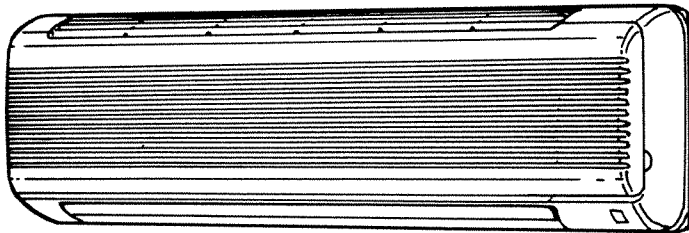




Model **MSM18N**  
[FLARE CONNECTIONS TYPE]

## Installation Manual



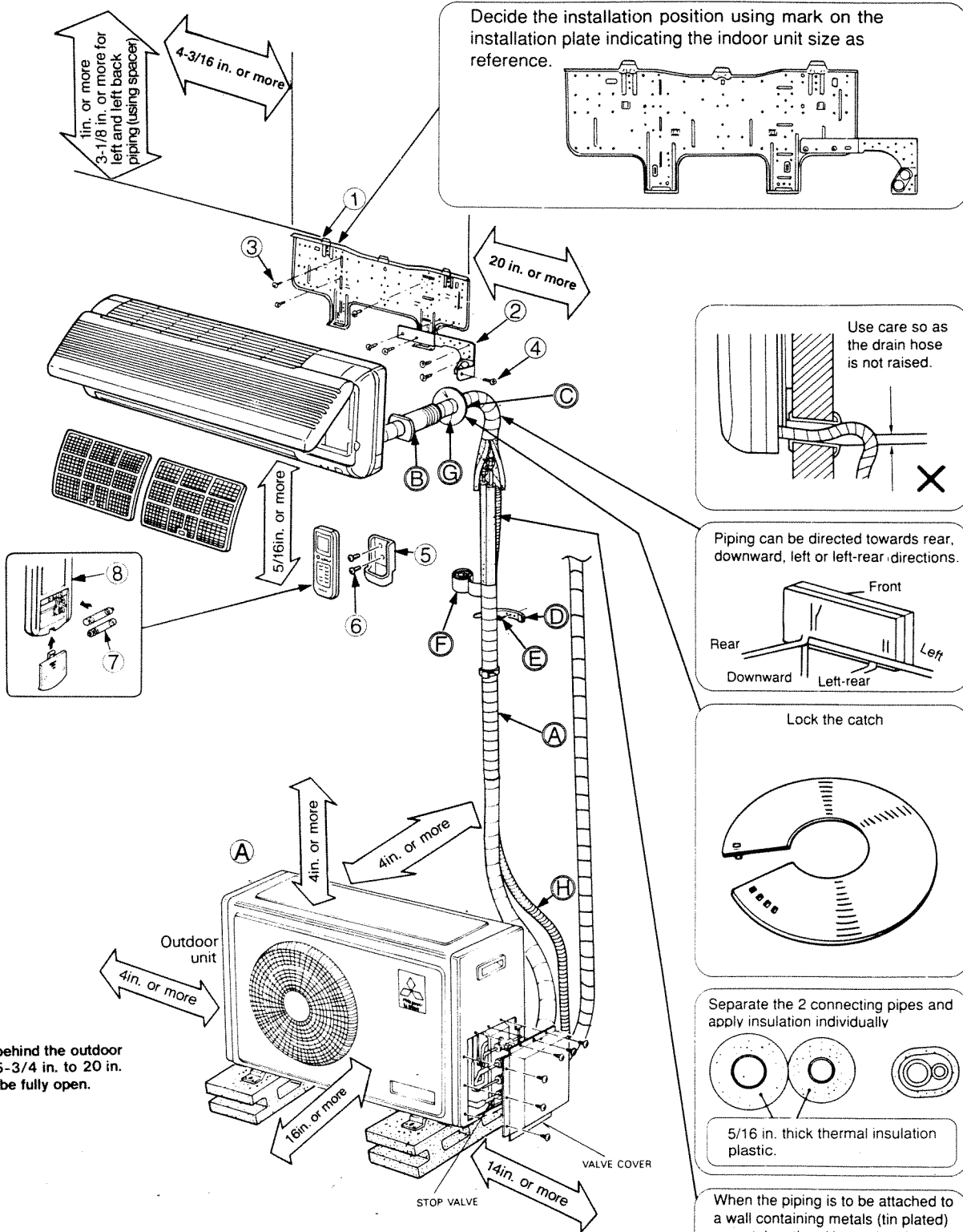
### ATTENTION

The installation manual details the suggested installation method.  
Any structural alterations necessary for installation must comply with local building code requirements.

### CONTENTS

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# 1. INSTALLATION DIAGRAM & ACCESSORIES



**NOTE**

If clearance behind the outdoor unit is only 15-3/4 in. to 20 in. side **A** must be fully open.

**Units should be installed by licensed contractor according to local code requirement.**

## ACCESSORIES

Check the following parts before installation.

(1)	Installation plate	1
(2)	Conduit plate	1
(3)	Installation plate and conduit plate fixing screw 4 x 25mm	8
(4)	Fixing screw for (2) and electrical box 4 x 8 mm	1
(5)	Remote controller mounting hardware	1
(6)	Fixing screw for (5) 3.5 x 16 mm (Black)	2
(7)	Battery (AAA) for remote controller	2
(8)	Wireless remote controller	1
(9)	Felt tape (Used for left or left-rear piping)	1
(10)	Insulation material	1

## PART TO BE PROVIDED AT YOUR SITE

Optional extension pipe MAC645P I ~649P I

(A)	Extension pipe	1
(B)	Wall hole sleeve	1
(C)	Wall hole cover	1
(D)	Pipe fixing band	2 to 5
(E)	Fixing screw for (D) 4x20 mm	2 to 5
(F)	Piping tape	1
(G)	Putty	1
(H)	Drain hose	1
(I)	Refrigerant oil	1

## 2. THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY

- 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.

<b>⚠ WARNING</b>	Could lead to death, serious injury, etc
<b>⚠ CAUTION</b>	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.

#### 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 injury.

#### 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.

#### Do not use intermediate connection of the power cord, etc. or an extension cord or connect many devices to one AC outlet.

- It could cause a fire or electric shock due to defective contact, defective insulation, exceeding the permissible current, etc.

#### Leak check refrigerant after installation is completed.

#### 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.

#### 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.

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

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

#### 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.

If the air conditioner is installed in a high humidity area or near a water source, a ground fault interrupt (GFI) circuit breaker should be installed to protect against shock.

