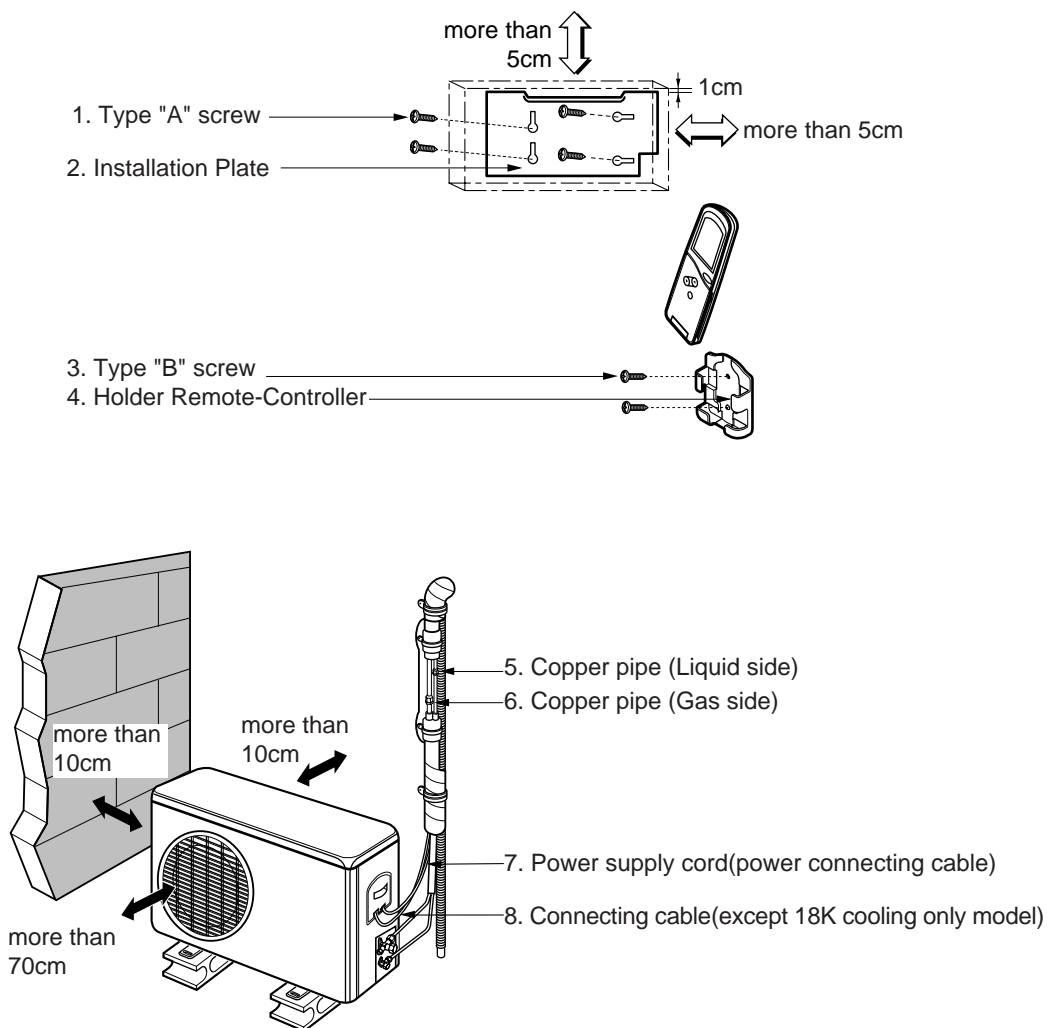


ROOM AIR CONDITIONERS INSTALLATION INSTRUCTIONS

- Please read this instruction sheet completely before installing the product.
- When the power cord is wanted to replace, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with national wiring standards by authorized personnel only.



Cooling & Heating Model has
included Drain Elbow

OUT-LINE OF INSTALLATION

1. The following should always be observed for safety3

Installation works	Installation Parts	Required Tools
--------------------	--------------------	----------------

2. Installation of indoor, outdoor Unit

1) Selection of the best location4	• Installation plate	• Level
2) Indoor unit Installation5	• Four type "A" screws • Connecting cable	• Screw driver • Electric drill • Hole core drill(ø70mm)

3. Piping and drainage of indoor unit

1) Preparation of pipings6	• Pipes: Gas side.....1/2", 5/8" Liquid side1/4", 3/8" (different depending on model No.)	• Flaring tools set
2) Connection of pipings7~11	• Insulated drain hose • Insulation materials	• Specified torque wrenches 1.8 kg·m, 4.2 kg·m, 5.5 kg·m, 6.6 kg·m (different depending on model No.)
• For right rear piping		SpannerHalf union
• For the left piping		

4. Connecting pipings and the cable to outdoor unit

1) Connection of pipings to the outdoor unit12	• Additional drain hose (Outer Dia15.5 mm)	• Specified torque wrenches 1.8 kg·m, 4.2 kg·m, 5.5 kg·m, 6.6 kg·m (different depending on model No.)
2) Connection of the cable12		

5. Checking the drainage and connecting the cable to Indoor unit

1) Checking the drainage14	• A glass of water
2) Connecting of the cable15	• Screw driver
3) Forming the pipings16	

6. Air Purging

1) Air Purging17	• Hexagonal wrench (4mm)
2) Checking a gas-leakage18	• Gas-leak detector



7. Maximum length of pipe and freon extra change.....19

8. Test running

1) Connection of power supply20	• Tow type "B" screws	• Owner's manual
2) Evaluation performance20		• Thermometer

1. The following should be always be observed for safety

- Please report to or take consent by the supply authority before connection to the system.
- Be sure to read "THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" before installing the air conditioner.
- Be sure to observe the cautions specified here as they include important items related to safety.
- The indications and meanings are as follows.

	WARNING	Could lead to death, serious injury, etc.
	CAUTION	Could lead to serious injury in particular environments when operated incorrectly.

- After reading this manual, be sure to keep it together with the instruction manual in a handy place on the customer's site.

 **WARNING**

Do not install it yourself (customer).

- Incomplete installation could cause injury due to fire, electric shock, the unit falling or a leakage of water. Consult the dealer from whom you purchased the unit or special installer.

Perform the installation securely referring to the installation manual.

- Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or a leakage of water.

Install the unit securely in a place which can bear the weight of the unit.

- When installed in an insufficient strong place, the unit could fall causing injured.

Perform electrical work according to the installation manual and be sure to use an exclusive circuit.

- If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.

Use the specified wires to connect the indoor and outdoor units securely and attach the wires firmly to the terminal board connecting sections so the stress of the wires is not applied to the sections.

- Incomplete connecting and fixing could cause fire.

Attach the electrical part cover to the indoor unit and the service panel to the outdoor unit securely.

- If the electrical part cover of the indoor unit and/or the service panel of the outdoor unit are not attached securely, it could result in a fire or electric shock due to dust, water, etc.

Check that the refrigerant gas does not leak after installation is completed.

Be sure to use the part provided or specified parts for the installation work.

- The use of defective parts could cause an injury or leakage of water due to a fire, electric shock, the unit falling, etc.

 **CAUTION**

Perform grounding

- Do not connect the ground wire to a gas pipe, water pipe arrester or telephone ground wire. Defective grounding could cause an electric shock.

Perform the drainage/piping work securely according to the installation manual.

- If there is a defect in the drainage/piping work, water could drop from the unit and household goods could be wet and damaged.

Do not install the unit in a place where an inflammable gas leaks.

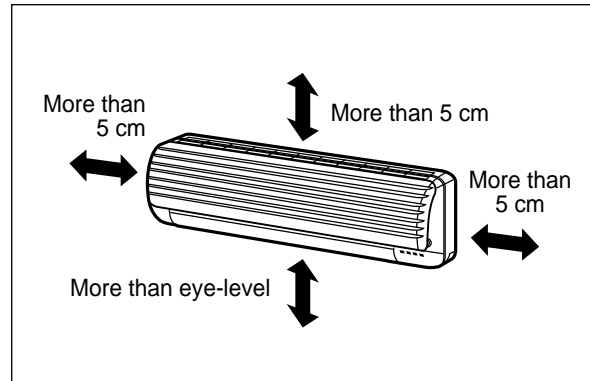
- If gas leaks and accumulates in the area surrounding the unit, it could cause an explosion.

