

# Refrigerant R407C

## SPLIT TYPE ROOM AIR CONDITIONER INSTALLATION MANUAL (PART NO. 9363251012)

This air conditioner uses new refrigerant HFC (R407C).

For authorized service personnel only.

### WARNING

- For the room air conditioner to operate satisfactorily, install it as outlined in this installation manual.
- Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available standards parts. This installation manual describes the correct connections using the installation set available from our standard parts.
- Installation work must be performed in accordance with national wiring standards by authorized personnel only.
- Never cut the power cord, lengthen or shorten the cord, or change the plug.
- Also, do not use an extension cord.
- Plug in the power cord plug firmly. If the receptacle is loose, repair it before using the room air conditioner.
- Do not turn on the power until all installation work is complete.

- Be careful not to scratch the room air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operating manual.
- Let the customer keep this installation manual because it is used when the room air conditioner is serviced or moved.

### STANDARD ACCESSORIES

The following installation accessories are supplied. Use them as required.

#### INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Use
Wall hook bracket	1	For indoor unit installation
Wall cap	1	For through hole connection pipe protection
Remote controller	1	
Battery (penlight)	2	For remote controller
Cable mark (17T model only)	1	Stick on both ends of connection cord (to prevent incorrect wiring)
Tapping screw (big) (ø4 x 20)	8	For wall hook bracket installation
Tapping screw (small) (ø3 x 12)	2	For remote controller holder installation
Flange screw (ø4 x 10)	2	For indoor unit installation
Spacer	1	For indoor unit installation
Remote controller holder	1	
Cloth tape	1	For indoor unit installation
Seal A	1	For indoor unit installation

#### OUTDOOR UNIT ACCESSORIES

Hexagon wrench	1	For opening the refrigerant valve on the outdoor unit
Drain pipe	1	For outdoor unit drain piping work (Heat & Cool (Reverse cycle) model only)
Drain cap	2	

This installation manual refers to following parts which are included in the optionally available installation set.

Name	Q'ty
Connection pipe assembly	1
Connection cord (3-conductor)	1
Connection cord (2-conductor) (17T model only)	1
Wall pipe	1
Decorative tape	1 roll
Vinyl tape	1 set
Wall cap	1 set
Saddle	1 set
Drain hose	1
Wood screws	1 set
Sealant	1 set

### ELECTRICAL REQUIREMENT

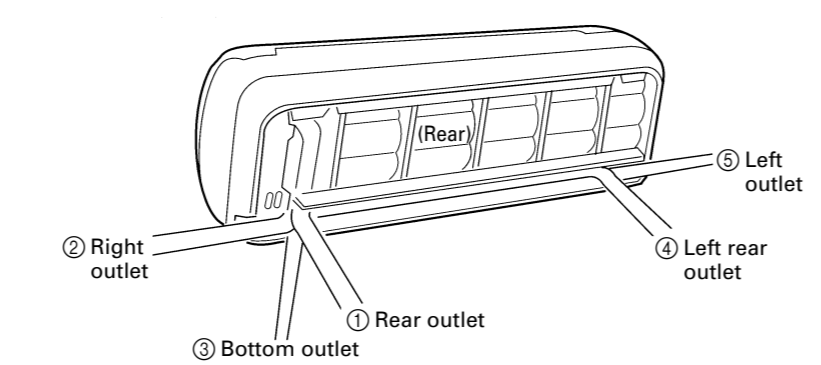
Always make the air conditioner power supply a special branch circuit and provide a special switch and receptacle. Do not extend the power cord.

## INSTALLATION PROCEDURE

### 1. INDOOR UNIT INSTALLATION

The piping can be connected in the five directions indicated by ①, ②, ③, ④, and ⑤ in (Fig. 3).

Fig. 3



#### 1. INSTALLING THE WALL HOOK BRACKET

##### WARNING

Install the wall hook bracket so that it is strong enough to withstand the weight of an adult.

##### CAUTION

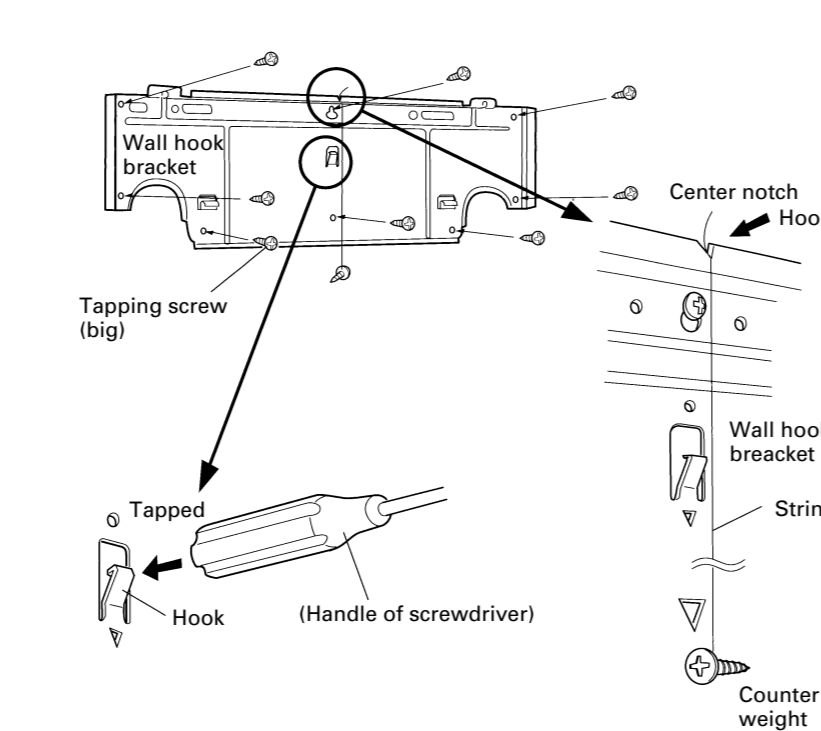
Install the wall hook bracket so that it is correctly positioned horizontally and vertically. If the wall hook bracket is tilted, water will drip to the floor.

[Installation directly to a wall]

Before fastening the wall hook bracket to the wall with the screws, level it by tapping the hook at the center of bracket to the wall with the handle of a screwdriver.

- Fasten the wall hook bracket to the wall with 6 or more screws through the holes near the outer edge of the bracket.
- Check that there is no rattle at the wall hook bracket.

Fig. 4



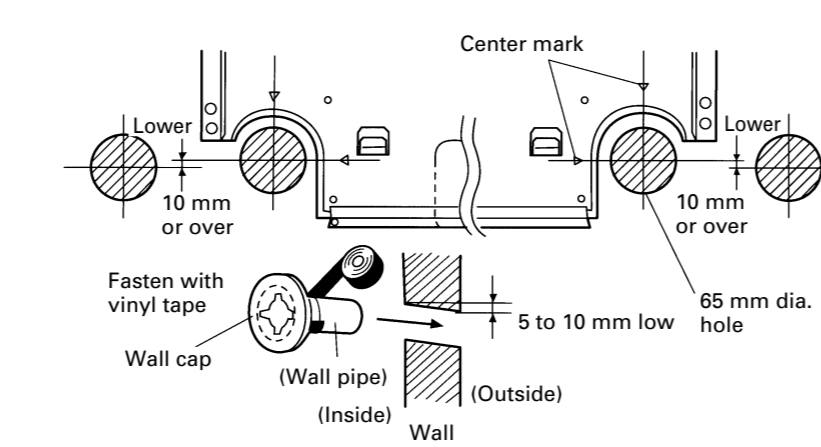
#### 2. CUTTING THE HOLE IN THE WALL FOR THE CONNECTING PIPING

##### WARNING

If the wall pipe is not used, the cord interconnecting the indoor and outdoor units may touch metal and cause electric leakage.

