

SERVICE MANUAL

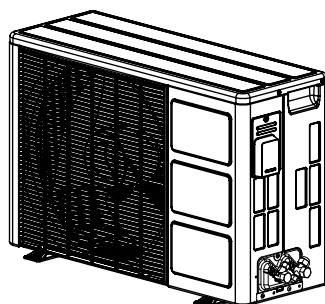
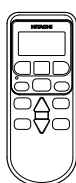
TECHNICAL INFORMATION

FOR SERVICE PERSONNEL ONLY

REFER TO THE FOUNDATION MANUAL



RAS-10G5
RAS-14G5



RAC-10G5
RAC-14G5

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SPECIFICATIONS

TYPE			(WALL TYPE)				
			INDOOR UNIT		OUTDOOR UNIT	INDOOR UNIT	OUTDOOR UNIT
MODEL			RAS-10G5		RAC-10G5	RAS-14G5	RAC-14G5
POWER SOURCE			1 PHASE, 50 Hz, 220-230V			1 PHASE, 50 Hz, 220-230V	
COOLING	TOTAL INPUT (W)		870-900			1210-1230	
	TOTAL AMPERES (A)		4.00-3.95			5.70-5.50	
	CAPACITY	(kW)	2.90-2.90			3.02-3.01	
		(B.T.U./h)	9890-9890			12,460-12,630	
DIMENSIONS (mm)		W	780	700	780	700	
		H	280	468	280	468	
		D	220	258	220	258	
NET WEIGHT (kg)		9	25	9	25		

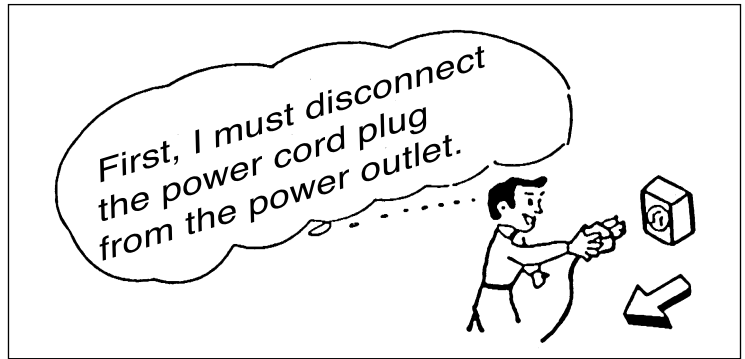
SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

ROOM AIR CONDITIONER

INDOOR UNIT + OUTDOOR UNIT

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 occurrence of any accident such as electrical shock, leak of current, or bodily injury due to the drop of any part.
8. To check the insulation of the unit, measure the insulation resistance between the power cord plug and grounding terminal of the unit. The insulation resistance should be 1M 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).

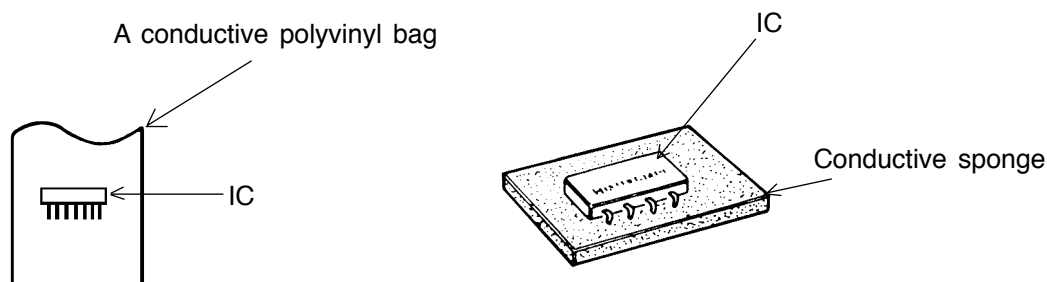


Fig. 1. Conductive Container

- (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 $1M\Omega$ 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.

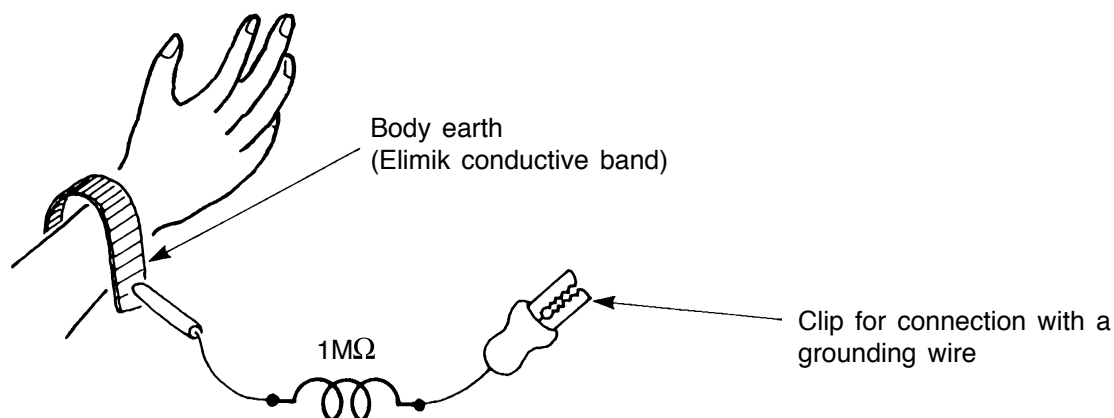


Fig. 2. Body Earth

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

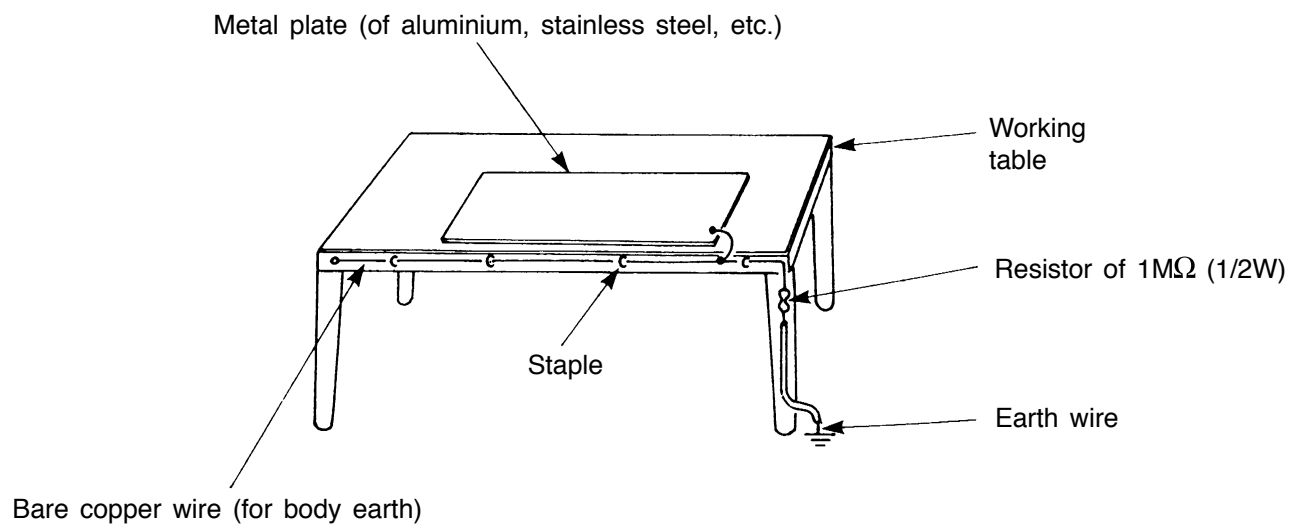


Fig. 3. Grounding of the working table

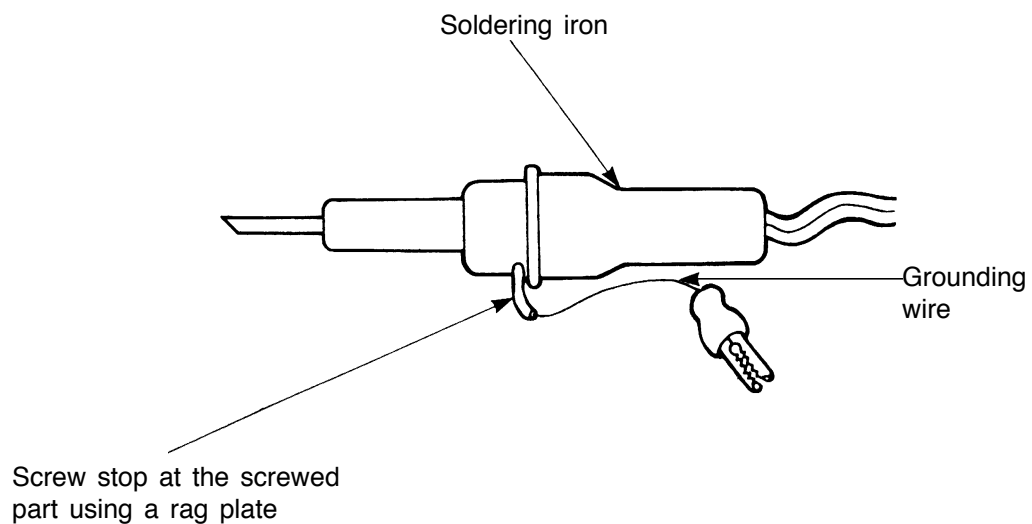


Fig. 4. Grounding a soldering iron

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 or stop operation, slight flowing noise of refrigerant in the refrigerating cycle is heard occasionally, but this noise is not abnormal for the operation.
2. When it thunders near by, it is recommended to stop the operation and to disconnect the power cord plug from the power outlet for safety.
3. In the event of power failure, the airconditioner will restart automatically in the previously selected mode once the power is restored. In the event of power failure during TIMER operation, the timer will be reset and the unit will begin or stop operating under a new timer setting.
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 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 21°C (70°F).
6. When the operation button is set to “cool” from other mode, the compressor will stop for about 3 minutes as IC delay circuit protection.

SPECIFICATIONS

MODEL		RAS-10G5 RAS-14G5	RAC-10G5	RAC-14G5
FAN MOTOR		20 W	30 W	
FAN MOTOR CAPACITOR		NO	2.5 μ F, 450VAC	
FAN MOTOR PROTECTOR		NO	YES	
COMPRESSOR		–	ASG108CV	UG4B124JX
COMPRESSOR MOTOR CAPACITOR		NO	35 μ F, 450 VAC	45 μ F, 450 VAC
OVERLOAD PROTECTOR		NO	YES (EXTERNAL)	
OVERHEAT PROTECTOR		NO	YES (EXTERNAL)	
FUSE (for MICROPROCESSOR)		3.15A	NO	
POWER RELAY		G4A	NO	
POWER SWITCH		YES	NO	
TEMPORARY SWITCH		YES	NO	
SERVICE SWITCH		YES	NO	
TRANSFORMER		YES (SWITCHING POWER SUPPLY)	NO	
VARISTOR		450NR	NO	
FUSE CAPACITY (TIME DELAY FUSE)		-----	10 A	15 A
THERMOSTAT		YES(IC)	NO	
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		YES	NO	
REFRIGERANT CHARGING VOLUME (Refrigerant R410A)	UNIT	-----	630g	680g
	MAX. PIPES	-----	15m	

Figure showing the installation of Indoor and Outdoor unit

CAUTION

In case the pipe length is more than 8m, add refrigerant R410A at 15 gram per every meter exceeds. However, pipe length shall not exceed 15m.

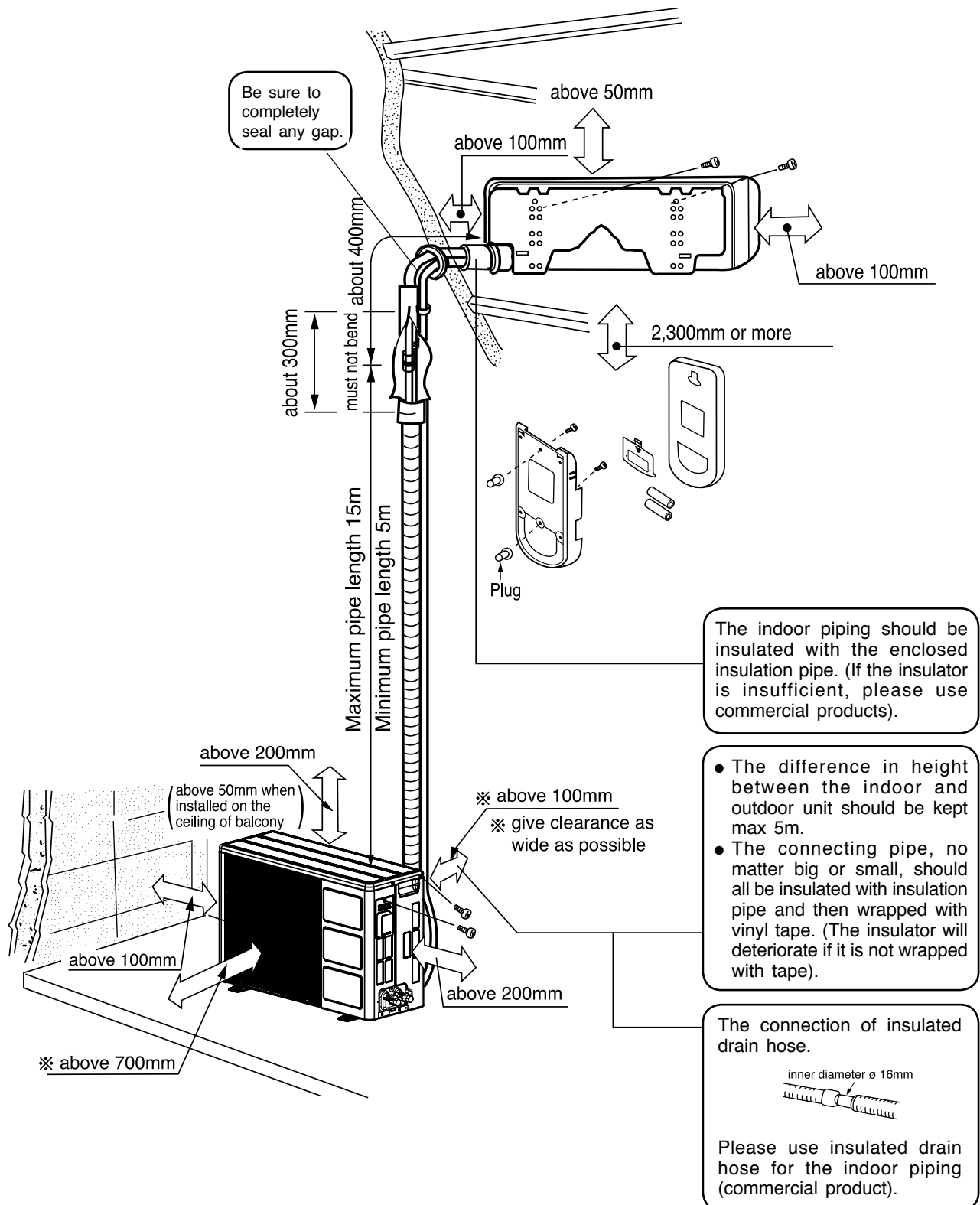
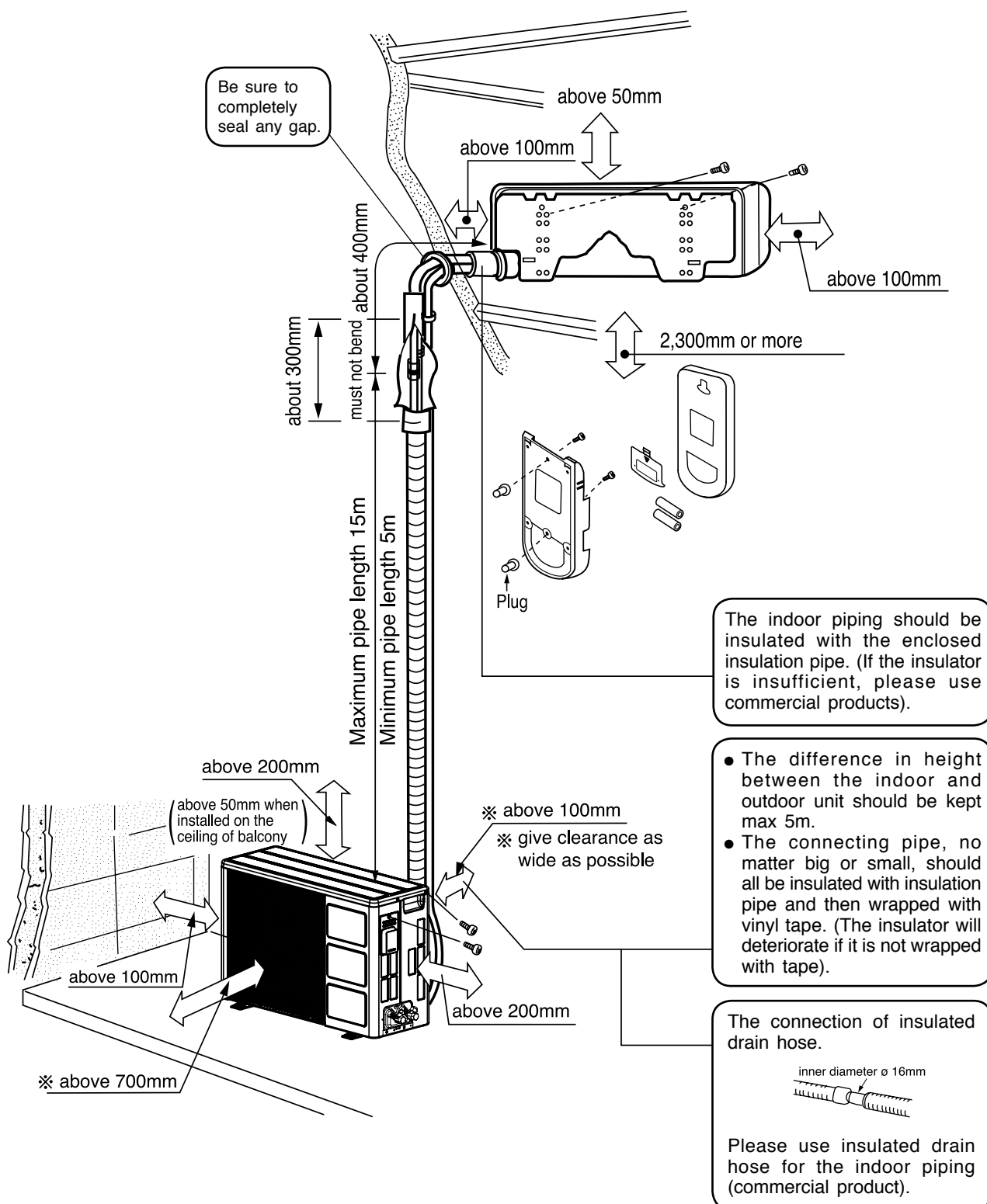
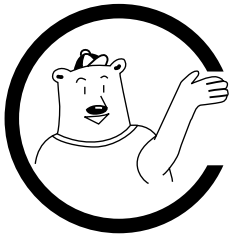


Figure showing the installation of Indoor and Outdoor unit

CAUTION

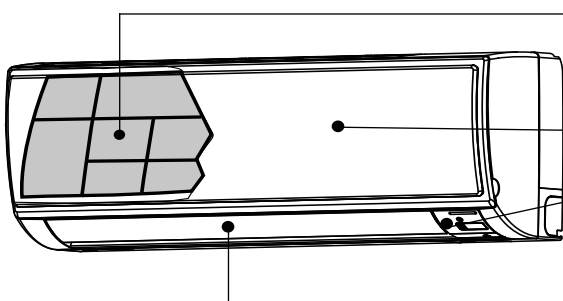
In case the pipe length is more than 8m, add refrigerant R410A at 10 gram per every meter exceeds. However, pipe length shall not exceed 15m.





