HITACHI
Inspire the Next

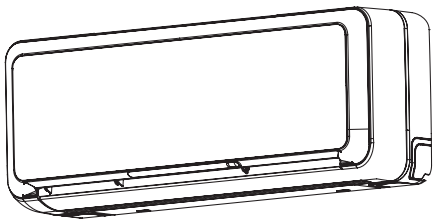
PM | NO. 0456E

RAK-18QH8S(W)
RAK-18QH8(W)
RAK-25QH8(W)
RAK-35QH8(W)
RAK-50QH8(W)
RAK-18QH8S(B)
RAK-18QH8(B)
RAK-25QH8(B)
RAK-35QH8(B)
RAK-50QH8(B)

SERVICE MANUAL

TECHNICAL INFORMATION

FOR SERVICE PERSONNEL ONLY



RAK-18QH8S(W)
RAK-18QH8(W)
RAK-25QH8(W)
RAK-35QH8(W)
RAK-50QH8(W)
RAK-18QH8S(B)
RAK-18QH8(B)
RAK-25QH8(B)
RAK-35QH8(B)
RAK-50QH8(B)

NOTE:
This manual describes only points that differ from PM No. 0270E, PM No. 0312E, PM No. 0322E & PM No. 0371E for items not described in this manual.

REFER TO THE FOUNDATION MANUAL

CONTENTS

SPECIFICATIONS

TYPE			DC INVERTER (WALL TYPE)				
			INDOOR UNIT				
MODEL			RAK-18QH8S(W) RAK-18QH8S(B)	RAK-18QH8(W) RAK-18QH8(B)	RAK-25QH8(W) RAK-25QH8(B)	RAK-35QH8(W) RAK-35QH8(B)	RAK-50QH8(W) RAK-50QH8(B)
POWER SOURCE			1 PHASE, 50/60 Hz, 220-240V				
COOLING	TOTAL INPUT	(W)	REFER TO THE SPECIFICATION (OUTDOOR)				
	TOTAL AMPERES	(A)					
	CAPACITY	(kW)					
		(B.T.U./h)					
HEATING	TOTAL INPUT	(W)					
	TOTAL AMPERES	(A)					
	CAPACITY	(kW)					
		(B.T.U./h)					
DIMENSIONS (mm)		W	795				
		H	295				
		D	198				
NET WEIGHT		(kg)	9.5	9.5	9.5	9.5	9.5

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

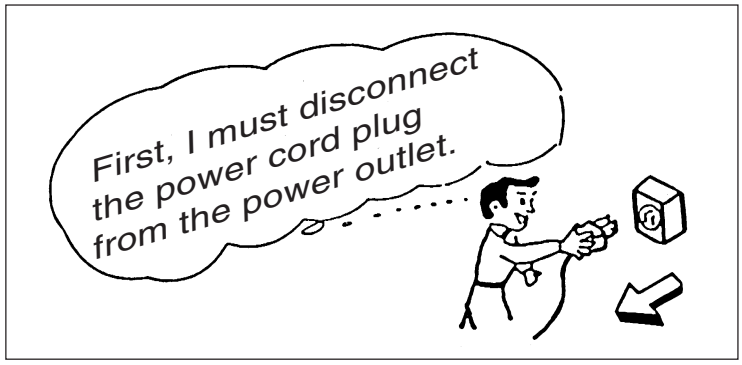
ROOM AIR CONDITIONER

INDOOR UNIT

JUNE 2009 **Refrigeration & Air-Conditioning Division**

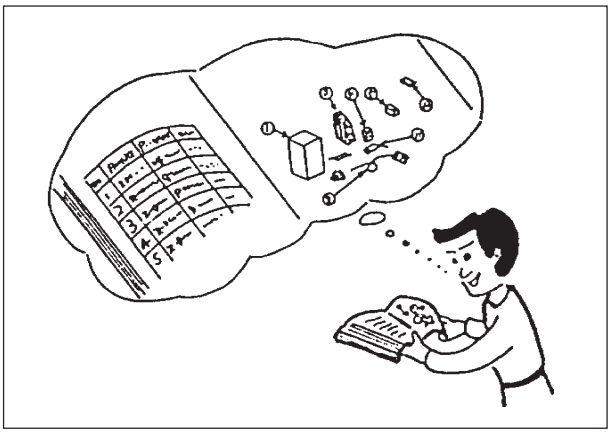
SAFETY DURING REPAIR WORK

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 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 occurence 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 1MΩ 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 and 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 reinforced or at a new location.
10. Any inflammable thing should never 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).

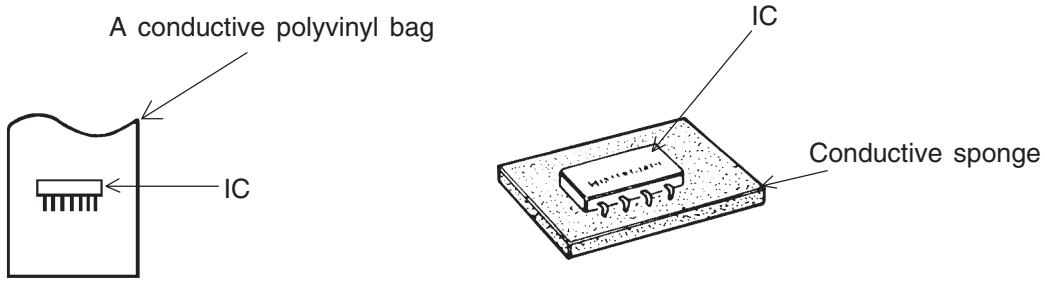


Fig. 1. Conductive Container

   (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.

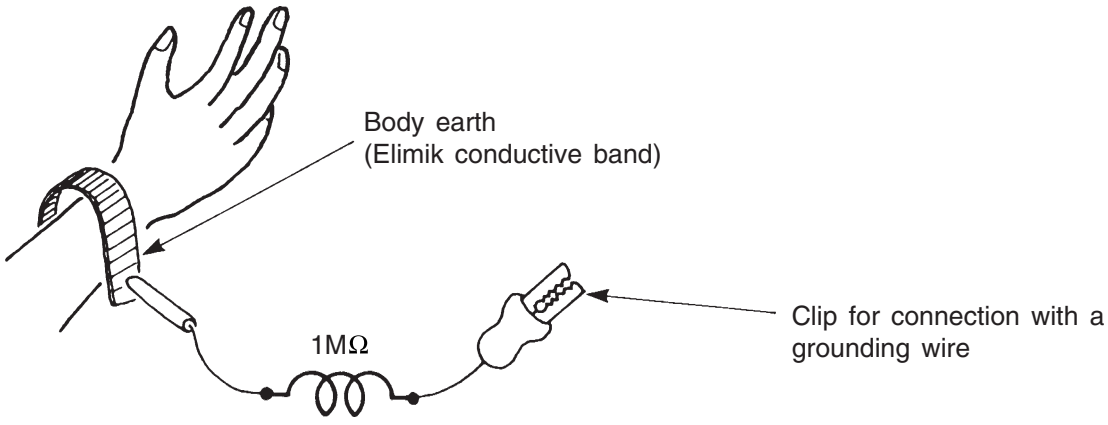


Fig. 2. Body Earth

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

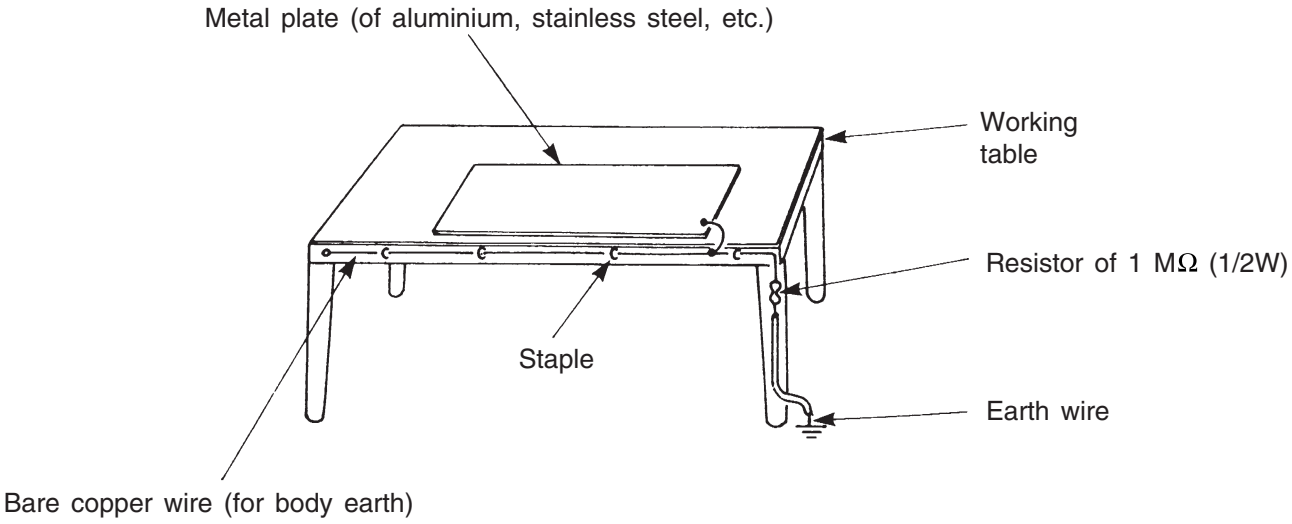


Fig. 3. Grounding of the working table

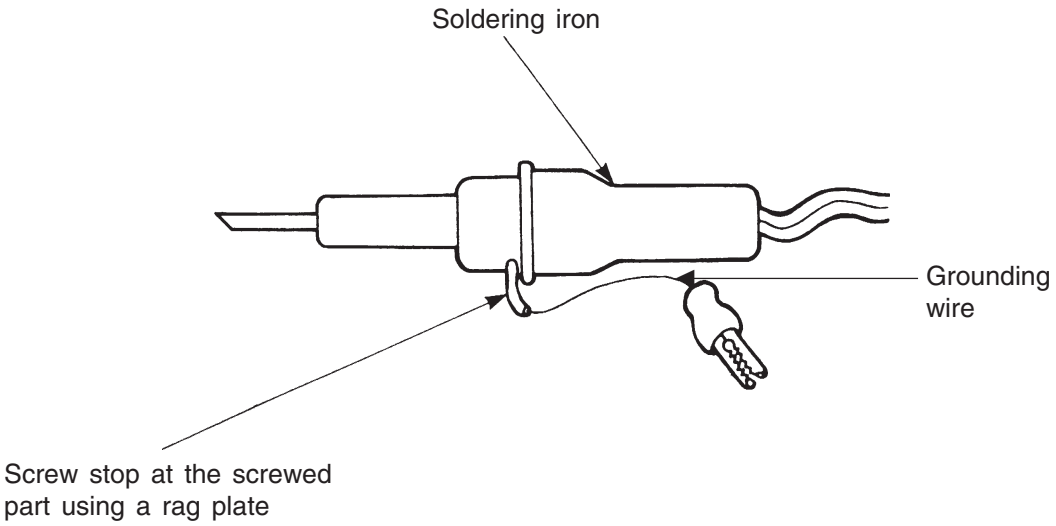


Fig. 4. Grounding a soldering iron

Use a high insulation mode (100V, 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 shortcircuit a load circuit or the like.

⚠ CAUTION

1. In quiet operation or stopping the running, 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. The room air conditioner does not start automatically after recovery of the electric power failure for preventing fuse blowing. Re-press START/STOP button after 3 minutes from when unit stopped.

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 –15°C (5°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-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)
FAN MOTOR		25W
FAN MOTOR CAPACITOR		NO
FAN MOTOR PROTECTOR		NO
COMPRESSOR		–
COMPRESSOR MOTOR CAPACITOR		NO
OVERLOAD PROTECTOR		NO
OVERHEAT PROTECTOR		NO
FUSE (for MICROPROCESSOR)		NO
POWER RELAY		NO
POWER SWITCH		NO
TEMPORARY SWITCH		YES
SERVICE SWITCH		NO
TRANSFORMER		NO
VARISTOR		NO
NOISE SUPPRESSOR		NO
THERMOSTAT		YES(IC)
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		YES
REFRIGERANT CHARGING VOLUME (Refrigerant 410A)	UNIT	----------
	PIPES	WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE.

FEATURES

1. NEW REFRIGERANT

(1) New refrigerant R410A with no harmful effect on the ozone layer

Refrigerant R410A, which does not damage the ozone layer, was adopted instead of HCFC-22 which is planned to be phased out globally by 2020.

(2) New refrigerating oil

The new refrigerant HFC-R410A is not compatible with conventional mineral oils and no lubrication can be expected with those oils. To solve this, the artificial synthetic ester oil is newly adopted.

NEW TECHNOLOGY

Cautions in relation to HFC (R410A)

1. Safety during Servicing

This air conditioner uses the new refrigerant HFC (R410A) for protecting the ozone layer. R410A has several different characteristic features from HCFC-22. Therefore keep the following care items during servicing for safety.

(1) Since the working pressure of R410A model is about 1.6 times higher than that of HCFC-22 models, it becomes necessary to use part of piping materials and servicing tools exclusive for R410A model.

(2) It is necessary to exercise more care to prevent the foreign matters (oil, moisture, etc.) from mixing into the piping than in the case of HCFC-22 model. Also, when storing the piping, securely seal its openings with pinching and taping, etc..

(3) Be sure to charge the refrigerant from the liquid-phase side, as the liquid-phase/gas-phase-composition changes a little in the case of R410A model.

(4) Never use refrigerant other than R410A in an air conditioner which is designed to operate with R410A.

(5) If a refrigeration gas leakage occurs during servicing, be sure to ventilate fully.
If the refrigerant gas comes into contact with fire, a poisonous gas may occur.

(6) When installing or removing an air conditioner, do not allow air or moisture to remain in the refrigeration cycle. Otherwise, pressure in the refrigeration cycle may become abnormally high so that a rupture or personal injury may be caused.

(7) After completion of service work, check to make sure that there is no refrigeration gas leakage.
If the refrigerant gas leaks into the room, coming into contact with fire in the fandriven heater, space heater, etc., a poisonous gas may occur.

2. Refrigerant Piping Materials

(1) Thickness of Refrigerant Piping
Although the thickness is same as that for HCFC-22 model, as R410A model features higher pressure, be sure to confirm the thickness prior to use.

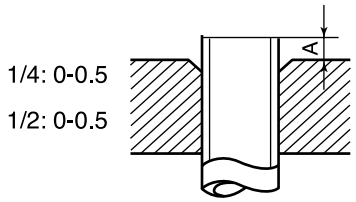
※Do not use thin pipes (thinner than 0.7 mm).

Nominal diameter	Outside diameter (mm)	Thickness (mm)
1/4	6.35	0.8
1/2	12.70	0.8

(2) Flare's Expansion Pipe
The projection when the new flare tool is used, is as follows. When using the conventional flare tool, be sure to secure the following projection by using a gauge for projection adjustment.

※When using the conventional flare tool, use a gauge for projection adjustment.

Projection "A"(mm) for Flare Tool for R410A (Clutch Type)



1/4: 0-0.5

1/2: 0-0.5

(3) Flare Nut Dimensions
Along with changes in the expansion pipe dimensions, the opposite side dimensions of flare nuts whose nominal diameter is 1/2 change so that different torque wrenches must be used.

※Figures in ( ) denote those for HCFC-22.

Nominal diameter	Opposite Side Dimensions (mm) of Flare Nuts for R410A
1/4	17 (17)
3/8	22 (22)
1/2	26 (24)

3. Servicing Tools

(Changes in the Product and Components)

- In order to prevent any other refirigerant from being charged, R410A model is provided with the outdoor unit whose control valve has a different service port diameter (port size: 7/16 UNF 20 threads per inch → 1/2 UNF 20 threads per inch).
- In order to secure larger pressure resisting strength, flare expansion pipe dimensions and flare nut dimensions have been changed.

(New Tools for R410A)

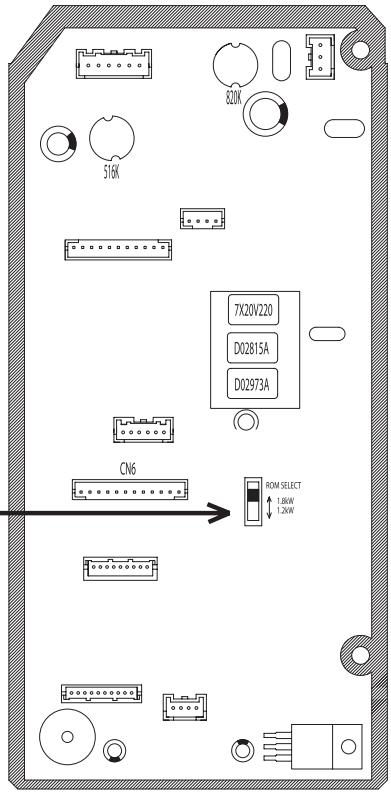
New tools for R410A	Applicable to HCFC-22 Model	Changes
Gauge manifold	×	As pressure is high, it is impossible to measure by means of conventional gauge. In order to prevent any other refrigerant from being charged, each port diameter has been changed.
Charge hose	×	In order to increase pressure resistance, hose materials and port size have been changed (to 1/2 UNF 20 threads per inch). When purchasing a charge hose, be sure to confirm the port size.
Electronic balance for refrigerant charging	○	As pressure is high and gasification speed is fast, it is difficult to read the indicated value by means of charging cylinder, as air bubbles occur.
Torque wrench	× (nominal diam. 1/2, 5/8)	The opposite side dimensions of flare nuts increase. Incidentally, a common wrench is used for nominal diameters 1/4 and 3/8.
Flare tool (clutch type)	○	By increasing the clamp bar's receiving hole, strengh of spring in the tool has been improved.
Gauge for projection adjustment	–	Used when performing flare processing by means of conventional flare tool.
Vacuum pump adapter	○	Connected to conventional vacuum pump.
Gas leakage detector	×	Exclusive for HFC refrigerant.

- Incidentally, the "refrigerant cylinder" comes with the refrigerant designation (R410A) and protector coating in the U.S.'s ARI specified rose color (ARI color code: PMS 507).
- Also, the "charge port and packing for refrigerant cylinder" require 1/2 UNF 20 threads per inch corresponding to the charge hose's port size.

SWITCH SETTING TO SELECT 1.8kW OR 1.2kW CAPACITY

⚠ CAUTION

Before setting the switch, make sure to turn OFF power supply and then set the position of the switch otherwise will cause damage to the Main PCB.



SWITCH POSITION	CAPACITY SELECTION
1. 8kW 1. 2kW	1.8kW
1. 8kW 1. 2kW	1.2kW

NOTE:
FACTORY default setting is at 1.8kW capacity.

SAFETY PRECAUTION

- Please read the “Safety Precaution” carefully before operating the unit to ensure correct usage of the unit.
- Pay special attention to signs of “ ⚠ **Warning**” and “ ⚠ **Caution**”. The “Warning” section contains matters which, if not observed strictly, may cause death or serious injury. The “Caution” section contains matters which may result in serious consequences if not observed properly. Please observe all instructions strictly to ensure safety.
- The 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

⚠ 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.

- Be sure to use the specified piping set for R410A. Otherwise, this may result in broken copper pipes or faults.

⚠ CAUTION

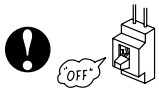
- A circuit breaker should be installed depending on the mounting site of the unit. Without a circuit breaker, the danger of electric shock exists.
- Do not install near location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it.

- Please ensure smooth flow of water when installing the drain hose.

PRECAUTIONS DURING SHIFTING OR MAINTENANCE

⚠ WARNING

- 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.



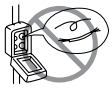
- Please contact your agent for maintenance. Improper self maintenance may cause electric shock and fire.
- Please contact your agent if you need to remove and reinstall the unit. Electric shock or fire may occur if you remove and reinstall the unit yourself improperly.
- If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service/parts centers.

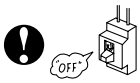
PRECAUTIONS DURING OPERATION

⚠ WARNING

- 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.



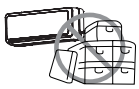


- During thunder storm, disconnect and turn off the circuit breaker.

PRECAUTIONS DURING OPERATION

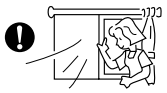
CAUTION

- 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.

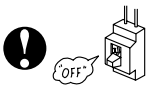


- Do not direct the cool air coming out from the air-conditioner panel to face household heating apparatus as this may affect the working of apparatus such as the electric kettle, oven etc.

- Please ensure that outdoor mounting frame is always stable, firm and without defect. If not, the outdoor unit may collapse and cause danger.

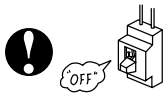
- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.

- 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.



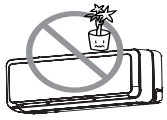
- Please switch off the unit and turn off the circuit breaker during cleaning, the high-speed fan inside the unit may cause danger.

- Turn off the circuit breaker if the unit is not to be operated for a long period.



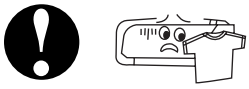
- Do not climb on the outdoor unit or put objects on it.

- 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.

- Do not hang any laundry onto the moveable panels.
  The moveable panels may get dislodged and may cause serious injuries.

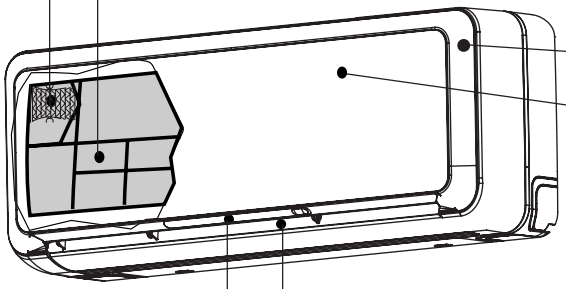


- When operating the unit with the door and windows opened, (the room humidity is always above 80%) and with the air deflector facing down or moving automatically for a long period of time, water will condense on the air deflector and drips down occasionally. This will wet your furniture. Therefore, 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.

- This appliance is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction. Children must be supervised not to play with the appliance.

NAMES AND FUNCTIONS OF EACH PART

INDOOR UNIT



AIR CLEANSING FILTER
(Refer Instruction manual)

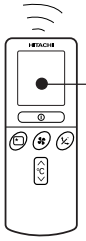
AIR FILTER
To prevent dust from coming into the indoor unit.
(Refer Instruction manual)

FRONT PANEL

MOVEABLE PANEL
It will be open when the air conditioner is operate and close when the air conditioner is not in operation. (Occasionally it may not be open during the operating mode)

HORIZONTAL DEFLECTOR ● VERTICAL DEFLECTOR (AIR OUTLET)
(Refer Instruction manual)

INDOOR UNIT INDICATORS
Light indicator showing the operating condition.
(Refer page 13)



REMOTE CONTROLLER
Send out operation signal to the indoor unit. So as to operate the whole unit.
(Refer Instruction manual)

■ **Moveable Panel**

- It will open up automatically when the air conditioner is in operation and it will close up automatically when the air conditioner stopped operating. Avoid physical adjustments as it may damage the panels' mechanisms.
- Please do not touch the moving panel during operations as it may pinch your fingers.

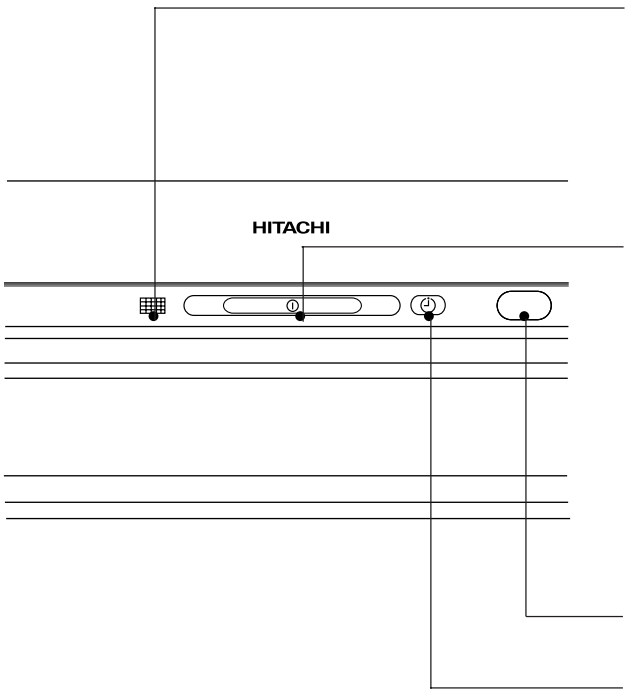
NOTE

- Air cleansing and deodorizing filters are washable and reusable up to 20 times by using vacuum cleaner or water rinse under running tap water. Type number for this air cleansing filter is <SPX-CFH20>. Please use this number for ordering when you want to renew it.
- Air cleansing filter should be cleaned every month or sooner if noticeable loading occurs. When used overtime, it may loose its deodorizing function. For maximum performance, it is recommended to replace it every 1 year depending on application requirements.

MODEL NAME AND DIMENSIONS

MODEL		WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
RAK-18QH8S(W)	RAK-18QH8S(B)	795	295	198
RAK-18QH8(W)	RAK-18QH8(B)			
RAK-25QH8(W)	RAK-25QH8(B)			
RAK-35QH8(W)	RAK-35QH8(B)			
RAK-50QH8(W)	RAK-50QH8(B)			

INDOOR UNIT INDICATORS



FILTER LAMP
When the device is operated for a total of about 200 hours, the FILTER lamp lights to indicate that it is time to clean the filter. The lamp goes out when the " (AUTO SWING)" button is pressed while the device is on "STANDBY MODE".

OPERATION LAMP
This lamp lights during operation.
The OPERATION LAMP flashes in the following cases during heating.

