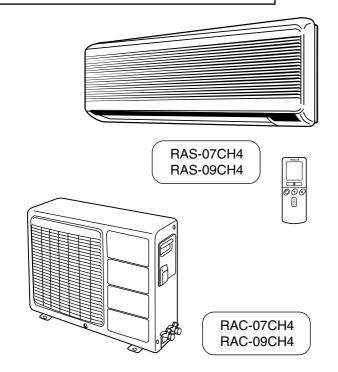
HITACHI Inspire the Next

SERVICE MANUAL

TECHNICAL INFORMATION

FOR SERVICE PERSONNEL ONLY



PM

NO. 0205E

RAS-07CH4/RAC-07CH4 RAS-09CH4/RAC-09CH4

REFER TO THE FOUNDATION MANUAL

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SPECIFICATIONS

| TYPE | | | WALL TYPE | | | |
|----------------------|----------------|------------|-------------|--------------|-------------|--------------|
| | | | INDOOR UNIT | OUTDOOR UNIT | INDOOR UNIT | OUTDOOR UNIT |
| MODEL | | | RAS-07CH4 | RAC-07CH4 | RAS-09CH4 | RAC-09CH4 |
| POWER SO | OURCE | | | 1Ø, 220 \ | V, 50 Hz | |
| | TOTAL INPUT | (W) | 680 | | 870 | |
| COOLING | TOTAL AMPERES | (A) | 3. | 15 | 4.1 | |
| OCCLING | CAPACITY | (kW) | 2. | 05 | 2.50 | |
| | | (B.T.U./h) | 7,000 | | 8,500 | |
| | TOTAL INPUT | (W) | 630 | | 860 | |
| HEATING | TOTAL AMPERES | (A) | 3.0 | | 4.1 | |
| ITILATING | CAPACITY | (kW) | 2.15 | | 2.65 | |
| | G7.11.7.1G.1.1 | (B.T.U./h) | 7,850 | | 10,000 | |
| DIMENSIONS (mm) H D | | W | 785 | 700 | 785 | 700 |
| | | Н | 265 | 570 | 265 | 570 |
| | | 168 | 210 | 168 | 210 | |
| NET WEIGHT (kg) | | | 7 | 26 | 7 | 26 |

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

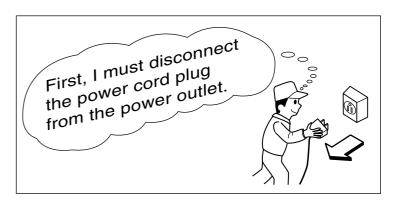
ROOM AIR CONDITIONER

INDOOR UNIT + OUTDOOR UNIT

MARCH 2004 H.A.P.M.

SAFETY DURING REPAIR WORK

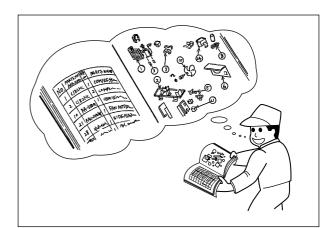
 In order to disassemble and repair the unit in question, be sure to disconnect the power cord plug from the power outlet before starting the work.



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.
- 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 manufacturers during maintenance and handling thereof. (They apply the same to handling of abnormal goods such as rejected goods being returned).

2. Object parts

- (1) Micro computer
- (2) Integrated circuits (IC)
- (3) Field-effect transistors (FET)
- (4) P.C. boards or the like on 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).

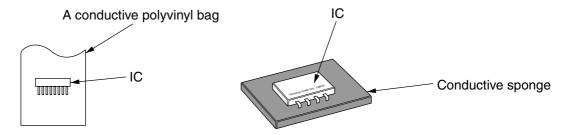


Fig. 1 Conductive Container

- (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.

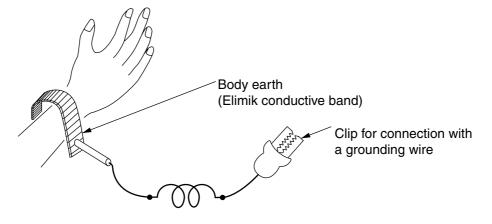


Fig. 2 Body Earth

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

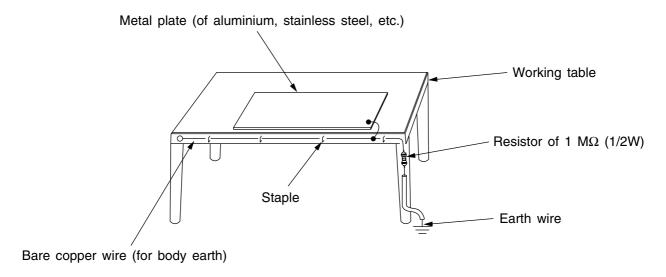


Fig. 3. Grounding of the working table

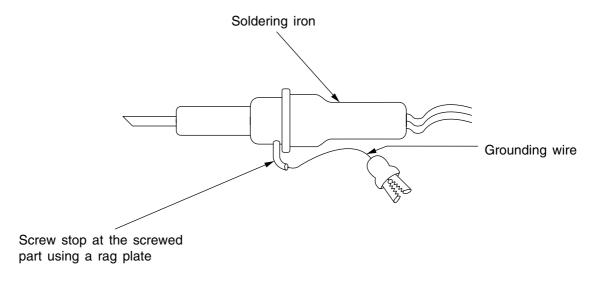


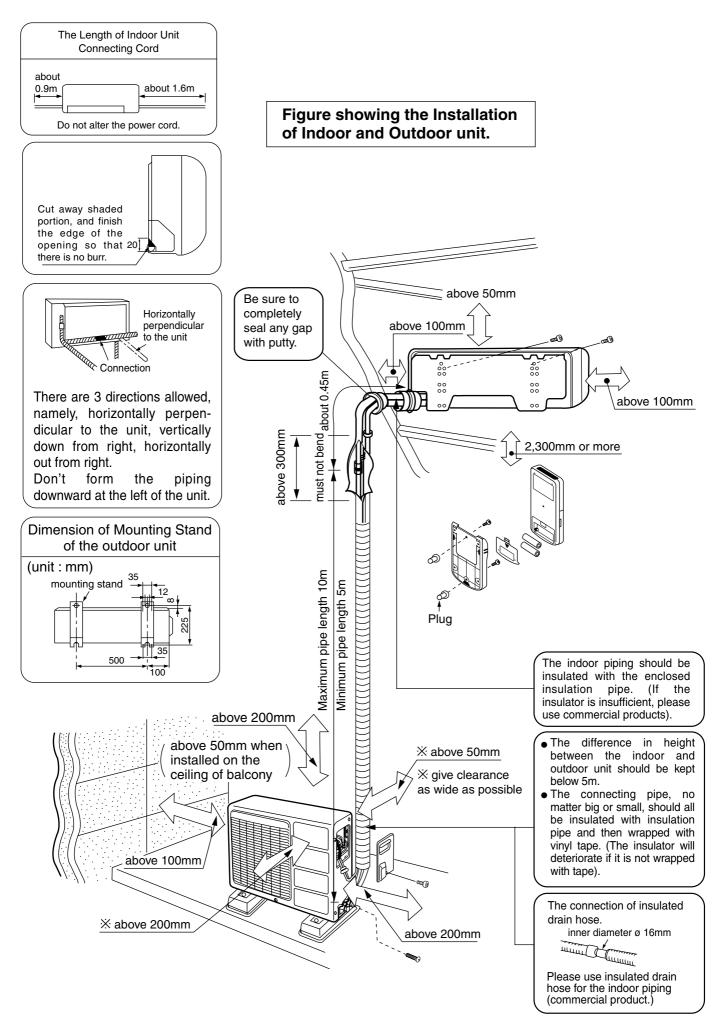
Fig. 4. Grounding a soldering iron

Use a high insulation mode (100V, $10M\Omega$ 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 shortcircuit 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 to disconnect the power cord plug from the power outlet for safety.
- 3. If the room air conditioner is stopped by setting the temperature or mis-operation, and then re-started in a moment, cooling 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.
- 4. This room air conditioner should not be used at the cooling operation when the outside temperature is below 20°C.
- 5. When the operation knob is set to "COOL" from another position, IC delay circuit functions and stops the compressor for the first 3 minutes, which is not an abnormal phenomenon.



SPECIFICATIONS

| MODEL | | RAS-07CH4 | RAC-07CH4 | RAS-09CH4 | RAC-09CH4 |
|--|--------------|--|----------------|----------------|----------------|
| FAN MOTOR | | 10 W | 20 W | 10 W | 20 W |
| FAN MOTOR CAPACITOR | | 1 μF, 400 V | 1.5 μF, 400 V | 1 μF, 400 V | 1.5 μF, 400 V |
| FAN MOTOR PROTECTOR | | YES (INTERNAL) | YES (INTERNAL) | YES (INTERNAL) | YES (INTERNAL) |
| COMPRESSOR | | NO | G333DB2Z | NO | G533QB9Z |
| COMPRESSOR MOTOR CAPACITOR | | NO | 30 μF, 400 V | NO | 30 μF, 400 V |
| OVERLOAD PROTECTOR | | NO | YES | NO | YES |
| OVERHEAT PROTECTOR | | NO | NO | NO | NO |
| FUSE (for MICRO COMPUTER) | | 3.0 A | NO | | |
| POWER RELAY | | G4A | NO | G4A | NO |
| POWER SWITCH | POWER SWITCH | | NO | YES | NO |
| TEMPORARY SWITCH | | YES | NO | YES | NO |
| SERVICE SWITCH | | YES | NO | YES | NO |
| TRANSFORMER | | YES | NO | YES | NO |
| VARISTOR | | 450NR | NO | 450NR | NO |
| NOISE SUPPRESSOR | | NO | NO | NO | NO |
| REMOTE CONTROL SWITCH (LIQUID C | RYSTAL) | YES | NO | YES | NO |
| THERMOSTAT | | YES (IC) | NO | YES (IC) | NO |
| FUSE CAPACITY | | 10 A TIME DELAY FUSE | | | |
| | UNIT | | ₩ 630 g | | ₩ 700 g |
| REFRIGERANT CHARGING VOLUME (Refrigerant 22) | PIPES | WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE. P - 105 VK1 (5m), P - 108 VK1 (8m) | | | |

[#] 630g for piping set of 5 ~ 8m.

[#] 700g for piping set of 5 ~ 8m.



SAFETY PRECAUTION

- Please read the "Safety Precaution" carefully before operating the unit to ensure correct usage of the unit.
- Pay special attention to signs of "A Warning" and "A 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 sign indicate the following meanings.

Make sure to connect earth line.

The sign in the figure indicates prohibition.

Indicates the instructions that must be followed.

Please keep this manual after reading.

PRECAUTIONS DURING INSTALLATION

• 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.





- 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 near 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.

PRECAUTIONS DURING SHIFTING OR MAINTENANCE

W Α R Ν N

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Should abnormal situation arises (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

Avoid an extended period of direct air flow for your health.





- Do not insert a finger, a rod or other objects into the air outlet or inlet. As the fan is rotating at a high speed, it will cause injury. Before cleaning, be sure to stop the operation and turn the breaker OFF.
- Do not use any conductor as fuse wire, this could cause fatal accident.





• During thunder storm, disconnect and turn off the circuit breaker.

PRECAUTIONS DURING OPERATION

• The product shall be operated under the manufacturer specification and not for any other intended use.





- Do not attempt to operate the unit with wet hands, this could cause fatal accident.
- When operating the unit with burning equipments, regularly ventilate the room to avoid oxygen insufficiency.





- Do not direct the cool air coming out from the air-conditioner panel to face household heating apparatus as this may affect the working of apparatus such as the electric kettle, oven etc.
- Please ensure that outdoor mounting frame is always stable, firm and without defect. If not, the outdoor unit may collapse and cause danger.





- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.
- Do not use any aerosol or hair sprays near the indoor unit. This chemical can adhere on heat exchanger fin and blocked the evaporation water flow to drain pan. The water will drop on tangential fan and cause water splashing out from indoor unit.





- Please switch off the unit and turn off the circuit breaker during cleaning, the high-speed fan inside the unit may cause danger.
- Turn off the circuit breaker if the unit is not to be operated for a long period.





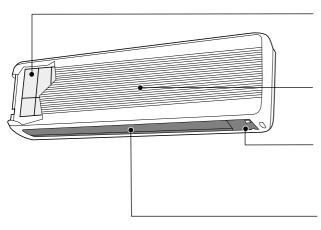
- Do not climb on the outdoor unit or put objects on it.
- Do not put water container (like vase) on the indoor unit to avoid water dripping into the unit. Dripping water will damage the insulator inside the unit and causes short-circuit.





- Do not place plants directly under the air flow as it is bad for the plants.
- When operating the unit with the door and windows opened, (the room humidity is always above 80%) and with the air deflector facing down or moving automatically for a long period of time, water will condense on the air deflector and drips down occasionally. This will wet your furniture. Therefore, do not operate under such condition for a long time.
- If the amount of heat in the room is above the cooling or heating capability of the unit (for example: more people entering the room, using heating equipments and etc.), the preset room temperature cannot be achieved.

