

HITACHI

SERVICE MANUAL

TECHNICAL INFORMATION

FOR SERVICE PERSONNEL ONLY

JCH-WH

NO.0124E

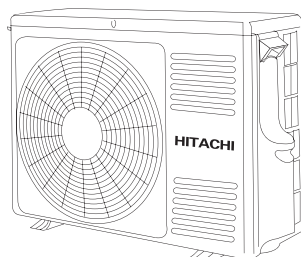
RAK-25PSEW / RAC-25WSE
RAK-35PSEW / RAC-35WSE
RAK-50PSEW / RAC-50WSE
RAK-25PSES / RAC-25WSE
RAK-35PSES / RAC-35WSE
RAK-50PSES / RAC-50WSE

INDOOR UNIT

OUTDOOR UNIT

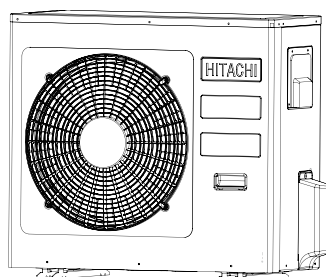


RAK-25PSEW
RAK-35PSEW
RAK-50PSEW
RAK-25PSES
RAK-35PSES
RAK-50PSES



RAC-25WSE
RAC-35WSE

RAK-6NE2



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-25PSES	RAC-25WSE	RAK-35PSEW RAK-35PSES	RAC-35WSE	RAK-50PSEW RAK-50PSES	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	
	CAPACITY	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)	CAPACITY	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	800
NET WEIGHT (kg)	H	250	600	250	600	250	736
	D	294	299	294	299	294	350
NET WEIGHT (kg)		11	37	11	37	11	51

※After installation

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

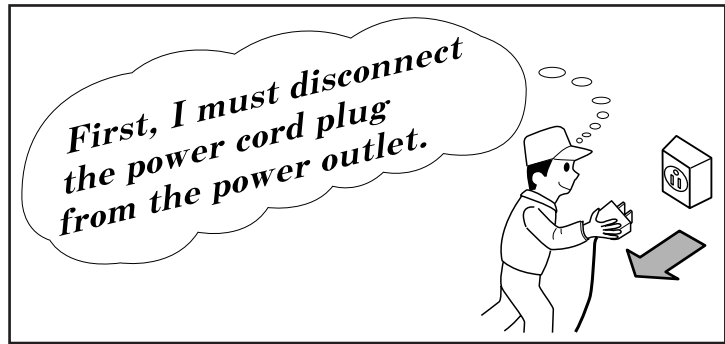
ROOM AIR CONDITIONER

INDOOR UNIT + OUTDOOR UNIT

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

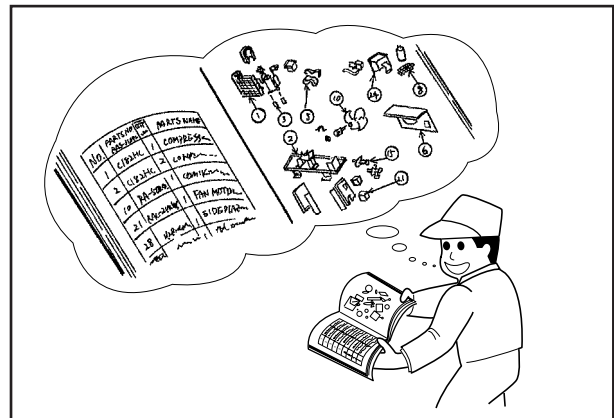
SAFETY DURING REPAIR WORK

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.)

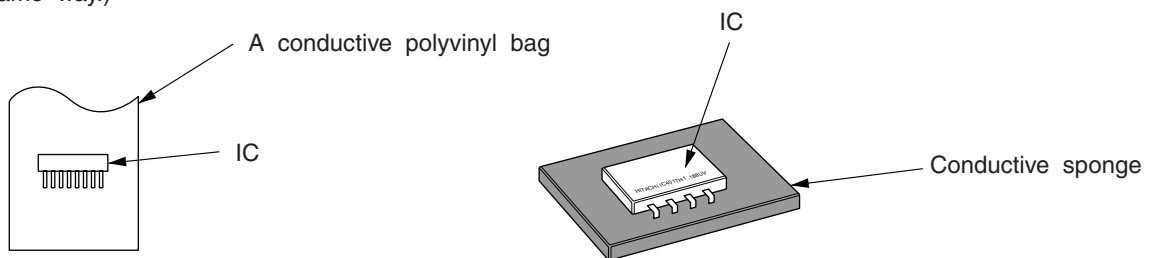


Fig. 1 Conductive container

- (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.

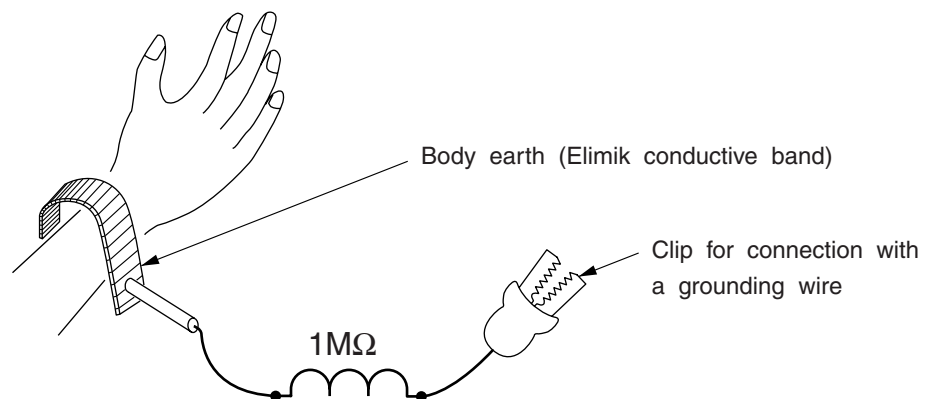


Fig. 2 Body earth

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

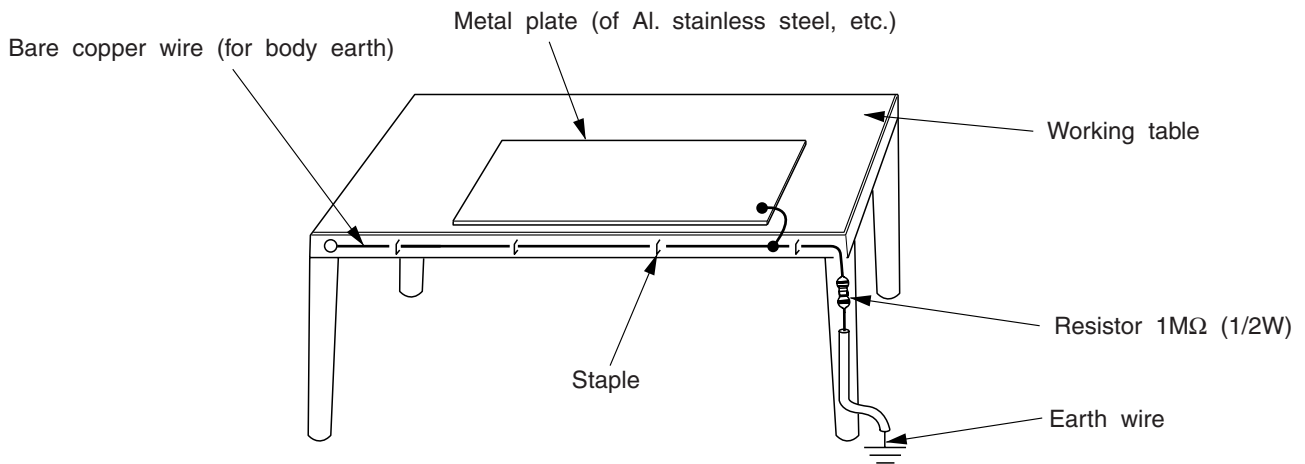


Fig.3 Grounding of the working table

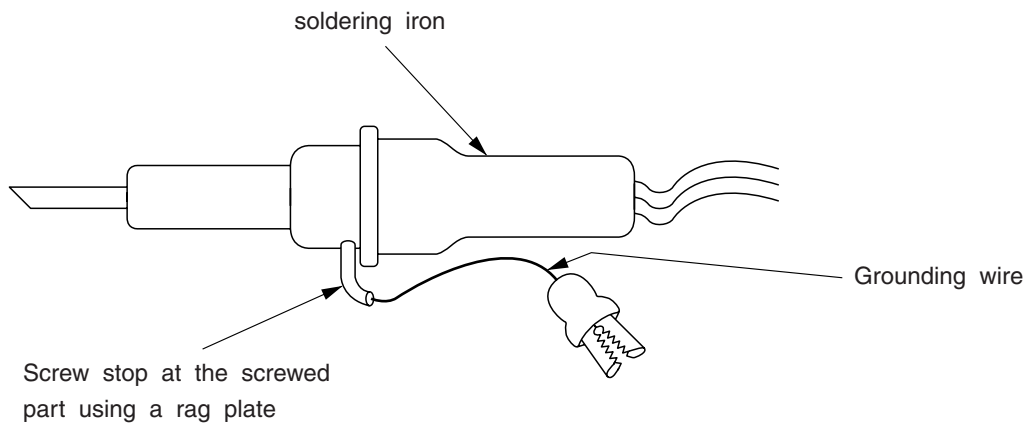


Fig.4 Grounding a solder iron

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)	WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE.

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

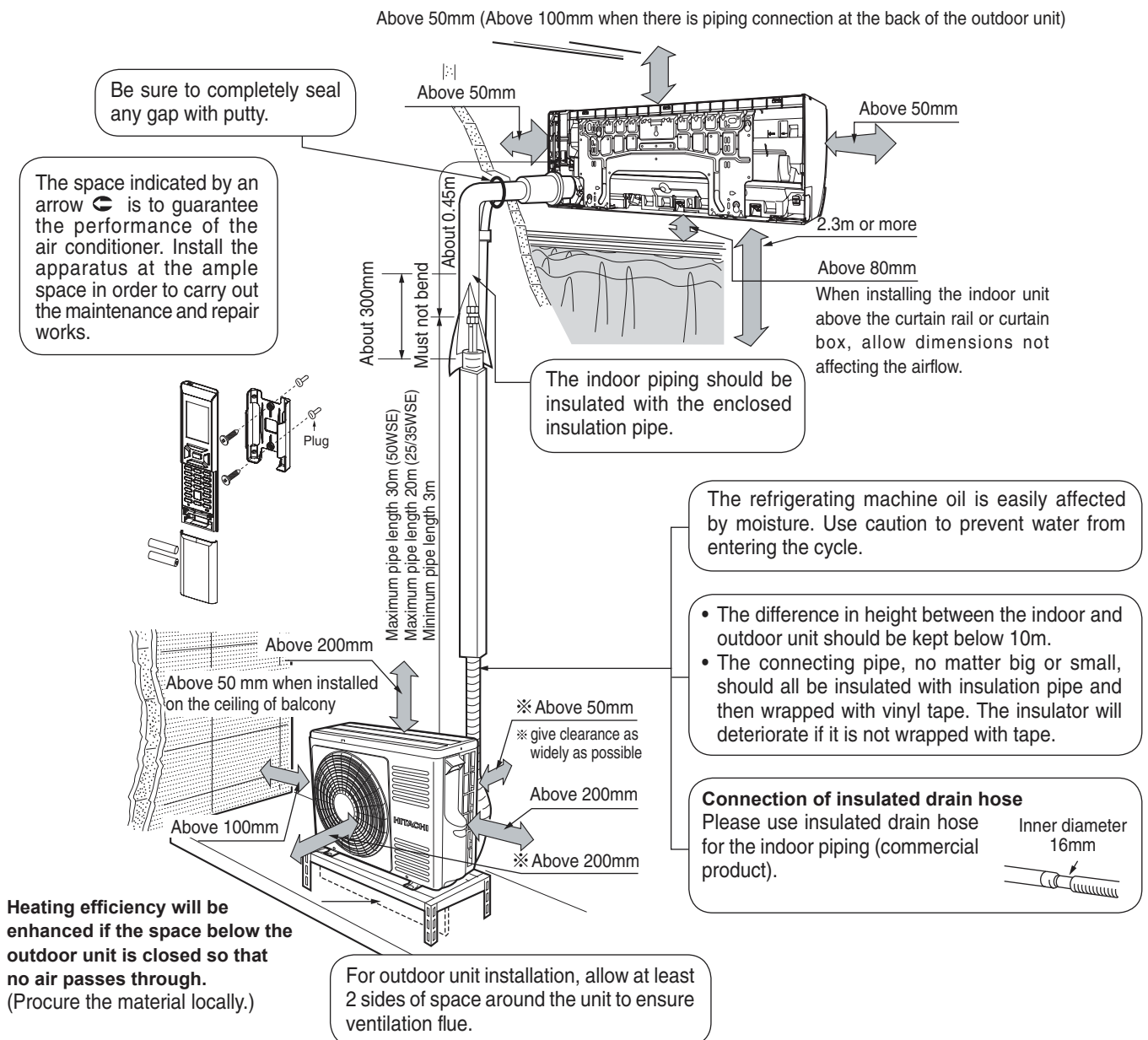
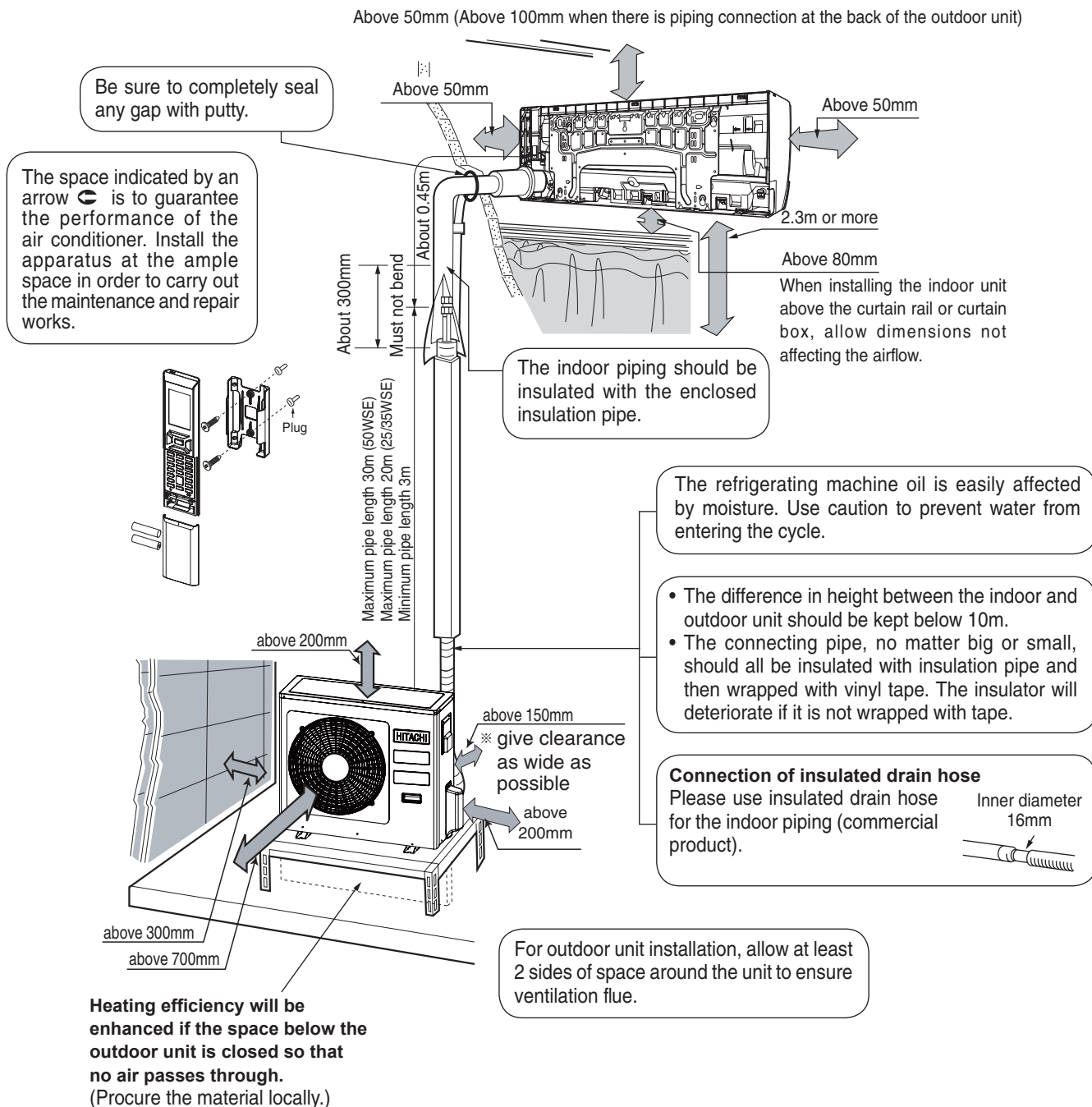


Figure showing the installation of Indoor and Outdoor unit

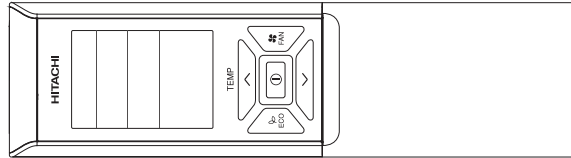
MODEL RAK-50PSEW/RAC-50WSE
RAK-50PSES/RAC-50WSE



HITACHI

Remote Controller Manual

MODEL
RAR-6NE2

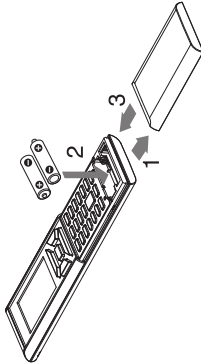


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PREPARATION BEFORE OPERATION

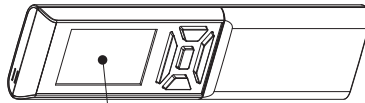
■ To install the batteries

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.

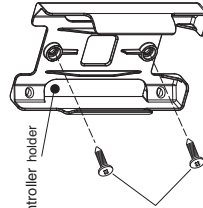


■ To fix the remote controller holder to the wall

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.



Remote controller



Remote controller holder

Screws

NOTE

Notes on batteries

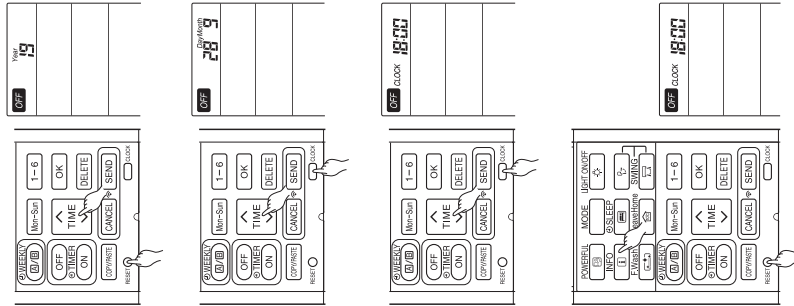
- When replacing the batteries, use batteries of the same type, and replace both old batteries together.
 - When the system is not used for a long time, take the batteries out.
 - The batteries will last for approximately 1 year. However, if the remote controller display begins to fade and degradation 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.

PREPARATION BEFORE OPERATION

To set calendar and clock



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

Calendar and clock are set.

To modify the calendar and clock, press **DATE** (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 **DATE** (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

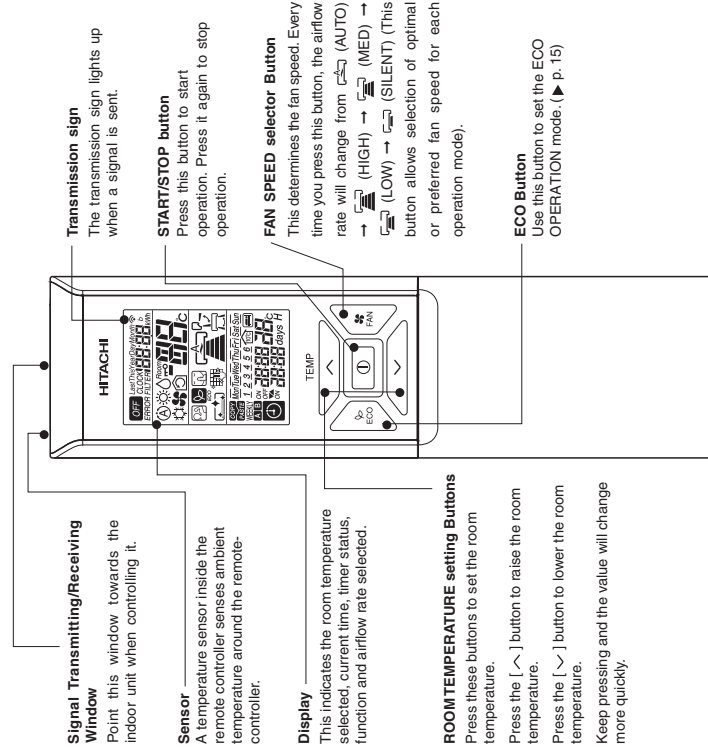
- Note on setting the calendar and clock.
- If the calendar and clock are not set, the ON timer, off timer and Weekly Timer cannot be set.
 - If the calendar and clock are not set correctly, the ON timer, off timer and Weekly Timer will not operate correctly.
 - When the ON timer, off timer and Weekly 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.

- 3 -

NAMES AND FUNCTIONS OF REMOTE CONTROLLER

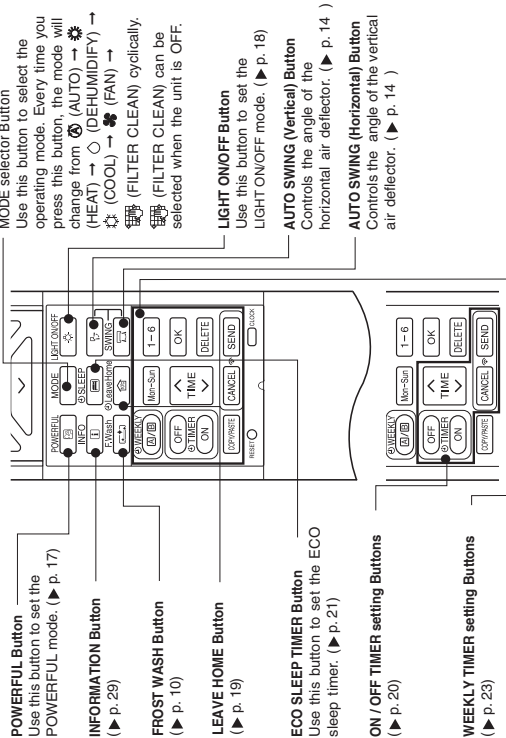
REMOTE CONTROLLER

- 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.



- 4 -

NAMES AND FUNCTIONS OF REMOTE CONTROLLER



MODE SELECTOR	MODE
AUTO	AUTO
HEAT	HEAT
DEHUMIDIFY	DEHUMIDIFY
COOL	COOL
FAN	FAN
FILTER CLEAN	FILTER CLEAN
FAN SPEED	FAN SPEED
AUTO	AUTO
SILENT	SILENT
LOW	LOW
MED	MED
HIGH	HIGH
START / STOP	START / STOP
ECO SENSOR	ECO SENSOR
FAN	FAN
POWERFUL	POWERFUL

LIGHT ON/OFF	ON / OFF TIMER
INFO	TIME
SLEEP TIMER	OK
AUTO SWING (VERTICAL)	DELETE
AUTO SWING (HORIZONTAL)	DELETE
LEAVE HOME	COPY/PASTE
FROST WASH	CANCEL
Mon-Sun	SEND
1-6	SEND
PROGRAM NO.	CLOCK
MODE	

Precautions for Use

- Do not put the remote controller in the following places.
 - Under direct sunlight.
 - In the vicinity of a heater.
- Handle the remote controller carefully. Do not drop it on the floor, and protect it from water.
- Once the outdoor unit stops, it will not restart for about 3 minutes (unless you turn the power switch off and on or unplug the power cord and plug it in again).
- This is to protect the device and does not indicate a failure.
- If you press the MODE selector button during operation, the device may stop for about 3 minutes for protection.

ENGLISH

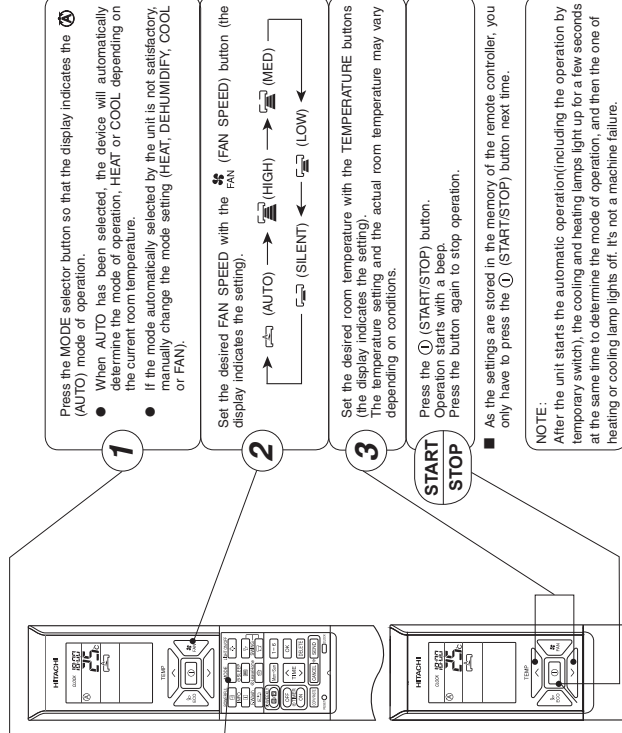
VARIOUS FUNCTIONS

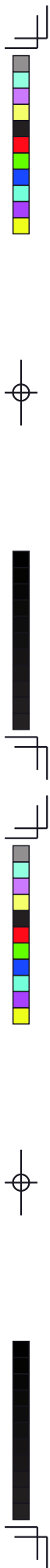
Auto Restart Control

- 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

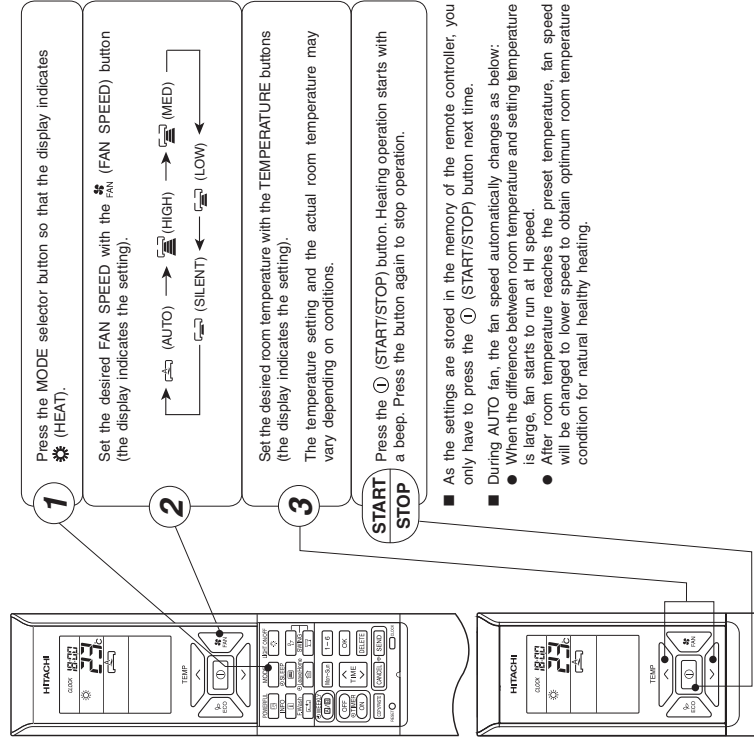
The device will automatically determine the mode of operation, HEAT or COOL depending on the current room temperature. The selected mode of operation will change when the room temperature varies.





HEATING OPERATION

- 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.

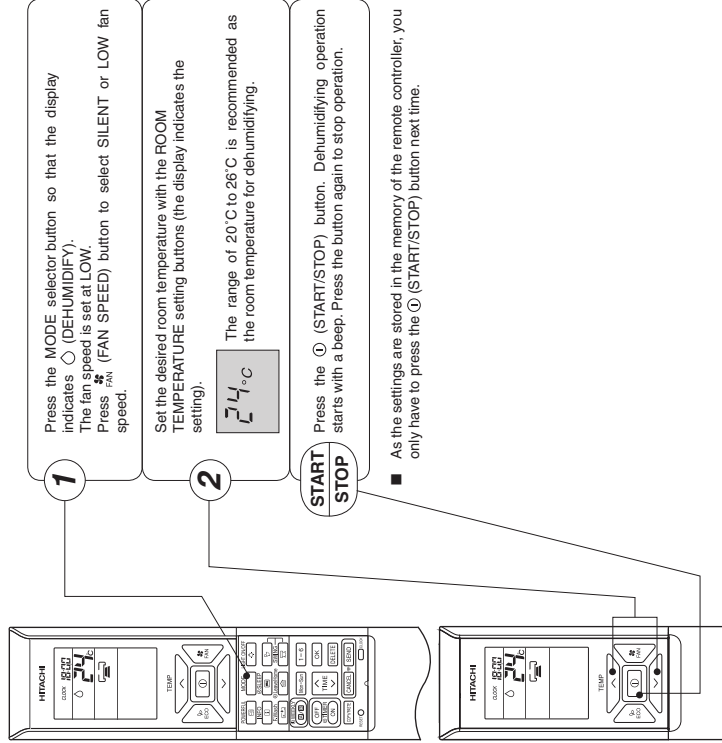
During defrosting operation, the operation lamp blinks in a cycle of 2 seconds on and 1 second off.

The maximum time for defrosting is 20 minutes.

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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.

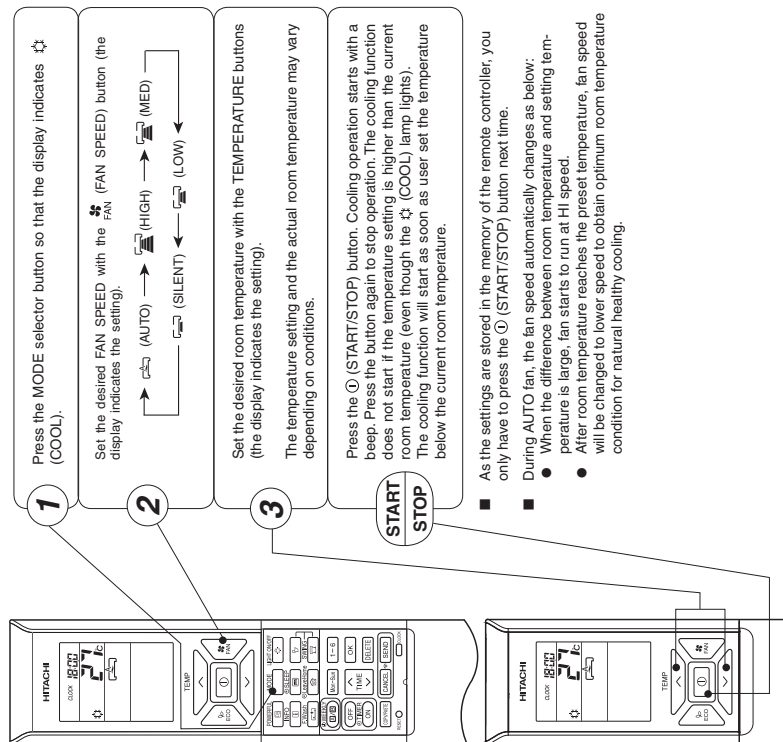


Dehumidifying Function

- 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.

COOLING OPERATION

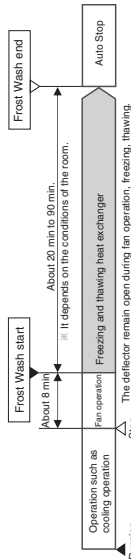
Use the device for cooling when the outdoor temperature is -10°C to 43°C .
If indoors humidity is very high (80%), some dew may form on the air outlet grille of the indoor unit.



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.

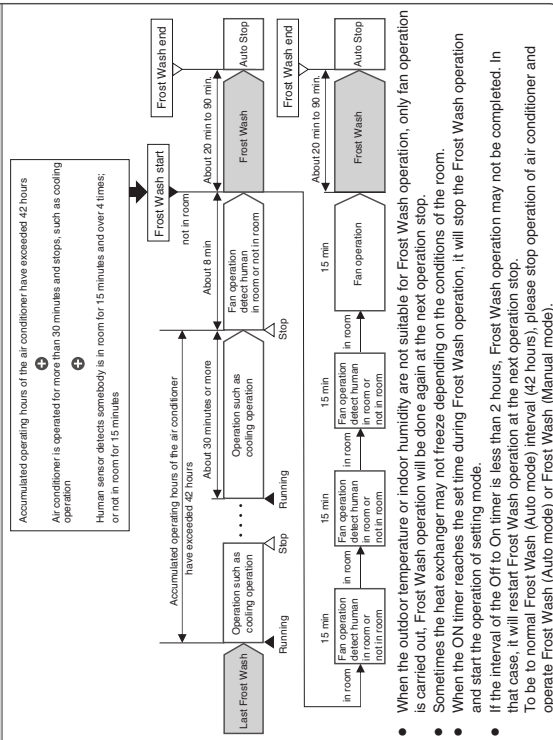
The process of Frost Wash



-  "lamp on the indoor unit lights up during Frost Wash operation.
- If you want to stop Frost Wash operation, press the  (START/STOP) button twice.
- When pressing the button such as cooling during Frost Wash operation is discontinued and start the cooling operation after about 3 minutes.
- When Frost Wash is stopped during Frost Wash operation, the unit automatically restart Frost Wash operation at the next operation stop.
- In order to protect the product, Frost Wash function cannot be carried out again for about 60 minutes after Frost Wash operation is completed.

■ Frost Wash (Auto mode)

Frost Wash auto start conditions



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]** button, the operation will stop.
- " **[Frost Wash]** " lamp on the indoor unit turns off.

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.

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 puts 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.
- (1) Accumulated operating hours of the air conditioner have exceeded 20 hours.
- (2) Air conditioner is not operated for more than one week.

(To clean the dust which is naturally deposited on the top filter.)

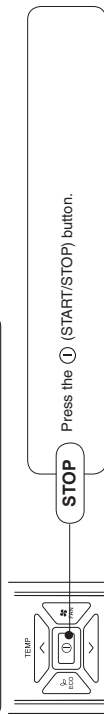
CAUTION: The accumulated operating hours will not be reset if the automatic filter cleaning operation is stopped before its completion.

- 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.

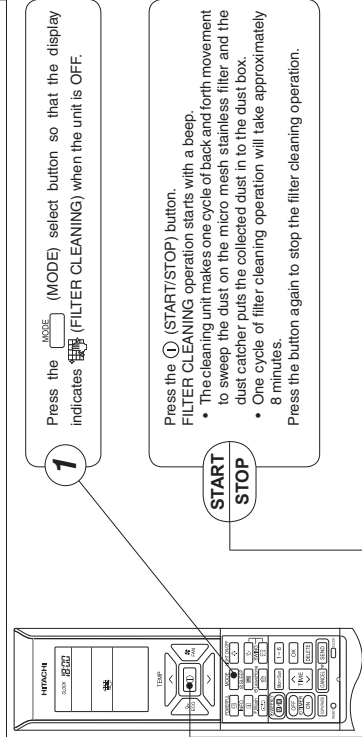
However, if manual filter cleaning is not performed, automatic filter cleaning will be performed approximately once a week after the air conditioner operation is stopped by sleep timer or off timer to protect the device.

■ To stop AUTOMATIC FILTER CLEANING operation



FILTER CLEANING OPERATION (MANUAL OPERATION)

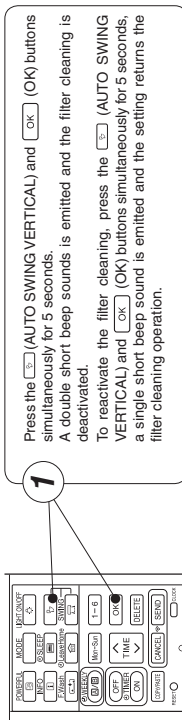
- Use the remote controller to run filter cleaning operation when the air conditioner operation is stopped.
- If the air conditioner is not in use for a long period, it is recommended to manually run filter cleaning before using the air conditioner.



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.



NOTE

About the noise during filter cleaning

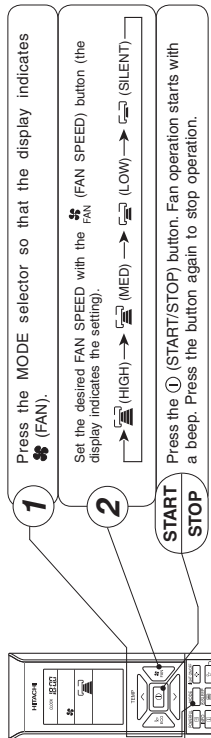
- A whirling motor noise is generated due to driving of the cleaning unit.
 - A sweeping sound is generated when the cleaning unit sweeps the dust.
- Maintenance
- No daily maintenance is required. However, dust amount varies depending on the environment in which the air conditioner is used. Check the 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.



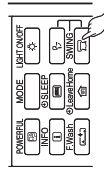
HORIZONTAL SWING

To start Horizontal Auto Swing

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

To cancel Horizontal Auto Swing

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



NOTE

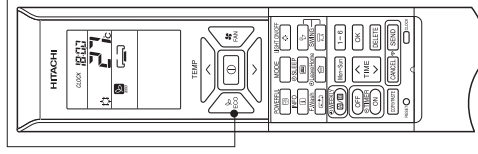
- During cooling and dehumidifying operation, do not keep the deflectors swinging or in the lower position (in the case of vertical auto swing) for a long time. It may cause dew condensation on the deflectors.

ECO OPERATION

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.



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

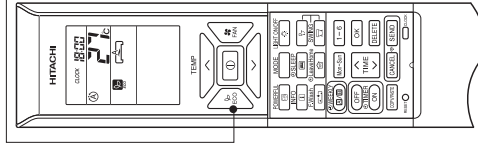
NOTE

- 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.

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.



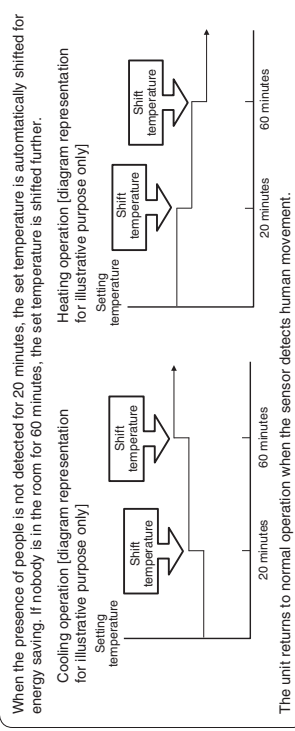
- By pressing the (ECO) button during AUTO, HEATING, DEHUMIDIFYING or COOLING operation, the air conditioner performs the "ECO" operation.

To start ECO operation

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



NOTE

- By pressing (POWERFUL) button, ECO operation is cancelled.
- After auto restart, ECO operation is cancelled and previous operation mode shall start.

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

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.

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

- 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.

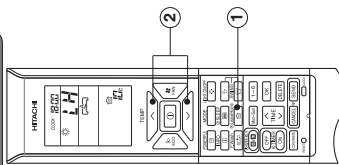
NOTE:

- When some failure is detected, the light off function is canceled and the error code is display.
- 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.

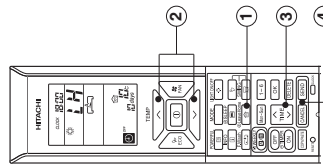
100 LEAVE HOME(LH) OPERATION

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



Day timer operation



To start LEAVE HOME operation

Option 1. Continuous operation.

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

"**LH**", "**10°C**", "**SET TEMPERATURE**" is displayed on the LCD.

Option 2. Day timer operation.

- Press **LEAVE HOME** button during stop or operation. Room temperature is set at 10°C and heating operation starts. Set the desired room temperature with the **TEMPERATURE** buttons. Temperature range can be set between 10°C and 16°C.
- "**LH**", "**10°C**", "**SET TEMPERATURE**" is displayed on the LCD.

- Set number of operation days (1 to 99 days), if needed.

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.
- Press **SEND** button to confirm number of operation days. Display for number of operation days will stop blinking. Press **CANCEL** button to reset number of operation days or to have continuous operation.

To cancel LEAVE HOME operation

- Press **START/STOP** button. Or
- Press **LEAVE HOME** button again. Return to previous operation mode. Or
- Change to other operation mode by pressing **MODE** button.

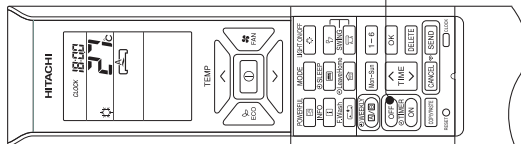
NOTE

- 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.

- 19 -

OFF
ON

ONCE TIMER (ON/OFF TIMER) OPERATION



OFF TIMER

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

- Press **OFF-TIMER** button. **OFF** and **18:00** blink on the display.
 - Set the "turn-off time" with **TIME** button.
 - After setting, direct the remote controller towards the indoor unit and press **SEND** button.
- OFF** and "set time" 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.

- Press **ON-TIMER** button. **ON** and **18:00** blink on the display.
 - Set the "turn-on time" with **TIME** button.
 - After setting, direct the remote controller towards the indoor unit and press **SEND** button.
- ON** and "set time" light 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.

- Press **OFF-TIMER** button so that **OFF** and **18:00** blink on the display.
 - Set the "turn-off" time with **TIME** button. After setting, direct the remote controller towards the indoor unit and press **SEND** button.
 - Press **ON-TIMER** button so that **ON** and **18:00** blink. The **OFF** and **18:00** blink.
 - Set the "turn-on" time with **TIME** button.
 - After setting, direct the remote controller towards the indoor unit and press **SEND** button.
- ON** 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

- Point the signal window of the remote controller towards the indoor unit and press **CANCEL** button.
- OFF** and "ON or OFF set time" goes out with a beep and the (TIMER) lamp on the indoor unit turns off.

NOTE

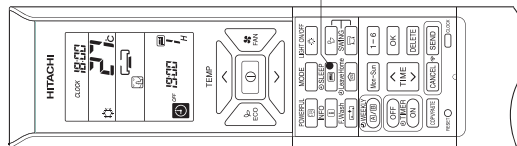
- User can set only one of the OFF-timer, ON-timer or ON/OFF-timer.
- If WEEKLY TIMER already set, by setting the ONCE TIMER, ONCE TIMER operation is prioritized. When ONCE TIMER operation is complete, WEEKLY TIMER operation will be activated.

- 20 -

ECO SLEEP TIMER OPERATION

The timer can be set up to a duration of 7 hours.

By pressing **SLEEP** (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** (SLEEP) button during operation.

- "OFF", off time, "OFF" 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** (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 cancel ECO SLEEP TIMER operation

Press **START/STOP** button.

- Room air conditioner will switch off.

Press **SLEEP** (SLEEP) button again until "OFF" and number of hour disappear from the remote controller display.

Press **CANCEL** (CANCEL) button.

- A beep sound emitted from indoor unit and the (TIMER) lamp on the indoor unit turns off.
- SLEEP TIMER operation is cancelled.

ECO SLEEP TIMER OPERATION

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** (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

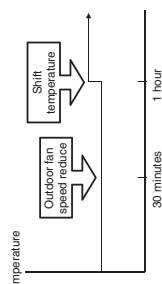
Direct the remote controller towards the indoor unit and press **CANCEL** (CANCEL) button.

- "OFF", off time, "OFF" and 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.

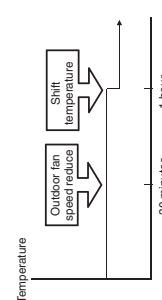
30 minutes after setting ECO SLEEP TIMER, outdoor fan speed will be reduced to lower the noise level and to have comfort operation.
1 hour after setting ECO SLEEP TIMER, set temperature will be slightly shifted. Amount of temperature shifted depends on type of air conditioner.

These automatic operation changes contribute to energy saving without losing comfort. The level of energy consumption depends on outside temperature, room temperature, set temperature or air conditioner type.

Cooling operation [diagram representation for illustrative purpose only]



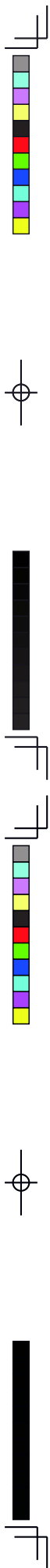
Heating operation [diagram representation for illustrative purpose only]



NOTE

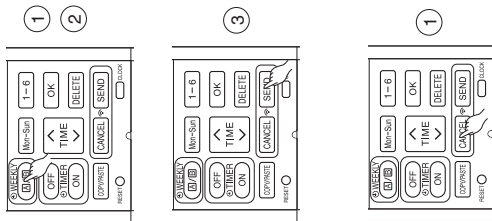
- If ECO SLEEP TIMER is set when OFF TIMER or ON/OFF TIMER has been set earlier, the ECO SLEEP TIMER becomes effective instead of the OFF TIMER or ON/OFF TIMER.

F



WEEKLY TIMER OPERATION

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 **B** blink on the display. (Normally Mode A will blink first).
 - 2. Press **MODE** (WEEKLY) button again. **B** and **A** 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 .

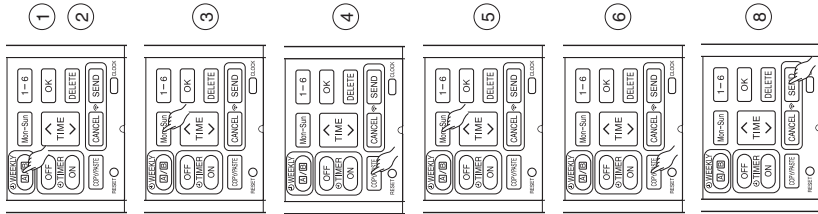
1. Direct the remote controller towards the indoor unit and press **CANCEL** (CANCEL) button.
Beep sound will be emitted from indoor unit and TIMER lamp will be OFF.
Reservation indication on remote display will also disappear.
This indicates that non-active WEEKLY TIMER has been confirmed.
- To activate back the setting of WEEKLY TIMER , repeat the steps for "How to select Mode A or Mode B of WEEKLY TIMER setting".

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.

WEEKLY TIMER OPERATION

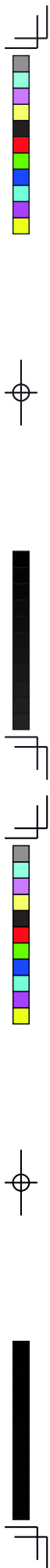
Step 3: Copy and cancel the reservation schedule.



- 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 **MODE** (DAY) button to select a day of the week to copy.
 4. Press **COPY/PASTE** (COPY/PASTE) button. Then "PASTE" blinks on the display.
• Press **CANCEL** (CANCEL) button to cancel the COPY mode. Normal setting mode is activated.
 5. Press **MODE** (DAY) button to select a day of the week to paste.
 6. Press **COPY/PASTE** (COPY/PASTE) button one more time to paste. **OK** only blinks on the display.
 7. To continue copying to other days, press **MODE** or **1-6** or **1-6** or **1-6** or **1-6**.
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

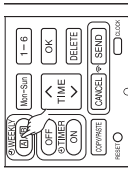
- If there is no reservation data, copying data from one day to another day cannot be done.



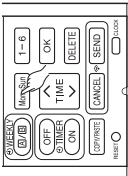
WEEKLY TIMER OPERATION

Step 3: Copy and cancel the reservation schedule.

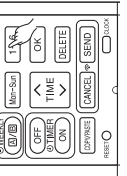
1



2



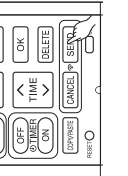
3



4



5



6



■ 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.
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.

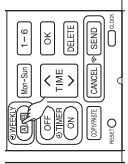
- Reservation will not change if **SEND** (SEND) button is not pressed.

ENGLISH

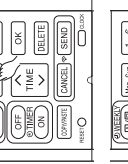
WEEKLY TIMER OPERATION

Step 3: Copy and cancel the reservation schedule.

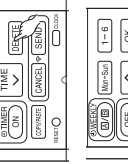
1



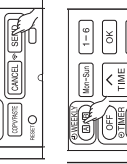
2



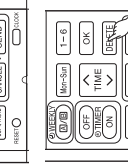
3



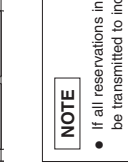
4



5



1



2



[Delete one day reservation]

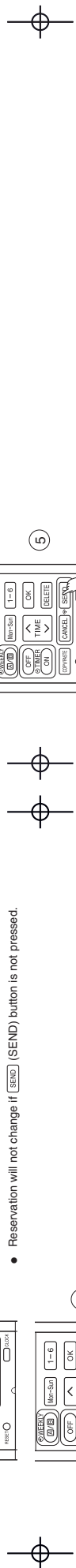
1. Press **WEEKLY** (WEEKLY) button to select Mode A or Mode B.
2. Press **WEEKLY** (WEEKLY) button for 3 seconds to start editing the reservation schedule.
3. Press **Mon-Sun** (DAY) button to select a day of the week to edit.
4. Press **DELETE** (DELETE) button for about 10 seconds. Reservations for all program numbers will be deleted.
 - If press for a short time, reservation for one program number will be deleted.
5. 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]

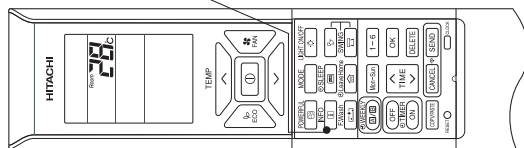
1. Press **WEEKLY** (WEEKLY) button to select Mode A or Mode B.
2. Direct the remote controller towards the indoor unit and press **DELETE** (DELETE) button for about 10 seconds while Mode A or Mode B display blinks. After beep sound emitted from indoor unit, reservations for Mode A or Mode B will disappear.

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.



- By pressing **INFO** (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** (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** (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** (INFO) button. Wait for 2 seconds for signal transmission.

