



HITACHI

SERVICE MANUAL

TECHNICAL INFORMATION

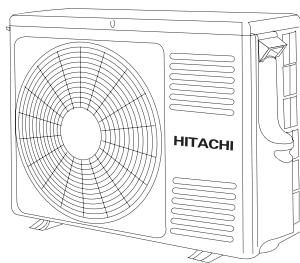
FOR SERVICE PERSONNEL ONLY

INDOOR UNIT



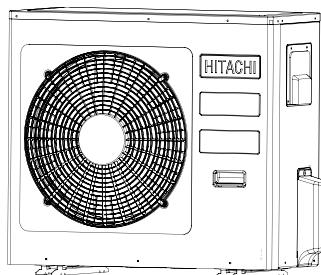
RAK-25PSEW
RAK-35PSEW
RAK-50PSEW
RAK-25PSSES
RAK-35PSSES
RAK-50PSSES

OUTDOOR UNIT



RAC-25WSE
RAC-35WSE

RAR-6NE2



RAC-50WSE

JCH-WH NO.0124E

RAK-25PSEW / RAC-25WSE
RAK-35PSEW / RAC-35WSE
RAK-50PSEW / RAC-50WSE
RAK-25PSSES / RAC-25WSE
RAK-35PSSES / RAC-35WSE
RAK-50PSSES / RAC-50WSE

REFER TO THE FOUNDATION MANUAL

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SPECIFICATIONS

TYPE	DC INVERTER					
	INDOOR UNIT	OUTDOOR UNIT	INDOOR UNIT	OUTDOOR UNIT	INDOOR UNIT	OUTDOOR UNIT
MODEL	RAK-25PSEW RAK-25PSSES	RAC-25WSE	RAK-35PSEW RAK-35PSSES	RAC-35WSE	RAK-50PSEW RAK-50PSSES	RAC-50WSE
POWER SOURCE	1PHASE,50HZ,220V-230V		1PHASE,50HZ,220V-230V		1PHASE,50HZ,220V-230V	
COOLING	TOTAL INPUT (W)	490		778		1,389
	TOTAL AMPERES (A)	2.26-2.16		3.56-3.40		6.33-6.05
	(KW)	2.50(0.50~3.40)		3.50(0.50~4.10)		5.00(1.90~5.20)
HEATING	(B.T.U./h)	8,530(1,710~11,600)		11,940(1,710~13,990)		17,060(6,480~17,740)
	TOTAL INPUT (W)	621		800		1,622
	TOTAL AMPERES (A)	2.85-2.73		3.65-3.50		7.38-7.06
DIMENSIONS(mm)	(KW)	3.20(0.60~5.80)		4.00(0.60~6.60)		6.00(2.20~7.00)
	(B.T.U./h)	10,920(2,050~19,790)		13,650(2,050~22,520)		20,470(7,510~23,380)
	W	795	792	795	792	795
	H	250	600	250	600	250
	D	294	299	294	299	294
NET WEIGHT (kg)	11	37	11	37	11	51

※After installation

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

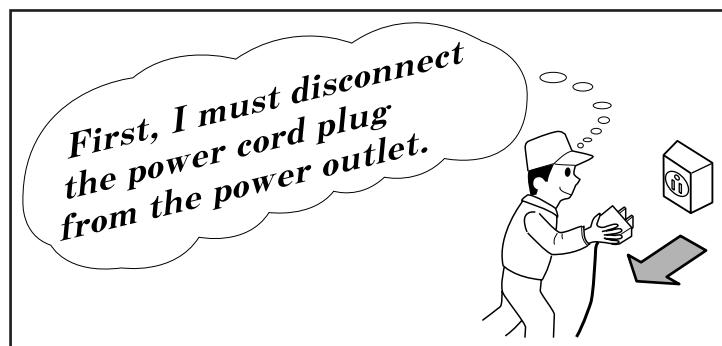
ROOM AIR CONDITIONER

INDOOR UNIT + OUTDOOR UNIT

Johnson Controls-Hitachi Air Conditioning Wuhu Co., Ltd.

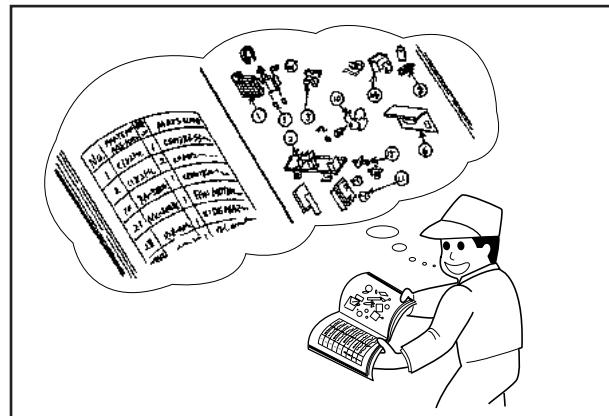
SAFETY DURING REPAIR WORK

1. In order to disassemble and repair the unit in question, be sure to disconnect the power cord plug from the power outlet before starting the work.



2. If it is necessary to replace any parts, they should be replaced with respective genuine parts for the unit, and the replacement must be effected in correct manner according to the instructions in the Service Manual of the unit.

If the contacts of electrical parts are defective, replace the electrical parts without trying to repair them



3. After completion of repairs, the initial state should be restored.
4. Lead wires should be connected and laid as in the initial state.
5. Modification of the unit by the user himself should absolutely be prohibited.
6. Tools and measuring instruments for use in repairs or inspection should be accurately calibrated in advance.
7. In installing the unit having been repaired, be careful to prevent the occurrence of any accident such as electrical shock, leak of current, or bodily injury due to the drop of any part.
8. To check the insulation of the unit, measure the insulation resistance between the power cord plug and grounding terminal of the unit.
The insulation resistance should be $1M\Omega$ or more as measured by a 500V DC megger.
9. The initial location of installation such as window, floor or the other should be checked for being safe enough to support the repaired unit again.
If it is found not so strong and safe, the unit should be installed at the initial location after reinforced or at a new location.
10. Any inflammable object must not be placed about the location of installation.
11. Check the grounding to see whether it is proper or not, and if it is found improper, connect the grounding terminal to the earth.



WORKING STANDARDS FOR PREVENTING BREAKAGE OF SEMICONDUCTORS

1. Scope

The standards provide for items to be generally observed in carrying and handling semiconductors in relative manufactures during maintenance and handling thereof. (They apply the same to handling of abnormal goods such as rejected goods being returned.)

2. Object parts

- (1) Microcomputer
- (2) Integrated circuits (I.C.)
- (3) Field effective transistor (F.E.T.)
- (4) P.C. boards or the like to which the parts mentioned in (1) and (2) of this paragraph are equipped.

3. Items to be observed in handling

- (1) Use a conductive container for carrying and storing of parts. (Even rejected goods should be handled in the same way.)

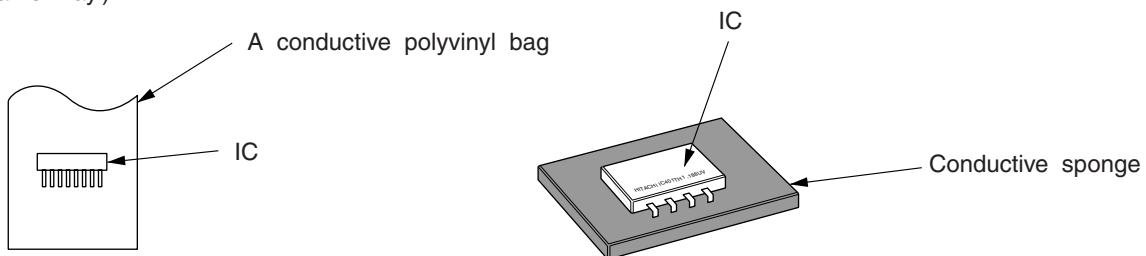


Fig. 1 Conductive container

- (2) When any part is handled uncovered (in counting, packing and the like), the handling person must always use himself as a body earth. (Make yourself a body earth by passing one M ohm earth resistance through a ring or bracelet.)
- (3) Be careful not to touch the parts with your clothing when you hold a part even if a body earth is being taken.
- (4) Be sure to place a part on a metal plate with grounding.
- (5) Be careful not to fail to turn off power when you repair the printed circuit board. At the same time, try to repair the printed circuit board on a grounded metal plate.

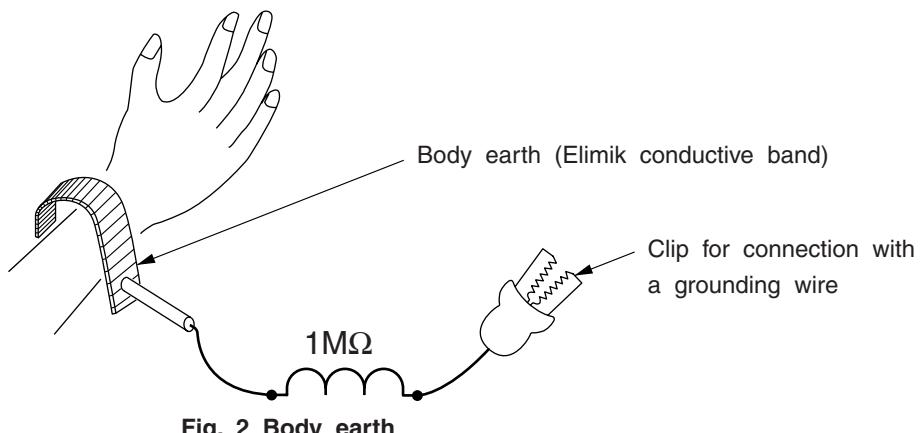


Fig. 2 Body earth

(6) Use a three wire type soldering iron including a grounding wire.

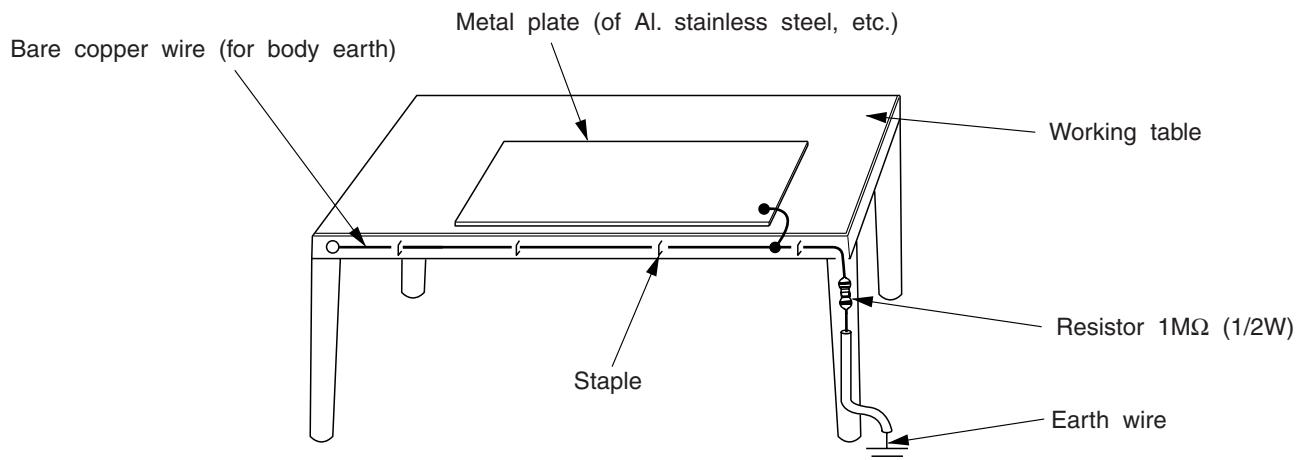


Fig.3 Grounding of the working table

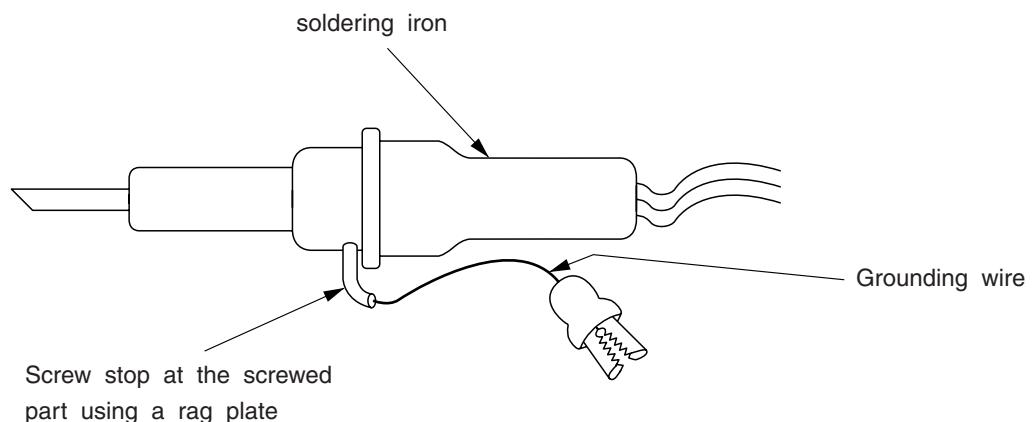


Fig.4 Grounding a solder iron

Use a high insulation mode (100V, 10MΩ or higher) when ordinary iron is to be used.

(7) In checking circuits for maintenance, inspection, or some others, be careful not to have the test probes of the measuring instrument short circuit a load circuit or the like.

▲ CAUTION

1. In quiet or stop operation, slight flowing noise of refrigerant in the refrigerating cycle is heard occasionally, but this noise is not abnormal for the operation.
2. When it thunders near by, it is recommend to stop the operation and turn off the circuit breaker for safety.
3. In the event of power failure, the room air conditioner will restart automatically in the previously selected mode once the power is restored. In the event of power failure during TIMER operation, the room air conditioner will not start automatically. Re-press ON/OFF button after 3 minutes from when the unit off or power recovery.
4. If the room air conditioner is stopped by adjusting thermostat, or missoperation, and re-start in a moment, there is occasion that the cooling and heating operation does not start for 3 minutes, it is not abnormal and this is the result of the operation of IC delay circuit. This IC delay circuit ensures that there is no danger of blowing fuse or damaging parts even if operation is restarted accidentally.
5. This room air conditioner should not be used at the cooling operation when the outside temperature is below -10°C (14°F).
6. This room air conditioner (the reverse cycle) should not be used when the outside temperature is below -20°C (-4°F).
If the reverse cycle is used under this condition, the outside heat exchanger is frosted and efficiency falls.
7. When the outside heat exchanger is frosted, the frost is melted by operating the hot gas system, it is not trouble that at this time fan stops and the vapour may rise from the outside heat exchanger.

SPECIFICATIONS

MODEL	RAK-25/35/50PSEW RAK-25/35/50PSES	RAC-25/35WSE	RAC-50WSE
FAN MOTOR	30W (DC325V)	47W (DC120-380V)	
FAN MOTOR CAPACITOR	NO	NO	
FAN MOTOR PROTECTOR	NO	NO	
COMPRESSOR	-	GSD102UKQA6JT6A	GSD141UKQA8JT6
COMPRESSOR MOTOR CAPACITOR	NO	NO	
OVER HEAT PROTECTOR	NO	YES	
OVERLOAD PROTECTOR	NO	YES(INTERNAL)	
FUSE (for MICRO COMPUTER)	3.15A	15A, 2A, 3A, 3.15A	25A, 2A, 3A, 3.15A
POWER RELAY, STICK RELAY	NO	HF161F	
POWER SWITCH	NO	NO	
TEMPORARY SWITCH	YES	NO	
SERVICE SWITCH	NO	YES	
TRANSFORMER	YES	YES	
VARISTOR	TVR10471	TVR10471, ERZVA9V431	
NOISE SUPPRESSOR	NO	YES	
THERMOSTAT	YES(IC)	YES(IC)	
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)	YES(RZEA15340)	NO	
REFRIGERANT CHARGING VOLUME (Refrigerant R32)	UNIT	980g	1240g
	PIPES	(MAX. 20m) MIN. 3m)	WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE. (MAX. 30m) MIN. 3m)

Figure showing the installation of Indoor and Outdoor unit

MODEL RAK-25PSEW/RAC-25WSE
 RAK-35PSEW/RAC-35WSE
 RAK-25PSES/RAC-25WSE
 RAK-35PSES/RAC-35WSE

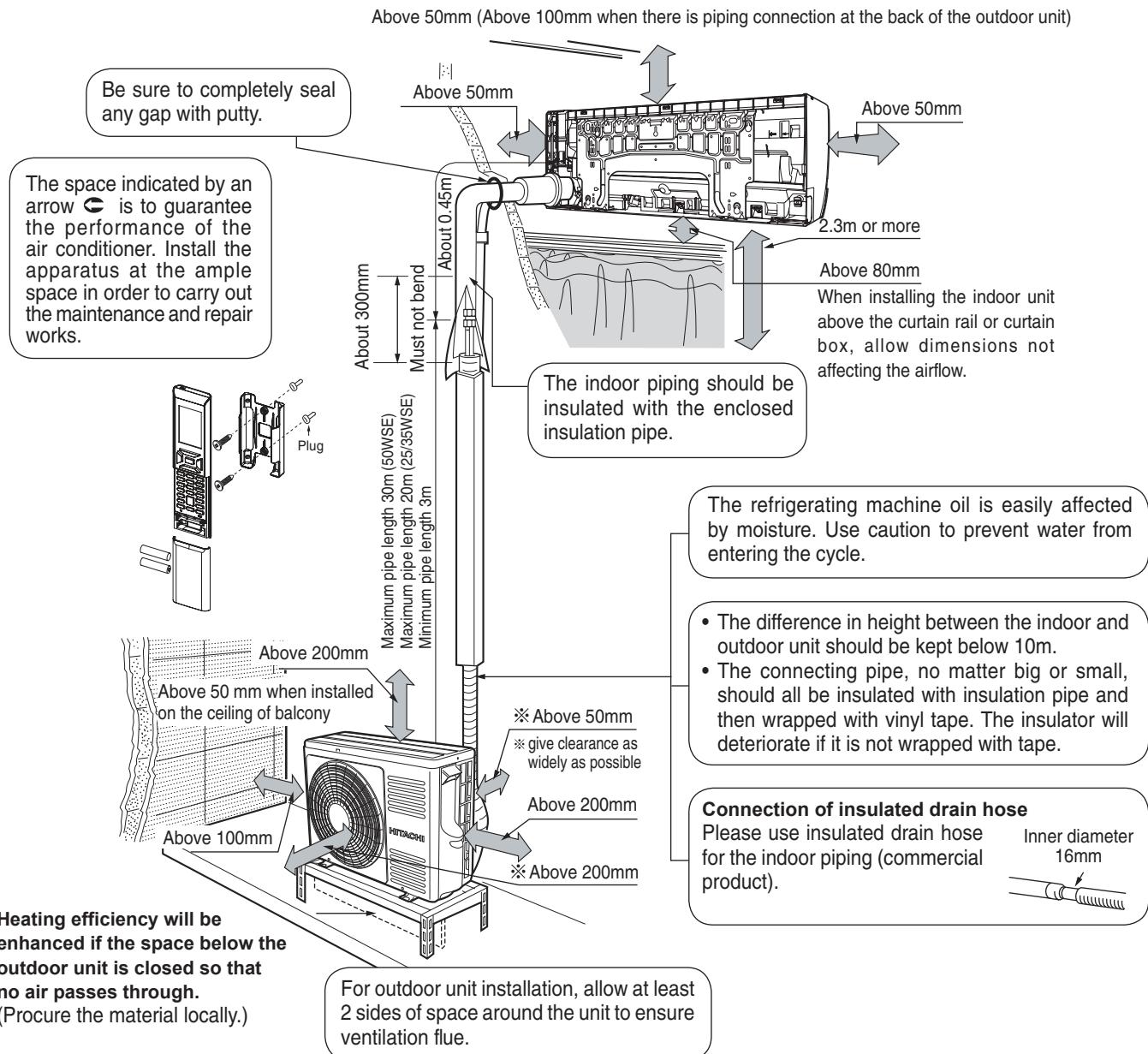
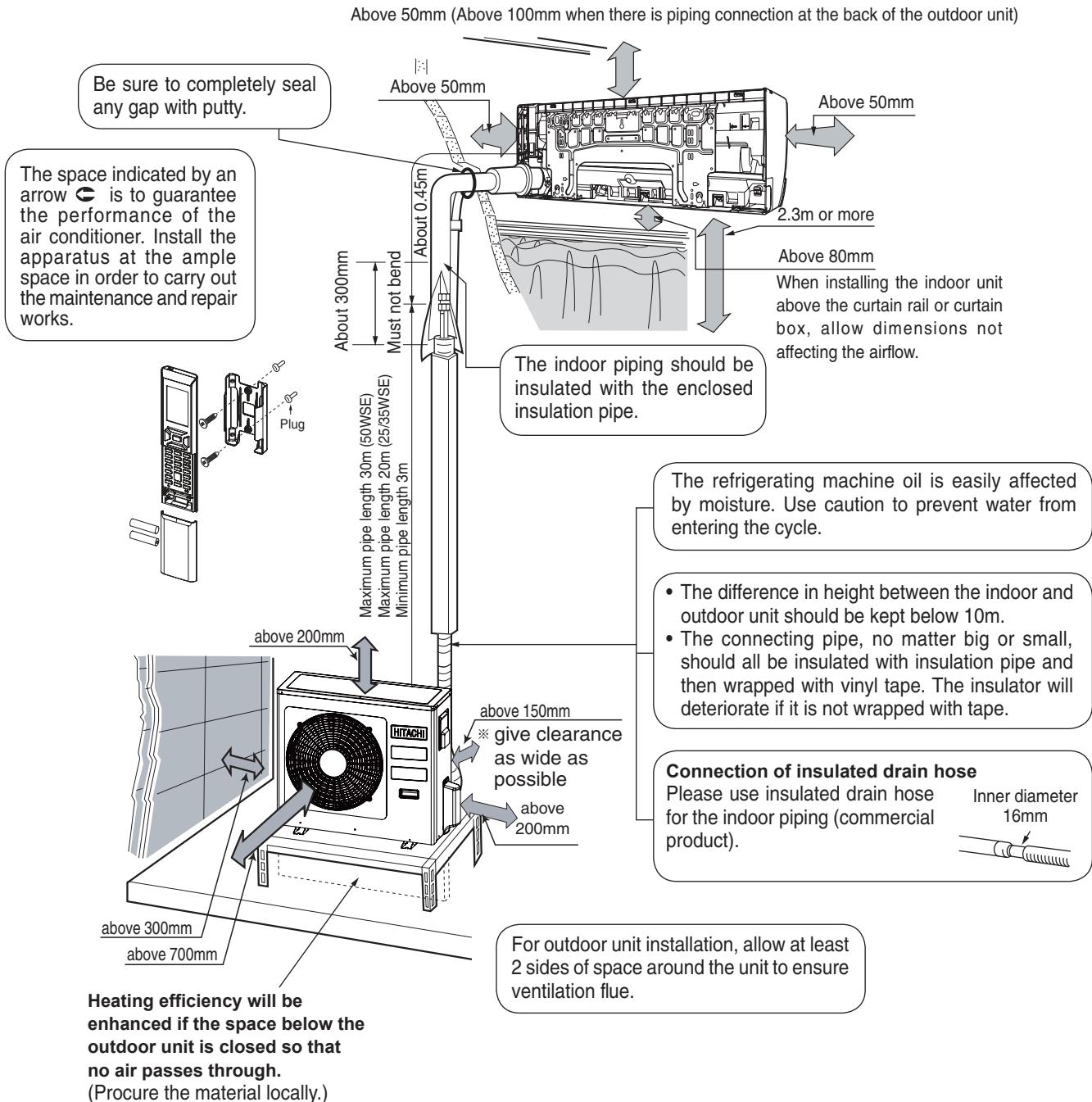


Figure showing the installation of Indoor and Outdoor unit

MODEL RAK-50PSEW/RAC-50WSE
RAK-50PSES/RAC-50WSE



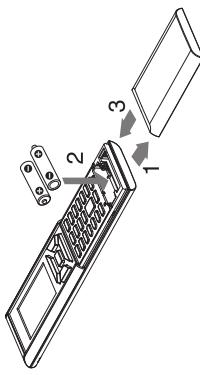
HITACHI

Remote Controller Manual

MODEL
RAR-6NE2

PREPARATION BEFORE OPERATION

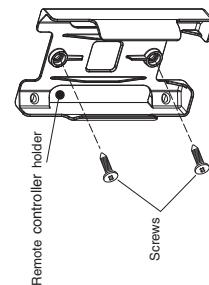
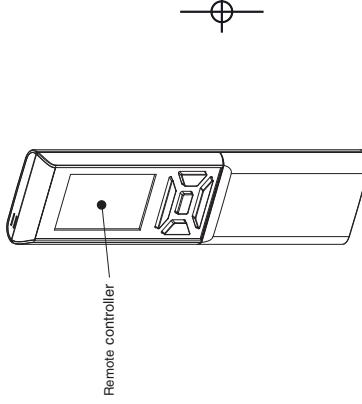
■ To install the batteries



1. Slide the cover to take it off.
2. Install two dry batteries AAA-LR03 (alkaline).
The direction of the batteries should match the marks in the case.
3. Replace the cover at its original position.

■ To fix the remote controller holder to the wall

1. Choose a place from where the signals can reach the unit.
2. Fix the remote controller holder to a wall, a pillar or similar location with the provided screws.
3. Place the remote controller in the remote controller holder.



NOTE

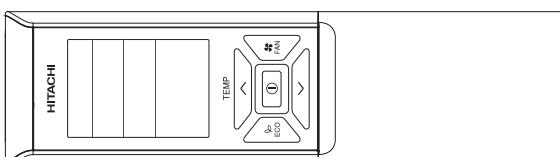
Notes on batteries

- When replacing the batteries, use batteries of the same type, and replace both old batteries together.
- When the system is not used for a long time, take the batteries out.
- The batteries will last for approximately 1 year. However, if the remote controller display begins to fade and degradation of reception performance occurs within a year, replace both batteries with new size AAA-LR03 (alkaline).
- 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.

Notes on 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 controller signals happen to operate another appliance, move that appliance to somewhere else, or consult the service shop.
- When the remote controller is not in use, please close the slide cover to prevent failure.

ESPAÑOL PORTUGUÉS ESPAÑOL ITALIANO FRANCÉS DEUTSCHE ENGLISH



Remote Controller manual
To obtain the best performance and ensure years of trouble free use, please read this instruction manual completely.

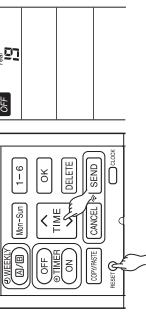
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PREPARATION BEFORE OPERATION

ENGLISH

To set calendar and clock



1. Press **RESET** (RESET) button when first time setting.
"Year" blinks.
2. Press **TIME** (TIME) button to set the current year.
3. Press **CLOCK** (CLOCK) button. "Day" and "Month" blink.
4. Press **TIME** (TIME) button to set the current day and month.
5. Press **CLOCK** (CLOCK) button. "CLOCK" blinks.
6. Press **TIME** (TIME) button to set the clock to the current time.
7. Press **CLOCK** (CLOCK) button.

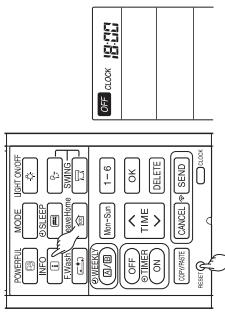
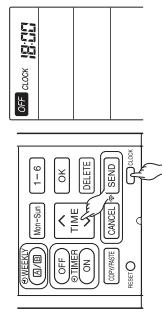
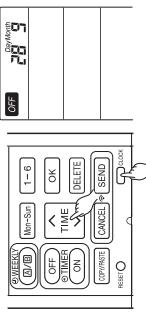
Calendar and clock are set.

To modify the calendar and clock, press **CLOCK** (CLOCK) button. Then follow steps 2 to 7.



Calendar and clock need to be set again after changing batteries.

- After changing the batteries.
1. Press **RESET** (RESET) button.
 2. Direct remote controller towards indoor unit and press **INFO** (INFO) button.
 3. The calendar and clock from indoor unit will be transmitted.
- Calendar and clock will not be transmitted from indoor unit when the following occurs:
- When there is a power failure.
 - When breaker is OFF by user (unit is not in STANDBY MODE).



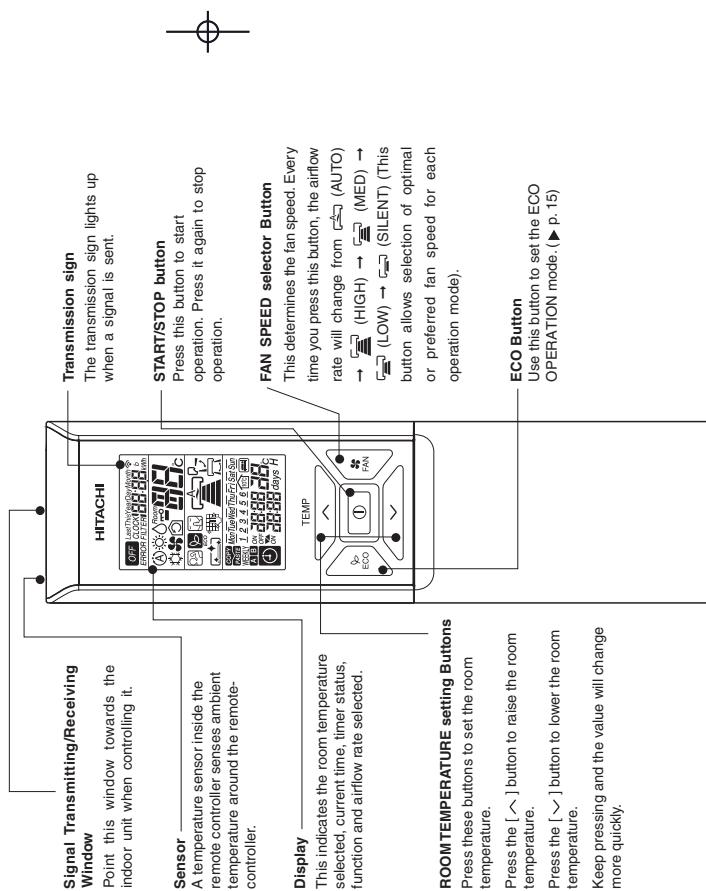
NOTE

Note on setting the calendar and clock.

- If the calendar and clock are not set, the ON timer, off timer and Weekly Timer cannot be set.
- If the calendar and clock are not set correctly, the ON timer, off timer and Weekly Timer will not operate correctly.
- When the ON timer, off timer and Weekly Timer are set, the calendar and clock cannot be changed.
- If there is a need to change the calendar and clock, ON timer, off timer and Weekly Timer need to be cancelled.

NAMES AND FUNCTIONS OF REMOTE CONTROLLER

- REMOTE CONTROLLER**
- This controls the operation of the indoor unit. The range of control is about 7 meters. If indoor lighting is controlled electronically, the range of control may be shorter. This controller can be fixed on a wall using the fixture provided. Before fixing it, make sure the indoor unit can be controlled from the remote controller.
 - Handle the remote controller with care. Dropping it or getting it wet may compromise its signal transmission capability.
 - After new batteries are inserted into the remote controller, the unit will initially require approximately 10 seconds to respond to commands and operate.
 - When remote controller is not in use for about 3 minutes during OFF condition, indicated by **OFF** on the display, the LCD will turn off. During clock setting, the LCD will turn off about 10 minutes later if the remote controller is not in use.
 - When pressing any button, the LCD will turn on.
 - The LCD will not turn off during TIMER setting.





NAMES AND FUNCTIONS OF REMOTE CONTROLLER

POWERFUL Button
Use this button to set the POWERFUL mode. (► p. 17)

INFORMATION Button
(► p. 29)

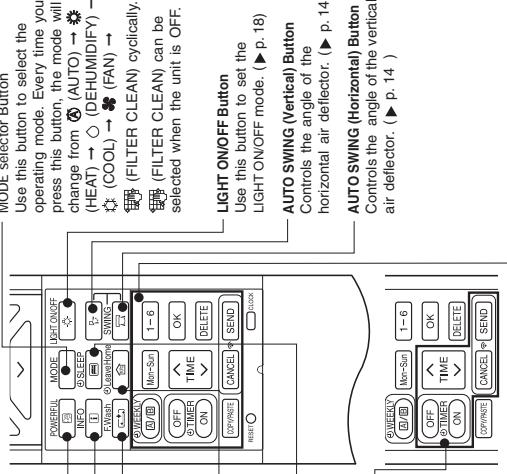
FROST WASH Button
(► p. 10)

LEAVE HOME Button
(► p. 19)

ECO SLEEP TIMER Button
Use this button to set the ECO sleep timer. (► p. 21)

ON / OFF TIMER setting Buttons
(► p. 20)

WEEKLY TIMER setting Buttons
(► p. 23)



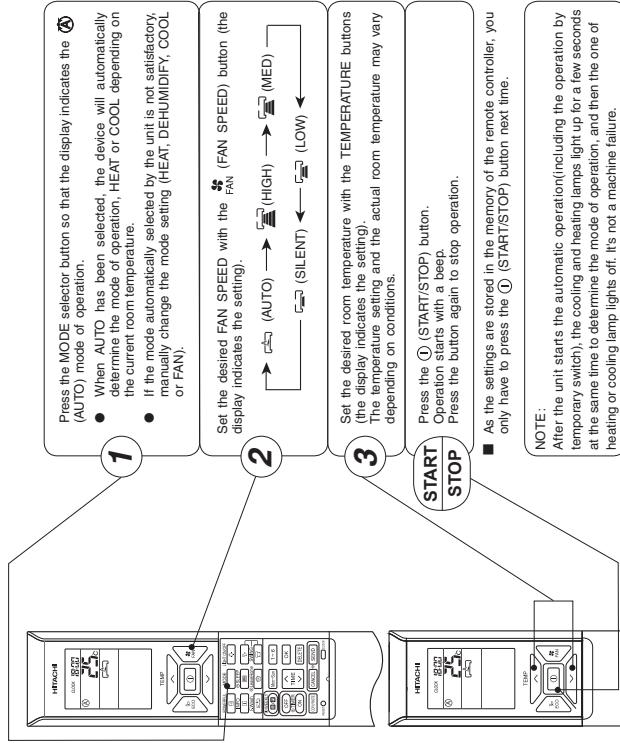
VARIOUS FUNCTIONS

■ Auto Restart Control

- If there is a power failure, operation will be automatically restarted when the power is resumed with previous operation mode and airflow direction.
- As the operation is not stopped by remote controller.
- If you intend not to continue the operation when the power is resumed, switch off the power supply.
- When you switch on the circuit breaker, the operation will be automatically restarted with previous operation mode and airflow direction.
- Note: 1. If you do not require Auto Restart Control, please consult your sales agent.
- 2. Auto Restart Control is not available when Timer or Sleep Timer mode is set.

AUTOMATIC OPERATION

The device will automatically determine the mode of operation, HEAT or COOL depending on the current room temperature. The selected mode of operation will change when the room temperature varies.

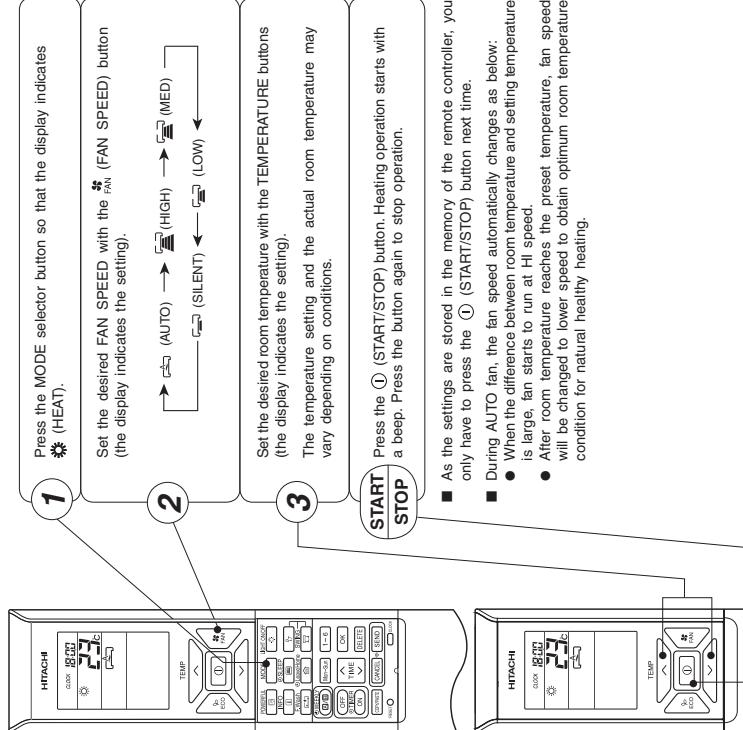




HEATING OPERATION

ENGLISH

- Use the device for heating when the outdoor temperature is under 24°C.
When it is too warm (over 24°C), the heating function may not work in order to protect the device.
- In order to maintain reliability of the device, please use this device when outdoor temperature is above -20°C.



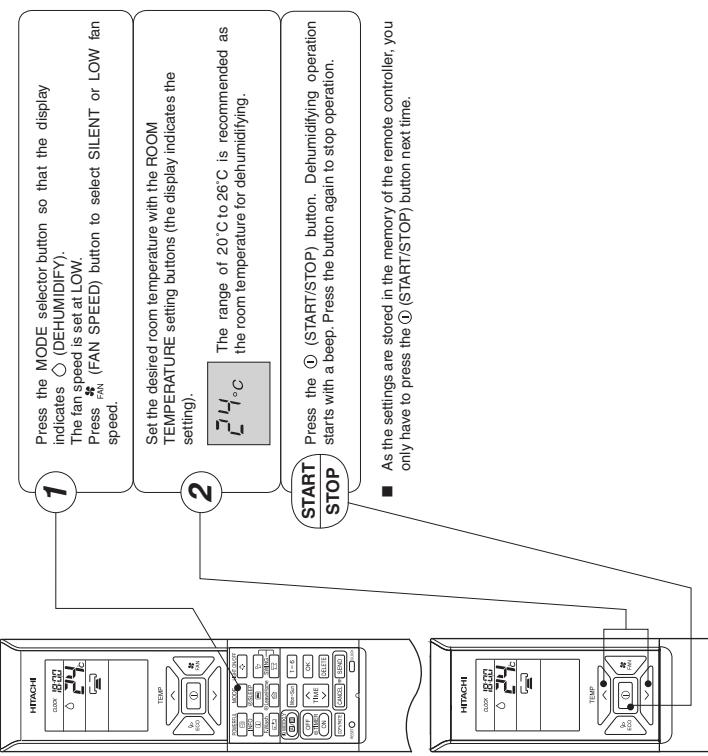
Defrosting

- Defrosting will be performed about once an hour when frost forms on the heat exchange of the outdoor unit, for 5 minutes to 10 minutes each time. During defrosting operation, the operation lamp blinks in a cycle of 2 seconds on and 1 second off. The maximum time for defrosting is 20 minutes.

- 7 -

DEHUMIDIFYING OPERATION

- Use the device for dehumidifying when the room temperature is over 16°C. When it is under 15°C, the dehumidifying function will not work.



Dehumidifying Function

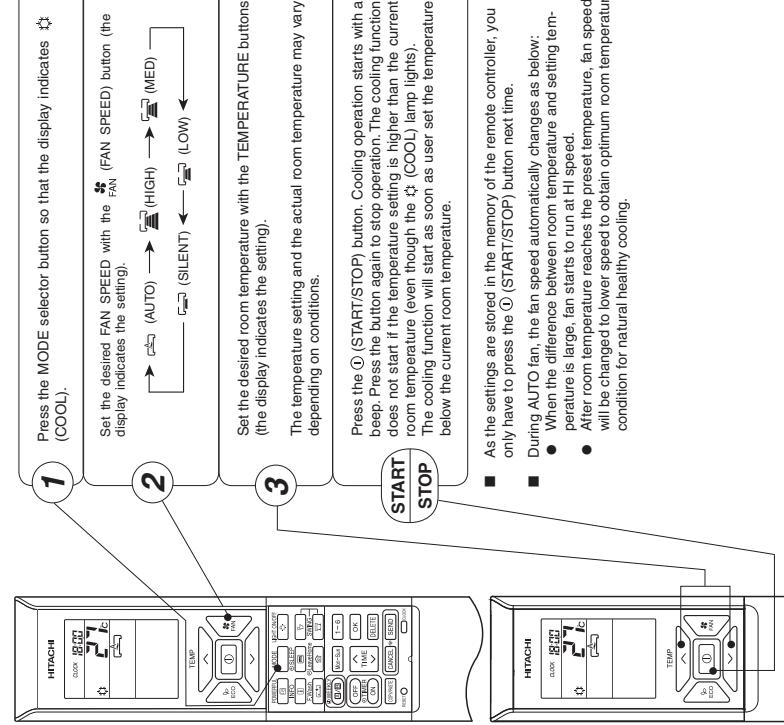
- When the room temperature is higher than the temperature setting. The device will dehumidify the room, reducing the room temperature to the preset level.
- When the room temperature is lower than the temperature setting: Dehumidifying will be performed at the temperature setting slightly lower than the current room temperature, regardless of the temperature setting.
- The preset room temperature may not be reached depending on the number of people present in the room or other room conditions.

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COOLING OPERATION

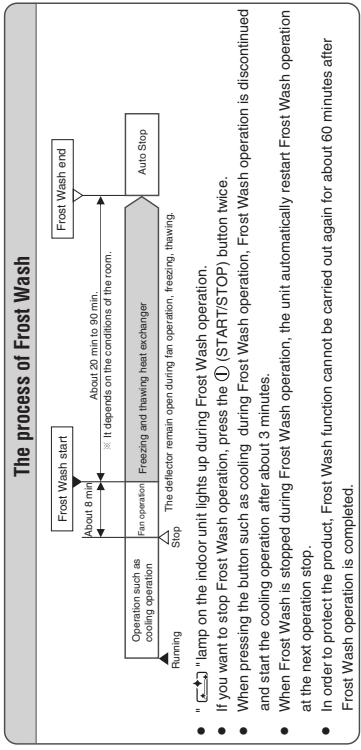
ENGLISH

- Use the device for cooling when the outdoor temperature is -10°C to 43°C.
- If indoors humidity is very high (80%), some dew may form on the air outlet grille of the indoor unit.



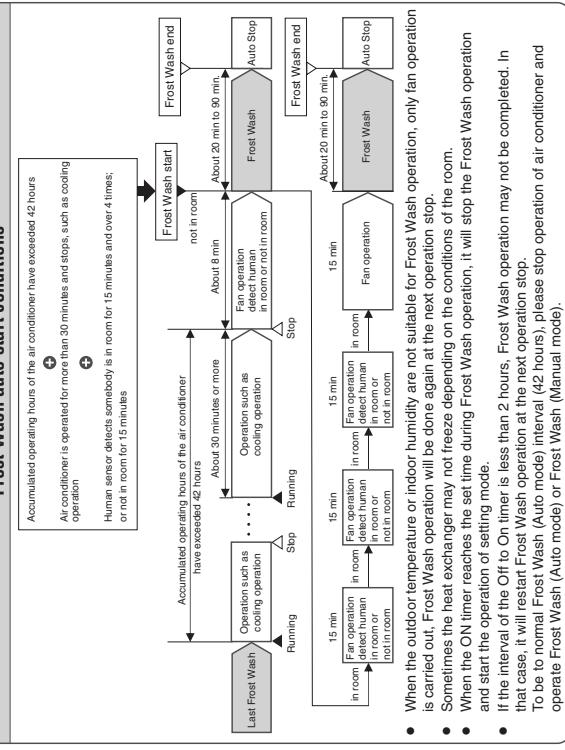
FROST WASH OPERATION

- The dust and dirt adhering to indoor/heat exchanger which is the cause of the smell. They are washed away by freezing and thawing of the heat exchanger.
- Frost Wash function can work when the outdoor temperature is 1°C to 43°C and Indoor humidity is 30% to 70%.
- There are two kinds of Frost Wash operation, auto mode and manual mode.



Frost Wash (Auto mode)

The process of Frost Wash

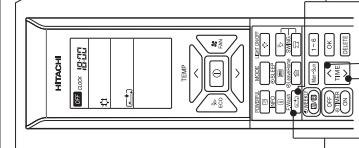




FROST WASH OPERATION

■ To cancel Frost Wash (Auto mode)

- This setting should be made only when the air conditioner is stopped.
- At the time of the effective setting, while pressing and holding TIME (TIME) button, press Frost Wash (Frost Wash) button on the same. Frost Wash (Auto mode) is canceled. " Frost Wash " disappears from the LCD.



- If Frost Wash function is not in use for a long period, it may not be possible to completely wash away the dust and dirt adhering to indoor heat exchanger. It will cause odor, so please conduct frequently Frost Wash function by using the remote controller.
- Recommended time of Frost Wash operation will be informed by " Frost Wash " lamp flash for 15 seconds upon air conditioner operation stop.

■ To start Frost Wash (Auto mode)

- This setting should be made only when the air conditioner is stopped.
- At the time of the disabled setting, while pressing and holding TIME (TIME) button, press Frost Wash (Frost Wash) button on the same. Frost Wash (Auto mode) is set. " Frost Wash " is displayed on the LCD.

■ The screen of the remote control

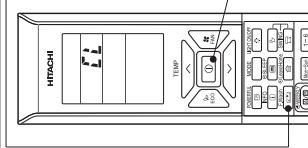
- At Frost Wash (Auto) reserved, " Frost Wash " is displayed on the LCD.
- At Frost Wash (Auto) not reserved, " Frost Wash " disappears from the LCD.

■ Frost Wash (Manual mode)

When the unit is off, press Frost Wash (Frost Wash) button, manual Frost Wash will start.

■ How to start and cancel Frost Wash (Manual mode)

- Press Frost Wash (Frost Wash) button. " Frost Wash " is displayed on the LCD. Frost Wash operation will start. " Frost Wash " lamp on the indoor unit lights up. After one hour, " Frost Wash " disappears from the LCD. After about two hours, the indoor unit will stop Frost Wash operation.
- In order to protect the product, Frost Wash function cannot be carried out again for about 60 minutes after the Frost Wash operation is completed.
- Press the START/STOP (START/STOP) button, the operation will stop.



Precautions for Use

- Do not open windows or doors during frost wash operation. Water will condense on the air deflector and drips down occasionally. This will wet your furniture.
- Do not open or remove the front panel during Frost Wash operation. It may cause injury or malfunction.
- Frost Wash operation does not wash away all dust and dirt.
- Hissing, fizzy, or squeaking noise may generate during Frost Wash operation.
- If the air conditioner is continuously running, Frost Wash function is not effective.
- During Frost Wash operation, if power is turned off and then power is restored, Frost Wash function will not restart.
- After turning on the power, please wait a moment if you want to start Frost Wash.

- 11 -

FILTER CLEANING OPERATION (AUTOMATIC OPERATION)

- Automatic filter cleaning mode is set at the time of purchase.
- Automatically cleans the micro mesh stainless filter when the basic air-conditioning operation (AUTO, HEATING, FAN, DEHUMIDIFYING or COOLING) has ended.
 - The cleaning unit makes cycle to back and forth movement to sweep the dust on the micro mesh stainless filter and the dust catcher pins the collected dust into the dust box.
 - One cycle of filter cleaning operation will take approximately 8 minutes.

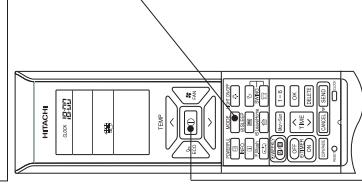
- Conditions of the automatic filter cleaning.
 - When the air conditioner operates for more than 15 minutes and stops, automatic filter cleaning is performed in one of the following conditions.
 - Accumulated operating hours of the air conditioner have exceeded 20 hours.
 - Air conditioner is not operated for more than one week.
 - To clean the dust which is naturally deposited on the top filter.
- CAUTION: The accumulated operating hours will not be reset if the automatic filter cleaning operation is stopped before its completion.
- If the air conditioner is in operation continuously for 24 hours, the operation is stopped and automatic filter cleaning operation is performed.
- After the completion of automatic filter cleaning, the operation will return to previous mode.
- Automatic filter cleaning is not performed if the air conditioner operation is stopped by sleep timer or off timer function.
- If you use sleep timer or off timer every time, it is recommended to operate manual filter cleaning once every 2 or 3 days.
- However, if manual filter cleaning is not performed, automatic filter cleaning will be performed approximately once a week after the air conditioner operation is stopped by sleep timer or off timer to protect the device.

■ To stop AUTOMATIC FILTER CLEANING operation



FILTER CLEANING OPERATION (MANUAL OPERATION)

- Use the remote controller to run filter cleaning operation when the air conditioner operation is stopped.
- If the air conditioner is not in use for a long period, it is recommended to manually run filter cleaning before using the air conditioner.



Press the ① (START/STOP) button.

- FILTER CLEANING operation starts with a beep.
- The cleaning unit makes one cycle of back and forth movement to sweep the dust on the micro mesh stainless filter and the dust catcher pins the collected dust into the dust box.
 - One cycle of filter cleaning operation will take approximately 8 minutes.
- Press the button again to stop the filter cleaning operation.

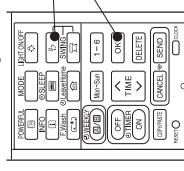
- 12 -



FILTER CLEANING OPERATION (MANUAL OPERATION)

HOW TO PROHIBIT THE FILTER CLEANING OPERATION

- With the remote controller, you can deactivate the filter cleaning operation.
 - This setting should be made only when the air conditioner is stopped.
- 1** Press the (OK) button simultaneously for 5 seconds.
A double short beep sounds is emitted and the filter cleaning is deactivated.
- To reactivate the filter cleaning, press the (OK) button simultaneously for 5 seconds.
A single short beep sound is emitted and the setting returns the filter cleaning operation.



- Filter cleaning operation (at the time of purchase)
“Beep” sound
- Filter cleaning operation is prohibited
“Beep Beep” sound

NOTE

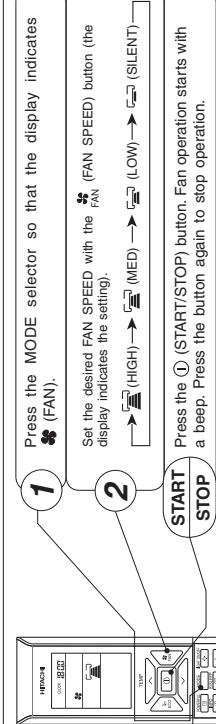
- About the noise during filter cleaning
- A whirling motor noise is generated due to driving of the cleaning unit.
 - A sweeping sound is generated when the cleaning unit sweeps the dust.
 - Maintenance
 - No daily maintenance is required. However, dust amount varies depending on the environment in which the air conditioner is used. Check the dust amount in the Dust Box approximately once every half years and throw the dust, if any.
 - Greasy dirt can also be cleaned by the combined function of filter cleaning and the micro mesh stainless filter. If the dirt looks heavy, remove the micro mesh stainless filter, the dust catcher and the filter cleaning wiper to wash them with water.

CAUTION

- Do not put your fingers or a stick etc into the top part of the indoor unit during filter cleaning operation.
It may result in injury or malfunction.

FAN OPERATION

User can use the device simply as an air circulator.



AUTO SWING OPERATION

VERTICAL SWING

■ To start Vertical Auto Swing



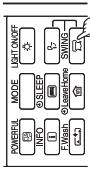
- Press (AUTO SWING (VERTICAL)) button. The deflector will start to swing up and down.
- is displayed on the LCD.

■ To cancel Vertical Auto Swing

- Press (AUTO SWING (VERTICAL)) button again. The deflector will stop in the current position.
- disappeared from the LCD.

HORIZONTAL SWING

■ To start Horizontal Auto Swing



- Press (AUTO SWING (HORIZONTAL)) button. The defectors will start to swing right and left.
- is displayed on the LCD.

■ To cancel Horizontal Auto Swing

- Press (AUTO SWING (HORIZONTAL)) button again. The defectors will stop in the current position.
- disappeared from the LCD.

NOTE

- During cooling and dehumidifying operation, do not keep the deflectors swinging or in the lower position (in the case of vertical auto swing) for a long time. It may cause dew condensation on the deflectors.





ECO OPERATION

ENGLISH

There are two kinds of ECO OPERATION with sensor or without sensor, depending on models.
Please refer to [Names and Functions of each part] in the unit instruction manual to verify if your unit is equipped with a sensor and read the following instruction on ECO Operation accordingly.

■ ECO OPERATION

ECO operation is an energy saving function by changing set temperature automatically and by limiting the maximum power consumption value.

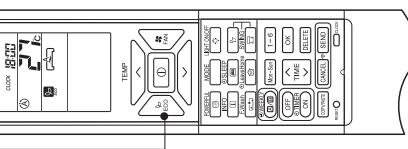
- 1 • By pressing the (ECO) button during AUTO, HEATING, DEHUMIDIFYING or COOLING operation, the air conditioner performs the "ECO" operation.

■ To start ECO operation

- Press (ECO) button during operation.
" " is displayed on the LCD.
A beep sound is emitted from indoor unit.
Energy saving operation will start by changing the set temperature higher or lower automatically and reducing operation power consumption. This function may vary based on the connected outdoor unit.

■ To cancel ECO operation

- Press ① (START/STOP) button. Or
- Press (ECO) button again.
" " disappears from the LCD.
A beep sound is emitted from indoor unit.



ECO OPERATION

■ ECO OPERATION with sensor

The sensor detects the presence of people in the room. When nobody is detected, the unit automatically starts energy saving operation by shifting the set temperature in two steps.

- 1 • By pressing the (ECO) button during AUTO, HEATING, DEHUMIDIFYING or COOLING operation, the air conditioner performs the "ECO" operation.

■ To start ECO operation

- Press (ECO) button during operation.
" " is displayed on the LCD.
A beep sound is emitted from indoor unit.
(ECO) lamp on the indoor unit lights up.
The sensor starts to detect the presence of people in the room.

■ To cancel ECO operation

- Press ① (START/STOP) button. Or
- Press (ECO) button again.
" " disappears from the LCD.
A beep sound is emitted from indoor unit.
(ECO) lamp on the indoor unit turns off.

When the presence of people is not detected for 20 minutes, the set temperature is automatically shifted for energy saving. If nobody is in the room for 60 minutes, the set temperature is shifted further.

Cooling operation (diagram representation for illustrative purpose only)

Setting temperature

Shift temperature



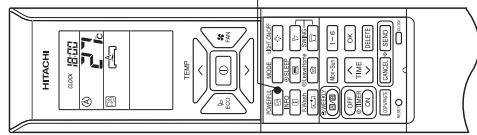
NOTE

- ECO function will not be effective when power consumption is low.
- By pressing (POWERFUL) button, ECO operation is cancelled.
- After auto restart, ECO operation is cancelled and previous operation mode shall start.
- For multi model connections, energy saving operation shall start only by changing set temperature higher or lower automatically. However, effectiveness of ECO depends on operation conditions.



POWERFUL OPERATION

- By pressing **POWERFUL** (POWERFUL) button during AUTO, HEATING, DEHUMIDIFYING, COOLING or FAN operation, the air conditioner performs at the maximum power.
- During POWERFUL operation, cooler or warmer air will be blown out from indoor unit for COOLING or HEATING operation respectively.



To start POWERFUL operation

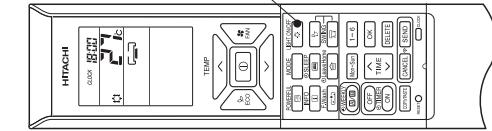
- Press **POWERFUL** (POWERFUL) button during operation.
- " " is displayed on the LCD.
- POWERFUL operation ends in 20 minutes. Then the system automatically operates with the previous settings used before POWERFUL operation.

To cancel POWERFUL operation

- Press the **① (START/STOP)** button. Or
- Press **POWERFUL** (POWERFUL) button again.
- POWERFUL operation stops.
- " " disappears from the LCD.

LIGHT ON/OFF OPERATION

- By pressing **LIGHT ON/OFF** (LIGHT ON/OFF) button during operation, lamps on the indoor will be turned off or turned on.



1 To turn on/off the light

- If lamps on the indoor are lighted up during operation, it will be turned off by pressing the **LIGHT ON/OFF** (LIGHT ON/OFF) button.
- Press the button again to turn on the lamps.

NOTE:

- When some failure is detected, the light off function is canceled and the error code is displayed.
- When temporary switch is pressed, the light off function is canceled, and the lamps on the panel will be turned on again.
- In the case of light off, the lamps on the panel will be turned on again if the remote controller is operated.
- During operation of the air conditioner, please do not operate the LIGHT ON/OFF button to turn off the temperature display lamp when the remote controller is off state, otherwise the air conditioner will stop.

NOTE

- When SLEEP mode, ECO mode, LEAVE HOME mode is selected, POWERFUL operation is cancelled.
- During POWERFUL operation, capacity of the air conditioner will not increase
 - if the air conditioner is already running at maximum capacity,
 - just before defrost operation (when the air conditioner is running in HEATING operation).
- After auto restart, POWERFUL operation is cancelled and previous operation shall start.



Leave Home(Home) Operation

Prevent the room temperature from falling too much when no one is at home. The initial setting temperature is 10°C and the temperature range can be set between 10°C and 16°C. This operation is able to operate by "Continuous operation" or "Day timer operation". Please use "Day timer operation" to set the number of days up to 99 days.

Continuous operation

To start LEAVE HOME operation

Option 1. Continuous operation.

- ① Press (LEAVE HOME) button during stop or operation. Room temperature is set at 10°C and heating operation starts.
- ② Set the desired room temperature with the TEMPERATURE buttons. Temperature range can be set between 10°C and 16°C.

"H", "↑", "↓", "SET TEMPERATURE" is displayed on the LCD.

Option 2. Day timer operation.

- ③ Press (LEAVE HOME) button during stop or operation. Room temperature is set at 10°C and heating operation starts.
- ④ Press (LEAVE HOME) button again. Set the desired room temperature with the TEMPERATURE buttons. Temperature range can be set between 10°C and 16°C.

"H", "↑", "↓", "SET TEMPERATURE" is displayed on the LCD.

③ Press (TIME) button to select number of days.

- Number of days blink.
 - * Press (UP) or (DOWN) to set number of days from 1 day to 99 days.
 - * Number of day is counted when clock indicates 0:00.
- ④ Press (SEND) button to confirm number of operation days. Display for number of operation days will stop blinking. Press CANCEL (CANCEL) button to reset number of operation days or to have continuous operation.

To cancel LEAVE HOME operation

Day timer operation

To cancel LEAVE HOME operation

- ① Press (START/STOP) button. Or
- ② Press (LEAVE HOME) button again.

- Return to previous operation mode. Or
- Change to other operation mode by pressing (MODE) button.

Once Timer (On/Off Timer) Operation

OFF TIMER

The device can be set to turn off at a preset time.

1. Press (OFF-TIMER) button. and blink on the display.
2. Set the "turn-off time" with .
3. After setting, direct the remote controller towards the indoor unit and press .

and lights up instead of blinking.

A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.

ON TIMER

The device will turn on at a designated time.

1. Press (ON-TIMER) button. and blink on the display.
2. Set the "turn-on time" with .
3. After setting, direct the remote controller towards the indoor unit and press .

and lights up instead of blinking.

A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.

ON/OFF TIMER

- The device will turn on (off) and off (on) at the designated time.
- The switching occurs first at the preset time that comes earlier.

The arrow mark appears on the display to indicate the sequence of switching operations.

1. Press (OFF-TIMER) button so that and blink on the display.
2. Set the "turn-off time" with after setting, direct the remote controller towards the indoor unit and press .
3. Press (ON-TIMER) button so that and and set "turn-off" time light up. The and blink.
4. Set the "turn-on time" with .
5. After setting, direct the remote controller towards the indoor unit and press .

and set "turn-on" time light up instead of blinking.

A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.

■ The timer may be used in three ways: OFF-timer, On-timer and ON/OFF (OFF/ON-timer). Set the current time first because it serves as a reference.

To cancel Reservation

NOTE

- After reaching the set number of operation days for Leave Home or by pressing the (Leave Home) button again, the unit will operate in previous mode.
- During Leave Home operation, fan speed and horizontal air deflector position cannot be changed.
- By pressing (Leave Home) button, implementation of Weekly Timer or Once Timer is cancelled.
- In case of power supply shut down, after autorestart, all setting for number of days operation will be reset and unit shall be in continuous operation.
- POWERFUL, ECO SLEEP TIMER and ECO operations are not applicable during Leave Home operation.

- Point the signal window of the remote controller towards the indoor unit and press (CANCEL) button. and "ON or Off set time" goes out with a beep and the (TIMER) lamp on the indoor unit turns off.
- User can set only one of the OFF-timer, ON-timer or ON/OFF-timer.
- If WEEKLY TIMER already set, by setting the ONCE TIMER, ONCE TIMER operation is prioritized. When ONCE TIMER operation is complete, WEEKLY TIMER operation will be activated.



ECO SLEEP TIMER OPERATION

ENGLISH

The timer can be set up to a duration of 7 hours. By pressing (SLEEP) button during AUTO, HEATING, DEHUMIDIFYING, COOLING or FAN operation, the unit shifts the room temperature and reduces the fan speed. It results in energy saving. Set the current time first before operating the ECO SLEEP TIMER operation.

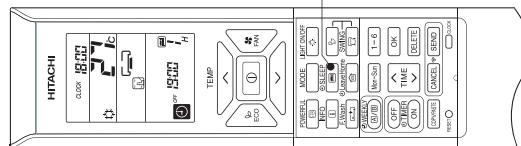
■ To start ECO SLEEP TIMER operation

- Press (SLEEP) button during operation.
- “”, “”, “”, “OFF”, off time, “” and number of hour are displayed on the remote controller display.
 - During ECO SLEEP TIMER operation, fan speed will be ultra slow.
 - A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit lights up.
- Pressing (SLEEP) button repeatedly, the number of hours will change as below:



- During ECO SLEEP TIMER operation, air conditioner will continue to operate for the designated number of hours and then turn off.
- When the ECO SLEEP TIMER has been set, the display on the remote controller indicates the turn off time.

Example: If ECO SLEEP TIMER is set for 1 hour at 18:00, the switch off time will be at 19:00.



■ To set ECO SLEEP TIMER and ON TIMER

The air conditioner will be turned off by ECO SLEEP TIMER and turned on by ON TIMER.

- Set the ON TIMER.
- Press (SLEEP) button and set ECO SLEEP TIMER.



Example:
In this case, air conditioner will turn off in 2 hours (at 1:38) and it will be turned on at 6:00 the next morning.

■ To cancel ECO SLEEP TIMER and ON TIMER operation

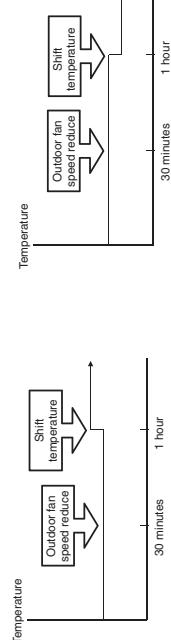
Direct the remote controller towards the indoor unit and press (CANCEL) button.

- “”, “”, “”, “OFF”, off time, “”, number of hour, “ON” and ON TIMER set time disappear from the remote controller display.
- A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit turns off.
- ECO SLEEP TIMER and ON TIMER reservations are cancelled.

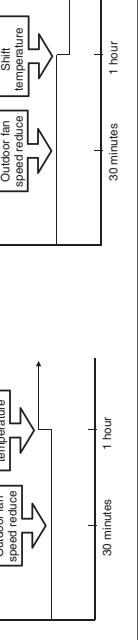
30 minutes after setting ECO SLEEP TIMER, outdoor fan speed will be reduced to lower the noise level and to have comfort operation.
1 hour after setting ECO SLEEP TIMER, set temperature will be slightly shifted. Amount of temperature shifted depends on type of air conditioner.

These automatic operation changes contribute to energy saving without losing comfort, room temperature, set temperature or air conditioner type.

Cooling operation [diagram representation for illustrative purpose only]



Heating operation [diagram representation for illustrative purpose only]



NOTE

- If ECO SLEEP TIMER is set when OFF TIMER or ON/OFF TIMER has been set earlier, the ECO SLEEP TIMER becomes effective instead of the OFF TIMER or ON/OFF TIMER.



ENGLISH WEEKLY TIMER OPERATION

- It is possible to select Mode A or Mode B. For each mode, up to 6 programs can be set per day. In total, a maximum of 42 programs can be set for a week, for each mode.
- If calendar and clock are not set, the reservation setting for WEEKLY TIMER cannot be set.
- If calendar and clock are not set correctly, WEEKLY TIMER will not operate correctly.
- Reservation for calendar and clock shall be set first before operating WEEKLY TIMER.

- Step 1:** Set the reservation schedule to the remote controller. Send the registered reservation to indoor unit and then operate.
Step 2: Select Mode A or Mode B and activate or deactivate WEEKLY TIMER.
Step 3: Copy and cancel the reservation schedule.

- Step 1 :** Set reservation schedule to the remote controller. Send the registered reservation to indoor unit and then operate.

Step 2: Select Mode A or Mode B and activate or deactivate WEEKLY TIMER.

Step 3: Copy and cancel the reservation schedule.

■ How to set a WEEKLY TIMER.

- Select Mode A or Mode B
Press (WEEKLY) button. WEEKLY lights up. **A** and **C** blink on the display. (Mode A is selected).
Press (WEEKLY) button again. **B** and **D** blink on the display. (Mode B is selected).
 - If no reservation has been made, ON/OFF, **—**, **—**, **—**, **c** appear.
 - If reservation has been made, ON/OFF, **—**, **—**, **—**, **c** will not appear.

- Set a program
Press (WEEKLY) button for about 3 seconds. The selection mode can be changed.
D day: Mon, program no. : 1, ON/OFF, setting time and setting temperature blink on the display.

- Select the desired day of the week
Press (DAY) button.
The day changes from Mon → Tue → Wed → Thu → Fri → Sat → Sun → Mon, Tue, Wed, Thu, Fri [weekend] → Sat, Sun [full days] → Mon → Tue
Select [full days] for Monday to Friday reservation.
Select [weekend] for Saturday and Sunday reservation.

- After reservation has been set, it is easy to check and edit at the same time.
- Press button to select a program number.
The number changes from 1 → 2 → 3 → 4 → 5 → 6 → 1 → 2
• If program number has been set, follow above in order to make changes.

- Press button to select a program number.
The number changes from 1 → 2 → 3 → 4 → 5 → 6 → 1 → 2
• If program number has been set, follow above in order to make changes.

ENGLISH WEEKLY TIMER OPERATION

- 5. Press (ON-OFF/TIMER) button to select ON TIMER or OFF TIMER reservation.
- 6. Press (TIME) button to set time reservation.
- 7. Press (TEMP ~ or →) button to set temperature reservation.
- 8. Press (OK) button. The reservations are set. Day, program number, ON reservation, setting temperature will light up. **C** will continuously blink. If reservation is not complete, settings will not be stored in memory.

- To continue with the reservation, press (Mon-Sun), (1-6), (TIME), (TEMP ~ or →) buttons. Follow step 3 to 8 for reservation.

9. After all the reservations have been set, press (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly. After beep sound emitted from indoor unit, TIMER lamp will light up.
Please ensure that the TIMER lamp lights up.
This indicates that the reservation has been stored in the indoor unit and Timer function has been completed.
- The reservation contents will appear on the remote controller display.
 - If TIMER lamp on the indoor unit does not light up, press (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds.
 - CAUTION !** Do not press (CANCEL) button during reservation setting because this will result in all reservation contents to be lost.
 - The reservation contents will not stored in the indoor unit until (SEND) button has been pressed.

NOTE

- Up to 6 programs can be set per day. Setting ON TIMER or OFF TIMER for each program number can be at random. When pressing (SEND) button, the set ON TIMER or OFF TIMER for each program number will automatically arranged so that program number 1 shall have the earliest time and program number 6 shall have the latest time.
- If the setting time is the same, Priority will be given to the latest reservation contents.
- CAUTION** If the remote controller is left idle and (SEND) button is not pressed within 3 minutes after reservations have been made , all current reservations will be lost.

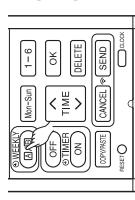


WEEKLY TIMER OPERATION

WEEKLY
[A/B]

ENGLISH

Step 2: Select Mode A or Mode B and activate or deactivate WEEKLY TIMER.



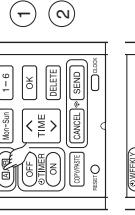
- How to select Mode A or Mode B of WEEKLY TIMER setting.

1. Press **WEEKLY** (WEEKLY) button. **A** and **C** blink on the display. (Normally Mode A will blink first).
2. Press **WEEKLY** (WEEKLY) button again. **B** and **D** blink on the display.
3. Select Mode A or Mode B. Press **SEND** (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly.
- After beep sound emitted from indoor unit, TIMER lamp will light up. Please ensure that the TIMER lamp lights up. This indicates that Mode A or Mode B selection and active WEEKLY TIMER have been confirmed.

Setting non-active WEEKLY TIMER .

1. Direct the remote controller towards the indoor unit and press **CANCEL** (CANCEL) button. Beep sound will be emitted from indoor unit and TIMER lamp will be OFF. Reservation indication on remote display will also disappear. This indicates that non-active WEEKLY TIMER has been confirmed.

- To activate back the setting of WEEKLY TIMER, repeat the steps for "How to select Mode A or Mode B of WEEKLY TIMER setting".



- How to copy and paste.