- If a ground fault interrupt circuit breaker is not installed, it could cause an electric shock.

### 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.

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.

## 3. SELECTING THE INSTALLATION LOCATION

### 3-1 INDOOR UNIT

- Where airflow is not blocked.
- Where cool air spreads over the entire room.
- Maximum pipe length between indoor unit and outdoor unit to be 49 ft. and the difference of height of both units to be 25 ft. max.
- Rigid wall without vibration.
- Where it is not exposed to direct sunshine.
- Where easily drained.
- At a distance 3 ft. or more away from your TV and radio (to prevent picture could be distorted or noise could be generated).
- In a place as far away as possible from fluorescent and incandescent lights (so the infrared remote control can operate the air conditioner normally).
- Where the air filter can be removed and replaced easily.

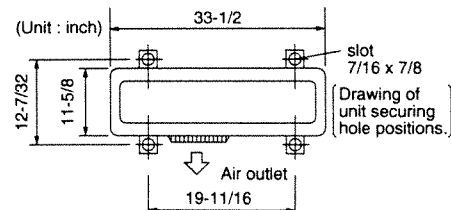
### 3-2 OUTDOOR UNIT

- Where it is not exposed to strong wind.
- Where airflow is good and dustless.
- Where it is not exposed to rain run-off and direct sunshine.
- Where neighbours are not annoyed by operation sound or hot air.
- Where rigid wall or support is available to prevent the increase of operational sound or vibration.
- Where there is no risk of combustible gas leakage.
- When installing the unit at a high level, be sure to fix the unit legs.

## ⚠ CAUTION

Avoid the following places for installation where air conditioner trouble is liable to occur.

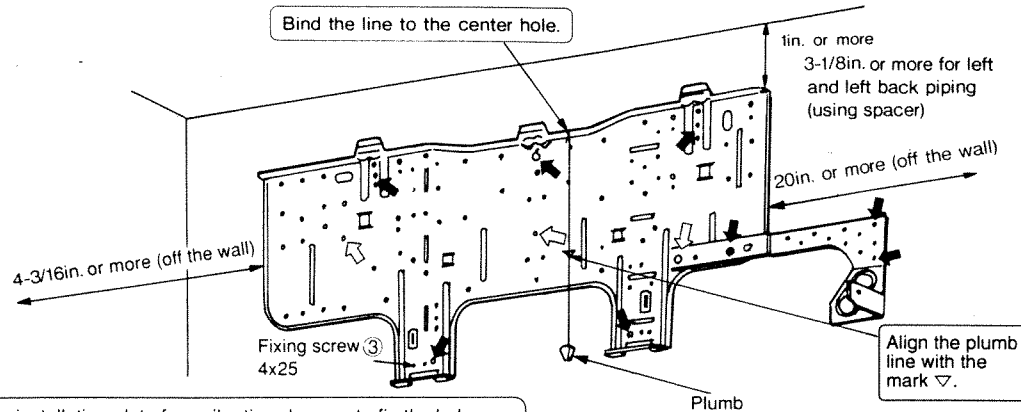
- Where there is too much machine oil.
- Salty environment as seaside areas.
- Hot-spring areas.
- Where sulfide gas exists.
- Other special atmospheric areas.



# 4. INDOOR UNIT INSTALLATION

## 4-1 FIXING OF INSTALLATION PLATE

- Find a structural material (such as a stud) in the wall and secure installation plate horizontally.



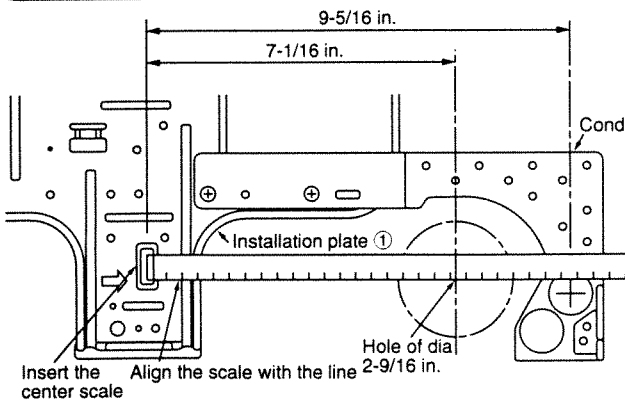
To prevent the installation plate from vibrating, be sure to fix the holes as indicated by the arrows Also, fix the holes as indicated by the arrows as much as possible.

- When bolts recessed in the concrete wall is to be utilized, secure the mounting plate using 7/16 in. x 13/16 in. 7/16 in. x 1 in. over hole (17-3/4 in. pitch)  
If the recessed bolt is too long change it with a shorter one available in the market.

## 4-2 WALL HOLE DRILLING

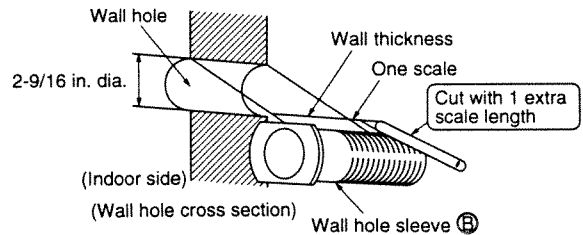
- 1 Determine the wall hole position.

### Positioning of the holes on the wall



Repeat the same procedure for the left hole.

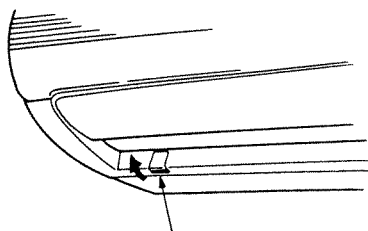
- 2 Drill a 2-9/16 in. hole slightly inclining downwards.
- 3 Insert the wall hole sleeve .



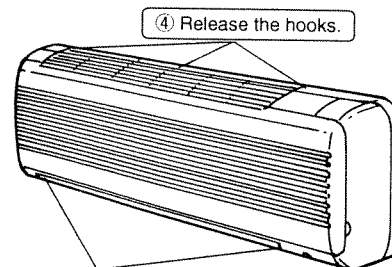
Always use wall hole sleeve to prevent contact of indoor and outdoor connecting wires with metal part in the wall and to prevent damage by rat in case of the wall is hollow.

## 4-3 FRONT PANEL REMOVAL

- Remove the front panel



Hold this concave section and pull the bottom forward to remove the front panel.



- 1 Remove the screw caps.
- 2 Remove 2 screws.