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

this month power consumption amount for heating → last month power consumption amount for heating → this 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** (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** (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** (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** (INFO) button. Wait for 2 seconds for signal transmission. An error code will be displayed.
- Call service center and inform the error code.
- Info Function to check monthly power consumption.
- 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 **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** (ECO) and **POWERFUL** (POWERFUL) buttons simultaneously for about 5 seconds when the remote controller is OFF.

"**ECO**", "**POWERFUL**" and "**MODE**" will be displayed for about 10 seconds. Later, "**ECO**" and "**MODE**" will remain.

This indicates that HEATING mode operation is locked.

When pressing **MODE** (MODE) button, "**ECO**", "**POWERFUL**" or "**MODE**" will be displayed.

- Method to unlock HEATING mode (including FAN) operation.

Press **ECO** (ECO) and **POWERFUL** (POWERFUL) 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 HEATING mode operation is unlocked.

- Method to lock COOLING and DEHUMIDIFYING modes (including FAN) operations.

Press **ECO** (ECO) and **LIGHT ON/OFF** (LIGHT ON/OFF) buttons simultaneously for about 5 seconds when the remote controller is OFF.

"**ECO**", "**LIGHT ON/OFF**", "**MODE**" and "**MODE**" will be displayed for about 10 seconds. Later, "**ECO**" and "**MODE**" will remain.

This indicates that COOLING and DEHUMIDIFYING mode operation is locked.

When pressing **MODE** (MODE) button, "**ECO**", "**LIGHT ON/OFF**", "**MODE**" or "**MODE**" will be displayed.

- Method to unlock COOLING and DEHUMIDIFYING modes (including FAN) operations.

Press **ECO** (ECO) and **LIGHT ON/OFF** (LIGHT ON/OFF) 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** (RESET) button. However, by pressing the **RESET** (RESET) button, all the information stored in the remote controller will disappear. You may need to set the necessary information again.

HITACHI

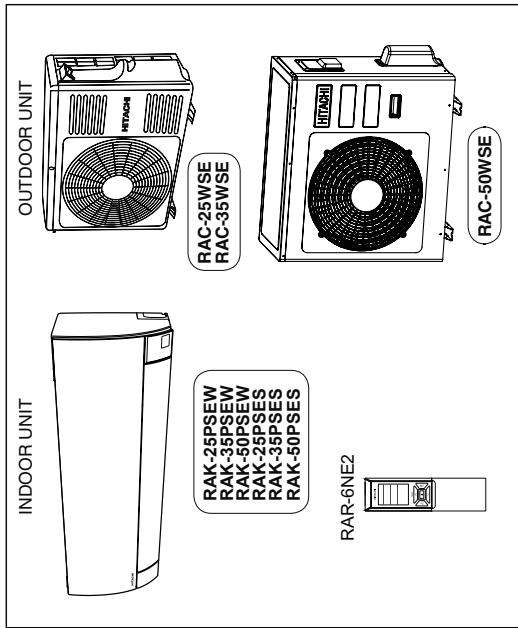
SPLIT TYPE AIR CONDITIONER

INDOOR UNIT/OUTDOOR UNIT



MODEL

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



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.

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Ελληνικά PORTUGUÊS ESPAÑOL ITALIANO FRANÇAIS DEUTSCH ENGLISH

SAFETY PRECAUTION



Please read the "Safety Precaution" carefully before operating the unit to ensure correct usage of the unit.



This appliance is filled with R32.

- 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.



This sign in the figure indicates prohibition.

- 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 depending on the mounting site of the unit. Without a circuit breaker, the danger of electric shock exists. • 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.

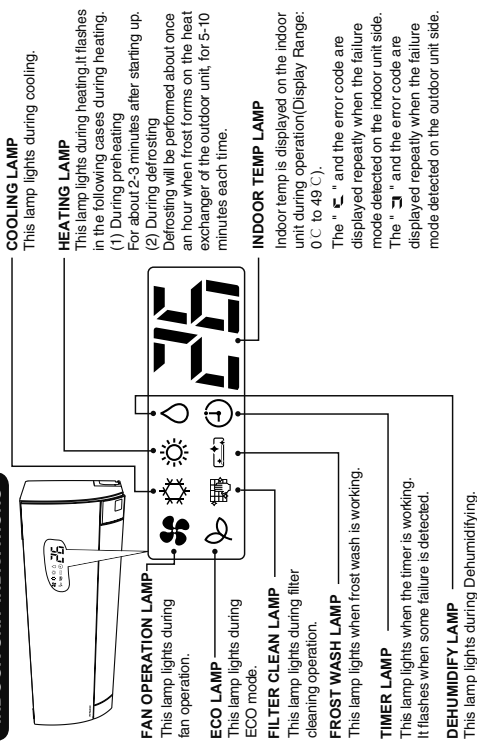
PRECAUTIONS DURING SHIFTING OR MAINTENANCE

▲ 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.

INDOOR UNIT INDICATIONS



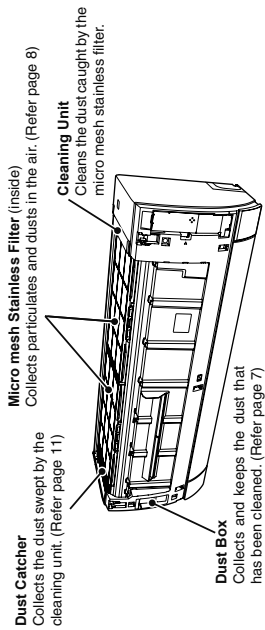
TEMPORARY SWITCH

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

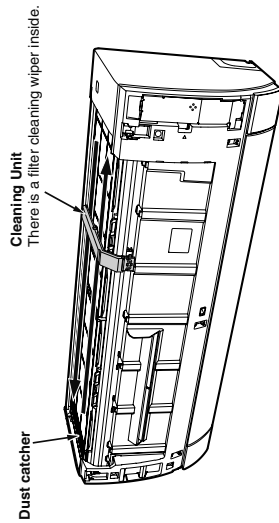
Open the front panel to operate. (How to open the front panel, Refer page 8)



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.

CAUTION

Do not put your fingers or a stick etc into the top surface during the filter cleaning operation.
It may result in injury or malfunction.

MAINTENANCE

▲ WARNING

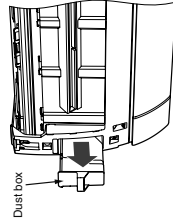
- Before cleaning, stop unit operation with the remote controller and turn off the circuit breaker.

▲ 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.

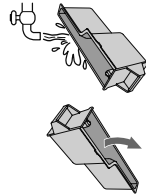


1 Stop the operation with the remote controller and turn off the circuit breaker.

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.

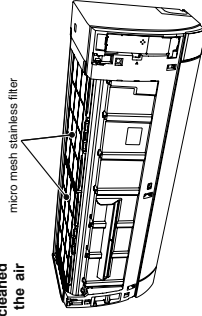


MAINTENANCE (continued)

Maintenance of Micro Mesh Stainless Filter

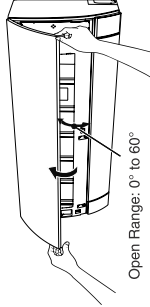
No daily maintenance is required. However, filters should be cleaned if the dirt is noticeable due to the environment in which the air conditioner is used.

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



2 Open the front panel.

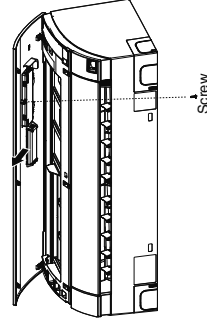
- Hold the lower side of the front panel with both hands.
- If it is raised further, the front panel may be damaged.



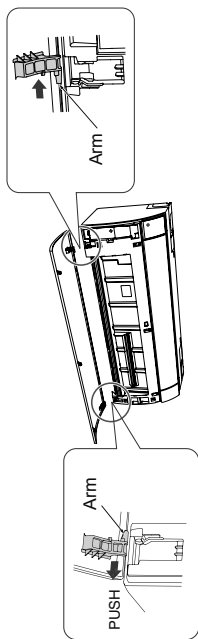
▲ CAUTION

- Do not open the front panel during operation. Be sure to stop the operation first before opening the front panel.

3 After removing 1 screw with a short screw driver(L100,TYPE:PH2×38), remove the Temperature Display box(Please remove it toward the direction as illustrated if the WIFI adapter is installed).

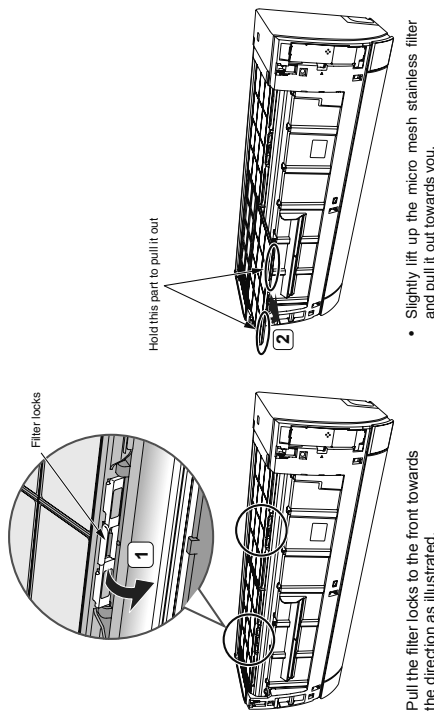


4 Remove the front panel.



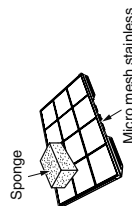
- 1 Push the end of the right-side arm outward to release the tab.
- 2 Move the left-side arm outward to release the left tab, and then pull the panel towards you.

5 Remove the micro mesh stainless filter.



6 Wash with water.

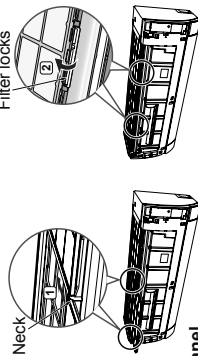
- In the event the micro mesh stainless filter is heavily dirty, wash the filter with neutral detergent and rinse well with water, and then dry the filter in the shade.



Maintenance of Micro Mesh Stainless Filter (continued)

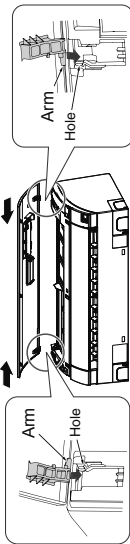
7 Attach the micro mesh stainless filter.

- 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.

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.

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

2 Remove the front panel.

(Refer to page 9 on removing the front panel)

3 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.

4 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.

5 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.

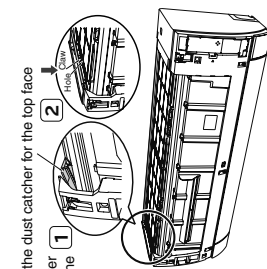
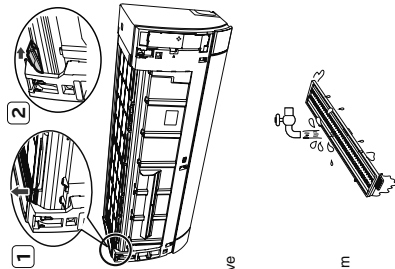
6 Attach the front panel.

(Refer to page 10 on attaching the front panel)

7 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.



ENGLISH

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 operation 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.

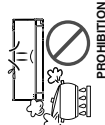
Cooling, dehumidifying capabilities

- 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.



REFRIGERANT INFORMATION

MODEL	Refrigerant (kg)	GWP	t CO2 eq.
RAC-29WSE	R32:0.980	675	0.662
RAC-35WSE	R32:1.240	675	0.837

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.

Make sure the room is ventilated when operating the air conditioner at the same time as other heating appliances.

▲ CAUTION



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)	• This is for filter cleaning operation check.
Filter cleaning operation does not start	• 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.
((FILTER CLEAN) indicator blinks)	• 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.
Noise occurred during filter cleaning operation	• 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.
Cleaning unit stops halfway	• 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	• 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.

TROUBLESHOOTING (continued)

PLEASE CHECK THE FOLLOWING BEFORE SERVICE

Signal cannot be received (Remote controller display is dim or blank)	- Do the batteries need replacement? - Is the polarity of the inserted batteries correct?
Operation does not start	- Is the fuse blown out or circuit breaker tripped? - Is there a blackout? (Operation remains idle after a blackout.) - Is the micro mesh stainless filter blocked with dust? - Is the set temperature suitable?
Does not cool well Does not heat well	- 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?
(FILTER CLEAN) indicator blinks	- Is the fan speed "LOW" or "SILENT"? - Check "filter cleaning operation".

FROST WASH OPERATION

Signal cannot be received (Remote controller display is dim or blank)	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. It does not wash when the humidity in the room is about 30% or less or about 70% or more. 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. Does not change to non-automatic "FROST WASH"? Does it happen after "sleep" and "time off"? → Automatic "FROST WASH" interval becomes longer. Please operate manual "FROST WASH" with remote controller. Within 60 minutes after the end of "FROST WASH", "FROST WASH" is not operated for product protection.
Noise occurred during frost wash operation	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 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. - 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" 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".
(FROST WASH) indicator blinks	

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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 fizzy 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.

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TROUBLESHOOTING (continued)

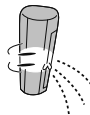
CONTACT YOUR SALES AGENT IMMEDIATELY ON FOLLOWING CASES

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.
- ⊕ (TIMER) indicator on the indoor unit display blinks.

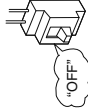
IF THE UNIT WOULD NOT BE USED FOR A LONG PERIOD OF TIME (MORE THAN 1 MONTH), PLEASE FOLLOW THE STEPS BELOW FOR MAINTENANCE

1 Dry the interior of the indoor unit.

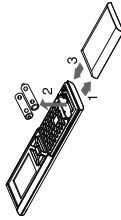


- On a sunny day, perform fan operation for approximately one half day. Mold can easily grow if air conditioner is not used for a long period of time while its inside is left wet.

2 Turn off the circuit breaker.



3 Remove the batteries from the remote controller.



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. • 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. • If the outdoor unit collapsed or fell, it could cause injury.

INSPECTION AND MAINTENANCE

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.

- Maintenance inspection is recommended in addition to ordinary cleaning.

Request your sales agent for maintenance inspection

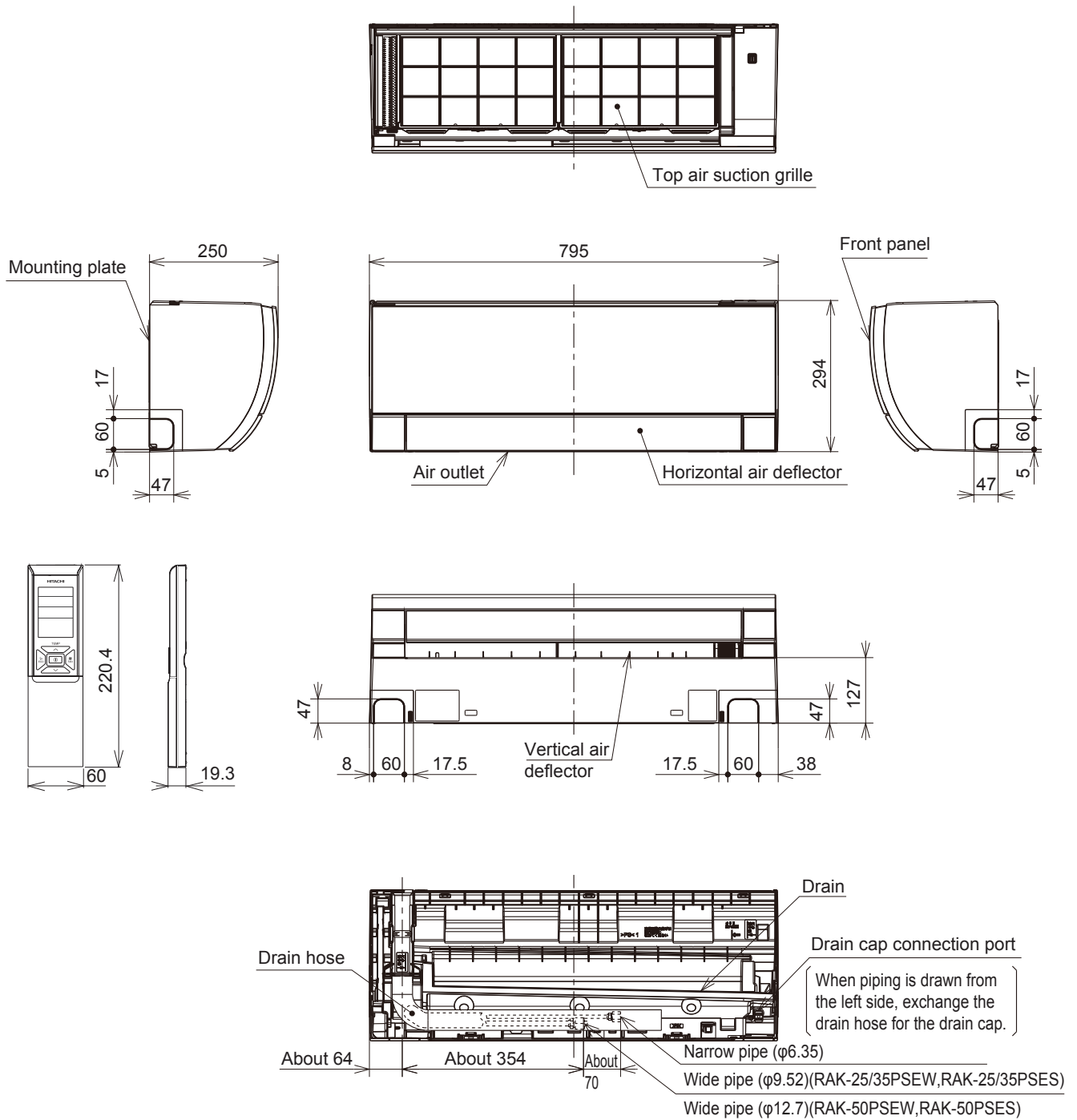
Maintenance inspection requires technical expertise. Use of commercially available cleaning agent may cause crack on resin part and clogging of drainage path, which could result in water dripping and electrical shock.

- Consult your sales agent for inspection and maintenance.

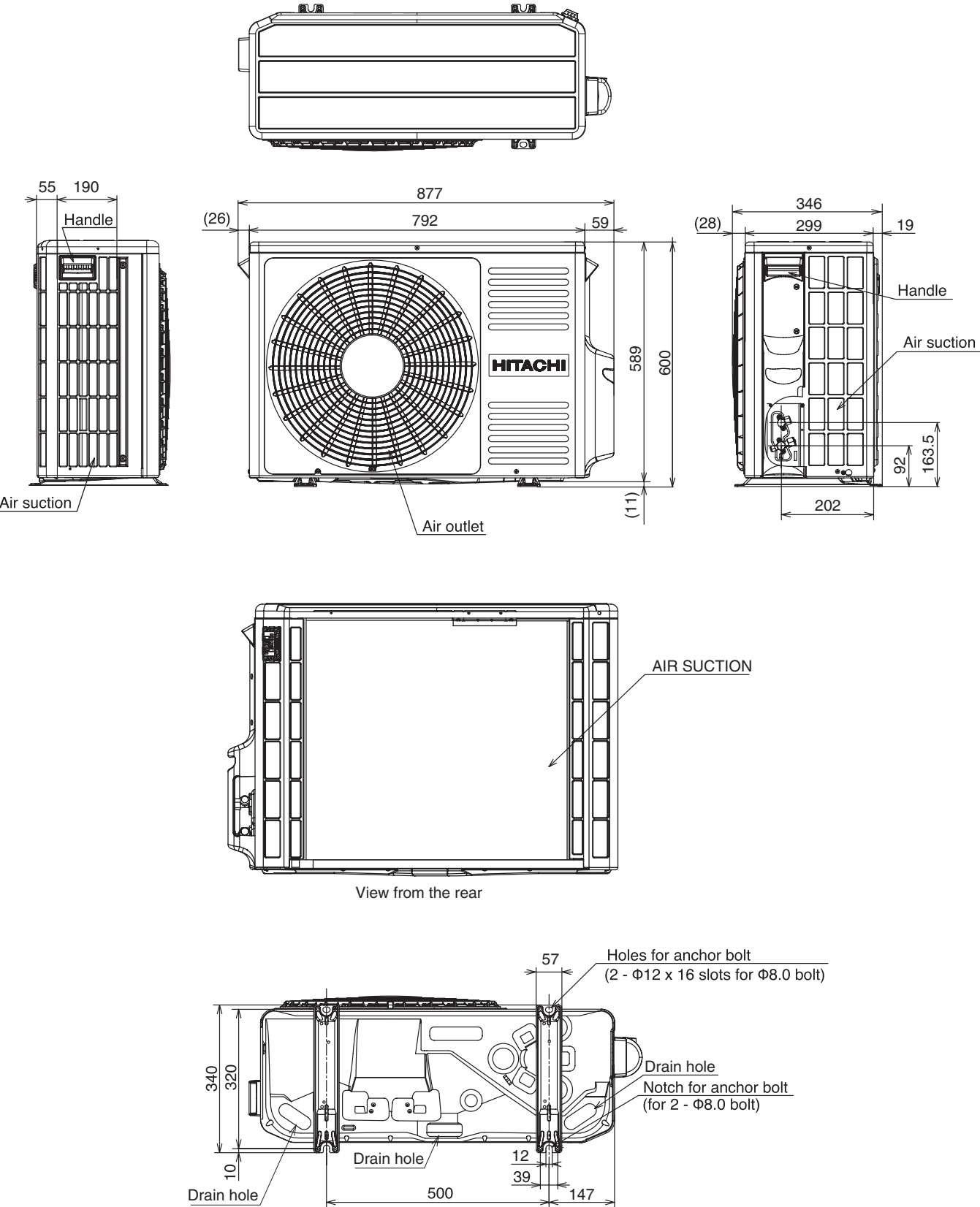
CONSTRUCTION AND DIMENSIONAL DIAGRAM

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

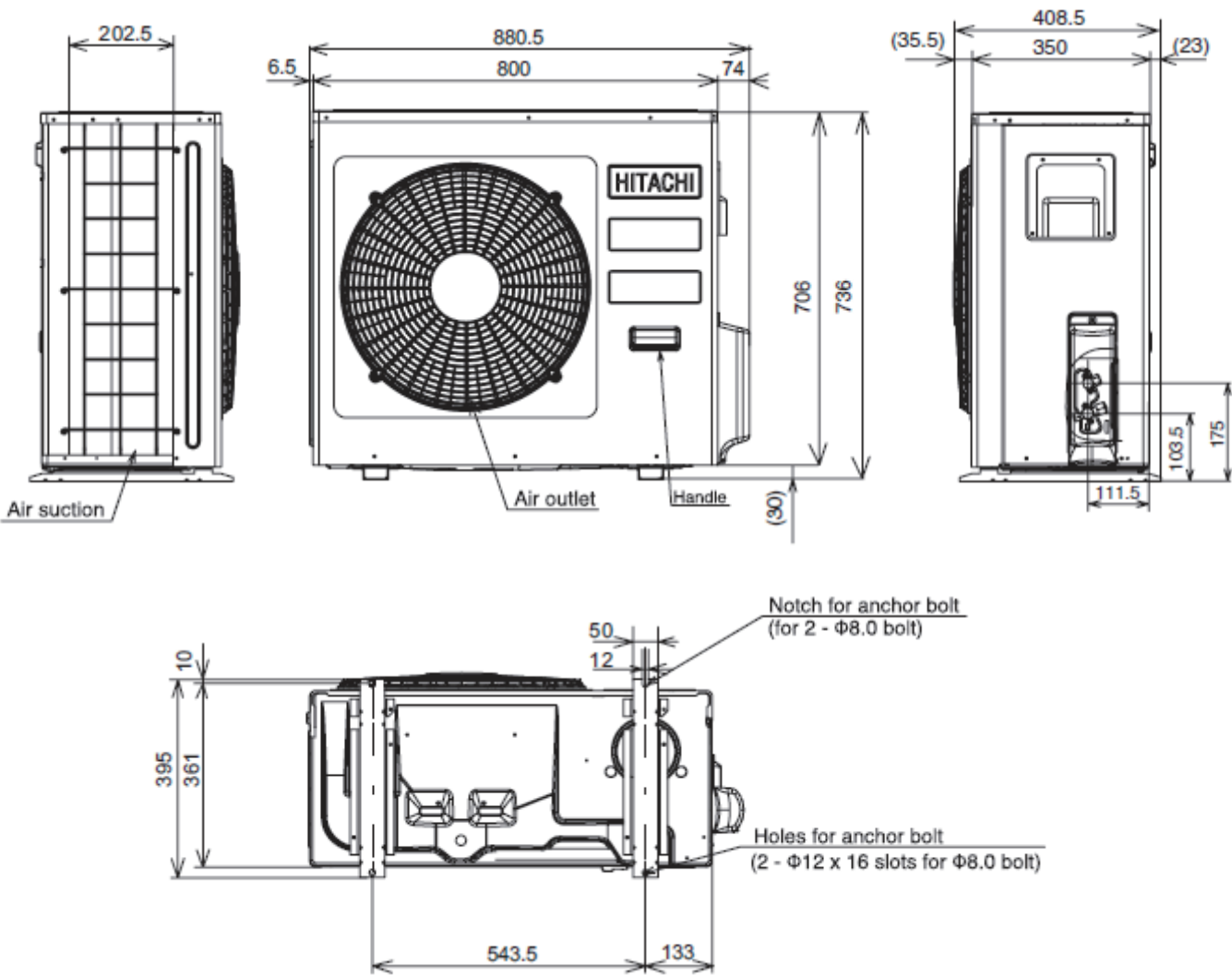
Unit : mm



Unit : mm



Unit : mm



MAIN PARTS COMPONENT

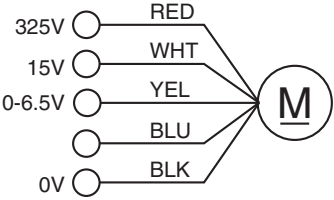
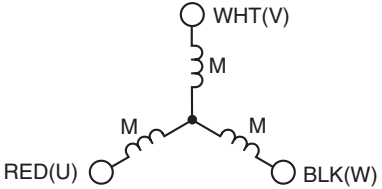
THERMOSTAT (Room temperature Thermistor)

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
GRY : GRAY
BLK : BLACK

YEL : YELLOW
ORN : ORANGE
PNK : PINK

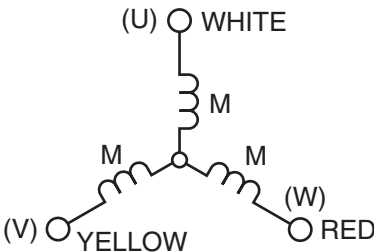
BRN : BROWN
GRN : GREEN
VIO : VIOLET

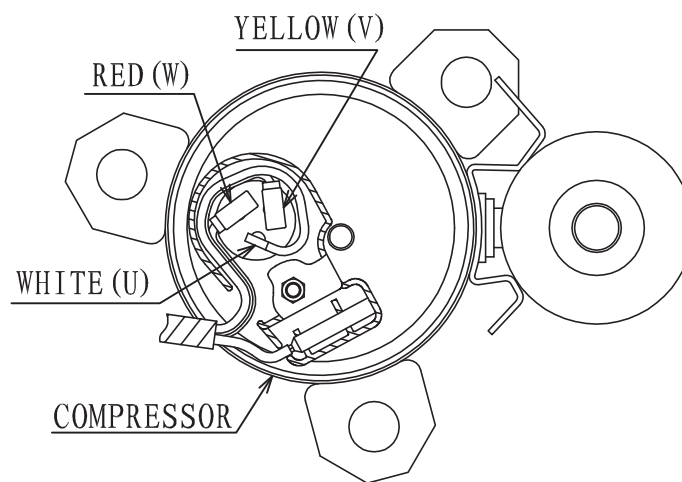
WHT : WHITE
RED : RED

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	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.

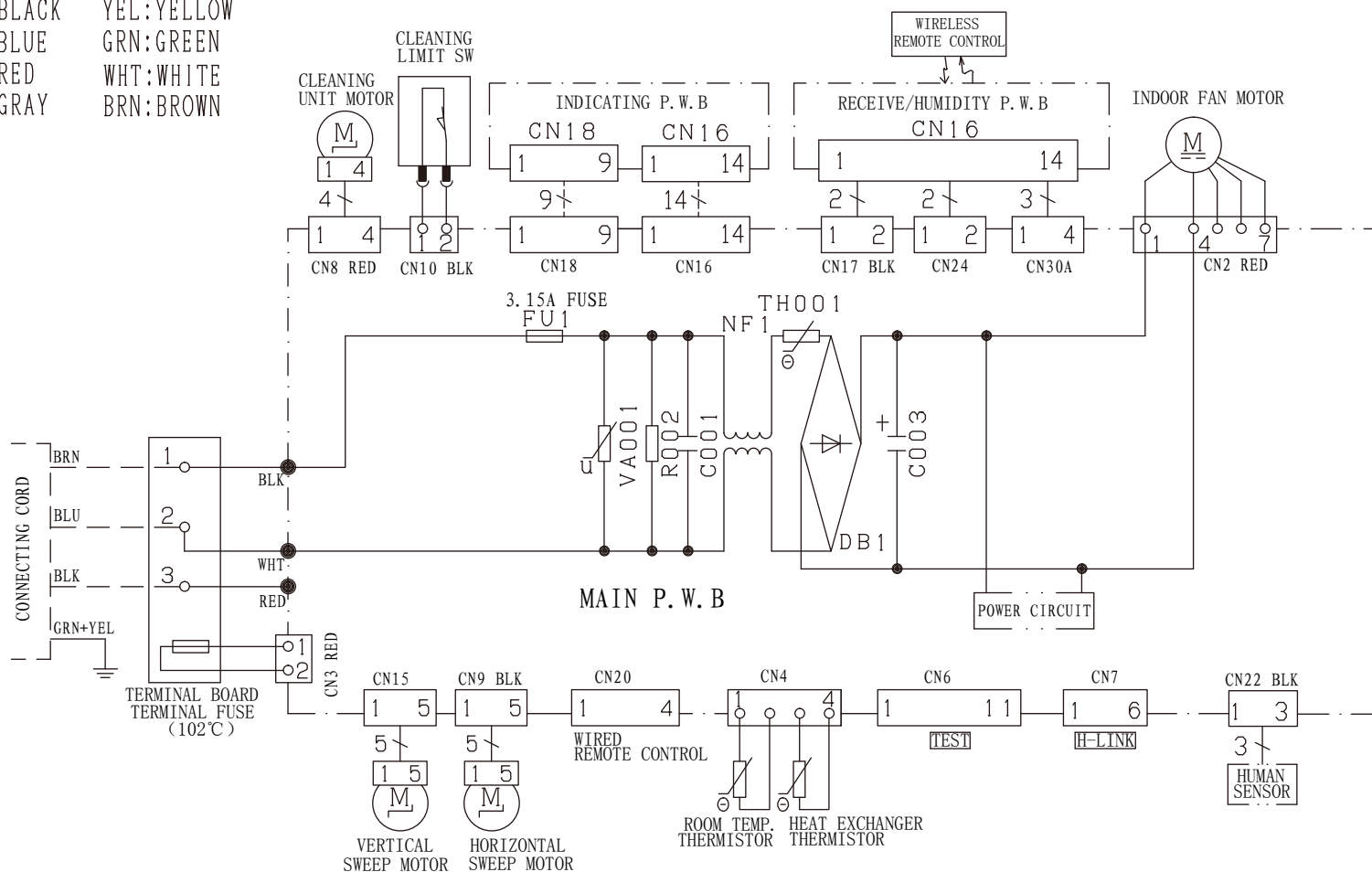
WIRING DIAGRAM

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

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.

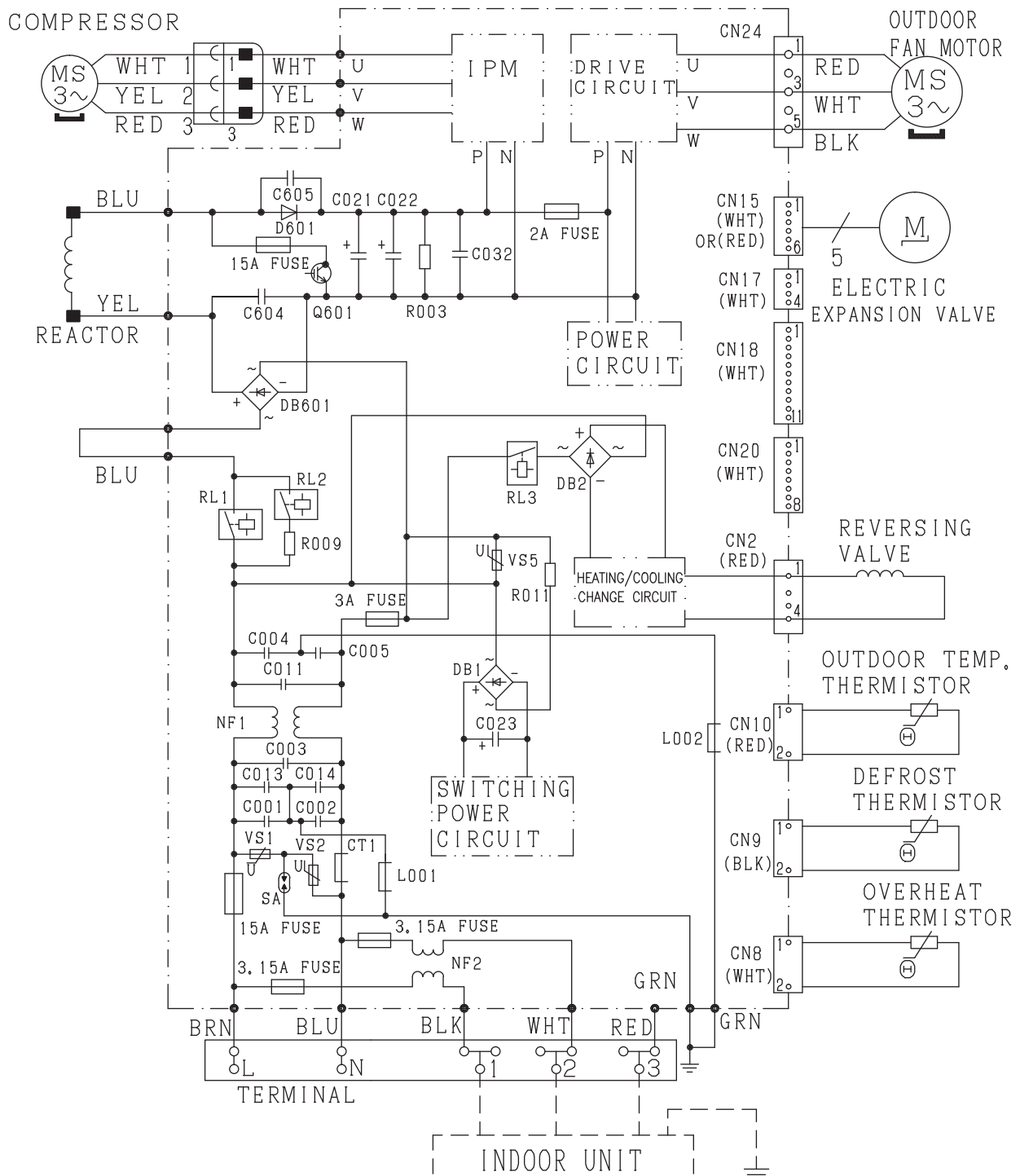
※ SOME CONNECTOR MAY NOT BE INSTALLED.
PLEASE ACCORDING TO THE SPECIFIC OF
ACTUAL MODELS

MODEL RAC-25WSE,RAC-35WSE

OUTDOOR UNIT

WIRING DIAGRAM

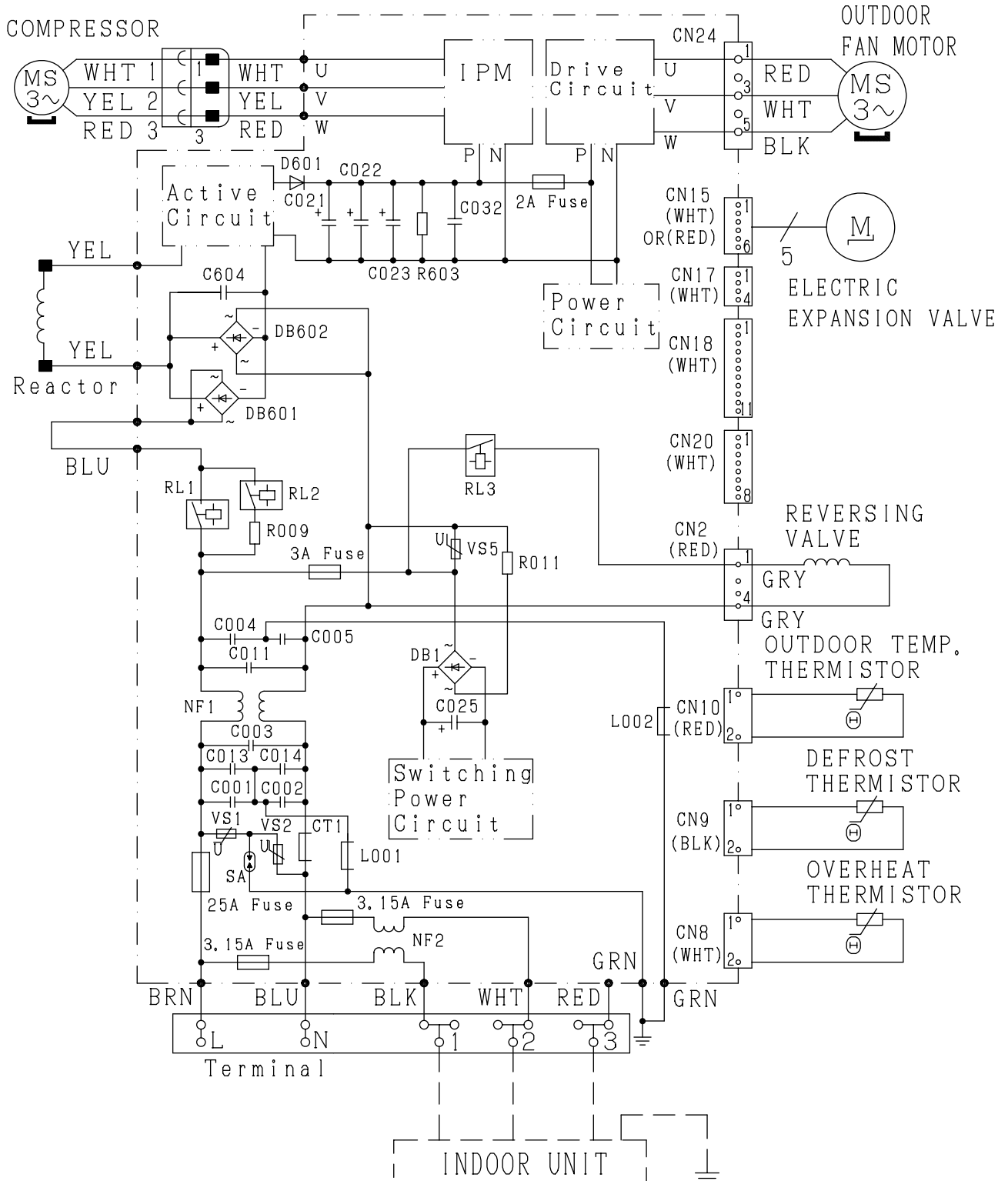
BLU:BLUE
 BLK:BLACK
 BRN:BROWN
 GRN:GREEN
 RED:RED
 WHT:WHITE
 YEL:YELLOW
 GRY:GRAY



MODEL RAC-50WSE

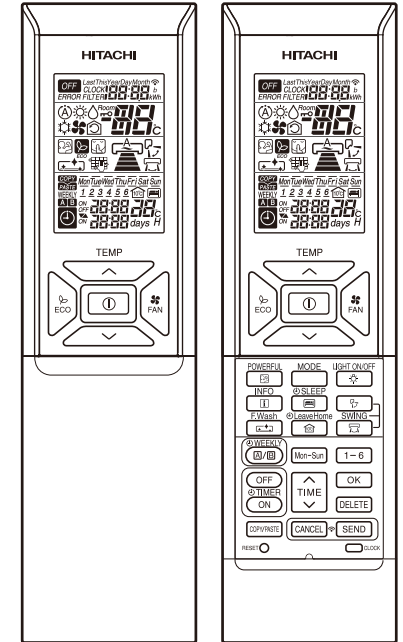
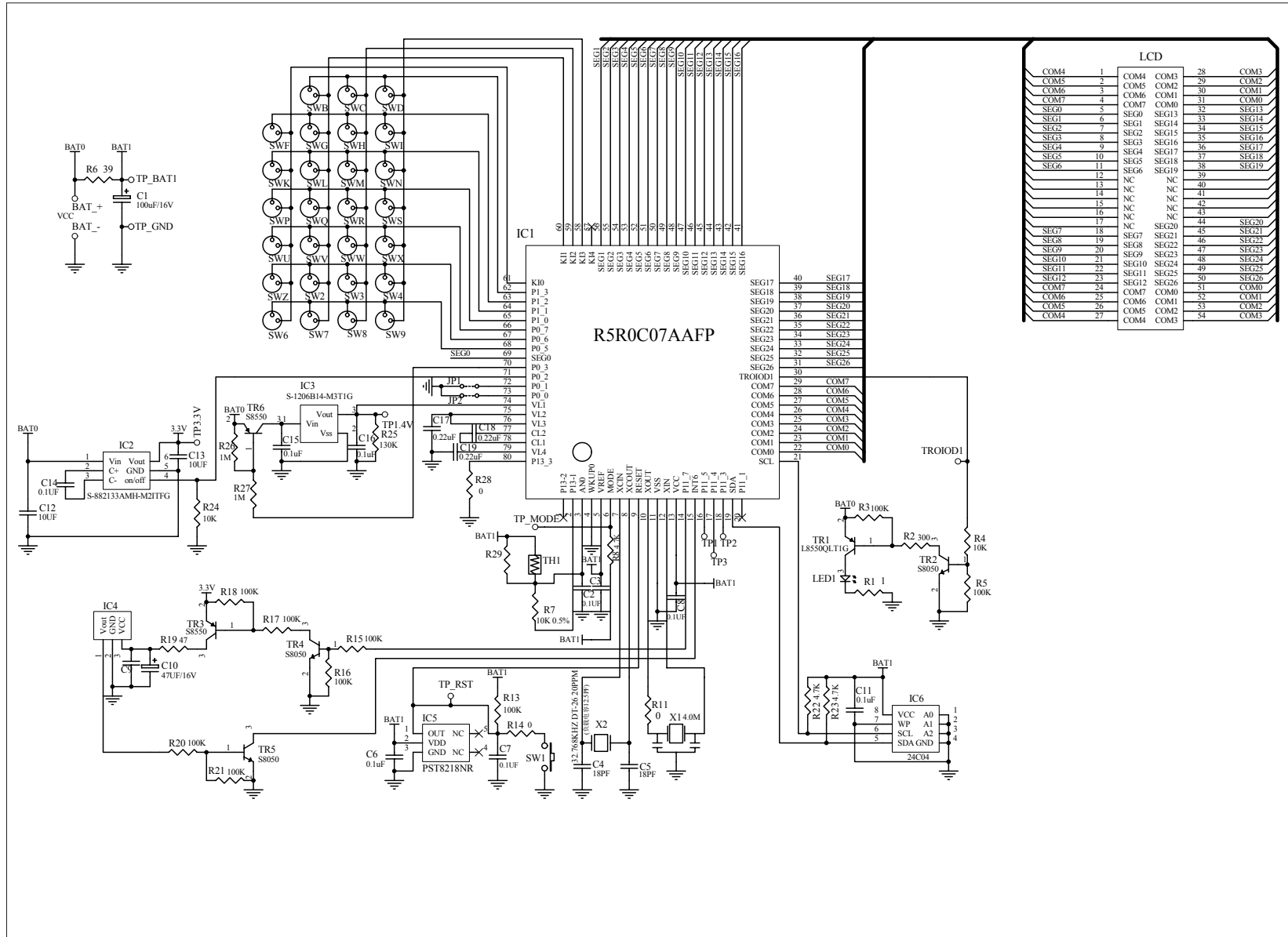
OUTDOOR UNIT

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

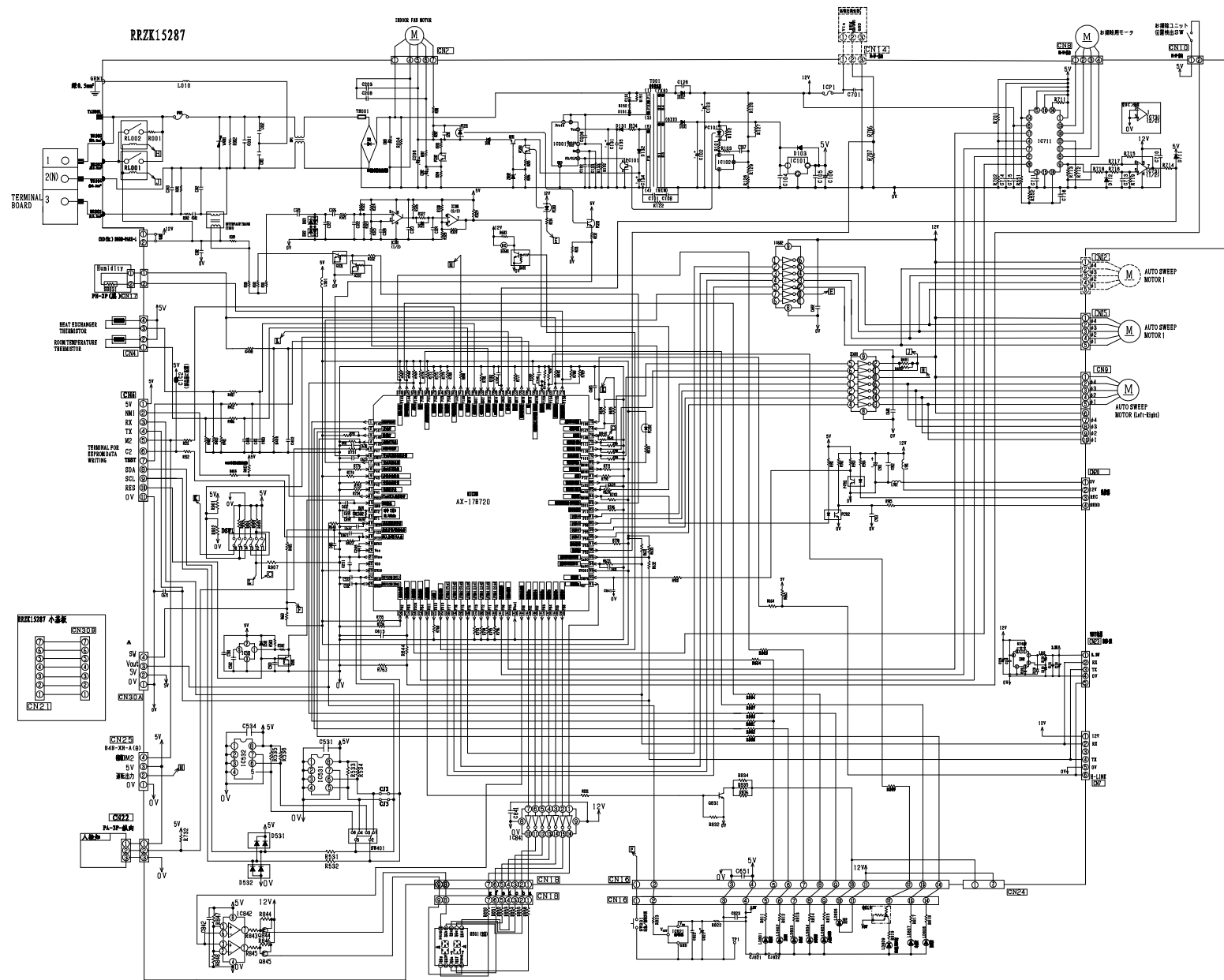


WIRING DIAGRAM OF THE PRINTED WIRING BOARD

[Remote controller] RZEA15340



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



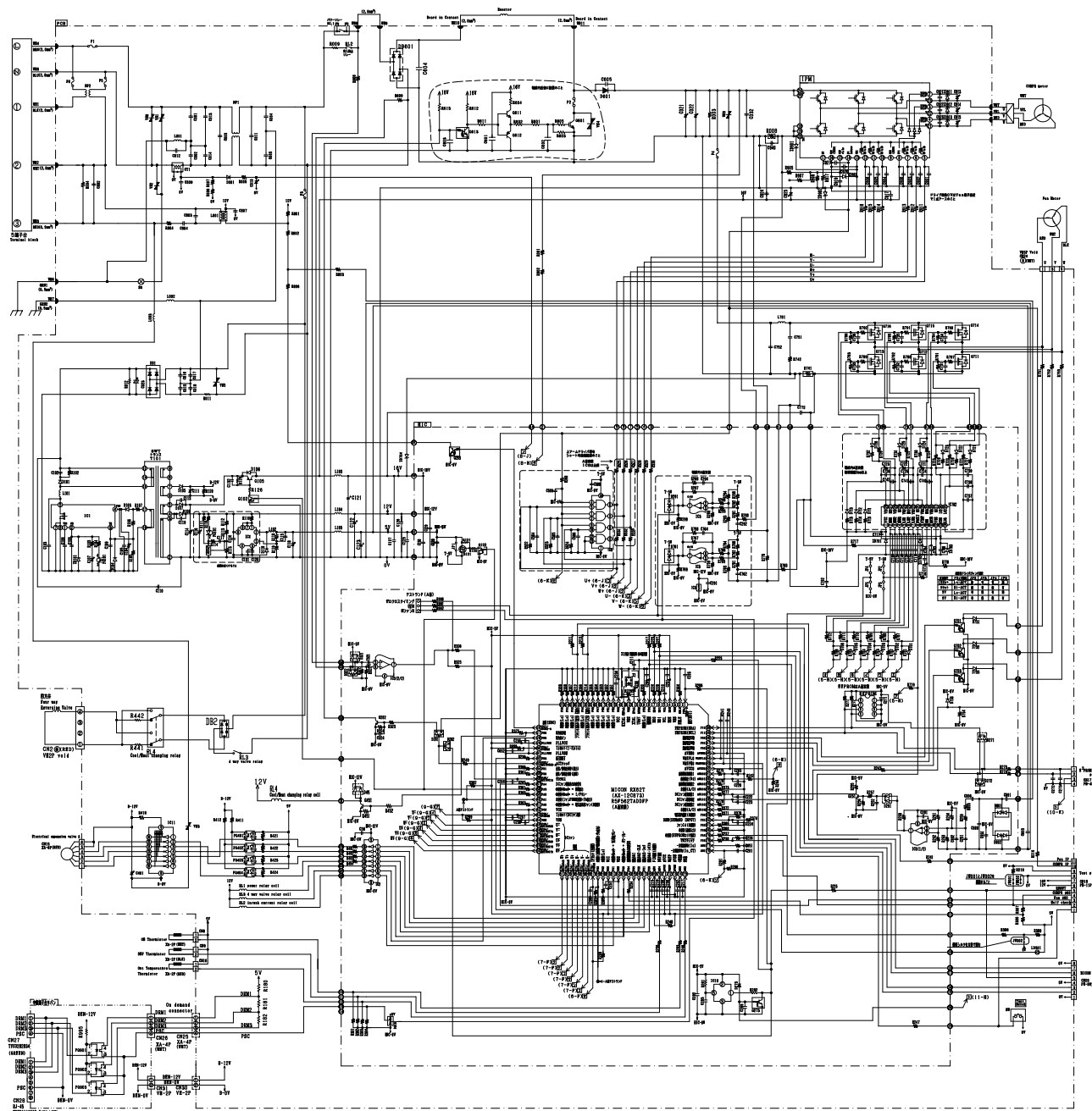
1. 电气符号如下

2. 元器件符号如下

3. 元器件符号与实物图对照表

符号	名称	规格	数量	备注
R1	电阻	10K	1	
R2	电阻	10K	1	
R3	电阻	10K	1	
R4	电阻	10K	1	
R5	电阻	10K	1	
R6	电阻	10K	1	
R7	电阻	10K	1	
R8	电阻	10K	1	
R9	电阻	10K	1	
R10	电阻	10K	1	
R11	电阻	10K	1	
R12	电阻	10K	1	
R13	电阻	10K	1	
R14	电阻	10K	1	
R15	电阻	10K	1	
R16	电阻	10K	1	
R17	电阻	10K	1	
R18	电阻	10K	1	
R19	电阻	10K	1	
R20	电阻	10K	1	
R21	电阻	10K	1	
R22	电阻	10K	1	
R23	电阻	10K	1	
R24	电阻	10K	1	
R25	电阻	10K	1	
R26	电阻	10K	1	
R27	电阻	10K	1	
R28	电阻	10K	1	
R29	电阻	10K	1	
R30	电阻	10K	1	
R31	电阻	10K	1	
R32	电阻	10K	1	
R33	电阻	10K	1	
R34	电阻	10K	1	
R35	电阻	10K	1	
R36	电阻	10K	1	
R37	电阻	10K	1	
R38	电阻	10K	1	
R39	电阻	10K	1	
R40	电阻	10K	1	
R41	电阻	10K	1	
R42	电阻	10K	1	
R43	电阻	10K	1	
R44	电阻	10K	1	
R45	电阻	10K	1	
R46	电阻	10K	1	
R47	电阻	10K	1	
R48	电阻	10K	1	
R49	电阻	10K	1	
R50	电阻	10K	1	
R51	电阻	10K	1	
R52	电阻	10K	1	
R53	电阻	10K	1	
R54	电阻	10K	1	
R55	电阻	10K	1	
R56	电阻	10K	1	
R57	电阻	10K	1	
R58	电阻	10K	1	
R59	电阻	10K	1	
R60	电阻	10K	1	
R61	电阻	10K	1	
R62	电阻	10K	1	
R63	电阻	10K	1	
R64	电阻	10K	1	
R65	电阻	10K	1	
R66	电阻	10K	1	
R67	电阻	10K	1	
R68	电阻	10K	1	
R69	电阻	10K	1	
R70	电阻	10K	1	
R71	电阻	10K	1	
R72	电阻	10K	1	
R73	电阻	10K	1	
R74	电阻	10K	1	
R75	电阻	10K	1	
R76	电阻	10K	1	
R77	电阻	10K	1	
R78	电阻	10K	1	
R79	电阻	10K	1	
R80	电阻	10K	1	
R81	电阻	10K	1	
R82	电阻	10K	1	
R83	电阻	10K	1	
R84	电阻	10K	1	
R85	电阻	10K	1	
R86	电阻	10K	1	
R87	电阻	10K	1	
R88	电阻	10K	1	
R89	电阻	10K	1	
R90	电阻	10K	1	
R91	电阻	10K	1	
R92	电阻	10K	1	
R93	电阻	10K	1	
R94	电阻	10K	1	
R95	电阻	10K	1	
R96	电阻	10K	1	
R97	电阻	10K	1	
R98	电阻	10K	1	
R99	电阻	10K	1	
R100	电阻	10K	1	