INDOOR UNIT



Air Filter

To prevent dust from coming into the indoor unit. (Refer page 24)

Suction Grille (Air Inlet)

Indoor unit Indicators

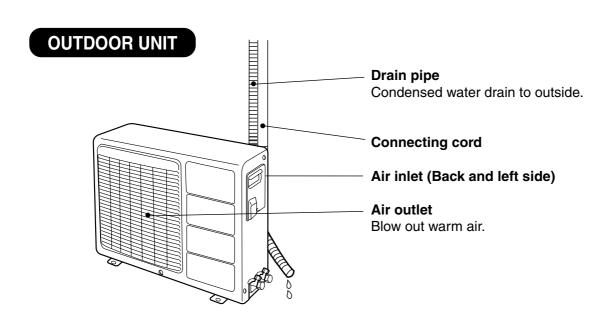
Light indicator showing the operation condition. (Refer page 9)

Horizontal Deflector • Vertical Deflector (Air outlet)

(Refer page 20)

Remote Control

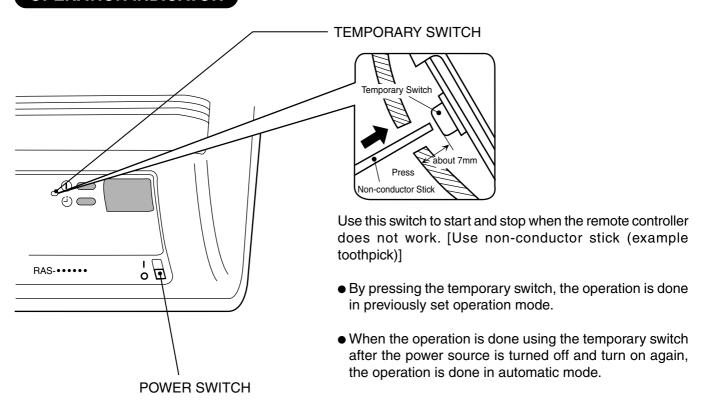
Send out operation signal to the indoor unit. So as to operate the whole unit. (Refer page 10)



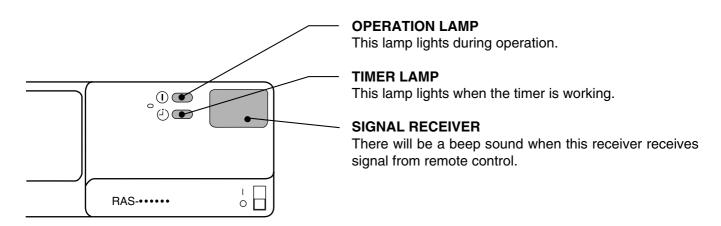
MODEL NAME AND DIMENSIONS

| MODEL | WIDTH (mm) | HEIGHT (mm) | DEPTH (mm) |
|----------------------|------------|-------------|------------|
| RAS-07CH4, RAS-09CH4 | 785 | 265 | 168 |
| RAC-07CH4, RAC-09CH4 | 700 | 570 | 210 |

OPERATION INDICATOR



INDOOR UNIT INDICATORS

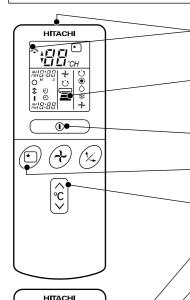


NAMES AND FUNCTIONS OF REMOTE CONTROL UNIT

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 unit 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.



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Signal emitting window/transmission sign

Point this window toward the indoor unit when controlling it.

The transmission sign blinks when a signal is sent.

Display

This indicates the room temperature selected, current time, timer status, function and intensity of circulation selected.

START/STOP button

Press this button to start operation. Press it again to stop operation.

SLEEP button

Use this button to set the sleep timer.

TEMPERATURE button

Use this button to raise or lower the temperature setting. (Keep pressed, and the value will change more quickly.)

■ TIME button

Use this button to set and check the time and date.

RESET button

FUNCTION selector

Use this button to select the operating mode. Every time you press it, the mode will change from \circlearrowleft (AUTO) to \odot (HEAT) to \circlearrowleft (DEHUMIDIFY) to \circledast (COOL) and to \nleftrightarrow (FAN) cyclically.

▶ FAN SPEED selector

This determines the fan speed. Every time you press this button, the intensity of circulation will change from $\dot{}$ (AUTO) to $\dot{}$ (HI) to $\dot{}$ (MED) to $\dot{}$ (LOW) (during the $\dot{}$ (FAN) mode, from $\dot{}$ (HI) to $\dot{}$ (MED) to $\dot{}$ (LOW)).

AUTO SWING button

Controls the angle of the horizontal air deflector.

TIMER control

Use this button to set the timer.

- OFF-TIMER button Select the turn OFF time.
- ON-TIMER button Select the turn ON time.
- RESERVE button Time setting reservation.
- CANCEL button Cancel time reservation.

Ü AUTO HEAT • \Diamond DEHUMIDIFY * COOL 4 FAN FAN SPEED MED * **SLEEPING** \bigcirc STOP (CANCEL) ı START (RESERVE) (I) START/STOP ① TIME (<u>-</u>) TIMER SET TIMER SELECTOR (Q X **AUTO SWING**

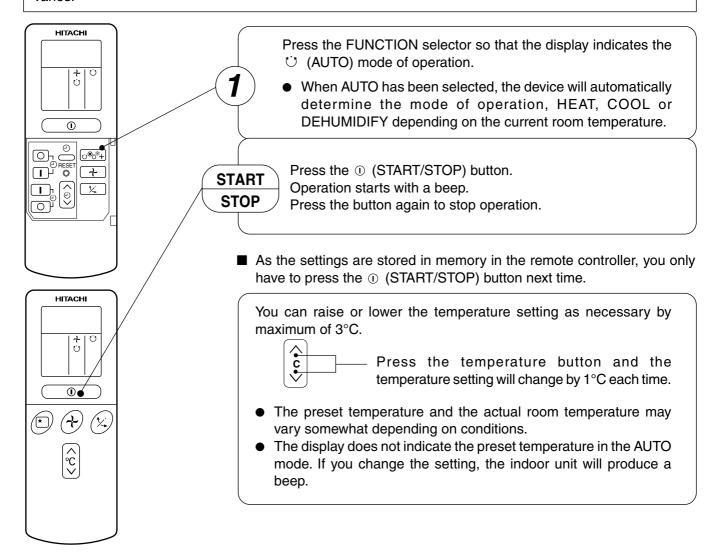
Precautions for Use

- 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 FUNCTION selector button during operation, the device may stop for about 3 minutes for protection.

The device will automatically determine the mode of operation, HEAT, COOL or DEHUMIDIFY depending on the initial room temperature. The selected mode of operation will not change when the room temperature varies.



■ CONDITION OF AUTOMATIC OPERATION

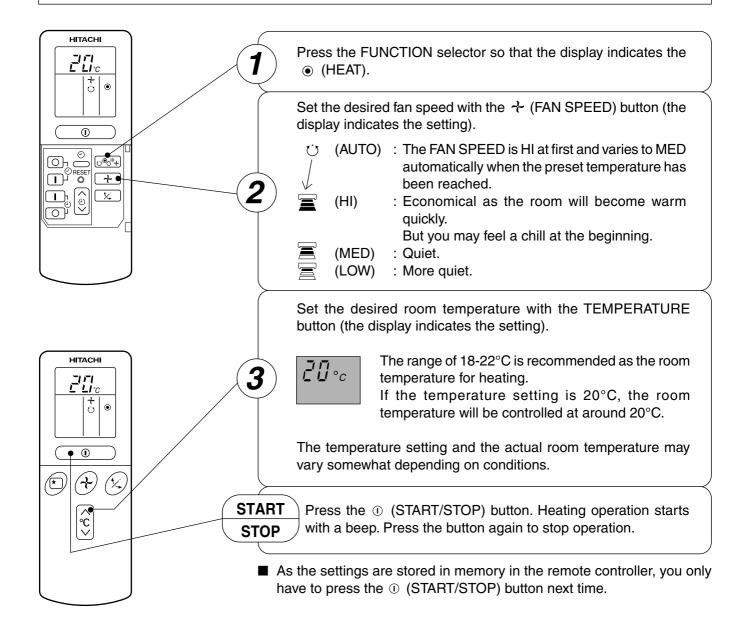
 The selected mode of operation will not change during the operation even though the room temperature change.

| Initial room temperature (approx.) | Function | Temperature setting | FAN SPEED |
|------------------------------------|--------------|--|---|
| Over 27°C ■ | ⇒ COOL | 27°C | HI at start, MED or LOW after the preset temperature is reached |
| 23~27°C ■ | ■ DEHUMIDIFY | Slightly lower than the room temperature | LOW |
| Under 23°C ■ | → HEAT | 23°C | HI at start, MED or LOW after the preset temperature is reached |

HEATING OPERATION

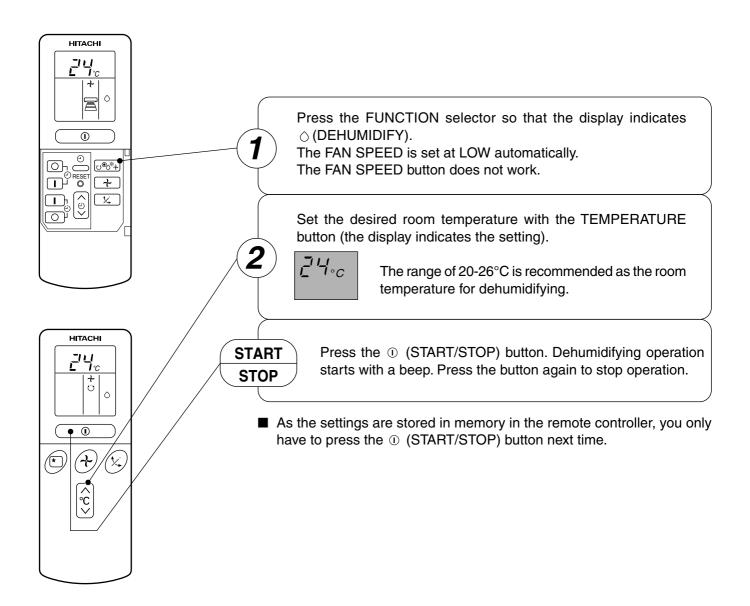
Use the device for heating when the outdoor temperature is under 21°C.

When it is too warm (over 21°C), the heating function may not work in order to protect the device.



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

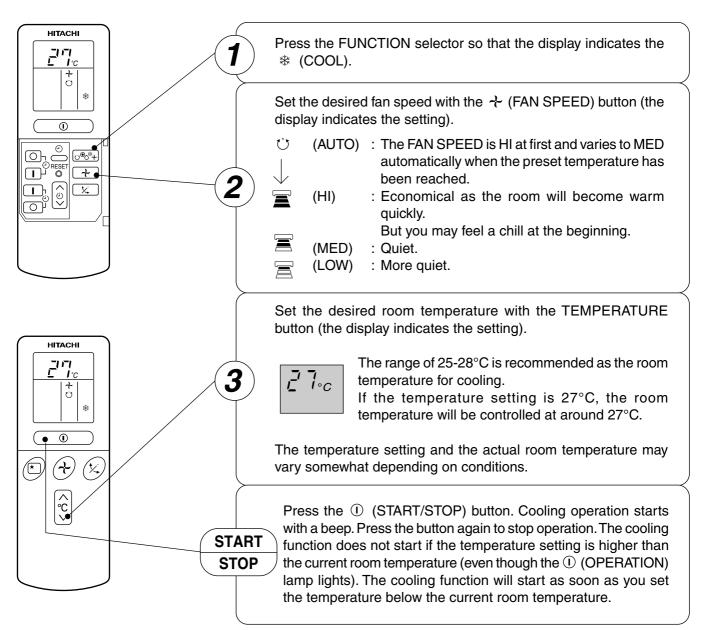
When the room temperature is higher than the temperature setting: The device will dehumidify the room, reducing the room temperature to the preset level.

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 function will stop (the indoor unit will stop emitting air) as soon as the room temperature becomes lower than the setting temperature.

COOLING OPERATION

Use the device for cooling when the outdoor temperature is 22-42°C.

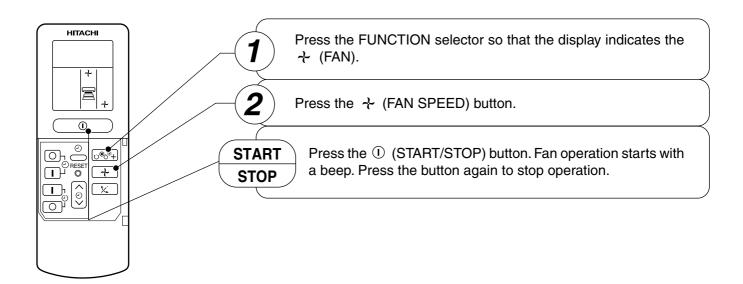
If humidity is very high (over 80%) indoors, some dew may form on the air outlet grille of the indoor unit.



■ As the settings are stored in memory in the remote controller, you only have to press the ① (START/STOP) button next time.

FAN OPERATION

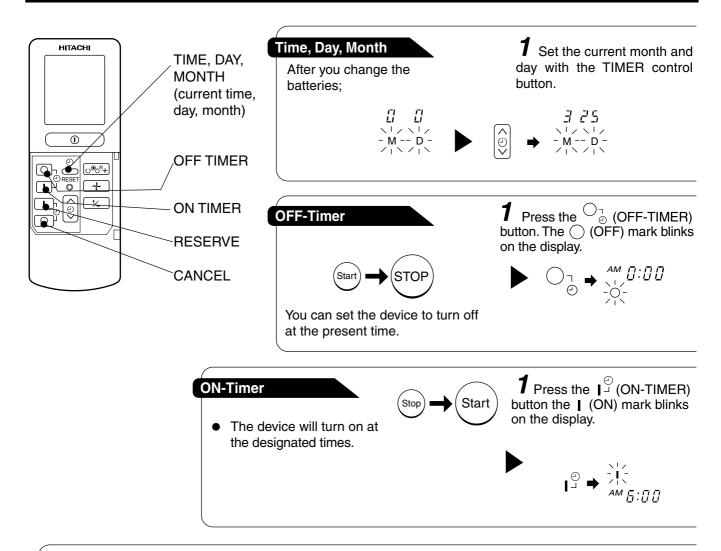
You can use the device simply as an air circulator. Use this function to dry the interior of the indoor unit at the end of summer.



