Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

INDOOR UNIT

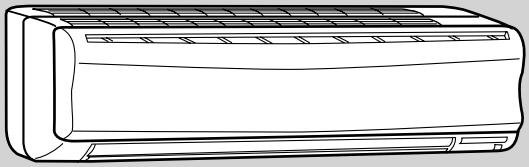
SERVICE MANUAL

No. OBH513

Wireless type
Model

MSH-GD80VB -E1

Outdoor unit service manual
MUH-GD•VB Series (OBH514)



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PARTS CATALOG (OBB513)

NOTE:
RoHS compliant products have <G> mark on the spec name plate.

CE

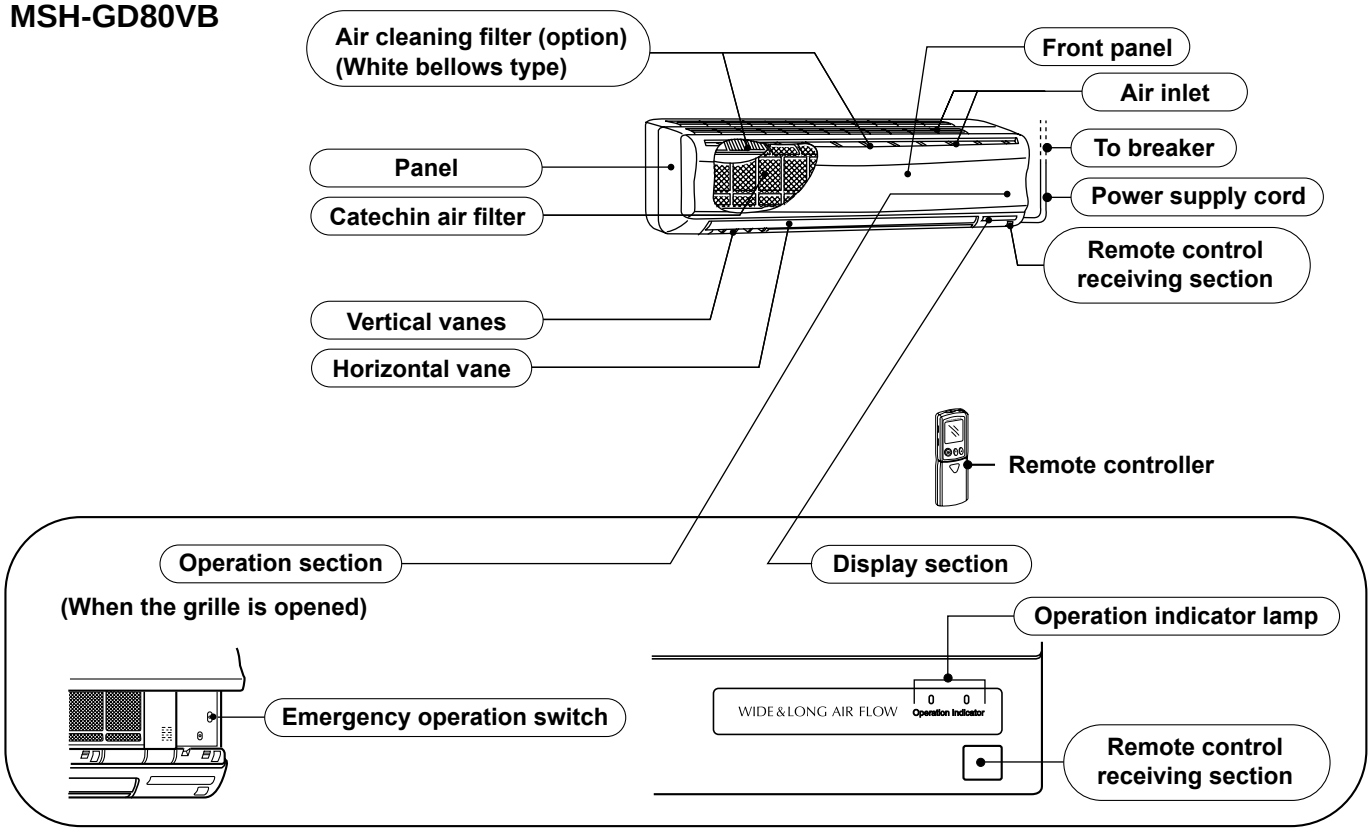
1 TECHNICAL CHANGES

MSH-GD80VB -E1

1. New model

2 PART NAMES AND FUNCTIONS

MSH-GD80VB



ACCESSORIES

		MSH-GD80VB
①	Installation plate	1
②	Installation plate fixing screw 4 × 25 mm	7
③	Remote controller holder	1
④	Fixing screw for ③×3.5 ×1.6 mm (Black)	2
⑤	Battery (AAA) for remote controller	2
⑥	Wireless remote controller	1
⑦	Felt tape (Used for left or left-rear piping)	1

3 SPECIFICATION

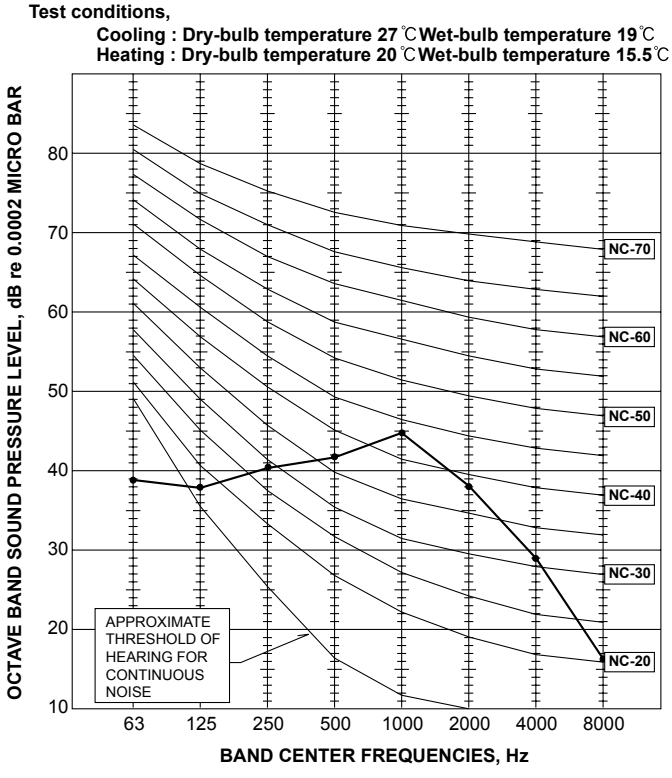
Indoor model			MSH-GD80VB	
Function			Cooling	Heating
Power supply			Single phase 230 V, 50 Hz	
Electrical data	Breaker capacity	A	10	
	Running current	A	0.34	
	Power input	W	69	
	Power factor	%	88	
Fan motor	Model		RC4V40-AA	
	Fan motor current	A	0.34	
Dimensions W × H × D		mm	1,100 × 325 × 258	
Weight		kg	16	
Special remarks	Air direction		5	
	Air flow (High/Med./Low)	m³/h	954/822/684	954/834/726
	Sound level (High/Med./Low)	dB	47/42/37	
	Fan speed (High/Med./Low)	rpm	1,280/1,130/970	1,280/1,150/1,020
	Fan speed regulator		3	
Remote controller model			KM04A	

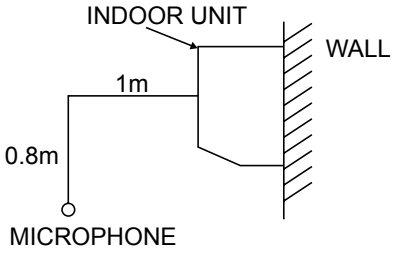
NOTE: Test conditions are based on ISO 5151.
Cooling: Indoor Dry-bulb temperature 27°C Wet-bulb temperature 19°C
Outdoor Dry-bulb temperature 35°C Wet-bulb temperature 24°C
Heating: Indoor Dry-bulb temperature 20°C Wet-bulb temperature 15.5°C
Outdoor Dry-bulb temperature 7°C Wet-bulb temperature 6°C
Indoor-Outdoor piping length: 5 m