- Cut a 65 mm diameter hole in the wall at the position shown in (Fig. 5).
- When cutting the wall hole at the inside of the installation frame, cut the hole to a point of intersection of center marks. When cutting the wall hole at the outside of the installation frame, cut the hole at least 10 mm below less.
- Cut the hole so that the outside end is lower (5 to 10 mm) than the inside end.
- Always align the center of the wall hole. If misaligned, water leakage will occur.
- Cut the wall pipe to match the wall thickness, stick it into the accessory wall cap, fasten the cap with vinyl tape, and stick the pipe through the hole. (Fig. 5)
- For ⑤ left piping and ② right piping, cut the hole a little lower so that drain water will flow freely. (Fig. 5)

Fig. 5



#### 3. FORMING THE DRAIN HOSE AND PIPE

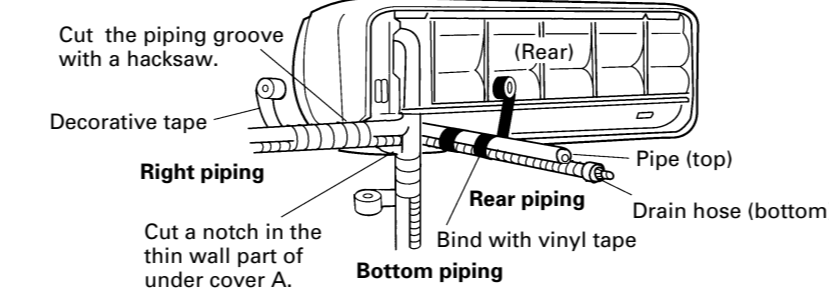
##### CAUTION

- Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.
- To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 100 mm or over.
- If the pipe is bent repeatedly at the same place, it will break.

#### ① Rear piping, ② Right piping, ③ Bottom piping

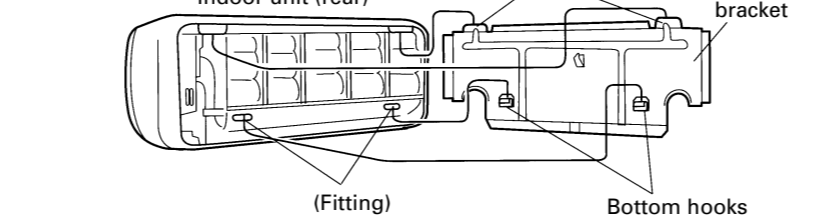
- Install the indoor unit piping in the direction of the wall hole and bind the drain hose and pipe together with vinyl tape. (Fig. 6)
- Install the piping so that the drain hose is at the bottom.

Fig. 6



- Perform "INDOOR UNIT WIRING" before performing this piping.
- Wrap the pipes of the indoor unit that are visible from the outside with decorative tape.
- After passing the indoor piping and drain hose through the wall hole, hang the indoor unit on the hooks at the top and bottom of the wall hook bracket.

Fig. 7



After hooking the indoor unit to the top hook, hook the fittings of the indoor unit to the two bottom hooks while lowering the unit and pushing it against the wall.

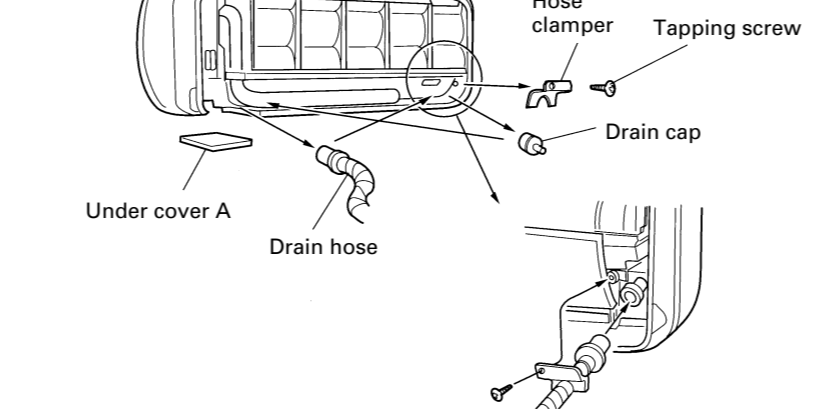
#### ④ Left rear piping, ⑤ Left piping

##### CAUTION

After removing the drain hose, do not forget to install the drain cap.

- Remove the hose clamp and install the drain hose and drain cap at the left and right.
- Then reinstall the hose clamp at its original position.

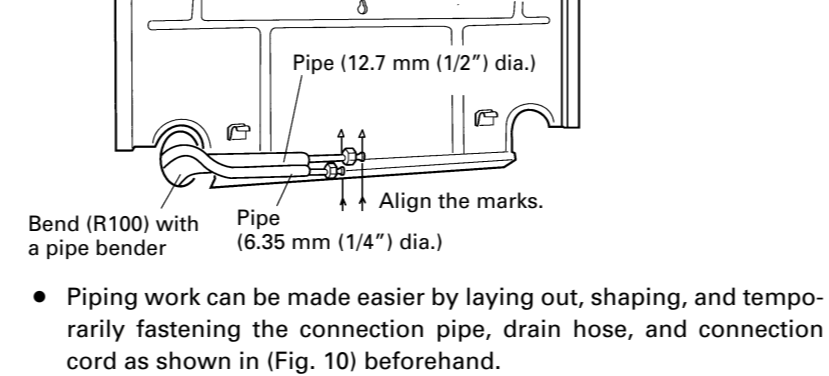
Fig. 8



For ④ Left rear piping and ⑤ Left piping, perform "CONNECTING THE PIPING" simultaneously.

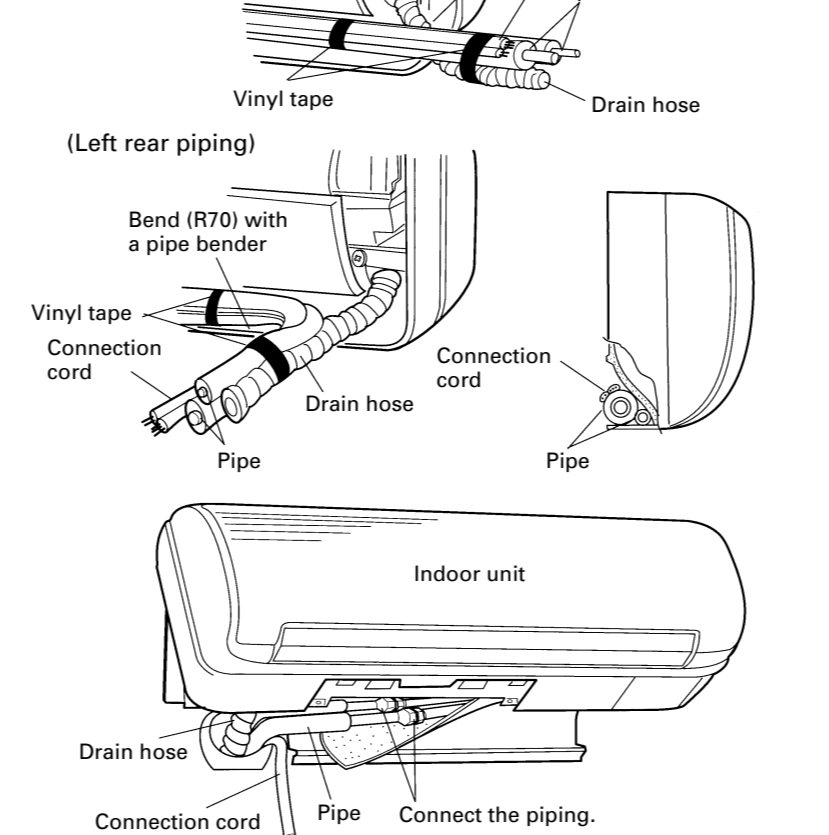
- Align the marks on the wall hook bracket and shape the connection pipe.
- Bend (about R100) the outlet section from the wall of left rear piping with a pipe bender and shape it as shown in (Fig. 9) so that there is no space between the pipe and the wall.

