DAIKIN

Si01-202

Service Manual

SPLIT
GA Series

[Applied Models]

●**Non-Inverter Pair : Cooling Only**

Non Inverter Pair

●Cooling Only

Indoor Unit

FT50GAVE	FT50GAVEA	FT50GAVAL
FT60GAVE	FT60GAVEA	FT60GAVAL

Outdoor Unit

R50GV1	R50GV19	R50GAV1A	R50GVAL
R60GV1	R60GV19	R60GAV1A	R60GVAL
R50GV1K	R50GV1K9	R50GAV1A9	R50GVAL9
R60GV1K	R60GV1K9	R60GAV1A9	R60GVAL9

1. Introduction

1.1 Safety Cautions

Cautions and Warnings

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

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

◯ This symbol indicates a prohibited action.
The prohibited item or action is shown inside or near the symbol.

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

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

1.1.1 Caution in Repair

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

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

1.1.2 Cautions Regarding Products after Repair

⚠ Warning	
Be sure to use parts listed in the service parts list of the applicable model and appropriate tools to conduct repair work. Never attempt to modify the equipment. The use of inappropriate parts or tools can cause an electrical shock, excessive heat generation or fire.	
When relocating the equipment, make sure that the new installation site has sufficient strength to withstand the weight of the equipment. If the installation site does not have sufficient strength and if the installation work is not conducted securely, the equipment can fall and cause injury.	
Be sure to install the product correctly by using the provided standard installation frame. Incorrect use of the installation frame and improper installation can cause the equipment to fall, resulting in injury.	For integral units only
Be sure to install the product securely in the installation frame mounted on a window frame. If the unit is not securely mounted, it can fall and cause injury.	For integral units only
Be sure to use an exclusive power circuit for the equipment, and follow the technical standards related to the electrical equipment, the internal wiring regulations and the instruction manual for installation when conducting electrical work. Insufficient power circuit capacity and improper electrical work can cause an electrical shock or fire.	

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

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

1.1.3 Inspection after Repair

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

Caution	
Check to see if the parts and wires are mounted and connected properly, and if the connections at the soldered or crimped terminals are secure. Improper installation and connections can cause excessive heat generation, fire or an electrical shock.	
If the installation platform or frame has corroded, replace it. Corroded installation platform or frame can cause the unit to fall, resulting in injury.	
Check the grounding, and repair it if the equipment is not properly grounded. Improper grounding can cause an electrical shock.	
Be sure to measure the insulation resistance after the repair, and make sure that the resistance is 1 Mohm or higher. Faulty insulation can cause an electrical shock.	
Be sure to check the drainage of the indoor unit after the repair. Faulty drainage can cause the water to enter the room and wet the furniture and floor.	

1.1.4 Using Icons

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

1.1.5 Using Icons List

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

Part 1
List of Function

1. Functions

1.1 List of Functions

Category	Functions	FT50·60GAVE(A)/GAVAL R50·60GV1/GAV1A/GVAL(K)(9)	Category	Functions	FT50·60GAVE(A)/GAVAL R50·60GV1/GAV1A/GVAL(K)(9)
Basic Function	Inverter (with Inverter Power Control)	—	Health Health & Clean	Air Purifying Filter with Bacteriostatic, Virustatic & Deodorizing Functions	○
	Operation Limit for Cooling (°C)★1	19.4 ~54		Longlife Filter	—
	Microprocessor Control	○		Ultra-Longlife Filter (Option)	—
	PAM Control	—		Photocatalytic Deodorizing Filter	—
Compressor	Oval Scroll Compressor (DAIKIN SCROLL)	—		Photocatalytic Filter with UV Lamp	—
	Swing Compressor(DAIKIN ROTARY)	—		Mold Proof Air Filter	○
	Rotary Compressor	○		Washable Grille	○
	Reluctance DC Motor	—		Filter Cleaning Indicator	○
Comfortable Airflow	Power-Airflow Flap	○		Good-Sleep Cooling Operation	—
	Power-Airflow Dual Flaps	—	Timer	72-Hour On/Off Timer	—
	Power-Airflow Diffuser	○		24-Hour On/Off Timer	○
	Wide-Angle Louvers	○		Night Set Mode	○
	Vertical Auto-Swing (Up and Down)	○		Just Fit Thermostatic Timer	—
	Horizontal Auto-Swing (Right and Left)	★2	Worry Free “Reliability & Durability”	Auto-Restart (after Power Failure)	○
	3-D Airflow	—		Self-Diagnosis (Digital, LED) Display	○
	3-Step Airflow (H/P Only)	—		The Remote Controller Loss Prevention with the Chain (Option)	○
“Comfortable Control” Comfort Control	Auto Fan Speed	○		Wiring-Error Check	—
	Silent Operation Control (Automatic)	—		Anticorrosion Treatment of Outdoor Heat Exchanger	○
	Outdoor Unit Silent Operation (Manual)	—	Flexibility	Multi-Split / Split Type Compatible Indoor Unit ★3	○
	Intelligent Eye	—		Flexible Voltage Correspondence	—
	Quick Warming Function	—		High Ceiling Application	—
	Hot-Start Function	—		Chargeless	10m
	Automatic Defrosting	—	Remote Control	5-Rooms Centralized Controller (Option)	○
Operation	Automatic Operation	—		Remote Control Adaptor (Option) (Normal Open-Pulse)	○
	Programme Dry Function	○		Remote Control Adaptor (Normal Open Contact)	○
	Fan Only	○		DIII-NET Compatible (Adaptor)	—
Lifestyle Convenience	New Powerful Operation (Non-Inverter)	○	Remote Controller	Wireless	○
	Inverter Powerful Operation	—		Wired	—
	Priority-Room Setting	—			
	Laundry Programme Operation	—			
	Home Leave Operation	—			
	Power Selection	—			
	Indoor Unit On/Off Switch	○			
	Signal Reception Indicator	○			
	Temperature Display	—			

Note: ○ : Holding Functions
— : No Functions

★1 R50·60GAV1A : 19.4°C~46°C
★2 Apply only for FT50·60GAVAL
★3 For FT50·60GAVAL : [—]

Part 2
Specifications

1. Specifications

1.1 Cooling Only

V1 : 50Hz, 220-240V V1A : 50Hz, 220-230-240V

Model	Indoor Units		FT50GAVE	FT50GAVEA		FT60GAVE	FT60GAVEA	
	Outdoor Units		R50GV1(9)	R50GAV1A(9)	R50GV1K(9)	R60GV1(9)	R60GAV1A(9)	R60GV1K(9)
Capacity Rated		kW	5.3			6.4		
		Btu/h	18,100			21,800		
		kcal/h	4,560			5,500		
Moisture Removal		L/h	2.9			5.2		
Running Current (Rated)		A	10.1-11.0	10.1-11.2-11.2	10.1-11.0	11.8-11.4	11.8-11.3-11.3	11.8-11.4
Power Consumption (Rated)		W	2,000-2,180	2,000-2,120-2,120	2,000-2,180	2,410-2,500-2,500		
Power Factor		%	90.0-82.6	90.0-82.3-81.1	90.0-82.6	92.8-91.4	92.8-96.2-92.2	92.8-91.4
COP		W/W	2.65-2.43	2.65-2.50-2.50	2.65-2.43	2.66-2.56-2.56		
Piping Connections	Liquid	mm	ϕ6.4			ϕ6.4		
	Gas	mm	ϕ15.9			ϕ15.9		
	Drain	mm	ϕ18.0			ϕ18.0		
Heat Insulation			Both Liquid and Gas Pipes			Both Liquid and Gas Pipes		
Indoor Unit			**FT50GAVE**	**FT50GAVEA**		**FT60GAVE**	**FT60GAVEA**	
Front Panel Color			Almond White			Almond White		
Air Flow Rate	m³/min (cfm)	H	14.0 (494)			14.0 (494)		
		M	12.0 (424)			12.4 (438)		
		L	10.0 (353)			10.8 (381)		
Fan	Type		Cross Flow Fan			Cross Flow Fan		
	Motor Output	W	54			54		
	Speed	Steps	5 Steps and Auto			5 Steps and Auto		
Air Direction Control			Right, Left, Horizontal and Downward			Right, Left, Horizontal and Downward		
Air Filter			Removal-Washable-Mildew Proof			Removal-Washable-Mildew Proof		
Running Current (Rated)		A	0.19-0.18-0.17			0.19-0.18-0.17		
Power Consumption (Rated)		W	40			40		
Power Factor		%	95.7-96.6-98.0			95.7-96.6-98.0		
Temperature Control			Microcomputer Control			Microcomputer Control		
Dimension (H×W×D)		mm	298×1,050×190			298×1,050×190		
Packaged Dimension		mm	1,183×367×289			1,183×367×289		
Weight		kg	12			12		
Gross Weight		kg	16			16		
Operation Sound	H/M/L	dBA	43/39/35			46/42/38		
Outdoor Unit			**R50GV1**	**R50GAV1A**	**R50GV1K(9)**	**R60GV1**	**R60GAV1A**	**R60GV1K(9)**
Casing Color			Ivory White			Ivory White		
Compressor	Type		Hermetically Sealed Rotary Type			Hermetically Sealed Rotary Type		
	Model		RC70AV1TRT			NH41VMDT		
	Motor Output	W	1,700			2,200		
Refrigerant Oil	Type		SUNISO 4GSD.I.			MS-32		
	Charge	L	0.85			1.20		
Refrigerant	Type		R22			R22		
	Charge	kg	1.10	1.20	1.10	1.50		
Air Flow Rate	m³/min (cfm)	H	29-29.5-30 (1,024-1,041-1,059)			40-40.5-41 (1,412-1,430-1,447)		
		L	—			23-24-25 (812-847-883)		
Fan	Type		Propeller			Propeller		
	Motor Output	W	45			53		
Running Current (Rated)		A	9.91-10.83	9.91-11.02-11.03	9.91-10.83	11.61-11.23	11.61-11.12-11.13	11.61-11.23
Power Consumption (Rated)		W	1,960-2,140	1,960-2,080-2,080	1,960-2,140	2,370-2,460-2,460		
Power Factor		%	89.9-82.3	90.0-82.1-78.6	90.0-82.3	92.8-91.3	92.8-96.2-92.1	92.8-91.3
Starting Current		A	43-47	43-44-45	43-45	55-58-60		
Dimensions (H×W×D)		mm	540×750×270			685×800×300		
Packaged Dimension		mm	940×360×609			955×390×732		
Weight		kg	42			61		
Gross Weight		kg	45			66		
Operation Sound		dBA	49-50-50			54-55-55		
Drawing No.			3D029060	3D028525	3D029102	3D029061	3D028526	3D029103

Notes:

- MAX. interunit piping length: 30m
- MAX. interunit height difference: 15m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shows in the table below.

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

FT50/60GAVE (220V)

Standard	Cooling	Piping Length
JIS C 9612	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	5m

FT50/60GAVEA (230/240V)

Standard	Cooling	Piping Length	Power Source
AS/NZS3823, 1	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	7.5m	50Hz 230/240V

60Hz, 200V

Model	Indoor Units		FT50GAVAL	FT60GAVAL
	Outdoor Units		R50GVAL(9)	R60GVAL(9)
Capacity Rated		kW	5.6	6.8
		Btu/h	19,100	23,200
		kcal/h	4,800	5,850
Capacity (SSA-385/386)		kW	4.5	5.6
		Btu/h	15,400	19,100
		kcal/h	3,900	4,800
Moisture Removal		L/h	2.9	5.2
Running Current (Rated) [JIS/SSA]		A	10.5/12.0	12.8/14.7
Power Consumption (Rated) [JIS/SSA]		W	2,180/2,500	2,680/3,060
Power Factor [JIS/SSA]		%	94.4/94.7	95.2/94.6
COP [JIS/SSA]		W/W	2.57/1.80	2.54/1.83
Piping Connections	Liquid	mm	ϕ6.4	ϕ6.4
	Gas	mm	ϕ15.9	ϕ15.9
	Drain	mm	ϕ18.0	ϕ18.0
Heat Insulation			Both Liquid and Gas Pipes	Both Liquid and Gas Pipes
Indoor Unit			**FT50GAVAL**	**FT60GAVAL**
Front Panel Color			Almond White	Almond White
Air Flow Rate	m^3/min (cfm)	H	12.9 (455)	14.0 (494)
		M	11.5 (406)	12.4 (438)
		L	10.0 (353)	10.8 (381)
Fan	Type		Cross Flow Fan	Cross Flow Fan
	Motor Output	W	54	54
	Speed	Steps	5 Steps and Auto	5 Steps and Auto
Air Direction Control			Right, Left, Horizontal and Downward	Right, Left, Horizontal and Downward
Air Filter			Removal-Washable	Removal-Washable
Running Current (Rated) [JIS/SSA]		A	0.14/0.14	0.19/0.19
Power Consumption (Rated) [JIS/SSA]		W	30/30	40/40
Power Factor [JIS/SSA]		%	97.4/97.4	95.7/95.7
Temperature Control			Microcomputer Control	Microcomputer Control
Dimension (H×W×D)		mm	298×1,050×190	298×1,050×190
Packaged Dimension		mm	1,183×367×289	1,183×367×289
Weight		kg	12	12
Gross Weight		kg	16	16
Operation Sound	H/M/L	dBA	41/38/34	46/42/38
Outdoor Unit			**R50GVAL(9)**	**R60GVAL(9)**
Casing Color			Ivory White	Ivory White
Compressor	Type		Hermetically Sealed Rotary Type	Hermetically Sealed Rotary Type
	Model		RC60VHTNRT	RC75VHTR2T
	Motor Output	W	1,500	1,800
Refrigerant Oil	Type		SUNISO 4GSD.I.	SUNISO 4GSD.I.
	Charge	L	0.85	1.0
Refrigerant	Type		R22	R22
	Charge	kg	1.15	1.6
Air Flow Rate	m^3/min (cfm)	H	30 (1,059)	44 (1,553)
Fan	Type		Propeller	Propeller
	Motor Output	W	45	53
Running Current (Rated) [JIS/SSA]		A	10.36/11.86	12.61/14.51
Power Consumption (Rated) [JIS/SSA]		W	2,150/2,470	2640/3020
Power Factor [JIS/SSA]		%	94.3/94.7	95.2/94.6
Starting Current		A	43	53
Dimensions (H×W×D)		mm	540×750×270	685×800×300
Packaged Dimension		mm	940×360×609	955×390×732
Weight		kg	41	51
Gross Weight		kg	45	56
Operation Sound		dBA	52	55
Drawing No.			3D029062	3D029063

Notes:

- MAX. interunit piping length: 30m
- MAX. interunit height difference: 15m
- Amount of additional charge of refrigerant 20g/m for piping length exceeding 10m
- The data are based on the conditions shows in the table below.

Standard	Cooling	Piping Length
JIS C 9612	Indoor ; 27°CDB/19°CWB Outdoor ; 35°CDB/24°CWB	5m
SSA-385/386	Indoor ; 29°CDB/19°CWB Outdoor ; 46°CDB/24°CWB	7.5m

- Operative up to 54°C.

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

Part 3
Printed Circuit Board Connector Wiring Diagram

1. Printed Circuit Board Connector Wiring Diagram and Name

1.1 FT50/60GAVE , FT50/60GAVEA , FT50/60GAVAL

Printed Circuit Board (1) (Control PCB)
Printed Circuit Board (2) (Powers Supply PCB)
Printed Circuit Board (3) (Receiver Sensor PCB)
Printed Circuit Board (4) (Display PCB)

Name of Connector

Printed Circuit Board (1) (Control PCB)

1) S6 : Connector for swing motor (Vertical Flap)
2) S7 : Connector for fan motor (Hall IC output)
3) S21 : Connector for Home Automation
4) S24 : Connector for Display PCB
5) S26 : Connector for Receiver Sensor PCB
6) S32 : Connector for heat exchange thermistor
7) S37 : Connector for Power Supply PCB

Printed Circuit Board (2) (Power Supply PCB)

1) S36 : Connector for Control PCB
2) S201 : Connector for fan motor

Printed Circuit Board (3) (Receiver Sensor PCB)

1) S27 : Connector for Control PCB
2) S31 : Connector for thermistor

Printed Circuit Board (4) (Display PCB)

1) S25 : Connector for Control PCB

Note: Other Designations

Printed Circuit Board (1) (Control PCB)

1) JA : ADDRESS SETTING JAMPER
   JB : Fan speed setting when compressor is OFF on thermistor
   JC : Power failure recovery function
2) SW8 : Filter cleaning indicator reset switch
3) BZ : Buzzer

Printed Circuit Board (2) (Power Supply PCB)

1) V1 : Varistor
2) FU1 : Fuse (AC250V 3.15A)

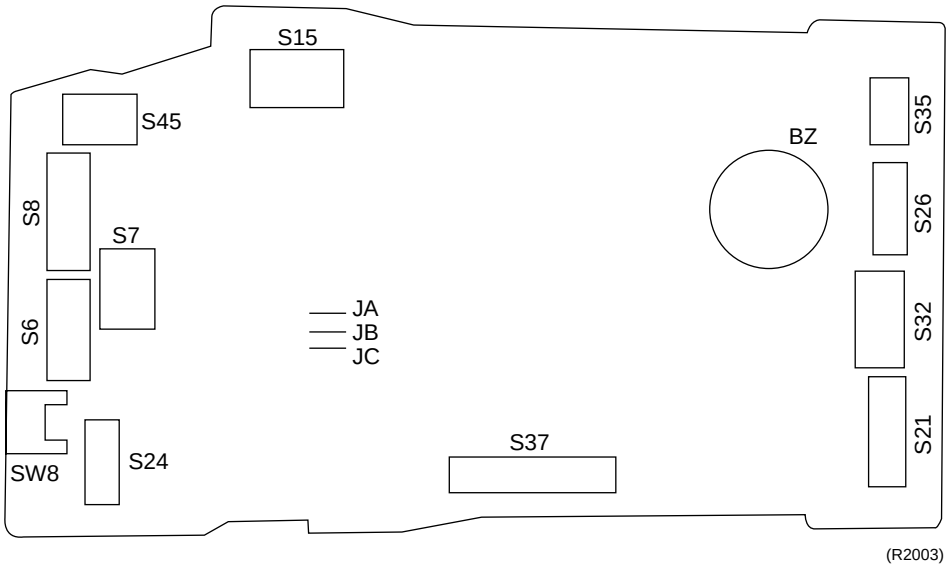
Printed Circuit Board (3) (Receiver Sensor PCB)

1) SW7 : OPERATION SWITCH
2) WLU : Infrared receiving unit

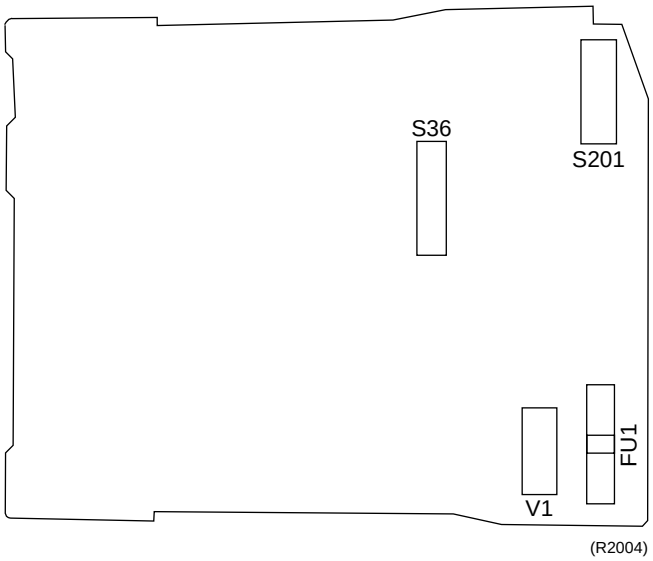
Printed Circuit Board (4) (Display PCB)

1) LED3 : LED for operation
2) LED4 : LED for timer
3) LED5 : LED for filter cleaning indicator

Printed Circuit Board (1) (Control PCB)

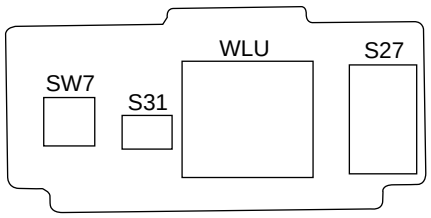


Printed Circuit Board (2) (Power Supply PCB)

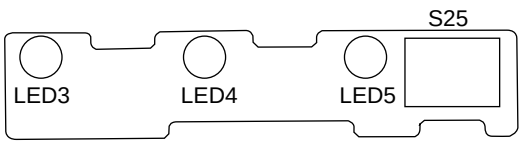


Printed Circuit Board (3), (4) (Receiver Sensor and Display PCB)

Receiver Sensor PCB

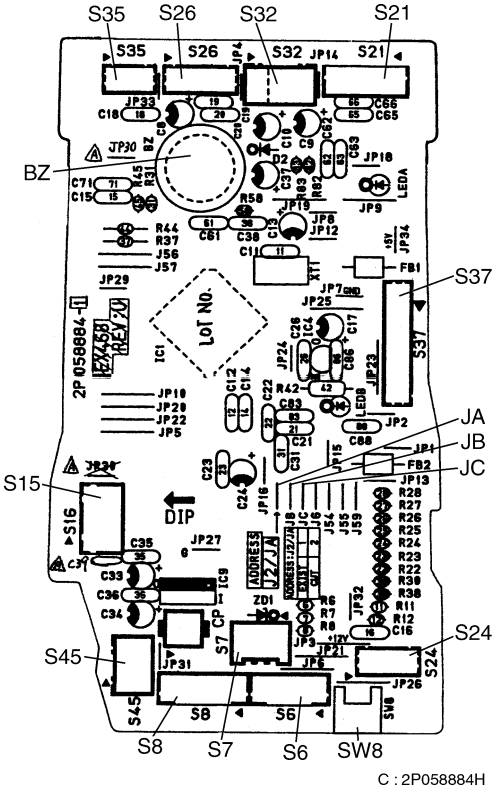


Display PCB

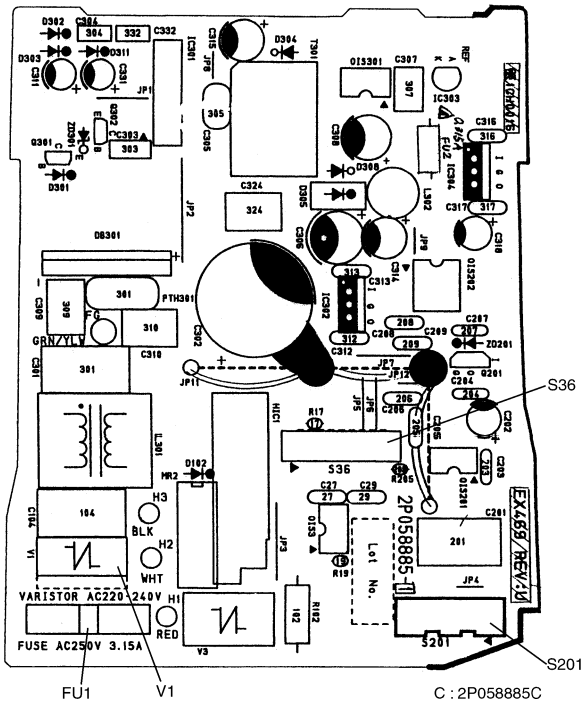


(R2005)

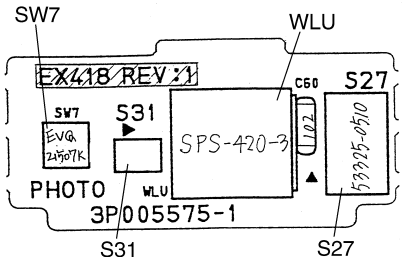
PCB (1)



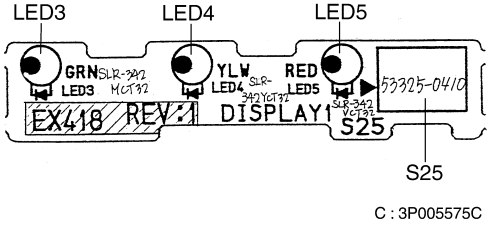
PCB (2)



PCB (3)



PCB (4)



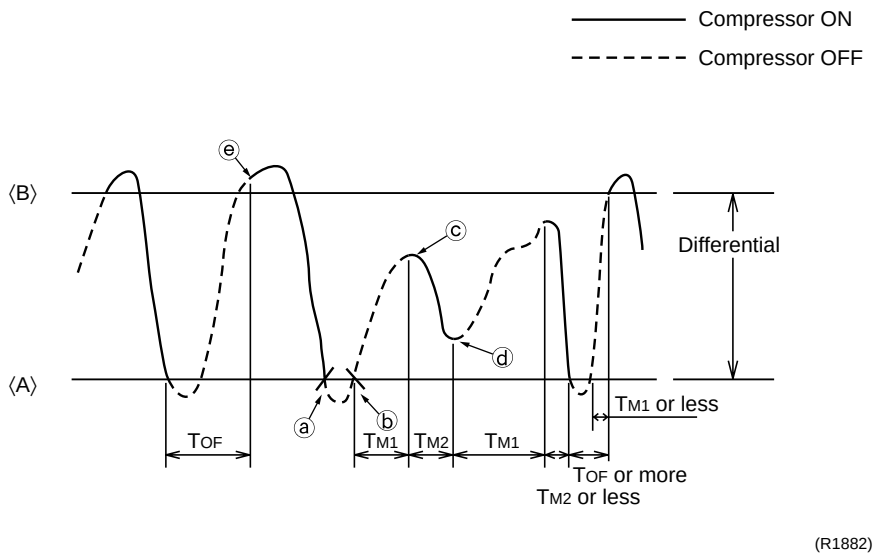
Part 4
Main Function

1. General Functionality

1.1 General Functionality

1.1.1 Cooling Monitoring Function

Monitoring function is activated while cooling and program dry operation are suspended.



(R1882)

TOF: Compressor recycling guard timer (3-minute timer)
TM1: 5-minute timer
TM2: 4-minute timer

⟨A⟩ At cooling: Temperature set by wireless remote controller
At program dry operation: Temperature at suspension
⟨B⟩ Temperature set by wireless remote controller +1 deg. (Cooling operation)
Temperature set (Program dry operation)
Even if the suction temperature remains in the differential range, a compressor is cycled ON and OFF.

DETAIL: When the suction temperature rises again to ⟨A⟩ (point b) after the suction temperature is dropped to ⟨A⟩ and the compressor turns OFF (point a) the 5-minute timer starts.
After that, when the suction temperature is within the differential range, even after a lapse of 5 minutes, the compressor is forced to turn ON (point c).
When the suction temperature is still in the differential range, after another 4 minutes of compressor ON, the compressor is forced to turn OFF (point d).
The 5 and 4-minute timers are effective only within the differential temperature range, and when the air suction temperature is reached to ⟨B⟩ or ⟨A⟩ while the timers are counting, timers are reset and the compressor is turned ON or OFF.
(Note, however, that function of placing the compressor in a 3-minute compressor recycling guard timer is provided at point e.)

While the compressor is OFF, the indoor fan operation is controlled by tap A during cooling mode.
In the program dry mode, the indoor fan starts operating five seconds after the compression starts, and it stops operating when the compressor shuts down.

	A
FT50 / 60GA Series	Remote controller setting

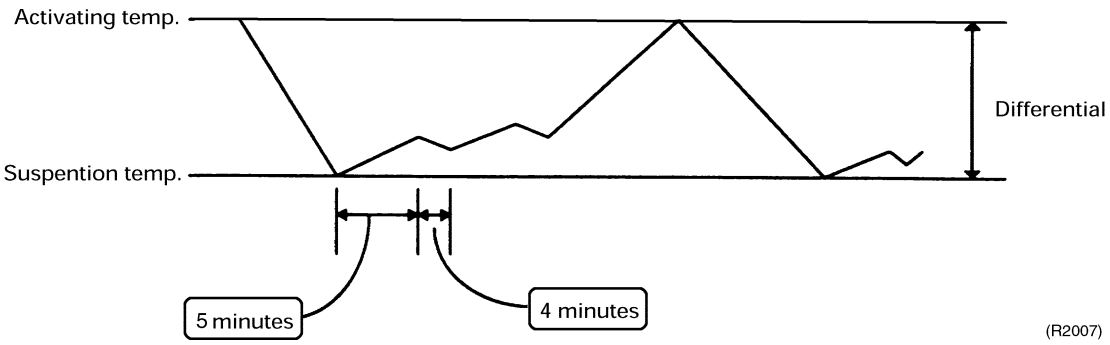
1.1.2 Program Dry Operation

By the function of the microcomputer, program dry operation reduces the humidity keeping the temperature in a minimum drop. Room temperature and air volume can not be controlled by room temperature adjusting button and air volume adjusting button because they are controlled automatically. When the program dry function starts, dry operation is provided, and then it repeats 6-minute suspension and 4-minute dry operation alternately. When the room temperature rises, it repeats the above process from the beginning.

