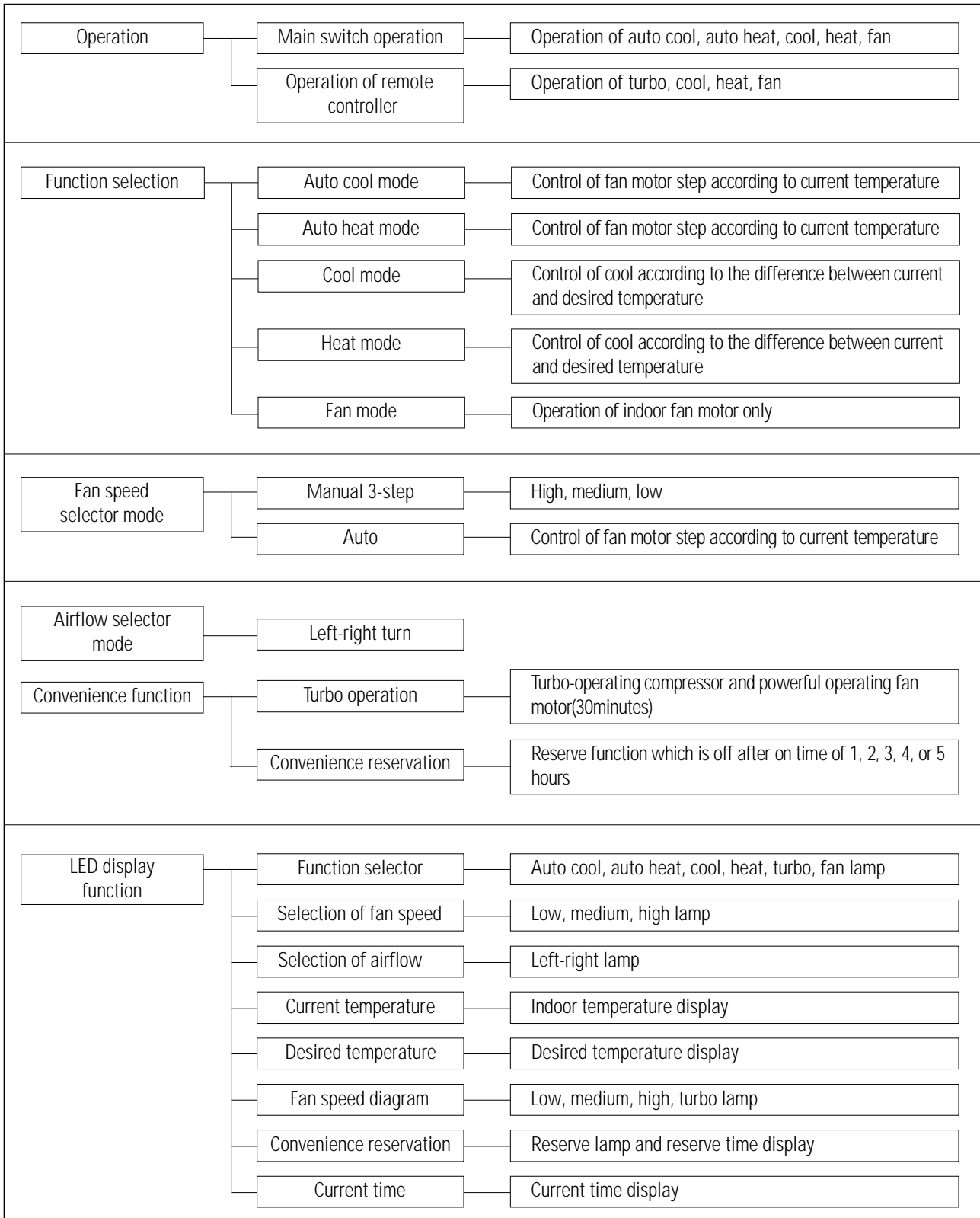


3. Operating instructions and Installation

3-1 Operating Instructions

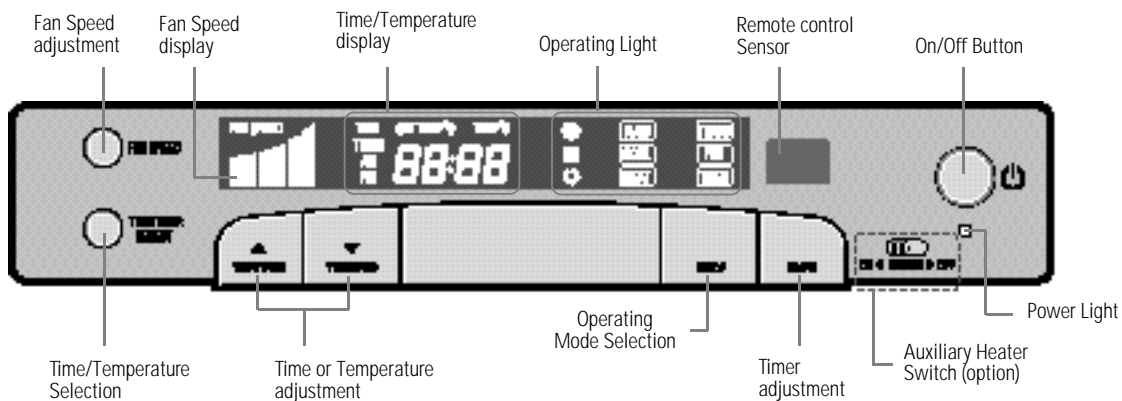


3-2 Key type and functions

3-2-1 PANEL key type and functions

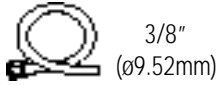
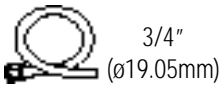
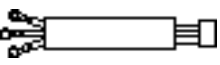
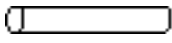
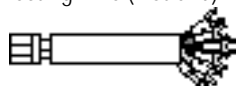
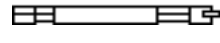
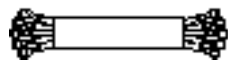