2. Installation of Indoor, Outdoor unit

1) Selection of the best location

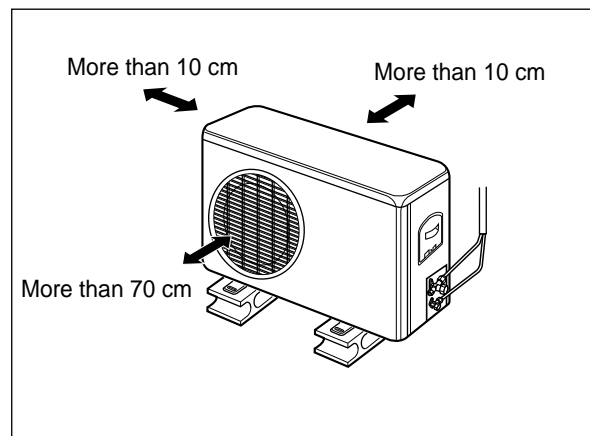
1. Indoor unit

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to prevent the air circulation.
- A place where air circulation in the room will be good.
- A place where drainage can be easily obtained.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence, or other obstacles.



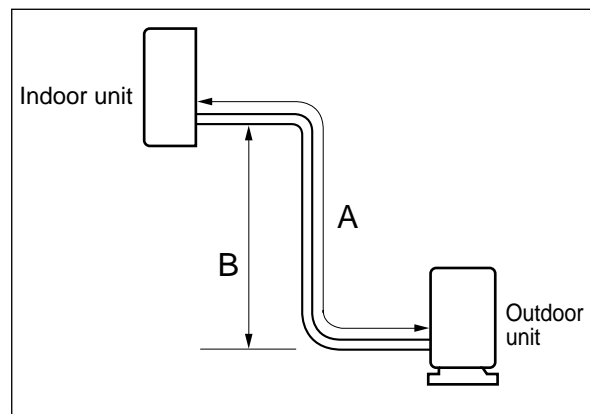
2. Outdoor unit

- If an awning is built over the unit to prevent direct sunlight or rain exposure, be careful that heat radiation from the condenser is not restricted.
- There should not be any animals or plants which could be affected by hot air discharged.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence, or other obstacles.



3. Piping length and the elevation

MODEL	Pipe Size		Max. length A (m)	Max. Elevation B (m)
	GAS	LIQUID		
18K	1/2"	1/4"	30	15
24K	5/8"	1/4"	30	15



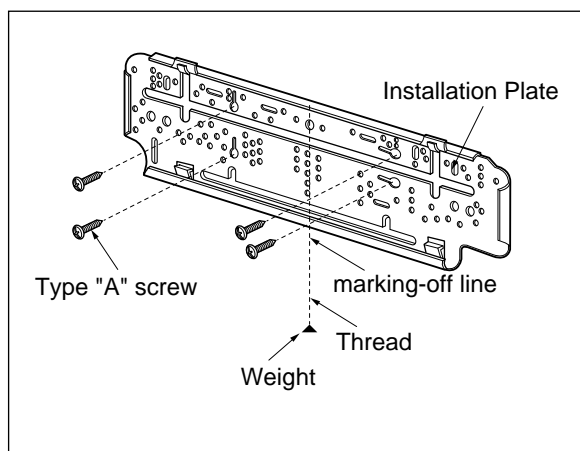
2) Indoor Unit Installation

The mounting wall should be strong and solid enough to protect it from the vibration.

1. Mount the installation plate on the wall with four Type "A" screws.

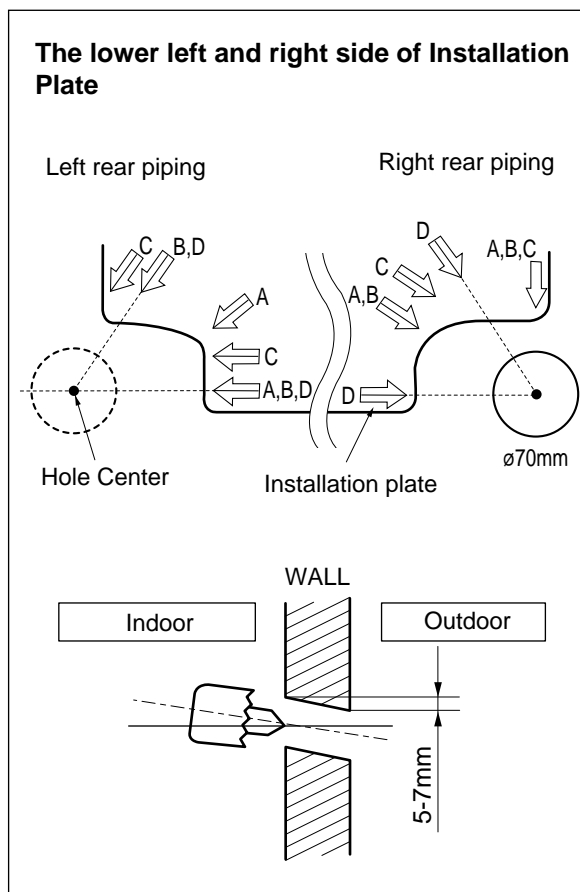
(if mounting the unit on the concrete wall, consider using anchor bolts.)

- Always mount the Installation plate horizontally by aligning the marking-off line by means of the thread and a level.



2. Drill the piping hole with 70mm dia. holecore drill.

- For right rear piping and left rear piping, draw a line in the direction of the arrow marked "D". The meeting point of the two lines is the center of the hole.
- Drill the piping hole with a $\varnothing 70\text{mm}$ hole core drill. Drill the piping hole at either the right or the left with the hole slightly slanted to the outdoor side.

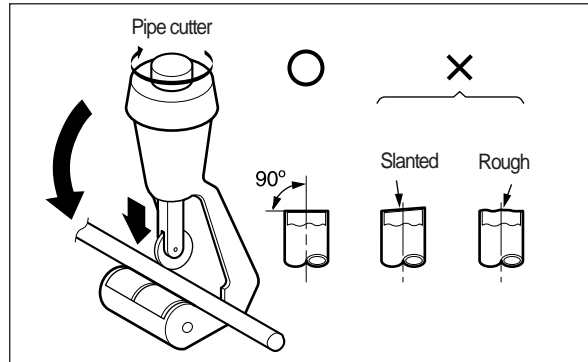


3. Piping and Drainage of Indoor Unit

1) Preparation of Pippings

1. Cut the pipes and the cable.

- Use the accessory piping kit or the pipes purchased locally.
- Measure the distance between the indoor and the outdoor unit.
- Cut the pipes a little longer than measured distance.
- Cut the cable 1.5m longer than the length of the pipe.

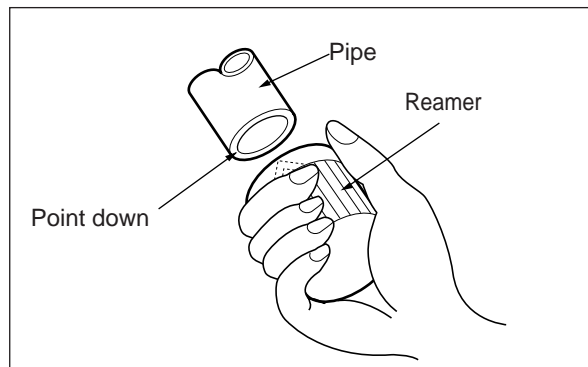


2. Remove burrs.

- Remove burrs from cut edges of pipes.
- Turn the pipe end toward down to avoid the metal powder entering the pipe.

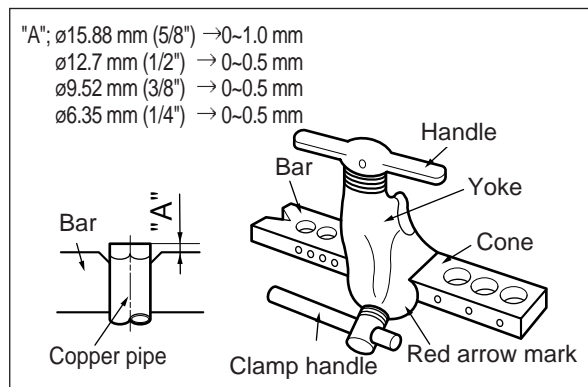
Caution:

If burrs are not removed, they may cause a gas leakage.

