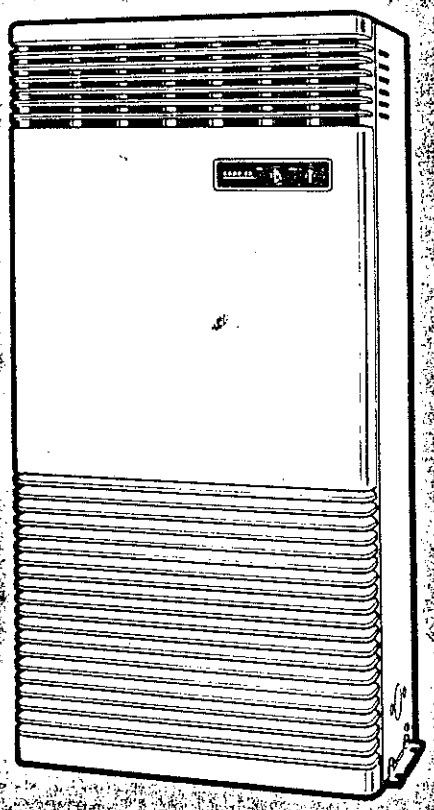
OWNER'S MANUAL

TOSHIBA

AIR CONDITIONER SPLIT (Floor Type)

INDOOR UNIT OUTDOOR UNIT

RAV-2000FHE8/RAV-S2000HE8
RAV-2500FHE8/RAV-S2500HE8

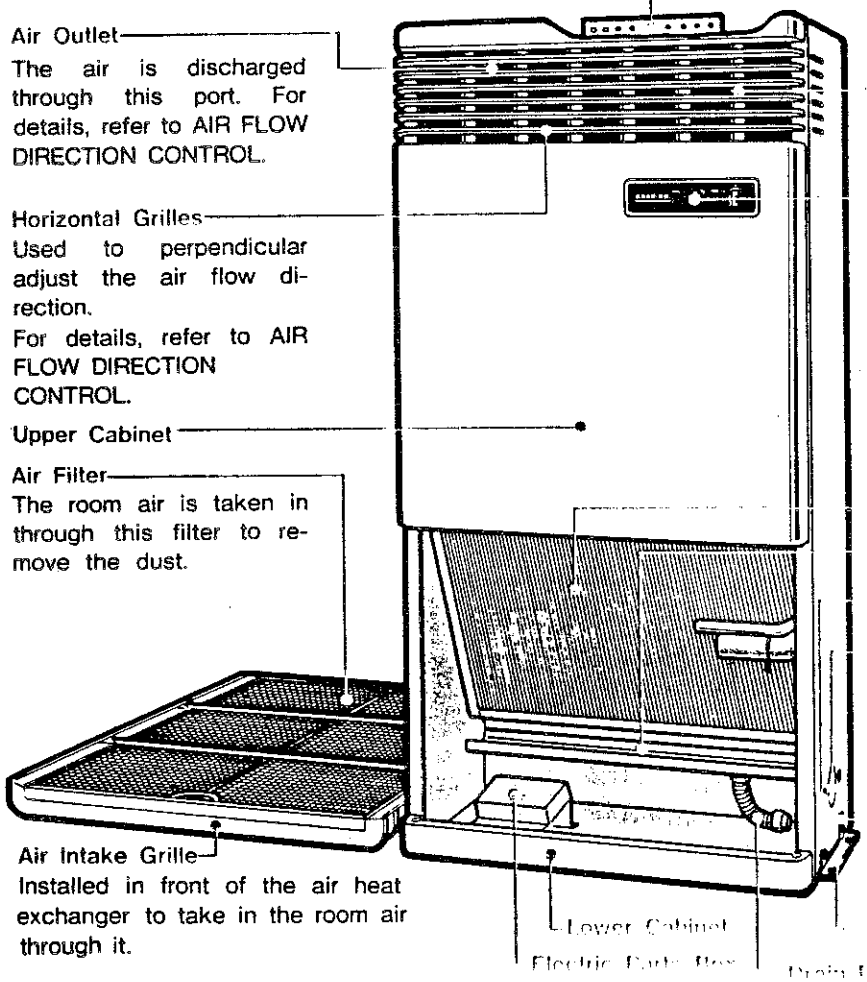


Thank you very much for your purchase of our TOSHIBA air conditioner. Please read this manual carefully before starting operations with your air conditioner to ensure correct operation. After reading this manual, be sure to keep it with you.