Key name	Key operating function	Key type
On/off	Start and end of operation - ON 1 time = operation start, ON again = operation end. - No continued operation	TACT
Mode selection	Change of the operation mode - Each time the button is pressed(ON), the mode is changed in the following order: "auto cool fan"(standard=auto) - No continued operation	TACT
Fan speed selection	Setting of the indoor fan motor speed - Each time the button is pressed ON, the mode is changed in the following order: "low medium high"(standard=high)	TACT
Temperature(time) setting(up)	Increase the desired temperature(current time) - Temperature: When pressing the button(ON) one time, the desired temperature is increased by the unit of 1°C.(18°C- 30°C) - Time: When pressing the button(ON) one time, the time is increased by 1 minute. If the "on" button is pressed continuously, the time is increased by 10 minutes. - One short, and continued operation	TACT
Temperature(time) setting(down)	Decrease the desired temperature (current time) - Temperature: When pressing the button(ON) one time, the desired temperature is decreased by the unit of 1°C. (18°C - 30°C) - Time: When pressing the button(ON) one time, the time is decreased by 1 minute. If the "on" button is pressed continuously, the time is decreased by 10 minutes. - One short, and continued operation	TACT
Change of display	The temperature and current time can be changed. - If the "on" key is pressed 1 time, current temperature and desired temperature are displayed. - If the "on" key is pressed 1 time, current time is displayed.	TACT
Brief reservation	The hours of 1,2,3,4 and 5 is selected whenever one time of on is performed.	TACT
Heater on/off selection	If the switch is selected to the on direction, the heater is operating at the heater operation condition. The heater is not operating when the switch is selected to the off position.	SLIDE

* Operating functions















3-3 Accessory Parts List

3-3-1 Connection Parts

No.	Part Name	Q'ty	Remarks
1	Connecting pipe  3/8" (ø9.52mm)	1	Option (Piping box)
2	Connecting pipe  3/4" (ø19.05mm)	1	
3	Heater cable (3 strand) 	1	
4	Protection tube 	1	
5	Connecting wire (7 strand) 	1	Piping box
6	Wire of sensor (2 strand) 	1	
7	Power cable 	1	
8	Drain hose 	1	
9	Finishing tape 	2	
10	Insulation tape 	1	
11	Insulation tube for indoor unit piping connection 	1	

3-3-2 Others

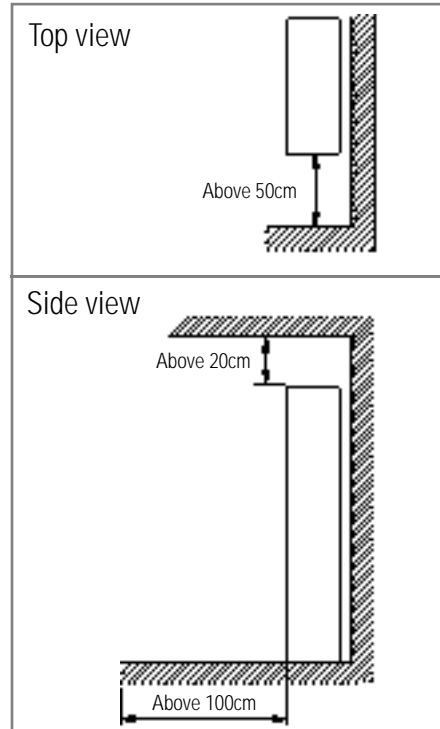
No.	Part Name	Q'ty	Remarks	
1	Leg holder for indoor unit 	4	Piping box	
2	Screw 	TH M4 X 12		4
		TH M4 X 25		4
3	Cable clamp 	12N	2	Option(Piping box)
		8N	3	
		6N	1	
4	Indoor unit fixing holder 	1	Piping box	
5	Leg holder for outdoor unit 	4		
6	Insulation rubber bottom 	4		
7	Cable tie 	5		
8	Putty 	3		
9	Pipe band 	3		
10	Rubber cabi slot 	1		
11	Rubber cabi hole 	1		
12	Drain plug out 	1		

3-4 Installation

3-4-1 Selection of Installation Place

3-4-1(a) Indoor Unit

- Install the unit at a place close to the wall facing the outside as it is necessary to perform piping connection with the outdoor unit.
 - It is effective to install the unit at a window side to ensure uniform distribution of indoor temperature.
- Install the unit at a place where there is no obstacle against the wind around the air inlet and air outlet.
- Install the unit horizontally at a stable, rigid place. (When installing the unit at a place subjected to vibration, noise may occur.)
- Avoid a place near the door which is frequented by people.
- Avoid a place subject to direct sunlight.

