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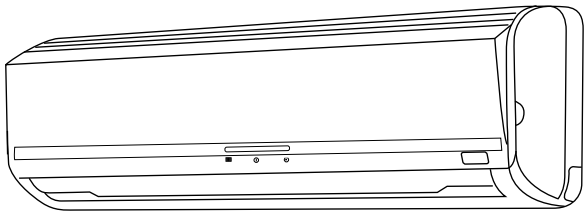
RAS-18G5/RAC-18G5

SERVICE MANUAL

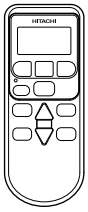
TECHNICAL INFORMATION

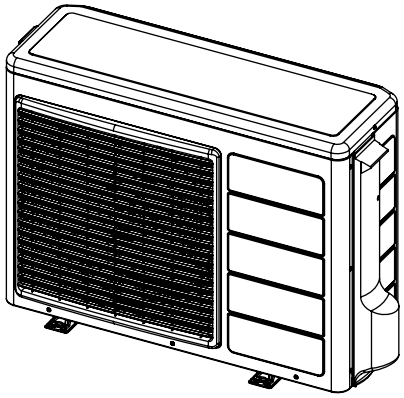
REFER TO THE FOUNDATION MANUAL

FOR SERVICE PERSONNEL ONLY



RAS-18G5





RAC-18G5

CONTENTS

SPECIFICATIONS

TYPE			(WALL TYPE)	
			INDOOR UNIT	OUTDOOR UNIT
MODEL			RAS-18G5	RAC-18G5
POWER SOURCE			1 Ø, 50 Hz, 220-230 V	
COOLING	TOTAL INPUT	(W)	1620-1620	
	TOTAL AMPERES	(A)	7.70-7.40	
	CAPACITY	(kW)	5.25-5.25	
		(B.T.U./h)	17,910	
DIMENSIONS (mm)		W	1030	850
		H	295	650
		D	207	298
NET WEIGHT		(kg)	12	47

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

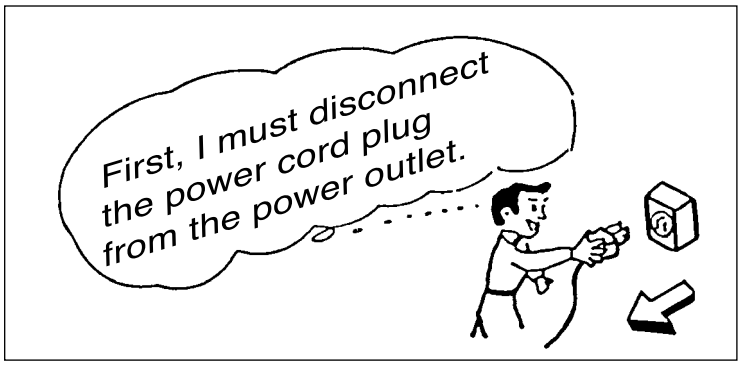
ROOM AIR CONDITIONER

INDOOR UNIT + OUTDOOR UNIT

MARCH 2011 Refrigeration & Air-Conditioning Division

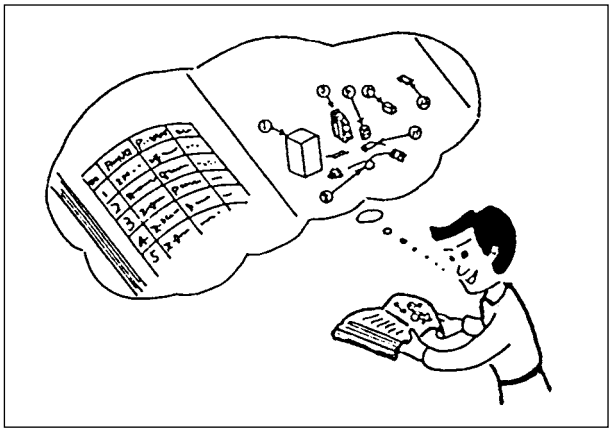
SAFETY DURING REPAIR WORK

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).

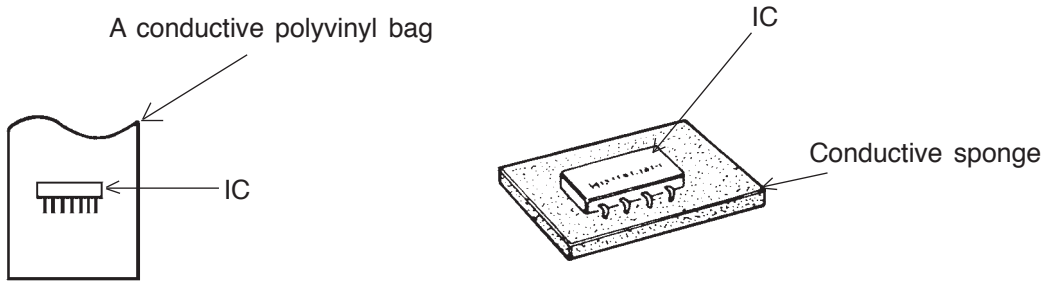


Fig. 1. Conductive Container

   (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 1MΩ 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.

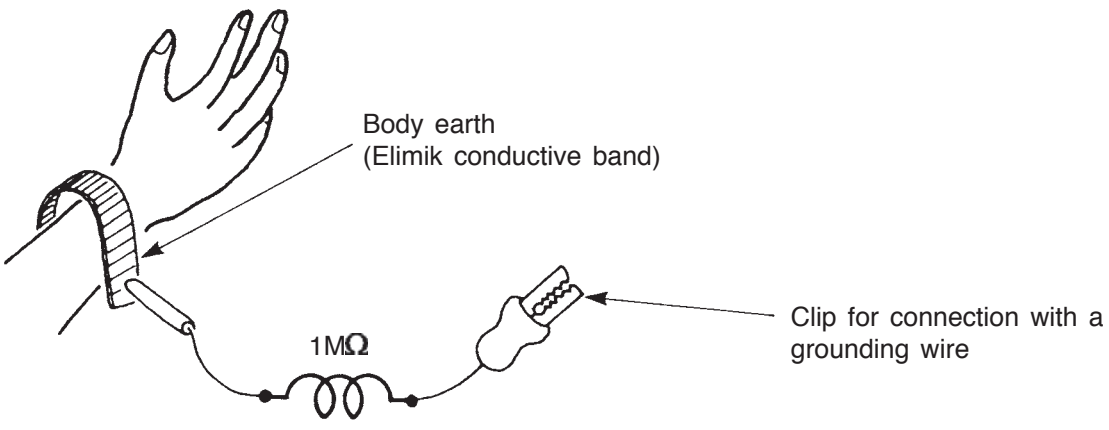


Fig. 2. Body Earth

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

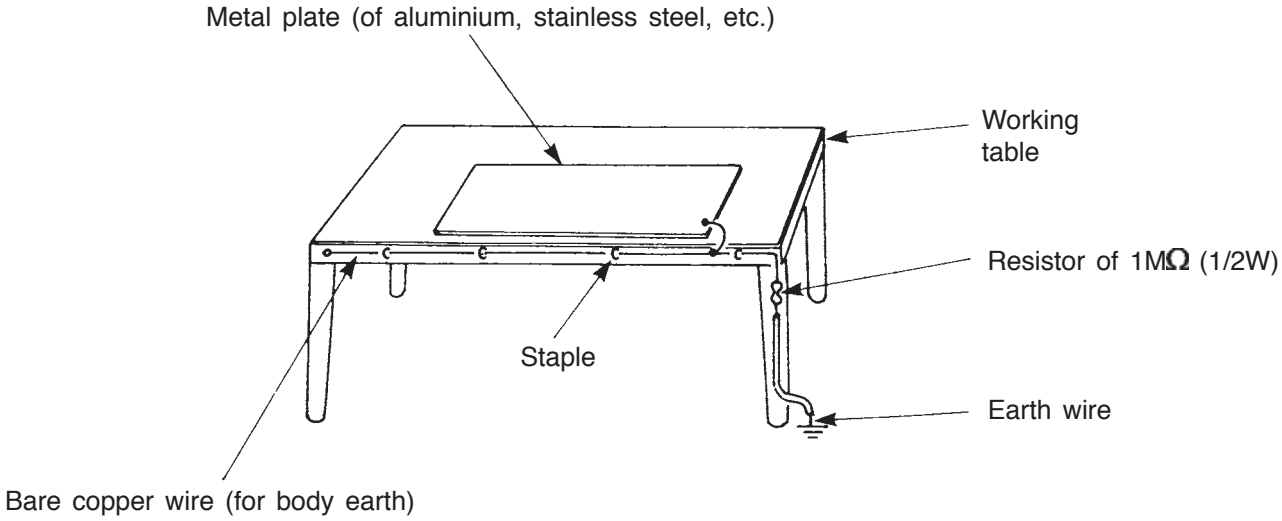


Fig. 3. Grounding of the working table

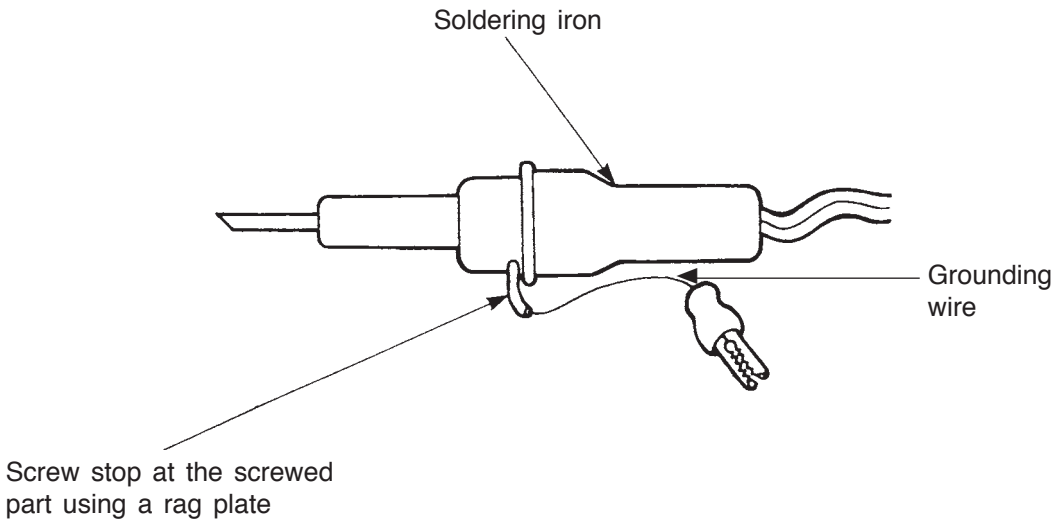


Fig. 4. Grounding a soldering iron

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).

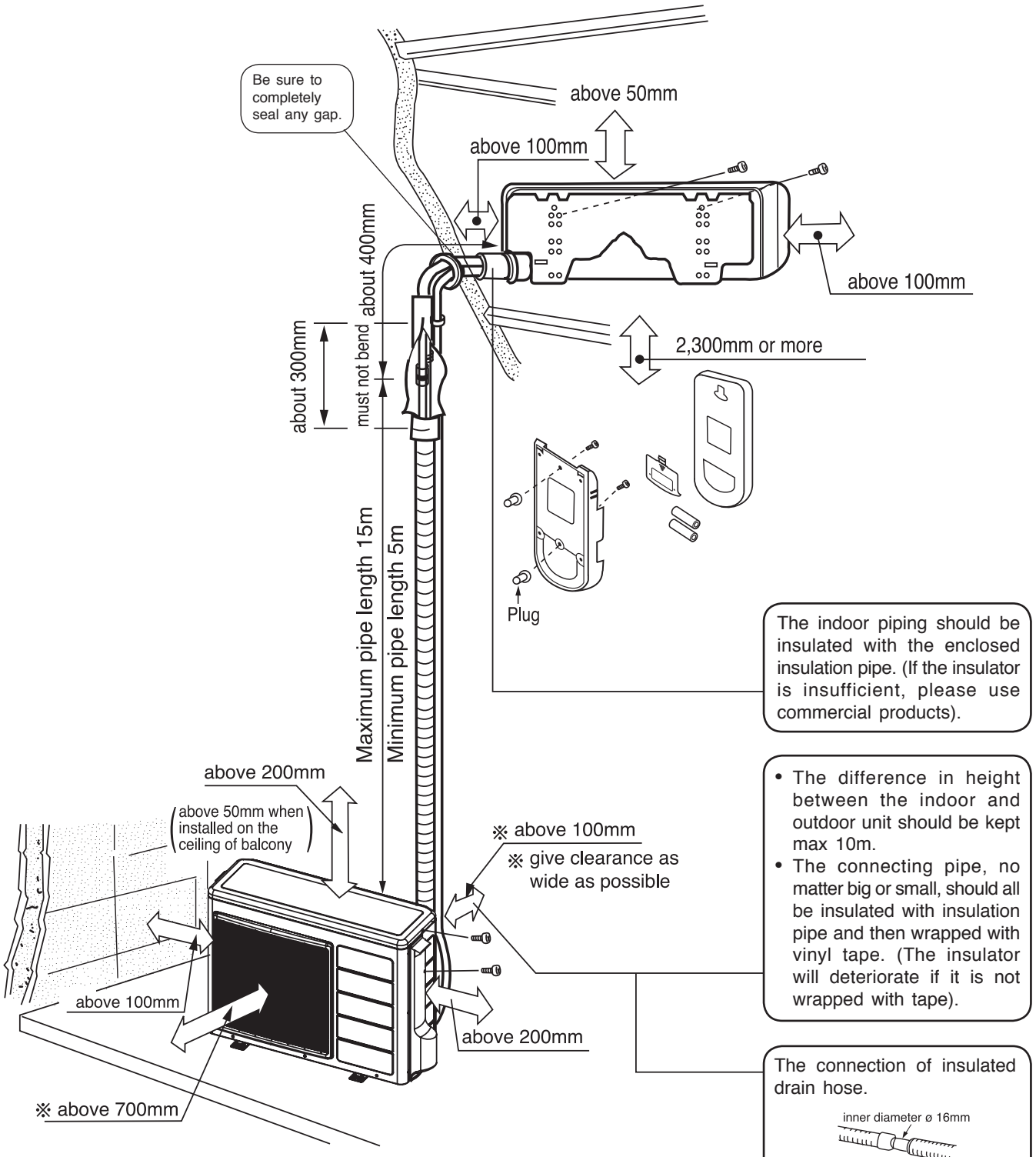
6. When the operation button is set to “cool” from other mode, the compressor will stop for about 3 minutes as IC delay circuit protection.

SPECIFICATIONS

MODEL		RAS-18G5	RAC-18G5
FAN MOTOR		30 W	40 W
FAN MOTOR CAPACITOR		NO	2.5μF, 450V
FAN MOTOR PROTECTOR		NO	YES (INTERNAL)
COMPRESSOR		–	ASH210SV-C8LU
COMPRESSOR MOTOR CAPACITOR		NO	60μF, 450VAC
OVERLOAD PROTECTOR		NO	YES (INTERNAL)
OVERHEAT PROTECTOR		NO	YES (INTERNAL)
FUSE (MICRO COMPUTER CIRCUIT)		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
NOISE SUPPRESSOR		NO	NO
THERMOSTAT		YES(IC)	NO
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		YES	NO
FUSE CAPACITY		20 A TIME DELAY FUSE	
REFRIGERANT CHARGING VOLUME (Refrigerant R410A)	UNIT	----------	1410g
	PIPES (MAX. 15m) (MIN. 5m)	ADDITIONAL REFRIGERANT R410A AT 15g PER EVERY METER IF PIPE LENGTH MORE THAN 8m.	

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.



The indoor piping should be insulated with the enclosed insulation pipe. (If the insulator is insufficient, please use commercial products).

