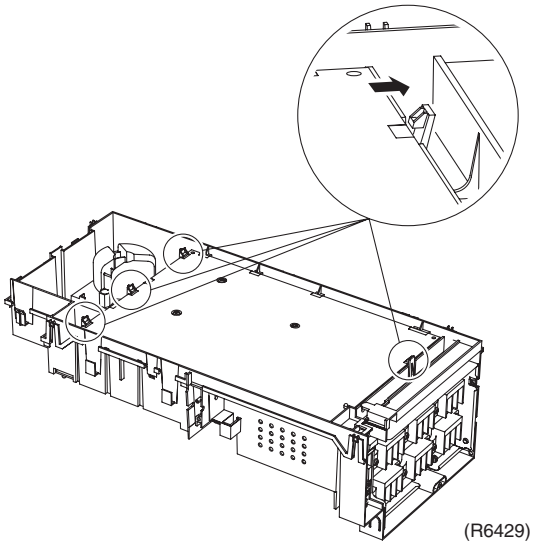
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

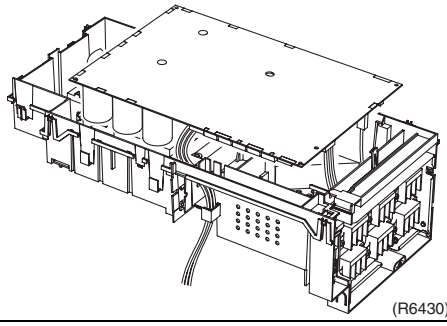
Step	Procedure	Points
1. Removing the Control PCB		
1	Open the cover of the electrical box.	■ Undo the 4 hooks. The hooks are marked with ▼.
2	Remove the 3 screws.	
3	Undo the 4 hooks.	
4	Lift up your side of the control PCB.	

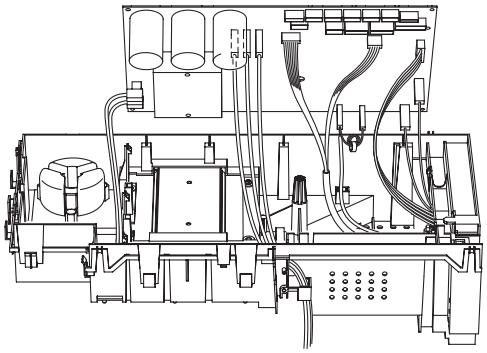
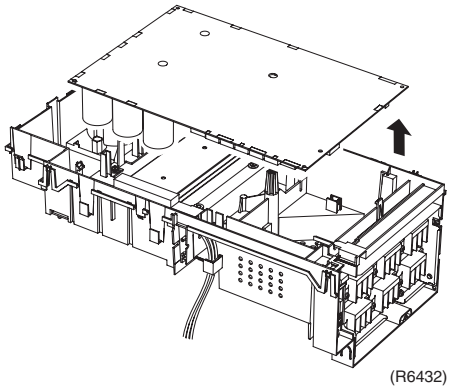
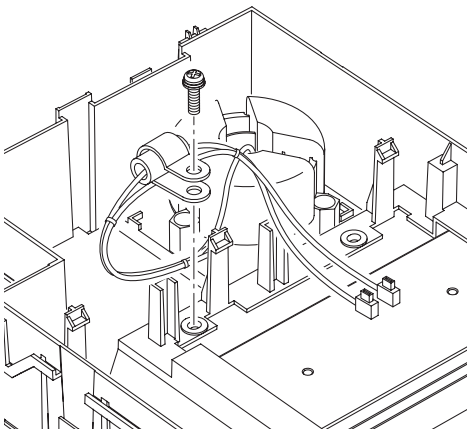
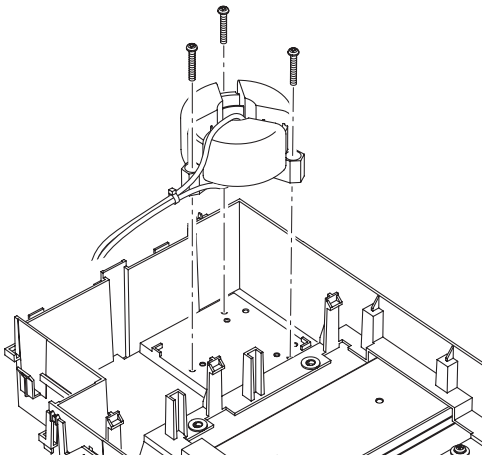

(R6426)

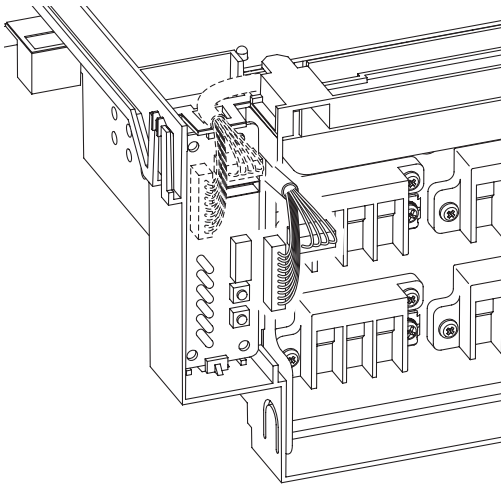
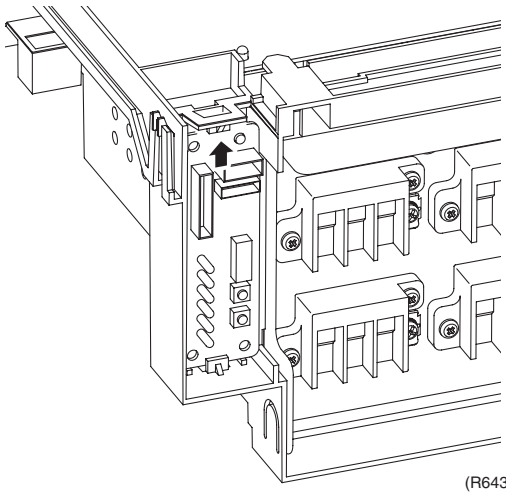
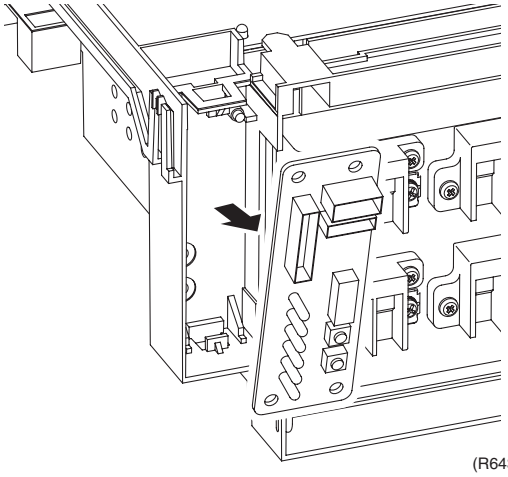

(R6427)


(R6428)

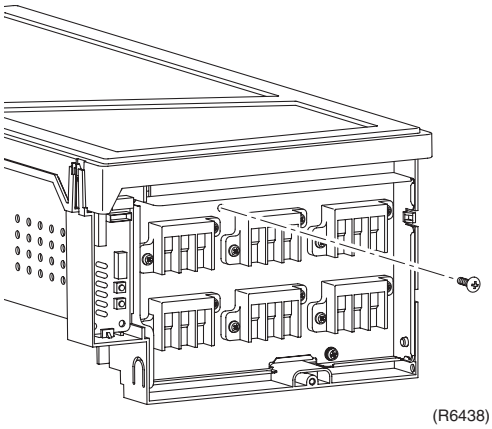

(R6429)

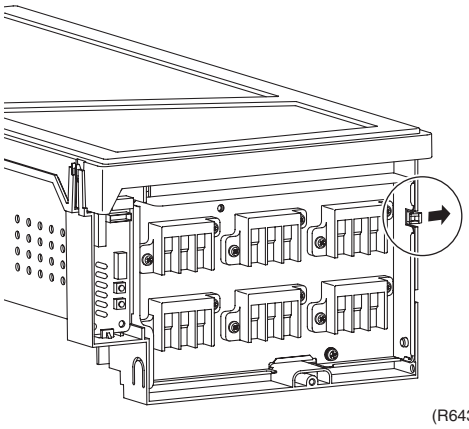

(R6430)