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

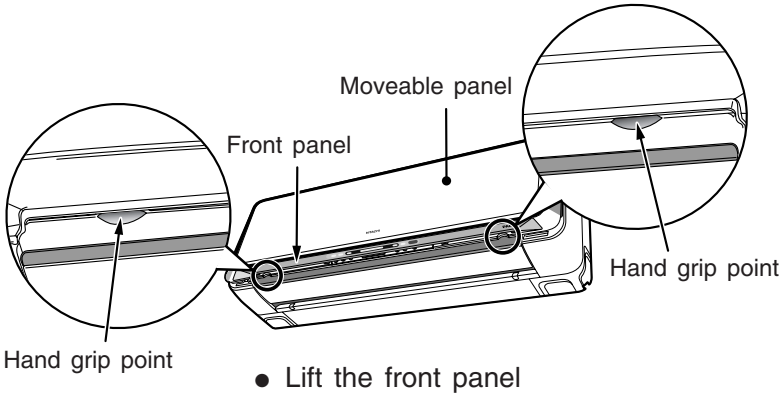
(2) During defrosting
Defrosting will be performed about once every one hour when frost forms on the heat exchanger of the outdoor unit, for 5–10 minutes each time.

SIGNAL RECEIVING PORT

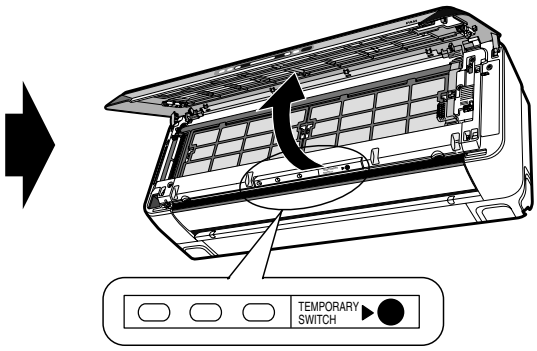
TIMER LAMP
This lamp lights when the timer is working.

OPERATION INDICATOR

1. Opening up the front panel



● Lift the front panel



● Do not hold the moveable panel when the front panel is in either opened/closed position.

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 previously set operation 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.

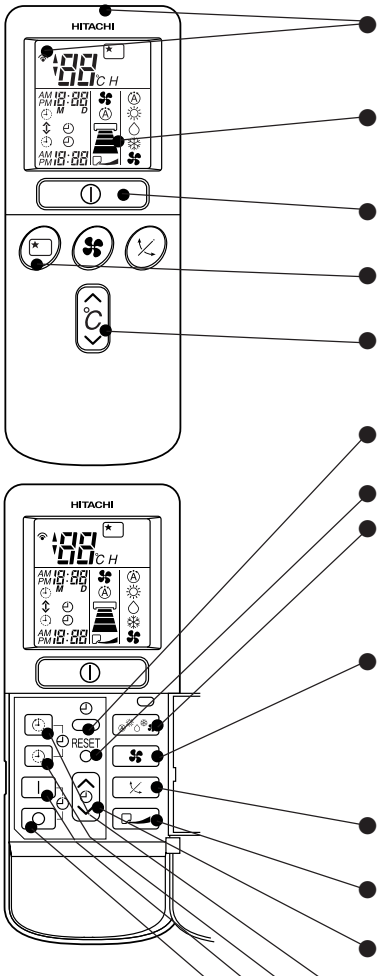
⚠ CAUTION

- Never try to force open/close the moveable panel manually.
  Manually opening or closing the moveable panel may cause breakdowns (The moveable panel will automatically close or open when the power supply is switched on or switched off and whenever the unit is in operations or has stopped operating.

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.
- 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.



- **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 buttons**
  Use these buttons 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 buttons**
- **FUNCTION selector**
  Use this button to select the operating mode. Every time you press it, the mode will change from Ⓐ (AUTO) to ☼ (HEAT) to ○ (DEHUMIDIFY) to ❄ (COOL) and to ✤ (FAN) cyclically.
- **FAN SPEED selector**
  This determines the fan speed. Every time you press this button, the intensity of circulation will change from Ⓐ (AUTO) to (HI) to (MED) to (LOW) to (SILENT) (This button allows selecting the optimal or preferred fan speed for each operation mode).
- **AUTO SWING button**
  Controls the angle of the horizontal air deflector.
- **EXTENDED AIRFLOW**
  Use this button to deliver faster and more comfortable air-conditioning.
- **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.

Ⓐ	AUTO
☼	HEAT
○	DEHUMIDIFY
❄	COOL
✤	FAN
	FAN SPEED SILENT LOW MED HI
	SLEEPING
○	STOP (CANCEL)
I	START (RESERVE)
⏻	START/STOP
	TIME
	TIMER SET
	TIMER SELECTOR ON TIMER OFF TIMER
	AUTO SWING
	EXTENDED AIRFLOW

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.

VARIOUS FUNCTIONS

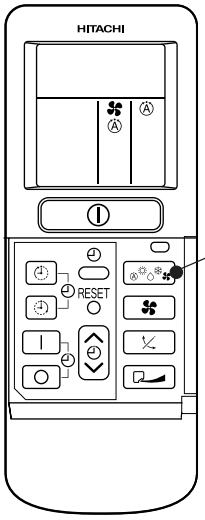
■ Auto Restart Control

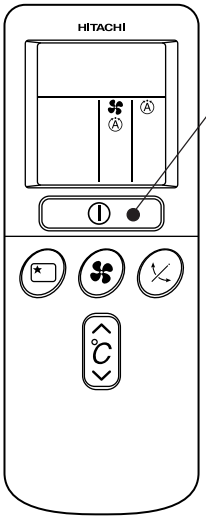
- If there is a power failure, operation will be automatically restarted when the power is resumed with previous operation mode and airflow direction.
  (As the operation is not stopped by remote controller.)
- If you intend not to continue the operation when the power is resumed, switch off the power 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 or OFF by remote control.
  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, COOL or DEHUMIDIFY depending on the current room temperature. The selected mode of operation will change when the room temperature varies. However the mode of operation will not change when indoor unit connected to multi type outdoor unit.





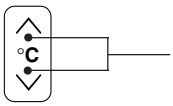
1 Press the FUNCTION selector so that the display indicates the Ⓐ (AUTO) mode of operation.

- When AUTO has been selected, the device will automatically determine the mode of operation, HEAT, COOL or DEHUMIDIFY depending on the current room temperature. However the mode of operation will not change when indoor unit connected to multi type outdoor unit.
- If the mode automatically selected by the unit is not satisfactory, manually change the mode setting (heat, dehumidify, cool or fan).

START / STOP Press the ⏻ (START/STOP) button.
Operation starts with a beep.
Press the button again to stop operation.

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

You can raise or lower the temperature setting as necessary by maximum of 3°C.



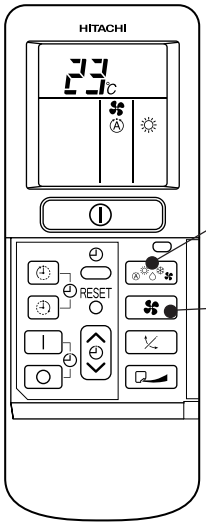
Press the temperature button and the temperature setting will change by 1°C each time.

- The preset temperature and the actual room temperature may vary somewhat depending on conditions.
- The display does not indicate the preset temperature in the AUTO mode. If you change the setting, the indoor unit will produce a beep.

Press the ✿ (FAN SPEED) button, AUTO, LOW and SILENT is available.

HEATING OPERATION

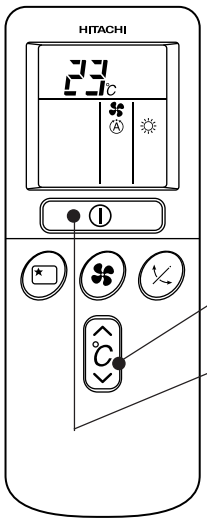
- Use the device for heating when the outdoor temperature is under 21°C.
  When it is too warm (over 21°C), the heating function may not work in order to protect the device.
- In order to keep reliability of the device, please use this device above -15°C of the outdoor temperature.



1 Press the FUNCTION selector so that the display indicates ☼ (HEAT).

2 Set the desired FAN SPEED with the ✣ (FAN SPEED) button (the display indicates the setting).

- Ⓐ (AUTO) : The fan speed changes automatically according to the temperature of the air which blows out.
- (HI) : Economical as the room will become warm quickly. But you may feel a chill at the beginning.
- (MED) : Fan speed slow.
- (LOW) : Fan speed slower.
- (SILENT) : Fan speed ultra slower.



3 Set the desired room temperature with the TEMPERATURE buttons (the display indicates the setting).

The temperature setting and the actual room temperature may vary somewhat depending on conditions.

START / STOP Press the ⏻ (START/STOP) button. Heating operation starts with a beep. Press the button again to stop operation.

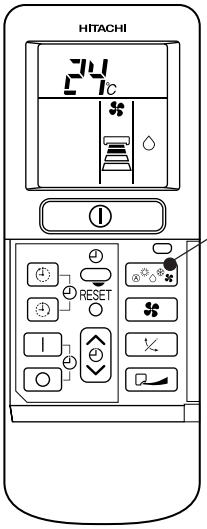
■ As the settings are stored in memory in the remote controller, you only have to press the ⏻ (START/STOP) button next time.

■ Defrosting

Defrosting will be performed about once an hour when frost forms on the heat exchange of the outdoor unit, for 5~10 minutes each time.
During defrosting operation, the operation lamp blinks in cycle of 3 seconds on and 0.5 second off.
The maximum time for defrosting is 20 minutes.
However, if it is connected to multi type outdoor unit, the maximum time for defrosting is 15 minutes.
(If the piping length used is longer than usual, frost will likely to form.)

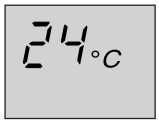
DEHUMIDIFYING OPERATION

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.



1 Press the FUNCTION selector so that the display indicates ♢ (DEHUMIDIFY).
The FAN SPEED is set at LOW or SILENT.

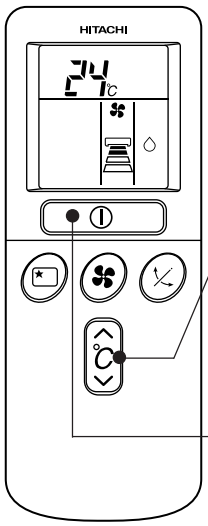
2 Set the desired room temperature with the TEMPERATURE button (the display indicates the setting).



The range of 20-26˚C is recommended as the room temperature for dehumidifying.

START / STOP Press the ⏻ (START/STOP) button. Dehumidifying operation starts with a beep. Press the button again to stop operation.

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

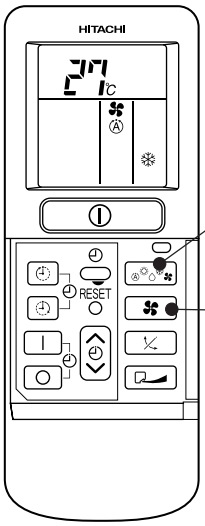


■ Dehumidifying Function

- 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.
- The preset room temperature may not be reached depending on the number of people present in the room or other room conditions.

COOLING OPERATION

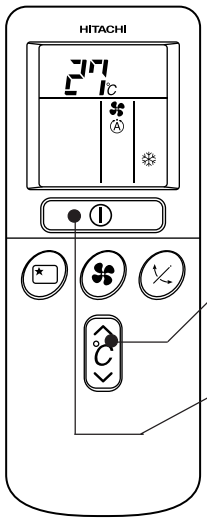
Use the device for cooling when the outdoor temperature is 21~43°C.
If in doors humidity is very high (80%), some dew may form on the air outlet grille of the indoor unit.



1 Press the FUNCTION selector so that the display indicates ❄ (COOL).

2 Set the desired FAN SPEED with the ✾ (FAN SPEED) button (the display indicates the setting).

- Ⓐ (AUTO) : The FAN SPEED is HI at first and varies to MED automatically when the preset temperature has been reached.
- (HI) : Economical as the room will become cool quickly.
- (MED) : Fan speed slow.
- (LOW) : Fan speed slower.
- (SILENT) : Fan speed ultra slower.



3 Set the desired room temperature with the TEMPERATURE button (the display indicates the setting).

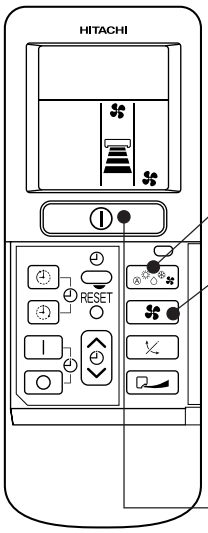
The temperature setting and the actual room temperature may vary some how depending on conditions.

START / STOP Press the ⏻ (START/STOP) button. Cooling operation starts with a beep. Press the button again to stop operation. The cooling function does not start if the temperature setting is higher than the current room temperature (even though the ⏻ (OPERATION) lamp lights). The cooling function will start as soon as you set the temperature below the current room temperature.

■ As the settings are stored in memory in the remote controller, you only have to press the ⏻ (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.



1 Press the FUNCTION selector so that the display indicates ✽ (FAN).

2 Press the ✽ (FAN SPEED) button.

- (HI) : The strongest air blow.
- (MED) : Fan speed slow.
- (LOW) : Fan speed slower.
- (SILENT) : Fan speed ultra slower.

START / STOP Press the ⏻ (START/STOP) button. Fan operation starts with a beep. Press the button again to stop operation.

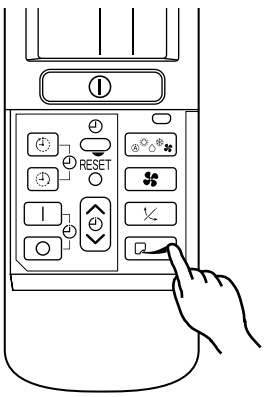
FAN SPEED (AUTO) ····· When the AUTO fan speed mode is set in the cooling/heating operation:

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.

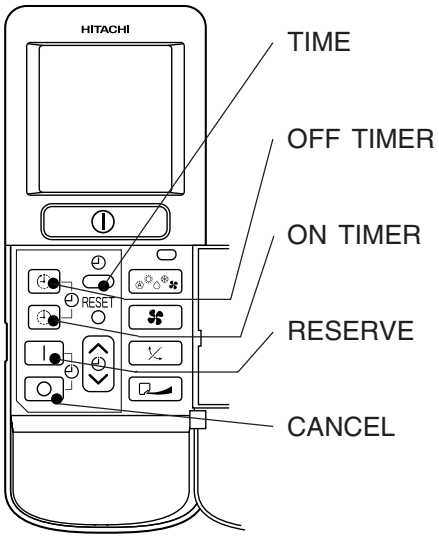
EXTENDED AIRFLOW

■ During operations, press the [⤳] button to select the various operating modes that will set the preferred air flow direction and will also adjust the air flow speed to reach the furthest distance within its range. (During the cooling operating mode, the air flow direction and air flow speed will return to their original settings after 3 hours of operations).

- If the ⤳ (EXTENDED AIRFLOW) button is pressed while the AUTO SWING mode is set, the AUTO SWING mode is cancelled and the EXTENDED AIRFLOW mode is set.
- If the ⤫ (AUTO SWING) button is pressed while the EXTENDED AIRFLOW mode is set, the EXTENDED AIRFLOW mode is cancelled and the AUTO SWING mode is set.
- If the ⤳ (EXTENDED AIRFLOW) button is pressed when the horizontal air deflector stops at your preferred angle, the deflector will change to EXTENDED AIRFLOW.
- As the angle of the horizontal air deflector changes, the air may blow directly onto the body.



HOW TO SET THE TIMER

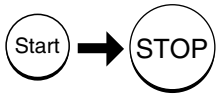


Time

After you change the batteries;

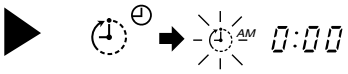
1 Set the ◴ (TIME) button.

OFF-Timer

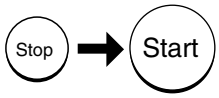


You can set the device to turn off at the preset time.

1 Press the ◴ (OFF-TIMER) button. The ◴ (OFF) mark blinks on the display.

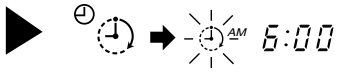


ON-Timer

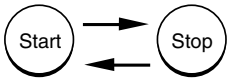


- The device will turn on at the designated times.

1 Press the ◴ (ON-TIMER) button the ◴ (ON) mark blinks on the display.

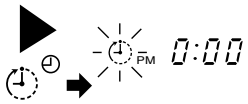


ON/OFF-Timer

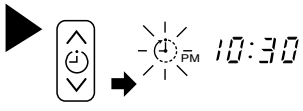


- The device will turn on (off) and off (on) at the designated times.
- The switching occurs first at the preset time that comes earlier.
- The arrow mark appearing on the display indicates the sequence of switching operations.

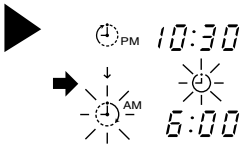
1 Press the ◴ (ON-OFF) button so that the ◴ (OFF) mark blinks.



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



3 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 ○ (CANCEL) button.
The ◴ (RESERVED) sign goes out with a beep and the ◴ (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 ⏲ (TIME) button.

3 Set the current time with the TIMER control button.

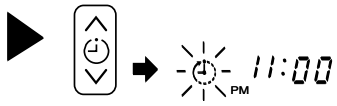
4 Press the ⏲ (TIME) button again.
The time indication starts lighting instead of flashing.

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

- The time indication will disappear automatically in 10 second.
- To check the current time setting, press the ⏲ (TIME) button twice.

The setting of the current time is now complete.

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

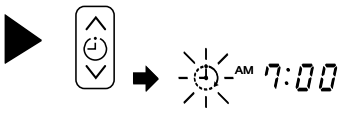


3 Point the signal window of the remote controller toward the indoor unit, and press the ❙ (RESERVE) button.
The ⏲ (OFF) mark starts lighting instead of flashing and the sign ⏲ (RESERVED) lights. A beep occurs and the ⏲ (TIMER) lamp lights on the indoor unit.

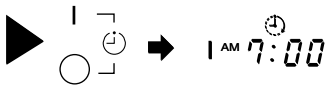
Example: The device will turn off at 11:00p.m.

The setting of turn-off time is now complete.

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

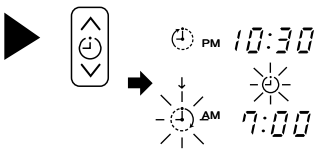


3 Point the signal window of the remote controller toward the indoor unit, and press the ❙ (RESERVE) button.
The ⏲ (ON) mark starts lighting instead of flashing and the ⏲ (RESERVED) sign lights. A beep occurs and the ⏲ (TIMER) lamp lights on the indoor unit.

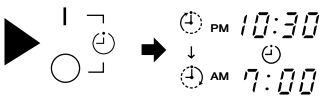


Example:
The device will turn on at 7:00 a.m.
The setting of the turn-on time is now complete.

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

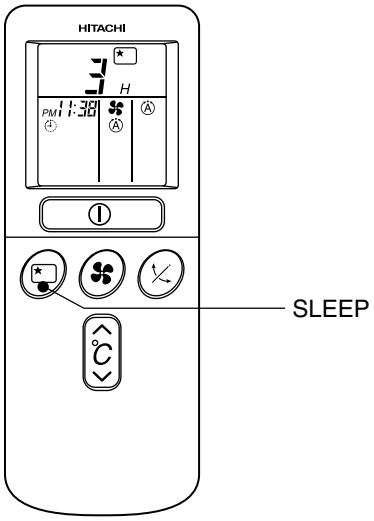


Example:
The device will turn off at 10:30 p.m. and it will be turned on at 7:00 a.m.
The settings of the turn-on/off times are now complete.

- 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 ❙ (RESERVE) button in order to use the same settings next time.

HOW TO SET THE SLEEP TIMER

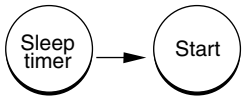
Set the current time at first if it is not set before (see the pages for setting the current time). Press the ⊡ (SLEEP) button, and the display changes as shown below.



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.

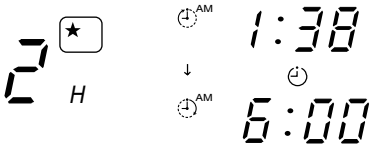
Example: If you set 3 hours sleep time at 11:38 p.m., the turn-off time is 2:38 a.m.



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.



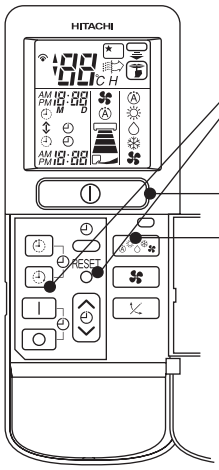
For heating:

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

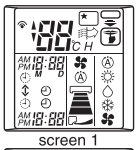
How to Cancel Reservation

Point the signal window of the remote controller toward the indoor unit, and press the ○ (CANCEL) button.
The ◴ (RESERVED) sign goes out with a beep and the ◴ (TIMER) lamp turns off on the indoor unit.

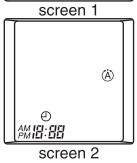
SHIFT VALUE ADJUSTMENT



1. Press and hold the ON-TIMER ⏲ and press and release RESET button until screen 1 appear.

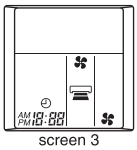

screen 1

2. Release ON-TIMER ⏲ button and screen 1 will change to screen 2.

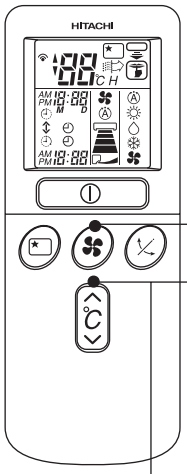

screen 2

3. Press the FUNCTION SELECTOR so that the display indicates ✣ (FAN MODE).

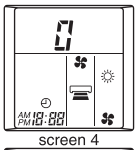
4. Press the (START/STOP) button, screen 3 will appear.


screen 3

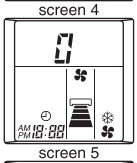
5. Close the lid of the remote control.



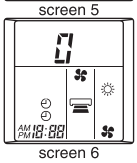
6. Press the TEMPERATURE button, display screen will change to screen 4


screen 4

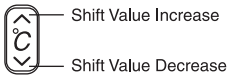
7. By setting FAN SPEED button to HI or MED, it will goes to cooling shift mode. Screen 5 indicates cooling shift mode.


screen 5

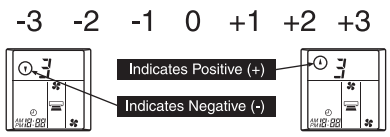
8. By setting FAN SPEED button to LOW or SILENT, it will goes to heating shift mode. Screen 6 indicates heating shift mode.


screen 6

9. Using the TEMPERATURE button to adjust the shift value.



10. There are total 7 shift value, ranging from -3 to 3. By default, the shift value is 0.



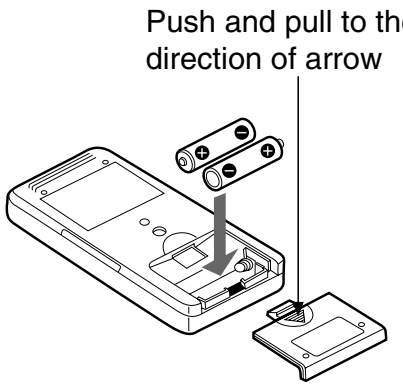
11. The shift value on screen will disappear after the remote controller is idle for 10 seconds.

12. If the signal is not sent, repeat STEP ① to STEP ⑨

HOW TO EXCHANGE THE BATTERIES IN THE REMOTE CONTROLLER

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

2 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.

TEMPORARY SWITCH

If the remote controller does not work due to battery failure, press this switch to start and stop operation.

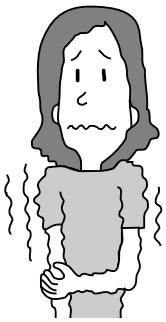
- This temporary operation will be at the setting made most recently. (The unit will immediately go into automatic operation once power is switched on.)

CIRCUIT BREAKER

When you do not use the room air conditioner, set the circuit breaker to “OFF”.

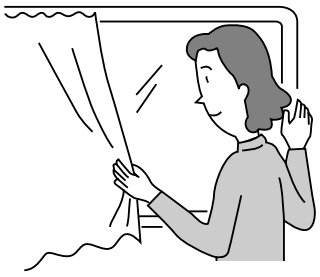
THE IDEAL WAYS OF OPERATION

Suitable Room Temperature



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

Install curtain or blinds



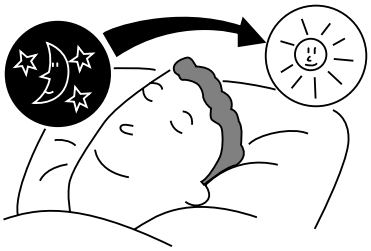
It is possible to reduce heat entering the room through windows.

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.

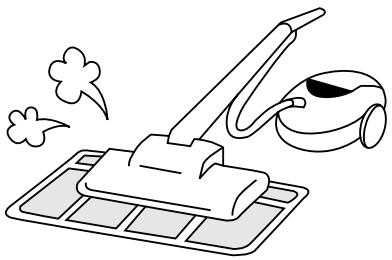
Effective Usage Of Timer

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.



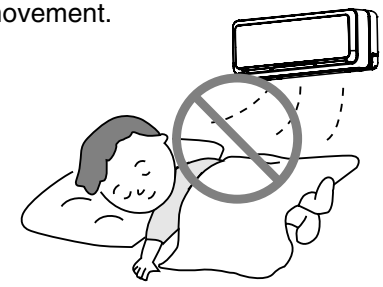
Do Not Forget To Clean The Air Filter

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.



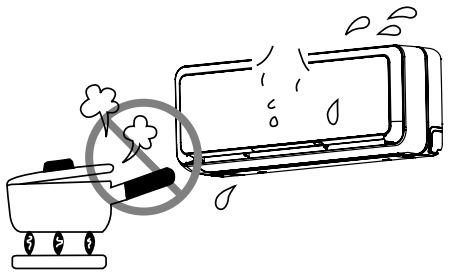
Please Adjust Suitable Temperature For Baby And Children

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.



