DAIKIN

SiUS091133

Service Manual

Inverter Pair

FTXS-L Series
FDXS-L Series

[Applied Models]

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

Inverter Pair
FTXS-L Series
FDXS-L Series

●Cooling Only

Indoor Unit

FTXS30LVJU
FTXS36LVJU

Outdoor Unit

RKS30LVJU
RKS36LVJU

●Heat Pump

Indoor Unit

FTXS09LVJU **FDXS09LVJU**
FTXS12LVJU **FDXS12LVJU**
FTXS15LVJU
FTXS18LVJU
FTXS24LVJU
FTXS30LVJU
FTXS36LVJU

Outdoor Unit

RXS09LVJU
RXS12LVJU
RXS15LVJU
RXS18LVJU
RXS24LVJU
RXS30LVJU
RXS36LVJU

Part 7

Removal Procedure 155

1. Safety Considerations

Read these ***SAFETY CONSIDERATIONS*** carefully before performing any repair work. Comply with these safety symbols without fail.Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

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

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

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.

NOTE ..... Indicates situations that may result in equipment or property-damage accidents only.

1.1 Safety Considerations for Repair

- **If refrigerant gas leaks during repair or service, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes into contact with flames. Refrigerant gas is heavier than air and replaces oxygen. In the event of an accident, a massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not start or stop the air conditioner operation by plugging or unplugging the power cable plug if a plug is used. Plugging or unplugging the power cable plug to operate the equipment may cause an electrical shock or fire.**
- **Use parts listed in the service parts list and appropriate tools to conduct repair work. The use of inappropriate parts or tools may cause an electrical shock or fire.**
- **Disconnect power before disassembling the equipment for repairs. Working on the equipment that is connected to the power supply may cause an electric shock. If it is necessary to supply power to the equipment to conduct repairs or to inspect the circuits, do not touch any electrically charged sections of the equipment.**
- **The step-up capacitor supplies high-voltage electricity to the electrical components of the outdoor unit. Discharge the capacitor completely before conducting repair work. A charged capacitor may cause an electrical shock.**
- **If refrigerant gas is discharged during repair work, do not touch the discharged refrigerant gas. The refrigerant gas may cause frostbite.**
- **Use only pipes, flare nuts, tools, and other materials designed specifically for R410A refrigerant systems. Never use tools or materials designed for R22 refrigerant systems on an R410A refrigerant system. Doing so can cause a serious accident or an equipment failure.**
- **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 electrical shock.**
- **Prior to disconnecting the suction or discharge pipe from the compressor at the welded section, pump-down the refrigerant gas completely in a well-ventilated place first. If there is refrigerant gas or oil remaining inside the compressor, the refrigerant gas or oil can discharge when the pipe is being disconnected and it may cause an injury.**
- **Wear a safety helmet, gloves, and a safety belt when working at an elevated height of more than 6.5 ft (2 m). Insufficient safety measures may cause a fall resulting in injury.**
- **Do not mix air or gas other than the specified refrigerant R410A to the refrigerant system. If air enters the refrigerant systems, it can cause an excessive high pressure resulting in equipment damage and injury.**
- **When relocating the equipment, check if the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and the equipment is not properly secured, the equipment may fall and cause injury.**
- **Securely fasten the outside unit terminal cover (panel). If the terminal cover/panel is not fastened properly, dust or water may enter the outside unit causing fire or electric shock.**
- **When relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R-410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.**
- **If refrigerant gas leaks, locate the leaking point and repair it before charging refrigerant. After charging refrigerant, check for refrigerant leaks. If the leaking point cannot be located and the repair work must be stopped, perform a 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 if it comes into contact with flames.**

- **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 on it. Washing the unit with water may cause an electrical shock.**
- **Ground the unit when repairing equipment in a humid or wet place to avoid electrical shocks.**
- **Turn off the power when cleaning the equipment to prevent internal fans that rotate at high speed from starting suddenly as they can cause injury.**
- **Let the refrigerant lines cool down before performing any repair work. Working on the unit when the refrigerant lines are hot may cause burns.**
- **All welding and cutting operations must be done in a well-ventilated place to prevent the accumulation of toxic fumes or possibly oxygen deficiency to occur.**
- **Check the grounding and repair it if the equipment is not properly grounded. Improper grounding may cause an electrical shock.**
- **Measure the insulation resistance after the repair. The resistance must be 1MΩ or higher. Faulty insulation may cause an electrical shock.**
- **Check the drainage of the indoor unit after finishing repair work. Faulty drainage may cause water to enter the room resulting in wet floors and furniture.**
- **Do not tilt the unit when removing it. The water inside the unit may spill resulting in wet floors and furniture.**
- **Dismantling of the unit, disposal of the refrigerant, oil, and additional parts, should be done in accordance with the relevant local, state, and national regulations.**

1.2 Safety Considerations for Users

- **Never attempt to modify the equipment. Doing so can cause electrical shock, excessive heat generation, or fire.**
- **If the power cable and lead wires have scratches or have become deteriorated, have them replaced. Damaged cable and wires may cause an electrical shock or fire.**
- **Do not use a joined power cable or an extension cord, or share the same power outlet with other electrical appliances as it may cause an electrical shock or fire.**
- **Use an exclusive power circuit for the equipment. Insufficient circuit amperage capacity may cause an electrical shock or fire.**
- **Do not damage or modify the power cable. Damaged or modified power cables may cause an electrical shock or fire. Placing heavy items on the power cable or pulling the power cable may damage the cable.**
- **Check the unit foundation for damage on a continual basis, especially if it has been in use for a long time. If left in a damaged condition, the unit may fall and cause injury. If the installation platform or frame has corroded, have it replaced. A corroded platform or frame may cause the unit to fall resulting in injury.**
- **If the unit has a power cable plug and it is dirty, clean the plug before securely inserting it into a power outlet. If the plug has a loose connection, tighten it or it may cause electrical shock or fire.**
- **After replacing the battery in the remote controller, dispose of the old battery to prevent children from swallowing it. If a child swallows the battery, see a doctor immediately.**
- **Never remove the fan guard of the unit. A fan rotating at high speed without the fan guard is very dangerous.**
- **Before cleaning the unit, stop the operation of the unit by turning the power off or by pulling the power cable plug out from its receptacle. Otherwise an electrical shock or injury may result.**
- **Do not wipe the controller operation panel with benzene, thinner, chemical dust cloth, etc. The panel may get discolored or the coating can peel off. If it is extremely dirty, soak a cloth in a water-diluted neutral detergent, squeeze it well, and wipe the panel clean. Then wipe it with another dry cloth.**

Part 1
List of Functions

1. Functions

1.1 FTXS Series

Category	Functions	FTXS09/12/15/18LVJU RXS09/12/15/18LVJU	FTXS24LVJU RXS24LVJU	Category	Functions	FTXS09/12/15/18LVJU RXS09/12/15/18LVJU	FTXS24LVJU RXS24LVJU
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 ~ 64.4	5 ~ 64.4		Air-Purifying Filter with Photocatalytic Deodorizing Function	—	—
	PAM Control	●	●		Titanium Apatite Photocatalytic Air-Purifying Filter	●	●
Compressor	Oval Scroll Compressor	—	—				
	Swing Compressor	●	●		Air Filter (Prefilter)	●	●
	Rotary Compressor	—	—		Wipe-clean Flat Panel	●	●
	Reluctance DC Motor	●	●		Washable Grille	—	—
Comfortable Airflow	Power-Airflow Louver (Horizontal Blade)	—	—		MOLD PROOF Operation	—	—
					Heating Dry Operation	—	—
	Power-Airflow Dual Louvers	●	●		Good-Sleep Cooling Operation	—	—
	Power-Airflow Diffuser	—	—	Timer	WEEKLY TIMER Operation	●	●
	Wide-Angle Fins (Vertical Blades)	●	●		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 Operation	●	●		Wiring Error Check Function	—	—
Comfort Control	Auto Fan Speed	●	●		Anticorrosion Treatment of Outdoor Heat Exchanger	●	●
	Indoor Unit Quiet Operation	●	●				
	NIGHT QUIET Mode (Automatic)	—	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	●	—
	OUTDOOR UNIT QUIET Operation (Manual)	●	●		H/P, C/O Compatible Indoor Unit	—	—
	INTELLIGENT EYE Operation	●	●		Flexible Power Supply Correspondence	—	—
	Quick Warming Function	●	●		Chargeless	32.8 ft	32.8 ft
	Hot-Start Function	●	●		Either Side Drain (Right or Left)	●	●
	Automatic Defrosting	●	●		Power Selection	—	—
Operation	Automatic Operation	●	●		Low Temperature Cooling Operation	●	●
	Program Dry Function	●	●		°F/°C Changeover R/C Temperature Display (factory setting: °F)	●	●
	Fan Only	●	●	Remote Control	5-Room Centralized Controller (Option)	●	●
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	—	—		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	●	●
	Inverter POWERFUL Operation	●	●		Remote Control Adaptor (Normal Open Contact) (Option)	●	●
	Priority-Room Setting	—	—				
	COOL / HEAT Mode Lock	—	—		DIII-NET Compatible (Adaptor) (Option)	●	●
	HOME LEAVE Operation	—	—	Remote Controller	Wireless	●	●
	ECONO Operation	●	●		Wired (Option)	●	●
	Indoor Unit [ON/OFF] Button	●	●				
	Signal Receiving Sign	●	●				
	R/C with Back Light	●	●				
	Temperature Display	—	—				

Note: ● : Holding Functions
— : No Functions

Category	Functions	FTXS30/36LVJU RKS30/36LVJU	FTXS30/36LVJU RXS30/36LVJU	Category	Functions	FTXS30/36LVJU RKS30/36LVJU	FTXS30/36LVJU RXS30/36LVJU
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 ~ 64.4		Air-Purifying Filter with Photocatalytic Deodorizing Function	—	—
	PAM Control	●	●		Titanium Apatite Photocatalytic Air-Purifying Filter	●	●
Compressor	Oval Scroll Compressor	—	—		Air Filter (Prefilter)	●	●
	Swing Compressor	●	●		Wipe-Clean Flat Panel	●	●
	Rotary Compressor	—	—		Washable Grille	—	—
	Reluctance DC Motor	●	●		MOLD PROOF Operation	—	—
Comfortable Airflow	Power-Airflow Louver (Horizontal Blade)	—	—		Heating Dry Operation	—	—
	Power-Airflow Dual Louvers	●	●		Good-Sleep Cooling Operation	—	—
	Power-Airflow Diffuser	—	—	Timer	WEEKLY TIMER	●	●
	Wide-Angle Fins (Vertical Blades)	●	●		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 Operation	●	●		Wiring Error Check Function	—	—
Comfort Control	Auto Fan Speed	●	●		Anticorrosion Treatment of Outdoor Heat Exchanger	●	●
	Indoor Unit Quiet Operation	●	●	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	—	—
	NIGHT QUIET Mode (Automatic)	—	—		H/P, C/O Compatible Indoor Unit	●	●
	OUTDOOR UNIT QUIET Operation (Manual)	●	●		Flexible Power Supply Correspondence	—	—
	INTELLIGENT EYE Operation	●	●		Chargeless	32.8 ft	32.8 ft
	Quick Warming Function (Preheating Operation)	—	●		Either Side Drain (Right or Left)	●	●
	Hot-Start Function	—	●		Power Selection	—	—
	Automatic Defrosting	—	●		Low Temperature Cooling Operation	●	●
Operation	Automatic Operation	—	●		°F/°C Changeover R/C Temperature Display (factory setting : °F)	●	●
	Program Dry Function	●	●	Remote Control	5-Rooms Centralized Controller (Option)	●	●
	Fan Only	●	●		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	●	●
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	—	—		Remote Control Adaptor (Normal Open Contact) (Option)	●	●
	Inverter POWERFUL Operation	●	●		DIII-NET Compatible (Adaptor) (Option)	●	●
	Priority-Room Setting	—	—	Remote Controller	Wireless	●	●
	COOL / HEAT Mode Lock	—	—		Wired (Option)	●	●
	HOME LEAVE Operation	—	—				
	ECONO Operation	●	●	Ultra low ambient cooling function	Cooling to - 40°F/-40°C with field installed accessory kit RK530/36LVJU only	●	—
	Indoor Unit [ON/OFF] Button	●	●				
	Signal Receiving Sign	●	●				
	R/C with Back Light	●	●				
	Temperature Display	—	—				

Note: ● : Holding Functions
— : No Functions

1.2 FDXS Series

Category	Functions	FDXS09/12LVJU RXS09/12LVJU	Category	Functions	FDXS09/12LVJU RXS09/12LVJU
Basic Function	Inverter (with Inverter Power Control)	●	Health & Clean	Air-Purifying Filter	—
	Operation Limit for Cooling (°FDB)	14 ~ 114.8		Photocatalytic Deodorizing Filter	—
	Operation Limit for Heating (°FWB)	5 ~ 64.4		Air-Purifying Filter with Photocatalytic Deodorizing Function	—
	PAM Control	●		Titanium Apatite Photocatalytic Air-Purifying Filter	—
Compressor	Oval Scroll Compressor	—			
	Swing Compressor	●		Air Filter (Prefilter)	●
	Rotary Compressor	—		Wipe-clean Flat Panel	—
	Reluctance DC Motor	●		Washable Grille	—
Comfortable Airflow	Power-Airflow Louver (Horizontal Blade)	—		MOLD PROOF Operation	—
	Power-Airflow Dual Louvers	—		Heating Dry Operation	—
	Power-Airflow Diffuser	—		Good-Sleep Cooling Operation	—
	Wide-Angle Fins (Vertical Blades)	—	Timer	WEEKLY TIMER Operation	—
	Vertical Auto-Swing (Up and Down)	—		24-Hour ON/OFF TIMER	●
	Horizontal Auto-Swing (Right and Left)	—		NIGHT SET Mode	●
	3-D Airflow	—	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	●
	COMFORT AIRFLOW Operation	—		Self-Diagnosis (Digital, LED) Display	●
Comfort Control	Auto Fan Speed	●		Wiring Error Check Function	—
	Indoor Unit Quiet Operation	●		Anticorrosion Treatment of Outdoor Heat Exchanger	●
	NIGHT QUIET Mode (Automatic)	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit	●
	OUTDOOR UNIT QUIET Operation (Manual)	●		H/P, C/O Compatible Indoor Unit	—
	INTELLIGENT EYE Operation	—		Flexible Power Supply Correspondence	—
	Quick Warming Function	●		Chargeless	32.8 ft
	Hot-Start Function	●		Either Side Drain (Right or Left)	—
	Automatic Defrosting	●		Power Selection	—
Operation	Automatic Operation	●		Low Temperature Cooling Operation	●
	Program Dry Function	●		°F/°C Changeover R/C Temperature Display (factory setting: °F)	●
	Fan Only	●	Remote Control	5-Room Centralized Controller (Option)	●
Lifestyle Convenience	New POWERFUL Operation (Non-Inverter)	—		Remote Control Adaptor (Normal Open-Pulse Contact) (Option)	●
	Inverter POWERFUL Operation	●		Remote Control Adaptor (Normal Open Contact) (Option)	●
	Priority-Room Setting	—			
	COOL / HEAT Mode Lock	—		DIII-NET Compatible (Adaptor) (Option)	●
	HOME LEAVE Operation	—	Remote Controller	Wireless	●
	ECONO Operation	●		Wired (Option)	●
	Indoor Unit [ON/OFF] Button	●			
	Signal Receiving Sign	●			
	R/C with Back Light	●			
	Temperature Display	—			

Note: ● : Holding Functions
— : No Functions

Part 2
Specifications

1. Specifications

1.1 FTXS Series

60 Hz, 208 - 230 V

Model	Indoor Unit		FTXS09LVJU		FTXS12LVJU	
	Outdoor Unit		RXS09LVJU		RXS12LVJU	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min.~Max.)		kW	2.64 (1.3 ~ 2.64)	3.52 (1.3 ~ 3.52)	3.52 (1.4 ~ 3.52)	4.22 (1.4 ~ 4.22)
		Btu/h	9,000 (4,400 ~ 9,000)	12,000 (4,400 ~ 12,000)	12,000 (4,800 ~ 12,000)	14,400 (4,800 ~ 14,400)
		kcal/h	2,300 (1,120 ~ 2,270)	3,030 (1,120 ~ 3,030)	3,000 (1,200 ~ 3,030)	3,630 (1,200 ~ 3,630)
Moisture Removal		gal/h (L/h)	0.3 (1.1)	—	0.5 (1.9)	—
Running Current (Rated)		A	3.6 - 3.3	4.4 - 3.9	4.9 - 4.4	4.9 - 4.5
Power Consumption Rated (Min.~Max.)		W	590 (320 ~ 590)	790 (310 ~ 790)	940 (350 ~ 940)	970 (340 ~ 970)
Power Factor		%	78.8 - 77.7	86.3 - 88.1	92.2 - 92.9	95.2 - 93.7
COP (Rated)		W/W	4.47 (4.06 ~ 4.47)	4.46 (4.20 ~ 4.46)	3.74 (4.00 ~ 3.74)	4.35 (4.10 ~ 4.35)
EER (Rated)		Btu/h·W	15.3 (13.8 ~ 15.3)	15.2 (14.2 ~ 15.2)	12.8 (13.7 ~ 12.8)	14.8 (14.1 ~ 14.8)
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (6.4)		ϕ 1/4 (6.4)	
	Gas	in. (mm)	ϕ 3/8 (9.5)		ϕ 3/8 (9.5)	
	Drain	in. (mm)	ϕ 5/8 (16.0)		ϕ 5/8 (16.0)	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Interunit Piping Length		ft (m)	65.6 (20)		65.6 (20)	
Max. Interunit Height Difference		ft (m)	49.2 (15)		49.2 (15)	
Chargeless		ft (m)	32.8 (10)		32.8 (10)	
Amount of Additional Charge of Refrigerant		oz/ft (g/m)	0.21 (20)		0.21 (20)	
Indoor Unit			**FTXS09LVJU**		**FTXS12LVJU**	
Front Panel Color			White		White	
Airflow Rate	H	m^3/min (cfm)	10.8 (381)	11.9 (420)	11.4 (403)	12.4 (438)
	M		7.9 (279)	9.1 (321)	8.7 (307)	9.5 (335)
	L		5.5 (194)	6.6 (233)	5.8 (205)	6.8 (240)
	SL		4.1 (145)	6.2 (219)	4.4 (155)	6.0 (212)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	23		23	
	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	0.09 - 0.08	0.11 - 0.10	0.13 - 0.12	0.14 - 0.13
Power Consumption (Rated)		W	18 - 18	21 - 21	26 - 26	28 - 28
Power Factor (Rated)		%	96.2 - 97.8	91.8 - 91.3	96.2 - 94.2	96.2 - 93.6
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	11-5/8 × 31-1/2 × 8-7/16 (295 × 800 × 215)		11-5/8 × 31-1/2 × 8-7/16 (295 × 800 × 215)	
Packaged Dimensions (H × W × D)		in. (mm)	10-13/16 × 34-1/4 × 14-7/16 (274 × 870 × 366)		10-13/16 × 34-1/4 × 14-7/16 (274 × 870 × 366)	
Weight (Mass)		Lbs (kg)	20 (9)		22 (10)	
Gross Weight (Gross Mass)		Lbs (kg)	29 (13)		31 (14)	
Sound Pressure Level (H / M / L / SL)		dB(A)	41 / 33 / 25 / 22	42 / 35 / 28 / 25	45 / 37 / 29 / 23	45 / 39 / 29 / 26
Sound Power Level		dB	57	58	61	61
Outdoor Unit			**RXS09LVJU**		**RXS12LVJU**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		1YC23AEXD		1YC23AEXD	
	Motor Output	W	600		600	
Refrigerant Oil	Type		FVC50K		FVC50K	
	Charge	oz (L)	12.5 (0.375)		12.5 (0.375)	
Refrigerant	Type		R-410A		R-410A	
	Charge	Lbs (kg)	2.43 (1.1)		2.65 (1.2)	
Airflow Rate	H	m^3/min (cfm)	31.2 (1,102)	28.1 (992)	33.5 (1,183)	28.1 (992)
	L		28.0 (989)	23.8 (840)	28.0 (989)	23.8 (840)
Fan	Type		Propeller		Propeller	
	Motor Output	W	23		23	
Running Current (Rated)		A	3.5 - 3.2	4.3 - 3.8	4.8 - 4.3	4.8 - 4.4
Power Consumption (Rated)		W	572 - 572	769 - 769	914 - 914	942 - 942
Power Factor (Rated)		%	78.6 - 77.7	86.0 - 88.0	91.5 - 92.4	94.4 - 93.1
Starting Current		A	4.4		4.9	
Dimensions (H × W × D)		in. (mm)	21-5/8 × 30-1/8 × 11-1/4 (550 × 765 × 285)		21-5/8 × 30-1/8 × 11-1/4 (550 × 765 × 285)	
Packaged Dimensions (H × W × D)		in. (mm)	25 × 34-5/8 × 14-3/16 (635 × 880 × 360)		25 × 34-5/8 × 14-3/16 (635 × 880 × 360)	
Weight (Mass)		Lbs (kg)	75 (34)		75 (34)	
Gross Weight (Gross Mass)		Lbs (kg)	89 (41)		89 (41)	
Sound Pressure Level (H / L)		dB(A)	47 / 43	48 / 44	49 / 44	49 / 45
Sound Power Level (H)		dB	61	62	63	63
Drawing No.			3D075491		3D075492	

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

Cooling	Heating	Piping Length
Indoor ; 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB) Outdoor ; 95°FDB (35°CDB) / 75°FWB (24°CWB)	Indoor ; 70°FDB (21°CDB) / 60°FWB (15.6°CWB) Outdoor ; 47°FDB (8.3°CDB) / 43°FWB (6°CWB)	25 ft (7.5 m)

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m^3/min × 35.3

60 Hz, 208 - 230 V

Model	Indoor Unit		FTXS15LVJU		FTXS18LVJU	
	Outdoor Unit		RXS15LVJU		RXS18LVJU	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min.~Max.)		kW	4.4 (1.7 ~ 4.4)	5.28 (1.7 ~ 5.28)	5.28 (1.7 ~ 5.28)	6.33 (1.7 ~ 6.33)
		Btu/h	15,000 (5,800 ~ 15,000)	18,000 (5,800 ~ 18,000)	18,000 (5,800 ~ 18,000)	21,600 (5,800 ~ 21,600)
		kcal/h	3,780 (1,460 ~ 3,780)	4,540 (1,460 ~ 4,540)	4,540 (1,460 ~ 4,540)	5,440 (1,460 ~ 5,440)
Moisture Removal		gal/h (L/h)	0.8 (3.0)	—	1.0 (3.8)	—
Running Current (Rated)		A	5.2 - 4.7	6.5 - 5.9	7.1 - 6.4	8.4 - 7.6
Power Consumption Rated (Min.~Max.)		W	1,040 (450 ~ 1,040)	1,320 (450 ~ 1,320)	1,420 (450 ~ 1,420)	1,710 (450 ~ 1,710)
Power Factor		%	96.2 - 96.2	97.6 - 97.3	96.2 - 96.5	97.9 - 97.8
COP (Rated)		W/W	4.23 (3.78 ~ 4.23)	4.00 (3.78 ~ 4.00)	3.72 (3.78 ~ 3.72)	3.70 (3.78 ~ 3.70)
EER (Rated)		Btu/h·W	14.4 (12.9 ~ 14.4)	13.6 (12.9 ~ 13.6)	12.7 (12.9 ~ 12.7)	12.6 (12.9 ~ 12.6)
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (6.4)		ϕ 1/4 (6.4)	
	Gas	in. (mm)	ϕ 1/2 (12.7)		ϕ 1/2 (12.7)	
	Drain	in. (mm)	ϕ 5/8 (16.0)		ϕ 5/8 (16.0)	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Interunit Piping Length		ft (m)	98.4 (30)		98.4 (30)	
Max. Interunit Height Difference		ft (m)	65.6 (20)		65.6 (20)	
Chargeless		ft (m)	32.8 (10)		32.8 (10)	
Amount of Additional Charge of Refrigerant		oz/ft (g/m)	0.21 (20)		0.21 (20)	
Indoor Unit			**FTXS15LVJU**		**FTXS18LVJU**	
Front Panel Color			White		White	
Airflow Rate	H	m³/min (cfm)	16.1 (568)	16.8 (593)	16.5 (583)	17.7 (625)
	M		13.5 (477)	14.3 (505)	13.7 (484)	14.9 (526)
	L		10.9 (385)	11.8 (417)	10.9 (385)	12.2 (431)
	SL		10.2 (360)	10.5 (371)	10.2 (360)	11.3 (399)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	48		48	
	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	0.31 - 0.29	0.31 - 0.29	0.32 - 0.30	0.32 - 0.30
Power Consumption (Rated)		W	38 - 38	38 - 38	38 - 38	38 - 38
Power Factor (Rated)		%	58.9 - 57.0	58.9 - 57.0	57.1 - 55.1	57.1 - 55.1
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	13-3/8 × 41-5/16 × 9-3/4 (340 × 1,050 × 248)		13-3/8 × 41-5/16 × 9-3/4 (340 × 1,050 × 248)	
Packaged Dimensions (H × W × D)		in. (mm)	13 × 45-11/16 × 16-7/8 (331 × 1,160 × 429)		13 × 45-11/16 × 16-7/8 (331 × 1,160 × 429)	
Weight (Mass)		Lbs (kg)	31 (14)		31 (14)	
Gross Weight (Gross Mass)		Lbs (kg)	44 (20)		44 (20)	
Sound Pressure Level (H / M / L / SL)		dB(A)	45 / 40 / 35 / 32	43 / 38 / 33 / 30	46 / 41 / 36 / 33	45 / 40 / 35 / 32
Sound Power Level		dB	61	59	62	61
Outdoor Unit			**RXS15LVJU**		**RXS18LVJU**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		2YC36BXD		2YC36BXD	
	Motor Output	W	1,100		1,100	
Refrigerant Oil	Type		FVC50K		FVC50K	
	Charge	oz (L)	21.8 (0.650)		21.8 (0.650)	
Refrigerant	Type		R-410A		R-410A	
	Charge	Lbs (kg)	3.97 (1.8)		3.97 (1.8)	
Airflow Rate	H	m³/min (cfm)	48.5 (1,713)	39.8 (1,405)	50.4 (1,780)	40.9 (1,444)
	L		41.6 (1,469)	37.0 (1,306)	42.3 (1,494)	37.6 (1,328)
Fan	Type		Propeller		Propeller	
	Motor Output	W	53		53	
Running Current (Rated)		A	5.0 - 4.5	6.3 - 5.7	6.9 - 6.2	8.2 - 7.4
Power Consumption (Rated)		W	1,002 - 1,002	1,282 - 1,282	1,382 - 1,382	1,672 - 1,672
Power Factor (Rated)		%	96.3 - 96.8	97.8 - 97.8	96.3 - 96.9	98.0 - 98.2
Starting Current		A	6.5		8.4	
Dimensions (H × W × D)		in. (mm)	28-15/16 × 32-1/2 × 11-13/16 (735 × 825 × 300)		28-15/16 × 32-1/2 × 11-13/16 (735 × 825 × 300)	
Packaged Dimensions (H × W × D)		in. (mm)	31-7/16 × 37-15/16 × 15-3/8 (798 × 964 × 390)		31-7/16 × 37-15/16 × 15-3/8 (798 × 964 × 390)	
Weight (Mass)		Lbs (kg)	104 (47)		104 (47)	
Gross Weight (Gross Mass)		Lbs (kg)	117 (53)		117 (53)	
Sound Pressure Level (H / L)		dB(A)	47 / 44	48 / 45	49 / 46	49 / 46
Sound Power Level (H)		dB	61	62	63	63
Drawing No.			3D075043		3D075044	

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

Cooling	Heating	Piping Length
Indoor ; 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB) Outdoor ; 95°FDB (35°CDB) / 75°FWB (24°CWB)	Indoor ; 70°FDB (21°CDB) / 60°FWB (15.6°CWB) Outdoor ; 47°FDB (8.3°CDB) / 43°FWB (6°CWB)	25 ft (7.5 m)

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

60 Hz, 208 - 230 V

Model	Indoor Unit		FTXS24LVJU	
	Outdoor Unit		RXS24LVJU	
			Cooling	Heating
Capacity Rated (Min.~Max.)		kW	6.30 (2.3 ~ 6.30)	7.44 (2.3 ~ 7.44)
		Btu/h	21,500 (7,800 ~ 21,500)	25,400 (7,800 ~ 25,400)
		kcal/h	5,400 (1,980 ~ 5,420)	6,400 (1,980 ~ 6,400)
Moisture Removal		gal/h (L/h)	1.2 (4.5)	—
Running Current (Rated)		A	8.4 ~ 7.6	10.7 ~ 9.7
Power Consumption Rated (Min.~Max.)		W	1,720 (570 ~ 1,720)	2,210 (520 ~ 2,210)
Power Factor		%	98.4 - 98.4	99.3 - 99.1
COP (Rated)		W/W	3.66 (4.04 ~ 3.66)	3.37 (4.40 ~ 3.37)
EER (Rated)		Btu/h·W	12.5 (13.7 ~ 12.5)	11.5 (15.0 ~ 11.5)
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (6.4)	
	Gas	in. (mm)	ϕ 5/8 (15.9)	
	Drain	in. (mm)	ϕ 5/8 (16.0)	
Heat Insulation			Both Liquid and Gas Pipes	
Max. Interunit Piping Length		ft (m)	98.4 (30)	
Max. Interunit Height Difference		ft (m)	65.6 (20)	
Chargeless		ft (m)	32.8 (10)	
Amount of Additional Charge of Refrigerant		oz/ft (g/m)	0.21 (20)	
Indoor Unit			**FTXS24LVJU**	
Front Panel Color			White	
Airflow Rate	H	m³/min (cfm)	18.2 (643)	19.8 (699)
	M		14.0 (494)	16.2 (572)
	L		9.9 (350)	12.6 (445)
	SL		9.3 (328)	11.4 (403)
Fan	Type		Cross Flow Fan	
	Motor Output	W	48	
	Speed	Steps	5 Steps, Quiet, Auto	
Air Direction Control			Right, Left, Horizontal, Downward	
Air Filter			Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.57 - 0.51	0.57 - 0.51
Power Consumption (Rated)		W	69 - 68	69 - 68
Power Factor (Rated)		%	58.2 - 58.0	58.2 - 58.0
Temperature Control			Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	13-3/8 × 41-5/16 × 9-3/4 (340 × 1,050 × 248)	
Packaged Dimensions (H × W × D)		in. (mm)	13 × 45-11/16 × 16-7/8 (331 × 1,160 × 429)	
Weight (Mass)		Lbs (kg)	31 (14)	
Gross Weight (Gross Mass)		Lbs (kg)	46 (21)	
Sound Pressure Level (H / M / L / SL)		dB(A)	51 / 44 / 37 / 34	48 / 42 / 37 / 34
Sound Power Level		dBA	67	64
Outdoor Unit			**RXS24LVJU**	
Casing Color			Ivory White	
Compressor	Type		Hermetically Sealed Swing Type	
	Model		2YC63BXD	
	Motor Output	W	1,920	
Refrigerant Oil	Type		FVC50K	
	Charge	oz (L)	25.2 (0.750)	
Refrigerant	Type		R-410A	
	Charge	Lbs (kg)	5.07 (2.3)	
Airflow Rate	H	m³/min (cfm)	54.5 (1,924)	52.5 (1,854)
	L		46.0 (1,624)	46.0 (1,624)
Fan	Type		Propeller	
	Motor Output	W	66	
Running Current (Rated)		A	8.1 - 7.3	10.4 - 9.4
Power Consumption (Rated)		W	1,651 - 1,652	2,141 - 2,142
Power Factor (Rated)		%	98.0 - 98.4	99.0 - 99.1
Starting Current		A	10.7	
Dimensions (H × W × D)		in. (mm)	30-5/16 × 35-7/16 × 12-5/8 (770 × 900 × 320)	
Packaged Dimensions (H × W × D)		in. (mm)	35-7/16 × 36-7/16 × 15-3/8 (900 × 925 × 390)	
Weight (Mass)		Lbs (kg)	159 (72)	
Gross Weight (Gross Mass)		Lbs (kg)	178 (81)	
Sound Pressure Level (H / L)		dB(A)	52 / 49	52 / 49
Sound Power Level (H)		dBA	66	66
Drawing No.			3D075045	

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

Cooling	Heating	Piping Length
Indoor ; 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB) Outdoor ; 95°FDB (35°CDB) / 75°FWB (24°CWB)	Indoor ; 70°FDB (21°CDB) / 60°FWB (15.6°CWB) Outdoor ; 47°FDB (8.3°CDB) / 43°FWB (6°CWB)	25 ft (7.5 m)

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

60 Hz, 208 - 230 V

Model	Indoor Unit		FTXS30LVJU	FTXS36LVJU
	Outdoor Unit		RKS30LVJU	RKS36LVJU
Capacity Rated (Min. ~ Max.)		kW	8.8 (3.0 ~ 8.8)	10.2 - 10.5 (3.0 ~ 10.2 - 10.5)
		Btu/h	30,000 (10,200 ~ 30,000)	35,000 - 36,000 (10,200 ~ 35,000 - 36,000)
		kcal/h	7,570 (2,580 ~ 7,570)	8,770 - 9,030 (2,580 ~ 8,770 - 9,030)
Moisture Removal		gal/h (L/h)	1.5 (5.8)	1.8 (6.9)
Running Current (Rated)		A	13.6 - 12.2	19.4 - 18.8
Power Consumption Rated (Min. ~ Max.)		W	2,800 (620 ~ 2,800)	4,000 - 4,300 (620 ~ 4,000 - 4,300)
Power Factor (Rated)		%	99.0 - 99.8	99.1 - 99.4
COP (Rated)		W/W	3.14 (4.84 ~ 3.14)	2.55 - 2.44 (4.84 ~ 2.55 - 2.44)
EER (Rated)		Btu/h·W	10.71 (16.45 ~ 10.71)	8.75 - 8.37 (16.45 ~ 8.75 - 8.37)
Piping Connections	Liquid	in. (mm)	ϕ 3/8 (9.5)	ϕ 3/8 (9.5)
	Gas	in. (mm)	ϕ 5/8 (15.9)	ϕ 5/8 (15.9)
	Drain	in. (mm)	ϕ 5/8 (16.0)	ϕ 5/8 (16.0)
Heat Insulation			Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Max. Interunit Piping Length		ft (m)	98.4 (30)	98.4 (30)
Max. Interunit Height Difference		ft (m)	65.6 (20)	65.6 (20)
Chargeless		ft (m)	32 (10)	32 (10)
Amount of Additional Charge of Refrigerant		oz/ft (g/m)	0.54 (50)	0.54 (50)
Indoor Unit			**FTXS30LVJU**	**FTXS36LVJU**
Front Panel Color			White	White
Airflow Rate	H	m³/min (cfm)	20.0 (706)	21.8 (770)
	M		17.3 (611)	18.0 (635)
	L		14.7 (519)	14.7 (519)
	SL		13.4 (473)	13.4 (473)
Fan	Type		Cross Flow Fan	Cross Flow Fan
	Motor Output	W	64	64
	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	0.38 - 0.34	0.38 - 0.34
Power Consumption (Rated)		W	77	77
Power Factor (Rated)		%	97.4 - 98.5	97.4 - 98.5
Temperature Control			Microcomputer Control	Microcomputer Control
Dimensions (H × W × D)		in. (mm)	13-3/8 × 47-1/4 × 9-7/16 (340 × 1,200 × 240)	13-3/8 × 47-1/4 × 9-7/16 (340 × 1,200 × 240)
Packaged Dimensions (H × W × D)		in. (mm)	12-13/16 × 51-9/16 × 16-7/8 (325 × 1,310 × 429)	12-13/16 × 51-9/16 × 16-7/8 (325 × 1,310 × 429)
Weight (Mass)		Lbs (kg)	38 (17)	38 (17)
Gross Weight (Gross Mass)		Lbs (kg)	51 (23)	51 (23)
Sound Pressure Level (H / M / L / SL)		dB(A)	47 / 45 / 40 / 37	49 / 45 / 40 / 37
Sound Power Level		dB	63	65
Outdoor Unit			**RKS30LVJU**	**RKS36LVJU**
Casing Color			Ivory White	Ivory White
Compressor	Type		Hermetically Sealed Swing Type	Hermetically Sealed Swing Type
	Model		2YC63FXD	2YC63FXD
	Motor Output	W	2,030	2,030
Refrigerant Oil	Type		FVC50K	FVC50K
	Charge	oz (L)	25.5 (0.75)	25.5 (0.75)
Refrigerant	Type		R-410A	R-410A
	Charge	Lbs (kg)	6.17 (2.8)	6.17 (2.8)
Airflow Rate	H	m³/min (cfm)	74.4 (2,627)	74.4 (2,627)
	SL		65.6 (2,316)	65.6 (2,316)
Fan	Type		Propeller	Propeller
	Motor Output	W	200	200
Running Current (Rated)		A	13.22 - 11.86	19.02 - 18.46
Power Consumption (Rated)		W	2,723	3,923 - 4,223
Power Factor (Rated)		%	99.0 - 99.8	99.2 - 99.5
Starting Current		A	18.9	19.4
Dimensions (H × W × D)		in. (mm)	38-15/16 × 37 × 12-5/8 (990 × 940 × 320)	38-15/16 × 37 × 12-5/8 (990 × 940 × 320)
Packaged Dimensions (H × W × D)		in. (mm)	43-7/8 × 39-7/16 × 16-11/16 (1,114 × 1,003 × 425)	43-7/8 × 39-7/16 × 16-11/16 (1,114 × 1,003 × 425)
Weight (Mass)		Lbs (kg)	179 (81)	179 (81)
Gross Weight (Gross Mass)		Lbs (kg)	204 (93)	204 (93)
Sound Pressure Level (H / SL)		dB(A)	54 / 51	54 / 51
Sound Power Level (H)		dB	68	68
Drawing No.			3D075052	3D075064

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

Cooling	Piping Length
Indoor ; 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB) Outdoor ; 95°FDB (35°CDB) / 75°FWB (24°CWB)	25 ft (7.5 m)

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

60 Hz, 208 - 230 V

Model	Indoor Unit		FTXS30LVJU		FTXS36LVJU	
	Outdoor Unit		RXS30LVJU		RXS36LVJU	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min. ~ Max.)		kW	8.8 (3.0 ~ 8.8)	10.2 (3.0 ~ 10.2)	10.2 - 10.5 (3.0 ~ 10.2 - 10.5)	10.5 - 11.1 (3.0 ~ 10.5 - 11.1)
		Btu/h	30,000 (10,200 ~ 30,000)	34,800 (10,200 ~ 34,800)	35,000 - 36,000 (10,200 ~ 35,000 - 36,000)	36,000 - 38,000 (10,200 ~ 36,000 - 38,000)
		kcal/h	7,570 (2,580 ~ 7,570)	8,770 (2,580 ~ 8,770)	8,770 - 9,030 (2,580 ~ 8,770 - 9,030)	9,030 - 9,550 (2,580 ~ 9,030 - 9,550)
Moisture Removal		gal/h (L/h)	1.5 (5.8)	—	1.8 (6.9)	—
Running Current (Rated)		A	13.6 - 12.2	18.9 - 17.1	19.4 - 18.8	18.4 - 18.4
Power Consumption Rated (Min. ~ Max.)		W	2,800 (620 ~ 2,800)	3,900 (620 ~ 3,900)	4,000 - 4,300 (620 ~ 4,000 - 4,300)	3,800 - 4,200 (620 ~ 3,800 - 4,200)
Power Factor (Rated)		%	99.0 - 99.8	99.2 - 99.2	99.1 - 99.4	99.3 - 99.2
COP (Rated)		W/W	3.14 (4.84 ~ 3.14)	2.62 (4.84 ~ 2.62)	2.55 - 2.44 (4.84 ~ 2.55 - 2.44)	2.76 - 2.64 (4.84 ~ 2.76 - 2.64)
EER (Rated)		Btu/h·W	10.71 (16.45 ~ 10.71)	8.92 (16.45 ~ 8.92)	8.75 - 8.37 (16.45 ~ 8.75 - 8.37)	9.47 - 9.05 (16.45 ~ 9.47 - 9.05)
Piping Connections	Liquid	in. (mm)	ϕ 3/8 (9.5)		ϕ 3/8 (9.5)	
	Gas	in. (mm)	ϕ 5/8 (15.9)		ϕ 5/8 (15.9)	
	Drain	in. (mm)	ϕ 5/8 (16.0)		ϕ 5/8 (16.0)	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Interunit Piping Length		ft (m)	98.4 (30)		98.4 (30)	
Max. Interunit Height Difference		ft (m)	65.6 (20)		65.6 (20)	
Chargeless		ft (m)	32 (10)		32 (10)	
Amount of Additional Charge of Refrigerant		oz/ft (g/m)	0.54 (50)		0.54 (50)	
Indoor Unit			**FTXS30LVJU**		**FTXS36LVJU**	
Front Panel Color			White		White	
Airflow Rate	H	m³/min (cfm)	20.0 (706)	20.1 (710)	21.8 (770)	22.9 (808)
	M		17.3 (611)	17.3 (611)	18.0 (635)	18.6 (657)
	L		14.7 (519)	14.7 (519)	14.7 (519)	14.7 (519)
	SL		13.4 (473)	13.3 (469)	13.4 (473)	13.3 (469)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	64		64	
	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	0.38 - 0.34	0.38 - 0.34	0.38 - 0.34	0.38 - 0.34
Power Consumption (Rated)		W	77	77	77	77
Power Factor (Rated)		%	97.4 - 98.5	97.4 - 98.5	97.4 - 98.5	97.4 - 98.5
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	13-3/8 × 47-1/4 × 9-7/16 (340 × 1,200 × 240)		13-3/8 × 47-1/4 × 9-7/16 (340 × 1,200 × 240)	
Packaged Dimensions (H × W × D)		in. (mm)	12-13/16 × 51-9/16 × 16-7/8 (325 × 1,310 × 429)		12-13/16 × 51-9/16 × 16-7/8 (325 × 1,310 × 429)	
Weight (Mass)		Lbs (kg)	38 (17)		38 (17)	
Gross Weight (Gross Mass)		Lbs (kg)	51 (23)		51 (23)	
Sound Pressure Level (H / M / L / SL)		dB(A)	47 / 45 / 40 / 37	47 / 44 / 38 / 35	49 / 45 / 40 / 37	49 / 44 / 38 / 35
Sound Power Level		dB	63	63	65	65
Outdoor Unit			**RXS30LVJU**		**RXS36LVJU**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		2YC63FXD		2YC63FXD	
	Motor Output	W	2,030		2,030	
Refrigerant Oil	Type		FVC50K		FVC50K	
	Charge	oz (L)	25.5 (0.75)		25.5 (0.75)	
Refrigerant	Type		R-410A		R-410A	
	Charge	Lbs (kg)	6.17 (2.8)		6.17 (2.8)	
Airflow Rate	H	m³/min (cfm)	74.4 (2,627)	74.4 (2,627)	74.4 (2,627)	74.4 (2,627)
	SL		65.6 (2,316)	65.6 (2,316)	65.6 (2,316)	65.6 (2,316)
Fan	Type		Propeller		Propeller	
	Motor Output	W	200		200	
Running Current (Rated)		A	13.22 - 11.86	18.52 - 16.76	19.02 - 18.46	18.02 - 18.06
Power Consumption (Rated)		W	2,723	3,823	3,923 - 4,223	3,723 - 4,123
Power Factor (Rated)		%	99.0 - 99.8	99.2 - 99.2	99.2 - 99.5	99.3 - 99.3
Starting Current		A	18.9		19.4	
Dimensions (H × W × D)		in. (mm)	38-15/16 × 37 × 12-5/8 (990 × 940 × 320)		38-15/16 × 37 × 12-5/8 (990 × 940 × 320)	
Packaged Dimensions (H × W × D)		in. (mm)	43-7/8 × 39-7/16 × 16-11/16 (1,114 × 1,003 × 425)		43-7/8 × 39-7/16 × 16-11/16 (1,114 × 1,003 × 425)	
Weight (Mass)		Lbs (kg)	179 (81)		179 (81)	
Gross Weight (Gross Mass)		Lbs (kg)	204 (93)		204 (93)	
Sound Pressure Level (H / SL)		dB(A)	54 / 51	55 / 51	54 / 51	55 / 51
Sound Power Level (H)		dB	68	69	68	69
Drawing No.			3D075050		3D075055	

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

Cooling	Heating	Piping Length
Indoor ; 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB) Outdoor ; 95°FDB (35°CDB) / 75°FWB (24°CWB)	Indoor ; 70°FDB (21°CDB) / 60°FWB (15.6°CWB) Outdoor ; 47°FDB (8.3°CDB) / 43°FWB (6°CWB)	25 ft (7.5 m)

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

1.2 FDXS Series

60 Hz, 208 - 230 V

Model	Indoor Unit		FDXS09LVJU		FDXS12LVJU	
	Outdoor Unit		RXS09LVJU		RXS12LVJU	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min.~Max.)		kW	2.49 (1.30 ~ 2.49)	2.93 (1.30 ~ 2.93)	3.37 (1.40 ~ 3.37)	3.37 (1.40 ~ 3.37)
		Btu/h	8,500 (4,400 ~ 8,500)	10,000 (4,400 ~ 10,000)	11,500 (4,800 ~ 11,500)	11,500 (4,800 ~ 11,500)
		kcal/h	2,140 (1,120 ~ 2,140)	2,520 (1,120 ~ 2,520)	2,900 (1,200 ~ 2,900)	2,900 (1,200 ~ 2,900)
Moisture Removal		gal/h (L/h)	2.5 (9.5)	—	4.0 (15.1)	—
Running Current (Rated)		A	4.6 - 4.2	4.5 - 4.1	6.4 - 5.8	4.9 - 4.4
Power Consumption Rated (Min.~Max.)		W	760 (300 ~ 760)	850 (290 ~ 850)	1,260 (300 ~ 1,260)	960 (290 ~ 960)
Power Factor		%	79.4 - 78.7	90.8 - 90.1	94.7 - 94.5	94.2 - 94.9
COP (Rated)		W/W	3.28 (4.33 ~ 3.28)	3.45 (4.48 ~ 3.45)	2.67 (4.67 ~ 2.67)	3.51 (4.83 ~ 3.51)
EER (Rated)		Btu/h·W	11.2 (14.7 ~ 11.2)	11.8 (15.2 ~ 11.8)	9.1 (16.0 ~ 9.1)	12.0 (16.6 ~ 12.0)
Piping Connections	Liquid	in. (mm)	ϕ 1/4 (6.4)		ϕ 1/4 (6.4)	
	Gas	in. (mm)	ϕ 3/8 (9.5)		ϕ 3/8 (9.5)	
	Drain	in. (mm)	ϕ 25/32 (20.0)		ϕ 25/32 (20.0)	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Interunit Piping Length		ft (m)	65.6 (20)		65.6 (20)	
Max. Interunit Height Difference		ft (m)	49.2 (15)		49.2 (15)	
Chargeless		ft (m)	32.8 (10)		32.8 (10)	
Amount of Additional Charge of Refrigerant		oz/ft (g/m)	0.21 (20)		0.21 (20)	
Indoor Unit			**FDXS09LVJU**		**FDXS12LVJU**	
External Static Pressure		"Wg (Pa)	0.12 (30)		0.12 (30)	
Airflow Rate	H	m³/min (cfm)	8.6 (305)	8.6 (305)	8.6 (305)	8.6 (305)
	M		7.9 (280)	7.9 (280)	7.9 (280)	7.9 (280)
	L		7.4 (260)	7.4 (260)	7.4 (260)	7.4 (260)
	SL		6.7 (235)	6.7 (235)	6.7 (235)	6.7 (235)
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	0.58 - 0.52	0.58 - 0.52	0.58 - 0.52	0.58 - 0.52
Power Consumption (Rated)		W	72 - 72	72 - 72	72 - 72	72 - 72
Power Factor (Rated)		%	59.7 - 60.2	59.7 - 60.2	59.7 - 60.2	59.7 - 60.2
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	7-7/8 × 27-9/16 × 24-7/16 (200 × 700 × 620)		7-7/8 × 27-9/16 × 24-7/16 (200 × 700 × 620)	
Packaged Dimensions (H × W × D)		in. (mm)	10-13/16 × 36-5/16 × 30-1/4 (274 × 923 × 768)		10-13/16 × 36-5/16 × 30-1/4 (274 × 923 × 768)	
Weight (Mass)		Lbs (kg)	47 (21)		47 (21)	
Gross Weight (Gross Mass)		Lbs (kg)	64 (29)		64 (29)	
Sound Pressure Level (H / M / L)		dB(A)	35 / 33 / 31	35 / 33 / 31	35 / 33 / 31	35 / 33 / 31
Sound Power Level		dBA	51	51	51	51
Outdoor Unit			**RXS09LVJU**		**RXS12LVJU**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		1YC23AEXD		1YC23AEXD	
	Motor Output	W	600		600	
Refrigerant Oil	Type		FVC50K		FVC50K	
	Charge	oz (L)	12.5 (0.375)		12.5 (0.375)	
Refrigerant	Type		R-410A		R-410A	
	Charge	Lbs (kg)	2.43 (1.1)		2.65 (1.2)	
Airflow Rate	H	m³/min (cfm)	31.2 (1,102)	28.1 (992)	33.5 (1,183)	28.1 (992)
	L		28.0 (989)	23.8 (840)	28.0 (989)	23.8 (840)
Fan	Type		Propeller		Propeller	
	Motor Output	W	23		23	
Running Current (Rated)		A	4.2 - 3.8	4.1 - 3.8	6.0 - 5.5	4.5 - 4.1
Power Consumption (Rated)		W	688 - 688	778 - 778	1,188 - 1,188	888 - 888
Power Factor (Rated)		%	78.8 - 78.7	91.2 - 89.0	95.2 - 93.9	94.9 - 94.2
Starting Current		A	4.6		6.4	
Dimensions (H × W × D)		in. (mm)	21-5/8 × 30-1/8 × 11-1/4 (550 × 765 × 285)		21-5/8 × 30-1/8 × 11-1/4 (550 × 765 × 285)	
Packaged Dimensions (H × W × D)		in. (mm)	25 × 34-5/8 × 14-3/16 (635 × 880 × 360)		25 × 34-5/8 × 14-3/16 (635 × 880 × 360)	
Weight (Mass)		Lbs (kg)	75 (34)		75 (34)	
Gross Weight (Gross Mass)		Lbs (kg)	89 (41)		89 (41)	
Sound Pressure Level (H / L)		dB(A)	47 / 43	48 / 44	49 / 44	49 / 45
Sound Power Level (H)		dBA	61	62	63	63
Drawing No.			3D075493		3D075494	

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

Cooling	Heating	Piping Length
Indoor ; 80°FDB (26.7°CDB) / 67°FWB (19.4°CWB) Outdoor ; 95°FDB (35°CDB) / 75°FWB (24°CWB)	Indoor ; 70°FDB (21°CDB) / 60°FWB (15.6°CWB) Outdoor ; 47°FDB (8.3°CDB) / 43°FWB (6°CWB)	25 ft (7.5 m)

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

Part 3
Printed Circuit Board Connector Wiring Diagram

1. Indoor Unit

1.1 FTXS09/12LVJU

Connectors and Other Parts

PCB (1): Control PCB

1)	S1	Connector for DC fan motor
2)	S21	Connector for centralized control (HA)
3)	S25	Connector for INTELLIGENT EYE sensor PCB
4)	S32	Indoor heat exchanger thermistor
5)	S41	Connector for swing motors
6)	S46	Connector for display PCB
7)	S47	Connector for signal receiver PCB
8)	H1, H2, H3, FG	Connector for terminal board
9)	JA	Address setting jumper ∗ Refer to page 388 for detail.
10)	JB	Fan speed setting when compressor stops for thermostat OFF
	JC	Power failure recovery function (auto-restart) ∗ Refer to page 390 for detail.
11)	LED A	LED for service monitor (green)
12)	FU1 (F1U)	Fuse (3.15 A, 250 V)
13)	V1	Varistor

PCB (2): Signal Receiver PCB

1)	S48	Connector for control PCB

PCB (3): Display PCB

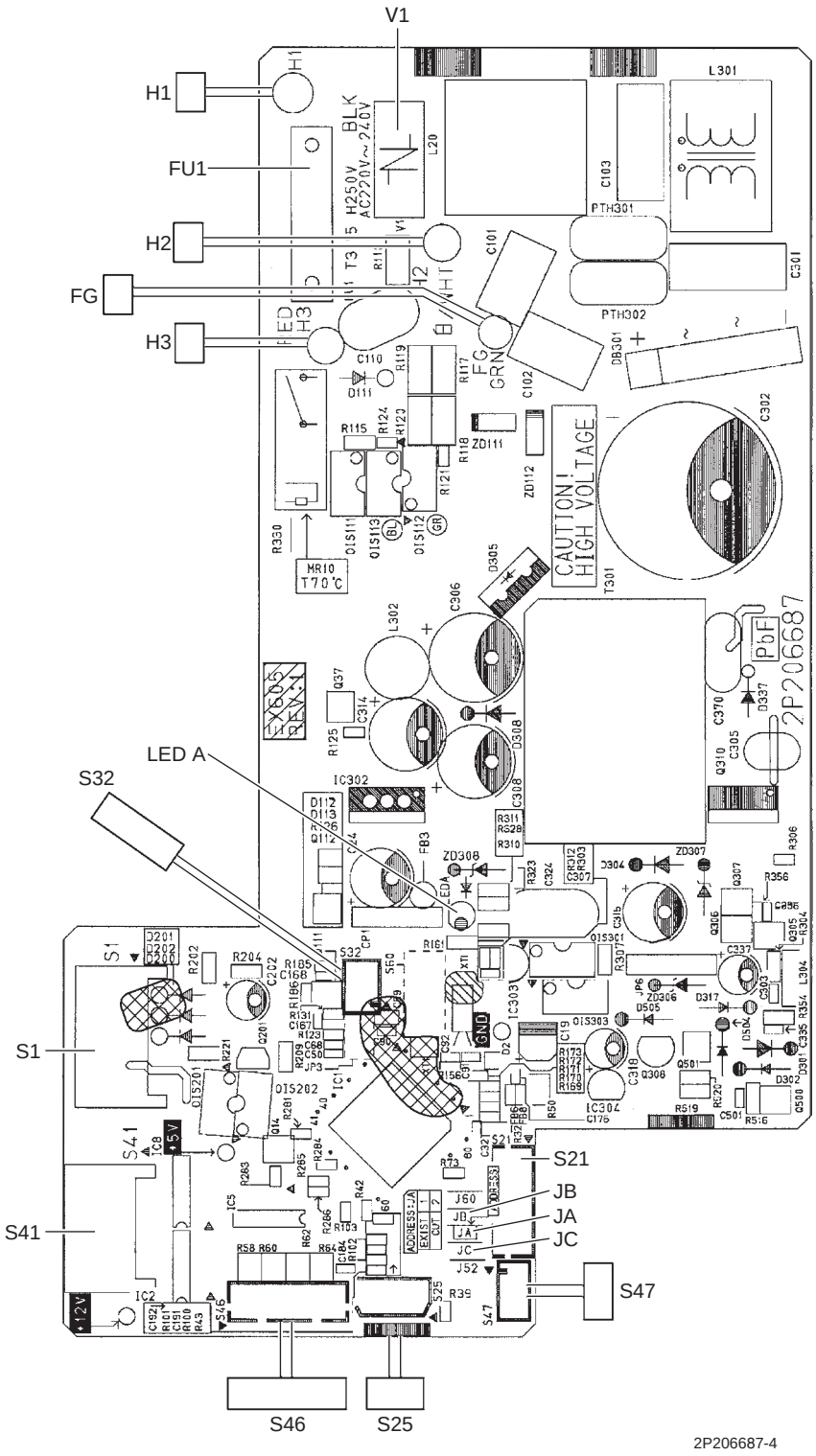
1)	S49	Connector for control PCB
2)	SW1	Forced cooling operation [ON/OFF] button ∗ Refer to page 384 for detail.
3)	LED1 (H1P)	LED for operation (green)
4)	LED2 (H2P)	LED for timer (yellow)
5)	LED3 (H3P)	LED for INTELLIGENT EYE (green)
6)	RTH1 (R1T)	Room temperature thermistor

PCB (4): INTELLIGENT EYE Sensor PCB

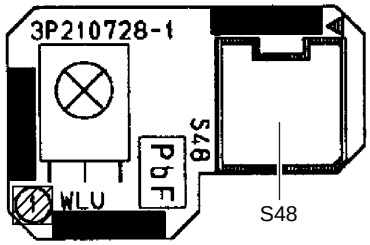
1)	S26	Connector for control PCB

PCB Detail

PCB (1): Control PCB

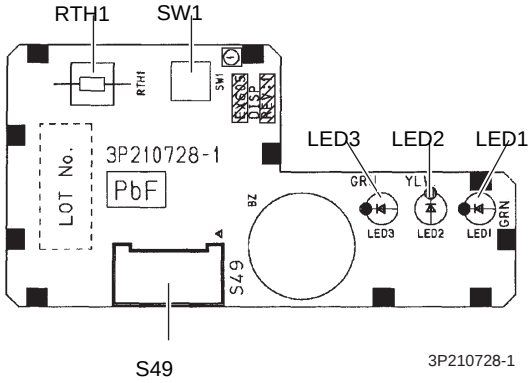


PCB (2): Signal Receiver PCB



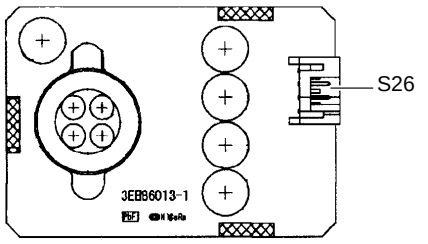
3P210728-1

PCB (3): Display PCB



3P210728-1

PCB (4): INTELLIGENT EYE Sensor PCB



3EB86013-1

1.2 FTXS15/18/24/30/36LVJU

Connectors and Other Parts

PCB (1): Control PCB

1)	S1	Connector for DC fan motor
2)	S21	Connector for centralized control (HA)
3)	S25	Connector for INTELLIGENT EYE sensor PCB
4)	S32	Indoor heat exchanger thermistor
5)	S41	Connector for swing motors
6)	S46	Connector for display PCB
7)	S47	Connector for signal receiver PCB
8)	H1, H2, H3, FG	Connector for terminal board
9)	JA	Address setting jumper ∗ Refer to page 388 for detail.
10)	JB	Fan speed setting when compressor stops for thermostat OFF
	JC	Power failure recovery function (auto-restart) ∗ Refer to page 390 for detail.
11)	LED A	LED for service monitor (green)
12)	FU1 (F1U)	Fuse (3.15 A, 250 V)
13)	V1	Varistor

PCB (2): Signal Receiver PCB

1)	S48	Connector for control PCB

PCB (3): Display PCB

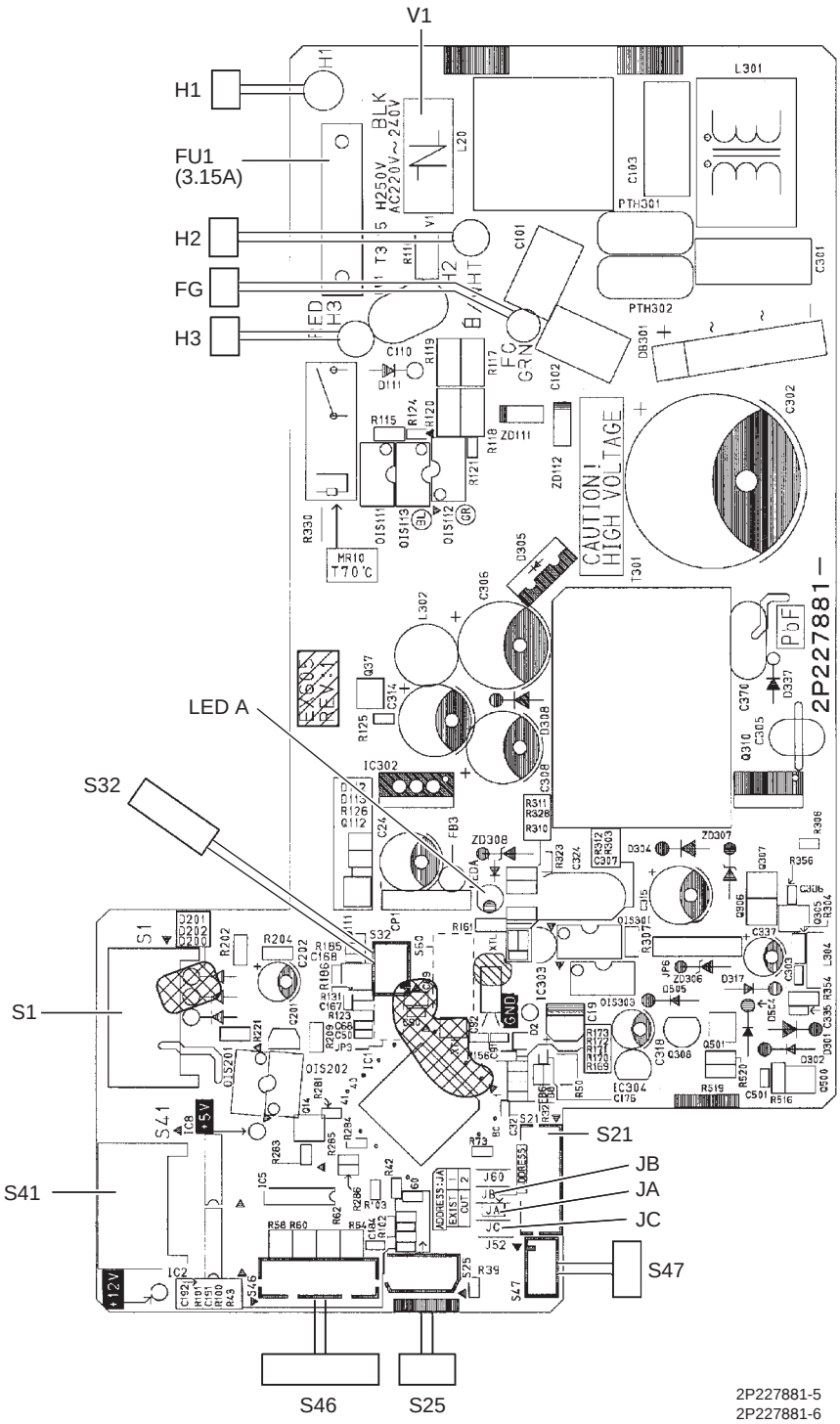
1)	S49	Connector for control PCB
2)	SW1	Forced cooling operation ON/OFF button ∗ Refer to page 384 for detail.
3)	LED1 (H1P)	LED for operation (green)
4)	LED2 (H2P)	LED for timer (yellow)
5)	LED3 (H3P)	LED for INTELLIGENT EYE (green)
6)	RTH1 (R1T)	Room temperature thermistor

PCB (4): INTELLIGENT EYE Sensor PCB

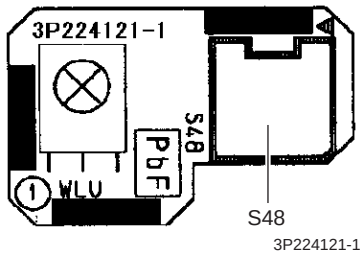
1)	S36	Connector for control PCB

PCB Detail

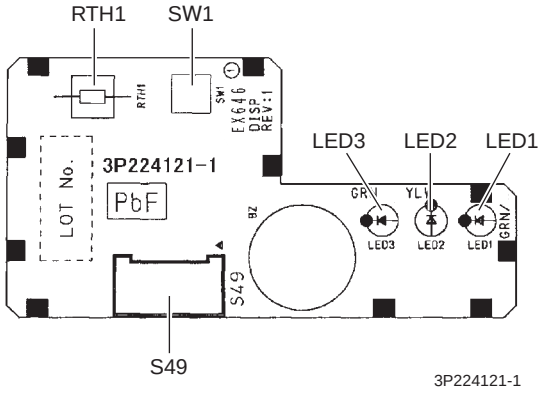
PCB (1): Control PCB



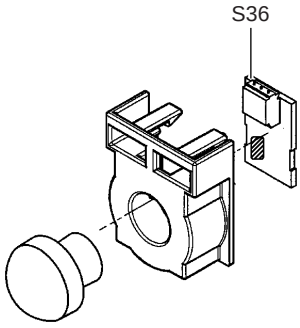
PCB (2): Signal Receiver PCB



PCB (3): Display PCB



PCB (4): INTELLIGENT EYE Sensor PCB



1.3 FDXS09/12LVJU

Connectors and Other Parts

A1P: Control PCB

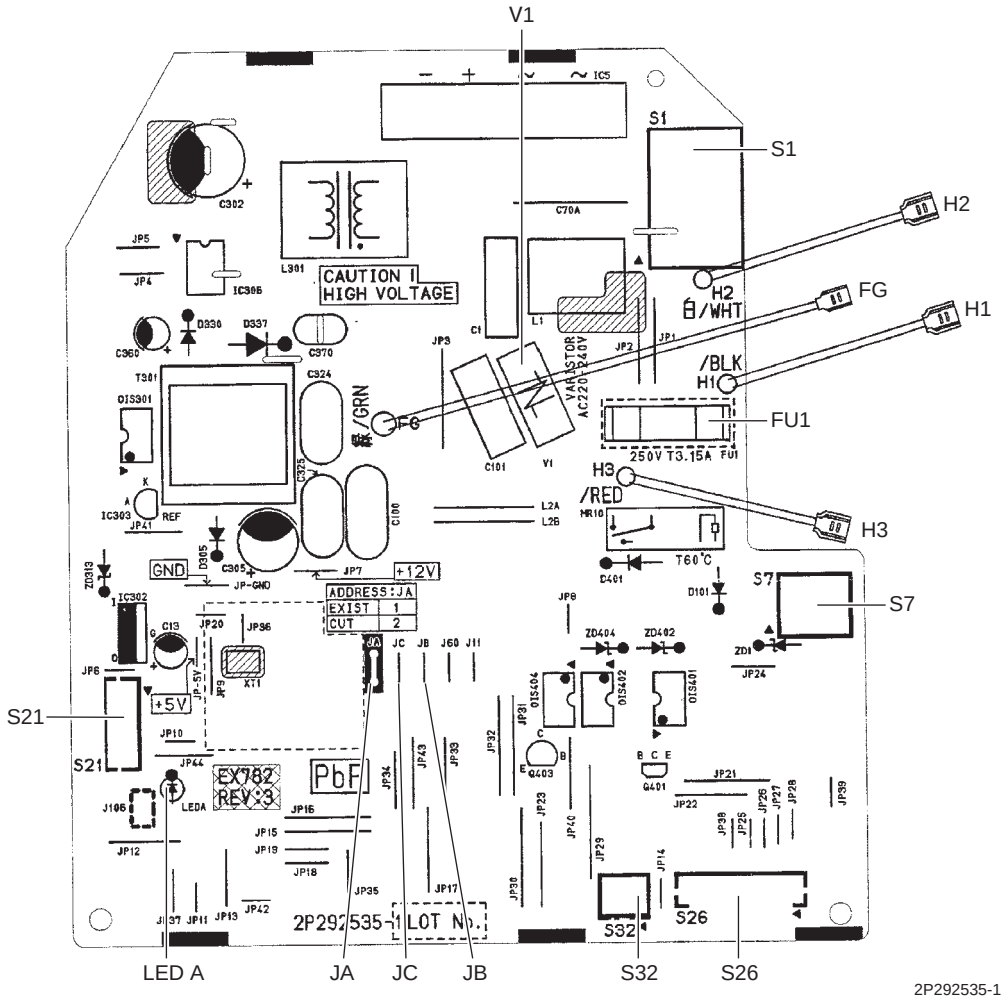
1)	S1	Connector for AC fan motor
2)	S7	Connector for AC fan motor (Hall IC)
3)	S21	Connector for centralized control (HA)
4)	S26	Connector for display PCB
5)	S32	Connector for indoor heat exchanger thermistor
6)	H1, H2, H3	Connector for terminal board
7)	FG (GND)	Connector for terminal board (ground)
8)	JA	Address setting jumper ∗ Refer to page 388 for detail.
9)	JB	Fan speed setting when compressor stops for thermostat OFF
	JC	Power failure recovery function (auto-restart) ∗ Refer to page 390 for detail.
10)	LED A	LED for service monitor (green)
11)	FU1 (F1U)	Fuse (3.15 A, 250 V)
12)	V1 (V1TR)	Varistor

A2P: Display PCB

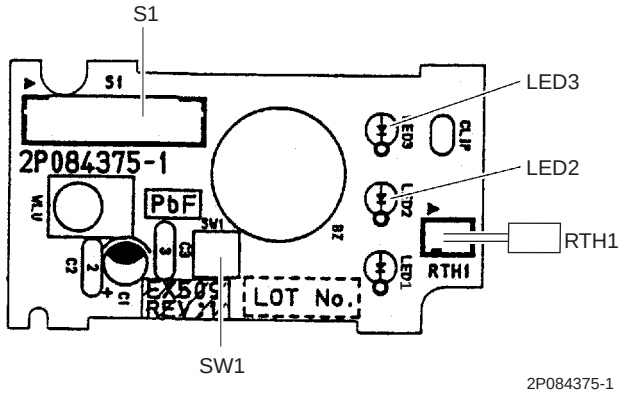
1)	S1	Connector for control PCB
2)	SW1 (S1W)	Forced cooling operation [ON/OFF] button ∗ Refer to page 384 for detail.
3)	LED2 (H2P)	LED for timer (yellow)
4)	LED3 (H3P)	LED for operation (green)
5)	RTH1 (R1T)	Room temperature thermistor

PCB Detail

A1P: Control PCB



A2P: Display PCB



★LED 1 does not function.

2. Outdoor Unit

2.1 RXS09/12LVJU

Connectors and Other Parts

PCB (1): Filter PCB

1)	S11	Connector for main PCB
2)	AC1, AC2, S	Connector for terminal board
3)	E1, E2	Terminal for ground wire
4)	HL2, HN2	Connector for main PCB
5)	HR1	Connector for reactor
6)	FU1	Fuse (3.15 A, 250 V)
7)	FU3	Fuse (20 A, 250 V)
8)	V2, V3	Varistor

PCB (2): Main PCB

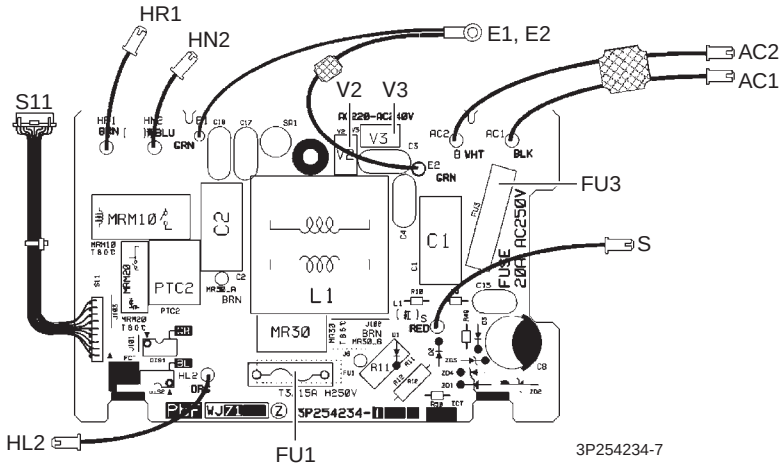
1)	S10	Connector for filter PCB
2)	S20	Connector for electronic expansion valve coil
3)	S40	Connector for overload protector
4)	S70	Connector for fan motor
5)	S80	Connector for four-way valve coil
6)	S90	Connector for thermistors (outdoor temperature, outdoor heat exchanger, discharge pipe)
7)	S100	Connector for forced operation button PCB
8)	HL3, HN3	Connector for filter PCB
9)	HR2	Connector for reactor
10)	U, V, W	Connector for compressor
11)	FU2	Fuse (3.15 A, 250 V)
12)	LED A	LED for service monitor (green)
13)	V1	Varistor
14)	J4	Jumper for facility setting ∗ Refer to page 389 for detail.

PCB (3): Forced Operation Button PCB

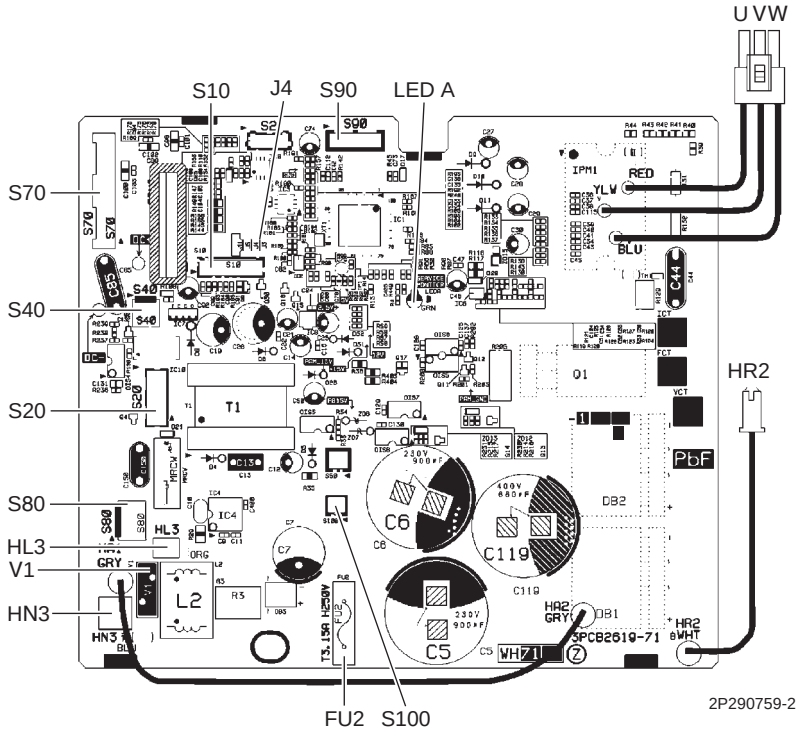
1)	S110	Connector for main PCB
2)	SW1	Forced cooling operation [ON/OFF] button ∗ Refer to page 384 for detail.

PCB Detail

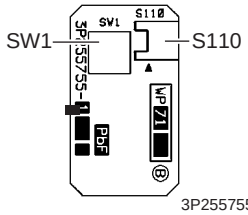
PCB (1): Filter PCB



PCB (2): Main PCB



PCB (3): Forced Operation Button PCB



2.2 RXS15/18LVJU

Connectors and Other Parts

PCB (1): Filter PCB

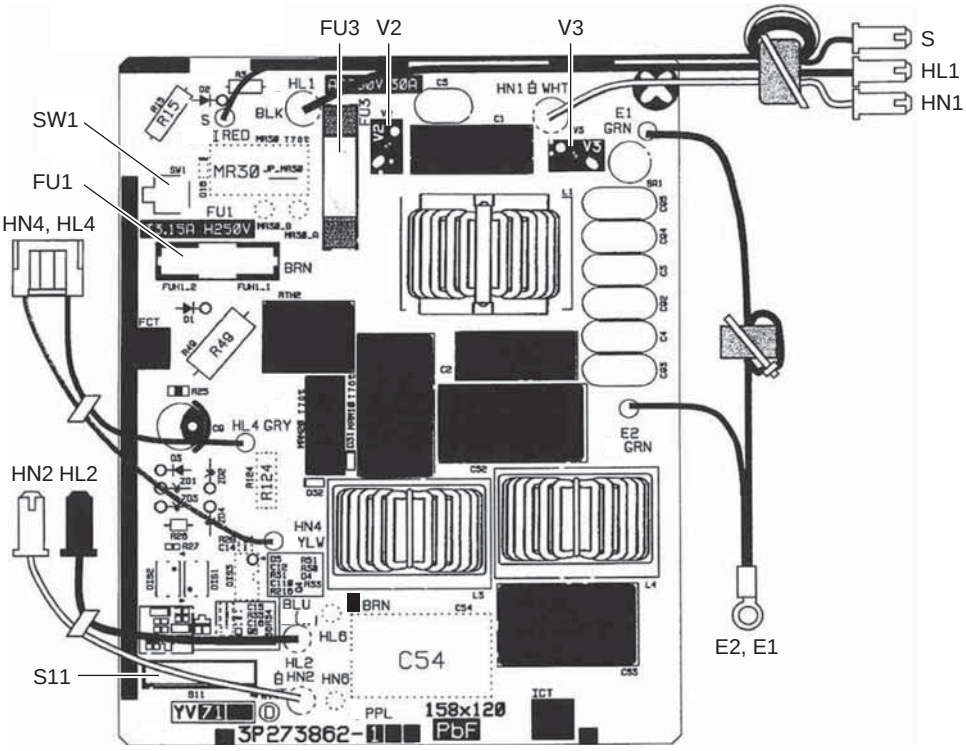
1)	S11	Connector for [S10] on main PCB
2)	HL1, HN1, S	Connector for terminal board
3)	E1, E2	Terminal for ground wire
4)	HL2, HN2	Connector for [HL3] [HN3] on main PCB
5)	HL4, HN4	Connector for [S12] on main PCB
6)	FU1	Fuse (3.15 A, 250 V)
7)	FU3	Fuse (30 A, 250 V)
8)	V2, V3	Varistor
9)	SW1	Forced cooling operation [ON/OFF] button ∗ Refer to page 384 for detail.

PCB (2): Main PCB

1)	S10	Connector for [S11] on filter PCB
2)	S12	Connector for [HL4] [HN4] on filter PCB
3)	S20	Connector for electronic expansion valve coil
4)	S40	Connector for overload protector
5)	S70	Connector for fan motor
6)	S80	Connector for four-way valve coil
7)	S90	Connector for thermistors (outdoor temperature, outdoor heat exchanger, discharge pipe)
8)	HL3, HN3	Connector for [HL2] [HN2] on filter PCB
9)	U, V, W	Terminal for compressor
10)	FU2	Fuse (3.15 A, 250 V)
11)	LED A	LED for service monitor (green)
12)	V1	Varistor
13)	J6	Jumper for facility setting ∗ Refer to page 389 for detail.

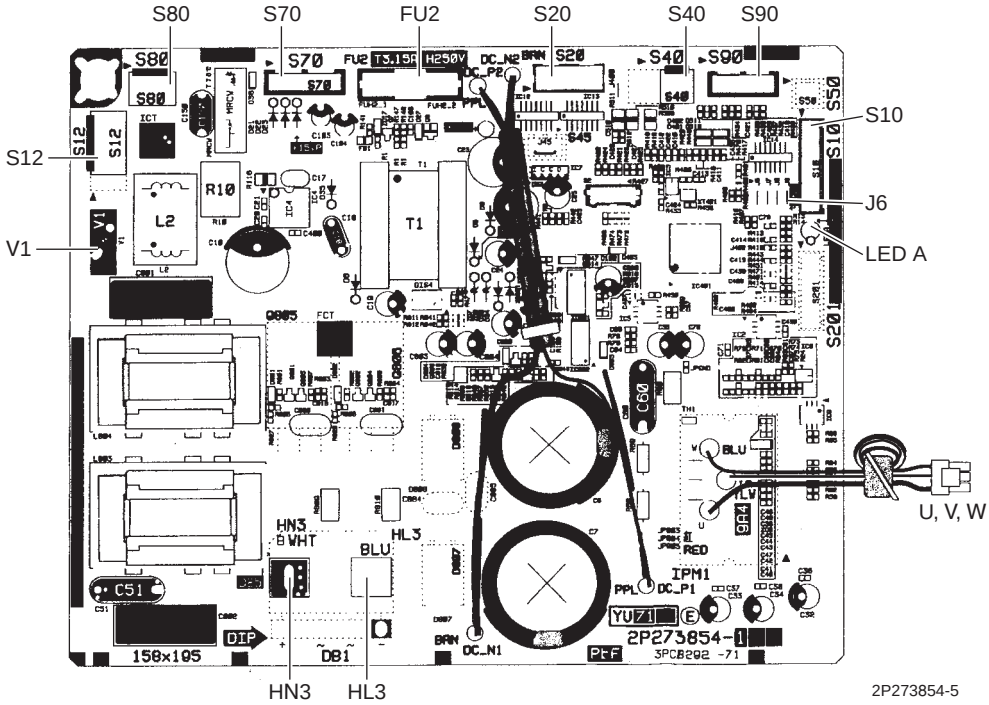
PCB Detail

PCB (1): Filter PCB



3P273862-3

PCB (2): Main PCB



2P273854-5

2.3 RXS24LVJU, RK(X)S30/36LVJU

Connectors and Other Parts

PCB (1): Main PCB

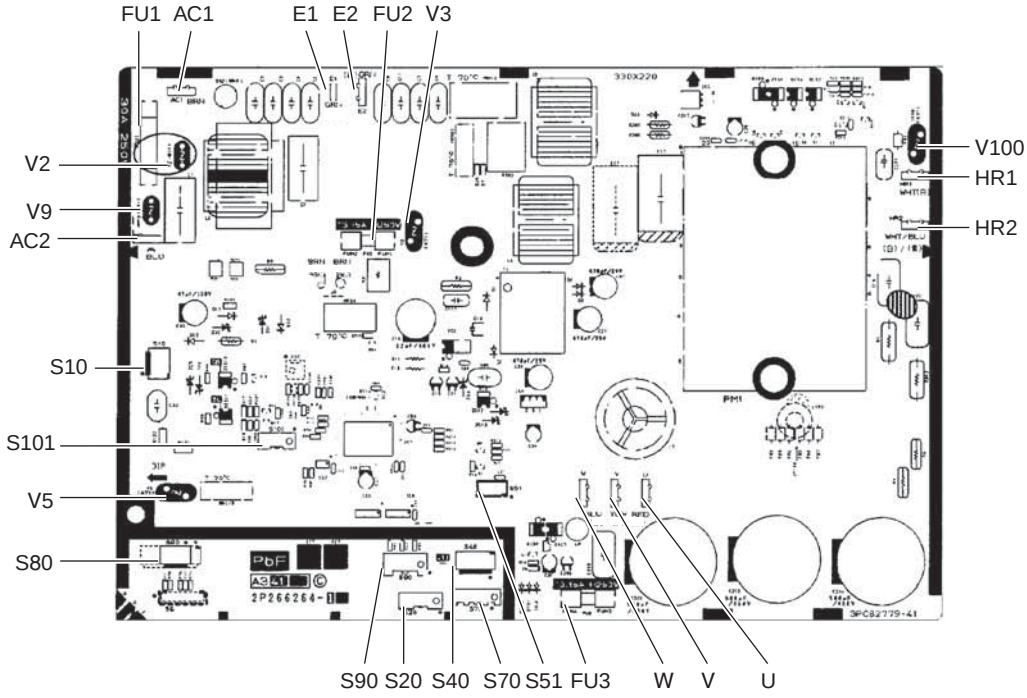
1)	S10	Connector for terminal board (indoor - outdoor transmission)
2)	S20	Connector for electronic expansion valve coil
3)	S40	Connector for overload protector
4)	S51, S101	Connector for service monitor PCB
5)	S70	Connector for fan motor
6)	S80	Connector for four-way valve coil
7)	S90	Connector for thermistors (outdoor temperature, outdoor heat exchanger, discharge pipe)
8)	AC1, AC2	Connector for terminal board (power supply)
9)	HR1, HR2	Connector for reactor
10)	E1, E2	Connector for ground wire
11)	U, V, W	Connector for compressor
12)	FU1	Fuse (30 A, 250 V)
13)	FU2, FU3	Fuse (3.15 A, 250 V)
14)	V2, V3, V5 V9, V100	Varistor

PCB (2): Service Monitor PCB

1)	S52, S102	Connector for main PCB
2)	LED A	LED for service monitor (green)
3)	SW1	Forced cooling operation [ON/OFF] button ∗ Refer to page 384 for detail.
4)	SW4-B	Switch for facility setting ∗ Refer to page 389 for detail.

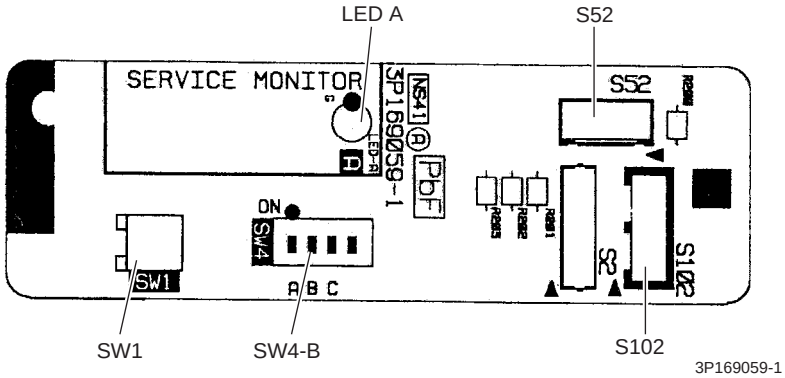
PCB Detail

PCB (1): Main PCB



2P266264-5
2P266264-6

PCB (2): Service Monitor PCB



3P169059-1

★ SW4-A and SW4-C has no function and keep it off.

Part 4
Function and Control

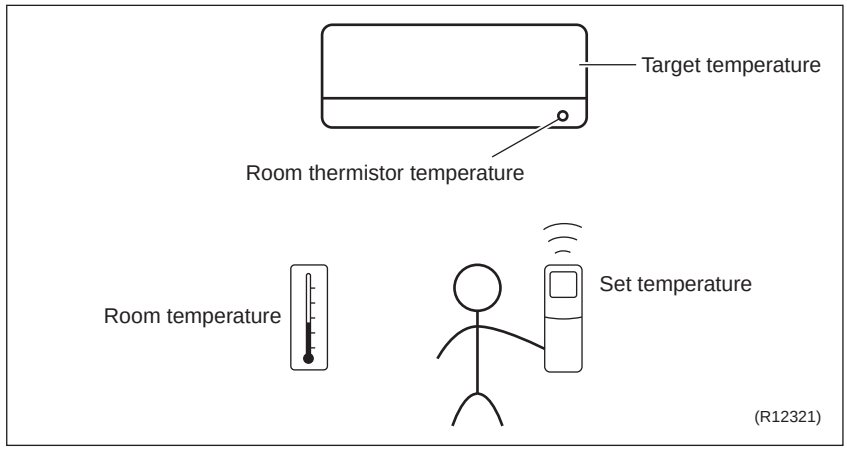
1. Main Functions

1.1 Temperature Control

Definitions of Temperatures

The definitions of temperatures are classified as following.

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



★ The illustration is for FTXS series as representative.

Temperature Control

The temperature of the room is detected by the room temperature thermistor. However, there is difference between the “temperature detected by room temperature thermistor” and the “temperature of lower part of the room”, depending on the type of the indoor unit or installation condition. Practically, the temperature control is done by the “target temperature appropriately adjusted for the indoor unit” and the “temperature detected by room temperature thermistor”.

1.2 Frequency Principle

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 thermistor temperature and the target temperature

Additional Control Parameters

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

- Frequency restrictions
- Initial settings
- Forced cooling operation

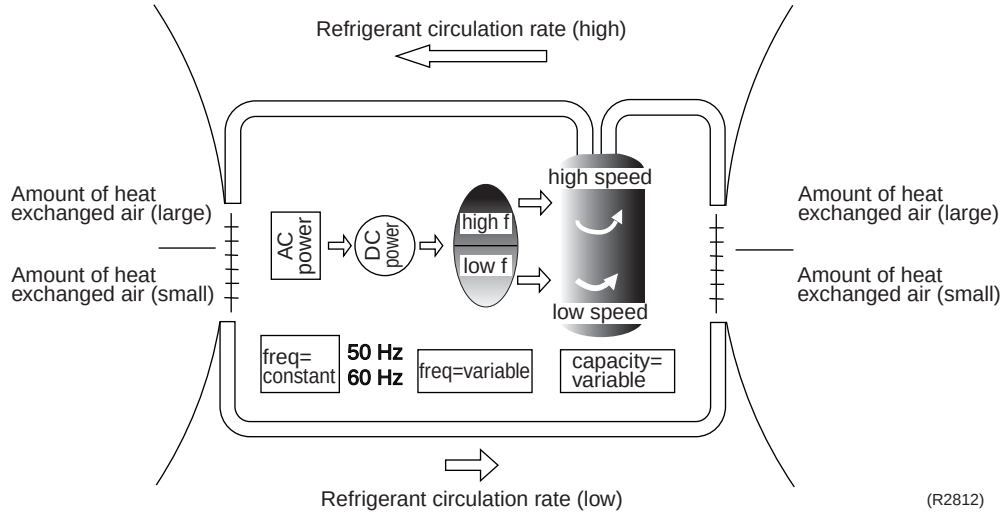
Inverter Principle

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

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

Drawing of Inverter

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



Inverter Features

The inverter provides the following features:

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

Frequency Limits

The following functions regulate the minimum and maximum frequency:

Frequency	Functions
Low	■ Four-way valve operation compensation. Refer to page 45.
High	■ Compressor protection function. Refer to page 46. ■ Discharge pipe temperature control. Refer to page 46. ■ Input current control. Refer to page 47. ■ Freeze-up protection control. Refer to page 48. ■ Heating peak-cut control. Refer to page 48. ■ Defrost control. Refer to page 50.

Forced Cooling Operation

Refer to page 384 for detail.

1.3 Airflow Direction Control (FTXS Series)

Power-Airflow Dual Louvers

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

<Cooling / Dry>

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

<Heating>

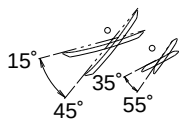
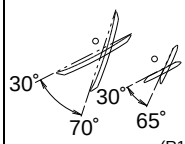
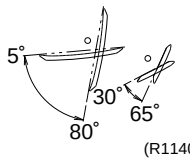
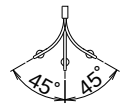
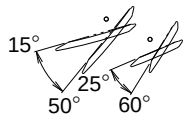
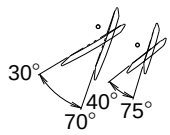
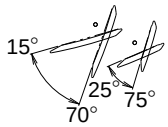
During heating operation, the large louver directs airflow downward to spread the warm air to the entire room.

Wide-Angle Fins

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

Auto-Swing

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

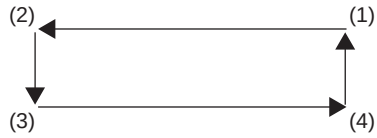
	Vertical Swing (up and down)			Horizontal Swing (right and left)
	Cooling / Dry	Heating	Fan	
09/12 class	 (R13527)	 (R11402)	 (R11403)	 (R11404)
15/18/24/30/36 class	 (R9303)	 (R9304)	 (R9305)	 (R9306)

3-D Airflow

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

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

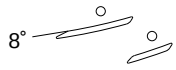
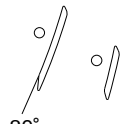
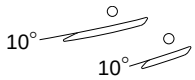
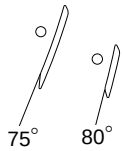
(1) The vertical blades (fins) move from the right to the left.
(2) The horizontal blades (louvers) move downward.
(3) The vertical blades (fins) move from the left to the right.
(4) The horizontal blades (louvers) move upward.



(R13554)

COMFORT AIRFLOW Operation

The horizontal blades (louvers) are controlled not to blow the air directly at the people in the room.

	Cooling	Heating
09/12 class	 (R4302)	 (R8413)
15/18/24/30/36 class	 (R9655)	 (R9654)

1.4 Fan Speed Control for Indoor Unit

Outline

Phase control and fan speed control contains 9 steps: LLL, LL, SL, L, ML, M, MH, H, and HH. The airflow rate can be automatically controlled depending on the difference between the room thermistor temperature and the target temperature. 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 99.

Automatic Fan Speed Control

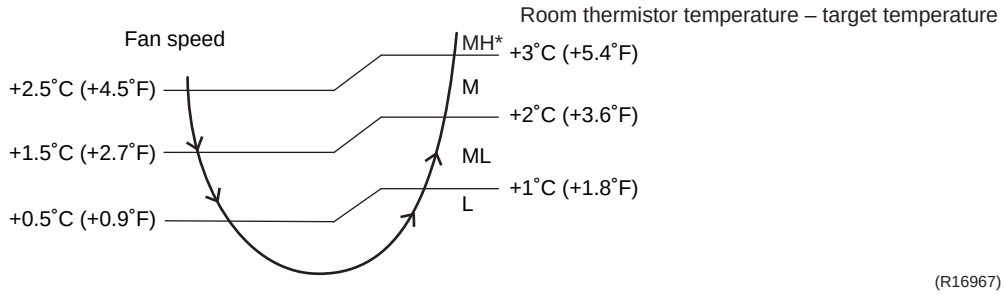
In automatic fan speed operation, the step “SL” is not available.

Step	Cooling	Heating
LLL		
LL		
L		
ML		
M		
MH		
H		
HH (POWERFUL)	(R11681)	(R6834)

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

<Cooling>

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



*For FTXS series, the upper limit is M tap in 30 minutes from the operation start.

<Heating>

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

Note:
1. During POWERFUL operation, the fan rotates at H tap + 50 rpm.
2. The fan stops during defrost operation.

COMFORT AIRFLOW Operation

FTXS series

- The fan speed is controlled automatically within the following steps.
  <Cooling>
  L tap ~ MH tap (same as AUTOMATIC)
  <Heating>
  ML tap ~ MH tap

- The latest command has the priority between POWERFUL and COMFORT AIRFLOW.

1.5 Program Dry Operation

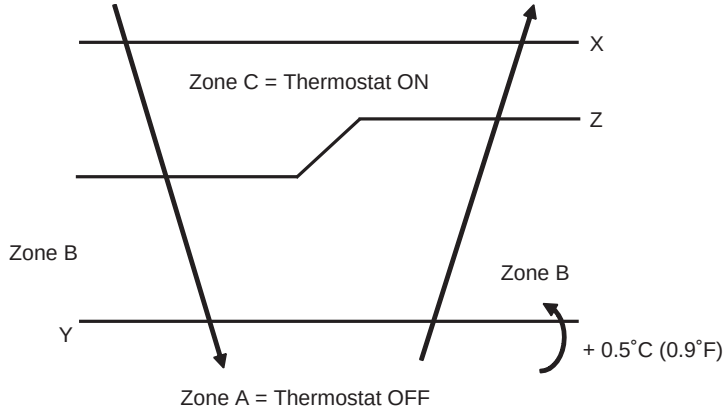
Outline

Program dry operation removes humidity while preventing the room temperature from lowering. Since the microcomputer controls both the temperature and airflow rate, the temperature adjustment and [FAN] setting buttons are inoperable.

Detail

The microcomputer automatically sets the temperature and airflow rate. The difference between the room thermistor temperature at start-up and the target temperature is divided into two zones. Then, the unit operates in an appropriate capacity for each zone to maintain the temperature and humidity at a comfortable level.

Room thermistor temperature at start-up	Target temperature X	Thermostat OFF point Y	Thermostat ON point Z
24°C (75.2°F) or more	Room thermistor temperature at start-up	X – 2.5°C (–4.5°F)	X – 0.5°C (– 0.9°F) or Y + 0.5°C (0.9°F) (zone B) continues for 10 min.
23.5°C (74.3°F) ≀ 18°C (64.4°F)		X – 2.0°C (–3.6°F)	X – 0.5°C (– 0.9°F) or Y + 0.5°C (0.9°F) (zone B) continues for 10 min.
17.5°C (63.5°F) ≀	18°C (64.4°F)	X – 2.0°C (–3.6°F)	X – 0.5°C (– 0.9°F) = 17.5°C (63.5°F) or Y + 0.5°C (0.9°F) (zone B) continues for 10 min.



(R11587)

1.6 Automatic Operation

Outline

Automatic Cooling / Heating Function

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

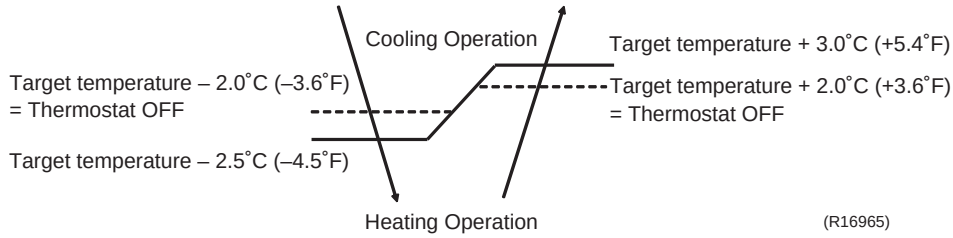
The unit automatically switches the operation mode to maintain the room temperature at the set temperature.

Detail

Ts: set temperature (set by remote controller)
Tt: target temperature (determined by microcomputer)
Tr: room thermistor temperature (detected by room temperature thermistor)
C: correction value

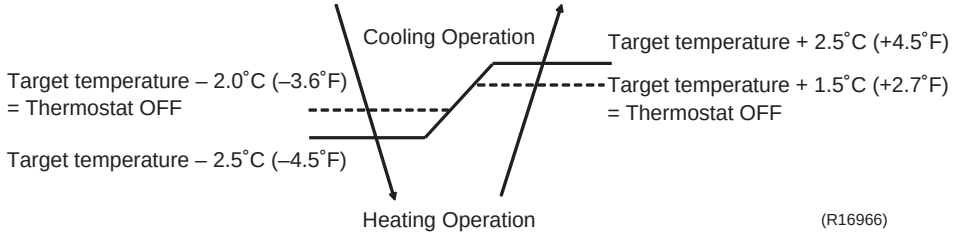
1. The set temperature (Ts) determines the target temperature (Tt).
   (Ts = 18 ~ 30°C, 64.4 ~ 86°F).
2. The target temperature (Tt) is calculated as;
   Tt = Ts + C
   where C is the correction value.
   C = 0°C (0°F)
3. Thermostat ON/OFF point and operation mode switching point are as follows.
   (1)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

FTXS series



Ex: When the target temperature is 25°C (77°F)
Cooling → 23°C (73.4°F): Thermostat OFF → 22°C (71.6°F): Switch to heating
Heating → 27°C (80.6°F): Thermostat OFF → 28°C (82.4°F): Switch to cooling

FDXS series



Ex: When the target temperature is 25°C (77°F)
Cooling → 23°C (73.4°F): Thermostat OFF → 22°C (71.6°F): Switch to heating
Heating → 26.5°C (79.7°F): Thermostat OFF → 27.5°C (81.5°F): Switch to cooling

1.7 Thermostat Control

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

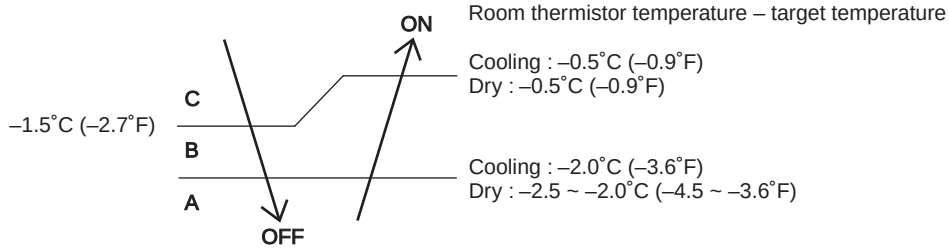
Thermostat OFF Condition

- The temperature difference is in the zone A.

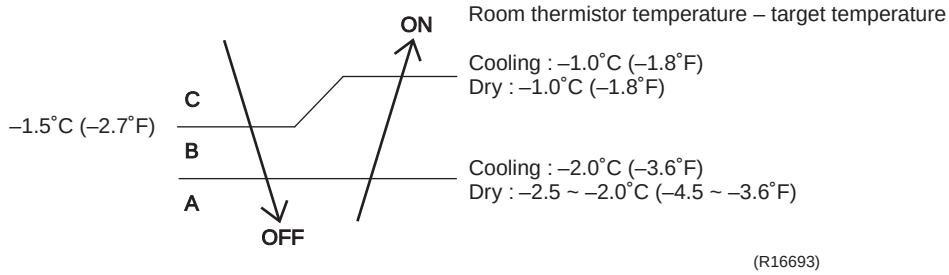
Thermostat ON Condition

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

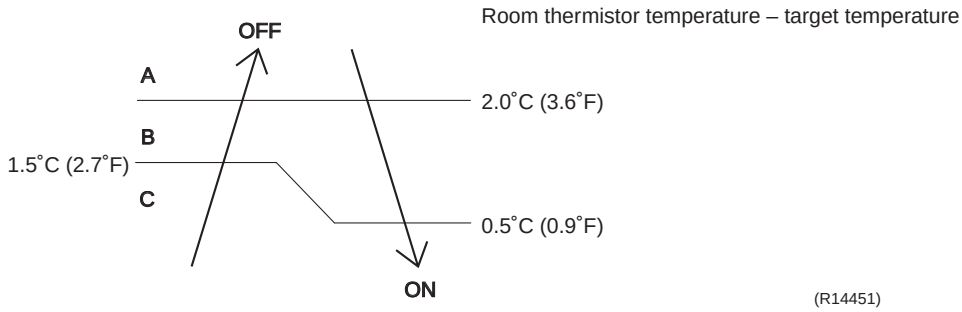
<Cooling / Dry>
FTXS series



FDXS series



<Heating>



Refer to “Temperature Control” on page 28 for detail.

1.8 NIGHT SET Mode

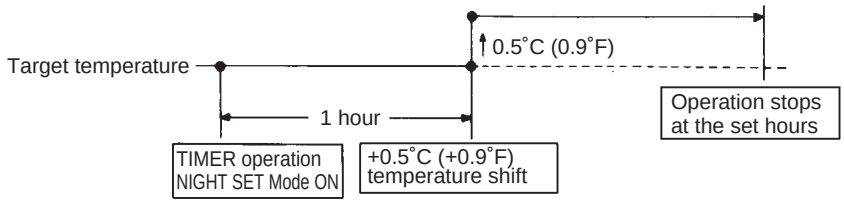
Outline

When the OFF timer is set, the NIGHT SET Mode is automatically activated. The NIGHT SET Mode keeps the airflow rate setting.

Detail

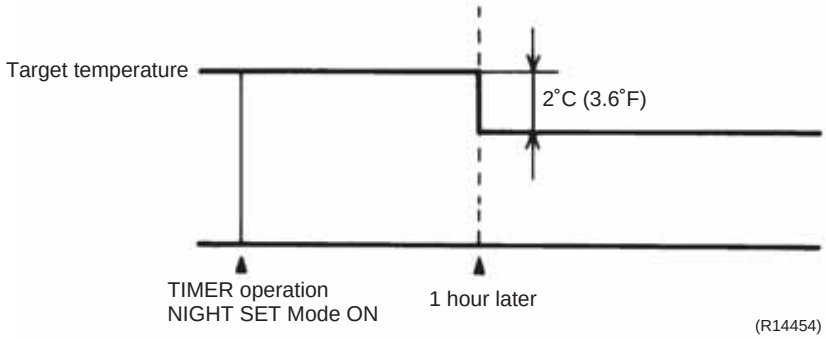
The NIGHT SET Mode continues operation at the target temperature for the first one hour, then automatically raises the target temperature slightly in the case of cooling, or lowers it slightly in the case of heating. This prevents excessive cooling in summer and excessive heating in winter to ensure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

<Cooling>



(R14453)

<Heating>



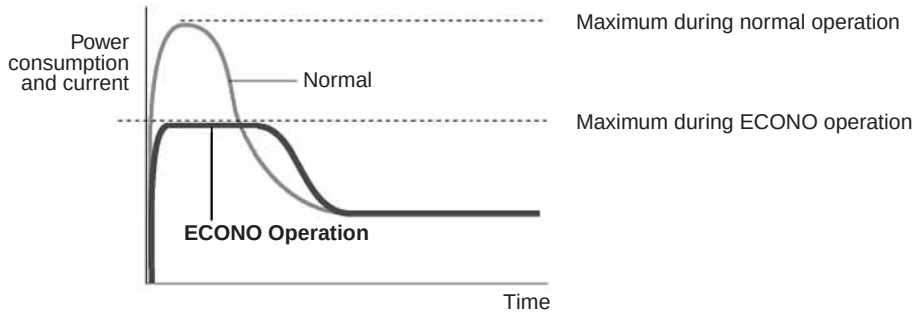
(R14454)

1.9 ECONO Operation

Outline

ECONO operation reduces the maximum operating current and the power consumption.
This operation is particularly convenient for energy-saving-oriented users. It is also a major bonus for those whose breaker capacities do not allow the use of multiple electrical devices and air conditioners.
It is easily activated from the wireless remote controller by pushing the [ECONO] button.

- When this function is activated, the maximum capacity also decreases.
- The remote controller can send the ECONO command when the unit is in COOL, HEAT, DRY, or AUTO operation. This function can only be set when the unit is running. Pressing the [ON/OFF] button on the remote controller cancels the function.
- This function and POWERFUL operation cannot be used at the same time. The latest command has the priority.



(R9288)

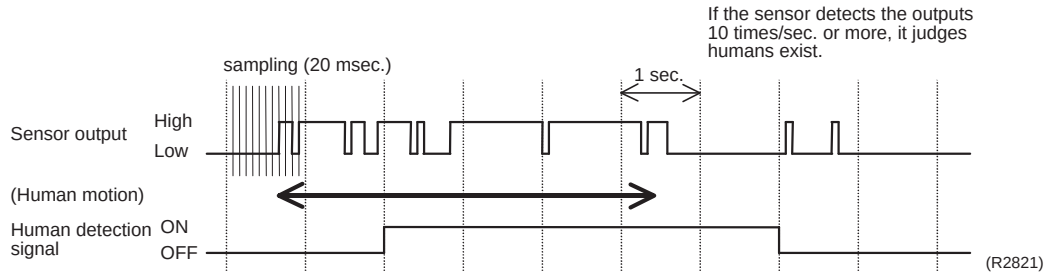
1.10 INTELLIGENT EYE Operation (FTXS Series)

Outline

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

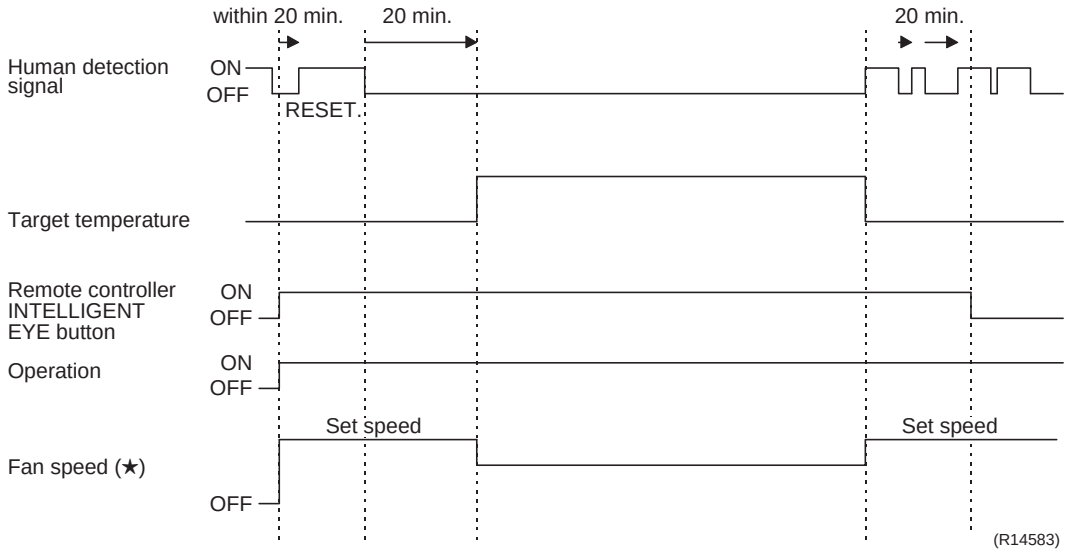
Detail

1. Detection method by INTELLIGENT EYE



- This sensor detects human motion by receiving infrared rays and displays the pulse wave output.
- The microcomputer in the indoor unit carries out a sampling every 20 msec. and if it detects 10 cycles of the wave in 1 second in total (corresponding to 20 msec. × 10 = 200 msec.), it judges humans are in the room as the motion signal is ON.

2. The motions (for example: in cooling)



- When the microcomputer does not have a signal from the sensor in 20 minutes, it judges that nobody is in the room and operates the unit at a temperature shifted from the target temperature. (Cooling / Dry: 1 ~ 2°C (1.8 ~ 3.6°F) higher, Heating: 2°C (3.6°F) lower, Auto: according to the operation mode at that time.)

★ In FAN operation, the fan speed is reduced by 60 rpm.

Others

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

1.11 Inverter POWERFUL Operation

Outline

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

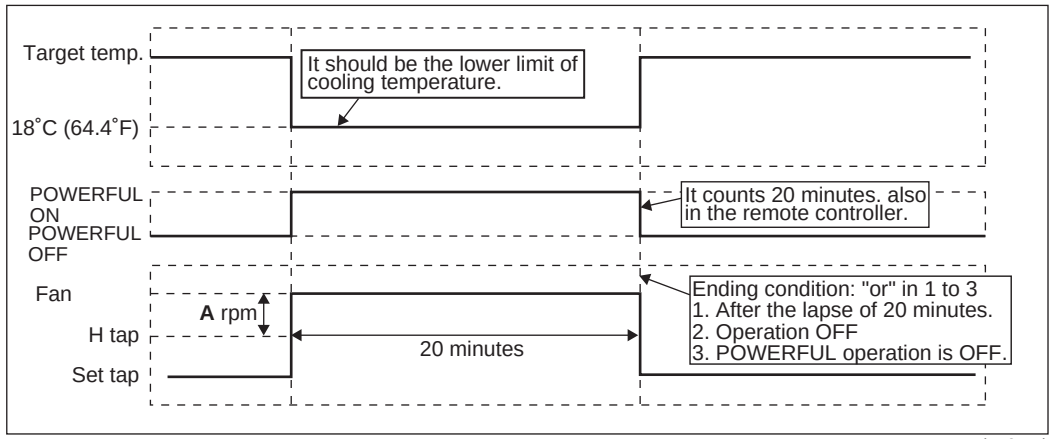
Detail

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

Operation mode	Fan speed	Target temperature
COOL	H tap + **A** rpm	18°C (64.4°F)
DRY	Dry rotating speed + **A** rpm	Lowered by 2.5°C (4.5°F)
HEAT	H tap + **A** rpm	30 ~ 31.5°C (86 ~ 88.7°F)
FAN	H tap + **A** rpm	—
AUTO	Same as cooling / heating in POWERFUL operation	The target temperature is kept unchanged.

A = 50 rpm

Ex: POWERFUL operation in cooling



(R13571)

1.12 Other Functions

1.12.1 Hot-Start Function

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

1.12.2 Signal Receiving Sign

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

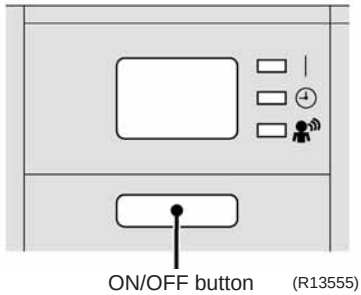
1.12.3 Indoor Unit ON/OFF Button

An [ON/OFF] button is provided on the display of the unit.

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

	Operation mode	Temperature setting	Airflow rate
Cooling Only	COOL	22°C (71.6°F)	Automatic
Heat Pump	AUTO	25°C (77°F)	Automatic

Ex: FTXS series



<Forced cooling operation>

Forced cooling operation can be started by pressing the [ON/OFF] button for 5 to 9 seconds while the unit is not operating.
Refer to page 384 for detail.

Note: When the [ON/OFF] button is pressed for 10 seconds or more, the forced cooling operation is stopped.

1.12.4 Titanium Apatite Photocatalytic Air-Purifying Filter

This filter combines the Air-Purifying Filter and Titanium Apatite Photocatalytic Deodorizing Filter as a single highly effective filter. The filter traps microscopic particles, decomposes odors and even deactivates bacteria and viruses. It lasts for 3 years without replacement if washed about once every 6 months.

1.12.5 Auto-restart Function

If a power failure (including one for just a moment) occurs during the operation, the operation restarts automatically when the power is restored in the same condition as before the power failure.

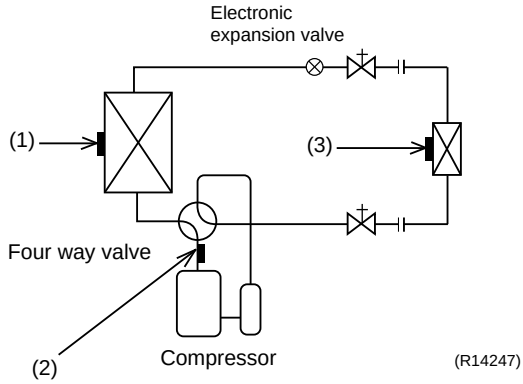
Note: It takes 3 minutes to restart the operation because the 3-minute standby function is activated.

1.12.6 WEEKLY TIMER Operation

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

Refer to page 71 for detail.

2. Function of Thermistor



(1) Outdoor Heat Exchanger Thermistor

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

(2) Discharge Pipe Thermistor

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

(3) Indoor Heat Exchanger Thermistor

1. The indoor heat exchanger thermistor is used for controlling the target discharge pipe temperature. The system sets the target discharge pipe temperature according to the outdoor and indoor heat exchanger temperature, and controls the electronic expansion valve opening so that the target discharge pipe temperature can be obtained.
2. In cooling operation, the indoor heat exchanger thermistor is used for freeze-up protection control. If the indoor heat exchanger temperature drops abnormally, the operating frequency becomes lower or the operation halts.
3. In heating operation, the indoor heat exchanger thermistor is used for detecting the disconnection of the discharge pipe thermistor. When the discharge pipe temperature becomes lower than the indoor heat exchanger temperature, the discharge pipe thermistor is judged as disconnected.

3. Control Specification

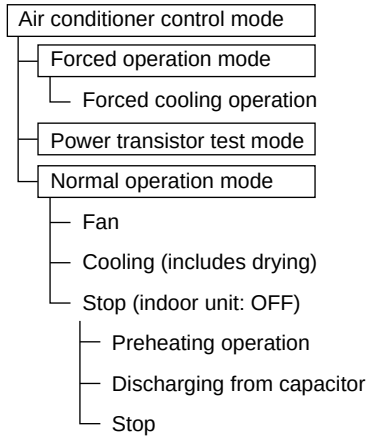
3.1 Mode Hierarchy

Outline

There are 3 modes; normal operation mode, forced operation mode and the power transistor test mode for installation and servicing.

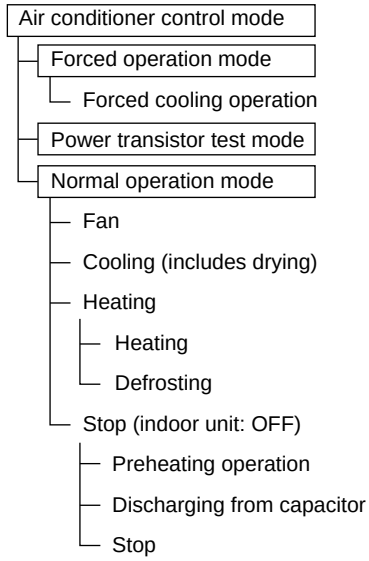
Detail

Cooling Only Model



(R14428)

Heat Pump Model



(R14248)

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

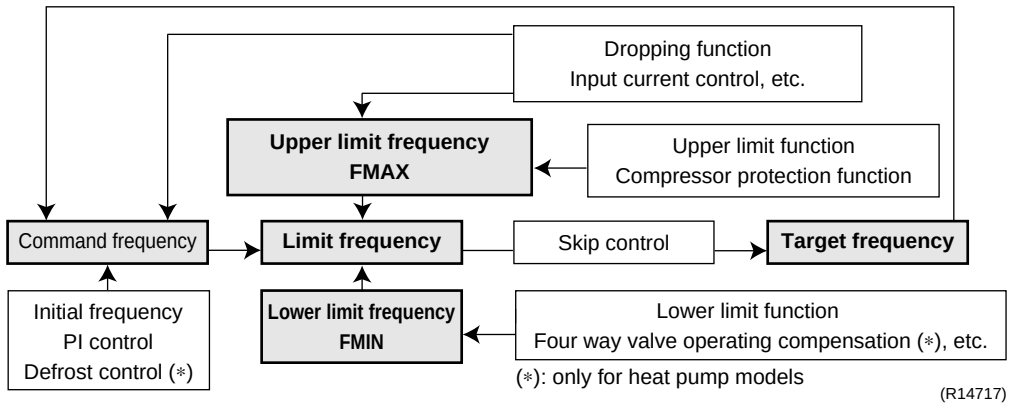
3.2 Frequency Control

Outline

Frequency is determined according to the difference between the room thermistor temperature and the target temperature.
The function is explained as follows.

1. How to determine frequency
2. Frequency command from the indoor unit (Difference between the room thermistor temperature and the target temperature)
3. Frequency initial setting
4. PI control

When the shift of the frequency is less than zero (ΔF<0) by PI control, the target frequency is used as the command frequency.



Detail

How to Determine Frequency

The compressor's frequency is determined by taking the following steps.

For Cooling Only Model

1. Determine command frequency

- Command frequency is determined in the following order of priority.
  1. Forced cooling
  2. Indoor frequency command

2. Determine upper limit frequency

- The minimum value is set as an upper limit frequency among the frequency upper limits of the following functions:
  Compressor protection, input current, discharge pipe temperature, freeze-up protection.

3. Determine lower limit frequency

- The maximum value is set as a lower limit frequency among the frequency lower limits of the following function:
  Pressure difference upkeep.

4. Determine prohibited frequency

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

For Heat Pump Model

1. Determine command frequency

- Command frequency is determined in the following order of priority.
  1. Limiting defrost control time
  2. Forced cooling
  3. Indoor frequency command

2. Determine upper limit frequency

- The minimum value is set as an upper limit frequency among the frequency upper limits of the following functions:
  Compressor protection, input current, discharge pipe temperature, heating peak-cut, freeze-up protection, defrost.

3. Determine lower limit frequency

- The maximum value is set as a lower limit frequency among the frequency lower limits of the following functions:
  Four-way valve operation 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 (∆D signal)

The difference between the room thermistor temperature and the target temperature is taken as the "∆D signal" and is used for frequency command.

Temperature difference	∆D signal	Temperature difference	∆D signal	Temperature difference	∆D signal	Temperature difference	∆D signal
–2.0°C (–3.6°F)	∗Th OFF	0°C (0°F)	4	2.0°C (3.6°F)	8	4.0°C (7.2°F)	C
–1.5°C (–2.7°F)	1	0.5°C (0.9°F)	5	2.5°C (4.5°F)	9	4.5°C (8.1°F)	D
–1.0°C (–1.8°F)	2	1.0°C (1.8°F)	6	3.0°C (5.4°F)	A	5.0°C (9°F)	E
–0.5°C (–0.9°F)	3	1.5°C (2.7°F)	7	3.5°C (6.3°F)	B	5.5°C (9.9°F)	F

∗Th OFF = Thermostat OFF

Frequency Initial Setting

<Outline>

When starting the compressor, the frequency is initialized according to the ∆D value and the Q value of the indoor unit.

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

PI Control (Determine Frequency Up / Down by ∆D Signal)

1. P control

The ∆D value is calculated in each sampling time (15 ~ 20 seconds), and the frequency is adjusted according to its difference from the frequency previously calculated.

2. I control

If the operating frequency does not change for more than a certain fixed time, the frequency is adjusted according to the ∆D value.
When the ∆D value is low, the frequency is lowered.
When the ∆D value is high, the frequency is increased.

3. Frequency management when other controls are functioning

- When 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.

4. Upper and lower limit of frequency by PI control

The frequency upper and lower limits are set according to the command of the indoor unit.
When the indoor or outdoor unit quiet operation command comes from the indoor unit, the upper limit frequency is lower than the usual setting.

3.3 Controls at Mode Changing / Start-up

3.3.1 Preheating Operation

Outline

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

Detail

ON Condition

- When the discharge pipe temperature is below **A**, the inverter operation in open phase starts.

OFF Condition

- When the discharge pipe temperature is higher than **B**, the inverter operation in open phase stops.

	A	B
09/12 class	0°C (32°F)	12°C (53.6°F)
15/18/24/30/36 class	0°C (32°F)	8°C (46.4°F)

3.3.2 Four-Way Valve Switching

Outline

In heating operation, current is conducted, and in cooling and defrosting operation, current is not 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 OFF delay switch of the four-way valve is carried out.

Detail

OFF delay switch of four-way valve:

The four-way valve coil is energized for 150 ~ 160 seconds after the operation is stopped.

3.3.3 Four-Way Valve Operation Compensation

Outline

At the beginning of the operation as the four-way valve is switched, the pressure difference to activate the four-way valve is acquired by having output frequency which is more than a certain fixed frequency, for a certain fixed time.

Detail

Starting Conditions

1. When starting the compressor for heating
2. When the operation mode changes from heating to cooling
3. When starting the compressor for defrosting
4. When starting the compressor for heating after defrosting
5. When starting the compressor for the first time after resetting with the power ON
6. When starting the compressor after the fault of switching over cooling / heating

The lower limit of frequency keeps **A** Hz for **B** seconds with any conditions 1 through 6 above.

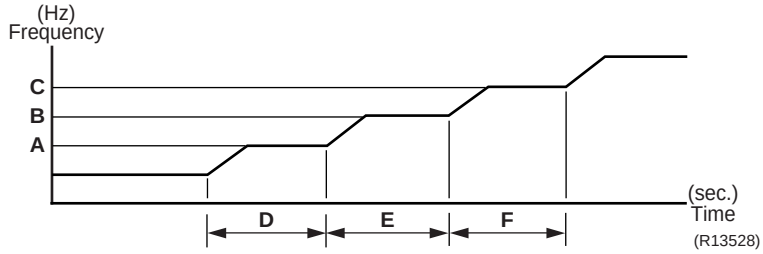
	09/12 class		15/18 class		24 class		30/36 class	
	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating
A (Hz)	68	66	48		28		83	
B (seconds)	45		70		70		70	

3.3.4 3-minute Standby

Turning on the compressor is prohibited for 3 minutes after turning it off.
(Except when defrosting.)

3.3.5 Compressor Protection Function

When turning the compressor from OFF to ON, the upper limit of frequency is set as follows. (The function is not activated when defrosting.)



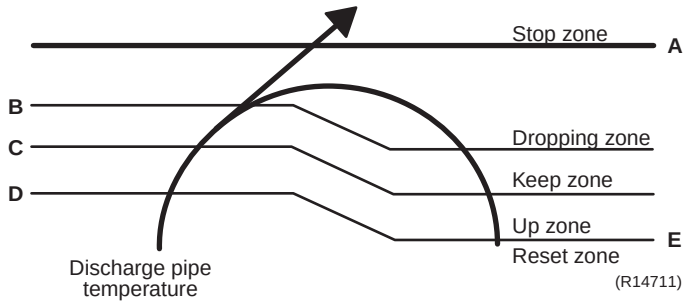
	09/12 class	15/18 class	24 class	30/36 class
A (Hz)	48	55	55	46 ~ 55
B (Hz)	64	70	65	65
C (Hz)	88	85	80	80
D (seconds)	240	120	120	120 ~ 500
E (seconds)	360	200	200	100 ~ 200
F (seconds)	180	470	470	470

3.4 Discharge Pipe Temperature Control

Outline

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

Detail



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

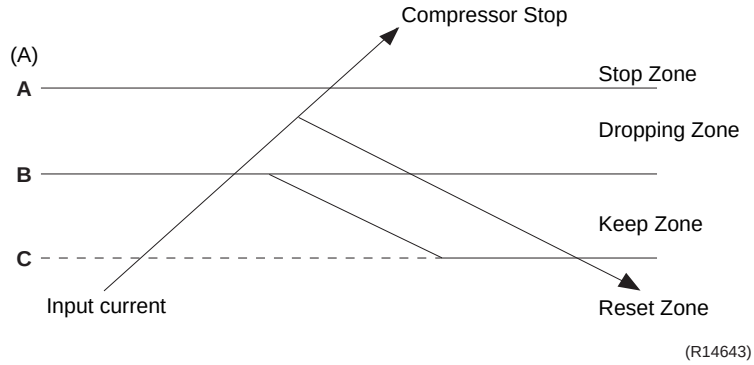
	09/12 class	15/18 class	24/30/36 class
A	110°C (230°F)	110°C (230°F)	120°C (248°F)
B	105°C (221°F)	103°C (217.4°F)	111°C (231.8°F)
C	101°C (213.8°F)	101.5°C (214.7°F)	109°C (228.2°F)
D	99°C (210.2°F)	100°C (212°F)	107°C (224.6°F)
E	97°C (206.6°F)	95°C (203°F)	107°C (224.6°F)

3.5 Input Current Control

Outline

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

Detail



Frequency control in each zone

Stop zone

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

Dropping zone

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

Keep zone

- The present maximum frequency goes on.

Reset zone

- Limit of the frequency is canceled.

	09 class		12 class		15/18 class	
	Cooling	Heating	Cooling	Heating	Cooling	Heating
A (A)	9.25		9.25		15.0	15.25
B (A)	6.25	7.5	8.25		13.0	13.25
C (A)	5.5	6.75	7.5		12.0	12.25

	24 class		30/36 class	
	Cooling	Heating	Cooling	Heating
A (A)	20.0		20.0	
B (A)	15.0	17.0	19.0	
C (A)	14.0	16.0	18.0	

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

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

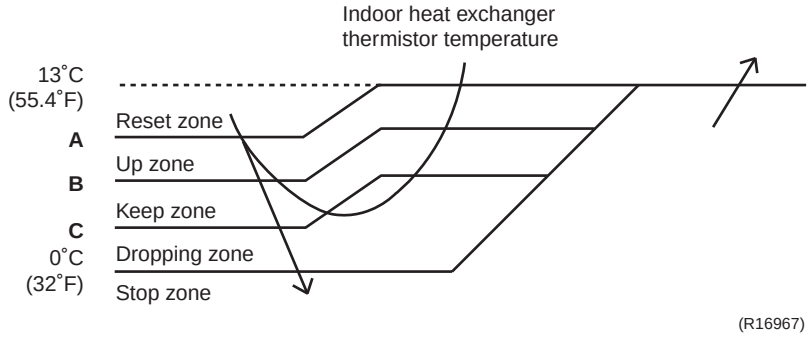
3.6 Freeze-up Protection Control

Outline

During cooling operation, the signal sent from the indoor unit controls the operating frequency limitation and prevents freezing of the indoor heat exchanger. (The signal from the indoor unit is divided into zones.)