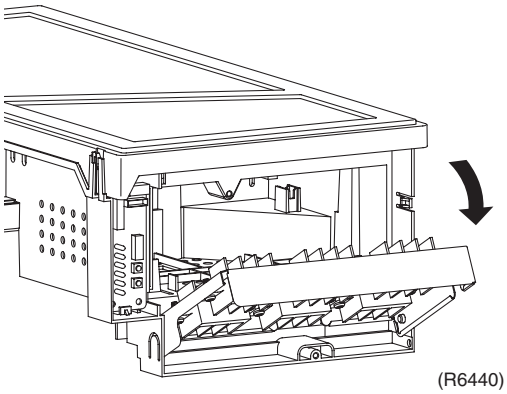
Step	Procedure		Points
5	Disconnect the connectors one by one starting from your side.	 (R6431)	● Connectors S33 & S71: For inverter PCB ● Connectors S31 & S32: For SPM PCB ● Connectors S51 & S101: For display PCB ● Connector S10: For relay PCB ● Connectors H1/H2: For DB (diode bridge), power wire harnesses AC1 (red) and AC2 (black)
6	Remove the control PCB.	 (R6432)	
2. Removing the reactor			
1	Remove the screw.	 (R6433)	
2	Remove the 3 screws and lift the reactor upward to remove it.	 (R6434)	

Step	Procedure	Points
3. Removing the display PCB.	 (R6435)	
1 Disconnect the control PCB connectors S52, S102		
2 Slightly lift the top hooks to detach.	 (R6436)	
3 Undo the bottom hook to remove the display PCB.	 (R6437)	

Step	Procedure	Points
4. Removing the servicing cover off the terminal block assembly.		
1	Remove the screw.	
2	Lift the hook to detach.	
3	Open the cover toward yourself.	


(R6438)

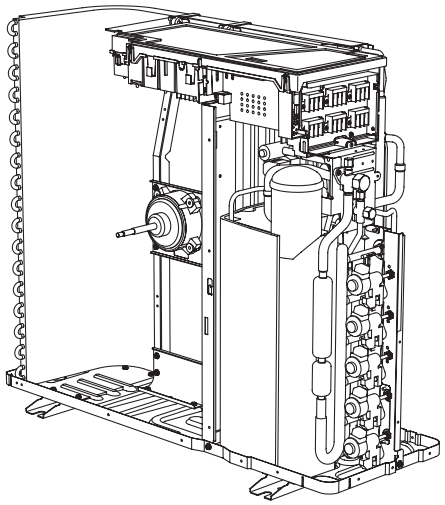
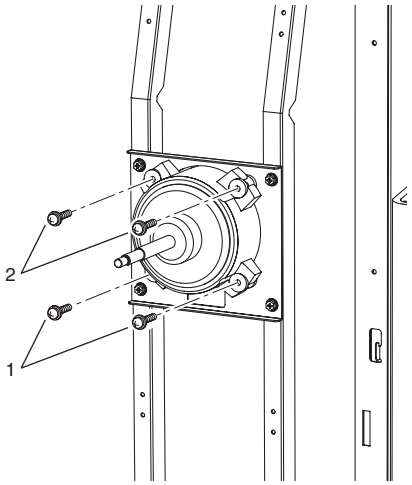
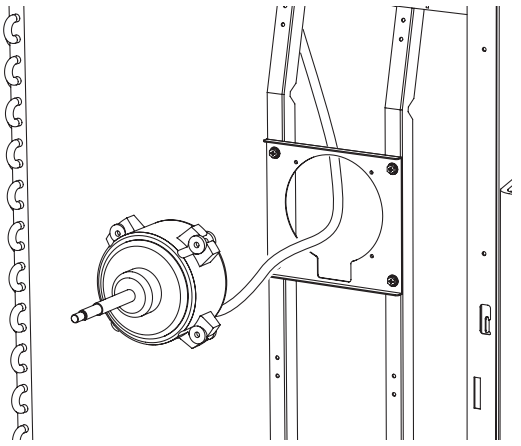
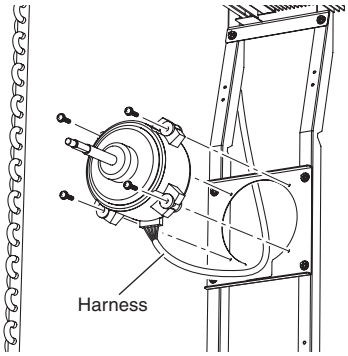

(R6439)


(R6440)

2.4 Removal of Fan Motor

Procedure

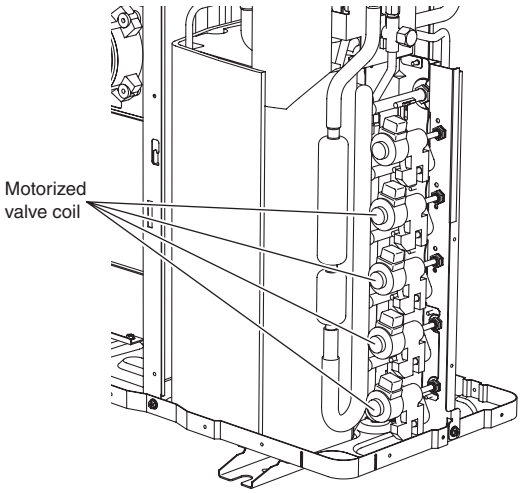
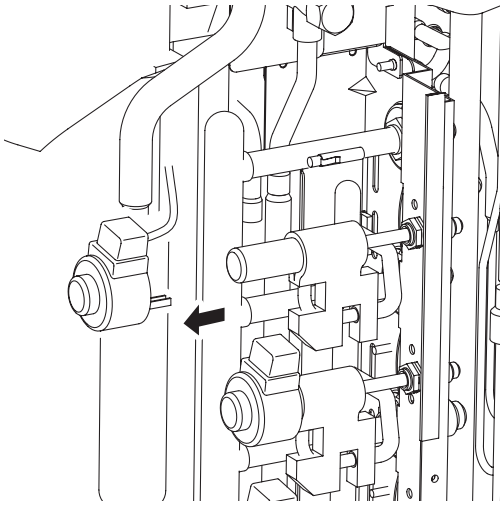
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

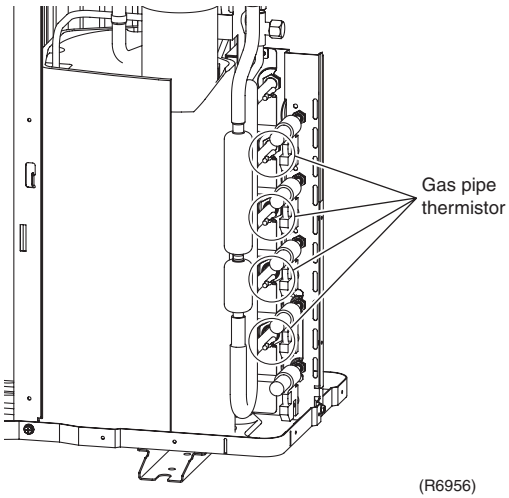
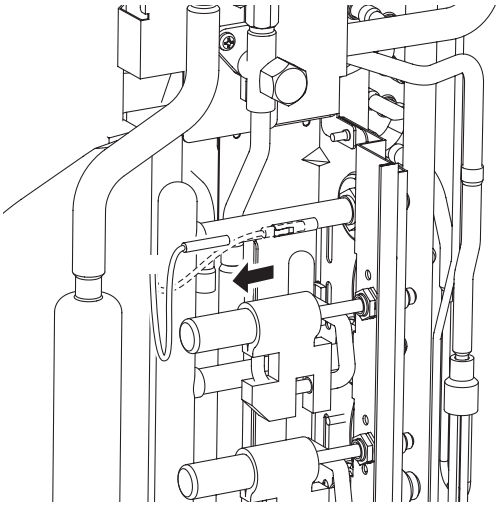
Step	Procedure	Points
	 (R6441)	
1	Remove the 2 screws at the bottom first.	Be sure to remove the bottom screws first. If the top screws are removed first, the fan motor, the center of gravity of which is toward the front, may tilt down or fall, resulting in injury.
2	Next, remove the 2 top screws.	
	 (R6442)	
3	Remove the fan motor.	When reassembling, be sure to place the wire harness lower.
	 (R6443)	 (R6444)