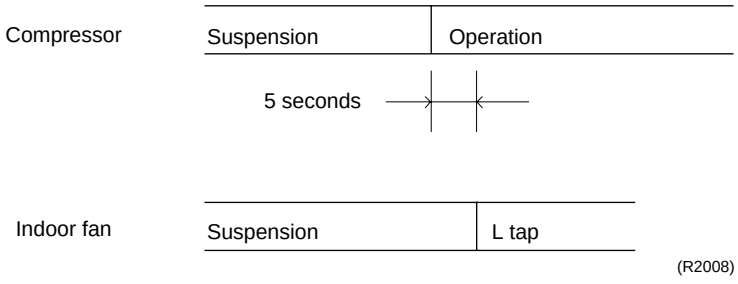
Room temperature at starting of program dry operation	Program dry activating temperature ∗1	Differential ∗2
Above 24°C	Room temperature at starting of program dry operation	1.5 deg
18°C ~ 24°C	Room temperature at starting of program dry operation	1.0 deg
Bellow 18°C	18°C	1.0 deg

∗1 Dry operation activating (compressor on) temperature
∗2 Room temperature difference between activation and suspension of dry operation

Program dry operating condition



Note:
1. The program dry function is not operated when the room temperature is at 18°C or less.
2. In monitoring operation, fan rotates 5 seconds after the compressor starts its operation.



1.1.3 Freeze Protection Function

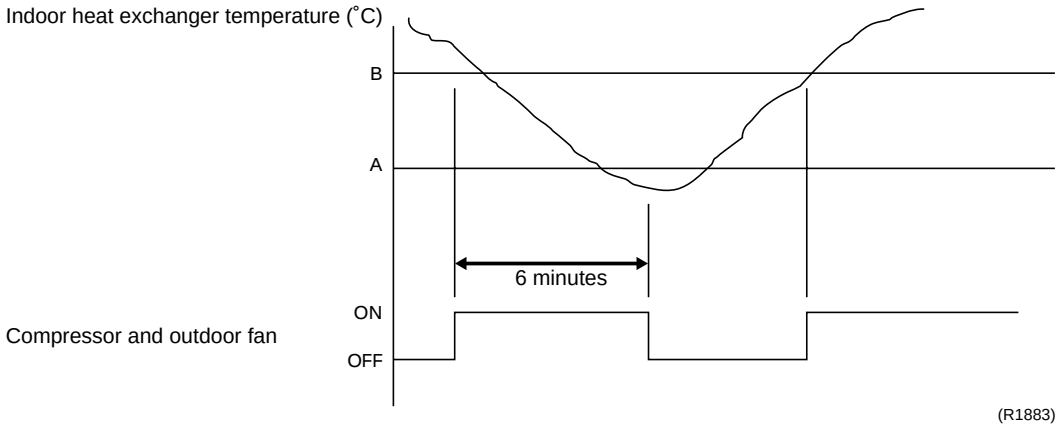
When the indoor heat exchanger temperature falls below “A” °C in cooling or program dry operation,

- the compressor and the outdoor fan are forced to turn OFF, and
- the indoor fan rotates at the L tap (in cooling operation) or W2 tap (in program dry operation).

Note that this function is not activated for 6 minutes after compressor turns ON.

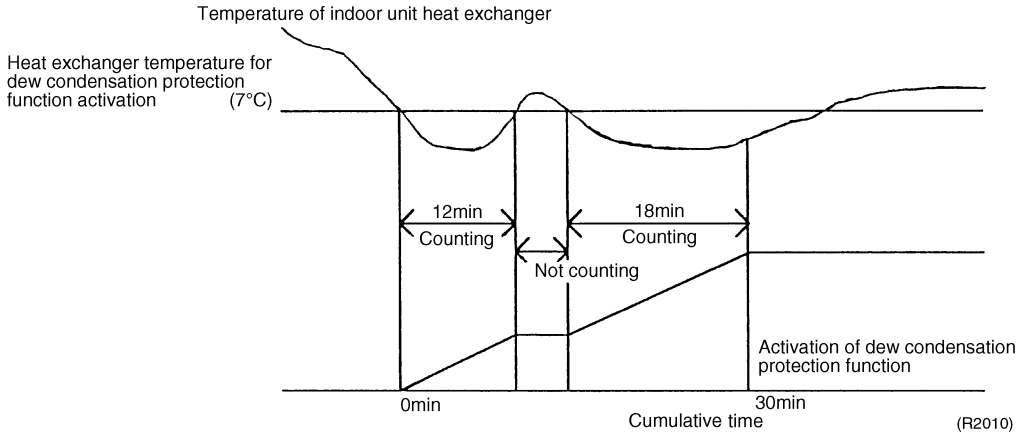
When the indoor heat exchanger reaches “B” °C, the compressor and the outdoor fan restart the operations. However, because the compressor recycling guard timer (3-minute timer) takes priority, the compressor and the outdoor fan don't restart the operation during this timer is ON.

	A	B	W2
FT50 / 60GA Series	3	13	LL



1.1.4 Dew Condensation Protection Function

When the cumulative time of the cooling or program dry operation with the temperature of the indoor unit heat exchanger below the preset temperature (7°C) for dew condensation protection function reaches 30 minutes, the dew condensation protection function activates.
When the dew condensation protection function turns on, the flap moves to the dew condensation protection flap position, and the lower-limit value of the indoor fan rotation speed rises by 10 rpm every three minutes (L tap + 100 rpm as the upper limit of the lower-limit setting). If the flap angle is changed during this process, the flap remains in that position for 30 minutes, then moves to the dew condensation protection flap position.
When the operation stops, or when the unit operates in a mode other than the cooling and program dry modes for 30 continuous minutes, the dew condensation protection function is canceled.

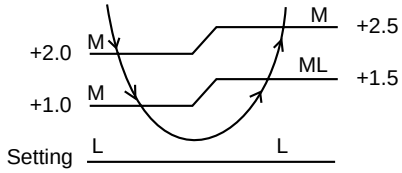


1.1.5 Timer Function

Refer to “Timer Operation” on page 31.

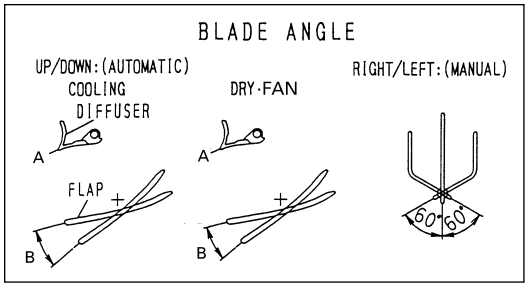
1.1.6 Auto-fan Speed

In cooling operation, if automatic airflow has been selected, the wind flow is determined according to the room temperature and the temperature setting.



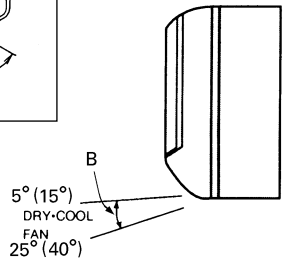
1.1.7 Auto-swing of Flaps

Auto-swing angles are about "A" degrees when the fan is ON, and about "B" degrees when the cooling or program dry operation is ON. The up-and-down swing of the flaps widens the direction of wind.



Fan, cooling, dry operation

	A	B
FT50, 60GA Series	20°	15° ↔ 40°



Notes on flap angles

- The diffuser is kept open in DRY, COOL or FAN mode.

NOTE

Unless [SWING] is selected, you should set the flap at a near-horizontal angle in COOL or DRY mode to obtain the best perfor-mance.

(R2368)

1.1.8 3-minutes Standby Function

When the compressor turns OFF, it doesn't turn ON for 3 minutes.

1.1.9 ON-OFF Operation from the Unit

The unit can be turned ON from the switch on the front panel. This is handy when the remote controller cannot be found or if the batteries are dead.
Pressing the switch again will turn the unit OFF.
When turned ON from the unit itself, the unit runs as follows.

Operation mode	Cool
Fan speed	Auto
Set temperature	22°C

1.1.10 Auto-restart Function

If there is a power cut when the unit is operating, it will automatically resume the same operating mode when the power is restored.

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

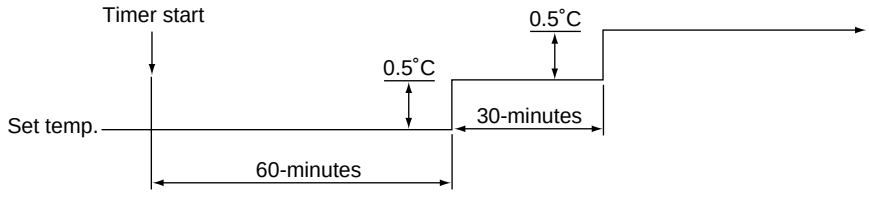
Store Data

- Power ON/OFF
- Operation mode
- Set temperature
- Fan operation mode
- Swing ON/OFF
- Flap angle
- ON/OFF Timer

1.1.11 Night Set Mode

This mode automatically keeps temperature slightly higher than the temperature setting. In this way, there is no need to worry about overcooling while sleeping, and it also saves on electricity.

- Set the OFF timer.
- The unit will cool the room at the set temperature for 1 hour from when the timer starts counting.
- After that, the unit will raise temperature 0.5°C higher than the set temperature and cool for 30 minutes.
- After that, the unit will raise temperature another 0.5°C and continue cooling at that temperature.
- Setting the OFF timer forcibly changes the airflow adjustment to the tap-L setting.
- It is possible to change the airflow setting while the OFF timer is in operation. However, changing the airflow setting cancels the shift-up of the set temperature.

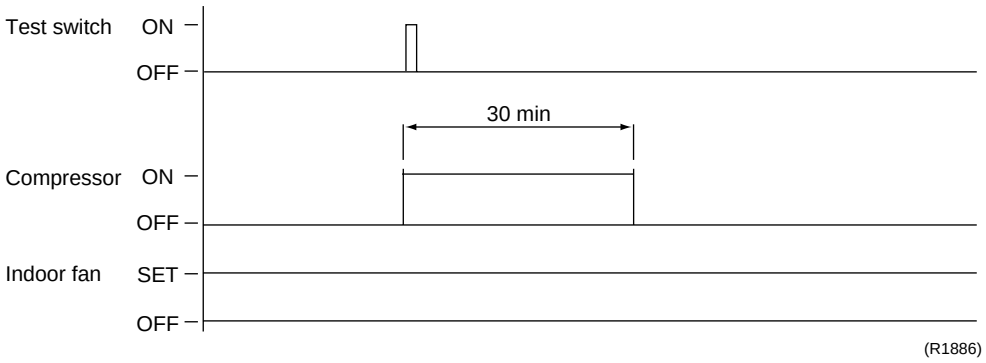


Notes: No higher temperature setting on program dry or auto operation.

1.1.12 Test Run Function

A compressor test run can be made regardless of room temperature and without turning the compressor ON-OFF from the thermistor.

The compressor can be turned ON for A minutes in either the cool or dry mode, even though the compressor is OFF on the thermostat. This is done by setting the test mode from the remote controller.



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

- After trial operation is complete, set the temperature to a normal level (26°C to 28°C).
- For protection, the machine disables restart operation for 3 minutes after it is turned off.

1.1.13 Powerful Operation

During cool and program dry operation, when the POWERFUL button on the remote controller is pressed, the thermistor setting is changed to the lowest setting of the remote controller and the fan runs at the maximum rpm (Note). During fan operation, air is blown at the maximum fan rpm.

Note ··· Max. fan rpm = H tap set by remote controller + 50 rpm

Notes:

- In COOL mode
  To maximize the cooling effect, the temperature setting is fixed to 18°C and the air flow rate is fixed to the maximum setting.
  (H tap + 50 r.p.m)
  The temperature and air flow settings are not variable.
- In DRY mode
  The temperature setting is lowered by 3°C and the air flow rate is slightly increased. You can repeat POWERFUL operation if you need even more dehumidification.

1.1.14 Filter Check Indicator

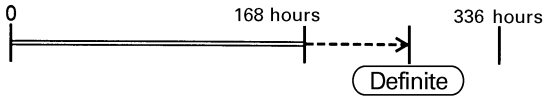
- **The filter check indicator located at the center of the unit will indicate the time for cleaning the air filters.**

The indicator will indicate an appropriate cleaning time depending on the environment (dusty place or not). This will prevent you from forgetting filter cleaning and also prevent performance drop that might be caused by using clogged filters and wasteful use of electricity by approximately 8%.

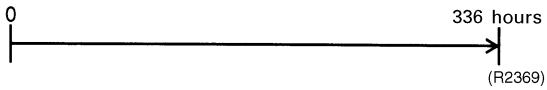
[Contents of indication]

●Sensed by the operation hours and the fan motor voltage

1) Filter clogging (*)



2) Accumulated operation hours

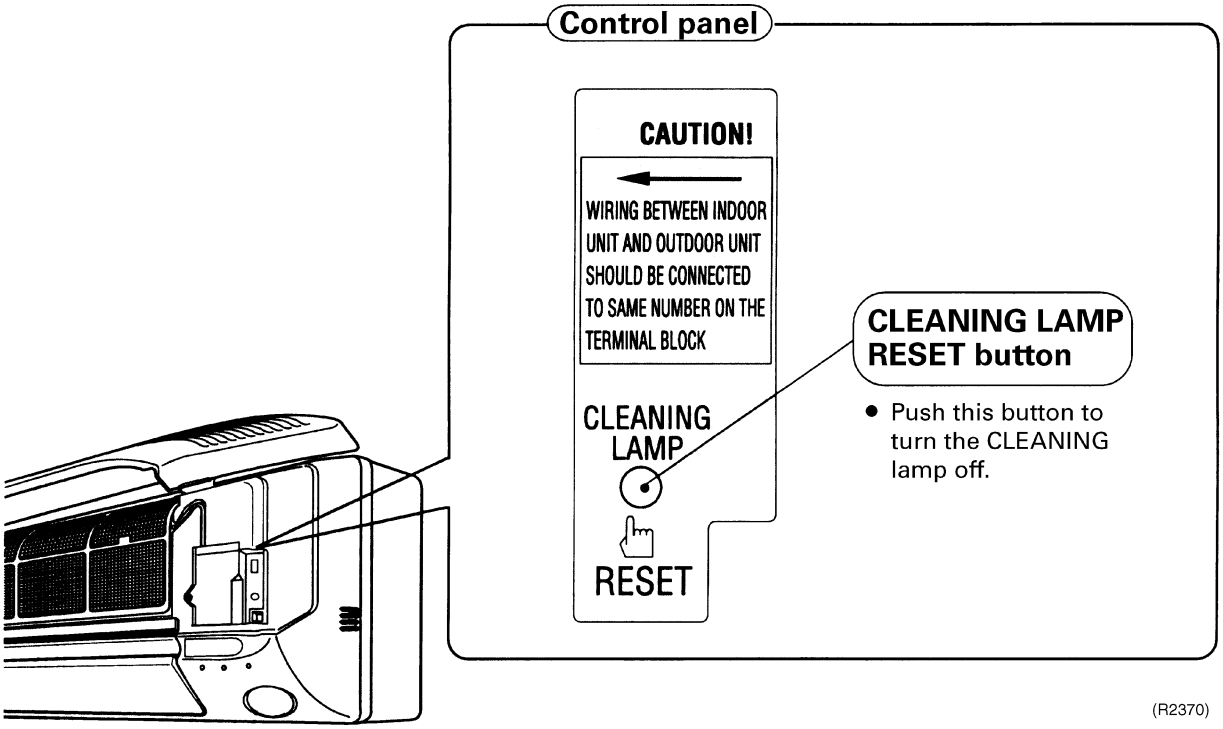


Indicates the earlier one of the above 1) or 2).

* This indicator utilizes the characteristic that the fan motor voltage drops as the crossflow fan gets clogged; it does not detects the amount of filter clogging.

Note:

- When the power supply is reset, the accumulated operation hour is not reset.
- After cleaning and mounting the filters, press the reset button located inside the panel of the unit.


Control panel
CAUTION!
WIRING BETWEEN INDOOR UNIT AND OUTDOOR UNIT SHOULD BE CONNECTED TO SAME NUMBER ON THE TERMINAL BLOCK
CLEANING LAMP
RESET
CLEANING LAMP RESET button
• Push this button to turn the CLEANING lamp off.
(R2370)

Part 5
System Configuration

1. Instruction

1.1 FT50 / 60GAVE, FT50 / 60GAVEA, FT50 / 60GAVAL

Safety Precautions

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

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

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

WARNING

- **Do not expose your body to the cool air for a long time, do not cool the room too much.**
  It will affect your physical conditions and cause health problems.
- **Do not put a finger, a rod or other objects into the air outlet or inlet.**
  As the fan is rotating at a high speed, it will cause injury.
- **Do not attempt to repair, relocate, modify or reinstall the air conditioner by yourself.**
  Incorrect work will cause electric shocks, fire etc. For repairs and reinstallation, consult the shop where you bought the air conditioner.
- **If anything abnormal such as a burning smell occurs, stop the operation immediately and turn the breaker OFF.**
  Continued abnormal operation will cause troubles, electric shocks, fire etc. If anything is abnormal, consult the shop where you bought the air conditioner.
- **If the air conditioner is not cooling or heating properly, the refrigerant may be leaking, so see the dealer where the unit was purchased. Check with a qualified repairman before attempting any repairs, which might accompany addition of refrigerant.**
  The refrigerant used in the air conditioner is safe. Although leaks should not occur, if for some reason any refrigerant happens to leak into the room, make sure it does not come in contact with any flame, such as fan heaters, kerosene heaters, or gas ranges, as this may result noxious substances being generated.

CAUTION

- **Do not use the air conditioner for preservation purposes.**
  Do not use it for preserving precision instruments, foods, plants, animals, works of fine arts etc. Performance or quality may deteriorate and animal or plant life may be shorter.
- **Do not operate the air conditioner with a wet hand.**
  It may cause an electric shock.
- **Ventilate the room from time to time.**
  Be careful especially when using a burning appliance in the same room. Insufficient ventilation may cause shortage of oxygen.
- **Before cleaning, be sure to stop the operation and turn the breaker OFF.**
  As a fan is rotating at a high speed, cleaning during operation may cause injury.
- **After a long use, check the unit stand and fittings for damage.**
  The unit may drop and cause injury if damage is left unrepaired.
- **Do not stand or sit on the outdoor unit. Do not place any object on the unit.**
  The object or the person may fall down or drop, causing injury.

2

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

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

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

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

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

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

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

Installation

WARNING

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

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

CAUTION

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

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

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

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

Installation site

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

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

Consider nuisance to your neighbours from noises

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

Electrical work

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

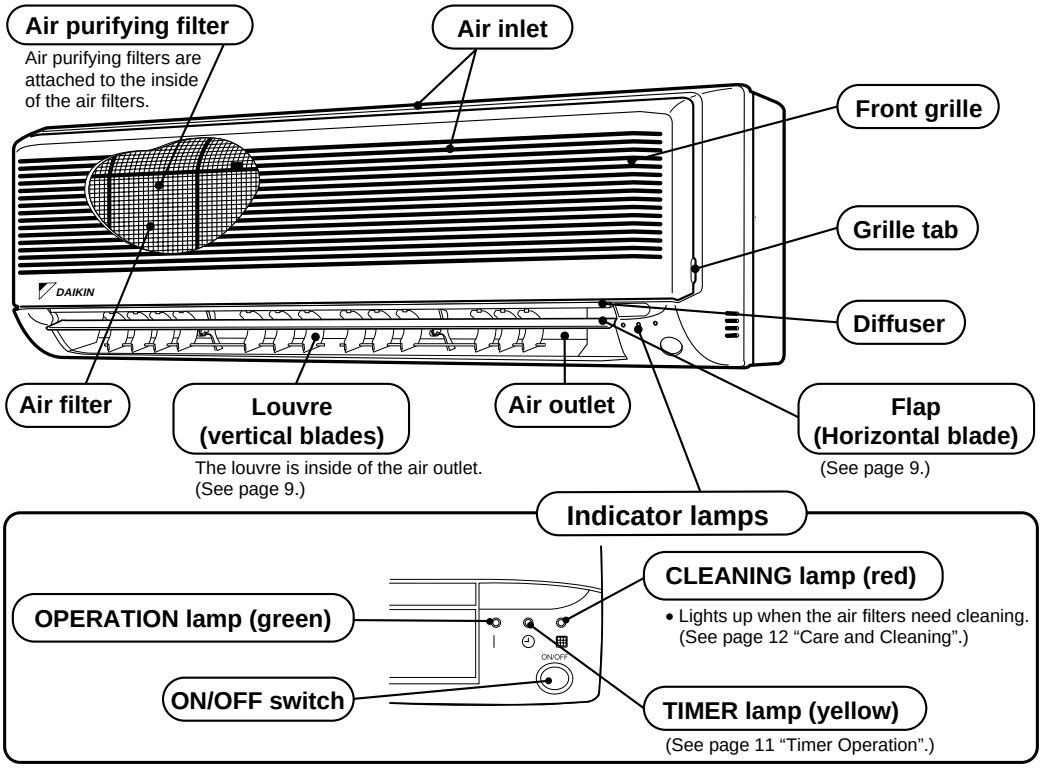
System relocation

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

4

Names of Parts

Indoor unit

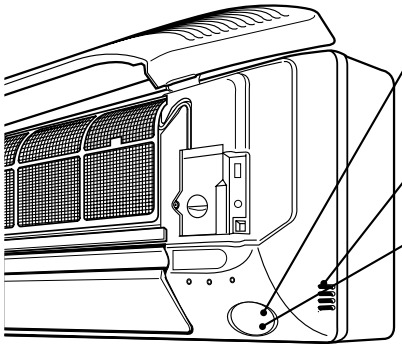


Opening the front grille

How to open the front grille: (See Page 8.)

⚠ CAUTION

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



Receiver:

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

Room temperature sensor:

- It senses the air temperature around the unit.

ON/OFF switch

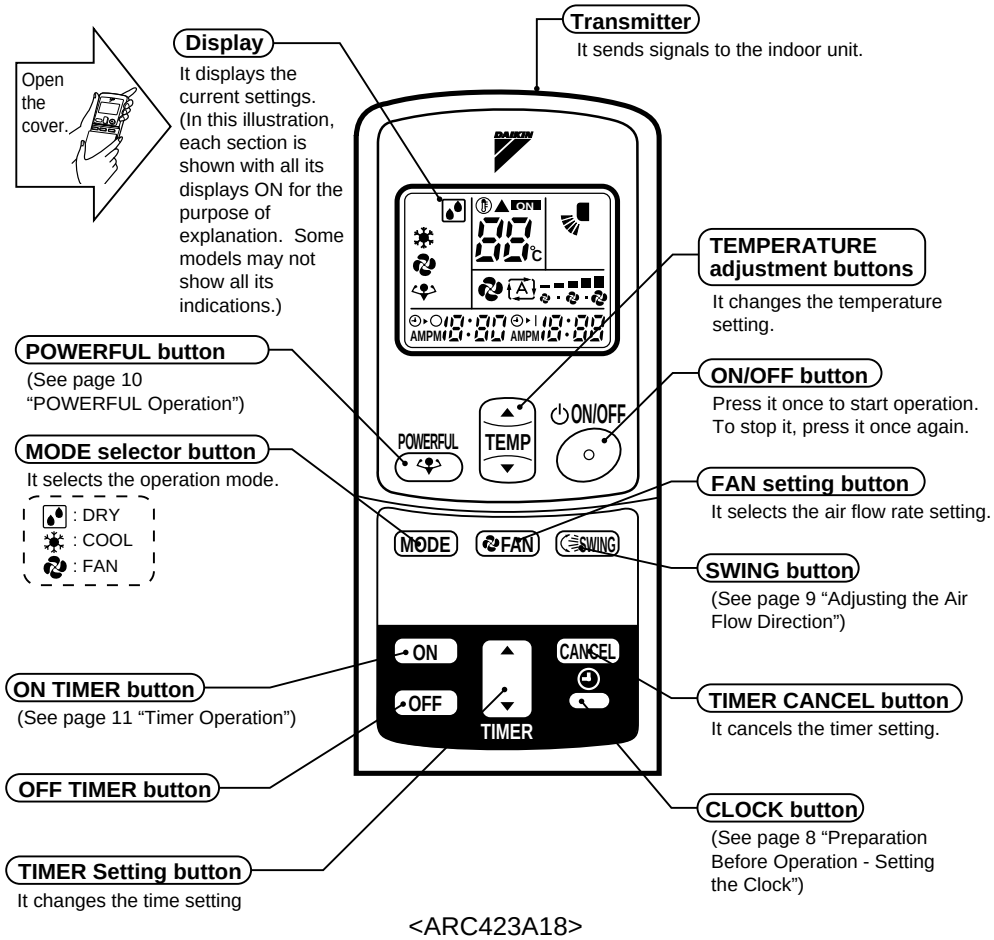
- Push this switch once to start operation. Push once again to stop it.
- The operation mode refer to the following table.

	Mode	Temperature setting	Air flow rate
FT	COOL	22˚C	AUTO

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

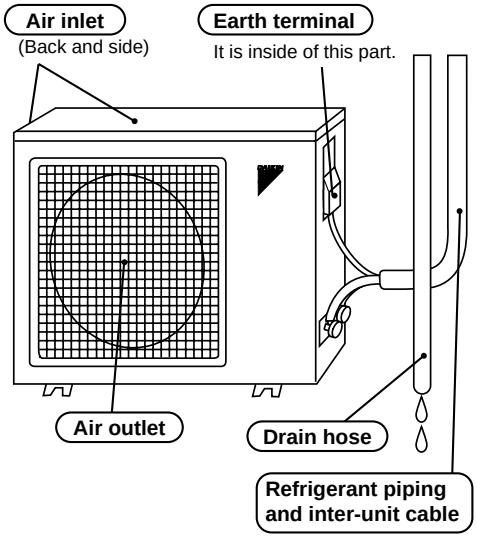
5

Remote controller



<ARC423A18>

Outdoor unit

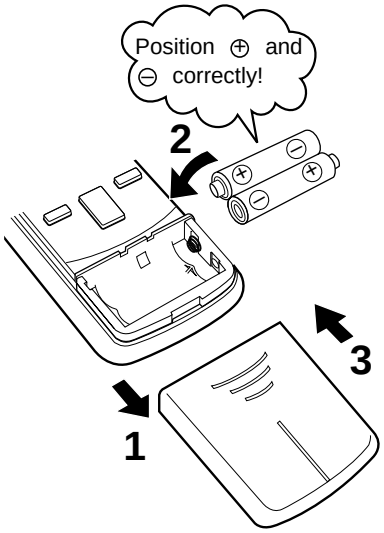


6

Preparation before Operation

Remote controller

Â Setting the batteries



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

2 Set two dry batteries (AAA).

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

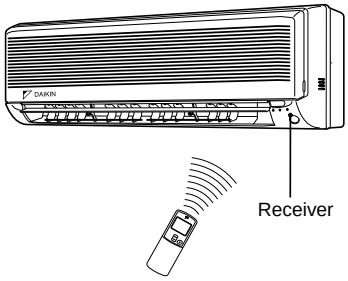
ATTENTION

About batteries

¸ When replacing the batteries, use batteries of the same type, and replace the two old batteries together.
¸ When the system is not used for a long time, take the batteries out.
¸ When the operation display screen of the remote controller is hard to see and the reception become hard, replace the batteries with new AAA batteries.
¸ The attached batteries are provided for the initial use of the system.
The usable period of the batteries may be short depending on the manufactured date of the air conditioner.

Â Operating the remote controller

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

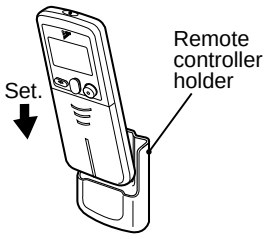


Â To fix the remote controller holder on the wall

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

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

3 Place the remote control in the remote control holder.



¸ To remove, pull it upwards

ATTENTION

About the remote controller

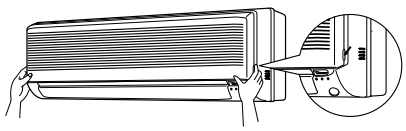
¸ Never expose the remote controller to direct sunlight.
¸ Dust on the signal transmitter or receiver will reduce the sensitivity. Wipe off dust with soft cloth.
¸ Signal communication may be disabled if an electronic-starter-type fluorescent lamp (such as inverter-type lamps) is in the room. Consult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

Indoor unit

Â Setting the air purifying filters

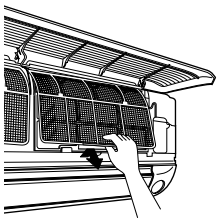
1 Open the front grille.

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



2 Pull out the air filters.

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



3 Set the air purifying filters.

¸ Attach an air purifying filter to each air filter.
(See page 12 “Care and cleaning”)

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

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

Â Setting the clock

1 Press .

AM 0:00 is displayed.

blinks.

2 Press TIMER to set the clock to the present time.

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

3 Press .

: blinks.

(Now the clock is set.)

Â Turn the breaker ON

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

NOTE

Tips for saving energy

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

Recommended temperature setting
For cooling: 26°C – 28°C

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

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

Please note

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

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

¸ Use the air conditioner in the following conditions.

