

Installation Manual of Room Air Conditioner

- Read this manual before installation
- Explain sufficiently the operating means to the user according to this manual.

Necessary Tools for Installation

- | | | | |
|-------------------------|-------------------------------------|---|--------------------|
| 1. Hammer | 5. Spanner (14, 17, 19 and 24mm) | 9. Knife | 12. Measuring tape |
| 2. Hacksaw | 6. Torque wrench (17mm, 22mm, 24mm) | 10. Nipper | 13. Reamer |
| 3. Hole core drill | 7. Pipe cutter | 11. Gas leakage detector or soap-and-water solution | |
| 4. Hexagon wrench (5mm) | 8. Flaring tool | | |

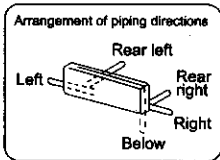
Drawing for the installation of indoor and outdoor units

Accessory parts

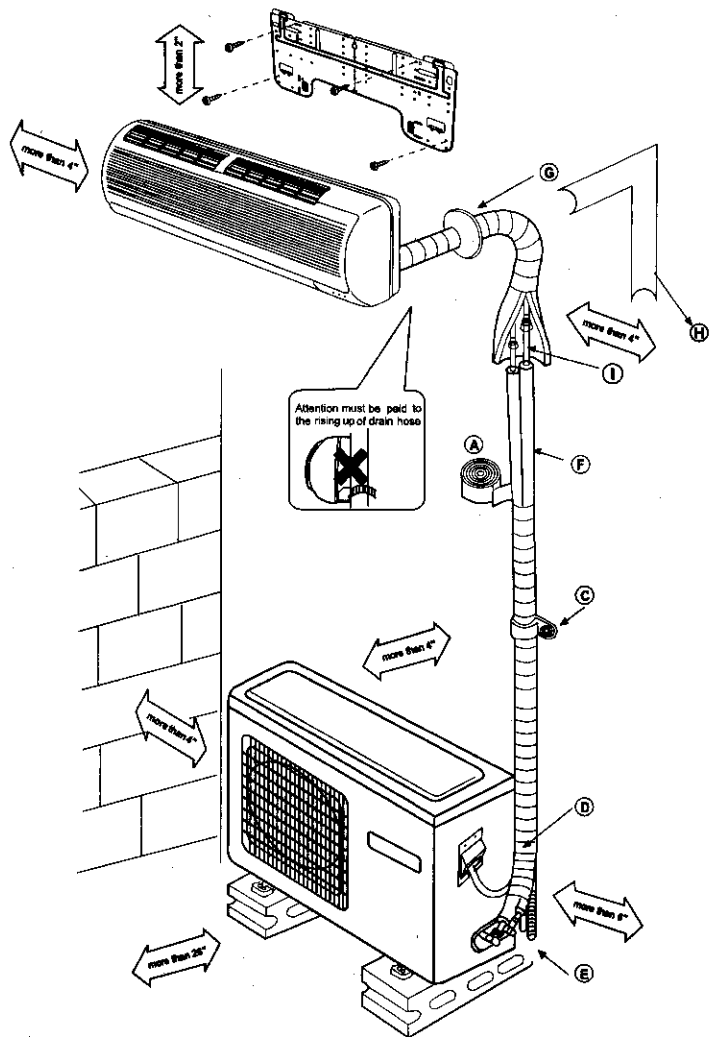
No.	Accessory parts	Number of articles
①	Remote Control	1
②	Size AA 1.5V battery	2
③	Mounting plate	1
④	Drain hose	1
⑤	$\varnothing 4 \times 50$ Steel nail, cement	6
⑥	$\varnothing 4 \times 25$ Screw Anchors	4
⑦	Cover	1
⑧	Cushion	4
⑨	Pipe supporting plate	1
⑩	Drain-elbow	1

Optional parts for piping

Mark	Parts name
(A)	Non-adhesive tape
(B)	Adhesive tape
(C)	Saddle (L.S) with screws
(D)	Connecting electric cable for indoor and outdoor
(E)	Drain hose
(F)	Heat insulating material
(G)	Piping hole cover
(H)	Line set ducting
(I)	Main pipes