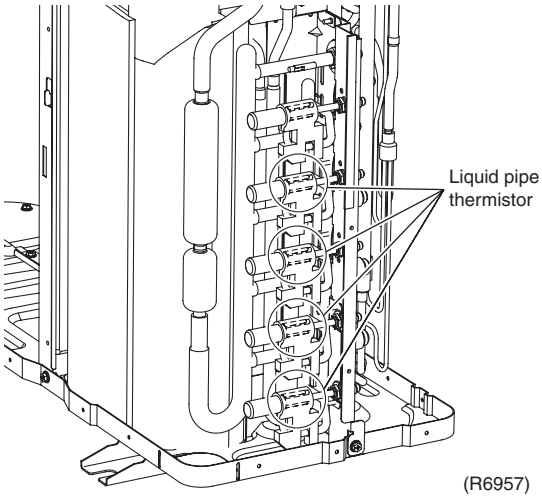
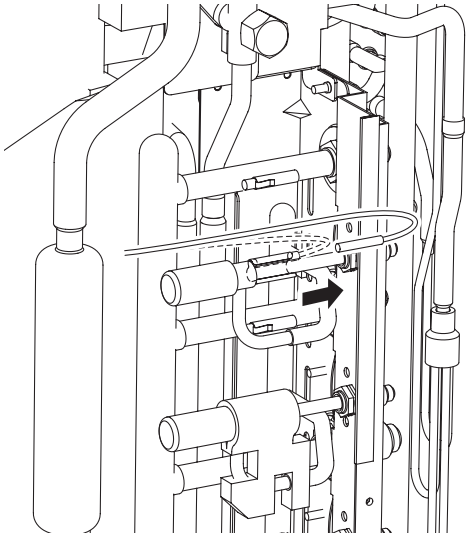
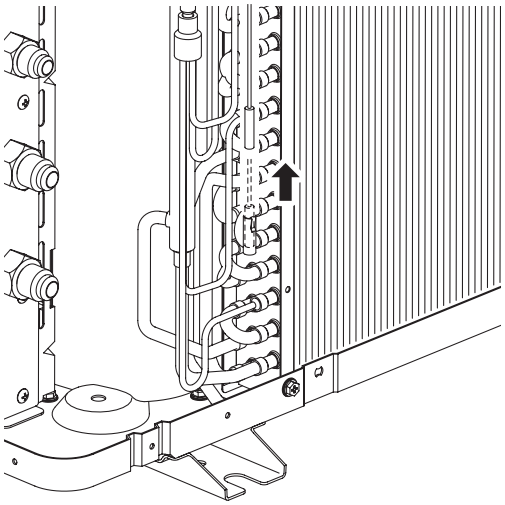
2.5 Removal of Coils / Thermistors

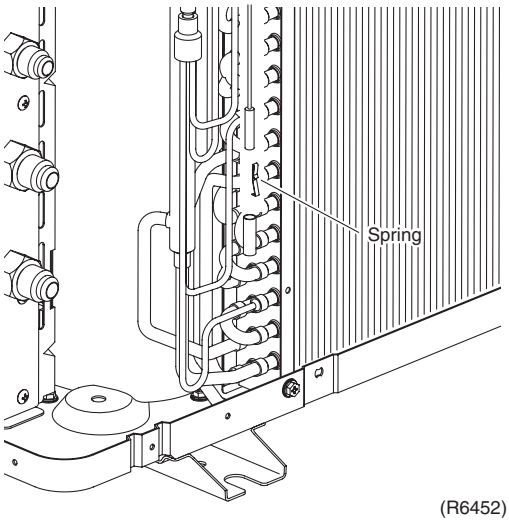
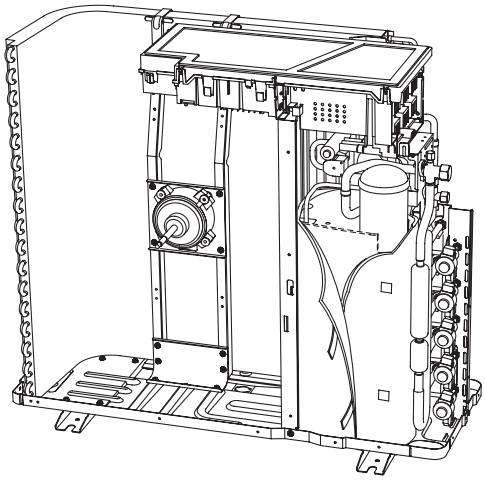
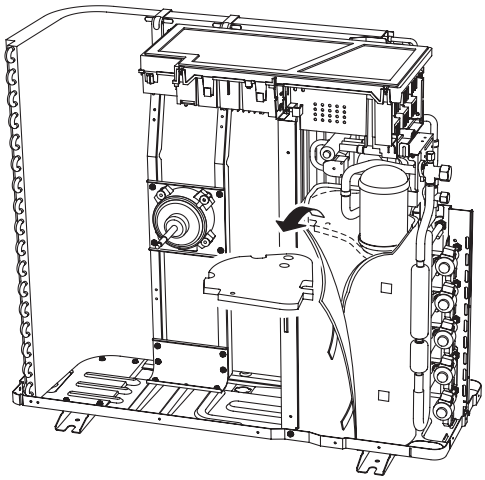
Procedure

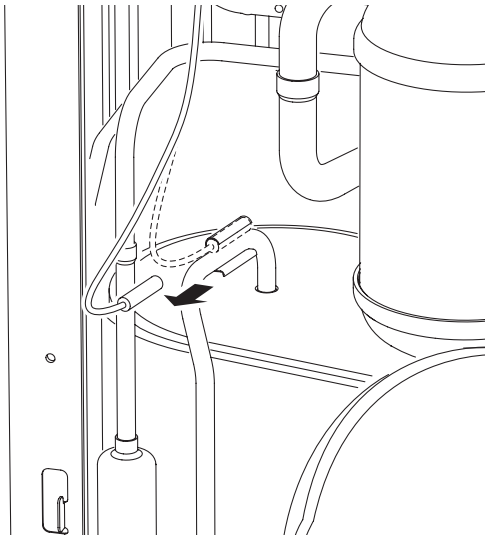
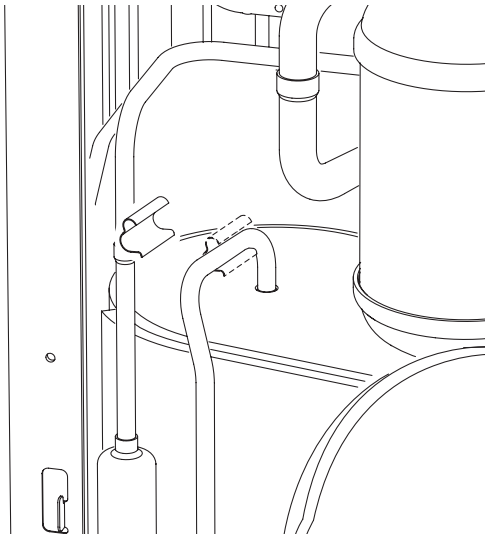
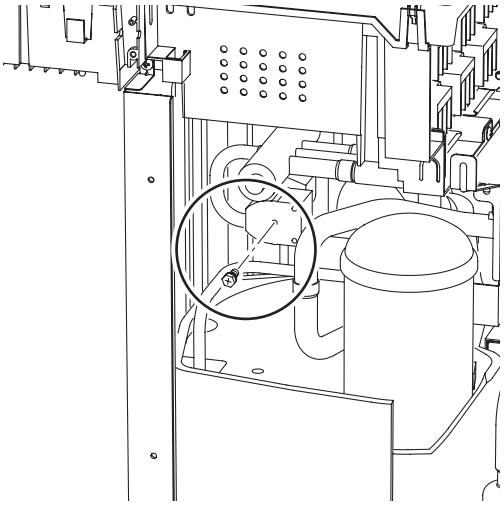
Warning **Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.**

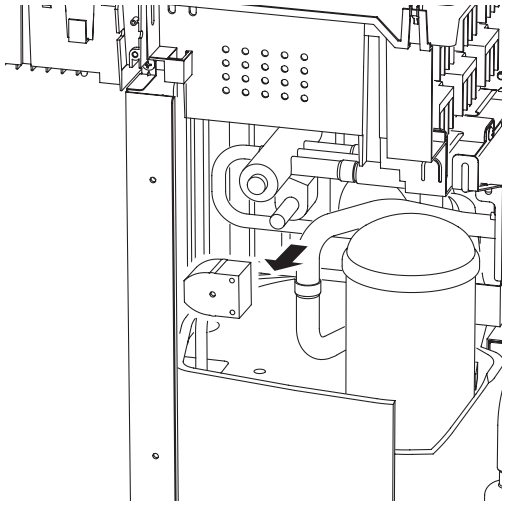
Step	Procedure	Points
1. Removing the motorized valve coil		■ 4MXS32GVJU has only 4 motorized valve coils.
1 Pull the motorized valve coils out of position.	 (R6955)  (R6446)	

Step	Procedure		Points
2	Pull out the thermistors.	 (R6956)  (R6448)	

Step	Procedure		Points
3	Peel the putty from the liquid pipe thermistor, and pull out the thermistor.	 (R6957)  (R6450)	
2. Removal of Thermistors			
1	Pull out the heat exchanger thermistor.	 (R6451)	