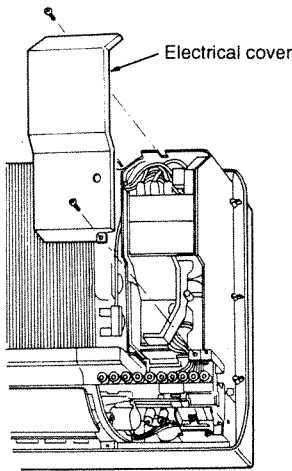
- 3 Pull the bottom.

## 4-4 POWER SUPPLY AND INDOOR/OUTDOOR CONNECTING WIRE CONNECTION

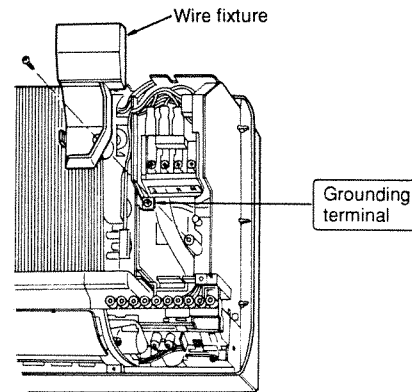
- Power should be taken from an exclusive branched circuit.
- Wiring work should be based on applicable technical standards.
- Wiring connections should be made following the diagram.  
Screws should be tightened so they won't loosen.

ELECTRICAL SPECIFICATIONS		
MODEL	MSM18N	
INDOOR UNIT	MS09N	MS09N
Power supply (V, PHASE, Hz)	115,1,60	115,1,60
Max. Fuse size (time delay) (A)	15.0	15.0
Min. Ckt Ampacity	0.5	0.5
Fan motor (F.L.A)	0.37	0.37
OUTDOOR UNIT	MUM18N	
Power supply (V, PHASE, Hz)	208/230,1,60 (3 wires)	
Max. Fuse size (time delay) (A)	15 x 2	
Min. Ckt Ampacity	14 + 13	
Fan motor (F.L.A)	1.0	
Compressor	(R.L.A)	10 x 2
	(L.R.A)	37 x 2
Control voltage	Indoor unit - Remote controller : (Wireless) Indoor unit - Outdoor unit : DC 12V (Polar)	

① Remove the electrical cover

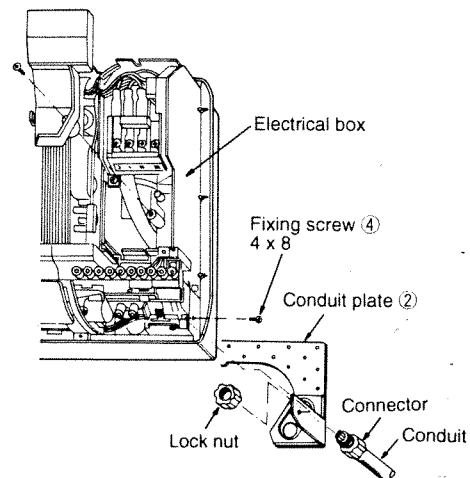


② Remove the wire fixture

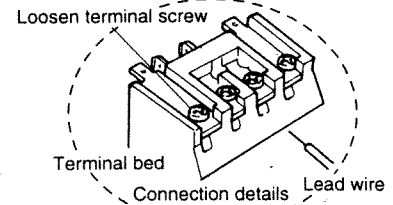
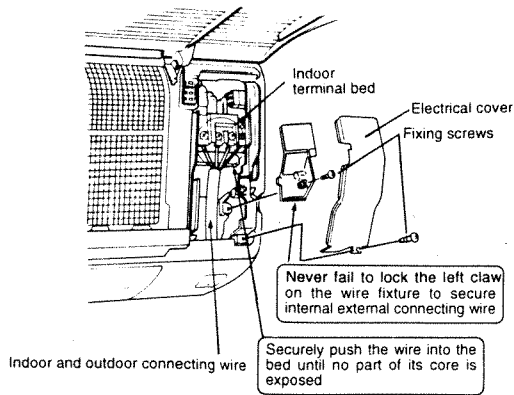


③ Fix the conduit connector to conduit plate ② with lock nut.

After that, set the unit to the installation plate ①, and secure the conduit plate ② and electrical box tightly with the fixing screw ④.



## 4-4 POWER SUPPLY AND INDOOR/OUTDOOR CONNECTING WIRE CONNECTION

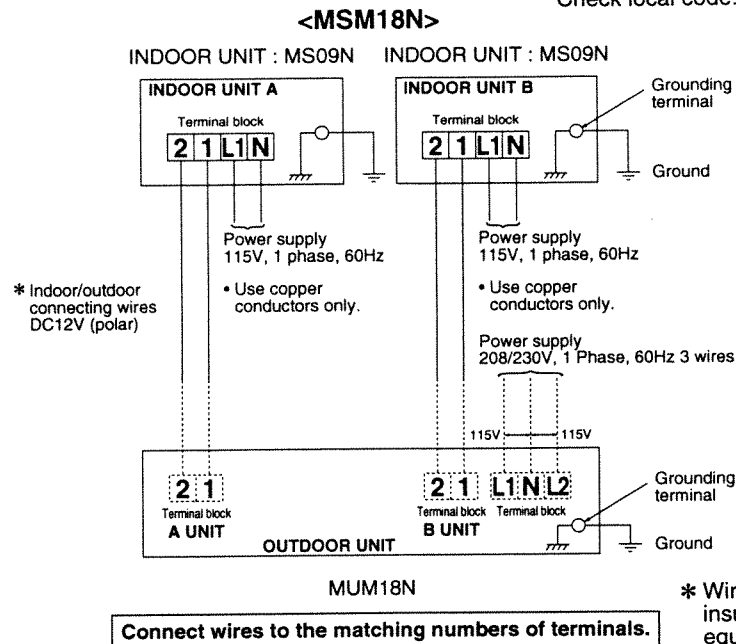


### Cautions

- ① Use care not to make mis-wiring.
- ② Firmly tighten the terminal screws to prevent them from loosening.
- ③ After tightening, pull the wires lightly and confirm that they do not move.

Make wirings connections according to wiring diagram.

- Disconnect switch may be required. Check local code.



### ⚠ WARNING

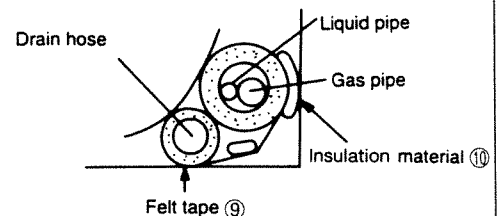
Use the specified indoor/outdoor unit connecting wire to connect the indoor and outdoor units and fix the wire to the terminal bed securely so that no stress is applied to the connecting section of the terminal bed. Incomplete connection or fixing of the wire could result in a fire.