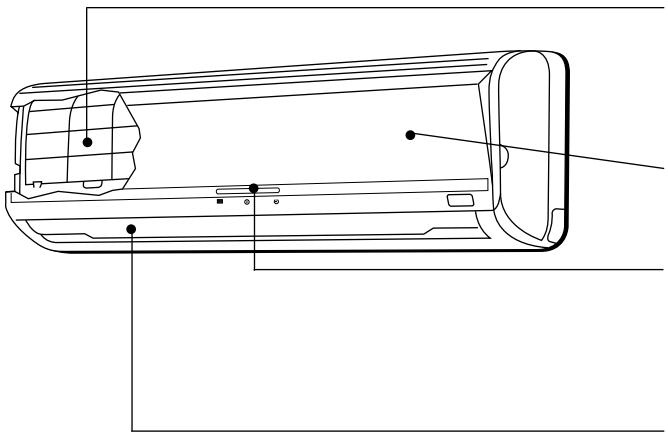
- The difference in height between the indoor and outdoor unit should be kept max 10m.
- The connecting pipe, no matter big or small, should all be insulated with insulation pipe and then wrapped with vinyl tape. (The insulator will deteriorate if it is not wrapped with tape).

The connection of insulated drain hose.

Please use insulated drain hose for the indoor piping (commercial product).

NAMES AND FUNCTIONS OF EACH PART

INDOOR UNIT

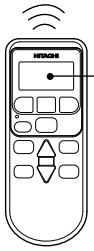


Pre-filter
To prevent dust from coming into the indoor unit. (Refer Instruction manual)

Front panel

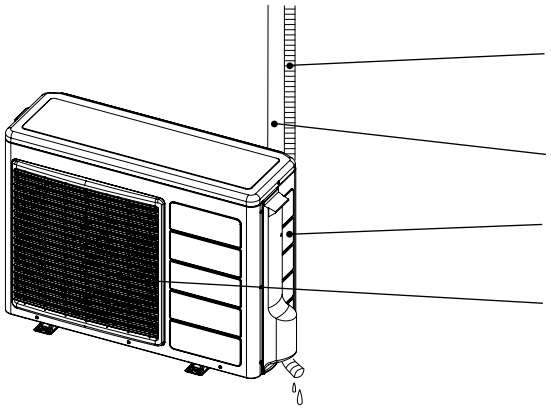
Indoor unit indicators
Light indicator showing the operating condition. (Refer page 7)

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 and insulation pipe for piping

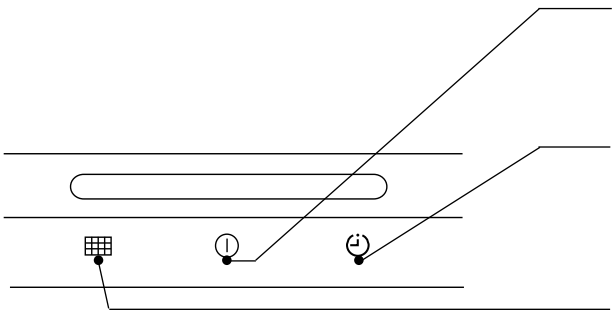
Air inlet (Back and Left side)

Air outlet

MODEL NAME AND DIMENSIONS

MODEL	WIDTH (mm)	HEIGHT (mm)	DEPTH (mm)
RAS-18G5	1030	295	207
RAC-18G5	850	650	298

INDOOR UNIT INDICATORS



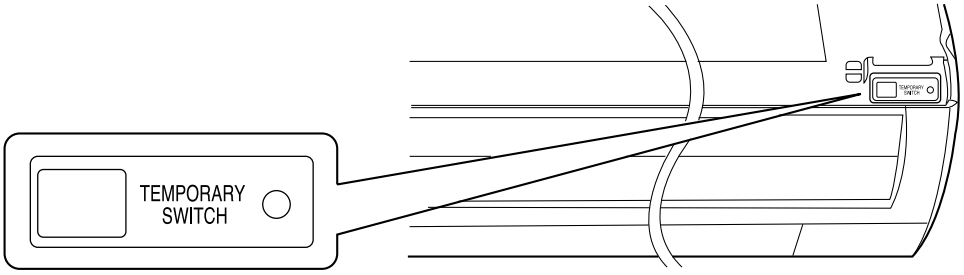
OPERATION LAMP
This lamp lights during operation.

TIMER LAMP
This lamp lights when the timer is working.

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 INDICATOR

- This figure shows the opening condition of front panel. Refer to page 21 in relation to how to open or close the front panel.



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.

Note

- Avoid to use the room air conditioner for cooling operation when the outside temperature is below 21°C (70°F).
  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

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

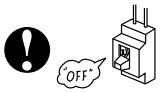
- A circuit breaker should be installed depending on the mounting site of the unit. Without a circuit breaker, the danger of electric shock exists.
- Do not install near location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it.

- 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.



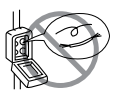
- Please contact your agent for maintenance. Improper self maintenance may cause electric shock and fire.
- Please contact your agent if you need to remove and reinstall the unit. Electric shock or fire may occur if you remove and reinstall the unit yourself improperly.
- If the supply cord is damaged,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

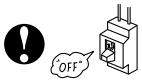
PRECAUTIONS DURING OPERATION

⚠ 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.



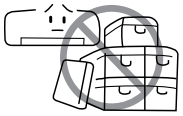


- During thunder storm, disconnect and turn off the circuit breaker.

PRECAUTIONS DURING OPERATION

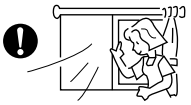
⚠ CAUTION

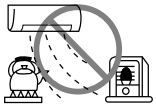
- The product shall be operated under the manufacturer specification and not for any other intended use.



- 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.



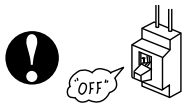


- Do not direct the cool air coming out from the air-conditioner panel to face household heating apparatus as this may affect the working of apparatus such as the electric kettle, oven etc.

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

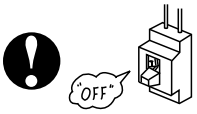
- Do not splash or direct water to the body of the unit when cleaning it as this may cause short circuit.

- 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.



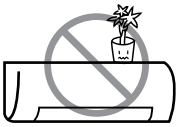
- Please switch off the unit and turn off the circuit breaker during cleaning, the high-speed fan inside the unit may cause danger.

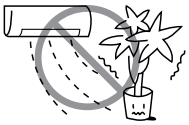
- Turn off the circuit breaker if the unit is not to be operated for a long period.



- 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.





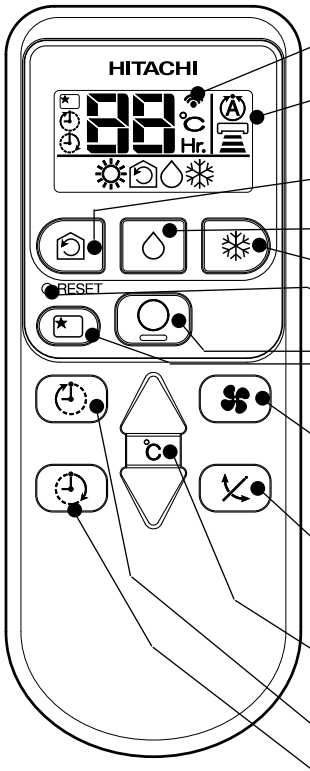
- Do not place plants directly under the air flow as it is bad for the plants.

- 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.

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.



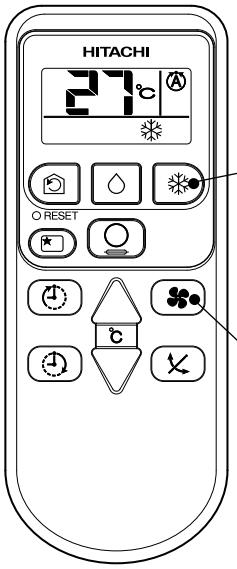
	CIRCULATION / START
	DEHUMIDIFY / START
	COOLING / START
	FAN
	FAN SPEED LOW MED HI
	SLEEP TIMER
	STOP
	TIMER SELECTOR ON TIMER OFF TIMER
	AUTO SWING

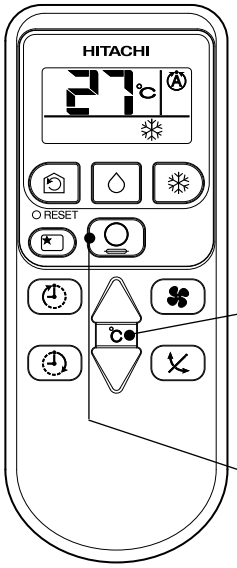
- **Transmission sign**
  The transmission sign blinks when a signal is sent.
- **Display**
  This indicates the room temperature selected, timer status, function and intensity of circulation selected.
- **CIRCULATION button**
  Use this button to set air circulation in the room or start operation.
- **DEHUMIDIFYING button**
  Use this button to reduce humidity in the room or start operation.
- **COOLING button**
  Use this button to set cooling mode in the room or start operation.
- **RESET button**
- **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 Ⓐ (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.

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



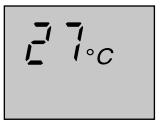


1 Press the ❄ button so that the display indicates ❄ (COOL). Cooling operation starts with a beep.
The cooling function does not start if the temperature setting is higher than the current room temperature (even though the ⏻ (OPERATION) lamp lights). The cooling function will start as soon as you set 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.

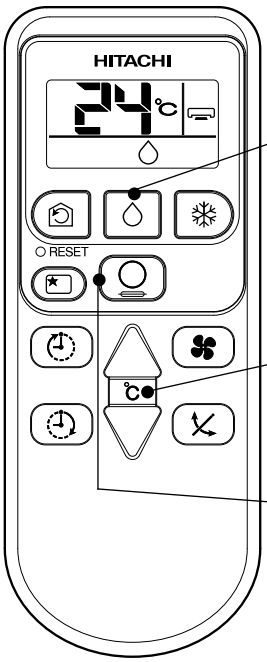
The temperature setting and the actual room temperature may vary somewhat depending on conditions.

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 setting next time.

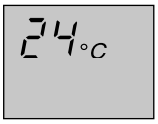
DEHUMIDIFYING OPERATION

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 ◇ button so that the display indicates ◇ (DEHUMIDIFY).
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.

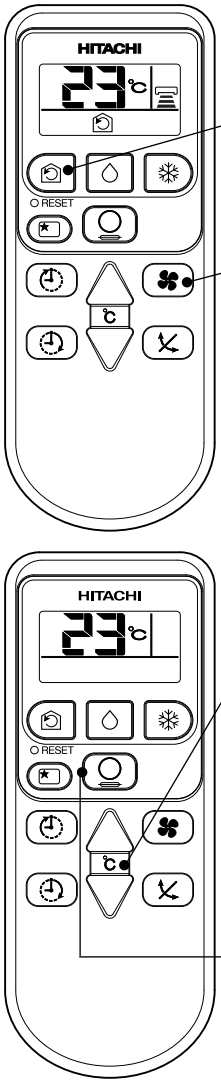
STOP Press the ○ (STOP) button to stop operation.

■ 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.

CIRCULATION OPERATION



1 Press the (CIRCULATION) button so that the display indicates (CIRCULATION).
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.

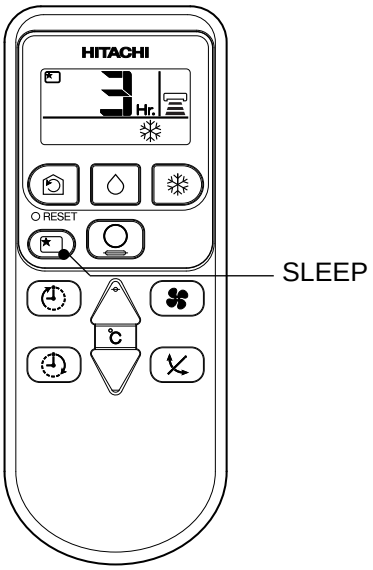
■ As the settings are stored in memory in the remote controller, you only have to press the (CIRCULATION) button next time.

■ 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.

HOW TO SET THE SLEEP TIMER

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



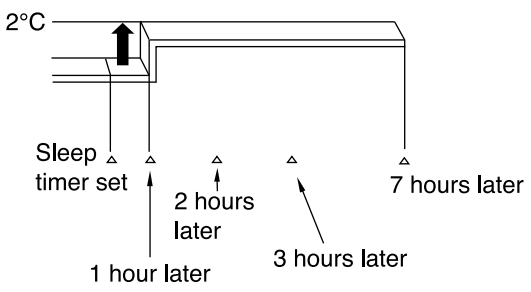
Mode	Indication
Sleep timer	1 hour → 2 hours → 3 hours → 7 hours → Sleep timer off → 1 hour

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 "◯"	The room temperature will be controlled 2°C above the temperature and the FAN SPEED will be set to LOW setting 1 hour after the setting of the sleep timer. 

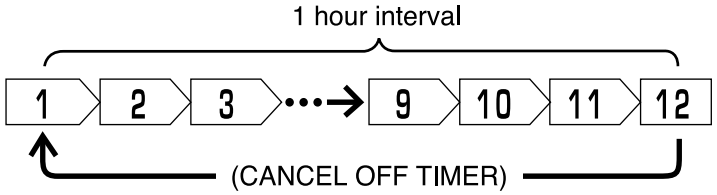
HOW TO SET THE TIMER

■ ON Timer and OFF Timer are available.

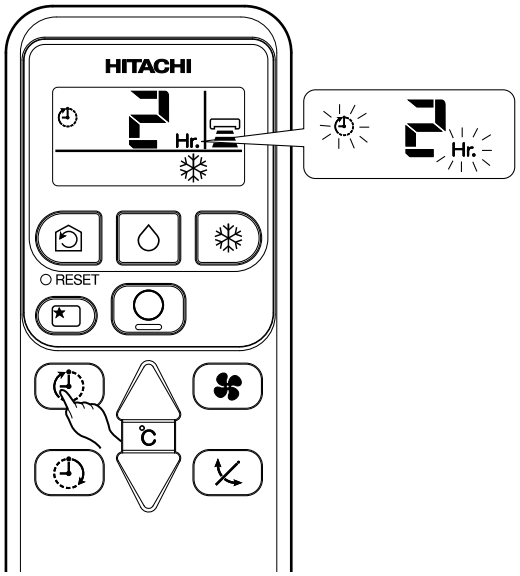
OFF Timer Reservation

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.



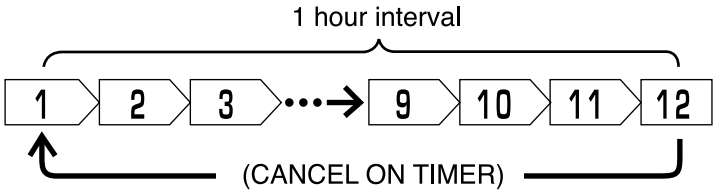
■ Operation stop at setting time



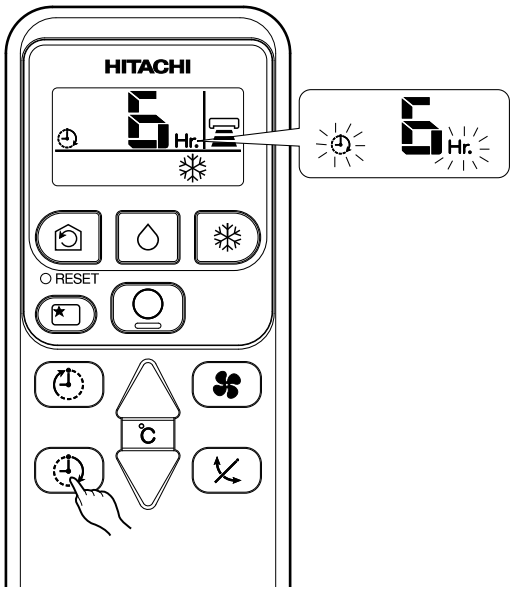
ON Timer Reservation

ON TIME setting

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

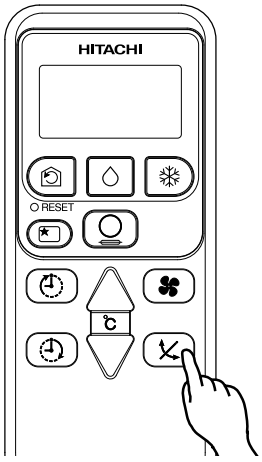


■ Operation will start for setting temperature at setting time (The starting time may different depend on the room temperature and set temperature).