Detail

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



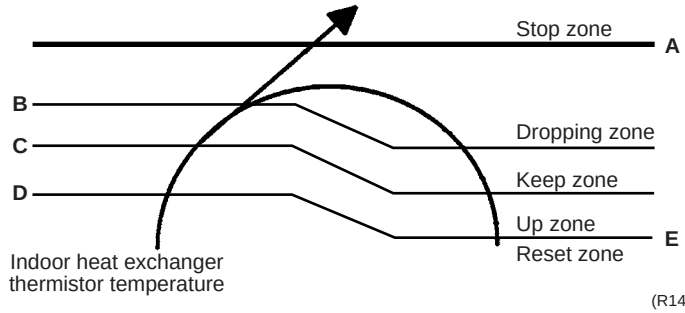
	A	B	C
FTXS09/12LVJU	9.5°C (49.1°F)	7.5°C (45.5°F)	5.5°C (41.9°F)
FTXS15/18/24/30/36LVJU, FDXS series	7°C (44.6°F)	5°C (41°F)	3°C (37.4°F)

3.7 Heating Peak-cut Control

Outline

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

Detail



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

	A	B	C	D	E
09 class	60°C (140°F)	56°C (132.8°F)	53°C (127.4°F)	51°C (123.8°F)	46°C (114.8°F)
12 class	60°C (140°F)	52°C (125.6°F)	50°C (122°F)	48°C (118.4°F)	43°C (109.4°F)
15/18 class	60°C (140°F)	57°C (134.6°F)	56°C (132.8°F)	54°C (129.2°F)	52°C (125.6°F)
24/30/36 class	65°C (149°F)	56°C (132.8°F)	55°C (131°F)	53°C (127.4°F)	51°C (123.8°F)

3.8 Outdoor Fan Control

1. Fan ON control to cool down the electrical box

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

2. Fan OFF control during defrosting

The outdoor fan is turned OFF during defrosting.

3. Fan OFF delay when stopped

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

4. Fan speed control for pressure difference upkeep

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

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

5. Fan speed control during forced cooling operation

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

6. Fan speed control during POWERFUL operation

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

7. Fan speed control during indoor / outdoor unit quiet operation

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

8. Fan ON/OFF control when operation starts / stops

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

3.9 Liquid Compression Protection Function

Outline

In order to obtain the dependability of the compressor, the compressor is stopped according to the outdoor temperature and temperature of the outdoor heat exchanger.

Detail

■ Operation stops depending on the outdoor temperature.

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

3.10 Defrost Control

Outline

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

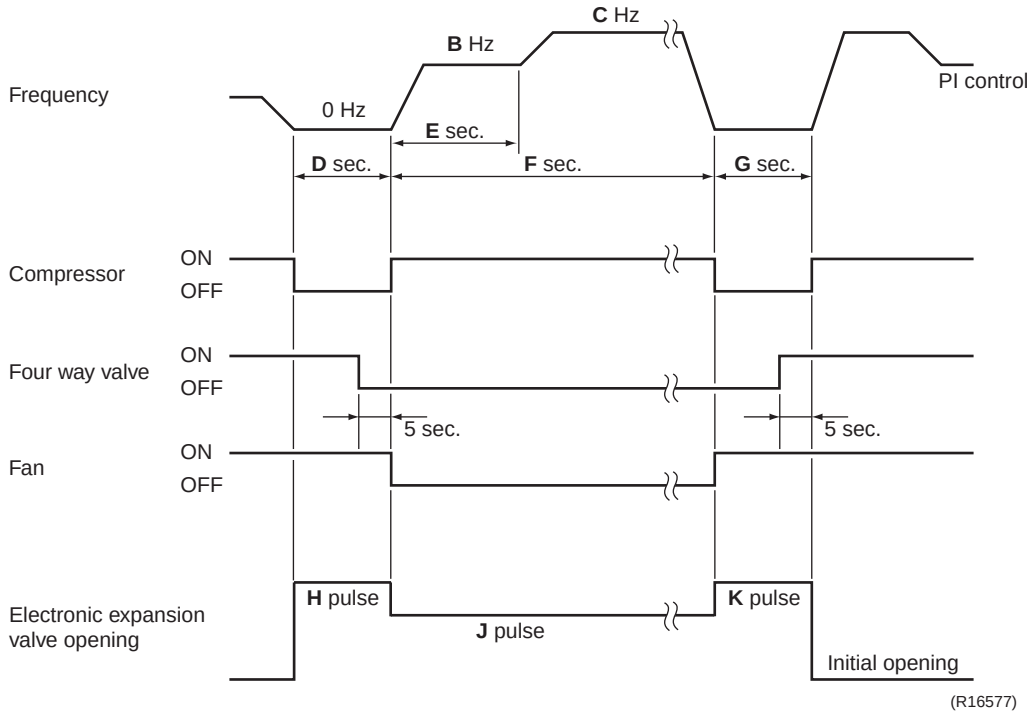
Detail

Conditions for Starting Defrost

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

Conditions for Canceling Defrost

The judgment is made with the outdoor heat exchanger temperature **L**.



	09/12 class	15/18 class	24 class	30/36 class
A (minutes)	15 ~ 28	15 ~ 44	15 ~ 38	15 ~ 38
B (Hz)	76	55	39	39
C (Hz)	86	90	62	62
D (seconds)	50	60	60	60
E (seconds)	60	120	120	120
F (seconds)	480	340	530	530
G (seconds)	60	50	60	60
H (pulse)	450	450	450	450
J (pulse)	350	450	300	350
K (pulse)	450	450	400	400
L	4 ~ 18°C (39.2 ~ 64.4°F)	4 ~ 12°C (39.2 ~ 53.6°F)	4 ~ 12°C (39.2 ~ 53.6°F)	4 ~ 18°C (39.2 ~ 64.4°F)

3.11 Electronic Expansion Valve Control

Outline

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

Electronic expansion valve is fully closed

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

Open Control

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

Feedback Control

1. Target discharge pipe temperature control

Detail

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

h : Holding Functions — : No Functions	When the power turns on or when the compressor stops	When the operation starts	When the frequency changes under starting control	During target discharge pipe temperature control	When the frequency changes under target discharge pipe temperature control	When the disconnection of the discharge pipe thermistor is ascertained	When the frequency changes under the control for disconnection of the discharge pipe thermistor	Under defrost control
Cooling								
Starting control	–	h	–	–	–	–	–	–
Control when the frequency changes	–	–	h	–	h	–	–	–
Target discharge pipe temperature control	–	–	–	h	–	–	–	–
Control for disconnection of the discharge pipe thermistor	–	–	–	–	–	h	h	–
High discharge pipe temperature control	–	h	h	h	h	–	–	–
Pressure equalizing control	h	–	–	–	–	–	–	–
Opening limit control	–	h	h	h	h	h	h	–
Heating								
Starting control	–	h	–	–	–	–	–	–
Control when the frequency changes	–	–	h	–	h	–	–	–
Target discharge pipe temperature control	–	–	–	h	–	–	–	–
Control for disconnection of the discharge pipe thermistor	–	–	–	–	–	h	h	–
High discharge pipe temperature control	–	h	h	h	h	–	–	–
Defrost control	–	–	–	–	–	–	–	h
Pressure equalizing control	h	–	–	–	–	–	–	–
Opening limit control	–	h	h	h	h	h	h	–

3.11.1 Fully Closing with Power ON

The electronic expansion valve is initialized when turning on the power. The opening position is set and the pressure equalization is developed.

3.11.2 Pressure Equalizing Control

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

3.11.3 Opening Limit Control

Outline

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

Detail

	09/12 class	15/18 class	24 class	30/36 class
Maximum opening (pulse)	480	480	450	480
Minimum opening (pulse)	52	54	75	10

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

3.11.4 Starting Operation Control

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

3.11.5 Control when the Frequency Changes

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

3.11.6 High Discharge Pipe Temperature Control

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

3.11.7 Control for Disconnection of the Discharge Pipe Thermistor

Outline

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

Detail

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

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

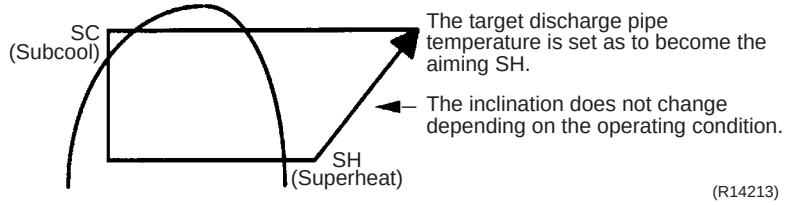
	09/12 class	15/18/24 class	30/36 class
A (seconds)	10	10	30
B (seconds)	120	30	30
C (seconds)	810	540	540

Adjustment when the thermistor is disconnected

When the disconnection is ascertained, the compressor continues operation for 9 minutes and then stops.
If the compressor stops repeatedly, the system is shut down.

3.11.8 Target Discharge Pipe Temperature Control

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



The electronic expansion valve opening and the target discharge pipe temperature are adjusted every 20 seconds. The target discharge pipe temperature is controlled by indoor heat exchanger temperature and outdoor heat exchanger temperature. The opening degree of the electronic expansion valve is controlled by the followings.

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

3.12 Malfunctions

3.12.1 Sensor Malfunction Detection

Sensor malfunction may occur in the thermistor.

Relating to Thermistor Malfunction

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

3.12.2 Detection of Overcurrent and Overload

Outline

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

Detail

- If the OL (compressor head) temperature exceeds 120 ~ 130°C (248 ~ 266°F), the system shuts down the compressor.
- If the inverter current exceeds 9.25 ~ 20 A (depending on the model), the system shuts down the compressor.

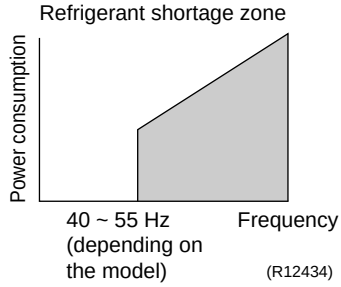
3.12.3 Refrigerant Shortage Control

Outline

I: Detecting by power consumption

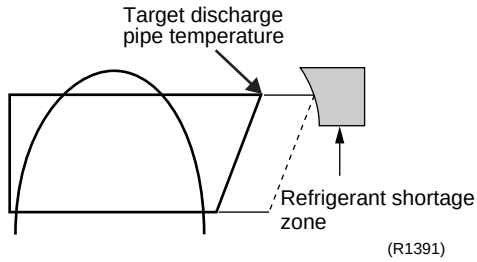
If the power consumption is below the specified value and the frequency is higher than the specified frequency, it is regarded as refrigerant shortage.

The power consumption is low comparing with that in the normal operation when refrigerant is insufficient, and refrigerant shortage is detected by checking power consumption.



II: Detecting by discharge pipe temperature

If the discharge pipe temperature is higher than the target discharge pipe temperature, and the electronic expansion valve is fully open for more than the specified time, it is regarded as refrigerant shortage.



III: Detecting by the difference of temperature

If the difference between suction and discharge temperature is smaller than the specified value, it is regarded as refrigerant shortage.

Refer to page 104 for detail.

Part 5
Operation Manual

1. System Configuration

After installation and trial operation of the room air conditioner are completed, the air conditioner should be handled and operated as described in the following pages. Every user should be informed on the correct method of operation and how to check if it can cool (or heat) well, and how to use it efficiently.

Providing instructions to the user can reduce requests for servicing by 80%. However proficient the installation and operating functions of the AC system are, the customer may fault either the room air conditioner or its installation work when it is actually due to improper handling. The installation work and the handing-over of the unit can only be considered completed when its handling has been fully explained to the user without using technical terms, and while imparting full knowledge of the equipment.

2. FTXS Series

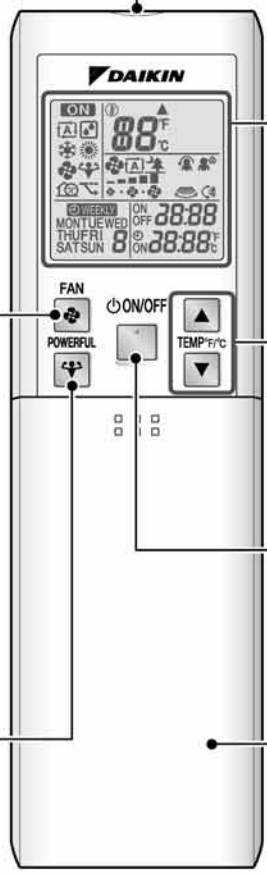
2.1 Remote Controller

Names of Parts

Remote Controller

Signal transmitter

- 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 approximately 23ft (7m).



Display (LCD)
- Displays the current settings. (In this illustration, each section is shown with all its displays on for the purpose of explanation.)

TEMPERATURE adjustment buttons
- Changes the temperature setting. Page 12

FAN setting button
- Selects the airflow rate setting. Page 14

ON/OFF button
- Press this button once to start operation. Press once again to stop it. Page 11

POWERFUL button
- POWERFUL operation. Page 17

Front cover
- Open the front cover. Page 8

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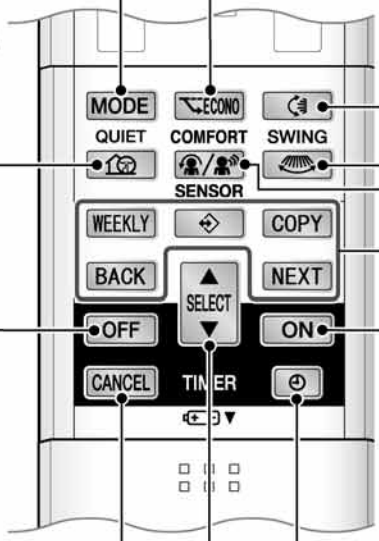
7

■ Open the front cover



MODE selector button
- Selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN) ▶Page 11

ECONO button
- ECONO operation. ▶Page 19

SWING button
- Adjusting the airflow direction. ▶Page 13

QUIET button
- OUTDOOR UNIT QUIET operation. ▶Page 18

COMFORT/SENSOR button
- COMFORT AIRFLOW and INTELLIGENT EYE operation. ▶Page 15,16

OFF TIMER button ▶Page 20

WEEKLY : WEEKLY button
: PROGRAM button
COPY : COPY button
BACK : BACK button
NEXT : NEXT button
- WEEKLY TIMER operation. ▶Page 22

TIMER CANCEL button
- Cancels the timer setting. ▶Page 20,21
- It cannot be used for the WEEKLY TIMER operation.

ON TIMER button ▶Page 21

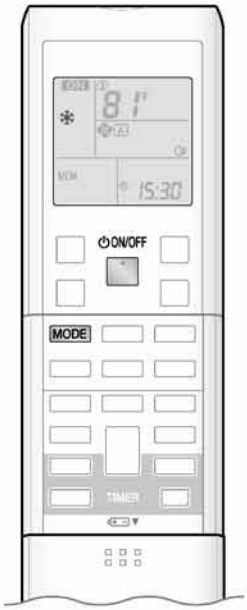
SELECT button
- Changes the ON/OFF TIMER and WEEKLY TIMER settings. ▶Page 20,21,22

CLOCK button

8

2.2 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 and select an operation mode.

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

COOLING ONLY model

DRY → COOL → FAN

HEAT PUMP model

AUTO → DRY → COOL → HEAT → FAN

2. Press ON/OFF.

- "ON" is displayed on the LCD.
- The OPERATION lamp lights green.

Display

■ To stop operation

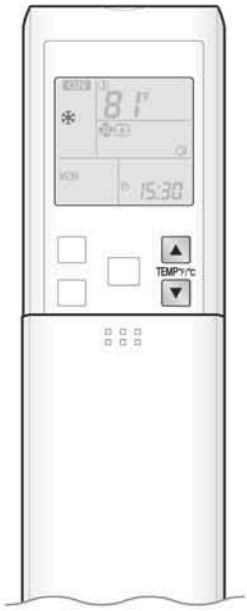
Press ON/OFF again.

- "ON" is no longer displayed on the LCD.
- The OPERATION lamp goes off.

NOTE

MODE	Notes on each operation mode
HEAT	• 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 HEAT operation, it takes some time before the room gets warmer. • In HEAT 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.
COOL	• This air conditioner cools the room by releasing the heat in the room outside. Therefore, the cooling performance of the air conditioner may be degraded if the outdoor temperature is high.
DRY	• The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and airflow rate, so manual adjustment of these functions is unavailable.
AUTO	• In AUTO operation, the system selects an appropriate operation mode (COOL or HEAT) based on the room and outside temperatures and starts the operation. • The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
FAN	• This mode is valid for fan only.

11



■ To change the temperature setting

Press ▲ **or** ▼ **TEMP°F/°C**

TEMP°F/°C

- The displayed items on the LCD will change whenever either one of the buttons is pressed.

COOL operation	HEAT operation	AUTO operation	DRY or FAN operation
64-90°F (18-32°C)	50-86°F (10-30°C)	64-86°F (18-30°C)	The temperature setting is not variable.
Press ▲ to raise the temperature and press ▼ to lower the temperature.			

■ Operating conditions

■ Recommended temperature setting

- For cooling: 78-82°F (26-28°C)
- For heating: 68-75°F (20-24°C)

■ Tips for saving energy

- Be careful not to cool (heat) the room too much.
  Keeping the temperature setting at a moderate level helps save energy.
- Cover windows with a blind or a curtain.
  Blocking sunlight and air from outdoors increases the cooling (heating) effect.
- Clogged air filters cause inefficient operation and waste energy. Clean them once in about every 2 weeks.

■ Notes on the operating conditions

- The air conditioner always consumes a small amount of electricity even while it is not operating.
- If you are not going to use the air conditioner for a long period, for example in spring or autumn, turn the breaker off.
- Use the air conditioner in the following conditions.

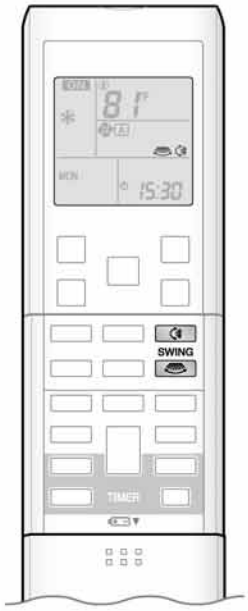
MODE	Operating conditions	If operation is continued out of this range
COOL	Outdoor temperature : 14-115°F (10-46°C) Indoor temperature : 64-90°F (18-32°C) Indoor humidity : 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.
HEAT	Outdoor temperature : 5-75°F (–15-24°C) Indoor temperature : 50-86°F (10-30°C)	• A safety device may work to stop the operation.
DRY	Outdoor temperature : 14-115°F (10-46°C) Indoor temperature : 64-90°F (18-32°C) Indoor humidity : 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.

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

12

2.3 Adjusting the Airflow Direction and Rate

Adjusting the Airflow Direction and Rate



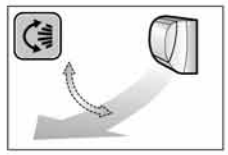
You can adjust the airflow direction to increase your comfort.

■ To start auto swing

Upper and lower airflow direction

Press [ ] **.**

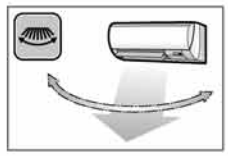
- "" is displayed on the LCD.
- The louvers (horizontal blades) will begin to swing.



Right and left airflow direction

Press [ ] **.**

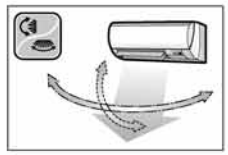
- "" is displayed on the LCD.
- The fins (vertical blades) will begin to swing.



The 3-D airflow direction

Press [ ] **and** [ ] **.**

- "" and "" are displayed on the LCD.
- The louvers and fins move in turn.
- To cancel 3-D airflow, press either [ ] or [ ] again. The louvers or fins will stop moving.



■ To set the louvers or fins at desired position

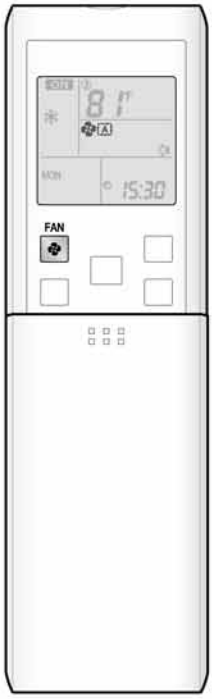
- This function is effective while louvers or fins are in auto swing mode.

Press [ ] **and** [ ] **when the louvers or fins have reached the desired position.**

- In the 3-D airflow, the louvers and fins move in turn.
- "" or "" is no longer displayed on the LCD.

13

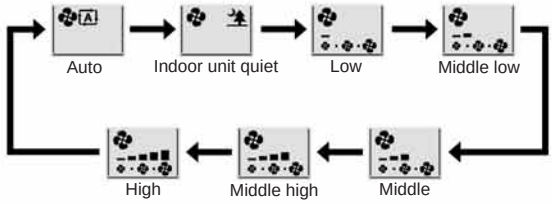
FTXS09/12LVJU



■ To adjust the airflow rate setting

Press .

• Each pressing of advances the airflow rate setting in sequence.

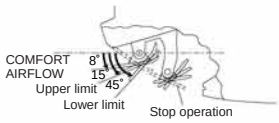


• When the airflow is set to " ", indoor unit quiet operation will start and the noise from the unit will become quieter.
• In indoor unit quiet operation, the airflow rate is set to a weak level.
• In DRY operation, the airflow rate setting is not variable.

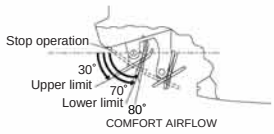
NOTE

■ **Notes on the angles of the louvers**
• The louvers swinging range depends on the operation. (See the figure.)

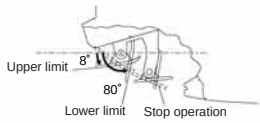
COOL and DRY operation



HEAT operation



FAN operation



■ **Note on 3-D airflow**
• Using 3-D 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.

■ **Note on airflow rate setting**
• At smaller airflow rates, the cooling (heating) effect is also smaller.

⚠ CAUTION

• Always use a remote controller to adjust the angles of the louvers and fins. If you attempt to move the louvers and fins forcibly with hand when they are swinging, the mechanism may be broken.
• Always use a remote controller to adjust the fins angles. Inside the air outlet, a fan is rotating at a high speed.

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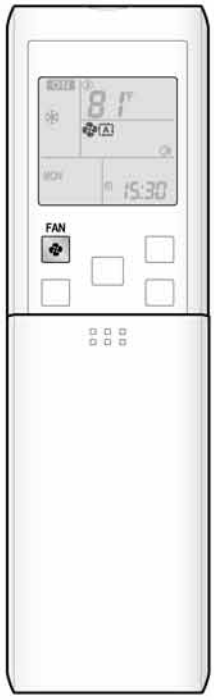
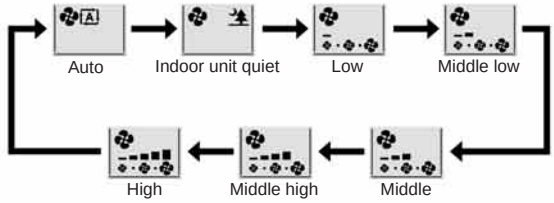
FTXS15/18/24/30/36LVJU



■ To adjust the airflow rate setting

Press .

• Each pressing of advances the airflow rate setting in sequence.



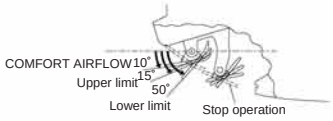
• When the airflow is set to " ", indoor unit quiet operation will start and the noise from the unit will become quieter.
• In indoor unit quiet operation, the airflow rate is set to a weak level.
• In DRY operation, the airflow rate setting is not variable.

NOTE

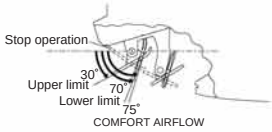
■ Notes on the angles of the louvers

• The louvers swinging range depends on the operation. (See the figure.)

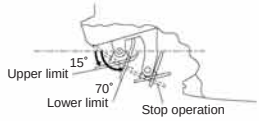
COOL and DRY operation



HEAT operation



FAN operation



■ Note on 3-D airflow

• Using 3-D 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.

■ Note on airflow rate setting

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

⚠ CAUTION

• Always use a remote controller to adjust the angles of the louvers and fins. If you attempt to move the louvers and fins forcibly with hand when they are swinging, the mechanism may be broken.
• Always use a remote controller to adjust the fins angles. Inside the air outlet, a fan is rotating at a high speed.

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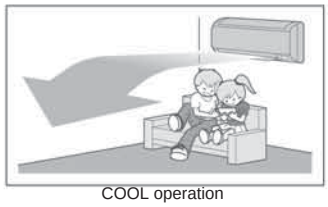
2.4 COMFORT AIRFLOW / INTELLIGENT EYE Operation

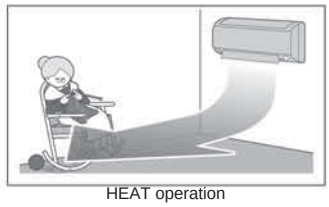
COMFORT AIRFLOW / INTELLIGENT EYE Operation

■ COMFORT AIRFLOW operation

The flow of air will be in the upward direction while in COOL operation and in the downward direction while in HEAT operation, providing comfortable temperatures without air blowing directly on people.



COOL operation

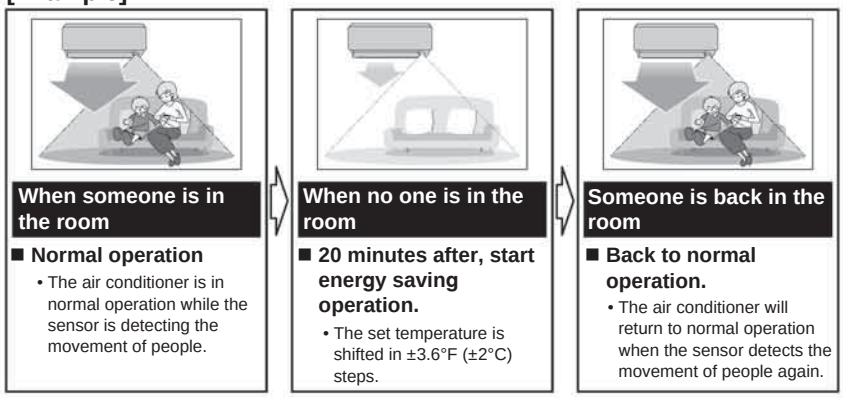


HEAT operation

■ INTELLIGENT EYE operation

"INTELLIGENT EYE" is the infrared sensor which detects human movement.
If no one is in the room for more than 20 minutes, the operation automatically changes to energy saving operation.

[Example]



INTELLIGENT EYE operation is useful for energy saving

■ **Energy saving operation**

- If no presence detected in the room for 20 minutes, the energy saving operation will start.
- This operation changes the temperature –3.6°F (–2°C) in HEAT / +3.6°F (+2°C) in COOL / +3.6°F (+2°C) in DRY operation from set temperature. When the room temperature exceeds 86°F (30°C), the operation changes the temperature +1.8°F (+1°C) in COOL / +1.8°F (+1°C) in DRY operation from set temperature.
- This operation decreases the airflow rate slightly in FAN mode only.

■ Combination COMFORT AIRFLOW and INTELLIGENT EYE operation

The air conditioner can go into operation with the COMFORT AIRFLOW and INTELLIGENT EYE functions combined.

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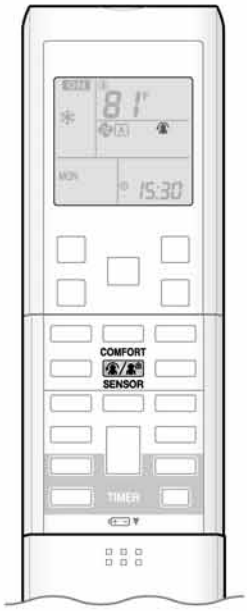


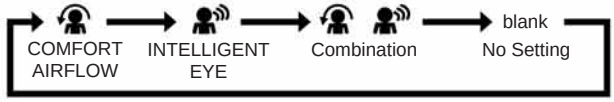
■ To start operation

Press and select the desired mode.

- Each time the is pressed a different setting option is displayed on the LCD.
- The INTELLIGENT EYE lamp lights green.

Display

- By selecting "" from the following icons, the air conditioner will be in COMFORT AIRFLOW operation combined with INTELLIGENT EYE operation.



- When the louvers (horizontal blades) are swinging, the operating as above will stop movement of them.
- The lamp will be lit while human movements are detected.

■ To cancel operation

Press and select "blank" on the LCD.

- The INTELLIGENT EYE lamp goes off.

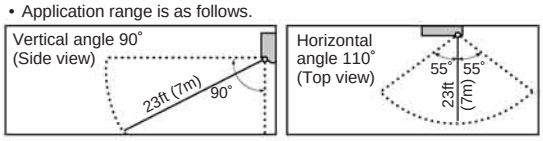
NOTE

■ Notes on COMFORT AIRFLOW operation

- The louver position will change, preventing air from blowing directly on the occupants of the room.
- POWERFUL operation and COMFORT AIRFLOW operation cannot be used at the same time. Priority is given to the function of whichever button is pressed last.
- The airflow rate will be set to AUTO. If the upper and lower airflow direction is selected, the COMFORT AIRFLOW function will be canceled.

■ Notes on INTELLIGENT EYE operation

- Application range is as follows.



- Sensor may not detect moving objects further than 23ft (7m) away. (Check the application range)
- Sensor detection sensitivity changes according to indoor unit location, the speed of passersby, temperature range, etc.
- The sensor also mistakenly detects pets, sunlight, fluttering curtains and light reflected off of mirrors as passersby.
- INTELLIGENT EYE operation will not go on during POWERFUL operation.
- NIGHT SET mode ▶Page 20 will not go on during use of INTELLIGENT EYE operation.

■ Notes on combination of COMFORT AIRFLOW operation and INTELLIGENT EYE operation

- The airflow rate will be set to AUTO. If the upper and lower airflow direction is selected, the COMFORT AIRFLOW operation will be canceled. Priority is given to the function of whichever button is pressed last.

⚠ 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 undesirable objects.
- Do not hit or violently push the INTELLIGENT EYE sensor. This can lead to damage and malfunction.

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2.5 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

Press [POWERFUL] during operation.

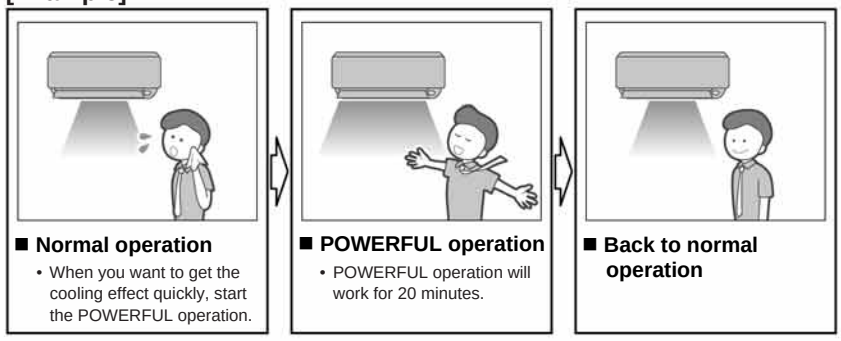
- POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the previous settings which were used before POWERFUL operation.
- "POWERFUL" is displayed on the LCD.

■ To cancel POWERFUL operation

Press [POWERFUL] again.

- "POWERFUL" is no longer displayed on the LCD.

[Example]



■ Normal operation
- When you want to get the cooling effect quickly, start the POWERFUL operation.

■ POWERFUL operation
- POWERFUL operation will work for 20 minutes.

■ Back to normal operation

NOTE

■ Notes on POWERFUL operation

- When using POWERFUL operation, there are some functions which are not available.
- POWERFUL operation cannot be used together with ECONO, COMFORT AIRFLOW or OUTDOOR UNIT 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 [ON/OFF] causes the settings to be canceled, and "POWERFUL" is no longer displayed on the LCD.
- POWERFUL operation will not increase the capacity of the air conditioner if the air conditioner is already in operation with its maximum capacity demonstrated.
- **In COOL, HEAT and AUTO operation**
  To maximize the cooling (heating) effect, the capacity of outdoor unit is increased and the airflow rate is fixed to the maximum setting. The temperature and airflow settings are not variable.
- **In DRY operation**
  The temperature setting is lowered by 4.5˚F (2.5˚C) and the airflow rate is slightly increased.
- **In FAN operation**
  The airflow rate is fixed to the maximum setting.

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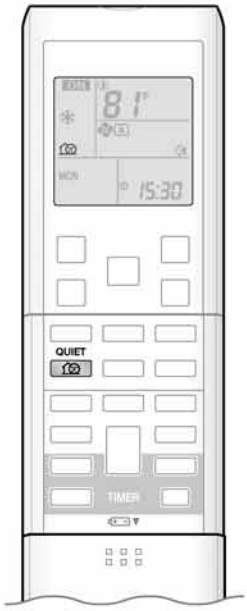
2.6 OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET Operation



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

■ To start OUTDOOR UNIT QUIET operation

Press .

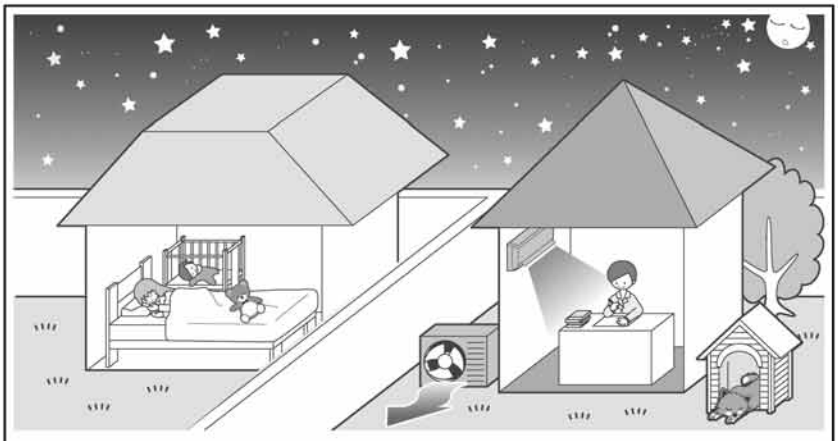
- "" is displayed on the LCD.

■ To cancel OUTDOOR UNIT QUIET operation

Press again.

- "" is no longer displayed on the LCD.

[Example] Using the OUTDOOR UNIT QUIET operation during the night.



- The noise level of the outdoor unit will be lower.
  This is convenient in consideration of your neighbors.

NOTE

■ **Notes on OUTDOOR UNIT QUIET operation**

- This function is available in COOL, HEAT, and AUTO operation.
  This is not available in FAN and DRY operation.
- 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.
- Even the operation is stopped using the remote controller or the indoor unit ON/OFF switch when using OUTDOOR UNIT QUIET operation, "" will remain on the remote controller display.
- OUTDOOR UNIT QUIET operation will drop neither the frequency nor fan speed if they have been already dropped low enough.

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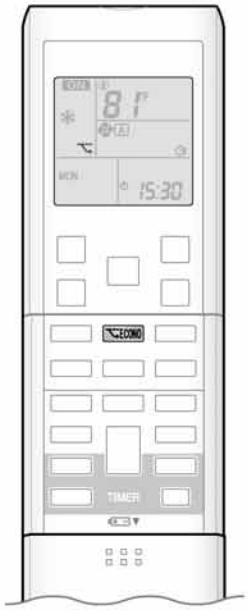
2.7 ECONO Operation

ECONO Operation



ECONO operation is a function which enables efficient operation by limiting the maximum power consumption value.
This function is useful for cases in which attention should be paid to ensure a circuit breaker will not trip when the product runs alongside other appliances.

■ To start ECONO operation

Press ECONO during operation.

- "ECONO" is displayed on the LCD.

■ To cancel ECONO operation

Press ECONO again.

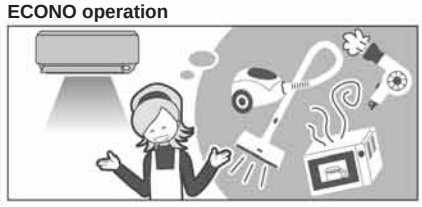
- "ECONO" is no longer displayed on the LCD.

[Example]

Normal operation

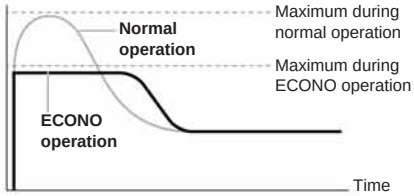
- In case the air conditioner and other appliances which require high power consumption are used at same time, a circuit breaker may trip if the air conditioner operate with its maximum capacity.

ECONO operation



- The maximum power consumption of the air conditioner is limited by using ECONO operation. The circuit breaker is unlikely to trip even if the air conditioner and other appliances are used at same time.

Running current and power consumption



From start up until set temperature is reached

- This diagram is a representation for illustrative purposes only.
  The maximum running current and power consumption of the air conditioner in ECONO operation vary with the connecting outdoor unit.

NOTE

■ Notes on ECONO operation

- ECONO operation can only be set when the unit is running. Pressing ON/OFF causes the settings to be canceled, and "ECONO" is no longer displayed on the LCD.
- ECONO operation functions in AUTO, COOL, DRY, and HEAT operation.
- POWERFUL and ECONO operation cannot be used at the same time.
  Priority is given to the function of whichever button is pressed last.
- If the level of power consumption is already low, ECONO operation will not drop the power consumption.

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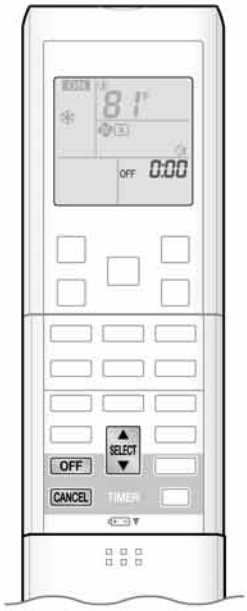
2.8 OFF TIMER Operation

OFF 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.

"0:00" is displayed on the LCD.
" OFF " blinks.

- " " is no longer displayed on the LCD.

2. Press SELECT until the time setting reaches the point you like.

- Each pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the time setting rapidly.

3. Press OFF again.

- " OFF " and setting time are displayed on the LCD.
- The TIMER lamp lights yellow.

Display

■ To cancel OFF TIMER operation

Press CANCEL.

- " OFF " and setting time are no longer displayed on the LCD.
- " " and day of the week are displayed on the LCD.
- The TIMER lamp goes off.

NOTE

■ **Notes on TIMER operation**

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

■ **NIGHT SET mode**

- When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.9˚F (0.5˚C) up in COOL, 3.6˚F (2.0˚C) down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.

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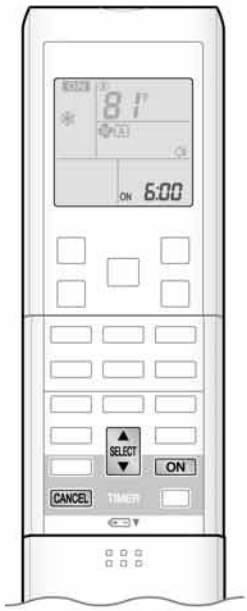
2.9 ON TIMER Operation

ON TIMER Operation



■ To use ON TIMER operation

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

1. Press ON.

" 6:00 " is displayed on the LCD.
" ON " blinks.

• " " and day of the week are no longer displayed on the LCD.

2. Press SELECT until the time setting reaches the point you like.

• Each pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press ON again.

• " ON " and setting time are displayed on the LCD.
• The TIMER lamp lights yellow.

Display

■ To cancel ON TIMER operation

Press CANCEL.

• " ON " and setting time are no longer displayed on the LCD.
• " " and day of the week are displayed on the LCD.
• The TIMER lamp goes off.

■ To combine ON TIMER and OFF TIMER

• A sample setting for combining the 2 timers is shown below.

(Example)
Present time: 23:00 (The unit operating)
OFF TIMER at 0:00) Combined
ON TIMER at 14:00)

NOTE

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

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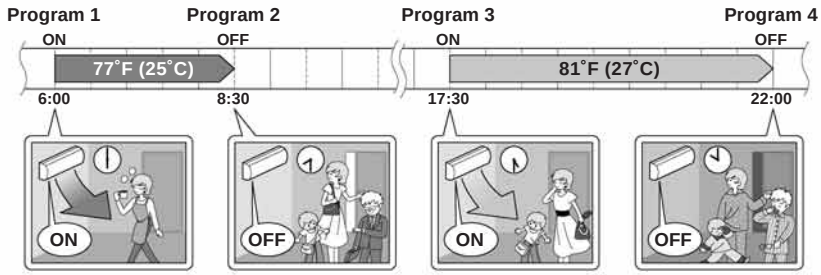
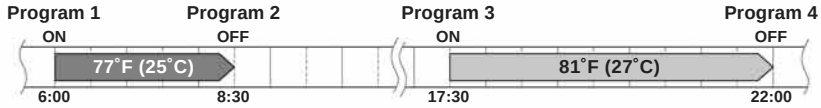
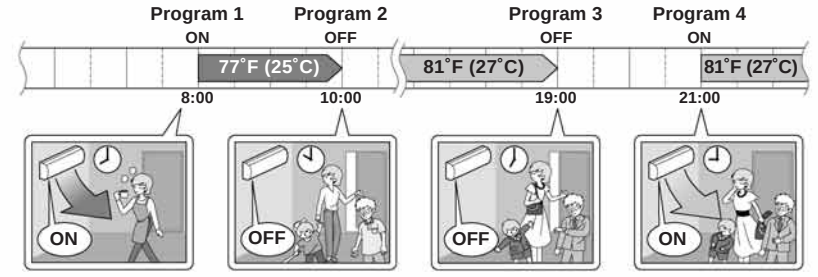
2.10 WEEKLY TIMER Operation

WEEKLY TIMER Operation

Up to 4 timer settings can be saved for each day of the week. It is convenient if the WEEKLY TIMER is set according to the family's life style.

■ Using in these cases of WEEKLY TIMER

Example: The same timer settings are made for the week from Monday through Friday while different timer settings are made for the weekend.

[Monday]	Make timer settings up to programs 1-4. ▶Page 23 
[Tuesday] to [Friday]	Use the copy mode to make settings for Tuesday to Friday, because these settings are the same as those for Monday. ▶Page 25 
[Saturday]	No timer settings
[Sunday]	Make timer settings up to programs 1-4. ▶Page 23 

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

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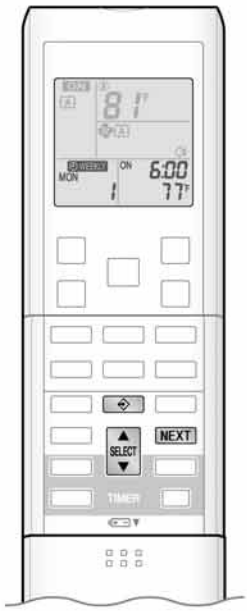
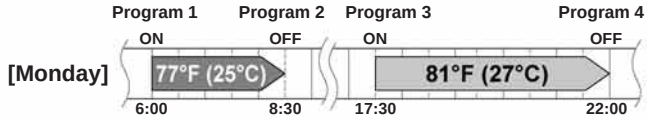
WEEKLY TIMER Operation



■ To use WEEKLY TIMER operation

Setting mode

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



Setting Displays

1. Press .

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

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

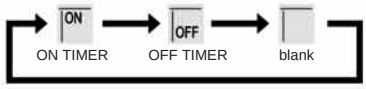
- Pressing SELECT changes the reservation number and the day of the week.

3. Press NEXT.

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

4. Press SELECT to select the desired mode.

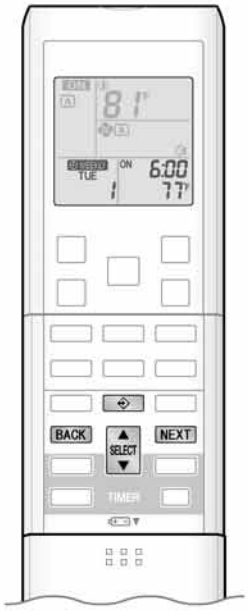
- Pressing SELECT changes "ON" or "OFF" setting in sequence.



- In case the reservation has already been set, selecting "blank" deletes the reservation.
- Go to **STEP 9** if "blank" is selected.

5. Press NEXT.

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



6. Press SELECT to select the desired time.

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

7. Press NEXT.

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

8. Press SELECT to select the desired temperature.

- The temperature can be set between 50˚F (10˚C) and 90˚F (32˚C).
  Cooling: The unit operates at 64˚F (18˚C) even if it is set at 50 (10) to 63˚F (17˚C).
  Heating: The unit operates at 86˚F (30˚C) even if it is set at 87 (31) to 90˚F (32˚C).
- To return to the time setting, press BACK.
- The set temperature is only displayed when the mode setting is on.

9. Press NEXT.

- The temperature will be set and go to the next reservation setting.
- To continue further settings, repeat the procedure from **STEP 4**.

10. Press ⏎ to complete the setting.

- Be sure to direct the remote controller toward the indoor unit and check for a receiving tone and flashing the OPERATION lamp.
- "WEEKLY" is displayed on the LCD and WEEKLY TIMER operation is activated.
- The TIMER lamp lights yellow.

Display

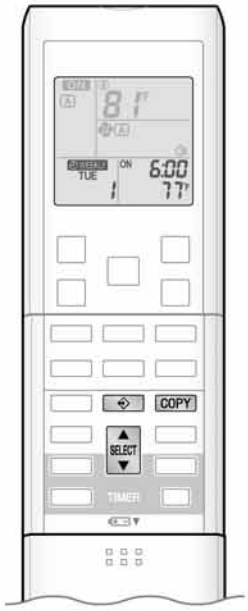
- A reservation made once can be easily copied and the same settings used for another day of the week. Refer to **Copy mode**. ▶Page 25

NOTE

■ **Notes on WEEKLY TIMER operation**

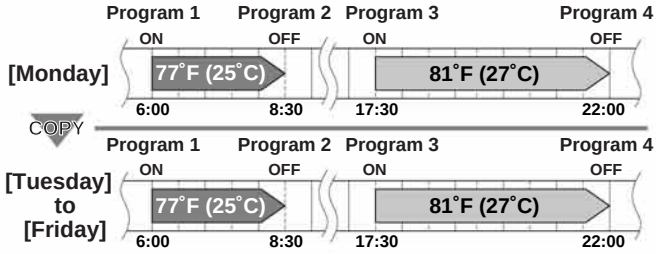
- Do not forget to set the clock on the remote controller first.
- The day of the week, ON/OFF TIMER mode, time and set temperature (only for ON TIMER mode) can be set with WEEKLY TIMER. Other settings for ON TIMER are based on the settings just before the operation.
- Both WEEKLY TIMER and ON/OFF TIMER operation cannot be used at the same time. The ON/OFF TIMER operation has priority if it is set while WEEKLY TIMER is still active. The WEEKLY TIMER will go into standby state, and "WEEKLY" will be no longer displayed on the LCD. When ON/OFF TIMER is up, the WEEKLY TIMER will automatically become active.
- Only the time and set temperature with the WEEKLY TIMER are sent with the ⏎. Set the WEEKLY TIMER only after setting the operation mode, the airflow rate and the airflow direction ahead of time.
- Shutting the breaker off, power failure, and other similar events will render operation of the indoor unit's internal clock inaccurate. Reset the clock.
- The BACK can be used only for the time and temperature settings. It cannot be used to go back to the reservation number.

WEEKLY TIMER Operation

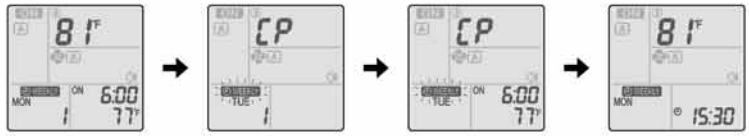


Copy mode

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



Setting Displays



1. Press [◈].

2. Press [SELECT] to confirm the day of the week to be copied.

3. Press [COPY].

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

4. Press [SELECT] to select the destination day of the week.

5. Press [COPY].

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

• To continue copying the settings to other days of the week, repeat **STEP *4*** and **STEP *5***.

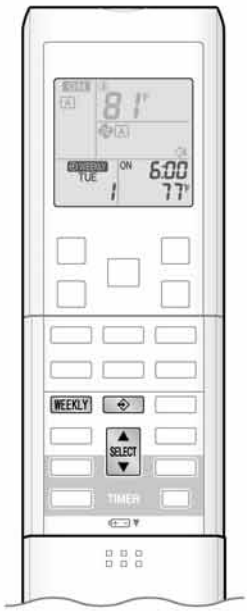
6. Press [◈] to complete the setting.

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

NOTE

■ **Note on COPY MODE**

• The entire reservation of the source day of the week is copied in the copy mode.
In the case of making a reservation change for any day of the week individually after copying the content of weekly reservations, press [◈] and change the settings in the steps of Setting mode. ▶Page 23



■ Confirming a reservation

• The reservation can be confirmed.

Setting Displays

Normal display Confirmation display

1. Press [◈].

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

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

• Pressing [SELECT] displays the reservation details.

• To change the confirmed reserved settings, select the reservation number and press [NEXT].
The mode is switched to setting mode. Go to **Setting mode** **STEP** *4*. Page 23

3. Press [◈] to exit confirming mode.

• "WEEKLY" is displayed on the LCD and WEEKLY TIMER operation is activated.
• The TIMER lamp lights yellow.

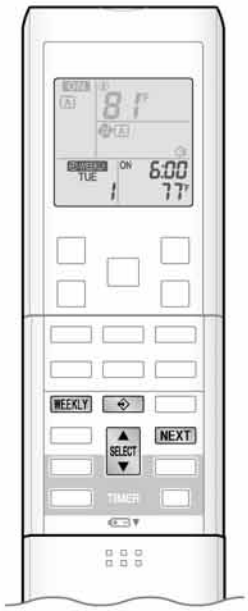
Display

■ To deactivate WEEKLY TIMER operation

Press [WEEKLY] while "WEEKLY" is displayed on the LCD.

• "WEEKLY" will be no longer displayed on the LCD.
• The TIMER lamp goes off.
• To reactivate the WEEKLY TIMER operation, press [WEEKLY] again.
• If a reservation deactivated with [WEEKLY] is activated once again, the last reservation mode will be used.

WEEKLY TIMER Operation



■ To delete reservations

The individual reservation

1. Press [⇔].

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

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

3. Press [NEXT].

- "[WEEKLY]" and "**ON**" or "**OFF**" blink.

4. Press [SELECT] and select " blank ".

- Pressing [SELECT] changes ON/OFF TIMER mode.
- The reservation will be no setting with selecting "blank".

5. Press [NEXT].

- The selected reservation will be deleted.

6. Press [⇔].

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

The reservations for each day of the week

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

1. Press [SELECT] to select the day of the week to be deleted.

2. Hold [WEEKLY] for 5 seconds.

- The reservation of the selected day of the week will be deleted.

All reservations

Hold [WEEKLY] for 5 seconds while normal display.

- Be sure to direct the remote controller toward the indoor unit and check for a receiving tone.
- This operation is not effective on the setting display of WEEKLY TIMER.
- All reservations will be deleted.

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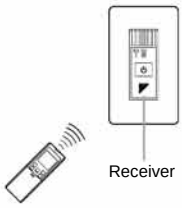
3. FDXS Series

3.1 Remote Controller

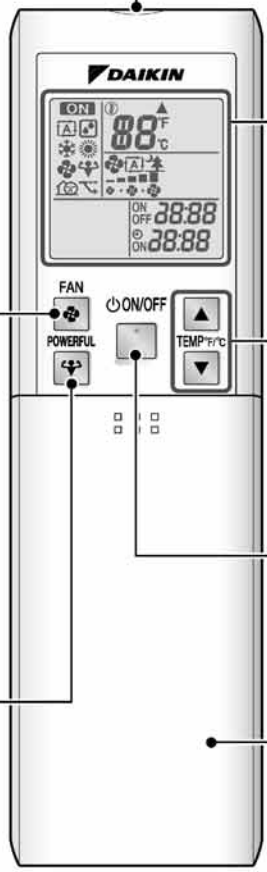
Names of Parts

Remote Controller

Signal transmitter



- 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 approximately 13ft (4m).



Display (LCD)
- Displays the current settings. (In this illustration, each section is shown with all its displays on for the purpose of explanation.)

TEMPERATURE adjustment buttons
- Changes the temperature setting. ▶Page 12

FAN setting button
- Selects the airflow rate setting. ▶Page 13

ON/OFF button
- Press this button once to start operation. Press once again to stop it. ▶Page 11

POWERFUL button
- POWERFUL operation. ▶Page 14

Front cover
- Open the front cover. ▶Page 8

<ARC452A23>

7

■ Open the front cover

MODE selector button
- Selects the operation mode. (AUTO/DRY/COOL/HEAT/FAN) Page 11

QUIET button
- OUTDOOR UNIT QUIET operation. Page 15

ECONO button
- ECONO operation. Page 16

OFF TIMER button
Page 17

ON TIMER button
Page 18

TIMER CANCEL button
- Cancels the timer setting.
Page 17,18

CLOCK button

SELECT button
- Changes the ON/OFF TIMER settings. Page 17,18

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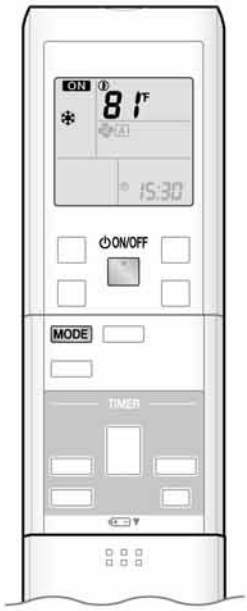
3.2 AUTO · DRY · COOL · HEAT · FAN Operation

AUTO · DRY · COOL · HEAT · FAN Operation

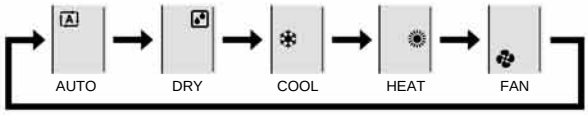


The air conditioner operates with the operation mode of your choice.
From the next time on, the air conditioner will operate with the same operation mode.

■ To start operation

1. Press MODE and select an operation mode.

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



2. Press ⏻ON/OFF.

• "ON" is displayed on the LCD.
• The OPERATION lamp lights green.

Display

■ To stop operation

Press ⏻ON/OFF again.

• "ON" is no longer displayed on the LCD.
• The OPERATION lamp goes off.

NOTE

MODE	Notes on each operation mode
HEAT	• 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 HEAT operation, it takes some time before the room gets warmer. • In HEAT 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.
COOL	• This air conditioner cools the room by releasing the heat in the room outside. Therefore, the cooling performance of the air conditioner may be degraded if the outdoor temperature is high.
DRY	• The computer chip works to rid the room of humidity while maintaining the temperature as much as possible. It automatically controls temperature and airflow rate, so manual adjustment of these functions is unavailable.
AUTO	• In AUTO operation, the system selects an appropriate operation mode (COOL or HEAT) based on the room and outside temperatures and starts the operation. • The system automatically reselects setting at a regular interval to bring the room temperature to user-setting level.
FAN	• This mode is valid for fan only.

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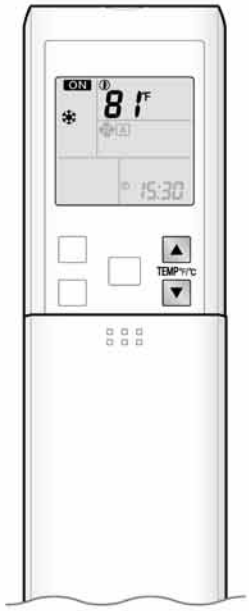

■ To change the temperature setting

Press ▲ TEMP°F/°C or TEMP°F/°C ▼.

• The displayed items on the LCD will change whenever either one of the buttons is pressed.

COOL operation	HEAT operation	AUTO operation	DRY or FAN operation
64-90˚F (18-32˚C)	50-86˚F (10-30˚C)	64-86˚F (18-30˚C)	The temperature setting is not variable.
Press ▲ to raise the temperature and press ▼ to lower the temperature.			

■ Operating conditions

■ Recommended temperature setting

• For cooling: 78-82˚F (26-28˚C)

• For heating: 68-75˚F (20-24˚C)

■ Tips for saving energy

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

• Cover windows with a blind or a curtain.
Blocking sunlight and air from outdoors increases the cooling (heating) effect.

• Clogged air filters cause inefficient operation and waste energy. Clean them once in about every 2 weeks.

■ Notes on the operating conditions

• The air conditioner always consumes a small amount of electricity even while it is not operating.

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

• Use the air conditioner in the following conditions.

MODE	Operating conditions	If operation is continued out of this range
COOL	Outdoor temperature : 50-115˚F (10-46˚C) Indoor temperature : 64-90˚F (18-32˚C) Indoor humidity : 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.
HEAT	Outdoor temperature : 5-75˚F (–15-24˚C) Indoor temperature : 50-86˚F (10-30˚C)	• A safety device may work to stop the operation.
DRY	Outdoor temperature : 50-115˚F (10-46˚C) Indoor temperature : 64-90˚F (18-32˚C) Indoor humidity : 80% max.	• A safety device may work to stop the operation. • Condensation may occur on the indoor unit and drip.

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

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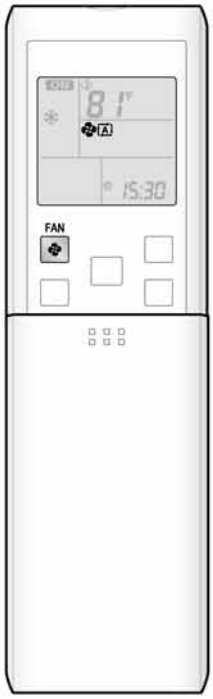
3.3 Adjusting the Airflow Rate

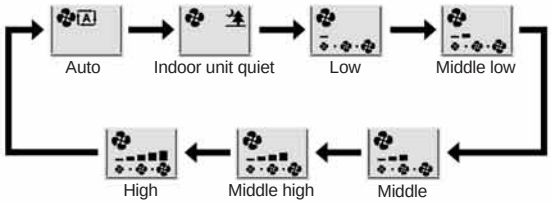
Adjusting the Airflow Rate



■ To adjust the airflow rate setting

Press .

• Each pressing of advances the airflow rate setting in sequence.



• When the airflow is set to " ", indoor unit quiet operation will start and the noise from the unit will become quieter.
• In indoor unit quiet operation, the airflow rate is set to a weak level.
• In DRY operation, the airflow rate setting is not variable.

NOTE

■ **Note on airflow rate setting**
• At smaller airflow rates, the cooling (heating) effect is also smaller.

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3.4 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

Press [POWERFUL] during operation.

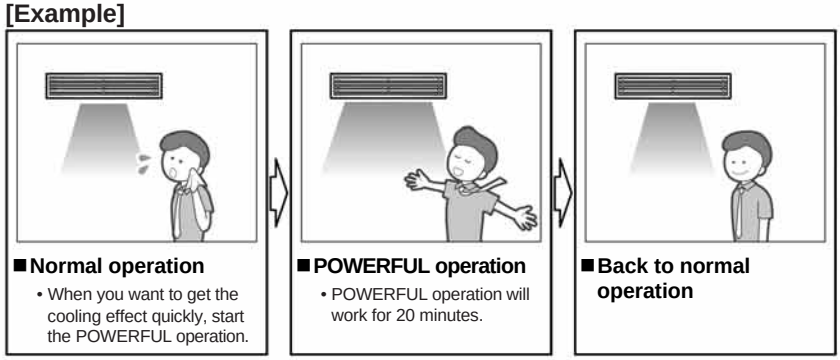
- POWERFUL operation ends in 20 minutes. Then the system automatically operates again with the previous settings which were used before POWERFUL operation.
- "POWERFUL" is displayed on the LCD.

■ To cancel POWERFUL operation

Press [POWERFUL] again.

- "POWERFUL" is no longer displayed on the LCD.

[Example]



■ **Normal operation**
- When you want to get the cooling effect quickly, start the POWERFUL operation.

■ **POWERFUL operation**
- POWERFUL operation will work for 20 minutes.

■ **Back to normal operation**

NOTE

■ **Notes on POWERFUL operation**

- When using POWERFUL operation, there are some functions which are not available.
- POWERFUL operation cannot be used together with ECONO and OUTDOOR UNIT 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 "POWERFUL" is no longer displayed on the LCD.
- POWERFUL operation will not increase the capacity of the air conditioner if the air conditioner is already in operation with its maximum capacity demonstrated.
- **In COOL, HEAT and AUTO operation**
  To maximize the cooling (heating) effect, the capacity of outdoor unit is increased and the airflow rate is fixed to the maximum setting.
  The temperature and airflow settings are not variable.
- **In DRY operation**
  The temperature setting is lowered by 4.5˚F (2.5˚C) and the airflow rate is slightly increased.
- **In FAN operation**
  The airflow rate is fixed to the maximum setting.

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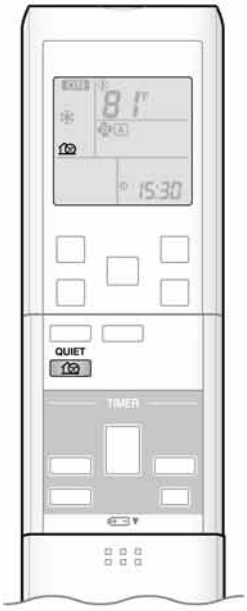
3.5 OUTDOOR UNIT QUIET Operation

OUTDOOR UNIT QUIET Operation



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

■ To start OUTDOOR UNIT QUIET operation

Press .

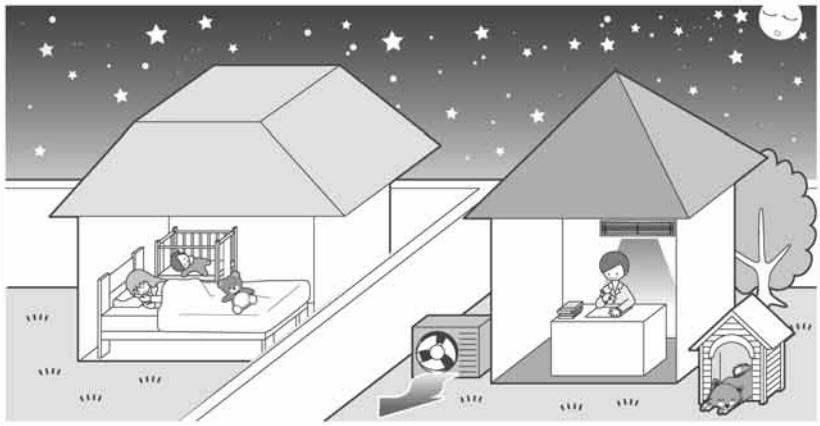
- "" is displayed on the LCD.

■ To cancel OUTDOOR UNIT QUIET operation

Press again.

- "" is no longer displayed on the LCD.

[Example] Using the OUTDOOR UNIT QUIET operation during the night.



- The noise level of the outdoor unit will be lower.
  This is convenient in consideration of your neighbors.

NOTE

■ **Notes on OUTDOOR UNIT QUIET operation**

- This function is available in COOL, HEAT, and AUTO operation.
  (This is not available in FAN and DRY operation.)
- 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 indoor unit ON/OFF switch when using OUTDOOR UNIT QUIET operation, "" will remain on the remote controller display.
- OUTDOOR UNIT QUIET operation will drop neither the frequency nor fan speed if the frequency and fan speed have been already dropped low enough.

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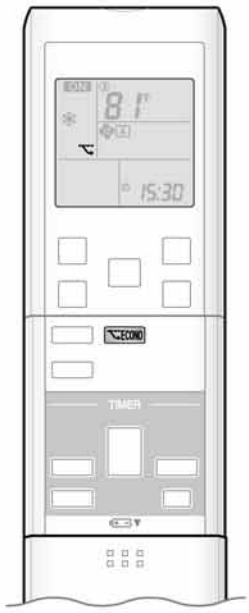
3.6 ECONO Operation

ECONO Operation



ECONO operation is a function which enables efficient operation by limiting the maximum power consumption value.
This function is useful for cases in which attention should be paid to ensure a circuit breaker will not trip when the product runs alongside other appliances.

■ To start ECONO operation

Press ECONO during operation.

- "ECONO" is displayed on the LCD.

■ To cancel ECONO operation

Press ECONO again.

- "ECONO" is no longer displayed on the LCD.

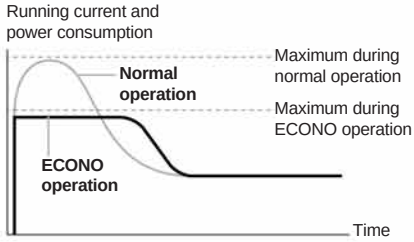
[Example]

Normal operation

- In case the air conditioner and other appliances which require high power consumption are used at same time, a circuit breaker may trip if the air conditioner operate with its maximum capacity.

ECONO operation

- The maximum power consumption of the air conditioner is limited by using ECONO operation. The circuit breaker is unlikely to trip even if the air conditioner and other appliances are used at same time.



From start up until set temperature is reached

- This diagram is a representation for illustrative purposes only.
  The maximum running current and power consumption of the air conditioner in ECONO operation vary with the connecting outdoor unit.

NOTE

■ Notes on ECONO operation

- ECONO operation can only be set when the unit is running. Pressing the operation stop button causes the settings to be canceled, and the "ECONO" is no longer displayed on the LCD.
- ECONO operation is a function which enables efficient operation by limiting the power consumption of the outdoor unit (operating frequency).
- ECONO operation functions in AUTO, COOL, DRY, and HEAT operation.
- POWERFUL and ECONO operation cannot be used at the same time.
  Priority is given to the function of whichever button is pressed last.
- If the level of power consumption is already low, ECONO operation will not drop the power consumption.

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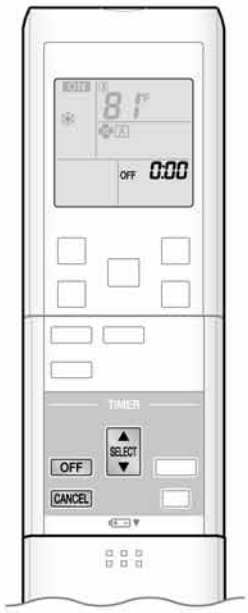
3.7 OFF TIMER Operation

OFF 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.

"0:00" is displayed on the LCD.
"OFF" blinks.

• "⏲" is no longer displayed on the LCD.

2. Press SELECT until the time setting reaches the point you like.

• Each pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the time setting rapidly.

3. Press OFF again.

• "OFF" and setting time are displayed on the LCD.
• The TIMER lamp lights yellow.

Display

■ To cancel OFF TIMER operation

Press CANCEL.

• "OFF" and setting time are no longer displayed on the LCD.
• "⏲" and day of the week are displayed on the LCD.
• The TIMER lamp goes off.

NOTE

■ Notes on TIMER operation

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

■ NIGHT SET mode

• When the OFF TIMER is set, the air conditioner automatically adjusts the temperature setting (0.9˚F (0.5˚C) up in COOL, 3.6˚F (2.0˚C) down in HEAT) to prevent excessive cooling (heating) for your pleasant sleep.

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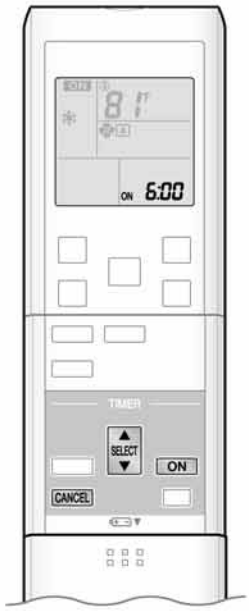
3.8 ON TIMER Operation

ON TIMER Operation



■ To use ON TIMER operation

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

1. Press ON.

"6:00" is displayed on the LCD.
"ON" blinks.

• "⏲" is no longer displayed on the LCD.

2. Press SELECT until the time setting reaches the point you like.

• Each pressing of either button increases or decreases the time setting by 10 minutes. Holding down either button changes the setting rapidly.

3. Press ON again.

• "ON" and setting time are displayed on the LCD.
• The TIMER lamp lights yellow.

Display

■ To cancel ON TIMER operation

Press CANCEL.

• "ON" and setting time are no longer displayed on the LCD.
• "⏲" and day of the week are displayed on the LCD.
• The TIMER lamp goes off.

■ To combine ON TIMER and OFF TIMER

• A sample setting for combining the 2 timers is shown below.

(Example)
Present time: 23:00 (The unit operating)
OFF TIMER at 0:00 } Combined
ON TIMER at 14:00

NOTE

■ **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.

18

3P297290-3

Part 6
Service Diagnosis

1. Troubleshooting with LED

1.1 Indoor Unit

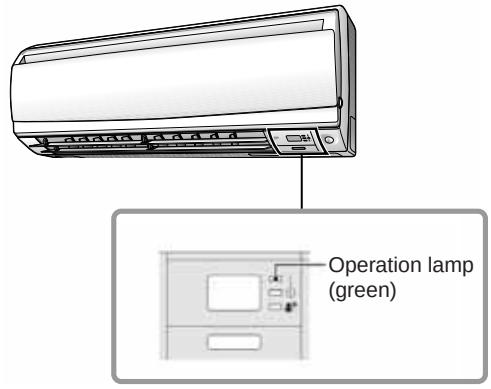
Operation Lamp

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

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

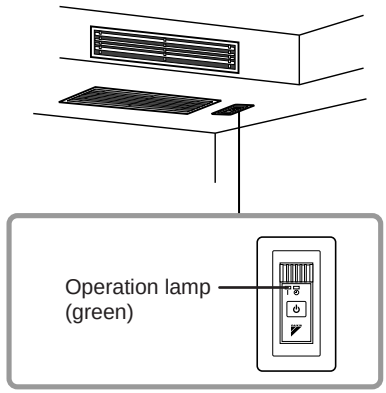
In either case, conduct the diagnostic procedure described in the following pages.

FTXS series
(Ex. 09/12 class)



(R13534)

FDXS series



(R16589)

Service Monitor

The indoor unit has one green LED (LED A) on the control PCB. When the microcomputer works in order, the LED A blinks.

1.2 Outdoor Unit

The outdoor unit has one green LED (LED A) on the PCB. When the microcomputer works in order, the LED A blinks.

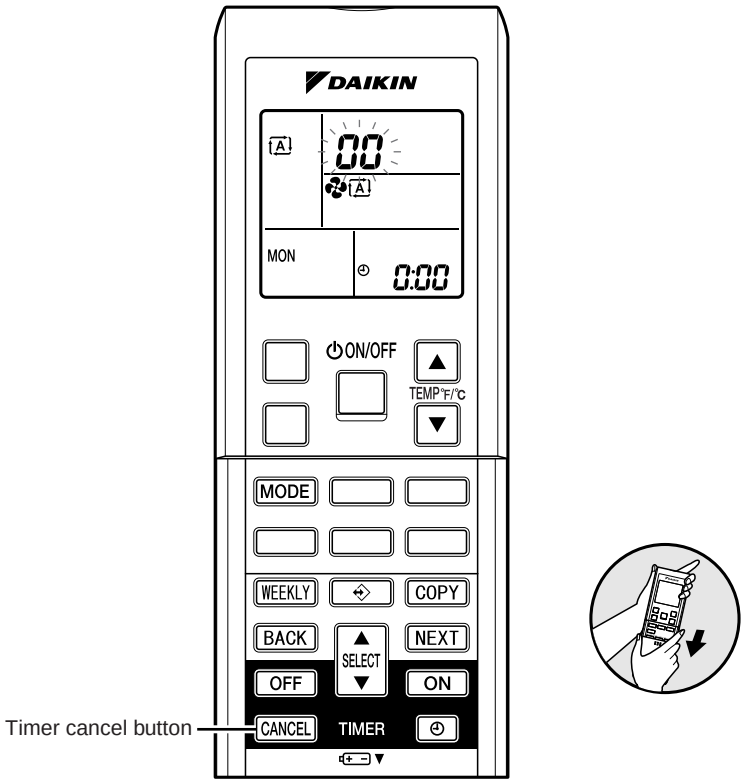
2. Problem Symptoms and Measures

Symptom	Check Item	Details of Measure	Reference Page
The unit does not operate.	Check the power supply.	Check if the rated voltage is supplied.	—
	Check the type of the indoor unit.	Check if the indoor unit type is compatible with the outdoor unit.	—
	Check the outdoor temperature.	Heating operation cannot be used when the outdoor temperature is 24°C (75.2°F) or higher, and cooling operation cannot be used when the outdoor temperature is below 10°C (50°F).	—
	Diagnose with remote controller indication.	—	94
	Check the remote controller addresses.	Check if address settings for the remote controller and indoor unit are correct.	388
Operation sometimes stops.	Check the power supply.	A power failure of 2 to 10 cycles stops air conditioner operation. (Operation lamp OFF)	—
	Check the outdoor temperature.	Heating operation cannot be used when the outdoor temperature is 24°C (75.2°F) or higher, and cooling operation cannot be used when the outdoor temperature is below 10°C (50°F).	—
	Diagnose with remote controller indication.	—	94
The unit operates but does not cool, or does not heat.	Check for wiring and piping errors in the connection between the indoor unit and outdoor unit.	—	—
	Check for thermistor detection errors.	Check if the thermistor is mounted securely.	—
	Check for faulty operation of the electronic expansion valve.	Set the unit to cooling operation, and check the temperature of the liquid pipe to see if the electronic expansion valve works.	—
	Diagnose with remote controller indication.	—	94
	Diagnose by service port pressure and operating current.	Check for refrigerant shortage.	104
operating noise and vibrations	Check the output voltage of the power module.	—	153
	Check the power module.	—	—
	Check the installation condition.	Check if the required spaces for installation (specified in the installation manual) are provided.	—

3. Service Check Function

Check Method 1

1. When the timer cancel button is held down for 5 seconds, 00 is displayed on the temperature display screen.



< ARC452 Series >

(R14460)

2. Press the timer cancel button repeatedly until a long beep sounds.

■ The code indication changes in the sequence shown below.

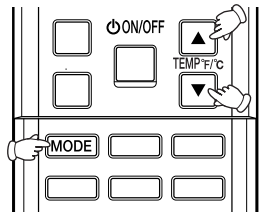
No.	Code	No.	Code	No.	Code
1	00	13	C7	25	UA
2	U4	14	A3	26	UH
3	L5	15	H8	27	P4
4	E6	16	H9	28	L3
5	H6	17	C9	29	L4
6	H0	18	C4	30	H7
7	A6	19	C5	31	U2
8	E7	20	J3	32	EA
9	U0	21	J6	33	AH
10	F3	22	E5	34	FA
11	A5	23	A1	35	H1
12	F6	24	E1	36	P9

Note:

1. A short beep or two consecutive beeps indicate non-corresponding codes.
2. To return to the normal mode, hold the timer cancel button down for 5 seconds. When the remote controller is left untouched for 60 seconds, it also returns to the normal mode.
3. Not all the error codes are displayed. When you cannot find the error code, try the check method 2. (→ Refer to page 92.)

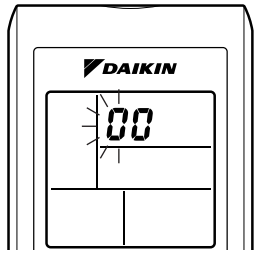
Check Method 2

1. Press the 3 buttons (TEMP▲, TEMP▼, MODE) at the same time to enter the diagnosis mode.



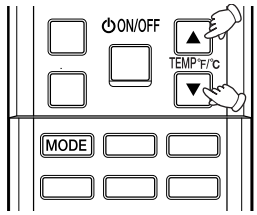
(R14550)

The left-side number blinks.



(R9430)

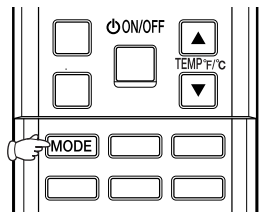
2. Press the [TEMP] ▲ or ▼ button and change the number until you hear the two consecutive beeps or the long beep.



(R14551)

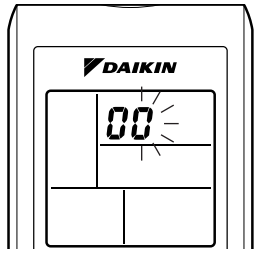
3. Diagnose by the sound.
   ★beep : The left-side number does not correspond with the error code.
   ★two consecutive beeps : The left-side number corresponds with the error code but the right-side number does not.
   ★long beep : Both the left-side and right-side number correspond with the error code. The numbers indicated when you hear the long beep are the error code.
   → Refer to page 94.

4. Press the [MODE] button.



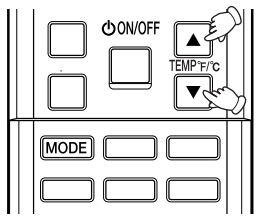
(R14552)

The right-side number blinks.



(R9429)

5. Press the [TEMP] ▲ or ▼ button and change the number until you hear the long beep.

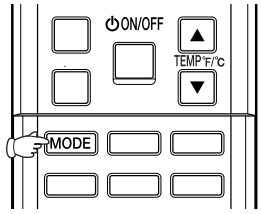


(R14547)

6. Diagnose by the sound.
   ★beep : The left-side number does not correspond with the error code.
   ★two consecutive beeps : The left-side number corresponds with the error code but the right-side number does not.
   ★long beep : Both the left-side and right-side number corresponds with the error code.

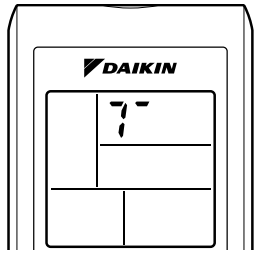
7. Determine the error code.
   The numbers indicated when you hear the long beep are the error code.
   Error codes and description → Refer to page 94.

8. Press the [MODE] button to exit from the diagnosis mode.



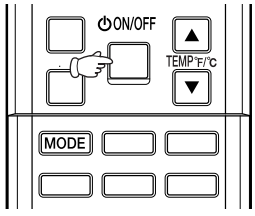
(R14548)

   The display 7- means the trial operation mode.
   Refer to page 386 for trial operation.



(R9879)

9. Press the [ON/OFF] button twice to return to the normal mode.



(R14549)

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

4. Troubleshooting

4.1 Error Codes and Description

	Error Codes	Description		Reference Page
System	00	Normal		—
	U0★	Refrigerant shortage		104
	U2	Low-voltage detection or over-voltage detection		107
	U4	Signal transmission error (between indoor unit and outdoor unit)		109
	UA	Unspecified voltage (between indoor unit and outdoor unit)		112
Indoor Unit	A1	Indoor unit PCB abnormality		95
	A5	Freeze-up protection control or heating peak-cut control		97
	A6	Fan motor or related abnormality	DC motor (FTXS series)	99
			AC motor (FDXS series)	101
	C4	Indoor heat exchanger thermistor or related abnormality		103
	C9	Room temperature thermistor or related abnormality		103
Outdoor Unit	E1	Outdoor unit PCB abnormality		113
	E5★	OL activation (compressor overload)		115
	E6★	Compressor lock		116
	E7★	DC fan lock		117
	E8	Input overcurrent detection		118
	EA	FourWay valve abnormality		119
	F3	Discharge pipe temperature control		121
	F6	High pressure control in cooling		123
	H0	Compressor system sensor abnormality		125
	H6	Position sensor abnormality		128
	H8	DC voltage / current sensor abnormality (09/12 class only)		131
		CT or related abnormality (24/30/36 class only)		132
	H9	Outdoor temperature thermistor or related abnormality		134
	J3★	Discharge pipe thermistor or related abnormality		134
	J6	Outdoor heat exchanger thermistor or related abnormality		134
	L3	Electrical box temperature rise		136
	L4	Radiation fin temperature rise		138
	L5★	Output overcurrent detection		140
	P4	Radiation fin thermistor or related abnormality		134
	U7	Signal transmission error on outdoor unit PCB (24/30/36 class only)		111

★: Displayed only when system-down occurs.

4.2 Indoor Unit PCB Abnormality

Remote Controller Display

A1

Method of Malfunction Detection

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

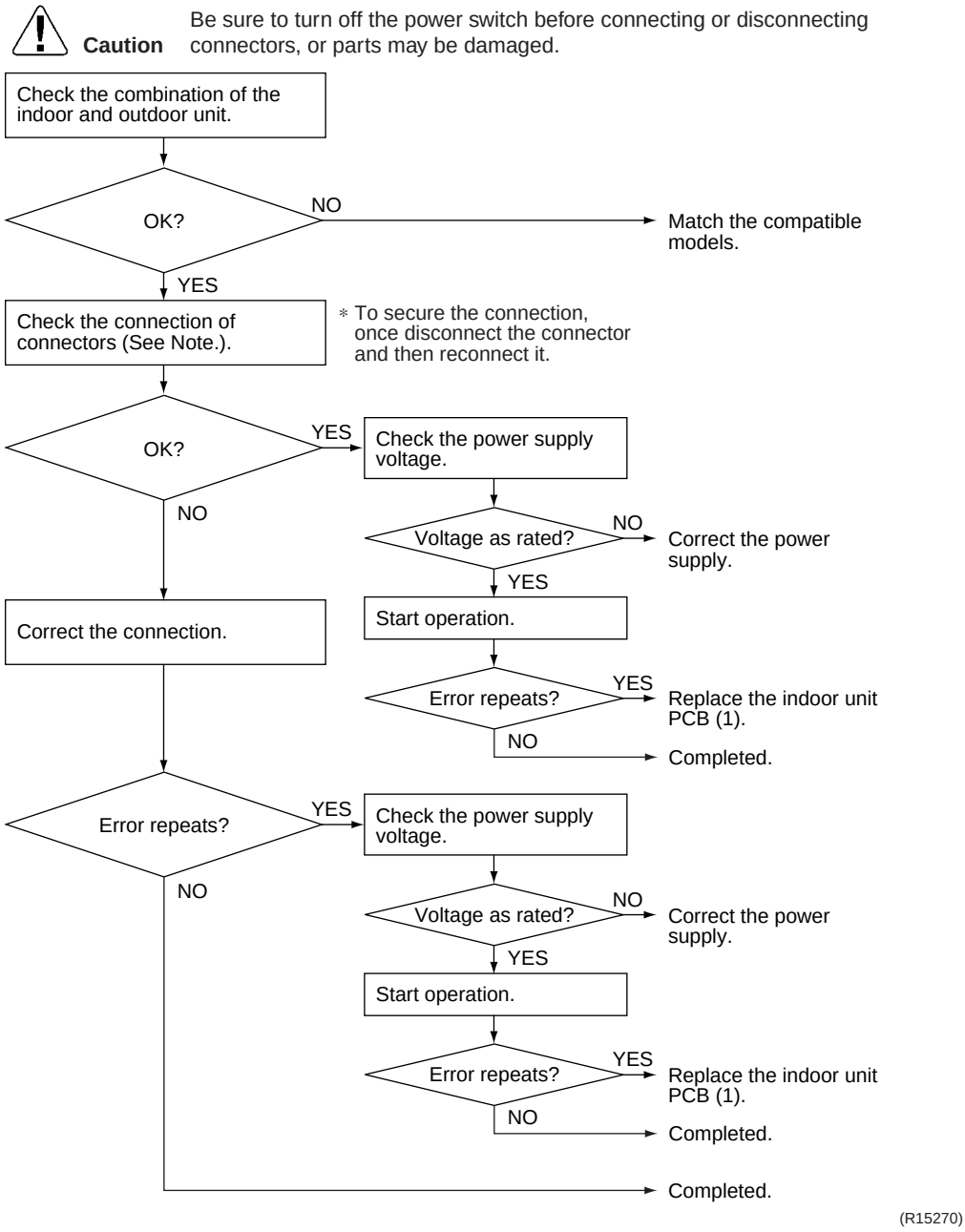
Malfunction Decision Conditions

The system cannot set the internal settings.

Supposed Causes

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

Troubleshooting



Note: Check the following connector.

Model Type	Connector
FTXS series	Terminal board ~ Control PCB
FDXS series	Terminal board ~ Control PCB

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

Remote Controller Display

A5

Method of Malfunction Detection

- Freeze-up protection control
  During cooling operation, the freeze-up protection control (operation halt) is activated according to the temperature detected by the indoor heat exchanger thermistor.
- Heating peak-cut control
  During heating operation, the temperature detected by the indoor heat exchanger thermistor is used for the heating peak-cut control (operation halt, outdoor fan stop, etc.)

Malfunction Decision Conditions

- Freeze-up protection control
  During cooling operation, the indoor heat exchanger temperature is below 0°C (32°F).
- Heating peak-cut control
  During heating operation, the indoor heat exchanger temperature is above 60 ~ 65°C (140 ~ 149°F) (depending on the model).

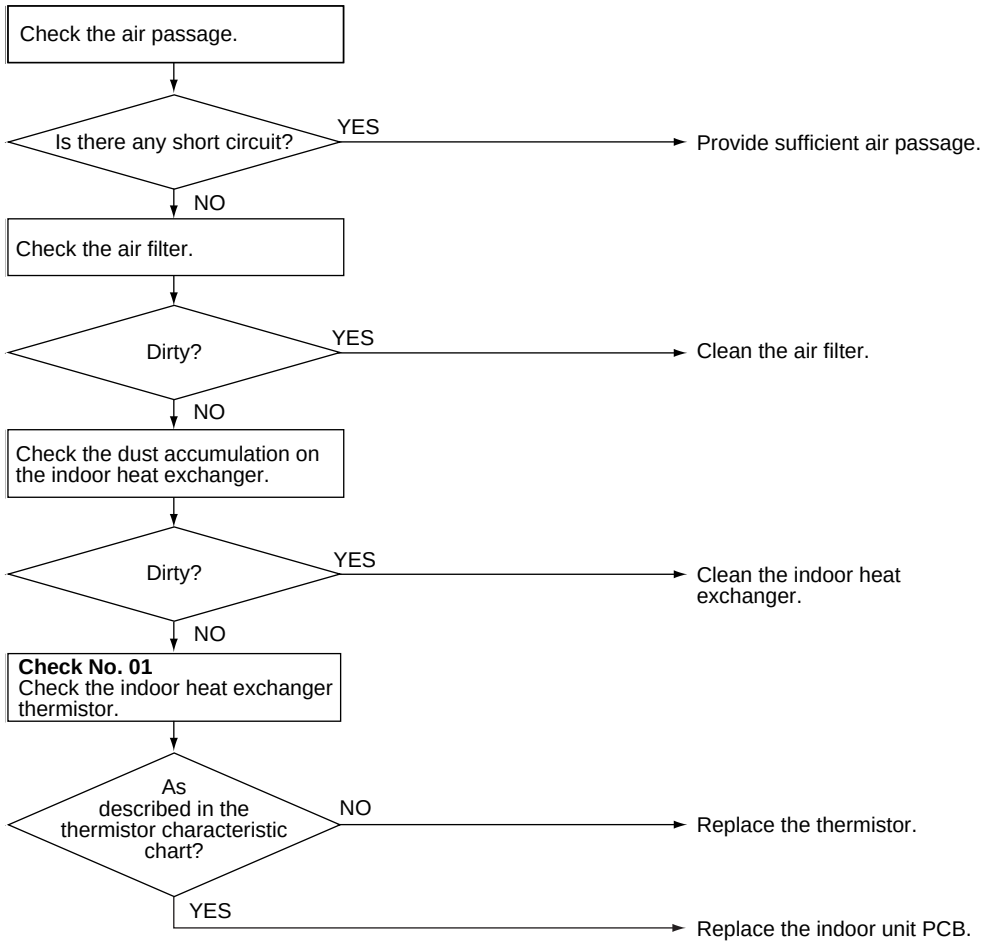
Supposed Causes

- Short-circuited air
- Clogged air filter of the indoor unit
- Dust accumulation on the indoor heat exchanger
- Defective indoor heat exchanger thermistor
- Defective indoor unit PCB

Troubleshooting

Check No.01
Refer to P.142

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



(R15715)

4.4 Fan Motor or Related Abnormality

4.4.1 DC Motor (FTXS Series)

Remote Controller Display

A6

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

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.

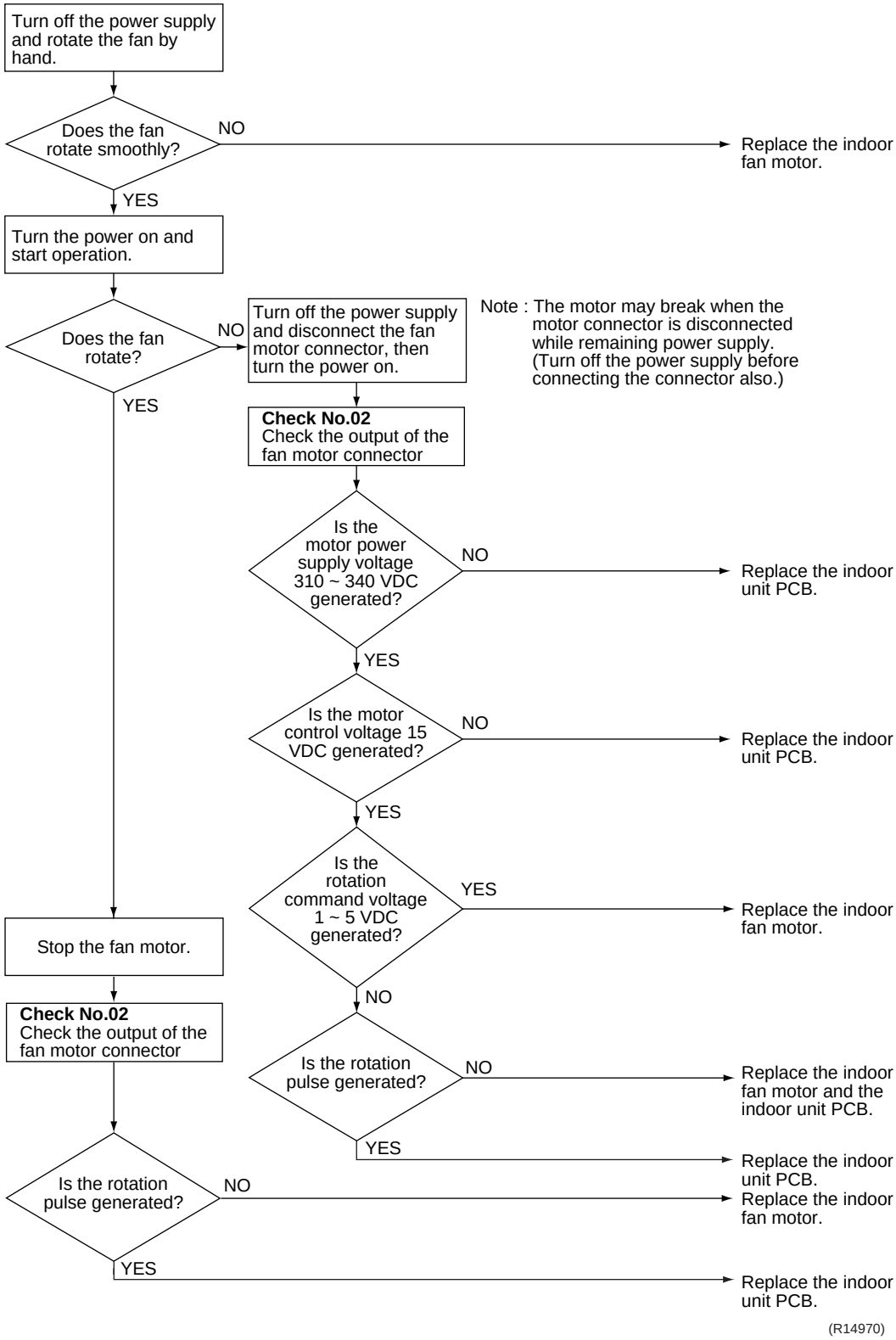
Supposed Causes

- Layer short inside the fan motor winding
- Breaking of wire inside the fan motor
- Breaking of the fan motor lead wires
- Defective capacitor of the fan motor
- Defective indoor unit PCB

Troubleshooting

Check No.02
Refer to P.143

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



4.4.2 AC Motor (FDXS Series)

Remote Controller Display

A6

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

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.

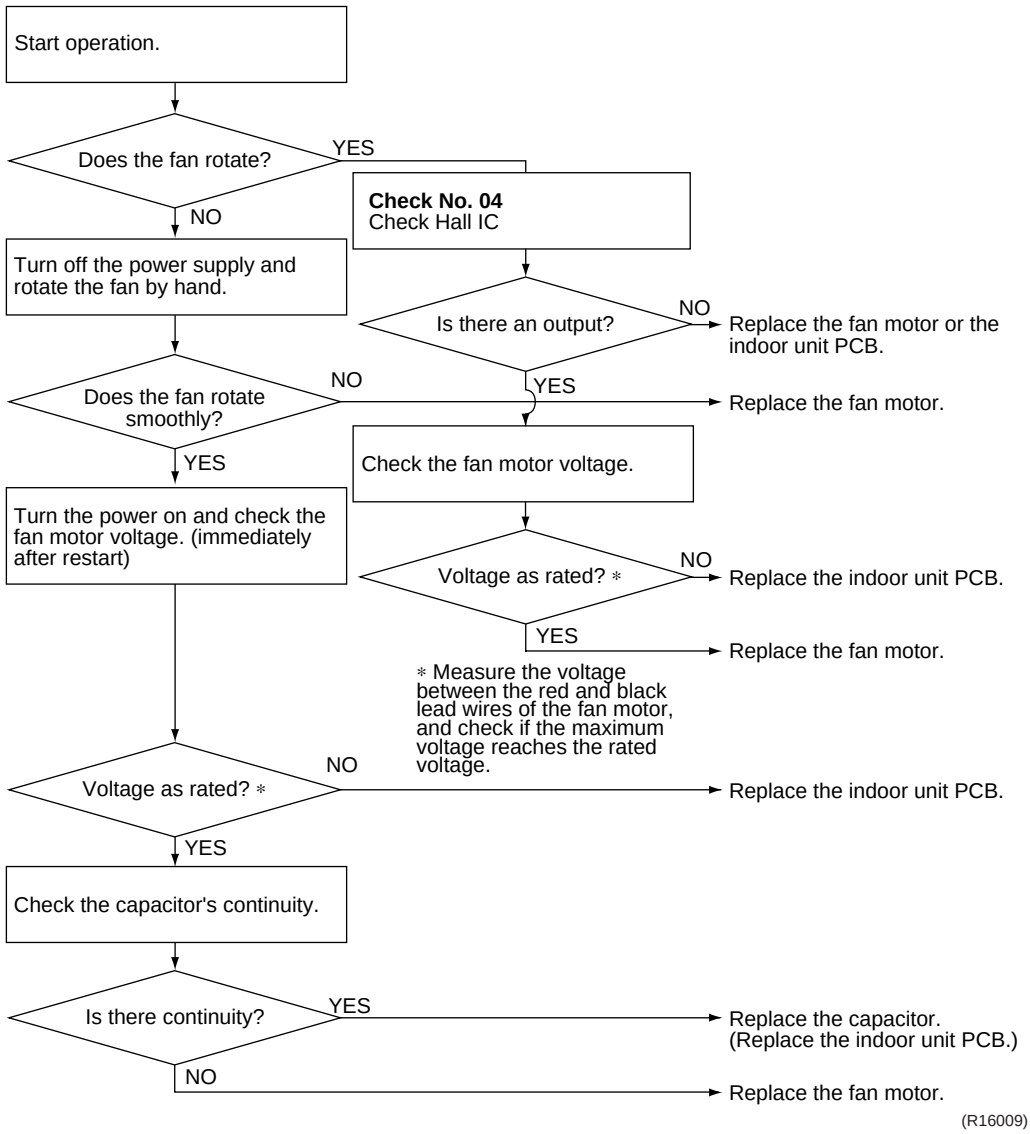
Supposed Causes

- Reduction of power supply voltage
- Layer short inside the fan motor winding
- Breaking of wire inside the fan motor
- Breaking of the fan motor lead wires
- Defective capacitor of the fan motor
- Defective indoor unit PCB

Troubleshooting

Check No.04
Refer to P.143

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



(R16009)

4.5 Thermistor or Related Abnormality (Indoor Unit)

Remote Controller Display

C4, C9

Method of Malfunction Detection

The temperatures detected by the thermistors determine thermistor errors.

Malfunction Decision Conditions

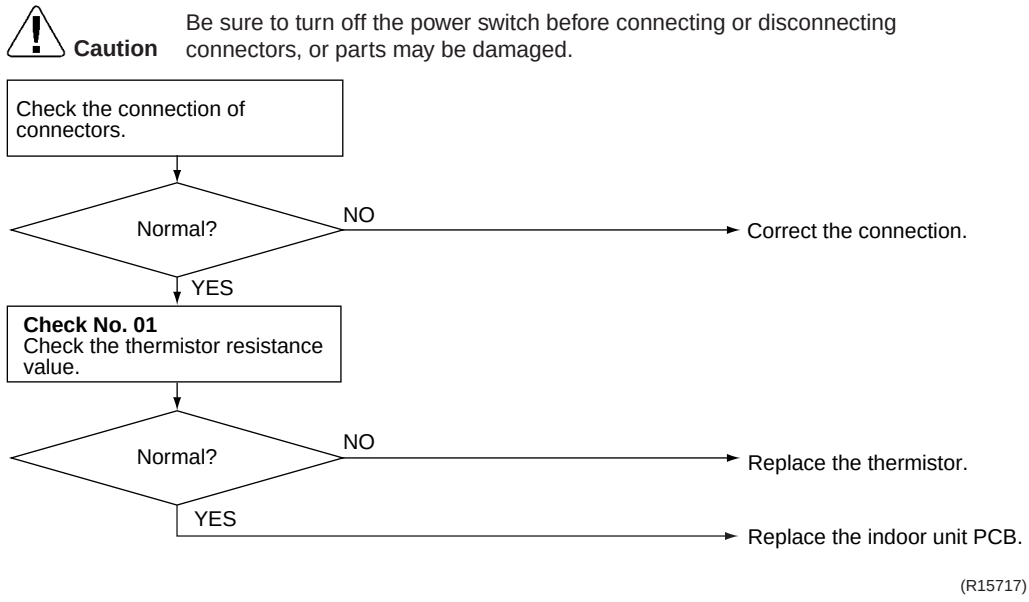
The thermistor input is more than 4.96 V or less than 0.04 V during compressor operation.

Supposed Causes

- Disconnection of connector
- Defective thermistor
- Defective indoor unit PCB

Troubleshooting

Check No.01
Refer to P.142



C4 : Indoor heat exchanger thermistor
C9 : Room temperature thermistor

4.6 Refrigerant Shortage

Remote Controller Display

U0

Method of Malfunction Detection

Refrigerant shortage detection I:
Refrigerant shortage is detected by checking the input current value and the compressor running frequency. If the refrigerant is short, the input current is lower than the normal value.

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

Refrigerant shortage detection III:
Refrigerant shortage is detected by checking the difference between suction and discharge temperature.

Malfunction Decision Conditions

Refrigerant shortage detection I:
The following conditions continue for 7 minutes.

<09/12 class>

- Input current × input voltage ≤ **A** × output frequency + **B**
- Output frequency > **C**

	A (–)	**B** (W)	**C** (Hz)
09/12 class	640/256	0	55

<15/18/24/30/36 class>

- Input current ≤ **D** × output frequency + **E**
- Output frequency > **F**

	D (–)	**E** (A)	**F** (Hz)
15/18 class	2000/256	–181	55
24/30/36 class	27/1000	2.0	40

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

- Opening of the electronic expansion valve ≥ **G**
- Discharge pipe temperature (°C) > **H** × target discharge pipe temperature (°C) + **J** (°C)
  (Discharge pipe temperature (°F) > **H** × target discharge pipe temperature (°F) + **K** (°F))

	G (pulse)	**H** (–)	**J** (°C)	**K** (°F)
09/12 class	480	128/128	cooling: 63.5, heating: 30	cooling: 114.3, heating: 54
15/18 class	480	128/128	cooling: 60, heating: 45	cooling: 108, heating: 81
24 class	450	128/128	60	108
30/36 class	480	128/128	cooling: 50, heating: 45	cooling: 90, heating: 81

Refrigerant shortage detection III: (09/12 class only)

When the difference of the temperature is smaller than **L**, it is regarded as refrigerant shortage.

		L
Cooling	room thermistor temperature – indoor heat exchanger temperature	4.0°C (7.2°F)
	outdoor heat exchanger temperature – outdoor temperature	4.0°C (7.2°F)
Heating	indoor heat exchanger temperature – room thermistor temperature	3.0°C (5.4°F)
	outdoor temperature – outdoor heat exchanger temperature	3.0°C (5.4°F)

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

Supposed Causes

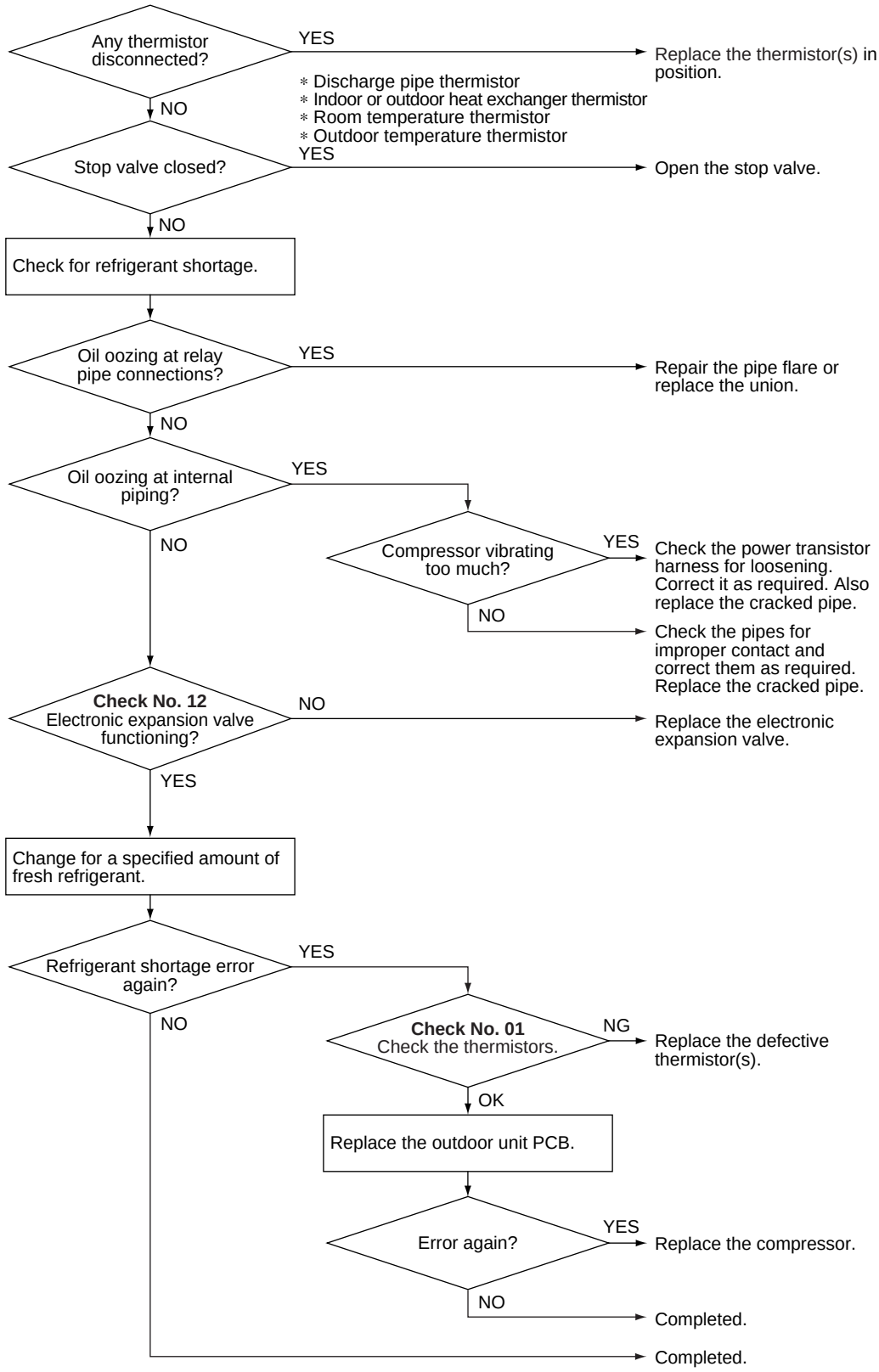
- Disconnection of the discharge pipe thermistor, indoor or outdoor heat exchanger thermistor, room or outdoor temperature thermistor
- Closed stop valve
- Refrigerant shortage (refrigerant leakage)
- Poor compression performance of compressor
- Defective electronic expansion valve

Troubleshooting

Check No.01
Refer to P.142

Check No.12
Refer to P.144

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



(R16015)

4.7 Low-voltage Detection or Over-voltage Detection

Remote Controller Display

U2

Method of Malfunction Detection

★ Indoor Unit

The zero-cross detection of the power supply is evaluated by the indoor unit PCB.

★ Outdoor Unit

Low-voltage detection:
An abnormal voltage drop is detected by the DC voltage detection circuit.

Over-voltage detection:
An abnormal voltage rise is detected by the over-voltage detection circuit.

Malfunction Decision Conditions

★ Indoor Unit

There is no zero-cross detection in approximately 10 seconds.

★ Outdoor Unit

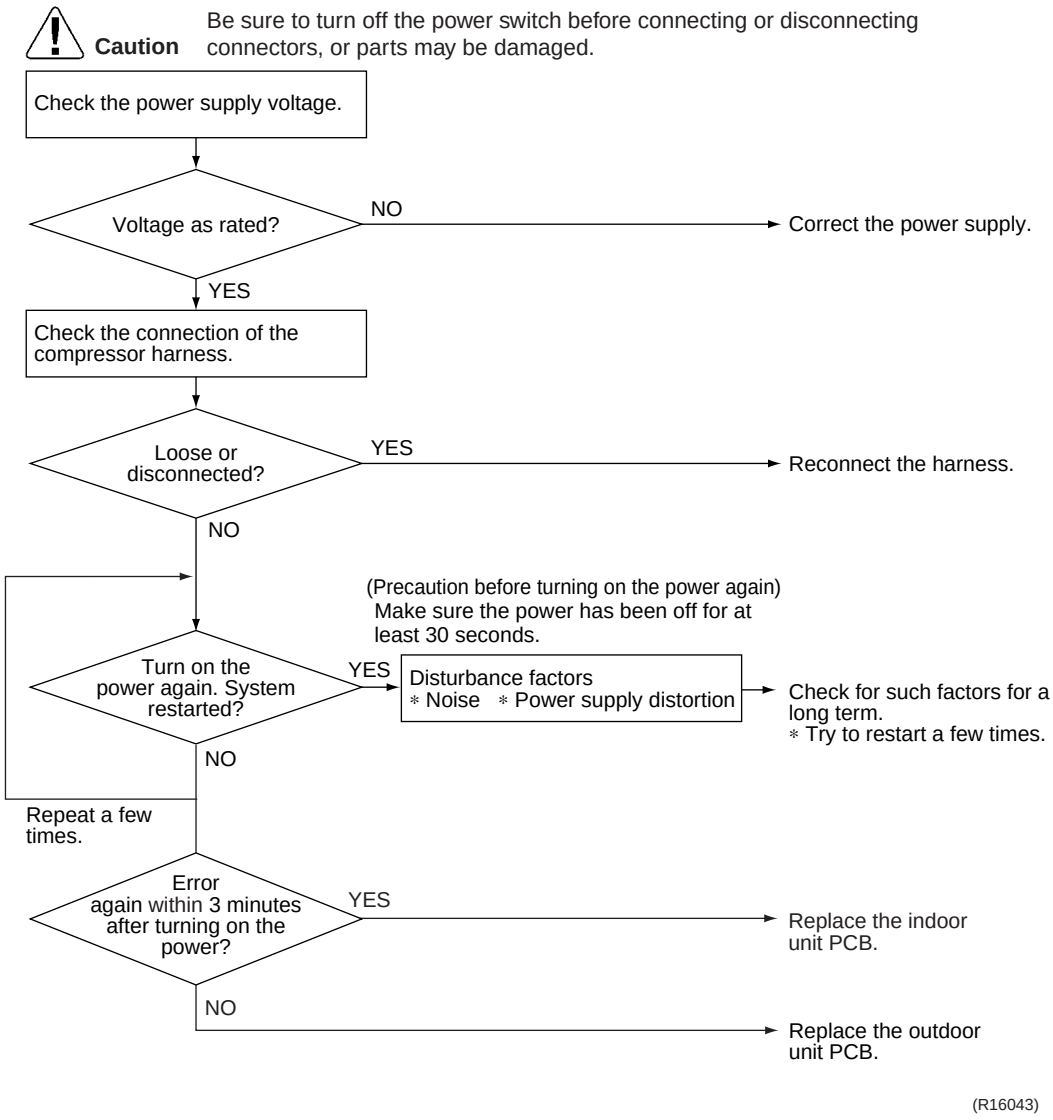
Low-voltage detection:
- The voltage detected by the DC voltage detection circuit is below 150 ~ 200 V (depending on the model).
- The compressor stops if the error occurs, and restarts automatically after 3-minute standby.

Over-voltage detection:
- An over-voltage signal is fed from the over-voltage detection circuit to the microcomputer.
- The compressor stops if the error occurs, and restarts automatically after 3-minute standby.

Supposed Causes

- Supply voltage is not as specified.
- Defective DC voltage detection circuit
- Defective over-voltage detection circuit
- Defective PAM control part
- Disconnection of compressor harness
- Noise
- Momentary fall of voltage
- Momentary power failure
- Defective indoor unit PCB

Troubleshooting



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

Remote Controller Display

U4

Method of Malfunction Detection

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

Malfunction Decision Conditions

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

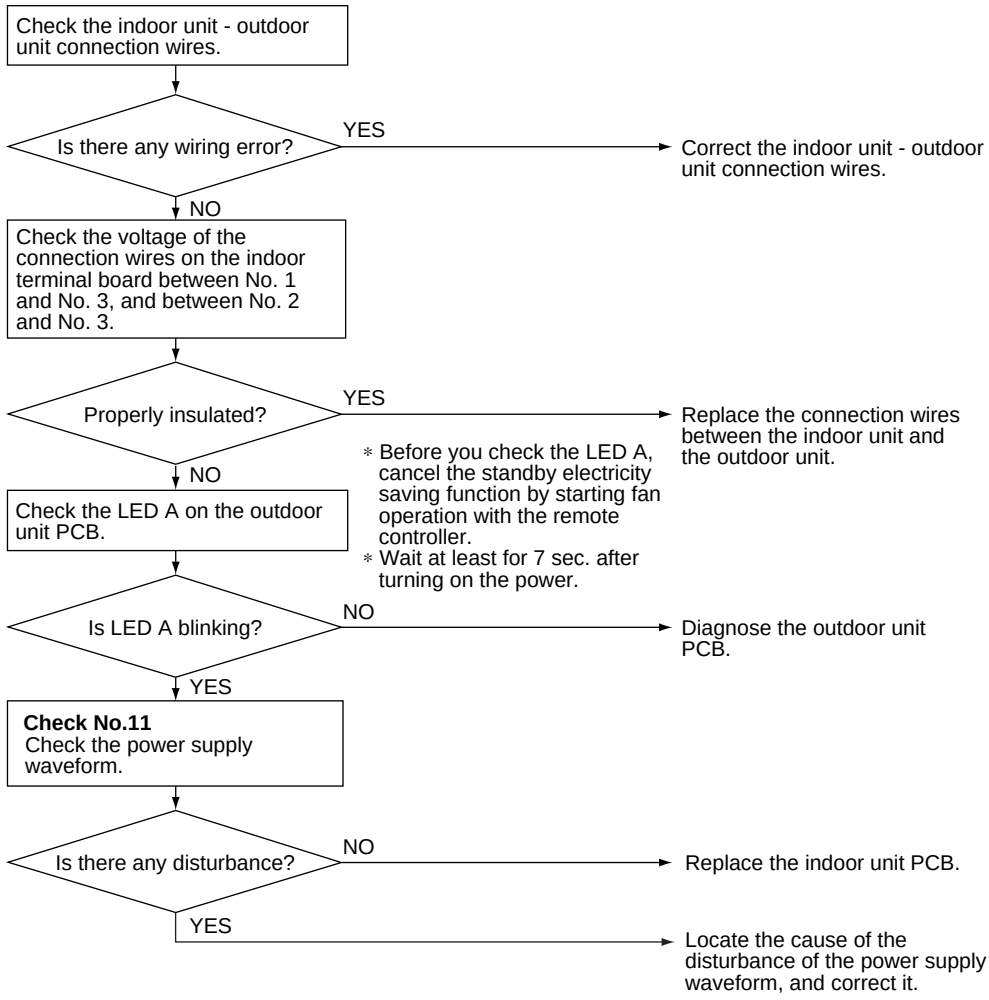
Supposed Causes

- Wiring error
- Breaking of the connection wires between the indoor and outdoor units (wire No. 3)
- Defective outdoor unit PCB
- Defective indoor unit PCB
- Disturbed power supply waveform

Troubleshooting

Check No.11
Refer to P.144

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



(R16914)

4.9 Signal Transmission Error on Outdoor Unit PCB (24/30/36 Class Only)

Remote Controller Display

U7

Method of Malfunction Detection

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

Malfunction Decision Conditions

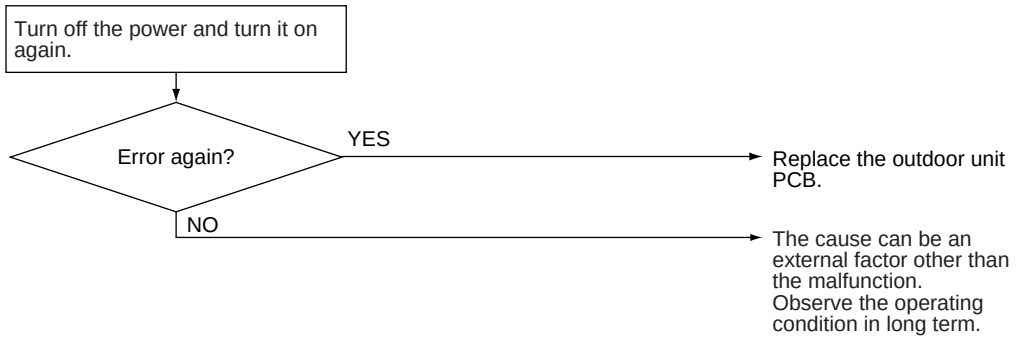
- The abnormality is determined when the data sent from the PM1 can not be received for 9 seconds.
- The error counter is reset when the data from the PM1 can be successfully received.

Supposed Causes

- Defective outdoor unit PCB

Troubleshooting

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



(R7185)

4.10 Unspecified Voltage (between Indoor Unit and Outdoor Unit)

Remote Controller Display

UA

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.

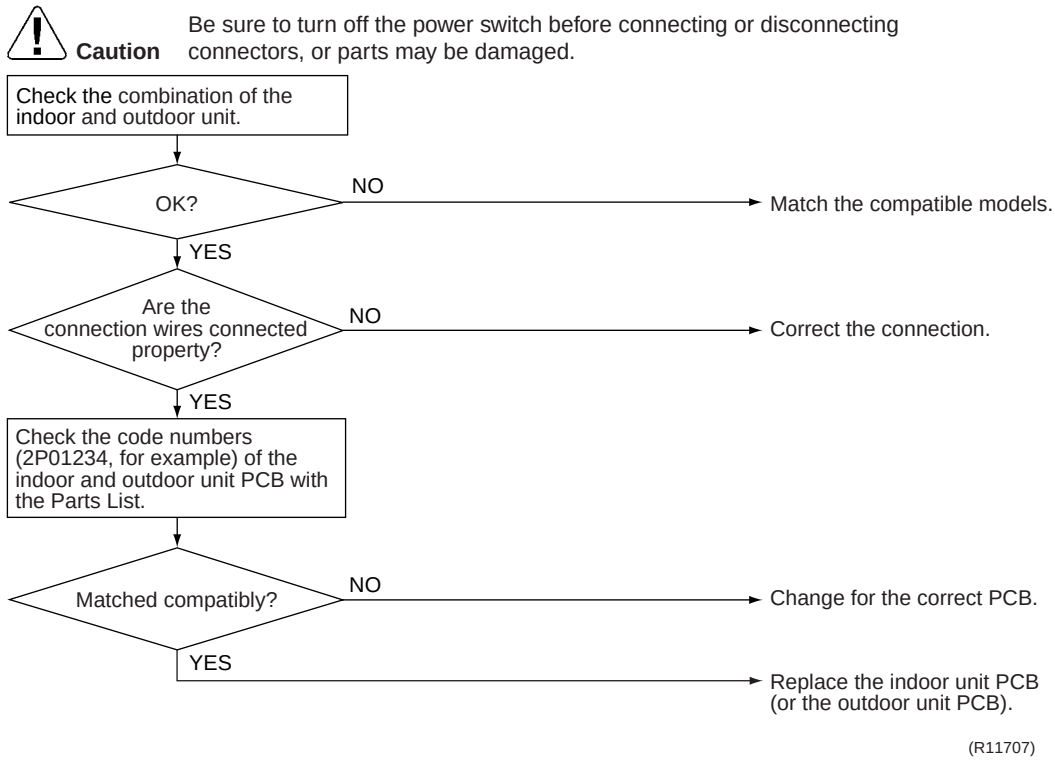
Malfunction Decision Conditions

The pair type and multi type are interconnected.

Supposed Causes

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

Troubleshooting



4.11 Outdoor Unit PCB Abnormality

Remote Controller Display

E1

Method of Malfunction Detection

- The system checks if the microprocessor is working in order.
- The system checks if the zero-cross signal comes in properly.

Malfunction Decision Conditions

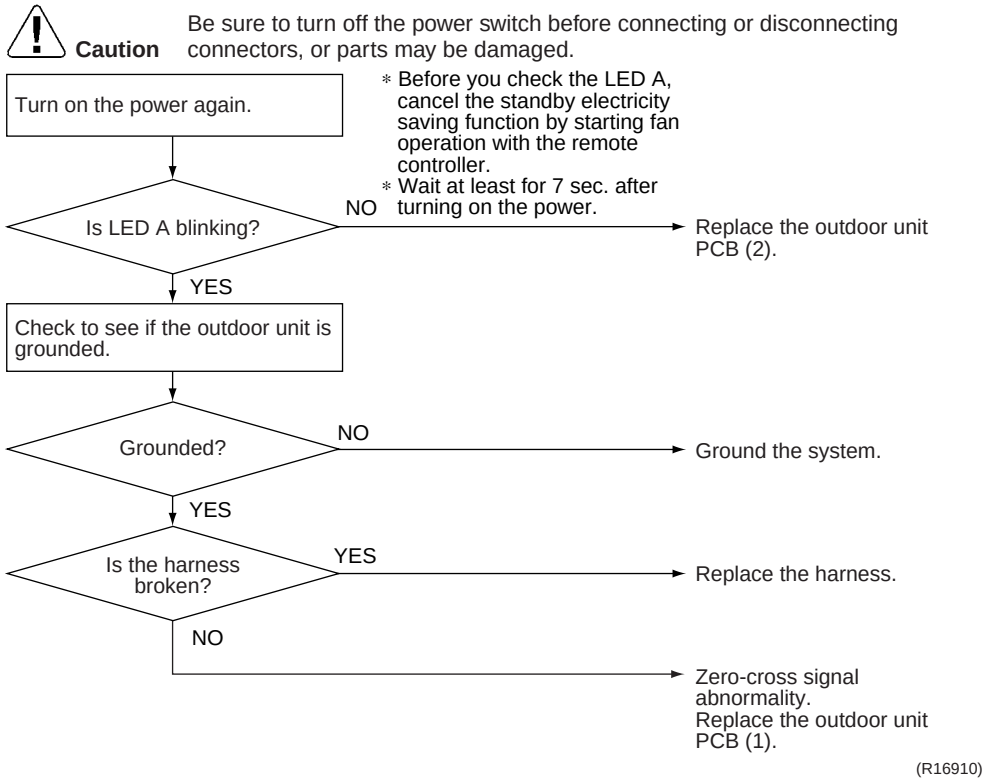
- The microprocessor program runs out of control.
- The zero-cross signal is not detected.

Supposed Causes

- Defective outdoor unit PCB
- Broken harness between PCBs
- Noise
- Momentary fall of voltage
- Momentary power failure, etc.

Troubleshooting

09/12/15/18 class

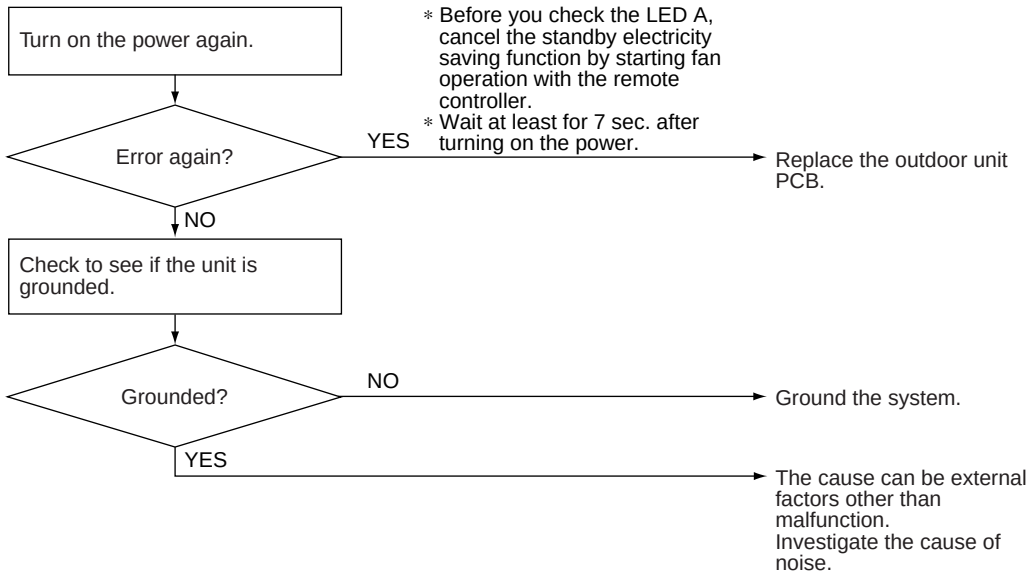


(R16910)

Troubleshooting

24/30/36 class

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



(R16911)

4.12 OL Activation (Compressor Overload)

Remote Controller Display

E5

Method of Malfunction Detection

A compressor overload is detected through compressor OL.

Malfunction Decision Conditions

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

∗ The operating temperature condition is not specified.

Supposed Causes

- Defective discharge pipe thermistor
- Defective electronic expansion valve or coil
- Defective FourWay valve or coil
- Defective outdoor unit PCB
- Refrigerant shortage
- Water mixed in refrigerant
- Defective stop valve

Troubleshooting

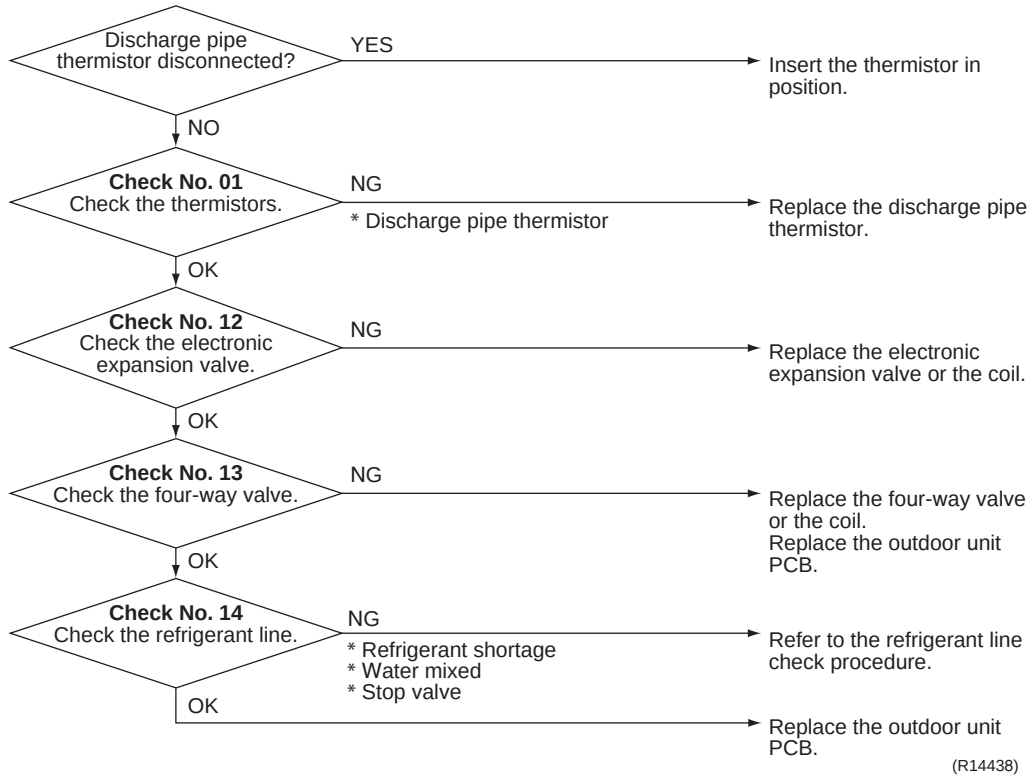
Check No.01
Refer to P.142

Check No.12
Refer to P.144

Check No.13
Refer to P.145

Check No.14
Refer to P.145

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



(R14438)

4.13 Compressor Lock

Remote Controller Display

E6

Method of Malfunction Detection

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

Malfunction Decision Conditions

09/12 class

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

15/18/24/30/36 class

- A compressor lock is detected by the current waveform generated when applying high-frequency voltage to the motor.
- If the error repeats, the system is shut down
- Reset condition: Continuous run for about 5 minutes without any other error

Supposed Causes

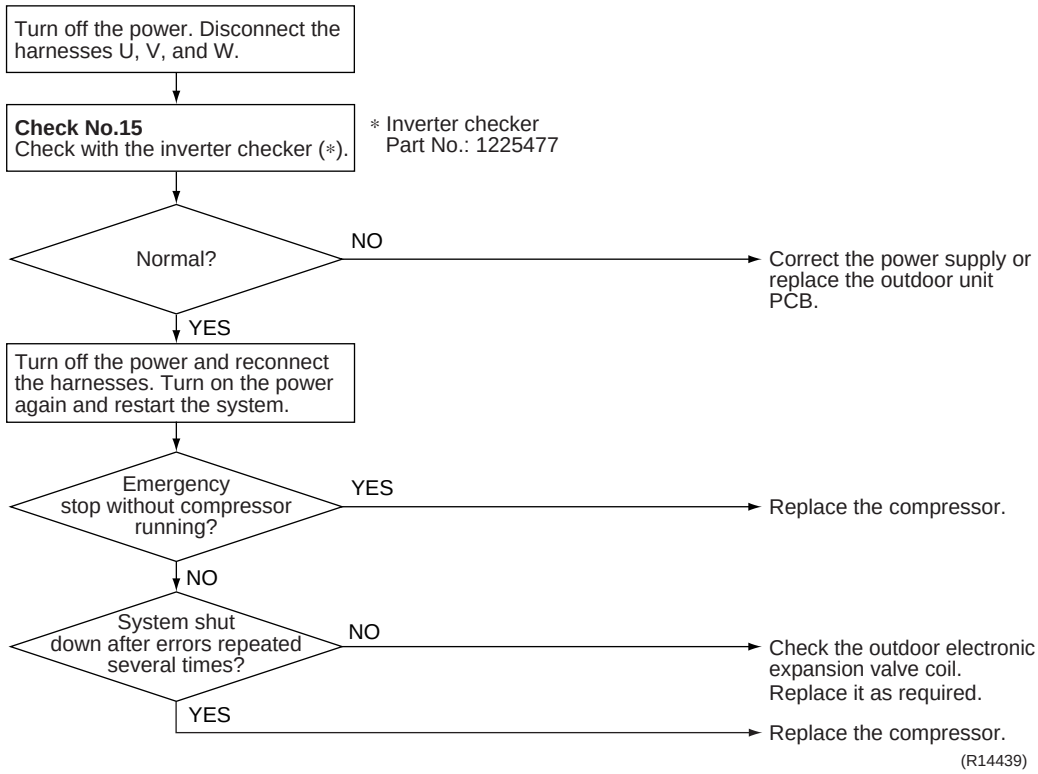
- Compressor locked
- Compressor harness disconnected

Troubleshooting

Check No.15
Refer to P.146

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

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



(R14439)

4.14 DC Fan Lock

Remote Controller Display

E7

Method of Malfunction Detection

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

Malfunction Decision Conditions

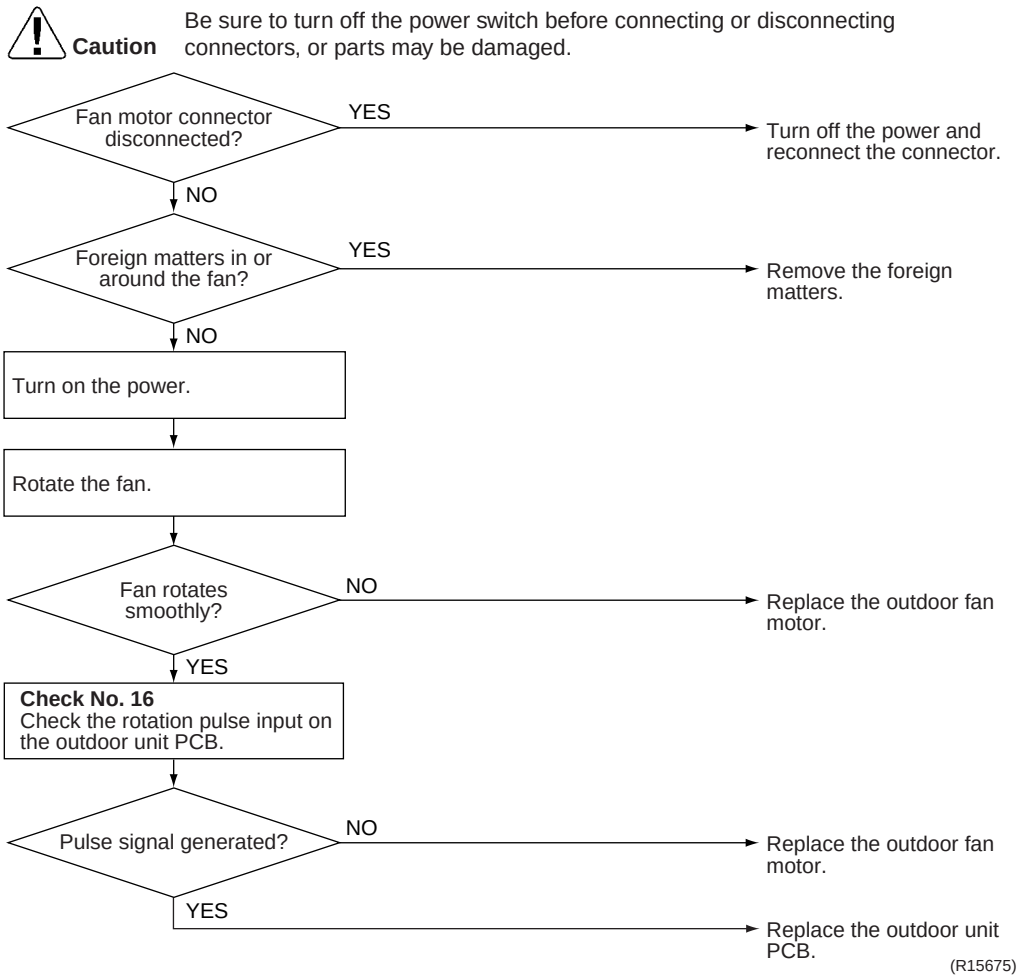
- The fan does not start in 15 ~ 30 seconds (depending on the model) even when the fan motor is running.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes (09/12 class) or 5 minutes (15/18/24/30/36 class) without any other error

Supposed Causes

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

Troubleshooting

Check No.16
Refer to P.148



4.15 Input Overcurrent Detection

Remote Controller Display

E8

Method of Malfunction Detection

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

Malfunction Decision Conditions

- The current exceeds about 9.25 ~ 20 A for 2.5 seconds with the compressor running. (The upper limit of the current decreases when the outdoor temperature exceeds a certain level.)