4 NOISE CRITERIA CURVES

MSH-GD80VB

FAN SPEED	SPL(dB(A))	LINE
High	47	

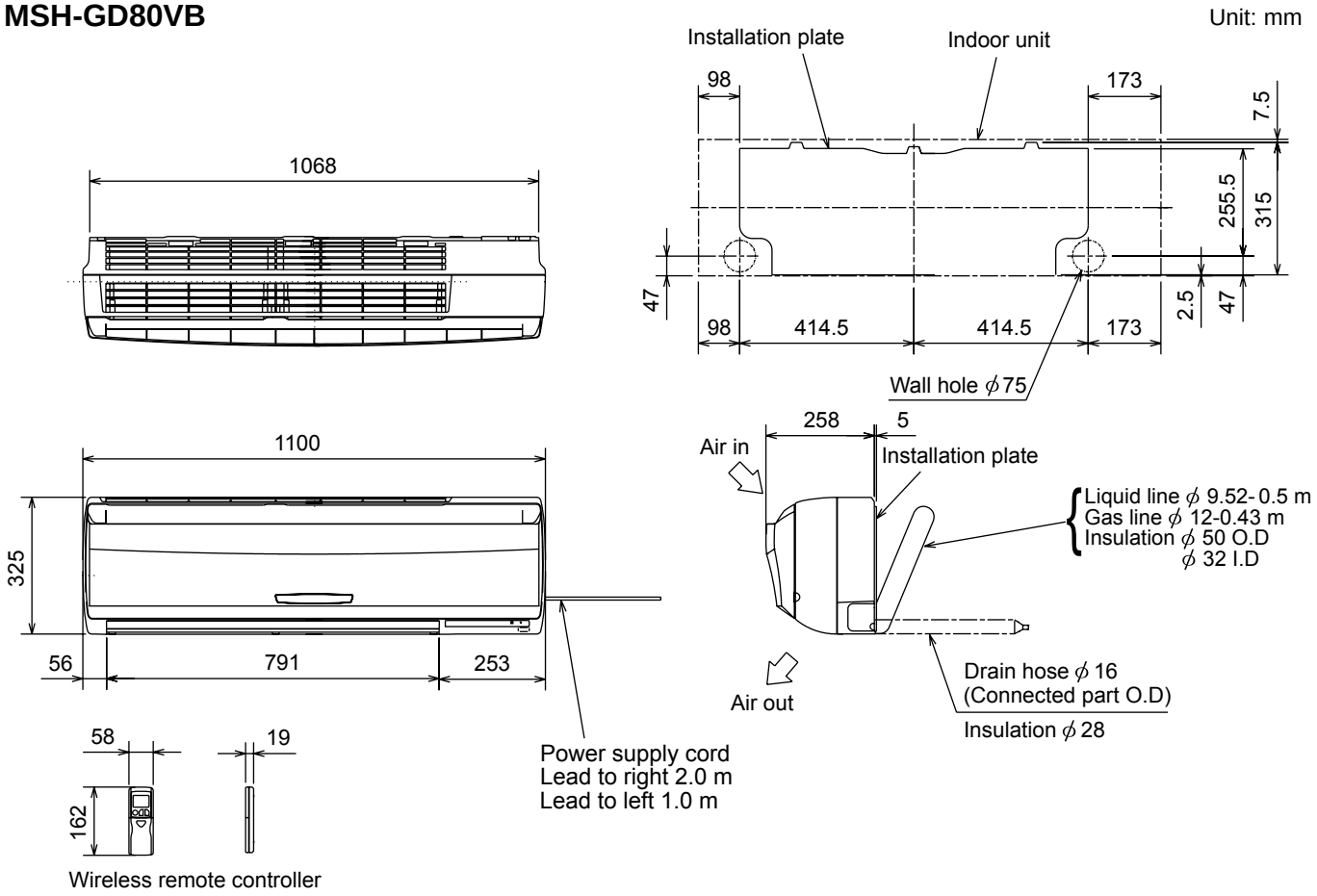




5 OUTLINES AND DIMENSIONS

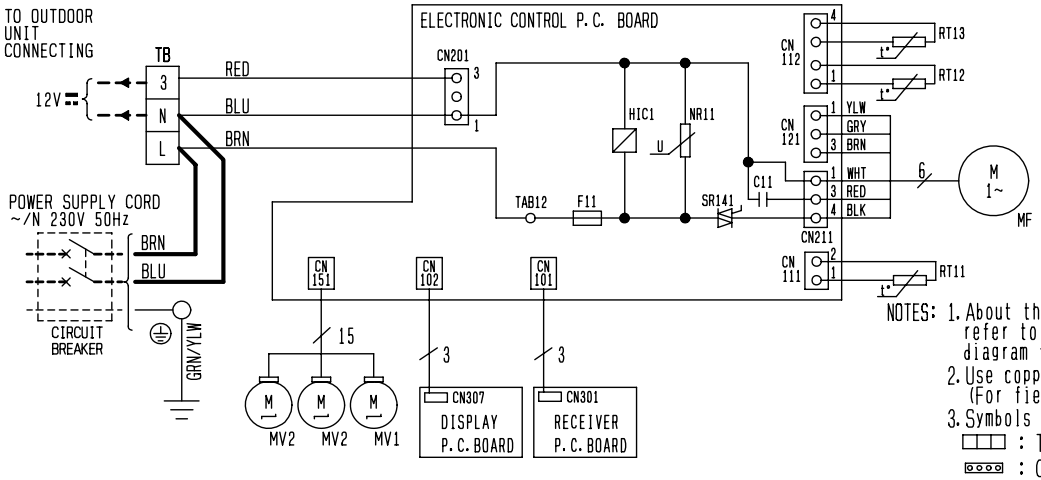
MSH-GD80VB

Unit: mm



6 WIRING DIAGRAM

MSH-GD80VB



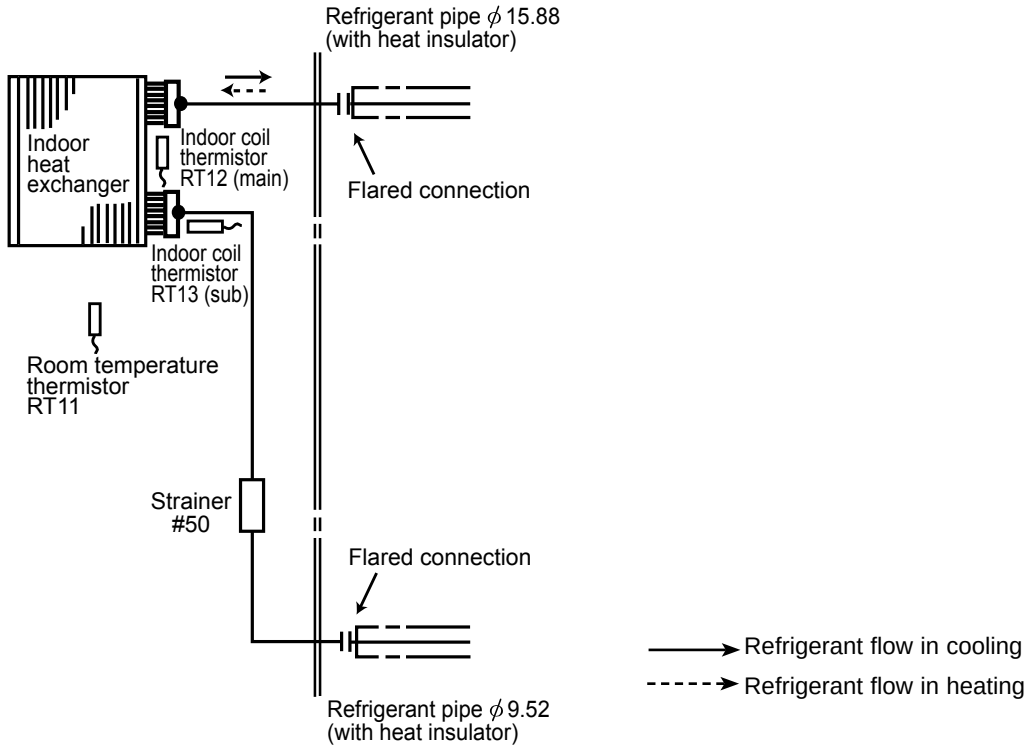
SYMBOL	NAME	SYMBOL	NAME
C11	FAN MOTOR CAPACITOR	NR11	VARISTOR
F11	FUSE (T3.15AL250V)	RT11	ROOM TEMP. THERMISTOR
HIC1	DC/DC CONVERTER	RT12	COIL TEMP. THERMISTOR (MAIN)
MF	FAN MOTOR (INNER PROTECTOR)	RT13	COIL TEMP. THERMISTOR (SUB)
MV1	VANE MOTOR (HORIZONTAL)	SR141	SOLID STATE RELAY
MV2	VANE MOTOR (VERTICAL)	TB	TERMINAL BLOCK

NOTES: 1. About the outdoor side electric wiring refer to the outdoor unit electric wiring diagram for servicing.
2. Use copper conductors only. (For field wiring)
3. Symbols below indicate.
: Terminal block
: Connector

7 REFRIGERANT SYSTEM DIAGRAM

MSH-GD80VB

Unit:mm



8 SERVICE FUNCTIONS

MSH-GD80VB

8-1. TIMER SHORT MODE

For service, set time can be shortened by short circuit of JPG and JPS on the electronic control P.C. board.
The time will be shortened as follows.
Set time: 1 minute ➔ 1-second
Set time: 3 minute ➔ 3-second (It takes 3 minutes for the compressor to start operation. However, the starting time is shortened by short circuit of JPG and JPS.)

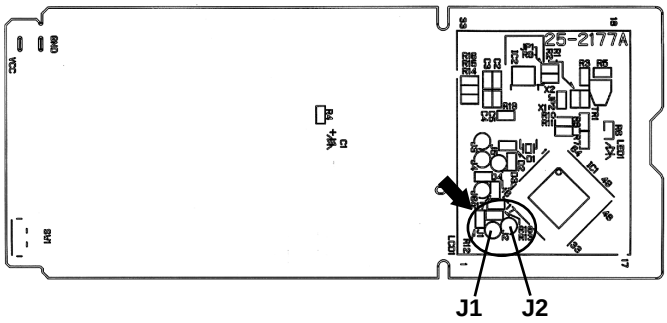
8-2. P.C. BOARD MODIFICATION FOR INDIVIDUAL OPERATION

A maximum of 4 indoor units with wireless remote controllers can be used in a room.
In this case, to operate each indoor unit individually by each remote controller, P.C. boards of remote controller must be modified according to the number of the indoor unit.

How to modify the remote controller P.C. board

Remove batteries before modification.
The board has a print as shown below:

NOTE: For modification, take out the batteries and press the OPERATE/STOP (ON/OFF) button 2 or 3 times at first. After modification, put back the batteries then press the RESET button.



The P.C. board has the print “J1” and “J2”. Solder “J1” and “J2” according to the number of indoor unit as shown in Table 1.
After modification, press the RESET button.

Table 1

	1 unit operation	2 units operation	3 units operation	4 units operation
No. 1 unit	No modification	Same as at left	Same as at left	Same as at left
No. 2 unit	–	Solder J1	Same as at left	Same as at left
No. 3 unit	–	–	Solder J2	Same as at left
No. 4 unit	–	–	–	Solder both J1 and J2

How to set the remote controller exclusively for particular indoor unit

After you turn the breaker ON, the first remote controller that sends the signal to the indoor unit will be regarded as the remote controller for the indoor unit.
The indoor unit only accepts the signal from the remote controller that has been assigned to the indoor unit once they are set. The setting will be cancelled if the breaker has turned off, or the power supply has shut down.
Please conduct the above setting once again after the power has restored.

8-3. AUTO RESTART FUNCTION

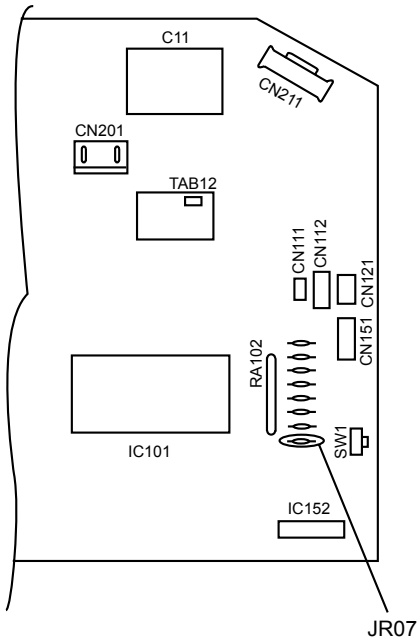
When the indoor unit is controlled with the remote controller, the operation mode, set temperature, and the fan speed are memorized by the indoor electronic control P.C. board. “AUTO RESTART FUNCTION” automatically starts operation in the same mode just before the shutoff of the main power. However if the unit is operated in “I FEEL CONTROL” mode before power failure, the operation is not memorized. In “I FEEL CONTROL” mode, the operation is decided by the initial room temperature.