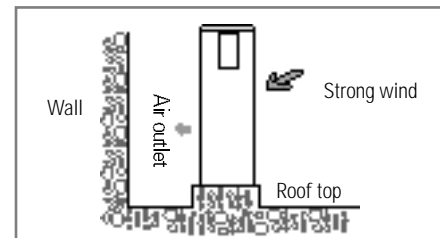


3-4-1(b) Outdoor Unit

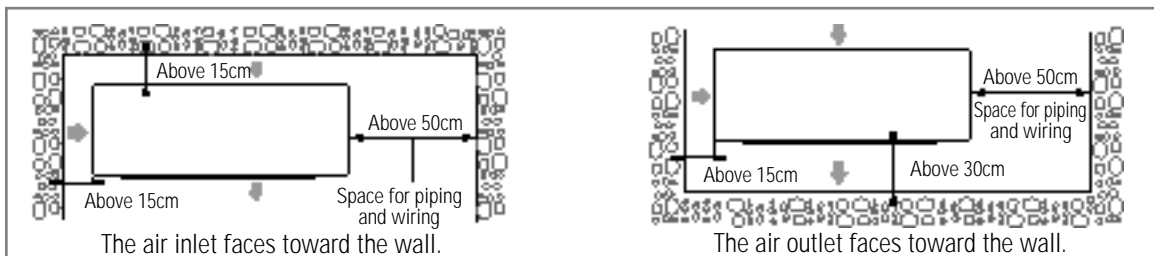
- Place free from the risk of combustible gas leakage.
- Place which can bear the weight of the unit.
- Place which can bear the fixing strength of the outdoor unit.
- Avoid a place subject to oil (including machine oil).
- Avoid a saline place.
- Avoid a place subject to sulfide gas (hot spring zone). (When installing the unit at such special environmental conditions, it may cause machine trouble. When it is unavoidable to use such places. It requires special maintenance.)
- A place where the discharge air and noise of the outdoor unit do not disturb the neighborhood. (Take special care not to cause any inconvenience to your neighbors when installing the unit on the borderline with your neighborhood.)
- A place where strong wind does not head against the air outlet of the outdoor unit. (If a strong wind heads directly against the air outlet at the time of cool operation, a safety device can be operated.)
- Do not install the outdoor unit at an unstable place such as outer wall of an apartment or building. The outdoor unit may fall down, causing severe personal or property damage or loss.

* If there is any unavoidable reason to install the unit at such a place, take the following measures against the wind;

1. When installing the unit at a roadside concentrated with buildings, install it parallel with the road.
2. Install the unit so that the air outlet faces toward the wall at a place such as rooftop, which may be subjected to strong wind.



* The outdoor unit should be installed in accordance with the service space.



3-4-2 Electrical Work

The electrical work should be performed by a specialist qualified for the work.

- Use the three phase power supply, and be sure to install the sub power distributing board for exclusive use with the unit (separately purchased by the user).
- * Avoid octopus-type wiring as it can cause a drop in voltage, thus resulting in poor performance of the automatic control circuit.
- Be sure to install circuit breaker (separately purchased by the user).
- Be sure to connect the grounding wire.

Electric power spec

Power	3phase 4wires 380V	
Ampere of breaker	50 A	
Knife switch	Switch	25 A
	Fuse	25 A
Size of grounding wire	2.5 mm ²	
Min. size of electric wires from/to the indoor/outdoor unit	0.75 mm ²	

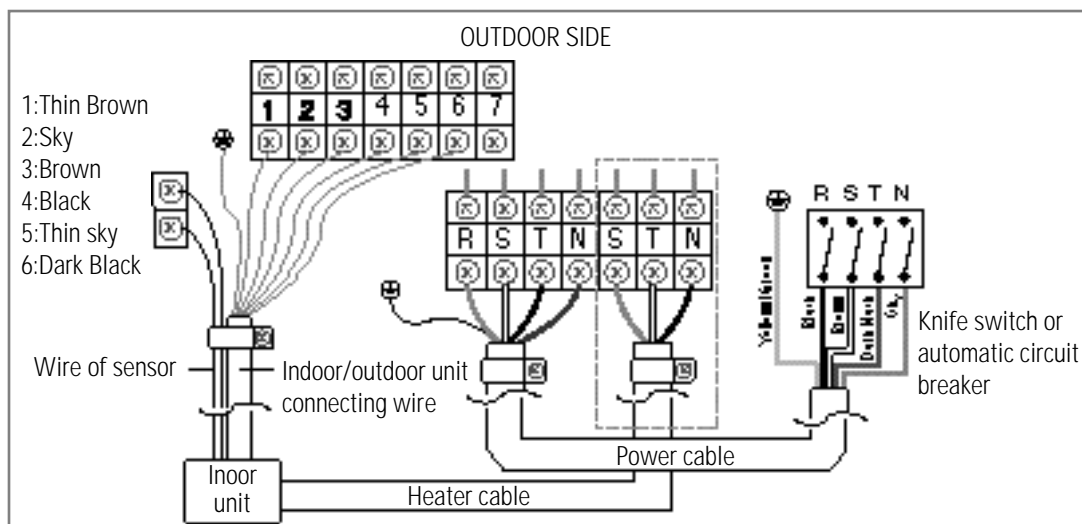
CAUTION

- Be sure to use the wires, and switches or fuses of power distribution board are qualified and fulfill the specification.
- Be sure to install knife switch or circuit breaker on the power distribution board.
- The electrical and grounding work should be performed as per "technical specification of electrical facilities" and "specification of internal wiring".
- Be sure to connect main electrical input wires with bolted connectors using compressed terminal.

Applicable voltage 380V 342V ~ 418V

When connecting 3Phase 4wires 380V AC

1. Remove cover of electric box on side panel of outdoor unit.
2. Connect electric input wires (R,S,T,N) to each terminal (R,S,T,N) of the electric box on outdoor unit respectively.
3. Connect electric wires to each terminal on indoor and outdoor unit respectively.



CAUTION

- Be sure to connect electrical wires correctly, if not it can cause a trouble.
- * Be sure to fix wires from/to the indoor and outdoor unit on the piping insulated. Avoid wires contact to bare pipe or valve directly without any insulated spacer.

* Must be use the approval wire according to IEC or EN requirement.