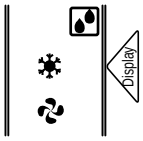
Mode	Operating conditions	If operation is continued out of this range
COOL	Outdoor temperature : 19 to 46 °C Indoor temperature : 18 to 32 °C Indoor humidity : 80% max.	•A safety device may work to stop the operation. (In multi system, it may work to stop the operation of the outdoor unit only.) •Condensation may occur on the indoor unit and drip.
DRY	Outdoor temperature : 21 to 46 °C Indoor temperature : 18 to 32 °C Indoor humidity : 80% max.	•A safety device may work to stop the operation. •Condensation may occur on the indoor unit and drip.

8

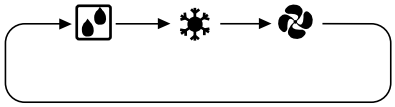
DRY · COOL · FAN Operation
Adjusting the Air Flow Direction

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

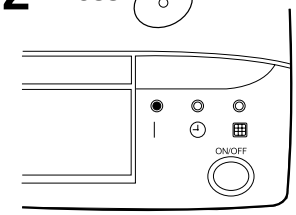
1 Press MODE and select a mode.



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



2 Press ON/OFF .



Then OPERATION lamp lights up.

Â To stop:

Press ON/OFF once again.

Then OPERATION lamp goes off.

Â To change the temperature setting:

DRY or FAN mode	COOL mode
The temperature setting is not variable.	Press TEMP to raise / lower the temperature.
	Set to the temperature you like.

Â To change the air flow rate setting:

Press FAN .

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

¸ At smaller air flow rates, cooling or heating effect is also smaller.

Â To change the air flow direction:

(See page 9.)

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

Adjusting the horizontal blade (flap)

Press SWING .

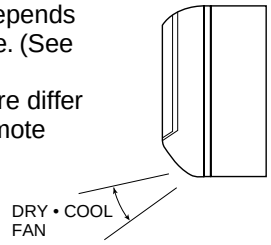
¸ Every time the button is pressed, " " appears or disappears.

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

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

Notes on flap angles

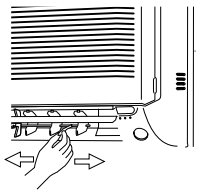
¸ When SWING is selected, the flap swinging range depends on the operation mode. (See the figure.)
¸ The real flap angles are differ from the display of remote controller.



ATTENTION

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

Adjusting the vertical blade (louvre)



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

ATTENTION

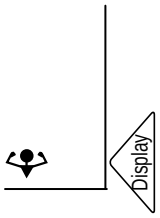
¸ Be careful when adjusting the louvre. Inside the air outlet, a fan is rotating at a high speed.

Powerful Operation

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

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

1 Press .



Â **To cancel POWERFUL operation:**

Press .

Notes on POWERFUL operation

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

10

Timer Operation

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

OFF TIMER operation

¸ Check that the clock is correct.
If not, set the clock to the present time. (See page 8.)

1 Press OFF while the air conditioner is operating.

AM 0:00 is displayed.

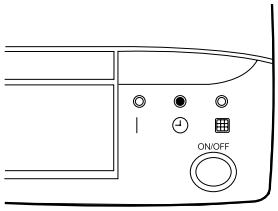
blinks.

* Previous time setting appears on display.

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

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

3 Press OFF once again.



Then the TIMER lamp lights up.

Â **To cancel the timer:**

Press CANCEL .

Then the TIMER lamp goes off.

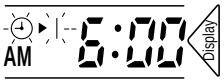
Notes on OFF TIMER

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

ON TIMER operation

¸ Check that the clock is correct. If not, set the clock to the present time. (See page 8.)

1 Press ON while the air conditioner is not operating.



AM 6:00 is displayed.

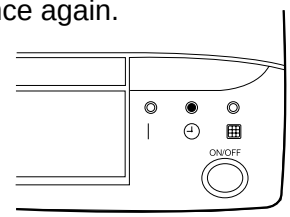
blinks.

* Previous time setting appears on display.

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

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

3 Press ON once again.



Then the TIMER lamp lights up.

Combining ON TIMER and OFF TIMER

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

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

Notes on ON,OFF TIMER

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

ATTENTION

Â 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.

Care and Cleaning

⚠ CAUTION

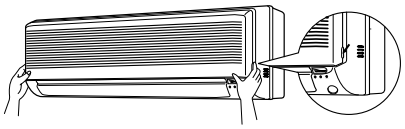
Before cleaning, be sure to stop the operation and turn the breaker OFF.

Cleaning the air filters

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

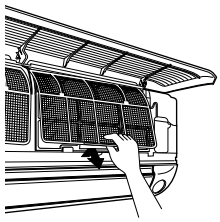
1 Open the front grille.

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



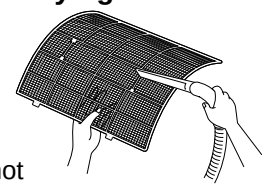
2 Pull out the air filters.

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



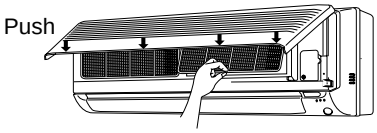
3 Take off the air purifying filters and clean them.

¸ Wash them with water, or clean them with a vacuum cleaner.



¸ If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them up in the shade.

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



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

NOTE

¸ In a dusty environment, clean the air filters at least once in every two weeks.

¸ Operation with dusty air filters lowers the cooling capacity and wastes energy.

Cleaning the indoor and outdoor units and the remote controller

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

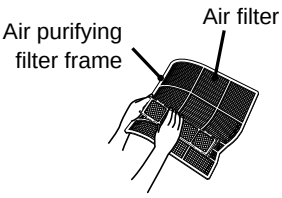
Replacing air purifying filters

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

¸ Air purifying filters need to be replaced regularly.

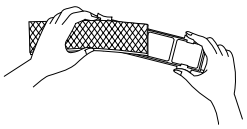
1 Open the front grille and pull out the air filters.

2 Take off the air purifying filters.

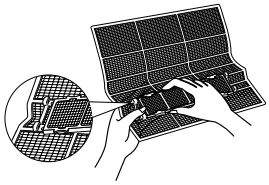


• Hold the recessed parts of the frame and unhook the four claws.

3 Detach the filter element and attach a new one.



4 Attach the air purifying filter.



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

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

NOTE

¸ To order air purifying filters, contact the service shop where you bought the air conditioner.

¸ Once the air purifying filter element gets dirty, it is not reusable but must be thrown away.

¸ Operation with dirty air purifying filters :
• cannot clean the air.
• results in poor cooling.
• may cause odour.

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

Cleaning the front grille

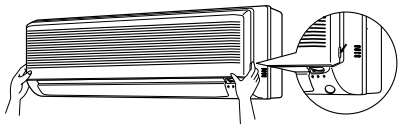
You may remove the front grille for cleaning.

⚠ CAUTION

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

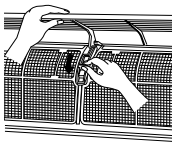
1 Open the front grille.

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



2 Remove the front grille.

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

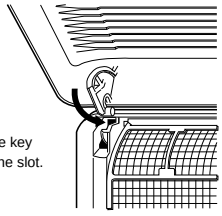


3 Clean the front grille.

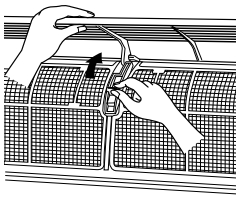
- You may wipe it with a soft cloth soaked in water.
- Only neutral detergent may be used.
- You may wash the grille with water. After washing, dry it with cloth, then dry it up in the shade.

4 Attach the front grille.

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



Fit the key into the slot.



Slide up the knob.

Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the earth wire is not disconnected or broken.
Check that the drain comes smoothly out of the drain hose during COOL or DRY operation. - If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the service shop if this is the case.

Before a long idle period

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

1 Press MODE and select " ✿ ".

2 Press ⏻ON/OFF .

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

Trouble Shooting

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

Case	Explanation
Operation does not start soon. ¸ **When ON/OFF button was pressed soon after operation was stopped.** ¸ **When the mode was reselected.**	¸ This is to protect the air conditioner. You should wait for about 3 minutes.
The outdoor unit emits water or steam.	Â In COOL or DRY mode ● Moisture in the air condenses into water on the cool surface of outdoor unit piping and drips.
Mists come out of the indoor unit.	Â This happens when the air in the room is cooled into mist by the cold air flow during cooling operation.
The indoor unit gives out odour.	Â This happens when smells of the room, furniture, or cigarettes are absorbed into the unit and discharged with the air flow. (If this happens, we recommend you to have the indoor unit washed by a technician. Consult the service shop where you bought the air conditioner.)
The outdoor fan rotates while the air conditioner is not in operation.	Â After operation is stopped: ● The outdoor fan continues rotating for another 60 seconds for system protection. Â While the air conditioner is not in operation: ● When the outdoor temperature is very high, the out door fan starts rotating for system protection.
The operation stopped suddenly. **(OPERATION lamp is on)**	Â For system protection, the air conditioner may stop operating on a sudden large voltage fluctuation. It automatically resumes operation in about 3 minutes.

14

¸ **Check again**
Please check again before calling a repair person.

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

¸ Call the service shop immediately.

⚠ WARNING

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

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

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

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

Turn the breaker OFF and call the service shop.

Â After a power failure

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

Â Lightening

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

We recommend periodical maintenance

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

16

3P062628-8F

Part 6
Service Diagnosis

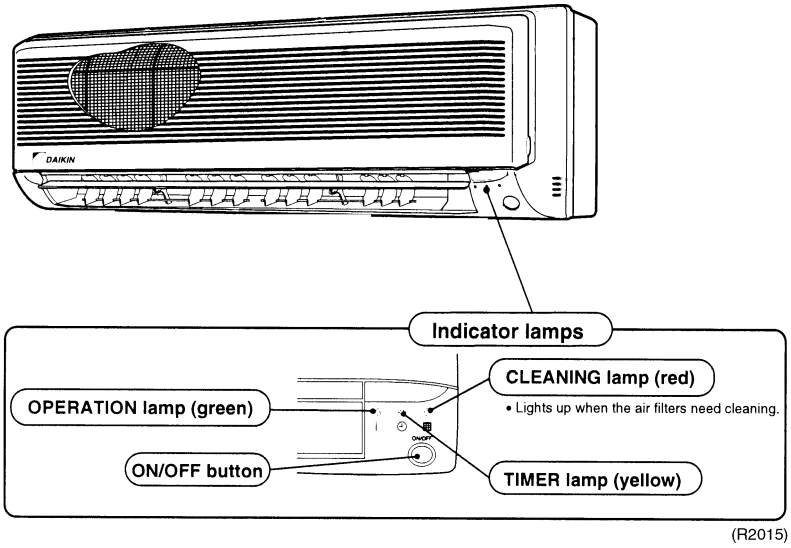
1. Caution for Diagnosis

1.1 Troubleshooting with The Operation Lamp

The Operation lamp flashes when any of the following errors is detected.
When a protection device of the indoor or outdoor unit is activated or when the thermistor malfunctions, disabling equipment operation.

1.1.1 Location of Operation Lamp

FT50 / 60GAVE
FT50 / 60GAVEA
FT50 / 60GAVAL



(R2015)

2. Problem Symptoms and Measures

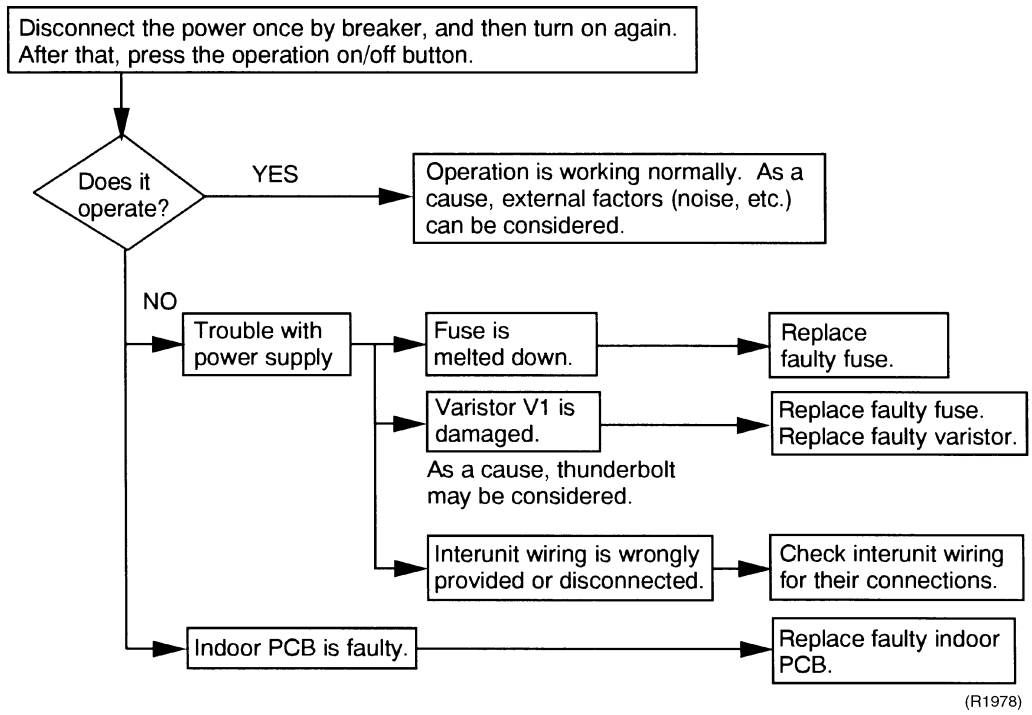
2.1 General Check

Problem Symptom	Check Item	Details of Measure	Page No. to be referred
None of The Units Operates.	Check the power supply.	Check to make sure that the rated voltage is supplied.	—
	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Check the outside air temperature.	Operation cannot be used when the outside temperature is below 19.4 °C.	—
	Diagnosis with remote controller indication	—	45
	Check the remote controller addresses.	Check to make sure that address settings for the remote controller and indoor unit are correct.	—
Operation Sometimes Stops.	Check the power supply.	A power failure of 2 to 10 cycles can stop air conditioner operation. (Operation lamp OFF)	—
	Check the outside air temperature.	Operation cannot be used when the outside temperature is below 19.4°C.	—
	Diagnosis with remote controller indication	—	45
Some indoor units do not operate.	Check the type of the indoor units.	Check to make sure that the indoor unit type is compatible with the outdoor unit.	—
	Diagnosis with remote controller indication	—	45
Equipment operates but does not cool, or does not heat (only for heat pump model).	Check for thermistor detection errors.	Check to make sure that the main unit's thermistor has not dismounted from the pipe holder.	—
	Diagnosis with remote controller indication	—	45
	Diagnosis by service port pressure and operating current	Check for insufficient gas.	—
Large Operating Noise and Vibrations	Check the installation condition.	Check to make sure that the required spaces for installation (specified in the Engineering data, etc.) are provided.	—

2.2 Troubleshooting (Fault Diagnosis and Countermeasure)

Case 1

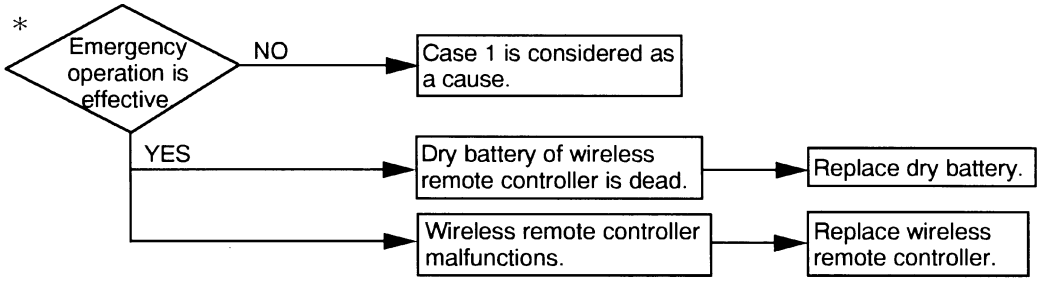
Phenomenon : Air conditioner does not operate.



(R1978)

Case 2

Phenomenon : Air conditioner does not operate with wireless remote controller.

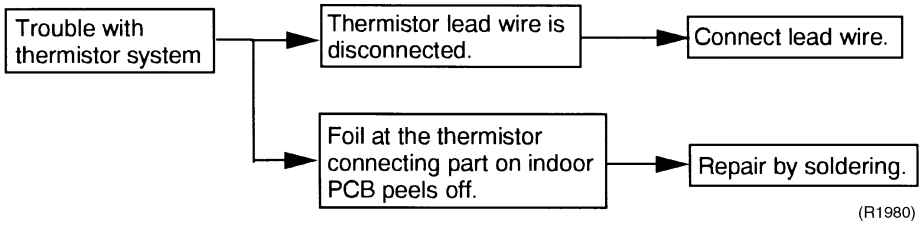


* Indoor unit has emergency operation switch.

(R1979)

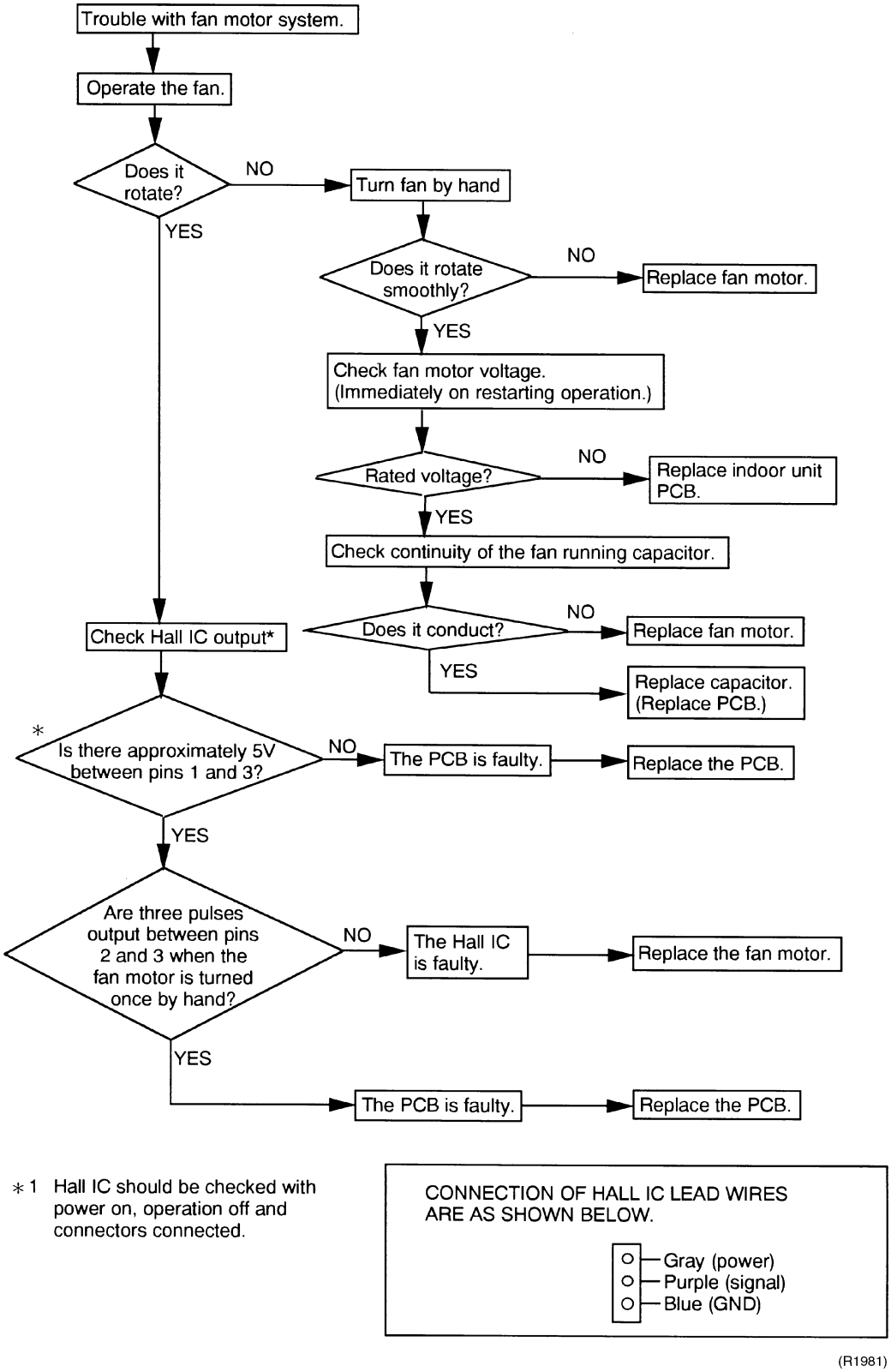
Case 3

Phenomenon : Air conditioner does not operate, and LED for operation blinks.



(R1980)

Case 4 **Air conditioner does not operate, and LED for operation blinks.**

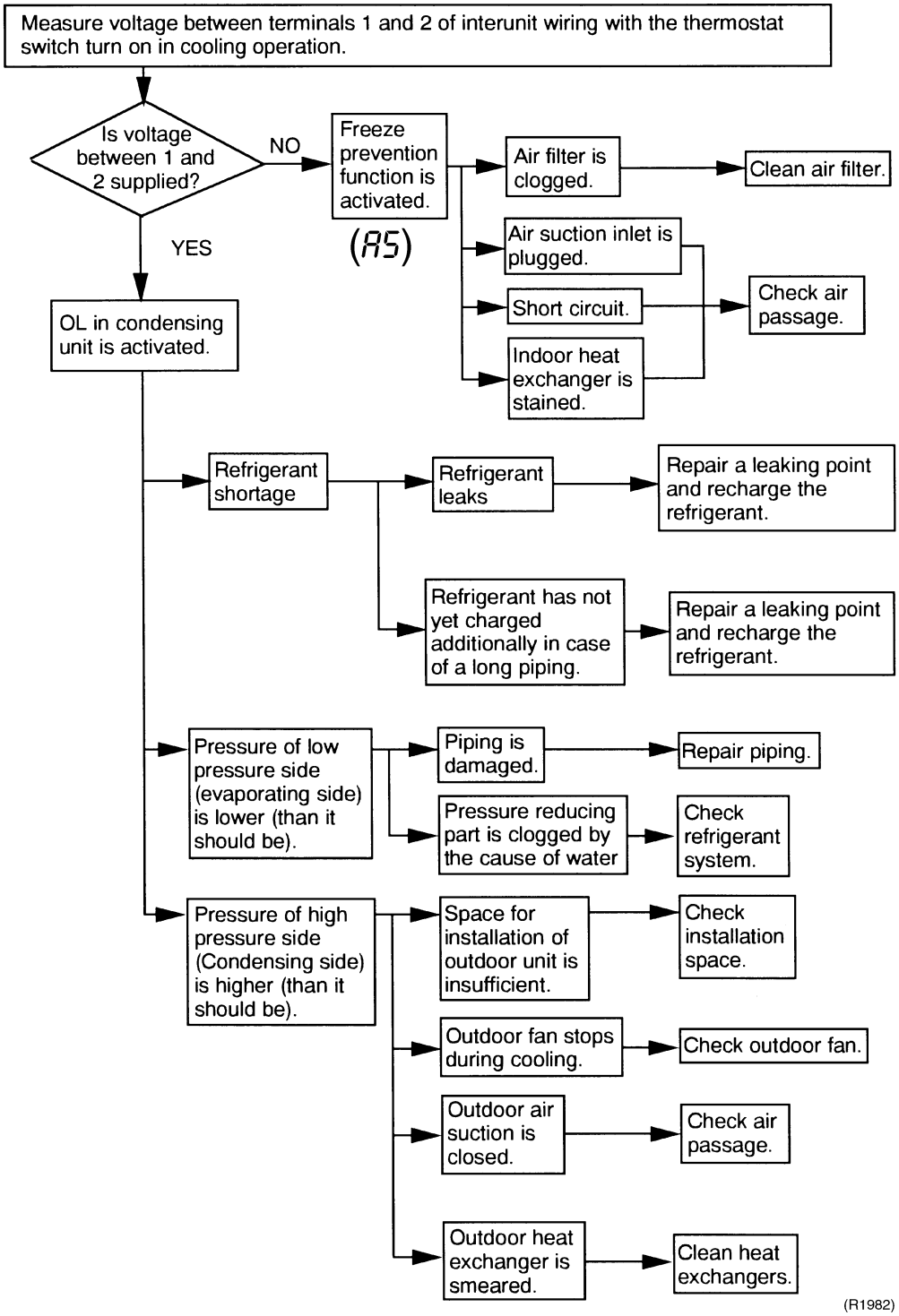


∗1 Hall IC should be checked with power on, operation off and connectors connected.

(R1981)

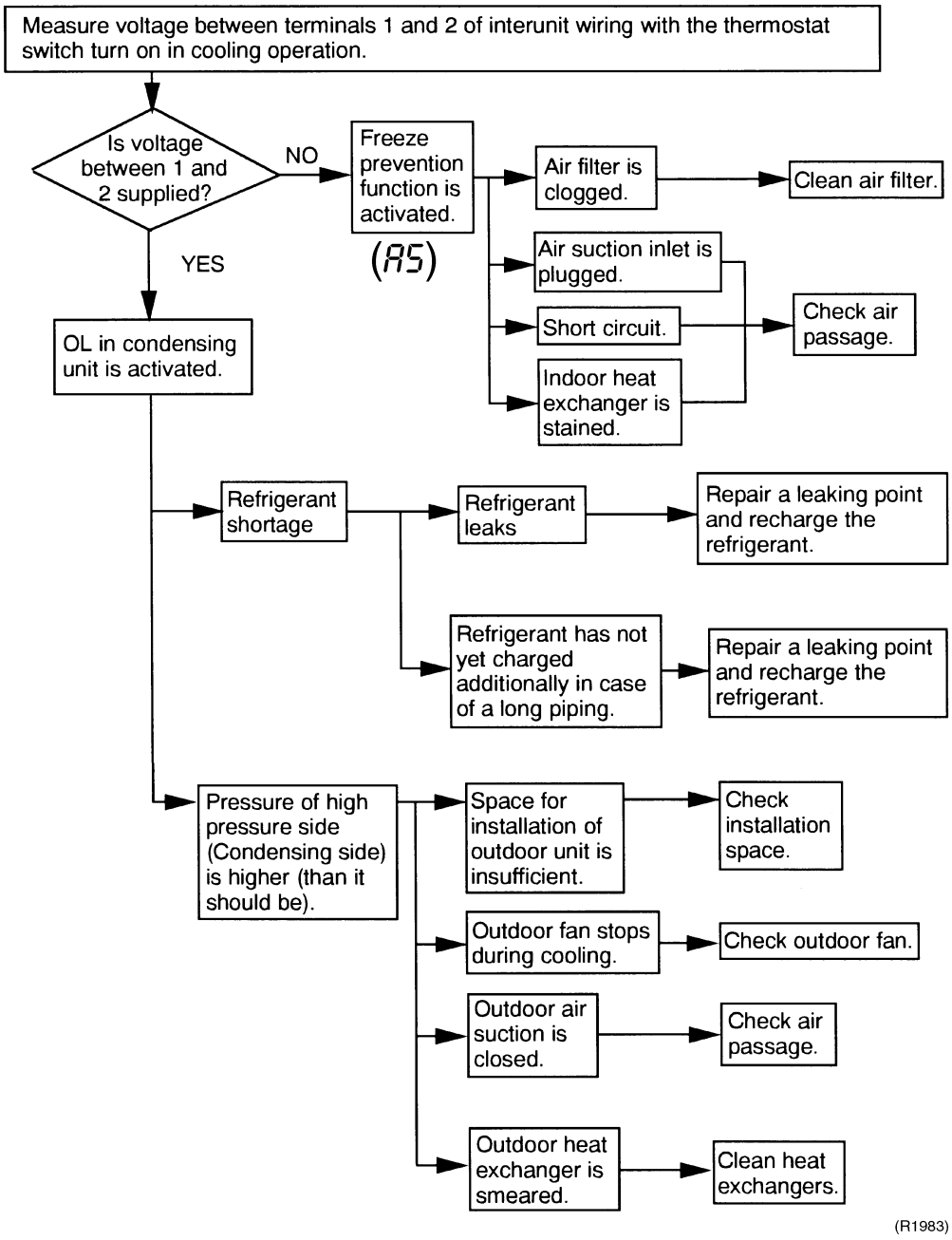
Case 5

Phenomenon : Air conditioner does not come into cooling though indoor fan is operating.



Case 6

Phenomenon : Air conditioner does not come into cooling though indoor fan is operating.

