

## Installer's Manual

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# Split System (R-410A)

*Air Handler for  
Multi Split Inverter System*

09,000 Btu/h to 18,000 Btu/h

Console Type Model :

4MXF8509A10N0AA

4MXF8512A10N0AA

4MXF8518A10N0AA

 CONFORMS TO  
UL STD. 1995  
CERTIFIED TO  
CSA STD. C22.2  
No. 236



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Literature Order Number MS-SVN39A-EN

Date October 2013

Supersedes

The manufacturer has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Only qualified technicians should perform the installation and servicing of equipment referred to in this manual.

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October 2013

MS-SVN39A-EN



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# Warnings and Cautions

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**Warnings and Cautions.** Notice that warnings and cautions appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in personal injury or death, while cautions are designed to alert personnel to conditions that could result in equipment damage.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

**Attention:** Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.



**WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE:** Indicates a situation that could result in equipment or property-damage only accidents.



## **WARNING**

This equipment is to be serviced by professionally trained personnel **ONLY**. Under **NO** circumstances should an unqualified person service it. This equipment contains refrigerant under **PRESSURE** and operates at **HIGH VOLTAGE**. Improperly installed, adjusted or altered equipment by an unqualified person poses safety hazards including **FIRE, ELECTROCUTION, or EXPLOSION**, which could result in death or serious injury.



## **WARNING**

### **Electrocution and Fire Hazards with Improperly Installed and Grounded Field Wiring!**

Improperly installed and grounded field wiring poses **FIRE & ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in the National Electrical Codes (NEC) and your local/state electrical codes. All field wiring **MUST** be performed by qualified personnel.

**Failure to follow these requirements could result in death or serious injury.**

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### **Thank you for selecting our products**

This operation manual explains the many comfort and technological features your unit has to offer. In addition, it provides you vital information about maintenance, service and economical operation. Take the next few minutes to discover how to operate your new room air conditioner for optimum comfort and efficiency.

The figures in this manual may be different with the material objects, please refer to the material objects for reference.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

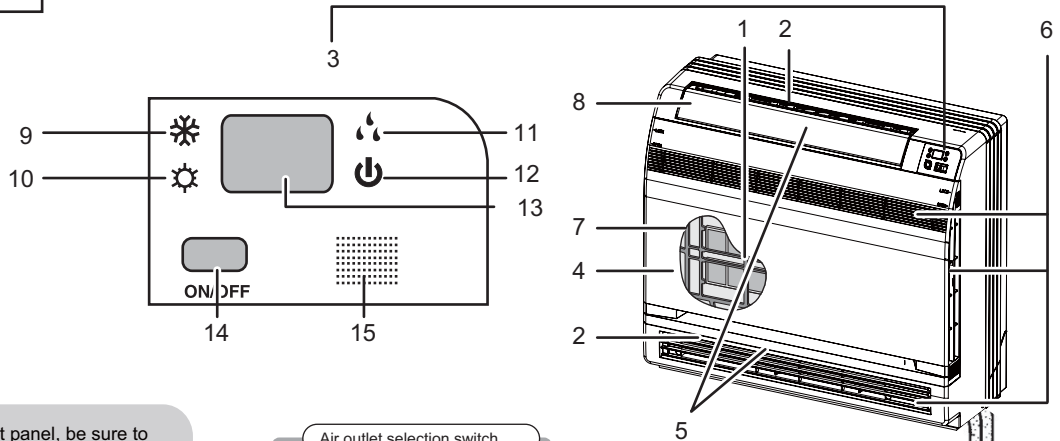
External static pressures at the appliance was tested is 0 Pa  
Fuse link: T250 V; 3.15 A

# 1

## Part names and their functions

OPERATION INSTRUCTIONS

### INDOOR UNIT



### CAUTION

Before opening the front panel, be sure to stop the operation and turn the breaker OFF.  
Do not touch the metal parts on the inside of the indoor unit, as it may result in injury.

#### 1. Titanium Apatite Photocatalytic Air-Purifying Filter:

- These filters are attached to the inside of the air filters.

#### 2. Air outlet

#### 3. Display

#### 4. Front panel

#### 5. Louvers (vertical blades)

- The louvers are inside of the air outlet.

#### 6. Air inlet

#### 7. Air filter

#### 8. Flap (horizontal blade)

#### 9. Cool mode lamp

#### 10. Heat mode lamp

#### 11. Dry mode lamp

#### 12. Run lamp

#### 13. LED display

#### 14. Indoor Unit ON/OFF switch:

- Push this switch once to start operation. Push once again to stop it.
- The operation mode refers to the following table.

Model	Mode	Temperature setting	Air flow rate
COOLING ONLY	COOL	25°C 77 F	AUTO
HEAT PUMP	AUTO	25°C 77 F	AUTO

- This switch is useful when the remote controller is missing.

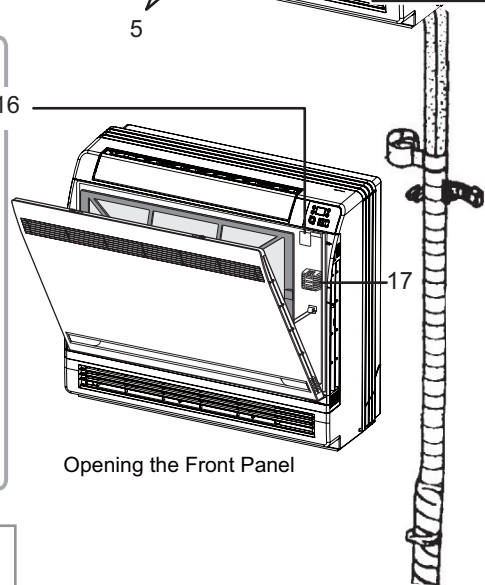
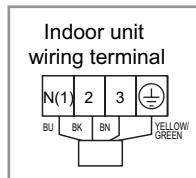
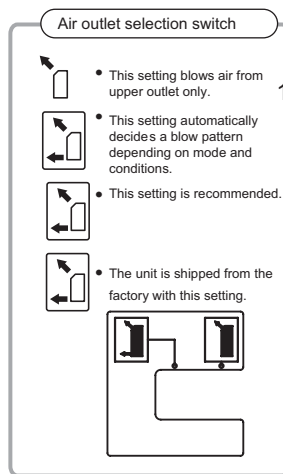
#### 15. Signal receiver:

- It receives signals from the remote controller.
- When the unit receives a signal, you will hear a short beep.
- Settings changed.....beep

#### 16. Air outlet selection switch

#### 17. Room temperature sensor:

- It senses the air temperature around the unit.



#### NOTE:

- ① If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- ② The appliance shall be installed in accordance with national wiring regulations.
- ③ An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

Before inspection and maintenance of the unit. PLEASE set power switch to "OFF" to cut off the power supply.