- Editing the reservation schedule is easy by copying data from one day to another day.
1. Press **WEEKLY** (WEEKLY) button to select Mode A or Mode B.
 2. Press **WEEKLY** (WEEKLY) button for about 3 seconds to start editing the reservation schedule.
 3. Press **NON-SUN** (DAY) button to select a day of the week to copy.
 4. Press **COPY/PASTE** (COPY/PASTE) button. Then "PASTE" blinks on the COPY mode. Normal setting mode is activated.
 5. Press **NON-SUN** (DAY) button to select a day of the week to paste.
 6. Press **COPY/PASTE** (COPY/PASTE) button one more time to paste. **C** only blinks on the display.
 7. To continue copying to other days, press **NON-SUN** or **1-6** or **THE 2** or **THE 3**.

- Then start from step 3.
8. After copy and paste completed, press **SEND** (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly. After beep sound emitted from indoor unit, TIMER lamp will light up. Please ensure that the TIMER lamp lights up. If TIMER lamp does not light up. Press **SEND** (SEND) button again.
 - Reservation data will not change if **SEND** (SEND) button is not pressed.

NOTE

- When setting ONCE TIMER, operation of WEEKLY TIMER is interrupted. After ONCE TIMER operation is complete, WEEKLY TIMER operation will be activated.
- When ONCE TIMER is cancelled, operation of WEEKLY TIMER is also cancelled. Need to set WEEKLY TIMER operation for activation.
- After auto restart, WEEKLY TIMER operation is cancelled. Need to set WEEKLY TIMER operation for activation.

NOTE

- If there is no reservation data, copying data from one day to another day cannot be done.



WEEKLY OPERATION

Step 3: Copy and cancel the reservation schedule.

ENGLISH

■ How to delete WEEKLY TIMER data.

[Delete one program number reservation]

1. Press **(WEEKLY)** (WEEKLY) button to select Mode A or Mode B.
2. Press **(WEEKLY)** (WEEKLY) button for 3 seconds to start editing the reservation schedule.

[Delete one day reservation]

1. Press **(WEEKLY)** (WEEKLY) button to select Mode A or Mode B.
2. Press **(WEEKLY)** (WEEKLY) button for 3 seconds to start editing the reservation schedule.
3. Press **(Mon-Sun)** (DAY) button to select a day of the week to edit.
4. Press **1 ~ 6** to select program number. Selected program number will blink.
5. Press **DELETE** (DELETE) button. Reservation of selected program number is deleted.
6. After deleting, press **SEND** (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly. After beep sound emitted from indoor unit, TIMER lamp will light up. Please ensure that the TIMER lamp lights up.
- Reservation will not change if **SEND** (SEND) button is not pressed.

[Delete Mode A or Mode B]

1. Press **(WEEKLY)** (WEEKLY) button to select Mode A or Mode B.
2. Direct the remote controller towards the indoor unit and press **DELETE** (DELETE) button for about 10 seconds while Mode A or Mode B display blinks. After beep sound emitted from indoor unit, reservations for Mode A or Mode B will disappear.

NOTE

- If all reservations in the remote controller were deleted and pressed **SEND** (SEND) button, no signal will be transmitted to indoor unit. TIMER lamp will remain off and no changes will be done to the reservations stored in the indoor unit.

WEEKLY OPERATION

Step 3: Copy and cancel the reservation schedule.

KOREAN

■ How to delete WEEKLY TIMER data.

[Delete one program number reservation]

1. Press **(WEEKLY)** (WEEKLY) button to select Mode A or Mode B.
2. Press **(WEEKLY)** (WEEKLY) button for 3 seconds to start editing the reservation schedule.

[Delete one day reservation]

1. Press **(WEEKLY)** (WEEKLY) button to select Mode A or Mode B.
2. Press **(WEEKLY)** (WEEKLY) button for 3 seconds to start editing the reservation schedule.
3. Press **(Mon-Sun)** (DAY) button to select a day of the week to edit.
4. Press **1 ~ 6** to select program number. Selected program number will blink.
5. Press **DELETE** (DELETE) button. Reservation of selected program number is deleted.
6. After deleting, press **SEND** (SEND) button while directing the remote controller towards the indoor unit for about 3 seconds. Timer lamp on the indoor unit will blink rapidly. After beep sound emitted from indoor unit, TIMER lamp will light up. Please ensure that the TIMER lamp lights up.
- Reservation will not change if **SEND** (SEND) button is not pressed.

[Delete Mode A or Mode B]

1. Press **(WEEKLY)** (WEEKLY) button to select Mode A or Mode B.
2. Direct the remote controller towards the indoor unit and press **DELETE** (DELETE) button for about 10 seconds while Mode A or Mode B display blinks. After beep sound emitted from indoor unit, reservations for Mode A or Mode B will disappear.

WEEKLY OPERATION

Step 3: Copy and cancel the reservation schedule.

CHINESE

■ 如何删除周定时数据。

[删除一个程序号的预订]

1. 按 **(WEEKLY)** (WEEKLY) 按钮选择模式A或模式B。
2. 按 **(WEEKLY)** (WEEKLY) 按钮3秒以上开始编辑预订计划表。

[删除一天的预订]

1. 按 **(WEEKLY)** (WEEKLY) 按钮选择模式A或模式B。
2. 按 **(WEEKLY)** (WEEKLY) 按钮3秒以上开始编辑预订计划表。
3. 按 **(Mon-Sun)** (DAY) 按钮选择一周中的一天来编辑。
4. 按 **1 ~ 6** 来选择程序号。被选中的程序号会闪烁。
5. 按 **DELETE** (DELETE) 按钮。被选中的程序号的预订将被删除。
6. 在删除后，按 **SEND** (SEND) 按钮并指向室内机，持续3秒。室内机上的定时灯将快速闪烁。之后从室内机发出蜂鸣声，定时灯将亮起。请确保定时灯亮起。
- 如果不按 **SEND** (SEND) 按钮，预订将不会改变。

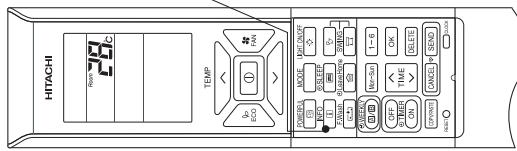
[删除模式A或模式B]

1. 按 **(WEEKLY)** (WEEKLY) 按钮选择模式A或模式B。
2. 将遥控器对准室内机，按 **DELETE** (DELETE) 按钮10秒以上。模式A或模式B显示将闪烁。之后从室内机发出蜂鸣声，预订将消失。

INFO FUNCTION

ENGLISH

- By pressing (INFO) button, temperature around remote controller and monthly power consumption will be displayed on the remote controller.
- After changing the batteries, direct the remote controller towards the indoor unit and press (INFO) button.
- Current calendar and clock will be transmitted from indoor unit.
- In order to receive information from indoor unit, the distance between remote controller and receiver of indoor units is within 2 meters.



To check temperature around remote controller

Press (INFO) button.

Temperature will be displayed for 10 seconds.

To check monthly power consumption

Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press (INFO) button. Wait for 2 seconds for signal transmission.

While temperature around remote controller is displayed, press (INFO) button repeatedly. The display will show as below:

This month power consumption amount for heating → last month power consumption amount for cooling → last month power consumption amount for cooling → temperature around remote controller → this month power consumption amount for heating cyclically.
 • If indication is not given, bring remote controller closer to the receiver of the indoor unit.
 • Indicated value shall be regarded as a guide only.

Current calendar and clock can be retrieved from indoor unit

Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press (INFO) button. Wait for 2 seconds for signal transmission.

Once received the current calendar and clock, check whether they are correct or not by pressing (CLOCK) button.

- If there is no power supply to indoor unit or calendar and clock have not been set, INFO function cannot be used for sending or receiving information.

NOTE

- In case failure occurs to the air conditioner, by pressing (INFO) button, an error code will be displayed.
- Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press (INFO) button. Wait for 2 seconds for signal transmission.
- An error code will be displayed.
- Call service center and inform the error code.
- During installation, in case of power failure or breaker ON / OFF, ensure to set the clock and calendar for indoor unit (unit in standby mode or auto restart), by pressing ① (START / STOP) button.
- Failure to do the above, monthly power consumption amount will not be displayed on the remote controller.

OPERATION MODE LOCK

The remote controller can be set to fix the HEATING mode (including FAN), COOLING mode (including FAN) and DEHUMIDIFYING mode (including FAN) operations.

- Method to lock HEATING mode (including FAN) operation.
Press (ECO) and (POWERFUL) buttons simultaneously for about 5 seconds when the remote controller is OFF.

", " and "" will be displayed for about 10 seconds. Later, "" and "" will remain.

This indicates that HEATING mode operation is locked.
When pressing (MODE) button, "", "" or "" will be displayed.

- Method to unlock HEATING mode (including FAN) operation.
Press (ECO) and (POWERFUL) buttons simultaneously for about 5 seconds when the remote controller is OFF.

", " and "" will appear on the display for about 10 seconds. After that, operation mode symbols will disappear on the display. This indicates that HEATING mode operation is unlocked.

- Method to lock COOLING and DEHUMIDIFYING modes (including FAN) operations.
Press (ECO) and (DEHUMIDIFY) buttons simultaneously for about 5 seconds when the remote controller is OFF.

", "" and "" will be displayed for about 10 seconds. Later, "" and "" will remain.

This indicates that COOLING and DEHUMIDIFYING mode operation is locked.
When pressing (MODE) button, "", "" or "" will be displayed.

- Method to unlock COOLING and DEHUMIDIFYING modes (including FAN) operations.
Press (ECO) and (DEHUMIDIFY) buttons simultaneously for about 5 seconds when the remote controller is OFF.

All operation mode symbols will appear on the display for about 10 seconds. After that, operation mode symbol before cancellation will be displayed.

This indicates that COOLING and DEHUMIDIFYING modes operation is unlocked.

NOTE

- Operation Mode Lock function will not activate if TIMER reservations activate.
- TIMER reservations shall be deactivated first. Then, Operation Mode Lock function can be activated.
- HEATING, COOLING and DEHUMIDIFYING mode (including FAN) operations can be unlocked by pressing the (RESET) button. However, by pressing the (RESET) button, all the information stored in the remote controller will disappear. You may need to set the necessary information again.

HITACHI

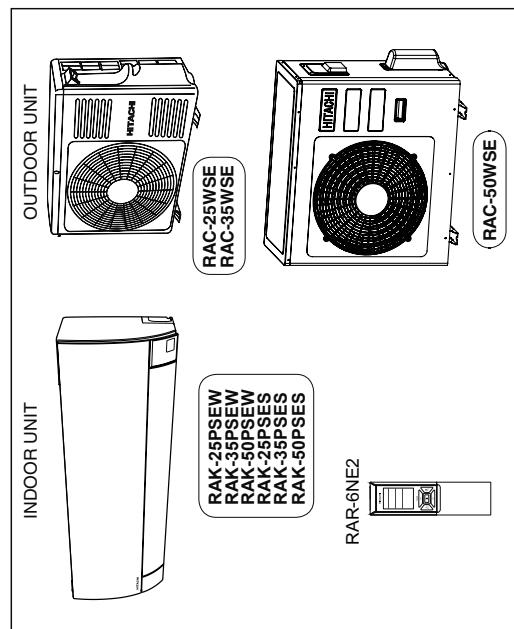
SPLIT TYPE A/R CONDITIONER

INDOOR UNIT/OUTDOOR UNIT

MODEL

RAC-25PSEW/RAC-25WSE
RAK-35PSEW/RAC-35WSE
RAK-50PSEW/RAC-50WSE
RAK-25PSES/RAC-25WSE
RAK-35PSES/RAC-35WSE
RAK-50PSES/RAC-50WSE

HFC
R32



SAFETY PRECAUTION

Please read the "Safety Precaution" carefully before operating the unit to ensure correct usage of the unit.
Pay special attention to signs of "⚠ Warning" and "⚠ Caution". The "Warning" section contains matters which, if not observed strictly, may cause death or serious injury. The "Caution" section contains matters which may result in serious consequences if not observed properly. Please observe all instructions strictly to ensure safety. The signs indicate the following meanings. (The following are examples of signs.)

- ⚠ Make sure to connect earth line.
- ⚠ Indicates the instructions that must be followed.
- ⚠ Please keep this manual after reading.

PRECAUTIONS DURING INSTALLATION

WARNING

- Do not reconstruct the unit.
Water leakage, fault, short circuit or fire may occur if you reconstruct the unit by yourself.
- Please ask your sales agent or qualified technician for the installation of your unit.
Water leakage, short circuit or fire may occur if you install the unit by yourself.
- Please use earth line.
Do not place the earth line near water or gas pipes, lightning-conductor, or the earth line of telephone. Improper installation of earth line may cause electric shock or fire.
- Be sure to use the specified piping set for R32. Otherwise, this may result in broken copper pipes or faults.
- Do not use refrigerant other than the one indicated on the outdoor unit (R32) when installing, moving or repairing.
Using other refrigerants may cause trouble or damage to the unit, and personal injury.
- A circuit breaker should be installed on the mounting site of the unit.
Without a circuit breaker, the danger of electric shock exists.

CAUTION

- Do not install the unit near a location where there is flammable gas.
The outdoor unit may catch fire if flammable gas leaks around it.
- Please ensure smooth flow of water when installing the drain hose.
- Make sure that a single phase 220V/230V power source is used.
The use of other power sources may cause electrical components to overheat and lead to fire.

PRECAUTIONS DURING SHIFTING OR MAINTENANCE

WARNING

- Should abnormal situation arise (like burning smell), please stop operating the unit and turn off the circuit breaker. Contact your agent. Fault, short circuit or fire may occur if you continue to operate the unit under abnormal situation.
- Please contact your agent for maintenance. Improper self maintenance may cause electric shock and fire.
- Please contact your agent if you need to remove and reinstall the unit. Electric shock or fire may occur if you remove and reinstall the unit yourself improperly.

PRECAUTIONS DURING OPERATION

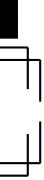
WARNING

- Avoid an extended period of direct airflow for your health.
- Do not put objects like thin rods into the panel of blower and suction side because the high-speed fan inside may cause danger.
- Do not use any conductor as fuse wire, this could cause fatal accident.
- During thunder storm, disconnect the plug top and turn off the circuit breaker.
- Spray cans and other combustibles should not be located within a meter of the air outlets of both indoor and outdoor units.
As a spray can's internal pressure can be increased by hot air, a rupture may result.

Instruction manual
To obtain the best performance and ensure years of trouble free use, please read this instruction manual completely.

This room air conditioner is only for consumer usage.
Do not use for preservation of foods, animals, plants, precision machines, art, medicine or such.

<001876Z>



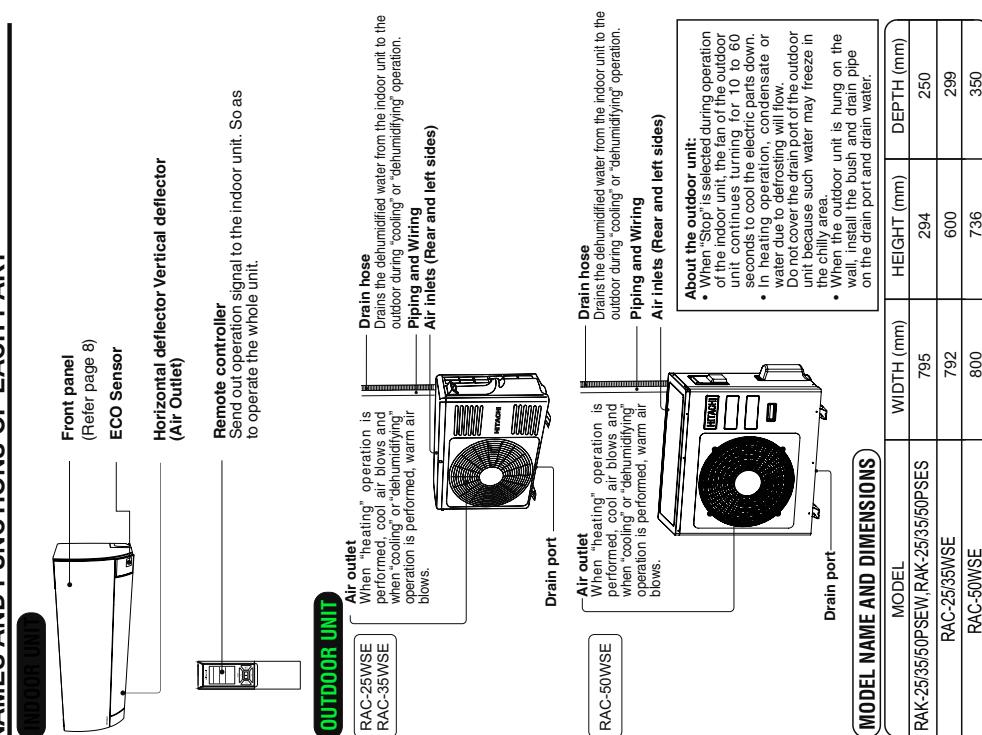
PRECAUTIONS DURING OPERATION

ENGLISH	
DON'T NET	<ul style="list-style-type: none"> The product shall be operated under the manufacturer specification and not for any other intended use.
PROHIBITION	<ul style="list-style-type: none"> Do not attempt to operate the unit with wet hands, this could cause fatal accident.
PROHIBITION	<ul style="list-style-type: none"> When operating the unit with burning equipments, regularly ventilate the room to avoid oxygen insufficiency.
PROHIBITION	<ul style="list-style-type: none"> Do not direct the cool air coming out from the air-conditioner panel to face household heating apparatus as this may affect the working of apparatus such as the electric kettle, oven etc.
PROHIBITION	<ul style="list-style-type: none"> Please ensure that outdoor mounting frame is always stable, firm and without defect. If not, the outdoor unit may collapse and cause danger.
PROHIBITION	<ul style="list-style-type: none"> Do not wash the unit with water or place a water container such as a vase on the indoor unit. Electrical leakage could be present and cause electric shock.
PROHIBITION	<ul style="list-style-type: none"> Do not place plants directly under the airflow as it is bad for the plants.
PROHIBITION	<ul style="list-style-type: none"> Be sure to stop the operation by using the remote controller and turn off the circuit breaker during cleaning, the high-speed fan inside the unit may cause danger.
PROHIBITION	<ul style="list-style-type: none"> Turn off the circuit breaker if the unit is not be operated for a long period.
PROHIBITION	<ul style="list-style-type: none"> Do not climb on the outdoor unit or put objects on it.
PROHIBITION	<ul style="list-style-type: none"> If the amount of heat in the room is above the cooling or heating capability of the unit (for example, more people entering the room, using heating equipments and etc.), the preset room temperature cannot be achieved.
PROHIBITION	<ul style="list-style-type: none"> Indoor unit cleaning must be performed by authorized personnel only. Consult your sales agent. Using a commercially available detergent or similar can damage the plastic parts or clog the drain pipe, causing water to drip with potential electric shock hazard.
DO NOT TOUCH	<ul style="list-style-type: none"> Do not touch the air outlet, bottom surface and aluminium fin of the outdoor unit. You may get hurt.
DO NOT TOUCH	<ul style="list-style-type: none"> Do not touch the refrigerant pipe and connecting valve. Burns may result.
<p>This appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction. Children must be supervised not to play with the appliance.</p>	

OPERATING RANGE

Operation mode	Cooling / Dehumidifying	Heating
Outdoor temperature	-10 to 43°C	-20 to 24°C

NAMES AND FUNCTIONS OF EACH PART

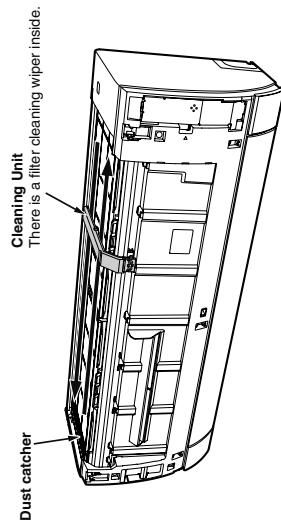


FILTER CLEANING UNIT OPERATION CHECK

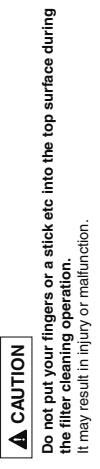
Performing operation check after the power is turned on.

Perform the filter cleaning unit operation check

- After the power is turned on (after the circuit breaker is switched on or power failure), the cleaning unit makes one cycle of back and forth movement.
- At this time, the (FILTER CLEAN) indicator is lit.
- One cycle of operation check will take approximately 8 minutes.
- During the operation check, the unit performs "Fan" operation while horizontal air deflector remain closed.
- If the (FILTER CLEAN) indicator blinks (lit for 4 seconds/off 1 second) after the operation check, refer to "Troubleshooting" on page 14.



- The illustration shows the unit without front panel for your reference only.



- 6 -

ENGLISH

INDOOR UNIT INDICATIONS

COOLING LAMP

This lamp lights during cooling.

HEATING LAMP

This lamp lights during heating. It flashes in the following cases during heating.

(1) During preheating
For about 2-3 minutes after starting up.

(2) During defrosting
Defrosting will be performed about once an hour when frost forms on the heat exchanger of the outdoor unit, for 5-10 minutes each time.

INDOOR TEMP. LAMP

Indoor temp. is displayed on the indoor unit during operation(Display Range: 0°C to 49°C).
The 'H' and the error code are displayed repeatedly when the failure mode detected on the indoor unit side.

The 'L' and the error code are displayed repeatedly when the failure mode detected on the outdoor unit side.
The error code is displayed on the indoor unit side.

ECO LAMP

This lamp lights during ECO mode.

FAN OPERATION LAMP

This lamp lights during fan operation.

FILTER CLEAN LAMP

This lamp lights during filter cleaning operation.

FROST WASH LAMP

This lamp lights when frost wash is working.

TIMER LAMP

This lamp lights when the timer is working.

FROST WASH LAMP

It flashes when some failure is detected.

DEHUMIDIFY LAMP

This lamp lights during Dehumidifying.

TEMPORARY SWITCH

Use this switch to start and stop when the remote controller does not work.

- By pressing the temporary switch, the operation is done in automatic mode.
- When the operation is done using the temporary switch after the power source is turned off and turn on again, the operation is done in automatic mode.
- The air conditioner performs force-cooling operation if the temporary switch is pressed for about 5 seconds.

This operation is allowed to sales agents only. Users must not perform this operation.

INDOOR UNIT CONTROL PANEL / CLEANING UNIT

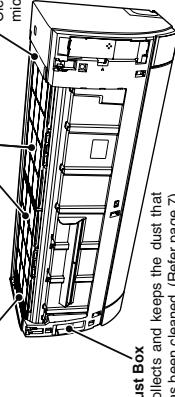
Open the front panel to operate. (How to open the front panel. Refer page 8)

Dust Catcher

Collects the dust swept by the cleaning unit. (Refer page 11)

Cleaning Unit

Cleans the dust caught by the micro mesh stainless filter.



- 5 -

Maintenance

ENGLISH

WARNING

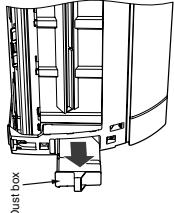
- Before cleaning, stop unit operation with the remote controller and turn off the circuit breaker.

CAUTION

- Do not expose the unit to water as it may cause an electric shock.
- For cleaning inside the air conditioner, consult your sales agent.
- Avoid using detergent when cleaning the heat exchanger of the indoor unit. Unit failure may result.
- When cleaning the heat exchanger with a vacuum cleaner, make sure to wear gloves so as not to injure your hands on the heat exchanger fins.

Maintenance of dust box

- No daily maintenance is required. However, dust amount varies depending on the environment in which the air conditioner is used. Check the dust amount in the Dust Box approximately once every half year and throw the dust, if any.
- Some type of dust may be accumulated on the rear surface of the dust catcher. It is recommended to clean the dust catcher together with the dust box.



1 Stop the operation with the remote controller and turn off the circuit breaker.

2 Wash the dust box with water.

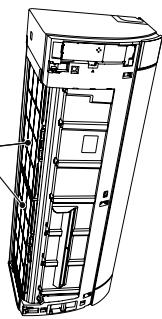
- If the dirt is stubborn, wash the dust box with warm water below 40°C.
- After washing, dry it in the shade.

3 Turn on the circuit breaker.

Maintenance (continued)

Maintenance of Micro Mesh Stainless Filter

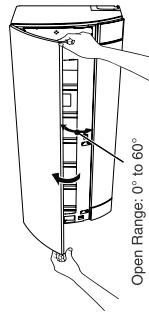
No daily maintenance is required. However, filter should be cleaned if the dirt is noticeable due to the environment in which the air conditioner is used.



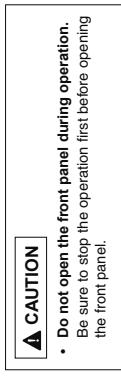
1 Stop the operation with the remote controller and turn off the circuit breaker.

2 Open the front panel.

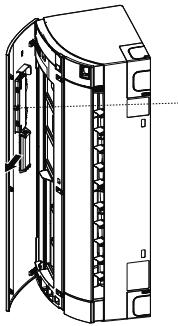
- Hold the lower side of the front panel with both hands.
- If it is raised further, the front panel may be damaged.



Open Range: 0° to 60°

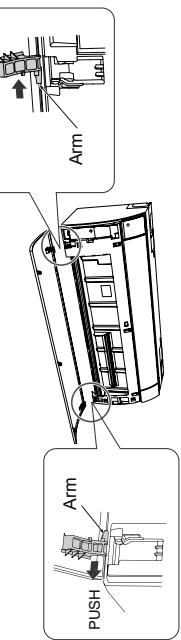


3 After removing 1 screw with a short screw driver(L100, TYPE:PH2x38), remove the Temperature Display box(Please remove it toward the direction as illustrated if the WiFi adapter is installed).



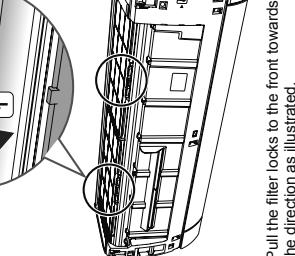
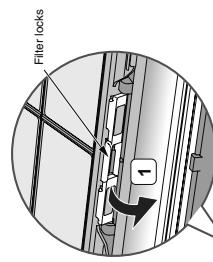
ENGLISH

4 Remove the front panel.



- 1 Push the end of the right-side arm outward to release the tab.
- 2 Move the left-side arm outward to release the left tab, and then pull the panel towards you.

5 Remove the micro mesh stainless filter.



- In the event the micro mesh stainless filter is heavily dirty, wash the filter with neutral detergent and rinse well with water, and then dry the filter in the shade.
- Pull the filter locks to the front towards the direction as illustrated.

6 Wash with water.

- 7 Attach the micro mesh stainless filter.**
- Align the filter with the top face of the indoor unit, and then slide and push it in. (The shape of the left and right filters is the same.)
 - Tighten the left and right filter locks to the indicated direction.
- 8 Attach the front panel.**

 - 1 Insert the shaft of the left arm along the step on the unit into the hole.
 - 2 Securely insert the shaft of the right arm along the step on the unit into the hole.
 - 3 Make sure that the front panel is securely attached.
 - 4 Attach the temperature display box and WiFi adapter.

9 Close the front panel.

 - Pull it downward.
 - Push the both ends of the front panel first and then its center until it clicks.
- CAUTION**
- If the front panel is loose, it may come off and drop.
 - When opening the front panel upwards, please do not use excessive force. If the front panel comes off the device, this may cause it to malfunction.
- ### 10 Turn on the circuit breaker.
- CAUTION**
- Improper installation of the micro mesh stainless filter could result in malfunction. Filter cleaning operation can not be performed properly and the (FILTER CLEAN) indicator blinks.
 - Do not operate the air conditioner without the micro mesh stainless filter. Dust goes in the gap of the heat exchanger as well as inside the appliance and may cause unpleasant smell on the heat exchanger or could result in malfunction.
 - Be extra careful not to cut your hand with the fin of the heat exchanger when removing and reattaching the micro mesh stainless filter.
- 9 -
- 28

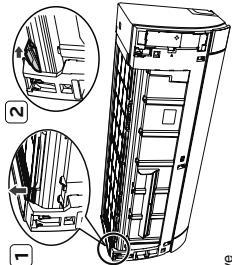
MAINTENANCE (continued)

Maintenance of dust catcher

No daily maintenance is required. However, dust catcher should be cleaned if the dirt is noticeable due to the environment in which the air conditioner is used.

Some type of dust may not go in the dust box but be accumulated on the rear surface of the dust catcher. It is recommended to check the dust amount on the dust catcher approximately once every half year and clean the dust catcher if it is dirty.

- Stop the operation with the remote controller and turn off the circuit breaker.**



- Remove the front panel.**
(Refer to page 9 on removing the front panel)

- Remove the dust catcher.**

- Remove the dust catcher as shown with arrows.
- If dust is accumulated at the inner side of the dust catcher, remove the dust with a vacuum cleaner.

- Wash with water.**

- Please wash with water.
- If the dirt is stubborn, use a mild detergent and wash with warm water below 40°C.
- Dry completely in the shade.



- Attach the dust catcher.**

- Hold the dust catcher for the top face [2] facing towards you. Insert and push in the dust catcher in the arrow direction until it clicks.

- Attach the front panel.**

- (Refer to page 10 on attaching the front panel)

- Turn on the circuit breaker.**

CAUTION

Improper installation of the dust catcher could result in malfunction. Filter cleaning operation can not be performed properly and the (FILTER CLEAN) indicator blinks.

UNDERSTANDING THE OPERATING MECHANISM

NAMES AND FUNCTIONS OF EACH PART (Refer page 4)

Heating capability

- This room air conditioner utilizes a heat pump system that absorbs exterior heat and brings it into a room to be heated. As the ambient temperature gets lower, heating capability will also lower. In such a situation, the inverter work to increase compressor rpm to keep the unit's heating capability from decreasing. If the unit's heating performance is still unsatisfactory, other heating appliances should be used to augment this unit's performance.
- The air conditioner is designed to heat an entire room so that it may take some time before you feel warm. Timer operation is recommended for effective preheating ahead of the desired time.
- When outside temperature becomes lower while humidity remains high, condensation forms on the heat exchanger of the outdoor unit and the heating efficiency may be affected if condensation is not removed. To prevent this problem, the air conditioner performs condensation-removing automatically. At this time, the heating operation is suspended and it usually takes approximately 5-10 minutes (maximum of 20 minutes) to resume the heating operation.

Cooling, dehumidifying capabilities

- If the heat present in a room exceeds the unit's cooling capacity (for example, if there are many people in the room or other heating appliances are used), the preset room temperature may not be reached.
- The preset temperature may not be reached if a heat source or humidity which exceeds the air conditioner's dehumidifying ability is present in the room.

※ Piping which is too long could lower the heating/cooling performance.

CAUTION

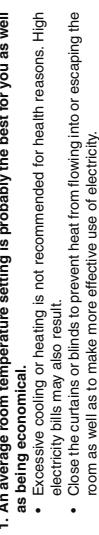
- Do not use a stove or any other high temperature devices in proximity to the indoor unit.
PROHIBITION

REFRIGERANT INFORMATION

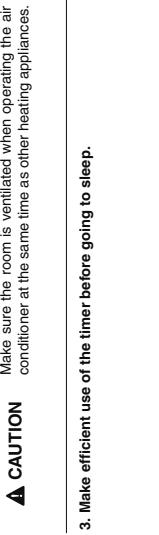
MODEL	Refrigerant (kg)	GWP	t CO ₂ eq
RAC-25NWE	R32:0.980	675	0.662
RAC-35NWE	R32:1.240	675	0.837
RAC-50NWE			

THE IDEAL WAYS OF OPERATION

1. An average room temperature setting is probably the best for you as well as being economical.
- Excessive cooling or heating is not recommended for health reasons. High electricity bills may also result.
 - Close the curtains or blinds to prevent heat from flowing into or escaping the room as well as to make more effective use of electricity.



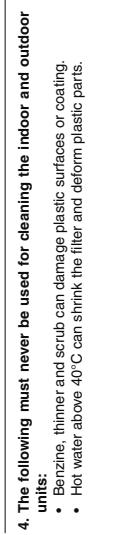
2. At intervals, the doors and windows should be opened to let fresh air in.



- CAUTION** Make sure the room is ventilated when operating the air conditioner at the same time as other heating appliances.
3. Make efficient use of the timer before going to sleep.



4. The following must never be used for cleaning the indoor and outdoor units:
- Benzine, thinner and scrub can damage plastic surfaces or coating.
 - Hot water above 40°C can shrink the filter and deform plastic parts.



5. Do not block the air intake and air outlet.



- Do not block the air outlets and intakes of the indoor and outdoor units with curtains or other obstacles which could degrade air conditioner performance and cause unit failure.

TROUBLESHOOTING

FILTER CLEANING OPERATION

Filter cleaning is performed after the power is turned on (after the circuit breaker is switched on or after power failure)	<ul style="list-style-type: none"> This is for filter cleaning operation check.
Filter cleaning operation does not start ((FILTER CLEAN) indicator blinks)	<ul style="list-style-type: none"> During filter cleaning operation or within 5 minutes after the operation , the filter cleaning operation will not restart to protect the device. ((FILTER CLEAN) indicator lit for 1 second/off for 1 second, for 10 seconds) Is "filter cleaning operation prohibited" being set? Please return to the filter cleaning operation setting.
Noise occurred during filter cleaning operation	<ul style="list-style-type: none"> Are the micro mesh stainless filter, the dust catcher correctly installed? ((FILTER CLEAN) indicator lit for 4 seconds/off for 1 second) Filter Cleaning is not performed if the air conditioner operation is stopped by Sleep Timer or Off Timer function. However, if the air conditioner is stopped by Sleep Timer or Off Timer every time, filter cleaning will be performed approximately once a week.
Cleaning unit stops halfway	<ul style="list-style-type: none"> A whirring motor noise is generated due to driving of the cleaning unit. A sweeping sound is generated when the cleaning unit sweeps the dust. Are the micro mesh stainless filter, the dust catcher correctly installed? ((FILTER CLEAN) indicator lit for 4 seconds/off for 1 second)
Micro mesh stainless filter is still dirty	<ul style="list-style-type: none"> Filter may not be cleaned evenly depending on the environment in which the air conditioner is used. To solve this problem, clean the micro mesh stainless filter. Depending on dust amount, the micro mesh stainless filter may not be completely cleaned by manual filter cleaning operation performed at your preferred time while filter cleaning operation is prohibited.

ENGLISH

TROUBLESHOOTING (continued)

PLEASE CHECK THE FOLLOWING BEFORE SERVICE

ENGLISH

Signal cannot be received (Remote controller display is dim or blank)	<ul style="list-style-type: none"> Do the batteries need replacement? Is the polarity of the inserted batteries correct?
Operation does not start	<ul style="list-style-type: none"> Is there a blackout? (Operation remains idle after a blackout?) Is the fuse blown out or circuit breaker tripped?
Does not cool well Does not heat well	<ul style="list-style-type: none"> Have the horizontal air deflector been adjusted to the correct positions according to the operation mode selected? Are the air inlets and air outlets of indoor and outdoor units blocked? Is the fan speed "LOW" or "SILENT"?
(FILTER CLEAN) Indicator blinks	<ul style="list-style-type: none"> Check "filter cleaning operation".

FROST WASH OPERATION

Frost wash operation does not start	<p>Is the total operation time of the air conditioner beyond about 42 hours when the air-conditioner is operated for about 30 minutes and stopped? It does not wash when outside temperature is less than about 1 degrees Celsius or more than 43 degrees Celsius. When "FROST WASH" is done by operating a remote controller, it does not wash when the room temperature is less than about 10 degrees Celsius or more than about 32 degrees Celsius.</p> <p>Does not change to non-automatic "FROST WASH"?</p> <p>Does it happen after "sleep" and "time off"?</p> <p>→ Automatic "FROST WASH" interval becomes longer. Please operate manual "FROST WASH" with remote controller.</p> <p>Within 60 minutes after the end of "FROST WASH", "FROST WASH" is not operated for product protection.</p>
Noise occurred during frost wash operation	<p>It is the sound that the internal machine is inflated and contracted by the temperature change and the fin of the heat exchanger is frozen and thawed</p> <p>Repeat for 1 second on and 1 second off for 10 seconds Because "FROST WASH" can not work when operating the "FROST WASH" with remote controller.</p> <p>(FROST WASH) Indicator blinks</p> <ul style="list-style-type: none"> The air conditioner is operating Outside air temperature, room temperature and room humidity are not suitable for "FROST WASH". It has not been over 60 minutes since the end of "FROST WASH". <p>Repeat for 4 seconds on and 1 second off for 15 seconds Because it is not "FROST WASH" for a long time. → Operate the remote controller to operate "FROST WASH".</p>

TROUBLESHOOTING (continued)

THE FOLLOWING CASES DOES NOT INDICATE MALFUNCTION

Odors	Caused as the smells and particles of smoke, food, cosmetics, etc. present in room air become attached the unit and blown off into the room again.
In heating operation, HEATING indicator blinks	Indicates preheating or defrosting operation is underway
(FILTER CLEAN), (FROST WASH), indicators lit after the operations	Indicates filter clean or frost wash operation is underway
Hissing or fuzzy sound	Refrigerant flow noise in the pipe or valve sound generated when flow rate is adjusted.
Squeaking noise	Noise generated when the unit expands or contracts due to temperature changes.
Rustling sound	Noise generated with the indoor unit fan's rpm changing such as operation start times.
Clicking sound	Noise of the motorized valve when the unit is switched on.
Operation sound changes	Operation noise changes due to power variations according to room temperature changes.
Mist emission	Mist is generated as the air within the room is suddenly cooled by conditioned air.
Steam emitted from outdoor unit	Water generated during defrosting operation evaporates and steam is emitted.
Outdoor unit continues to operate even if operation is stopped and HEATING indicator blinks	Auto fresh defrosting is activated (as the heating operation is stopped, the microcomputer checks frost accumulated in the outdoor unit and instructs the unit to perform automatic defrosting if necessary).
Preset temperature cannot be reached	Depending on the number of person in the room and the conditions of the room, actual room temperature may deviate slightly from the remote controller's setting.

TROUBLESHOOTING (continued)

CONTACT YOUR SALES AGENT IMMEDIATELY ON FOLLOWING CASES

In the event that any trouble or phenomenon listed below still occurs even after a check has been conducted according to the troubleshooting procedures on page 14-16 disconnect the power plug from the outlet (or switch off the circuit breaker) and immediately contact your sales agent.

- The circuit breaker switches off or the fuse blows frequently.
- The switch operation is not stable.
- Foreign matter or water accidentally enters the unit interior.
- The power cord gets excessively hot or its insulation is torn or stripped.
- ⑤ (TIMER) indicator on the indoor unit display blinks.

IF THE UNIT WOULD NOT BE USED FOR A LONG PERIOD OF TIME (MORE THAN 1 MONTH), PLEASE FOLLOW THE STEPS BELOW FOR MAINTENANCE

1 Dry the interior of the indoor unit.



2 Turn off the circuit breaker.



3 Remove the batteries from the remote controller.



- On a sunny day, perform fan operation for approximately one half day. Mold can easily grow if air conditioner is not used for a long period of time while its inside is left wet.

REGULAR INSPECTION

PLEASE CHECK THE FOLLOWING POINTS EVERY EITHER HALF YEARLY OR YEARLY. CONTACT YOUR SALES AGENT SHOULD YOU NEED ANY HELP.

	WARNING	Is the unit's earth line connected correctly? Please make sure earth line is connected correctly. <ul style="list-style-type: none"> If the earth line is disconnected or faulty, it may result in malfunction or electric shock.
	WARNING	Is the mounting frame stable? Check to see if the mounting frame has rusted excessively or if the outdoor unit has tilted or become unstable. <ul style="list-style-type: none"> If the outdoor unit collapsed or fell, it could cause injury.

INSPECTION AND MAINTENANCE

	CAUTION	Air conditioner is designed to perform automatic filter cleaning and frost wash to maintain the interior of air conditioner clean. However, the interior of air conditioner may get dirty and the air conditioning performance may be lowered after air conditioner is used for a few seasons.
	CAUTION	Beside maintenance, please perform Inspection as well Dust deposited inside the indoor unit may block the drainage path of dehumidified water and could result in water dripping. <ul style="list-style-type: none"> Maintenance inspection is recommended in addition to ordinary cleaning. Request your sales agent for maintenance inspection Maintenance inspection requires technical expertise. Use of commercially available cleaning agent may cause crack on resin part and clogging of drainage path which could result in water dripping and electrical shock. <ul style="list-style-type: none"> Consult your sales agent for inspection and maintenance.

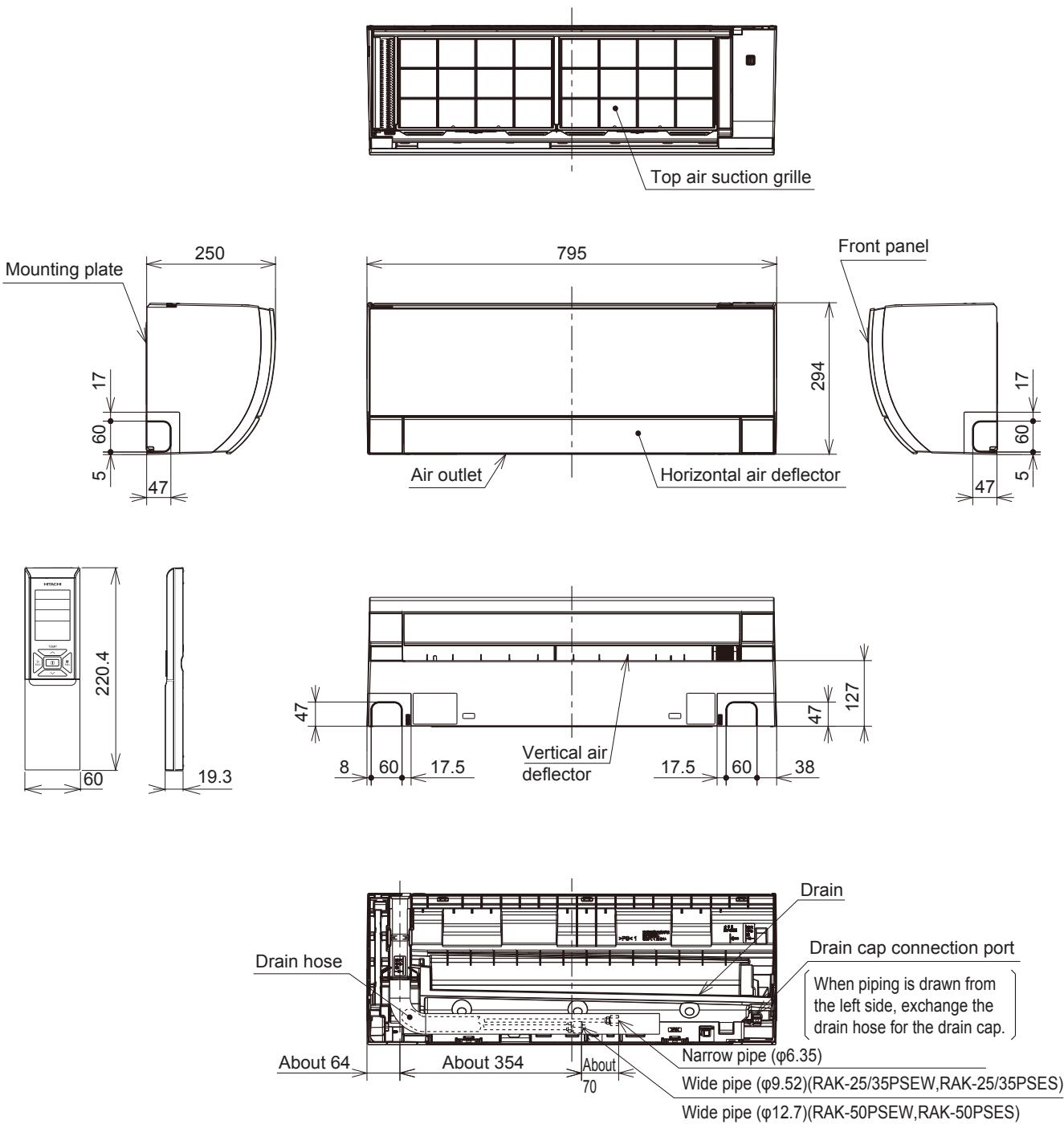
ENGLISH

CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAK-25/35/50PSEW

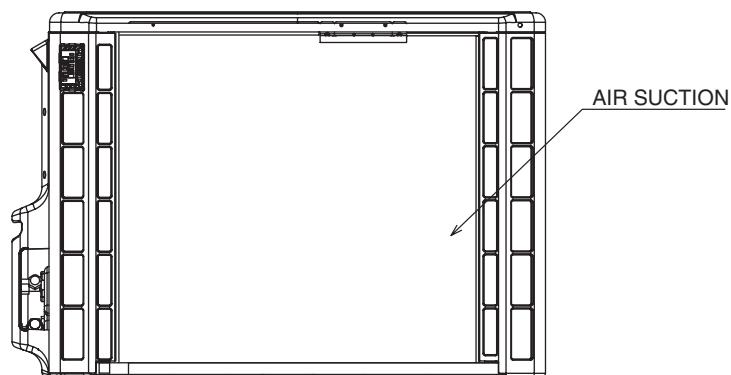
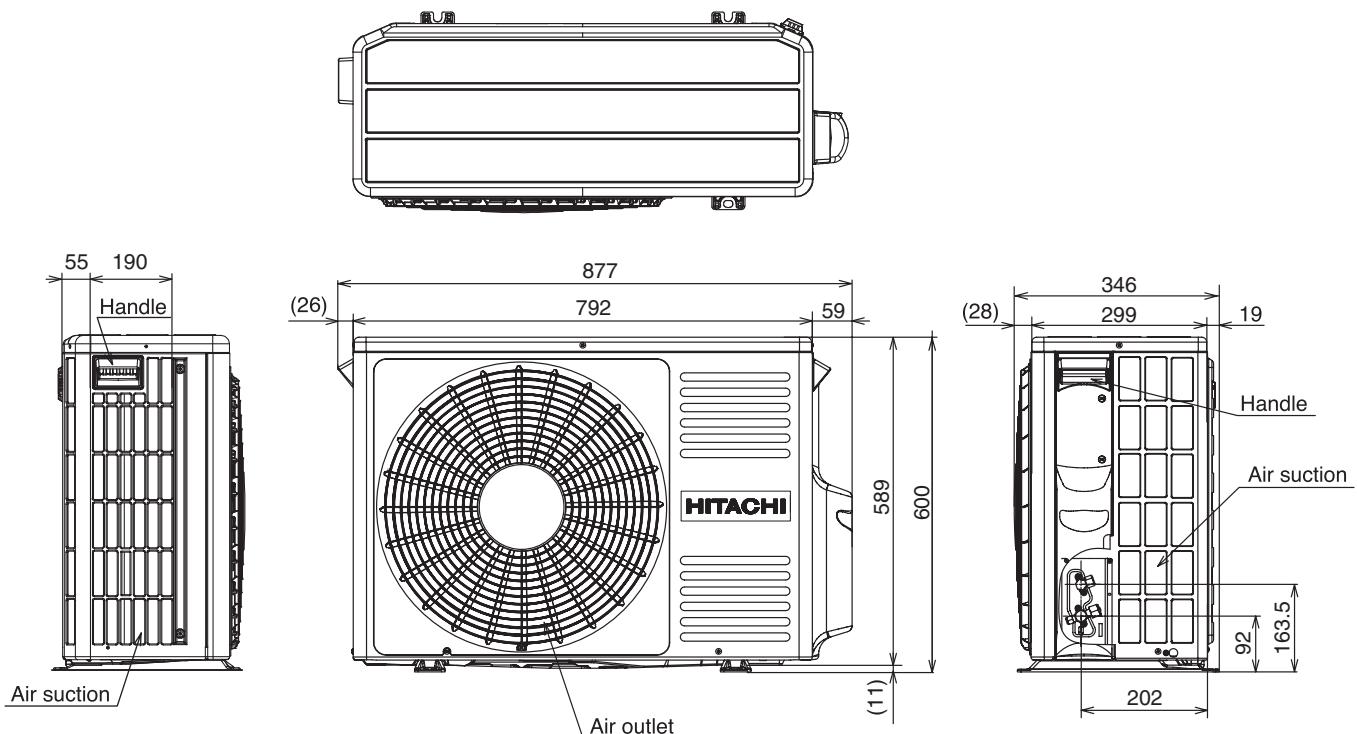
RAK-25/35/50PSSES

Unit : mm

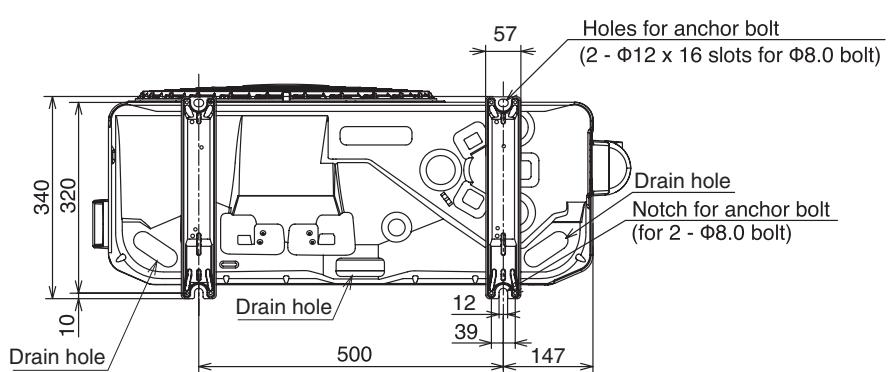


MODEL RAC-25WSE, RAC-35WSE

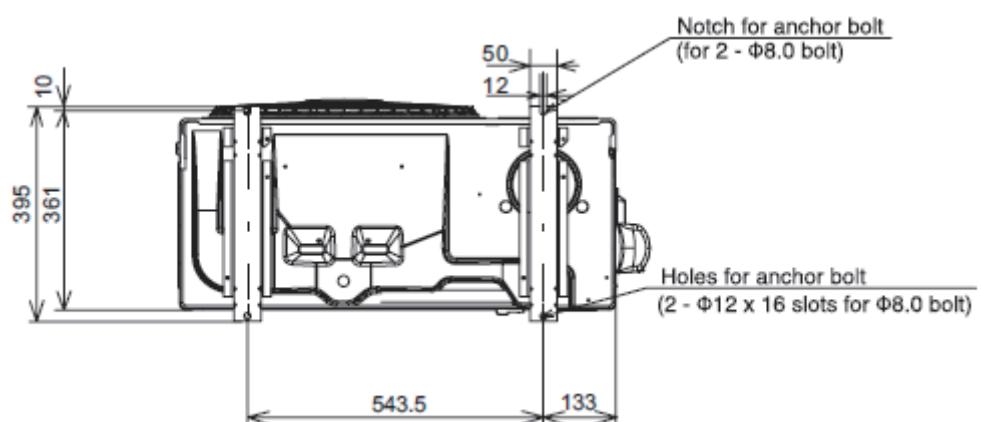
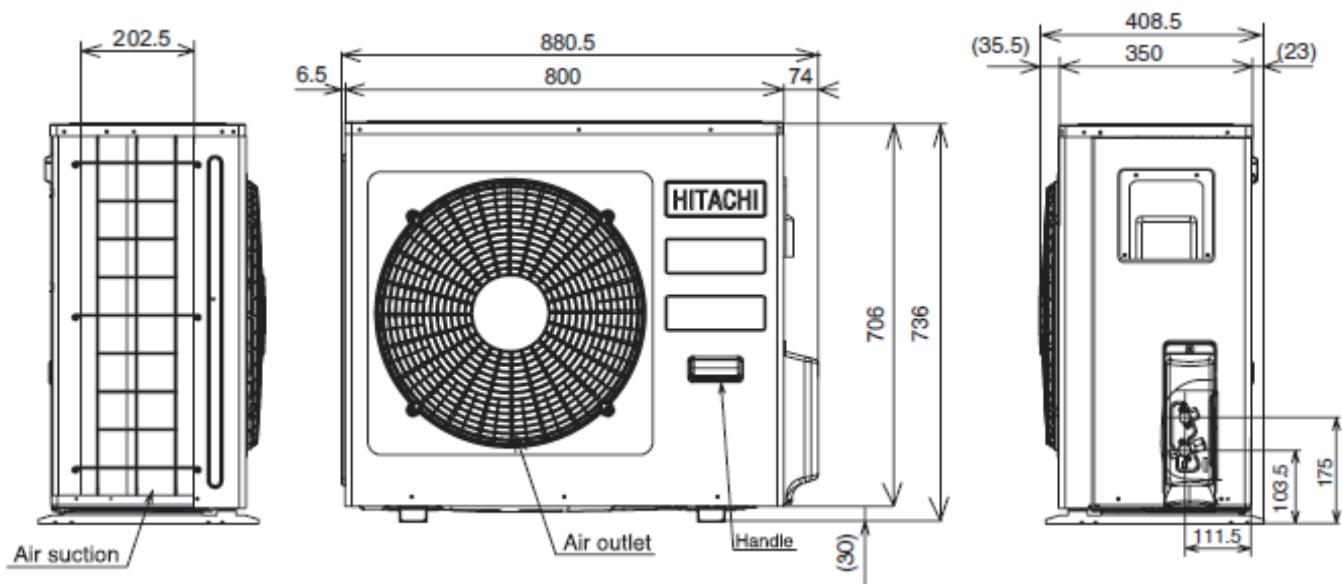
Unit : mm



View from the rear



Unit : mm



MAIN PARTS COMPONENT

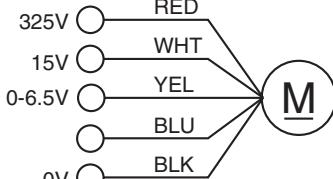
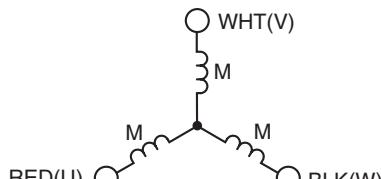
THERMOSTAT (Room temperature Thermistor)

Thermostat Specifications

MODEL			RAK-25/35/50PSEW, RAK-25/35/50PSES		
THERMOSTAT MODEL			IC		
OPERATION MODE			COOL		HEAT
TEMPERATURE °C (°F)	INDICATION 16	ON	15.3 (59.54)	16.7 (62.06)	
		OFF	15.0 (59.00)	16.7 (62.06)	
	INDICATION 24	ON	23.3 (73.94)	24.7 (76.46)	
		OFF	23.0 (73.40)	24.7 (76.46)	
	INDICATION 32	ON	31.3 (88.34)	32.7 (90.86)	
		OFF	31.0 (87.80)	32.7 (90.86)	

FAN MOTOR

Fan Motor Specifications

MODEL	RAK-25/35/50PSEW RAK-25/35/50PSES	RAC-25WSE RAC-35WSE	RAC-50WSE
POWER SOURCE	DC : 325V	DC:120-380V	
OUT PUT	30W	47W	
CONNECTION	 (Control circuit built in)		

BLU : BLUE

YEL : YELLOW

BRN : BROWN

WHT : WHITE

GRY : GRAY

ORN : ORANGE

GRN : GREEN

RED : RED

BLK : BLACK

PNK : PINK

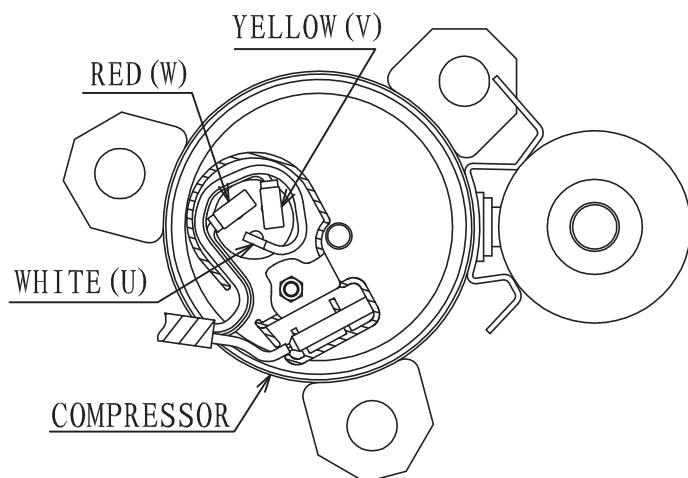
VIO : VIOLET

PARTS NAME	RESISTANCE VALUE(Ω)	APPLICABLE MODELS
COIL(REVERSING VALVE)	2780 Ω (0 °C)	RAC-25/35/50WSE
COIL(EXPANSION VALVE)	46 Ω / PHASE (AT 20 °C)	RAC-25/35/50WSE
REACTOR	AC8A 50Hz 15mH 226mΩ MAX (20 °C)	RAC-25/35WSE
	AC18A 50/60Hz 5.3mH 67mΩ MAX (20 °C)	RAC-50WSE

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL	RAC-25/35WSE	RAC-50WSE
COMPRESSOR TYPE	GSD102UKQA6JT6A	GTD141UKQA8JT6
POWER SOURCE	220 - 350 V	220 - 350 V
OUTPUT	790W	1400W
CONNECTION		
RESISTANCE VALUE (Ω)	20°C	2M= 1.354
	75°C	—



RAC-25/35/50WSE

CAUTION

When the refrigerating cycle has been operated for a long time with the capillary tubes clogged or crushed or with too little refrigerant, check the color of the refrigerating machine oil inside the compressor. If the color has been changed conspicuously, replace the compressor.

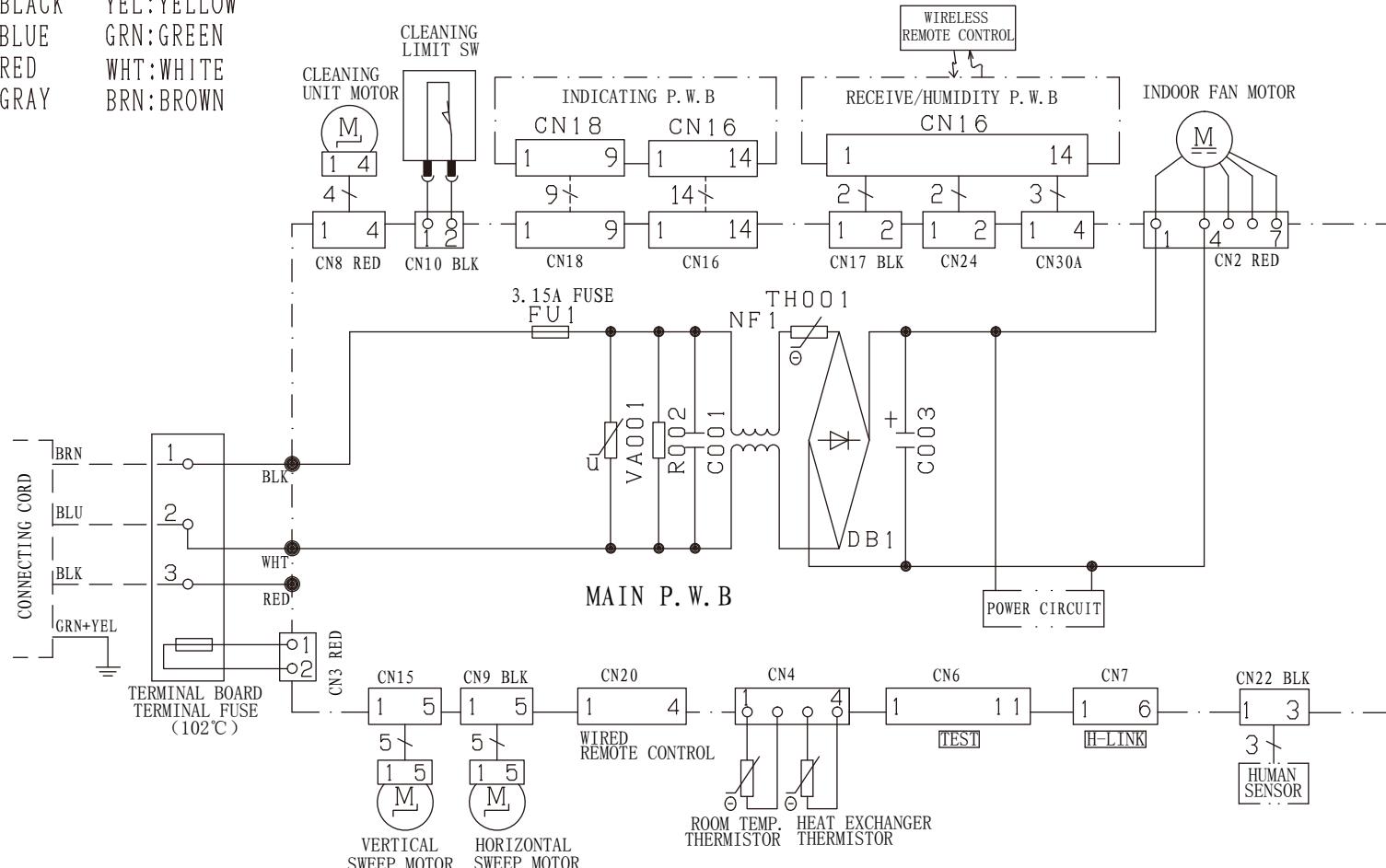
WIRING DIAGRAM

MODEL RAK-25/35/50PSEW, RAK-25/35/50PSSE

INDOOR UNIT

WIRING DIAGRAM

BLK:BLACK	YEL:YELLOW
BLU:BLUE	GRN:GREEN
RED:RED	WHT:WHITE
GRY:GRAY	BRN:BROWN



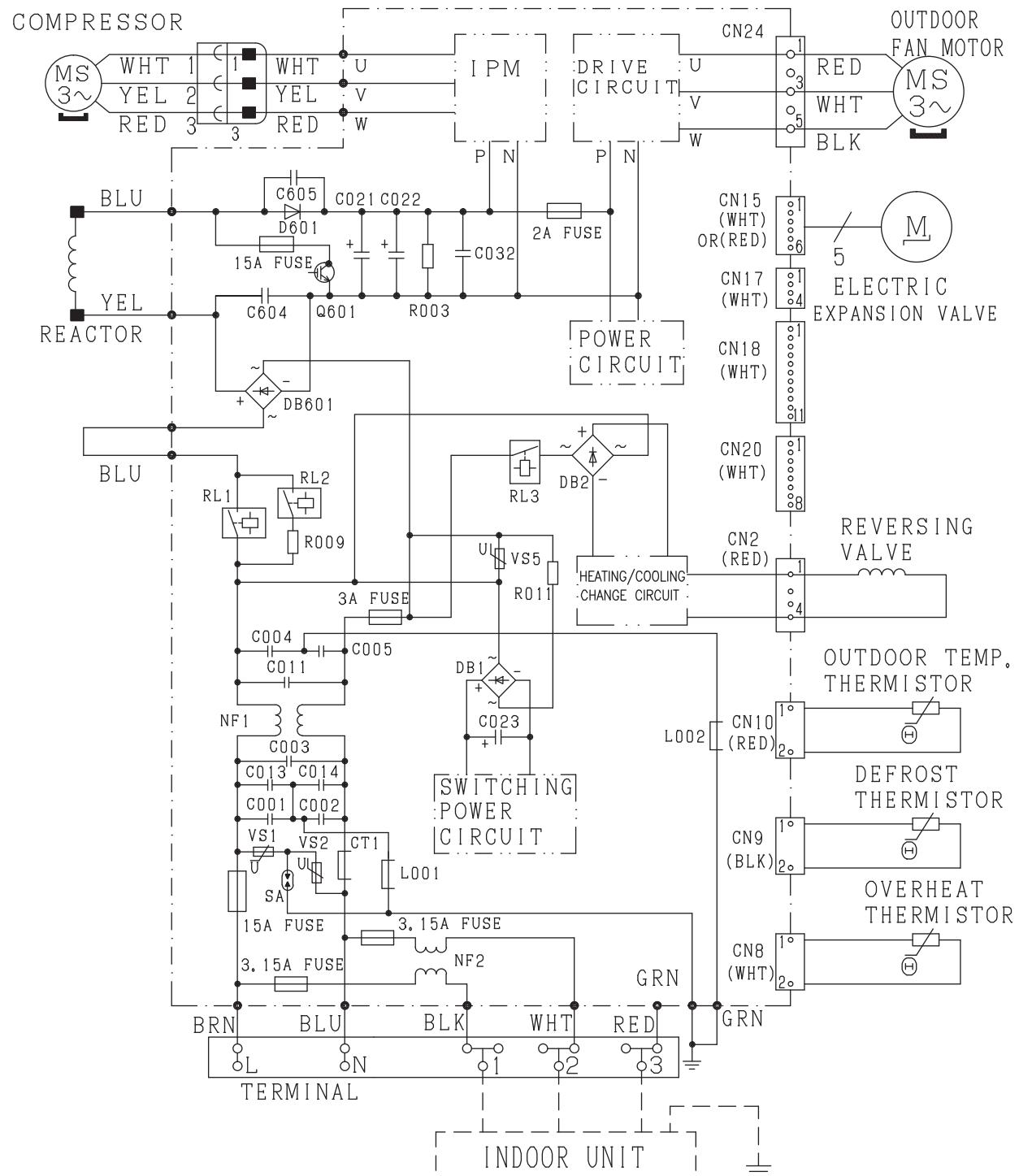
CAUTION !
HIGH VOLTAGE

TURN OFF THE POWER SOURCE
DURING THE SERVICE WORK.