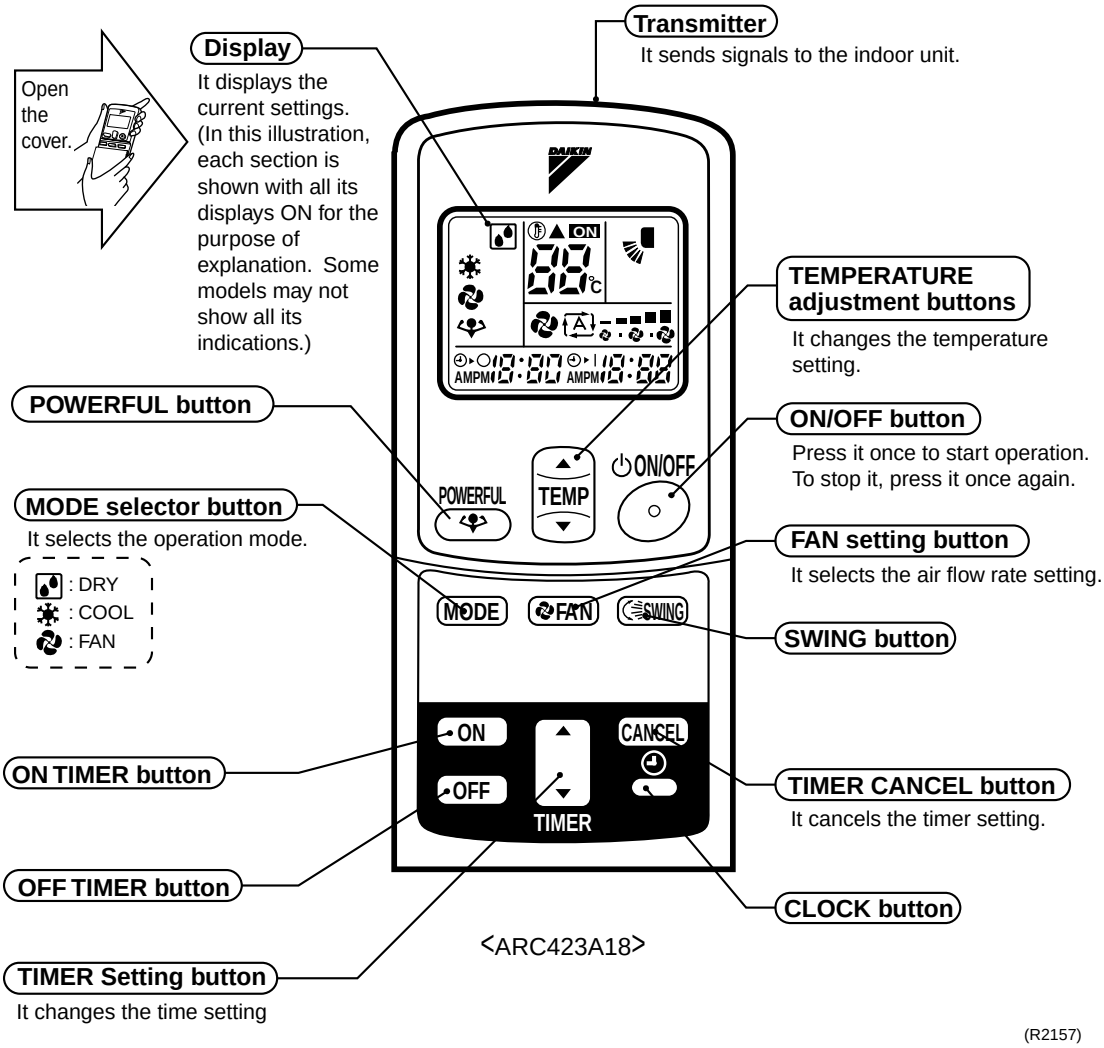


3. Service Check Function

3.1 Remote Controller Display

The temperature display sections on the main unit indicate corresponding codes.

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



(R2157)

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

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

No.	Code	No.	Code	No.	Code
1	00	11	E7	21	UA
2	U4	12	C7	22	A5
3	F3	13	H8	23	J9
4	E6	14	J3	24	E8
5	L5	15	A3	25	P4
6	A6	16	A1	26	L3
7	E5	17	C4	27	L4
8	LC	18	C5	28	H6
9	C9	19	H9	29	H7
10	U0	20	J6	30	U2

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

4. Troubleshooting by Indication on the Remote Controller

4.1 Indoor Units

- : Not used for troubleshooting

∗ : Varies depending on the cases.

Indication on the remote controller	Description of The Fault	Details of fault (Refer to the indicated page.)
00	Indoor unit in normal condition (Conduct a diagnosis of the outdoor unit.)	—
A1	Faulty indoor unit PCB	46
A5	Operation halt due to the freeze protection function	47
A6	Faulty fan motor (AC motor stop)	48
C4	Heat exchanger temperature thermistor or related abnormality	49
C9	Suction thermistor or related abnormality	49
∗	Faulty indoor unit PCB	50

4.2 Faulty PCB

Remote Controller Display

A1

Indoor unit LED Display

Method of Malfunction Detection

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

Malfunction Decision Conditions

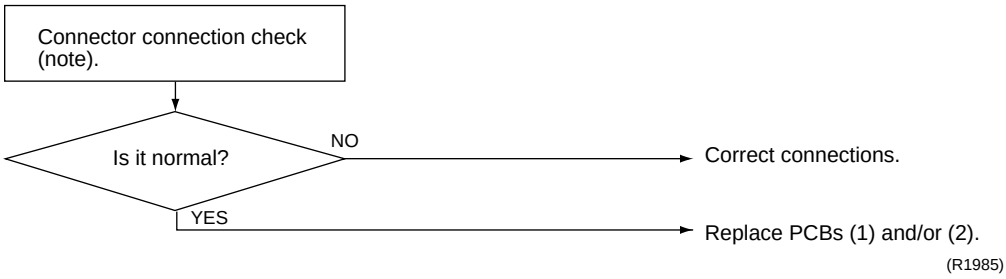
When there is no zero-cross detection in approximately 10 continuous seconds.

Supposed Causes

- Faulty indoor unit PCB
- Faulty connector connection

Troubleshooting

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



(R1985)

Note: Connector Nos. vary depending on models.
Control connector····S26 and S27

4.3 Freeze-Up Protection (Thermistor Activation)

Remote Controller Display

A5

Indoor unit LED Display

Method of Malfunction Detection

- The freeze protection control (operation halt) is activated during cooling operation according to the temperature detected by the indoor unit heat exchanger thermistor.

Malfunction Decision Conditions

- Freeze protection
  When the indoor unit heat exchanger temperature is below 0°C during cooling operation.

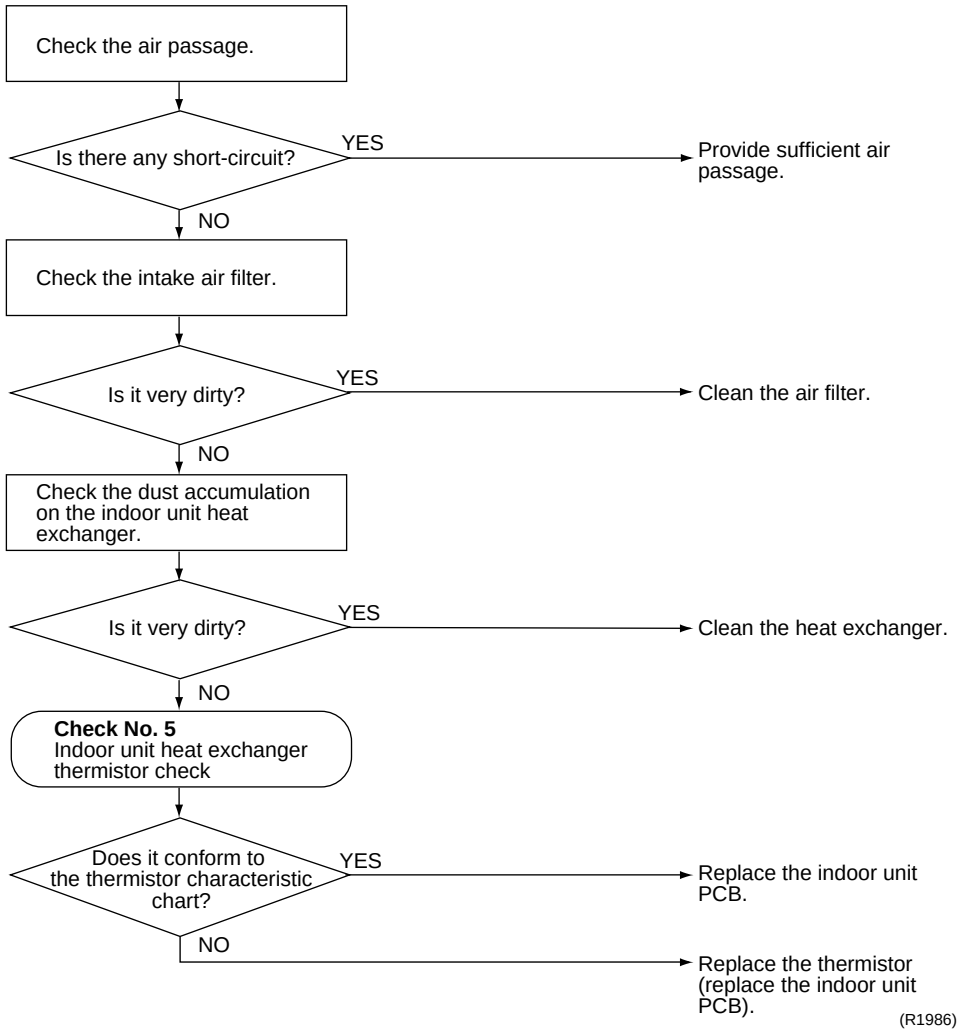
Supposed Causes

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

Troubleshooting

Check No.5
Refer to P.51

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



(R1986)

4.4 Operation Halt Due to Fan Motor (AC Motor) or Related Abnormality

Remote Controller Display

A6

Indoor unit LED Display

Method of Malfunction Detection

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

Malfunction Decision Conditions

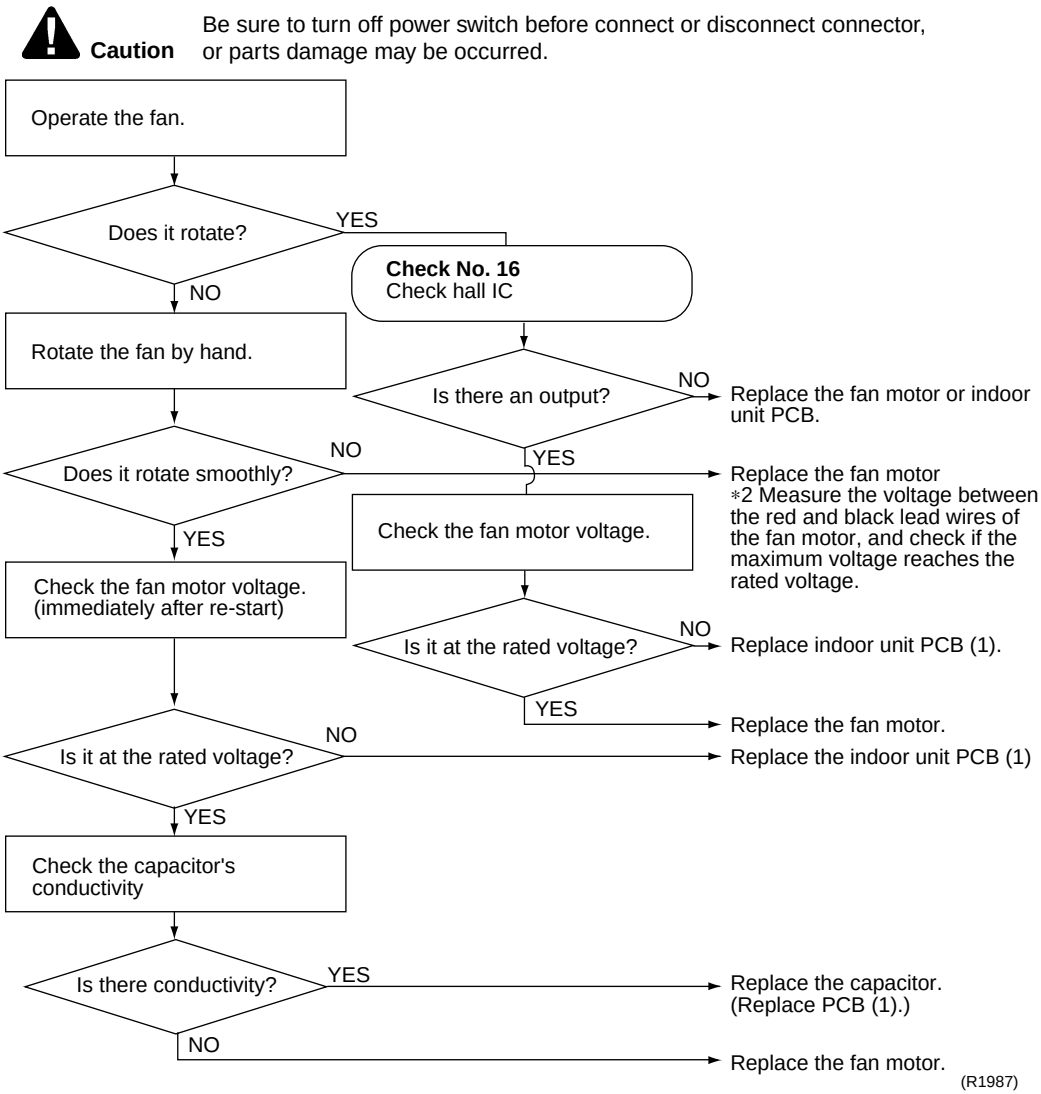
When the detected rotation speed is less than 50% of the HH tap under maximum fan motor rotation demand.

Supposed Causes

- Operation halt due to short circuit inside the fan motor winding.
- Operation halt due to breaking of wire inside the fan motor.
- Operation halt due to breaking of the fan motor lead wires.
- Operation halt due to faulty capacitor of the fan motor.
- Detection error due to faulty indoor unit PCB (1).

Troubleshooting

Check No.16
Refer to P.52



4.5 Operation Halt Due to Detection of Thermistor or Related Abnormality

Remote Controller Display

C4, C9

Indoor unit LED Display

Method of Malfunction Detection

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

Malfunction Decision Conditions

When the thermistor input is more than 4.96 V or less than 0.04 V during compressor operation∗.
∗ (reference)
When above about 212°C (less than 120 Ω) or below about -50°C (more than 1,860 kΩ).

Note: The values vary slightly in some models.

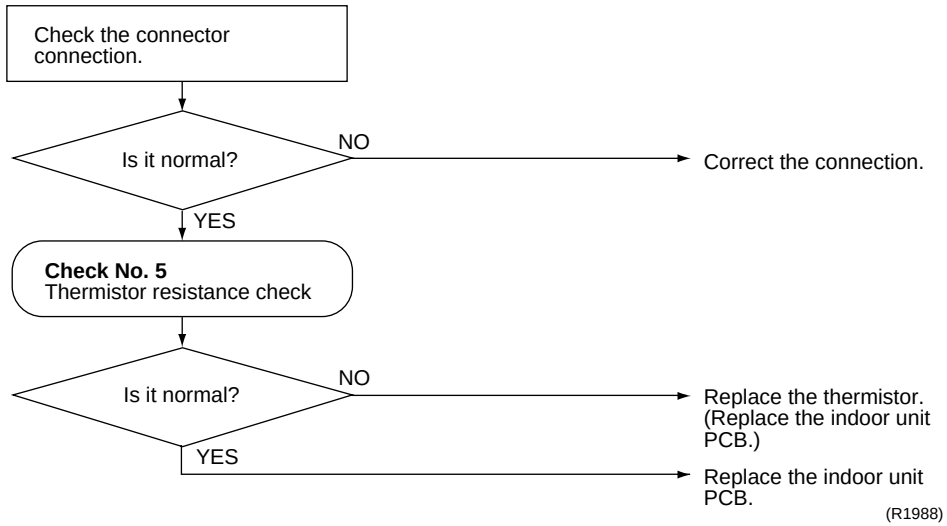
Supposed Causes

- Faulty connector connection
- Faulty thermistor
- Faulty PCB

Troubleshooting

Check No.5
Refer to P.51

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



C4 : Heat exchanger temperature thermistor.
C9 : Suction air thermistor

4.6 Faulty Indoor Unit PCB

Remote Controller Display

*

Indoor unit LED Display

Method of Malfunction Detection

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

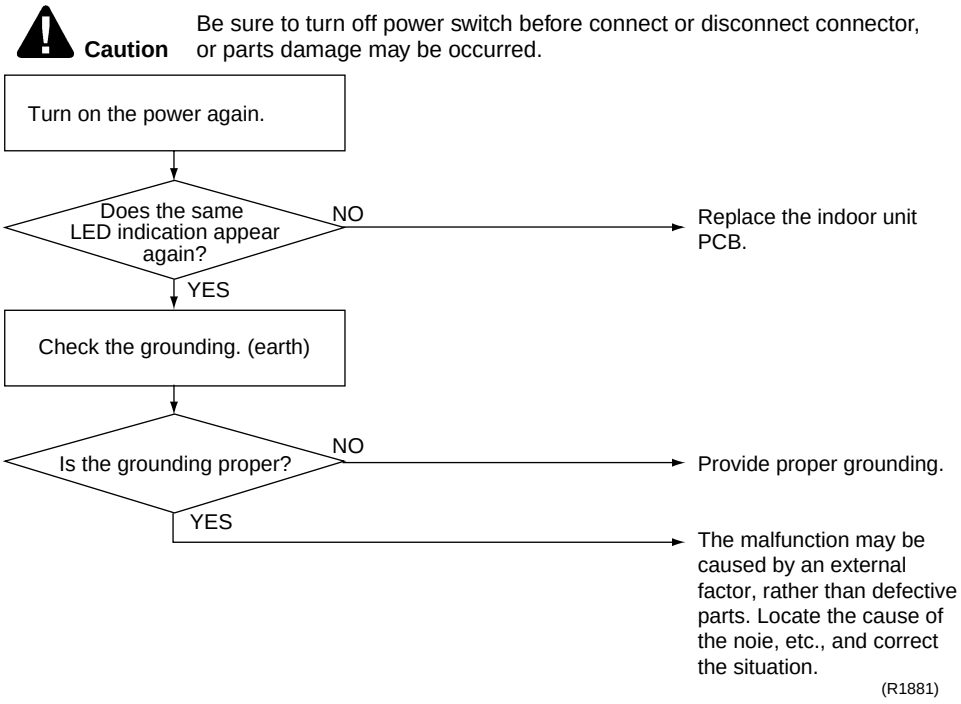
Malfunction Decision Conditions

When the microcomputer program does not function properly.

Supposed Causes

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

Troubleshooting



5. Check

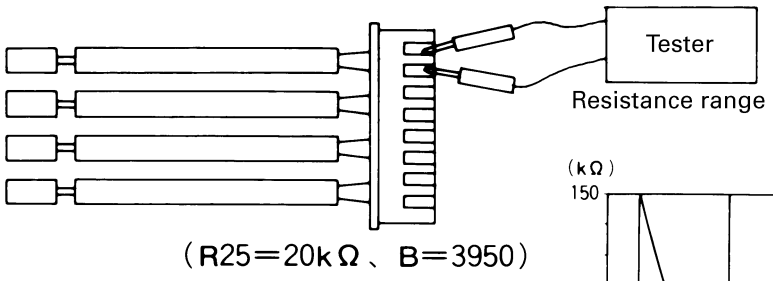
5.1 How to Check

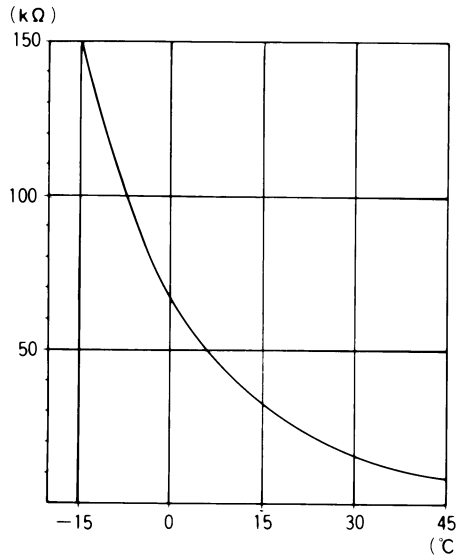
5.1.1 Thermistor Resistance Check

Check No.5

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

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

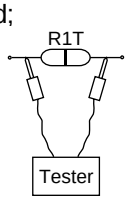




(R1989)

For the models whose thermistor is directly equipped on the printed circuit board;

- Remove the signal receiver and the display printed circuit board (disconnect the connector too), and then measure ohm by an ohmmeter at the both ends.
- The relation between temperature and resistance is in common with the existing models.



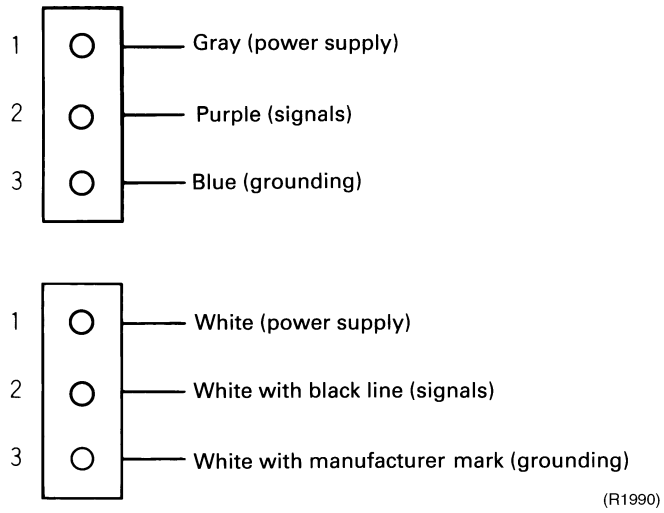
5.1.2 Inverter Units Hall IC Check

Check No.16

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

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

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

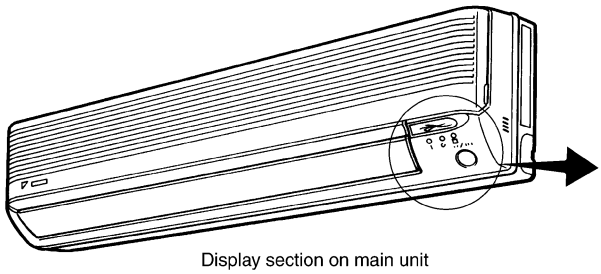
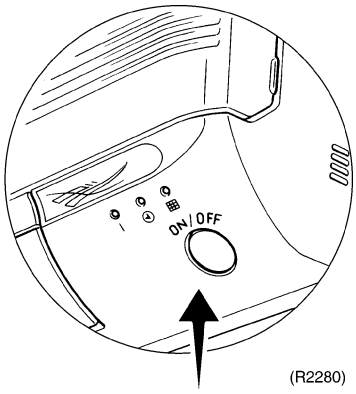
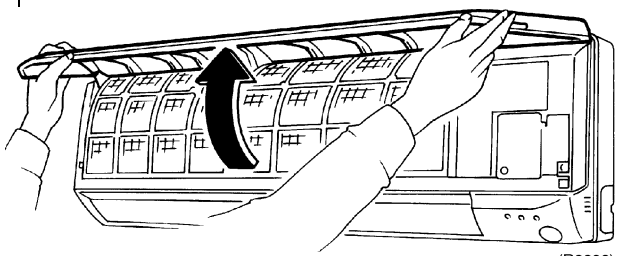
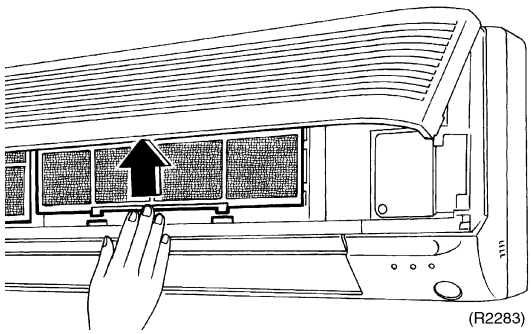


Part 7
Removal Procedure

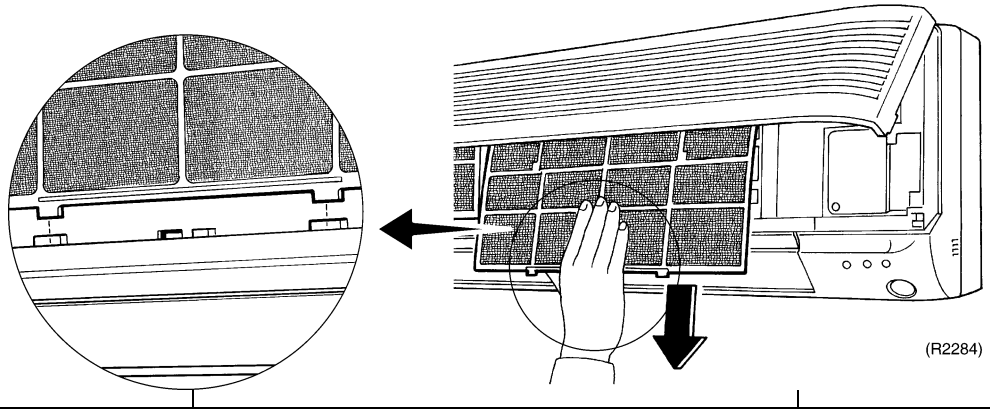
1. For FT50 / 60GAVE, FT50 / 60GAVEA, FT50 / 60GAVAL

1.1 Removal of Air Filter

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

Step	Procedure	Points
1. External features	 Display section on main unit  (R2280)	
2. Removing air filters		ON/OFF switch on main unit also functions as remote controller signal receiving section.
1 Pull protrusions on left and right sides of grille with fingers and open front grille all the way.	 (R2282)	
2 Lift center section of air filter and disengage hooks at two locations.	 (R2283)	

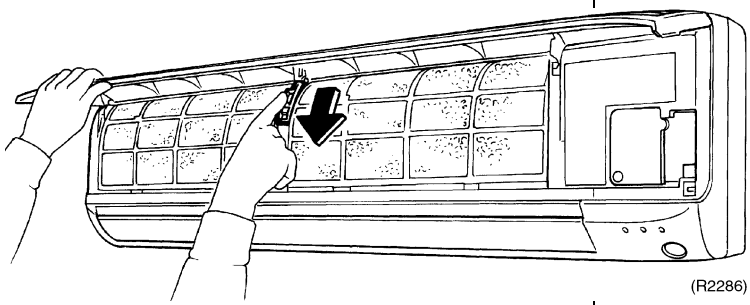
Step	Procedure	Points
3	Remove air filter by pulling forward.	■ Left and right filters are interchangeable. ■ To re-install, insert air filter along the guide.

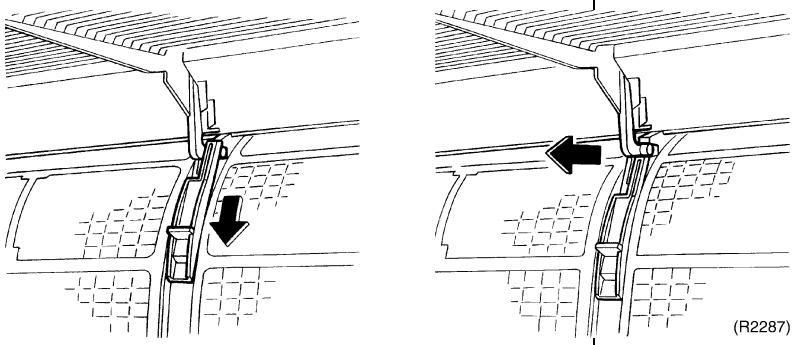


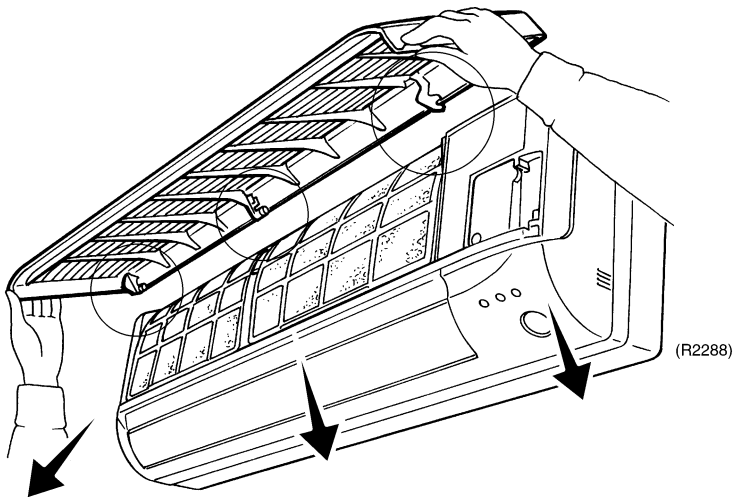
1.2 Removal of Front Grille

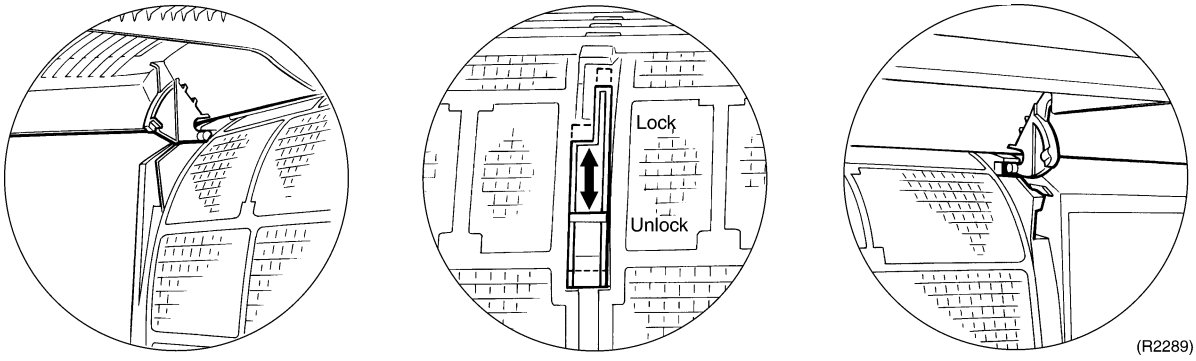
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

Step	Procedure	Points
■	Pull protrusions on left and right sides of front panel and open grille until it locks in position.	
1	Slide down locking switch at the center of front grille and disjoin hinge.	
2	Remove front grille from the unit.	■ Lift front panel until a clicking sound is produced.