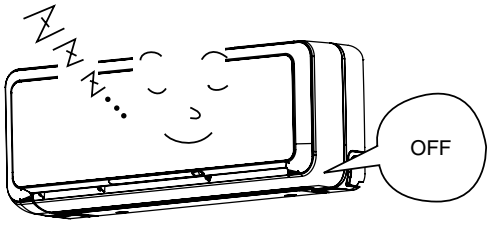
The Air Conditioner And The Heat Source In The Room

⚠ 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.



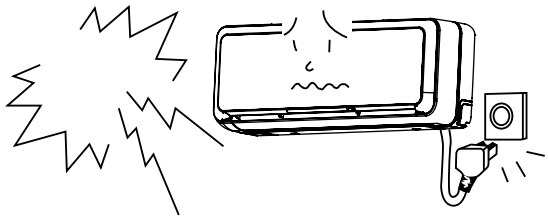
Not Operating For A Long Time

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.



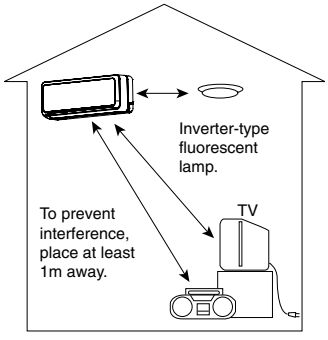
When Lightning Occurs

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



Interference From Electrical Products

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



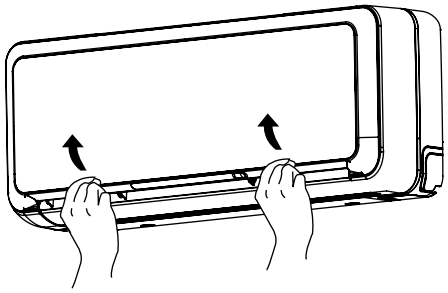
ATTACHING THE AIR CLEANSING FILTERS

⚠ CAUTION

Cleaning and maintenance must be carried out only by qualified service personal. Before cleaning, stop operation and switch off the power supply.

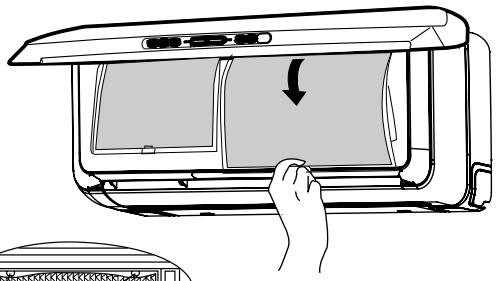
1 **Open the front panel.**

- Pull up the front panel by holding it at both sides with both hands.



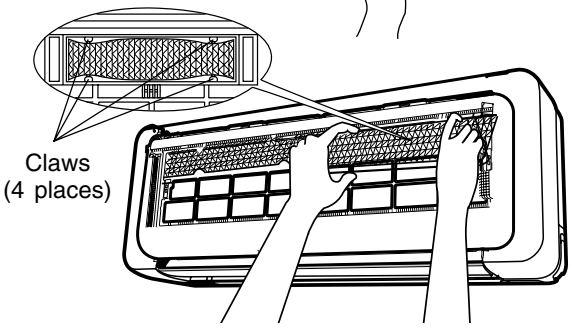
2 **Remove the filter.**

- Push upward to release the claws and pull out the filter.



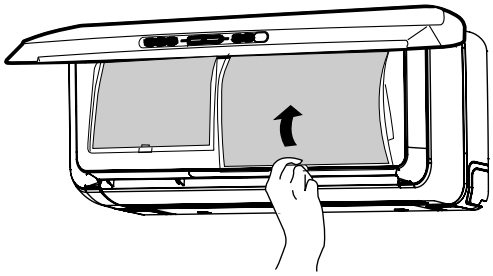
3 **Attaching the air cleansing filters to the filter.**

- Attach the air cleansing filters to the frame by gently compress its both sides and release after insertion into filter frame.



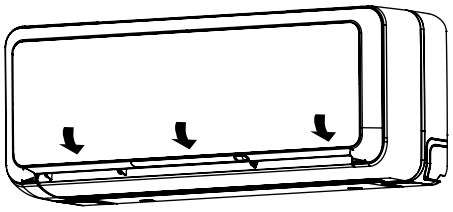
⚠ CAUTION

Do not bend the air cleansing filter as it may cause damage to the structure.



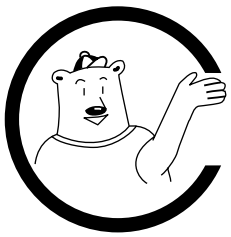
4 **Attach the filters.**

- Attach the filters by ensuring that the surface written “FRONT” is facing front.
- After attaching the filters, push the front panel at three arrow portion as shown in figure and close it.



NOTE

- In case of removing the air cleansing filters, please follow the above procedures.
- The cooling capacity is slightly weakened and the cooling speed becomes slower when the air cleansing filters are used. So, set the fan speed to "HIGH" when using it in this condition.
- Do not operate the air conditioner without filter. Dust may enter the air conditioner and fault may occur.



MAINTENANCE

⚠ CAUTION

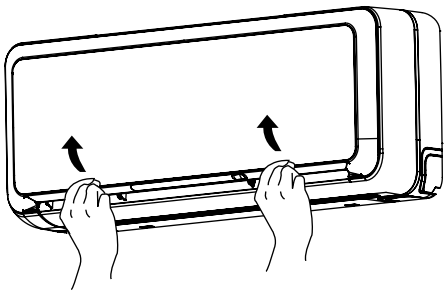
Cleaning and maintenance must be carried out only by qualified service personal. Before cleaning, stop operation and switch off the power supply.

1. AIR FILTER

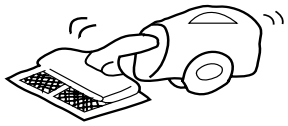
Clean the air filter, as it removes dust inside the room. In case the air filter is full of dust, the air flow will decrease and the cooling capacity will be reduced. Further, noise may occur. Be sure to clean the filter following the procedure below.

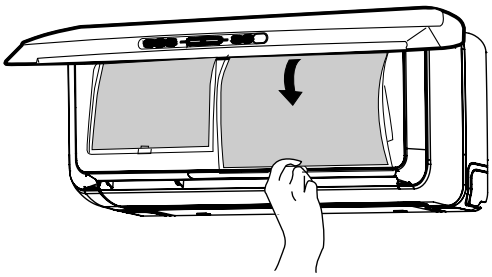
PROCEDURE

1 Open the front panel and remove the filter
- Gently lift and remove the air cleansing filter from the air filter frame.

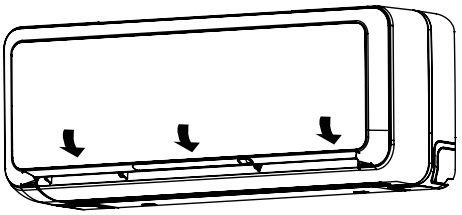


2 Vacuum dust from the air filter and air cleansing filter using vacuum cleaner. If there is too much dust, air filter only rinse under running tap water and gently brush it with soft bristle brush. Allow filters to dry in shade.





3
- Re-insert the air cleansing filter to the filter frame. Set the filter with “FRONT” mark facing front, and slot them into the original state.
- After attaching the filters, push the front panel at three arrow portions as shown in figure and close it.

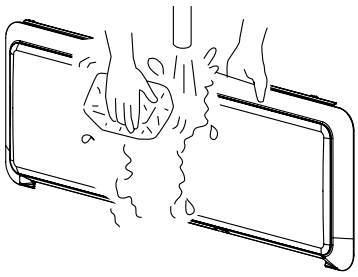


⚠ CAUTION

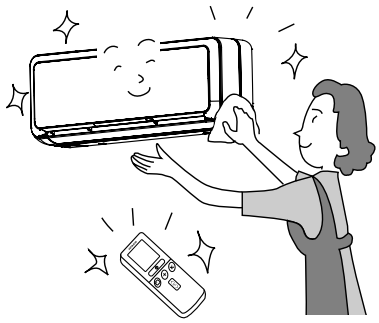
- Do not wash with hot water at more than 40°C. The filter may shrink.
- When washing it, shake off moisture completely and dry it in the shade; do not expose it directly to the sun. The filter may shrink.
- Do not use detergent on the air cleansing filter as some detergent may deteriorate the filter electrostatic performance.

2. Washable Front Panel

- Remove the front panel and wash with clean water.
  Wash it with a soft sponge.
  After using neutral detergent, wash thoroughly with clean water.

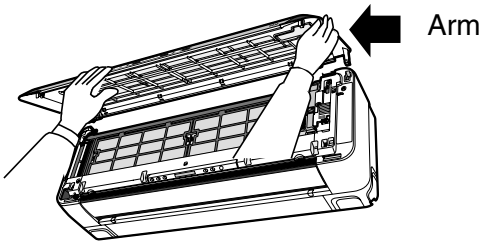


- When front panel is not removed, wipe it with a soft dry cloth. Wipe the remote controller thoroughly with a soft dry cloth.
- Wipe the water thoroughly.
  If water remains at indicators or signal receiver of indoor unit, it causes trouble.



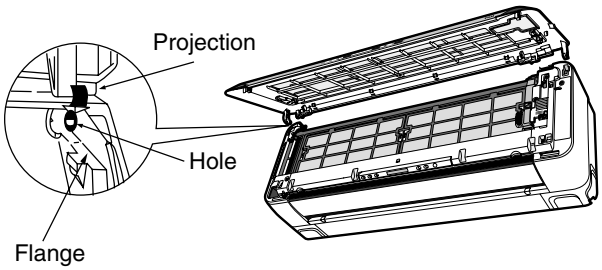
Method of removing the front panel.
Be sure to hold the front panel with both hands to detach and attach it.

Removing the Front Panel



- When the front panel is fully opened with both hands, push the right arm to the inside to release it, and while closing the front panel slightly, put it out forward.

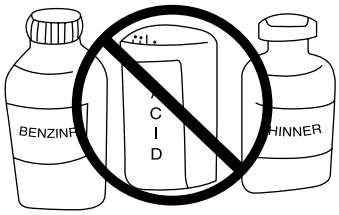
Attaching the Front Panel



- Move the projections of the left and right arms into the **Flanges** in the unit and securely insert them into the holes.

⚠ CAUTION

- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.
- Never use hot water (above 40°C), benzine, gasoline, acid, thinner or a brush, because they will damage the plastic surface and the coating.

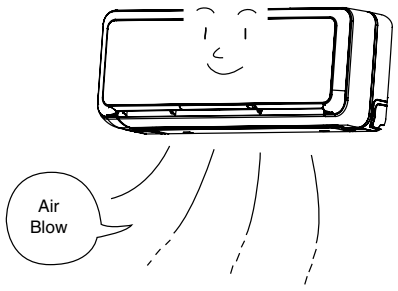


⚠ CAUTION

Cleaning and maintenance must be carried out only by qualified service personal. Before cleaning, stop operation and switch off the power supply.

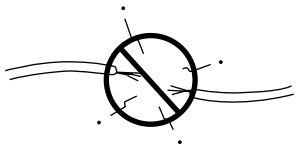
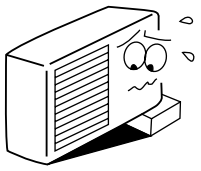
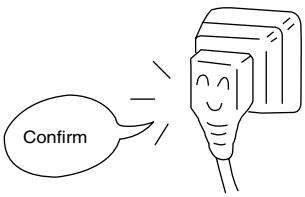
3. MAINTENANCE AT BEGINNING OF LONG OFF PERIOD

- Running the unit setting the operation mode to (FAN) and the fan speed to HI for about half a day on a fine day, and dry the whole of the unit.
- Switch off the power plug.



REGULAR INSPECTION

PLEASE CHECK THE FOLLOWING POINTS BY QUALIFIED SERVICE PERSONAL EITHER EVERY HALF YEARLY OR YEARLY. CONTACT YOUR SALES AGENT OR SERVICE SHOP.

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

AFTER SALE SERVICE AND WARRANTY

WHEN ASKING FOR SERVICE, CHECK THE FOLLOWING POINTS.

CONDITION	CHECK THE FOLLOWING POINTS
If the remote controller is not transmitting a signal. Remote controller display is dim or blank.)	● Do the batteries need replacement? ● Is the polarity of the inserted batteries correct?
When it does not operate	● Is the fuse all right? ● Is the voltage extremely high or low? ● Is the circuit breaker “ON”? ● Is the setting of operation mode different from other indoor units?
When it does not cool well When it does not hot well	● Is the air filter blocked with dust? ● 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 of heat in the room? ● Is the set temperature suitable? ● Are the air inlets or air outlets of indoor and outdoor units blocked? ● Is the fan speed “LOW” or “SILENT”?

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 the air filter and the evaporator regularly must be cleaned 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.

NOTE:

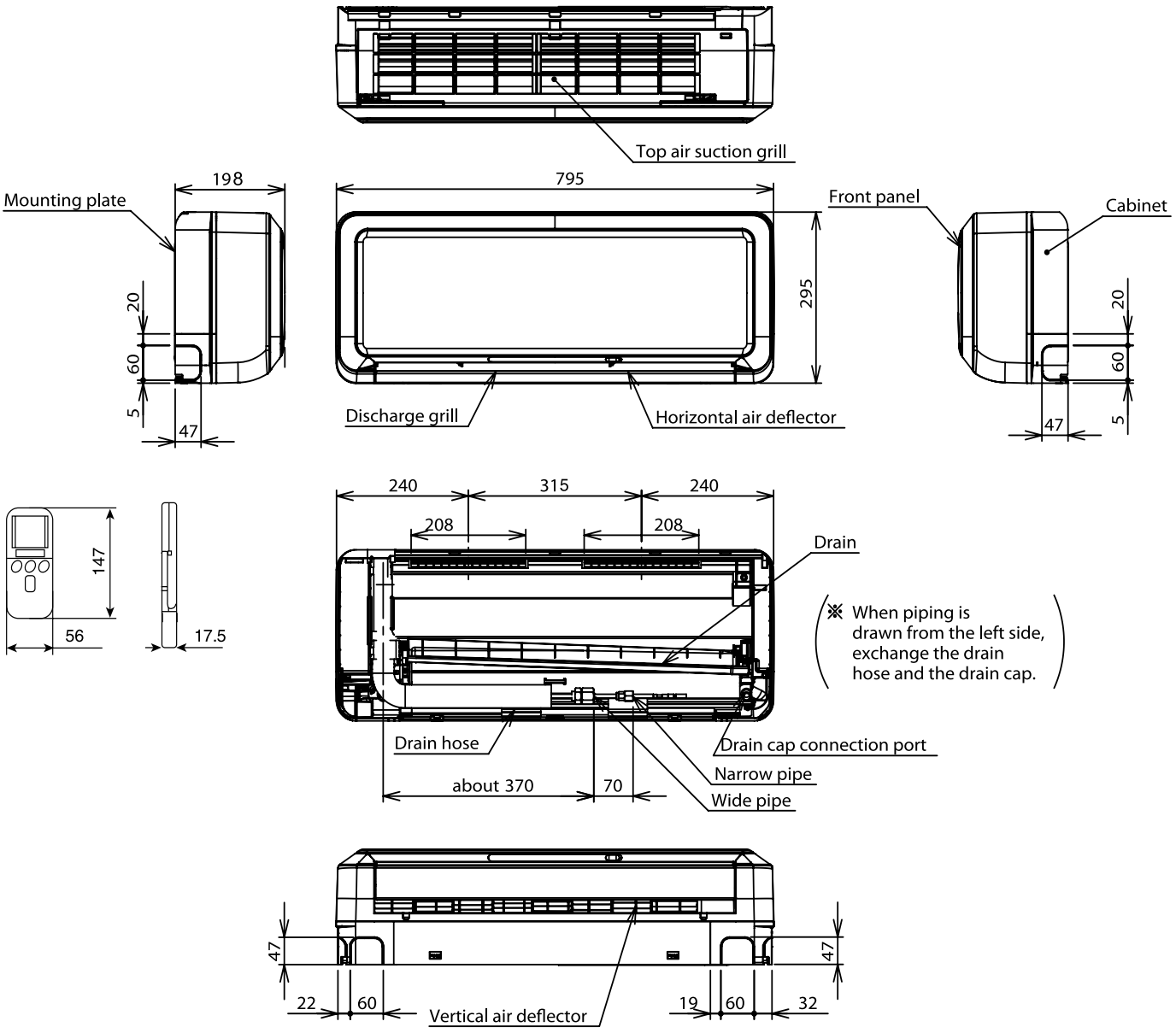
- If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service parts centers.
- On switching on the equipment, particularly when the room light is dimmed, a slight brightness fluctuation may occur. This is of no consequence.
  The conditions of the local Power Supply Companies are to be observed.

■ The moveable panels are not moving
- Check to ensure whether the front panels have been installed in a proper manner.

CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAK-18QH8S (W), RAK-18QH8 (W), RAK-25QH8 (W), RAK-35QH8 (W), RAK-50QH8 (W)
RAK-18QH8S (B), RAK-18QH8 (B), RAK-25QH8 (B), RAK-35QH8 (B), RAK-50QH8 (B)

INDOOR UNIT



MAIN PARTS COMPONENT

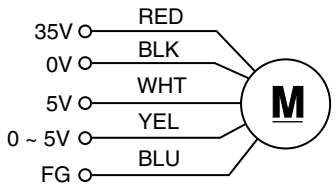
THERMOSTAT

Thermostat Specifications

MODEL			RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)	
THERMOSTAT MODEL			IC	
OPERATION MODE			COOL	HEAT
TEMPERATURE °C (°F)	INDICATION 16	ON	15.7 (60.3)	16.7 (62.1)
		OFF	15.3 (59.5)	17.3 (63.1)
	INDICATION 24	ON	23.7 (74.7)	24.7 (76.5)
		OFF	23.3 (73.9)	25.3 (77.5)
	INDICATION 32	ON	31.7 (89.1)	32.3 (90.1)
		OFF	31.3 (88.3)	32.7 (90.9)

FAN MOTOR

Fan Motor Specifications

MODEL	RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)
POWER SOURCE	DC: 5V, 35V
OUTPUT	25W
CONNECTION	 (Control circuit built in)

BLU : BLUE YEL : YELLOW BRN : BROWN WHT : WHITE

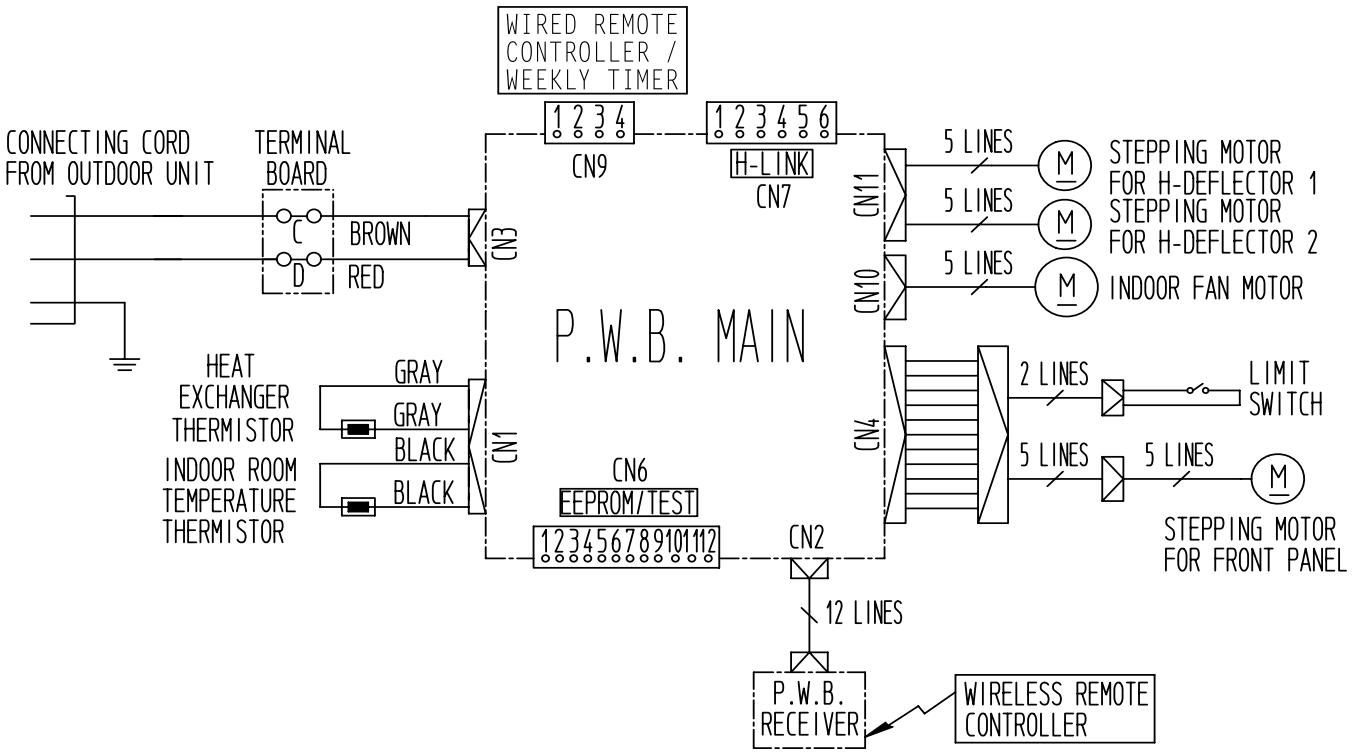
GRY : GRAY ORN : ORANGE GRN : GREEN RED : RED

BLK : BLACK PNK : PINK VIO : VIOLET

WIRING DIAGRAM

MODEL RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W)
RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)

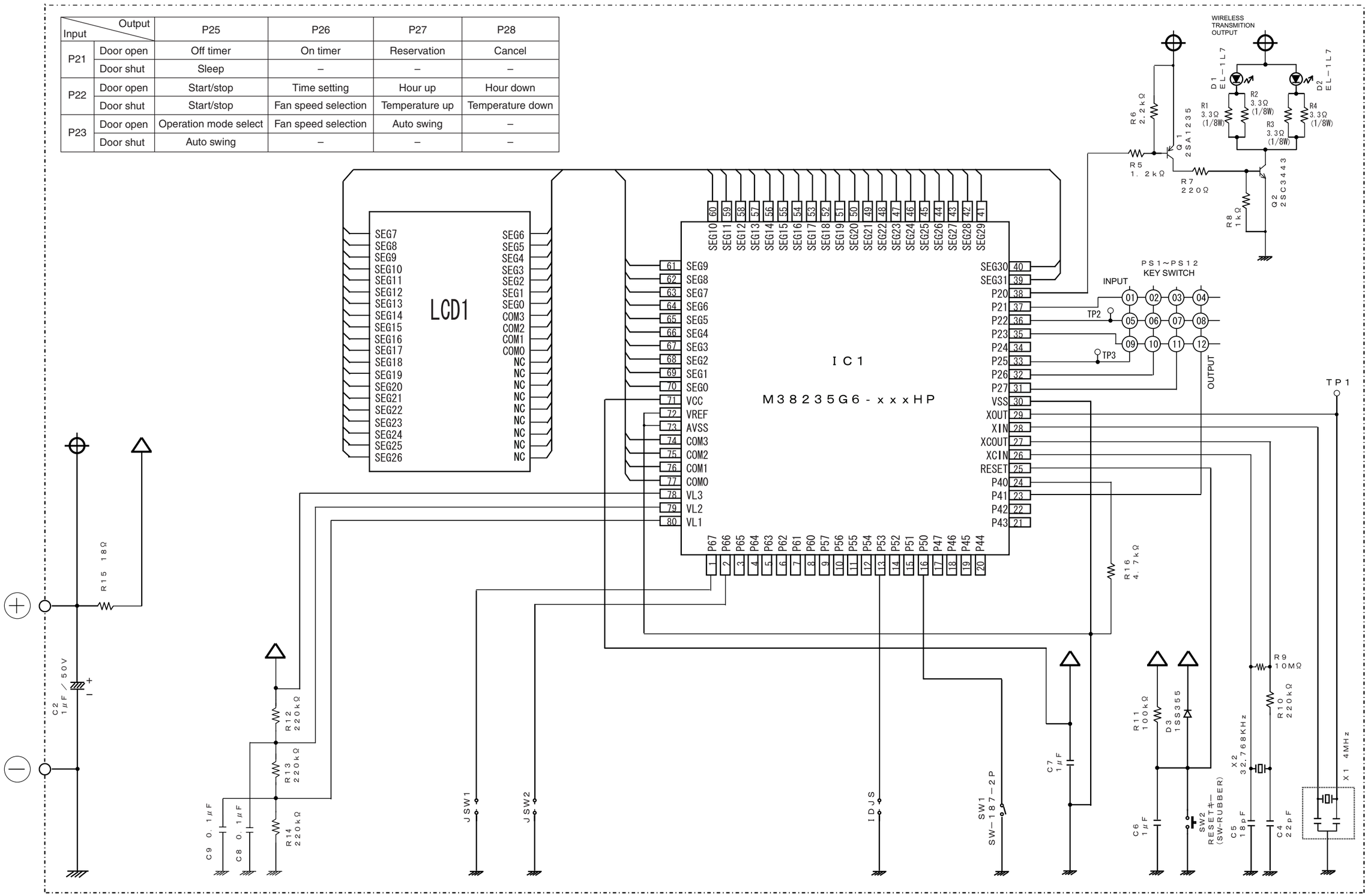
INDOOR UNIT



CIRCUIT DIAGRAM

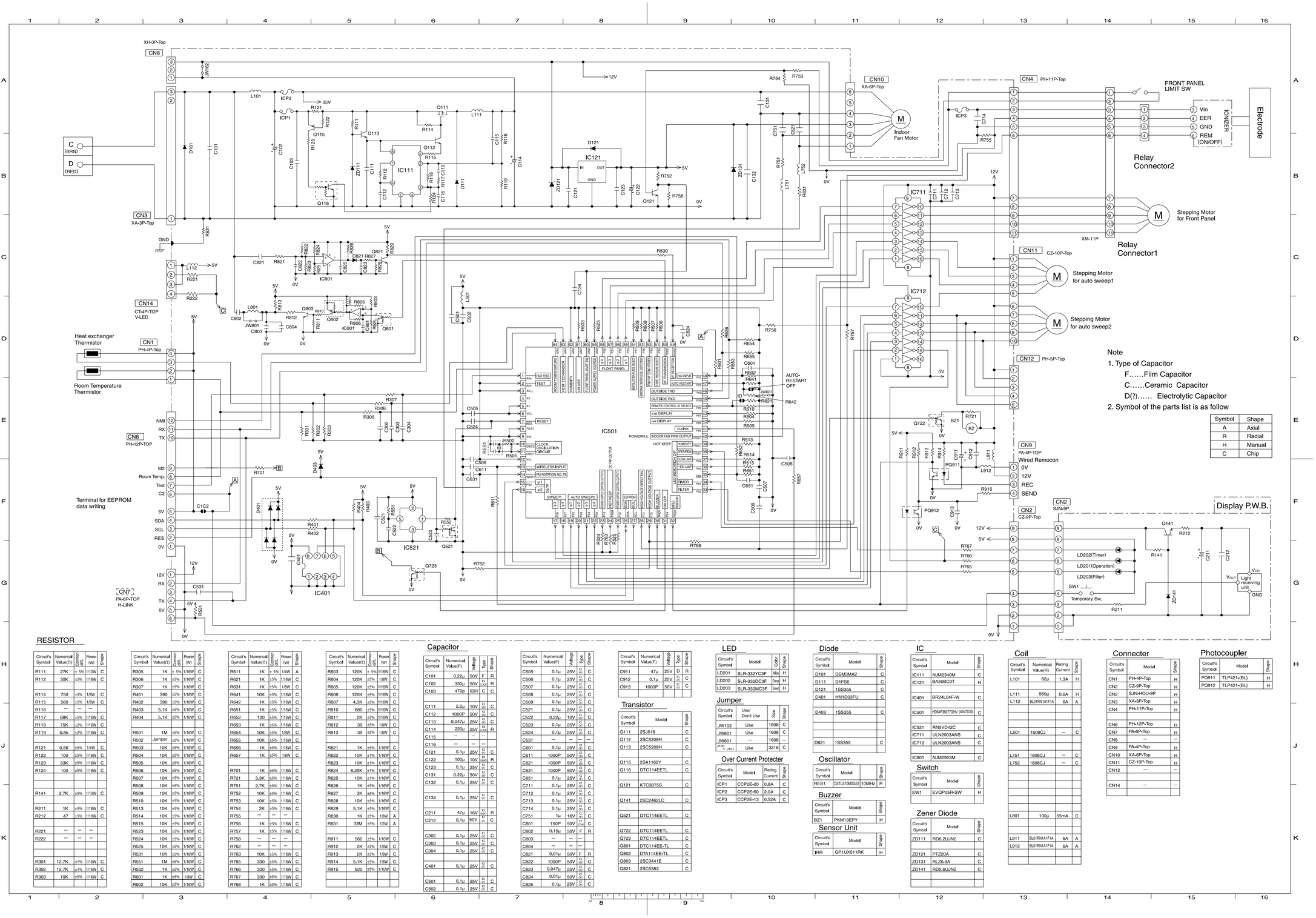
Remote Control

Input \ Output		P25	P26	P27	P28
P21	Door open	Off timer	On timer	Reservation	Cancel
	Door shut	Sleep	–	–	–
P22	Door open	Start/stop	Time setting	Hour up	Hour down
	Door shut	Start/stop	Fan speed selection	Temperature up	Temperature down
P23	Door open	Operation mode select	Fan speed selection	Auto swing	–
	Door shut	Auto swing	–	–	–