FAN SPEED (AUTO) ... When the AUTO fan speed mode is set in the cooling/heating operation:

| For the heating operation | The fan speed will automatically change according to the temperature of discharged air. When the difference of room temperature and setting temperature is large, fan starts to run at HI speed. When the room temperature reaches setting temperature, fan speed changes to LOW automatically. |
|---------------------------|--|
| For the cooling operation | When the difference of room temperature and setting temperature is large, fan starts to run at HI speed. After room temperature reaches the preset temperature, the cooling operation, which changes the fan speed and room temperature to obtain optimum conditions for natural healthful cooling will be performed. |

HOW TO SET THE TIMER





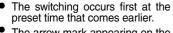


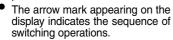
button so that the (OFF)

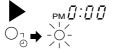
1 Press the [○][¬] (ON-OFF) mark blinks.

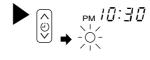
2 Set the turn-off time with the TIMER control button. Press the (RESERVE) button.

Press the | (ON-TIMER) button so that the (OFF) mark lights and the (ON) mark blinks.











How to Cancel Reservation

Point the signal window of the remote controller toward the indoor unit, and press the O (CANCEL)

The ② (RESERVED) sign goes out with a beep and the ② (TIMER) lamp turns off on the indoor unit.

NOTE

You can set only one of the OFF-timer, ON-timer and ON/OFF-timer.

2 Press the ① (TIME) button.

Set the current time with the TIMER control button.

4 Press the (TIME) button again. The time indication starts lighting instead of flashing.









• The time indication will disappear automatically in 10 second.

 To check the current time setting, press the ① (TIME) button twice. The setting of the current time is now complete.

Example: The current time is 1:30 p.m.

2 Set the turn-off time with the TIMER control button.



 $oldsymbol{3}$ Point the signal window of the remote controller toward the indoor unit, and press the I (RESERVE) button.

The ○(OFF) mark starts lighting instead of flashing and the sign ② (RESERVED) lights. A beep occurs and the (i) (TIMER) lamp lights on the indoor unit.



Example: The device will turn off at 11:00p.m.

The setting of turn-off time is now complete.

2 Set the turn-on time with the TIMER control button.

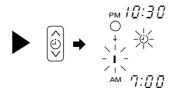


 $oldsymbol{3}$ Point the signal window of the remote controller toward the indoor unit, and press the I (RESERVE) button.

The I (ON) mark starts lighting instead of flashing and the sign 🕘 (RESERVED) lights. A beep occurs and the 🕘 (TIMER) lamp lights on the indoor unit.

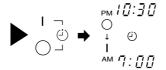
Example: The device will automatically turn on earlier so that the preset temperature can be reached at 7:00 a.m. The setting of the turn-on time is now complete.

4 Set the turn-on time with the TIMER control button.



5 Point the signal window of the remote controller toward the indoor unit, and press the I (RESERVE) button.

The (ON) mark starts lighting instead of flashing and the sign (i) (RESERVED) lights. A beep occurs and the (i) (TIMER) lamp lights on the indoor unit.

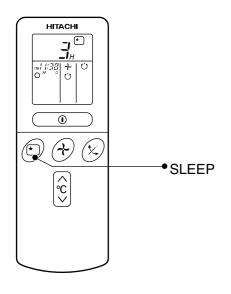


The device will turn off at 10:30 p.m. and then automatically turn on earlier so that the preset temperature can be reached at 7:00 a.m.

The settings of the turn-on/off times are now complete.

- The timer may be used in three ways: off-timer, on-timer and ON/OFF (OFF/ON)-timer. Set the current time at first because it serves as a reference.
- As the time settings are stored in memory in the remote controller, you only have to press the I (RESERVE) button in order to use the same settings next time.

Set the current time at first if it is not set before (see the pages for setting the current time). Press the * (SLEEP) button, and the display changes as shown below.



| Mode | Indication |
|-------------|--|
| Sleep timer | 1 hour → 2 hours → 3 hours → 7 hours → Sleep timer off |

Sleep Timer: The device will continue working for the designated number of hours and then turn off.

Point the signal window of the remote controller toward the indoor unit, and press the SLEEP button.

The timer information will be displayed on the remote controller. The TIMER lamp lights with a beep from the indoor unit. When the sleep timer has been set, the display indicates the turn-off time.

Example: If you set 3 hours sleep time at 11:38 p.m., the turn-off time is 2:38 a.m.



The device will be turned off by the sleep timer and turned on by on-timer.

1 Set the On-timer.

2 Press the ★ (SLEEP) button and set the sleep timer.

Example:

In this case, the device will turn off in 2 hours (at 1:38 a.m.) and turn on early so that the preset temperature will be almost reached at 6:00 next morning.

How to Cancel Reservation

Point the signal window of the remote controller toward the indoor unit, and press the \bigcirc (CANCEL) button.

The \odot (RESERVED) sign goes out with a beep and the \odot (TIMER) lamp turns off on the indoor unit.

Explanation of the sleep timer

The device will control the FAN SPEED and room temperature automatically so as to be quiet and good for people's health.

You can set the sleep timer to turn off after 1, 2, 3 or 7 hours. The FAN SPEED and room temperature will be controlled as shown below.

Operation with the sleep timer

| Function | | Operation |
|---|---|---|
| Heating " " | The room temperature will be controlled 5°C below the temperature and the FAN SPEED will be set to LOW setting 30 minutes after the setting of the sleep timer. | Sleep timer set 2 hours later 30 minutes later 1 hour later 3 hours later |
| Cooling " * * " and dehumidifying " | The room temperature will be controlled 2°C above the temperature and the FAN SPEED will be set to LOW setting 30 minutes after the setting of the sleep timer. | Sleep 6 hours later Sleep 7 hours later 30 minutes later 3 hours later |
| Fan " -{- " | The settings of room temperature | e and circulation are varied. |

NOTE

- If date or current time is not set, sleep timer can not be set.
- If you set the sleep timer after the off-, on/off- or off/on-timer has been set, the sleep timer becomes effective instead of the off-, on/off- or off/on-timer set earlier.
- You can not set other timer during sleep timer operation.
- After sleep timer time is up and when press sleep button again, the sleep timer will be set as last setting.
- Sleep timer effective only once.

ADJUSTING THE AIR DEFLECTORS

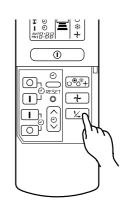


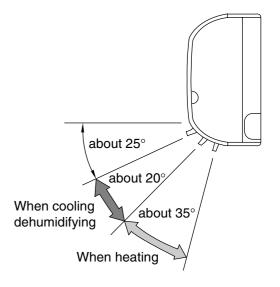
Adjustment of the conditioned air in the upward and downward directions.

According to "Dehumidifying" and "Cooling" operation, the horizontal air deflector is automatically set to the proper angle suitable for each operation.

The deflector can be swung up and down and also set to the desired angle using the " (AUTO SWING)" button. (If the angle of the deflector is changed, it will not return to the auto-set position after operations start unless the operation mode is switched.)

- If the "X (AUTO SWING)" button is pressed once, the horizontal air deflector swings up and down. If the button is pressed again, the deflector stops in its current position. Several seconds (about 12 seconds) may be required before the deflector starts to move.
- In "Cooling" operation, do not keep the horizontal air deflector swinging for a long time. Some dew may form on the horizontal air deflector and some dew may drop.

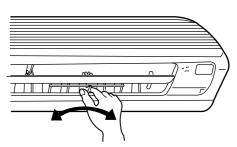






Adjustment of the conditioned air to the left and right.

Hold the vertical air deflector as shown in the figure and adjust the conditioned air to the left and right.



▲ CAUTION

 When operating the unit in cooling operation with the air deflector facing down and moving automatically for a long period of time, water will condensed on the air deflector and drips down occasionally. This will wet your furniture.

HOW TO EXCHANGE THE BATTERIES IN THE REMOTE CONTROLLER



Remove the cover as shown in the figure and take out the old batteries.





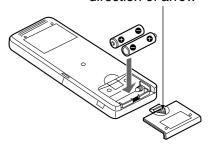
Install the new batteries.

The direction of the batteries should match the marks in the case.

▲ CAUTION

- 1. Do not use new and old batteries, or different kinds of batteries together.
- 2. Take out the batteries when you do not use the remote controller for 2 or 3 months.

Push and pull to the direction of arrow



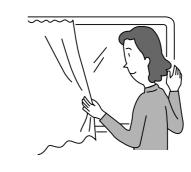
Suitable Room Temperature



▲ Warning

Freezing temperature is bad for health and a waste of electric power.

Install curtain or blinds



It is possible to reduce heat entering the room through windows.

Ventilation

▲ Caution

Do not close the room for a long period of time. Occasionally open the door and windows to

allow the entrance of fresh air.



Effective Usage Of Timer

At night, please use the "OFF or ON timer operation mode", together with your wake up time in the morning. This will enable you to enjoy a comfortable room temperature. Please use the timer effectively.



Do Not Forget To Clean The Air Filter

Dusty air filter will reduce the air volume and the cooling efficiency. To prevent from wasting electric energy, please clean the filter every 2 weeks.



Please Adjust Suitable Temperature For Baby and Children

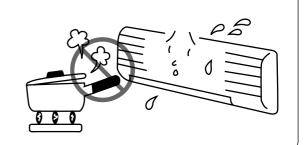
Please pay attention to the room temperature and air flow direction when operating the unit for baby, children and old folks who have difficulty in movement.



The Air Conditioner And The Heat Source In The Room

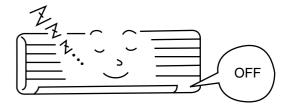
A Caution

If the amount of heat in the room is above the cooling capability of the air conditioner (for example: more people entering the room, using heating equipments and etc.), the preset room temperature cannot be achieved.



Not Operating For A Long Time

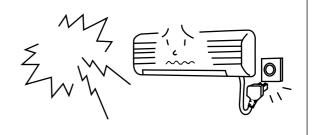
When the indoor unit is not to be used for a long period of time, please switch off the power from the mains. If the power from mains remains "ON", the indoor unit still consumes about 8W in the operation control circuit even if it is in "OFF" mode.



When Lightning Occurs

A Warning

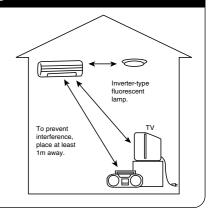
To protect the whole unit during lightning, please stop operating the unit and remove the plug from the socket.



Interference From Electrical Products

A Caution

To avoid noise interference, please place the indoor unit and its remote controller at least 1m away from electrical products.



A CAUTION

Before the cleaning, stop operation and disconnect the power supply.

1. AIR FILTER IIII

Clean the air filter, as it removes dust inside the room. In case the air filter is full of dust, the air flow will decrease and the cooling capacity will be reduced. Further, noise may occur. Be sure to clean the filter following the procedure below.

PROCEDURE

- Remove dust from the filter using a vacuum cleaner. If there is too much dust, use neutral detergent. After using neutral detergent, wash with clean water and dry in the shade.
- Install the filters.
 (Set them with "FRONT" mark facing front.)
 Slot in the filter to the original state.

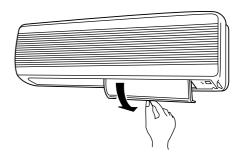
A CAUTION

- Do not wash with hot water at more than 40°C. The filter may shrink.
- When washing it, shake off moisture completely and dry it in the shade; do not expose it directly to the sun. The filter may shrink.
- Do not operate the air conditioner with the filter removed. Dust may enter the air conditioner and cause trouble.

NOTE:

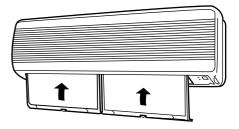
- This model has an air cleaning filter. The cooling capacity is slightly weakened and the cooling speed becomes slower when the air cleaning filter is used. So, set the fan speed to "HIGH" when using it in this condition.
- Recommended to replace the air cleaning filter after every 3 months for normal usage. Type number for this air cleaning filter is <SPX-CFH3>. Please use this number for ordering when you want to renew it.

REMOVING METHOD



- 1. Press the " (AUTO SWING)" button, let the deflector facing downward.
- 2. Remove the filter from the lower side as the arrow shown.

INSTALLATION METHOD



Set the filter with "FRONT" mark facing front, and slot in them to the original state.

2. CLEANING OF FRONT COVER, ETC.

- Wipe it with a soft dry cloth.
- When it is excessively dirty, wipe with a soft cloth soaked in luke warm water or neutral detergent. Then wipe thoroughly with a soft dry cloth.
- Wipe the remote controller thoroughly with a soft dry cloth.



A CAUTION

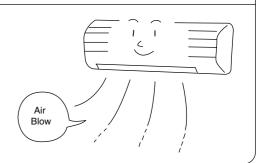
 Never use hot water (above 40°C), benzine, gasoline, acid, thinner or a brush, because they will damage the plastic surface and the coating.



3. MAINTENANCE AT BEGINNING OF LONG OFF PERIOD

Running the unit setting the operation mode to \leftarrow (FAN) and the fan speed to HI for about half a day on a fine day, and dry the whole of the unit.

Disconnect the power plug.





