

## 8. INSTALLATION PROCEDURE

### 8-1. Safety Cautions

#### For general public use

Power supply cord of Outdoor unit shall be more than 4 mm<sup>2</sup> (H07RN-F or 245 IEC66 : polychloroprene sheathed flexible cord) or 3.5 mm<sup>2</sup> (AWG-12).

#### CAUTION

#### To Disconnect the Appliance from the Main Power Supply.

This appliance must be connected to the main power supply by means of a circuit breaker or a switch with a contact separation of at least 3 mm.

If this is not possible, a power supply plug with earth must be used. This plug must be easily accessible after installation. The plug must be disconnected from the power supply socket in order to disconnect the appliance completely from the mains.

#### DANGER

- FOR USE BY QUALIFIED PERSONS ONLY.
- TURN OFF MAIN POWER SUPPLY BEFORE ATTEMPTING ANY ELECTRICAL WORK. MAKE SURE ALL POWER SWITCHES ARE OFF. FAILURE TO DO SO MAY CAUSE ELECTRIC SHOCK.
- CONNECT THE CONNECTING CABLE CORRECTLY. IF THE CONNECTING CABLE IS CONNECTED BY WRONG WAY, ELECTRIC PARTS MAY BE DAMAGED.
- CHECK THE EARTH WIRE IS NOT BROKEN OR DISCONNECTED BEFORE INSTALLATION.
- DO NOT INSTALL NEAR CONCENTRATIONS OF COMBUSTIBLE GAS OR GAS VAPORS. FAILURE TO FOLLOW THIS INSTRUCTION CAN RESULT IN FIRE OR EXPLOSION.
- TO PREVENT OVERHEATING THE INDOOR UNIT AND CAUSING A FIRE HAZARD, PLACE THE UNIT WELL AWAY (MORE THAN 2 M.) FROM HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTORS, FURNACE, STOVES, ETC.
- WHEN MOVING THE AIR-CONDITIONER FOR INSTALLING IT IN ANOTHER PLACE AGAIN, BE VERY CAREFUL NOT TO GET THE SPECIFIED REFRIGERANT WITH ANY OTHER GASEOUS BODY INTO THE REFRIGERATION CYCLE. IF AIR OR ANY OTHER GAS IS MIXED IN THE REFRIGERANT, THE GAS PRESSURE IN THE REFRIGERATION CYCLE BECOMES ABNORMALLY HIGH AND IT RESULTINGLY CAUSES BURST OF THE PIPE AND INJURIES ON PERSONS.
- IN THE EVENT THAT THE REFRIGERANT GAS LEAKS OUT OF THE PIPE DURING THE INSTALLATION WORK, IMMEDIATELY LET FRESH AIR INTO THE ROOM. IF THE REFRIGERANT GAS IS HEATED BY FIRE OR SOMETHING ELSE, IT CAUSES GENERATION OF POISONOUS GAS.

#### WARNING

- Never modify this unit by removing any of the safety guards or by by-passing any of the safety interlock switches.
- Do not install in a place which cannot bear the weight of the unit. Personal injury and property damage can result if the unit falls.
- Before doing the electrical work, attach an approved plug to the power supply cord. And make sure the equipment to be earthed.
- Appliance shall be installed in accordance with national wiring regulations. If you detect any damage, do not install the unit. Contact your Toshiba dealer immediately.

#### CAUTION

- Exposure of unit to water or other moisture before installation may cause a short circuit. Do not store it in a wet basement or expose to rain or water.
- After unpacking the unit, examine it carefully for possible damage.
- Do not install in a place that can increase the vibration of the unit. Do not install in a place that can amplify the noise level of the unit or where noise and discharged air might disturb user's neighbors.
- To avoid personal injury, be careful when handling parts with sharp edges.
- Please read this installation manual carefully before installing the unit. It contains further important instructions for proper installation.

**REQUIREMENT OF REPORT TO THE LOCAL POWER SUPPLIER**

Please make sure certainly that the installation of this air conditioner will be reported to the local power supplier before installation.

If you have any obscure problems (or if the power supplier does not accept the installation) of this appliance, service agency will take adequate countermeasures.