CIRCUIT DIAGRAM

MODEL RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) / RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)



Note

1. Type of Capacitor
   F……Film Capacitor
   C……Ceramic Capacitor
   D(?)…… Electrolytic Capacitor
2. Symbol of the parts list is as follow

Symbol	Shape
A	Axial
R	Radial
H	Manual
C	Chip

RESISTOR

Circuit's Symbol	Numerical Value(Ω)	Common use	Power (W)	Shape
R111	27K	± 5%	1/16W	C
R112	30K	±5%	1/16W	C
R114	750	±5%	1/8W	C
R115	560	±5%	1/8W	C
R116	—	—	—	
R117	68K	±5%	1/16W	C
R118	75K	±2%	1/16W	C
R119	6,8k	±2%	1/16W	C
R121	0,56	±5%	1/4W	C
R122	100	±5%	1/16W	C
R123	33K	±5%	1/16W	C
R124	100	±5%	1/16W	C
R141	2,7K	±5%	1/10W	C
R211	1K	±5%	1/16W	C
R212	47	±5%	1/10W	C
R221	—	—	—	
R222	—	—	—	
R301	12,7K	±1%	1/16W	C
R302	12,7K	±1%	1/16W	C
R303	10K	±5%	1/16W	C

Circuit's Symbol	Numerical Value(Ω)	Common use	Power (W)	Shape
R305	1K	± 5%	1/16W	C
R306	1K	±5%	1/16W	C
R307	1K	±5%	1/16W	C
R401	390	±5%	1/16W	C
R402	390	±5%	1/16W	C
R403	5,1K	±5%	1/16W	C
R404	5,1K	±5%	1/16W	C
R501	1M	±5%	1/16W	C
R502	Jumper	±5%	1/16W	C
R503	10K	±5%	1/16W	C
R504	10K	±5%	1/16W	C
R505	10K	±5%	1/16W	C
R506	10K	±5%	1/16W	C
R507	10K	±5%	1/16W	C
R508	10K	±5%	1/16W	C
R509	10K	±5%	1/16W	C
R510	10K	±5%	1/16W	C
R513	10K	±5%	1/16W	C
R514	10K	±5%	1/16W	C
R515	10K	±5%	1/16W	C
R523	10K	±5%	1/16W	C
R524	10K	±5%	1/16W	C
R525	10K	±5%	1/16W	C
R531	10K	±5%	1/16W	C
R551	1M	±5%	1/16W	C
R552	1K	±5%	1/16W	C
R601	1K	±5%	1/8W	C
R602	10K	±5%	1/16W	C

Circuit's Symbol	Numerical Value(Ω)	Common use	Power (W)	Shape
R611	1K	± 5%	1/4W	A
R621	1K	±5%	1/16W	C
R631	1K	±5%	1/8W	C
R641	10K	±5%	1/16W	C
R642	1K	±5%	1/16W	C
R651	1K	±5%	1/16W	C
R652	100	±5%	1/16W	C
R653	1K	±5%	1/16W	C
R654	10K	±5%	1/16W	C
R655	10K	±5%	1/16W	C
R656	1K	±5%	1/8W	C
R657	1K	±5%	1/8W	C
R701	1K	±5%	1/16W	C
R721	3,3K	±5%	1/16W	C
R751	2,7K	±5%	1/16W	C
R752	10K	±5%	1/16W	C
R753	10K	±5%	1/16W	C
R754	2K	±5%	1/16W	C
R755	—	—	—	
R756	1K	±5%	1/16W	C
R757	1K	±5%	1/16W	C
R758	—	—	—	
R762	—	—	—	
R763	10K	±5%	1/16W	C
R765	390	±5%	1/16W	C
R766	300	±5%	1/16W	C
R767	390	±5%	1/16W	C
R768	1K	±5%	1/16W	C

Circuit's Symbol	Numerical Value(Ω)	Common use	Power (W)	Shape
R803	120K	± 5%	1/16W	C
R804	120K	±5%	1/8W	C
R805	120K	±5%	1/16W	C
R806	120K	±5%	1/16W	C
R807	4,3K	±5%	1/16W	C
R810	680	±5%	1/16W	C
R811	2K	±5%	1/16W	C
R812	39	±5%	1/8W	C
R813	39	±5%	1/8W	C
R821	1K	±5%	1/16W	C
R822	10K	±1%	1/16W	C
R823	10K	±1%	1/16W	C
R824	8,25K	±1%	1/16W	C
R825	10K	±1%	1/16W	C
R826	1K	±5%	1/16W	C
R827	3K	±5%	1/16W	C
R828	10K	±5%	1/16W	C
R829	5,1K	±5%	1/16W	C
R830	1K	±5%	1/8W	A
R831	33M	±5%	1/2W	A
R911	560	±5%	1/10W	C
R912	2K	±5%	1/8W	C
R913	2K	±5%	1/8W	C
R914	5,1K	±5%	1/8W	C
R915	620	±5%	1/10W	C

Capacitor

Circuit's Symbol	Numerical Value(F)	Voltage	Type	Shape
C101	0,22μ	50V	F	R
C102	330μ	50V	C	R
C103	470p	630V	C	C
C111	2,2μ	10V	C	C
C112	1000P	50V	C	C
C113	0,047μ	25V	C	C
C114	220μ	25V	C	R
C115	—	—	—	—
C116	—	—	—	—
C121	0,1μ	25V	C	C
C122	100μ	10V	C	R
C123	0,1μ	25V	C	C
C131	0,22μ	50V	C	C
C132	0,1μ	25V	C	C
C134	0,1μ	25V	C	C
C211	47μ	16V	C	R
C212	0,1μ	50V	C	C
C302	0,1μ	25V	C	C
C303	0,1μ	25V	C	C
C304	0,1μ	25V	C	C
C401	0,1μ	25V	C	C
C501	0,1μ	25V	C	C
C502	0,1μ	25V	C	C

Circuit's Symbol	Numerical Value(F)	Voltage	Type	Shape
C505	0,1μ	25V	C	C
C506	0,1μ	25V	C	C
C507	0,1μ	25V	C	C
C508	0,1μ	25V	C	C
C509	0,1μ	25V	C	C
C521	0,1μ	25V	C	C
C522	0,22μ	10V	C	C
C523	0,1μ	25V	C	C
C524	0,1μ	25V	C	C
C531	—	—	—	—
C601	0,1μ	25V	C	C
C611	1000P	50V	C	C
C621	1000P	50V	C	C
C631	1000P	50V	C	C
C651	0,1μ	25V	C	C
C711	0,1μ	25V	C	C
C712	0,1μ	25V	C	C
C713	0,1μ	25V	C	C
C714	0,1μ	25V	C	C
C751	1μ	16V	C	C
C801	150P	50V	C	C
C802	0,15μ	50V	F	R
C803	—	—	—	—
C804	—	—	—	—
C821	0,01μ	50V	F	R
C822	1000P	50V	C	C
C823	0,047μ	25V	C	C
C824	0,01μ	50V	C	C
C825	0,1μ	25V	C	C

Circuit's Symbol	Numerical Value(F)	Voltage	Type	Shape
C911	47μ	25V	D	R
C912	0,1μ	25V	C	C
C913	1000P	50V	C	C

Transistor

Circuit's Symbol	Model	Shape
Q111	2SJ518	C
Q112	2SC5209H	C
Q113	2SC5209H	C
Q115	2SA1162Y	C
Q116	DTC114EETL	C
Q121	KTC3875S	C
Q141	2SC2462LC	C
Q521	DTC114EETL	C
Q722	DTC114EETL	C
Q723	DTC114EETL	C
Q801	DTC114EE-TL	C
Q802	DTA114EE-TL	C
Q803	2SC3441E	C
Q821	2SC5383	C

Jumper

Circuit's Symbol	Use/ Don't Use	Size	Shape
JW102	Use	1608	C
JW601	Use	1608	C
JW801	—	1608	—
JP100 — JP121	Use	3216	C

Over Current Protecter

Circuit's Symbol	Model	Rating Current	Shape
ICP1	CCP2E-20	0,8A	C
ICP2	CCP2E-50	2,0A	C
ICP3	CCP2E-13	0,52A	C

LED

Circuit's Symbol	Model	Color	Shape
LD201	SLR-332YC3F	Yellow	H
LD202	SLR-332DC3F	Orange	H
LD203	SLR-332MC3F	Green	H

Diode

Circuit's Symbol	Model	Shape
D101	DSM3MA2	C
D111	D1FS6	C
D121	1SS355	C
D401	HN1D03FU	C
D403	1SS355	C
D821	1SS355	C

Oscillator

Circuit's Symbol	Model		Shape
RES1	CSTLS10M0G53	10MHz	R

Buzzer

Circuit's Symbol	Model	Shape
BZ1	PKM13EPY	H

Sensor Unit

Circuit's Symbol	Model	Shape
IRR	GP1UX511RK	H

IC

Circuit's Symbol	Model	Shape
IC111	NJM2340M	C
IC121	BA50BC0T	H
IC401	BR24L04F-W	C
IC501	HD64F38077GHV (AX-7X30)	C
IC521	RN5VD42C	C
IC711	ULN2003ANS	C
IC712	ULN2003ANS	C
IC801	NJM2903M	C

Switch

Circuit's Symbol	Model	Shape
SW1	EVQP05R-SW	H

Zener Diode

Circuit's Symbol	Model	Shape
ZD111	RD6.2UJN2	C
ZD121	PTZ20A	C
ZD131	RLZ6.8A	C
ZD141	RD5.6UJN2	C

Coil

Circuit's Symbol	Numerical Value(H)	Rating Current	Shape
L101	82μ	1,3A	H
L111	560μ	0,6A	H
L112	BLO1RN1A1F1A	6A	A
L501	1608CJ	—	C
L751	1608CJ	—	C
L752	1608CJ	—	C
L801	100μ	55mA	C
L911	BLO1RN1A1F1A	6A	A
L912	BLO1RN1A1F1A	6A	A

Connecter

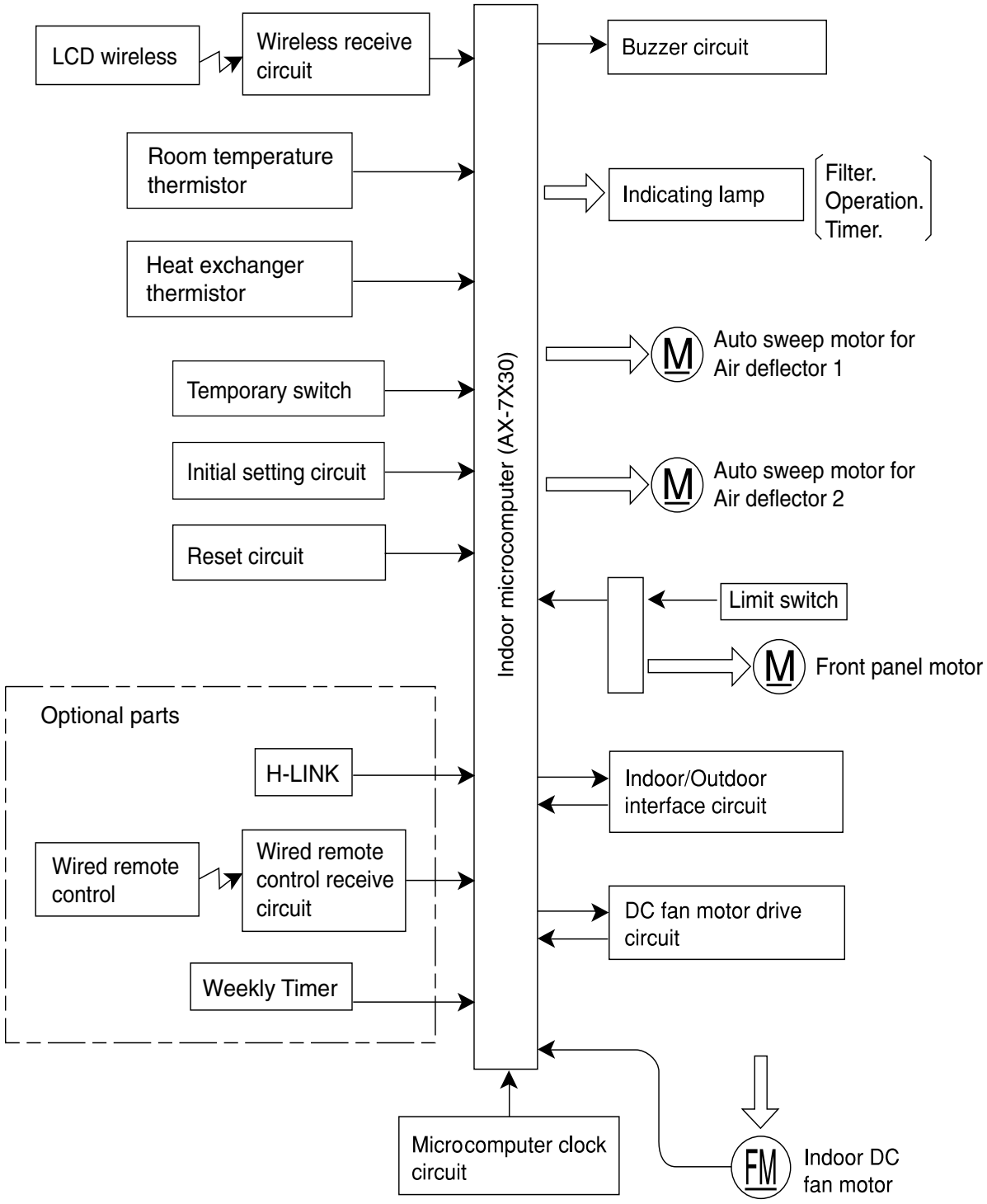
Circuit's Symbol	Model	Shape
CN1	PH-4P-Top	H
CN2	CZ-9P-Top	H
CN2	SJN-HOU-9P	H
CN3	XA-3P-Top	H
CN4	PH-11P-Top	H
CN6	PH-12P-Top	H
CN7	PA-6P-Top	H
CN8	—	—
CN9	PA-4P-Top	H
CN10	XA-8P-Top	H
CN11	CZ-10P-Top	H
CN12	—	—
CN14	—	—

Photocoupler

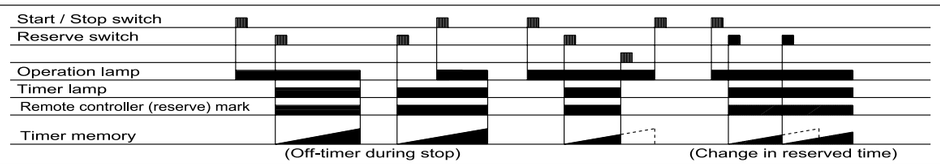
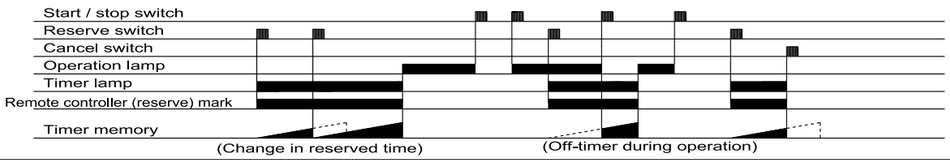
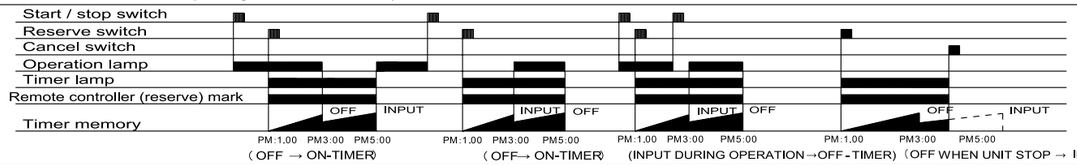
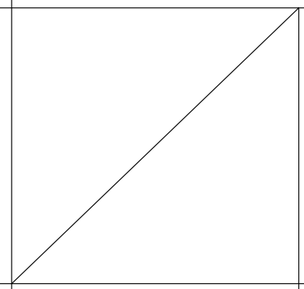
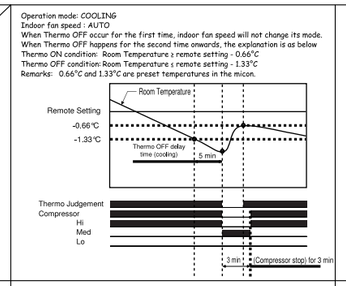
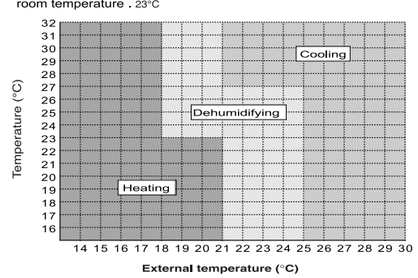
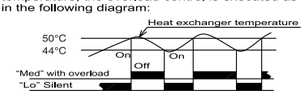
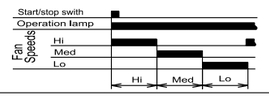
Circuit's Symbol	Model	Shape
PQ911	TLP421-(BL)	H
PQ912	TLP421-(BL)	H

BLOCK DIAGRAM

MODEL RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W),
RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B),



BASIC MODE

Operation mode	Fan	Cooling	Dehumidifying	Heating	Auto	Special auto mode (not use in normal operation)
Basic operation of start/stop switch						
Timer Function — Off Timer						
Timer Function — On Timer						
Timer Function — Off ⇄ On Timer					
Fan speed mode (indoor fan) — Auto			Changes between “Lo” and “Silent” depending on the room temperature. Temperature division / Fan Speed Division 1 — Silent Division 2 — Silent Division 3 — Lo Division 4 — Lo 1. The indoor fan also stops when the compressor is in stop status. 2. Temp. division is a reference on how dehumidifying is prepare.	REFER TO PAGE NO. 42	Operation mode ◦ Judgment based on the room temperature and external temperature; Cooling : external temperature ≧ 25°C, or 21°C ≦ external temperature < 25°C and room temperature > 27°C Heating : external temperature < 18°C, or 18°C ≦ external temperature < 21°C and room temperature > 23°C Dehumidifying : 21°C ≦ external temperature < 25°C and room temperature 27°C ≦ 27°C, or 18°C ≦ external temperature , 21°C and room temperature . 23°C 	The special auto mode is based on auto, but the following is diffrent: Operation mode / Mode change during operation Auto — Judging the operation mode from the external temperature and room temperature at the start Special auto — The operation mode will be judged the same as at operation start every hour The special auto operation mode is entered when operation is started in the following status: <Start condition> Power is supplied while the tele-control signal is being input. (Operation starts automatically.) <End condition> The remote control restores the normal operation mode.
Fan speed mode (indoor fan) — Hi	Operates at “Hi” regardless of the room temperature.	Set to “Ultra-Hi” when the compressor runs at maximum speed, and to “Hi” in other modes. When comp-stop it shall run at [Lo]	Except when the comp. is stop the fan shall run at [Hi]	Set to “Ultra-Lo”,“Med”,“Lo”, “Hi”, “Ultra-Hi”or“stop”depending on the room temperature and time. Set to “Stop” if the room temperature is 18°C in the “Ultra-Lo” mode other than during preheating (cooling is recovered at 18.33°C) Set to “Ultra-Hi” when the compressor is running at maximum speed during hot dash or when recovered from defrosting.		
Fan speed mode (indoor fan) — Med	Operates at “Med” regardless of the room temperature.	Same as at left When comp-stop it shall run at [Lo]	Except when the comp. is stop the fan shall run at [Med]	Set to “Ultra-Lo”,“Lo”, “Med”or“stop” depending on the room temperature and time. Set to “Stop” if the room temperature is 18°C in the “Ultra-Lo” mode other than during preheating (cooling is recovered at 18.33°C)		
Fan speed mode (indoor fan) — Lo	Operates at “Lo” regardless of the room temperature.	Same as at left	Except when the comp. is stop the fan shall run at [Lo]	Set to “Ultra-Lo”,“Lo”, “Med”or“stop” depending on the room temperature and time. Set to “Stop” if the room temperature is 18°C in the “Ultra-Lo” mode other than during preheating (cooling is recovered at 18.33°C) The fan speed is controlled by the heat exchanger temperature; the overload control is executed as in the following diagram: 		
Fan speed mode (indoor fan) — Silent	Operates at “Silent” regardless of the room temperature.	Same as at left	Except when the comp. is stop the fan shall run at [Silent]			
Basic operation of temperature controller	Performs only fan operation at the set speed regerdless of the room temperature. 	See page basic cooling operation	See page basic dehumidifying operation	See page basic dehumidifying operation		
Sleep operation (with sleep button ON)	Enters sleep operation after set as on the left. Action during sleep operation silent (sleep) operation	◦ Same as at left. ◦ See page cooling sleep operation	◦ Same as at left. ◦ See page dehumidifying sleep operation	◦ Same as at left. ◦ See page heating sleep operation	◦ Same as at left. ◦ Performs the sleep operation of each operation mode.	

COOLING	Cooling set temp : 27°C Fan speed mode : [AUTO] {LO] [SILENT]
DEHUMIDIFYING	Dehumidifying set temp : room temp. when start the operation Fan speed mode : [AUTO] {LO] [SILENT]
HEATING	Heating set temp : 23°C Fan speed mode : [AUTO] {LO] [SILENT]
Note (1) all the setting temp. above can be compensated for± 3°C by using the remote control button △ ▽	

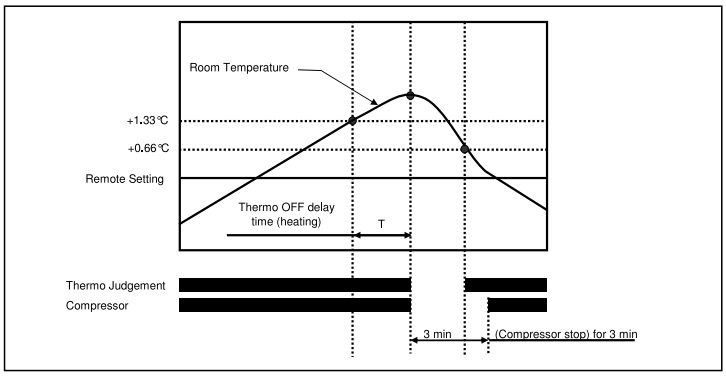
Notes:
1. Refer to the PWRITE-ZU data for the constants expressed by capital alphabet letters in the drawing.