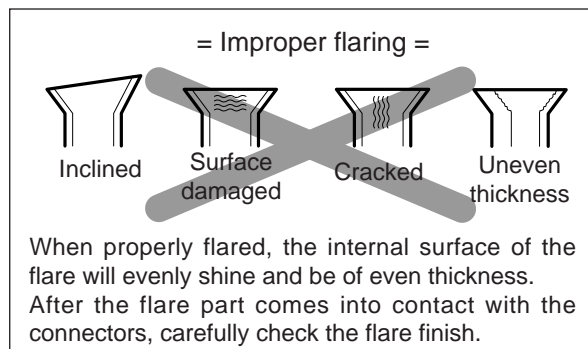


3. Flaring the pipes.

- Insert the flare nuts, mounted on the connection ports of both indoor and outdoor unit, onto the copper pipes. Some gas may leak, when the flare nuts are removed from the indoor unit, as some gas is charged to prevent the inside of the pipe from rusting.
- Fit the copper pipe end into the Bar of flare tool about 0.5~1.0mm higher. (See illustration)
- Flare the pipe ends.



4. Tape the flaring portion to protect it from the dust or damages.

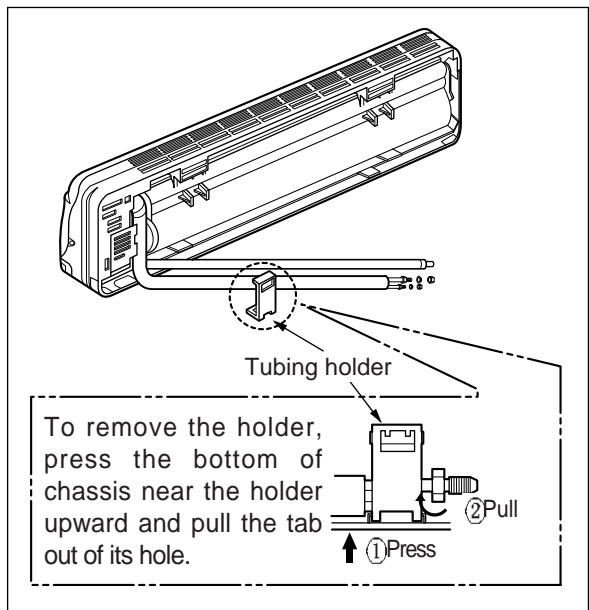


2) Connection of Pipings

1. Remove the indoor tubing with Drain hose from the hole

- Remove tubing holder and pull the tubing out of the chassis.

2. Replace the tubing holder into original position.



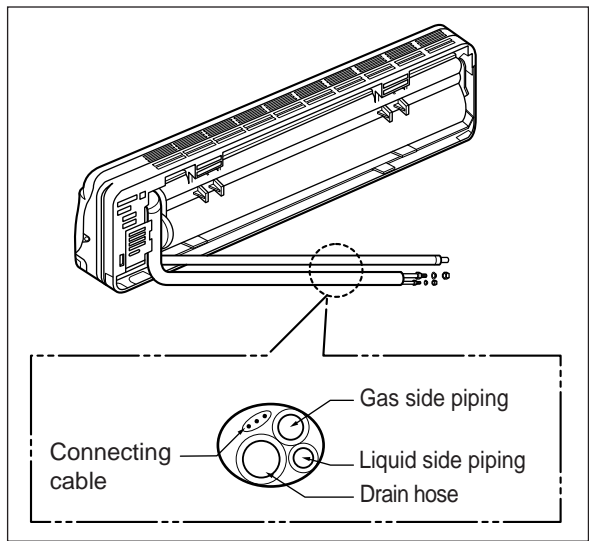
For right rear piping

3. Route the tubing and the drain hose straight backwards.

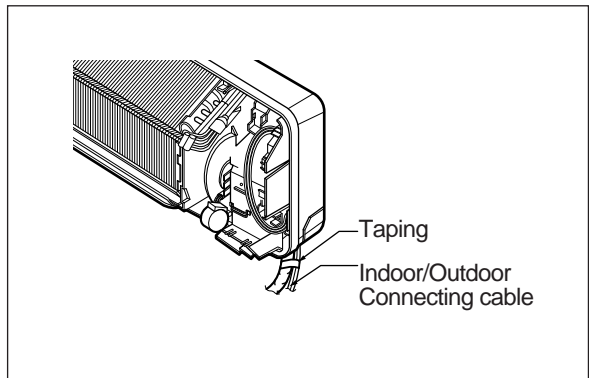
4. Insert the connecting cable into the indoor unit through the piping hole.

- Do not connect the cable to the indoor unit.
- Make a small loop with the cable for easy connection later.
- Connecting cable

	Cooling Model	Heat Pump Model
18K		
24K		

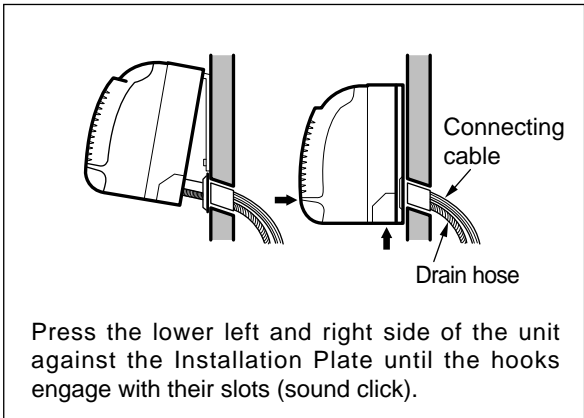


5. Tape the tubing, drain hose and the connecting cable. Be sure that drain hose locates at the lowest side of the bundle. Locating at the upper side can be a reason that drain water overflows drain pan inside the unit.



6. Indoor unit installation

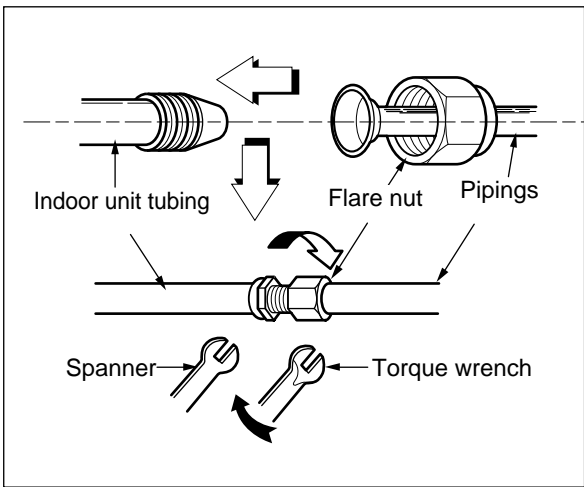
- Hook the indoor unit onto the upper portion of installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.) Ensure the hooks are properly seated on the installation plate by moving it left and right.



7. Connecting the pipings to the indoor unit.

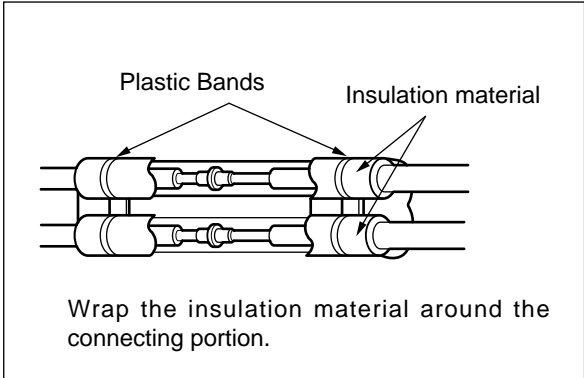
- Align the center of the pipings and sufficiently tighten the flare nut with fingers.
- Finally, tighten the flare nut with torque wrench until the wrench clicks. When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Pipe Size	Torque
Liquid Side(1/4")	1.8kg·m
Liquid Side(3/8")	4.2kg·m
Gas Side(1/2")	5.5kg·m
Gas Side(5/8")	6.6kg·m



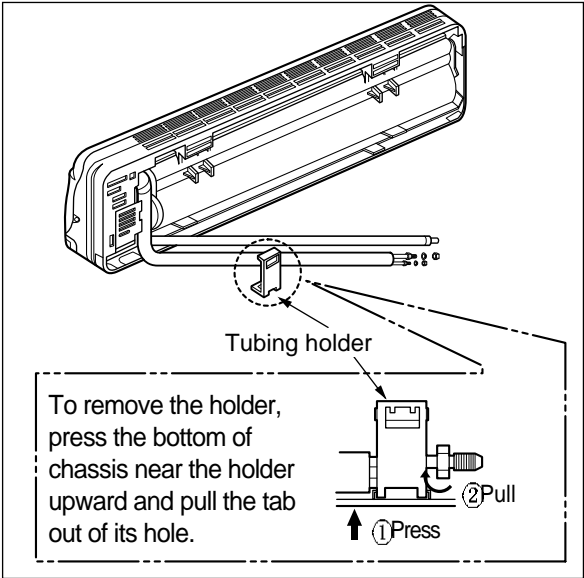
8. Wrap the insulation material around the connecting portion.