ADJUSTING THE AIR DEFLECTORS

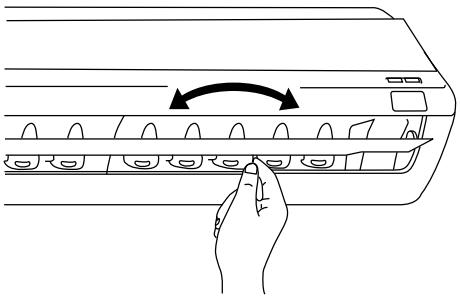
1 Adjustment of the conditioned air in the upward and downward directions.
The horizontal air deflector is automatically set to the proper angle suitable for each operation. The deflector can be swung up and down continuously and also set to the desired angle using the " (AUTO SWING)" button.



- If the " (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.

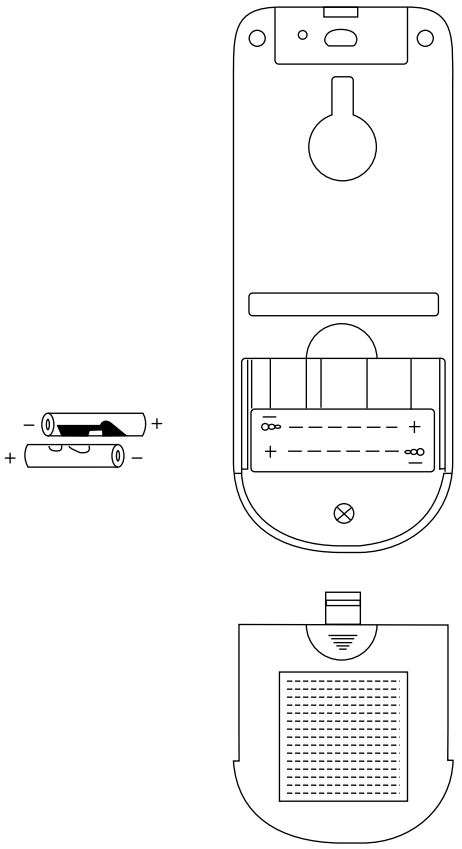
2 Adjustment of the conditioned air to the left and right.

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.

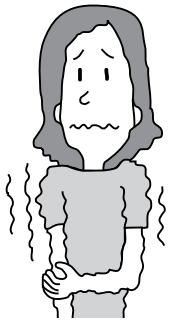
2 Install the new batteries.
The direction of the batteries should match the marks in the case.

⚠ 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

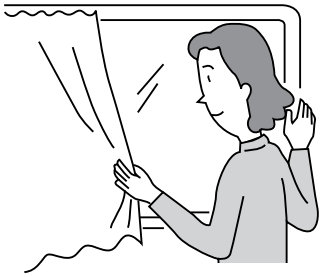
THE IDEAL WAYS OF OPERATION

Suitable Room Temperature



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

Install curtain or blinds



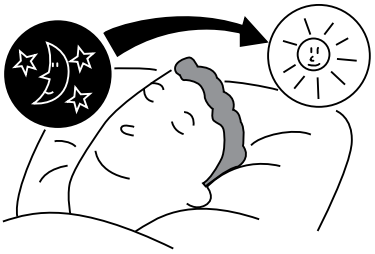
It is possible to reduce heat entering the room through windows.

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.

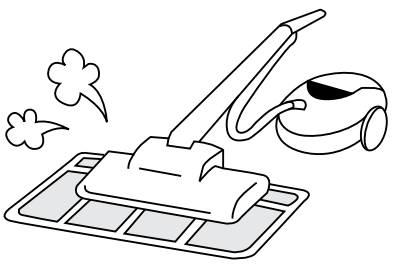
Effective Usage Of Timer

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.



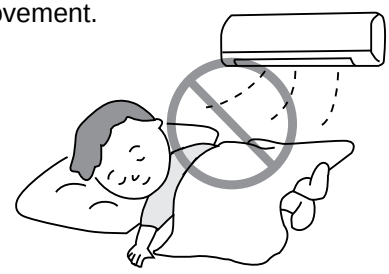
Do Not Forget To Clean The Air Filter

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

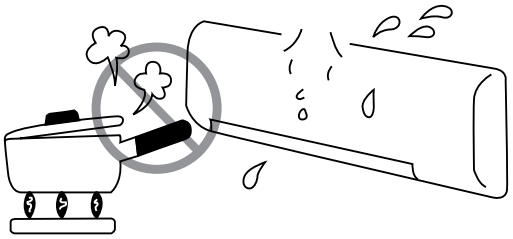
Please pay attention to the room temperature and air flow direction when operating the unit for baby, children and old folks who have difficulty in movement.



FOR USER'S INFORMATION

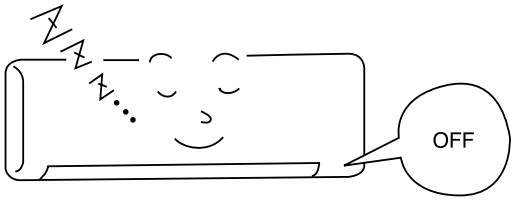
The Air Conditioner And The Heat Source In The Room

⚠ 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.



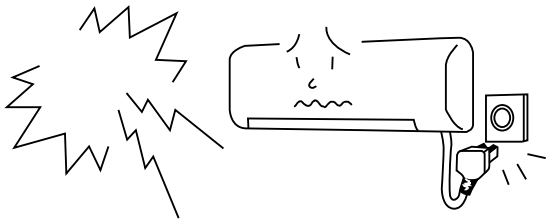
Not Operating For A Long Time

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.



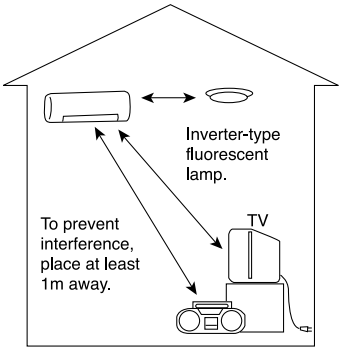
When Lightning Occurs

⚠ 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.



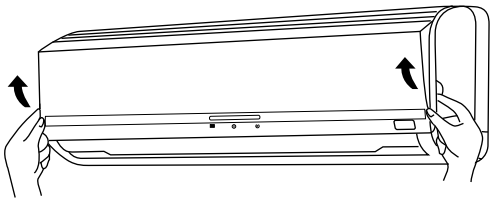
ATTACHING THE AIR PURIFYING FILTERS

⚠ CAUTION

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

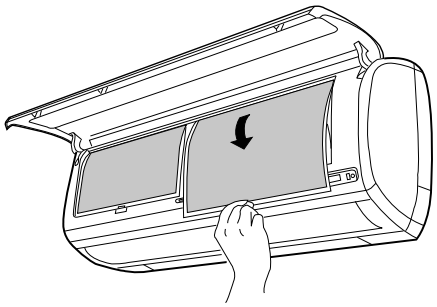
1 **Open the front panel**

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



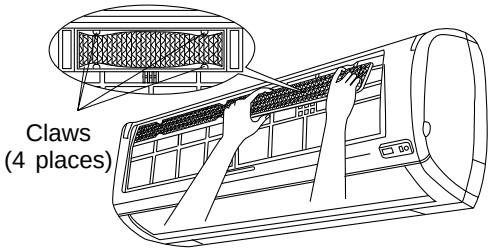
2 **Remove the pre-filter**

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



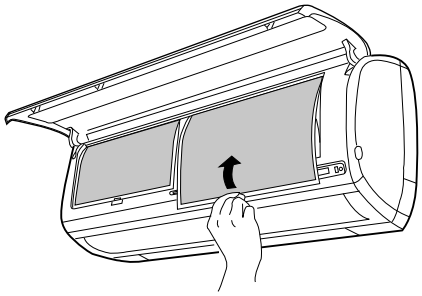
3 **Attaching the air purifying filters**

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



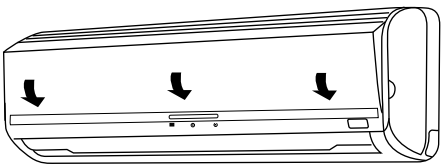
⚠ CAUTION

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 portion 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-CFH5>. 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

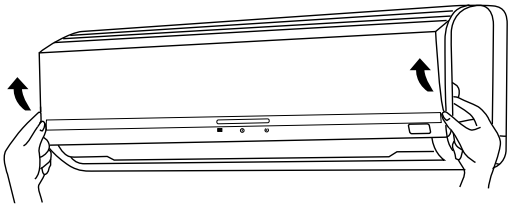
Cleaning and maintenance must be carried out when filter lamp lights. Before cleaning, stop operation and switch off the power supply.

1. PRE-FILTER

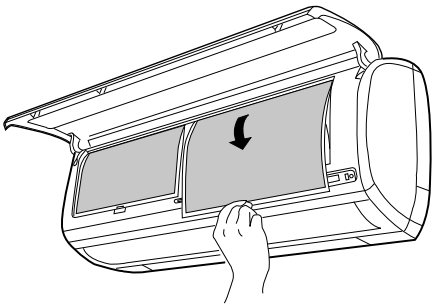
Clean the pre-filter, as it removes dust inside the room. In case the pre-filter is full of dust, the air flow will decrease and the cooling capacity will be reduced. Further, noise may occur. Be sure to clean the filter following the procedure below.

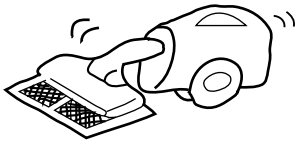
PROCEDURE

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

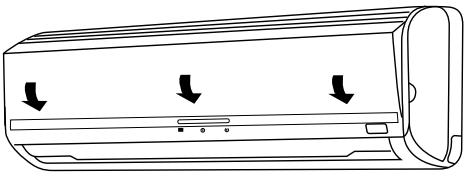


2 Vacuum dust from the pre-filter and air purifying filter using vacuum cleaner. If there is too much dust, rinse under running tap water and gently brush it with soft bristle brush. Allow filters to dry in shade.





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.



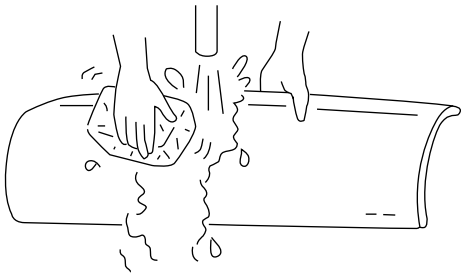
NOTE:
- Air purifying filter should be cleaned every month or sooner if noticeable loading occurs. When used overtime, it may loose its deodorizing function. For maximum performance, it is recommended to replace it every 1 year depending on application requirements.

⚠ 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.

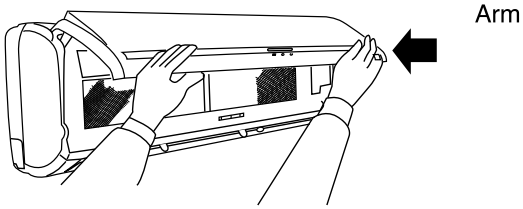


- When front panel is not removed, wipe it with a soft dry cloth. Wipe the remote controller thoroughly with a soft dry cloth.

- Wipe the water thoroughly.
  If water remains at indicators or signal receiver of indoor unit, it causes trouble.

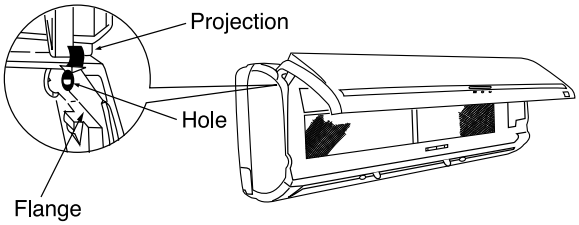
Method of removing the front panel.
Be sure to hold the front panel with both hands to detach and attach it.

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



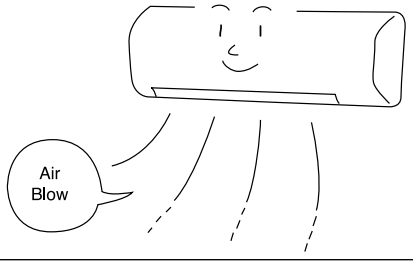
- Move the projections of the left and right arms into the **Flanges** in the unit and securely insert them into the holes.

⚠ 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.

3. MAINTENANCE BEFORE LONG OFF PERIOD

- Run the unit by setting the operation mode to ⌂ (CIRCULATION), the temperature to 16°C 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.

⚠ 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

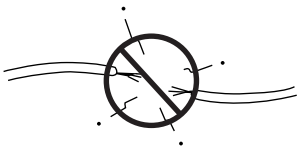
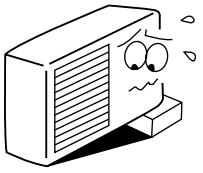
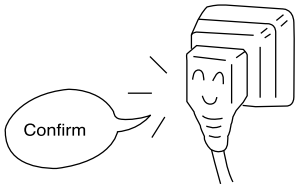
If the supply cord is damaged, it must be replaced by the special cord obtainable at authorized service/parts centers.

⚠ 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 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
When it does not operate	● Is the fuse all right? ● Is the voltage extremely high or low? ● Is the circuit breaker “ON”?
When it does not cool well	● Was the air filter cleaned? ● Does sunlight fall directly on the outdoor unit? ● Is the air flow of the outdoor unit obstructed? ● Are the doors or windows opened, or is there any source of heat in the room? ● Is the set temperature suitable?

Notes

- In quiet or stop 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.

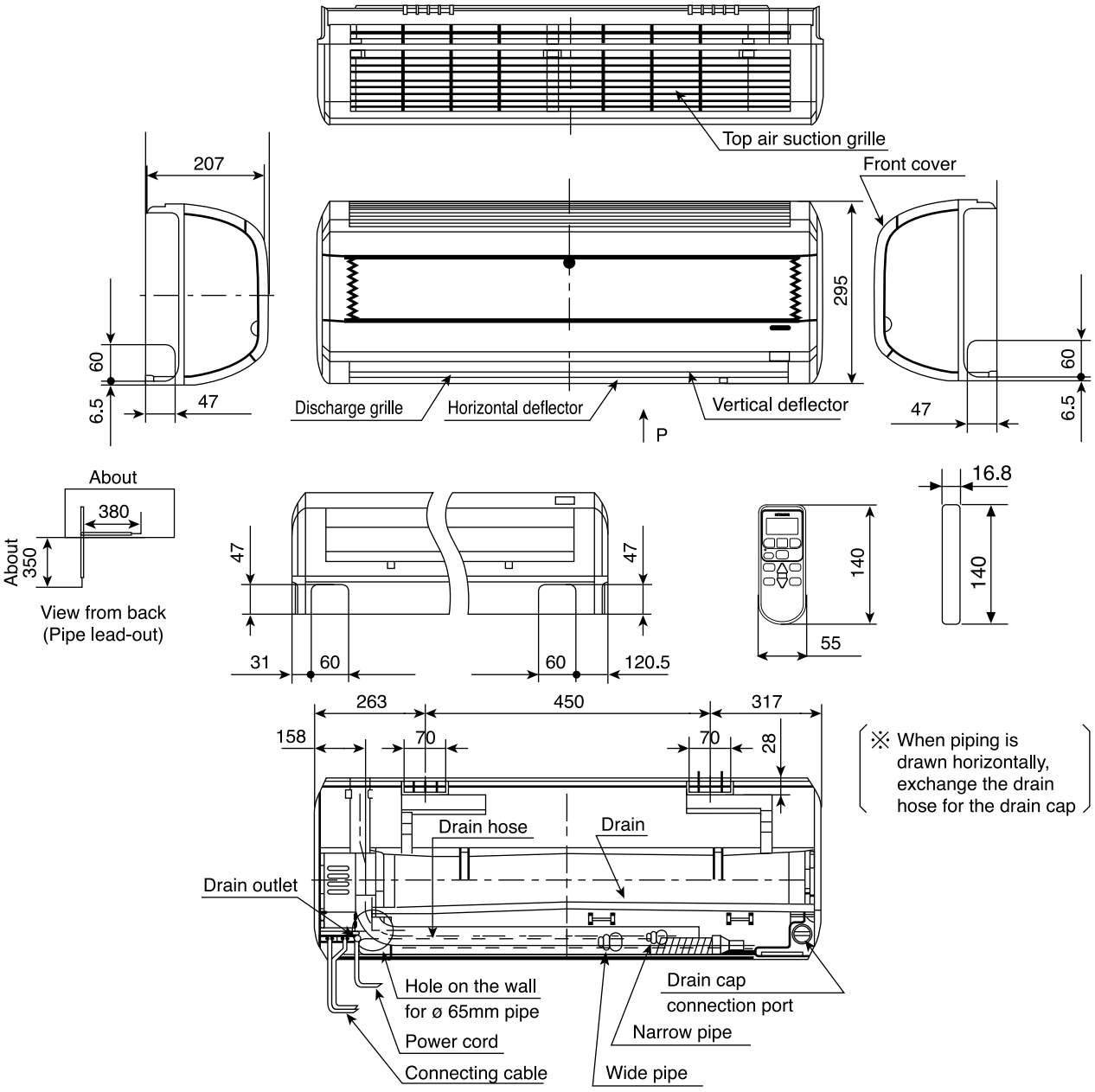
Please note:
On switching on the equipment, particularly when the room light is dimmed, a slight brightness fluctuation may occur. This is of no consequence.
The conditions of the local Power Supply Companies are to be observed.