Step	Procedure		Points
2	Remove the spring from the heat exchanger thermistor.	 (R6452)	■ Be careful not to lose the spring.
3	Slightly open the sound blanket.	 (R6453)	
4	Remove the sound blanket (top upper).	 (R6454)	

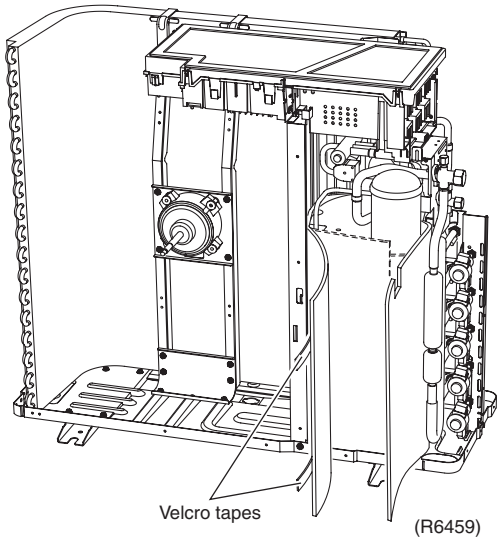
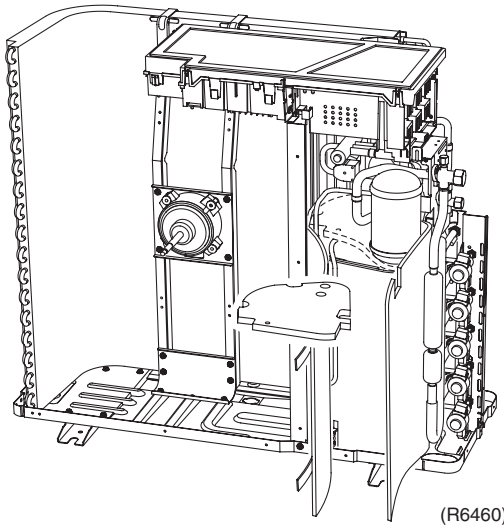
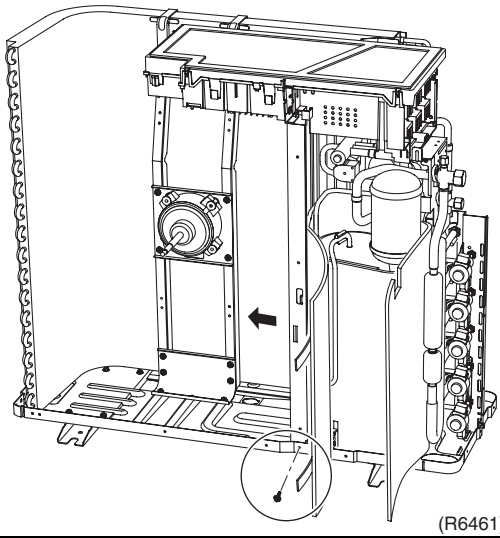
Step	Procedure		Points
5	Remove the discharge pipe thermistor.	 (R6455)	
6	Remove the fixture.	 (R6456)	
3. Removing the Four-way valve coil and motorized valve coil			
1	Remove the screw.	 (R6457)	

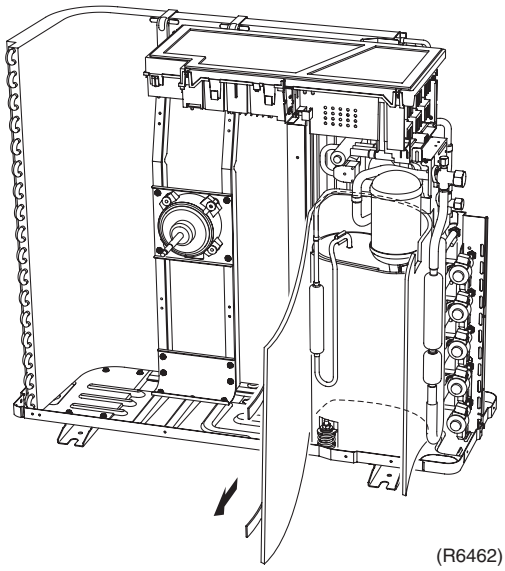
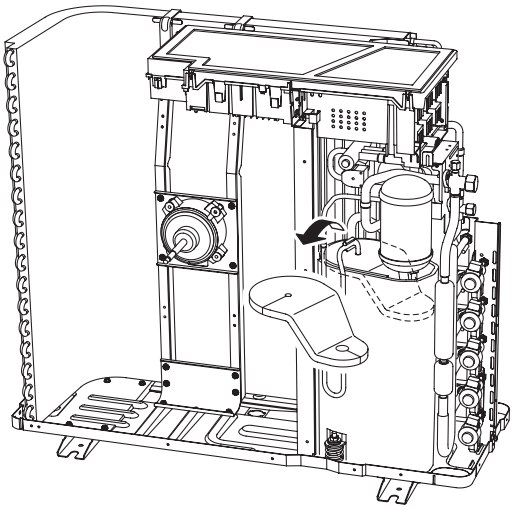
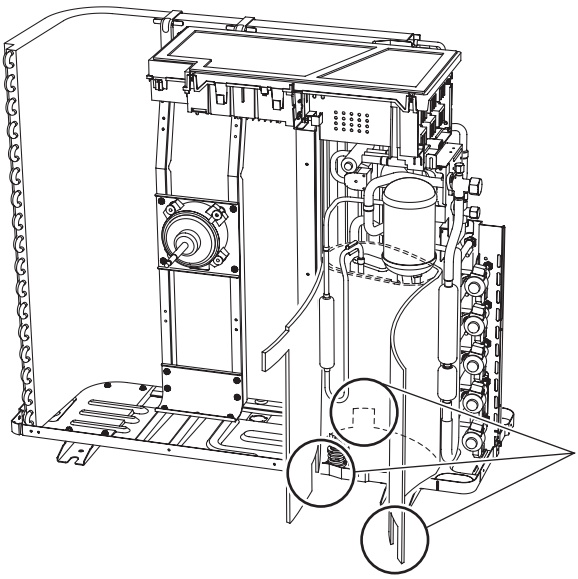
Step	Procedure		Points
2	Remove the Four-way valve coil.	 (B6458)	

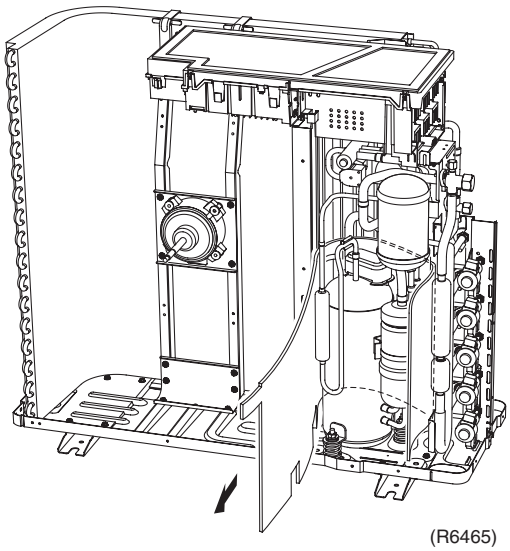
2.6 Removal of Sound Blanket

Procedure

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

Step	Procedure		Points
1	Undo the 2 Velcro tapes off the sound blanket, and open the sound blanket (outer sleeve).	 (R6459)	
2	Remove the sound blanket (top upper).	 (R6460)	■ The sound blanket is fragile. Carefully pass the discharge pipe through it.
3	Remove the screw from the partition plate and open the plate slightly to the left for easy work.	 (R6461)	