NAMES AND FUNCTIONS OF EACH PART

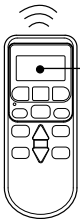
INDOOR UNIT

**PRE-FILTER**

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

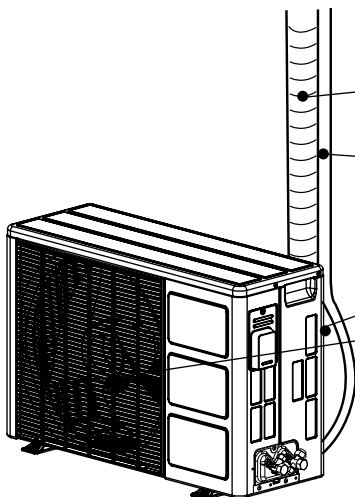
FRONT PANEL**INDOOR UNIT INDICATORS**

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

HORIZONTAL DEFLECTOR • VERTICAL DEFLECTOR (AIR OUTLET)**REMOTE CONTROLLER**

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

OUTDOOR UNIT

**DRAIN PIPE**

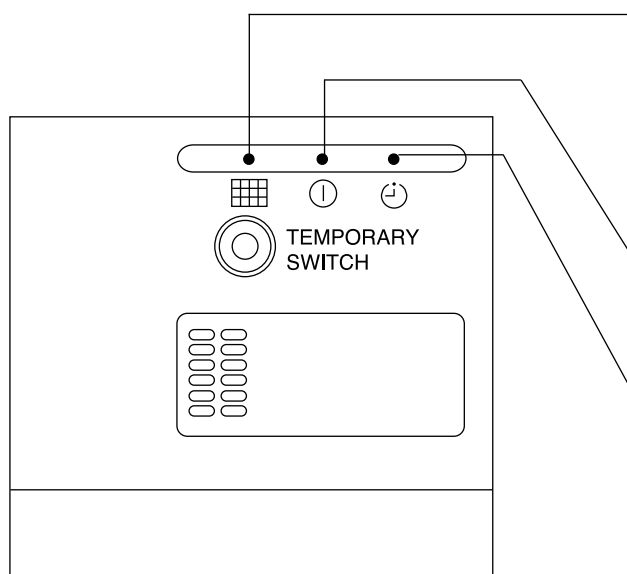
Condensed water drain to outside.

CONNECTING CORD**AIR INLET (BACK, LEFT SIDE)****AIR OUTLET**


MODEL NAME AND DIMENSIONS

MODEL	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
RAS-10G5 / RAS-14G5	780	280	220
RAC-10G5 / RAC-14G5	700	468	258

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”.

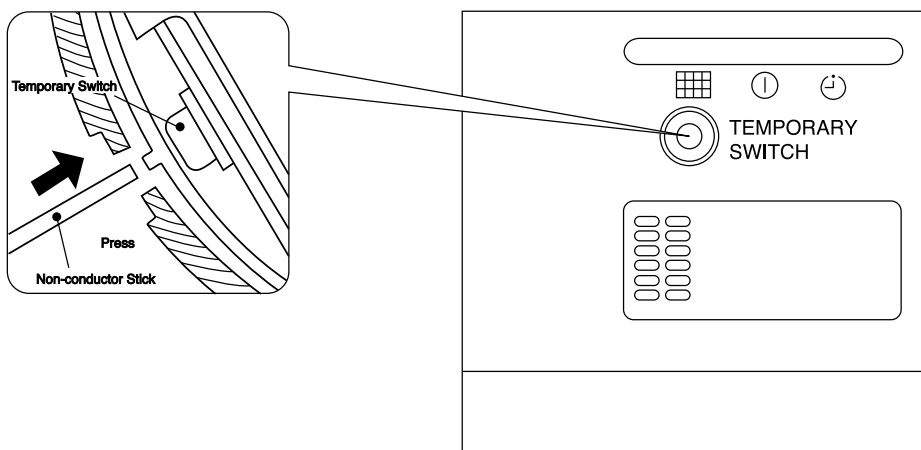
OPERATION LAMP

This lamp lights during operation.

TIMER LAMP

This lamp lights when the timer is working.

OPERATION INDICATOR



TEMPORARY SWITCH

Use this switch to start and stop when the remote controller does not work. [Use non-conductor stick (example: toothpick)]

- 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.

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

Note

- The recommended maximum and minimum operating temperatures of the hot and cold sides should be as below:

		Minimum	Maximum
Indoor	Dry bulb °C	21	32
	Wet bulb °C	15	23
Outdoor	Dry bulb °C	21	43
	Wet bulb °C	15	26




MEMO

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.








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.


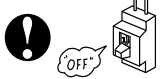
 Make sure to connect earth line.	 The sign in the figure indicates prohibition.
 Indicates the instructions that must be followed.	

- Please keep this manual after reading.




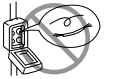

PRECAUTIONS DURING INSTALLATION

 WARNING	<ul style="list-style-type: none"> • Do not reconstruct the unit. Water leakage, fault, short circuit or fire may occur if you reconstruct the unit by yourself. 	
	<ul style="list-style-type: none"> • 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. 	
	<ul style="list-style-type: none"> • 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. 	
	<ul style="list-style-type: none"> • Be sure to use the specified piping set for R410A. Otherwise, this may result in broken copper pipes or faults. 	
 CAUTION	<ul style="list-style-type: none"> • A circuit breaker should be installed depending on the mounting site of the unit. Without a circuit breaker, the danger of electric shock exists. 	
	<ul style="list-style-type: none"> • Do not install near location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it. 	
	<ul style="list-style-type: none"> • Please ensure smooth flow of water when installing the drain hose. 	

PRECAUTIONS DURING SHIFTING OR MAINTENANCE

 WARNING	<ul style="list-style-type: none"> • 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. 	
	<ul style="list-style-type: none"> • Please contact your agent for maintenance. Improper self maintenance may cause electric shock and fire. 	
	<ul style="list-style-type: none"> • 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. 	
	<ul style="list-style-type: none"> • If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service/parts centers. 	

PRECAUTIONS DURING OPERATION

 WARNING	<ul style="list-style-type: none"> • Avoid an extended period of direct air flow for your health. 	
	 <ul style="list-style-type: none"> • 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. 	
	<ul style="list-style-type: none"> • Do not use any conductor as fuse wire, this could cause fatal accident. 	
	 <ul style="list-style-type: none"> • During thunder storm, disconnect and turn off the circuit breaker. 	

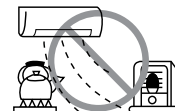
PRECAUTIONS DURING OPERATION

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



- Do not attempt to operate the unit with wet hands, this could cause fatal accident.

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



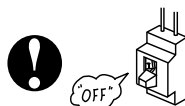
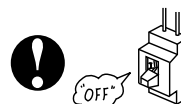
- Please ensure that outdoor mounting frame is always stable, firm and without defect. If not, the outdoor unit may collapse and cause danger.

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



- Do not use any aerosol or hair sprays near the indoor unit. This chemical can adhere on heat exchanger fin and blocked the evaporation water flow to drain pan. The water will drop on tangential fan and cause water splashing out from indoor unit.

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



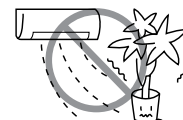
- Turn off the circuit breaker if the unit is not to be operated for a long period.

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



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

- Do not place plants directly under the air flow as it is bad for the plants.



- When operating the unit with the door and windows opened, (the room humidity is always above 80%) and with the air deflector facing down or moving automatically for a long period of time, water will condense on the air deflector and drips down occasionally. This will wet your furniture. Therefore, do not operate under such condition for a long time.
- If the amount of heat in the room is above the cooling 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 intended for use by young children or infirm person unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.
- Young children should be supervised to ensure that they do not play with the appliance.

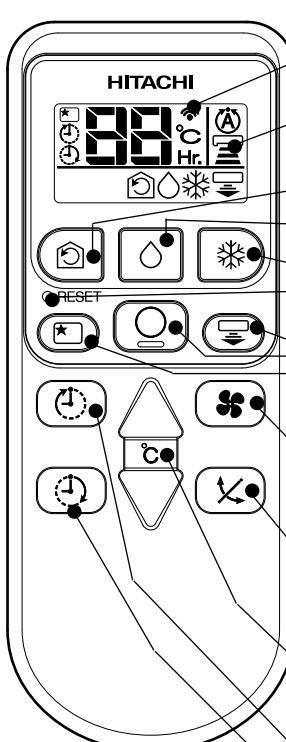
CAUTION

NAMES AND FUNCTIONS OF REMOTE CONTROL UNIT

REMOTE CONTROLLER

This controls the operation of the indoor unit. Signal range to reach indoor unit is about 7 meters. If inverter lamp is used, 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.



Transmission sign
The transmission sign blinks when a signal is sent.

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

CIRCULATION button
Use this button to set air circulation in the room or start operation.

DEHUMIDIFYING button
Use this button to dehumidify the room or start operation.

COOLING button
Use this button to set cooling mode in the room or start operation.

RESET button

SUPER COOLING button
Use this button to deliver faster and more comfortable air-conditioning.

STOP button
Press this button to stop operation only.

SLEEP button
Use this button to set the sleep timer.

FAN SPEED selector
This determines the fan speed. Each time you press this button, the intensity of circulation will change from (A) (AUTO) to (HI) to (MED) to (LOW).

AUTO SWING button
Controls the angle of the horizontal air deflector.

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

OFF-TIMER button Select the turn OFF time.

ON-TIMER button Select the turn ON time.

	SUPER COOL / START
	CIRCULATION / START
	DEHUMIDIFY / START
	COOLING / START
	FAN
	FAN SPEED LOW MED HI
	SLEEP TIMER
	STOP
	TIMER SELECTOR ON TIMER OFF TIMER
	AUTO SWING

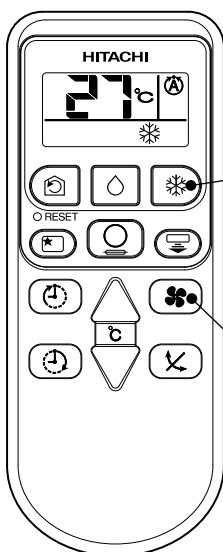
Precautions for Use

- Do not put the remote controller in the following places.
 - In 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.



COOLING OPERATION

Use the device for cooling when the outdoor temperature is 21 ~ 43°C.

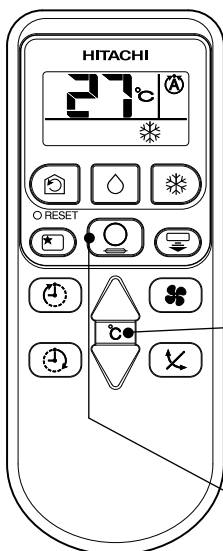
If indoors humidity is very high (over 80%), some dew may form on the air outlet grille of the indoor unit.




1


Press the  button so that the display indicates  (COOL). Cooling operation starts with a beep.

The cooling function does not start if the temperature setting is higher than the current room temperature (even though the ① (OPERATION) lamp lights). The cooling function will start as soon as you set the temperature below the current room temperature.





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 or LOW automatically when the preset temperature has been reached.

 (HI) : Hi fan speed mode.

 (MED) : Medium fan speed mode.

 (LOW) : Low fan speed mode.

3

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





The range of 25 ~ 28°C is recommended as the room temperature for cooling.

If the temperature setting is 27°C, the room temperature will be controlled at around 27°C.

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

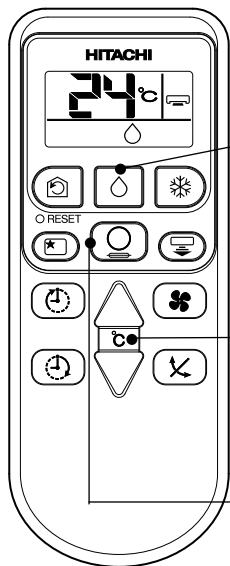
STOP


Press the  (STOP) button to stop operation.

■ As the settings are stored in memory in the remote controller, you only have to press the  (COOLING) button to repeat the same settings next time.

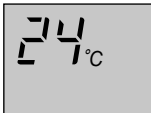
DEHUMIDIFYING OPERATION


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  (DEHUMIDIFY) button. Dehumidifying operation starts with a beep.
The FAN SPEED is set at LOW automatically.
The FAN SPEED button does not work.

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.

STOP Press the  (STOP) button to stop operation.

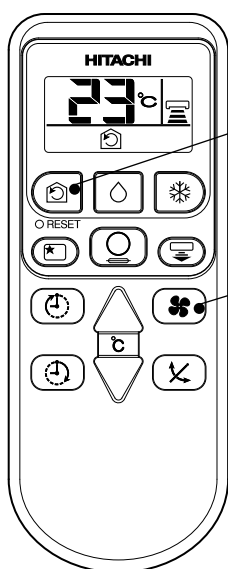
■ As the settings are stored in memory in the remote controller, you only have to press the  (DEHUMIDIFY) button next time.

■ Dehumidifying Function



When the room temperature is higher than the temperature setting: The device will dehumidify the room and 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. You might feel a bit colder in dehumidifying operation.

CIRCULATION OPERATION



1

Press the  button so that the display indicates  (CIRCULATE).
Circulating operation starts with a beep.


2


Press the FAN SPEED button and select the desired FAN SPEED (the display indicates your choice).

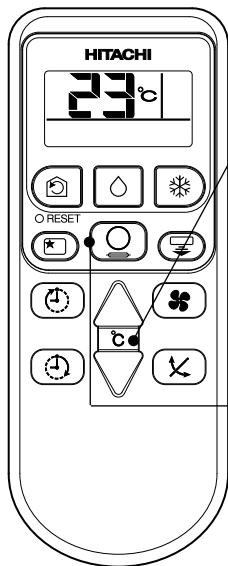
3

Press the temperature control button to set to the desired temperature.

STOP

Press the  (STOP) button to stop operation.

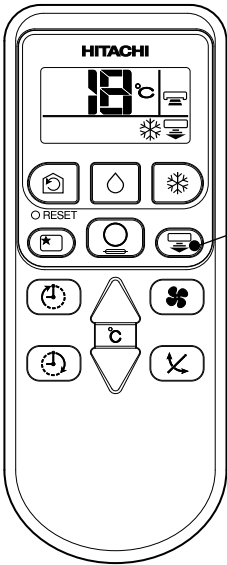
■ As the settings are stored in memory in the remote controller, you only have to press the  (CIRCULATION) button next time.





■ Circulation Function

- During circulation operation, compressor does not run and there is no cooling operation with only indoor fan running.
- When the setting temperature is higher than room temperature, indoor fan will stop running.








SUPER COOLING





Press the  button.

- Operation start with a signal received sound “beep”.
- Unit will be forced operate in ❄️ (COOL) with SUPER HI fan speed for 20 minutes.  Indicator appear during this period while temperature and fan speed setting display remain unchanged. (Operation lamp at indoor unit is blinking).
- After 20 minutes, operation lamp stop blinking and  indicator will disappear while unit will be in ❄️ (COOL) mode. Temperature and fan speed will change to previous setting.
- Air blow sound will be slightly high due to forced operation.


CANCELLATION of SUPER COOLING Operation

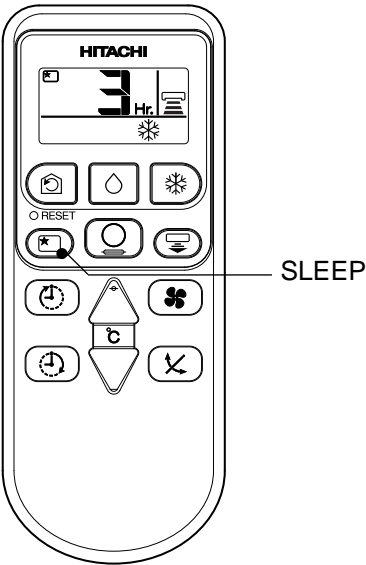
Cancel Condition	Operation mode after cancel
Press  or OFF timer time is up	Stop operation
 key press	DEHUMIDIFYING operation
 key press	CIRCULATION operation
Press  or Press  or Press  or Press  or 20 minutes time is up	Normal COOLING operation

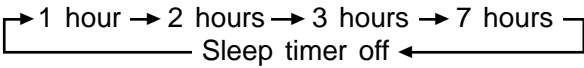
NOTE

- (1)  OFF TIME setting : OFF timer will be a priority over the SUPER COOLING operation time.
- (2)  ON TIME setting : SUPER COOLING operation will be a priority over the ON timer operation time.

HOW TO SET THE SLEEP TIMER

Press the  (SLEEP) button, and the display changes as shown below.





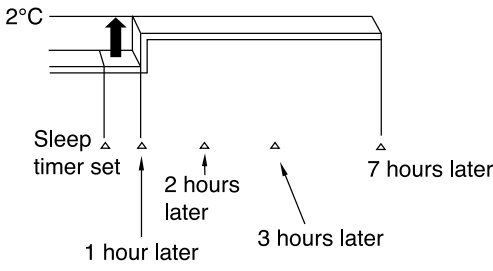
Mode	Indication
Sleep timer	 1 hour → 2 hours → 3 hours → 7 hours Sleep timer off

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.

Explanation of the sleep timer

The device will control the FAN SPEED and room temperature automatically so as to be quiet and good for people’s health.
You can set the sleep timer to turn off after 1, 2, 3 or 7 hours. The FAN SPEED and room temperature will be controlled as shown below.


Operation with the sleep timer

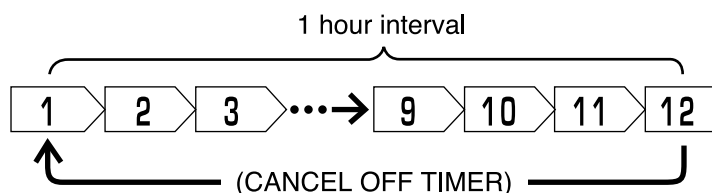
Function	Operation
Cooling “  ” and dehumidifying “  ”	<p>The room temperature will be controlled 2°C above the setting temperature and the FAN SPEED will be set to LOW setting 1 hour after the setting of the sleep timer.</p>  <p>The diagram shows a horizontal line representing a temperature setpoint. An upward arrow indicates a 2°C increase. Below the line, a timeline shows the sequence of events: 'Sleep timer set' (marked with a triangle), '1 hour later' (marked with a triangle), '2 hours later' (marked with a triangle), '3 hours later' (marked with a triangle), and '7 hours later' (marked with a triangle).</p>

- ON Timer and OFF Timer are available.

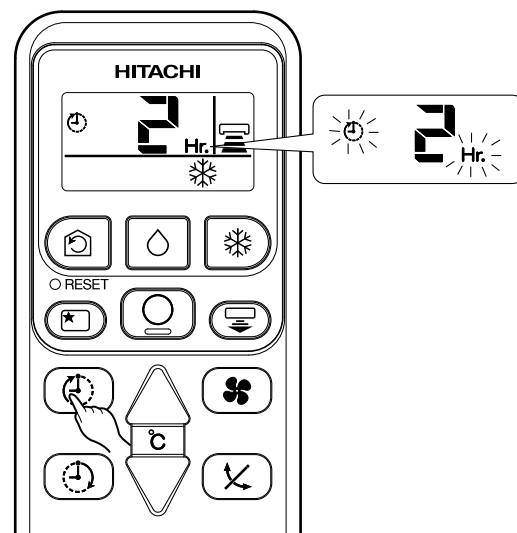
OFF Timer Reservation

OFF TIME setting

- Select the OFF TIME by pressing the  (OFF) Button.
- Setting time will change according to the below sequence when you press the button.