MODEL RAC-25WSE,RAC-35WSE



板外器件
1. 电阻符号如下
— 普通电阻
— 可调电阻
— 电位器
— 热敏电阻
— 光敏电阻
— 压敏电阻
— 电敏电阻

M基板BOM

2. 板中符号说明如下
A 零件名称
B 零件规格
C 零件数量
D 零件位置

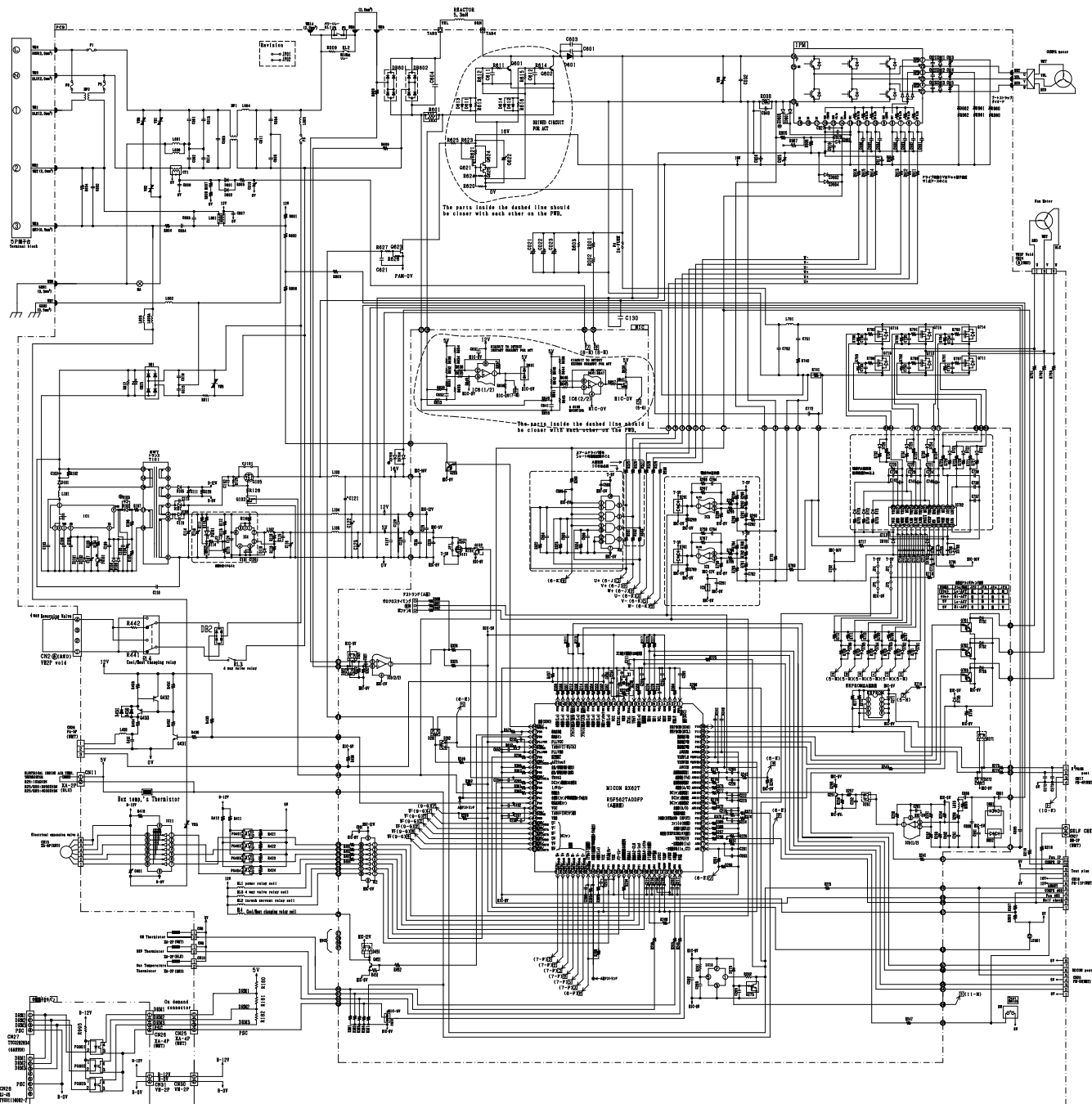
3. 零件名称与安装位置示意图
M 零件名称
B 零件规格
C 零件数量
D 零件位置

Resistor	Value	Quantity	Position
R1	10K	1	U1
R2	10K	1	U1
R3	10K	1	U1
R4	10K	1	U1
R5	10K	1	U1
R6	10K	1	U1
R7	10K	1	U1
R8	10K	1	U1
R9	10K	1	U1
R10	10K	1	U1
R11	10K	1	U1
R12	10K	1	U1
R13	10K	1	U1
R14	10K	1	U1
R15	10K	1	U1
R16	10K	1	U1
R17	10K	1	U1
R18	10K	1	U1
R19	10K	1	U1
R20	10K	1	U1
R21	10K	1	U1
R22	10K	1	U1
R23	10K	1	U1
R24	10K	1	U1
R25	10K	1	U1
R26	10K	1	U1
R27	10K	1	U1
R28	10K	1	U1
R29	10K	1	U1
R30	10K	1	U1
R31	10K	1	U1
R32	10K	1	U1
R33	10K	1	U1
R34	10K	1	U1
R35	10K	1	U1
R36	10K	1	U1
R37	10K	1	U1
R38	10K	1	U1
R39	10K	1	U1
R40	10K	1	U1
R41	10K	1	U1
R42	10K	1	U1
R43	10K	1	U1
R44	10K	1	U1
R45	10K	1	U1
R46	10K	1	U1
R47	10K	1	U1
R48	10K	1	U1
R49	10K	1	U1
R50	10K	1	U1
R51	10K	1	U1
R52	10K	1	U1
R53	10K	1	U1
R54	10K	1	U1
R55	10K	1	U1
R56	10K	1	U1
R57	10K	1	U1
R58	10K	1	U1
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R61	10K	1	U1
R62	10K	1	U1
R63	10K	1	U1
R64	10K	1	U1
R65	10K	1	U1
R66	10K	1	U1
R67	10K	1	U1
R68	10K	1	U1
R69	10K	1	U1
R70	10K	1	U1
R71	10K	1	U1
R72	10K	1	U1
R73	10K	1	U1
R74	10K	1	U1
R75	10K	1	U1
R76	10K	1	U1
R77	10K	1	U1
R78	10K	1	U1
R79	10K	1	U1
R80	10K	1	U1
R81	10K	1	U1
R82	10K	1	U1
R83	10K	1	U1
R84	10K	1	U1
R85	10K	1	U1
R86	10K	1	U1
R87	10K	1	U1
R88	10K	1	U1
R89	10K	1	U1
R90	10K	1	U1
R91	10K	1	U1
R92	10K	1	U1
R93	10K	1	U1
R94	10K	1	U1
R95	10K	1	U1
R96	10K	1	U1
R97	10K	1	U1
R98	10K	1	U1
R99	10K	1	U1
R100	10K	1	U1

Capacitor	Value	Quantity	Position
C1	100nF	1	U1
C2	100nF	1	U1
C3	100nF	1	U1
C4	100nF	1	U1
C5	100nF	1	U1
C6	100nF	1	U1
C7	100nF	1	U1
C8	100nF	1	U1
C9	100nF	1	U1
C10	100nF	1	U1
C11	100nF	1	U1
C12	100nF	1	U1
C13	100nF	1	U1
C14	100nF	1	U1
C15	100nF	1	U1
C16	100nF	1	U1
C17	100nF	1	U1
C18	100nF	1	U1
C19	100nF	1	U1
C20	100nF	1	U1
C21	100nF	1	U1
C22	100nF	1	U1
C23	100nF	1	U1
C24	100nF	1	U1
C25	100nF	1	U1
C26	100nF	1	U1
C27	100nF	1	U1
C28	100nF	1	U1
C29	100nF	1	U1
C30	100nF	1	U1
C31	100nF	1	U1
C32	100nF	1	U1
C33	100nF	1	U1
C34	100nF	1	U1
C35	100nF	1	U1
C36	100nF	1	U1
C37	100nF	1	U1
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C40	100nF	1	U1
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C52	100nF	1	U1
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C55	100nF	1	U1
C56	100nF	1	U1
C57	100nF	1	U1
C58	100nF	1	U1
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C64	100nF	1	U1
C65	100nF	1	U1
C66	100nF	1	U1
C67	100nF	1	U1
C68	100nF	1	U1
C69	100nF	1	U1
C70	100nF	1	U1
C71	100nF	1	U1
C72	100nF	1	U1
C73	100nF	1	U1
C74	100nF	1	U1
C75	100nF	1	U1
C76	100nF	1	U1
C77	100nF	1	U1
C78	100nF	1	U1
C79	100nF	1	U1
C80	100nF	1	U1
C81	100nF	1	U1
C82	100nF	1	U1
C83	100nF	1	U1
C84	100nF	1	U1
C85	100nF	1	U1
C86	100nF	1	U1
C87	100nF	1	U1
C88	100nF	1	U1
C89	100nF	1	U1
C90	100nF	1	U1
C91	100nF	1	U1
C92	100nF	1	U1
C93	100nF	1	U1
C94	100nF	1	U1
C95	100nF	1	U1
C96	100nF	1	U1
C97	100nF	1	U1
C98	100nF	1	U1
C99	100nF	1	U1
C100	100nF	1	U1

ダイオード Diode			
部品名	Value	Quantity	Position
D101	1N4148	1	U1
D102	1N4148	1	U1
D103	1N4148	1	U1
D104	1N4148	1	U1
D105	1N4148	1	U1
D106	1N4148	1	U1
D107	1N4148	1	U1
D108	1N4148	1	U1
D109	1N4148	1	U1
D110	1N4148	1	U1
D111	1N4148	1	U1
D112	1N4148	1	U1
D113	1N4148	1	U1
D114	1N4148	1	U1
D115	1N4148	1	U1
D116	1N4148	1	U1
D117	1N4148	1	U1
D118	1N4148	1	U1
D119	1N4148	1	U1
D120	1N4148	1	U1
D121	1N4148	1	U1
D122	1N4148	1	U1
D123	1N4148	1	U1
D124	1N4148	1	U1
D125	1N4148	1	U1
D126	1N4148	1	U1
D127	1N4148	1	U1
D128	1N4148	1	U1
D129	1N4148	1	U1
D130	1N4148	1	U1
D131	1N4148	1	U1
D132	1N4148	1	U1
D133	1N4148	1	U1
D134	1N4148	1	U1
D135	1N4148	1	U1
D136	1N4148	1	U1
D137	1N4148	1	U1
D138	1N4148	1	U1
D139	1N4148	1	U1
D140	1N4148	1	U1
D141	1N4148	1	U1
D142	1N4148	1	U1
D143	1N4148	1	U1
D144	1N4148	1	U1
D145	1N4148	1	U1
D146	1N4148	1	U1
D147	1N4148	1	U1
D148	1N4148	1	U1
D149	1N4148	1	U1
D150	1N4148	1	U1
D151	1N4148	1	U1
D152	1N4148	1	U1
D153	1N4148	1	U1
D154	1N4148	1	U1
D155	1N4148	1	U1
D156	1N4148	1	U1
D157	1N4148	1	U1
D158	1N4148	1	U1
D159	1N4148	1	U1
D160	1N4148	1	U1
D161	1N4148	1	U1
D162	1N4148	1	U1
D163	1N4148	1	U1
D164	1N4148	1	U1
D165	1N4148	1	U1
D166	1N4148	1	U1
D167	1N4148	1	U1
D168	1N4148	1	U1
D169	1N4148	1	U1
D170	1N4148	1	U1
D171	1N4148	1	U1
D172	1N4148	1	U1
D173	1N4148	1	U1
D174	1N4148	1	U1
D175	1N4148	1	U1
D176	1N4148	1	U1
D177	1N4148	1	U1
D178	1N4148	1	U1
D179	1N4148	1	U1
D180	1N4148	1	U1
D181	1N4148	1	U1
D182	1N4148	1	U1
D183	1N4148	1	U1
D184	1N4148	1	U1
D185	1N4148	1	U1
D186	1N4148	1	U1
D187	1N4148	1	U1
D188	1N4148	1	U1
D189	1N4148	1	U1
D190	1N4148	1	U1
D191	1N4148	1	U1
D192	1N4148	1	U1
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MODEL RAC-50WSE



技术要求

1. 电容种类如下
F——薄膜电容
C——陶瓷电容
D——电解电容

2. 表中的形态记号如下

记号	形态
A	横肉肌插
R	纵肉肌插
P	纵肉肌插(问题7)
H	手插
C	贴片安装
S	其他贴片安装

3. 基桩组件与安装形态参照下记图号

形态	参考图号
A、B、C、P	ZB01.2995B
H	ZB01.9400B

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2241		

[illegible]

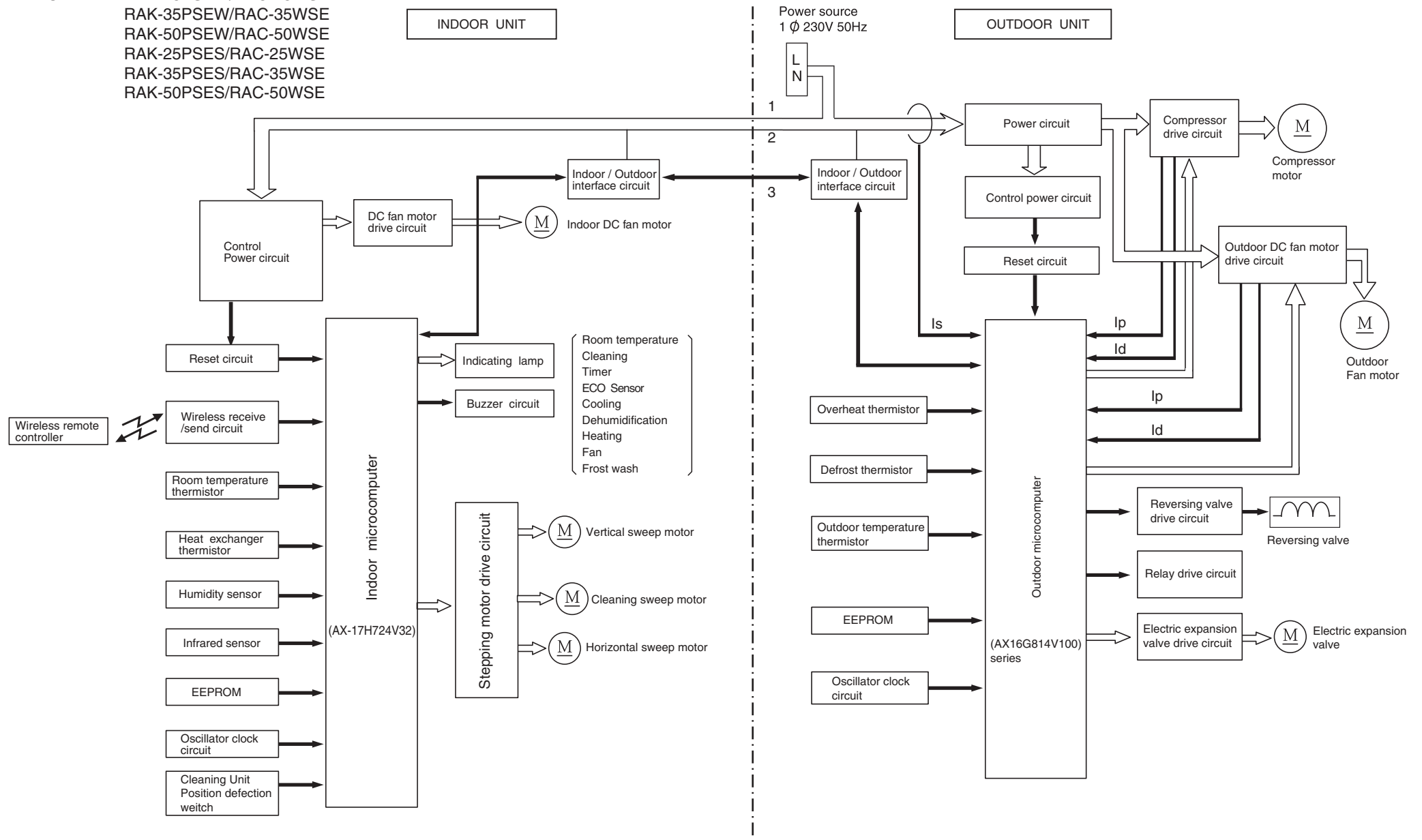
ボルトス Dims									
ボルト	規格	材質	寸法	単位	備考	ボルト	規格	材質	寸法
0101	SAEJ4290	A16	1/2	mm		0102	SAEJ4290	A16	1/2
0103	SAEJ4290	A16	1/2	mm		0104	SAEJ4290	A16	1/2
0105	SAEJ4290	A16	1/2	mm		0106	SAEJ4290	A16	1/2
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0111	SAEJ4290	A16	1/2	mm		0112	SAEJ4290	A16	1/2
0113	SAEJ4290	A16	1/2	mm		0114	SAEJ4290	A16	1/2
0115	SAEJ4290	A16	1/2	mm		0116	SAEJ4290	A16	1/2
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0123	SAEJ4290	A16	1/2	mm		0124	SAEJ4290	A16	1/2
0125	SAEJ4290	A16	1/2	mm		0126	SAEJ4290	A16	1/2
0127	SAEJ4290	A16	1/2	mm		0128	SAEJ4290	A16	1/2
0129	SAEJ4290	A16	1/2	mm		0130	SAEJ4290	A16	1/2
0131	SAEJ4290	A16	1/2	mm		0132	SAEJ4290	A16	1/2
0133	SAEJ4290	A16	1/2	mm		0134	SAEJ4290	A16	1/2
0135	SAEJ4290	A16	1/2	mm		0136	SAEJ4290	A16	1/2
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0149	SAEJ4290	A16	1/2	mm		0150	SAEJ4290	A16	1/2
0151	SAEJ4290	A16	1/2	mm		0152	SAEJ4290	A16	1/2
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0197	SAEJ4290	A16	1/2	mm		0198	SAEJ4290	A16	1/2
0199	SAEJ4290	A16	1/2	mm		0200	SAEJ4290	A16	1/2
0201	SAEJ4290	A16	1/2	mm		0202	SAEJ4290	A16	1/2
0203	SAEJ4290	A16	1/2	mm		0204	SAEJ4290	A16	1/2
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0207	SAEJ4290	A16	1/2	mm		0208	SAEJ4290	A16	1/2
0209	SAEJ4290	A16	1/2	mm		0210	SAEJ4290	A16	1/2
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0215	SAEJ4290	A16	1/2	mm		0216	SAEJ4290	A16	1/2
0217	SAEJ4290	A16	1/2	mm		0218	SAEJ4290	A16	1/2
0219	SAEJ4290	A16	1/2	mm		0220	SAEJ4290	A16	1/2
0221	SAEJ4290	A16	1/2	mm		0222	SAEJ4290	A16	1/2
0223	SAEJ4290	A16	1/2	mm		0224	SAEJ4290	A16	1/2
0225	SAEJ4290	A16	1/2	mm		0226	SAEJ4290	A16	1/2
0227	SAEJ4290	A16	1/2	mm		0228	SAEJ4290	A16	1/2
0229	SAEJ4290	A16	1/2	mm		0230	SAEJ4290	A16	1/2
0231	SAEJ4290	A16	1/2	mm		0232	SAEJ4290	A16	1/2
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0235	SAEJ4290	A16	1/2	mm		0236	SAEJ4290	A16	1/2
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0241	SAEJ4290	A16	1/2	mm		0242	SAEJ4290	A16	1/2
0243	SAEJ4290	A16	1/2	mm		0244	SAEJ4290	A16	1/2
0245	SAEJ4290	A16	1/2	mm		0246	SAEJ4290	A16	1/2
0247	SAEJ4290	A16	1/2	mm		0248	SAEJ4290	A16	1/2
0249	SAEJ4290	A16	1/2	mm		0250	SAEJ4290	A16	1/2
0251	SAEJ4290	A16	1/2	mm		0252	SAEJ4290	A16	1/2
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0267	SAEJ4290	A16	1/2	mm		0268	SAEJ4290	A16	1/2
0269	SAEJ4290	A16	1/2	mm		0270	SAEJ4290	A16	1/2
0271	SAEJ4290	A16	1/2	mm		0272	SAEJ4290	A16	1/2
0273	SAEJ4290	A16	1/2	mm		0274	SAEJ4290	A16	1/2
0275	SAEJ4290	A16	1/2	mm		0276	SAEJ4290	A16	1/2
0277	SAEJ4290	A16	1/2	mm		0278	SAEJ4290	A16	1/2
0279	SAEJ4290	A16	1/2	mm		0280	SAEJ4290	A16	1/2
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0283	SAEJ4290	A16	1/2	mm		0284	SAEJ4290	A16	1/2
0285	SAEJ4290	A16	1/2	mm		0286	SAEJ4290	A16	1/2
0287	SAEJ4290	A16	1/2	mm		0288	SAEJ4290	A16	1/2
0289	SAEJ4290	A16	1/2	mm		0290	SAEJ4290	A16	1/2
0291	SAEJ4290	A16	1/2	mm		0292	SAEJ4290	A16	1/2
0293	SAEJ4290	A16	1/2	mm		0294	SAEJ4290	A16	1/2
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0297	SAEJ4290	A16	1/2	mm		0298	SAEJ4290	A16	1/2
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0305	SAEJ4290	A16	1/2	mm		0306	SAEJ4290	A16	1/2
0307	SAEJ4290	A16	1/2	mm		0308	SAEJ4290	A16	1/2
0309	SAEJ4290	A16	1/2	mm		0310	SAEJ4290	A16	1/2
0311	SAEJ4290	A16	1/2	mm		0312	SAEJ4290	A16	1/2
0313	SAEJ4290	A16	1/2	mm		0314	SAEJ4290	A16	1/2
0315	SAEJ4290	A16	1/2	mm		0316	SAEJ4290	A16	1/2
0317	SAEJ4290	A16	1/2	mm		0318	SAEJ4290	A16	1/2
0319	SAEJ4290	A16	1/2	mm		0320	SAEJ4290	A16	1/2
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0327	SAEJ4290	A16	1/2	mm		0328	SAEJ4290	A16	1/2
0329	SAEJ4290	A16	1/2	mm		0330	SAEJ4290	A16	1/2
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0339	SAEJ4290	A16	1/2	mm		0340	SAEJ4290	A16	1/2
0341	SAEJ4290	A16	1/2	mm		0342	SAEJ4290	A16	1/2
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0349	SAEJ4290	A16	1/2	mm		0350	SAEJ4290	A16	1/2
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0353	SAEJ4290	A16	1/2	mm		0354	SAEJ4290	A16	1/2
0355	SAEJ4290	A16	1/2	mm		0356	SAEJ4290	A16	1/2
0357	SAEJ4290	A16	1/2	mm		0358	SAEJ4290	A16	1/2
0359	SAEJ4290	A16	1/2	mm		0360	SAEJ4290	A16	1/2
0361	SAEJ4290	A16	1/2	mm		0362	SAEJ4290	A16	1/2
0363	SAEJ4290	A16	1/2	mm		0364	SAEJ4290	A16	1/2
0365	SAEJ4290	A16	1/2	mm		0366	SAEJ4290	A16	1/2
0367	SAEJ4290	A16	1/2	mm		0368	SAEJ4290	A16	1/2
0369	SAEJ4290	A16	1/2	mm		0370	SAEJ4290	A16	1/2
0371	SAEJ4290	A16	1/2	mm		0372	SAEJ4290	A16	1/2
0373	SAEJ4290	A16	1/2	mm		0374	SAEJ4290	A16	1/2
0375	SAEJ4290	A16	1/2	mm		0376	SAEJ4290	A16	1/2
0377	SAEJ4290	A16	1/2	mm		0378	SAEJ4290	A16	1/2
0379	SAEJ4290	A16	1/2	mm		0380	SAEJ4290	A16	1/2
0381	SAEJ4290	A16	1/2	mm		0382	SAEJ4290	A16	1/2</

★カラー Photo coupler				
部品	品名	電圧	消費電力	備考
PC111	PC111-122681	5 V DC	0.1 W	標準
PC112	PC112-122681	5 V DC	0.1 W	標準
PC113	PC113-122681	5 V DC	0.1 W	標準
PC114	PC114-122681	5 V DC	0.1 W	標準
PC115	PC115-122681	5 V DC	0.1 W	標準
PC116	PC116-122681	5 V DC	0.1 W	標準
PC117	PC117-122681	5 V DC	0.1 W	標準
PC118	PC118-122681	5 V DC	0.1 W	標準
PC119	PC119-122681	5 V DC	0.1 W	標準
PC120	PC120-122681	5 V DC	0.1 W	標準
PC121	PC121-122681	5 V DC	0.1 W	標準
PC122	PC122-122681	5 V DC	0.1 W	標準
PC123	PC123-122681	5 V DC	0.1 W	標準
PC124	PC124-122681	5 V DC	0.1 W	標準
PC125	PC125-122681	5 V DC	0.1 W	標準
PC126	PC126-122681	5 V DC	0.1 W	標準
PC127	PC127-122681	5 V DC	0.1 W	標準
PC128	PC128-122681	5 V DC	0.1 W	標準
PC129	PC129-122681	5 V DC	0.1 W	標準
PC130	PC130-122681	5 V DC	0.1 W	標準
PC131	PC131-122681	5 V DC	0.1 W	標準
PC132	PC132-122681	5 V DC	0.1 W	標準
PC133	PC133-122681	5 V DC	0.1 W	標準
PC134	PC134-122681	5 V DC	0.1 W	標準
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PC147	PC147-122681	5 V DC	0.1 W	標準
PC148	PC148-122681	5 V DC	0.1 W	標準
PC149	PC149-122681	5 V DC	0.1 W	標準
PC150	PC150-122681	5 V DC	0.1 W	標準
PC151	PC151-122681	5 V DC	0.1 W	標準
PC152	PC152-122681	5 V DC	0.1 W	標準
PC153	PC153-122681	5 V DC	0.1 W	標準
PC154	PC154-122681	5 V DC	0.1 W	標準
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PC156	PC156-122681	5 V DC	0.1 W	標準
PC157	PC157-122681	5 V DC	0.1 W	標準
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PC162	PC162-122681	5 V DC	0.1 W	標準
PC163	PC163-122681	5 V DC	0.1 W	標準
PC164	PC164-122681	5 V DC	0.1 W	標準
PC165	PC165-122681	5 V DC	0.1 W	標準
PC166	PC166-122681	5 V DC	0.1 W	標準
PC167	PC167-122681	5 V DC	0.1 W	標準
PC168	PC168-122681	5 V DC	0.1 W	標準
PC169	PC169-122681	5 V DC	0.1 W	標準
PC170	PC170-122681	5 V DC	0.1 W	標準
PC171	PC171-122681	5 V DC	0.1 W	標準
PC172	PC172-122681	5 V DC	0.1 W	標準
PC173	PC173-122681	5 V DC	0.1 W	標準
PC174	PC174-122681	5 V DC	0.1 W	標準
PC175	PC175-122681	5 V DC	0.1 W	標準
PC176	PC176-122681	5 V DC	0.1 W	標準
PC177	PC177-122681	5 V DC	0.1 W	標準

[illegible]

BLOCK DIAGRAM

MODEL RAK-25PSEW/RAC-25WSE
 RAK-35PSEW/RAC-35WSE
 RAK-50PSEW/RAC-50WSE
 RAK-25PSES/RAC-25WSE
 RAK-35PSES/RAC-35WSE
 RAK-50PSES/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						
Timer functions	Off-timer					
	On-timer					
	Off -> On On -> Off timer					
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.) Operating mode is judged by room temperature. (1) Judging by room temperature - Operating mode at start up is judged (initial judgment). (a) Conditions for judgment (any of the followings). - 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 [Cooling] : Room temperature ≥ Remote controller setting [Heating] : Room temperature < Remote controller setting [Room temperature setting of remote controller] Cooling Heating		
	Hi	Operates at "Hi" regardless of the room temperature.	Set to "ultra-Hi" when the compressor runs at cold dash mode speed, and to "Hi" in other modes. 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.) Set to "ultra-Hi" when the compressor is running at maximum speed during hot dash or when recovered from defrosting.		
	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", "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.) The fan speed is controlled by the heat exchanger temperature; the overload control is executed as in the following diagram:	
	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.		
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.

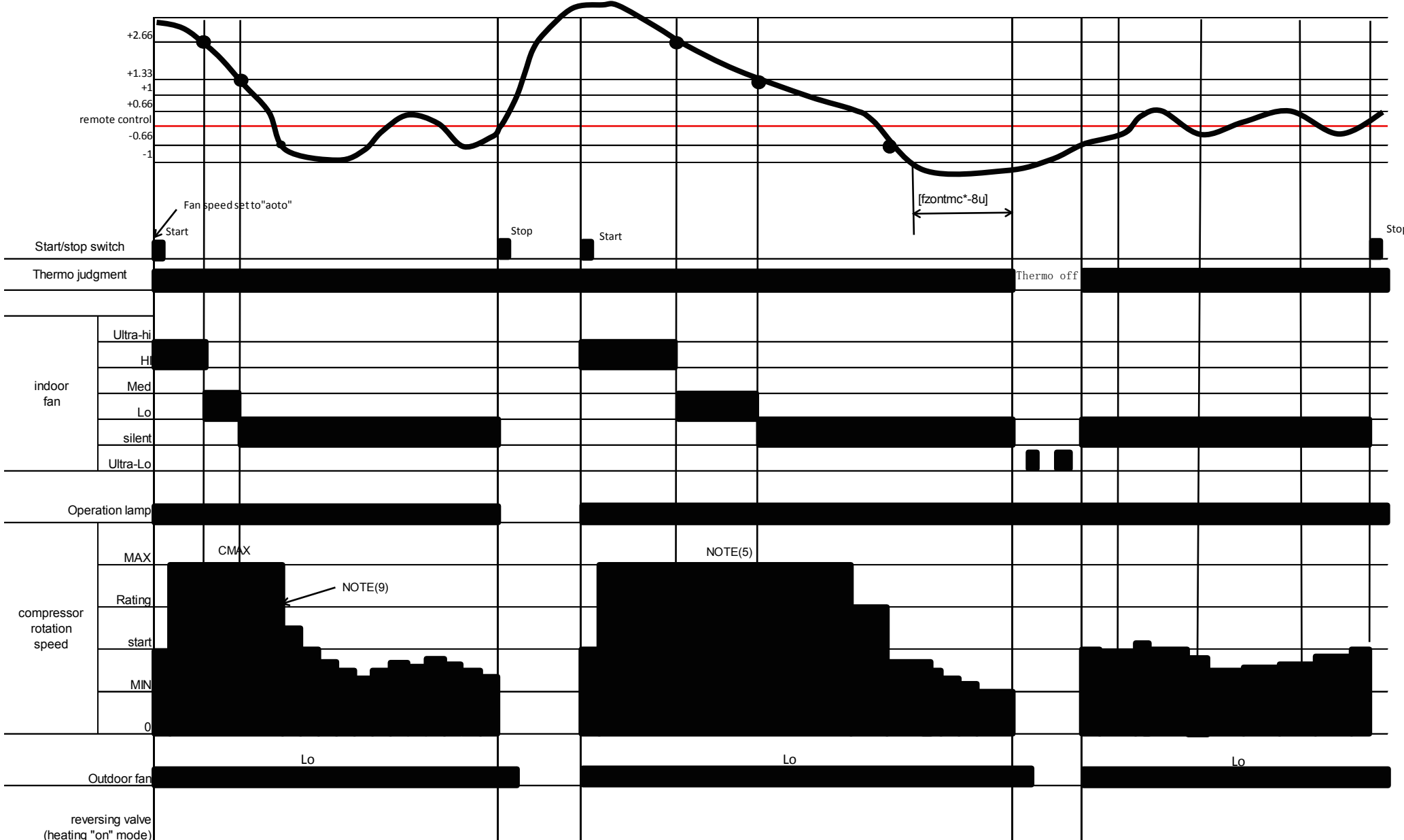
Table 1 Mode data file

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

fdoym_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

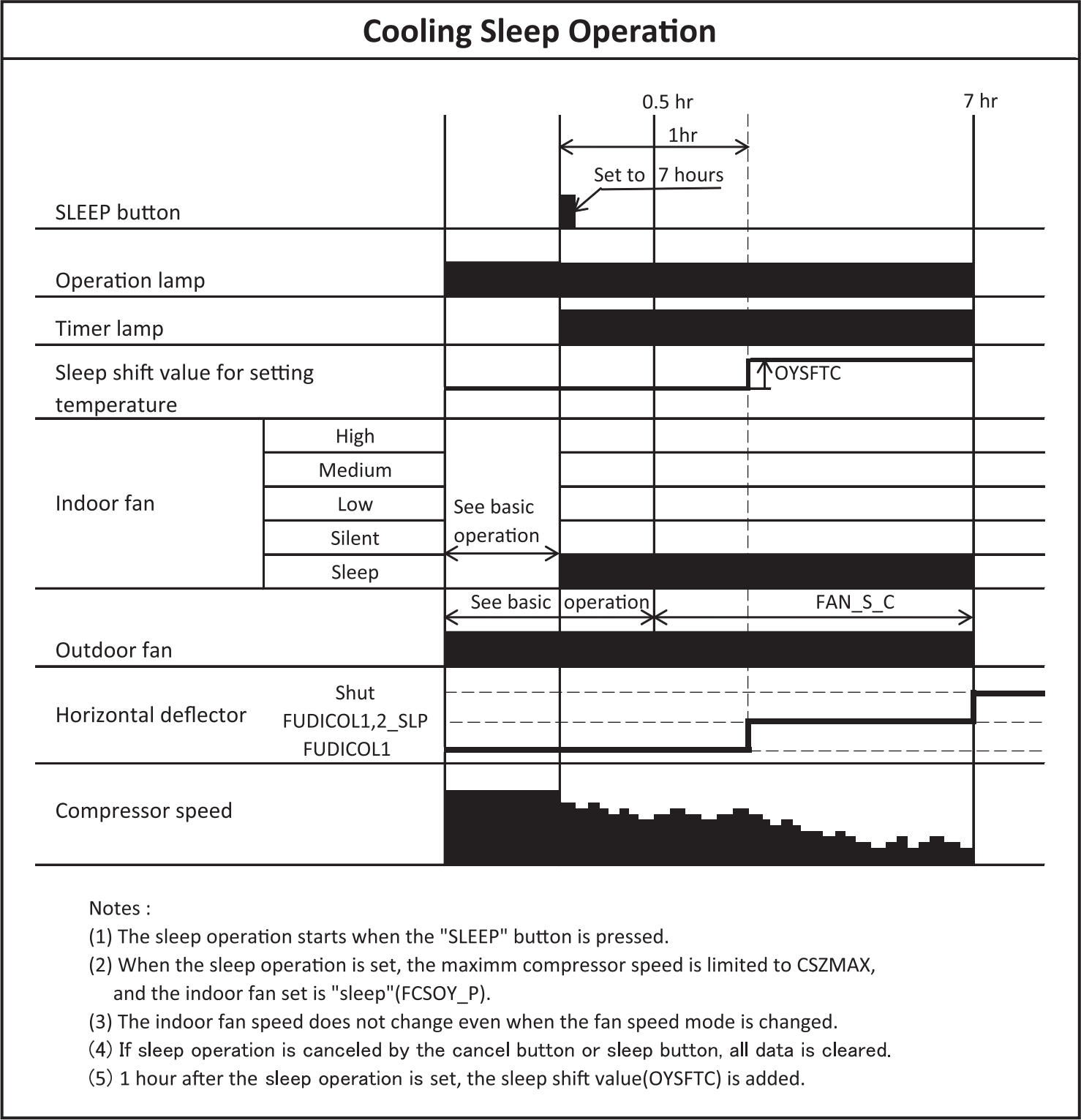
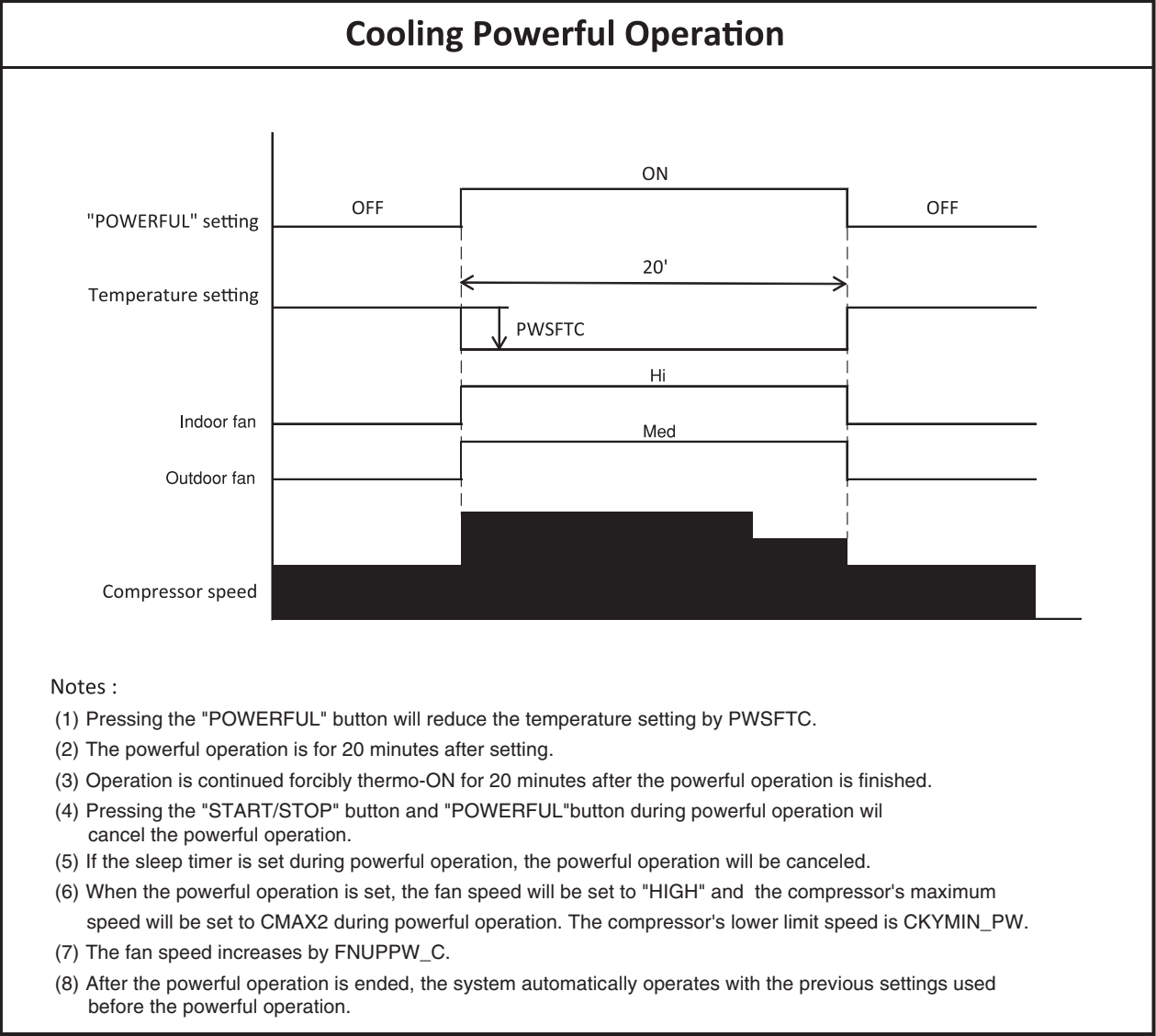
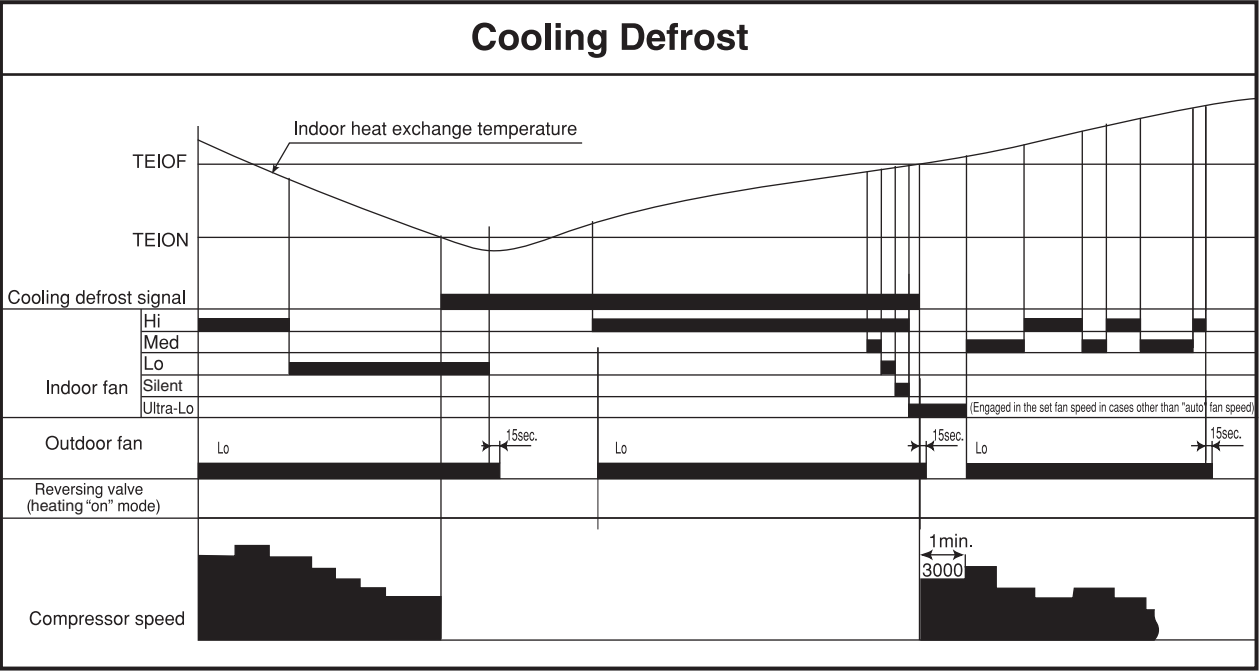
MODEL	RAK-25PSEW RAK-25PSES	RAK-35PSEW RAK-35PSES	RAK-50PSEW RAK-50PSES
tdf411_8u	30S	30S	60S
tdf412_8u	0	0	30S
tdf413_8u	0	0	50S
tdf411_cmp_8u	3000min-1	3000min-1	3000min-1
tdf412_cmp_8u	0	0	2400min-1
tdf413_cmp_8u	0	0	1800min-1
defcmp_off_8u	30S	30S	60S
defben_std_8u	0	0	30S
startdf1_8u	30S	30S	20S
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
dftimfst_8u	43min	43min	45min
dftimotp0_8u	43min	40min	45min
dftimotp5_8u	43min	55min	60min
dftimotp10_8u	43min	55min	60min
dftmcotp0_8u	25min	25min	25min
dftmcotp5_8u	25min	25min	25min
dftmcotp10_8u	25min	25min	25min
frzcIn_chk1_8u	42h	42h	42h
frzcIn_chk2_8u	42h	42h	42h
frzcIn_chk3_8u	84h	84h	84h
frzcInstp_8u	30min	30min	30min
frzcIn_blnce_tm_8u	8min	8min	8min
frzcIn_souf1_tm_8u	3min	3min	3min
frzcIn_souf2_tm_8u	8min	8min	8min
frz1_tm_short_8u	25min	25min	25min
frz1_tm_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
fcIn_frz_hou_8u	350min-1	350min-1	400min-1
fcIn_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

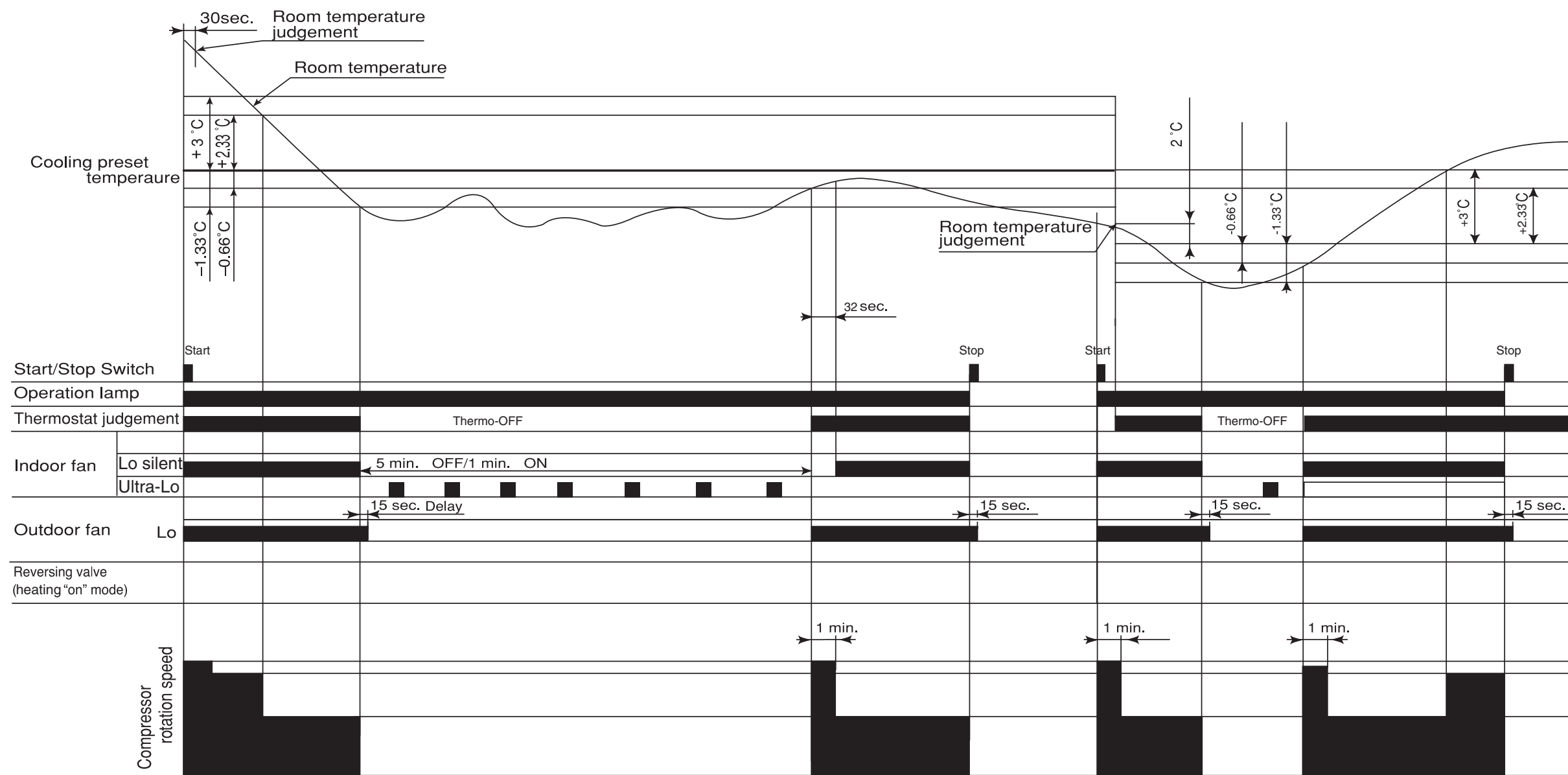


Notes:

- (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.