REGULAR INSPECTION

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

| 1 | Confirm | Is the plug of power line firmly plugged into the socket? (Please ensure no loose contact between them). |
|---|---------|--|
| 2 | | Is the earth line disconnected or broken? |
| 3 | | Is the mounting frame seriously affected by rust and is the outdoor unit tilted or unstable? |

WHEN ASKING FOR SERVICE, CHECK THE FOLLOWING POINTS.

| CONDITION | CHECK THE FOLLOWING POINTS |
|----------------------------|---|
| When it does not operate | Is the fuse all right? Is the voltage extremely high or low? Is the circuit breaker "ON"? |
| When it does not cool well | Was the air filter cleaned? Does sunlight fall directly on the outdoor unit? Is the air flow of the outdoor unit obstructed? Are the doors or windows opened, or is there any source ofheat in the room? Is the set temperature suitable? |



Notes

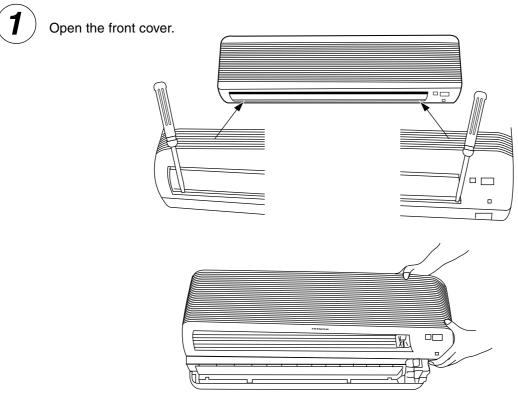
- In quiet operation or stopping the operation, the following phenomena may occassionally occur, but they are not abnormal for the operation.
 - (1) Slight flowing noise of refrigerant in the refrigerating cycle.
 - (2) Slight rubbing noise from the fan casing which is cooled and then gradually warmed as operation stops.
- The odor will possibly be emitted from the room air conditioner because the various odor, emitted by smoke, foodstuffs, cosmetics and so on, sticks to it. So please clean the air filter and the evaporator regularly to reduce the odor.
- Please contact your sales agent immediately if the air conditioner still fails to operate normally after the above inspections. Inform your agent of the model of your unit, production number, date of installation.
 Please also inform him regarding the fault.
- Power supply shall be connected at the rated voltage, otherwise the unit will be broken or could not reach the specified capacity.

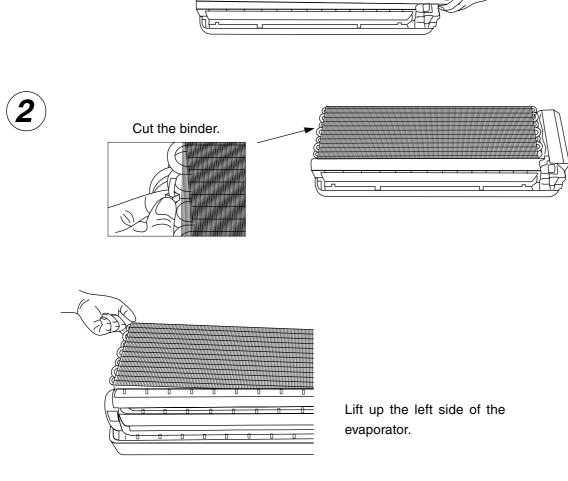
Please note:

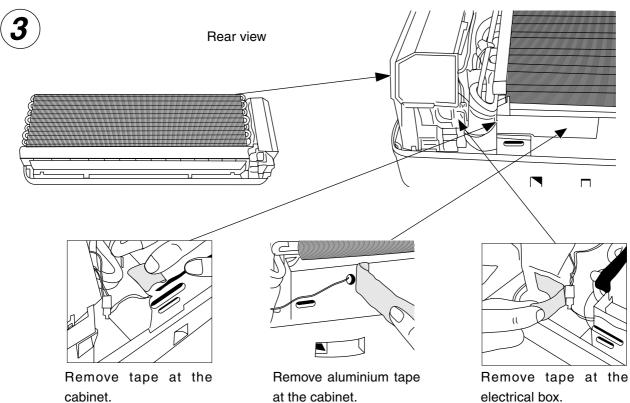
On switching on the equipment, particularly when the room light is dimmed, a slight brightness fluctuation may occur. This is of no consequence.

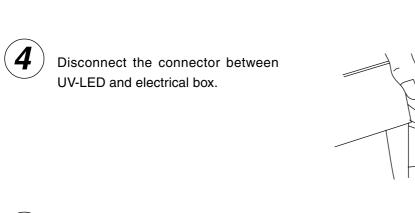
The conditions of the local Power Supply Companies are to be observed.

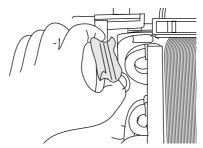
HOW TO REPLACE NEW UV-LED AND FILTER

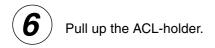




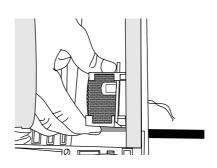






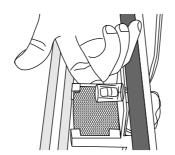


Remove the K-spring.





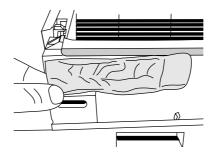
Remove the UV-LED.



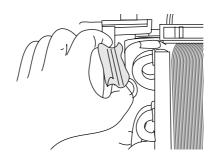
If necessary, change the ACL filter (SPX-CFH9).



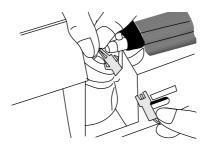
After replace new UV-LED and filter, make sure to reattach the aluminium tape.

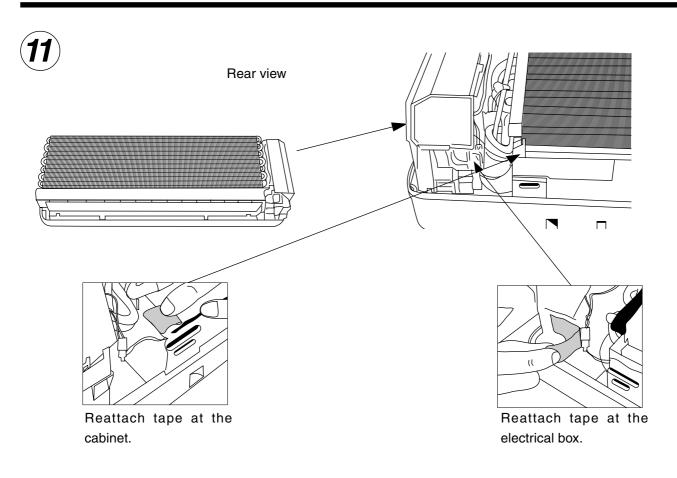


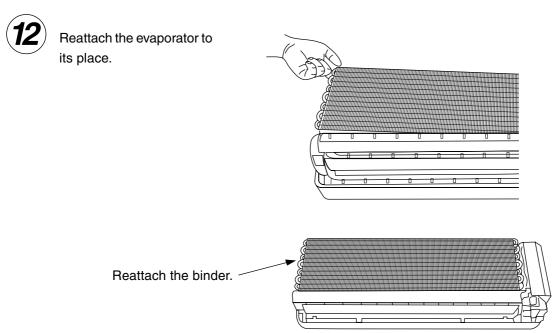
 $oldsymbol{oldsymbol{9}}$ Put back the K-spring.



Connect the connector between UV-LED and electrical box.

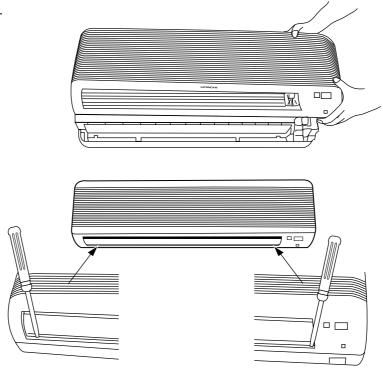






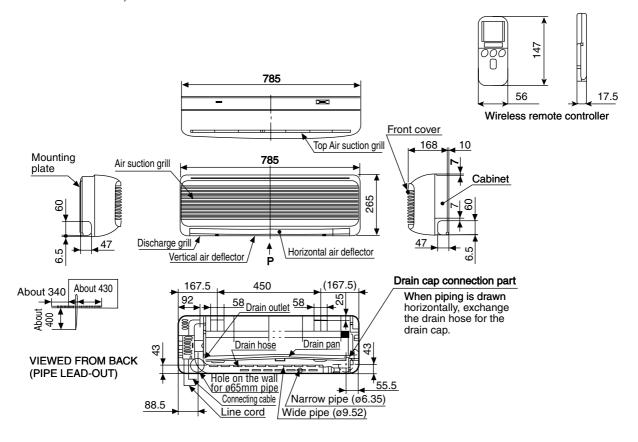


Put back the front cover.

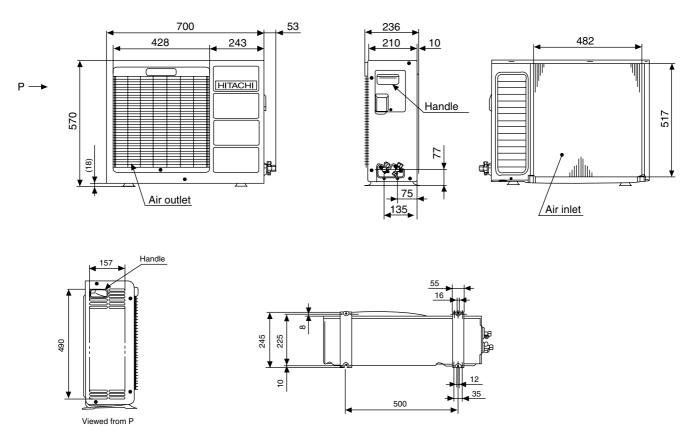


CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAS-07CH4, RAS-09CH4



MODEL RAC-07CH4, RAC-09CH4



MAIN PARTS COMPONENTS

THERMOSTAT

Thermostat Specifications

| MODEL | RAS-07CH4, RAS-09CH4 | | |
|------------------|----------------------|-----|-------------|
| THERMOSTAT MODEL | IC | | |
| | INDICATION | ON | 17.6 (63.7) |
| | 16 | OFF | 16.6 (61.8) |
| TEMPERATURE | INDICATION 24 | ON | 25.6 (78.1) |
| °C (°F) | | OFF | 24.6 (76.3) |
| | INDICATION 32 | ON | 33.6 (92.5) |
| | | OFF | 32.6 (90.7) |

FAN MOTOR

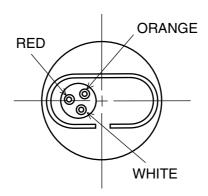
Fan Motor Specifications

| MODEL | | RAS-07CH4, RAS-09CH4 RAC-07CH4, RAC-09 | | |
|------------------|----------------|---|---|--|
| PHASE | | SIN | GLE | |
| RATED VOLTAGE | | 220 – | 240V | |
| RATED FREQUENCY | | 50 | Hz | |
| OUTPUT | | 10 W | 20 W | |
| POLE NUMBER | | 4 | 6 | |
| CONNECTION | | 7 > 0 | INTERNAL THERMAL FUSE BLACK CAPACITOR GRAY | |
| RESISTANCE VALUE | 20°C (68°F) | M= 541.0 A2 = 87.6 A1 = 148.3 A3 = 147.4 | WA = 348.2 WM = 284.6 | |
| (Ω) | 25°C (77°F) | M= 551.6 A2 = 89.3 A1 = 151.2 A3 = 150.3 | WA = 355 WM = 290.2 | |

COMPRESSOR MOTOR

Compressor Motor Specifications

| MODEL | | RAC-07CH4 | RAC-09CH4 |
|----------------------|-----------------|---------------------------------|--------------------------|
| COMPRESSOR MODEL | | G333DB2Z | G533QB9Z |
| PHASE | | SINGLE | SINGLE |
| RATED VOLTAGE | | 220 – 240 V | 220 – 240 V |
| RATED FREQUENCY | | 50 Hz | 50 Hz |
| LOCKED ROTOR CURRENT | | 22 A | 22 A |
| POLE NUMBER | | 2 | 2 |
| CONNECTION | | ORANGE RM WHITE CAPACITOR RED | |
| RESISTANCE VALUE | 20°C (68°F) | RA = 4.072 RM = 3.938 | RA = 4.372 RM = 3.154 |
| (Ω) | 75°C (167°F) | RA = 4,896 RM = 3.787 | RA = 5.315 RM = 3.834 |



A CAUTION

When the Air conditioner 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 oil inside the compressor. If the color has been changed conspicuously, replace the compressor.

