

SPLIT TYPE ROOM AIR CONDITIONER Floor Console/Under Ceiling Dual Type INSTALLATION MANUAL

(PART NO. 9360374011-02)

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.

SELECTING THE MOUNTING POSITION

WARNING

Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.

CAUTION

- Do not install where there is the danger of combustible gas leakage.
- Do not install near heat sources.
- If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

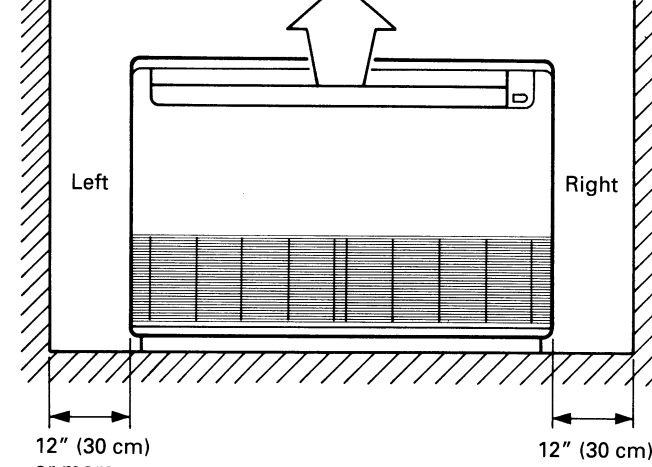
Decide the mounting position with the customer as follows:

1. INDOOR UNIT

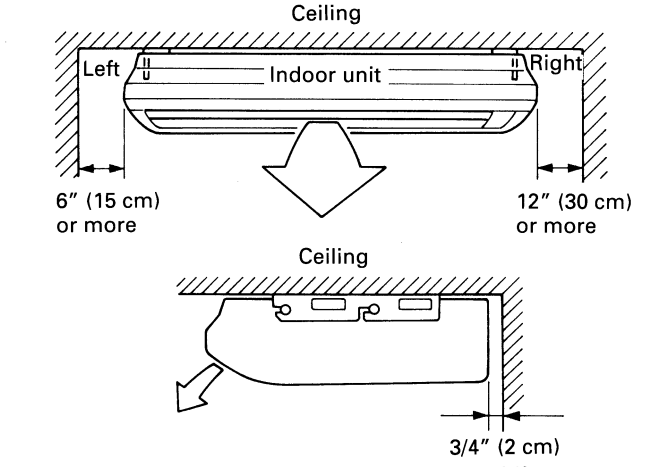
- Install the indoor unit level on a strong wall, floor, ceiling which is not subject to vibration.
- The inlet and outlet ports should not be obstructed: the air should be able to blow all over the room.
- Install the unit near an electric outlet or special branch circuit.
- Do not install the unit where it will be exposed to direct sunlight.
- Install the unit where connection to the outdoor unit is easy.
- Install the unit where the drain pipe can be easily installed.
- Take servicing, etc. into consideration and leave the spaces shown in Fig. 1. Also install the unit where the filter can be removed.

Fig. 1

• Floor console



• Under ceiling



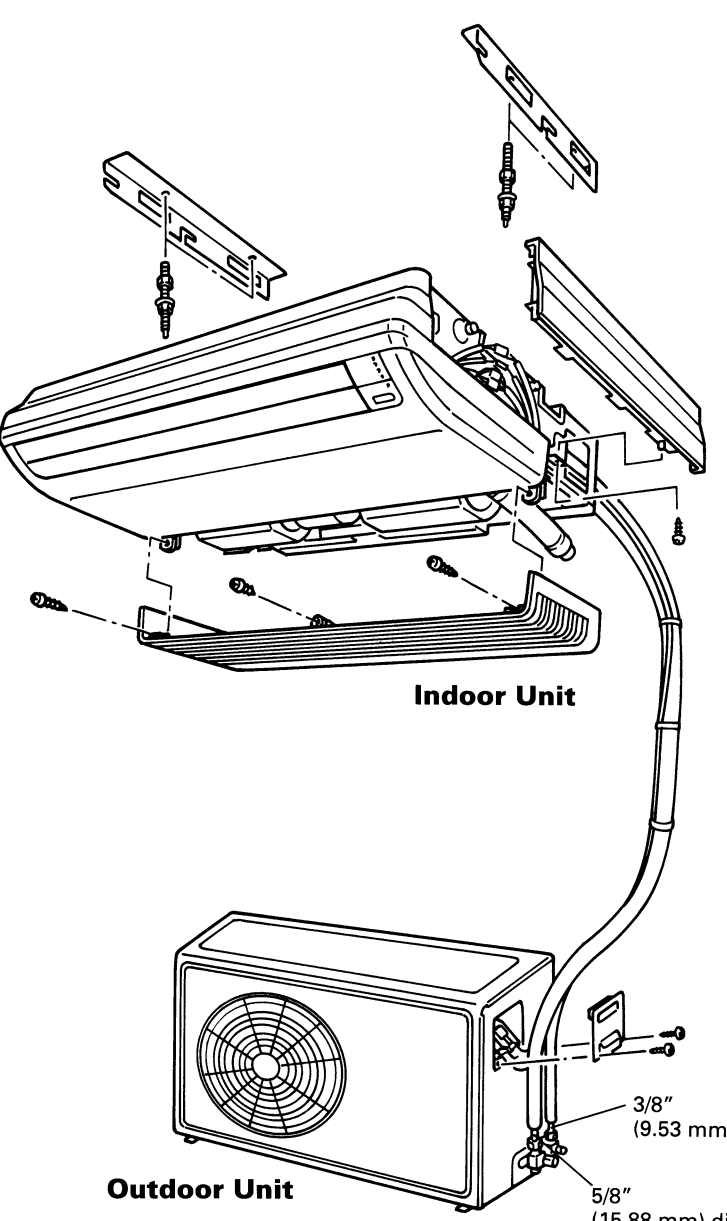
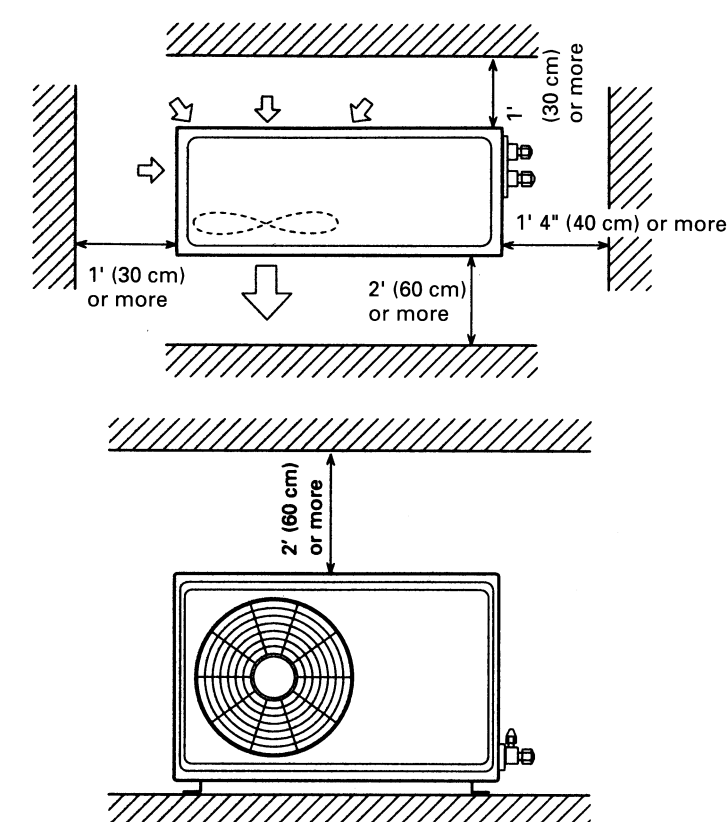
2. OUTDOOR UNIT

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.

- If possible, do not install the unit where it will be exposed to direct sunlight. (If necessary, install a blind that does not interfere with the air flow.)
- Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
- Install the unit when connection to the indoor unit is easy.
- During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where the drain water flow will not be obstructed. (Reverse cycle model only)
- Do not place animals and plants in the path of the warm air.
- Take the air conditioner weight into account and select a place where noise and vibration are small.
- Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.
- Provide the space shown in Fig. 2 so that the air flow is not blocked. Also for efficient operation, leave open three of the four directions front, rear, and both sides.

Fig. 2



STANDARD PARTS

The following installation parts are furnished. Use them as required.

INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Cover plate (left)	1	
Cover plate (right)	1	
Tapping screw (ø4 x 10)	2	
Installation template	1	For positioning the indoor unit For under ceiling type.
Bracket (left)	1	For suspending the indoor unit from ceiling
Bracket (right)	1	
Anchor bolt (M12)	4	
Spring washer	4	
Special nut	4	
Wall bracket	2	For suspending the indoor unit on the wall.
Tapping screw (ø4 x 20)	6	For fixing the wall bracket.
Coupler heat insulator (large)	1	For indoor side pipe joint (Large pipe)
Coupler heat insulator (small)	1	For indoor side pipe joint (Small pipe)
Nylon fastener	1	For fixing the drain hose
Drain hose	1	
Insulation (drain hose)	1	Adhesive type 70 x 230
VT wire	1	For fixing the drain hose L 280 mm
Remote control unit	1	Use for air conditioner operation
Battery (penlight)	4	For remote control unit
Remote control unit holder	1	For mounting the remote control unit
Tapping screw (ø3 x 12)	3	For remote control unit holder installation

OUTDOOR UNIT ACCESSORIES

Hexagon wrench	1	For air purge
Pipe (drain)	1	For outdoor unit drain piping work (Heat & Cool model only)
Flexible tube	1	For outdoor unit drain piping work (Heat & Cool model only)
Cap (drain)	2	For outdoor unit drain piping work (Heat & Cool model only)

OPTIONAL PARTS FOR INDOOR UNIT

Name and Shape	Part No.	Application
Joint pipe-A	9302812021	For indoor side pipe joint

CONNECTION PIPE REQUIREMENT

Diameter		Maximum length	Maximum height (between indoor and outdoor)
Small	Large		
9.53 mm (3/8 in)	15.88 mm (5/8 in)	20 m (66 ft)	8 m (26 ft)

- Use 0.7 mm to 1.2 mm thick pipe.
- Use pipe with water-resistant heat insulation.
- Use pipe that can withstand a pressure of 3,040 kPa.

INSTALLATION PROCEDURE

Install the room air conditioner as follows:

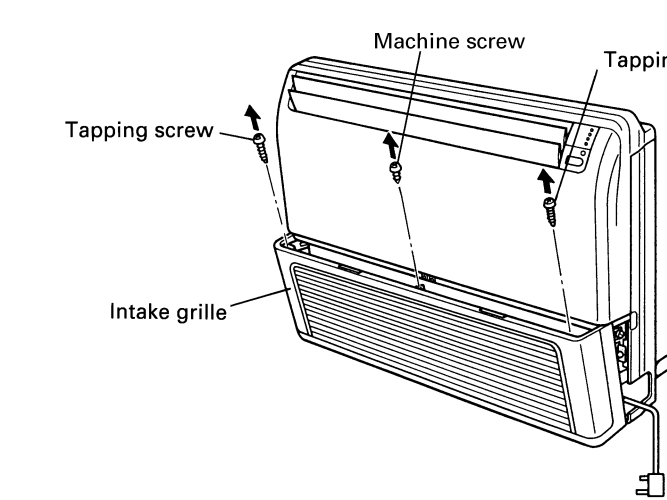
1

PREPARING INDOOR UNIT INSTALLATION

1. REMOVE THE INTAKE GRILLE

Open the intake grille and remove the three screws. (Fig. 3)

Fig. 3



Remark: The main unit can be wired before the indoor unit is installed. Select the most appropriate installation order.

2

INDOOR UNIT INSTALLATION

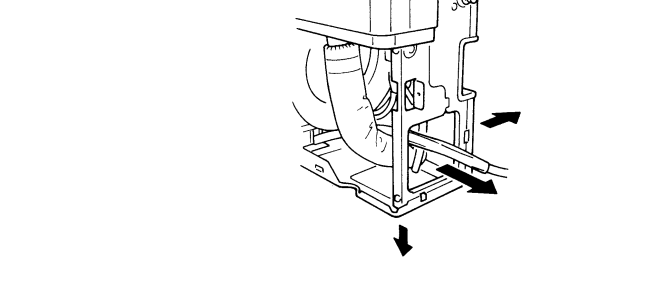
A. FLOOR CONSOLE TYPE

1. DRILLING FOR PIPING

Select piping and drain directions. (Fig. 4)

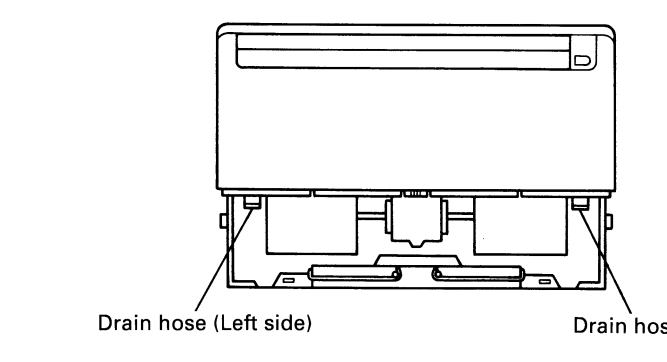
The piping and drain can be made in three directions as shown below.

Fig. 4



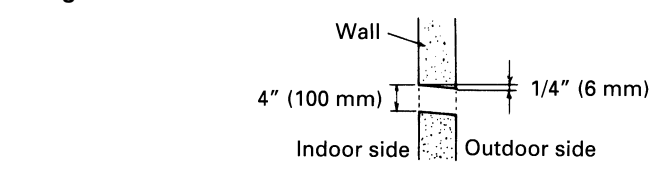
The drain hose can be connected to either the left or right side. (Fig. 5)

Fig. 5



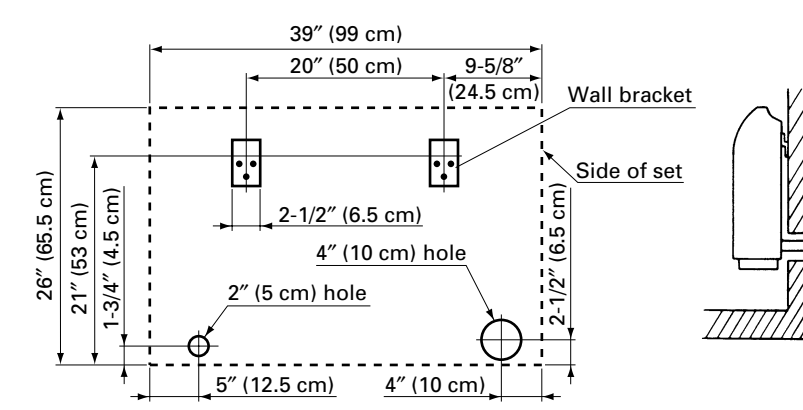
When the directions are selected, drill a 4" (10 cm) dia. hole on the wall so that the hole is tilted downward toward the outdoor for smooth water flow. When the pipe is led out from the rear, make a hole in Fig. 6, at the position shown.

Fig. 6



When installing set to wall install the accessory wall bracket at the position shown in Fig. 7, and mount the set to it.

Fig. 7



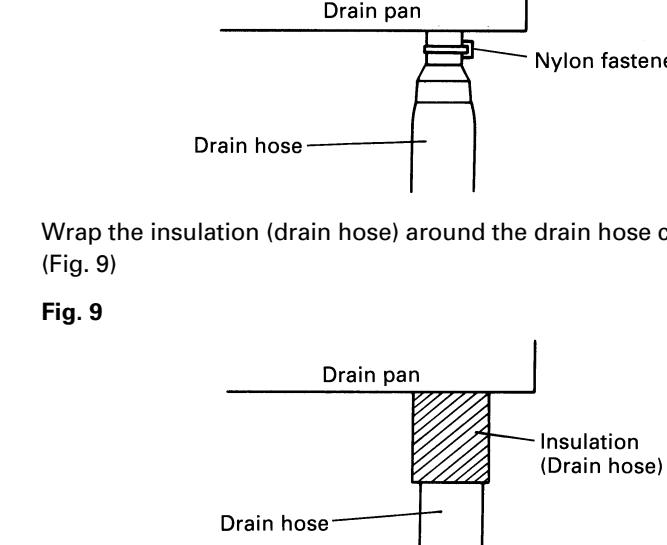
2. INSTALLING DRAIN HOSE

INSTALL THE DRAIN HOSE.