Supposed Causes

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

Troubleshooting

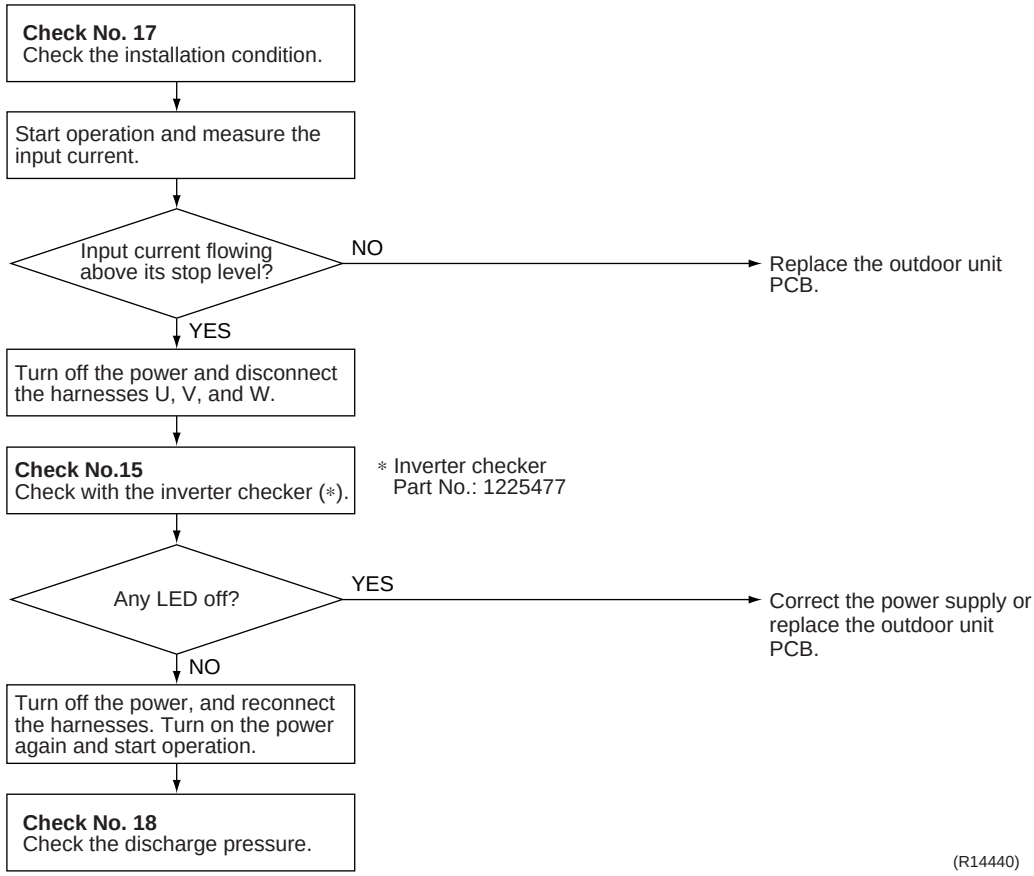
Check No.15
Refer to P.146

Check No.17
Refer to P.149

Check No.18
Refer to P.150

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

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



(R14440)

4.16 FourWay Valve Abnormality

Remote Controller Display

EA

Method of Malfunction Detection

The room temperature thermistor and the indoor heat exchanger thermistor are checked if they function within their normal ranges in each operation mode.

Malfunction Decision Conditions

A following condition continues over 1 ~ 10 minutes after operating for 5 ~ 10 minutes.

- Cooling / Dry
  (room thermistor temp. – indoor heat exchanger temp.) < –5°C (–9°F)
- Heating
  (indoor heat exchanger temp. – room thermistor temp.) < –5°C (–9°F)

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

Supposed Causes

- Disconnection of fourway valve coil
- Defective fourway valve, coil, or harness
- Defective outdoor unit PCB
- Defective thermistor
- Refrigerant shortage
- Water mixed in refrigerant
- Defective stop valve

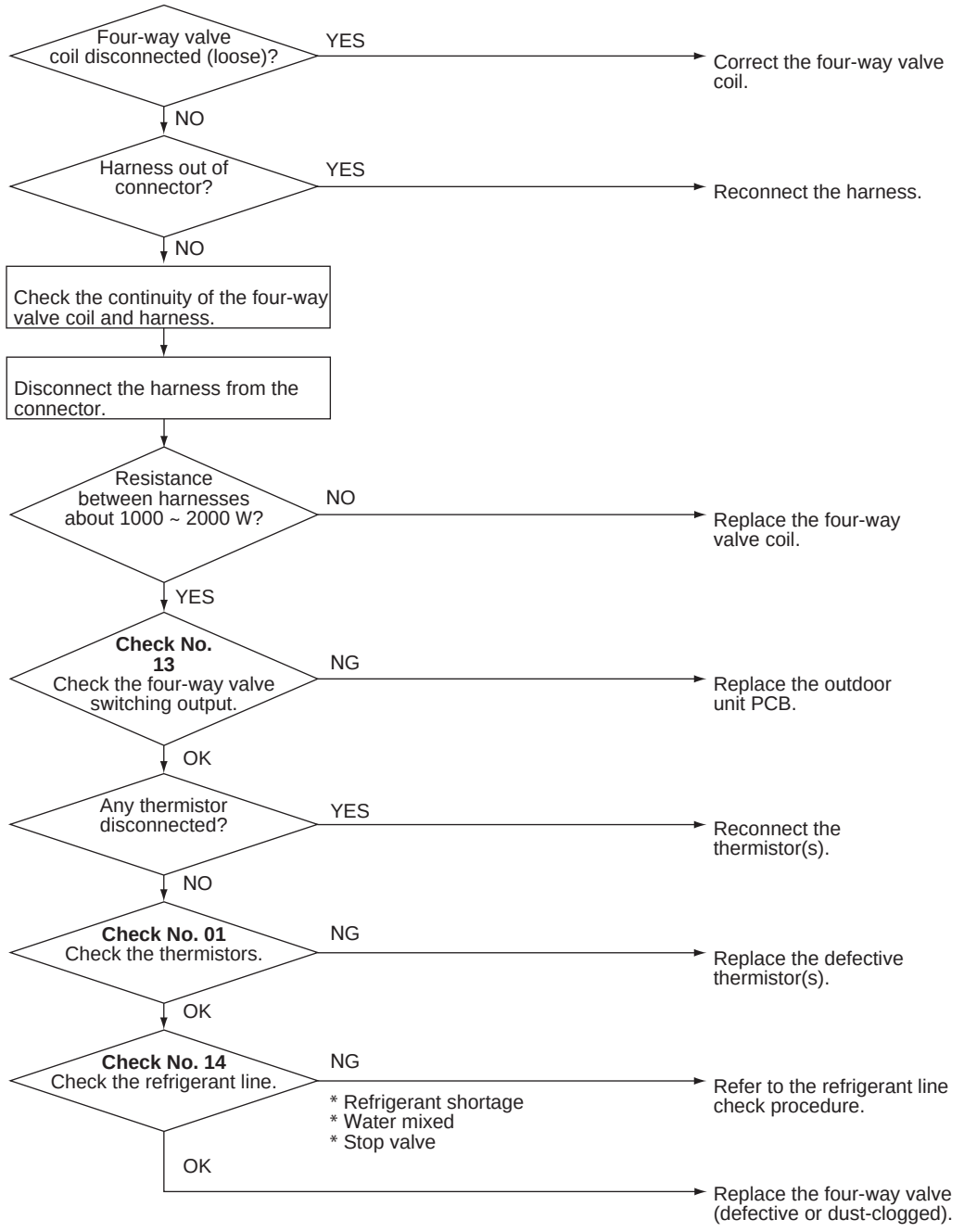
Troubleshooting

Check No.01
Refer to P.142

Check No.13
Refer to P.145

Check No.14
Refer to P.145

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



(R15824)

4.17 Discharge Pipe Temperature Control

Remote Controller Display

F3

Method of Malfunction Detection

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

Malfunction Decision Conditions

- If the temperature detected by the discharge pipe thermistor rises above **A**, the compressor stops.
- The error is cleared when the discharge pipe temperature has dropped below **B**.

<09/12 class>

	A	B
(1) above 45 Hz (rising), above 40 Hz (dropping)	110°C (230°F)	97°C (206.6°F)
(2) 30 ~ 45 Hz (rising), 25 ~ 40 Hz (dropping)	105°C (221°F)	92°C (197.6°F)
(3) below 30 Hz (rising), below 25 Hz (dropping)	99°C (210.2°F)	86°C (186.8°F)

<15/18/24/30/36 class>

	A	B
15/18 class	110°C (230°F)	95°C (203°F)
24/30/36 class	120°C (248°F)	107°C (224.6°F)

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

Supposed Causes

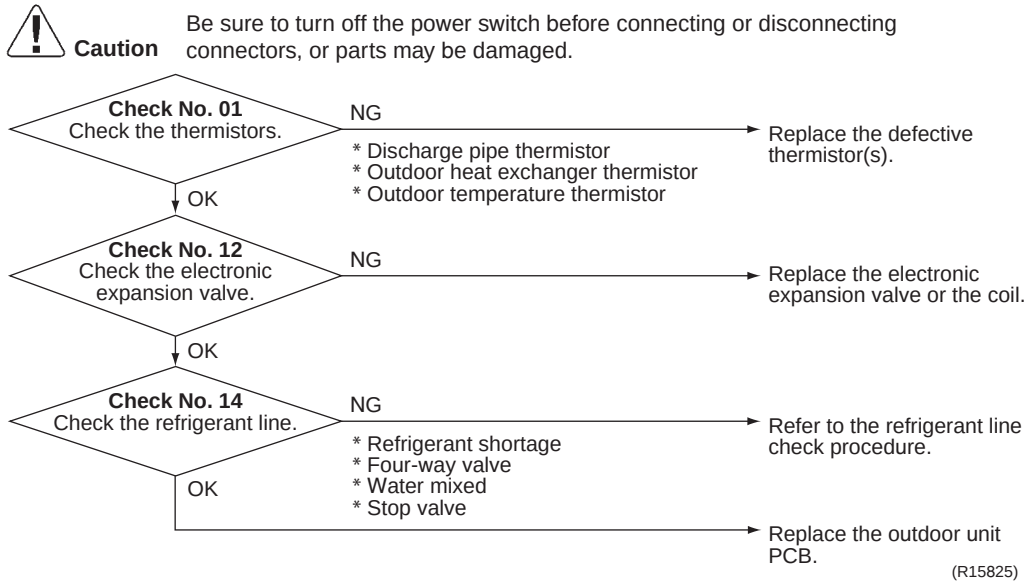
- Defective discharge pipe thermistor
  (Defective outdoor heat exchanger thermistor or outdoor temperature thermistor)
- Defective electronic expansion valve or coil
- Refrigerant shortage
- Defective fourway valve
- Water mixed in refrigerant
- Defective stop valve
- Defective outdoor unit PCB

Troubleshooting

Check No.01
Refer to P.142

Check No.12
Refer to P.144

Check No.14
Refer to P.145



4.18 High Pressure Control in Cooling

Remote Controller Display

F6

Method of Malfunction Detection

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

Malfunction Decision Conditions

- The temperature sensed by the outdoor heat exchanger thermistor rises above about 60 ~ 65°C (140 ~ 149°F).
- The error is cleared when the temperature drops below about 50°C (122°F).

Supposed Causes

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

Troubleshooting

Check No.01
Refer to P.142

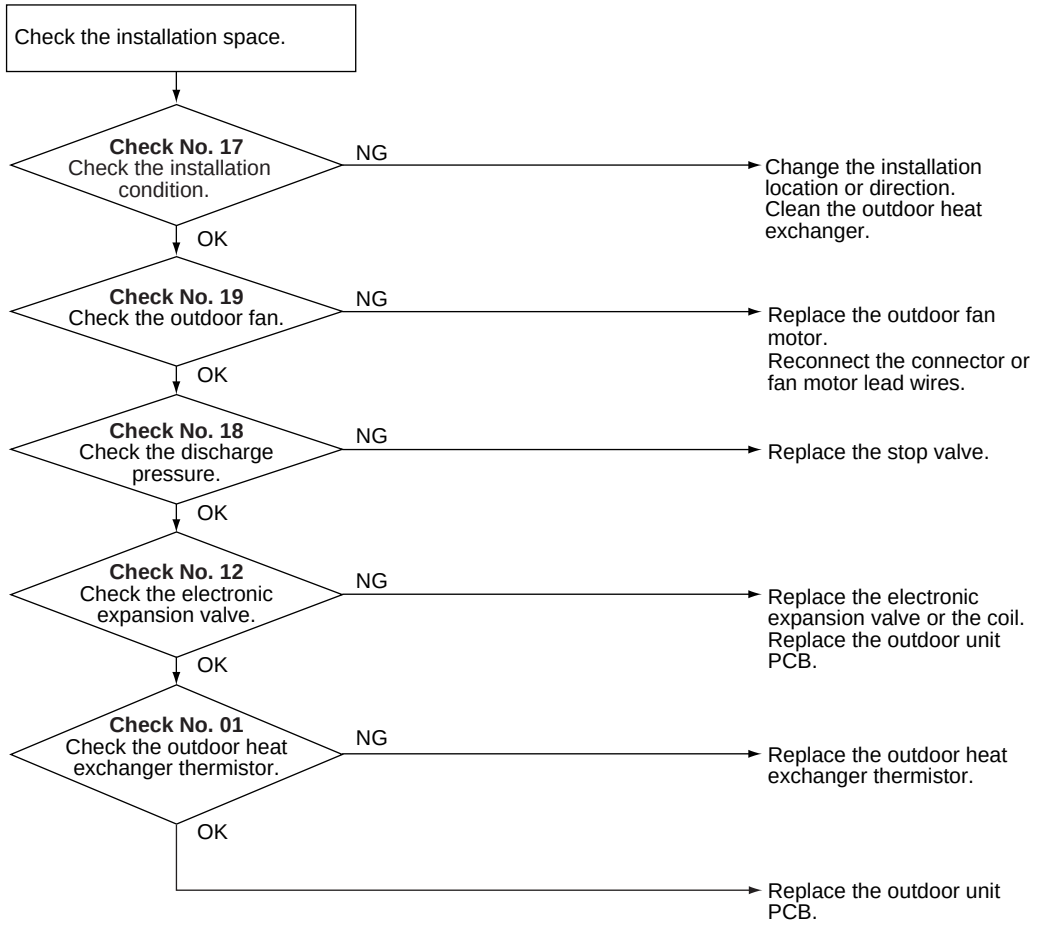
Check No.12
Refer to P.144

Check No.17
Refer to P.149

Check No.18
Refer to P.150

Check No.19
Refer to P.150

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



(R15667)

4.19 Compressor System Sensor Abnormality

4.19.1 09/12/15/18 Class

Remote Controller Display

H0

Method of Malfunction Detection

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

Malfunction Decision Conditions

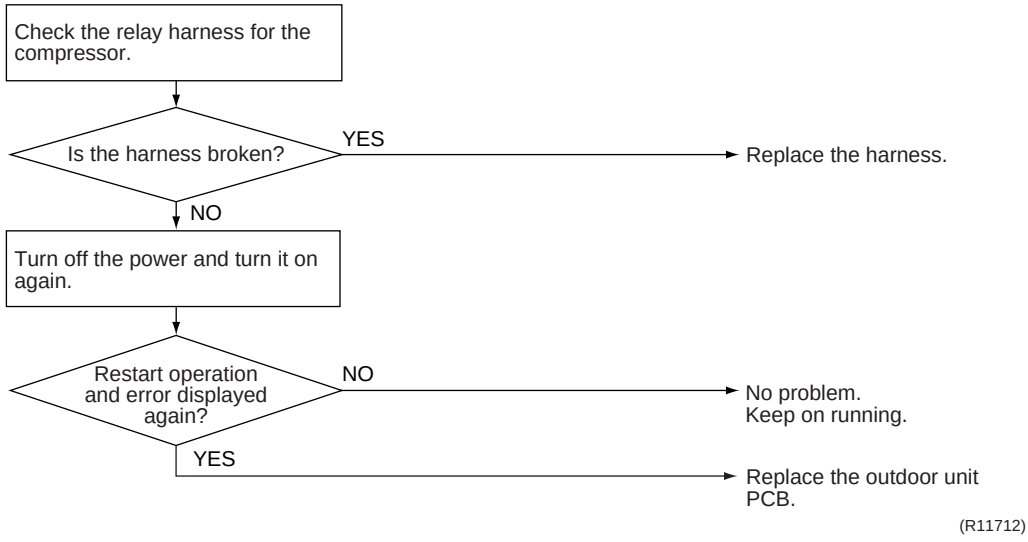
- The DC current before compressor start-up is out of the range 0.5 ~ 4.5 V (sensor output converted to voltage value)
- The DC voltage before compressor start-up is below 50 V.

Supposed Causes

- Broken or disconnected harness
- Defective outdoor unit PCB

Troubleshooting

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

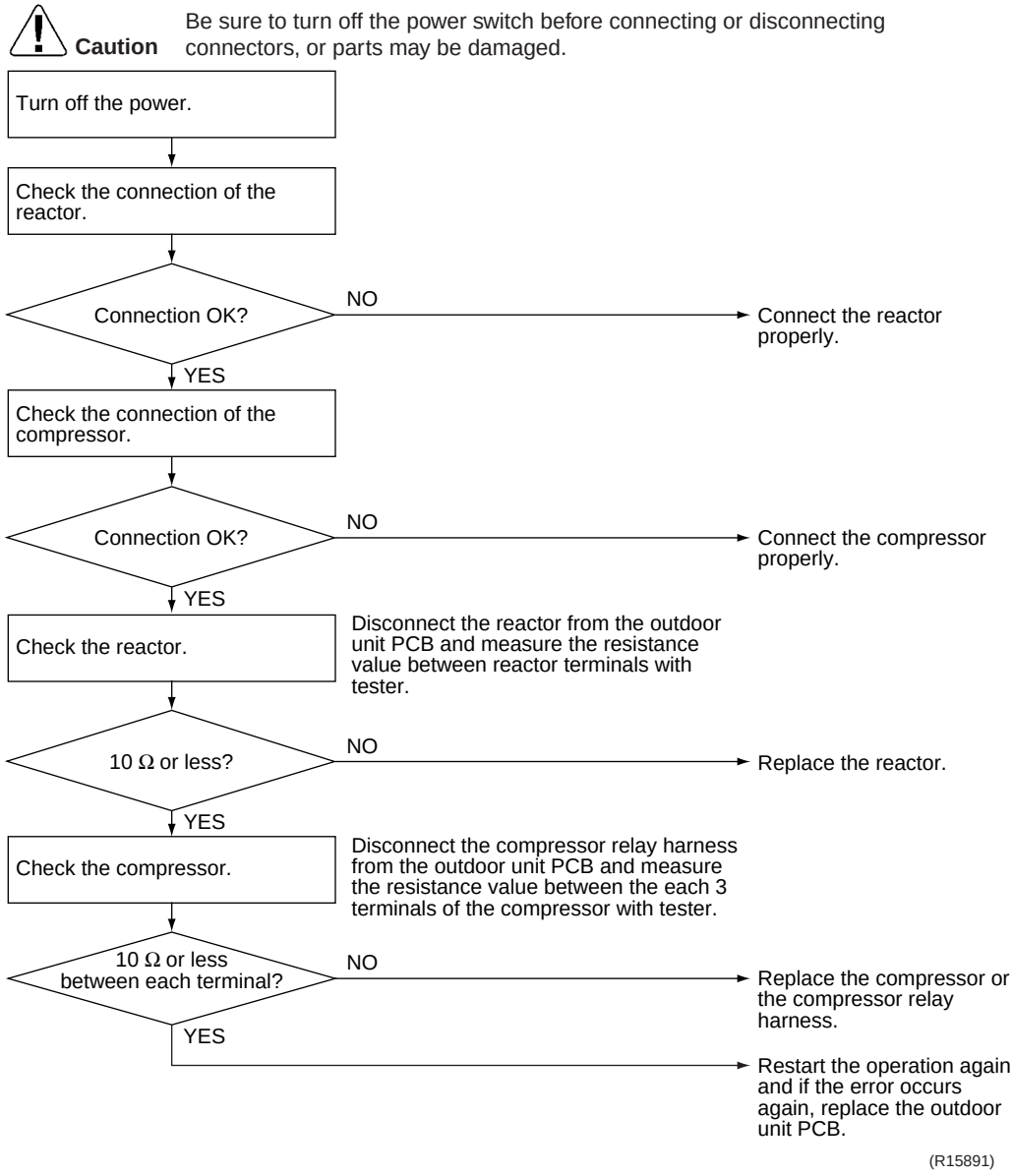


(R11712)

4.19.2 24/30/36 Class

Remote Controller Display	H0
Method of Malfunction Detection	■ The system checks the supply voltage and the DC voltage before the compressor starts. ■ The system checks the compressor current right after the compressor starts.
Malfunction Decision Conditions	■ The supply voltage and the DC voltage is obviously low or high. ■ The compressor current does not run when the compressor starts.
Supposed Causes	■ Disconnection of reactor ■ Disconnection of compressor harness ■ Defective outdoor unit PCB ■ Defective compressor

Troubleshooting



4.20 Position Sensor Abnormality

Remote Controller Display

H6

Method of Malfunction Detection

A compressor start-up failure is detected by checking the compressor running condition through the position detection circuit.

Malfunction Decision Conditions

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes (09/12 class) or 5 minutes (15/18/24/30/36 class) without any other error

Supposed Causes

- Disconnection of the compressor relay cable
- Defective compressor
- Defective outdoor unit PCB
- Start-up failure caused by the closed stop valve
- Input voltage is outside the specified range.

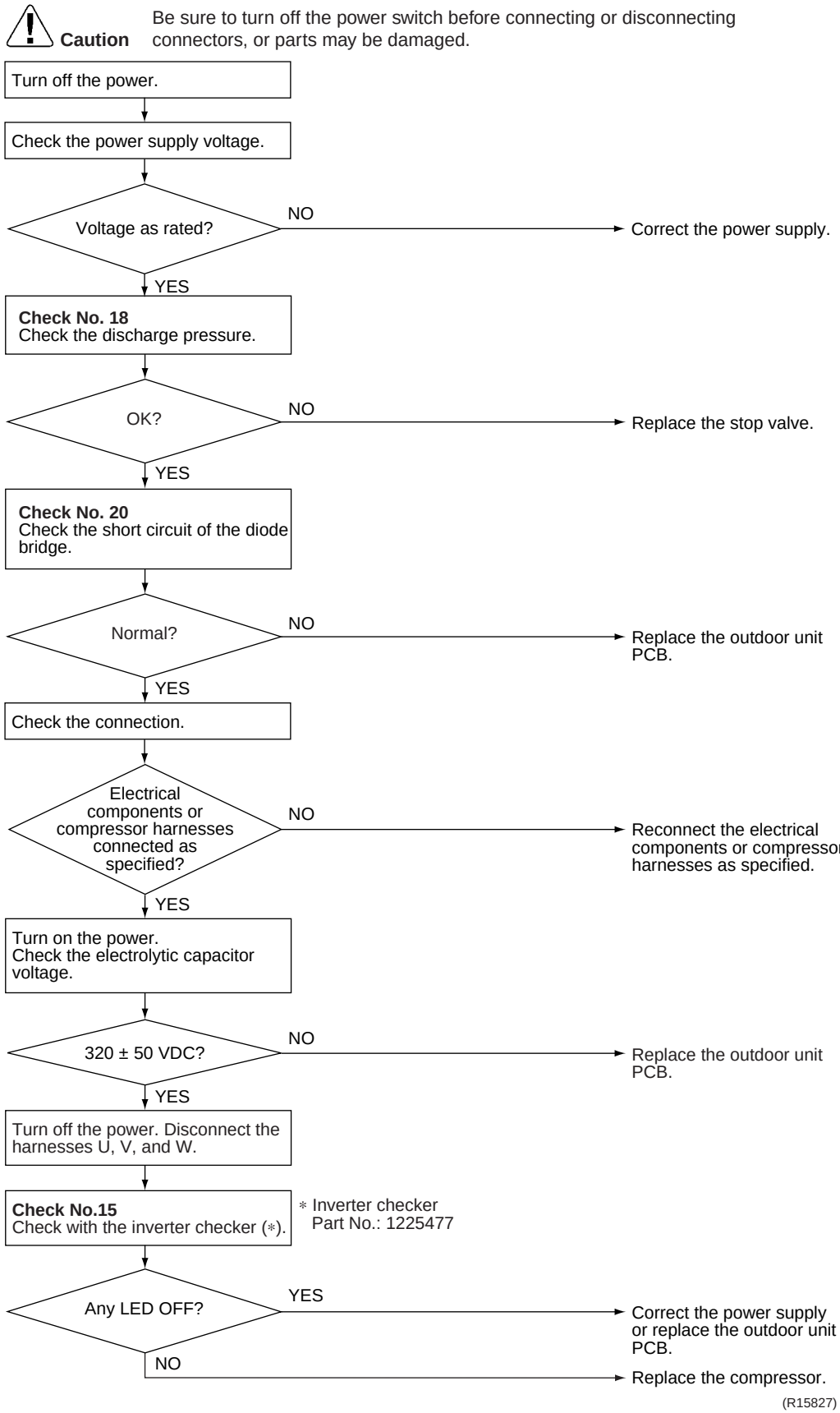
Troubleshooting

09/12/15/18 class

Check No.15
Refer to P.146

Check No.18
Refer to P.150

Check No.20
Refer to P.151

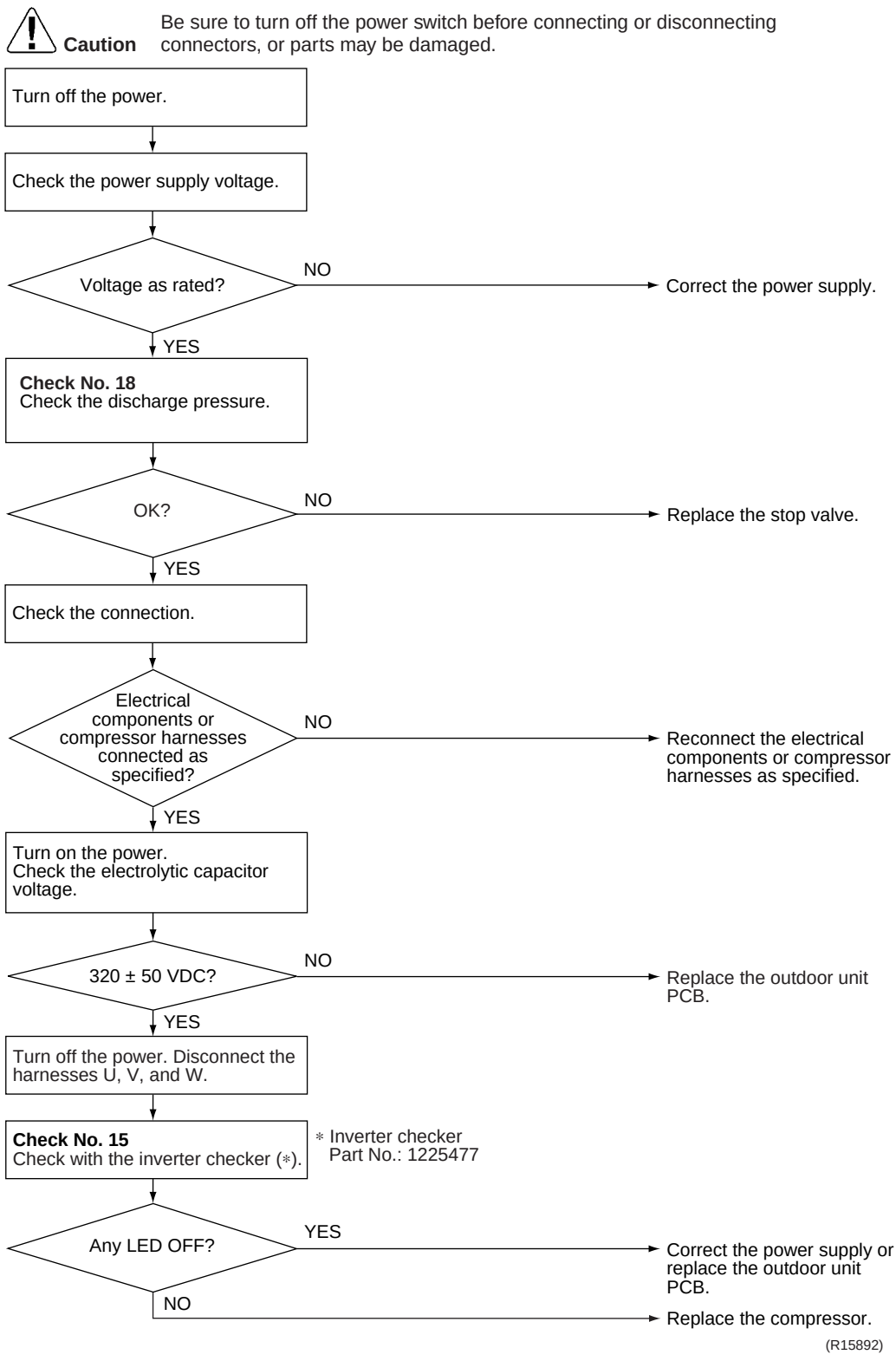


Troubleshooting

24/30/36 class

Check No.15
Refer to P.146

Check No.18
Refer to P.150



4.21 DC Voltage / Current Sensor Abnormality (09/12 Class Only)

Remote Controller Display

H8

Method of Malfunction Detection

DC voltage or DC current sensor abnormality is identified based on the compressor running frequency and the input current.

Malfunction Decision Conditions

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

Supposed Causes

- Defective outdoor unit PCB

Troubleshooting

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

Replace the outdoor unit PCB.

4.22 CT or Related Abnormality (24/30/36 Class Only)

Remote Controller Display

H8

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 more than **A** Hz, and the CT input current is less than **B** A.

A (Hz)	**B** (A)
32	0.5

- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 60 minutes without any other error

Supposed Causes

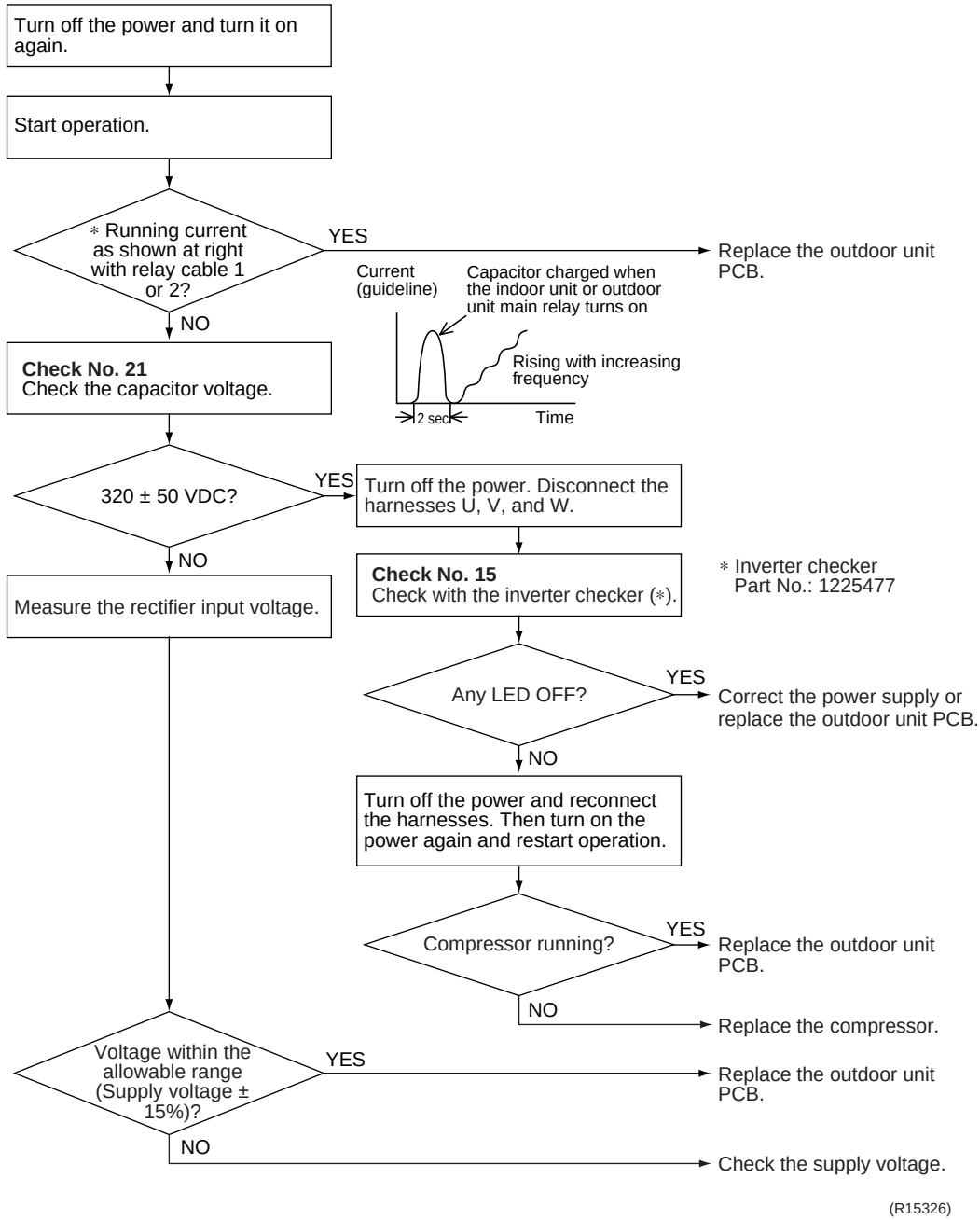
- Defective power module
- Broken or disconnected wiring
- Defective reactor
- Defective outdoor unit PCB

Troubleshooting

Check No.15
Refer to P.146

Check No.21
Refer to P.152

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



(R15326)

4.23 Thermistor or Related Abnormality (Outdoor Unit)

Remote Controller Display

H9, J3, J6, P4

Method of Malfunction Detection

This fault is identified based on the thermistor input voltage to the microcomputer.
A thermistor fault is identified based on the temperature sensed by each thermistor.

Malfunction Decision Conditions

- The thermistor input voltage is above 4.96 V or below 0.04 V with the power on.
- J3 error is judged if the discharge pipe temperature is lower than the heat exchanger temperature.

Supposed Causes

- Disconnection of the connector for the thermistor
- Defective thermistor corresponding to the error code
- Defective heat exchanger thermistor in the case of J3 error (outdoor heat exchanger thermistor in cooling operation, or indoor heat exchanger thermistor in heating operation)
- Defective outdoor unit PCB

Troubleshooting

In case of "P4"

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

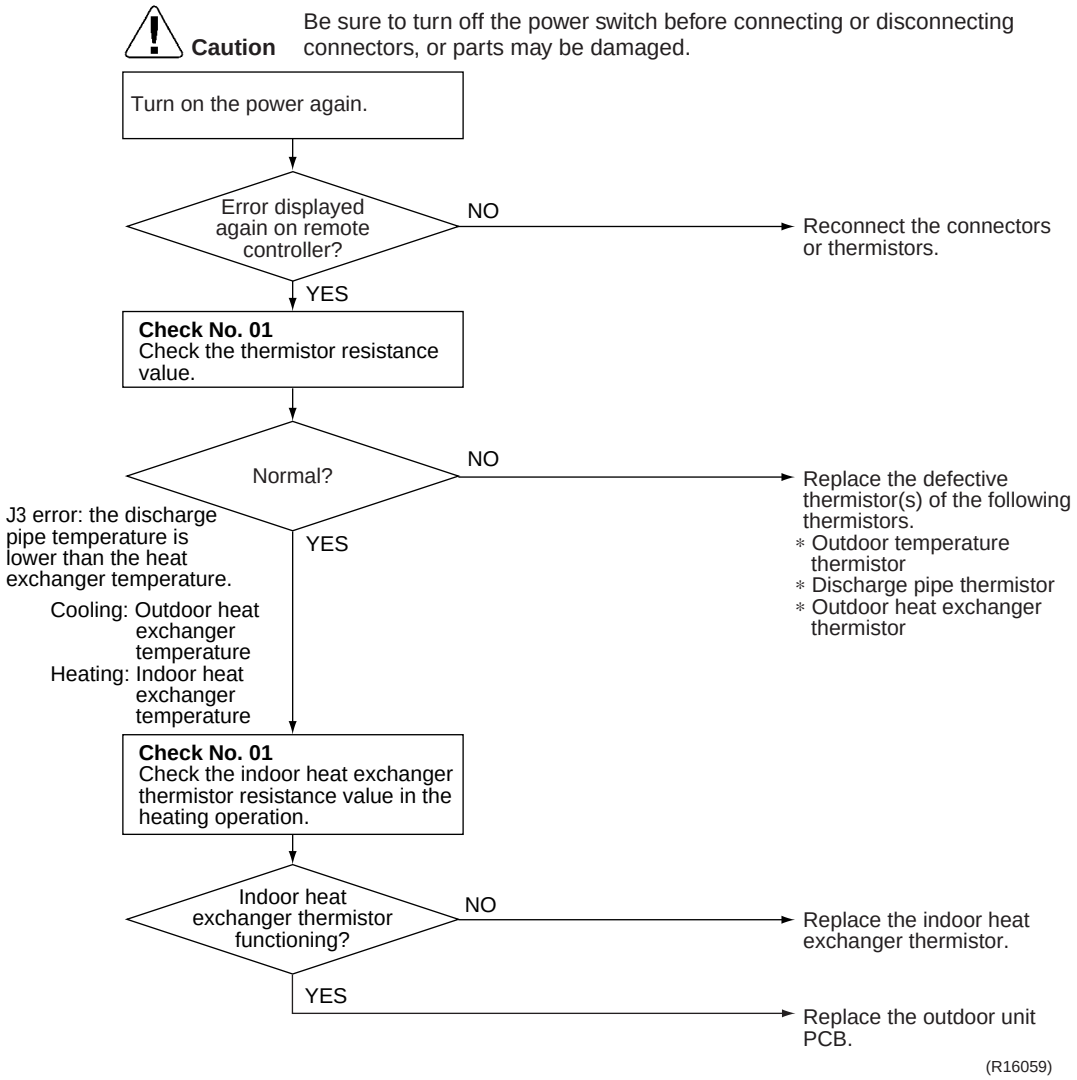
Replace the outdoor unit PCB.

P4 : Radiation fin thermistor

Troubleshooting

In case of "H9" "J3" "J6"

Check No.01
Refer to P.142



H9 : Outdoor temperature thermistor
J3 : Discharge pipe thermistor
J6 : Outdoor heat exchanger thermistor

4.24 Electrical Box Temperature Rise

Remote Controller Display

L3

Method of Malfunction Detection

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

Malfunction Decision Conditions

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

	A	B	C
09/12 class	98°C (208.4°F)	75°C (167°F)	83°C (181.4°F)
15/18 class	122°C (251.6°F)	64°C (147.2°F)	113°C (235.4°F)
24/30/36 class	100°C (212°F)	70°C (158°F)	85°C (185°F)

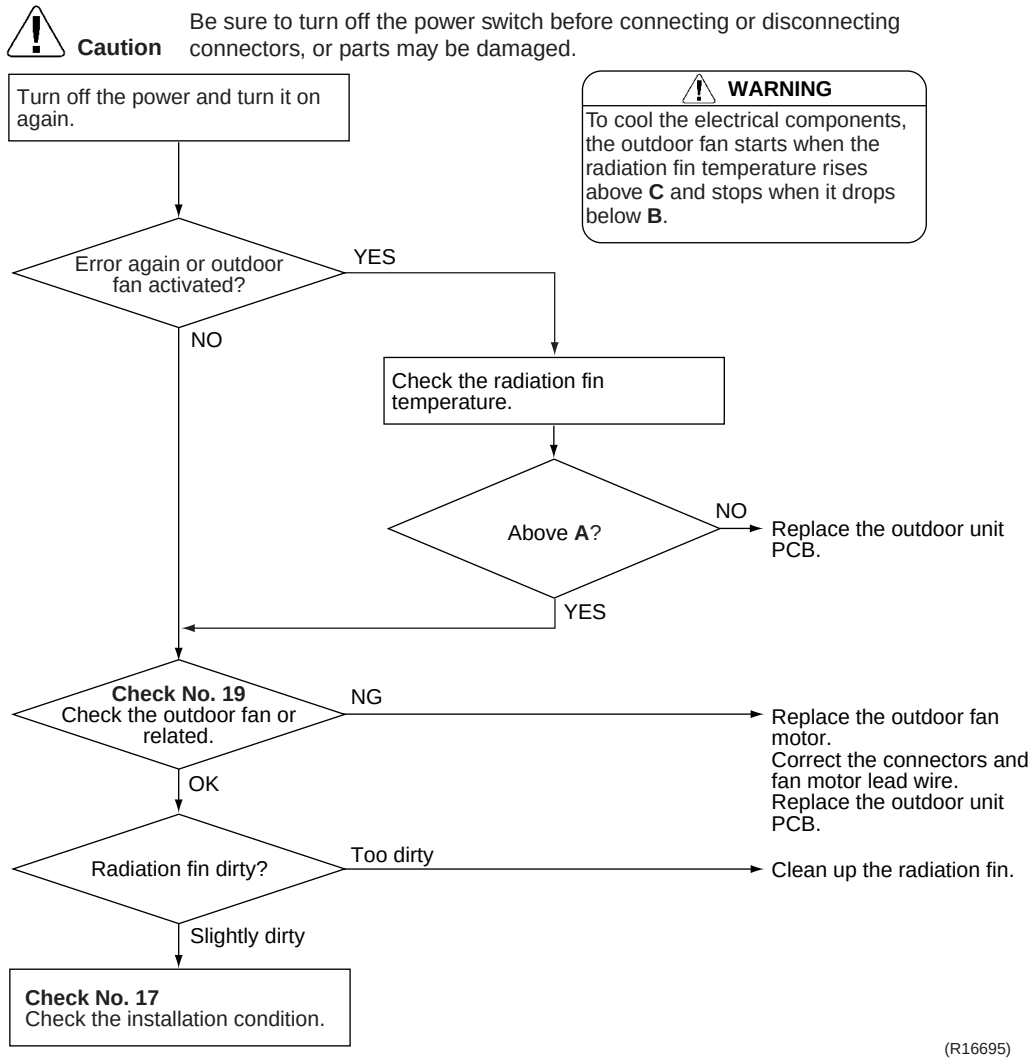
Supposed Causes

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

Troubleshooting

Check No.17
Refer to P.149

Check No.19
Refer to P.150



	A	B	C
09/12 class	98°C (208.4°F)	75°C (167°F)	83°C (181.4°F)
15/18 class	122°C (251.6°F)	64°C (147.2°F)	113°C (235.4°F)
24/30/36 class	100°C (212°F)	70°C (158°F)	85°C (185°F)

4.25 Radiation Fin Temperature Rise

Remote Controller Display

L4

Method of Malfunction Detection

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

Malfunction Decision Conditions

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

	A	B
09/12 class	98°C (208.4°F)	78°C (172.4°F)
15/18 class	85°C (185°F)	56°C (132.8°F)
24/30/36 class	105°C (221°F)	97°C (206.6°F)

Supposed Causes

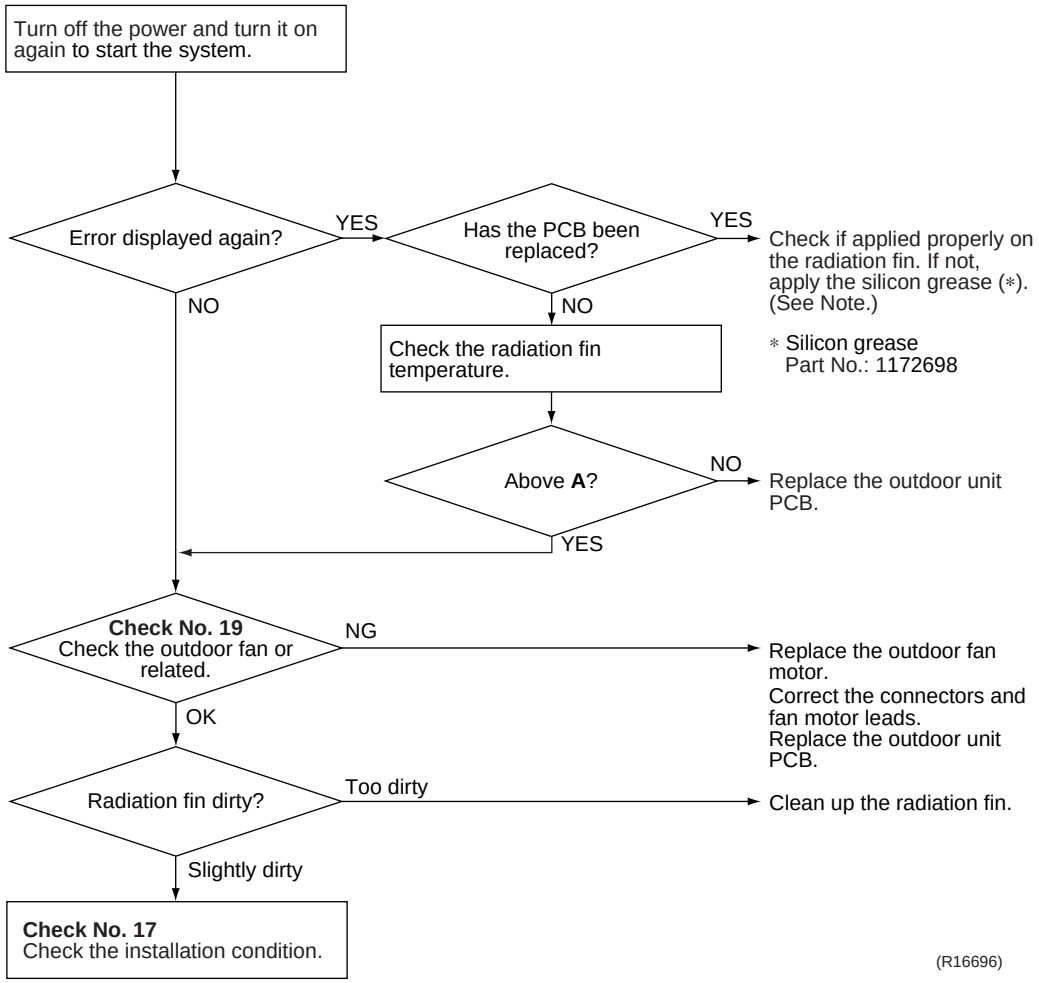
- Defective outdoor fan motor
- Short circuit
- Defective radiation fin thermistor
- Disconnection of connector
- Defective outdoor unit PCB
- Silicon grease is not applied properly on the radiation fin after replacing the outdoor unit PCB.

Troubleshooting

Check No.17
Refer to P.149

Check No.19
Refer to P.150

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



	A
09/12 class	98°C (208.4°F)
15/18 class	85°C (185°F)
24/30/36 class	105°C (221°F)

Note: Refer to “Application of silicon grease to a power transistor and a diode bridge” on page 391 for detail.

4.26 Output Overcurrent Detection

Remote Controller Display

L5

Method of Malfunction Detection

An output overcurrent 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 overcurrent signal is fed from the output overcurrent detection circuit to the microcomputer.
- If the error repeats, the system is shut down.
- Reset condition: Continuous run for about 11 minutes (09/12 class) or 5 minutes (15/18/24/30/36) without any other error

Supposed Causes

- Poor installation condition
- Closed stop valve
- Defective power module
- Wrong internal wiring
- Abnormal power supply voltage
- Defective outdoor unit PCB
- Defective compressor

Troubleshooting

Check No.15
Refer to P.146

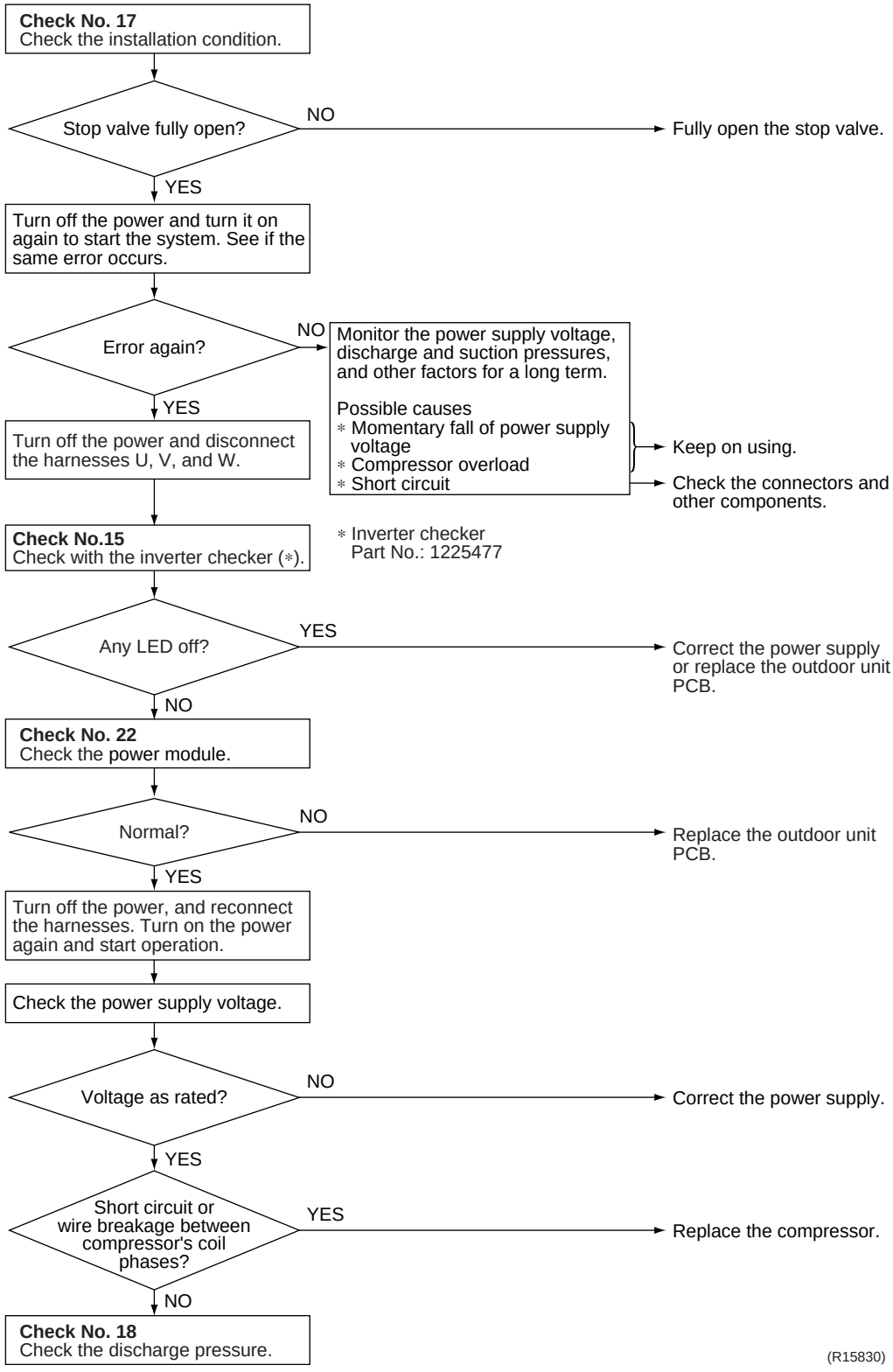
Check No.17
Refer to P.149

Check No.18
Refer to P.150

Check No.22
Refer to P.153

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

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



(R15830)

5. Check

5.1 Thermistor Resistance Check

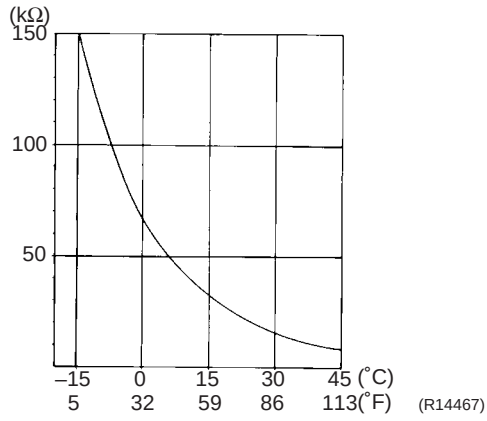
Check No.01

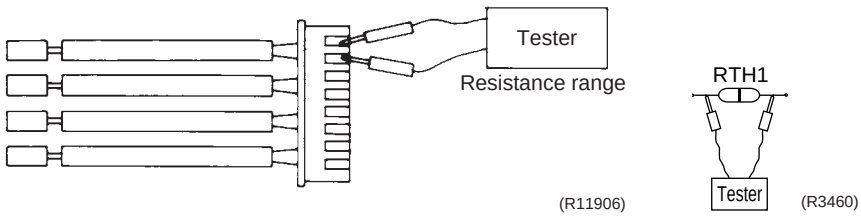
Disconnect the connectors of the thermistors from the PCB, and measure the resistance of each thermistor using tester.
The relationship between normal temperature and resistance is shown in the table and the graph below.

The data is for reference purpose only.

Temperature (°C / °F)	Resistance (kΩ)
–20 / –4	197.8
–15 / 5	148.2
–10 / 14	112.1
–5 / 23	85.60
0 / 32	65.93
5 / 41	51.14
10 / 50	39.99
15 / 59	31.52
20 / 68	25.02
25 / 77	20.00
30 / 86	16.10
35 / 95	13.04
40 / 104	10.62
45 / 113	8.707
50 / 122	7.176

(R25°C (77°F) = 20 kΩ, B = 3950 K)





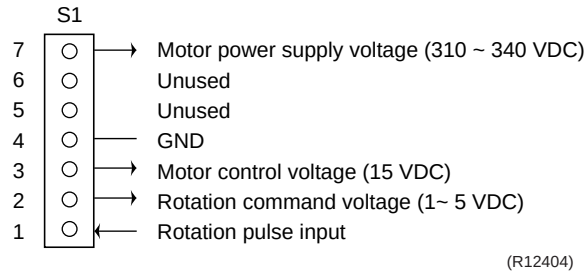
- The room temperature thermistor is directly mounted on the display PCB. Remove the display PCB from the control PCB to measure the resistance.
- When the indoor heat exchanger thermistor is soldered on the PCB, remove the thermistor and measure the resistance.

5.2 Fan Motor Connector Output Check

Check No.02

FTXS series

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



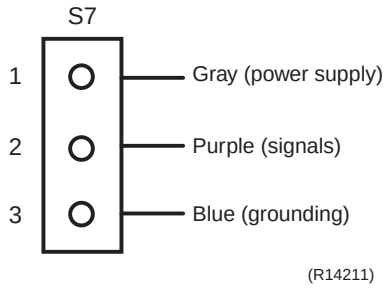
5.3 Hall IC Check

Check No.04

FDXS series

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.

If NG in step 1 → Defective PCB → Replace the PCB.
If NG in step 2 → Defective Hall IC → Replace the fan motor.
If OK in both steps 1 and 2 → Replace the PCB.



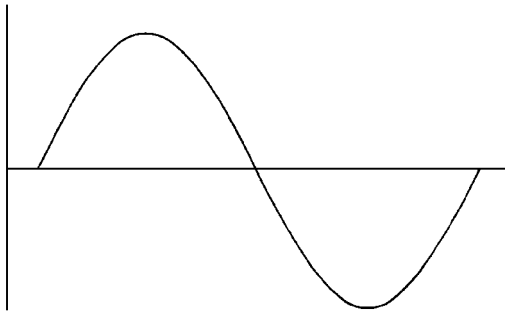
5.4 Power Supply Waveforms Check

Check No.11

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

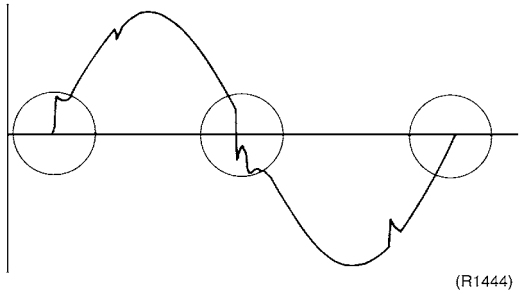
- Check to see if the power supply waveform is a sine wave. (Fig.1)
- Check to see if there is waveform disturbance near the zero cross. (sections circled in Fig.2)

Fig.1



(R1736)

Fig.2



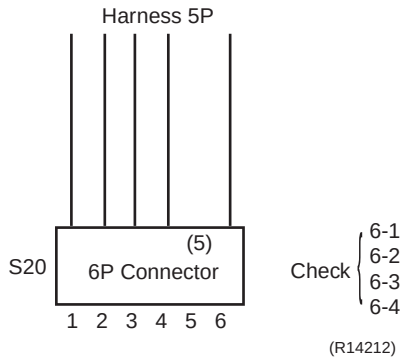
(R1444)

5.5 Electronic Expansion Valve Check

Check No.12

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

1. Check to see if the EV connector is correctly connected to the PCB.
2. Turn the power off and on again, and check to see if the EV generates a latching sound.
3. If the EV does not generate a latching sound in the above step 2, disconnect the connector and check the continuity using a tester.
4. Check the continuity between the pins 1 - 6, 2 - 6, 3 - 6, and 4 - 6. If there is no continuity between the pins, the EV coil is faulty.



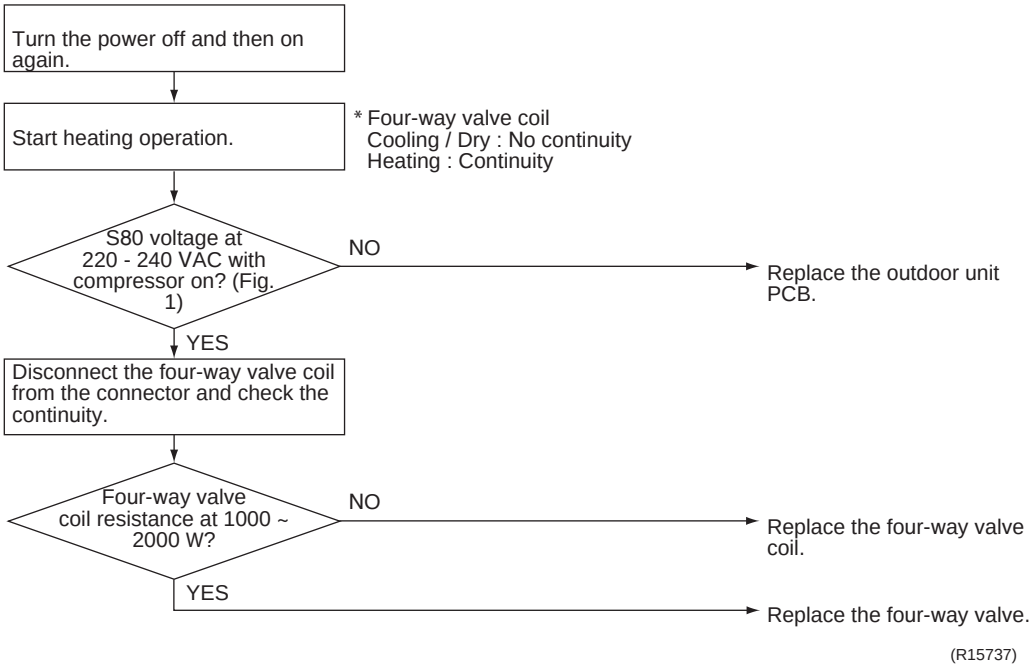
(R14212)

5. If the continuity is confirmed in step 3, the outdoor unit PCB is faulty.

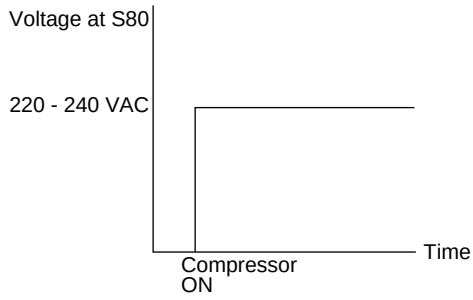
Note: Please note that the latching sound varies depending on the valve type.

5.6 FourWay Valve Performance Check

Check No.13



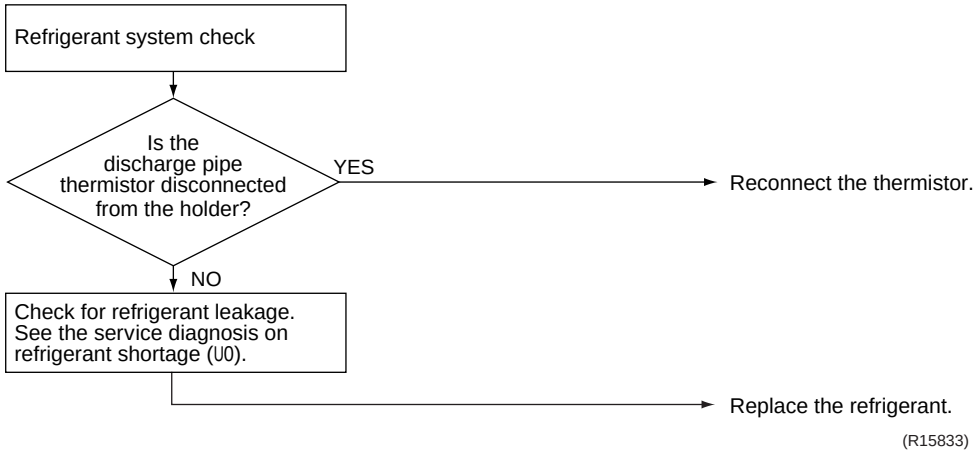
(Fig. 1)



(R11904)

5.7 Inverter Units Refrigerant System Check

Check No.14



5.8 “Inverter Checker” Check

Check No.15

■ **Characteristics**

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

■ **Operation Method**

Step 1

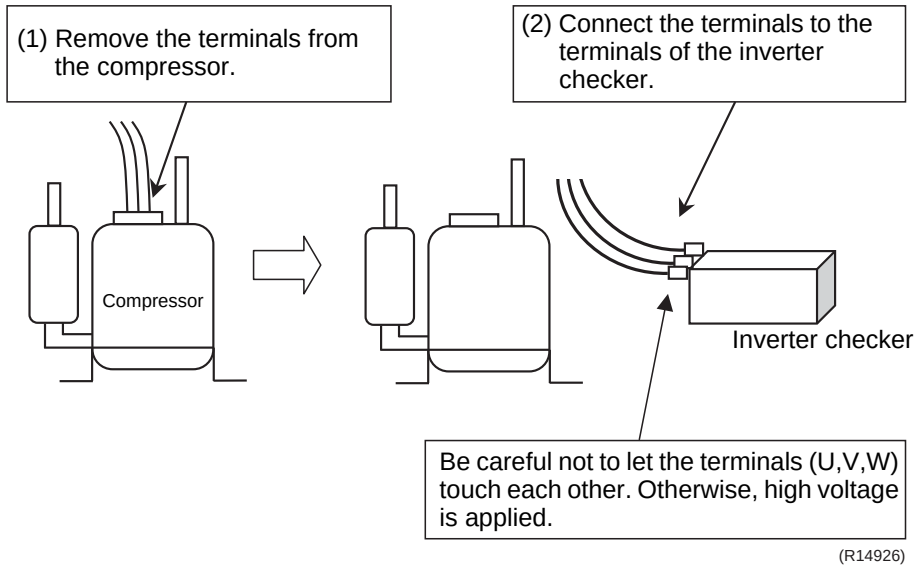
Be sure to turn the power off.

Step 2

Install the inverter checker instead of a compressor.

Note:

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



Reference:

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

Step 3

Activate the power transistor test operation from the outdoor unit.

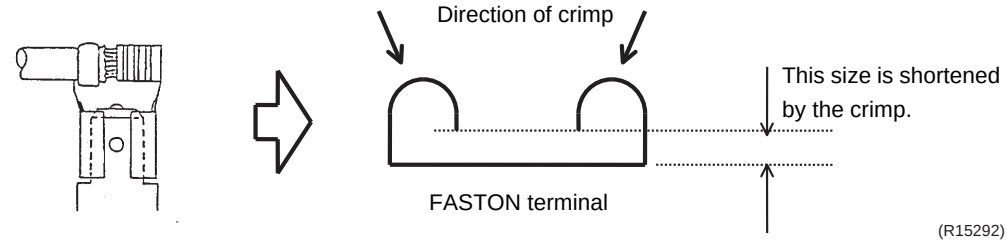
1) Press the forced cooling operation [ON/OFF] button for 5 seconds.
(Refer to page 384 for the position.)
→ Power transistor test operation starts.

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

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

Caution

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

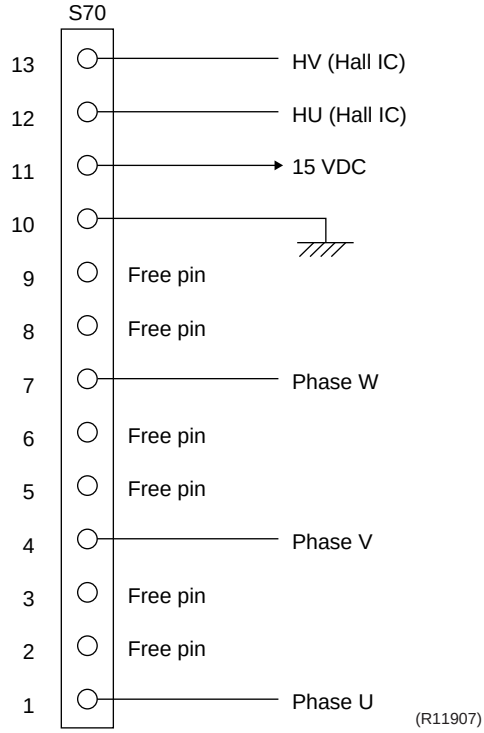


5.9 Rotation Pulse Check on the Outdoor Unit PCB

Check No.16

09/12 class

1. Check that the voltage between the pins 10 - 11 is 15 VDC.
2. Check if the Hall IC generates the rotation pulse (0 ~ 15 VDC) 4 times between the pins 10 -12, 10 - 13, when the fan motor is manually rotated once.



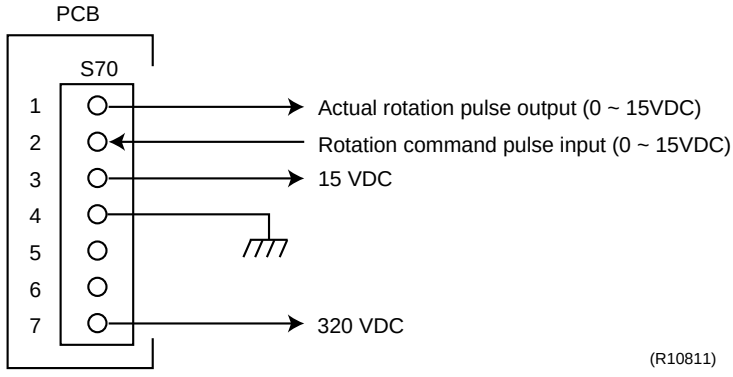
15/18/24/30/36 class

Make sure that the voltage of 320 ± 30 V is applied.

1. Set operation off and power off. Disconnect the connector S70.
2. Check that the voltage between the pins 4 - 7 is 320 VDC.
3. Check that the control voltage between the pins 3 - 4 is 15 VDC.
4. Check that the rotation command voltage between the pins 2 - 4 is 0 ~ 15 VDC.
5. Keep operation off and power off. Connect the connector S70.
6. Check whether 2 pulses (0 ~ 15 VDC) are output at the pins 1 - 4 when the fan motor is rotated 1 turn by hand.

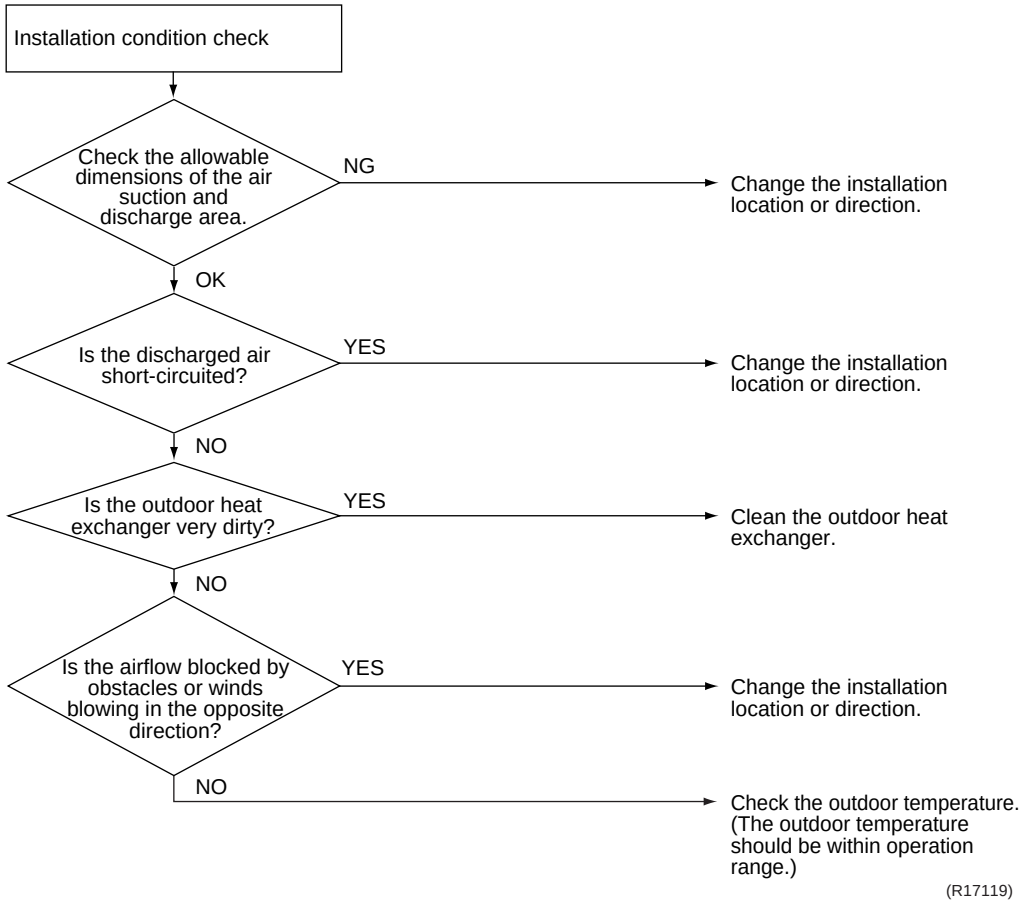
When the fuse is melted, check the outdoor fan motor for proper function.

If NG in step 2 → Defective PCB → Replace the outdoor unit PCB.
If NG in step 4 → Defective Hall IC → Replace the outdoor fan motor.
If OK in both steps 2 and 4 → Replace the outdoor unit PCB.



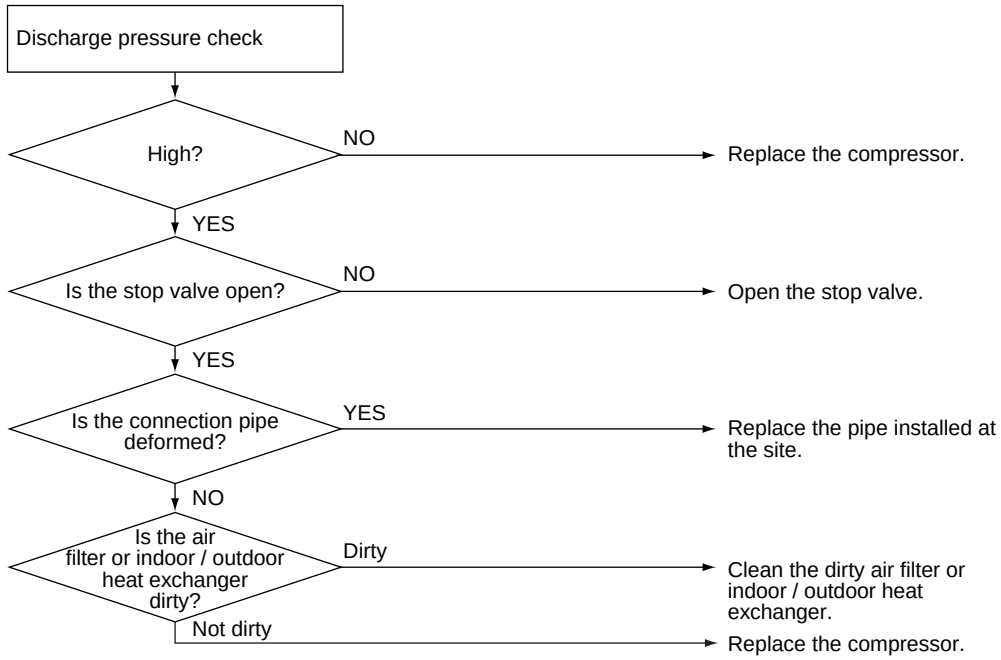
5.10 Installation Condition Check

Check No.17



5.11 Discharge Pressure Check

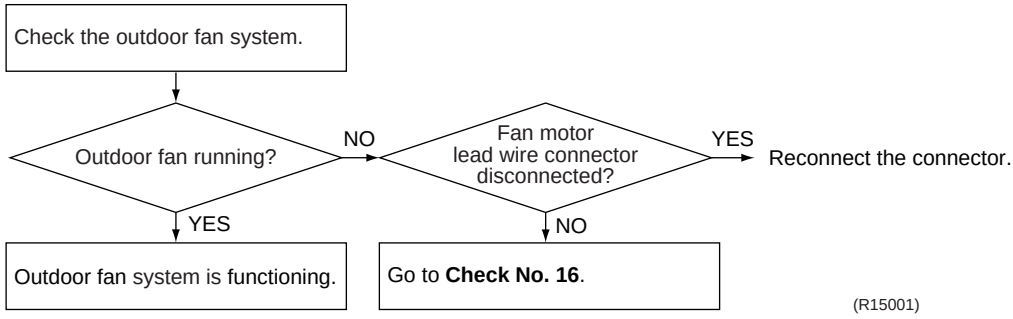
Check No.18



(R15738)

5.12 Outdoor Fan System Check

Check No.19 **DC motor**



(R15001)

5.13 Main Circuit Short Check

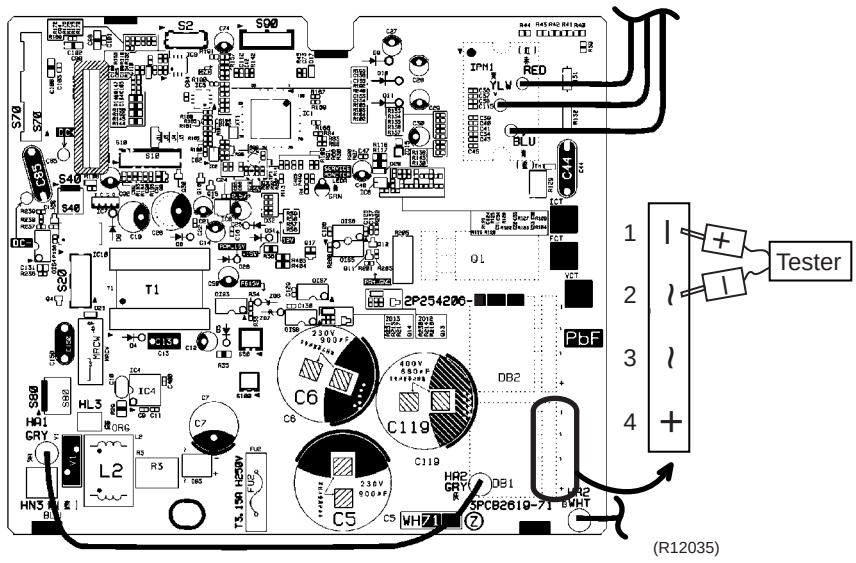
Check No.20

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

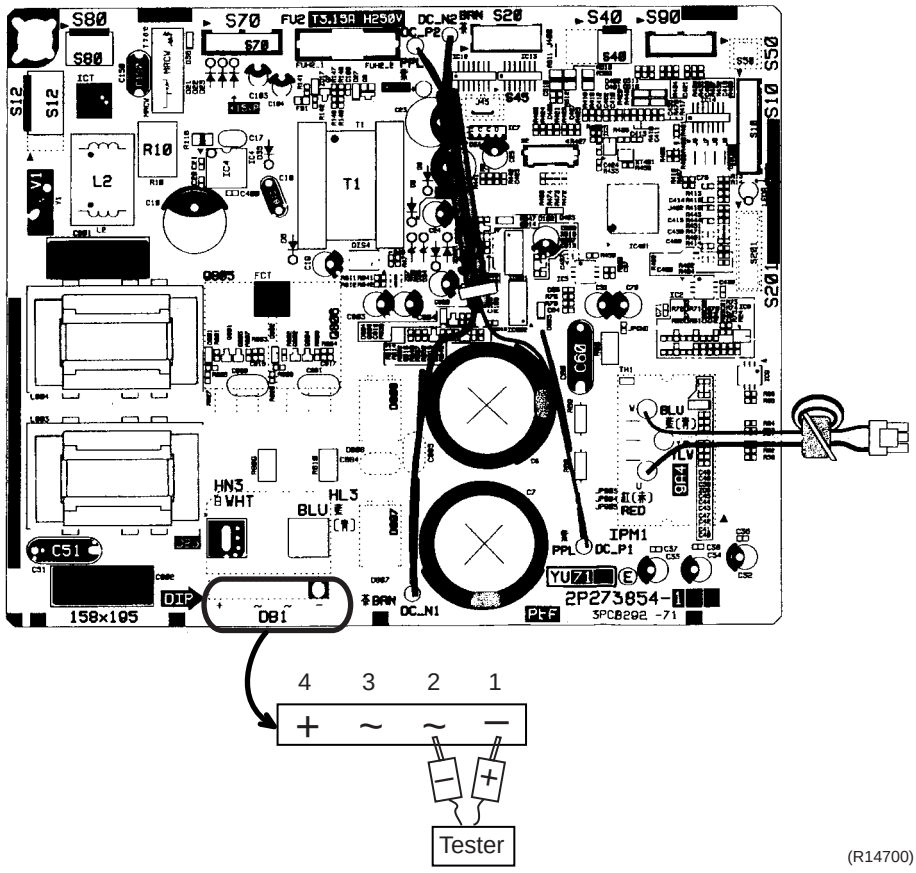
- Measure the resistance between the pins of the DB1 referring to the table below.
- If the resistance is ∞ or less than 1 kΩ, short circuit occurs on the main circuit.

Negative (–) terminal of tester (positive terminal (+) for digital tester)	~ (2, 3)	+ (4)	~ (2, 3)	─ (1)
Positive (+) terminal of tester (negative terminal (–) for digital tester)	+ (4)	~ (2, 3)	─ (1)	~ (2, 3)
Resistance is OK.	several kΩ ~ several MΩ	∞	∞	several kΩ ~ several MΩ
Resistance is NG.	0 Ω or ∞	0	0	0 Ω or ∞

09/12 class



15/18 class

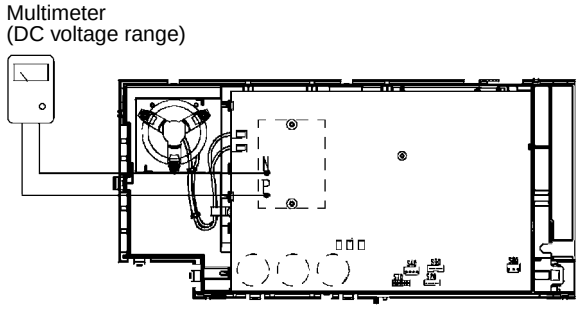


(R14700)

5.14 Capacitor Voltage Check

Check No.21

Before this check, be sure to check the main circuit for short circuit.
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.



(R13538)

5.15 Power Module Check

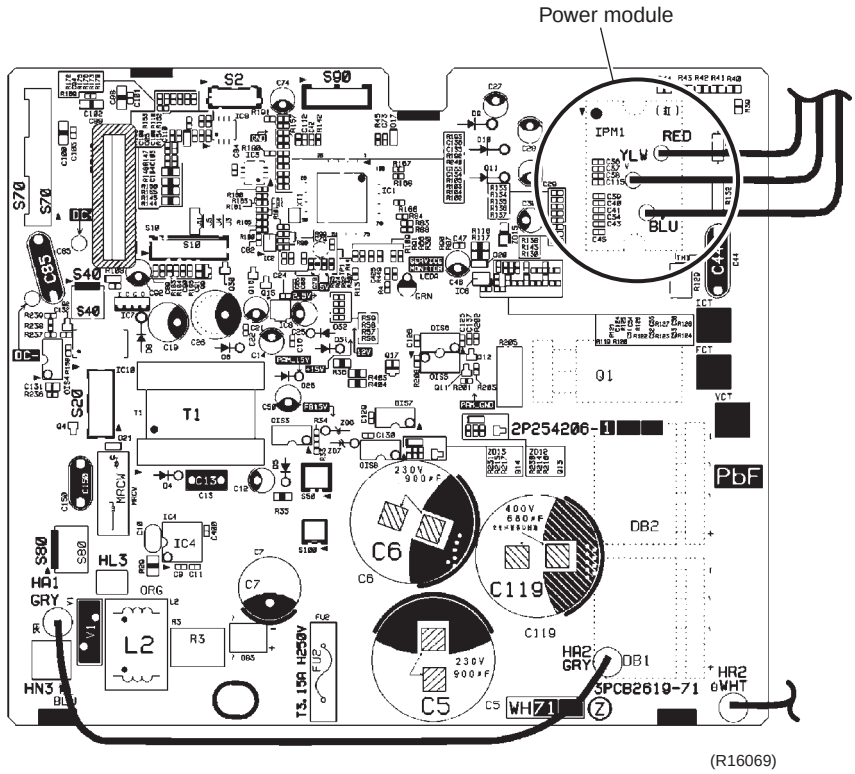
Check No.22

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

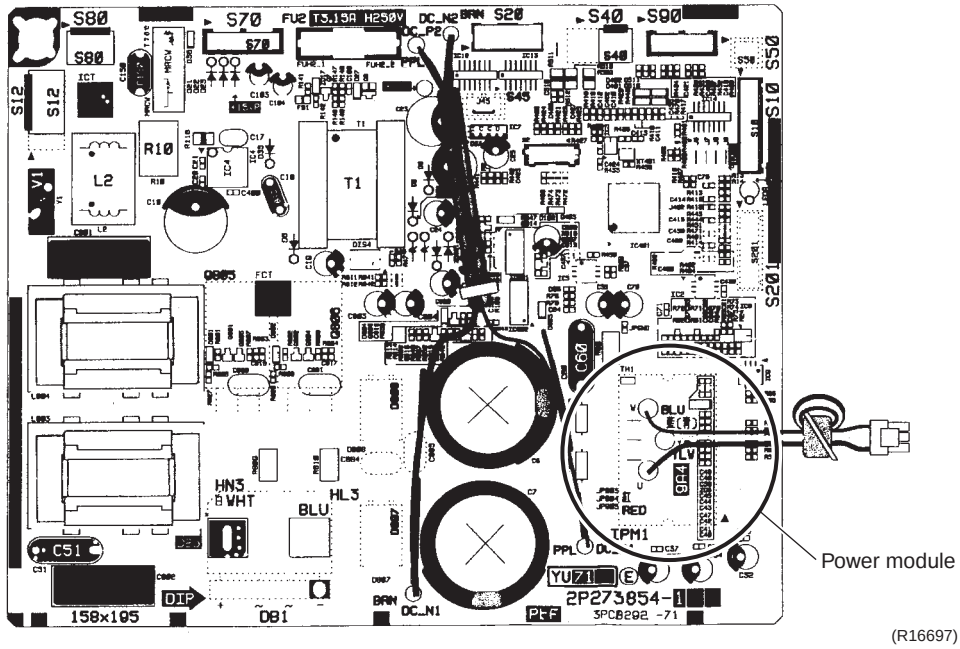
- Disconnect the compressor harness connector from the outdoor unit PCB. To disengage the connector, press the protrusion on the connector.
- Follow the procedure below to measure resistance between the terminals of the power module and the terminals of the compressor with a multi-tester. Evaluate the measurement results referring to the following table.

Negative (–) terminal of tester (positive terminal (+) for digital tester)	Power module (+)	UVW	Power module (–)	UVW
Positive (+) terminal of tester (negative terminal (–) for digital tester)	UVW	Power module (+)	UVW	Power module (–)
Resistance is OK.	several kΩ ~ several MΩ			
Resistance is NG.	0 Ω or ∞			

09/12 class

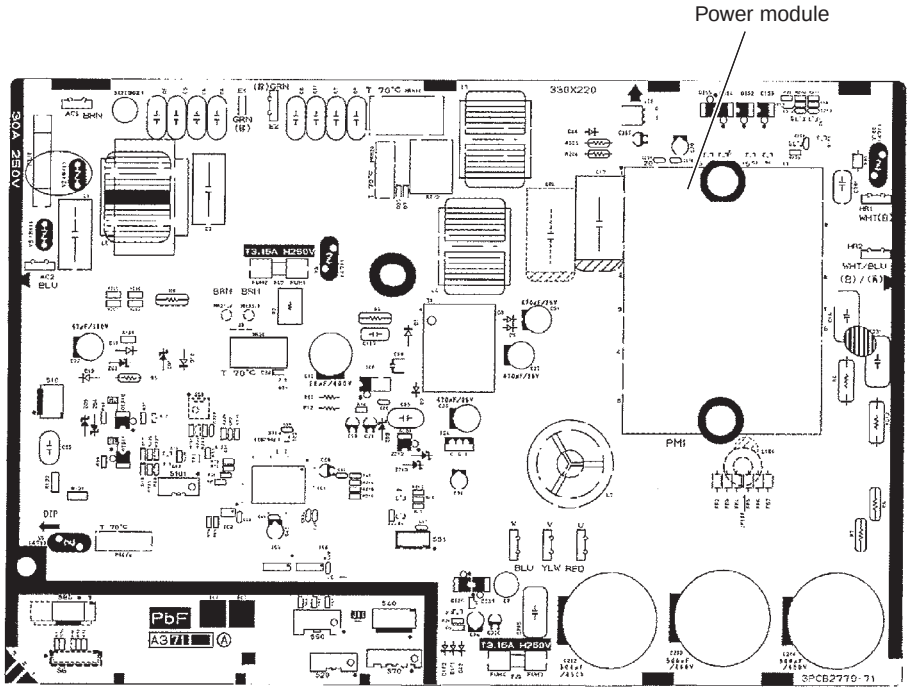


15/18 class



(R16697)

24/30/36 class



(R16073)

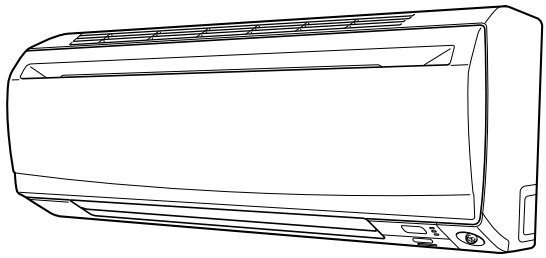
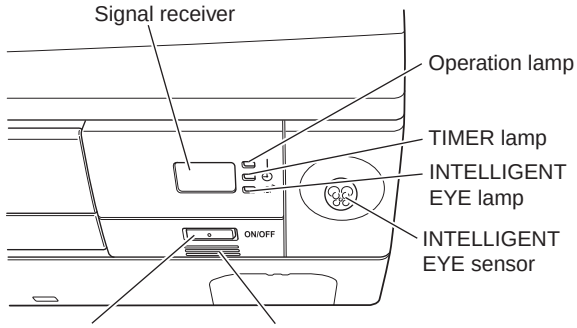
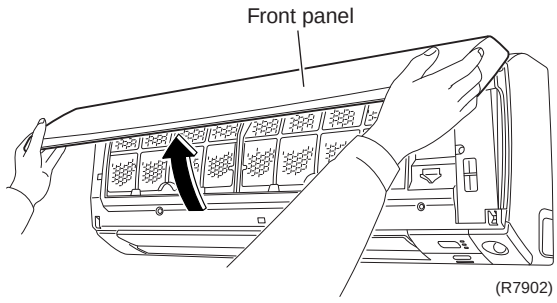
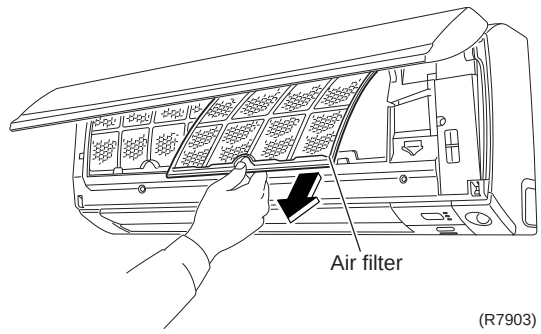
Part 7
Removal Procedure

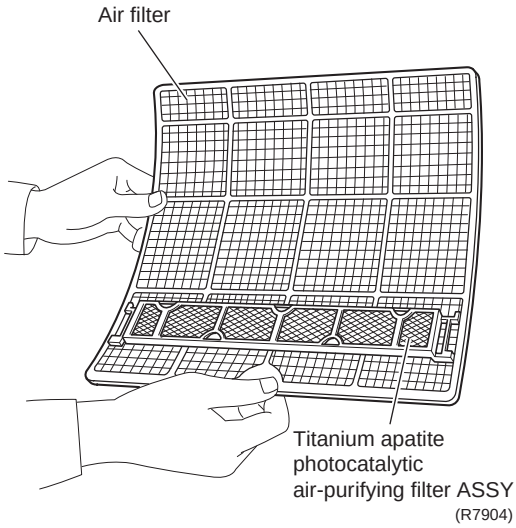
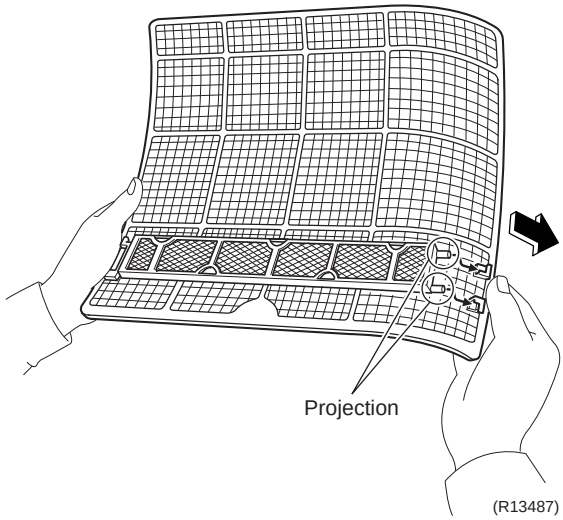
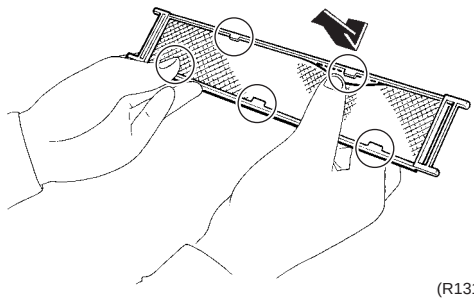
1. Indoor Unit: FTXS09/12LVJU

1.1 Removal of Air Filters

Procedure

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

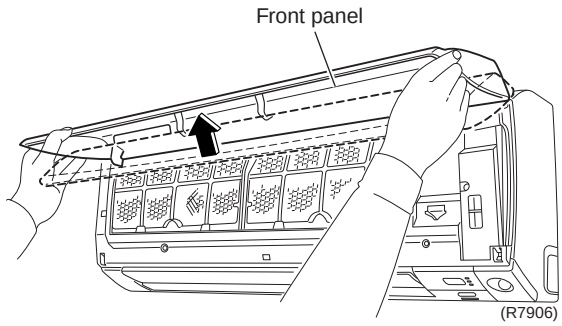
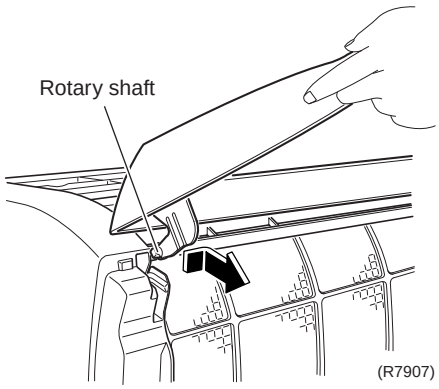
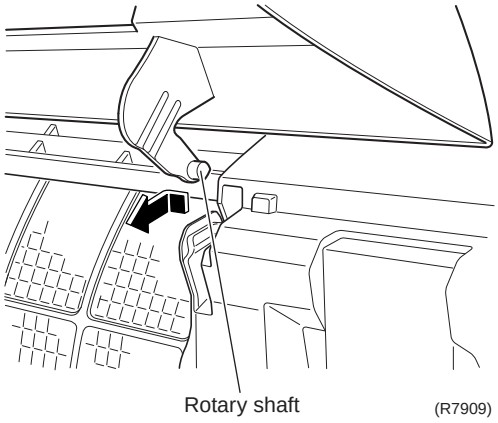
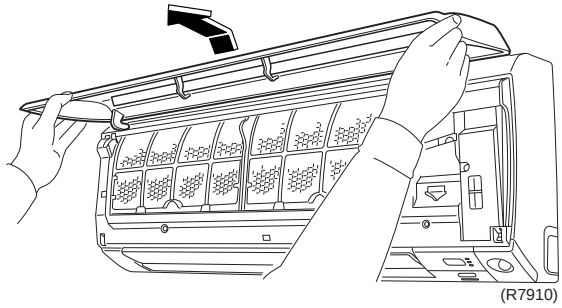
Step	Procedure	Points
1. Appearance features	 (R7900)  (R7901)	**Warning** **Dangerous: High voltage** **A high voltage is applied to all the electric circuits of this product including thermistors.** ■ When the signal receiver catches a signal from the remote controller, the receiving tone sounds and the operation lamp blinks immediately to confirm the signal reception. ■ When the [ON/OFF] button is kept pressed for 5 seconds, the forced cooling operation is performed for about 15 minutes.
2. Remove the air filters. 1 Open the front panel to the position where it stops. 2 Slightly push up the center knob of the air filter and release the hooks. 3 Pull out the air filter downward and remove it.	 (R7902)  (R7903)	■ The air filter is not marked for difference between the right and left sides. ■ The air filter can be set easily by inserting it along the guides. ■ Insert the air filter with the "FRONT" mark faced up. ■ Be sure to insert the hooks (at 2 lower positions) when reassembling the air filter.

Step	Procedure	Points
3. Remove the Titanium apatite photocatalytic air-purifying filters.		
1 The Titanium apatite photocatalytic air-purifying filter ASSY is attached to the back of the air filter.		■ The right and left filters are interchangeable.
2 Remove the Titanium apatite photocatalytic air-purifying filter ASSY by unfastening the projections from the back of the air filter frame.		
3 Unfasten the 5 hooks and remove the Titanium apatite photocatalytic air-purifying filter from its frame.		

1.2 Removal of Front Panel

Procedure

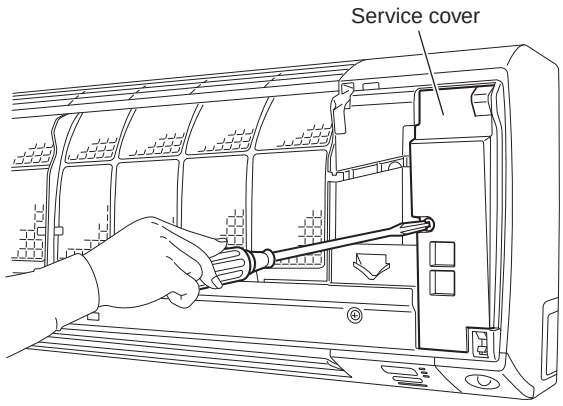
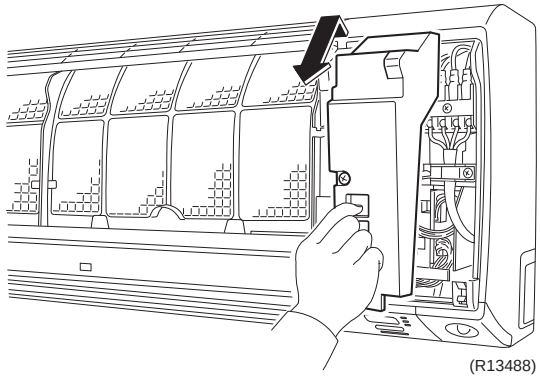
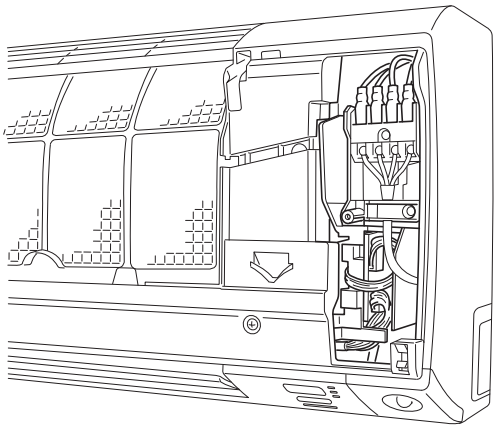
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

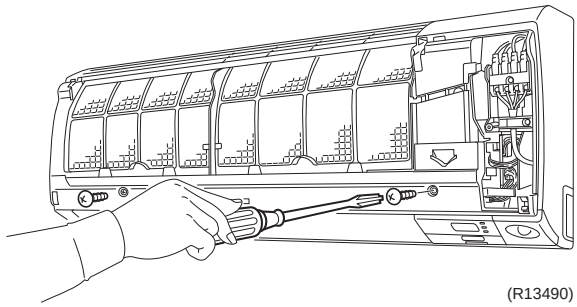
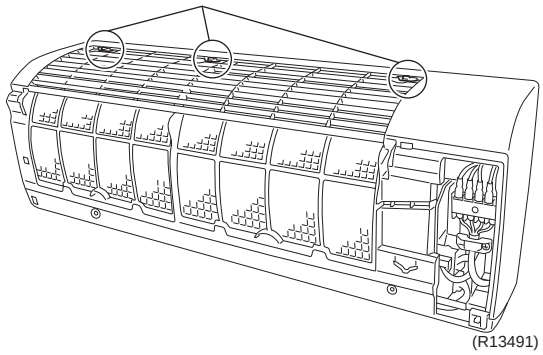
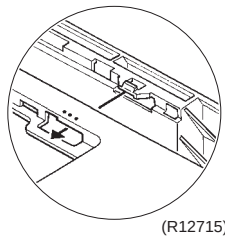
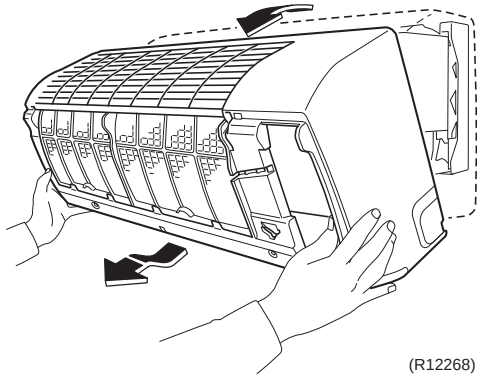
Step	Procedure		Points
1	Open the front panel over the position where it stops.		
2	Slide the left rotary shaft to the right and release it.		■ When reassembling the front panel, fit the right and left rotary shafts one by one into the grooves and fully push them into position.
3	Slide the right rotary shaft to the left and release it.		
4	Remove the front panel.		

1.3 Removal of Front Grille

Procedure

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

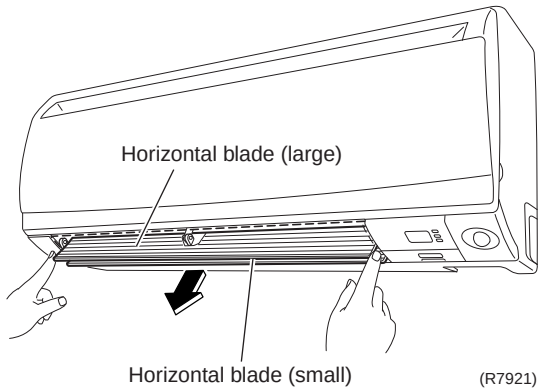
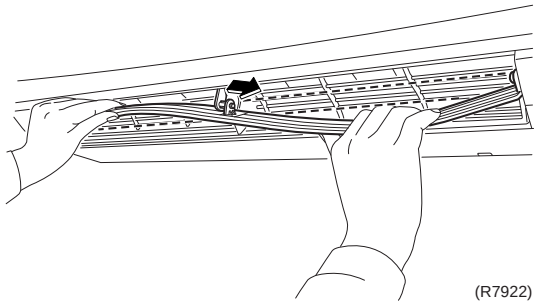
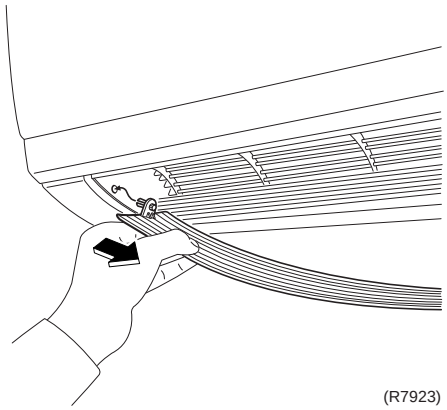
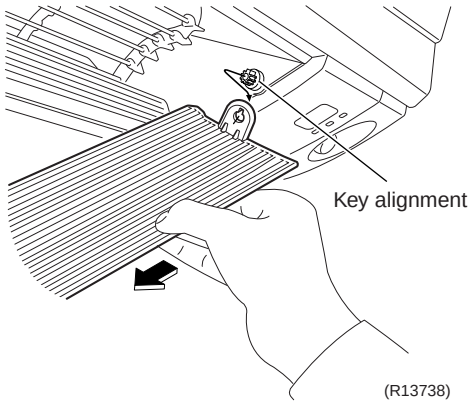
Step	Procedure	Points
1. Remove the service cover.		**Preparation** ■ Remove the front panel according to the “Removal of Front Panel”.
1	Remove the screw of the service cover.	 (R7911)
2	Pull out the service cover diagonally down in the direction of the arrow.	 (R13488)
3	The figure shows the inside.	 (R13489)

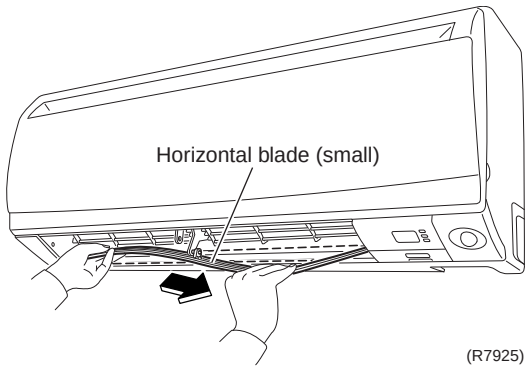
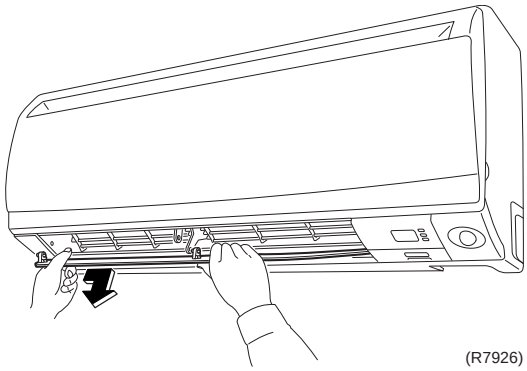
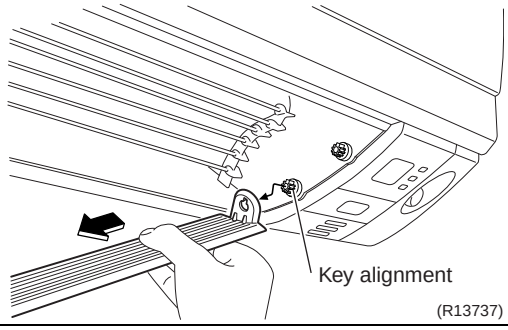
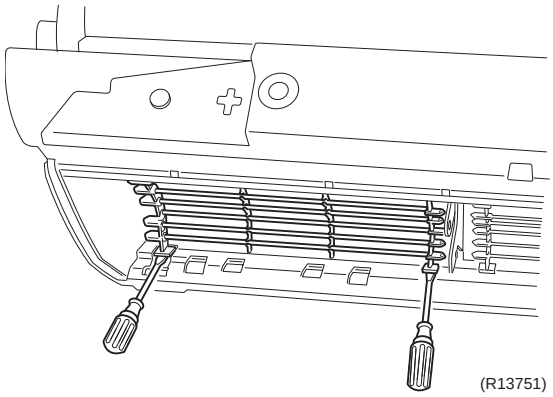
Step	Procedure	Points
2. Remove the front grille.		
1 Remove the 2 screws.	 (R13490)	
2 Unfasten the 3 hooks at the top.	Hook  (R13491)	■ The convex marks (...) on the front panel indicate the position of the hooks.  (R12715)
3 Pull the upper part of the front grille out and lift the lower part up, and then remove the front grille.	 (R12268)	■ When reassembling, make sure that all the 3 hooks are fastened as they were.

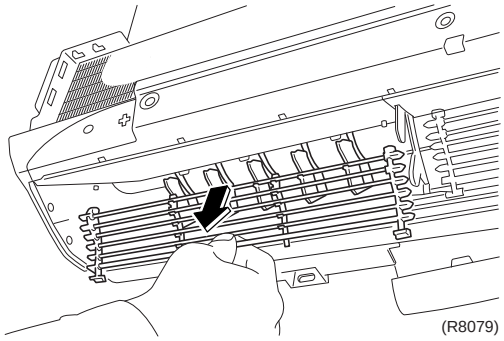
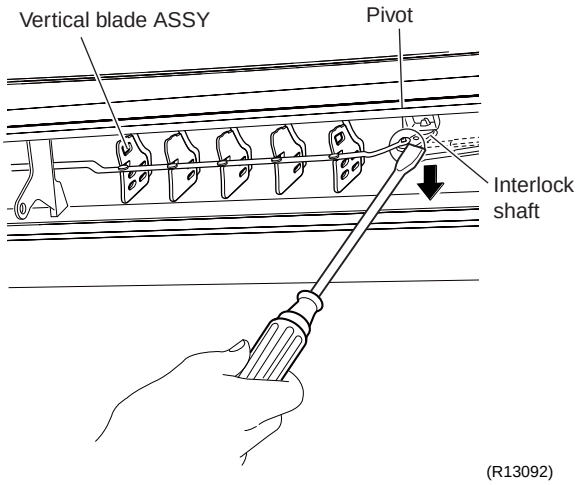
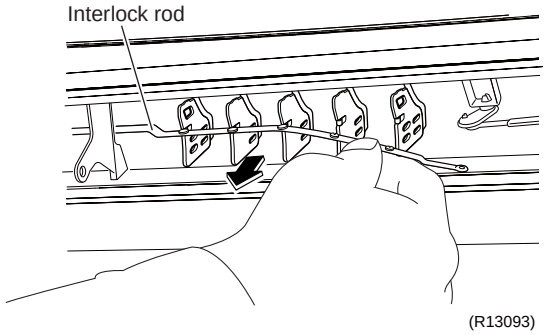
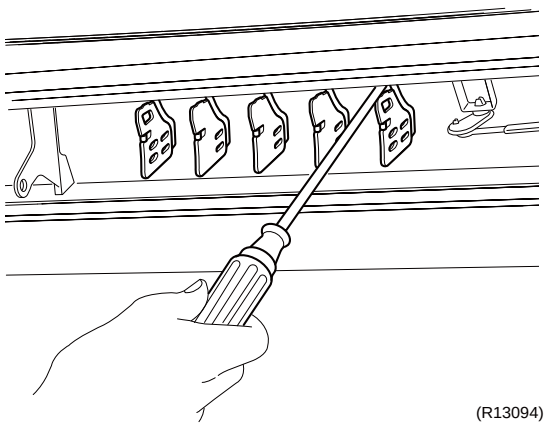
1.4 Removal of Horizontal Blades / Vertical Blades

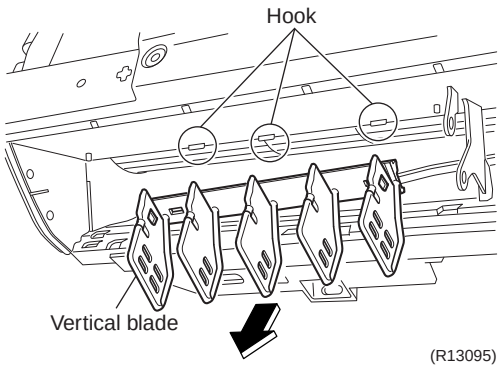
Procedure

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

Step	Procedure	Points
1. Remove the horizontal blade (large).		
1 Open the horizontal blade (large).		■ When reassembling, mount the large horizontal blade to the upper position and the small horizontal blade to the lower position. Do not put them in the wrong place.
2 Unfasten the center shaft while bending the horizontal blade (large) slightly.		
3 Unfasten the left shaft.		
4 Unfasten the right shaft.		■ There is a key alignment at the right shaft. When reassembling, insert the right shaft first while turning. ■ After inserting the right shaft, first mount the horizontal blade to the center shaft and then to the left shaft.

Step	Procedure	Points
2. Remove the horizontal blade (small).		
1 Unfasten the center shaft while bending the horizontal blade (small) slightly.	 (R7925)	
2 Unfasten the left shaft.	 (R7926)	
3 Unfasten the right shaft.	 (R13737)	■ There is a key alignment at the right shaft. When reassembling, insert the right shaft first while turning. ■ After inserting the right shaft, first mount the horizontal blade to the center shaft, and then to the left shaft.
3. Remove the fan guard.		
1 Unfasten the hooks at the lower part of the fan guard with a flat screwdriver.	 (R13751)	

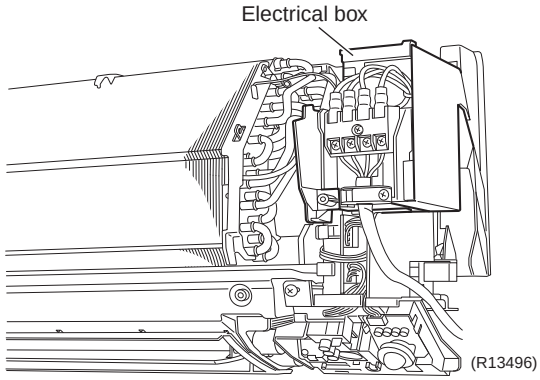
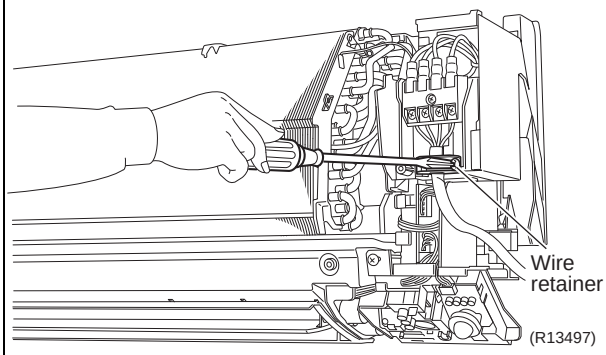
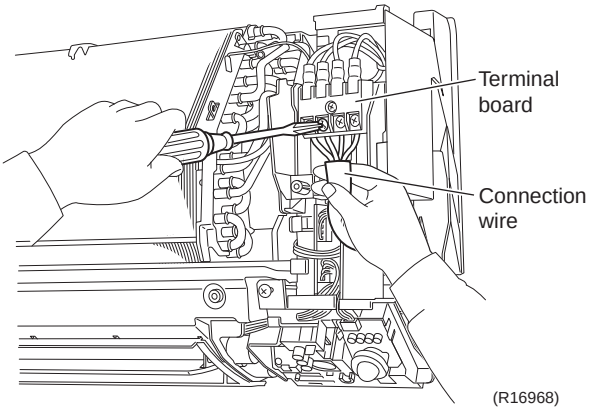
Step	Procedure		Points
2	Remove the fan guard.		
4. Remove the vertical blade ASSYs.			
1	Detach the pivot from the interlock shaft for vertical blades with a flat screwdriver.		
2	Remove the interlock rod.		
3	Unfasten the hooks at the upper 3 positions by pressing them with a flat screwdriver.		

Step	Procedure		Points
4	Remove the vertical blade ASSY.		■ A vertical blade ASSY has 5 fins. It is impossible to replace only one fin. ■ The vertical blade ASSY is not marked for difference between right and left.

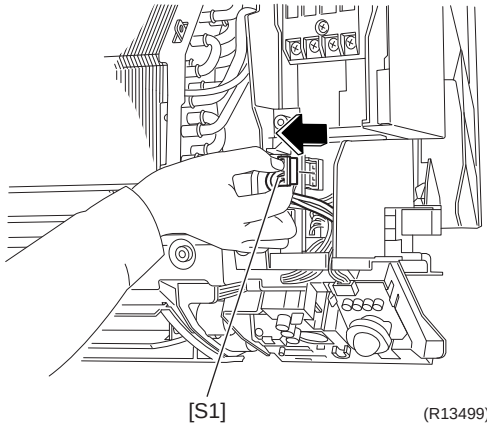
1.5 Removal of Electrical Box

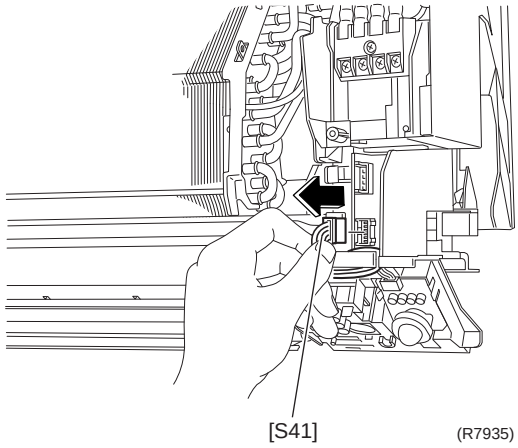
Procedure

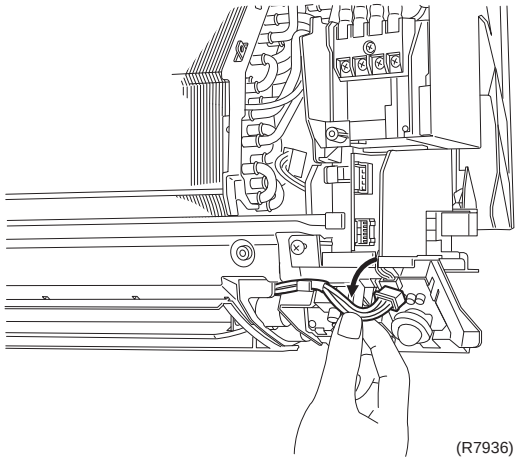
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

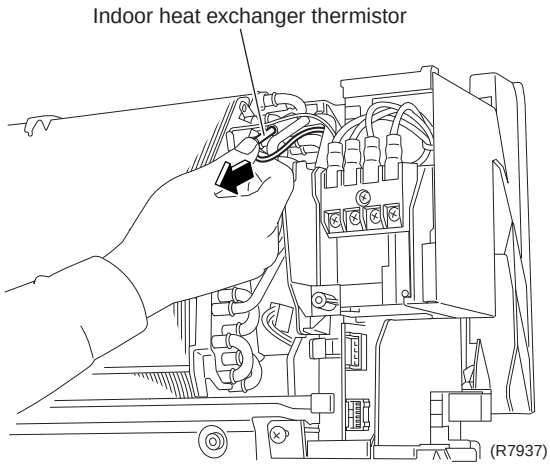
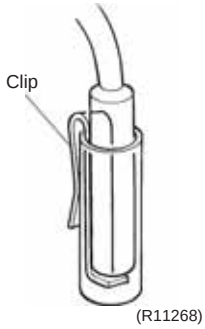
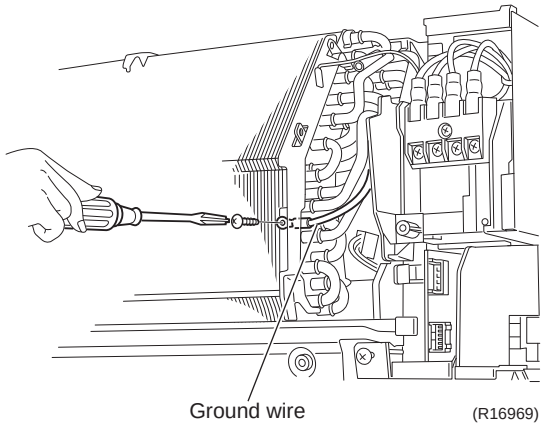
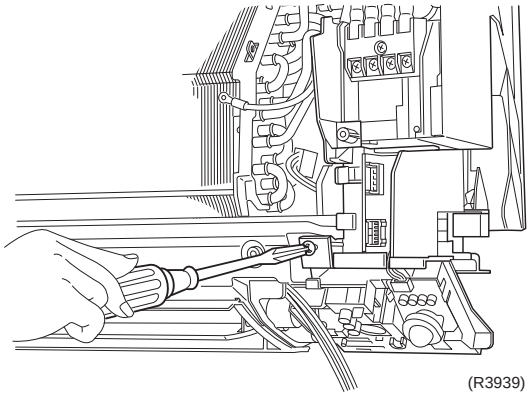
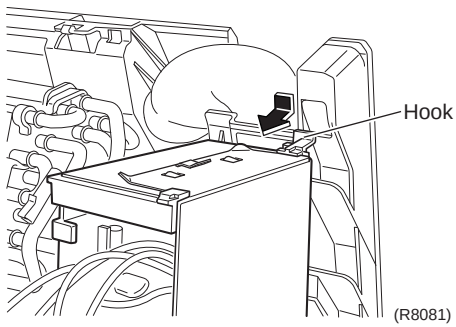
Step	Procedure		Points
1	The figure shows the connections of the wire harnesses.		**Preparation** ■ Remove the front grille according to the “Removal of Front Grille”.
2	Remove the screw of the wire retainer.		
3	Remove the 4 screws of the terminal board and disconnect the connection wires.		

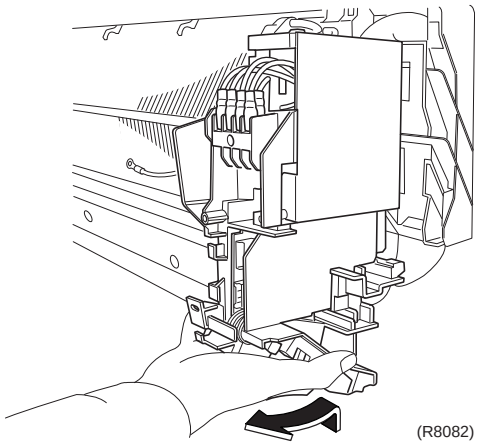
Step	Procedure	Points
4	Disconnect the connector for the fan motor [S1].	
5	Disconnect the connector for the swing motors [S41].	
6	Release the harness for the swing motors from the hook.	







Step	Procedure		Points
7	Pull out the indoor heat exchanger thermistor.		■ The position of the indoor heat exchanger thermistor varies by model. ■ Be careful not to lose the clip of the thermistor. 
8	Remove the screw and detach the ground wire.		
9	Remove the screw of the electrical box.		
10	Unfasten the hook at the upper far side by pressing it from above and pulling the electrical box.		

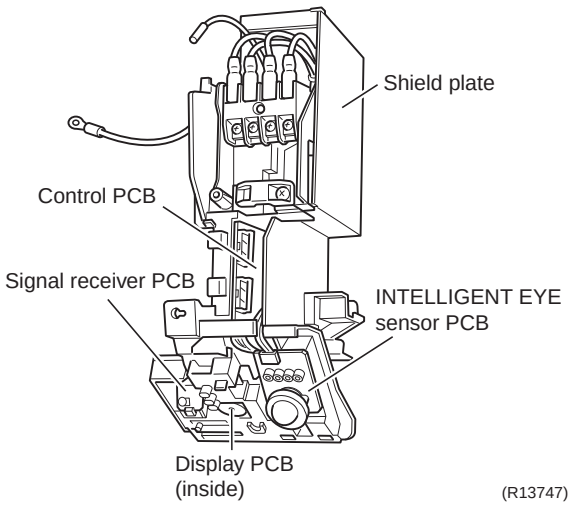
Step	Procedure		Points
11	Lift up the electrical box and pull it out.	 (R8082)	■ There is a hook also at the lower part of the back. When reassembling the electrical box, make sure that it is securely fastened.