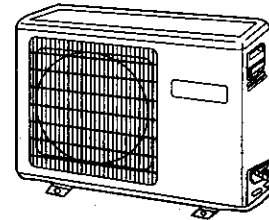
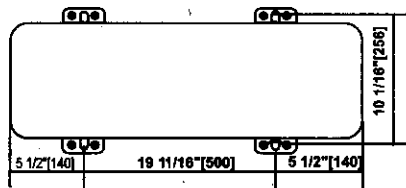
The appearance is different by models.



※ The marks from (A) to (I) in the figure are the parts numbers.

※ ⑩ Only for heat pump unit.

HSU09XC7
 HSU09XH7
 HSU12XC7
 HSU12XH7



Floor fixing dimensions of the outdoor unit
 (Unit, inch[mm])

Fixing of outdoor unit

- Fix the unit to concrete or block with bolts(ϕ 10mm) and nuts firmly and horizontally.
- When fitting the unit to wall surface, roof or rooftop, fix a supporter surely with nails or wires in consideration of earthquake and strong wind.
- If vibration may affect the house, fix the unit by attaching a vibration-proof mat.

Indoor Unit

Selection of Installation Place

Outdoor Unit

- Place, robust not causing vibration, where the body can be supported sufficiently.
- Place, not affected by heat or steam generated in the vicinity, where inlet and outlet of the unit are not disturbed.
- Place, possible to drain easily, where piping can be connected with the outdoor unit.
- Place, where cold air can be spread in a room entirely.
- Place, nearby a power receptacle, with enough space around. (Refer to drawings).
- Place where the distance of more than 1m from televisions, radios, wireless apparatuses and fluorescent lamps can be left.
- In the case of fixing the remote controller on a wall, place where the indoor unit can receive signals when the fluorescent lamps in the room are lightened.
- Place, which is less affected by rain or direct sunlight and is sufficiently ventilated.
- Place, possible to bear the unit, where vibration and noise are not increased.
- Place, where discharged wind and noise do not cause a nuisance to the neighbors.
- Place, where a distance marked \leftrightarrow is available as illustrated in the above figure.

Power Source

- Before inserting power plug into receptacle, check the voltage without fail. The power source is the same as the corresponding name plate.
- Install an exclusive branch circuit of the power.
- A receptacle shall be set up in a distance where the power cable can be reached. Do not extend the cable by cutting it.

Selection of pipe

- To this unit, both liquid and gas pipes shall be insulated as they become low temperature in operation.
- Use optional parts for piping set or pipes covered with equivalent insulation material.
- The thickness of the pipe must be 0.8mm at least.

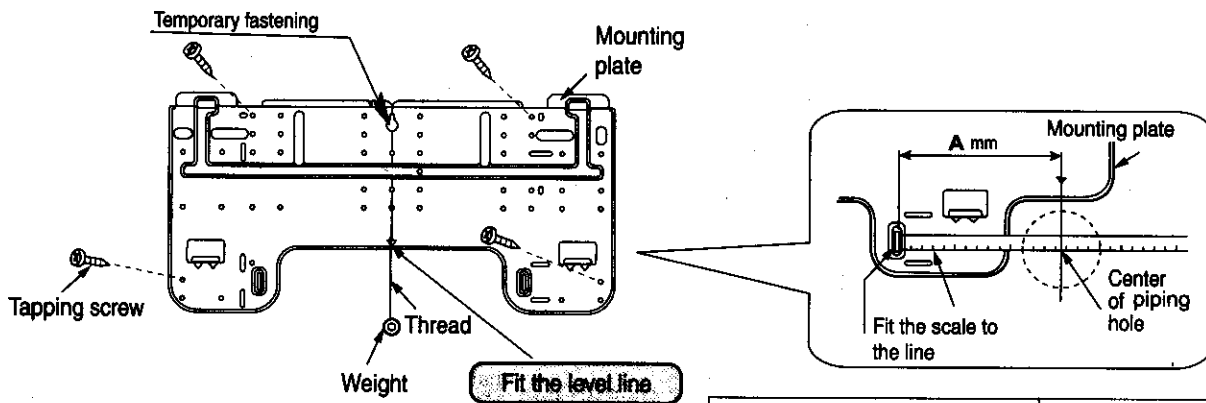
	HSU09XC7 HSU09XH7	HSU12XC7 HSU12XH7
Liquid pipe (ϕ)	1/4" [6.35mm] x 1/32" [0.8mm]	1/4" [6.35mm] x 1/32" [0.8mm]
Gas pipe (ϕ)	1/2" [12.7mm] x 1/32" [0.8mm]	1/2" [12.7mm] x 1/32" [0.8mm]