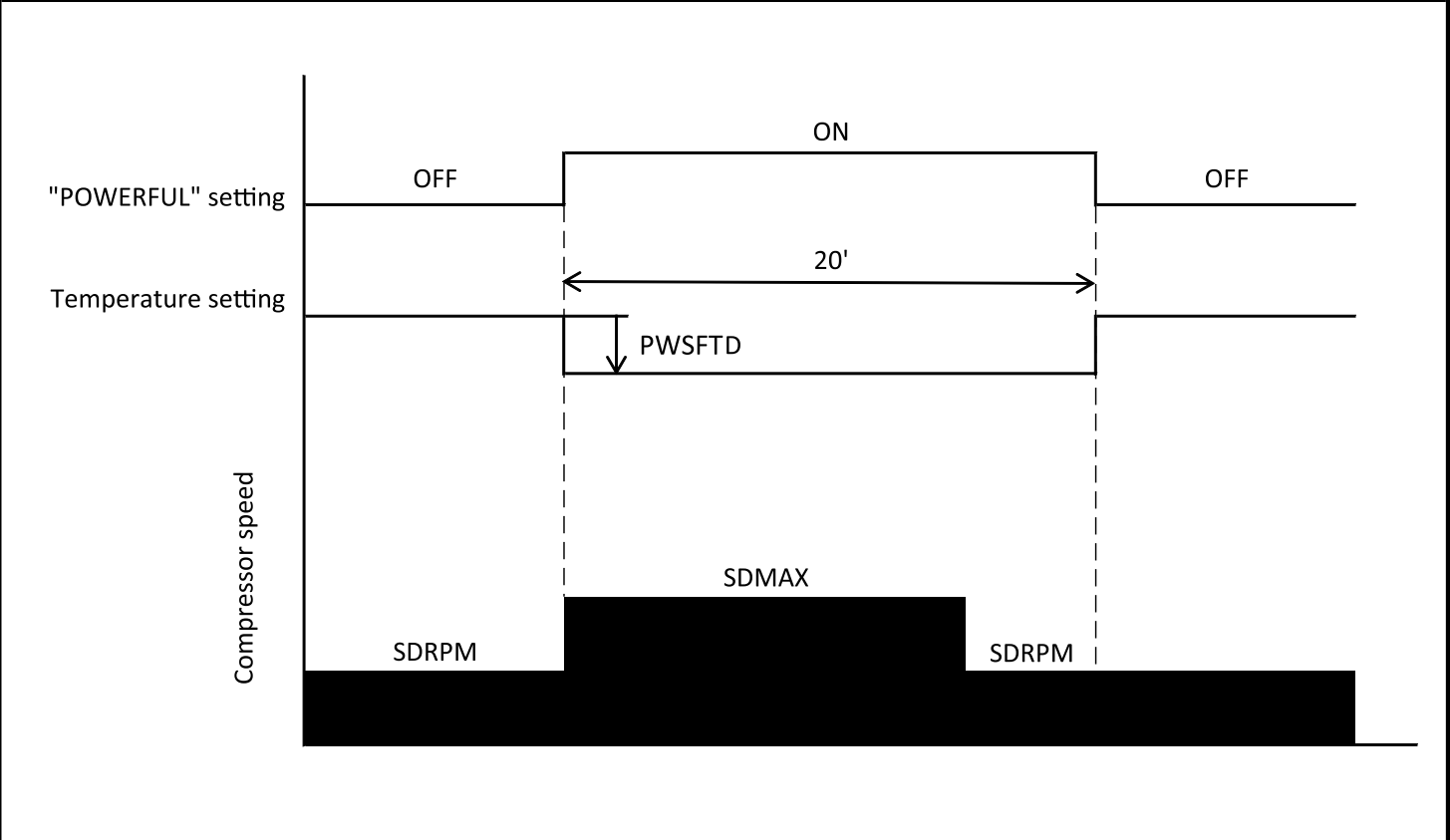
Basic Dehumidifying Operation



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.

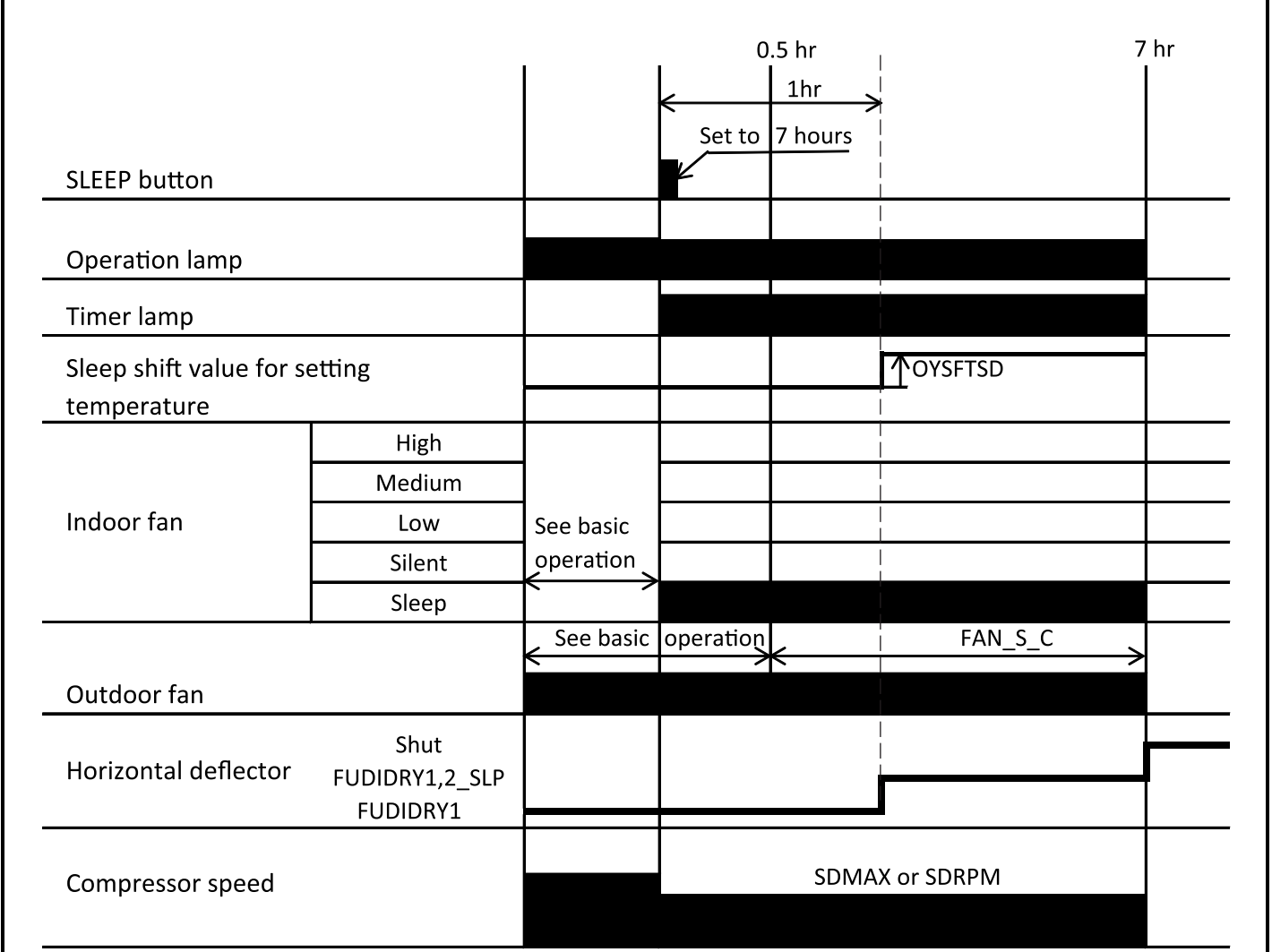
Dehumidifying Powerful Operation



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 will 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 $\geq 3\text{ }^{\circ}\text{C}$ " after powerful setting, the compressor's maximum speed during powerful operation will be set to SDMAX. Then the differential reduce "the differential $\leq 2.33\text{ }^{\circ}\text{C}$ " during powerful operation, the compressor's speed will be set to SDRPM.
If the differential (the room temperature - the temperature setting) is "the differential $< 3\text{ }^{\circ}\text{C}$ " 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.

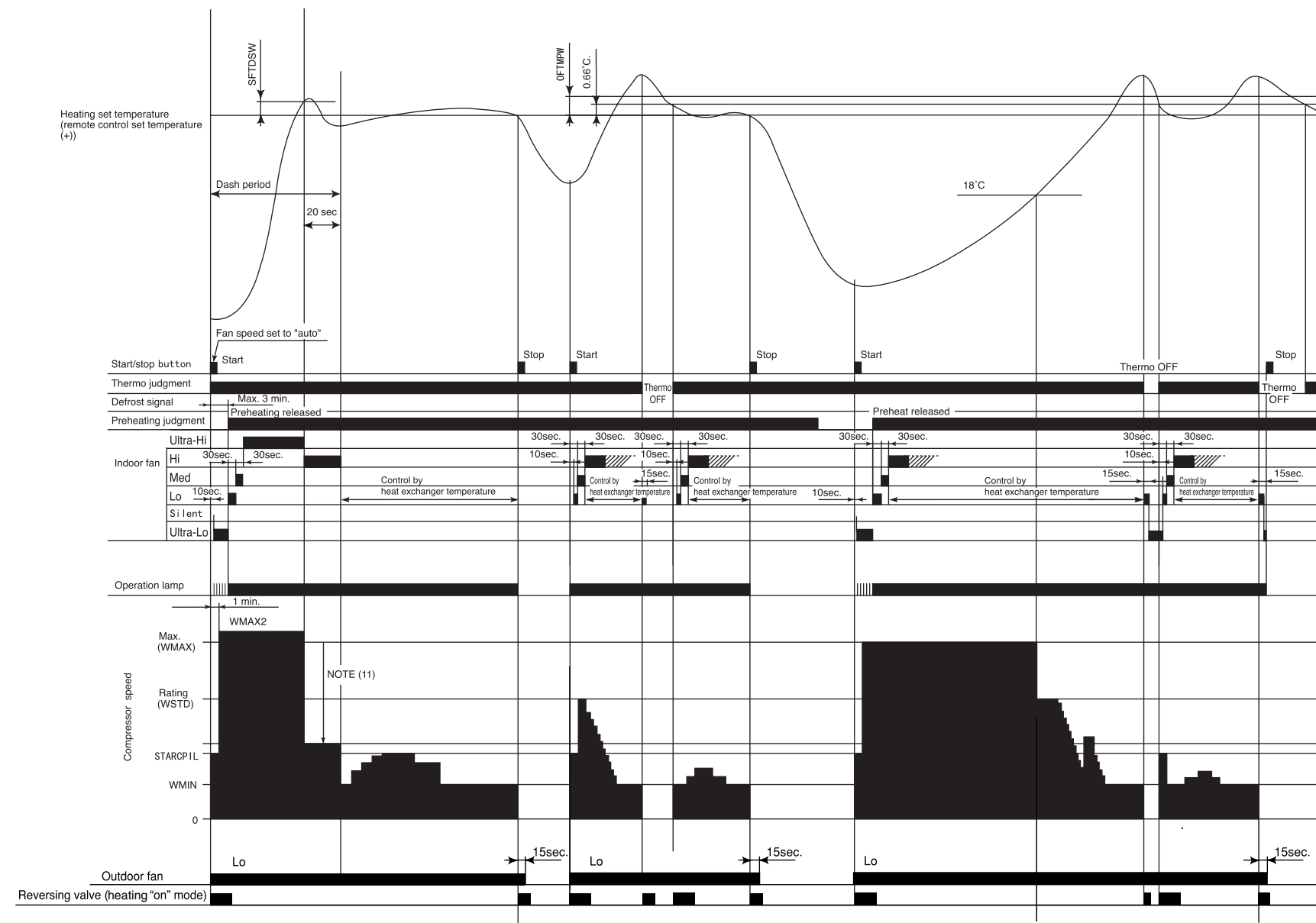
Dehumidifying Sleep Operation



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, "Ulrt a-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

Over defrosting inhibit period

Start/Stop button

Fan speed set to "Hi"

Defrost signal

Preheating judgment

Preheating released

Hi

Med

Lo

Ultra-Lo

Indoor fan

Hi or Lo

Outdoor fan

Operation lamp

Reversing valve (cooling "on" mode)

15' or more

30"

30"

Stop

Auto fresh defrosting

Deceleration period

Reverse cycle period

20' MAX.

TDF431

3' MAX.

DFMAX_STD

TDF411

TDF412

TDF413

DEFEMP_OFF

1'

WMAX

STARCPD1

STARTDF1

STARCPD2

TDF412_CMP

TDF413_CMP

STARCPD1_ATF

STARCPD2_ATF

DFMAX_ATF

DEFEMP_OFFA

20' MAX.

STARTDF2

STARTDF2_ATF

0

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

The diagram illustrates the timing sequence for the Heating Sleep Operation. The horizontal axis represents time, with markers at 0.5 hr, 1hr, and 7 hr.

- SLEEP button:** A single pulse is shown at the start of the sequence.
- Operation lamp:** Turns on immediately after the SLEEP button is pressed and remains on throughout the sleep operation.
- Timer lamp:** Turns on after the SLEEP button press and remains on for the duration of the sleep operation.
- Sleep shift value for setting temperature:** A horizontal bar labeled "OYSFTW" indicates the period during which the sleep shift value is active.
- Indoor fan:** The fan speed is shown for four modes: High, Medium, Low, and Silent. A horizontal bar labeled "See basic operation" indicates that the fan speed remains constant regardless of the mode selected during the sleep operation.
- Outdoor fan:** A horizontal bar labeled "See basic operation" indicates that the outdoor fan speed remains constant during the sleep operation.
- Horizontal deflector:** The deflector position is shown for two modes: Shut and FUDIWAR1,2. A horizontal bar labeled "FAN_S_H" indicates the period during which the deflector is in the "Shut" position.
- Compressor speed:** A bar graph shows the compressor speed decreasing from its normal level to a lower level during the 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

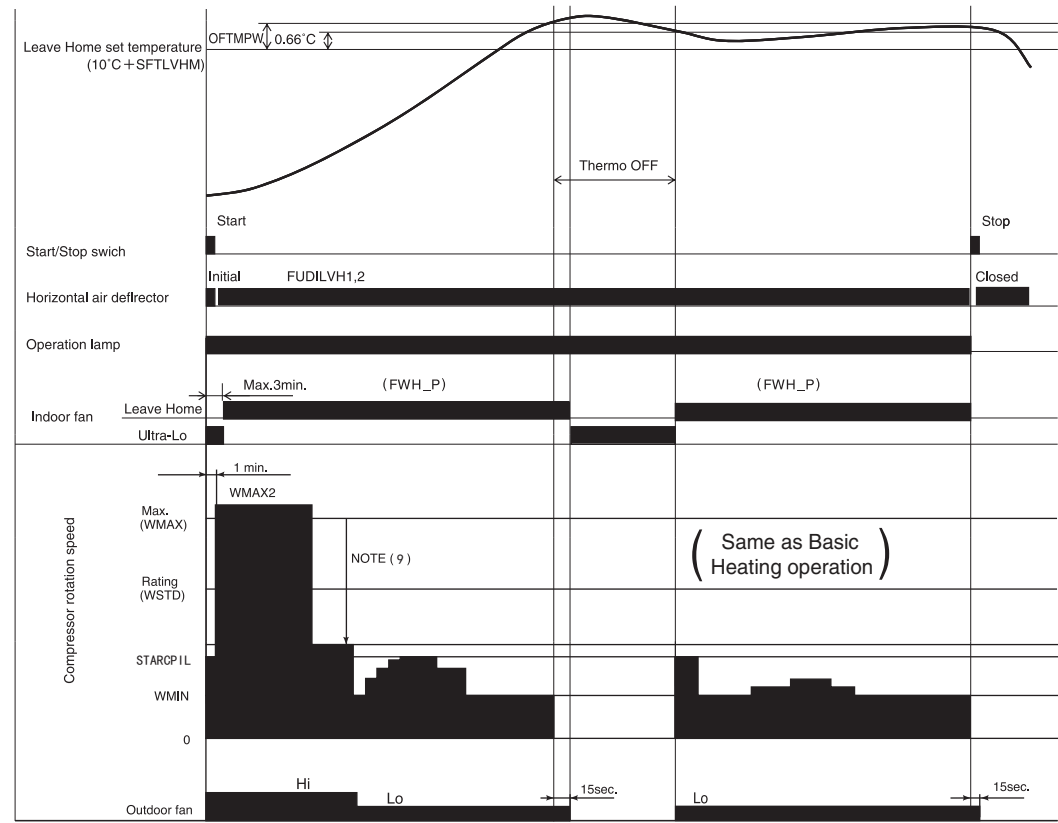
The diagram illustrates the timing of various system components during a 20-minute 'POWERFUL' heating operation. The components and their states are as follows:

- "POWERFUL" setting:** Transitions from OFF to ON at the start of the operation and back to OFF at the end.
- Temperature setting:** Increases by PWSFTW (Powerful Setting Temperature Increase) at the start of the operation and returns to the original setting at the end.
- Indoor fan:** Set to 'Hi' (High) speed during the 20-minute operation and returns to 'Med' (Medium) speed.
- Outdoor fan:** Set to 'Med' (Medium) speed during the 20-minute operation and returns to 'OFF'.
- Compressor speed:** Increases from a baseline level to a higher level during the 20-minute operation and returns to the baseline level.

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.

Leave Home

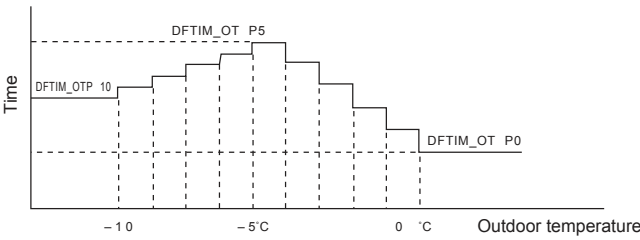


Notes:

Perform Leave Home operation according to the following control contents.

- (1) Operation mode : Heating
- (2) Temperature set : 10°C
- (3) Temperature setting correction shift : + 『SFTLVHM』
- (4) Indoor fan : 『FWH_P』
- (5) Outdoor fan speed :
- (6) Compressor start control : } Same as Basic Heating operation
- (7) Compressor speed :
- (8) Lamp indication : i) Operation lamp : ON
i) Timer lamp : OFF(Cotinuous operation) ; ON(Day timer operation)

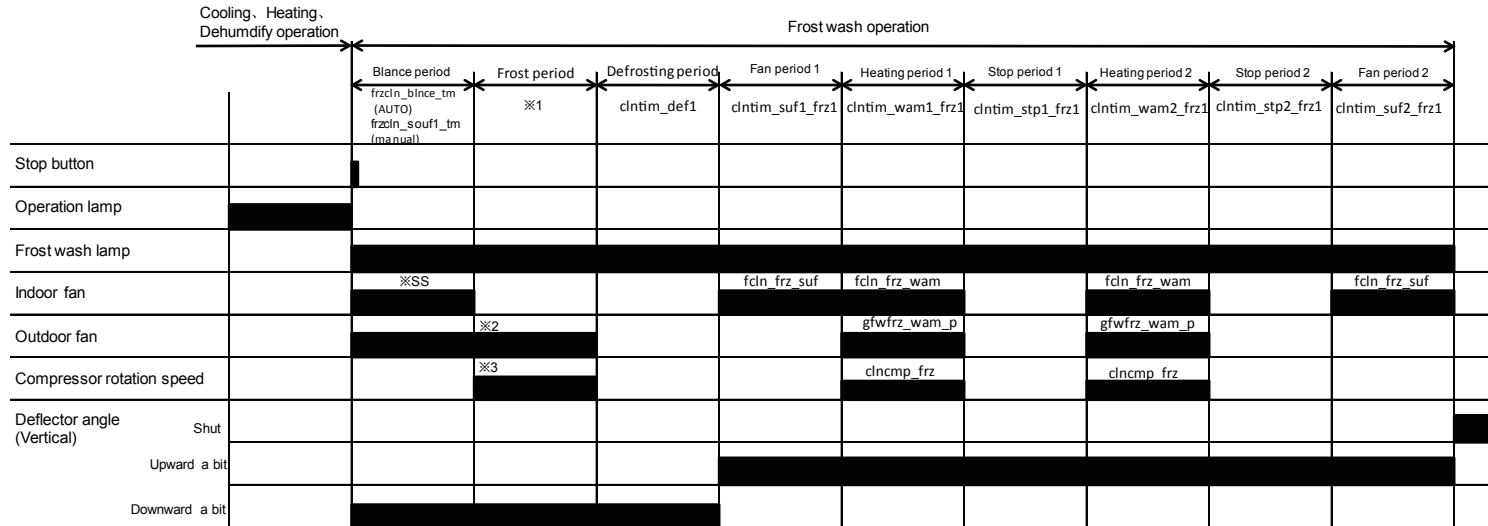
Setting Defrosting Inhibit Period



Notes:

- (1) The first inhibit time after operation start is set to DFTIM_FST.
- (2) From the second time onwards, the inhibit time is set according to the time required for defrosting.
Reverse cycle operation time $\geq$ [DEFCOL] : DEFTIM_COL is set.
Reverse cycle operation time $<$ [DEFCOL] : The time corresponding to outdoor temperature is set.

Frost wash



(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 $\geq 35^{\circ}\text{C}$,remanent 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

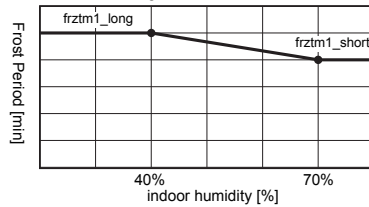


Fig.2 Frost Period outdoor Fan

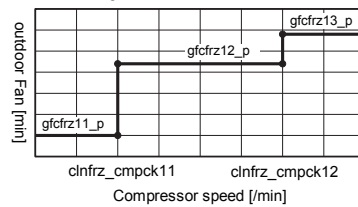


Fig.3 The range of indoor/outdoor temperature

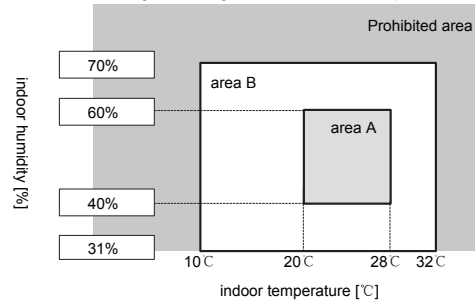


Fig.4 The range of indoor/outdoor temperature

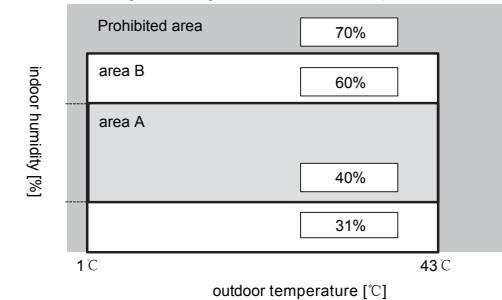


Fig.5 Frost Period Compressor speed (area A)

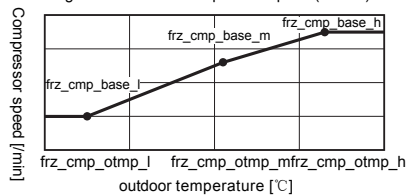
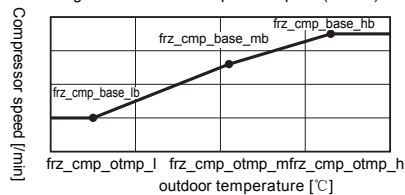


Fig.6 Frost Period Compressor speed (area B)



Pre-filter cleaning system operation control (1)

Types of cleaning operation

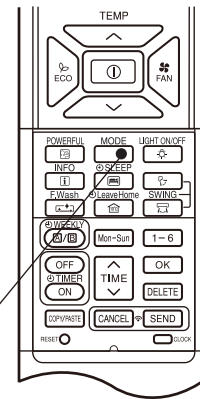
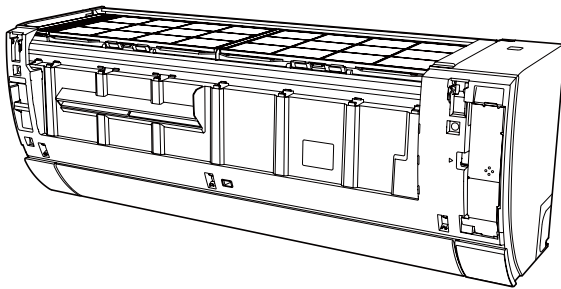
- Automatic cleaning: Cleaning conducted automatically when the product is stopped
- Forcible cleaning: Cleaning conducted when the product is continuously operated
- Manual cleaning: Cleaning conducted by using the MANUAL CLEANING mode on the remote control unit

(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 (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.

Pre-filter cleaning system operation control (3)

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.

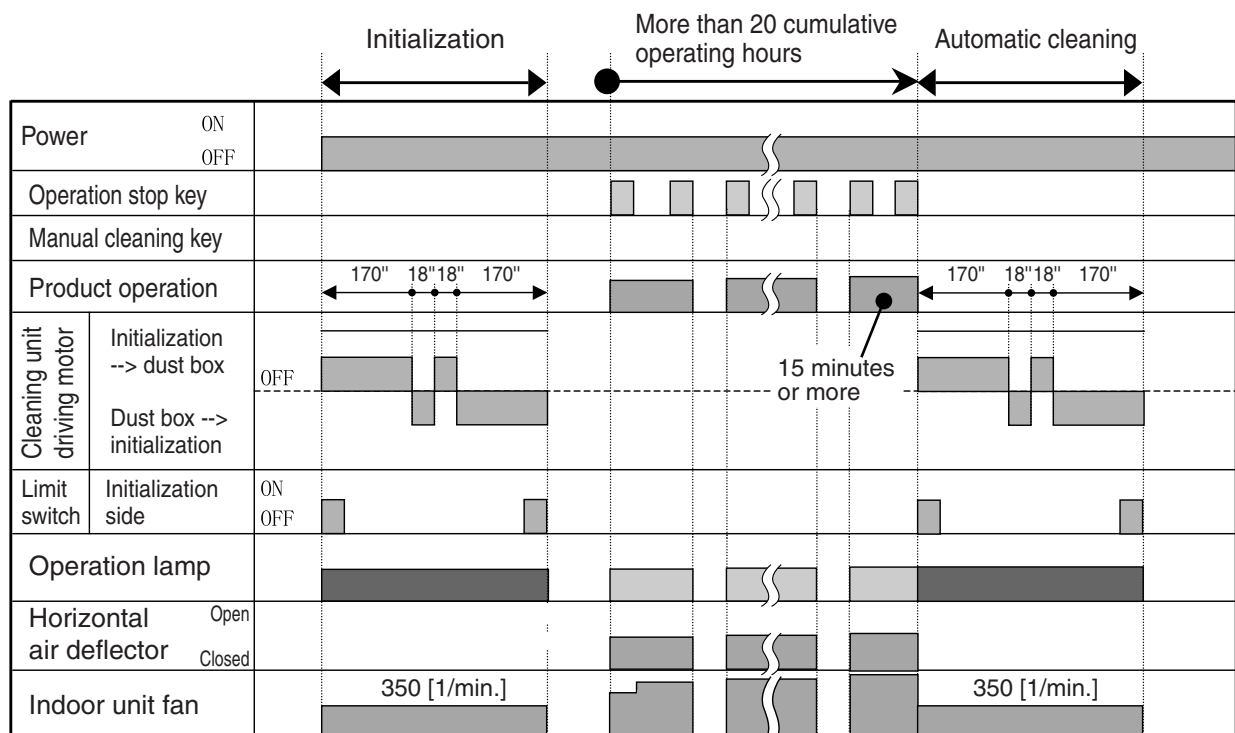
(3) Continuous operation is impossible. (Allow for an interval of 5 [minutes].)

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

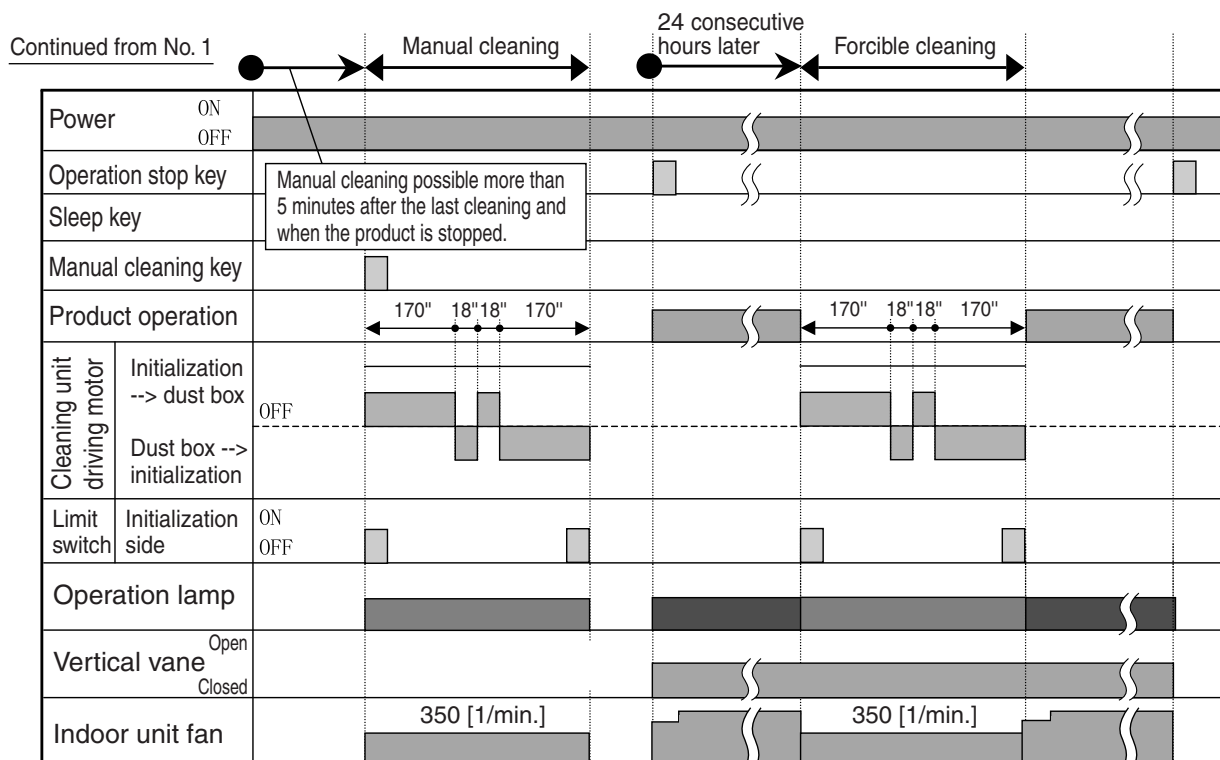
- During a continuous run with an interval of up to [eeprom] (5 minutes), the product will not accept signals from the remote control unit.
- To protect the machine, avoid continuous manual cleaning. Allow for an interval of more than 5 minutes between operations.

Indicate the above in the operation manual.

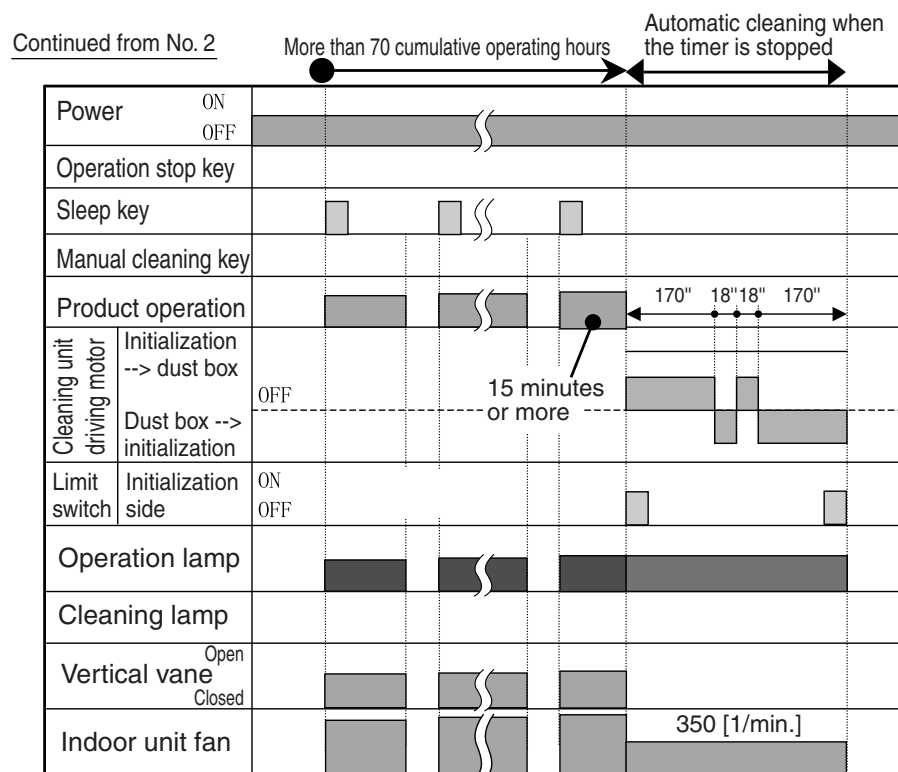
Operation diagram 1 for filter cleaning (initialization and automatic cleaning)



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



Operation diagram for filter cleaning 3 (timer 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

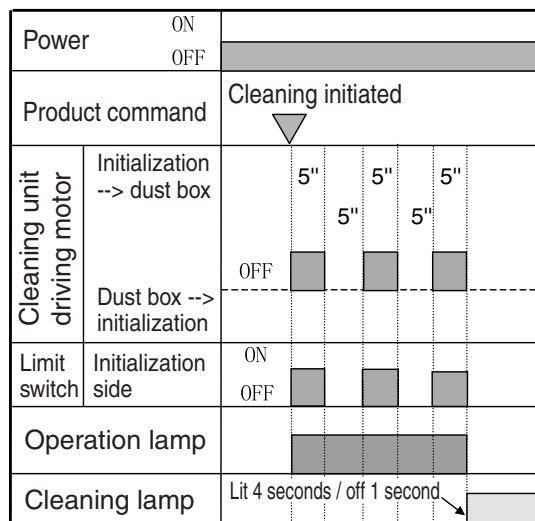
- (1) This will not be activated during air-conditioner cleaning, or auto-fresh.
- (2) This will not be activated while the sleep timer is on.
- (3) This will not be activated for 15 minutes after preheating, defrost, or preheating cancellation.

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)

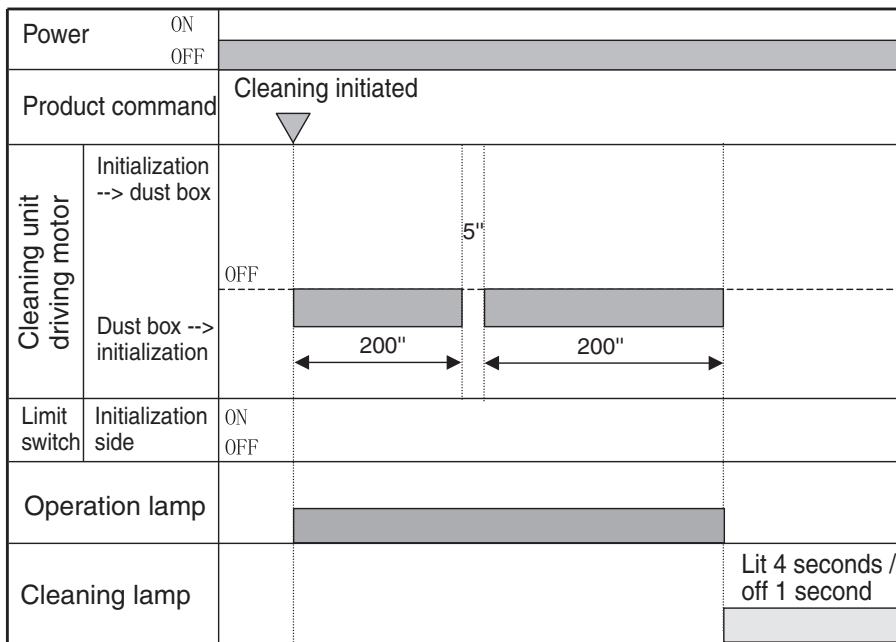
Startup error



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)

Arrival error (lock)

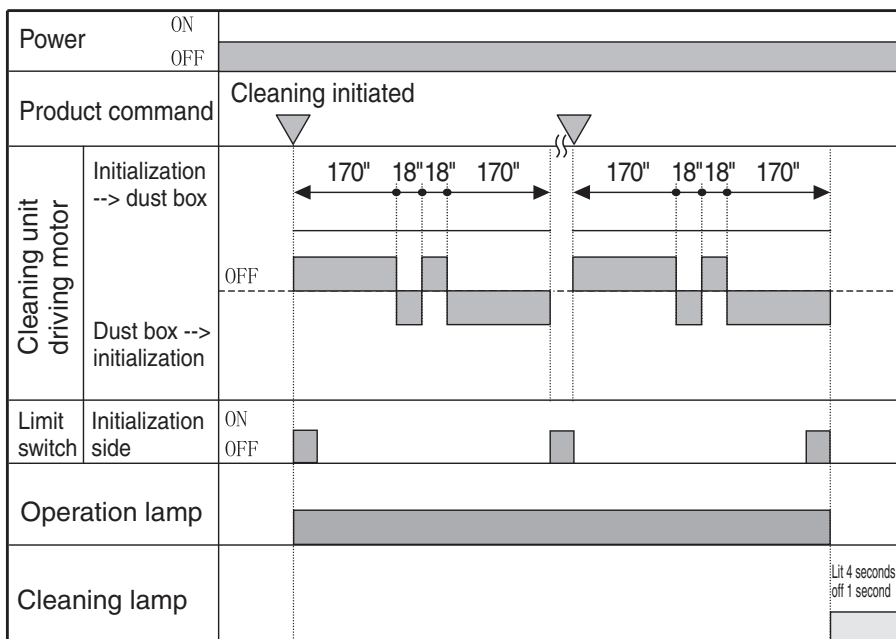


1. If the limit switch is not detected 200" (= 170" + 30":30" is the safety time) after startup, the product will be considered to have an arrival error.
2. If the startup-side limit switch is detected during reversing, the product will stop for 5 seconds and restart itself in the direction of advance.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

1. Reverse the current setting.
Cleaning enabled ⇔ disabled
2. In the case of an error, this can cancel the display.
3. If the filter cleaning operation is prohibited, the manual filter cleaning operation can be used.

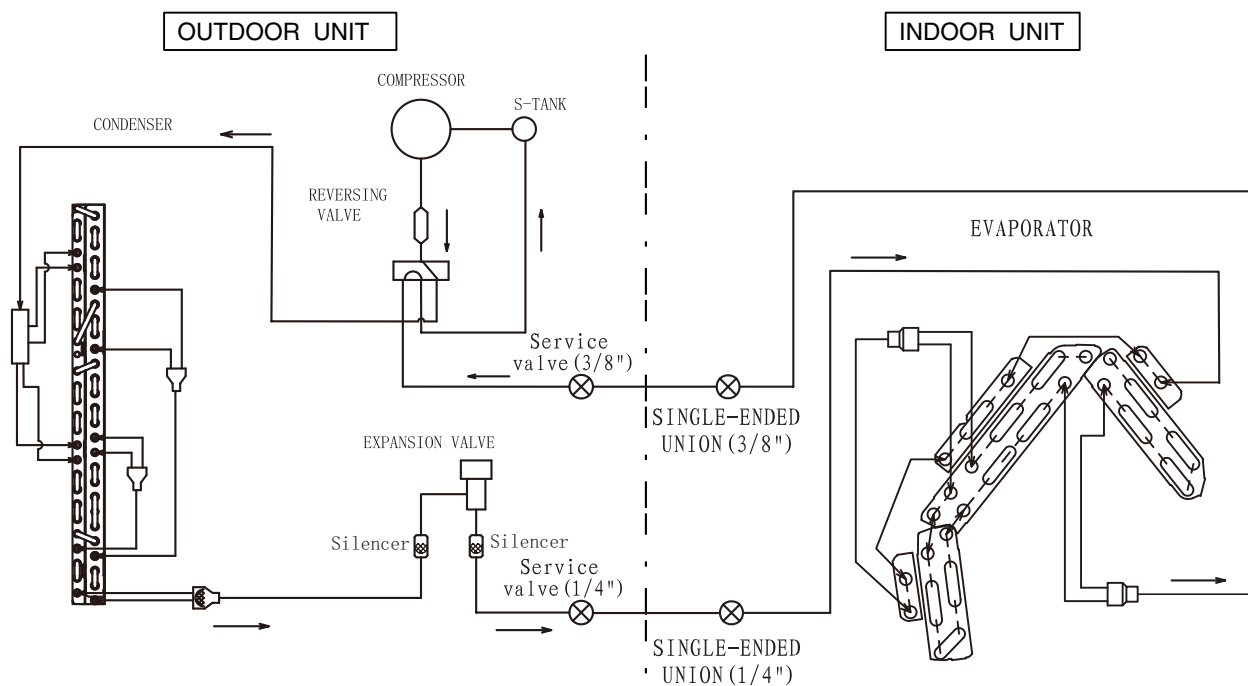
Operation diagram for filter cleaning (error detection 3)



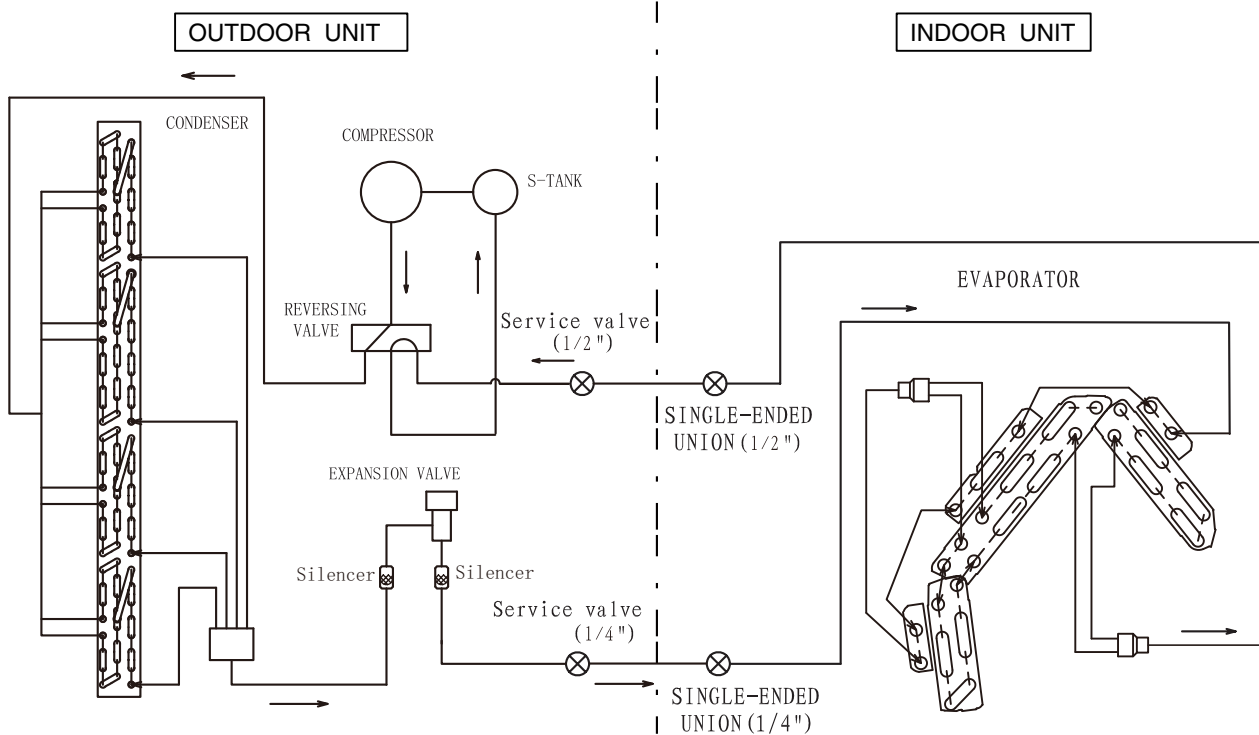
1. The product will be considered to have a go-route error if the limit switch is detected within 160" (= 170" - 10":10" is the safety time) after the dust box side is started.
2. The product will be considered to have an error when 2 go-route errors are finalized.

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



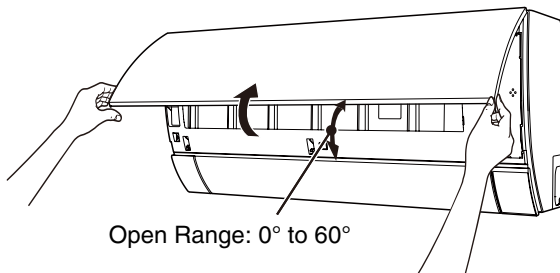
PROCEDURE FOR DISASSEMBLY AND REASSEMBLY

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

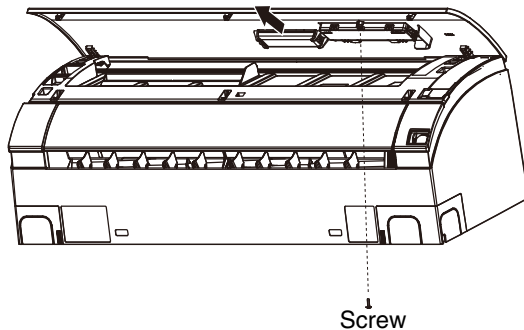
1. Front panel

(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.

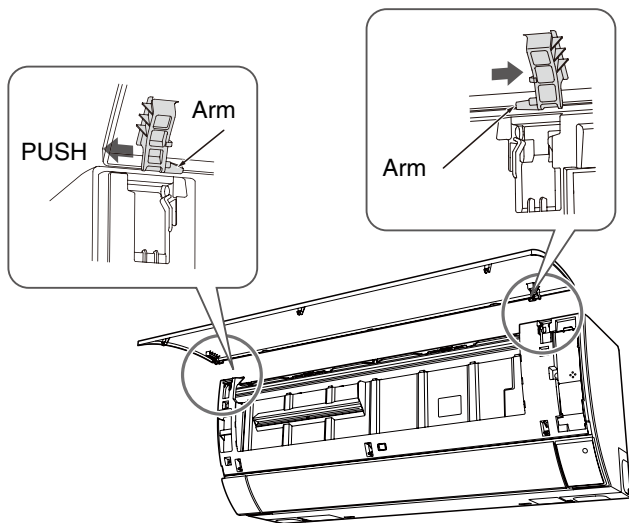


(2) After removing 1 screw with a short screw driver, remove the Temperature Display box.



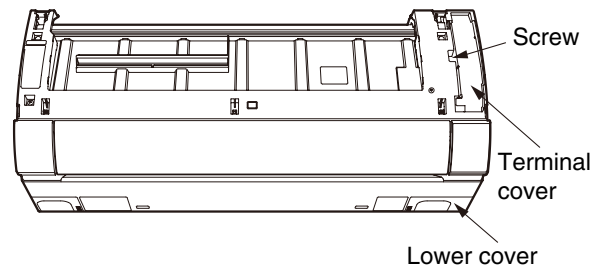
(3) Remove the front panel.

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.



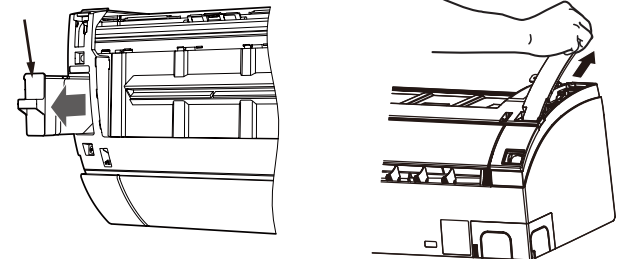
2. Fancy cover

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



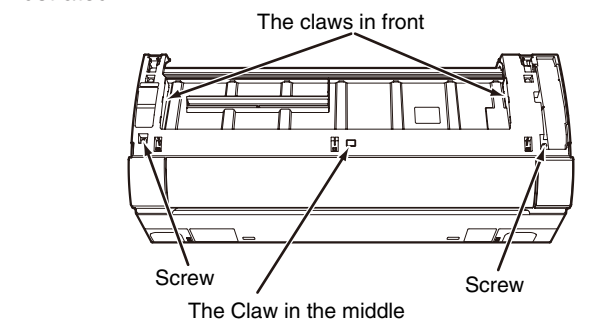
(2) Remove the terminal board cover and dust box.