* SOME CONNECTOR MAY NOT BE INSTALLED.
PLEASE ACCORDING TO THE SPECIFIC OF
ACTUAL MODELS

WIRING DIAGRAM

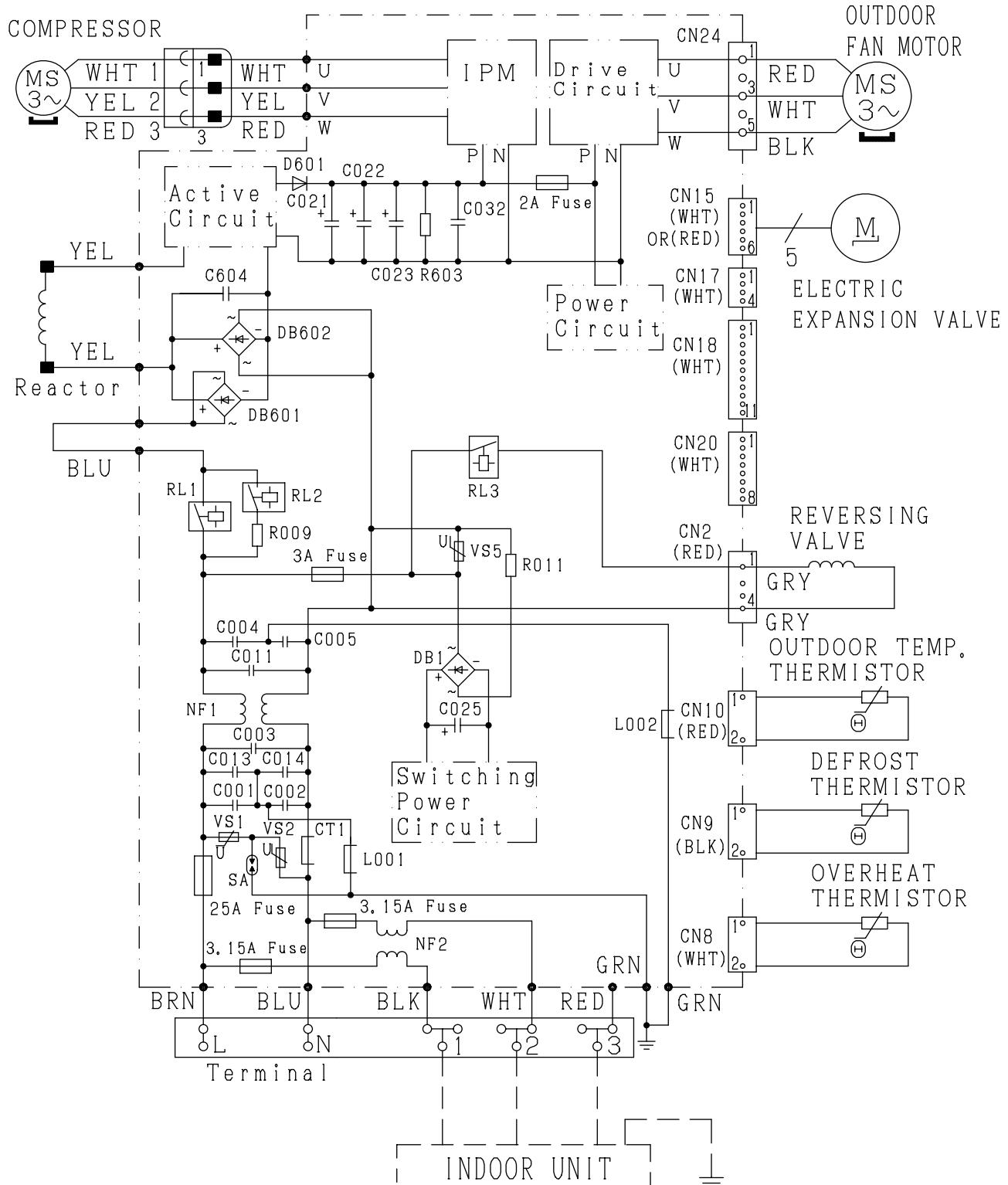
BLU:BLUE	RED:RED
BLK:BLACK	WHT:WHITE
BRN:BROWN	YEL:YELLOW
GRN:GREEN	GRY:GRAY



MODEL RAC-50WSE

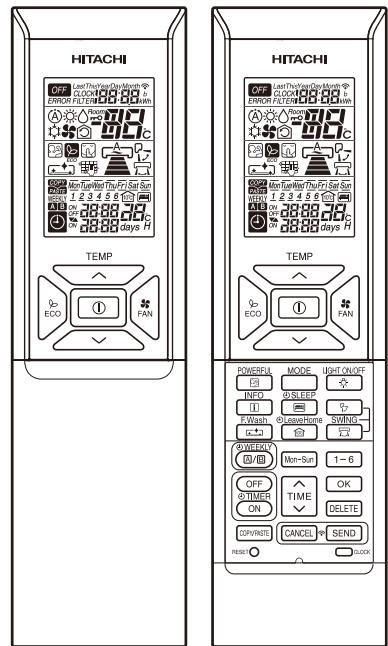
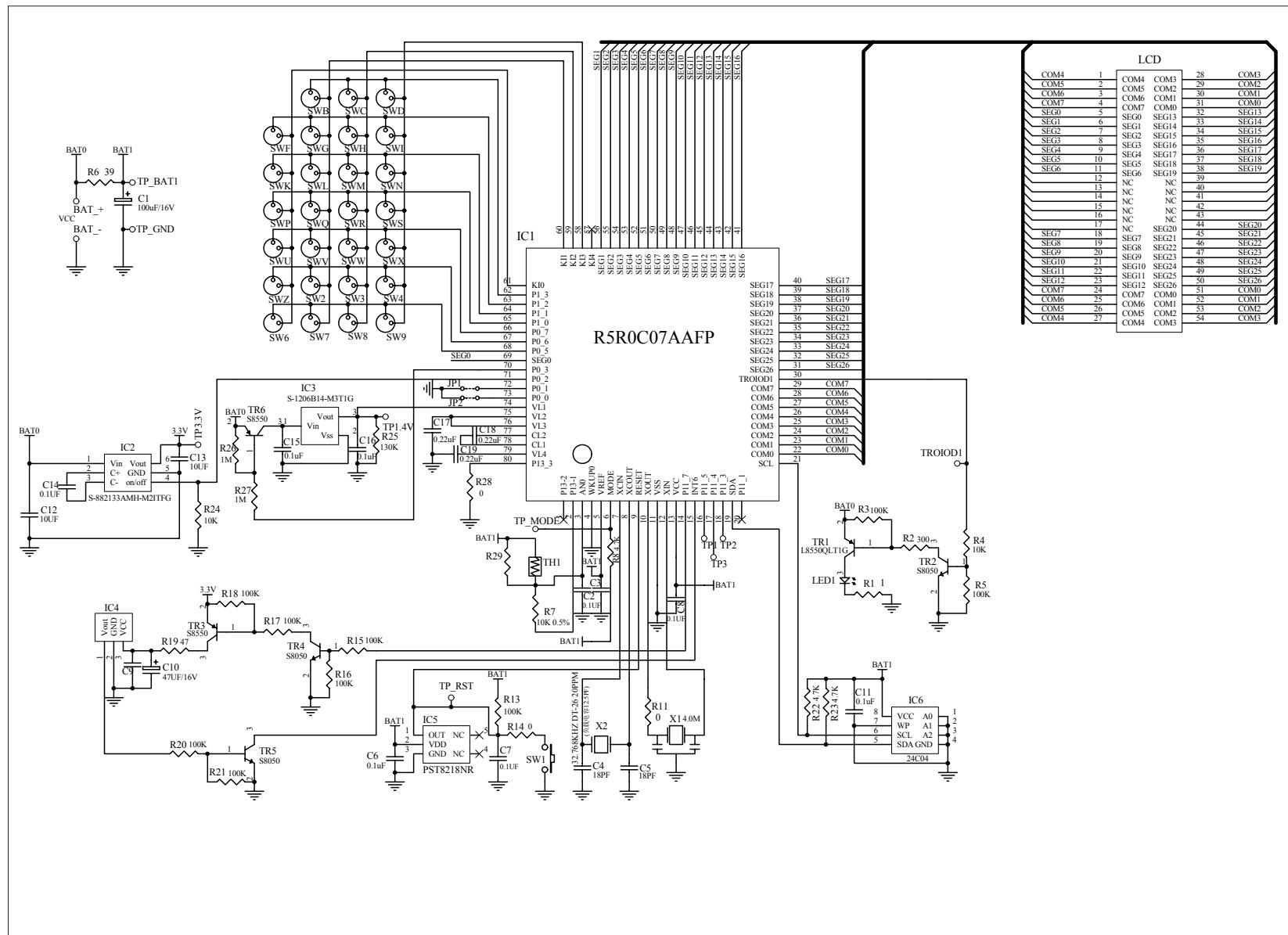
OUTDOOR UNIT

BLU:BLUE	RED:RED
BLK:BLACK	WHT:WHITE
BRN:BROWN	YEL:YELLOW
GRN:GREEN	GRY:GRAY

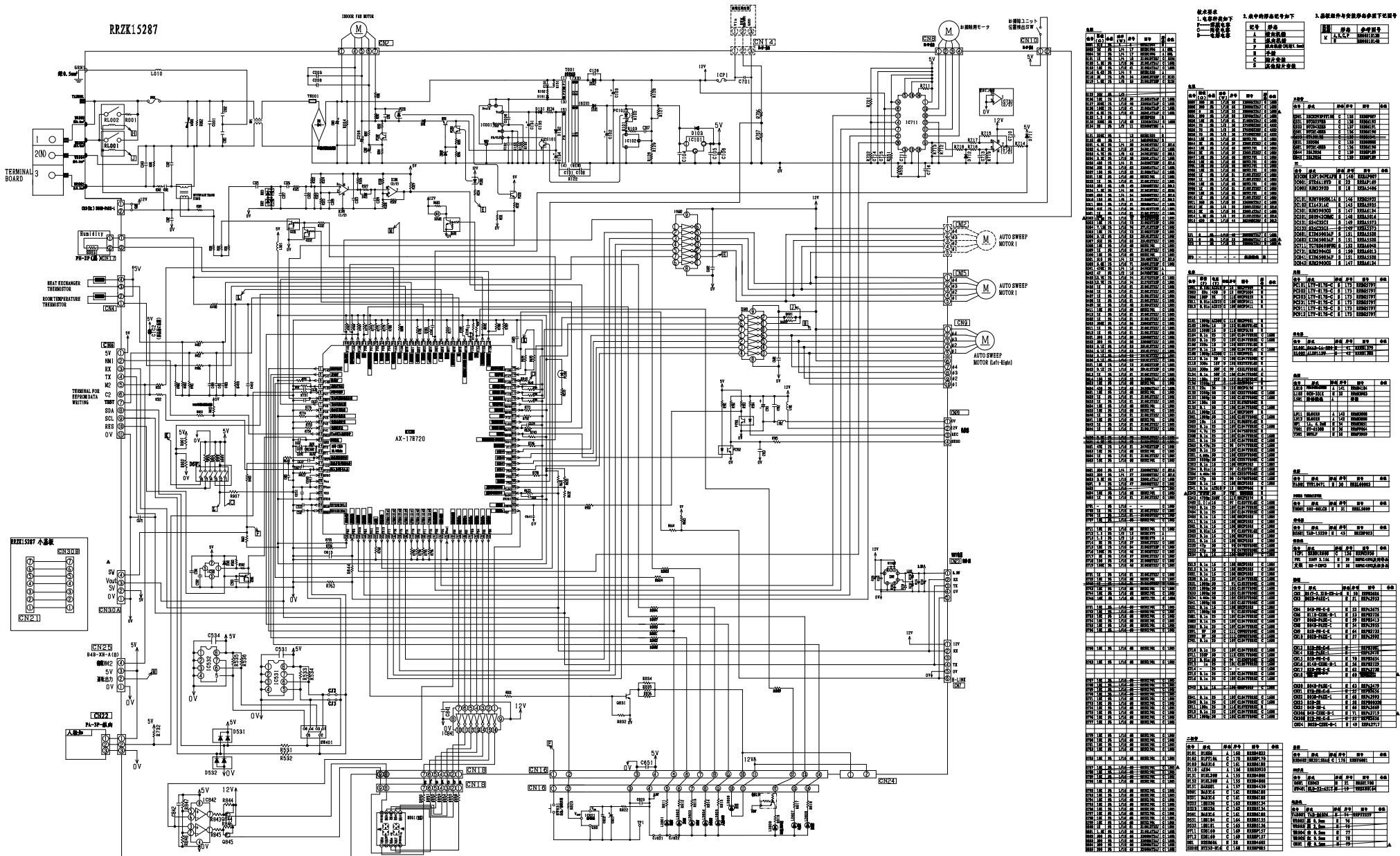


WIRING DIAGRAM OF THE PRINTED WIRING BOARD

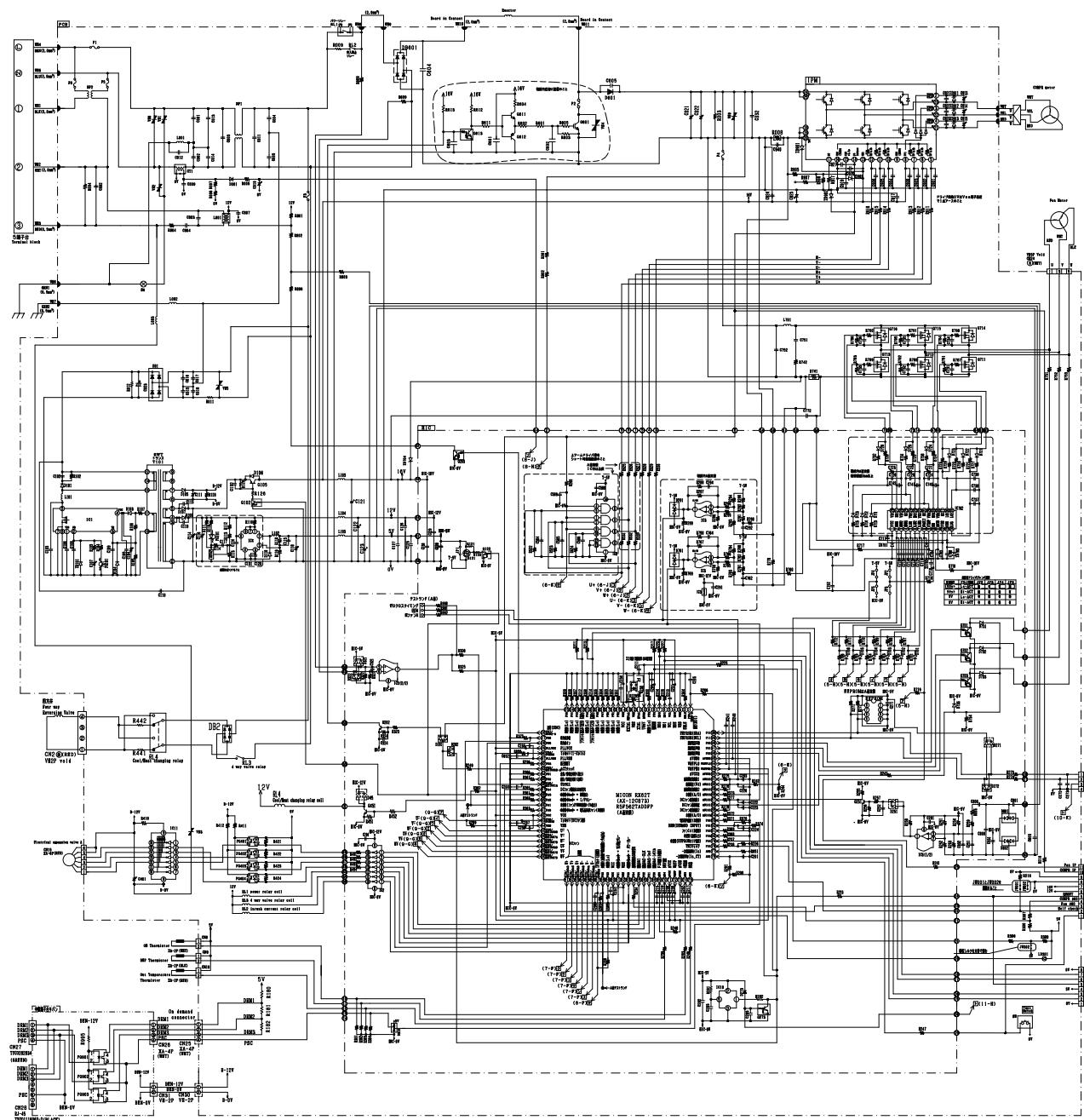
[Remote controller] RZE A15340



MODEL RAK-25/35/50PSEW, RAK-25/35/50PSES



MODEL RAC-25WSE,RAC-35WSE

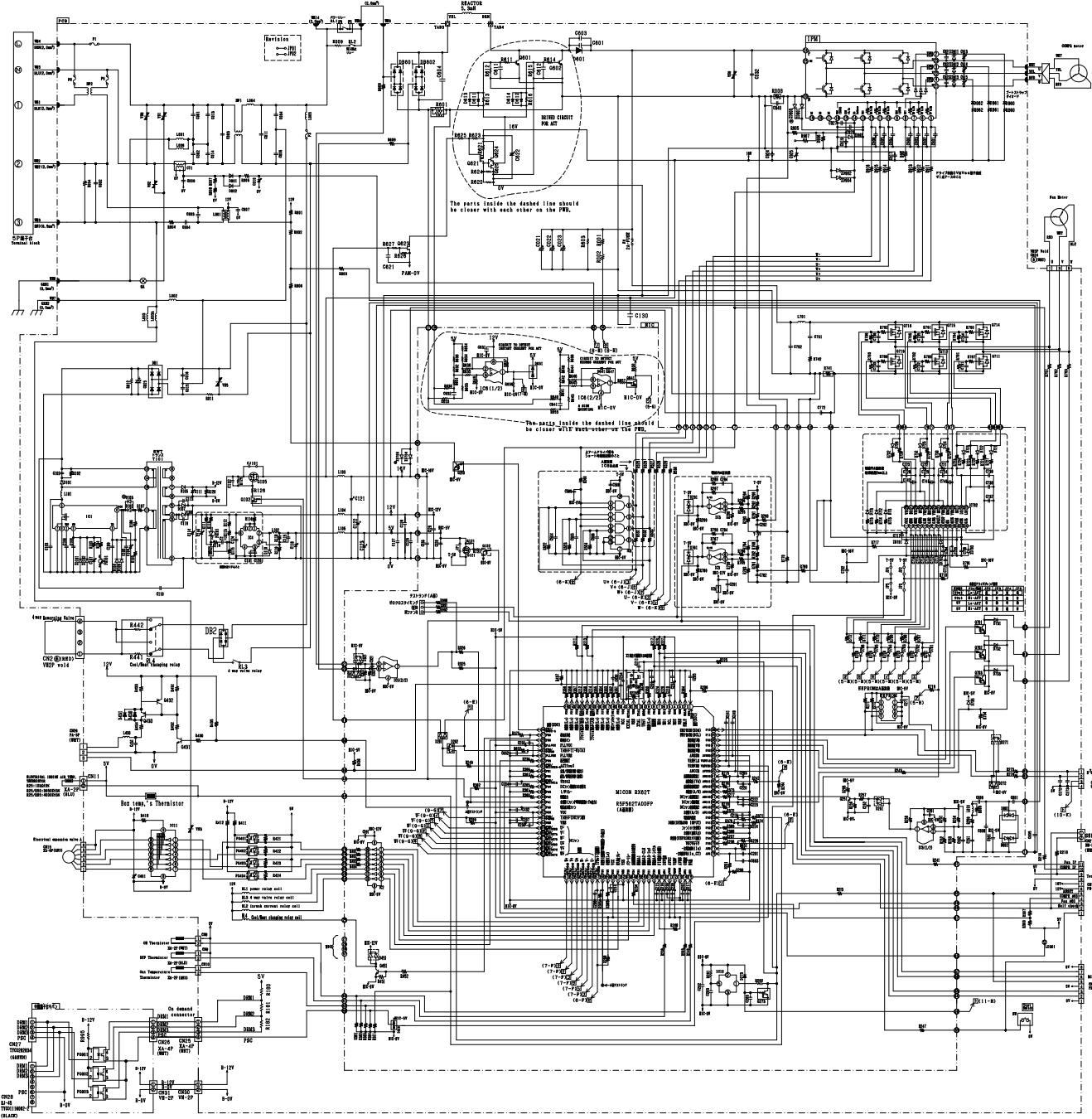


技术要求
1. 各部件及接线
2. 基板连接与安装参考图号

序号	名称	参考图号
1	电源	图1-1
2	继电器	图1-2
3	电容电感	图1-3
4	开关	图1-4
5	光耦	图1-5

M基板 BOM

M-1 Resistor	
R1	100Ω 1/4W 5% 2001
R2	100Ω 1/4W 5% 2001
R3	100Ω 1/4W 5% 2001
R4	100Ω 1/4W 5% 2001
R5	100Ω 1/4W 5% 2001
R6	100Ω 1/4W 5% 2001
R7	100Ω 1/4W 5% 2001
R8	100Ω 1/4W 5% 2001
R9	100Ω 1/4W 5% 2001
R10	100Ω 1/4W 5% 2001
R11	100Ω 1/4W 5% 2001
R12	100Ω 1/4W 5% 2001
R13	100Ω 1/4W 5% 2001
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R262	100Ω 1/4W 5% 2001
R263	100Ω 1/4W 5% 2001
R264	100Ω 1/4W 5% 2001
R265	100Ω 1/4W 5% 2001
R266	100Ω 1/4W 5% 2001
R267	100Ω 1/4W 5% 2001
R268	100Ω 1/4W 5% 2001
R269	100Ω 1/4W 5% 2001
R270	100Ω 1/4W 5% 2001
R271	100Ω 1/4W 5% 2001
R272	100Ω 1/4W 5% 2001
R273	100Ω 1/4W 5% 2001
R274	100Ω 1/4W 5% 2001
R275	100Ω 1/4W 5% 2001
R276	100Ω 1/4W 5% 2001
R277	100Ω 1/4W 5% 2001
R278	100Ω 1/4W 5% 2001
R279	100Ω 1/4W 5% 2001
R280	100Ω 1/4W 5% 2001
R281	100Ω 1/4W 5% 2001
R282	100Ω 1/4W 5% 2001
R283	100Ω 1/4W 5% 2001
R284	100Ω 1/4W 5% 2001
R285	100Ω 1/4W 5% 2001
R286	100Ω 1/4W 5% 2001
R287	100Ω 1/4W 5% 2001
R288	100Ω 1/4W 5% 2001
R289	100Ω 1/4W 5% 2001
R290	100Ω 1/4W 5% 2001
R291	100Ω 1/4W 5% 2001
R292	100Ω 1/4W 5% 2001
R293	100Ω 1/4W 5% 2001
R294	100Ω 1/4W 5% 2001
R295	100Ω 1/4W 5% 2001
R296	100Ω 1/4W 5% 2001
R297	100Ω 1/4W 5% 2001
R298	100Ω 1/4W 5% 2001
R299	100Ω 1/4W 5% 2001
R300	100Ω 1/4W 5% 20



技术要求
1. 零件图号如下
R: 电阻
C: 电容器
D: 二极管
P: 晶体管
T: 三极管
L: 电感器
S: 变压器及变容

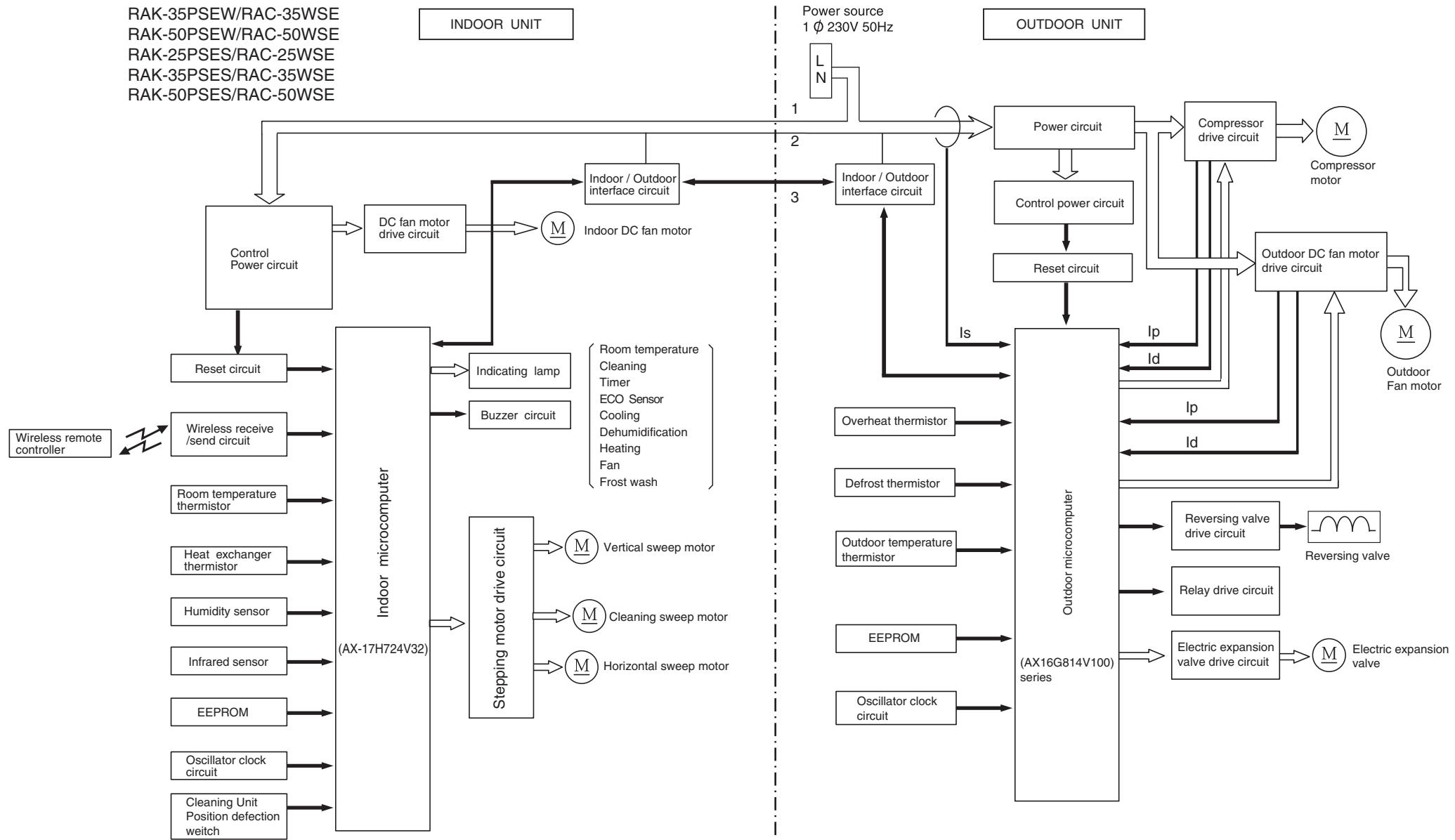
2. 本机零件与安装参考图下记号
记号 部位
R 电阻
C 电容器
D 二极管
P 晶体管
T 三极管
L 电感器
S 变压器及变容

记号	部位	零件图号
R	电阻	M-L-L-2 2601109300
C	电容器	M-L-L-2 2601109300

零件表		
R	Resistance	S-1 0.01MΩ 10%
C	Capacitor	S-2 0.01μF 10%
D	Diode	S-3 0.7V 1A 10%
P	Relay	S-4 2A 12VDC
L	Fuse	S-5 1A 250VAC
T	Transistor	S-6 2N3904
S	Switch	S-7 SPDT
	Connector	S-8 2P 250VAC
	Jumper	S-9 J1001
	Capacitor	S-10 200PF
	Inductor	S-11 220UH
	Switch	S-12 SPST
	Resistor	S-13 10KΩ
	Capacitor	S-14 0.001μF
	Diode	S-15 1N4007
	Transistor	S-16 2N3904
	Switch	S-17 SPDT
	Resistor	S-18 100Ω
	Capacitor	S-19 0.01μF
	Diode	S-20 1N4007
	Transistor	S-21 2N3904
	Switch	S-22 SPDT
	Resistor	S-23 100Ω
	Capacitor	S-24 0.01μF
	Diode	S-25 1N4007
	Transistor	S-26 2N3904
	Switch	S-27 SPDT
	Resistor	S-28 100Ω
	Capacitor	S-29 0.01μF
	Diode	S-30 1N4007
	Transistor	S-31 2N3904
	Switch	S-32 SPDT
	Resistor	S-33 100Ω
	Capacitor	S-34 0.01μF
	Diode	S-35 1N4007
	Transistor	S-36 2N3904
	Switch	S-37 SPDT
	Resistor	S-38 100Ω
	Capacitor	S-39 0.01μF
	Diode	S-40 1N4007
	Transistor	S-41 2N3904
	Switch	S-42 SPDT
	Resistor	S-43 100Ω
	Capacitor	S-44 0.01μF
	Diode	S-45 1N4007
	Transistor	S-46 2N3904
	Switch	S-47 SPDT
	Resistor	S-48 100Ω
	Capacitor	S-49 0.01μF
	Diode	S-50 1N4007
	Transistor	S-51 2N3904
	Switch	S-52 SPDT
	Resistor	S-53 100Ω
	Capacitor	S-54 0.01μF
	Diode	S-55 1N4007
	Transistor	S-56 2N3904
	Switch	S-57 SPDT
	Resistor	S-58 100Ω
	Capacitor	S-59 0.01μF
	Diode	S-60 1N4007
	Transistor	S-61 2N3904
	Switch	S-62 SPDT
	Resistor	S-63 100Ω
	Capacitor	S-64 0.01μF
	Diode	S-65 1N4007
	Transistor	S-66 2N3904
	Switch	S-67 SPDT
	Resistor	S-68 100Ω
	Capacitor	S-69 0.01μF
	Diode	S-70 1N4007
	Transistor	S-71 2N3904
	Switch	S-72 SPDT
	Resistor	S-73 100Ω
	Capacitor	S-74 0.01μF
	Diode	S-75 1N4007
	Transistor	S-76 2N3904
	Switch	S-77 SPDT
	Resistor	S-78 100Ω
	Capacitor	S-79 0.01μF
	Diode	S-80 1N4007
	Transistor	S-81 2N3904
	Switch	S-82 SPDT
	Resistor	S-83 100Ω
	Capacitor	S-84 0.01μF
	Diode	S-85 1N4007
	Transistor	S-86 2N3904
	Switch	S-87 SPDT
	Resistor	S-88 100Ω
	Capacitor	S-89 0.01μF
	Diode	S-90 1N4007
	Transistor	S-91 2N3904
	Switch	S-92 SPDT
	Resistor	S-93 100Ω
	Capacitor	S-94 0.01μF
	Diode	S-95 1N4007
	Transistor	S-96 2N3904
	Switch	S-97 SPDT
	Resistor	S-98 100Ω
	Capacitor	S-99 0.01μF
	Diode	S-100 1N4007
	Transistor	S-101 2N3904
	Switch	S-102 SPDT
	Resistor	S-103 100Ω
	Capacitor	S-104 0.01μF
	Diode	S-105 1N4007
	Transistor	S-106 2N3904
	Switch	S-107 SPDT
	Resistor	S-108 100Ω
	Capacitor	S-109 0.01μF
	Diode	S-110 1N4007
	Transistor	S-111 2N3904
	Switch	S-112 SPDT
	Resistor	S-113 100Ω
	Capacitor	S-114 0.01μF
	Diode	S-115 1N4007
	Transistor	S-116 2N3904
	Switch	S-117 SPDT
	Resistor	S-118 100Ω
	Capacitor	S-119 0.01μF
	Diode	S-120 1N4007
	Transistor	S-121 2N3904
	Switch	S-122 SPDT
	Resistor	S-123 100Ω
	Capacitor	S-124 0.01μF
	Diode	S-125 1N4007
	Transistor	S-126 2N3904
	Switch	S-127 SPDT
	Resistor	S-128 100Ω
	Capacitor	S-129 0.01μF
	Diode	S-130 1N4007
	Transistor	S-131 2N3904
	Switch	S-132 SPDT
	Resistor	S-133 100Ω
	Capacitor	S-134 0.01μF
	Diode	S-135 1N4007
	Transistor	S-136 2N3904
	Switch	S-137 SPDT
	Resistor	S-138 100Ω
	Capacitor	S-139 0.01μF
	Diode	S-140 1N4007
	Transistor	S-141 2N3904
	Switch	S-142 SPDT
	Resistor	S-143 100Ω
	Capacitor	S-144 0.01μF
	Diode	S-145 1N4007
	Transistor	S-146 2N3904
	Switch	S-147 SPDT
	Resistor	S-148 100Ω
	Capacitor	S-149 0.01μF
	Diode	S-150 1N4007
	Transistor	S-151 2N3904
	Switch	S-152 SPDT
	Resistor	S-153 100Ω
	Capacitor	S-154 0.01μF
	Diode	S-155 1N4007
	Transistor	S-156 2N3904
	Switch	S-157 SPDT
	Resistor	S-158 100Ω
	Capacitor	S-159 0.01μF
	Diode	S-160 1N4007
	Transistor	S-161 2N3904
	Switch	S-162 SPDT
	Resistor	S-163 100Ω
	Capacitor	S-164 0.01μF
	Diode	S-165 1N4007
	Transistor	S-166 2N3904
	Switch	S-167 SPDT
	Resistor	S-168 100Ω
	Capacitor	S-169 0.01μF
	Diode	S-170 1N4007
	Transistor	S-171 2N3904
	Switch	S-172 SPDT
	Resistor	S-173 100Ω
	Capacitor	S-174 0.01μF
	Diode	S-175 1N4007
	Transistor	S-176 2N3904
	Switch	S-177 SPDT
	Resistor	S-178 100Ω
	Capacitor	S-179 0.01μF
	Diode	S-180 1N4007
	Transistor	S-181 2N3904
	Switch	S-182 SPDT
	Resistor	S-183 100Ω
	Capacitor	S-184 0.01μF
	Diode	S-185 1N4007
	Transistor	S-186 2N3904
	Switch	S-187 SPDT
	Resistor	S-188 100Ω
	Capacitor	S-189 0.01μF
	Diode	S-190 1N4007
	Transistor	S-191 2N3904
	Switch	S-192 SPDT
	Resistor	S-193 100Ω
	Capacitor	S-194 0.01μF
	Diode	S-195 1N4007
	Transistor	S-196 2N3904
	Switch	S-197 SPDT
	Resistor	S-198 100Ω
	Capacitor	S-199 0.01μF
	Diode	S-200 1N4007
	Transistor	S-201 2N3904
	Switch	S-202 SPDT
	Resistor	S-203 100Ω
	Capacitor	S-204 0.01μF
	Diode	S-205 1N4007
	Transistor	S-206 2N3904
	Switch	S-207 SPDT
	Resistor	S-208 100Ω
	Capacitor	S-209 0.01μF
	Diode	S-210 1N4007
	Transistor	S-211 2N3904
	Switch	S-212 SPDT
	Resistor	S-213 100Ω
	Capacitor	S-214 0.01μF
	Diode	S-215 1N4007
	Transistor	S-216 2N3904
	Switch	S-217 SPDT
	Resistor	S-218 100Ω
	Capacitor	S-219 0.01μF
	Diode	S-220 1N4007
	Transistor	S-221 2N3904
	Switch	S-222 SPDT
	Resistor	S-223 100Ω
	Capacitor	S-224 0.01μF
	Diode	S-225 1N4007
	Transistor	S-226 2N3904
	Switch	S-227 SPDT
	Resistor	S-228 100Ω
	Capacitor	S-229 0.01μF
	Diode	S-230 1N4007
	Transistor	S-231 2N3904
	Switch	S-232 SPDT
	Resistor	S-233 100Ω
	Capacitor	S-234 0.01μF
	Diode	S-235 1N4007
	Transistor	S-236 2N3904
	Switch	S-237 SPDT
	Resistor	S-238 100Ω
	Capacitor	S-239 0.01μF
	Diode	S-240 1N4007
	Transistor	S-241 2N3904
	Switch	S-242 SPDT
	Resistor	S-243 100Ω
	Capacitor	S-244 0.01μF
	Diode	S-245 1N4007
	Transistor	S-246 2N3904
	Switch	S-247 SPDT
	Resistor	S-248 100Ω
	Capacitor	S-249 0.01μF
	Diode	S-250 1N4007
	Transistor	S-251 2N3904
	Switch	S-252 SPDT
	Resistor	S-253 100Ω
	Capacitor	S-254 0.01μF
	Diode	S-255 1N4007
	Transistor	S-256 2N3904
	Switch	S-257 SPDT
	Resistor	S-258 100Ω
	Capacitor	S-259 0.01μF
	Diode	S-260 1N4007
	Transistor	S-261 2N3904
	Switch	S-262 SPDT
	Resistor	S-263 100Ω
	Capacitor	S-264 0.01μF
	Diode	S-265 1N4007
	Transistor	S-266 2N3904
	Switch	S-267 SPDT
	Resistor	S-268 100Ω
	Capacitor	S-269 0.01μF
	Diode	S-270 1N4007
	Transistor	S-271 2N3904
	Switch	S-272 SPDT
	Resistor	S-273 100Ω
	Capacitor	S-274 0.01μF
	Diode	S-275 1N4007
	Transistor	S-276 2N3904
	Switch	S-277 SPDT
	Resistor	S-278 100Ω
	Capacitor	S-279 0.01μF
	Diode	S-280 1N4007
	Transistor	S-281 2N3904
	Switch	S-282 SPDT
	Resistor	S-283 100Ω
	Capacitor	S-284 0.01μF
	Diode	S-285 1N4007
	Transistor	S-286 2N3904
	Switch	S-287 SPDT
	Resistor	S-288 100Ω
	Capacitor	S-289 0.01μF
	Diode	S-290 1N4007
	Transistor	S-291 2N3904
	Switch	S-292 SPDT
	Resistor	S-293 100Ω
	Capacitor	S-294 0.01μF
	Diode	S-295 1N4007
	Transistor	S-296 2N3904
	Switch	S-297 SPDT
	Resistor	S-298 100Ω
	Capacitor	S-299 0.01μF
	Diode	S-300 1N4007
	Transistor	S-301 2N3904
	Switch	S-302 SPDT
	Resistor	S-303 100Ω
	Capacitor	S-304 0.01μF
	Diode	S-305 1N4007
	Transistor	S-306 2N3904
	Switch	S-307 SPDT
	Resistor	S-308 100Ω
	Capacitor	S-309 0.01μF
	Diode	S-310 1N4007
	Transistor	S-311 2N3904
	Switch	S-312 SPDT
	Resistor	S-313 100Ω
	Capacitor	S-314 0.01μF
	Diode	S-315 1N4007
	Transistor	S-316 2N3904
	Switch	S-317 SPDT
	Resistor	S-318 100Ω
	Capacitor	S-319 0.01μF
	Diode	S-320 1N4007
	Transistor	S-321 2N3904
	Switch	S-322 SPDT
	Resistor	S-323 100Ω
	Capacitor	S-324 0.01μF
	Diode	S-325 1N4007
	Transistor	S-326 2N3904
	Switch	S-327 SPDT
	Resistor	S-328 100Ω
	Capacitor	S-329 0.01μF
	Diode	S-330 1N4007
	Transistor	S-331 2N3904
	Switch	S-332 SPDT
	Resistor	S-333 100Ω
	Capacitor	S-334 0.01μF
	Diode	S-335 1N4007
	Transistor	S-336 2N3904
	Switch	S-337 SPDT
	Resistor	S-338 100Ω
	Capacitor	S-339 0.01μF

BLOCK DIAGRAM

MODEL RAK-25PSEW/RAC-25WSE
 RAK-35PSEW/RAC-35WSE
 RAK-50PSEW/RAC-50WSE
 RAK-25PSSES/RAC-25WSE
 RAK-35PSSES/RAC-35WSE
 RAK-50PSSES/RAC-50WSE



BASIC MODE

MODEL RAK-25/35/50PSEW, RAK-25/35/50PSES

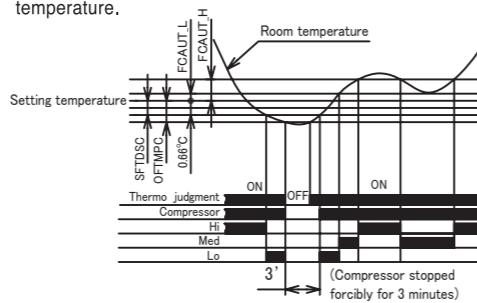
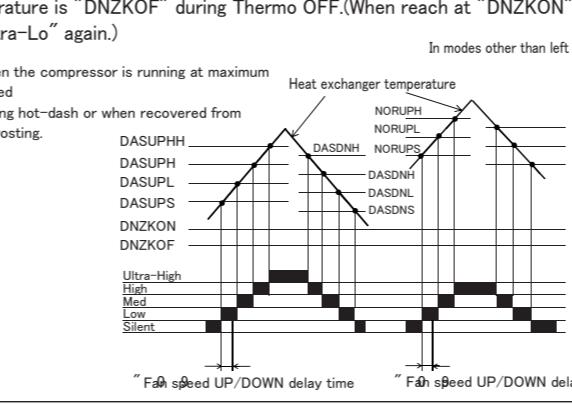
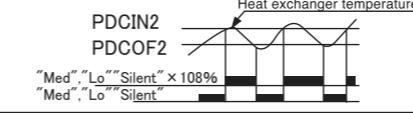
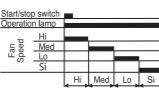
Operation mode	Fan	Cooling	Dehumidifying	Heating	Auto					
Basic operation of start/stop button				Start/stop button Operation lamp						
Timer functions	Off-timer			Start/stop button Reserve button Cancel button Operation lamp Timer lamp Timer memory	(Off-timer during stop) (Change in reserved time)					
	On-timer			Start/stop button Reserve button Cancel button Operation lamp Timer lamp Timer memory	(Change in reserved time) (On-timer during operation)					
	Off -> On On -> Off timer			Start/stop button Reserve button Cancel button Operation lamp Timer lamp Timer memory	(Off->On timer) (On->Off timer) (On->Off timer) (Off->On timer) during operation (Off->On timer) during stop					
Fan speed mode (indoor fan)	Auto	Changes from "Hi" to "Med" or "Lo" depending on room temperature.  1. Runs at "Hi" until room temperature reaches to "setting temperature-SFTDSC" after operation is started. 2. Runs at "ultra-Lo" when thermo is off.		Set to "ultra-Lo", "Silent", "Lo", "Med", "Hi", "ultra-Hi" or "stop" depending on the room temperature, time and heat exchanger temperature. Set to "stop" if the heat exchanger temperature is "DNZKOF" during Thermo OFF.(When reach at "DNZKON", fan speed set to "ultra-Lo" again.)  In modes other than left When the compressor is running at maximum speed during hot dash or when recovered from defrosting. Heat exchanger temperature NORDPH NORDNL NORDNS NORUPH NORULP NORUPS DASUPH DASUPL DASUPS DASUP DASDNH DASDNL DASDNS DASDNH DASDNL DASDNS Ultra-High High Med Low Silent Fan speed UP/DOWN delay time Fan speed UP/DOWN delay time	Operating mode is judged by room temperature. (1) Judging by room temperature <ul style="list-style-type: none">Operating mode at start up is judged (initial judgment).Conditions for judgment (any of the followings).<ul style="list-style-type: none">When auto operation is started after the previous auto mode operation.When auto operation is started after the previous manual mode operation.When the operating mode is switched to auto while operating at manual mode. (b) Judging method <ul style="list-style-type: none">[Cooling] : Room temperature[Heating] : Room temperature Remote controller setting ≥ Remote controller setting < Remote controller setting [Room temperature setting of remote controller] Cooling Heating					
	Hi	Operates at "Hi" regardless of the room temperature.		Set to "ultra-Lo", "Silent", "Lo", "Med", "Hi", "ultra-Hi" or "stop" depending on the room temperature, time and heat exchanger temperature. Set to "stop" if the heat exchanger temperature is "DNZKOF" during Thermo OFF.(When reach at "DNZKON", fan speed set to "ultra-Lo" again.) Set to "ultra-Hi" when the compressor is running at maximum speed during hot dash or when recovered from defrosting.	(2) Judging operating mode change during operation (Continuous judgment). (a) Conditions for judgment <ul style="list-style-type: none">The mode is reviewed at interval time.Interval time as below<ul style="list-style-type: none">The first interval time : 10 minutesThe second interval time : 15 minutesOn and after the third interval time : 55 minutes (b) Judging method <ul style="list-style-type: none">Judge by setting the hysteresis on the final preset temperature. The final preset temperature is the actually targeted preset temperature which is sum of basic preset temperature and each type of shift value. (e.g. preset temperature correction value, powerful shift value, eco shift value, eco sleep shift value, etc.) <table border="1"><tr><td>[Currently cooling]</td><td>• Room temperature ≤ Final preset temperature -3°C Change to heating</td><td>• Room temperature > Final preset temperature -3°C Continue cooling</td></tr><tr><td>[Currently heating]</td><td>• Room temperature ≥ Final preset temperature 2 °C Change to cooling</td><td>• Room temperature < Final preset temperature 2 °C Continue heating</td></tr></table>	[Currently cooling]	• Room temperature ≤ Final preset temperature -3°C Change to heating	• Room temperature > Final preset temperature -3°C Continue cooling	[Currently heating]	• Room temperature ≥ Final preset temperature 2 °C Change to cooling
[Currently cooling]	• Room temperature ≤ Final preset temperature -3°C Change to heating	• Room temperature > Final preset temperature -3°C Continue cooling								
[Currently heating]	• Room temperature ≥ Final preset temperature 2 °C Change to cooling	• Room temperature < Final preset temperature 2 °C Continue heating								
Med	Operates at "Med" regardless of the room temperature.	Operates at "Med" regardless of the room temperature. Runs at "ultra-Lo" when thermo is off.	Set to "ultra-Lo", "Silent", "Lo", "Med", "Hi", "ultra-Hi" or "stop" depending on the room temperature, time and heat exchanger temperature. Set to "stop" if the heat exchanger temperature is "DNZKOF" during Thermo OFF.(When reach at "DNZKON", fan speed set to "ultra-Lo" again.)							
Lo	Operates at "Lo" regardless of the room temperature.	Operates at "Lo" regardless of the room temperature. Runs at "ultra-Lo" when thermo is off.	Set to "Lo" in modes other than when the compressor stops. Set to "ultra-Lo" depending on room temperature, time and heat exchanger temperature. Set to "stop" if the heat exchanger temperature is "DNZKOF" during Thermo OFF.(When reach at "DNZKON", fan speed set to "ultra-Lo" again.)							
Silent	Operates at "Silent" regardless of the room temperature.	Operates at "Silent" regardless of the room temperature. Runs at "ultra-Lo" when thermo is off.	Set to "Silent" in modes other than when the compressor stops. overload control is executed as in the following diagram: 							
Basic operation of temperature controller	Performs only fan operation at the set speed regardless of the room temperature. 	See page 49.	See page 51.	See page 53.						
Sleep operation (with sleep button ON)	• Enters sleep operation after set as on the left. • Action during sleep operation Lo (sleep) operation	• Same as at left • See page 50.	• Same as at left • See page 52.	• Same as at left • See page 54.	• Same as at left. • Performs the sleep operation of each operation mode.					

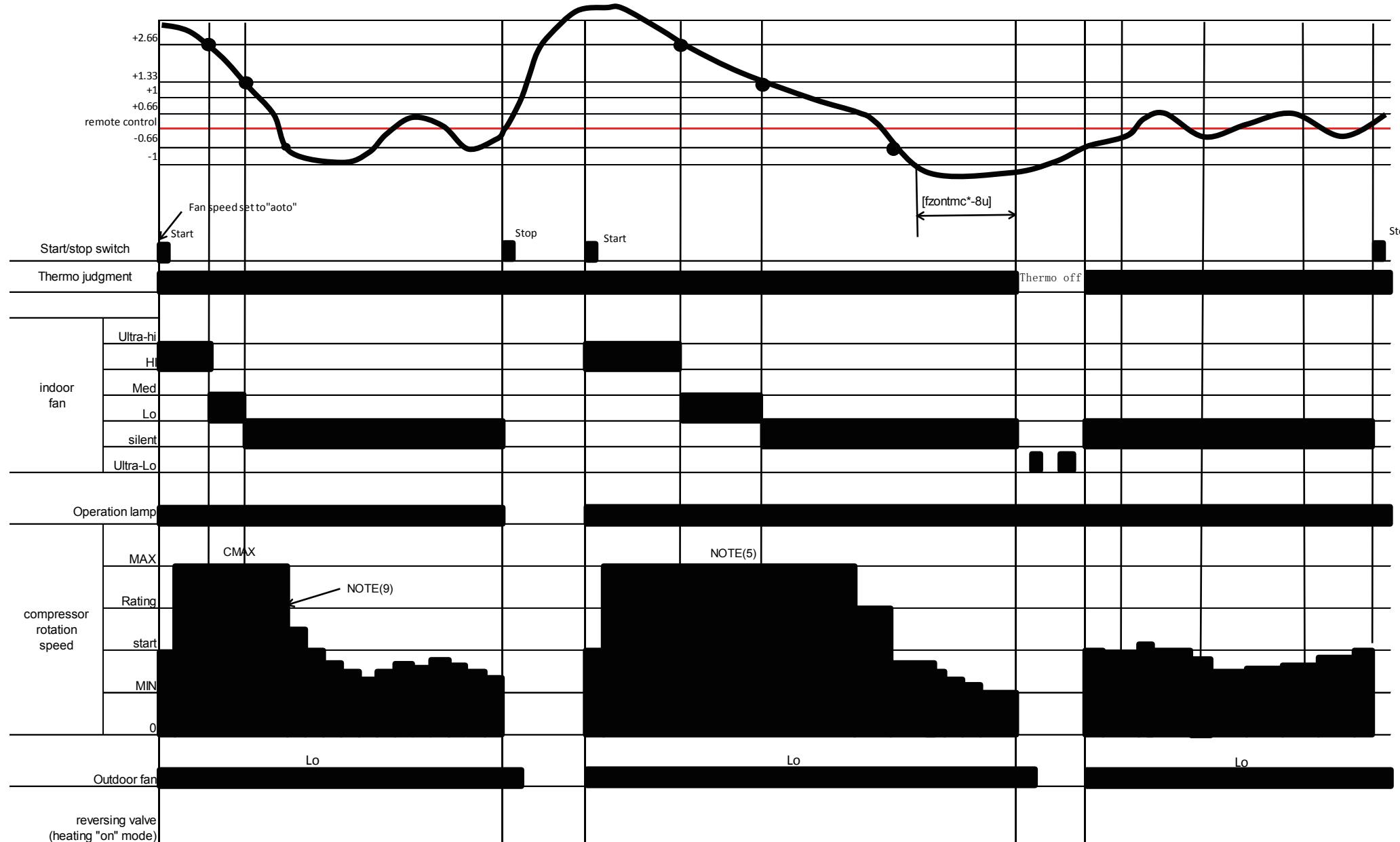
Table 1 Mode data file

MODEL	RAK-25PSEW RAK-25PSes	RAK-35PSEW RAK-35PSes	RAK-50PSEW RAK-50PSes
LABEL NAME	VALUE		
WMAX	4700 min-1	5450 min-1	5300 min-1
WMAX2	5600 min-1	6500 min-1	6700 min-1
WSTD	3000 min-1	3550 min-1	4200 min-1
CMAX	3150 min-1	4600 min-1	4800 min-1
CMAX2	3150 min-1	4600 min-1	4800 min-1
CSTD	2450 min-1	3450 min-1	3850 min-1
CJKMAX	2200 min-1	3200 min-1	3600 min-1
CBEMAX	2100 min-1	2800 min-1	3000 min-1
CSZMAX	2000 min-1	2200 min-1	2200 min-1
WMIN-CMPH	2400 min-1	2400 min-1	2400 min-1
WMIN-CMPL	2400 min-1	2400 min-1	2400 min-1
CMIN	1900 min-1	1900 min-1	1700 min-1
DWNRATEW	80%	80%	80%
DWNRATEC	60%	60%	70%
SHIFTW	0.66°C	0.66°C	0.66°C
SHIFTC	0.00°C	0.00°C	0.00°C
CLMXTP	30.00°C	30.00°C	30.00°C
TEION	2.00°C	2.00°C	2.00°C
TEIOF	6.00°C	6.00°C	6.00°C
SFTDSW	0.66°C	0.66°C	0.66°C
DFTIM-OTP0	43 Minutes	40 Minutes	45 Minutes
DFTIM-OTP5	43 Minutes	55 Minutes	60 Minutes
DFTIM-OTP10	43 Minutes	55 Minutes	60 Minutes
FCAUT-L	0.66°C	0.66°C	0.66°C
FCAUT-H	2.00°C	2.00°C	2.00°C
SFTDSC	0.66°C	0.66°C	0.66°C
OFTMPC	1.00°C	1.00°C	1.00°C
DASUPHH	45.00	45.00	39.00
DASDNHH	41.00	41.00	36.00
DASUPH	40.00	40.00	34.66
DASDNH	35.33	35.33	32.00
DASUPL	35.00	35.00	31.00
DASDNL	28.00	28.00	29.00
DASUPS	28.00	28.00	28.00
DASDNS	27.00	27.00	26.00
NORUPH	44.00	44.00	44.66
NORDNH	40.00	40.00	38.00
NORUPL	39.00	39.00	37.66
NORDNL	35.00	35.00	33.66
NORUPS	35.00	35.00	33.00
NORDNS	34.00	34.00	30.66
PDCIN2	50.00	50.00	50.00
PDCOF2	45.00	45.00	45.00
DNZKON	15.00	15.00	15.00
DNZKOF	13.00	13.00	13.00
FNUPPW-C	30 min-1	30 min-1	30 min-1
DFMAX-STD	4400 min-1	5500 min-1	5400 min-1
DFMAX-ATF	4400 min-1	5500 min-1	5400 min-1
fzontmw1_8u	10min	10min	10min
fzontmc1_8u	5min	5min	5min
fzontmw2_8u	3min	3min	3min
fzontmc2_8u	0min	0min	0min
pwsftw_8u	3°C	3°C	3°C
pwsftc_8u	2°C	2°C	2°C
pwsftd_8u	3°C	3°C	3°C
CKYMIN_PW	2200min-1	2400min-1	2300min-1
oysftw_8u	2°C	2°C	2°C
oysftc_8u	3°C	3°C	3°C
oysftd_8u	1°C	1°C	1°C
fcsoy_p_8u	450min-1	450min-1	450min-1
fwsoy_m_8u	500min-1	500min-1	550min-1
fwh_p_8u	970min-1	1050min-1	1150min-1
sdmax_8u	2100min-1	2200min-1	2300min-1
sdrpm_8u	1900min-1	1900min-1	1800min-1

fdoy_m_8u	450min-1	560min-1	690min-1
oftmpc_8u	1°C	1°C	1°C
yneof_8u	25°C	25°C	25°C
wjkmax_8u	2900min-1	3400min-1	3600min-1
wbemax_8u	2700min-1	3200min-1	3300min-1
wszmax_8u	2600min-1	3000min-1	3000min-1
sftlvhm_8u	0	0	0

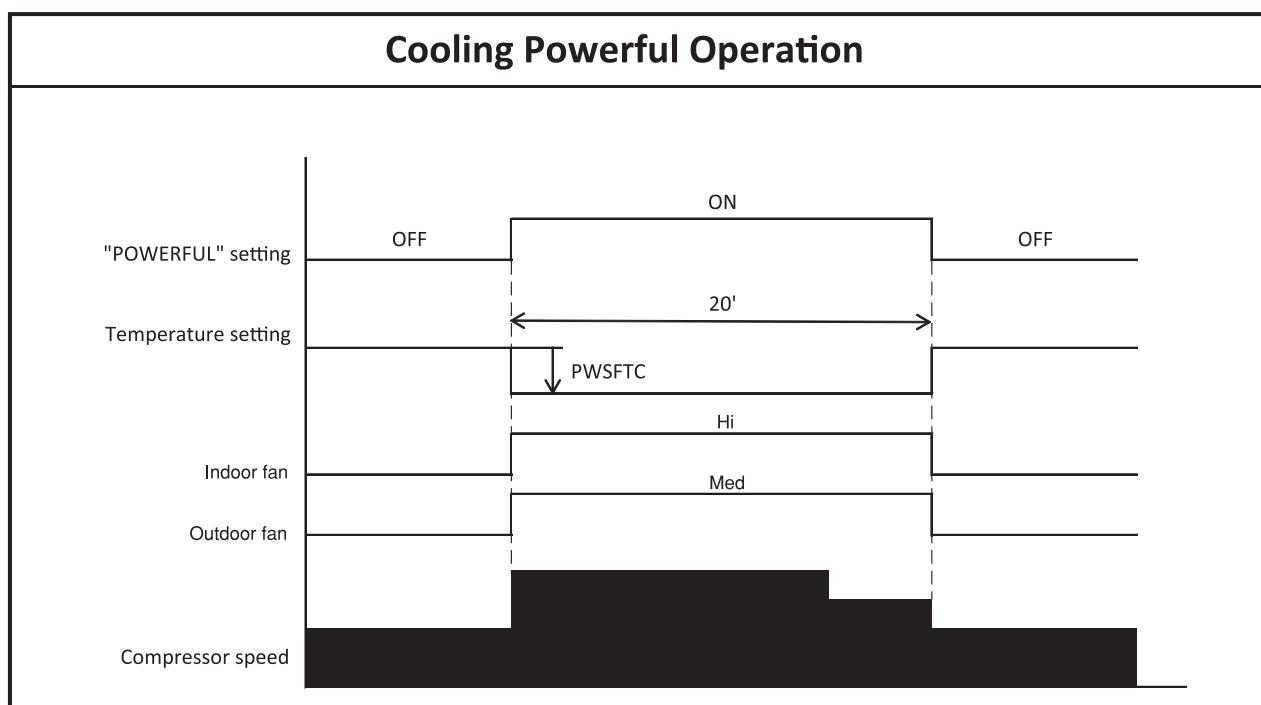
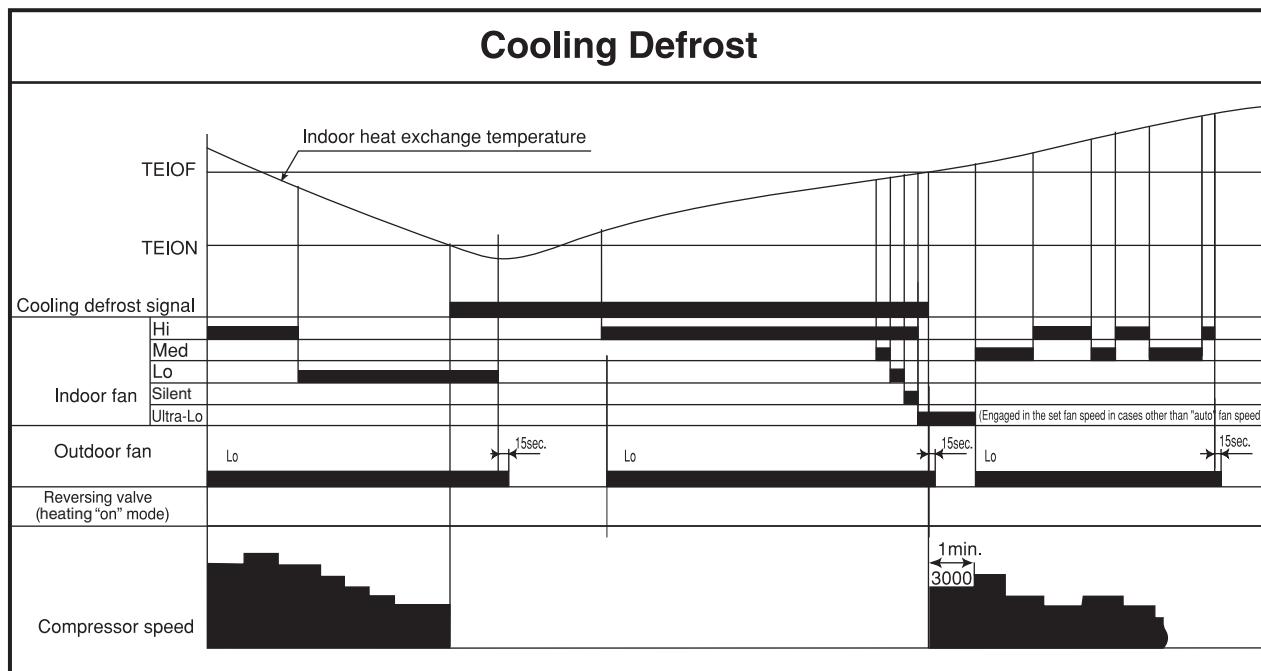
MODEL	RAK-25PSEW RAK-25PSSES	RAK-35PSEW RAK-35PSSES	RAK-50PSEW RAK-50PSSES
tdf411_8u	30S	30S	60S
tdf412_8u	0	0	30S
tdf413_8u	0	0	50S
tdf411_cmp_8u	3000min-1	3000min-1	3000min-1
tdf412_cmp_8u	0	0	2400min-1
tdf413_cmp_8u	0	0	1800min-1
defcmp_off_8u	30S	30S	60S
defben_std_8u	0	0	30S
startdf1_8u	30S	30S	20S
startdf2_8u	0	0	20S
starcpd1_8u	3000min-1	3000min-1	2000min-1
starcpd2_8u	5500min-1	5500min-1	3000min-1
dfmax_std_8u	4400min-1	5500min-1	5400min-1
tdf431_8u	60S	60S	60S
tdf431_chg_8u	30S	30S	10S
tdf431_cmp_8u	0	0	0
tdf431_gfn_8u	0	0	0
dftim_fst_8u	43min	43min	45min
dftim_otp0_8u	43min	40min	45min
dftim_otp5_8u	43min	55min	60min
dftim_otp10_8u	43min	55min	60min
dftmc_otp0_8u	25min	25min	25min
dftmc_otp5_8u	25min	25min	25min
dftmc_otp10_8u	25min	25min	25min
frzcln_chktm1_8u	42h	42h	42h
frzcln_chktm2_8u	42h	42h	42h
frzcln_chktm3_8u	84h	84h	84h
frzcln_instp_8u	30min	30min	30min
frzcln_blnce_tm_8u	8min	8min	8min
frzcln_souf1_tm_8u	3min	3min	3min
frzcln_souf2_tm_8u	8min	8min	8min
frztm1_short_8u	25min	25min	25min
frztm1_long_8u	25min	25min	25min
clntim_def2_8u	3min	3min	3min
clntim_wam1_frz1_8u	5min	5min	5min
clntim_stp1_frz1_8u	3min	3min	3min
clntim_suf1_frz1_8u	5min	5min	5min
clntim_ion1_8u	0	0	0
frz_cmp_base_h_8u	3200min-1	3200min-1	4000min-1
frz_cmp_base_m_8u	3200min-1	3200min-1	4000min-1
frz_cmp_base_l_8u	3000min-1	3000min-1	3500min-1
clncmp_frz_8u	3200min-1	3200min-1	3300min-1
fcln_frz_hou_8u	350min-1	350min-1	400min-1
fcln_frz_suf_8u	450min-1	450min-1	500min-1
gfcfrz11_p_8u	510min-1	510min-1	550min-1
gfcfrz12_p_8u	650min-1	650min-1	600min-1
gfcfrz13_p_8u	700min-1	700min-1	650min-1
clnfrz_cmpck11_8u	2000min-1	2000min-1	2000min-1
clnfrz_cmpck12_8u	3100min-1	3100min-1	3800min-1
gfwfrz_wam_p_8u	600min-1	600min-1	600min-1
clntim_wam2_frz1_8u	5min	5min	5min
clntim_stp2_frz1_8u	3min	3min	3min
clntim_suf2_frz1_8u	39min	39min	39min

Basic Cooling Operation



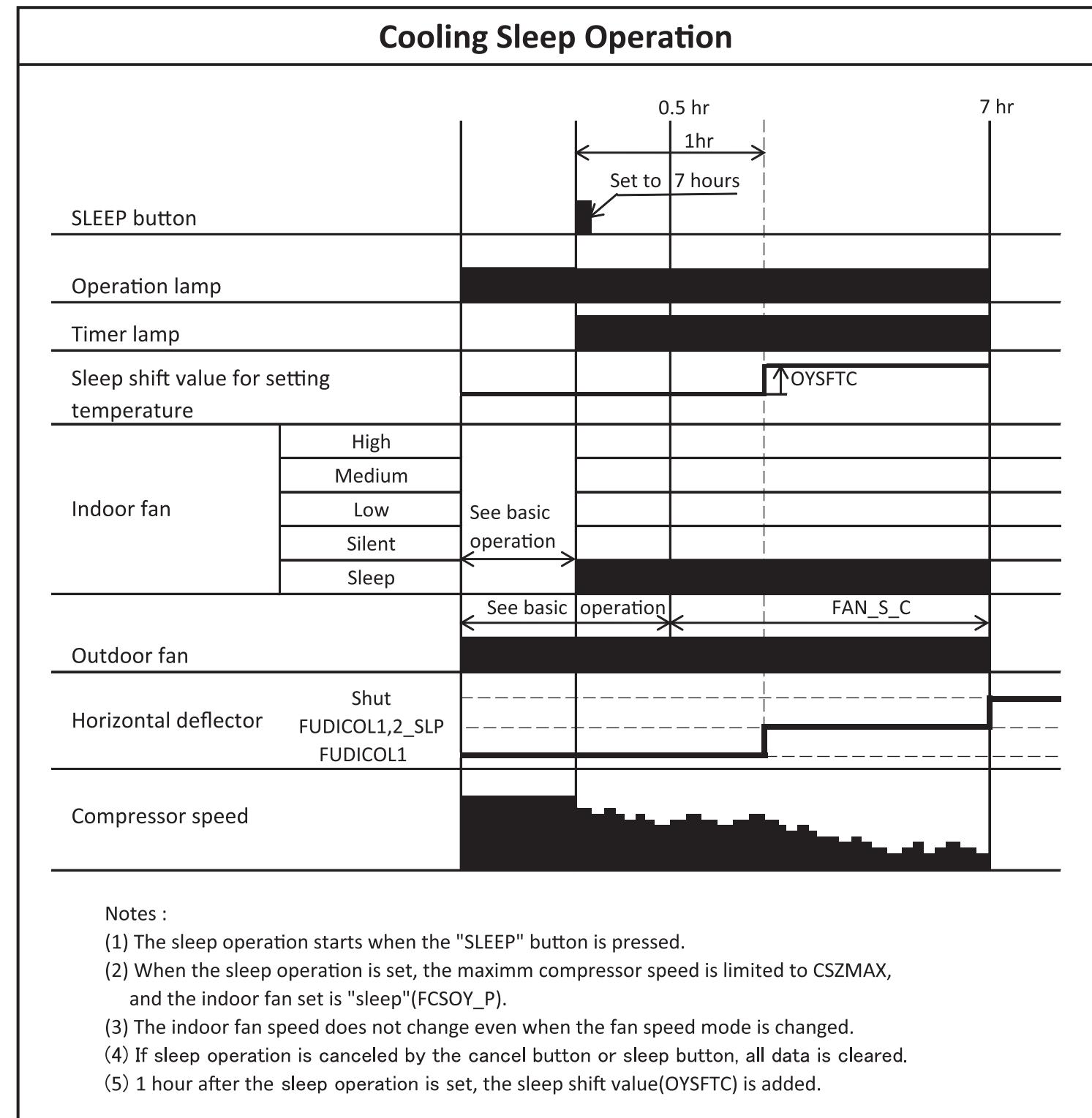
Notes:

- (1) Condition for entering into Cool Dashed mode. When fan set to "Hi" or "Auto and when the compressor speed (P section) due to temperature difference between setting temperature (including the correction shift only) and room temperature is CMAX or higher.
- (2) Cool Dashed will release when i) a maximum 25 minutes is lapsed and ii) room temperature is lower than set temperature -3°C (thermo off) and iii) when room temperature has achieved setting temperature -1°C then maximum Cool Dashed time will be revised to 20 minutes. And iv) indoor fan is set to Lo and Med fan mode and v) change operation mode.
- (3) During Cool Dashed operation, thermo off temperature is set temperature (with shift value) -3°C. After thermo off, operation continue in Fuzzy control mode.
- (4) Compressor minimum "ON" time and "OFF" time is 3 minutes.
- (5) During normal cooling mode, compressor maximum rpm CMAX will maintain for 60 minutes if indoor temperature is lower than CLMXTP. No time constrain if indoor temperature is higher than CLMXTP.
- (6) When fan is set to "Hi", compressor rpm will be limited to CSTD.
- (7) When fan is set to "Med", compressor rpm will be limited to CJKMAX.
- (8) When fan is set to "Lo", compressor rpm will be limited to CBEMAX.
- (9) During Cool Dashed, when room temperature reaches set temperature -1°C compressor rpm is actual rpm x DWNRATEC.



Notes :

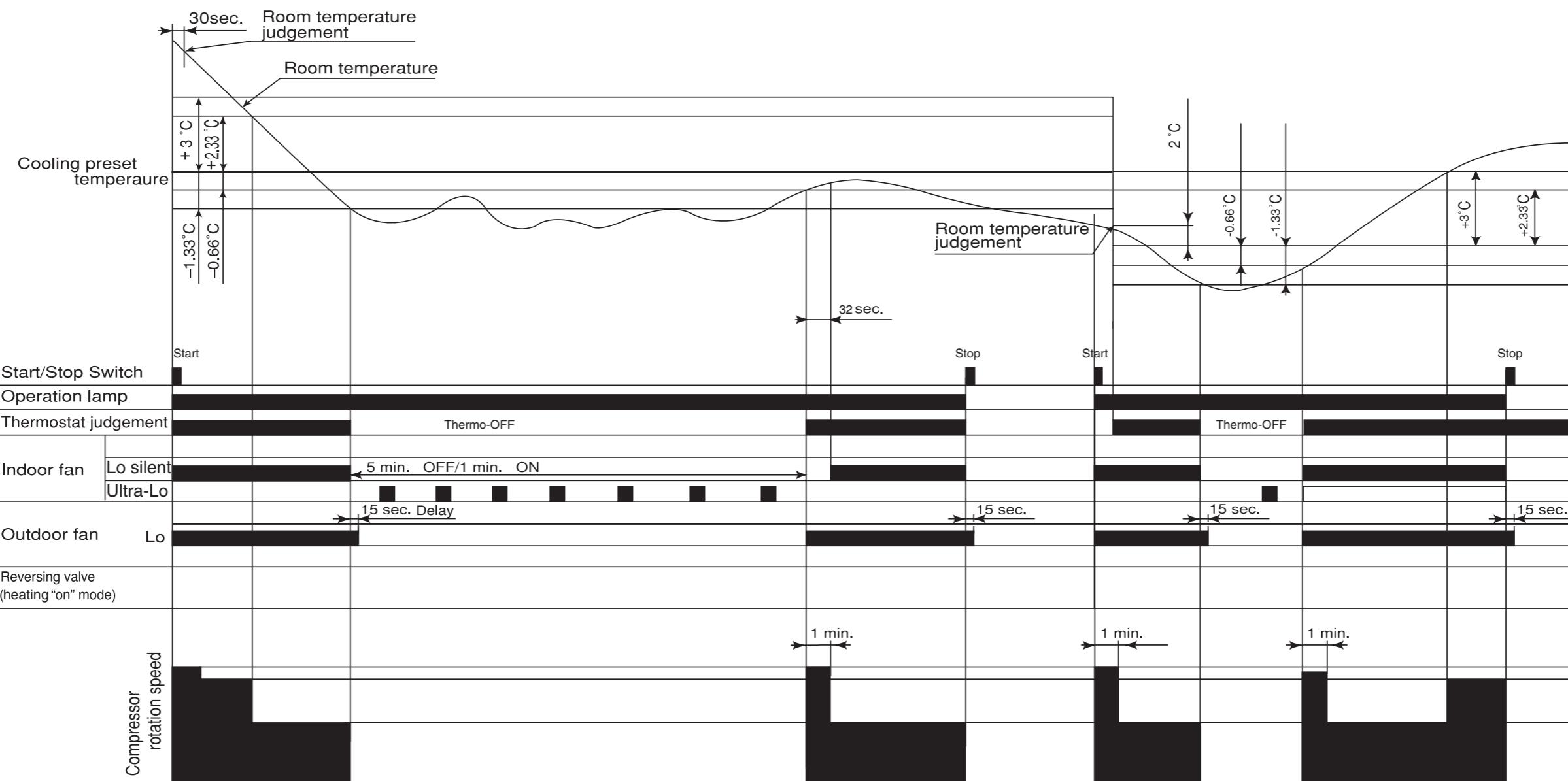
- (1) Pressing the "POWERFUL" button will reduce the temperature setting by PWSFTC.
- (2) The powerful operation is for 20 minutes after setting.
- (3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.
- (4) Pressing the "START/STOP" button and "POWERFUL" button during powerful operation will cancel the powerful operation.
- (5) If the sleep timer is set during powerful operation, the powerful operation will be canceled.
- (6) When the powerful operation is set, the fan speed will be set to "HIGH" and the compressor's maximum speed will be set to CMAX2 during powerful operation. The compressor's lower limit speed is CKYMIN_PW.
- (7) The fan speed increases by FNUPPW_C.
- (8) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.