WIRING DIAGRAM

MODEL RAS-07CH4, RAC-07CH4

(A): COMPRESSOR

(B): FAN MOTOR

(C): POWER SWITCH

D: 1,000 PF CAPACITOR

(E): FAN MOTOR PROTECTOR (INTERNAL)

(F): 1 μF CAPACITOR

G : 35 μF CAPACITOR

(H): 2.5 μF CAPACITOR

(I): FAN MOTOR PROTECTOR

(J): LINE CORD

(K): TERMINAL BOARD

(L): OUTDOOR FAN RELAY

(M): THERMAL FUSE FOR PCB

BLU : BLUE YEL : YELLOW

GRY : GRAY ORN : ORANGE

BLK : BLACK PNK : PINK

(N): REVERSING VALVE

(P): POWER RELAY

(Q): THERMAL FUSE FOR TERMINAL BOARD

(R): SURGE ASSORBER

S : THERMISTOR

(T): TRANSFORMER

U_P: OVERLOAD PROTECTOR

(V): VARISTOR

VIO : VIOLET

(W): SOLID STATE RELAY FOR FAN (FAN SSR)

X : FUSE

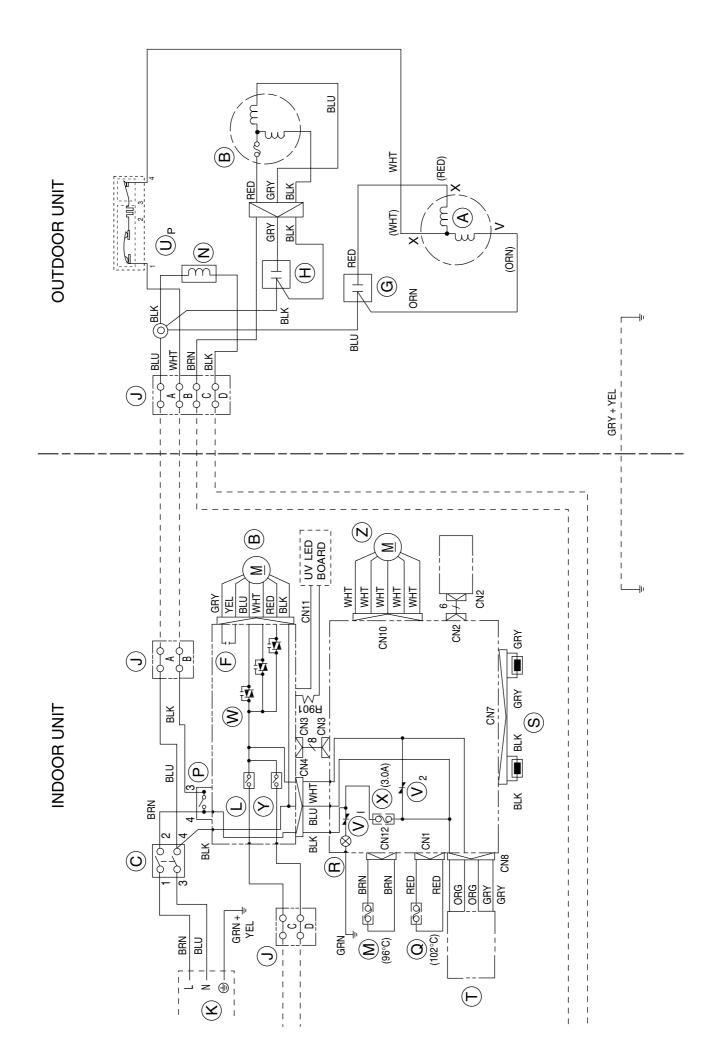
Y : REVERSING VALVE RELAY

(Z): AUTO SWEEP MOTOR

BRN : BROWN WHT : WHITE

GRN: GREEN RED: RED

INDOOR UNIT OUTDOOR UNIT (C) (X) (3.0A) (Q) M (102°C) (96°C) \bigcirc (A) of of (P) $\sqrt{\mathbb{V}_2}$ (165°C) (B) (B) (F) PRINTED WIRING (E) **BOARD ASSEMBLY** 6 (167°C) (N)A c c



MODEL RAS-07CH4, RAS-09CH4

RESISTOR

| I ILOIC | 71011 | | | |
|---------|------------|-----------|-------|------|
| SYMBOL | RESISTANCE | TOLERANCE | POWER | FORM |
| R201 | 3K | ±5% | 1/10W | С |
| R202 | 10K | ±5% | 1/16W | С |
| R203 | 2.7K | ±5% | 1/16W | С |
| R204 | 5.1K | ±5% | 1/16W | С |
| R205 | 5.1K | ±5% | 1/16W | С |
| R206 | 10K | ±5% | 1/16W | С |
| R207 | 10K | ±5% | 1/16W | С |
| | | | | |
| | | | | |
| R210 | 1M | ±5% | 1/16W | С |
| | | | | |
| R302 | 1K | ±5% | 1/16W | С |
| R303 | 10K | ±5% | 1/16W | С |
| R304 | 2.4K | ±2% | 1/16W | С |
| | | | | |
| R307 | 1K | ±5% | 1/16W | С |
| R308 | 18K | ±1% | 1/10W | С |
| R309 | 1K | ±5% | 1/16W | С |
| R310 | 127K | ±1% | 1/10W | С |
| R311 | 1K | ±5% | 1/16W | С |
| R312 | 10K | ±5% | 1/16W | С |
| R313 | 10K | ±5% | 1/16W | С |
| R314 | 10K | ±5% | 1/16W | С |
| | | | | |

| SYMBOL | RESISTANCE | TOLERANCE | POWER | FORM |
|--------|------------|-----------|-------|------|
| R401 | 390 | ±5% | 1/16W | С |
| R402 | 390 | ±5% | 1/16W | С |
| R403 | 390 | ±5% | 1/16W | С |
| R404 | 390 | ±5% | 1/16W | С |
| R405 | 5.1K | ±5% | 1/16W | С |
| R406 | 5.1K | ±5% | 1/16W | С |
| | | | | |
| | | | | |
| R410 | 10K | ±5% | 1/16W | С |
| R411 | 10K | ±5% | 1/16W | С |
| R412 | 10K | ±5% | 1/16W | С |
| R413 | 10K | ±5% | 1/16W | С |
| R414 | 10K | ±2% | 1/16W | С |
| | | | | |
| | | | | |
| R501 | 560 | ±5% | 1/10W | С |
| R502 | 560 | ±5% | 1/10W | С |
| R503 | 560 | ±5% | 1/10W | С |
| R504 | 560 | ±5% | 1/10W | С |
| R505 | 560 | ±5% | 1/10W | С |
| R506 | 560 | ±5% | 1/10W | С |
| | | | | |
| | | | | |
| | | | | |

| SYMBOL | RESISTANCE | TOLERANCE | POWER | FORM |
|--------|------------|-----------|-------|------|
| R601 | 10K | ±5% | 1/16W | С |
| R603 | 10K | ±5% | 1/16W | С |
| R606 | 10K | ±5% | 1/16W | С |
| R607 | 10K | ±5% | 1/16W | С |
| R608 | 1K | ±5% | 1/16W | С |
| R609 | 1K | ±5% | 1/16W | С |
| R610 | 1K | ±5% | 1/16W | С |
| R611 | 10K | ±5% | 1/16W | С |
| R612 | 1K | ±5% | 1/16W | С |
| R613 | 10K | ±5% | 1/16W | С |
| R614 | 5.1K | ±5% | 1/16W | С |
| | | | | |
| | | | | |
| R702 | 240 | ±5% | 1/10W | С |
| R703 | 240 | ±5% | 1/10W | С |
| | | | | |
| R705 | 1K | ±1% | 1/16W | С |
| R707 | 20 | ±5% | 1/10W | С |
| R708 | 20 | ±1% | 1/10W | С |
| | | | | |
| R801 | 3.3K | ±5% | 1/10W | С |
| | | | | |
| R901 | 750 | ±5% | 1/4W | Н |
| | | | | |

CAPACITOR

| SYMBOL | RATING | TYPE | FORM |
|--------|--------------|--------|------|
| C101 | 1000μ, 35V | D (VX) | Н |
| C102 | | | |
| C103 | 100μ, 16V | D (VX) | Н |
| C104 | | | |
| C105 | | | |
| C106 | 100μ, 10V | D (VX) | Н |
| | 00 001 | 5 000 | |
| C201 | 33μ, 6.3V | D (VX) | Н |
| C202 | 0.1μ, 25V | C | С |
| C205 | 0.1μ, 25V | С | С |
| C206 | 0.1μ, 25V | С | С |
| | | | |
| C301 | 0.1μ, 25V | С | С |
| C302 | 0.1μ, 25V | C | C |
| C303 | 0.1μ, 25V | С | С |
| | | | |
| C401 | 0.1μ, 25V | С | С |
| C501 | 1000P,AC250V | С | Н |
| C502 | 1000P,AC250V | С | Н |
| C503 | 1000P,AC250V | С | Н |
| C504 | 1μ, 400VAC | F | Н |
| C601 | 0.1μ, 25V | C | С |
| C701 | 33μ, 10V | D (WX) | С |
| C801 | 1000P, 50V | С | С |

| C801 | 1000F, |
|-------|--------|
| OSCIL | LATOR |

| SYMBOL | MODEL NO. | FORM |
|--------|-------------|------|
| OSC1 | EFOEC8004A4 | Н |
| | | |

| | | ГΟ | |
|--|--|----|--|
| | | | |
| | | | |

| SYMBOL | MODEL NO. | FORM |
|--------|------------|------|
| Q201 | 2SC2462LC | C |
| Q202 | 2SA1121SCT | O |
| | | |
| Q301 | GA1A4M | С |
| Q302 | DTC114EUA | С |
| | | |
| Q501 | GA1A4M | С |
| Q502 | GA1A4M | С |
| Q503 | GA1A4M | С |
| | | |

DIODE

| SYMBOL | MODEL NO. | FORM |
|--------|-----------|------|
| DB101 | S1WB20 | Н |
| | | |
| D401 | DAN202K | С |
| D403 | DAP202K | С |
| | | |

SURGE PROTECTORS

| SYMBOL | MODEL NO. | FORM |
|-------------------|--------------|------|
| VARISTOR 1 | 450NR12D | Н |
| VARISTOR 2 | 450NR12D | Н |
| SURGE ABSORBER | DSA-362MA-05 | Н |

RELAYS

| SYMBOL | MODEL NO. | FORM |
|--------------------------|-----------|------|
| POWER RELAY | DFT-RELAY | Н |
| OUTDOOR FAN RELAY | G5N-RELAY | Н |
| REVERSING VALVE RELAY | G5N-RELAY | Н |

| <u>IC</u> | | |
|-----------|------------|------|
| SYMBOL | MODEL NO. | FORM |
| REG1 | MC7&12CT | Н |
| REG2 | MC7&05CT | Н |
| IC1 | HD6433712 | С |
| IC401 | BR24C02F | С |
| IC501 | ULN2003ANS | С |
| SSR-H | TLP3507 | Н |
| SSR-L | TLP3507 | Н |
| SSR-S | TLP3507 | Н |
| | | |
| IR701 | RPM6938-V4 | Н |

NOTES:
1. TYPE OF CAPACITOR

F:FILM C:CERAMIC

D: ELECTROLYTIC

2. FORM

H: HAND INSERT C: SMT R: RADIAL

A: AXIAL

SWITCHES

| SYMBOL | MODEL NO. | FORM |
|---------------|------------|------|
| SW701 | EVQP05R-SW | Н |
| SERVICE SW | SSSS9AE | Ι |

BUZZER

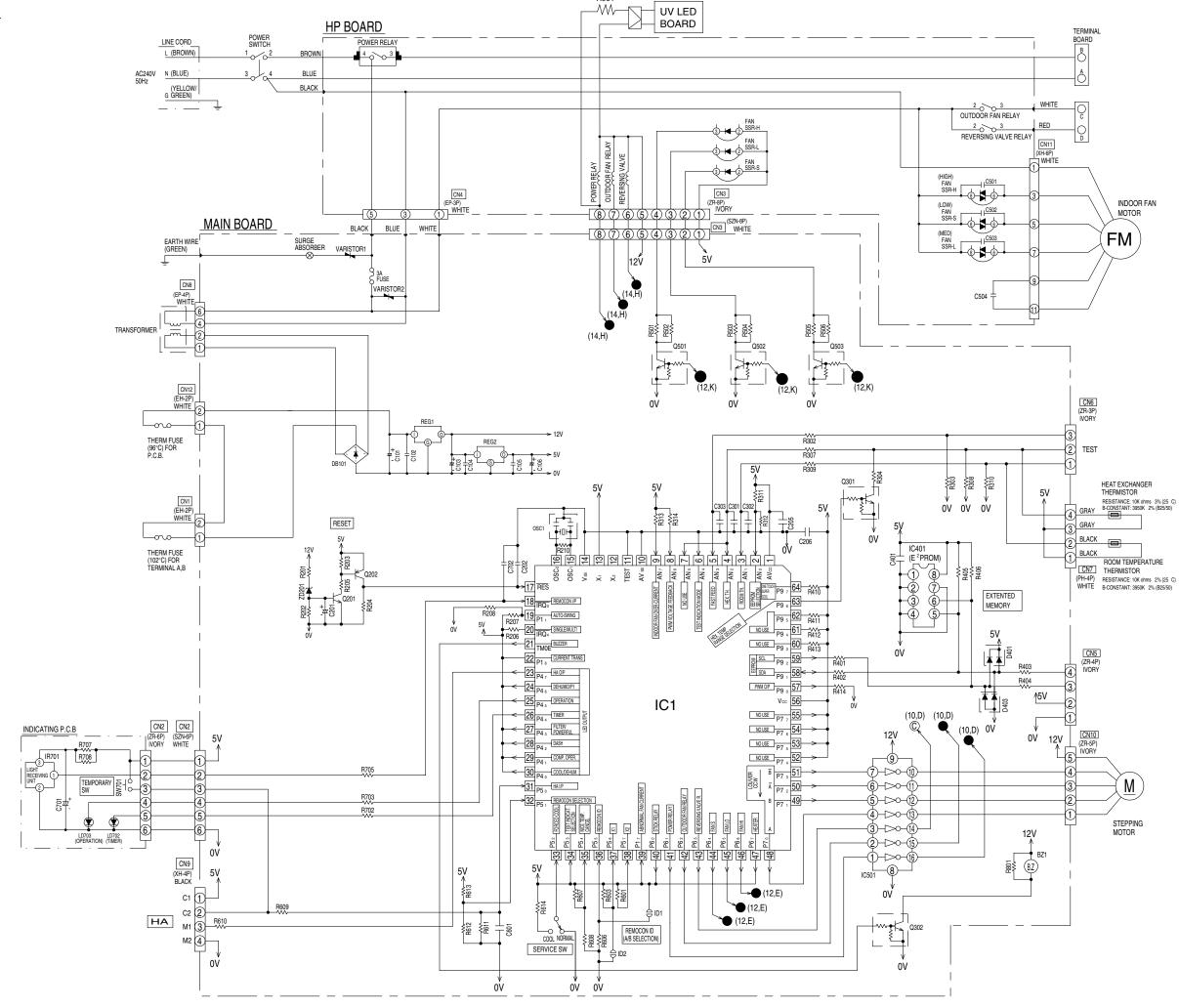
| SYMBOL | MODEL NO. | FORM |
|--------|-----------|------|
| BZ1 | PKM13EPY | Н |