Select whether the drain hose will be connected to the left or right side. (Fig. 5)

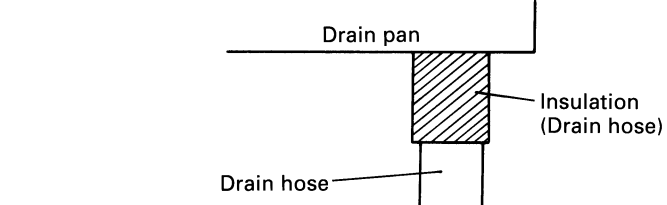
Insert the drain hose into the drain pan, then secure the drain hose with a nylon fastener. (Fig. 8)

Fig. 8

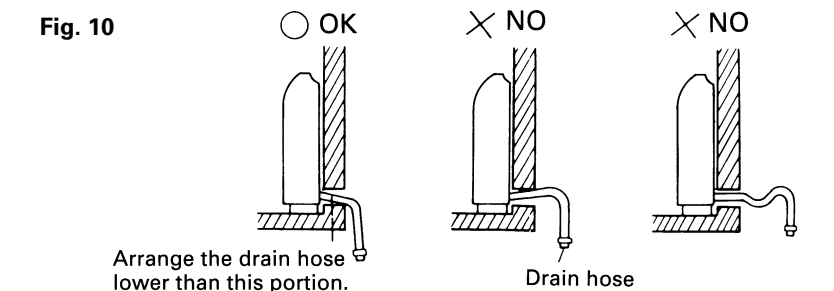


Wrap the insulation (drain hose) around the drain hose connection. (Fig. 9)

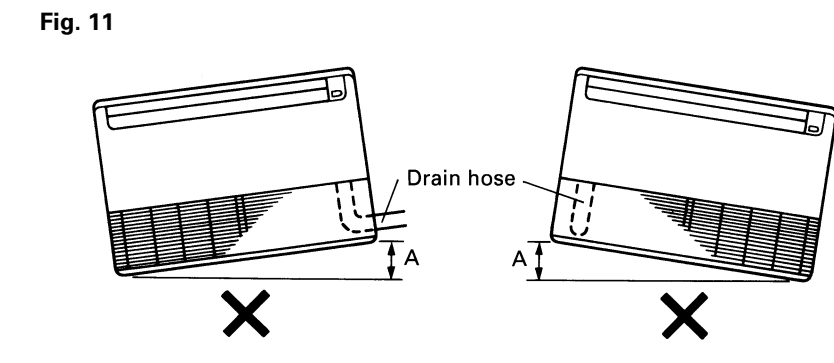
Fig. 9



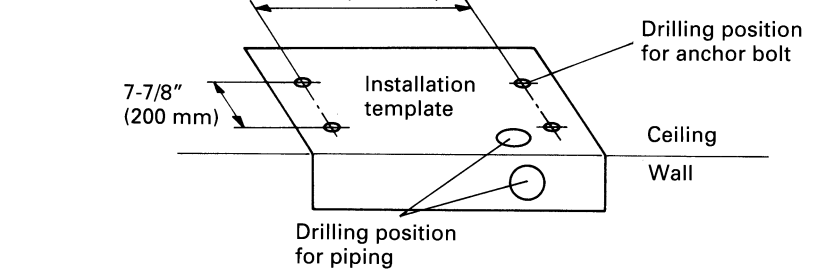
Be sure to arrange the drain hose so that it is leveled lower than the drain hose connecting part of the indoor unit.



CAUTION
Do not install the unit so that the drain hose side is too high. Height A should be less than 5 mm. (Fig. 11)

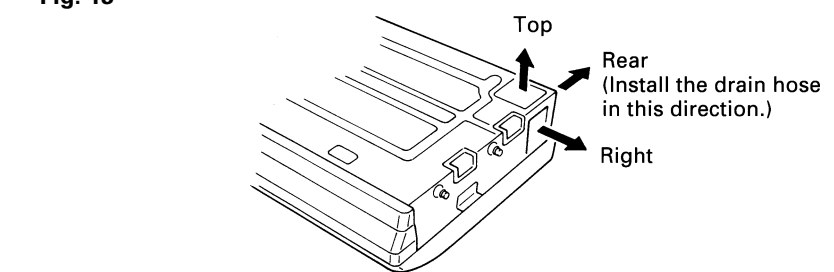


B. UNDER CEILING TYPE
Using the installation template, drill holes for piping and anchor bolts (for holes). (Fig. 12)



1. DRILLING FOR PIPING

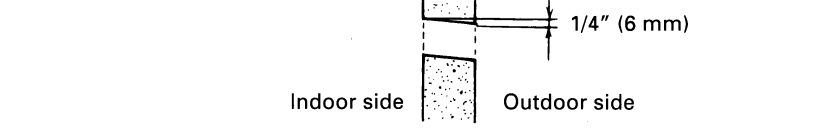
Select piping and drain directions. (Fig. 13)



CAUTION
Install the drain hose at the rear; it should not be installed on the top or right side.

When the directions are selected, drill 3-1/8" (80 mm) and 2" (50 mm) or 6" (150 mm) dia. hole on the wall so that the hole is tilted downward toward the outdoor for smooth water flow.

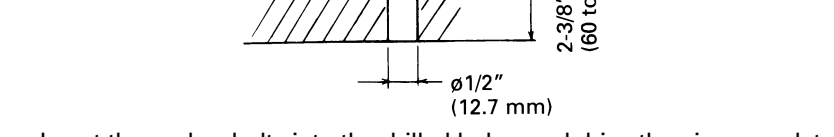
Fig. 14



2. DRILLING HOLES FOR ANCHOR BOLTS AND INSTALLING THE ANCHOR BOLTS

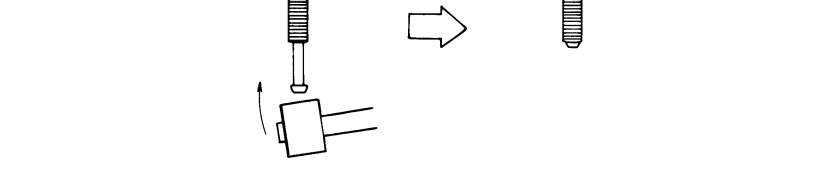
With a concrete drill, drill four 1/2" (12.7 mm) dia. holes. (Fig. 15)

Fig. 15



Insert the anchor bolts into the drilled holes, and drive the pins completely into the anchor bolts with a hammer. (Fig. 16)

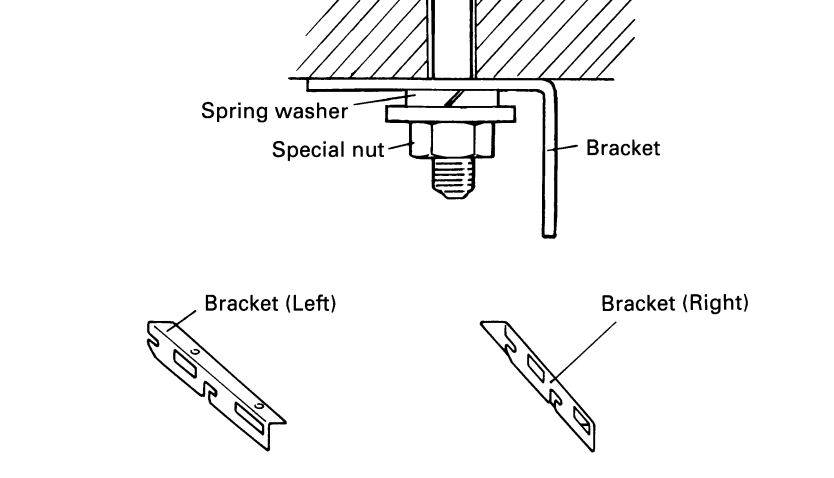
Fig. 16



3. INSTALLING BRACKETS

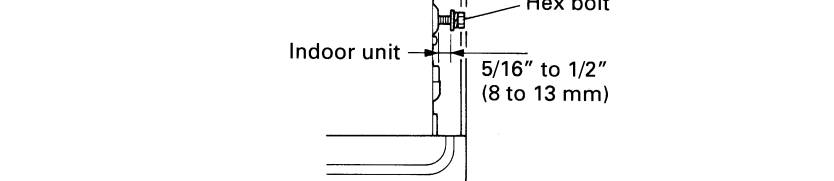
Install the brackets with nuts, washers and spring washers. (Fig. 17)

Fig. 17

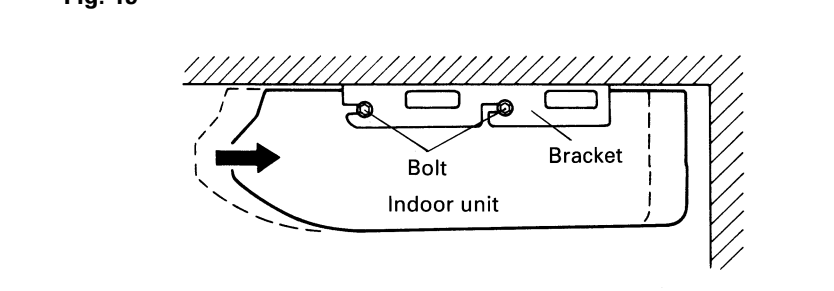


4. INSTALLING INDOOR UNIT

Reset the hex bolts as shown in Fig. 18.