## 2.1 Units

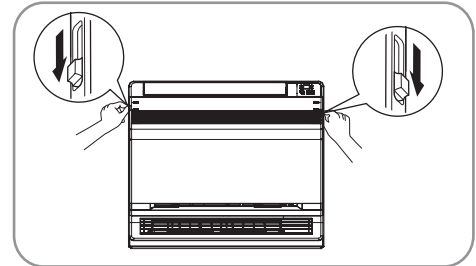
- Indoor unit, Outdoor unit and Remote controller

1. Wipe them with dry soft cloth.

- Front panel

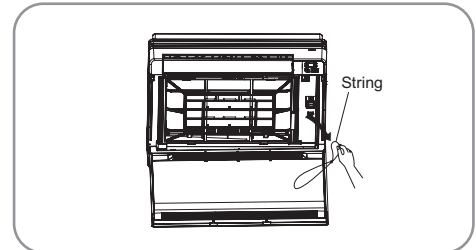
1. Open the front panel.

Slide the two stoppers on the left and right sides inward until they click.



2. Remove the front panel.

- Remove the string.
- Allowing the front panel to fall forward will enable you to remove it.

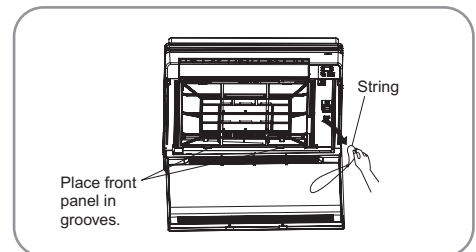


3. Clean the front panel.

- Wipe it with a soft cloth soaked in water.
- Only neutral detergent may be used.
- In case of washing the front panel with water, dry it with cloth, dry it in the shade after washing.

4. Attach the front panel.

- Insert the front panel into the grooves of the unit (3 places).
- Attach the string to the right, inner-side of the front grille.
- Close the panel slowly.



### CAUTION

- Don't touch the metal parts of the indoor unit. If you touch those parts, this may cause an injury.
- When removing or attaching the front panel, use a robust and stable stool and watch your steps carefully.
- When removing or attaching the front panel, support the panel securely with hand to prevent it from falling.
- For cleaning, do not use hot water above 104 F (40°C), benzine, gasoline, thinner, nor other volatile oils, polishing compound, scrubbing brushes, nor other abrasive cleansers.
- After cleaning, make sure that the front panel is securely fixed.

## 2.2 Filters

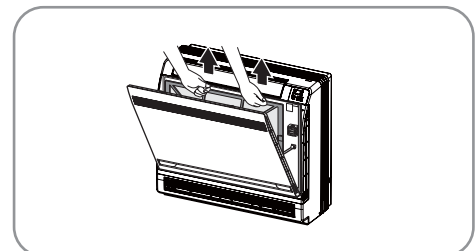
1. Open the front panel.

2. Remove the air filter.

- Press the claws on the right and left of the air filter down slightly, then pull upward.

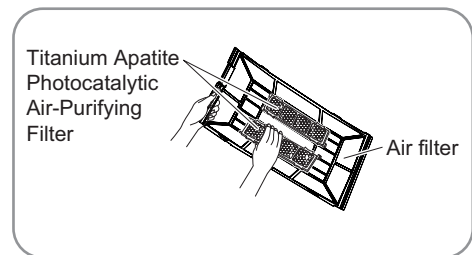
3. Take off the Titanium Apatite Photocatalytic Air-Purifying Filter.

- Hold the tabs of the frame, and remove the claws in 4 places.



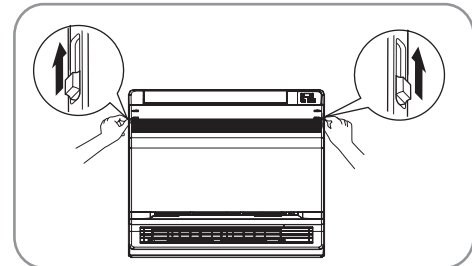
4. Clean or replace each filter.

See figure.



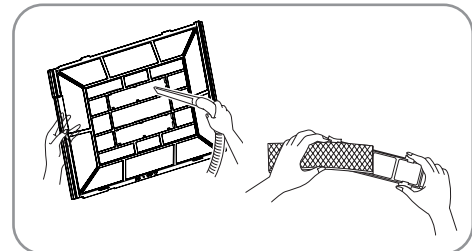
5. Set the air filter and Titanium Apatite Photocatalytic Air-Purifying Filter as they were and close the front panel.

- Operation without air filters may result in troubles as dust will accumulate inside the indoor unit.



6. Wash the air filters with water or clean them with vacuum cleaner.

- If the dust does not come off easily, wash them with neutral detergent thinned with lukewarm water, then dry them in the shade.
- It is recommended to clean the air filters every week.



## 2.3 Titanium Apatite Photocatalytic Air-Purifying Filter

The Titanium Apatite Photocatalytic Air-Purifying Filter can be renewed by washing it with water once every 6 months. We recommend replacing it once every 3 years.

### • Maintenance

1. Vacuum dust, and soak in lukewarm water for about 10 to 15 minutes if dirt is heavy.
2. Do not remove filter from frame when washing with water.
3. After washing, shake off remaining water and dry in the shade.
4. Since the material is made out of paper, do not wring out the filter when removing water from it.

### • Replacement

Remove the tabs on the filter frame and replace with a new filter.

- Dispose of the old filter as flammable waste.

## NOTE

- Operation with dirty filters:
 

(1) cannot deodorize the air.	(2) cannot clean the air.
(3) results in poor heating or cooling.	(4) may cause odor.

## Check

Check that the base, stand and other fittings of the outdoor unit are not decayed or corroded.
Check that nothing blocks the air inlets and the outlets of the indoor unit and the outdoor unit.
Check that the drain water comes smoothly out of the drain hose during COOL or DRY operation. <ul style="list-style-type: none"><li>• If no drain water is seen, water may be leaking from the indoor unit. Stop operation and consult the installing/servicing dealer if this is the case.</li></ul>

## 2.4 Before a long idle period

1. Operate the "FAN only" for several hours on a clear day to dry out the inside.
  - Press "MODE" button and select "FAN" operation.
  - Press "ON/OFF" button and start operation.
2. After operation stops, turn off the breaker for the room air conditioner.
3. Clean the air filters and set them again.
4. Take out batteries from the remote controller.

## NOTE

- When a multi outdoor unit is connected, make sure the heating operation is not used in another room before you use the fan operation. Fan mode is not available during heat mode of operation.



**Working principle and special functions for cooling****Principle:**

Air conditioner absorbs heat in the room and transmits to the outdoor unit and is discharged, so that indoor ambient temperature decreases, its cooling capacity will increase or decrease by outdoor ambient temperature.

**Anti-freezing function:**

If the unit is running in COOL mode and in low temperature, there will be frost formed on the heat exchanger, when indoor heat exchanger temperature is decreased below 32 F(0 C), the indoor unit microcomputer will stop compressor running and protect the unit.