Fig. 9



- Piping work can be made easier by laying out, shaping, and temporarily fastening the connection pipe, drain hose, and connection cord as shown in (Fig. 10) beforehand.

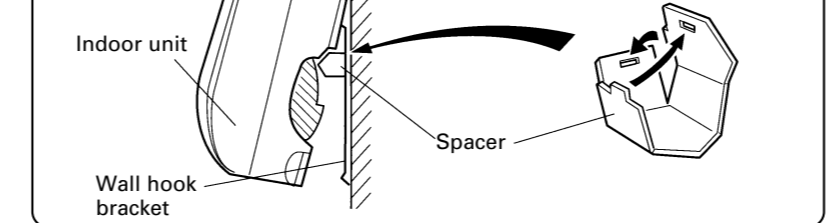
Fig. 10



#### How to use the spacer:

- Hang the indoor unit from the hooks at the top of the wall hook bracket.
- Insert the accessory spacer between the indoor unit and the wall hook bracket and separate the bottom of the indoor unit from the wall.

Fig. 11



### 2. INDOOR UNIT WIRING

##### WARNING

- Match the terminal block numbers and connection cord colors with those of the outdoor unit side. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords firmly to the terminal block. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is clamped, electric leakage may occur.)
- Always connect the ground wire.

[Model: 17T]

- Remove the under cover A.
- Remove the front panel.
- Remove the cable clamp.
- Process the end of the connection cords to the dimensions shown in (Fig. 13) and bend the end of each cord as shown in (Fig. 12).
- Stick the cable mark to both ends of the connection cord.
- Connect the end of the connection cord fully into the terminal block and fasten with a screw.

Fig. 12 Stripped length

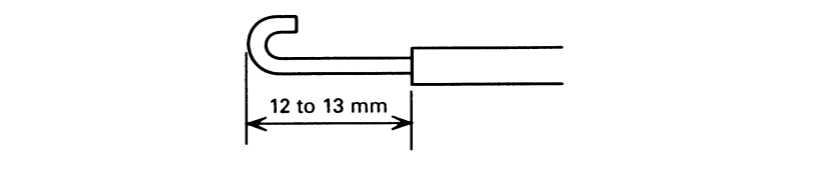
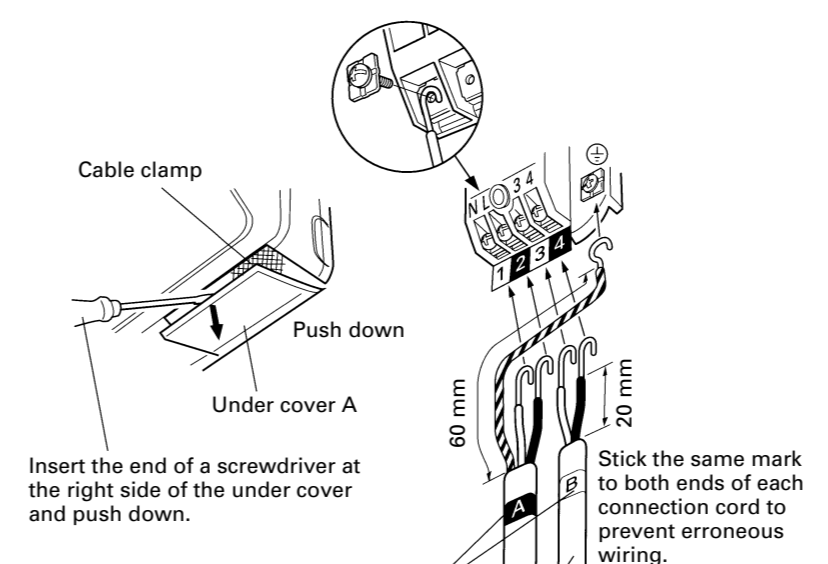


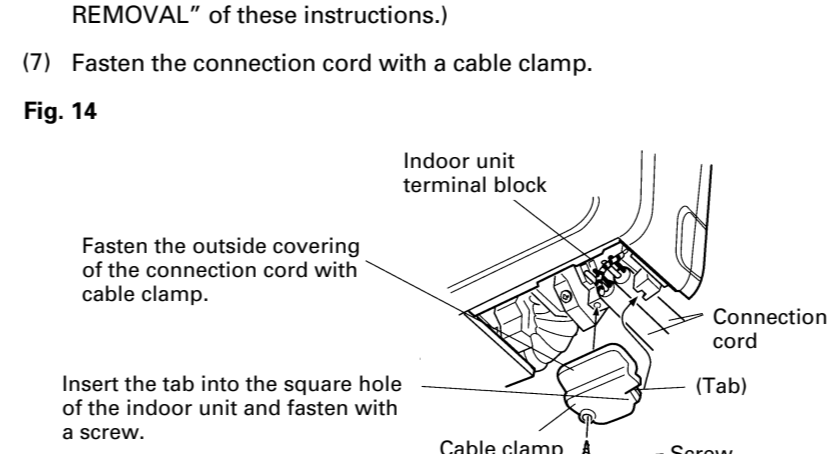
Fig. 13



(Remove the front panel in accordance with "FRONT PANEL REMOVAL" of these instructions.)

- Fasten the connection cord with a cable clamp.

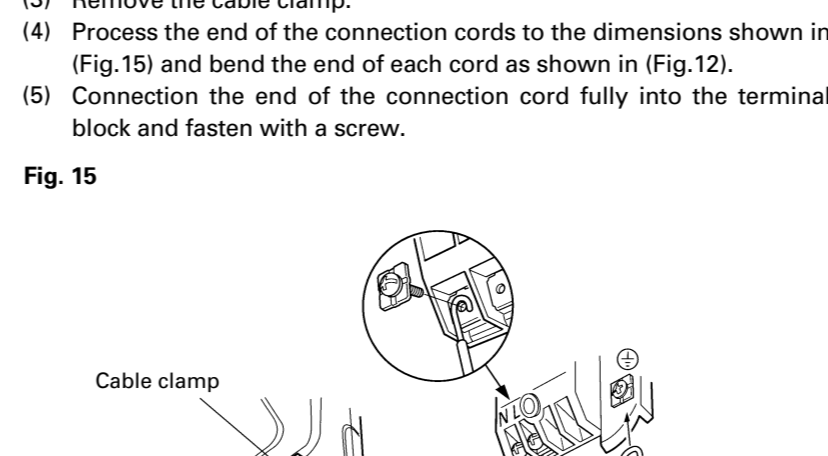
Fig. 14



(Remove the front panel in accordance with "FRONT PANEL REMOVAL" of these instructions.)

- Fasten the connection cord with a cable clamp.

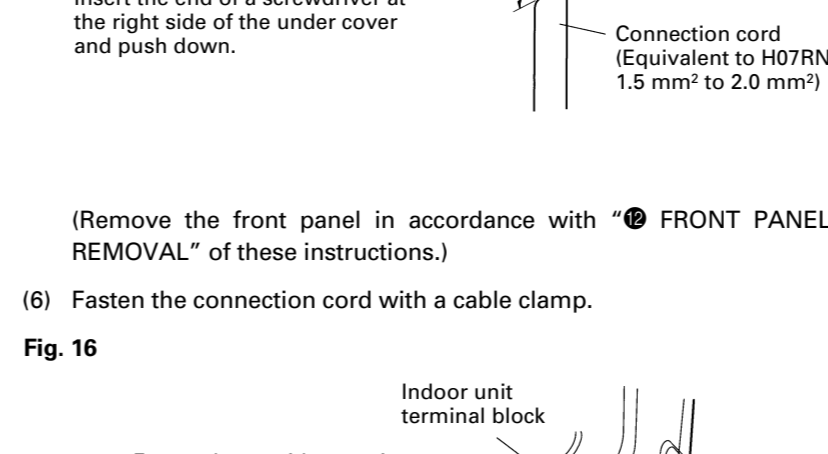
Fig. 15



(Remove the front panel in accordance with "FRONT PANEL REMOVAL" of these instructions.)