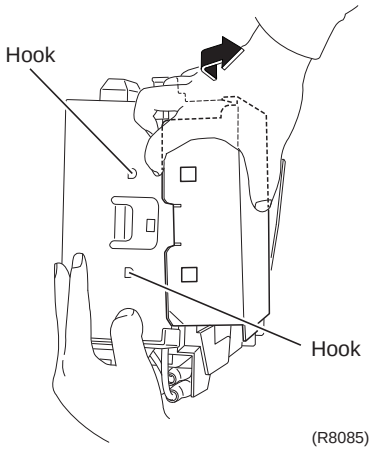
1.6 Removal of PCBs

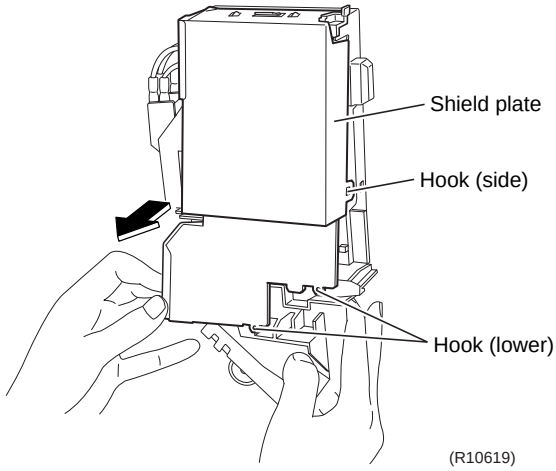
Procedure

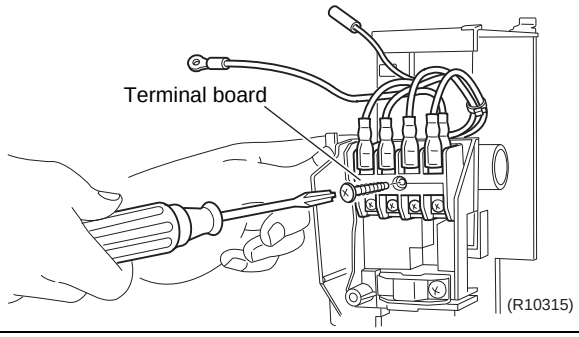
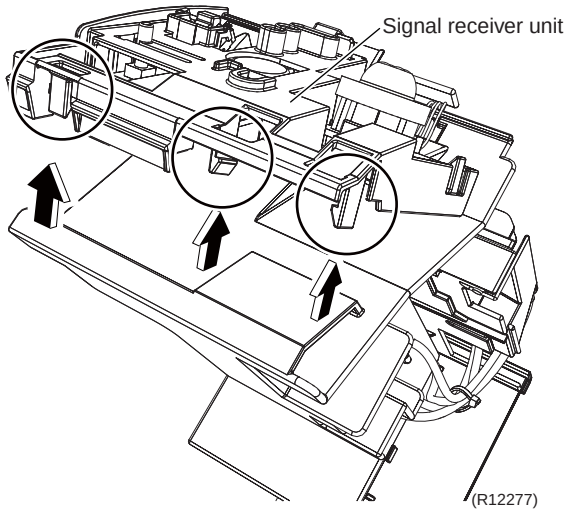
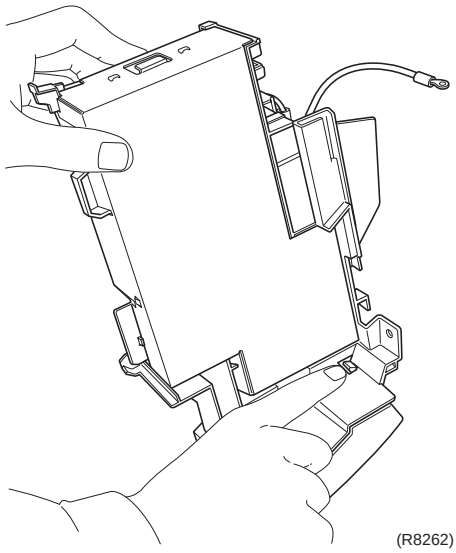
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

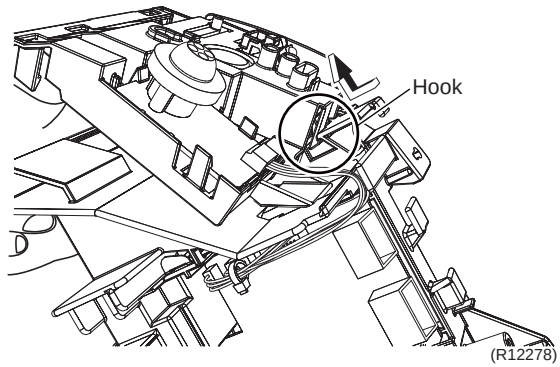
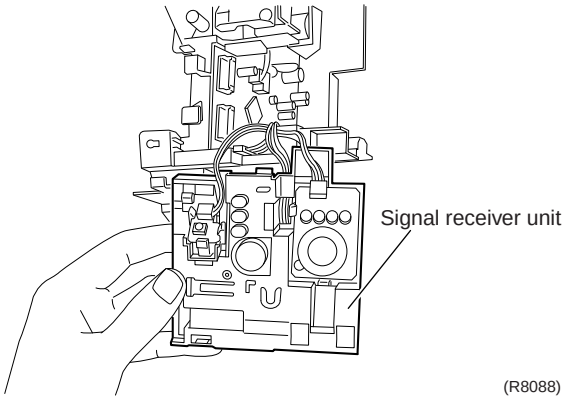
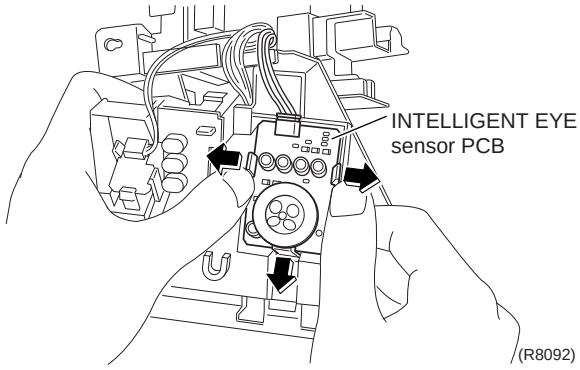
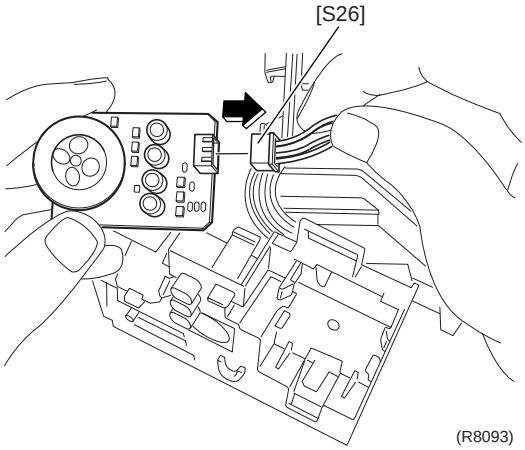
Step	Procedure	Points
1. Remove the shield plate.		
1	The figure shows the appearance of the electrical box.	**Preparation** ■ Remove the electrical box according to the “Removal of Electrical Box”.
2	Unfasten the hooks at the upper 2 positions of the shield plate.	
3	Unfasten the hook at the side of the shield plate.	
4	Lift up the shield plate to unfasten the lower hooks and remove it.	

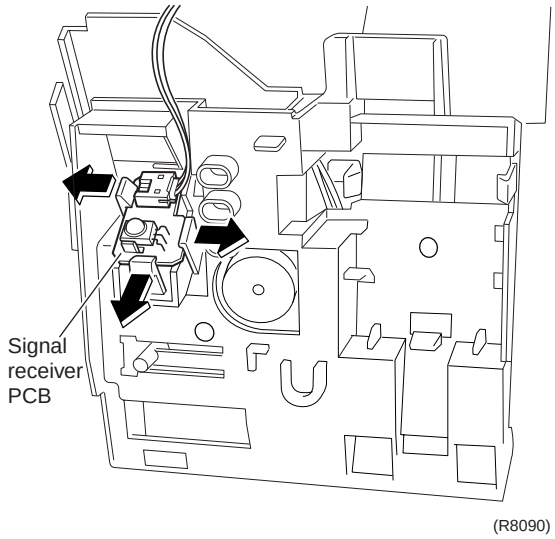
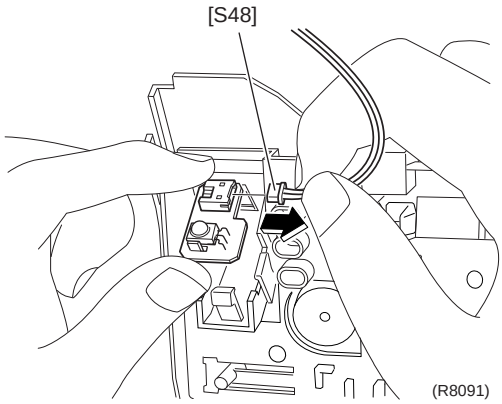
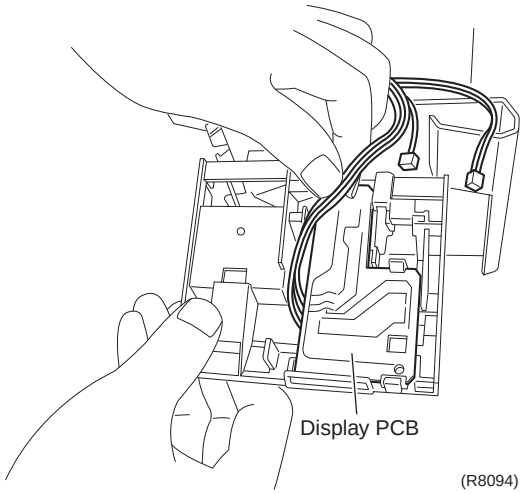


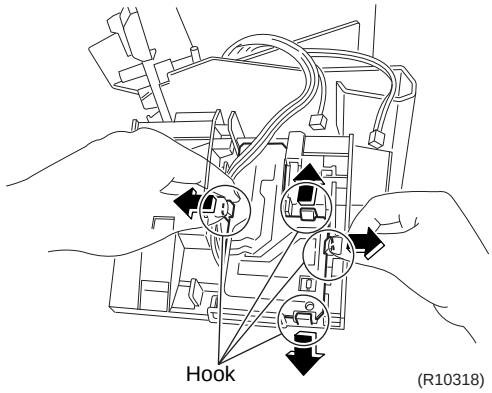
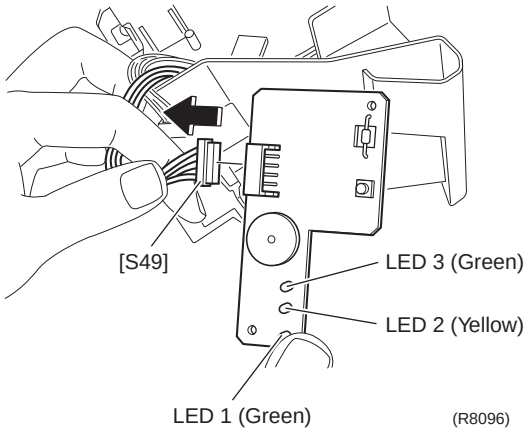
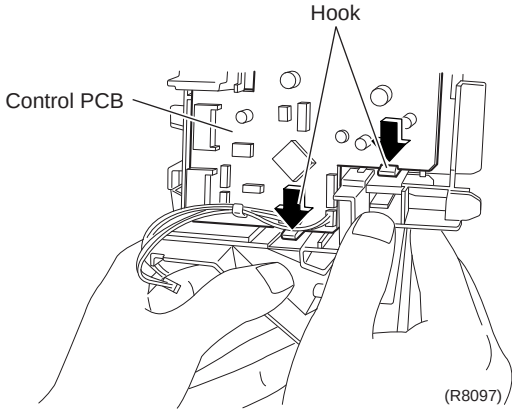
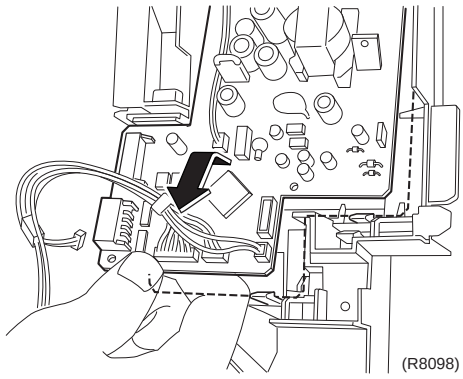


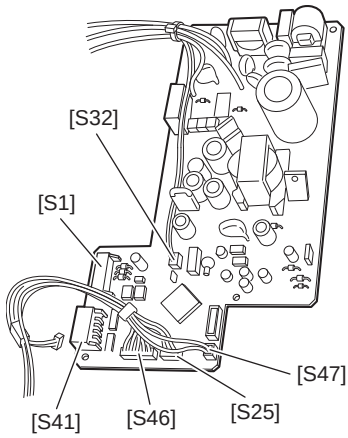
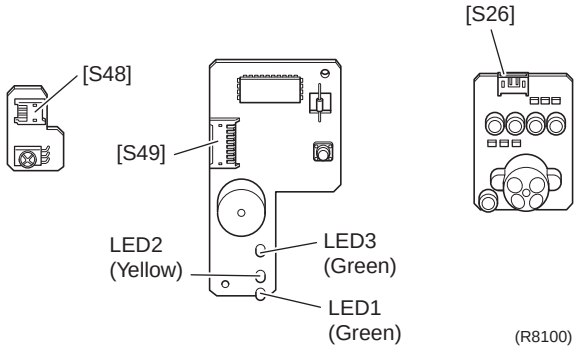


Step	Procedure	Points
2. Remove the terminal board.		
1 Remove the screw and remove the terminal board.		
3. Remove the signal receiver unit.		
1 Unfasten the 3 hooks.		
2 Unfasten the hook on the opposite side, and lift up the signal receiver unit.		

Step	Procedure		Points
3	Remove the signal receiver unit.	 	
4. Remove the INTELLIGENT EYE sensor PCB.			
1	Unfasten the 3 hooks and remove the INTELLIGENT EYE sensor PCB.		
2	Disconnect the connector [S26] from the INTELLIGENT EYE sensor PCB.		

Step	Procedure	Points
5. Remove the signal receiver PCB.		
1 Unfasten the 3 hooks and remove the signal receiver PCB.	 (R8090)	
2 Disconnect the connector [S48] from the signal receiver PCB.	 (R8091)	
6. Remove the display PCB.		■ The display PCB is positioned on the rear side of the signal receiver unit.
1 The figure shows the connection of the wire harness for the display PCB.	 (R8094)	

Step	Procedure		Points
2	Unfasten the 4 hooks and remove the display PCB.		
3	Disconnect the connector [S49] from the display PCB.		
7. Remove the control PCB.			
1	Unfasten the lower 2 hooks of the control PCB.		
2	Lift up the bottom of the control PCB and pull it out.		■ The control PCB is also fixed by 2 upper hooks. When reassembling, be sure to fit all the 4 hooks.

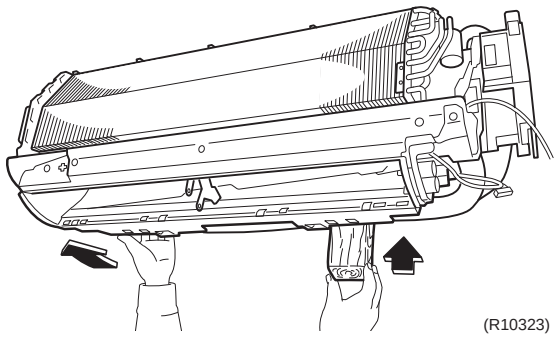
Step	Procedure		Points
3	The figures show the names of the PCB component parts.	 	[S1]: DC fan motor [S25]: INTELLIGENT EYE sensor PCB [S26]: control PCB [S32]: indoor heat exchanger thermistor [S41]: swing motors [S46]: display PCB [S47]: signal receiver PCB [S48] [S49]: control PCB ■ Refer to page 14, 15 for detail.

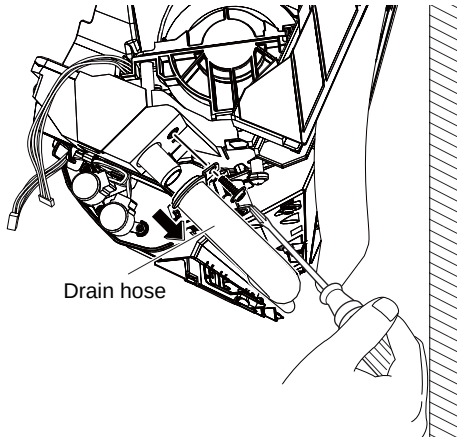
1.7 Removal of Swing Motors

Procedure

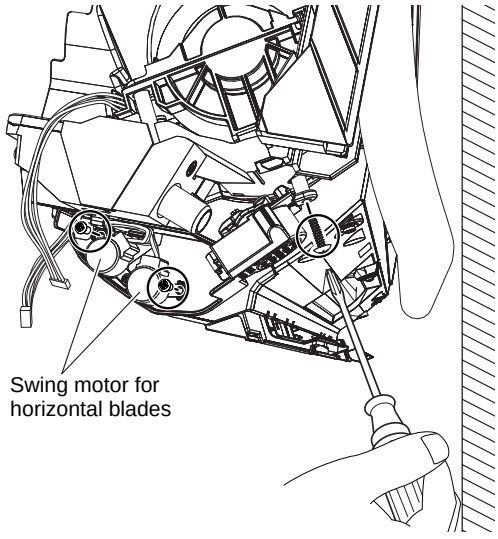
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the swing motor for vertical blades.		
1	Lift the indoor unit with a wooden base.	
2	Remove the screw behind the drain hose, and disconnect the drain hose.	
3	Remove the screw at the rear, and remove the screws on the right and the left side of the swing motors for horizontal blades.	


(R10323)

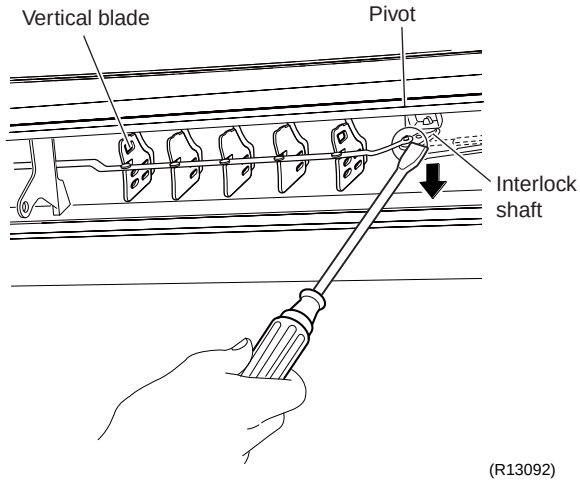


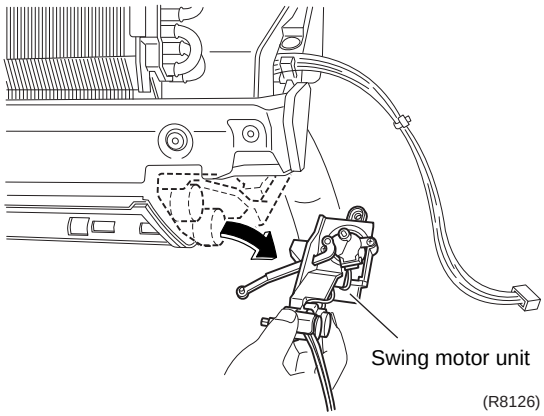
(R10329)

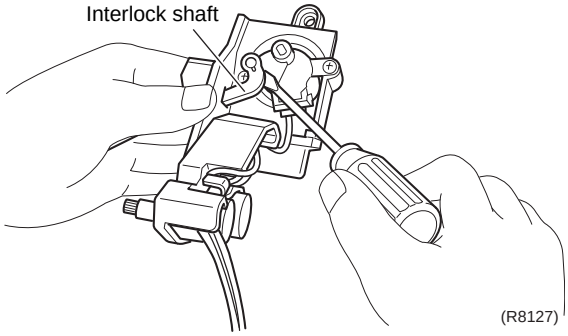


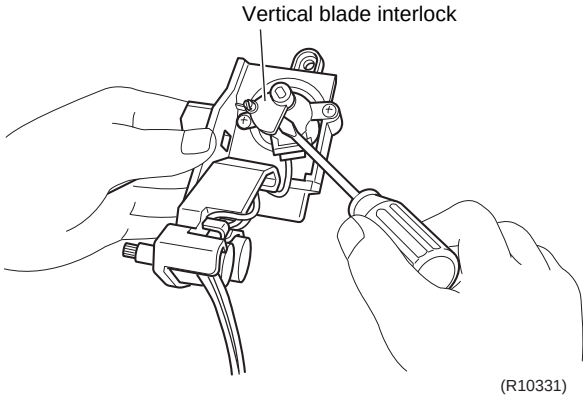
(R13748)

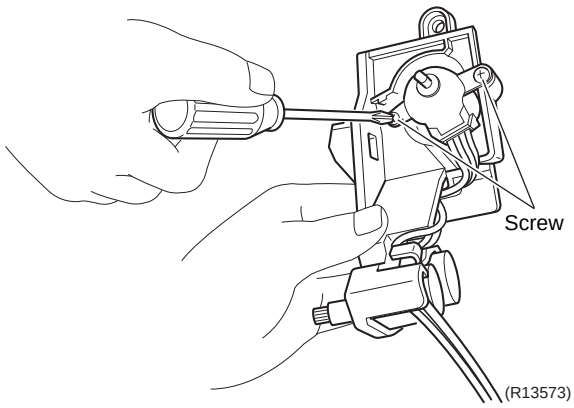
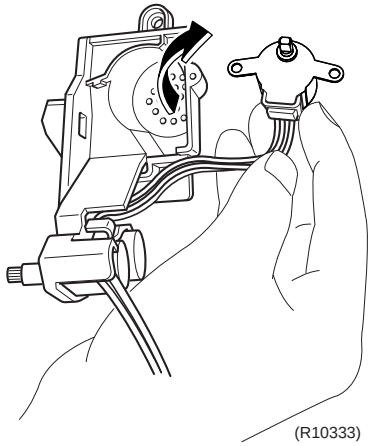
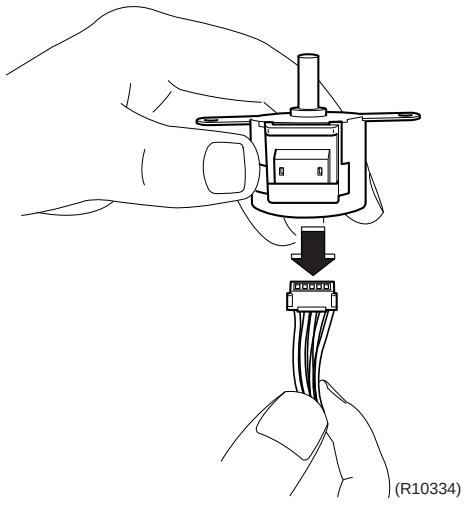
Step	Procedure	Points
4	Detach the pivot from the interlock shaft for vertical blades with a flat screwdriver.	
5	Remove the swing motor unit.	
6	Detach the interlock shaft from the swing motor with a flat screwdriver.	
7	Remove the vertical blade interlock with a flat screwdriver.	



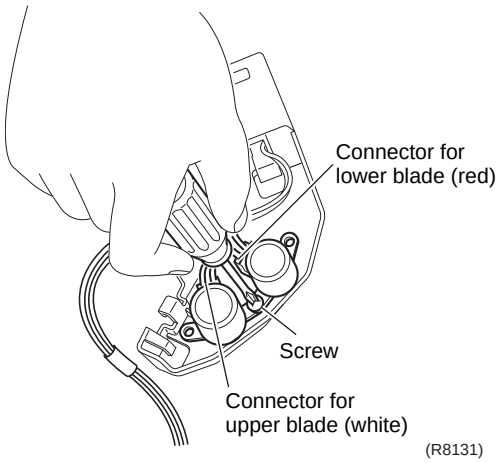




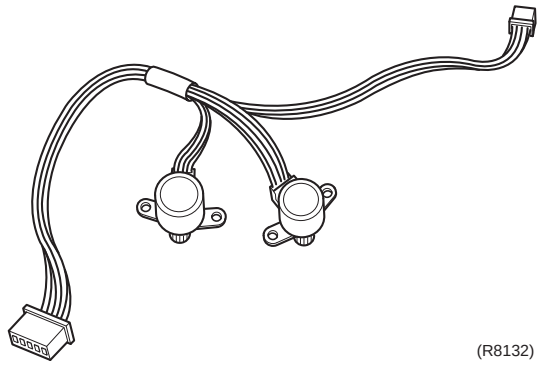


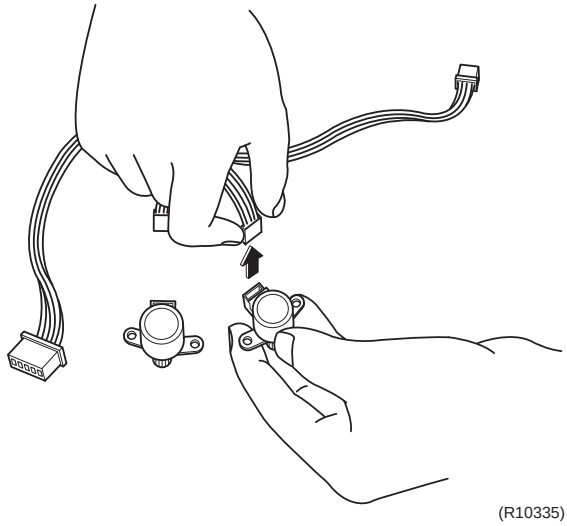
Step	Procedure		Points
8	Remove the 2 screws.		
9	Remove the swing motor for vertical blades.		
10	Disconnect the connector.		■ Connector: green

Step	Procedure	Points
2. Remove the swing motors for horizontal blades.		
1	Remove the screw and remove the swing motors for horizontal blades.	
2	Disconnect the harnesses from the motors.	



(R8131)


(R8132)


(R10335)

Caution

When reassembling, do not confuse the installing order of the 2 motors and the colors of the connectors.

If you set the connectors or motors opposite, the horizontal blades do not move smoothly or noise may be heard.

(1) Set the swing motor for the upper blade first.
(connector: white)

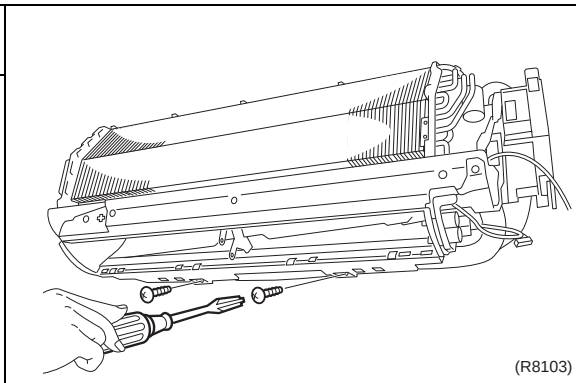
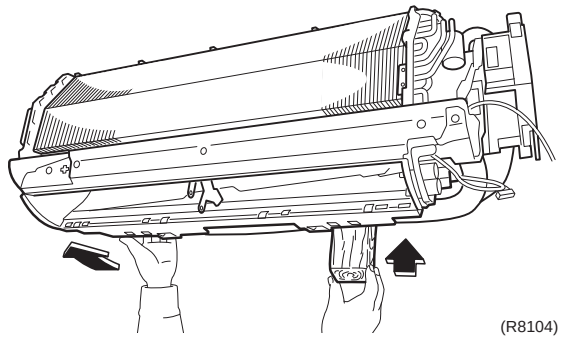
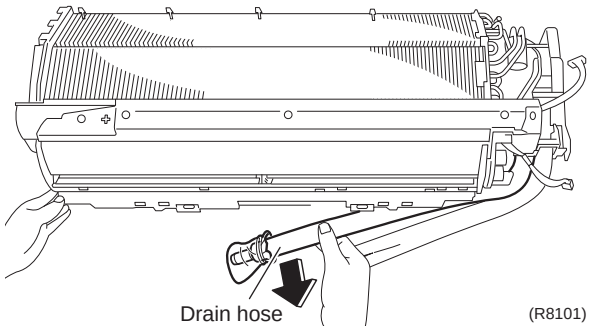
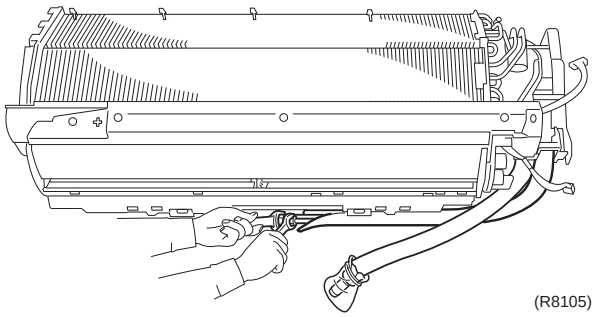
(2) Then, set the swing motor for the lower blade.
(connector: red)

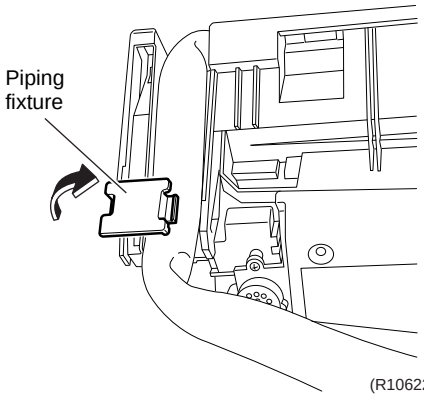
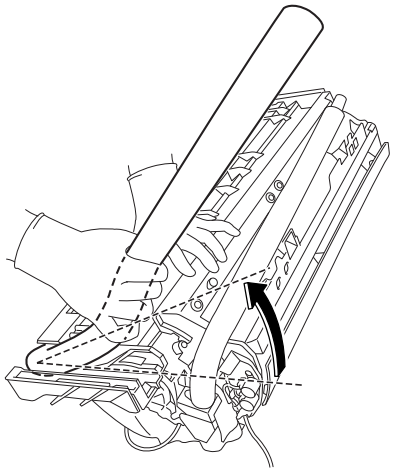
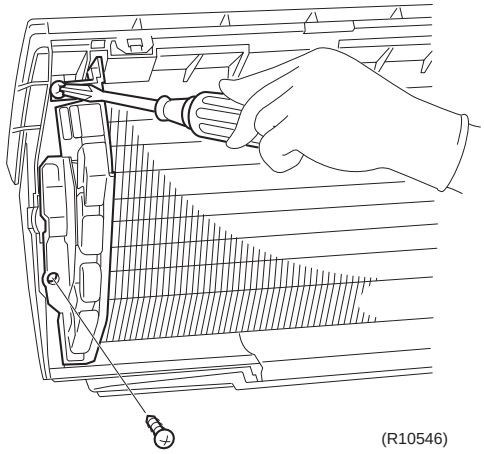
(3) Fix both swing motors with a screw.

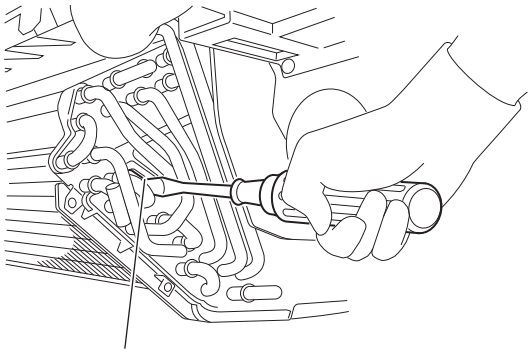
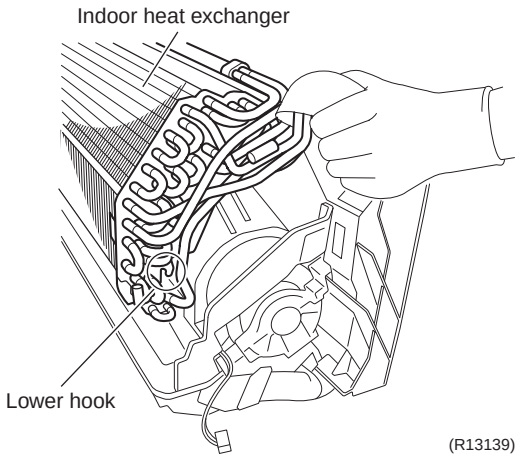
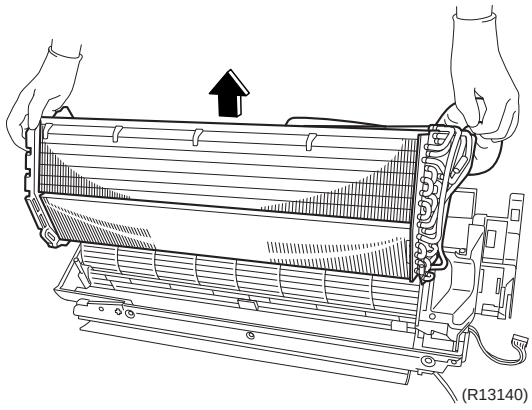
1.8 Removal of Indoor Heat Exchanger

Procedure

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

Step	Procedure		Points
1. Disconnect the refrigerant piping.		 (R8103)	**Preparation** ■ Remove the electrical box according to the “Removal of Electrical Box”. **Caution** **If the refrigerant leaks, repair the leakage, then collect all refrigerant from the unit. After conducting vacuum drying, recharge the proper amount of refrigerant.**
1	Remove the screws which fix the indoor heat exchanger to the installation plate.		
2	Lift the indoor unit with a wooden base.	 (R8104)	**Caution** **From the viewpoint of global environment protection, be sure to use a vacuum pump for air purging.** **Caution** **In pump-down work, be sure to stop the compressor before disconnecting the refrigerant piping. If the refrigerant piping is disconnected with the compressor operating and the stop valve open, air may be sucked in to generate an over-pressure in refrigeration cycle, thus resulting in pipe rupture or accidental injury.**
3	Lift up the indoor unit slightly and pull out the drain hose. (The illustration is for the case of left piping.)	 (R8101)	■ Place a plastic sheet under the drain pan to prevent from wetting the floor with remaining drain. ■ If the drain hose is embedded in the wall, disconnect the drain hose beforehand.
4	Disconnect the gas piping and the liquid piping.	 (R8105)	■ Carry out the removal work with 2 wrenches. ■ When the pipings are disconnected, protect both the openings of pipe and unit from entering moisture.

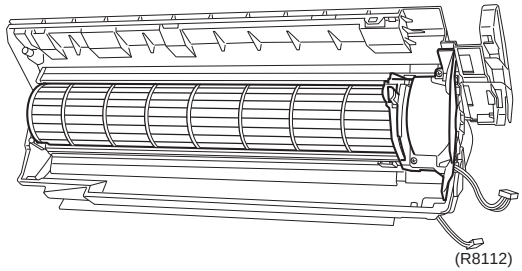
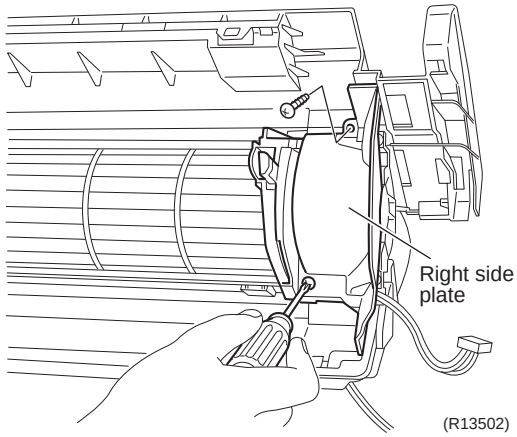
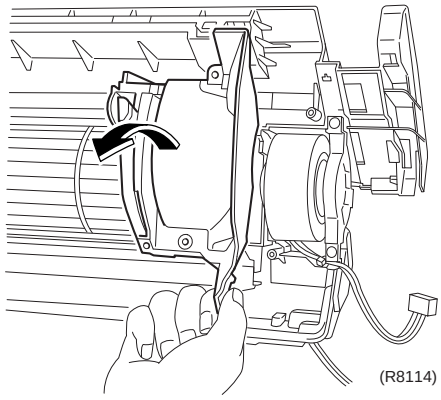
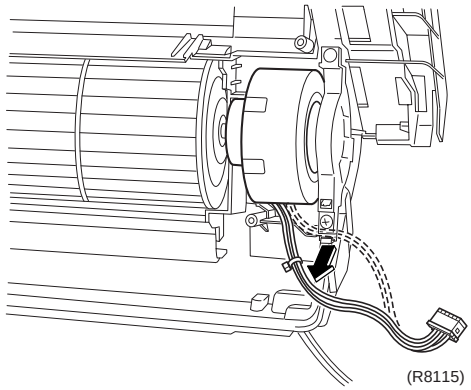
Step	Procedure	Points
2. Remove the indoor heat exchanger.		
1 Detach the indoor unit from the installation plate.	 (R10622)	
2 Unfasten the hook of the piping fixture at the back of the indoor unit. Remove the piping fixture.		
3 Widen the auxiliary piping.	 (R17120)	
4 Remove the 2 screws on the left side.	 (R10546)	**Caution** **When removing or reassembling the indoor heat exchanger, be sure to wear gloves or wrap the indoor heat exchanger with cloth. (You may be injured by the fins.)**

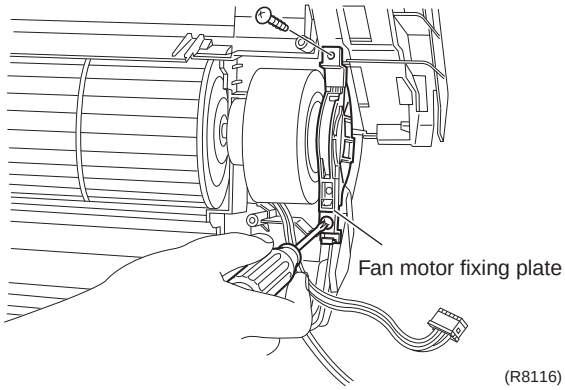
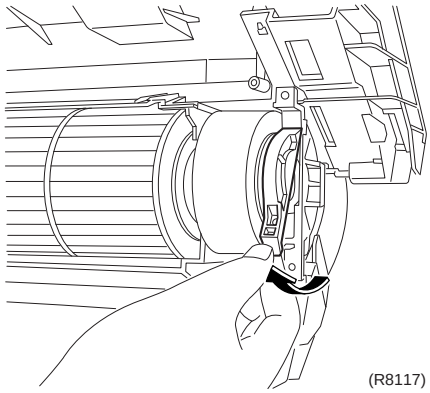
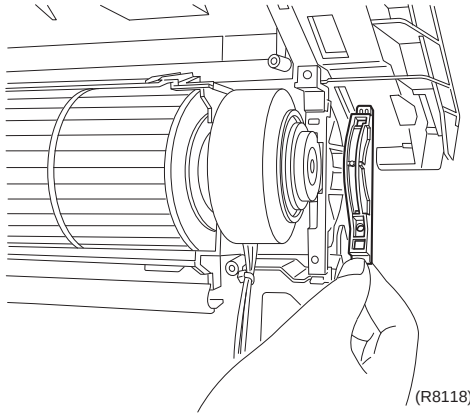
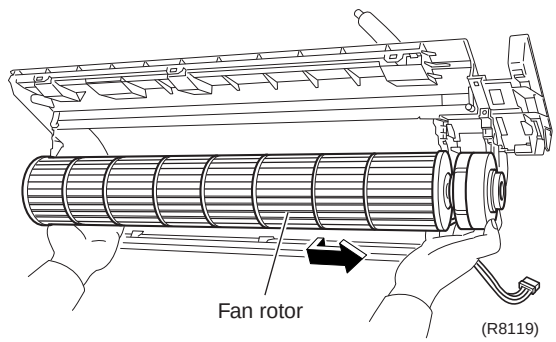
Step	Procedure		Points
5	Unfasten the upper hook on the right side with a flat screwdriver.	 (R13138)	
6	After unfastening the lower hooks, lift up the indoor heat exchanger by its right side.	 (R13139)	■ When reassembling the indoor heat exchanger, make sure that the right hooks (upper and lower) are fastened.
7	Remove the indoor heat exchanger.	 (R13140)	

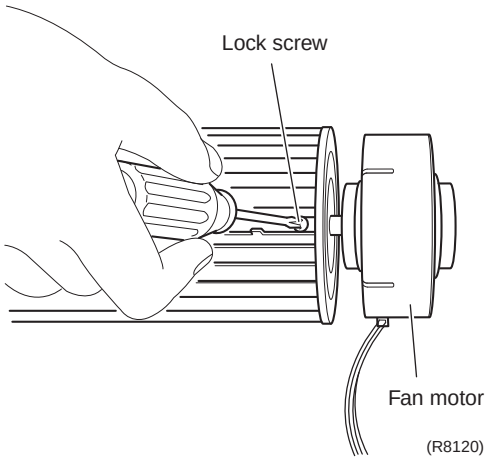
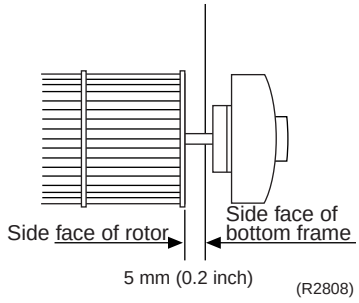
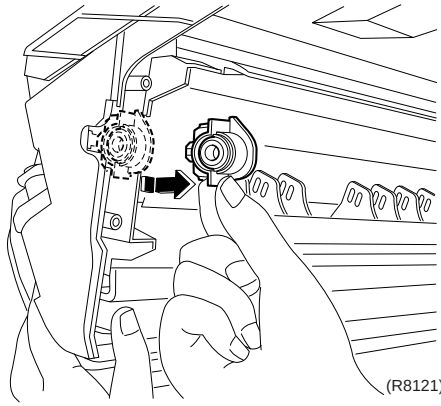
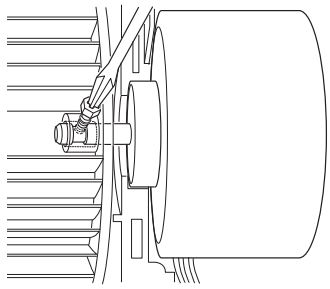
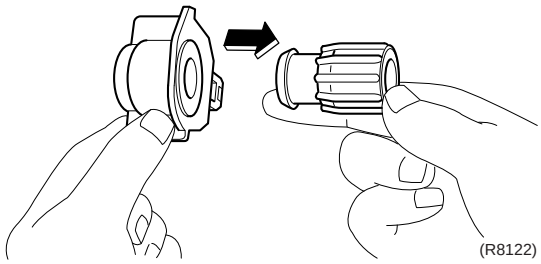
1.9 Removal of Fan Motor

Procedure

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

Step	Procedure	Points
1. Remove the right side plate.	 (R8112)	**Preparation** ■ Remove the indoor heat exchanger according to the “Removal of Indoor Heat Exchanger”.
1 Remove the 2 screws and remove the right side plate.	 (R13502)	
2 Release the fan motor wire harness from the hook.	 (R8114)  (R8115)	

Step	Procedure		Points
3	Remove the 2 screws of the fan motor fixing plate.	 (R8116)	
4	Unfasten the hook of the fan motor fixing plate and remove the plate.	 (R8117)  (R8118)	
2. Remove the fan motor.			
1	Dislocate the fan rotor by sliding it to the right.	 (R8119)	

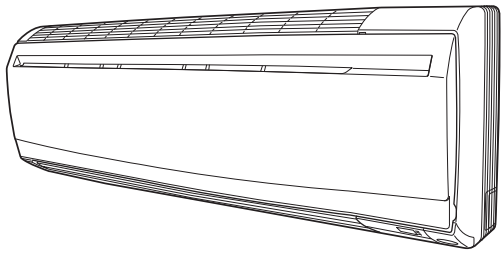
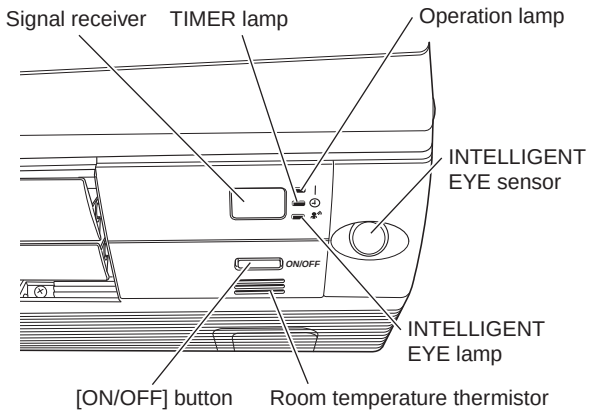
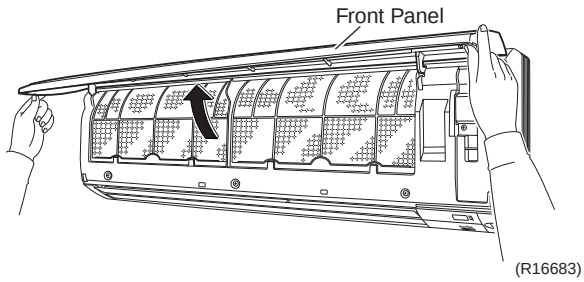
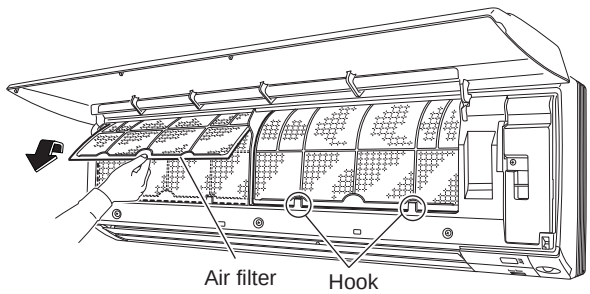
Step	Procedure		Points
2	Loosen the lock screw and remove the fan motor.		■ When reassembling the fan motor and the fan rotor, provide as much as 5 mm (0.2 inch) of play between the side face of the rotor and the bottom frame. 
3	Press the bearing ASSY from outside.		 (1) Insert the fan motor with approx. 5 mm (0.2 inch) left. (2) Tighten the screw until it stops. Then give the screw one more turn. (3) Rotate the fan rotor and confirm the fan motor and the fan rotor are installed appropriately. (4) Tighten the screw completely if appropriate. (5) If not appropriate, go back to (1).
4	Remove the bearing.		

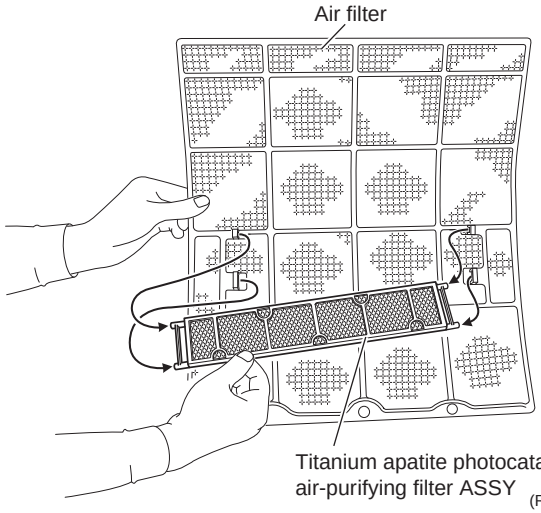
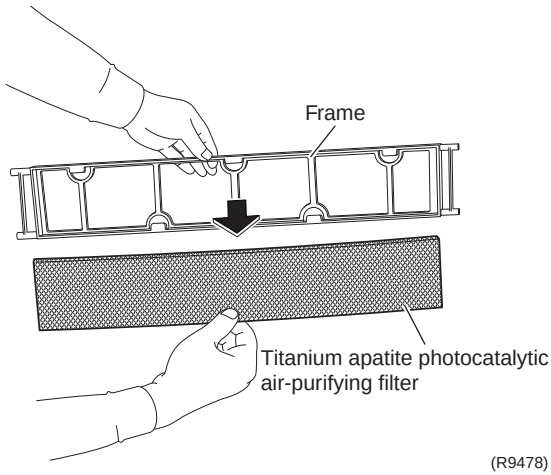
2. Indoor Unit: FTXS15/18/24LVJU

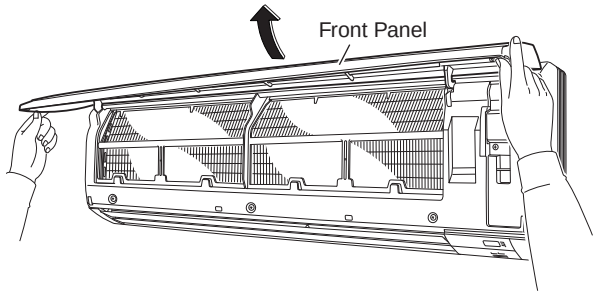
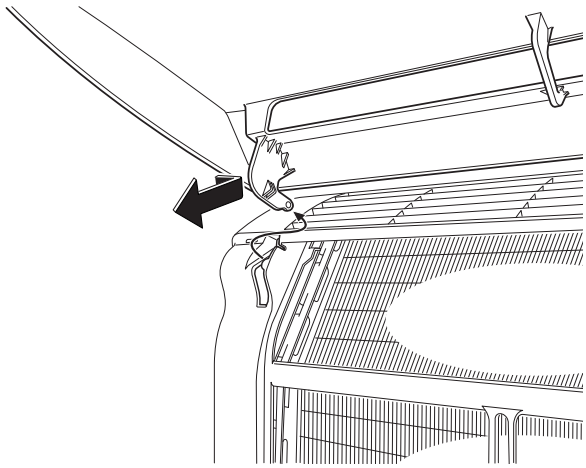
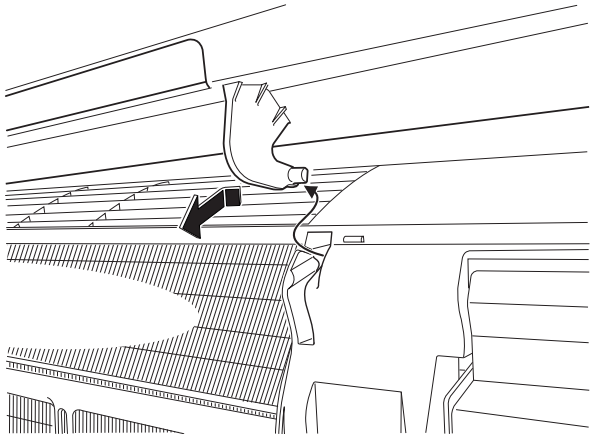
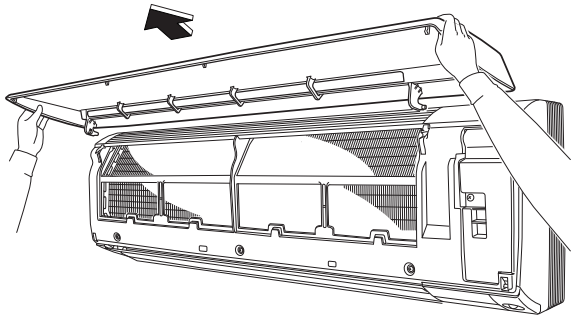
2.1 Removal of Air Filters / Front Panel

Procedure

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

Step	Procedure	Points
1. Appearance features	 (R16259)  (R16682)	**Warning** **Dangerous: High voltage** **A high voltage is applied to all the electric circuits of this product including thermistors.** ■ When the signal receiver catches a signal from the remote controller, the receiving tone sounds and the operation lamp blinks immediately to confirm the signal reception. ■ When the [ON/OFF] button is kept pressed for 5 seconds, the forced cooling operation is performed for about 15 minutes.
2. Remove the air filters. 1 Open the front panel to the position where it stops. 2 Slightly push up the center knob of the air filter and unfasten the hooks. 3 Pull out the air filter downward and remove it.	 (R16683)  (R16975)	■ The 2 filters are interchangeable. ■ The air filter can be set easily by inserting it along the guides. ■ Insert the air filter with the "FRONT" mark faced up. ■ Be sure to insert the hooks (at 2 lower positions) when reassembling the air filter.

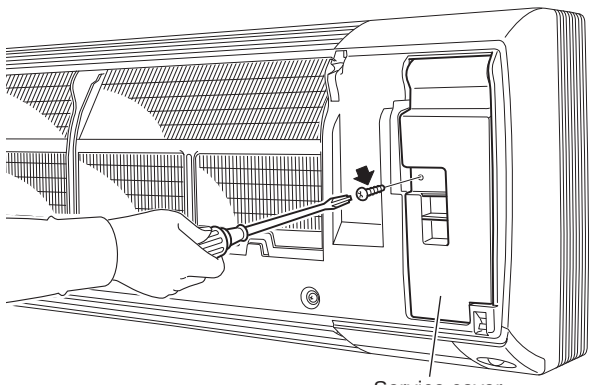
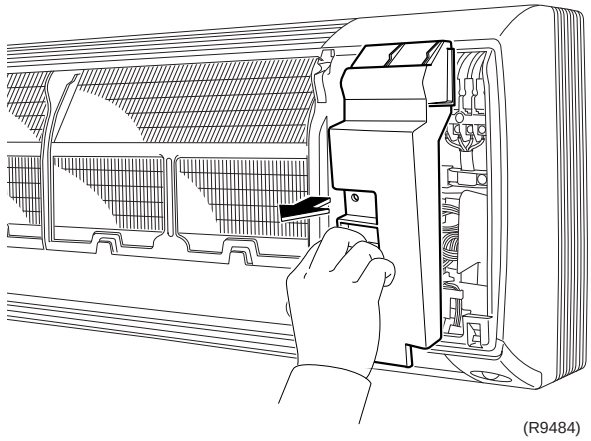
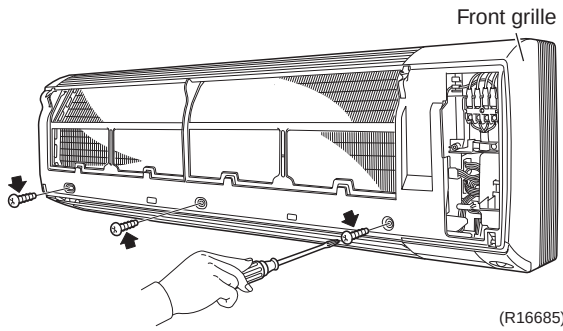
Step	Procedure	Points
3. Remove the Titanium apatite photocatalytic air-purifying filters.		
1 Remove the Titanium apatite photocatalytic air-purifying filter ASSY by unfastening the projections from the back of the air filter frame.		■ The right and left filters are interchangeable.
2 Remove the Titanium apatite photocatalytic air-purifying filter from its frame.		

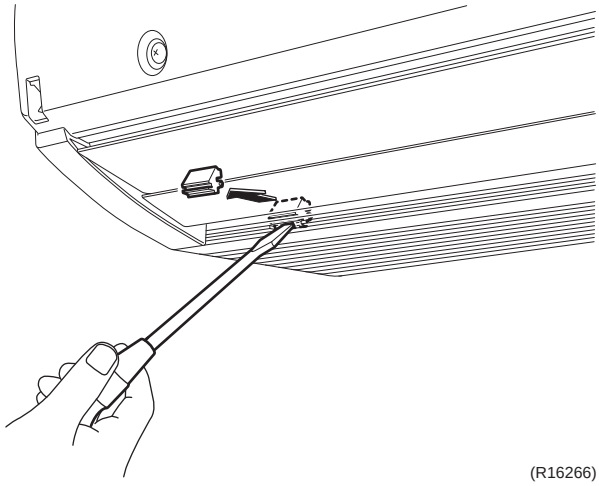
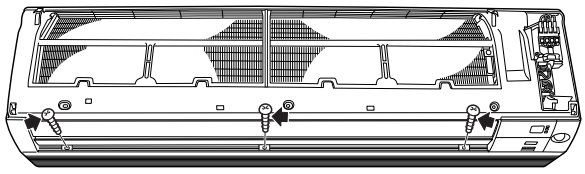
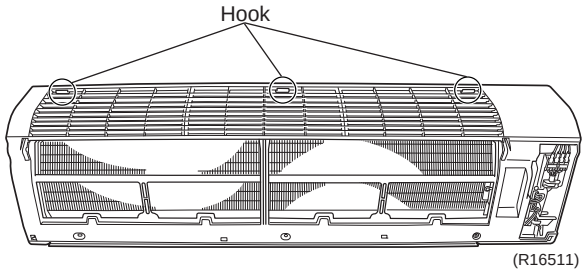
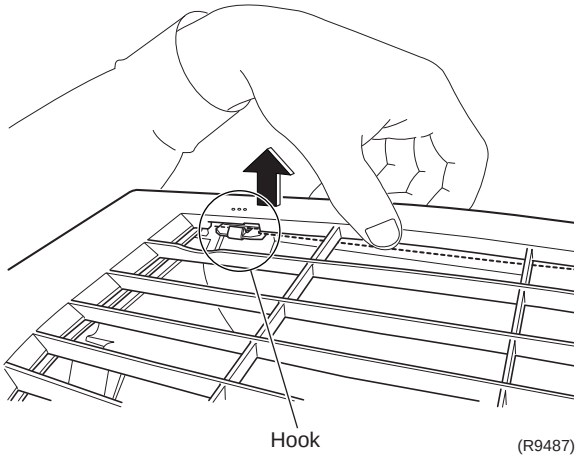
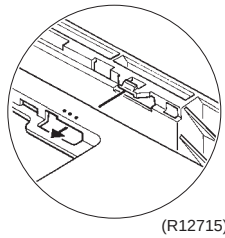
Step	Procedure	Points
4. Remove the front panel.		
1 While opening the front panel further than it stops, release both the shafts.	 (R16456)	■ Slide the front panel from side to side to release each shaft. ■ Align the right and left shafts with grooves in turn and insert them to the end when reassembling.
	 (R9480)	
	 (R9481)	
2 Remove the front panel.	 (R16684)	

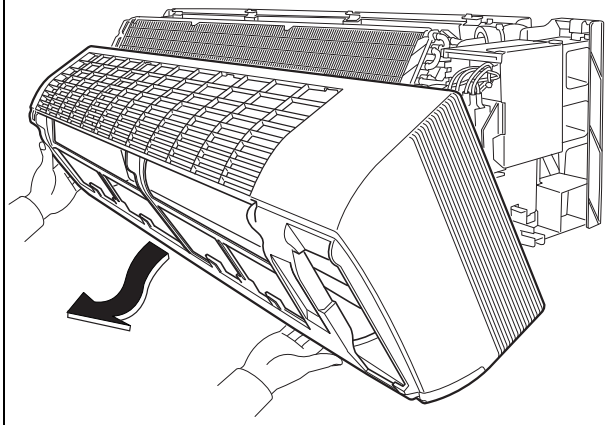
2.2 Removal of Front Grille

Procedure

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

Step	Procedure	Points
1. Remove the service cover.	 (R9483)	■ You can remove the front grille without detaching the service cover.
1 Remove the screw and remove the service cover.	 (R9484)	
2. Remove the front grille.	 (R16685)	■ Refer to the removal procedure in a reverse way when reassembling.
1 Remove the 3 screws of the front grille.		

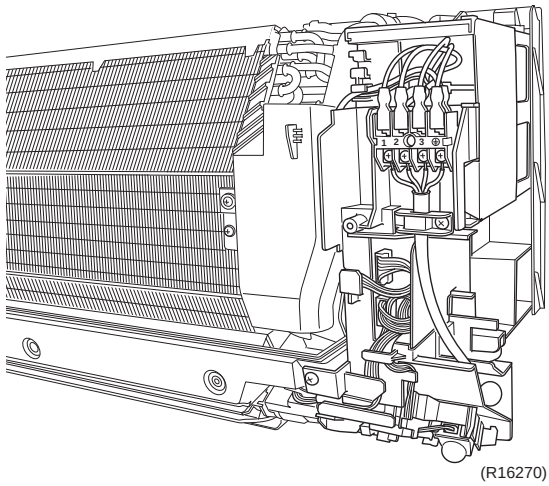
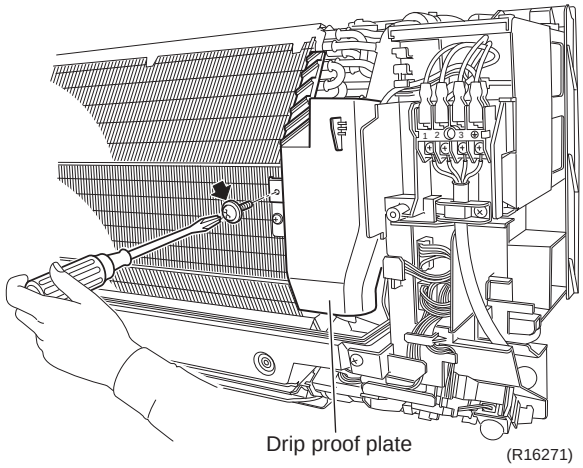
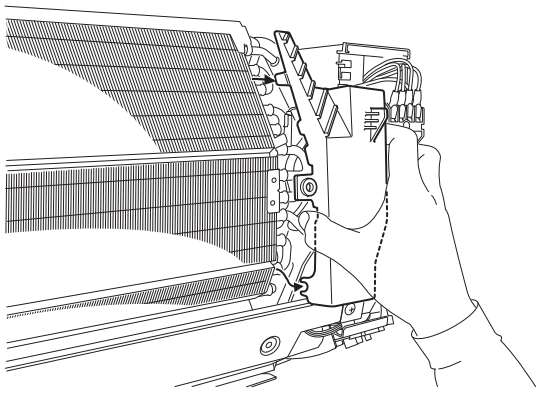
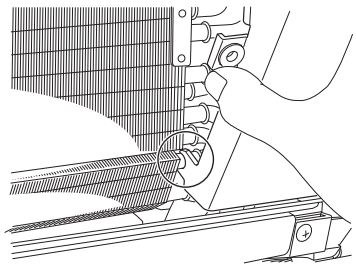
Step	Procedure		Points
2	Remove the screw caps with a flat screwdriver.	 (R16266)	
3	Remove the lower 3 screws.	 (R16686)	
4	Unfasten the 3 hooks on the top of the front grille.	 (R16511)  (R9487)	■ The convex marks (...) on the front panel indicate the position of the hooks.  (R12715)

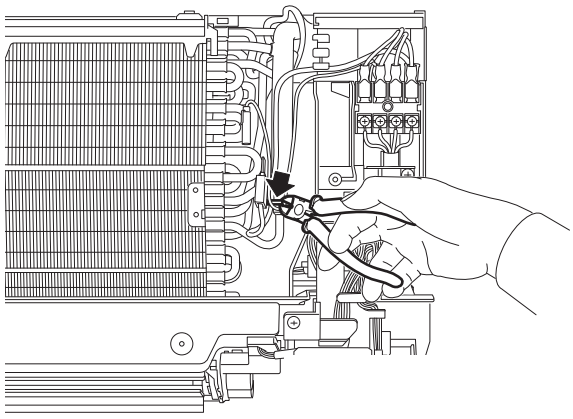
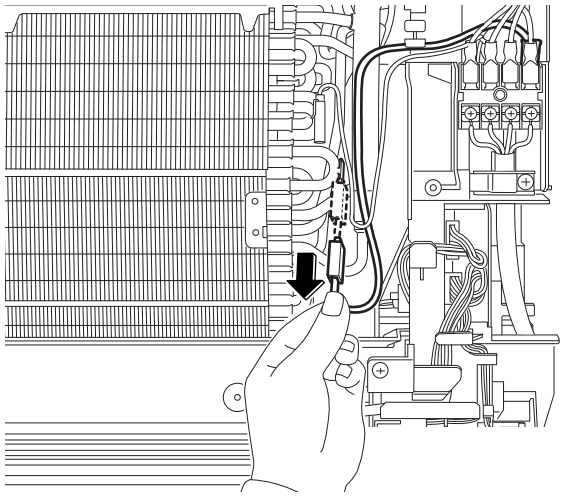
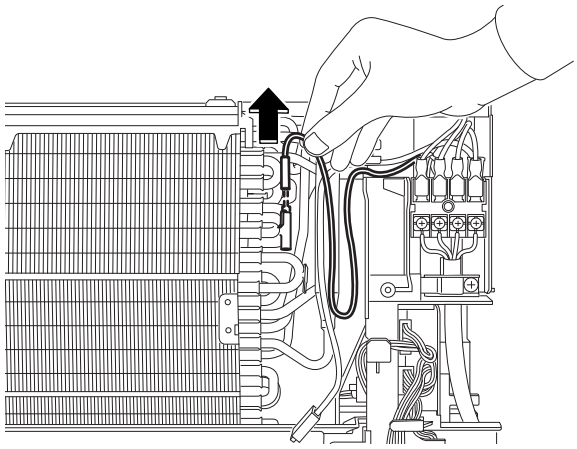
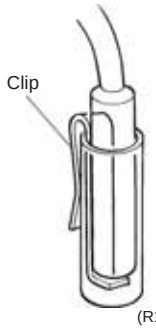
Step	Procedure		Points
5	Pull the upper part of the front grille out and lift the lower part up, and then remove the front grille.	 (R16269)	■ When reassembling, make sure that all the 3 hooks are fastened as they were.

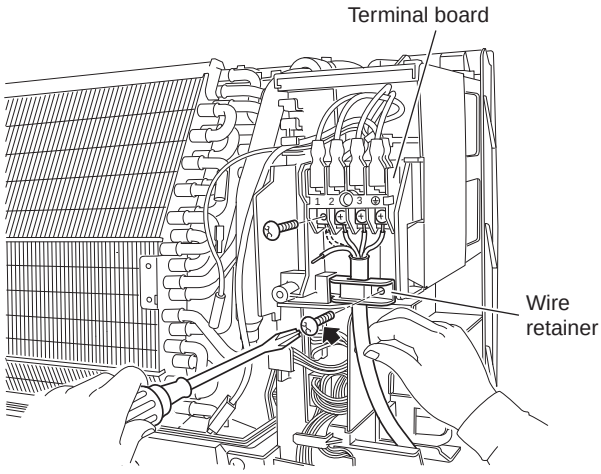
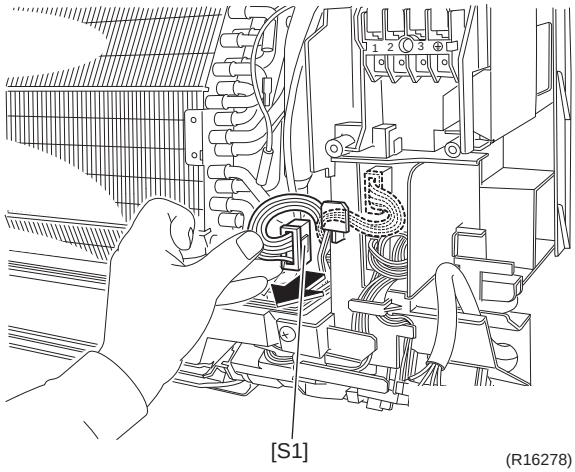
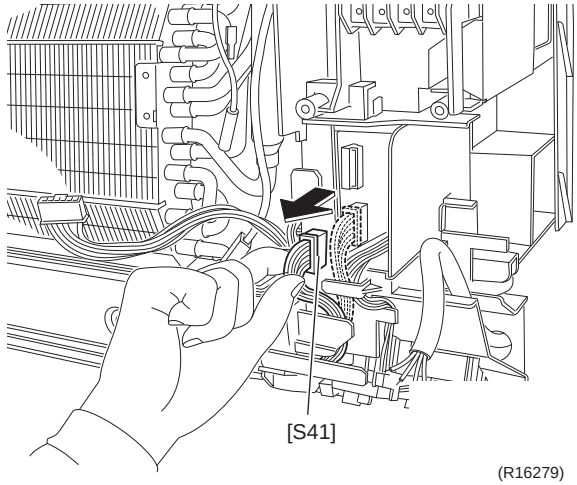
2.3 Removal of Electrical Box

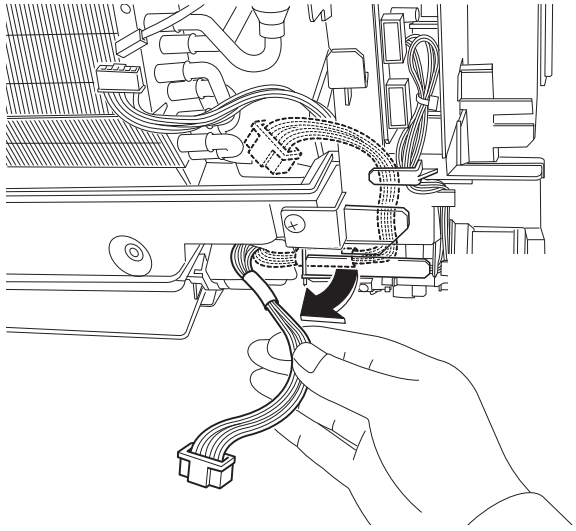
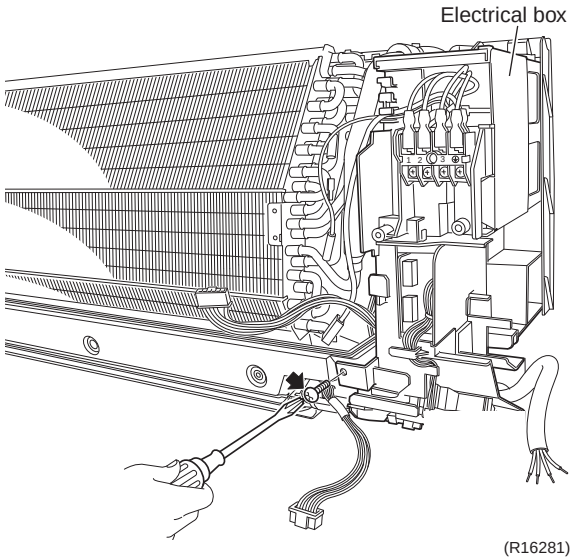
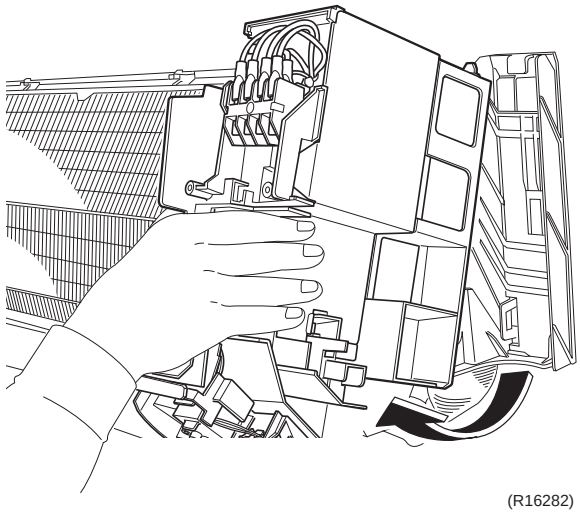
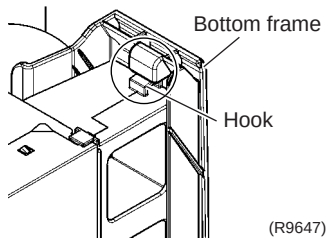
Procedure

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

Step	Procedure	Points
1. Layout of the parts	 (R16270)	**Preparation** ■ Remove the front grille according to the “Removal of Front Grille.”
2. Remove the drip proof plate.		■ The shape of the drip proof plate differs by the model.
1 Remove the screw.	 Drip proof plate (R16271)	
2 Remove the drip proof plate from the indoor heat exchanger.	 (R16272)	 (R16273) ■ When reassembling, fit the hook to the indoor heat exchanger.

Step	Procedure	Points
3. Release the ground wire and the indoor heat exchanger thermistor.		
1 Cut the clamp	 (R16274)	
2 Pull out and release the ground wire.	 (R16275)	
3 Pull out the indoor heat exchanger thermistor.	 (R16276)	■ The position of the indoor heat exchanger thermistor is slightly different depending on the model. ■ Be careful not to lose the clip of the thermistor.  (R11268)

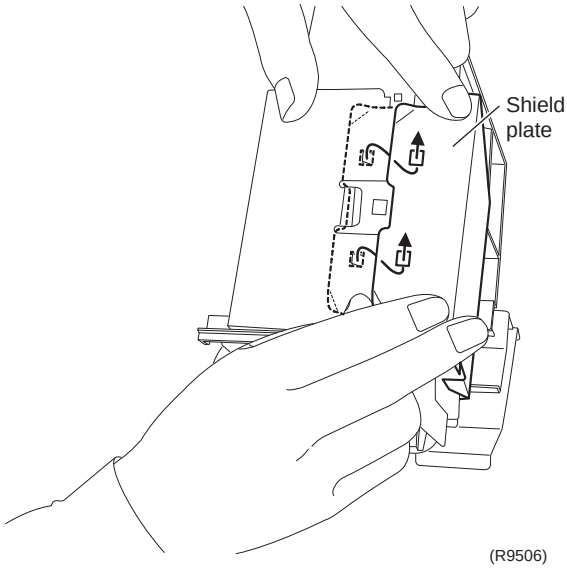
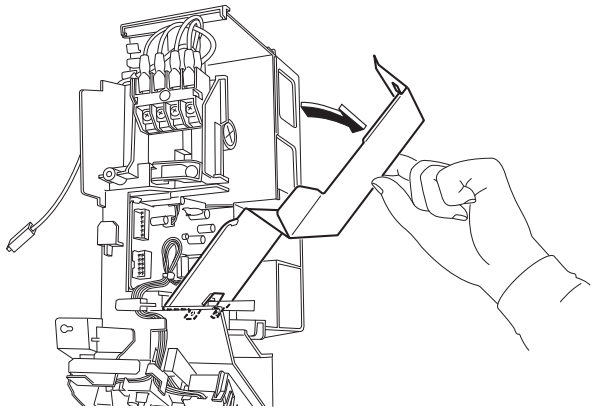
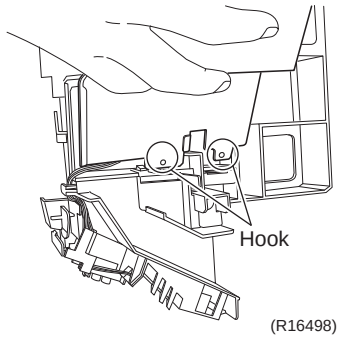
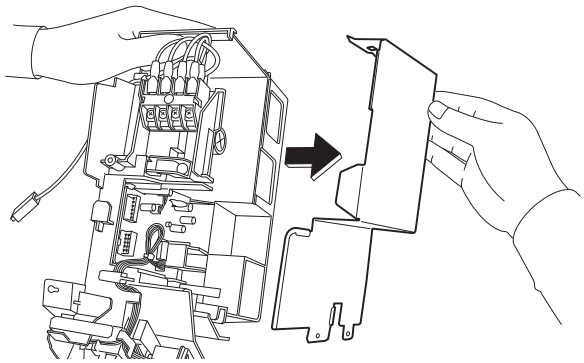
Step	Procedure	Points
4. Remove the electrical box.		
1	Remove the 4 screws and disconnect the connection wires on the terminal board. Remove the screw and remove the wire retainer.	
2	Disconnect the connector for the fan motor [S1] and release the harness from the hook.	
3	Disconnect the connector for the swing motors [S41].	

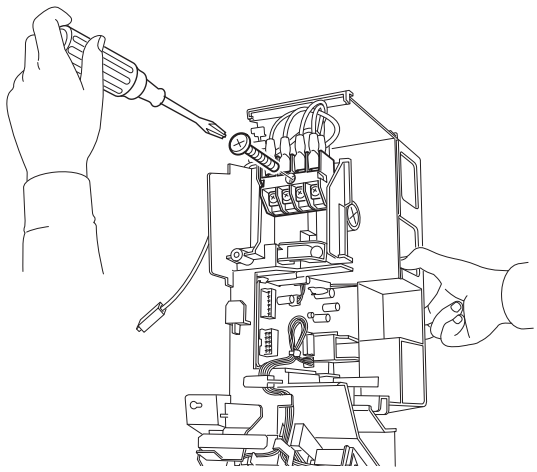
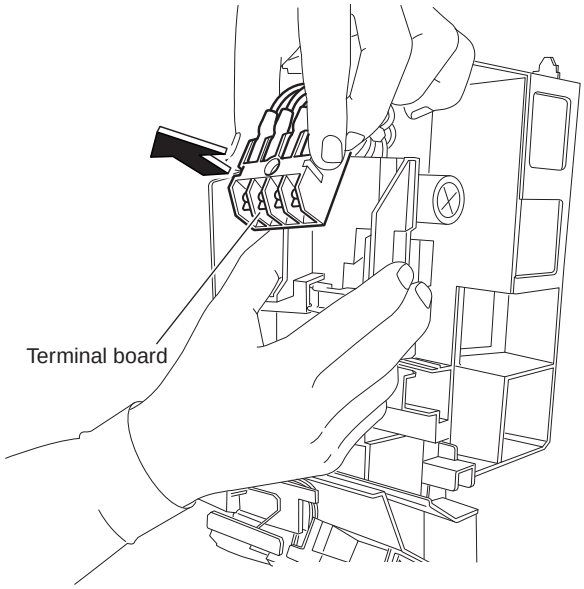
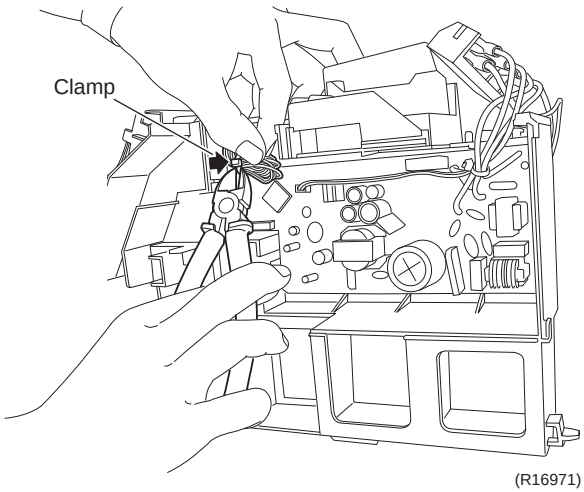
Step	Procedure		Points
4	Release the harness from the hooks.	 (R16280)	
5	Remove the screw of the electrical box.	 (R16281)	
6	Lift up the electrical box from the bottom frame and remove it.	 (R16282)	■ Fit the back hook of the electrical box to the bottom frame when reassembling.  (R9647)

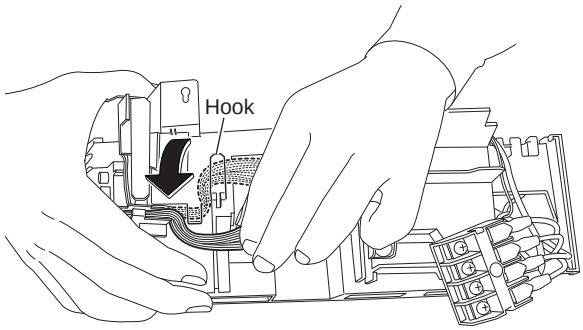
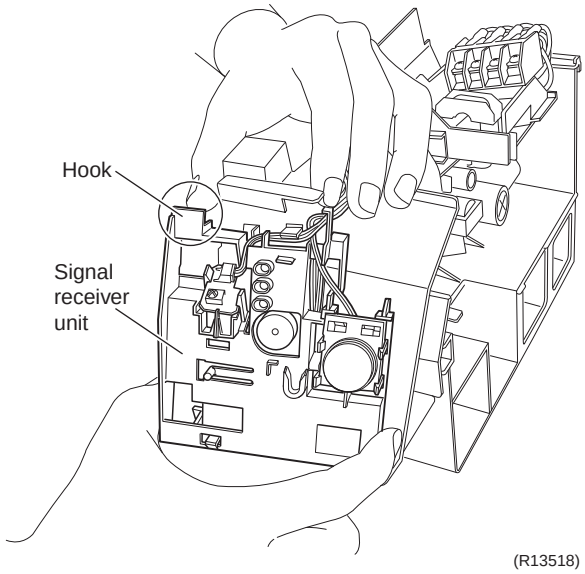
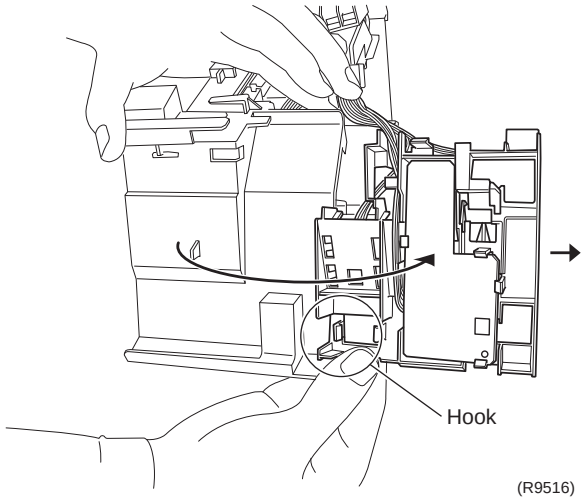
2.4 Removal of PCBs

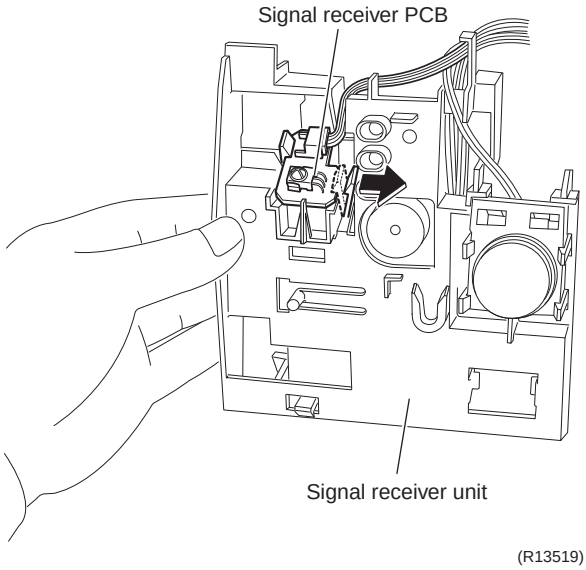
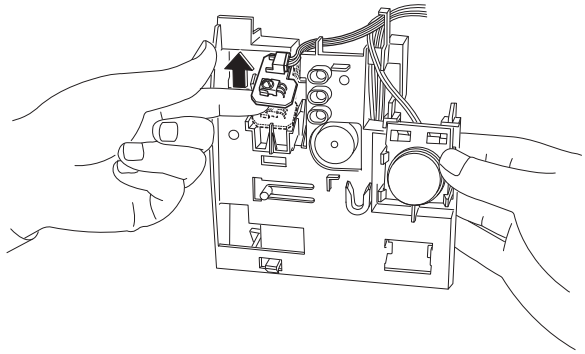
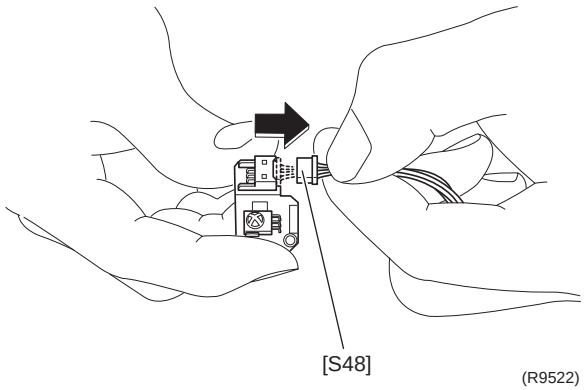
Procedure

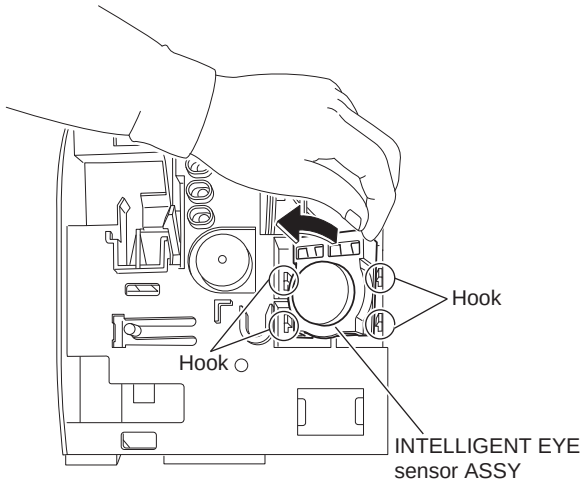
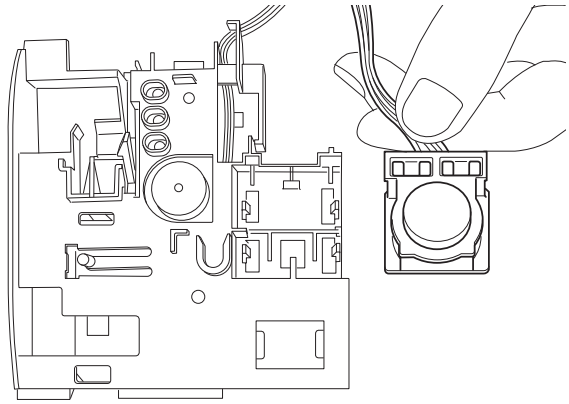
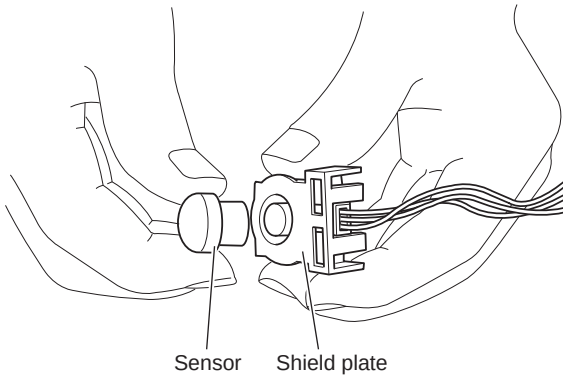
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

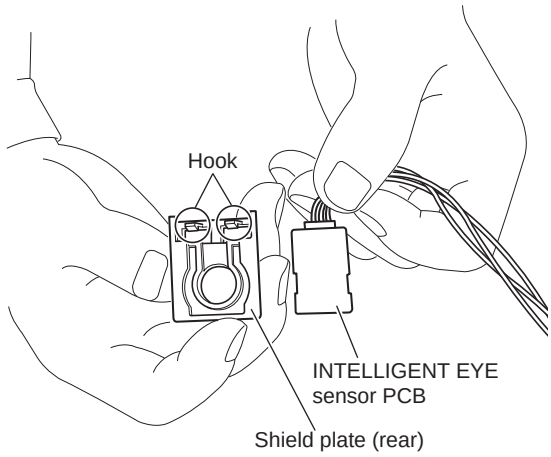
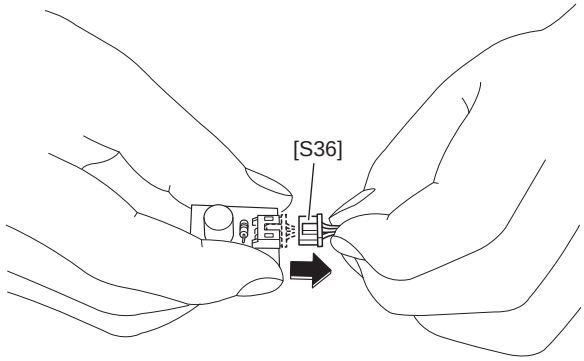
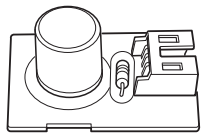
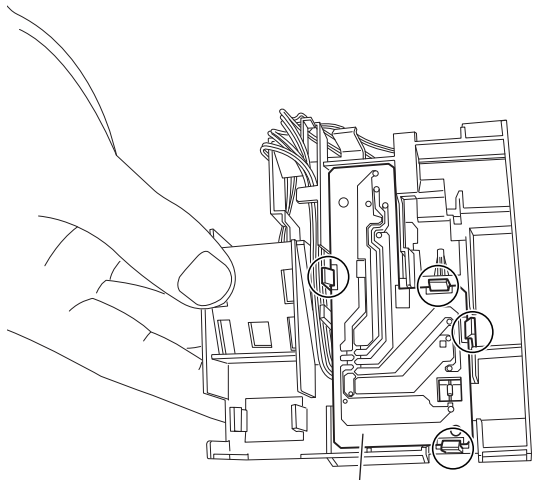
Step	Procedure		Points
1.	Remove the signal receiver PCB.		
1	Unfasten the hooks of the shield plate.	 (R9506)	**Preparation** ■ Remove the electrical box according to the “Removal of Electrical Box.”
2	Open the shield plate.	 (R16283)	■ The shield plate has 2 hooks at the lower part also.  (R16498)
3	Remove the shield plate.	 (R16284)	

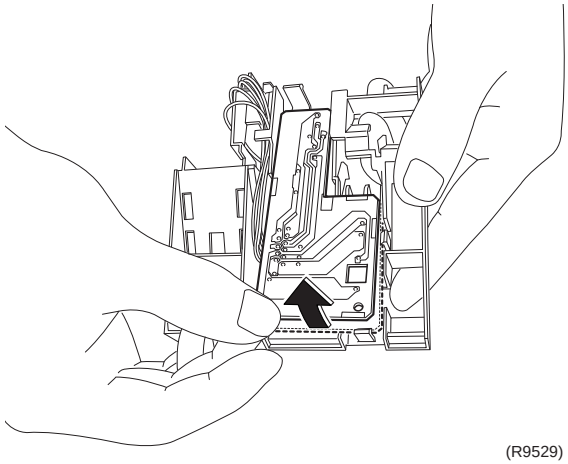
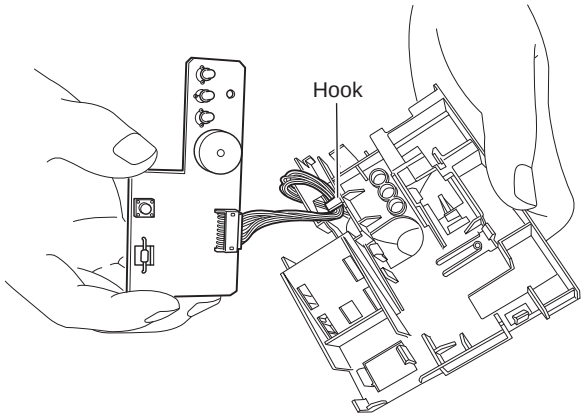
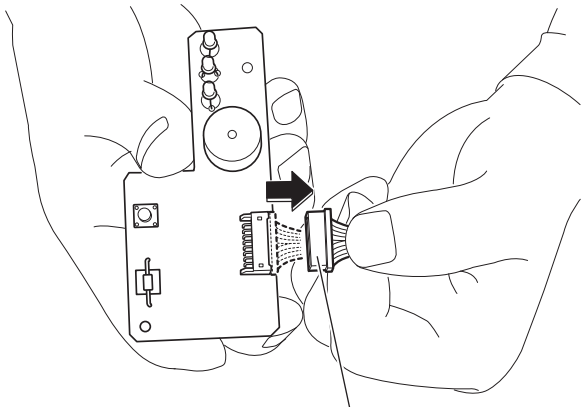
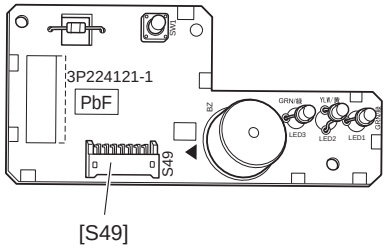
Step	Procedure	Points
4	Remove the screw of the terminal board.  (R16285)	
5	Remove the terminal board. (1 hook at the back)  (R16286)	
6	Cut the clamp.  (R16971)	

Step	Procedure		Points
7	Release the harness from the hook.	 (R9514)	■ When reassembling, make sure to hook the harness.
8	Push and unfasten the hook of the signal receiver unit.	 (R13518)	
9	Open the signal receiver unit. Unfasten the hook and remove the signal receiver unit.	 (R9516)	

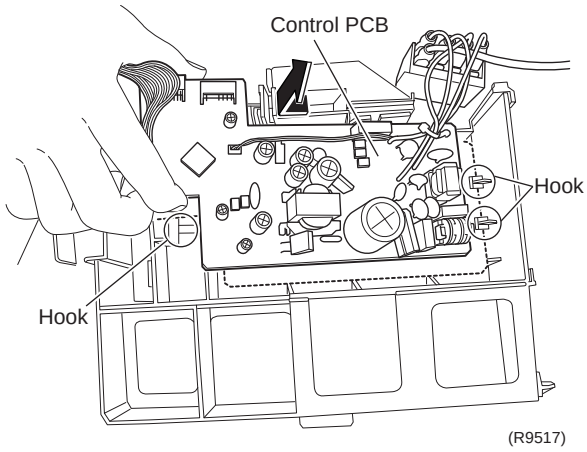
Step	Procedure	Points
10	Unfasten the hook on the right of the signal receiver PCB. (Then the signal receiver PCB is lifted up.)	 (R13519)	
11	Remove the signal receiver PCB.	 (R9521)	
12	Disconnect the connector. [S48] : to control PCB	 (R9522)	

Step	Procedure	Points
2. Remove the INTELLIGENT EYE sensor PCB.		
1 Unfasten the 2 hooks on the right and then the 2 hooks on the left. Remove the INTELLIGENT EYE sensor ASSY.	 (R9523)  (R9524)	
2 Remove the sensor from the shield plate.	 (R9525)	■ When reassembling, set the sensor at the position where it “clicks”. Otherwise, the sensor is not completely set.

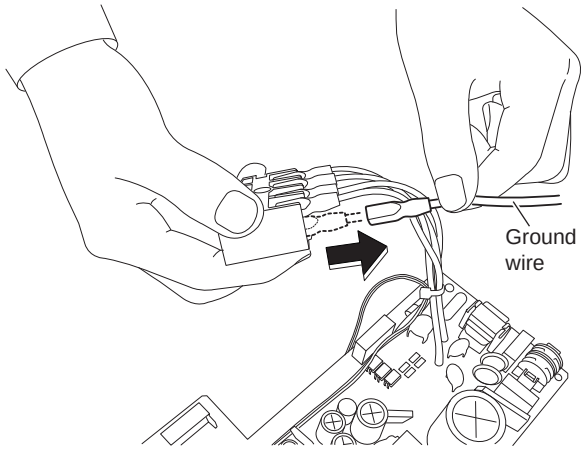
Step	Procedure		Points
3	Remove the shield plate by unfastening the 2 hooks.	 (R9526)	
4	Disconnect the connector. [S36]: control PCB	  (R9527)	
3. Remove the display PCB.			
1	Unfasten the 4 hooks.	 (R9528)	

Step	Procedure		Points
2	Lift up the display PCB.	 (R9529)	
3	Release the harness from the hook.	 (R9530)	
4	Disconnect the connector. [S49]: to control PCB	 (R9531)  (R13520)	

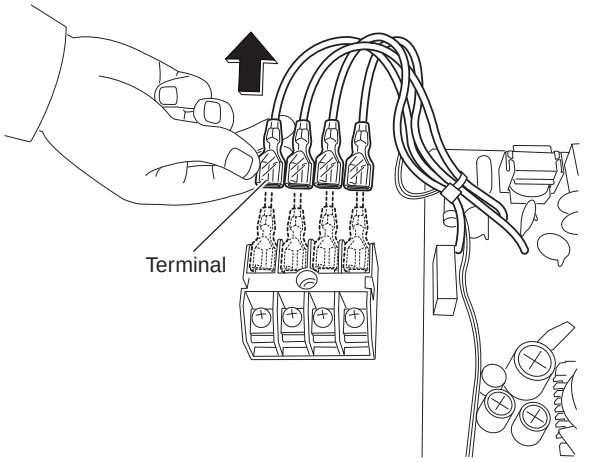
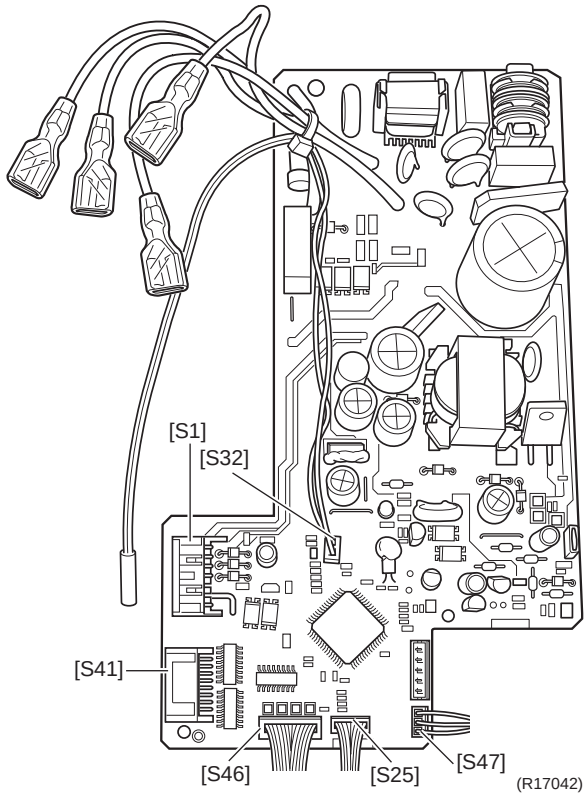
Step	Procedure	Points
4. Remove the control PCB.		
1	Unfasten the 3 hooks. Lift up and remove the control PCB.	
2	Pull out the ground wire from the terminal board.	



(R9517)



(R16550)

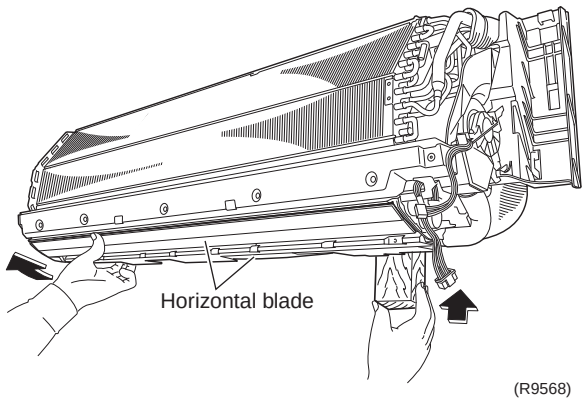
Step	Procedure		Points
3	Pull out the terminals from the terminal board.	 (R9519)  (R17042)	[S1] : DC fan motor [S25] : INTELLIGENT EYE sensor PCB [S32] : indoor heat exchanger thermistor [S41] : swing motors [S46] : display PCB [S47] : signal receiver PCB ■ Refer to page 17 for detail.

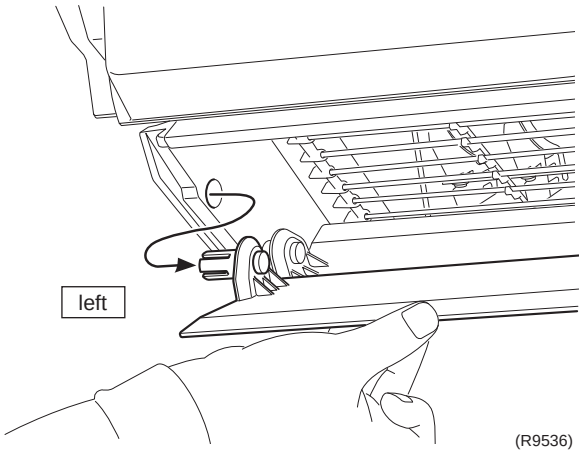
2.5 Removal of Horizontal Blades / Swing Motors

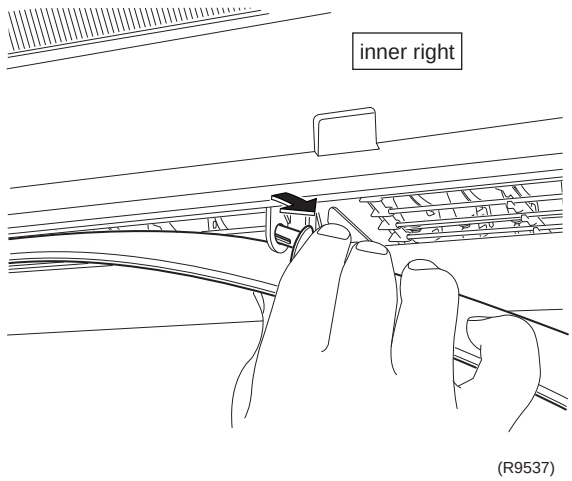
Procedure

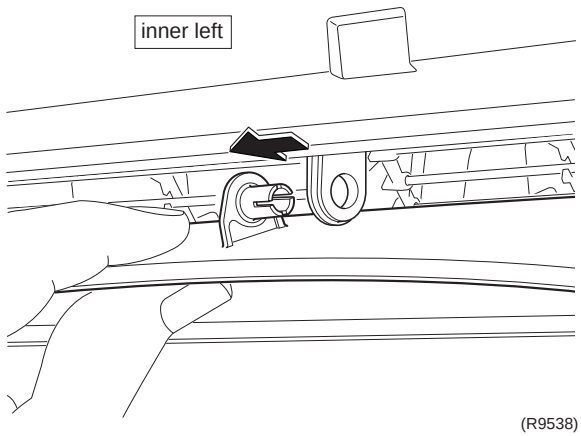
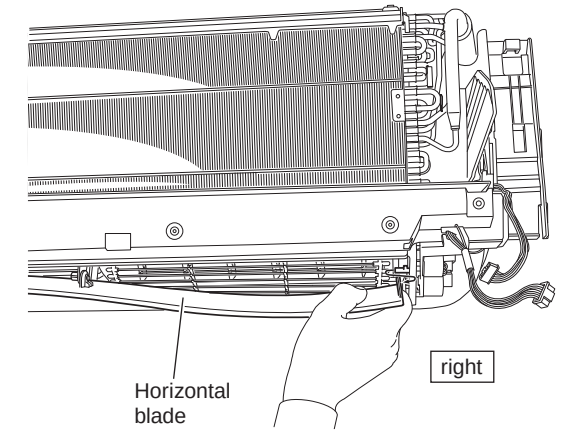
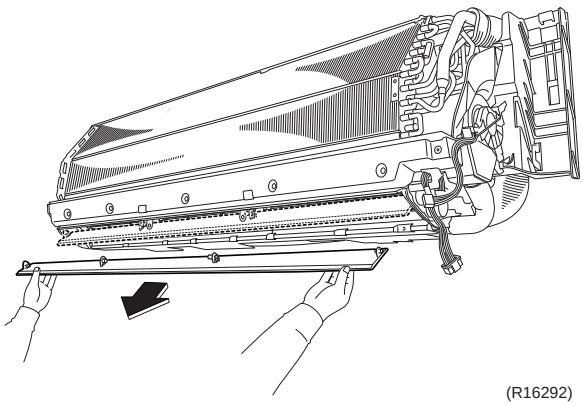
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

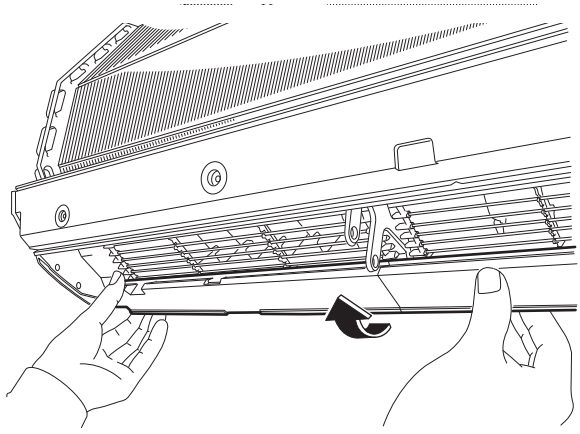
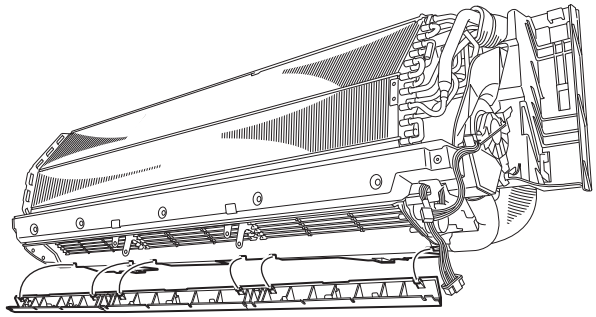
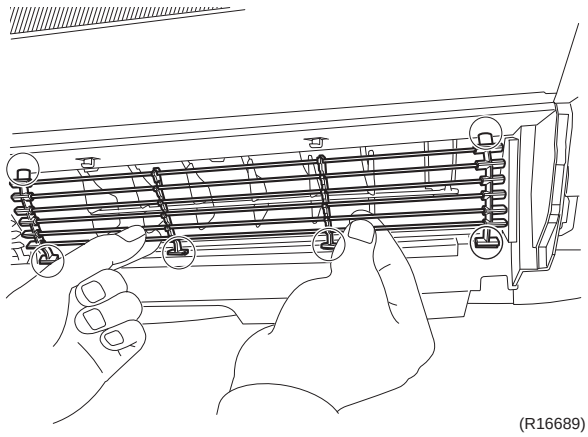
Step	Procedure	Points
1. Remove the horizontal blades.		
1	Hold the indoor unit up with something sturdy such as a piece of wood.	
2	Release the shafts in turn.	



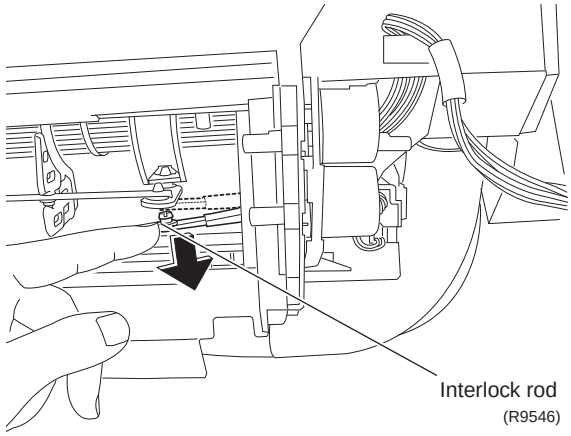


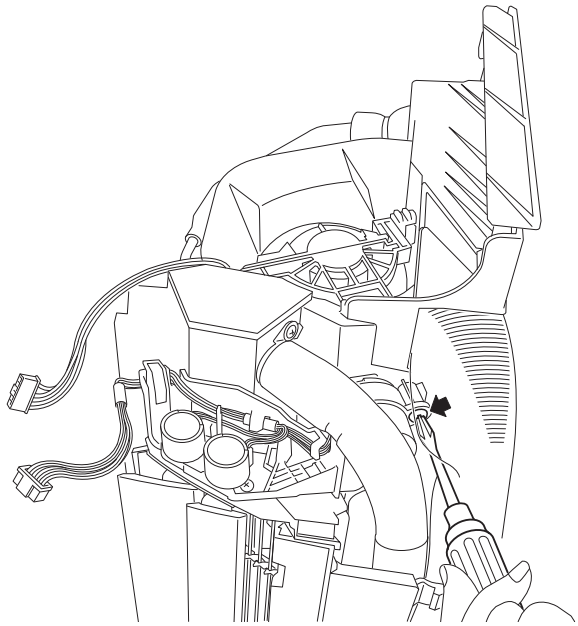


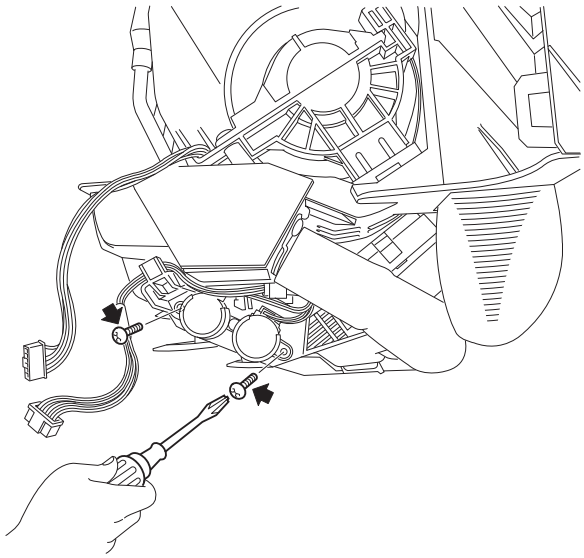
Step	Procedure	Points
3	Remove the horizontal blade.  (R9538)  (R9535)  (R16292)	■ Remove both the horizontal blades (upper and lower) in the same way.

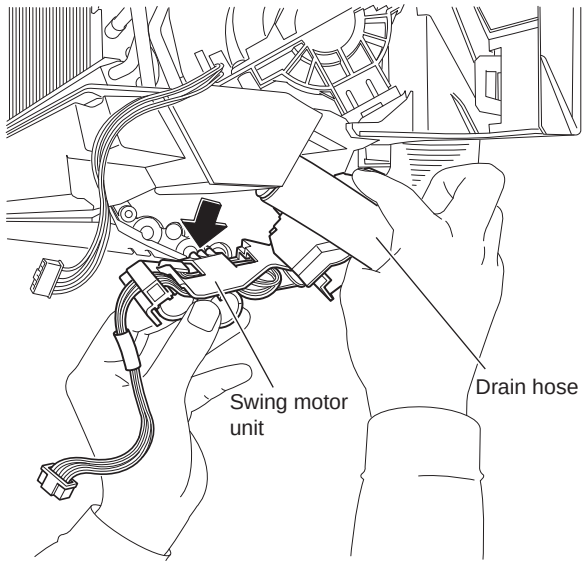
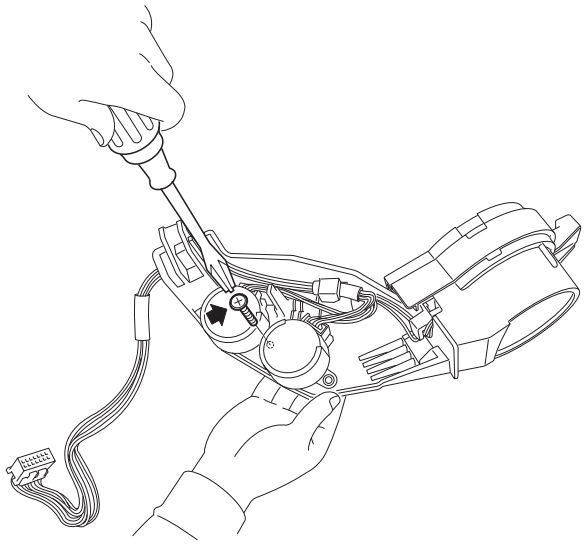
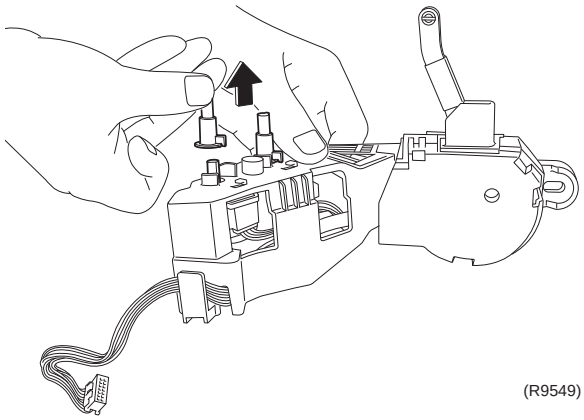
Step	Procedure	Points
2. Remove the air outlet ASSYs.	 (R16687)  (R16688)	■ The 3 air outlet ASSYs are bound with sealing materials.
1 Remove the air outlet ASSYs by pushing the 2 hooks at the back of each.		
3. Remove the fan guards.	 (R16689)	■ Remove the other 2 fan guards likewise.
1 Unfasten the 4 lower hooks and the 2 upper hooks and remove the fan guard.		

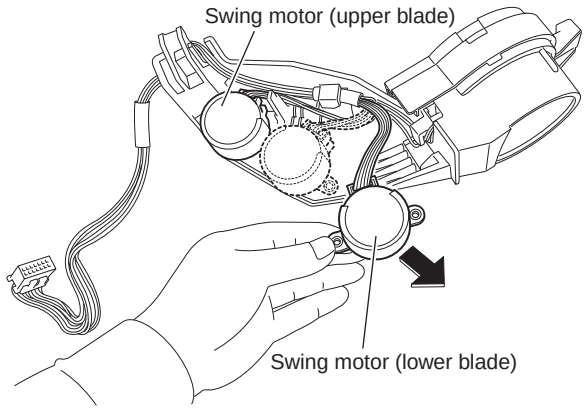
Step	Procedure	Points
4. Remove the swing motors for horizontal blades.		
1	Release the interlock rod.	
2	Remove the screw at the rear of the indoor unit.	
3	Remove the 2 screws (front and rear).	

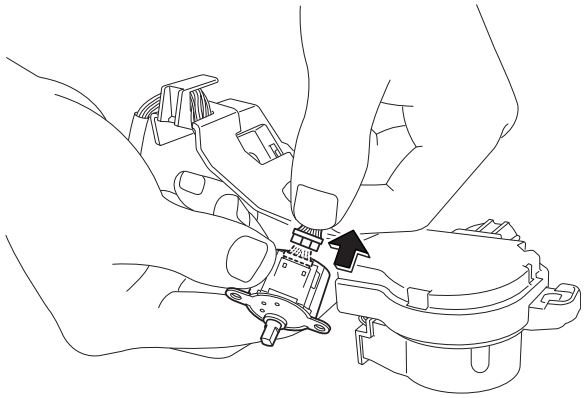
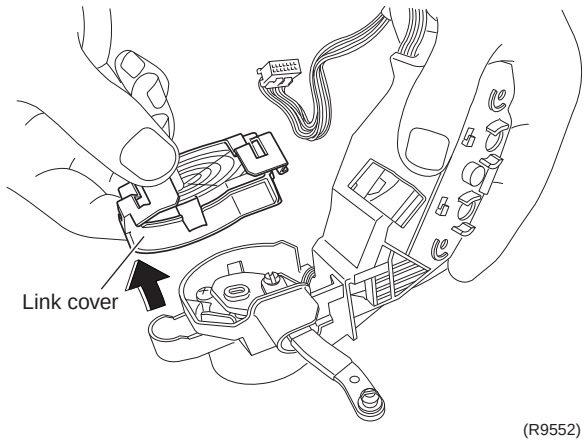




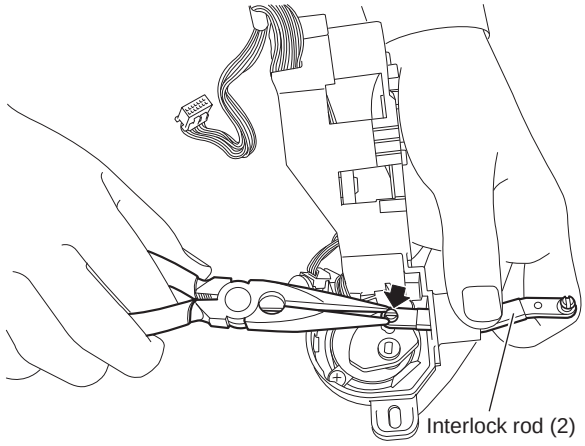
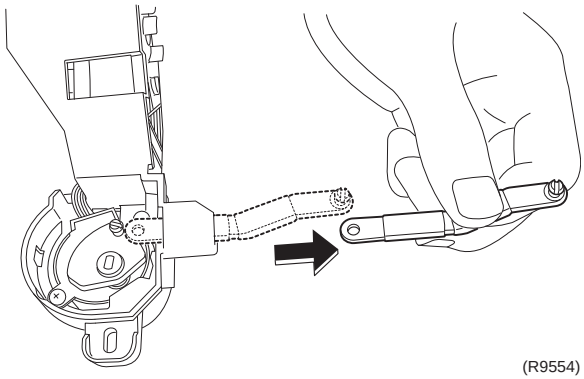
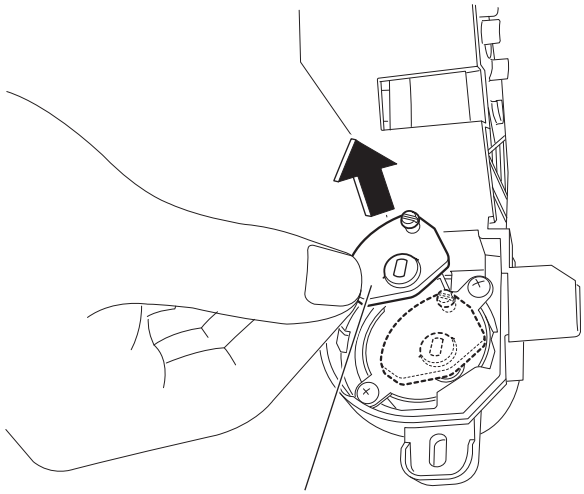


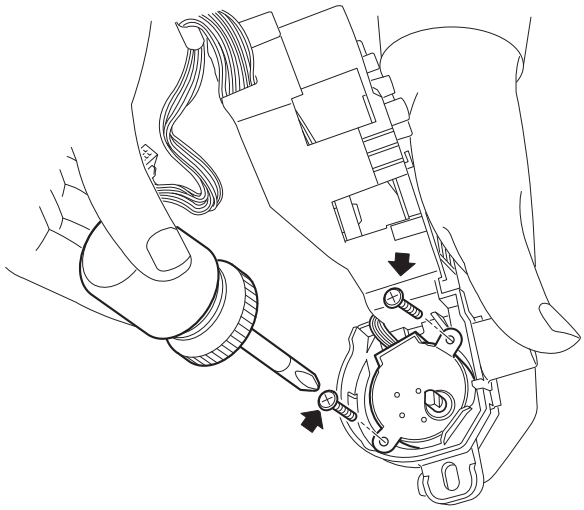
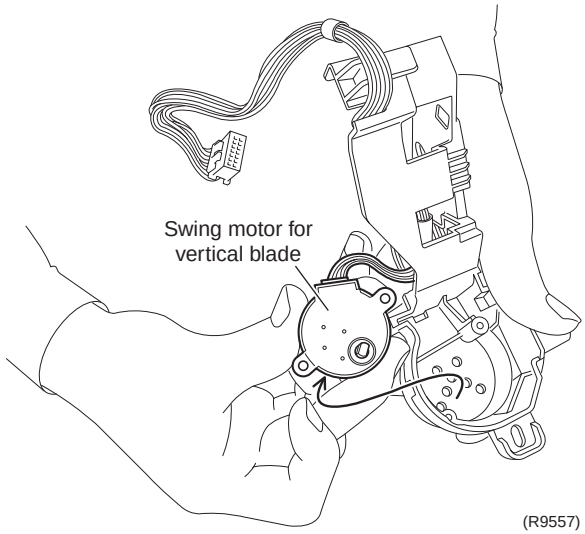
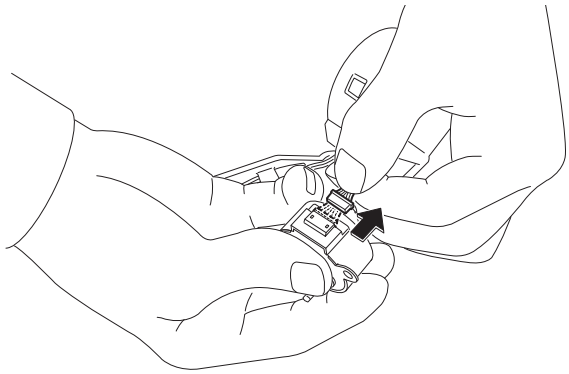
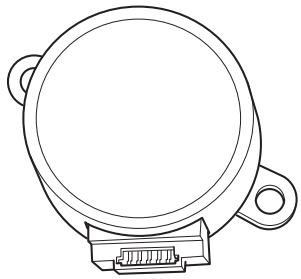
Step	Procedure	Points
4	Pull out the drain hose, then remove the swing motor unit.  (R16298)	
5	Remove the screw at the center.  (R9548)	
6	Remove the 2 pivots.  (R9549)	

<table>
<tr><th>Step</th><th colspan="2">Procedure</th><th>Points</th></tr>
<tr><td>7</td><td>Remove the swing motors.</td><td rowspan="2"> 

(R16079)
 
(R9551)</td><td rowspan="2">⚠ Caution
When reassembling, do not confuse the installing order of the 2 motors and the colors of the connectors.
If you set the connectors or motors opposite, the horizontal blades do not move smoothly or noise may be heard.
(1) Set the swing motor of the upper blade first.
(connector: white)
(2) Then, set the swing motor of the lower blade.
(connector: red)
(3) Fix both swing motors with a screw.</td></tr>
<tr><td>8</td><td>Disconnect the connector to remove the swing motor.</td></tr>
<tr><td colspan="2">5. Remove the swing motor for vertical blades.</td><td rowspan="2"> 

(R9552)</td><td rowspan="2"></td></tr>
<tr><td>1</td><td>Remove the link cover.</td></tr>
</table>

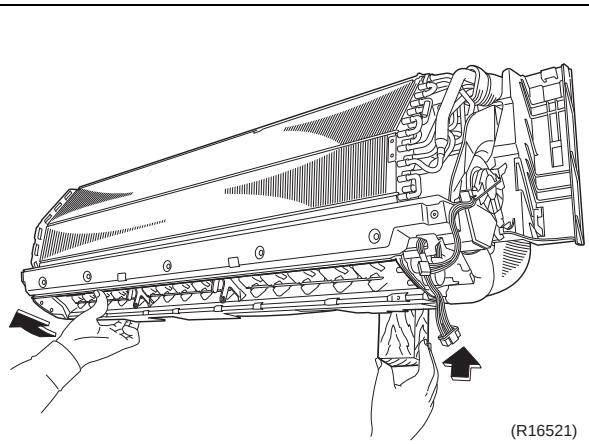
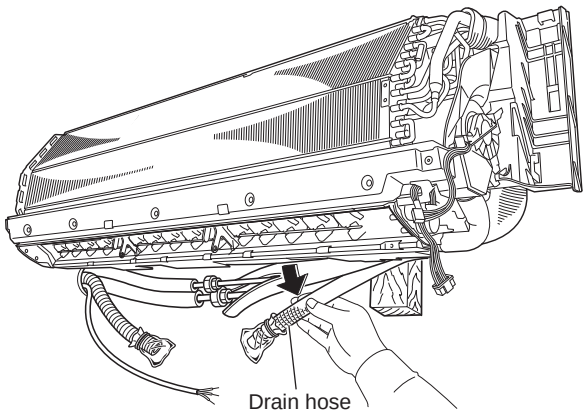
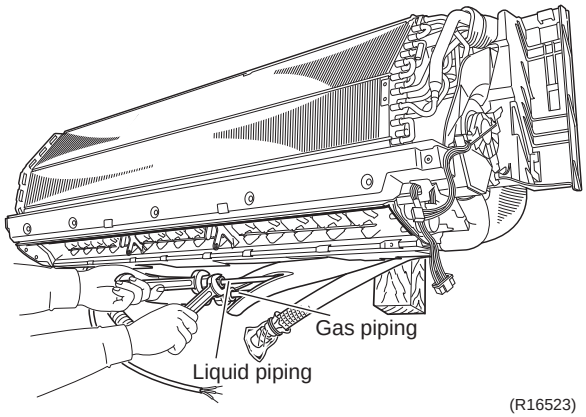
Step	Procedure		Points
2	Remove the interlock rod (2) with pliers.	 (R9553)	
		 (R9554)	
3	Remove the interlock rod (1).	 (R9555)	

Step	Procedure		Points
4	Remove the 2 screws.	 (R9556)	
5	Remove the swing motor for the vertical blade.	 (R9557)	
6	Disconnect the connector.	  (R9558)	

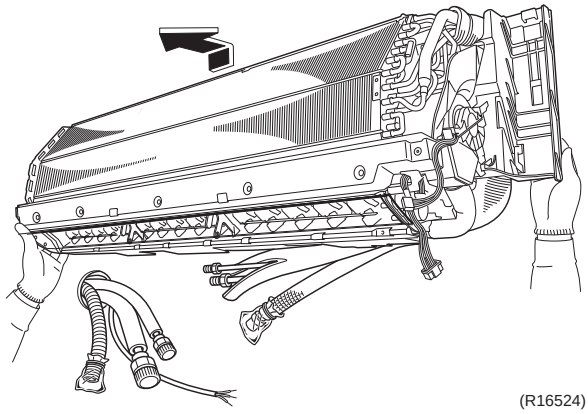
2.6 Removal of Indoor Heat Exchanger

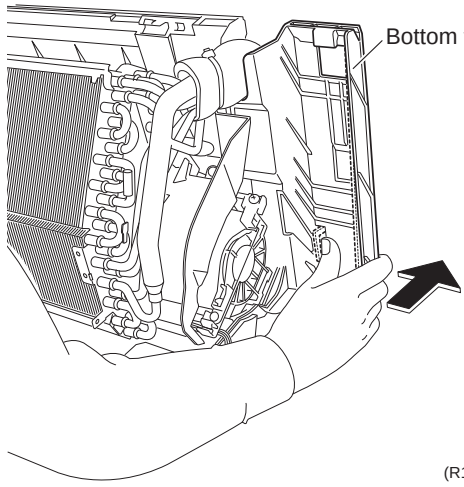
Procedure

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

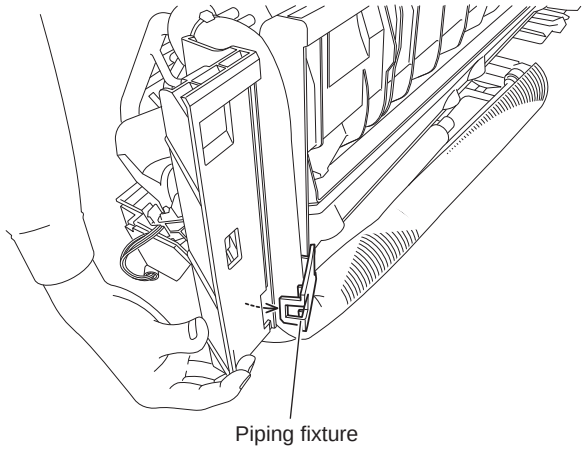
Step	Procedure		Points
1. Disconnect the refrigerant piping.		 (R16521)	**Preparation** ■ Remove the electrical box according to the “Removal of Electrical Box”. **Caution** **If the refrigerant leaks, repair the leakage, then collect all refrigerant from the unit. After conducting vacuum drying, recharge a proper amount of refrigerant.** **Caution** **From the viewpoint of global environment protection, be sure to use a vacuum pump for air purging.** **Caution** **In pump-down work, be sure to stop the compressor before disconnecting the refrigerant piping. If the refrigerant piping is disconnected with the compressor operating and the stop valve open, air may be sucked in to generate an over-pressure in refrigeration cycle, thus resulting in pipe rupture or accidental injury.** ■ Place a plastic sheet under the drain pan to prevent from wetting the floor with remaining drain. ■ If the drain hose is embedded in the wall, disconnect the drain hose beforehand. ■ Carry out the removal work with 2 wrenches. ■ When the pipings are disconnected, protect both the openings of pipe and unit from entering moisture.
1	Hold the indoor unit up with a piece of wood etc.		
2	Pull out the drain hose.	 (R16522)	
3	Unscrew the flare nuts for gas piping and liquid piping.	 (R16523)	

Step	Procedure	Points
2. Remove the piping fixture.		
1	Detach the indoor unit from the installation plate.	
2	Push the bottom frame.	
3	Release the piping fixture.	