**Working principle and special functions for heating****Principle:**

- \* Air conditioner absorbs heat from outdoors and transmits to the indoor unit, to increase room temperature. This is the heat pump heating principle, its heating capacity will be reduced due to outdoor temperature decrease.
- \* If outdoor temperature becomes very low, please operate with other heating equipments.

**Defrosting:**

- \* When outdoor temperature is low but high humidity, after a long running cycle, frost will form on the outdoor unit, that will effect the heating efficiency, at this time, the auto defrosting function will act, the heat running will stop for 8-10 minutes.
- \* During the auto defrosting, the fan motors of indoor unit and outdoor unit will stop.
- \* During the defrosting, the indoor indicator flashes(or display "H1"), the outdoor unit may emit vapor, This is due to the defrosting, it isn't malfunction.
- \* After defrosting is finished,the heating will recover automatically.

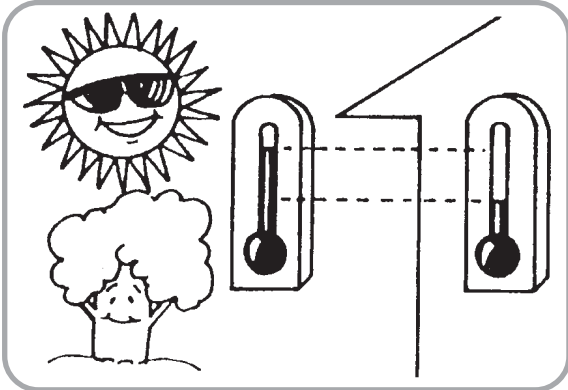
**Anti-cool wind function:**

In Heat mode, the following three kinds of status, if indoor heat exchanger hasn't achieved certain temperature that indoor fan motor will not start, in this way to prevent blowing cool wind (within 3 minutes):

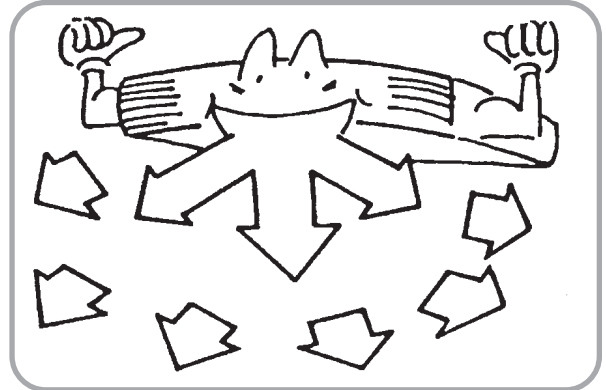
1. Heat operation just started up.
2. After Auto defrosting operation is finished.
3. Heating under low temperature.

The climate type of this unit is according to the nameplate.

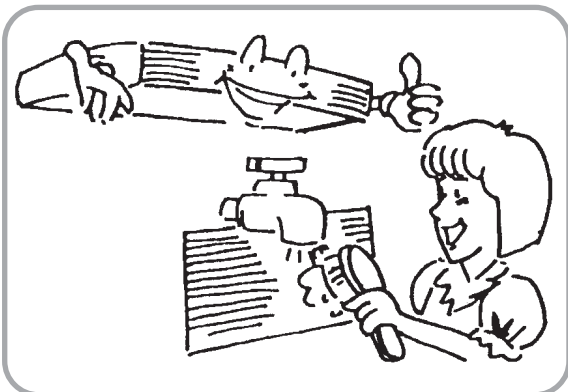
- The temperature should not be set lower than what you need. This would result to increase energy cost.



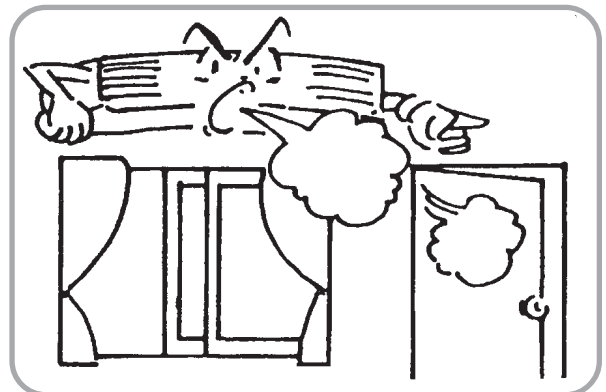
- To distribute cool air through out the room, adjust air flow direction as shown by the arrows (see picture) to diffuse cool air.



- Clean the air filter every week for higher efficiency.



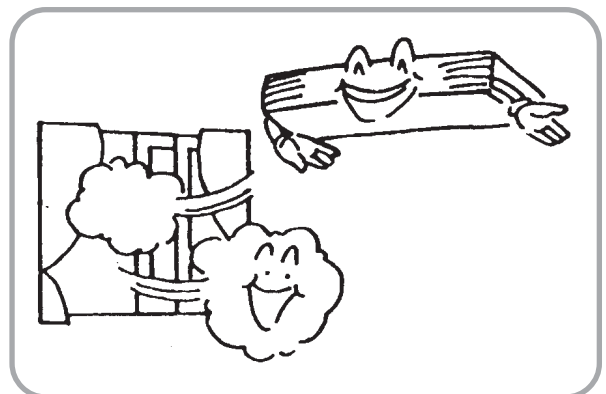
- Close window and door while operating the unit to prevent leakage of cooled air to save energy.



- Draw close curtains or close glass windows when cooling to prevent heat load from sun light which may cause more electricity cost.



- In case of ineffective ventilation, open the window to ventilate the room air once in a while but not too long since cooled air will be uselessly drained out.



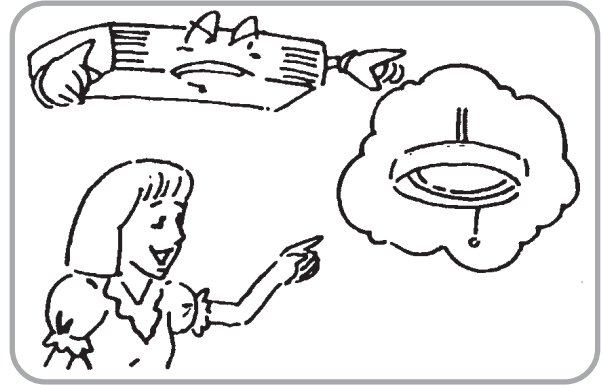
# 4

## Precautions

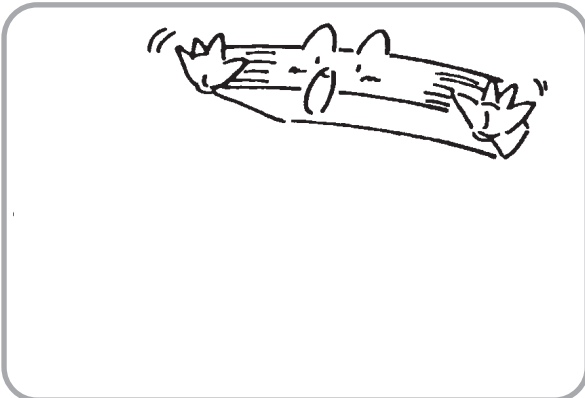
- Check electrical system (voltage and frequency). Use the proper power supply indicated on the unit to operate the airconditioner and only fuses with specified capacity. Do not use pieces of wire instead of fuse.