NOTE:

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid a hazard.

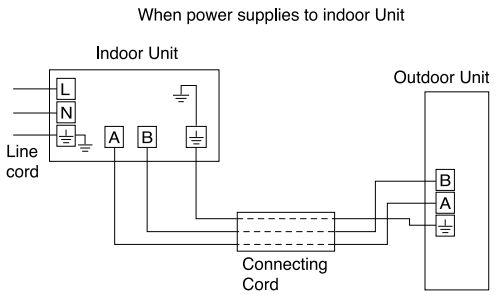
CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAS-18G5

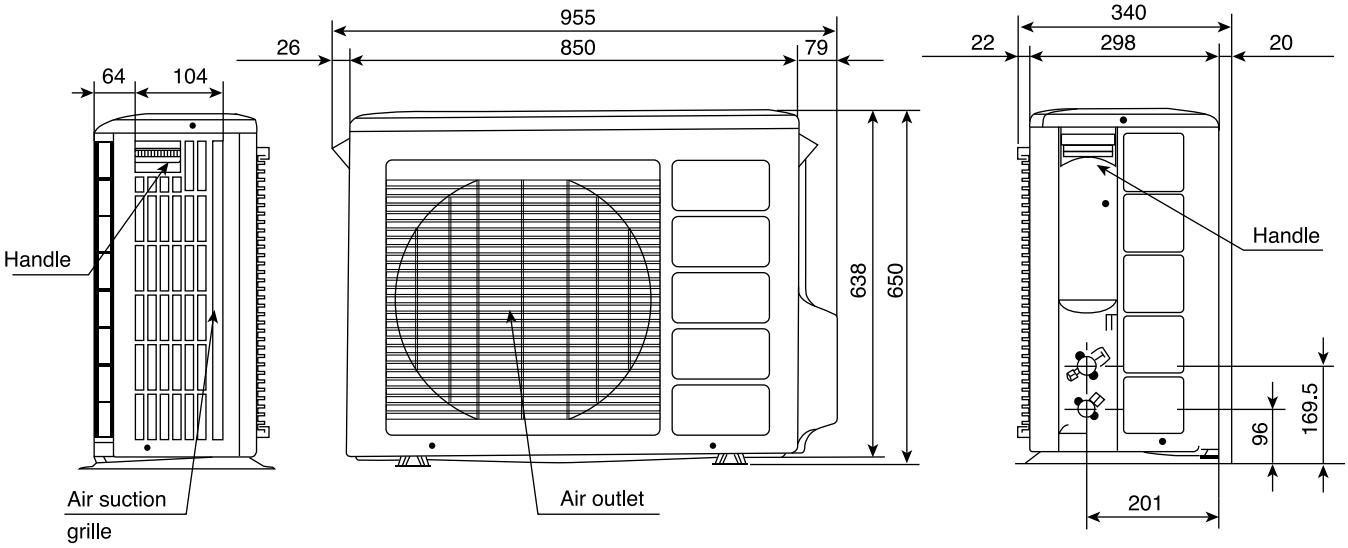


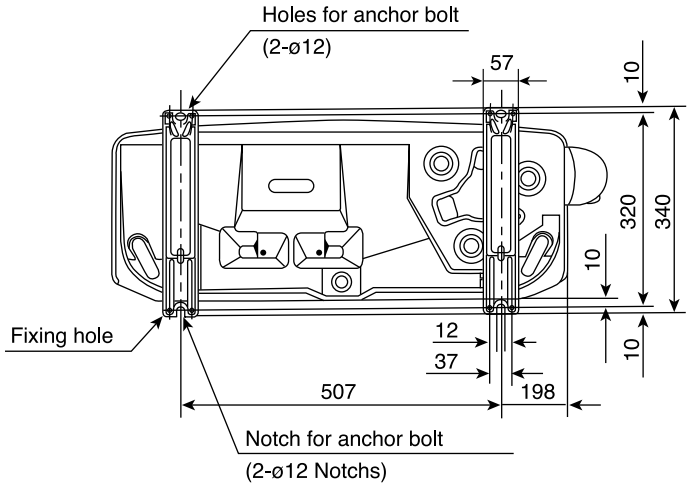
Note:

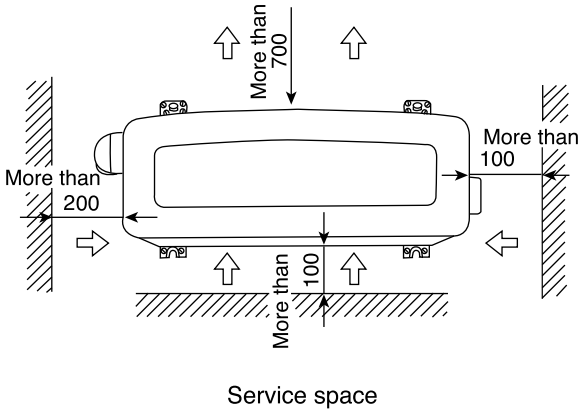
1. Servicing space of 100mm or more is required on the left and right sides of the indoor unit and also 50mm or more space is required above the unit
2. Insulated pipes should be used for both the narrow and wide dia. pipes.
3. Piping length is within 15m
4. Height different of the piping between the indoor unit and the outdoor unit should be within 10m.
5. Power supply cord length is about 2m
6. Connecting cord 2.5mm^2 dia. x 3 is used for connection.



MODEL RAC-18G5







Service space

MAIN PARTS COMPONENT

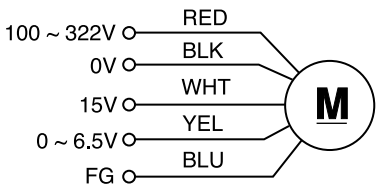
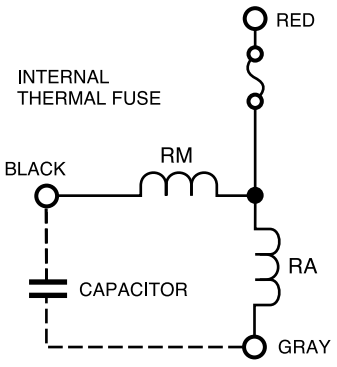
THERMOSTAT

Thermostat Specifications

MODEL			RAS-18G5
THERMOSTAT MODEL			IC
OPERATION MODE			COOL
TEMPERATURE °C (°F)	INDICATION 16	ON	15.6 (60.1)
		OFF	15.3 (59.5)
	INDICATION 24	ON	23.6 (74.5)
		OFF	23.3 (73.9)
	INDICATION 32	ON	31.6 (88.9)
		OFF	31.3 (88.3)

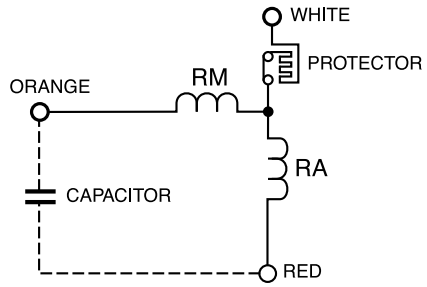
FAN MOTOR

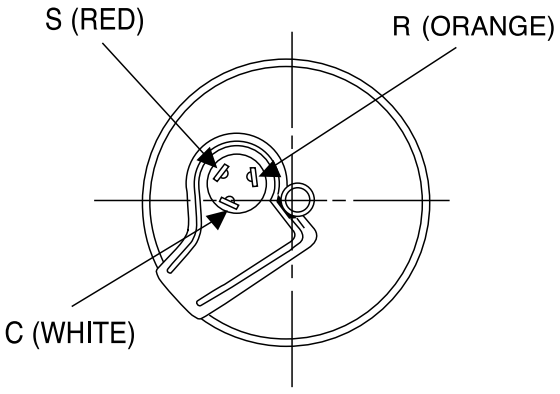
Fan Motor Specifications

MODEL		RAS-18G5	RAC-18G5
PHASE		– – – – –	SINGLE
RATED VOLTAGE		DC100~ 322V	220-240V
RATED FREQUENCY		– – – – –	50 Hz
OUTPUT		30 W	40 W
POLE NUMBER		– – – – –	6
CONNECTION			
RESISTANCE VALUE (Ω)	20°C	– – – – –	RM = 186.0 RA = 247.0
	75°C	– – – – –	RM = 226.2 RA = 300.4

COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL		RAC-18G5
COMPRESSOR MODEL		ASH210SV-C8LU
PHASE		SINGLE
RATED VOLTAGE		220 ~ 230 V
RATED FREQUENCY		50 Hz
LOCKED ROTOR CURRENT		40 A
POLE NUMBER		2
CONNECTION		
RESISTANCE VALUE (Ω)	20°C (68°F)	RM = 1.69 RA = 1.54
	75°C (167°F)	RM = 2.06 RA = 1.87
EXTERNAL OVERLOAD RELAY		NO
INTERNAL PROTECTOR		YES



⚠ 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

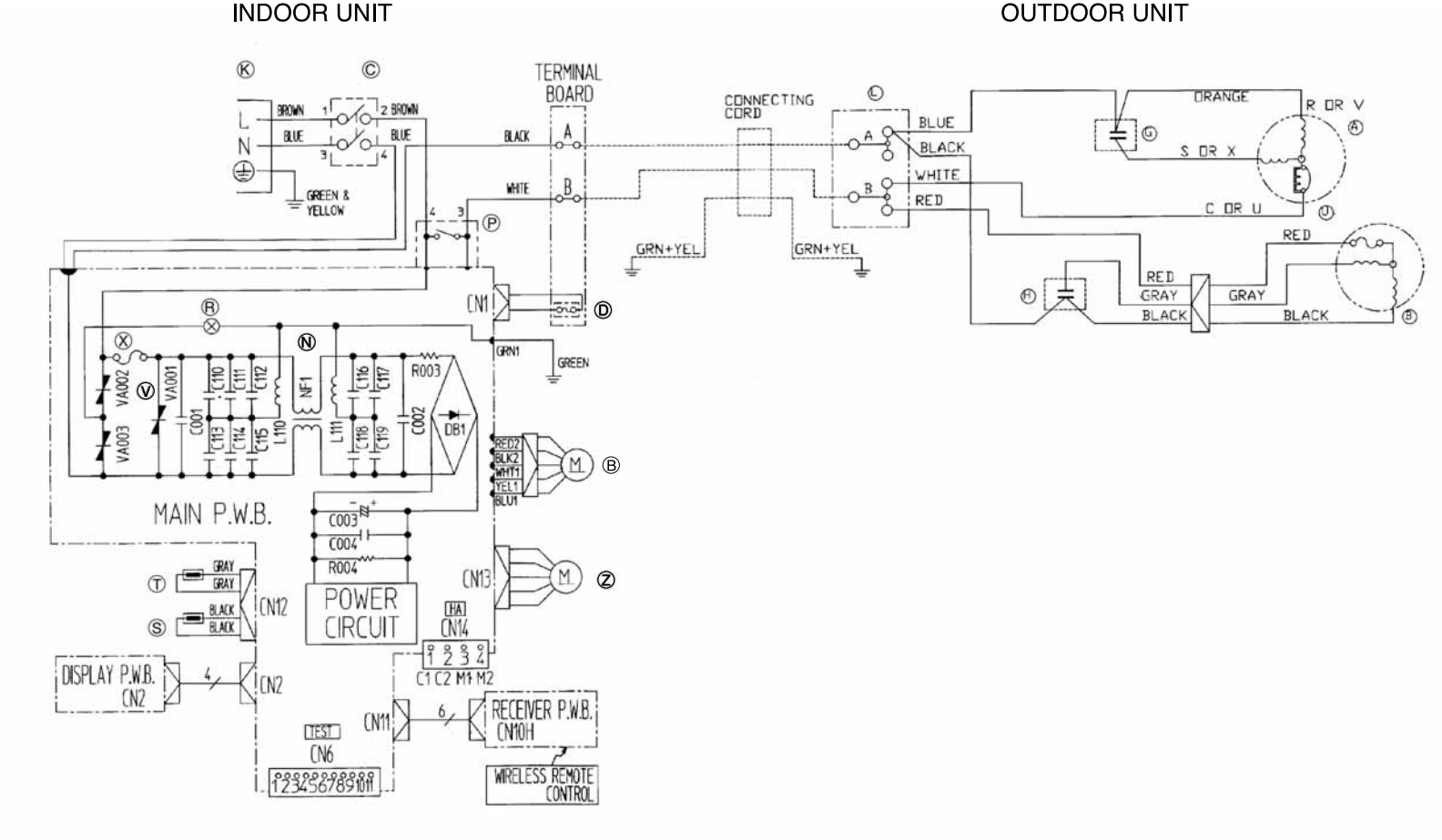
MODEL RAS-18G5/RAC-18G5

Ⓐ : COMPRESSOR
Ⓑ : FAN MOTOR
Ⓒ : POWER SWITCH
Ⓓ : THERMAL FUSE FOR 2P TERMINAL (102°C)
Ⓖ : 60 μF CAPACITOR
Ⓗ : 2.5 μF CAPACITOR
Ⓛ : TERMINAL BOARD
Ⓚ : LINE CORD
Ⓝ : NOISE FILTER
Ⓟ : POWER RELAY
Ⓡ : SURGE ABSORBER
Ⓢ : ROOM THERMISTOR
Ⓣ : HEX THERMISTOR
Ⓤ : INTERNAL PROTECTOR
Ⓥ : VARISTOR
Ⓧ : FUSE
Ⓩ : AUTO SWEEP MOTOR

BLU : BLUE
GRY : GRAY
BLK : BLACK
YEL : YELLOW
ORN : ORANGE
PNK : PINK
BRN : BROWN
GRN : GREEN
VIO : VIOLET
WHT : WHITE
RED : RED
IVO : IVORY