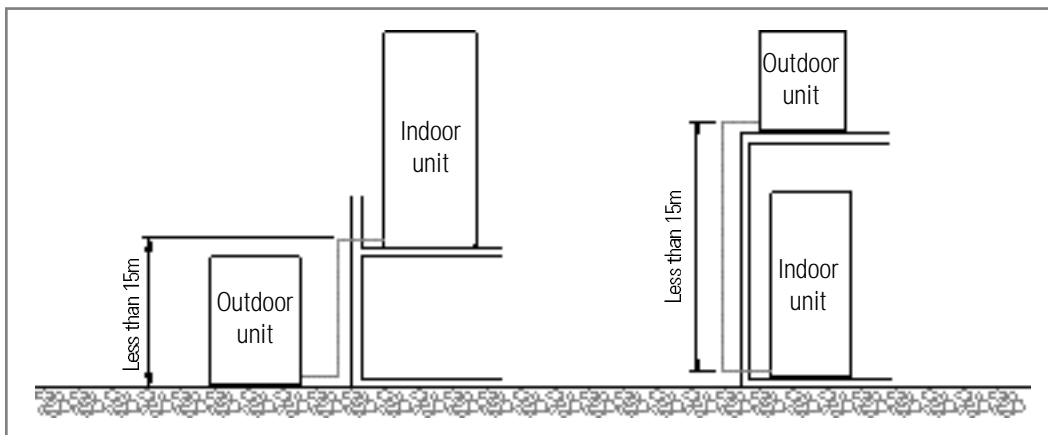
3-4-3 Installation Method

3-4-3(a) Installation Procedures

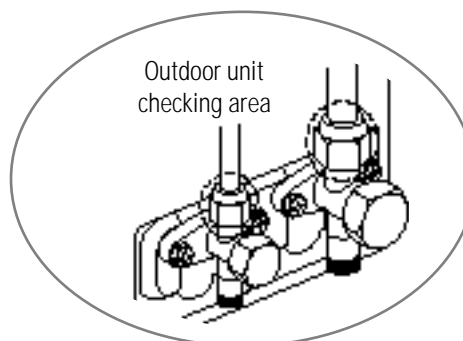
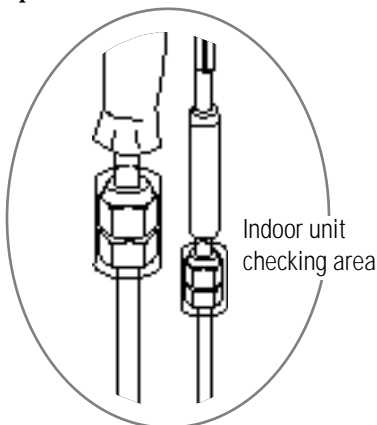
1. Open the inlet grille, and remove the flare nut.
2. Bend the connection pipe to an appropriate length using the spring bender depending upon the installation place.
 - Allowable pipe length : Maximum 25m
 - Allowable pipe drop distance : Maximum 15m
 - Make no more than ten bending points on the pipe
- When the pipe length is in excess of the standard pipe length of 5m, add the refrigerant (R-22) of 50g for each additional 1m.

CAUTION

- If the pipe is lengthened, the performance of the unit is degraded, and the service life is shortened. Therefore, the pipe length should be as short as possible (less than 15m).



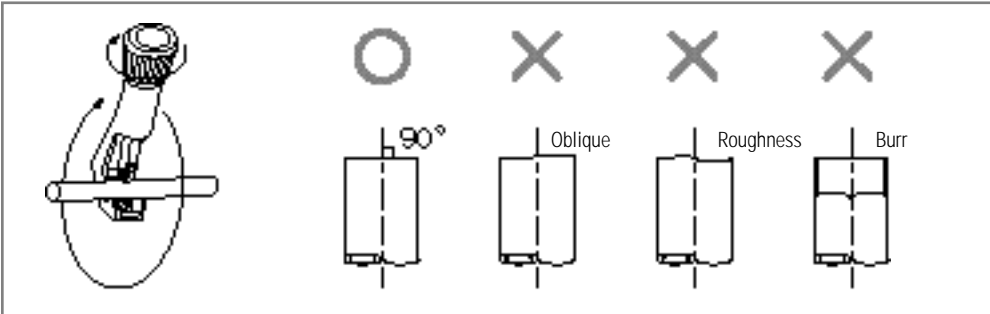
3. Install the high pressure pipe to the heat exchanger liquid pipe, and the low pressure pipe to the heat exchanger gas pipe respectively using the flare nut, taking care not to cause any leakage of refrigerant.
4. Be sure to insulate the pipe with appropriate insulation material.
5. Insert the drain hose into the drain pipe, and connect them by tying them to the cable tie to prevent any water leakage.
6. After completion of the installation, check the connecting area for any gas leakage.
7. Wind a finish tape when the wiring of the refrigerant pipe, the unit, and the drain piping are completed.



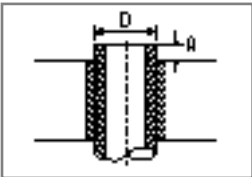
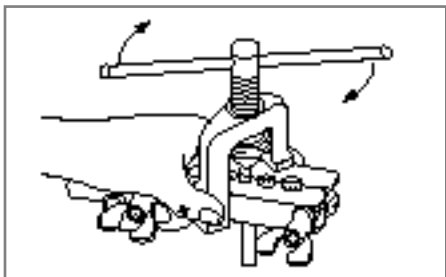
3-4-3(b) Connection of Refrigerant Piping