ZENER DIODE

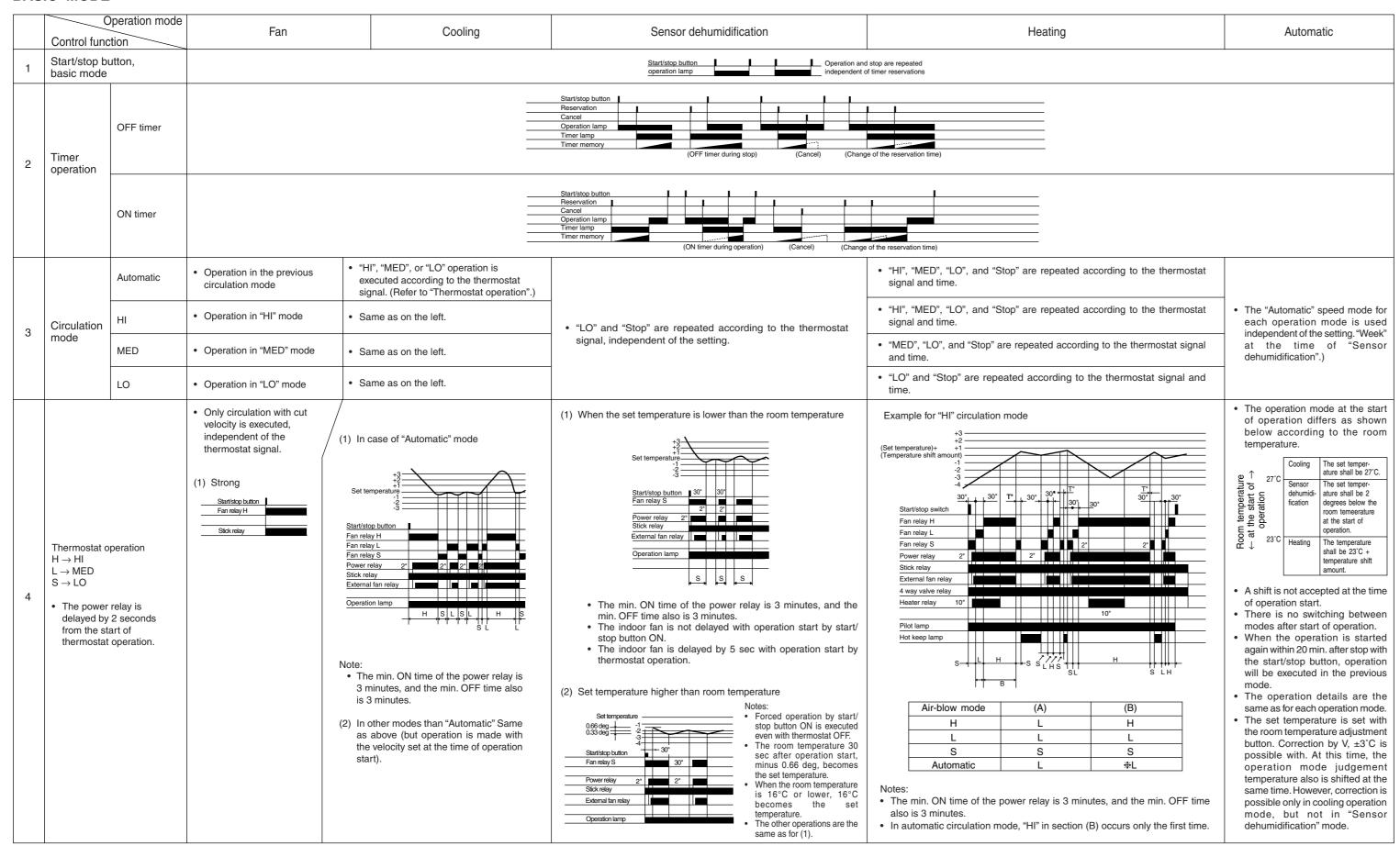
| SYMBOL | MODEL NO. | FORM |
|--------|-----------|------|
| ZD201 | RLZB.8A | С |
| | | |

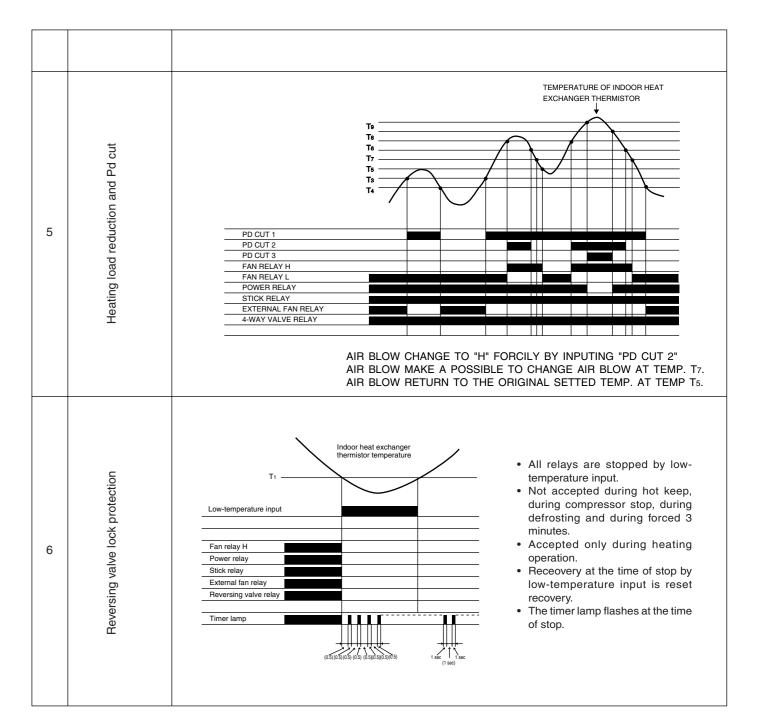
LED

| SYMBOL | MODEL NO. | COLOUR | FORM |
|--------|-------------|--------|------|
| | | | |
| LD702 | SLR-332DC3F | ORANGE | Н |
| LD703 | SLR-332YC3F | YELLOW | Н |
| | | | |
| | | | |

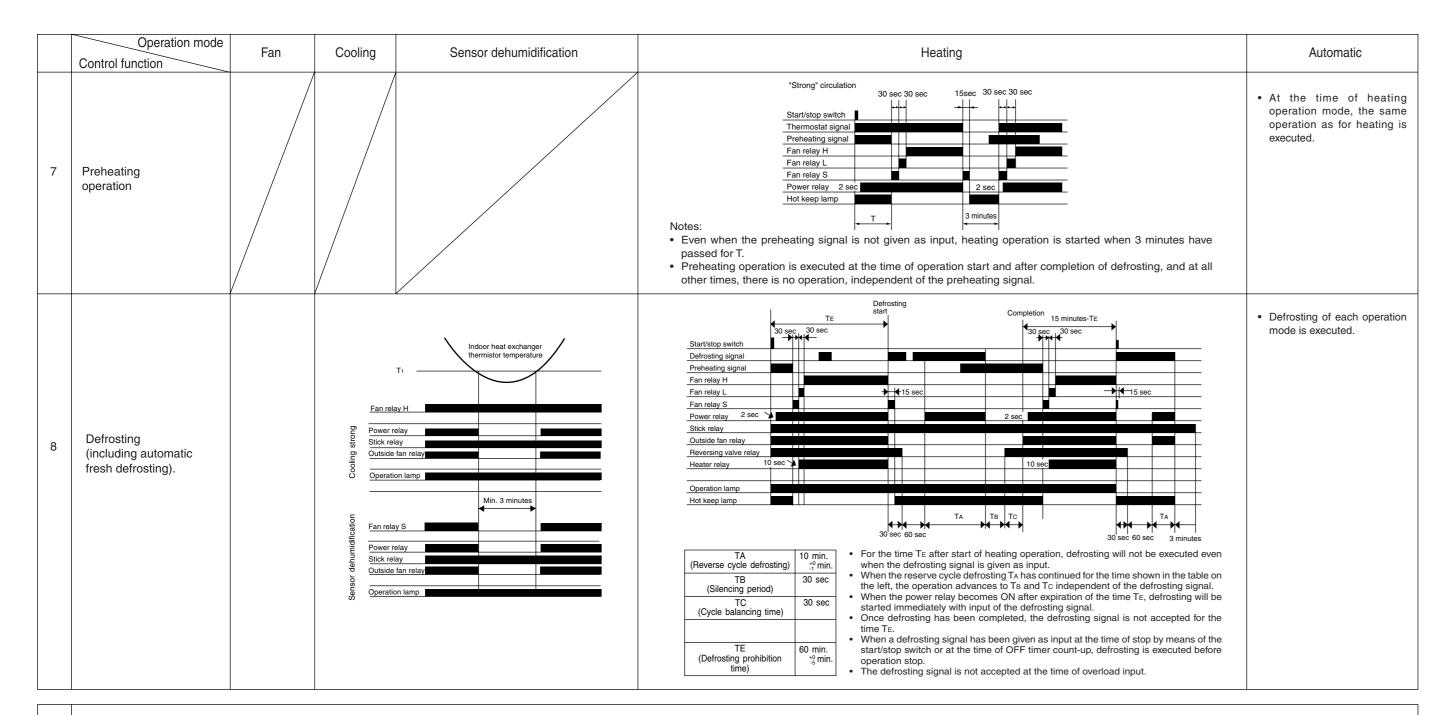


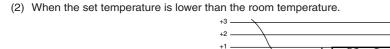
BASIC MODE

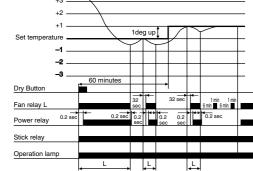




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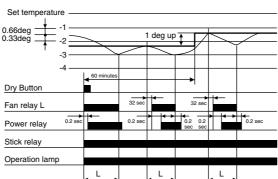






- The min. ON time of the power relay is 3 minutes, and the min. OFF time is also 3 minutes.
- The indoor fan is not delayed in operation when the Dry button is pressed ON.

(2) Set temperature higher than room temperature.



Note

- Focused operation by Dry button ON is executed even with thermostat OFF.
- The room temperature 30 sec after operation start minus 0.33 deg., becomes the set temperature.
- When the room temperature is 16°C or lower, 16°C becomes the set temperature.
- The other operation are the same as for (I).
- The indoor fan is not delayed in operation when the Dry button is pressed ON.

Table 1 Specifications

| Item | | | | | |
|--|-----------------|------------------|--|--|--|
| Operation switching | Yes | | | | |
| | Heating | | | | |
| | Yes | | | | |
| | Yes | | | | |
| | Cooling | Yes | | | |
| Temporary switch | Yes (automatic) | | | | |
| Service switch | Heating | Yes | | | |
| | Yes | | | | |
| Nice temperature res | Yes | | | | |
| Automatic fresh defro | Yes | | | | |
| Defrosting | Yes | | | | |
| Pd cut 1 | Yes | | | | |
| Pd cut 2 | Yes | | | | |
| Pd cut 3 | Yes | | | | |
| Heating load reduction | Yes | | | | |
| External fan relay | Yes | | | | |
| Reversing valve relay | Yes | | | | |
| Reversing valve lock | Yes | | | | |
| Sleep circuit | Yes | | | | |
| Heater operation at t dehumidification | No | | | | |
| Automatic blowing dir | rection | Yes | | | |
| Filter sign | | No | | | |
| Wireless mode | | Heating wireless | | | |

Table 2 Sensor operation values

| Item | | | | | | |
|-----------------|-----------|----------------------------------|-------------------|---------|-------|--|
| | | | Cooling, Sensor | 16 | 17.6 | |
| | ON temp | | dehumidification | 24 | 25.6 | |
| Thermostat | | stat relay) | | 32 | 33.6 | |
| operation | power re | elay | Heating | 16 | 19.6 | |
| | (°C) | | | 24 | 27.6 | |
| | | | | 32 | 35.6 | |
| | Different | ial (°C) | | | 0.33 | |
| | | | | | ı | |
| | | | | | ı | |
| Low-temperature | | (T1) ON (°C) | | | 5.0 | |
| defrosting | | Reset (°C) | | | 9.0 | |
| Preheating | | (T2) Reset (°C) | | | 17.0 | |
| | | ON (°C) | | | 15.0 | |
| | | | | | _ | |
| | | | | | _ | |
| Pd cut 1 | | (T3) | C | ON (°C) | 48.66 | |
| | | (T4) Reset (°C) | | | 45.66 | |
| Pd cut 2 | Pd cut 2 | | (T6) ON (°C) 55.0 | | | |
| | | | (T7) Reset (°C) | | | |
| | | (T5) Fan Relay H → Original (°C) | | | 35.0 | |
| Pd cut 3 | | (T8) ON (°C) | | | 63.0 | |
| | | (T9) Reset (°C) | | | 55.0 | |

Other detailed specifications

- When the room temperature rises within 3 minutes after thermostat OFF during cooling operation with automatic velocity, the blowing velocity changes in the order of S ← L → H in the same way as at the time of thermostat ON.
- In case of Tele. control input during stopped ON timer, operation will be started at that time and the timer will be cleared.
- In case of Tele. control input during operation of the OFF timer, the operation will be stopped at that time and the timer will be cleared.
- Even when operation stop is executed at the time of outside fan OFF by overload, automatic fresh defrosting will not be executed.
- 5. In case of switching to "Heating" during "Automatic" heating operation, the operation will be continued as it is when the thermostat is ON. 3 min delay will not be entered. However, the set room temperature and the blowing velocity will be according to the remote control signal. The same applies for switching from "Heating" to "Automatic" heating.
- 6. In case of switching from "Sensor dehumidification" operation to "Cooling", as it is when the thermostat is ON. 3 min delay will not be entered. However, the set room temperature and the blowing velocity will be according to the remote control signal.