(R2286)


(R2287)


(R2288)

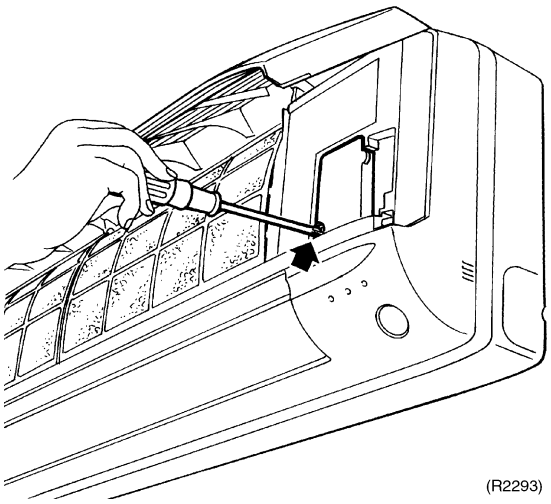


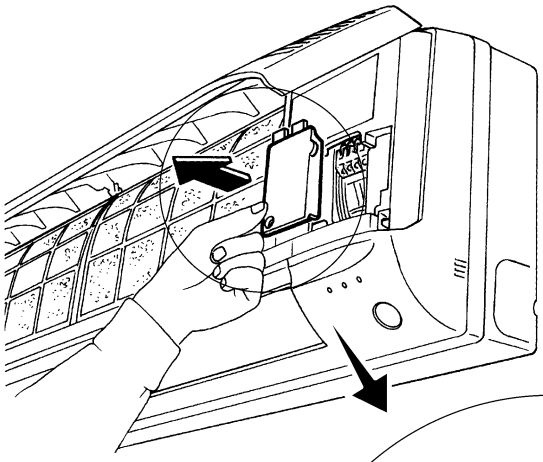
(R2289)

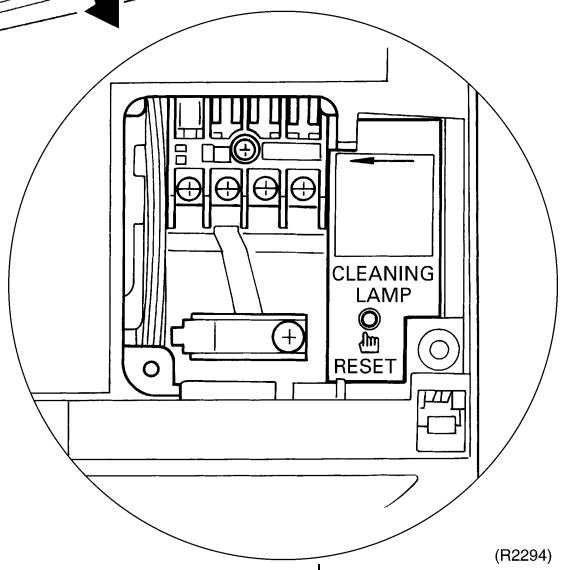
1.3 Opening and Closing of Service Cover / Changing Settings at Installation Site

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

Step	Procedure	Points
1. External features		
1	Remove service cover mounting screw. (M4 × 12 black)	
2	Take off cover by pulling down.	
2. Changing settings at installation site		
1	Filter sign can be reset.	



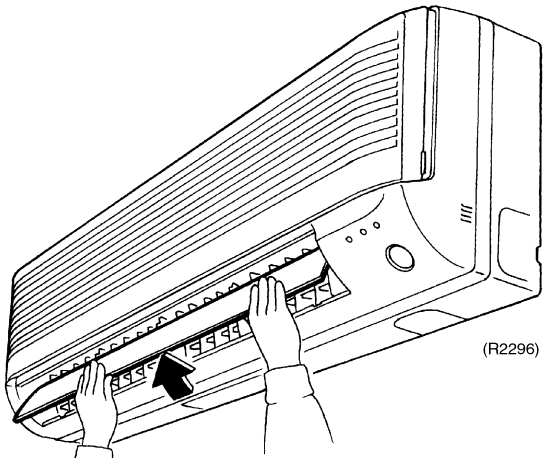


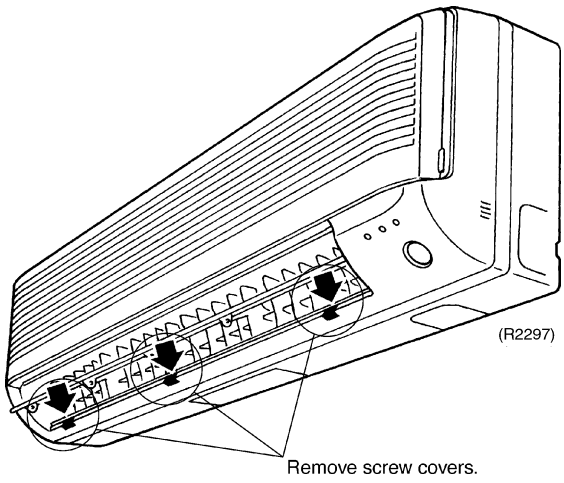


1.4 Removal of Front Panel

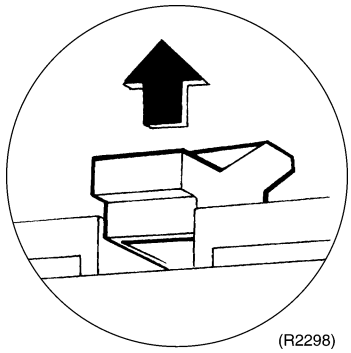
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

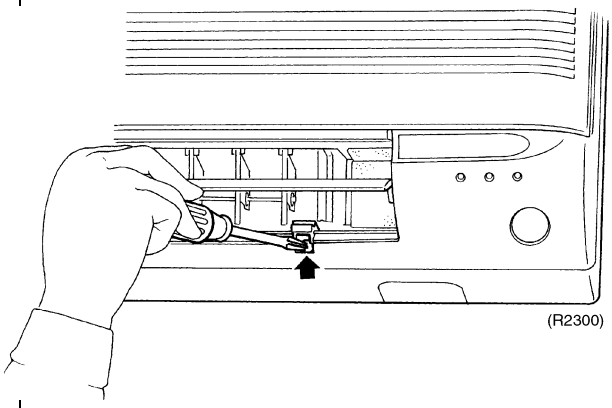
Step	Procedure	Points
1	Lift horizontal blade to open position.	
2	Remove screw covers at three locations, then remove screws. (M4 × 16 × 3 pcs.) Front cover can be now dismounted from the unit.	

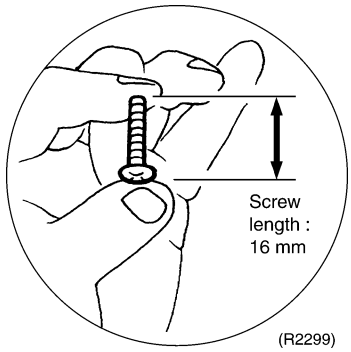

(R2296)



(R2297)

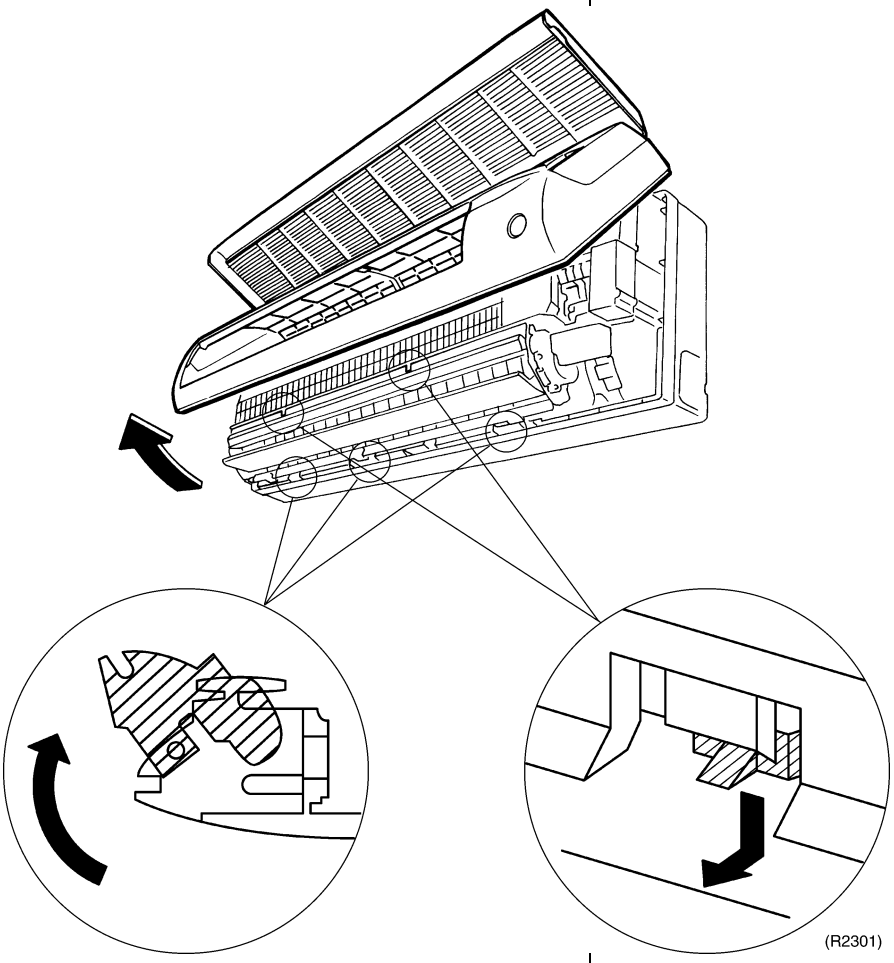

(R2298)

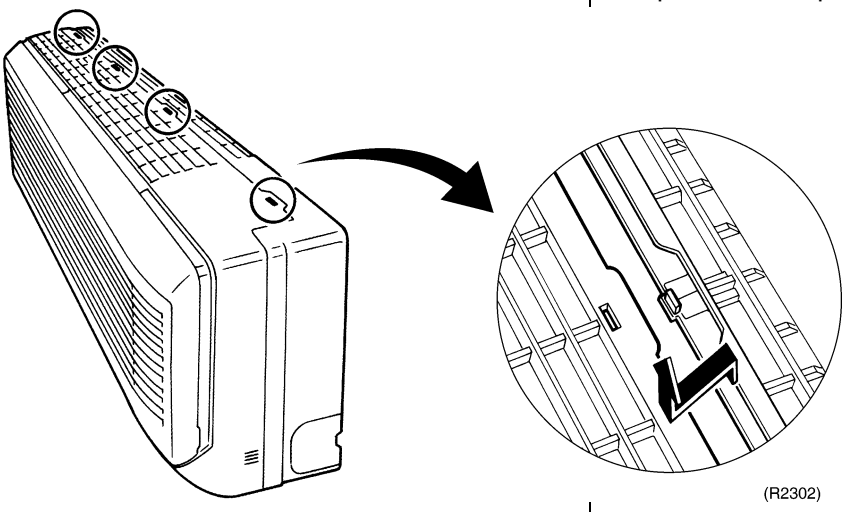

(R2300)



(R2299)

Step	Procedure	Points
3	To remove front panel, take out air filter and disengage two hooks on upper side of than three hooks on lower side of flap.	
4	Top side is provided with four hooks. To disengage, move front panel forward while twisting it.	■ Four hooks are provided on top side of front panel.

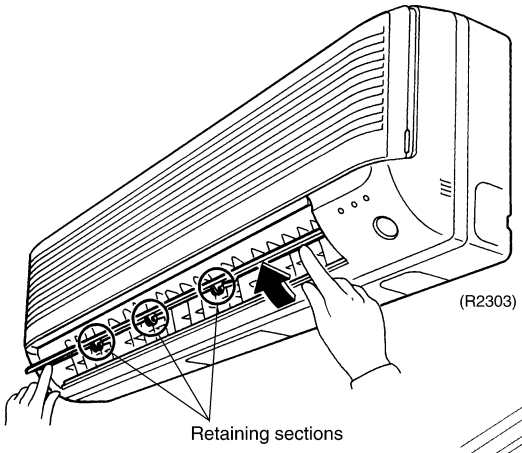


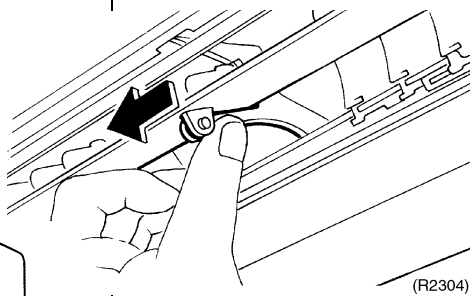


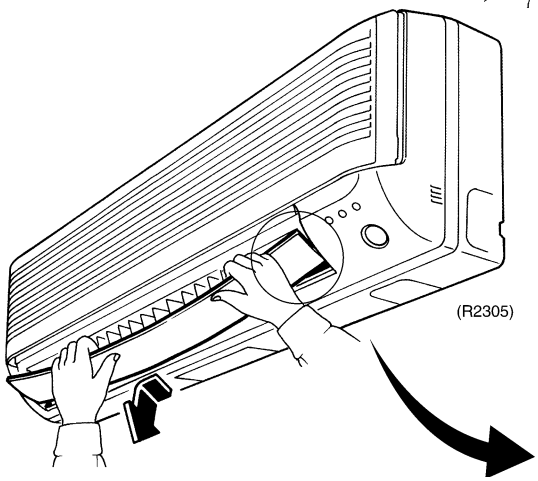
1.5 Removal of Horizontal and Vertical Blades

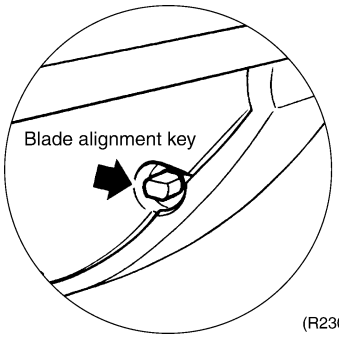
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

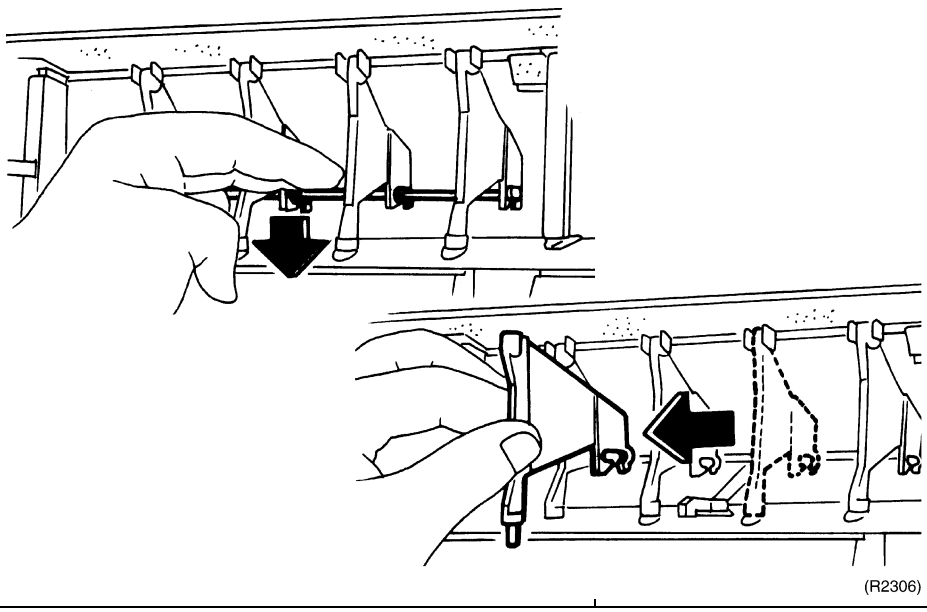
Step	Procedure	Points
1	Lift horizontal blade to open position.	
2	Disengage horizontal blade from three blade retaining sections.	
3	Bend blade slightly and remove it from the unit.	■ Re-installation 1. Set blade onto the alignment key on right side first. 2. Engage blade retaining sections at 3 locations.
4	Disengage vertical blades from bottom catch by bending them slightly.	
5	Pull the vertical blades forward to remove.	





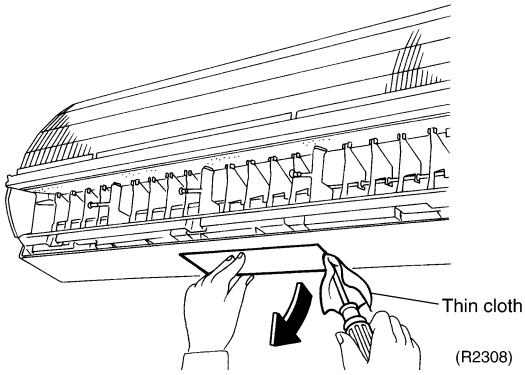
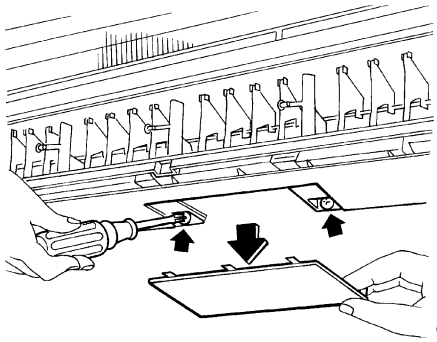
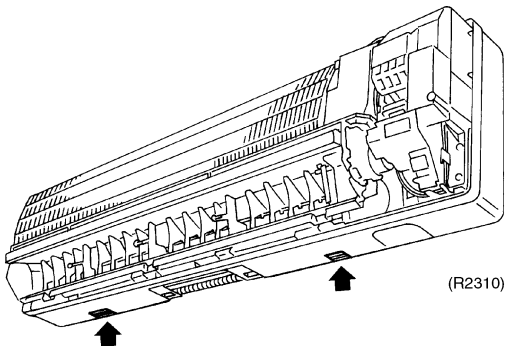
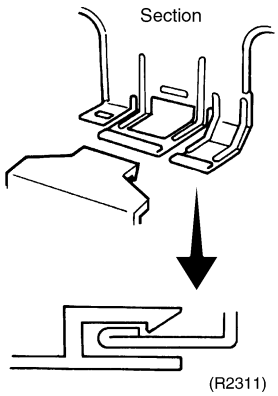
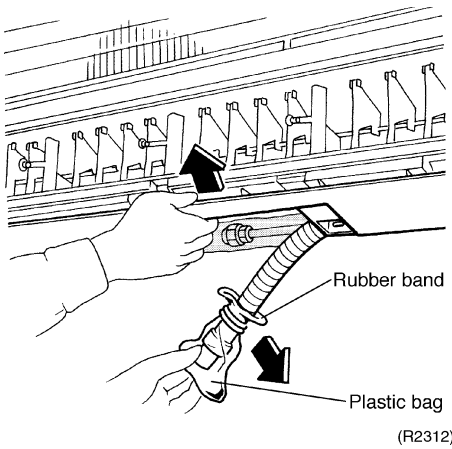


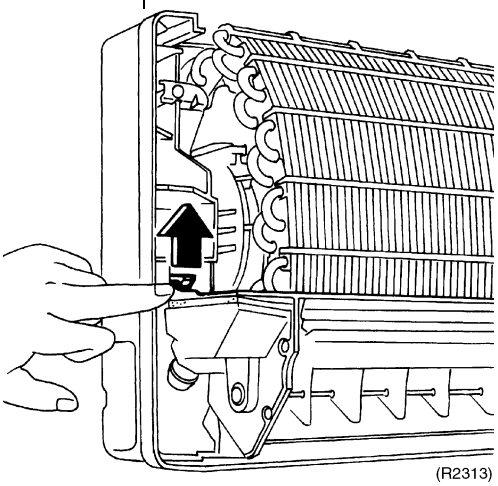
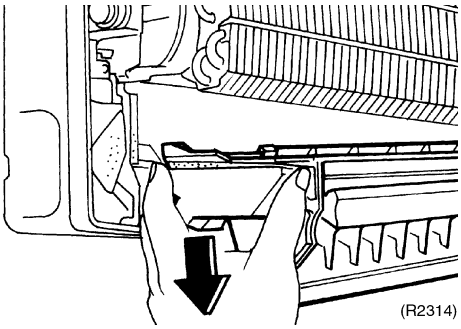
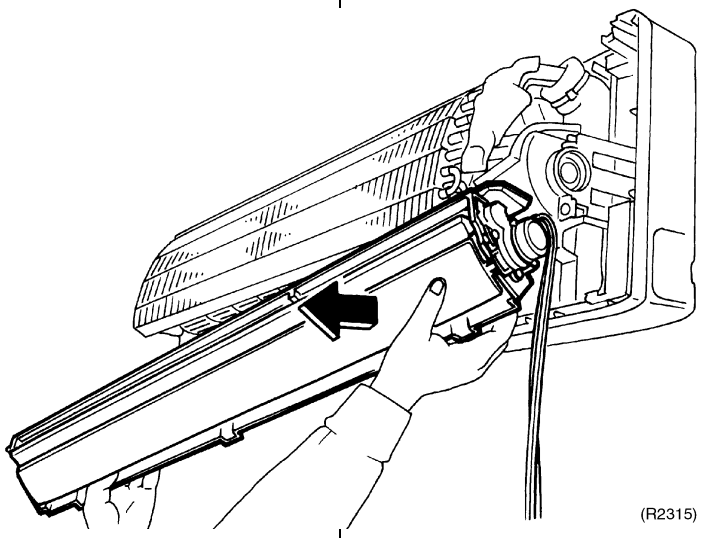
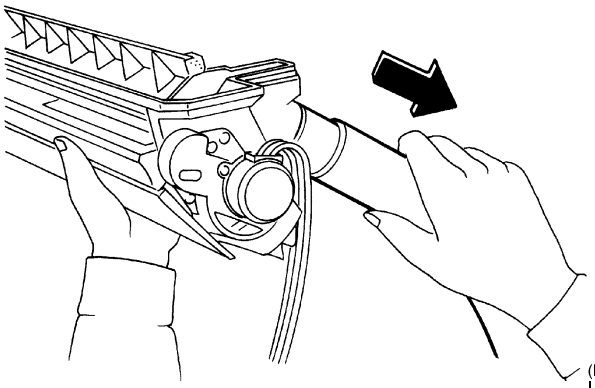




1.6 Removal of Drain Pan

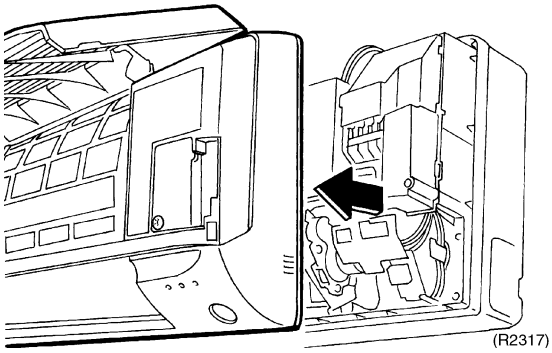
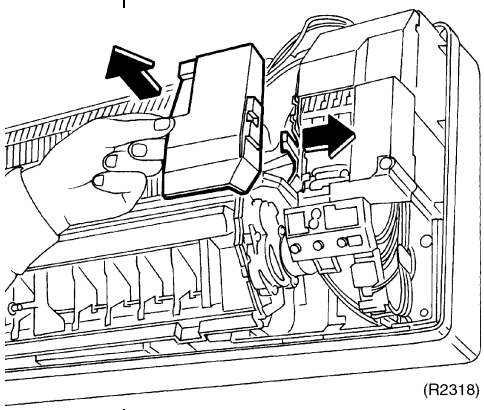
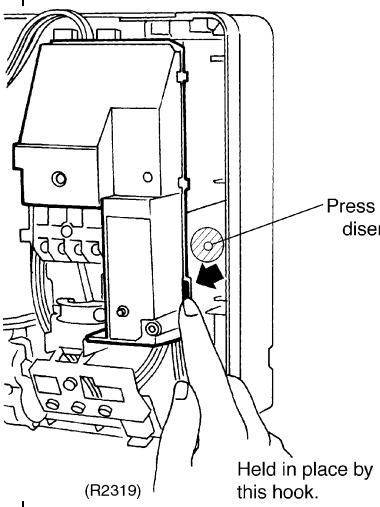
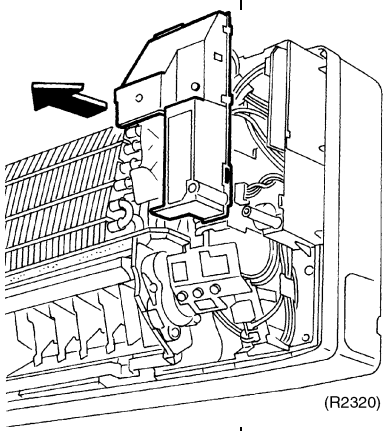
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

Step	Procedure	Points
■ Remove front grille. ■ Remove electrical box.		■ Wrap a thin cloth around the tip of screwdriver, and pry open the cover. ■ This step is not necessary for backside piping.
1 Remove bottom cover to access drain hose (for left-handed piping). 2 Remove two screws that secure bottom frame to mounting plate.		
3 Push two positions at lower part of the unit to disengage bottom frame hooks from mounting plate. Lift the unit slightly and pull out drain hose.		Listen to clicking sound to ensure secure mounting of parts. 
4 Lift the unit slightly and pull out drain hose.		■ Be careful not to soil the floor with drain water.

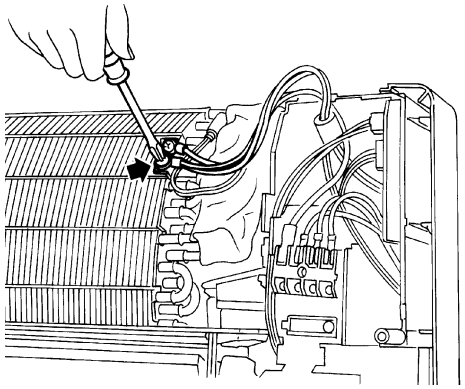
Step	Procedure	Points
5	Disengage hook on left side.  (R2313)	
6	Dismount left side of drain pan from the unit.  (R2314)	
7	Dismount right side of drain pan from the unit.  (R2315)	
8	Disconnect drain hose.  (R2316)	**Warning!** **Hold the bottom of drain hose and disconnect drain hose.**

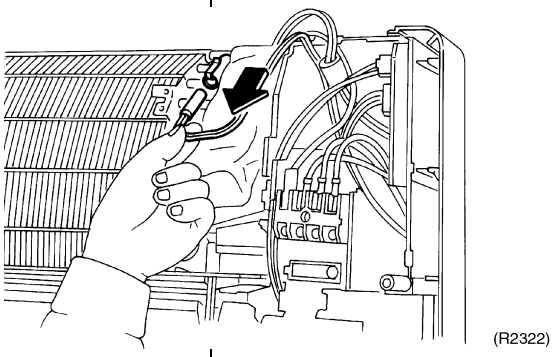
1.7 Removal of PC Board

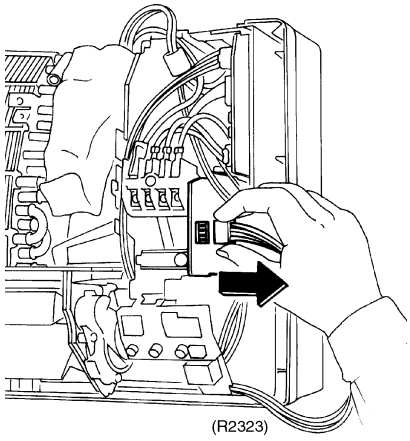
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

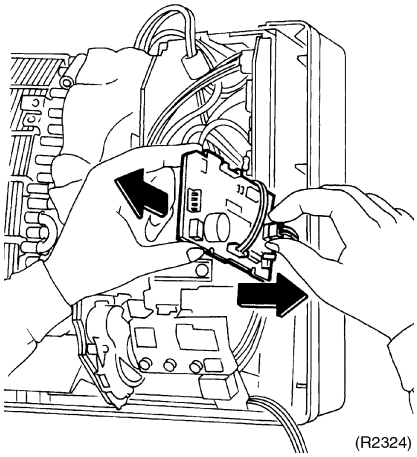
Step	Procedure	Points
■ Remove front panel.	 (R2317)	
1	Remove water-proofing plate. Cover can be removed by moving hook outward.  (R2318)  Press this section to disengage hook. Held in place by this hook. (R2319)	
2	Electrical box cover is secured in position by two hook.  (R2320)	

Step	Procedure	Points
3	Disconnect earth wire.	
4	Disconnect heat exchanger thermistor.	
5	Disconnect swing motor wire harness.	When disconnecting wire harness, pull out the connector holding terminal section of connector. Do not hold lead wire.
6	Pull out printed circuit board, and unplug wire harness connector.	
7	Remove P.C. Board.	