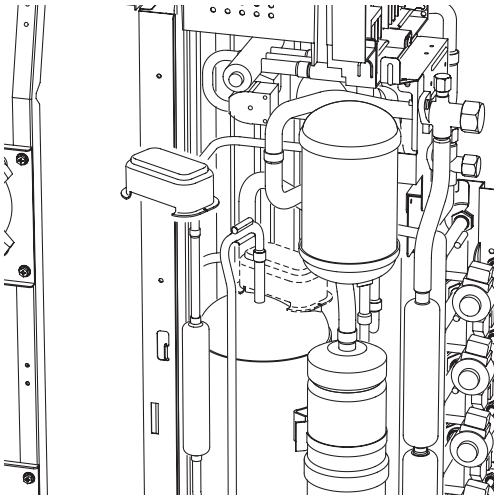
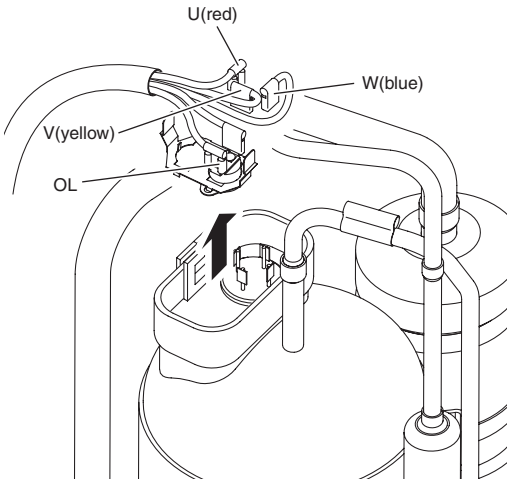
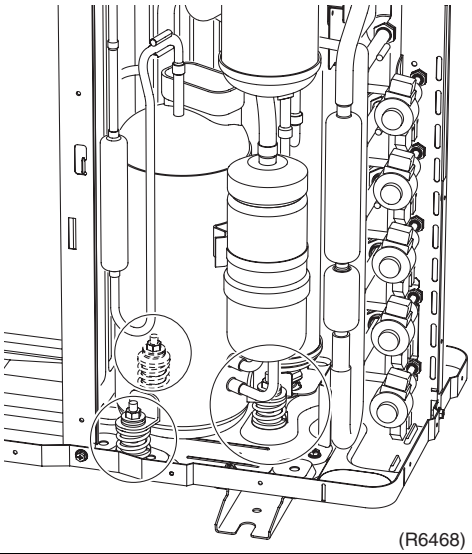
Step	Procedure		Points
4	Remove the sound blanket (outer sleeve).	 (R6462)	■ The sound blanket is fragile. Be careful of the notches of the compressor mount (3 locations).
5	Remove the sound blanket (top lower).	 (R6463)	■ The sound blanket is fragile. Carefully pass the discharge pipe through it.
6	Open the sound blanket (inner sleeve) and remove part of the muffler.	 (R6464)	■ The sound blanket is fragile. Be careful of the notches of the compressor mount (3 locations).

Step	Procedure		Points
7	Remove the sound blanket (outer sleeve).	 (R6465)	

2.7 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 terminal cover.	 (R6466)	
2	Pull out the 3 leads using long-nose pliers.	 (R6467)	■ U : red, V : yellow, W : blue
3	Remove the OL.		
4	Remove the 3 screws.	 (R6468)	

Part 8
Others

1. Others

1.1 Test Run from the Remote Controller

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.

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 (78°F to 82°F in cooling mode, 68°F to 75°F in heating mode).
- For protection, the system disables restart operation for 3 minutes after it is turned off.

For Cooling operation in case of low ambient temperature

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.

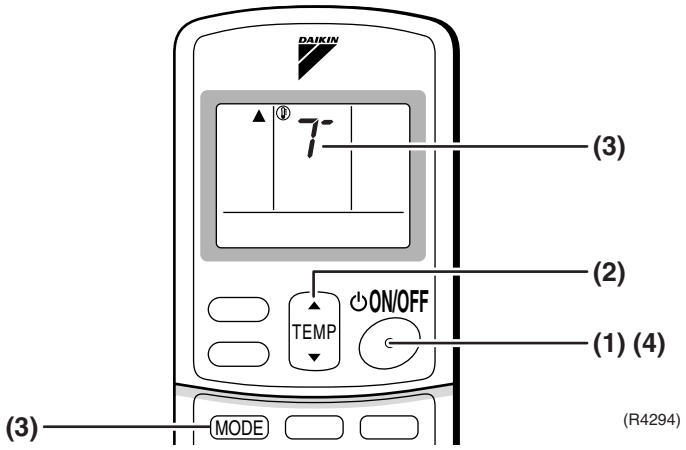
Trial operation from Remote Controller

(1) Press ON/OFF button to turn on the system.
(2) Simultaneously press center 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.

- After trial operation is complete, set the temperature to a normal level (78°F to 82°F).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

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 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.



1.2 Jumper Settings

1.2.1 When Two Units are Installed in One Room

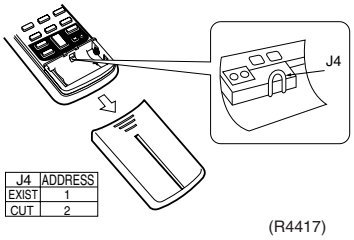
- **How to set the different addresses.**
- When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

PCB in the indoor unit

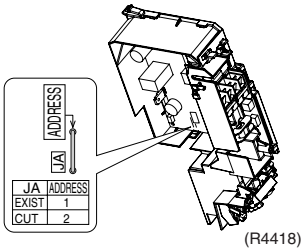
- Remove the front panel.
- Remove the sensor parts cover (2-screws), then remove the electric parts box (1-screw).
- Slide the metallic cover to remove it. (4-claws on the electric parts box.)
- Cut the jumper JA on PCB.

Wireless remote controller (in case of wall mounted type)

- Cut the jumper J4.



(R4417)



(R4418)

1.2.2 Jumper Setting

Jumper (On indoor PCB)	Function	When connected (factory set)	When cut
JC	Power failure recovery function	Auto start	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>

1.3 Application of Silicon Grease to a Power Transistor and a Diode Bridge

Applicable Models

All outdoor units using inverter type compressor for room air conditioner.

When the printed circuit board of an outdoor unit is replaced, it is required that silicon grease (*1) is certainly applied to the heat radiation part (the contact point to the heat radiation fin) of the power transistor and diode bridge.

*1: Part number of the silicon grease – 1172698 (Drawing number 3FB03758-1)

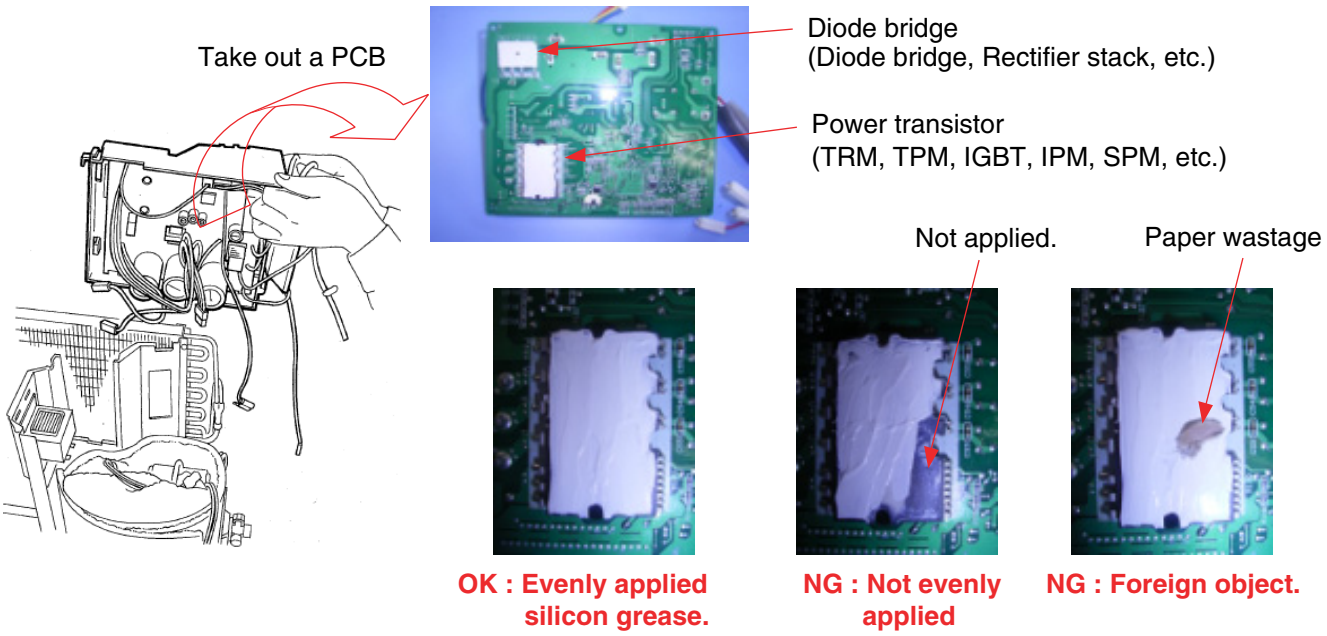
Details

The silicon grease is an essential article for encouraging the heat radiation of the power transistor and the diode bridge. Applying the paste should be implemented in accordance with the following instructions.