CAUTION: Take care to arrange the pipings, drain hose and cables as the picture on page 7 for inserting it into the indoor unit and refixing the tubing holder easily.

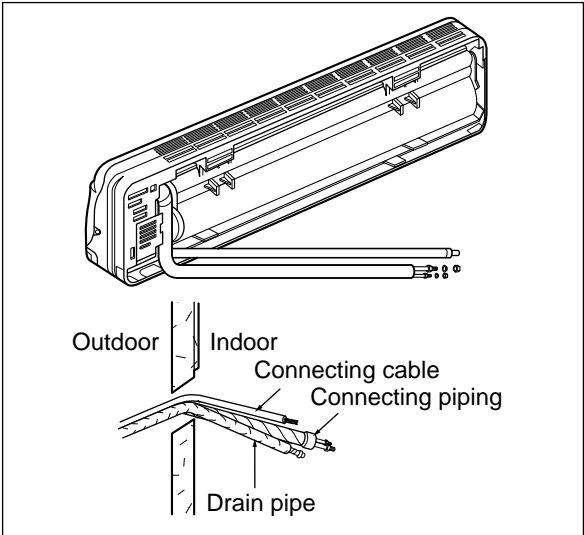


For the left pipings

3. Route the indoor tubing with the drain hose to the piping hole as desired position.



4. Insert the pipings, power supply cord and connecting cable into the piping hole.



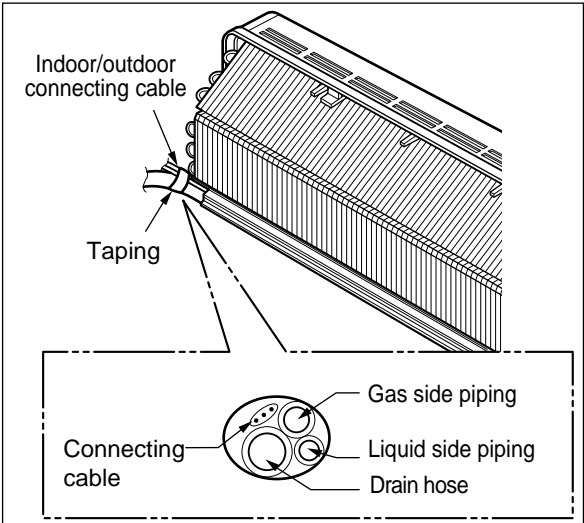
5. Insert the connecting cable into the indoor unit.

- Don't connect the cable to the indoor unit.
- Make a small loop with the cable for easy connection later.

6. Tape the tubing, drain hose and the connecting cable.

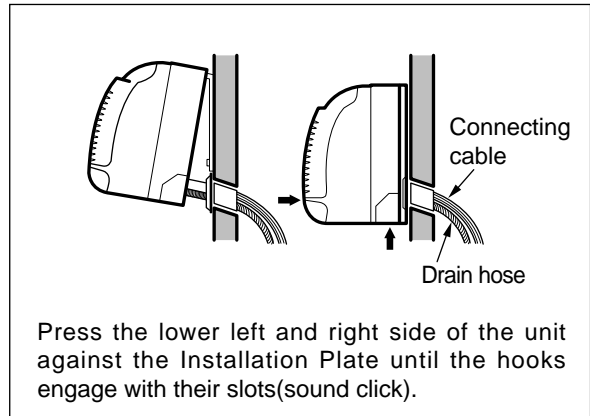
- Connecting cable

	Cooling Model	Heat Pump Model
18K		+
24K		



7. Indoor unit installation

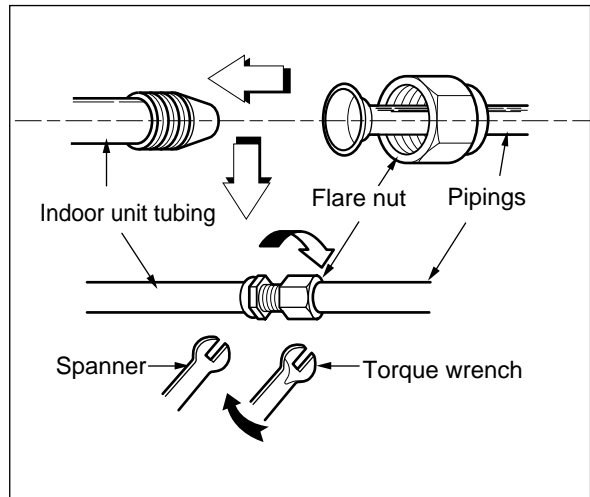
- Hook the indoor unit onto the upper portion of installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.) Ensure the hooks are properly seated on the installation plate by moving it in left and right.



8. Connecting the pipings to the indoor unit.

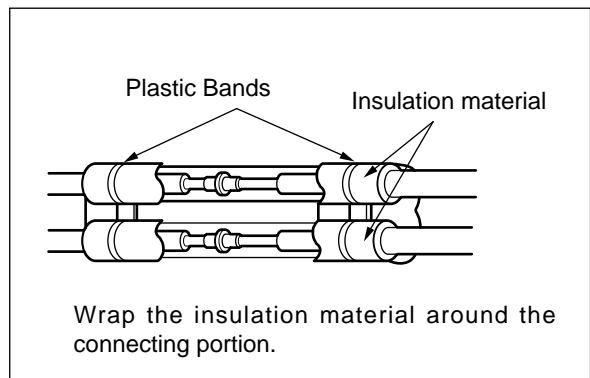
- Align the center of the pipings and sufficiently tighten the flare nut with fingers.
- Finally, tighten the flare nut with torque wrench until the wrench clicks. When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Pipe Size	Torque
Liquid Side(1/4")	1.8kg·m
Liquid Side(3/8")	4.2kg·m
Gas Side(1/2")	5.5kg·m
Gas Side(5/8")	6.6kg·m



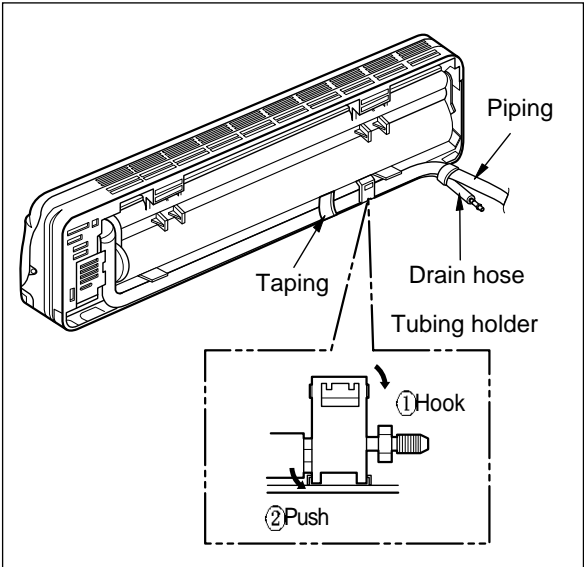
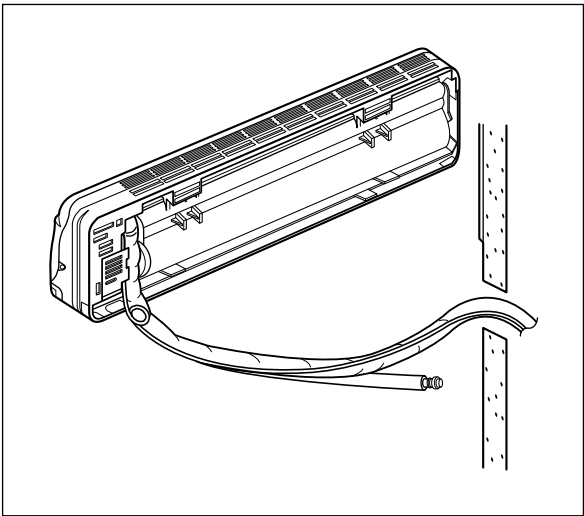
9. Wrap the insulation material around the connecting portion.