### ⚠ WARNING

Attach the electrical part cover securely. If it is attached incorrectly, it could result in a fire, electric shock due to dust, water, etc.

## 4-5 PIPE FORMING

- Place the drain hose below the refrigerant piping.
- Make sure that the drain hose is not heaved or snaked.
- Do not pull the hose to apply taping.
- When the drain hose is to pass inside the room, be sure to wrap insulation material (obtainable at a store) around it.
- Wrap the felt tape ⑨ around the pipe and drain hose and paste the insulation material ⑩ at the position where the pipe would touch the wall surface and house them in the pipe housing section at the back of the unit

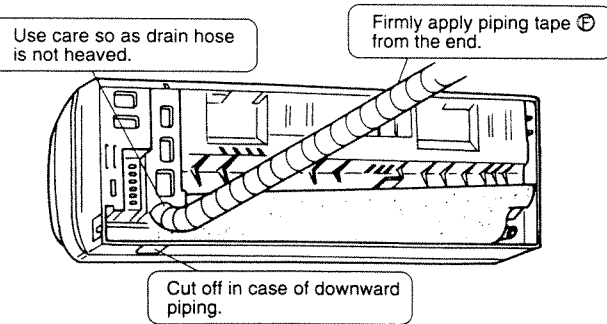


## 4-5 PIPE FORMING

### FOR REAR, RIGHT OR DOWNWARD PIPING

● Pipe arrangement

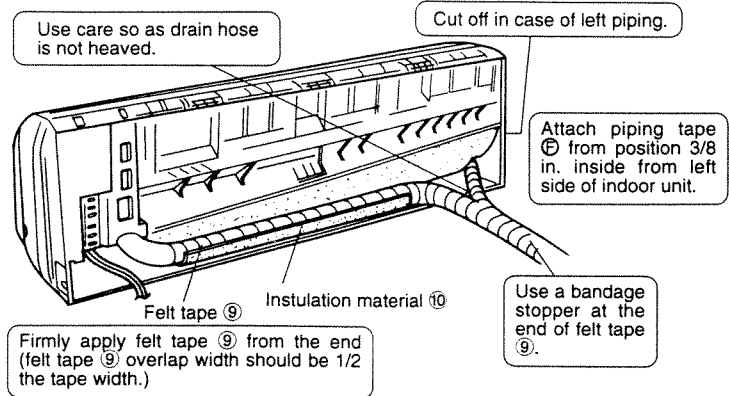
Put the refrigerant piping and drain hose together and apply piping tape ⑤ taping.



### PIPING (LEFT AND LEFT-REAR)

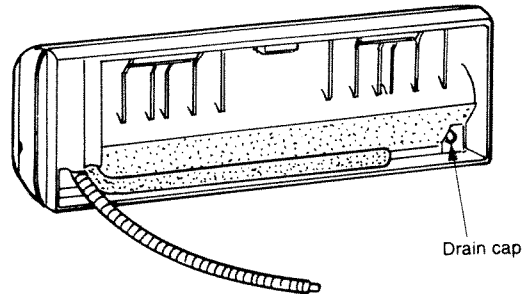
● Pipe arrangement

Put the refrigerant piping and drain hose together and apply felt tape ⑨ taping.



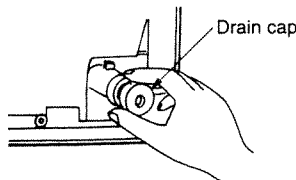
### REATTACHING DRAIN HOSE

Be sure to reattach the drain hose and drain cap when piping from the left or from the left rear. Otherwise, it could cause water droplets to drip from the drain hose.



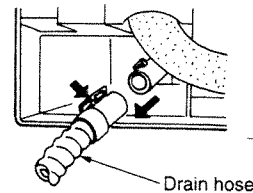
#### ① Pull out the drain cap at the rear right of the indoor unit.

Hold the convex section at the end and pull of the drain cap.



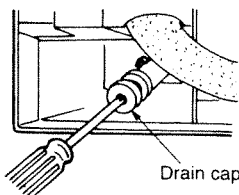
#### ② Pull out the drain hose at the rear left of the indoor unit.

Hold the tab marked by the arrow and pull out the drain hose forward.



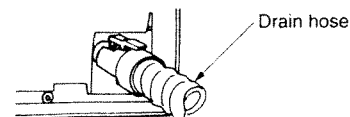
#### ③ Put the drain cap into the section to which the drain hose is to be attached at the rear of the indoor unit.

Insert the tip of a screwdriver, etc. into the hole at the end of the cap insert the cap fully into the drain plate.



#### ④ Insert the drain hose into the section to which the drain hose is to be attached at the rear right of the indoor unit.

Insert the drain hose fully into the drain plate. Check that the hose is hooked onto the projection at the section to which the drain hose is to be inserted securely.



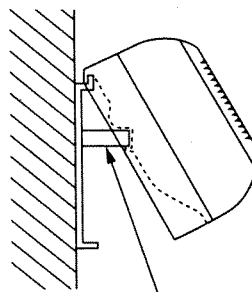
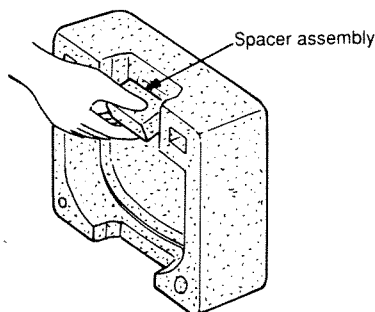


## 4-5 PIPE FORMING

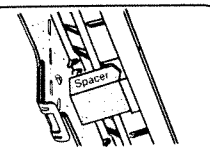
Connect ducts as shown in the figure below when extension pipes or cables have been embedded in the wall.

- Hook the upper part of room unit on the Installation plate ①, move the unit to the left most considering room for running ducts, cut part of packing material (spacer assembly) to hook it on the back rib, then lift the room unit as shown in the figure right.

Cut part of packing material (spacer assembly) to hook it on the back rib

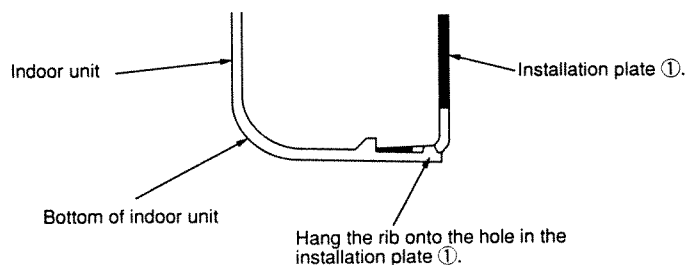


Securely attach the spacer assembly in the concave part of the rib taking care its direction is correct as shown in the figure right



## 4-6 INDOOR UNIT INSTALLATION

- Place piping through the wall hole, hang top of indoor unit to installation plate ①, thrust the indoor unit till it clicks.