- Fasten the connection cord with a cable clamp.

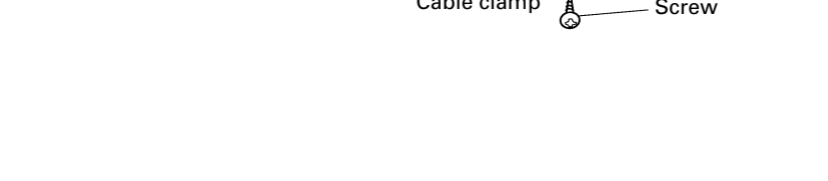
Fig. 16



(Remove the front panel in accordance with "FRONT PANEL REMOVAL" of these instructions.)

- Fasten the connection cord with a cable clamp.

Fig. 17

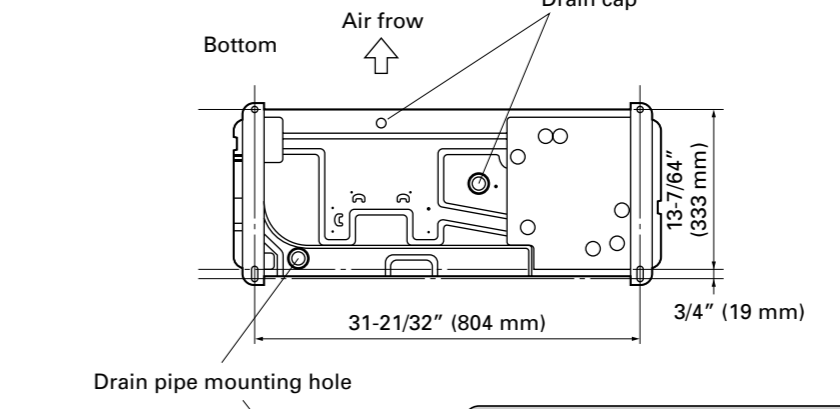


### 3. OUTDOOR UNIT INSTALLATION

#### 1. OUTDOOR UNIT PROCESSING

When the outdoor unit will be exposed to strong wind, fasten it with bolts at the places indicated by the arrows. (Fig. 17)

Fig. 17



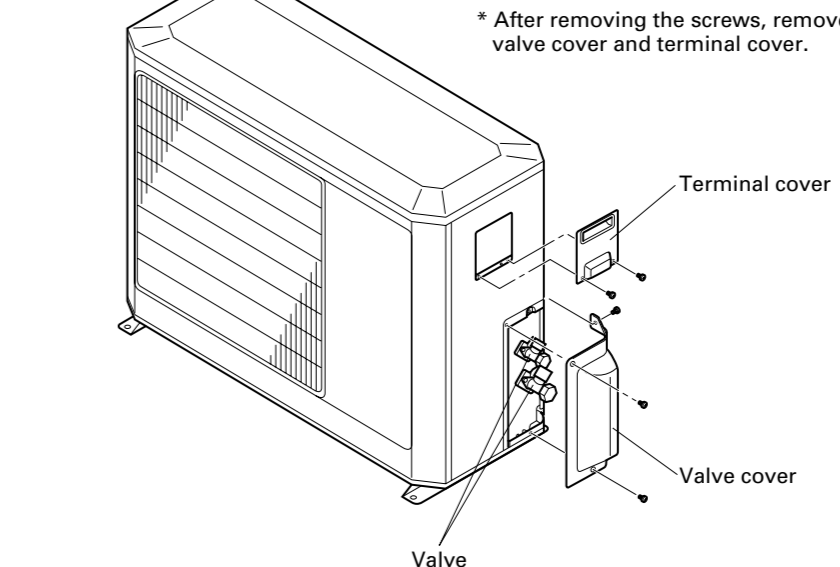
##### CAUTION

If this product is used in an area where the temperature falls below freezing for long periods of time, do not connect the drain pipe. Instead, allow the water to drain into a drain pan.

#### 2. OUTDOOR UNIT CONNECTION CORD AND PIPE CONNECTION PREPARATIONS

- Remove outdoor unit valve cover and terminal cover.

Fig. 18



- Connect the piping, connection cord and power supply cord.

##### WARNING

- Install the unit where it will not be tilted by more than 5°.
- When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.

- Set the unit on a strong stand, such as one made of concrete blocks to minimize shock and vibration.
- Do not set the unit directly on the ground because it will cause trouble.

### 4. CONNECTING THE PIPING

##### CAUTION

- Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
- Never use piping which has been used for previous installations. Only use parts which are delivered with the unit.
- While welding the pipes, be sure to blow dry nitrogen gas through them.

##### CAUTION

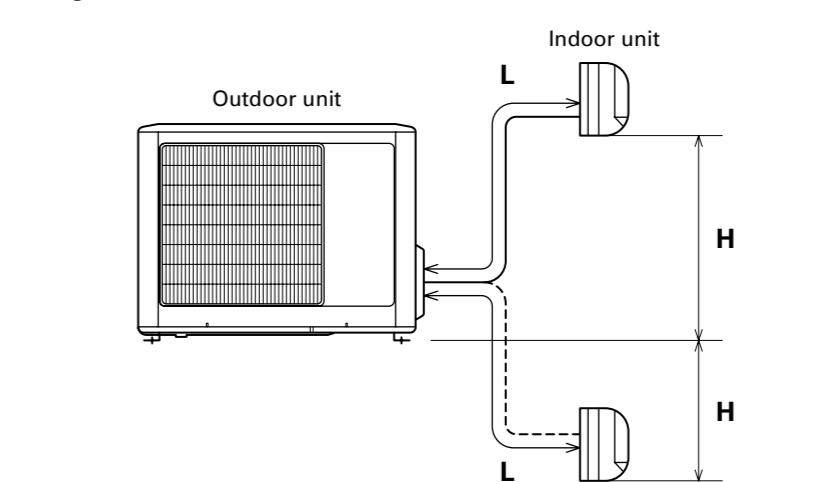
The maximum lengths of this product are shown in table 1. If the units are further apart than this, correct operation can not be guaranteed.

#### 1. LIMITATION OF REFRIGERANT PIPING LENGTH

Table 1

Max length (L)	20 m (66 ft)
Max height difference (H)	8 m (20 ft)

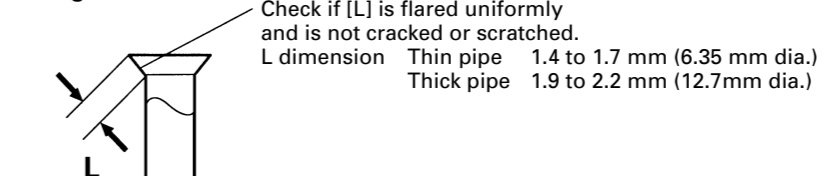
Fig. 19



#### 2. FLARING

- Cut the connection pipe to the necessary length with a pipe cutter.
- Hold the pipe downward so that cuttings will not enter the pipe and remove the burrs.
- Insert the flare nut onto the pipe and flare the pipe with a flaring tool.

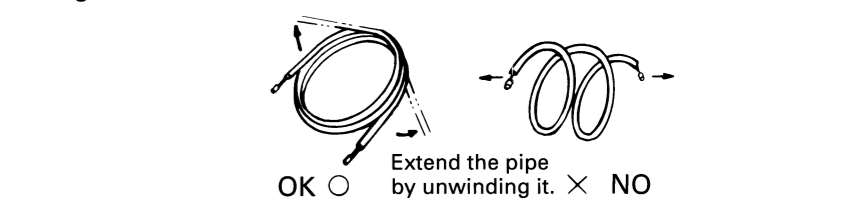
Fig. 20



### 3. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

Fig. 21



Do not bend the pipes in an angle more than 90°. When the pipes are bent and stretched repeatedly, the material will be hardened, causing the pipes no longer be bent or stretched. Be sure to limit a number of bendings and stretchings to three times.