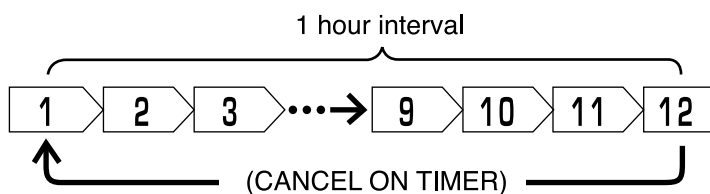
- Operation stop at setting time



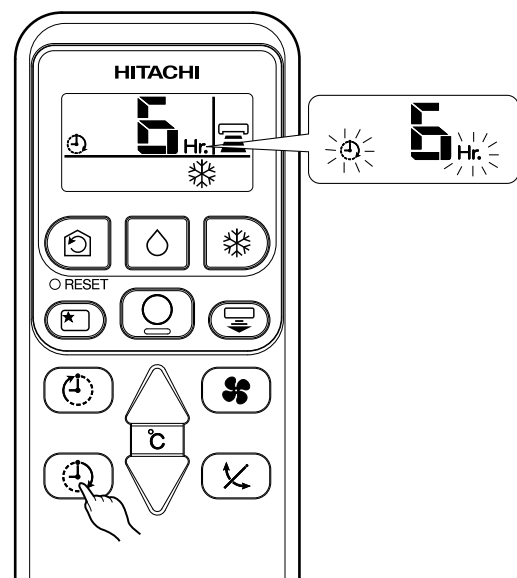
ON Timer Reservation

ON TIME setting

- Select the ON TIMER by pressing the  (ON) Button.
- Setting time will change according to the below sequence.




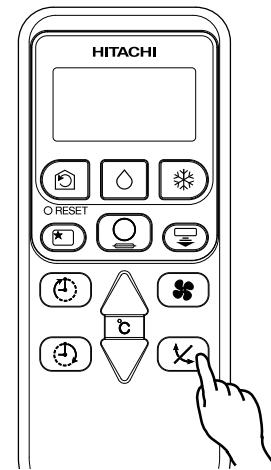
- Operation will start for setting temperature at setting time (The starting time may different depend on the room temperature and set temperature).




ADJUSTING THE AIR DEFLECTORS

- 1** Adjustment of the conditioned air in the upward and downward directions.

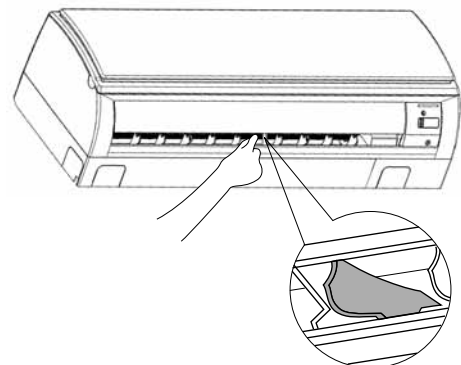
The horizontal air deflector is automatically set to the proper angle suitable for each operation. The deflector can be swung up and down continuously and also set to the desired angle using the “ (AUTO SWING)” button. (If the angle of the deflector is changed, it will not return to the auto-set position after operations start unless the operation mode is switched.)



- If the “ (AUTO SWING)” button is pressed once, the horizontal air deflector swings up and down. If the button is pressed again, the deflector stops in its current position. Several seconds (about 6 seconds) may be required before the deflector starts to move.
- In “Cooling” operation, do not keep the horizontal air deflector swinging for a long time. Some dew may form on the horizontal air deflector and dew may drop.

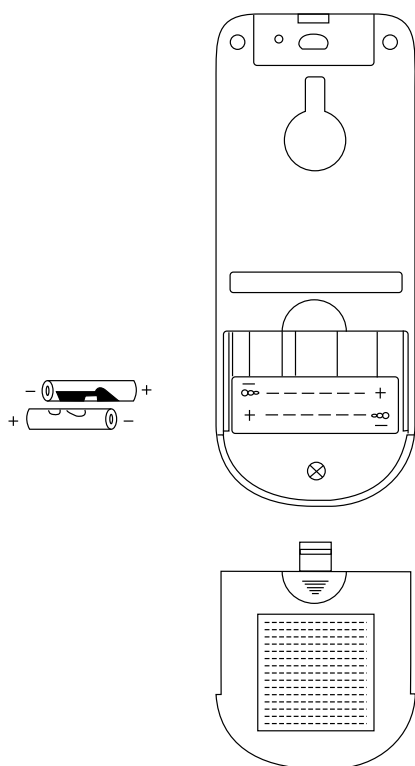
- 2** Adjustment of the conditioned air to the left and right.

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



HOW TO EXCHANGE THE BATTERIES IN THE REMOTE CONTROLLER

When using the remote control, if there is no response from the air conditioner unit and/or the remote control has fading and dim displays, the batteries in the remote control device need to be removed and replaced with new ones



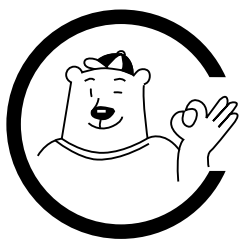
- 1 Remove the cover as shown in the figure and take out the old batteries.



- 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.
3. Use high quality and high performance AAA batteries to avoid short operating life and electrolyte leakages



THE IDEAL WAYS OF OPERATION

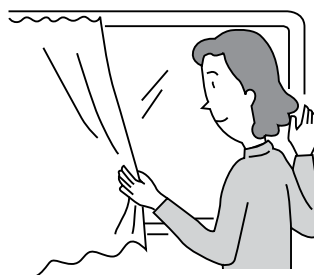
Suitable Room Temperature



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



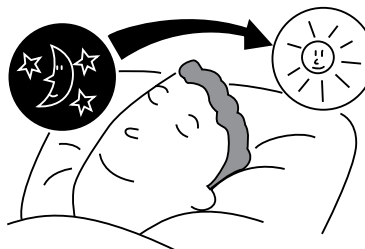
Caution

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



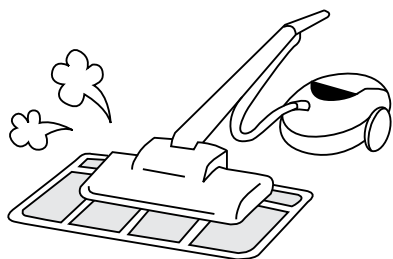
Effective Usage Of Timer

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.



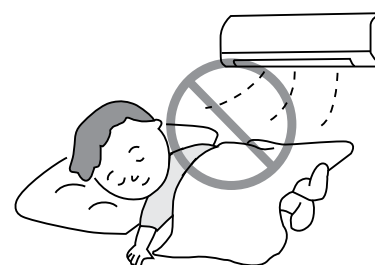
Do Not Forget To Clean The Air Filter

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.



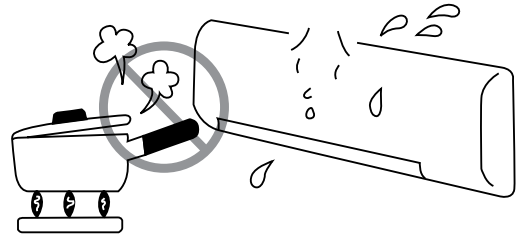


FOR USER'S INFORMATION

The Air Conditioner And The Heat Source In The Room

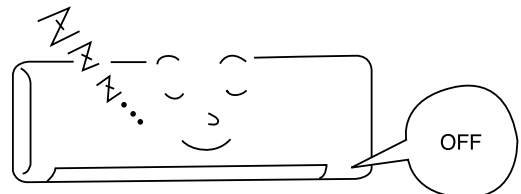
⚠ Caution

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

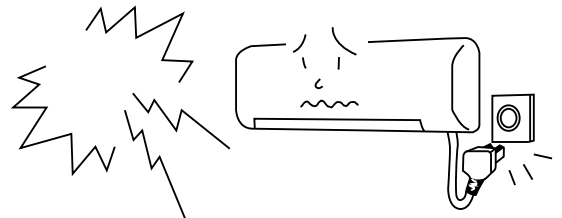
When the indoor unit is not to be used for a long period of time, please switch off the power from the mains. If the power from mains remains "ON", the indoor unit still consumes about 8W in the operation control circuit even if it is in "OFF" mode.



When Lightning Occurs

⚠ Warning

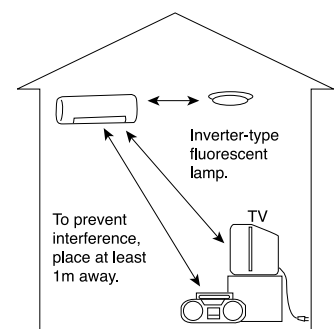
To protect the whole unit during lightning, please stop operating the unit and remove the plug from the socket.



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.



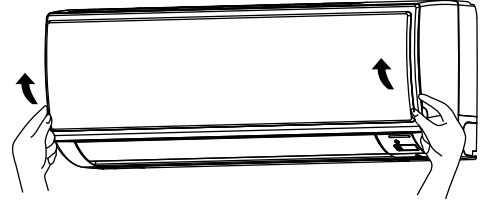
ATTACHING THE AIR PURIFYING FILTERS

CAUTION

Cleaning and maintenance must be carried out when filter lamp lights. Before cleaning, stop operation and switch off the power supply.

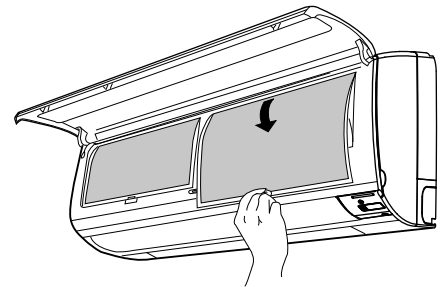
1 Open the front panel

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



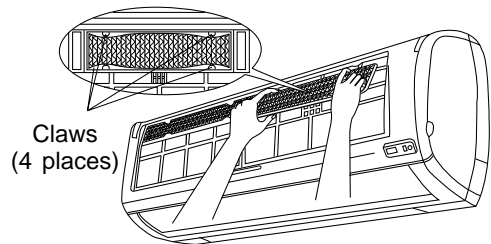
2 Remove the pre-filter

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



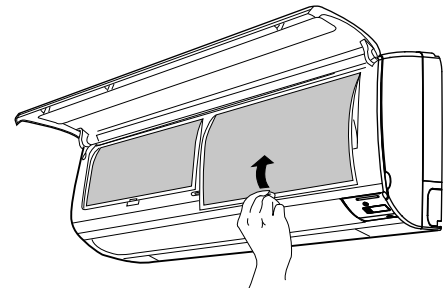
3 Attaching the air purifying filters

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



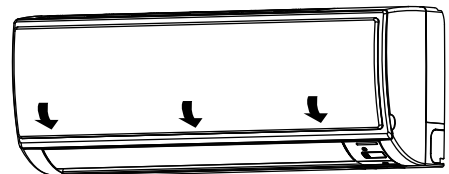
CAUTION

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



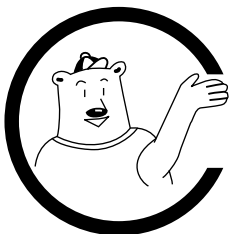
4 Attach the pre-filters

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



NOTE

- In case of removing the air purifying filters, please follow the above procedures.
- The cooling capacity is slightly weakened and the cooling speed becomes slower when the air purifying filters are used. So, set the fan speed to "HIGH" when using it in this condition.
- Air purifying filters are washable and can be use in 1 year time. Type number for this air purifying filter is <SPX-CFH11>. Please use this number for ordering when you want to renew it.
- Do not operate the air conditioner without pre-filter. Dust may enter the air conditioner and fault may occur.



MAINTENANCE

CAUTION

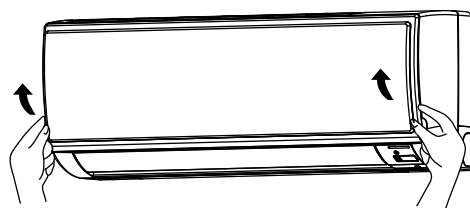
Cleaning and maintenance must be carried out when filter lamp lights. Before cleaning, stop operation and switch off the power supply.

1. PRE-FILTER

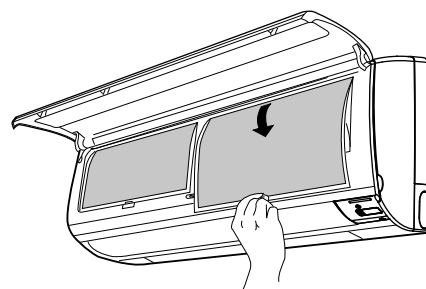
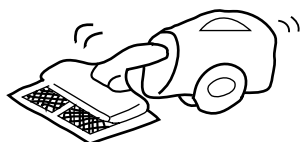
Clean the pre-filter, as it removes dust inside the room. In case the pre-filter is full of dust, the air flow will decrease and the cooling capacity will be reduced. Further, noise may occur. Be sure to clean the filter following the procedure below.

PROCEDURE

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



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



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



NOTE:

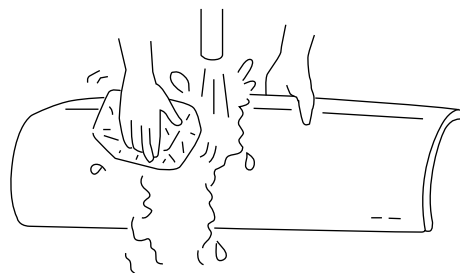
- Air purifying filter should be cleaned every month or sooner if noticeable loading occurs. When used overtime, it may loose its deodorizing function. For maximum performance, it is recommended to replace it every 1 year depending on application requirements.

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 purifying filter as some detergent may deteriorate the air purifying filter electrostatic performance.

2. Washable Front Panel

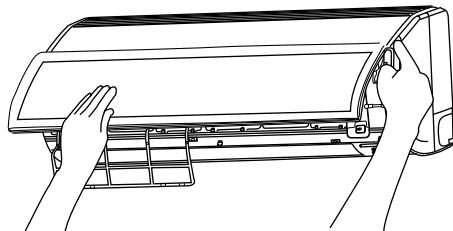
- Remove the front panel and wash with clean water.
Wash it with a soft sponge.
After using neutral detergent, wash thoroughly with clean water.
- When front panel is not removed, wipe it with a soft dry cloth. Wipe the remote controller thoroughly with a soft dry cloth.
- Wipe the water thoroughly.
If water remains at indicators or signal receiver of indoor unit, it causes trouble.



Method of removing the front panel.

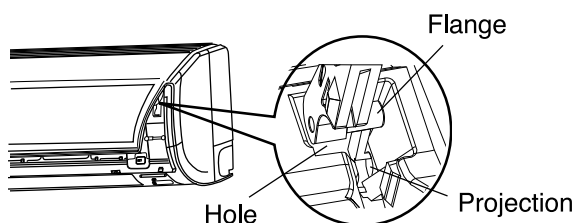
Be sure to hold the front panel with both hands to detach and attach it.

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.

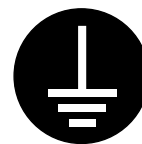
CAUTION

- 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

- Please use earth line.
Do not place the earth line near water or gas pipes, lightning-conductor, or the earth line of telephone. Improper installation of earth line may cause electric shock.
- A circuit breaker should be installed depending on the mounting site of the unit. Without a circuit breaker, the danger of electric shock exists.



IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Green-and-yellow : Earth
Blue : Neutral
Brown : Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol (⏏) or coloured green or green-and-yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

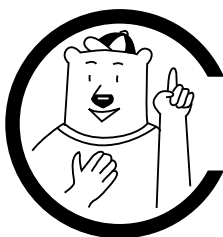
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

NOTE

If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service/parts centers.

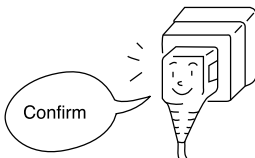
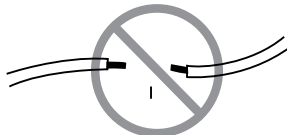
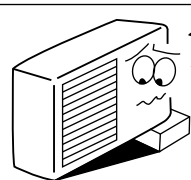
⚠ CAUTION

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



REGULAR INSPECTION

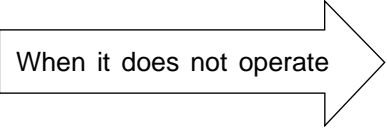
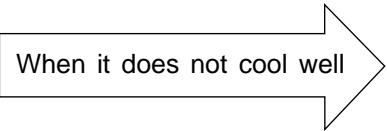
PLEASE CHECK THE FOLLOWING POINTS BY QUALIFIED SERVICE PERSONNEL EITHER EVERY HALF YEARLY OR YEARLY. CONTACT YOUR SALES AGENT OR SERVICE SHOP.

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



AFTER SALE SERVICE AND WARRANTY

WHEN ASKING FOR SERVICE, CHECK THE FOLLOWING POINTS.

CONDITION	CHECK THE FOLLOWING POINTS
 <p>When it does not operate</p>	<ul style="list-style-type: none"> ● Is the fuse all right? ● Is the voltage extremely high or low? ● Is the circuit breaker "ON"?
 <p>When it does not cool well</p>	<ul style="list-style-type: none"> ● Was the air filter cleaned? ● Does sunlight fall directly on the outdoor unit? ● Is the air flow of the outdoor unit obstructed? ● Are the doors or windows opened, or is there any source of heat in the room? ● Is the set temperature suitable?



Notes

- In quiet or stop operation, the following phenomena may occasionally 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.