Apply the indoor unit to the brackets. (Fig. 19)



Now, securely tighten the hex bolts in both sides.

5. INSTALL THE DRAIN HOSE

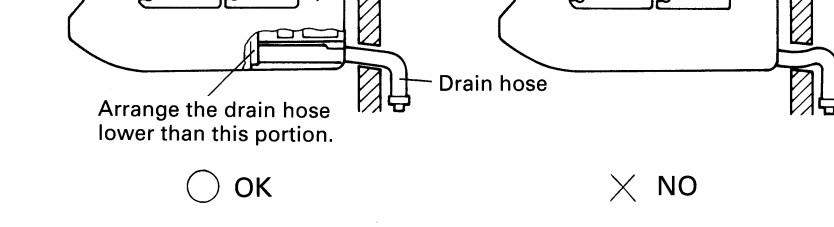
Select whether the drain hose will be connected to the left or right side. (Fig. 5)

Insert the drain hose into the drain pan, then secure the drain hose with a nylon fastener. (Fig. 8)

Wrap the insulation (drain hose) around the drain hose connection. (Fig. 9)

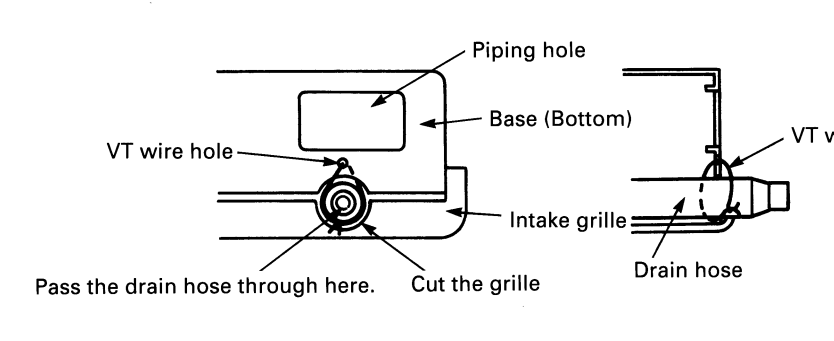
Be sure to arrange the drain hose so that it is leveled lower than the drain hose connecting part of the indoor unit. (Fig. 20)

Fig. 20



When drain hose is arranged backward. Secure the drain hose with the VT wire. (Fig. 21)

Fig. 21

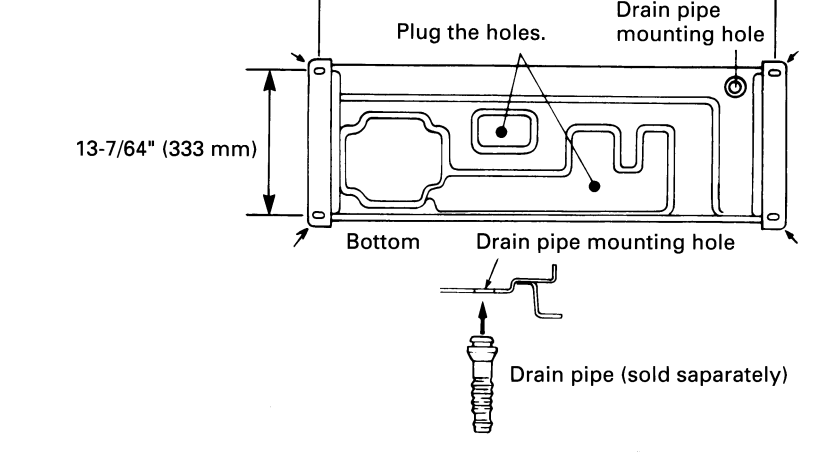


3

OUTDOOR UNIT INSTALLATION

- When the outdoor unit will be exposed to strong wind, fasten it with bolts at the places indicated by the arrows. (Fig. 22)
- Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe sold separately and connect it to an commercial 16 mm hose. (Heat & Cool model only)
- When installing the drain pipe, plug all the holes (• holes at two places) other than the drain pipe mounting hole in the bottom of the outdoor unit with putty so there is no water leakage. (Fig. 22) (Heat & Cool model only)

Fig. 22



4

CONNECTING THE PIPING

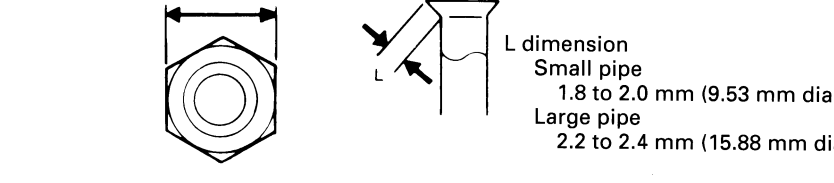
1. FLARE PROCESSING

- Cut the connection pipe with pipe cutters so that the pipe is not deformed.
- Holding the pipe downward so that cuttings cannot enter the pipe, remove the burrs.
- Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 1) and insert the flare nut onto the pipe, and flare with a flaring tool.
- Check if the flared part "L" (Fig. 23) is spread uniformly and that there are no cracks.

Table 2

Pipe	Flare nut
Small pipe	Small (width across flats 22 mm)
Large pipe	Large (width across flats 24 mm)

Fig. 23



2. BENDING PIPES

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

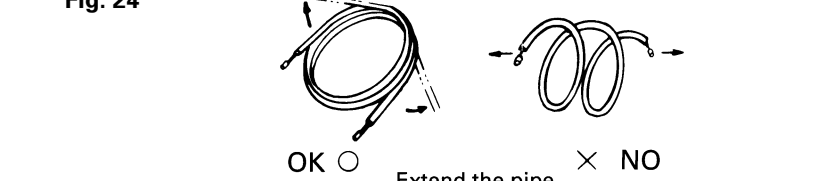


Fig. 24

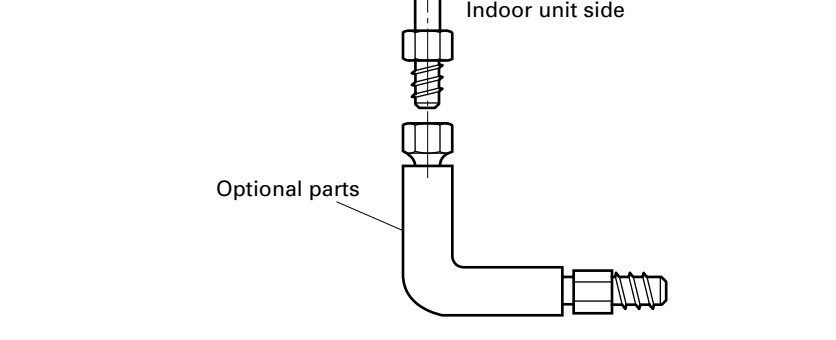
Do not bend the pipes in an angle less than 90°.

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 number of bendings and stretchings to three times. When bending the pipe, do not bend it as is. The pipe will be collapsed. In this case, cut the heat insulating pipe with a sharp cutter as shown in Fig. 25, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the heat insulating pipe back on the pipe, and secure it with tape.

3. CONNECTION PIPES

- Indoor unit side
Centering the pipe against port on the indoor unit, turn the flare nut with your hand. (Fig. 26)
- Outdoor unit side
Be sure that the small pipe is completely installed before connecting the large pipe.

Fig. 26



CAUTION

Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.