Flare Processing

1. Cut the pipe using the pipe cutter.

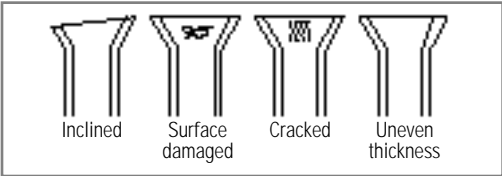


2. Insert the flare nut into the pipe, and then perform the flare processing.



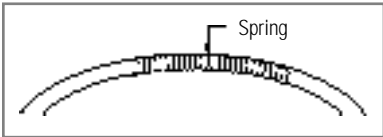
Outer Diameter	A (out / in)
ø 9.52mm	1.7 / 1.0 (mm)
ø 19.05 mm	2.2 / 1.5 (mm)

• Unproper flaring



Pipe Bending

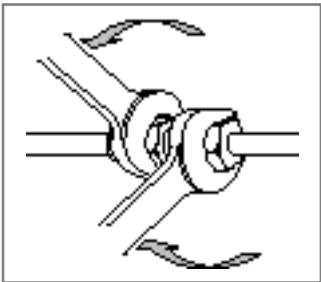
1. Perform bending of the pipe using the bender which has a specified bending radius.
2. Be sure to take full care to perform bending of the pipe successfully at one time.
Bending and unbending the pipe more than twice makes the bending work increasingly difficult.
3. You may use the spring inserted into the gas pipe instead of the bender to bend the pipe.
4. When you bend the pipe using the spring, hold the pipe with both hands to prevent any distortion, and secure a minimum bending radius of more than 100mm.



Tightening of Connection Parts

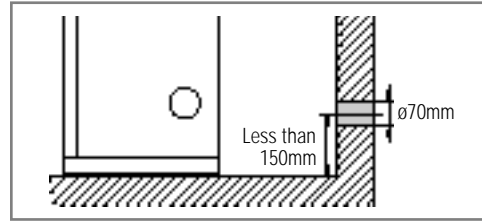
- Align the center of the connection piping, and tighten the flare nut by turning it with hand. Then tighten it again using the spanner in the direction as shown in the figure.

Outer Diameter	Tightening Torque	Final Torque	Remarks
ø 9.52mm	400 kg • cm	450 kg • cm	
ø 19.05mm	700kg • cm	750kg • cm	



3-4-3(c) Drilling a Hole in the Wall

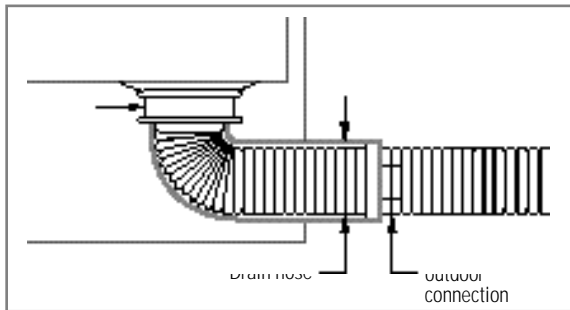
- Drill a hole of 70mm in diameter to the outside.
- The drilling should be done at a distance of less than 150mm from the floor facing the indoor unit.



3-4-3(d) Drain Hose

- Extend the drain hose to the drain pan, and fix it with the tape or a cable tie to prevent separation. Then make a covering of it so that water can not flow outwardly.

Piping Material	Vinyl Chloride(Outer diameter ø 16mm)
Insulator	Foamed Polyethylene

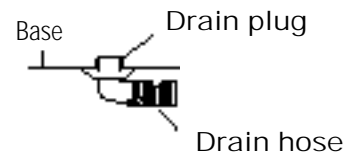
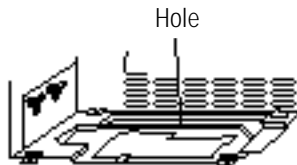


CAUTION

1. As the draining is of natural drain type, make the drain hose direct downward.
2. If there is any foreign substance in the drain plate, it may clog the drain pipe. Therefore, be sure to remove the foreign substance inside after installation.
3. After completion of installation, be sure to pour water into the drain pan, and then check the draining condition. (There is no problem in draining when the draining is completed within 20 seconds.)

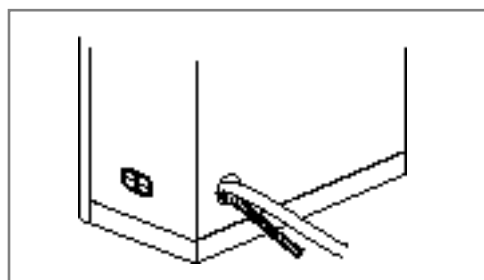
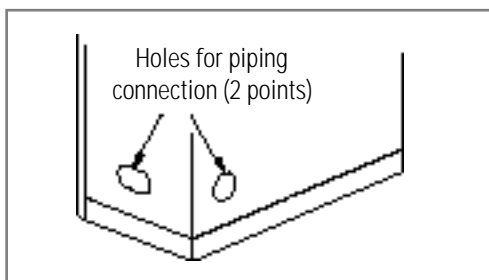
- In heating and deice operation, condensed water may be generated. Install drain line as following procedure.

1. Insert the drain plug into base hole.
2. And then connect drain hose to drain plug.



3-4-3(e) Rat-prevention Cover

- The piping of this unit can be connected to the left and rear side.
- When you hit the area for piping connection slightly with a hammer, a hole is made. - If there is any reason to change connection, fill in hole with rubber cabi slot.

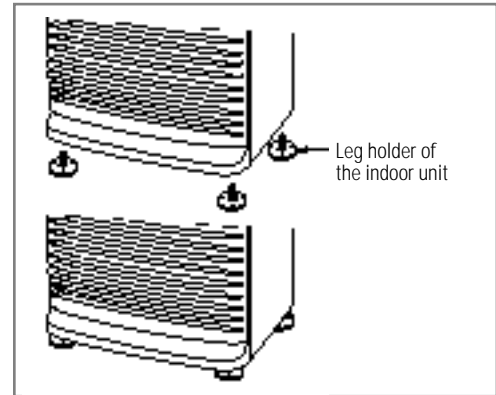


3-4-3(f) Indoor Unit

In order to install drain hose through wall, adjust height (max. 150mm) of the indoor unit using leg holder.