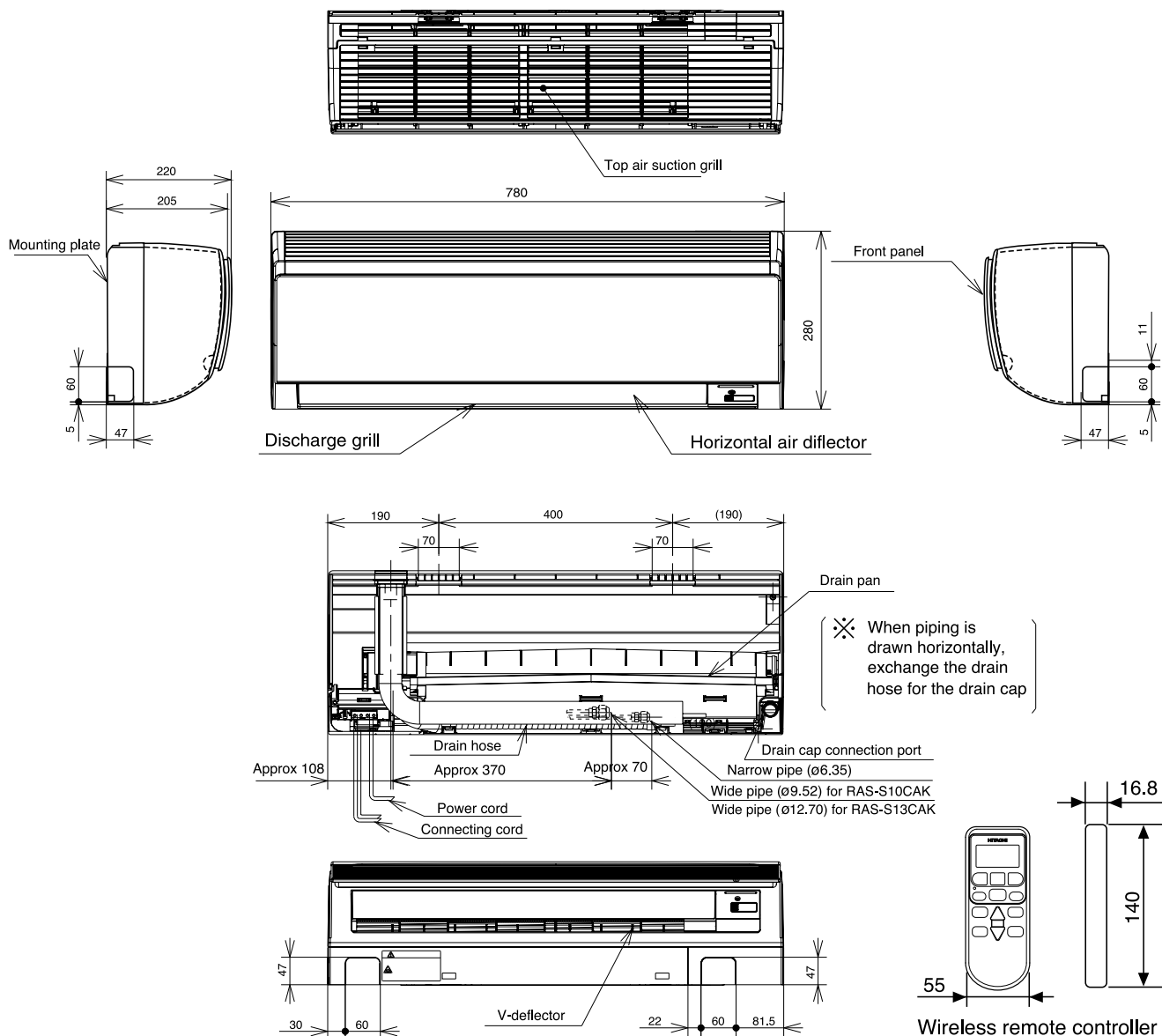
- Please contact your sales agent immediately if the air conditioner still fails to operate normally after the above inspections. Inform your agent of the model of your unit, production number, date of installation. Please also inform him regarding the fault.
- Power supply shall be connected at the 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.

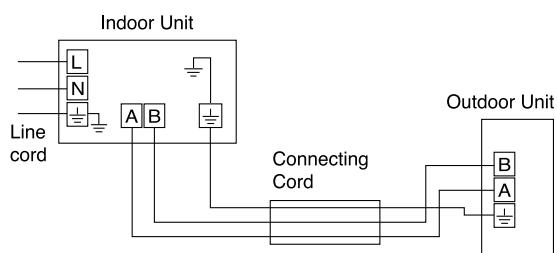
CONSTRUCTION AND DIMENSIONAL DIAGRAM

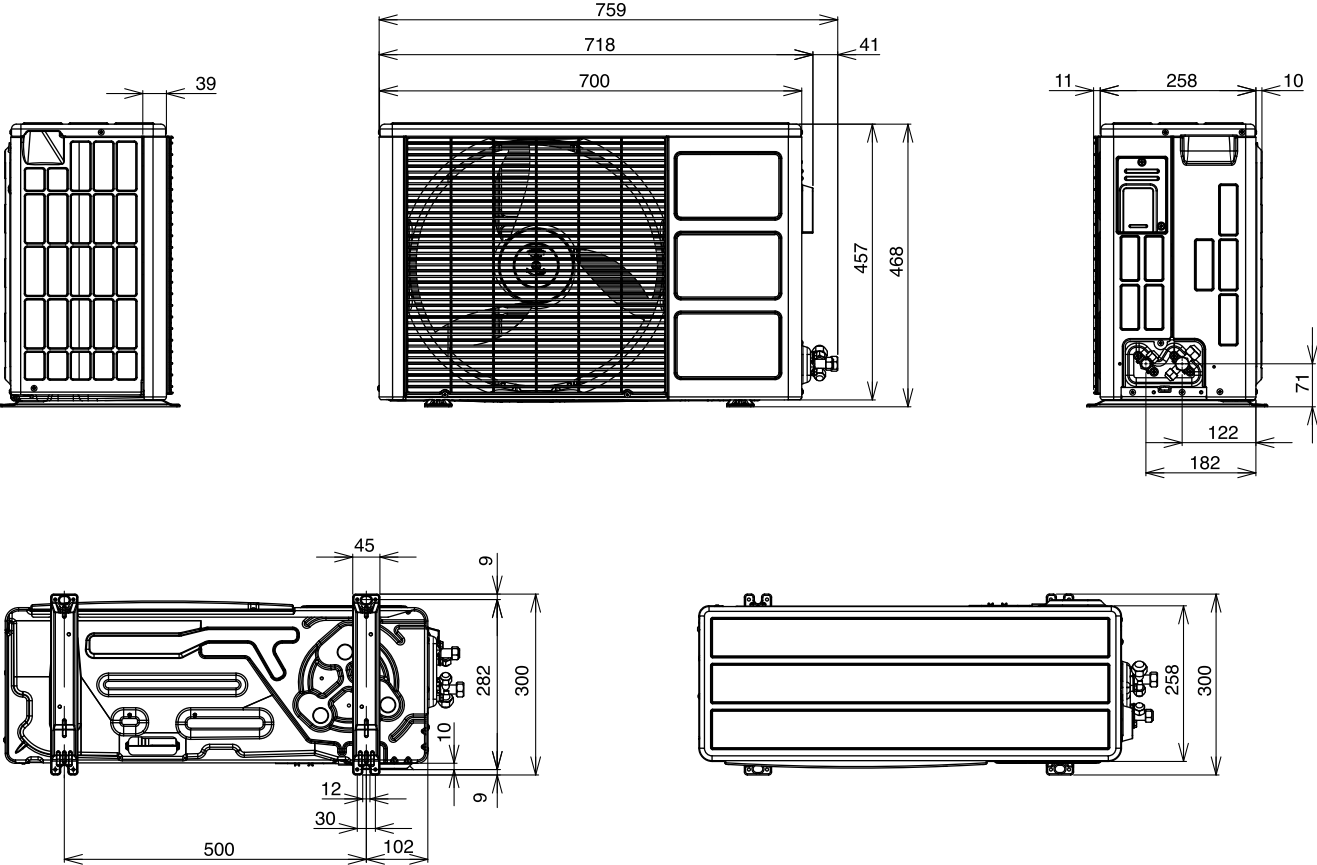
MODEL RAS-10G5/14G5



Note:

1. Servicing space of 100mm or more is required on the left and right sides of the indoor unit and also 50mm or more space is required above the unit
2. Insulated pipes should be used for both the narrow and wide dia. pipes.
3. Height different of the piping between the indoor unit and the outdoor unit should be kept max 5m.
4. Power supply cord length is about 2m
5. Connecting cable 1.5mm dia. x 3 (AB Line) is used for the connection.





MAIN PARTS COMPONENT

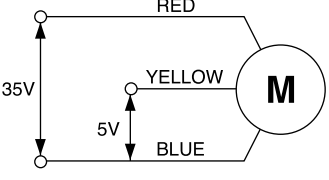
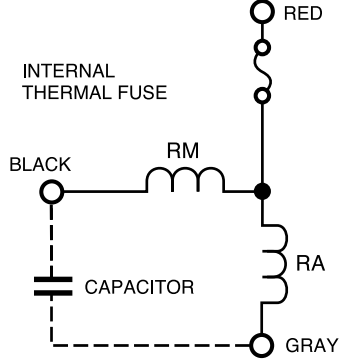
THERMOSTAT (Room Temperature Thermistor)

Thermostat Specifications

MODEL			RAS-10G5/14G5	
THERMOSTAT MODEL			IC	
OPERATION			COOL	
TEMPERATURE °C (°F)	INDICATION 16	ON	17.3 (63.1)	
		OFF	16.7 (62.1)	
	INDICATION 24	ON	25.3 (77.5)	
		OFF	24.7 (76.5)	
	INDICATION 32	ON	33.3 (91.9)	
		OFF	32.7 (90.9)	

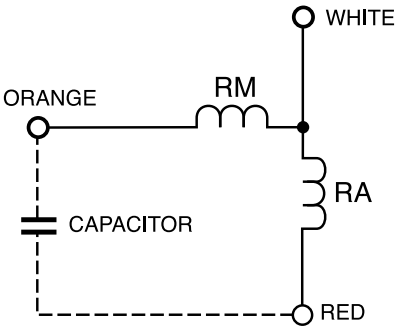
FAN MOTOR

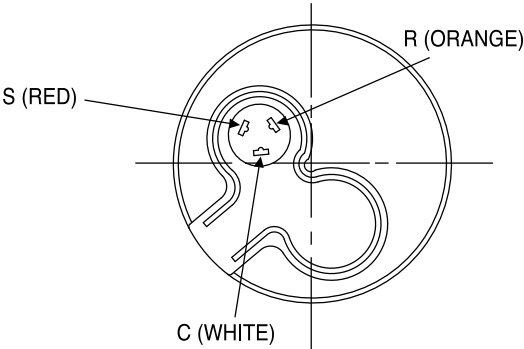
Fan Motor Specifications

MODEL		RAS-10G5/14G5	RAC-10G5/14G5
PHASE		-----	SINGLE
RATED VOLTAGE		DC35V	220-240V
RATED FREQUENCY		-----	50 Hz
OUTPUT		20 W	30W
POLE NUMBER		-----	6
CONNECTION			
RESISTANCE VALUE (Ω)	20°C	-----	RM = 350.0 RA = 195.0
	75°C	-----	RM = 425.6 RA = 237.1

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL		RAC-10G5	
COMPRESSOR MODEL		ASG108CV-B7AT	
PHASE		SINGLE	
RATED VOLTAGE		220 – 240 V	
RATED FREQUENCY		50 Hz	
LOCKED ROTOR CURRENT		18 A	
POLE NUMBER		2	
CONNECTION			
RESISTANCE VALUE (Ω)	20°C (68°F)	RM = 3.75 RA = 3.34	
	75°C (167°F)	RM = 4.56 RA = 4.06	
EXTERNAL OVERLOAD RELAY		YES	
INTERNAL PROTECTOR		NO	

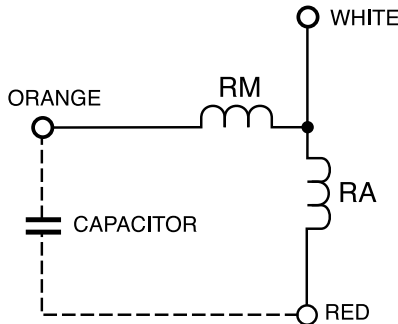
MODEL	RAC-10G5		
COMPRESSOR LINE-CORD ARRANGEMENT			

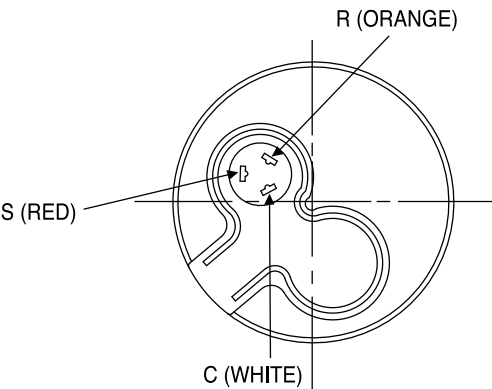
⚠ CAUTION

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

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL	RAC-14G5	
COMPRESSOR MODEL	UG4B124JX	
PHASE	SINGLE	
RATED VOLTAGE	220 – 240 V	
RATED FREQUENCY	50 Hz	
LOCKED ROTOR CURRENT	27 A	
POLE NUMBER	2	
CONNECTION		
RESISTANCE VALUE (Ω)	20°C (68°F)	RM = 3.08 RS = 2.81
	75°C (167°F)	RM = 3.75 RS = 3.42
EXTERNAL OVERLOAD RELAY	YES	
INTERNAL PROTECTOR	NO	

MODEL	RAC-14G5
COMPRESSOR LINE-CORD ARRANGEMENT	

⚠ CAUTION

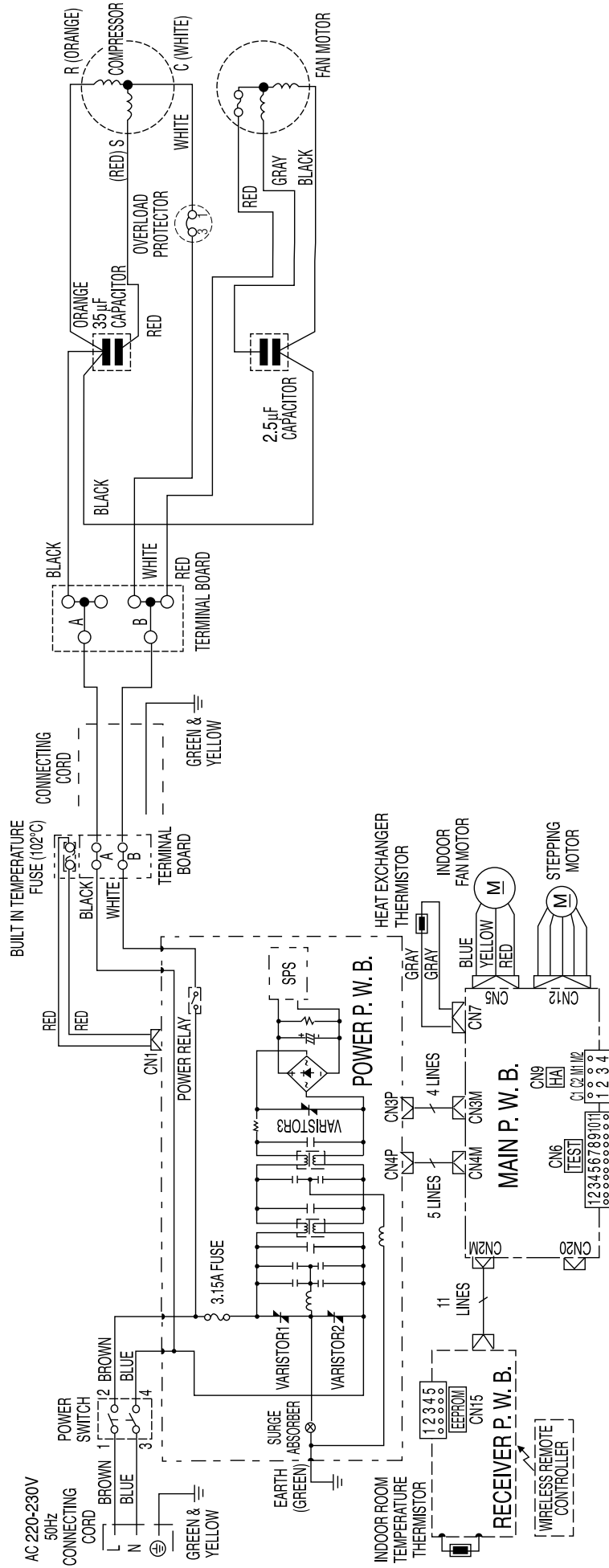
When the Air Conditioner has been operated for a long time with the capillary tubes clogged or crushed or with too little refrigerant, check the color of the refrigerant oil inside the compressor. If the color has been changed conspicuously, replace the compressor.