CAUTION: Take care to arrange the pipings, drain hose and cables as the right upper picture for inserting it into the indoor unit and refixing the tubing holder easily.



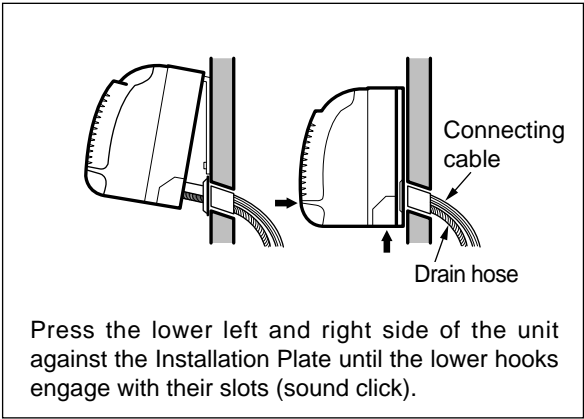
10. Set the pipings and the connecting cable to the back of the chassis with the tubing holder

- Hook the edge of tubing holder to tap on chassis and push the bottom of tubing holder to be engaged in the bottom of chassis.



11. Indoor unit installation

- Hook the indoor unit onto the upper portion of installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.) Ensure the hooks are properly seated on the installation plate by moving it in left and right.

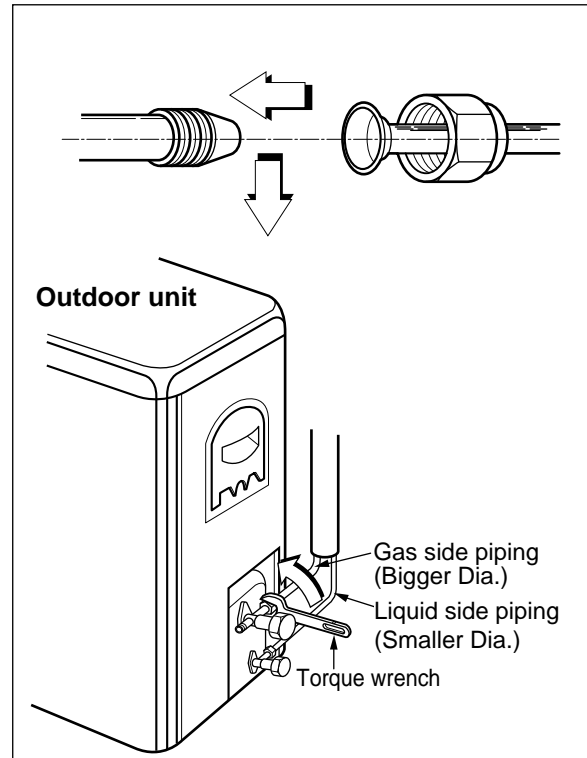


4. Connecting Pipings and the cable to Outdoor unit

1) Connecting the pipings to the Outdoor unit

1. Align the center of the pipings and sufficiently tighten the flare nut with fingers.
2. Finally, tighten the flare nut with torque wrench until the wrench clicks.
 - When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Pipe Size	Torque
Liquid Side(1/4")	1.8kg·m
Liquid Side(3/8")	4.2kg·m
Gas Side(1/2")	5.5kg·m
Gas Side(5/8")	6.6kg·m



CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

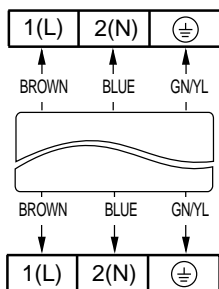
- 1) Never fail to have an individual power specialized for the air conditioner. As for the method of wiring, be guided by the circuit diagram pasted on the inside of control box cover.
- 2) Provide a circuit breaker switch between power source and the unit.
- 3) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could give rise to burn-out of the wires.)
- 4) Specification of power source.
- 5) Confirm that electrical capacity is sufficient.
- 6) See to that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- 7) Confirm that the cable thickness is as specified in the power sources specification. (Particularly note the relation between cable length and thickness.)
- 8) Never fail to equip a leakage breaker where it is wet or moist.
- 9) The following troubles would be caused by voltage drop-down.
 - Vibration of a magnetic switch, damage on the contact point there of, fuse breaking, disturbance to the normal function of a overload protection device.
 - Proper starting power is not given to the compressor.

2) Connection of the cable

- Remove the cover control from the unit by loosening the screw.
Connect the wires to the terminals on the control board individually as the following.

• 18K cooling only model

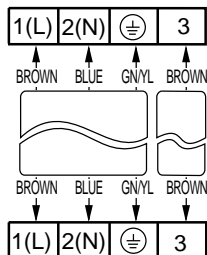
Terminals on the outdoor unit



Terminals on the indoor unit

• 18K heat pump model

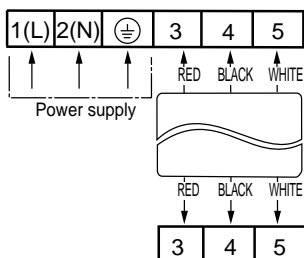
Terminals on the outdoor unit



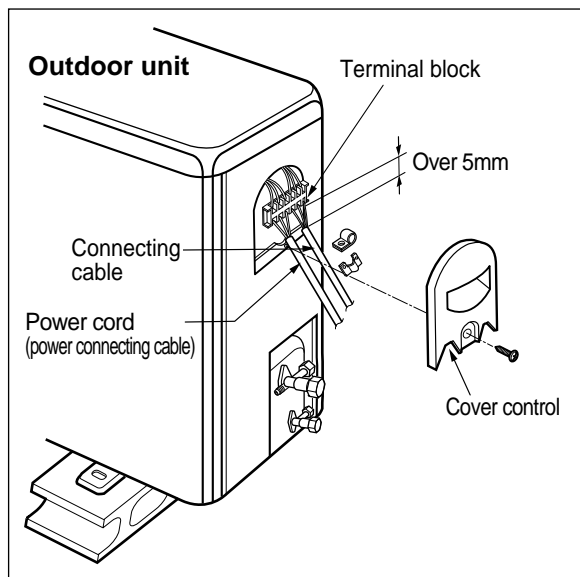
Terminals on the indoor unit

• 24K models

Terminals on the outdoor unit



Terminals on the indoor unit



- Secure the cable onto the control board with the holder (clammer).
- Refix the cover control to the original position with the screw.
- Use a recognized circuit breaker 20A between the power source and the unit. A disconnection device to adequately disconnect all supply lines must be fitted.