Caution: If there is improper heat radiation, smoke may result and cause failure of application. T

- To completely wipe off the old silicon grease on a heat radiation fin.
- To evenly apply the silicon grease to the whole.
- Do not have any foreign objects such as solder or paper waste between the power transistor, the diode bridge, and the heat radiation fin.
- To firmly tighten the screws of the power transistor and the diode bridge, and to surely contact to the heat radiation fin without any gap.

<Example>



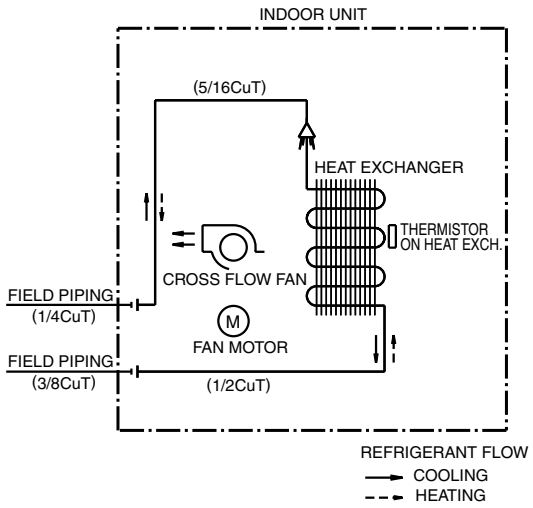
(R7100)