Dust box

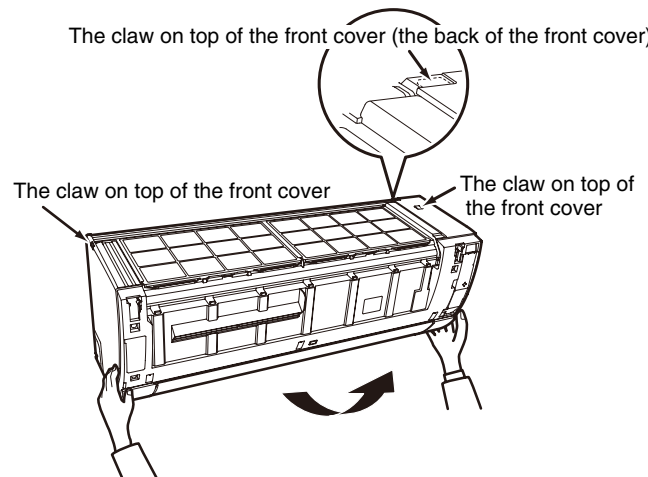


(3) Pull the center of the front cover towards you and release the claw in the middle.

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

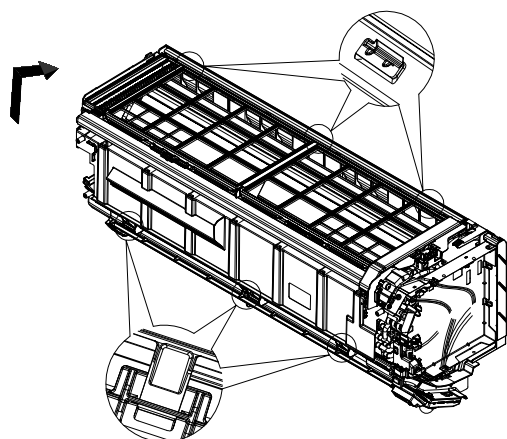


The claw on top of the front cover (the back of the front cover)



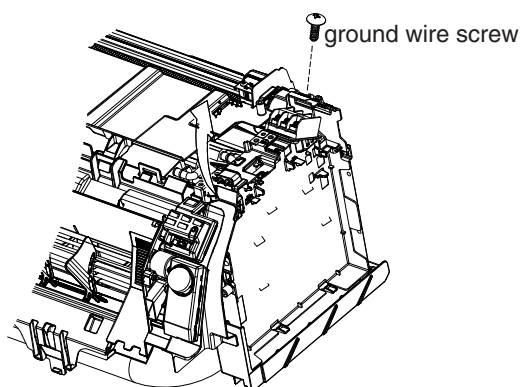
3. Cleaning unit

- (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.



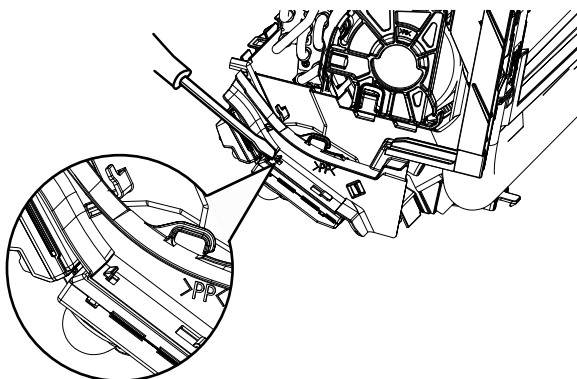
4. Control P.W.B. components

- (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.



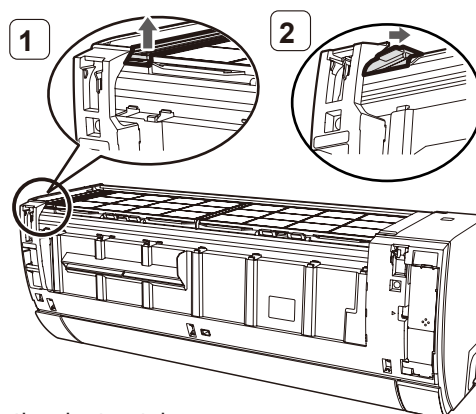
5. ECO sensor

- (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

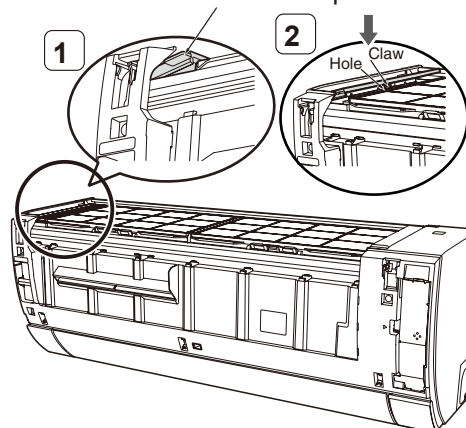
Remove the dust catcher as shown with arrows. If dust is accumulated at the inner side of the dust catcher, remove the dust with a vacuum cleaner.



Attach the dust catcher

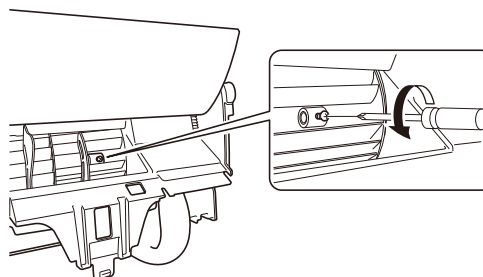
Hold the dust catcher for the top face with its side having the lever facing towards you. Insert and push in the dust catcher in the arrow direction until it clicks.

Hold the dust catcher for the top face

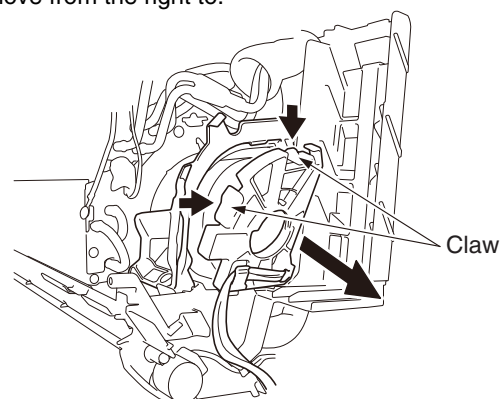


7. Tangential air flow fan and fan motor

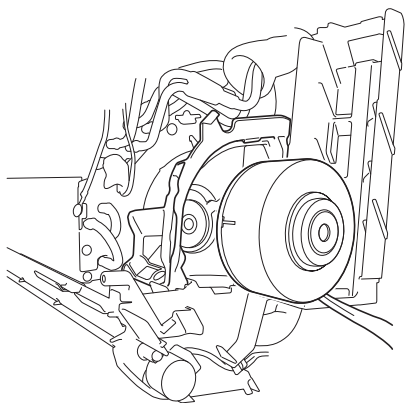
- (1) Loosen the fan lock screw.



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

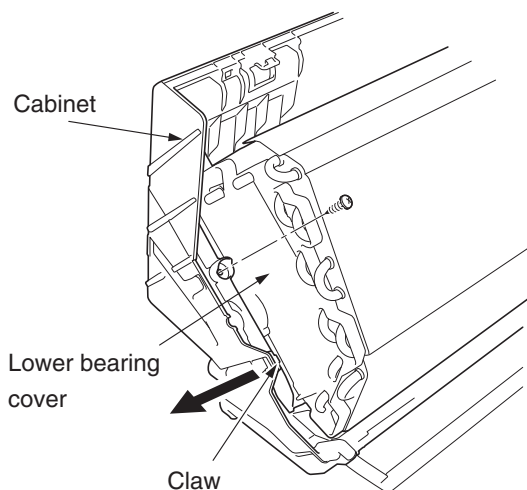


(3) Pull fan motor out of the remove the right.

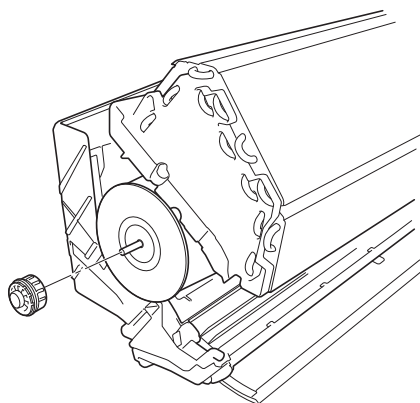


(4) Remove the screws from the upper and lower bearing covers.

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

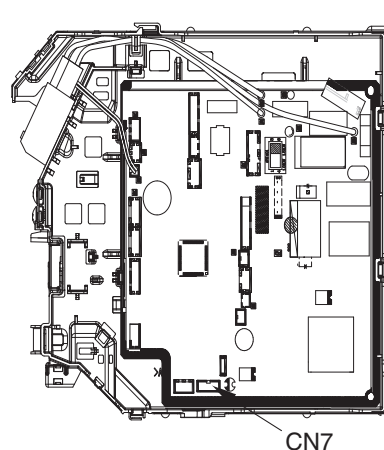
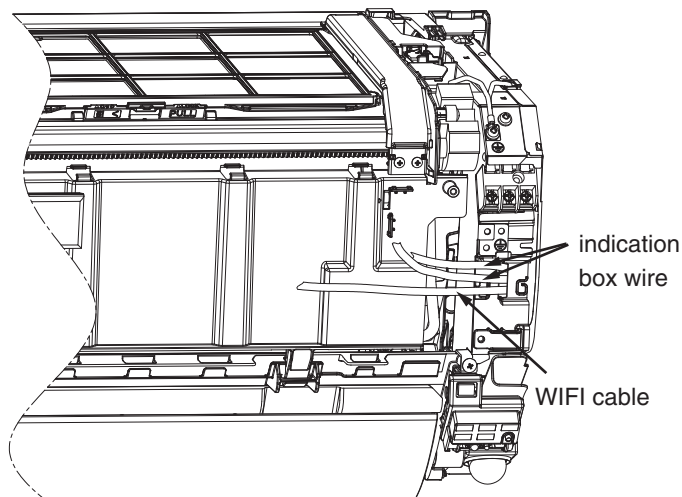


(6) Remove the fan and bearing from the left.



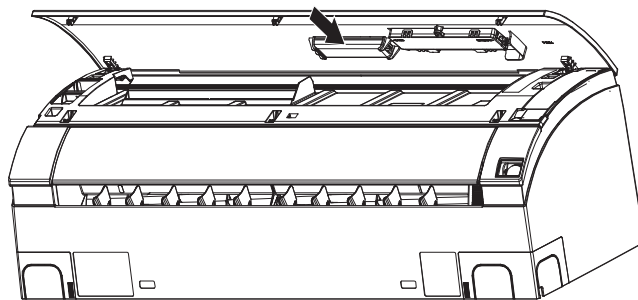
8.WIFI adapter installation

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

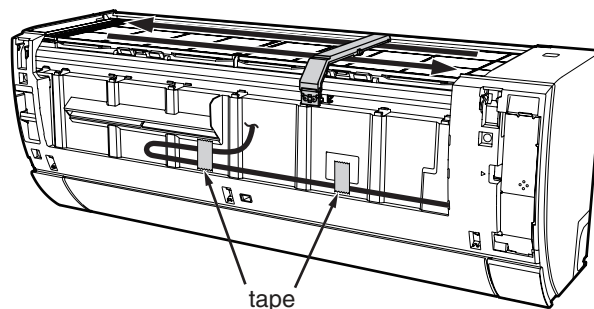


(2) Install the front cover;

(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.

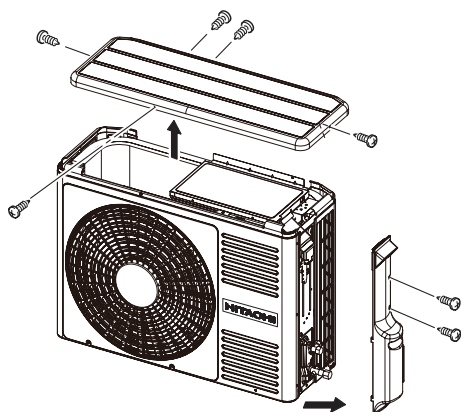


Fig. 1

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

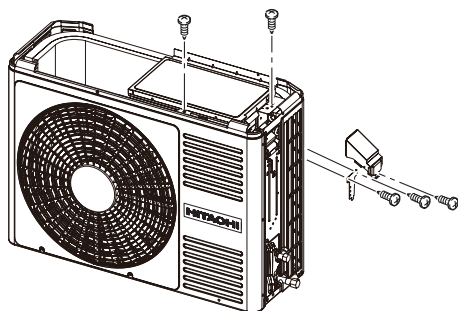


Fig. 2

- (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.

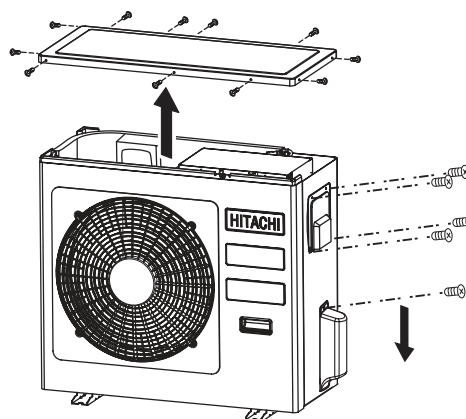


Fig. 3

- (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.

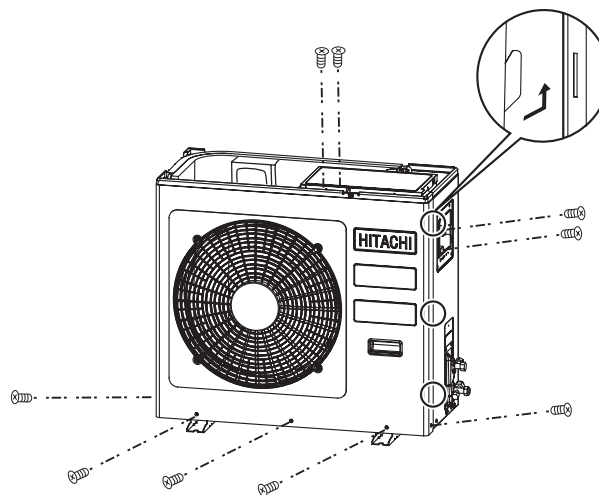


Fig. 4

- (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-25/35/50PSES

1. Control power circuit

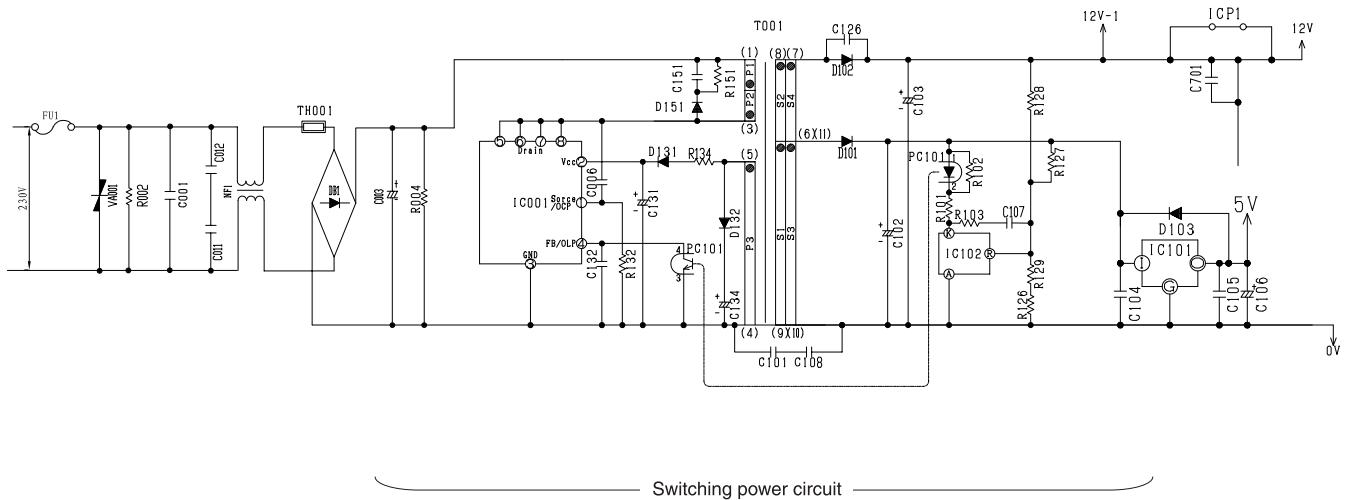


Fig. 1-1

- 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

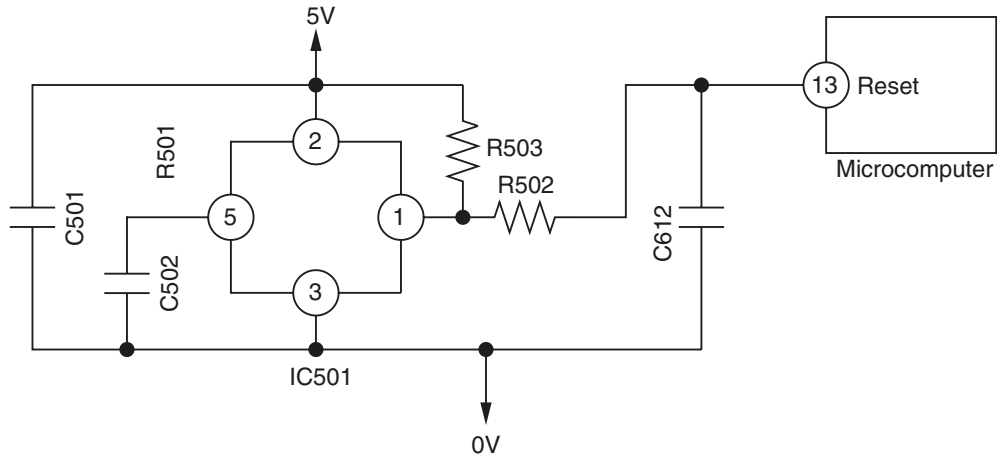


Fig.2-1

Timing chart

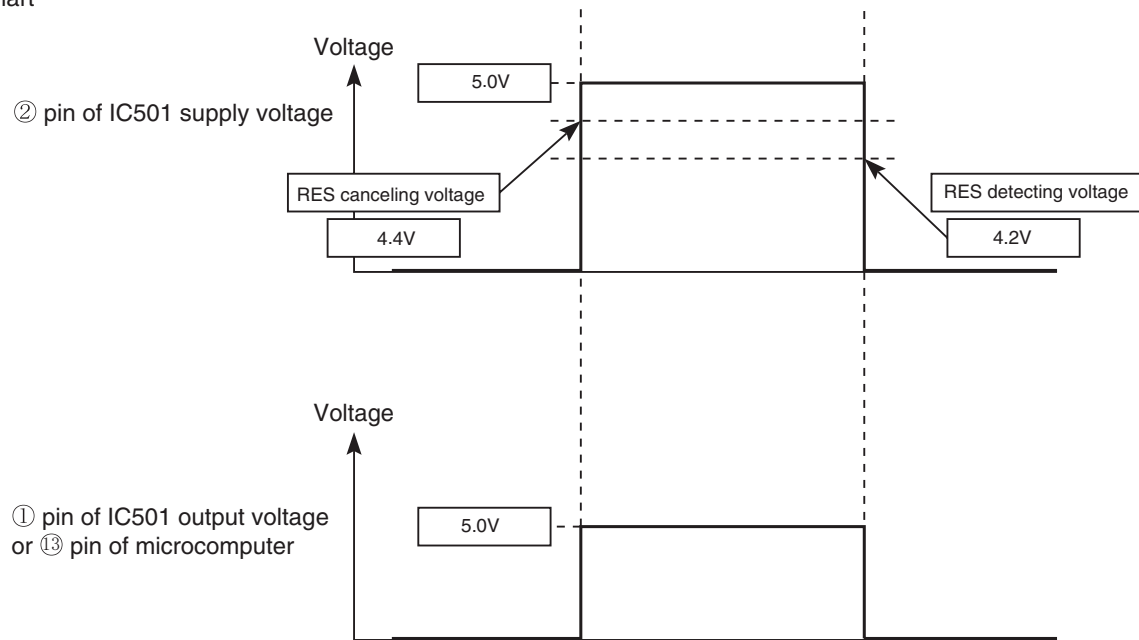


Fig.2-2

- 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

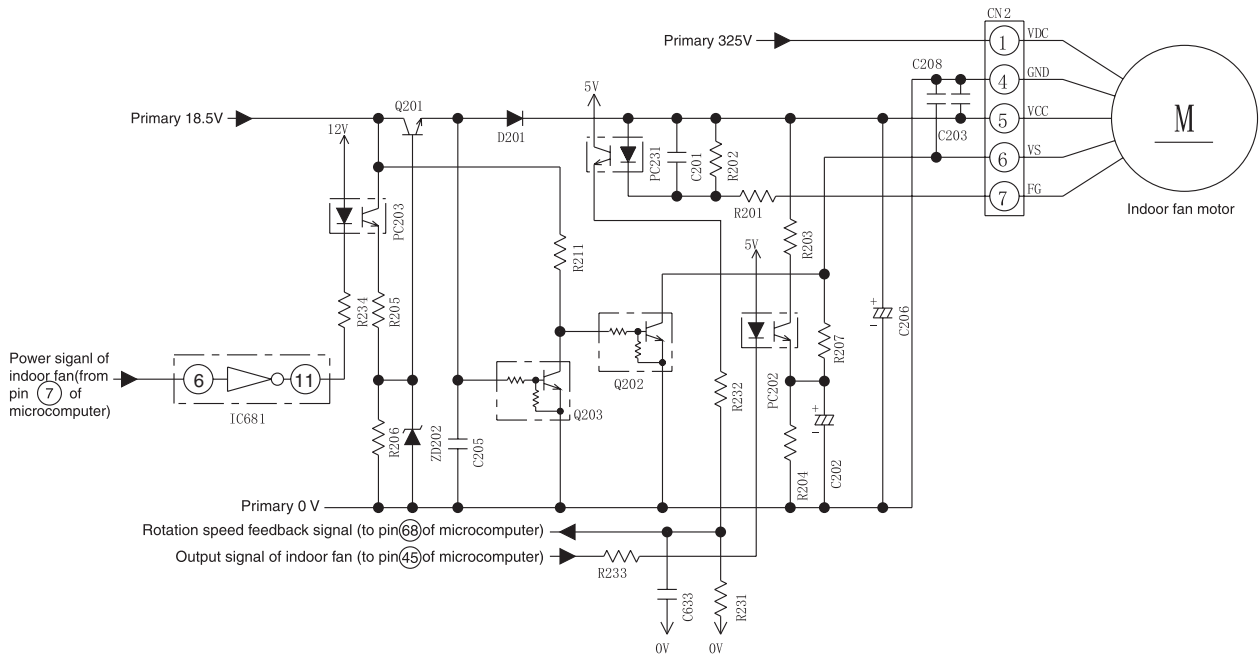
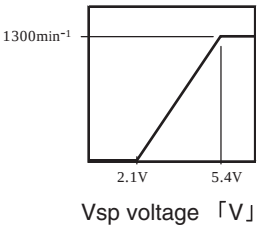


Fig. 3-1

< 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

< Pin 6 - Pin 4 voltage one example >



- * 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.

* The different mode maybe have different FAN rotation speed.

< Typical circuit waveform >

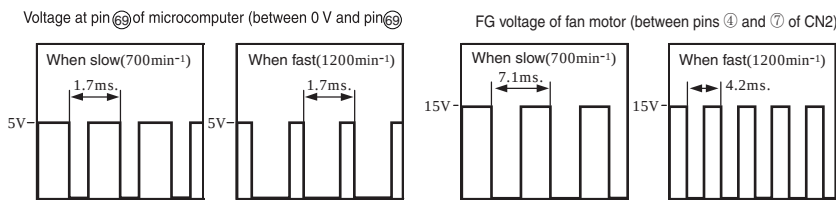


Fig. 3-2

- 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

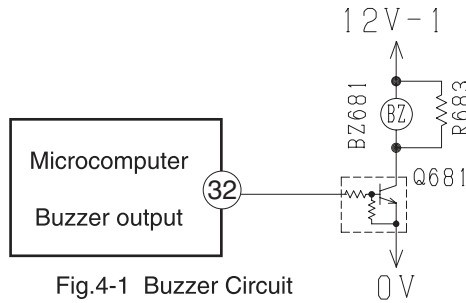


Fig.4-1 Buzzer Circuit

- When the buzzer sounds, an approx. 3.9kHz square signal is output from buzzer output pin (32) of the micro computer. After the amplitude of this signal has been set to 12Vp-p by a transistor, it is applied to the buzzer. The piezoelectric element in the buzzer oscillates to generate the buzzer's sound.

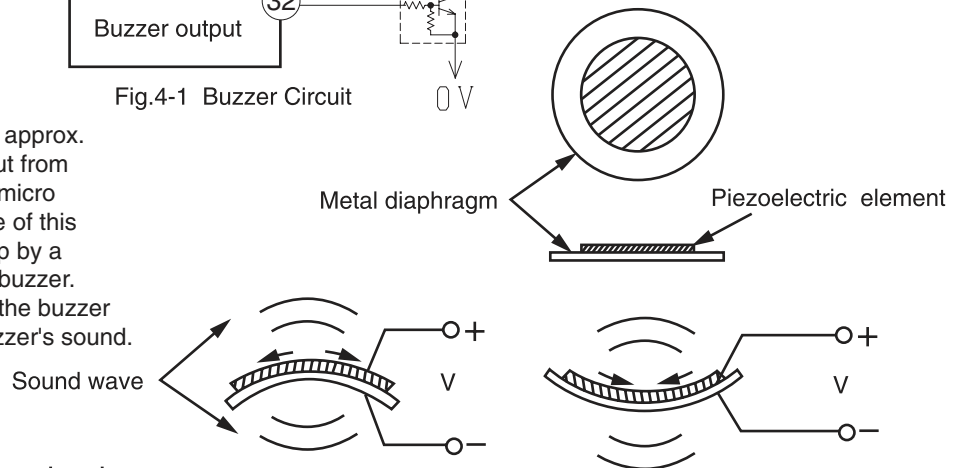


Fig.4-2 Buzzer Operation

5. Remote control reception circuit

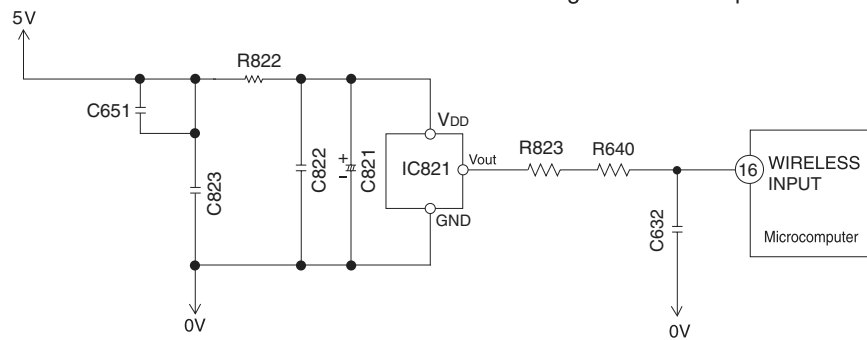


Fig.5-1

[Typical communication waveform]

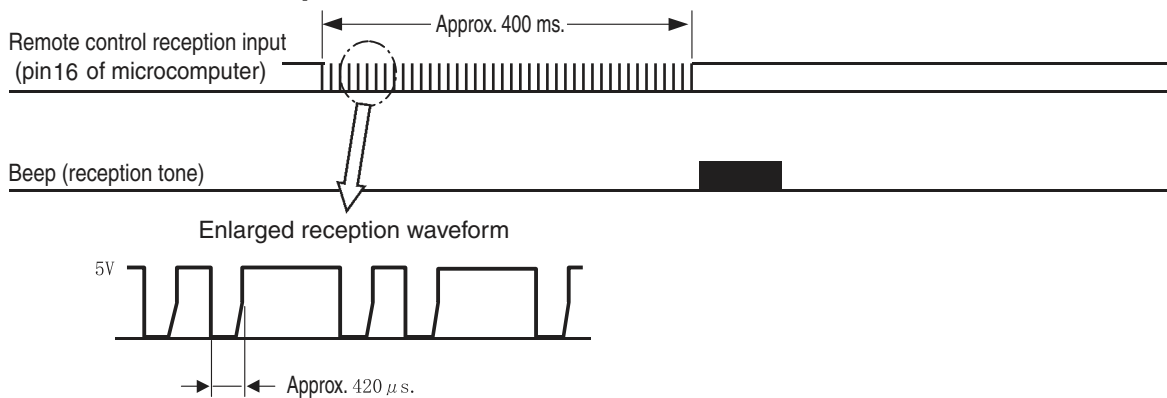


Fig. 5-2

- 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 μs.

6. Initial Setting Circuit (IC531)

- When power is supplied, the microcomputer reads the data in IC531 (E²PROM) 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.

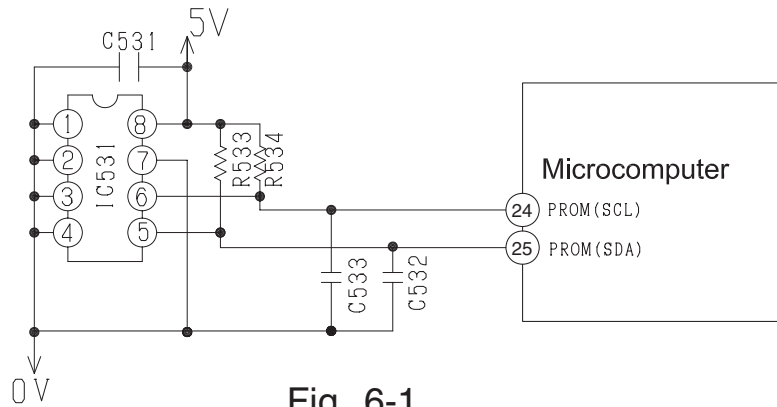


Fig. 6-1

7. Temporary Switch Circuit

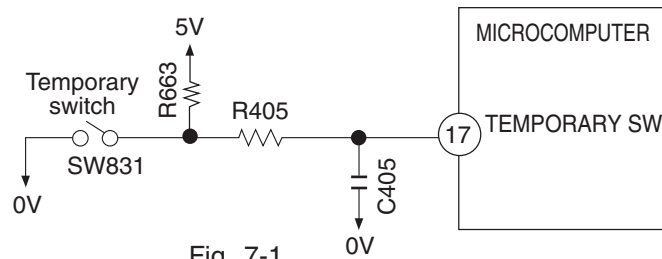


Fig. 7-1

- 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 ① becomes as it is shown in Fig.8-2.

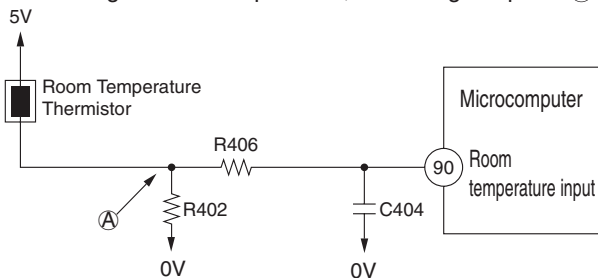


Fig. 8-1

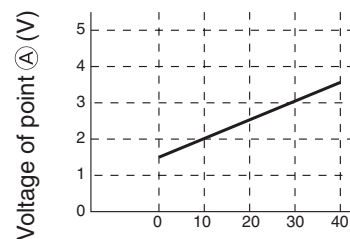


Fig. 8-2

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 ① becomes as it is shown in Fig. 9-2.

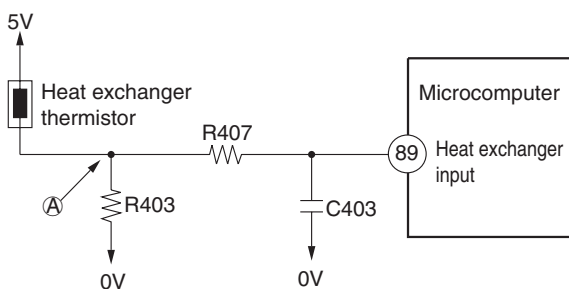


Fig. 9-1

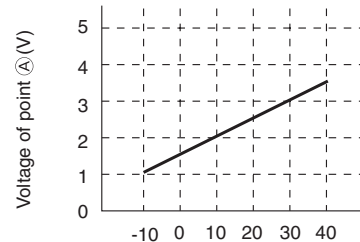


Fig. 9-2

10 . Dip-switch

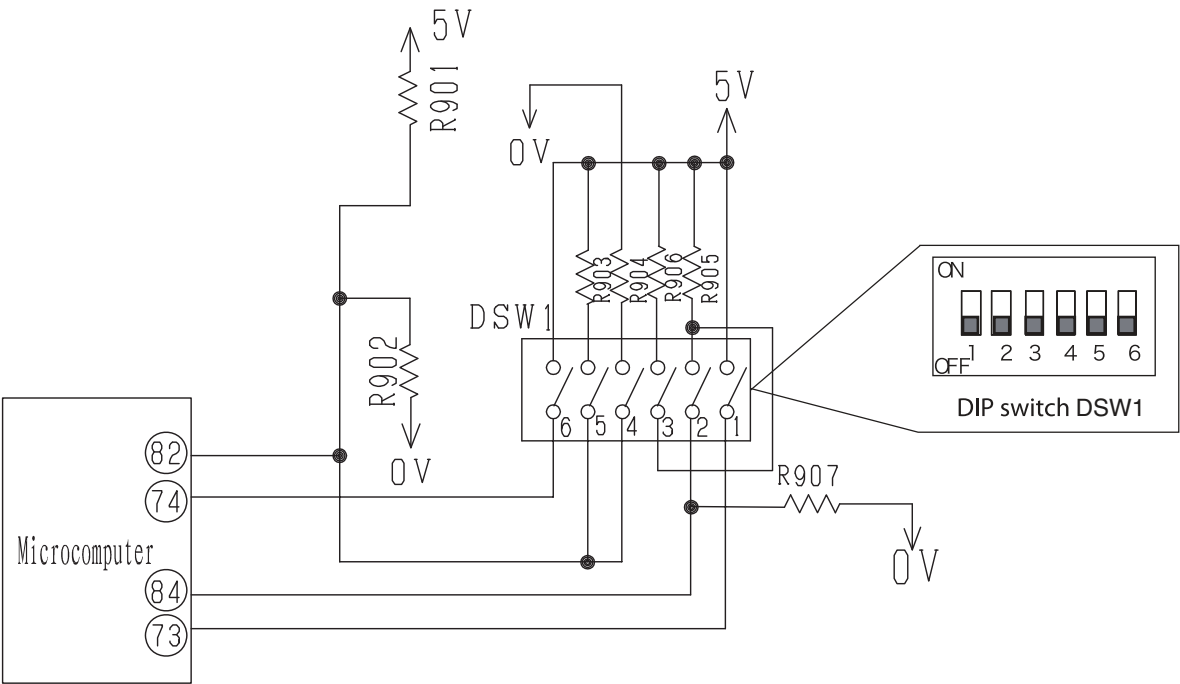


Fig.10-1Dip switch Circuit

- 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.	I T E M	F U N C T I O N							
1	AUTO RESTART	OFF*	ENABLE	ON	DISABLE				
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	ON	HEATING & COOLING
5	HEATING/COOLING ONLY MODE SELECT	OFF*		ON		OFF		ON	
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

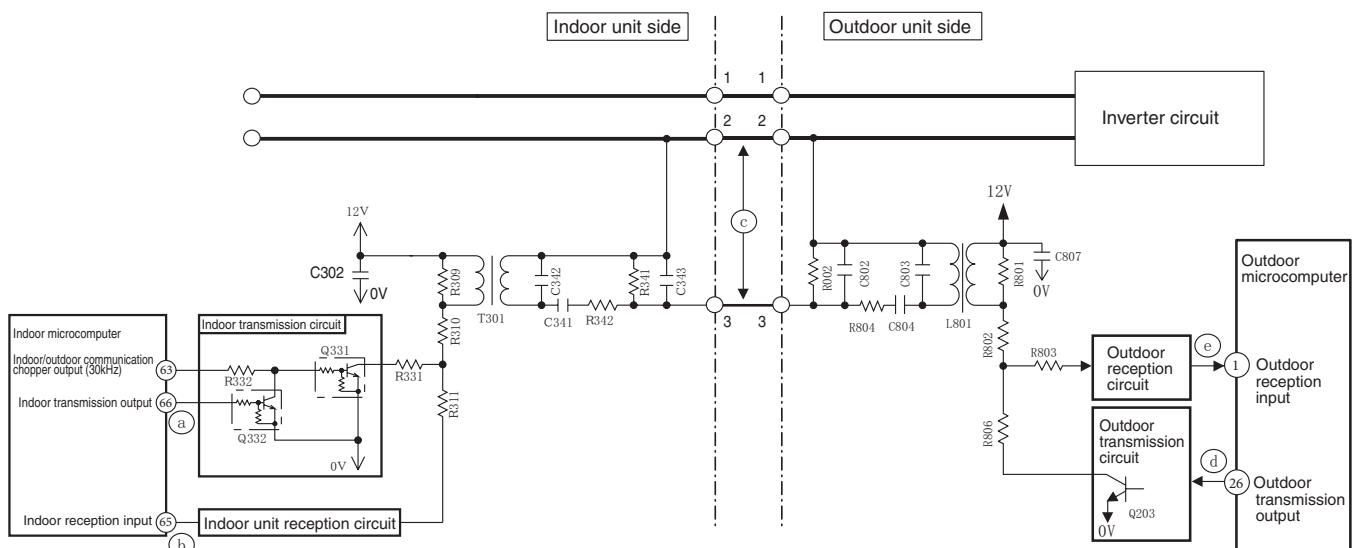


Fig. 11-1

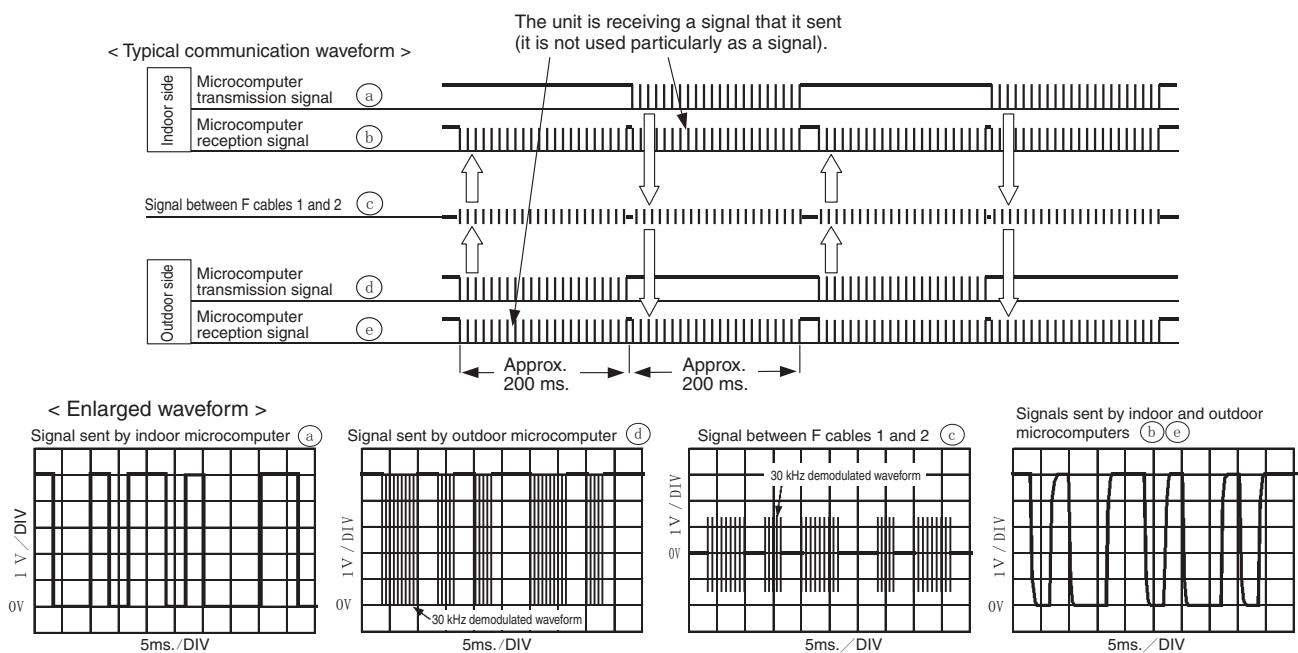


Fig. 11-2

- 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

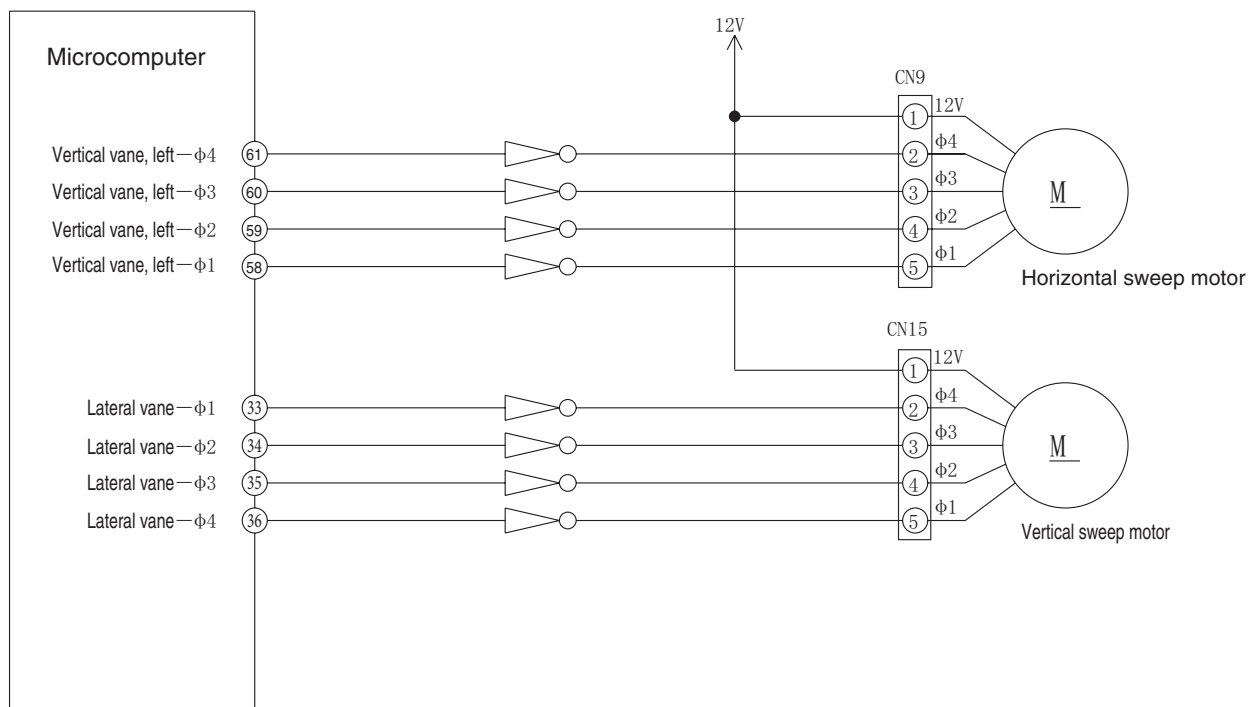


Fig. 12-1

[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

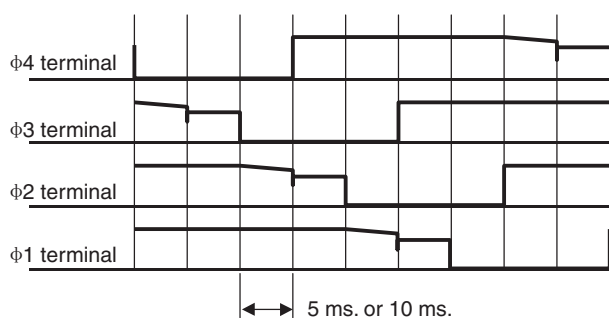


Fig. 12-2

- 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

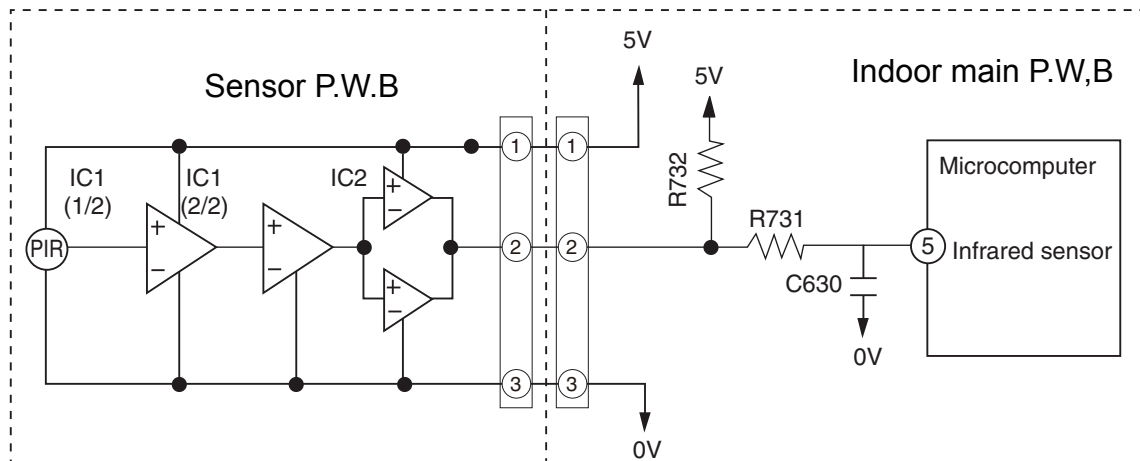


Fig.13 – 1

- 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

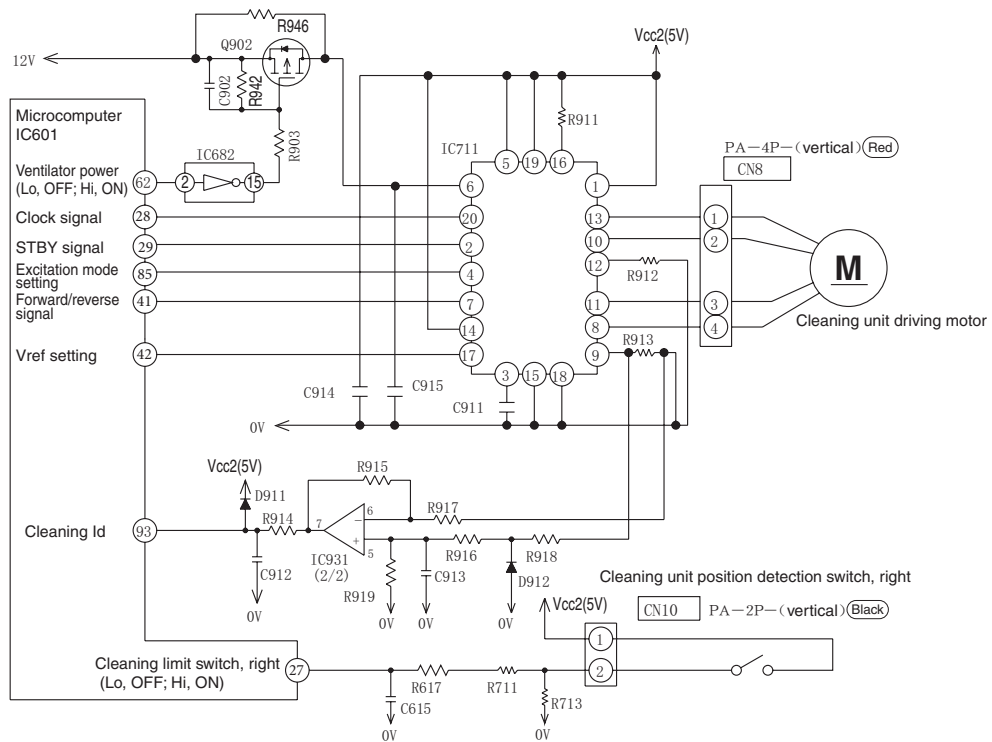
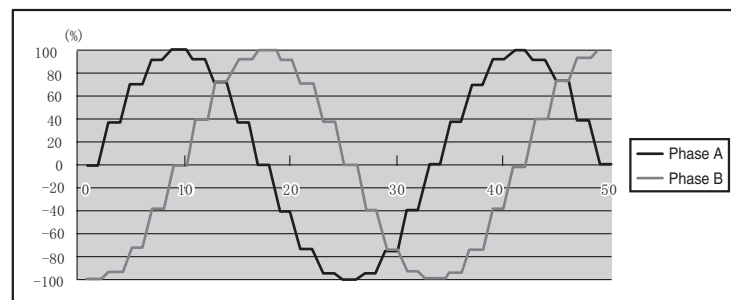


Fig. 14-1

- 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

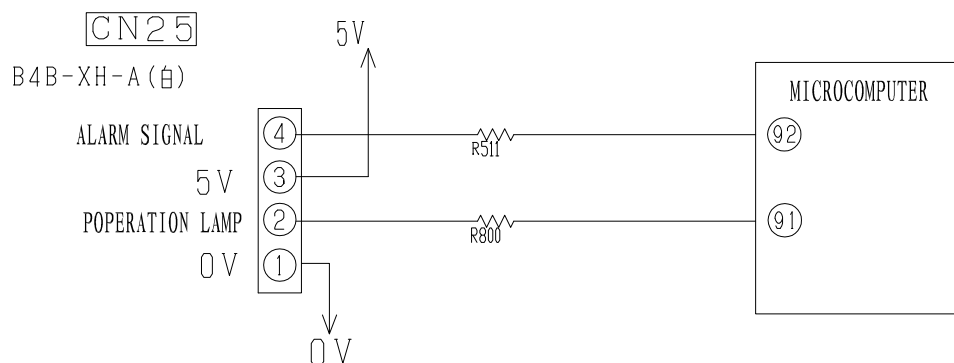


Fig.15-1

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.