CONTENTS

NAMES AND FUNCTIONS OF COMPONENTS

Indoor Unit



Air Outlet
The air is discharged through this port. For details, refer to AIR FLOW DIRECTION CONTROL.

Horizontal Grilles
Used to perpendicular adjust the air flow direction.
For details, refer to AIR FLOW DIRECTION CONTROL.

Upper Cabinet

Air Filter
The room air is taken in through this filter to remove the dust.

Air Intake Grille
Installed in front of the air heat exchanger to take in the room air through it.

Installation Fixture
Used to fix the air-conditioner on the wall.

Vertical Grilles
Used to lateral adjust the air flow direction.

Operation Panel
Start/stop and control of the air-conditioner is done from this panel.
For details, refer to OPERATING METHOD.

Air Heat Exchanger

Drain Receiver

Port for power wiring

Refrigerant Pipe Connection (right, left, rear, or bottom as desired)
The refrigerant piping to and from the outdoor unit is connected here.

Earthing screw (on right side only)
Used to connect the grounding wire.

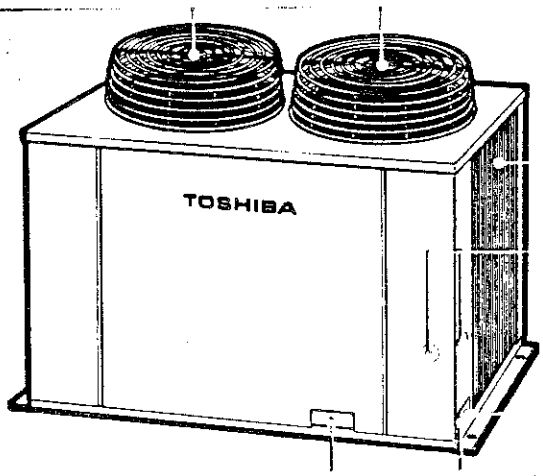
Lower Cabinet

Electric Parts Box

Drain Pipe Connection

Installation Fixtures (on both right and left side)
Used to fix the air-conditioner on the floor to prevent a fall.

Outdoor Unit



Air Outlet

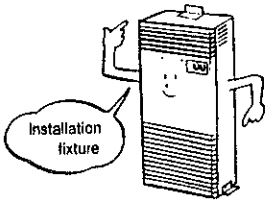
Air Intake

Port for power wiring

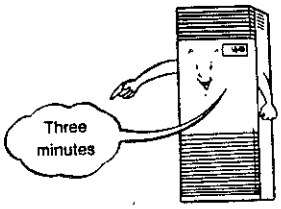
Earthing Screw

Refrigerant Pipe Connections

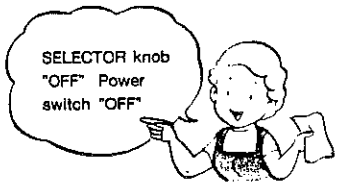
IMPORTANT PRECAUTIONS



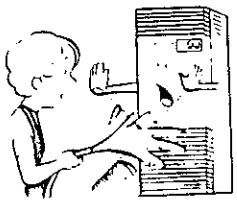
- **Make sure that the indoor unit is fixed on the floor and wall with installation fixtures. If not, promptly ask an installation executor for their fixing. Never remove the installation fixtures. Otherwise, the unit may fall down.**



- **Be sure to wait at least three minutes before restarting the cooling operation.** Otherwise excessive load will be applied to the machine.

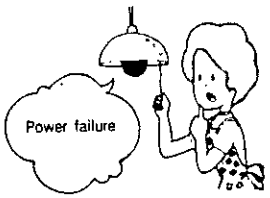


- When doing the maintenance work of the air-conditioner or when suspending operation for a long period of time as for a trip, **turn OFF the power switch.**

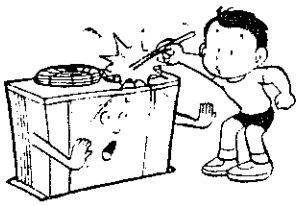


- **Do not sprinkle water on the air-conditioner for cleaning.** Sprinkling water on the unit deteriorates insulation causing an electric shock.