Operation

①If the main power has been cut, the operation settings remain.
②After the power is restored, the unit restarts automatically according to the memory. (However, it takes at least 3 minutes for the compressor to start running.)

How to release “AUTO RESTART FUNCTION”

①Turn OFF the main power for the unit.
②Solder jumper wire to JR07 on the indoor electronic control P.C. board. (Refer to 10-6.)



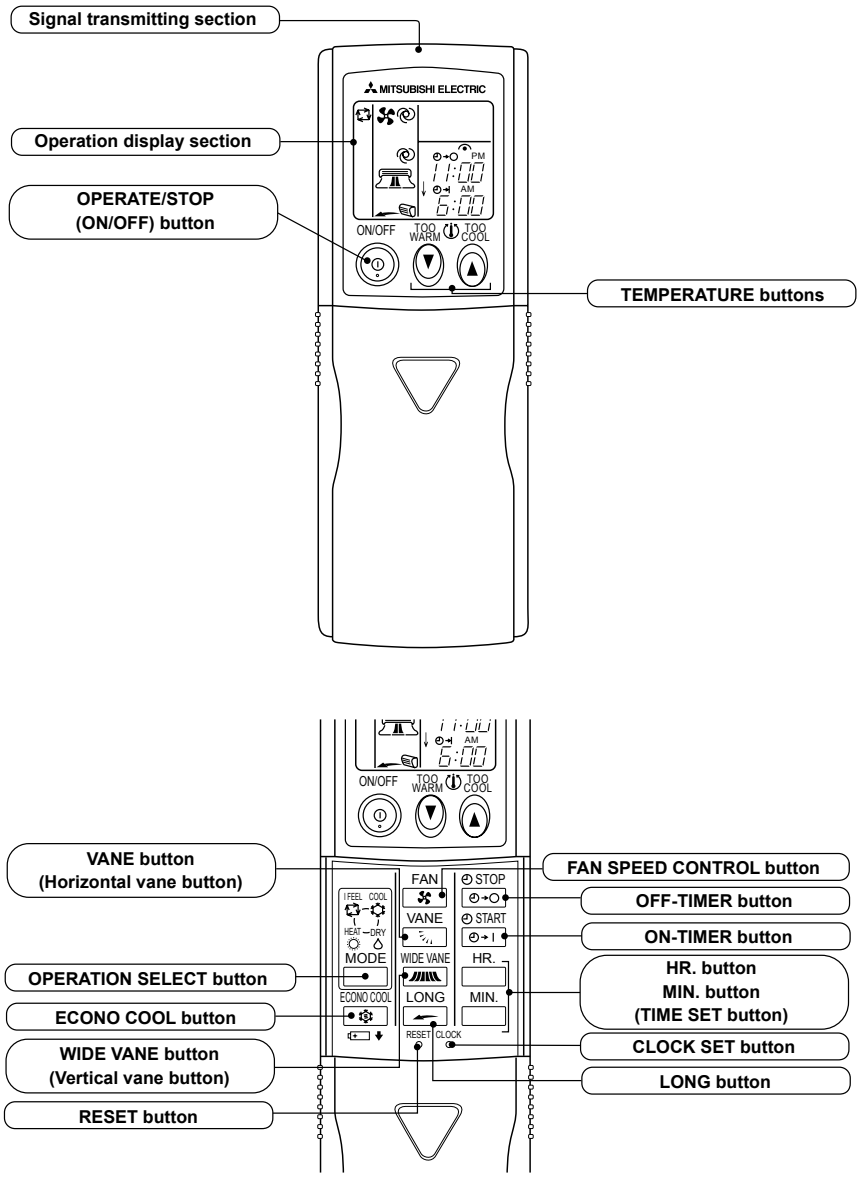
NOTE:

- The operation settings are memorized when 10 seconds have passed after the remote controller was operated with the remote controller.
- If main power is turned OFF or a power failure occurs while AUTO START/STOP timer is active, the timer setting is cancelled.
- If the unit has been OFF with the remote controller before power failure, the auto restart function does not work as the power button of the remote controller is OFF.
- To prevent breaker OFF due to the rush of starting current, systematize other home appliances not to turn ON at the same time.
- When some air conditioners are connected to the same supply system, if they are operated before power failure, the starting current of all the compressors may flow simultaneously at restart.
  Therefore, the special counter-measures are required to prevent the main voltage-drop or the rush of the starting current by adding to the system that allows the units to start one by one.

9 MICROPROCESSOR CONTROL

MSH-GD80VB

WIRELESS REMOTE CONTROLLER



NOTE:

- The last setting will be stored after the unit is turned OFF with the remote controller.
- Indoor unit receives the signal of the remote controller with beeps.

INDOOR UNIT DISPLAY SECTION

OPERATION INDICATOR lamp

The OPERATION INDICATOR at the right side of the indoor unit indicates the operation state.

·The following indication applies regardless of shape of the indicator.

Operation Indicator

☀ **Lighted**

○ **Not lighted**

Indication	Operation state	Difference between target temperature and room temperature
☀ ☀	This shows that the air conditioner is operating to reach the target temperature. Please wait until the target temperature is obtained.	Approx. 2℃ or more
☀ ○	This shows that the room temperature is approaching the target temperature.	Approx. 2℃ or less

9-1. COOL (☼) OPERATION

(1) Press OPERATE/STOP (ON/OFF) button.
OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select COOL mode with OPERATION SELECT button.
(3) Press TEMPERATURE buttons.
(TOO WARM or TOO COOL button) to select the desired temperature.
The setting range is 16 ~ 31°C.
✻ Indoor fan continues to operate regardless of thermostat's OFF-ON at set speed.

1. Coil frost prevention

When the temperature of indoor heat exchanger becomes too low, the coil frost prevention mode works.
The indoor fan operates at the set speed and the compressor stops. This mode continues until the temperature of indoor heat exchanger rises.

2. Discharge temperature protection

The compressor is controlled by the temperature of discharge temperature thermistor RT62 for excess rise protection of compressor discharge pressure.

9-2. DRY (△) OPERATION

(1) Press OPERATE/STOP (ON/OFF) button.
OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.
(2) Select DRY mode with OPERATION SELECT button.
(3) The set temperature is determined from the initial room temperature.
(4) DRY operation will not function when the room temperature is 13°C or below.

1. Indoor fan speed control

Indoor fan operates at the set speed by FAN SPEED CONTROL button.
However, in AUTO fan operation, fan speed becomes Low.

2. The operation of the compressor and indoor/outdoor fan

Compressor operates by room temperature control and time control.
Set temperature is controlled to fall 2°C from initial room temperature.
Indoor fan and outdoor fan operate in the same cycle as the compressor.

3. Coil frost prevention

- The operation is as same as coil frost prevention during COOL mode.
- Indoor fan operates at the set speed and the compressor stops for 5 minutes, because protection(Coil frost prevention) has the priority.
  However, when the coil frost prevention works while the compressor is not operating, the indoor fan speed becomes Low.

9-3. HEAT (☼) OPERATION

(1) Press OPERATE/STOP (ON/OFF) button.
OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.
(2) Select HEAT mode with OPERATION SELECT button.
(3) Press TEMPERATURE buttons (TOO WARM or TOO COOL button) to select the desired temperature.
The setting range is 16 ~ 31°C.

1. Cold air prevention control

When the compressor is not operating or is starting, and the temperature of indoor heat exchanger and/or the room temperature is low or when defrosting is being done, the indoor fan will stop or rotate in Very Low speed.

2. Discharge temperature protection

Discharge temperature protection is as same as during COOL mode of "I FEEL CONTROL".

3. Defrosting

Defrosting starts when the temperature of outdoor heat exchanger becomes too low.
The compressor stops once, the indoor/outdoor fans stop, the 4-way valve reverses, and the compressor re-starts.
This mode continues until the temperature of outdoor heat exchanger rises or the fixed time passes.

9-4."I FEEL CONTROL" (▭) OPERATION

(1) Press OPERATE/STOP (ON/OFF) button on the remote controller.
OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select "I FEEL CONTROL" mode with OPERATION SELECT button.
(3) The operation mode is determined by the room temperature at start-up of the operation.

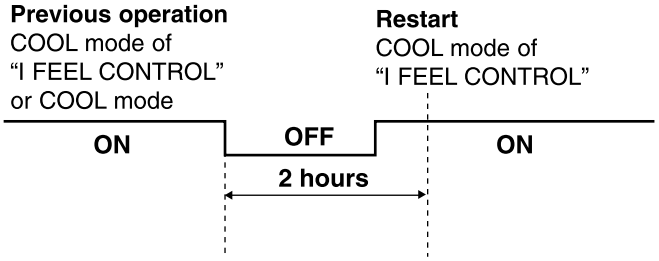
Initial room temperature	Mode
25℃ or more	COOL mode of "I FEEL CONTROL"
23℃ to 25℃	DRY mode of "I FEEL CONTROL"
less than 23℃	HEAT mode of "I FEEL CONTROL"

• Once the mode is fixed, the mode does not change by room temperature afterwards.
• Under ON-TIMER (◴→|) operation, mode is determined as follows.

When the system is stopped on the remote controller, and restarted within 2 hours in “I FEEL CONTROL” (▭) mode, the system operates in previous mode automatically regardless of the room temperature.

Operation time chart

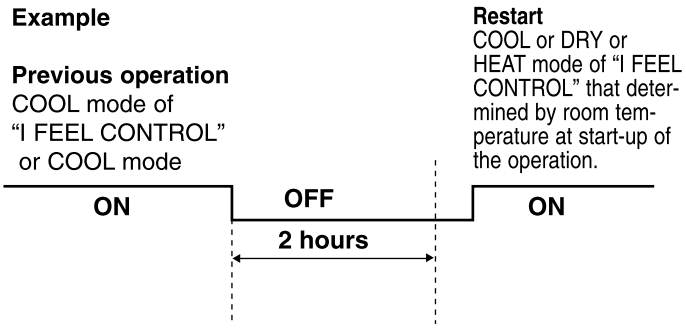
Example



When the system is restarted after 2 hours and more, the operation mode is determined by the room temperature at start-up of the operation.