Operation mode: HEATING
Indoor fan speed: AUTO

Thermo ON and thermo OFF depends on room temperature.
Indoor fan speed changes during thermo ON and thermo OFF depends on:
1. Heat exchanger sensing temperature
2. Time

Room temperature factor

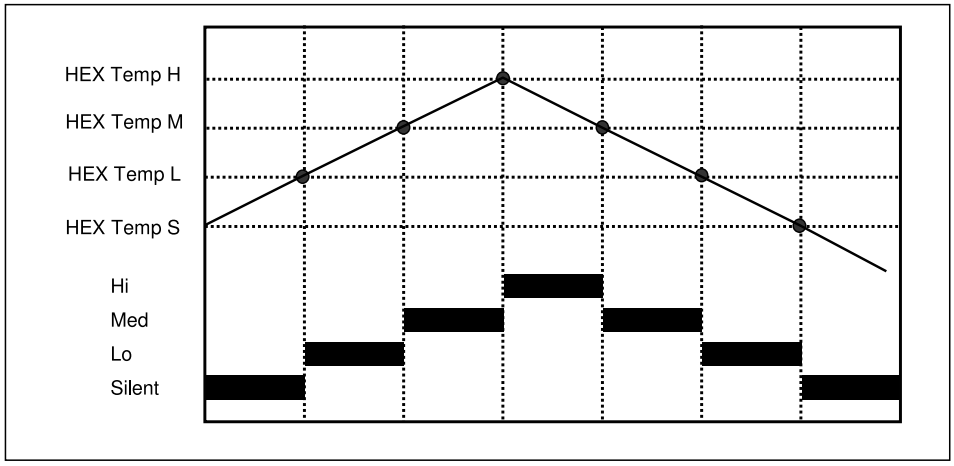
Thermo ON condition: Room Temperature ≤ remote setting + 0.66¡C
Thermo OFF condition:Room Temperature ≥ remote setting + 1.33¡C
Remarks: 0.66¡C and 1.33¡C are preset temperatures in the micon.



Thermo OFF delay time (heating) - preset value in EEPROM of the indoor unit.

Heat exchanger sensing temperature factor

During Thermo ON, fan speed depends on the heat exchanger sensing temperature.
Heat exchanger is located on the indoor unit heat exchanger.



Note: Value of HEX Temp H, HEX temp M, HEX temp S are preset value in the EEPROM.
As the heat exchanger sensing temperature varies, fan speed varies.

Time factor

During Thermo OFF, fan speed depends on below table:

Single	When thermo OFF starts - within 15 seconds	Fan speed = Lo
	During thermo OFF - after 15 seconds	Fan speed = Silent ※ 1
Multi	When thermo OFF starts - within 15 seconds	Fan speed = Lo
	During thermo OFF - after 15 seconds	Fan speed = (ON / OFF)

※ 1: Room temperature ≤ 18¡C - fan speed = STOP
Room temperature > 18¡C - fan speed = Silent

MODEL		RAK-18QH8S (W) RAK-18QH8S (B)	RAK-18QH8 (W) RAK-18QH8 (B)	RAK-25QH8 (W) RAK-25QH8 (B)	RAK-35QH8 (W) RAK-35QH8 (B)	RAK-50QH8 (W) RAK-50QH8 (B)
0F5	WMAX_M	3500 min-1	5300 min-1	5300 min-1	5000 min-1	4500 min-1
0F6	WMAX2_M	3500 min-1	5300 min-1	5300 min-1	5000 min-1	4500 min-1
0F7	WSTD_M	2950 min-1	4000 min-1	4000 min-1	4000 min-1	4000 min-1
0F8	CMAX_M	3000 min-1	3300 min-1	3300 min-1	3300 min-1	4000 min-1
0F9	CSTD_M	2400 min-1	3250 min-1	3250 min-1	3150 min-1	3100 min-1
0FA	SDMAX_M	2400 min-1	2400 min-1	2400 min-1	1550 min-1	1800 min-1
0FB	SDRPM_M	2000 min-1	2000 min-1	2000 min-1	1400 min-1	1100 min-1
0FC	WMINHI_M	800 min-1	800 min-1	800 min-1	800 min-1	800 min-1
0FD	WMIN_M	800 min-1	800 min-1	800 min-1	800 min-1	800 min-1
0FE	CMINHI_M	900 min-1	900 min-1	900 min-1	900 min-1	900 min-1
0FF	CMIN_M	1200 min-1	1200 min-1	1200 min-1	1200 min-1	1200 min-1
100	DMIN_M	1100 min-1	1100 min-1	1100 min-1	1100 min-1	1100 min-1
101	PKOU_M	500 min-1	500 min-1	500 min-1	500 min-1	500 min-1
102	FZZY_GN_M	1	1	1	1.5	1.5
103	FZZYTM_M	3 min	3 min	3 min	4 min	4 min
10F	SHIFTW_M	0 ℃	0 ℃	0 ℃	0 ℃	0 ℃
110	SFTSZW_M	0 ℃	0 ℃	0 ℃	0 ℃	0 ℃
111	SFTOYW_M	0 ℃	0 ℃	0 ℃	0 ℃	0 ℃
112	SHIFTC_M	0.33 ℃	0.33 ℃	0.33 ℃	0.33 ℃	0.33 ℃
113	SHIFTD_M	0.33 ℃	0.33 ℃	0.33 ℃	0.33 ℃	0.33 ℃
123	CLMXTP_M	30 ℃	30 ℃	30 ℃	30 ℃	30 ℃
12D	TEION_M	2 ℃	2 ℃	2 ℃	2 ℃	2 ℃
12E	TEIOF_M	9 ℃	9 ℃	9 ℃	9 ℃	9 ℃
115	YNEOF_M	25 ℃	25 ℃	25 ℃	25 ℃	25 ℃
050	CMNLMT	2000 min^{-1}	2000 min^{-1}	2000 min^{-1}	2000 min^{-1}	2000 min^{-1}
133	FWSS_M	350 min-1	350 min-1	350 min-1	350 min-1	350 min-1
134	FWSOY_M	550 min-1	580 min-1	550 min-1	550 min-1	650 min-1
135	FWS_M	600 min-1	680 min-1	730 min-1	820 min-1	850 min-1
136	FWKAF_M	800 min-1	800 min-1	850 min-1	950 min-1	1050 min-1
137	FWL_M	700 min-1	800 min-1	850 min-1	950 min-1	1050 min-1
138	FWAH_M	800 min-1	890 min-1	930 min-1	1000 min-1	1150 min-1
139	FWH_M	800 min-1	890 min-1	1030 min-1	1100 min-1	1320 min-1
13A	FWAHH_M	900 min-1	990 min-1	1100 min-1	1100 min-1	1320 min-1
13B	FWHH_M	900 min-1	990 min-1	1150 min-1	1200 min-1	1420 min-1
13C	FCSOY_M	500 min-1	550 min-1	630 min-1	630 min-1	700 min-1
13D	FCS_M	550 min-1	600 min-1	700 min-1	750 min-1	850 min-1
13E	FCL_M	600 min-1	700 min-1	800 min-1	850 min-1	1000 min-1
13F	FCAH_M	700 min-1	840 min-1	850 min-1	900 min-1	1100 min-1
140	FCH_M	700 min-1	840 min-1	900 min-1	1000 min-1	1200 min-1
141	FCHH_M	800 min-1	940 min-1	1000 min-1	1100 min-1	1300 min-1
142	FDSOY_M	630 min-1	630 min-1	630 min-1	630 min-1	600 min-1
143	FDS1_M	700 min-1	700 min-1	700 min-1	730 min-1	800 min-1
144	FDS2_M	700 min-1	700 min-1	700 min-1	730 min-1	800 min-1

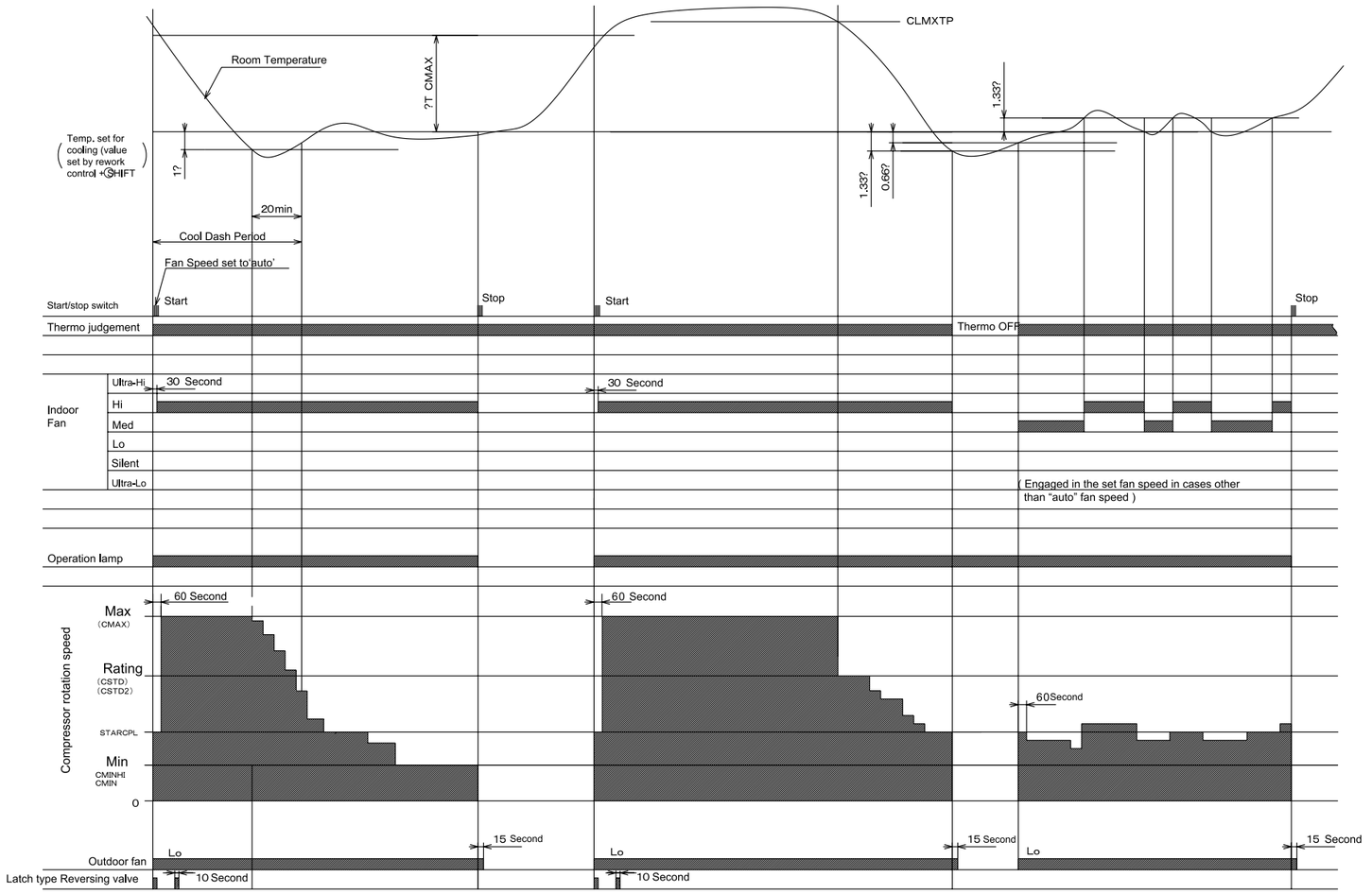
Table 1 Fan speed by mode

Operation mode	Fan speed mode		Label name
Heating operation	Ultra Lo		FWSS_M
	Sleep		FWSOY_M
	Lo		FWS_M
	Overload		FWKAF_M
	Med		FWL_M
	Hi	Set fan speed “AUTO”	FWAH_M
	Hi	Set fan speed “Hi”	FWH_M
	Ultra Hi		FWHH_M
Cooling operation	Sleep		FCSOY_M
	Lo		FCS_M
	Med		FCL_M
	Hi	Set fan speed “AUTO”	FCAH_M
	Hi	Set fan speed “Hi”	FCH_M
	Ultra Hi		FCHH_M
Dehumidifying operation	Sleep		FDOY_M
	Lo 1		FDS1_M
	Lo 2		FDS2_M

Table 2 Room temperature shift value

Operation mode		Shift value
Heating operation	Fan speed “AUTO, Hi, Med”	SHIFTW_M
	Fan speed “Lo, Sleep”	SFTSZW_M
Cooling operation		SHIFTC_M
Dehumidifying operation		SHIFTD_M

Basic Cooling Operation



Notes:

(1) Cool dash is started when the operation is started at fan speed "AUTO" or "H " or when the fan speed is changed to "AUTO" or "Hi" during cooling operation, and when the compressor speed reaches CMAX or higher.

(2) The maximum compressor speed period during cool dash is finished ① when 25 minutes have elapsed after cool dash was started ② when the room temperature reaches the cooling set temperature -1˚C (including cooling shift) and when 20 minutes it elapses from MAX compressor speed, ③ when thermo is OFF.
(if cool dash finished in the above ① the compressor does not go through the steady speed period but it starts fuzzy control.)

(3) The thermo OFF temperature during cool dash is cooling set temperature (including cooling shift) -3˚C. After thermo OFF, cool dash is finished and fuzzy control starts.

(4) The compressor minimum ON time and minimum OFF time is 3 minutes.

(5) The time limit for which the maximum compressor speed (CMAX) during normal cooling can be maintained is less than 60 minutes when the room temperature is less than 30˚C : it is not provided when the room temperature is 30˚C or more.

(6) If the fan speed is set to "Med" by remote contrd, the maximum compressor speed is CJKMAX.

(7) If the fan speed is set to "Lo" by remote control, the maximum compressor speed is CBEMAX.

(8) If the fan speed is set to “silent” or “sleep” by remote control, the maximum compressor speed is CSZMAX.

(9) If the fan speed is set to “Hi” by remote control, the room temp. is more than 21˚C and the humidity is morethan 74%, the comp. maximum speed is CKYMAX TY1.

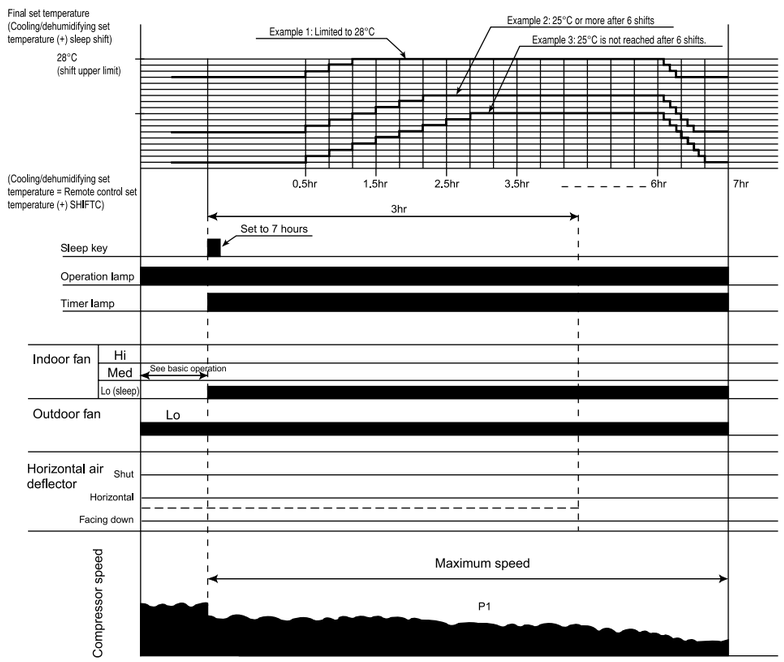
(10) Compressor maximum speed at powerful operation is CMAX2.

(11) When room temp. is more than 25˚C and humidity is more than 74%, minimum comp. speed is speed up 100 min at a time. Also, upper limit becomes 1400 min^{-1}
When it deviates from high temp. and moiture condition, minimum comp, speed is deceleration 50 min a time. The lower limit value shall become CMINH1
(Cooling humidity restriction)

(12) While the cooling thermo is OFF, the indoor fan speed is maintained at the preset fan speed.

(13) When 30 minutes elapsing with humidity 65% or less, cooling rated compressor speed is CSTD2.

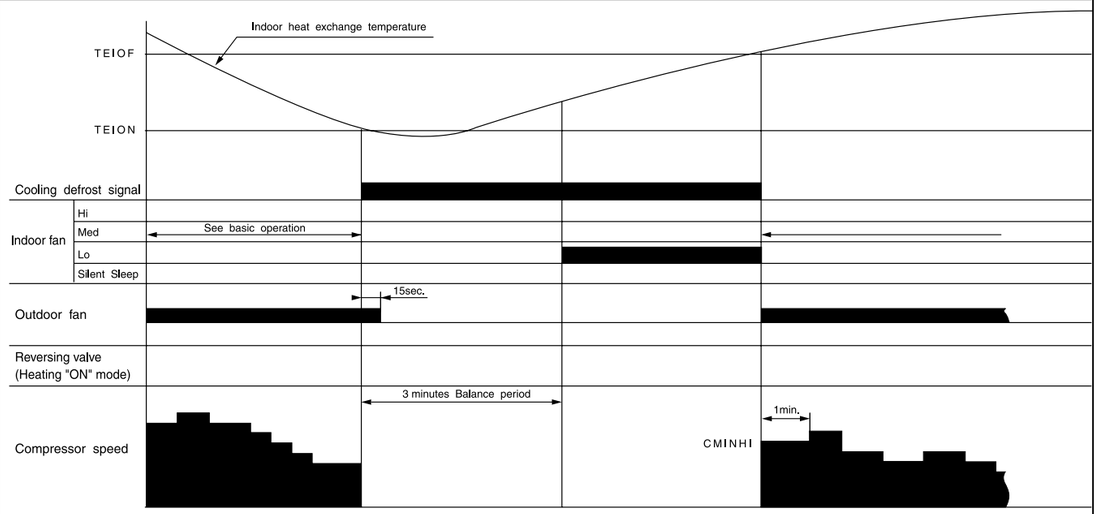
Cooling Sleep Operation



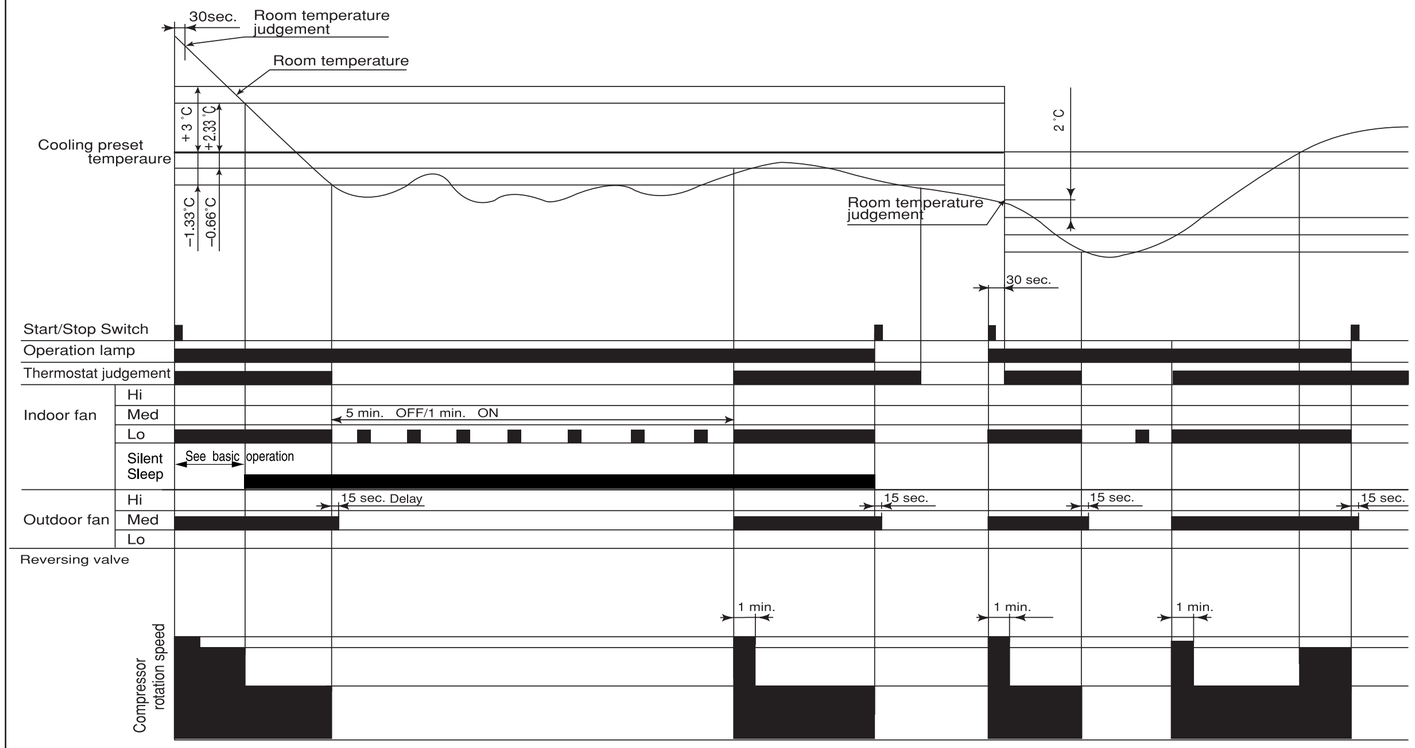
Notes:

(1) The sleep operation starts when the sleep key is pressed.
(2) When the sleep key is set, the maximum compressor speed is limited, and the indoor fan is set to “sleep Lo”.
(3) 30 minutes after the sleep key is set, the sleep shift of temperature starts, and upper shift is made at least 6 times. If 25˚C is not reached after 6 shifts, shifts repeat unit 25˚C is reached.
(4) The sleep shift upper value of set temperature is 28˚C.
(5) After 6 hours, a shift down to the initial set temperature is made at a rate of 0.33˚C/5 min.
(6) If the operation mode is changed during sleep operation, the set temperature is cleared, and shift starts from the point when switching is made.
(7) The indoor fan speed does not change even when the fan speed mode is changed.
(8) When operation is stopped during sleep operation, the set temperature when stopped, as well as the time, continue to be counted.
(9) If the set time is changed during sleep operation, all data including set temperature, time, etc. is cleared and restarted.
(10) If sleep operation is canceled by the cancel key or sleep key, all data is cleared.

Cooling Defrost

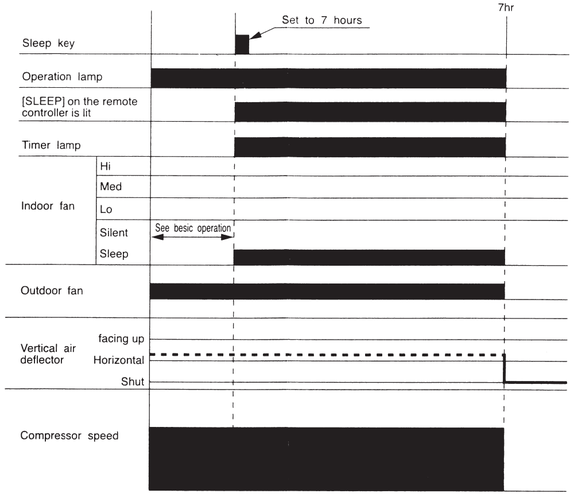


Dehumidifying



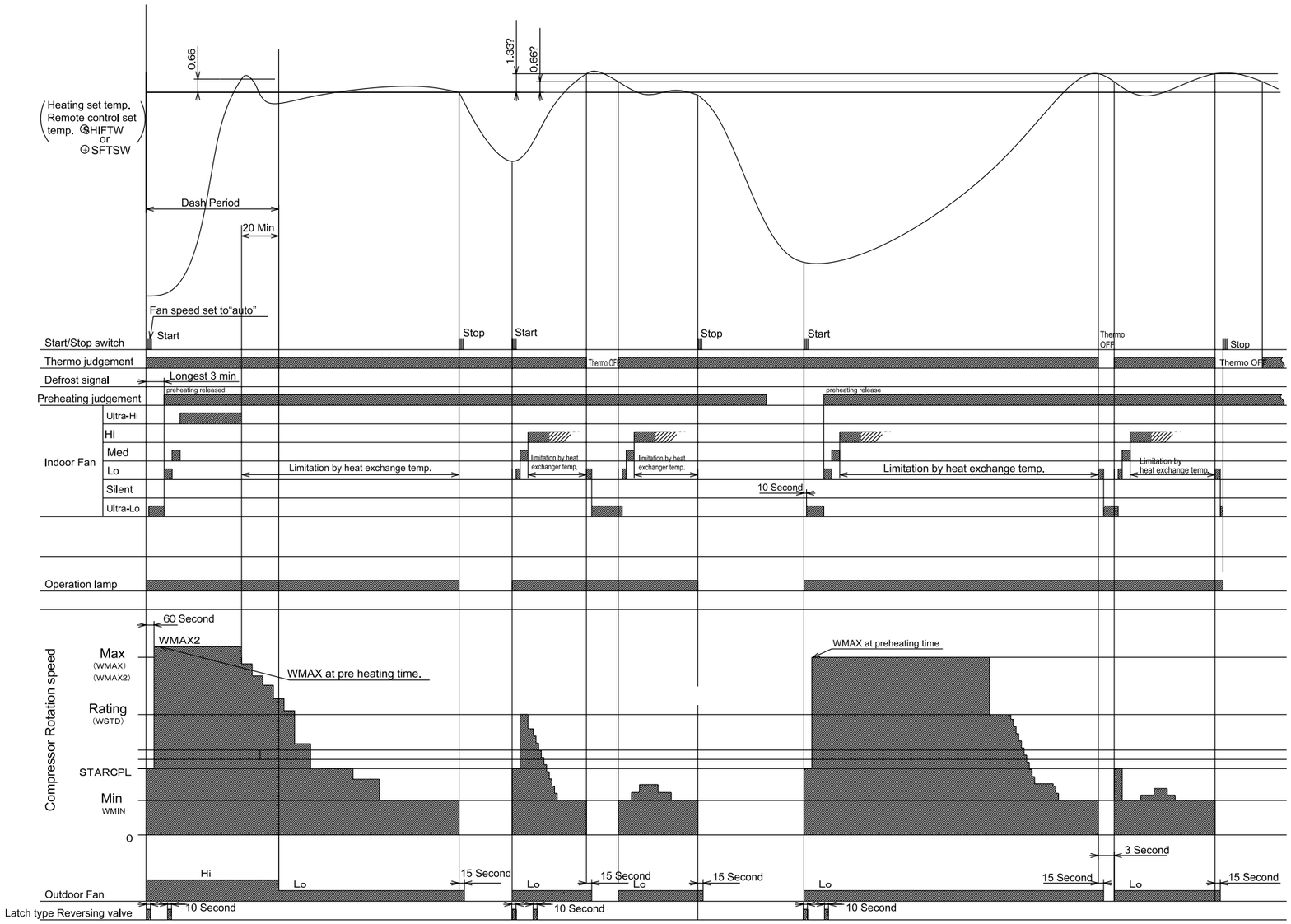
Notes:
(1) If the room temperature is (cooling preset temperature) - (1.33°C) or less after 30 seconds from starting the operation, the operation is done assuming as the preset temperature = (room temperature at the time) - (2°C).
(2) The indoor fan is operated in the "Lo" mode. During thermo OFF indoor fan will be OFF for 5 minutes and ON for 1 minute.
(3) When the operation is started by the themostat 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 Sleep Operation



Notes:
(1) The sleep operation starts when the sleep key is pressed.
(2) When the sleep key is set, the indoor fan is set to "sleep silent" (FDOY_M or AFDOY).
(3) The indoor fan speed does not change even when the fan speed mode is changed.
(4) If the set time is changed during sleep operation, all data including set temperature, time, etc. is cleared and restarted.
(5) If sleep operation is canceled by the cancel key or sleep key, all data is cleared.
(6) If the position of air deflector is being operated using remote control, the operation will be performed at any desired position of air deflector.