Notes :

- (1) The sleep operation starts when the "SLEEP" button is pressed.
- (2) When the sleep operation is set, the maximum compressor speed is limited to CSZMAX, and the indoor fan set is "sleep"(FCSOY_P).
- (3) The indoor fan speed does not change even when the fan speed mode is changed.
- (4) If sleep operation is canceled by the cancel button or sleep button, all data is cleared.
- (5) 1 hour after the sleep operation is set, the sleep shift value(OYSFTC) is added.

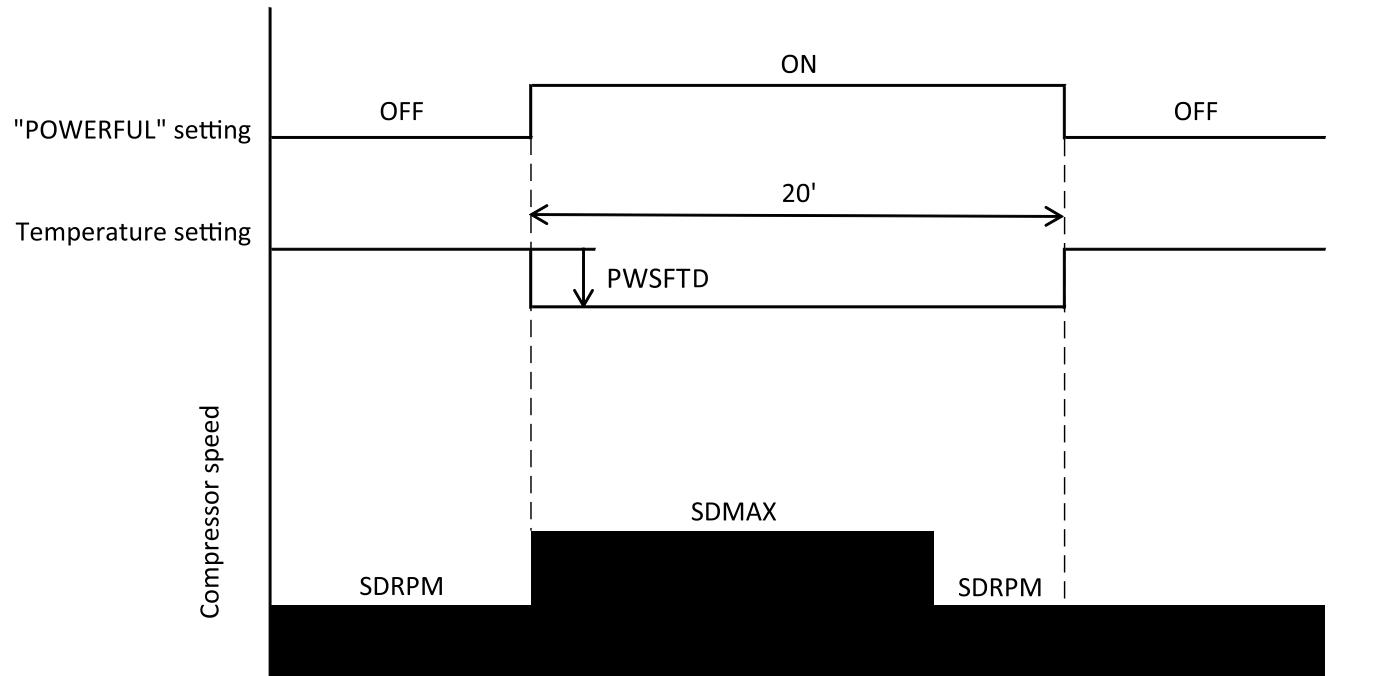
Basic Dehumidifying Operation



Notes:

- (1) The operation is done assuming as the preset temperature = (room temperature at the time) - (2°C).
- (2) The indoor fan is operated in the "Lo silent" mode. During thermo OFF indoor fan will be OFF for 5 minutes and ON for 1 minute.
- (3) When the operation is started by the thermostat turning ON, the start of the indoor fan is delayed 32 seconds after the start of compressor operation.
- (4) The compressor is operated forcedly for 3 minutes after operation is started.
- (5) The minimum ON time and OFF time of the compressor are 3 minutes.

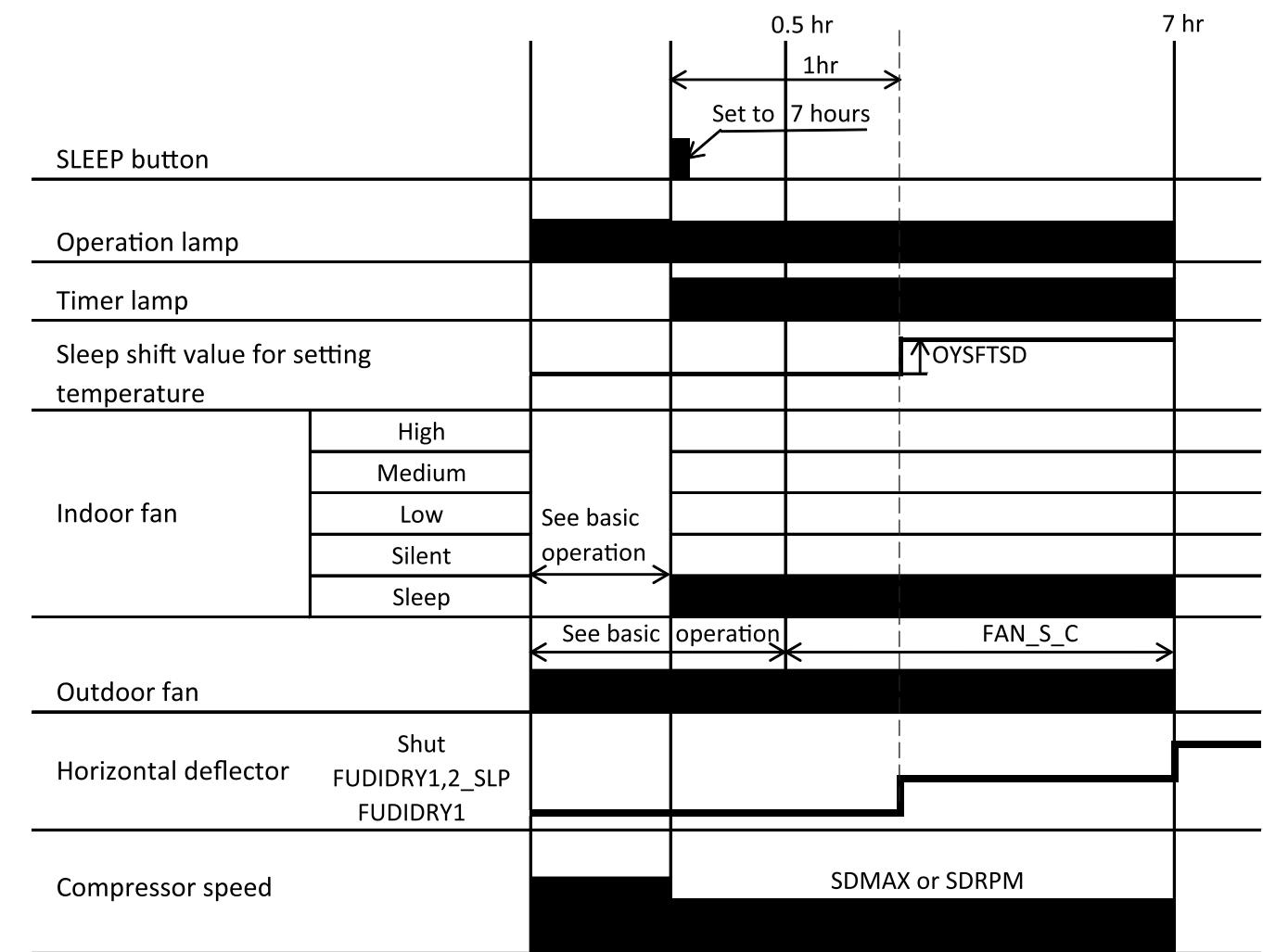
Dehumidifying Powerful Operation



Notes :

- (1) Pressing the "POWERFUL" button will reduce the temperature setting by PWSFTD.
- (2) The powerful operation is for 20 minutes after setting.
- (3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.
- (4) Pressing the "START/STOP" button and "POWERFUL"button during powerful operation wil cancel the powerful operation.
- (5) If the sleep timer is set during powerful operation, the powerful operation will be canceled.
- (6) If the differential(the room temperature - the temperature setting) is "the differential ≥ 3 °C" after powerful setting , the compressor's maximum speed during powerful operation will be set to SDMAX. Then the differential reduce "the differential ≤ 2.33 °C" during powerful operation,the compressor's speed will be set to SDRPM.
If the differential(the room temperature - the temperature setting) is "the differential < 3 °C" after powerful setting , the compressor's minimum speed during powerful operation will be set to SDRPM.
- (7) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.

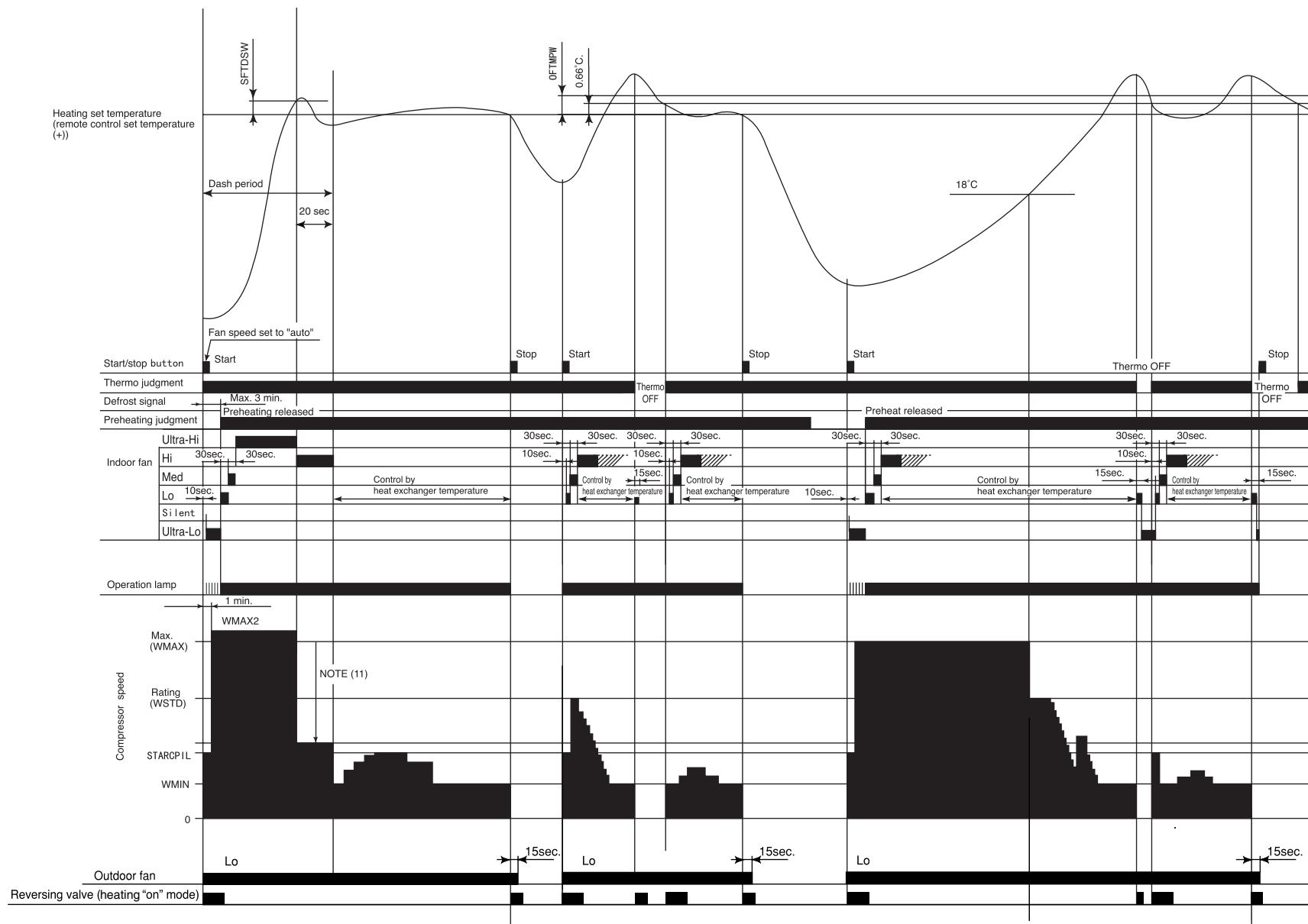
Dehumidifying Sleep Operation



Notes :

- (1) The sleep operation starts when the "SLEEP" button is pressed.
- (2) When the sleep operation is set, the indoor fan set is "sleep"(FDOY_P).
- (3) The indoor fan speed does not change even when the fan speed mode is changed.
- (4) If sleep operation is canceled by the cancel button or sleep button, all data is cleared.
- (5) 1 hour after the sleep operation is set, the sleep shift value(OYSFTSD) is added.

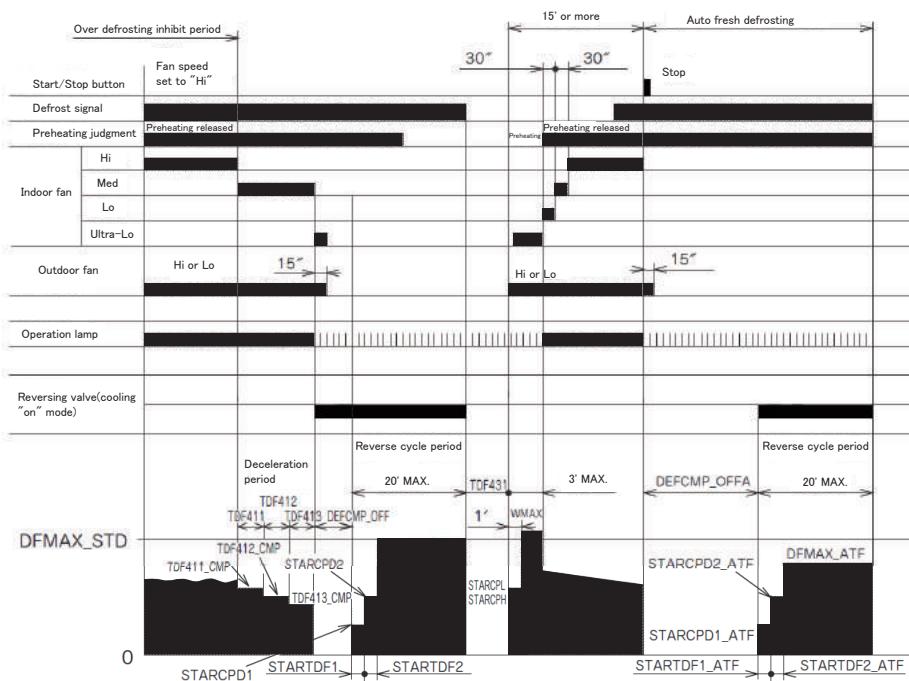
Basic Heating Operation



Notes:

- (1) Condition for entering into hot dashed mode. When fan set to "Hi" or "Auto" and i) room temperature is 18 or less, and ii) outdoor temperature is 10 or less, and iii) compressor speed (P section) due to temperature difference between setting temperature(including shift value only) and room temperature is WMAX or more.
- (2) The maximum compressor speed period during hot dash is finished when i) room temperature has reached the setting temperature + SFTDSW. ii) thermo off.
- (3) During hot dashed operation, thermo off temperature is setting temperature (with shift value) +3 . After thermo off, operation continue inn Fuzzy control mode.
- (4) Minimum "ON" time and minimum "OFF" time of compressor operation is 3 minutes.
- (5) During normal heating mode, compressor maximum rpm WMAX will maintain for 120 minutes. No time limit constrain if room temperature is 18 or less and outdoor temperature is 2 or less.
- (6) During preheating or defrosting or auto fresh defrosting mode, indoor unit operation lamp will blink at interval of 2 seconds "ON" and 1 second "OFF".
- (7) When heating mode starts, it will enter into preheating mode if indoor heat exchanger temperature is less than YNEOF + 0.33 .
- (8) When fan is set to "Med" or "Lo" or "Silent", compressor rpm will be limited to "WJKMAX" or "WBEMAX" or "WSZMAX".
- (9) During "Ultra-Lo" mode, if room temperature is 18 or less, indoor fan will stop. If room temperature is 18 + 0.33 or more, fan will continue in "Ultra-Lo" mode. However, "Ulta-Lo" mode during preheating or preheating after defrosting does not stop if room temperature is 18 or less.
- (10) During hot dashed or outdoor temperature is -5 or less, compressor rpm is WMAX2.
- (11) During hot dashed, when room temperature reaches setting temperature + SFTDSW compressor rpm is actual rpm x DWNRATEW.

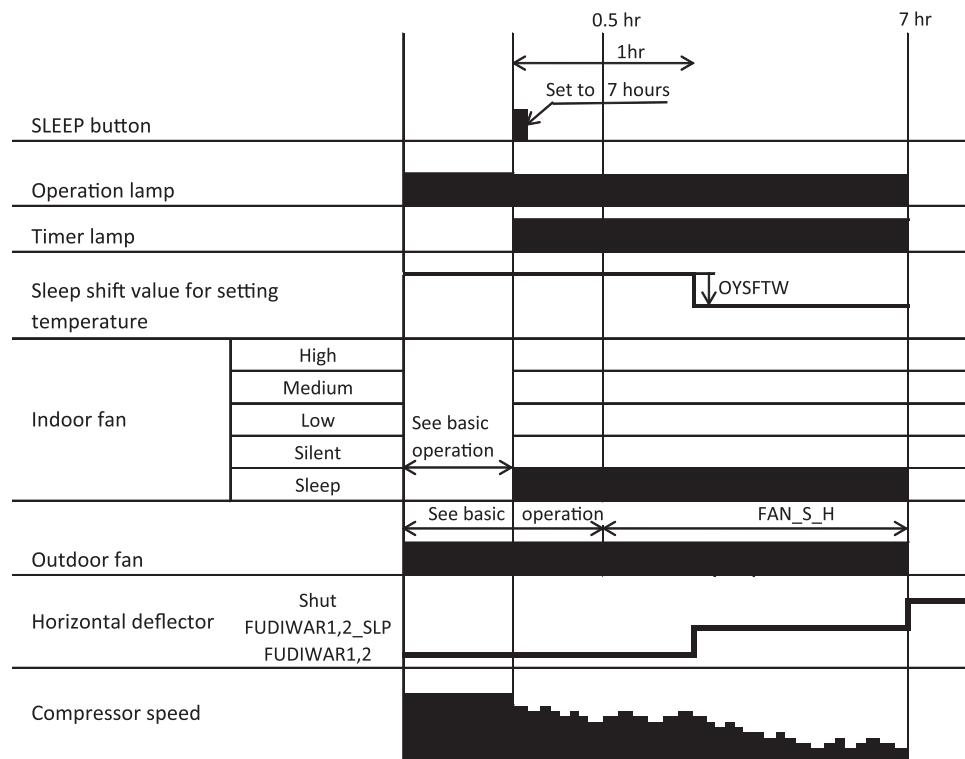
Reversing valve defrosting



Notes:

- (1) The defrosting inhibit period is set as shown in the diagram below. When defrosting has finished once, the inhibit period is newly set, based on the outdoor temperature when the compressor was started. During this period, the defrost signal is not accepted.
- (2) If the difference between the room and outdoor temperature is large when defrosting is finished, the maximum compressor speed (WMAX) or (WMAX2) can be continued for 120 minutes maximum.
- (3) The defrosting period is 20 minutes maximum.
- (4) When operation is stopped during defrosting, it is switched to auto refresh defrosting.
- (5) Auto refresh defrosting cannot be engaged within 15 minutes after operation is started or defrosting is finished.

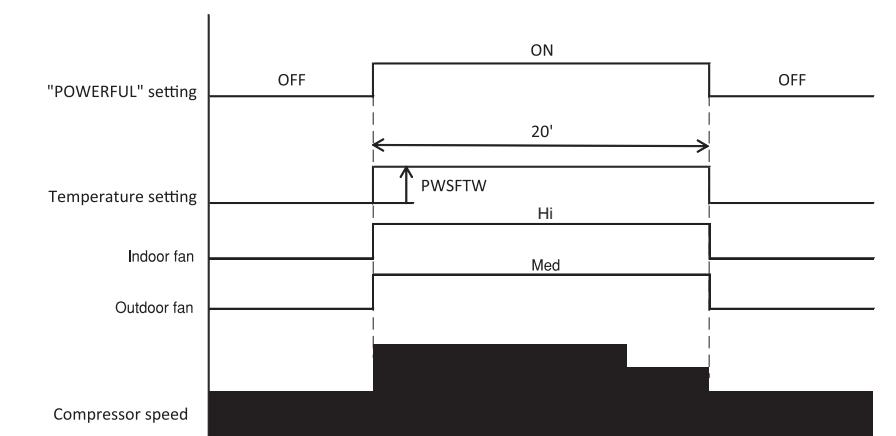
Heating Sleep Operation



Notes :

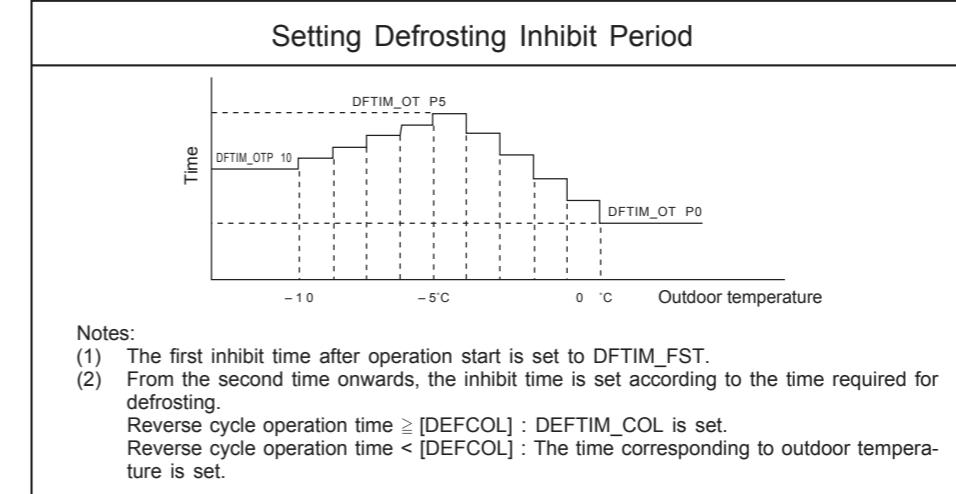
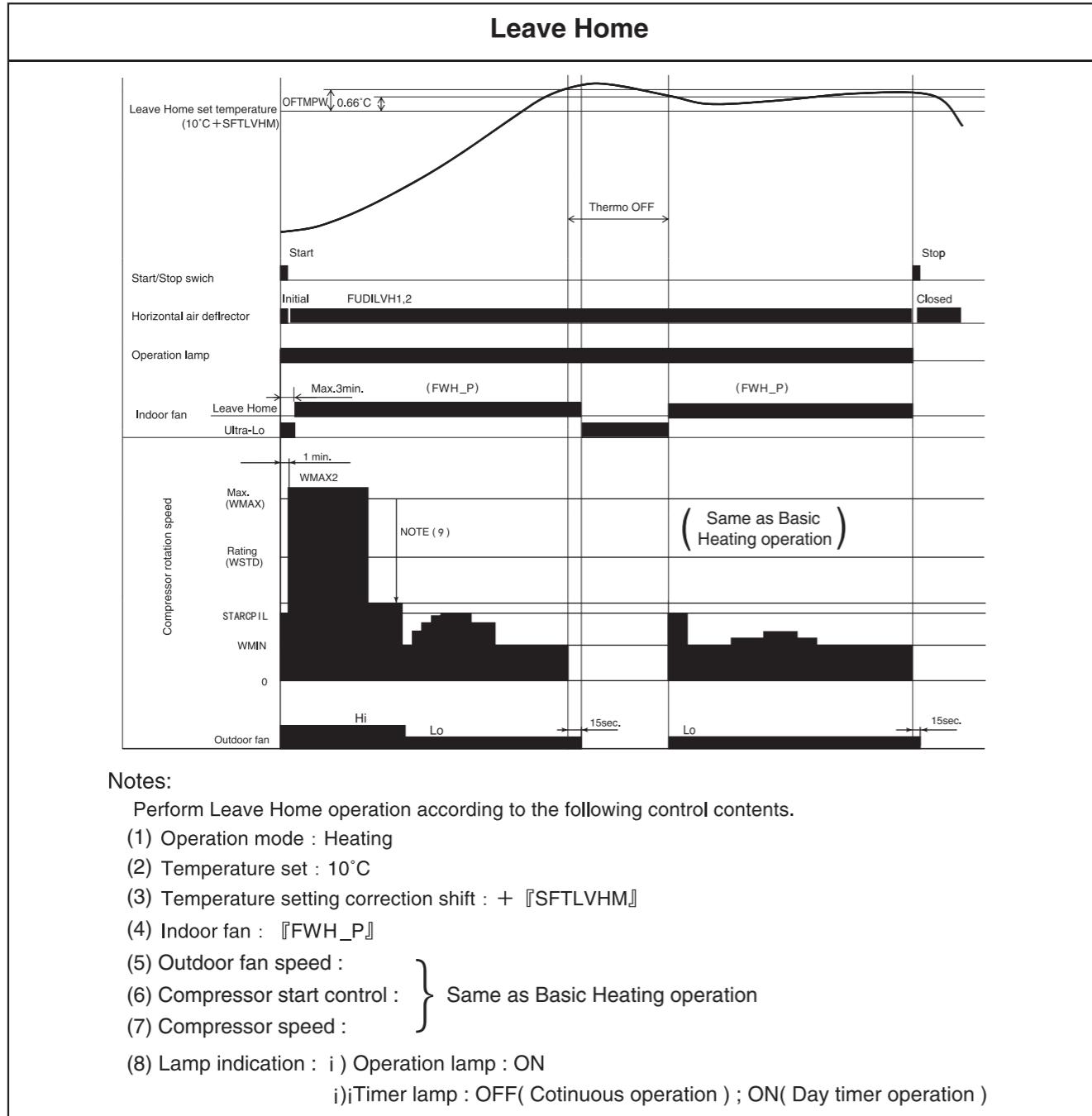
- (1) The sleep operation starts when the "SLEEP" button is pressed.
- (2) When the sleep operation is set, the maximum compressor speed is limited to WSZMAX, and the indoor fan set is "sleep"(FWSOY_P).
- (3) The indoor fan speed does not change even when the fan speed mode is changed.
- (4) If sleep operation is canceled by the cancel button or sleep button, all data is cleared.
- (5) 1 hour after the sleep operation is set, the sleep shift value(OYSFTW) is reduced.

Heating Powerful Operation



Notes :

- (1) Pressing the "POWERFUL" button will increase the temperature setting by PWSFTW.
- (2) The powerful operation is for 20 minutes after setting.
- (3) Operation is continued forcibly thermo-ON for 20 minutes after the powerful operation is finished.
- (4) Defrost is inhibited for 20 minutes after the start of the powerful operation.
- (5) Pressing the "START/STOP" button and "POWERFUL" button during powerful operation will cancel the powerful operation.
- (6) If the sleep timer is set during powerful operation, the powerful operation will be canceled.
- (7) When the powerful operation is set, the fan speed will be set to "HIGH" and the compressor's maximum speed will be set to WMAX2 during powerful operation. The compressor's lower limit speed is WKYMIN_PW.
- (8) After the powerful operation is ended, the system automatically operates with the previous settings used before the powerful operation.



Frost wash

	Frost wash operation								
	Blance period frzcln_blnce_tm (AUTO) frzcln_souf1_tm (manual)	Frost period ※1	Defrosting period clntim_def1	Fan period 1 dntim_suf1_frz1	Heating period 1 clntim_wam1_frz1	Stop period 1 clntim_stp1_frz1	Heating period 2 clntim_wam2_frz1	Stop period 2 clntim_stp2_frz1	Fan period 2 dntim_suf2_frz1
Stop button									
Operation lamp									
Frost wash lamp									
Indoor fan		※SS		fcln_frz_suf	fcln_frz_wam		fcln_frz_wam	fcln_frz_suf	
Outdoor fan		※2			gfwrz_wam_p		gfwrz_wam_p		
Compressor rotation speed		※3			clncmp_frz		clncmp_frz		
Deflector angle (Vertical)	Shut								
	Upward a bit								
	Downward a bit								

(1)The total hours of air conditioning operation is more than 42 hours(SLEEP、ON TIMER operation will take 84 hours). And air conditioner is operated for more than 30 minutes,

Meanwhile, the outdoor temperature and indoor humidity are suitable for the Frost Wash(Area A、B in Fig.3、4),Frost Wash (auto) start;

(2)Within 2 hours before the ON TIMER designated time,Frost wash(auto) cannot be operate;

(3)ONCE TIMER (ON/OFF TIMER) operation cannot be set,when Frost wash(auto) is running;

(4)When the Frost Wash is stopped during Frost Wash operation, the unit automatically restart Frost Wash at the next operation stop.

(5)Before the Frost period start,the outdoor temperature $\geq 16^{\circ}\text{C}$. Or before the defrosting period finish,the heat exchanger temperature $\geq 0^{\circ}\text{C}$. The Heating period will not running. Fan period 1～Fan period 2 all turn to Fan operation

(6)In frost period ,The maximum time is 10 minutes after the heat exchanger temperature $\leq 10^{\circ}\text{C}$

(7)Heating period will finish after the heat exchanger temperature $\geq 35^{\circ}\text{C}$,remain time turn to Fan period 2,the total time unchanged

(8)Fan period 1～Fan period 2 will not running,when last operation was HEATING;

(9)When device operat Frost wash during ON condition,the device will stop and have blance time(3 minutes)

(10)Before the Frost period start,OH temperature $\geq 60^{\circ}\text{C}$,Original blance period time will add 3 minutes

※1 According to room humidity, the Frost period time becomes as it is shown in Fig.1.

※2 According to Compressor rotation speed, the Outdoor fan becomes as it is shown in Fig.2.

※3 The Compressor rotation speed becomes as it is shown in Fig.5.about area A,

The Compressor rotation speed becomes as it is shown in Fig.6.about area B

Fig.1 Frost Period time

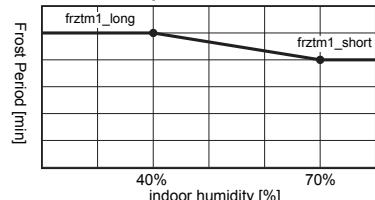


Fig.2 Frost Period outdoor Fan

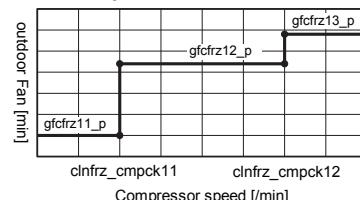


Fig.3 The range of indoor/outdoor temperature

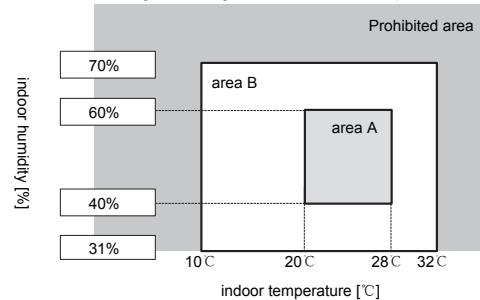


Fig.4 The range of indoor/outdoor temperature

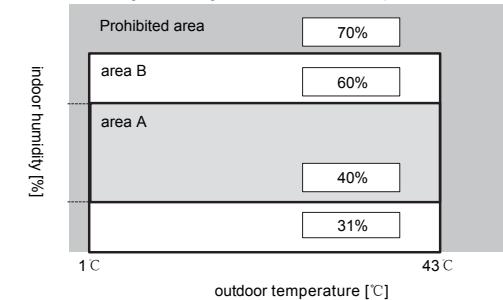


Fig.5 Frost Period Compressor speed (area A)

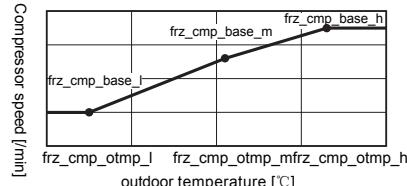
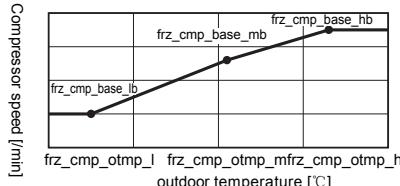


Fig.6 Frost Period Compressor speed (area B)



Pre-filter cleaning system operation control (1)

Types of cleaning operation

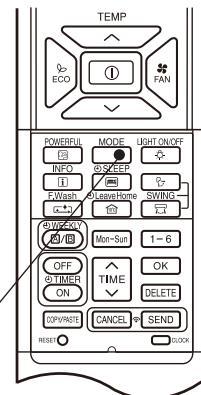
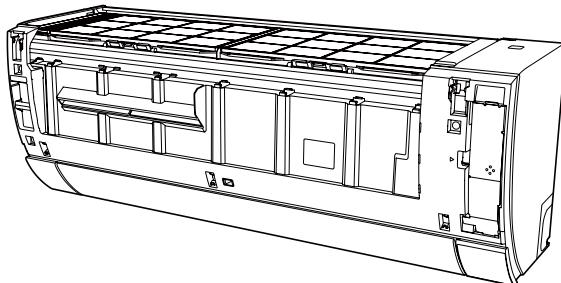
- Automatic cleaning: Cleaning conducted automatically when the product is stopped
- Forcible cleaning: Cleaning conducted when the product is continuously operated
- Manual cleaning: Cleaning conducted by using the MANUAL CLEANING mode on the remote control unit

(i) Cleaning unit reciprocated + (ii) cleaning lamp + (iii) horizontal air deflector closed + (iv) tap for indoor unit only

*For forcible cleaning, (iii) is open

*Indoor unit: The special-purpose tap is on a super-slight wind level.

*After the microcomputer is reset, the product will perform initial operation.



Press the **MODE** select button so that the display indicates (FILTER CLEANING) when the unit is OFF.

Pre-filter cleaning system operation control (2)

Automatic cleaning

- Setting "Filter cleaning" is configured at the factory.
- Cancellation This is for people who do not need filter cleaning at all.
 - Double-pressing a button on the remote control unit enables switchover between cancellation and setting.

Operation conditions

- (1) A cumulative period of 20 [hours] after the last "filter cleaning" and more than 15 [minutes] in the air conditioner operation time immediately beforehand, and when the air conditioner is stopped, the product will clean itself.
- (2) If the product stops due to the "sleep timer" or "OFF timer", the product will not clean itself even if (1) above holds.
- (3) For everyday users of the "sleep timer", the product will clean itself after 70 [hours] have passed cumulatively after the last "filter cleaning", more than 15 [minutes] in the air-conditioner operation immediately beforehand, or when the air-conditioner is stopped.
- (4) Pulling out the power plug (or in the case of a power failure or momentary power failure), the cumulative time will not be reset.
- (5) If the product runs 7 consecutive days of stoppage, it will clean itself when the air-conditioner is stopped even if the cumulative time after "filter cleaning" has not elapsed.

Forcible cleaning

If the air-conditioner has run for more than 24 consecutive [hours], stop it and clean it forcibly.

After the cleaning is over, reset it.

Manual cleaning

(1) This operation aims to make the product ready for use after having left the air-conditioner unused for a long time.

(2) Pressing the MANUAL CLEANING mode on the remote control unit will make one go and return.

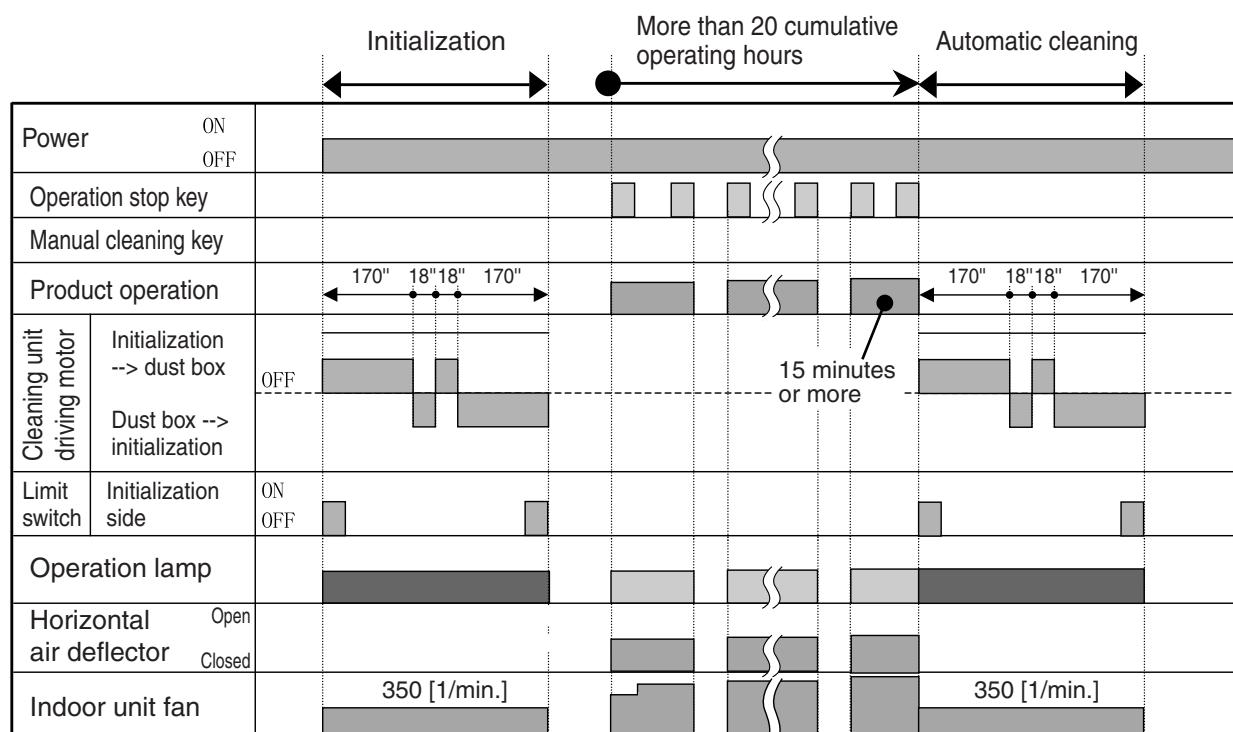
(3) Continuous operation is impossible. (Allow for an interval of 5 [minutes].)

(4) While the air-conditioner is running, it will not accept "manual cleaning".

- During a continuous run with an interval of up to [eprom] (5 minutes), the product will not accept signals from the remote control unit.
- To protect the machine, avoid continuous manual cleaning. Allow for an interval of more than 5 minutes between operations.

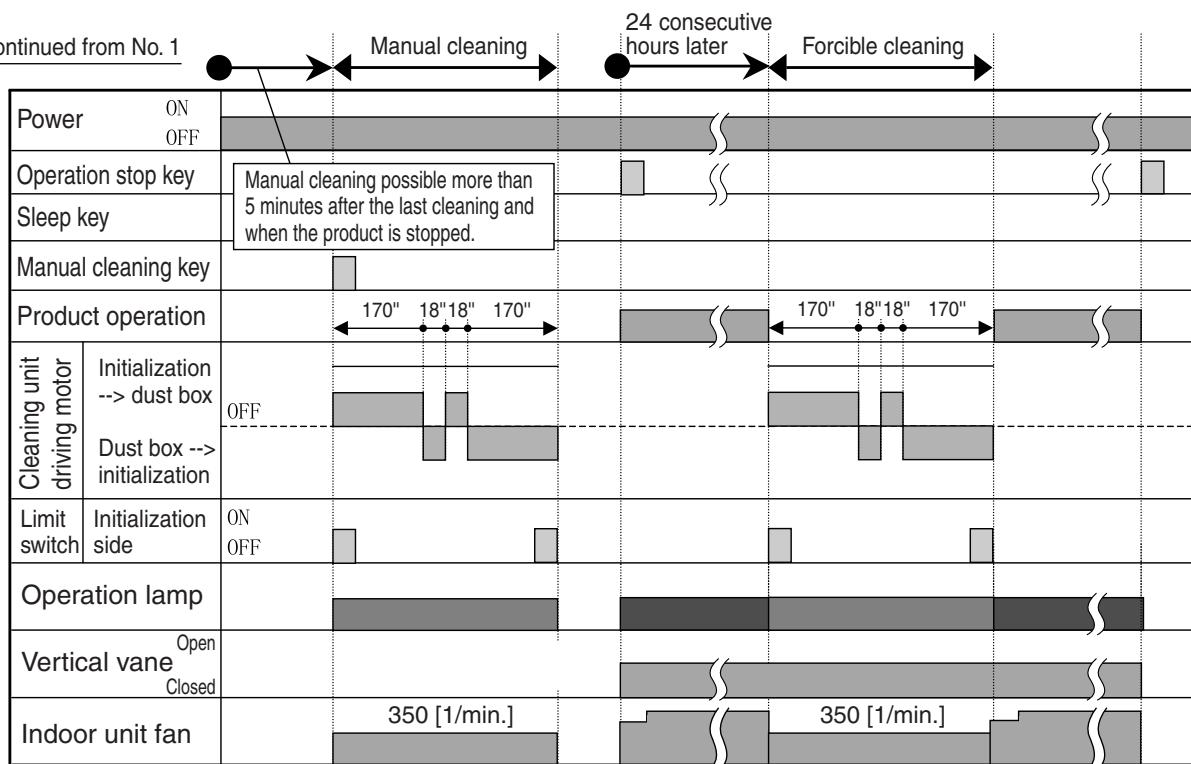
Indicate the above in the operation manual.

Operation diagram 1 for filter cleaning (initialization and automatic cleaning)



Operation diagram 2 for filter cleaning (manual and forcible cleaning)

Continued from No. 1

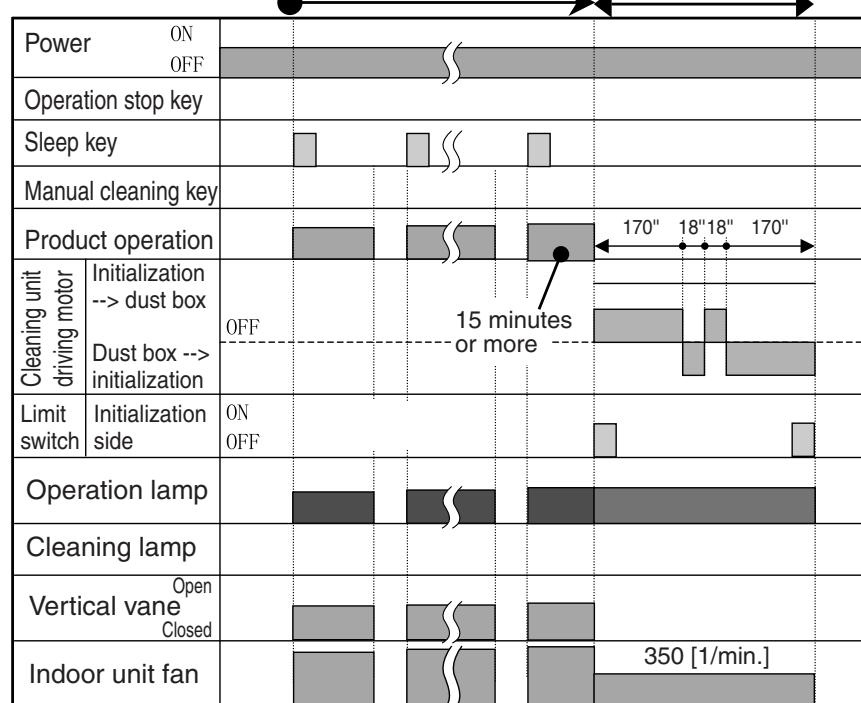


Operation diagram for filter cleaning 3 (timer stopped)

Continued from No. 2

More than 70 cumulative operating hours

Automatic cleaning when the timer is stopped



Operation diagram for filter cleaning 4 (remarks)

1. Cleaning in general

- (1) If, during cleaning, the remote control is used to start the air-conditioner by cooling, heating, or other operation, the cleaning will be stopped at that time. While the product is being run, the cleaning unit will be returned to its initial position.
- (2) The cumulative count of operating hours will be initialized only when the cleaning has come to a normal end.

2. Automatic cleaning

- (1) If the air-conditioner auto-fresh holds while the product is stopped, it will start to clean itself after that operation is over.

3. Manual cleaning

- (1) This will not be activated during initialization or automatic cleaning.

4. Forcible cleaning

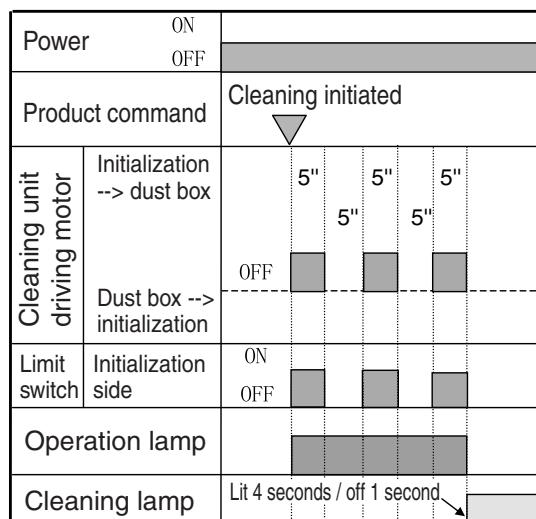
- (1) This will not be activated during air-conditioner cleaning, or auto-fresh.
- (2) This will not be activated while the sleep timer is on.
- (3) This will not be activated for 15 minutes after preheating, defrost, or preheating cancellation.

5. Automatic operation with the timer stopped

- (1) The basic mode is the same as normal automatic cleaning.
- (2) This will be performed for more than 70 cumulative hours when stopped by the timer. In the meantime, if normal automatic, manual, or forcible cleaning holds, the cumulative 70 hours will be initialized.

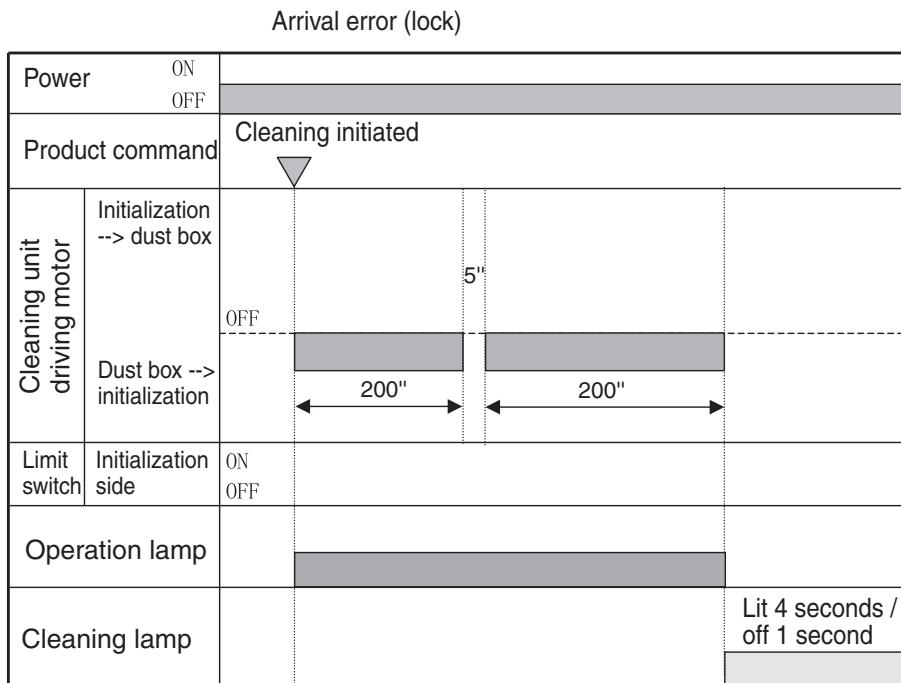
Operation diagram for filter cleaning (error detection 1)

Startup error



1. The product will be considered to have a startup error when the logic of the limit switch has not changed for more than 5 seconds after being started from the initialization side.
2. The product will be considered to have an error when 3 startup errors are finalized.

Operation diagram for filter cleaning (error detection 2)

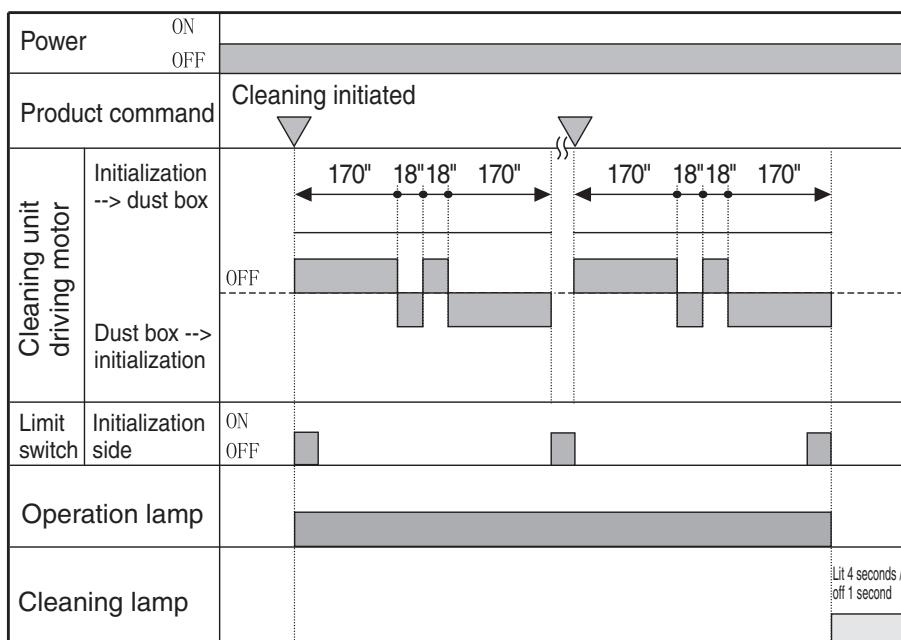


- If the limit switch is not detected 200" (= 170" +30":30" is the safety time) after startup, the product will be considered to have an arrival error.
- If the startup-side limit switch is detected during reversing, the product will stop for 5 seconds and restart itself in the direction of advance.
- If 2 arrival errors are finalized, the product will be considered to have an error.

Cleaning settings can be selected by double-pressing the remote control unit (Press the **SWING** (AUTO SWING VERTICAL) and **OK** (OK) buttons simultaneously for 5 seconds.)

- Reverse the current setting.
Cleaning enabled ↔ disabled
- In the case of an error,
this can cancel the display.
- If the filter cleaning operation is prohibited ,the manual filter cleaning operation can uses.

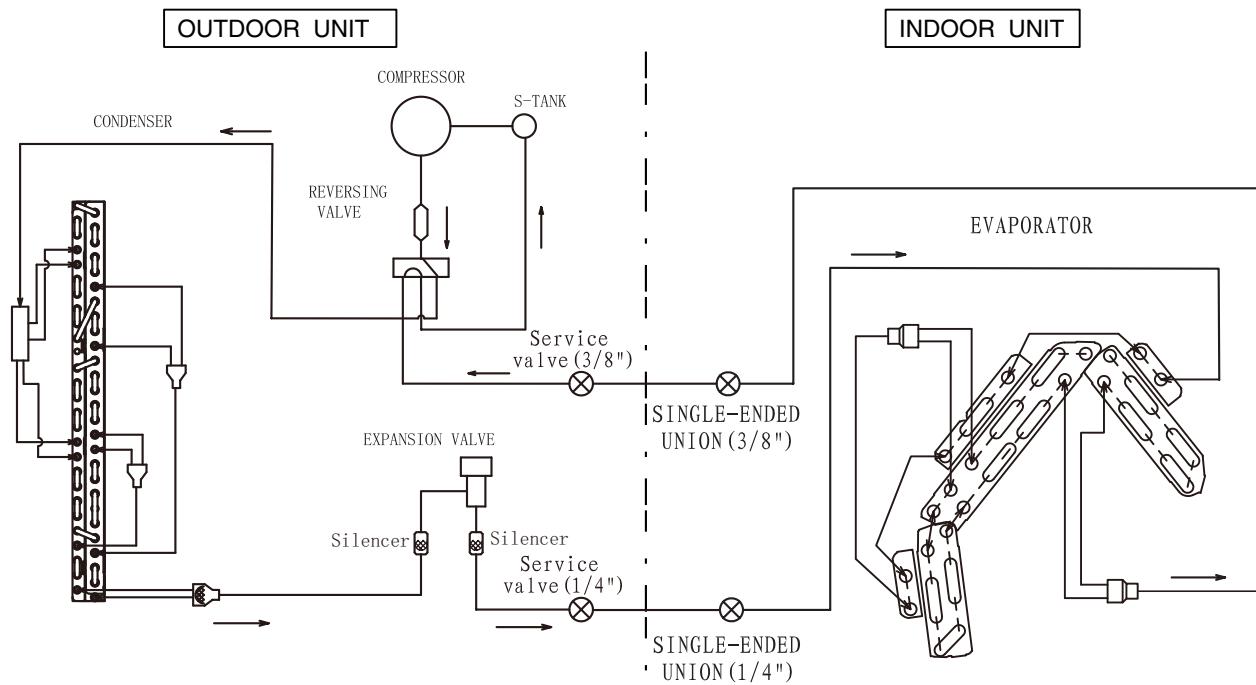
Operation diagram for filter cleaning (error detection 3)



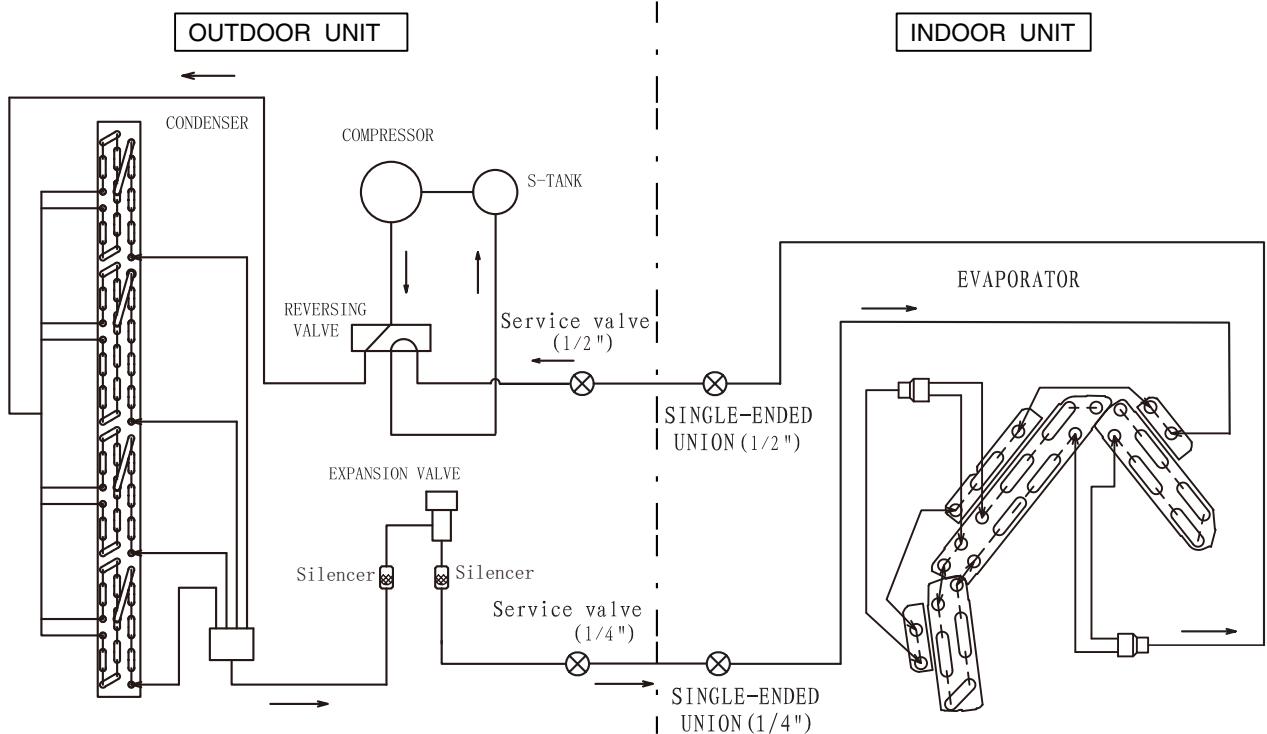
- The product will be considered to have a go-route error if the limit switch is detected within 160" (= 170" - 10":10" is the safety time) after the dust box side is started.
- The product will be considered to have an error when 2 go-route errors are finalized.

REFRIGERATING CYCLE DIAGRAM

MODEL RAK-25PSEW/RAC-25WSE, RAK-35PSEW/RAC-35WSE
 RAK-25PSES/RAC-25WSE, RAK-35PSES/RAC-35WSE



MODEL RAK-50PSEW/RAC-50WSE
 RAK-50PSES/RAC-50WSE



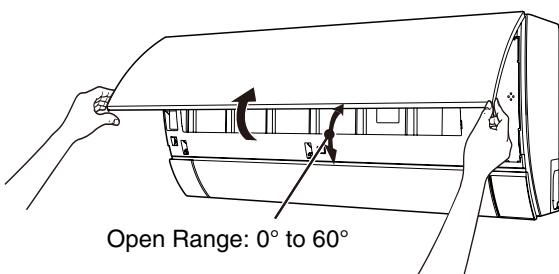
PROCEDURE FOR DISASSEMBLY AND REASSEMBLY

MODEL RAK-25/35/50PSEW, RAK-25/35/50PSES

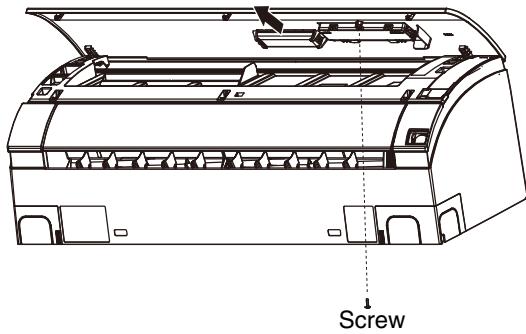
1. Front panel

(1) Open the front panel

- Hold the lower of the front panel with both hands.
- If it is raised further, the front panel may be damaged.

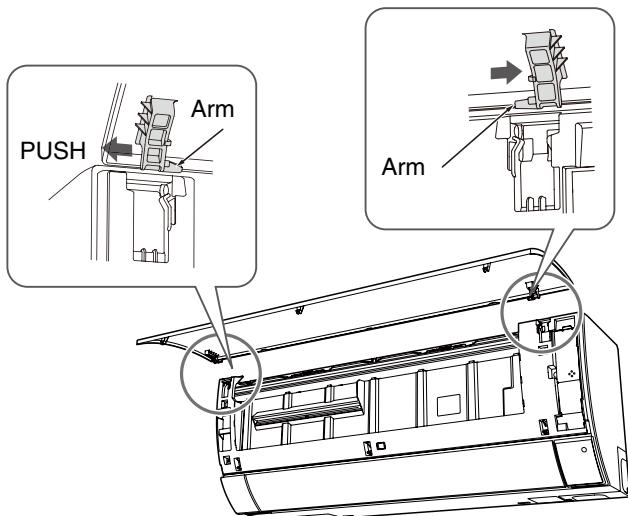


(2) After removing 1 screw with a short screw driver, remove the Temperature Display box.



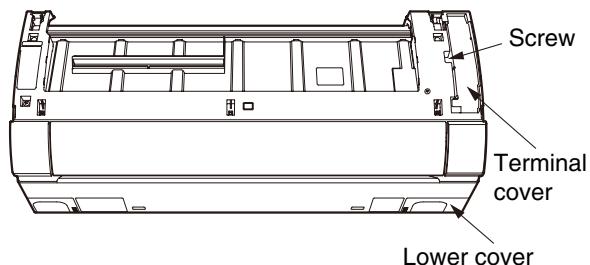
(3) Remove the front panel.

1. Push the end of the right-side arm outward to release the tab.
2. Move the left-side arm outward to release the left tab, and then pull the panel towards you.



2. Fancy cover

(1) Unscrew the terminal board cover and the fancy cover.



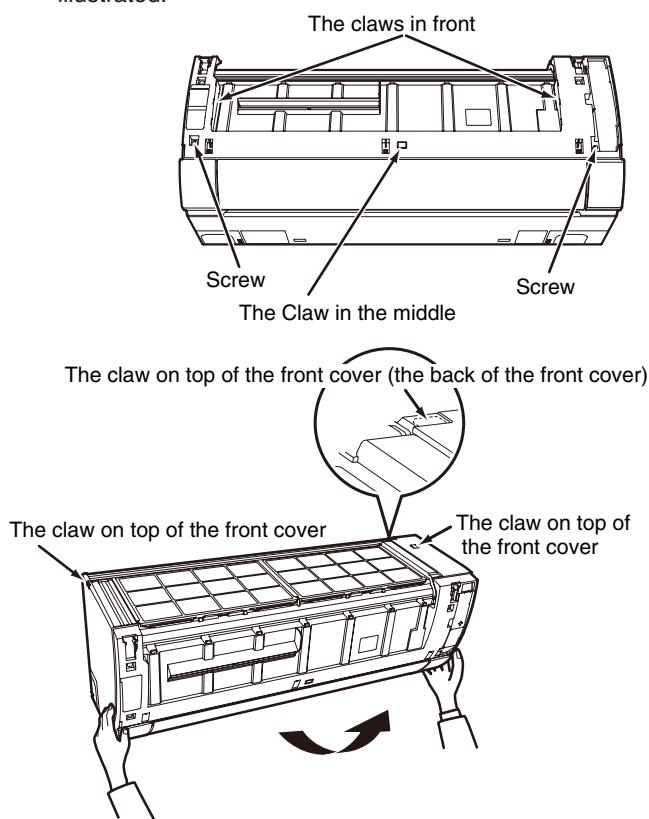
(2) Remove the terminal board cover and dust box.

Dust box



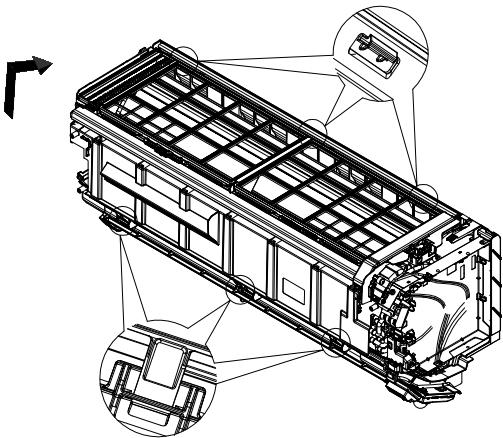
(3) Pull the center of the front cover towards you and release the claw in the middle.

Release the 3 claws on top of front cover and 2 claws in front, remove the front cover toward the direction as illustrated.



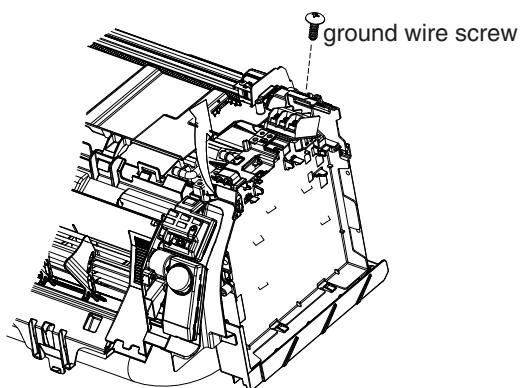
3. Cleaning unit

- (1) Remove the lead wire and ground wire from the electrical parts box(CN8,CN10).
- (2) Release the lower claws(x 3) and put your hand into the left side of the dust catcher,pull the bottom slightly upwards,then remove it towards you, and remove the cleaning unit.



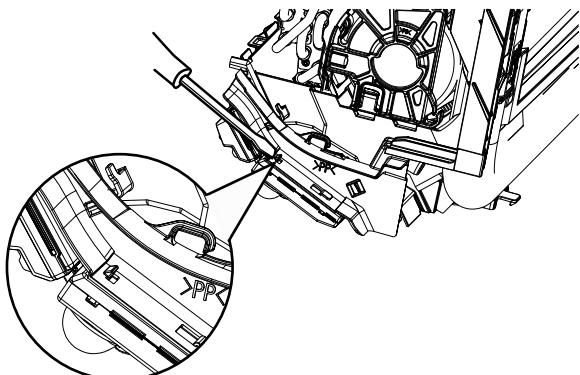
4. Control P.W.B. components

- (1) Press the hook lug of the electrical parts lid and remove the lid.
- (2) From the control P.W.B., remove the lead wires fixed to the electrical parts box.
- (3) Remove the screw that fixes the ground wire to the electrical parts box.
- (4) Push the Control P.W.B slightly towards the right-side and remove the Control P.W.B.



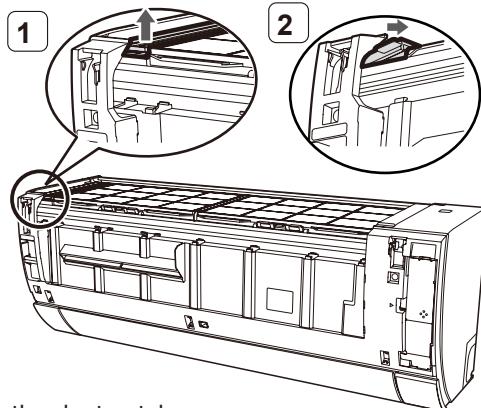
5. ECO sensor

- (1) From the FC-guide frame,remove the lead wire.
- (2) Press the FC-guide frame fixed claw right side.
Remove the ECO sensor from the rear.



6. The dust catcher

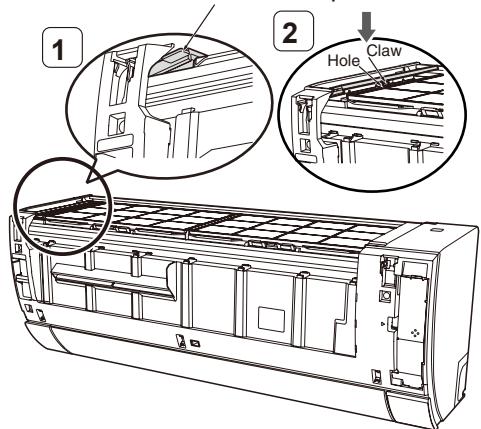
Remove the dust catcher as shown with arrows.
If dust is accumulated at the inner side of the dust catcher, remove the dust with a vacuum cleaner.



Attach the dust catcher

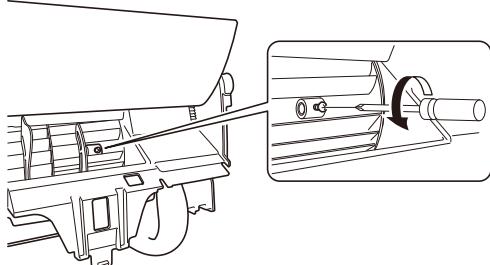
Hold the dust catcher for the top face with its side having the lever facing towards you. Insert and push in the dust catcher in the arrow direction until it clicks.

Hold the dust catcher for the top face

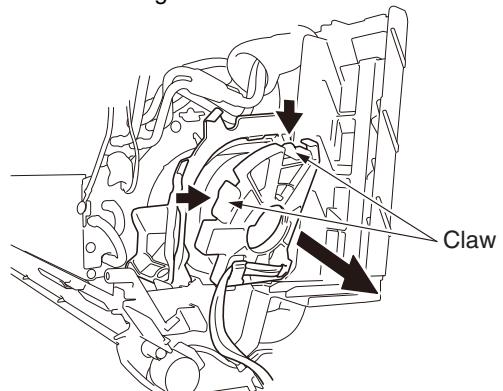


7. Tangential air flow fan and fan motor

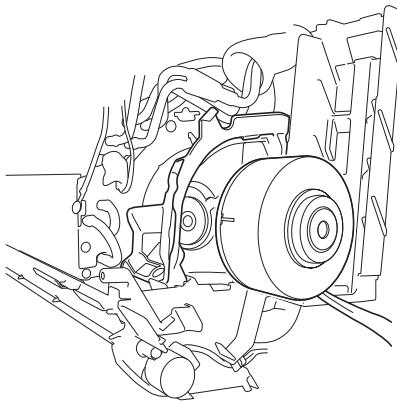
- (1) Loosen the fan lock screw.



- (2) Press the fan motor cover 2 fixed pawl, and remove from the right to.

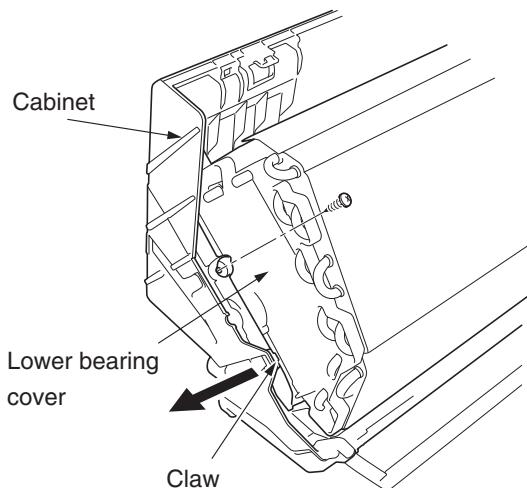


(3) Pull fan motor out of the remove the right.