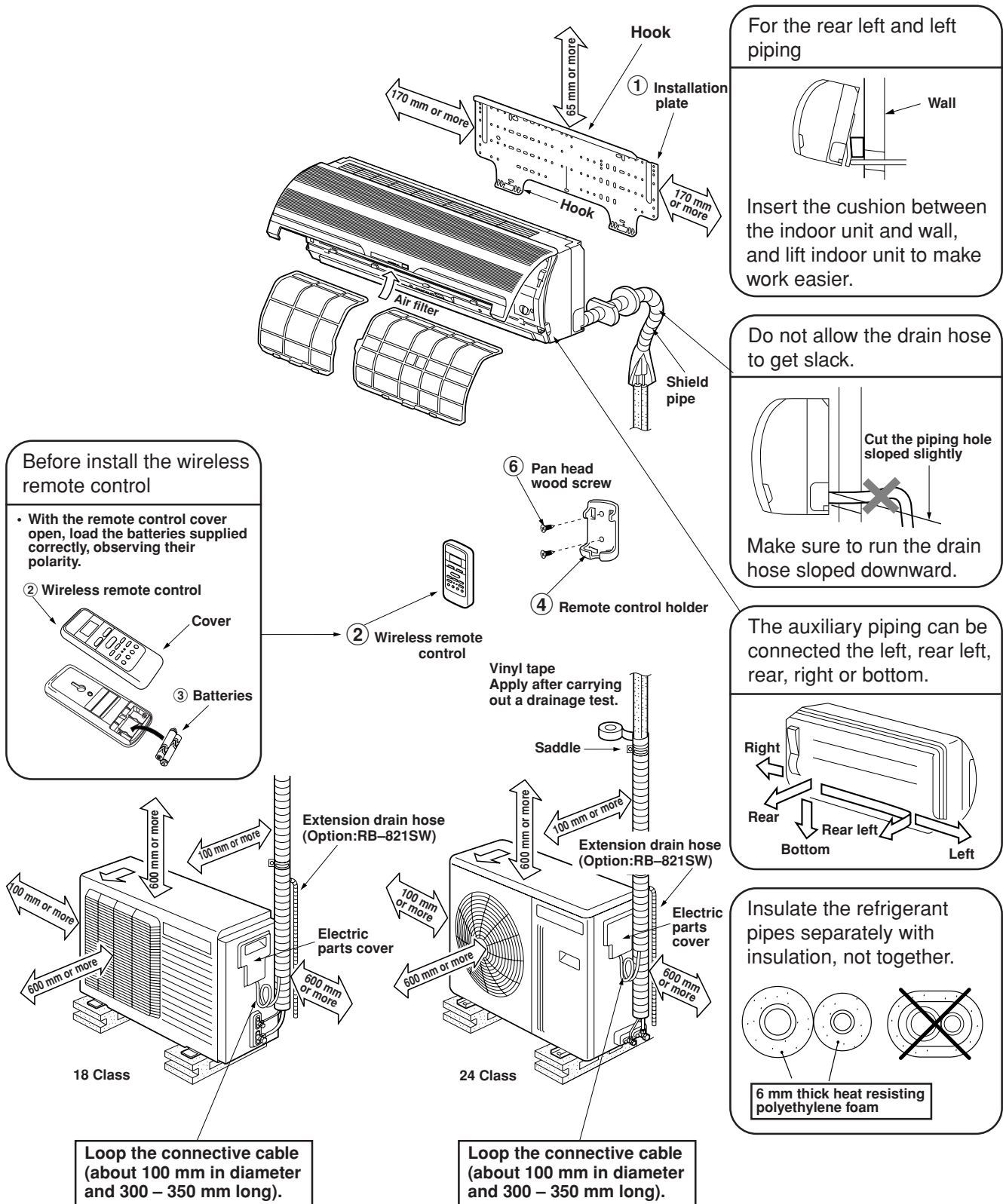
**Remark per EMC Directive 89/336/EEC**

To prevent flicker impressions during the start of the compressor (technical process) following installation conditions do apply.

1. The power connection for the air conditioner has to be done at the main power supply. This distribution has to be of an impedance.  
Normally the required impedance is reached at a 32A fusing point. Air conditioner fuse has to be 16A max.!
2. No other equipment has to be connected to this power line.
3. For detailed installation acceptance please contact with your power supplier, it restriction do apply for products like washing machines, air conditioners or electrical ovens.
4. For power details of the air conditioner, refer to the rating plate of the product.

## 8-2. Installation Diagram of Indoor and Outdoor Units

For installation of the indoor unit, use the paper pattern on the back of the installation manual.



### 8-3. Installation

#### 8-3-1. Optional installation parts

Part Code	Parts name	Q'ty
Ⓐ	Refrigerant piping Liquid side : $\varnothing 6.35$ mm Gas side : $\varnothing 12.70$ mm (RAS-18UK) : $\varnothing 15.88$ mm (RAS-24UK)	One each
Ⓑ	Pipe insulating material (polyethylene foam, 6 mm thick)	1
Ⓒ	Putty, PVC tapes	One each

#### <Fixing bolt arrangement of outdoor unit>

RAS-18UAX / RAS-18UA-AR

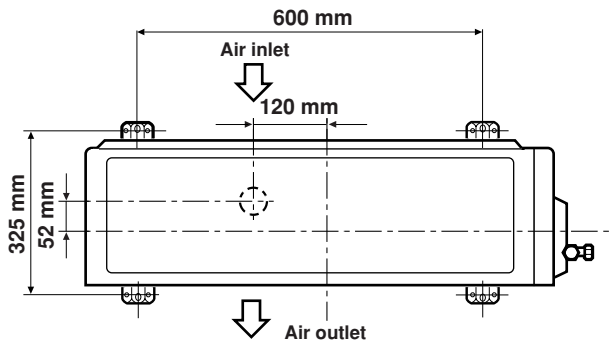


Fig. 8-3-1

RAS-24UAX / RAS-24UA-AR

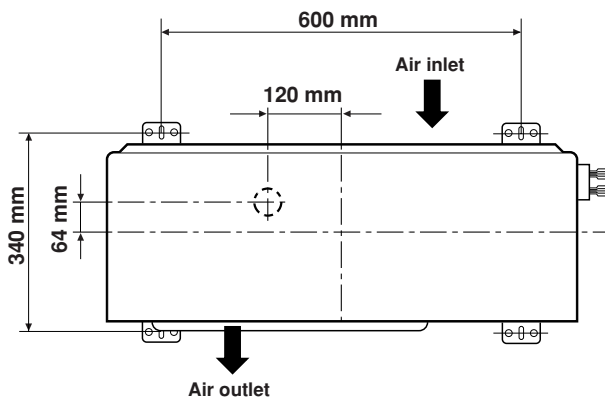
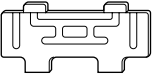
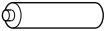