Indoor unit

1. Fitting of the Mounting Plate and Positioning of the wall Hole

When the mounting plate is first fixed

1. Carry out, based on the neighboring pillars or lintels, a proper leveling for the plate to be fixed against the wall, then temporarily fasten the plate with one steel nail.
2. Make sure once more the proper level of the plate, by hanging a thread with a weight from the central top of the plate, then fasten securely the plate with the attachment steel nail.
3. Find the wall hole location A using a measuring tape



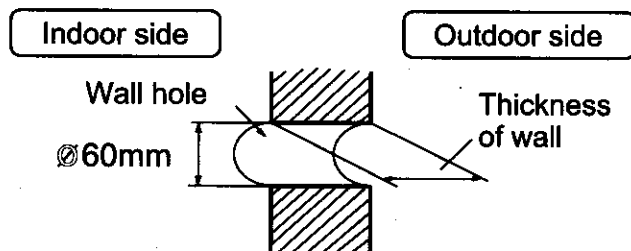
	Amm
HSU09XC7 HSU09XH7 HSU12XC7 HSU12XH7	5 11/16" [145mm]

When the mounting plate is fixed side bar and lintel

- Fix to side bar and lintel a mounting bar, which is separately sold, and then fasten the plate to the fixed mounting bar.
- Refer to the previous article, " **When the mounting plate is first fixed** ", for the position of wall hole.

2. Making a Hole on the Wall and Fitting the Piping Hole Cover

- Make a hole of 2 3/8" (60 mm) in diameter, slightly descending to outside the wall.
- Install piping hole cover and seal it off with putty after installation



(Section of wall hole) ㊸ Piping hole pipe

Indoor unit

3. Installation of the Indoor Unit

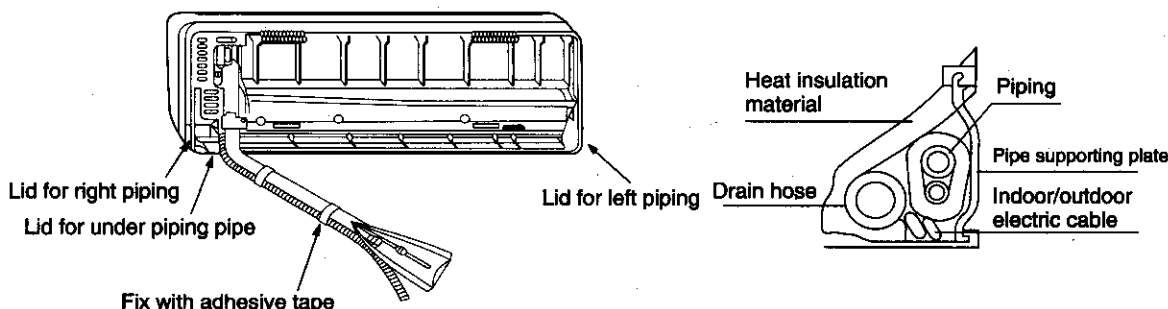
Drawing of pipe

[Rear piping]

- Draw pipes and the drain hose, then fasten them with the adhesive tape

[Left • Left-rear piping]