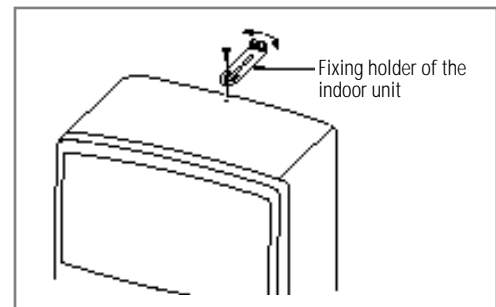
Fixing to the floor

- When using the leg holder of the indoor unit.
 1. Lie down the unit on flat floor.
 2. Insert the leg holders into screwed holes and then fasten them clockwise.
 3. Turn the unit right and adjust horizontal line of it.
 - * Mis-alignment of the unit can cause vibration and noise.



Fixing to the wall

- When using fixing holder of the indoor unit.
 1. Fix the holder using long screw bolts on wall.
 2. Fix the unit using two screw bolts or four anchor bolts.
 - (Size of the screw hole on the holder is $\varnothing 4.5\text{mm}$ and size of the bolt is $\varnothing 6\text{mm}$.)



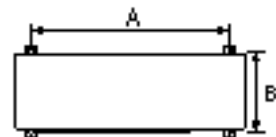
3-4-3(g) Outdoor Unit

When using the anchor bolt

1. Fix the unit on a flat, rigid floor using the anchor bolt.
 - (Anchor bolt : M10 x 4 points - separately purchased)

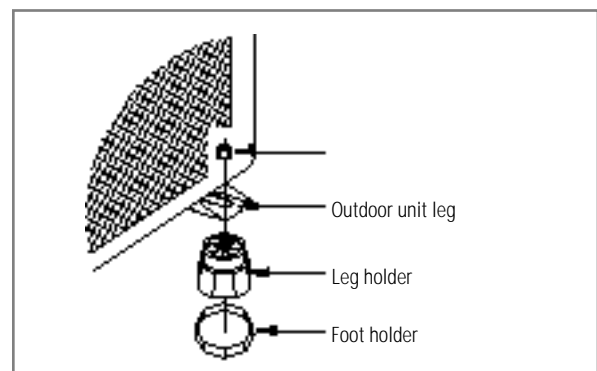
Anchor bolt fixing dimensions

Unit:mm	
A	840
B	415



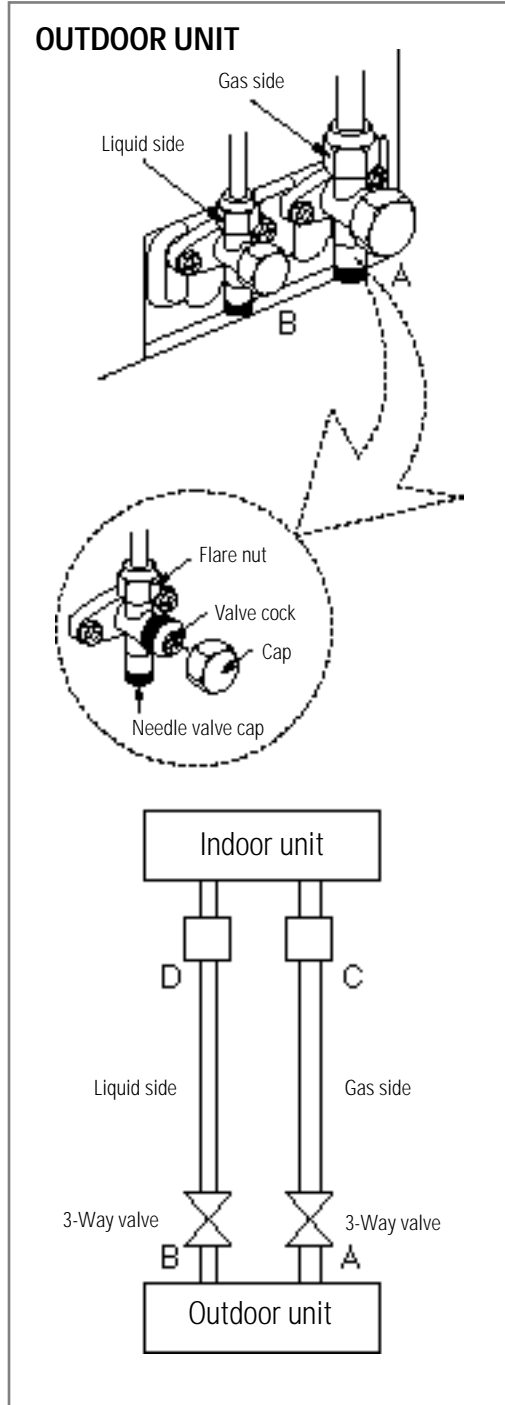
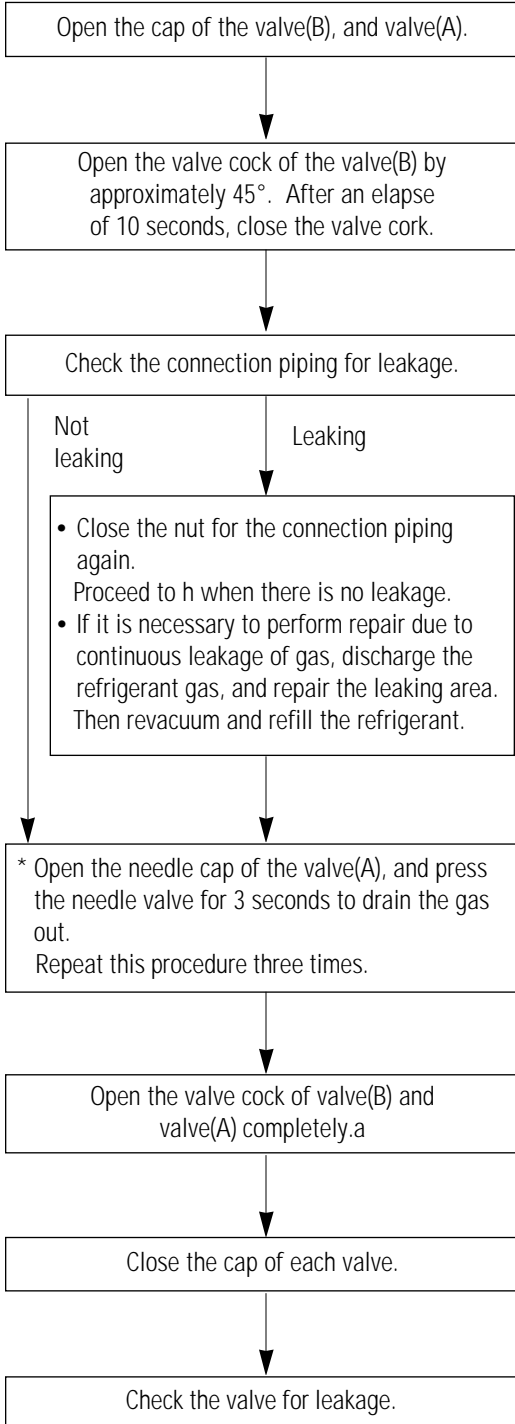
When using the leg holder of the outdoor unit