Fig. 27

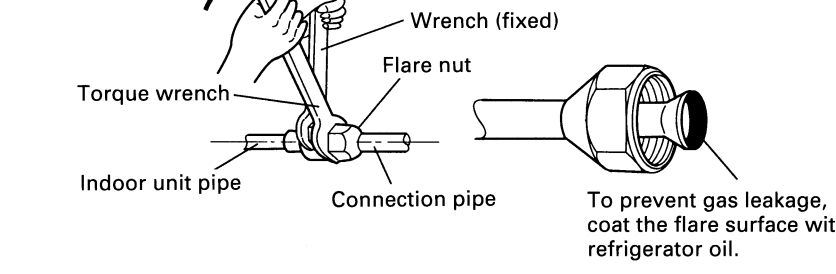


Table 3 Flare nut tightening torque

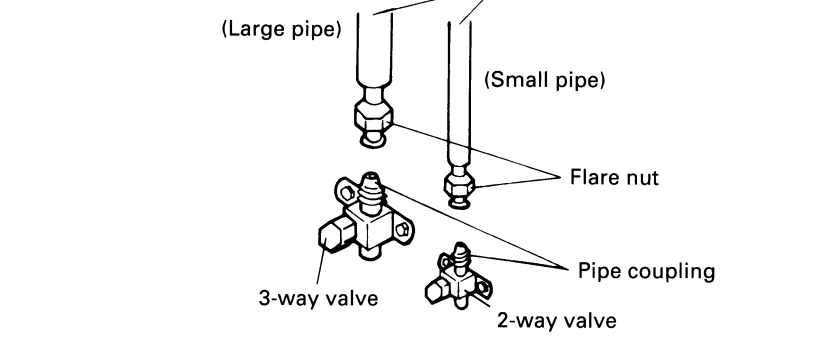
Flare nut	Tightening torque
Small pipe 9.52 mm dia.	30.4 to 34.3 N · m (310 to 350 kgf · cm)
Large pipe 15.88 mm dia.	73.6 to 78.5 N · m (750 to 800 kgf · cm)

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

CAUTION
Be sure to connect the large pipe after connecting the small pipe completely.

- Outdoor unit side
Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same as that as at the indoor side.

Fig. 28



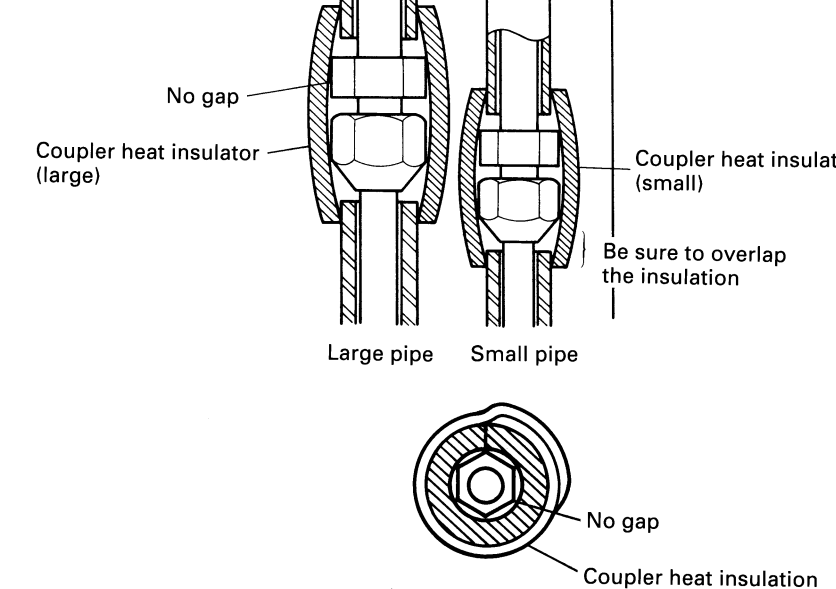
4. CHECKING THE PIPE CONNECTIONS FOR GAS LEAKING

For both the indoor and outdoor unit sides, check the joints for gas leaking by the use of a gas leakage detector without fail when the pipes are connected.

5. HEAT INSULATION ON THE PIPE JOINTS (INDOOR SIDE ONLY)

Put coupler heat insulator on the joints (indoor side only) (Fig. 29)

Fig. 29

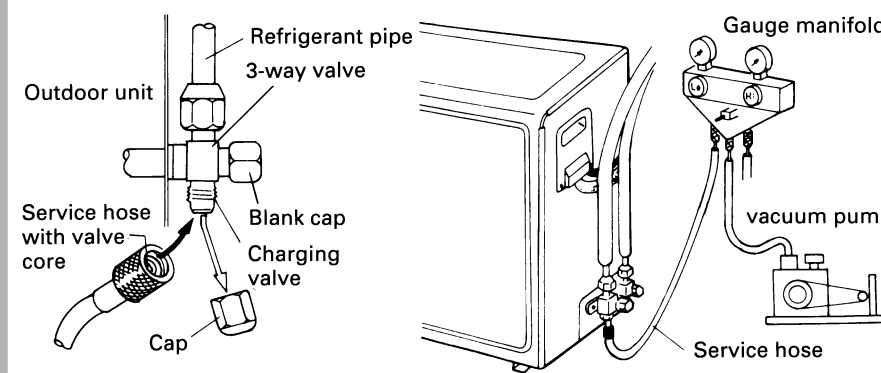


5

AIR PURGE

- AIR PURGE**
Remove the cap, and connect 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 in them lowers to below 1.5 mmHg.
- 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. 30



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.

Table 4

Pipe length (5 m)	Reverse model	16 ft (5 m)	33 ft (10 m)	49 ft (15 m)	66 ft (20 m)
		Additional refrigerant	None	8.8 oz (250 g)	17.6 oz (500 g)
	Cooling model	None	2.1 oz (60 g)	4.2 oz (120 g)	6.3 oz (180 g)

Between 5 m and 20 m, when using a connection pipe other than in the table, charge additional refrigerant with
Reverse model 1.76 oz (50 g)/3.3 ft (1 m)
Cooling model 0.42 oz (12 g)/3.3 ft (1 m)
as the criteria.

CAUTION

- Always pump down the piping before use.
- Add refrigerant from the charging valve after the completion of the work.

6

GAS LEAKAGE INSPECTION

CAUTION

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

7

HOW TO CONNECT WIRING TO THE TERMINALS

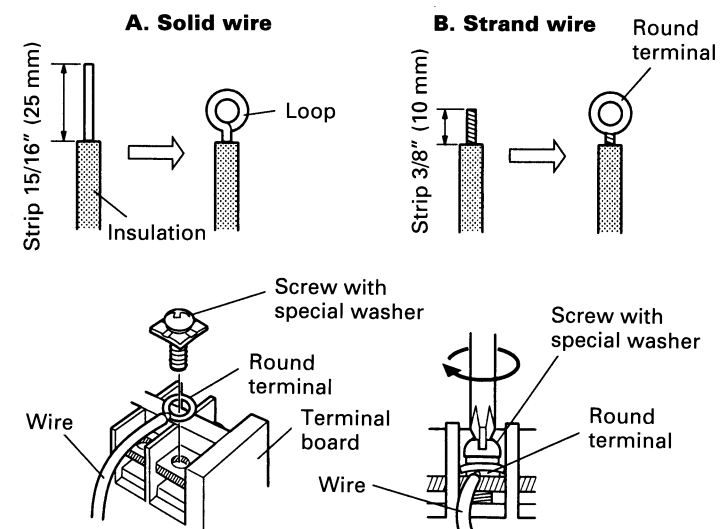
A. For solid core wiring (or F-cable)

- Cut the wire and with a wire cutter or wire-cutting pliers, then strip the insulation to about 15/16" (25 mm) of expose the solid wire.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screw driver.

B. For strand wiring

- Cut the wire and with a wire cutter or wire-cutting pliers, then strip the insulation to about 3/8" (10 mm) of expose the strand wiring.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

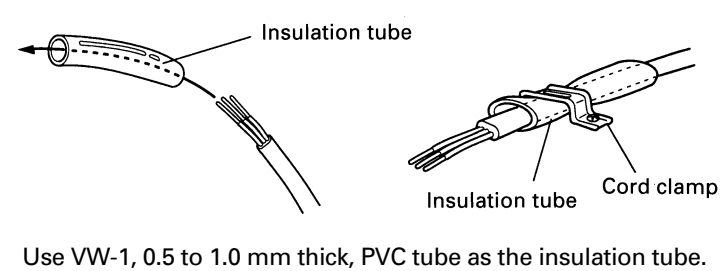
Fig. 31



HOW TO FIXED CONNECTION CORD AND POWER CABLE AT THE CORD CLAMP

After passing the connection cord and power cable through the insulation tube, fasten it with the cord clamp.