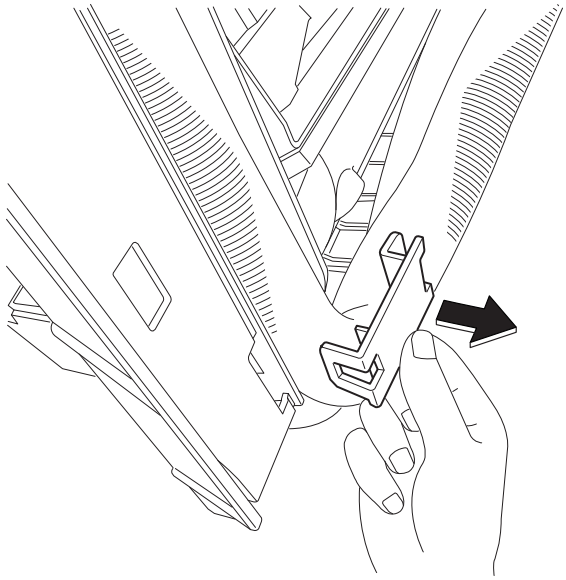
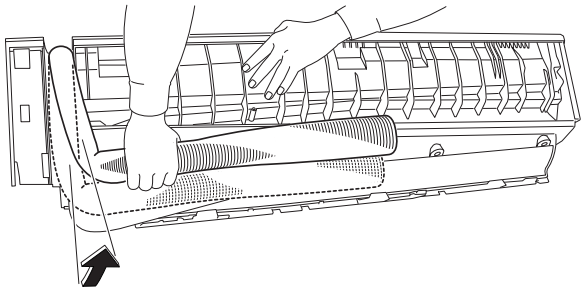
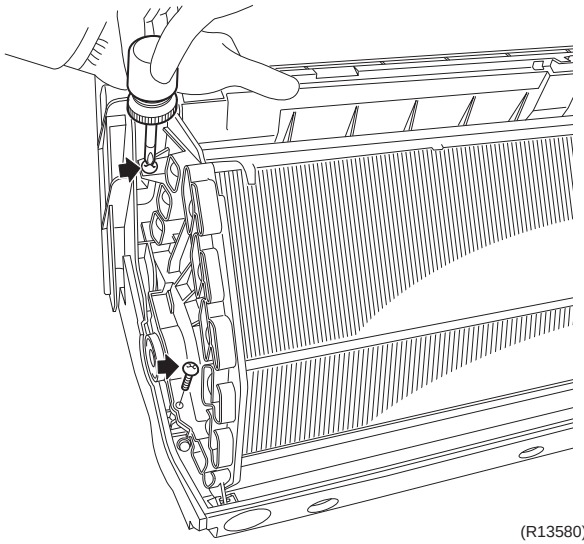

(R16524)

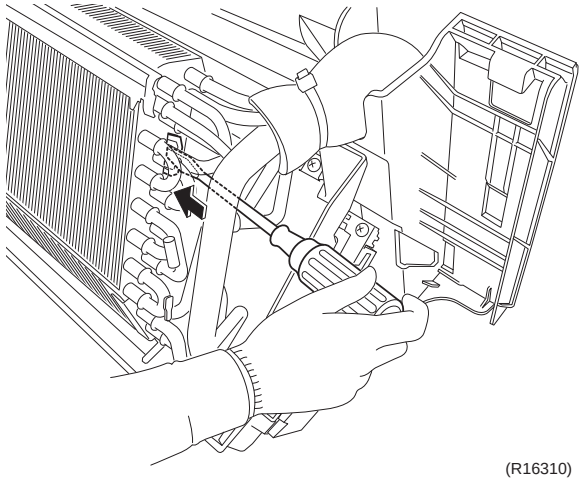
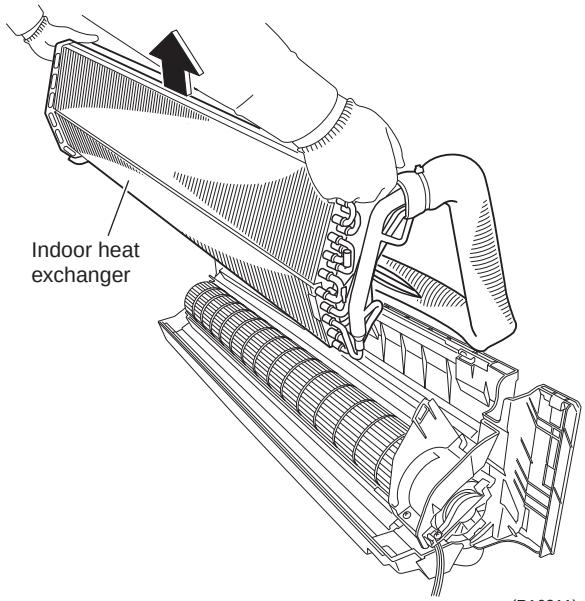


(R16309)



(R9573)

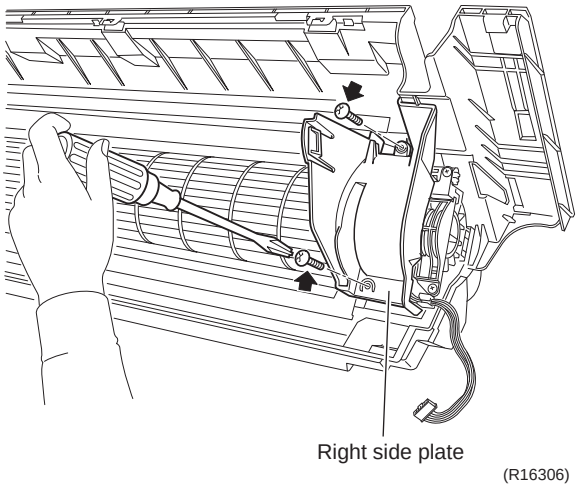
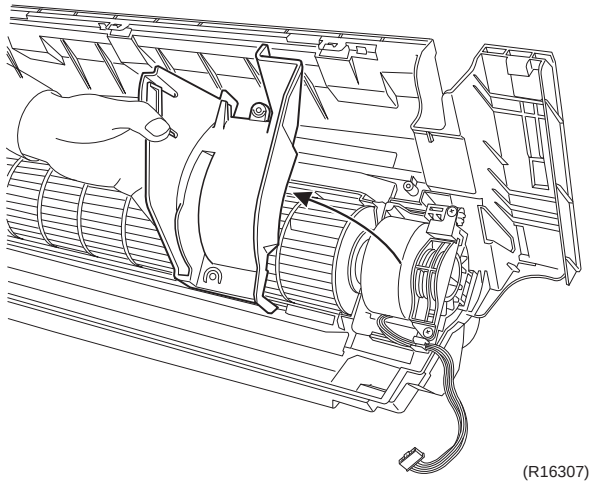
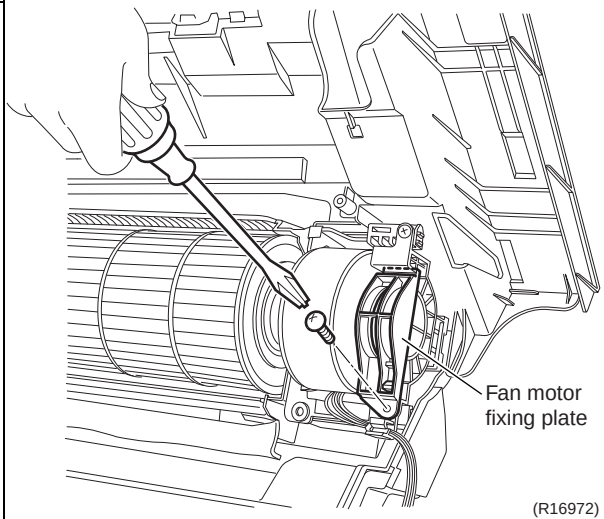
Step	Procedure		Points
4	Remove the piping fixture.	 (R9574)	
3. Remove the indoor heat exchanger.			
1	Widen the auxiliary piping.	 (R9575)	
2	Remove the 2 screws on the left side.	 (R13580)	**Caution** **When removing or reassembling the indoor heat exchanger, be sure to wear gloves or wrap the indoor heat exchanger with cloths. (You may be injured by the fins.)**

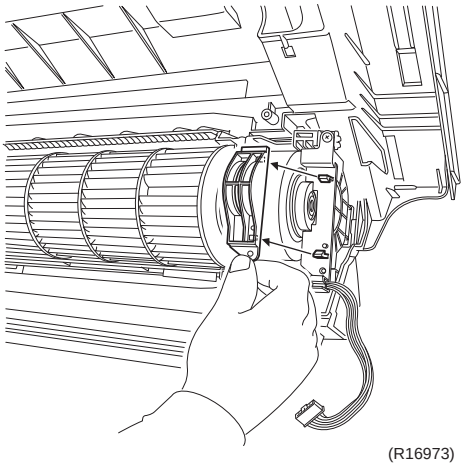
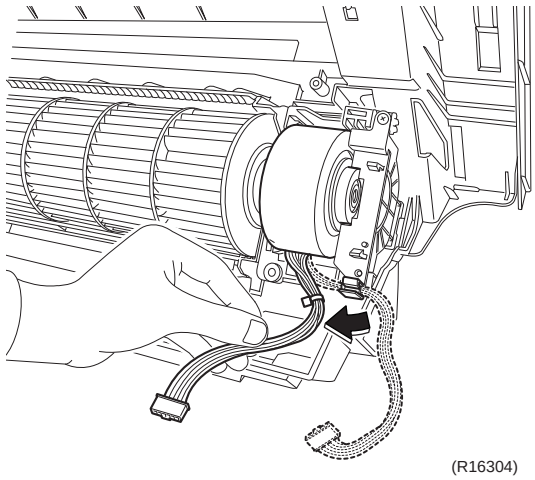
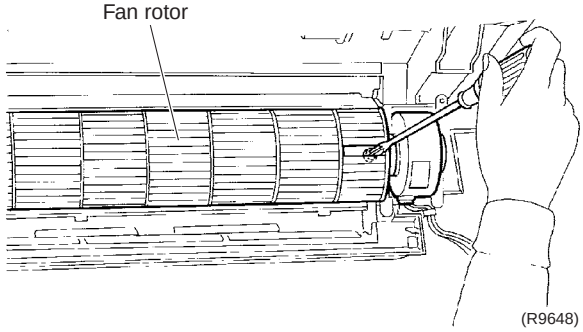
Step	Procedure		Points
3	Push the hook on the right side and unfasten it.	 (R16310)	
4	Lift up and remove the indoor heat exchanger.	 (R16311)	■ Press the right side of the indoor heat exchanger, and lift it up from the left side.

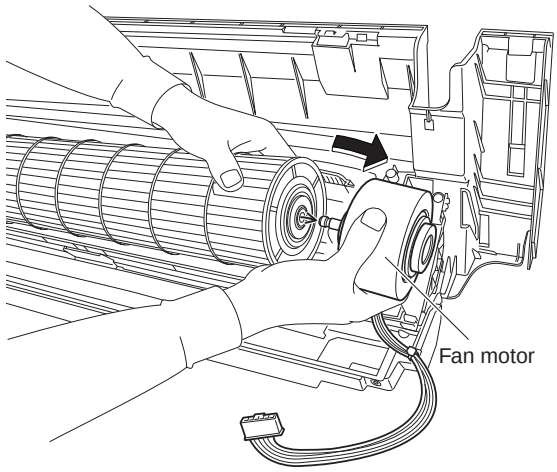
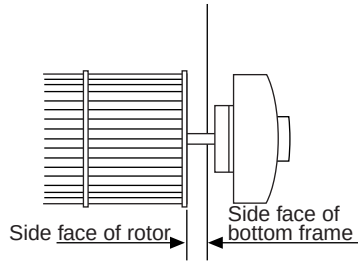
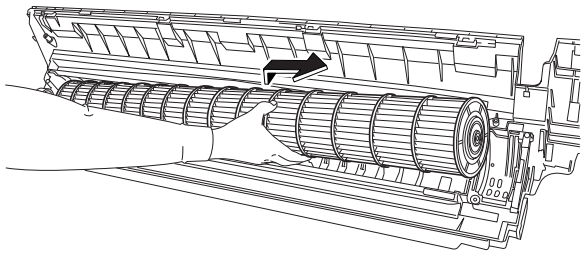
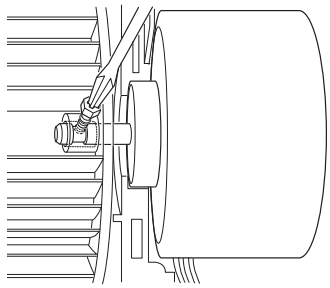
2.7 Removal of Fan Motor / Fan Rotor

Procedure

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

Step	Procedure	Points
1. Remove the right side plate.		
1 Remove the 2 screws.	 (R16306)	
2 Lift the right side plate and remove it.	 (R16307)	
2. Remove the fan rotor.		
1 Remove the screw of the fan motor fixing plate.	 (R16972)	

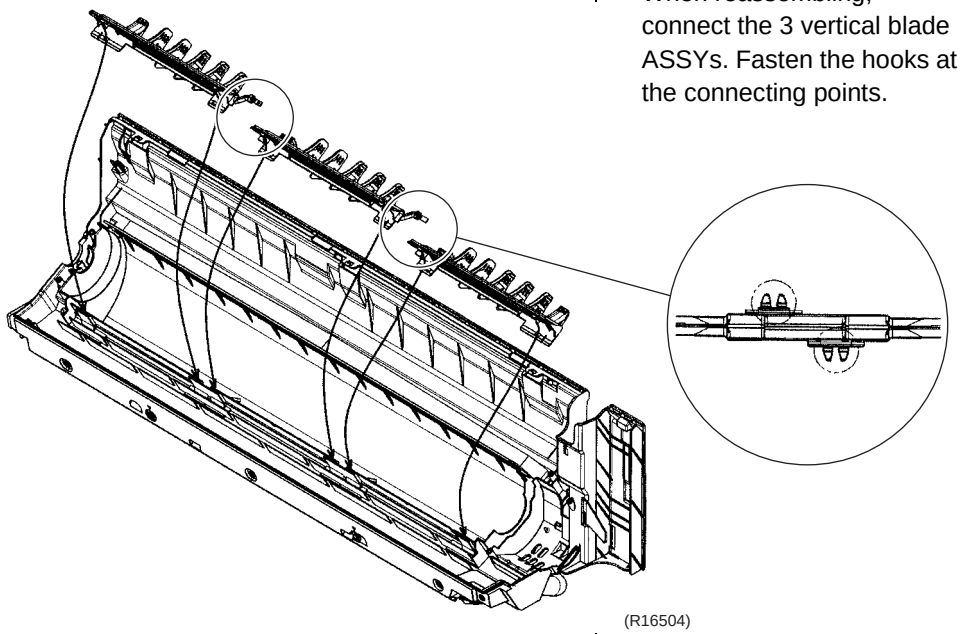
Step	Procedure	Points
2	Remove the fan motor fixing plate.  (R16973)	
3	Release the fan motor harness from the hook.  (R16304)	
4	Loosen the screw of the fan rotor.  (R9648)	

Step	Procedure		Points
5	Remove the fan motor.	 (R16305)	■ When reassembling the fan motor and the fan rotor, provide as much as 5 mm (0.2 inch) of play between the side face of the rotor and the bottom frame.  (R2808)
6	Remove the fan rotor.	 (R9584)	 (R9582) (1) Insert the fan motor with approx. 5 mm (0.2 inch) left. (2) Tighten the screw until it stops. Then give the screw one more turn. (3) Rotate the fan rotor and confirm the fan motor and the fan rotor are installed appropriately. (4) Tighten the screw completely if appropriate. (5) If not appropriate, go back to (1).

2.8 Removal of Vertical Blade ASSYs

Procedure

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

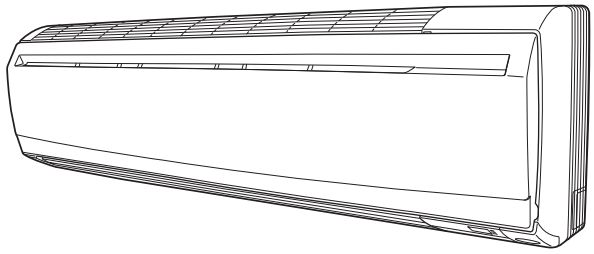
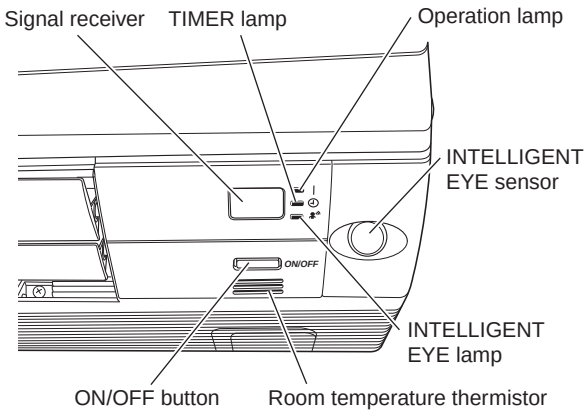
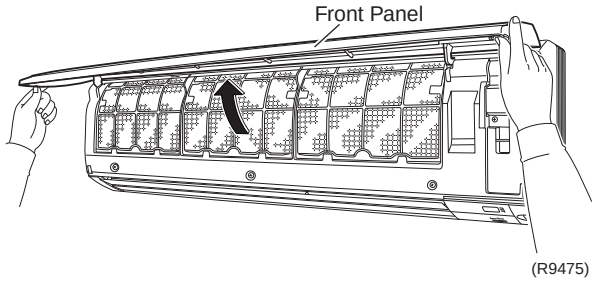
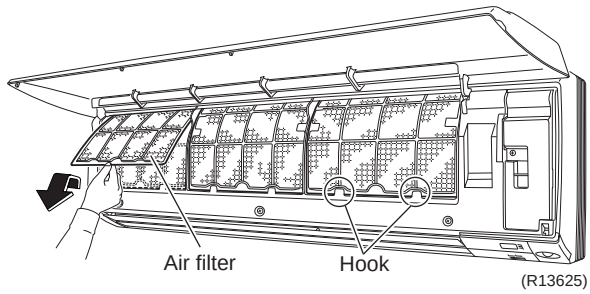
Step	Procedure		Points
	Unfasten the 2 hooks of each vertical blade ASSY. Remove the 3 vertical blade ASSYs.	 (R16504)	■ When reassembling, connect the 3 vertical blade ASSYs. Fasten the hooks at the connecting points. ■ Each vertical blade ASSY is united with a drain pan ASSY.

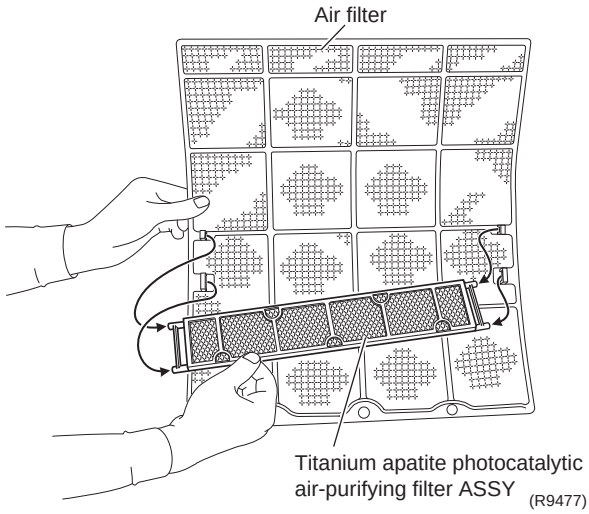
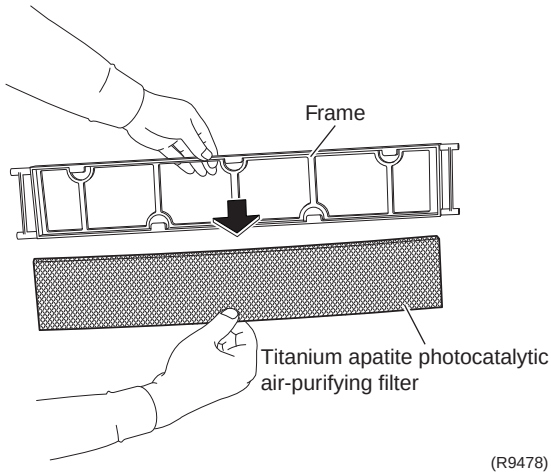
3. Indoor Unit: FTXS30/36LVJU

3.1 Removal of Air Filters / Front Panel

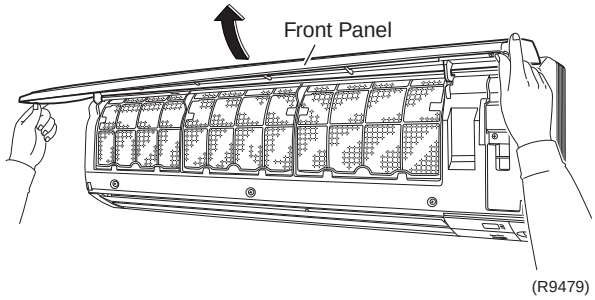
Procedure

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

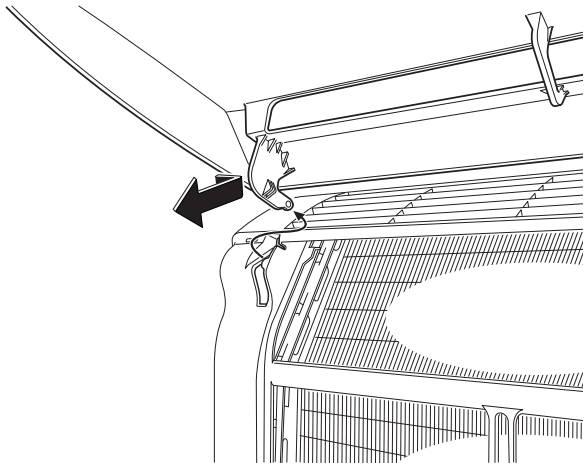
Step	Procedure	Points
1. Appearance features	 (R9473)  (R16974)	**Warning** **Dangerous: High voltage** **A high voltage is applied to all the electric circuits of this product including thermistors.** ■ When the signal receiver catches a signal from the remote controller, the receiving tone sounds and the operation lamp blinks immediately to confirm the signal reception. ■ When the [ON/OFF] button is kept pressed for 5 seconds, the forced cooling operation is performed for about 15 minutes.
2. Remove the air filters. 1 Open the front panel to the position where it stops. 2 Slightly push up the center knob of the air filter and unfasten the hooks. 3 Pull out the air filter downward and remove it.	 (R9475)  (R13625)	■ The 3 filters are interchangeable. ■ The air filter can be set easily by inserting it along the guides. ■ Insert the air filter with the "FRONT" mark faced up. ■ Be sure to insert the hooks (at 2 lower positions) when reassembling the air filter.

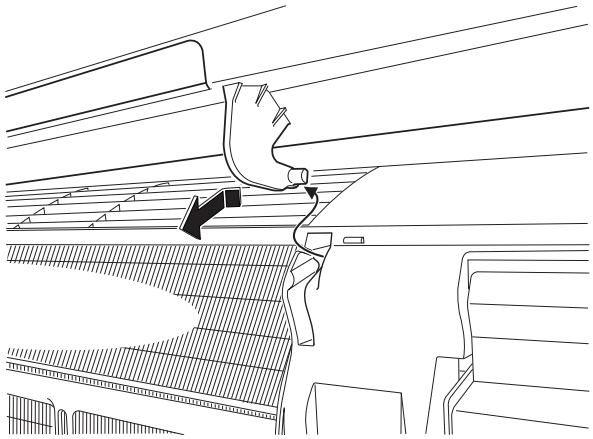
Step	Procedure	Points
3. Remove the Titanium apatite photocatalytic air-purifying filters.		
1 Remove the Titanium apatite photocatalytic air-purifying filter ASSY by unfastening the projections from the back of the air filter frame.	 (R9477)	■ The 3 filters are interchangeable.
2 Remove the Titanium apatite photocatalytic air-purifying filter from its frame.	 (R9478)	

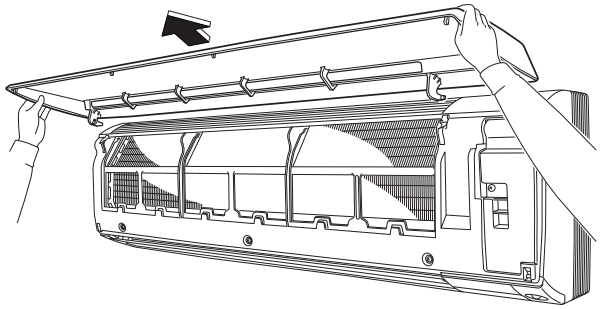
Step	Procedure	Points
4. Remove the front panel.		
1	While opening the front panel further than it stops, release both the shafts.	■ Slide the front panel from side to side to release each shaft. ■ Align the right and left shafts with grooves in turn and insert them to the end when reassembling.
2	Remove the front panel.	



(R9479)


(R9480)

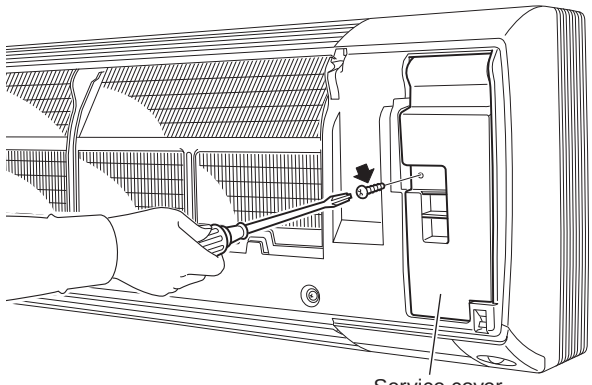
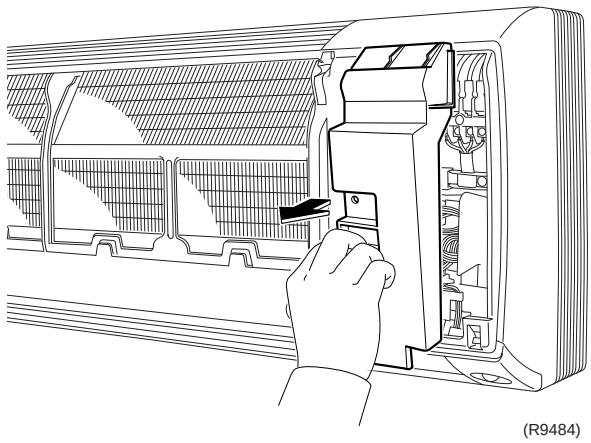
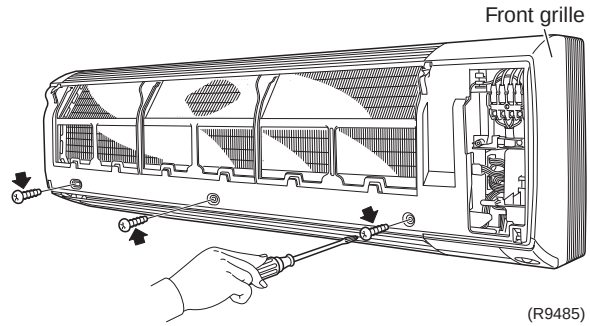

(R9481)

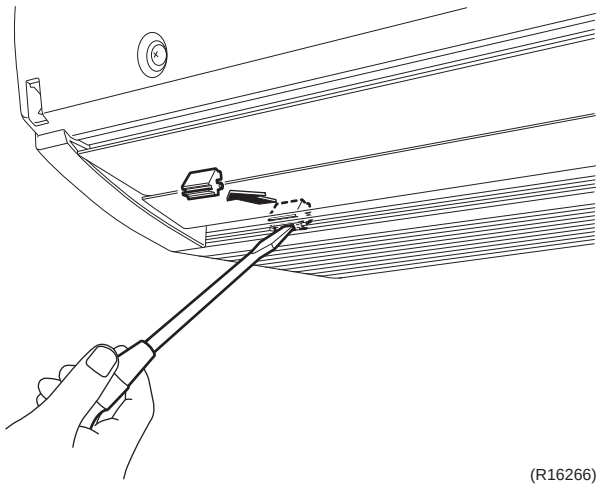
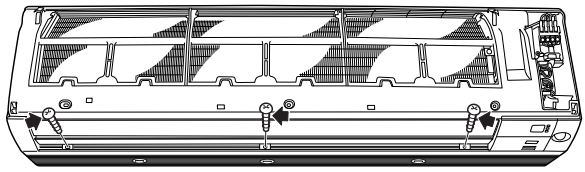
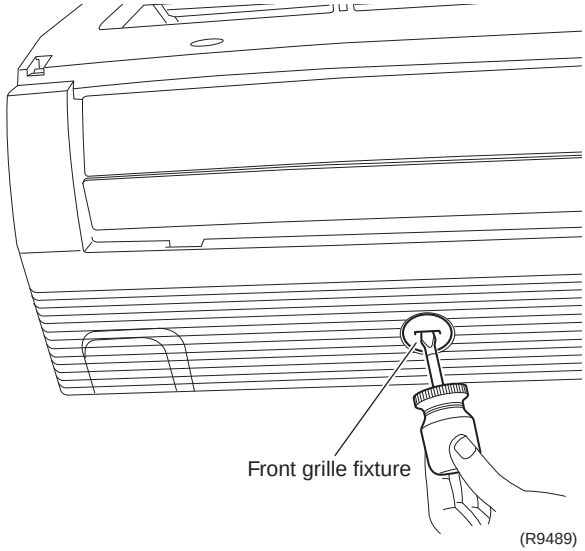

(R9482)

3.2 Removal of Front Grille

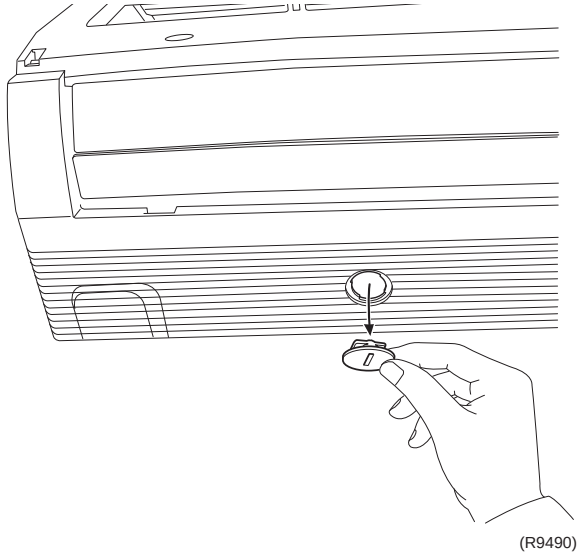
Procedure

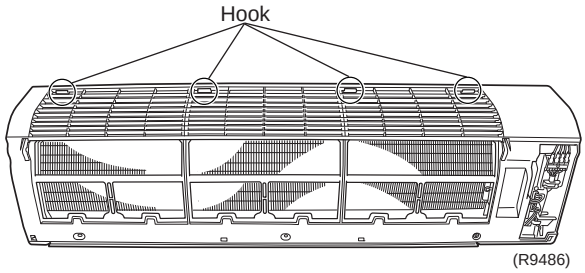
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure	Points
1. Remove the service cover.	 (R9483)  (R9484)	■ You can remove the front grille without detaching the service cover.
1 Remove the screw and remove the service cover.		
2. Remove the front grille.	 (R9485)	■ Refer to the removal procedure in a reverse way when reassembling.
1 Remove the 3 screws of the front grille.		

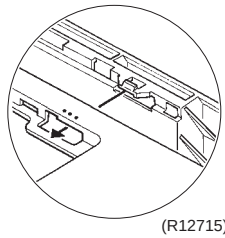
Step	Procedure		Points
2	Remove the screw caps with a flat screwdriver.	 (R16266)	
3	Remove the lower 3 screws.	 (R9488)	
4	Remove the 3 front grille fixtures.	 (R9489)	■ The Illustration shows the left fixture.

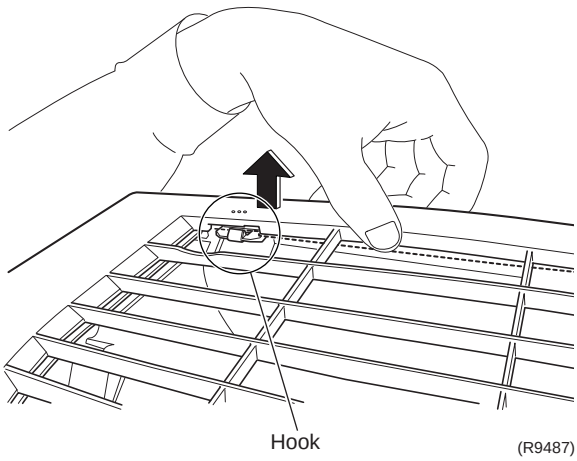
Step	Procedure	Points
5	Unfasten the 4 hooks on the top of the front grille.	■ The convex marks (...) on the front panel indicate the position of the hooks.


(R9490)

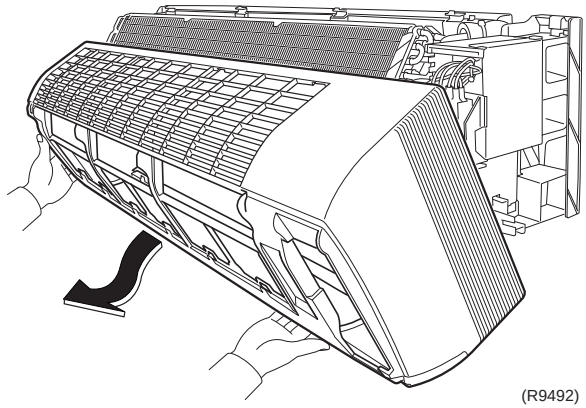


(R9486)


(R12715)



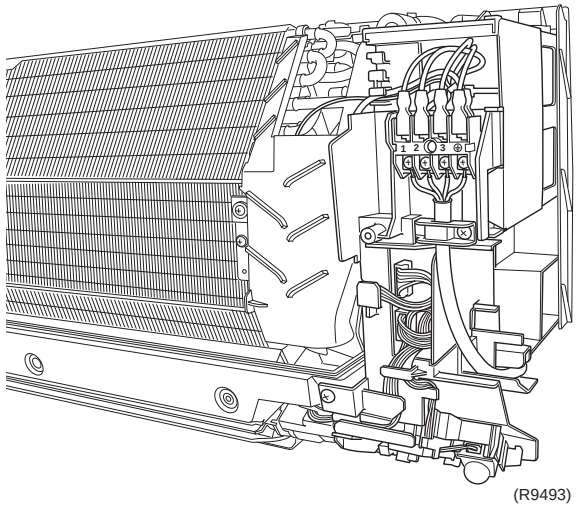
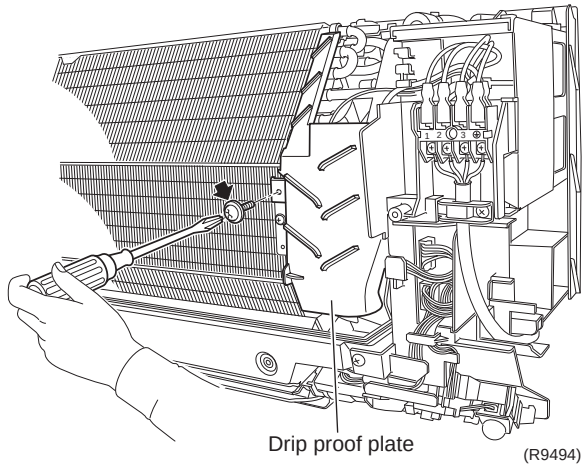
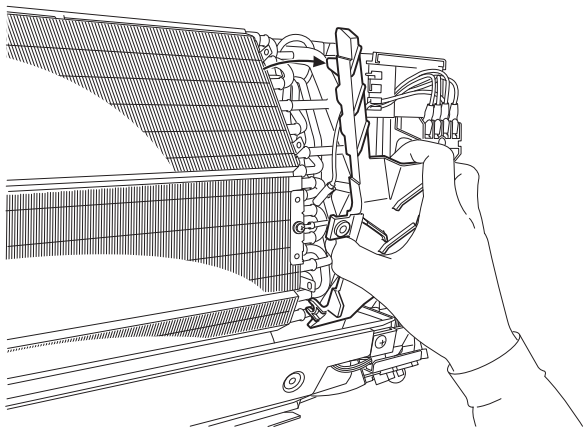
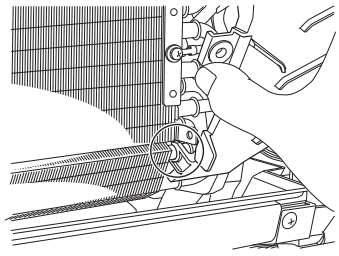
(R9487)

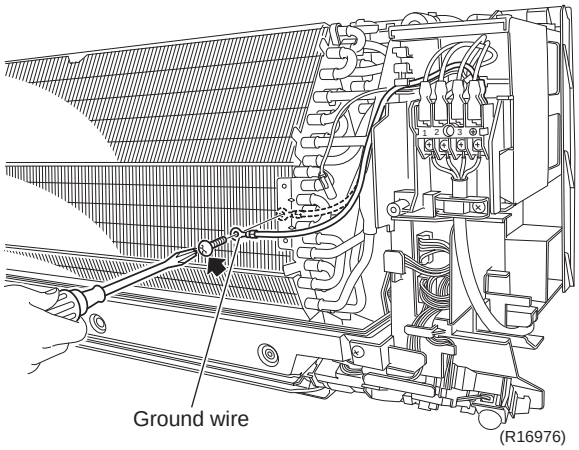
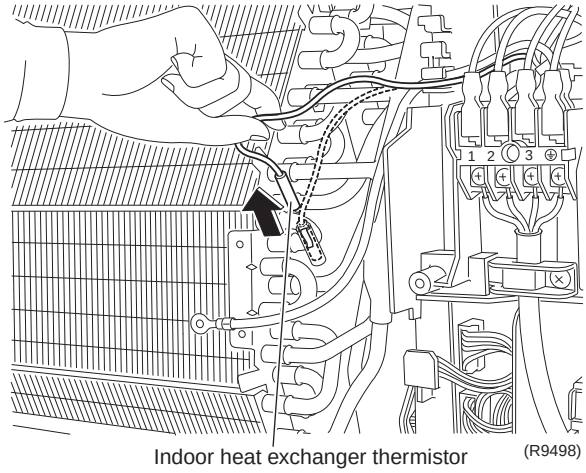
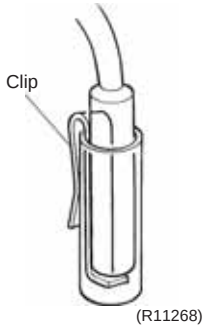
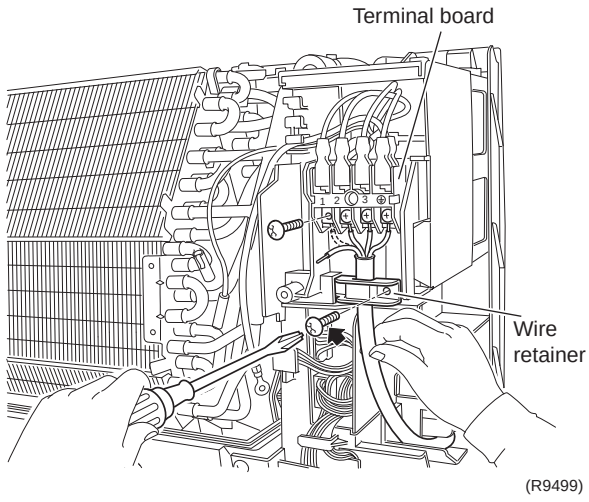
Step	Procedure		Points
6	Pull the upper part of the front grille out and lift the lower part up, and then remove the front grille.	 (R9492)	■ When reassembling, make sure that all the 4 hooks are fastened as they were.

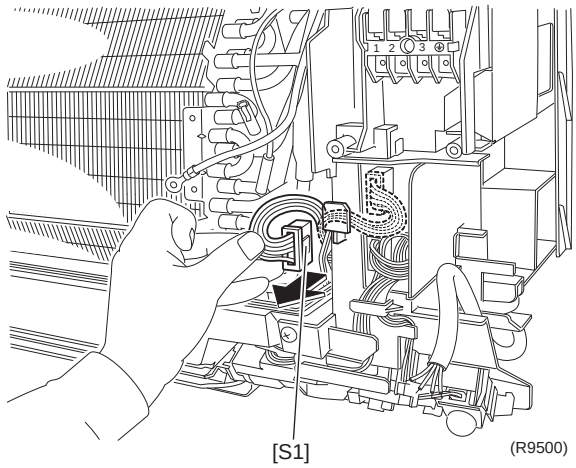
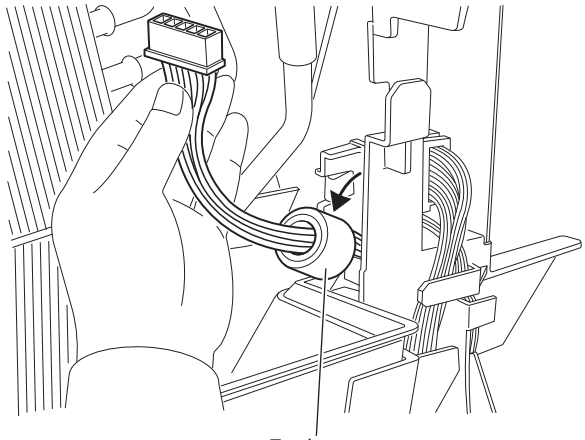
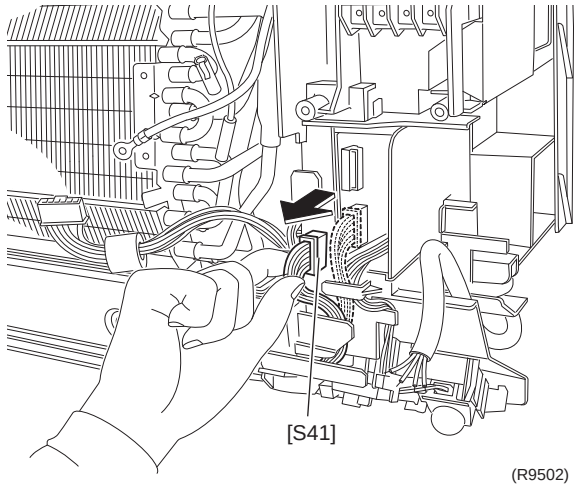
3.3 Removal of Electrical Box

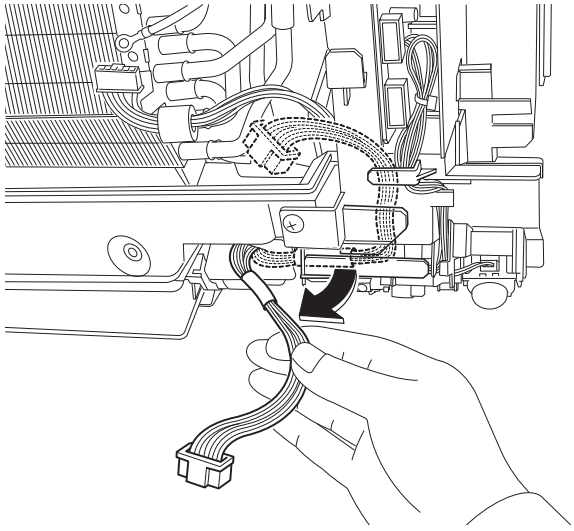
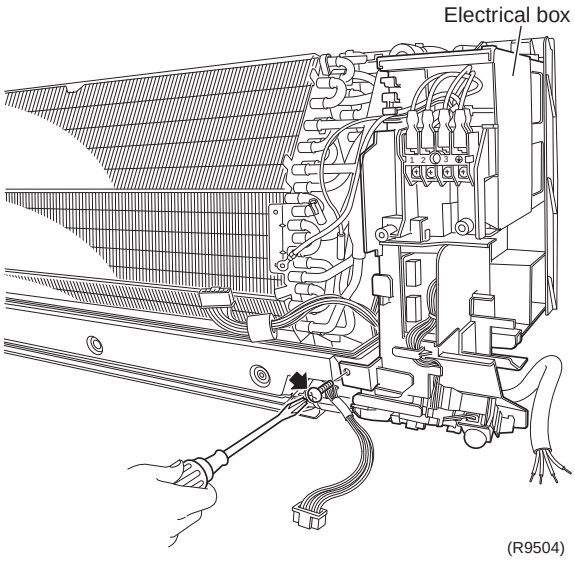
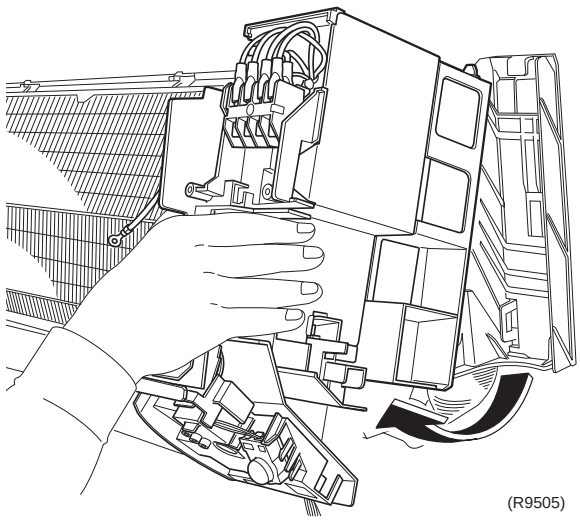
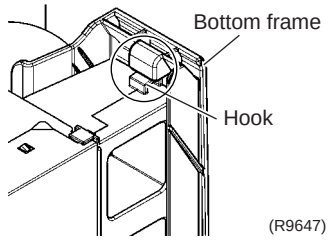
Procedure

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

Step	Procedure	Points
1. Layout of the parts	 (R9493)	**Preparation** ■ Remove the front grille according to the “Removal of Front Grille.”
2. Remove the drip proof plate.		
1 Remove the screw.	 Drip proof plate (R9494)	
2 Remove the drip proof plate from the indoor heat exchanger.	 (R9496)	 (R9495) ■ When reassembling, fit the hook to the indoor heat exchanger.

Step	Procedure	Points
3. Release the ground wire and the indoor heat exchanger thermistor.		
1 Remove the screw and release the ground wire.		
2 Pull out the indoor heat exchanger thermistor.		■ Be careful not to lose the clip of the thermistor. 
4. Remove the electrical box.		
1 Remove the 4 screws and disconnect the connection wires on the terminal board. Remove the screw and remove the wire retainer.		

Step	Procedure	Points
2	Disconnect the connector for the fan motor [S1] and release the harness from the hook.  	
3	Release the ferrite core.  	
4	Disconnect the connector for the swing motors [S41].  	

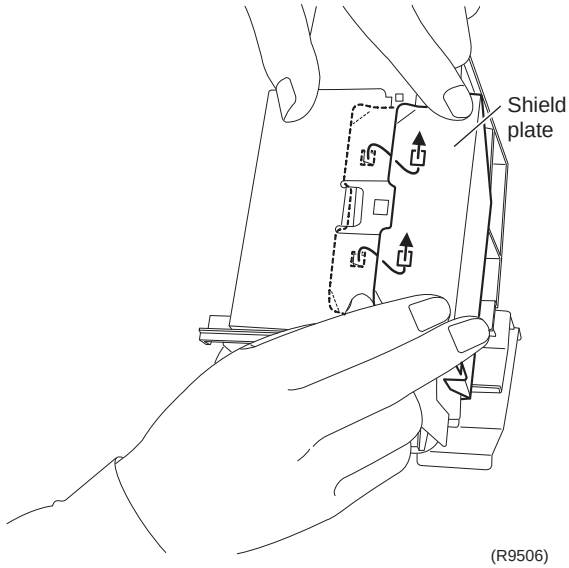
Step	Procedure	Points
5	Release the harness from the hooks.  (R9503)	
6	Remove the screw of the electrical box.  (R9504)	
7	Lift up the electrical box from the bottom frame and remove it.  (R9505)	■ Fit the back hook of the electrical box to the bottom frame when reassembling.  (R9647)

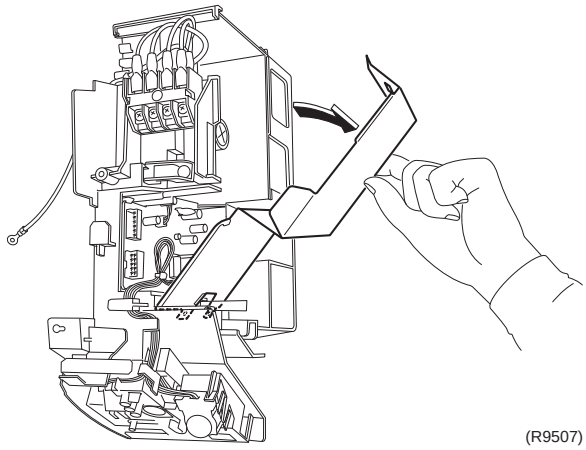
3.4 Removal of PCBs

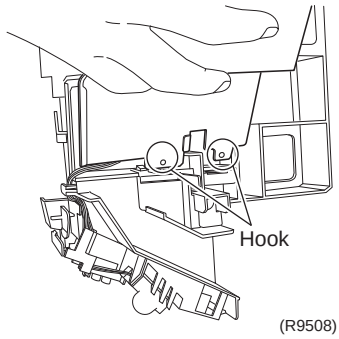
Procedure

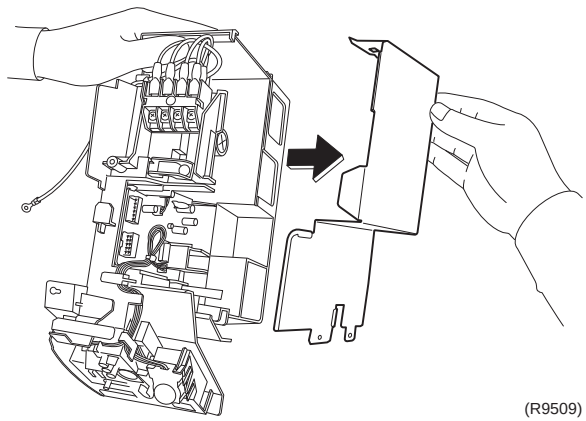
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

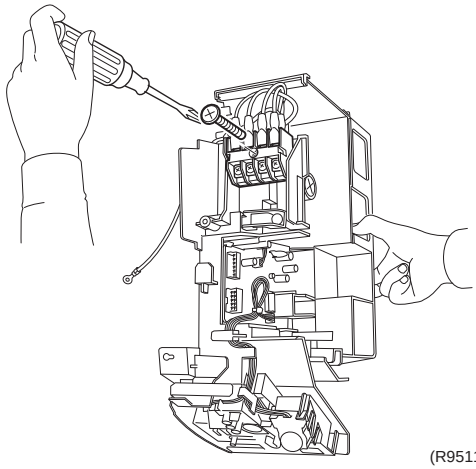
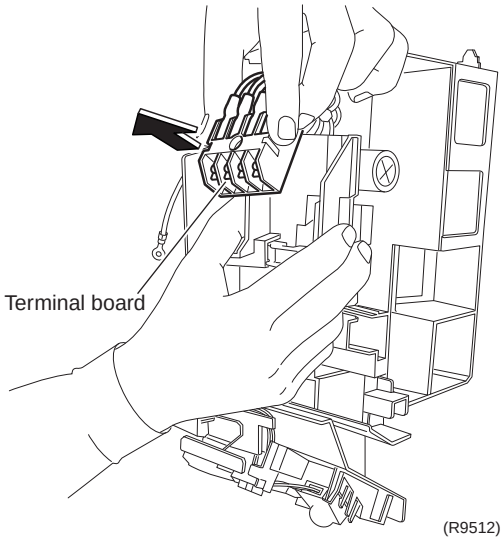
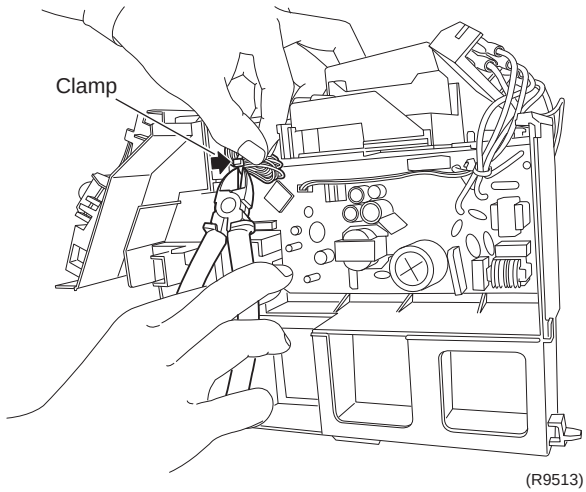
Step	Procedure	Points
1. Remove the signal receiver PCB.		
1	Unfasten the hooks of the shield plate.	
2	Open the shield plate.	■ The shield plate has 2 hooks at the lower part also.
3	Remove the shield plate.	

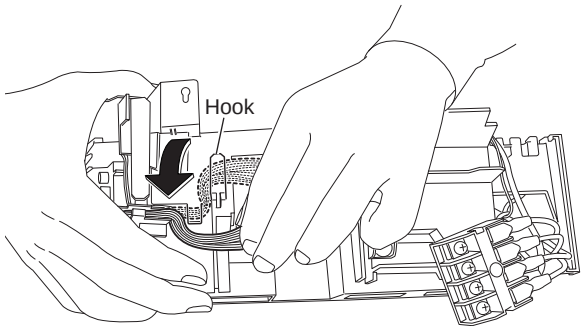
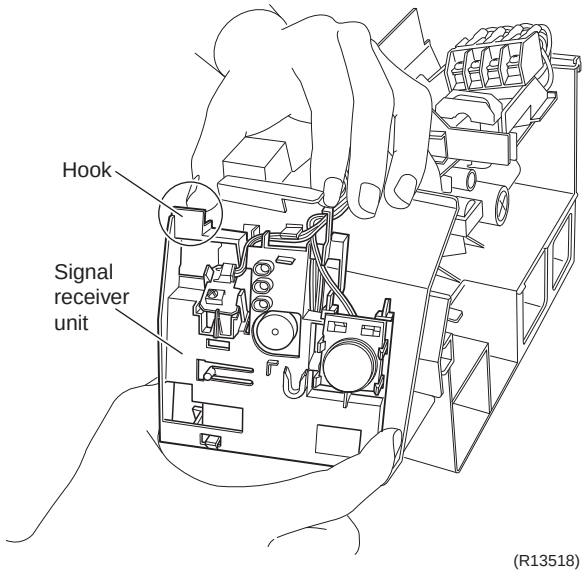
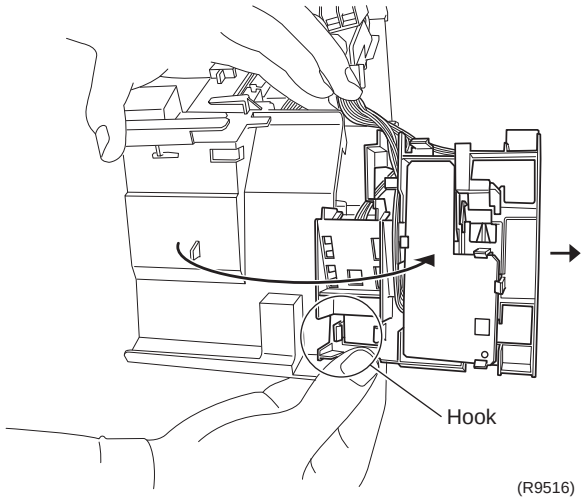


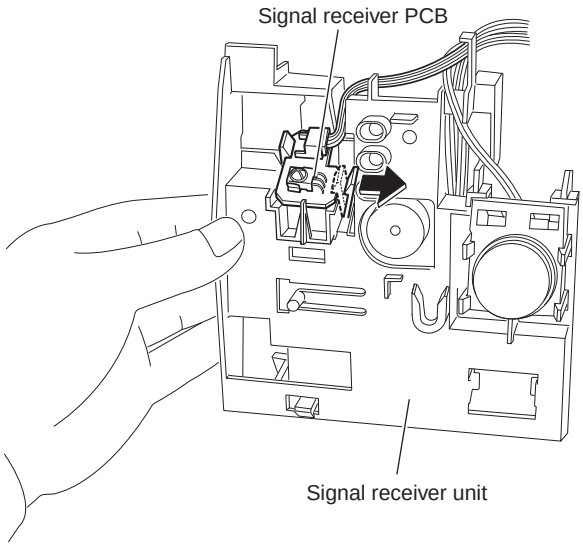
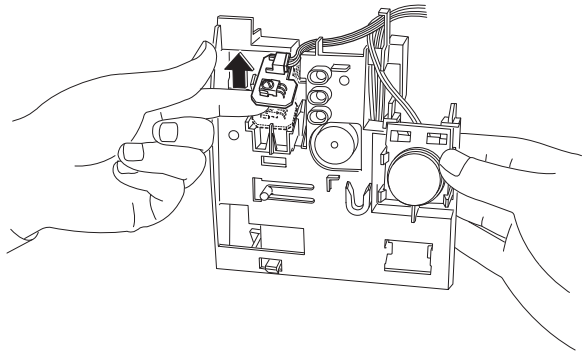
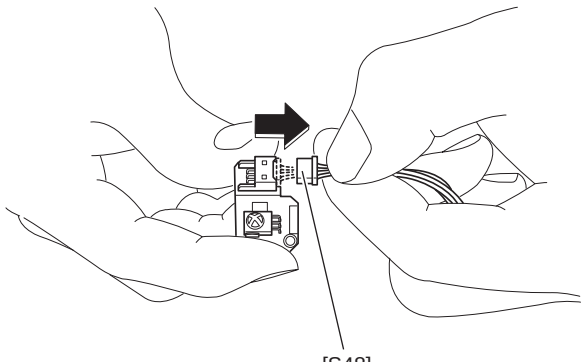


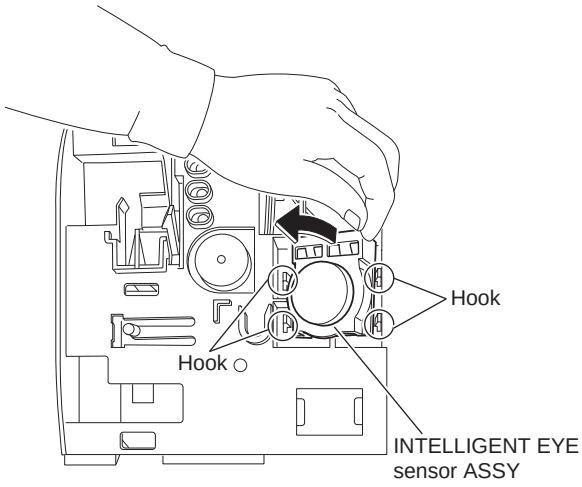
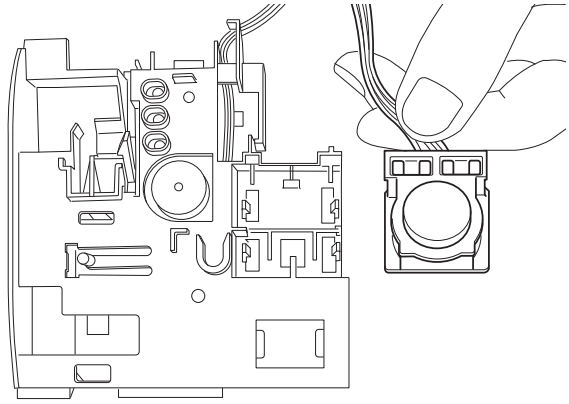
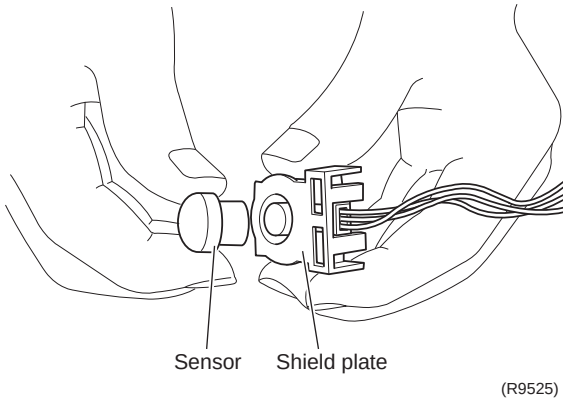




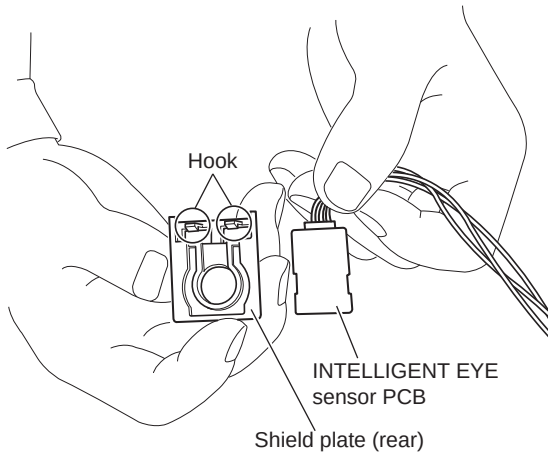
Step	Procedure		Points
4	Remove the screw of the terminal board.	 (R9511)	
5	Remove the terminal board. (1 hook at the back)	 (R9512)	
6	Cut the clamp.	 (R9513)	

Step	Procedure		Points
7	Release the harness from the hook.	 (R9514)	■ When reassembling, make sure to hook the harness.
8	Push and unfasten the hook of the signal receiver unit.	 (R13518)	
9	Open the signal receiver unit. Unfasten the hook and remove the signal receiver unit.	 (R9516)	

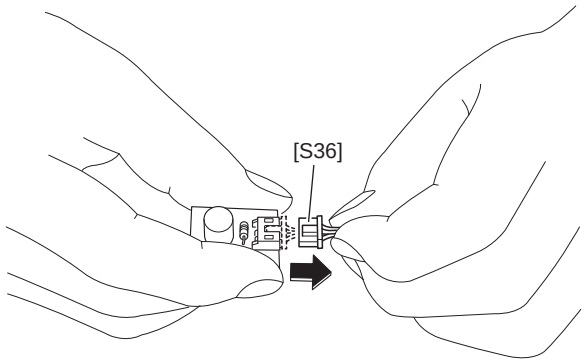
Step	Procedure	Points
10	Unfasten the hook on the right of the signal receiver PCB. (Then the signal receiver PCB is lifted up.)	 (R13519)	
11	Remove the signal receiver PCB.	 (R9521)	
12	Disconnect the connector. [S48]: control PCB	 (R9522)	

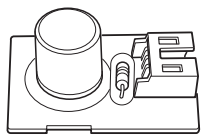
Step	Procedure	Points
2. Remove the INTELLIGENT EYE sensor PCB.		
1 Unfasten the 2 hooks on the right and then the 2 hooks on the left. Remove the INTELLIGENT EYE sensor ASSY.	 (R9523)  (R9524)	
2 Remove the sensor from the shield plate.	 (R9525)	■ When reassembling, set the sensor at the position where it “clicks”. Otherwise, the sensor is not completely set.

Step	Procedure	Points
3	Remove the shield plate by unfastening the 2 hooks.	
4	Disconnect the connector. [S36]: control PCB	



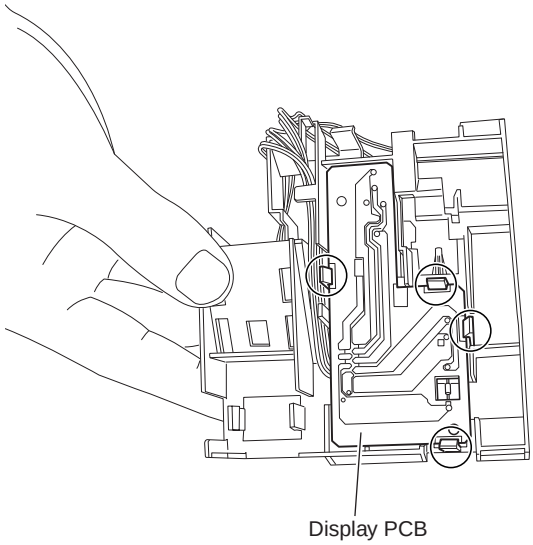
(R9526)



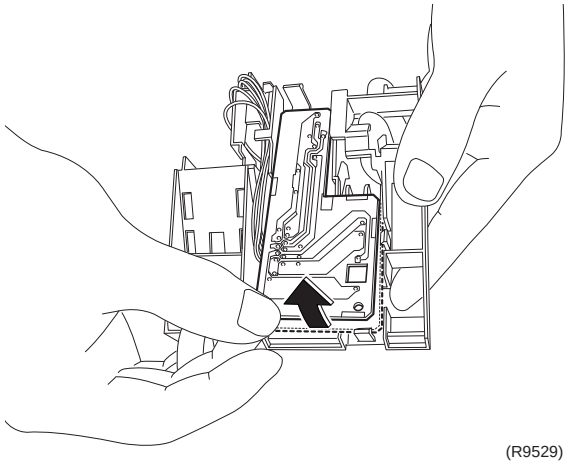


(R9527)

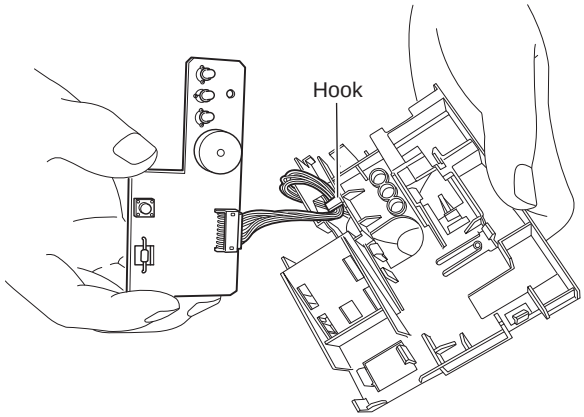
Step	Procedure	Points
3. Remove the display PCB.		
1	Unfasten the 4 hooks.	
2	Lift up the display PCB.	
3	Release the harness from the hook.	



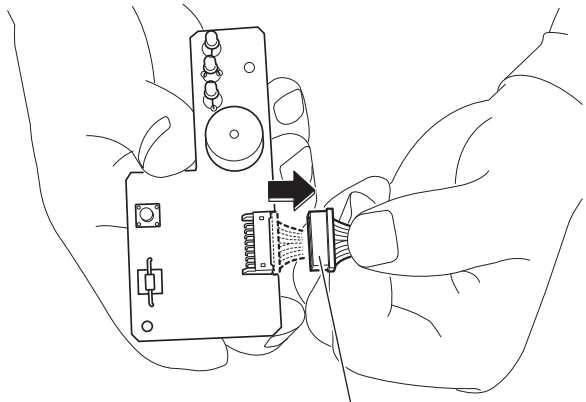
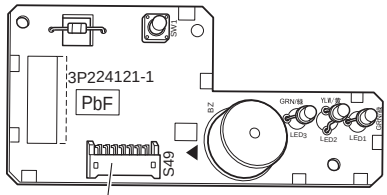
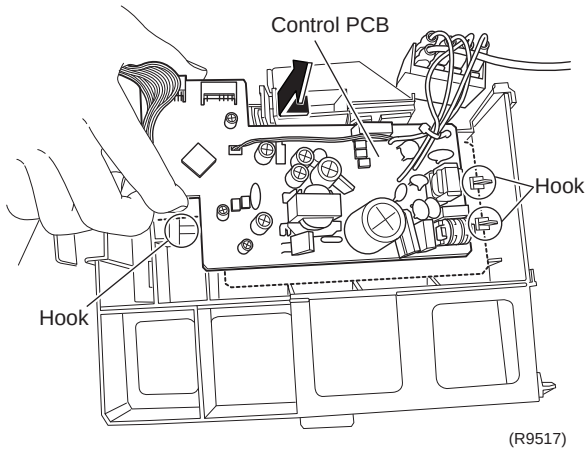
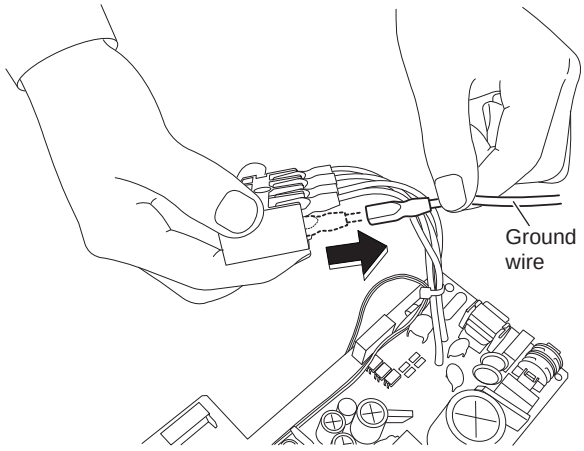
(R9528)



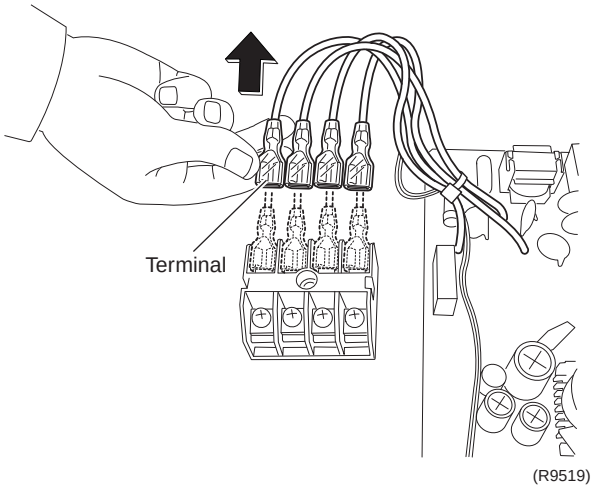
(R9529)

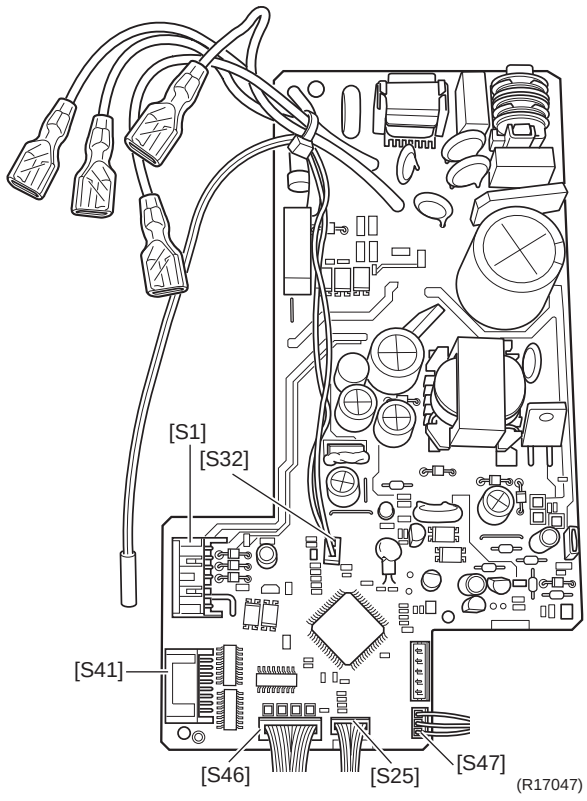


(R9530)

Step	Procedure		Points
4	Disconnect the connector. [S49]: control PCB	 (R9531)  [S49] (R13520)	
4. Remove the control PCB.			
1	Unfasten the 3 hooks. Lift up and remove the control PCB.	 (R9517)	
2	Pull out the ground wire from the terminal board.	 (R16550)	

Step	Procedure	Points
3	Pull out the terminals from the terminal board.	[S1] : DC fan motor [S25] : INTELLIGENT EYE sensor PCB [S32] : indoor heat exchanger thermistor [S41] : swing motors [S46] : display PCB [S47] : signal receiver PCB ■ Refer to page 17 for detail.

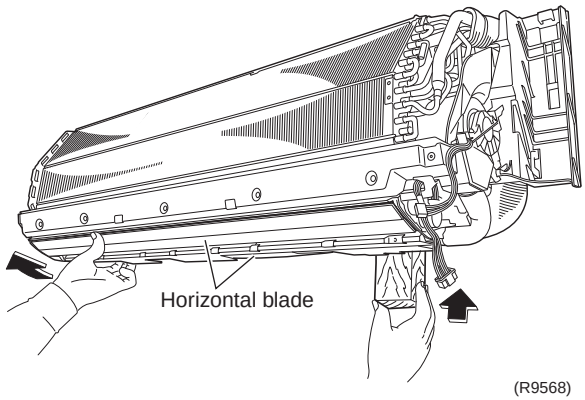
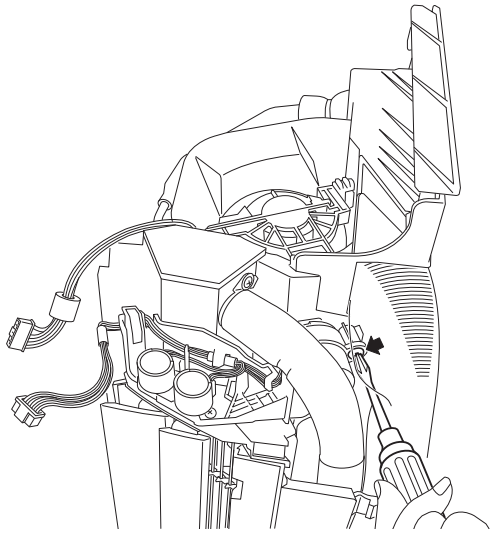
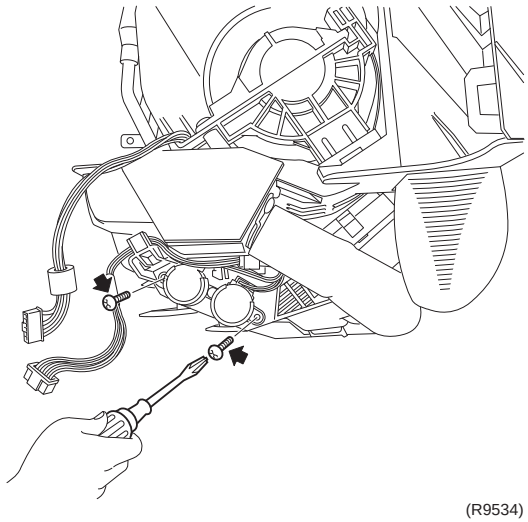




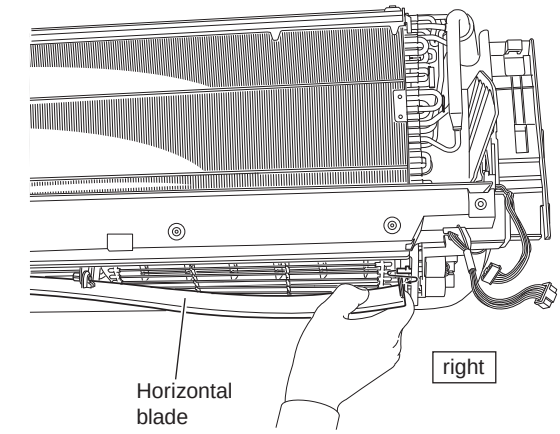
3.5 Removal of Horizontal Blades / Swing Motors

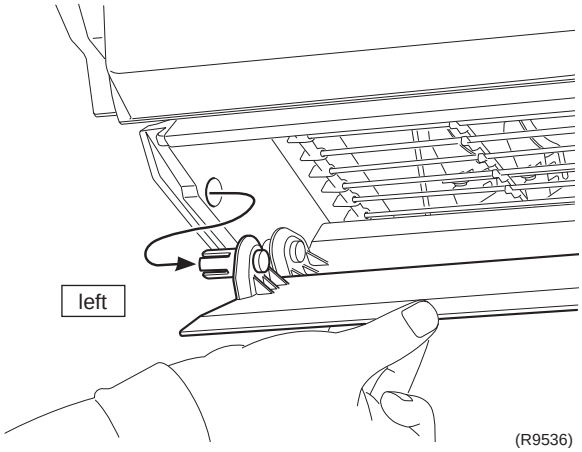
Procedure

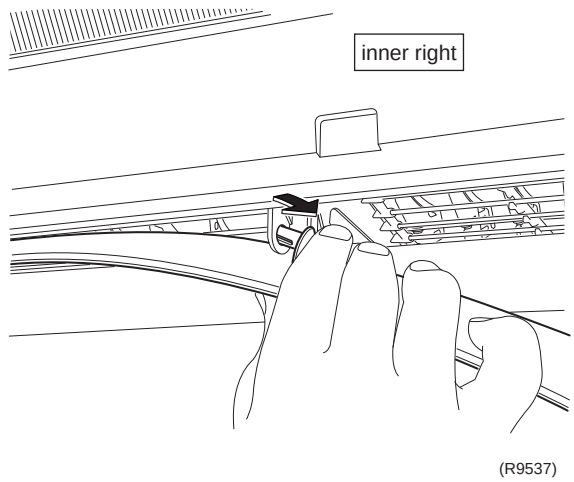
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

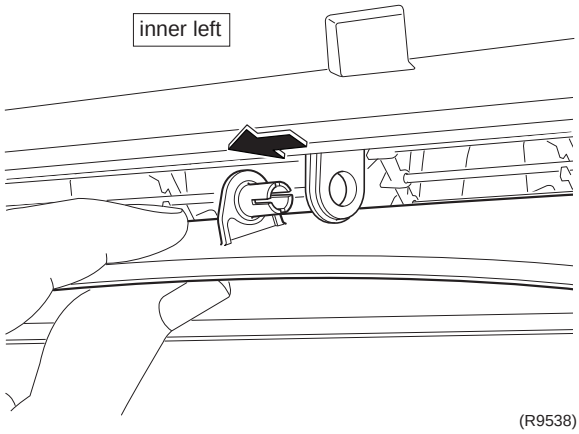
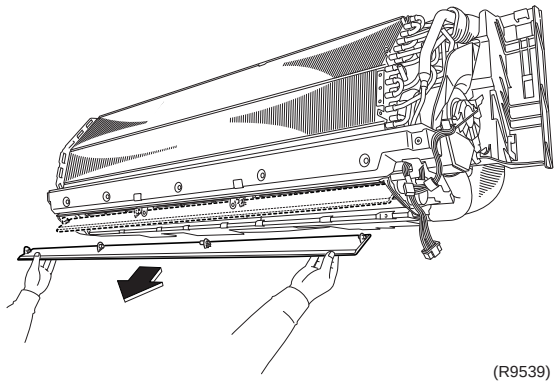
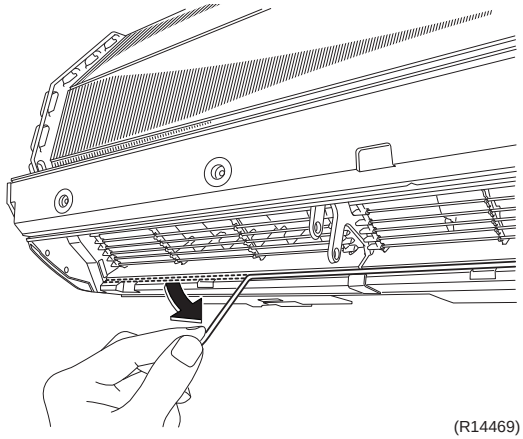
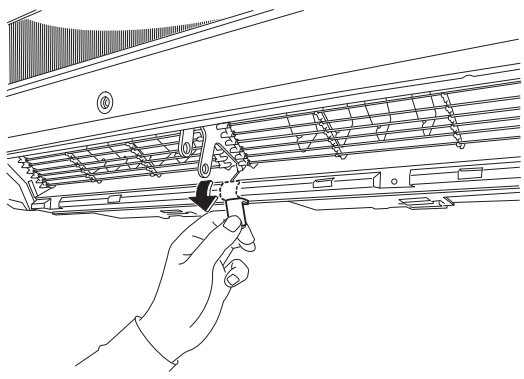
Step	Procedure	Points
1. Remove the horizontal blades.		
1 Hold the indoor unit up with a piece of wood etc.	 (R9568)	
2 Remove the screw at the rear of the indoor unit.	 (R9533)	
3 Remove the 2 screws (front and rear).	 (R9534)	

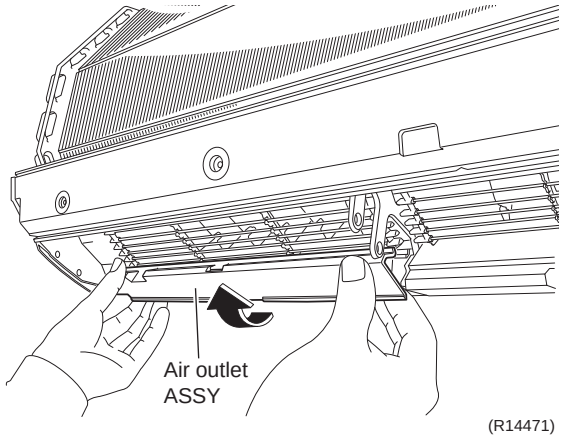
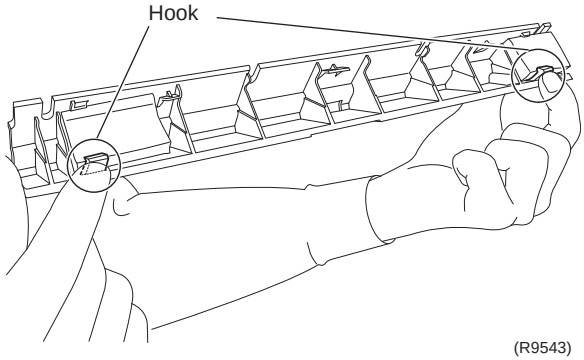
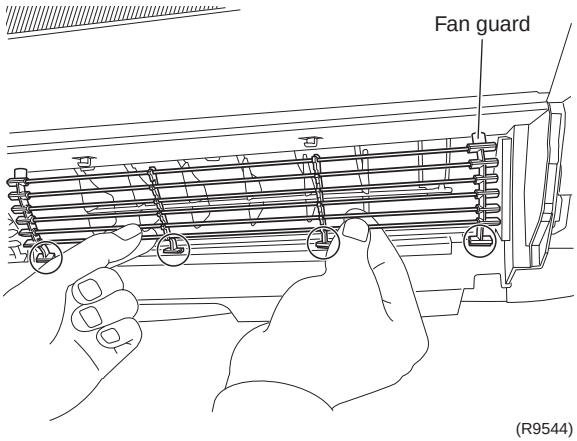
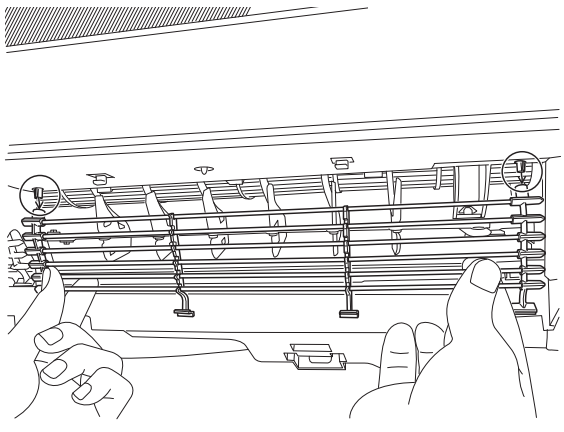
Step	Procedure	Points
4	Release the shafts in turn.	■ Removing order (right → left → inner right → inner left)

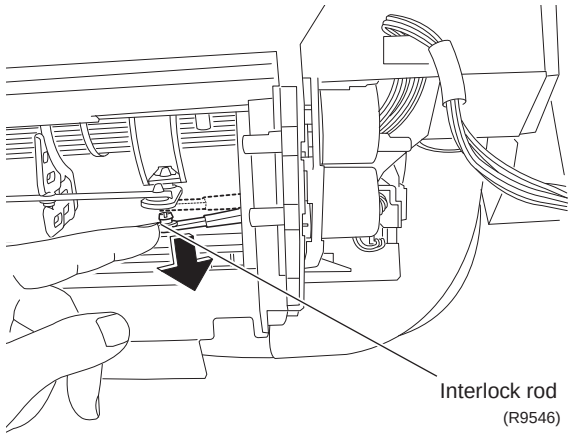
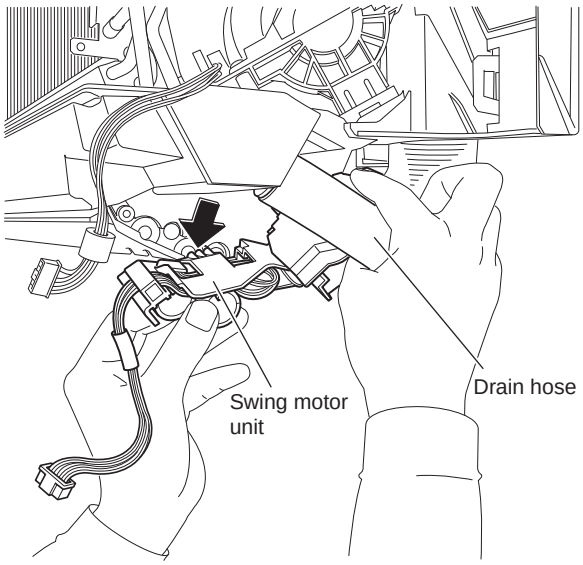
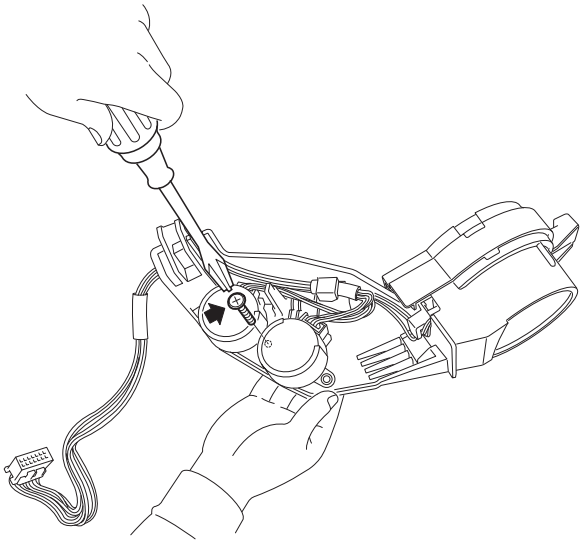


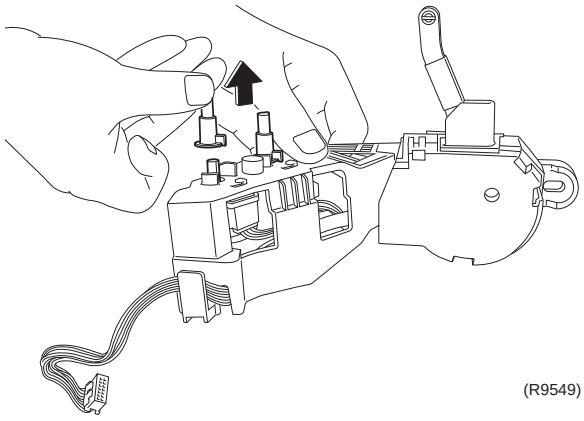
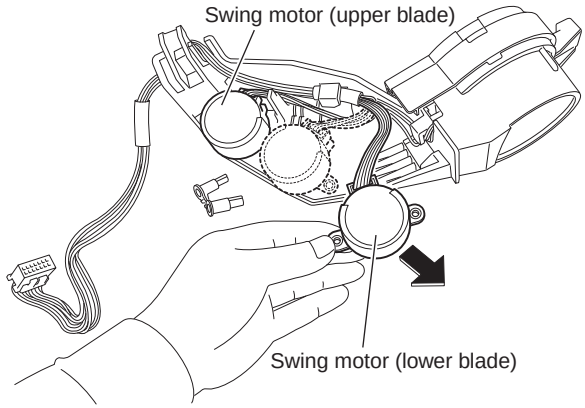
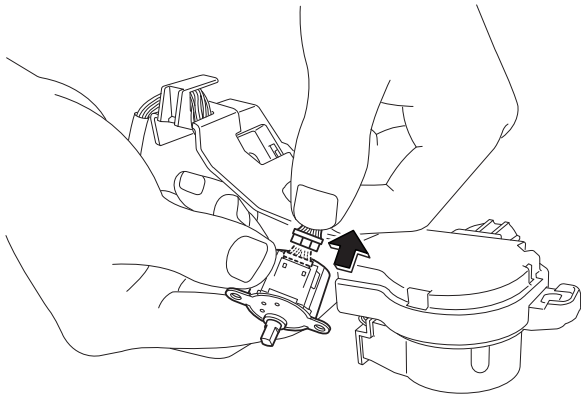




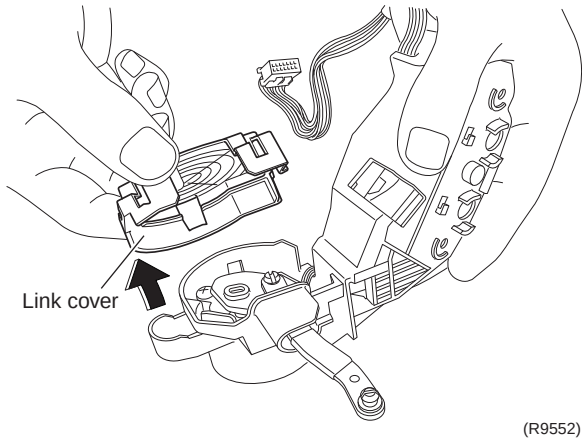
Step	Procedure		Points
5	Remove the horizontal blade.	 (R9538)  (R9539)	■ Remove both the horizontal blades (upper and lower) in the same way.
2. Remove the fan guards.			
1	Remove the sealing material (horizontal).	 (R14469)	
2	Remove the sealing material (vertical). Also remove the other sealing material on the right.	 (R14470)	

Step	Procedure		Points
3	Remove the left air outlet ASSY by pushing the 2 hooks at the back.	 (R14471)  (R9543)	■ Remove the center and right air outlet ASSY likewise.
4	Unfasten the 4 lower hooks and the 2 upper hooks and remove the fan guard.	 (R9544)  (R9545)	■ Remove the other 2 fan guards likewise.

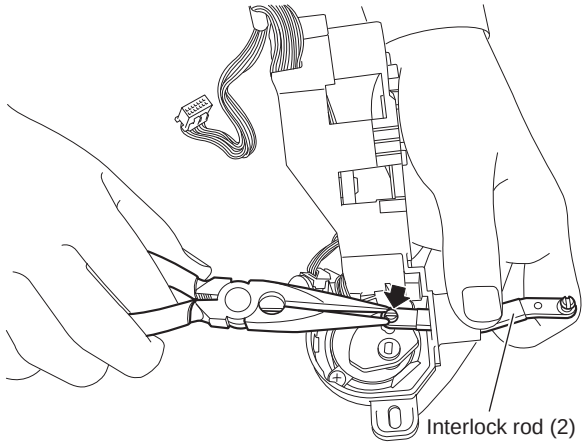
Step	Procedure	Points
3. Remove the swing motors for horizontal blades.		
1 Release the interlock rod.	 (R9546)	
2 Pull out the drain hose, then remove the swing motor unit.	 (R13579)	
3 Remove the screw at the center.	 (R9548)	

Step	Procedure		Points
4	Remove the 2 pivots.	 (R9549)	
5	Remove the swing motors.	 (R9550)	**Caution** **When reassembling, do not confuse the installing order of the 2 motors and the colors of the connectors.** **If you set the connectors or motors opposite, the horizontal blades do not move smoothly or the noise may be heard.** (1) Set the swing motor for the upper blade first. (connector: white) (2) Then, set the swing motor for the lower blade. (connector: red) (3) Fix both the swing motors with a screw.
6	Disconnect the connector to remove the swing motor.	 (R9551)	

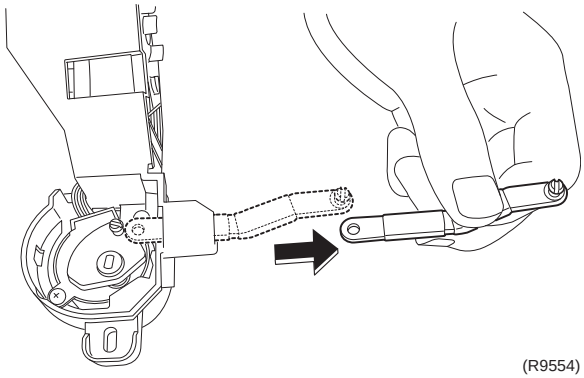
Step	Procedure	Points
4. Remove the swing motor for vertical blades.		
1	Remove the link cover.	
2	Remove the interlock rod (2) with pliers.	



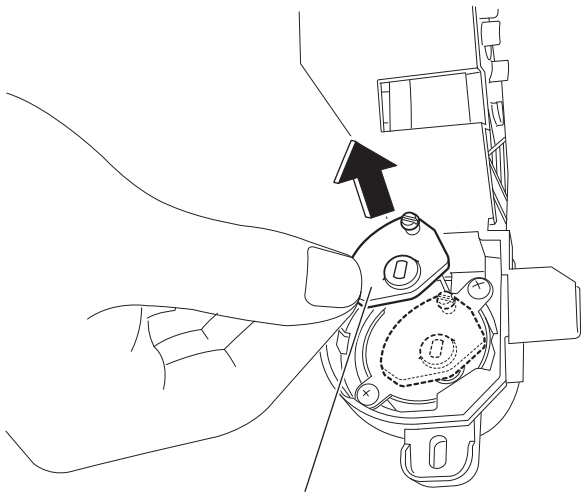
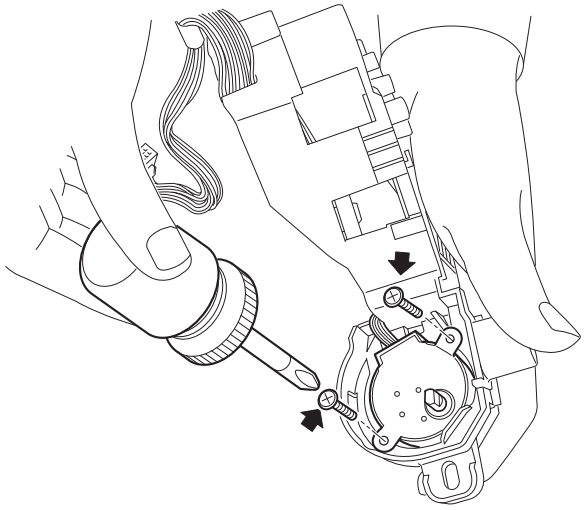
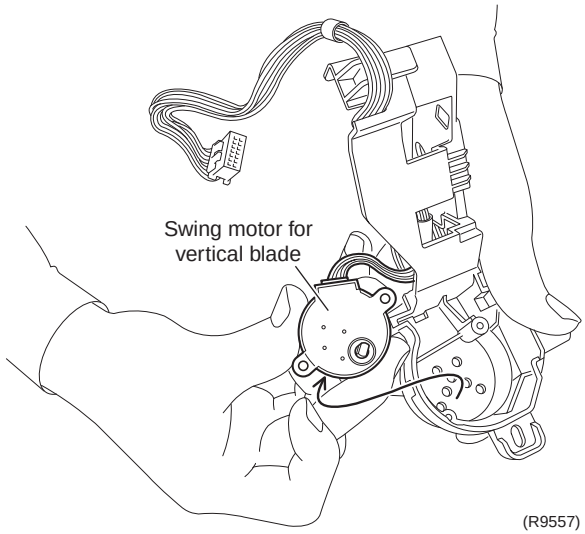
(R9552)

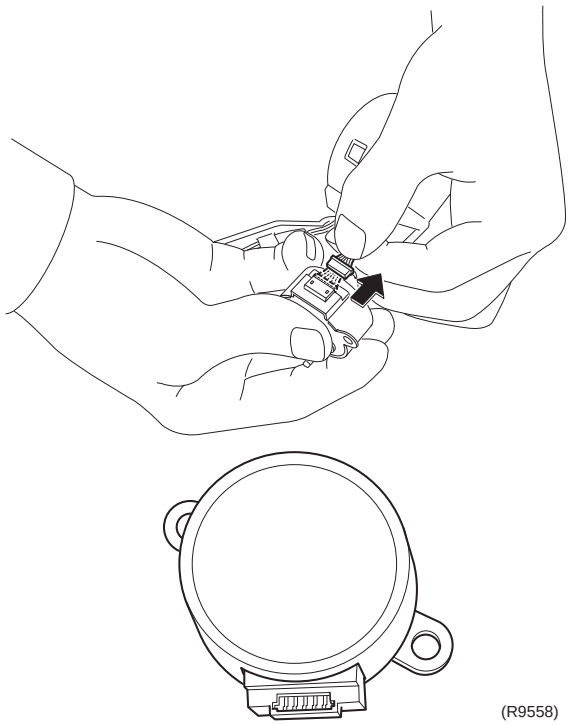


(R9553)



(R9554)

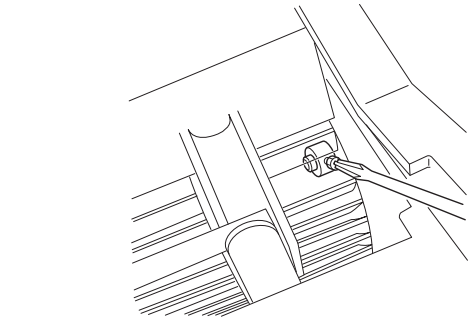
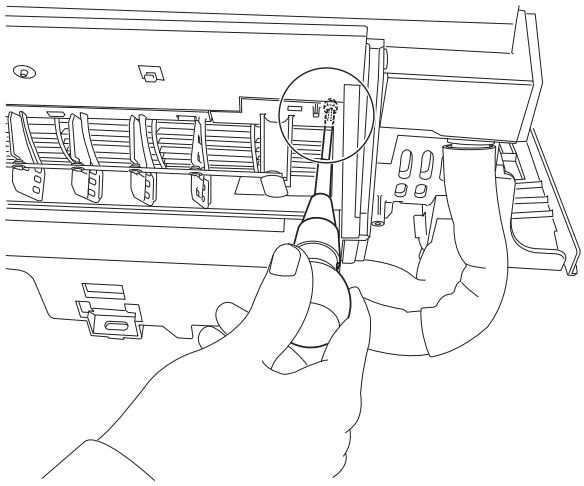
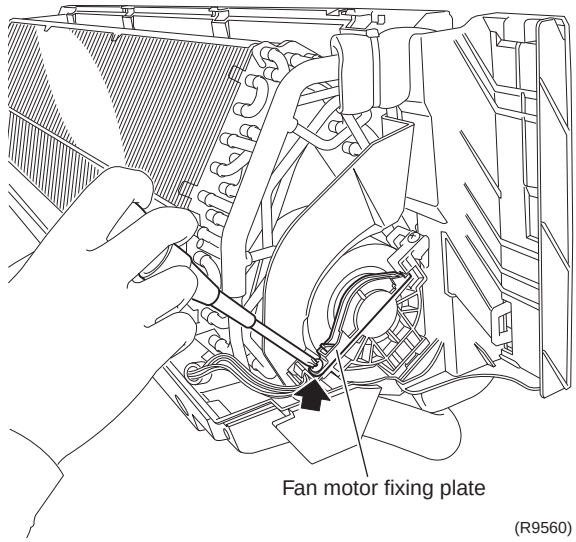
Step	Procedure		Points
3	Remove the interlock rod (1).	 (R9555)	
4	Remove the 2 screws.	 (R9556)	
5	Remove the swing motor for the vertical blade.	 (R9557)	

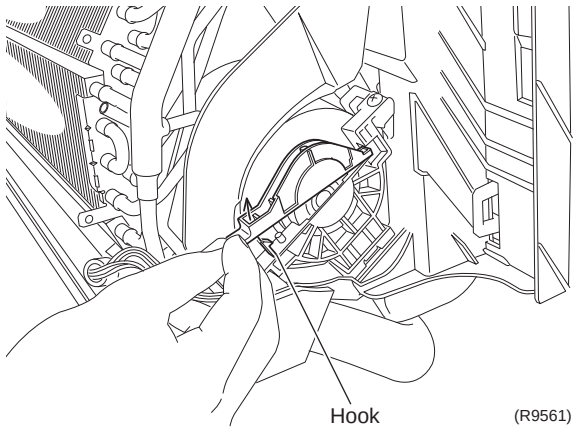
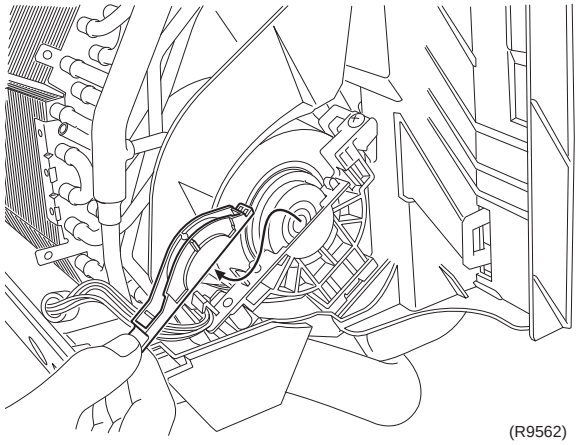
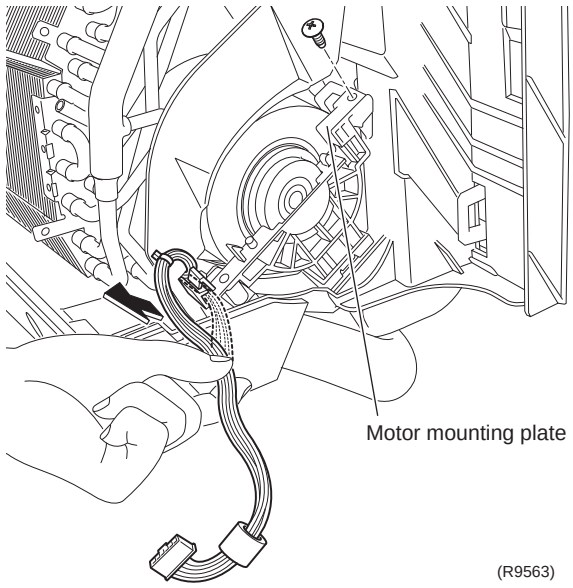
Step	Procedure		Points
6	Disconnect the connector.	 (R9558)	

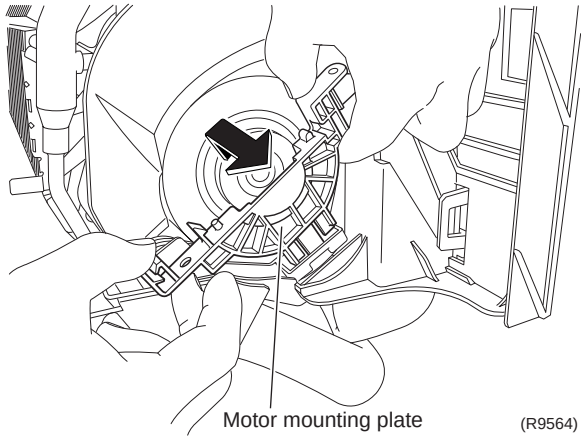
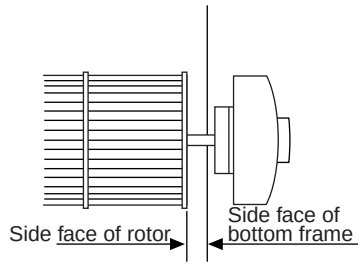
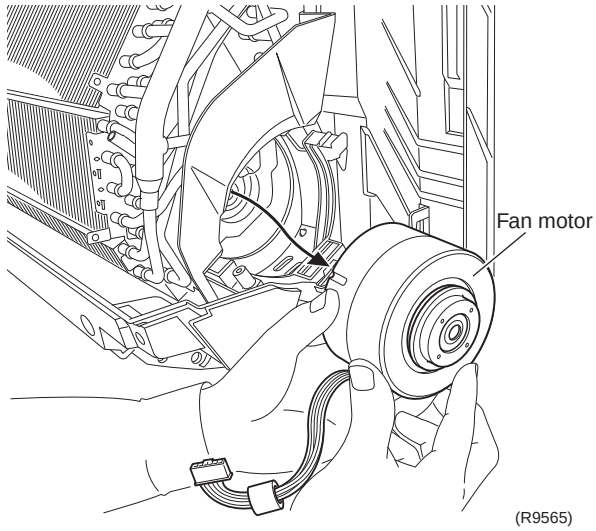
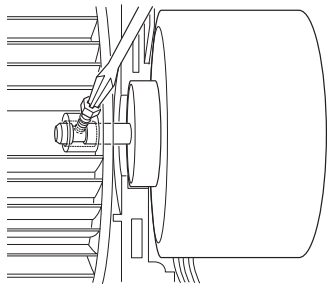
3.6 Removal of Fan Motor

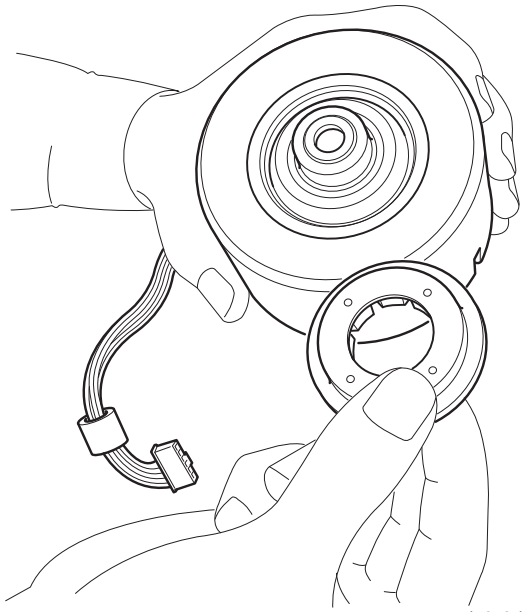
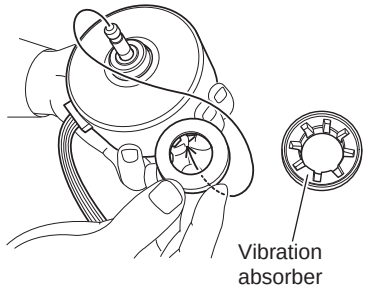
Procedure

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

Step	Procedure		Points
1	Loosen the screw of the fan motor from the air outlet.	  (R9559)	
2	Remove the screw of the fan motor fixing plate.	 Fan motor fixing plate (R9560)	

Step	Procedure		Points
3	Unfasten the hook at the front and remove the fan motor fixing plate.	 (R9561)	
		 (R9562)	
4	Release the harness from the hook, and remove the screw of the motor mounting plate.	 (R9563)	

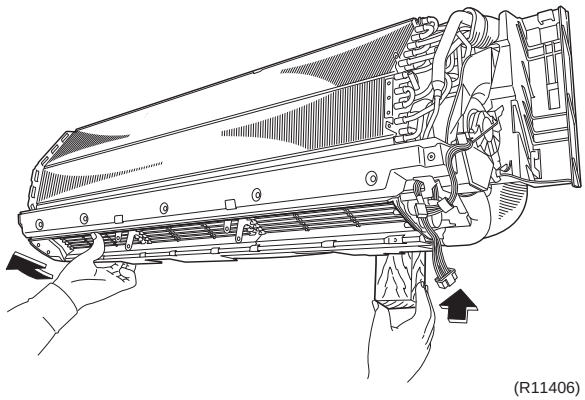
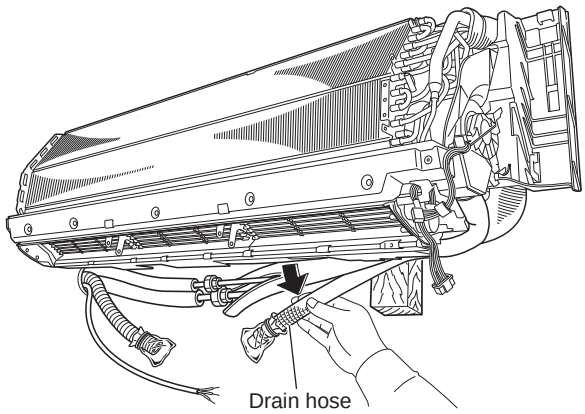
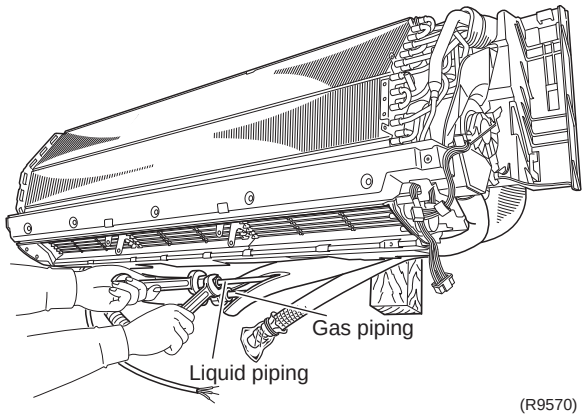
Step	Procedure		Points
5	Remove the motor mounting plate.	 (R9564)	■ When reassembling the fan motor and the fan rotor, provide as much as 5 mm (0.2 inch) of play between the side face of the rotor and the bottom frame.  (R2808)
6	Remove the fan motor.	 (R9565)	 (R9582) (1) Insert the fan motor with approx. 5 mm (0.2 inch) left. (2) Tighten the screw until it stops. Then give the screw one more turn. (3) Rotate the fan rotor and confirm the fan motor and the fan rotor are installed appropriately. (4) Tighten the screw completely if appropriate. (5) If not appropriate, go back to (1).

Step	Procedure		Points
7	Remove the vibration absorber.	 (R9567)	■ When reassembling, engage the vibration absorber completely.  (R9566)

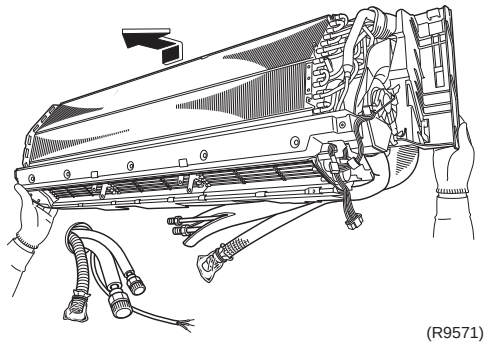
3.7 Removal of Indoor Heat Exchanger

Procedure

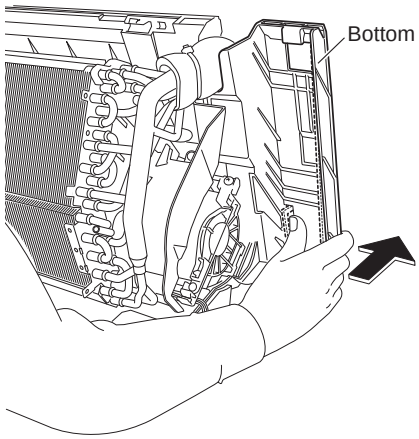
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure		Points
1. Disconnect the refrigerant piping.		 (R11406)	**Preparation** ■ Remove the electrical box according to the “Removal of Electrical Box”. **Caution** **If the refrigerant leaks, repair the leakage, then collect all refrigerant from the unit. After conducting vacuum drying, recharge a proper amount of refrigerant.** **Caution** **From the viewpoint of global environment protection, be sure to use a vacuum pump for air purging.** **Caution** **In pump-down work, be sure to stop the compressor before disconnecting the refrigerant piping. If the refrigerant piping is disconnected with the compressor operating and the stop valve open, air may be sucked in to generate an over-pressure in refrigeration cycle, thus resulting in pipe rupture or accidental injury.**
1	Hold the indoor unit up with a piece of wood etc.		
2	Pull out the drain hose.	 (R9569)	
3	Unscrew the flare nuts for gas piping and liquid piping.	 (R9570)	■ Place a plastic sheet under the drain pan to prevent from wetting the floor with remaining drain. ■ If the drain hose is embedded in the wall, disconnect the drain hose beforehand. ■ Carry out the removal work with 2 wrenches. ■ When the pipings are disconnected, protect both the openings of pipe and unit from entering moisture.

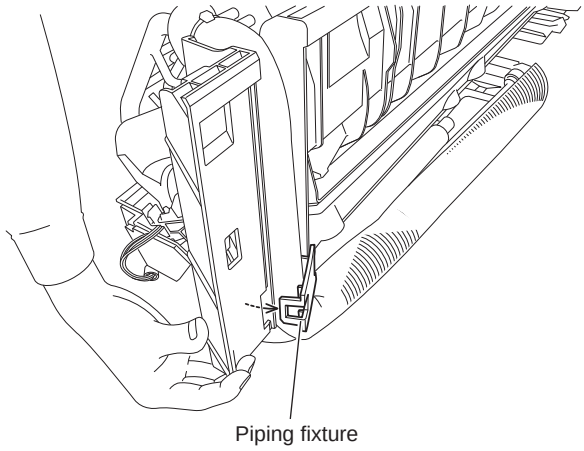
Step	Procedure	Points
2. Remove the piping fixture.		
1	Detach the indoor unit from the installation plate.	
2	Push the bottom frame.	
3	Release the piping fixture.	



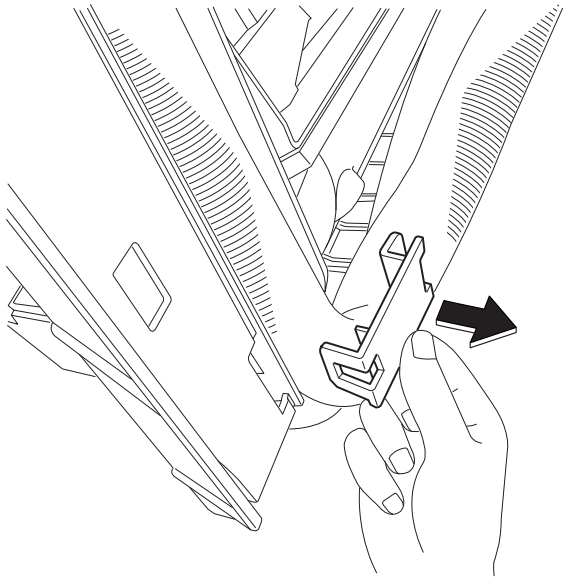
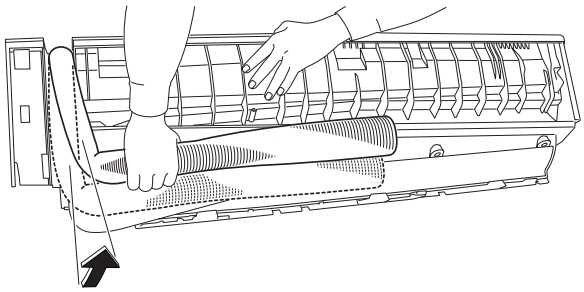
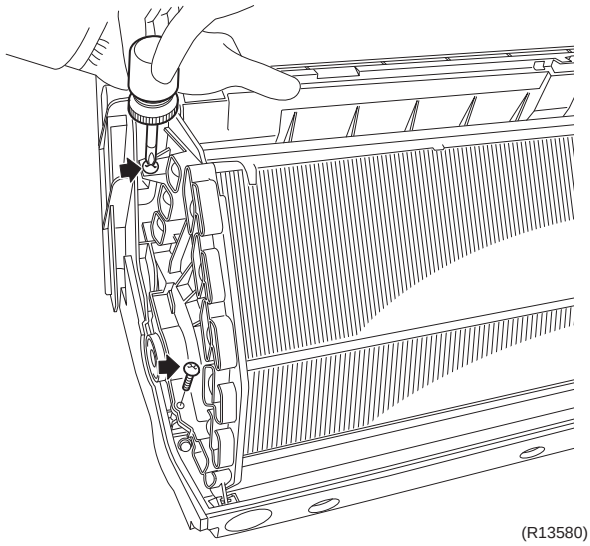
(R9571)

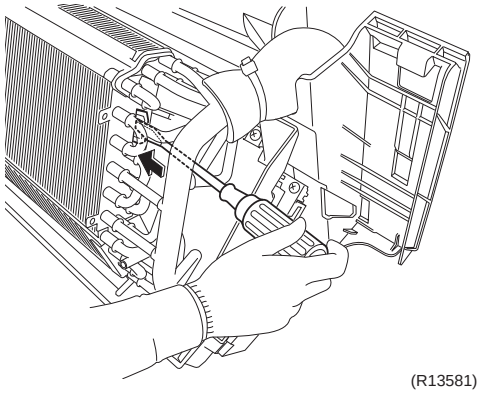
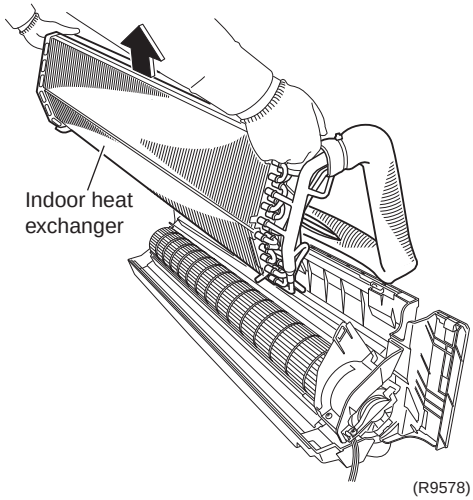


(R9572)



(R9573)

Step	Procedure		Points
4	Remove the piping fixture.	 (R9574)	
3. Remove the indoor heat exchanger.			
1	Widen the auxiliary piping.	 (R9575)	
2	Remove the 2 screws on the left side.	 (R13580)	**Caution** **When removing or reassembling the indoor heat exchanger, be sure to wear gloves or wrap the indoor heat exchanger with cloths. (You may be injured by the fins.)**

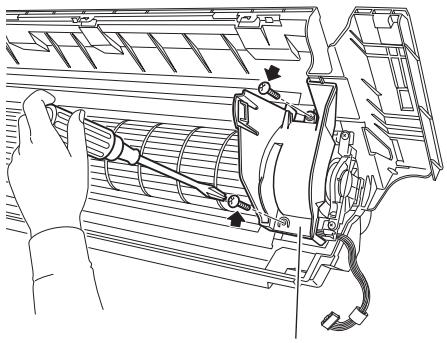
Step	Procedure		Points
3	Push the hook on the right side and unfasten it.	 (R13581)	
4	Lift up and remove the indoor heat exchanger.	 (R9578)	■ Press the right side of the indoor heat exchanger, and lift it up from the left side.

3.8 Removal of Fan Rotor

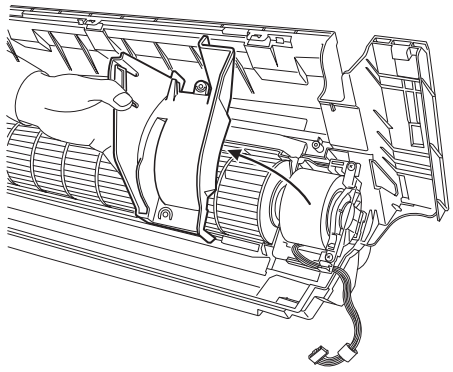
Procedure

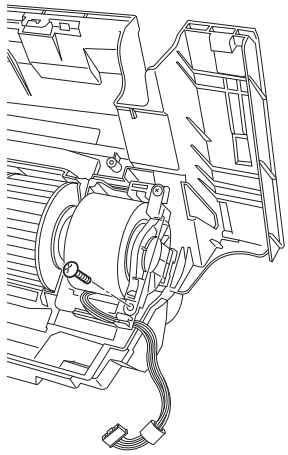
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

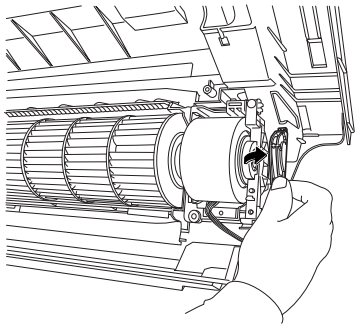
Step	Procedure	Points
1. Remove the right side plate.		
1	Remove the 2 screws.	
2	Lift the right side plate and remove it.	
2. Remove the fan rotor.		
1	Remove the screw of the fan motor fixing plate.	
2	Remove the fan motor fixing plate.	

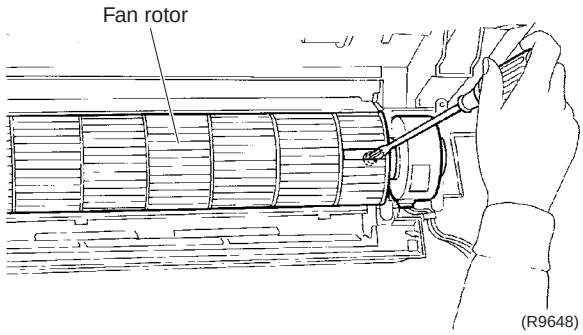
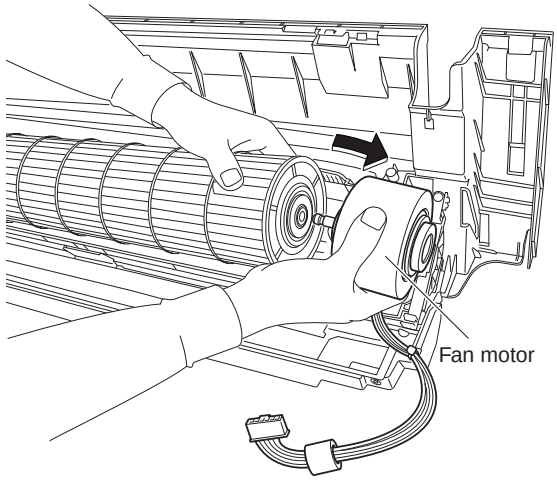
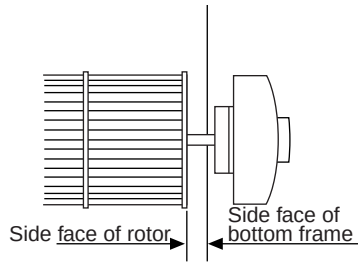
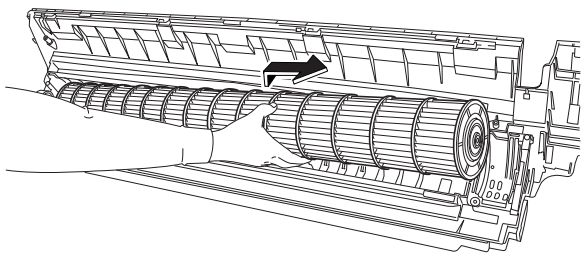
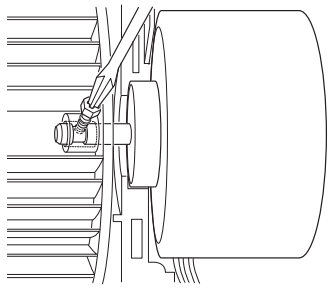


(R9579)


(R9580)


(R17121)

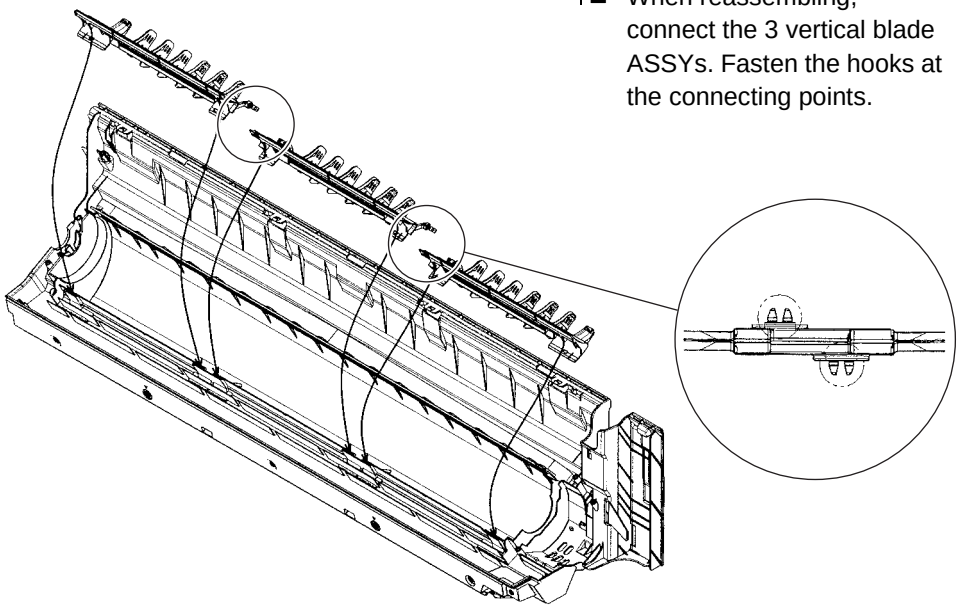

(R9581)

Step	Procedure		Points
3	Loosen the screw of the fan rotor.	 (R9648)	
4	Remove the fan motor.	 (R9583)	■ When reassembling the fan motor and the fan rotor, provide as much as 5 mm (0.2 inch) of play between the side face of the rotor and the bottom frame.  (R2808)
5	Remove the fan rotor.	 (R9584)	 (R9582) (1) Insert the fan motor with approx. 5 mm (0.2 inch) left. (2) Tighten the screw until it stops. Then give the screw one more turn. (3) Rotate the fan rotor and confirm the fan motor and the fan rotor are installed appropriately. (4) Tighten the screw completely if appropriate. (5) If not appropriate, go back to (1).

3.9 Removal of Vertical Blade ASSYs

Procedure

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

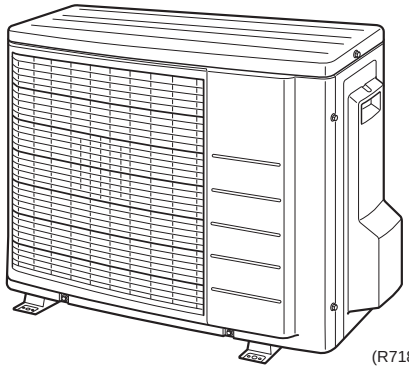
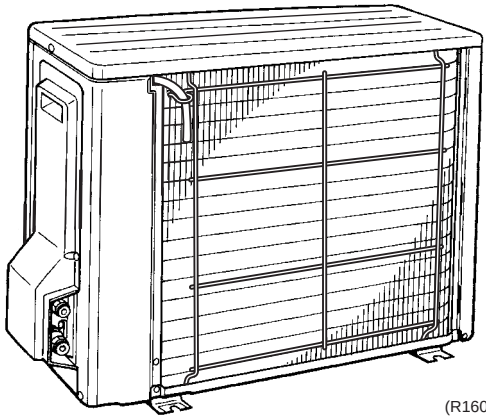
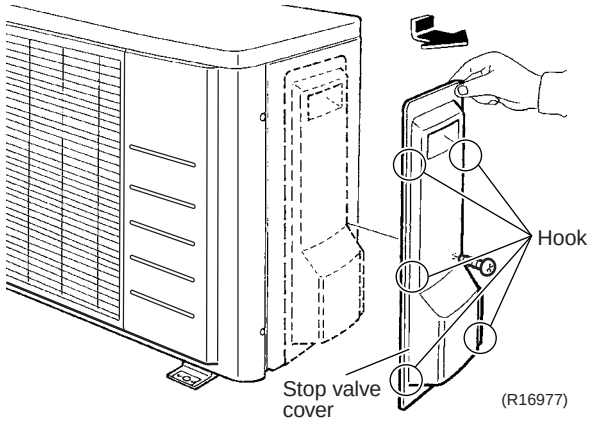
Step	Procedure		Points
	Unfasten the 2 hooks of each vertical blade ASSY. Remove the 3 vertical blade ASSYs.	 (R16979)	■ When reassembling, connect the 3 vertical blade ASSYs. Fasten the hooks at the connecting points. ■ Each vertical blade ASSY is united with a drain pan ASSY.