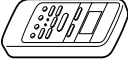




Fig. 8-3-2

- Secure the outdoor unit with the fixing bolts and nuts if the unit is likely to be exposed to a strong wind.
- Use  $\varnothing 8$  mm or  $\varnothing 10$  mm anchor bolts and nuts.

**8-3-2. Accessory and installation parts**

Part No.	Part name (Q'ty)	Part No.	Part name (Q'ty)	Part No.	Part name (Q'ty)
①	 Installation plate x 1	③	 Battery x 2	⑤	 Mounting screw $\varnothing 4 \times 25 \text{ l} \times 8$
②	 Wireless remote control x 1	④	 Remote control holder x 1	⑥	 Pan head wood screw $\varnothing 3.1 \times 16 \text{ l} \times 2$

Others

Name
Owner's manual
Installation manual

This model is not equipped with an extension drain hose.

**Option :**

For the extension drain hose, use an optionally available RB-821SW or commercially available one.

## 8-4. Indoor Unit

### 8-4-1. Installation place

- A place which provides the spaces around the indoor unit as shown in the above diagram.
- A place where there is no obstacle near the air inlet and outlet.
- A place which allows an easy installation of the piping to the outdoor unit.
- A place which allows the front panel to be opened.

### CAUTION

- Direct sunlight to the indoor unit wireless receiver should be avoided.
- The microprocessor in the indoor unit should not be too close to r-f noise sources.  
(For details, see the owner's manual.)

### <Remote control>

- A place where there are no obstacles such as a curtain that may block the signal from the indoor unit.
- Do not install the remote control in a place exposed to direct sunlight or close to a heating source, such as a stove.
- Keep the remote control at least 1 m apart from the nearest TV set or stereo equipment. (This is necessary to prevent image disturbances or noise interference.)
- The location of the remote control should be determined as shown below.

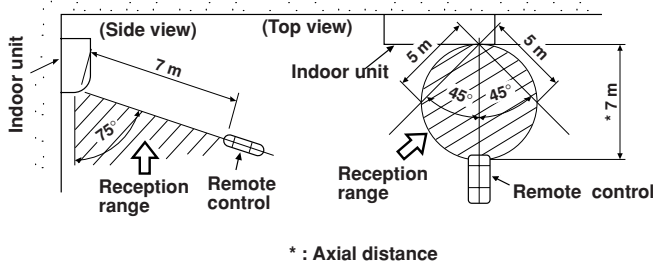


Fig. 8-4-1

### 8-4-2. Cutting a hole and mounting installation plate

#### <Cutting a hole>

When install the refrigerant pipes from the rear.

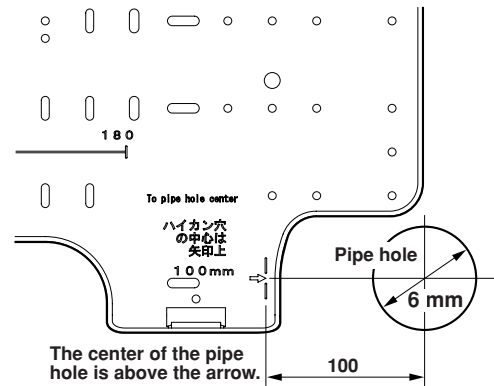


Fig. 8-4-2

1. After determining the pipe hole position on the mounting plate (100 mm →), drill the pipe hole (Ø65 mm) at a slight downward slant to the outdoor side.

#### NOTE:

- When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use a pipe hole brim ring sold separately.

#### <Mounting the installation plate>

For installation of the indoor unit, use the paper pattern on the back of installation manual (English).

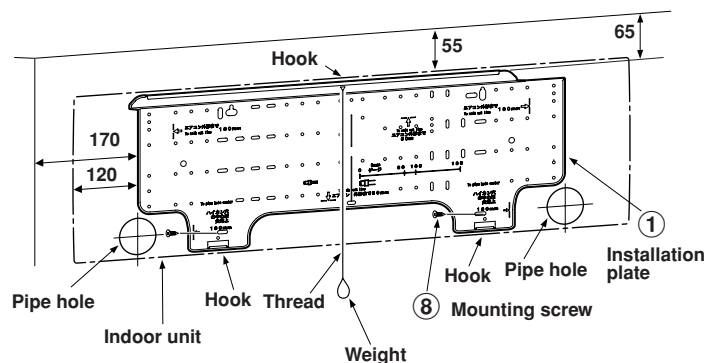


Fig. 8-4-3

**<When the installation plate is directly mounted on the wall>**

1. Securely fit the installation plate onto the wall by screwing it in the upper and lower parts to hook up the indoor unit.
2. To mount the installation plate on a concrete wall with anchor bolts, utilize the anchor bolt holes as illustrated above.
3. Install the installation plate horizontally in the wall.