Fig. 32



Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

8

ELECTRICAL REQUIREMENT

- Electric wire size and fuse capacity:

Table 5		18,000 BTU/h class	24,000 BTU/h class
Connection cord (mm ²)	MAX	3.5	3.5
	MIN	2.5	2.5
Fuse capacity (A)		20	30

- Always use H07RN-F or equivalent as the connection cord

9

ELECTRICAL WIRING

CAUTION

- Match the terminal block numbers and connection cord colors with those of the outdoor unit. 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 chafed, electric leakage may occur.)
- Always connect the ground wire.

1. INDOOR UNIT SIDE

- Remove the electric component box.

Fig. 33

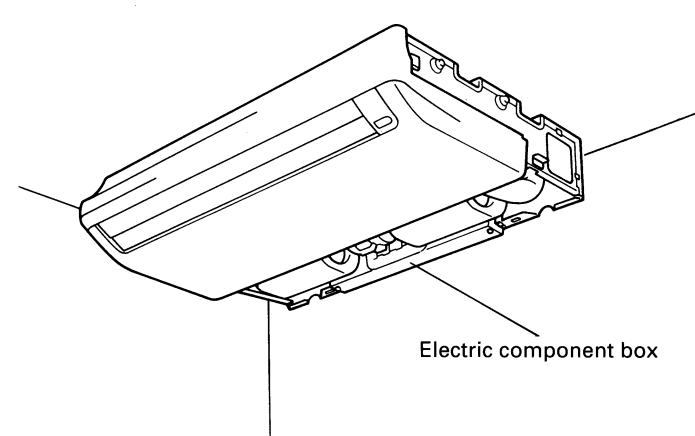


Fig. 34

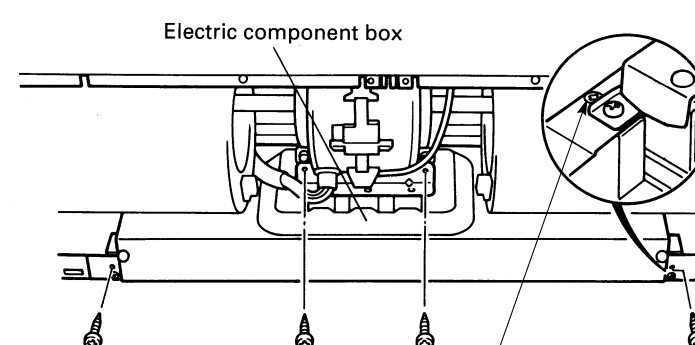
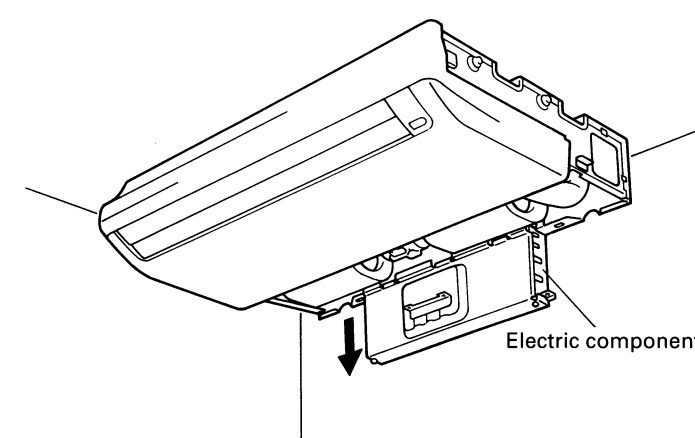
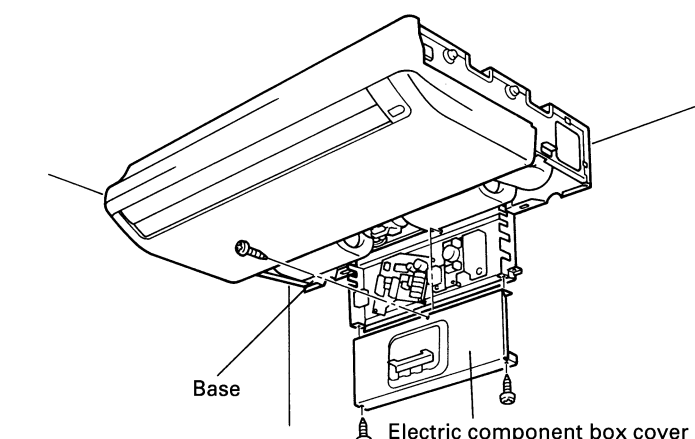


Fig. 35



- Remove the electric component box cover.

Fig. 36



Remove the three tapping screws.

CAUTION

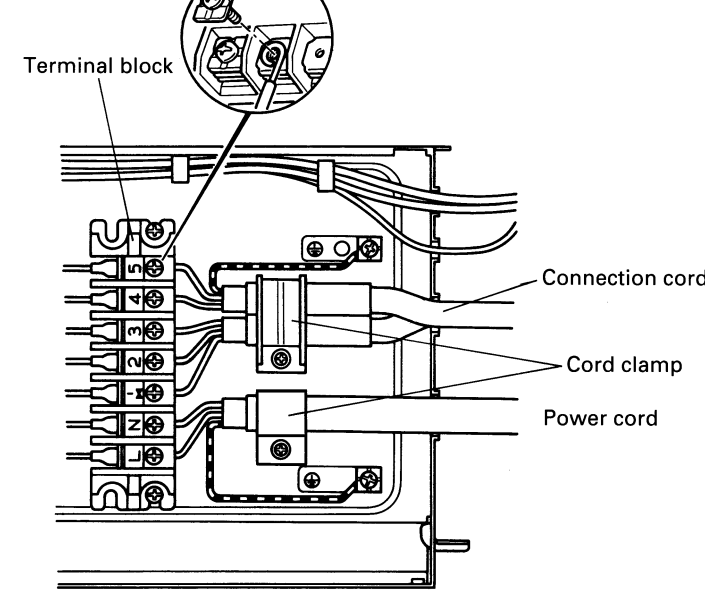
Be careful not to pinch the lead wires between the electric component box and base.

(4) Wiring

[Heat & Cool model (Reverse cycle)]

- Remove the cord clamp.
- Process the end of the connection cords to the dimensions shown in Fig. 37.
- Connect the end of the connection cord fully into the terminal block.

Fig. 37

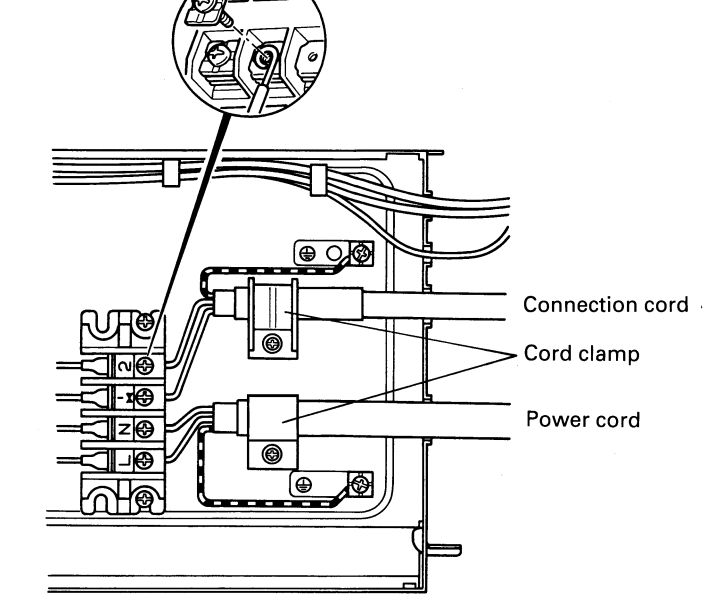


- Fasten the connection cord with a cord clamp.
- Fasten the end of the connection cord with the screw.

[Cooling model]

- Remove the cord clamp.
- Process the end of the connection cords to the dimensions shown in Fig. 38.
- Connect the end of the connection cord fully into the terminal block.

Fig. 38

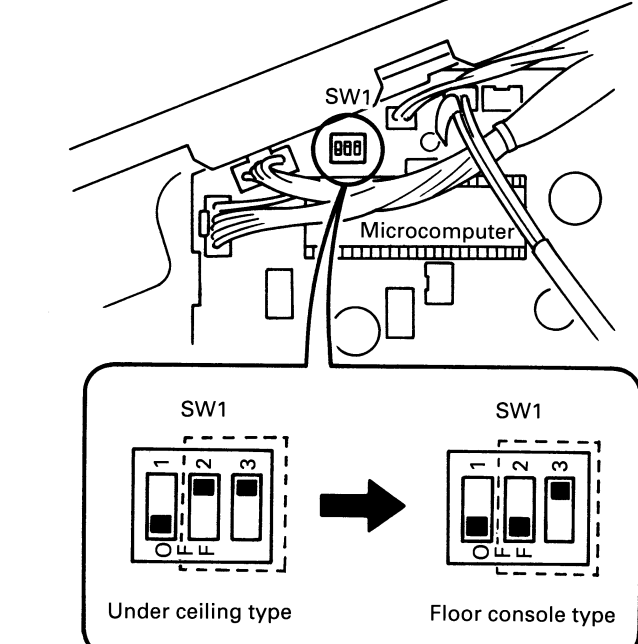


- Fasten the connection cord with a cord clamp.
- Fasten the end of the connection cord with the screw.