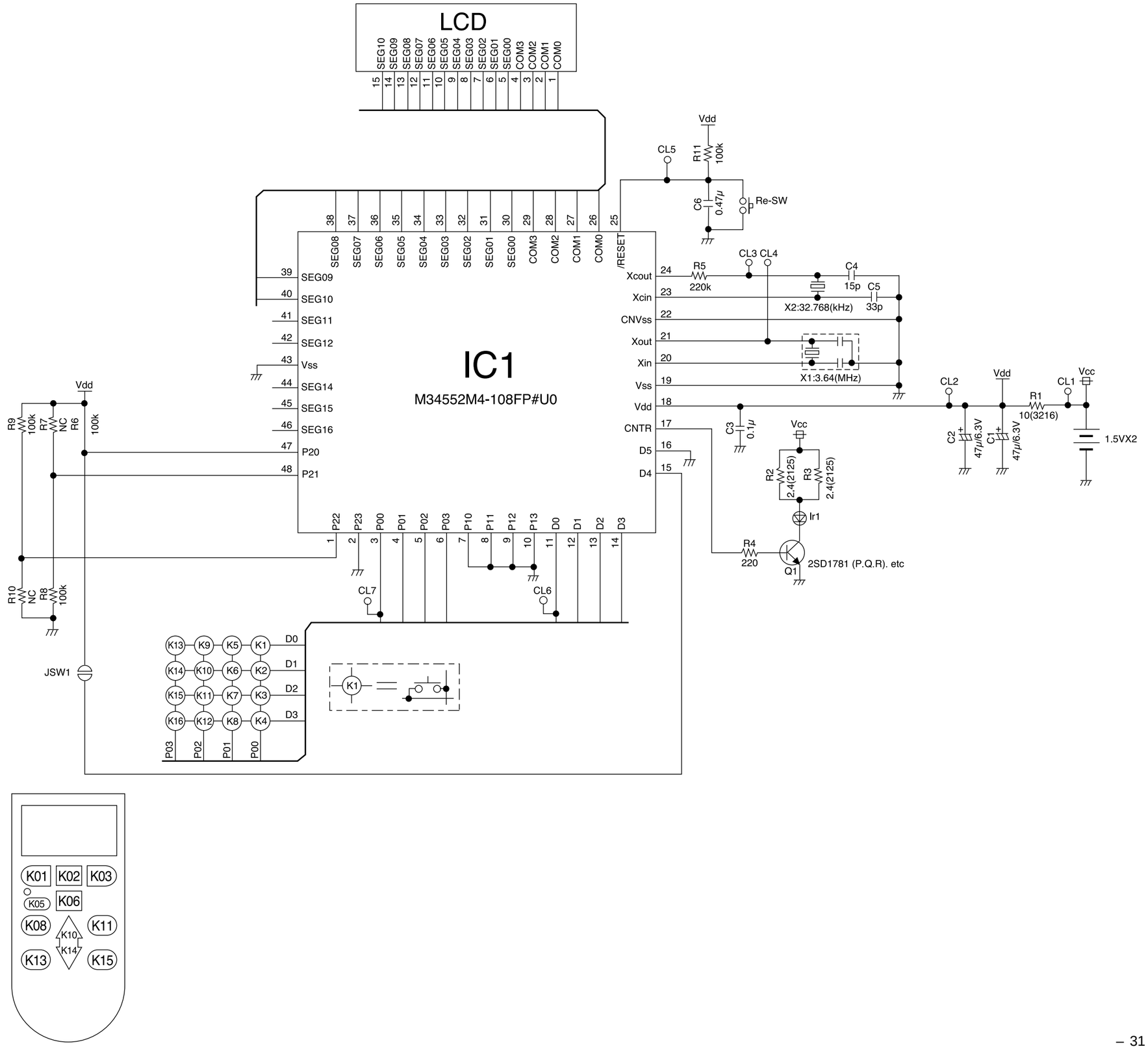
INDOOR UNIT

OUTDOOR UNIT



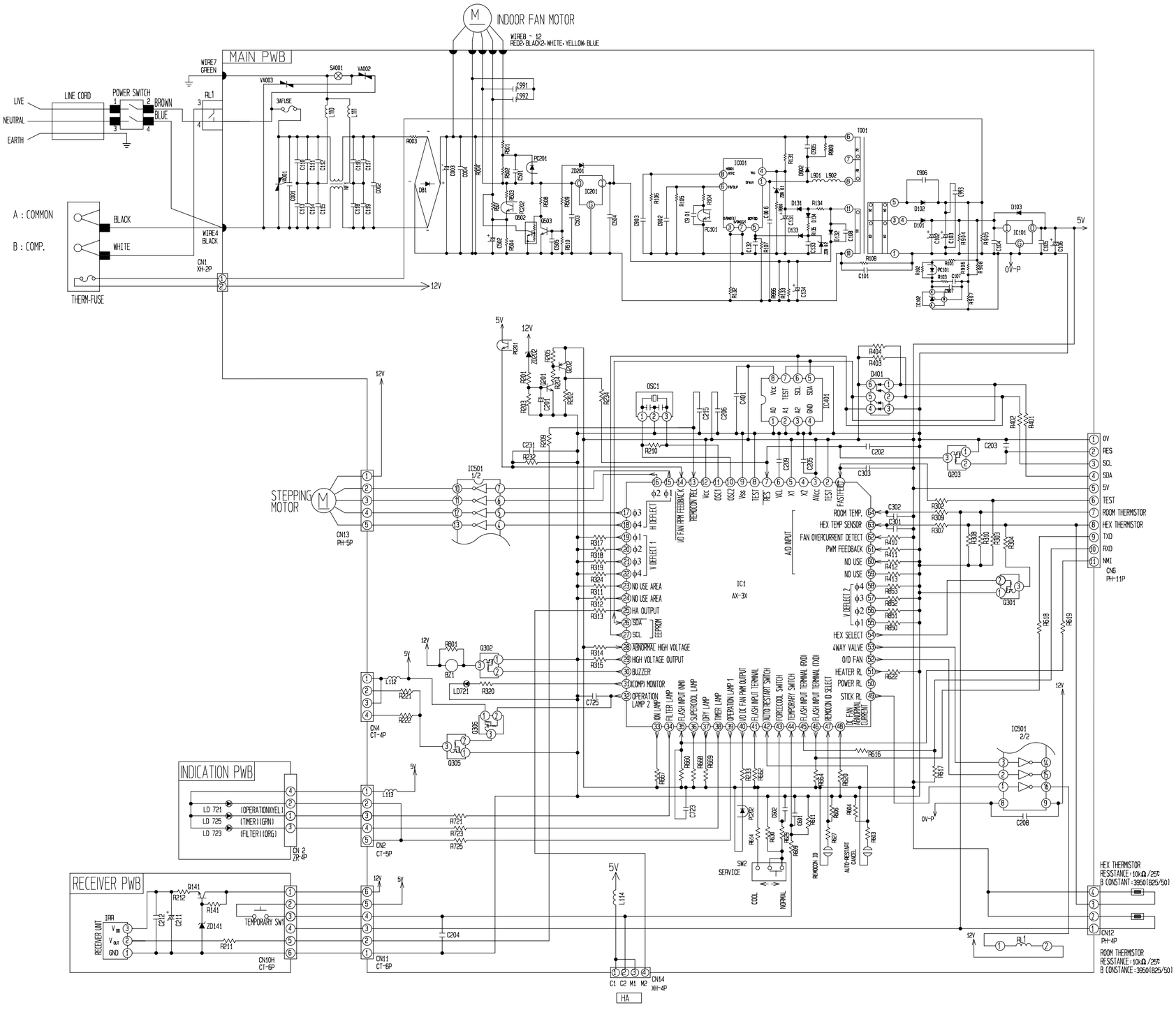
CIRCUIT DIAGRAM

Remote Control



PRINTED WIRING BOARD LOCATION DIAGRAM

MODEL RAS-18G5



NOTES:

1.TYPE OF CAPACITOR
- FILM
- CERAMIC
- DELECTROLYTIC

2.FORM
- H=HAND INSERT
- C=CHIP
- A=AXIAL
- R=RADIAL
- P=RADIAL(7.5 mm)

Main

RESISTOR

SYMBOL	Ω	±%J	PWJ	FORM	MOUNT SIDE	
R003	2.2	5%	5	H		
R004	1M	5%	1/4	A		RCR
R101	620	5%	1/10	C	B	
R102	1K	5%	1/10	C	B	
R103	15K	5%	1/10	C	B	
R104	2.2K	5%	1/10	C	B	
R105	33K	5%	1/10	C	B	
R106	150K	1%	1/10	C	A	
R107	330	5%	1/4	C	B	
R108				A		
R131	1.2M	5%	1	H		RCR
R132	0.82	5%	2	P		SRX
R133	1M	5%	1/2	C	B	
R134	22	5%	1/2	A		
R135	750	5%	1/2	C	A	
R201	5.1K	5%	1/16	C	A	
R202	5.1K	5%	1/16	C	A	
R203	2K	5%	1/16	C	A	
R204	5.1K	5%	1/16	C	A	
R205	2.7K	5%	1/16	C	A	
R209	1K	5%	1/16	C	A	
R210	1M	5%	1/16	C	B	
R221	110	5%	1/4	C	B	
R222	110	5%	1/4	C	B	
R232	1K	5%	1/10	C	B	
R233	300	5%	1/8	C	A	
R234	5.1K	5%	1/16	C	A	
R302	1K	5%	1/16	C	A	
R303	10K	5%	1/16	C	A	
R304	2.4K	1%	1/16	C	A	
R307	1K	5%	1/16	C	A	
R308	18K	1%	1/16	C	A	
R309	1K	5%	1/16	C	A	
R310	12.7K	1%	1/16	C	A	
R311	10K	5%	1/16	C	A	
R312	10K	5%	1/16	C	A	
R313	10K	5%	1/16	C	B	
R314	10K	5%	1/16	C	A	
R315	10K	5%	1/16	C	A	
R317	10K	5%	1/16	C	A	
R318	10K	5%	1/16	C	A	
R319	10K	5%	1/16	C	A	
R320	2K	5%	1/16	C	B	
R324	10K	5%	1/16	C	A	
R401	390	5%	1/16	C	A	
R402	390	5%	1/16	C	A	
R403	5.1K	5%	1/16	C	A	
R404	5.1K	5%	1/16	C	A	
R410	10K	5%	1/16	C	A	
R411	10K	5%	1/16	C	A	
R412	10K	5%	1/16	C	A	
R413	10K	5%	1/16	C	A	
R501	4.3K	5%	1/4	C	B	
R502	4.3K	5%	1/10	C	B	
R503	4.7K	5%	1/8	C	B	
R504	3.3K	5%	1/10	C	B	
R507	7.5K	5%	1/2	C	B	
R508	10K	5%	1/10	C	B	
R509	15K	5%	1/10	C	A	
R510	15K	5%	1/10	C	B	
R603	1K	5%	1/16	C	A	
R604	20K	5%	1/16	C	A	
R606	20K	5%	1/16	C	A	
R609	1K	5%	1/16	C	A	
R611	10K	5%	1/16	C	A	
R614	5.1K	5%	1/16	C	B	
R616	1K	5%	1/10	C	A	
R617	10K	5%	1/10	C	A	
R618	1K	5%	1/10	C	A	
R619	10K	5%	1/10	C	A	
R620	10K	5%	1/16	C	A	
R622	10K	5%	1/16	C	A	
R627	1K	5%	1/16	C	A	
R629	1K	5%	1/16	C	B	
R630	10K	5%	1/16	C	B	
R660	1K	5%	1/16	C	A	
R662	10K	5%	1/16	C	B	
R664	10K	5%	1/16	C	A	
R667	10K	5%	1/16	C	A	
R668	10K	5%	1/16	C	A	
R669	10K	5%	1/16	C	B	
R721	240	5%	1/10	C	A	
R723	180	5%	1/10	C	A	
R725	240	5%	1/10	C	A	
RB01	3.3K	5%	1/10	C	B	
R850	10K	5%	1/16	C	A	
R851	10K	5%	1/16	C	A	
R852	10K	5%	1/16	C	A	
R853	10K	5%	1/16	C	A	
R904	1M	5%	1/2	C	B	
R905	1M	5%	1/2	C	B	
R906	12K	1%	1/10	C	B	
R907	2K	1%	1/10	C	B	
R908	12K	1%	1/10	C	B	
R909	220K	5%	2	P		
R910				C	B	
R996				C	B	

CAPACITOR

SYMBOL	μF	V	TYPE	FORM	MOUNT SIDE	
C001	0.68	M250	F	H		
C002	0.01	M250	C	P		
C003	100	450	D	H		KMH
C004	0.01	1000	C	H		
C006	2200	2000	C	P		
C101	2200p	M250	C	P		
C102	470	25	D	R		LXZ
C103	1800	25	D	H		LXZ
C104	0.1	25	C	C	B	
C105	0.1	25	C	C	B	
C106	220	10	D	R		YXA
C107	0.1	16	C	C	B	
C108						
C110	0.01	M250	C	P		
C111	0.01	M250	C	P		
C112	0.01	M250	C	P		
C113	0.01	M250	C	P		
C114	0.01	M250	C	P		
C115	0.01	M250	C	P		
C116	0.01	M250	C	P		
C117	0.01	M250	C	P		
C118	0.01	M250	C	P		
C119	0.01	M250	C	P		
C131	10	50	D	R		RF
C132	470p	50	C	C	B	
C133	22p	50	C	C	A	
C134	68	50	D	R		LXZ
C201	100	6.3	D	R		
C202	0.1	25	C	C	B	
C203	0.1	25	C	C	A	
C204	0.1	25	C	C	A	
C205	0.1	25	C	C	B	
C206	0.1	25	C	C	B	
C208	0.1	25	C	C	A	
C209	0.1	25	C	C	B	
C215	1000p	50	C	C	B	BA
C231	1000p	50	C	C	B	
C301	0.1	25	C	C	B	
C302	0.1	25	C	C	B	
C303	0.1	25	C	C	B	
C401	0.1	25	C	C	A	
C501	1000p	50	C	C	B	
C502	10	16	D	R		KL
C503	0.1	25	C	C	B	
C504	0.1	50	C	C	B	
C505	1000p	50	C	C	B	
C601	0.1	25	C	C	B	
C602	0.1	25	C	C	B	
C723	0.1	25	C	C	B	
C725	0.1	25	C	C	A	
C901					B	
C902	0.47	10	C	C	B	
C903	0.01	50	C	C	A	
C905	0.01	M250	C	P		
C906	2200p	1000	C	P		
C907					B	
C991	0.1	50	C			
C993	0.1	50	C			
C994				H	H	

TRANSISTOR

SYMBOL	MODEL	FORM	MOUNT SIDE	
Q502	KRC402E	C	A	
Q503	2SC2412K-R	C	B	
Q201	2SC2482LC	C	A	
Q202	2SA1121SC	C	A	
Q203	DTC114EKA	C	A	
Q301	DTC114EKA	C	A	
Q302	DTC114EKA	C	A	
Q305	DTC114EUA	C	A	
Q306	DTA114WK	C	A	

PHOTOCOUPLER

SYMBOL	MODEL	FORM	MOUNT SIDE	
PC101	TLP421BL	C	A	
PC201	TLP421BL	C	A	
PC202	TLP421BL	C	A	

RELAY

SYMBOL	MODEL	FORM	MOUNT SIDE	
RL1	G4A-1A-E	H		

BUZZER

SYMBOL	MODEL	FORM	MOUNT SIDE	
BZ1	PKM13EPY	H		

FUSE

SYMBOL	MODEL	FORM	MOUNT SIDE	
3AFUSE	250V,3.15A	H		
t_2=1mF~1	TP00351-31	R		
t_2=1mF~2	TP00351-31	R		

SWITCH

SYMBOL	MODEL	FORM	MOUNT SIDE	
SW2	SSSU011700	H		

ZENER DIODE

SYMBOL	MODEL	FORM	MOUNT SIDE	
ZD202	RLZ7.5B	C	A	
ZD201	RD15UUN3	C	A	
ZD901		C	A	
ZD902	UDZ3.6B	C	A	

SURGE ABSORBER

SYMBOL	MODEL	FORM	MOUNT SIDE	
VA001	471NS-12D	P		
VA002	471NS-12D	P		
VA003	471NS-12D	P		
SA001	RA-102M-C6	R		

OSCILLATOR

SYMBOL	MODEL	FORM	MOUNT SIDE	
OSC1	CSTLS10MHZ	R		

LED

SYMBOL	MODEL	FORM	MOUNT SIDE	
LD721	SEL-2110R	R		

DIODE

SYMBOL	MODEL	FORM	MOUNT SIDE	
D101	RK16	A		
D102	FMB-G16L	H		
D103	1SS355	C	A	
D131	U1GU44	C	B	
D132	U1GU44	C	B	
D133	1SS355	C	A	
D134	U1GU44	C	B	
D401	HN1D03FU	C	A	
D902	EG01C	H		
DB1	D3SBA60	H		