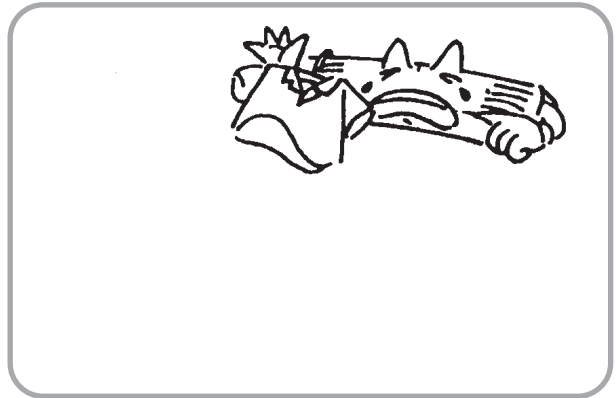
- Turn off the airconditioner if, while running, electricity interference occurs. If the unit is not to be used for a long time, cut off the power supply main switch.



- Do not insert objects into the air inlet or outlet when the airconditioner is running as it may cause damage or personal injury. Also pay special attention when children are around.



- Do not locate any obstacle against the air flow direction of indoor and outdoor unit. Inefficient performance or malfunction may result.



- Do not channel the air flow directly at people, especially infants, aged persons, or patients.



- Do not locate a heater or any other heat source close to the unit. The heat may deform plastic parts.



# 5

## Check before contacting the service man

Check the following before contacting the service man. You may find the solution to your problems. After checking, if it still does not operate, please contact your local dealer.

Problem	Causes
No operation	<ul style="list-style-type: none"><li>• Check if electrical wire is damaged &amp; check if breaker switch is still on.</li><li>• Check if the power supply is in order.</li><li>• Check if the timer switch is on or not.</li></ul>
The air conditioner runs but does not cool enough.	<ul style="list-style-type: none"><li>• Check if the preset temperature is too high.</li><li>• Check if the sunlight shines directly into the rooms.</li><li>• Check if the door and window are opened.</li><li>• Check if there is anything obstructing the air discharge.</li><li>• Check if the exhaust fan still operates.</li><li>• Check if the air filter is dirty or clogges.</li></ul>
Vapor or mist fume coming out of the unit while running.	<ul style="list-style-type: none"><li>• Hot air in the room mixes with cool air. This can cause moisture to vaporize.</li></ul>
Inoperative remote control.	<ul style="list-style-type: none"><li>• Loosened or disconnected wire between the unit and the display</li><li>• Check if the batteries are inserted in correct directions.</li><li>• Check if the batteries are exhausted or not.</li></ul>

# 6

## Installation of indoor unit

### SELECTION OF INSTALLATION LOCATION.

- Such a place where cool air can be distributed throughout the room.
- Such a place where condensation water is easily drained out.
- Such a place that can handle the weight of indoor unit.
- Such a place which has easy access for maintenance.
- The appliance shall not be installed in the laundry.

### THERE ARE 2 STYLES OF INSTALLATION.

#### ● CEILING TYPE

#### ● FLOOR TYPE

Each type is similar to the other as follows:  
Indoor unit

The indoor unit should be sited in a place where:

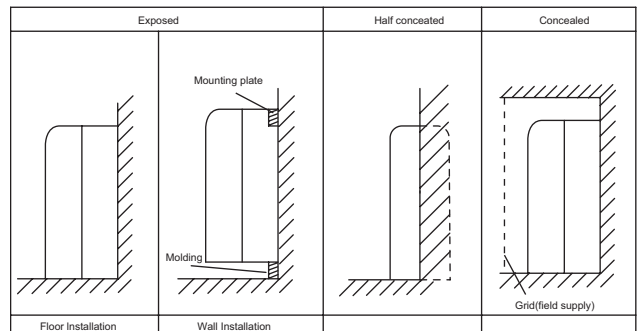
- 1) the restrictions on installation specified in the indoor unit installation drawings are met.
- 2) both air intake and exhaust have clear paths met.
- 3) the unit is not in the path of direct sunlight.
- 4) the unit is away from the source of heat or steam.
- 5) there is no source of machine oil vapor (this may shorten indoor unit life).
- 6) cool(warm) air is circulated throughout the room.
- 7) the unit is away from electronic ignition type fluorescent lamps (inverter or rapid start type) as they may shorten the remote controller range.
- 8) the unit is at least 39.4 inches (1 meter) away from any television or radio set(unit may cause interference with the picture or sound).

### CAUTIONS FOR INSTALLATION WHERE AIR CONDITIONER TROUBLE IS LIKELY TO OCCUR.

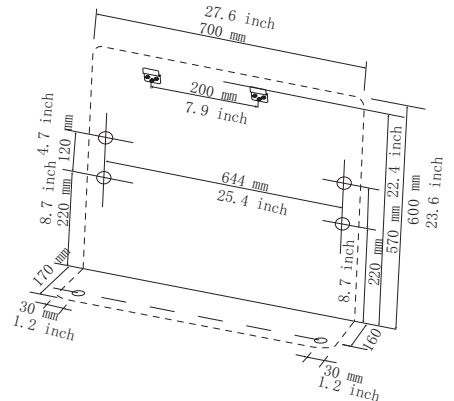
- Where there is too much oil in the area.
- Where it is an acid or base area.
- Where there is irregular electrical supply.

### Indoor Unit Installation Drawings

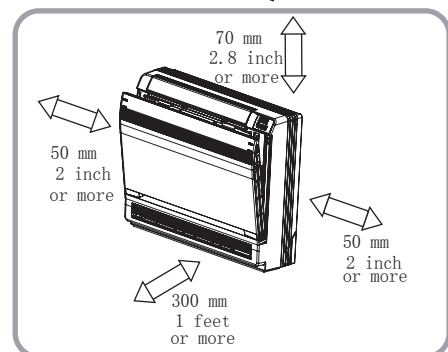
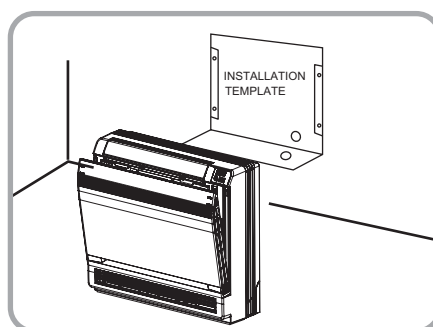
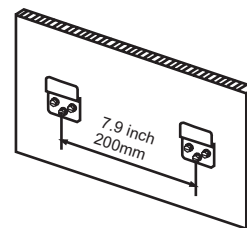
The indoor unit may be mounted in any of the three styles shown here.