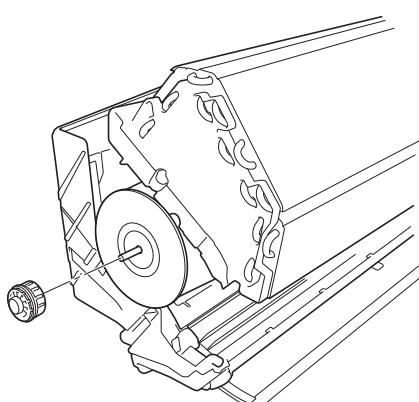


(4) Remove the screws from the upper and lower bearing covers.

(5) Remove the locking hook of the lower bearing cover from the Cabinet.

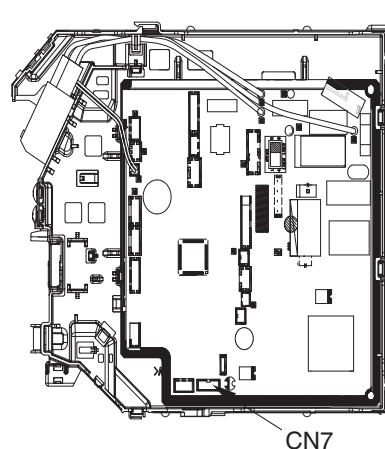
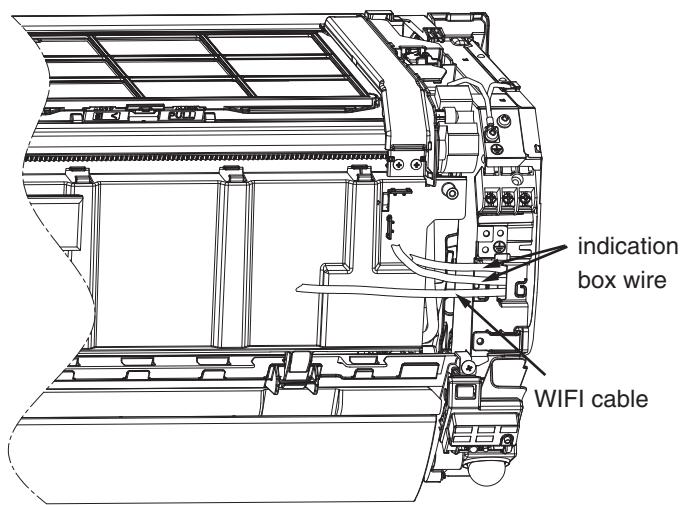


(6) Remove the fan and bearing from the left.



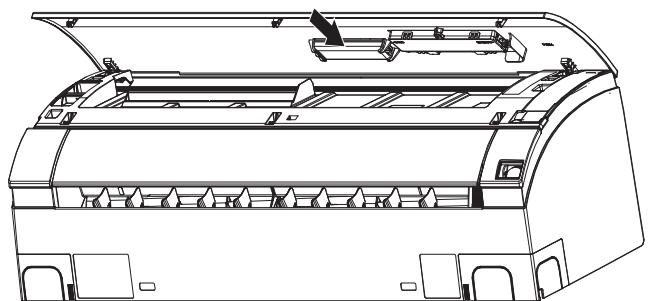
8.WIFI adapter installation

(1) Insert the WIFI cable into the PCB(CN7) through the mounting hole;

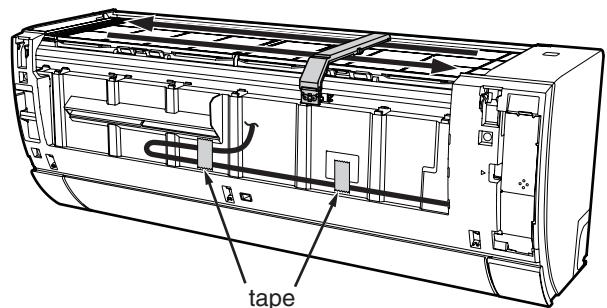


(2) Install the front cover;

(3) Install the WIFI adapter in the front panel toward the direction as illustrated;



(4) Fix the WIFI cable with tape to the front panel;



(5) Insert the WIFI cable into the WIFI adapter;

(6) Close the front panel.

Procedure for Disassembly and Reassembly

OUTDOOR UNIT MODEL RAC-25/35WSE

1. Electrical parts

- (1) Remove the service value cover lock screws and lower the cover to remove it.
- (2) Remove the top cover lock screw and raise the cover to remove it.

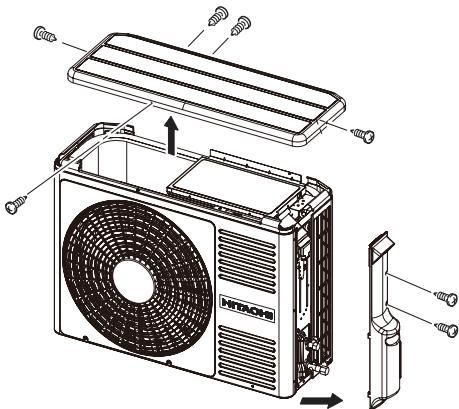


Fig. 1

- (3) Remove the electrical box lock screw.
- (4) Remove the terminal cover lock screw.

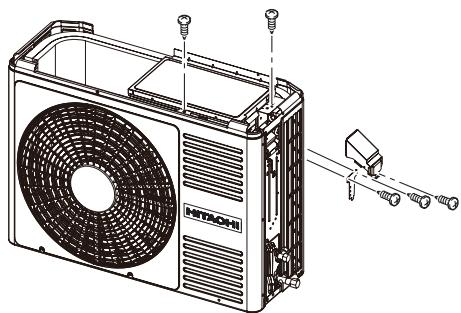


Fig. 2

- (5) Remove each connector and earth cable from the lead wire. Then, remove the electrical box.

OUTDOOR UNIT MODEL RAC-50WSE

1. Electrical parts

- (1) Remove the service value cover lock screws and lower the cover to remove it.
- (2) Remove the top cover lock screw and raise the cover to remove it.

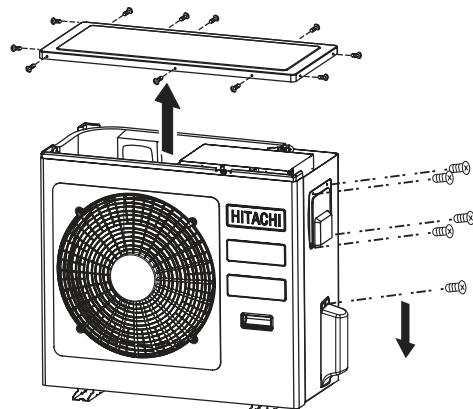


Fig. 3

- (3) Remove the front cover lock screw.
- (4) Lower the right side of the front cover and pull it forward. Then, remove the cover from the hook.
- (5) Pull the right side of the front cover a little and pull up the left side to remove it from the hook.

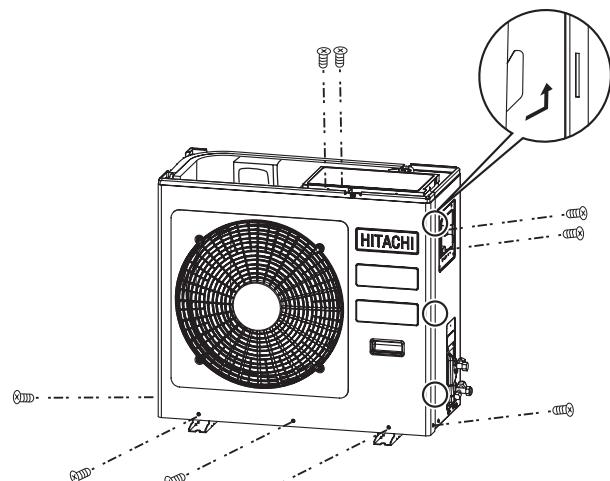


Fig. 4

- (6) Remove each connector and earth cable from the lead wire. Then, remove the electrical box.

DESCRIPTION OF MAIN CIRCUIT OPERATION

MODEL RAK-25/35/50PSEW, RAK-25/35/50PSSE

1. Control power circuit

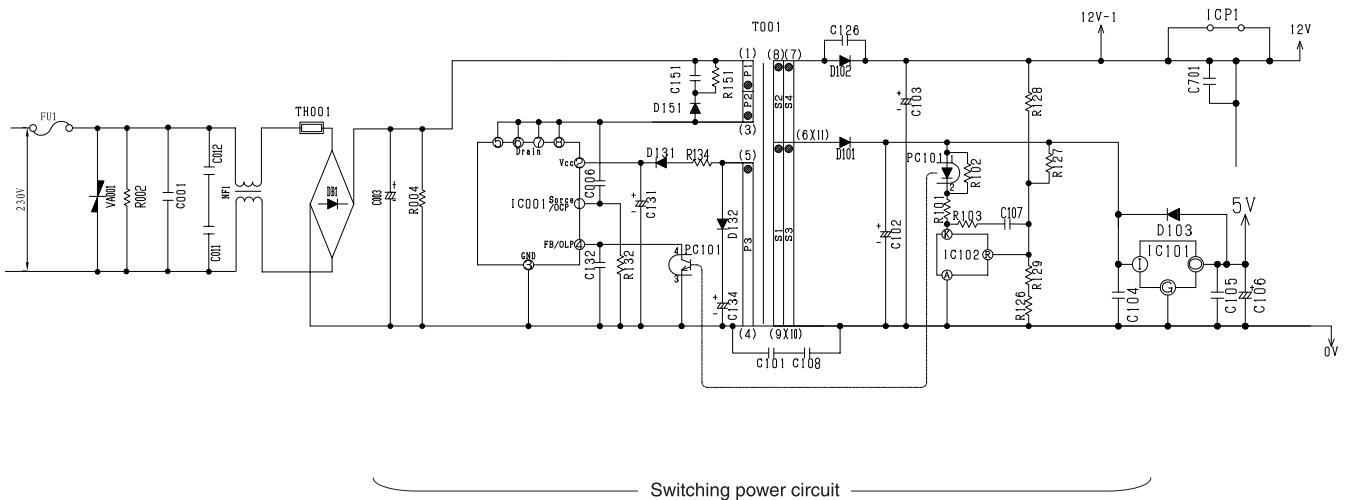


Fig. 1-1

- An AC power supply from outdoor unit passes through the 3.15 A fuse, varistor (VA001), and noise filter circuit and rectified and smoothed by DB1 and C003 to become a DC current 325 V. It is then supplied to indoor fan motor drive circuit, and switching power circuit.
- The switching power circuit, as controlled by IC001, drives the primary winding of the transformer (T001) to produce a specified voltage at the output winding. [The output terminal (pin ⑤) of IC001 has a switching voltage. But it changes in voltage peak and oscillation period depending on the power load. usually, the oscillation frequency when the air condition operation is about 67 kHz. In the standby state, the oscillation frequency is lowered to a level as low as 20 kHz or so to reduce the standby power.]
- The outputs of the output windings of the transformer is rectified and smoothed to become DC voltages at primary 18.5 V, 12 V, and 8.5 V respectively. The primary 18.5 V is supplied to the drive circuit of the indoor fan motor, the 12 V is supplied to each vane motor and to the drive circuits of the cleaning unit driving motor and other equipment, and the 8.5 V is adjusted to a stable 5 V by the 3-terminal regulator IC (IC101) and supplied to the microcomputer peripheral circuit.

Check

If a failure in a part or circuit has produced an abnormal current in the power supply, the 3.15 A fuse will melt down to prevent further damage. If the 3.15 A fuse melts down, check the indoor fan motor, switching electrical circuit, and other components and replace any defective part.

Check

If an abnormally high voltage is applied to the power supply, the 3.15 A fuse and varistor (VA001) will prevent further damage. If a high voltage results in the 3.15A fuse melted down, the varistor (VA001) should have deteriorated and destroyed. Therefore replace it at the same time.

Caution

The primary circuit of the transformer (T001) has a voltage to ground. Guard against electric shocks.

2. Reset Circuit

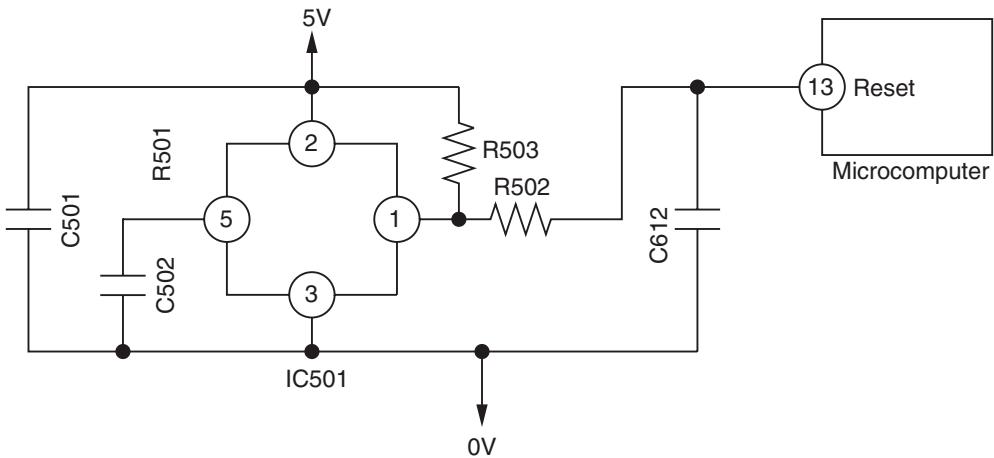


Fig.2-1

Timing chart

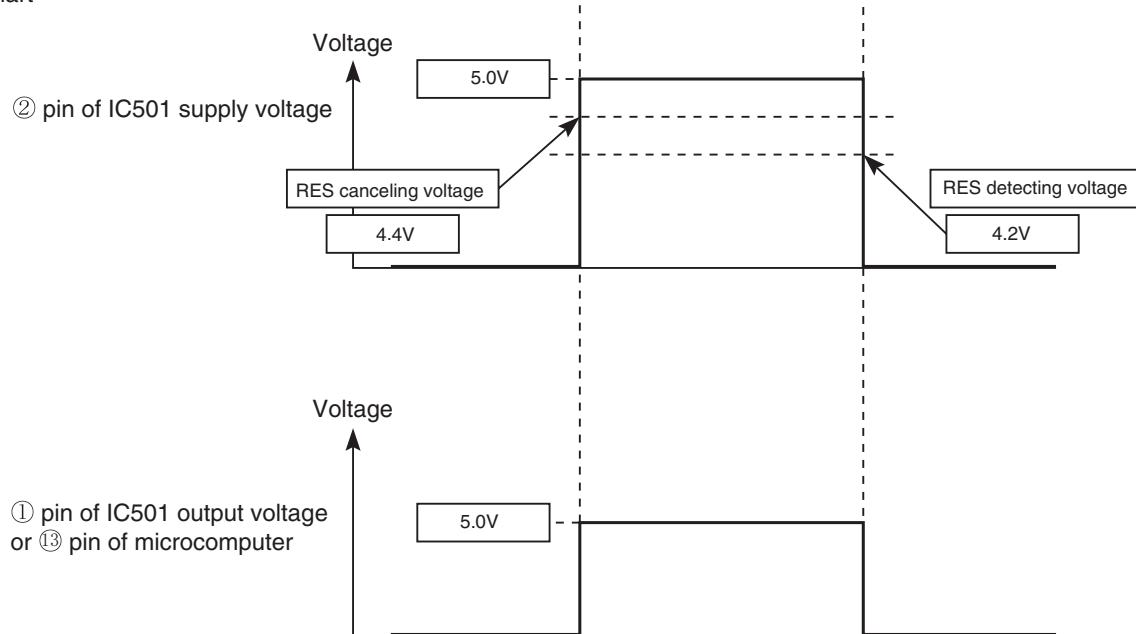


Fig.2-2

- Reset circuit is to initialize the indoor unit microcomputer when switching ON the power or after recovering from power failure.
- Microcomputer operates when ⑬ pin of the indoor unit microcomputer (reset input) is "Lo" for resetting and "Hi" for heating.
- Waveform of each part when switching ON the power and when shutting down is shown in the Fig. 2-2.
- After switching ON the power, ① pin of IC501 supply voltage and ⑬ pin of microcomputer becomes Hi when DC5V line rises and reaches approximately 4.4V or higher.
Then, resetting will be cancelled and microcomputer starts operating.
- After shutting down the power, ① pin of IC501 supply voltage and ⑬ pin of microcomputer becomes Lo when DC5V line falls and reaches approximately 4.2V or lower.
Then, the microcomputer will be in reset condition.

3. Drive circuit of the indoor fan motor

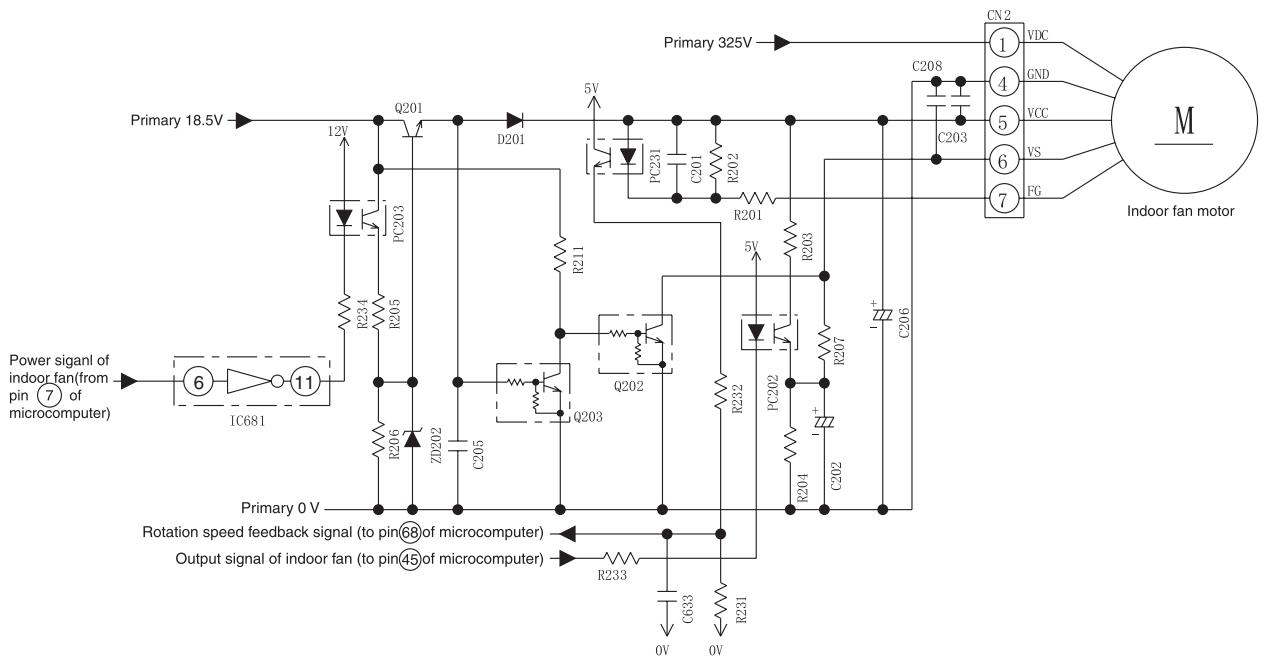


Fig. 3-1

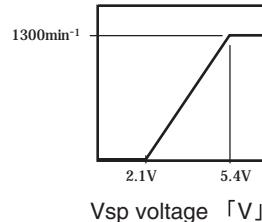
< The circuit check (For test) >

Name	Test point	Test voltage
Motor drive power	CN2 ① pin- ④ pin	About 325V
Motor control power	CN2 ⑤ pin- ④ pin	About 15V
Motor speed signal	CN2 ⑥ pin- ④ pin	About 2-6V
Motor rotation speed debug	CN2 ⑦ pin- ④ pin	About 7.5V

* The voltage above is all motor operation vol. when you start the test, take care of your connector, do not touch the different pin together.

* The voltage of pin ⑥ - pin ④ , pin ⑦ - ④ maybe different from above.

< Pin 6 - Pin 4 voltage one example >



Vsp voltage 「V」

* The different mode maybe have different FAN rotation speed.

< Typical circuit waveform >

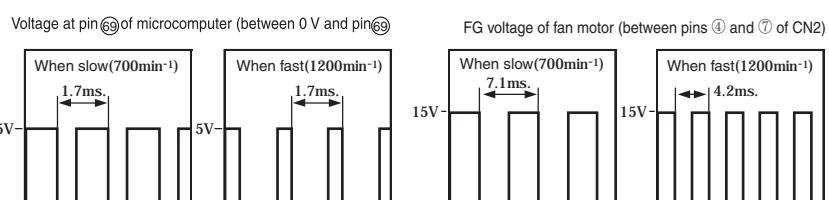


Fig. 3-2

- The indoor fan motor receives VDC (motor drive power supply), VCC (power supply for the control circuit inside the motor), and VS (speed command voltage) from CN2. The indoor fan motor returns an FG signal of a frequency that matches the rotation speed.
- VCC stabilizes the primary 18.5 V power supply into 15 V by using Q201 and supplies it.
- While on standby for a remote control signal, the Q201 shuts down the VCC and reduces the standby power.
- The VS receives a command voltage from the microcomputer. The VS terminal undergoes an analog voltage that matches the Lo level time ratio of the pulse signal from pin ④ of the microcomputer. (See Fig. 3-2.)
- The FG terminal undergoes a signal of 12 pulses per revolution of the motor shaft. By counting the pulse rate, the microcomputer recognizes the motor speed, thereby performing feedback control.

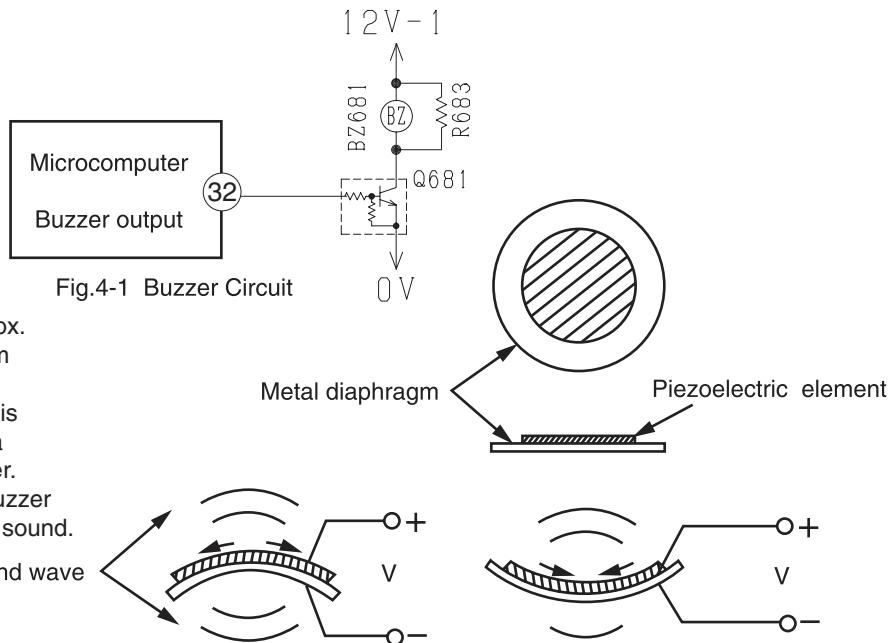
Caution

The indoor fan motor and drive circuit are connected to the primary power supply. They therefore have voltage to ground. Guard against electric shocks.

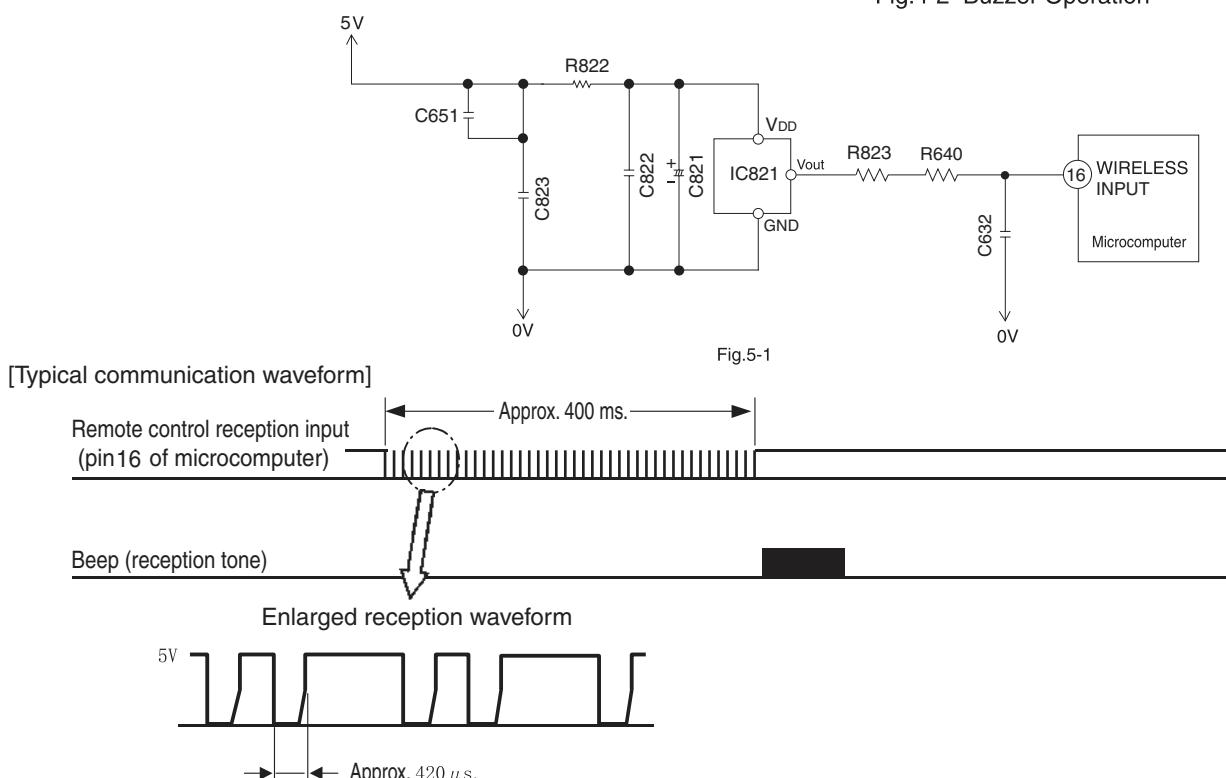
Caution

While the product is energized, do not under any circumstances detach or reattach a connector. Any such practice would cause a high voltage to run, resulting in the indoor fan motor and board circuit being destroyed. (Check the discharge of the C003 before detaching or reattaching the connectors.)

4. Buzzer Circuit



5 . Remote control reception circuit



- An infrared signal from the remote control unit is converted to an electrical signal by the remote control light-receiving unit (IC821) and is received by the microcomputer. Data is transmitted as digital data 0 and 1 by changing the interval of the basic pulses at about $420\mu s$.

6. Initial Setting Circuit (IC531)

- When power is supplied, the microcomputer reads the data in IC531 (E^2 PROM) and sets the preheating activation value and the rating and maximum speed of the compressor, etc. to their initial values.
- Data of self-diagnosis mode is stored in IC531; data will not be erased even when power is turned off.

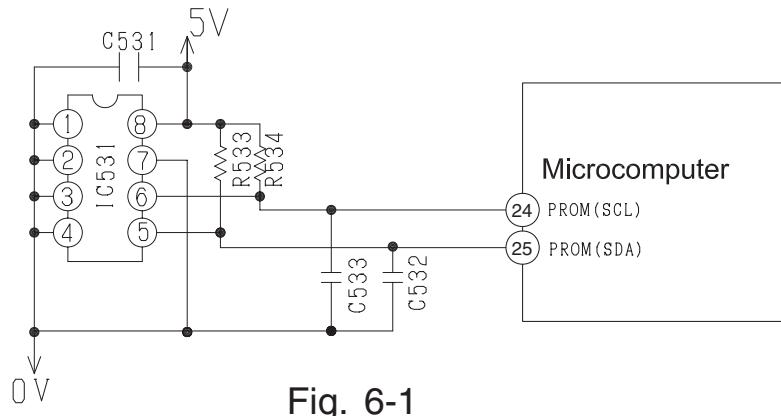


Fig. 6-1

7. Temporary Switch Circuit

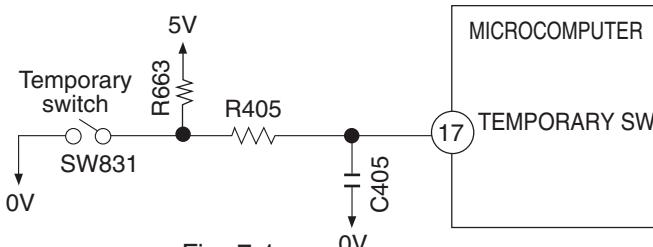


Fig. 7-1

- The temporary switch is used to operate the air conditioner temporarily when the wireless remote control is lost or faulty.
- The air conditioner operates in the previous mode at the previously set temperature. However, when the power switch is set to OFF, it starts automatic operation.

8. Room Temperature Thermistor Circuit

A room temperature thermistor circuit is shown in Fig. 8-1.

According to room temperature, the voltage of point (A) becomes as it is shown in Fig. 8-2.

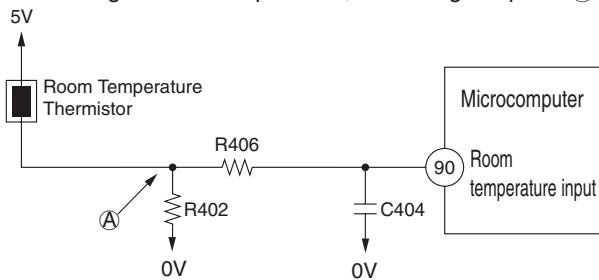


Fig. 8-1

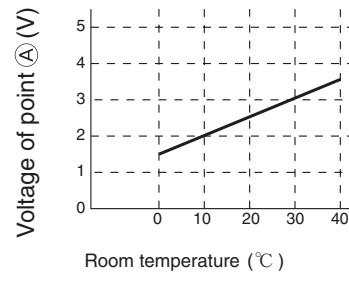


Fig. 8-2

9. Heat Exchanger Thermistor Circuit

Heat exchanger temperature is noticed inside the room

- (1) Preheating
- (2) Low-temperature defrosts at cooling and dehumidification operation time.
- (3) Not working of reversing valve or detection of opening of heat exchanger thermistor is controlled.

According to heat exchanger temperature, the voltage of point (A) becomes as it is shown in Fig. 9-2.

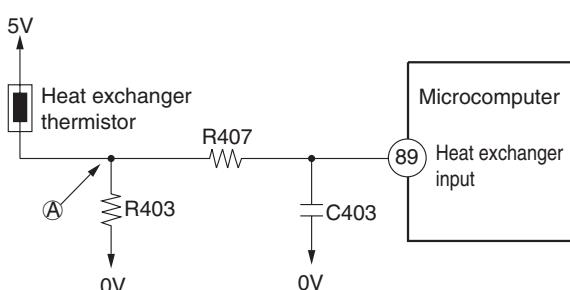


Fig. 9-1

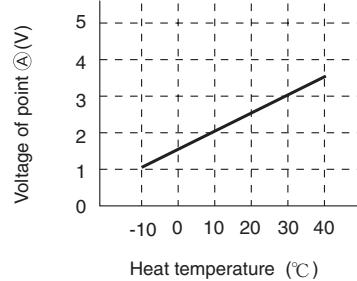


Fig. 9-2

10 . Dip-switch

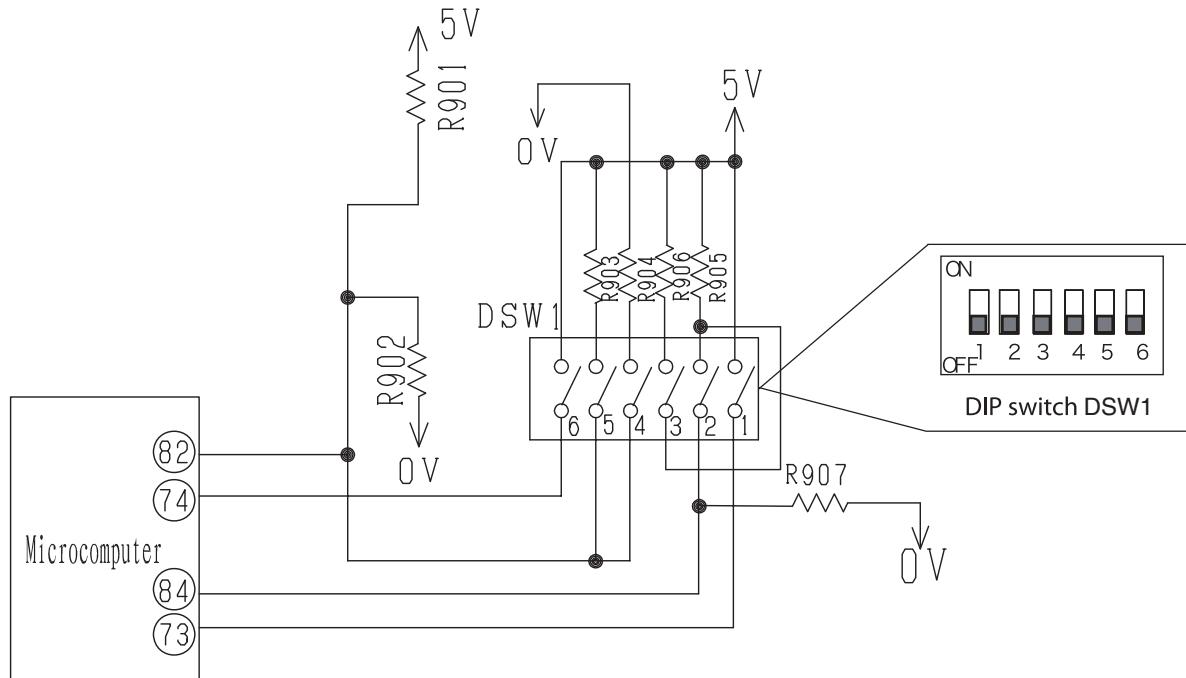


Fig.10-1 Dip switch Circuit

- Fig. 10-1 shows the dip switch circuit; the table shown in Fig.10-2 are function and setting position from ①–⑥ of the switch no.

SW No.	ITEM	FUNCTION					
		OFF*	ENABLE	ON	DISABLE		
1	AUTO RESTART	OFF*					
2	CARD KEY MODE	OFF*	DISABLE	ON	ENABLE		
3	CARD KEY LOGIC SELECT	OFF*	INPUT HIGH ACTIVE	ON	INPUT LOW ACTIVE		
4	HEATING/COOLING ONLY MODE SELECT	OFF*	HEATING & COOLING	OFF	HEATING ONLY	ON	COOLING ONLY
5	HEATING/COOLING ONLY MODE SELECT	OFF*		ON		OFF	ON HEATING & COOLING
6	REMOCON ID SELECT	OFF*	SELECT ID : A	ON	SELECT ID : B		

Fig.10-2 Functions of Dip switch

NOTE:

* Marking is position of shipping [FACTORY default setting]

11. Indoor/outdoor communication circuits

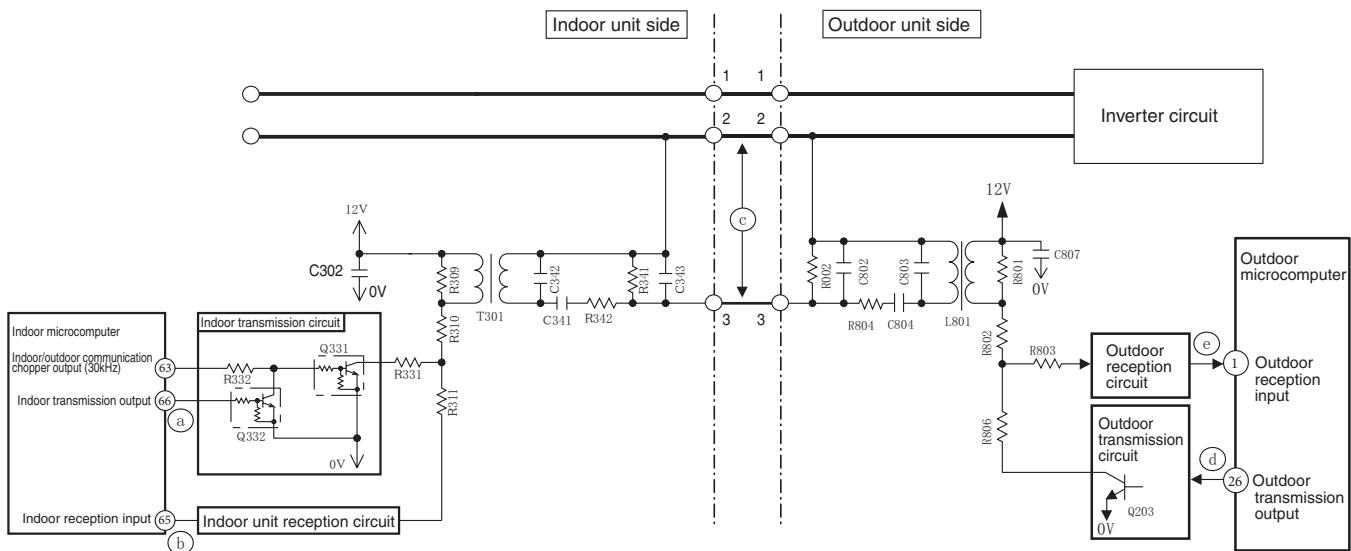
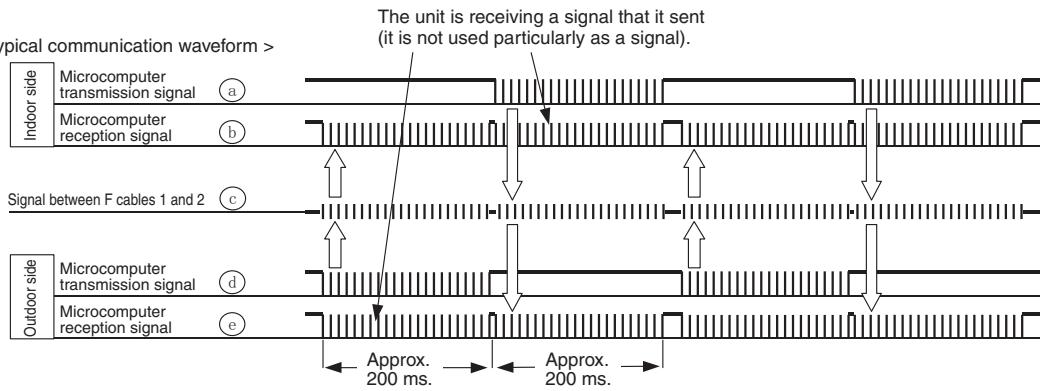


Fig. 11-1

< Typical communication waveform >



The unit is receiving a signal that it sent
(it is not used particularly as a signal).

< Enlarged waveform >

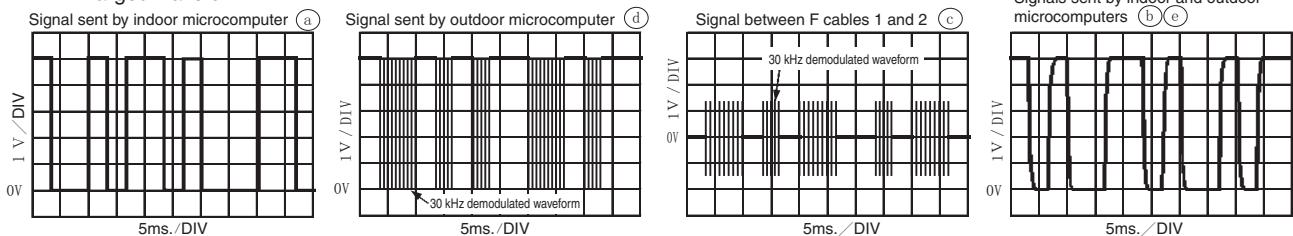


Fig. 11-2

- Indoor and outdoor communications are conducted by using lines 2 and 3 of F cable. Line 2 of F cable is shared with a transmission channel that powers the outdoor unit.
- Data communicated between the indoor and outdoor units are outputted from the microcomputer as serial signals and are transmitted as demodulated by a 30 kHz carrier wave. (Both the indoor and outdoor microcomputers directly output a signal demodulated at 30 kHz.)

Check

If a cable poorly inserted in the indoor terminal board or some other failure overheats the terminal board and the temperature fuse of the terminal board blows out, the power to the indoor communication circuit will be shut down to stop the communications function. (In that case, the failure will be displayed by the timer lamp blinking 3 times.)

Check

If communication fails between the indoor and outdoor units for some reason, the product will give a self-diagnosis display either by "the timer lamp blinking 3 times" or "the timer lamp blinking 12 times" depending on the cause.

12. Stepping motor drive circuit

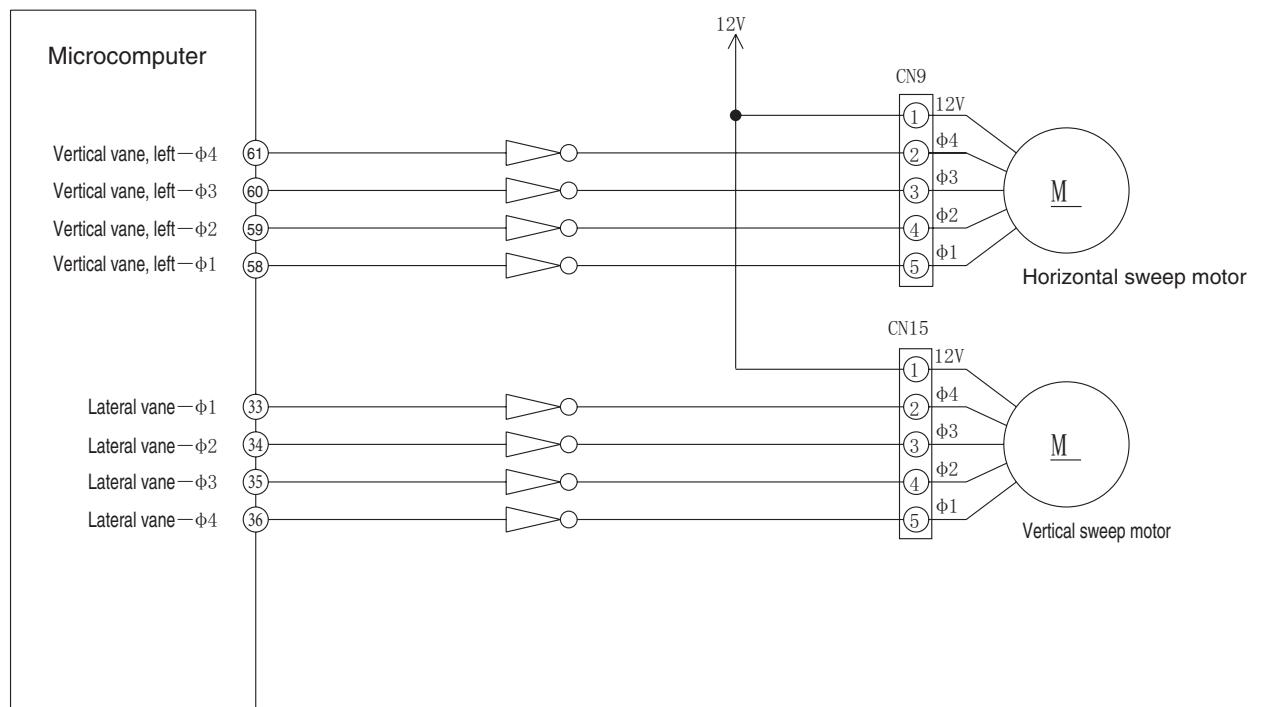


Fig. 12-1

[Connector circuit waveform while the motor runs]

Voltage waveforms of different phases as viewed from

the OV line while the motor rotor is turning counterclockwise

as viewed from the shaft side

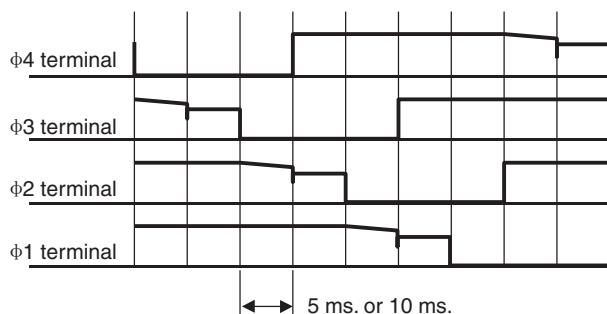


Fig. 12-2

- Each stepping motor runs as excited in 1 or 2 phases at 100 PPS or 200 PPS.
- The excitation pattern passes the microcomputer and then the driver IC and excites the coil of each stepping motor.
- Some models not need to install the horizontal sweep motor.

13. Infrared human presence sensor circuit

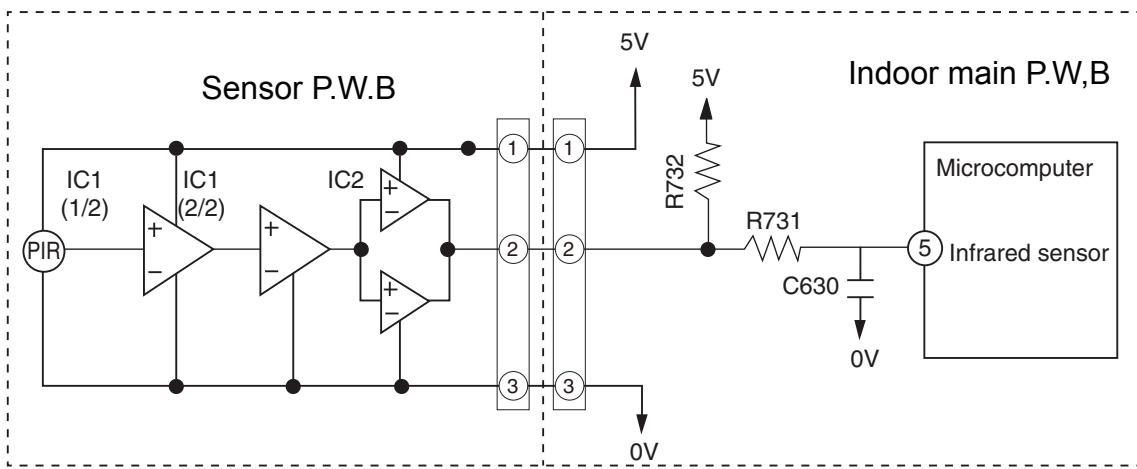


Fig.13 - 1

- With the infrared sensor, the air conditioner can detect the activity level in a room and adjust the temperature and humidity automatically, thus achieving the purpose of energy saving.
- When the activity level in a room is detected, the infrared sensor will be in operation. And a low-voltage output from the infrared sensor P.W.B. will be magnified by the amplifier comparator and be transformed the digital signal to microcomputer (MICON). (The infrared sensor output is [Hi] when the activity level is not detected. On the contrary, output is [Lo].)
- If the connector(CN22) is not inserted, it will be considered as no infrared sensor, and no self-diagnosis indication.

14. Cleaning unit drive circuit

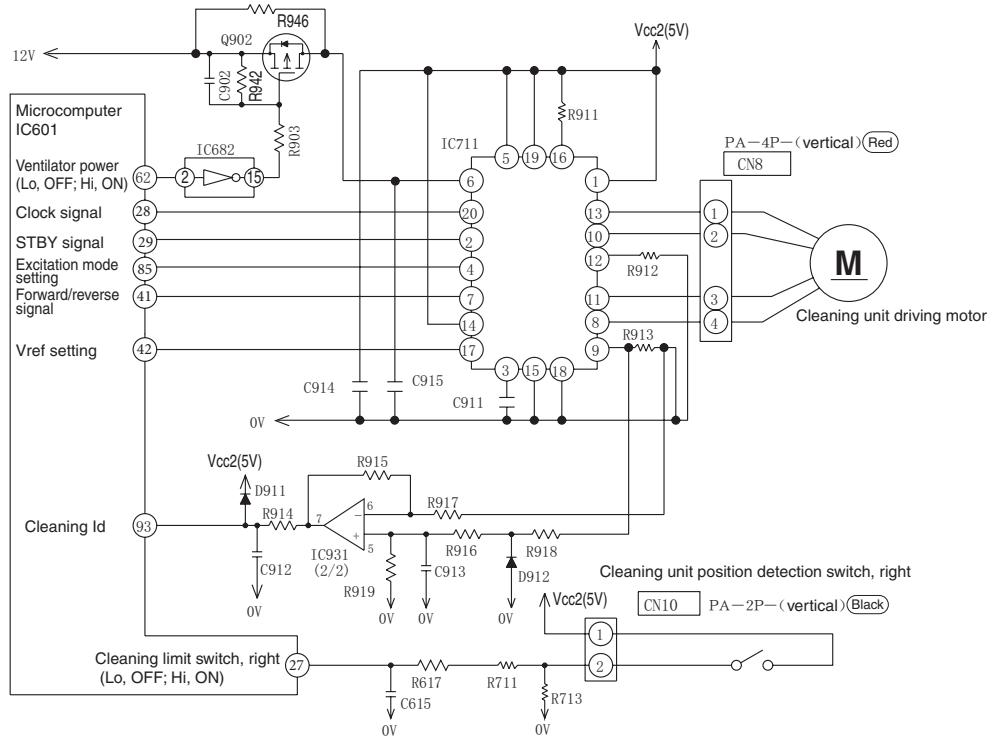
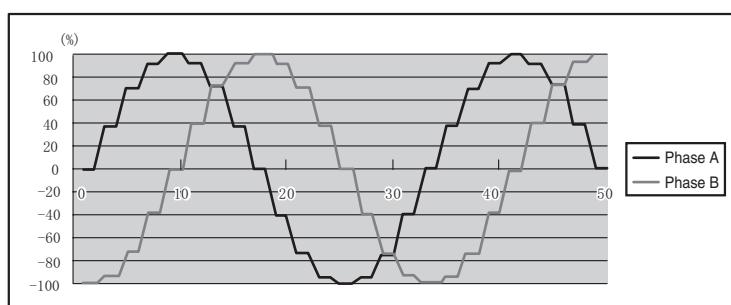


Fig. 14-1

- The cleaning wiper scrapes out any dirt and dust from the filter mounted at the suction inlet up to the dust catcher, thereby cleaning the filter.
- The cleaning unit is activated only when being initialized at power-on and in either of the operation modes: "manual cleaning", "automatic cleaning" and "forcible cleaning".
- In either of the above operation modes, control of the microcomputer (MICON) will turn on the Q902, with the 12 V component passing the driver IC (IC711) and powering the cleaning unit driving motor.
- The cleaning unit driving motor will, by using the driver IC (IC711), perform micro-step sine wave drive (excitation of W1-2). When moving from the right to the left, the motor current will show a waveform as illustrated in the chart below. The waveform may change slightly according to the rotation speed.



- The cleaning wiper moves rightward as the indoor unit is viewed from the front. Pressing the cleaning position detection switch will return the product to its initial position. (If it is already in its initial position, it will remain there.)

The wiper will start at its initial position and move leftward. It passes by the dust catcher and, as it reaches the left end, the cleaning unit driving motor will reverse and change its direction rightwards.

When the cleaning wiper presses the cleaning unit position detection switch mounted at the right end of the indoor unit, the cleaning operation will be complete.

- The cleaning unit drive circuit comes equipped with a current detection circuit. Normally it runs in silent mode. When the load increases, however, it will switch to high-power mode and increase the torque of the cleaning unit driving motor.
- The peak motor current in silent mode is about 83 mA, with the peak motor current in high power mode being between about 200 mA and 300 mA.
- Switchover is judged by recognizing changes in values entered into the microcomputer as the current detection circuit smoothes the strains in the motor current waveform. At that time, mode switchover is conducted when the change ratio of the microcomputer input is found to have exceeded about 30%.

※Normally, the product will not switch to high-power mode unless it is mechanically locked or under a similar large load or in another special environment which may deteriorate the grease performance.

Caution

When the cleaning wiper has increased in load or switched to high-power mode, it may become slightly noisy. But this is not a sign of breakdown.

- If the cleaning wiper undergoes a mechanical lock heavy enough to make it unmovable even in high-power mode, the product will detect the lock and cause the clean lamp to remain on for 4 seconds and to blink for 1 second, thereby producing an error message to alert the user.

※Even when the product has entered an error-blinking state where the clean lamp remains on for 4 seconds and off for 1 second, the product will be trouble-free in normal operation (such as cooling and heating).

When product locking is detected, it may be in either of its 2 modes.

Firstly, when the wiper is mechanically locked while moving from the right leftwards, the current is detected to detect the locking. At that time, the cleaning wiper moves rightwards from the locked position and stops at the initial position at the right end.

Lock judgment is performed by the strains in the motor current waveform and recognizing the changes in the microcomputer input by using the current detection circuit. At that time, the change ratio of the microcomputer input is recognized to have exceeded the level of about 15%, and is then judged to have locked.

Secondly, when the wiper is mechanically locked when moving from the left rightwards, the product will detect that the wiper does not reach the right-end limit switch even after a specified time limit and detects the lock.

※ The mechanical lock mentioned above is referred to when the filter is not inserted as specified or when it has received non-dust foreign matter.

However, such locking may go undetected depending on the way the filter has ejected or on the size of the foreign matter involved. This is because the lock detection threshold is set to a high level to prevent erroneous detection.

Reference

When mechanical locking is detected and the clean lamp has entered a mode where it remains on for 4 seconds and off for 1 second, and when attempts to remove the cause of the mechanical locking keeps failing because of the cleaning wiper interfering, then remove the cause of the mechanical locking by doing the following:

If the left side of the cleaning wiper is responsible for the locking, then detach the power plug and reattach it. The cleaning brush will then move rightwards.

If the right end of the cleaning wiper is responsible for the locking, detach the power plug and reattach the plug while holding down the cleaning limit switch. The cleaning brush will then move leftwards.

15. Run status and alarm signal output circuit

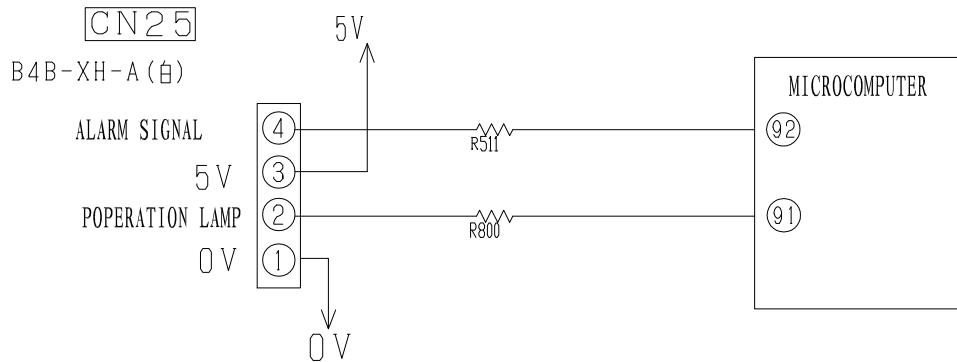


Fig.15-1

Fig.15-1 is the control circuit of run status and signal output in main PWB. The pin② of CN25 is used to show run status and the pin④ of CN25 is used to warn people when failure occurrence. If customer want to use this function, need to use the adapter(sold separately) to achieve it. the adapter is optional and the detail circuit refer to following circuit.

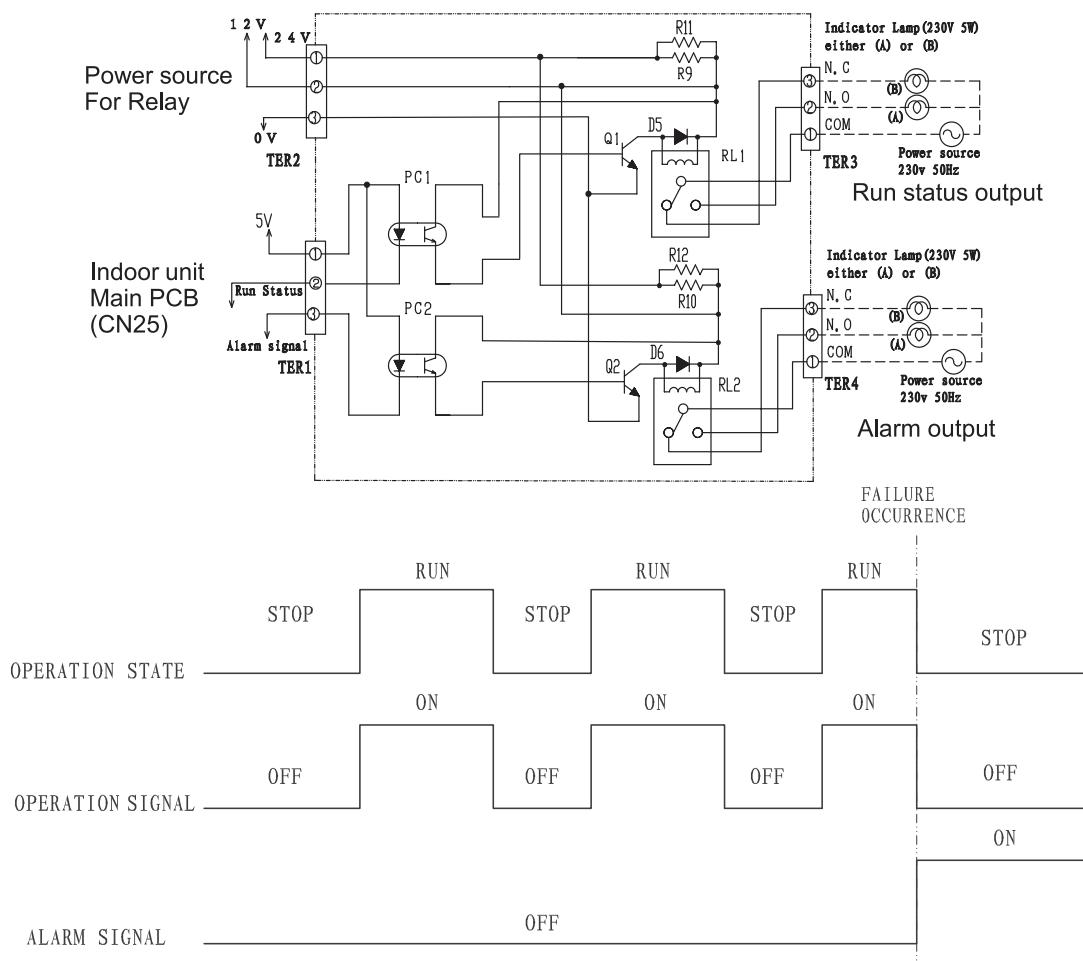
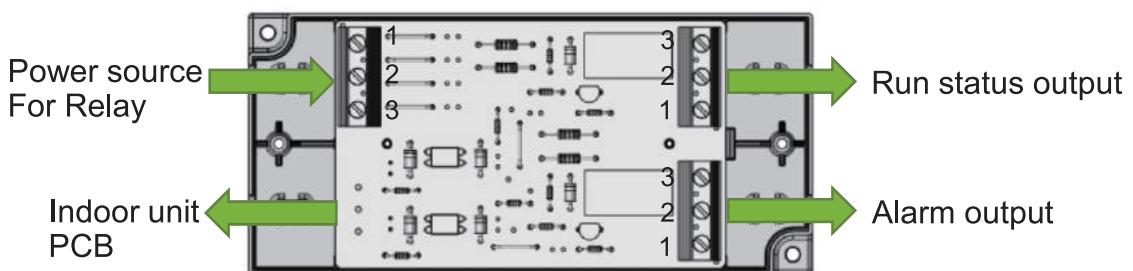


Fig.15-2

RL1 is on When air-condition is running and is off When air-condition is stopping. We can know the status of air-condition by RL1. RL2 is off When air-condition in normal condition and is on when air-condition in failure occurrence, we can repair it in time.



- When operating RAC, Run Status signal is output.
- When operation stops, the signal disappears.
- When RAC gets malfunction, alarm signal is output.
- Each signal has to be taken out through the Adapter.

※ The adapter must to be used because of noise interference. The noise will cause air-condition failure. the voltage from customer's home supply to adapter must be in the 5 ~ 24V, the current is less than 10mA. If the voltage is lower than 5V, optocouplers will not be action; once the voltage is higher than 24V, optocouplers adapter will be damaged.

Load side is a high voltage line, please be careful from electric shock and install the Indication Lamp as near as possible to the Relay Kit. The maximum length of the wiring cable should be below 100m.

DESCRIPTION OF MAIN CIRCUIT OPERATION

MODEL RAC-25/35WSE

1. Power Circuit

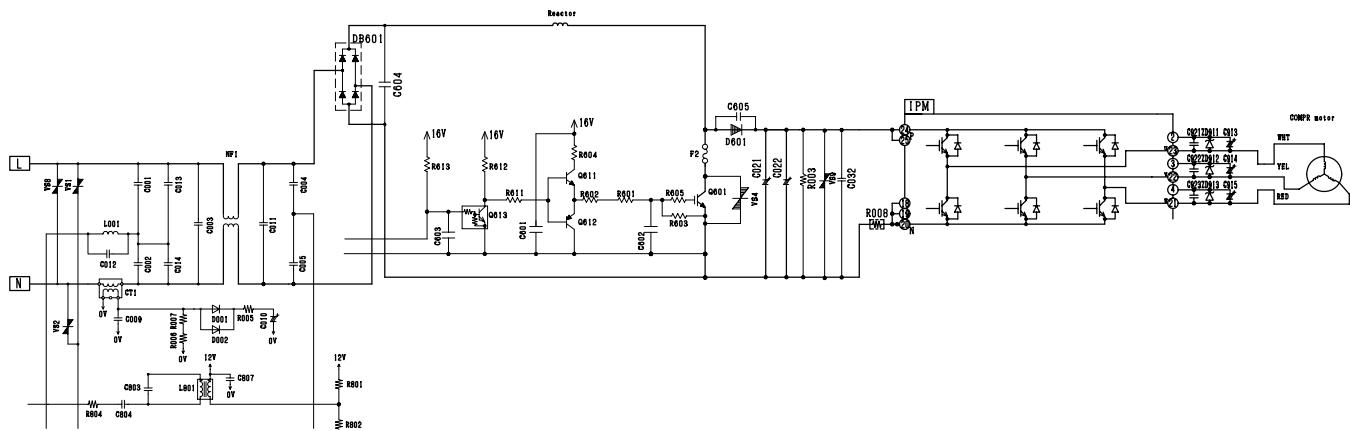


Fig 1-1

- ※ This circuit full-wave rectifies 230VAC applied between terminals L and N and boosts it to a required voltage with the IPM to create a DC voltage.

The voltage become 300-330V when the compressor is operated.

※ Main parts

(1) Intelligence Power Module (IPM)

A module that constitute by an inverter part.

(2) Diode Stack (DB601)

These rectify the 230VAC from terminal L and N to a DC power supply.

(3) Smoothing capacitors (C021-C022, 3.5μF, 420V)

<Reference>

- ※ In case of Intelligence Power Module malfunction or connection failure immediately after compressor starts, its may stop due to error of [abnormal low speed], [switching failure],[Ip stop] and others.

<Reference>

- ※ If diode stack (DB601) are faulty, DC voltage may not be generated and the compressor may not operate at all. Also be aware that the 15A fuse might have blown.

- ※ This smoothes (averages) the voltage rectified by the diode stack.

(4) IGBT to improve efficiency (Q001)

- ※ It will improve the efficiency during compressor load become heavy when current flow thru the chopper period of Q001.

2. Power circuit (Low voltage)

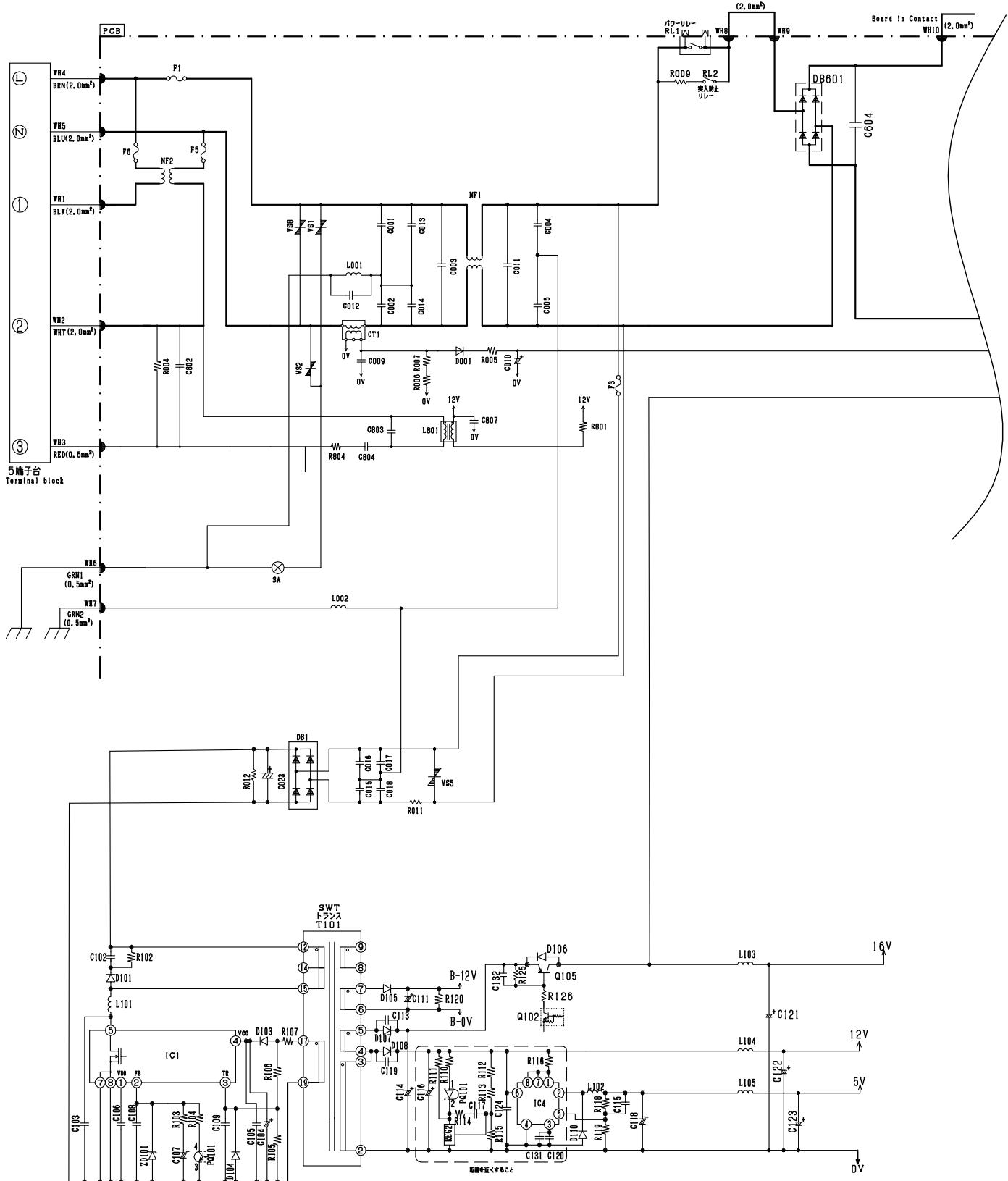


Fig. 2-1

- The 230V AC voltage is rectified to DC voltage (B-12V, 16V, 12V, 5V) pass through switching control IC (IC1), switching transformer.

(1) B-12V Power supply for electrical expansion valve.

(2) 16V Power supply for IPM driver circuit of compressor and fan motor, IGBT action.

(3) 12V Power supply for 4 way valve relay, power relay, inrush current relay, motor current amplification,

(4) 5V Power supply for microcomputer, peripheral circuits.

Main parts

- (1) C001,C002,C003,C004,C005,C011,C013,C014, NF1

These absorb electrical noise generated during operation of compressor and also absorb external noise entering from power line to protect electronic parts.

- (2) Surge Absorber, Varistor 1,2,5,8.

These absorbs external power surge.

- (2) IC4

DC/DC convertor IC (DC12V → DC5V).

3. P.W.B. for power circuit

Voltage specification of power circuit as shown in below table.

<Checking point>

Output	Spec	Main load	Measuring point	Example of possible failure mode.
5V O/P	$5 \pm 0.4V$	Micon, Thermistor	Tester \oplus : L105 (JUMPER) Tester \ominus : D110 (EARTH)	Outdoor not operate, no blinking indication
12V O/P	$12 \pm 0.5V$	Micon, IC2, 3, 4 Relay circuit	Tester \oplus : L104 (JUMPER) Tester \ominus : D110 (EARTH)	Outdoor not operate, no blinking indication
16V O/P	$15.5 \pm 1.5V$	IPM for Comp IPM for DC fan	Tester \oplus : L103 (JUMPER) Tester \ominus : D110 (EARTH)	Stop : LD301 3, 4 or 12 times blinking
B-12V O/P	$13 \pm 2.5V$	Expansion valve	Tester \oplus : R120 (B-12V) Tester \ominus : R120 (B-0V)	Stop : LD301 5 times blinking

※ Power circuit for P.W.B. can consider normal if the result is satisfied with above specification.

4. Reversing valve (4-way valve) control circuit

- This model is equipped with a reversing valve (4-way Valve).
- The reversing valve (4-way Valve) "slides" the valve in the specified direction for each operating mode and switches the route of refrigerant and holds the route with a built-in permanent magnet.
- According to an operation command from the indoor unit microcomputer, the reversing valve (4-way Valve) control circuit applies current to the reversing valve (4-way Valve) coil in the specified direction, for each operating mode and slides the valve.
- Just before the compressor starts operation, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- During forced cooling operation, just after the forced cooling switch turns on, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- When the operation stops, the position of the valve before the stop is held.