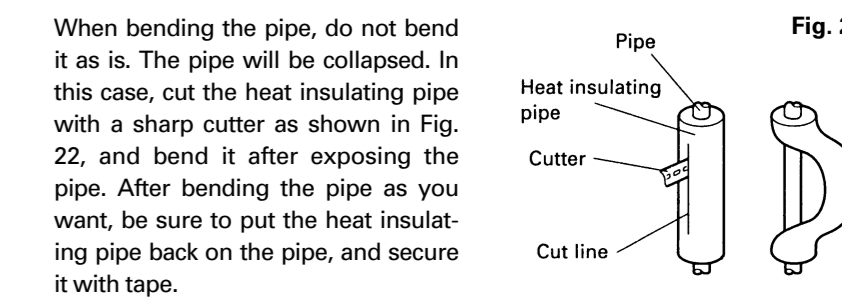


Fig. 22

### 4. CONNECTION

- Install the outdoor unit wall cap (supplied with the optional installation set or procured at the site) to the wall pipe.
- Connect the outdoor unit and indoor unit piping.
- After matching the center of the flare surface and tightening the nut hand tight, tighten the nut to the specified tightening torque with a torque wrench. (Tighten the flare nut of the outdoor unit 3-way valve after air purging.)

Fig. 23

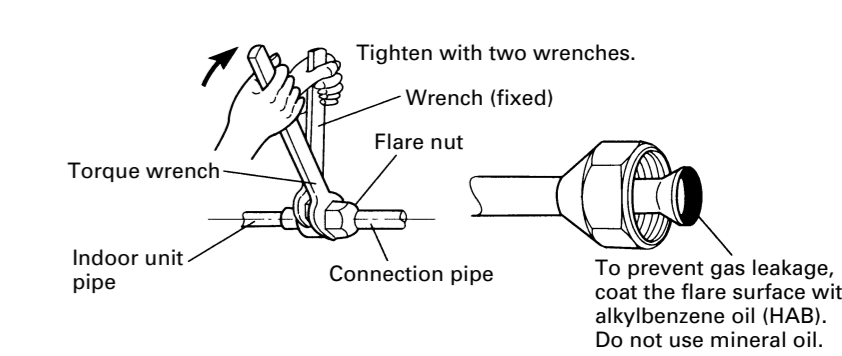


Table 2 Flare nut tightening torque

Flare nut	Tightening torque
6.35 mm (1/4") dia.	14.7 to 19.6 N·m (150 to 200 kgf·cm)
12.7 mm (1/2") dia.	49.0 to 53.9 N·m (500 to 550 kgf·cm)

Do not remove the cap from the connection pipe before connecting the pipe.

### 5. VACUUMING AND ADDITIONAL CHARGE

##### CAUTION

- Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!
- Use a vacuum pump for R407C exclusively. Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.

#### 1. VACUUM

- Remove the cap, and correct the gauge manifold and the vacuum pump to the charging valve by the service hoses.
- Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -76 cmHg.
- When -76 cmHg is reached, operate the vacuum pump for at least 15 minutes.
- Disconnect the service hoses and fit the cap to the charging valve (Tightening torque: 70 to 90 kgf·cm).
- Remove the blank caps, and fully open the spindles of the 2-way and 3-way valves with a hexagon wrench (Torque: 2-way valve: 70 to 90 kgf·cm, 3-way valve: 100 to 120 kgf·cm).
- Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque (200 to 250 kgf·cm).

Fig. 24

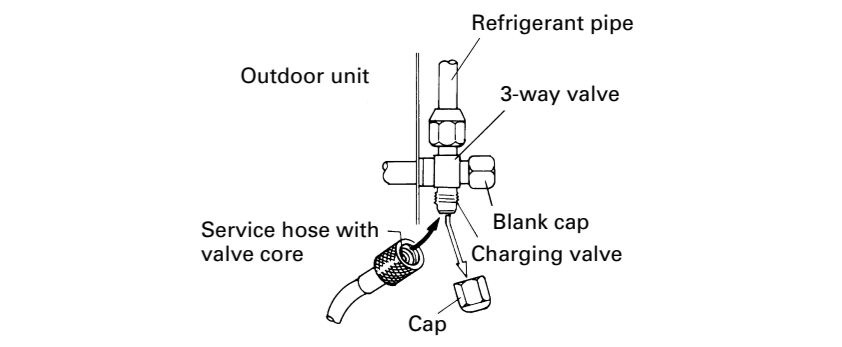
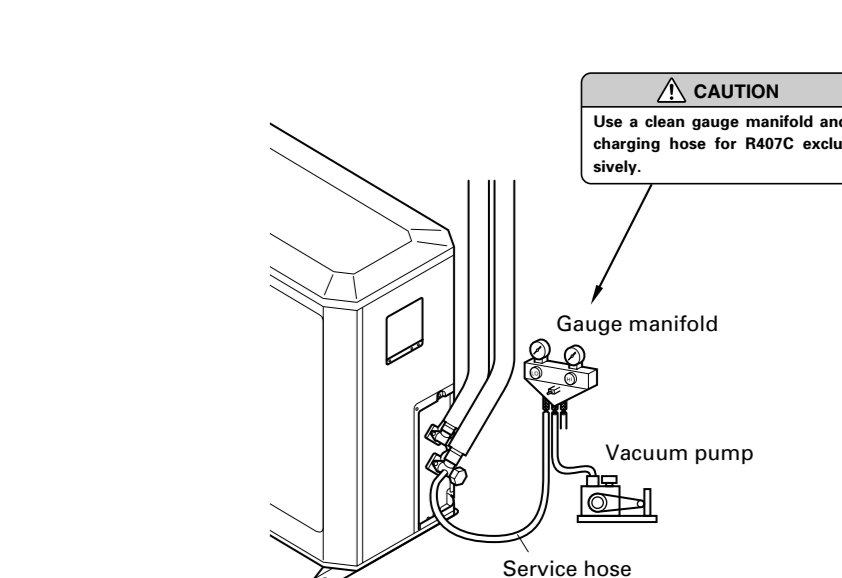


Fig. 25



Use a clean gauge manifold and charging hose for R407C exclusively.

## 2. ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 5 m is charged in the outdoor unit at the factory.  
When the piping is longer than 5 m, additional charging is necessary. For the additional amount, see the table below.

Pipe length	16 ft (5 m)	33 ft (10 m)	49 ft (15 m)	66 ft (20 m)
Additional refrigerant	None	1.7 oz (50 g)	3.5 oz (100 g)	5.3 oz (150 g)
Cooling model (17E)	None	1.7 oz (50 g)	3.5 oz (100 g)	5.3 oz (150 g)
Heat pump model (17T)	None	5.3 oz (150 g)	10.6 oz (300 g)	15.9 oz (450 g)

Between 5 m and 20 m, when using a connection pipe other than that in the table, charge additional refrigerant with 0.35 oz (10 g) / 3.3 ft (1 m) (Cooling model), 1.06 oz (30 g) / 3.3 ft (1 m) (Heat pump model) as the criteria.

### CAUTION

- When moving and installing the air conditioner, do not mix gas other than the specified refrigerant (R407C) inside the refrigerant cycle.
- When charging the refrigerant R407C, always use an electronic balance for refrigerant charging (to measure the refrigerant by weight).
- When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.
- Add refrigerant from the charging valve after the completion of the work.
- If the units are further apart than the maximum pipe length, correct operation can not be guaranteed.

## 6 GAS LEAKAGE INSPECTION

### CAUTION

- After connecting the piping, check the joints for gas leakage with gas leak detector.

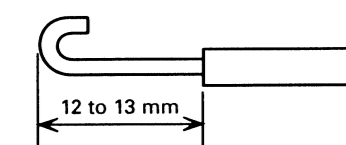
## 7 OUTDOOR UNIT WIRING

### WARNING

- Match the terminal block numbers and connection cord colors with those of the indoor unit side. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords firmly to the terminal block. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cord with cord clamps. (If the insulator is clamped, electric leakage may occur.)
- Always connect the ground wire.