Location for securing the installation panel.

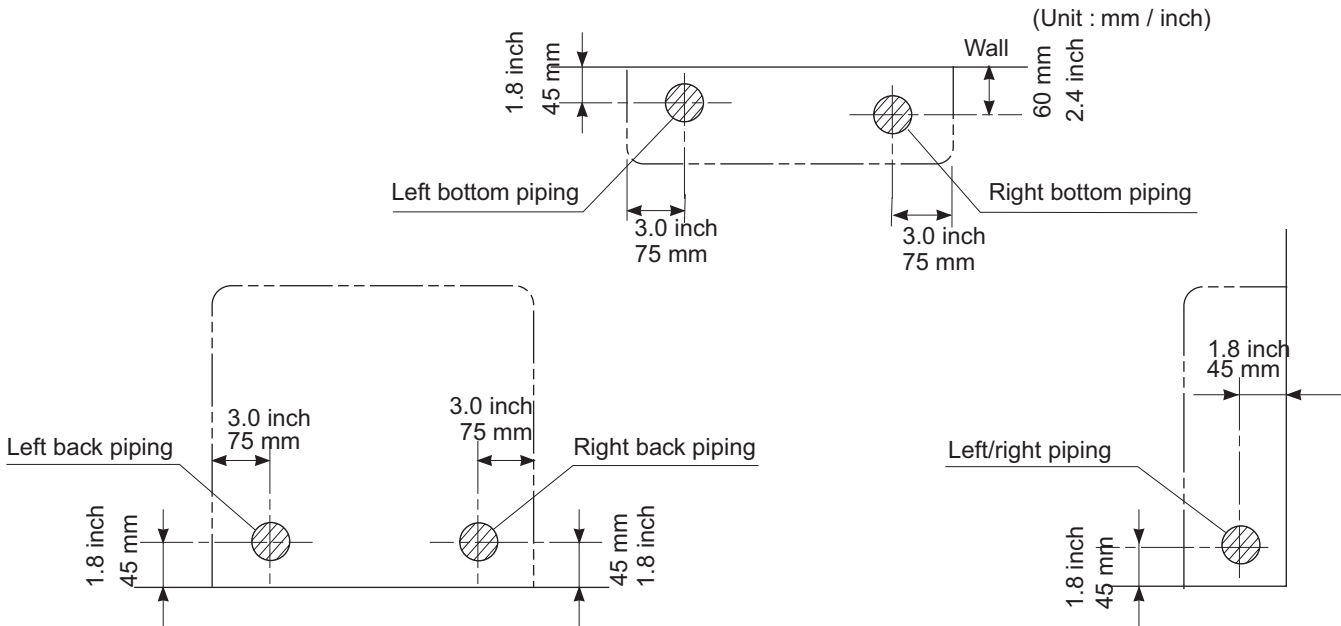


Schematic drawing of hooks:



## Refrigerant piping

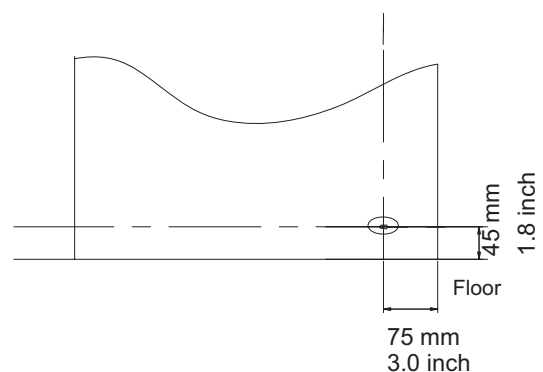
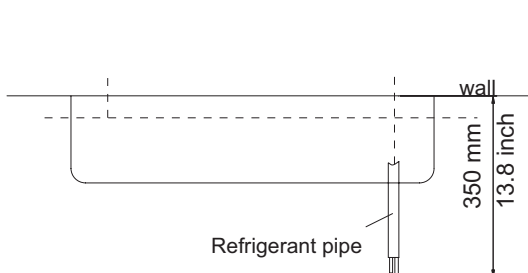
- 1) Drill a hole (2.2 inches (55 mm) in diameter ) in the spot indicated by the  symbol in the illustration as below .
- 2) The location of the hole is different depending on which side of the pipe is taken out .
- 3) For piping ,see **Connecting the refrigerant pipe** ,under Indoor Unit Installation(1).
- 4) Allow space around the pipe for a easier indoor unit pipe connection.



### CAUTION

Min. allowable length

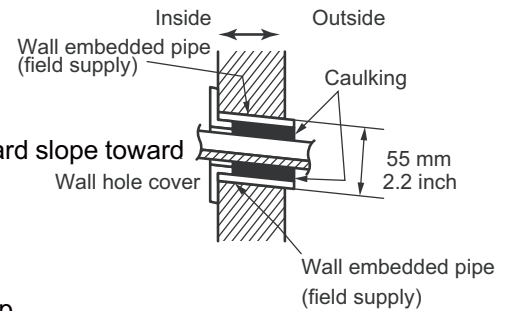
- The suggested shortest pipe length is 8.2 feet (2.5 m), in order to avoid noise from the outdoor unit and vibration. (Mechanical noise and vibration may occur depending on how the unit is installed and the environment in which it is used.)
- See the installation manual for the outdoor unit for the maximum pipe length.



## Boring a wall hole and installing wall embedded pipe

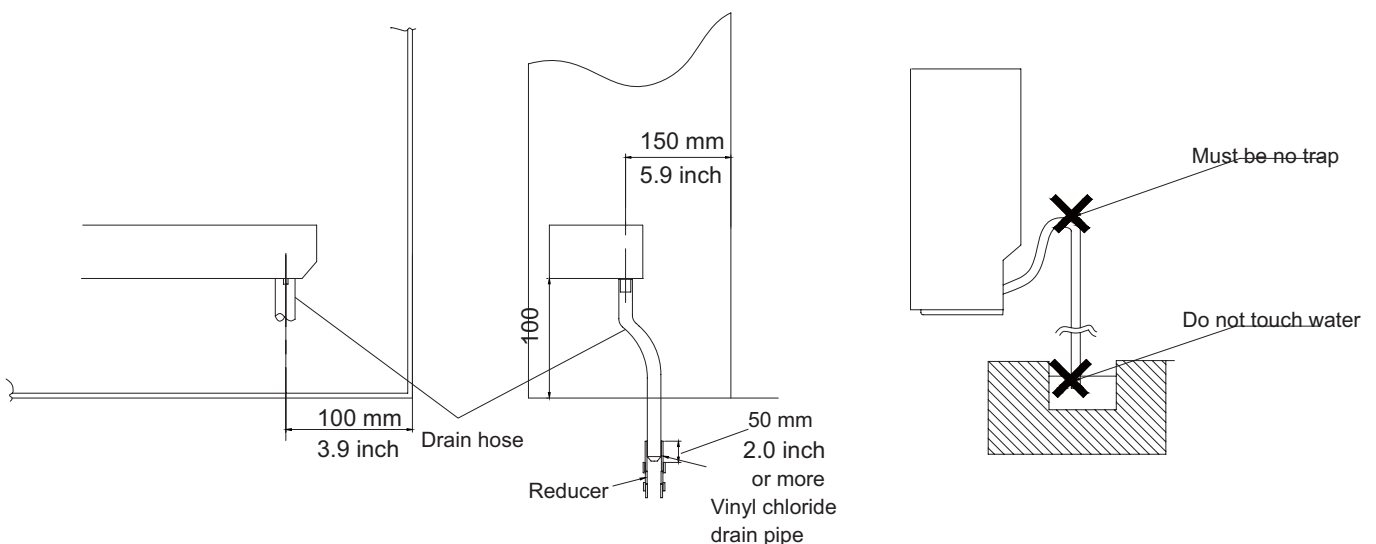
- For walls containing metal frame or metal board ,be sure to use a wall embedded pipe sleeve and wall cover in the feed-through hole to prevent water leakage.
- Be sure to caulk the gaps around the pipes with caulking material to prevent water leakage.