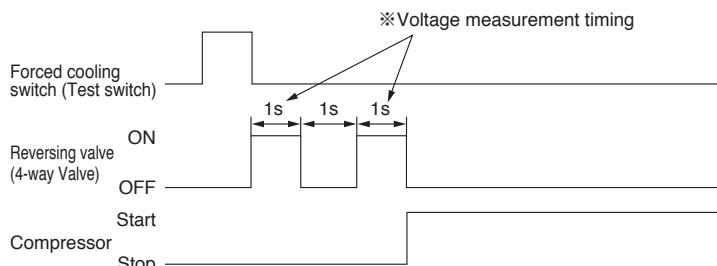


Fig. 4-1

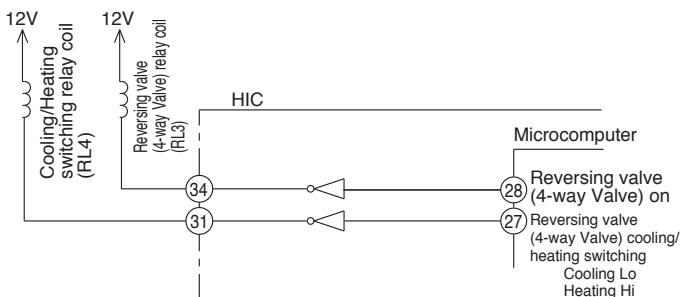
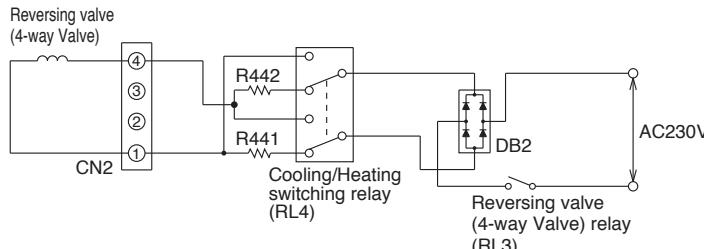


Fig. 4-2

- Before checking the application of current to the reversing valve (4-way Valve), disconnect the connector (CN2) and measure the resistance of both ends of the connector, to see if it is $[2500\Omega \pm 10\%]$. Only when the resistance is normal, check the application of current using the following procedures.
If the resistance is abnormal, it is caused by either; breakage of a lead wire, or failure of the reversing valve (4-way Valve).
- The voltage, when measured by a tester during the application of current to the reversing valve (4-way Valve) (when the voltage is measured)
※Switches the indoor unit to the "Ion Mist operation and air cleaning operation", and keep pressing the "Test switch" of the outdoor unit electrical part from 1 sec to below 5 sec (while the self-diagnosis lamp LED301 is on).
Afterwards, when the "Test switch" is released, the application of current starts after 1 sec elapses. (Forced cooling operation)

Operating mode		Cooling operation (including forced cooling operation)	(Reference) Heating operation
Tester and CN2 terminal connection point		⊕ terminal of tester to CN2 pin ④ ⊖ terminal of tester to CN2 pin ①	⊕ terminal of tester to CN2 pin ① ⊖ terminal of tester to CN2 pin ④
Types of testers	Analog tester	The tester indicates about 80 VDC and returns to 0 V, and indicates about 80 VDC again.	The tester indicates about 160 VDC and returns to 0 V, and indicates about 160 VDC again.
	Digital tester	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.

※In each operating mode, if the tester is reverse-connected to the CN2 terminal, the tester indicates a value on the – (negative) side.

- At the voltage measurement timing, when the voltage is measured with a tester, if the tester indicates the values as shown in the table above, the circuit is functioning normally. (Each tester indicates values differently. Since it is often difficult to read the values of a digital tester, it is recommended to measure voltage with an analog tester.)
- Since the current is applied only twice in 1 sec, if the timing is missed, correct operations cannot be measured.
- If the main body of the reversing valve (4-way Valve) is functioning normally, it clicks twice synchronously with the voltage measurement timing.
If this sound is heard, the reversing valve (4-way Valve) is functioning normally.
- If the checking of the application of current becomes abnormal, it is a failure of an electrical part.

5. Temperature Detection Circuit

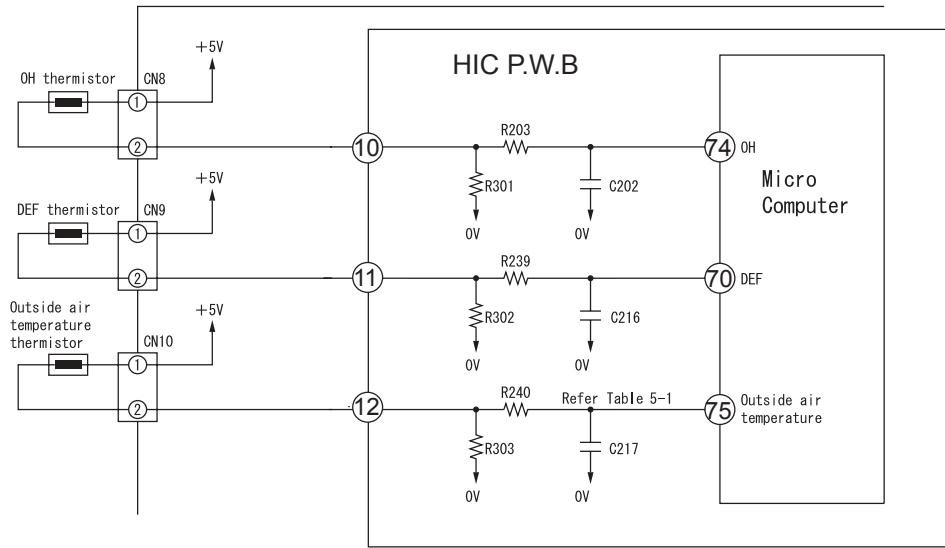


Fig. 5-1

- OH thermistor circuit detect the temperature at the surface of compressor head, DEF thermistor circuit detect the defrosting operation temperature.
- A thermistor is a negative resistor element which has characteristics that the higher(lower) the temperature, the lower(higher) the resistance.
- When the compressor is heated, the resistance of the OH thermistor becomes low and $\oplus 5V$ is divided by OH thermistor and R301 and the voltage at pin 74 of microcomputer.
- Compare the voltage at microcomputer pin 74 and setting value stored inside. If the value exceed the set value, microcomputer will judge that the compressor is overheated and stop the operation.
- When frost is formed on the outdoor heat exchanger, the temperature at the exchanger drops abruptly. Therefore the resistance of the DEF thermistor becomes high and the voltage at pin 70 of micro computer drops. If this voltage becomes lower than the set value stored inside, microcomputer will enter the defrost control.
- During defrost operation, the microcomputer will transfer the defrosting condition command to indoor unit via SDO pin of interface of IF transmission output.
- The microcomputer read the outdoor Air temperature by Outside Air thermistor and transfer it to the indoor unit, thus controlling the compressor rotation speed according to the set value in the EEPROM of indoor unit and switching the operation mode (outdoor fan on/off etc.) to DRY mode.

Below table show the typical values of outdoor temperature in relation to the voltage.

Table 5-1

Outside Air Temperature (°C)	-10	0	10	20	30	40
Voltage at both side of R303 (V)	1.19	1.69	2.23	2.75	3.22	3.62

<Reference>

When the thermistor is open, open condition or disconnect, microcomputer pin 70, 74, 75 are approx. 0V;

When thermistor is shorted, they are approx. 5V and LD301 will blink 7 times.

However, an error is detected when only the OH thermistor is shorted and will enter blinking mode after 12 minutes start the compressor operation.

6. Electric expansion valve circuit

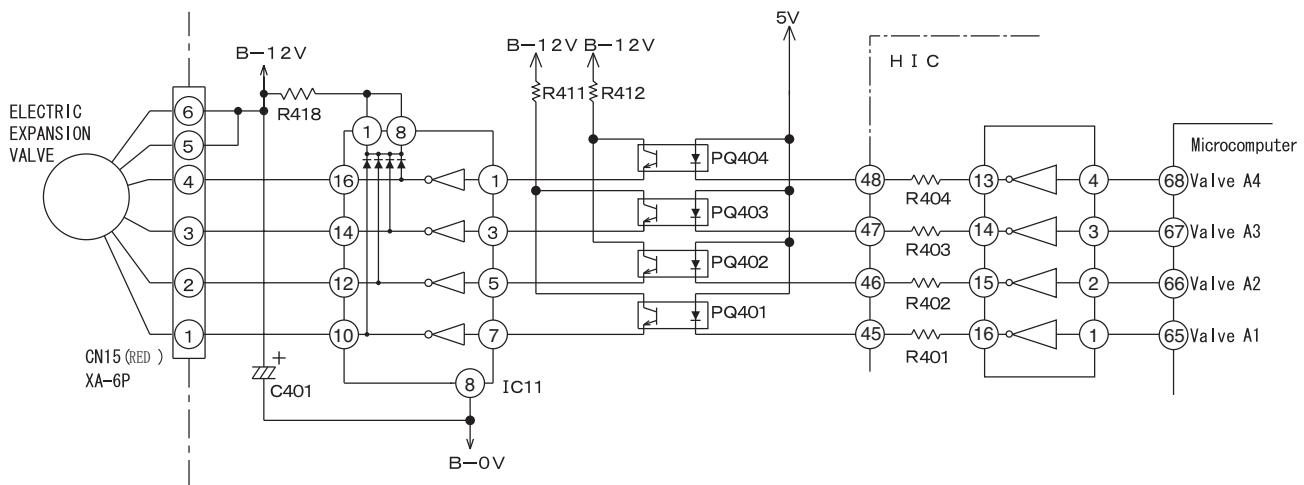


Fig. 6-1

- The electric expansion valve is driven by DC12V. Power is supplied to 1 or 2 phases of 4-phase winding to switch magnetic pole of winding in order to control the opening degree.
- Relationship between power switching direction of phase and open/close direction is shown below. When power is supplied, voltages at pins ④ to ① of CN15 are about 0.9V and 12V when no power is supplied. When power is reset, initial operation is performed for 10 or 20 seconds. During initial operation, measure all voltages at pin ④ to ① of CN15 by using a multimeter. If there is any pin with voltage that has not changed from 0.9V or 12V, expansion valve or microcomputer is broken.
- Fig. 6-2 shows logic waveform when expansion valve is operating.

Table 6-1

CN15 pin no.	Wire	Drive status							
		1	2	3	4	5	6	7	8
①	WHT	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
②	YEL	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
③	ORG	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
④	BLU	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

Operation mode
1→2→3→4→5→6→7→8 VALVE CLOSE
8→7→6→5→4→3→2→1 VALVE OPEN

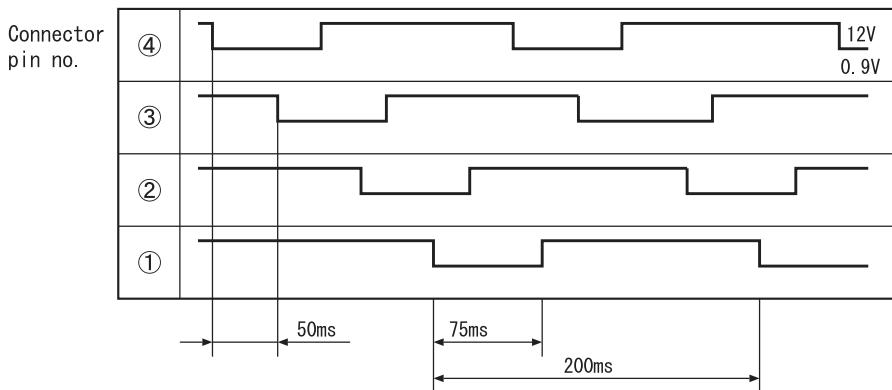


Fig. 6-2

With expansion valve control, opening degree is adjusted to stabilize target temperature by detecting compressor head temperature. The period of control is about once per 20 seconds and output a few pulse.

7. Outdoor DC fan motor control circuit

- This model is built with DC fan motor control circuit inside outdoor electrical unit.

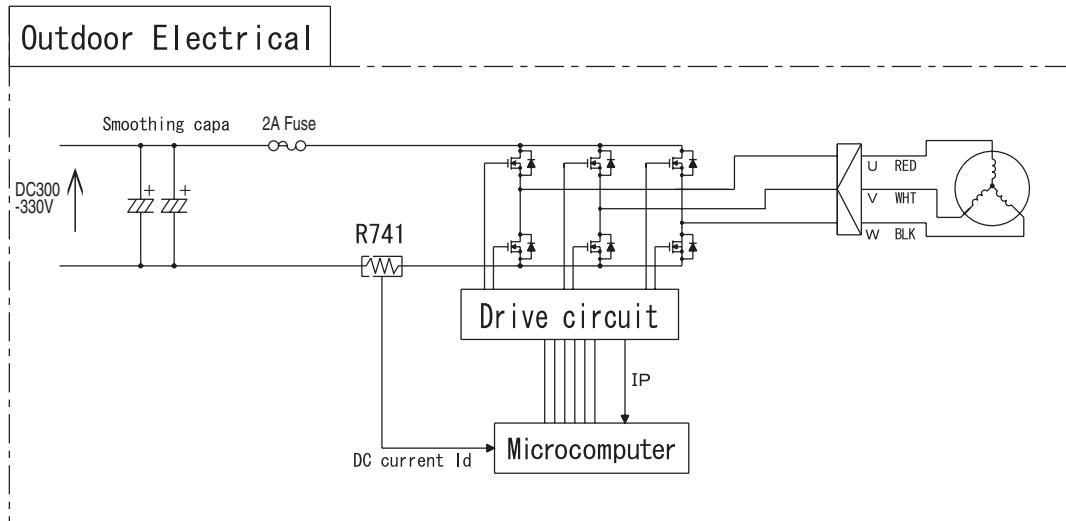


Fig 7-1

This DC fan motor is controlled by outdoor microcomputer that follows the operating instruction received from indoor microcomputer. The DC current that flows from R741 will measure actual operation speed and control the rotation to follow the operating instruction. Based on this DC current it will detect an over current and other fan motor failure.

(1) Fan motor speed controller during starting

Due to the interference of strong wind etc., operation movement is changed based on fan direction and rotation speed as shown below during starting of operation.

In addition, the fair wind is defined as wind that blows to outside direction using Mouth Ring part.

At strong and contrary wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition becomes weak.

At contrary wind ... The rotational speed is controlled in fair wind direction after it slowly reduces the speed and finally stops.

At fair wind ... The rotational speed is controlled as it is.

At strong fair wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition becomes weak.

(2) Fan motor speed controller during unit operating

There is a case where fan rpm is reduced during rotation caused by interference of strong wind.

If this condition continues for a long period, the fan will stop rotating. (LD301 : 11 times blinking)

The unit will restart according to control as per during start (1).

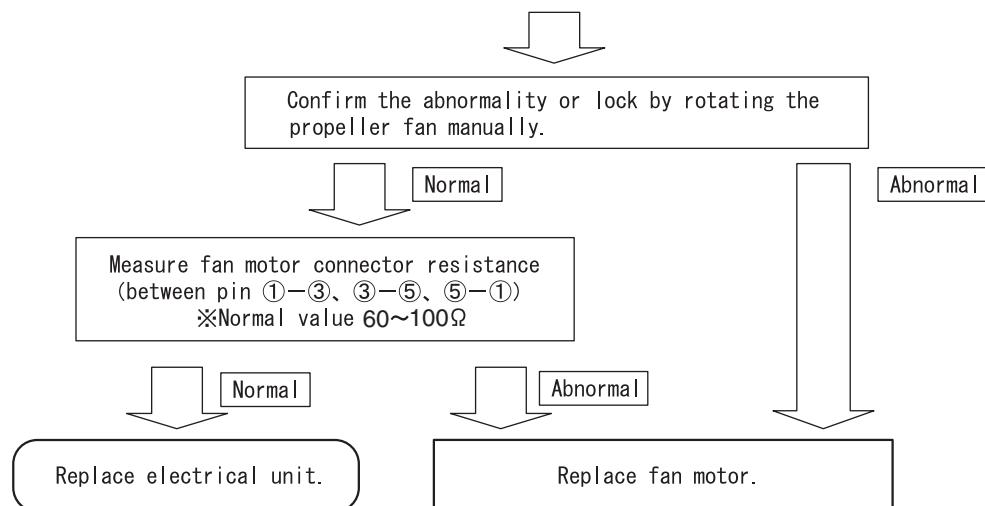
(3) Method of confirming self diagnosis LD301 lamp : 12 times blinking

If the unit stop and LD301 on the pwb blinking 12 times [fan lock stop is detected], follow below steps to confirm it.

1. Fan lock stop is detected when something has disturb the fan rotation by inserting material into propeller fan or ice has growing inside outdoor unit caused by snow.
Remove it if found something is bloking the fan.
2. Confirmed that CN24 connector is securely inserted. Fan lock stop is detected also when connector is not properly inserted. Please securely insert if found any disconnection.
3. Fan lock stop also can be detected where strong wind blown surrounding the unit.
Please confirm after restart the unit. (It may take few minutes to operate the compressor)
It is not a malfunction of electrical unit or fan motor if the unit run continuesly after restart the unit.
4. Check fan motor condition as below procedure.

[Checking Fan Motor] procedure

Shut down supply and wait for 10 minutes for voltage to go down. Confirm it by measuring the DC voltage (must be below 10V). Then disconnect fan motor connector (CN24).



5. Reconnect again fan motor connector (CN24).

※Please confirm above checking procedure if found 2A fuse blown.

If fan motor is broken, replace both electrical unit and fan motor.

Caution

※Beware of electric shock due to high voltage when conducting an operation check.

Power supply for DC fan motor and compressor is common (DC300-330V).

MODEL RAC-50WSE

1. Power Circuit

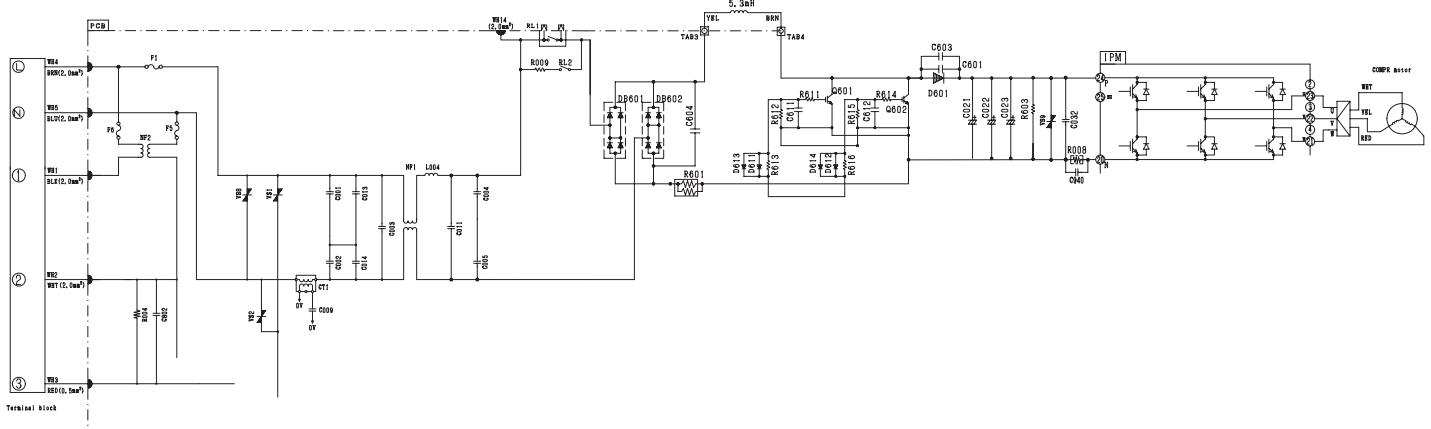


Fig 1-1

※ This circuit full-wave rectifies 230VAC applied between terminals L and N and boosts it to a required voltage with the IPM to create a DC voltage.

The voltage become 300-330V when the compressor is operated.

※ Importance component

(1) Intelligence Power Module (IPM)

A module that constitute by an inverter part.

(2) Diode Stack (DB601, DB602)

These rectify the 230VAC from terminal L and N to a DC power supply.

<Reference>

※ In case of Intelligence Power Module malfunction or connection failure immediately after compressor starts, its may stop due to error of [abnormal low speed], [switching failure],[Ip stop] and others.

<Reference>

※ If diode stack (DB601,DB602) are faulty, DC voltage may not be generated and the compressor may not operate at all. Also be aware that the 25A fuse might have blown.

(3) Smoothing capacitors (C021-C023, 500μF, 450V)

This smoothes (averages) the voltage rectified by the diode stack.

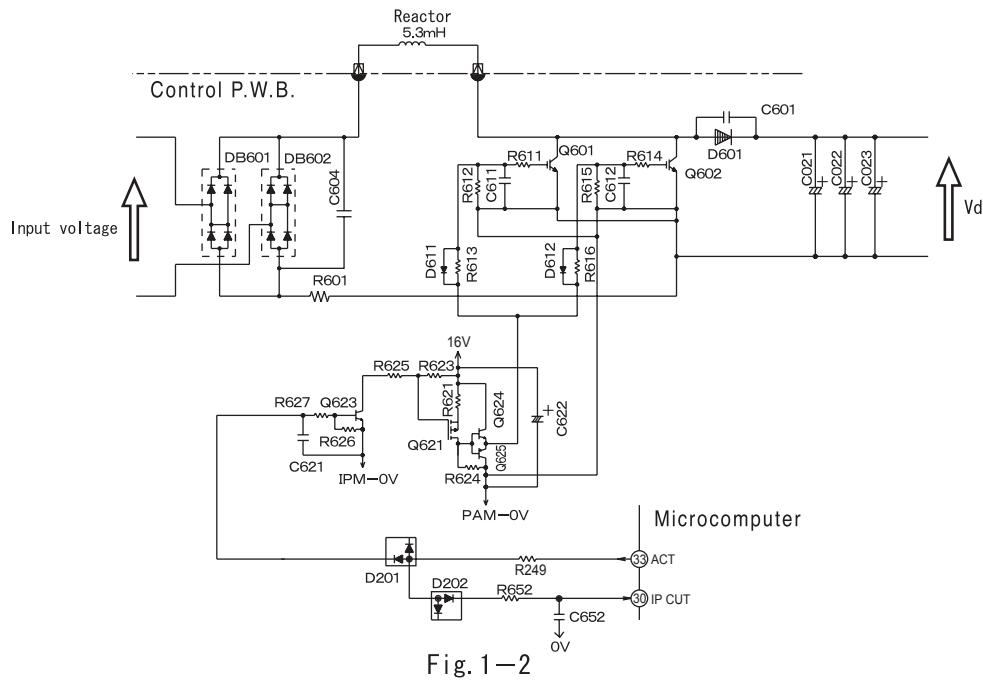


Fig. 1-2

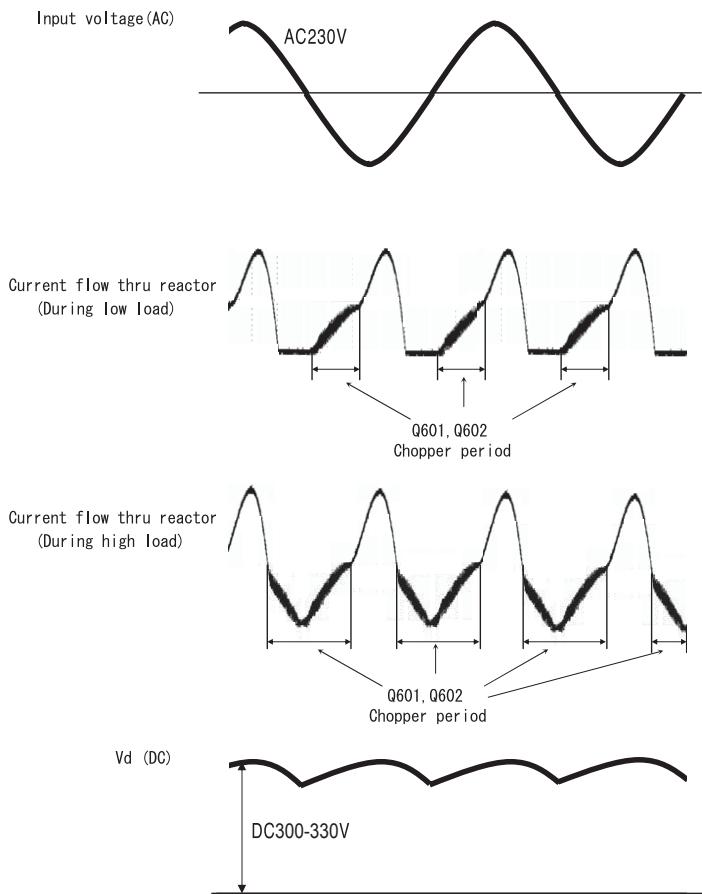


Fig. 1-3

(4) IGBT to improve efficiency (Q601, Q602)

It will improve the efficiency during compressor load become heavy when current flow thru the chopper period of Q601, Q602.

2. Power circuit (Low voltage)

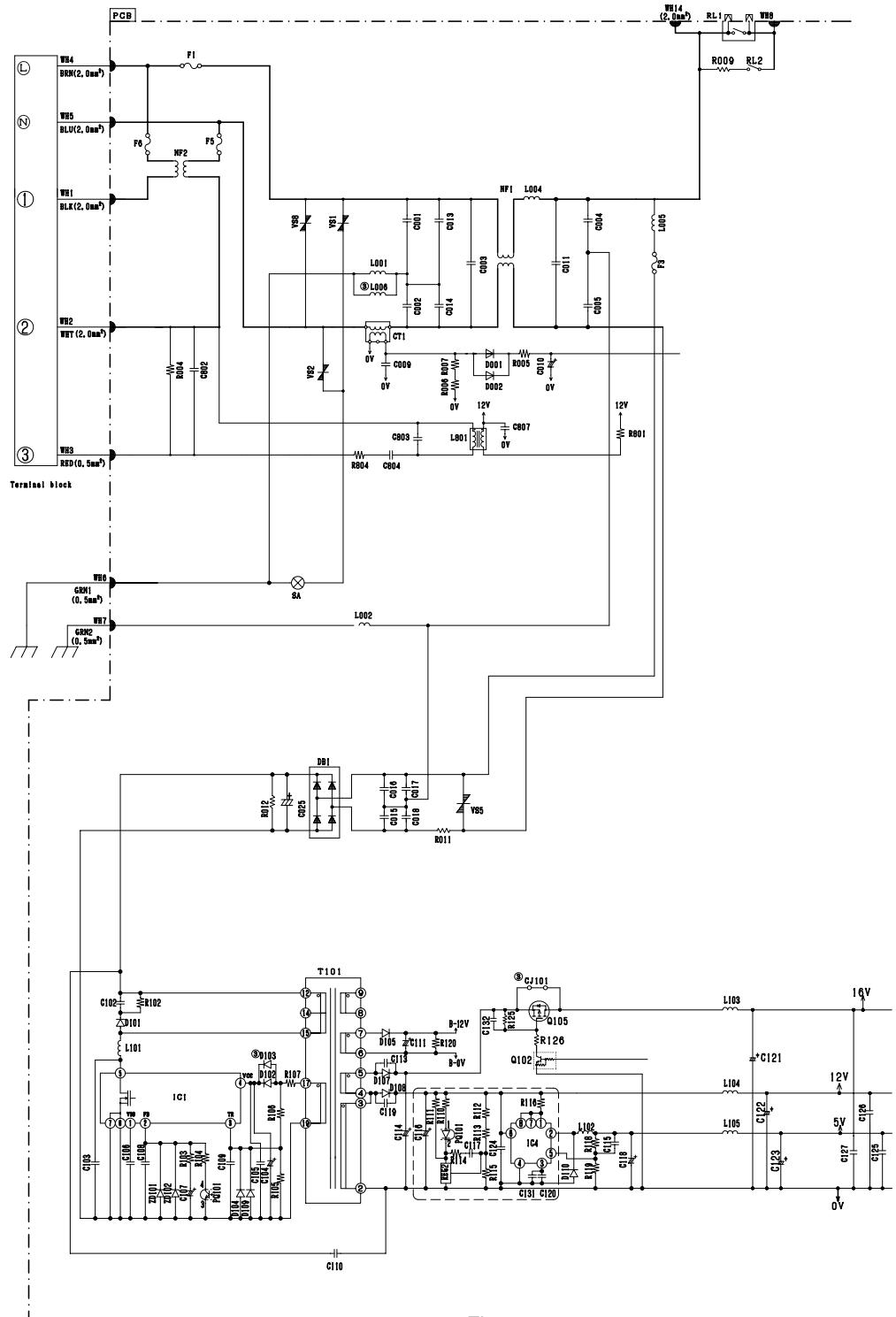


Fig. 2-1

- The 230V AC voltage is rectified to DC voltage (B-12V, 16V, 12V, 5V) pass through switching control IC (IC1), switching transformer.
- (1) B-12V Power supply for electrical expansion valve.
- (2) 16V Power supply for IPM driver circuit of compressor and fan motor, IGBT action.
- (3) 12V Power supply for 4 way valve relay, power relay, inrush current relay, motor current amplification,
- (4) 5V Power supply for microcomputer, peripheral circuits.

Main parts

(1) C001,C002,C003,C004,C005,C011,C013,C014, NF1

These absorb electrical noise generated during operation of compressor and also absorb external noise entering from power line to protect electronic parts.

(2) Surge Absorber, Varistor1,2,5,8.

These absorbs external power surge.

(2) IC4

DC/DC convertor IC (DC12V → DC5V).

3. P.W.B. for power circuit

Voltage specification of power circuit as shown in below table.

<Checking point>

Output	Spec	Main load	Measuring point	Example of possible failure mode.
5V O/P	$5 \pm 0.4V$	Micon, Thermistor	Tester \oplus : L105 (JUMPER) Tester \ominus : D110 (EARTH)	Outdoor not operate, no blinking indication
12V O/P	$12 \pm 0.5V$	Micon, IC2, 3, 4 Relay circuit	Tester \oplus : L104 (JUMPER) Tester \ominus : D110 (EARTH)	Outdoor not operate, no blinking indication
16V O/P	$15.5 \pm 1.5V$ $-1.0V$	IPM for Comp IPM for DC fan	Tester \oplus : L103 (JUMPER) Tester \ominus : D110 (EARTH)	Stop : LD301 3, 4 or 12 times blinking
B-12V O/P	$13 \pm 2.5V$ $-1.0V$	Expansion valve	Tester \oplus : R418(B-12V) Tester \ominus : C401 (" - ")	Stop : LD301 5 times blinking

※ Power circuit for P.W.B can consider normal if the result is satisfied with above specification.

4. Reversing valve (4-way valve) control circuit

- This model is equipped with a reversing valve (4-way Valve).
- The reversing valve (4-way Valve) "slides" the valve in the specified direction for each operating mode and switches the route of refrigerant and holds the route with a built-in permanent magnet.
- According to an operation command from the indoor unit microcomputer, the reversing valve (4-way Valve) control circuit applies current to the reversing valve (4-way Valve) coil in the specified direction, for each operating mode and slides the valve.
- Just before the compressor starts operation, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- During forced cooling operation, just after the forced cooling switch turns on, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- When the operation stops, the position of the valve before the stop is held.

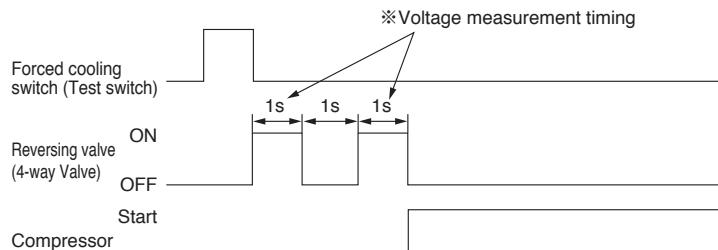


Fig. 4-1

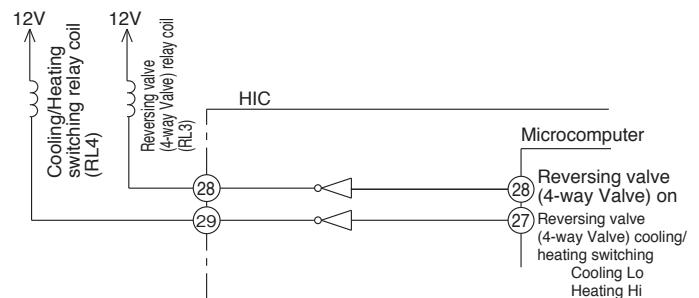
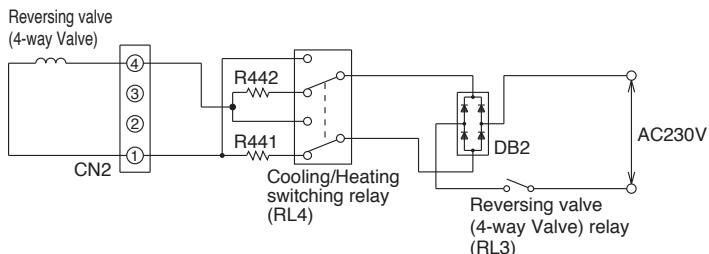


Fig. 4-2

- Before checking the application of current to the reversing valve (4-way Valve), disconnect the connector (CN2) and measure the resistance of both ends of the connector, to see if it is [2500Ω±10%]. Only when the resistance is normal, check the application of current using the following procedures.

If the resistance is abnormal, it is caused by either; breakage of a lead wire, or failure of the reversing valve (4-way Valve).

- The voltage, when measured by a tester during the application of current to the reversing valve (4-way Valve) (when the voltage is measured)
 - Switches the indoor unit to the "Ion Mist operation and air cleaning operation", and keep pressing the "Test switch" of the outdoor unit electrical part from 1 sec to below 5 sec (while the self-diagnosis lamp LED301 is on).
 - Afterwards, when the "Test switch" is released, the application of current starts after 1 sec elapses. (Forced cooling operation)

Operating mode		Cooling operation (including forced cooling operation)	(Reference) Heating operation
Tester and CN2 terminal connection point		⊕ terminal of tester to CN2 pin ④ ⊖ terminal of tester to CN2 pin ①	⊕ terminal of tester to CN2 pin ① ⊖ terminal of tester to CN2 pin ④
Types of testers	Analog tester	The tester indicates about 80 VDC and returns to 0 V, and indicates about 80 VDC again.	The tester indicates about 160 VDC and returns to 0 V, and indicates about 160 VDC again.
	Digital tester	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.

※ In each operating mode, if the tester is reverse-connected to the CN2 terminal, the tester indicates a value on the – (negative) side.

- At the voltage measurement timing, when the voltage is measured with a tester, if the tester indicates the values as shown in the table above, the circuit is functioning normally. (Each tester indicates values differently. Since it is often difficult to read the values of a digital tester, it is recommended to measure voltage with an analog tester.)
- Since the current is applied only twice in 1 sec, if the timing is missed, correct operations cannot be measured.
- If the main body of the reversing valve (4-way Valve) is functioning normally, it clicks twice synchronously with the voltage measurement timing.
If this sound is heard, the reversing valve (4-way Valve) is functioning normally.
- If the checking of the application of current becomes abnormal, it is a failure of an electrical part.

5. Temperature Detection Circuit

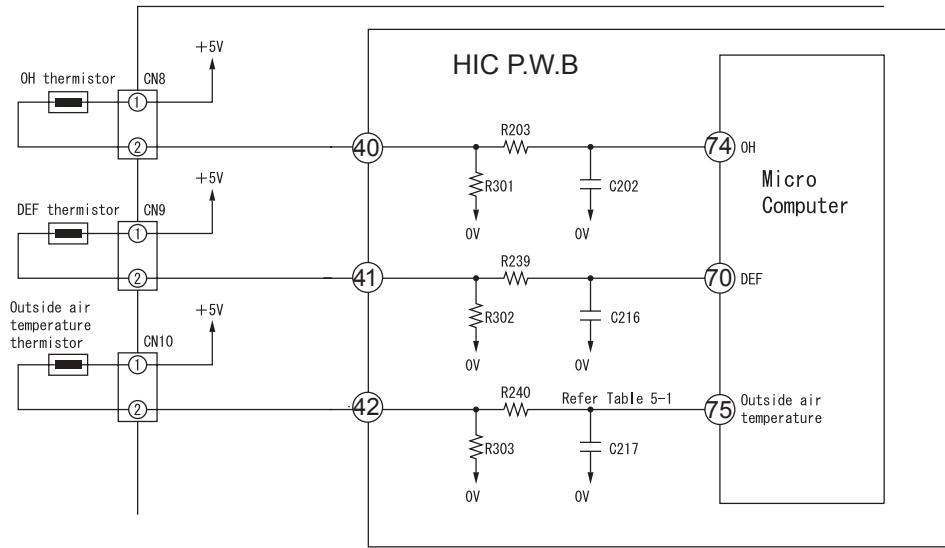


Fig.5-1

- OH thermistor circuit detect the temperature at the surface of compressor head, DEF thermistor circuit detect the defrosting operation temperature.
- A thermistor is a negative resistor element which has characteristics that the higher(lower) the temperature, the lower(higher) the resistance.
- When the compressor is heated, the resistance of the OH thermistor becomes low and +5V is divided by OH thermistor and R301 and the voltage at pin 74 of microcomputer.
- Compare the voltage at microcomputer pin 74 and setting value stored inside. If the value exceed the set value, microcomputer will judge that the compressor is overheated and stop the operation.
- When frost is formed on the outdoor heat exchanger, the temperature at the exchanger drops abruptly. Therefore the resistance of the DEF thermistor becomes high and the voltage at pin 70 of micro computer drops. If this voltage becomes lower than the set value stored inside, microcomputer will enter the defrost control.
- During defrost operation, the microcomputer will transfer the defrosting condition command to indoor unit via SDO pin of interface of IF transmission output.
- The microcomputer read the outdoor Air temperature by Outside Air thermistor and transfer it to the indoor unit, thus controlling the compressor rotation speed according to the set value in the EEPROM of indoor unit and switching the operation mode (outdoor fan on/off etc.) to DRY mode.

Below table show the typical values of outdoor temperature in relation to the voltage.

Table 5-1

Outside Air Temperature (°C)	-10	0	10	20	30	40
Voltage at both side of R303 (V)	1.19	1.69	2.23	2.75	3.22	3.62

<Reference>

When the thermistor is open, open condition or disconnect, microcomputer pin 70, 74, 75 are approx. 0V;

When thermistor is shorted, they are approx. 5V and LD301 will blink 7 times.

However, an error is detected when only the OH thermistor is shorted and will enter blinking mode after 12 minutes start the compressor operation.

6. Electric expansion valve circuit

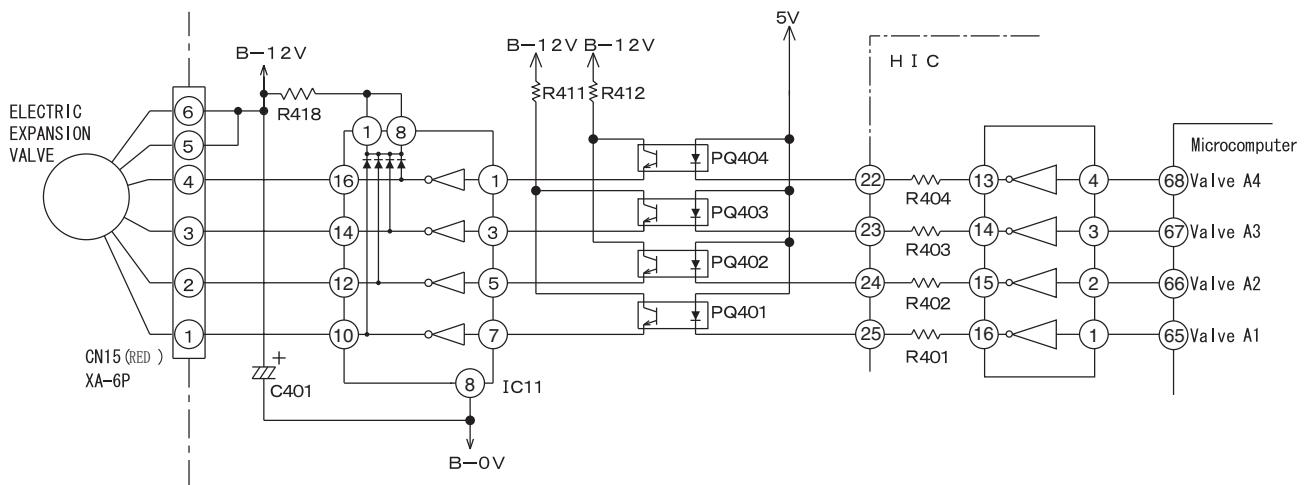


Fig. 6-1

- The electric expansion valve is driven by DC12V. Power is supplied to 1 or 2 phases of 4-phase winding to switch magnetic pole of winding in order to control the opening degree.
- Relationship between power switching direction of phase and open/close direction is shown below. When power is supplied, voltages at pins ④ to ① of CN15 are about 0.9V and 12V when no power is supplied. When power is reset, initial operation is performed for 10 or 20 seconds. During initial operation, measure all voltages at pin ④ to ① of CN15 by using a multimeter. If there is any pin with voltage that has not changed from 0.9V or 12V, expansion valve or microcomputer is broken.
- Fig. 5-2 shows logic waveform when expansion valve is operating.

Table 6-1

CN15 pin no.	Wire	Drive status							
		1	2	3	4	5	6	7	8
①	WHT	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
②	YEL	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
③	ORG	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
④	BLU	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

Operation mode
1→2→3→4→5→6→7→8 VALVE CLOSE
8→7→6→5→4→3→2→1 VALVE OPEN

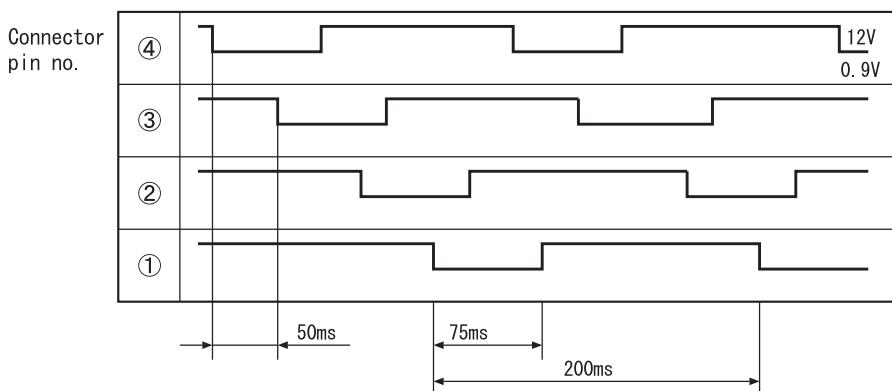


Fig. 6-2

With expansion valve control, opening degree is adjusted to stabilize target temperature by detecting compressor head temperature. The period of control is about once per 20 seconds and output a few pulse.

7. Outdoor DC fan motor control circuit

- This model is built with DC fan motor control circuit inside outdoor electrical unit.

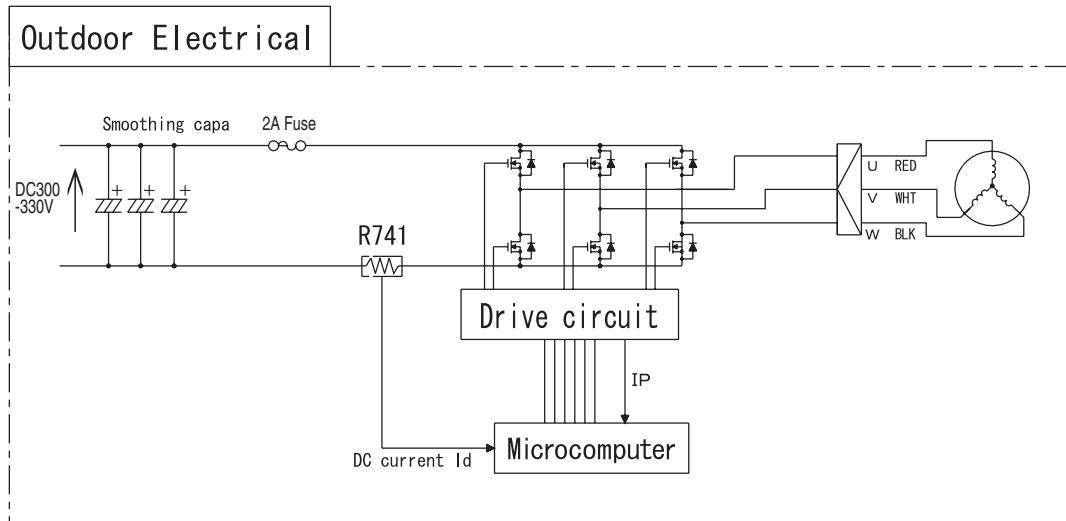


Fig 7-1

This DC fan motor is controlled by outdoor microcomputer that follows the operating instruction received from indoor microcomputer. The DC current that flows from R741 will measure actual operation speed and control the rotation to follow the operating instruction. Based on this DC current it will detect an over current and other fan motor failure.

(1) Fan motor speed controller during starting

Due to the interference of strong wind etc., operation movement is changed based on fan direction and rotation speed as shown below during starting of operation.

In addition, the fair wind is defined as wind that blows to outside direction using Mouth Ring part.

At strong and contrary wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition becomes weak.

At contrary wind ... The rotational speed is controlled in fair wind direction after it slowly reduces the speed and finally stops.

At fair wind ... The rotational speed is controlled as it is.

At strong fair wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition becomes weak.

(2) Fan motor speed controller during unit operating

There is a case where fan rpm is reduced during rotation caused by interference of strong wind. If this condition continues for a long period, the fan will stop rotating. (LD301 : 11 times blinking)

The unit will restart according to control as per during start (1).

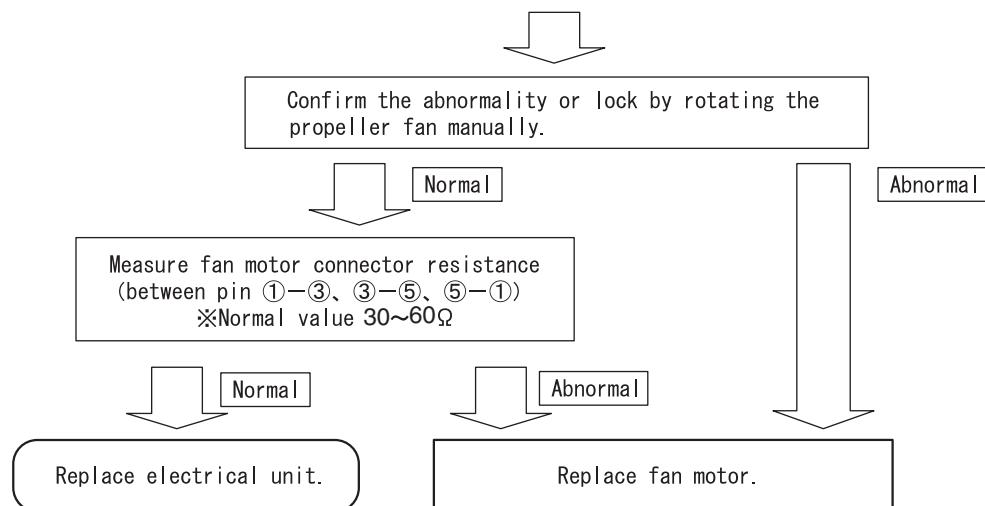
(3) Method of confirming self diagnosis LD301 lamp : 12 times blinking

If the unit stop and LD301 on the pwb blinking 12 times [fan lock stop is detected], follow below steps to confirm it.

1. Fan lock stop is detected when something has disturb the fan rotation by inserting material into propeller fan or ice has growing inside outdoor unit caused by snow.
Remove it if found something is bloking the fan.
2. Confirmed that CN24 connector is securely inserted. Fan lock stop is detected also when connector is not properly inserted. Please securely insert if found any disconnection.
3. Fan lock stop also can be detected where strong wind blown surrounding the unit.
Please confirm after restart the unit. (It may take few minutes to operate the compressor)
It is not a malfunction of electrical unit or fan motor if the unit run continuesly after restart the unit.
4. Check fan motor condition as below procedure.

[Checking Fan Motor] procedure

Shut down supply and wait for 10 minutes for voltage to go down. Confirm it by measuring the DC voltage (must be below 10V). Then disconnect fan motor connector (CN24).



5. Reconnect again fan motor connector (CN24).

※Please confirm above checking procedure if found 2A fuse blown.

If fan motor is broken, replace both electrical unit and fan motor.

Caution

※Beware of electric shock due to high voltage when conducting an operation check.

Power supply for DC fan motor and compressor is common (DC300-330V).

SERVICE CALL Q&A

MODEL RAK-25/35/50PSEW, RAK-25/35/50PSES

Cooling operation

Q1 The compressor sometimes stops during cooling.

A1 Check if the heat exchanger of the indoor unit is covered with frost. Wait for 3 to 4 minutes until the frost disappears.

Cooling when the room temperature is low may cause the heat exchanger of the indoor unit to gather frost.

Dehumidification

Q1 The indoor unit produces a noise that goes "shaaahhh" during dehumidification.

A1 That is a noise produced by refrigerant flowing through the pipe.

Q2 Cold air comes out during a dehumidifying operation.

A2 To improve the dehumidification efficiency performs quiet fan operation. Therefore the air is cold and it is not a malfunction.

Q3 The operation does not stop even by setting the temperature higher than room temperature on the remote controller.

A3 It sets to perform dehumidifying operation by setting the temperature slightly lower than remote controller setting.

Heating operation

Q1 The product sometimes fails to produce a wind during heating.

A1 Defrosting is in progress. Wait 5 to 10 minutes until the frost on the outdoor unit disappears.

Q2 The product begins with a slight fan speed during heating even though set to "Hi fan" or "Med fan" or "Low fan" or "silent fan".

A2 At the first of the heating, the product will run for 30 seconds with a slight fan speed. When set to strong fan speed, the product will begin with a slight fan speed operation, producing a weak fan speed for 30 seconds, and then switch to strong fan speed.

Q3 The product stops during heating even though it is set to "30°C".

A3 When heating is conducted despite the high outdoor temperature, the product may stop to protect its equipment.

Auto-fresh defrost

Q1 During heating, I turned off the product by using the START/STOP button. But the "operation lamp" is blinking and the outdoor unit is running.

A1 The "auto-fresh defrost" should be working. When stopped, the product will check its outdoor unit for frost and, if there is any frost, conduct defrosting and then stop operating.

Automatic operation

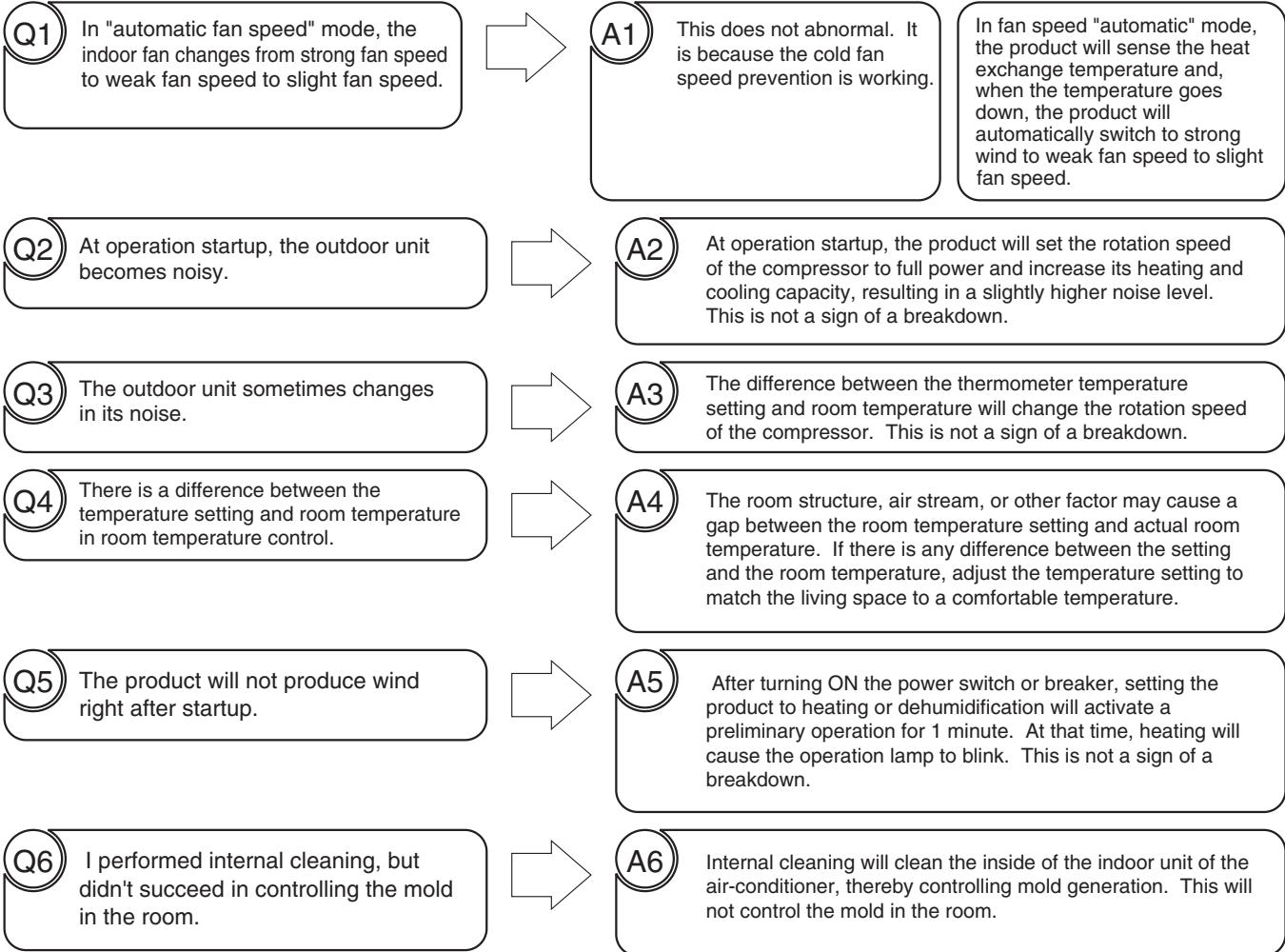
Q1 During an automatic run, switching the fan speed selector will not change the fan speed.

A1 The product will switch automatically to automatic fan speed. You cannot select strong or weak fan speed by remote control but you can select fan speed and quiet.

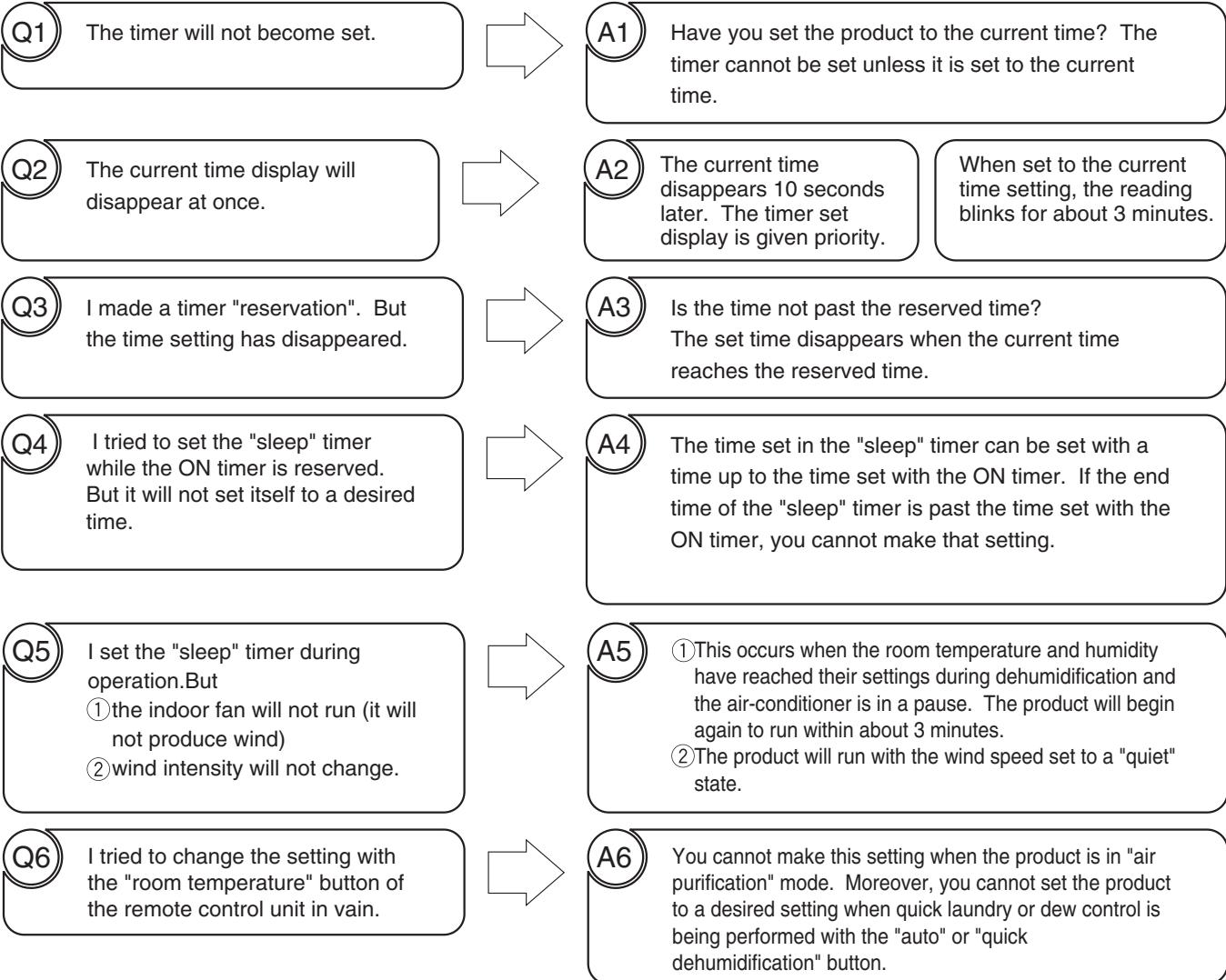
Q2 How is the automatic operation mode determined?

A2 According to the room temperature, heating or cooling operation is automatically selected. Refer to the basic operation section.

Common, etc.



Wireless remote control



Cleaning unit

Q1

After power-on (after connecting power plug, after a power failure, after the breaker is turned on), the product will begin cleaning its filter.



A1

- For an operation check on filter cleaning, the cleaning unit will make one go and return. At that time, the "clean" lamp will go on.
- The one-time operation check will last about 7 minutes.
- During an operation check, the product will supply wind, with the vertical vane remaining closed.

Q2

The product will not clean its filter. The clean lamp will blink or repeat going on and dimming.



A2

- Pressing the "manual cleaning" button on the remote control unit while the air-conditioner is in basic mode (such as cooling) will not activate filter cleaning. (The "clean lamp" will go on for 1 second and off for 1 second, for a total of 10 seconds.)
- During or after filter cleaning, the product will remain inoperative for about 5 minutes to protect the machine even if you press the "manual cleaning" button on the remote control unit. (The "clean lamp" will go on for 1 second and off for 1 second for a total of 10 seconds.)
- Is the product set to disable filter cleaning? Set it back to a setting to enable filter cleaning. (The "clean lamp" will go on for 1 second and off for 1 second for a total of 10 seconds.)
- Are the micro-mesh, stainless steel filter, dust catcher, filter cleaning wiper, and wiper cover correctly installed? (The "clean lamp" will go on for 4 seconds and off for 1 second.)
- If you have stopped the air-conditioner by the sleep timer or OFF timer, filter cleaning will not occur. However, if you have stopped the air-conditioner with the sleep timer or OFF timer every time, then filter operation will occur once a week or so.

Q3

Noise will occur while the filter is being cleaned.



A3

- The motor will make a noise, going "weeen" to drive the cleaning unit.
- When the cleaning unit collects dust or dirt collected on the going-forward direction, the product will go "snap" or "flap".
- When the cleaning unit reverses the dust catcher on its way back, it makes a noise, going "snap" or "flap".
- When the cleaning unit collects dust and dirt, it may make a noise, going "chitty-chitty".

Q4

The cleaning unit has stopped midway.



A4

- Are the micro-mesh, stainless steel filter, dust catcher, and filter cleaning wiper, and wiper cover correctly installed?
(The "clean lamp" will go on for 4 seconds and off for 1 second.)

Q5

The micro-mesh and stainless steel filter remain dirty.



A5

- There may occur cleaning unevenness depending on the operating environment. In that case, clean the micro-mesh and stainless steel filter.
- If you wish to conduct "manual filter cleaning" at a desired time while filter cleaning is disabled, then dirt may remain depending on the amount of dust or dirt.

TROUBLE SHOOTING

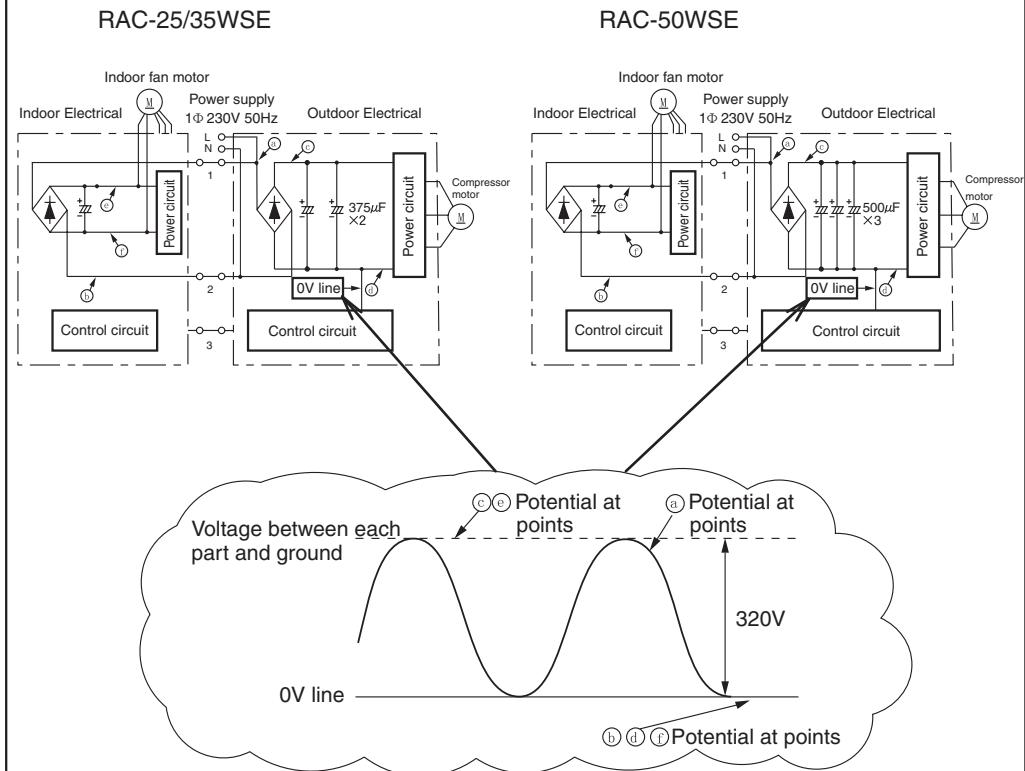
MODEL RAC-25/35/50WSE

Inspection instructions



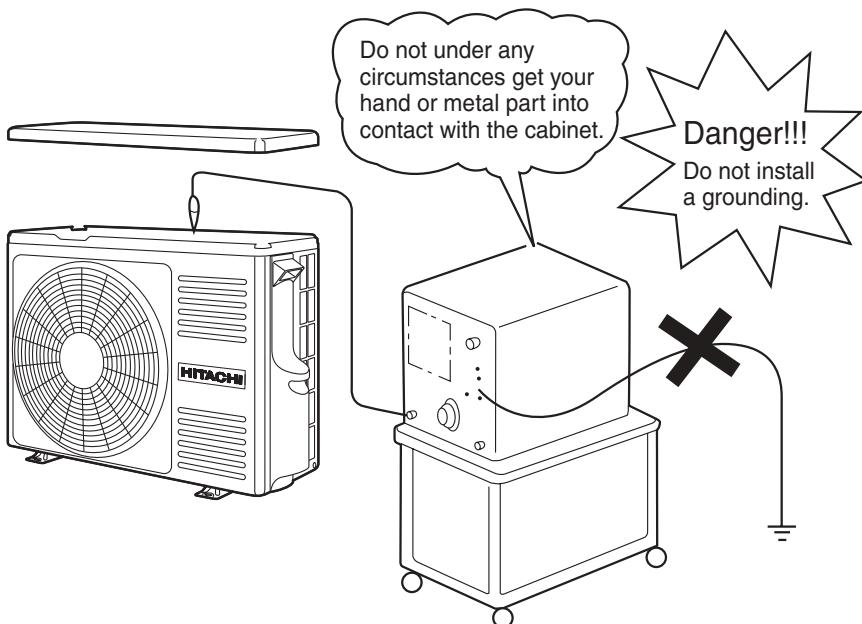
Warning

Note that the 0 V line of the outdoor electrical parts and the primary power circuit of the indoor electrical parts have voltages to ground as illustrated in the right-hand figure.



Warning

When conducting a check with an oscilloscope or something similar, do not ground the oscilloscope. Note that the oscilloscope will be subjected to voltages as illustrated in the figure above.



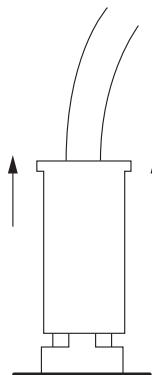
Other instructions

(1) Detaching and reattaching the receptacles for tab terminal

All the receptacles for connecting tab terminals are with a locking mechanism. Forcibly pulling any such receptacle without unlocking it will destroy it. Be on guard.

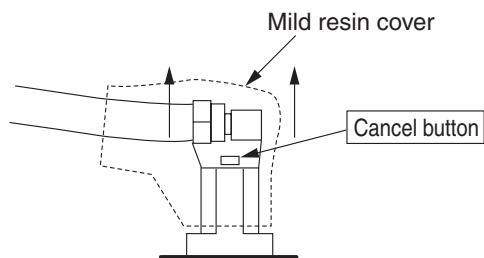
When reconnecting it, insert it securely all the way home.

- Receptacle types and how to unlock them



Vertical (with a resin case)

Hold the resin case and pull it out.



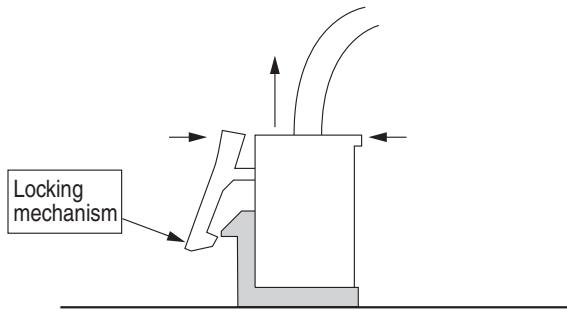
Horizontal (with a mild resin cover)

Hold the cancel button down on the mild resin cover while pulling it out.

(2) Detaching and reattaching the board connector

The product comes equipped with many board connectors provided with lock mechanism. Forcibly pulling any such part without unlocking it will destroy it. Be on guard. When reconnecting it, insert it securely all the way home.

Pinch the locking mechanism with your fingers and pull it out unlocked.



(3) Do not detach or reattach the connectors while energized

Do not under any circumstances detach or reattach the connectors while energized. That would destroy the board components and fan motor. For both the indoor and outdoor boards, ensure that the smoothing capacitor has discharged its electricity fully before you do your work.

Troubleshooting support

No	Function	Description
1	Self-diagnosis display [Display on the indoor unit side]	<ul style="list-style-type: none"> The failure mode detected on the indoor unit side is displayed by blinking the "timer lamp". And a failure detected on the outdoor unit side will be indicated by the "time lamp" blinking 4 times. If the outdoor unit side detects a failure, the product will first conduct several operation retrials. <p>There are some failure modes with no lamp display while retrials are continued.</p> <p>[Failure mode where retrials are continued and the indoor unit lamp does not end up giving a display]</p> <ul style="list-style-type: none"> OH thermistor heat-up Overload lower limit cut Low-frequency things
	[Display on the outdoor unit side]	<ul style="list-style-type: none"> The failure mode detected on the outdoor unit side is displayed by blinking the "LD301". Detecting a failure will stop the outdoor unit and keep blinking the LD301 until it is restarted. <p>(The communication error will persist until the communication is reestablished.)</p>
2	Self-diagnosis memory	<ul style="list-style-type: none"> The failure modes detected on the indoor and outdoor unit sides are stored in the nonvolatile memory of the indoor unit and can be read later on. (The memory will remain even after power-off.) The failure modes detected on the outdoor unit side are written in memory every time any such mode occurs. The failure mode can therefore be detected on the indoor unit side without waiting for the retry frequency to reach the display of the indoor unit lamp. Moreover, the normal self-diagnosis display function which rarely occurs will store and display failure modes that do not end up displaying the indoor unit lamp. (Any such mode may be unable to be stored if indoor or outdoor communications is in a failure.) The product stores 5 last-stored failure modes. There is a function for deleting memory. Once you clear the memory and run the product for several days, you can read the failure modes and check them, thereby detecting the less frequent failure phenomena. Failure modes can be checked by both the blinking of the lamp of the indoor unit and the display of the remote control liquid crystal display.

※The "self-diagnosis function of the communication circuit" available in our conventional models is now incorporated as part of the normal self-diagnosis function. In the case of a failure in the communication circuit, you do not have to conduct a special operation and the operations can be automatically divided into 3 blinking operations and 12 blinking operations of the timer lamp. However, a strong external noise may have resulted in 12 times of blinking.