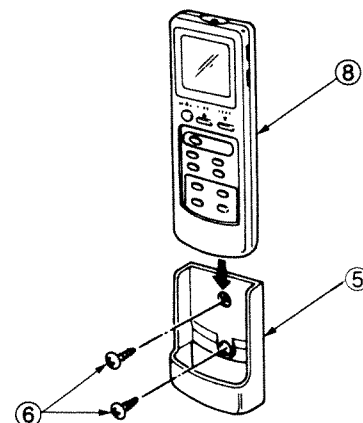


## 4-7 WIRELESS REMOTE CONTROLLER MOUNTING

- Place of mounting
  - Where it is easy to operate and easily visible.
  - Where children can not touch.
- Mounting

Select a position about 4 ft. above the floor, check that signals from the controller are surely received by the indoor unit from that position ('beep' or 'beep-beep' receiving tone sounds), attach remote controller mounting hardware ⑤ to a pillar or wall, then set the wireless remote controller ⑧.

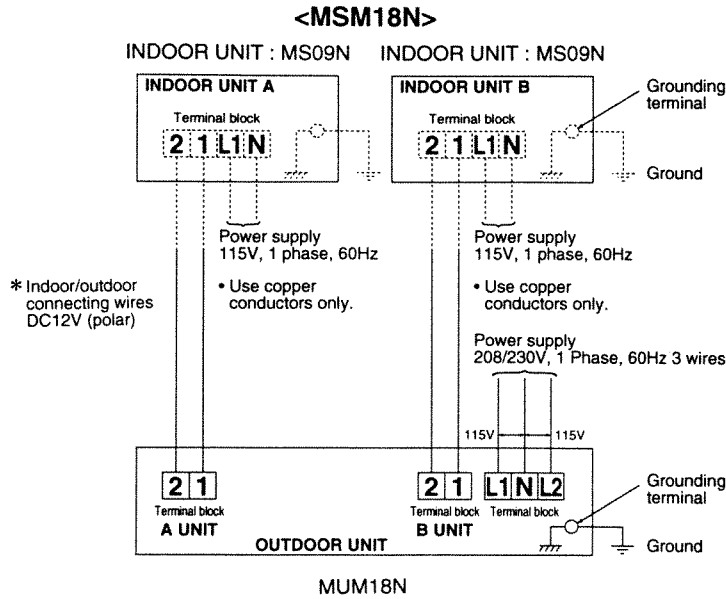
In a room where fluorescent lamps using cyclic ignition stabilizer of high voltage pulse or intermittent oscillator, signal from the wireless remote controller may not be received.



# 5. OUTDOOR UNIT INSTALLATION

## 5-1 POWER SUPPLY AND INDOOR/OUTDOOR CONNECTING WIRE CONNECTION

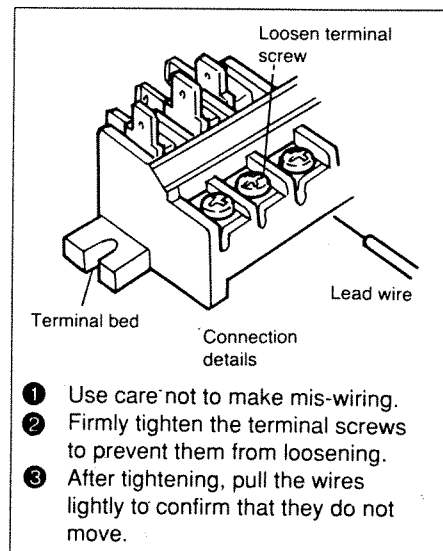
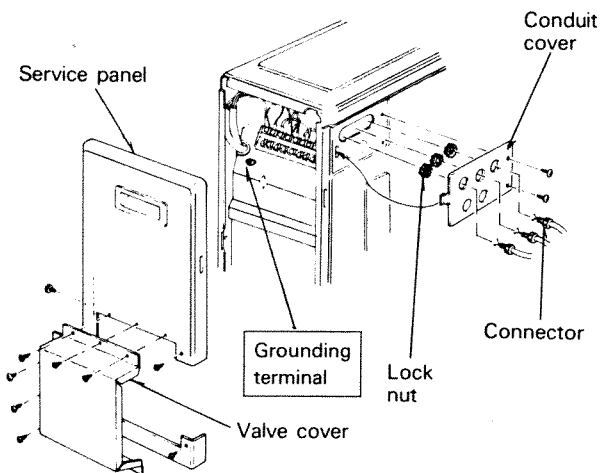
- Disconnect switch may be required Check local code.



Connect wires to the matching numbers of terminals.

\* Wire to be AWG22 double insulated, 300V insulation equal to Belden 9407.

- Remove the service panel.
- Fix the conduit connector to conduit cover with lock nut then secure it against unit with screw.



- Connect wires matching numbers of the terminals.
  - Leave some slack in wires to allow easier servicing.
- Use care so as connecting wires do not contact pipes.**

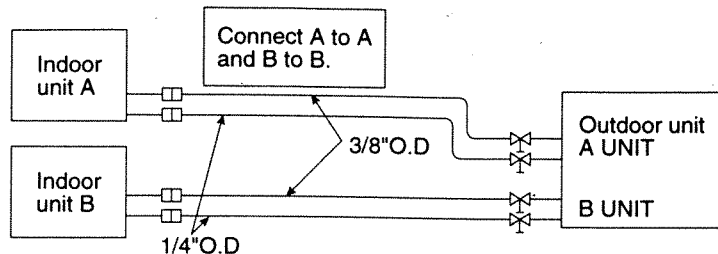
### **⚠ WARNING**

Be sure to attach the service panel of the outdoor unit securely. If it is not attached correctly, it could result in a fire or electric shock due to dust, water, etc.

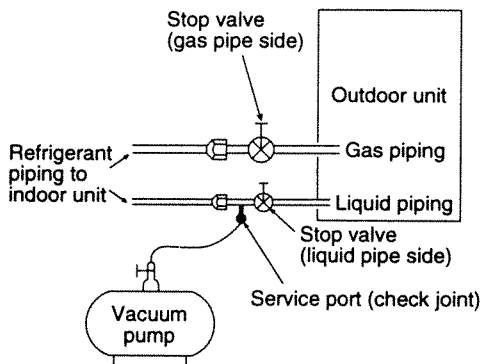
# 5. INDOOR/OUTDOOR UNITS CONNECTION FINISHING AND TRIAL RUN

## 6-1 FLARED CONNECTIONS

- This unit has flared connections on both indoor and outdoor sides.
- Refrigerant pipes are used to connect the indoor and outdoor units as shown in the figure below.
- The refrigerant pipes and the indoor unit contain a nitrogen holding charge which must be removed by evacuation.