- 1)Bore a feed-through hole of 2.2 inches (55 mm) in the wall so it has a downward slope toward the outside.
- 2)Insert a wall pipe into the hole.
- 3)Insert a wall cover into wall pipe .
- 4)After completing refrigerant piping, wiring, and drain piping, caulk pipe hole gap with putty.



## Drain piping

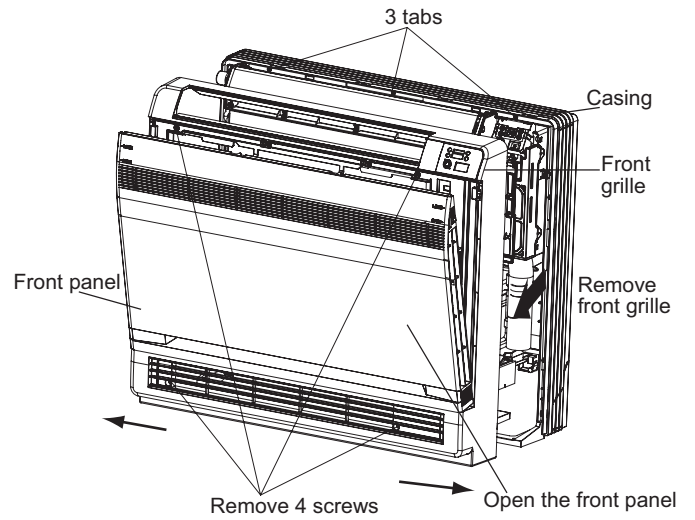
- 1)Use commercial rigid polyvinyl chloride pipe (general VP 20 pipe, outer diameter 1.0 inches (26 mm), inner diameter 0.79 inches (20 mm) )for the drain pipe.
- 2)The drain hose (outer diameter 0.71 inches (18 mm) at connecting end,8.7 inches (220 mm) long)is supplied with the indoor unit. Prepare the drain pipe picture below position.
- 3)The drain pipe should be inclined downward so that water will flow smoothly without any accumulation.(Must not be trapped.)
- 4)Insert the drain hose to this depth so it won't be pulled out of the drain pipe.
- 5)Insulate the indoor drain pipe with 0.4 inches (10 mm) or more of insulation material to prevent condensation.
- 6)Remove the air filters and pour some water into the drain pan to check the water flows smoothly.



## Installing indoor unit

### 1.Preparation

- Open the front panel, remove the 4 screws and dismount the front grille while pulling it forward.
- Follow the arrows to disengage the clasps on the front case to remove it.
- Follow the procedure below when removing the slit portions.

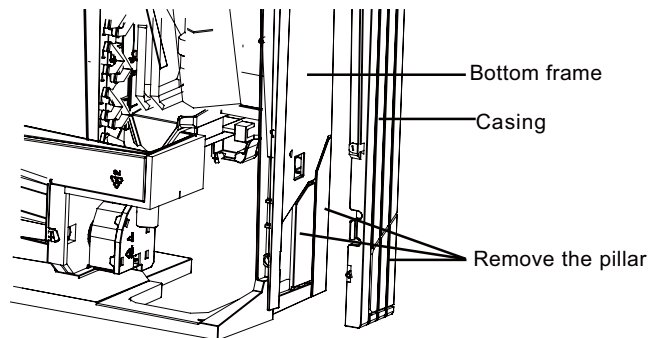
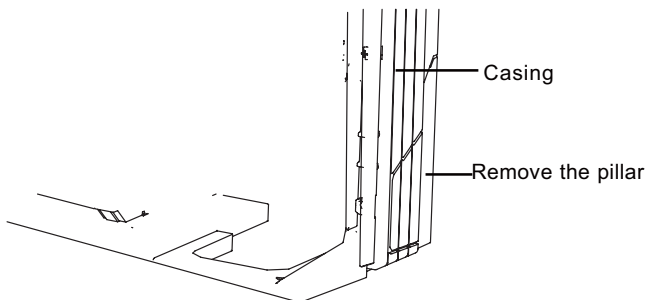
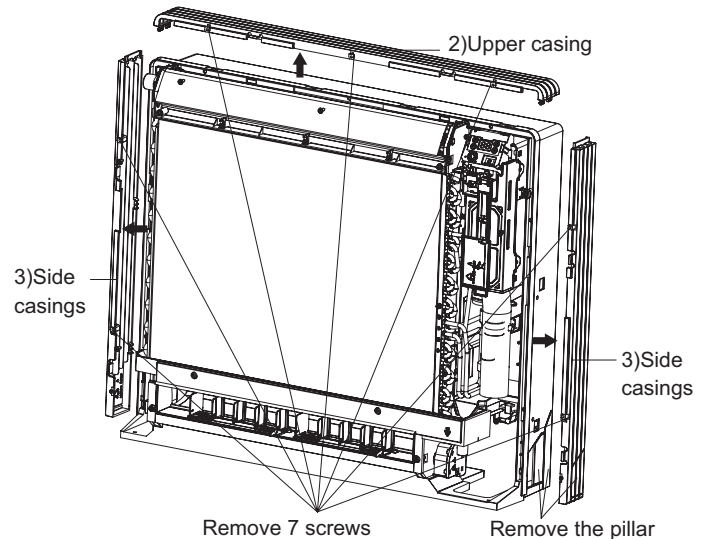


#### ■ For Moldings

- Remove the pillars. (Remove the slit portions on the bottom frame using nippers.)

#### ■ For Side Piping

- Remove the pillars.
- 1) Remove the 7 screws.
- 2) Remove the upper casing (2 tabs).
- 3) Remove the left and right casings (2 tabs on each side).
- 4) Remove the slit portions on the bottom frame and casings using nippers.
- 5) Return by following the steps in reverse order (3>2>1).