Operation time chart

Example



(4) The initial set temperature is decided by the initial room temperature.

Model	Initial room temperature	Initial set temperature	
COOL mode of "I FEEL CONTROL"	26℃ or more	24℃	✻1
	25℃ to 26℃	Initial room temperature minus 2℃	
DRY mode of "I FEEL CONTROL"	23℃ to 25℃	Initial room temperature minus 2℃	
HEAT mode of "I FEEL CONTROL"	less than 23℃	26℃	

✻1 When the system is restarted with the remote controller, the system operates with the previous set temperature regardless of room temperature at restart.
The set temperature is calculated by the previous set temperature.

(5) TEMPERATURE buttons

In “I FEEL CONTROL” (▭) mode, set temperature is decided by the microprocessor based on the room temperature. In addition, set temperature can be controlled by TOO WARM or TOO COOL buttons when you feel too cool or too warm. Each time TOO WARM or TOO COOL button is pressed, the indoor unit receives the signal and emits a beep tone.

• **Fuzzy control**

When TOO COOL or TOO WARM button is pressed, the microprocessor changes the set temperature, considering the room temperature, the frequency of pressing TOO COOL or TOO WARM button and the user’s preference to heat or cool. So this is called “Fuzzy control”, and works only in “I FEEL CONTROL” mode.
In DRY mode of “I FEEL CONTROL”, the set temperature doesn’t change.

⋯To raise the set temperature 1~2°C

⋯To lower the set temperature 1~2°C

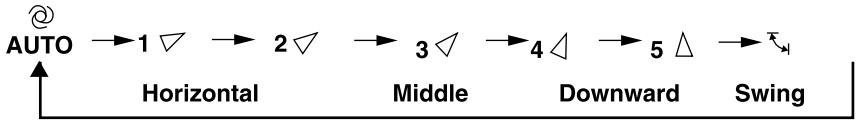
9-5. AUTO VANE OPERATION

1. Horizontal vane

(1) Vane motor drive

These models are equipped with a stepping motor for the horizontal vane. The rotating direction, speed, and angle of the motor are controlled by pulse signals (approximate 12V) transmitted from indoor microprocessor.

(2) The horizontal vane angle and mode change as follows by pressing the VANE button.



(3) Positioning

To confirm the standard position, the vane moves until it touches the vane stopper. Then the vane is set to the desired angle.

Confirming of standard position is performed in the following case:

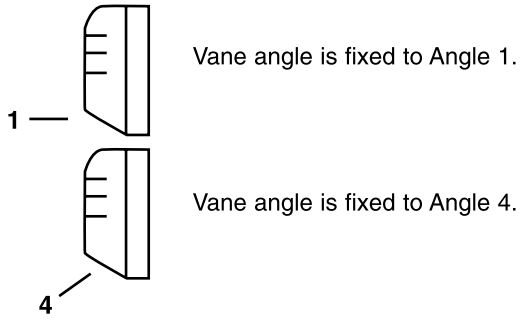
(a) When the power supply turns ON.
(b) When the operation starts or finishes (including timer operation).
(c) When the test run starts.
(d) When the vane control is changed AUTO to MANUAL (except SWING).
(e) When SWING is finished (including ECONO COOL).
(f) When multi-standby starts or finishes.

(4) VANE AUTO ( ) mode

In VANE AUTO mode, the microprocessor automatically determines the horizontal vane angle and operation to make the optimum room-temperature distribution.

① In COOL and DRY operation

② In HEAT operation



Vane angle is fixed to Angle 1.

Vane angle is fixed to Angle 4.

(5) STOP (operation OFF) and ON-TIMER standby

When the following cases occur, the horizontal vane returns to the closed position.

(a) When OPERATE/STOP (ON/OFF) button is pressed (POWER OFF).
(b) When the operation is stopped by the emergency operation.
(c) When ON-TIMER is on standby.

(6) Dew prevention

During COOL or DRY operation at Vane Angle 4 or 5 when the compressor cumulative operation time of compressor exceeds 1 hour, the vane angle automatically changes to Angle 1 for dew prevention.

(7) SWING mode ( )

By selecting SWING mode with VANE button, the horizontal vane swings vertically. The remote controller displays " ". SWING mode is cancelled when VANE button is pressed once again.

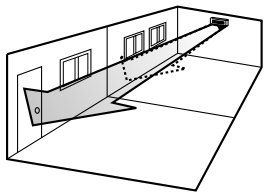
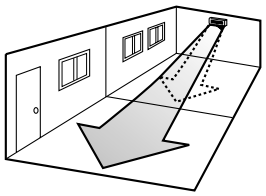
(8) Cold air prevention in HEAT operation

The horizontal vane position is set to Upward.

(9) ECONO COOL ( ) operation (ECONOmical operation)
When ECONO COOL button is pressed in COOL mode, set temperature is automatically set 2 C higher.
Also the horizontal vane swings in various cycle.
SWING operation makes you feel cooler than set temperature. So, even though the set temperature is higher, the air conditioner can keep comfort. As a result, energy can be saved.
ECONO COOL operation is cancelled when ECONO COOL button is pressed once again or VANE button or LONG button is pressed or changed to other operation mode.

(10) LONG mode ( )
By pressing LONG button indoor fan speed becomes faster than setting fan speed on the remote controller, and the horizontal vane moves to the position for LONG mode. The remote controller displays " ". LONG mode is cancelled when LONG button is pressed once again or VANE button is pressed or ECONO COOL button is pressed in COOL mode.

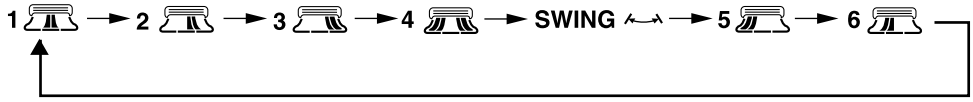
• In the following example, the vertical vane is set to (front.).

COOL / DRY	HEAT
	
Fan speed : Faster Solid arrow : When LONG mode is used. Dotted arrow : When LONG mode is not used.	

2. Vertical vane

(1) Vane motor drive
These models are equipped with a stepping motor for the vertical vane. The rotating direction, speed, and angle of the motor are controlled by pulse signals (approximate 12V) transmitted from microprocessor.

(2) The vertical vane angle and mode change as follows by pressing the WIDE VANE button.



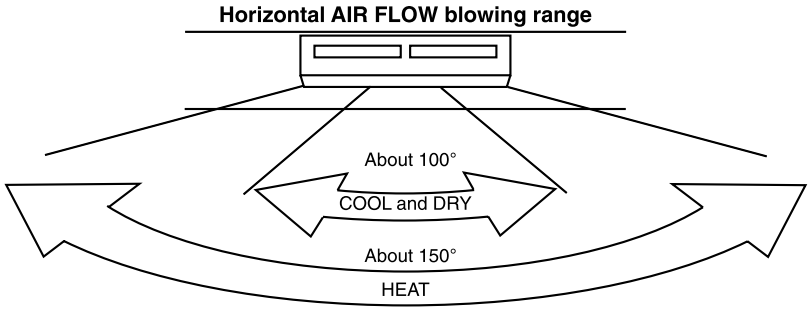
(3) Positioning
To confirm the standard position, the vane moves until it touches the vane stopper. Then the vane is set to the desired angle.
Confirming of standard position is performed in the following case:
(a) When OPERATE/STOP(ON/OFF) button is pressed (POWER ON/OFF).
(b) When SWING is started or finished.
(c) When the power supply turns ON.

(4) SWING mode ( )
By selecting SWING mode with WIDE VANE button, the vertical vane swings horizontally. The remote controller displays " ". The vane moves right and left in the width of Angle 4 repeatedly.

(5) WIDE mode ( )
By selecting WIDE mode with WIDE VANE button, indoor fan speed becomes faster than setting fan speed on the remote controller (※). The remote controller displays " ".

NOTE : The position of vane angle 3, angle 4 and angle 5 are different in COOL operation and HEAT operation.

※ Indoor fan speed becomes faster than setting fan speed on the remote controller even when or is selected.



9-6. TIMER OPERATION

1. How to set the timer

(1) Press OPERATE/STOP (ON/OFF) button to start the air conditioner.

(2) Check that the current time is set correctly.

NOTE : Timer operation will not work without setting the current time. Initially “AM0:00” blinks at the current time display of TIME MONITOR, so set the current time correctly with CLOCK SET button.

(3) Press ON/OFF TIMER buttons to select the operation.

“ON-TIMER” button... AUTO START operation (ON timer)

“OFF-TIMER” button... AUTO STOP operation (OFF timer)

(4) Press HR. and MIN. button to set the timer. Time setting is 10-minute units.

HR. and MIN. button will work when “ ◴→| ” or “ ◴→◯ ” mark is flashing.

These marks disappear in 1 minute.

After setting the ON timer, check that OPERATION INDICATOR lamp of the indoor unit lights.

NOTE1 : Be sure to place the remote controller at the position where its signal can reach the air conditioner even during TIMER operation, or the set time may deviate within the range of about 10 minutes.

NOTE2 : Reset the timer in the following cases, or the set time may deviate and other malfunctions may occur.

- A power failure occurs.
- The circuit breaker functions.

2. Cancel

TIMER setting can be cancelled with the ON/OFF TIMER buttons.

To cancel ON timer, press “ON-TIMER” button.

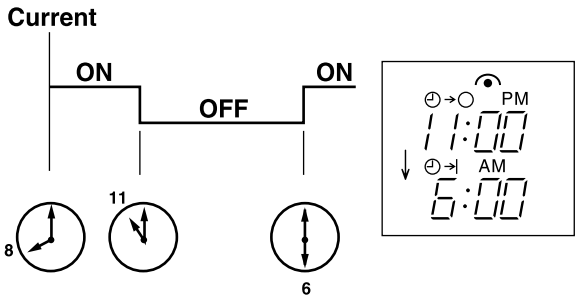
To cancel OFF timer, press “OFF-TIMER” button.