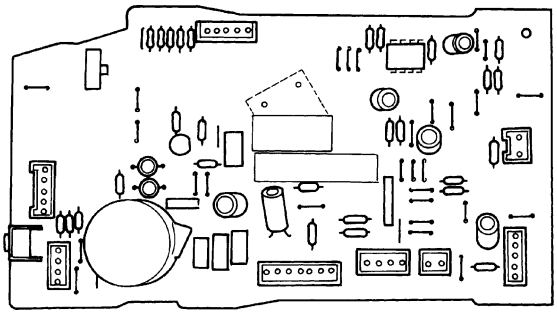

(R2321)

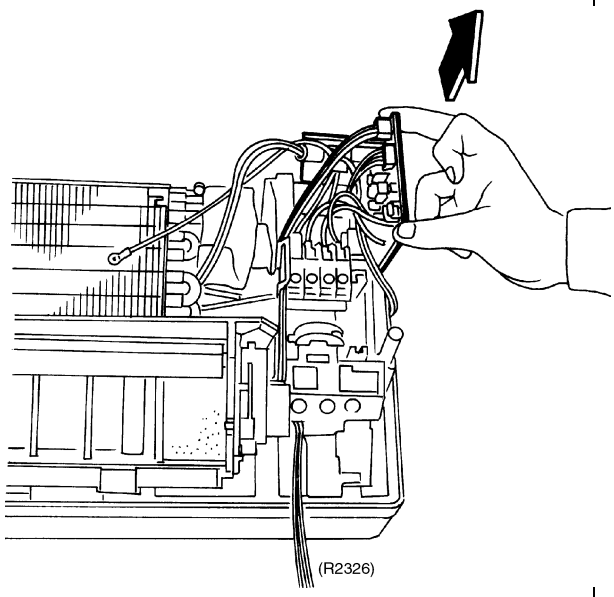

(R2322)

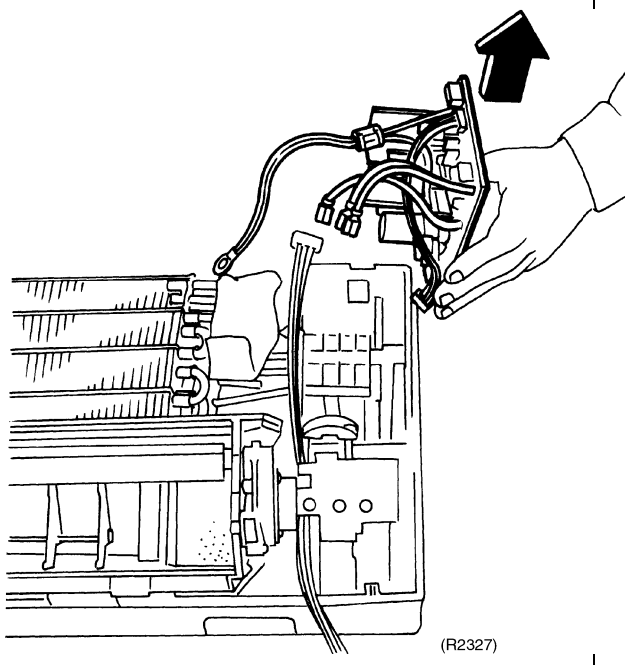

(R2323)


(R2324)

Step	Procedure	Points
8	Pull out power supply printed circuit board slightly.	
9	After disconnecting power supply terminal and motor wire harness, remove power supply printed circuit board. Fan motor : S1	


(R2325)

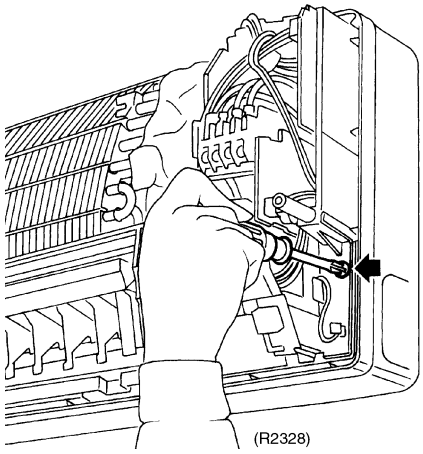

(R2326)

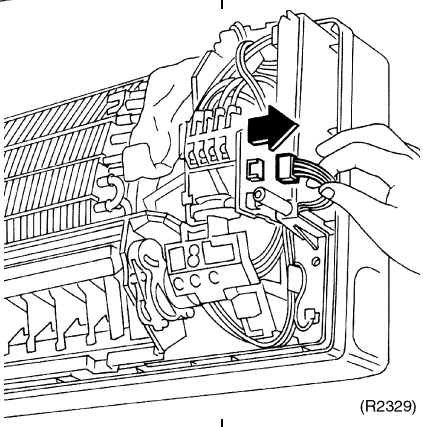

(R2327)

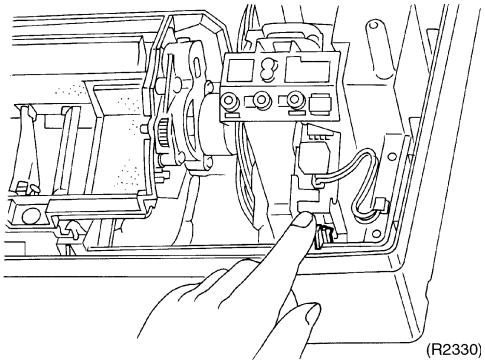
1.8 Removal of Electrical Parts Box

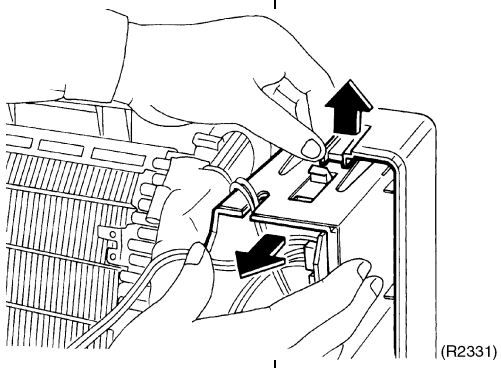
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

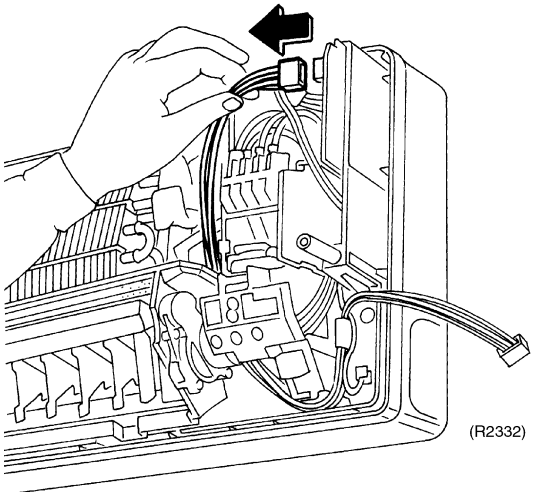
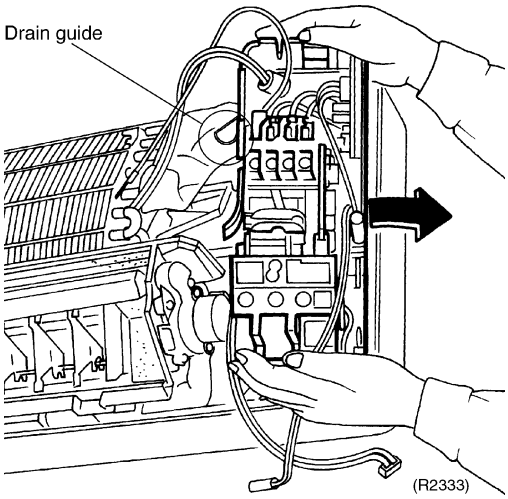
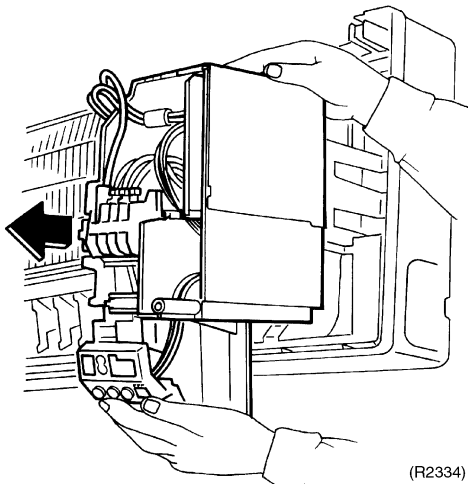
Step	Procedure	Points
Remove thermistors, earth wire and connectors (S1, S6)		
1	Remove screw located at right lower side of electrical box. (M4 × 16)	
2	Disconnect swing motor wire harness.	
3	Lift up electrical parts box slightly and disengage hook located at bottom side.	
4	Disengage hook located at top side.	


(R2328)


(R2329)

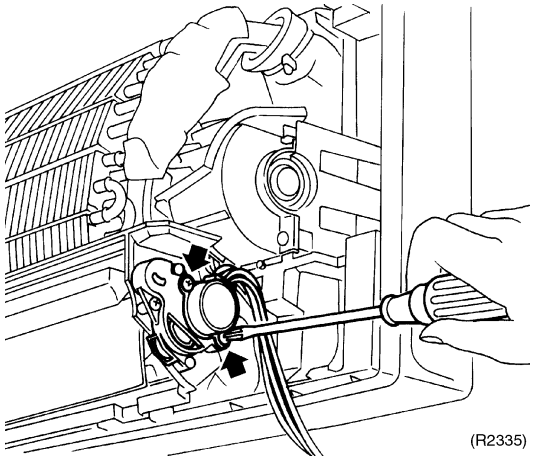
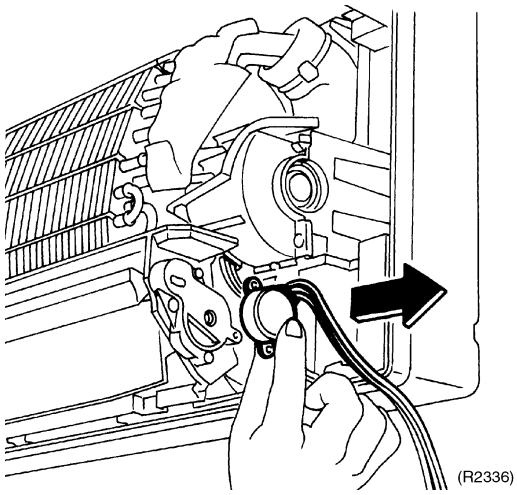
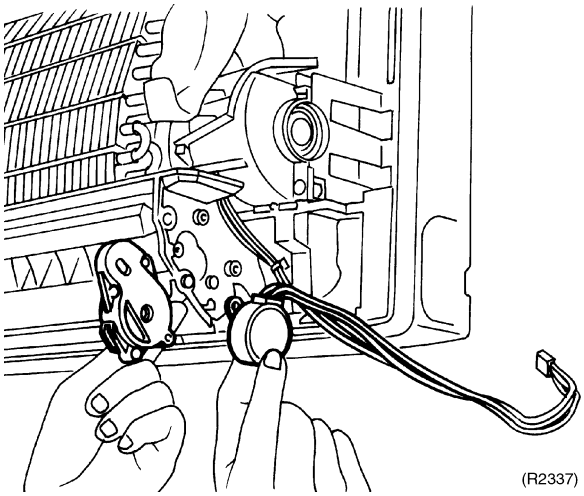

(R2330)


(R2331)

Step	Procedure		Points
5	Unplug connector of fan motor wire harness. (S1)	 (R2332)	
6	Move electrical box slightly to right, then pull out box forward.	 Drain guide (R2333)  (R2334)	**Caution!** **Do not catch the putty on protrusion of drain guide in the flame protection panel.**

1.9 Removal of Swing Motor Assembly

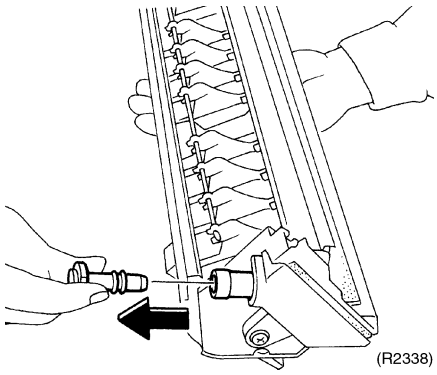
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

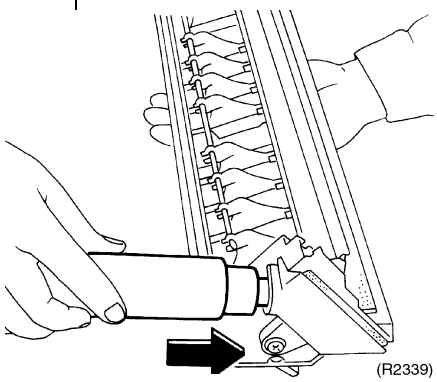
Step	Procedure	Points
■ Remove front panel. ■ Remove the electric parts box.	 (R2335)	The number of motors varies depending on the model.
1 Remove two screws holding swing motor in place. (M4 × 8)	 (R2336)	
2 Remove two screws holding swing motor mechanism in place. (M4 × 8)	 (R2337)	

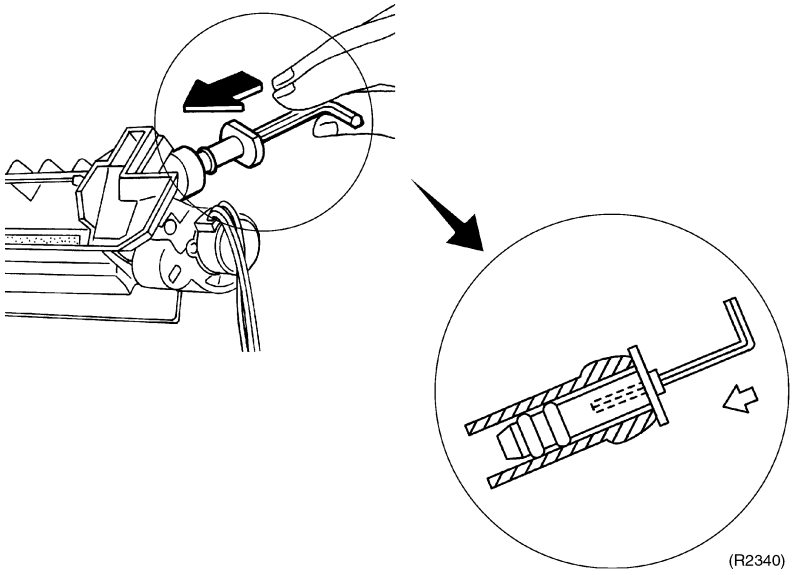
1.10 Piping of Drain Hose at Left Side

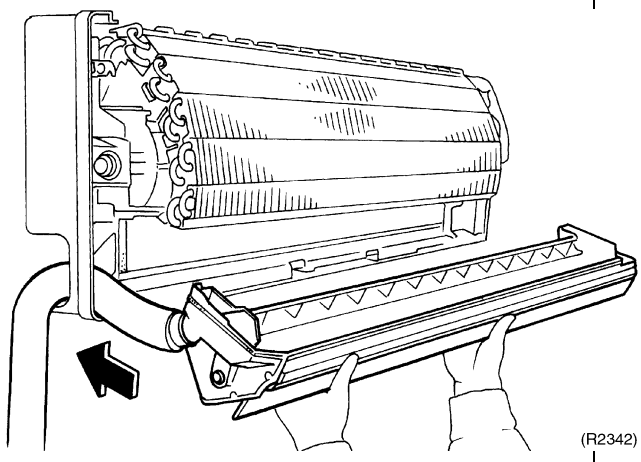
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

Step	Procedure	Points
Remove drain pan. (Refer page 61.)		
1	Pull out drain plug located on left side of drain pan with fingers.	**Warning! Hold the bottom of drain hose and insert drain hose properly.**
2	Insert drain hose.	
3	Insert drain plug into the opening on right side, and press it in using hexagon wrench (4 mm).	
4	Place drain hose into left side of the unit, and mount drain pan.	
■ Make sure to check draining the water properly.		


(R2338)

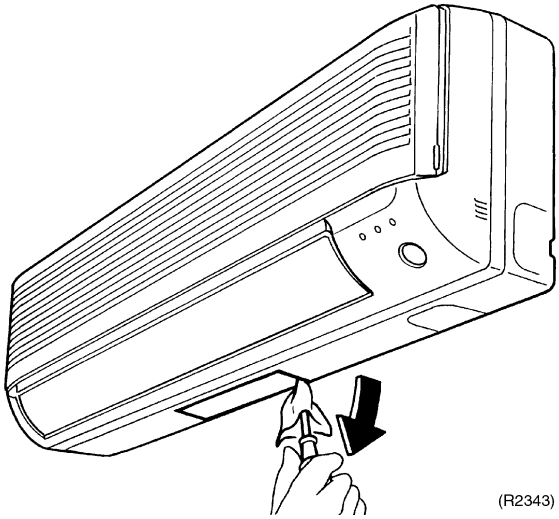
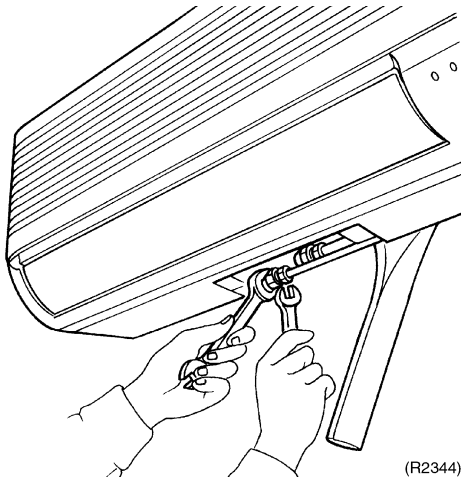
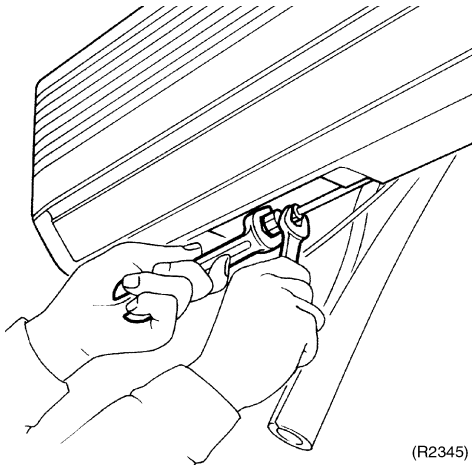

(R2339)


(R2340)

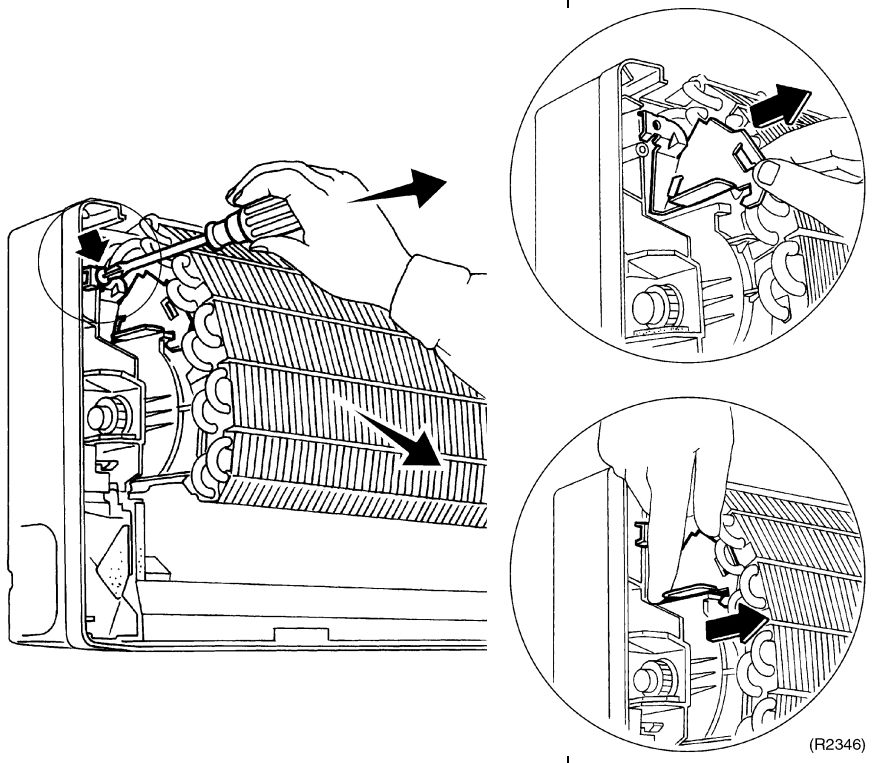

(R2342)

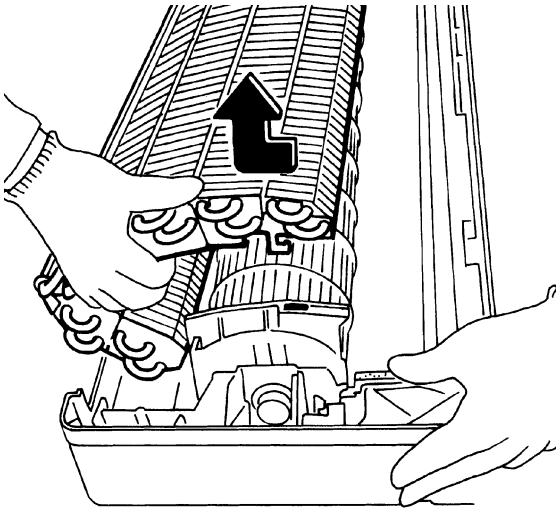
1.11 Removal of Heat Exchanger

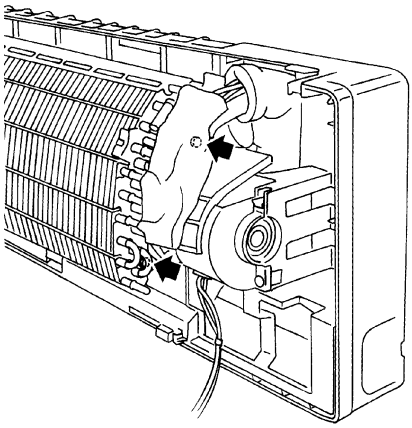
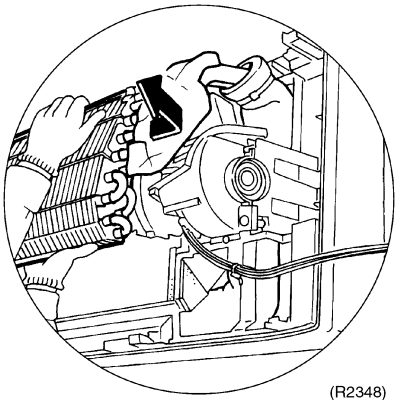
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

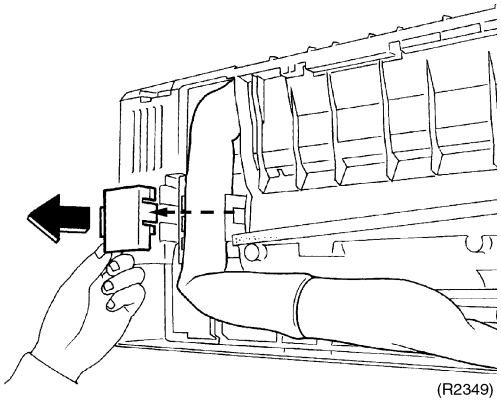
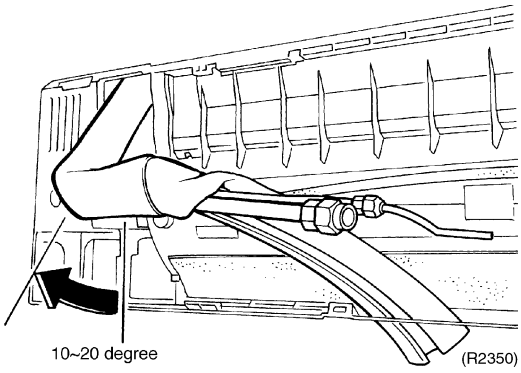
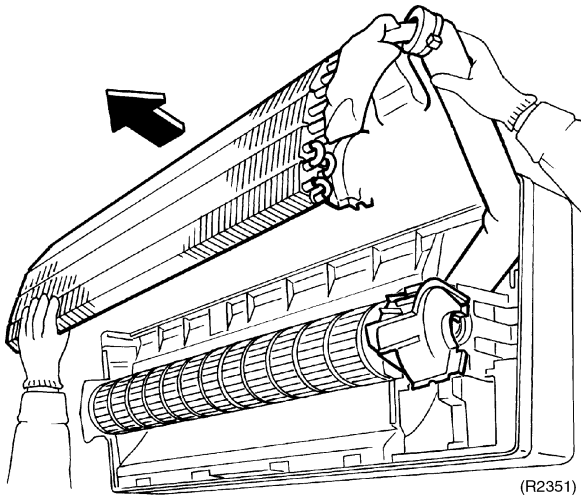
Step	Procedure		Points
■ Conduct pump-down operation.			**Warning!** **If gas leaks, repair the leak location, then collect all refrigerant from the unit. Conduct vacuum drying, and charge proper amount of refrigerant.** **Warning!** **Do not mix any gas (including air) other than the specified refrigerant (R22) into refrigerating cycle. (Mixing of air or other gas causes abnormal temperature rise in refrigerating cycle, and this results in pipe rupture or personal injuries.)**
1	Remove bottom cover located at lower part of the unit and disconnect two screws.		
2	Push two positions at lower part of the unit to disengage bottom frame hooks from mounting plate. Lift the unit slightly. Refer page 61.	 (R2343)	
3	Remove insulation tube, and disconnect liquid pipe at the flare.	 (R2344)	■ Use two wrenches to disconnect pipe. ■ Be careful not to scratch the wall.
4	Disconnect gas pipe at the flare.	 (R2345)	■ After pipes are disconnected, close all pipe openings with caps to prevent dust and moisture from entering pipes.

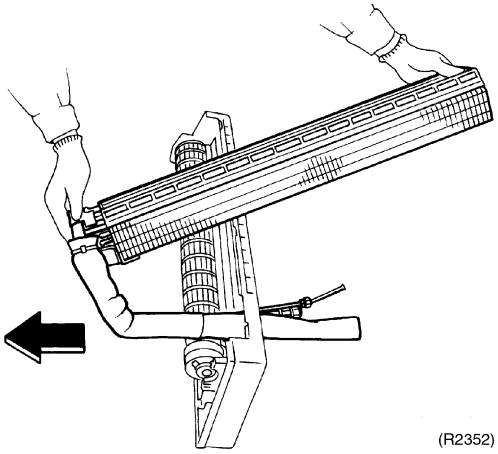
Step	Procedure	Points
■ For removal of front grille, drain pan, electrical box and other parts, see reference pages.		
1. Lifting heat exchanger		
1	Remove screw holding heat exchanger mounting plate in place.	
2	While raising heat exchanger, pull it forward and disengage hooks.	**Caution!** **When removing or re-installing heat exchanger, be sure to wear protective gloves or wrap heat exchanger with cloths. (Fins can cut fingers.)**
3	Lift heat exchanger.	





Step	Procedure	Points
2. Remove the heat exchanger from the right side plate.	  (R2348)	
1 There are hooks on right side plate.		