WIRING DIAGRAM

MODEL RAS-10G5

INDOOR UNIT

OUTDOOR UNIT

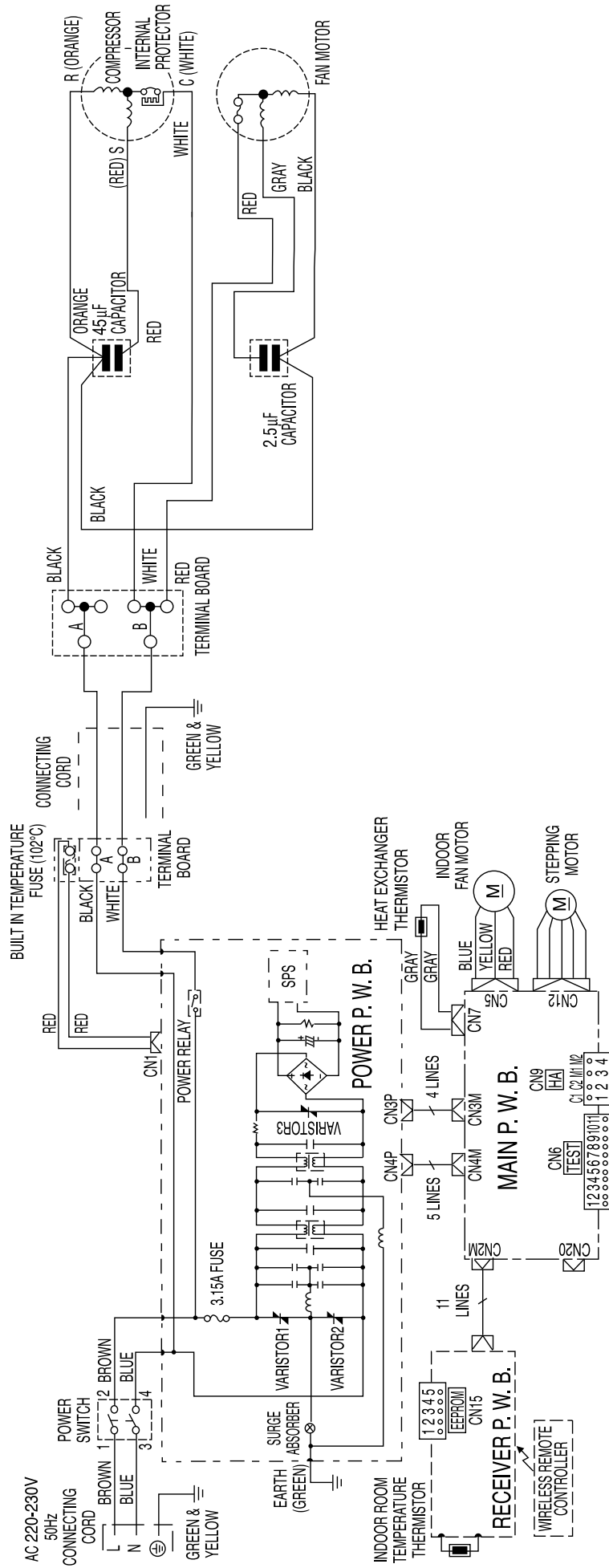


WIRING DIAGRAM

MODEL RAS-14G5

INDOOR UNIT

OUTDOOR UNIT



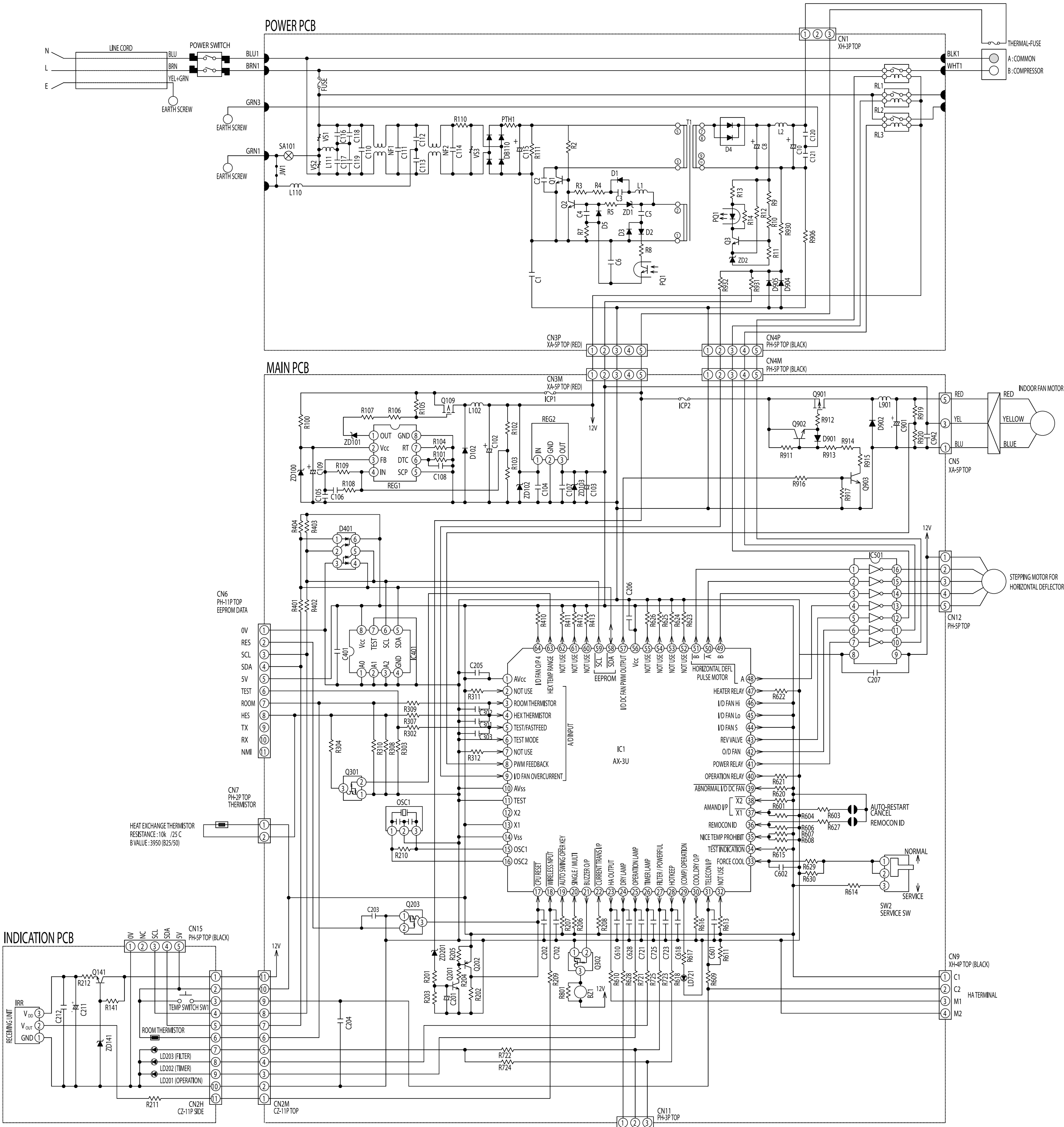
Remote Control

Remote Control



PRINTED WIRING BOARD LOCATION DIAGRAM

MODEL RAS-10G5/14G5
RAC-10G5/14G5



RESISTOR

SYMBOL	VALUE	TOL	PWR (W)	USE IT	FORM
R 2	470K	+5%	1	PWR	H
R 3	56	+5%	1	PWR	H
R 4	56	+5%	1	PWR	H
R 5	680	+5%	1/6	PWR	A
R 7	330	+5%	1/6	PWR	A
R 8	100	+5%	1/6	PWR	A
R 9	15K	+5%	1/6	PWR	A
R10	1.2K	+5%	1/6	PWR	A
R11	3.9K	+1%	1/6	PWR	A
R12	18K	+1%	1/6	PWR	A
R13	470	+5%	1/6	PWR	A
R14	2.2K	+5%	1/6	PWR	A

R100	5.6K	+5%	1/10	MAIN	C
R101	120K	+5%	1/16	MAIN	C
R102	33K	+2%	1/16	MAIN	C
R103	3K	+2%	1/16	MAIN	C
R104	130K	+5%	1/16	MAIN	C
R105	470	+5%	1/4	MAIN	C
R106	330	+5%	1/4	MAIN	C
R107	330	+5%	1/4	MAIN	C
R108	2.2K	+5%	1/16	MAIN	C
R109	220K	+5%	1/16	MAIN	C
R110	2.2	+5%	5	PWR	H
R111	560K	+5%	1/6	PWR	A

R141	2.7K	+5%	1/10	IND	C
R201	5.1K	+5%	1/10	MAIN	C
R202	5.1K	+5%	1/16	MAIN	C
R203	2K	+5%	1/16	MAIN	C
R204	5.1K	+5%	1/16	MAIN	C
R205	2.7K	+5%	1/16	MAIN	C
R206	10K	+5%	1/16	MAIN	C
R207	10K	+5%	1/16	MAIN	C
R208	10K	+5%	1/16	MAIN	C
R209	1K	+5%	1/16	MAIN	C
R210	1M	+5%	1/16	IND	C
R211	1K	+5%	1/16	IND	C
R212	47	+5%	1/10	IND	C

R302	1K	+5%	1/16	MAIN	C
R303	10K	+5%	1/16	MAIN	C
R304	2.4K	+2%	1/16	MAIN	C
R307	1K	+5%	1/16	MAIN	C
R308	18K	+1%	1/16	MAIN	C
R309	1K	+5%	1/16	MAIN	C
R310	12.7K	+1%	1/16	MAIN	C
R311	10K	+5%	1/16	MAIN	C
R312	10K	+5%	1/16	MAIN	C

R401	390	+5%	1/16	MAIN	C
R402	390	+5%	1/16	MAIN	C
R403	5.1K	+5%	1/16	MAIN	C
R404	5.1K	+5%	1/16	MAIN	C
R410	10K	+5%	1/16	MAIN	C
R411	10K	+5%	1/16	MAIN	C
R412	10K	+5%	1/16	MAIN	C
R413	10K	+5%	1/16	MAIN	C

R601	10K	+5%	1/16	MAIN	C
R603	1K	+5%	1/16	MAIN	C
R604	10K	+5%	1/16	MAIN	C
R606	10K	+5%	1/16	MAIN	C
R607	10K	+5%	1/16	MAIN	C
R608	1K	+5%	1/16	MAIN	C
R609	1K	+5%	1/16	MAIN	C
R610	1K	+5%	1/16	MAIN	C

R611	10K	+5%	1/16	MAIN	C
R613	10K	+5%	1/16	MAIN	C
R614	1K	+5%	1/16	MAIN	C
R615	10K	+5%	1/16	MAIN	C
R616	10K	+5%	1/16	MAIN	C
R617	240	+5%	1/10	MAIN	C
R618	240	+5%	1/10	MAIN	C
R620	10K	+5%	1/16	MAIN	C

R621	10K	+5%	1/16	MAIN	C
R622	10K	+5%	1/16	MAIN	C
R623	10K	+5%	1/16	MAIN	C
R624	10K	+5%	1/16	MAIN	C
R625	10K	+5%	1/16	MAIN	C
R626	10K	+5%	1/16	MAIN	C
R627	1K	+5%	1/16	MAIN	C
R628	240	+5%	1/10	MAIN	C

R629	1K	+5%	1/16	MAIN	C
R630	10K	+5%	1/16	MAIN	C
R721	240	+5%	1/10	MAIN	C
R722	0	+5%	1/10	MAIN	C
R723	240	+5%	1/10	MAIN	C
R724	240	+5%	1/10	MAIN	C
R725	240	+5%	1/10	MAIN	C

R801	3.3K	+5%	1/10	MAIN	C
R906	0.3	+5%	1	PWR	H
R911	1K	+5%	1/4	MAIN	C
R912	47	+5%	1/10	MAIN	C
R913	1K	+5%	1/4	MAIN	C
R914	1K	+5%	1/4	MAIN	C
R915	1K	+5%	1/4	MAIN	C
R916	3.3K	+5%	1/16	MAIN	C
R917	3.3K	+5%	1/16	MAIN	C
R919	20K	+1%	1/10	MAIN	C
R920	2.2K	+1%	1/16	MAIN	C
R930	1K	+1%	1/10	PWR	A
R931	8.25K	+1%	1/10	PWR	A
R932	5.1K	+5%	1/6	PWR	A

CAPACITOR

SYMBOL	VALUE	USE IT	TYPE	USE IT	FORM
C 2	2200P	AC250	C	PWR	H
C 2	1000P	2K	C	PWR	H
C 3	0.047u	50	F	PWR	R
C 4	0.047u	50	F	PWR	R
C 5	0.1u	50	F	PWR	R
C 6	0.1u	50	F	PWR	R

C 8	1000u	50	D	PWR	H
C10	47u	50	D	PWR	R
C102	68u	50	D	MAIN	R
C103	100u	10	D	MAIN	R
C104	0.1u	25	C	MAIN	C
C105	1000P	50	C	MAIN	C
C106	0.1u	50	F	MAIN	C
C107	0.047u	25	C	MAIN	C
C108	1000P	50	C	MAIN	C
C109	1u	50	D	MAIN	R
C110	0.15u	AC275	F	PWR	H
C111	0.15u	AC275	F	PWR	H
C112	10000P	AC250	C	PWR	H
C113	10000P	AC250	C	PWR	H
C114	0.15u	AC275	F	PWR	H
C115	100u	450	D	PWR	H
C116	10000P	AC250	C	PWR	H
C117	10000P	AC250	C	PWR	H
C118	10000P	AC250	C	PWR	H
C119	10000P	AC250	C	PWR	H
C120	0.003u	AC250	C	PWR	H
C121	0.003u	AC250	C	PWR	H

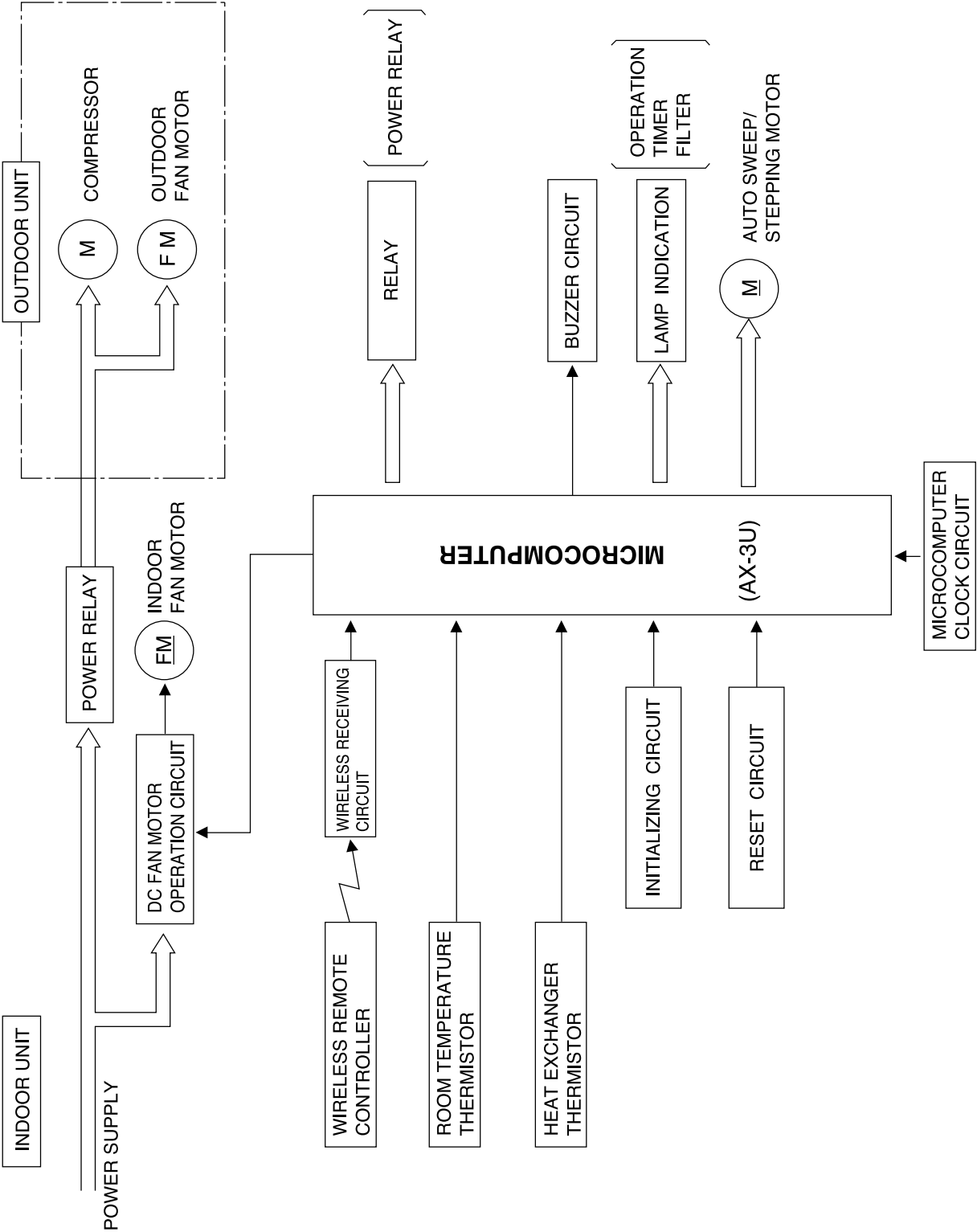
C201	100u	6.3	D	MAIN	R
C202	0.1u	25	C	MAIN	C
C203	0.1u	25	C	MAIN	C
C204	0.1u	25	C	MAIN	C
C205	0.1u	25	C	MAIN	C
C206	0.1u	25	C	MAIN	C
C207	0.1u	25	C	MAIN	C
C211	47u	16	D	IND	R
C212			C	IND	C

C301	0.1u	25	C	MAIN	C
C302	0.1u	25	C	MAIN	C
C303	0.1u	25	C	MAIN	C
C401	0.1u	25	C	MAIN	C
C601	0.1u	25	C	MAIN	C
C602	0.1u	25	C	MAIN	C
C603	0.1u	25	C	MAIN	C
C610	0.1u	25	C	MAIN	C
C618	0.1u	25	C	MAIN	C
C628	0.1u	25	C	MAIN	C
C702	1000P	50	C	MAIN	C
C721	0.1u	25	C	MAIN	C
C723	0.1u	25	C	MAIN	C
C725	0.1u	25	C	MAIN	C

C901	220u	50	D	MAIN	H
C942	0.1u	25	C	MAIN	C

C991	220u	50	D	MAIN	H
C992	0.1u	25	C	MAIN	C
C993	0.1u	25	C	MAIN	C
C994	0.1u	25	C	MAIN	C
C995	0.1u	25	C	MAIN	C
C996	0.1u	25	C	MAIN	C
C997	0.1u	25	C	MAIN	C
C998	0.1u	25	C	MAIN	C
C999	0.1u	25	C	MAIN	C
C1000	0.1u	25	C	MAIN	C
C1001	0.1u	25	C	MAIN	C
C1002	0.1u	25	C	MAIN	C
C1003	0.1u	25	C	MAIN	C
C1004	0.1u	25	C	MAIN	C
C1005	0.1u	25	C	MAIN	C
C1006	0.1u	25	C	MAIN	C
C1007	0.1u	25	C	MAIN	C
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C1042	0.1u	25	C	MAIN	C
C1043	0.1u	25	C	MAIN	C
C1044	0.1u	25	C	MAIN	C
C1045	0.1u	25	C	MAIN	C
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C1047	0.1u	25	C	MAIN	C
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C1087	0.1u	25	C	MAIN	C
C1088	0.1u	25	C	MAIN	C
C1089	0.1u	25	C	MAIN	C
C1090	0.1u	25	C	MAIN	C

BLOCK DIAGRAM
MODEL RAS-10G5/14G5
RAC-10G5/14G5



BASIC MODE
MODEL RAS-10G5/14G5 // RAC-10G5/14G5

No.	Operation mode		Cooling	Sensor dehumidification
1	Control function			<div>Start/stop button</div> <div>Operation lamp</div>
2	Timer operation	OFF timer		<div>Start/stop button</div> <div>Reservation</div> <div>Cancel</div> <div>Operation lamp</div> <div>Timer lamp</div> <div>Timer memory</div>
		ON timer		<div>Start/stop button</div> <div>Reservation</div> <div>Cancel</div> <div>Operation lamp</div> <div>Timer lamp</div> <div>Timer memory</div>
3	Circulation mode	Automatic	<ul style="list-style-type: none">• “HI”, “MED”, or “LO” operation is executed according to the thermostat signal. (Refer to “Thermostat operation”.)	<ul style="list-style-type: none">• “LO” and “Stop” are repeated according to the thermostat signal, independent of the setting.
		HI	<ul style="list-style-type: none">• Same as on the left.	
		MED	<ul style="list-style-type: none">• Same as on the left.	
		LO	<ul style="list-style-type: none">• Same as on the left.	
4	Thermostat operation H → HI L → MED S → LO		<div>(1) When the set temperature is lower than the room temperature.</div> <div></div> <ul style="list-style-type: none">• The min. ON time of the power relay is 3 minutes, and the min. OFF time also is 3 minutes.• The indoor fan is not delayed with operation start by start/stop button ON.• The indoor fan is delayed by 5 sec with operation start by thermostat operation. <div>(2) Set temperature is higher than room temperature.</div> <div></div> <div>Notes:</div> <ul style="list-style-type: none">• Forced operation by start/stop button ON is executed even with thermostat OFF.• The room temperature 30 sec after operation start, minus 0.66 deg, becomes the se temperature.• When the room temperature is 16°C or lower, 16°C becomes the set temperature.• The other operations are the same as for (1).	

No.	Operation mode		Cooling	Sensor dehumidification
5	Control function			<div>Set temperature</div> <div>Start/stop switch</div> <div>Sleep key</div> <div>Operation lamp</div> <div>Timer lamp</div>

- The set temperature after sleep shift in sensor dehumidification operation is limited by 16°C.

Notes:

- 60 minutes after the sleep key is switched on, sleep operation is started.
- When the sleep key is switched on during OFF timer operation, the OFF timer will be canceled.