Basic Heating Operation



Notes:

(1) Hot dash is engaged if the difference between the room temperature and set temperature is equal to that between the room temperature, at which the compressor reaches maximum speed, and set temperature (ΔTWMAX), and the room temperature is less than 18°C and outdoor temperature is less than 10°C when the fan speed is "auto", operation is started at "Hi", or the fan speed is changed to "Hi" during heating.

(2) The maximum compressor speed period during hot dash is finished ① when the room temperature reaches the heating set temperature (including heating shift) plus 0.66°C or ② when the thermo is off.

(3) The thermo OFF temperature during hot dash is heating set temperature (including heating shift) plus 3°C. After thermo OFF, hot dash finishes, and fuzzy control starts.

(4) The comp. minimum ON time and minimum OFF time is 3 minutes.

(5) The time limit for which the maximum compressor speed (WMAX) or (WMAX2) during normal heating (except for hot dash) can be maintained is less than 120 minutes when the room temperature is 18°C or more; it is not provided when the room temperature is less than 18°C and outdoor temperature is less than 2°C.

(6) The operation indicator blinks every second during initial cycle operation, preheating, defrosting (including) balance time after defrosting is finished), or auto fresh defrosting.

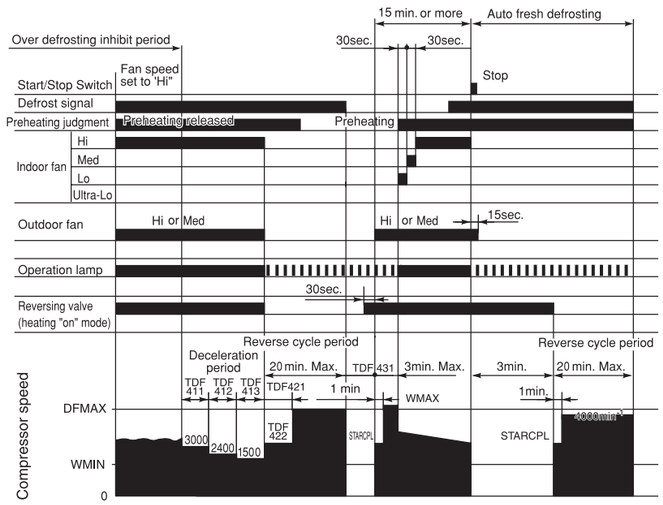
(7) For preheating judgment, preheating starts if the heat exchanger temperature is lower than 24°C and is cancelled if the heat exchange temperature is 24°C or higher at the start of operation using the START / STOP button.

(8) The limitation of compressor speed during the operation at the fan speed of "Med" is set to WJKMAX or below, "Lo" is set to "WBEMAX"or below, and "silent" is set to WSZMAX or below.

(9) If the room temperature falls to less than 18°C in the "Ultra-Lo" mode, the indoor fan stops. When the room temperature is 18°C + 0.33°c or more, the ultra-Lo operation restarts. However, the ultra-Lo operation during preheating or preheating after defrosting will stop if the heat exchanger temperature is less than 16°C.

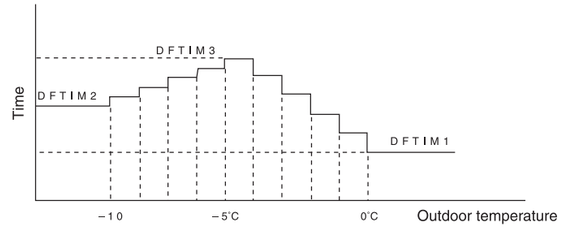
(10) WMAX2 is used as the maximum compressor speed during hot dash, (only when room temp. - outside temp. < RTOSTA), when the outdoor temperature is less than -5°C and unit is operating at powerful.

Reversing Valve Defrosting



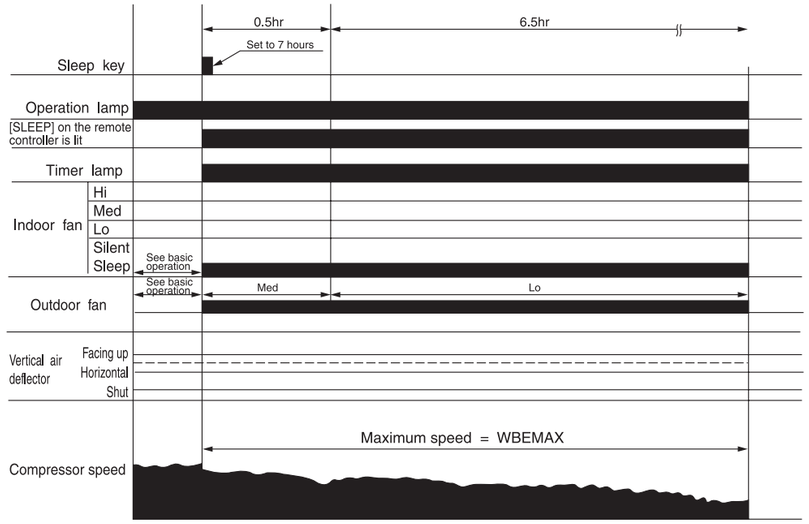
Notes:
(1) The defrosting inhibit period is set as shown in the diagram below. When defrosting has finished once, the inhibit period is newly set, based on the outdoor temperature when the compressor was started. During this period, the defrost signal is not accepted.
(2) If the difference between the room and outdoor temperatures 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.

Setting Defrosting Inhibit Period



Notes:
(1) The first inhibit time after operation start is set to DFTIM1.
(2) From the second time onwards, the inhibit time is set according to the time required for defrosting.
Reverse cycle operation time ≥ [DEFCOL] : DEFTIM1 is set.
Reverse cycle operation time < [DEFCOL] : The time corresponding to outdoor temperature is set.

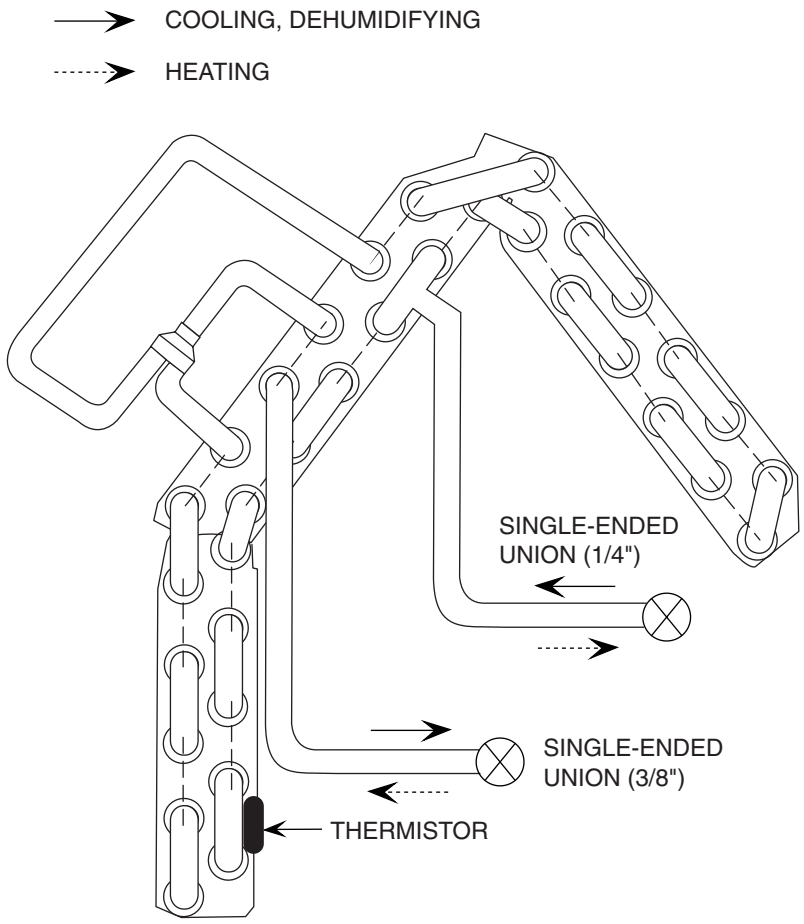
Heating Sleep Operation



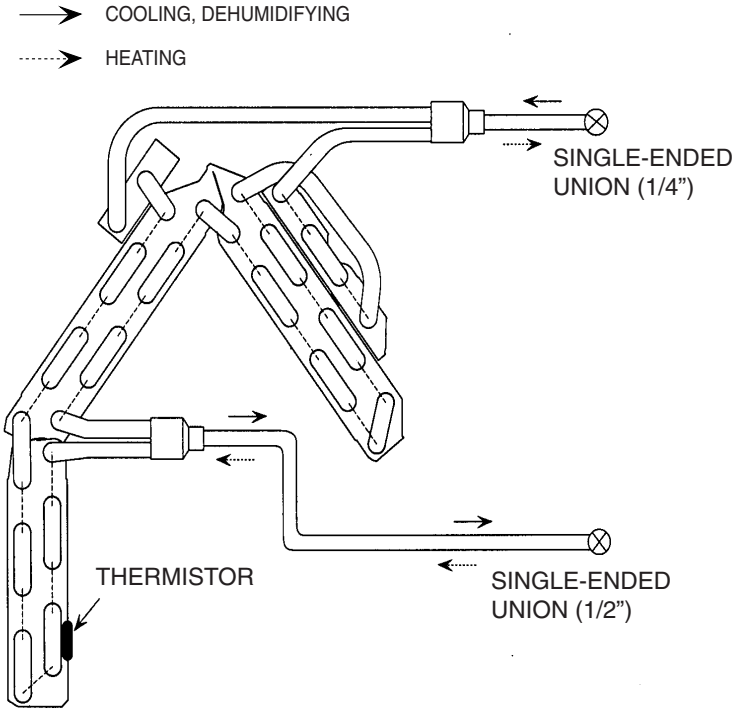
Notes:
(1) The sleep operation starts when the sleep key is pressed.
(2) When the sleep key is set, the maximum compressor speed is limited to WBEMAX, and the indoor fan is set to “Sleep Silent” (FWSOY).
(3) If the operation mode is changed during sleep operation, the changed operation mode is set and sleep control starts.
(4) The indoor fan speed does not change even when the fan speed mode is changed. (Lo)
(5) When defrosting is to be set during sleep operation, defrosting is engaged and sleep operation is restored after defrosting.
(6) When operation is stopped during sleep operation, the set temperature when stopped, as well as the time, continue to be counted.
(7) If the set time is changed during sleep operation, all data including set temperature, time, etc. is cleared and restarted.
(8) If sleep operation is cancelled by the cancel key or sleep key all data is cleared.
(9) There is no preset temperature shift due to time elapse.

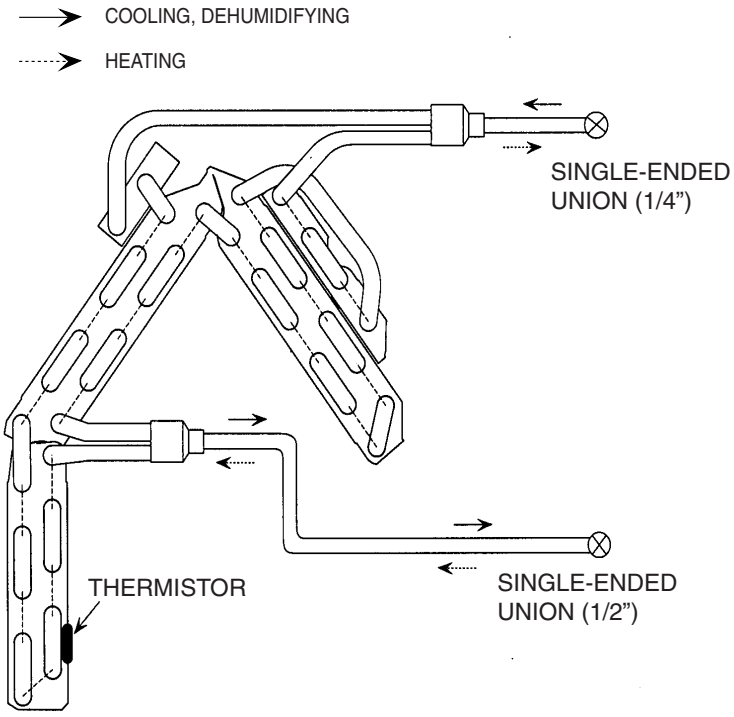
NOTE
1. Refer to the PWRITE-ZU data for the constants expressed by capital alphabet letters in the drawing.

REFRIGERATING CYCLE DIAGRAM
RAK-18QH8S(W), RAK-18QH8(W)
RAK-18QH8S(B), RAK-18QH8(B)



RAK-25QH8(W), RAK-35QH8(W)
RAK-25QH8(B), RAK-35QH8(B)




COOLING, DEHUMIDIFYING
HEATING
SINGLE-ENDED
UNION (1/4")
THERMISTOR
SINGLE-ENDED
UNION (1/2")

AUTO SWING FUNCTION

MODEL: RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) / RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)

INPUT SIGNAL	PRESENT CONDITION			OPERATING SPECIFICATION	REFERENCE
	OPERATION	OPERATION MODE	AIR DEFLECTOR		
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 DRY	STOP	START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD	
			DURING SWINGING	STOP AT THE MOMENT.	
		AUTO HEAT HEAT CIRCULATOR	STOP	START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD	
			DURING SWINGING	STOP AT THE MOMENT.	
THERMO. ON (INTERNAL FAN ON)	DURING OPERATION	AUTO DRY DRY AUTO HEAT HEAT CIRCULATOR	TEMPORARY STOP	START SWING AGAIN.	
THERMO. ON (INTERNAL FAN OFF)			DURING SWINGING	STOP SWINGING TEMPORARILY. (SWING MODE IS CLEARED IF SWING COMMAND IS TRANSMITTED DURING TEMPORARY STOP.)	
MAIN SWITCH ON	STOP	COOL FAN DRY	STOP DURING ONE SWING	INITIALIZE ① DOWNWARD ② UPWARD	
		HEAT CIRCULATOR	STOP DURING ONE SWING	INITIALIZE ① DOWNWARD	
MAIN SWITCH OFF	DURING OPERATION	EACH MODE	STOP DURING SWINGING	ONE SWING (CLOSING AIR DEFLECTOR) ① DOWNWARD ② UPWARD	INITIALIZE AT NEXT OPERATION.
			DURING INITIALIZING		
CHANGE OF OPERATION	DURING OPERATION	EACH MODE	STOP	INITIALIZING CONDITION OF EACH MODE.	
			DURING SWINGING	STOP SWINGING AND MODE BECOMES INITIALIZING CONDITION.	

DESCRIPTION OF MAIN CIRCUIT OPERATION

RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) /
RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)

1. Power circuit

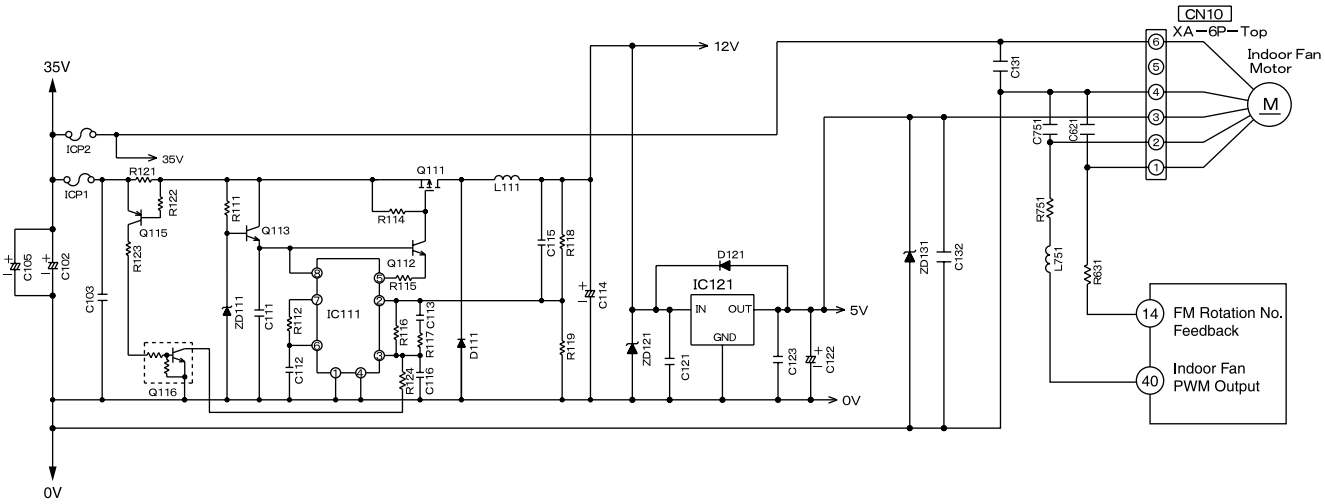


Fig. 1-1

Power to operate indoor unit (DC35V) is generated at the power supply in outdoor unit and it is sent to indoor unit through the connecting cord C and D.
Then, DC 12V (12V line) is generated using DC/DC converter from the voltage sent from outdoor unit, as the control voltage of 12V is required to drive the suction deflector motor and others.
Furthermore, 5V (5V line), which is necessary to drive the microcomputer and to control the fan motor, is generated using three-terminal regulator IC121.

2. Reset Circuit

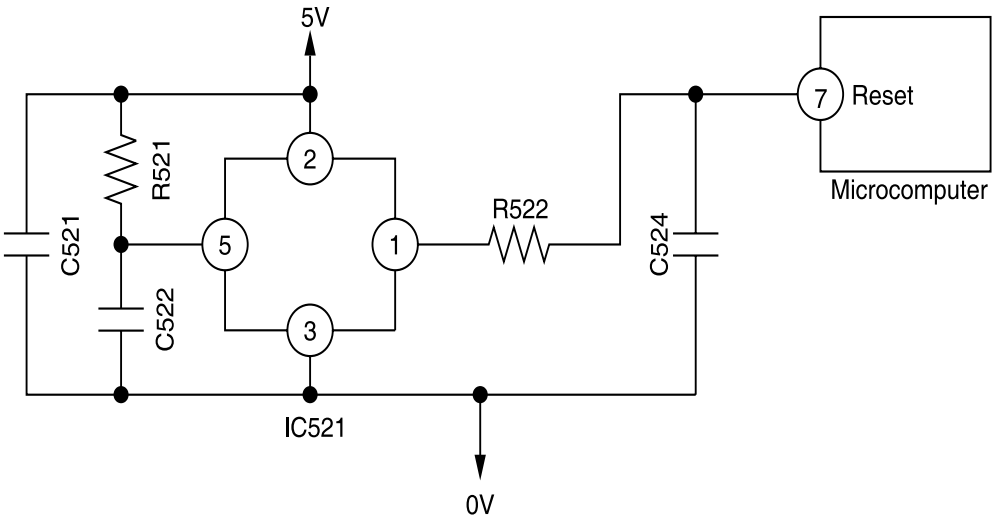


Fig.2-1

Timing chart

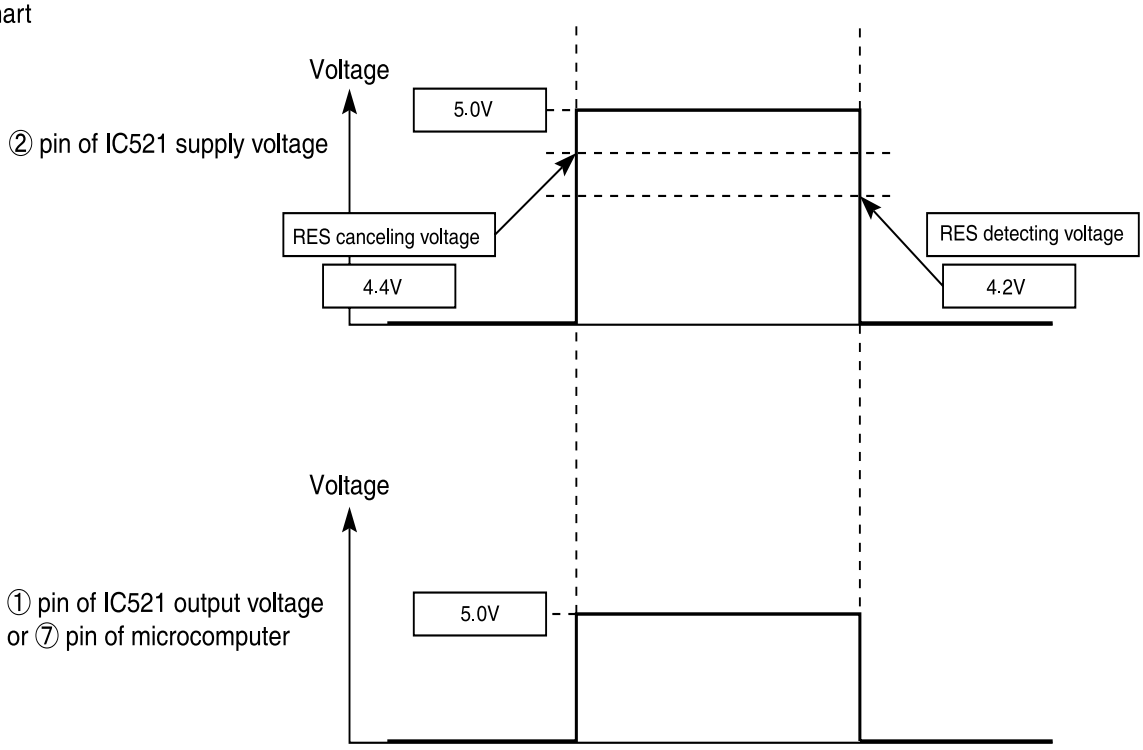


Fig.2-2

- Reset circuit is to initialize the indoor unit microcomputer when switching ON the power or after recovering from power failure.
- Microcomputer operates when ⑦ pin of the indoor unit microcomputer (reset input) is "Lo" for resetting and "Hi" for activates the microcomputer.
- 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 IC521 supply voltage and ⑦ 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 IC521 supply voltage and ⑦ 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. Receiver Circuit

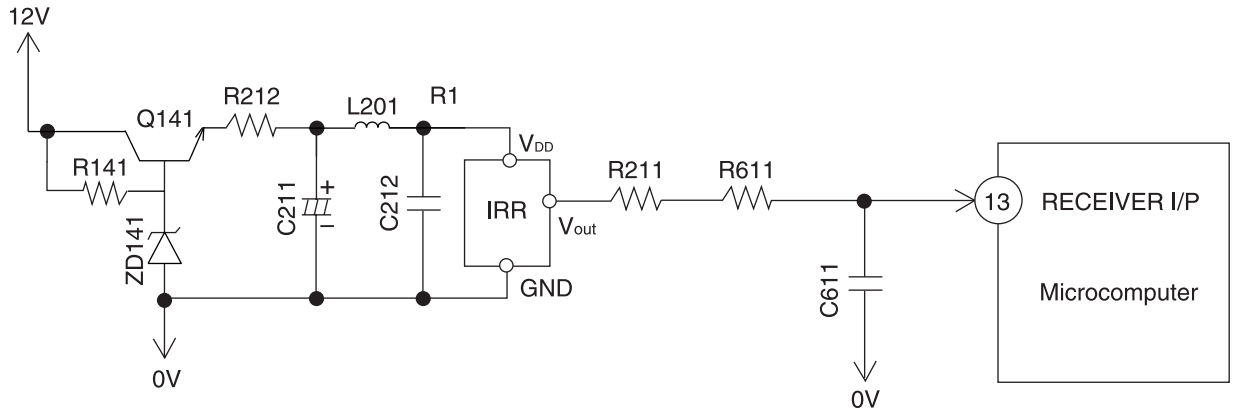


Fig. 3-1

- The light receiver unit receives the infrared signal from the wireless remote control. The receiver amplifies and shapes the signal and outputs it.