CONNECTOR

SYMBOL	MODEL	FORM	MOUNT SIDE	
CN1	B2B-PH-K-S	H		
CN2	CT-5P-V	H		
CN4	CT-4P-V	H		
CN6	B11B-PH-K-S	H		
CN11	CT-6P-V	H		
CN12	B4B-PH-K-S	H		
CN13	B5B-PH-K-S	H		
CN14	B4B-XH-K-S	H		

INDUCTOR

SYMBOL	MODEL	FORM	MOUNT SIDE	
L110	JUMPER	A		
L111	JUMPER	A		
L112	EXCELSA35	A		
L113	EXCELSA35	A		
L114	EXCELSA35	A		
L901	MF70TL3.5X6R	A		
L902	MF70TL3.5X6R	A		
NF1	HF203V-502YR-09	H		
TO01	200V-TRANS	H		

IC

SYMBOL	MODEL	FORM	MOUNT SIDE	
IC1	HD64336B3207HV (AX-3X)C	H	A	
IC001	STR-W852	H		
IC101	KIA7805API	H		
IC102	K1A431A	R		
IC201	KIA7815API	H		
IC401	BR24L02F-W	C	A	
IC501	KIC65003AF	C	A	

IR

RESISTOR

SYMBOL	Ω	±%J	PWJ	FORM
R141	1K	5%	1/6	A
R211	1K	5%	1/6	A
R212	47	5%	1/6	A

CAPACITOR

SYMBOL	μF	V	TYPE	FORM
C211	47	16	D	R
C212				

IC

SYMBOL	MODEL	FORM
IRR	RPM6938-V4	H

TRANSISTOR

SYMBOL	MODEL	FORM
Q141	KTC3199-Y	R

SWITCH

SYMBOL	MODEL	FORM
SW1	EVQPAC05R	H

ZENER DIODE

SYMBOL	MODEL	FORM
ZD141	HZS6B1LTA	A

CONNECTER

SYMBOL	MODEL	FORM
CN10H	CT-6P-V	H

DISPLAY

LED

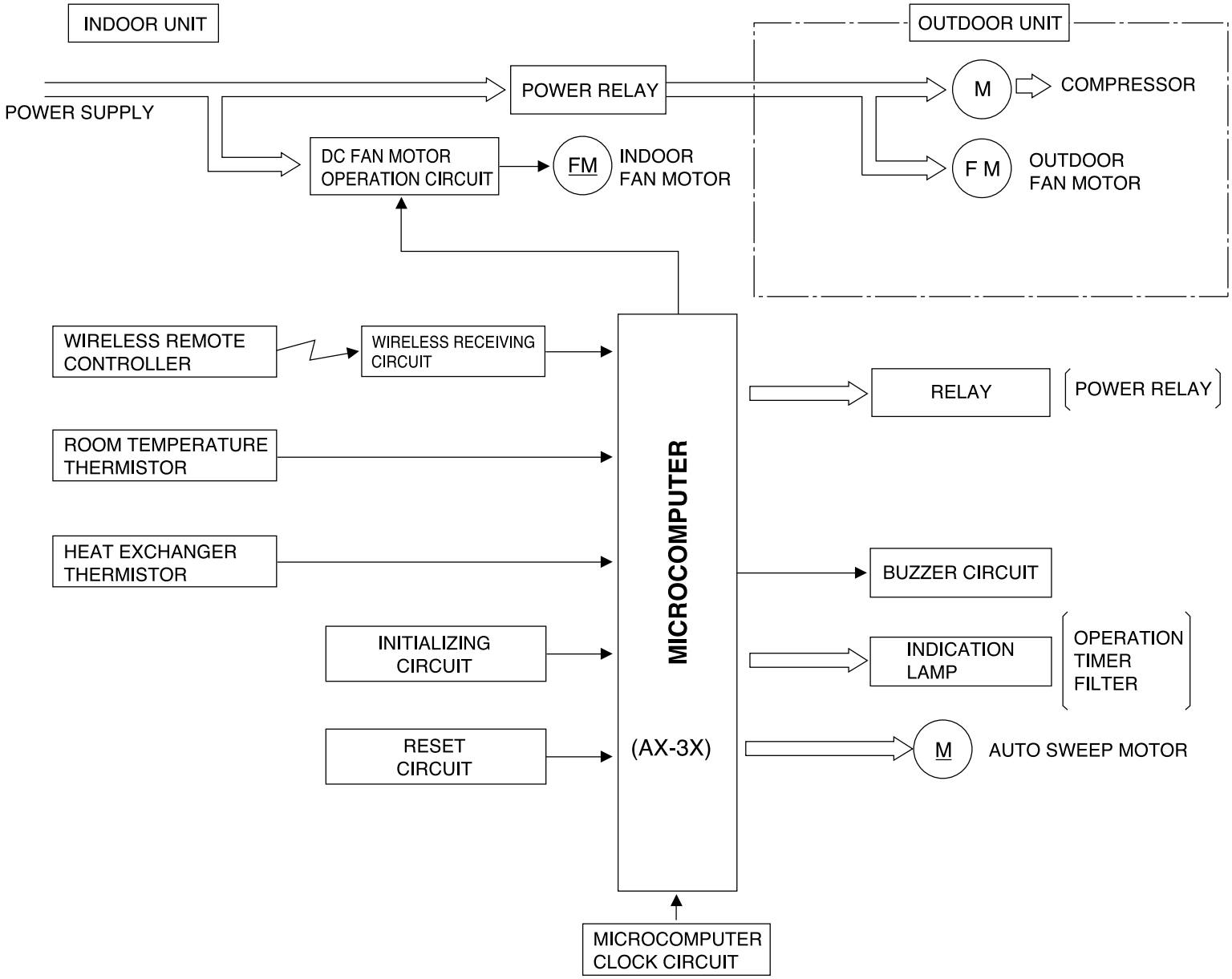
SYMBOL	MODEL	FORM
LD721	EFY36A1	H
LD723	HLMF-K505	H
LD725	HLMF-K405	H
		H

CONNECTOR

SYMBOL	MODEL	FORM
CN2	ZH-4P	H

BLOCK DIAGRAM

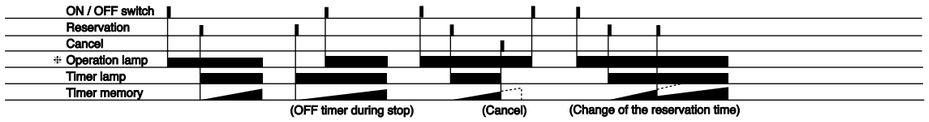
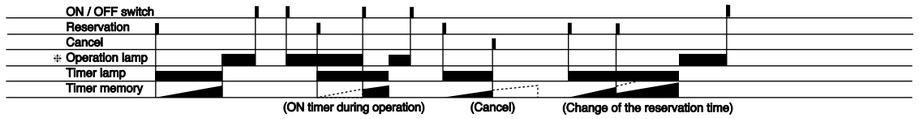
MODEL RAS-18G5/RAC-18G5

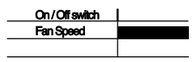
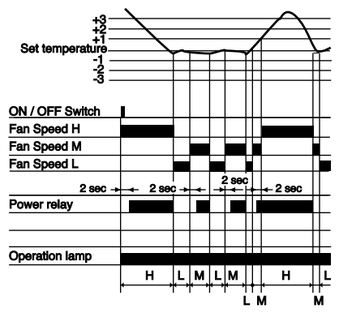


BASIC MODE

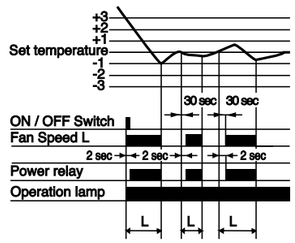
MODEL RAS-18G5/RAC-18G5

<table>
<tr><th>No.</th><th colspan="2">Operation mode / Control function</th><th>Cooling</th><th>Sensor dehumidification</th><th>Circulation</th></tr>
<tr><td>1</td><td colspan="2">ON / OFF switch, basic mode</td><td colspan="3"> 

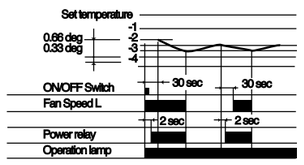
Operation and stop are repeated independent of timer reservations</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Timer operation</td><td>OFF timer</td><td colspan="2"> 
</td><td rowspan="2">❊ Both operation lamp during Sensor dehumidification at operation mode.</td></tr>
<tr><td>ON timer</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="4">3</td><td rowspan="4">Fan speed mode</td><td>Automatic</td><td></td><td>• “HI”, “MED”, or “LO” operation is executed according to the thermostat signal. (Refer to “Thermostat operation”.)</td><td rowspan="4">• “LO” and “Stop” are repeated according to the thermostat signal, independent of the setting.</td><td></td></tr>
<tr><td>HI</td><td>• Operation in “HI” mode</td><td>• Same as on the left.</td><td>• Repetition of “HI” and “Stop” by means of thermo signal and time.</td></tr>
<tr><td>MED</td><td>• Operation in “MED” mode</td><td>• Same as on the left.</td><td>• Repetition of “MED” “Stop” by means of thermo signal and time.</td></tr>
<tr><td>LO</td><td>• Operation in “LO” mode</td><td>• Same as on the left.</td><td>• Repetition of “LO” “Stop” by means of thermo signal and time.</td></tr>
<tr><td>4</td><td colspan="2">Thermostat operation
H → HI
M → MED
L → LO
• The power relay is delayed by 2 seconds from the start of thermostat.</td><td>• Only circulation with cut velocity is executed, independent of the thermostat signal.

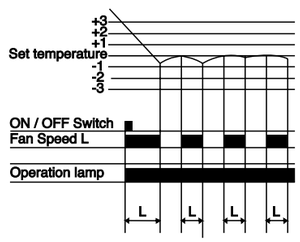
(1) Strong
 
</td><td>(1) In case of “Automatic” mode
 

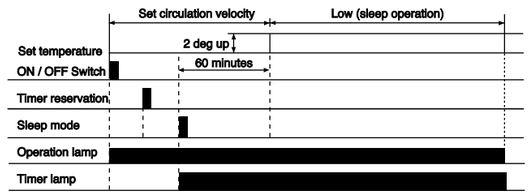
Note:
• The min. ON time of the power relay is 3 minutes, and the min. OFF time also is 3 minutes.

(2) In other modes than “Automatic”
Same as above (but operation is made with the velocity set at the time of operation start).</td><td>(1) When the set temperature is lower than the room temperature.
 

Notes:
• 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 ON / OFF button.

(2) Set temperature is higher than room temperature.
 

Notes:
• Forced operation by ON / OFF button ON is executed even with thermostat OFF.
• The room temperature 30 sec after operation start, minus 0.66 deg, becomes the set 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).</td><td> 
</td></tr>
</table>

No.	Operation mode / Control function	Cooling	Sensor dehumidification	Circulation
5	Sleep mode • 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. • The sleep operation is started when the sleep key is “ON” after timer reservation.		• The operation is switched OFF at the set time.

6 “NICE TEMPERATURE” reservation

- 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.

(1) Calculation method of the moved-up time.
Moved-up time (MT) = Moved-up time depending on the temperature difference (OT) + compensation time (HT).
MT is at least 5 minute if OT is not zero.

	Cooling
(MT)	00 ~ 60 min.
(OT)	00 ~ 60 min.
(HT)	–60 ~ 60 min.

Obtain OT (moved-up time depending on the temperature difference) from the table below.

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

❊ The preset temperature value shown above does not include any shift value.

(2) Compensation

① The “Attained” state is monitored and a “Not attained” check is done to revise the compensation time (HT).

“Attained” monitor

Continuously monitored during “NICE TEMPERATURE” operation.

(Cooling)

When the room temperature < Set value + compensation shift, it is regarded to be “attained” and 5 minutes are reduced from the cooling compensation time.

“Not attained” check

Performed once when the “NICE TEMPERATURE” timer is completed.

(Cooling)

When the room temperature > Set value + compensation shift +1°C, it is regarded to be “Not attained” and 5 minutes are added to the cooling compensation time.

❊ If the room temperature is within +1°C from the set value + compensation shift, compensation is not done.

8 Air blowing direction control

- 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 after the filter sign lamp is lit.

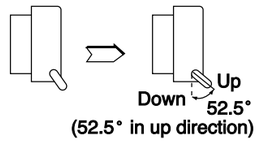
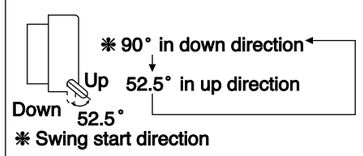
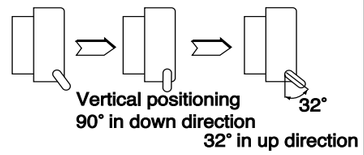
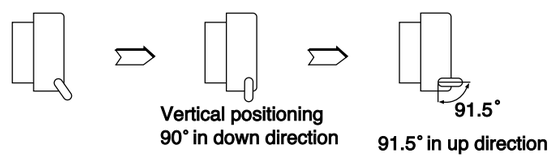
Item	Specification	
	3-way	AUTO (Swing)
Cooling/ dehumidifying		
Circulator		The same as cooling • dehumidifying
(When the operation switch is turned off after the filter sign lamp lights.)		

Table 1 Specifications

Item		RAS-18G5
Operation switching	Automatic	No
	Circulator	Yes
	Sensor dehumidification	Yes
	Cooling	Yes
	Fan	No
Temporary switch		Yes (automatic)
Service switch	Cooling	Yes
Nice temperature reservation		Yes
Defrosting		Yes
Sleep circuit		Yes
Heater operation at the time of sensor dehumidification		No
Automatic blowing direction		Yes
Filter sign		Yes
Wireless mode		Cooling

Table 2 Sensor operation values

Item				RAS-18G5
Thermostat operation	ON temperature (Thermostat relay) power relay (°C)	Cooling, sensor dehumidification	16	17.0
			24	25.0
			32	33.0
	Differential (°C)			0.33
Low-temperature defrosting	(T1)	ON (°C)		2.0
		Reset (°C)		9.0

Other detailed specifications

1. When the room temperature starts to increase within 3 minutes after thermo OFF in “cooling” and fan speed “AUTO”, the fan speed changes L → M → H as when thermo ON.