- See that stop valve on outdoor unit is fully shut (unit is shipped with valve shut). After all piping connections between indoor and outdoor unit have been completed, vacuum the air and nitrogen from system through the service port of the stop valve on the outdoor unit.
- Refrigerant adjustment ... If pipe length exceeds 25 ft. additional refrigerant (R-22) charge is required. (The outdoor unit is charged with refrigerant for 25 ft. pipe length.)



Limits	
Pipe length	49 ft. max.
Height difference	25 ft. max.
No. of bends	10 max.

Additional charge piping length exceeding 25 ft.	No additional charge required
0.53 oz each 5 ft.	25 ft. maximum (Pipe length)

### PIPING PREPARATION

- Refrigerant pipes of 10, 16, 23, 33 and 49 ft. are available as optional items.
- ① Table below shows the specifications of pipes commercially available.

Pipe	Outside diameter	Insulation thickness	Insulation material
For liquid	1/4	5/16	Heat resisting foam plastic 0.045 specific gravity
For gas	3/8	5/16	

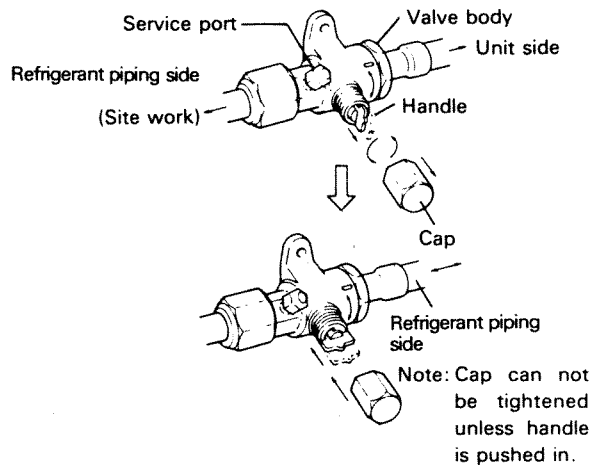
(inch)

- ② Ensure that the 2 refrigerant pipes are well insulated to prevent condensation.
- ③ Refrigerant pipe bending radius must be 4 in. or more.

### CAUTION

Use insulation of specified thickness. Excessive thickness prevents storage behind the indoor unit and smaller thickness causes condensation dripage.

- Stop valve open/close operation procedure (see Figs. below)



① Remove cap, pull handle with fingers (up to arrow mark position stamped on handle) then rotate 1/4 turn counterclockwise.

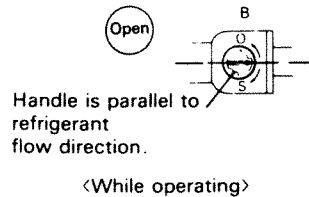
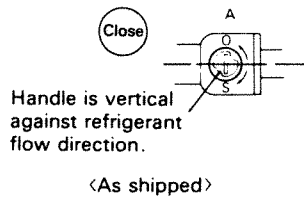
② When the handle becomes parallel to refrigerant flow direction, push handle into main body then tighten cap in its original state.

\* Opening both gas and liquid pipe sides in the above procedure connects the refrigerant circuit and enables the system to be started.

- Handling

- ① Connect refrigerant pipe only with stop valve fully closed (Fig.A).  
Be sure to use two wrenches for pipe connection to valve.
- ② For vacuuming of refrigerant piping, use service port provided on stop valve.  
(For additional refrigerant charge, use charge plug provided on low pressure side pipe inside the unit.)
- ③ After refrigerant pipes are connected and evacuated, fully open all stop valves on gas and liquid pipe sides as shown in B below.  
Operating without fully opening lowers the performance and causes trouble.  
(Handle can be rotated only when handle is pulled up. After rotating, be sure to push handle in.)
- ④ Be sure to attach caps on service port and handle section upon completion of all works above. Negligence may cause refrigerant leakage.

- Status of stop valve



### Notes

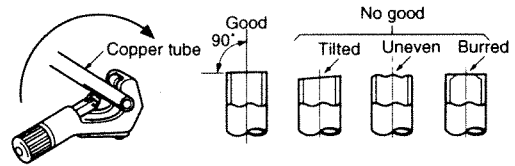
- Before tightening the flare nuts, apply a thin coat of refrigerant oil  $\text{Ⓢ}$  to the pipe and the connection's seat surface.
- After connecting the pipes, check for gas leakage using a leak detector or soap water.
- Always insulate the connections on the indoor side and outdoor side.
- When the actual length of the pipe exceeds 25 ft., charge additional refrigerant (R-22).
- Ⓢ Finally attach the service panel.

## 6-2 FLARING WORK

- Main cause of gas leakage is defect in flaring work.
- Carry out correct flaring work in the following procedure.

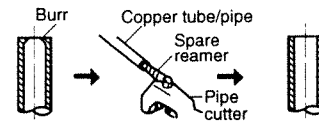
### 1 Pipe cutting

- Using a pipe cutter cut the copper tube correctly.



### 2 Burrs removal

- Completely remove all burrs from the cut cross section of pipe/tube.
- Put the end of the copper tube/pipe to downward direction as you remove burrs in order to avoid to let burrs drop in the tubing.



### 3 Putting nut on

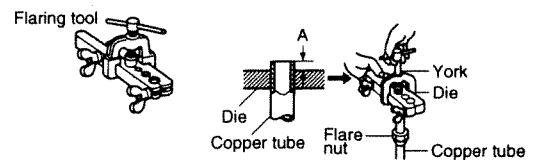
- Remove flare nuts attached to indoor and outdoor units, then put them on pipe/tube having completed burr removal.
- (not possible to put them on after flaring work)



### 4 Flaring work

- Carry out flaring work using flaring tool as shown below.

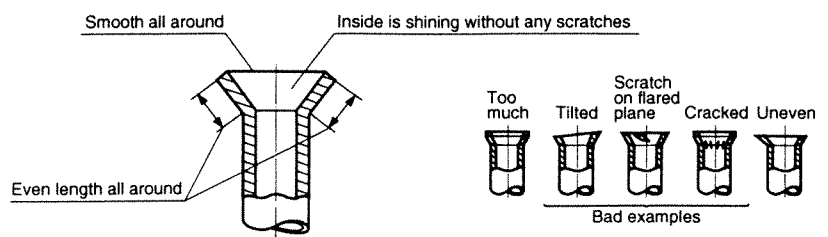
Outside diameter		A
mm	inch	inch
6.35	1/4	3/32
9.52	3/8	1/8



Firmly hold copper tube in a die in the dimension shown in the table at above.