4. Buzzer Circuit

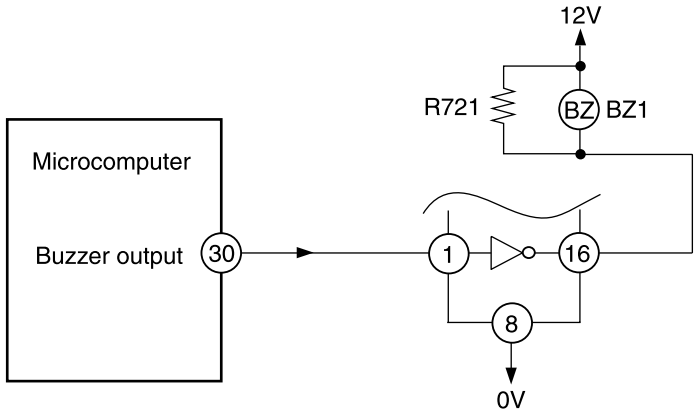


Fig. 4-1 Buzzer Circuit

- When the buzzer sounds, an approx. 3.9kHz square signal is output from buzzer output pin ㉚ of the microcomputer. 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.

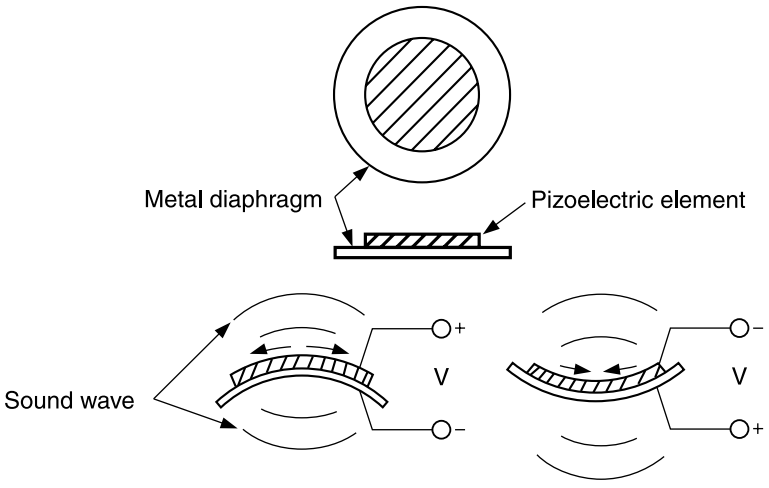


Fig. 4-2 Buzzer Operation

5. Fan Motor Drive Circuit

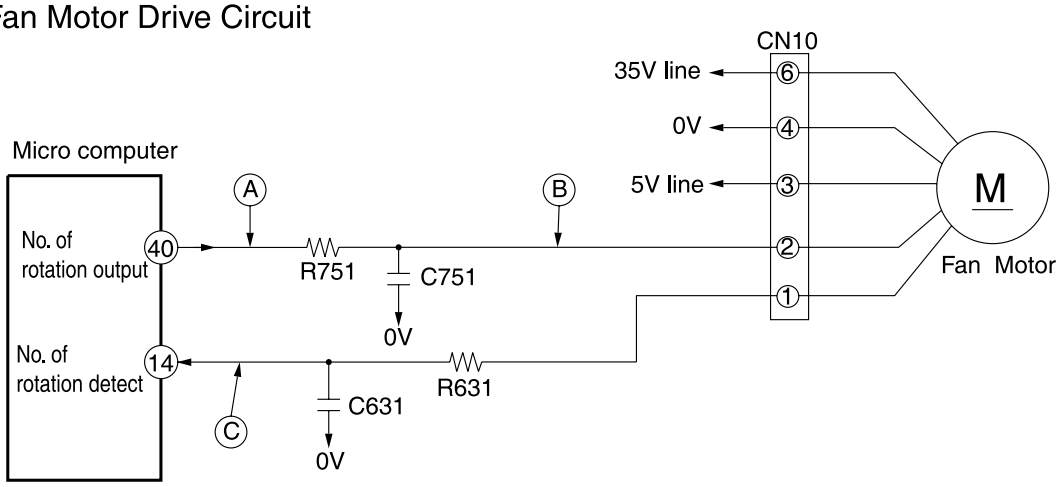


Fig. 5-1

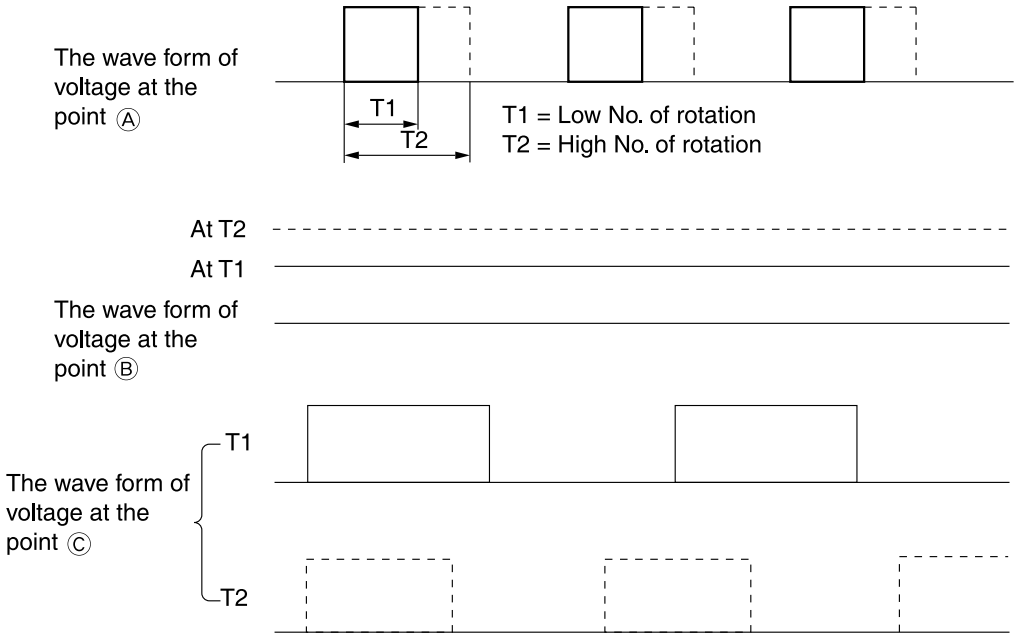


Fig. 5-2

- The 15.7 kHz PWM pulse shown in Fig.5-2 from the micro computer pin ㊵ is output to point Ⓐ. The width of this pulse changes with instruction number of rotations.
- This pulse changes to analog voltage by R751 and C751 and it is applied to the fan motor as instruction voltage number of rotations. The relationship between the voltage of point Ⓑ and number of rotations becomes as shown in Fig.5-3. (The gap may arise depending on the condition of unit.)
- The feedback pulse of number of rotation is outputted from the fan motor and input to micro computer pin ⑭. The frequency of this pulse is 12/60 of the number of rotations. (Ex: 1000min^{-1}X 12/60=200Hz) The micro computer observes this frequency and to make it as the instruction number of rotation all the time, adjusts the output pulse width of pin ㊵.
- If the feedback pulse becomes lower than 100min^{-1} caused by lock or failure of a fan motor, the fan output stops temporary as the fan lock is faulty. The pulse will output again after 10 seconds. If the abnormal in fan lock is detected twice in 10 minutes, the unit is completely stopped and change to the fault mode which the timer lamp blinks 10 times.

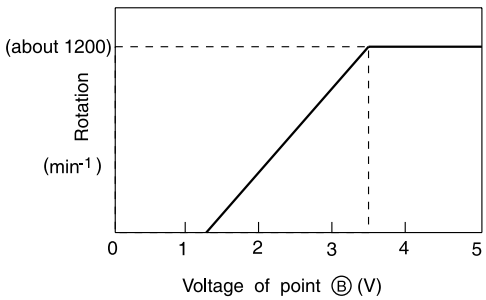


Fig. 5-3

6. Auto sweep motor circuit

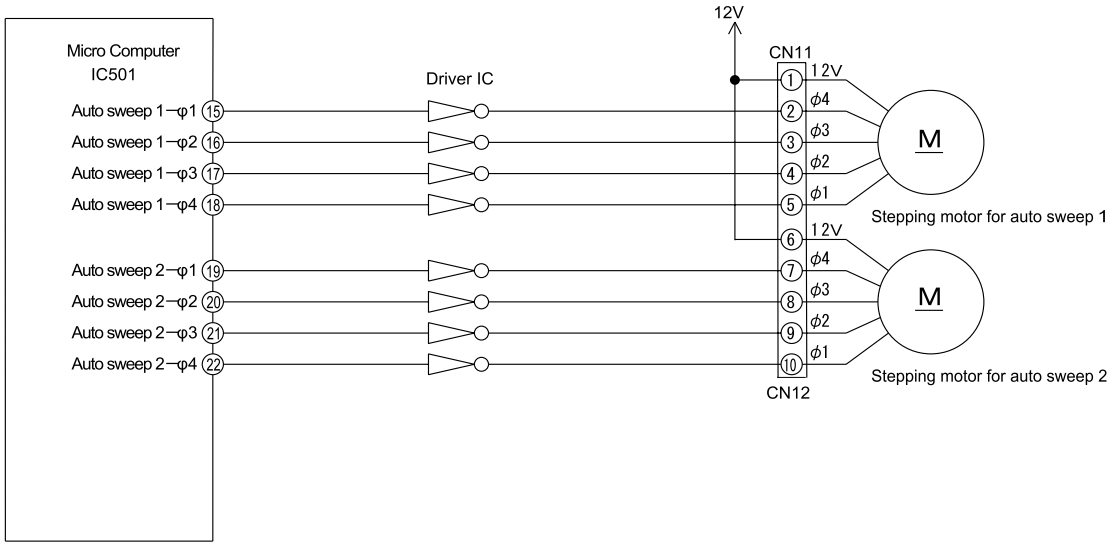


Fig. 6-1

＜Circuit wave at connector portion during rotation of motor＞

Figure below shows the voltage wave for each phase view from 0V line.

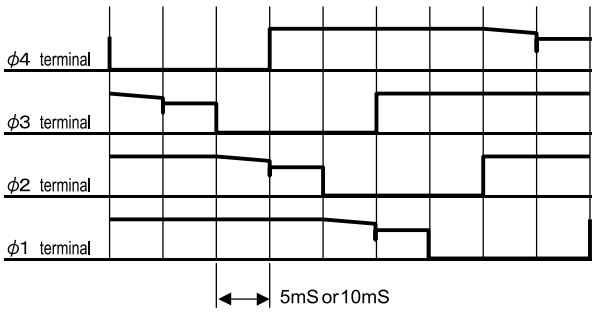


Fig. 6-2

Each auto sweep motor is excited to turn the rotor by the speed of 100PPS or 200PPS.

7. Room Temperature Thermistor Circuit

- Fig. 7-1 shows the room temperature thermistor circuit.

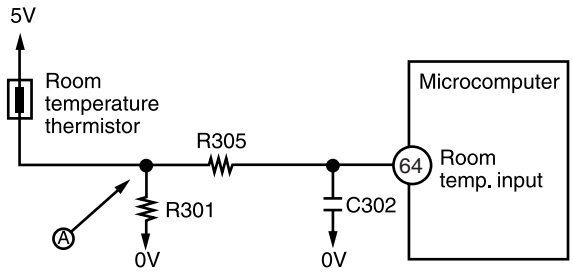


Fig. 7-1

- The voltage at Ⓐ depends on the room temperature as shown in Fig. 7-2.

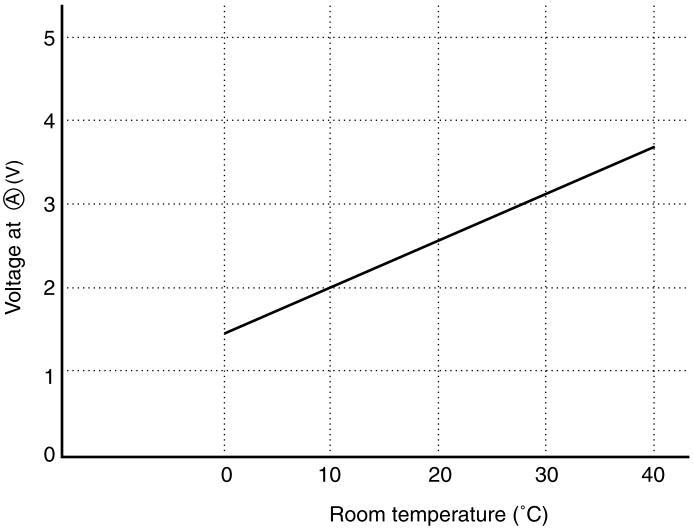


Fig. 7-2

8. Heat exchanger temperature thermistor circuit

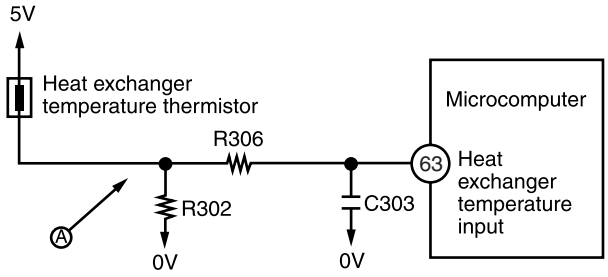


Fig. 8-1

- The circuit detects the indoor heat exchanger temperature and controls the following.

  (1) Preheating.

  (2) Low-temperature defrosting during cooling and dehumidifying operation.

  (3) Detection of the reversing valve non-operation or heat exchanger temperature thermistor open.

  The voltage at Ⓐ depends on the heat exchanger temperature as shown in Fig. 8-2.

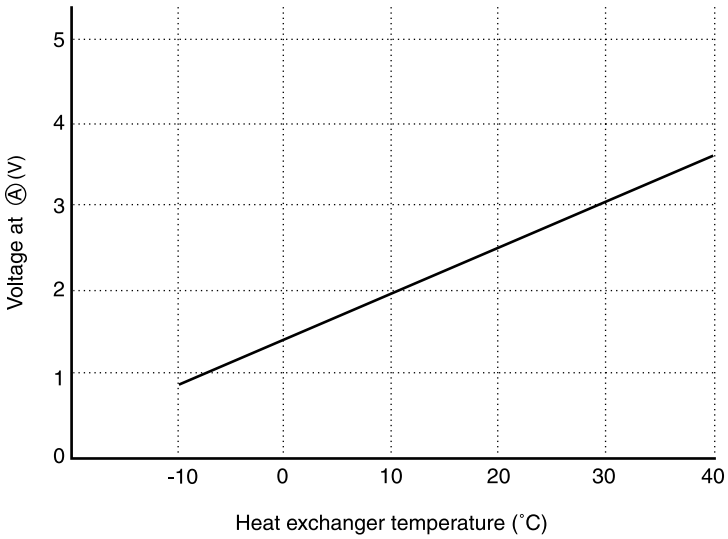


Fig. 8-2

9. Initial Setting Circuit (IC401)

- When power is supplied, the microcomputer reads the data in IC401 (E^2PROM) 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 IC401. Data will not be erased even when power is turned off.

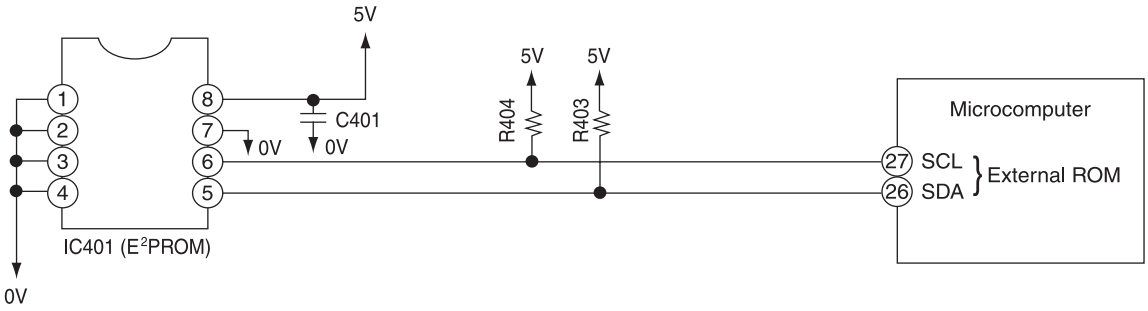


Fig. 9-1

SERVICE CALL Q & A

MODEL RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) / RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)

COOLING MODE

Q1 The compressor has stopped suddenly during cooling operation.

A1 Check if the indoor heat exchanger is frosted. Wait for 3-4 minutes until it is defrosted.

If the air conditioner operates in cooling mode when it is cold, the evaporator may get frosted.

DEHUMIDIFYING MODE

Q2 Sound of running water is heard from indoor unit during dehumidifying.

A2 Normal sound when refrigerant flows in pipe.

Q3 Compressor occasionally does not operate during dehumidifying.

A3 Compressor may not operate when room temperature is 10°C or less. It also stops when the humidity is preset humidity or less.

HEATING MODE

Q4 The circulation stops occasionally during Heating mode.

A4 It occurs during defrosting. Wait for 5-10 minutes until the condenser is defrosted.

Q5 When the fan speed is set at HIGH or MED, the flow is actually Weak.

A5 At the beginning of heating, the fan speed remains LOW for 30 seconds. If HIGH is selected, it switches to LOW and again to MED after additional 30 seconds.

Q6 Heating operation stops while the temperature is preset at "30".

A6 If temperature is high in the outdoor, heating operation may stop to protect internal devices.

AUTO FRESH DEFROSTING

Q7 After the ON/OFF button is pressed to stop heating, the outdoor unit is still working with the OPERATION lamp lighting.

A7 Auto Fresh Defrosting is carried out : the system checks the outdoor heat exchanger and defrosts it as necessary before stopping operation.

AUTO OPERATION

Q8 Fan speed does not change when fan speed selector is changed during auto operation.

A8 At this point fan speed is automatic.

NICE TEMPERATURE RESERVATION

Q9 When on-timer has been programmed, operation starts before the preset time has been reached.

A9 This is because “Nice temperature reservation” function is operating. This function starts operation earlier so the preset temperature is reached at the preset time. Operation may start maximum 60 minutes before the preset time.

Q10 Does “Nice temperature reservation” function operate during dehumidifying?

A10 It does not work. It works only during cooling and heating.

Q11 Even if the same time is preset, the operation start time varies.

A11 This is because “Nice temperature reservation” function is operating. The start time varies according to the load of room. Since load varies greatly during heating, the operation start time is corrected, so it will vary each day.

INFRARED REMOTE CONTROL

Q12 Timer cannot be set.

A12 Has the clock been set? Timer cannot be set unless the clock has been set.

Q13 The current time display disappears soon.

A13 The current time disappears in approx. 10 seconds. The time set display has priority.

When the current time is set the display flashes for approx 3 minutes.

Q14 The timer has been programmed, but the preset time disappears.

A14 Is the current time past the preset time? When the preset time reaches the current time, it disappears.

OTHERS

Q15 The indoor fan varies among high air flow, low air flow and breeze in the auto fan speed mode. (Heating operation)

A15 This is because the cool wind prevention function is operating, and does not indicate a fault.

The heat exchanger temperature is sensed in the auto speed mode. When the temperature is low, the fan speed varies among high air flow, low air flow and breeze.

Q16 Loud noise from the outdoor unit is heard when operation is started.

A16 When operation is started, the compressor rotation speed goes to maximum to increase the heating or cooling capability, so noise becomes slightly louder. This does not indicate a fault.

Q17 Noise from the outdoor unit occasionally changes.

A17 The compressor rotation speed changes according to the difference between the thermostat set temperature and room temperature. This does not indicate a fault.

Q18 There is a difference between the set temperature and room temperature.

A18 There may be a difference between the set temperature and room temperature because of construction of room, air current, etc. Set the temperature at a comfortable for the space.

Q19 Air does not flow immediately after operation is started.

A19 Preliminary operation is performed for one minute when the power switch on and heating or dehumidifying is set. The operation lamp blinks during this time for heating. This does not indicate a fault.

TROUBLESHOOTING WHEN TIMER LAMP BLINKS.
Model RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) /
RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)

Perform troubleshooting according to the number of times the indoor timer lamp and outdoor LD301 blink.

SELF-DIAGNOSIS LIGHTING MODE
Model: RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) /
RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)

No.	Blinking of Timer lamp	Reason for indication	Possible cause
1	1 time	Reversing valve defective 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 the heating mode) (Note) The malfunction mode is entered the 3rd time this abnormal indication appears (read every 3 minutes).
2	 2 times	Outdoor unit forced operation When the outdoor unit is in forced operation or balancing operation after forced operation	Electrical parts in the outdoor unit
3	 3 times	Indoor/outdoor interface defective When the interface signal from the outdoor unit is interrupted.	(1) Indoor interface circuit (2) Outdoor interface circuit
4	 4 times	Outdoor electrical assembly defective.	Please check at the outdoor electrical led lamp blinking (LD301) and refer to self diagnosis lighting mode for outdoor unit.
5	 9 times	Room thermistor or heat exchanger thermistor is faulty When room thermistor or heat exchanger thermistor is opened circuit or short circuit.	(1) Room thermistor (2) Heat exchanger thermistor
6	 10 times	Over-current detection at the DC fan motor when over-current is detected at the DC fan motor of the indoor unit.	(1) Indoor fan locked (2) Indoor fan motor (3) Indoor control P.W.B.
※1 7	 13 times	IC401 data reading error When data read from IC401 is incorrect.	IC401 abnormal

(▮ – – Lights for 0.35 sec. at interval of 0.35 sec..)

<Cautions>

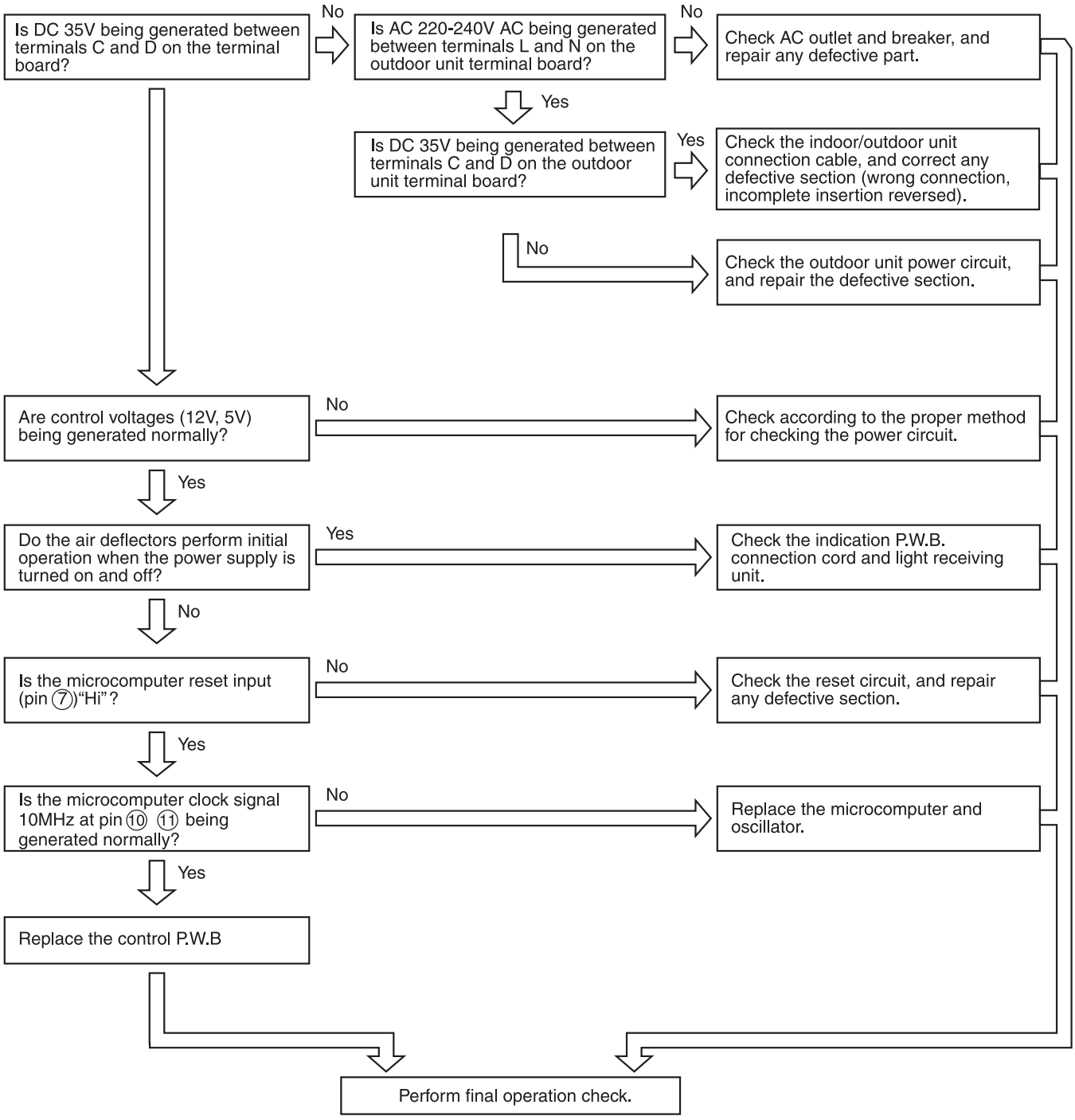
(1) If the interface circuit is faulty when power is supplied, the self-diagnosis display will not be displayed.

(2) If the indoor unit does not operate at all, check to see if the connecting cable is connected or disconnected.