- **Before starting operation, be sure to put on the air filter at the air intake.** When used in a dusty place, clean the filter every two weeks or so.



- If there is a power failure during operation, turn OFF the air conditioner until power is restored.



- **Do not insert a stick or the like into the air intake and outlet of the indoor and outdoor units.** It is very dangerous because a high-speed fan is installed inside.

Power switch operation of the outdoor unit

Turn on the power switch of outdoor unit 12 hours or longer before starting of operation. In case the air conditioner is stopped for short hour, for instance, for about 24 hours, do not cut off the power. (This is because the power needs to be supplied to the crankcase heater to warm the compressor in order to prevent the outdoor unit from being exposed to an excessive force at the time of starting.)

HANDLING INFORMATION

(Make sure that the Indoor unit is fixed on the floor and wall with installation fixtures.)

●To get maximum performance out of your air conditioner, be sure to run it only under the following conditions:

	Ambient temperature	Room temperature	Room relative humidity
Cooling operation	21°C or more but 43°C or less Running the air conditioner at ambient temperatures above 43°C could trip a protective device, thereby inhibiting cooling operation. Running at temperatures lower than 21°C could cause a freeze to occur in the indoor unit, resulting in failure.	21°C or more but 32°C or less Running the air conditioner at room temperatures lower than 21°C could cause a freeze to occur in the indoor unit, resulting in failure. Also, extended periods of service at temperatures above 32°C might trip a protective device, thereby inhibiting cooling operation.	80% or less Extended periods of service at relative humidities above 80% might cause dew to be condensed and dripped over the air conditioner surfaces.
Heating operation	21°C or less Running the air conditioner at ambient temperatures above 21°C could trip a protective device, thereby inhibiting heating operation.	28°C or less Running the air conditioner at room temperatures above 28°C under conditions of high ambient air temperature could trip a protective device, thereby inhibiting heating operation.	———

●Heating Capacities

This air conditioner permits selecting between cooling and heating operation with a single switch. In heating, it operates on the principle of a heat pump, which absorbs heat from outdoors and discharges it indoors. As a result, the heating capacity tends to decline with drops in ambient air temperature as shown in the table below.

When ambient air temperature is low, your air conditioner may be run with the aid of a heating apparatus. A circulator may also be installed when the temperature difference between the ceiling level and the floor level is marked during heating operation.

		Heating capacity (Btu/h) (50Hz)	
Room temperature	**Ambient air wet-bulb temperature**	**RAV-2000FHE8**	**RAV-2500FHE8**
21°C	10°C	103,600	128,100
	6°C	95,900	118,600
	0°C	81,500	100,800

The indicated room temperature of 21°C and ambient air wet-bulb temperature of 6°C comply with Japanese Industrial Standards (JIS B8615).

OPERATING METHOD

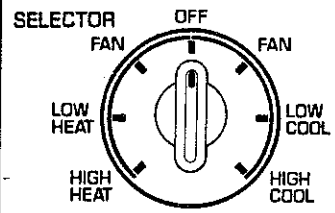
Turn ON the power switch of outdoor unit 12hours or longer before starting of operation.