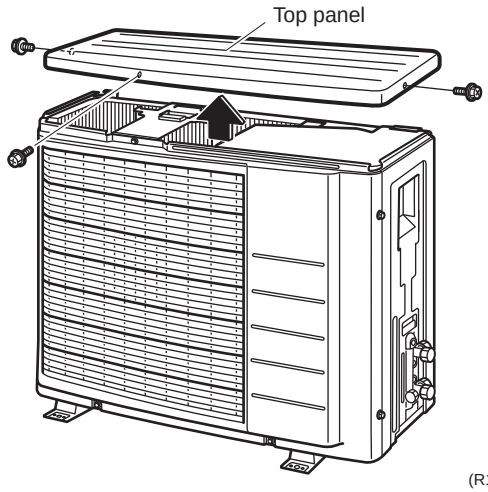
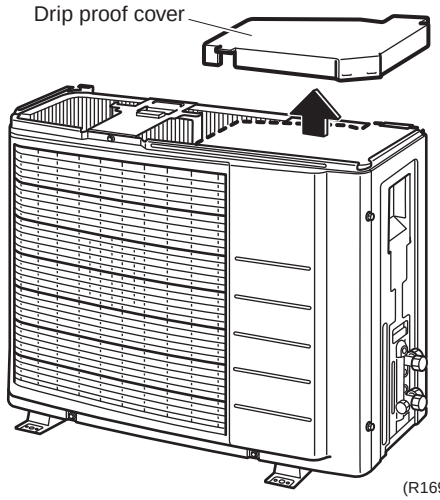
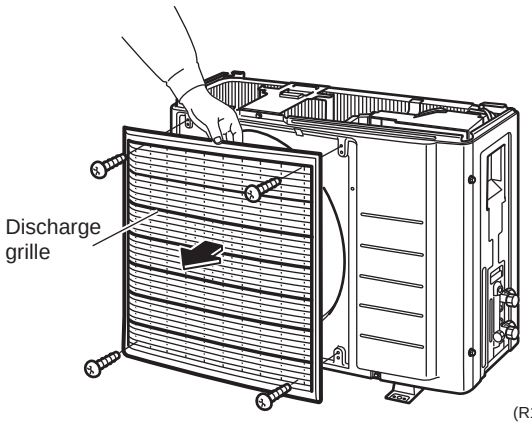
4. Outdoor Unit: RXS09/12LVJU

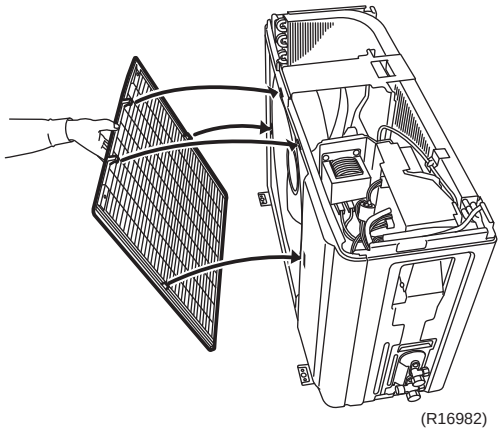
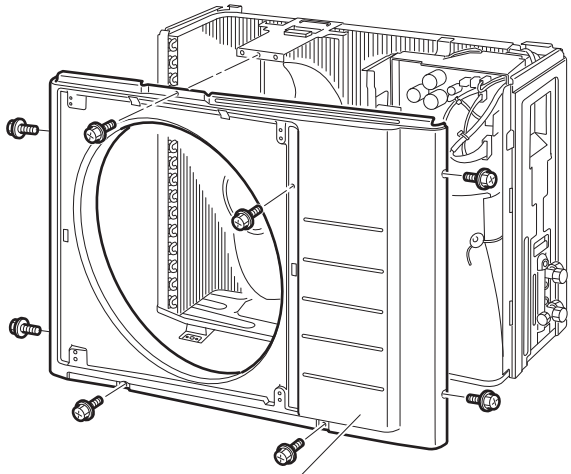
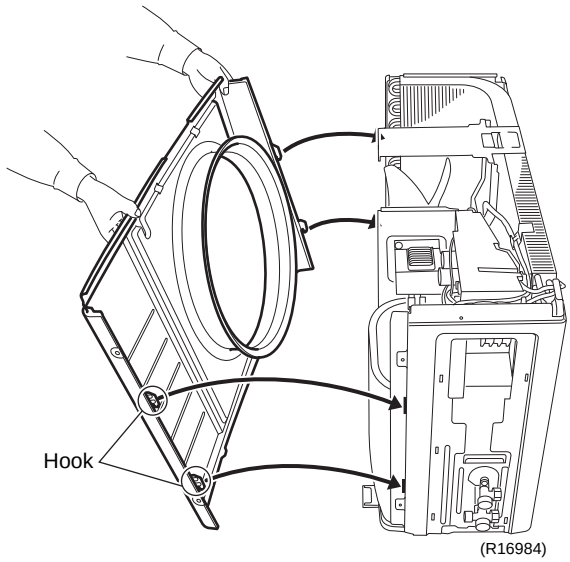
4.1 Removal of Outer Panels / Fan Motor

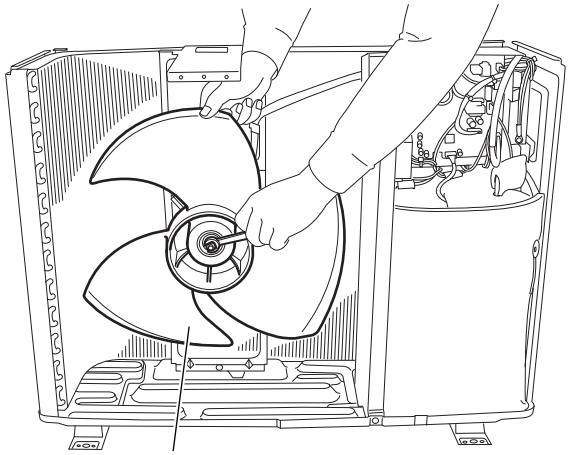
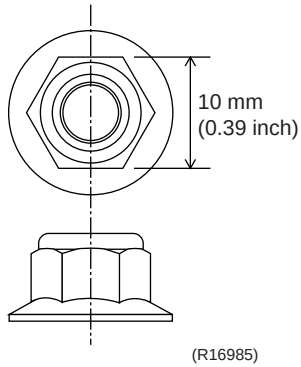
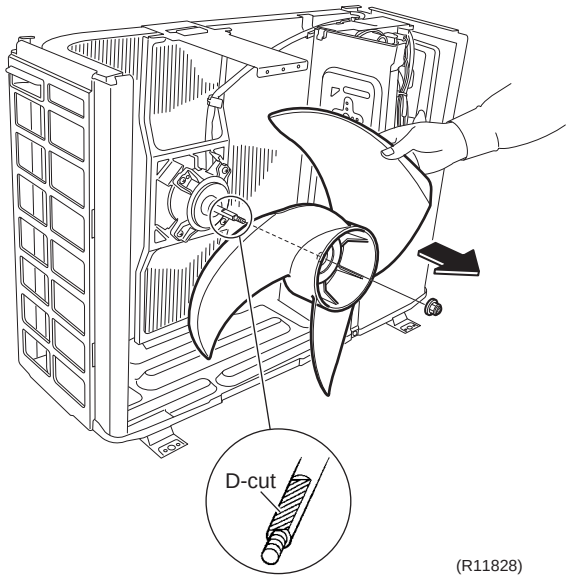
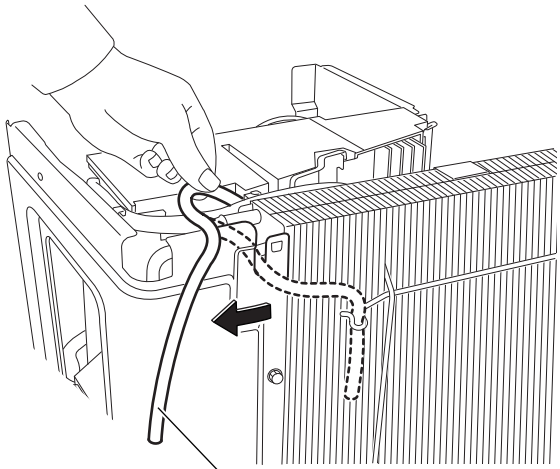
Procedure

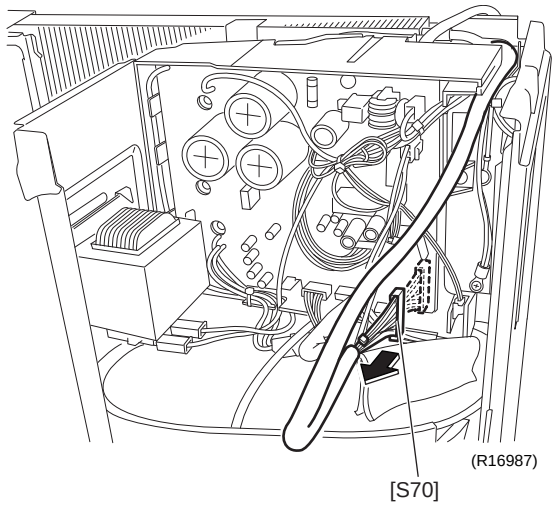
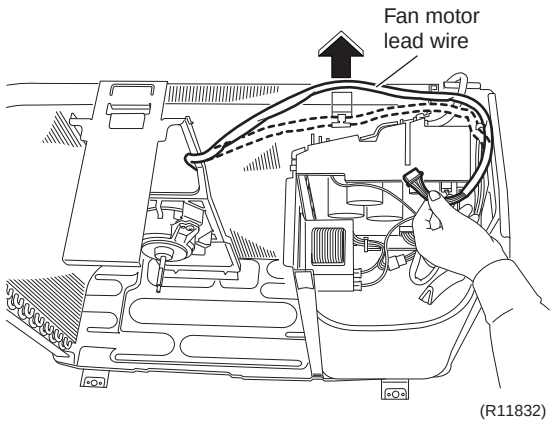
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

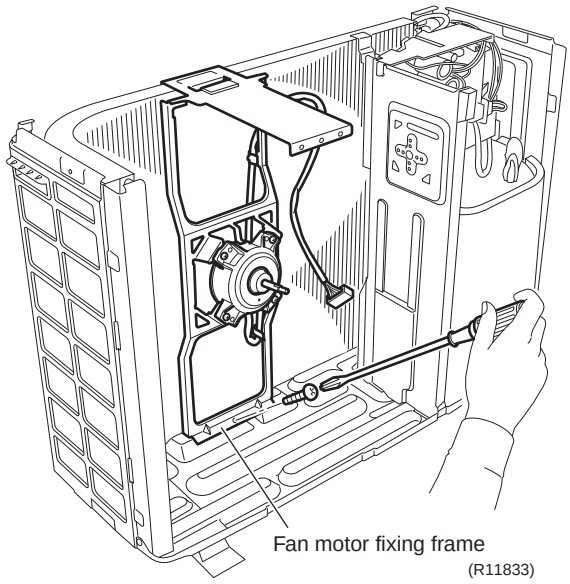
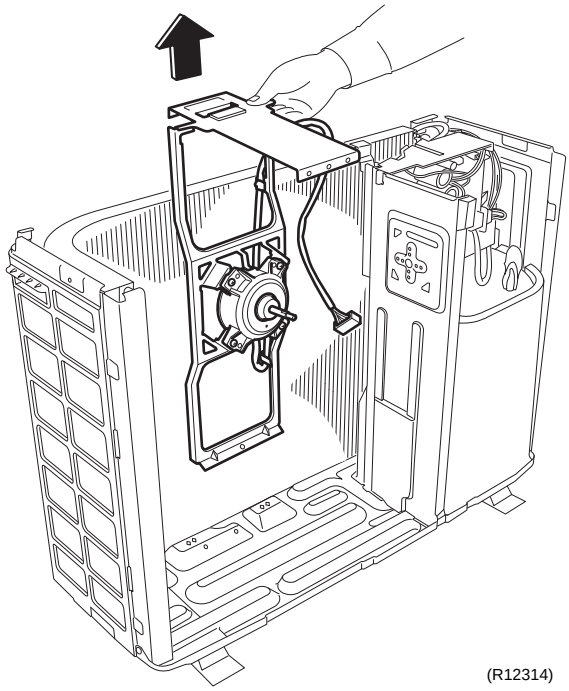
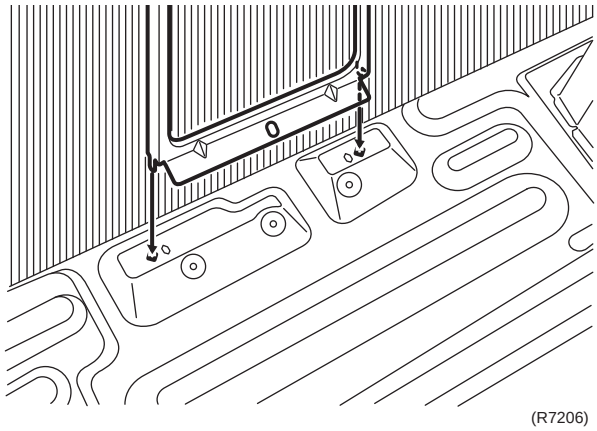
Step	Procedure	Points
1. Appearance features	 (R7186)  (R16044)	■ Take care not to cut your finger by the fins of the outdoor heat exchanger.
2. Remove the panels. 1 Remove the screw of the stop valve cover. Pull the stop valve cover downward and remove it.	 (R16977)	■ When reassembling, make sure to fit the 5 hooks.

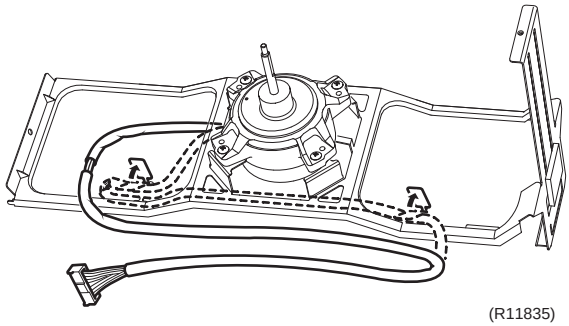
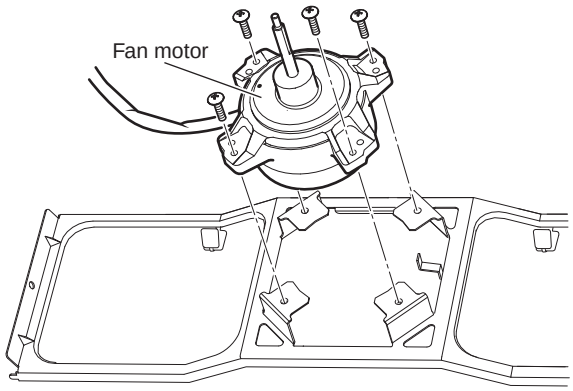
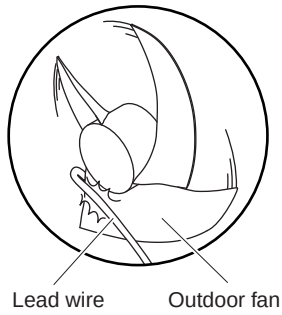
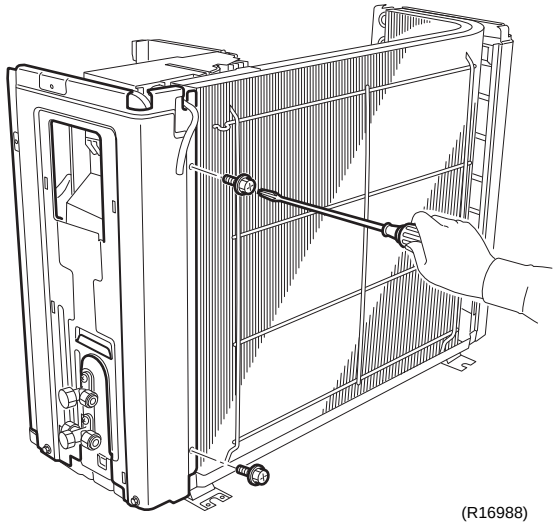
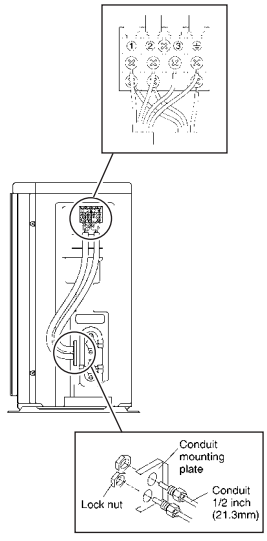
Step	Procedure		Points
2	Remove the 3 screws and lift the top panel.	 (R16978)	
3	Remove the drip proof cover.	 (R16980)	
4	Remove the 4 screws and remove the discharge grille.	 (R16981)	

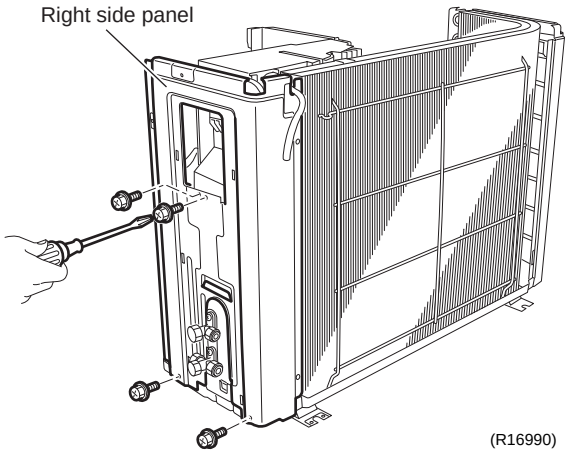
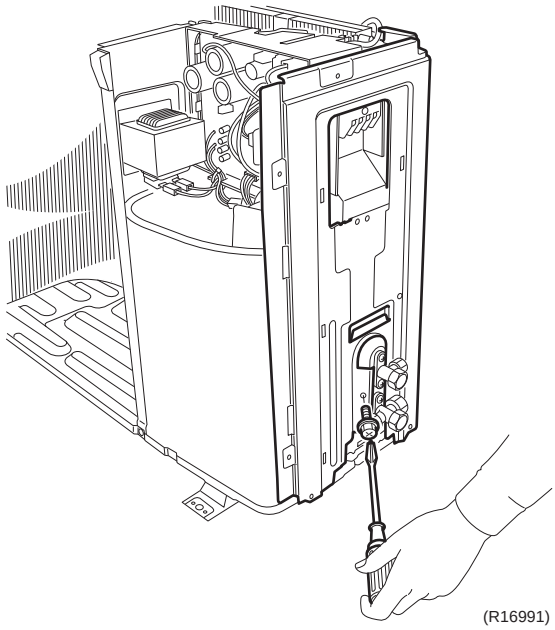
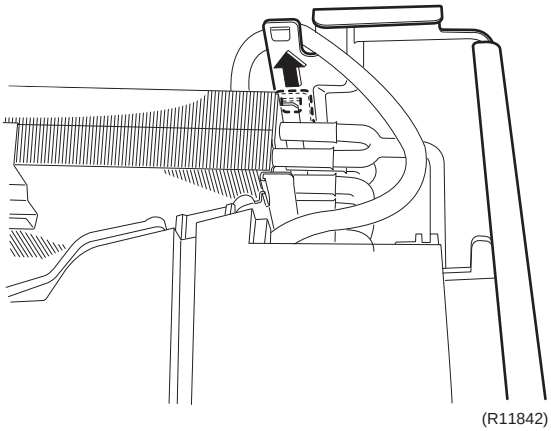
Step	Procedure		Points
		 (R16982)	■ The discharge grille has 4 hooks.
5	Remove the 8 screws of the front panel.	 Front panel (R16983)	
6	Unfasten the hooks. Pull and remove the front panel.	 Hook (R16984)	■ The front panel has 4 hooks.

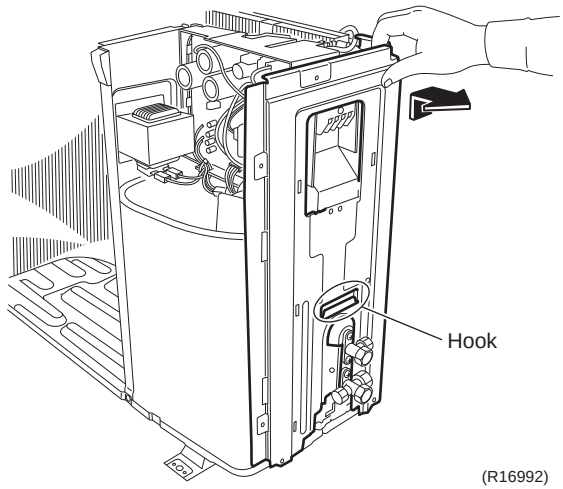
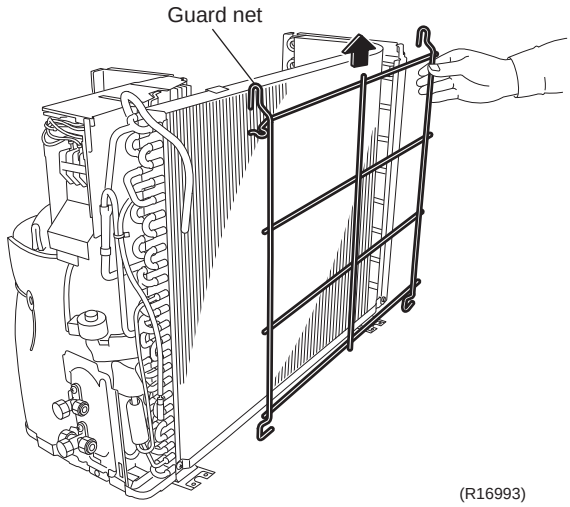
Step	Procedure	Points
3. Remove the fan motor.		■ Nut size: M6
1 Remove the nut of the outdoor fan.	 (R16922)	 (R16985)
2 Remove the outdoor fan.	 (R11828)	■ When reassembling, align the ▼ mark of the outdoor fan with the D-cut section of the motor shaft.
3 Release the outdoor temperature thermistor.	 (R16986)	

Step	Procedure		Points
4	Disconnect the connector for the fan motor [S70].		
5	Release the fan motor lead wire from the hook.		

Step	Procedure		Points
6	Remove the screw and remove the fan motor fixing frame.	 (R11833)  (R12314)  (R7206)	■ When reassembling, fit the lower hooks into the bottom frame.

<table>
<tr><th>Step</th><th colspan="2">Procedure</th><th>Points</th></tr>
<tr><td>7</td><td>Open the 2 hooks and release the fan motor lead wire.</td><td rowspan="2"> 
(R11835)
 
Fan motor
(R12311)</td><td rowspan="2">■ When reassembling, put the fan motor lead wire through the back of the fan motor so as not to be entangled with the outdoor fan.
 
Lead wire Outdoor fan
(R3249)</td></tr>
<tr><td>8</td><td>Remove the 4 screws and remove the fan motor.</td></tr>
<tr><td colspan="2">4. Remove the right side panel.</td><td rowspan="2"> 
(R16988)</td><td rowspan="2">■ When reassembling, pass the connecting wires through the conduit and secure them with a lock nut.
■ Remove the screws and detach the connection wires.
 
Conduit mounting plate
Lock nut
Conduit 1/2 inch (21.3mm)
(R16989)</td></tr>
<tr><td>1</td><td>Remove the 2 screws on the rear side.</td></tr>
</table>

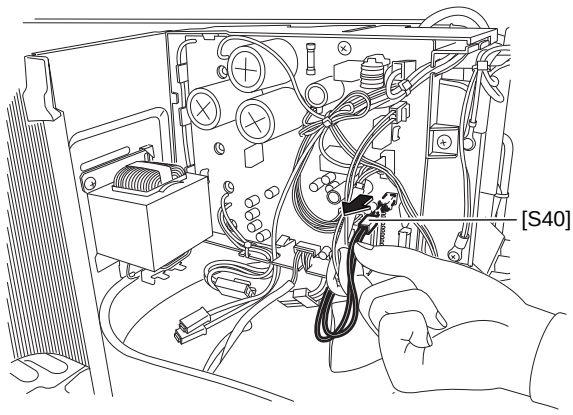
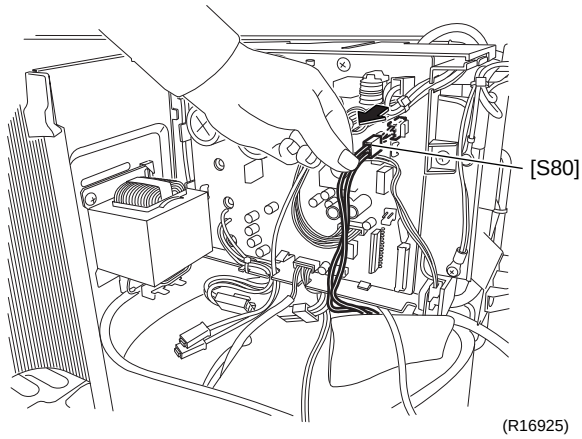
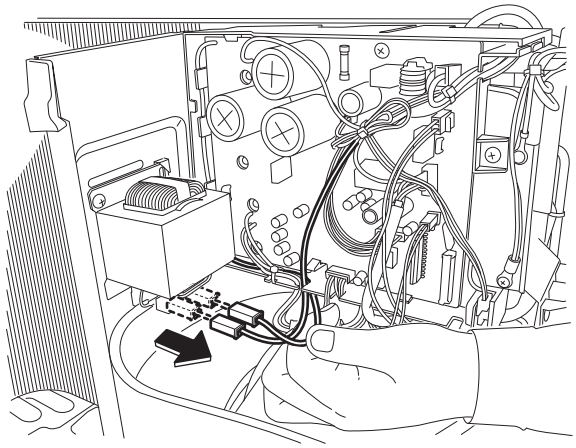
Step	Procedure	Points
2	Remove the 4 screws on the right side panel.  (R16990)	
3	Remove the screw near the stop valves.  (R16991)	
4	Unfasten the hook on the rear side.  (R11842)	■ When reassembling, make sure to fit the hook.

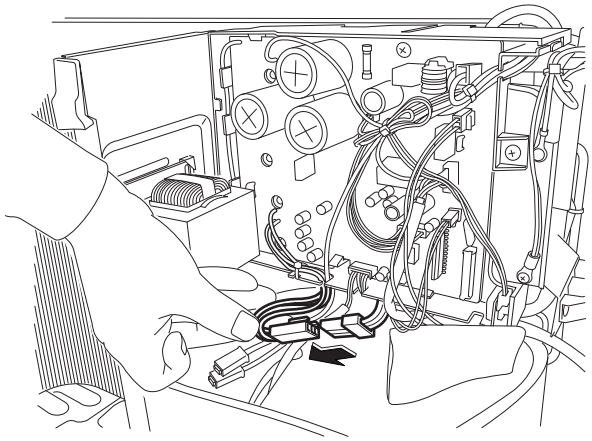
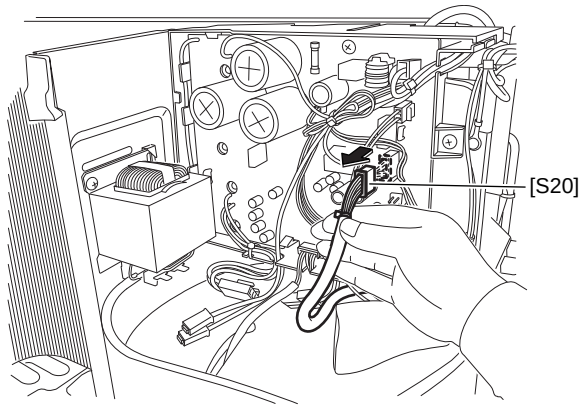
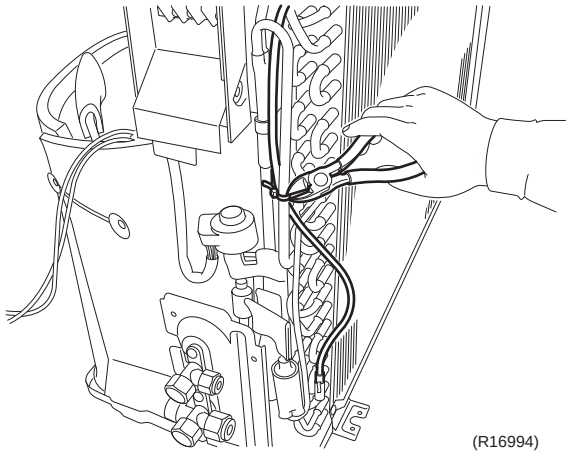
Step	Procedure		Points
5	Lift up the right side panel and remove it.	 (R16992)	■ When reassembling, make sure to fit the hook.
6	Lift up the guard net and remove it.	 (R16993)	

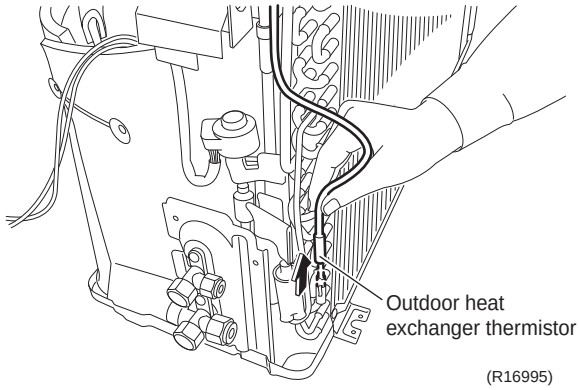
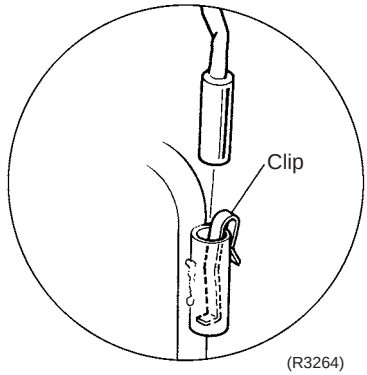
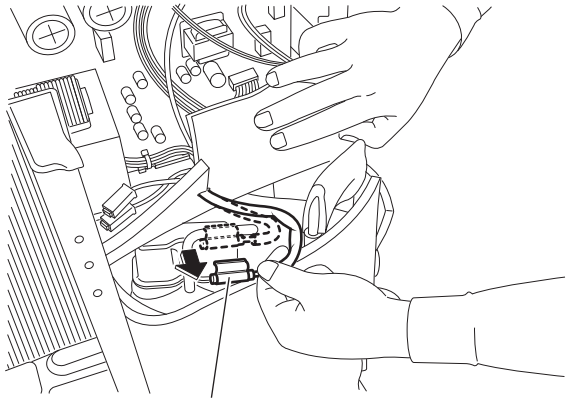
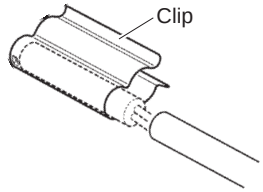
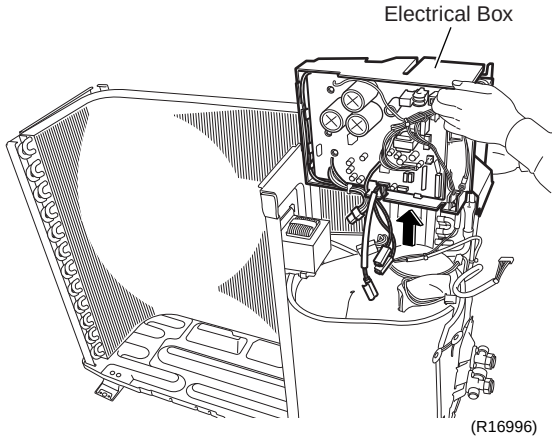
4.2 Removal of Electrical Box

Procedure

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

Step	Procedure		Points
1	Disconnect the connector for the overload protector [S40].	 (R16924)	**Preparation** ■ Remove the outer panels and disconnect the connector for the fan motor according to the “Removal of Outer Panels / Fan Motor”.
2	Disconnect the connector for the four-way valve coil [S80].	 (R16925)	
3	Disconnect the 2 connectors for the reactor.	 (R16926)	■ When reassembling, you can connect the 2 harnesses in either way regardless of the color.

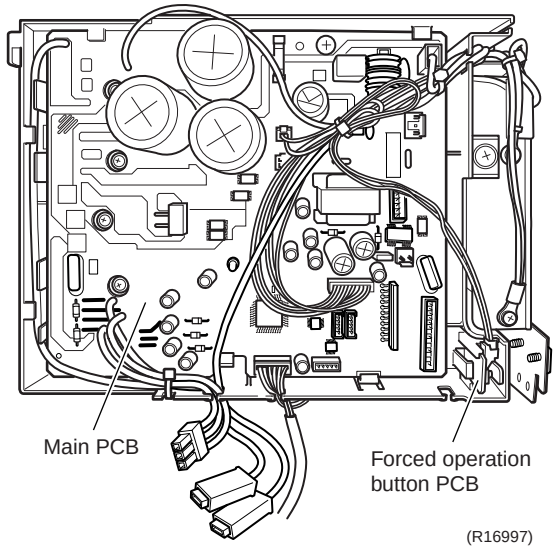
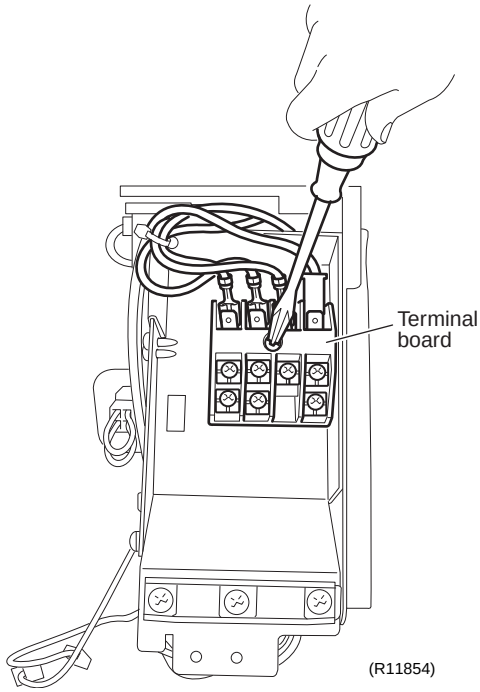
Step	Procedure	Points
4	Disconnect the relay connector for the compressor.  (R16927)	
5	Disconnect the connector for the electronic expansion valve coil [S20].  (R16928)	
6	Cut the clamp.  (R16994)	

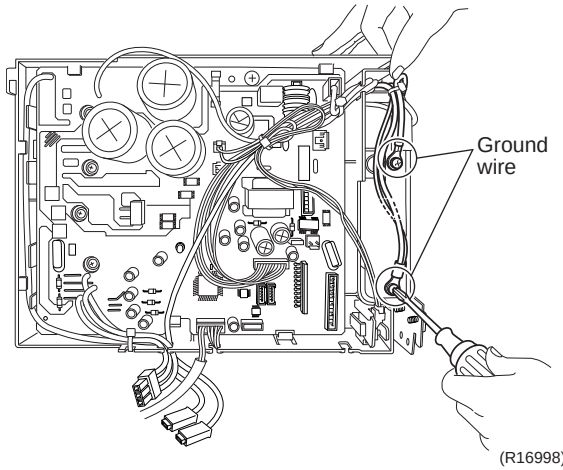
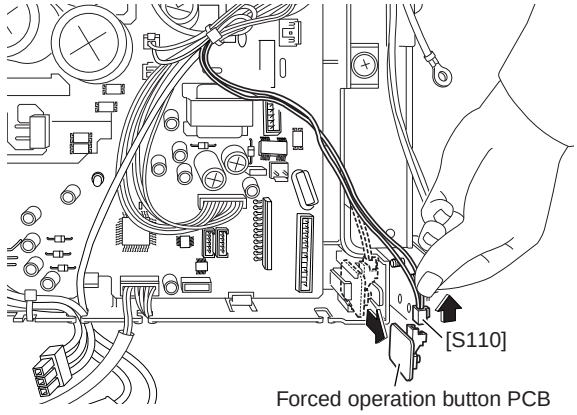
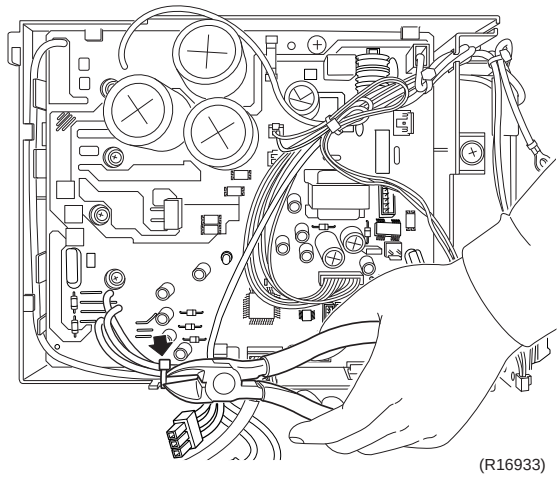
Step	Procedure		Points
7	Pull out the outdoor heat exchanger thermistor.	 (R16995)	■ Be careful not to lose the clip for the thermistor.  (R3264)
8	Release the discharge pipe thermistor.	 (R11849)	■ Be careful not to lose the clip for the thermistor.  (R12279)
9	Lift and remove the electrical box.	 (R16996)	

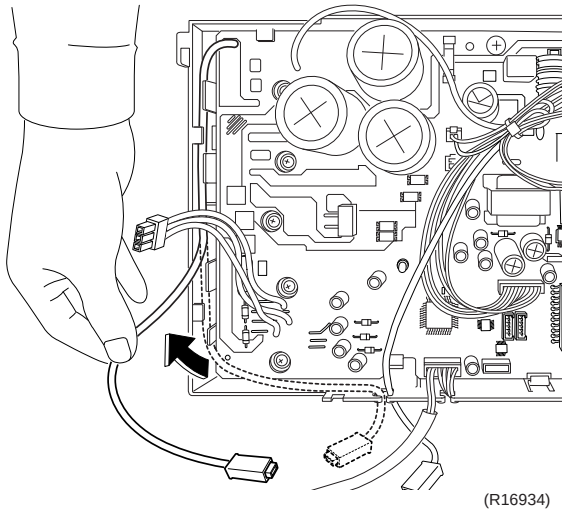
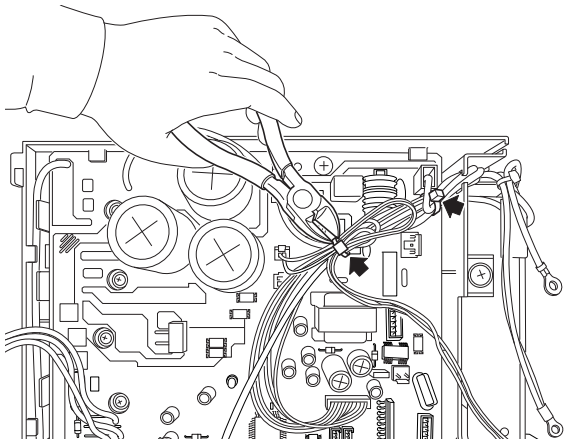
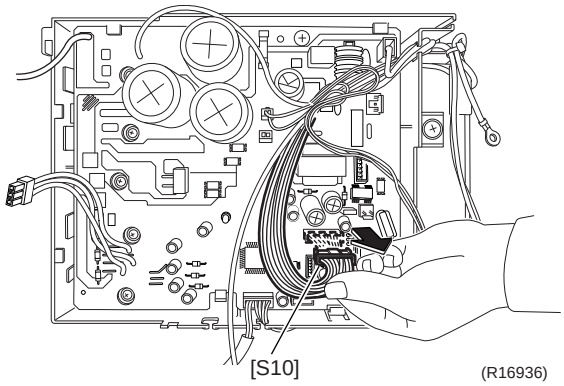
4.3 Removal of PCBs

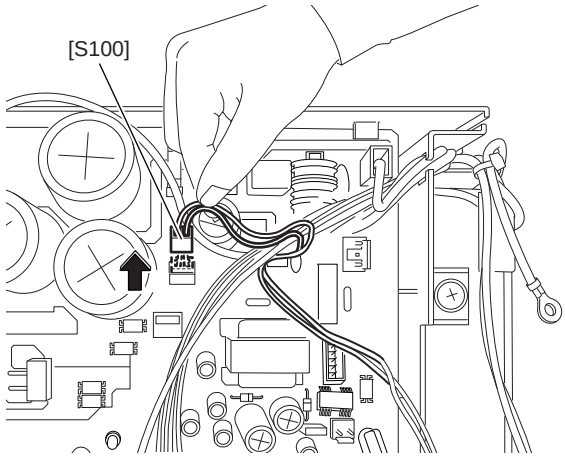
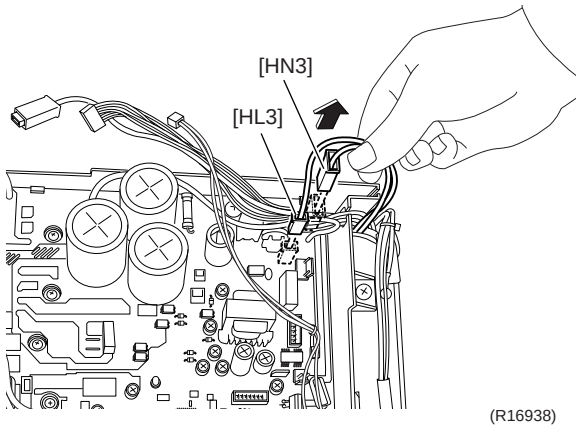
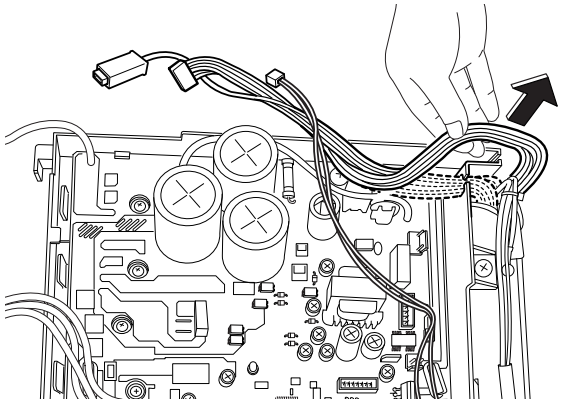
Procedure

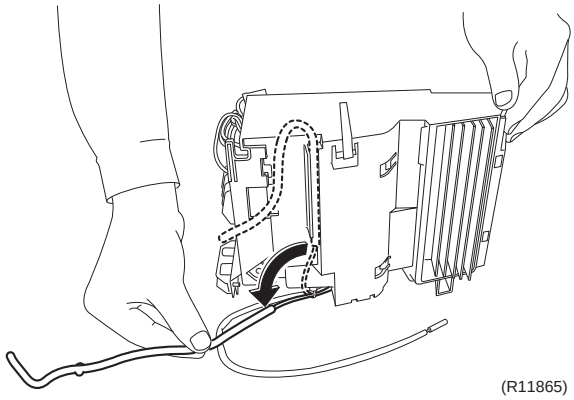
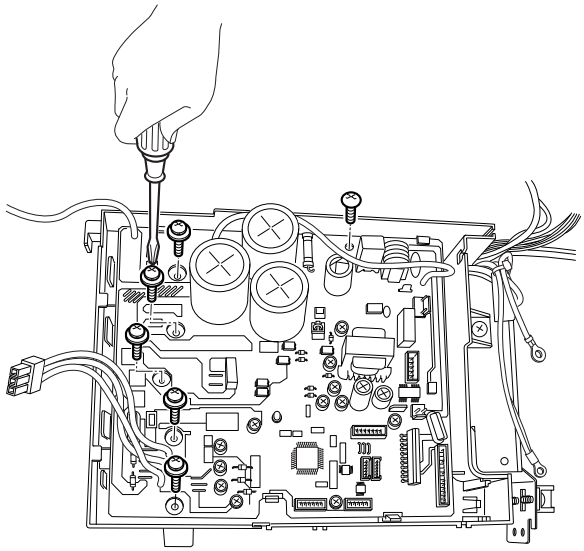
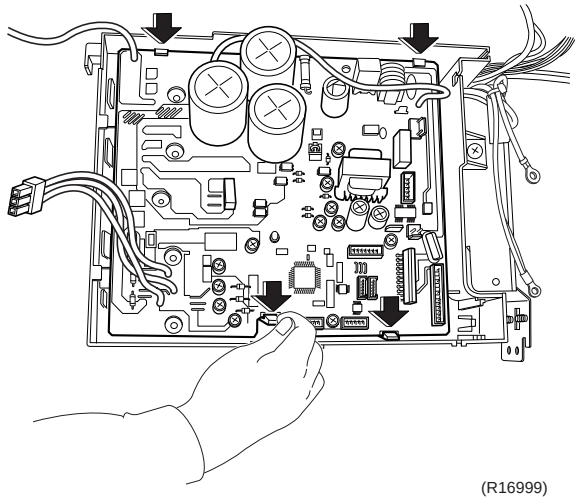
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

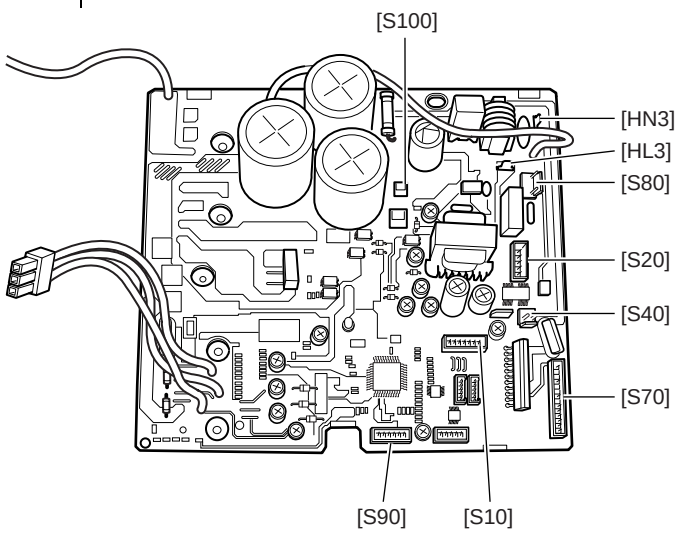
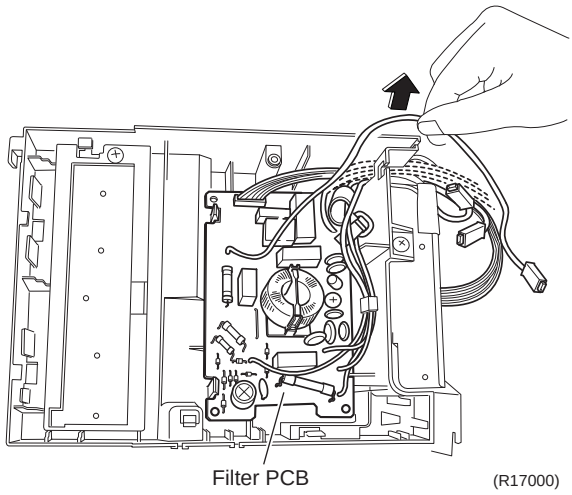
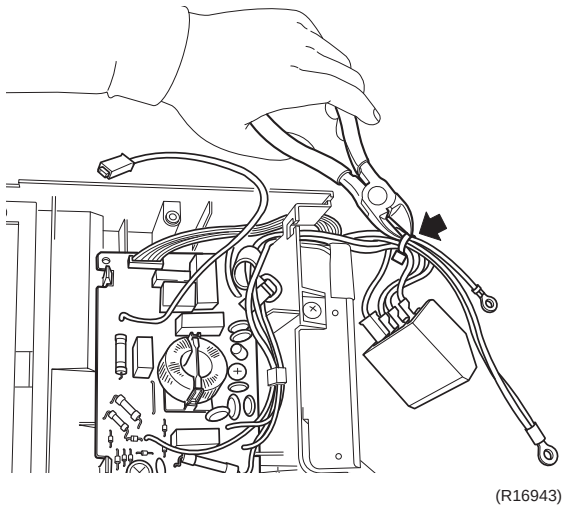
Step	Procedure	Points
1. Remove the main PCB and the forced operation button PCB.		■ You can remove the main PCB when you disconnect the lead wires on the terminal board without removing the electrical box.
1 Layout of the main PCB		
2 Remove the screw on the terminal board.		

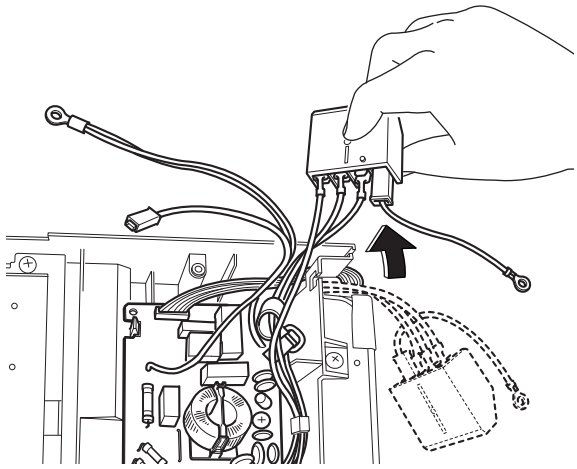
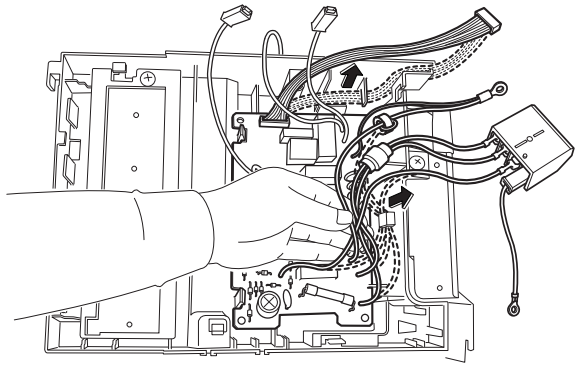
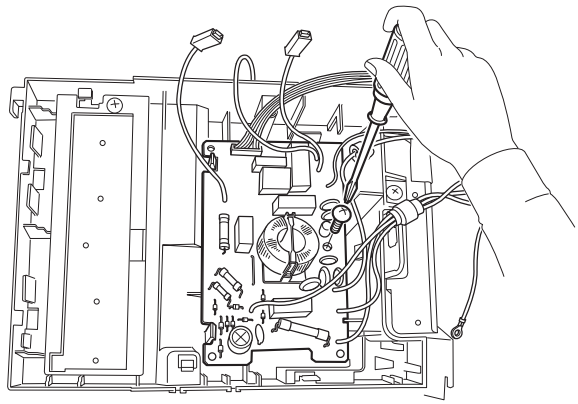
Step	Procedure		Points
3	Release the 2 ground wires.	 (R16998)	
4	Pull out the forced operation button PCB. Disconnect the connector [S110] to remove the forced operation button PCB.	 (R16932)	■ Be careful of a sharp protrusion at the back of the forced operation button PCB.
5	Cut the clamp.	 (R16933)	

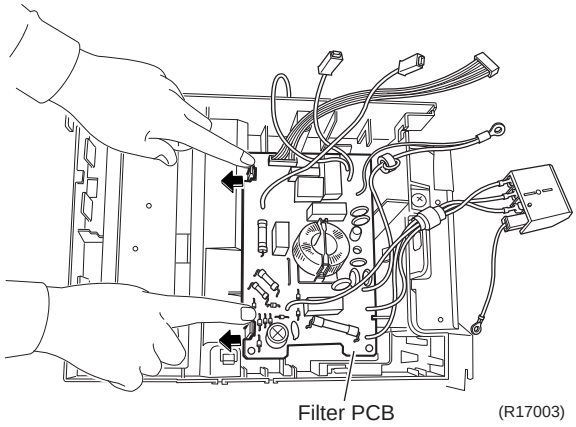
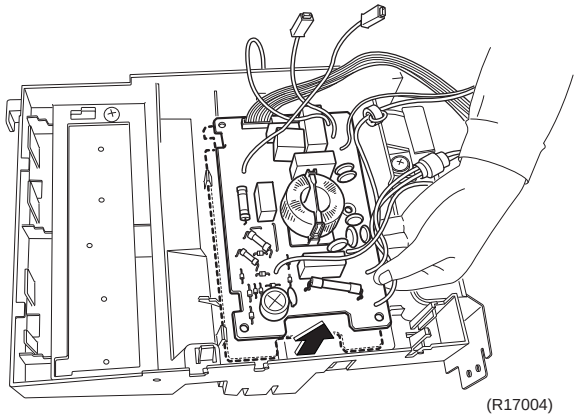
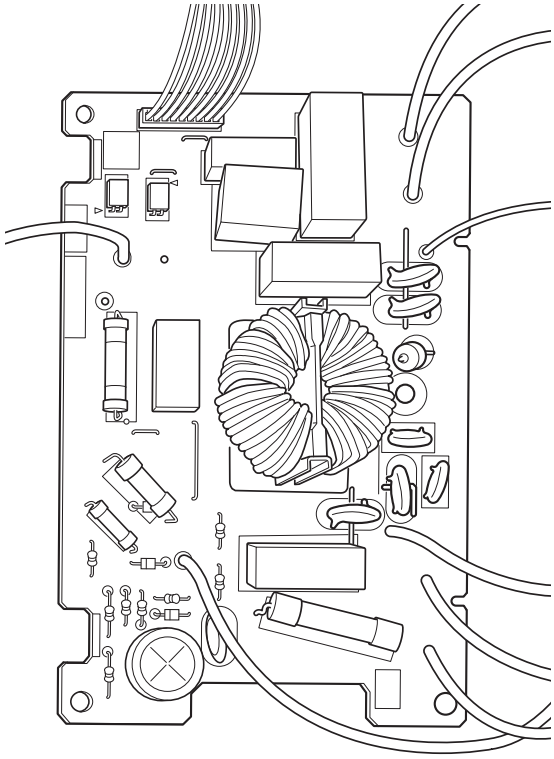
Step	Procedure	Points
6	Release the harness.  (R16934)	
7	Cut the clamps at the 2 locations.  (R16935)	
8	Disconnect the connector for the filter PCB [S10].  [S10] (R16936)	

Step	Procedure		Points
9	Disconnect the connector for the forced operation button PCB [S100].	 (R16937)	
10	Disconnect the connector for the filter PCB [HL3] [HN3].	 (R16938)	
11	Release the harnesses from the hook.	 (R16939)	

Step	Procedure		Points
12	Release the harness for the outdoor temperature thermistor.	 (R11865)	
13	Remove the 6 screws.	 (R16940)	
14	Unfasten the 4 hooks and remove the main PCB.	 (R16999)	

Step	Procedure	Points
		■ Refer to page 22 for detail. [S10] [HL3] [HN3]: filter PCB [S20]: electronic expansion valve coil [S40]: overload protector [S70]: fan motor [S80]: four-way valve coil [S90]: thermistors [S100]: forced operation button PCB
2. Remove the filter PCB.		
1 Release the harnesses from the hook.		
2 Cut the clamp.		

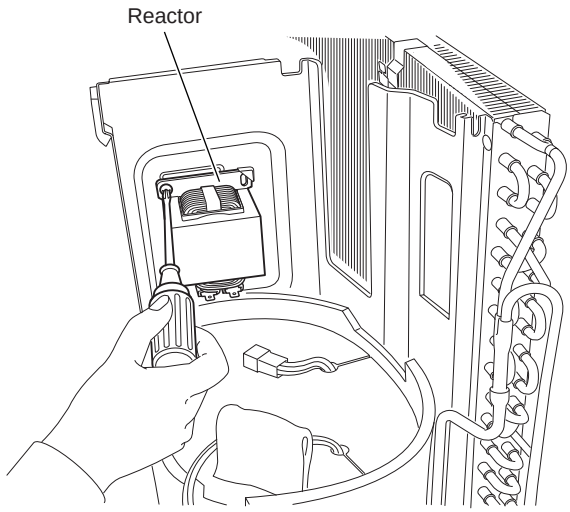
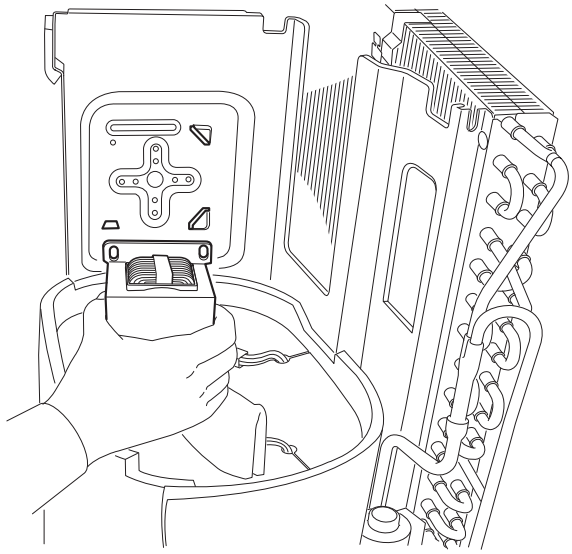
Step	Procedure	Points
3	Release the harnesses from the hook.  (R16944)	
4	Release the harnesses from the 2 hooks.  (R17001)	
5	Remove the screw.  (R17002)	

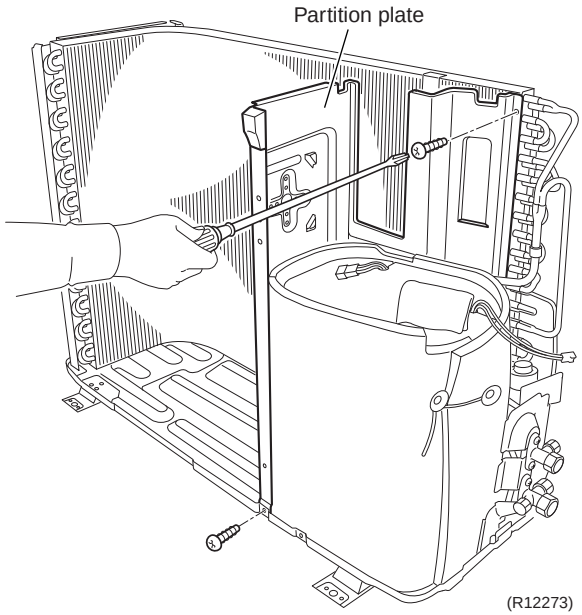
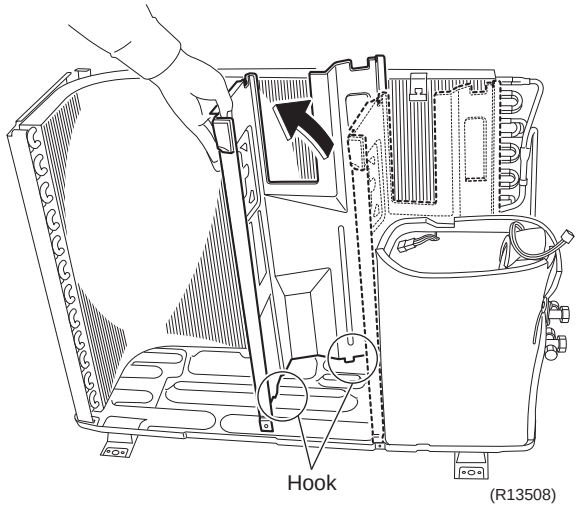
Step	Procedure	Points
6	Unfasten the 2 hooks.  (R17003)	
7	Lift and pull out the filter PCB.  (R17004)	
8	Layout of the filter PCB  (R16949)	■ Refer to page 22 for detail.

4.4 Removal of Reactor / Partition Plate

Procedure

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

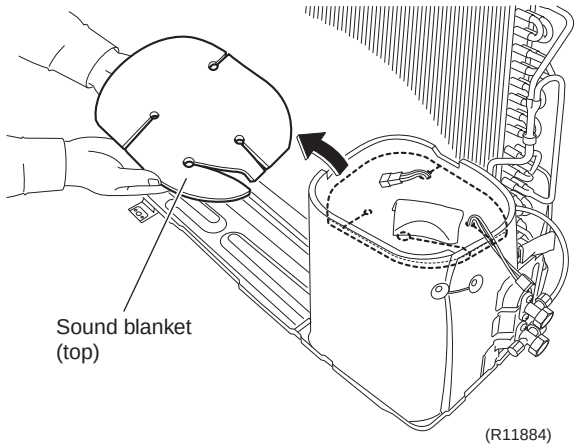
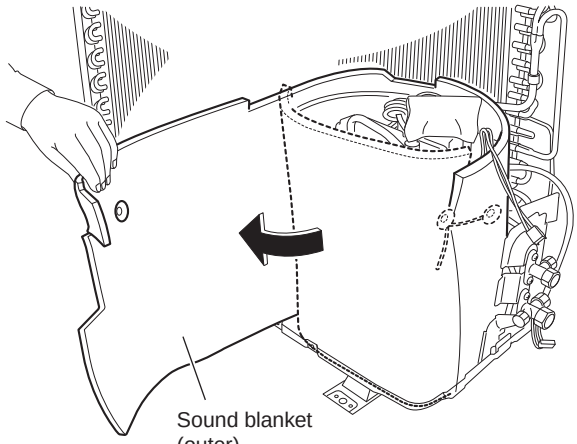
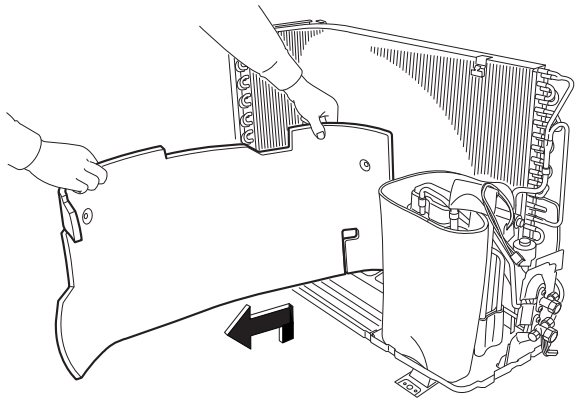
Step	Procedure	Points
1. Remove the reactor.	 (R11879)  (R11880)	**Preparation** ■ Remove the outer panels according to the “Removal of Outer Panels / Fan Motor”. ■ Remove the electrical box according to the “Removal of Electrical Box”.
1 Remove the screw and remove the reactor.		

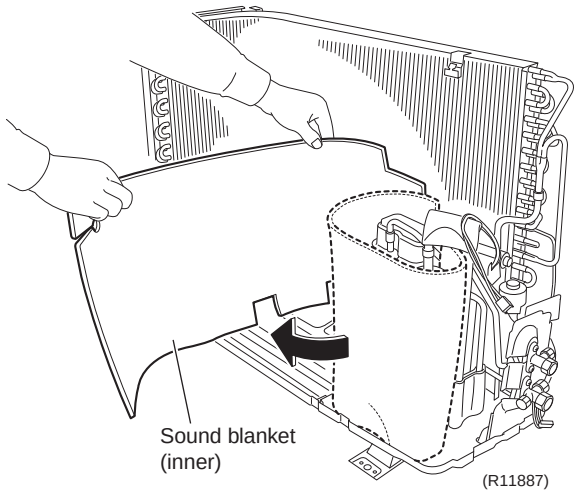
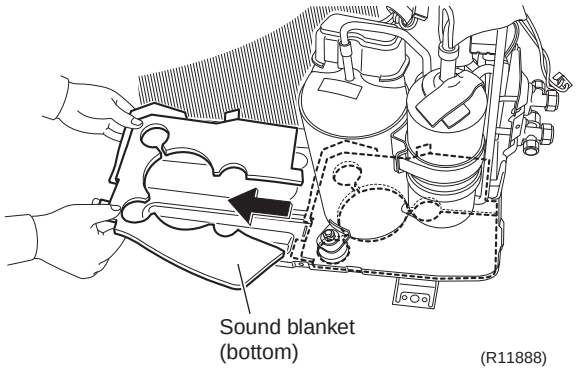
Step	Procedure	Points
2. Remove the partition plate.	 (R12273)	
1 Remove the 2 screws.		
2 The partition plate has 2 hooks on the lower side. Lift and pull the partition plate to remove.	 (R13508)	■ When reassembling, fit the lower hooks into the bottom frame.

4.5 Removal of Sound Blankets

Procedure

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

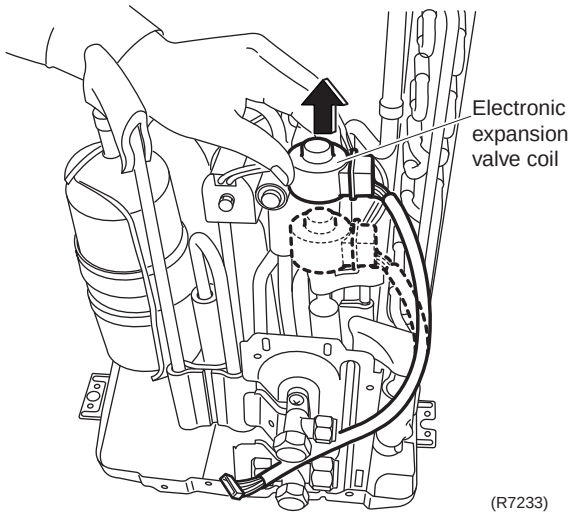
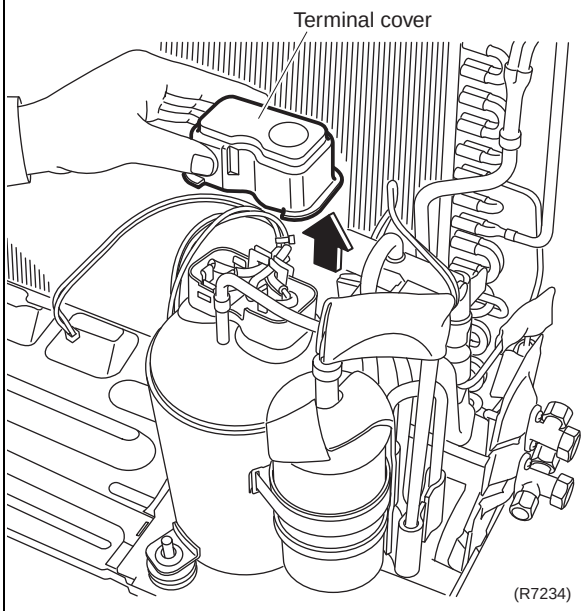
Step	Procedure		Points
1	Remove the sound blanket (top).	 (R11884)	■ Since the piping ports are torn easily, remove the sound blankets carefully.
2	Untie the string and open the sound blanket (outer).	 (R11885)	
3	Lift and remove the sound blanket (outer).	 (R11886)	

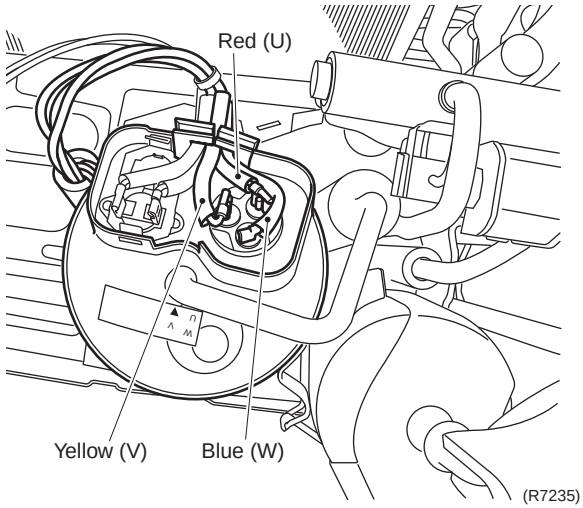
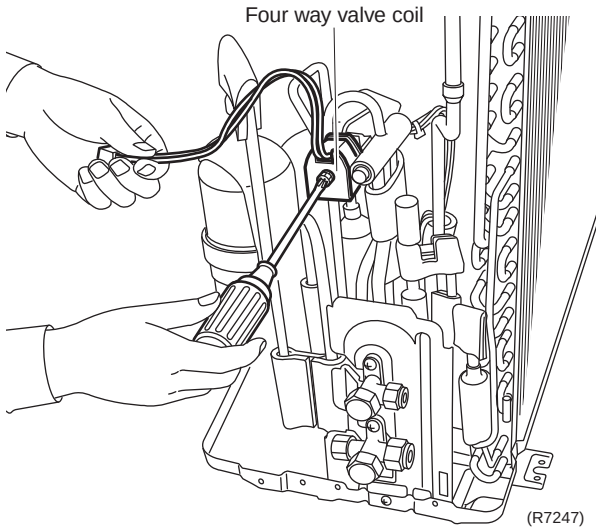
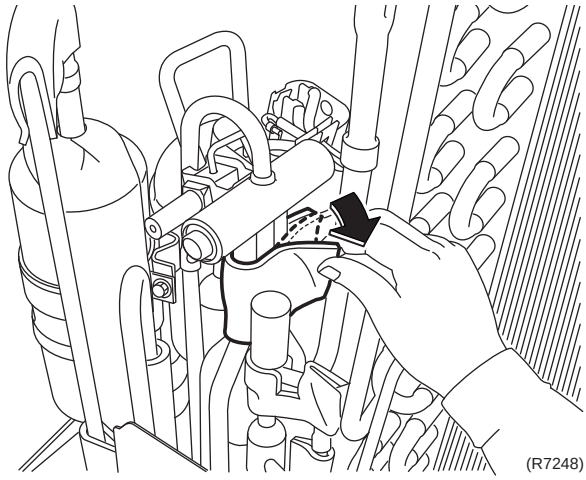
Step	Procedure	Points
4	Pull out the sound blanket (inner).  	
5	Pull out the sound blanket (bottom).  	

4.6 Removal of Four-Way Valve

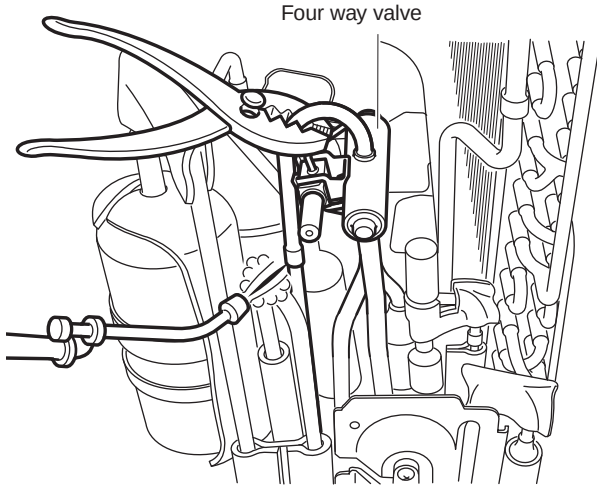
Procedure

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

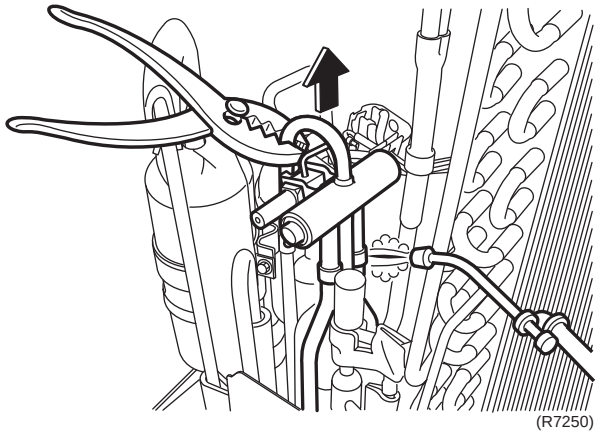
Step	Procedure		Points
1	Pull out the electronic expansion valve coil.		
2	Remove the terminal cover.		

Step	Procedure		Points
3	Disconnect the lead wires of the compressor.		
4	Remove the screw and remove the four-way valve coil.		**Warning** **Be careful not to get yourself burnt with the pipes and other parts that are heated by the gas brazing machine.** **Warning** **If the refrigerant gas leaks during work, ventilate the room. (If the refrigerant gas is exposed to flames, toxic gas may be generated.)** **Caution** **From the viewpoint of global environment protection, do not discharge the refrigerant gas in the atmosphere. Make sure to collect all the refrigerant gas.**
5	Remove the sheets of putty.		**Cautions for restoration** 1. Restore the piping by non-oxidation brazing. 2. It is required to prevent the carbonization of the oil inside the four-way valve and the deterioration of the gaskets affected by heat. (Keep below 120°C (248°F).) For the sake of this, wrap the four-way valve with wet cloth and provide water so that the cloth does not dry.

Step	Procedure	Points
■ Before working, make sure that the refrigerant gas is empty in the circuit. ■ Be sure to apply nitrogen replacement when heating up the brazed part.		**In case of difficulty with gas brazing machine** 1. Disconnect the brazed part where is easy to disconnect and restore. 2. Cut pipes on the main unit with a tube cutter in order to make it easy to disconnect.
6	Heat up the brazed part and withdraw the piping with pliers.	**Note:** ■ Never use a metal saw to cut pipes because the sawdust may enter the circuit. ■ When withdrawing the pipes, be careful not to pinch them firmly with pliers. The pipes may get deformed. ■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries.



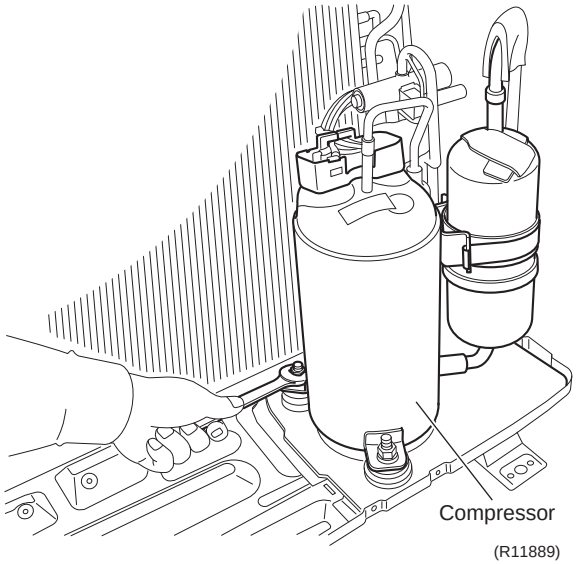
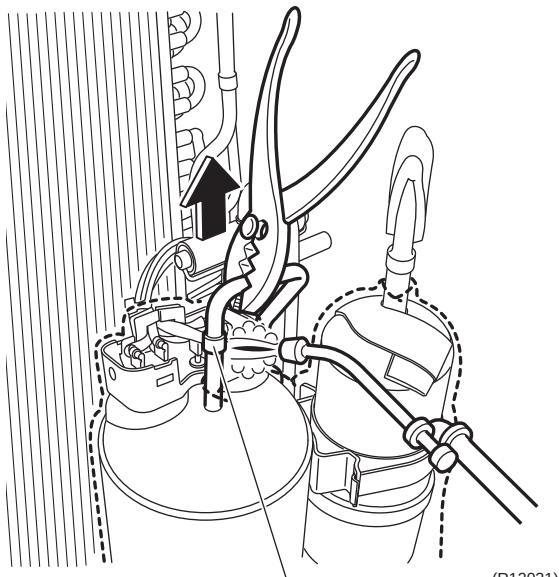
(R7249)

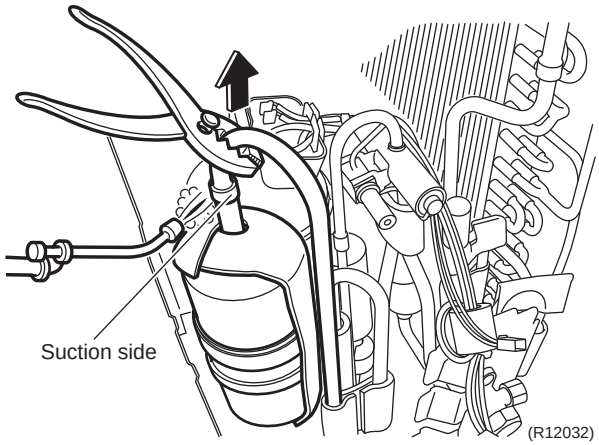
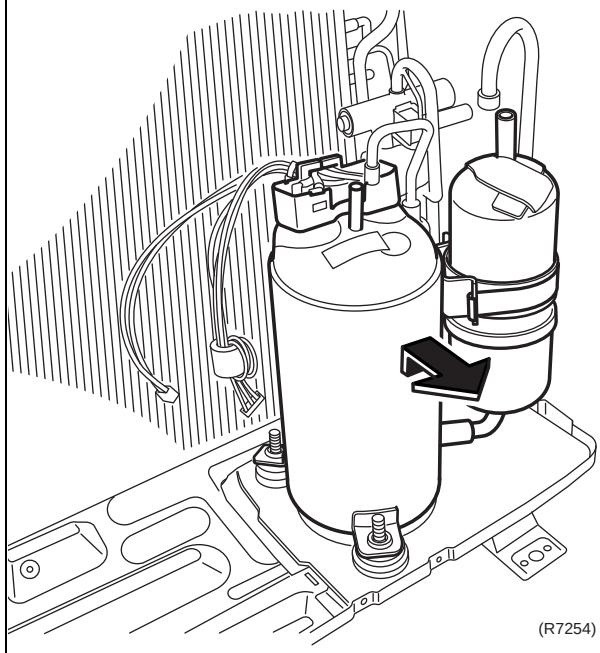

(R7250)

4.7 Removal of Compressor

Procedure

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

Step	Procedure		Points
1	Remove the 2 nuts of the compressor.	 (R11889)	**Warning** **Be careful not to get yourself burnt with pipes and other parts that are heated by the gas brazing machine.** **Warning** **If the refrigerant gas leaks during work, ventilate the room. (If the refrigerant gas is exposed to flames, toxic gas may be generated.)** **Warning** **Since it may happen that the refrigerant oil in the compressor catches fire, prepare wet cloth so as to extinguish fire immediately.**
■ Before working, make sure that the refrigerant gas is empty in the circuit. ■ Be sure to apply nitrogen replacement when heating up the brazed part.			**Caution** **From the viewpoint of global environment protection, do not discharge the refrigerant gas in the atmosphere. Make sure to collect all the refrigerant gas.**
2	Heat up the brazed part of the discharge side and disconnect it.	 (R12031)	**Cautions for restoration** 1. Restore the piping by non-oxidation brazing. 2. It is required to prevent the carbonization of the oil inside the four-way valve and the deterioration of the gaskets affected by heat. (Keep below 120°C (248°F).) For the sake of this, wrap the four-way valve with wet cloth and provide water so that the cloth does not dry. **In case of difficulty with gas brazing machine** 1. Disconnect the brazed part where is easy to disconnect and restore. 2. Cut pipes on the main unit with a tube cutter in order to make it easy to disconnect.

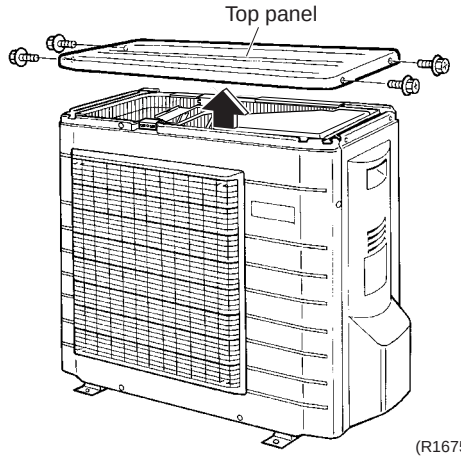
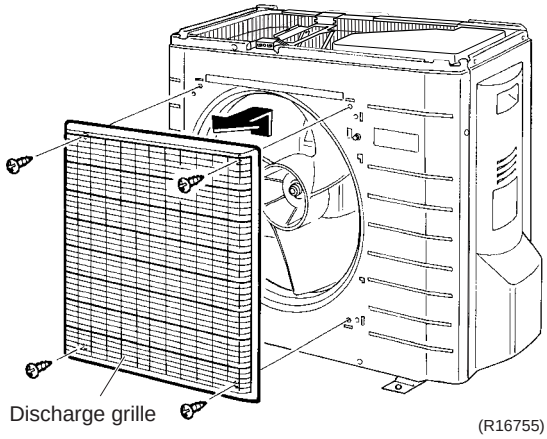
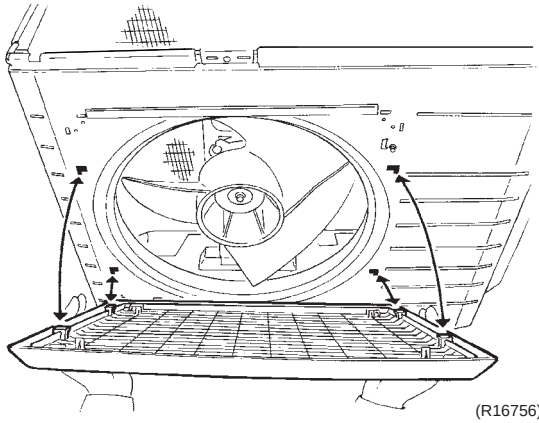
Step	Procedure		Points
3	Heat up the brazed part of the suction side and disconnect it.	 (R12032)	**Note:** ■ Never use a metal saw to cut pipes because the sawdust may enter the circuit. ■ When withdrawing the pipes, be careful not to pinch them firmly with pliers. The pipes may get deformed. ■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries.
4	Lift the compressor up and remove it.	 (R7254)	■ Be careful so as not to burn the compressor terminals, the name plate, the heat exchanger fins.

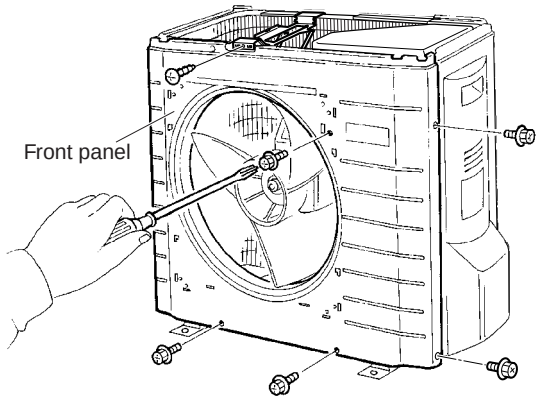
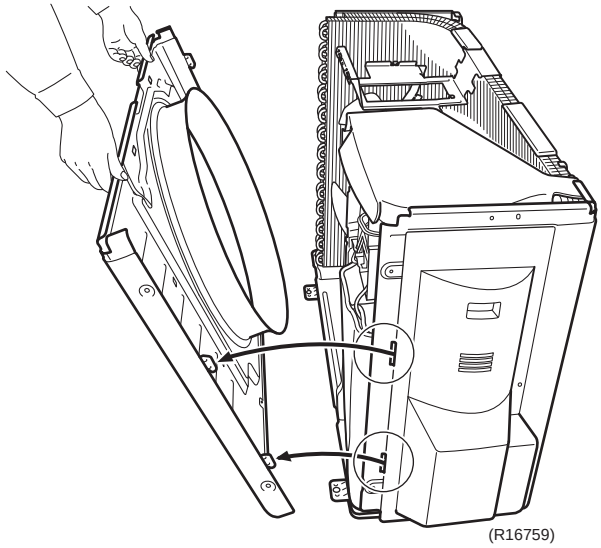
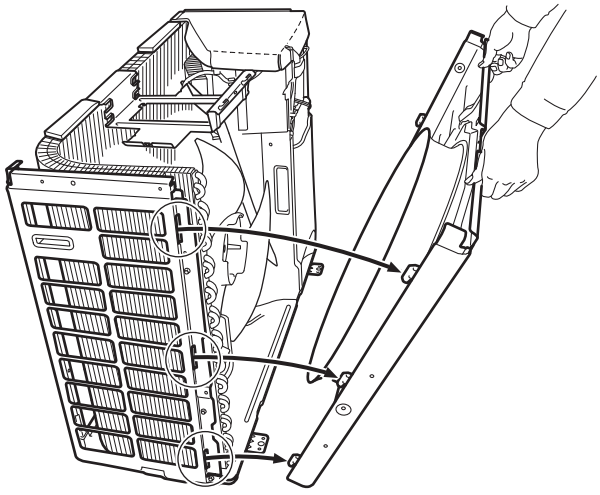
5. Outdoor Unit: RXS15/18LVJU

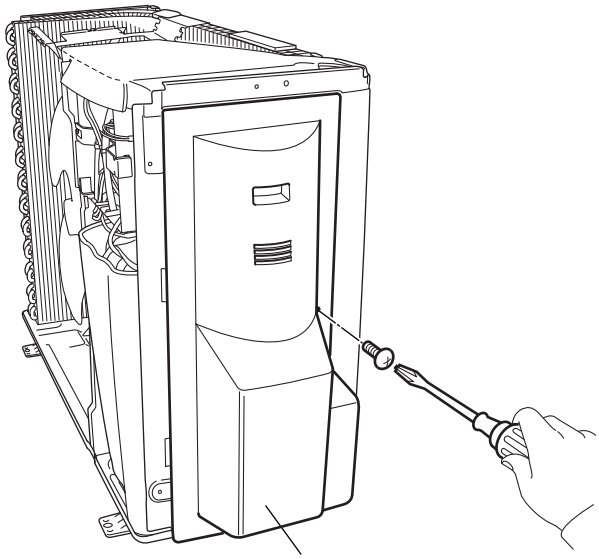
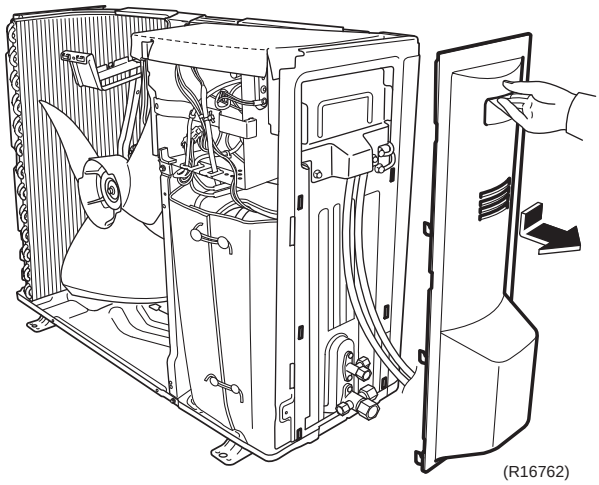
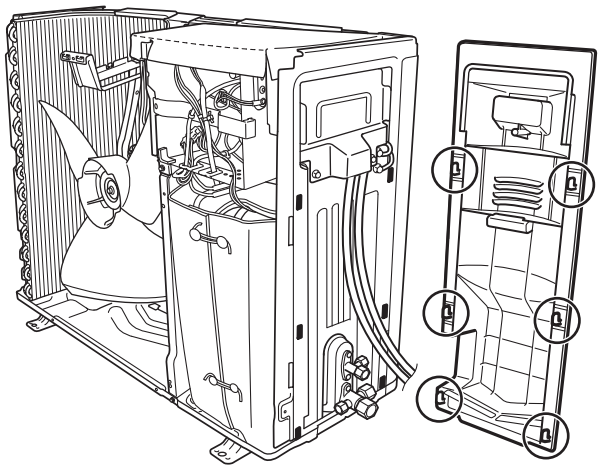
5.1 Removal of Outer Panels

Procedure

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

Step	Procedure		Points
1	Remove the 4 screws and remove the top panel.	 (R16754)	■ Take care not to cut your finger by the fins of the outdoor heat exchanger.
2	Remove the 4 screws and remove the discharge grille.	 (R16755)	■ Slide the discharge grille upward and remove it.
		 (R16756)	■ The discharge grille has 4 hooks.

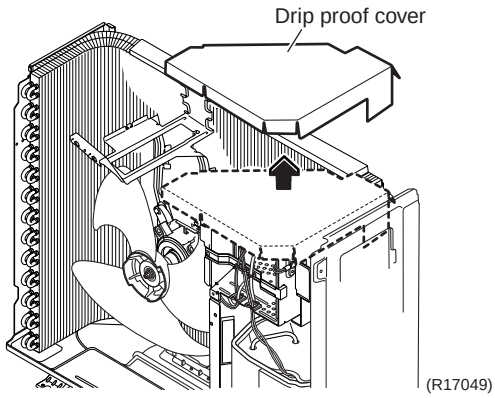
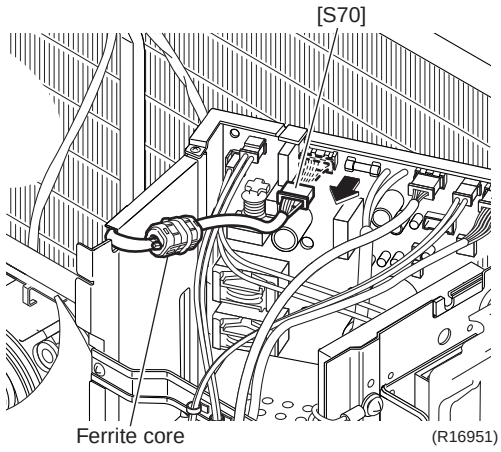
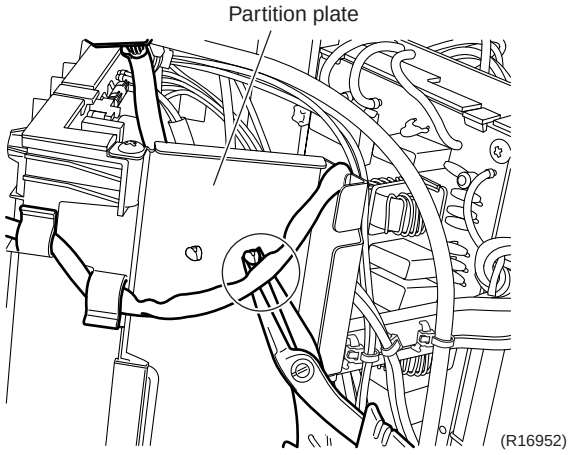
Step	Procedure		Points
3	Remove the 6 screws of the front panel.	 (R16757)	
4	Unfasten the right side hooks.	 (R16759)	
5	Unfasten the left side hooks. Remove the front panel.	 (R16760)	■ When reassembling, fit the left side of the front panel first.

Step	Procedure	Points
6	Remove the screw of the stop valve cover.  (R16761)	
7	Pull down the stop valve cover to unfasten the hooks and remove it.  (R16762)  (R16763)	■ The stop valve cover has 6 hooks.

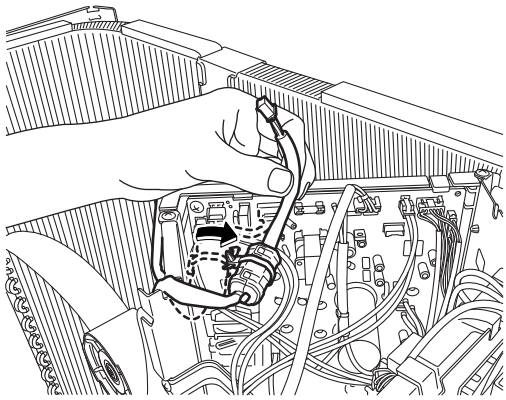
5.2 Removal of Outdoor Fan / Fan Motor

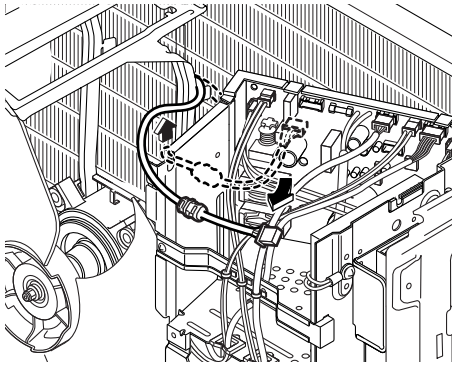
Procedure

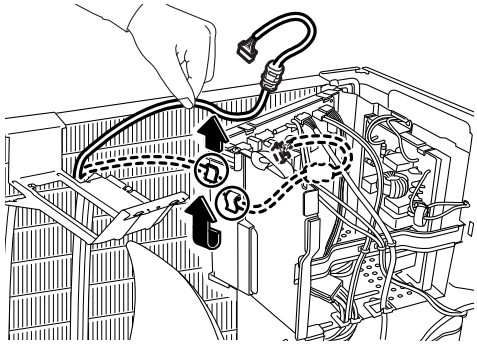
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

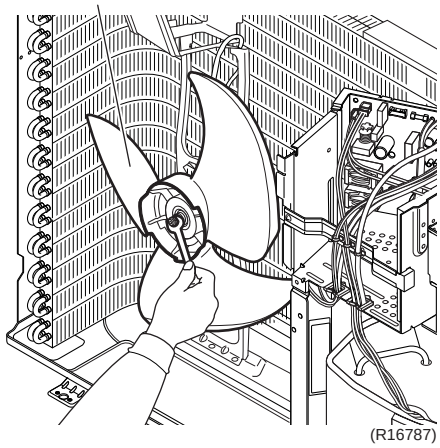
Step	Procedure		Points
1	Remove the drip proof cover.		**Preparation** ■ Remove the top panel and the front panel according to the “Removal of Outer Panels”.
2	Disconnect the connector for the fan motor [S70].		
3	Release the clamp from the partition plate.		■ The ferrite core of the fan motor lead wire has a clamp.

Step	Procedure	Points
4	Release the fan motor lead wire from the groove and the 2 hooks of the partition plate.	
5	Remove the nut of the outdoor fan.	■ Nut size: M6

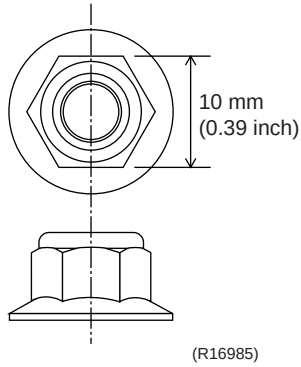

(R16764)


(R16796)

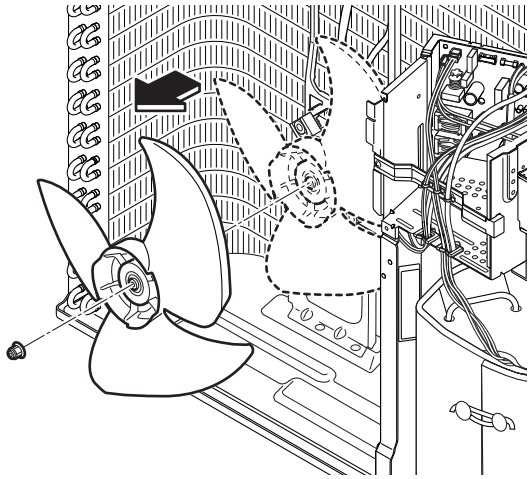
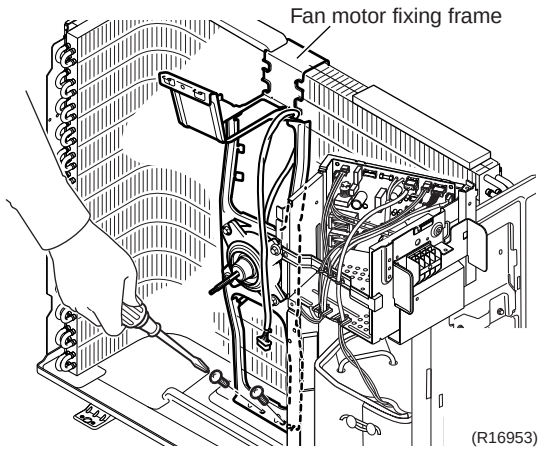
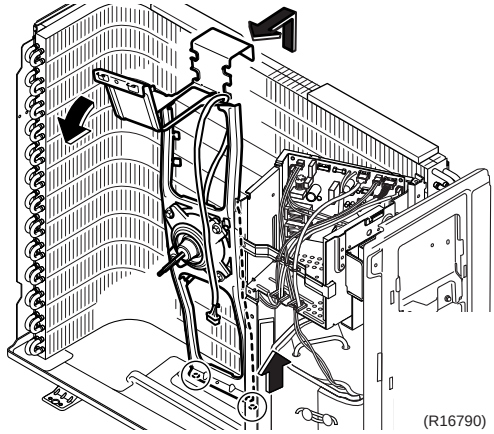

(R16797)

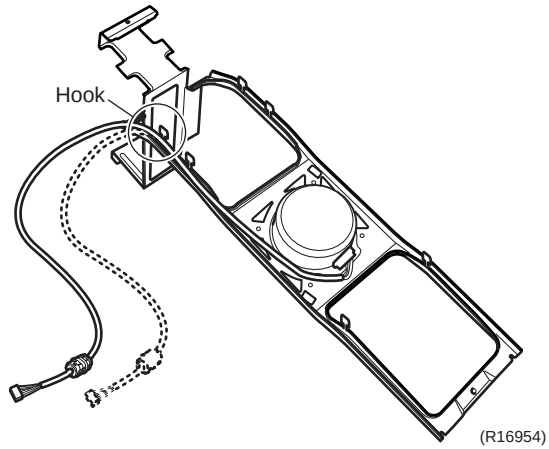
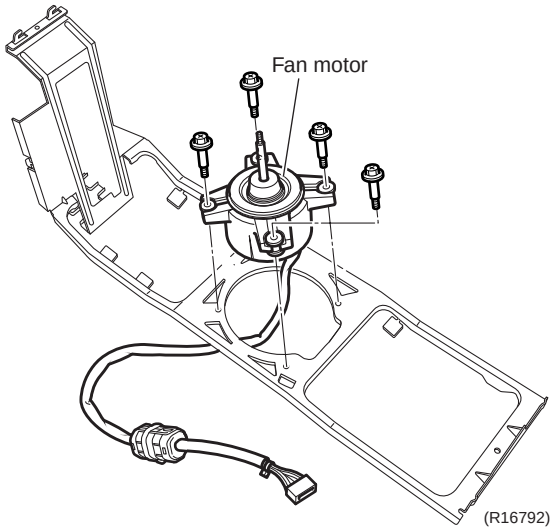


(R16787)



(R16985)

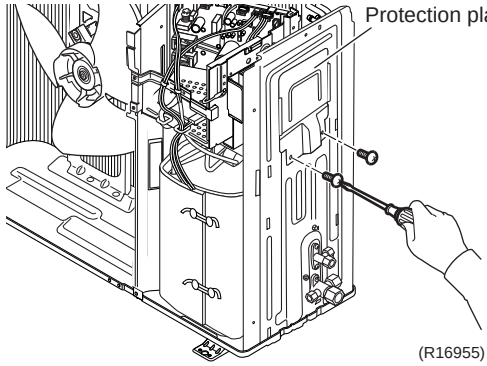
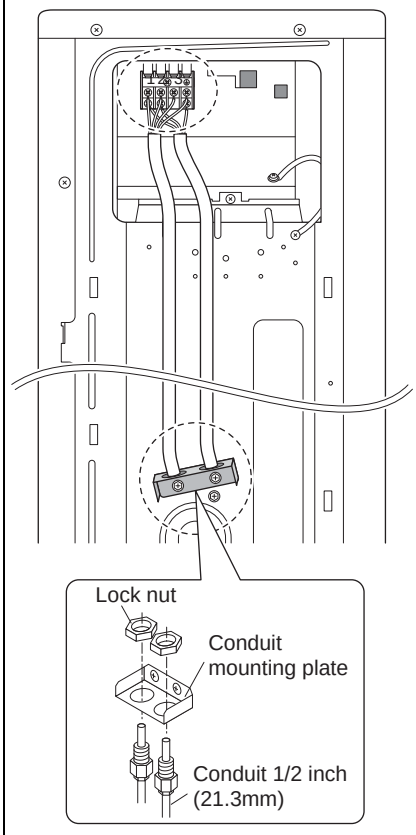
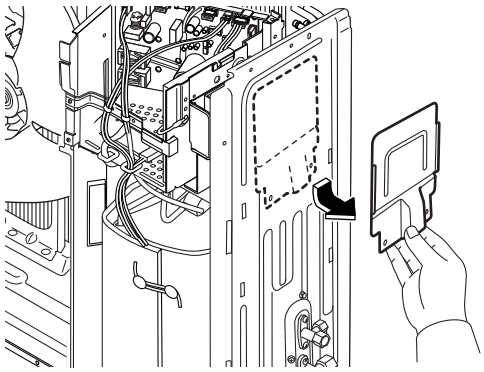
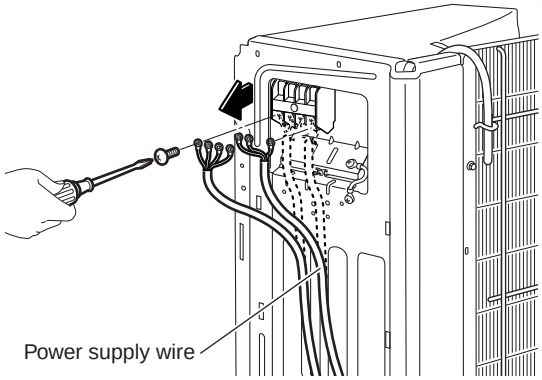
Step	Procedure		Points
6	Remove the outdoor fan.	 (R16788)	■ When reassembling, align the ▼ mark of the outdoor fan with the D-cut section of the motor shaft.
7	Remove the 2 screws of the fan motor fixing frame.	 (R16953)	
8	Pull up the fan motor fixing frame to unfasten the 2 hooks at the bottom.	 (R16790)	
9	Remove the fan motor fixing frame.		

Step	Procedure		Points
10	Open the hook and release the fan motor lead wire.		
11	Remove the 4 screws and remove the fan motor.		

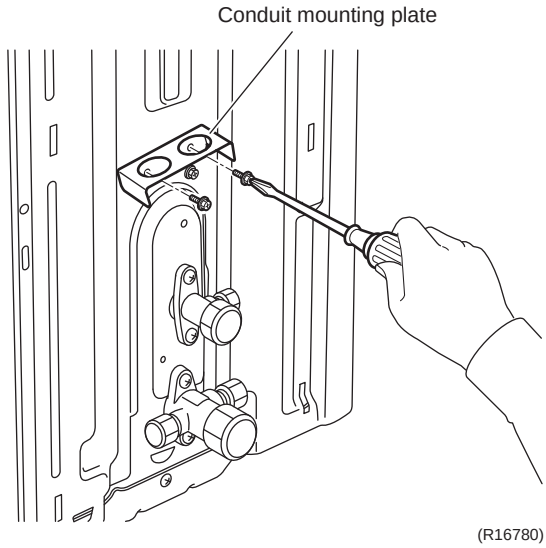
5.3 Removal of Electrical Box

Procedure

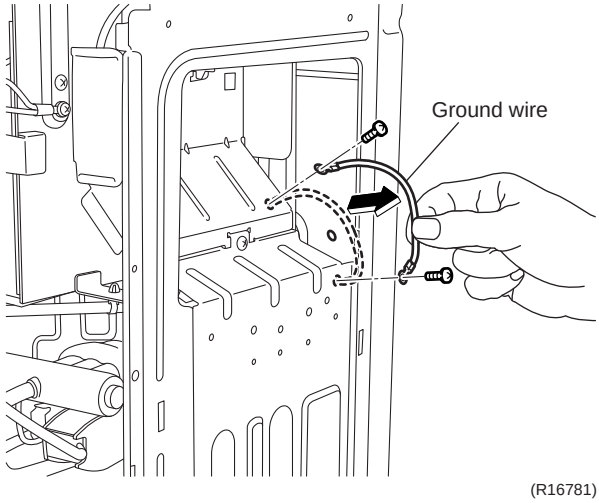
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure		Points
1	Remove the 2 screws of the protection plate.	 (R16955)	■ When reassembling, pass the connecting wires through the conduit and secure them with a lock nut.  (R16825)
2	Remove the protection plate.	 (R16956)	
3	Remove the screws and remove the connecting wires and the power supply wires.	 (R16914)	

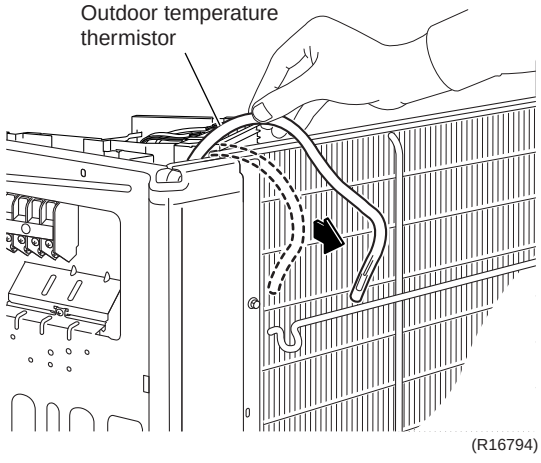
Step	Procedure	Points
4	Remove the 2 screws of the conduit mounting plate.	
5	Remove the conduit mounting plate.	

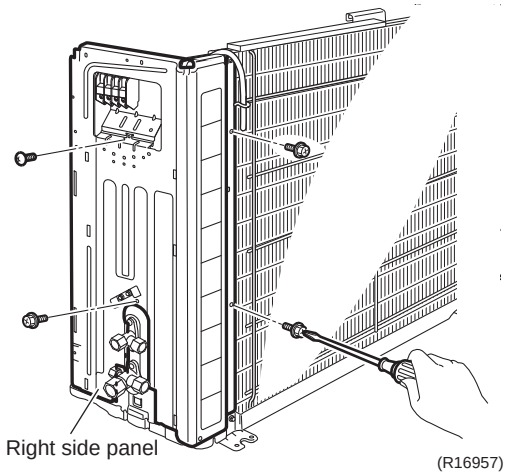
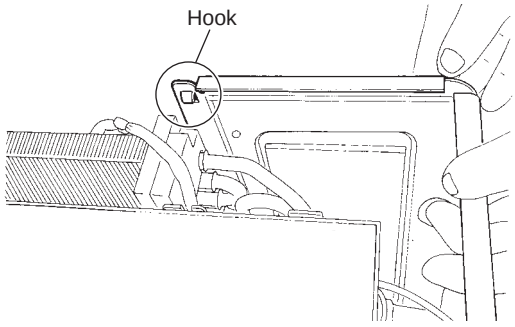
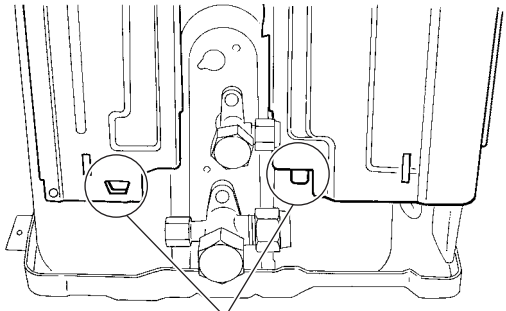
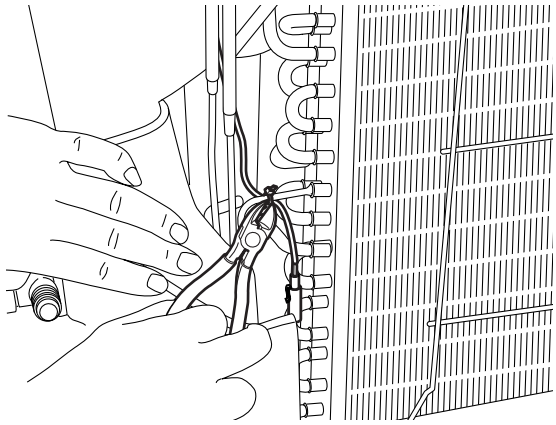


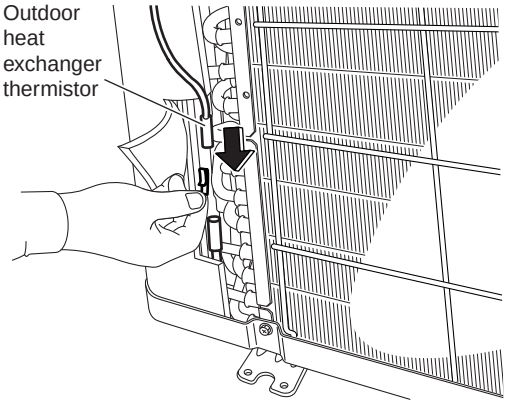
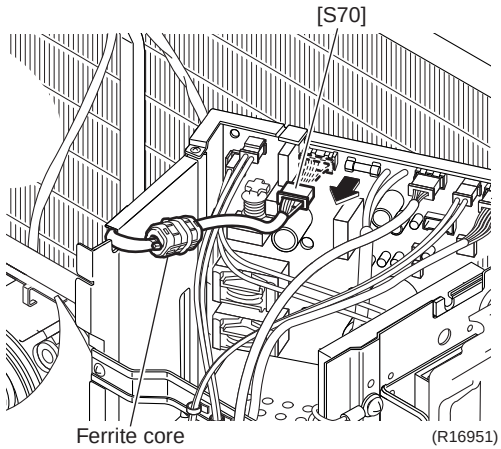
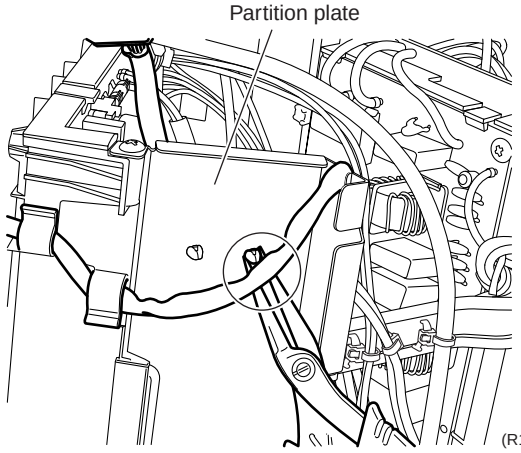
6	Remove the 2 screws and remove the ground wire.	

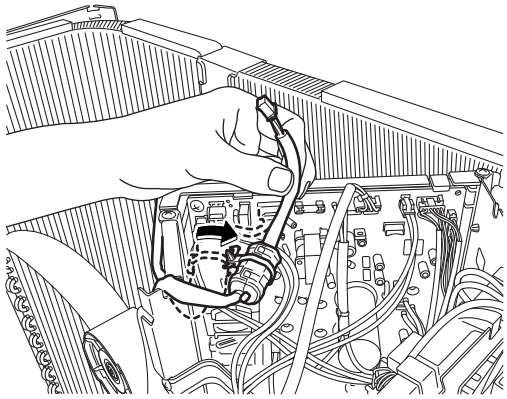
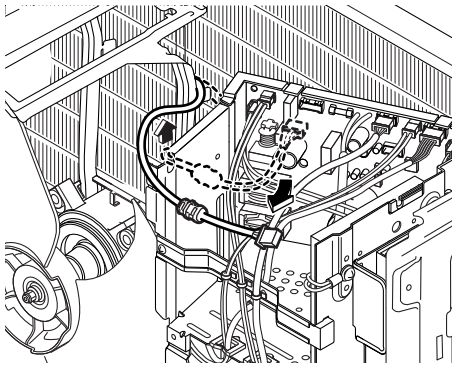
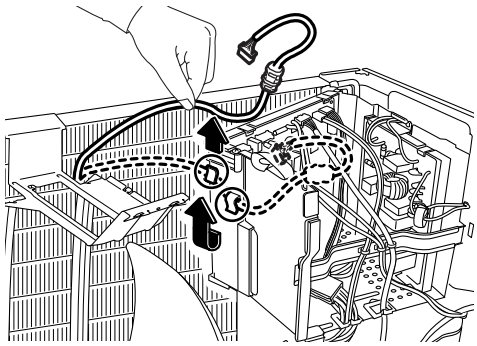
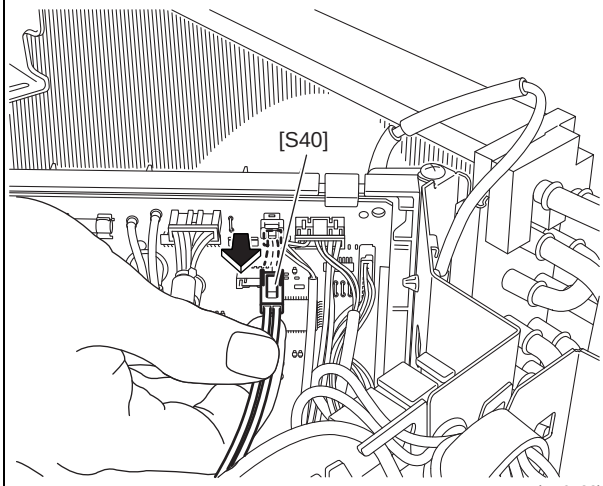


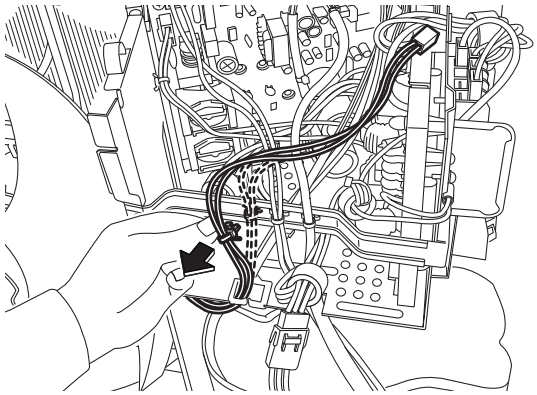
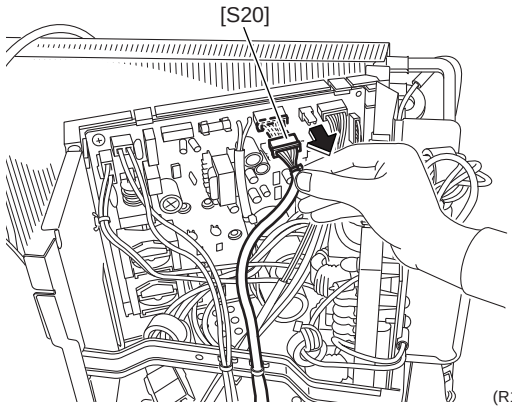
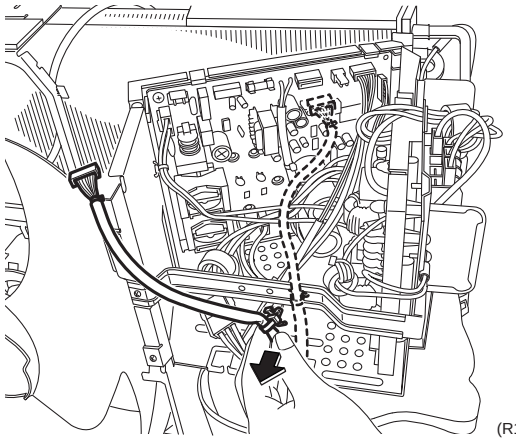
7	Pull out the outdoor temperature thermistor.	

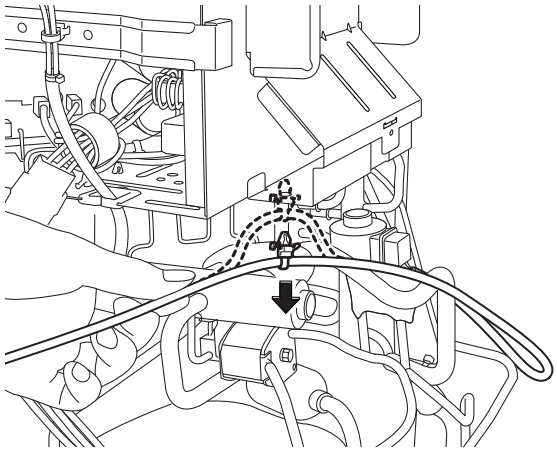
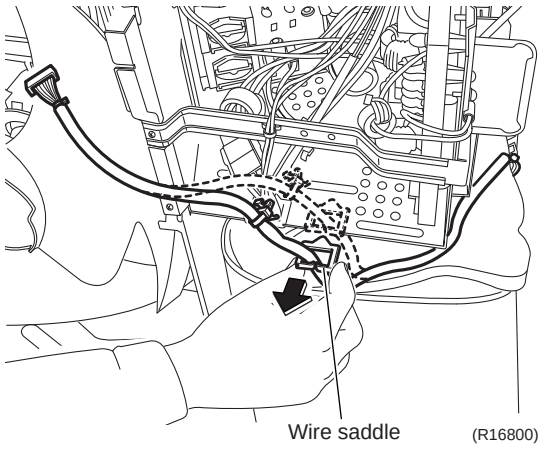
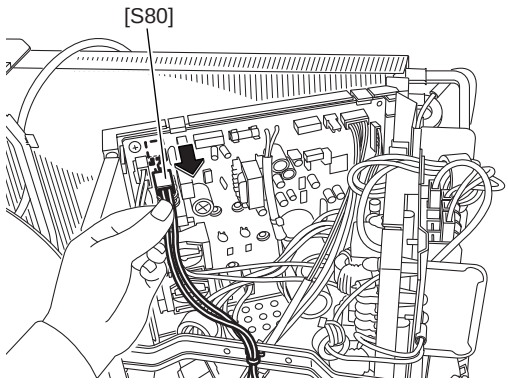


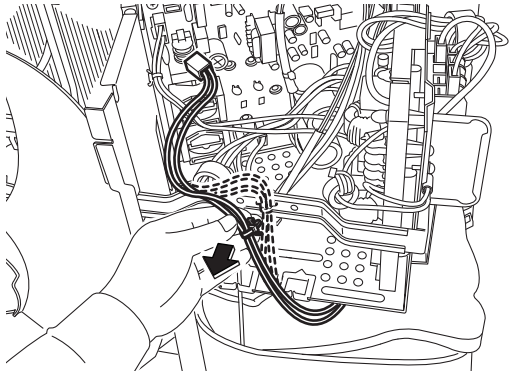
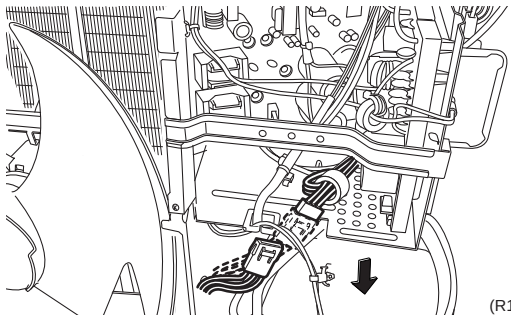
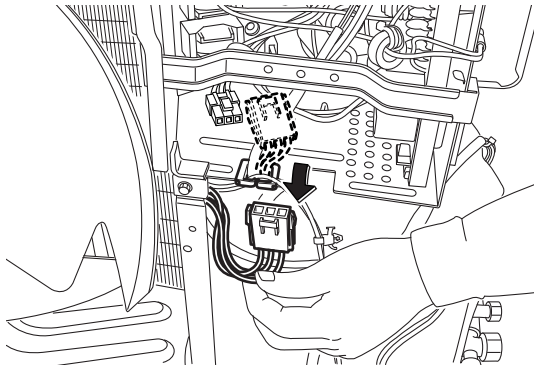
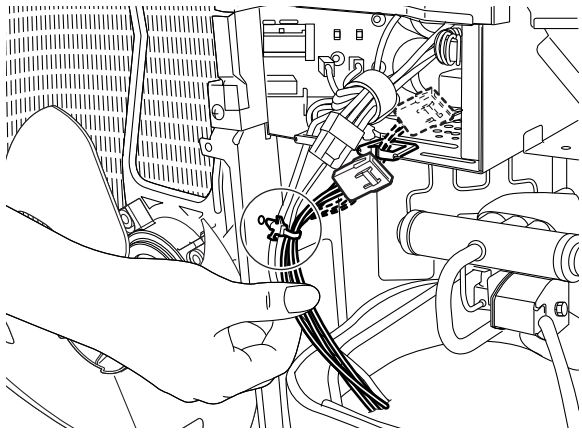
Step	Procedure		Points
8	Remove the 4 screws of the right side panel.	 (R16957)	
9	Unfasten the hooks and remove the right side panel.	 (R16823)	■ When reassembling, insert the upper hook and the 2 lower hooks back into place.
		 (R16824)	
10	Cut the clamp.	 (R16766)	

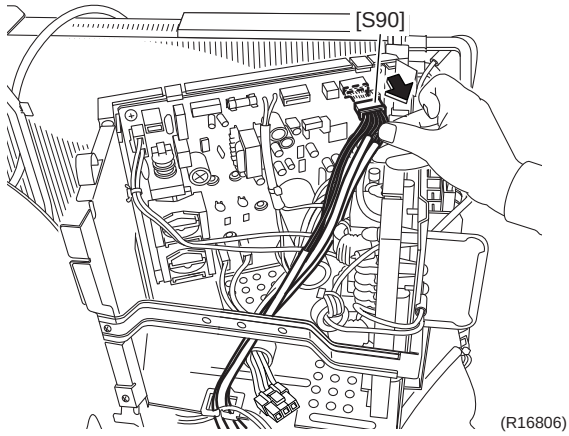
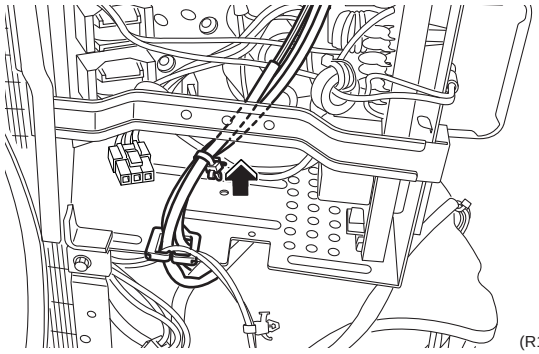
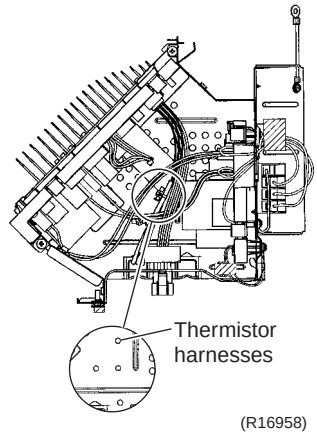
Step	Procedure		Points
11	Pull out the outdoor heat exchanger thermistor.	 (R16819)	
12	Disconnect the connector for the fan motor [S70].	 (R16951)	
13	Release the clamp from the partition plate.	 (R16952)	■ The ferrite core of the fan motor lead wire has a clamp.