TIMER is cancelled and the display of set time disappears.

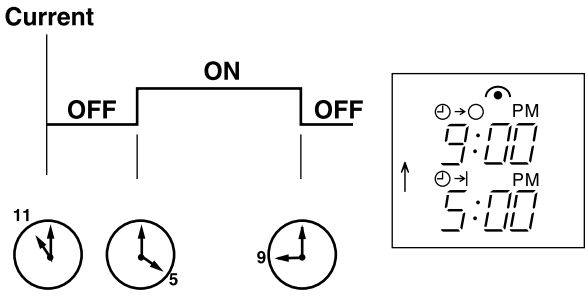
PROGRAM TIMER

- OFF timer and ON timer can be used in combination.
- “ ↑ ” and “ ↓ ” display shows the order of OFF timer and ON timer operation.

(Example 1) The current time is 8:00 PM.
The unit turns OFF at 11:00 PM, and ON at 6:00 AM.



(Example 2) The current time is 11:00 AM.
The unit turns ON at 5:00 PM, and OFF at 9:00 PM.



NOTE : TIMER setting will be cancelled by power failure or breaker functioning.

9-7. EMERGENCY/TEST OPERATION

In case of test run operation or emergency operation, use EMERGENCY OPERATION switch on the front of the indoor unit. Emergency operation is available when the remote controller is missing, has failed or the batteries of remote controller run down. The unit will start and OPERATION INDICATOR lamp will light.

The first 30 minutes of operation is the test run operation. This operation is for servicing. The indoor fan speed runs at High speed and the system is in continuous operation. (The thermostat is ON.)

After 30 minutes of test run operation, the system shifts to EMERGENCY COOL / HEAT MODE with a set temperature of 24°C.

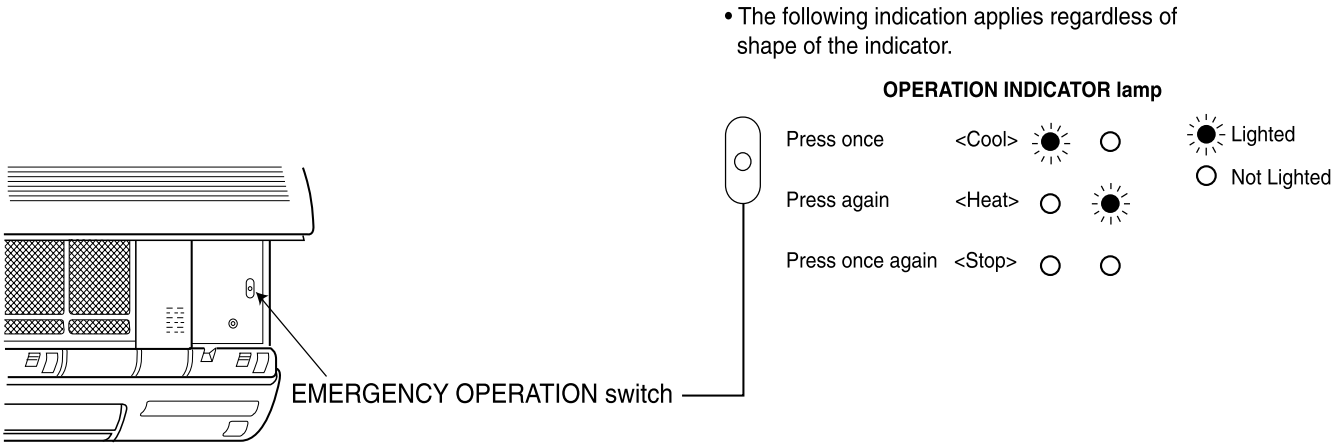
The fan speed shifts to Med. speed.

The coil frost prevention works even in emergency operation, and defrosting too.

In the test run or emergency operation, the horizontal vane operates in VANE AUTO (@) mode.

Emergency operation continues until EMERGENCY OPERATION switch is pressed once or twice or the unit receives any signal from the remote controller. In case of latter, normal operation will start.

NOTE : Do not press EMERGENCY OPERATION switch during normal operation.



9-8. 3-MINUTE TIME DELAY OPERATION

When the system turns OFF, compressor will not restart for 3 minutes as 3-minute time delay function operates to protect compressor form overload.

10 TROUBLESHOOTING

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10-1. CAUTIONS ON TROUBLESHOOTING

1. Before troubleshooting, check the following:

(1) Check the power supply voltage.

(2) Check the indoor/outdoor connecting wire for mis-wiring.

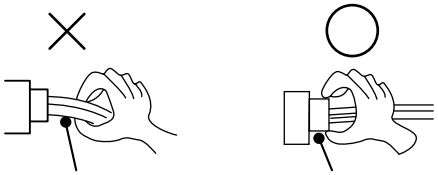
2. Take care the following during servicing.

(1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and then after confirming the horizontal vane is closed, turn OFF the breaker and / or disconnect the power plug.

(2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.

(3) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.

(4) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



Lead wiring **Housing point**

3. Troubleshooting procedure

(1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing ON and OFF to indicate an abnormality. To make sure, check how many times the OPERATION INDICATOR lamp is flashing ON and OFF before starting service work.

(2) Before servicing, check that the connector and terminal are connected properly.

(3) When the electronic control P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.

(4) When troubleshooting, refer to 10-2. and 10-3.

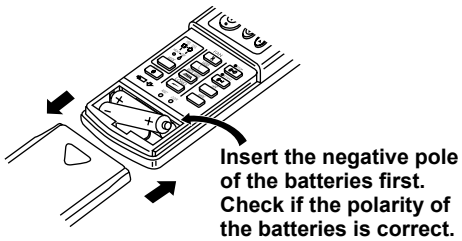
4. How to replace batteries

Weak batteries may cause the remote controller malfunction.

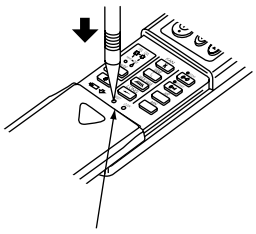
In this case, replace the batteries to operate the remote controller normally.

① Remove the front lid and insert batteries. Then reattach the front lid.

② Press the RESET button with tip end of ball point pen or the like, and then use the remote controller.



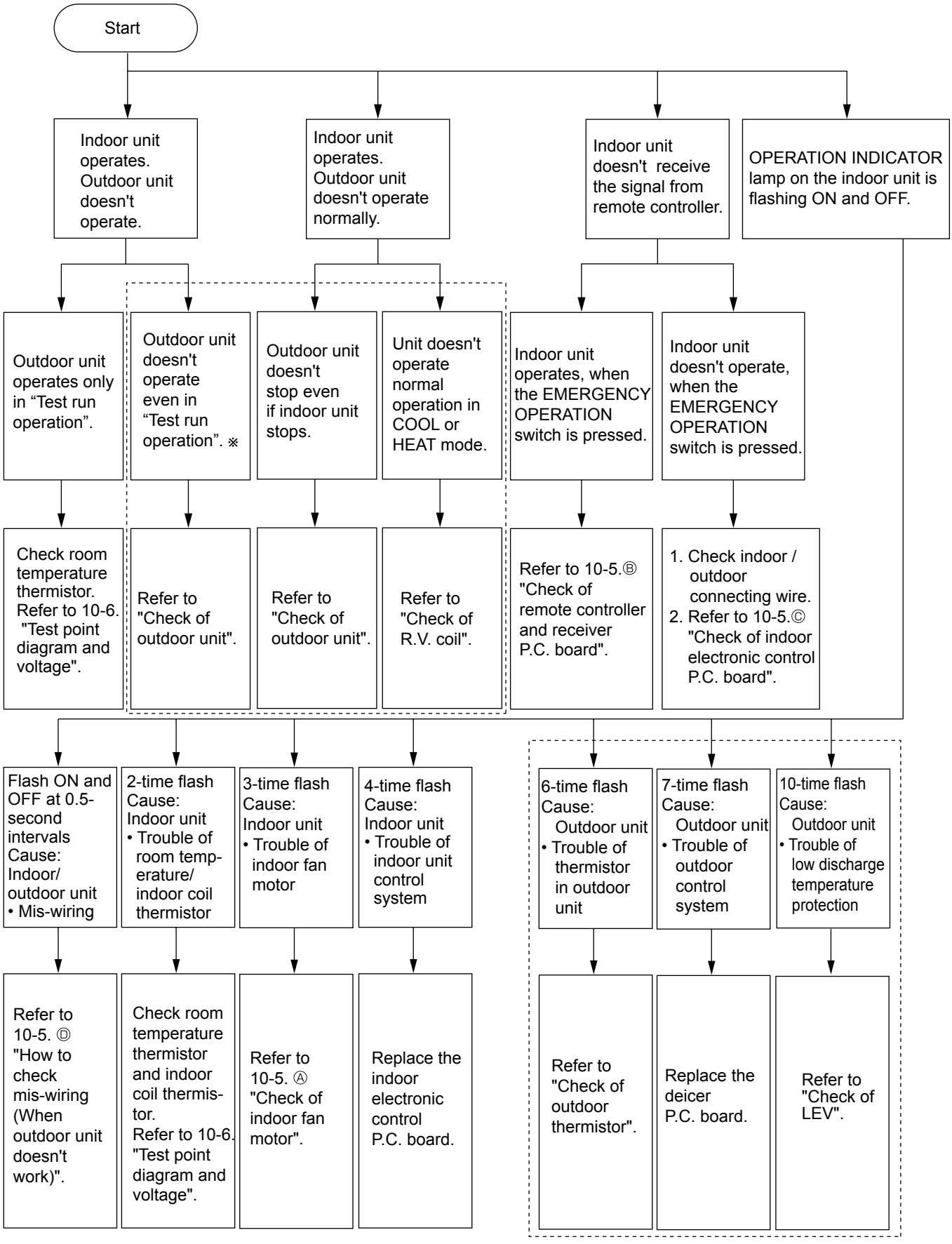
Insert the negative pole of the batteries first. Check if the polarity of the batteries is correct.



RESET button

NOTE: If the RESET button is not pressed, the remote controller may not operate correctly.