**CAUTION**

When installing the installation plate with mounting screw, do not use the anchor bolt hole. Otherwise the unit may fall down and result in personal injury and property damage.

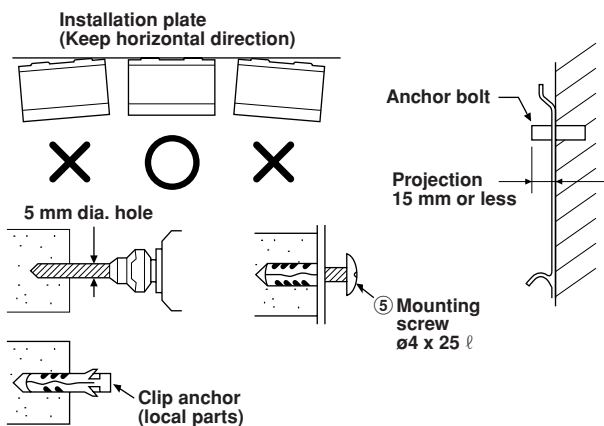


Fig. 8-4-4

**CAUTION**

Failure to firmly install the unit may result in personal injury and property damage if the unit falls.

- In case of block, brick, concrete or similar type walls, make 5 mm dia. holes in the wall.
- Insert clip anchors for appropriate 5 mounting screws.

**NOTE:**

- Secure four corners and lower parts of the installation plate with 6 to 8 mounting screws to install it.

**8-4-3. Electrical work**

1. The supply voltage must be the same as the rated voltage of the air conditioner.
2. Prepare the power source for exclusive use with the air conditioner.

**NOTE:**

- Wire type: More than 1.5 mm<sup>2</sup> (H07RN-F or 245 IEC66) or 1.3 mm<sup>2</sup> (AWG-16)

**CAUTION**

- Use power specified above table.
- This appliance can be connected to the mains in the following way.  
Connection to fixed wiring :  
A switch or circuit breaker which disconnects all poles and has a contact separation of at least 3 mm must be incorporate in the fixed wiring. An approved circuit breaker or switches must used.

**NOTE:**

- Perform wiring works so as to allow a generous wiring capacity.

### 8-4-4. Wiring connection

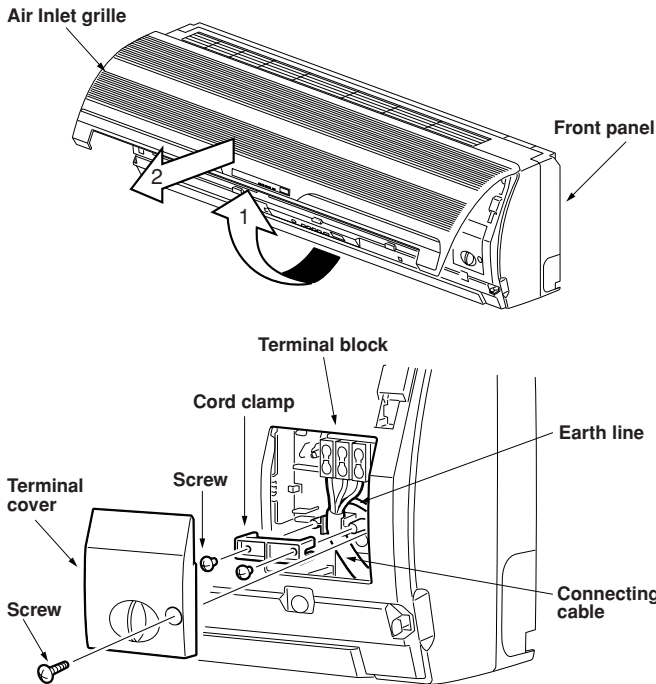


Fig. 8-4-5

#### <How to connect the connecting cable>

Wiring of the connecting cable can be carried out without removing of the front panel.

1. Remove the air inlet grille.  
Open the air inlet grille upward and pull it toward you.
2. Remove the terminal cover and cord clamp.
3. Insert the connecting cable (according to local cords) into pipe hole on the wall.
4. Take out the connecting cable through the cable slot on the rear panel so that it is exploded by about 15 cm long in the front side.
5. Insert the connecting cable fully into the terminal block and secure it by screw tightly.
6. Tightening torque : 1.2 N·m (0.12 kgf·m)
7. Secure the connecting cable with the cord clamp.
8. Fix the terminal cover, rear plate bushing and air inlet grille on the indoor unit.

### CAUTION

- Be sure to refer to the wiring system diagram labeled inside the front panel.
- Check local electrical cords and also any specific wiring instructions or limitation.