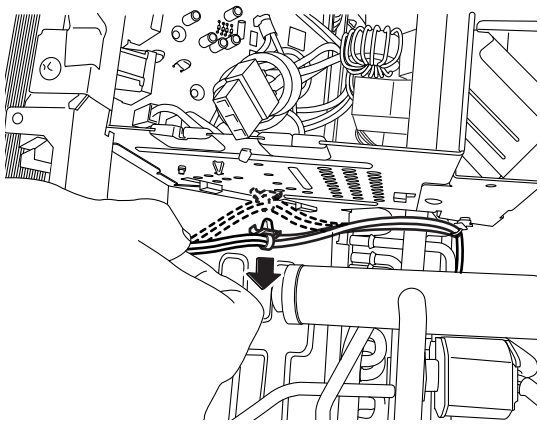
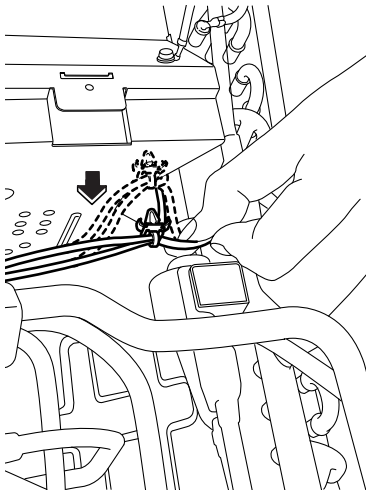
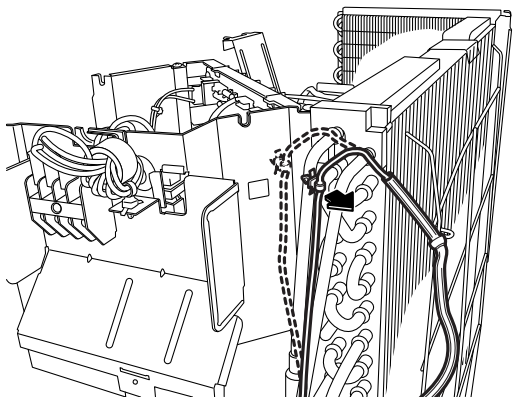
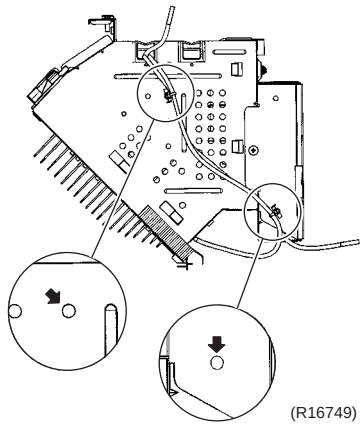
Step	Procedure		Points
		 (R16764)	
14	Release the fan motor lead wire from the groove and the 2 hooks of the partition plate.	 (R16796)	
		 (R16797)	
15	Disconnect the connector for the overload protector [S40].	 (R16782)	

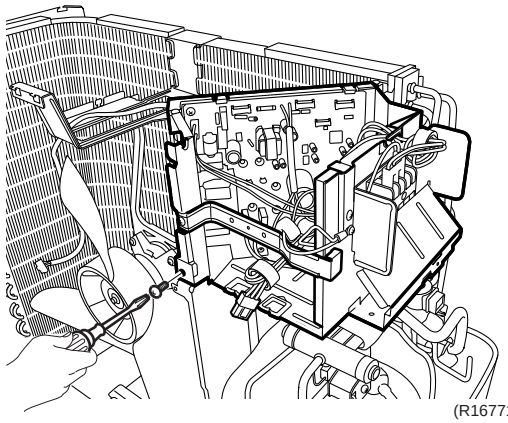
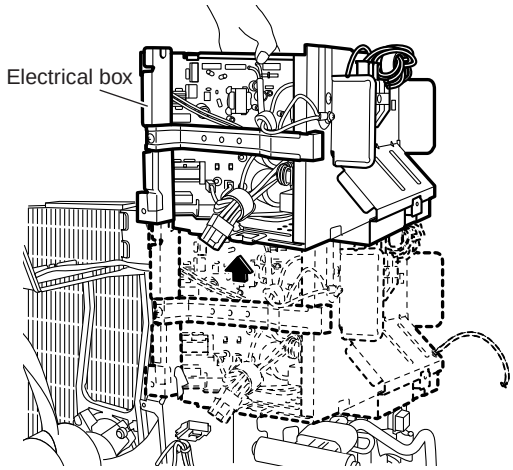
Step	Procedure	Points
16	Pull out the clamp.  (R16803)	
17	Disconnect the connector for the electronic expansion valve coil [S20].  (R16798)	
18	Pull out the clamp (2 locations).  (R16799)	

Step	Procedure	Points
19	Remove the wire saddle.  (R16767)  Wire saddle (R16800)	
20	Disconnect the connector for the four-way valve coil [S80].  [S80] (R16801)	■ When reassembling, insert the clamps of harnesses as below.  [S40] [S80] [S20] (R14363) ■ When reassembling, connect the connectors in the following order. (1) [S80] (2) [S20] (3) [S40] (4) [S70]

Step	Procedure	Points
21	Pull out the clamp.  (R16802)	
22	Disconnect the relay connector for the compressor.  (R14312)	
23	Release the harness of the relay connector from the wire saddle.  (R14313)	
24	Pull out the clamp from the partition plate.  (R16950)	

Step	Procedure		Points
25	Disconnect the connector for the thermistors [S90].	 (R16806)	
26	Pull out the clamp.	 (R14315)	■ When reassembling, pass the thermistor harness under the harnesses (HL2: blue, HN2: white) from the filter PCB. ■ When reassembling, insert the clamp as below.  (R16958)
27	Remove the wire saddle.	 (R14316)	

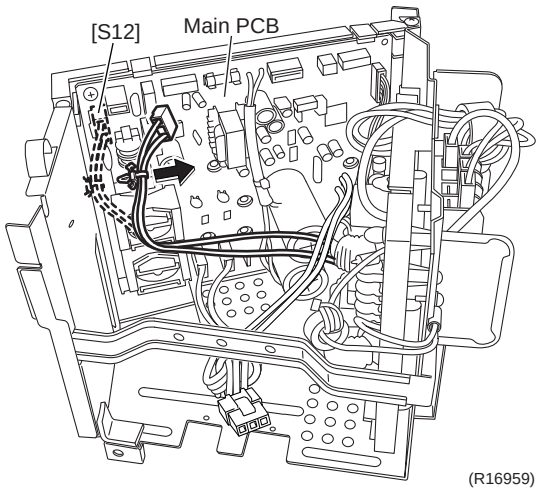
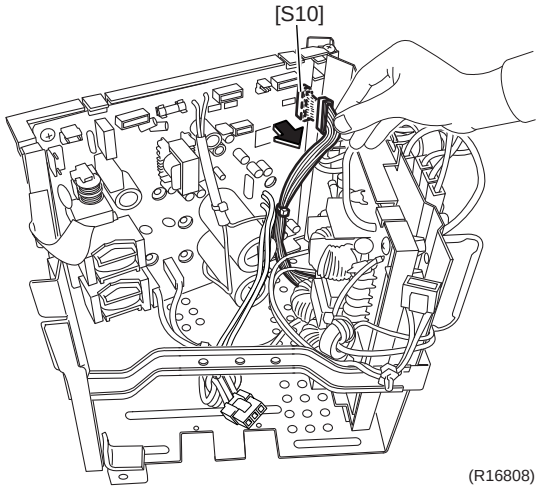
Step	Procedure	Points
28	Pull out the clamp (3 locations).  (R16768)  (R16769)  (R16770)	■ When reassembling, insert the 2 clamps into the bottom of the electrical box.  (R16749)

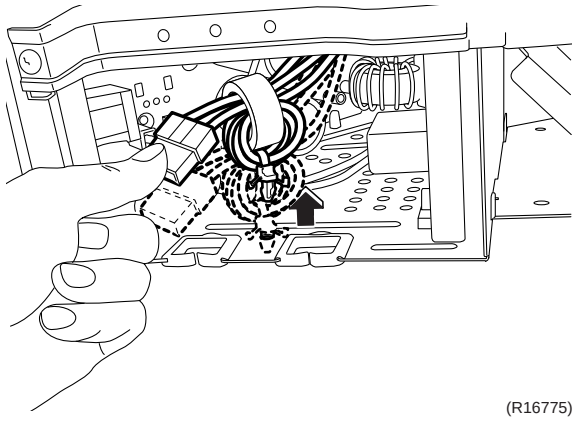
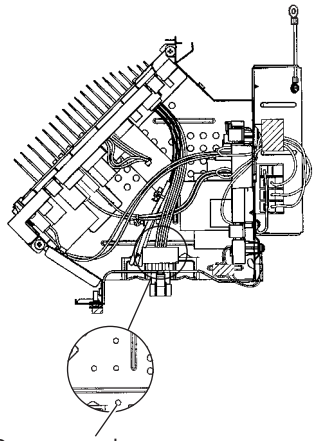
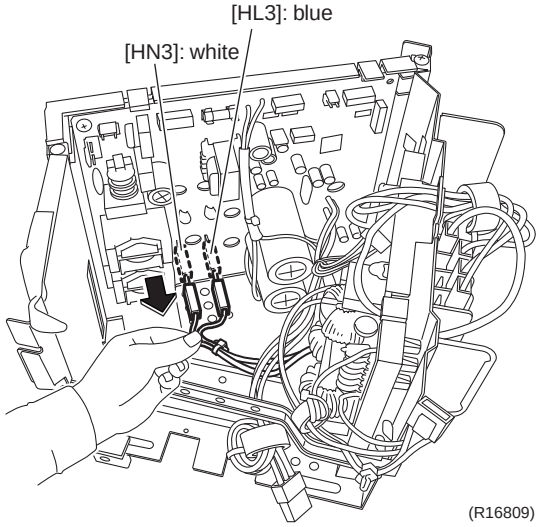
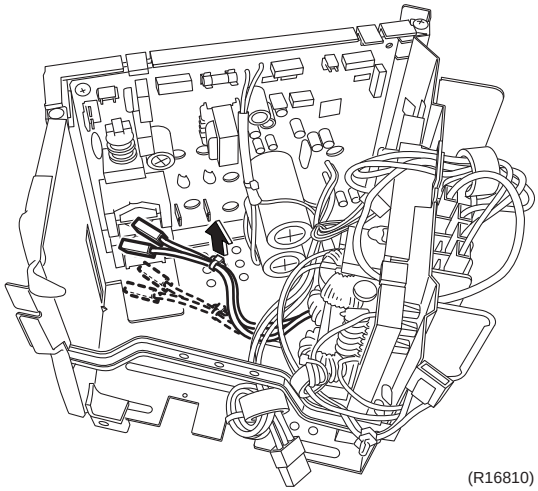
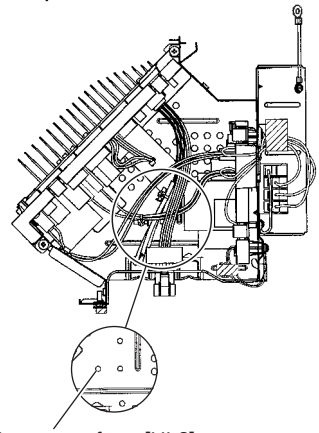
Step	Procedure		Points
29	Remove the screw.	 (R16771)	
30	Remove the electrical box.	 (R16772)	

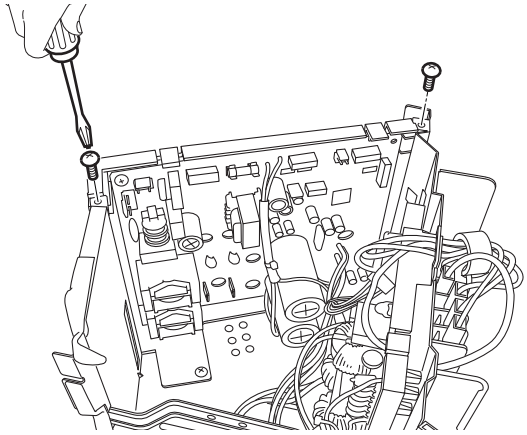
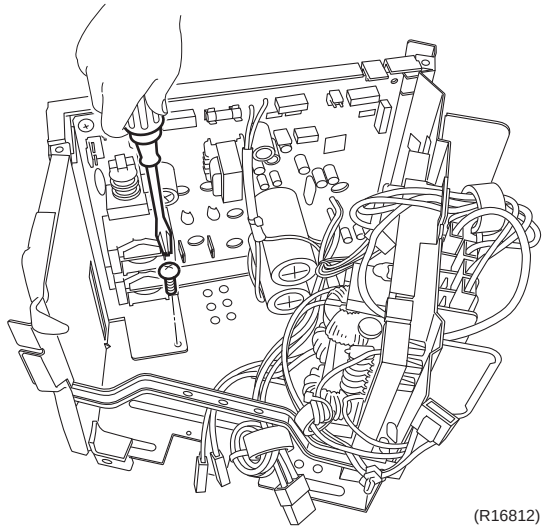
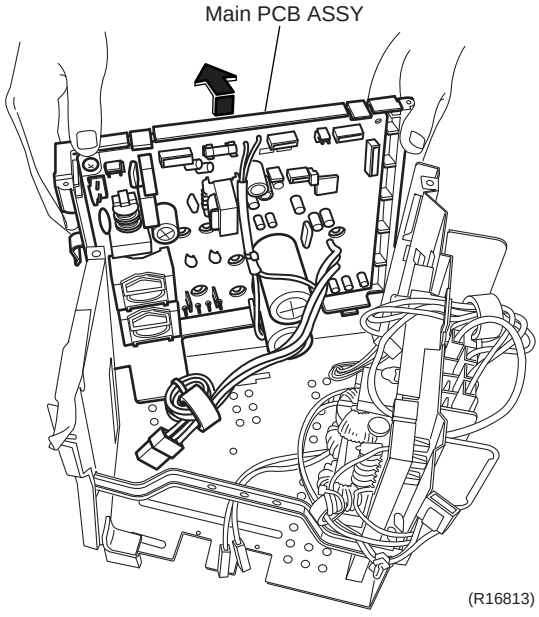
5.4 Removal of PCBs

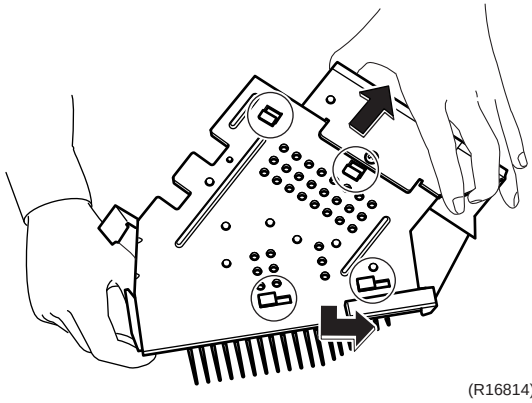
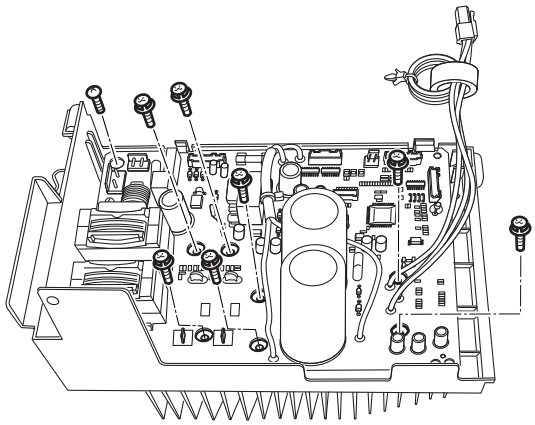
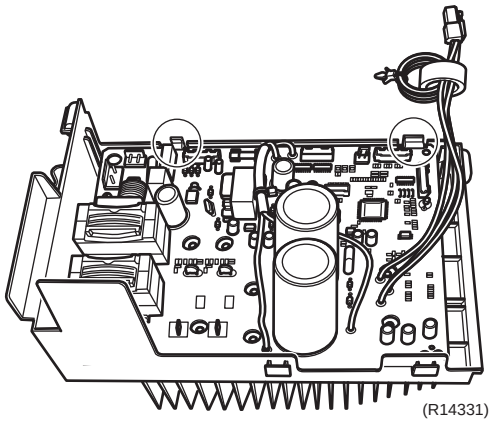
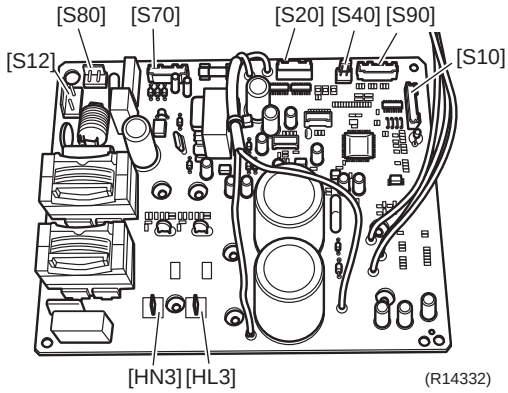
Procedure

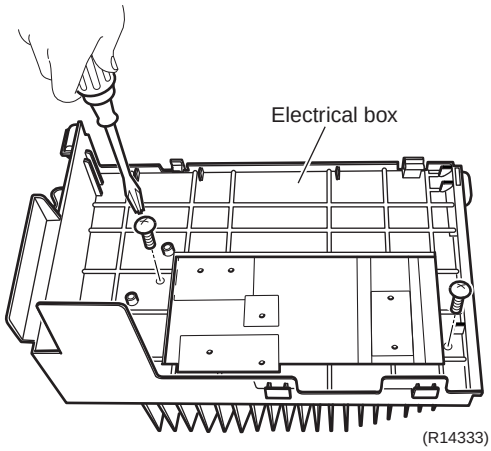
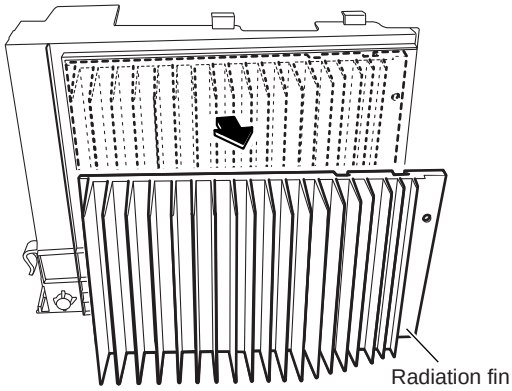
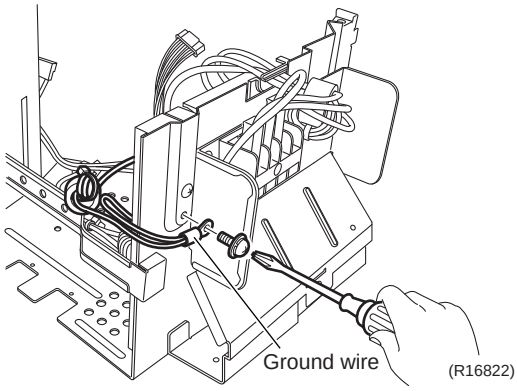
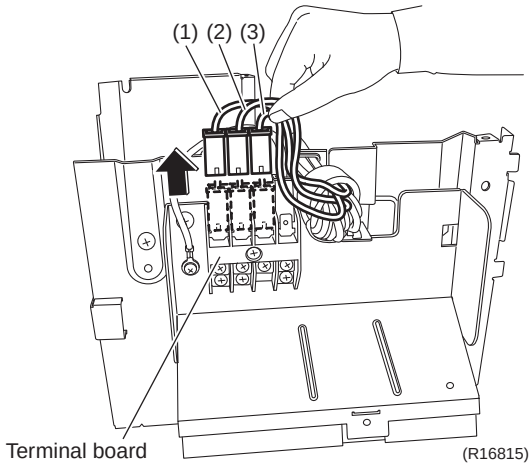
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

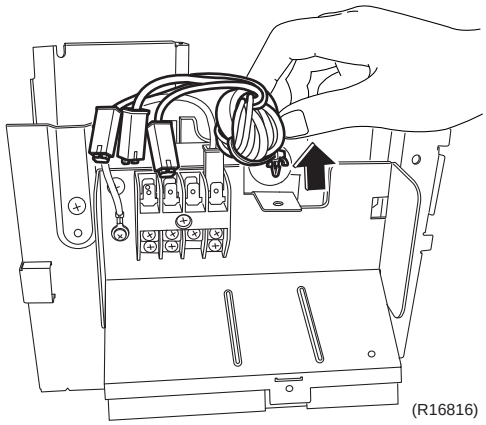
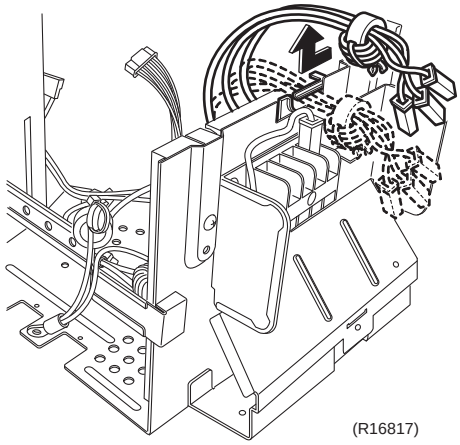
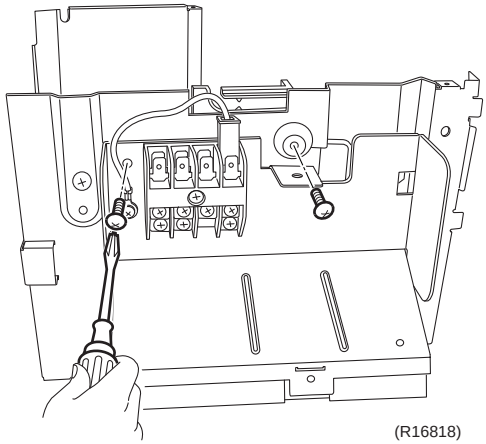
Step	Procedure		Points
1. Remove the main PCB.			[S12]: for [HL4] [HN4] on filter PCB
1	Disconnect the connector [S12] and pull out the clamp.		
2	Disconnect the connector [S10].		[S10]: for [S11] on filter PCB

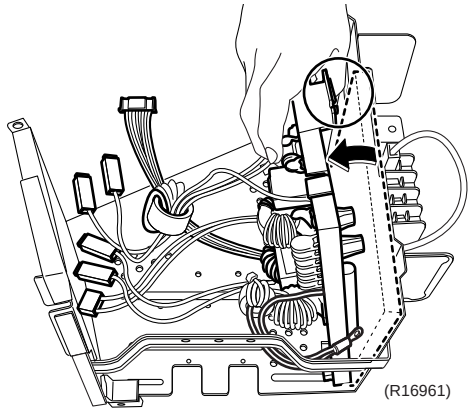
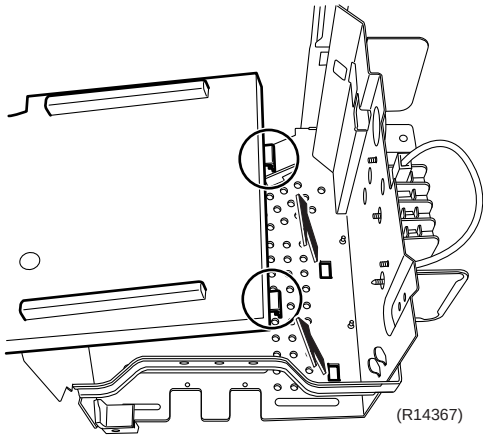
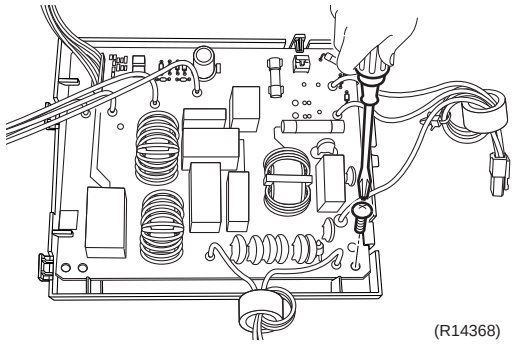
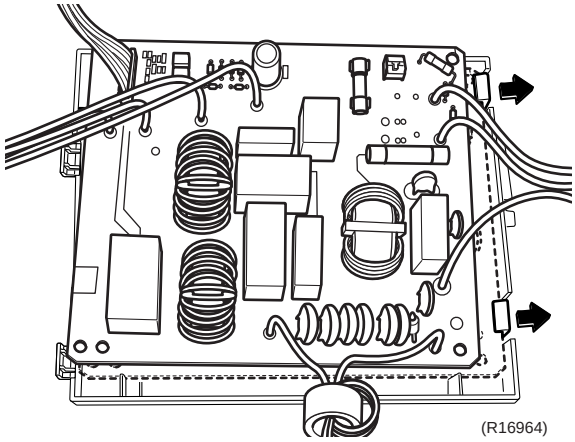
Step	Procedure		Points
3	Pull out the clamp.	 (R16775)	■ The compressor harness has a clamp. When reassembling, insert the clamp as below.  Compressor harness (red, blue, yellow) (R16747)
4	Disconnect the connectors [HN3] and [HL3].	 (R16809)	[HL3]: for [HL2] on filter PCB [HN3]: for [HN2] on filter PCB
5	Pull out the clamp.	 (R16810)	■ When reassembling, insert the clamp as below.  Harnesses from [HL2] (blue) and [HN2] (white) (R16960)

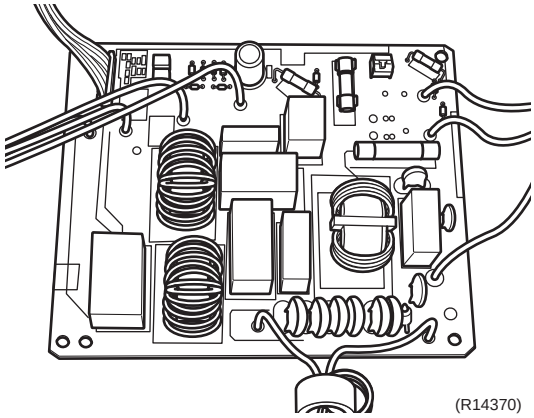
Step	Procedure		Points
6	Remove the 2 upper screws.	 (R16811)	
7	Remove the lower screw.	 (R16812)	
8	Lift the main PCB ASSY.	 (R16813)	

Step	Procedure		Points
9	Unfasten the 4 hooks at the bottom.	 (R16814)	
10	Remove the 8 screws.	 (R14330)	
11	Unfasten the 2 hooks.	 (R14331)	■ Refer to page 24 for detail.
12	Remove the main PCB.	 (R14332)	[S10] [S12]: filter PCB [S20]: electronic expansion valve coil [S40]: overload protector [S70]: fan motor [S80]: four-way valve coil [S90]: thermistors [HL3] [HN3]: filter PCB

Step	Procedure	Points
2. Remove the radiation fin.		
1 Remove the 2 screws on the bottom of the electrical box.	 (R14333)	
2 Remove the radiation fin.	 (R14334)	
3. Remove the filter PCB.		
1 Remove the ground wire screw.	 (R16822)	
2 Pull out the terminals from the terminal board.	 (R16815)	(1): black (2): white (3): red

Step	Procedure		Points
3	Pull out the clamp.	 (R16816)	
4	Release the harnesses from the groove.	 (R16817)	
5	Remove the 2 screws.	 (R16818)	

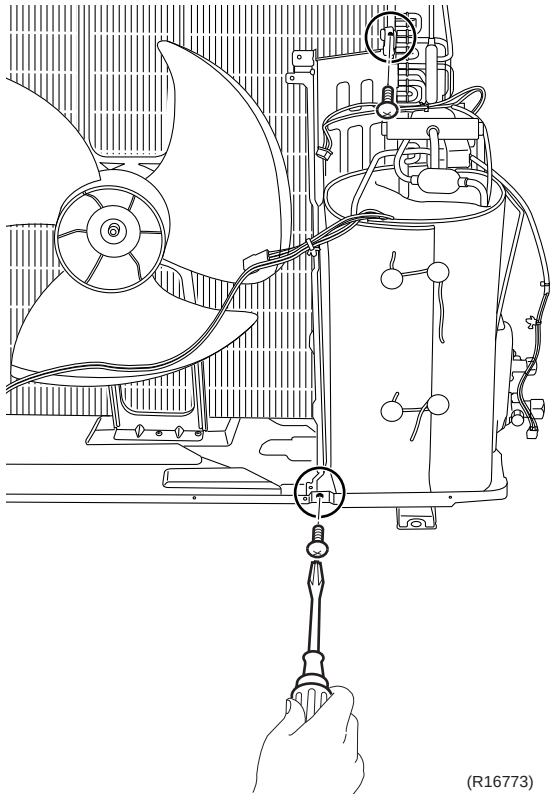
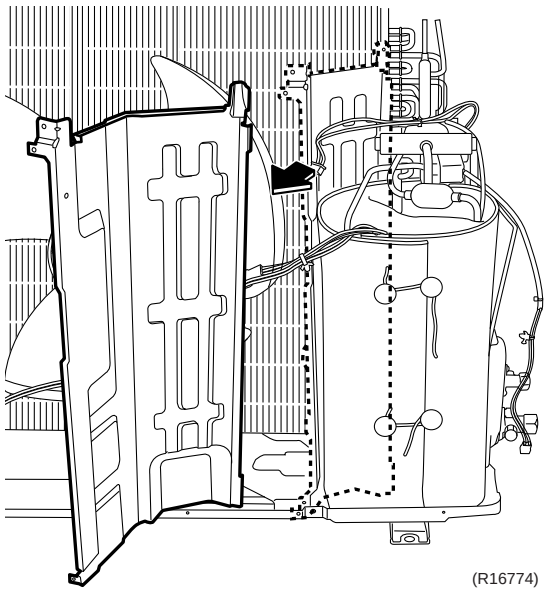
Step	Procedure		Points
6	Unfasten the 3 hooks of the filter PCB ASSY.	 (R16961)	
		 (R14367)	
7	Remove the screw.	 (R14368)	
8	Unfasten the 2 hooks.	 (R16964)	

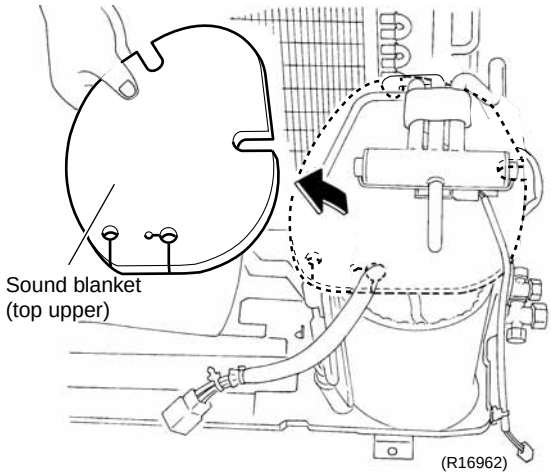
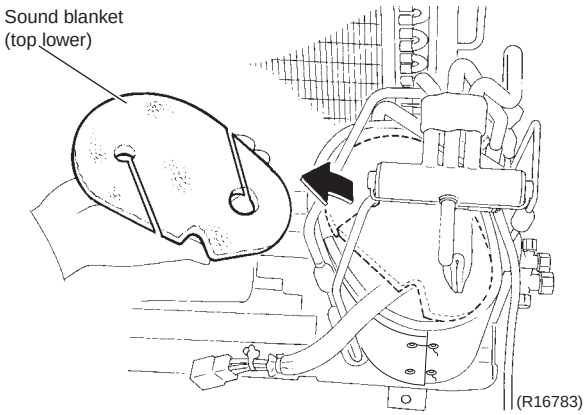
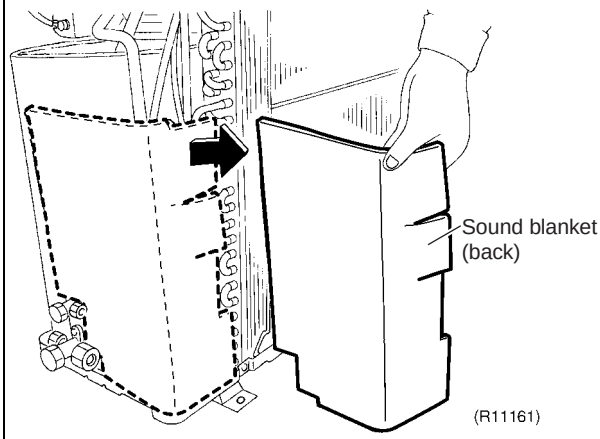
Step	Procedure		Points
9	Remove the filter PCB.	 (R14370)	■ Refer to page 24 for detail.

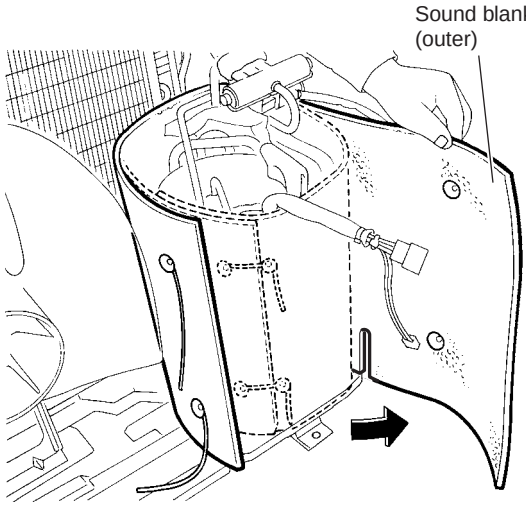
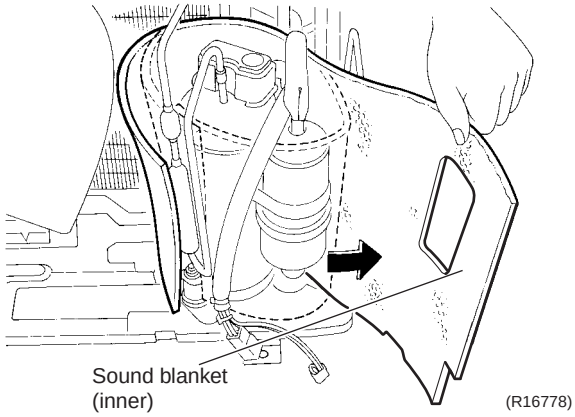
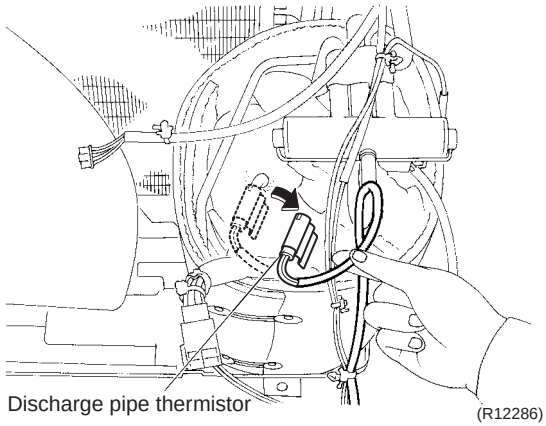
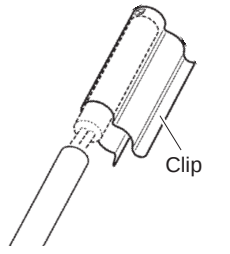
5.5 Removal of Sound Blankets / Thermistors

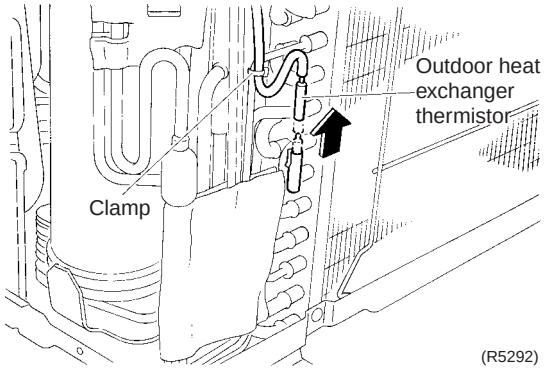
Procedure

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

Step	Procedure	Points
1. Remove the partition plate.		
1 Remove the 2 screws.	 (R16773)	
2 Remove the partition plate.	 (R16774)	

Step	Procedure	Points
2. Remove the sound blankets.		
1 Remove the sound blanket (top upper).		
2 Remove the sound blanket (top lower).		
3 Remove the sound blanket (back).		

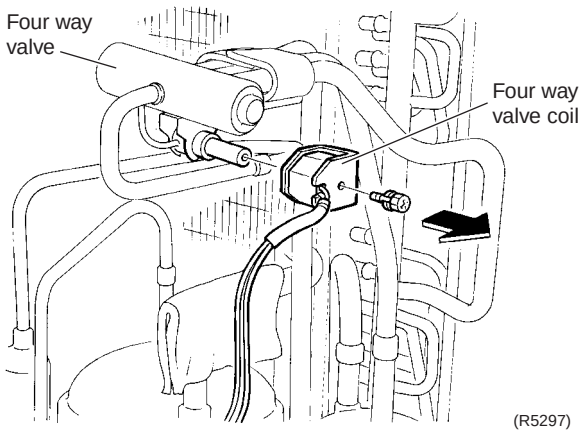
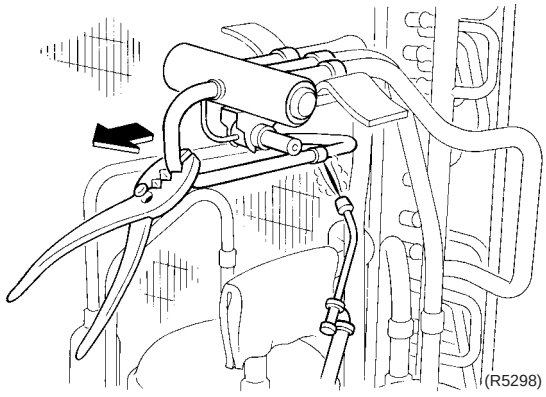
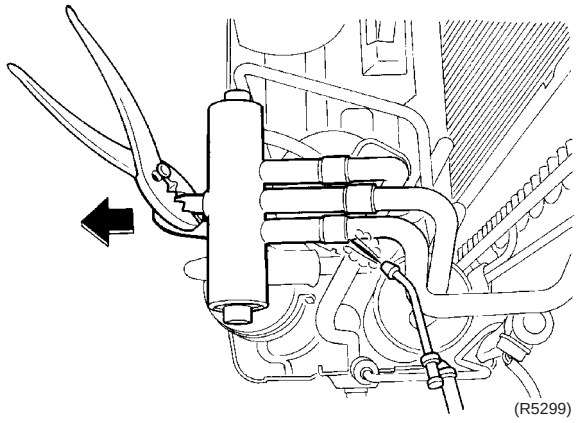
Step	Procedure		Points
4	Remove the sound blanket (outer).		■ Since the piping ports are torn easily, remove the sound blankets carefully.
5	Remove the sound blanket (inner).		
6	Release the discharge pipe thermistor.		■ Be careful not to lose the clip for the thermistor. 

Step	Procedure	Points
7	Cut the clamp and pull out the outdoor heat exchanger thermistor.	

5.6 Removal of Four-Way Valve

Procedure

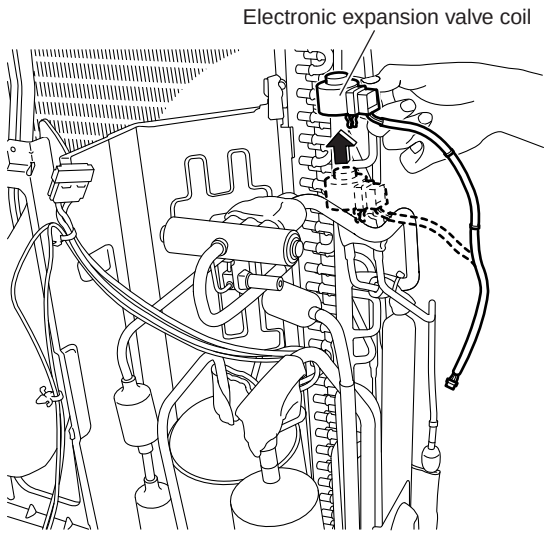
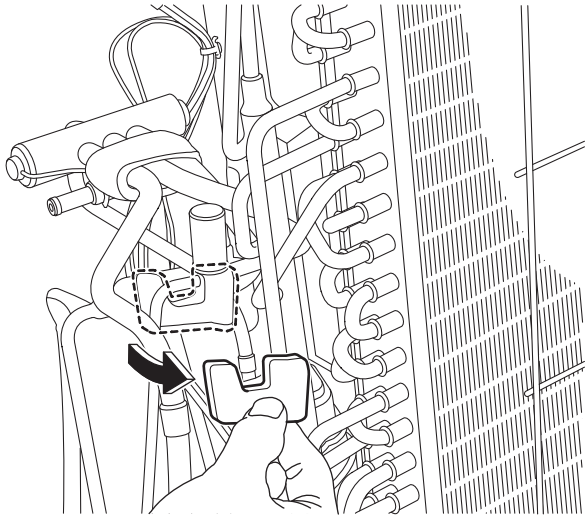
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure		Points
1	Remove the screw and remove the four-way valve coil.		**Warning** **Be careful not to get yourself burnt with the pipes and other parts that are heated by the gas brazing machine.** **Warning** **If the refrigerant gas leaks during work, ventilate the room. (If the refrigerant gas is exposed to flames, toxic gas may be generated.)** **Caution** **From the viewpoint of global environment protection, do not discharge the refrigerant gas in the atmosphere. Make sure to collect all the refrigerant gas.**
■ Before working, make sure that the refrigerant gas is empty in the circuit. ■ Be sure to apply nitrogen replacement when heating up the brazed part.			**Cautions for restoration** 1. Restore the piping by non-oxidation brazing. 2. It is required to prevent the carbonization of the oil inside the four-way valve and the deterioration of the gaskets affected by heat. (Keep below 120°C (248°F).) For the sake of this, wrap the four-way valve with wet cloth and provide water so that the cloth does not dry.
2	Remove the putty. Heat up the brazed part of the four-way valve and disconnect.		**Note:** ■ Never use a metal saw to cut pipes because the sawdust may enter the circuit.
3	Heat up every brazed part in turn and disconnect.		■ When withdrawing the pipes, be careful not to pinch them firmly with pliers. The pipes may get deformed. ■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries.

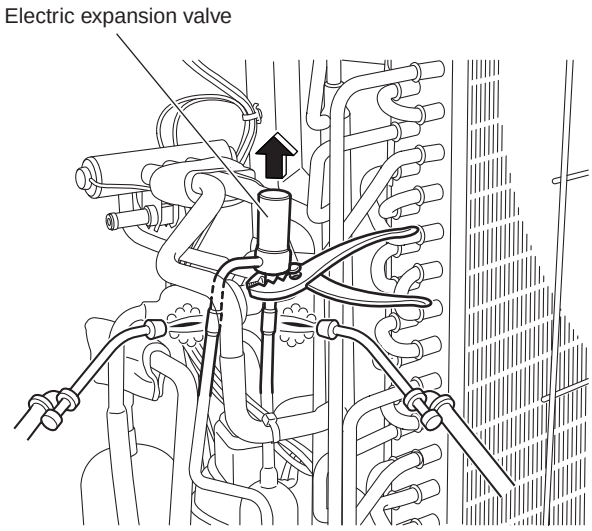
5.7 Removal of Electronic Expansion Valve

Procedure

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

Step	Procedure		Points
1	Pull out the electronic expansion valve coil.	 (R16751)	
2	Remove the sheets of putty.	 (R16752)	

Step	Procedure	Points
■ Before working, make sure that the refrigerant gas is empty in the circuit. ■ Be sure to apply nitrogen replacement when heating up the brazed part.		
3	Heat up the 2 brazed parts of the electronic expansion valve and remove it.	



(R16753)

Warning
Use caution to avoid burning yourself with pipes and other parts that are heated by the gas brazing.

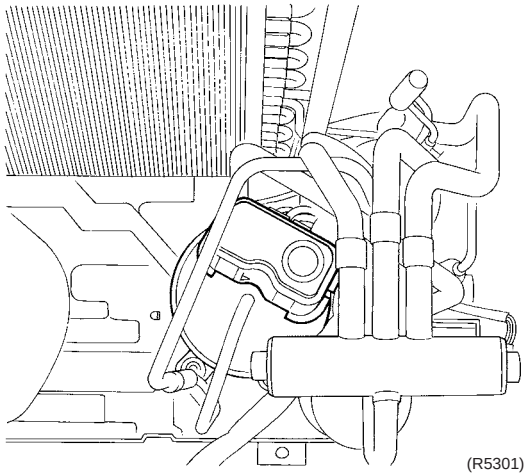
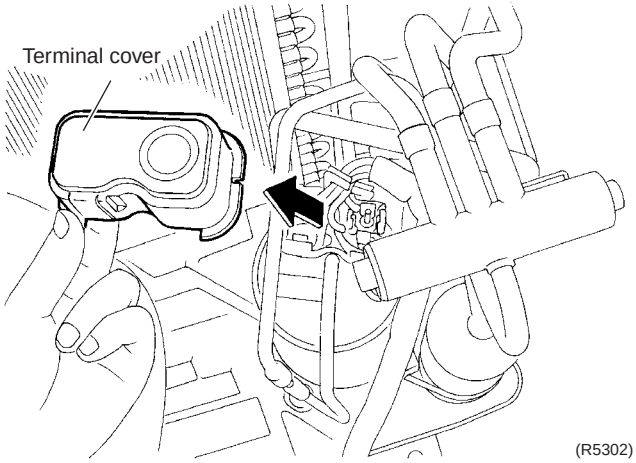
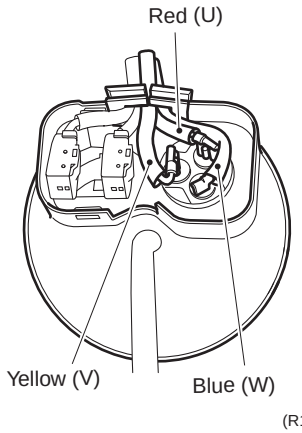
Warning
If the refrigerant gas leaks during work, immediately ventilate the room. If refrigerant gas is exposed to flames, toxic gas may be generated.

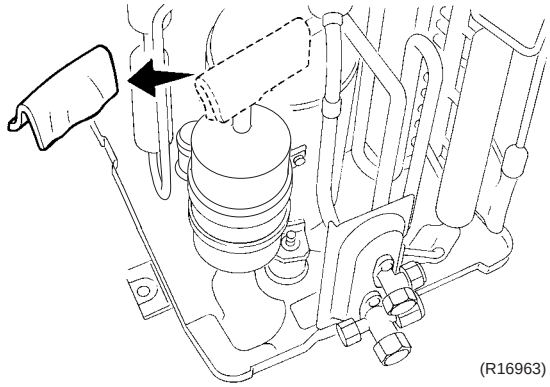
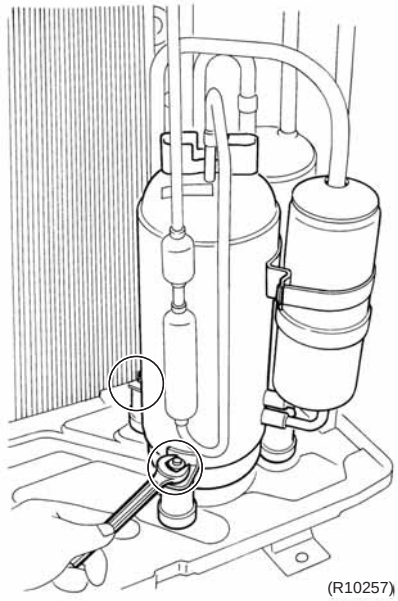
Caution
For global environmental protection, do not discharge the refrigerant gas in the atmosphere. Make sure to collect all the refrigerant gas.

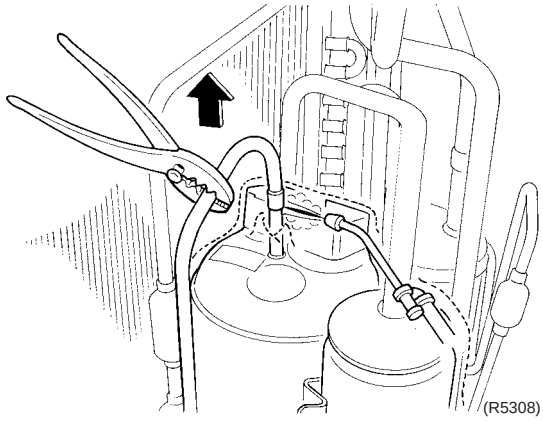
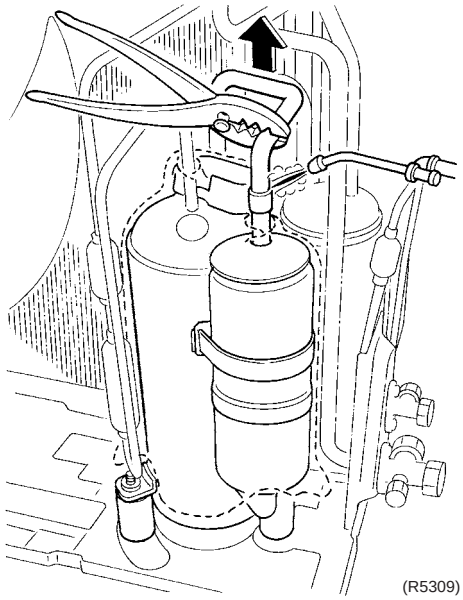
5.8 Removal of Compressor

Procedure

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

Step	Procedure		Points
1	Remove the terminal cover.	 (R5301)  (R5302)	
2	Disconnect the lead wires of the compressor.	 (R16784)	

Step	Procedure		Points
3	Remove the putty.	 (R16963)	
4	Remove the 2 nuts of the compressor.	 (R10257)	**Warning** **Use caution to avoid burning yourself with pipes and other parts that are heated by the gas brazing** **Warning** **If the refrigerant gas leaks during work, immediately ventilate the room. If refrigerant gas is exposed to flames, toxic gas may be generated.** **Warning** **If the refrigerant oil in the compressor catches fire, have a wet cloth prepared to extinguish the fire immediately.** **Caution** **For global environmental protection, do not discharge the refrigerant gas in the atmosphere. Make sure to collect all the refrigerant gas.**
■ Before working, make sure that the refrigerant gas is empty in the circuit. ■ Be sure to apply nitrogen replacement when heating up the brazed part.			

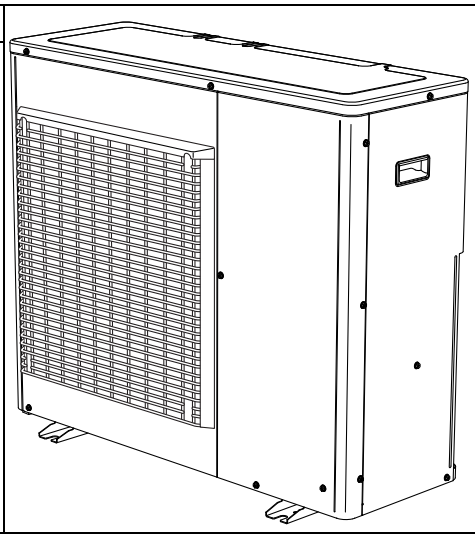
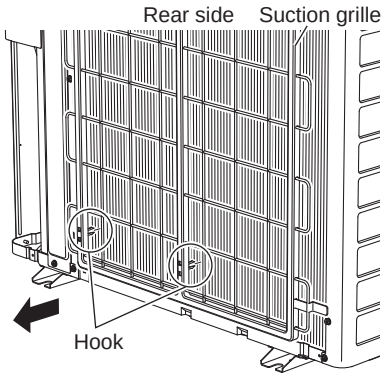
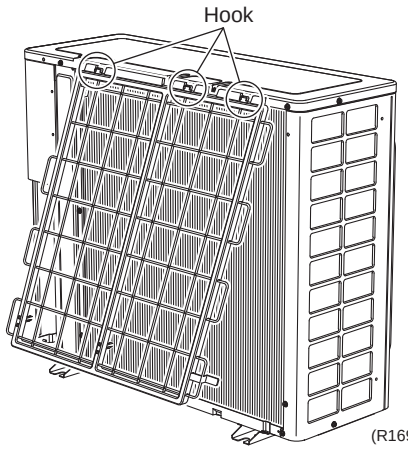
Step	Procedure		Points
5	Heat up the brazed part of the discharge side and disconnect it.	 (R5308)	**Cautions for restoration** 1. Restore the piping by non-oxidation brazing. 2. It is required to prevent the carbonization of the oil inside the four-way valve and the deterioration of the gaskets affected by heat. Keep below 120°C (248°F). Wrap the four-way valve with a wet cloth and provide water so that the cloth does not dry.
6	Heat up the brazed part of the suction side and disconnect it.	 (R5309)	**In case of difficulty with gas brazing machine** 1. Disconnect the brazed part where is easy to disconnect and restore. 2. Cut pipes on the main unit with a tube cutter in order to make it easy to disconnect.
7	Lift the compressor up and remove it.		**Note:** ■ Never use a metal saw to cut pipes because the sawdust may enter the circuit. ■ When withdrawing the pipes, be careful not to pinch them firmly with pliers. The pipes may get deformed. ■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries. ■ Be careful so as not to burn the compressor terminals, the name plate, the heat exchanger fin.

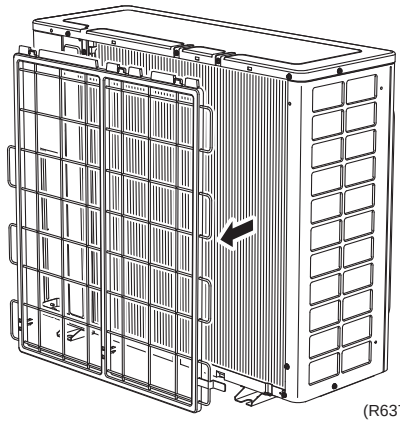
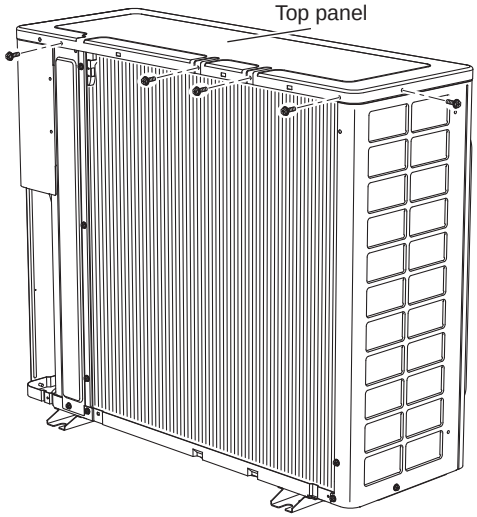
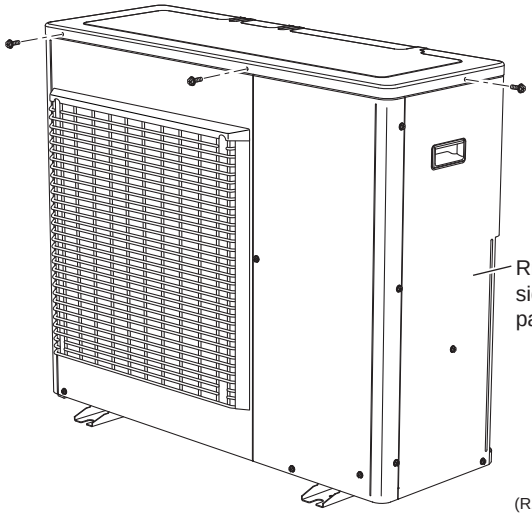
6. Outdoor Unit: RXS24LVJU

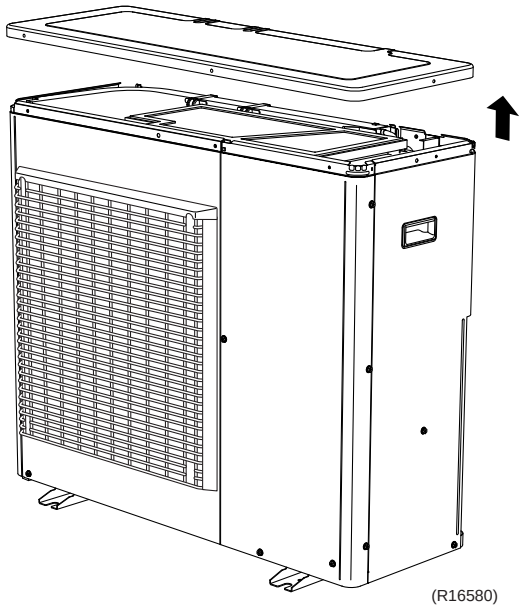
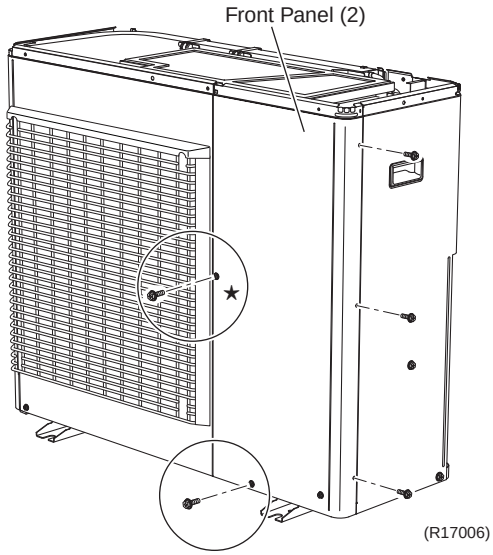
6.1 Removal of Outer Panels

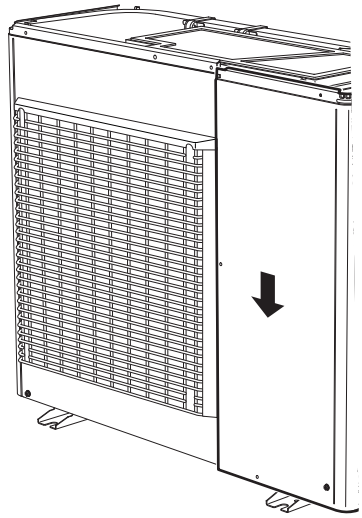
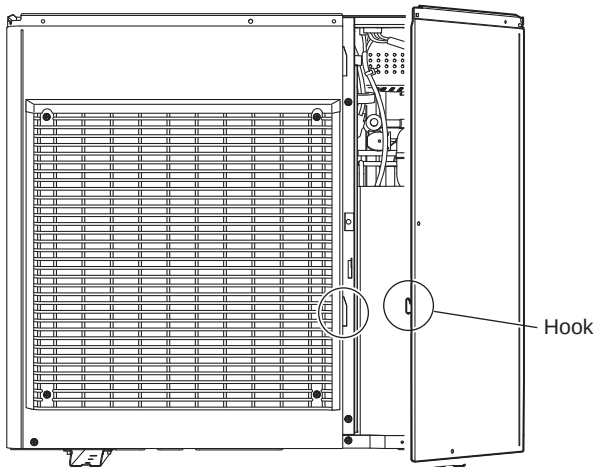
Procedure

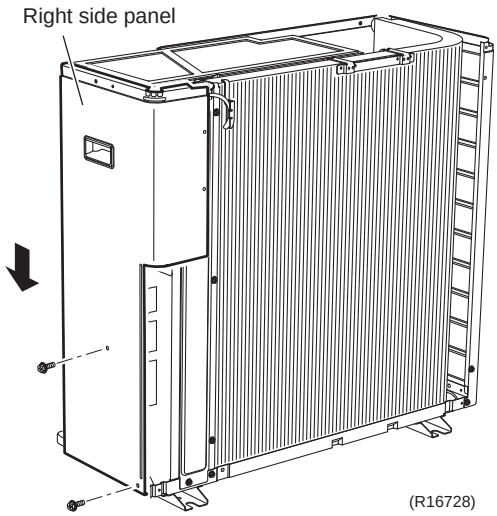
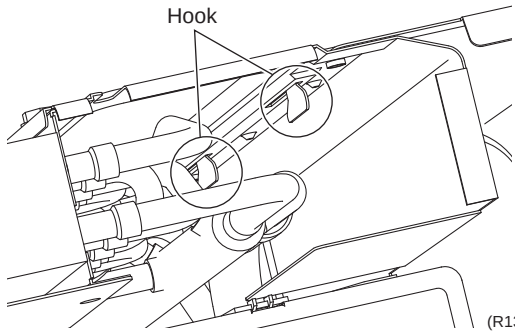
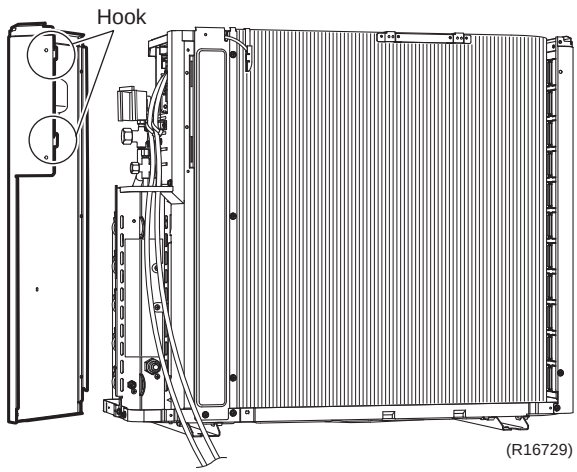
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

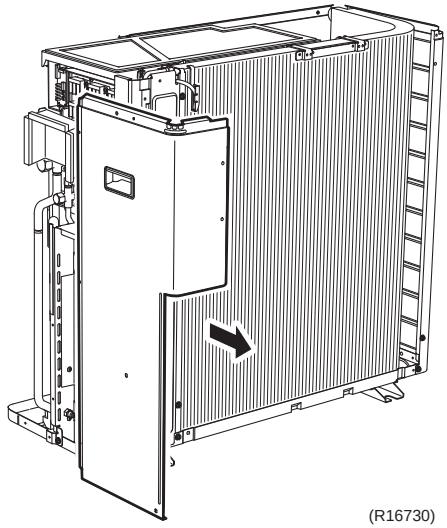
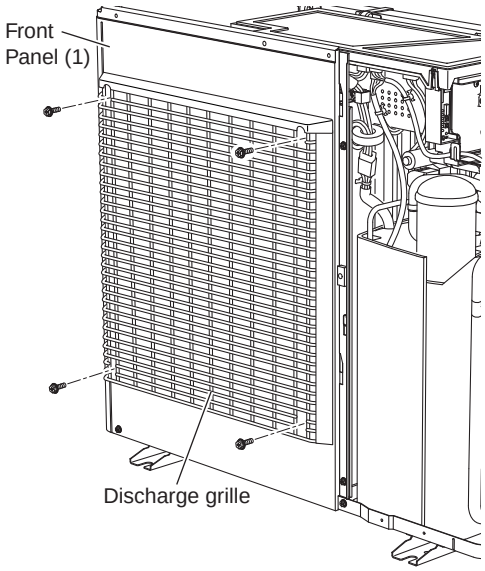
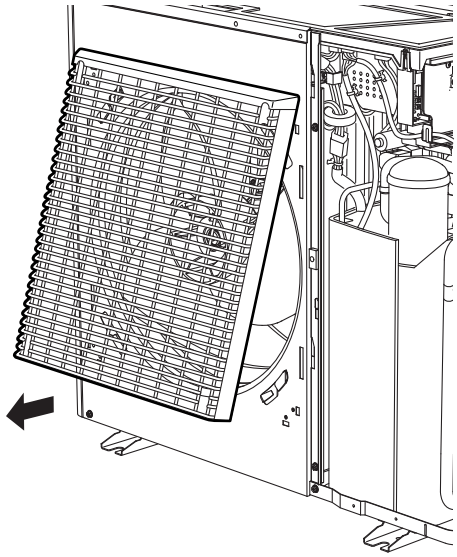
Step	Procedure	Points
1. Appearance features	 (R16578)	
2. Remove the suction grille.		■ The hooks are secured in the clearances of the outdoor heat exchanger fins.
1 Unfasten the 2 hooks at the bottom first.	 (R16916)	
2 Slide the suction grille downward to unfasten the 3 top hooks.	 (R16917)	

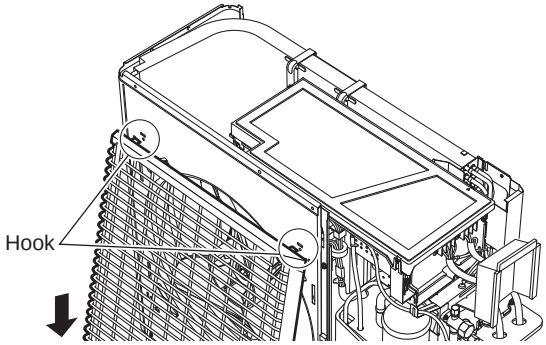
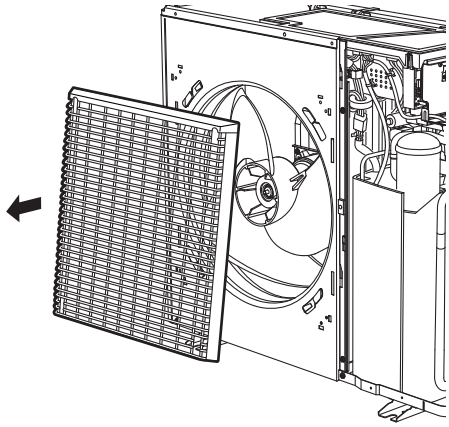
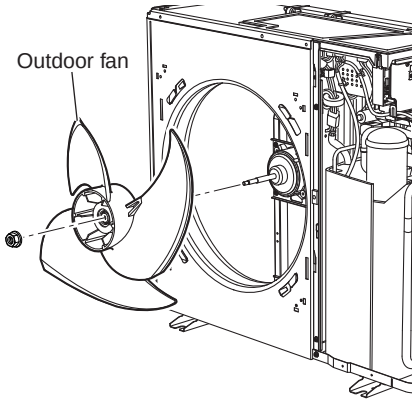
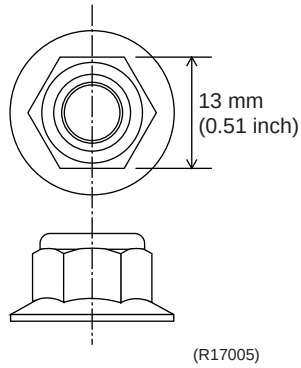
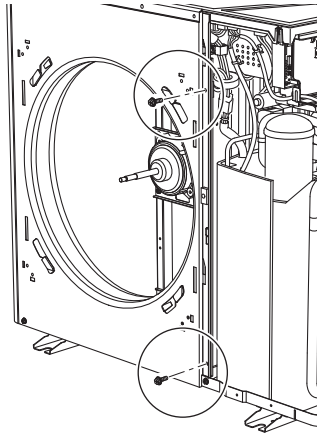
Step	Procedure		Points
3	Remove the suction grille.	 (R6372)	
3. Remove the top panel.			
1	Remove the 4 screws on the back and the screw on the left side.	 (R6373)	
2	Remove the 2 screws on the front and the screw on the right side panel.	 (R16579)	

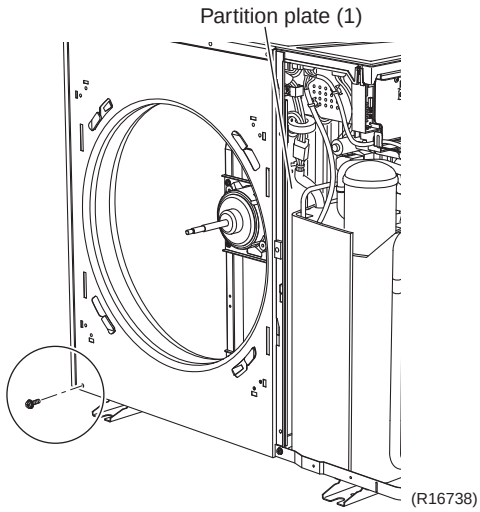
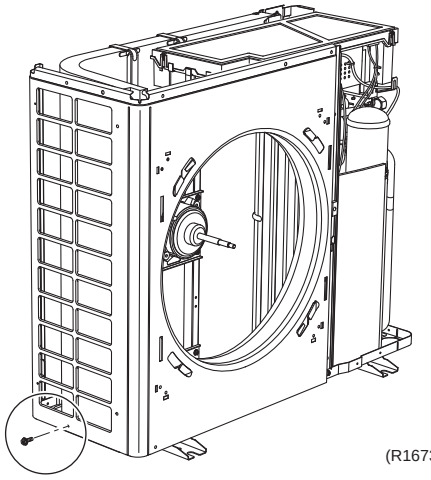
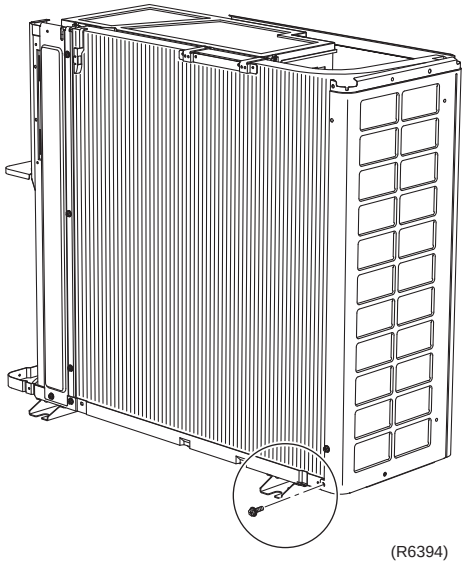
Step	Procedure		Points
3	Lift the top panel and remove it.	 (R16580)	
4. Remove the front panel (2).		 (R17006)	★: This screw is M5(3) × 16
1	Remove the 5 screws.		

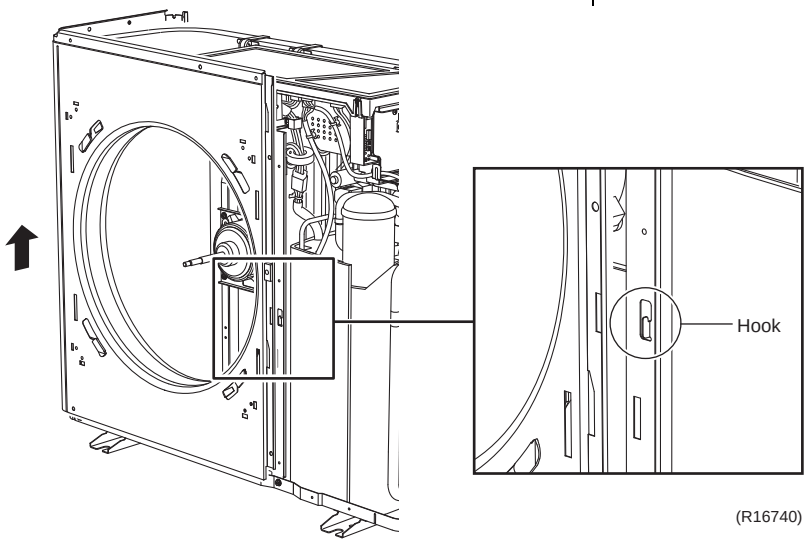
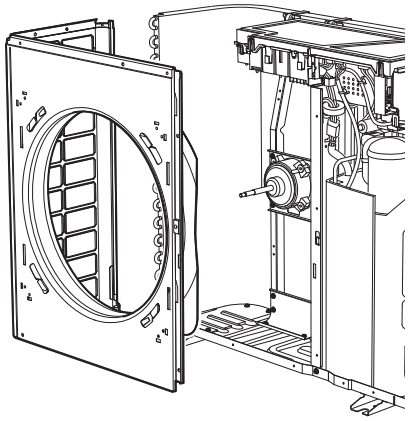
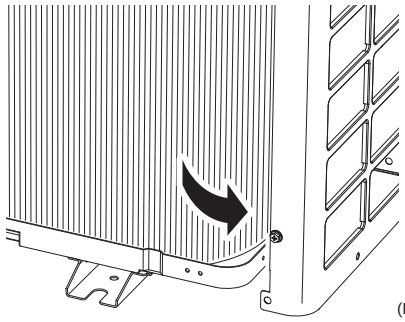
Step	Procedure	Points
2	Slide the front panel (2) downward to unfasten the hook.  (R16582)	
3	Remove the front panel (2).  (R16583)	

Step	Procedure	Points
5. Remove the right side panel.		
1 Remove the 2 screws. Slide the right side panel downward to unfasten the 2 hooks on the rear side.		
		

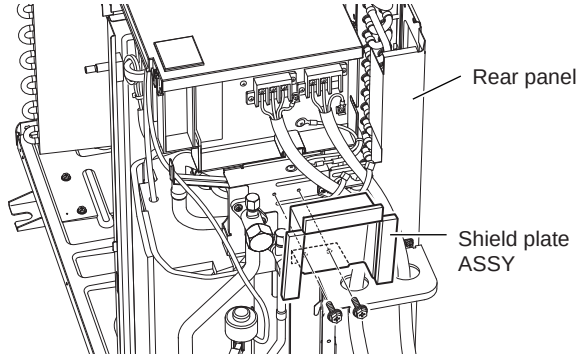
Step	Procedure		Points
2	Remove the right side panel.	 (R16730)	
6. Remove the front panel (1).		 (R16587)	■ Remove the discharge grille and the outdoor fan first to remove the front panel (1).
1	Remove the 4 screws on the discharge grille.		
2	Pull the bottom of the discharge grille.	 (R16588)	

Step	Procedure		Points
3	Slide the discharge grille downward to unfasten the 2 hooks at the top.	 (R16591)	
4	Remove the discharge grille.	 (R16592)	
5	Remove the nut of the outdoor fan.	 (R16736)	■ Nut size : M8  (R17005)
6	Remove the 2 screws on the partition plate (1).	 (R16737)	

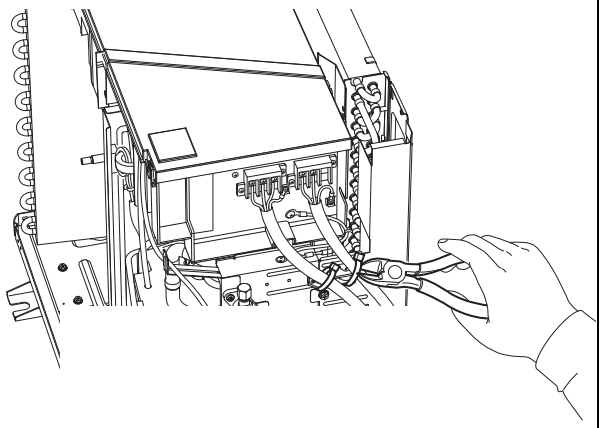
Step	Procedure		Points
7	Remove the screw at the bottom left of the front.	 (R16738)	
8	Remove the screw at the bottom of the left side.	 (R16739)	
9	Remove the screw at the bottom of the rear side.	 (R6394)	

Step	Procedure	Points
10	Lift the front panel (1) to unfasten the hook.  (R16740)	
11	Remove the front panel (1).  (R16741)  (R6995)	■ Be sure to detach the front panel (1) carefully so as not to deform it.

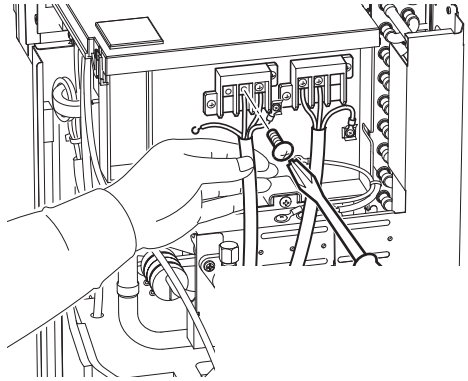
Step	Procedure	Points
7. Remove the rear panel.		
1	Remove the 2 screws, and remove the shield plate ASSY.	
2	Release the clamps of the connection wire.	
3	Remove the screws and detach the connection wires.	



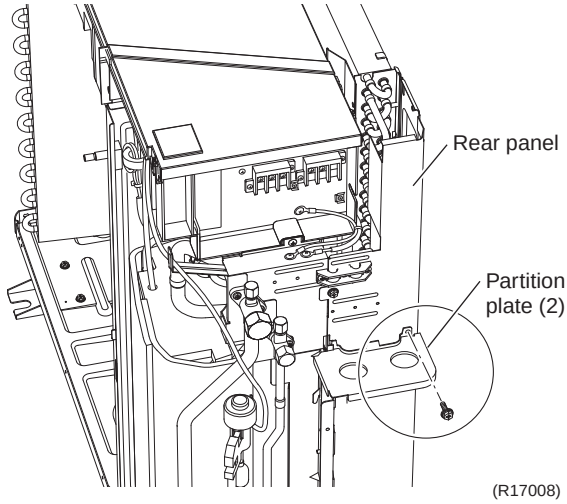
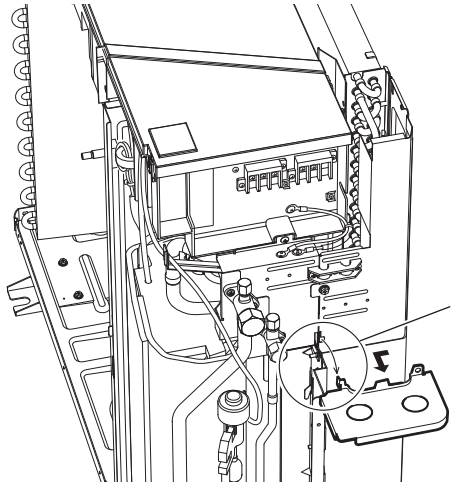
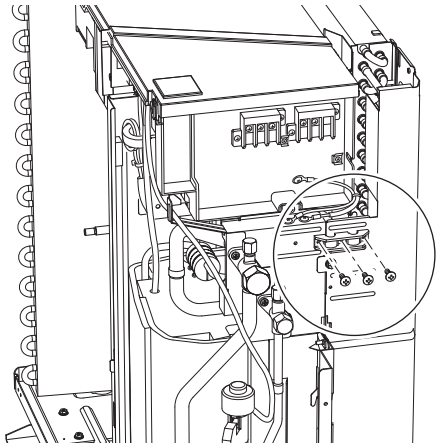
(R16599)

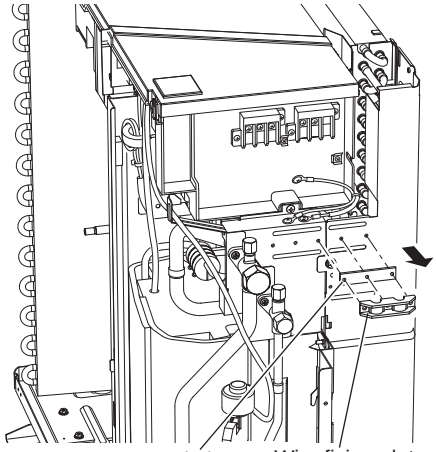
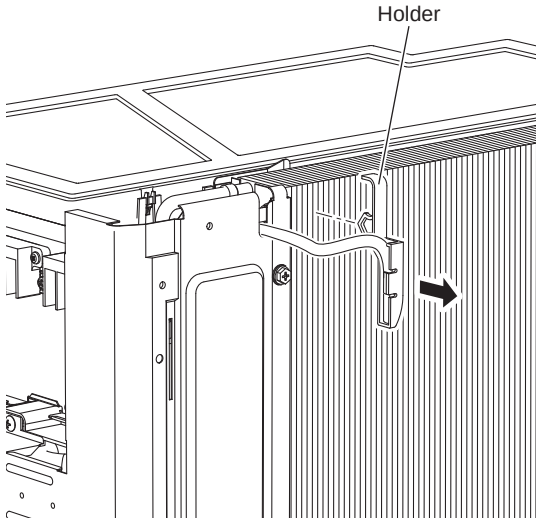
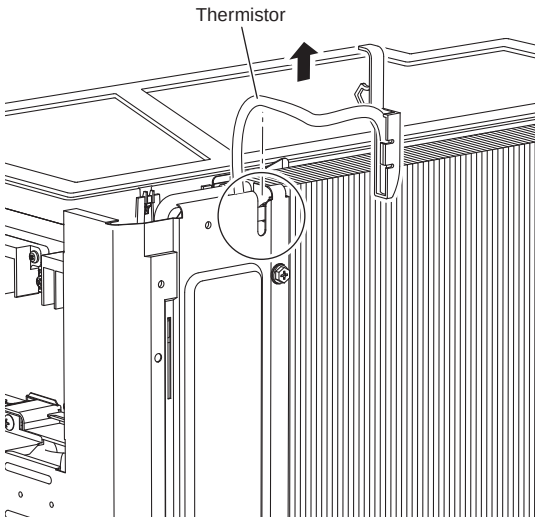


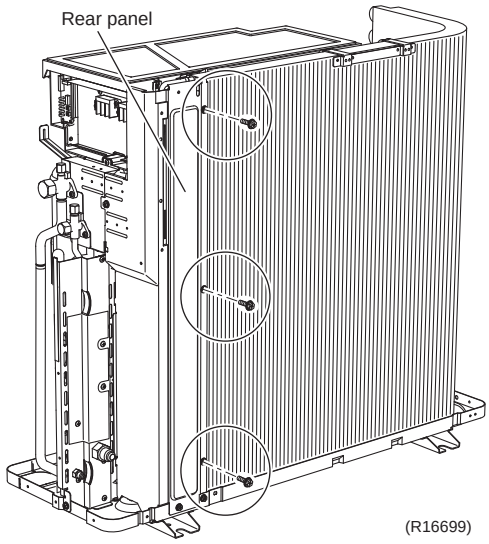
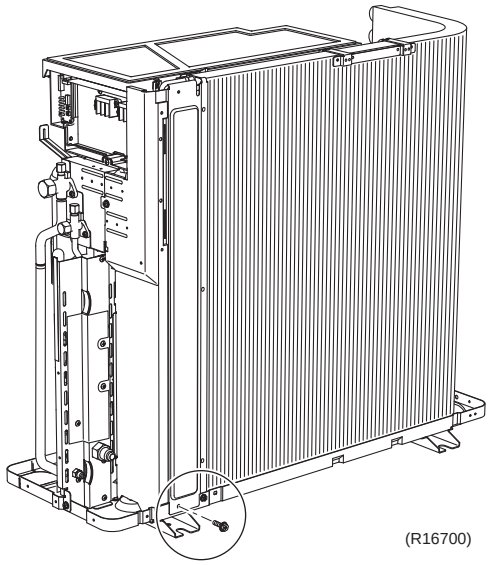
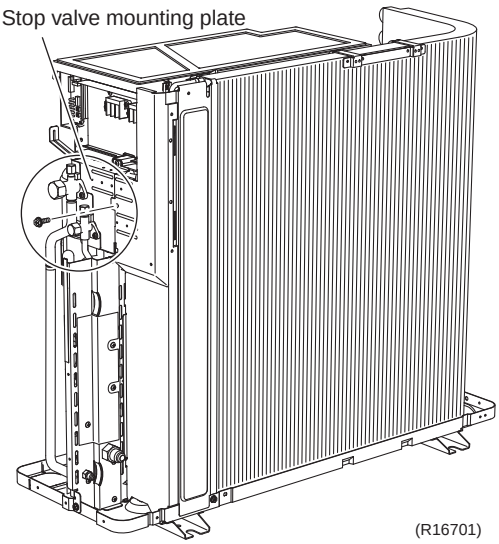
(R17009)

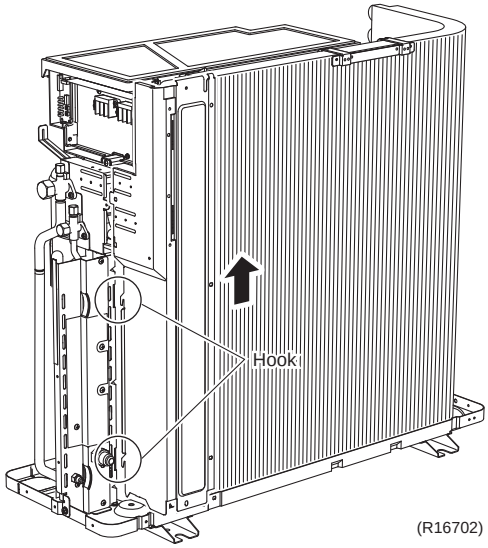
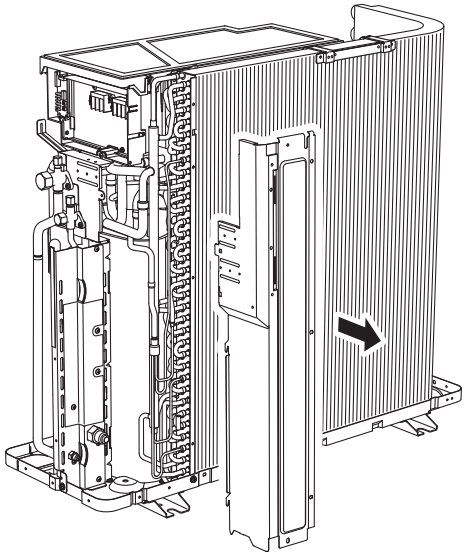


(R17012)

Step	Procedure	Points
4	Remove the screw on the partition plate (2).  (R17008)	
5	Slide the partition plate (2) to the left, and remove it.  (R17007)	
6	Remove the 3 screws on the wire fixing plate.  (R17010)	

Step	Procedure	Points
7	Remove the wire fixing plate and the insulation.  (R17011)	
8	Release the holder of the outdoor temperature thermistor.  (R11151)	■ The holder is secured in the clearances of the outdoor heat exchanger fins.
9	Release the harness of the outdoor temperature thermistor from the groove.  (R14991)	

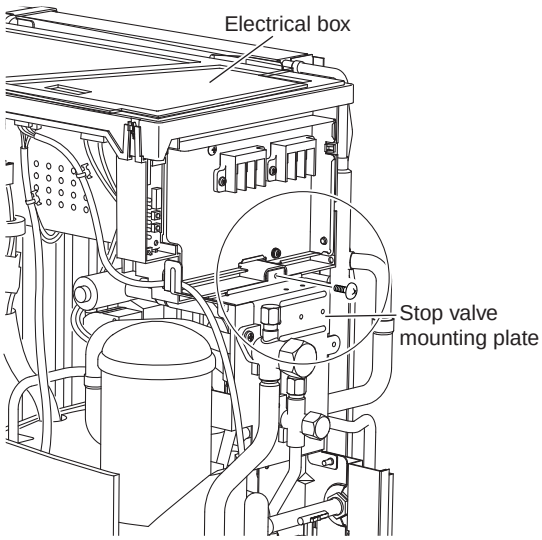
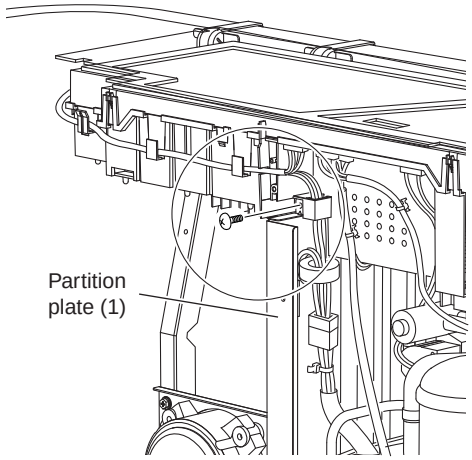
Step	Procedure		Points
10	Remove the 3 screws on the rear panel.	 (R16699)	
11	Remove the screw on the bottom frame.	 (R16700)	
12	Remove the screw on the stop valve mounting plate.	 (R16701)	

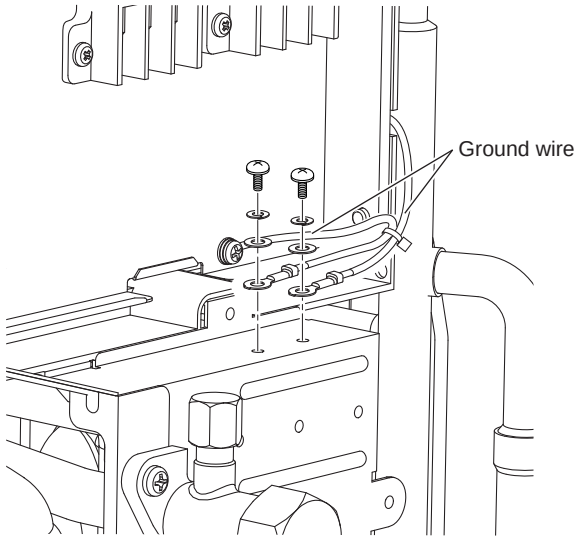
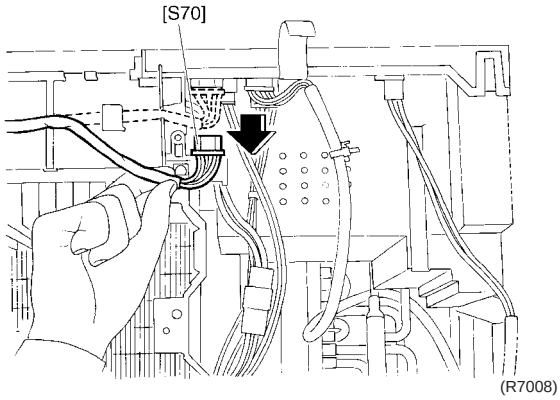
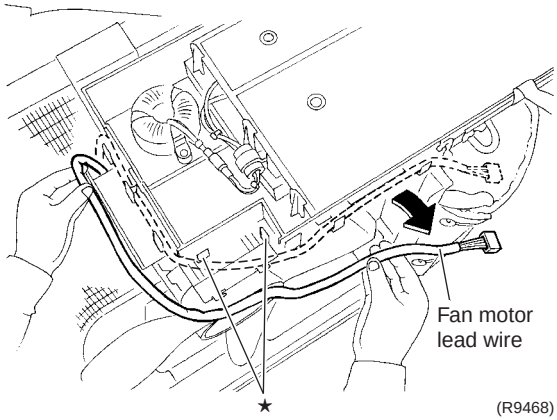
Step	Procedure		Points
13	Lift the rear panel upward to unfasten the 2 hooks.	 (R16702)	
14	Remove the rear panel.	 (R16703)	

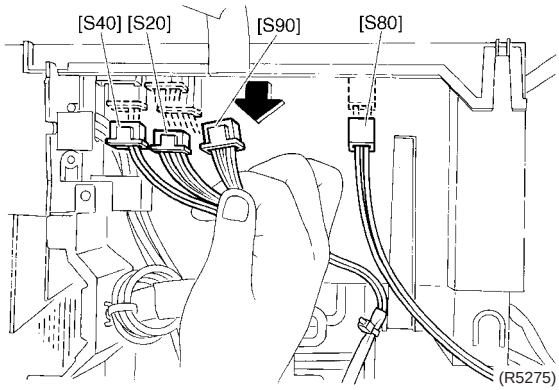
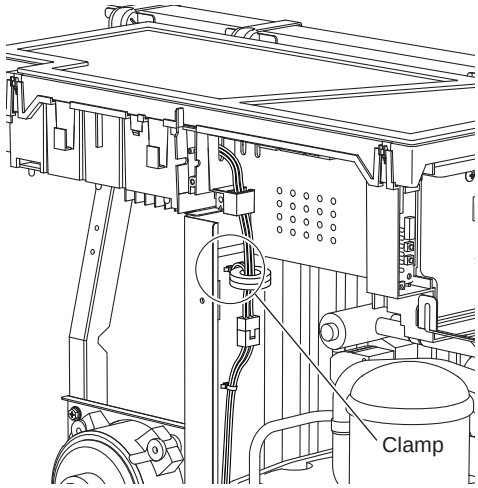
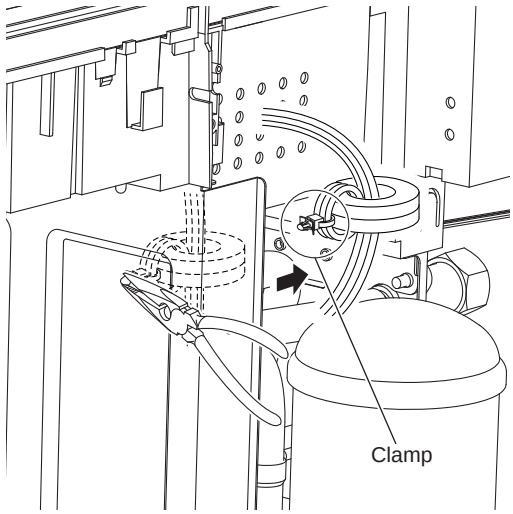
6.2 Removal of Electrical Box

Procedure

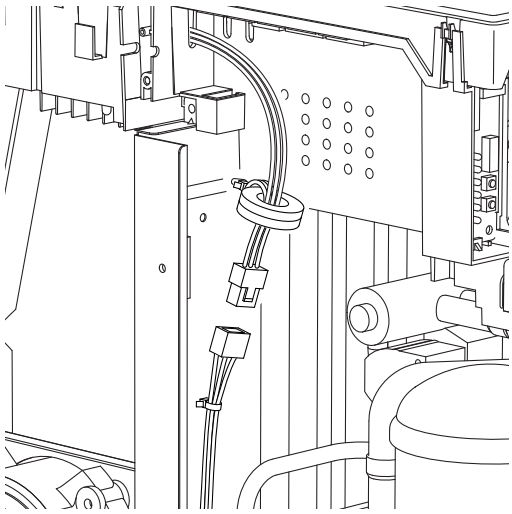
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

Step	Procedure		Points
1	Remove the screw on the stop valve mounting plate.	 (R16605)	
2	Remove the screw on the partition plate (1).	 (R16606)	

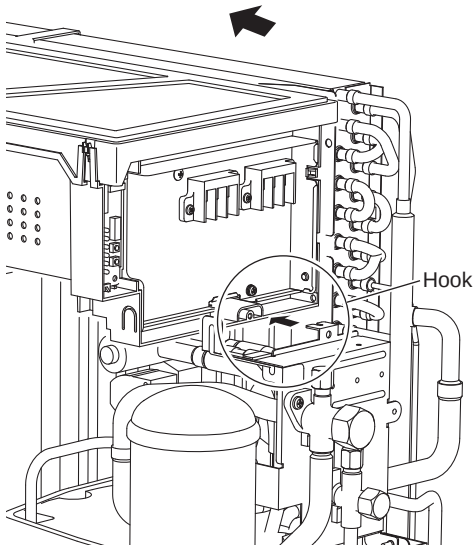
Step	Procedure		Points
3	Remove the 2 screws to detach the ground wires.	 (R16607)	
4	Disconnect the connector for the fan motor [S70].	 (R7008)	
5	Release the fan motor lead wire from the 5 hooks.	 (R9468)	★: When reassembling, do not use these 2 hooks.

Step	Procedure		Points
6	Disconnect the connectors of the front side.		[S20]: electronic expansion valve coil [S40]: overload protector [S80]: four-way valve coil [S90]: thermistors
7	The compressor lead wire is fixed on the partition plate (1) with a clamp.		
8	Release the clamp of the compressor relay harness with pliers.		

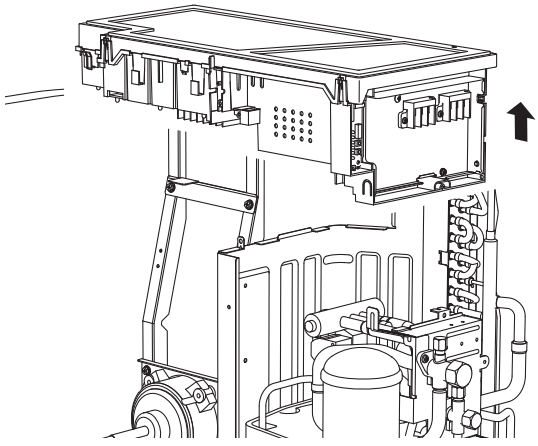
Step	Procedure	Points
9	Disconnect the relay connector for the compressor.	
10	Slide the electrical box to the left to unfasten the hook on the right side of the box.	
11	Lift up the electrical box and remove it.	



(R6469)



(R16705)

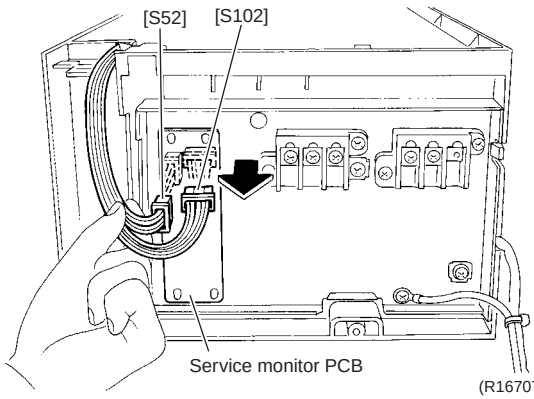
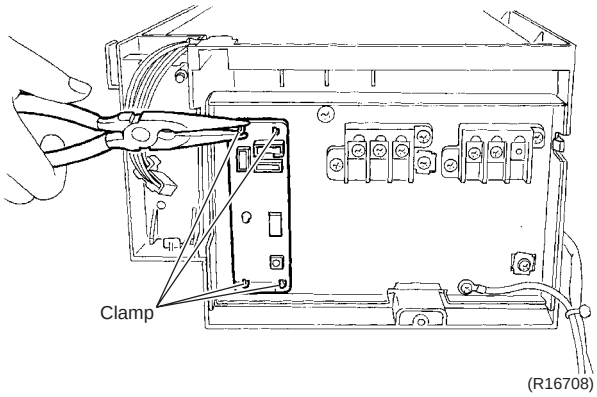
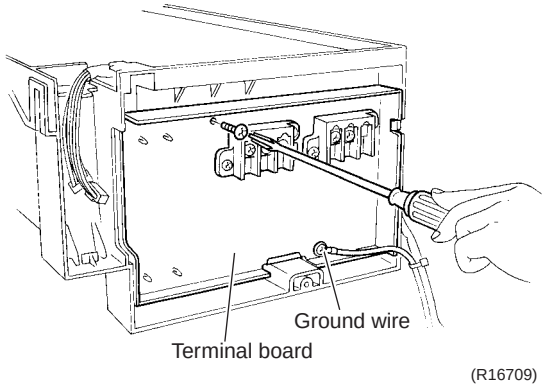


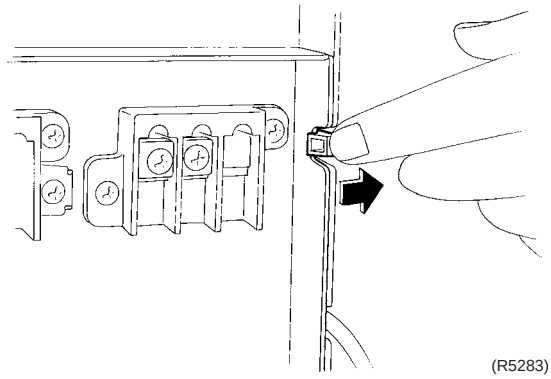
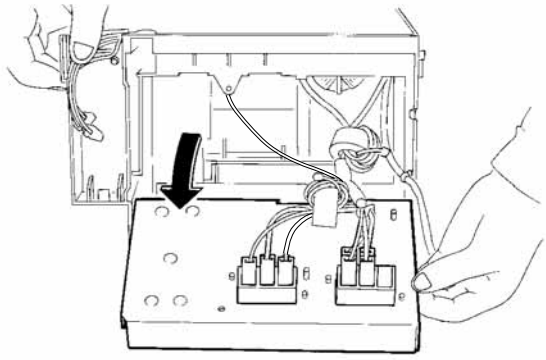
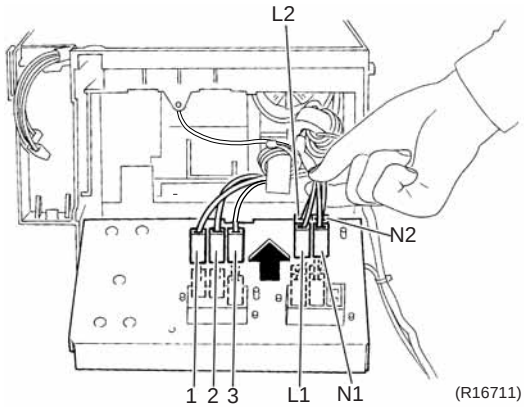
(R16706)

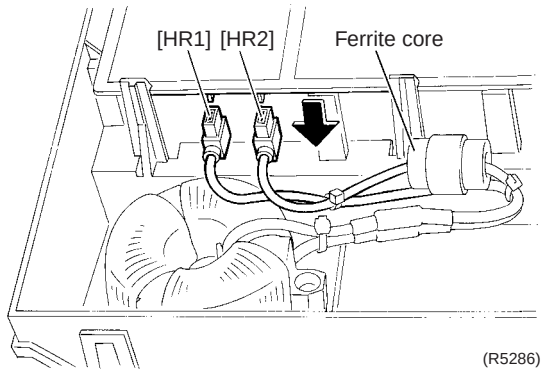
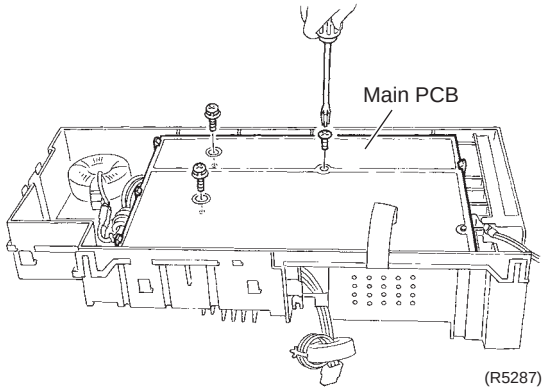
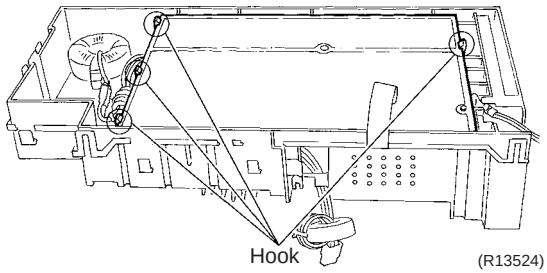
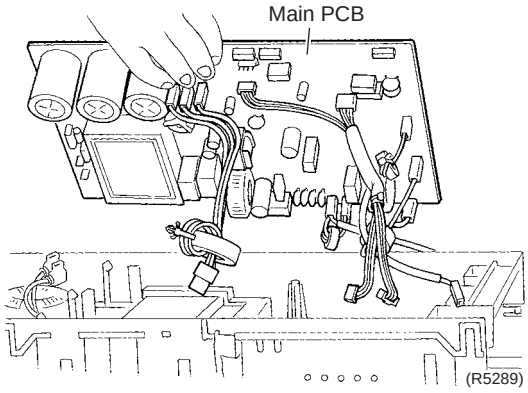
6.3 Removal of PCBs

Procedure

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

Step	Procedure		Points
1	Disconnect the connectors [S52] [S102] from the service monitor PCB.		**Preparation** ■ Remove the electrical box according to the "Removal of Electrical Box".
2	Detach the 4 clamps with pliers and remove the service monitor PCB.		
3	Remove the screws of the terminal board and the ground wire.		

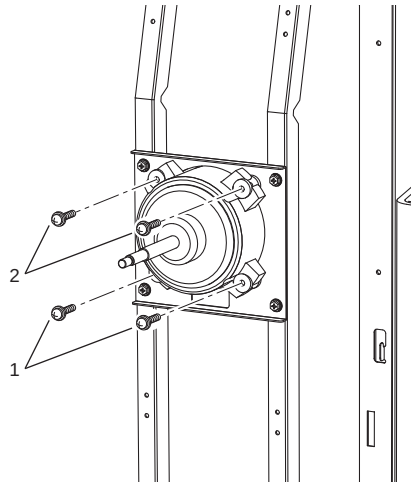
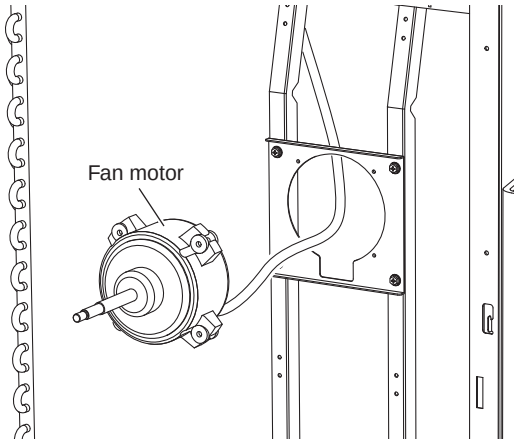
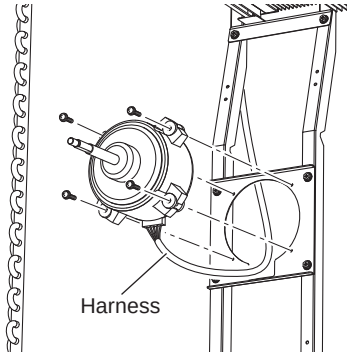
Step	Procedure		Points
4	Unfasten the hook on the right.	 (R5283)	
5	Open the terminal board.	 (R16710)	
6	Disconnect the harnesses from the terminal board.	 (R16711)	1: Black 2: White 3: Red L1: Black L2: Brown N1: White N2: Blue

Step	Procedure		Points
7	Disconnect the 2 harnesses for the reactor [HR1] [HR2].		[HR1] : White [HR2] : Blue ■ The harness for [HR2] has a ferrite core.
8	Remove the 3 screws of the main PCB.		
9	Release the 4 hooks.		
10	Lift up and remove the main PCB.		■ Refer to page 26 for detail.

6.4 Removal of Fan Motor

Procedure

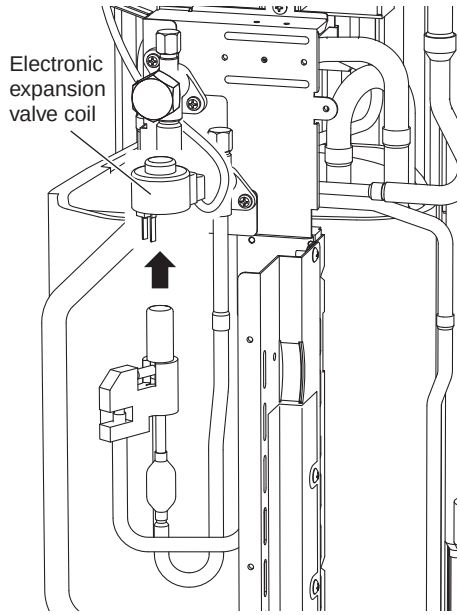
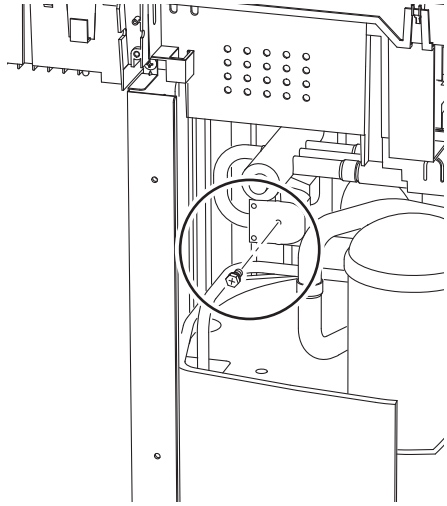
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

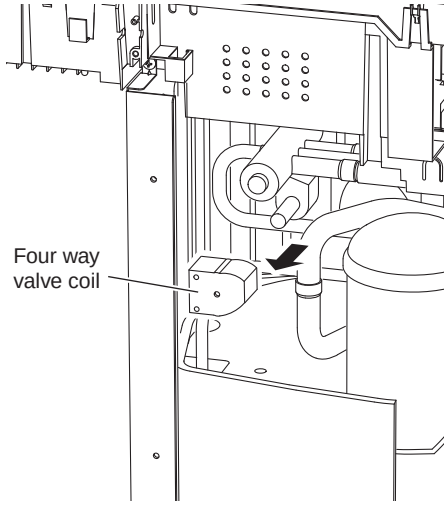
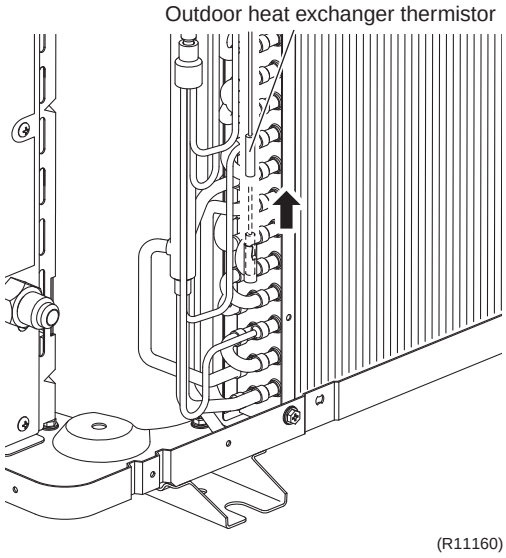
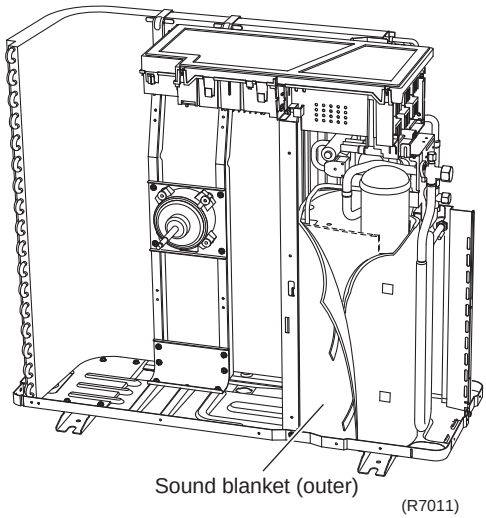
Step	Procedure		Points
1	Remove the 2 lower screws first.	 (R6442)	**Preparation** ■ Remove the electrical box according to the "Removal of Electrical Box". ■ Be sure to remove the lower screws first. If the top screws are removed first, the fan motor may tilt down or fall and cause injury because its center of gravity is shifted to the front.
2	Then, remove the 2 upper screws.		
3	Remove the fan motor.	 (R6443)	■ When reassembling, make sure that the wire harness is facing downward.  (R6444)

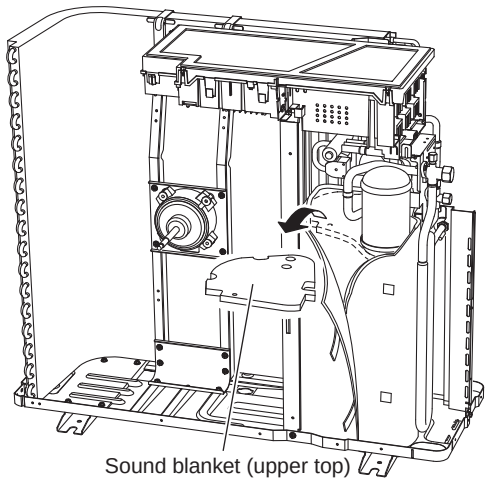
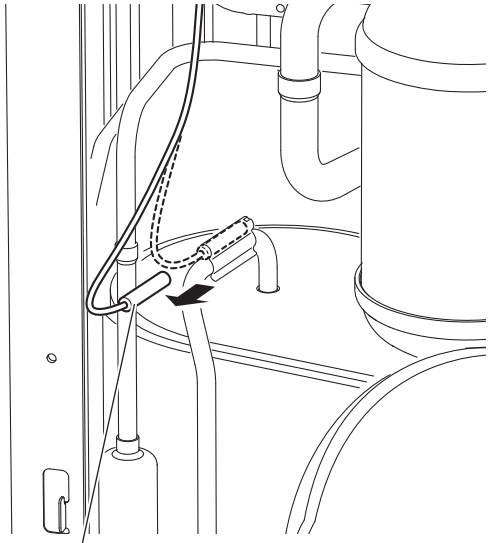
6.5 Removal of Coils / Thermistors

Procedure

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

Step	Procedure	Points
1. Remove the electronic expansion valve coil.	 (R11159)	
1 Pull the electronic expansion valve coil out.		
2. Remove the four-way valve coil.	 (R6457)	
1 Remove the screw.		

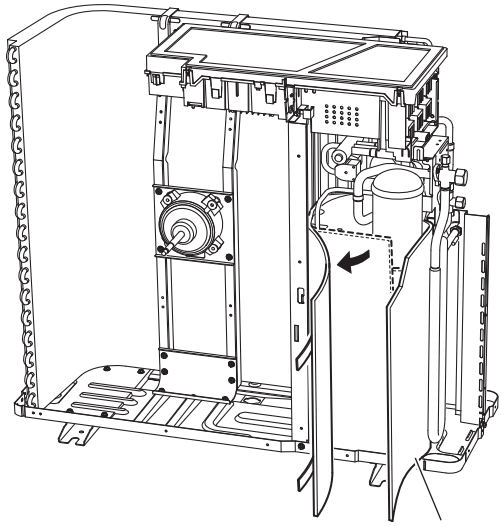
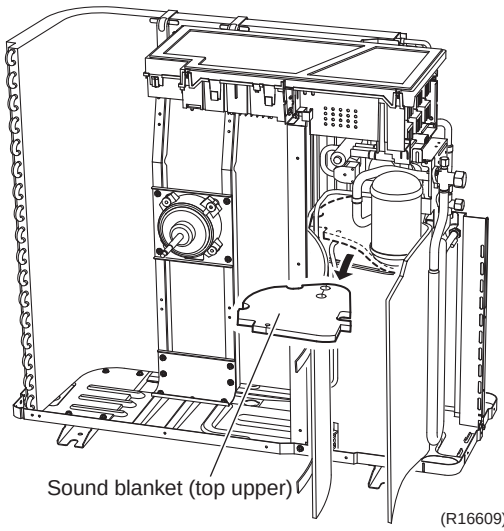
Step	Procedure		Points
2	Remove the four-way valve coil.		
3. Remove the thermistors.			
1	Pull out the outdoor heat exchanger thermistor.		
2	Slightly open the sound blanket (outer).		

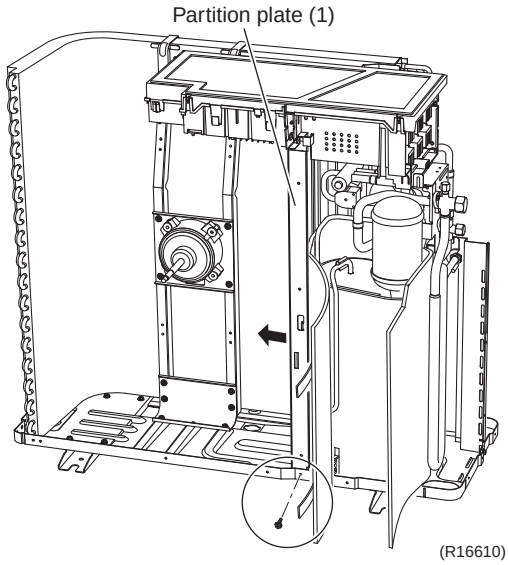
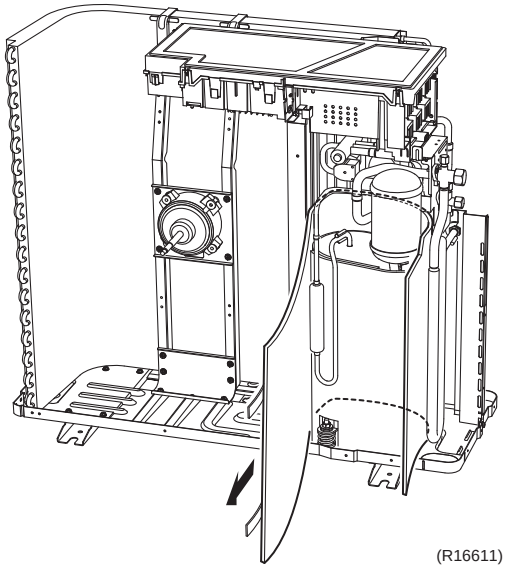
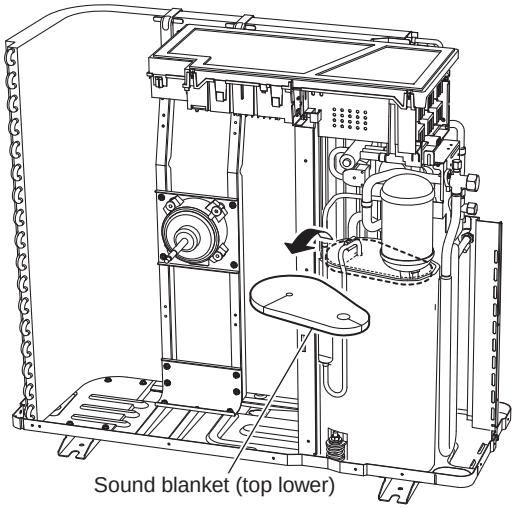
Step	Procedure		Points
3	Remove the sound blanket (upper top).	 (R7012)	
4	Remove the discharge pipe thermistor.	 (R9469)	

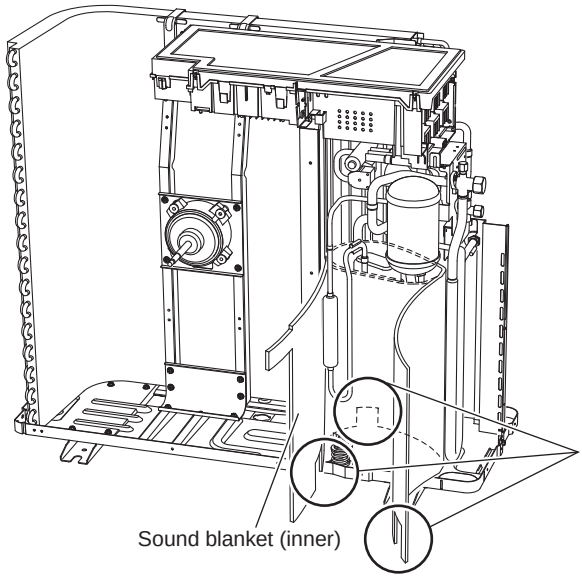
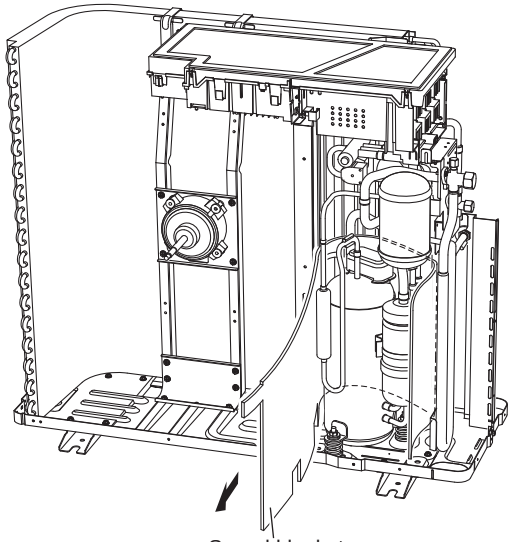
6.6 Removal of Sound Blankets

Procedure

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

Step	Procedure		Points
1	Open the sound blanket (outer).		
2	Remove the sound blanket (top upper).		■ The sound blanket is fragile. Carefully pass the discharge pipe through it.

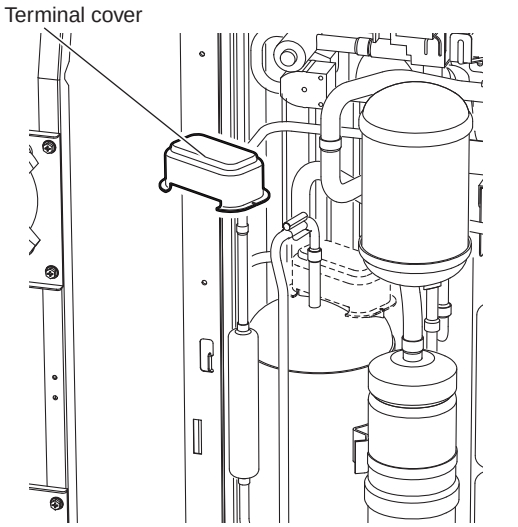
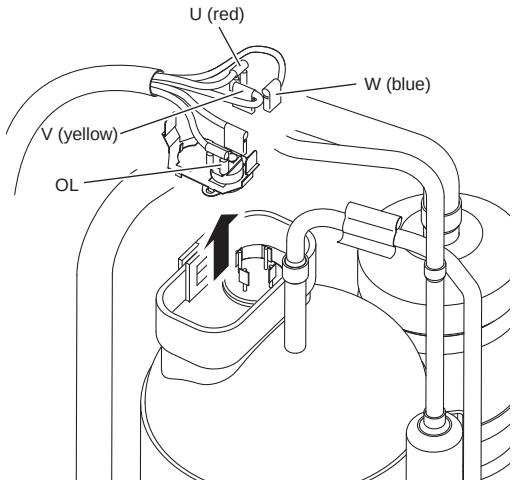
Step	Procedure	Points
3	Remove the screw and slightly push the partition plate (1) to the left for easy work.  (R16610)	
4	Remove the sound blanket (outer).  (R16611)	
5	Remove the sound blanket (top lower).  (R16612)	■ The sound blanket is fragile. Carefully pass the discharge pipe through it.

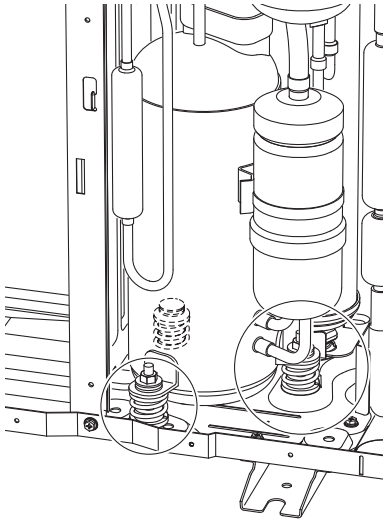
Step	Procedure		Points
6	Open the sound blanket (inner).	 (R7018)	■ The sound blanket is fragile. Be careful of the notches of the compressor mount (3 locations).
7	Remove the sound blanket (inner).	 (R7019)	

6.7 Removal of Compressor

Procedure

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

Step	Procedure		Points
1	Remove the terminal cover.	 (R9690)	
2	Pull out the 3 lead wires.		
3	Remove the overload protector (OL).	 (R9471)	

Step	Procedure		Points
4	Remove the 2 nuts.	 (R9472)	■ Disconnect the piping, referring to page 381.

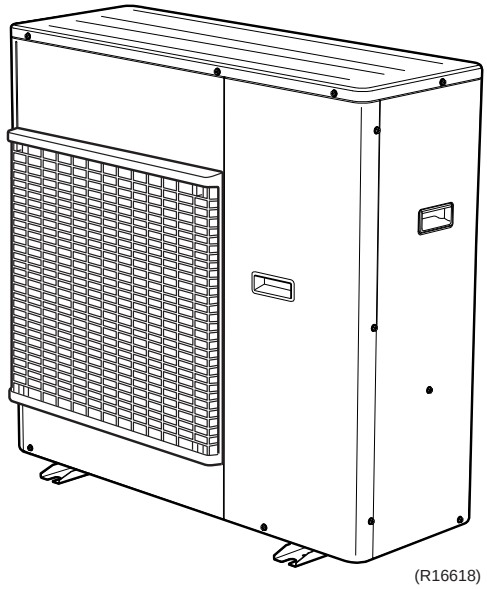
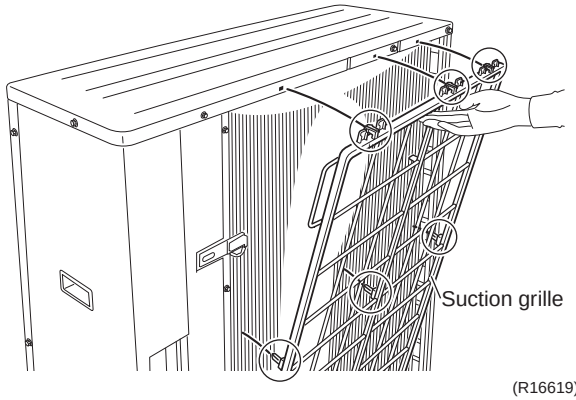
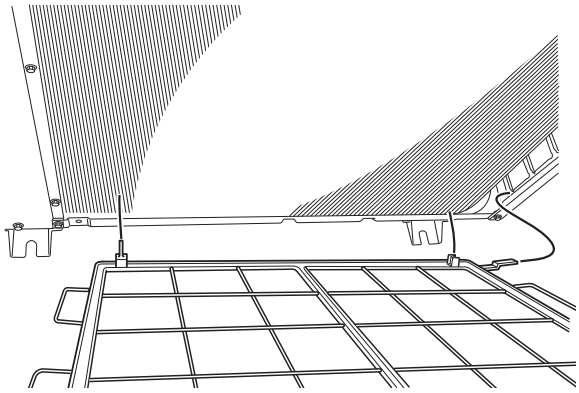
7. Outdoor Unit: RKS30/36LVJU, RXS30/36LVJU

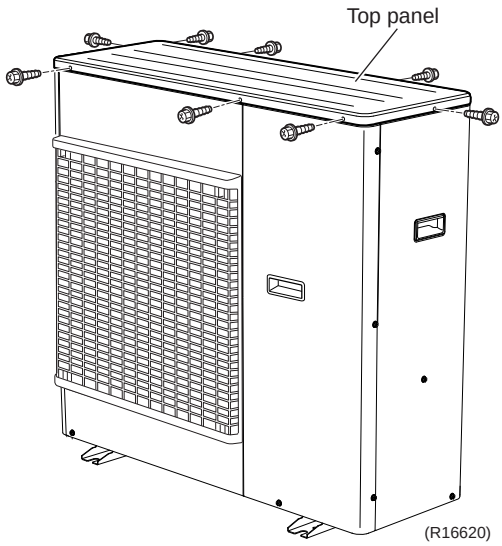
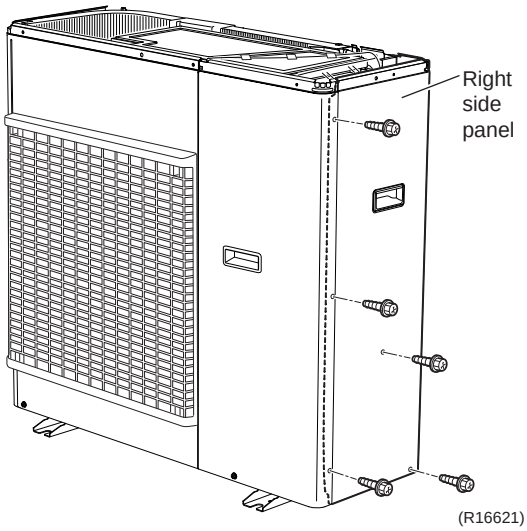
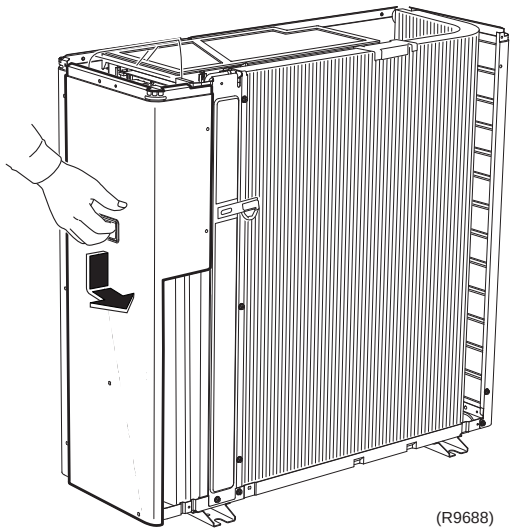
Note: The illustrations are for heat pump models as representative.

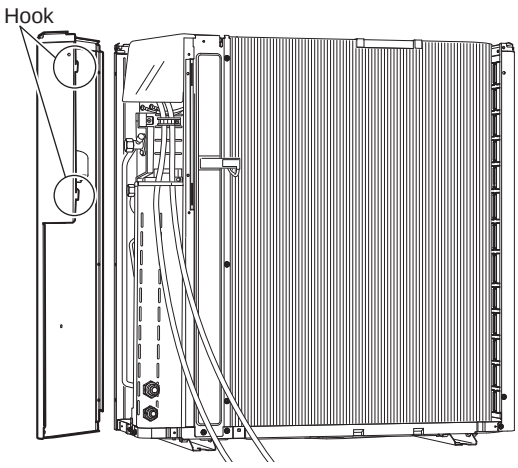
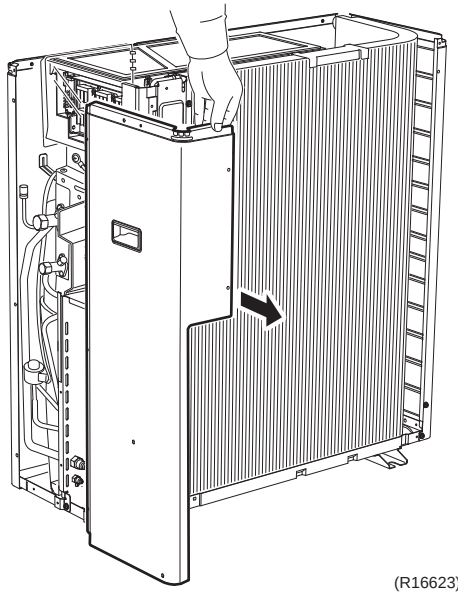
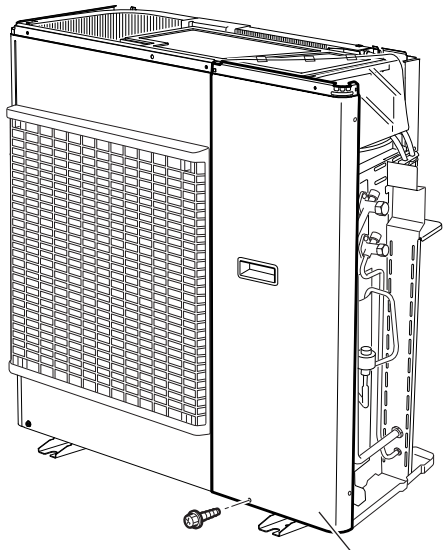
7.1 Removal of Outer Panels

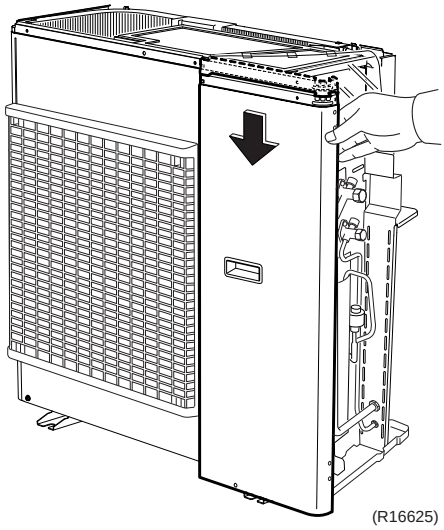
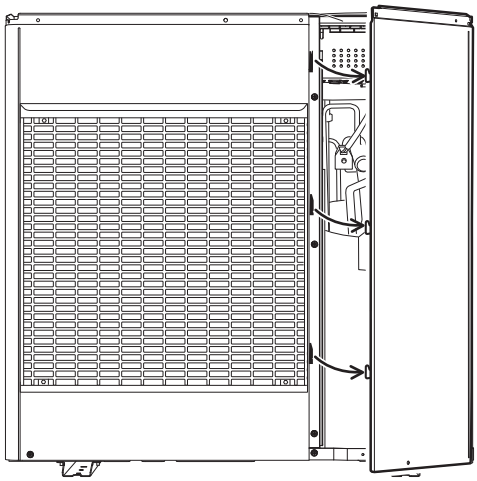
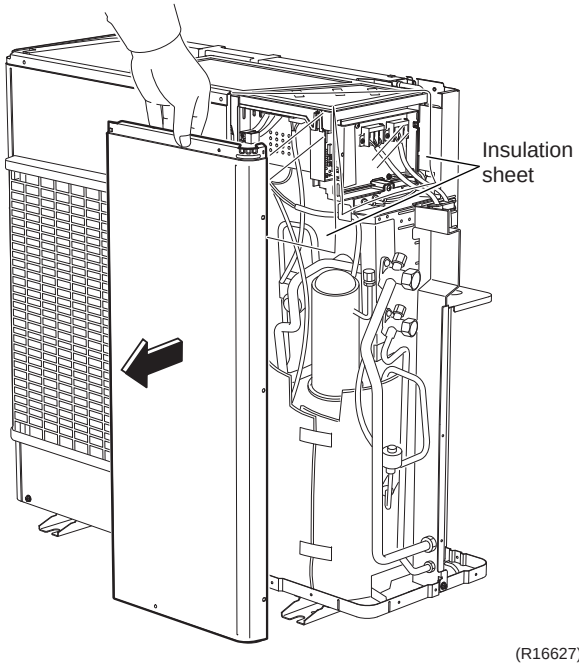
Procedure

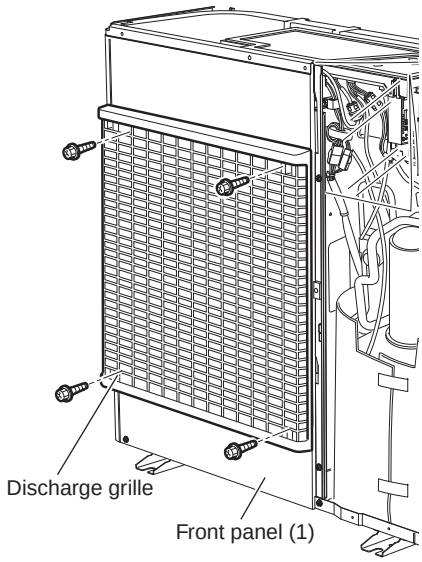
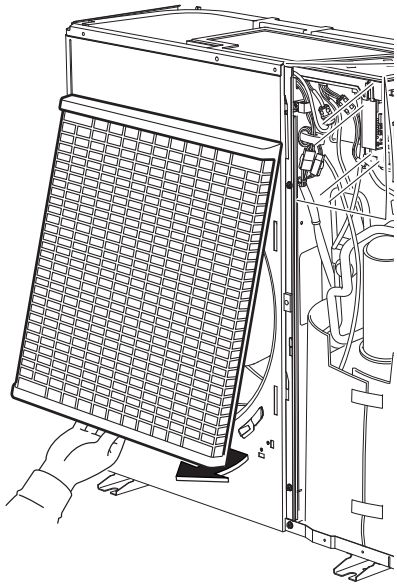
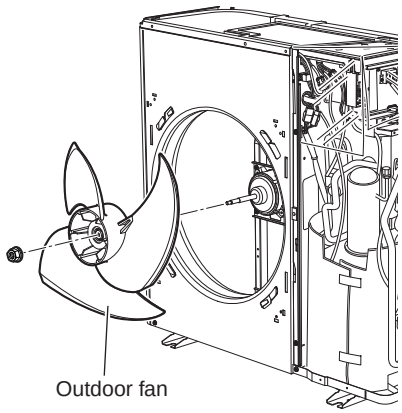
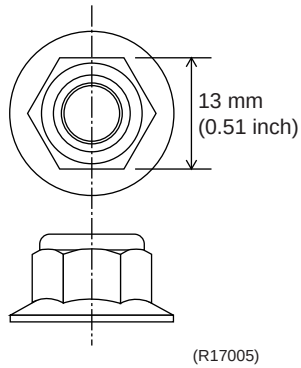
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

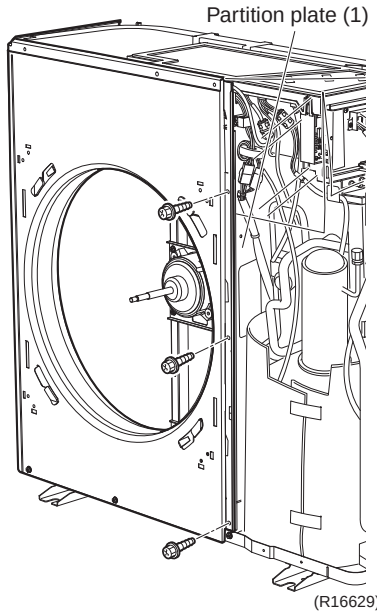
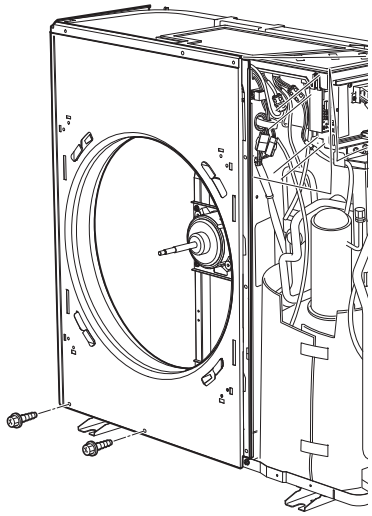
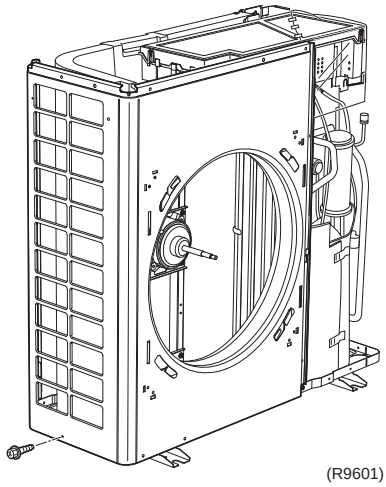
Step	Procedure	Points
1. Appearance features.	 (R16618)	
2. Remove the suction grille.		■ The hooks are secured in the clearances of the outdoor heat exchanger fins.
1 Unfasten the 3 hooks at the upper first, and then 3 hooks at the middle.	 (R16619)	
2 Unfasten the 3 hooks at the bottom and remove the suction grille.	 (R9587)	

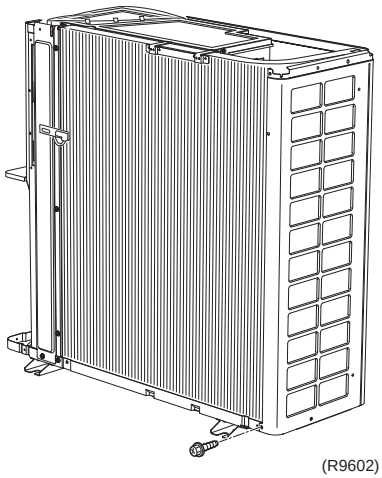
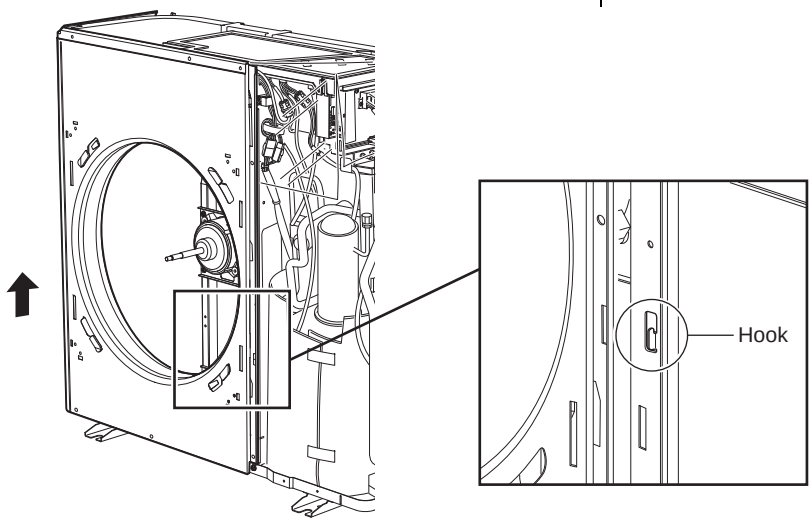
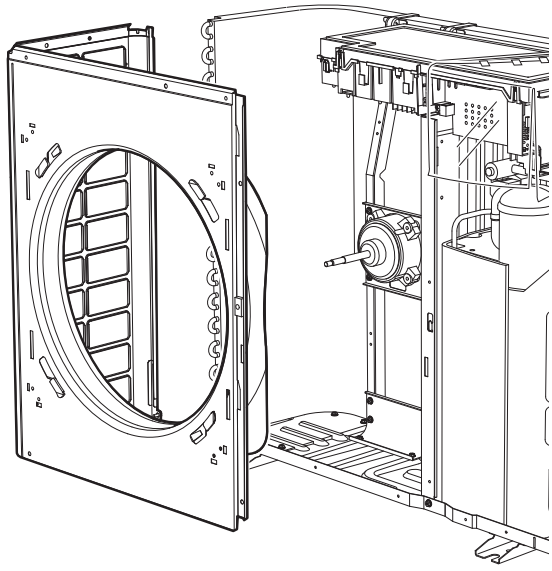
Step	Procedure	Points
3. Remove the top panel.		
1 Remove the 9 screws and remove the top panel.		
4. Remove the right side panel.		
1 Remove the 5 screws.		
2 Slide the right side panel downward to unfasten the 2 hooks on the back side.		