Table 1 Specifications

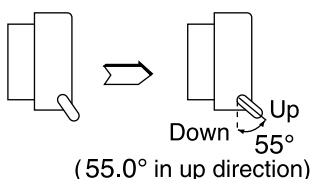
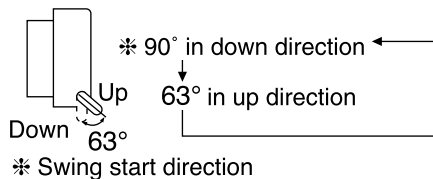
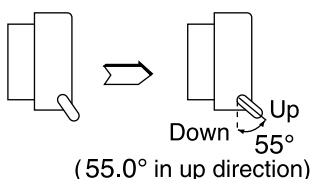
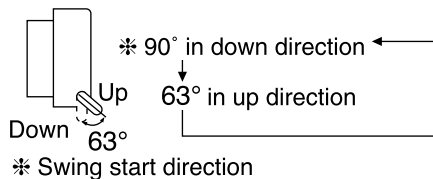
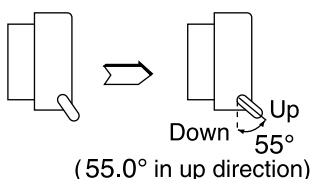
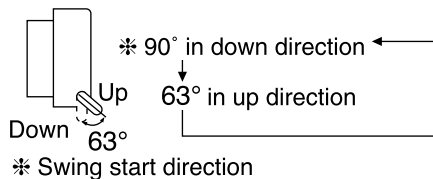
Item		
Operation switching	Sensor dehumidification	Yes
	Cooling	Yes
Temporary switch		Yes (automatic)
Service switch	Cooling	Yes
Nice temperature reservation		Yes
Sleep circuit		Yes
Auto swing direction		Yes
Filter sign		Yes
Wireless mode		Cooling

Table 2 Sensor operation values

Item				RAS-10G5/14G5	
Thermostat operation	ON temperature (Thermostat relay) power relay (°C)	Cooling, Sensor dehumidification	16	17.3	
			24	25.3	
			32	33.3	
	Differential (°C)			0.33	

Other detailed specifications

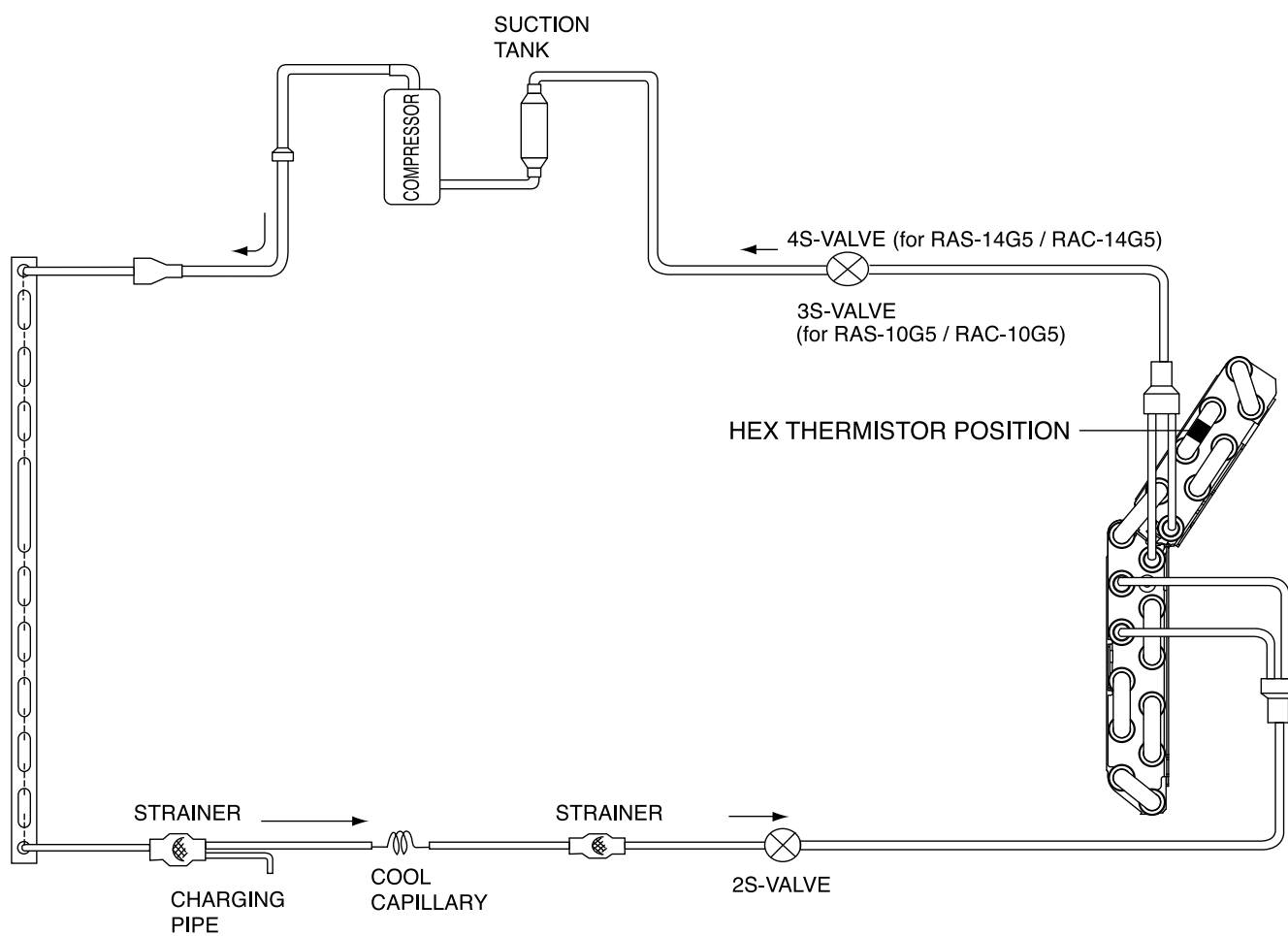
- When the room temperature rises within 3 minutes after thermostat OFF during cooling operation with automatic velocity, the blowing velocity changes in the order of S → L → H in the same way as at the time of thermostat ON.
- In case of switching from “Sensor dehumidification” operation to “Cooling”, as it is when the thermostat is ON. 3 min delay will not be entered. However, the set room temperature and the blowing velocity will be according to the remote control signal.
The same applies for switching from “Cooling” to “Sensor dehumidification”.
- The filter sign lights after operation of the indoor fan for 200 hours. The time is cleared when the “ (AUTO SWING)” button is pressed while the device is on “STANDBY MODE”.
- When operation by nice temperature reservation is executed during sleep operation, normal operation will be continued, and the advance time becomes the temperature difference between the set temperature without sleep shift and the room temperature.

7	“NICE TEMPERA- TURE” reservation	<ul style="list-style-type: none">● Operation starts in advance so that the room temperature reaches the preset value at the set time.● The operation time is obtained as follows depending on the room temperature when operation starts.																											
		<p>(1) Calculation method of the moved-up time.</p> <p>Moved-up time (MT) = Moved-up time depending on the temperature difference (OT) + compensation time (HT).</p> <p>MT is at least 1 minute if OT is not zero.</p> <table><tr><td></td><td>Cooling</td></tr><tr><td>(MT)</td><td>00 ~ 60 min.</td></tr><tr><td>(OT)</td><td>00 ~ 60 min.</td></tr><tr><td>(HT)</td><td>−60 ~ 60 min.</td></tr></table> <p>Obtain OT (moved-up time depending on the temperature difference) from the table below.</p> <table><tr><td colspan="3">Cooling</td></tr><tr><td colspan="2">Setting temp. − Room temp.</td><td>Time (min.)</td></tr><tr><td>00.00</td><td>− 02.00</td><td>00</td></tr><tr><td>02.25</td><td>− 05.00</td><td>15</td></tr><tr><td>05.25</td><td>− 08.00</td><td>30</td></tr><tr><td>08.25</td><td>− 11.00</td><td>45</td></tr><tr><td>11.25</td><td>−</td><td>60</td></tr></table> <p>✱ The preset temperature value shown above does not include any shift value.</p> <p>(2) Compensation</p> <p>1 The “Attained” state is monitored and a “Not attained” check is done to revise the compensation time (HT).</p> <div><div>“Attained” monitor</div><p>Continuously monitored during “NICE TEMPERATURE” operation.</p><div>(Cooling) — When the room temperature < Set value + compensation shift, it’s operated same as above.</div></div> <div><div>“Not attained” check</div><p>Performed once when the “NICE TEMPERATURE” timer is completed.</p><div>(Cooling) — When the room temperature > Set value + compensation shift +1°C, it’s operated same as above.</div></div> <p>✱ If the room temperature is within +1°C from the set value + compensation shift, compensation is not done.</p>		Cooling	(MT)	00 ~ 60 min.	(OT)	00 ~ 60 min.	(HT)	−60 ~ 60 min.	Cooling			Setting temp. − Room temp.		Time (min.)	00.00	− 02.00	00	02.25	− 05.00	15	05.25	− 08.00	30	08.25	− 11.00	45	11.25
	Cooling																												
(MT)	00 ~ 60 min.																												
(OT)	00 ~ 60 min.																												
(HT)	−60 ~ 60 min.																												
Cooling																													
Setting temp. − Room temp.		Time (min.)																											
00.00	− 02.00	00																											
02.25	− 05.00	15																											
05.25	− 08.00	30																											
08.25	− 11.00	45																											
11.25	−	60																											
8	Air blowing direction control	<ul style="list-style-type: none">● The air deflector control operation shown below is done when the swing switch is pressed or when the operation mode is changed.● The air deflector control operation shown below is done when the operation switch is turned off. <table><tr><th rowspan="2">Item</th><th colspan="2">Specification</th></tr><tr><th>3-way</th><th>AUTO (Swing)</th></tr><tr><td>Cooling/dehumid-ifying</td><td></td><td></td></tr></table>	Item	Specification		3-way	AUTO (Swing)	Cooling/dehumid-ifying																					
Item	Specification																												
	3-way	AUTO (Swing)																											
Cooling/dehumid-ifying																													

REFRIGERANT CYCLE DIAGRAM

MODEL RAS-10G5/RAC-10G5

RAS-14G5/RAC-14G5



DESCRIPTION OF MAIN CIRCUIT OPERATION

1. ON / OFF

The “ON / OFF” and “Timer reserve button” and “Sleeping” function independently. Their operations are shown in Fig. 1-1.

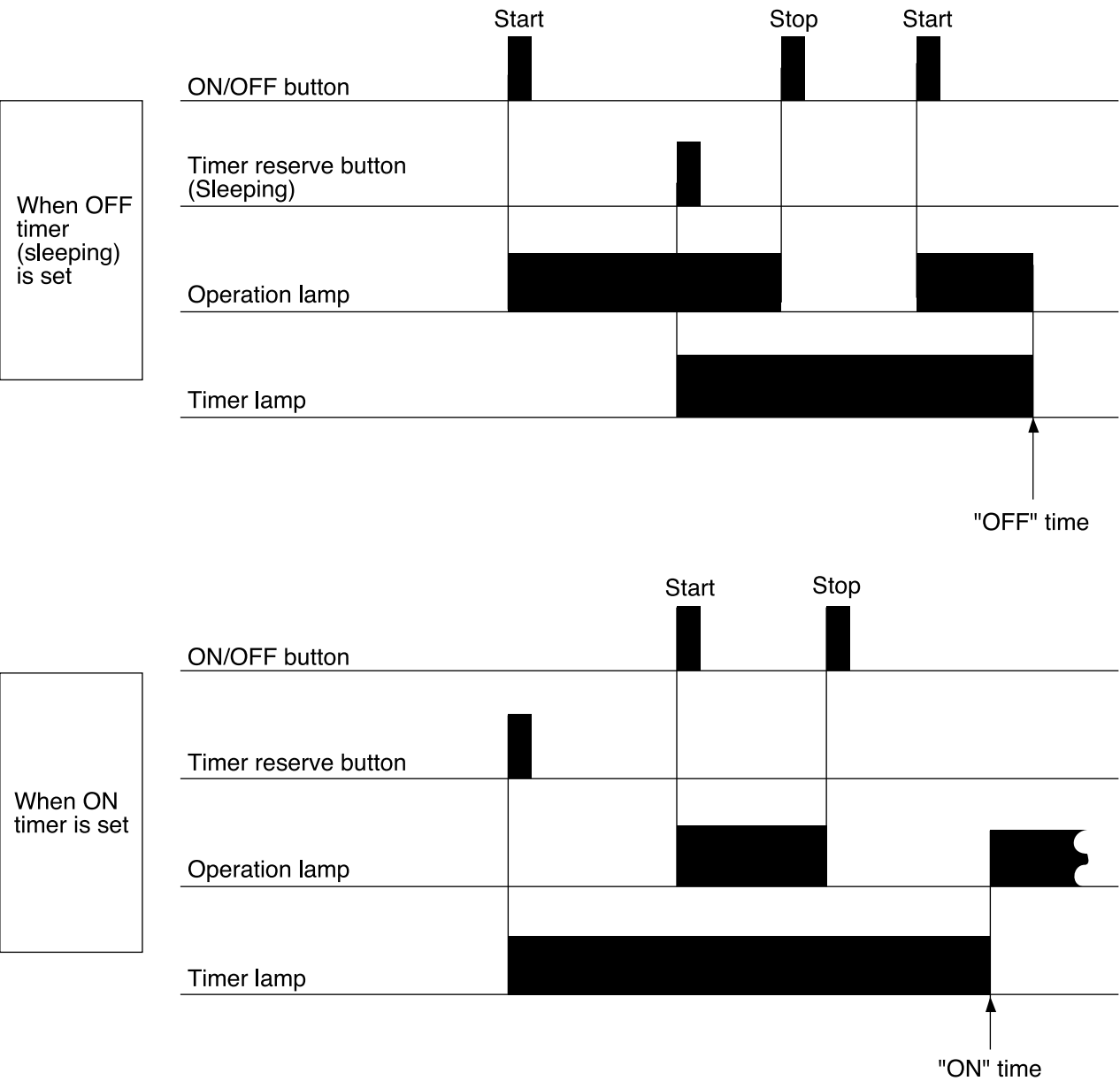
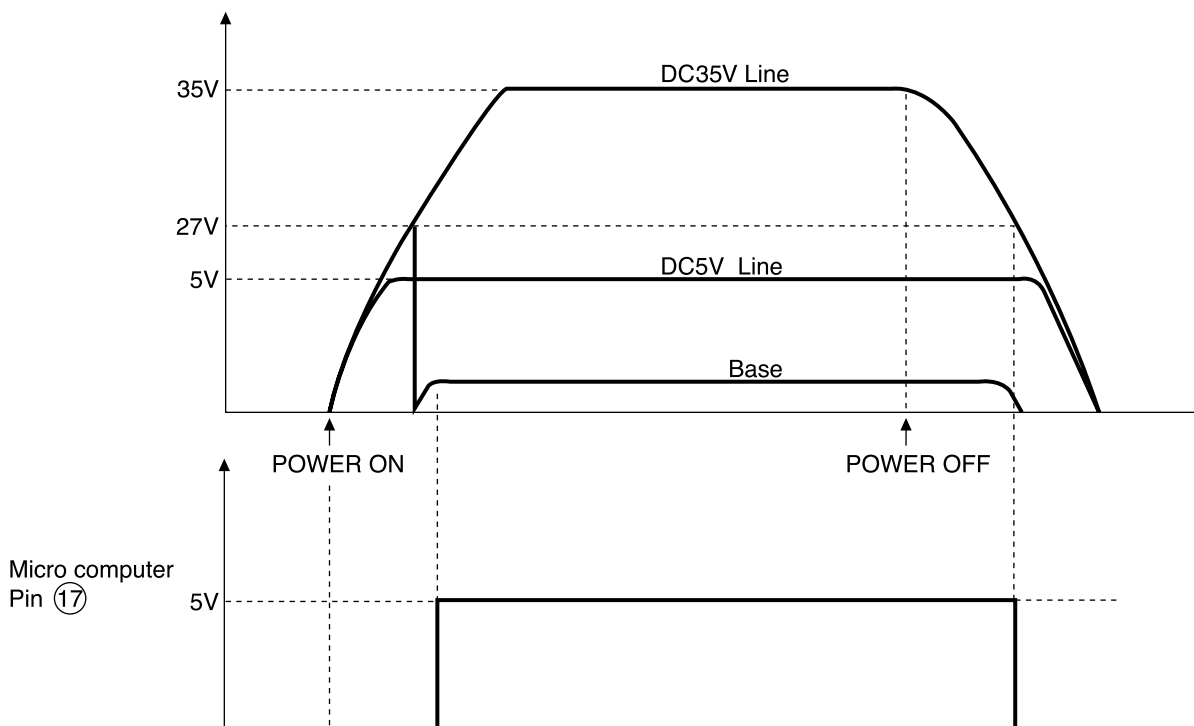
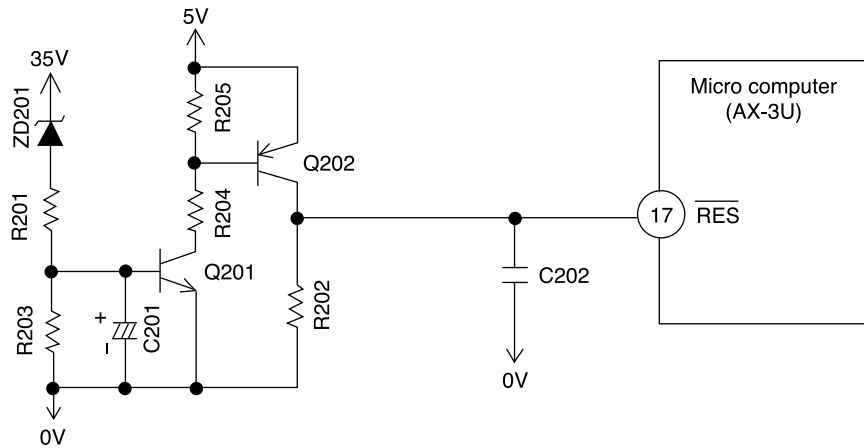


Fig. 1-1 Timer operation

2. Reset Circuit



- The reset circuit is used to reset the program to its initial settings when the power is turned on or when the power is recovered after a power failure.
- The micro computer is reset when the reset input is “Lo”, and operation is possible when the reset input is “Hi”.
- The waveforms at each point when the power is turned on and off are shown in the diagrams.
- When the power is turned on, the voltages of the DC 35V line and DC 5V lines are increased. When the voltage of DC 35V lines reaches about 27V, ZD201 is turned ON, the potential of Q201's base rises and Q201 is turned ON. Since Q201's collector is set to “LO” at this time, Q202 is turned ON and the reset input of the micro computer is set to “Hi”. The DC 5V line voltage has already become stable at this time and the micro computer starts operation.
- When the power is turned OFF, the voltage of the DC 35V line decreases. When it becomes below 27V, ZD201 is turned OFF, then Q201 is turned OFF, Q202 is turned OFF the reset input of the micro computer is set to “Lo” and the micro computer is set to the reset mode.

3. Buzzer Circuit

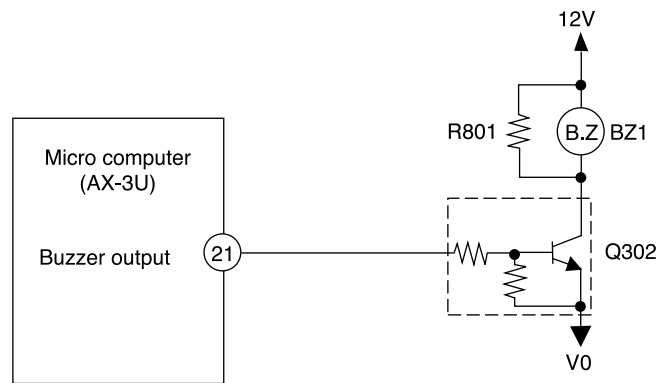


Fig. 3-1 Buzzer Circuit

- When the buzzer sounds, an approx. 3.9kHz square signal is output from buzzer output pin ②① of the micro computer. After the amplitude of this signal has been set to 12Vp-p by a transistor, it is applied to the buzzer. The piezoelectric element in the buzzer oscillates to generate the buzzer's sound.