TOSHIBA

AIR CONDITIONER

MADE IN JAPAN

SELECTOR

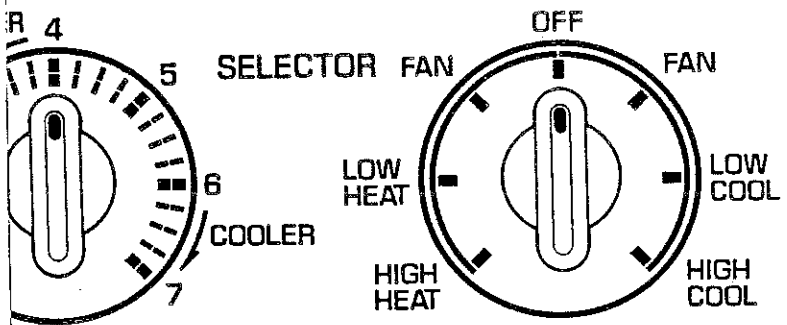


Cautions

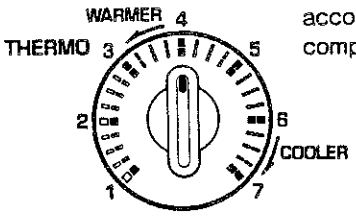
- When the knob is set at the operating position, if the power switch is turned ON, there is a case that the machine does not operate. In this case, reset the knob, after turn to OFF.
- The knob does not go beyond the position between HIGH COOl and HIGH HEAT. Do not try to try to turn it forcedly.
- Do not operate the knob too often.
- At the stoppage of heating operation, be sure to turn the SELECTOR knob to the "FAN" position at least three minutes, then turn the knob to "OFF".
- Turning the knob to "OFF" soon, which may cause a trouble by residual heat.

For operation, turn the SELECTOR knob to the operating position "FAN" "LOW COOL" "HIGH COOL" "LOW HEAT" "HIGH HEAT".

SELECTOR Knob	THERMOSTAT Knob	Operation of air conditioner
HIGH COOL	Set the desired position	Provides maximum cooling, dehumidifying, and dust-removal.
LOW COOL	Set the desired position	Provides minimum cooling, dehumidifying, and dust-removal.
FAN	———	Provides fan operation alone to circulate and dust-removal.
OFF	———	Stops fan, cooling, heating operations.
FAN		Provides fan operation alone to circulation and dust-removal.
LOW HEAT	Set the desired position	Provides minimum heating. and dust-removal.
HIGH HEAT	Set the desired position	Provides maximum heating. and dust-removal.



THERMOSTAT



Automatically starts and stops the unit to maintain the selected room temperature for economical cooling, and heating.
Aux-electric heater is attached in the indoor unit. During heating according to the THERMO setting, the operation of heater and compressor is automatically controlled for economy.

Cautions

- During cooling, if you turn the knob toward <1>, be sure to wait at least three minutes before turning the knob back toward <7>, During heating if you turn the knob toward <7>, be sure to wait at least three minutes before turning back toward <4>.
  Otherwise undue load will be applied to the machine.
- During heating, If the knob is set at <3>~<1> position, it may cause the braker operation or high pressure switch operation.
- Do not operate heating at high ambient temperature of outdoor (exceed 21°C), there is a case of high pressure switch operation.
- At the restarting of heating after defrosting, there is a case that the indoor fan blow a white foggy air of cold air at short time, it is not a troubl of the unit.
- During heating, according to the temperature condition of indoor and outdoor, there is a case that the outdoor fan is repeated running and stopping automatically.

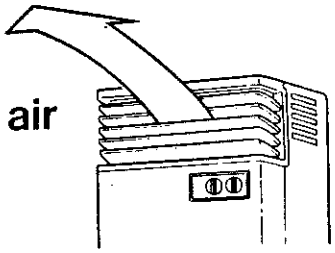
AIR FLOW DIRECTION CONTROL

How to control air flow direction

●Perpendicular direction

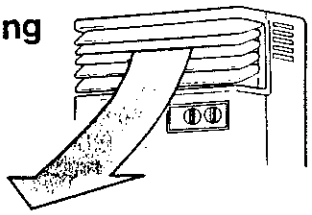
Cooling

Cool air



- Turn up the horizontal grilles at the air outlet.

Heating



Warm air

- Turn down the horizontal grilles at the air outlet.

●Auto-Defrost Operation

- During heating operation in winter, the heat exchanger of the outdoor unit may be frosted under the condition of low ambient air temperature, so that the heating capacity becomes poor. For removing the frost, the unit will operate at defrosting mode automatically.
- During defrosting operation, the fan of the outdoor unit is stopped automatically, but the compressor remains running.
- During defrosting operation, the fan of the indoor unit flows at SOFT flow rate, and the flowing temperature becomes lower than at heating operation.
- Defrosting operation is completed in less 10 minutes.

●Protective Device (High-Pressure Switch)

A device to automatically stop operation of the air-conditioner in the event of an overload.

The Protective device may operate in the following cases.