- In case of left side piping, cut away, with a nipper, the lid for left piping.
- In case of left-rear piping, bend the pipes according to the piping direction to the mark of hole for left-rear piping which is marked on heat insulation materials.
 1. Insert the drain hose into the dent of heat insulation materials of indoor unit.
 2. Insert the indoor/outdoor electric cable from backside of indoor unit, and pull it out on the front side, then connect them.
 3. Coat the flaring seal face with refrigerant oil and connect pipes.
Cover the connection part with heat insulation materials closely, and make sure fixing with adhesive tape



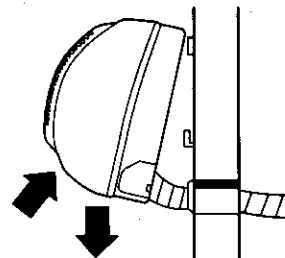
- Indoor/outdoor electric cable and drain hose must be bound with refrigerant piping by protecting tape.

[Other direction piping]

- Cut away, with a nipper, the lid for piping according to the piping direction and then bend the pipe according to the position of wall hole. When bending, be careful not to crash pipes.
- Connect beforehand the indoor/outdoor electric cable, and then pull out the connected to the heat insulation of connecting part specially.

Fixing the indoor unit body

- Hang surely the unit body onto the upper notches of the mounting plate. Move the body from side to side to verify its secure fixing.
- In order to fix the body onto the mounting plate, hold up the body aslant from the underside and then put it down perpendicularly.

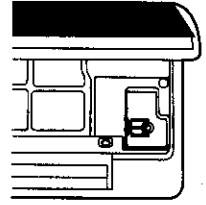


Indoor unit

4 Connecting the indoor/outdoor Power Cable

Removing the wiring cover

- Remove terminal cover at right bottom corner of indoor unit, then remove wiring cover.



ELECTRICAL WIRING

Field wiring must comply with the National Electric Code (C.E.C in Canada) and any applicable local ordinance.

POWER WIRING

It is important that proper electrical power is available at the condensing unit contactor. Voltage should not vary more than 10% of that stamped on the rating plate. when the unit is trying to start. Interphase variation on the three-phase units must not be more than 3%. Install a branch circuit disconnect within sight of the unit and of adequate size to handle the starting current. Power wiring must be run in a rain-tight conduit. Conduit must be run through the connector panel below the access cover and attached to the bottom of the control box. Connect power wiring to contactor located in outdoor heat pump electrical box. Check all electrical connections, including factory wiring within the unit and make sure all connections are tight. DO NOT connect aluminum field wire to the contactor terminals.

GROUNDING

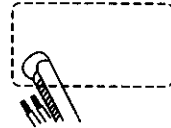
WARNING

THE UNIT MUST BE PERMANENTLY GROUNDED. FAILURE TO DO SO CAN CAUSE ELECTRICAL SHOCK RESULTING IN SEVERE PERSONAL INJURY OR DEATH.

A grounding lug is provided near the contactor for a ground wire. Grounding may be accomplished by grounding the power wire conduit to the condensing unit control box.

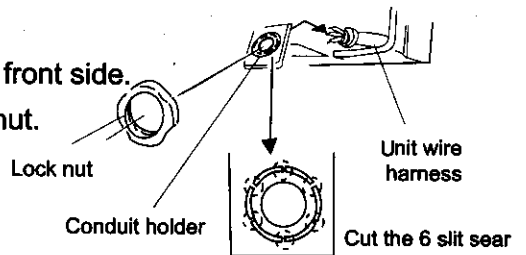
When connecting the cable after installing the indoor unit

1. Insert the cord from outside into the left side of the existing wall hole.
2. Pull out the cord on the front side, and connect the cable making a loop for easy connection later.

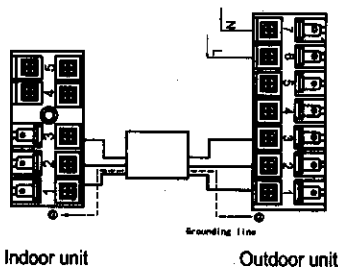


When connecting the cord before installing the indoor unit

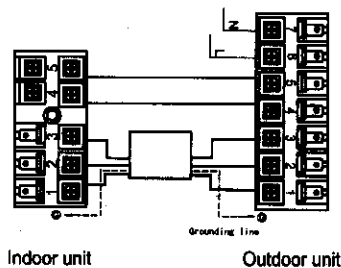
- Insert the cord from the back side of the unit, then pull it out on the front side.
- Fasten the unit wire harness to the conduit holder using the lock nut.
- Position the conduit holder to its original state using screw.