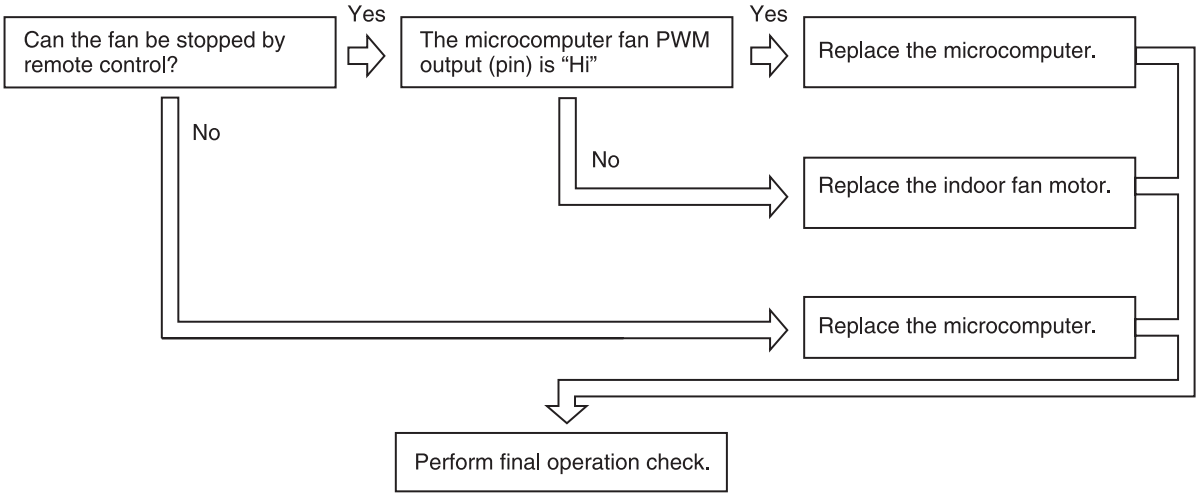
(3) To check operation again when the timer lamp is blinking, you can use the remote control for operation (except for mode mark ※1).

CHECKING INDOOR UNIT ELECTRICAL PARTS

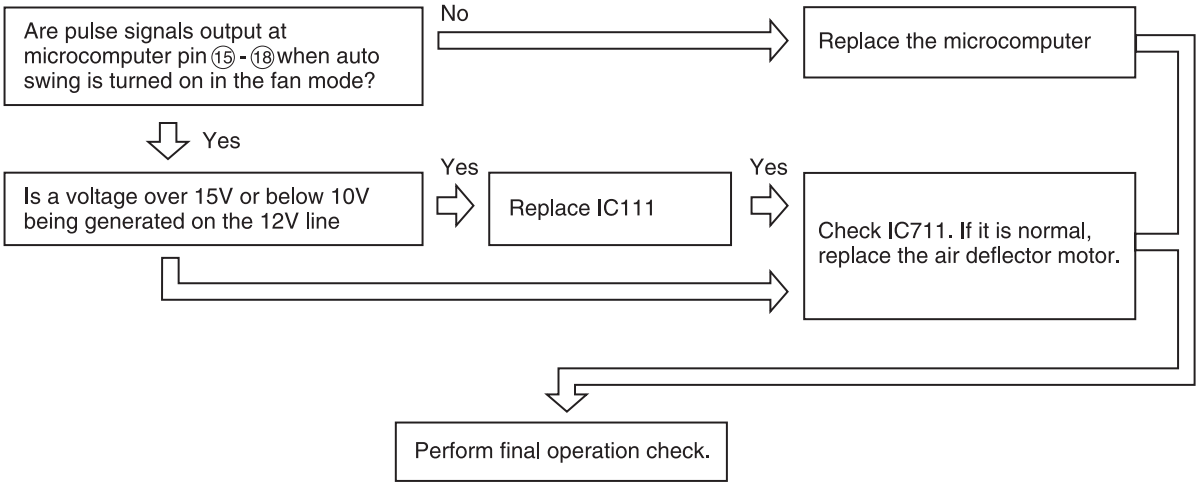
1. Power does not come on (no operation)



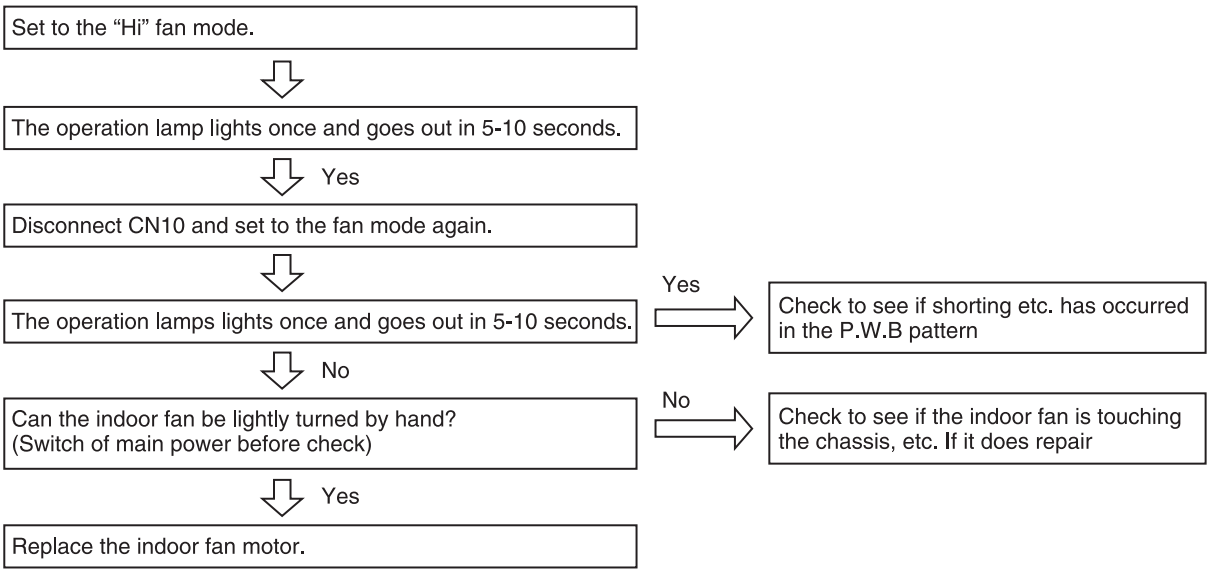
2. Only indoor fan does not operate (other is normal)



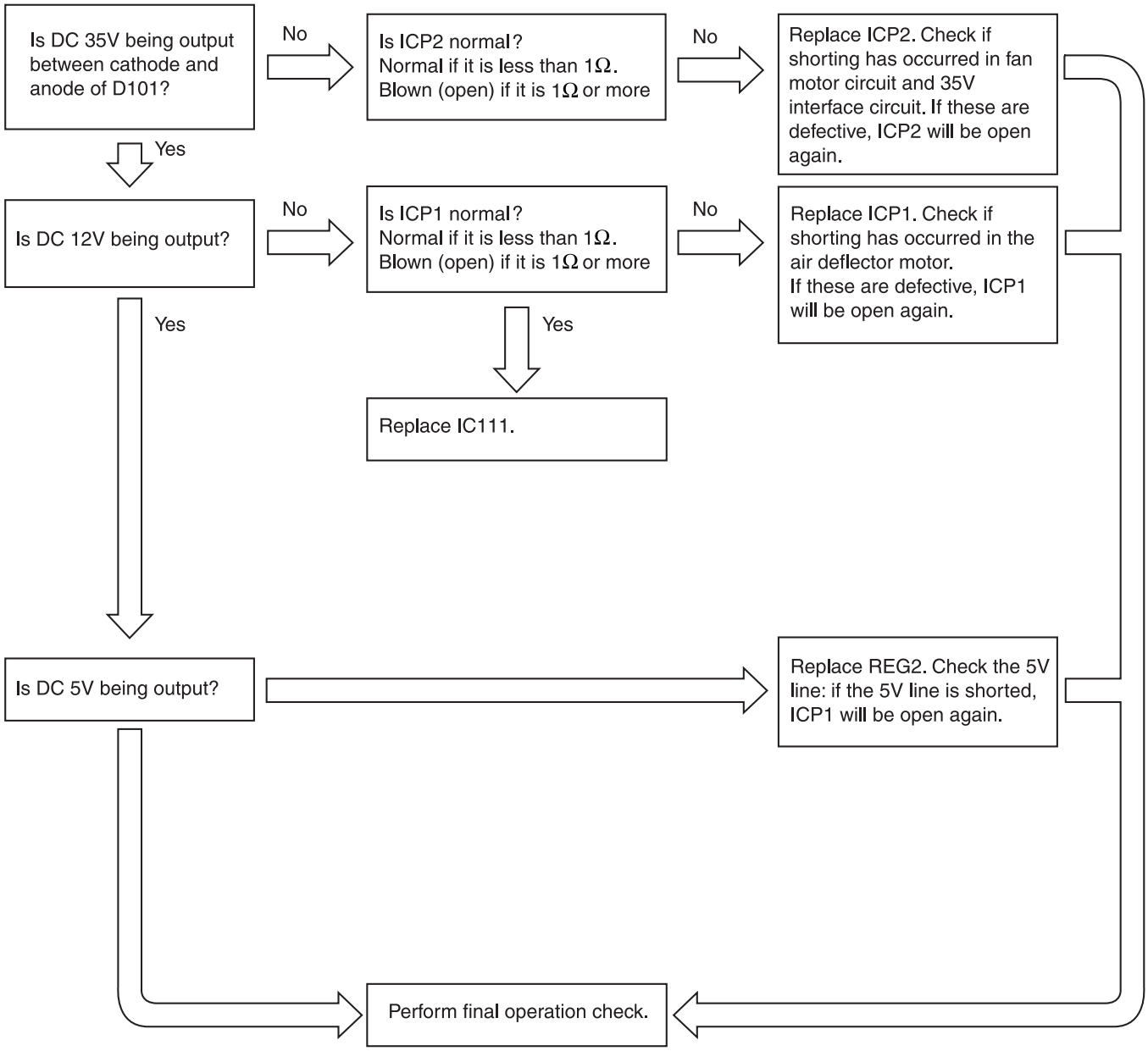
3. Air deflector does not move (others are normal)



4. All systems stop from several seconds to several minutes after operation is started (all indicators are also off)



5. Check the main P.W.B (power circuit)



CHECKING THE REMOTE CONTROLLER

Is battery polarity correct?

No

Install the battery in the correct polarity.

Yes

Is the battery check sign + − flashing?

Yes

Replace the battery.

No

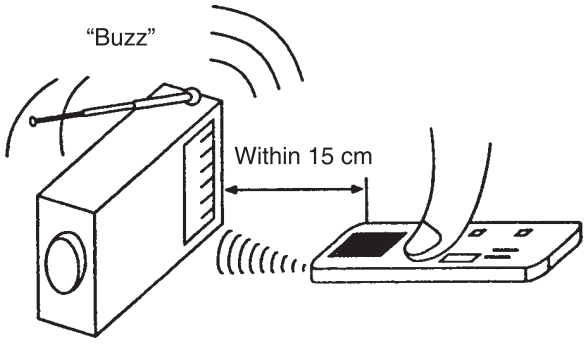
Turn on an AM radio, bring the remote control switch within 15 cm of the radio, and press the ON/OFF button.

Does the radio buzz noisily?

No

Check the LED (D1) with a multimeter.

Yes



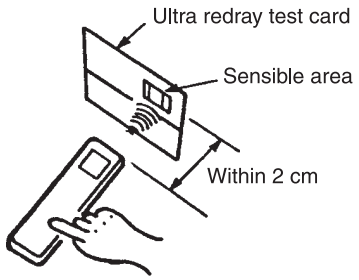
[AM radio]

Check the indoor unit signal receiving P. W. B..
If it is good, check the main P. W. B..

Check functions again.
If it does not work, replace the remote controller.

You can check the remote control switch by other methods as explained below.

Using the test card



The sensible area should flash in orange when you operate the remote control unit if it is good.

Procedure for Disassembly and Reassembly

INDOOR UNIT RAK-18QH8S(W), RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) /
RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)

1. Control Borad Assembly
(1) Take out electrical assembly cover by push the hook.
(2) Disconnect each lead wires and the screw that fixed earth wire to electrical box.
(3) Remove the screw that fixed electrical box to the water gutter.
(4) Pull forward the bottom portion of electrical assembly and take out.

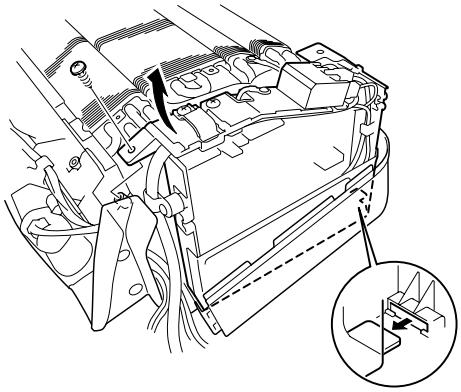


Fig. 1

2. Water Gutter Assembly
(1) Pull out the hook that fixed to the cabinet.
(2) Hold the water gutter at both end side, from the bottom side turn it upward and take out the water gutter.

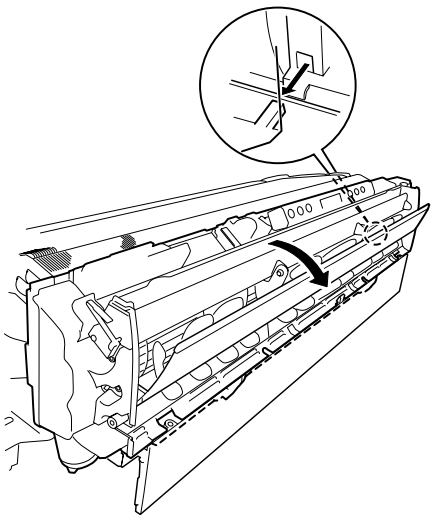


Fig. 2

3. Fan Motor
(1) Remove the screws that fixed bearing cover at the right side of Evaporator.
(2) Hold the right side of Evaporator and pull up toward you, take out the hook at the bottom of bearing cover.
(3) Remove the screw that fixed the fan motor holder.
(4) Push the down side of Evaporator upward and remove the hook of fan motor holder.
(5) Loosen the screw that fixed the fan and take out the fan.
(6) Take out the anti-vibration rubber at the left and right of fan motor.
(7) Turn the fan motor forward and take out.

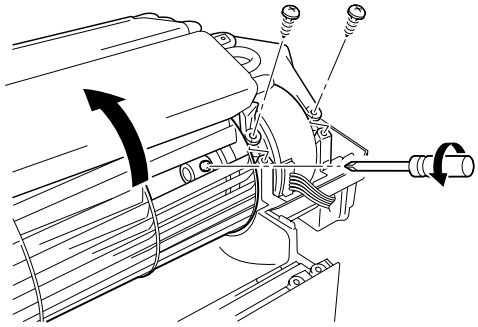
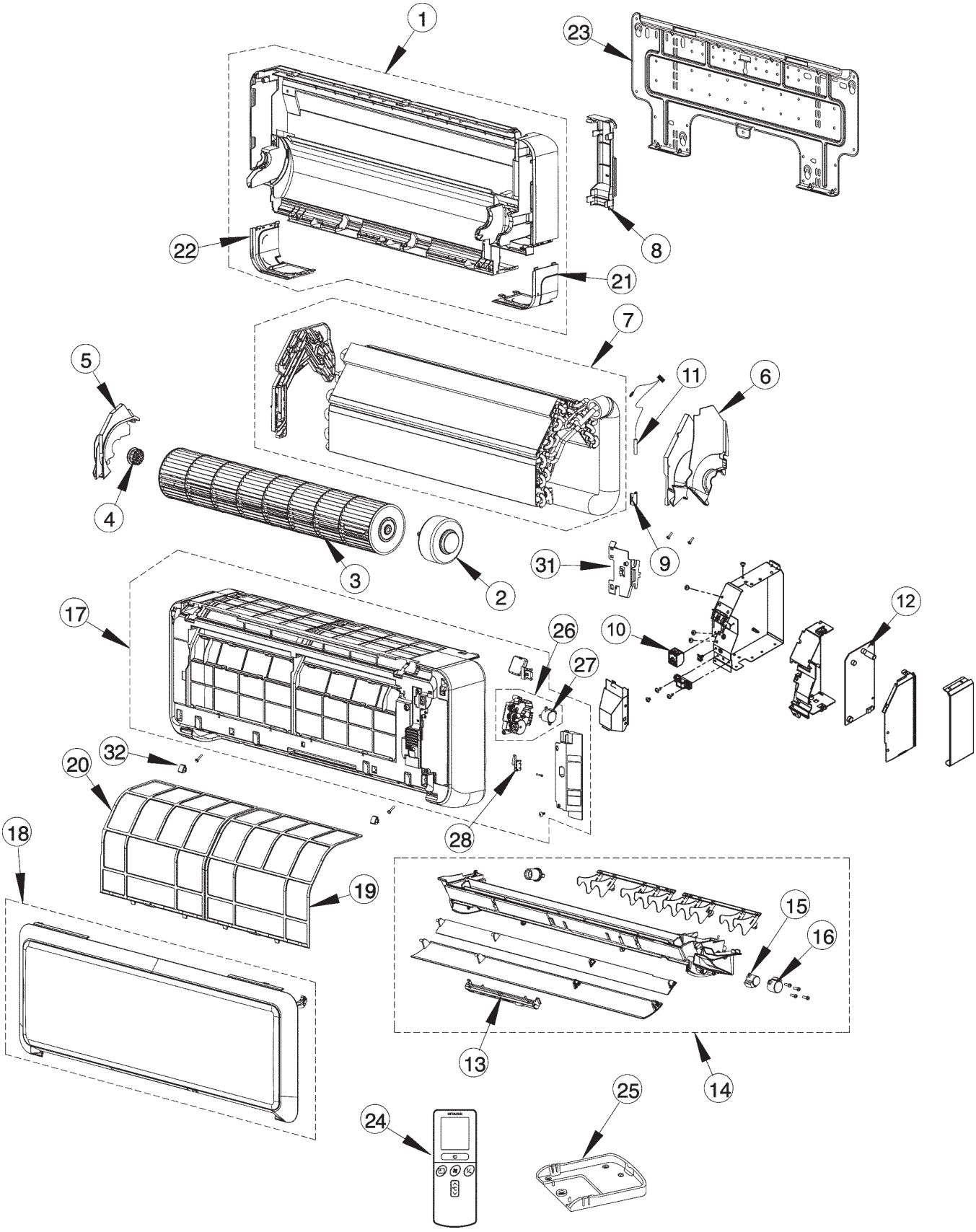


Fig. 3

PARTS LIST AND DIAGRAM

INDOOR UNIT

MODEL: RAK-18QH8S(W),RAK-18QH8(W), RAK-25QH8(W), RAK-35QH8(W), RAK-50QH8(W) /
RAK-18QH8S(B), RAK-18QH8(B), RAK-25QH8(B), RAK-35QH8(B), RAK-50QH8(B)



MODEL RAK-18QH8S(W)

NO.	PART N0. RAK-18QH8S(W)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8W R06	1	CABINET (WHITE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-18QH8W R02	1	CYCLE ASSY
8	PMRAK-25QH8W R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-18QH8S R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8W R25	1	DRAIN PAN ASSY
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8W R04	1	FRONT COVER ASSY
18	PMRAK-25QH8W R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8W R09	1	LOW COVER (R)
22	PMRAK-25QH8W R12	1	LOW COVER (L)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8W R27	2	SCREW CAP

MODEL RAK-18QH8(W)

NO.	PART N0. RAK-18QH8(W)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8W R06	1	CABINET (WHITE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-18QH8W R02	1	CYCLE ASSY
8	PMRAK-25QH8W R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-18QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8W R25	1	DRAIN PAN ASSY
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8W R04	1	FRONT COVER ASSY
18	PMRAK-25QH8W R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8W R09	1	LOW COVER (R)
22	PMRAK-25QH8W R12	1	LOW COVER (L)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8W R27	2	SCREW CAP

MODEL RAK-25QH8(W)

NO.	PART N0. RAK-25QH8(W)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8W R06	1	CABINET (WHITE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-25QH8W R03	1	CYCLE ASSY
8	PMRAK-25QH8W R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-25QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8W R25	1	DRAIN PAN ASSY
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8W R04	1	FRONT COVER ASSY
18	PMRAK-25QH8W R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8W R09	1	LOW COVER (R)
22	PMRAK-25QH8W R12	1	LOW COVER (L)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8W R27	2	SCREW CAP

MODEL RAK-35QH8(W)

NO.	PART N0. RAK-35QH8(W)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8W R06	1	CABINET (WHITE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-25QH8W R03	1	CYCLE ASSY
8	PMRAK-25QH8W R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-35QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8W R25	1	DRAIN PAN ASSY
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8W R04	1	FRONT COVER ASSY
18	PMRAK-25QH8W R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8W R09	1	LOW COVER (R)
22	PMRAK-25QH8W R12	1	LOW COVER (L)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8W R27	2	SCREW CAP

MODEL RAK-50QH8(W)

NO.	PART N0. RAK-50QH8(W)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8W R06	1	CABINET (WHITE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-50QH8W R02	1	CYCLE ASSY
8	PMRAK-25QH8W R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-50QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8W R25	1	DRAIN PAN ASSY
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8W R04	1	FRONT COVER ASSY
18	PMRAK-25QH8W R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8W R09	1	LOW COVER (R)
22	PMRAK-25QH8W R12	1	LOW COVER (L)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8W R27	2	SCREW CAP

MODEL RAK-18QH8S(B)

NO.	PART N0. RAK-18QH8S(B)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8B R06	1	CABINET (BEIGE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-18QH8W R02	1	CYCLE ASSY
8	PMRAK-25QH8B R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-18QH8S R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8B R25	1	DRAIN PAN ASSY (BEIGE)
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8B R04	1	FRONT COVER ASSY
18	PMRAK-25QH8B R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8B R09	1	LOW COVER (R) (BEIGE)
22	PMRAK-25QH8B R12	1	LOW COVER (L) (BEIGE)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8B R27	2	SCREW CAP

MODEL RAK-18QH8(B)

NO.	PART N0. RAK-18QH8(B)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8B R06	1	CABINET (BEIGE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-18QH8W R02	1	CYCLE ASSY
8	PMRAK-25QH8B R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-18QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8B R25	1	DRAIN PAN ASSY (BEIGE)
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8B R04	1	FRONT COVER ASSY
18	PMRAK-25QH8B R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8B R09	1	LOW COVER (R) (BEIGE)
22	PMRAK-25QH8B R12	1	LOW COVER (L) (BEIGE)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8B R27	2	SCREW CAP

MODEL RAK-25QH8(B)

NO.	PART N0. RAK-25QH8(B)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8B R06	1	CABINET (BEIGE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-25QH8W R03	1	CYCLE ASSY
8	PMRAK-25QH8B R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-25QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8B R25	1	DRAIN PAN ASSY (BEIGE)
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8B R04	1	FRONT COVER ASSY
18	PMRAK-25QH8B R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8B R09	1	LOW COVER (R) (BEIGE)
22	PMRAK-25QH8B R12	1	LOW COVER (L) (BEIGE)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8B R27	2	SCREW CAP

MODEL RAK-35QH8(B)

NO.	PART N0. RAK-35QH8(B)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8B R06	1	CABINET (BEIGE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-25QH8W R03	1	CYCLE ASSY
8	PMRAK-25QH8B R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-35QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8B R25	1	DRAIN PAN ASSY (BEIGE)
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8B R04	1	FRONT COVER ASSY
18	PMRAK-25QH8B R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8B R09	1	LOW COVER (R) (BEIGE)
22	PMRAK-25QH8B R12	1	LOW COVER (L) (BEIGE)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8B R27	2	SCREW CAP

MODEL RAK-50QH8(B)

NO.	PART N0. RAK-50QH8(B)	Q'TY / UNIT	PARTS NAME
1	PMRAK-25QH8B R06	1	CABINET (BEIGE)
2	PMRAK-25QH8W R16	1	FAN MOTOR
3	PMRAK-25QH8W R17	1	TANGENTIAL FAN
4	PMRAK-25QH8W R18	1	FAN SUPPORT ASSY
5	PMRAK-25QH8W R19	1	FAN COVER
6	PMRAK-25QH8W R20	1	FAN MOTOR SUPPORT
7	PMRAK-50QH8W R02	1	CYCLE ASSY
8	PMRAK-25QH8B R21	1	UPPER COVER
9	PMRAS-10C8M R03	1	SPRING
10	PMRAM-90QH5 901	1	TERMINAL BOARD (2P)
11	PMRAK-25QH8W R23	1	THERMISTOR ASSEMBLY
12	PMRAK-50QH8W R01	1	P.W.B (MAIN)
13	PMRAK-25QH8W R24	1	P.W.B (RECEIVER)
14	PMRAK-25QH8B R25	1	DRAIN PAN ASSY (BEIGE)
15	PMRAS-10EX9 R02	1	DAMPER MOTOR
16	PMRAS-10EX9 R33	1	STEP MOTOR FLOP
17	PMRAK-25QH8B R04	1	FRONT COVER ASSY
18	PMRAK-25QH8B R05	1	FRONT PANEL
19	PMRAK-25QH8W R07	1	AIR FILTER (R)
20	PMRAK-25QH8W R08	1	AIR FILTER (L)
21	PMRAK-25QH8B R09	1	LOW COVER (R) (BEIGE)
22	PMRAK-25QH8B R12	1	LOW COVER (L) (BEIGE)
23	PMRAK-25QH8W R10	1	MOUNTING PLATE
24	PMRAK-25QH8W R02	1	REMOTE CONTROL ASSEMBLY
25	PMRAK-25QH8W R11	1	REMOTE CONTROL SUPPORT
26	PMRAK-25QH8W R28	1	GEAR ASSY
27	PMRAK-25QH8W R14	1	AUTO SWEEP MOTOR (GEAR)
28	PMRAK-25QH8W R15	1	MICRO SWITCH
31	PMRAK-25QH8W R26	1	THERMISTOR SUPPORT
32	PMRAK-25QH8B R27	2	SCREW CAP

HITACHI

RAK-18QH8S(W)
RAK-18QH8(W)
RAK-25QH8(W)
RAK-35QH8(W)
RAK-50QH8(W)

RAK-18QH8S(B)
RAK-18QH8(B)
RAK-25QH8(B)
RAK-35QH8(B)
RAK-50QH8(B)

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