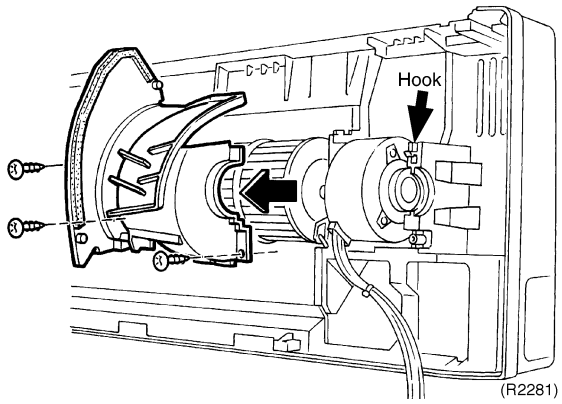
Step	Procedure	Points
3. Loosening pipe retaining plate		
1 Disengage hook on pipe retaining plate.	 (R2349)	
2 Pull auxiliary pipe forward to an angle of 10 to 20 degree.	 10~20 degree (R2350)	■ Be careful to prevent pipe deformation.
3 Pull out heat exchanger toward front.	 (R2351)	

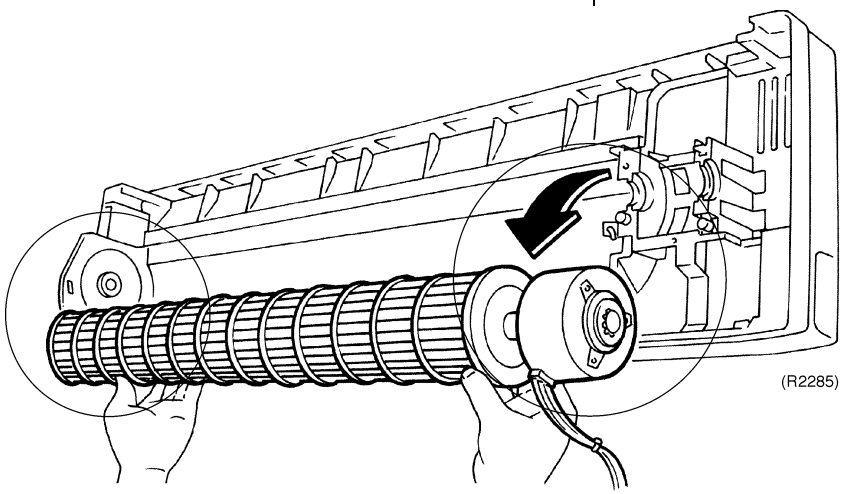
Step	Procedure		Points
4	Pull out the heat exchanger along the pipe from the unit.	 (R2352)	**Warning!** **Do not mix any gas (including air) other than the specified refrigerant (R22) into refrigerating cycle.** **(Mixing of air or other gas causes abnormal temperature rise in refrigerating cycle, and this results in pipe rupture or personal injuries.)** **Warning!** **If gas leaks, repair the leak location, then collect all refrigerant from the unit. Conduct vacuum drying, and charge proper amount of refrigerant.** **Caution!** **When removing or re-installing heat exchanger, be sure to wear protective gloves or wrap heat exchanger with cloths. (Fins can cut fingers.)**

1.12 Removal of Fan Rotor and Motor

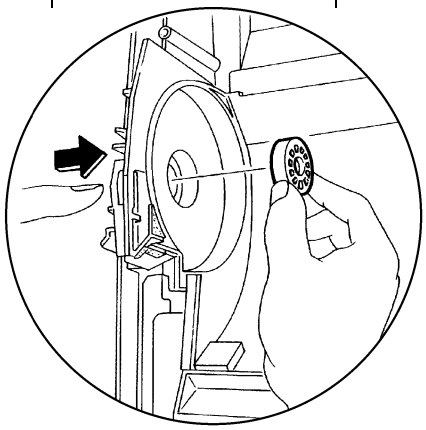
Procedure **Warning** **Be sure to turn off all power supplies before disassembling work.**

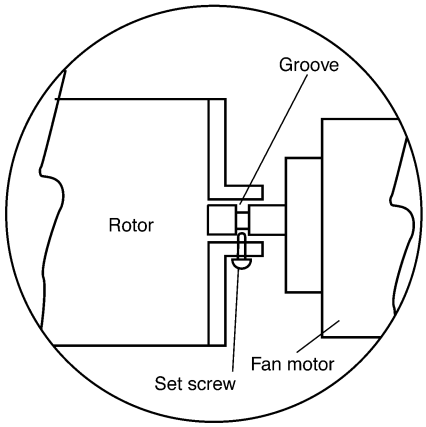
Step	Procedure	Points
■ Remove front panel, drain pan, electrical parts box and heat exchanger from the unit.		
1	Remove three screws on right side panel.	
2	Remove fan rotor and motor together from the unit.	
3	Loosen the hexagon head set screw on the fan rotor, and remove the motor. ⊕ screwdriver can be also used.	
4	Press the bearing with finger from the outside to remove it.	

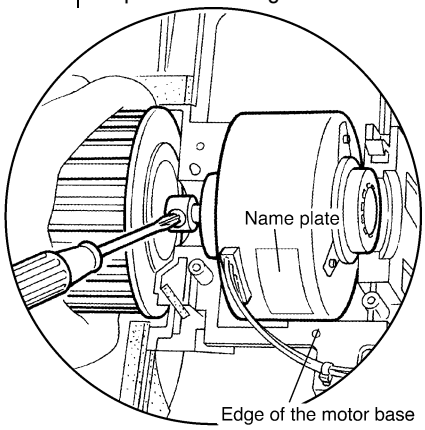




WARNING
(In case of installing fan rotor and motor)
Make sure to insert the set screw in the groove of fan motor shaft.
Set the fan motor in right.
■ Set the bottom of motor name plate to the edge of motor base.







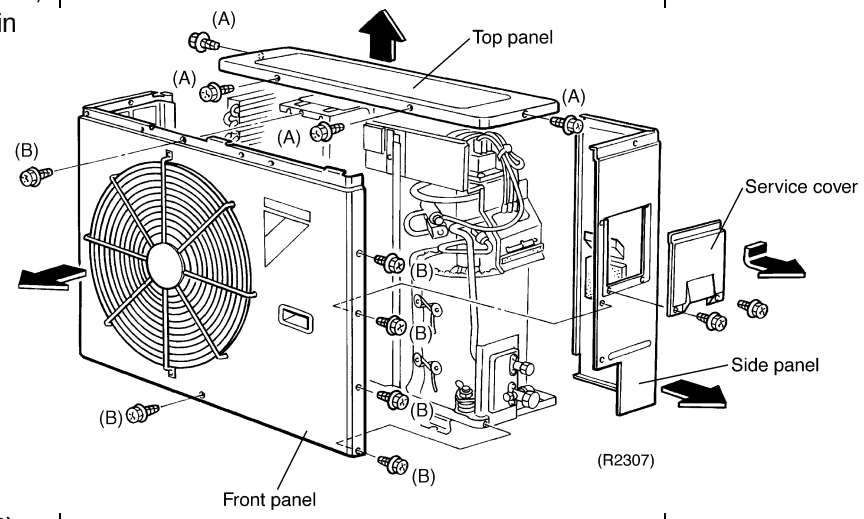
2. For R60GV1(K)(9), R60GAV1A(9), R60GVAL(9)

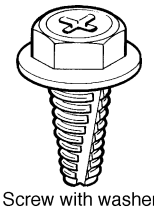
2.1 Removal of Outer Panel

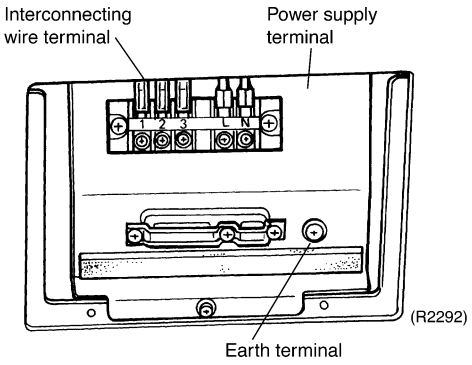
Procedure

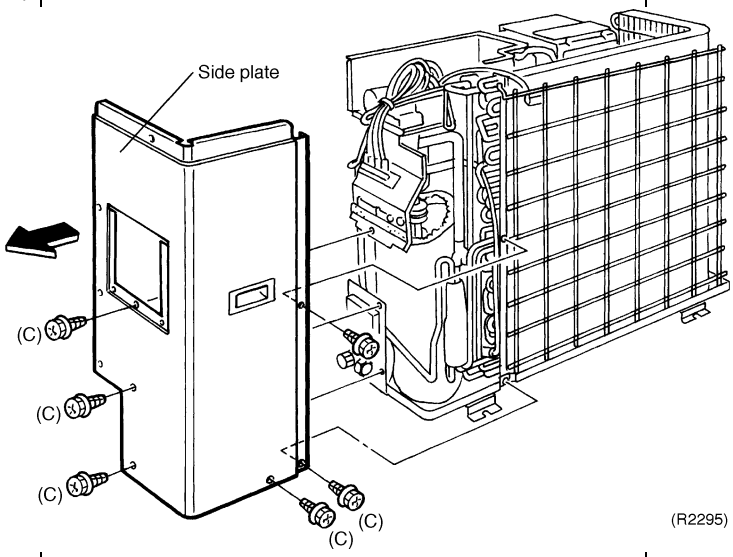
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Step	Procedure	Points
1	To dismount top panel, remove four mountin screws (A).	
2	To dismount front panel, remove six mounting screws (B).	
3	To dismount service cover, remove two mounting screws.	
4	To dismount side panel, remove six mounting screws (C).	







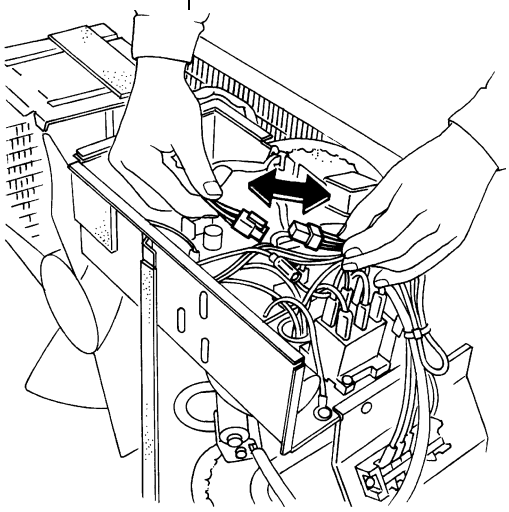


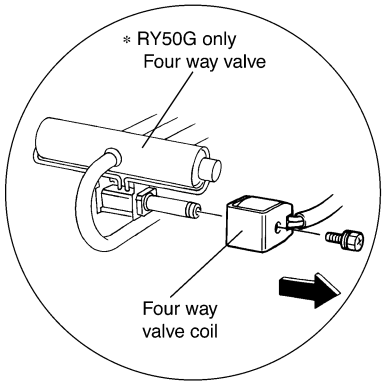
2.2 Removal of Electrical Parts Box

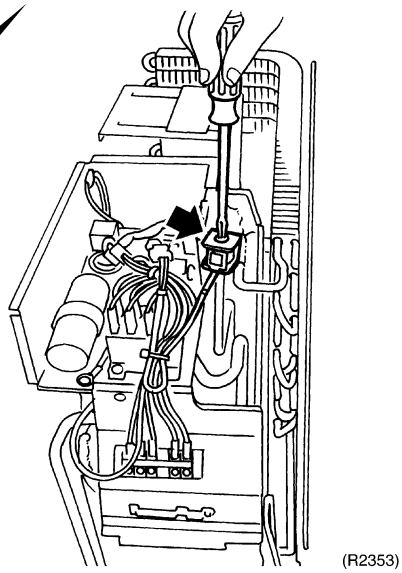
Procedure

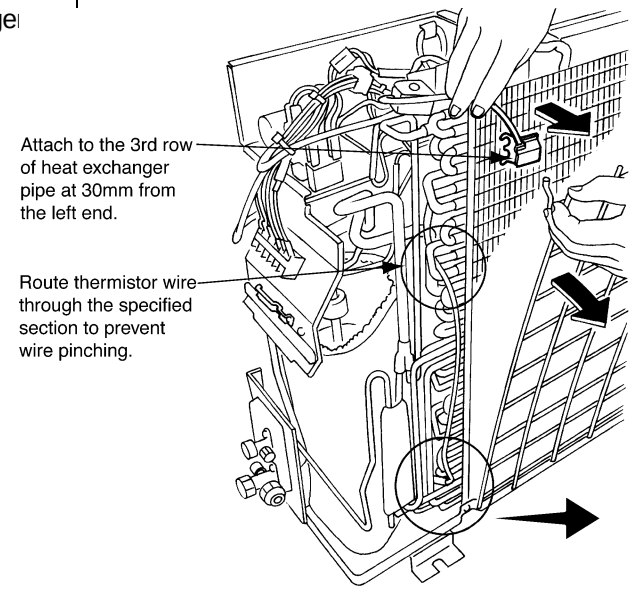
⚠ Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

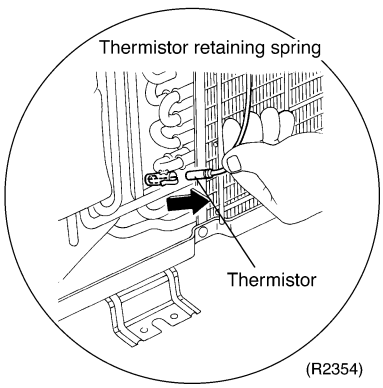
Step	Procedure	Points
1	Remove wire harness connectors from printed circuit board and a coil for four-way valve. (remove one screw)	
2	Remove screw holding solenoid coil in place.	
3	Dismount air thermistor and heat exchanger thermistor.	

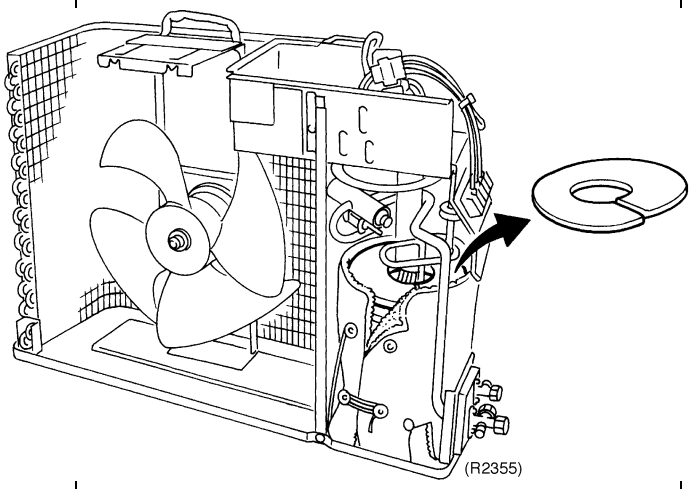
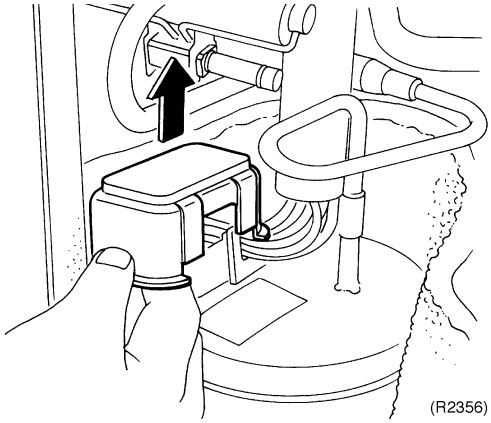
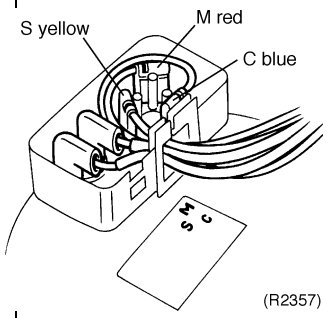
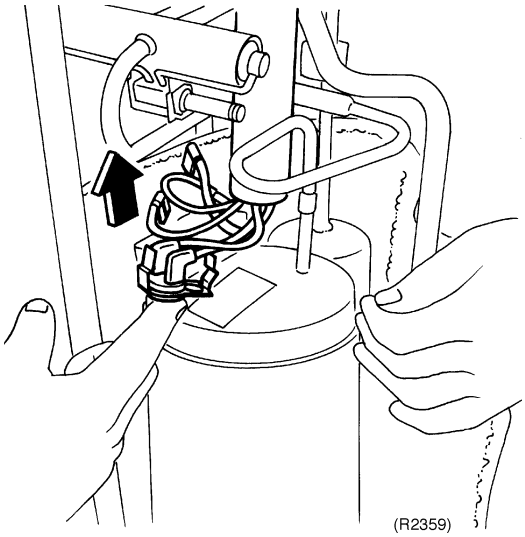
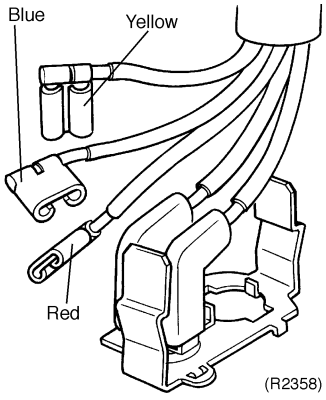


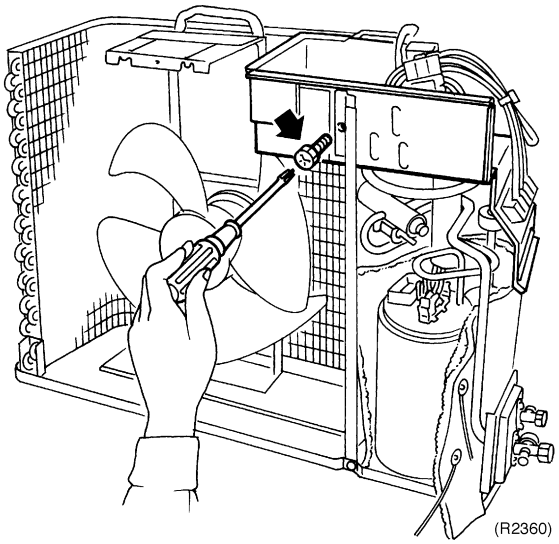
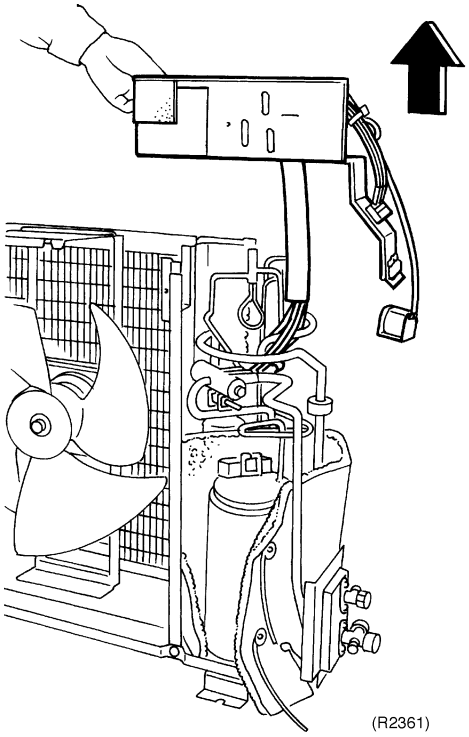








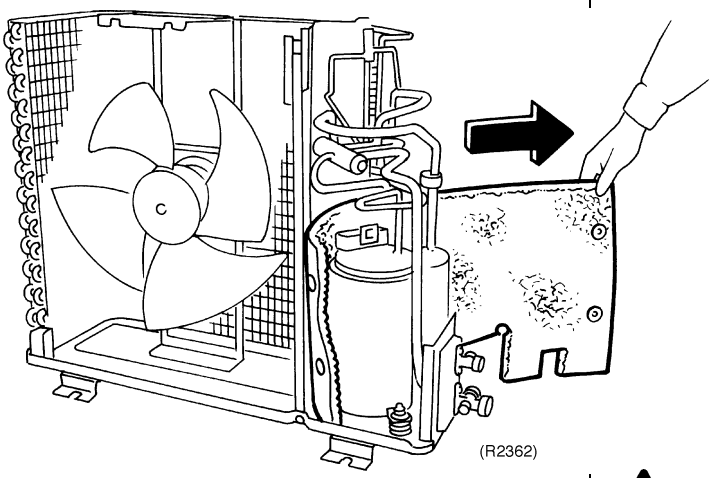
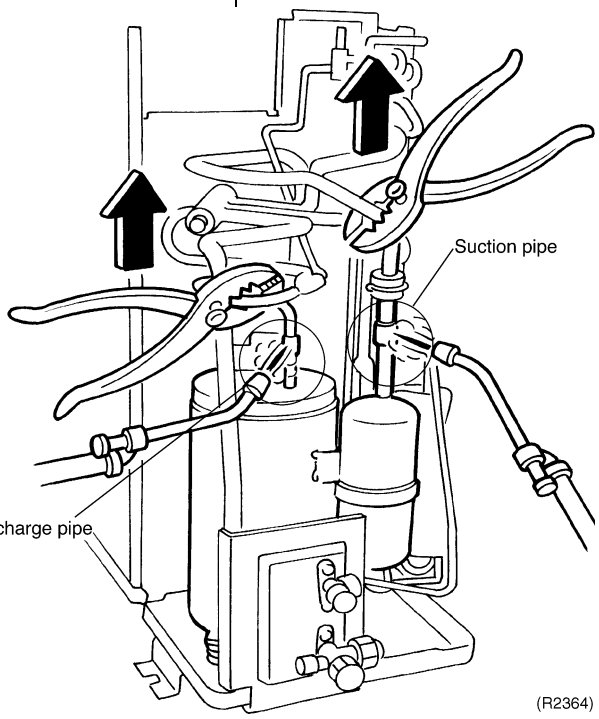
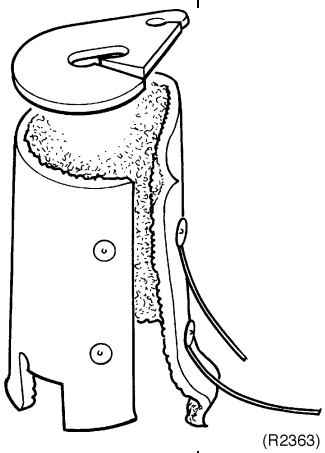
Step	Procedure	Points
4	Remove top insulation material from compressor.  (R2355)	■ Terminal code is printed. Do not scorch the indication with the flame of welder. Also record terminal code on a memo paper in case the indication becomes illegible.
5	Remove terminal cover.  (R2356)	 (R2357)
6	Remove compressor protective device and three terminals together with mounting plate.  (R2359)	 (R2358) ■ Connect lead wires to proper fasten terminals. S ·····Yellow M·····Red C ·····Blue

Step	Procedure		Points
7	Remove the screw.	 (R2360)	
8	Take off the electrical parts box.	 (R2361)	

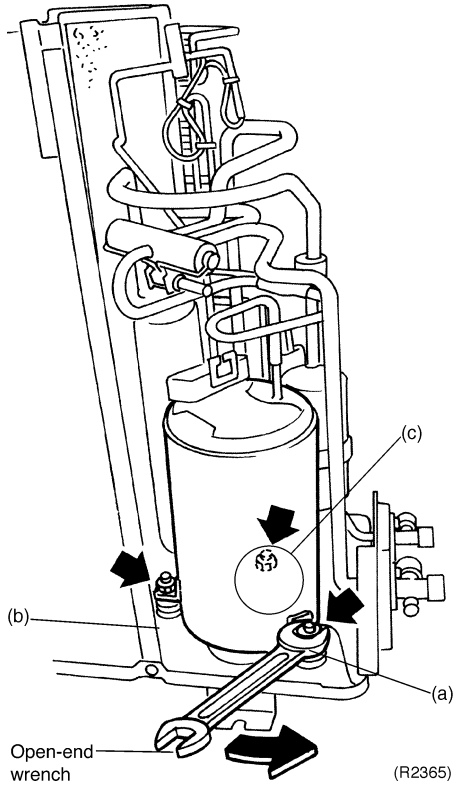
2.3 Removal of Compressor

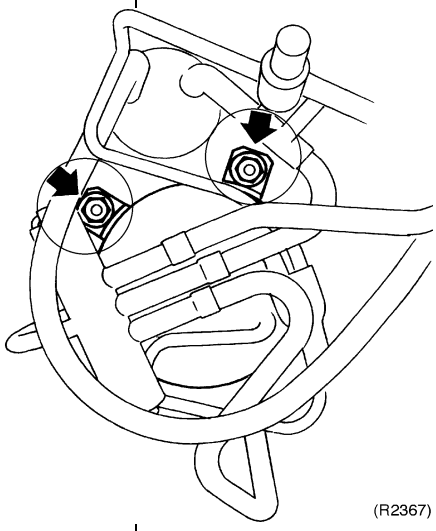
Procedure

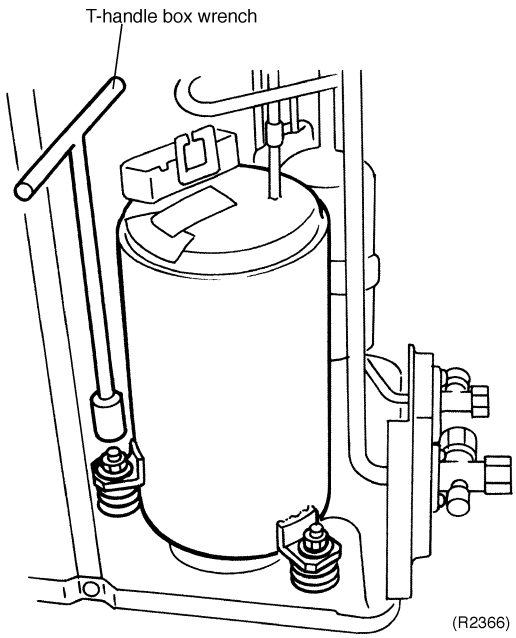
⚠ Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Step	Procedure	Points
■ Make sure that there is no refrigerant in the unit before disassembling.	 (R2362)	
1 Pull out sound insulation material (side insulation) from right side.		**⚠ WARNING** **If refrigerant gas leaks during servicing work, ventilate the area. (If refrigerant gas contacts flames, hazardous gas can generate.)** ■ When removing sound-insulation material, do not pull it with excessive force, since it is inserted between pipes.
2 Disconnect suction pipe and discharge pipe of compressor at brazed sections.	 (R2364)  (R2363)	

Step	Procedure	Points
3	After disconnecting refrigerant pipes, remove three washer nuts that secure compressor in place. Use open-end wrench to remove washer nut (a) located on right front side.	
4	Use T-handle box wrench to loosen nuts (b) and (c).	







Part 8
Others

1. Others

1.1 Points of Installation Work

1.1.1 Method of Operating Air Conditioners Individually (When Two Units are Installed in One Room)

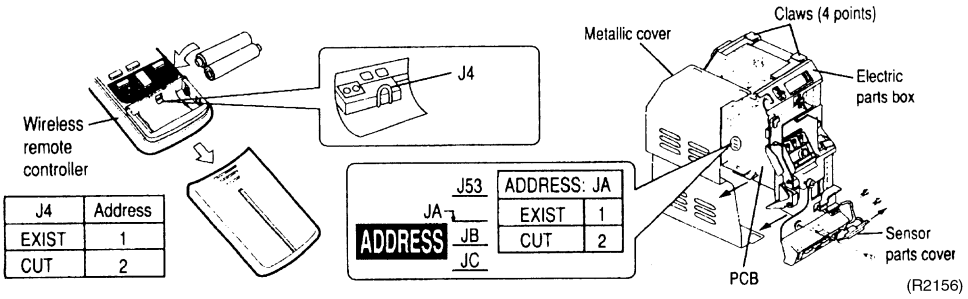
- **How to set the different addresses.**
- When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

PCB in the indoor unit

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

Wireless remote controller

- Cut the jumper J4.



1.1.2 Centralized Control (For KRC72, KRP413A1S)

For an explanation on usage, see the option handbook. However, do the following when using the KRP413A1S (Contact connection centralized control PC board).

Cut jumper JC on the indoor PC Board.

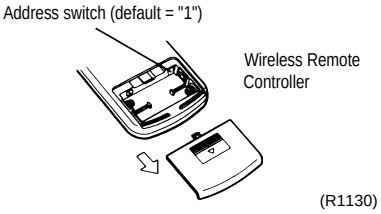
Note : The power failure recovery function is controlled by the ON signal from the centralized control PC Board. The following may occur if the unit is used without cutting jumper JC.

- If the unit was running when a power failure occurred, it may not resume operation after recovering from a power failure.