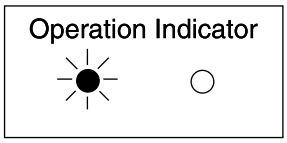
10-2. INSTRUCTION OF TROUBLESHOOTING



※"Test run operation" means the operation within 30 minutes after EMERGENCY OPERATION switch is pressed.
Refer to outdoor unit service manual.

10-3. TROUBLESHOOTING CHECK TABLE

• Before taking measures, make sure that the symptom reappears for accurate troubleshooting.
When the indoor unit has started operation and the following detection method has detected an abnormality (the first detection after the power ON), the indoor electronic control P.C. board turns OFF the indoor fan motor with the OPERATION INDICATOR lamp flashing.



Lighted

Not lighted

· Flashing of the OPERATION INDICATOR lamp (the left-hand side lamp) indicates possible abnormalities.

No.	Abnormal point	Operation indicator lamp	Symptom	Condition	Checkpoint
1	Mis-Wiring	0.5-second ON 0.5-second OFF	Outdoor unit does not operate.	3 minutes after power supply turns ON, serial signal is not received.	• Refer to 10-5. Ⓓ "How to check mis-wiring ".
2	Indoor coil thermistor Room temperature thermistor	2-time flash 2.5-second OFF	Outdoor unit does not operate.	Indoor coil/room temperature thermistor detects short or open circuit every 8 seconds during operation.	• Refer to the characteristics of indoor coil thermistor, and room temperature thermistor on 10-6.
3	Indoor fan motor	3-time flash 2.5-second OFF	Indoor fan repeats 12 seconds ON and 3minutes OFF. When the indoor fan breaks, the fan keeps stopping.	The rotational frequency feedback signal is not sent out for 12 seconds after indoor fan motor is operated.	• Refer to 10-5. Ⓐ "Check of indoor fan motor".
4	Indoor control system	4-time flash 2.5-second OFF	Outdoor unit does not operate.	It cannot properly read data in the nonvolatile memory of the indoor electronic control P.C. board.	• Check the indoor electronic control P.C. board.
5	Outdoor thermistor	6-time flash 2.5-second OFF	Outdoor unit does not operate.	<Thermistor short> Thermistors are abnormal when they short after compressor start-up. <Thermistor open> Thermistors are abnormal when they open after compressor start-up. However, discharge temperature thermistor is abnormal when open circuit is detected more than 10 minutes after compressor start-up.	• Shortage of refrigerant • Check the deicer P.C. board. Refer to "Check of outdoor thermistor". Refer to outdoor service manual.
6	Outdoor control system	7-time flash 2.5-second OFF	Outdoor unit does not operate.	It cannot properly read data in the nonvolatile memory of the deicer P.C. board, outdoor unit stops.	• Check the deicer P.C. board. Refer to outdoor service manual.
7	Low discharge temperature protection	10-time flash 2.5-second OFF	Outdoor unit does not operate.	Discharge temperature has been 50℃ or less on cool operation, or has been 49℃ or less on heat operation for 20 minutes.	• Refer to "Check of LEV". • Check refrigerant circuit and refrigerant amount. Refer to outdoor unit service manual.

10-4. TROUBLE CRITERION OF MAIN PARTS

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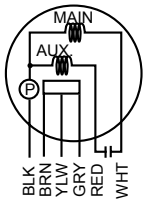
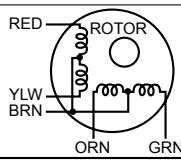
<table>
<tr><th>Part name</th><th colspan="2">Check method and criterion</th><th>Figure</th></tr>
<tr><td>Room temperature thermistor (RT11)
Indoor coil thermistor (RT12 (main), RT13 (sub))</td><td colspan="2">Measure the resistance with a tester.
(Part temperature 10°C ~ 30°C)

Refer to 10-6."Test point diagram and voltage",
"Indoor electronic control P.C. board", the chart of thermistor.</td><td></td></tr>
<tr><td rowspan="2">Indoor fan motor (MF)

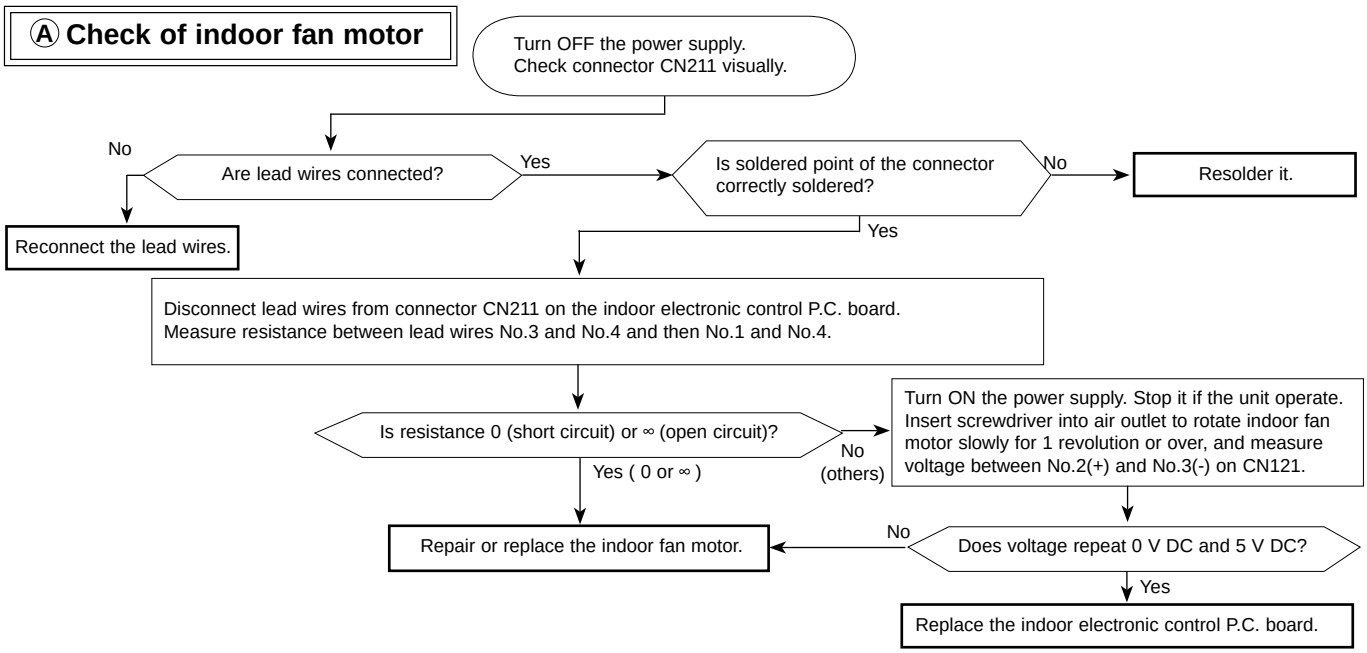
INNER PROTECTOR
135 ± 5℃ OPEN</td><td>Motor part</td><td>Measure the resistance between the terminals with a tester.
(Part temperature 10°C ~ 30°C)

<table><tr><th>Color of lead wire</th><th>Normal</th></tr><tr><td>WHT – BLK</td><td>132 Ω ~ 144 Ω</td></tr><tr><td>BLK – RED</td><td>152 Ω ~ 166 Ω</td></tr></table></td><td rowspan="2">  </td></tr>
<tr><td>Sensor part</td><td>Measure the voltage power ON.
<table><tr><th>Color of lead wire</th><th>Normal</th></tr><tr><td>BRN – YLW</td><td>4.5 ~ 5.5 V</td></tr><tr><td>YLW – GRY</td><td>(When fan revolved one time)
0 V → 5 V → 0 V
(Approx.)</td></tr></table></td></tr>
<tr><td>Horizontal vane motor (MV1)
Vertical vane motor (MV2)</td><td colspan="2">Measure the resistance between the terminal with a tester.
(Part temperature 10°C ~ 30°C)
<table><tr><th>Normal</th></tr><tr><td>282 Ω ~ 306 Ω</td></tr></table></td><td>  </td></tr>
</table>