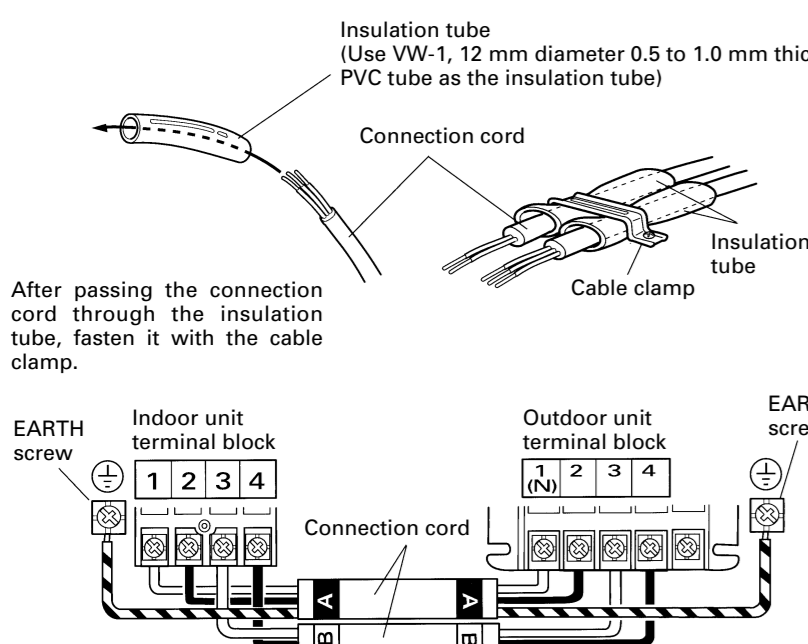
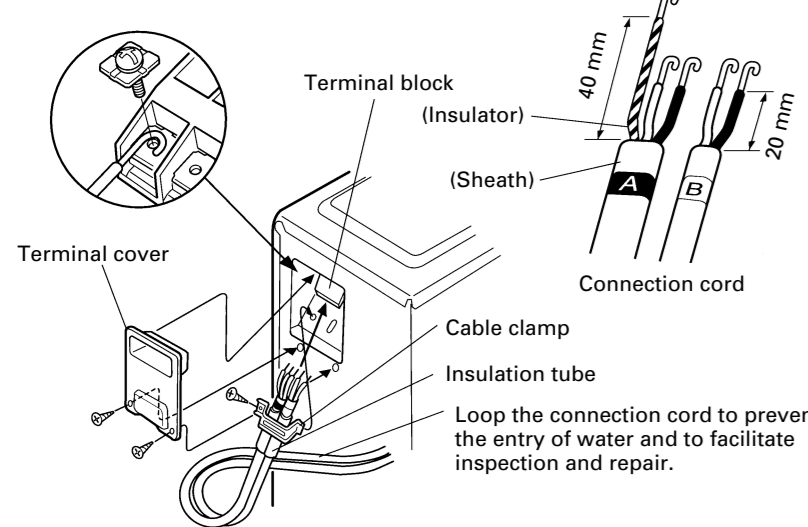
- Remove the outdoor unit terminal cover.
- Process the end of the connection cords to the dimensions shown in (Fig. 27 to 28) and bend the end of each cord as shown in (Fig. 26).
- Connect the end of the connection cord fully into the terminal block and fasten with the screws.
- Fasten the sheath with a cord clamp.
- Install the terminal cover.

Fig. 26 Stripped length



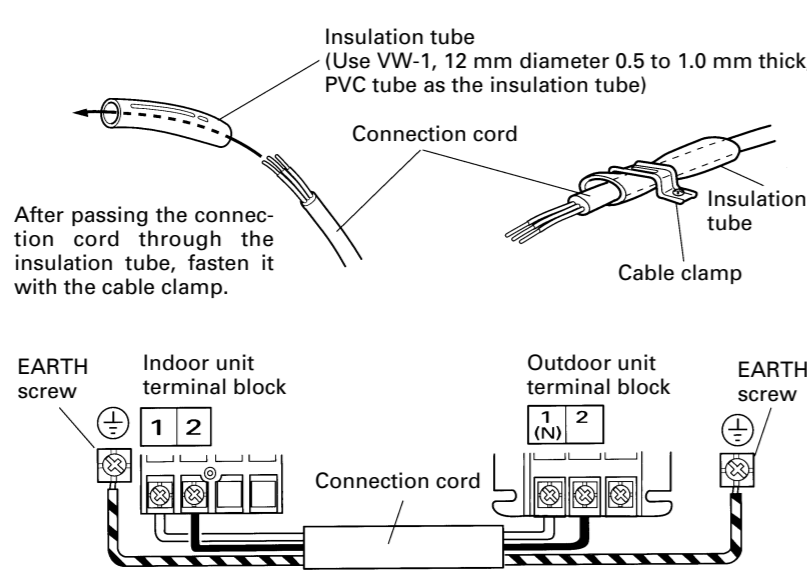
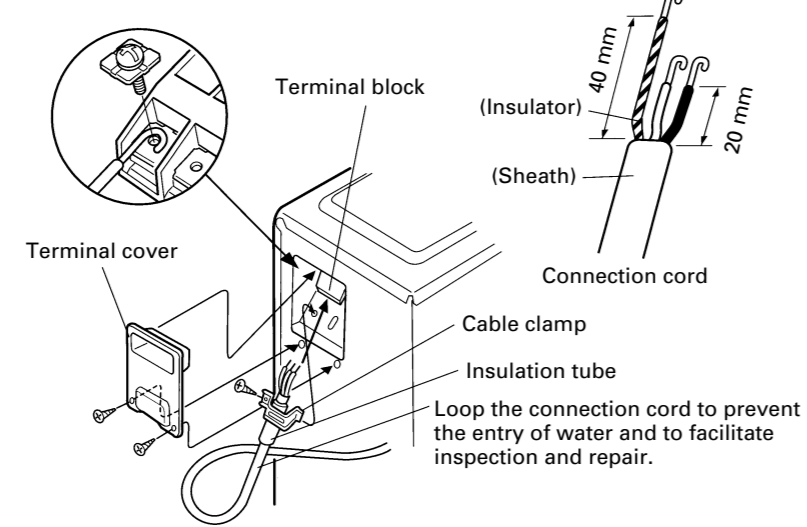
[Model : 17T]

Fig. 27



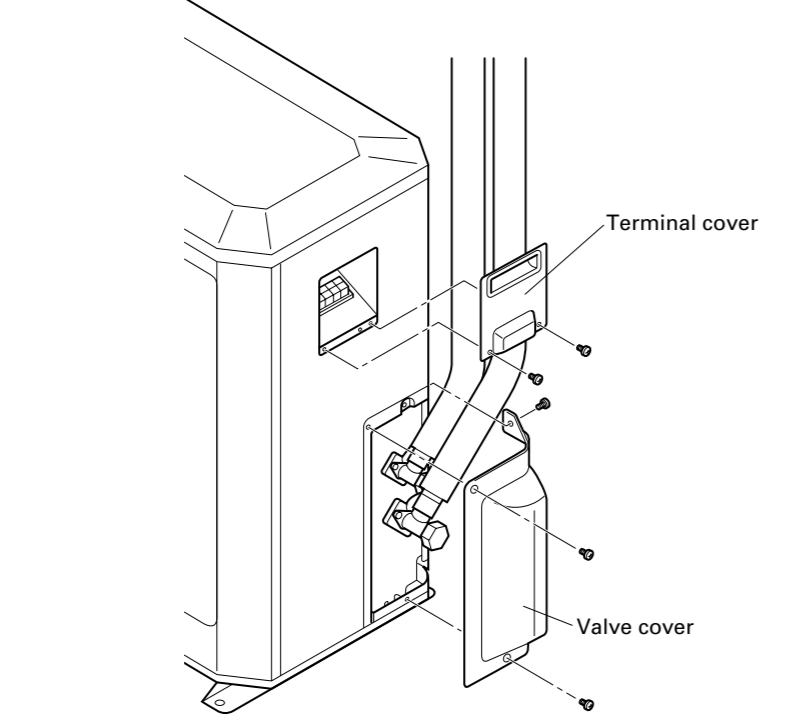
[Model : 17E]