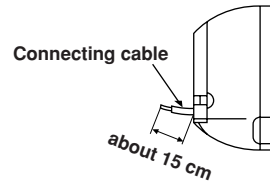


Fig. 8-4-6

#### <Stripping length of connecting cable>

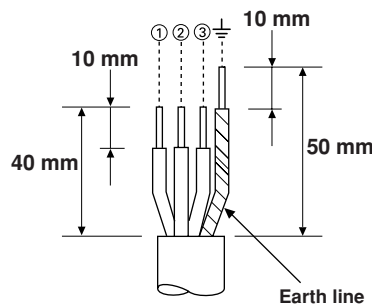


Fig. 8-4-7

#### NOTE:

- Use strand wire only.
- Wire type : More than 1.5 mm<sup>2</sup> (H07RN-F or 245 IEC66) or 1.3 mm<sup>2</sup> (AWG-16)

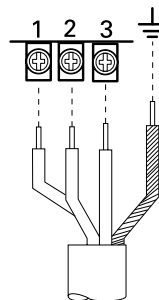


Fig. 8-4-8

#### NOTE:

Connect the earth line to the metallic part (⊕ mark) located at the side of 3P terminal.

#### <How to install the air inlet grille on the indoor unit>

- When attaching the air inlet grille, the contrary of removed operation is performed.

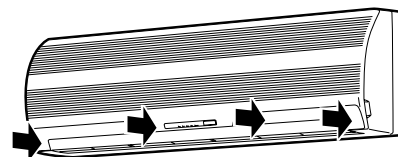


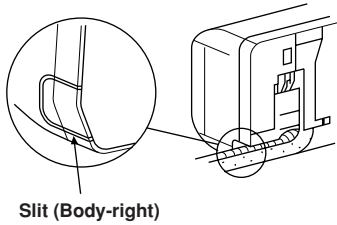
Fig. 8-4-9



**8-4-5. Piping and drain hose installation**

**<In case of rightward piping>**

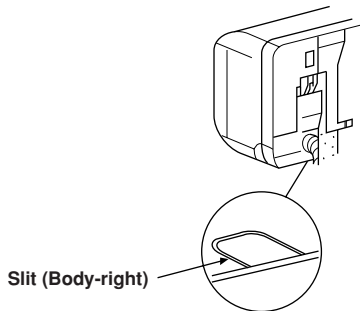
- After scribing slits of the body-right by a knife or a making-off pin, cut them by a pair of nippers or the like.



**Fig. 8-4-10**

**<In case of downward piping>**

- After scribing slits of the body-right by a knife or a making-off pin, cut them by a pair of nippers or the like.



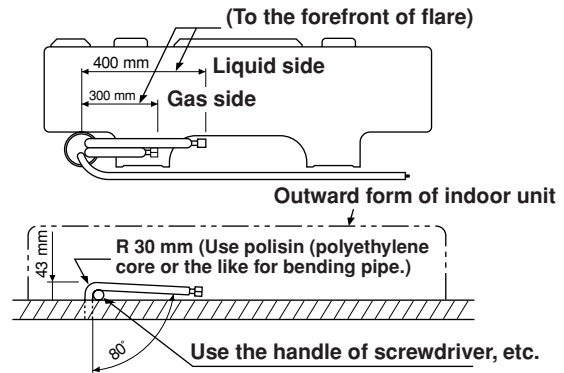
**Fig. 8-4-11**

**<Left-hand connection with piping>**

Bend the connecting pipe so that it is laid within 43 mm above the wall surface. If the connecting pipe is laid exceeding 43 mm above the wall surface, the indoor unit may unstably be set on the wall. When bending the connecting pipe, make sure to use spring bender so as not to crush the pipe.

**Bend the connection pipe within a radius of 30 mm.**

To connect pipe after installation of unit (figure)



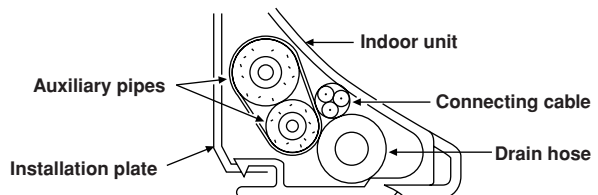
**Fig. 8-4-12**

**NOTE:**

If the pipe is bent incorrectly, the indoor unit may unstably be set on the wall. After passing the connecting pipe through the pipe hole, connect the connecting pipe to the auxiliary pipes and wrap the facing tape around them.

**CAUTION**

- Bind the auxiliary pipes (two) and connecting cable with facing tape tightly. In case of leftward piping and rear-leftward piping, bind the auxiliary pipes (two) only with facing tape.



- Carefully arrange pipes so that any pipe does not stick out of the rear plate of the indoor unit.
- Carefully connect the auxiliary pipes and connecting pipes to each other and cut off the insulating tape wound on the connecting pipe to avoid double-taping at the joint, moreover, seal the joint with the vinyl tape, etc.
- Since dewing results in a machine trouble, make sure to insulate both the connecting pipes. (Use polyethylene foam as insulating material.)
- When bending a pipe, carefully do it not to crush it.

### 8-4-6. Indoor unit fixing

1. Pass the pipe through the hole in the wall, and hook the indoor unit on the installation plate at the upper hooks.
2. Swing the indoor unit to right and left to confirm that it is firmly hooked up on the installation plate.
3. While pressing the indoor unit onto the wall, hook it at the lower part on the installation plate. Pull the indoor unit toward you to confirm that it is firmly hooked up on the installation plate.