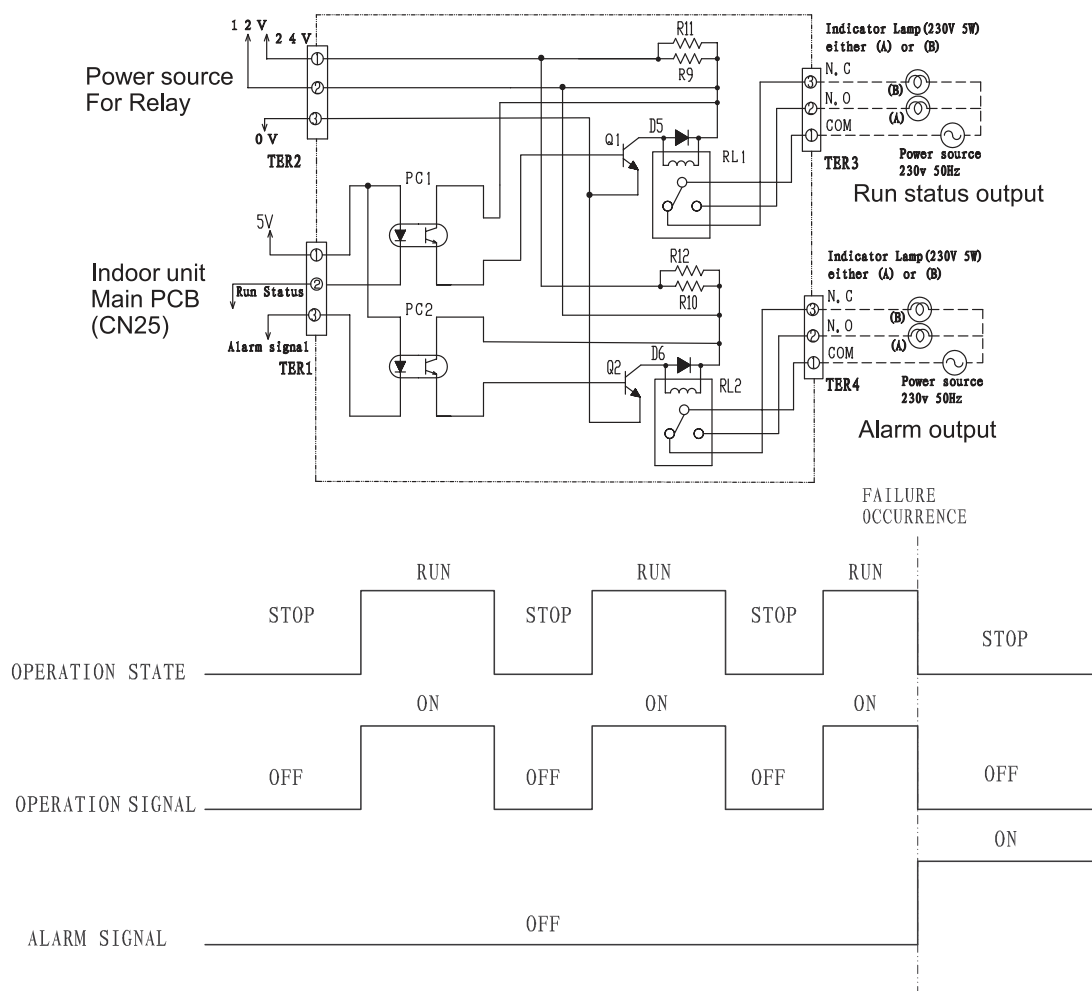
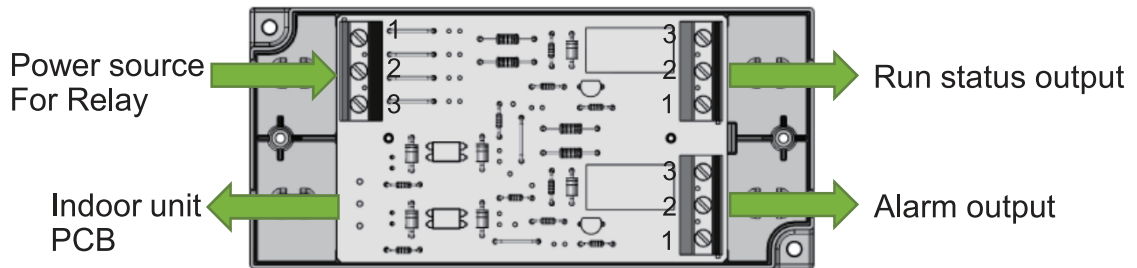


Fig.15-2

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.

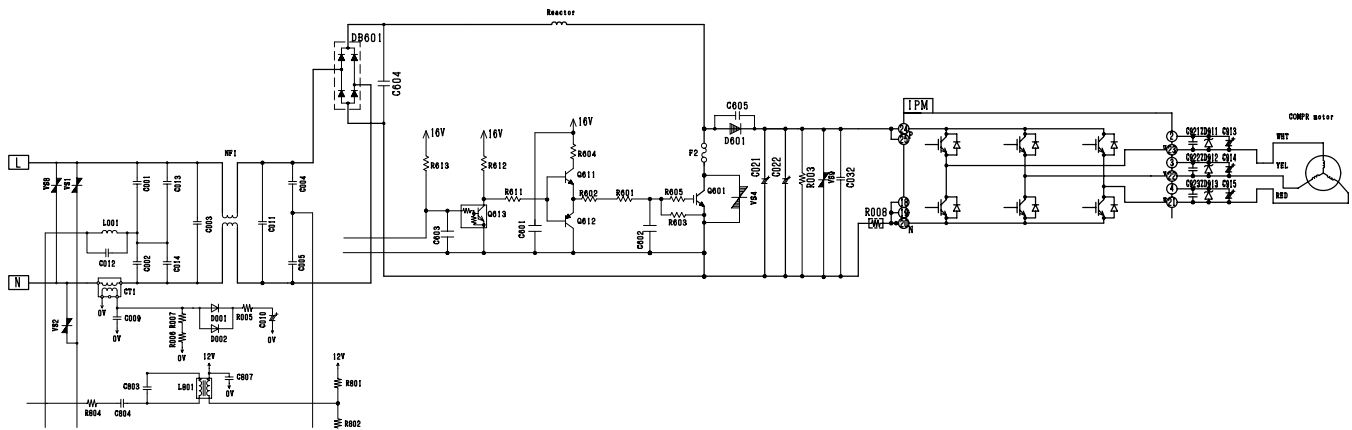


- When operating RAC, Run Status signal is output.
- When operation stops, the signal disappears.
- When RAC gets malfunction, alarm signal is output.
- Each signal has to be taken out through the Adapter.

※ The adapter must 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.

1. Power Circuit



※ 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.

(1) Intelligence Power Module (IPM)

(2) Diode Stack (DB601)

<Reference>

<Reference>

(3) Smoothing capacitors (C021-C022, $3 \times 5 \mu F$, 420V)

(4) IGBT to improve efficiency (Q601)

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2. Power circuit (Low voltage)

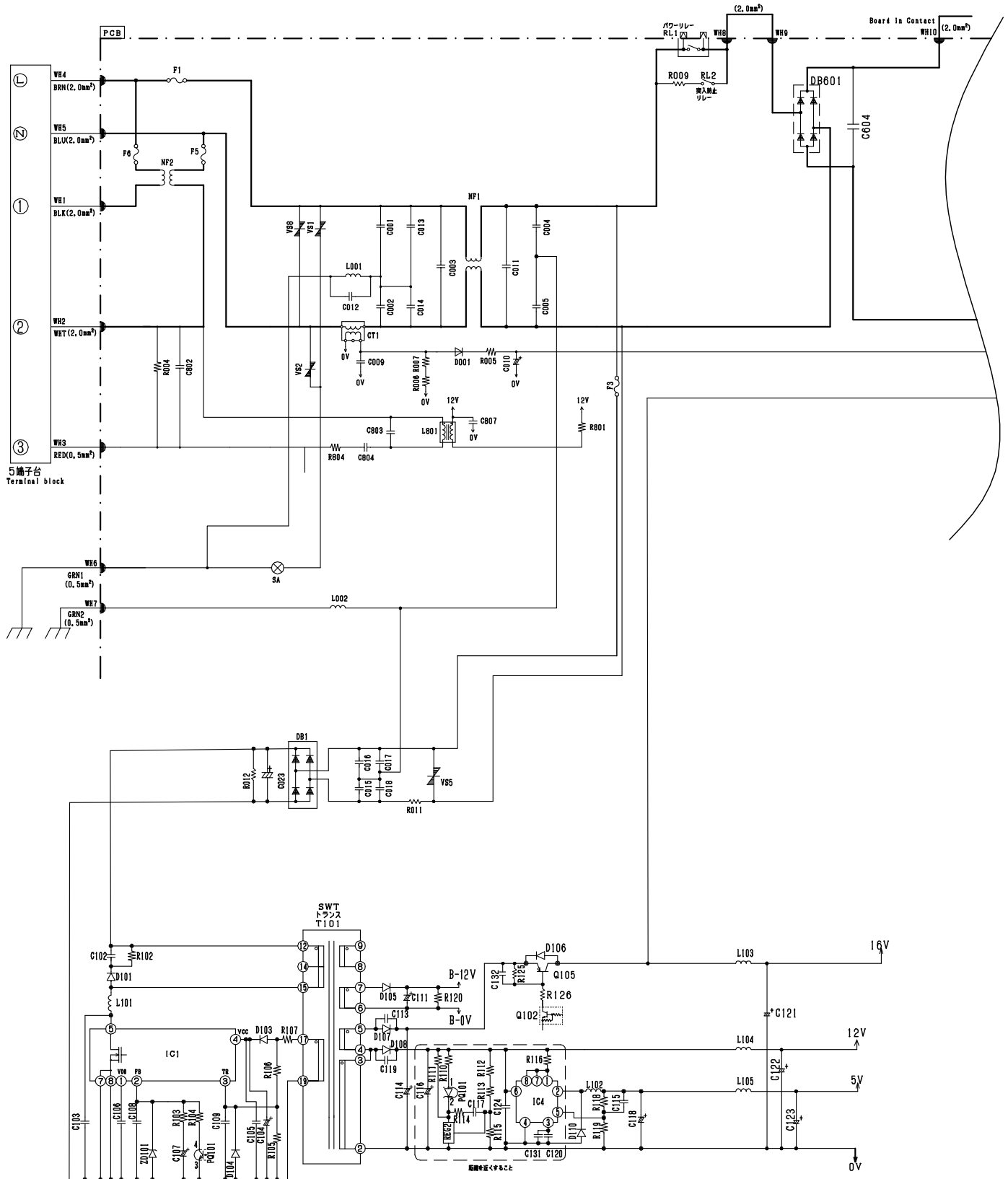


Fig. 2-1

- 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 absorb 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⊕ : L105 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
12V O/P	$12 \pm 0.5V$	Micon, IC2, 3, 4 Relay circuit	Tester⊕ : L104 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
16V O/P	$15.5^{+1.5V}_{-1.0V}$	IPM for Comp IPM for DC fan	Tester⊕ : L103 (JUMPER) Tester⊖ : D110 (EARTH)	Stop : LD301 3, 4 or 12 times blinking
B-12V O/P	$13^{+2.5V}_{-1.0V}$	Expansion valve	Tester⊕ : R120 (B-12V) Tester⊖ : 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.

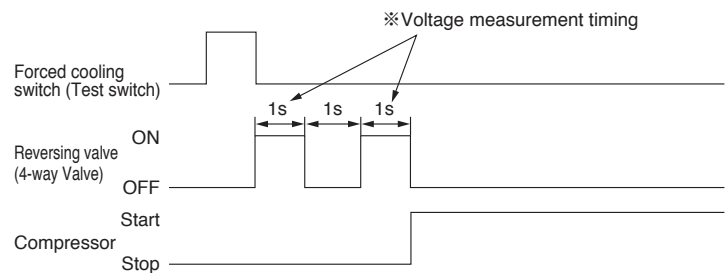


Fig. 4-1

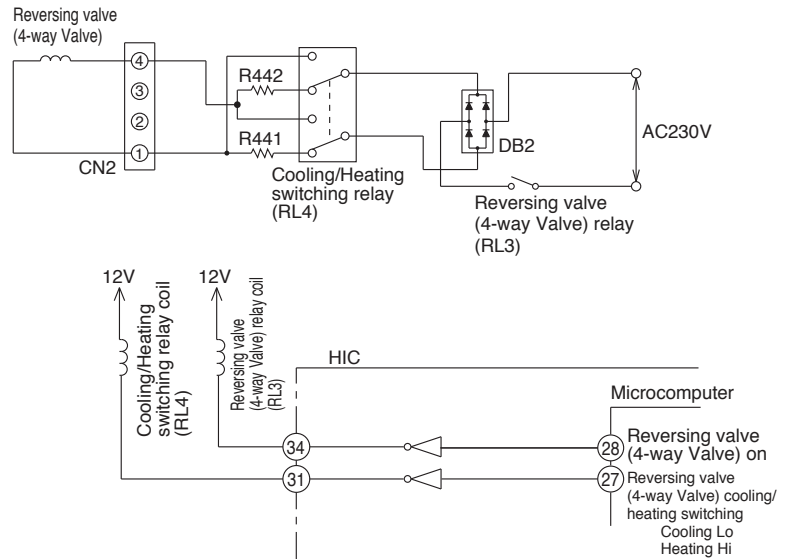


Fig. 4-2

- 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

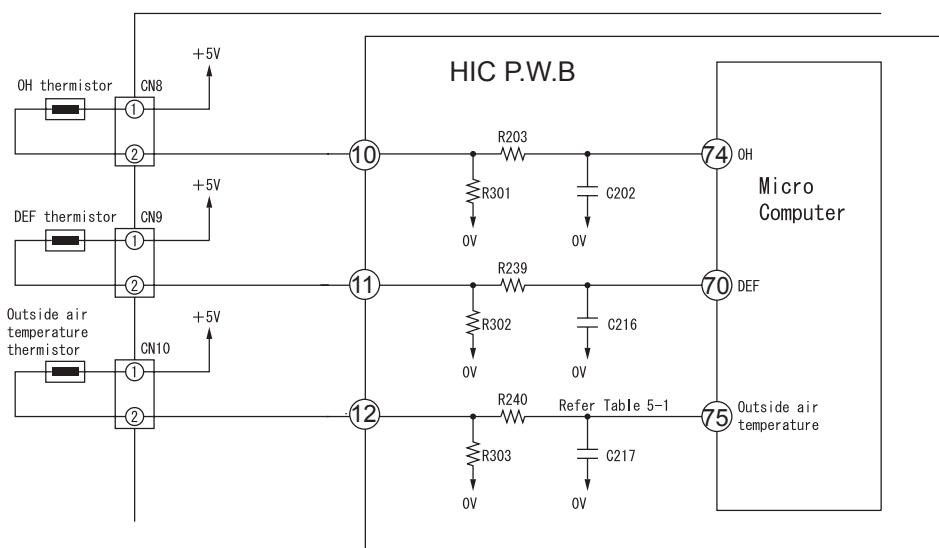


Fig. 5-1

- 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 ⑦① 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 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 ⑦①⑦④⑦⑤ 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

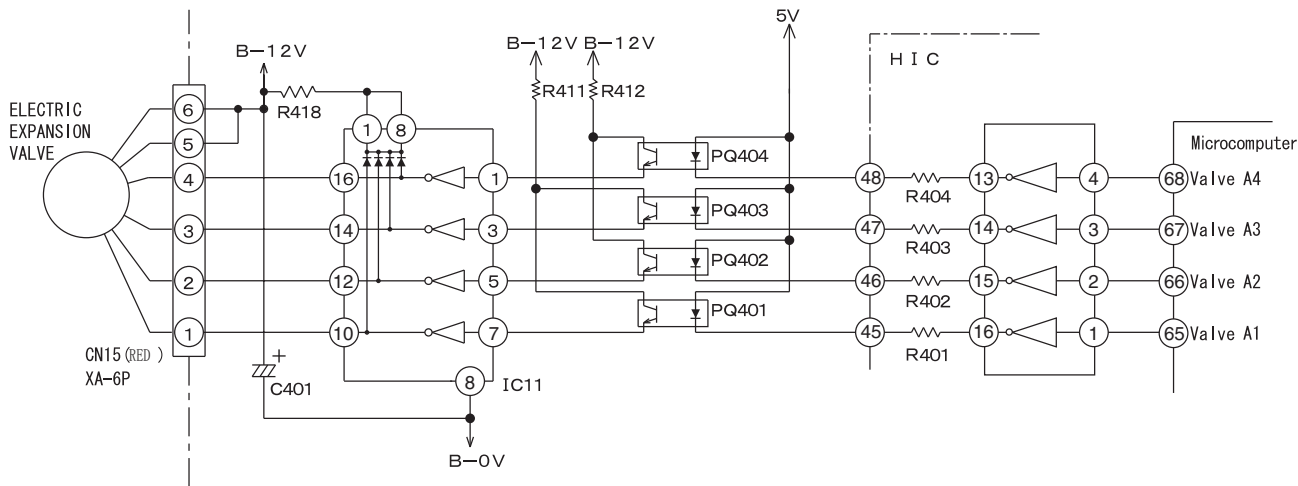


Fig. 6-1

- 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 pins④to①of 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 pin④to①of 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									

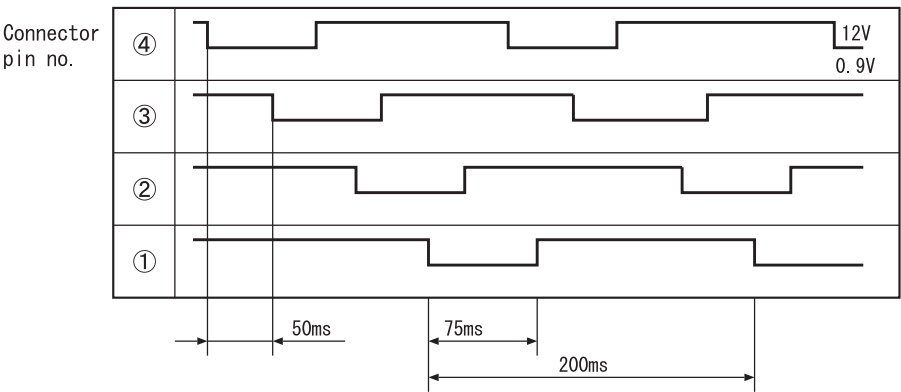


Fig. 6-2

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.

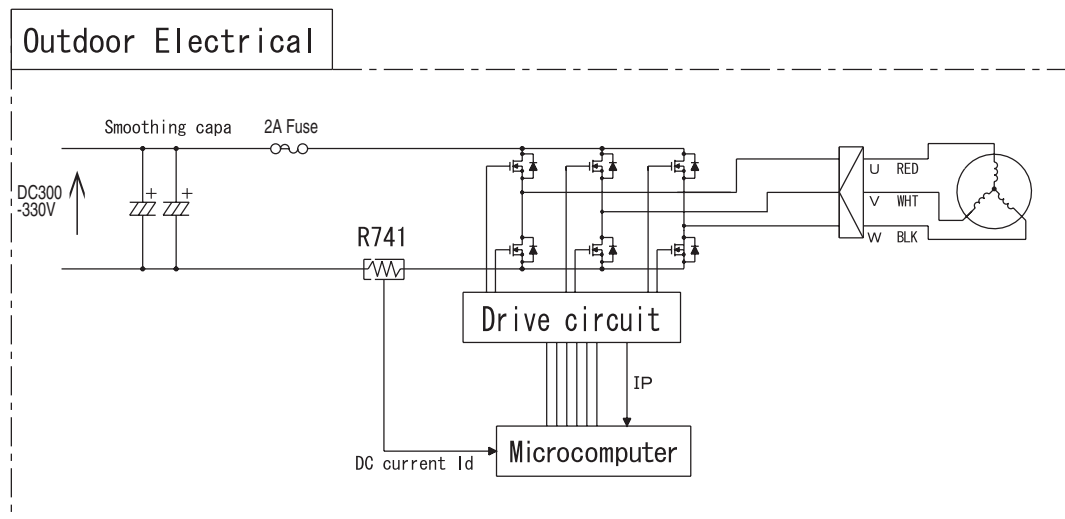


Fig 7-1

This DC fan motor is control by outdoor microcomputer that follow the operating instruction received from indoor microcomputer. The DC current that flow from R741 will presume actual operation speed and control the rotation to follow the operating instruction. Based on this DC current it will detect a 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 define as wind that blow 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 become weak.

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

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 become weak.

(2) Fan motor speed controller during unit operating

There is a case where fan rpm is reducing during rotating caused by interference of strong wind

If this condition continue in long period, fan will stop rotating. (LD301 : 11 times blinking)

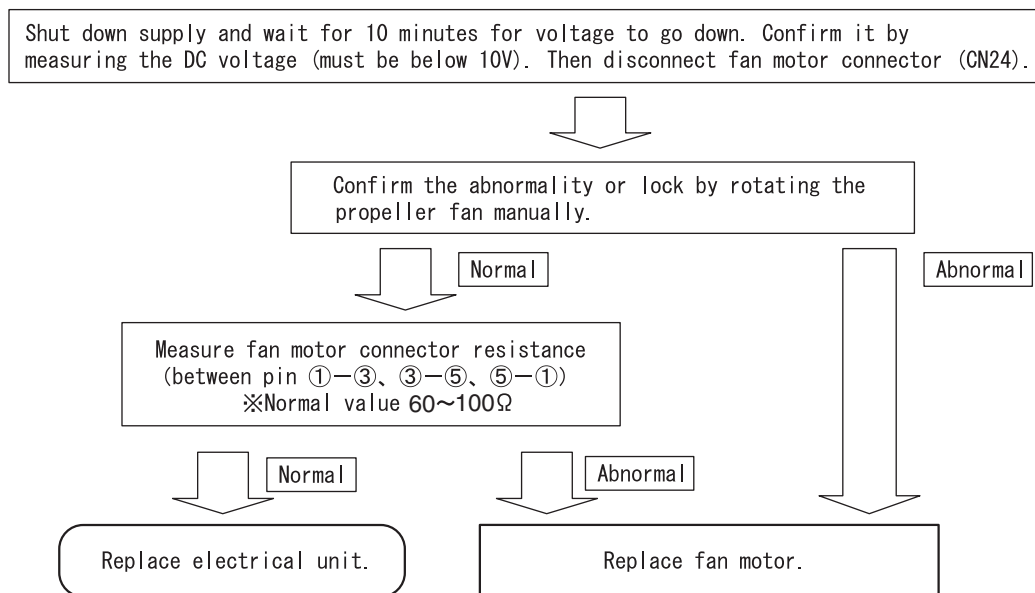
The unit will restart according to control as per during start (1).

(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



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).

1. Power Circuit



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

(1) Intelligence Power Module (IPM)

(2) Diode Stack (DB601, DB602)

<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],[lp 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, 500 μ F, 450V)

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

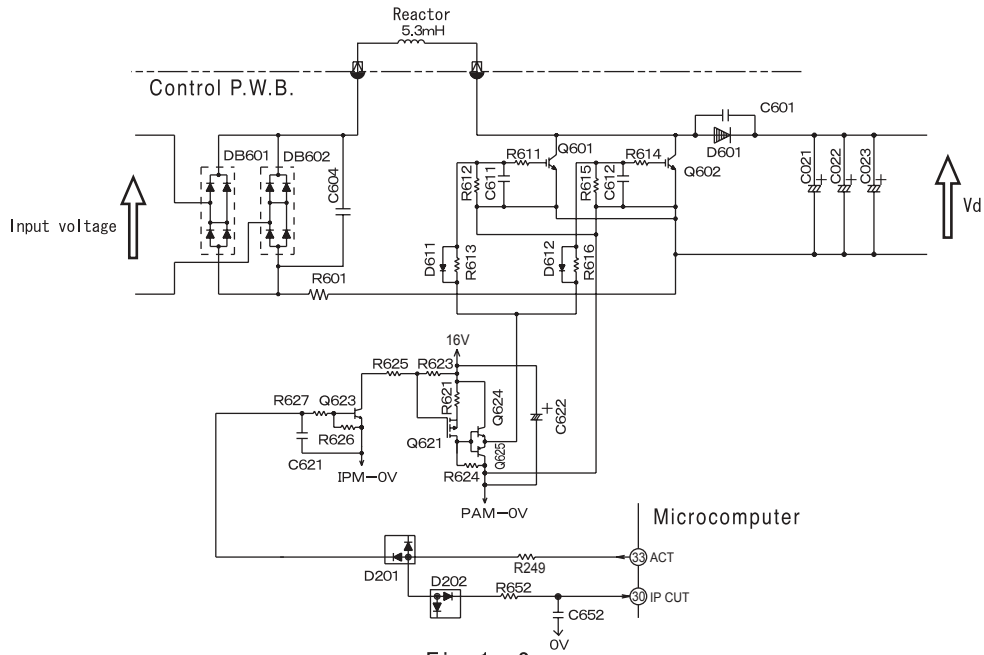


Fig. 1-2

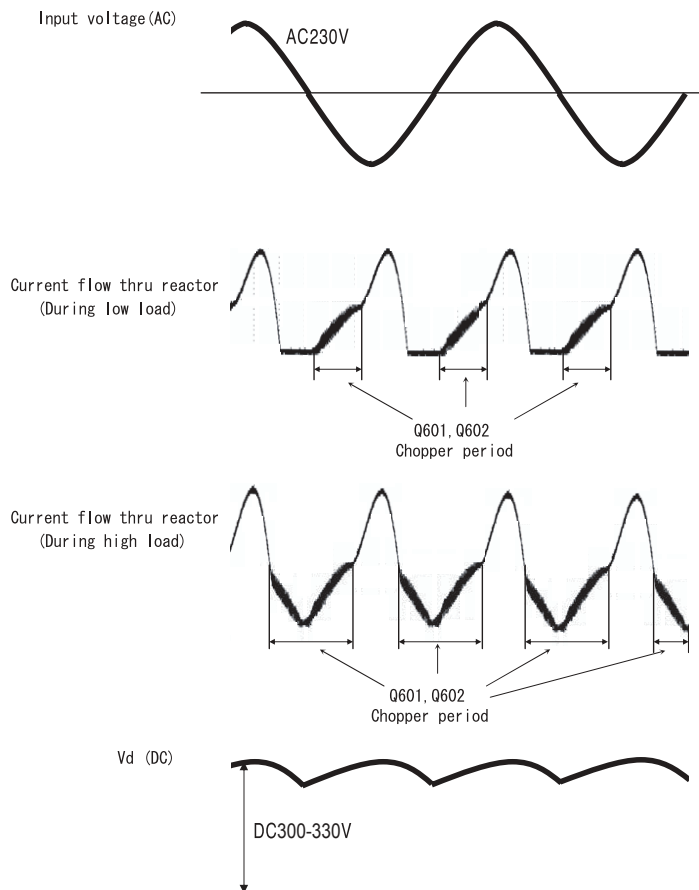


Fig. 1-3

(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)

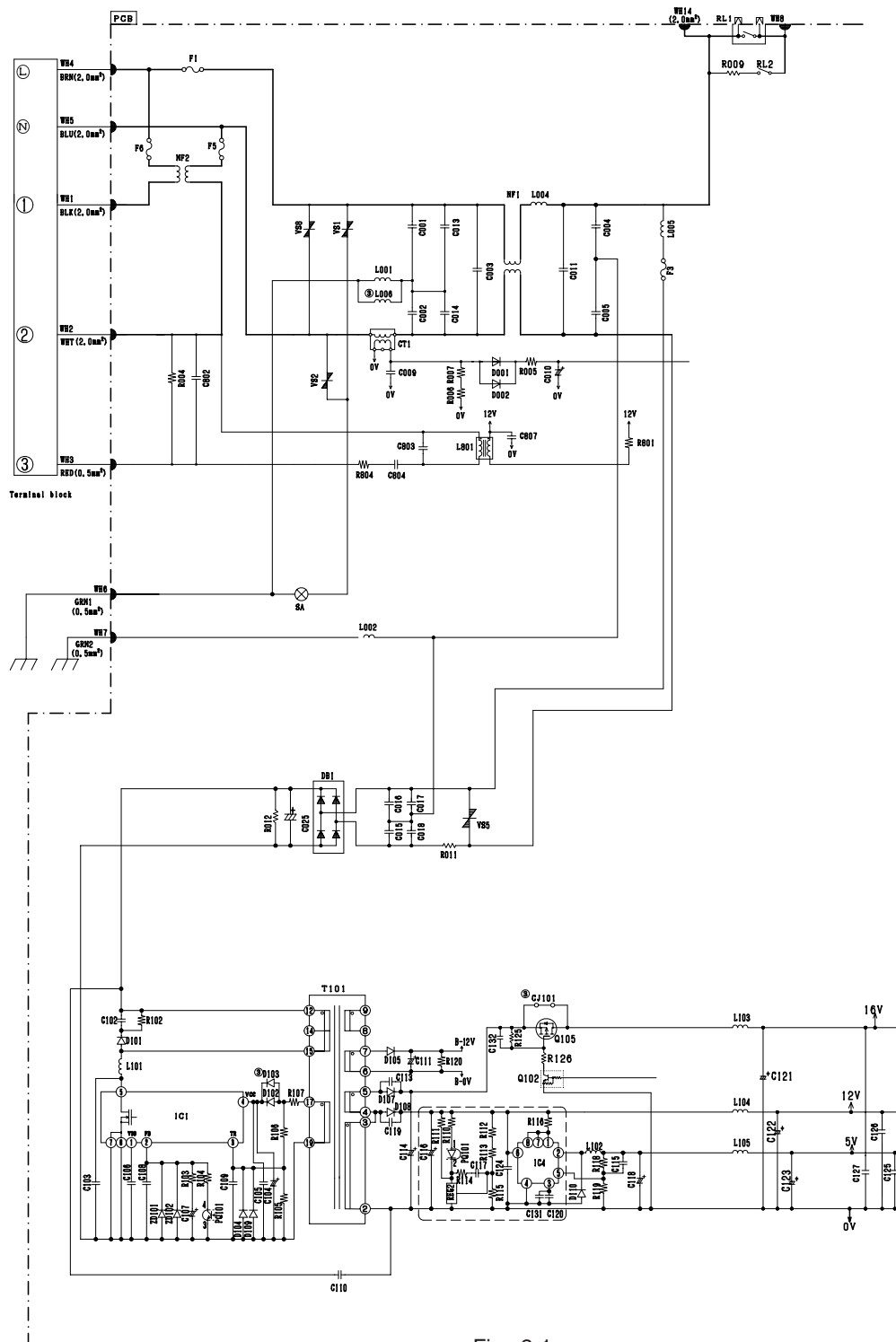


Fig. 2-1

- The 230V AC voltage is rectified to DC voltage (B-12V,16V,12V,5V) pass through switching control IC (ICI), 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 absorb 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	$15.5^{+1.5V}_{-1.0V}$	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	$13^{+2.5V}_{-1.0V}$	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.

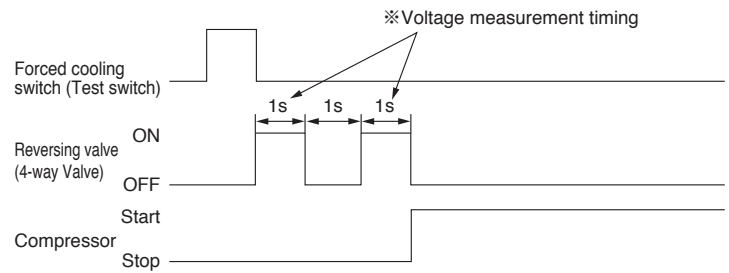


Fig. 4-1

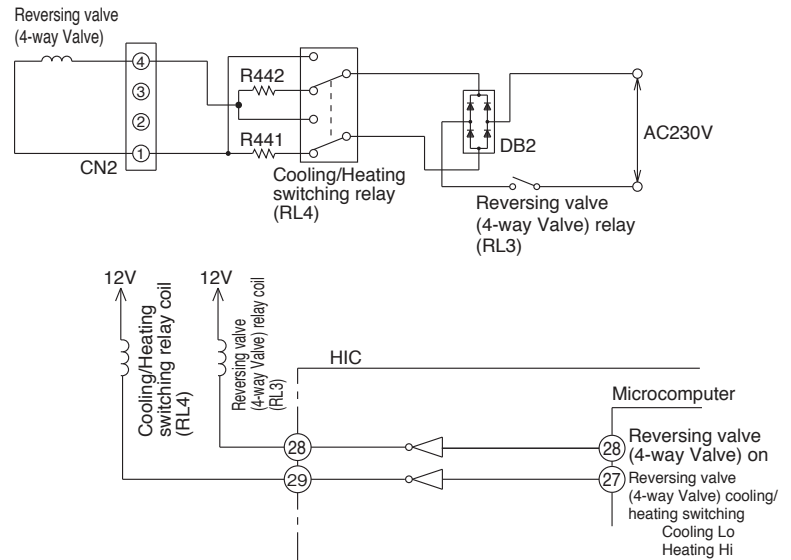


Fig. 4-2

- 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 $[2500\Omega \pm 10\%]$. 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

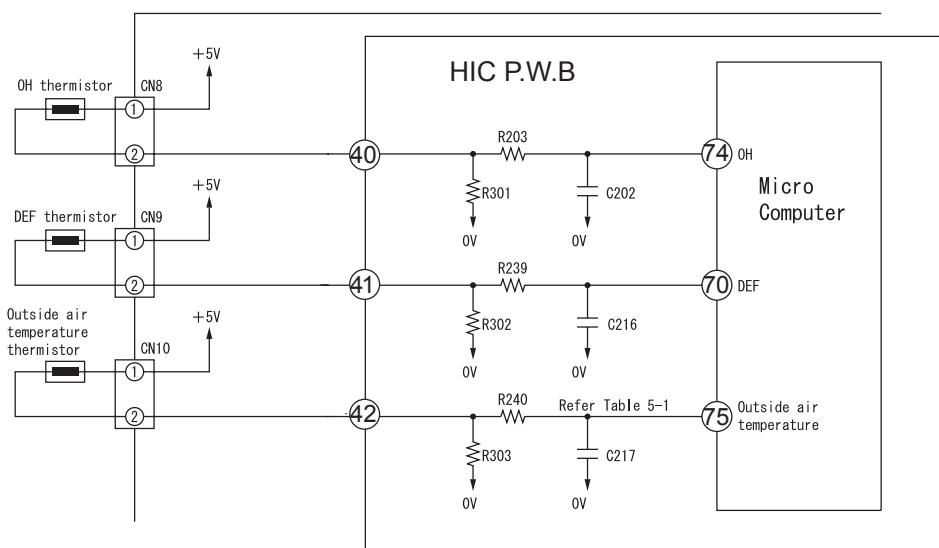


Fig. 5-1

- 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 ⑦① 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 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 ⑦①⑦④⑦⑤ 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

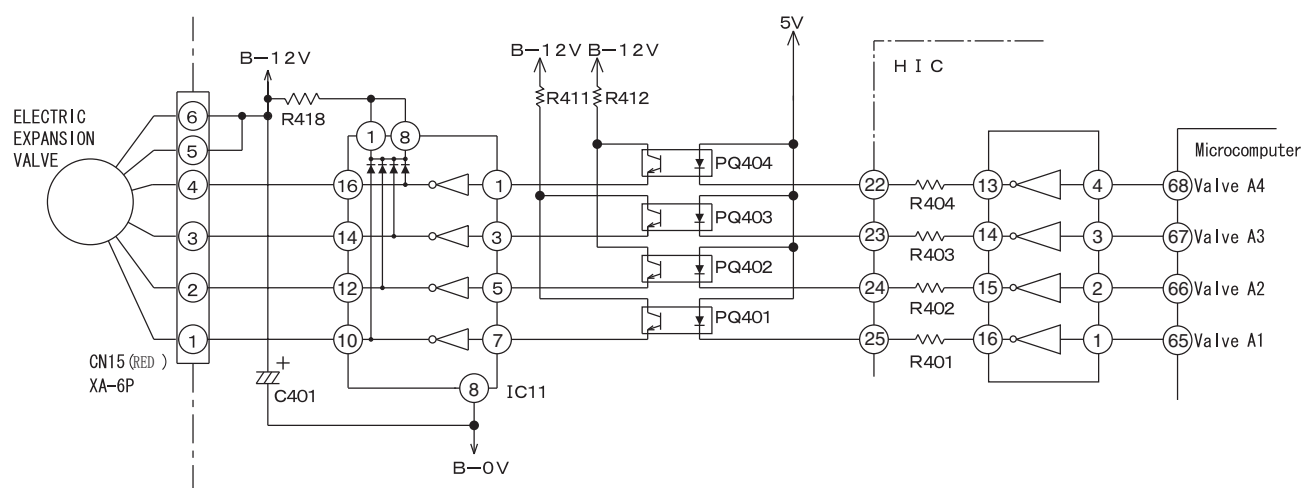


Fig. 6-1

- 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									

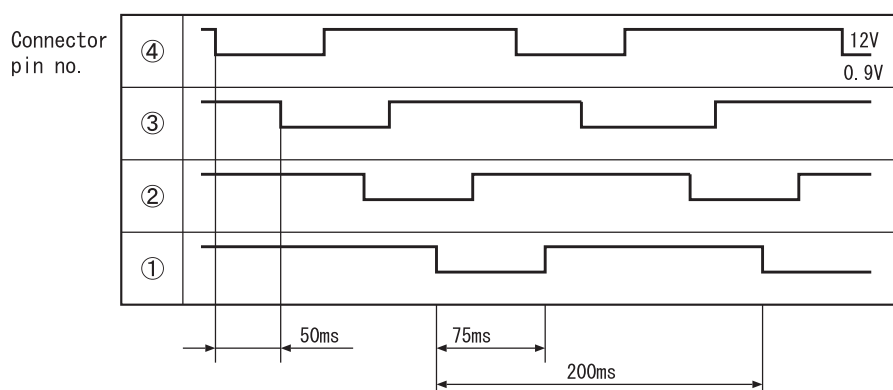


Fig. 6-2

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.

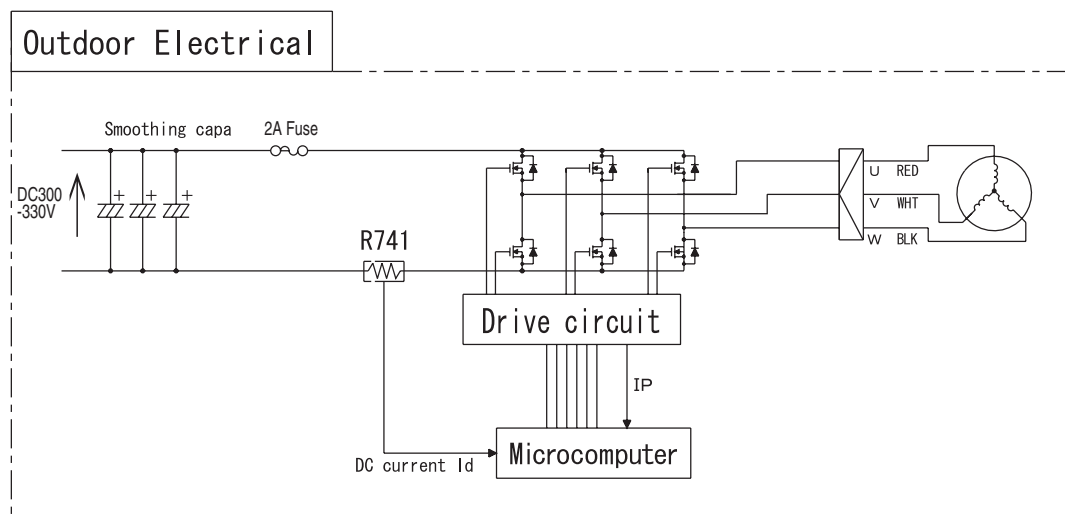


Fig 7-1

This DC fan motor is control by outdoor microcomputer that follow the operating instruction received from indoor microcomputer. The DC current that flow from R741 will presume actual operation speed and control the rotation to follow the operating instruction. Based on this DC current it will detect a 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 define as wind that blow 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 become weak.

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

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 become weak.

(2) Fan motor speed controller during unit operating

There is a case where fan rpm is reducing during rotating caused by interference of strong wind

If this condition continue in long period, fan will stop rotating. (LD301 : 11 times blinking)

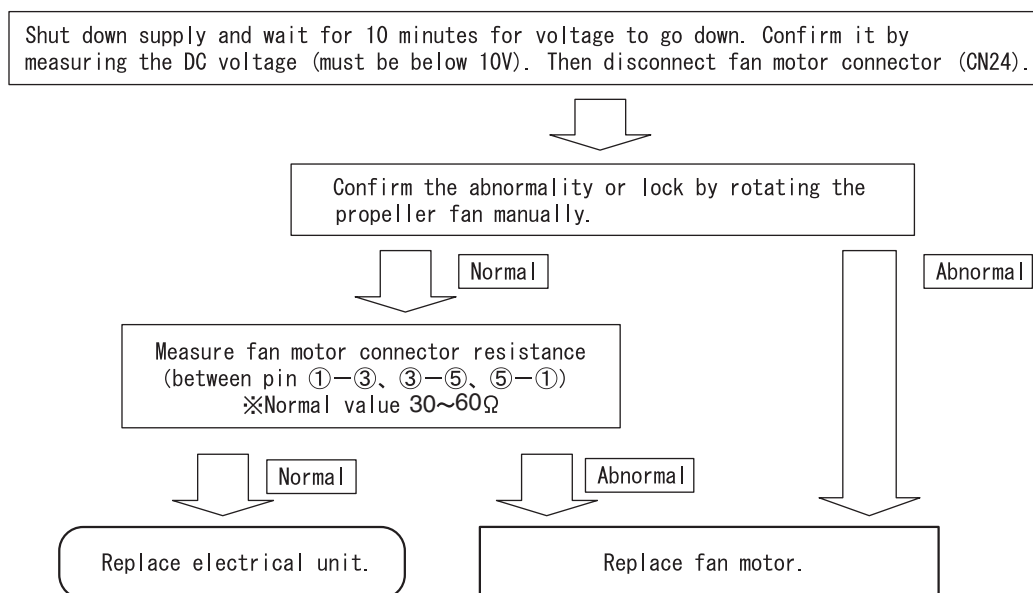
The unit will restart according to control as per during start (1).

(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



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.

Q1 In "automatic fan speed" mode, the indoor fan changes from strong fan speed to weak fan speed to slight fan speed.		A1 This does not abnormal. It is because the cold fan speed prevention is working.	In fan speed "automatic" mode, the product will sense the heat exchange temperature and, when the temperature goes down, the product will automatically switch to strong wind to weak fan speed to slight fan speed.
Q2 At operation startup, the outdoor unit becomes noisy.		A2 At operation startup, the product will set the rotation speed of the compressor to full power and increase its heating and cooling capacity, resulting in a slightly higher noise level. This is not a sign of a breakdown.	
Q3 The outdoor unit sometimes changes in its noise.		A3 The difference between the thermometer temperature setting and room temperature will change the rotation speed of the compressor. This is not a sign of a breakdown.	
Q4 There is a difference between the temperature setting and room temperature in room temperature control.		A4 The room structure, air stream, or other factor may cause a gap between the room temperature setting and actual room temperature. If there is any difference between the setting and the room temperature, adjust the temperature setting to match the living space to a comfortable temperature.	
Q5 The product will not produce wind right after startup.		A5 After turning ON the power switch or breaker, setting the product to heating or dehumidification will activate a preliminary operation for 1 minute. At that time, heating will cause the operation lamp to blink. This is not a sign of a breakdown.	
Q6 I performed internal cleaning, but didn't succeed in controlling the mold in the room.		A6 Internal cleaning will clean the inside of the indoor unit of the air-conditioner, thereby controlling mold generation. This will not control the mold in the room.	

Wireless remote control

Q1 The timer will not become set.



A1 Have you set the product to the current time? The timer cannot be set unless it is set to the current time.

Q2 The current time display will disappear at once.



A2 The current time disappears 10 seconds later. The timer set display is given priority.

When set to the current time setting, the reading blinks for about 3 minutes.

Q3 I made a timer "reservation". But the time setting has disappeared.



A3 Is the time not past the reserved time? The set time disappears when the current time reaches the reserved time.

Q4 I tried to set the "sleep" timer while the ON timer is reserved. But it will not set itself to a desired time.



A4 The time set in the "sleep" timer can be set with a time up to the time set with the ON timer. If the end time of the "sleep" timer is past the time set with the ON timer, you cannot make that setting.

Q5 I set the "sleep" timer during operation. But
 ① the indoor fan will not run (it will not produce wind)
 ② wind intensity will not change.



A5 ① This occurs when the room temperature and humidity have reached their settings during dehumidification and the air-conditioner is in a pause. The product will begin again to run within about 3 minutes.
 ② The product will run with the wind speed set to a "quiet" state.

Q6 I tried to change the setting with the "room temperature" button of the remote control unit in vain.



A6 You cannot make this setting when the product is in "air purification" mode. Moreover, you cannot set the product to a desired setting when quick laundry or dew control is being performed with the "auto" or "quick dehumidification" button.

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

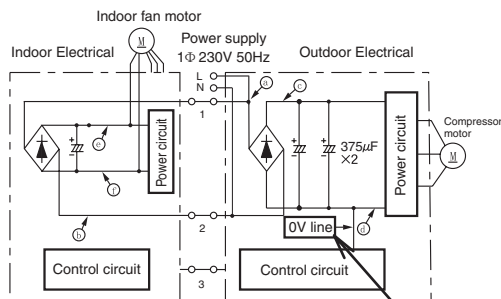


Warning

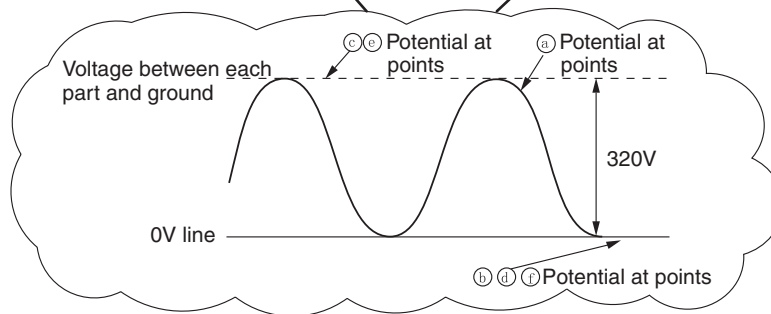
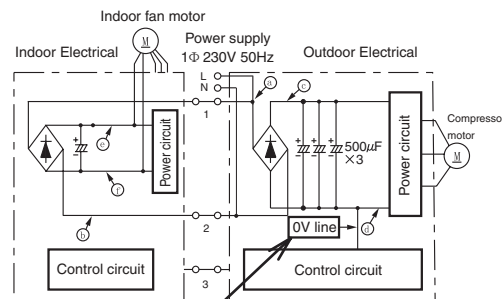
Note that the 0 V line of the outdoor electrical parts and the primary power circuit of the indoor electrical parts have voltages to ground as illustrated in the right-hand figure.



RAC-25/35WSE

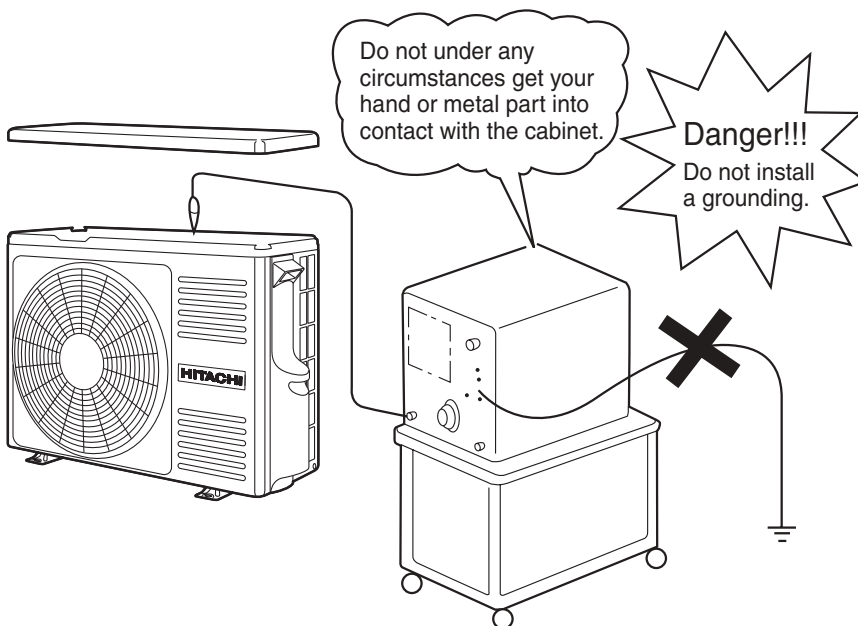


RAC-50WSE



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.



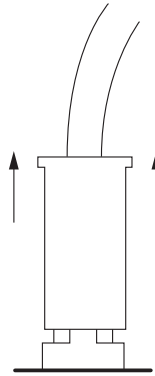
Other instructions

(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.

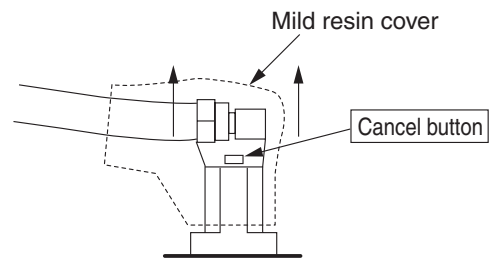
When reconnecting it, insert it securely all the way home.

· Receptacle types and how to unlock them



Vertical (with a resin case)

Hold the resin case and pull it out.



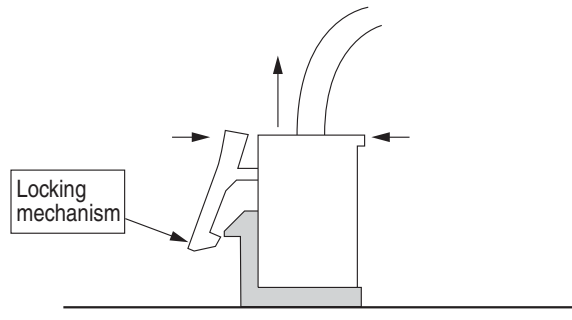
Horizontal (with a mild resin cover)

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.