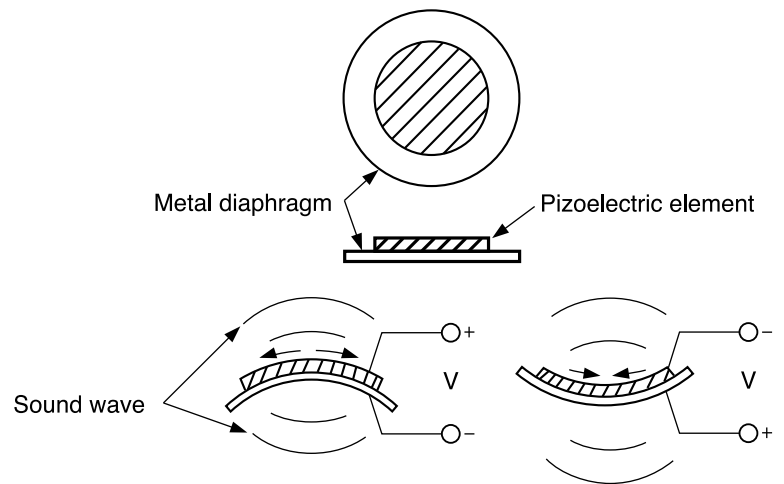
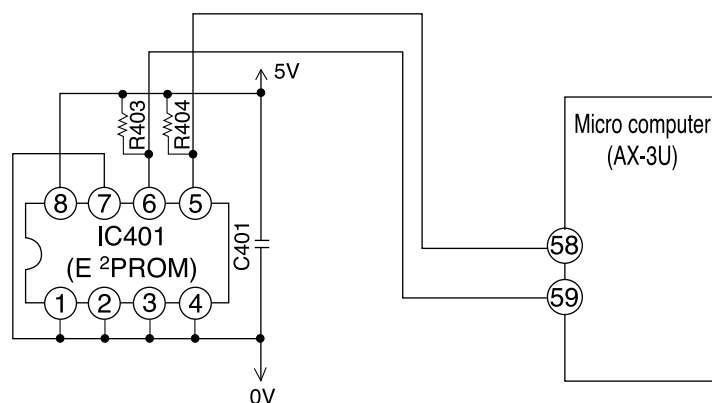


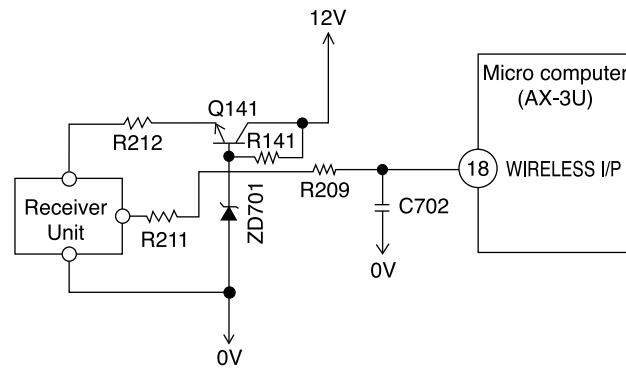
Fig. 3-2 Buzzer Operation

4. Initial setting (IC401)

The ratings of the compressor, maximum rotation speed, etc. are preset in the micro computer.

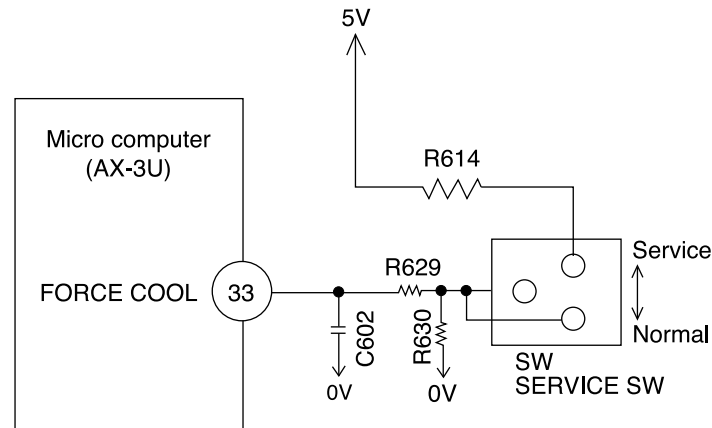


5. Receive circuit



Infrared signals from the wireless remote controller are received by the light receiving unit and output after being amplified and shaped.

6. Service Operation Circuit



- Use the service switch to select “Cooling” temporarily when the interior electric equipment has troubled.
- Setting the switch to “Cooling” causes continuous cooling room temperature control. To control the room temperature, turn on and off the disconnect switch. To protect the compressor, wait at least 3 minutes before turning on again.
- The fan speed is “MED”.
- Does not operate is 12V is not generated in the control circuit.
- When the service switch is used for operation, each change switch is overridden.
- Setting the service switch to “Cooling” turns on the “Power relay”.

7. Auto Sweep Motor Circuit

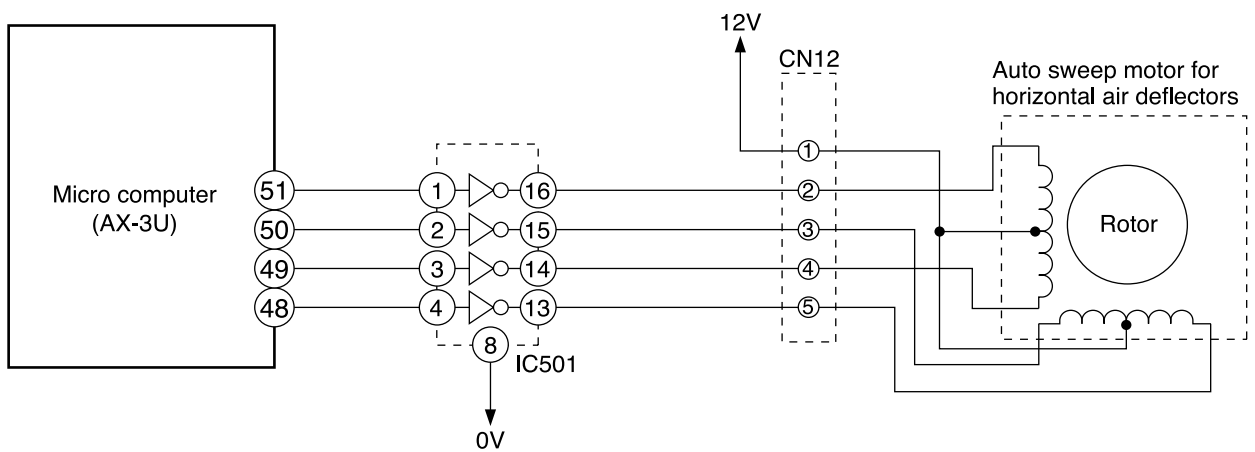


Fig. 7-1 Auto Sweep Motor Circuit (Horizontal air deflectors)

- Fig. 7-1 shows the Auto sweep motor drive circuit; the signals shown in Fig. 7-2 are output from pins ④⑧ – ⑤① of the micro computer.

Micro computer pins	Step width								Horizontal air deflectors: 10ms.
Horizontal air deflectors	1	2	3	4	5	6	7	8	
⑤①	High	High	High	Low	Low	Low	Low	Low	
⑤②	High	Low	Low	Low	Low	Low	High	High	
④⑨	Low	Low	Low	Low	High	High	High	Low	
④⑧	Low	Low	High	High	High	Low	Low	Low	

Fig. 7-2 Micro computer Output Signals

- As the micro computer's outputs change as shown in Fig. 7-2, the core of the auto sweep motor is excited to turn the rotor. Table 7-1 shows the rotation angle of horizontal air deflectors.

Table 7-1 Auto sweep Motor Rotation

	Rotation angle per step (°)	Time per step (ms)
Horizontal air deflectors motor	0.0879	10
Deflectors	7.47	850

8. Room Temperature Thermistor Circuit

- Fig. 8-1 shows the room temperature thermistor circuit.

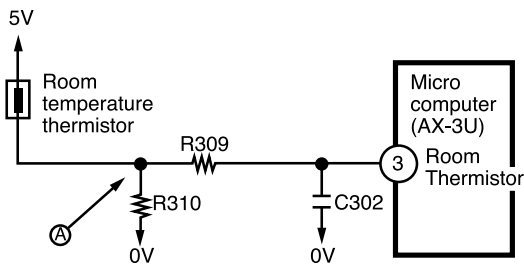


Fig. 8-1

- The voltage at ③ depends on the room temperature as shown in Fig. 8-2.

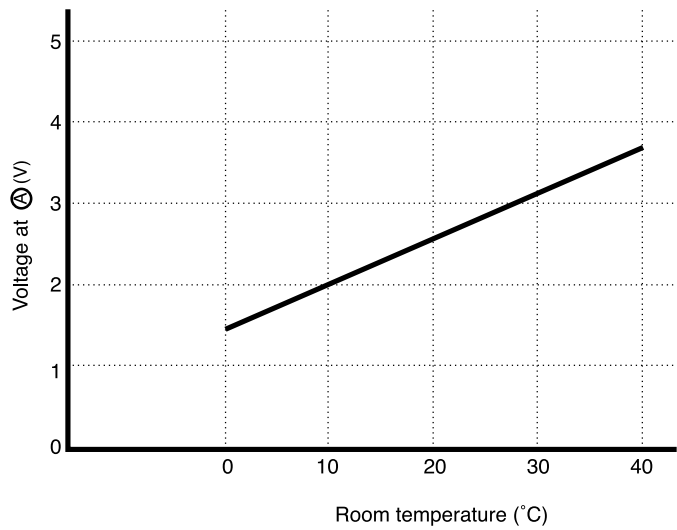


Fig. 8-2

9. Heat exchanger temperature thermistor circuit

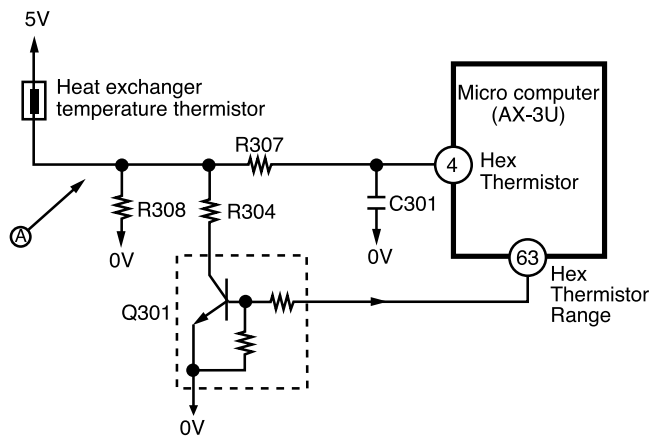


Fig. 9-1

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

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

The voltage at ④ depends on the heat exchanger temperature as shown in Fig. 9-2.

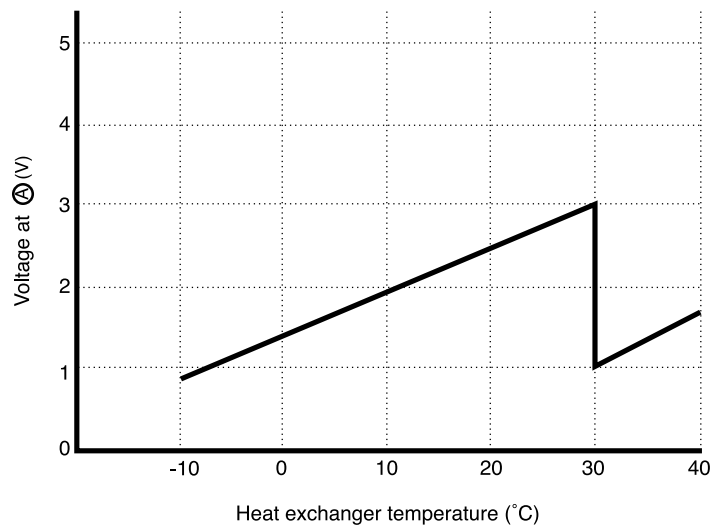


Fig. 9-2

10. Temporary Switch

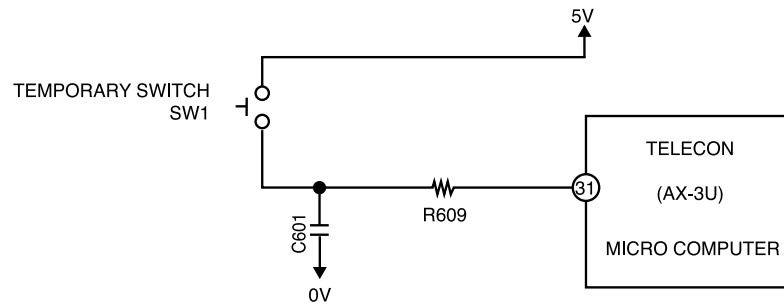


Fig. 10-1

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

11. DC Fan Motor Drive Circuit

- Fig. 11-1 shows the indoor DC fan motor drive circuit.

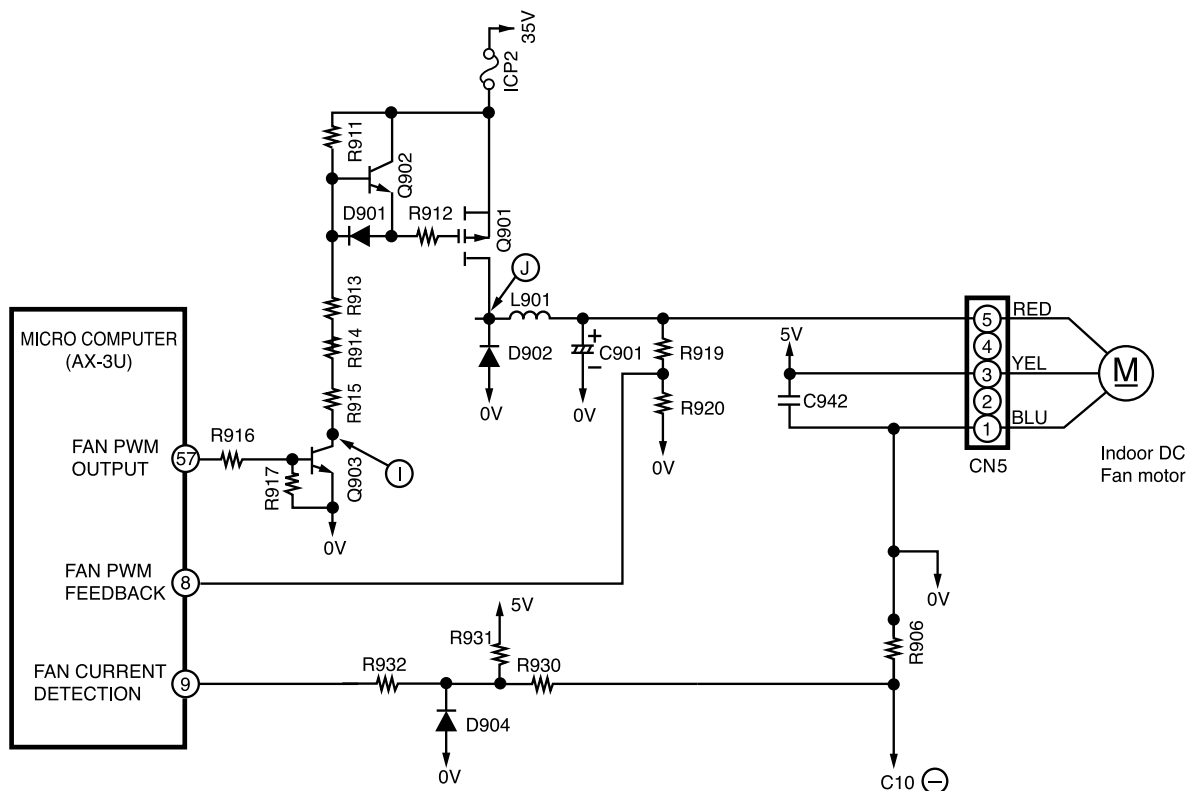


Fig. 11-1

- The circuit produces the fan motor drive voltages, 8-33V, from 35V DC supplied from power supply and controls the fan motor speed.
- Q901 is switched on and off according to the signal at fan PWM output pin (57) to control the voltage which is smoothed by D902, L901 and C901 to drive the fan motor.
- The output voltage is divided by R919 and R920 and is input to divided voltage output pin (8); the micro computer controls the fan PWM output so the output voltage is set to the specified value. The chopper frequency of the fan PWM output is 15.7kHz.
- In the Fan current detection circuit, 35V line current is detected by R906 and input to fan current detection pin (9). Microcomputer detects overcurrent comparing it with the current judgment value corresponding to the fan rotation speed.

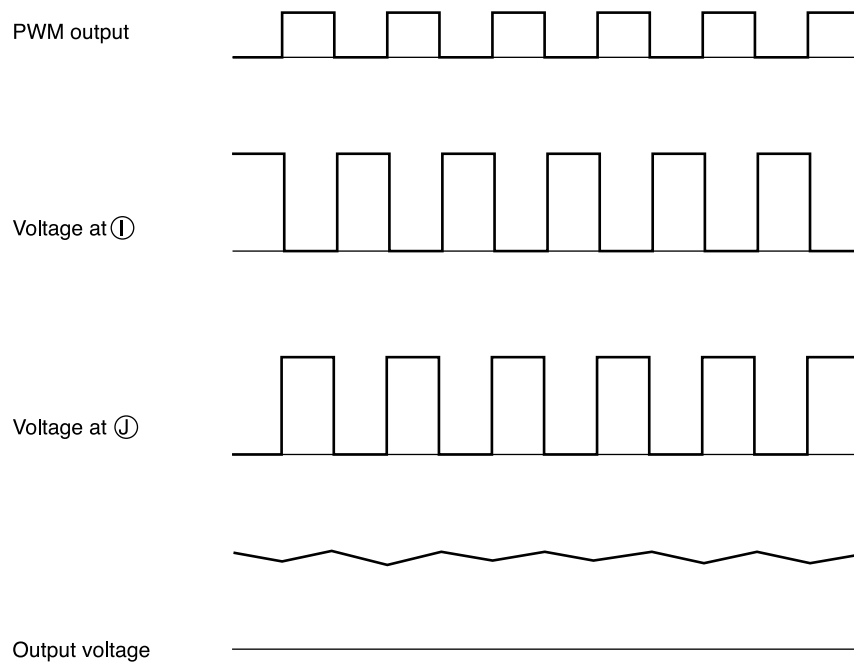


Fig. 11-2

AUTO SWING FUNCTION

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

SERVICE CALL Q & A

Cooling operation

Q1 While cooling, the compressor sometimes stops abruptly.



A1 Check whether frost sticks on the heat exchanger of indoor unit or not.
Wait for 3 – 4 minutes until the frost melts.

If cooling is performance when the room temperature is low, frost may stick on the heat exchanger of indoor unit.

Dehumidifying operation

Q2 The fan speed does not change during a dehumidifying operation.



A2 The fan speed is always LO at a dehumidifying operation.

Q3 Cold air comes out during a dehumidifying operation.



A3 To improve the dehumidification efficiency, LO fan speed operation is performed. Therefore the air is cold. This is not a trouble.

Q4 The operation does not stop even by raising the room temperature setting of remote control at a dehumidifying operation.



A4 At a dehumidifying operation, the actual room temperature is compared with the room temperature setting when starting the operation and the operation is as follows.

1) When actual room temperature > room temperature setting.

The operation is according to the room temperature setting on the remote controller.

2) * When actual room temperature < room temperature setting.

Regardless of the room temperature setting, the temperature is automatically set slightly lower than the room temperature.

In this case, the status is as 2) and, therefore, the operation by the room temperature control is impossible. Turn off the On / OFF switch, set the room temperature to a new value and turn on the operation by the On / Off switch.

Q5 In the dehumidifying mode, the temperature set by remote controller is set slightly higher than the room temperature but the operation starts.

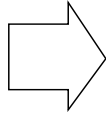


A5 This is the status in 2) of (A4). The temperature is set a little lower than the room temperature to carry out a dehumidifying operation as far as possible.

Common, etc.

Q6

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

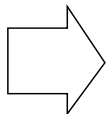


A6

There may be a difference between the room temperature setting and actual room temperature on account of the room structure, air flow, etc.
If there is a difference from the room temperature, adjust the set temperature to keep living space at a comfortable temperature.

Q7

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



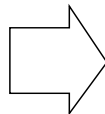
A7

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

Nice temperature reservation

Q8

In case of "ON" timer, the operation does not start at a preprogrammed time but a little earlier.

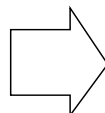


A8

The "Nice temperature reservation" functions. The operation starts earlier so the room temperature will be as set at a programmed time.
The operation starts at most 60 minutes before a preprogrammed time.

Q9

The time to start an operation is irregular while preprogramming at the same time.