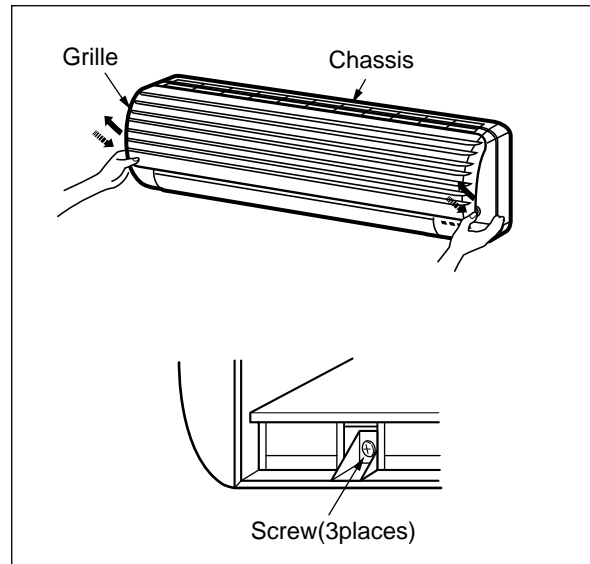
CAUTION		
<p>The power cord connected to the indoor unit should be complied with the following specifications (Type H05VV-F(Indoor), H07RN-F(Outdoor) approved by HAR or SAA).</p>	<p>The power connecting cable (18K) connected to the indoor and outdoor unit should be complied with the following specifications (Type H07RN-F approved by HAR or SAA).</p>	<p>The connecting cable connected to the indoor and outdoor unit should be complied with the following specifications (Type H07RN-F approved by HAR or SAA).</p>
<p>NORMAL CROSS-SECTIONAL AREA 2.5mm² (18K : 1.5mm²)</p>	<p>NORMAL CROSS-SECTIONAL AREA 1.5mm²</p>	<p>NORMAL CROSS-SECTIONAL AREA 0.75mm²</p>

5. Checking the Drainage and Connecting the cable to Indoor unit

1) Checking the Drainage

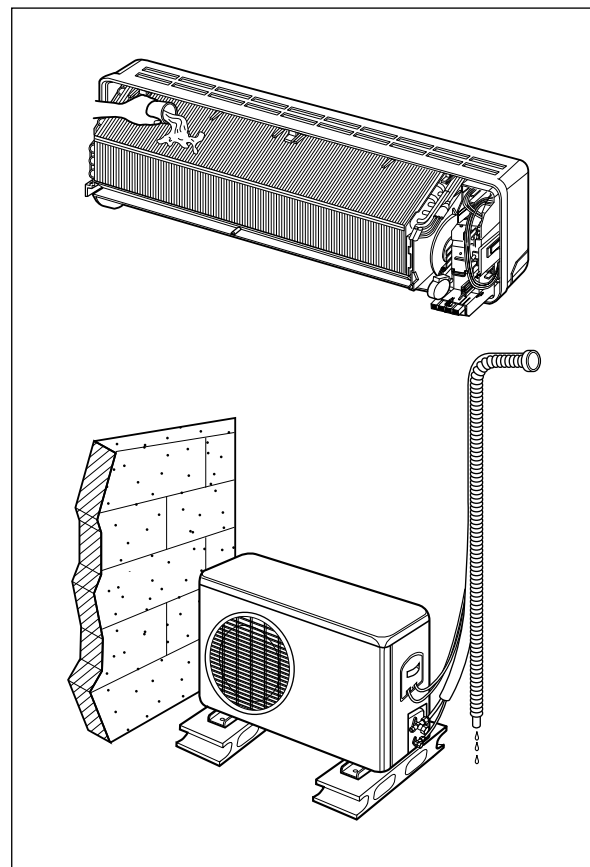
1. Remove the Grille from the cabinet.

- Set the up-and-down air direction louver to open position (horizontally) by finger pressure.
- Remove 4 screws.
- To remove the Grille, pull lower the left and right side of the grille toward you (slightly tilted) and lift it straight upward (Four tabs on the top inside edge of chassis are clear of their slots).



2. Check the drainage.

- Pour a glass of water on the evaporator.
- Ensure if water flows drain hose of indoor unit without any leakage.



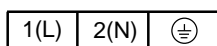
2) Connect the cable to the indoor unit

1. Connect the wires to the terminals on the control board individually according to the outdoor unit connection.

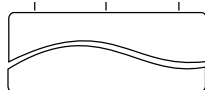
- Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively.

• 18K cooling only model

Terminals on the outdoor unit

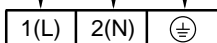


BROWN BLUE GNYL



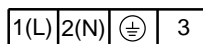
BROWN BLUE GNYL

Terminals on the indoor unit

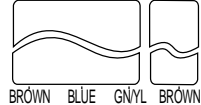


• 18K heat pump model

Terminals on the outdoor unit

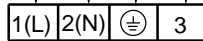


BROWN BLUE GNYL BROWN



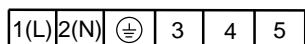
BROWN BLUE GNYL BROWN

Terminals on the indoor unit



• 24K models

Terminals on the outdoor unit



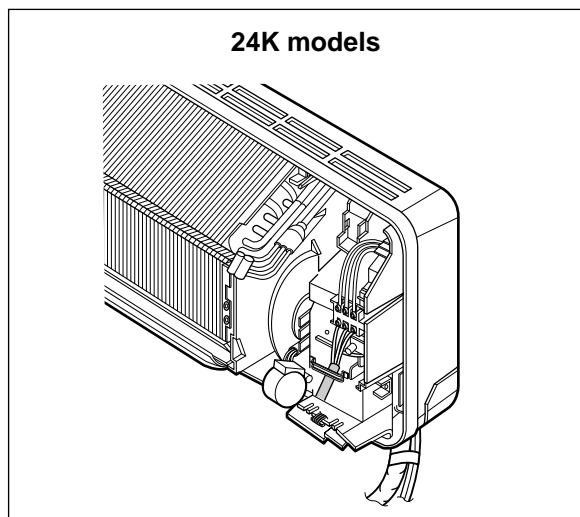
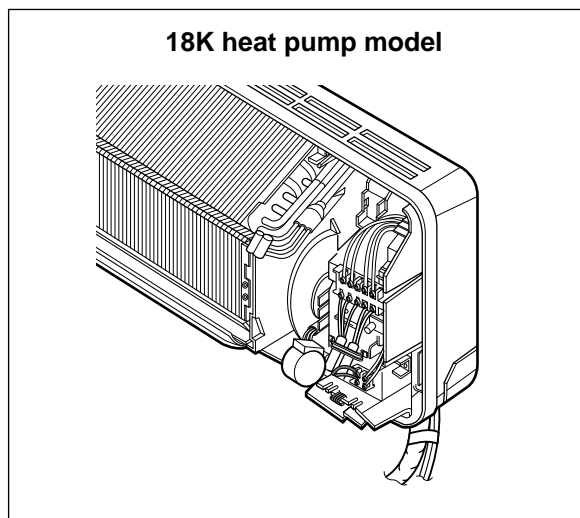
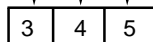
RED BLACK WHITE

Power supply



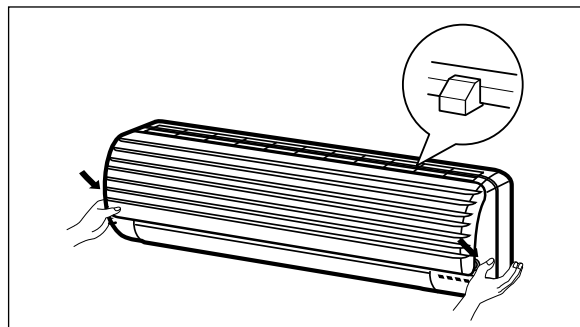
RED BLACK WHITE

Terminals on the indoor unit



2. Attach the Grille onto the cabinet.

- Grasp lower the left and right side of the Grille and engage four tabs on the top inside edge of the chassis.
- Press the Grille toward the chassis until it will be back into place.



3) Form the pipings

1. Wrap the connecting portion of indoor unit with the Insulation material and secure it with two Plastic Bands. (for the right pipings)

- If you want to connect an additional drain hose, the end of the drain-outlet should keep distance from the ground. (Do not dip it into water, and fix it on the wall to avoid swinging in the wind.)
- Connecting cable

	Cooling Model	Heat Pump Model
18K		
24K		

In case of the Outdoor unit being installed below position of the Indoor unit.