### 5 Check

- Compare the flared work with figure below.
- If flare is noted to be defective, cut off the flared section and do flaring work again.



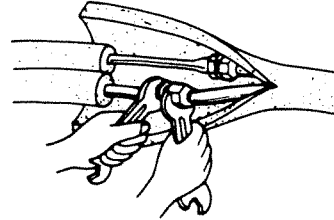
## 6-3 PIPE CONNECTION

### ① Indoor unit connection.

Connect both liquid and gas pipings to indoor unit.

- Apply a thin coat of refrigerant oil ④ on the seat surface of pipe.
- For connection first align the center, then hand tighten the first 3 to 4 turns of flare unit.
- Use tightening torque table below as a guideline for indoor unit side union joint section, and tighten using two wrenches. Excess tightening damages the flare section.

Pipe diameter		Tightening torque (ft. • lbs)
mm	inch	
6.35	1/4	10 to 13
9.52	3/8	25 to 30



### ② Outdoor unit connection

Connect pipes to stop valve pipe joint of the outdoor unit in the same manner applied for indoor unit.

- For tightening use a torque wrench or spanner, and use the same tightening torque applied for indoor unit.

## 6-4 INSULATION AND TAPING

### ① Cover piping joints with pipe cover.

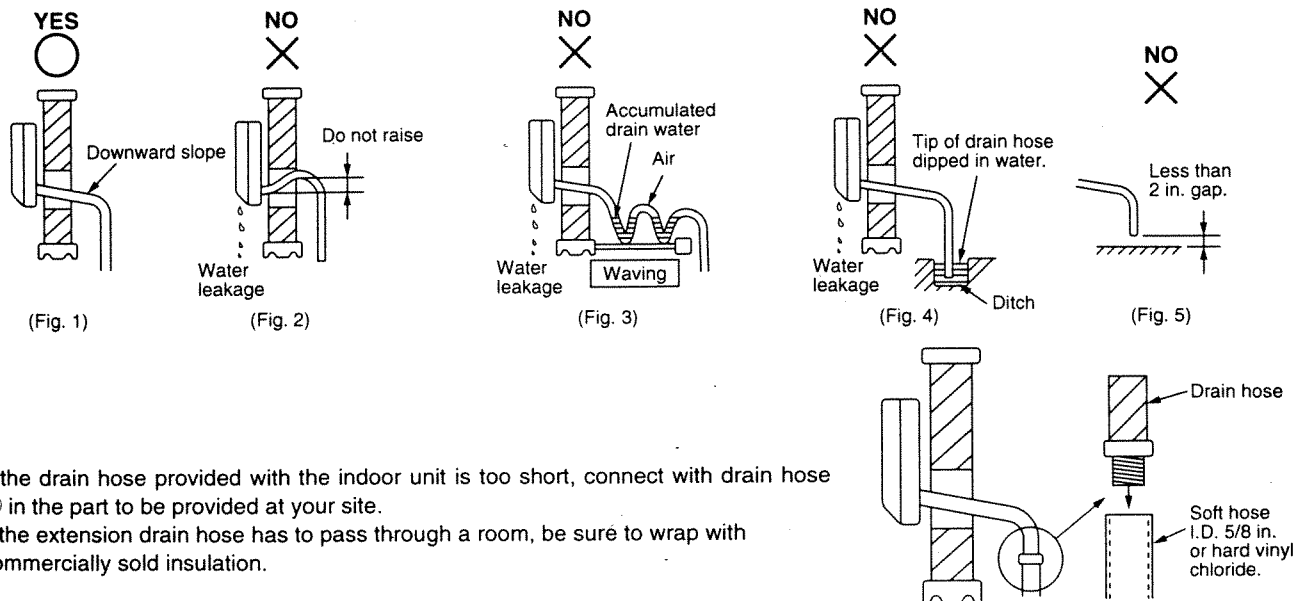
### ② For outdoor side surely insulate all piping including valves.

### ③ Using piping tape ⑤, apply taping starting from the entry of outdoor unit.

- Stop the end of piping tape ⑤ with tape (with adhesive agent attached).
- When piping has to be arranged through above ceiling, closet or where the temperature and humidity are high, wind additional commercially sold insulation for prevention of condensation.

## 6-5 DRAIN PIPING

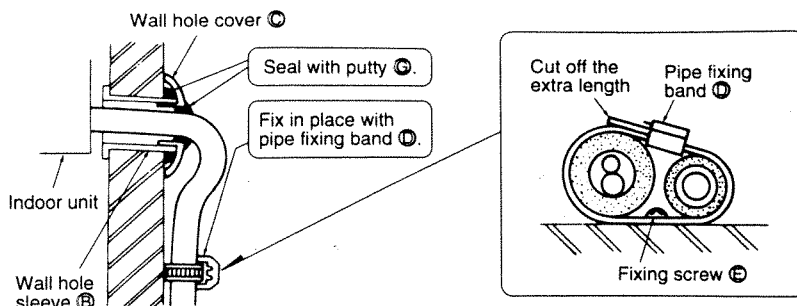
- The drain hose should point downward for easy drain flow. (Fig.1)  
Do not make drain piping as shown in Fig. 2 to 5.



- If the drain hose provided with the indoor unit is too short, connect with drain hose ⑥ in the part to be provided at your site.
- If the extension drain hose has to pass through a room, be sure to wrap with commercially sold insulation.

## 6-6 WALL HALL SEALING AND FIXING PIPE IN PLATE

- ① Seal the wall hole gap with putty ㉓.
- ② Fix piping in place with pipe fixing band ㉔.







## 6-7 TEST RUN

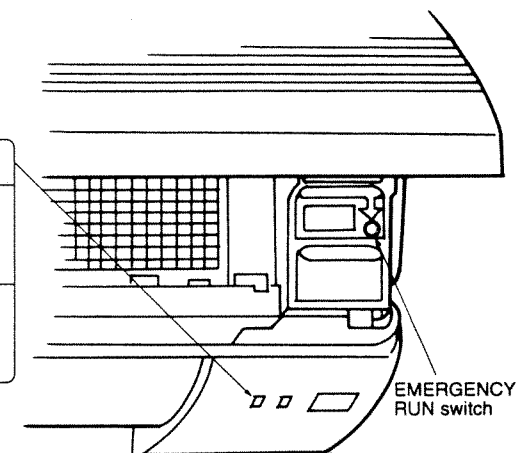
- Before performing the test run recheck for any wrong wiring.  
Wrong wiring prevents normal operation or results in blown fuse disabling operation.
- The test run can be initiated by using EMERGENCY RUN switch (push button switch). Once the EMERGENCY RUN switch is pressed, the unit starts continuous operation and runs for 30 minutes in cooling mode. During this 30 minutes a thermostat does not work. After 30 minutes the unit starts the emergency run at a fixed temperature setting of 75°F in cooling mode.
- Perform test run in the following procedure.