Self-diagnosis display function (indoor side display)

While the "timer lamp" , of the indoor unit is blinking, troubleshoot the product while referring to the table below.

1. How to count the lamp blinking frequency

- The product will repeat blinking with 2-second intermissions.
- The blinking speed is as follows: on for 0.35 seconds and off for 0.35 seconds.

[An example of 5-time blinking]



2. If you wish to try another operation while the lamp is blinking, operate the START/STOP button on the remote control unit twice. The first push will reset the indoor microcomputer, while the second will activate the product

DESCRIPTION OF THE SELF-DIAGNOSIS INDICATION

REFER TO THE TABLE BELOW IF THE TIMER INDICATOR IS BLINKING.

THE SYMBOL "※" MEANS, USUALLY THERE IS NO INDICATION, BUT IT WILL INDICATE ONLY WHEN REDISPLAY THE FAILURE MODE MANUALLY.

LAMP BLINKING MODE	MAIN DEFECTIVE
■ 2 sec ----- ONCE	REFRIGERANT CYCLE DEFECTIVE
■ ■ 2 sec ----- 2 TIMES	FORCED COOLING OPERATION
■ ■ ■ 2 sec ----- 3 TIMES	INTERFACE DEFECTIVE (INDOOR)
■ ■ ■ 2 sec ----- 4 TIMES	OUTDOOR UNIT DEFECTIVE
■ ■ ■ ■ 2 sec ----- 9 TIMES	INDOOR THERMISTOR DEFECTIVE
■ ■ ■ ■ 2 sec ----- 10 TIMES	ABNORMAL ROTATING NUMBERS OF DC FAN MOTOR
■ ■ ■ ■ 2 sec ----- 12 TIMES	INTERFACE DEFECTIVE (OUTDOOR)
■ ■ ■ ■ 2 sec ----- 13 TIMES	IC531 DEFECTIVE
■ ■ ■ ■ 2 sec ----- ※18 TIMES	CLEANING UNIT DEFECTIVE
■ ■ ■ ■ 2 sec ----- ※20 TIMES	HUMAN SENSOR DEFECTIVE

(■ -- LIGHTS FOR 0.35 SEC AT INTERVAL OF 0.35 SEC.)

* IF THE INTERFACE CIRCUIT IS DEFECTIVE WHEN THE POWER IS TURNED ON, THE SELF-DIAGNOSIS INDICATION WILL NOT WORK.

* IF THE INDOOR UNIT CAN NOT BE OPERATED AT ALL,

REFER TO THE TABLE BELOW IF THE CLEANING INDICATOR IS BLINKING.

LAMP BLINKING MODE	MAIN DEFECTIVE
■ ■ ■ 2 sec ----- LIGHTING:4SEC OFF :1SEC	• CLEANING DEFECTIVE

REFER TO THE TABLE BELOW IF THE HUMAN SENSOR INDICATOR IS BLINKING.

LAMP BLINKING MODE	MAIN DEFECTIVE
■ ■ ■ 2 sec ----- LIGHTING:4SEC OFF :1SEC	• HUMAN SENSOR SIGNAL DEFECTIVE

REFER TO THE TABLE BELOW IF THE INDOOR UNIT DOES NOT WORK AT ALL.

CHECK POINT	ACTION/REPLACEMENT PARTS, etc
FU1(3.15A) FUSE BLOWN	REPLACE THE PART WHICH CAUSED BLOWING /DISCONNECTION OF FU1(3.15A) FUSE
COME OFF OR DISCONNECTION OF THE CONNECTOR FOR INDICATING P.W.B	FIX CN16 CONNECTOR
FAILURE OF CONTROL P.W.B	REFER TO THE SERVICE GUIDE FOR HOW TO DETERMINE THE FAILED PART

SELF-DIAGNOSIS MEMORY FUNCTION

Failure modes are stored in the nonvolatile memory of indoor unit and shall be redisplayed by remote controller.

This function is useful in checking the failure modes either during switching OFF the power or restarting the device without checking the number of indication lamp blinking . Remote controller can redisplay up to last 5 failure modes from the memory. However, failure modes which are rarely to occur are also stored in the memory which caused the numbers of failure more than 5. Thus, for some failure modes which are unable to retrieve because of remote controller limit to redisplay only 5 failure modes, it can be found by clearing up the memory first then recheck the memory content again during the visit at the customer place.

< How to redisplay failure diagnosis >

1. Turn the circuit breaker OFF.
2. Set the remote controller to OFF condition, indicated by  on the display.
3. By pressing  (MODE) button on the remote controller, set to Cooling operation indicated by  (COOL).
4. Turn the circuit breaker ON.
5. Set the room temperature setting on the remote controller to 32°C by pressing the (TEMP \checkmark or \wedge) button.
6. Set the fan speed with the  (FAN SPEED) button according to the desired failure information. (Refer to the corresponding table below)

Fan speed settings for failure data	
AUTO	
HI	
MED	
LOW	
SILENT	
	Newest
	Second newest
	Third newest
	Fourth newest
	Oldest

7. While directing the remote controller towards the receiver of the indoor unit, press (TEMP \wedge) button and  (START/STOP) button simultaneously. (The remote controller perform signal transmission with the device.)
8. The device beeps [Pi-] to indicate that it has just received the signal to redispaly the failure mode.
9. Direct the remote controller towards the receiver of indoor unit (within 2 meters in front of indoor unit) and press the  (INFO) button. Wait for 2 seconds for signal transmission. An error code will be displayed on the remote controller display.

< How to clear the troubleshooting data >

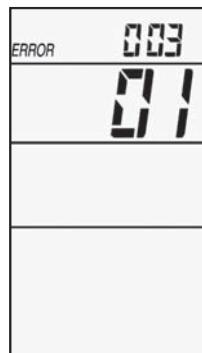
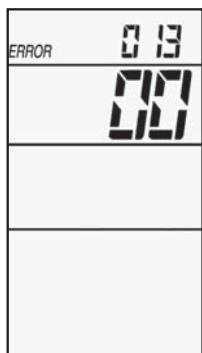
1. Redisplay the troubleshooting status. (See the above procedure.)
2. Turn the circuit breaker OFF.
3. By pressing  (MODE) button on the remote controller, set to Heating operation indicated by  (HEAT).
4. Turn the circuit breaker ON.
5. Set the room temperature setting on the remote controller to 16°C by pressing the (TEMP \checkmark or \wedge) button.
6. While directing the remote controller towards the receiver of the indoor unit, press (TEMP \checkmark) button and  (START/STOP) button simultaneously. (The remote controller perform signal transmission with the device.)
7. The product beeps for a second [Pi-] to indicated that it has just received the signal. The data has now been cleared.

< How to display error code in case of failure just occurs>

If timer lamp  of the indoor unit blinking and operation stops, please perform below procedures.

1. Direct the remote controller towards the receiver of indoor unit (within 2m in front of the indoor unit) and press  (INFO) button.
2. Wait for 2 seconds for signal transmission.
3. Indication of error code will be shown on the remote controller display for 10 seconds.

For example :



For details information regarding error code, please refer to page 92 .

TIMER LAMP BLINKING	LD301 BLINKING	CODE	MEANING	MEANING	MEANING
INDOOR	-	-	000 00	Normal	
	1 time	-	001 00	Refrigerant cycle fault	When the indoor heat exchanger temperature is too low in the heating mode or it is too high in the cooling mode.
	2 times	-	-	Outdoor unit is under forced operation	It is not failure. Outdoor unit is in forced operation or balancing operation after forced operation.
	3 times (single only)	9 times (single only)	003 00	Communication error between indoor and outdoor units	Indoor interface circuit broken
	9 times	-	009 00	Indoor thermistor defective	Room thermistor or heat exchanger thermistor is opened circuit or short circuit.
	10 times	-	010 00	Abnormal rotating numbers of DC fan motor	Overcurrent is detected at the DC fan motor of the indoor unit.
	12 times	9 times (single only)	012 00	Communication error between indoor and outdoor units	Outdoor interface circuit broken
	13 times	-	013 00	IC531 data reading error	When data read from IC531 or IC532 is incorrect.
	18 times	-	018 00	Cleaning defective	Cleaning circuit broken
	20 times	-	020 00	Human sensor unit defective	Short-circuit
OUTDOOR	4 times	2 times	002 01	Peak current cut	Over current detected
	4 times	3 times	003 01	Compressor abnormal low speed rotation	Position detection signal is not input during operation.
	4 times	4 times	004 01	Compressor switching failure	Fail to switch from initial low frequency sync to position detection sync.
	4 times	5 times	005 01	Overload lower limit cut	Overload condition still persisting even when rotation speed is below the lower rpm limit.
	-	6 times	006 01	OH thermistor temperature rise	OH thermistor is operating.
	4 times	7 times	007 01	Abnormal outdoor thermistor	Thermistor is opened or shorted.
	-	9 times	009 01	Communication error	When indoor unit is not connected, it blinks similarly, not malfunction.
	-	10 times	010 01	Abnormal power source	Power supply voltage is incorrect.
	-	11 times	011 01	Fan stop for strong wind	Fan motor load is too heavy or rotation disturbed by wind blow.
	4 times	12 times	012 01	Fan motor fault	Outdoor fan rpm is not rotate as intended rpm.
	4 times	13 times	013 01	EEPROM reading error	Microcomputer cannot read the data in EEPROM.
	4 times	14 times	014 01	Active converter defective	Over voltage is detected, compressor abnormal load.
	4 times	15 times	015 01	Abnormal PWB circuit	Active circuit abnormal.
	-	16 times	016 01	Software peak current cut	

<Caution>

This function is effective only once immediately after the power is turned on. It will not work if you have performed another remote control operation beforehand. Note also that it may not function in response to a procedure other than the above. (If it does not work, turn off the power, turn it back on and repeat the procedure.)

If the memory stores nothing, performing a redisplay operation will not blink the lamp.

For a normal operation, turn off the power and turn it back on. After the above operation, the product will not receive a remote control signal normally.

After clearing the troubleshooting data, turn off the power. (If you do not turn off the power, the product will become unresponsive to remote control signals.)

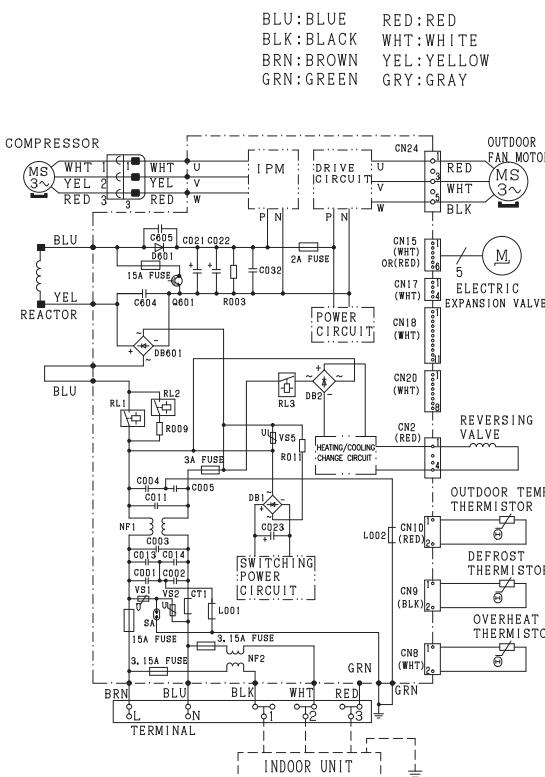
SELF-DIAGNOSIS LIGHTING MODE

MODEL RAC-25/35WSE

! DANGER (DC350V)

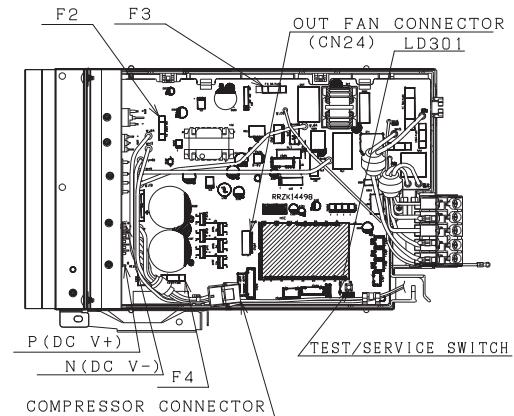
- CUT THE POWER SOURCE AND WAIT MORE THAN 10 MINUTES BEFORE SERVICE WORK.
- CONFIRM THE DC VOLTAGE AT THE MEASURING POINT SHOWN IN BELOW FIGURE MUST BE LESS THAN 10V.

WIRING DIAGRAM



DURING STOP			
SELF-DIAGNOSIS BLINKING MODE		□:BLINK □:OFF	
LD301 (RED)	SELF DIAGNOSIS CONTENTS	MAIN CHECK POINT	HOW TO REPAIR
□ OFF	NORMAL STOP (STOPPED BY INDOOR THERMO-STAT OR MAIN OPERATION OFF)	1. NO NEED TO CHECK	1. NOT ANY MALFUNCTION
□ ONCE	RESET STOP	1. MICROPROCESSOR WAS REBOOTED	1. CHANGE ODU CONTROLLER
□ 2 TIMES	PEAK CURRENT CUT	1. ODU CONTROLLER DEFECTIVE 2. COMPRESSOR ABNORMAL LOAD	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
□ 3 TIMES	ABNORMAL LOW SPEED ROTATION	1. ODU CONTROLLER DEFECTIVE 2. COMPRESSOR ABNORMAL LOAD	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
□ 4 TIMES	SWITCHING FAILURE	1. COMPRESSOR CONNECTOR OPEN 2. COMPRESSOR ABNORMAL LOAD 3. ODU CONTROLLER DEFECTIVE	1. INSERT THE CONNECTOR 2. CHECK THE COMPRESSOR 3. CHANGE ODU CONTROLLER
□ 5 TIMES	OVERLOAD LOWER LIMIT CUT	1. OBSTACLE SURROUND THE ODU MAY CAUSE 2. OTHER CAUSE	1. REMOVE THE OBSTRUCTION 2. CHECK CYCLE PIPE
□ 6 TIMES	OH THERMISTOR TEMPERATURE RISE	1. DUE TO OPEN CONNECTOR 2. LEAKAGE OF REFRIGERANT 3. OTHER CAUSE	1. INSERT THE CONNECTOR 2. CHECK THE CYCLE PIPE AND RECHARGE THE REFRIGERANT 3. CHANGE ODU CONTROLLER
□ 7 TIMES	THERMISTOR ABNORMAL	1. CONNECTOR INSERT MISS 2. OPEN CIRCUIT/SHORT CIRCUIT OF THERMISTOR WIRE	1. INSERT PROPERLY 2. CHANGE THE THERMISTOR
□ 9 TIMES	COMMUNICATIONS ERROR	1. F CABLE MISS CONNECTION 2. F CABLE DISCONNECTION 3. ODU CONTROLLER DEFECTIVE 4. IDU CONTROLLER DEFECTIVE	1. F CABLE CONNECT PROPERLY 2. CHANGE THE F CABLE 3. CHANGE ODU CONTROLLER 4. CHANGE IDU CONTROLLER
□ 10 TIMES	ABNORMAL POWER SOURCE	1. REACTOR IS UNCONNECTED 2. ABNORMAL AC INPUT: OUT OF THE RANGE (230±10%) 3. AC INPUT IS NORMAL	1. CONNECT REACTOR PROPERLY 2. CONNECT TO NORMAL AC POWER SOURCE 3. CHANGE ODU CONTROLLER
□ 11 TIMES	ODU FAN STOP BY STRONG REVERSE WIND	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND	1. IT WILL RE-START AFTER THE WIND BECOME WEAK
□ 12 TIMES	OUTDOOR FAN LOCK ERROR	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND 2. PROPELLER FAN LOCK 3. OUTDOOR FAN MOTOR LOCK	1. AUTOMATICALLY RE-START AFTER WIND BECOME WEAK 2. REMOVE THE OBSTRUCTION 3. CHANGE THE FAN MOTOR 4. OUTDOOR FAN MOTOR OK
□ 13 TIMES	EEPROM READ ERROR	• CHANGE OUTDOOR UNIT CONTROLLER	
□ 14 TIMES	ACTIVE VOLTAGE ABNORMAL	1. ABNORMAL OUTDOOR CONTROLLER 2. ABNORMAL COMPRESSOR LOAD	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
□ 15 TIMES	CIRCUIT ABNORMAL	• CHANGE OUTDOOR UNIT CONTROLLER	
□ 16 TIMES	HIGH LORD STOP	1. SERVICE VALVE CLOSE 2. OBSTACLE SURROUND THE ODU MAY CAUSE 3. CLOGGED FILTER IN INDOOR UNIT CAUSE	1. CHECK SERVICE VALVE 2. REMOVE THE OBSTRUCTION 3. CHECK FILTER

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*OTHERS CHECK POINTS

1. DIAGNOSIS FOR REVERSING VALVE OPERATION ERROR :
⇒CHECK REVERSING VALVE WIRE CONNECTION EITHER WIRE BROKEN OR NOT, IF OK CHECK 3.15A FUSE, IF BROKEN REPLACE FUSE OR ODU CONTROLLER.
2. WHEN DISPLAY THE COMMUNICATION ERROR OR THE OUTDOOR DO NOT RUN AT ALL,
⇒PLEASE CHECK THE CONTINUITY OF THE INDOOR ↔ OUTDOOR CONNECTING CORD(F CABLE).

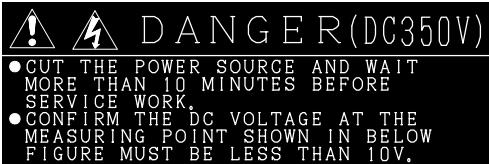
*OUTDOOR FAN MOTOR CHECK/DIAGNOSIS METHOD

- PUT THE POWER OFF
- REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM CN24
- ROTATE THE FAN MOTOR BY HAND AND CHECK WHETHER THE FAN MOTOR IS LOCKED OR NOT.
- MEASURE THE RESISTANCE BETWEEN EACH TERMINAL OF THE FAN MOTOR CONNECTOR, NORMAL RESISTANCE BETWEEN EACH TERMINAL REFER TO THE SERVICE MANUAL.
- INSERT THE FAN MOTOR'S CONNECTOR AFTER FINISHING STEPS 1 TO 4.

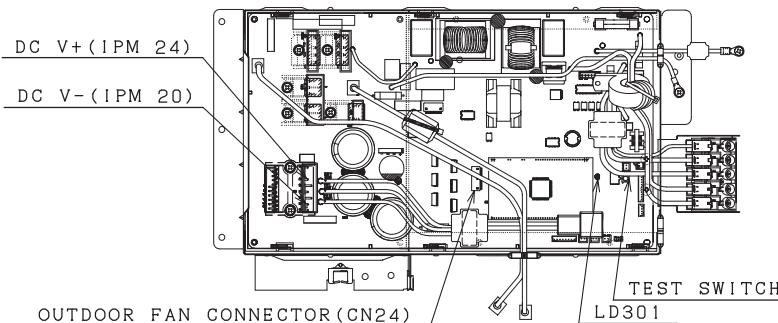
*OTHERS SELF-DIAGNOSIS CONTENTS REFER TO THE SERVICE MANUAL.

SELF-DIAGNOSIS LIGHTING MODE

MODEL RAC-50WSE



DURING STOP	
LD301	CONTENTS
LIGHT	NORMAL OPERATION
2 SEC LIGHTING AND 0.3 SEC LIGHTS OUT REPETITION	OVERLOAD OPERATION(NORMAL OPERATION)



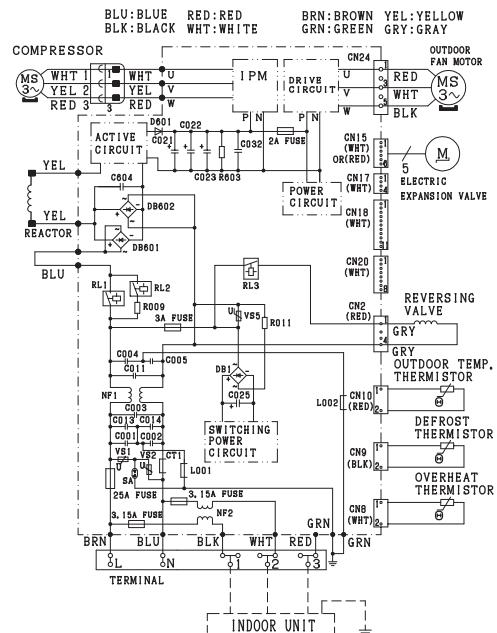
DURING STOP

SELF-DIAGNOSIS BLINKING MODE

■:BLINK □:OFF

LD301 (RED)	SELF DIAGNOSIS CONTENTS	MAIN CHECK POINT	HOW TO REPAIR
□ OFF	NORMAL STOP (STOPPED BY INDOOR THERMO- STAT OR MAIN OPERATION OFF)	1. NO NEED TO CHECK	1. NOT ANY MALFUNCTION
□ ONCE	RESET STOP	1. MICROPROCESSOR WAS REBOOTED	1. CHANGE ODU CONTROLLER
2 TIMES	PEAK CURRENT CUT	1. ODU CONTROLLER DEFECTIVE 2. COMPRESSOR ABNORMAL LOAD	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
3 TIMES	ABNORMAL LOW SPEED ROTATION	1. ODU CONTROLLER DEFECTIVE 2. COMPRESSOR ABNORMAL LOAD	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
4 TIMES	SWITCHING FAILURE	1. COMPRESSOR CONNECTOR OPEN 2. COMPRESSOR ABNORMAL LOAD 3. ODU CONTROLLER DEFECTIVE	1. INSERT THE CONNECTOR 2. CHECK THE COMPRESSOR 3. CHANGE ODU CONTROLLER
5 TIMES	OVERLOAD LOWER LIMIT CUT	1. OBSTACLE SURROUND THE ODU MAY CAUSE 2. OTHER CAUSE	1. REMOVE THE OBSTRUCTION 2. CHECK CYCLE PIPE
6 TIMES	OH THERMISTOR TEMPERATURE RISE	1. DUE TO OPEN CONNECTOR 2. LEAKAGE OF REFRIGERANT 3. OTHER CAUSE	1. INSERT THE CONNECTOR 2. CHECK THE CYCLE PIPE AND RECHARGE THE REFRIGERANT 3. CHANGE ODU CONTROLLER
7 TIMES	THERMISTOR ABNORMAL	1. CONNECTOR INSERT MISS 2. OPEN CIRCUIT/SHORT CIR- CUIT OF THERMISTOR WIRE 3. ODU CONTROLLER DEFECTIVE	1. INSERT PROPERLY 2. CHANGE THE THERMISTOR 3. CHANGE ODU CONTROLLER
9 TIMES	COMMUNICATIONS ERROR	1. F CABLE MISS CONNECTION 2. F CABLE DISCONNECTION 3. ODU CONTROLLER DEFECTIVE 4. IDU CONTROLLER DEFECTIVE	1. F CABLE CONNECT PROPERLY 2. CHANGE THE F CABLE 3. CHANGE ODU CONTROLLER 4. CHANGE IDU CONTROLLER
10 TIMES	ABNORMAL POWER SOURCE	1. REACTOR IS UNCONNECTED 2. ABNORMAL AC INPUT: OUT OF THE RANGE (230±10%) 3. AC INPUT IS NORMAL	1. CONNECT REACTOR PROPERLY 2. CONNECT TO NORMAL AC POWER SOURCE 3. CHANGE ODU CONTROLLER
11 TIMES	ODU FAN STOP BY STRONG REVERSE WIND	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND	1. IT WILL RE-START AFTER THE WIND BECOME WEAK
12 TIMES	OUTDOOR FAN LOCK ERROR	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND 2. PROPELLER FAN LOCK 3. OUTDOOR FAN MOTOR LOCK 4. OUTDOOR FAN MOTOR OK	1. AUTOMATICALLY RE-START AFTER WIND BECOME WEAK 2. REMOVE THE OBSTRUCTION 3. CHANGE THE FAN MOTOR 4. CHANGE ODU CONTROLLER
13 TIMES	EPPROM READ ERROR	• CHANGE OUTDOOR UNIT CONTROLLER	
14 TIMES	ACTIVE VOLTAGE ABNORMAL	1. ABNORMAL OUTDOOR CONTROLLER 2. ABNORMAL COMPRESSOR LOAD	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
15 TIMES	CIRCUIT ABNORMAL	• CHANGE OUTDOOR UNIT CONTROLLER	
16 TIMES	HIGH LORD STOP	1. SERVICE VALVE CLOSE 2. OBSTACLE SURROUND THE ODU MAY CAUSE 3. CLOGGED FILTER IN INDOOR UNIT CAUSE,	1. CHECK SERVICE VALVE 2. REMOVE THE OBSTRUCTION 3. CHECK FILTER

WIRING DIAGRAM



*ODU=OUTDOOR UNIT, IDU=INDOOR UNIT

【OUTDOOR FAN MOTOR CHECK】DIAGNOSIS METHOD

- PUT THE POWER OFF.
- REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM "CN24".
- ROTATE THE FAN MOTOR BY HAND AND CHECK WHETHER THE FAN MOTOR IS LOCKED OR NOT.
- MEASURE THE RESISTANCE BETWEEN EACH TERMINAL OF THE FAN MOTOR CONNECTOR. NORMAL RESISTANCE BETWEEN EACH TERMINAL REFER TO THE SERVICE MANUAL.

*INSERT THE FAN MOTOR'S CONNECTOR AFTER FINISHING STEPS 1 TO 4.

*OTHERS CHECK POINTS

- DIAGNOSIS FOR REVERSING VALVE OPERATION ERROR ;
→CHECK REVERSING VALVE WIRE CONNECTION EITHER WIRE BROKEN
OR NOT, IF OK CHECK 3.15A FUSE, IF BROKEN REPLACE FUSE
OR ODU CONTROLLER.
- [WHEN DISPLAY THE COMMUNICATION ERROR OR
THE OUTDOOR DO NOT RUN AT ALL].
→PLEASE CHECK THE CONTINUITY OF THE INDOOR ↔ OUTDOOR
CONNECTING CORD(F CABLE).

*OTHERS SELF-DIAGNOSIS CONTENTS
REFER TO THE SERVICE MANUAL.

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Forced cooling operation

The cooling operation can be forcibly performed for collecting refrigerant and inspecting failures.
Do not perform the forced cooling operation continuously for long hours,
because the compressor continues to be in operational status, regardless of room temperature.

<How to start the operation>

- The operation of the unit should be stopped.
- Press and hold the "Temporary operation SW" shown in the right figure for 5 sec.

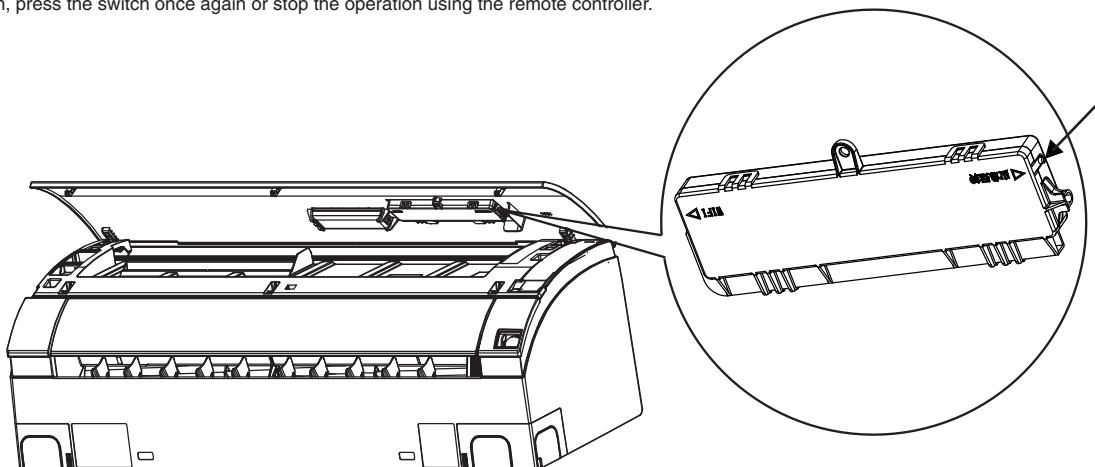
<How to stop the operation>

- Press and hold the "Temporary operation SW" again.
- Or stop the operation using the remote controller.

※During the forced cooling operation,
the "Timer indicator" blinks twice.

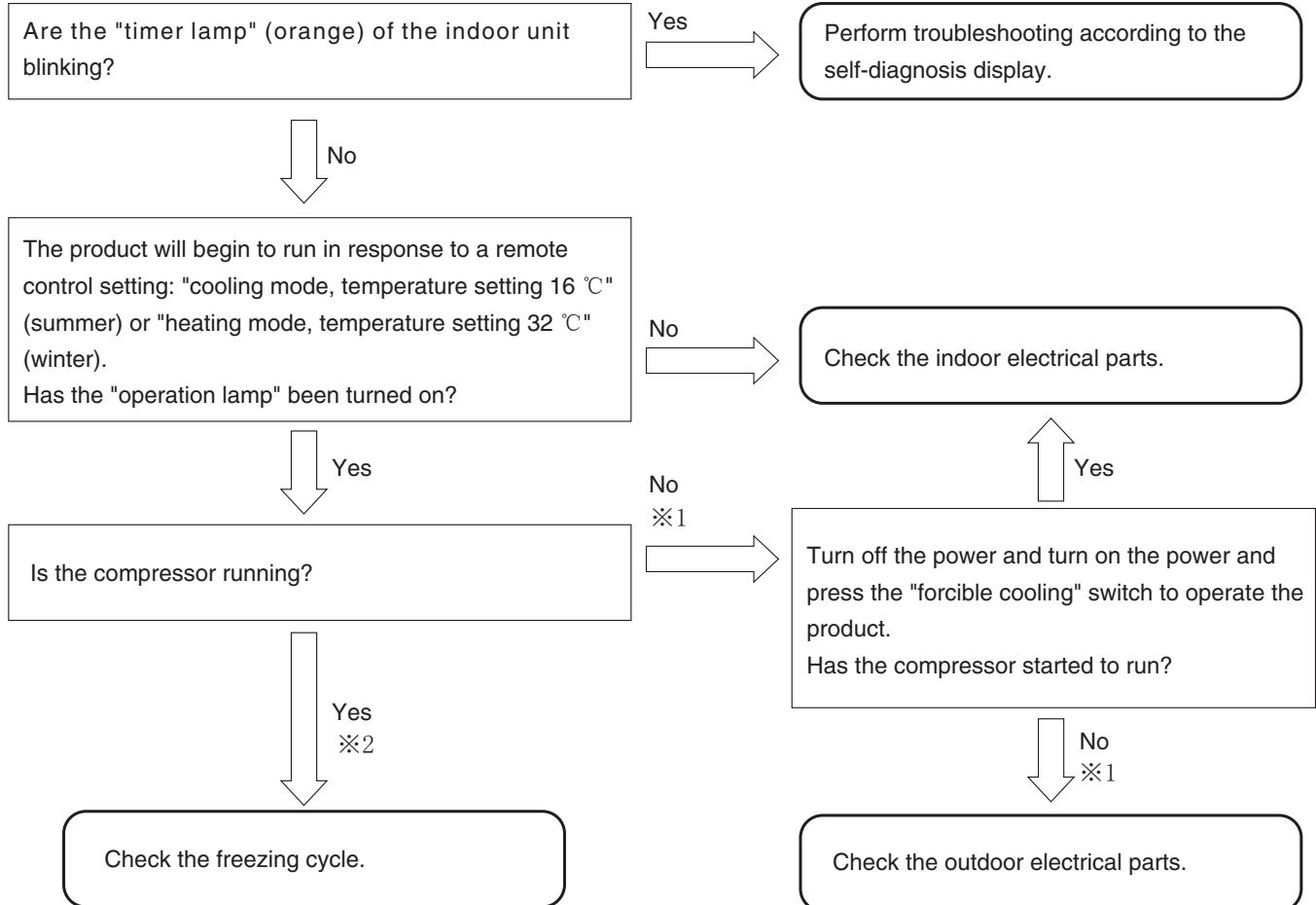
Temporary operation switch

When performing the forced cooling operation, turn the power off once. If you press and hold the switch for 5 sec or longer, the forced cooling operation starts. To stop the forced cooling operation, press the switch once again or stop the operation using the remote controller.



Diagnosis and troubleshooting of indoor electric parts

Initiating troubleshooting



< Troubleshooting by using the self-diagnosis memory function >

- By using the self-diagnosis memory function, you can check the failure mode (※1) occurring in the outdoor electrical parts on the indoor unit side.

Steps

1. Clear the troubleshooting data.
2. Run the product for several minutes under the conditions where the compressor runs.
3. Redisplay and check the data written in the self-diagnosis memory.

- The self-diagnosis memory function can also be used to catch sporadic failure phenomena.

Steps

1. Clear the troubleshooting data.
2. Have the user use the product as usual until a failure phenomenon occurs.
(The period depends on the incidence of the phenomenon.)
3. At a later date, redisplay and check the data written in the self-diagnosis memory.

- For the outdoor self-diagnosis display (OH thermistor heat-up, overload lower limit cut) stemming from the freezing cycle or operating condition, the time lag is long from operation startup to the emergence of the phenomenon. Moreover, it is affected by the temperature, sunshine, operating hours, and other factors of the day, so that the phenomenon may not be able to be identified at the time of a repair service visit. In that case too, use the self-diagnosis memory function (※2).
- The outdoor self-diagnosis display "overload lower limit cut" and "OH thermistor heat-up" can be identified only when you are using the self-diagnosis lamp of the outdoor unit and the self-diagnosis memory function of the indoor unit. Note that this will not be automatically displayed on the indoor unit side.

Checking the indoor unit electrical parts

Introduction

First check the failure phenomenon and status, and then move on to elaborate diagnosis.

Initiating troubleshooting

Is the "timer lamp" (orange) of the indoor unit blinking?

Yes

How many times does the time lamp blinding

↓ not 4 times

time lamp blinking,
please according to the
self-diagnosis display.

↓ 4 times

outdoor ele.unit check

↓ No

Turn off the power, wait at least 5 seconds, turn it back on, and observe the way the horizontal vanes move for about 30 seconds.

Check 1: Have the horizontal vanes moved? (Yes/No)

↓

Set the remote control unit to cooling mode, temperature setting 16°C (summer), heating mode, temperature setting 32°C (winter) and operate the product.

Check 2: Has the product received the remote control signal and has the "operation lamp" gone on? (Yes/No)

If you responded "Yes" to Check 2:

Check 3: Is the compressor of the outdoor unit running? (Yes/No)

If you responded "No" to Check 2:

Check 4: Does the "emergency operation switch" work? (Yes/No)

Check results and next check items

Check 1	Check 2	Check 3	Check 4	Next check item
No	No	—	No	Go on to "The power will not become turned on".
Yes	No	—	Yes	Go on to "The product will not receive the remote control signal".
Yes	Yes	No	—	Go on to "The compressor will not run".

1. Failure phenomenon: The power will not become turned on.

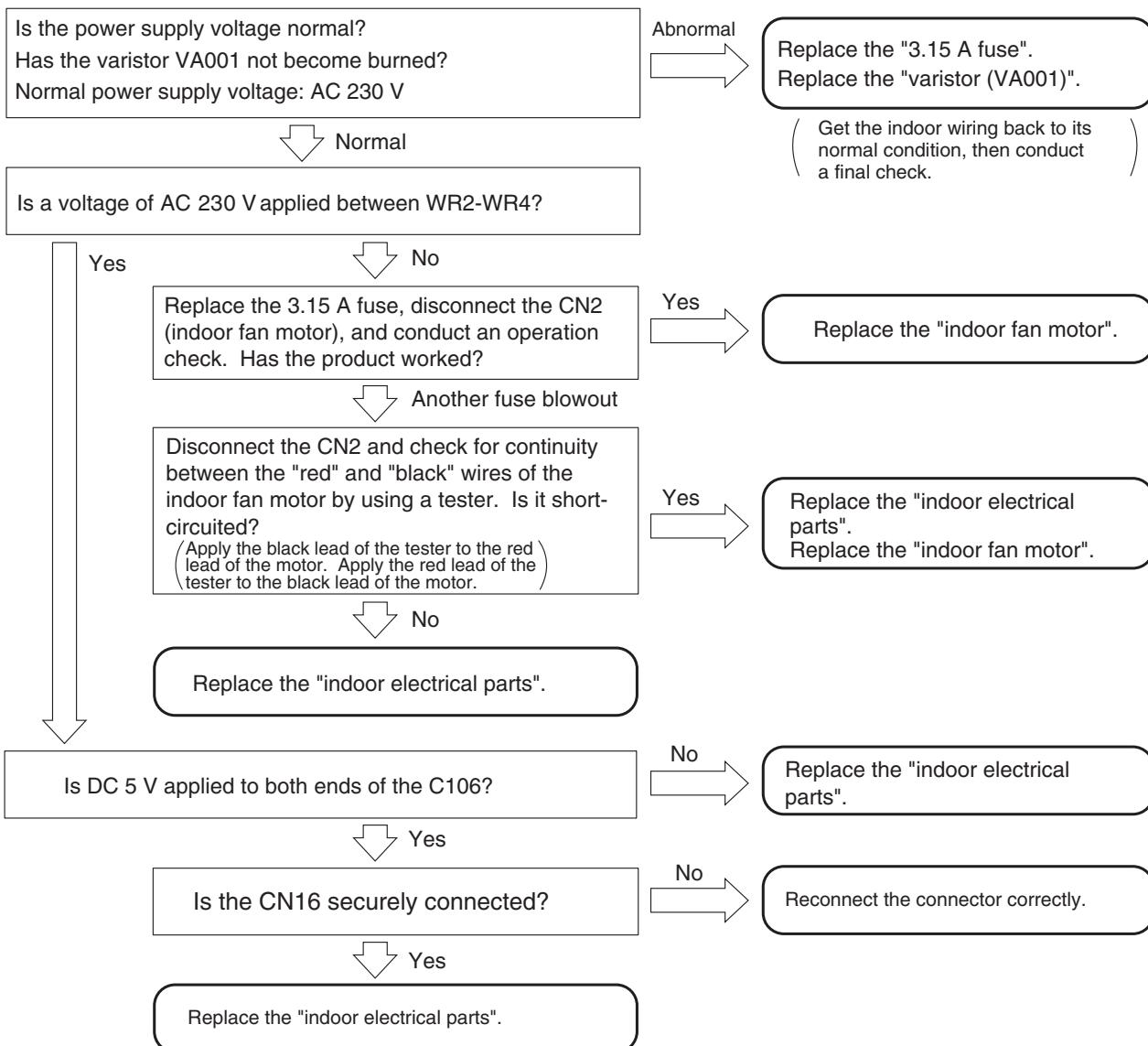
[Situation] Neither initialization, remote control, nor any other step works on the vane position at power-on.

[Estimated failure locations]	<ul style="list-style-type: none"> · 3.15 A fuse blown out · Control power circuit · Connector loose, wire break 	<table border="1"> <tr> <td>Estimated cause of fuse blowout</td><td> <ul style="list-style-type: none"> · Abnormally high voltage applied to the power supply · Indoor fan motor out of order · Power circuit out of order </td></tr> </table>	Estimated cause of fuse blowout	<ul style="list-style-type: none"> · Abnormally high voltage applied to the power supply · Indoor fan motor out of order · Power circuit out of order
Estimated cause of fuse blowout	<ul style="list-style-type: none"> · Abnormally high voltage applied to the power supply · Indoor fan motor out of order · Power circuit out of order 			

- [Cautions]
- Before work, check the power supply voltage. An abnormal voltage may be being supplied in some rare occasions due to a defect in the indoor wiring (a wire break in the neutral wire of the single-phase 3-wire power supply).
 - If the 3.15 A fuse has blown out, eliminate the cause of the fuse blowout. Otherwise, there will occur another fuse blowout.
 - If the 3.15 A fuse has blown out due to an abnormally high voltage to the power supply, the varistor (VA001) will deteriorate and become destroyed as well.
 - On a repair service visit due to the failure phenomenon of "The power will not become turned on", take a "3.15 A fuse" and a "varistor" with you.

[Diagnosis flow]

Initiating troubleshooting



2.Failure phenomenon: The product will not receive a remote control signal.

[Situation] The product does not receive a remote control signal. It is not very responsive.

(The product does run normally in response to the emergency operation switch.)

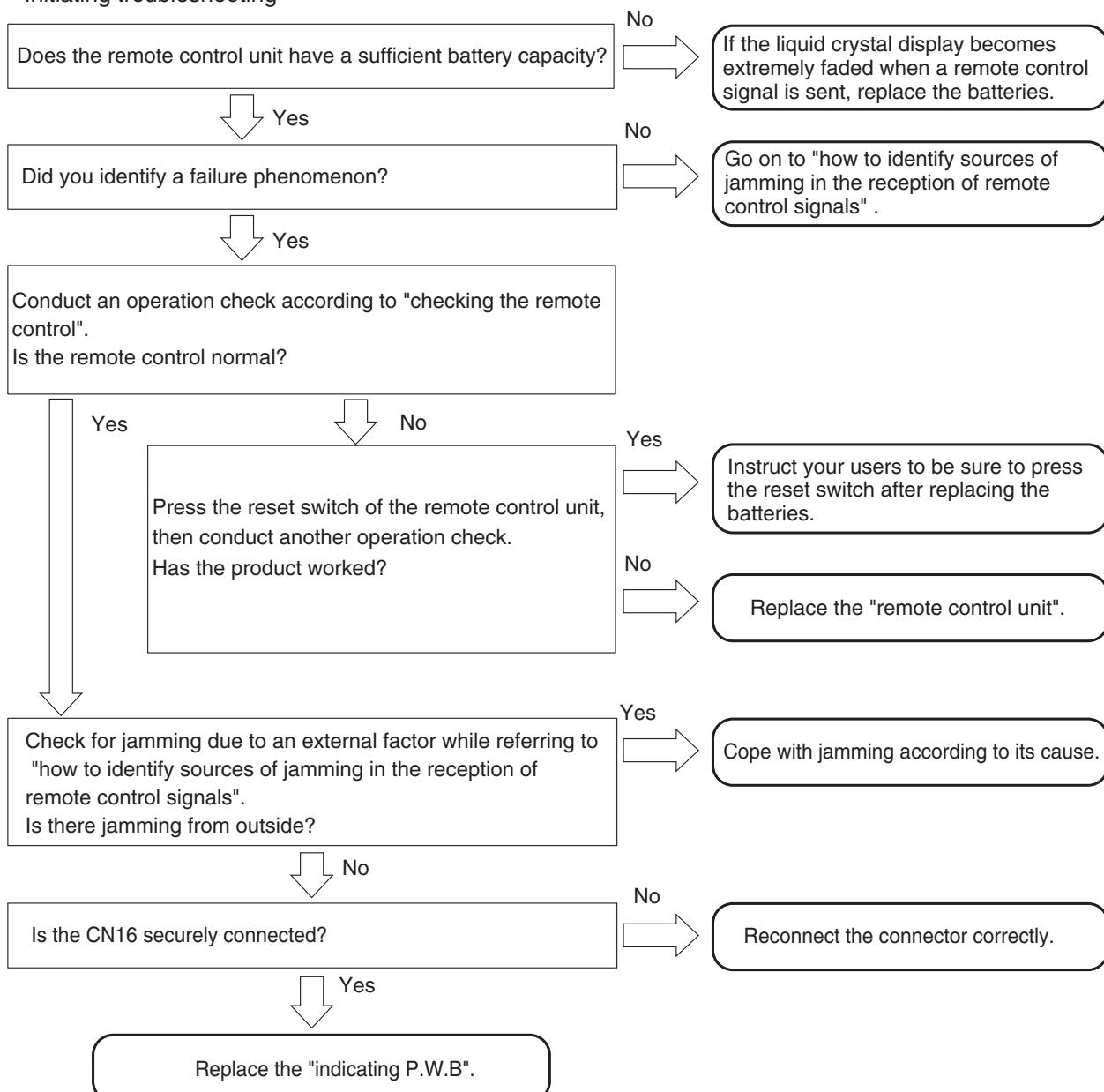
[Estimated failure locations] · Remote control failure, remote control low battery level, remote control poorly set
· Remote control light-receiving unit
· Connector loose, wire break

· Normal product (external factors: the remote control units for lighting equipment and other equipment, electrical noise, etc.)

[Cautions] · Even if the product is trouble-free, a factor coming from outside the product may hamper the reception of signals from the remote control unit.
· Batteries may decline in capacity at low temperatures. Old batteries decline particularly much in voltage in the morning and evening of winter, resulting in the poor arrival of remote control signals. Instruct your users to use new alkaline batteries.

[Diagnosis flow]

Initiating troubleshooting



[Cautions in replacing the indicating P.W.B.] Be sure to replace the indicating P.W.B. components.

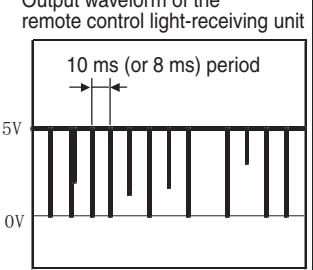
How to identify sources of jamming in the reception of remote control signals

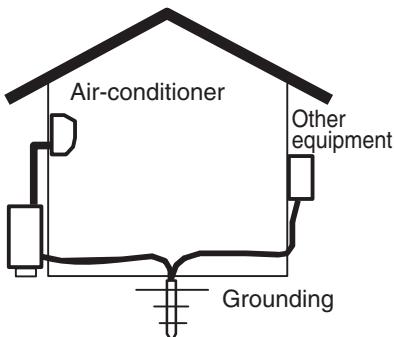
[Situation] The product may become poorly responsive to remote control signals due to external factors even though the product itself is trouble-free.

[Estimating sources of jamming] Identify the installation status of the air-conditioner and the indoor and outdoor environments to identify possible causes of the jamming.

- Indoor lighting equipment (quantity, type, location)
- Remote control units of other electrical products and equipment
- Is the grounding for the air-conditioner shared with other equipment?
- Are the surroundings of the air-conditioner clear of wireless antenna?
- Is the remote control light-receiving unit protected from direct sunlight?

[Checking and actions]

<p>Effects of lighting equipment (fluorescent lamps)</p>	<p><u>Checking points</u></p> <ul style="list-style-type: none"> · Turn on and off the lighting equipment and check for its effects on the reception of remote control signals. · When cold, the fluorescent lamp tends to emit infrared rays with wavelengths close to those used in remote control. <p>If you cannot detect the phenomenon about which your user is complaining at the time of your visit, such as "the product sometimes fails to receive remote control signals" and "the product fails to receive remote control signals in the morning alone", then turn off the lighting for about 20-30 minutes and wait for the fluorescent lamps to cool down before conducting another check.</p> <p>There are even cases where the product fails to receive remote control signals for 1 to 2 minutes only after the lighting equipment is turned on.</p> <ul style="list-style-type: none"> · The noise status may vary with the dimming of the lighting equipment. In the case of lighting equipment with a dimmer, therefore, conduct a check with all the light intensities. · If the lighting equipment is the source of the jamming, the remote control light-receiving unit output usually shows a noise waveform as shown in the right-hand figure. In the case of slight jamming, this kind of waveform will not cause practical problems. However, intense degrees of jamming will disable the reception of remote control signals. · When the fluorescent lamp is old and is flickering, it may cause disorders in the reception of remote control signals. <p><u>Output waveform of the remote control light-receiving unit</u></p>  <p><u>Actions proposed</u></p> <ol style="list-style-type: none"> 1. Make it hard for light of the lighting equipment to enter the remote control light-receiving unit. <ul style="list-style-type: none"> · Separate the lighting equipment from the indoor unit. · Raise the lighting equipment. · Cover the upper half of the light-receiving panel from its rear side with aluminum tape or black vinyl tape. <p>(This will also affect the reception of remote control signals. Therefore, set the range to be covered with tape to a range that is problem-free in practice, while checking the reception status.)</p> 2. Add an interference filter to the front panel of the remote control light-receiving unit. <p>※ Lighting equipment that produces strong jamming exists although rarely. Some problems may therefore be unsolvable by managing the air-conditioner side alone.</p> <p><u>Effects of the remote control units of other equipment</u></p> <p><u>Checking points</u></p> <ul style="list-style-type: none"> · If, on the remote control unit of a TV or audio equipment, its sound volume key or something similar is left pressed, infrared signals become continuously sent, thereby jamming the reception of remote control signals. · Check how the remote control unit and related components are stored, thereby checking if there is any possibility that a button may be inadvertently left pressed on the remote control unit of other equipment. <p><u>Actions proposed</u></p> <p>If there is any such possibility, give explanations to your users to that effect and instruct them to exercise caution.</p> 
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Effects of other electrical products	<p><u>Checking points</u></p> <ul style="list-style-type: none"> Check the effects of light and power noises coming from other electrical products. Turn on and off the electrical products, turn off the power and turn on the power, and check their effects on the reception of remote control signals. For products whose operating states change, check the effects of each state. <p><u>Actions proposed</u></p> <ul style="list-style-type: none"> Change the location relationship between the air-conditioner and the target products. Use a different wall outlet for the target products.
Sharing a grounding	<p><u>Checking points</u></p> <ul style="list-style-type: none"> Check for effects of electrical noises coming into the air-conditioner through grounding wires. Check if the grounding works is for the air-conditioner alone or shared with other equipment. If there is any equipment that shares it, turn on and off that equipment and detach and reattach the power plugs and examine their effects on the reception of remote control signals. <p><u>Actions proposed</u></p> <ul style="list-style-type: none"> Establish an independent grounding for the air-conditioner. 
Effects of radio waves	<p><u>Checking points</u></p> <ul style="list-style-type: none"> Using a wireless transmitter near the air-conditioner may affect the reception of remote control signals. Have your users try sending signals with a wireless transmitter and examine their effects on the reception of remote control signals. <p><u>Actions proposed</u></p> <ul style="list-style-type: none"> Add a ferrite core to the power cord and F cable. Add a ferrite core to the internal wiring of the indoor unit. Move the wireless antenna.
Effects of direct sunlight	<p><u>Checking points</u></p> <ul style="list-style-type: none"> Direct sunlight and other intense light make the remote control light-receiving unit less sensitive. Check for any time zone where the remote control light-receiving unit of the indoor unit is affected by direct sunlight depending on the location of the sun and mirror reflection. <p><u>Actions proposed</u></p> <ul style="list-style-type: none"> Block the sunlight to protect against direct sunlight.

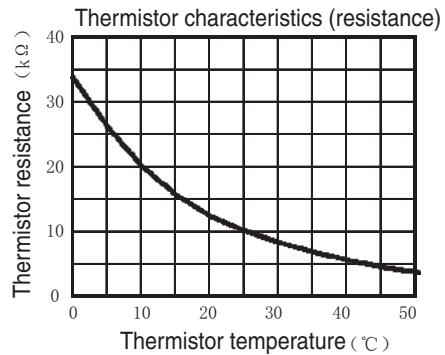
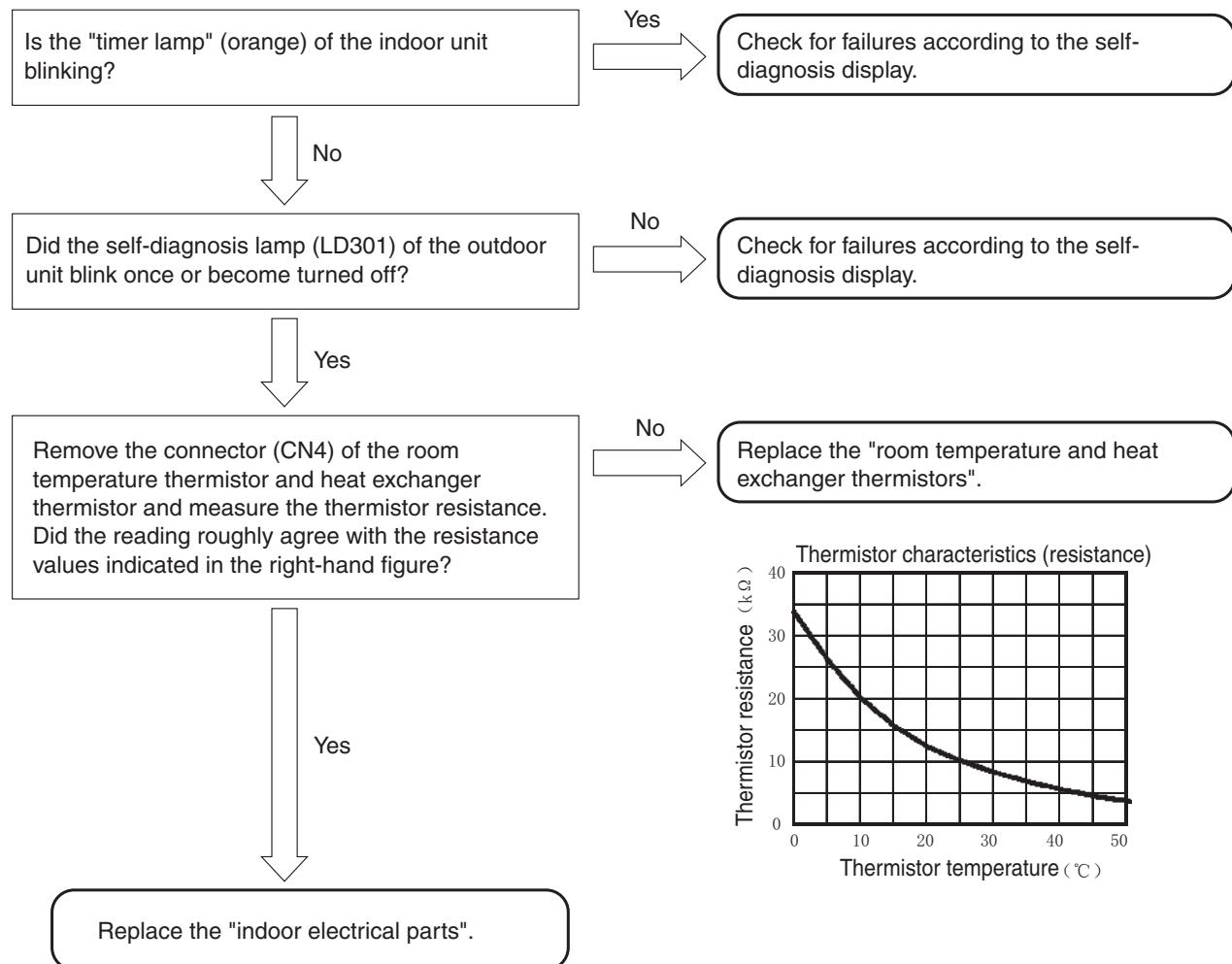
3. Failure phenomenon: The compressor will not run.

[Situation] The compressor will not run (the same state as the thermometer turned off), the product receives remote control signals normally. The self-diagnosis lamp (LD301) of the outdoor unit blinks once or becomes turned off.

[Estimated failure locations]

- Room temperature thermistor, heat exchanger thermistor
- Microcomputer peripheral circuit

[Diagnosis flow]
Initiating troubleshooting



4. Failure phenomenon: The fan motor will not stop.

[Situation] I have conducted the stop operation on the product by remote control, but the indoor fan motor will not stop.
(It stopped about 10 minutes later.)

[Estimated failure locations]

- Indoor fan motor
- Fan motor drive circuit

[Diagnosis flow]

Initiating troubleshooting

Run the product by remote control and then stop it.
(Reproduce the failure phenomenon.)
Is the voltage between pins ④ and ⑥ of the fan motor connector (CN2) below 1.5 V? (Take measurements while the failure phenomenon is present.)

Yes →

Replace the "indoor fan motor".



No

Replace the "indoor electrical parts".

5. Timer lamp blinking: blinking once

[Situation] The timer lamp blinks one time and the product will not operate.
(This is not a sign of a breakdown.)

[Estimated failure locations]

- Reversing valve defective.
- The refrigerating cycle block gas leak.

6. Timer lamp blinking: blinking twice

[Situation] The product is giving a display to indicate that it is performing forcible cooling.
(This is not a sign of a breakdown.)

7. Timer lamp blinking: blinking three times

[Situation] The timer lamp blinks three times and the product will not operate.

[Estimated failure locations]

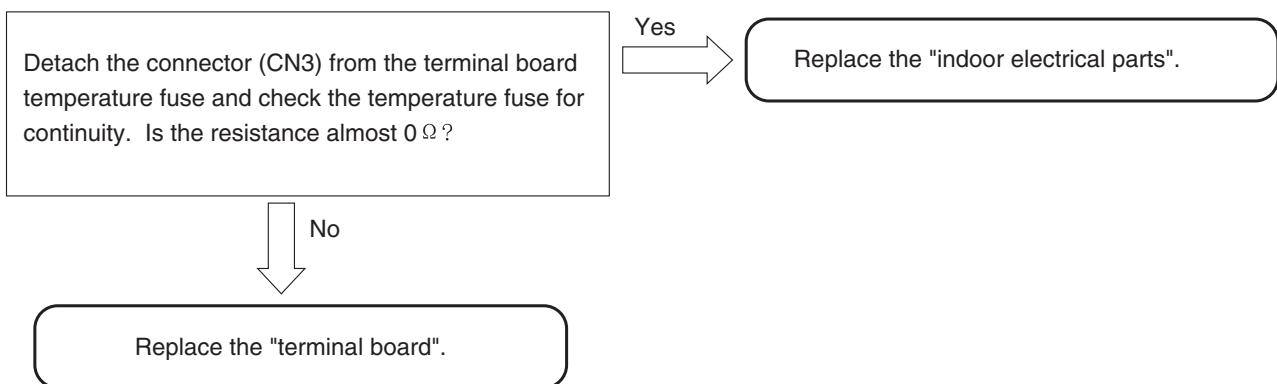
- Meltdown of the terminal board temperature fuse (the terminal board poorly inserted into the F cable)
- Outdoor communication circuit out of order

[Cautions]

- If a terminal board is replaced to counter the meltdown of the terminal board temperature fuse, ensure that the F cable to be inserted into the terminal board has the appropriate dimension for peeling the insulation sheathing and that the insertion region is unbent before inserting it into the terminal board securely.

[Diagnosis flow]

Initiating troubleshooting



8. Timer lamp blinking: blinking four times

[Situation] The timer lamp blinks four times and the product will not operate.

[Estimated failure locations]

- Outdoor unit error.
- Please confirm the times of the LD301 blinking, and then see the outdoor selfcheck table.

9. Timer lamp blinking: blinking 9 times

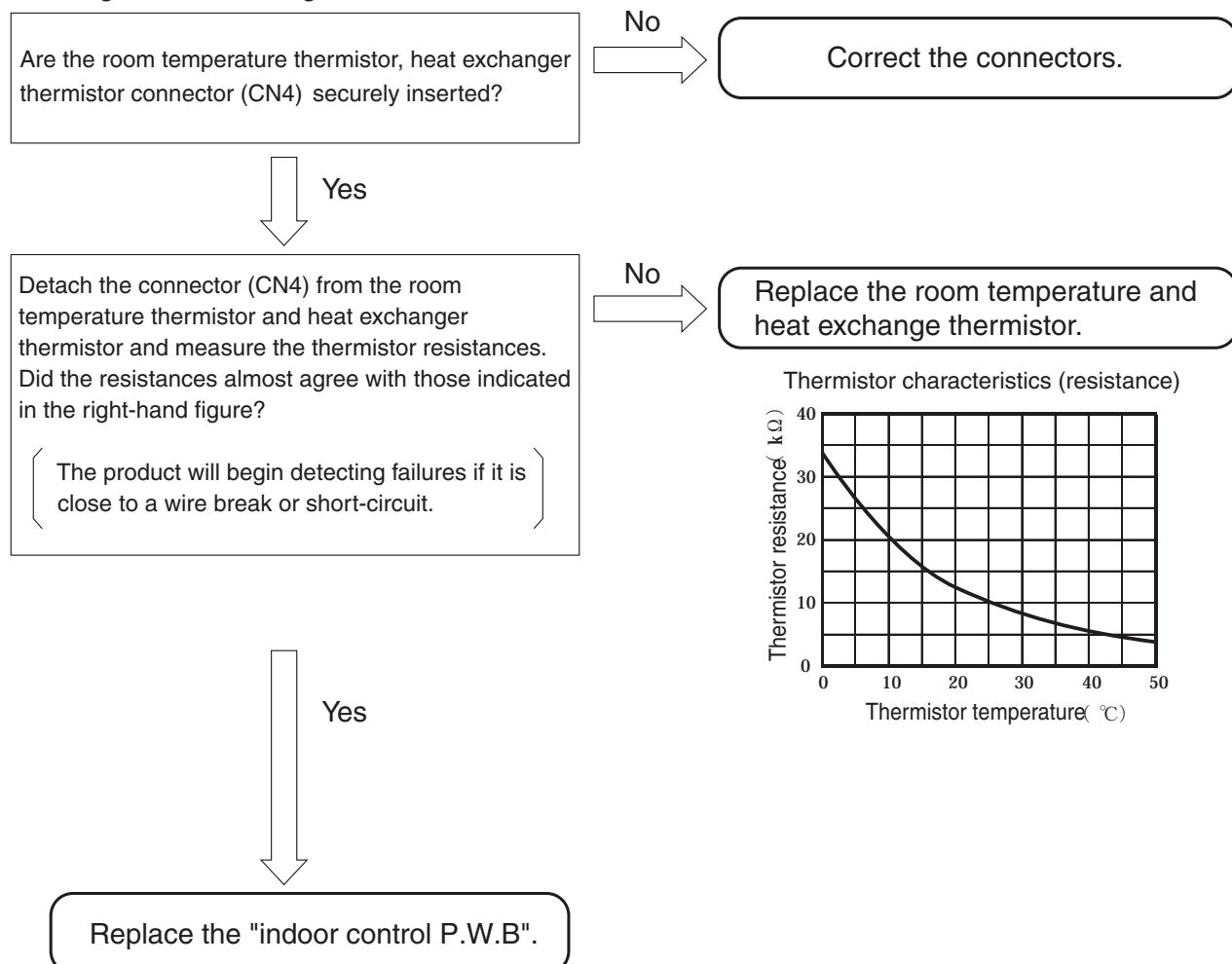
[Situation] The timer lamp blinks 9 times and the product will not run.

[Estimated failure location] • Loose connector, wire break, or short-circuit in the room temperature thermistor, heat exchanger thermistor.

[Cautions] • Starting the product by remote control will initiate failure detection.
(Merely turning on the power will not activate the failure detection function.)

[Diagnosis flow]

Initiating troubleshooting



10. Timer lamp blinking: blinking 10 times

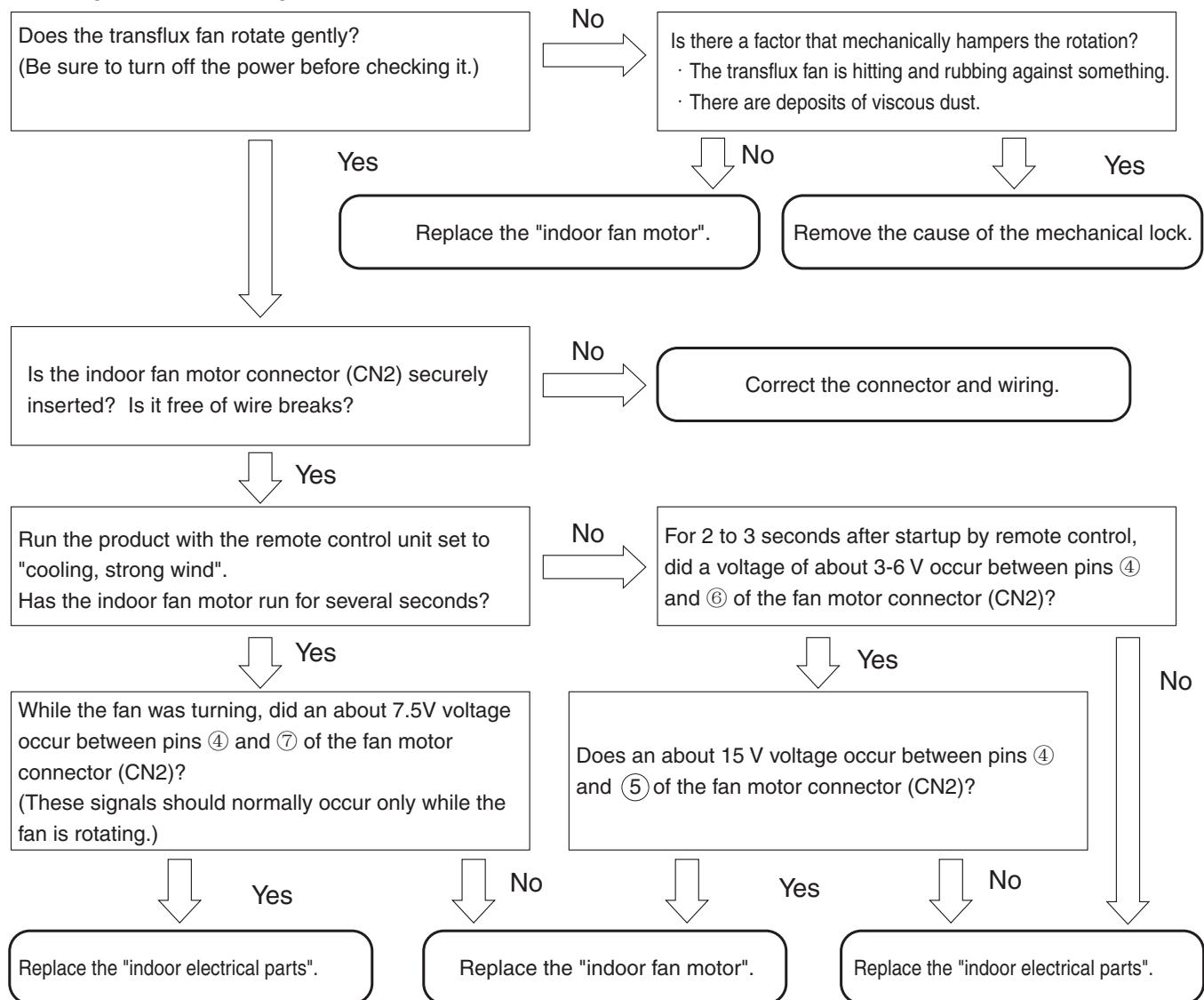
[Situation] The timer lamp blinks 10 times and the product will not run.

[Estimated failure locations]

- Loose connector or wire break in the indoor fan motor
- Indoor fan motor mechanically locked
- Indoor fan motor
- Indoor fan motor drive circuit

[Diagnosis flow]

Initiating troubleshooting



11. Timer lamp blinking: blinking 12 times

[Situation] The timer blinks 12 times and the product will not run.

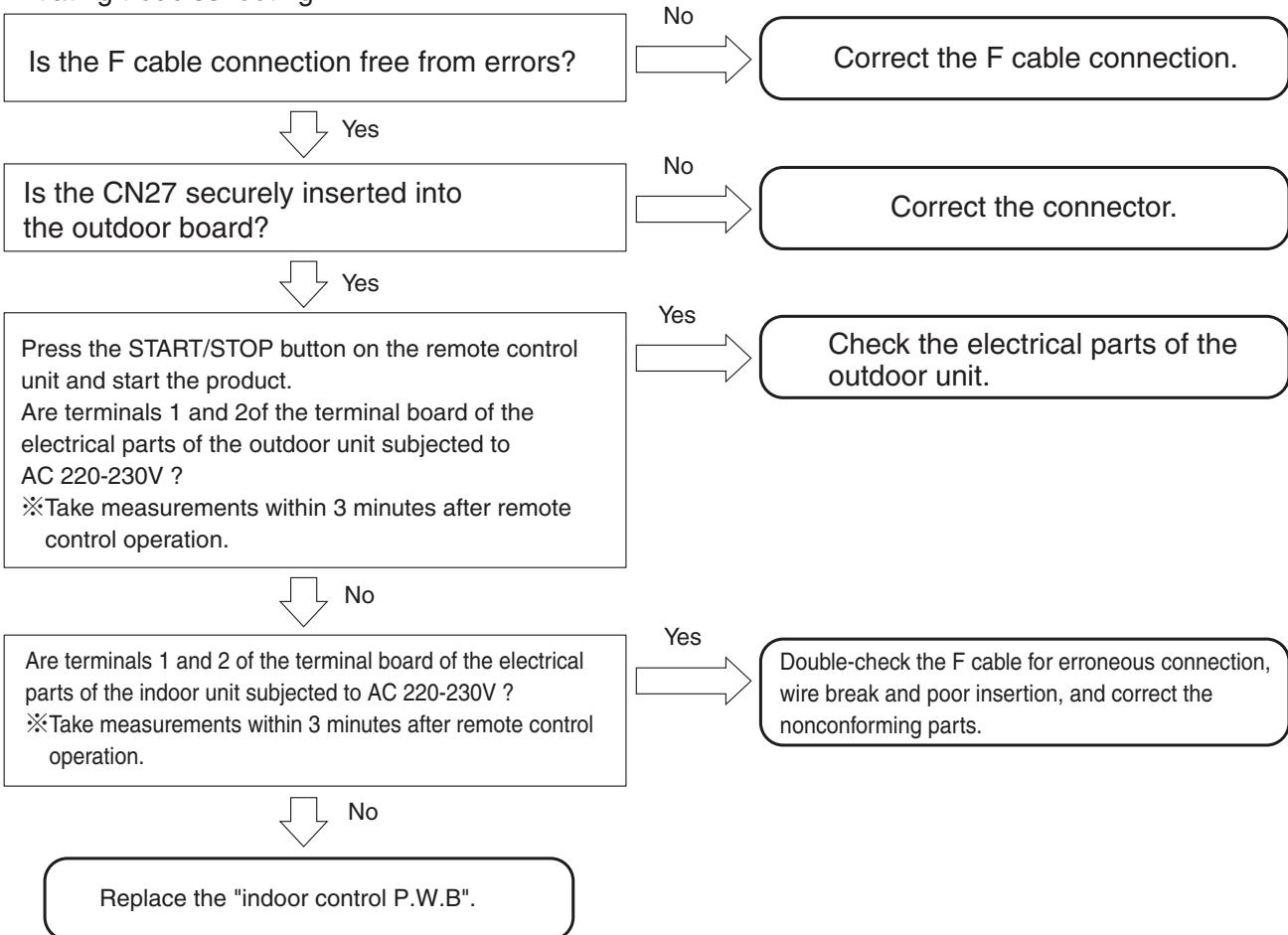
- [Estimated failure locations]
- Erroneous connection in the indoor-outdoor connection line (F cable)
 - Forget to connect CN27 of outdoor P.W.B
 - Wire break or poor insertion of the indoor-outdoor connection line (F cable)
 - Electrical parts in the outdoor unit (communication circuit, power circuit error)
 - Communication error due to noise in other home electronics
- ※This does not constitute a failure in the air-conditioner

[Cautions]

- When lines 1 and 2 of F cable are erroneously connected (crossed), the product may not enter self-diagnosis display mode. If the self-diagnosis memory stores data about "timer lamp blinked 12 times", then, just in case, check if the F cable is not erroneously connected.