Fig. 28



## INSTALL THE VALVE COVER AND TERMINAL COVER

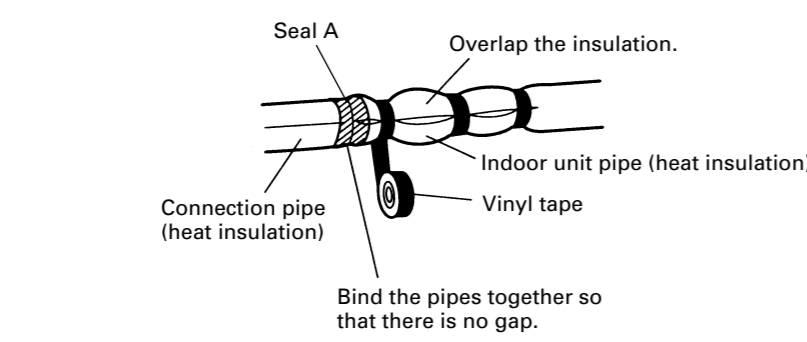
Fig. 29



## 8 FINISHING

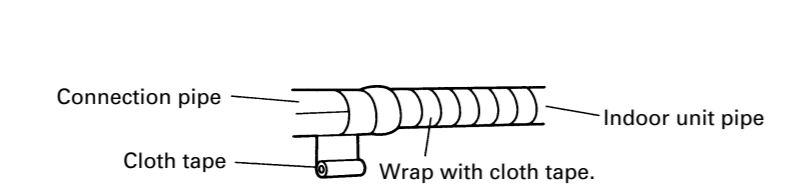
- Insulate between pipes.
  - For rear, right, and bottom piping, overlap the connection pipe heat insulation and indoor unit pipe heat insulation and bind them with vinyl tape so that there is no gap.
  - For left and left rear piping, butt the connection pipe heat insulation and indoor unit pipe heat insulation together and bind them with seal A and vinyl tape so that there is no gap.

Fig. 30



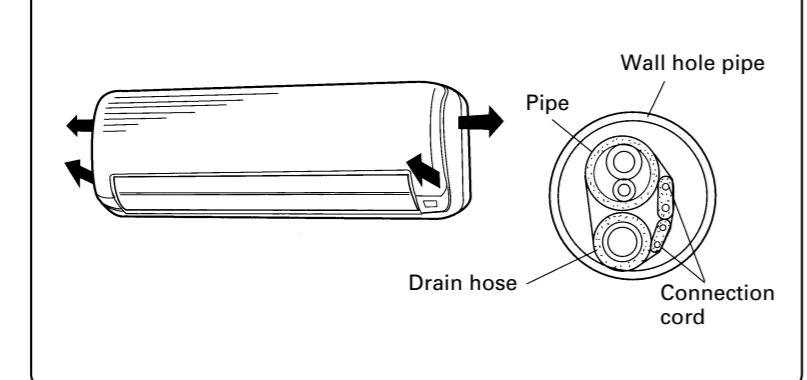
- For left and left rear piping, wrap the area which accommodates the rear piping housing section with cloth tape. Then lift the indoor unit slightly and lower it while pushing the wall side and hook the two hooks at the bottom of the wall hook bracket to the hook holes.

Fig. 31



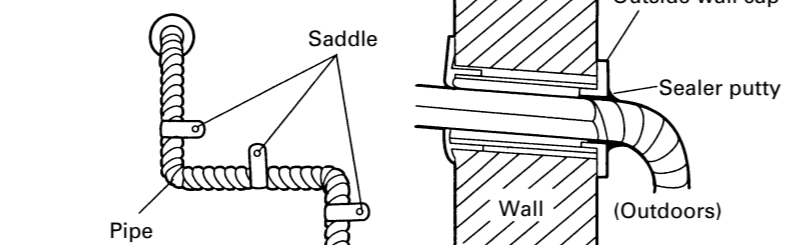
- Check that:**
- The top and bottom hooks are hooked firmly and the indoor unit does not move to the front and rear or left and right.
  - The indoor unit is accurately positioned horizontally and vertically.
  - The drain hose is at the bottom left of the wall pipe.

Fig. 32



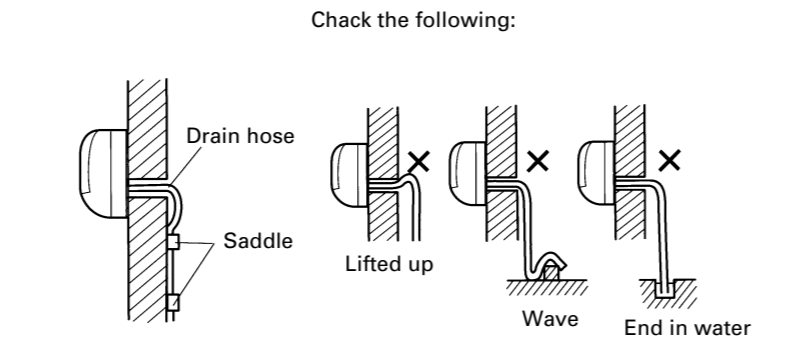
- Temporarily fasten the connection cord along the connection pipe with vinyl tape. (Wrap to about 1/3 the width of the tape from the bottom of the pipe so that water does not enter.)
- Fasten the connection pipe to the outside wall with a saddle, etc.
- Fill the gap between the outside wall pipe hole and the pipe with sealer so that rain water and wind cannot blow in.

Fig. 33



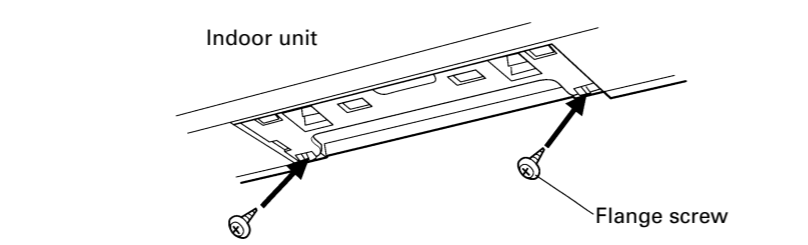
- Fasten the drain hose to the outside wall, etc.

Fig. 34



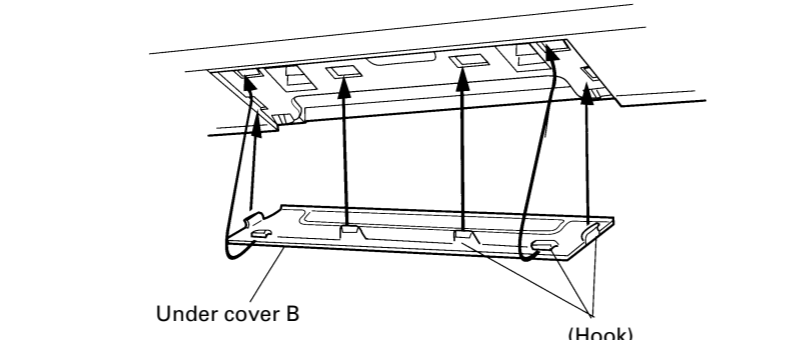
- Fasten the indoor unit.
  - Fasten the bottom of the indoor unit to the wall hook bracket with the two flange screws.