No	Function	Description
1	Self-diagnosis display [Display on the indoor unit side]	- 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. There are some failure modes with no lamp display while retrials are continued. [Failure mode where retrials are continued and the indoor unit lamp does not end up giving a display] - OH thermistor heat-up - Overload lower limit cut - Low-frequency things
	[Display on the outdoor unit side]	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. (The communication error will persist until the communication is reestablished.)
2	Self-diagnosis memory	- 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]



- 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 DOSE 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 **OFF** on the display.
3. By pressing **MODE** (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  or ) 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	
Fan Speed	Data
AUTO 	Newest
HI 	Second newest
MED 	Third newest
LOW 	Fourth newest
SILENT 	Oldest

7. While directing the remote controller towards the receiver of the indoor unit, press (TEMP ) 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 redisplay 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 >

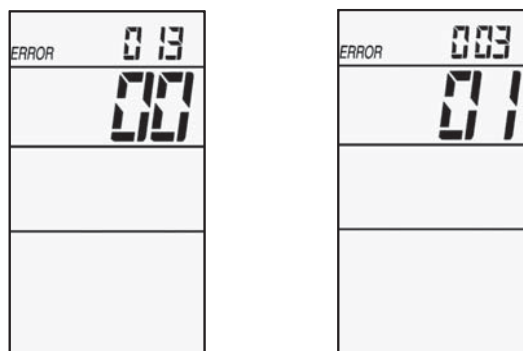
1. Redisplay the troubleshooting status. (See the above procedure.)
2. Turn the circuit breaker OFF.
3. By pressing **MODE** (MODE) button on the remote controller, set to Heating operation indicated by  (HEAT).
4. Turn the circuit breaker ON.
5. Set the room temperature setting on the remote controller to 16°C by pressing the (TEMP  or ) button.
6. While directing the remote controller towards the receiver of the indoor unit, press (TEMP ) 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.	1.Reversing valve defective 2.Heat exchanger thermistor disconnected. (only in heating 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.	1.Electrical parts in the outdoor unit
	3 times	9 times (sige only)	003 00	Communication error between indoor and outdoor units	Indoor interface circuit broken	1. Indoor interface circuit
	9 times	-	009 00	Indoor thermistor defective	Room thermistor or heat exchanger thermistor is opened circuit or short circuit.	1.Room thermistor 2.Heat exchanger thermistor
	10 times	-	010 00	Abnormal rotating numbers of DC fan motor	Overcurrent is detected at the DC fan motor of the indoor unit.	1.Indoor interface circuit 2. Outdoor interface circuit 3.Indoor control P.W.B
	12 times	9 times (sige only)	012 00	Communication error between indoor and outdoor units	Outdoor interface circuit broken	1. Outdoor interface circuit
	13 times	-	013 00	IC531 data reading error	When data read from IC531 or IC532 is incorrect.	1.IC531 or IC532 abnormal
	18 times	-	018 00	Cleaning defective	Cleaning circuit broken	Cleaning circuit
	20 times	-	020 00	Human sensor unit defective	Short-circuit	Human sensor circuit
OUTDOOR	4 times	2 times	002 01	Peak current cut	Over current detected	1.Compressor 2.P.W.B.s
	4 times	3 times	003 01	Compressor abnormal low speed rotation	Position detection signal is not input during operation.	1.P.W.B.s 2.Compressor
	4 times	4 times	004 01	Compressor switching failure	Fail to switch from initial low frequency sync to position detection sync.	1.P.W.B.s 2.Compressor
	4 times	5 times	005 01	Overload lower limit cut	Overload condition still persisting even when rotation speed is below the lower rpm limit.	1.Outdoor unit is exposed to direct sunlight or its air flow blocked. 2.Fan motor 3.Fan motor circuit 4.The voltage is extremely low.
	-	6 times	006 01	OH thermistor temperature rise	OH thermistor is operating.	1.Leak of refrigerant 2.Compressor 3.OH thermistor circuit 4.Fan motor 5.Fan motor circuit
	4 times	7 times	007 01	Abnormal outdoor thermistor	Thermistor is opened or shorted.	1.Thermistor 2.Connection of thermistor is faulty 3.Thermistor circuit
	-	9 times	009 01	Communication error	When indoor unit is not connected, it blinks similarly, not malfunction.	1.Cable is wrong connected 2.Cable is open 3.Interface circuit between indoor and outdoor unit.
	-	10 times	010 01	Abnormal power source	Power supply voltage is incorrect.	1.Power supply voltage 2.Receptcle of wire for P.W.B IPM is not properly inserted
	-	11 times	011 01	Fan stop for strong wind	Fan motor load is too heavy or rotation disturbed by wind blow.	1.Fan motor 2.Outdoor condition (wind)
	4 times	12 times	012 01	Fan motor fault	Outdoor fan rpm is not rotate as intended rpm.	1.Fan motor 2.Fan motor circuit
	4 times	13 times	013 01	EEPROM reading error	Microcomputer cannot read the data in EEPROM.	1.P.W.B main
	4 times	14 times	014 01	Active converter defective	Over voltage is detected,compressor abnormal load.	1.P.W.B.s 2.Compressor
	4 times	15 times	015 01	Abnormal PWB circuit	Active circuit abnormal.	1.P.W.B.s
	-	16 times	016 01	Software peak current cut		

<Cautions>

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 an. 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

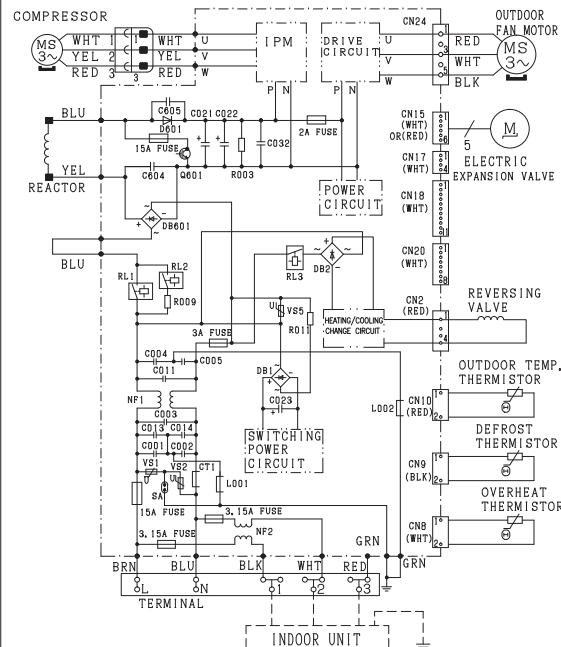
MODEL RAC-25/35WSE

⚠️ 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

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



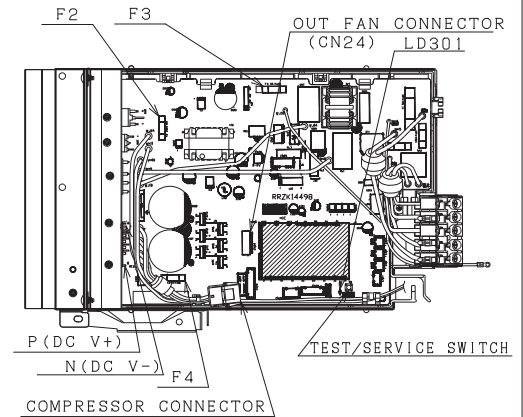
DURING STOP

SELF-DIAGNOSIS BLINKING MODE

▣:BLINK □:OFF

LD301 (RED)	SELF DIAGNOSIS CONTENTS	MAIN CHECK POINT	HOW TO REPAIR
□ OFF	NORMAL STOP (STOPPED BY INDOOR THERMOSTAT 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 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	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 LOAD 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

1. PUT THE POWER OFF.
 2. REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM* CN24.
 3. ROTATE THE FAN MOTOR BY HAND AND CHECK WHETHER THE FAN MOTOR IS LOCKED OR NOT.
 4. 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

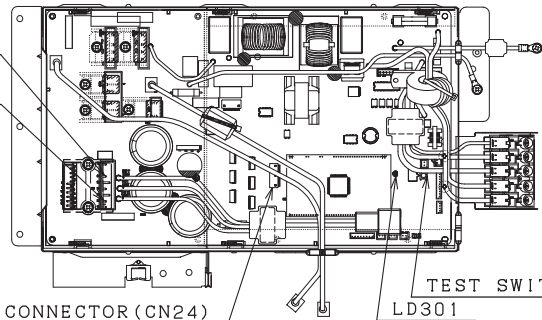
⚠️ ⚡ DANGER(DC350V)

- 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.

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

DC V+(1PM 24)

DC V-(1PM 20)



OUTDOOR FAN CONNECTOR(CN24)

TEST SWITCH LD301

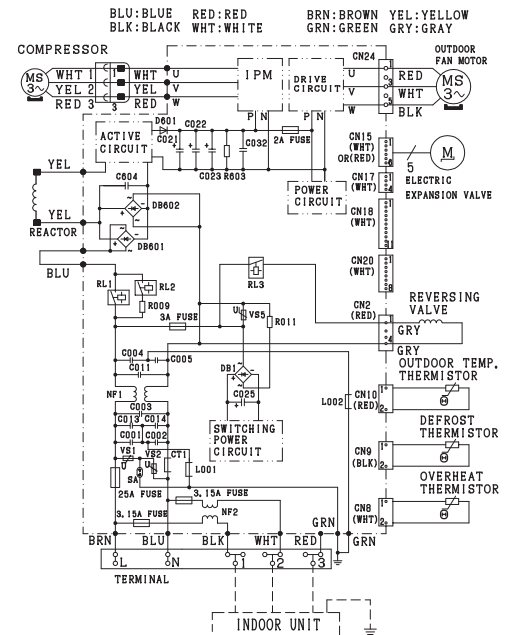
DURING STOP

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 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	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 LOAD 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

1. PUT THE POWER OFF.
2. REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM*CN24*.
3. ROTATE THE FAN MOTOR BY HAND AND CHECK WHETHER THE FAN MOTOR IS LOCKED OR NOT.
4. 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**

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).

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

0018642A

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.

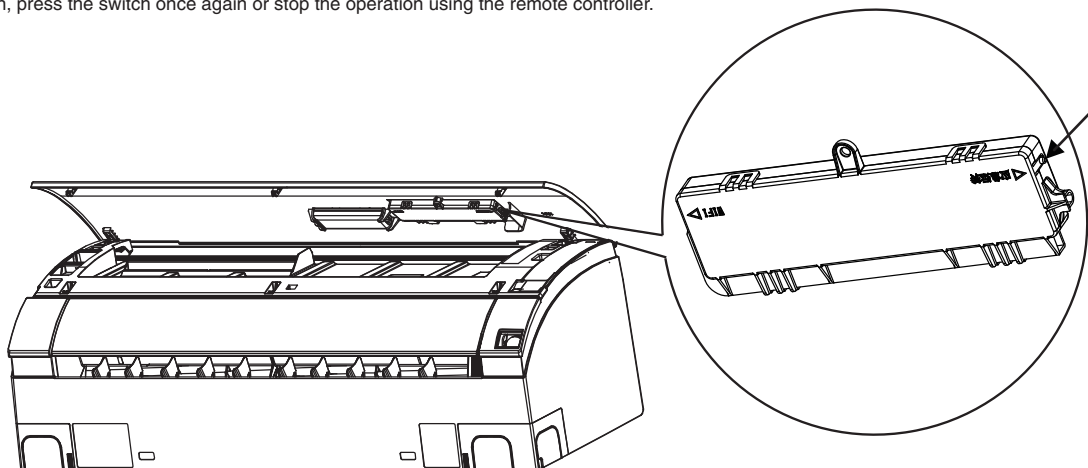
<How to stop the operation>

- 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.

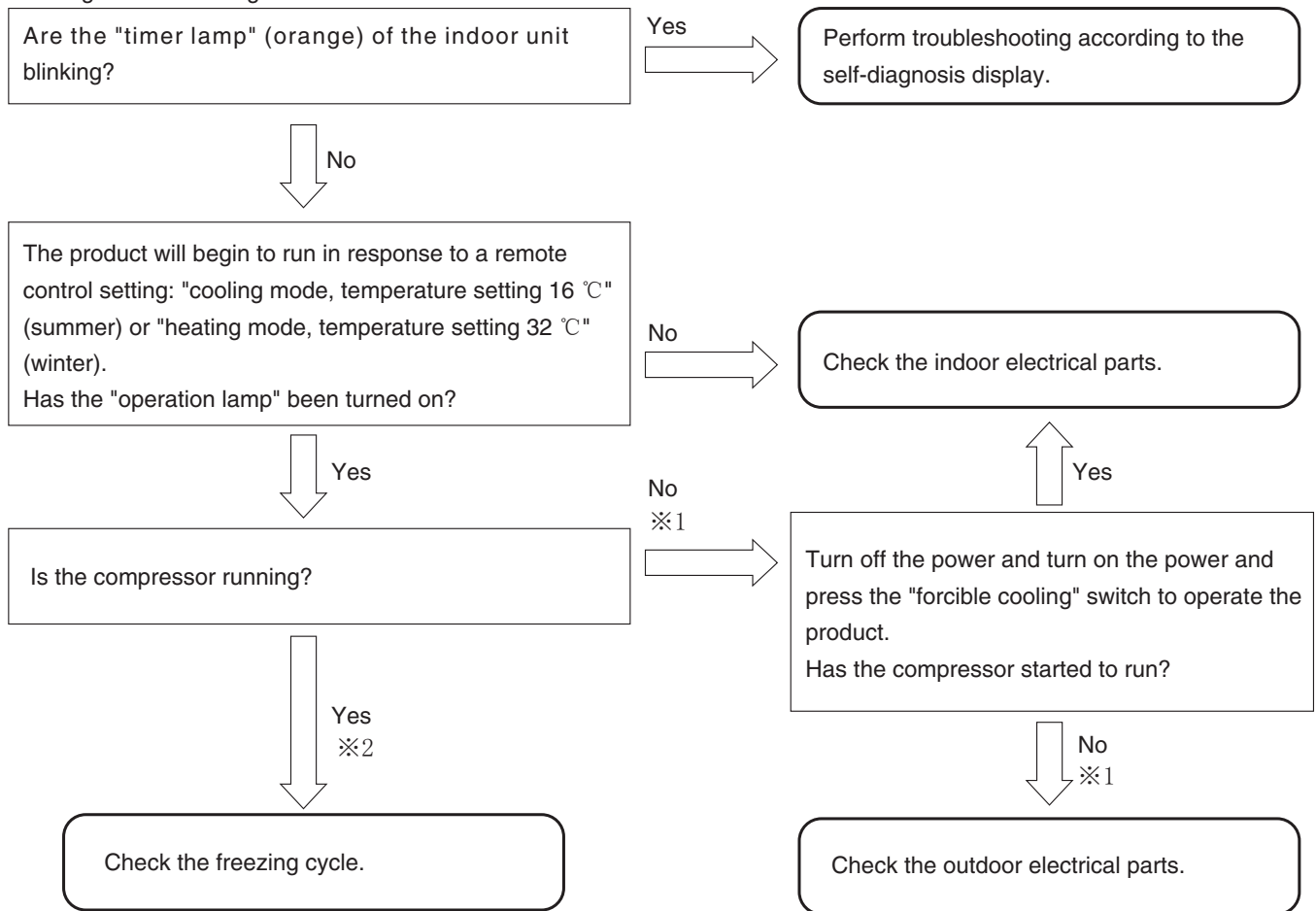
Temporary operation switch

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.

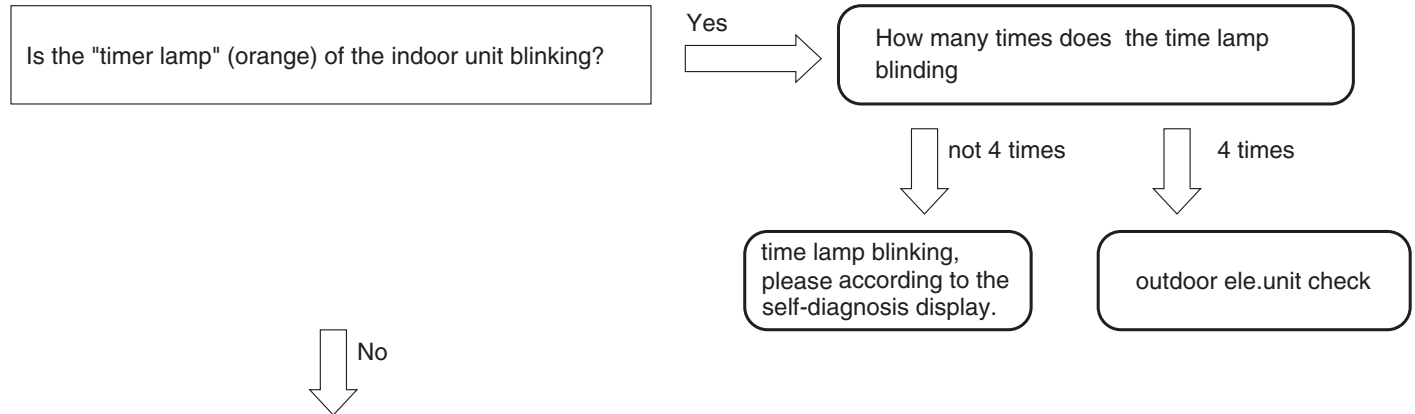
- For the outdoor self-diagnosis display (OH thermistor heat-up, overload lower limit cut) stemming from the freezing cycle or operating condition, the time lag is long from operation startup to the emergence of the phenomenon. Moreover, it is affected by the temperature, sunshine, operating hours, and 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



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.

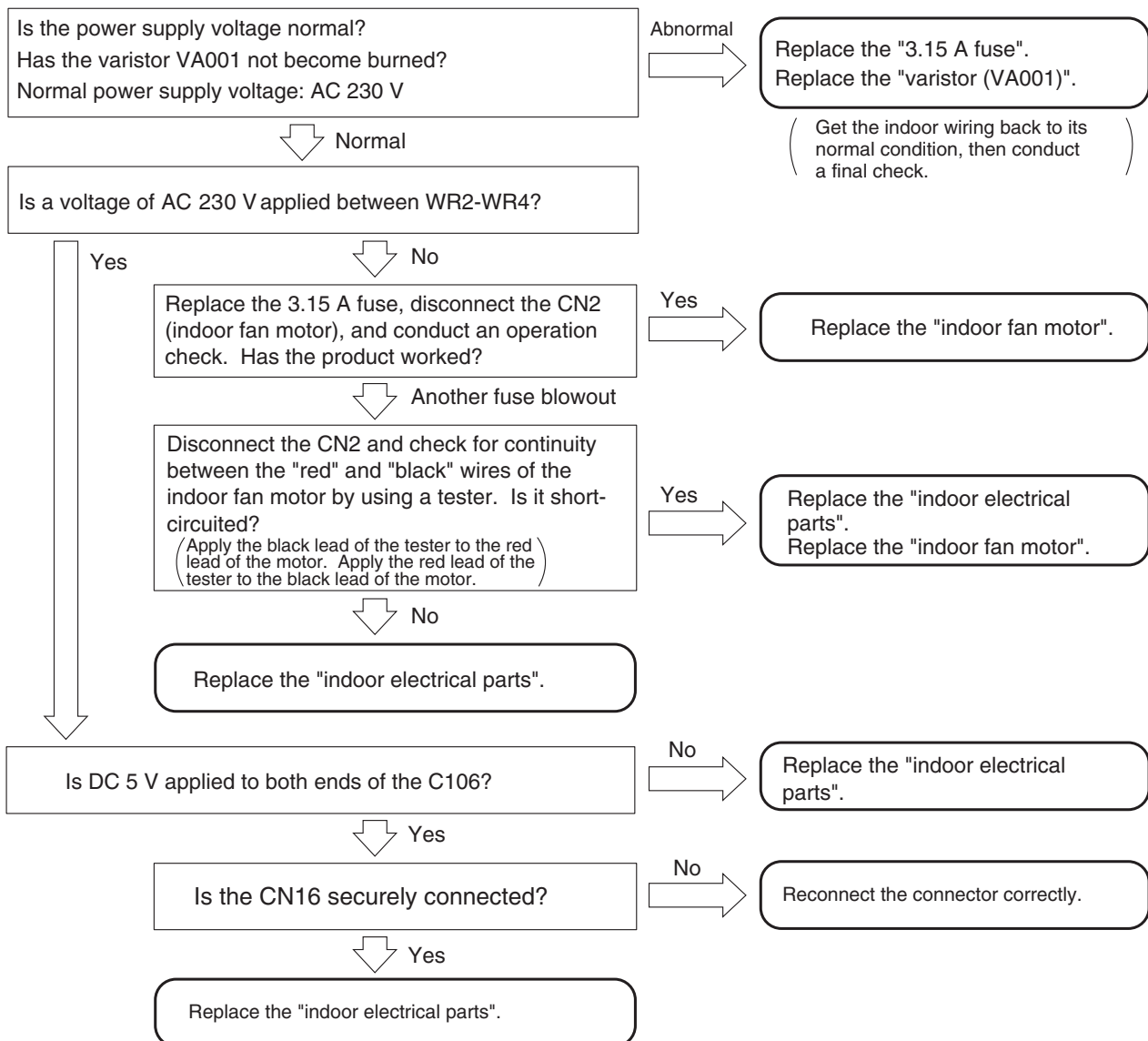
[Estimated failure locations]	· 3.15 A fuse blown out · Control power circuit · Connector loose, wire break	Estimated cause of fuse blowout · Abnormally high voltage applied to the power supply · Indoor fan motor out of order · Power circuit out of order
-------------------------------	---	---

[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

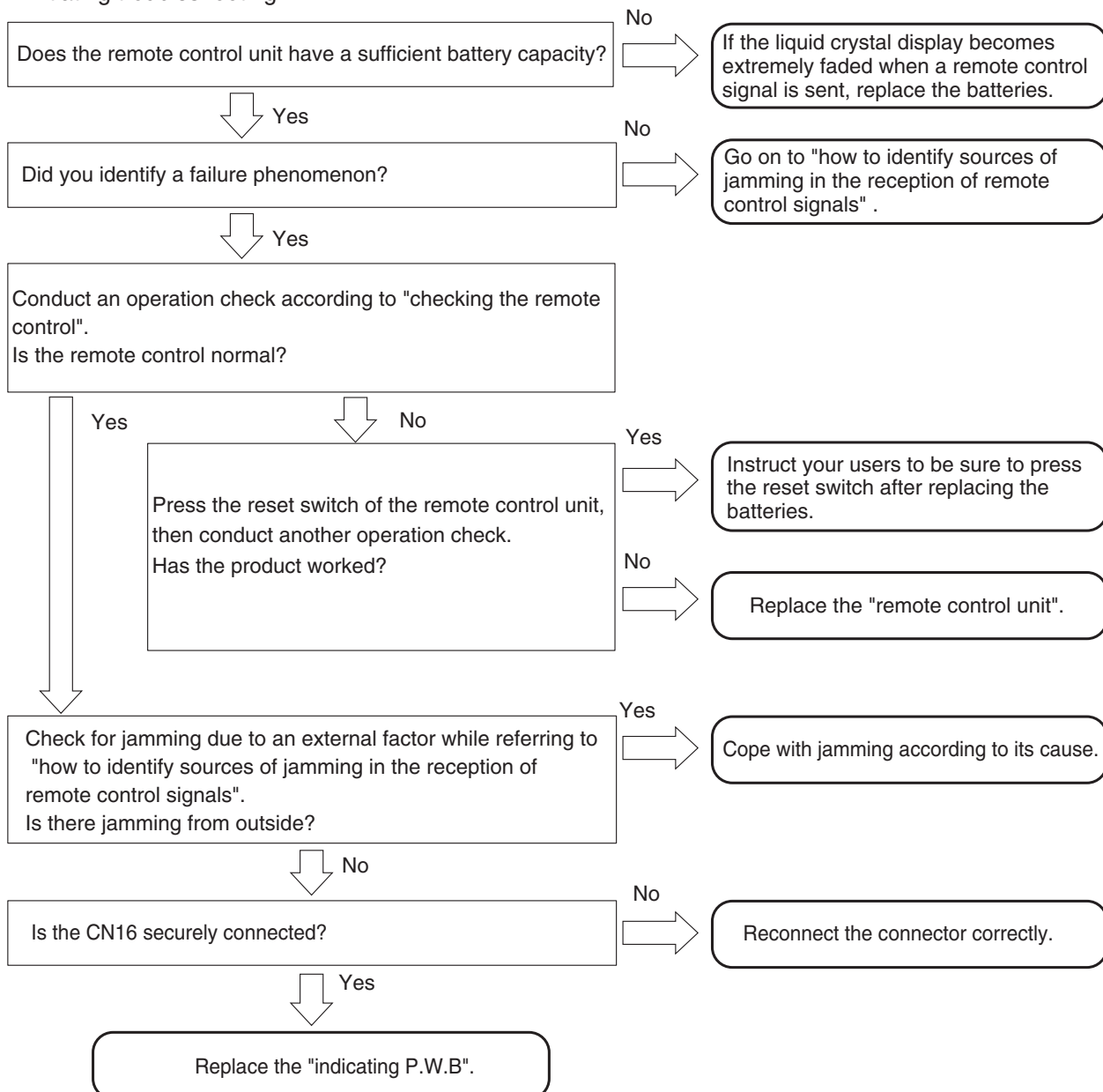


2.Failure phenomenon: The product will not receive a remote control signal.

- [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.

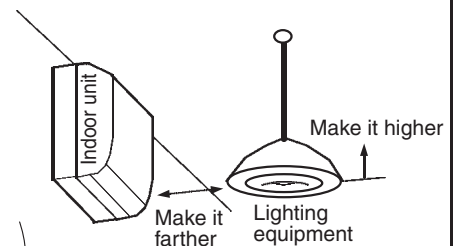
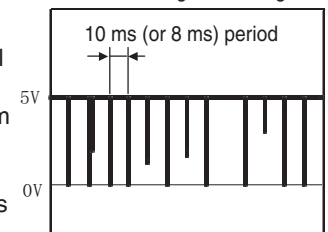
[Estimating sources of jamming] Identify the installation status of the air-conditioner and the indoor and outdoor environments to identify possible causes of the jamming.

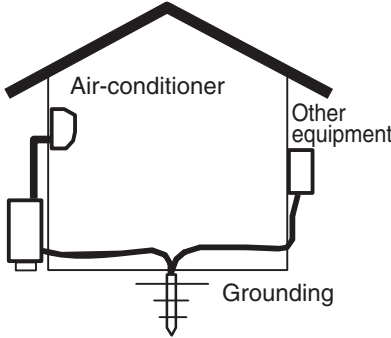
- Indoor lighting equipment (quantity, type, location)
- Remote control units of other electrical products and equipment
- Is the grounding for the air-conditioner shared with other equipment?
- Are the surroundings of the air-conditioner clear of wireless antenna?
- Is the remote control light-receiving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

[Checking and actions]

Effects of lighting equipment (fluorescent lamps)	<u>Checking points</u> · 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. 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. 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. · 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. <u>Actions proposed</u> 1. Make it hard for light of the lighting equipment to enter the remote control light-receiving unit. · 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. (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.) 2. Add an interference filter to the front panel of the remote control light-receiving unit. ※ Lighting equipment that produces strong jamming exists although rarely. Some problems may therefore be unsolvable by managing the air-conditioner side alone.
Effects of the remote control units of other equipment	<u>Checking points</u> · 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. <u>Actions proposed</u> If there is any such possibility, give explanations to your users to that effect and instruct them to exercise caution.

Output waveform of the remote control light-receiving unit



Effects of other electrical products	<u>Checking points</u> · 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. <u>Actions proposed</u> · Change the location relationship between the air-conditioner and the target products. · Use a different wall outlet for the target products.
Sharing a grounding	<u>Checking points</u> · 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. <u>Actions proposed</u> · Establish an independent grounding for the air-conditioner. 
Effects of radio waves	<u>Checking points</u> · 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. <u>Actions proposed</u> · 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	<u>Checking points</u> · 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. <u>Actions proposed</u> · Block the sunlight to protect against direct sunlight.

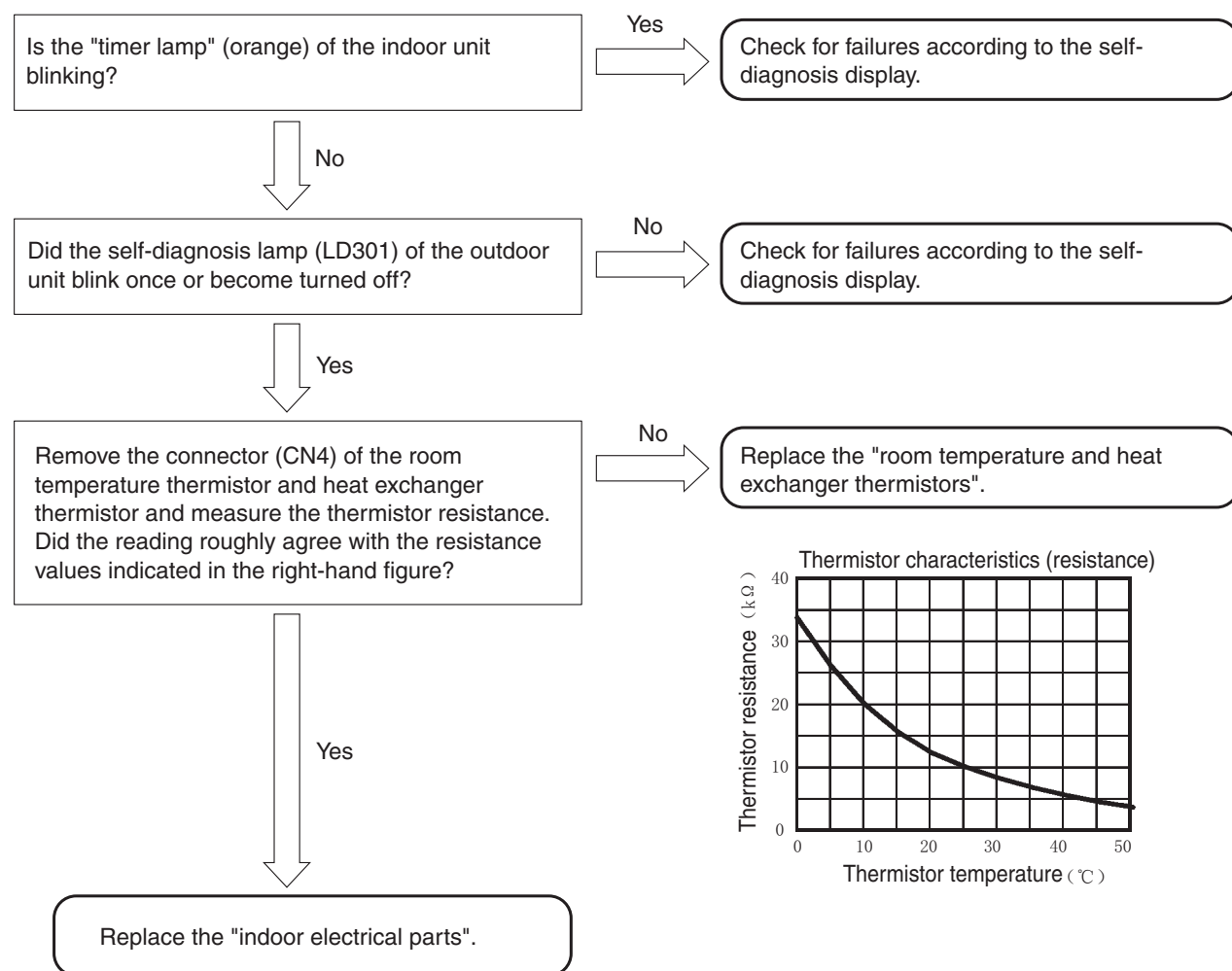
3. Failure phenomenon: The compressor will not run.

[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.

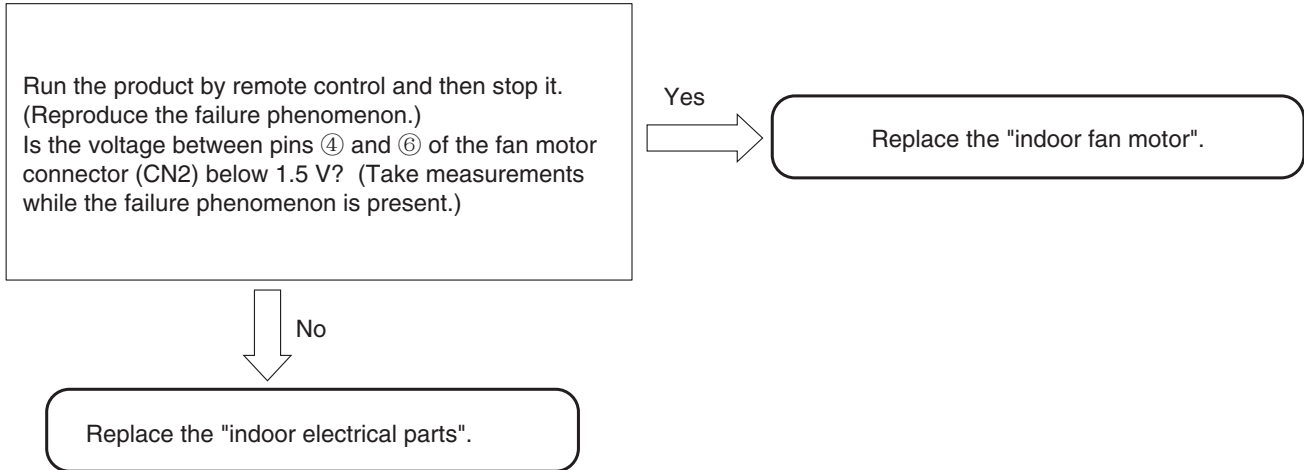
[Situation] I have conducted the stop operation on the product by remote control, but the indoor fan motor will not stop.
(It stopped about 10 minutes later.)

[Estimated failure locations]

- Indoor fan motor
- Fan motor drive circuit

[Diagnosis flow]

Initiating troubleshooting



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]

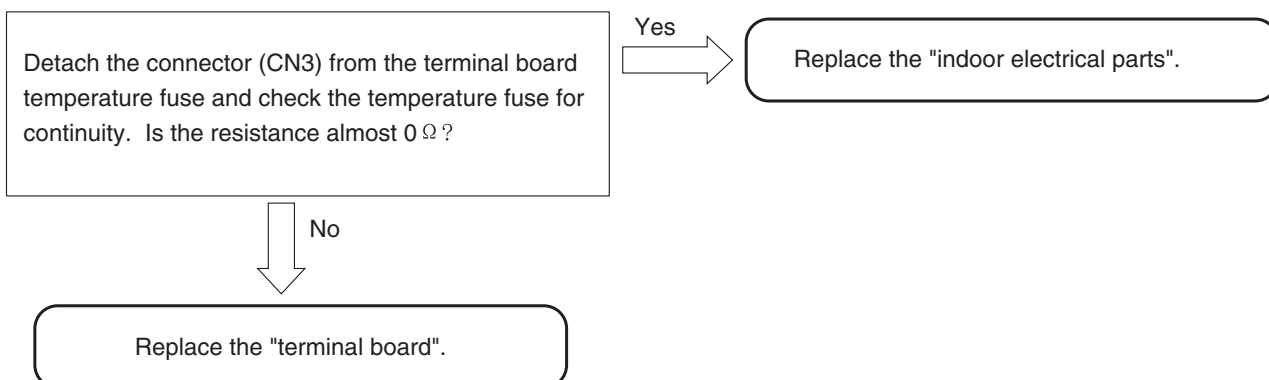
- Meltdown of the terminal board temperature fuse (the terminal board poorly inserted into the F cable)
- Outdoor communication circuit out of order

[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 lable.

9. Timer lamp blinking: blinking 9 times

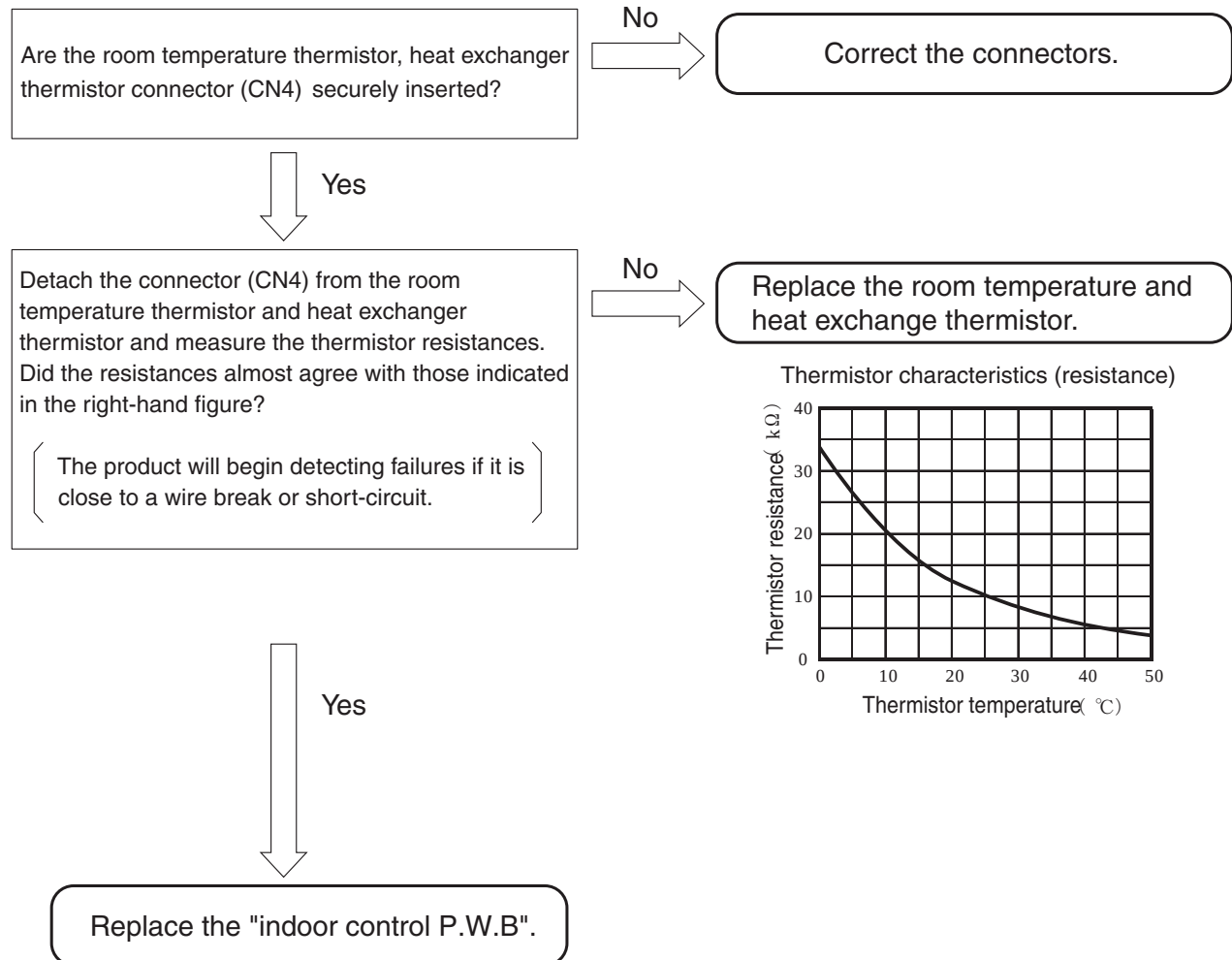
[Situation] The timer lamp blinks 9 times and the product will not run.

[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

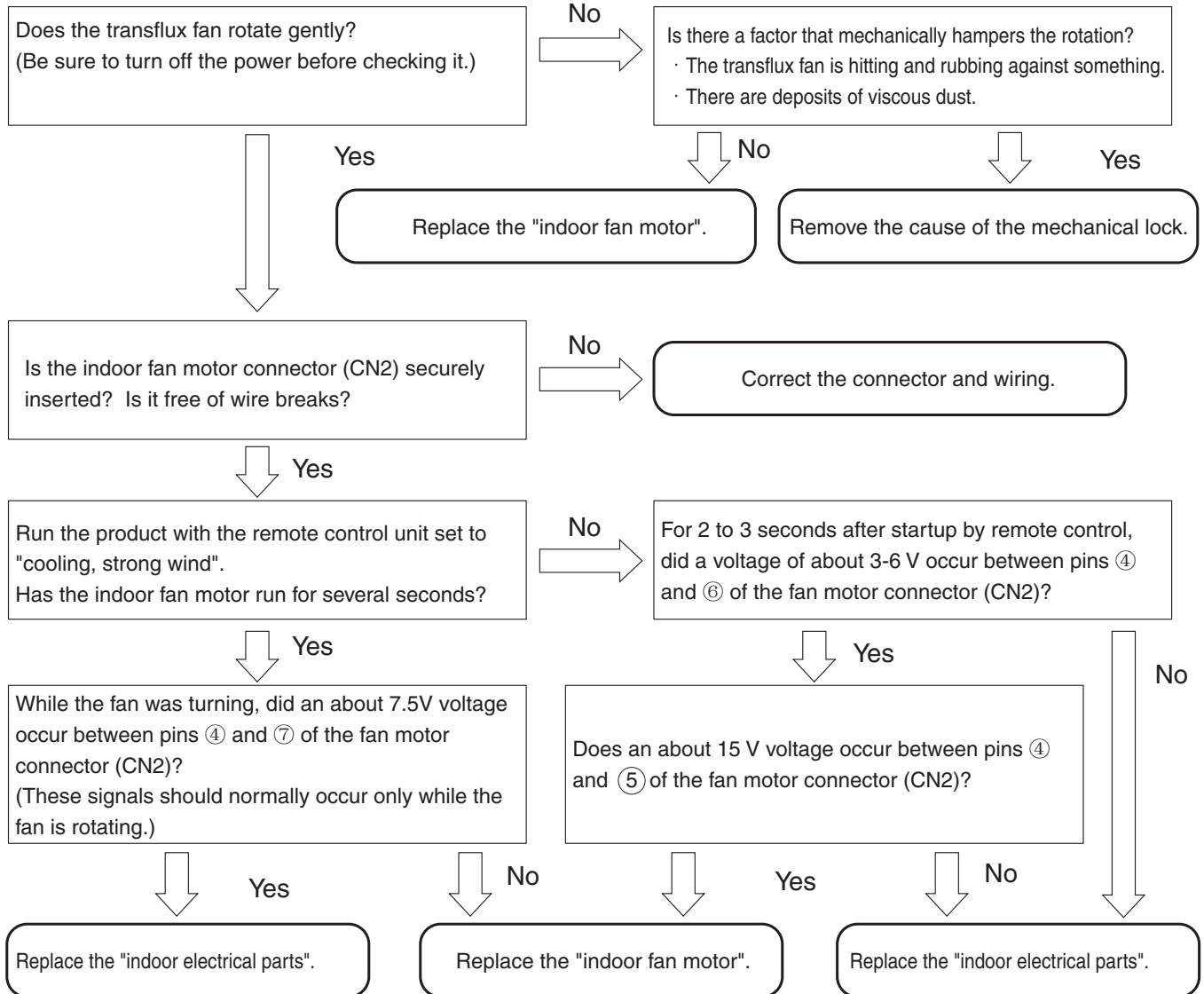
[Situation] The timer lamp blinks 10 times and the product will not run.

[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

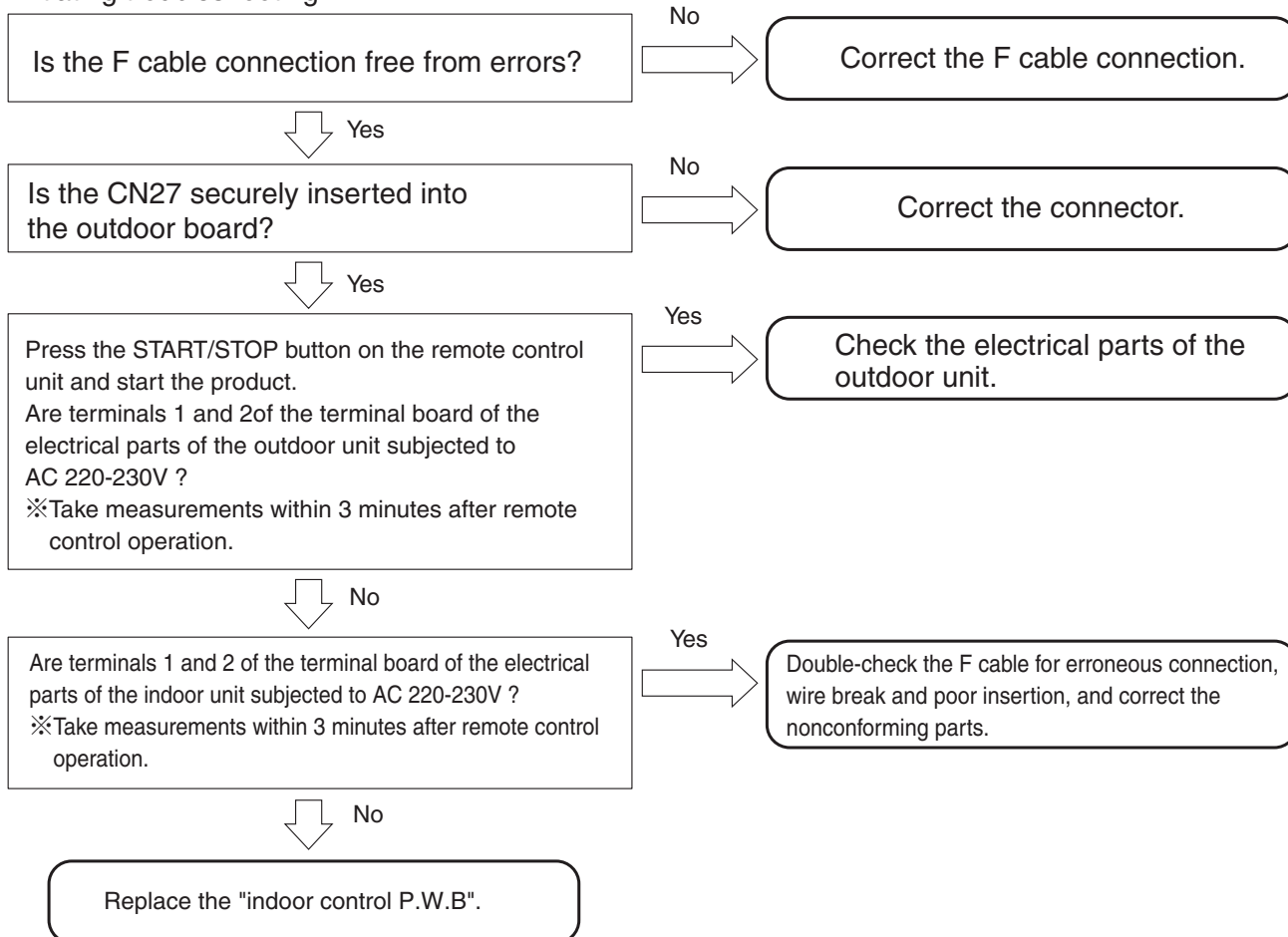
※This does not constitute a failure in the air-conditioner

[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.