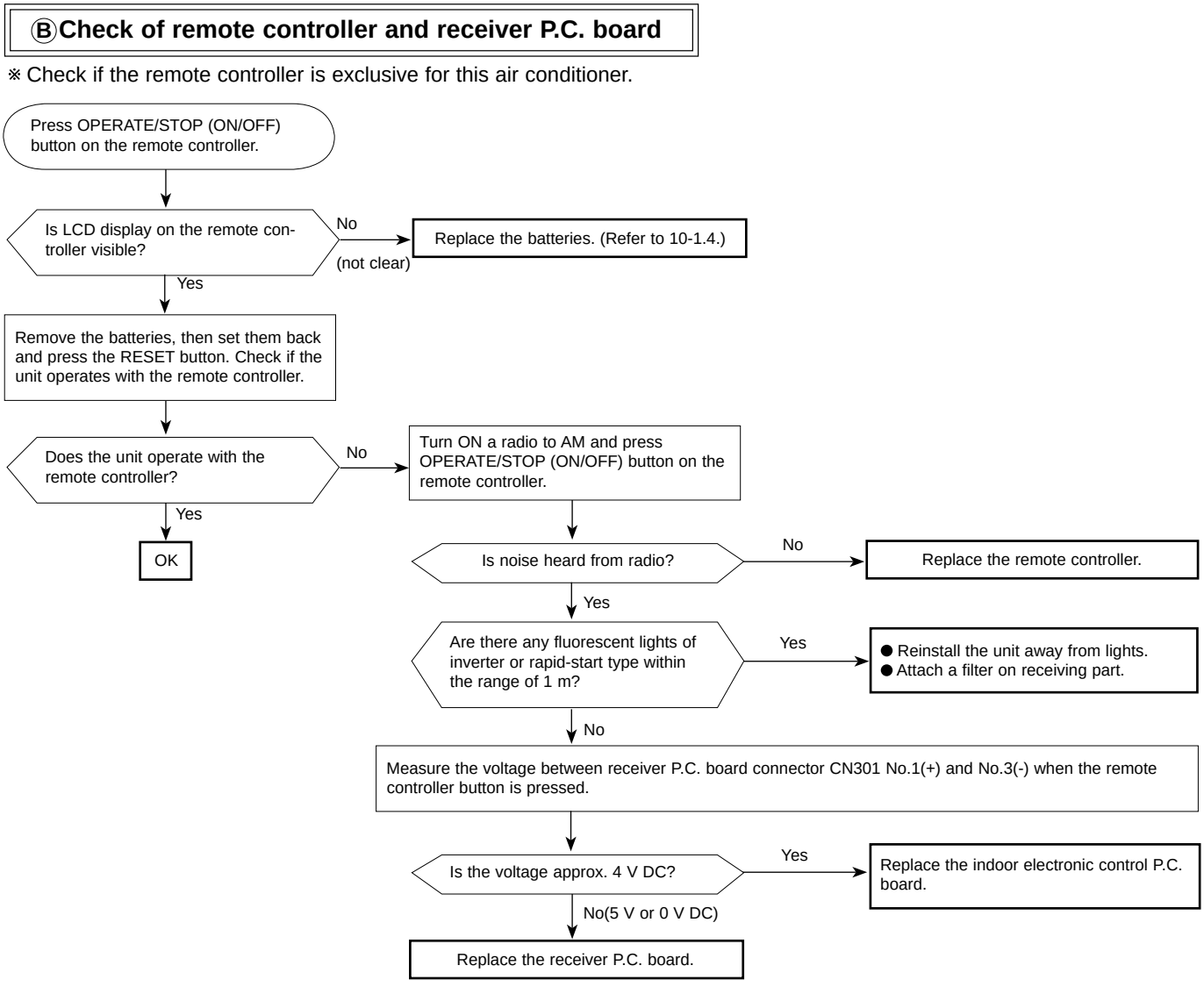
Ⓟ: INNER PROTECTOR

10-5. TROUBLESHOOTING FLOW

When OPERATION INDICATOR lamp flashes 3-time.
Indoor fan motor doesn't operate.

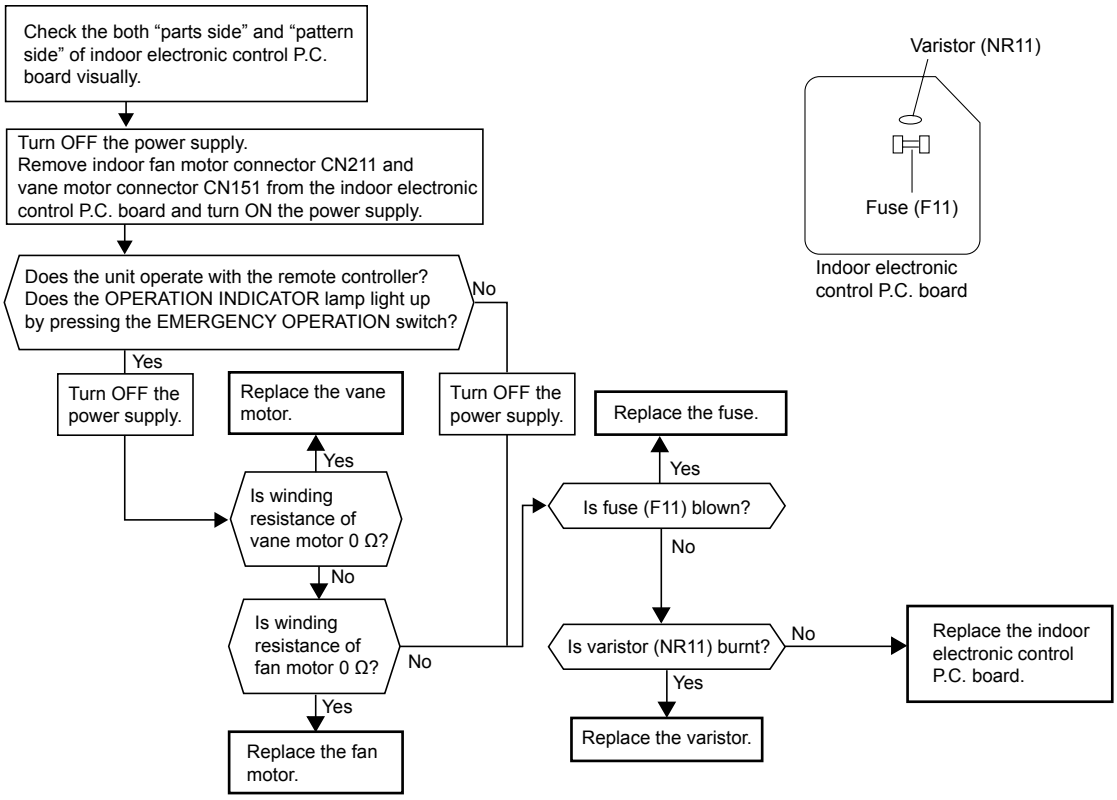


Indoor unit operates by pressing the EMERGENCY OPERATION switch, but doesn't operate with the remote controller.



The unit doesn't operate with the remote controller. Also, the OPERATION INDICATOR lamp doesn't light up by pressing the EMERGENCY OPERATION switch.

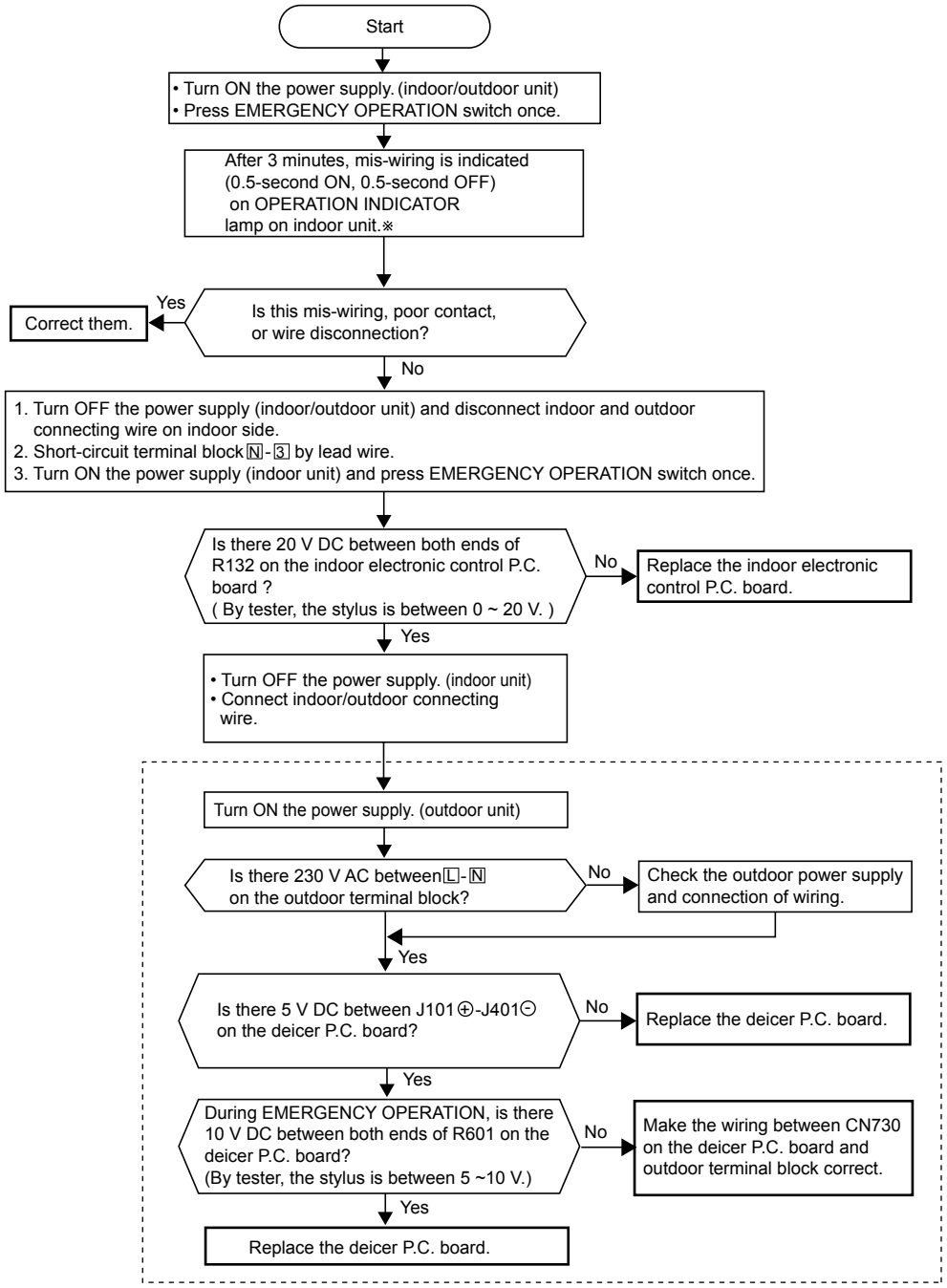
ⓒCheck of indoor electronic control P.C. board



When OPERATION INDICATOR lamp flashes ON and OFF in every 0.5-second.
Outdoor unit doesn't operate.

Ⓓ How to check mis-wiring

※ Short circuit of JPG and JPS on the indoor electronic control P.C. board enables self -check to be displayed in 3 seconds.



Refer to outdoor unit service manual.