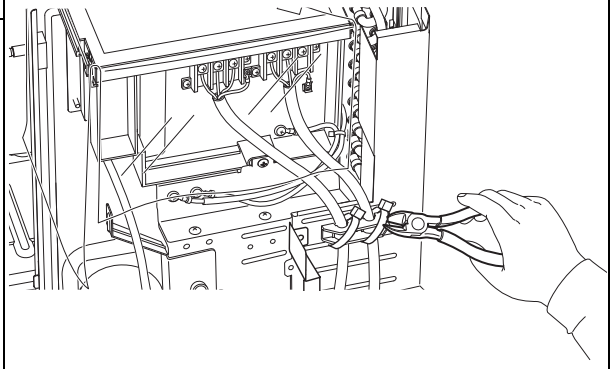
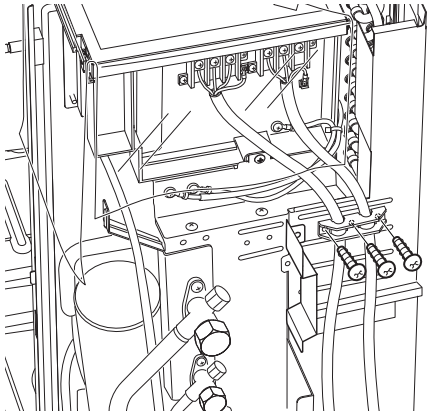
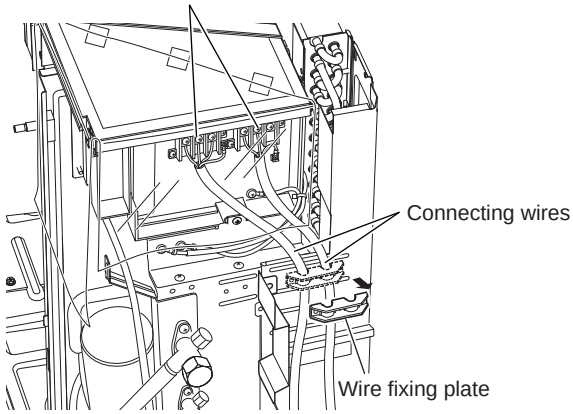
Step	Procedure	Points
3	Remove the right side panel.  (R16622)  (R16623)	
5. Remove the front panel (2). 1 Remove the screw.	 (R16624)	

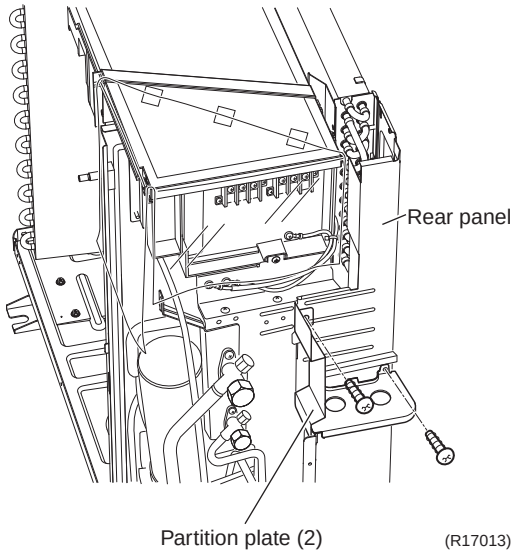
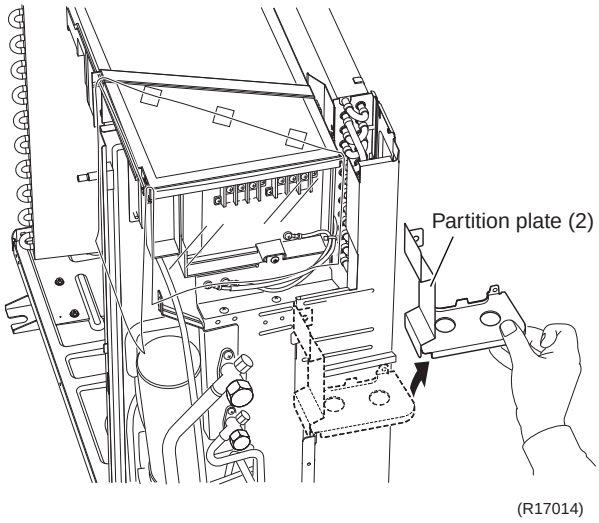
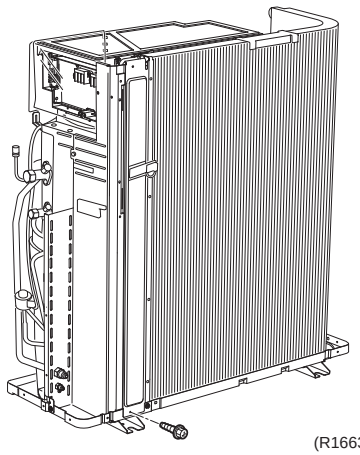
Step	Procedure	Points
2	Slide the front panel (2) downward to unfasten the 3 hooks.  (R16625)  (R16626)	
3	Remove the front panel (2).  (R16627)	■ The insulation sheet is inserted between the front panel (2) and the electrical box.

Step	Procedure	Points
6. Remove the front panel (1).		■ Remove the discharge grille and the outdoor fan first to remove the front panel (1).
1 Remove the 4 screws on the discharge grille.	 (R9757)	
2 Pull the bottom of the discharge grille and remove it.	 (R9758)	
3 Remove the outdoor fan fixing nut.	 (R16628)	■ Nut size: M8  (R17005)

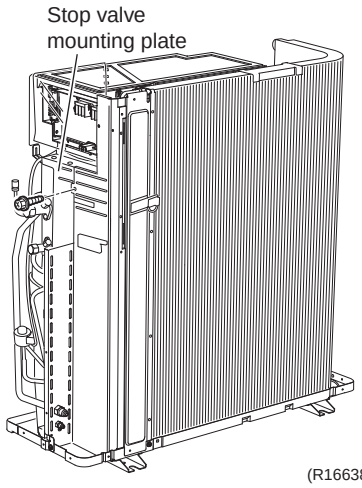
Step	Procedure		Points
4	Remove the 3 screws on the partition plate (1).	 (R16629)	
5	Remove the 2 screws at the bottom of the front.	 (R16630)	
6	Remove the screw at the bottom of the left side.	 (R9601)	

Step	Procedure	Points
7	Remove the screw at the bottom of the back side.  (R9602)	
8	The front panel (1) has a hook on its front. Lift the front panel (1).  (R16631)	
9	Remove the front panel (1).  (R9604)	

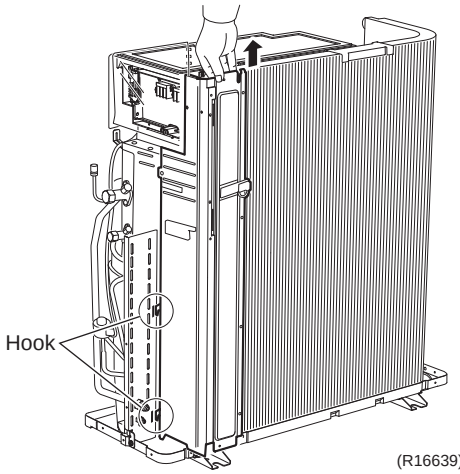
Step	Procedure	Points
7. Remove the rear panel.		
1 Cut the clamp.	 (R17015)	
2 Remove the 3 screws.	 (R17016)	
3 Remove the wire fixing plate. 4 Remove the 7 screws of the terminal board and ground wires. Detach the connection wires and the power supply wires.	 (R17017)	

Step	Procedure	Points
5	Remove the 2 screws on the partition plate (2). 	
6	Lift up slightly and remove the partition plate (2). 	
7	Remove the screw on the bottom frame. 	

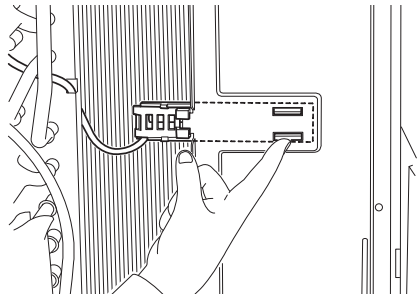
Step	Procedure	Points
8	Remove the screw on the stop valve mounting plate.	
9	Lift the rear panel upward to unfasten the 2 hooks.	
10	Push the hooks of the outdoor temperature thermistor holder from inner-side of the rear panel and detach it.	

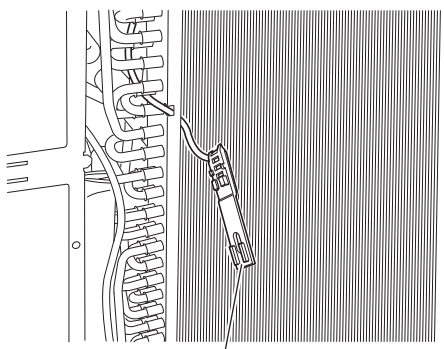


(R16638)

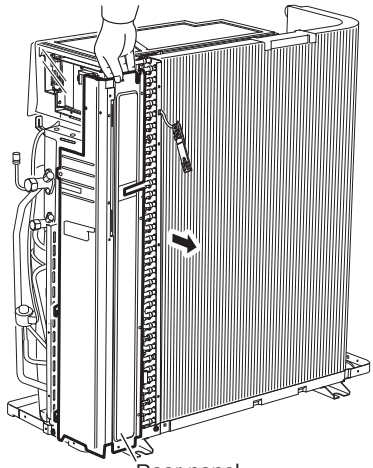


(R16639)


(R9615)



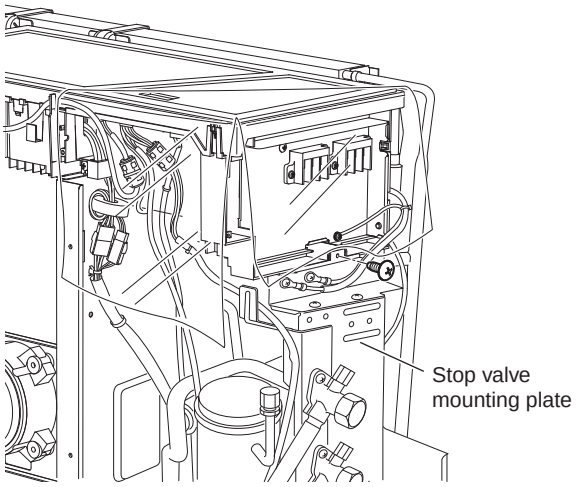
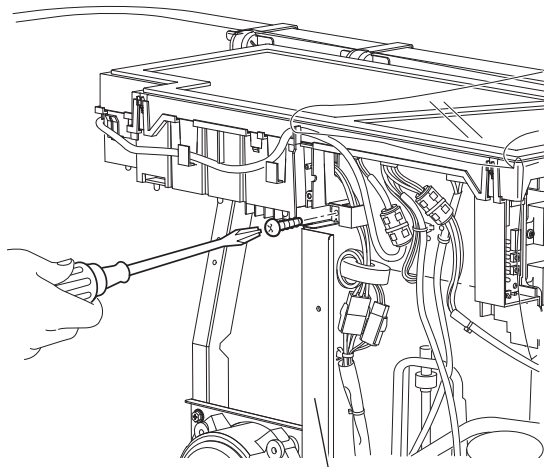
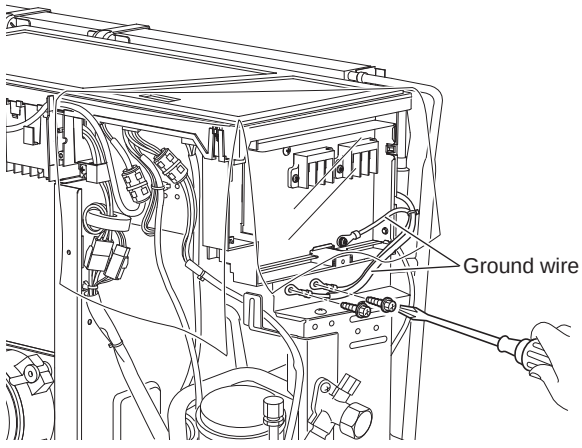
(R9616)

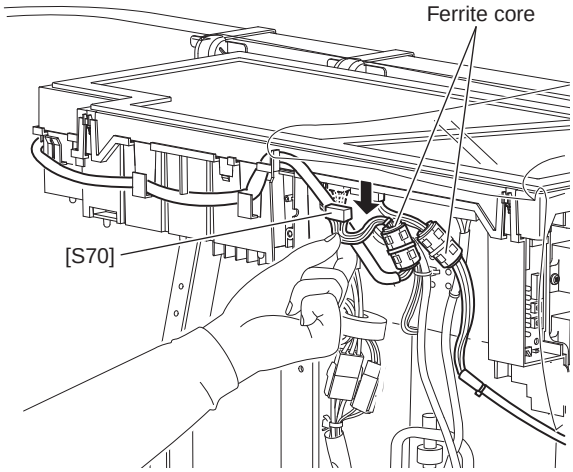
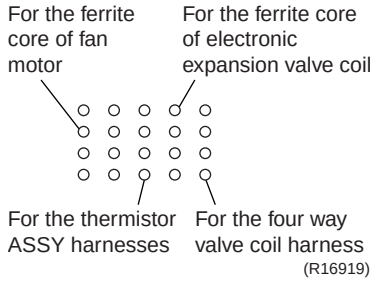
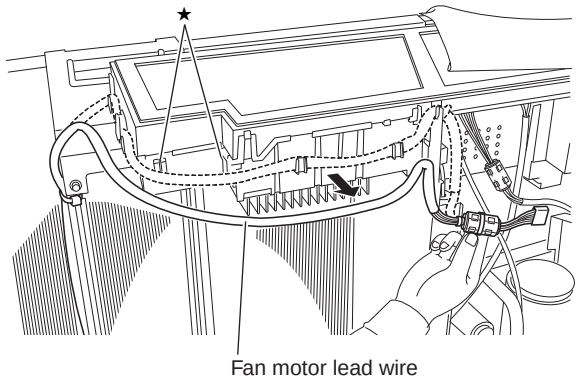
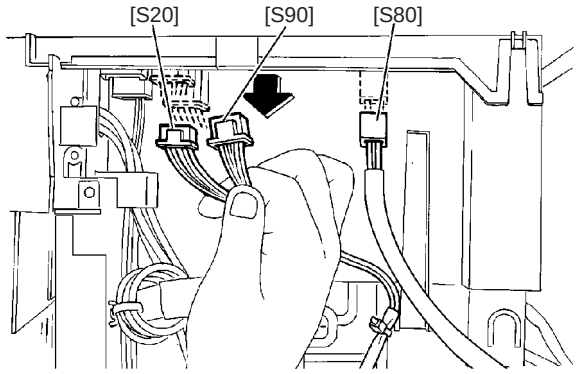
Step	Procedure		Points
11	Remove the rear panel.	 Rear panel (R16640)	

7.2 Removal of Electrical Box

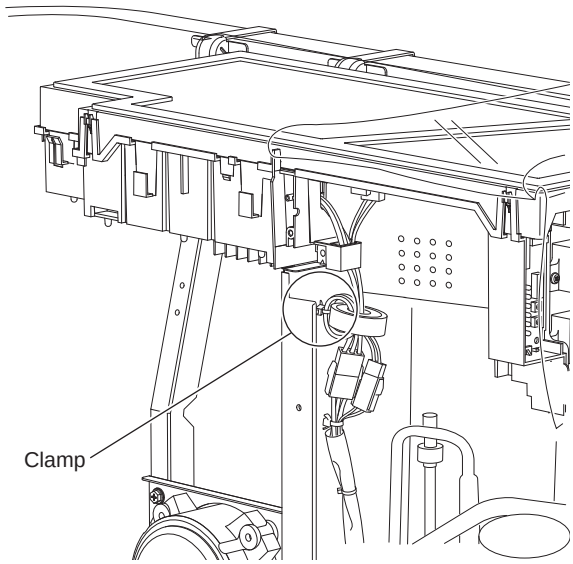
Procedure

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

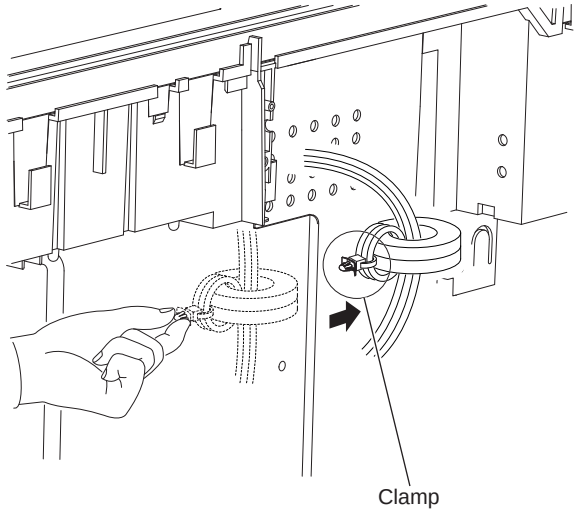
Step	Procedure		Points
1	Remove the screw on the stop valve mounting plate.	 (R16641)	
2	Remove the screw on the partition plate (1).	 (R16917)	
3	Remove the 2 screws to detach the ground wires.	 (R16642)	

Step	Procedure		Points
4	Disconnect the connector for fan motor [S70] and release the 4 clamps attached to the electrical box.	 (R16918)	■ When reassembling, insert each clamp into the small hole.  (R16919)
5	Release the fan motor lead wire.	 (R14466)	★: When reassembling, do not use these 2 hooks.
6	Disconnect the connectors of the front side.	 (R9622)	[S20]: electronic expansion valve coil [S80]: four-way valve coil [S90]: thermistors ■ Cooling only models have no harness for [S80].

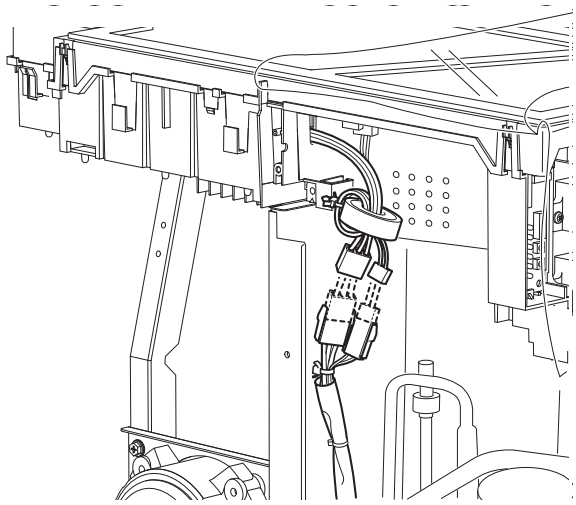
Step	Procedure	Points
7	The compressor lead wire is fixed on the partition plate (1) with a clamp.	
8	Pull out the clamp and release the compressor lead wire.	
9	Disconnect the relay connector for the overload protector and the compressor.	



(R9623)

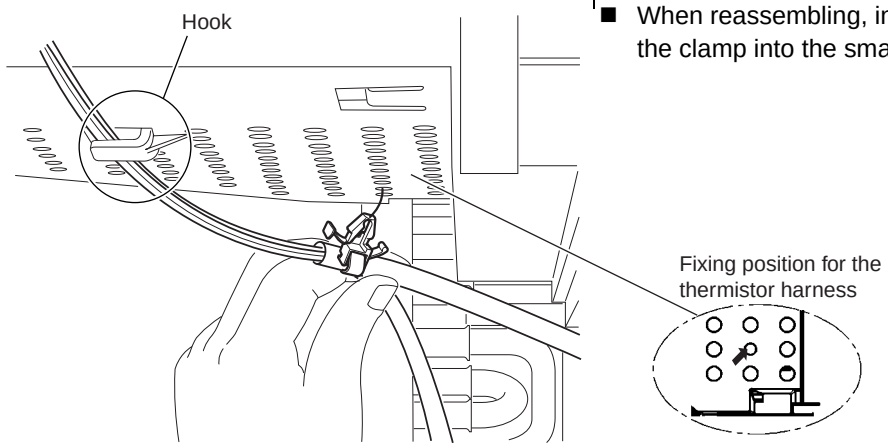


(R9624)

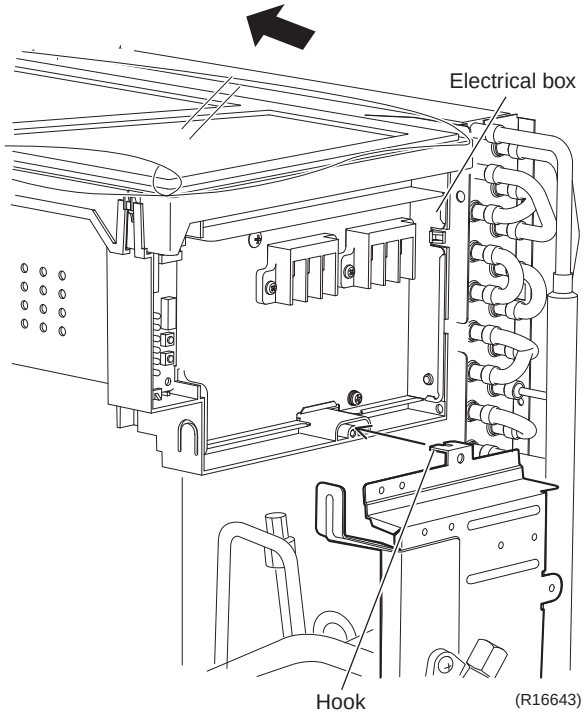


(R9625)

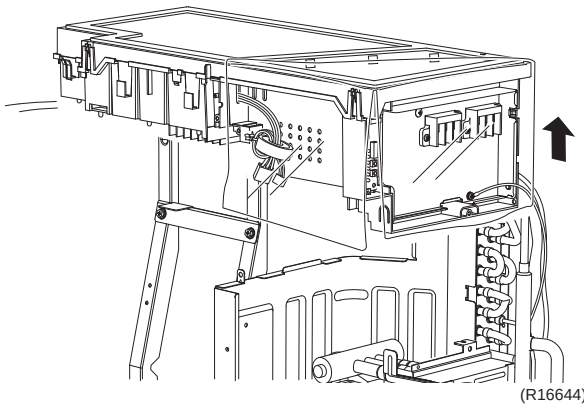
Step	Procedure	Points
10	Release the thermistor harness from the hook at the bottom of electrical box.	■ When reassembling, insert the clamp into the small hole.
11	Pull out the clamp of the thermistor harness from the hole of the electrical box.	
12	Slide the electrical box leftward to unfasten the hook on the right side of the box.	
13	Lift up the electrical box and remove it.	



(R16647)



(R16643)

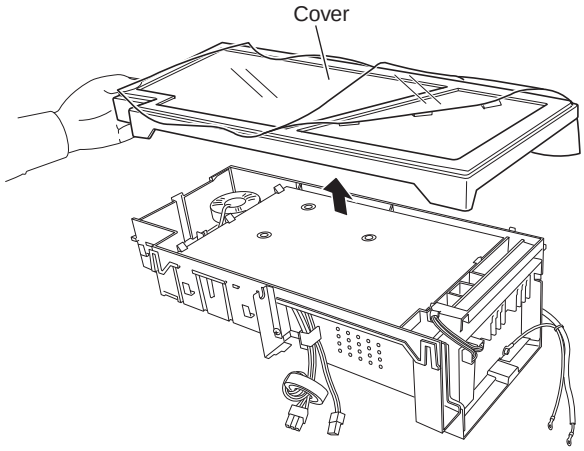
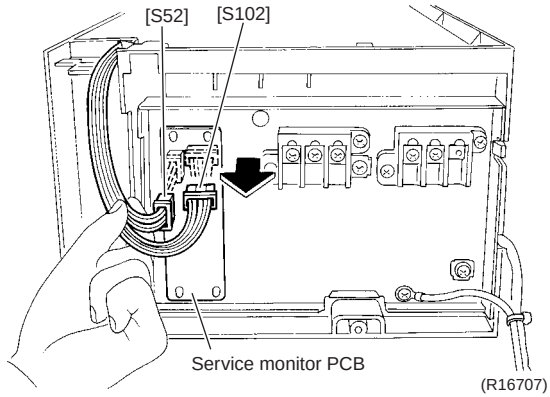
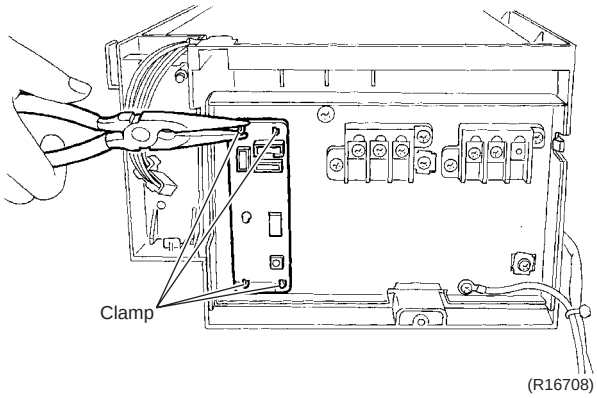


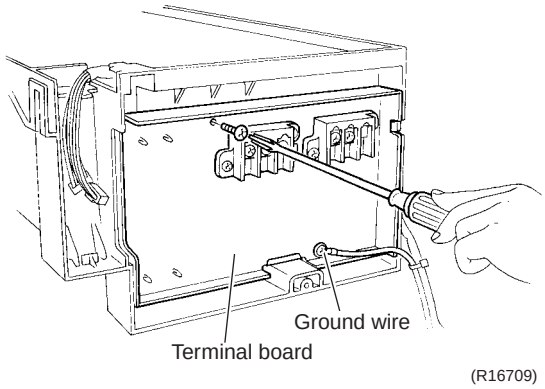
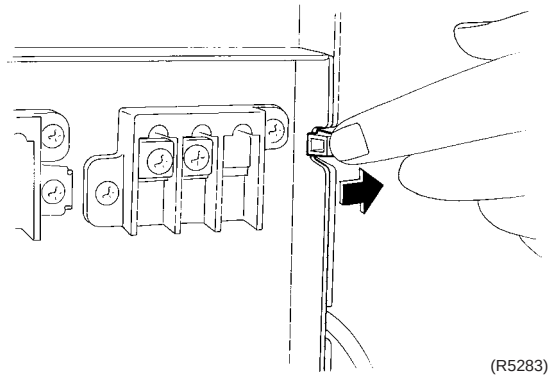
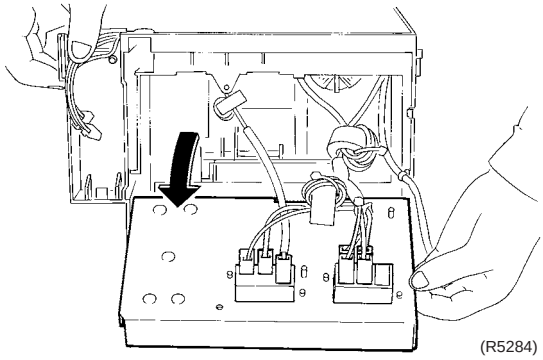
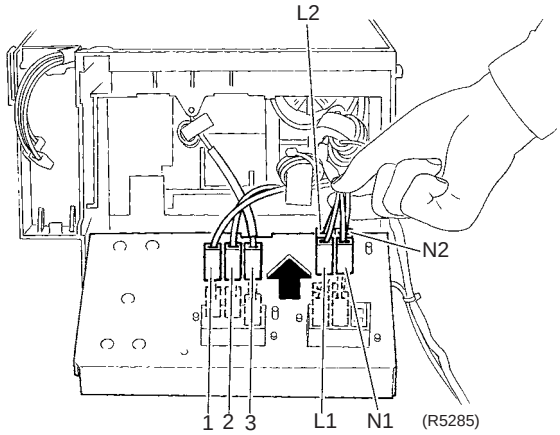
(R16644)

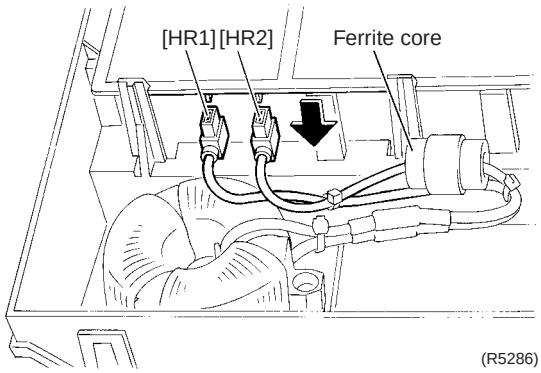
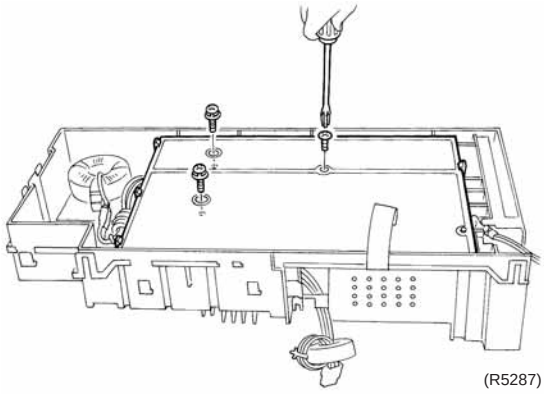
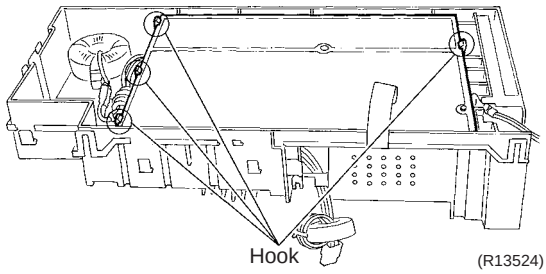
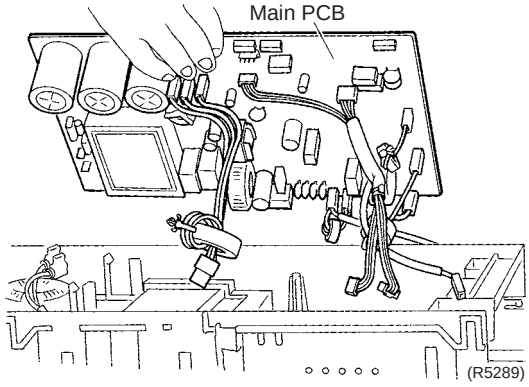
7.3 Removal of PCBs

Procedure

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

Step	Procedure		Points
1	Remove the cover.	 (R9611)	**Preparation** ■ Remove the electrical box according to the “Removal of Electrical Box”.
2	Disconnect the connectors [S52] [S102] from the service monitor PCB.	 (R16707)	
3	Detach the 4 clamps with pliers and remove the service monitor PCB.	 (R16708)	

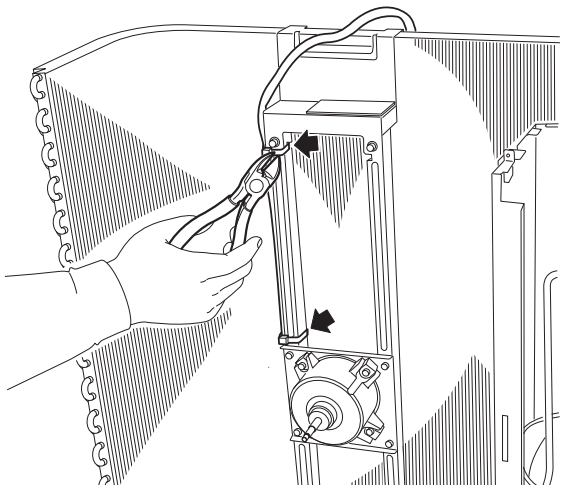
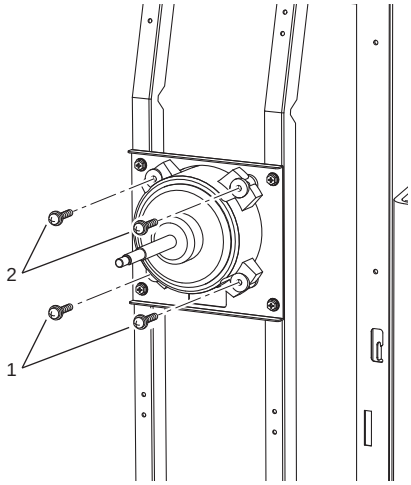
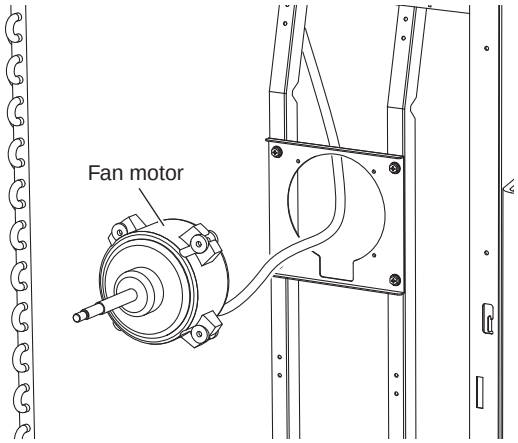
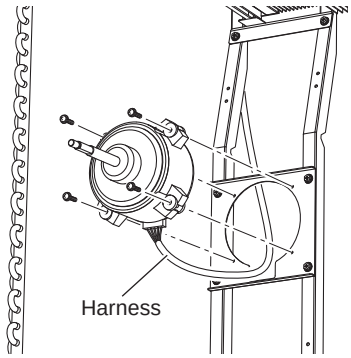
Step	Procedure		Points
4	Remove the screws of the terminal board and the ground wire.		
5	Unfasten the hook on the right.		
6	Open the terminal board.		
7	Disconnect the harnesses.		1: Black 2: White 3: Red L1: Black L2: Brown N1: White N2: Blue

Step	Procedure		Points
8	Disconnect the 2 harnesses for the reactor [HR1] [HR2].		[HR1] : white [HR2] : blue ■ The harness for [HR2] has a ferrite core.
9	Remove the 3 screws of the main PCB.		
10	Release the 4 hooks.		
11	Lift up and remove the main PCB.		■ Refer to page 26 for detail.

7.4 Removal of Fan Motor

Procedure

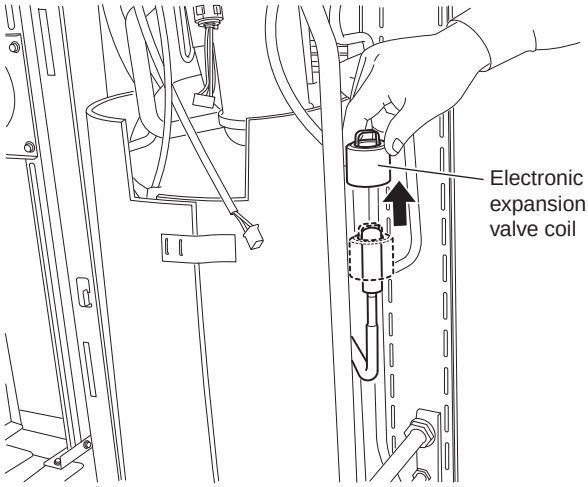
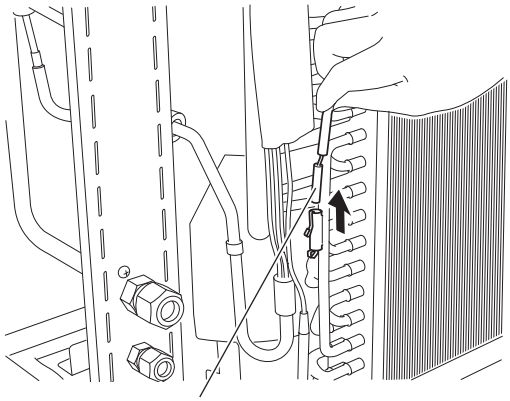
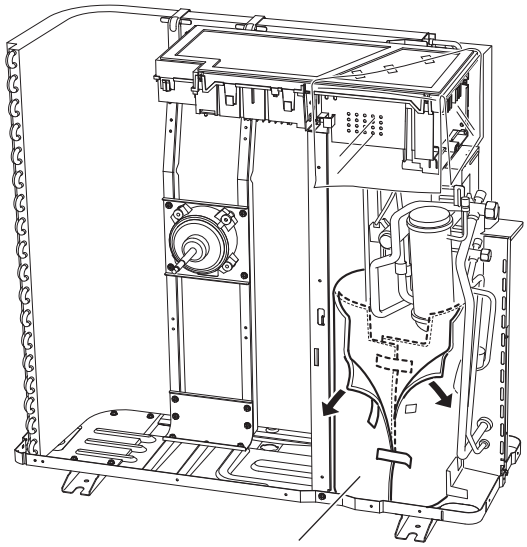
Warning **Be sure to wait for 10 minutes or more after turning off all power supplies before disassembling work.**

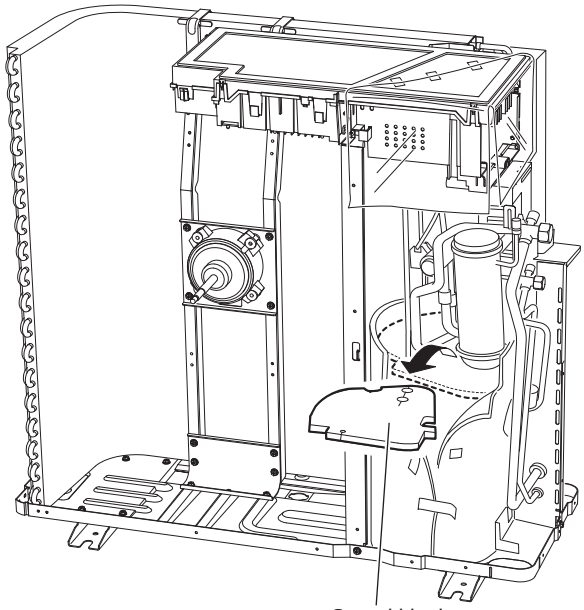
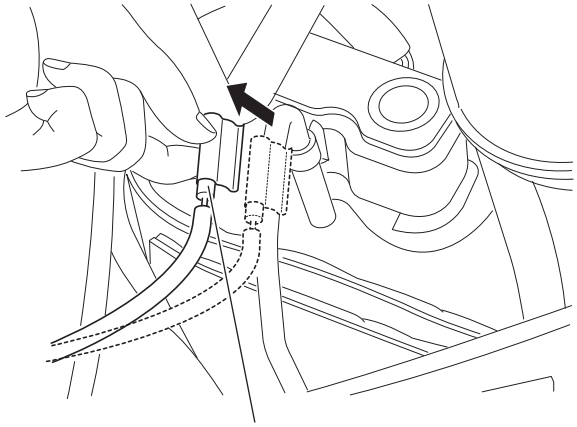
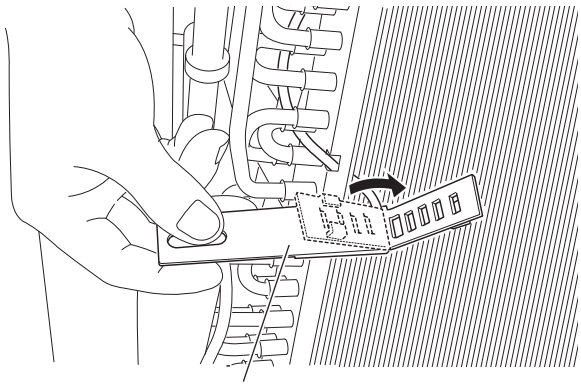
Step	Procedure		Points
1	Cut the clamps at 2 locations.	 (R9630)	**Preparation** ■ Remove the electrical box according to the "Removal of Electrical Box".
2 3	Remove the 2 lower screws first. Then, remove the 2 upper screws.	 (R6442)	■ Be sure to remove the lower screws first. If the top screws are removed first, the fan motor may tilt down or fall and cause injury because its center of gravity is shifted to the front.
4	Remove the fan motor.	 (R6443)	■ When reassembling, make sure that the wire harness is facing downward.  (R6444)

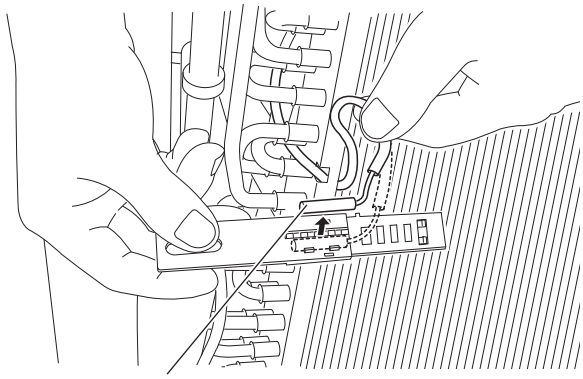
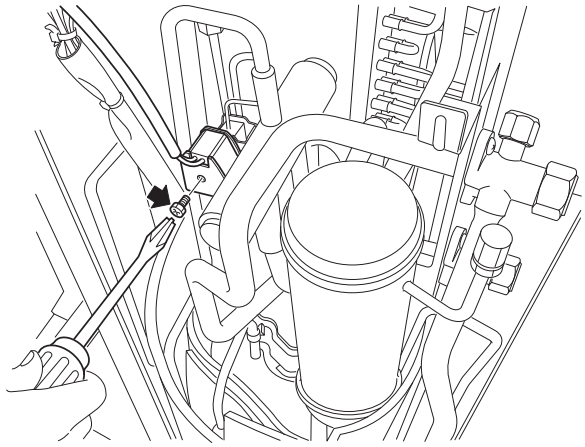
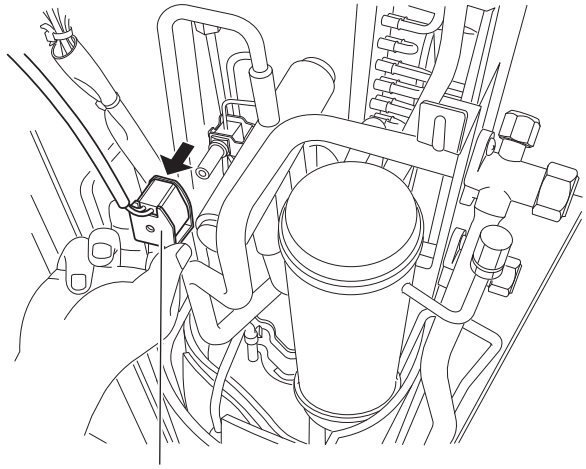
7.5 Removal of Coils / Thermistors

Procedure

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

Step	Procedure	Points
1. Remove the electronic expansion valve coil.	 (R9631)	
1 Pull the electronic expansion valve coil out.		
2. Remove the thermistors.	 Outdoor heat exchanger thermistor (R9632)	■ You can remove the thermistor ASSY with the electrical box on. (1) Disconnect [S90] from the electrical box (main PCB). (2) Release the thermistor harness from the hook at the bottom of electrical box. (3) Pull out the clamp of the thermistor harness from the hole of the electrical box.
1 Pull out the outdoor heat exchanger thermistor.		
2 Slightly open the sound blanket (outer).	 Sound blanket (outer) (R9633)	

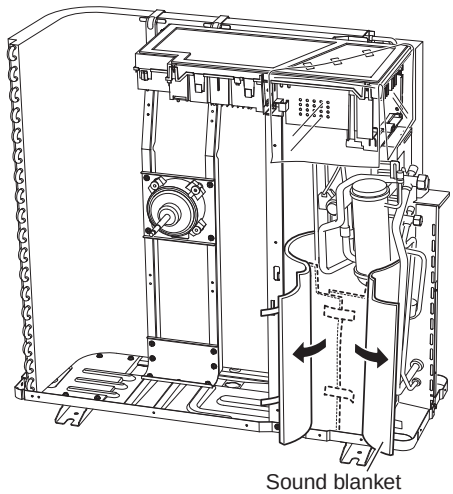
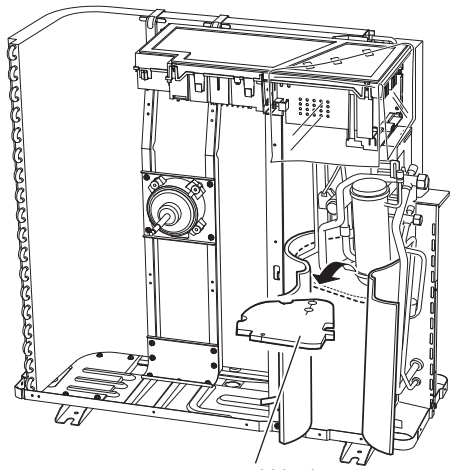
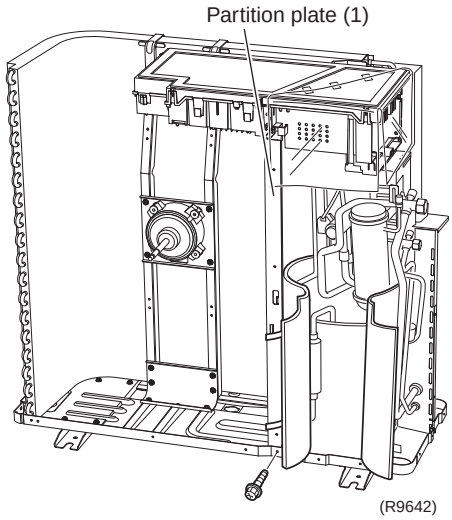
Step	Procedure		Points
3	Remove the sound blanket (top upper).	 (R16920)	
4	Remove the discharge pipe thermistor.	 (R9635)	
5	At the back side, open the outdoor temperature thermistor holder.	 (R9636)	

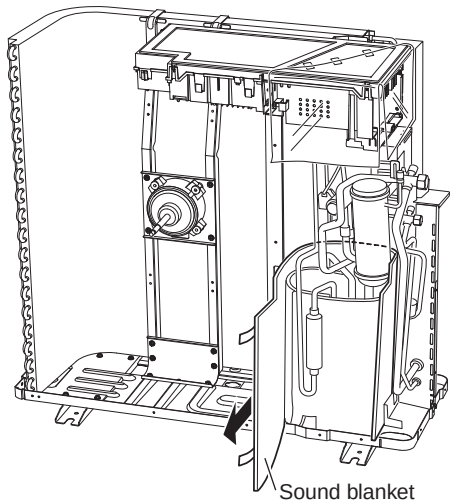
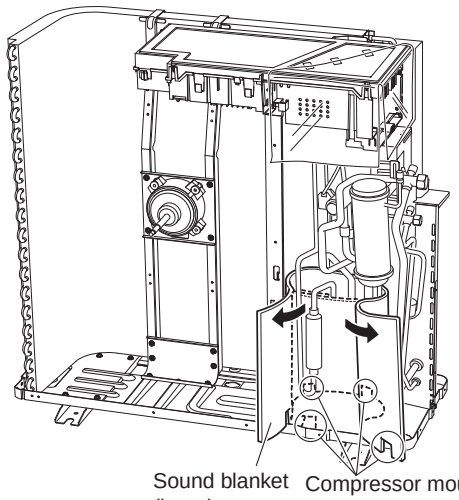
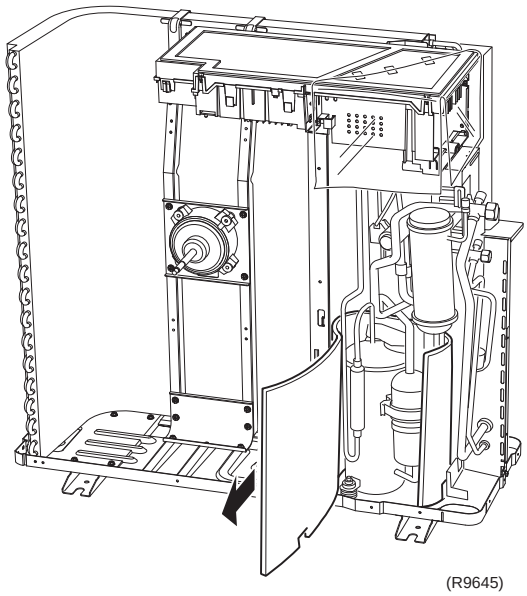
Step	Procedure		Points
6	Release the outdoor temperature thermistor.	 Outdoor temperature thermistor (R9637)	
3. Remove the four-way valve coil.		 (R9638)	
1	Remove the screw.		
2	Remove the four-way valve coil.	 Four way valve coil (R9639)	

7.6 Removal of Sound Blankets

Procedure

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

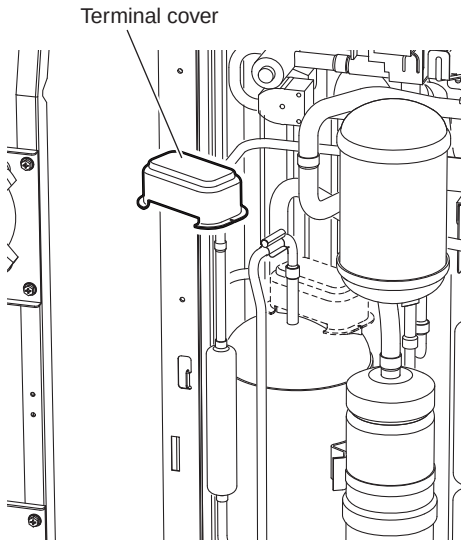
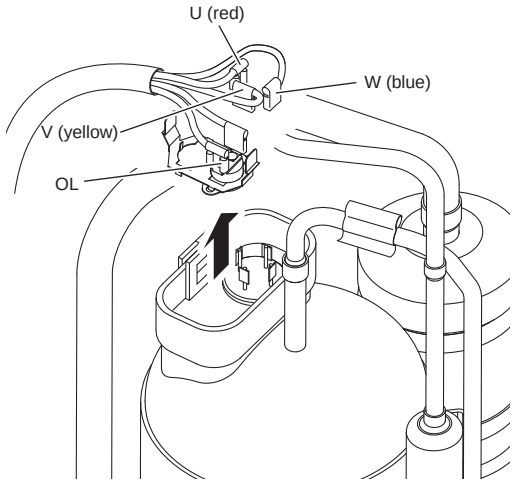
Step	Procedure		Points
1	Open the sound blanket (outer).		
2	Remove the sound blanket (top upper).		■ The sound blanket is fragile. Carefully pass the discharge pipe through it.
3	Remove the screw and slightly push the partition plate (1) to the left for easy work.		

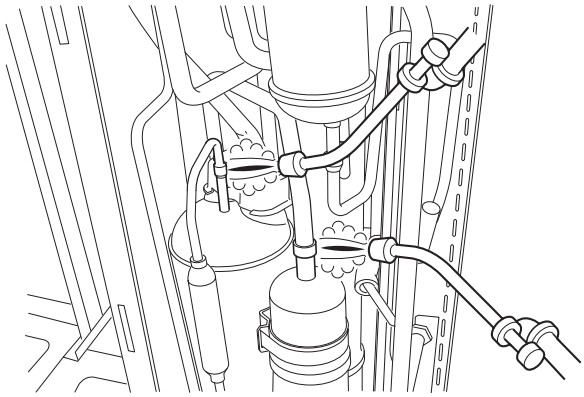
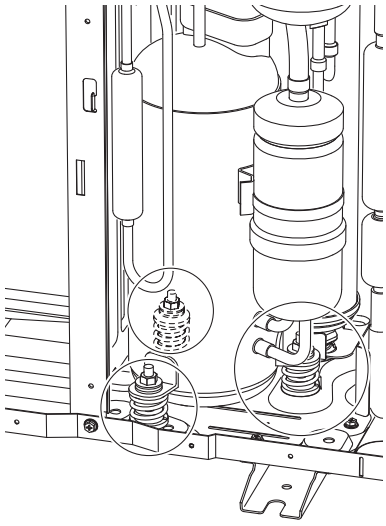
Step	Procedure		Points
4	Remove the sound blanket (outer).	 (R9643)	
5	Open the sound blanket (inner).	 (R9644)	
6	Remove the sound blanket (inner).	 (R9645)	■ The sound blanket is fragile. Be careful of the notches of the compressor mount (4 locations).

7.7 Removal of Compressor

Procedure

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

Step	Procedure		Points
1	Remove the terminal cover.	 (R9650)	
2	Pull out the 3 lead wires.		■ U: red, V: yellow, W: blue
3	Remove the overload protector (OL).	 (R9471)	

Step	Procedure	Points
■ Before working, make sure that the refrigerant gas is empty in the circuit. ■ Be sure to apply nitrogen replacement when heating up the brazed part.		
4 Heat up the brazed part and withdraw the piping with pliers.	 (R9646)	**Warning** **Use caution to avoid burning yourself with pipes and other parts that are heated by the gas brazing machine.** **Warning** **If the refrigerant gas leaks during work, immediately ventilate the room. If refrigerant gas is exposed to flames, toxic gas may be generated.**
5 Remove the 3 nuts.	 (R7021)	**Warning** **If the refrigerant oil in the compressor catches fire, have a wet cloth prepared to extinguish the fire immediately.** **Caution** **For global environmental protection, do not discharge the refrigerant gas in the atmosphere. Make sure to collect all the refrigerant gas.** **Cautions for restoration** 1. Restore the piping by non-oxidation brazing. 2. It is required to prevent the carbonization of the oil inside the four-way valve and the deterioration of the gaskets affected by heat. Keep below 120°C (248°F). Wrap the four-way valve with a wet cloth and provide water so that the cloth does not dry. **In case of difficulty with gas brazing machine** 1. Disconnect the brazed part where is easy to disconnect and restore. 2. Cut pipes on the main unit with a tube cutter in order to make it easy to disconnect.
Note: ■ Never use a metal saw for cutting pipes or sawdust will enter the circuit. ■ When withdrawing the pipes, be careful not to pinch them firmly with pliers. The pipes may get deformed. ■ Provide a protective sheet or a steel plate so that the brazing flame cannot influence peripheries. ■ Be careful so as not to burn the compressor terminals, the name plate, the heat exchanger fin.		

Part 8
Trial Operation and Field Settings

1. Pump Down Operation

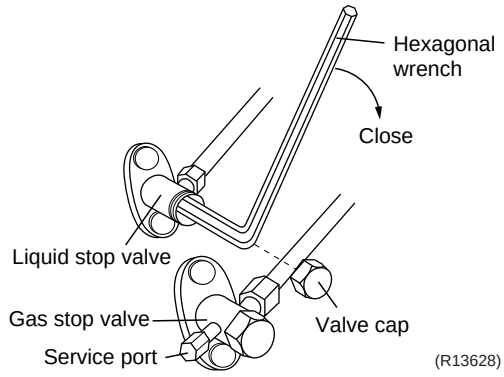
Outline

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

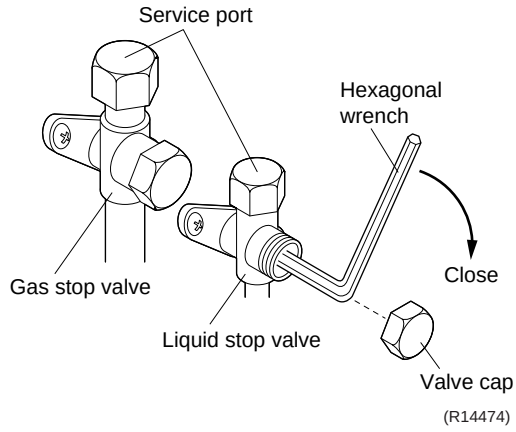
Detail

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

09/12/15/18 class



24/30/36 class



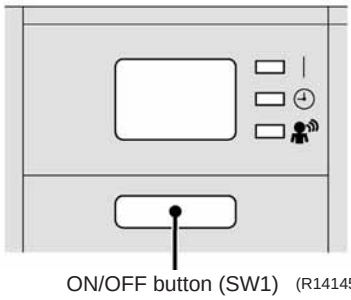
Refer to page 384 for forced cooling operation.

2. Forced Cooling Operation

Item	Forced Cooling
Conditions	The forced cooling operation is allowed when both of the following conditions are met. 1) The outdoor unit is not abnormal and not in the 3-minute standby mode. 2) The outdoor unit is not operating.
Start	The forced cooling operation starts when any of the following conditions is fulfilled. 1) Press the forced cooling operation [ON/OFF] button (SW1) on the indoor unit for 5 seconds. 2) Press the forced cooling operation [ON/OFF] button (SW1) on the outdoor unit.
Command frequency	09/12 class: 58 Hz 15/18 class: 66 Hz 24 class: 31 Hz 30/36 class: 55 Hz
End	The forced cooling operation ends when any of the following conditions is fulfilled. 1) The operation ends automatically after 15 minutes. 2) Press the forced cooling operation [ON/OFF] button (SW1) on the indoor unit again. 3) Press the [ON/OFF] button on the remote controller. 4) Press the forced cooling operation [ON/OFF] button (SW1) on the outdoor unit.
Others	Protection functions have priority over all other functions during forced cooling operation.

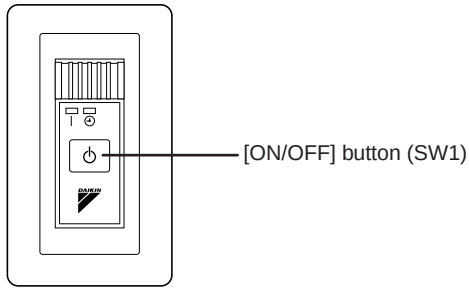
■ **Indoor Unit**

FTXS series



(R14145)

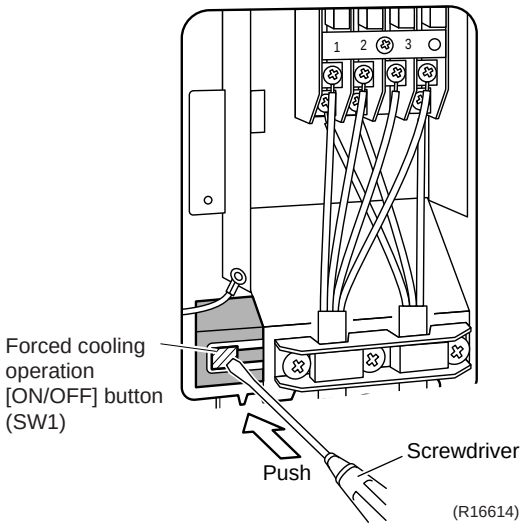
FDXS series



(R16615)

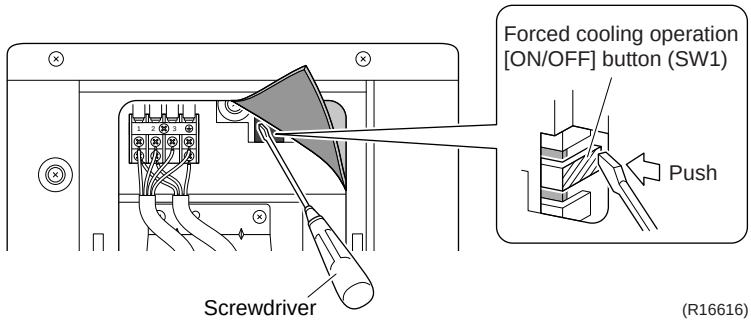
■ **Outdoor Unit**

09/12 class



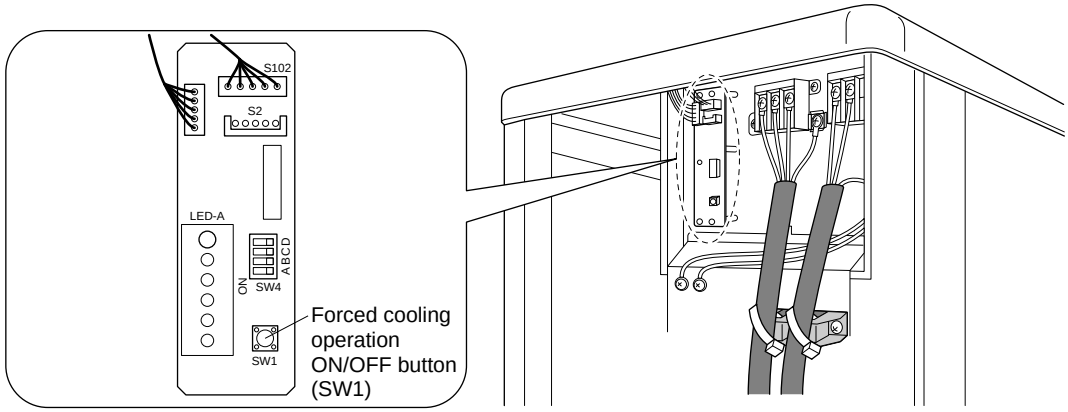
(R16614)

15/18 class



(R16616)

24/30/36 class



(R14475)

3. Trial Operation

Outline

1. Measure the supply voltage and make sure that it falls within the specified range.
2. Trial operation should be carried out in either cooling or heating operation.
3. Carry out the trial 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 backs up the operation mode. The system then restarts operation with the previous operation mode when the circuit breaker is restored.

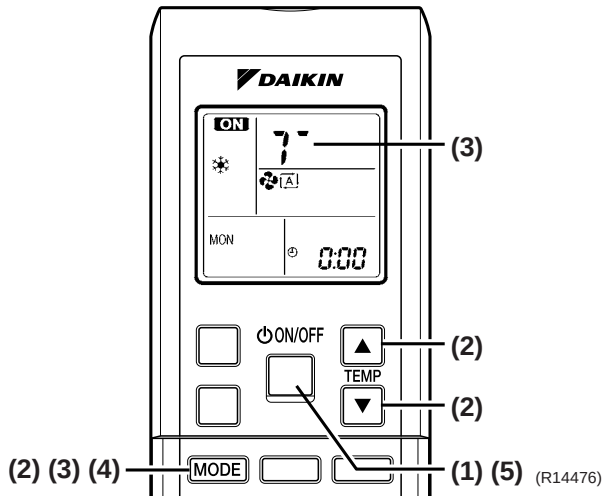
In cooling operation, select the lowest programmable temperature; in heating operation, select the highest programmable temperature.

- Trial operation may be disabled in either operation mode depending on the room temperature.
- After trial operation is complete, set the temperature to a normal level.
  (26 ~ 28°C (78.8 ~ 82.4°F) in cooling, 20 ~ 24°C (68 ~ 75.2°F) in heating)
- For protection, the system does not start for 3 minutes after it is turned off.

Detail

ARC452 Series

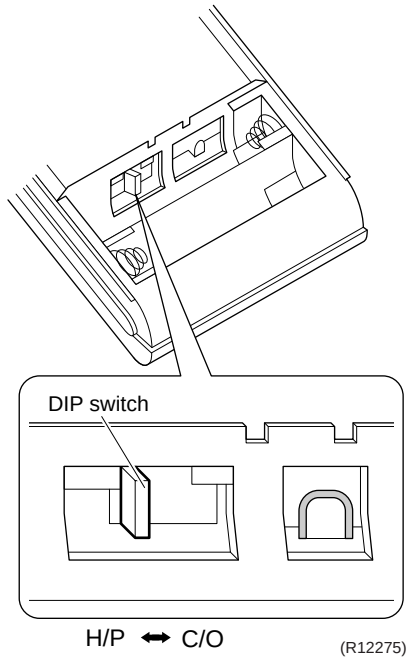
(1) Press the [ON/OFF] button to turn on the system.
(2) Press the both of [TEMP] buttons and the [MODE] button at the same time.
(3) Press the [MODE] button twice.
(T appears on the display to indicate that trial operation is selected.)
(4) Press the [MODE] button and select the operation mode.
(5) Trial operation terminates in approx. 30 minutes and switches into normal mode. To quit trial operation, press the [ON/OFF] button.



4. Field Settings

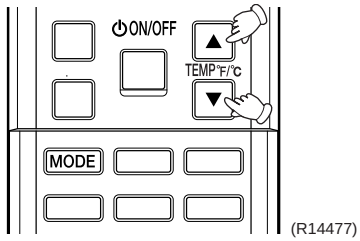
4.1 Model Type Setting

- This remote controller is common to the heat pump model and cooling only model. Use the DIP switch on the remote controller to set the heat pump model or cooling only model.
- Make the setting as shown in the illustration. (The factory set is the heat pump side.)
  - Heat pump model: Set the DIP switch to H/P.
  - Cooling only model: Set the DIP switch to C/O.



4.2 Temperature Display Switch

- You can select Fahrenheit or Celsius for temperature display.
- Press the TEMP▲ and ▼ buttons simultaneously for 5 seconds to change the unit of temperature display.



4.3 When 2 Units are Installed in 1 Room

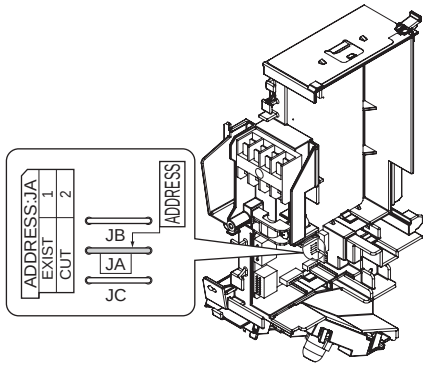
Outline

When 2 indoor units are installed in 1 room, 1 of the 2 indoor units and the corresponding wireless remote controller can be set for different addresses.
Both the indoor unit PCB and the wireless remote controller need alteration.

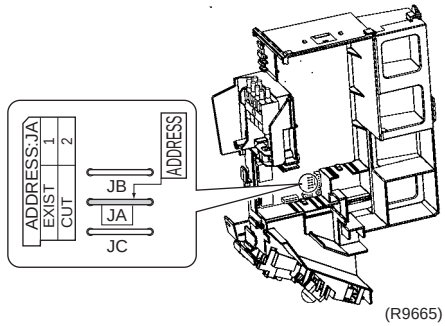
Indoor Unit PCB

- Cut the address setting jumper JA on the control PCB.

FTXS09/12LVJU

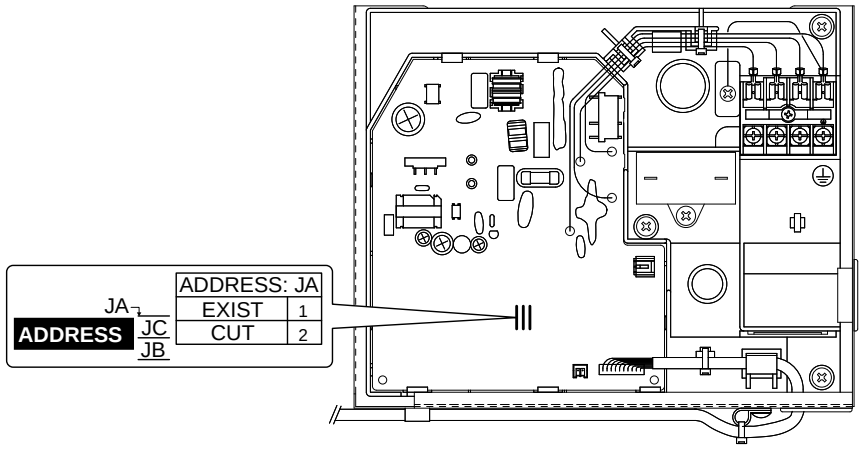


FTXS15/18/24/30/36LVJU



(R9665)

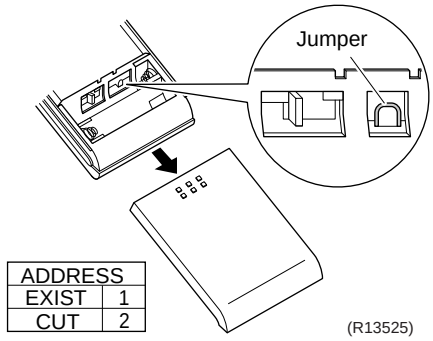
FDXS series



(R16921)

Wireless Remote Controller

- Cut the address setting jumper.



(R13525)

4.4 Facility Setting Jumper and Switch (Cooling at Low Outdoor Temperature)

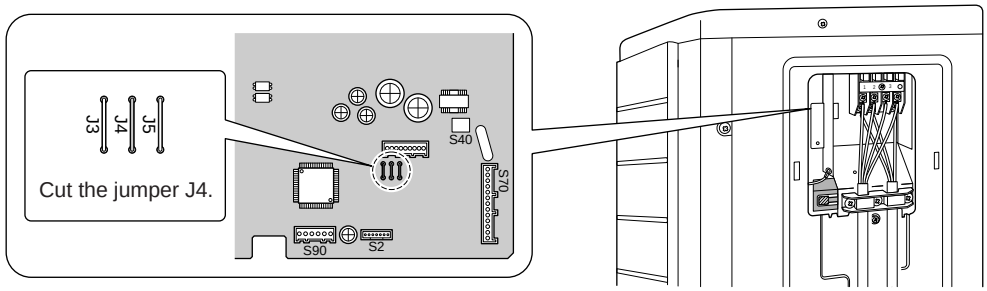
Outline

This function is limited only for facilities (the target of air conditioning is equipment such as computer. Never use it in spaces occupied by humans such as a residence or office.

Detail

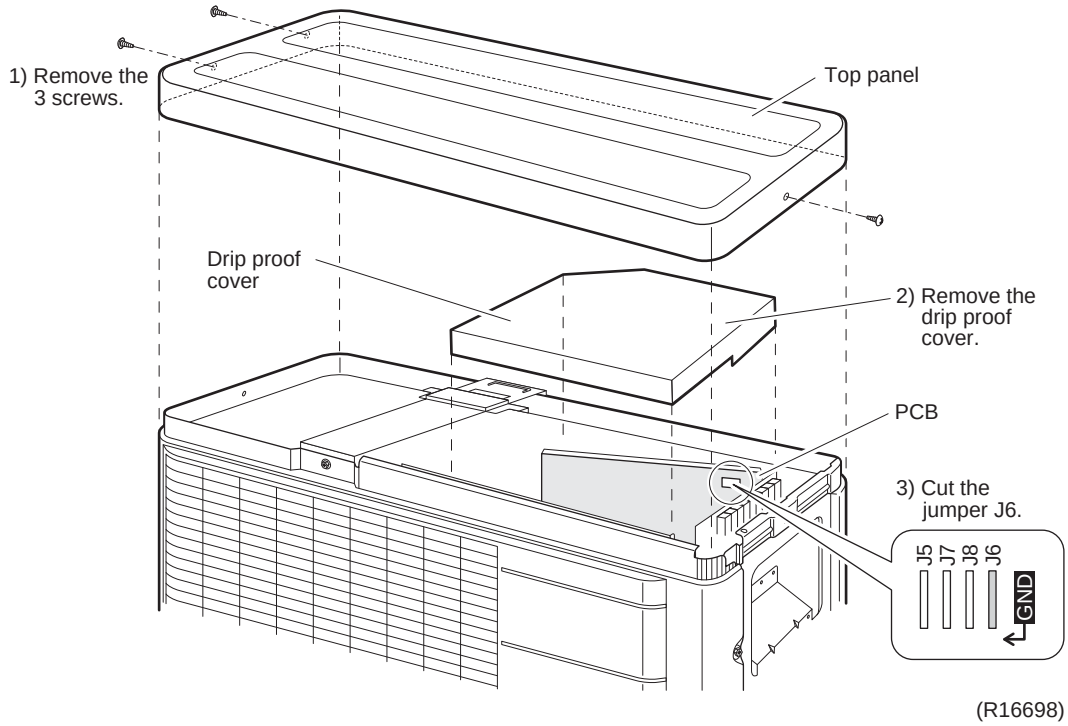
You can expand the operation range to –10°C (14°F) by cutting the jumper or turning on switch on the outdoor unit PCB. If the outdoor temperature falls to –18°C (–0.4°F) or lower, the operation stops. If the outdoor temperature rises, the operation starts again.

09/12 class



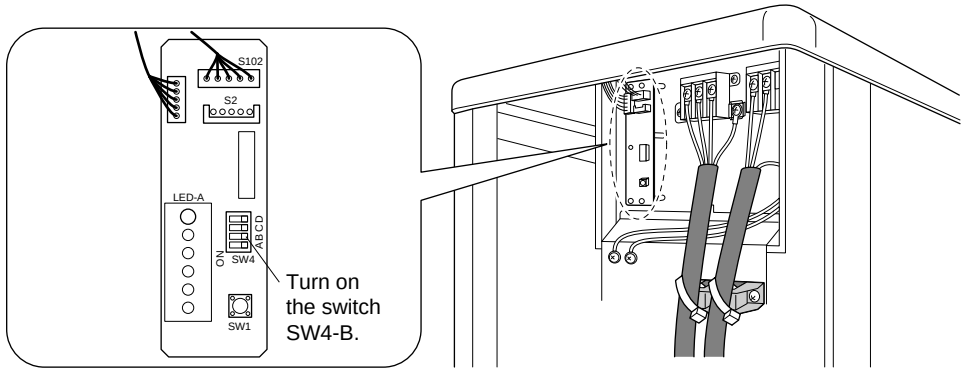
(R12187)

15/18 class



(R16698)

24/30/36 class



(R14478)

Caution

1. If the outdoor unit is installed where the outdoor heat exchanger of the unit is exposed to direct wind, provide a windbreak wall.
2. Intermittent noises may be produced by the indoor unit due to the outdoor fan turning on and off when using facility settings.
3. Do not place humidifiers or other items which might raise the humidity in rooms where facility settings are being used.
   A humidifier might cause dew jumping from the indoor unit outlet vent.
4. Cutting the jumper sets the indoor fan tap to the highest position. (09/12/15/18 class)
5. Use the indoor unit at the highest level of airflow rate. (24/30/36 class)

4.5 Jumper Settings

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

For the location of the jumper, refer to the following pages.
Indoor unit; page 14, 17, 20

5. Application of Silicon Grease to a Power Transistor and a Diode Bridge

Applicable Models

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

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

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

Details

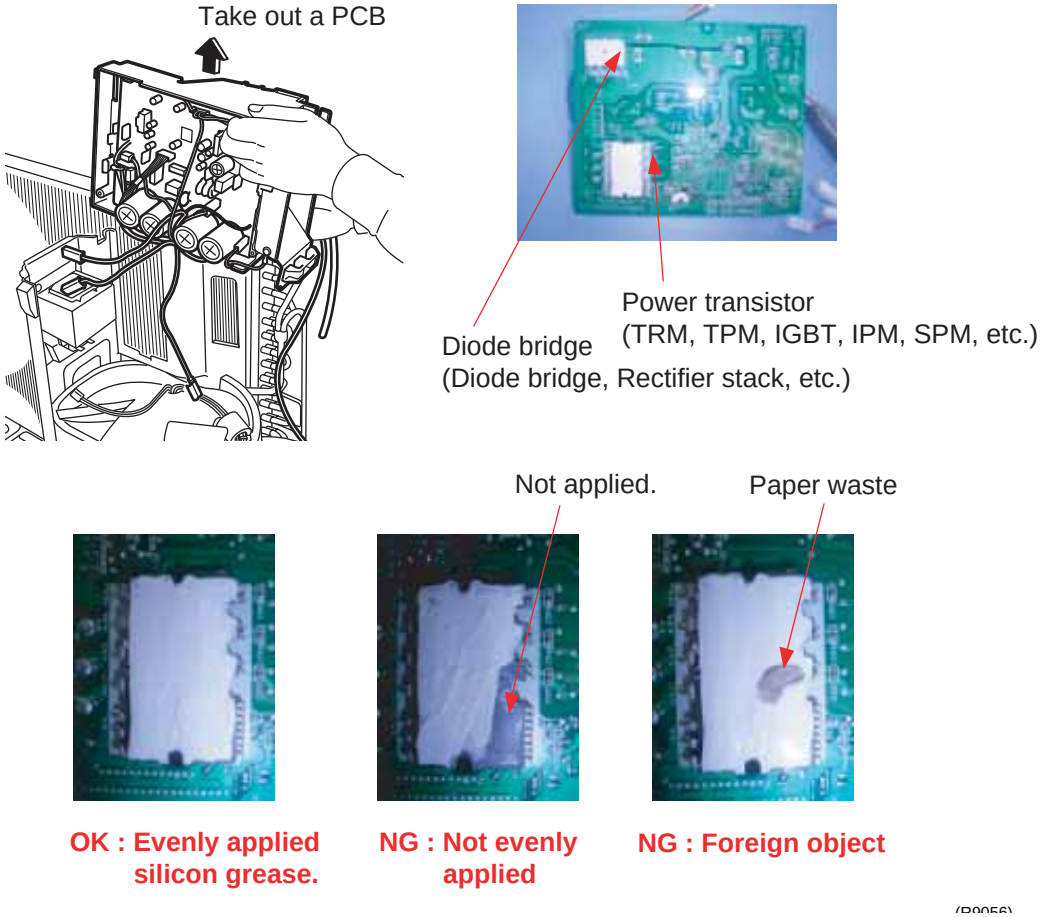
The silicon grease is essential for proper heat radiation of the power transistor and the diode bridge. Applying the grease should be implemented in accordance with the following instruction.

Note: There is a possibility of failure and smoke emission in case of poor heat radiation.

- Wipe off the old silicon grease completely off the radiation fin.
- Apply silicon grease evenly to the whole surface of the radiation fin.
- Do not leave any foreign object such as solder or paper waste between the power transistor and the radiation fin, or the diode bridge and the radiation fin.
- Tighten the screws of the power transistor and the diode bridge, and contact to the radiation fin without any gap.

<Example>

The shape of the electrical box and PCB vary depending on the model.

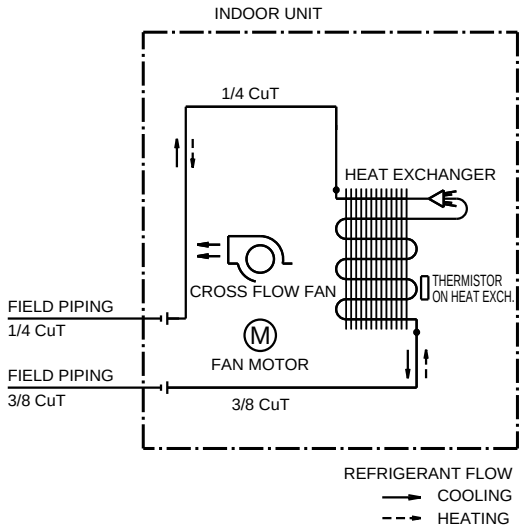


Part 9
Appendix

1. Piping Diagrams

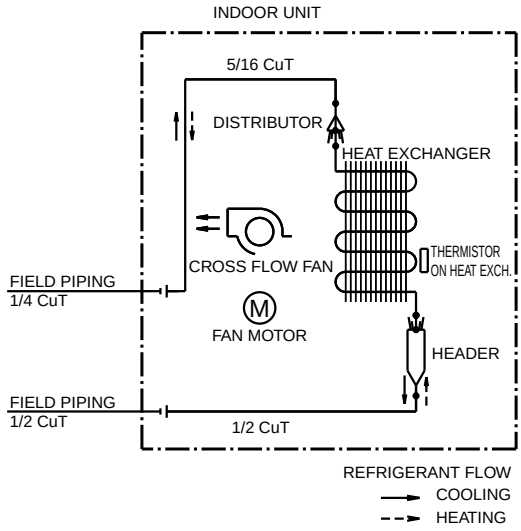
1.1 Indoor unit

FTXS09/12LVJU



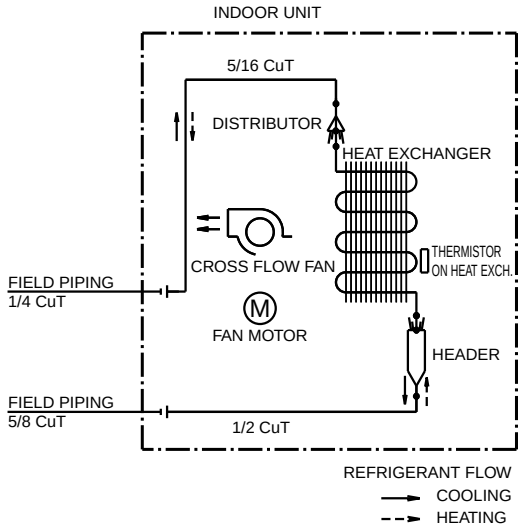
4D074606

FTXS15/18LVJU



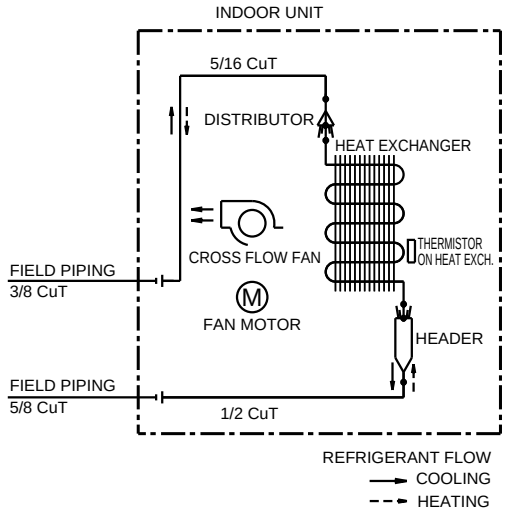
4D074609

FTXS24LVJU



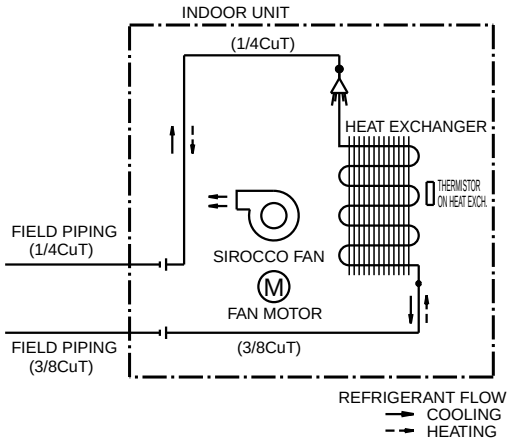
4D074608

FTXS30/36LVJU



4D062742A

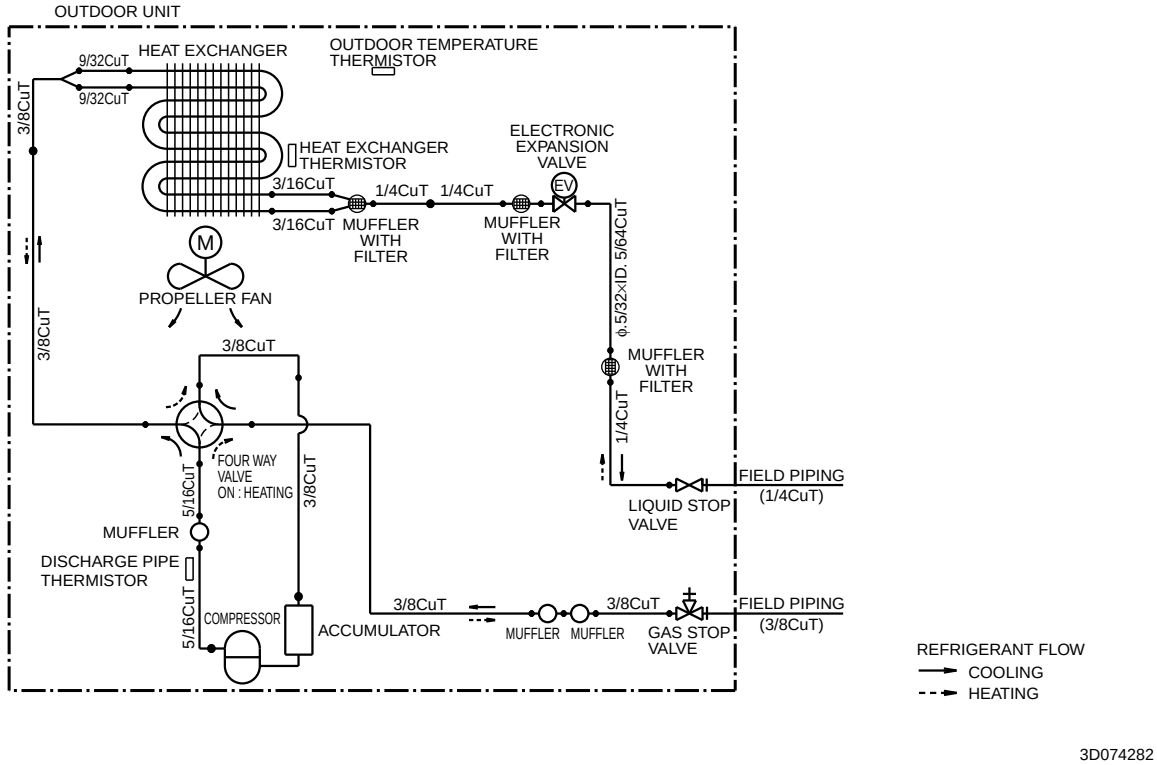
FDXS09/12LVJU



4D074621

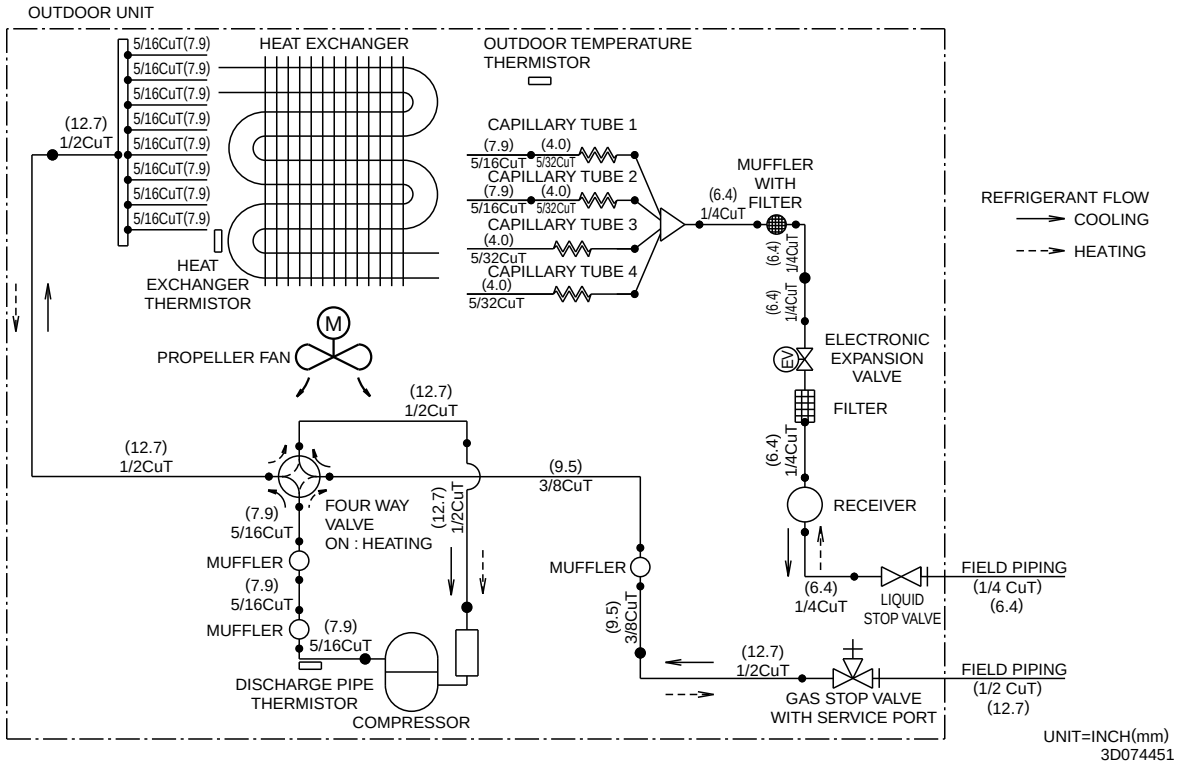
1.2 Outdoor Unit

RXS09/12LVJU



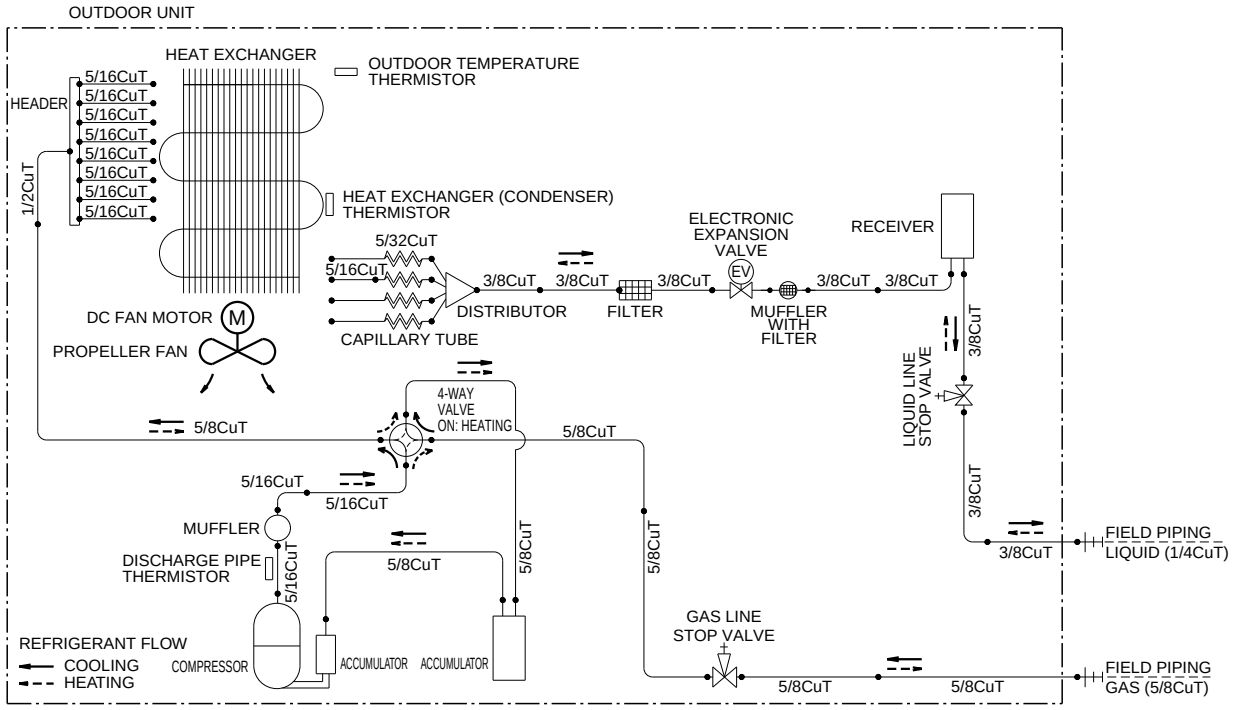
3D074282

RXS15/18LVJU



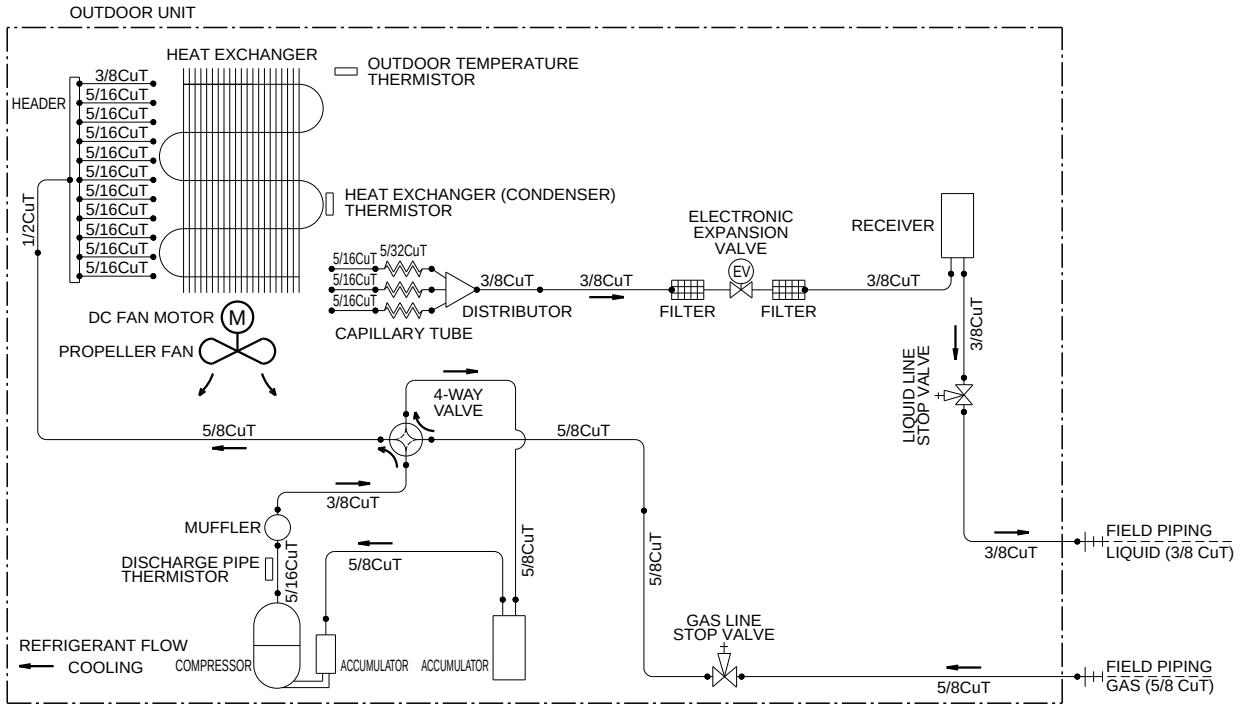
UNIT=INCH(mm)
3D074451

RXS24LVJU



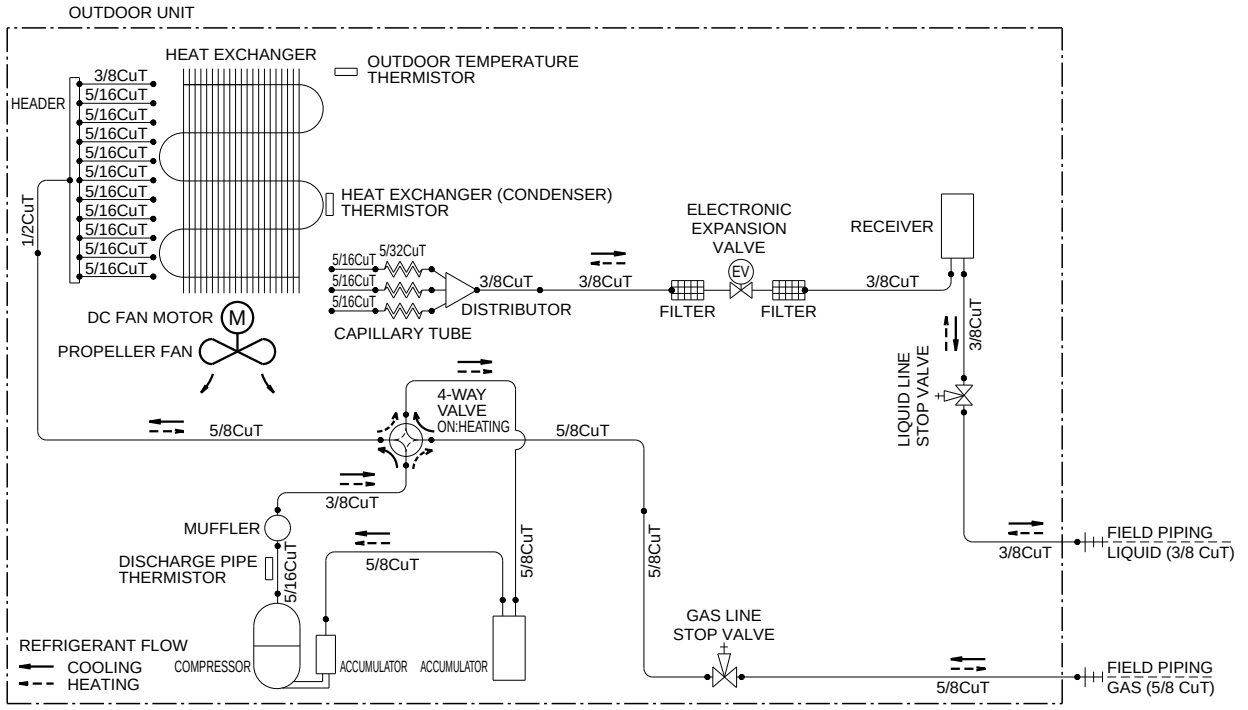
3D074442

RKS30/36LVJU



3D074193

RXS30/36LVJU

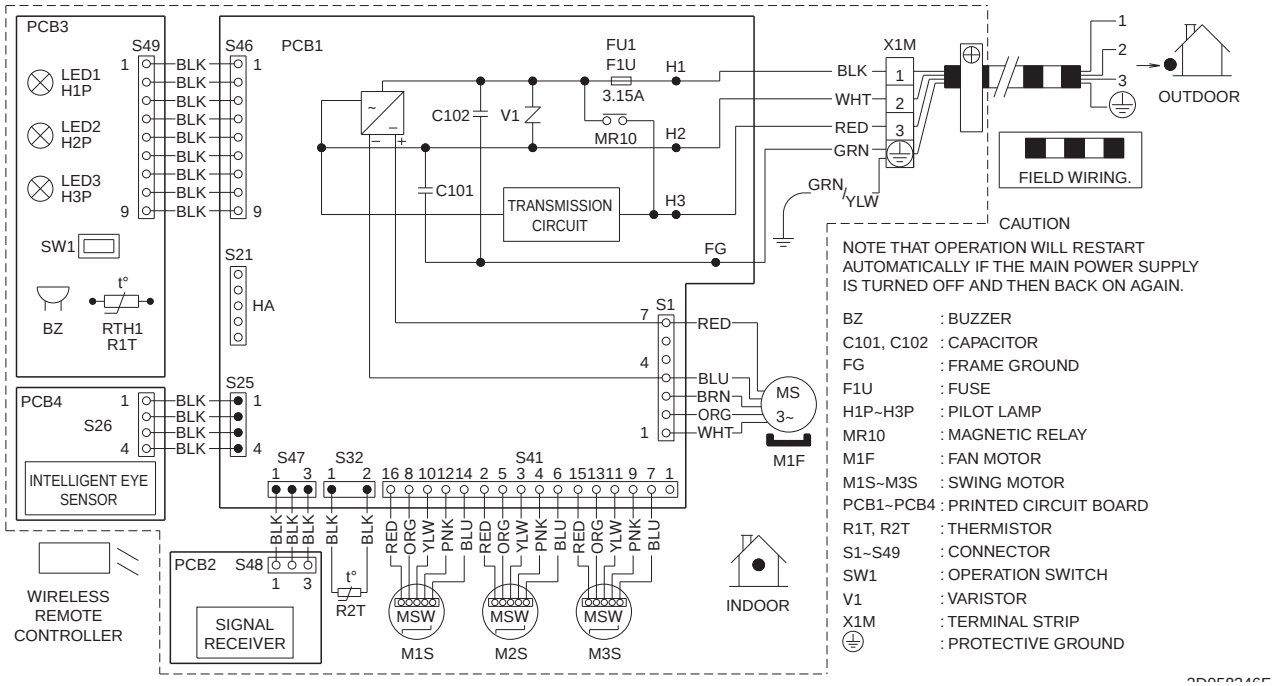


3D074192

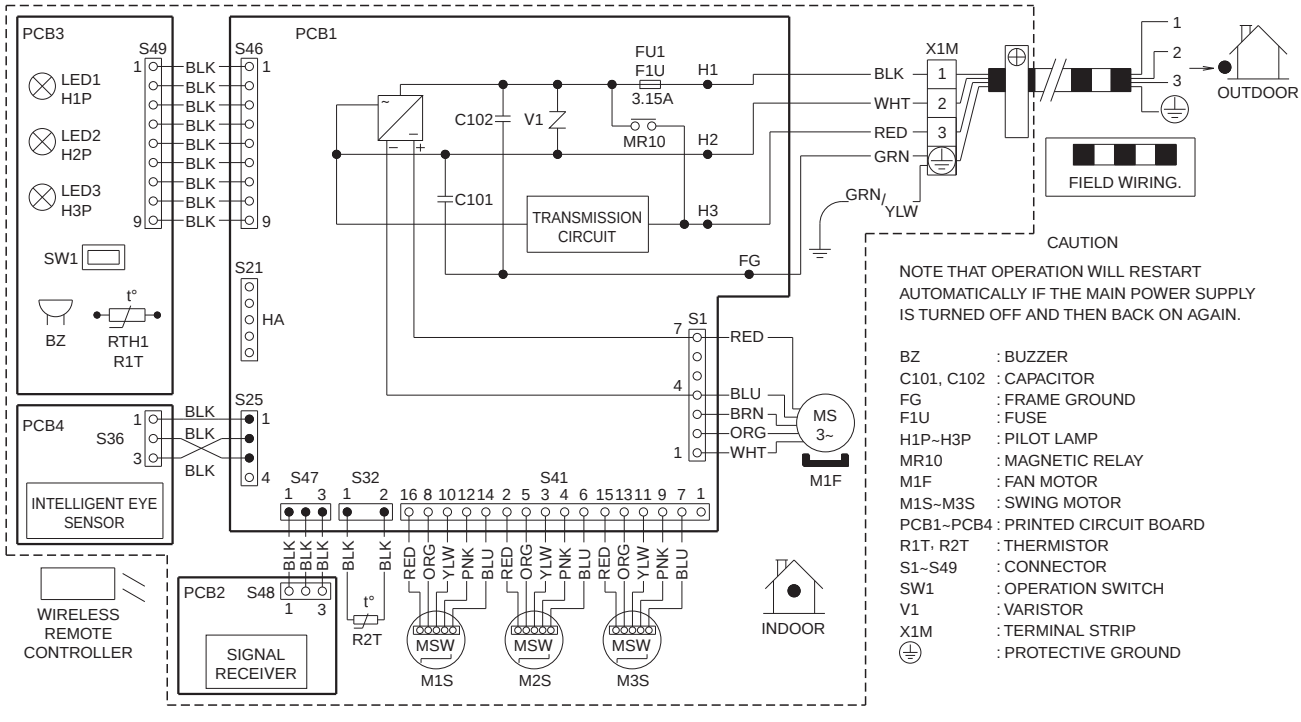
2. Wiring Diagrams

2.1 Indoor Unit

FTXS09/12LVJU

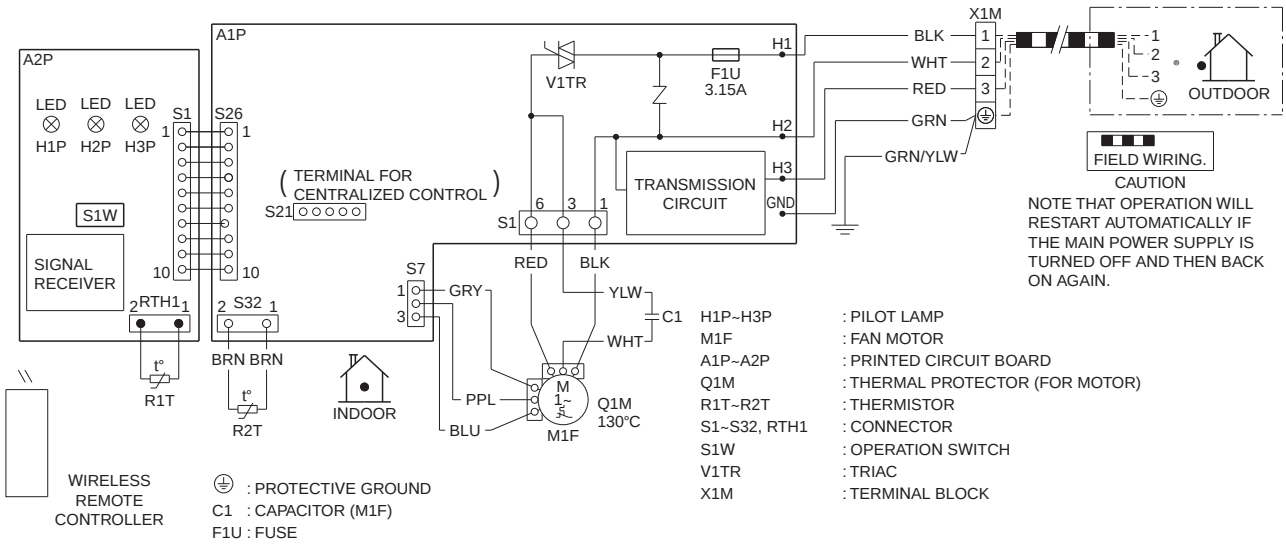


FTXS15/18/24/30/36LVJU



3D060942H

FDXS09/12LVJU



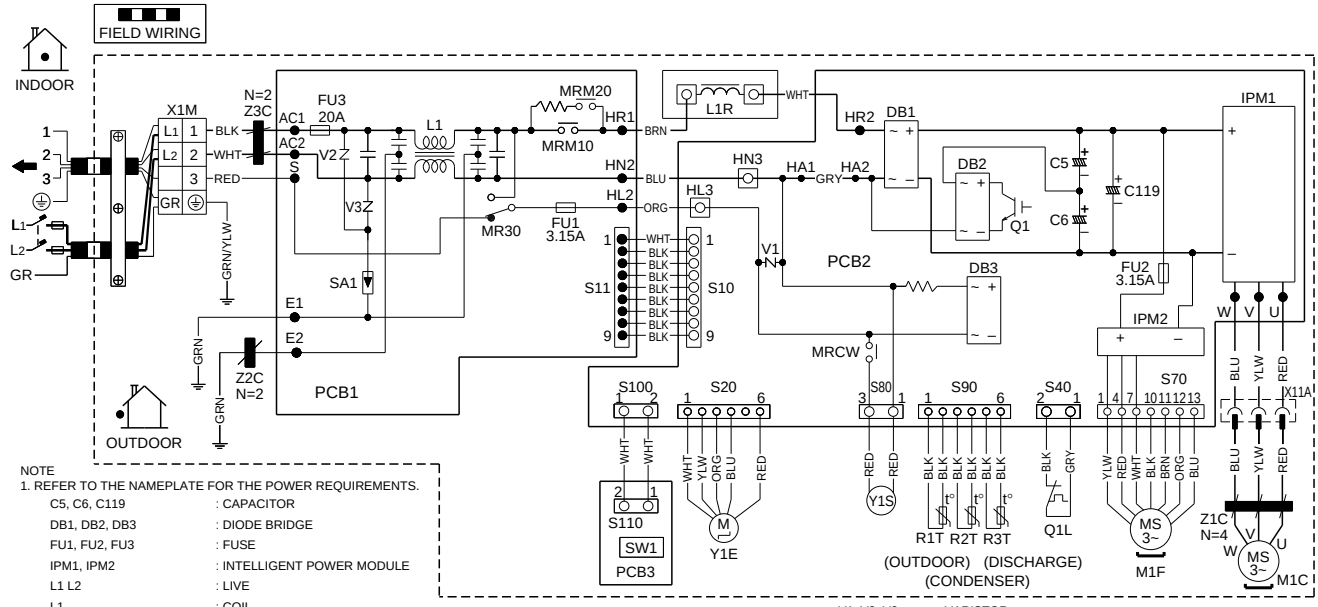
: PROTECTIVE GROUND
C1 : CAPACITOR (M1F)
F1U : FUSE

H1P~H3P	: PILOT LAMP
M1F	: FAN MOTOR
A1P~A2P	: PRINTED CIRCUIT BOARD
Q1M	: THERMAL PROTECTOR (FOR MOTOR)
R1T~R2T	: THERMISTOR
S1~S32, RTH1	: CONNECTOR
S1W	: OPERATION SWITCH
V1TR	: TRIAC
X1M	: TERMINAL BLOCK

3D073998B

2.2 Outdoor Unit

RXS09/12LVJU



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

C5, C6, C119	: CAPACITOR
DB1, DB2, DB3	: DIODE BRIDGE
FU1, FU2, FU3	: FUSE
IPM1, IPM2	: INTELLIGENT POWER MODULE
L1 L2	: LIVE
L1	: COIL
L1R	: REACTOR
M1C	: COMPRESSOR MOTOR
M1F	: FAN MOTOR
MRCW, MR30, MRM10, MRM20	: MAGNETIC RELAY
Q1L	: OVERLOAD PROTECTOR
PCB1, PCB2, PCB3	: PRINTED CIRCUIT BOARD
S10, S11, S20, S40	
S70, S80, S90, S100	
S110, HL3, HN3, X11A	: CONNECTOR
R1T, R2T, R3T	: THERMISTOR
SA1	: SURGE ABSORBER
SW1	: FORCED COOLING OPERATION SWITCH (SW1)
V1, V2, V3	: VARISTOR
X1M	: TERMINAL STRIP
Y1E	: ELECTRONIC EXPANSION VALVE COIL
Y1S	: REVERSING SOLENOID VALVE COIL
Z1C, Z2C, Z3C	: FERRITE CORE
GR	: PROTECTIVE GROUND
⏚	: GROUND

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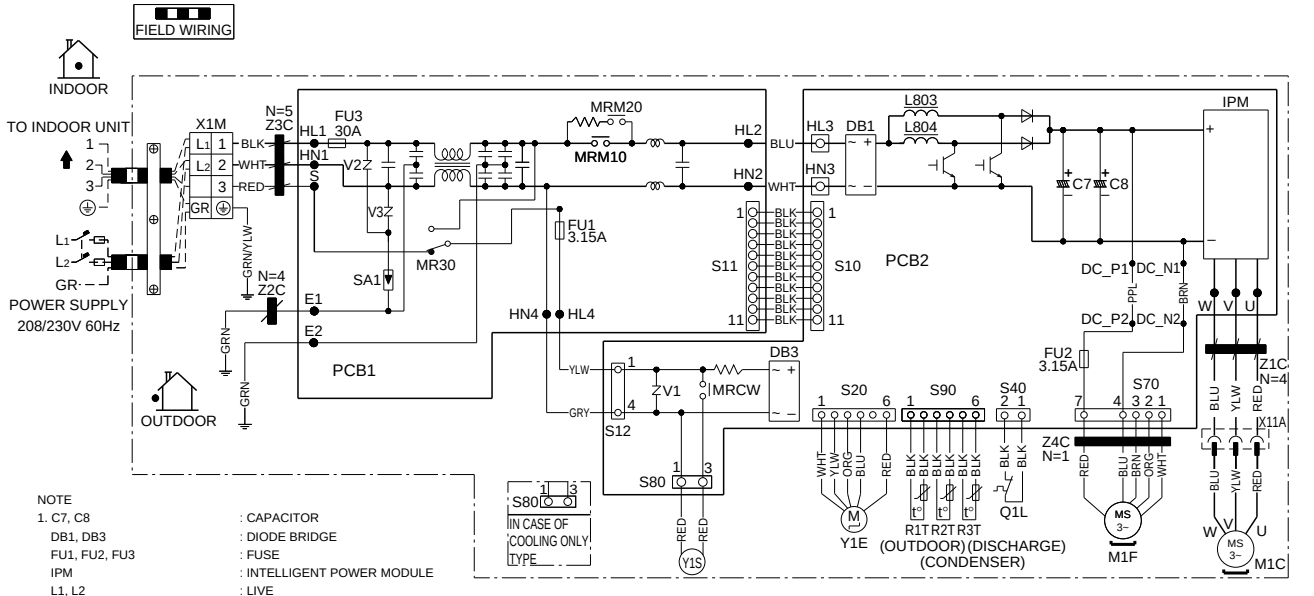
RXS15/18LVJU



NOTE
1. C7, C8

	: CAPACITOR
DB1, DB3	: DIODE BRIDGE
FU1, FU2, FU3	: FUSE
IPM	: INTELLIGENT POWER MODULE
L1, L2	: LIVE
L803, L804	: REACTOR
M1C	: COMPRESSOR MOTOR
M1F	: FAN MOTOR
MRCW, MRM10, MRM20, MR30	: MAGNETIC RELAY
Q1L	: OVERLOAD PROTECTOR
PCB1, PCB2	: PRINTED CIRCUIT BOARD
S10, S11, S12, S20	
S40, S70, S80, S90	
HL3, HN3, X11A	: CONNECTOR
R1T, R2T, R3T	: THERMISTOR
SA1	: SURGE ABSORBER
V1, V2, V3	: VARISTOR
X1M	: TERMINAL STRIP
Y1E	: ELECTRONIC EXPANSION VALVE COIL
Y1S	: REVERSING SOLENOID VALVE COIL
Z1C, Z2C, Z3C, Z4C	: FERRITE CORE
GR	:PROTECTIVE GROUND
⏚, ⏚	:GROUND

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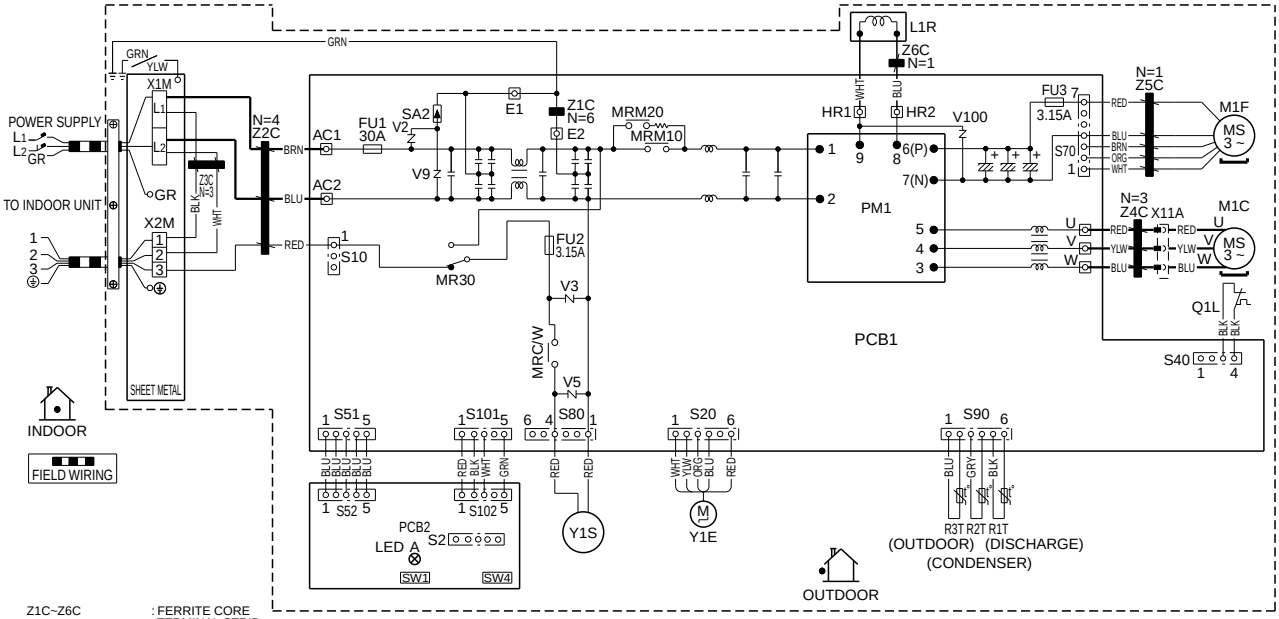
RXS24LVJU



Z1C~Z6C	: FERRITE CORE	MRM10, MRM20		L1, L2	: LIVE	M1C	: COMPRESSOR MOTOR
X1M, X2M	: TERMINAL STRIP	MRC/W, MR30	: MAGNETIC RELAY	SW1	: FORCED COOLING OPERATION SWITCH (SW1)	M1F	: FAN MOTOR
Y1E	: ELECTRONIC EXPANSION VALVE COIL	R1T~R3T	: THERMISTOR	SW4	: LOCAL SETTING SW (SW4)	L1R	: REACTOR
V2, V3, V5, V9, V100	: VARISTOR	S2~S102	: CONNECTOR			Q1L	: OVERLOAD PROTECTOR
SA2	: SURGE ABSORBER	LED A	: PILOT LAMP			PM1	: POWER MODULE
FU1, FU2, FU3	: FUSE					PCB1, 2	: PRINTED CIRCUIT BOARD
AC1, AC2						Y1S	: REVERSING SOLENOID VALVE COIL
U, V, W, X11A						SHEET METAL	: TERMINAL STRIP FIXED PLATE
E1, E2						GR	: PROTECTIVE GROUND
HR1, HR2	: CONNECTOR					⏚	: GROUND

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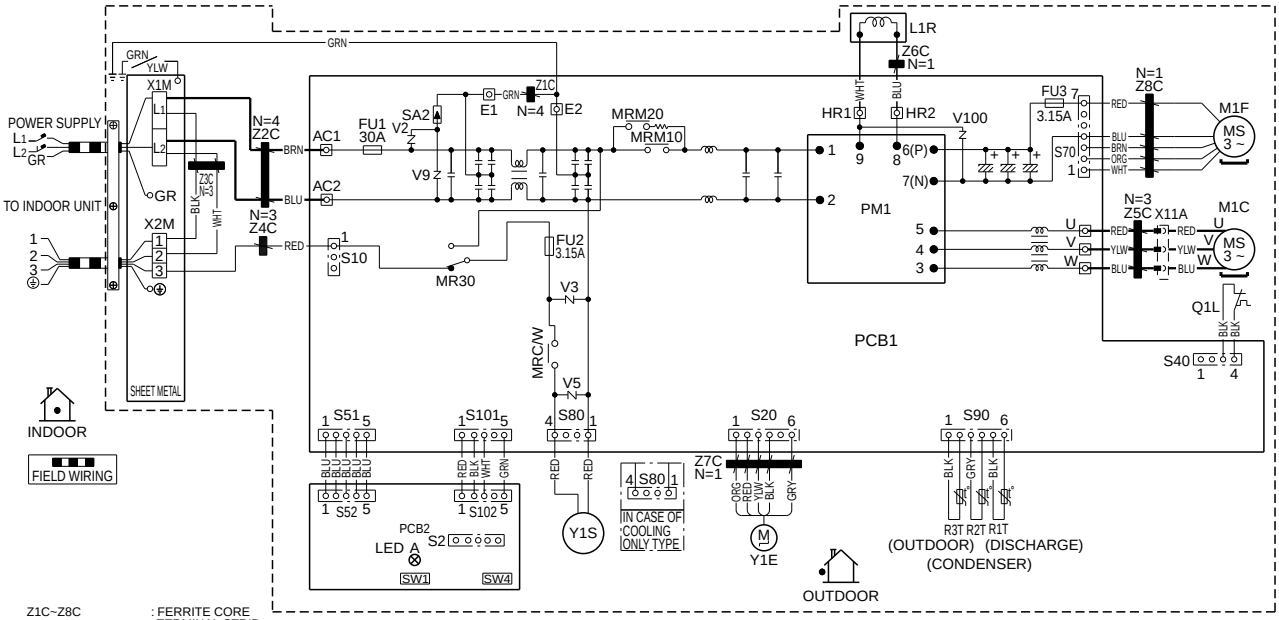
RKS30/36LVJU, RXS30/36LVJU



Z1C~Z8C	: FERRITE CORE	MRM10, MRM20		L1, L2	: LIVE	M1C	: COMPRESSOR MOTOR
X1M, X2M	: TERMINAL STRIP	MRC/W, MR30	: MAGNETIC RELAY	SW1	: FORCED COOLING OPERATION SWITCH (SW1)	M1F	: FAN MOTOR
Y1E	: ELECTRONIC EXPANSION VALVE COIL	R1T~R3T	: THERMISTOR	SW4	: LOCAL SETTING SW (SW4)	L1R	: REACTOR
V2, V3, V5, V9, V100	: VARISTOR	S2~S102	: CONNECTOR			Q1L	: OVERLOAD PROTECTOR
SA2	: SURGE ABSORBER	LED A	: PILOT LAMP			PM1	: POWER MODULE
FU1, FU2, FU3	: FUSE					PCB1, 2	: PRINTED CIRCUIT BOARD
AC1, AC2						Y1S	: REVERSING SOLENOID VALVE COIL
U, V, W, X11A						SHEET METAL	: TERMINAL STRIP FIXED PLATE
E1, E2						GR	: PROTECTIVE GROUND
HR1, HR2	: CONNECTOR					⏚	: GROUND

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Warning

Daikin Industries, Ltd.'s products are manufactured for export to numerous countries throughout the world. Daikin Industries, Ltd. does not have control over which products are exported to and used in a particular country. Prior to purchase, please therefore confirm with your local authorized importer, distributor and/or retailer whether this product conforms tot he 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, or retailer.

CAUTIONS ON PRODUCT CORROSION:

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

JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

Scope of registraton:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF COMMERCIAL AIR CONDITIONING, HEATING, COOLING, REFRIGERANT EQUIPMENT, COMMERCIAL HEATING EQUIPMENT, RESIDENTIAL AIR CONDITONING EQUIPMENT, HEAT RECLAIM VENTILATION, AIR CLEANING EQUIPMENT, MARINE TYPE CONTRAINER REFRIGERANT UNITS, COMPRESSORS, AND VALVES.

JQA-1452

Organization:
DAIKIN INDUSTRIES (THAILAND) LTD.

Scope of registraton:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF AIR CONDITIONERS, AND THE COMPONENTS INCLUDING COMPRESSORS USED FOR THEM.

All of the Daikin Group's business facilities and subsidiaries in Japan are certified under the ISO 14001 international standard for environment management.

Dealer

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