1. Insert the foot holder (4EA).
2. Remove the nut fastened to the leg holder, and then insert the leg holder into the hole of the outdoor unit leg.
3. Fix the unit securely with the nut.

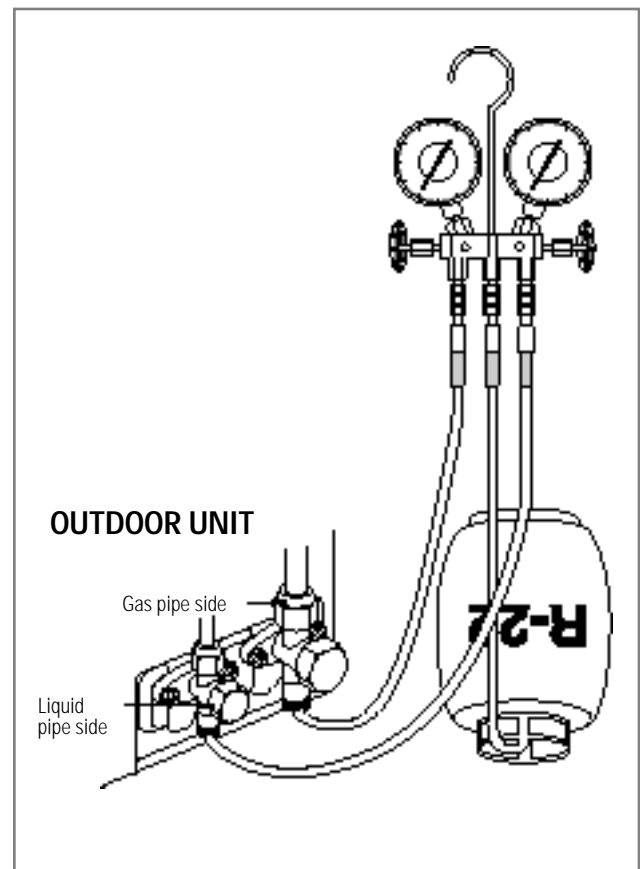
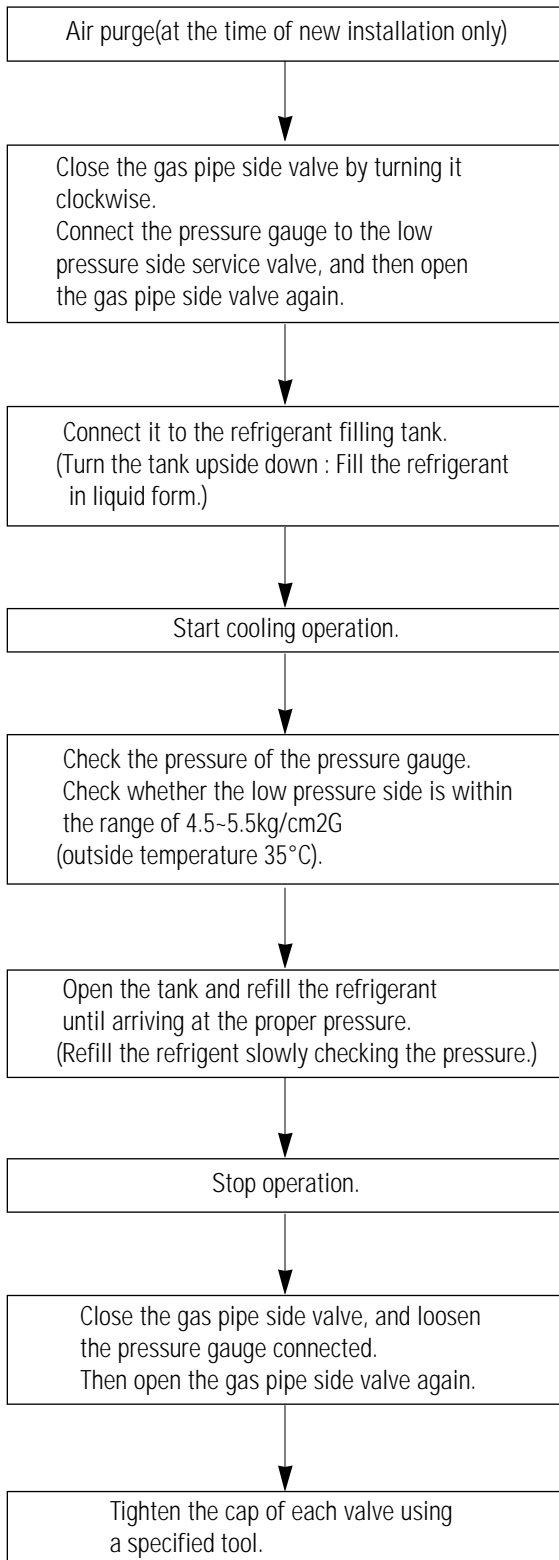