10-6. TEST POINT DIAGRAM AND VOLTAGE

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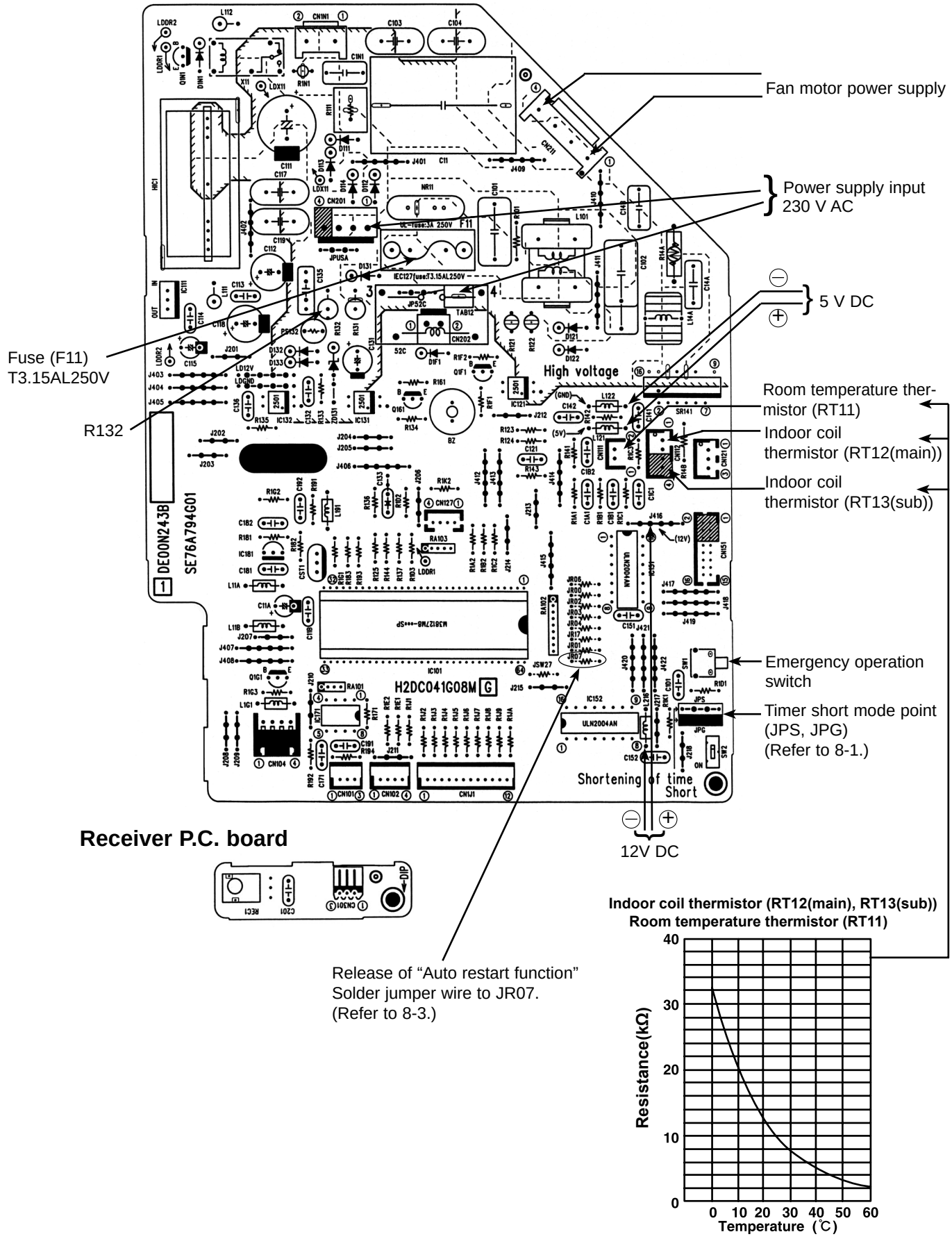
Indoor electronic control P.C. board



Receiver P.C. board

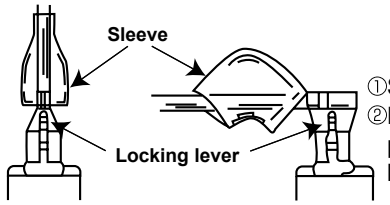
Indoor coil thermistor (RT12(main), RT13(sub))
Room temperature thermistor (RT11)

11 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

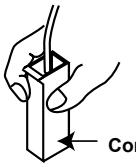
The terminal which has the locking mechanism can be detached as shown below.
There are two types (Refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

(2) The terminal with this connector has the locking mechanism.



①Hold the sleeve, and pull out the terminal slowly.

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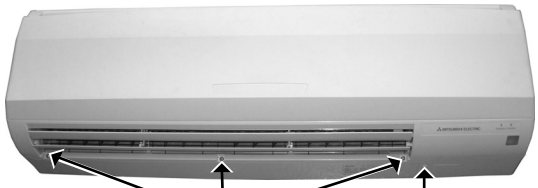
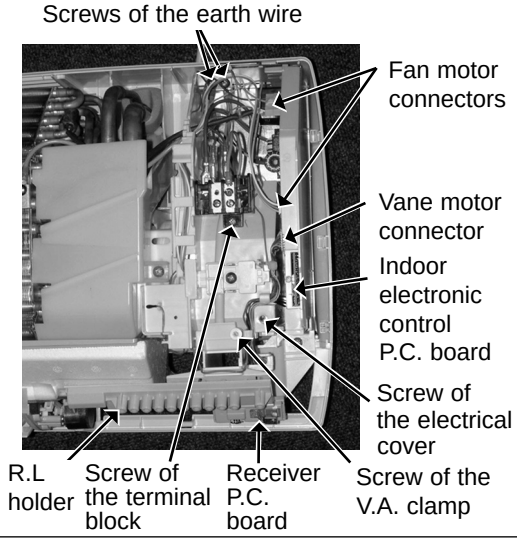
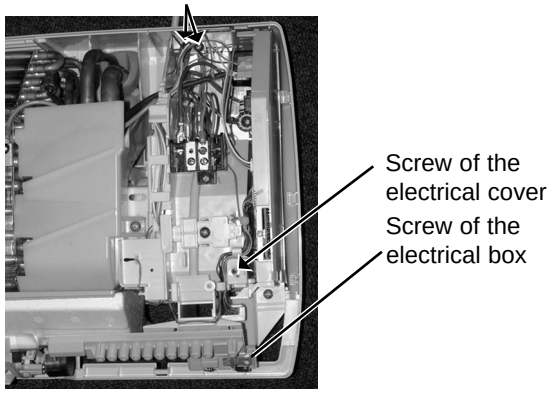
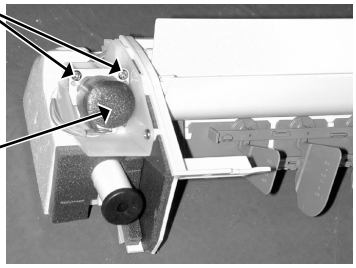
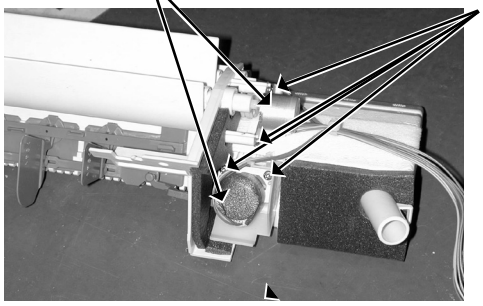
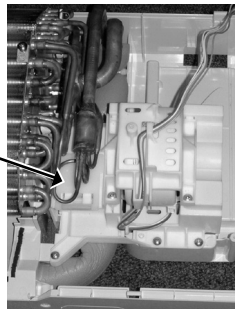
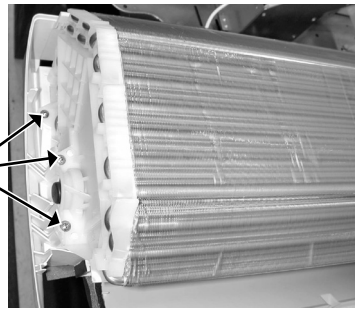
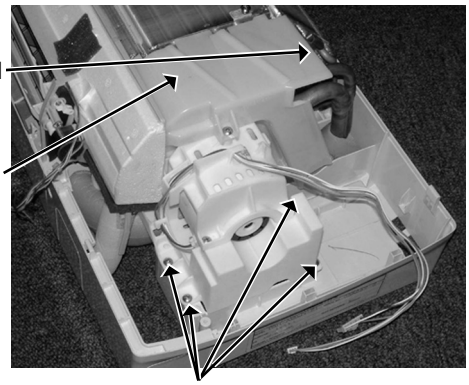
OPERATING PROCEDURE	PHOTOS
1. Removing the panel (1) Remove the screw caps of the panel. Remove the screws of the panel. (2) Pull the panel down to your side slightly and unhook the catches at the top. (3) Remove the screw of the corner box. Remove the corner box.	**Photo 1** 
2. Removing the electronic control P.C. board, the receiver P.C. board and the display P.C. board (1) Remove the panel and the corner box. (Refer to 1.) (2) Remove the screw of the electrical cover. Remove the electrical cover. (3) Remove the screws of the V.A. clamp. Remove the V.A. clamp. (4) Remove the screw of the terminal block. (5) Remove the screws of the earth wire. (6) Disconnect all the connectors and all the lead wires on the electronic control P.C. board. (7) Remove the R.L holder. (8) Remove the electronic control P.C. board. (9) Open the R.L holder, remove the receiver P.C. board and the display P.C. board.	**Photo 2** 
3. Removing the electrical box (1) Remove the panel and the corner box. (Refer to 1.) (2) Remove the electrical cover. (Refer to 2.) (3) Disconnect the connector of the indoor coil thermistor. (4) Disconnect the motor connector (CN211 and CN121) and the vane motor connector (CN151) on the electronic control P.C. board. (5) Remove the screws of earth wire. (6) Remove the fan motor lead wire and indoor coil thermistor from the electrical box. (7) Remove the lead wire of vane motor from the bottom of electrical box. (8) Remove the screw of the electrical box and remove the electrical box.	**Photo 3** Screws of the earth wire 

OPERATING PROCEDURE	PHOTOS
4. Removing the vane motor (1) Remove the panel and the corner box. (Refer to 1.) (2) Remove the electrical cover. (Refer to 2.) (3) Remove the lead wire of vane motor. (Refer to 3.) (4) Remove the R.L. holder. (5) Pull out the drain hose from the nozzle assembly and remove the nozzle assembly. (6) Remove the screws of the vane motor and disconnect the connector. (7) Remove the vane motor. **Photo 5** Screws of the vane motor Vane motor 	**Photo 4** Vane motors Screws of the vane motor 
5. Removing the line flow fan and the indoor fan motor (1) Remove the panel and the corner box. (Refer to 1.) (2) Remove the electrical box. (Refer to 3.) (3) Pull out the drain hose from the nozzle assembly and remove the nozzle assembly. (4) Remove the water cut. (5) Slide the hole cover and remove the hole cover. (6) Remove the hexagon socket set screw from the line flow fan. (7) Remove the screws of the fan motor and remove the fan motor. (Be careful not to drop the fan motor because it is heavy.) (8) Remove the screws of the left side of the heat exchanger. (9) Lift the left side of the heat exchanger. (10) Remove the line flow fan. **Photo 8** Hole cover 	**Photo 6** Screws of the left side of the heat exchanger  **Photo 7** Indoor coil thermistor Water cut  Screws of the fan motor

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