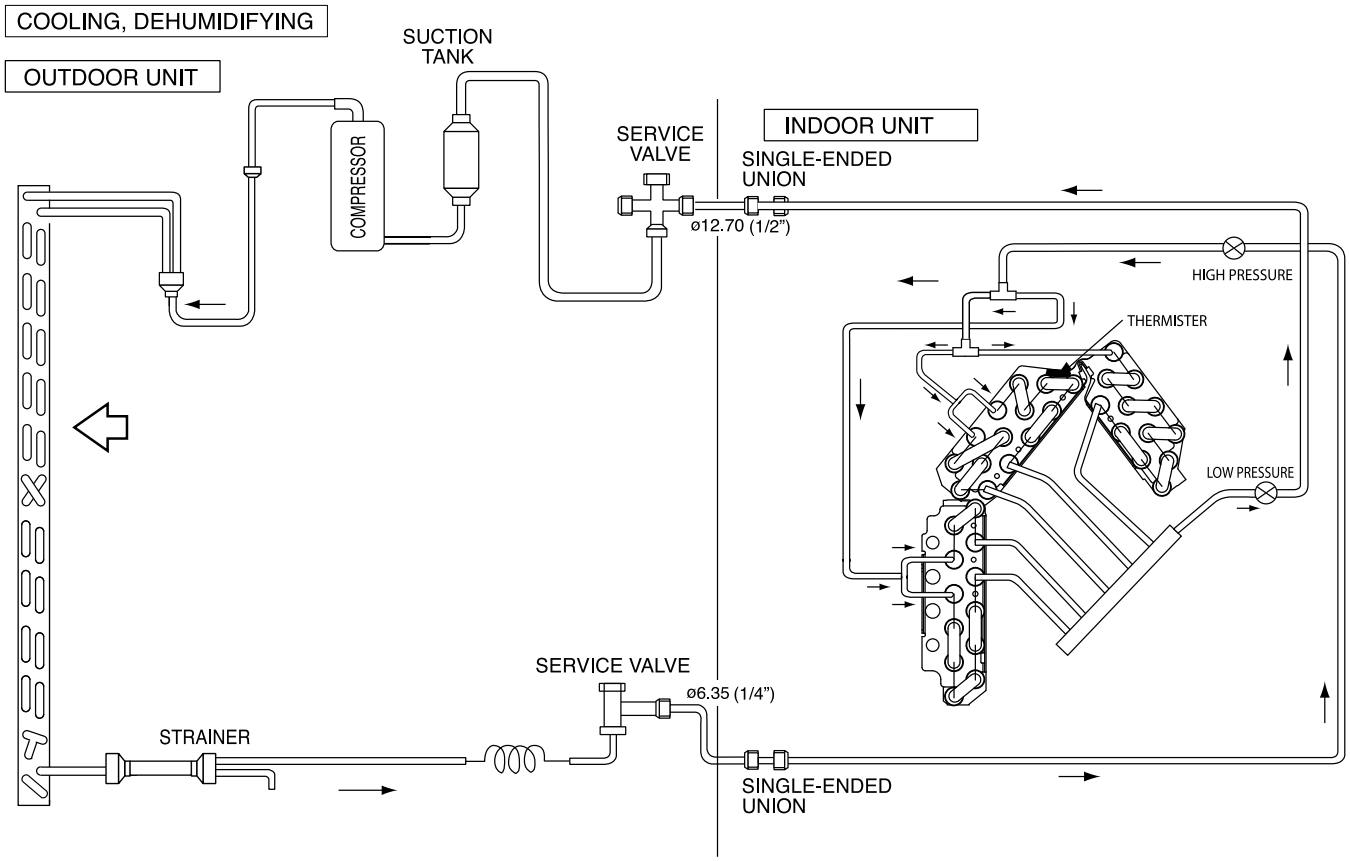
2. If “cooling” is selected during “sensor dehumidification” operation, the operation continues as it is with the thermo ON. The 3 minutes delay is not started. The set temperature and fan speed depend on the remote control signal.
It is same for “cooling” – – – – “sensor dehumidification”. It is same for “AUTO” sensor dehumidification cooling “sensor dehumidification” “cooling”.

3. The filter sign lights after 200 hours operation of the room fan. The time is cleared when the “ (AUTO SWING)” button is pressed while the device is on “STANDBY MODE”.

4. If the operation is made by the nice temperature reservation during the sleep operation, the normal operation continuously occurs, and for the advance time, the temperature difference between the set temperature without sleep shift and “room temperature” is used.

REFRIGERATING CYCLE DIAGRAM

MODEL RAS-18G5/RAC-18G5



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.

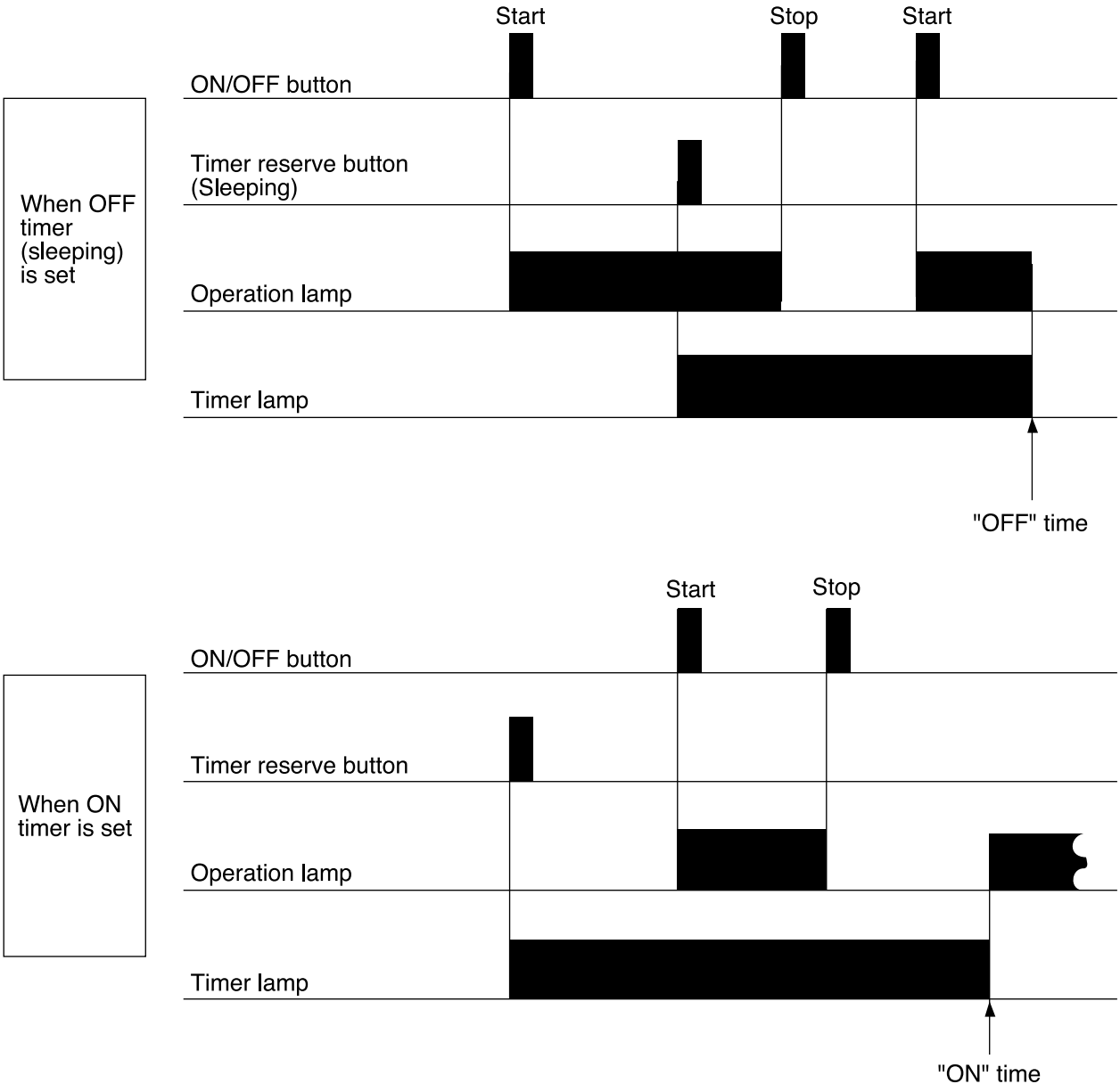
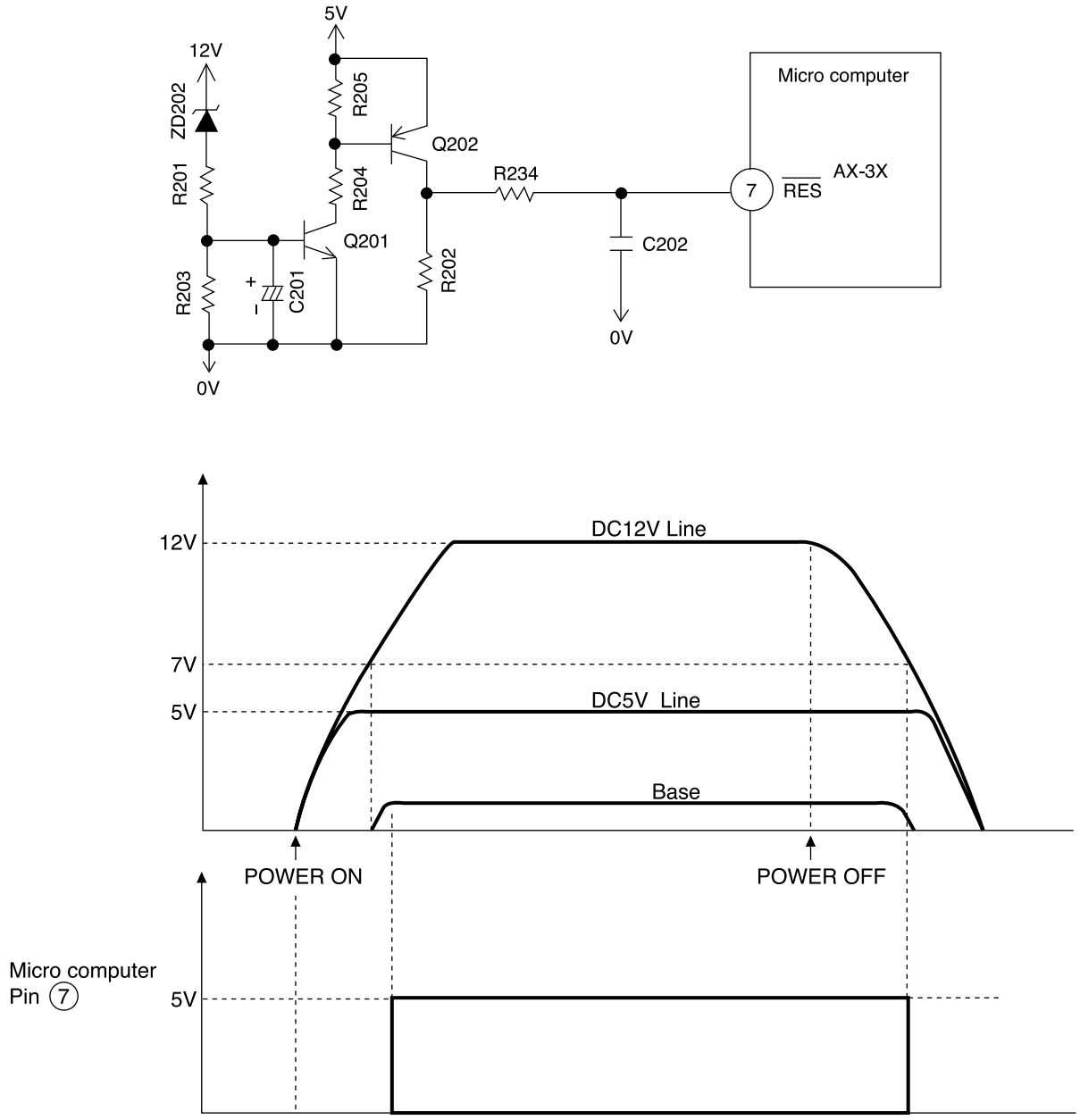


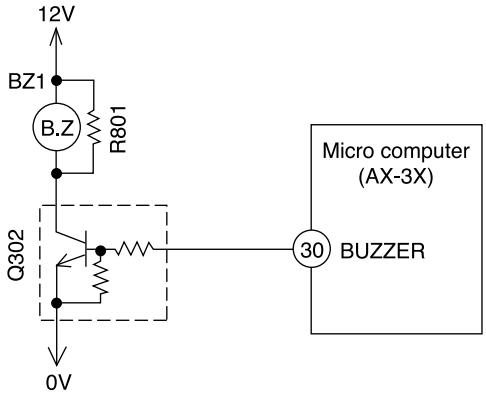
Fig. 1-1 Timer operation

2. Reset Circuit



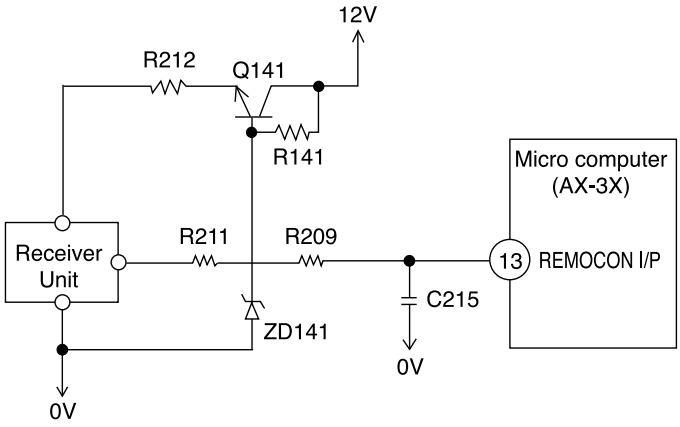
- The reset circuit is used to reset the program to its initial settings when the power is turned on or when the power is recovered after a power failure.
- The micro computer is reset when the reset input is “Lo”, and operation is possible when the reset input is “Hi”.
- The waveforms at each point when the power is turned on and off are shown in the diagrams.
- When the power is turned on, the voltages of the DC 12V line and DC 5V lines are increased. When the voltage of DC 12V lines reaches about 7V, ZD202 is turned ON, the potential of Q201’s base rises and Q202 is turned ON. Since Q202’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 12V line decreases. When it becomes below 7V, ZD202 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



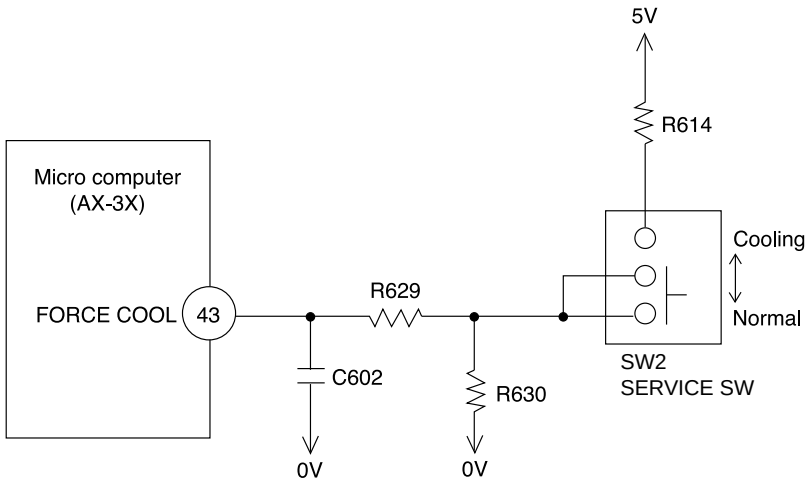
When the buzzer is to be activated, buzzer output pin ㉚ of the micro computer alternates between ON and OFF repeatedly at 4kHz and Q302 is turned ON/OFF accordingly. A 4kHz voltage is applied to the buzzer and the diaphragm of the buzzer vibrates to output 4kHz sound.

4. Receive circuit



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

5. 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 “Hi”.
- 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”.

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.	
		CIRCULATOR	STOP	START SWINGING ① DOWNWARD ② UPWARD ③ DOWNWARD	
			DURING SWINGING	STOP AT THE MOMENT.	
INTERNAL FAN ON (THERMO. ON)	DURING OPERATION	DRY CIRCULATOR	TEMPORARY STOP	START SWING AGAIN.	
INTERNAL FAN OFF (THERMO. OFF)			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	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.	

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.

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 dehumidi-fication 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.

Nice temperature reservation

Q7 In case of “ON” timer, the operation does not start at a preprogrammed time but a little earlier.

A7 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.

Q8 The time to start an operation is irregular while preprogramming at the same time.

A8 The “Nice temperature reservation” operates. The starting time depends on the room load.