3-4-3(h) Air Purge

- **Be sure to perform the air purge of the indoor unit, and piping using the refrigerant of the outdoor unit at the time of installation.**



3-4-3(i) Refrigerant Charging

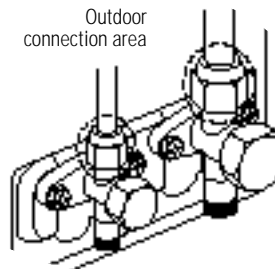
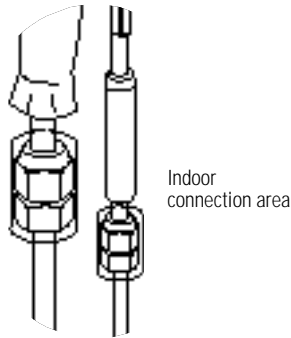


3-4-4 Check and Test Operation

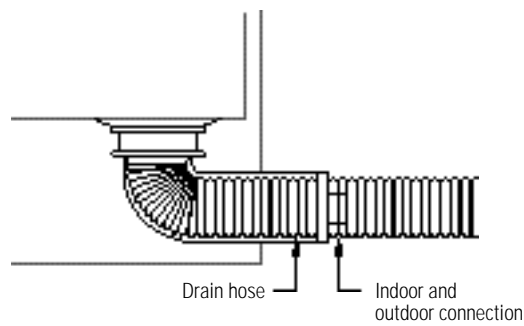
3-4-4(a) Check

- **Be sure to check the following again after completion of installation.**

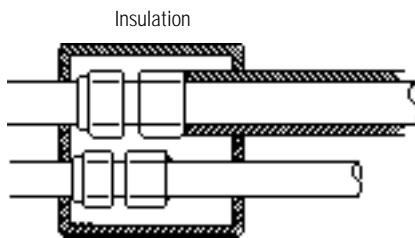
1. Check the piping connection area for any gas leakage.



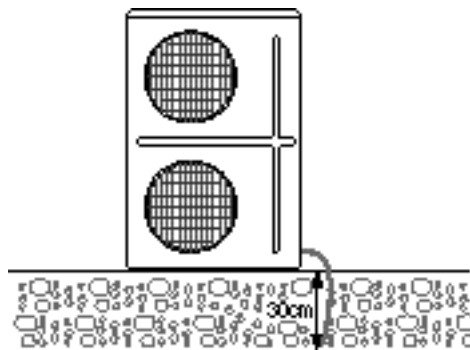
2. Is the drain hose properly connected?



3. Is the insulation of the piping in good condition?



4. Is grounding properly made?

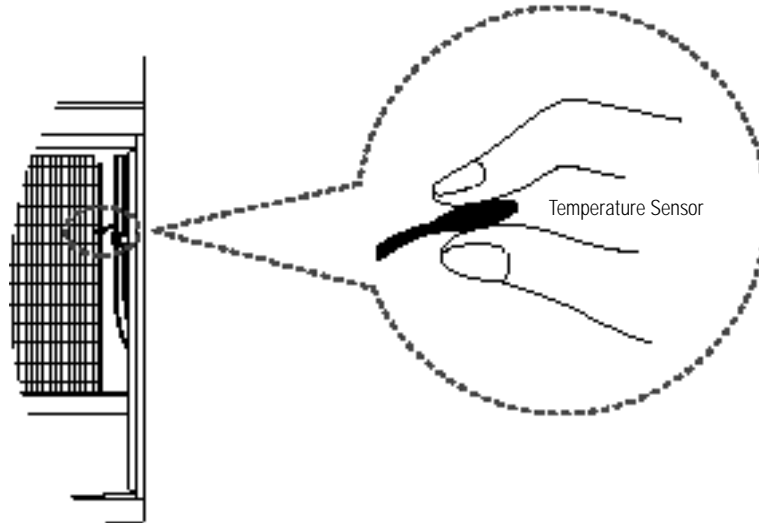


3-4-4(b) Test Operation

- **After checking, read the owner's instructions carefully, and perform a test operation. Then deliver the unit to the customer.**
(When delivering the unit, be sure to read carefully and follow the contents of the owner's instructions.)

CAUTION

1. Be sure to check whether the service valve is opened before attempting to perform the test operation.
2. Never attempt to start test operation by force pressing the electronic contactor as it is very dangerous.
(This is very dangerous as the protective device does not work.)
3. Be sure to perform the test operation after installation.
It is easy to start the test operation in winter if you increase the sensor temperature to 23°C ~ 25°C by holding the indoor temperature sensor. (Cooling operation)



MEMO