In cooling operation

- The air intake or outlet of the outdoor unit is blocked.
- An ambient temperature of the outdoor unit exceeds 43 °C.
- The air-conditioner is operated for a long period of time at a room temperature of over 32°C.

In heating operation

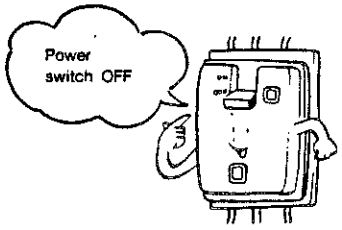
- The air outlet of the indoor unit is blocked.
- The ambient temperature of the outdoor unit exceeds 21°C
- The ambient temperature is high and the room temperature exceeds 28°C.
- The air filter is clogged with an unusually large amount of dust or dirt.

When the protective device has operated, check for a cause (refer to TROUBLESHOOTING) and take necessary actions.

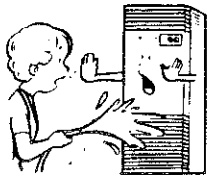
To reset the protective device, follow the procedures below.

1. Turn OFF the power switch.
2. Remove a cause of the operation of the protective device.
3. Turn ON the power switch, and then resume operation by doing steps under OPERATING METHOD.

Caution



Before starting cleaning, be sure to turn OFF the power switch.



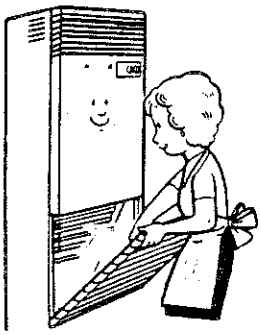
Never sprinkle water on the indoor unit for cleaning.
It will cause an electric shock.

Air filter cleaning

When the air filter is clogged with the dust, the air discharge reduces with a consequent drop in cooling capability. Moreover, it will cause a trouble to the compressor due to overload.
Therefore, when used in a dusty place, clean it every two weeks or so.

●How to remove the air filter

The air filter is installed at air intake grille.
Lift the air filter and pull toward you to remove it.



●How to wash the air filter

Remove the dust from the air filter using a vacuum cleaner, or drop it off by tapping the air filter. If stain is excessive, wash the filter in lukewarm water or water by shaking it up and down.
Note that washing in the water of 40°C or above may cause a deformation or discoloration to the filter.
Using a neutral detergent will be more effective. After removing stain, rinse it well with water, and dry it up in the shade. Then, put it back in place.

Cleaning Air Intake Grille and Cabinet

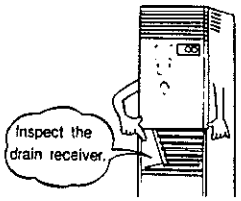
When the air intake grille and cabinet get stained, wipe off a stain with cloth soaked with water of 40°C or below.
Using cloth soaked with neutral detergent will be more effective. When using neutral detergent, wring a soft, water-soaked cloth, and then completely wipe off detergent with the cloth.

Caution

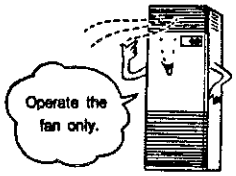
Do not use gasoline, benzine, thinner, or any other similar chemicals for cleaning. Also, never spray an insecticide available on the market. Using these chemicals causes a peel of coating, or cracks in or deformation of plastic.

Drain Receiver Inspection

The drain receiver collects water removed from the air. Clogging a port in the receiver with dust and foreign matters causes an overflow of collected water. Therefore, check it once a month.

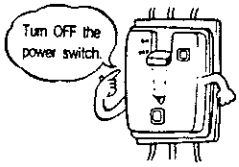


Cleaning after Season



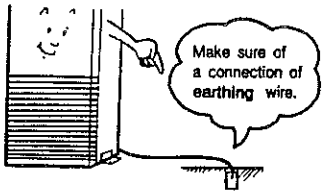
- Operate the fan only half a day long to dry up the inside.

- Clean the air filter, and dry it up. Then put it back in place.

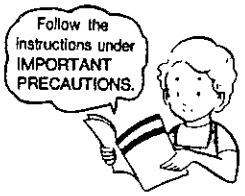


- Turn OFF the power switch. If an electric heater is used, turn OFF its own power switch.