Wireless remote controller

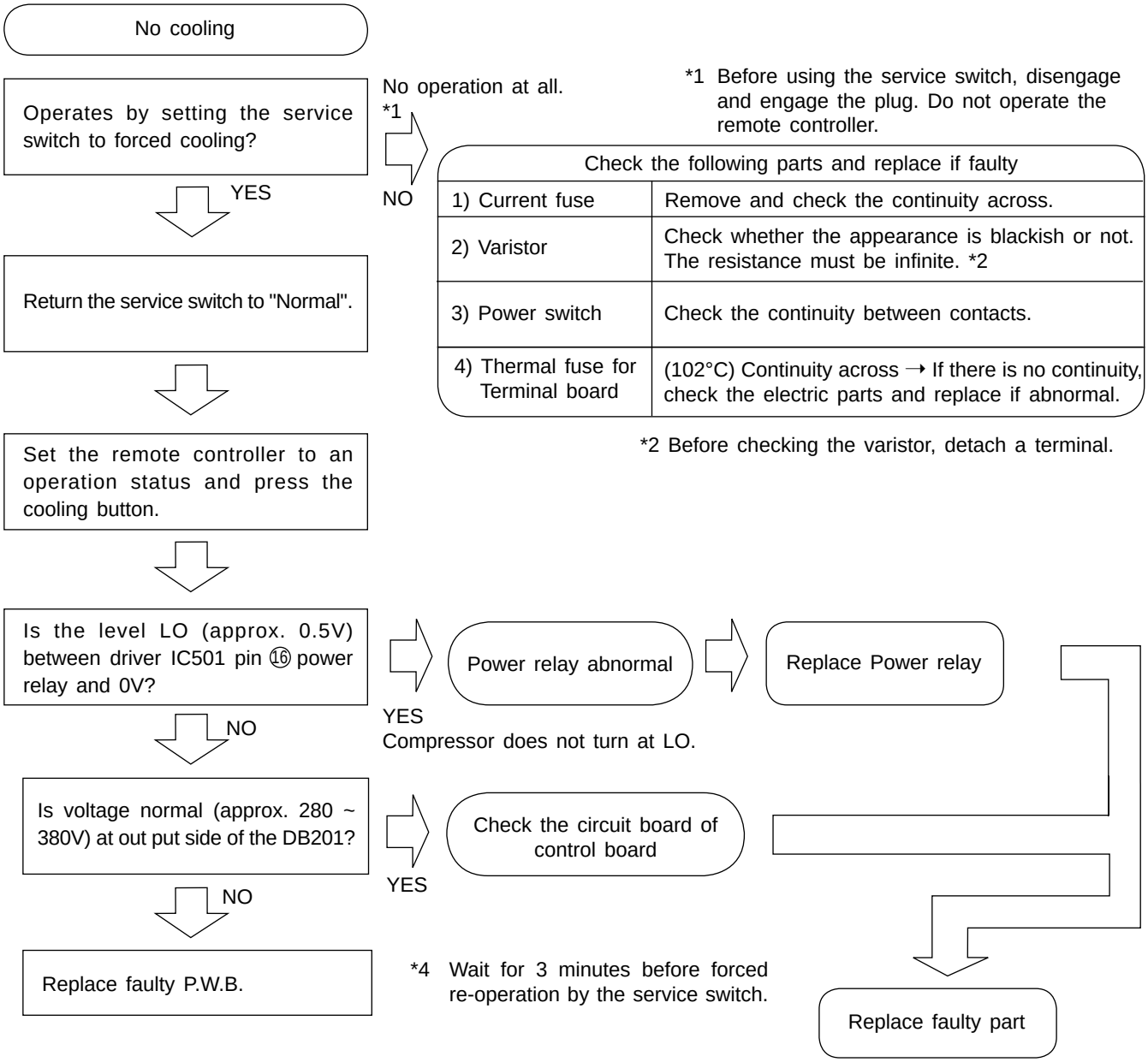
Q9 When the room temperature setting is “16”, pressing the room temperature control button “ V ” causes no transmission. At “32”, pressing “ Λ ” causes no transmission either.

A9 The room temperature is settable within the range of 16 - 32 and not beyond.

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



*1 Before using the service switch, disengage and engage the plug. Do not operate the remote controller.

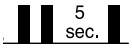
Check the following parts and replace if faulty	
1) Current fuse	Remove and check the continuity across.
2) Varistor	Check whether the appearance is blackish or not. The resistance must be infinite. *2
3) Power switch	Check the continuity between contacts.
4) Thermal fuse for Terminal board	(102°C) Continuity across → If there is no continuity, check the electric parts and replace if abnormal.

*2 Before checking the varistor, detach a terminal.

*4 Wait for 3 minutes before forced re-operation by the service switch.

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	**Force cooling operation** Unit is under forcible operation or under balancing after forcible operation.	Check force cooling switch at indoor electrical.
2	 10 times	**DC Fan motor - over current of electricity** 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	**IC 401 Data read wrongly** In case that data read from IC401 is wrong.	IC401 data is not in order.
4	 14 times	**Heat exchanger thermistor error** Heat exchanger thermistor open or short-circuit detected.	(1) Thermistor (2) Indoor - control circuit board.
5	 15 times	**Room thermistor error** Room thermistor error open or short-circuit detected.	(1) Thermistor (2) Indoor - control circuit board.

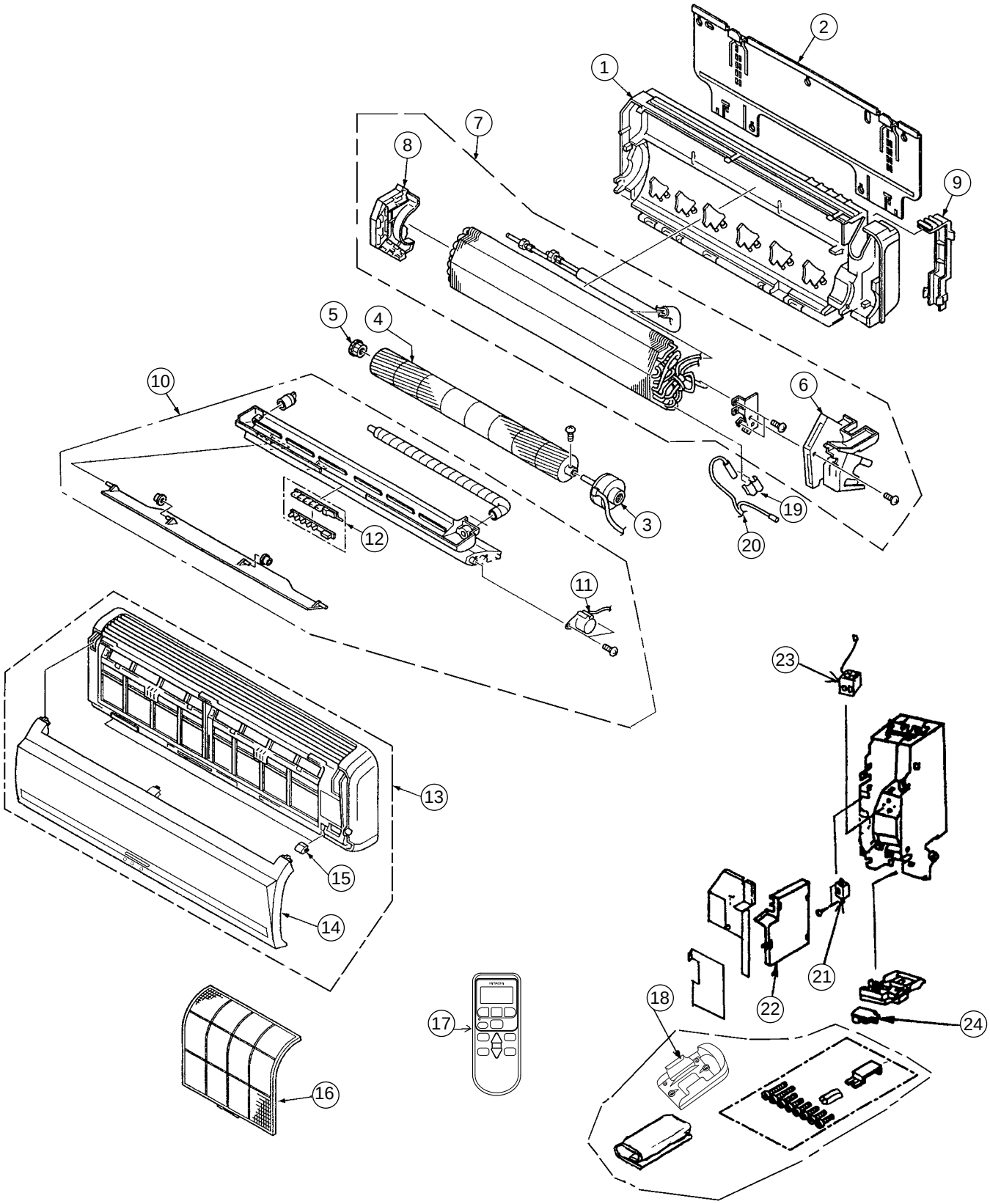
(– 0.5 second on, 0.5 second off.)

⚠ 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-18G5

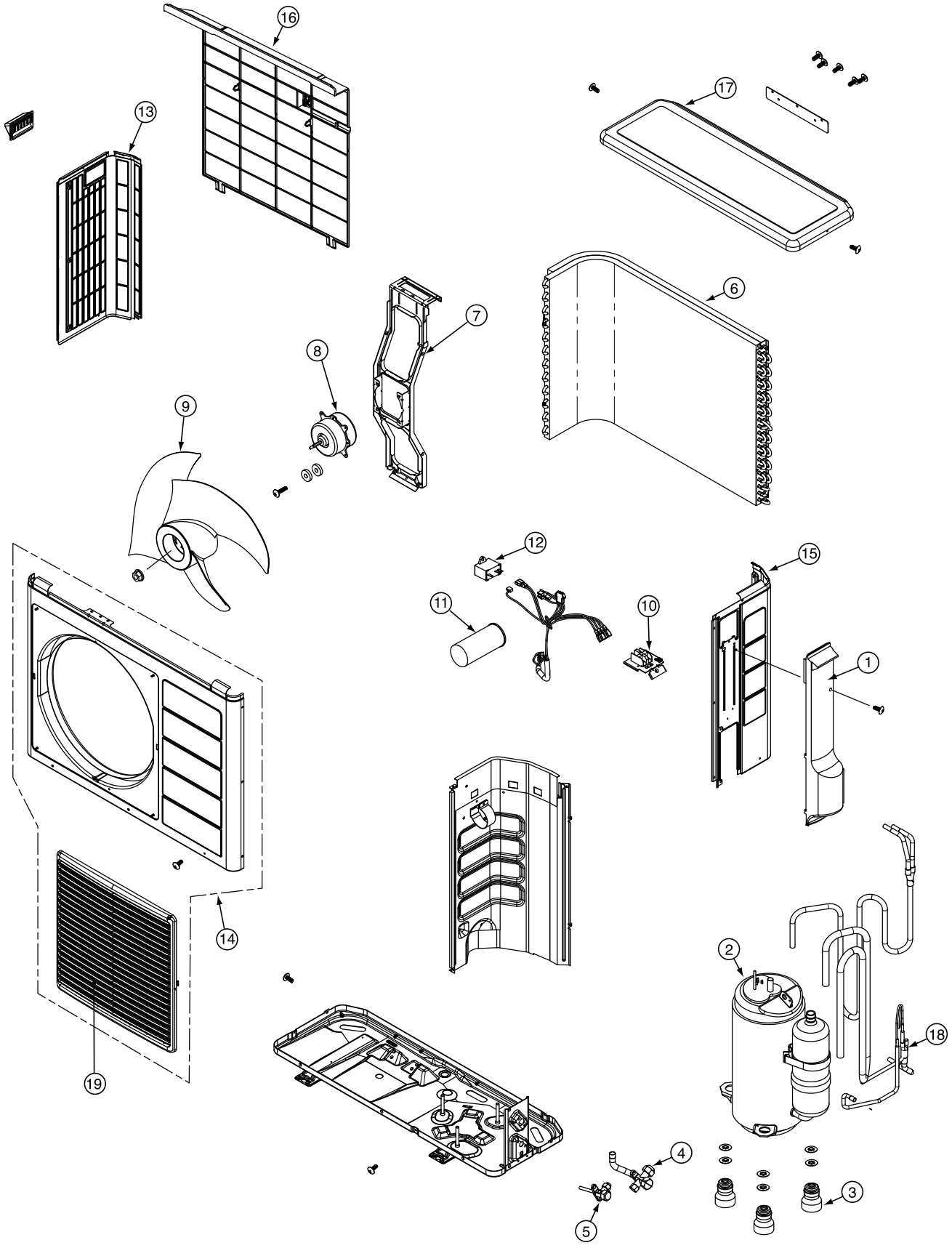


MODEL RAS-18G5

NO.	PART N0. RAS-18G5	Q'TY / UNIT	PARTS NAME
1	PMRAS-S18CAK R02	1	CABINET
2	PMRAS-40CNH2 R23	1	MOUNTING PLATE
3	PMRAS-70YHA R04	1	FAN MOTOR
4	PMRAS-70YHA R10	1	TANGENTIAL FLOW FAN
5	PMRAS-25CNH2 005	1	P-BEARING ASSY
6	PMRAS-51CHA1 004	1	FAN MOTOR BASE
7	PMRAS-S18CAK R03	1	CYCLE ASSY
8	PMRAS-51CHA1 R20	1	FAN COVER
9	PMRAS-18CP5 003	1	PIPE SUPPORT
10	PMRAS-S18CAK R04	1	DRAIN PAN ASSY
11	PMRAS-18C9 002	1	AUTO SWEEP MOTOR
12	PMRAS-63CA2 R05	1	P.W.B (LED)
13	PMRAS-18KHT1 R02	1	FRONT COVER ASSY
14	PMRAS-18KHT1 R03	1	FRONT PANEL
15	PMRAS-10C7M 008	3	CAP
16	PMRAS-51CHA1 R10	2	FILTER
17	PMRAS-10C9G 013	1	REMOTE CONTROL ASSY
18	PMRAS-10C3M 003	1	REMOTE CONTROL SUPPORT
19	PMRAS-51CHA1 R15	1	THERMISTOR SUPPORT
20	PMRAS-70YHA R12	1	THERMISTOR
21	PMRAS-18CP2R R02	1	POWER SWITCH
22	PMRAS-S18CAK R01	1	P.W.B (MAIN)
23	PMRAS-70YHA R11	1	TERMINAL BOARD (FUSE)
24	PMRAS-70YHA R08	1	P.W.B (RECEIVER)

PARTS LIST AND DIAGRAM

OUTDOOR UNIT
MODEL : RAC-18G5



MODEL RAC-18G5

NO.	PART N0. RAC-18G5	Q'TY / UNIT	PARTS NAME
1	PMRAC-50NH4 912	1	SV-COVER
2	PMRAC-S18CAK S01	1	COMPRESSOR
3	PMRAC-18GH4 902	3	COMPRESSOR RUBBER
4	PMRAC-50NH4 S03	1	VALVE (2S)
5	PMRAC-18GH4 S05	1	VALVE (4S)
6	PMRAC-63CA1 901	1	CONDENSER
7	PMRAC-40CNH2 S18	1	FAN MOTOR SUPPORT
8	PMRAC-S18CXK 902	1	FAN MOTOR
9	PMRAC-30CH7 905	1	PROPELLER FAN
10	PMRAC-63CA1 S02	1	TERMINAL BOARD (2P)
11	PMRAC-63CHA2 S07	1	COMPRESSOR CAPACITOR
12	PMRAC-63CHA2 S08	1	FAN MOTOR CAPACITOR
13	PMRAC-40CNH2 926	1	SIDE PLATE (L)
14	PMRAC-S18CZT S03	1	CABINET
15	PMRAC-S18CAK S04	1	SIDE PLATE (R)
16	PMRAC-24CP5 904	1	NET
17	PMRAC-24CP5 905	1	TOP COVER
18	PMRAC-S18CAK S02	1	STRAINER (COND.)
19	PMRAM-52QH5 S03	1	D-GRILL

HITACHI

RAS-18G5 / RAC-18G5

PM NO. 0485E

Made in Malaysia