### 2.Installation

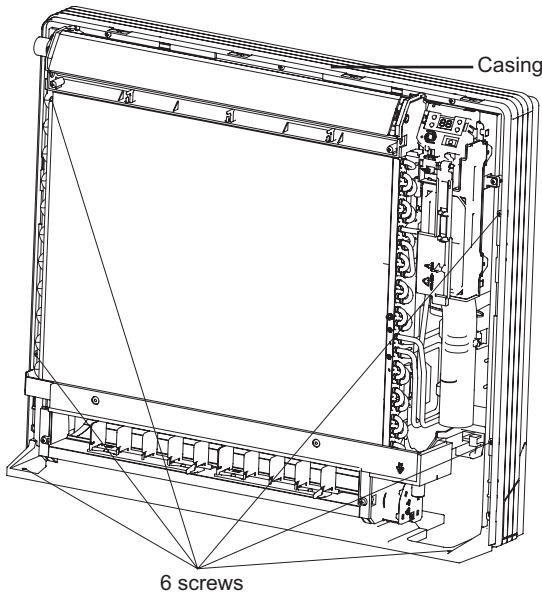
- Secure using 6 screws for floor installations.(Do not forget to secure to the rear wall.)
- For wall installations, secure the mounting plate using 5 screws and the indoor unit using 4 screws.



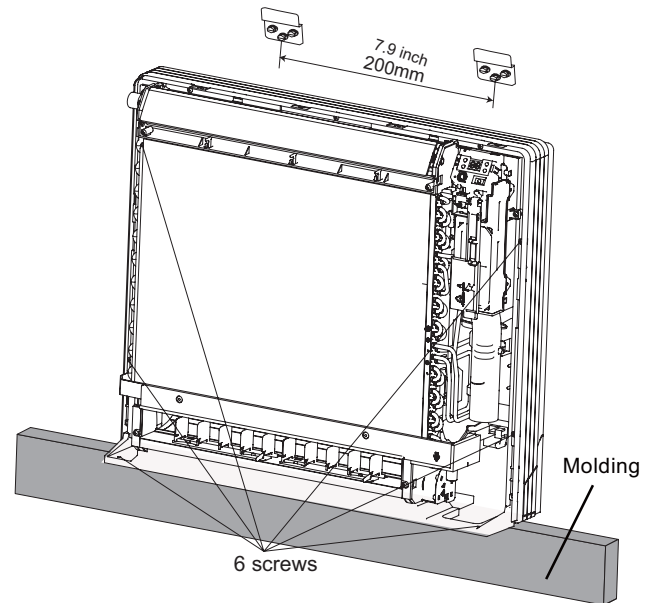
The mounting plate should be installed on a wall which can support the weight of the indoor unit.

- 1) Temporarily secure the mounting plate to the wall, make sure that the panel is completely level, and mark the boring points on the wall.
- 2) Secure the mounting plate to the wall with screws.

## Floor Installation



## Wall Installation



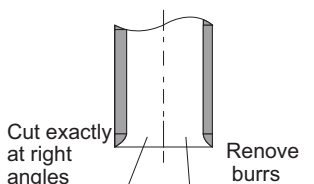
- 3) Once refrigerant piping and drain piping connections are complete, fill in the gap of the through hole with putty. A gap can lead to condensation on the refrigerant pipe, and drain pipe, and the entry of insects into the pipes.
- 4) Attach the front panel and front grille in their original positions once all connections are complete.

## Flaring the pipe end

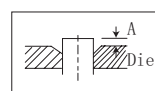
- 1) Cut the pipe end with a pipe cutter.
- 2) Remove burrs with the cut surface facing downward so that the chips do not enter the pipe.
- 3) Fit the flare nut on the pipe.
- 4) Flare the pipe.
- 5) Check that the flaring is properly made.

### ! WARNING

- 1) DO not use mineral oil on flared part.
- 2) Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
- 3) Never use piping which had been used for previous installations. Only use parts which are delivered with the unit.
- 4) Never install a drier to this R410A unit in order to maximize system reliability.
- 5) Incomplete flaring may cause refrigerant gas leakage.



Flaring  
Set exactly at the position shown below



A	Flare tool for R410A		
	Clutch-type	Clutch-type (Rigid-type)	Wing-nut type (Imperial-type)
	0-0.5 (mm)	1-1.5 (mm)	1.5-2 (mm)
	0-0.02 (inch)	0.04-0.06 (inch)	0.06-0.08 (inch)

Flare's inner surface must be scratch-free

The pipe end must be evenly flared in a perfect circle

Make sure that the flare nut is fitted

## Connecting the refrigerant pipe

1) Use torque wrenches when tightening the flare nuts to prevent damage to the flare nuts and gas leaks.



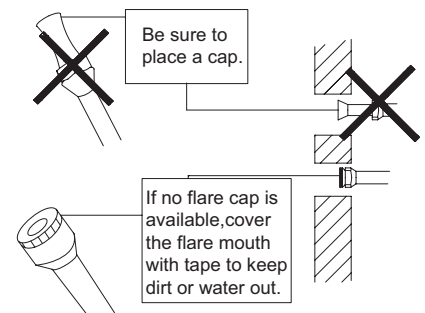
2) Align the centers of both flares and tighten the flares and tighten the flare nuts 3 or 4 turns by hand. Then tighten them fully with the torque wrenches.

3) To prevent gas leakage, apply refrigeration oil on both inner and outer surfaces in the flare. (Use refrigeration oil for R410A.)

Flare nut tightening torque		
Gas side		Liquid side
09K/12K	18K	09K/12K/18K
3/8 inch	1/2 inch	1/4 inch
42-47 ft-lbf	68-75 ft-lbf	20-27 ft-lbf

### Caution on piping handling

- 1) Protect the open end of the pipe against dust and moisture.
- 2) All pipe bends should be as gentle as possible. Use a pipe bender for bending.  
(Bending radius should be 1.2 to 1.6 inches (30 to 40 mm) or larger.)

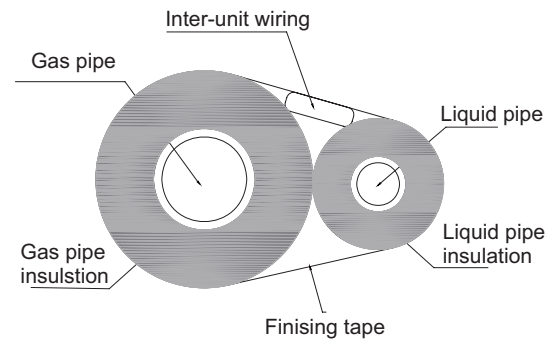


### Selection of copper and heat insulation materials

● When using commercial copper pipes and fittings, observe the following:

1) Insulation material: Polyethylene foam

Refrigerant gas pipe's surface temperature reaches 230 F (110 C) max  
Choose heat insulation materials that will withstand this temperature.