(5) Floor console/Under ceiling select switch

- The electrical circuits for this were set for use as a ceiling type at the factory.
- The following changes must be made to the settings if the unit is to be used as a floor type.
- Changing the settings for the electrical circuits. Switch 1 (SW1) on the printed circuit board inside the electric component box must be set as follows.

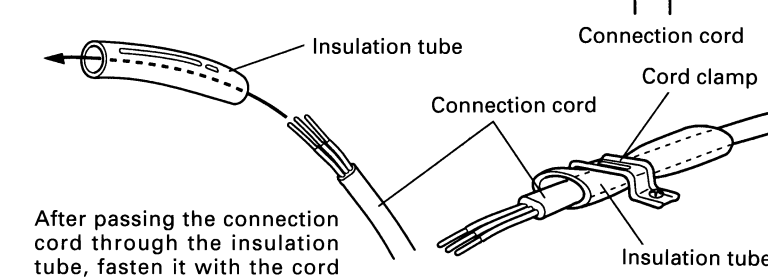
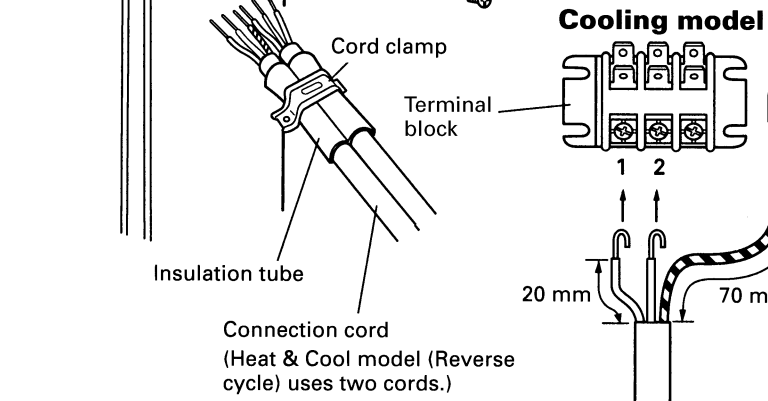
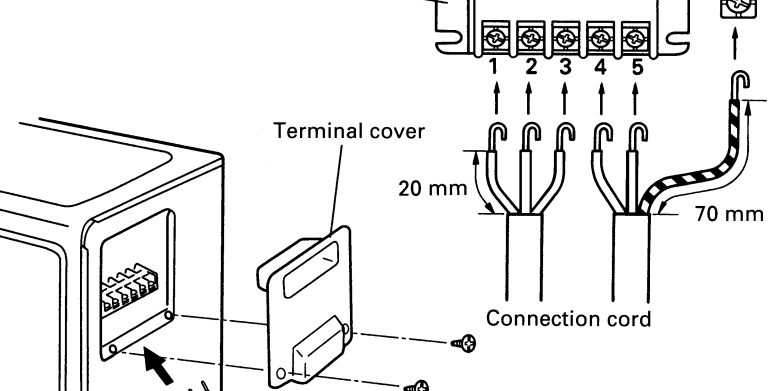
Fig. 39



2. OUTDOOR UNIT SIDE

Heat & Cool model (Reverse cycle)

Fig. 40



After passing the connection cord through the insulation tube, fasten it with the cord clamp

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POWER

WARNING

- The rated voltage of this product is 220-240V A.C. 50Hz.
- Before turning on the verify that the voltage is within the 198V to 264V 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.
- The circuit breaker is installed in the permanent wiring. Always use a circuit that can trip all the poles of the wiring and has an isolation distance of at least 3mm between the contacts of each pole.
- 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.

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REMOTE CONTROL UNIT INSTALLATION

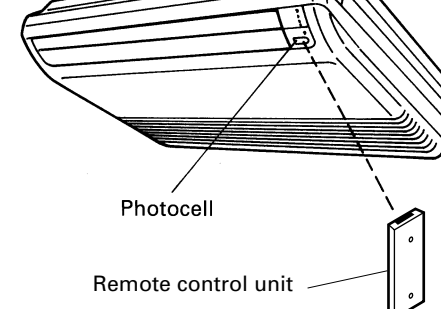
CAUTION

- Check that the indoor unit correctly receives the signal from the remote control unit, then install the remote control unit holder.
- Select the remote control unit 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.

1. REMOTE CONTROL UNIT HOLDER INSTALLATION

- Install the remote control unit so that the front is facing the photocell. (Fig. 42)

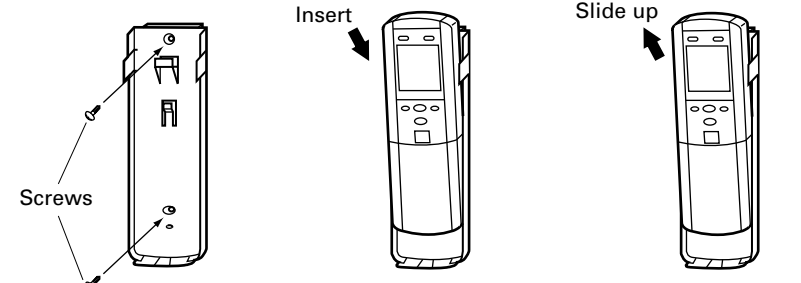
Fig. 42



- Install the remote control unit with a distance of 7 m between the remote control unit and the photocell as the criteria. However, when installing the remote control unit, check that it operates positively.
- Install the remote control unit holder to a wall, pillar, etc. with the tapping screw (Fig. 43).

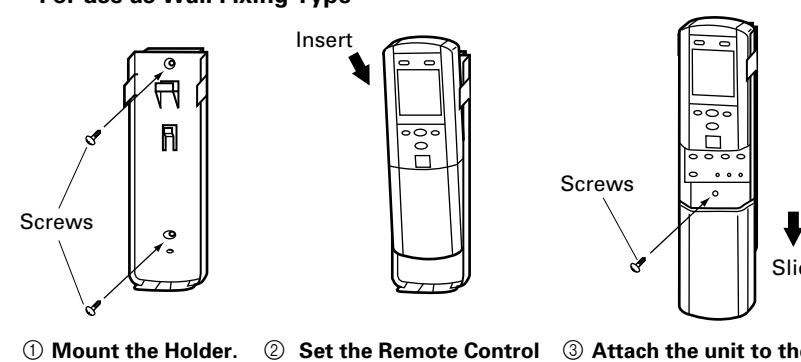
Fig. 43

For use as Handy Type



- Mount the Holder.
- Set the Remote Control Unit.
- To remove the Remote Control Unit (when use at hand.)

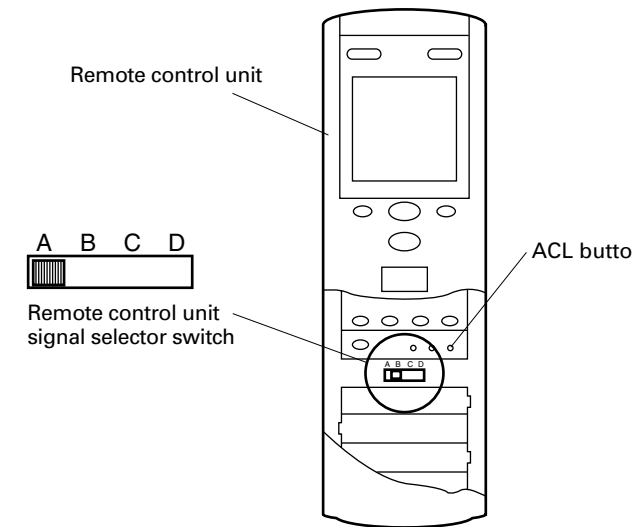
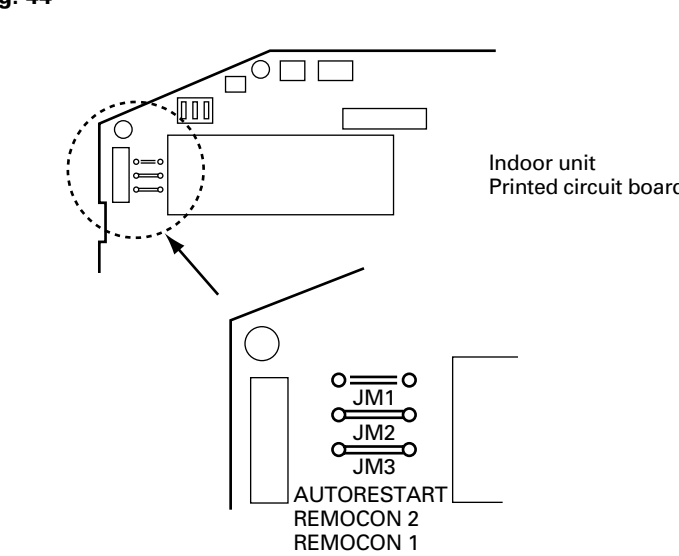
For use as Wall Fixing Type



- Mount the Holder.
- Set the Remote Control Unit.
- Attach the unit to the holder as shown.