 The same applies for switching from "Cooling" to "Sensor dehumidification". The same also applies for
- The filter sign lights after operation of the indoor fan for 100 hours. The time is cleared by the filter switch.

"Cooling".

"Automatic" sensor dehumidification,

cooling "Sensor dehumidification",

- After entry into trouble mode (when the indication lamp is flashing), the rapid feed mode can not be changed.
- When operation by nice temperature reservation is executed during sleep operation, normal operation will be continued, and the advance time becomes the temperature difference between the set temperature without sleep shift and the room temperature.
- 10. The 60 minutes of defrosting prohibition are counted from thermostat ON after start/stop switch ON. When the thermostat is OFF at the time of start/stop switch ON, the 60 minutes will be counted from the time of thermostat ON. The initial OFF time is not counted. Counting starts when the thermostat becomes ON, and the count then continues even if the thermostat becomes OFF.
- 11. In case of switching from "Heating" the reversing valve is held for 3 minutes.
- 12. The defrosting signal is not accepted with overload input, and the operation becomes as shown below when the overload input disappears.
- (1) When previously the defrosting signal existed without overload input, defrosting will start immediately.
- (2) In cases other than the above, defrosting will be executed with a defrosting signal in the condition without overload input.

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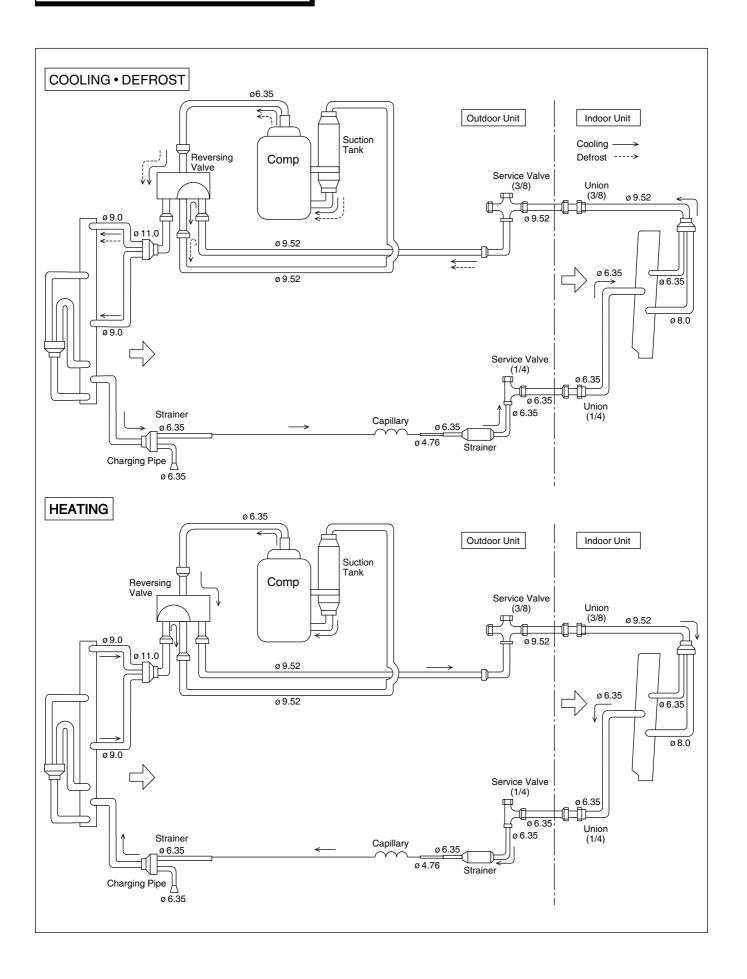
Timer-Lamp, break-down checking in blinking sign.

Check the break-down factor from the frequency of timer-lamp blinking.

| No. | Mode of Timer-Lamp blinking | Indication Factor | Estimated Break-Down Part |
|-----|-----------------------------|---|---|
| 1 | | Forced cool operation Running force-cool operation by service switch. Service switch at indoor P.W.B. has been activated. | (1) Service switch at Indoor has been set to "COOL" position.(2) Control P.W.B. damaged. |
| 2 | | IC 401 Data read wrongly In case that data read from IC401 is wrong. | IC401 is not in order. |
| 3 | <u>■ ■ </u> sec. 14 times | Heat exchanger thermistor error Heat exchanger thermistor open or short-circuit detected. | (1) Thermistor(2) Indoor - control circuit board. |
| 4 | ■■ | Room thermistor error Room thermistor error open or short-circuit detected. | (1) Thermistor(2) Indoor - control circuit board. |

(\blacksquare --0.5 second on, 0.5 second off.)

REFRIGERATION CYCLE



AUTO SWING FUNCTION

| i i | | PRESENT CONDITION | NOI | INCITACION CINITAGLICO | L C |
|--------------------------------------|---------------------|--------------------------------------|--------------------------|---|----------------------------------|
| INPOL SIGNAL | OPERATION | OPERATION MODE | AIR DEFLECTOR | OPERATING SPECIFICATION | HEFENCE |
| KEY INPUT | STOP | EACH MODE | STOP | ONE SWING (CLOSING AIR DEFLECTOR) ① DOWNWARD ② UPWARD | INITIALIZE AT NEXT OPERATION. |
| | | | DURING ONE SWING | STOP AT THE MOMENT. | |
| | DURING OPERATION | AUTO COOL COOL FAN AUTO DRY | STOP | START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD | |
| | | | DURING SWINGING | STOP AT THE MOMENT. | |
| INTERNAL FAN ON (THERMO. ON) | SNIBITO | ALITO DBY | TEMPORARY STOP | START SWING AGAIN. | |
| INTERNAL FAN OFF (THERMO. OFF) | OPERATION | DRY | DURING SWINGING | STOP SWINGING TEMPORARILY. (SWING MODE IS CLEARED IF SWING COMMAND IS TRANSMITTED DURING TEMPORARY STOP.) | |
| MAIN SWITCH | STOP | COOL FAN DRY | STOP DURING ONE SWING | INITIALIZE ① DOWNWARD ② UPWARD | |
| 20 | | CIRCULATOR | STOP DURING ONE SWING | INITIALIZE ① DOWNWARD | |
| MAIN SWITCH | DURING | EACH MODE | STOP DURING SWINGING | ONE SWING (CLOSING AIR DEFLECTOR) ① DOWNWARD | INITIALIZE AT NEXT |
| OFF | OPERATION | | DURING INITIALIZING | ② UPWARD | OPERATION. |
| | | | STOP | INITIALIZING CONDITION OF EACH MODE. | |
| CHANGE OF OPERATION | DURING OPERATION | ЕАСН МОDE | DURING SWINGING | STOP SWINGING AND MODE BECOMES INITIALIZING CONDITION. | |

SERVICE CALL Q & A

Cooling operation Check whether frost sticks on If cooling is performance While cooling, the com-Q1 pressor sometimes stops the heat exchanger of unit or when the room temnot. perature is low, frost may abruptly. Wait for 3 - 4 minutes until the stick on the heat exchanger frost melts. of unit. Dehumidifying operation The fan speed is always The fan speed does not Q2 A2 change during a dehumidi-QUIET at a dehumidifying fying operation. operation. Cold air comes out during To improve the dehumidifica-Q3 А3 tion efficiency, QUIET fan dehumidifying speed operation is performed. operation. Therefore the air is cold. This is not a trouble. At a dehumidifying operation, The operation does not Q4 Α4 the actual room temperature is stop even by raising the compared with the room room temperature setting temperature setting when of remote control at a starting the operation and the dehumidifying operation. operation is as follows. 1) When actual room temperature > room temperature setting The operation is according to the room temperature setting on the remote controller. 2) *When actual room < room temperature setting Regardless of the room temperature setting, the temperature is automatically set slightly lower than the room temperature. In this case, the status in 2) is the case and, therefore, the operation by the room temperature control is impossible. Turn off the ON/OFF button, set the room temperature to a new value and turn on the operation by the ON/OFF button. Q5 In the dehumidifying mode, This is the status in 2) of (A4). **A5** the remote controller is set The temperature is set a little lower than the room temperature slightly higher than the room to carry out a dehumidifying temperature but the operation starts. operation as far as possible.

| | Heating operation | | | |
|------|--|------|--|--|
| Q6 | Air does not come out when starting a heating operation. | A6 | It is not a trouble. The fan is stopped to avoid cold wind. | When starting the operation, the heat exchanger is cold and, therefore, the fan is stopped. Wait 2–3 minutes. |
| Q7) | Air does not come out sometimes while in a heating operation. | A7) | Defrosting is on. Wait for 5–10 minutes until the outdoor unit is defrosted. | |
| Q8 | The fan speed is set to "HI" or "MED" but the heating operation starts with a LO fan speed. | A8 | The heating operation starts with a LO fan speed for 30 seconds. If the fan speed is set to HI, the operation starts with LO fan speed, followed by MED fan speed for 30 seconds and then by HI fan speed. | |
| Q9 | The operation stops during a heating operation while the room temperature is set at "30". | (A9) | If a heating operation is performed when the exterior temperature is high, the operation may stop to protect the equipment. | |
| Q10 | The outdoor fan does not move at a heating operation by the service switch. | A10 | It is not a trouble. When heating, the outdoor fan is stopped to avoid excessive pressure rise. | |
| | Auto fresh defrosting | | | |
| Q11) | Heating has been turned off to operation but the "Hot keep lampeter the outdoor unit operations. | | stopping the op unit is frosted of | defrosting" operates. When peration, whether the outdoor or not is checked and, if in the frosting is performed before peration. |

Automatic operation How is the automatic According to the room Q12 operation mode determined? temperature, cooling, heating or dehumidifying operation automatically selected. Cooling: When room temperature is approx. 27°C or higher. Dehumidifying: When room temperature is between approx. 23°C and 27°C. Heating: When room temperature is approx. 23°C or lower. At an automatic operation, The fan speed is automati-Q13 A13 changing the fan speed cally determined. change switch does not vary the fan speed. When changing the room It is automatically set as The room temperature Q14 A14 temperature setting in an cannot be controlled at an follows. automatic operation, the next automatic operation. automatic operation mode is At cooling: Set at 27°C determined by new room At dehumidifying: temperature setting. Set slightly If, for example, the room lower than room temperature setting is 2°C lowered for example, the temperature operation mode is as follows. The room temperature Cooling: When room setting can be raised 3°C by temperature is " Λ " or lowered 3°C by " V ". approx. 27°C or higher. Dehumidifying: When room temperature is between approx. 23°C and 27°C. Heating: When room temperature is approx. 23°C or lower.

Common, etc.

Q15 There is a difference between the room temperature setting and actual room temperature.



(A15

There may be a difference between the room temperature setting and actual room temperature on account of the room structure, air flow, etc.

If there is a difference, adjust the set temperature to keep living space at a comfortable temperature.

Q16 What will happen if the time setting is changed while in a timer operation?



A16

A timer operation is performed until the time after changing the time setting.

Wireless remote controller

- 1) When the "Automatic" operatoin mode is selected, "Automatic" does not change by pressing the fan speed select button.
 - 2) The room temperature setting is not displayed.

3) Pressing the room temperature control button develope transmit mark " " and sounds a receive sound but does not display the room temperature setting.



- When the operation mode is "Automatic", the fan speed is automatically fixed to "Automatic".
- At an "Automatic" operation, the room temperature setting is not displayed.

The room temperature is automatically set as follows.

At cooling Set at 27°C.

At dehumidifying

Set to a temperature slightly lower than the room temperature.

At heating Set at 23°C.

 At an "Automatic" operation, the room temperature setting is not displayed.

However, every pressing "Λ" or "V" button changes 1°C within the range of: 27±3°C when cooling 23±3°C when heating The room temperature sensing thermistor in the indoor unit detects the room temperature and, according to the particular temperature, automatically performs "Cooling" or "Dehumidifying" operation.

The value indicated not at an "Automatic" but manual operation is not the actual room temperature but the room temperature setting.

Wireless remote controller

When the room temperature setting is "16", pressing the room temperature control button "V" causes no transmission. At "32", pressing "A" causes no transmission either.



The room temperature os settable within the range of 16 - 32 and not beyond.

Q19 In spite of timer "Preprogram", setting is extinguished.