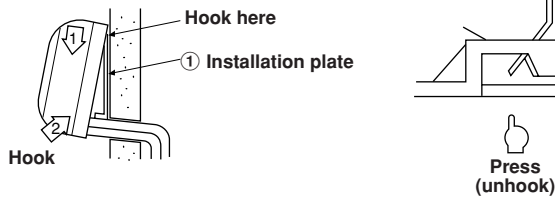


Fig. 8-4-13

- For detaching the indoor unit from the installation plate pull the indoor unit toward you while pushing its bottom up at the specified parts.

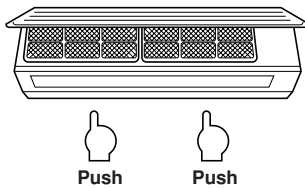


Fig. 8-4-14

### 8-4-7. Drainage

1. Run the drain hose sloping downwards.

**NOTE:**

- Hole should be made at a slight downward slant on the outdoor side.

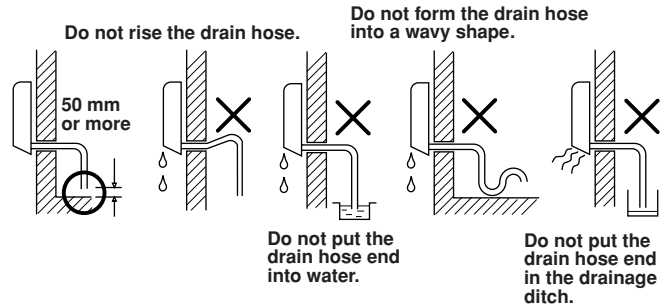


Fig. 8-4-15

2. Put water in the drain pan and make sure that the water is drained out of doors.
3. When connecting extension drain hose, insulate the connecting part of extension drain hose with shield pipe.

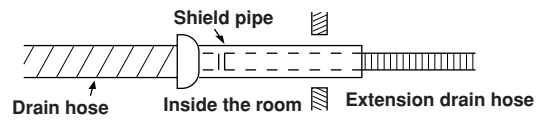


Fig. 8-4-16

**CAUTION**

Arrange the drain pipe for proper drainage from the unit.  
Improper drainage can result in dew-dropping.

This air conditioner has the structure designed to drain water collected from dew, which forms on the back of the indoor unit, to the drain pan. Therefore, do not store the power cord and other parts at a height above the drain guide.

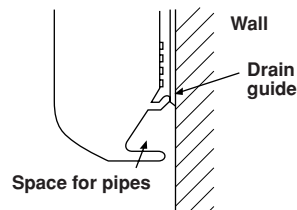


Fig. 8-4-17

## 8-5. Outdoor Unit

### 8-5-1. Installation place

- A place which provides the spaces around the outdoor unit as shown in the left diagram.
- A place which can bear the weight of the outdoor unit and does not allow an increase in noise level and vibration.
- A place where the operation noise and discharged air do not disturb your neighbors.
- A place which is not exposed to a strong wind.
- A place free of a leakage of combustible gases.
- A place which does not block a passage.
- When the outdoor unit is to be installed in an elevated position, be sure to secure its feet.
- An allowable length of the connecting pipe is up to 15 m. (Refer to the table of **TO CHARGE REFRIGERANT** for detail.)
- An allowable height level is up to 8 m. (RAS-18UA) or 10 m. (RAS-24UA).
- A place where the drain water does not raise any problem.

### CAUTION

1. Install the outdoor unit without anything blocking the air discharging.
2. When the outdoor unit is installed in a place exposed always to a strong wind like a coast or on a high story of a building, secure the normal fan operation using a duct or a wind shield.
3. Specially in windy area, install the unit to prevent the admission of wind.
4. Installation in the following places may result in trouble.

Do not install the unit such places.

- A place full of machine oil.
- A saline-place such as coast.
- A place full of sulfide gas.
- A place where high-frequency waves are likely to be generated as from audio equipment, welders, and medical equipment.

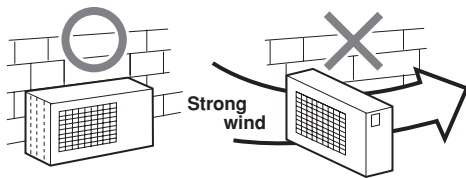


Fig. 8-5-1

### 8-5-2. Refrigerant piping connection

1. Cut the pipe with a pipe cutter.



Fig. 8-5-2

2. Insert a flare nut into the pipe, and flare the pipe.
  - Projection margin in flaring : A (Unit : mm)

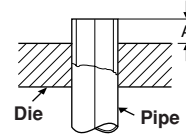


Fig. 8-5-3

Outer dia. of copper pipe	A	
	Rigid	Imperial
6.35	1.0 to 1.5	1.5 to 2.0
12.7	1.0 to 1.5	2.0 to 2.5
15.88	1.0 to 1.5	2.0 to 2.5

### <Tightening connection>

Align the centers of the connecting pipes and tighten the flare nut as far as possible with your fingers. Then tighten the nut with a spanner and torque wrench as shown in the figure.