### PROCEDURE

- Press the EMERGENCY RUN switch.

- ① Pressing it once starts the emergency cooling operation.
- ② Pressing it again stops the operation.  
(Pressing the EMERGENCY RUN switch alternates between ① and ②.)

	Mode	Operation monitor lamp	
①	Cooling	 (Light)	 (Off)
②	Stop	 (Light not turn on)	 (Light not turn on)



### Checking the remote (infrared) signal reception

Press the ON/OFF button on the remote control and check that an electronic sound is heard from the indoor unit. Press the ON/OFF button again to turn the air conditioner off.

**If the indoor unit is operated from the remote control, both the trial and emergency operations are released by commands from the remote control.**

- Once the compressor stops, the restart preventive device operates so the compressor will not run for three minutes to protect the air conditioner.

### NOTE

This unit is equipped with the auto restart function. With this function, the air conditioner automatically starts operation according to the previous remote controller settings when the main power is restored. Since the air conditioner has the cooling mode saved in the memory of auto restart function at shipment from the factory, it starts cooling at the first operation after the main power is restored.

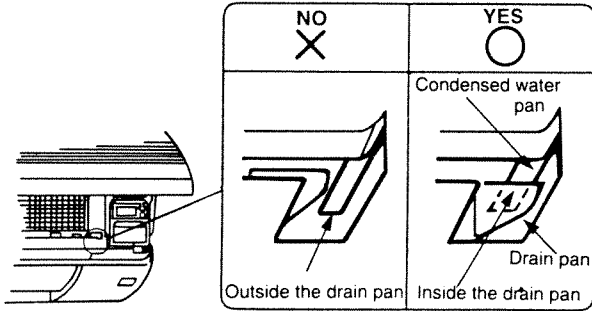
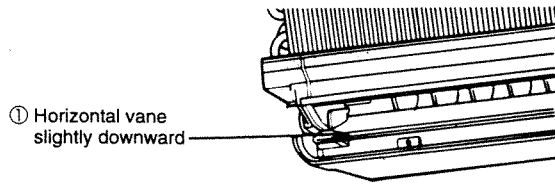
## 6-8 EXPLANATION TO THE CUSTOMER

- Using the Instruction manual explain the following to the customer how to control temperature, how to remove air filters, how to remove or put the remote controller in the remote controller mounting hardware, how to clean, precautions for operation, etc.
- Recommend the customer to carefully read the Operating Instruction Book.

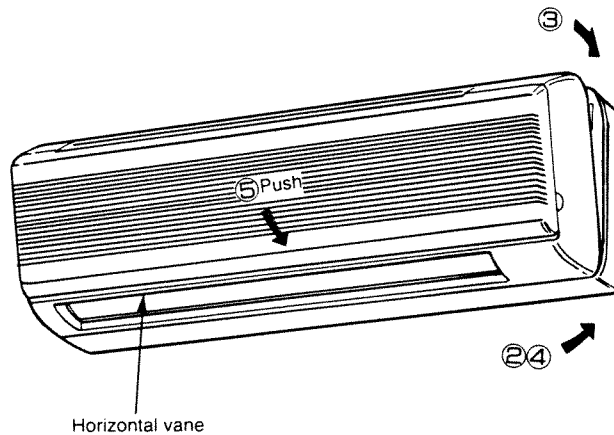
# 7. FOR MOVEMENT AND MAINTENANCE

## 7-1 HOW TO INSTALL THE FRONT PANEL

- 1 Before installing the panel, set the horizontal vane to the position shown below.
- 2 Insert the bottom of the panel under the horizontal vane.
- 3 Set the top of the panel.
- 4 After setting the bottom of the panel, open intake grille as shown below and check that the condensed water pan is positioned inside the drain pan. Then, fix the front panel using screws.



- 5 Push the arrow mark on the panel to fix it to the air conditioner.

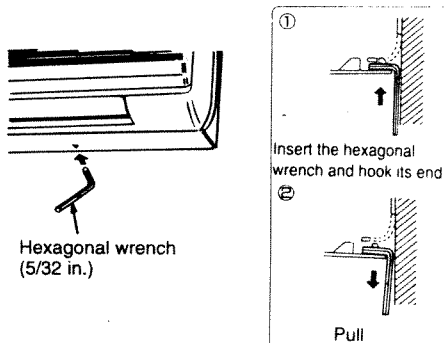


## 7-2 REMOVING THE INDOOR UNIT

Releasing the bottom of the indoor unit from the attachment plate.

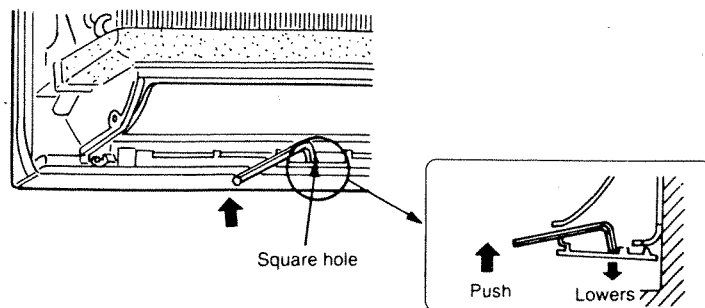
### When using a hexagonal wrench

Use a hexagonal wrench to pull the bottom of the indoor unit downward as shown in the figure below, then pull the unit slightly forward to release the hooks at the bottom.



### If the above method cannot be used

If the above method cannot be used, remove the front panel and insert hexagonal wrenches into the square holes on the left and right as shown in the figure below, then push them up; the bottom of the indoor unit is lowered and the hooks are released.





## 7-3 GAS CHARGER

- 1 Connect gas drum to the service port of outdoor unit
- 2 Execute air purge of the pipe (or hose) coming from refrigerant drum.
- 3 Replenish specified amount of the refrigerant, while running the air conditioner for cooling.

### ⚠ CAUTION

- Never charge liquid refrigerant, such as by inverting the drum while charging, otherwise troubles may be generated.