For HSU09XC7 HSU12XC7



For HSU09XH7 HSU12XH7



Connecting wiring:AWG12X4, Power Cable:AWG12X3.

Connecting wiring:AWG12X6, Power Cable:AWG12X3.

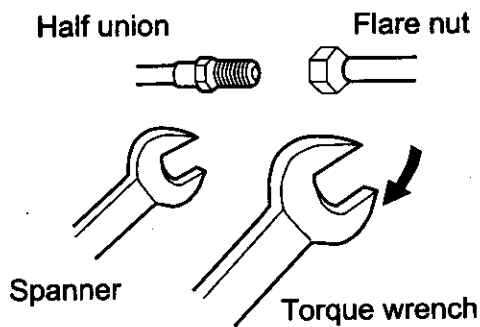
Outdoor unit

1. Installation of Outdoor Unit

Install according to **Drawing for the installation of indoor and outdoor units**

2. Connection of pipes

- To bend a pipe, give the roundness as large as possible not to crush the pipe, and the bending radius should be 30 to 40 mm or longer.
- Connecting the pipe of gas side first makes working easier.
- The connection pipe is specialized for R410A.



Forced fastening without careful centering may damage the threads and cause a leakage of gas.

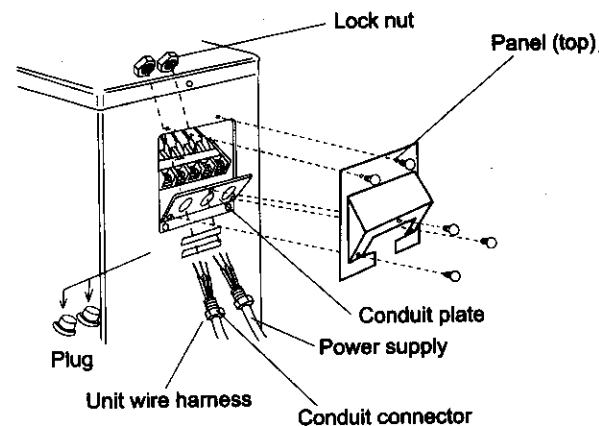
Pipe Diameter (ϕ)	Fastening torque
Liquid side 6.35mm(1/4")	18N.m
Gas side 12.7mm(1/2")	55N.m

Be careful that matters, such as wastes of sands, etc. shall not enter the pipe.

The standard pipe length is 5m. If it is over 5m, the function of the unit will be affected. If the pipe has to be lengthened, the refrigerant should be charged, according to 20 g/m. But the charge of refrigerant must be conducted by professional air conditioner engineer. Before adding additional refrigerant, perform air purging from the refrigerant pipes and indoor unit using a vacuum pump, then charge additional refrigerant.

3. Connection

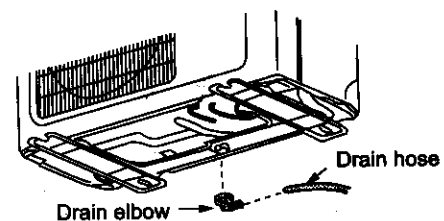
1. Take off the panel(top), by removing the 5 screws.
2. Remove the plugs on the conduit plate.
3. Temporarily mount the conduit tubes on the conduit plate.
4. Connect both the power supply and unit wire harness to the corresponding terminals on the terminal board.
5. Ground the unit in accordance with local codes.
6. Allow several extra inches of wire for making wiring connections.
7. Use lock nuts to secure conduit tubes.



4. Attaching Drain-Elbow

- If the drain-elbow is used, please attach it as figure.