Part 9
Appendix

1. Piping Diagrams

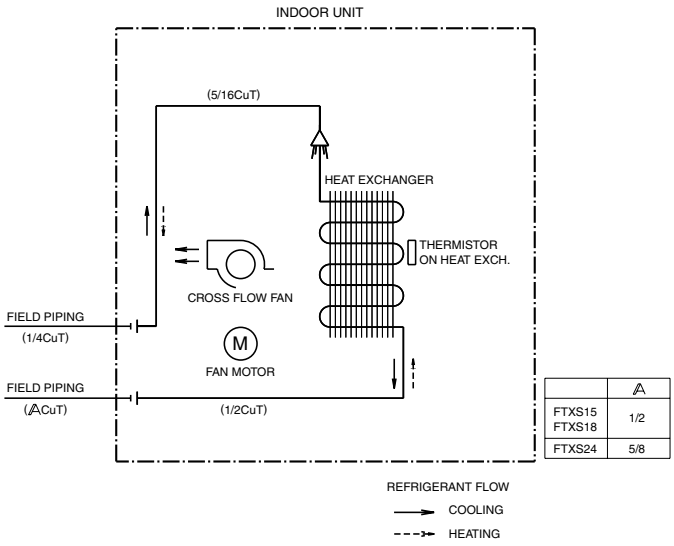
1.1 Indoor Units

CTXS09GVJU, CTXS12GVJU



4D048251A

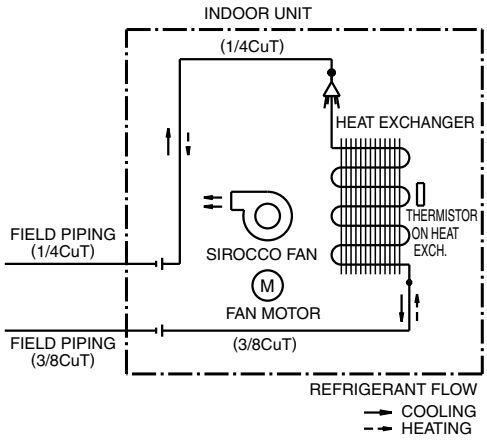
FTXS15DVJU, FTXS18DVJU



	A
FTXS15 FTXS18	1/2
FTXS24	5/8

4D047162

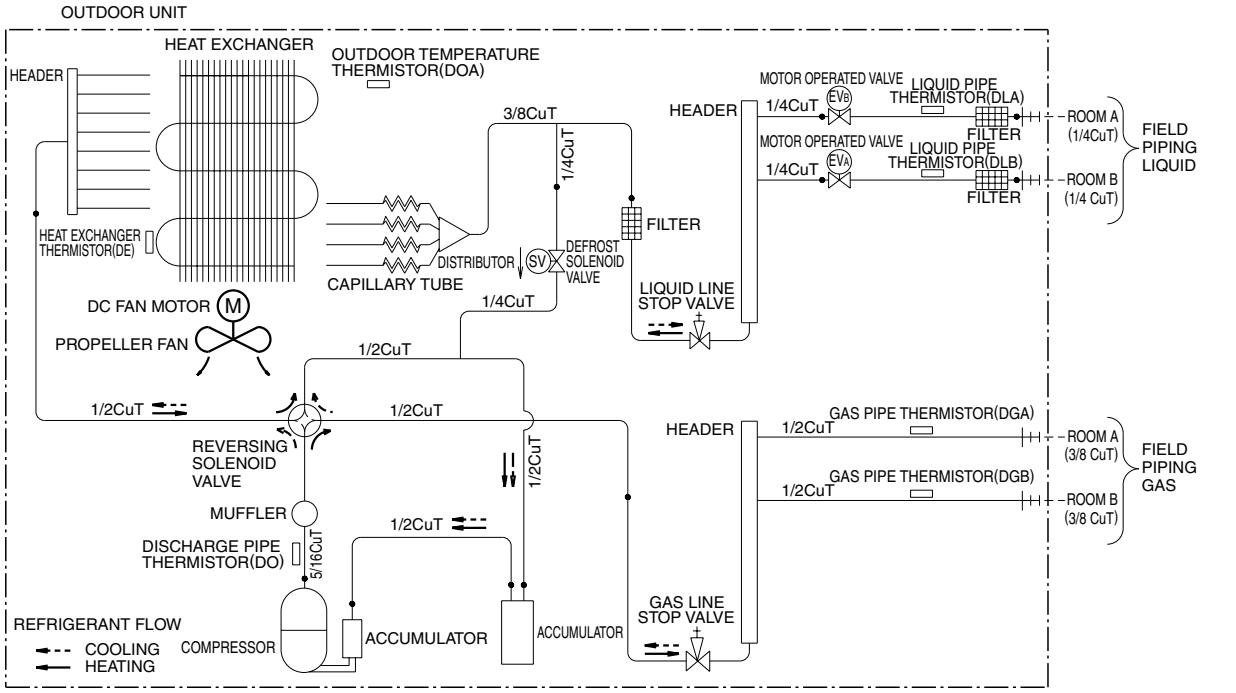
FDXS09DVJU, FDXS12DVJU



4D051787

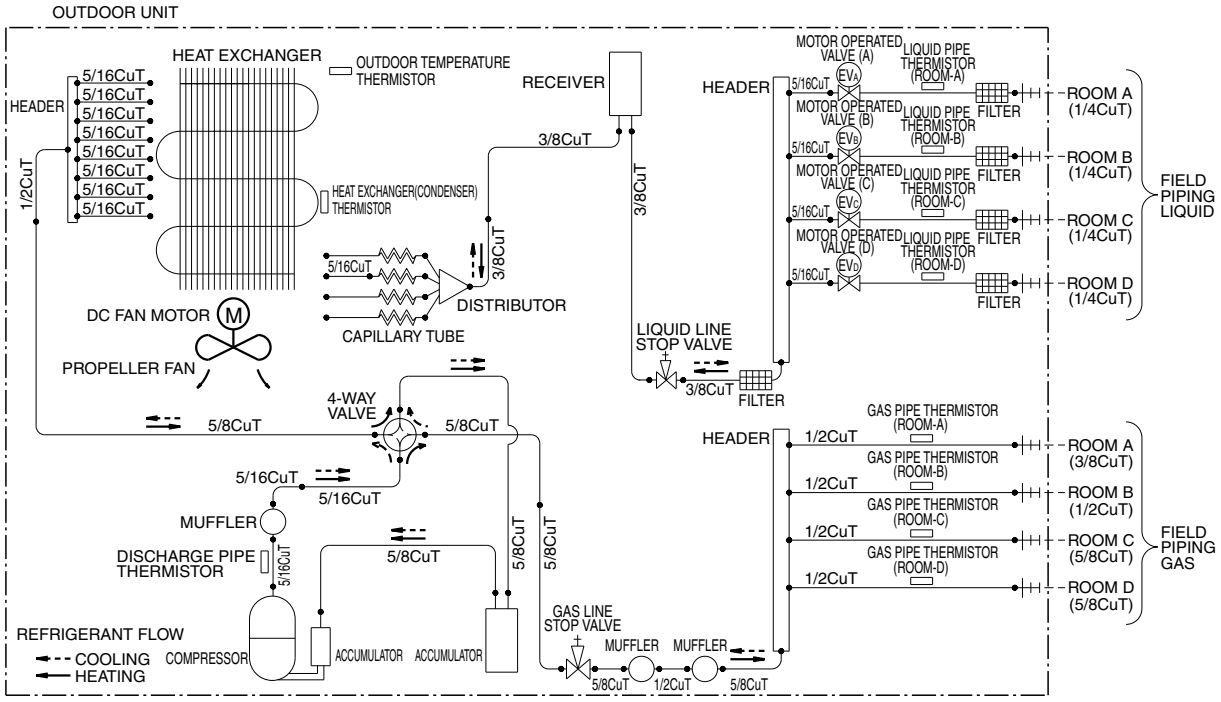
1.2 Outdoor Units

2MXS18GVJU



3D048177A

4MXS32GVJU

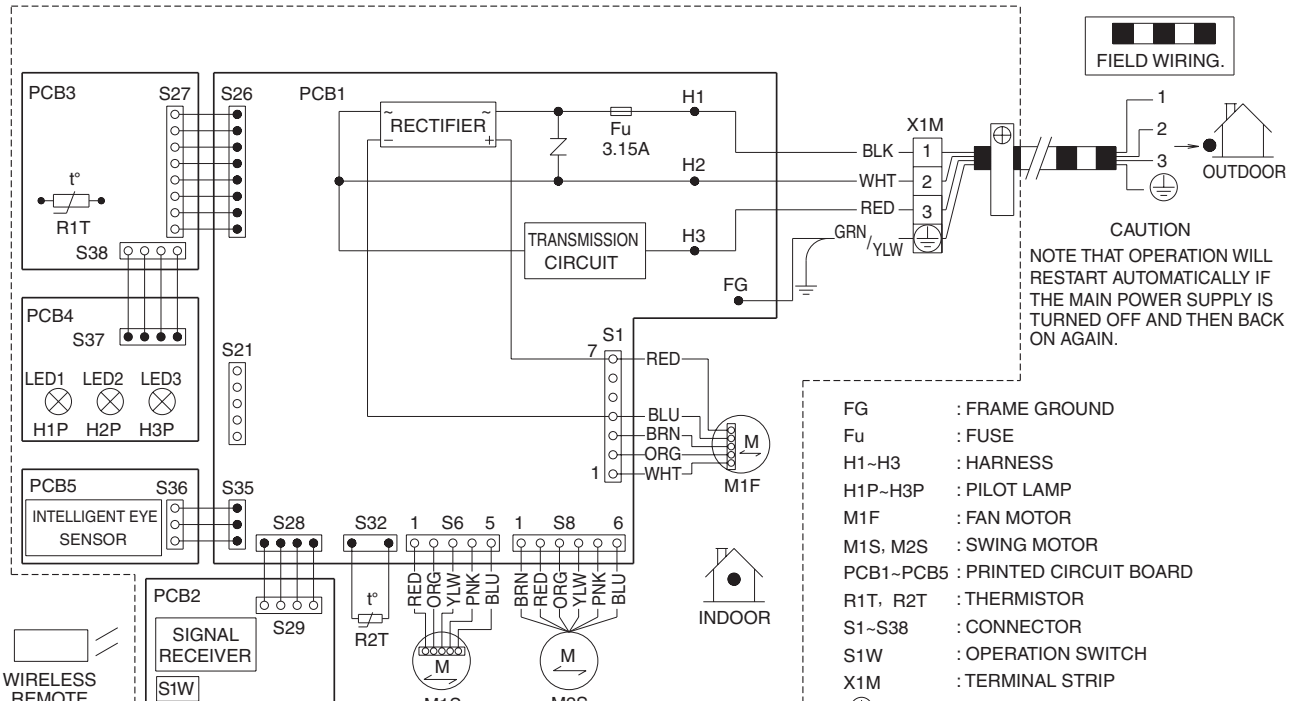


3D058508

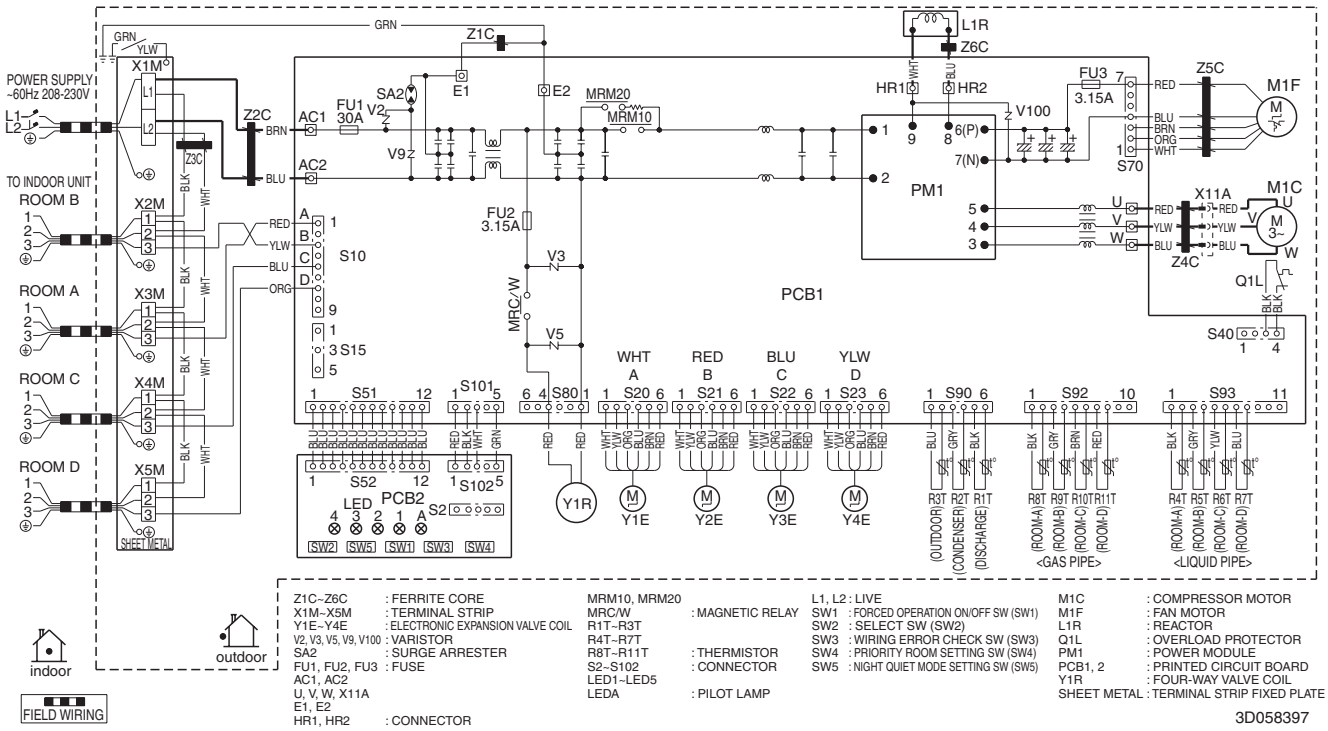
2. Wiring Diagrams

2.1 Indoor Units

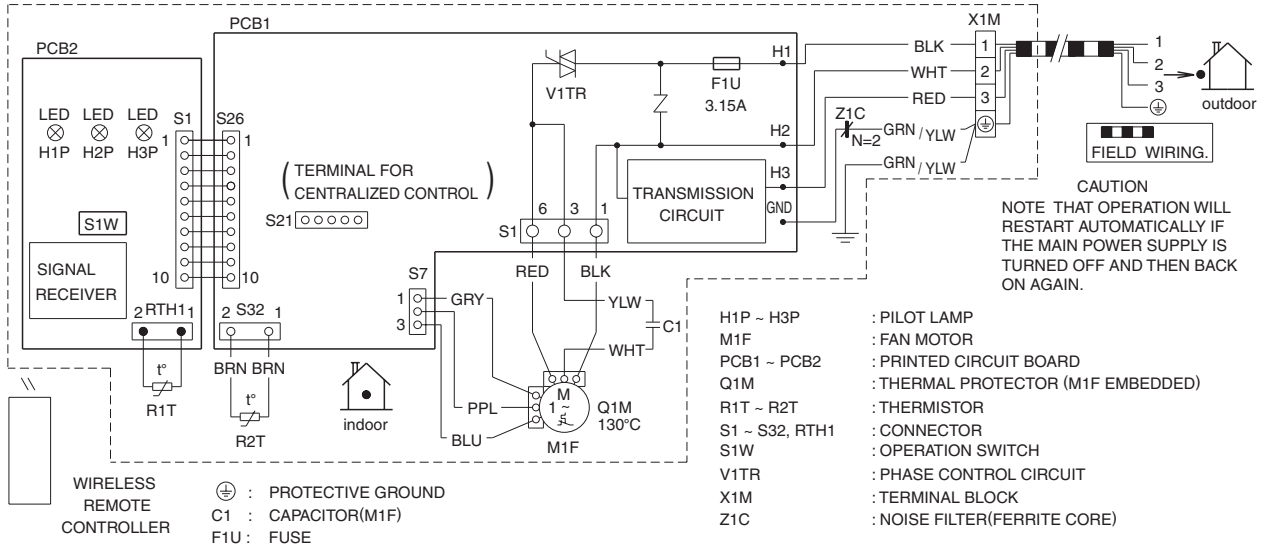
CTXS09GVJU, CTXS12GVJU



FTXS15DVJU, FTXS18DVJU



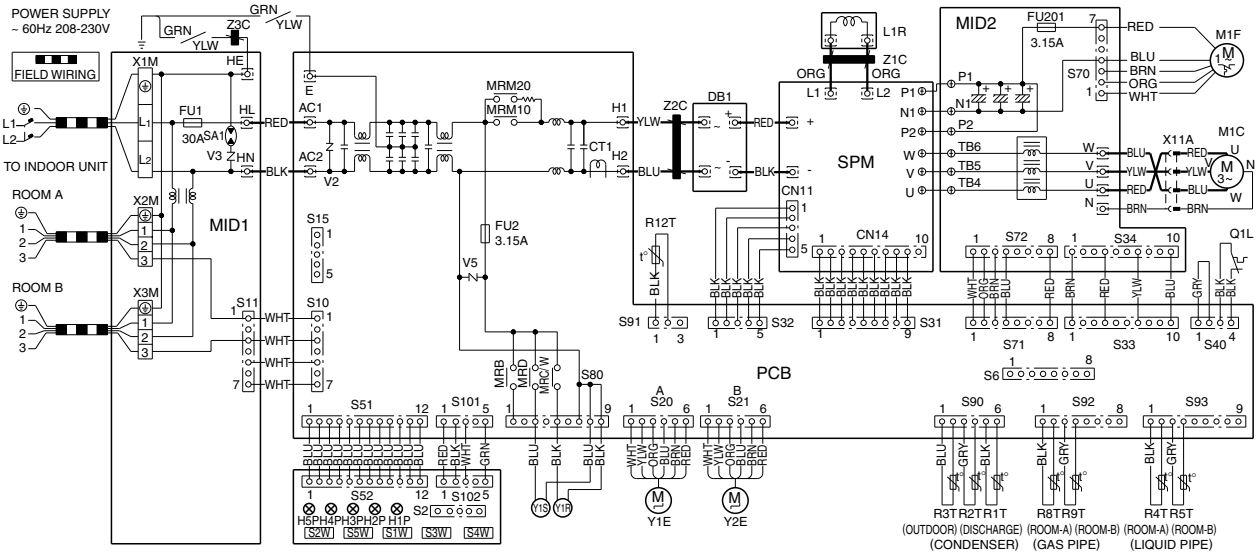
FDXS09DVJU, FDXS12DVJU



3D045012K

2.2 Outdoor Units

2MXS18GVJU



Z1C~Z3C : FERRITE CORE
X1M~X3M : TERMINAL STRIP
Y1E~Y2E : ELECTRONIC EXPANSION VALVE COIL
V2~V5 : VARISTOR
FU1, FU2. FU201 : FUSE
HE, HL, HN
E,AC1, AC2
H1, H2, L1
L2, : CONNECTOR
MRM10, MRM20
MRB, MRD
MRC/W : MAGNETIC RELAY
R1T~R12T : THERMISTOR
S2~S102 : CONNECTOR
H1P~H5P : PILOT LAMP
L1, L2 : LIVE

S1W : FORCED OPERATION ON/OFF SW (SW1)
S2W : FORCED OPERATION MODE SELECT SW (SW2)
S3W : WIRING ERROR CHECK SW (SW3)
S4W : PRIORITY ROOM SETTING SW (SW4)
S5W : NIGHT QUIET MODE SETTING SW SW5)
SA1 : SURGE ARRESTER
Y1R : REVERSING SOLENOID VALVE COIL
Y1S : DEFROST SOLENOID VALVE COIL
PCB : PRINTED CIRCUIT BOARD
DB1 : DIODE BRIDGE
M1C : COMPRESSOR MOTOR
M1F : FAN MOTOR