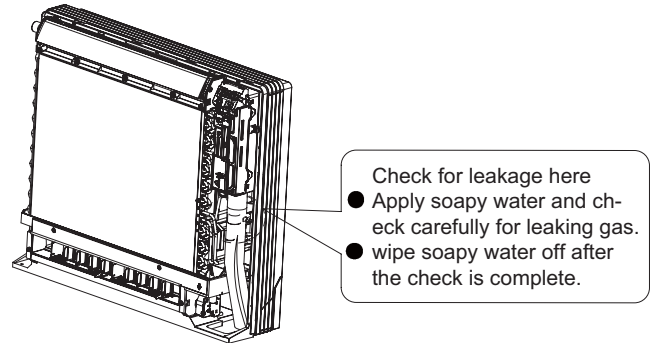


2) Be sure to insulate both the gas and liquid piping.

3) Use separate thermal insulation pipes for gas and liquid refrigerant pipes.

## Checking for refrigerant leakage

1) Check for refrigerant leaks.



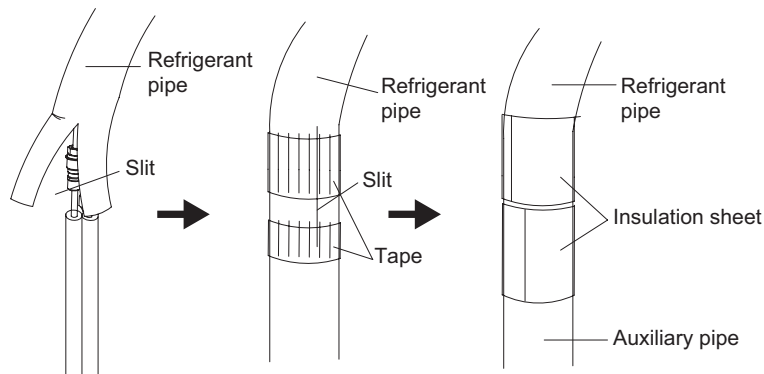
## Attaching the connection pipe

● Attach the pipe after checking for gas leakage, described above.

1) Cut the insulated portion of the on-site piping, matching it up with the connecting portion.

2) Secure the slit on the refrigerant piping side with the butt joint on the auxiliary piping using the tape, making sure there are no gaps.

3) Wrap the slit and butt joint with the included insulation sheet, making sure there are no gaps.



### ⚠ CAUTION

1) Insulate the joint of the pipes securely.

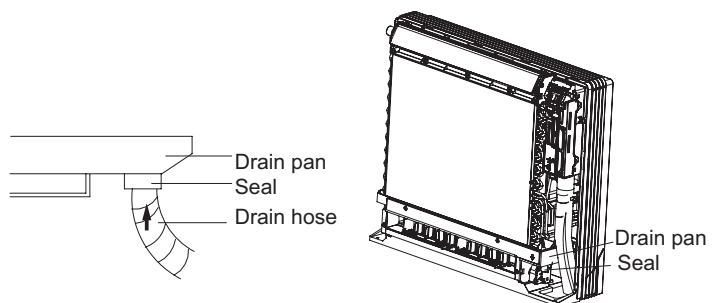
Incomplete insulation may lead to water leakage.

2) Push the pipe inside so it does not place undue force on the front grille.

## Connecting the drain hose

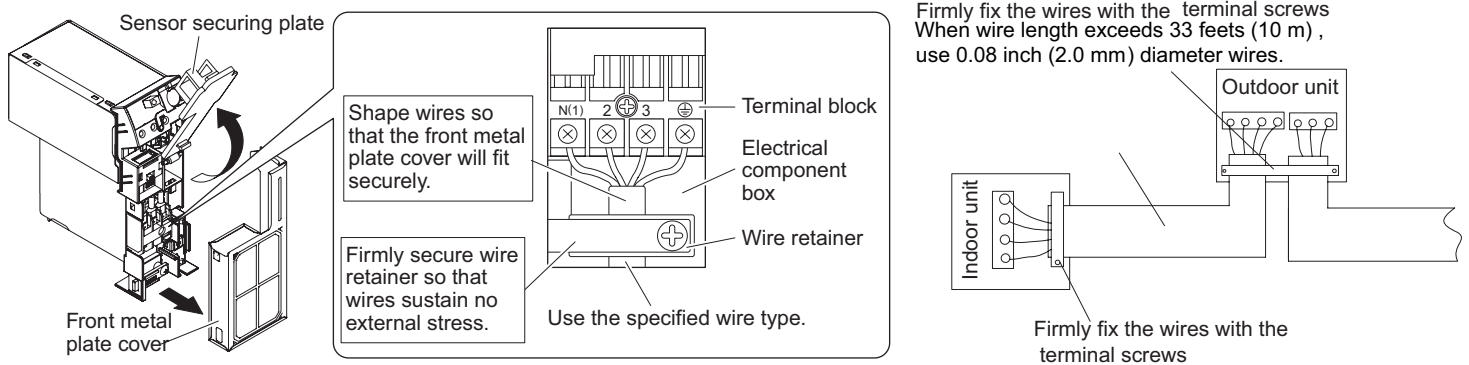
Insert the supplied C drain hose into the socket of the drain pan.

Fully insert the drain hose until it adheres to a seat of the socket.



● Loosen the sensor securing plate, remove the front metal plate cover, and connect the branch wiring to the terminal block.

- 1) Strip wire ends 0.6 inches (15 mm).
- 2) Match wire colors with terminal numbers on indoor and outdoor unit's terminal blocks and firmly screw wires to the corresponding terminals.
- 3) Connect the ground wires to the corresponding terminals.
- 4) Pull wires to make sure that they are securely connected, then retain wires with wire retainer.



## **!** WARNING

- 1) Do not use tapped wires, stranded wires, extension cords, or starburst connections, as they may cause overheating, electrical shock, or fire.
- 2) Do not use locally purchased electrical parts inside the product. (Do not branch the power for the drain pump, etc, from the terminal block.) Doing so may cause electric shock or fire.)

# 7 Routine check after installation

## ● Check after installation

Items to be checked	Possible malfunction	Situation
Has it been fixed firmly?	The unit may drop,shake or emit noise.	
Have you done the refrigerant leakage test?	It may cause insufficient refrigerating capacity.	
Is heat insulation sufficient?	It may cause condensation and dripping.	
Does the unit drain well?	It may cause condensation and dripping.	
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the part.	
Is the electrical wiring and piping connection installed correctly and securely?	It may cause electric malfunction or damage the part.	
Has the unit been connected to a secure ground connection?	It may cause electrical leakage.	
Is the power cord specified?	It may cause electric malfunction or damage the part.	
Has the inlet and outlet been covered?	It may cause insufficient refrigerating capacity.	
Has the length of connection pipes and the refrigerant charge been recorded?	The refrigerating capacity is not accurate	