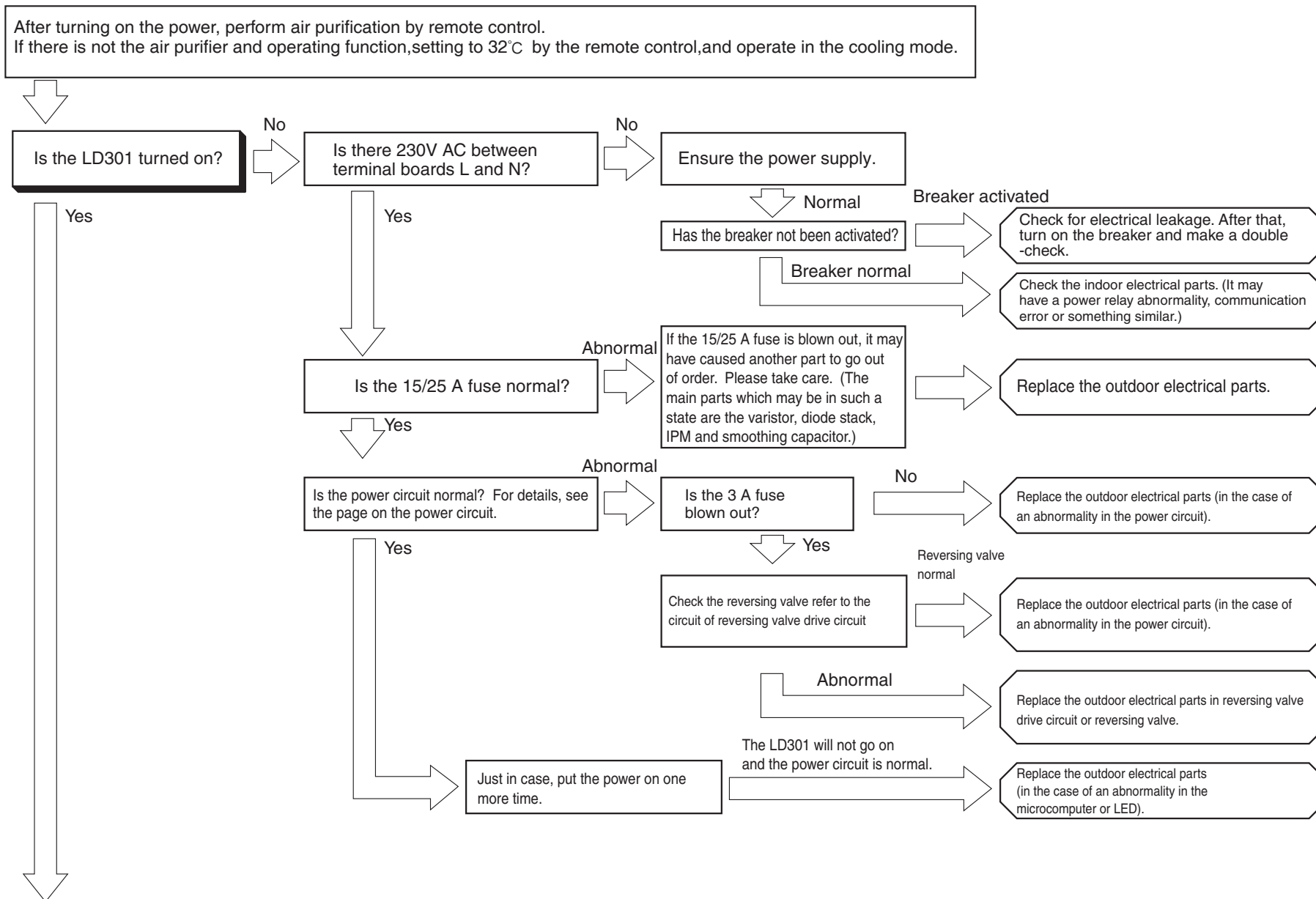
[Estimated failure location]

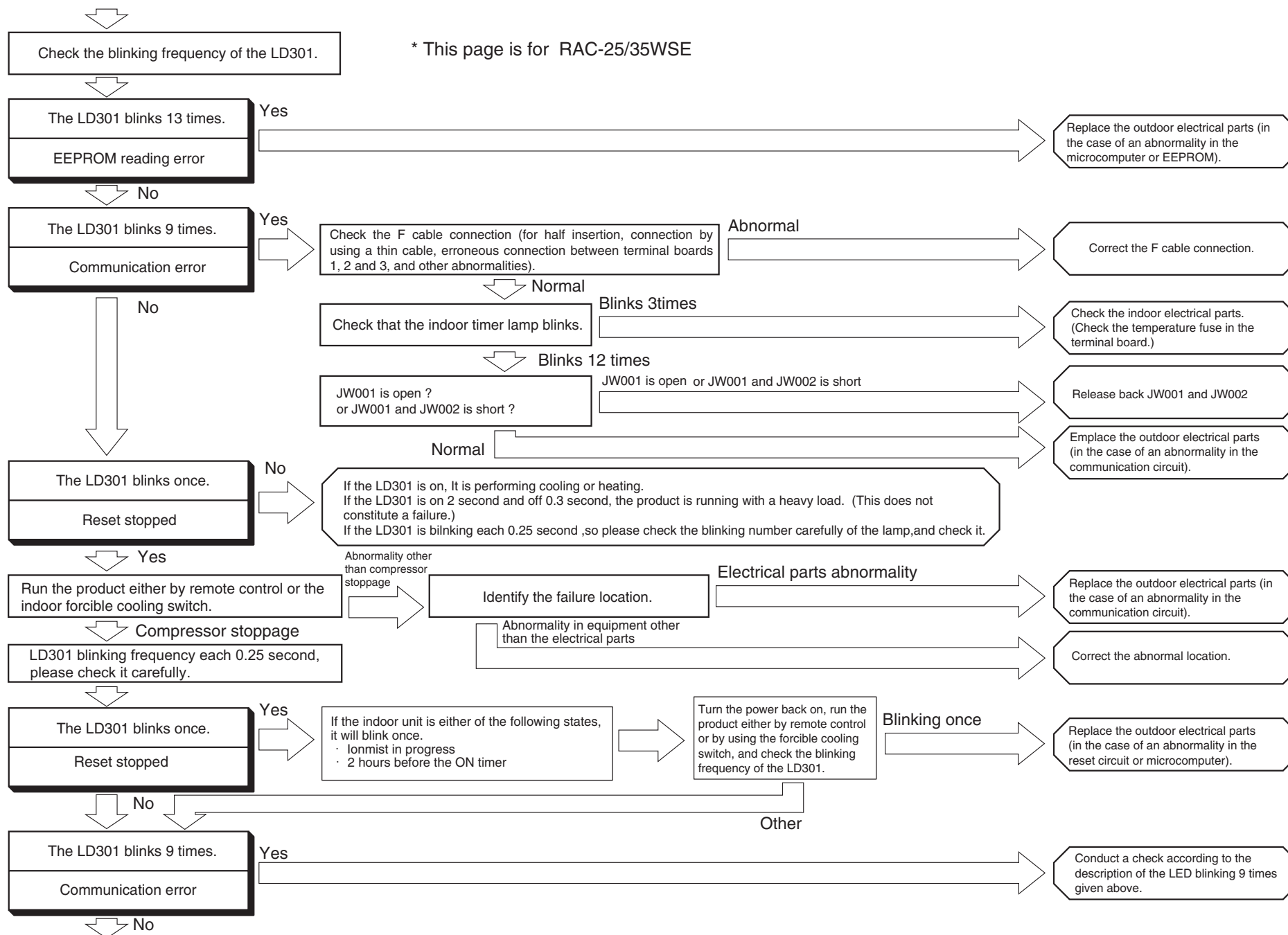
- EEPROM, microcomputer

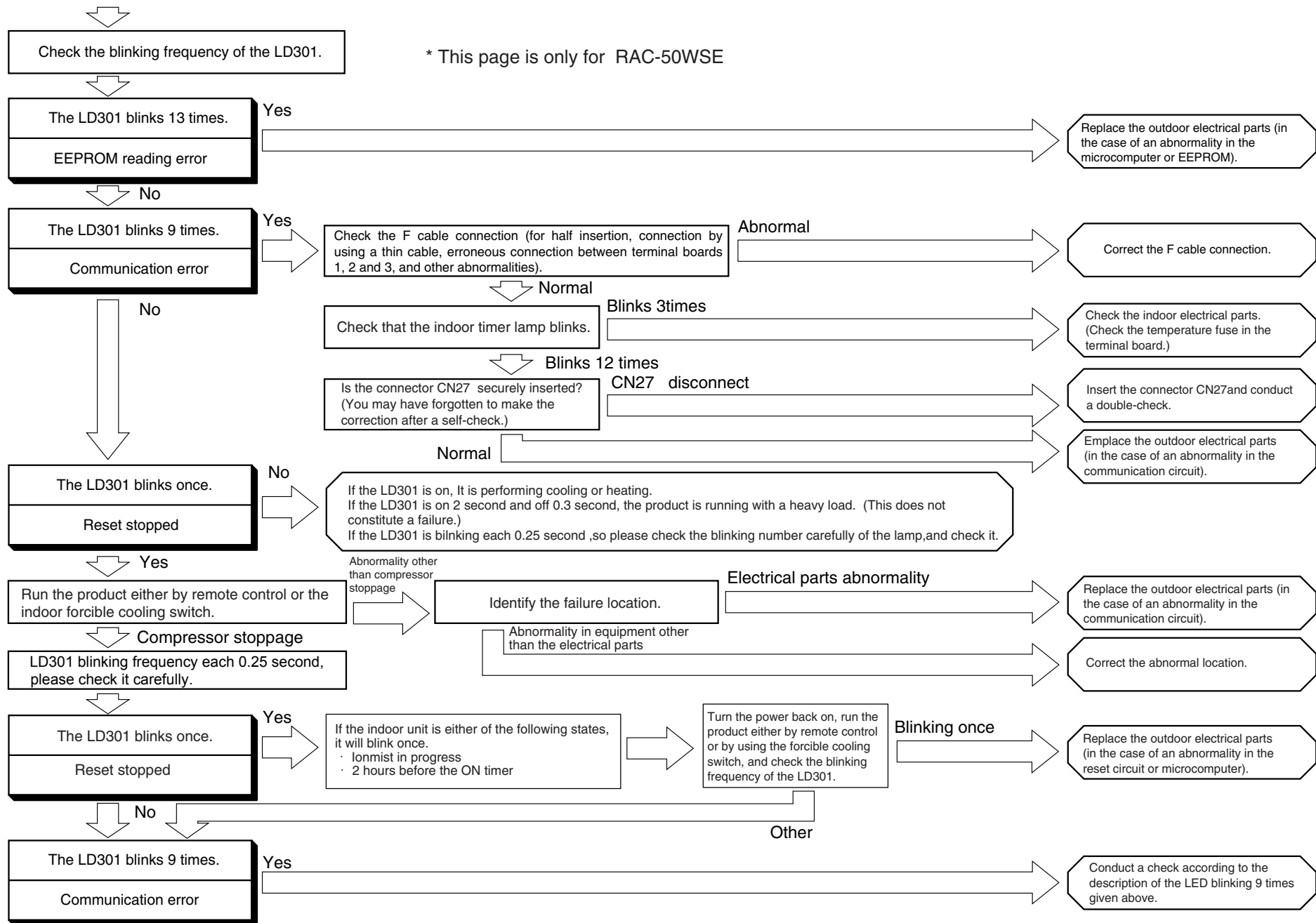
[Diagnosis flow]

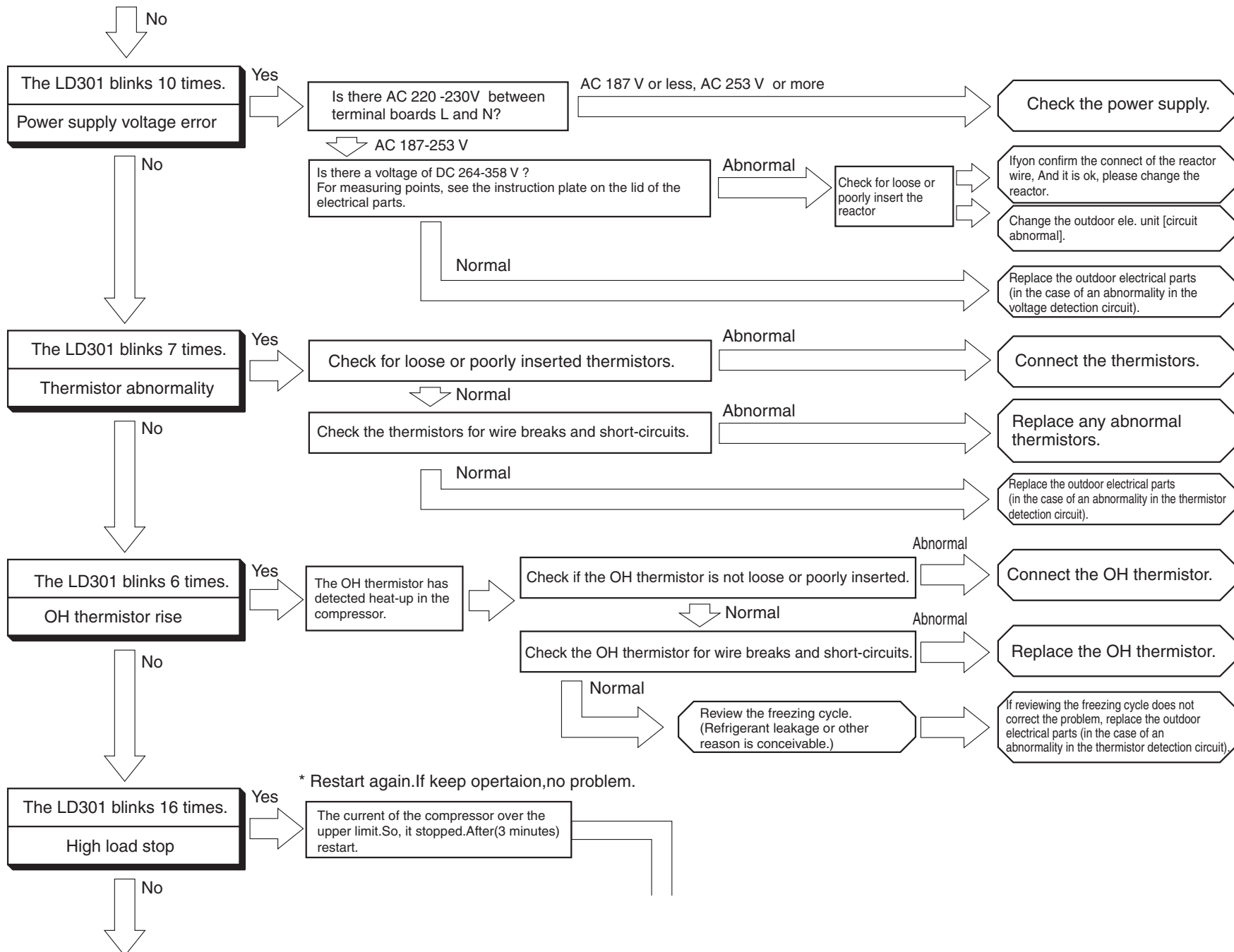
Replace the "indoor control P.W.B".

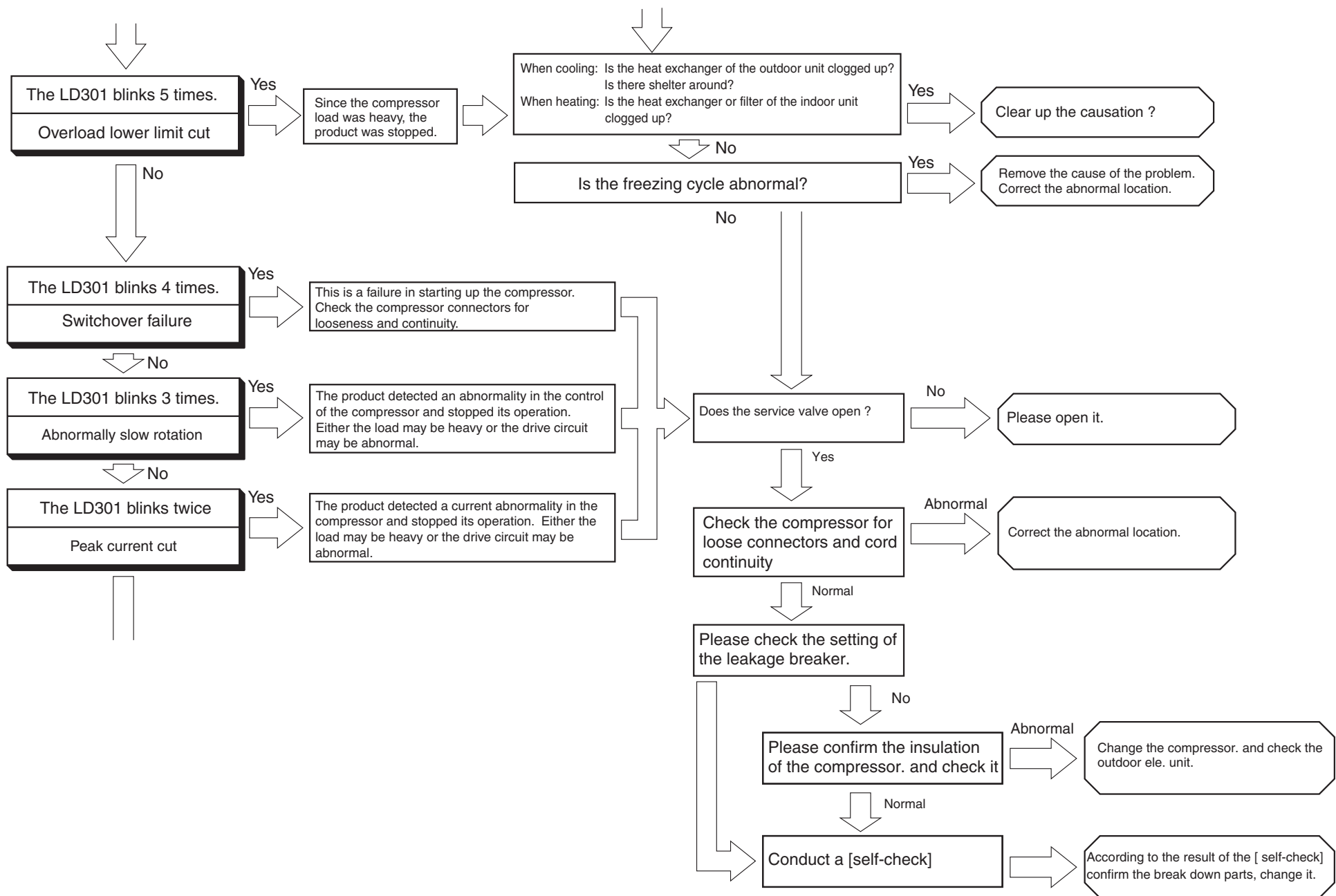
Checking the electrical parts of the outdoor unit

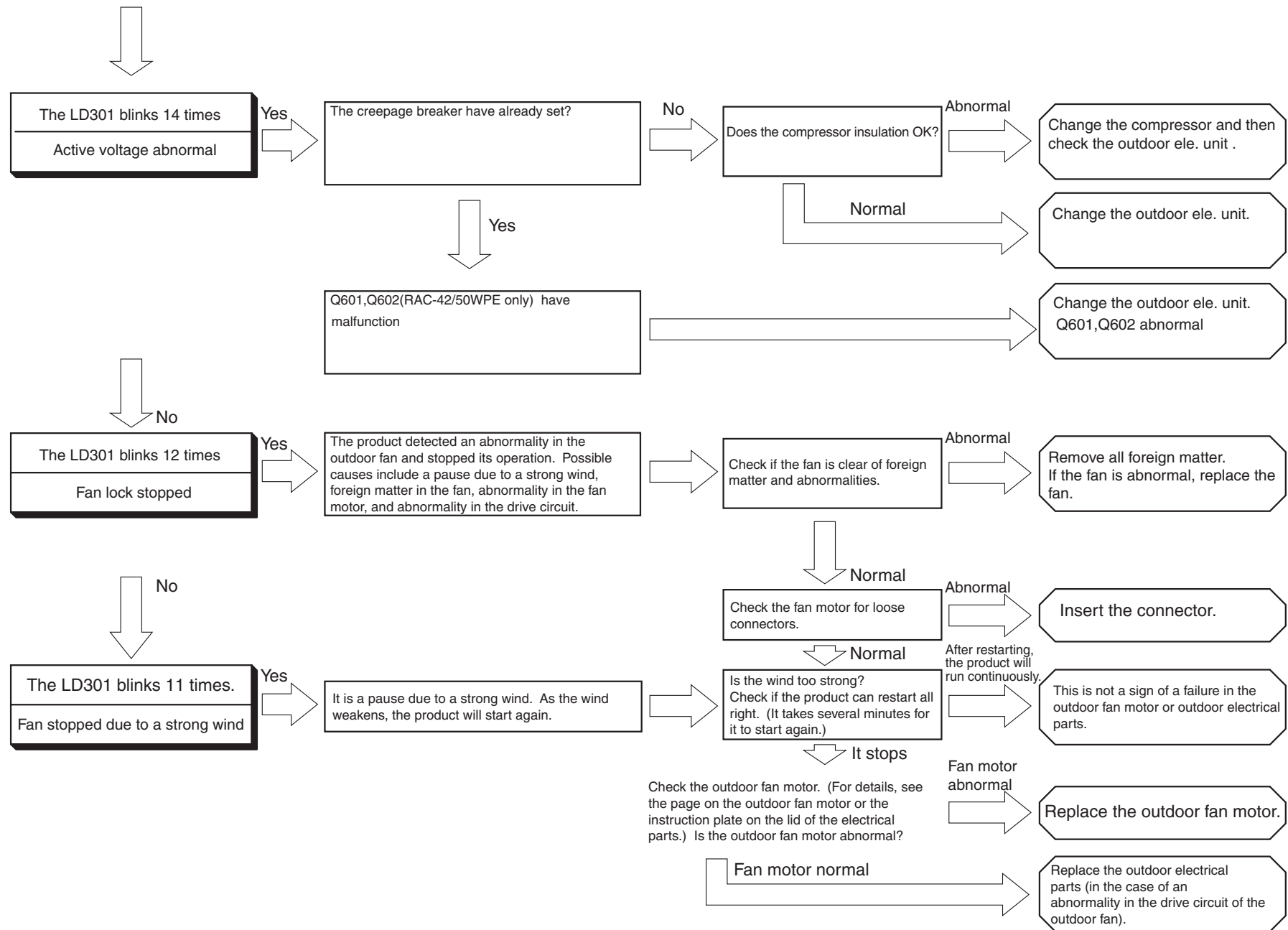












HOW TO CHANGE THE SHIFT VALUE FOR SETTING TEMPERATURE

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

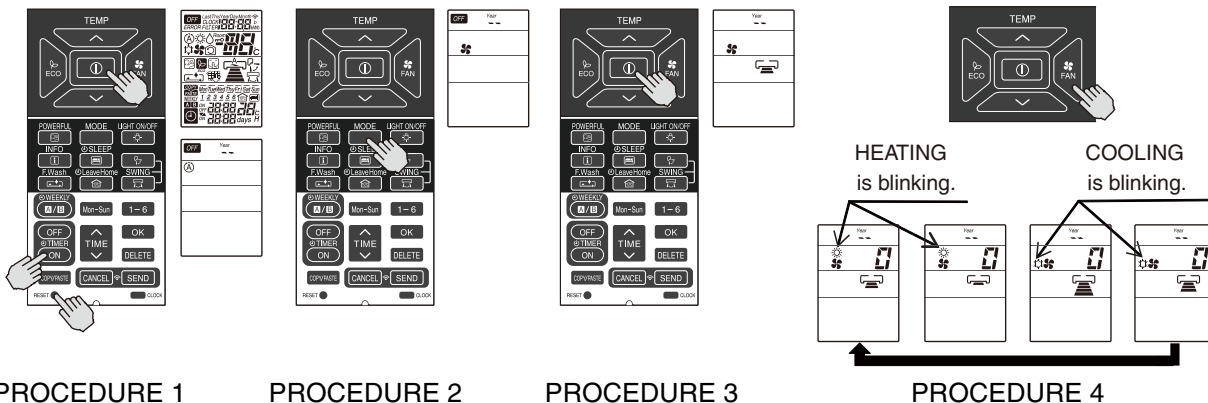
1. While pressing ① [START/STOP] button and  [ON] button, press  [RESET] button at one time.
Stop pressing  [RESET] button only and make sure that all marks on the LCD display are indicated, then stop pressing the ① [START/STOP] button and  [ON] button.
(Enters "Shift Value Change Mode".)

2. Press  [MODE] selector button to select FAN mode.

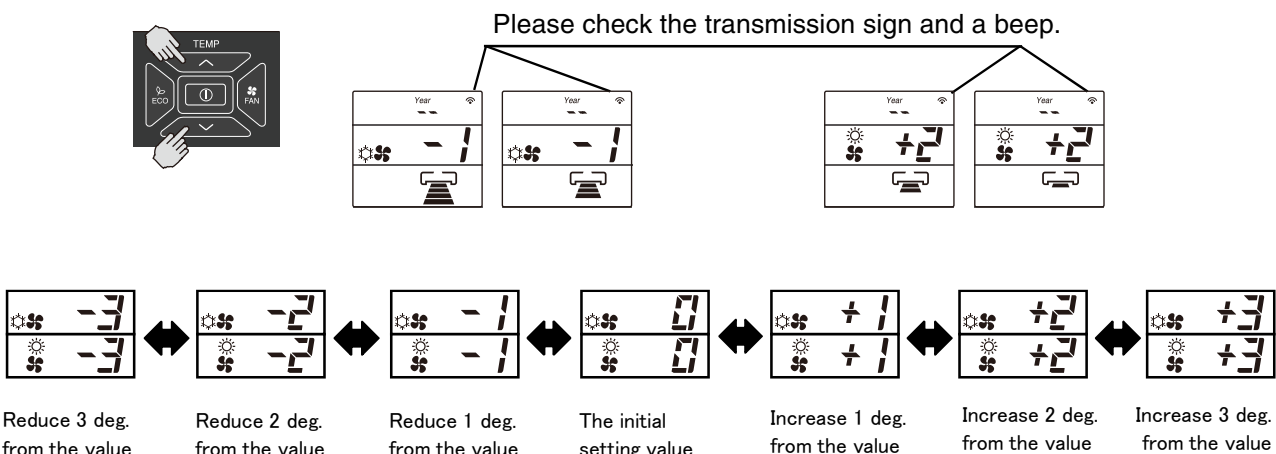
3. Press ① [START/STOP] button. (FAN operation will be started.)

4. Select the following  (FAN speed) to choose required operation mode to change.

- To change the shift value of COOLING operation, select  (HIGH) or  (MED) of FAN speed.
- To change the shift value of HEATING operation, select  (LOW) or  (SILENT) of FAN speed.



5. Then Press the TEMPERATURE button to change the shift value.
(The shift value is changed with 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.

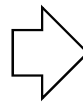
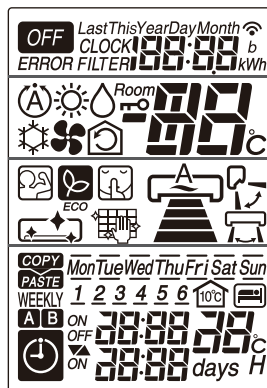
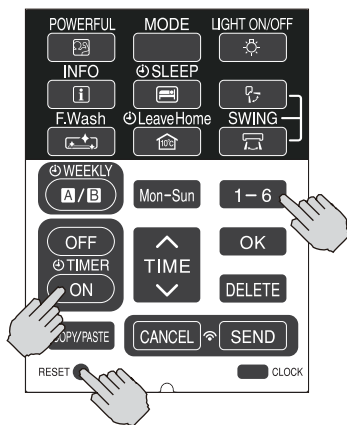
This flow change the signal address form A to B.

The power breaker for other unit shall be OFF.

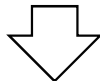
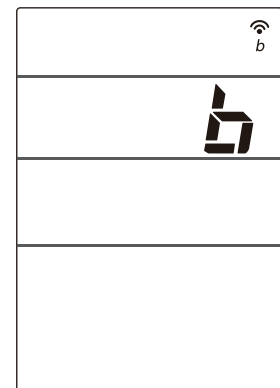


Open the slide cover of remote controller.

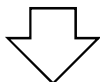
Direct remote controller towards the receiver of changing indoor unit and press **RESET** [RESET] button while pressing **1-6** [1-6] button and **ON** [ON] button. ---> Transmission



Signal transmission : From A to B



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



Please check to be used the remote controller.

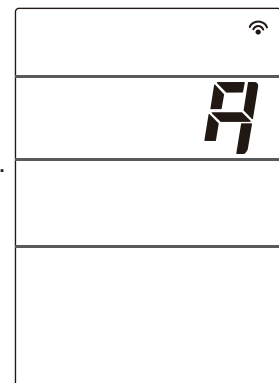
Signal transmission : From B to A

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*).



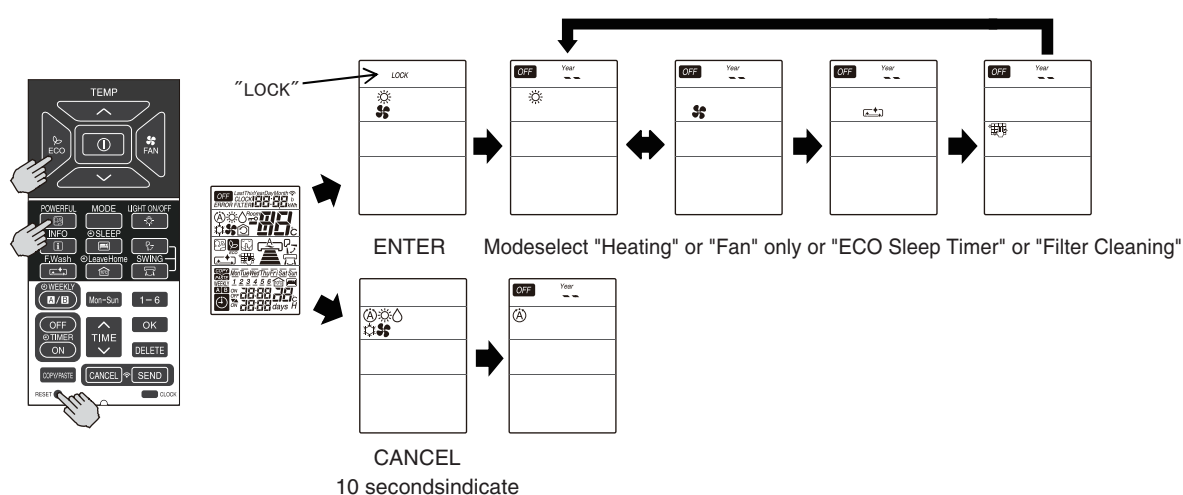
OPERATION MODE LOCK SETTING

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 be match.

PROCEDURE

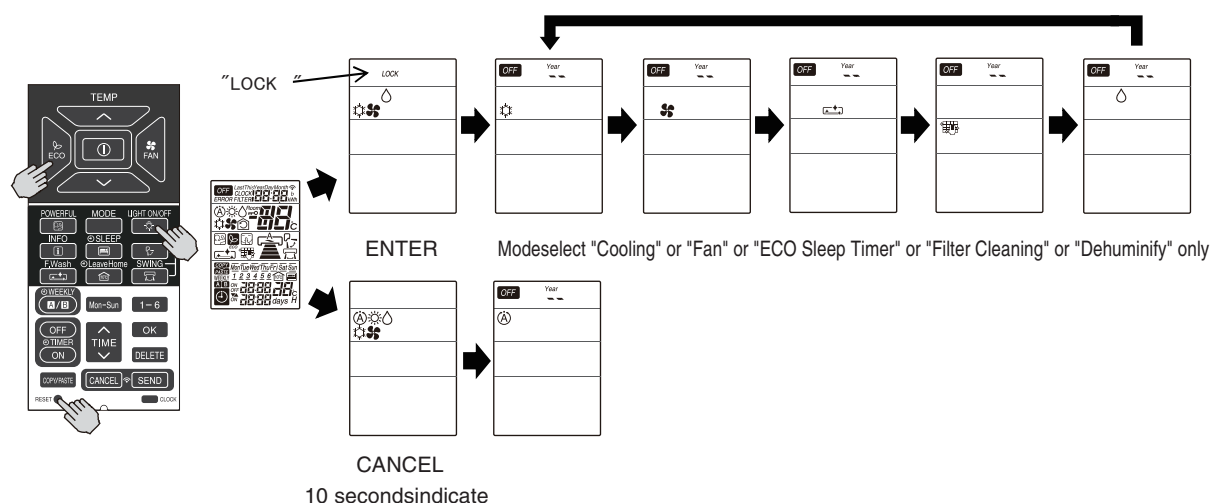
1. Heating operation mode lock

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



2. Cooling operation mode lock

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



NOTE :

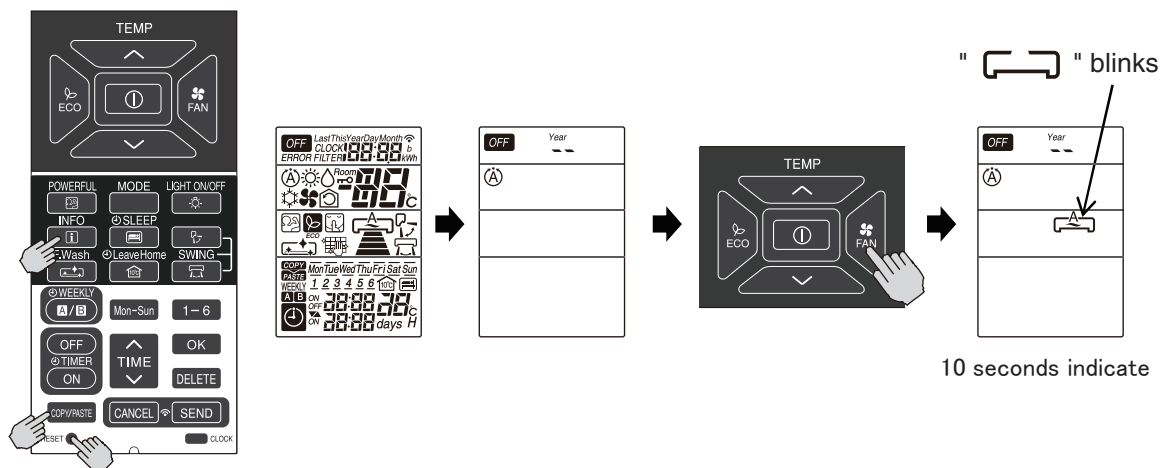
- (1) The indication of "LOCK" and MODE symbols will disappear after 10 seconds.
- (2) The OPERATION MODE LOCK setting is memorized even if batteries are exhausted.

DISPLAY OPERATION MODE SETTING

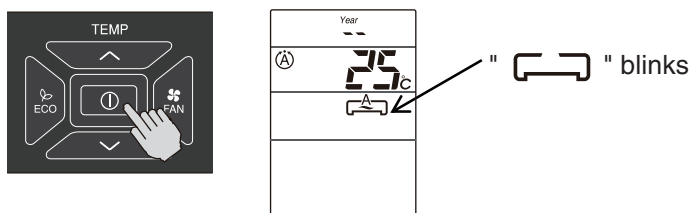
This is the remote controller setting method for operating indoor unit independently by display etc.
New communication format(Between indoor and outdoor) is required to communicate with outdoor unit.
So this setting is required in order to operate indoor unit independently.

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 "  " blinks.



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



NOTE :

- (1) During "DISPLAY OPERATION MODE", "  " blinks on LCD of remote controller.
- (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.

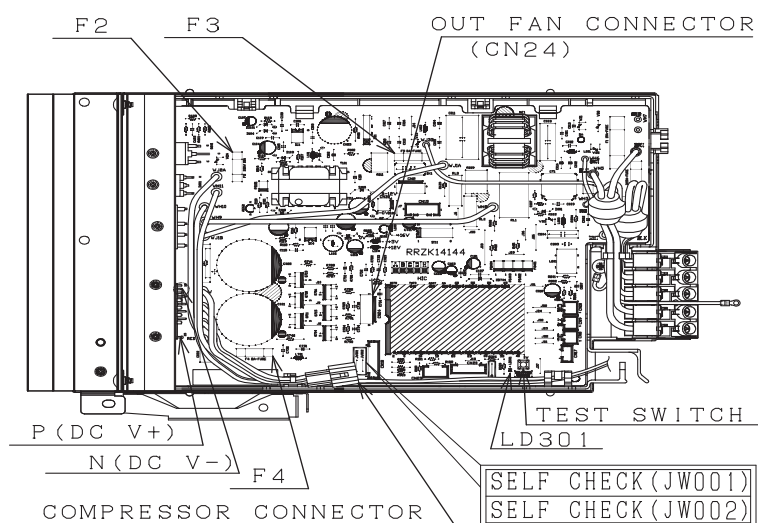
If you release your finger from the test switch within 1 sec to 5 sec after pressing the switch, the forced cooling operation starts.

※(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.)

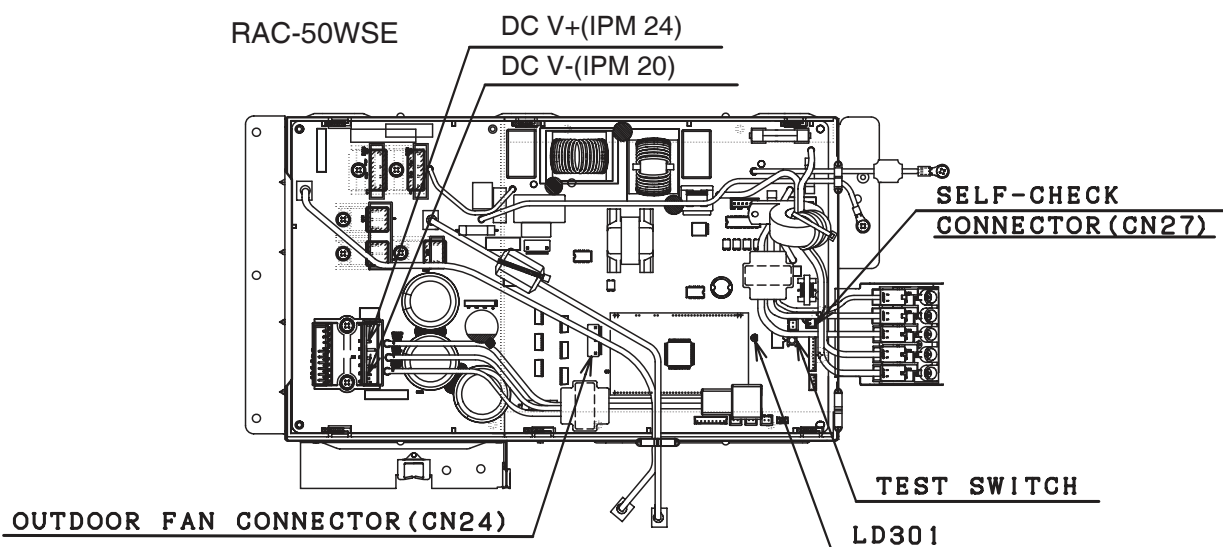
※(For the initialization of the expansion valve, it may take 1 min until the operation starts.)

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.

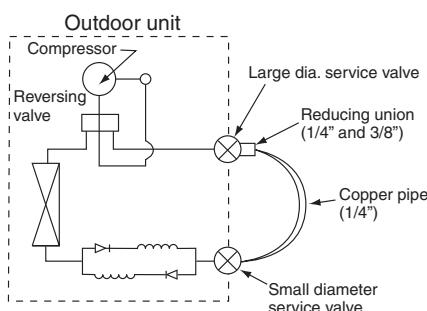
HOW TO OPERATE THE OUTDOOR UNIT INDEPENDENTLY

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".

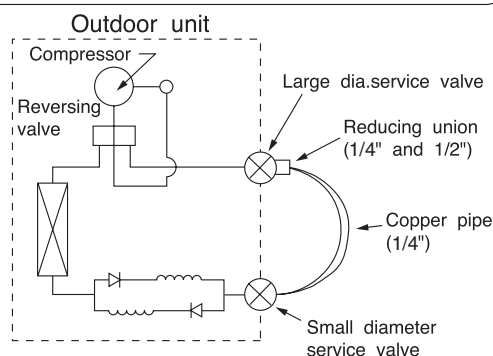
※1 The charging amount of 300g is equivalent to the load in normal operation.

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.

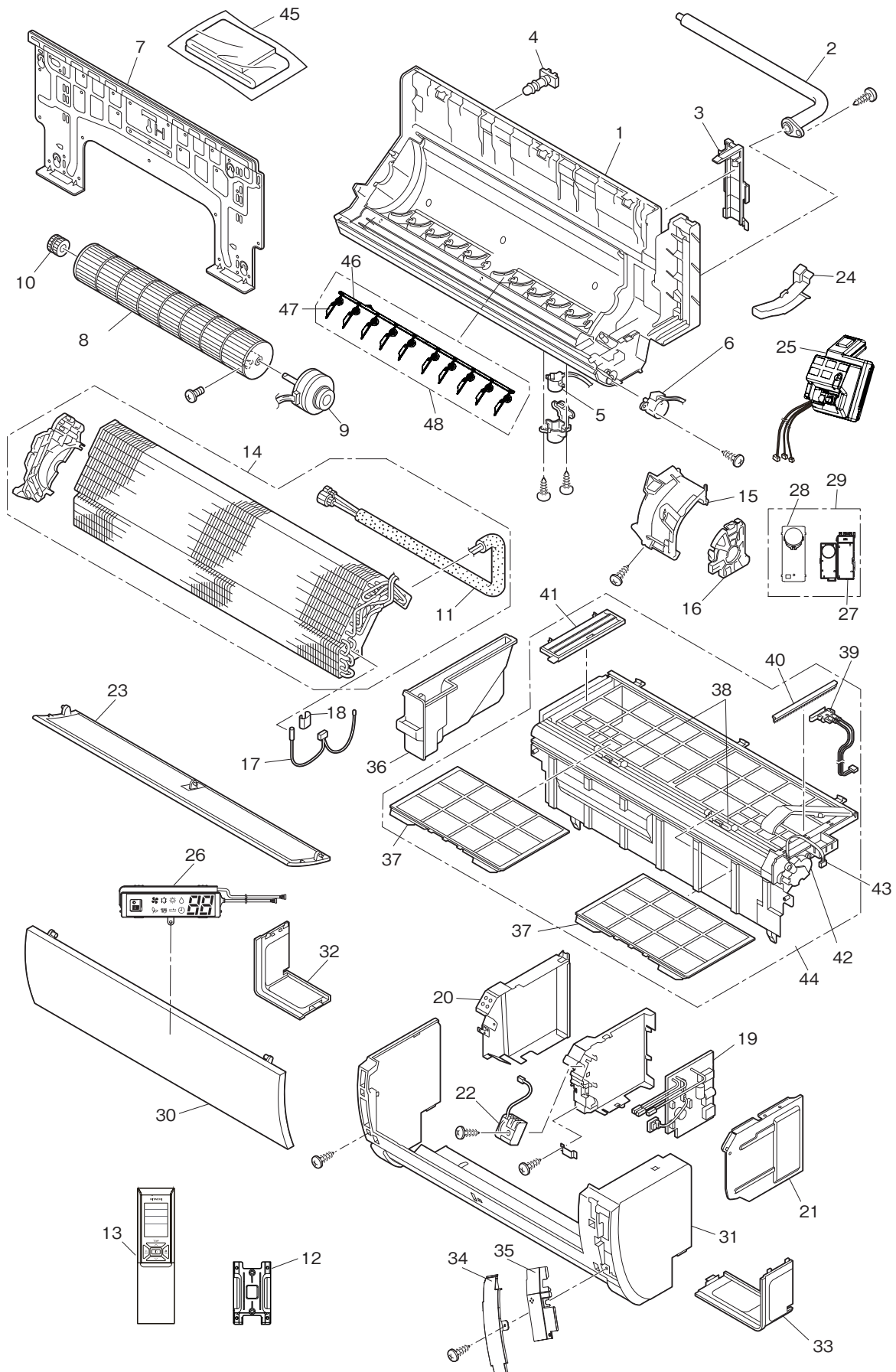
The operation method is the same as "How to operate using the connector to servicing the outdoor unit".

※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



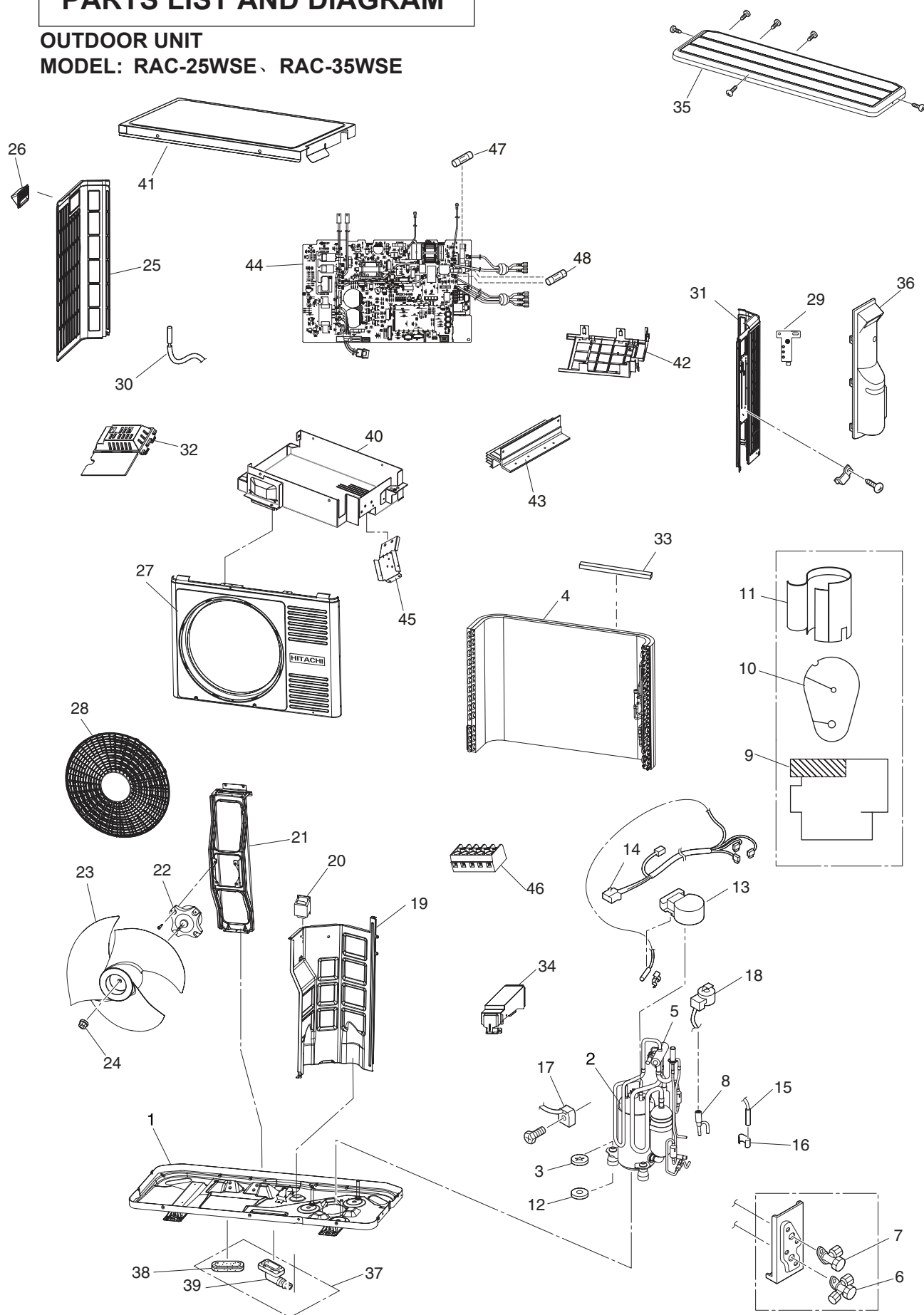
MODEL RAK-25/35/50PSEW,RAK-25/35/50PSES

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

PARTS LIST AND DIAGRAM

OUTDOOR UNIT

MODEL: RAC-25WSE、RAC-35WSE



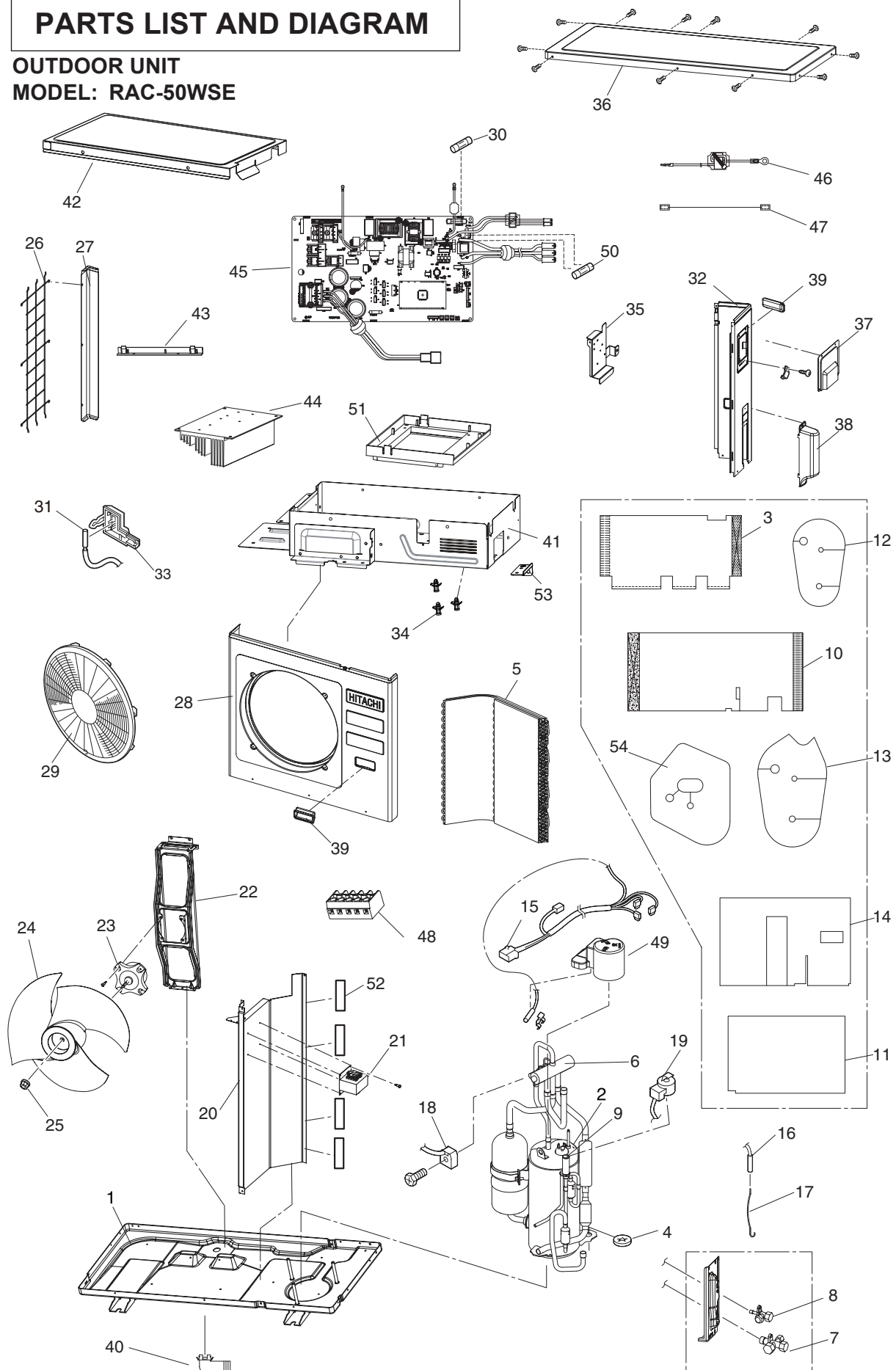
MODEL RAC-25WSE,RAC-35WSE

NO	JCH-WH PARTS NO		Q'TY/UNIT	PARTS NAME
	RAC-25WSE	RAC-35WSE		
1	HWRAC-50WPC A01		1	BASE
2	HWRAC-25WDX A01		1	COMPRESSOR
3	HWRAC-50NX2 A04		3	PUSH NUT
4	HWRAC-25WDX A02		1	CONDENSER
5	HWRAC-25WDX 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-25WDX A04		1	SOUND PROOF
10	HWRAC-25WDX A05		2	SOUND PROOF
11	HWRAC-25WDX A06		1	SOUND PROOF
12	HWRAC-25WDX A07		3	RUBBER RING
13	HWRAC-25WDX 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-25WDX 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-25WDX A11		2	FUSE (3.15A)

PARTS LIST AND DIAGRAM

OUTDOOR UNIT

MODEL: RAC-50WSE



MODEL RAC-50WSE

NO	JCH-WH PARTS NO	Q'TY/UNIT	PARTS NAME
	RAC-50WSE		
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

HITACHI

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