[Diagnosis flow]

Initiating troubleshooting



12. Timer lamp blinking: blinking 13 times

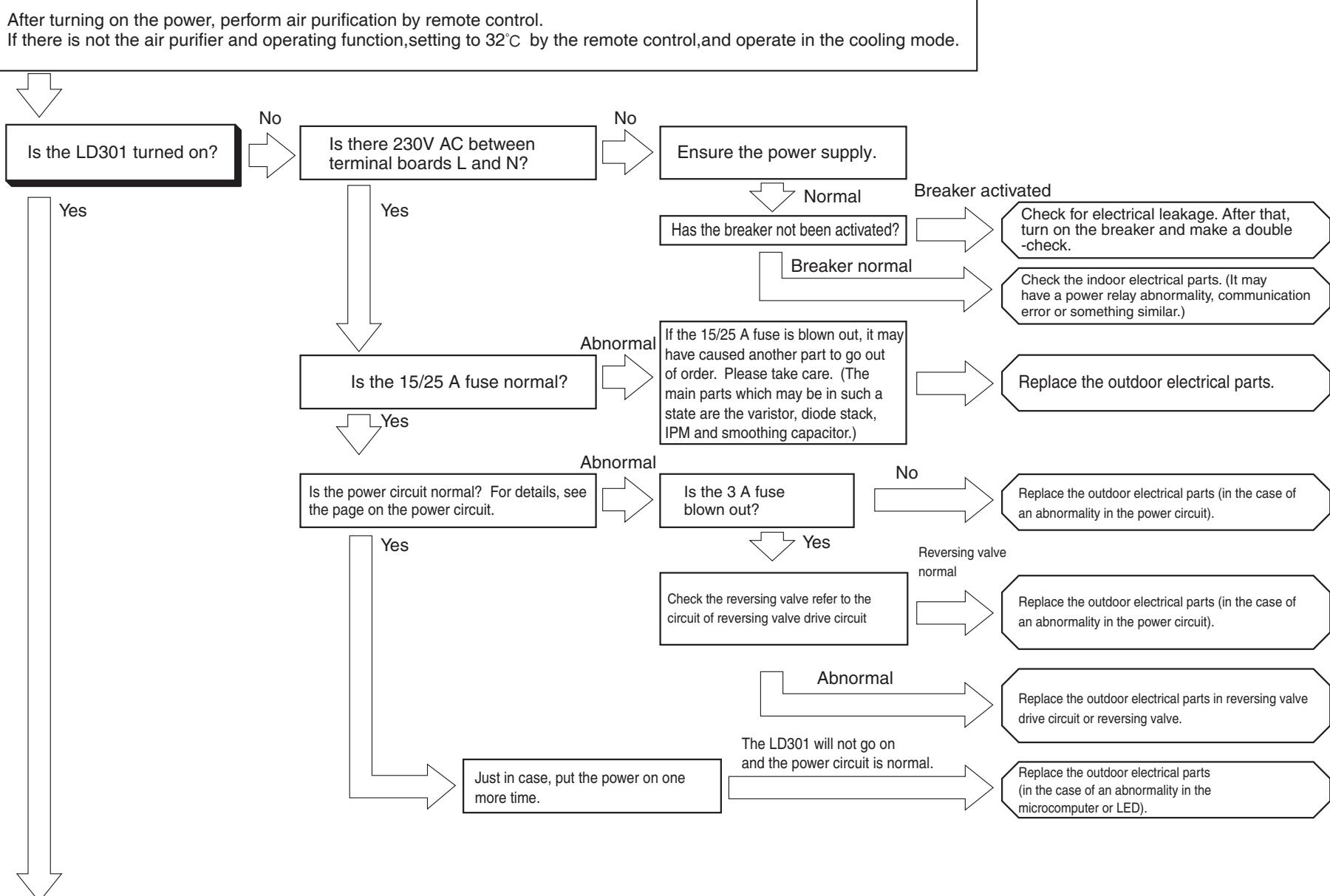
[Situation] The timer lamp blinks 13 times and the product will not run.

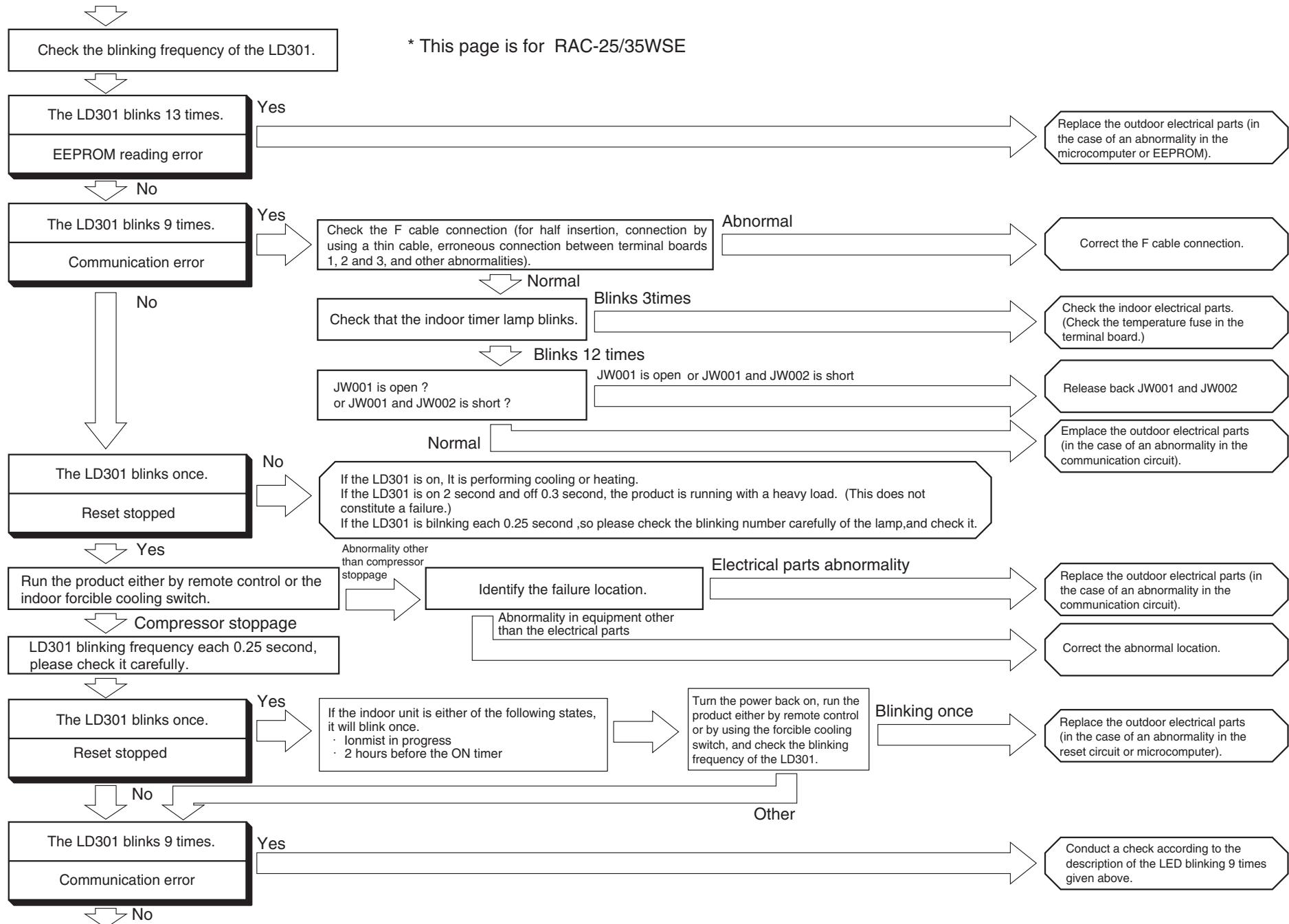
- [Estimated failure location]
- EEPROM, microcomputer

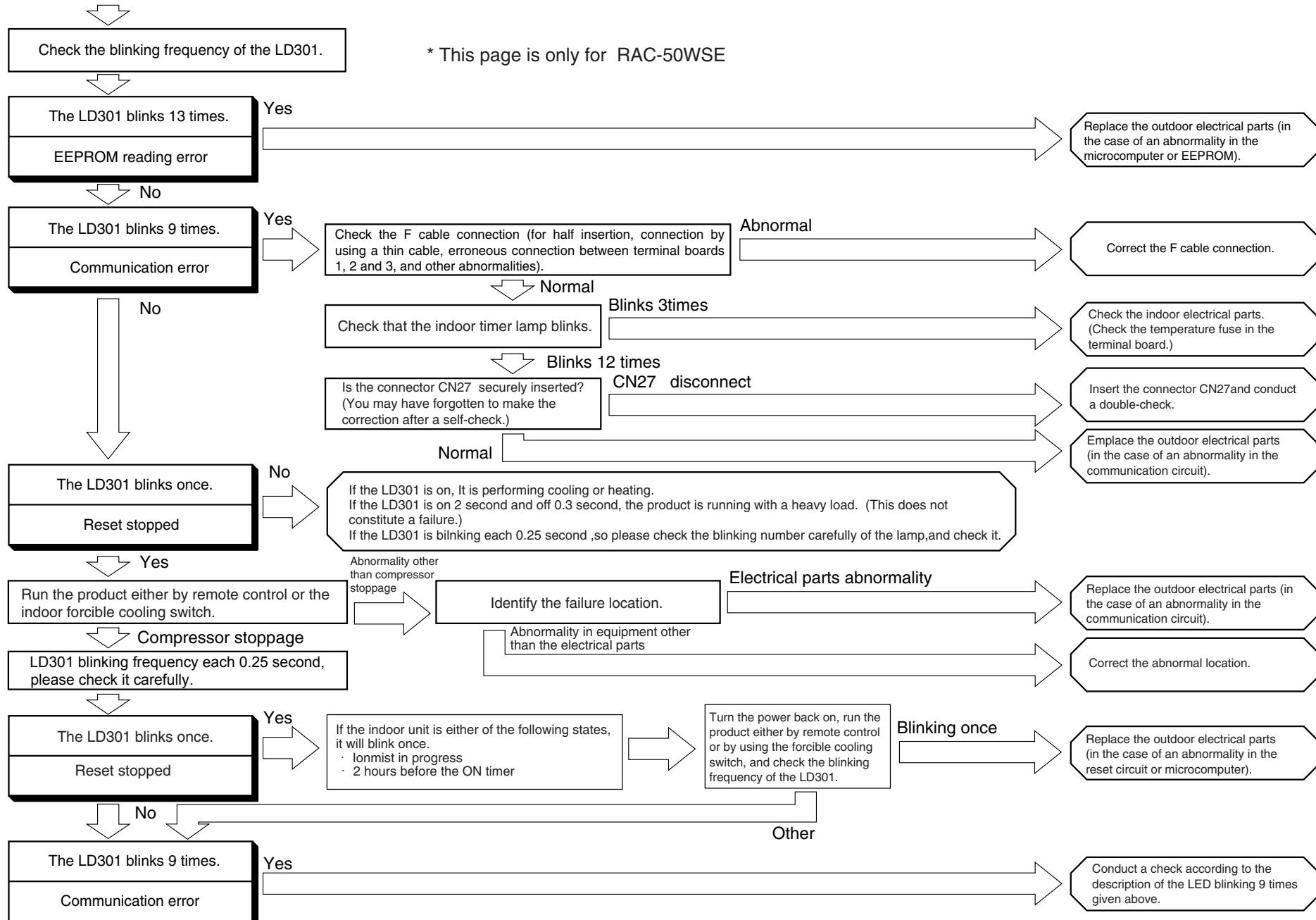
[Diagnosis flow]

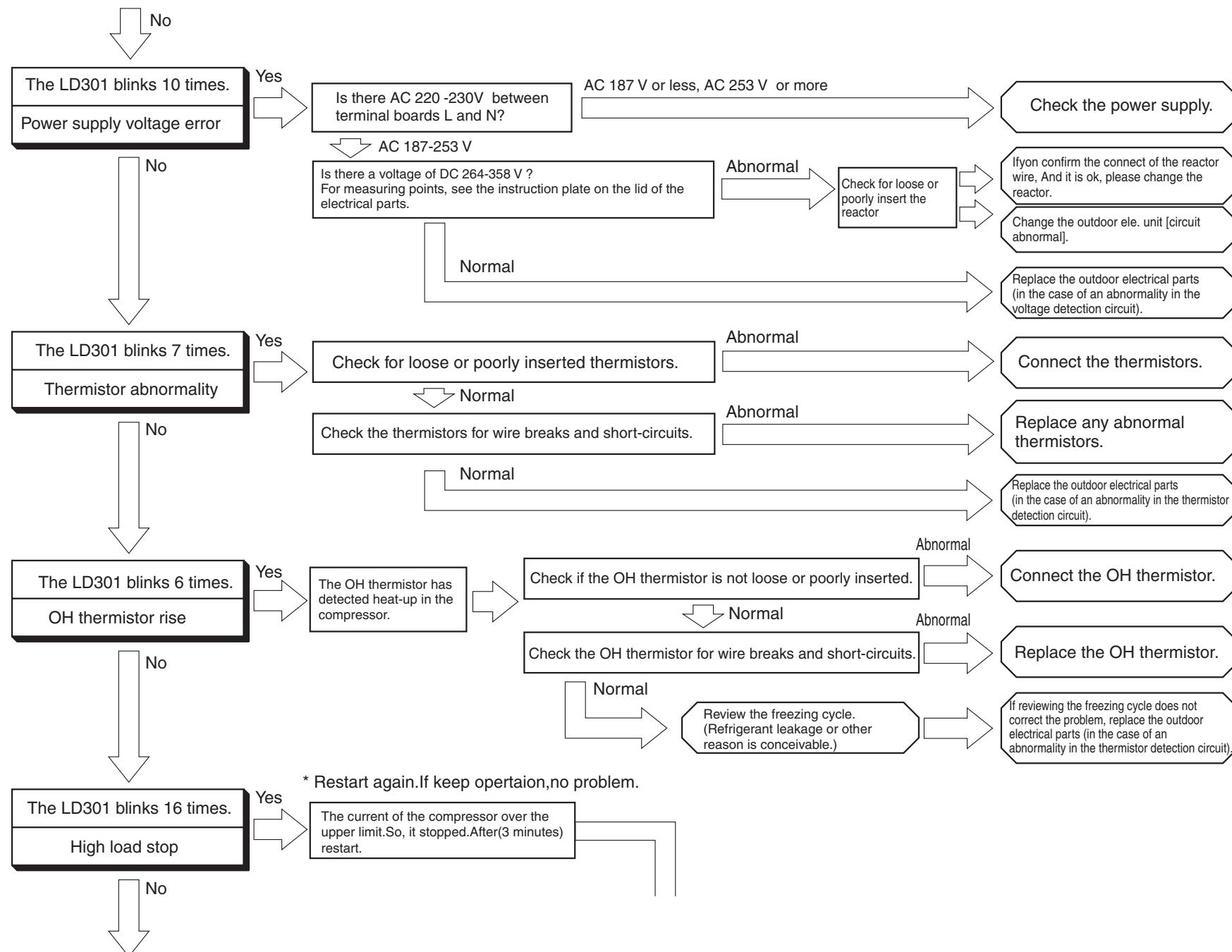
Replace the "indoor control P.W.B."

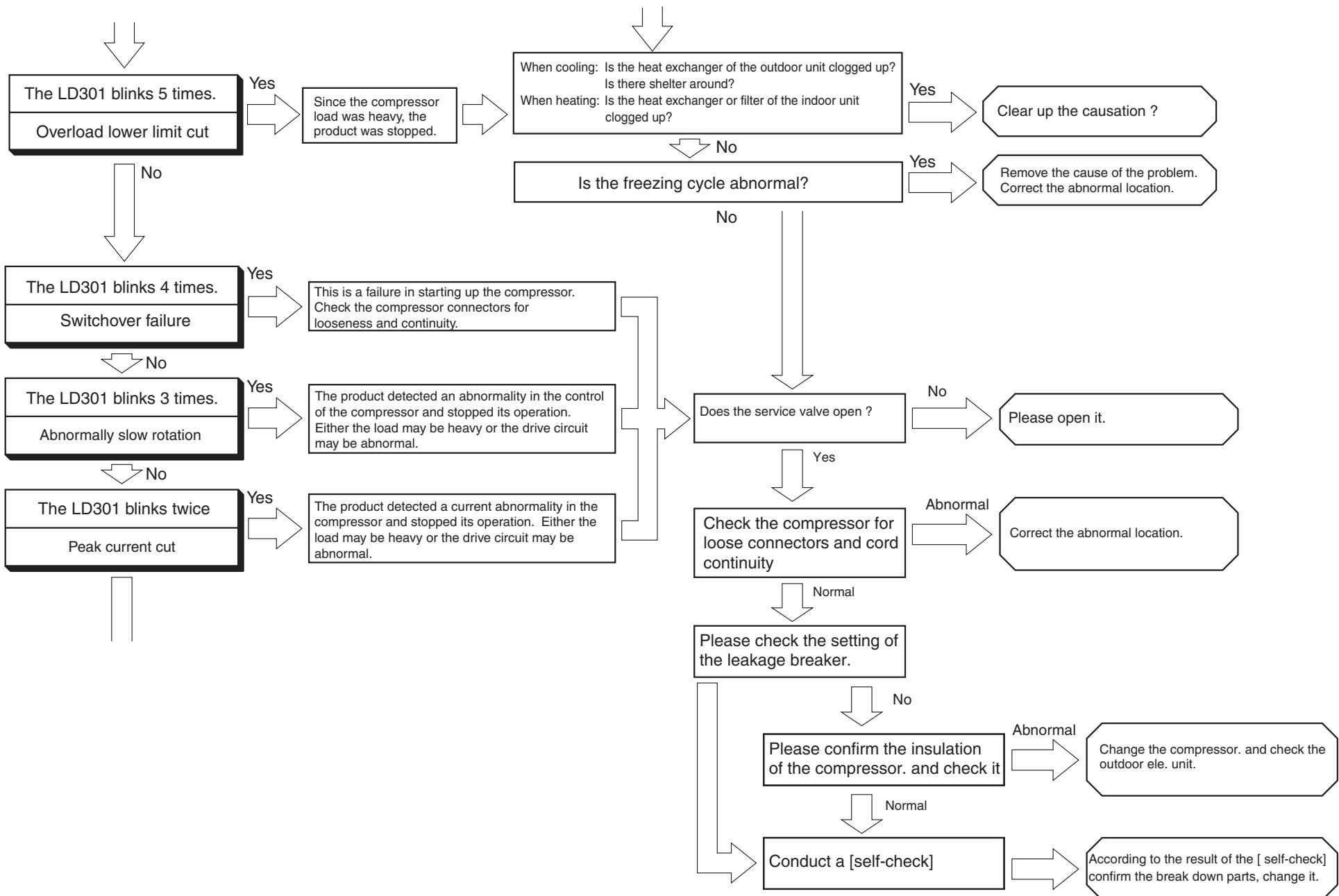
Checking the electrical parts of the outdoor unit

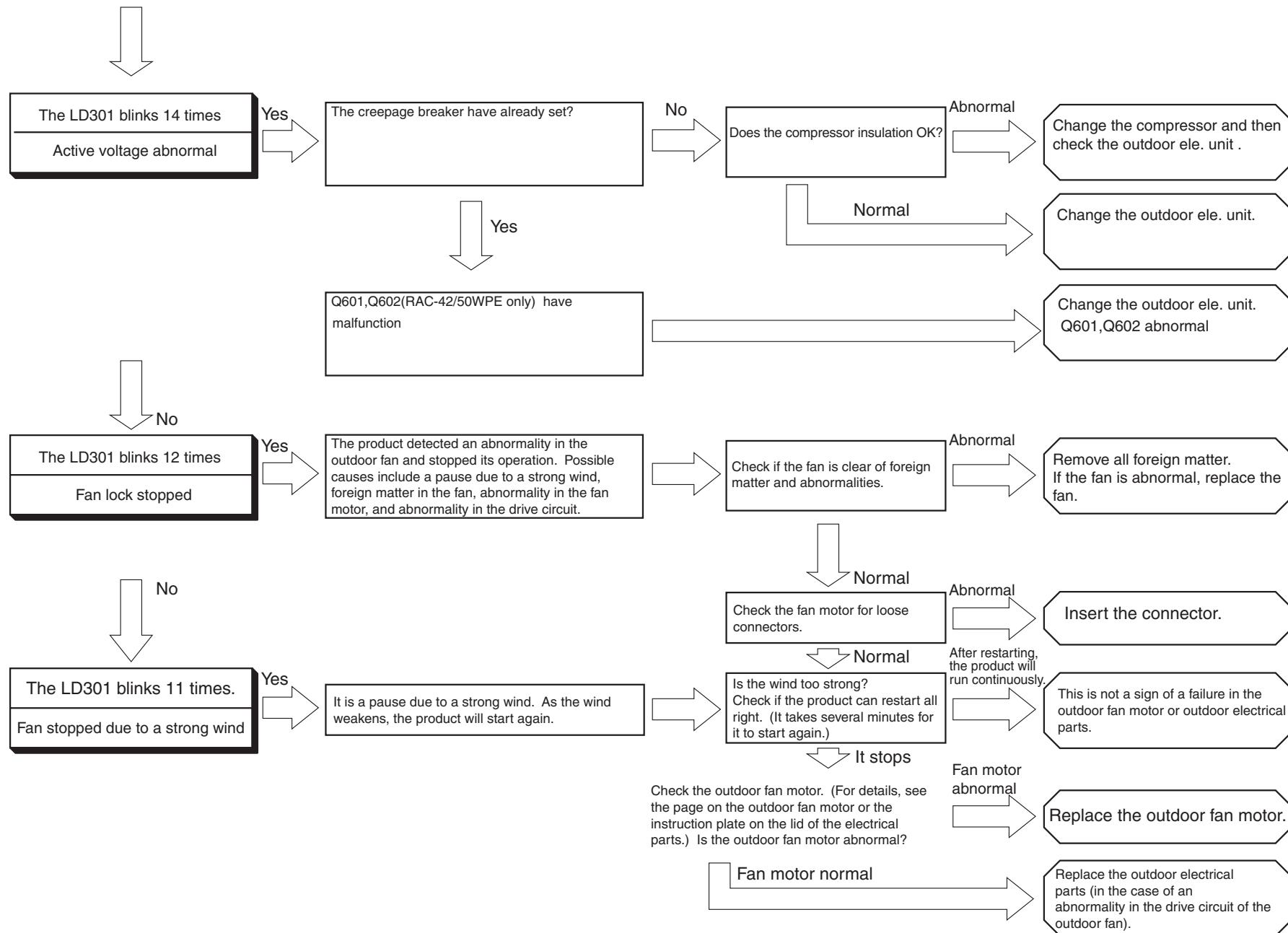












HOW TO CHANGE THE SHIFT VALUE FOR SETTING TEMPERATURE

The shift value for setting temperature of COOLING or HEATING operation can be changed with the remote controller. (This procedure should be done only by service personnel.) It is possible to reduce or increase in 3 degrees from the initial setting value. (SHIFTC and SHIFTW : ref. page *47*)

PROCEDURE

1. While pressing $\textcircled{1}$ [START/STOP] button and $\textcircled{\text{ON}}$ [ON] button, press $\textcircled{\text{RESET}}$ [RESET] button at one time. Stop pressing $\textcircled{\text{RESET}}$ [RESET] button only and make sure that all marks on the LCD display are indicated, then stop pressing the $\textcircled{1}$ [START/STOP] button and $\textcircled{\text{ON}}$ [ON] button.

(Enters "Shift Value Change Mode".)

2. Press $\textcircled{\text{MODE}}$ [MODE] selector button to select FAN mode.

3. Press $\textcircled{1}$ [START/STOP] button. (FAN operation will be started.)

4. Select the following $\textcircled{\text{FAN}}$ (FAN speed) to choose required operation mode to change.

- To change the shift value of COOLING operation, select $\textcircled{\text{HIGH}}$ (HIGH) or $\textcircled{\text{MED}}$ (MED) of FAN speed.

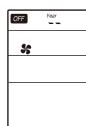
- To change the shift value of HEATING operation, select $\textcircled{\text{LOW}}$ (LOW) or $\textcircled{\text{SILENT}}$ (SILENT) of FAN speed.



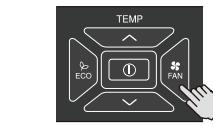
PROCEDURE 1



PROCEDURE 2



PROCEDURE 3

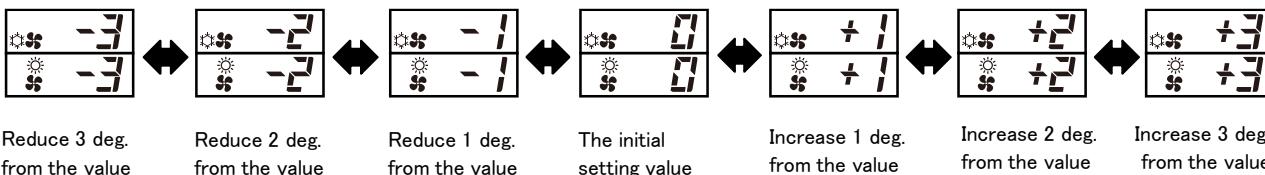
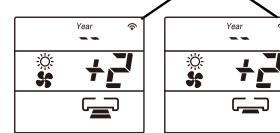
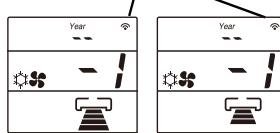
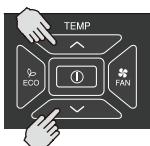


PROCEDURE 4

5. Then Press the TEMPERATURE button to change the shift value.

(The shift value is changed with a beep.)

Please check the transmission sign and a beep.



NOTE :

- (1) The indication of the changed shift value and symbol of COOLING or HEATING will disappear after 10 seconds.
- (2) The changed shift value will remain unchanged after turned off the power.
- (3) When "0" is indicated, the shift value is at the initial setting.

How to set prevention of mutual interference for remote controller

[Remote controller model : RAR-6NE2]

In this case : 2 sets indoor units are installed near to each other.

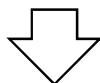
If both indoor unit can receive a remote controller signal, please set as below.

(This setting change the signal address of remote controller.)

Initial setting is A.

This flow change the signal address from A to B.

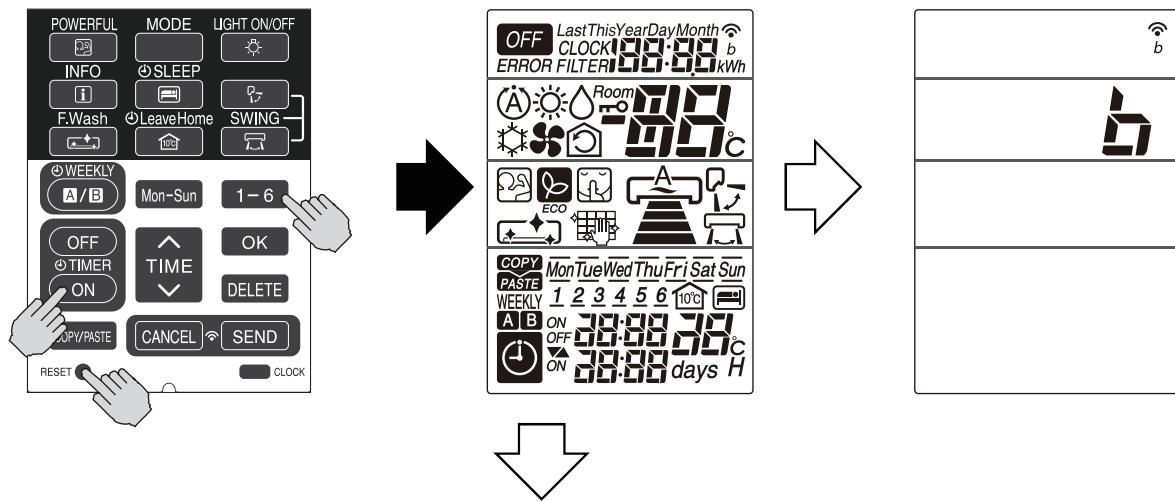
The power breaker for other unit shallbe OFF.



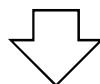
Open the slide cover of remote controller.

Direct remote controller towards the receiver of changing indoor unit and press [RESET] button while pressing [1-6] button and [ON] button. ---> Transmission

Signal transmission : From A to B



When the indoor unit receive the signalfrom remote controller, beep sound [Pip]will emit.



Please check to be used the remote controller.

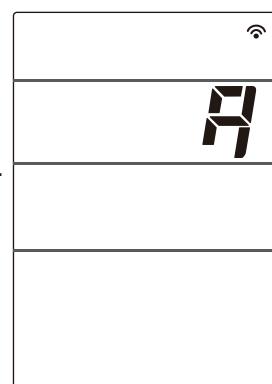
Signal transmission : From B to A

Notes : If indoor unit didnot receive the signal, setting shall be made one more time.

Once again setting, the signal address changes from B to A.

If once more again setting, the signal address change from A to B.

Please set the DIP switch No.6 to ON accordingly (Refe to page *73*).



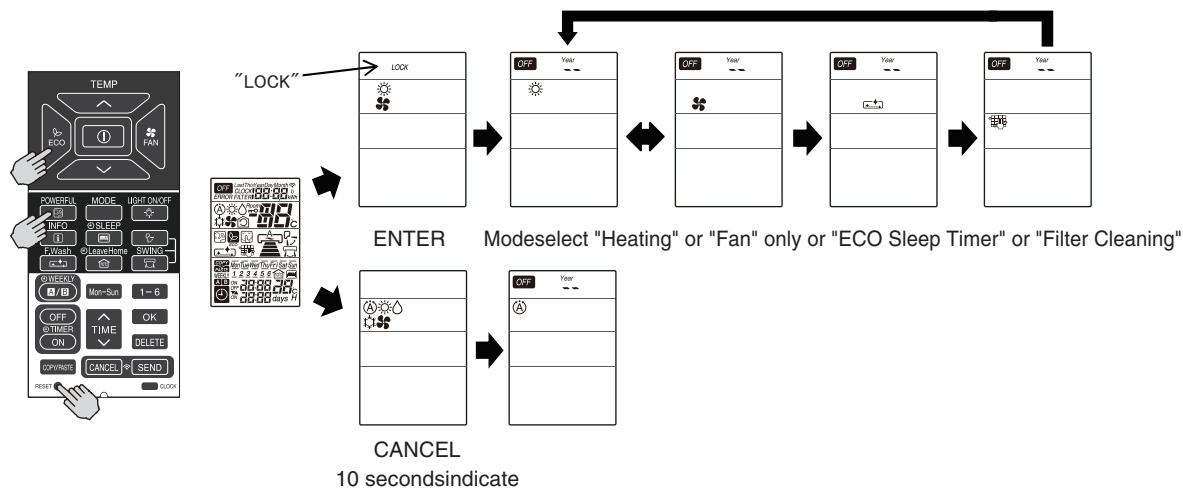
OPERATION MODE LOCK SETTING

When the Dip-switch of indoor unit is changed into "Heating mode only" or "Cooling mode only", the remote controller also needs to be changed into operation mode lock setting. (Refer to Page *73 *) If the setting of remote controller is not changed , the indoor unit and the remote controller can not been match.

PROCEDURE

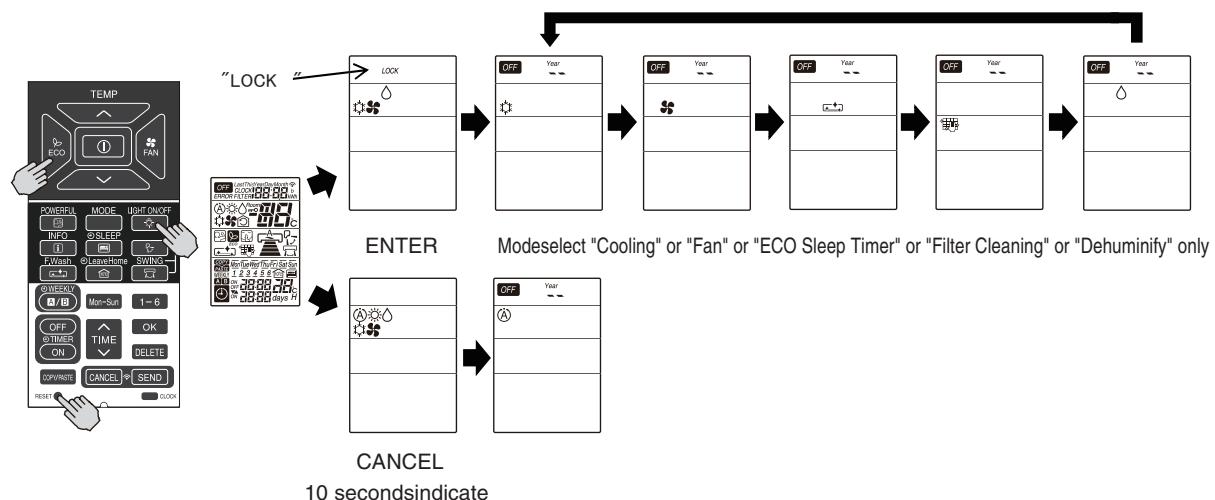
1. Heating opearation mode lock

- (1) While pressing  [ECO] button and  [POWERFUL] button, simultaneously for about 5 seconds when the remobe controller is OFF.
- (2) Once again "1-(1)" operation , "Heating operation mode lock" is cancelled.



2. Cooling opearation mode lock

- (1) While pressing  [ECO] button and  [LIGHT ON/OFF] button, simultaneously for about 5 seconds when the remobe controller is OFF.
- (2) Once again "2-(1)" operation , "Cooling operation mode lock" is cancelled.



NOTE :

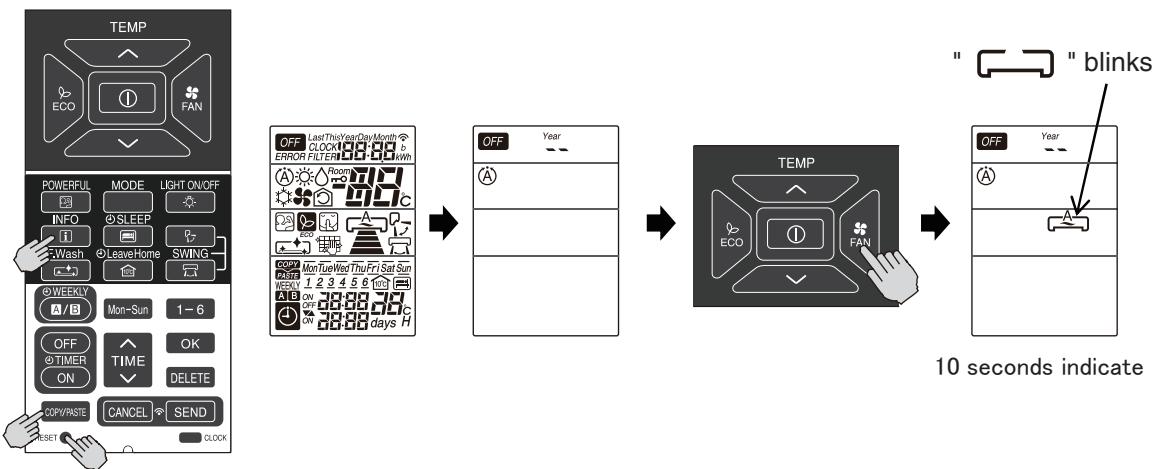
- (1) The indication of "LOCK" and MODE symbols will disappear after 10 seconds.
- (2) The OPERATION MODE LOCK setting is memorized even if batteries are exhausted.

DISPLAY OPERATION MODE SETTING

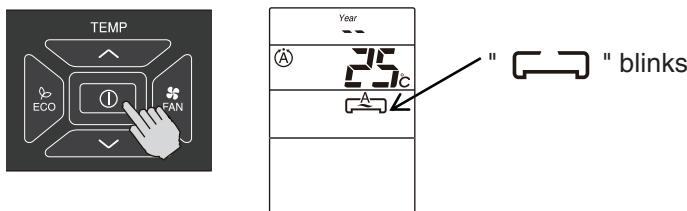
This is the remote controller setting method for operating indoor unit independently by display etc. New communication format(Between indoor and outdoor) is required to communicate with outdoor unit. So this setting is required in order to operate indoor unit independently.

PROCEDURE

1. While pressing  [INFO] button and  [COPY/PASTE] button, press  [RESET] button at one time. Stop pressing  [RESET] button only and make sure that all marks on the LCD display are indicated, then stop pressing the  [INFO] button and  [COPY/PASTE] button. Remote controller enters "DISPLAY OPERATION MODE" for indoor unit independently. Please check that press  [FAN] button and " 



2.  [MODE] select, then press  [START/STOP] button. Indoor unit starts to operate independently operation mode.



NOTE :

- (1) During "DISPLAY OPERATION MODE", " - (2) When operation stops, "DISPLAY OPERATION MODE" is canceled.

How to run the product with the outdoor unit test switch

If the indoor electrical parts is out of order and if you wish to run the outdoor unit

1. Turn on the outdoor terminal boards L and N (220-230 V AC).
2. Confirm that the "LD301" blinks once from the terminal side of the outdoor unit. Afterwards (when about 30 sec elapses after the power turns on), confirm that the "LD301" changes to blinking 9 times (communication error).
3. When the "LD301" is blinks 9 times, if you press the test switch, the "LD301" lights up.

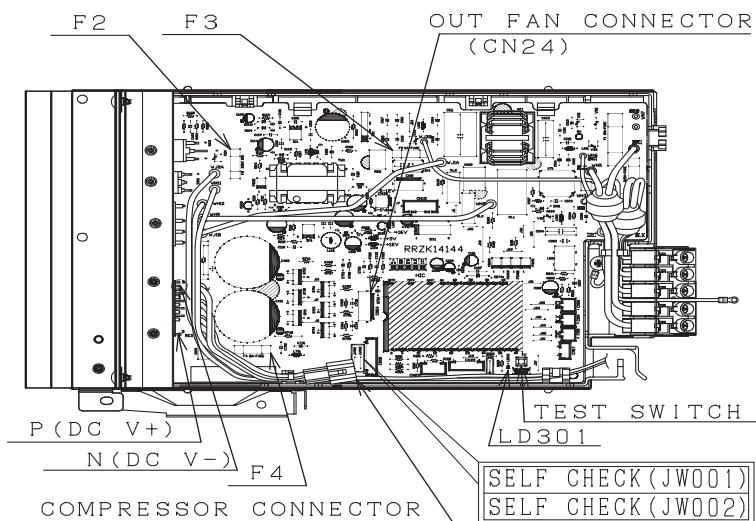
If you release your finger from the test switch within 1 sec to 5 sec after pressing the switch, the forced cooling operation starts.

※(If you press the test switch for 5 sec or longer, the self-check diagnosis starts. In this case, turn the power off and start the procedure from 1 again.)

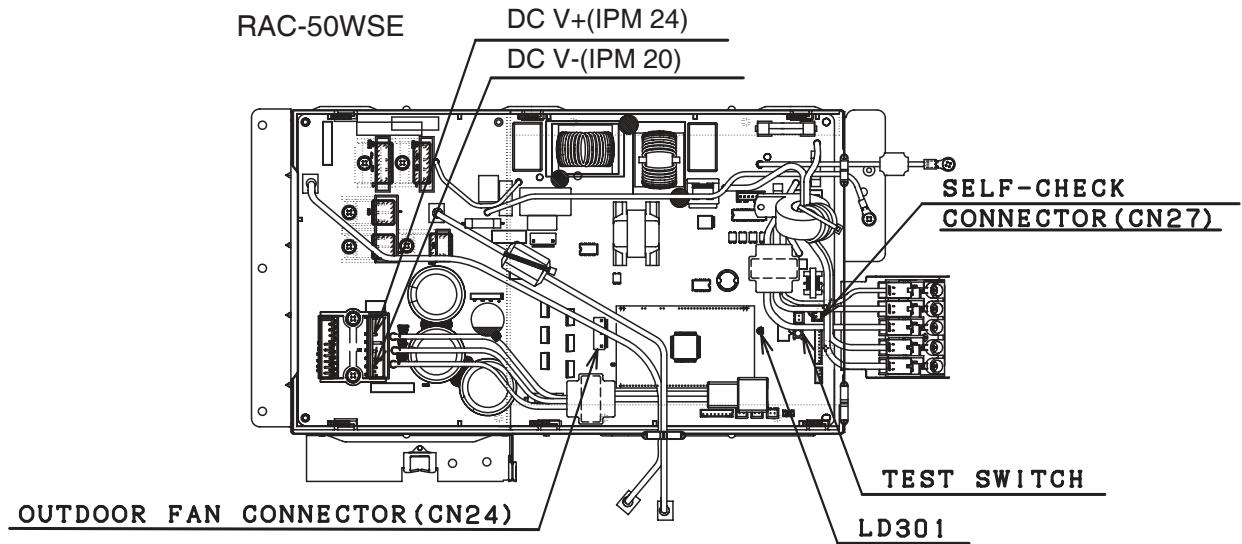
※(For the initialization of the expansion valve, it may take 1 min until the operation starts.)

4. When you press the test switch again for 1 sec or longer, the unit stops the operation.

RAC-25/35WSE



RAC-50WSE



※Cautions

1. Applying power directly to the outdoor unit will cause a rush current to stress the outdoor unit. Therefore, if the indoor unit is not out of order, do not use the method described in 2).
2. Before making the connections, be sure to turn off the breaker.
3. Do not under any circumstances run the product for more than 5 minutes.
4. Doing work with the compressor connector removed will cause the LD301 to blink 4 times. It will not start.
5. For another test run, turn off the breaker and turn it back on. (The test switch is accepted only once after power-on. After operation by remote control, it is not accepted.)
6. When the operation with the test switch is over, turn off the breaker and set the connectors back.

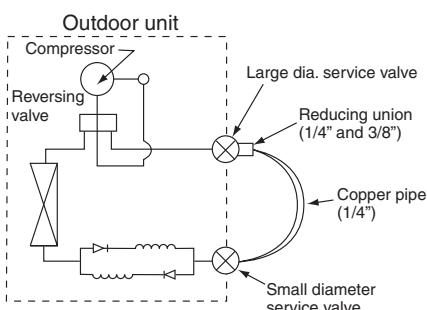
HOW TO OPERATE THE OUTDOOR UNIT INDEPENDENTLY

RAC-25/35WSE

1. Connect the large dia. pipe side and small dia. pipe side service valve using a pipe.

Connect the small diameter service valve and the large diameter service valve using the reducing union and copper pipe as shown on the right.

Charge refrigerant of 300g
after vacuuming (※1)



Parts to be prepared

- (1) Reducing union
1/4" (6.35 mm)
3/8" (9.52 mm)
(2) Copper pipe (1/4" and 3/8")

Do not operate for more than 5 minutes

The operation method is the same as "How to operate using the connector to servicing the outdoor unit".

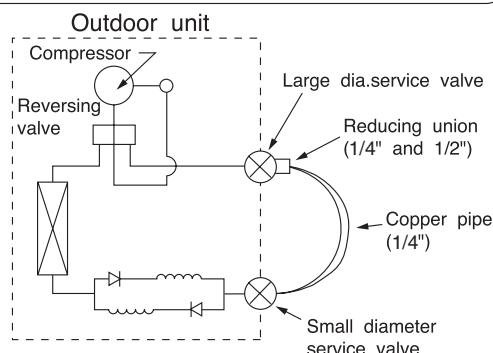
※1 The charging amount of 300g is equivalent to the load in normal operation.

RAC-50WSE

1. Connect the large dia. pipe side and small dia. pipe side service valves using a pipe.

Connect the small diameter service value and the large diameter service valve using the reducing union and copper pipe as shown on the right.

Charge refrigerant of 300g
after vacuuming (※1)



Parts to be prepared

- (1) Reducing union
1/4" (6.35mm)
1/2" (12.7mm)
(2) Copper pipe (1/4" and 1/2")
(3) Shorting leads
2 leads approx. 10 cm long
with alligator clip or IC clip

Do not operate for 5 minutes or more.

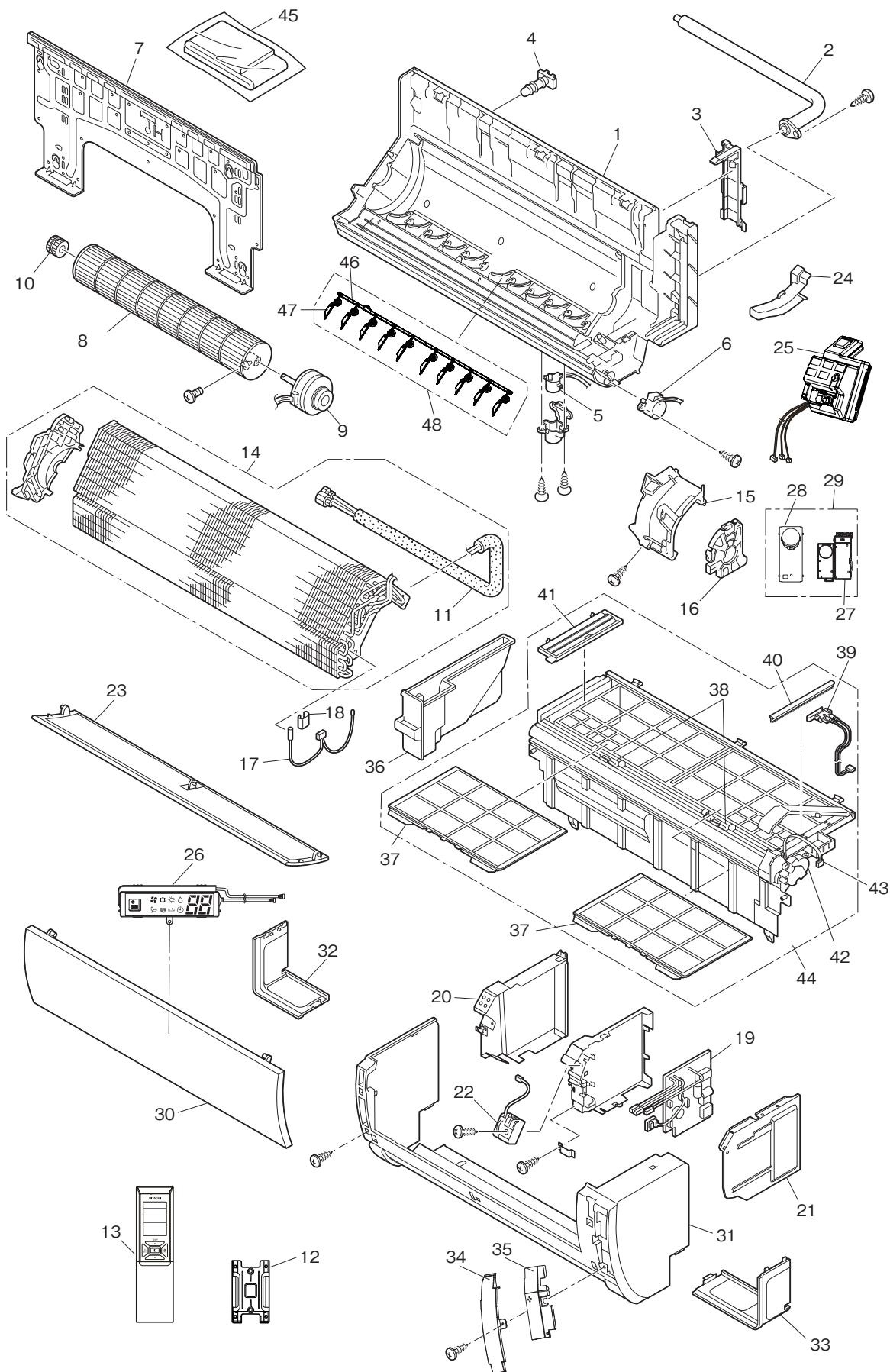
The operation method is the same as "How to operate using the connector to servicing the outdoor unit".

※1 The charging amount of 300g is equivalent to the load in normal operation.

PARTS LIST AND DIAGRAM

INDOOR UNIT

MODEL: RAK-25/35/50PSEW、RAK-25/35/50PSES



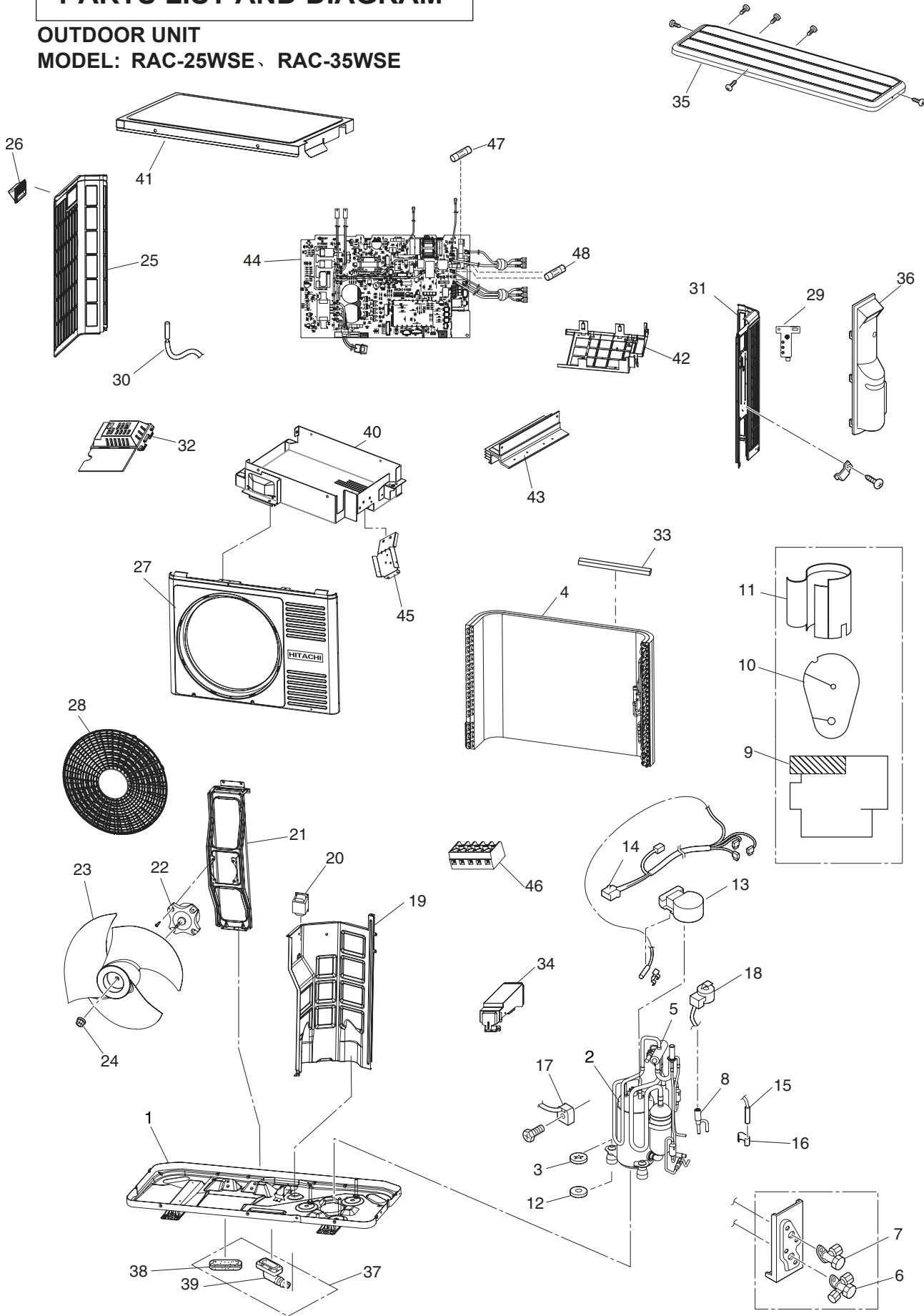
MODEL RAK-25/35/50PSEW, RAK-25/35/50PSES

NO	JCH-WH PARTS NO						Q'TY/ UNIT	PARTS NAME
	RAK-25PSEW	RAK-35PSEW	RAK-50PSEW	RAK-25PSSES	RAK-35PSSES	RAK-50PSSES		
1							1	CABINET ASSEMBLY
2				HWRAK-18RPD A10			1	DRAIN HOSE
3				HWRAK-25PSEW A02			1	COVER (REAR) (RIGHT)
4				HWRAK-18PSPA 919			1	DRAIN CAP
5				HWRAK-18RPD A02			1	STEPPING MOTOR
6				HWRAK-25PSEW A03			1	STEPPING MOTOR
7				HWRAK-25PSEW A04			1	MOUNTING PLATE
8				HWRAK-25PSEW A05			1	TANGENTIAL AIR FLOW FAN
9				HWRAS-K10HCG 903			1	FAN MOTOR
10				HWRAK-18PED A03			1	FAN SUPPORT ASSEMBLY
11		HWRAK-50PSEW A01			HWRAK-25PSEW A06		1	PIPE SET
12				HWRAK-18PPB 902			1	RE-HOLDER
13				HWRAK-25PSEW A07			1	REMOTE CONTROLLER
14		HWRAK-50PSEW A02			HWRAK-25PSEW A08		1	HEAT EXCHANGER ASSEMBLY
15				HWRAK-18RPD A03			1	FAN MOTOR SUPPORT (LEFT)
16				HWRAK-18PED A04			1	FAN MOTOR SUPPORT (RIGHT)
17				HWRAK-18PED A10			1	THERMISTOR ASSEMBLY
18				HWRAC-X18HAK A03			1	THERMISTOR SUPPORT
19	HWRAK-25PSEW A09	HWRAK-35PSEW A01	HWRAK-50PSEW A03	HWRAK-25PSSES A01	HWRAS-35PSSES A01	HWRAK-50PSSES A01	1	P.W.B. (CONTROL)
20				HWRAK-25PSEW A10			1	ELECTRIC PARTS PLATE
21				HWRAK-25PSEW A11			1	ELECTRIC PARTS COVER
22				HWRAS-DX10CSK A12			1	TERMINAL BOARD (3P)
23		HWRAK-25PSEW A12			HWRAK-25PSSES A02		1	HORIZONTAL AIR DEFLECTOR ASSEMBLY
24				HWRAK-25PSEW A13			1	FC-GUIDE
25				HWRAK-25PSEW A14			1	SENSOR
26		HWRAK-25PSSES A03			HWRAK-25PSEW A15		1	DISPLAY SUBSTRATE ASS'Y
27				HWRAK-25PSEW A16			1	HUMAN SENSOR COVER
28				HWRAK-18RPD A20			1	P.W.B.(HUMAN SENSOR)
29				HWRAK-25PSEW A17			1	HUMAN SENSOR ASS'Y
30		HWRAK-25PSEW A18			HWRAK-25PSSES A04		1	FRONT PANEL ASSEMBLY
31		HWRAK-25PSEW A19			HWRAK-25PSSES A05		1	FRONT COVER ASSEMBLY
32		HWRAK-25PSEW A20			HWRAK-25PSSES A06		1	COVER (LOWER) (LEFT)
33		HWRAK-25PSEW A21			HWRAK-25PSSES A07		1	COVER (LOWER) (RIGHT)
34				HWRAK-25PSEW A22			1	TERMINAL COVER ASSEMBLY
35				HWRAK-25PSEW A23			1	TERMINAL COVER ASSEMBLY
36				HWRAK-25PSEW A24			1	DUST BOX
37				HWRAK-25PSEW A25			2	STAINLESS MESH FILTER
38				HWRAK-25PSEW A26			2	FILTER LOCKER
39				HWRAK-25PSEW A27			1	SWITCH(THE RIGHT OF CLEANING UNIT)
40				HWRAK-25PSEW A28			1	WIPER (BRUSH)
41				HWRAK-25PSEW A29			1	WIPER ASSEMBLY
42				HWRAS-SX10HAK A62			1	AUTO SWEEP MOTOR
43				HWRAK-25PSEW A30			1	CORD (4P) (FOR AUTO SWEEP MOTOR)
44				HWRAK-25PSEW A31			1	FILTER CLEANING UNIT
45				HWRAS-SX10HAK A68			1	HEAT INSULATING MATERIAL (FOR REFRIGERATING PIPE SET WHEN INSTALLING)
46				HWRAK-25PSEW A32			1	LINK-PLATE
47				HWRAK-25PSEW A33			10	VERTICAL AIR DEFLECTOR
48				HWRAK-25PSEW A34			1	VERTICAL AIR DEFLECTOR ASSEMBLY

PARTS LIST AND DIAGRAM

OUTDOOR UNIT

MODEL: RAC-25WSE、RAC-35WSE



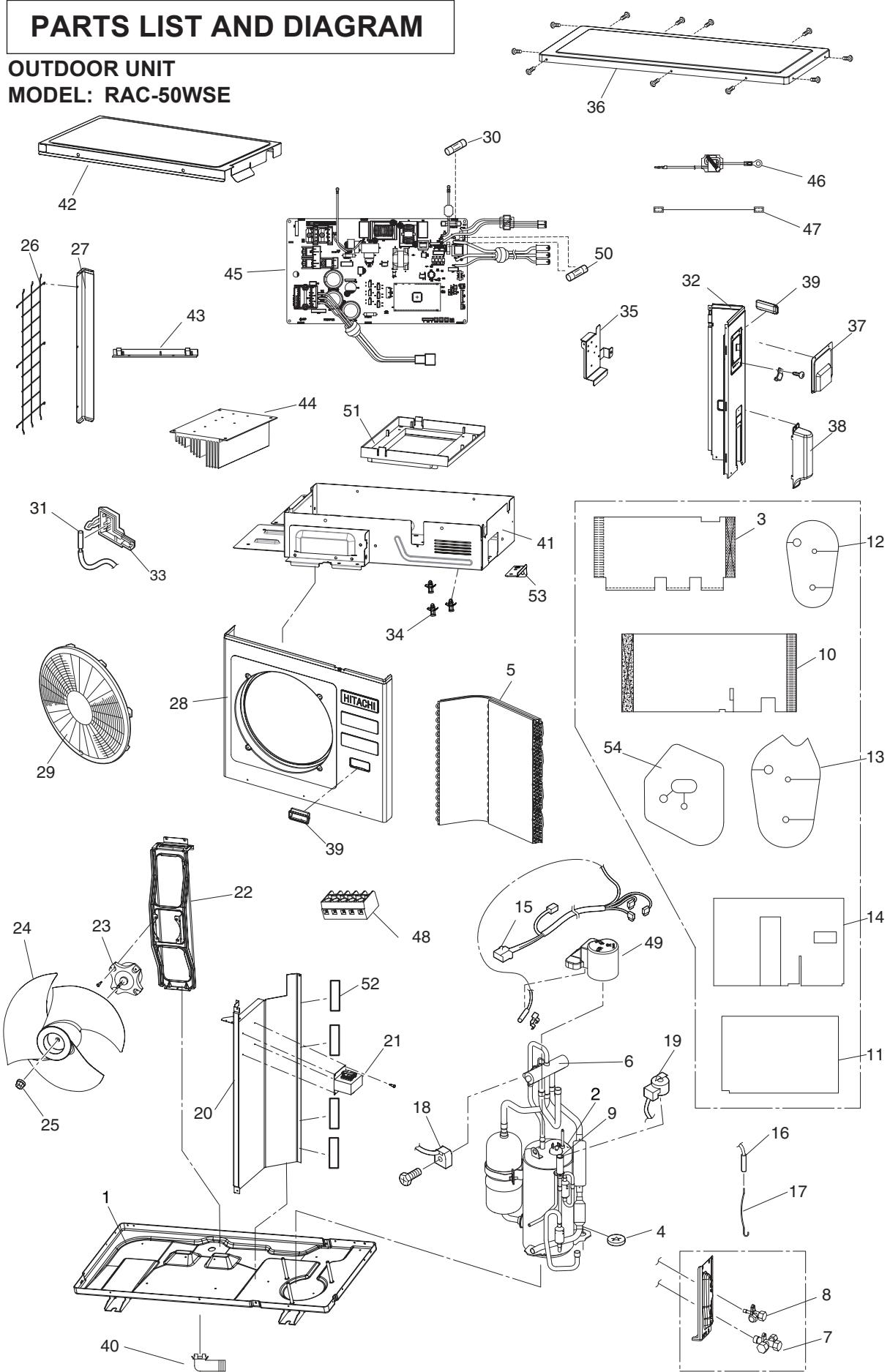
MODEL RAC-25WSE,RAC-35WSE

NO	JCH-WH PARTS NO		Q'TY/UNIT	PARTS NAME
	RAC-25WSE	RAC-35WSE		
1	HWRAC-50WPC A01		1	BASE
2	HWRAC-25WXD A01		1	COMPRESSOR
3	HWRAC-50NX2 A04		3	PUSH NUT
4	HWRAC-25WXD A02		1	CONDENSER
5	HWRAC-25WXD A03		1	REVERSING VALVE ASSEMBLY
6	HWRAC-10GH5 A03		1	SERVICE VALVE
7	HWRAC-50WEA A06		1	SERVICE VALVE
8	HWRAC-50WED A03		1	ELECTRIC EXPANSION VALVE
9	HWRAC-25WXD A04		1	SOUND PROOF
10	HWRAC-25WXD A05		2	SOUND PROOF
11	HWRAC-25WXD A06		1	SOUND PROOF
12	HWRAC-25WXD A07		3	RUBBER RING
13	HWRAC-25WXD A08		1	O.L.R COVER
14	HWRAC-25WSE A01		1	CONNECTING CORD(COMPRESSOR)
15	HWRAC-50NX2 A16		1	THERMISTOR (DEFROST)
16	HWRAC-50NX2 A17		1	THERMISTOR SUPPORT
17	HWRAC-25WXD A09		1	COIL(REVERSING VALVE)
18	HWRAC-50WED A07		1	COIL(EXPANSION VALVE)
19	HWRAC-25WSE A02		1	PARTITION
20	HWRAC-18WED A07		1	REACTOR
21	HWRAC-25WSE A03		1	FAN MOTOR SUPPORT
22	HWRAC-42WPD A03		1	FAN MOTOR
23	HWRAC-50WEC A12		1	PROPELLER FAN
24	HWRAC-50NX2 A25		1	NUT (PROPELLER FAN)
25	HWRAC-50NX2 A26		1	SIDE COVER (L)
26	HWRAC-50NX2 A27		1	HANDLE
27	HWRAC-50WED A11		1	FRONT COVER
28	HWRAC-50WEC A14		1	DISCHARGE GRILL
29	HWRAC-50WEA A14		1	EARTH-PLATE
30	HWRAC-E14H3 914		1	THERMISTOR(OUTDOOR TEMPERATURE)
31	HWRAC-25WSE A04		1	SIDE COVER (R)
32	HWRAC-18WSPA A24		1	TC-COVER
33	HWRAC-25WSE A05		1	H-SHEET
34	HWRAC-50WEC A16		1	TERMINAL COVER
35	HWRAC-SX18HAK A28		1	TOP COVER
36	HWRAC-50WED A13		1	SERVICE VALVE COVER
37	HWRAC-50NX2 A36		1	BUSH ASSEMBLY
38	HWRAC-50NX2 A37		2	BUSH
39	HWRAC-50NX2 A38		1	DRAIN PIPE
40	HWRAC-25WSE A06		1	ELECTRIC PARTS PLATE
41	HWRAC-18WPD A13		1	ELECTRIC PARTS COVER
42	HWRAC-35WPC A11		1	SUPPORT (P.W.B.)
43	HWRAC-25YHA5 A21		1	HEAT SINK
44	HWRAC-25WSE A07	HWRAC-35WSE A01	1	P.W.B.(MAIN)
45	HWRAC-25WSE A08		1	TERM-PLATE
46	HWRAC-50WED A16		1	TERMINAL BOARD (5P)
47	HWRAC-18WPD A09		1	FUSE (15A)
48	HWRAC-25WXD A11		2	FUSE (3.15A)

PARTS LIST AND DIAGRAM

OUTDOOR UNIT

MODEL: RAC-50WSE



MODEL RAC-50WSE

NO	JCH-WH PARTS NO RAC-50WSE	Q'TY/UNIT	PARTS NAME
1	HWRAC-50WXD A01	1	BASE
2	HWRAC-50WXD A02	1	COMPRESSOR
3	HWRAC-50WEC A08	1	SOUND PROOF
4	HWRAC-50NX2 A04	3	PUSH NUT
5	HWRAC-50WXD A03	1	CONDENSER
6	HWRAC-50WSE A01	1	REVERSING VALVE ASSEMBLY
7	HWRAC-50WEA A05	1	SERVICE VALVE
8	HWRAC-50WEA A06	1	SERVICE VALVE
9	HWRAC-50WED A03	1	ELECTRIC EXPANSION VALVE
10	HWRAC-50WXD A05	1	SOUND PROOF
11	HWRAC-50WXD A06	1	SOUND PROOF
12	HWRAC-50WXD A07	1	SOUND PROOF
13	HWRAC-50WSE A02	1	SOUND PROOF
14	HWRAC-50WXD A09	1	SOUND PROOF
15	HWRAC-50WEA A12	1	CONNECTING CORD(COMPRESSOR)
16	HWRAC-50WXB A28	1	THERMISTOR (DEFROST)
17	HWRAC-50WXD A10	1	THERMISTOR SUPPORT
18	HWRAC-25WXD A09	1	COIL(REVERSING VALVE)
19	HWRAC-50WED A07	1	COIL(EXPANSION VALVE)
20	HWRAC-50WXD A11	1	PARTITION
21	HWRAC-50WED A09	1	REACTOR
22	HWRAC-50WXD A12	1	FAN MOTOR SUPPORT
23	HWRAC-50WED A10	1	FAN MOTOR
24	HWRAC-50WXB A07	1	PROPELLER FAN
25	HWRAC-50NX2 A25	1	NUT (PROPELLER FAN)
26	HWRAC-50WXB A09	1	NET LEFT
27	HWRAC-50WXB A10	1	LEFT PLATE
28	HWRAC-50WXDN A04	1	FRONT COVER
29	HWRAC-50WXB A12	1	DISCHARGE GRILL
30	HWRAC-50WED A17	1	FUSE (25A)
31	HWRAC-50WXB A14	1	THERMI-C
32	HWRAC-50WXD A14	1	SIDE COVER (R)
33	HWRAC-14EH4 A15	1	COVER(OUT DOOR THERMISTOR)
34	HWRAC-50WXB A27	3	PC-SUP
35	HWRAC-50WXB A18	1	TER-PLATE
36	HWRAC-50WXB A19	1	TOP COVER
37	HWRAC-50WXD A15	1	TERMINAL-COVERAS
38	HWRAC-50WXD A16	1	EV-COVER
39	HWRAC-50WXB A22	2	HANDLE
40	HWRAC-50WXB A23	1	DRAIN PIPE
41	HWRAC-50WXB A24	1	ELECTRIC PARTS PLATE
42	HWRAC-50WXD A17	1	ELECTRIC PARTS COVER
43	HWRAC-50WEB A07	2	SUPPORT (P.W.B.)
44	HWRAC-50WEB A08	1	HEAT SINK
45	HWRAC-50WSE A03	1	P.W.B.(MAIN)
46	HWRAC-50WEB A10	1	ASSEMBLY
47	HWRAC-50WEB A11	2	CORD ASSEMBLY
48	HWRAC-50WED A16	1	TERMINAL BOARD (5P)
49	HWRAC-25WXD A08	1	O.L.R COVER
50	HWRAC-25WXD A11	2	FUSE (3.15A)
51	HWRAC-50WEB A13	1	SUPPORT (P.W.B.)
52	HWRAC-50WXB A32	4	MIRROR MAT
53	HWRAC-50WXB A26	1	FIX-PLATE
54	HWRAC-50WXD A19	1	SOUND PROOF

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**RAK-25PSEW / RAC-25WSE
RAK-35PSEW / RAC-35WSE
RAK-50PSEW / RAC-50WSE
RAK-25PSES / RAC-25WSE
RAK-35PSES / RAC-35WSE
RAK-50PSES / RAC-50WSE**

JCH-WH NO. 0124E