### CAUTION

- Do not apply excess torque.

Otherwise, the nut may crack depending on the conditions.

(Unit : N·m) **8-5-3. Evacuating**

Outer dia. of copper pipe	Tightening torque
Ø6.35 mm	16 to 18 (1.6 to 1.8 kgf·m)
Ø12.70 mm	50 to 62 (5.0 to 6.2 kgf·m)
Ø15.88 mm	65 to 80 (6.5 to 8.0 kgf·m)

After the piping has been connected to the indoor unit, you can perform the air purge together at once.

**AIR PURGE**

Evacuate the air in the connecting pipes and in the indoor unit using vacuum pump. Do not use the refrigerant in the outdoor unit. For details, see the manual of vacuum pump.

- Tightening torque of flare pipe connections

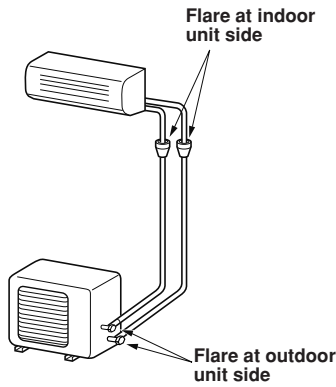


Fig. 8-5-4

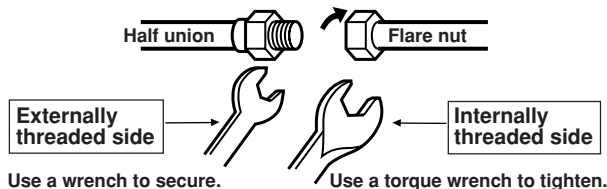


Fig. 8-5-5

**CAUTION**

- **KEEP IMPORTANT 4 POINTS FOR PIPING WORK**
  - (1) Take away dust and moisture (Inside of the connecting pipes.)
  - (2) Tight connection (between pipes and unit)
  - (3) Evacuate the air in the connecting pipes using VACUUM PUMP.
  - (4) Check gas leak (connected points)

**<Use a vacuum pump>**

Be sure to use a vacuum pump with counter-flow prevention function so that inside oil of the pump does not flow backward into pipes of the air conditioner when the pump stops.

1. Connect the charge hose from the manifold valve to the service port of the gas side packed valve.
2. Connect the charge hose to the port of vacuum pump.
3. Open fully the low pressure side handle of the gauge manifold valve.
4. Operate the vacuum pump to start for evacuating. Perform evacuating for about 15 minutes if the piping length is 20 meters. (15 minutes for 20 meters) (assuming a pump capacity of 27 liters per minute.) Then confirm that the compound pressure gauge reading is -101 kPa (-76 cmHg).
5. Close the low pressure side valve handle of gauge manifold.
6. Open fully the valve stem of the packed valves (both side of Gas and Liquid).
7. Remove the charging hose from the service port.
8. Securely tighten the caps on the packed valves.

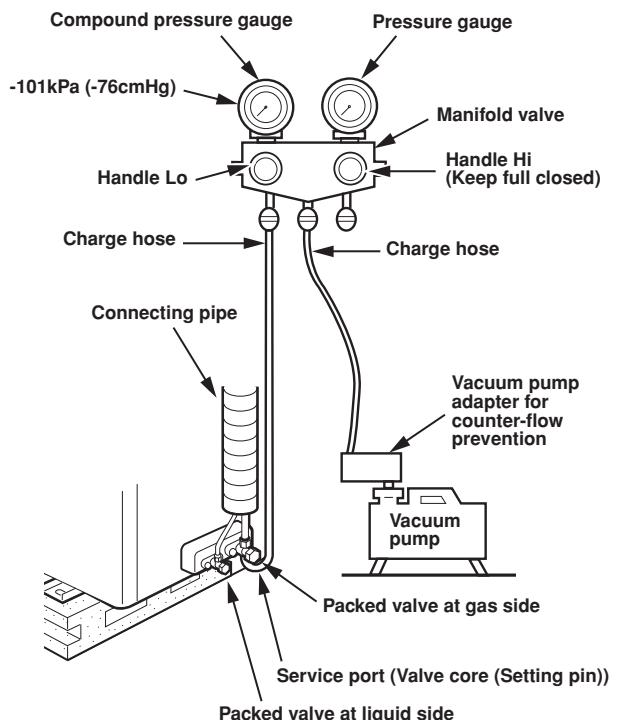


Fig. 8-5-6

TO CHARGE REFRIGERANT

	RAS-18UKX / 18UAX RAS-18UK-AR / 18UA-AR	RAS-24UKX / 24UAX RAS-24UK-AR / 24UA-AR
No need to charge refrigerant	15 m or less	15 m or less
Need to charge refrigerant	Over 15 m up to 20 m (20g/m)	Over 15 m up to 25 m (20g/m)

<Packed valve handling precautions>

- Open the valve stem all the way out; but do not try to open it beyond the stopper.
- Securely tighten the valve stem cap with torque in the following table:

Gas side	Tightening torque	A
Gas side (Ø15.88 mm)	65 to 80 N•m (6.5 to 8.0 kgf•m)	5 mm
Gas side (Ø12.7 mm)	60 to 62 N•m (6.0 to 6.2 kgf•m)	4 mm
Liquid side (Ø6.35 mm)	16 to 18 N•m (1.6 to 1.8 kgf•m)	Same as Gas side
Service port	9 to 10 N•m (0.9 to 1.0 kgf•m)	

- Hexagonal wrench : A (Unit : mm)

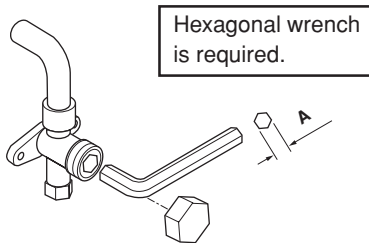


Fig. 8-5-7

8-5-4. Wiring connection

1. Remove the electric parts cover from the outdoor unit.
2. Connect the connecting cable to the terminal as identified with their respective matched numbers on the terminal block of indoor and outdoor unit.
3. When connecting the connecting cable to the outdoor unit terminal, make a loop as shown in installation diagram of indoor and outdoor unit, to prevent water coming in the outdoor unit.
4. Insulate the unused cords (conductors) with water coming in the outdoor unit. Process them so that they do not touch any electrical or metal parts.

<Stripping length of connection cable>

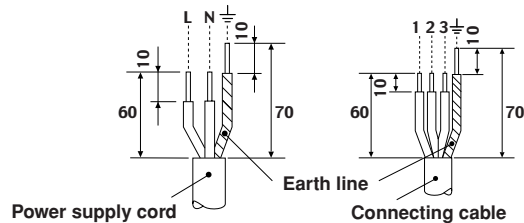
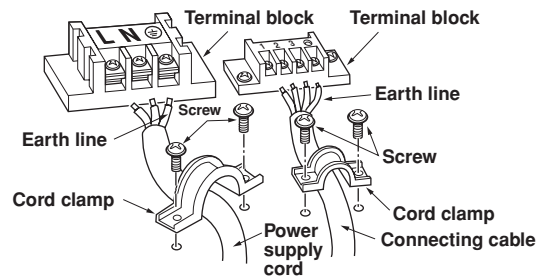


Fig. 8-5-8

Model	RAS-18UKX/ RAS-18UK-AR	RAS-24UKX/ RAS-24UK-AR
Power source	50 Hz, 220 – 240V Single phase	
Maximum running current	16A	18A
Plug socket & fuse rating	20A	20A
Power cord	• 4 mm <sup>2</sup> (H07RN-F or 245 IEC 66) or 3.5 mm <sup>2</sup> (AWG-12)	

**CAUTION**

- Wrong wiring connection may cause some electrical parts burn out.
- Be sure to comply with local codes on running the wire from outdoor unit to indoor unit (size of wire and wiring method etc.)
- Every wire must be connected firmly.

**NOTE: Connecting cable**

- Wire type : More than 1.5 mm<sup>2</sup> (H07RN-F or 245 IEC66) or 1.3 mm<sup>2</sup> (AWG-16)

## 8-6. Others

### 8-6-1. Gas leak test

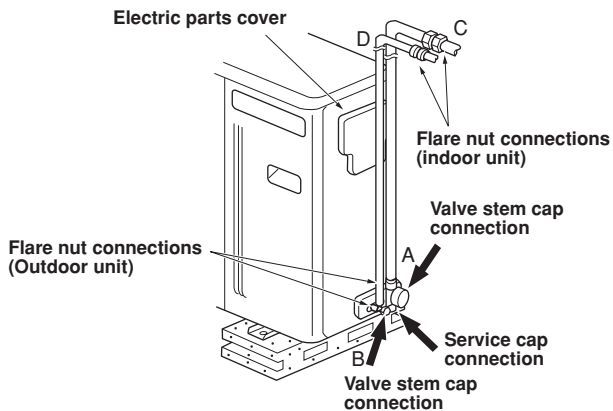


Fig. 8-6-1

- Check the flare nut connections, valve stem cap connections and service port cap connections for gas leak with a leak detector or soap water.

### 8-6-2. Test operation

To switch the TEST RUN (COOL) mode, press TEMPORARY button for 10 sec.  
(The beeper will make a short beep.)

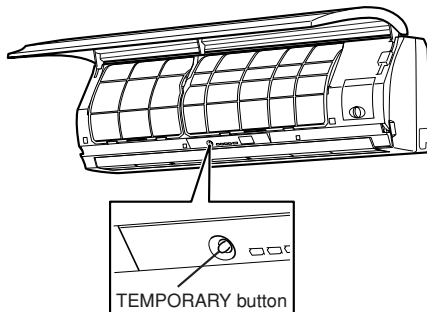


Fig. 8-6-2

### 8-6-3. Auto restart setting

This product is designed so that, after a power failure, it can restart automatically in the same operating mode as before the power failure.

#### Information

The product was shipped with Auto Restart function in the off position. Turn it on as required.

#### <How to set the auto restart>

- Press and hold down the TEMPORARY button for about 3 seconds. After 3 seconds, the electronic beeper makes three short beeps to tell you the Auto Restart has been selected.
- To cancel the Auto Restart, follow the steps described in the section Auto Restart Function of the Owner's Manual.