2. Tape the Pipings, drain hose and Connecting Cable from down to up.

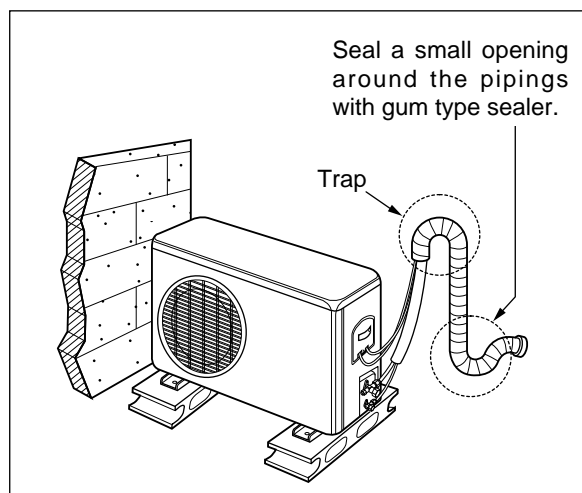
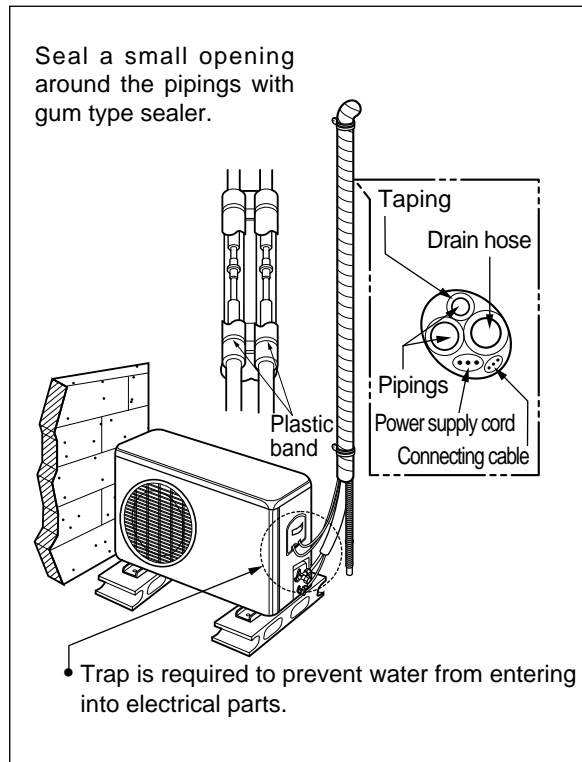
3. Form the pipings gathered by taping along the exterior wall and fix it onto the wall by saddle or equivalent.

In case of the Outdoor unit being installed above position of the Indoor unit.

2. Tape the Pipings and Connecting cable from down to up.

3. Form the pipings gathered by taping along the exterior wall, make the Trap to be required to prevent water from entering into the room.

4. Fix the pipings onto the wall by saddle or equivalent.



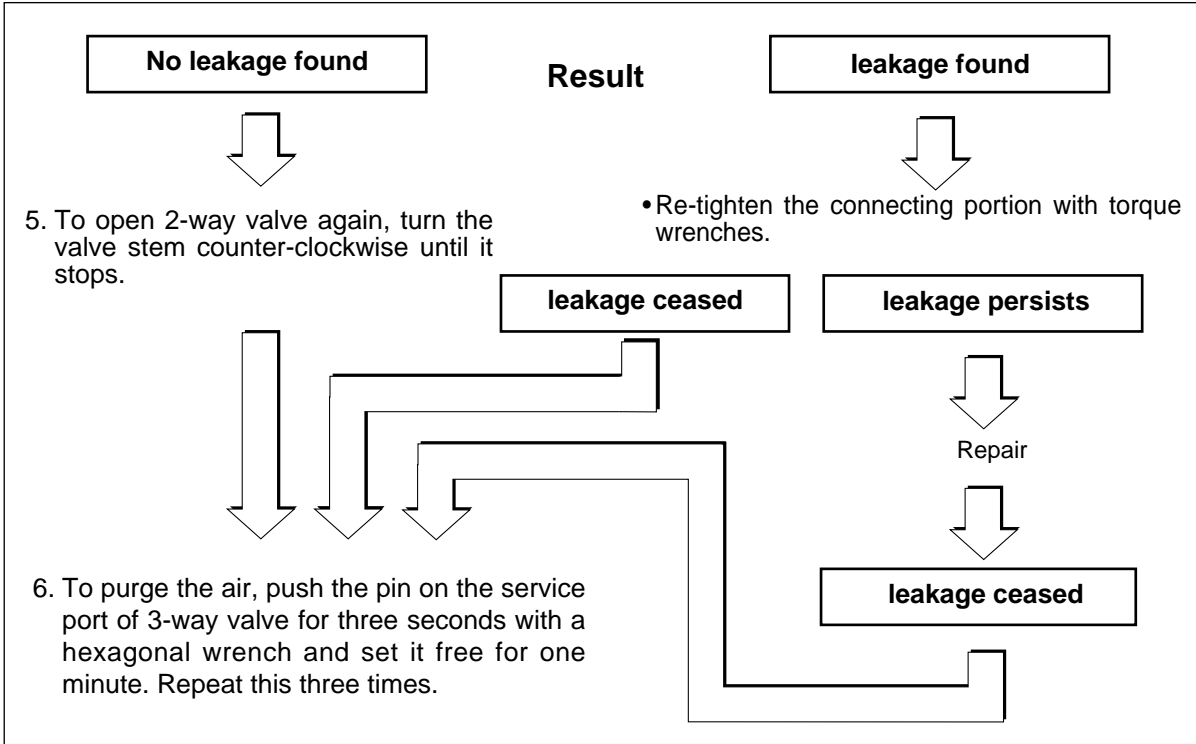
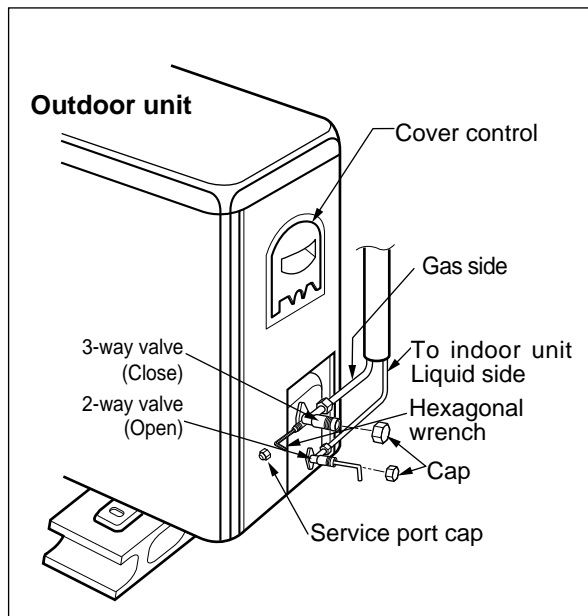
6. Air Purging

1) Air purging

The air which contains moisture remaining in the refrigeration cycle may cause a malfunction on the compressor.

1. Remove the caps from the 2-way and 3-way valves.
2. Remove the service-port cap from the 3-way valve.
3. Turn the valve stem of liquid side valve counter-clockwise approx. 90° and hold it there for ten seconds, then close it.
4. Check a gas-leakage of the connecting portion of the pipings.