A19 Isn't the time over the preprogrammed time?
As soon as the preprogrammed time is reached, the time setting disappears.

When setting the current time, its indication blinks for approxinately 3 minutes.

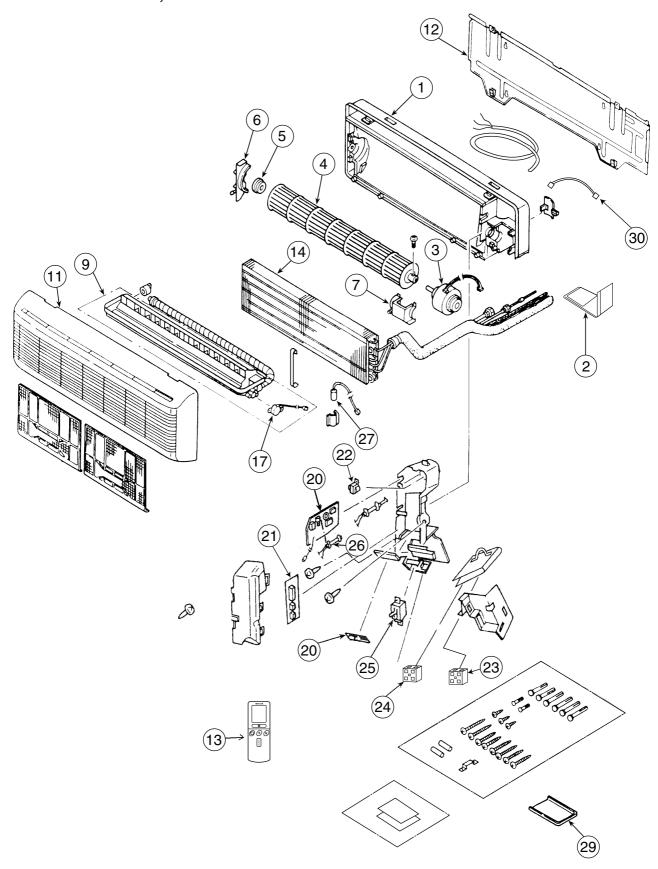
After selecting a "Dehumidifying" operation mode, the fan speed mode remains "LO" fan speed.



A20 At a "Dehumidifying" operation, the "LO" fan speed is forcibly selected.

PARTS LIST AND DIAGRAM

MODEL RAS-07CH4, RAS-09CH4



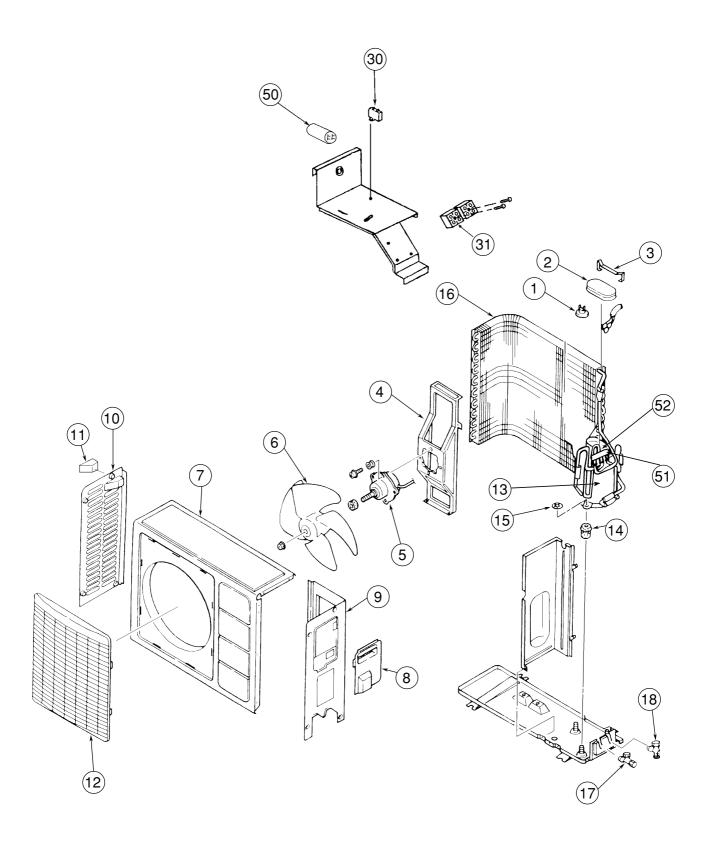
MODEL RAS-07CH4

| NO. | PART NO RAS-07CH | | Q'TY / UNIT | PARTS NAME |
|-----|---------------------|-----|-------------|---------------------------------|
| 1 | PMRAS-07CH4 | 001 | 1 | CABINET |
| 2 | PMRAS-07CH4 | 004 | 1 | LOW-COVER |
| 3 | PMRAS-07CH2 | 018 | 1 | 10W MOTOR |
| 4 | PMRAS-09C1 | 003 | 1 | TANGENTIAL FLOW FAN |
| 5 | PMRAS-05C | 013 | 1 | P-BEARING ASSEMBLY |
| 6 | PMRAS-05C | 004 | 1 | BEARING COVER |
| 7 | PMRAS-26CHAI | 001 | 1 | FAN MOTOR SUPPORT |
| 9 | PMRAS-07CH4 | 002 | 1 | DRAIN PAN ASSEMBLY |
| 11 | PMRAS-07CH4 | 003 | 1 | FRONT COVER ASSEMBLY |
| 12 | PMRAS-05C | 009 | 1 | MOUNTING PLATE |
| 13 | PMRAS-07CH4 | 006 | 1 | REMOTE CONTROL |
| 14 | PMRAS-07CH2 | 014 | 1 | CYCLE ASSEMBLY |
| 17 | PMRAS-05C | 041 | 1 | STEP MOTOR |
| 20 | PMRAS-07CH2 | 003 | 1 | PWB (MAIN AND INDICATION) |
| 21 | PMRAS-07CH4 | 005 | 1 | PWB (POWER) |
| 22 | PMRAS-07CH4 | 007 | 1 | TRANSFORMER |
| 23 | PMRAS-07CH2 | 006 | 1 | TERMINAL (2P) |
| 24 | PMRAS-07CH2 | 007 | 1 | TERMINAL (2P WITH THERMAL FUSE) |
| 25 | PMRAS-18CP2R | 002 | 1 | POWER SWITCH |
| 26 | PMRAS-07CH2 | 800 | 1 | THERMAL FUSE FOR PWB |
| 27 | PMRAS-07CH2 | 012 | 1 | THERMISTOR |
| 29 | PMRAS-10C3M | 003 | 1 | REMOTE CONTROL HOLDER |
| 30 | PMRAS-07CH4 | 800 | 1 | UV LED UNIT |
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MODEL RAS-09CH4

| NO. | PART NO RAS-09CH | | Q'TY / UNIT | PARTS NAME |
|-----|---------------------|-----|-------------|---------------------------------|
| 1 | PMRAS-07CH4 | 001 | 1 | CABINET |
| 2 | PMRAS-07CH4 | 004 | 1 | LOW-COVER |
| 3 | PMRAS-07CH2 | 018 | 1 | 10W MOTOR |
| 4 | PMRAS-09C1 | 003 | 1 | TANGENTIAL FLOW FAN |
| 5 | PMRAS-05C | 013 | 1 | P-BEARING ASSEMBLY |
| 6 | PMRAS-05C | 004 | 1 | BEARING COVER |
| 7 | PMRAS-26CHAI | 001 | 1 | FAN MOTOR SUPPORT |
| 9 | PMRAS-07CH4 | 002 | 1 | DRAIN PAN ASSEMBLY |
| 11 | PMRAS-07CH4 | 003 | 1 | FRONT COVER ASSEMBLY |
| 12 | PMRAS-05C | 009 | 1 | MOUNTING PLATE |
| 13 | PMRAS-07CH4 | 006 | 1 | REMOTE CONTROL |
| 14 | PMRAS-07CH2 | 014 | 1 | CYCLE ASSEMBLY |
| 17 | PMRAS-05C | 041 | 1 | STEP MOTOR |
| 20 | PMRAS-09CH2 | 001 | 1 | PWB (MAIN AND INDICATION) |
| 21 | PMRAS-07CH4 | 005 | 1 | PWB (POWER) |
| 22 | PMRAS-07CH4 | 007 | 1 | TRANSFORMER |
| 23 | PMRAS-07CH2 | 006 | 1 | TERMINAL (2P) |
| 24 | PMRAS-07CH2 | 007 | 1 | TERMINAL (2P WITH THERMAL FUSE) |
| 25 | PMRAS-18CP2R | 002 | 1 | POWER SWITCH |
| 26 | PMRAS-07CH2 | 800 | 1 | THERMAL FUSE FOR PWB |
| 27 | PMRAS-07CH2 | 012 | 1 | THERMISTOR |
| 29 | PMRAS-10C3M | 003 | 1 | REMOTE CONTROL HOLDER |
| 30 | PMRAS-07CH4 | 800 | 1 | UV LED UNIT |
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MODEL RAC-07CH4, RAC-09CH4



MODEL RAC-07CH4

| NO. | PART NO RAC-07CH | | Q'TY / UNIT | PARTS NAME |
|-----|---------------------|-----|-------------|-----------------------------------|
| 1 | PMRAC-07CH2 | 906 | 1 | OVERLOAD PROTECTOR |
| 2 | RA-226 | 015 | 1 | O.L.R. COVER |
| 3 | RA-226 | 016 | 1 | COVER SUPPORT |
| 4 | PMRAC-05CV | 901 | 1 | FAN MOTOR SUPPORT |
| 5 | PMRAC-07G1 | 902 | 1 | FAN MOTOR 20W |
| 6 | PMRAC-05CV | 903 | 1 | PROPELLER FAN |
| 7 | PMRAC-07CH2 | 901 | 1 | CABINET |
| 8 | PMRAC-07CH2 | 902 | 1 | ELECTRICAL COVER ASSEMBLY |
| 9 | PMRAC-05CV | 906 | 1 | SIDE PLATE (R) |
| 10 | PMRAC-05CV | 907 | 1 | SIDE PLATE (L) |
| 11 | PMRAC-05CV | 908 | 1 | HANDLE |
| 12 | PMRAC-09CHA1 | 903 | 1 | D-GRILL |
| 13 | PMRAC-07CH4 | 901 | 1 | COMPRESSOR 600W 10KG |
| 14 | RAC-2226HV | 805 | 3 | COMPRESSOR RUBBER |
| 15 | KPNT1 | 001 | 3 | PUSH NUT |
| 16 | PMRAC-26CHA1 | 901 | 1 | CONDENSER |
| 17 | PMRAC-26CHA1 | 902 | 1 | 2S-VALVE |
| 18 | PMRAC-10C7 | 906 | 1 | 3S-VALVE |
| 30 | PMRAC-10C8 | 905 | 1 | FAN MOTOR CAPACITOR (1.5µF, 440V) |
| 31 | PMRAC-07CV1 | 006 | 2 | TERMINAL BOARD (2P) |
| 50 | PMRAC-10C8 | 904 | 1 | COMPRESSOR CAPACITOR (30µF, 440V) |
| 51 | PMRAC-07CH2 | 904 | 1 | REVERSING VALVE |
| 52 | PMRAC-07CH2 | 905 | 1 | COIL (REVERSING VALVE) |
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MODEL RAC-09CH4

| NO. | PART NO. RAC-09CH4 | | Q'TY / UNIT | PARTS NAME |
|-----|-----------------------|-----|-------------|-----------------------------------|
| 1 | PMRAC-09CH2 | 901 | 1 | OVERLOAD PROTECTOR |
| 2 | RA-226 | 015 | 1 | O.L.R. COVER |
| 3 | RA-226 | 016 | 1 | COVER SUPPORT |
| 4 | PMRAC-05CV | 901 | 1 | FAN MOTOR SUPPORT |
| 5 | PMRAC-07G1 | 902 | 1 | FAN MOTOR 20W |
| 6 | PMRAC-05CV | 903 | 1 | PROPELLER FAN |
| 7 | PMRAC-07CH2 | 901 | 1 | CABINET |
| 8 | PMRAC-07CH2 | 902 | 1 | ELECTRICAL COVER ASSEMBLY |
| 9 | PMRAC-05CV | 906 | 1 | SIDE PLATE (R) |
| 10 | PMRAC-05CV | 907 | 1 | SIDE PLATE (L) |
| 11 | PMRAC-05CV | 908 | 1 | HANDLE |
| 12 | PMRAC-09CHA1 | 903 | 1 | D-GRILL |
| 13 | PMRAC-09CHV1 | 901 | 1 | COMPRESSOR 750W 10KG |
| 14 | RAC-2226HV | 805 | 3 | COMPRESSOR RUBBER |
| 15 | KPNT1 | 001 | 3 | PUSH NUT |
| 16 | PMRAC-26CHA1 | 901 | 1 | CONDENSER |
| 17 | PMRAC-26CHA1 | 902 | 1 | 2S-VALVE |
| 18 | PMRAC-10C7 | 906 | 1 | 3S-VALVE |
| 30 | PMRAC-10C8 | 905 | 1 | FAN MOTOR CAPACITOR (1.5µF, 440V) |
| 31 | PMRAC-07CV1 | 006 | 2 | TERMINAL BOARD (2P) |
| 50 | PMRAC-10C8 | 904 | 1 | COMPRESSOR CAPACITOR (30µF, 440V) |
| 51 | PMRAC-07CH2 | 904 | 1 | REVERSING VALVE |
| 52 | PMRAC-07CH2 | 905 | 1 | COIL (REVERSING VALVE) |
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