1.1.3 Dry Keep Change-over Switch

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

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

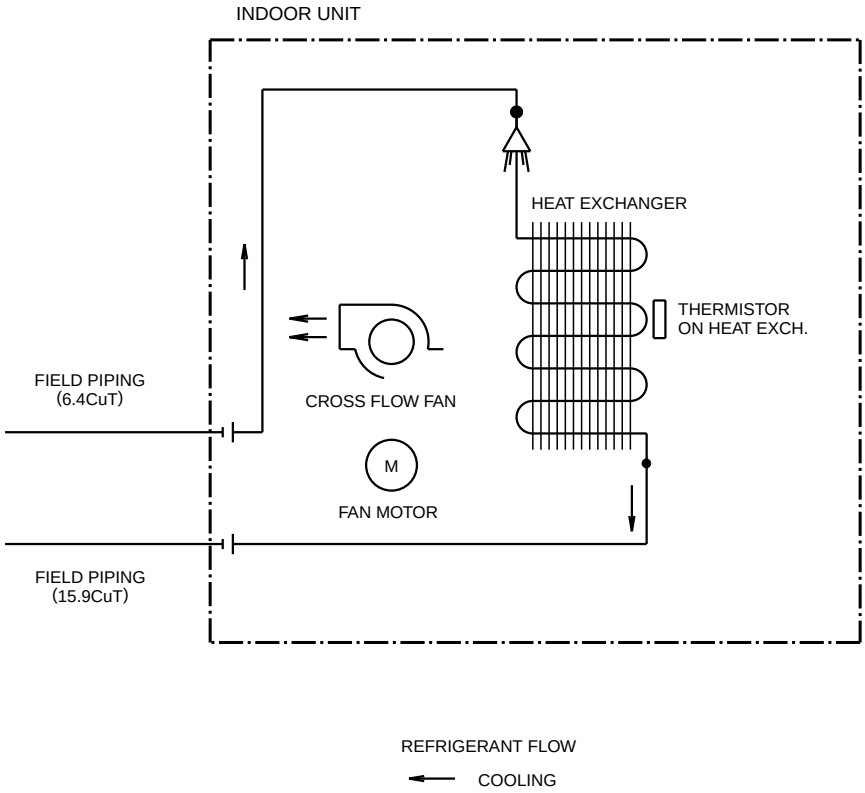


Part 9
Appendix

1. Piping Diagram

1.1 Indoor Unit

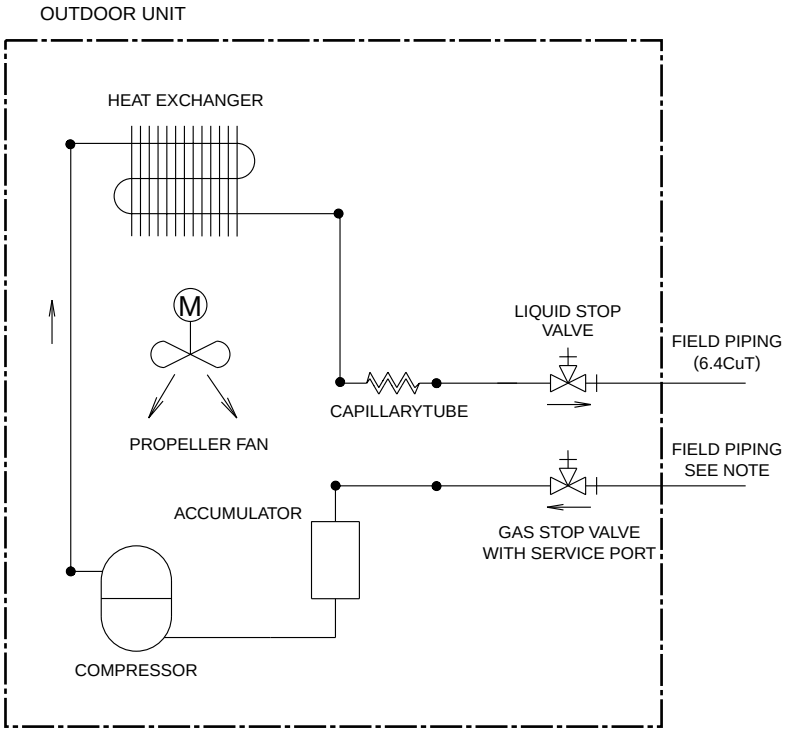
FT50 / 60GAVE(A)
FT50 / 60GAVAL



C : 4D005343C

1.2 Outdoor Unit

R50 / 60GV1(9) , R50GV1K(9)

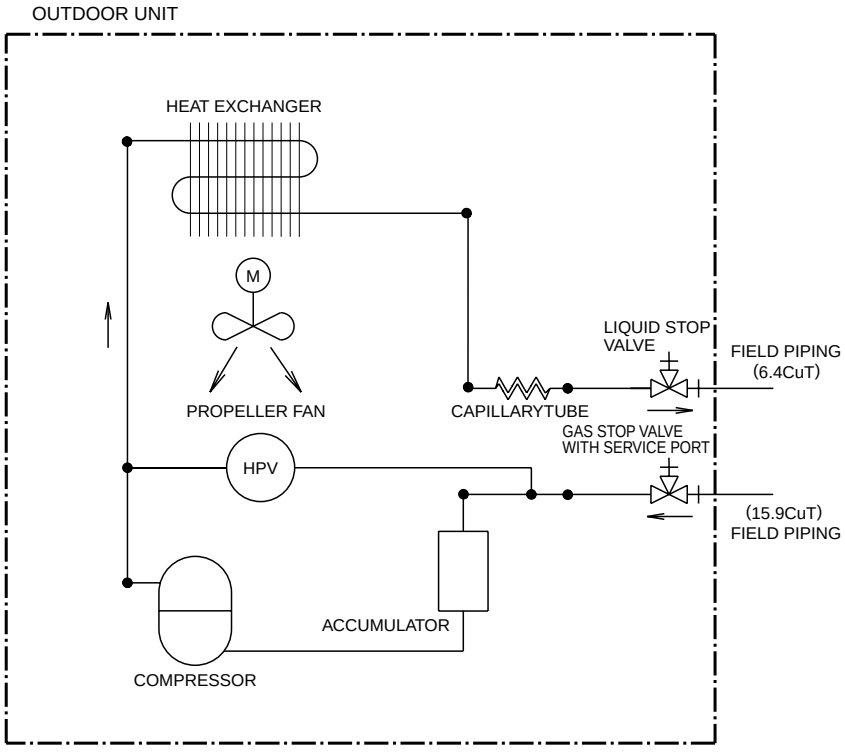


NOTE:
1.GAS PIPE SPECIFICATION

R25	9.5CuT
R35	12.7CuT
R45,R50,R60	15.9CuT

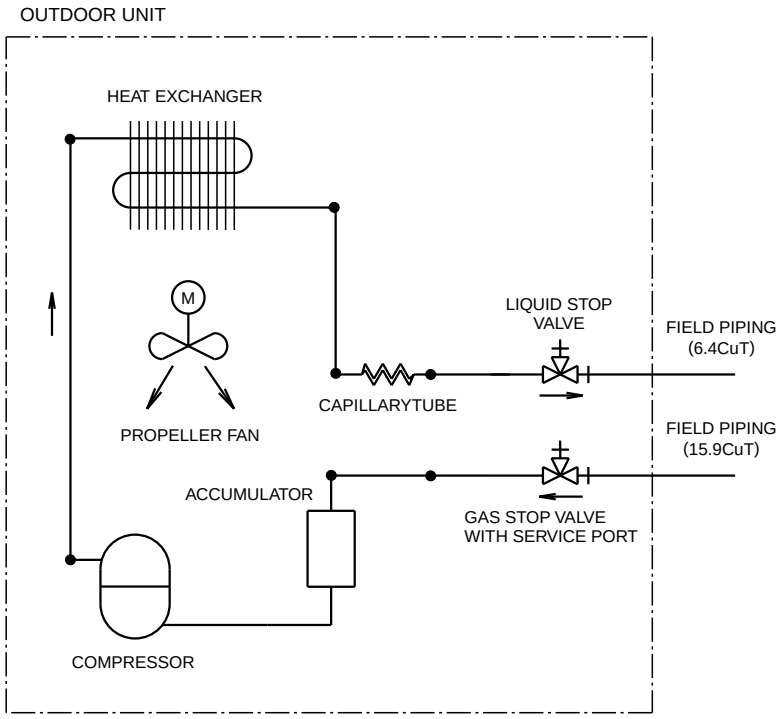
DW521-856F

R60GV1K(9)



DW527-236A

R50 / 60GAV1A(9) , R50 / 60GVAL(9)

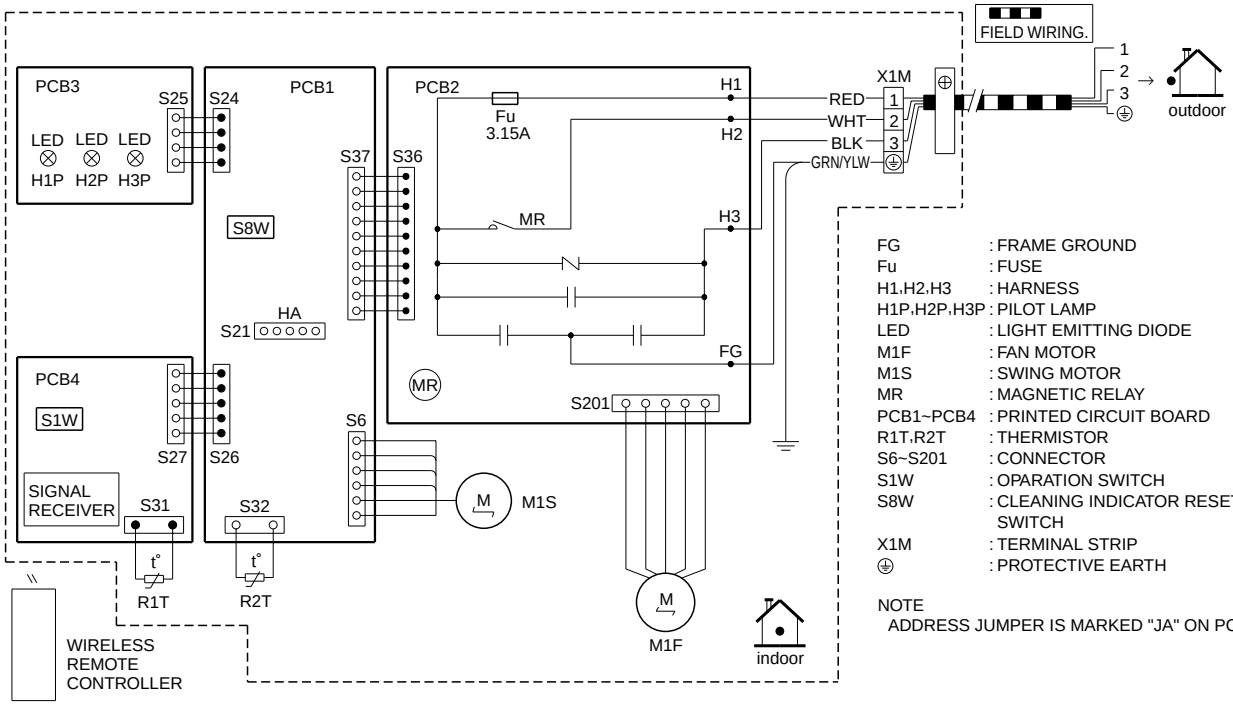


4D028567

2. Wiring Diagram

2.1 Indoor Unit

FT50 / 60GAVE(A)

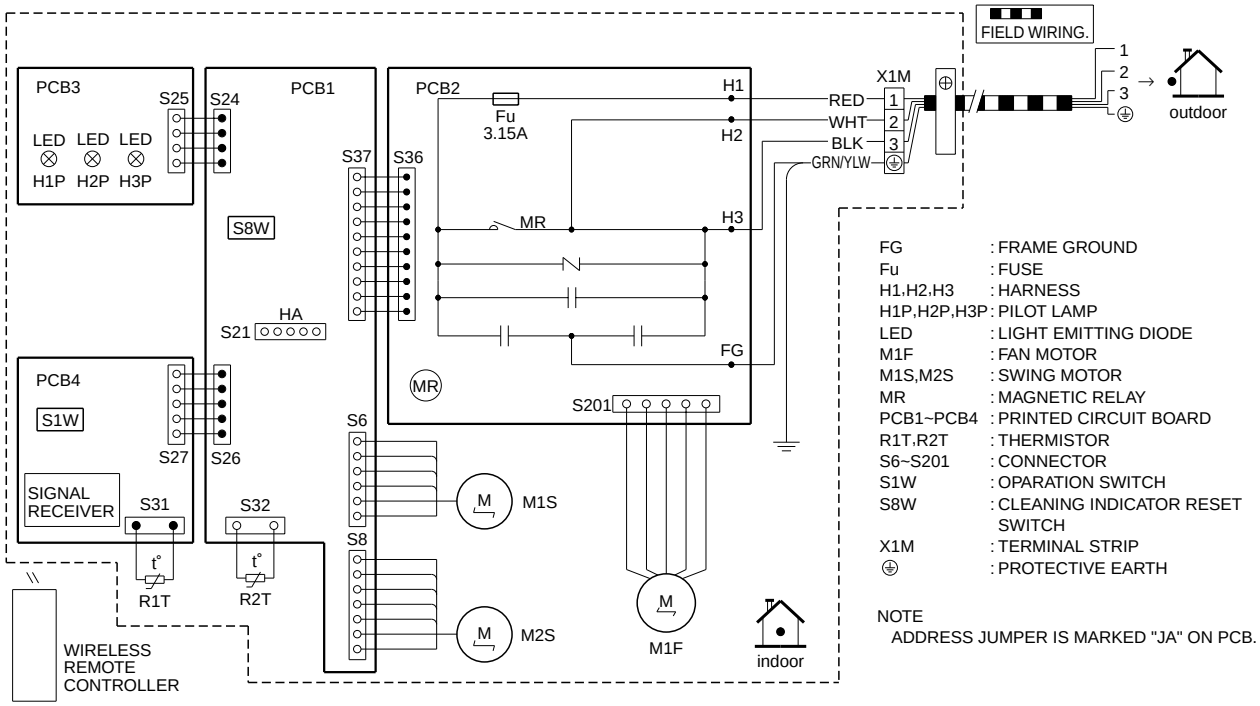


FG	: FRAME GROUND
Fu	: FUSE
H1,H2,H3	: HARNESS
H1P,H2P,H3P	: PILOT LAMP
LED	: LIGHT EMITTING DIODE
M1F	: FAN MOTOR
M1S	: SWING MOTOR
MR	: MAGNETIC RELAY
PCB1~PCB4	: PRINTED CIRCUIT BOARD
R1T,R2T	: THERMISTOR
S6~S201	: CONNECTOR
S1W	: OPARATION SWITCH
S8W	: CLEANING INDICATOR RESET SWITCH
X1M	: TERMINAL STRIP
⏚	: PROTECTIVE EARTH

NOTE
ADDRESS JUMPER IS MARKED "JA" ON PCB.

3D027718A

FT50 / 60GAVAL



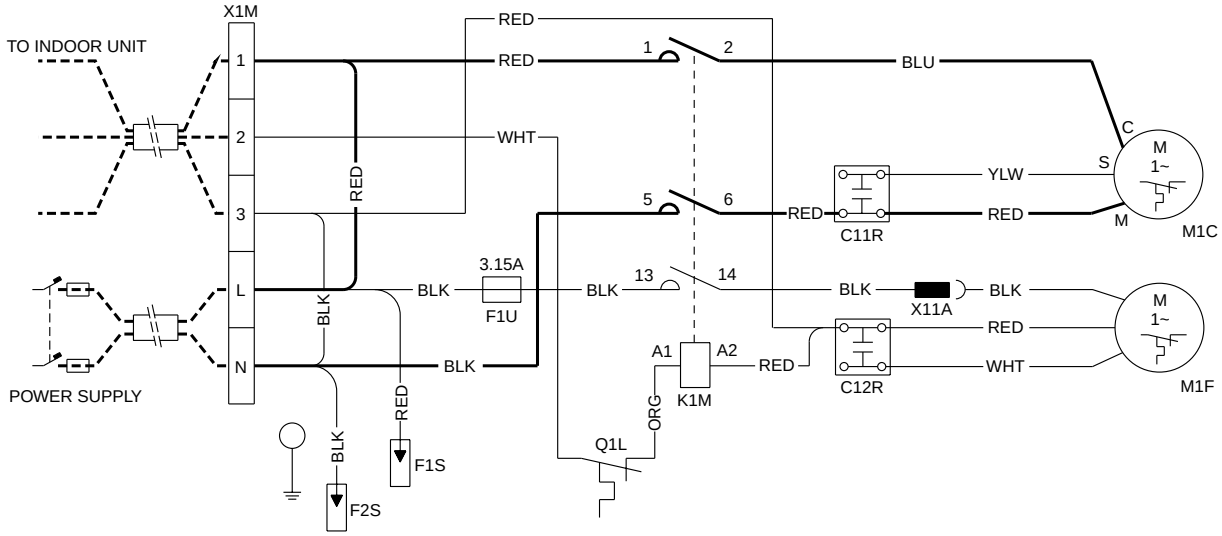
FG	: FRAME GROUND
Fu	: FUSE
H1,H2,H3	: HARNESS
H1P,H2P,H3P	: PILOT LAMP
LED	: LIGHT EMITTING DIODE
M1F	: FAN MOTOR
M1S,M2S	: SWING MOTOR
MR	: MAGNETIC RELAY
PCB1~PCB4	: PRINTED CIRCUIT BOARD
R1T,R2T	: THERMISTOR
S6~S201	: CONNECTOR
S1W	: OPARATION SWITCH
S8W	: CLEANING INDICATOR RESET SWITCH
X1M	: TERMINAL STRIP
⏚	: PROTECTIVE EARTH

NOTE
ADDRESS JUMPER IS MARKED "JA" ON PCB.

3D027720

2.2 Outdoor Unit

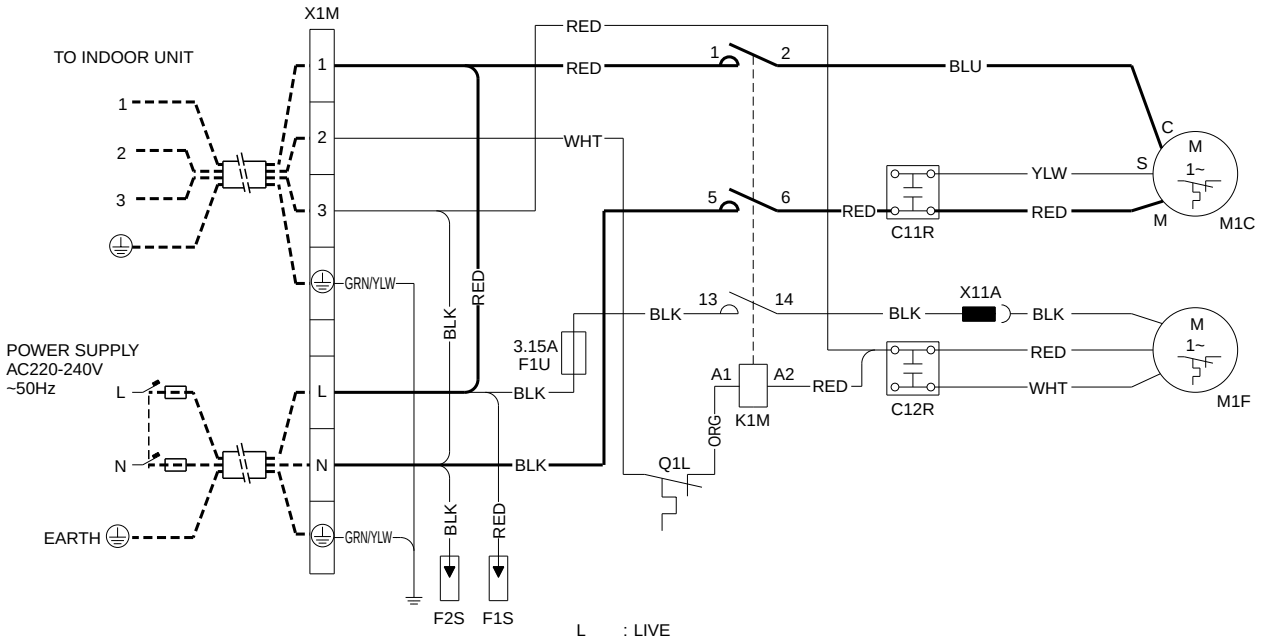
R50GV1(K)(9) , R50GVAL(9),



C11R,C12R	:RUNNING CAPACITOR	M1F	:FAN MOTOR	NOTES	
F1U	:FUSE	N	:NEUTRAL	1. REFER TO THE NAMEPLATE FOR THE POWER REQUIREMENTS.	
F1S	:SURGE ARRESTER	Q1L	:OVERLOAD PROTECTOR		
F2S	:SURGE ARRESTER	X11A	:CONNECTOR		
K1M	:COMPRESSOR RELAY	X1M	:TERMINAL STRIP		
L	:LIVE				
M1C	:COMPRESSOR MOTOR				

3D005285A

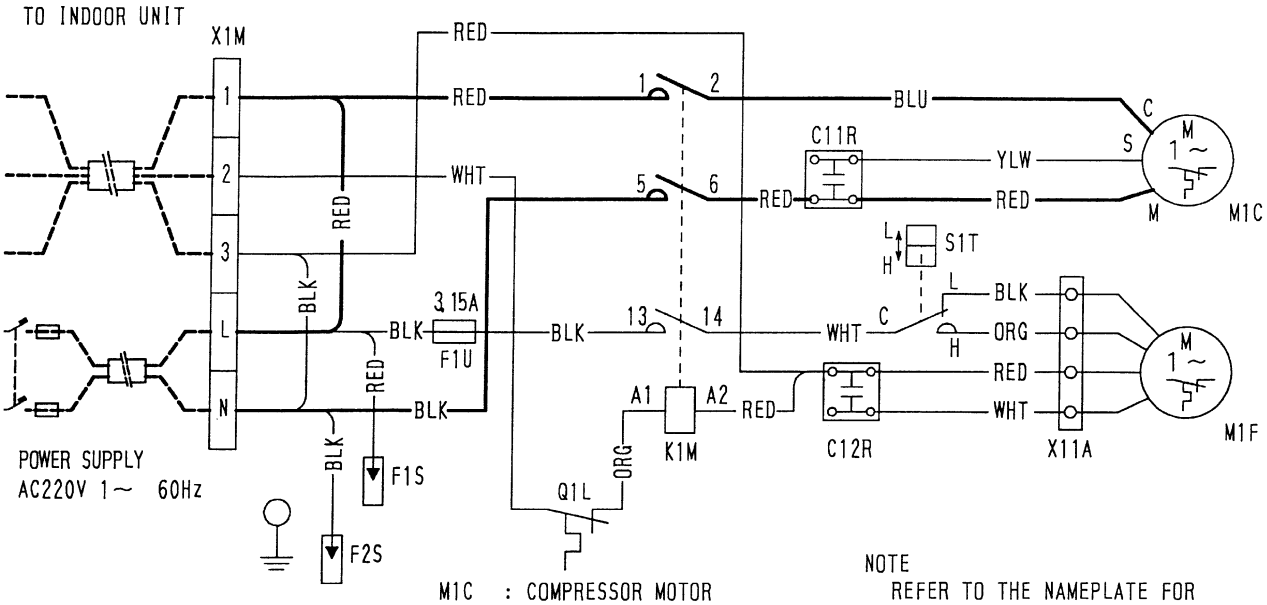
R50GAV1A(9)



C11R,C12R	: RUNNING CAPACITOR	L	: LIVE
F1S,F2S	: SURGE ARRESTER	M1C	: COMPRESSOR MOTOR
F1U	: FUSE	M1F	: FAN MOTOR
K1M	: COMPRESSOR RELAY	N	: NEUTRAL
		Q1L	: OVERLOAD PROTECTOR
		X11A	: CONNECTOR
		X1M	: TERMINAL STRIP

3D028077

R60GVAL(9)



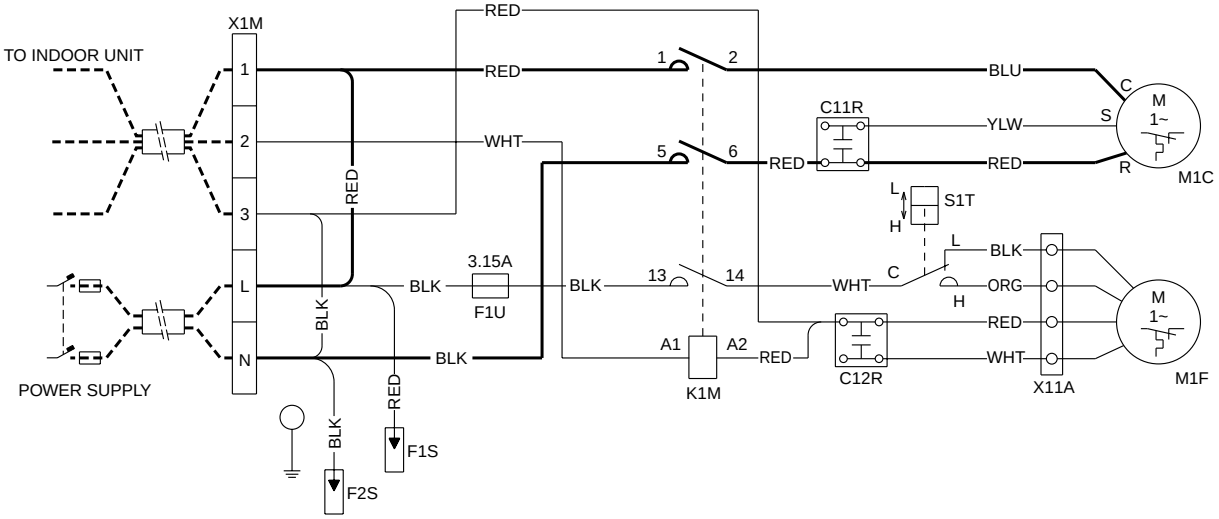
C11R, C12R : RUNNING CAPACITOR
F1S, F2S : SURGE ARRESTER
F1U : FUSE
K1M : COMPRESSOR RELAY
L : LIVE
N : NEUTRAL

M1C : COMPRESSOR MOTOR
S1T : THERMOSTAT
M1F : FAN MOTOR
Q1L : OVERLOAD PROTECTOR
X1M : TERMINAL STRIP
X11A : CONNECTOR

NOTE
REFER TO THE NAMEPLATE FOR THE POWER REQUIREMENTS.

3D005750A

R60GV1(K)(9)

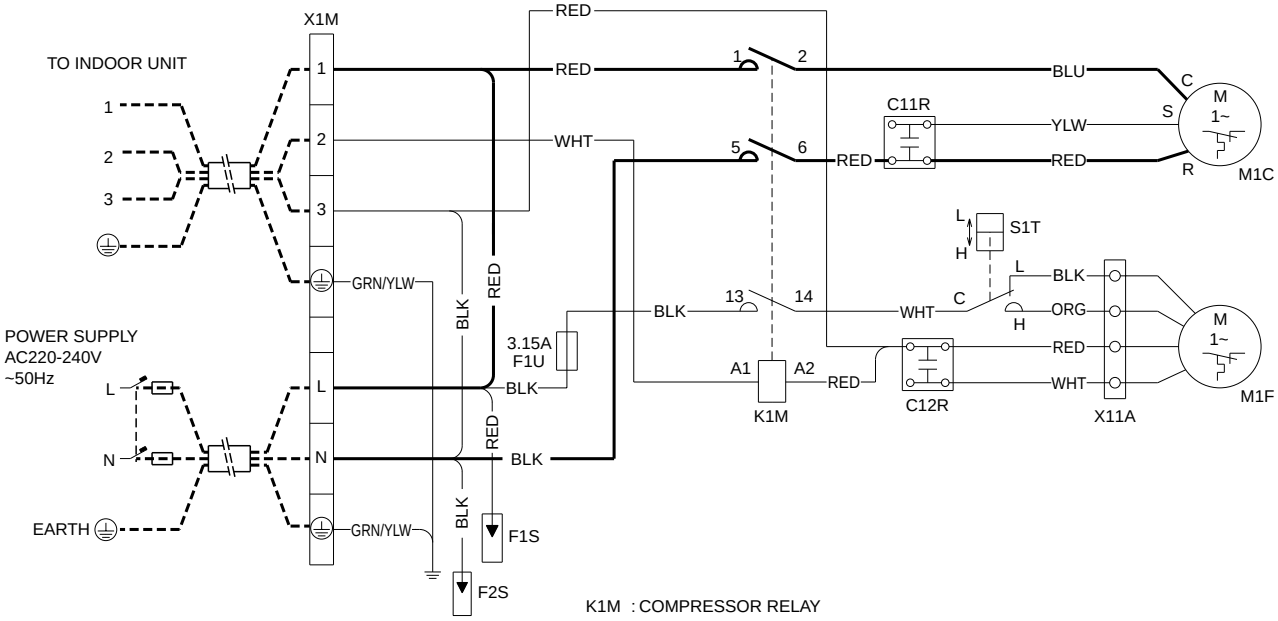


C11R,C12R :RUNNING CAPACITOR
F1S :SURGE ARRESTER
F2S :SURGE ARRESTER
F1U :FUSE
K1M :COMPRESSOR RELAY
L :LIVE
M1C :COMPRESSOR MOTOR
M1F :FAN MOTOR
N :NEUTRAL
S1T :THERMOSTAT
X11A :CONNECTOR
X1M :TERMINAL STRIP

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

3D004030A

R60GAV1A(9)



K1M : COMPRESSOR RELAY
L : LIVE
M1C : COMPRESSOR MOTOR
M1F : FAN MOTOR
N : NEUTRAL
S1T : THERMOSTAT
X11A : CONNECTOR
X1M : TERMINAL STRIP

C11R,C12R : RUNNING CAPACITOR
F1S,F2S : SURGE ARRESTER
F1U : FUSE

3D028078

Index

Drawings & Flow Charts

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