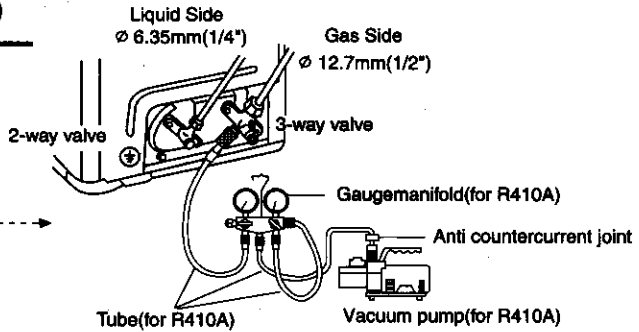
Note: Only for heat pump unit.



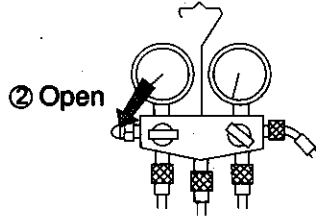
Outdoor unit

5. Purging Method: To use vacuum pump

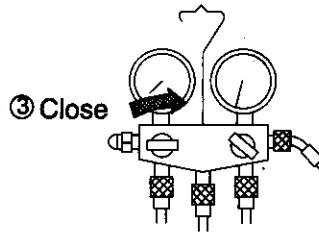
① Detach the service port's cap of 3-way valve, the valve rod's cap for 2-way valve and 3-way's, connect the service port into the projection of charge hose (low) for gaugemanifold. Then connect the projection of charge hose (center) for gaugemanifold into vacuum pump.



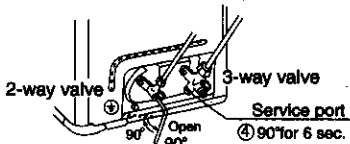
② Open the handle at low in gaugemanifold, operate vacuum pump. If the scale-moves of gauge (low) reach vacuum condition in a moment, check ① again.



③ Vacuumize for over 15min. And check the level gauge which should read -0.1 MPa (-76 cm Hg) at low pressure side. After the completion of vacuumizing, close the handle 'Lo' in gaugemanifold and stop the operation of the vacuum pump. Check the condition of the scale and hold it for 1-2min. If the scale-moves back in spite of tightening, make flaring work again, the return to the beginning of ③..



④ Open the valve rod for the 2-way valve to an angle of anticlockwise 90 degrees. After 6 seconds, close the 2-way valve and make the inspection of gas leakage.

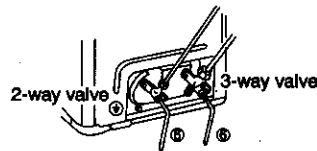


⑤ No gas leakage?

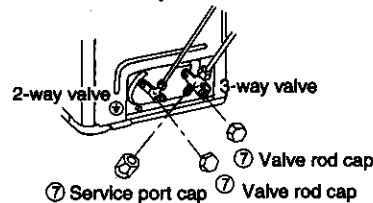
In case of gas leakage, tighten parts of pipe connection. If leakage stops, then proceed ⑥ steps.

If it does not stop gas leakage, discharge whole refrigerants from the service port. After flaring work again and vacuumize, fill up prescribed refrigerant from the gas cylinder

⑥ Detach the charge hose from the service port, open 2-way valve and 3-way. Turn the valve rod anticlockwise until hitting lightly.



⑦ To prevent the gas leakage, turn the service port's cap, the valve rod's cap for 2-way valve and 3-way's a little more than the point where the torque increases suddenly.



⑧ After attaching the each caps, check the gas leakage around the caps.

CAUTION:

1. If the refrigerant of the air conditioner leaks, it is necessary to discharge all the refrigerant. Vacuumize first, then charge the liquid refrigerant into air conditioner according to the amount marked on the name plate.