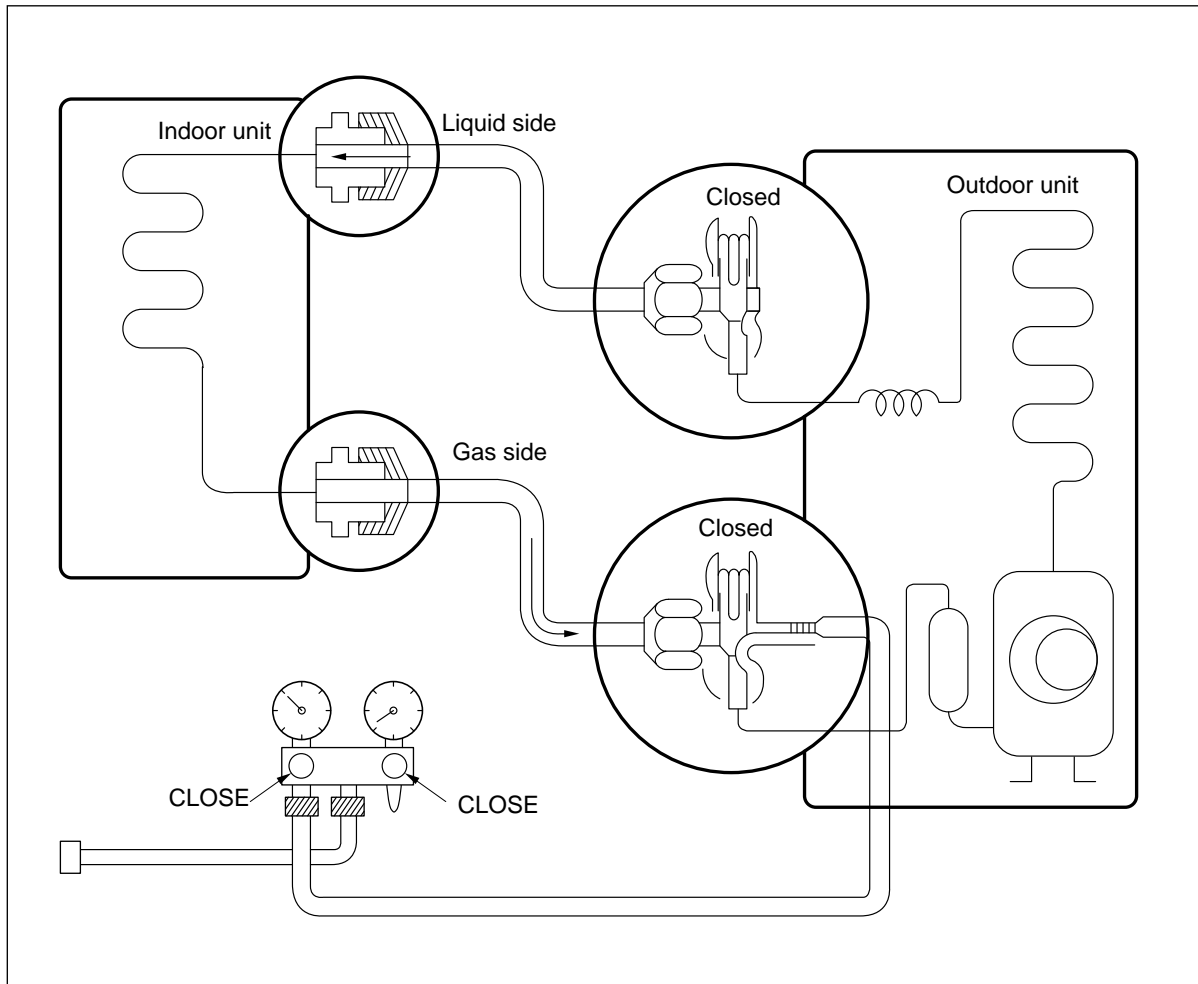
CAUTION: Do not leak the gas in the air during air purging. Use vacuum pump as far as possible.



7. Set the both liquid and gas side valves to open position with the Hexagonal wrench for the unit operation.

2) Checking a gas leakage

1. Connect the manifold gauge to the service port of 3-way valve.
Measure the pressure.
2. Keep it for 5-10 minutes.
Ensure if the pressure indicated on the gauge is as same as that of measured at first time.



NOTE:

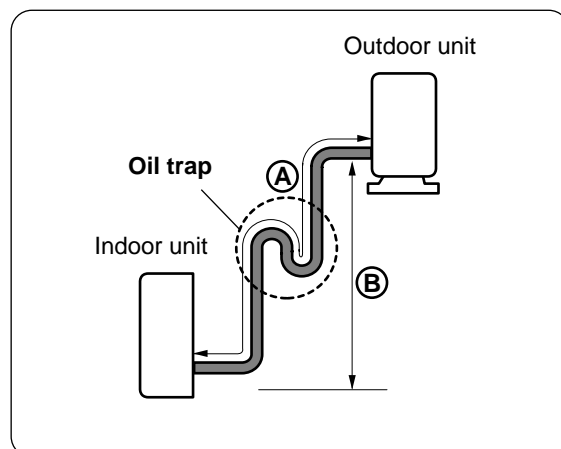
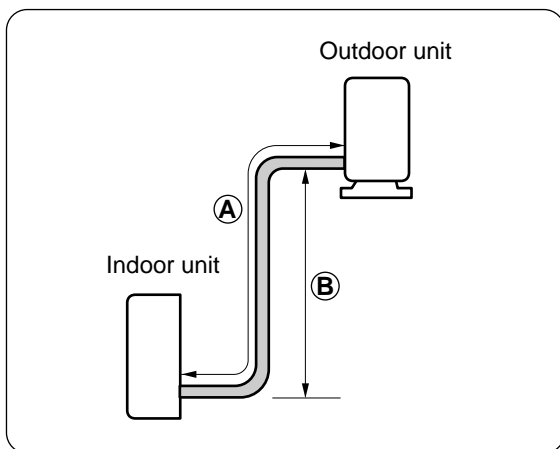
The additional gas for air purging has been charged in the outdoor unit.

However, if the flare connections have not been done correctly and there gas leaks, a gas cylinder and the charge set will be needed.

CAUTION : Do not leak the gas in the air during air purging. Use vacuum pump as far as possible.

7. Maximum Length of Pipe and Freon Extra Charge

Capacity (Btu/h)	Pipe Size		Standard Length (m)	Max. Elevation Ⓑ (m)	Max. length Ⓐ (m)	Additional Refrigerant (g/m)
	GAS	LIQUID				
7K, 9K	3/8"	1/4"	5	7	15	20
12K	1/2"	1/4"	5	7	15	20
18K	1/2"	1/4"	5	15	30	20
24K	5/8"	1/4"	5	15	30	30



In case more than 5m

CAUTION

- Capacity is based on standard length and maximum allowance length is on the basis of reliability.
- Oil trap should be installed every 5~7 meters.

8. Test running

1) Connection of power supply

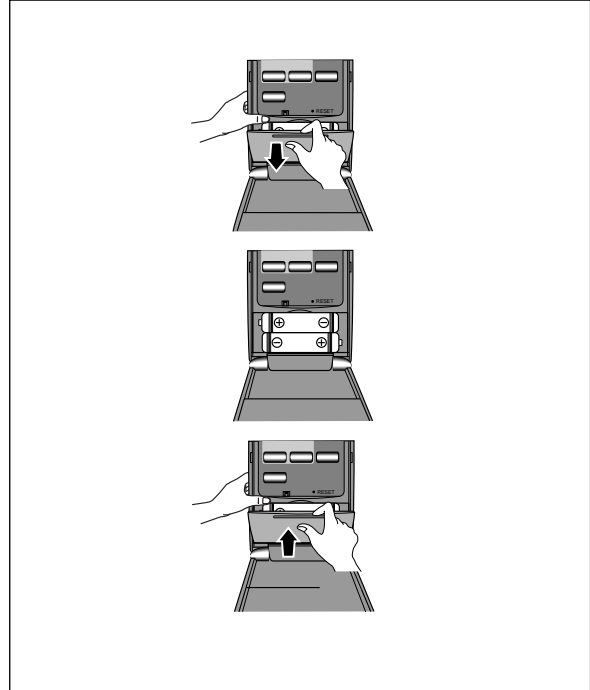
1. Connect the power supply cord to the independent power supply.

- Circuitbreaker is required.

2. Prepare the remote control.

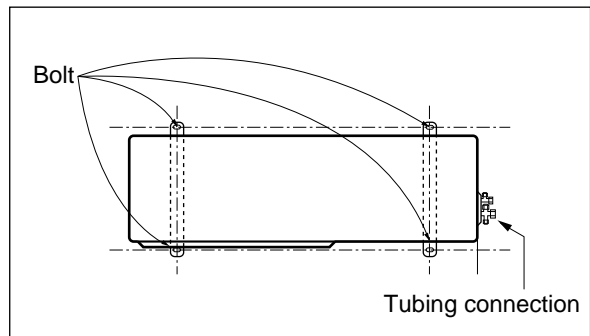
- Insert two batteries provided.
Remove the battery cover from the remote controller.
- Slide the cover according to the arrow direction.
Insert the two batteries.
(Two "R03" or "AAA" dry-cell batteries or equivalent.)
- Be sure that the (+) and (-) directions are correct.
- Be sure that both batteries are new.
Re-attach the cover.
- Slide it back into position.

3. Operate the unit for fifteen minutes or more.



Settlement of Outdoor Unit

- Anchor the outdoor unit with a bolt and nut ($\varnothing 10\text{cm}$) tightly and horizontally on a concrete or rigid mount.
- When installing on the wall, roof or rooftop, anchor the mounting base securely with a nail or wire assuming the influence of wind and earthquake.
- In the case when the vibration of the unit is conveyed to the house, settle the unit with an anti-vibration rubber.



2) Evaluation of the performance

1. Measure the temperature of the intake and discharge air.
2. Ensure the difference between the intake temperature and the discharge one is more than 8°C (Cooling) or reversely (Heating).