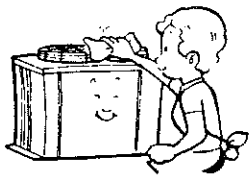
Cleaning before Season



- Check the earthing wire for a breaking or disconnection.



- Refer to IMPORTANT PRECAUTIONS.



- Wipe off the dust from the outdoor unit.

Inspection and Maintenance

When the air-conditioner is used several seasons, the inside gets stained with a consequent drop in performance although its extent varies depending on working conditions. Therefore, in addition to the ordinary cleaning described here, another inspection and maintenance is recommended. For this inspection and maintenance, consult with the seller. This service is given at actual cost.

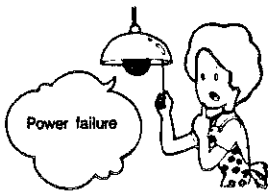
TROUBLESHOOTING

When something is wrong with the air conditioner, check the following items before calling for the repair service.

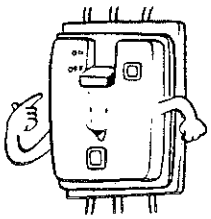
These are not failures.

- In heating operation, the outdoor blowers may be stopped, With the outdoor unit being frosted, depending on the temperature and humidity of ambient air. Then, an opaque, misty current of chilled air may be found to arise from around the outdoor unit. This simply signals that the air conditioner is automatically defrosting.
- When heating operation restarts after it has been suspended with the auto-defroster at work, opaque, misty air or chilled air may blow off temporarily from the air outlet of the indoor unit.

The air-conditioner does not start.

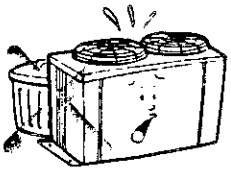


- Isn't it a power failure?

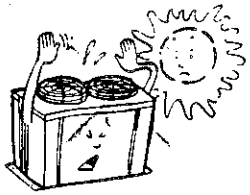


- Doesn't the power fuse blow out, or isn't the power circuit breaker open?

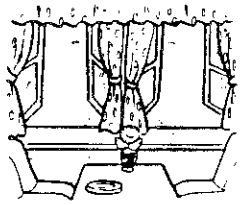
Cooling is poor although the air is discharged.



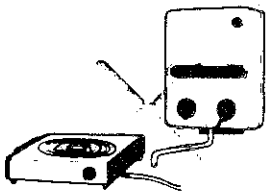
- Isn't the air intake or outlet of the outdoor unit blocked? Is the place well ventilated?



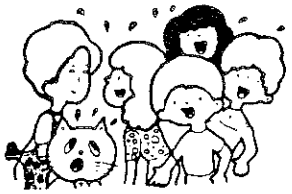
- Isn't the outdoor unit exposed to direct rays of the sun or the hot air?



- Are the door and the windows closed?

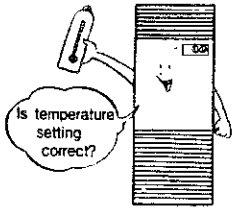


- Aren't you using a water heater, range, or any other heat source?



- Aren't there too many people in the room?

- Isn't the air filter clogged with the dust?

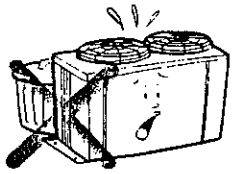


- Isn't the air flow control set to the FAN position? Set the air flow control to the LOW or HIGH position as desired. Then, turn the room temperature control to a lower temperature (a larger scale number).

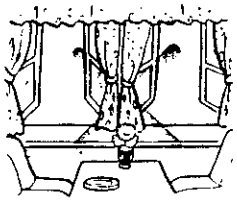
TROUBLESHOOTING

When something is wrong with the air conditioner, check the following items before asking for the repair service.

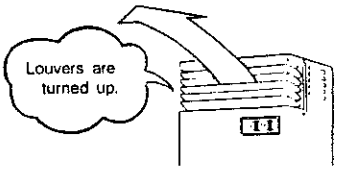
● Heating is poor although the air is discharged.



● Isn't the air intake or outlet of the outdoor unit blocked? Is the place well ventilated?