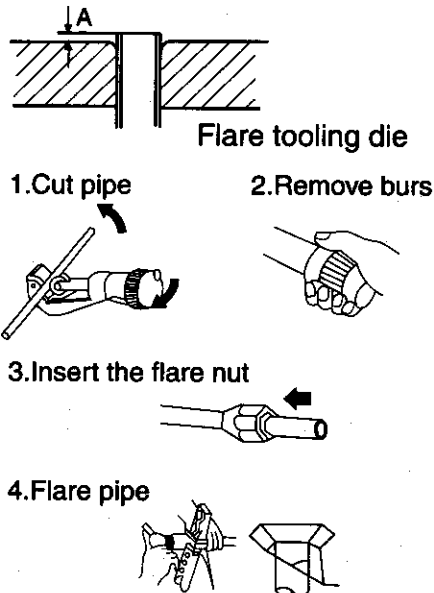
2. Please do not let other cooling medium, except specified one (R410A), or air enter into the cooling circulation system. Otherwise, there will be abnormal high pressure in the system to make it crack and lead to personal injuries.

1. Power Source Installation

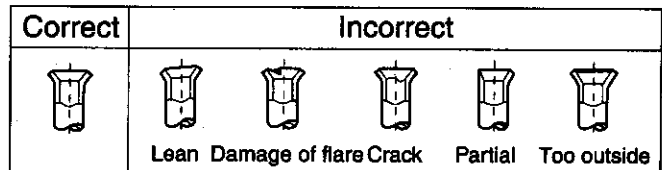
- The power source must be exclusively used for air conditioner. (Over 10A)
- In the case of installing an air conditioner in a moist place, please install an earth leakage breaker.
- For installation in other places, use a circuit breaker as far as possible.

2. Cutting and Flaring Work of Piping

- Pipe cutting is carried out with a pipe cutter and burs must be removed.
- After inserting the flare nut, flaring work is carried out.

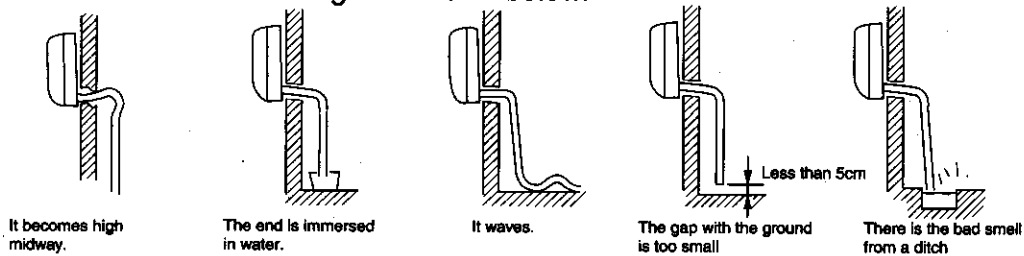


	Flare tool for R410A	Conventional flare tool	
	Clutch-type	clutch-type(Rigid-type)	Wing-nut type (Imperial-type)
A	0~0.5mm	1.0~1.5mm	1.5~2.0mm



3. On Drainage

Please install the drain hose so as to be downward slope without fail.
Please don't do the drainage as shown below.



- Please pour water in the drain pan of the indoor unit, and confirm that drainage is carried out surely to outdoor.
- In case that the attached drain hose is in a room, please apply heat insulation to it without fail.

Check for Installation and Test Run

- Please kindly explain to our customers how to operate through the instruction manual.

Check Items for Test Run

Put check mark ✓ in boxes

- | | | |
|--|--|--|
| <input type="checkbox"/> Gas leak from pipe connecting? | <input type="checkbox"/> Is drainage securely carried out? | <input type="checkbox"/> Is the lamp normally lighting? |
| <input type="checkbox"/> Heat insulation of pipe connecting? | <input type="checkbox"/> Is the earth line securely connected? | <input type="checkbox"/> Are cooling and heating (when in heat pump) performed normally? |
| <input type="checkbox"/> Are the connecting wirings of indoor and outdoor firmly inserted to the terminal block? | <input type="checkbox"/> Is the indoor unit securely fixed? | <input type="checkbox"/> Is the operation of room temperature regulator normal? |
| <input type="checkbox"/> Is the connecting wiring of indoor and outdoor firmly fixed? | <input type="checkbox"/> Is power source voltage abided by the code? | |
| | <input type="checkbox"/> Is there any noise? | |