2. REMOTE CONTROL UNIT CODE SWITCHING

Fig. 44



Confirm the remote control unit signal selector switch selection and printed circuit board setting.
If these are not confirmed, the remote control unit cannot be operated for the air conditioner.

Table 6

Jumper wire	Remote control unit signal selector switch
JM 2	JM 3
Connect	Connect
Connect	Disconnect
Disconnect	Connect
Disconnect	Disconnect

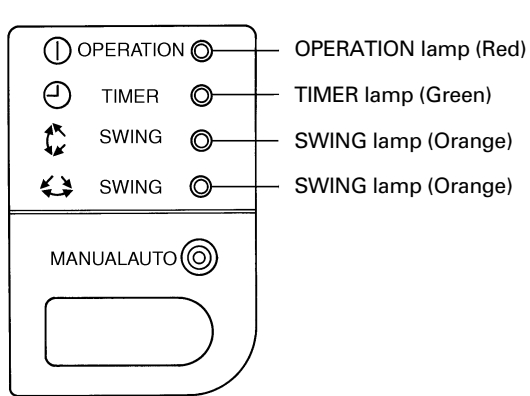
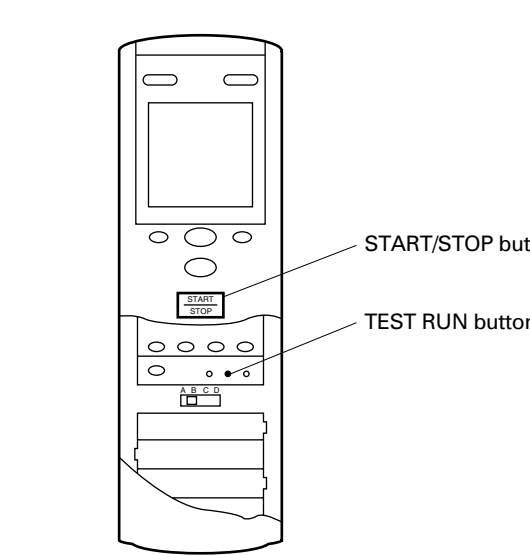
After setting the remote control unit signal selector switch, press the ACL button.

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TEST RUNNING

- Press the remote control unit test run button while the air conditioner is running.
- At the end of test running, press the remote control unit start-stop button. (Fig. 45)

Fig. 45



Operation can be checked by lighting and flashing of the display section OPERATION and TIMER lamps.
Perform judgment in accordance with the following.

- Test running

When the air conditioner is run by pressing the remote control unit test run button, the OPERATION and TIMER lamps flash slowly at the same time.

- Error

The OPERATION and TIMER lamps operate as follows (Table 7) according to the error contents.

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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 control unit operations.
- Air filter removal and cleaning, and how to use the air louvers.
- Give the operating and installation manuals to the customer.

Table 7

Error display	Error contents
OPERATION LAMP ON 0.5 sec. OFF 0.1 sec. ON 0.5 sec. OFF 0.1 sec. ON 0.5 sec. OFF 0.1 sec.	Two quick flashes repeated Room temperature thermostat abnormal temperature detected
TIMER LAMP ON 0.1 sec. OFF 0.1 sec. ON 0.1 sec. OFF 0.1 sec.	0.1 sec ON/OFF repeated Piping thermostat abnormal temperature detected

CHECK ITEMS

(1) INDOOR UNIT

- Is operation of each button on the remote control unit normal?
- Does each lamp light normally?
- Do not air flow direction louvers operate normally?
- Is the drain normal?
- Is there any abnormal noise and vibration during operation?

(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?

- Do not operate the air conditioner in the test running state for a long time.
- For the operation method, refer to the operating manual and perform operation check.

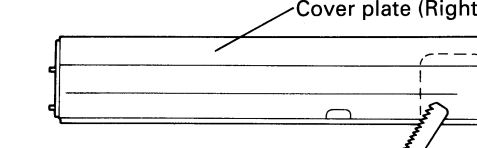
13

MOUNT THE COVER PLATE AND THE INTAKE GRILLE

1. MOUNT THE COVER PLATE (RIGHT)

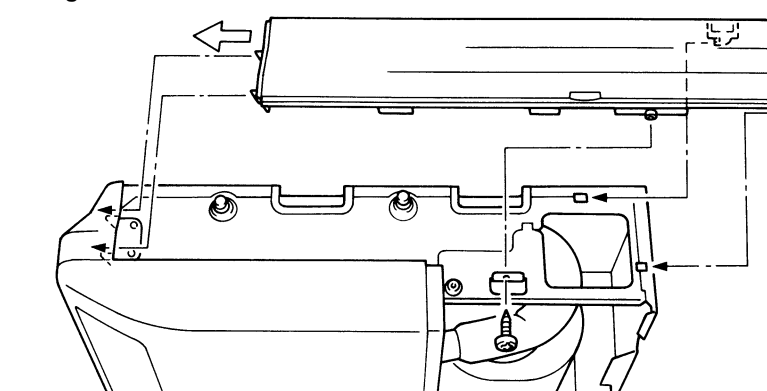
- Cut a pipe exit hole in the right plate. This is only when the pipe exits from the right side. (This operation is not required when the protrusion is on the top or rear.)

Fig. 46



- Join the cover plates (right) and mount with screws. (Fig. 47)

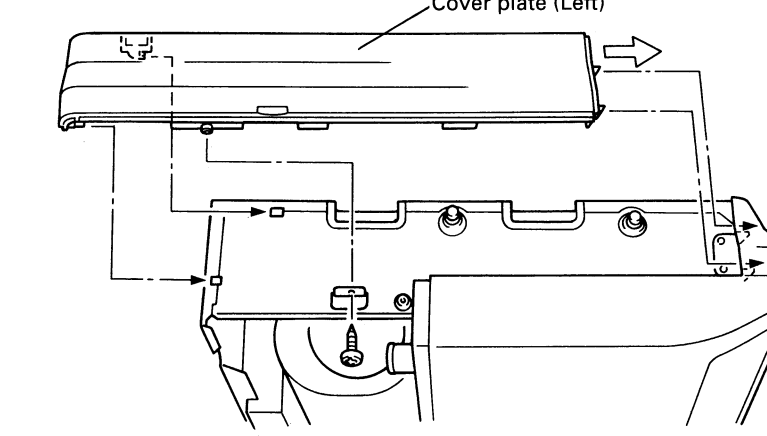
Fig. 47



2. MOUNT THE COVER PLATE (LEFT)

- Join the cover plates (left) and mount with screws.

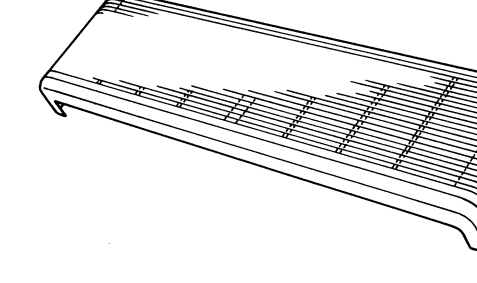
Fig. 48



3. MOUNT THE INTAKE GRILLE

- Cut the right side of the intake grille. This is only when the pipe exits from the right side. (Fig. 49)

Fig. 49



- Insert the hinges on the bottom of the intake grille into the holes in the base assembly. Then mount the arms to the three areas on the top of the intake grille. (Fig. 50)

Fig. 50