Fig. 35



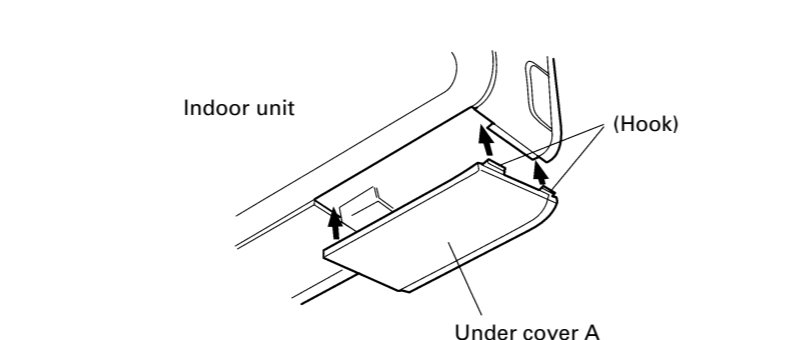
- Install under cover B.

Fig. 36



- Install under cover A.

Fig. 37



## 9 POWER

### WARNING

- The rated voltage of this product is 220-240V AC 50Hz.
  - Before turning on the verify that the voltage is within the 198 V to 264 V range.
  - Always use a special branch circuit and install a special receptacle to supply power to the room air conditioner.
  - Use a circuit breaker and receptacle matched to the capacity of the room air conditioner.
- | Model     | Fuse - Breaker Rating |
|-----------|-----------------------|
| 17E · 17T | 20 A                  |
- Do not extend the power cord.
  - Perform wiring work in accordance with standards so that the room air conditioner can be operated safely and positively.
  - Install a leakage circuit breaker in accordance with the related laws and regulations and electric company standards.

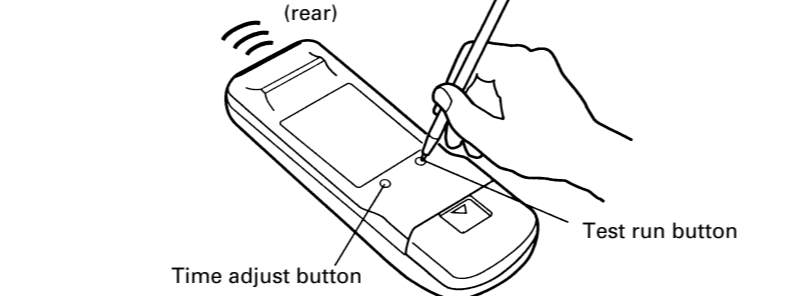
### CAUTION

- The power source capacity must be the sum of the room air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
- When the voltage is low and the air conditioner is difficult to start, contact the power company the voltage raised.

## 10 TEST RUNNING

- Perform test operation and check items 1 and 2 below.
- For the operation method, refer to the operating manual.
- The outdoor unit may not run, depending on the room temperature. In this case, press the test run button at the back of the remote controller while the room air conditioner is running. (With the transmit section of the remote controller facing the body, press the test run button with the tip of a ball point pen.)

Fig. 38



- To end test operation, press the remote controller START/STOP button. (When the power is turned on for the first time after unpacking, the RUN and TIMER lamps will alternately flash rapidly. When operation starts, the flashing stops. Thereafter, when the power is turned off and then turned on, operation immediately before the power was turned off, or the stop state, will be automatically reproduced.) (When the room air conditioner is run by pressing the remote controller test run button, the RUN and TIMER lamps will simultaneously flash slowly.)

### 1. INDOOR UNIT

- Is operation of each button on the remote controller normal?
- Does each lamp light normally?
- Do the air flow direction louvers operate normally?
- Is the drain normal?

### 2. OUTDOOR UNIT

- Is there any abnormal noise and vibration during operation?
- Will noise, wind, or drain water from the unit disturb the neighbors?
- Is there any gas leakage?

## 11 CUSTOMER GUIDANCE

Explain the following to the customer in accordance with the operating manual:

- Starting and stopping method, operation switching, temperature adjustment, timer, air flow switching, and other remote controller operations.
- Filter removal and cleaning, and how to use the air flow direction louvers.
- Give the operating and installation manuals to the customer.

## 12 FRONT PANEL REMOVAL

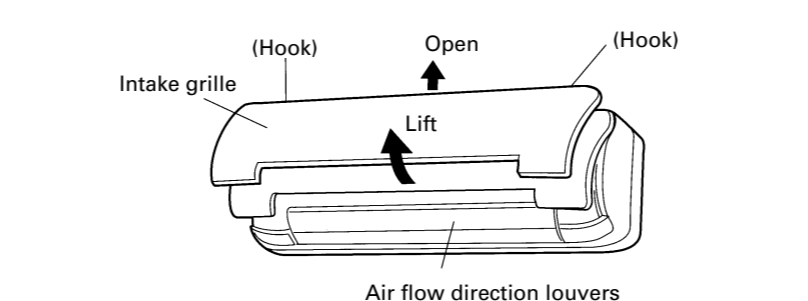
### CAUTION

Install the front panel and intake grille securely. If installation is imperfect, the front panel or intake grille may fall off and cause injury.

### 1. INTAKE GRILLE REMOVAL

- Open the intake grille.
- Open the intake grille further and lift off the grille.

Fig. 39

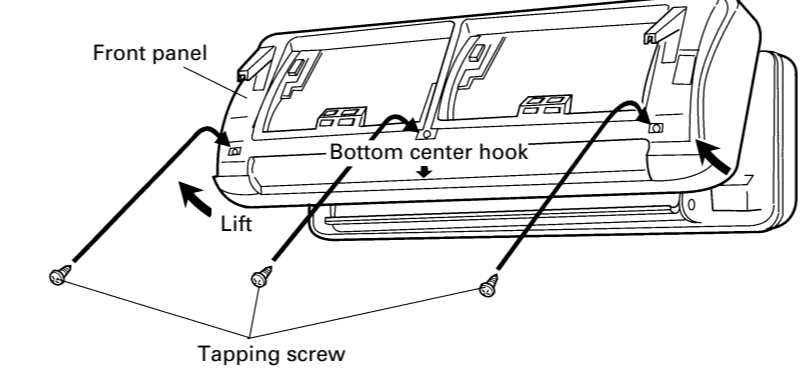


### 2. FRONT PANEL REMOVAL

- Remove the under cover B.
- Remove the tapping screws.
- After placing the air flow direction louvers to the horizontal position and unlatching the bottom center hook, lift off the front panel.

[Model : 17E · 17T]

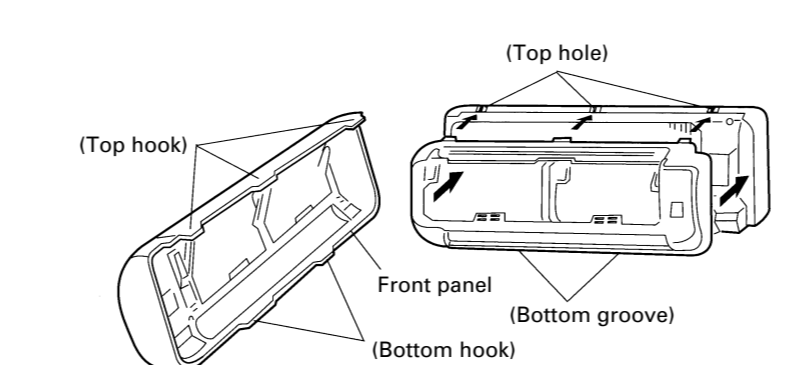
Fig. 40



### 3. FRONT PANEL INSTALLATION

- Set the air flow direction louvers to the horizontal position and install the front panel straight from the front with the tapping screws.

Fig. 41



- Check that the top hooks are firmly seated in the top holes and the bottom hooks are firmly seated in the bottom grooves.

## 13 REMOTE CONTROLLER HOLDER INSTALLATION

### CAUTION

- Check that the indoor unit correctly receives the signal from the remote controller, then install the remote controller holder.
- Select the remote controller holder selection site by paying careful attention to the following: Avoid places in direct sunlight. Select a place that will not be affected by the heat from a stove, etc.

Install the remote controller holder to a wall or pillar with the tapping screws.

Fig. 42