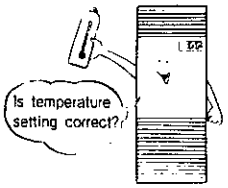


● Are the door and the windows closed?



● Are the air outlet louvers turned down?

● Isn't the air filter clogged with the dust?



● Isn't the air flow control set to the FAN position? Set the air flow control to either LOW or HIGH position as desired. Then, turn the room temperature control to a higher temperature (a smaller scale number).

If the trouble still remains after checking the above, turn OFF the power switch, and then inform the seller of the model of your air-conditioner and the state of the trouble to receive the inspection and repair service. Never try to fix by yourself.

GUIDE FOR LONG SERVICE LIFE

Installation place

1 ● Install both indoor and outdoor units in such a palce that endures a heavy weight and vibration.

2 ● **The indoor unit is fixed on the floor and wall with installation fixtures to prevent the unit from falling down. Check the clamping screws of the fixtures for any looseness once a year. Never remove these fixtures.**

3 ● Leave an ample room around the air intake and outlet for good ventilation.

4 ● Run the drain piping in such a way that the indoor unit can discharge the drain (water removed from the air) completely.

5 ● Do not install in such a place that might be exposed to a leaked combustible gas.

6 ● Install the outdoor unit in such a place that the hot air and noise from the unit do not bother neighbors.

7 ● Avoid using the air-conditioner in oily environment (including machine oil environment), saline environment as of a coastal region, and sulfide gas environment as of a hot-spring resort. Otherwise, the air-conditioner will be troubled.
If installing in such a place is unavoidable, consult with the seller because special measures are required to be taken.

Wiring

1 ● Install the earthing wire for protection against an electric shock. For details, consult with the seller where you purchased.

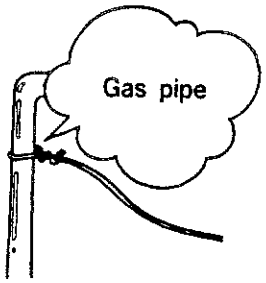
2 ● Use the power source dedicated to the air-conditioner.

3 ● A law concerned requires the installation of an earth leakage circuit breaker. For details. consult with the seller or an electric work executor.

4 ● In the event of a blow-out of the power fuse, replace it with a fuse of a rated ampere. Never use a steel or copper wire. Using such a wire as a fuse causes a trouble to the air-conditioner and a fire.

Caution

When the earthing wire is connected to the water service pipe, note that earthing does not work if a vinyl chloride pipe is installed in the water line.
Never connect the earthing wire to the gas piping.



Change of Installation Place

Moving an air-conditioner to another location requires special technique. Therefore, if it is necessary, consult with the seller. You will be charged an actual cost in this case.

REPAIR SERVICE

- In the event of an occurrence of any abnormality, stop operation, and turn OFF the power switch. Then, consult with the seller.
  When holding a consultation with the seller, inform it of the model of your air-conditioner and the purchase date.
- For details of the repair service, consult with the seller where you purchased.

Maintenance Service

Utilize our maintenance service to run the TOSHIBA air-conditioner under optimum conditions for a long period of time.

- Maintenance is one of essential factors to determine the service life and performance of the TOSHIBA air-conditioner.
- For application for or inquiry about the maintenance service, consult with the seller.

SPECIFICATIONS

Model			RAV-			
			Indoor Unit	Outdoor Unit	Indoor Unit	Outdoor Unit
			2000FHE8	S2000HE8	2500FHE8	S2500HE8
Power Supply		V-PH-Hz	380/415-3-50			
Cooling	Capacity	BTU/h (kcal/h)	72000 (18000)		90000 (22500)	
Cooling	Amps	A	12.7		15.9	
Cooling	Watts	kW	7.6		9.5	
Heating	Capacity	BTU/h (kcal/h)	95900 (23975)		118600 (29650)	
Heating	Amps	A	19.0		23.2	
Heating	Watts	kW	12.0		14.7	
Refrigerant charge (R-22)※		kg	5.8		6.8	
Weight		kg	110	180	120	220
Dimensions (Height×Width×Depth)		mm	1750×880×450	975×1290×670	1750×880×500	975×1500×800

TOSHIBA

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