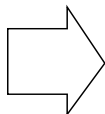


A9

The "Nice temperature reservation" operates. The starting time depends on the room load.

Q10

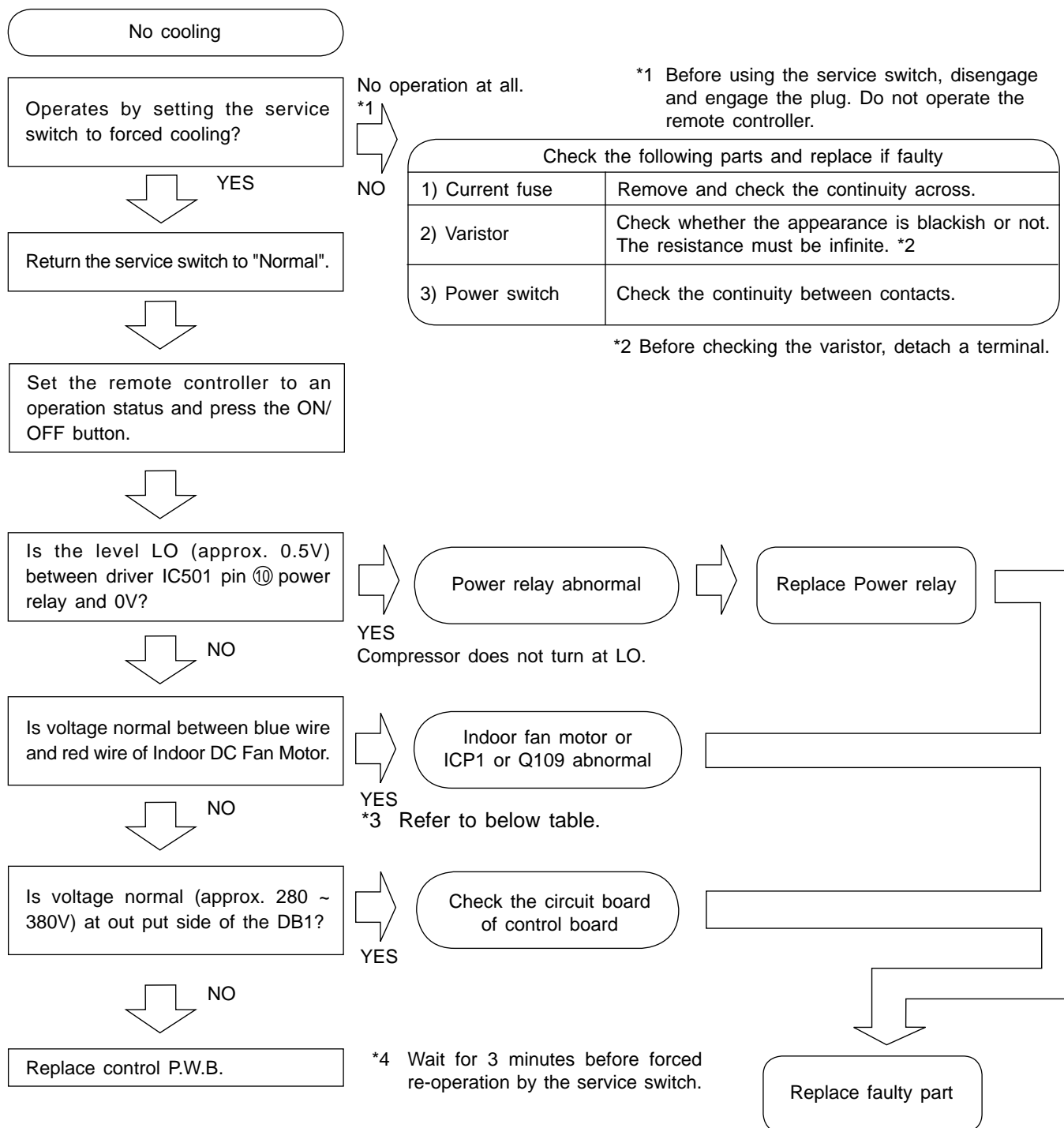
After selecting a "Dehumidifying" operation mode, the fan speed mode remains "LO" fan speed".



A10

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

TROUBLE-SHOOTING

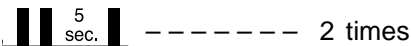







*3

CN5 BLUE-RED (V)		
	RAS-10G5 RAC-10G5	RAS-14G5 RAC-14G5
Fan Speed	Cool	Cool
HI	23.0	30.3
MED	19.0	25.6
LO	15.6	20.0
SLEEP MODE	11.9	13.5

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

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

No.	Mode of Timer-Lamp blinking	Indication Factor	Estimated Break-Down Part
1	 2 times	<u>Force cooling operation</u> Unit is under forcible operation or under balancing after forcible operation.	Check force cooling switch at indoor electrical.
2	 10 times	<u>DC Fan motor - over current of electricity</u> Indoor - DC Fan motor has over current of electricity.	(1) Indoor - Fan is locked. (2) Indoor - Fan motor damage. (3) Indoor - control circuit board.
3	 13 times	<u>IC 401 Data read wrongly</u> In case that data read from IC401 is wrong.	IC401 data is not in order.
4	 14 times	<u>Heat exchanger thermistor error</u> Heat exchanger thermistor open or short-circuit detected.	(1) Thermistor (2) Indoor - control circuit board.
5	 15 times	<u>Room thermistor error</u> Room thermistor error open or short-circuit detected.	(1) Thermistor (2) Indoor - control circuit board.

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

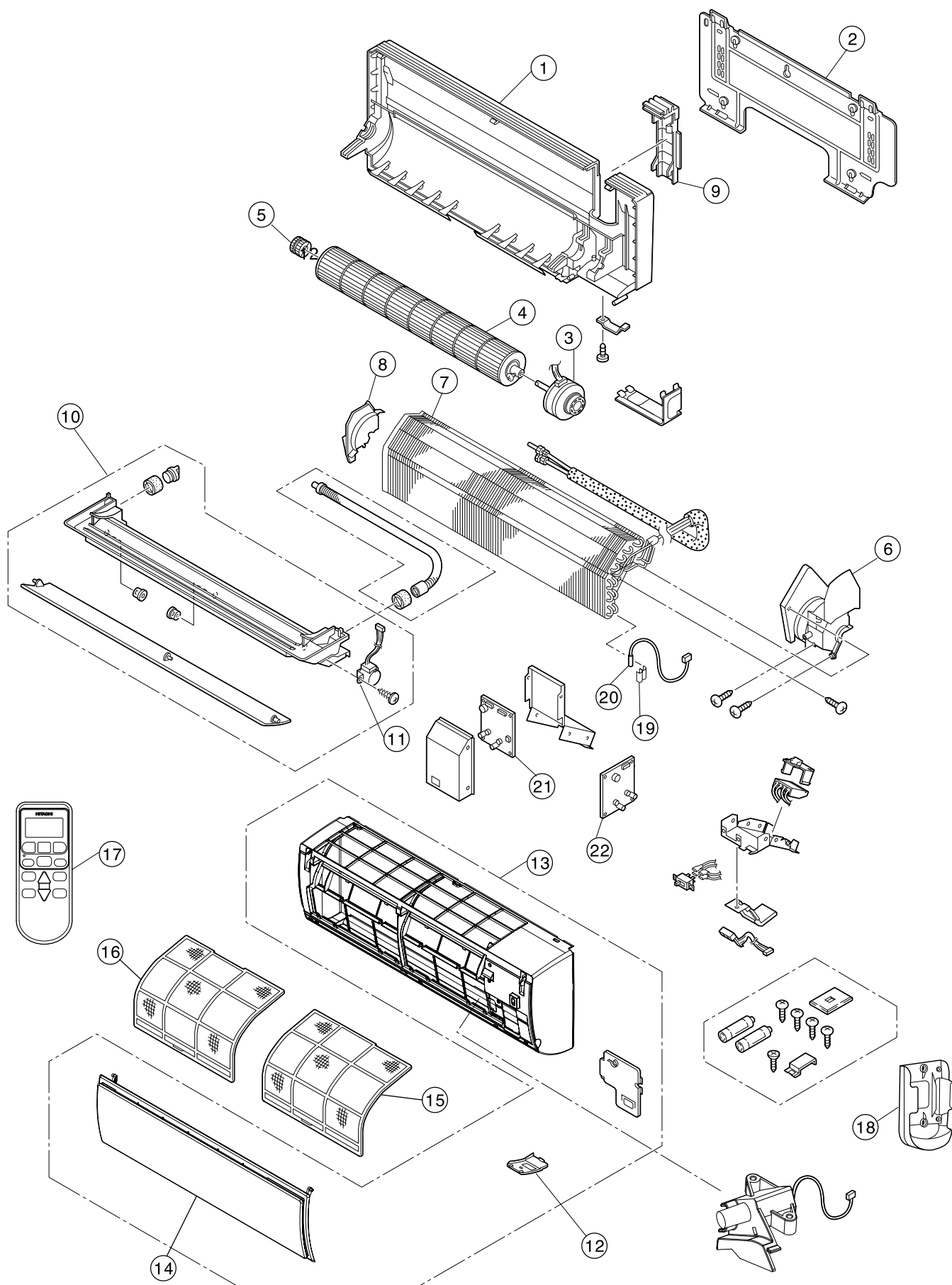
CAUTION

Remote control is disabled while the Timer lamp is flashing.
To check operation, turn off the power switch and turn it on again.

PARTS LIST AND DIAGRAM

INDOOR UNIT

MODEL : RAS-10G5/14G5



MODEL RAS-10G5

NO.	PART NO. RAS-10G5	Q'TY / UNIT	PARTS NAME
1	PMRAS-S10CYT R07	1	CABINET
2	PMRAS-25YH4 S40	1	MOUNTING PLATE
3	PMRAS-07GH4 001	1	FAN MOTOR
4	PMRAS-260GA 001	1	TANGENTIAL FAN
5	PMRAS-25YH4 908	1	P-BEARING ASSY
6	PMRAS-10CYT R06	1	FAN MOTOR BASE
7	PMRAS-S10CYK R02	1	CYCLE ASSY
8	PMRAS-25YH4 909	1	BEARING COVER
9	PMRAS-S13CY 002	1	PIPE SUPPORT
10	PMRAS-S10CY 005	1	DRAIN PAN ASSY
11	PMRAS-25YH4 929	1	AUTO SWEEP MOTOR
12	PMRAS-S10CYT R05	1	SE COVER
13	PMRAS-10G5 R01	1	FRONT COVER ASSY
14	PMRAS-10G5 R02	1	FRONT PANEL
15	PMRAK-25N6 R04	1	AIR FILTER (R)
16	PMRAK-25N6 R05	1	AIR FILTER (L)
17	PMRAS-10CE9G 003	1	REMOTE CONTROL ASSEMBLY
18	PMRAS-10C9G 014	1	REMOTE CONTROL SUPPORT
19	PMRAS-10C8M 003	1	THERMISTOR SUPPORT
20	PMRAS-260GHA 001	1	THERMISTOR
21	PMRAS-S10CAK R01	1	P.W.B (MAIN)
22	PMRAS-S10CX 005	1	P.W.B (POWER SW SUPPLY)

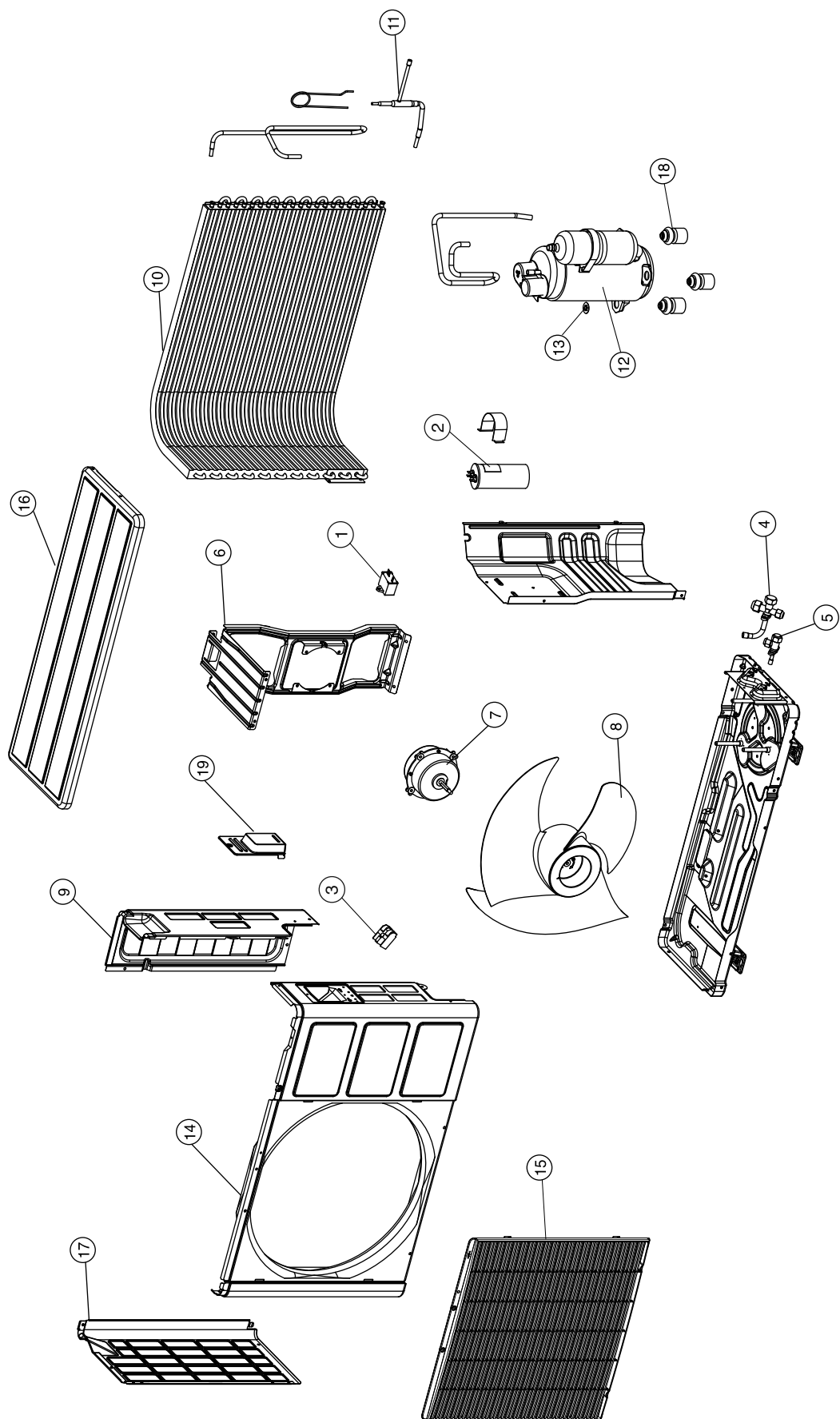
MODEL RAS-14G5

NO.	PART NO. RAS-14G5	Q'TY / UNIT	PARTS NAME
1	PMRAS-08CH8 005	1	CABINET
2	PMRAS-25YH4 S40	1	MOUNTING PLATE
3	PMRAS-07GH4 001	1	FAN MOTOR
4	PMRAS-260GA 001	1	TANGENTIAL FAN
5	PMRAS-25YH4 908	1	P-BEARING ASSY
6	PMRAS-10CYT R06	1	FAN MOTOR BASE
7	PMRAS-S13CYK R02	1	CYCLE ASSY
8	PMRAS-25YH4 909	1	BEARING COVER
9	PMRAS-S13CY 002	1	PIPE SUPPORT
10	PMRAS-S10CY 005	1	DRAIN PAN ASSY
11	PMRAS-25YH4 929	1	AUTO SWEEP MOTOR
12	PMRAS-S10CYT R05	1	SE COVER
13	PMRAS-10G5 R01	1	FRONT COVER ASSY
14	PMRAS-10G5 R02	1	FRONT PANEL
15	PMRAK-25N6 R05	1	AIR FILTER (R)
16	PMRAK-25N6 R04	1	AIR FILTER (L)
17	PMRAS-10CE9G 003	1	REMOTE CONTROL ASSEMBLY
18	PMRAS-10C9G 014	1	REMOTE CONTROL SUPPORT
19	PMRAS-10C8M 003	1	THERMISTOR SUPPORT
20	PMRAS-260GHA 001	1	THERMISTOR
21	PMRAS-S13CAK R01	1	P.W.B (MAIN)
22	PMRAS-S10CX 005	1	P.W.B (POWER SW SUPPLY)

PARTS LIST AND DIAGRAM

OUTDOOR UNIT

MODEL : RAC-10G5/14G5



MODEL RAC-10G5

NO.	PART NO. RAC-10G5		Q'TY / UNIT	PARTS NAME
1	PMRAC-13C7	904	1	FAN MOTOR CAPACITOR
2	PMRAC-13C7	905	1	COMPRESSOR CAPACITOR
3	PMRAC-63CA1	S02	1	TERMINAL BOARD (2P)
4	PMRAC-X10CZ	S17	1	3S-VALVE
5	PMRAC-X13CX	902	1	2S-VALVE
6	PMRAC-E10CZ	S06	1	FAN MOTOR SUPPORT
7	PMRAC-S13CX	903	1	FAN MOTOR
8	PMRAC-X10CZ	S05	1	PROPELLER FAN
9	PMRAC-S10CAK	S03	1	SIDE PLATE (R)
10	PMRAC-X10CZ	S03	1	CONDENSER
11	PMRAC-X10CZ	S07	1	STRAINER (PIPE)
12	PMRAC-S10CAK	S01	1	COMPRESSOR
13	KPNTI	001	6	COMPRESSOR NUT
14	PMRAC-10G5	S01	1	CABINET
15	PMRAC-X10CZ	S04	1	D-GRILL
16	PMRAC-E10CZ	S07	1	TOP COVER
17	PMRAC-X10CZ	S14	1	SIDE PLATE (L)
18	PMRAC-S10CAK	S05	3	COMPRESSOR RUBBER
19	PMRAC-E10CZ	S10	1	TERM-COVER

MODEL RAC-14G5

NO.	PART NO. RAC-14G5		Q'TY / UNIT	PARTS NAME
1	PMRAC-13C7	904	1	FAN MOTOR CAPACITOR
2	PMRAC-24GH4	S02	1	COMPRESSOR CAPACITOR
3	PMRAC-63CA1	S02	1	TERMINAL BOARD (2P)
4	PMRAC-S13CAK	S02	1	4S-VALVE
5	PMRAC-X13CX	902	1	2S-VALVE
6	PMRAC-E10CZ	S06	1	FAN MOTOR SUPPORT
7	PMRAC-S13CX	903	1	FAN MOTOR
8	PMRAC-X10CZ	S05	1	PROPELLER FAN
9	PMRAC-S10CAK	S03	1	SIDE PLATE (R)
10	PMRAC-X10CZ	S03	1	CONDENSER
11	PMRAC-X10CZ	S07	1	STRAINER (PIPE)
12	PMRAC-S13CAK	S01	1	COMPRESSOR
13	KPNTI	001	6	COMPRESSOR NUT
14	PMRAC-14G5	S01	1	CABINET
15	PMRAC-X10CZ	S04	1	D-GRILL
16	PMRAC-E10CZ	S07	1	TOP COVER
17	PMRAC-X10CZ	S14	1	SIDE PLATE (L)
18	PMRAC-S13CAK	S03	3	COMPRESSOR RUBBER
19	PMRAC-E10CZ	S10	1	TERM-COVER

HITACHI

RAS-10G5 / RAC-10G5
RAS-14G5 / RAC-14G5

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