L1R : REACTOR
Q1L : OVERLOAD PROTECTOR
CT1 : CURRENT TRANSFORMER

MID1~MID2 : MOLDED INTER CONNECT DEVICE
SPM : SYSTEM POWER MODULE

ASSIGNMENTS OF TERMINALS OF THE COMP.

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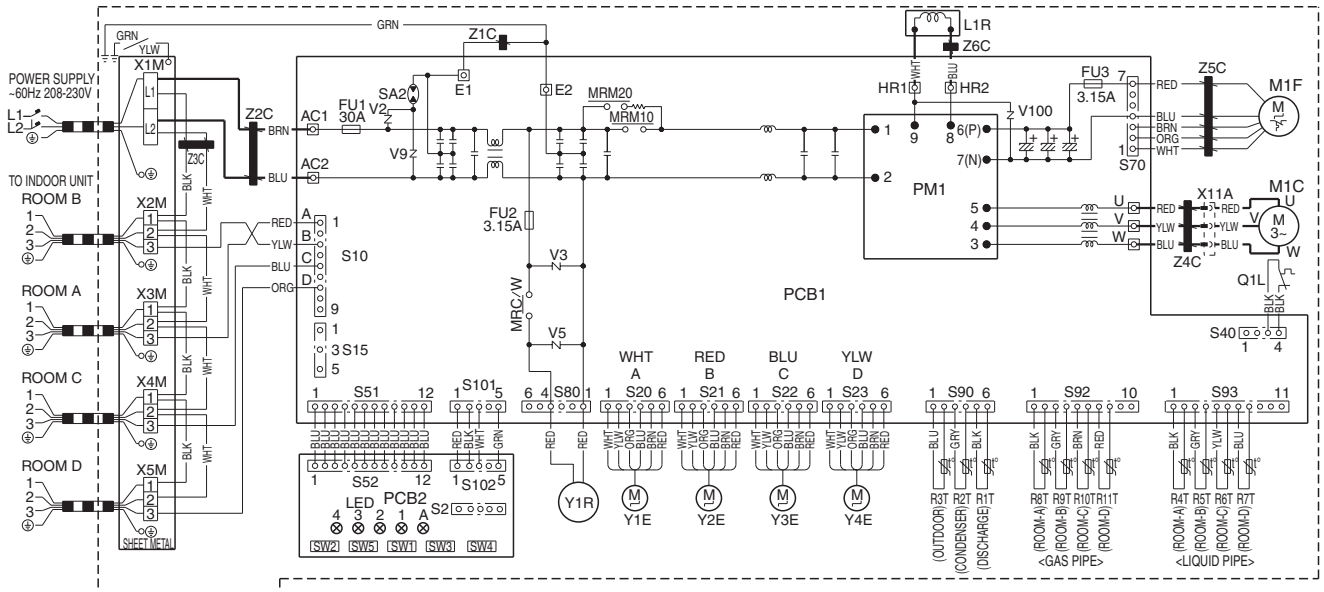
4MXS32GVJU



Z1C~Z6C : FERRITE CORE
X1M~X5M : TERMINAL STRIP
Y1E~Y4E : ELECTRONIC EXPANSION VALVE COIL
V2, V3, V5, V9, V100 : VARISTOR
SA2 : SURGE ARRESTER
FU1, FU2, FU3 : FUSE
AC1, AC2
U, V, W, X11A
E1, E2
HR1, HR2 : CONNECTOR

MRM10, MRM20
MRC/W : MAGNETIC RELAY
R1T~R3T
R4T~R7T
R8T~R11T : THERMISTOR
S2~S102 : CONNECTOR
LED1~LED5
LEDA : PILOT LAMP

L1, L2 : LIVE
SW1 : FORCED OPERATION ON/OFF SW (SW1)
SW2 : SELECT SW (SW2)
SW3 : WIRING ERROR CHECK SW (SW3)
SW4 : PRIORITY ROOM SETTING SW (SW4)
SW5 : NIGHT QUIET MODE SETTING SW (SW5)

M1C : COMPRESSOR MOTOR
M1F : FAN MOTOR
L1R : REACTOR
Q1L : OVERLOAD PROTECTOR
PM1 : POWER MODULE
PCB1, 2 : PRINTED CIRCUIT BOARD
Y1R : FOUR-WAY VALVE COIL
SHEET METAL : TERMINAL STRIP FIXED PLATE

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T

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Drawings & Flow Charts

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 authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

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

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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