

SPLIT TYPE ROOM AIR CONDITIONER INSTALLATION MANUAL

(PART NO. 9363416015)

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.

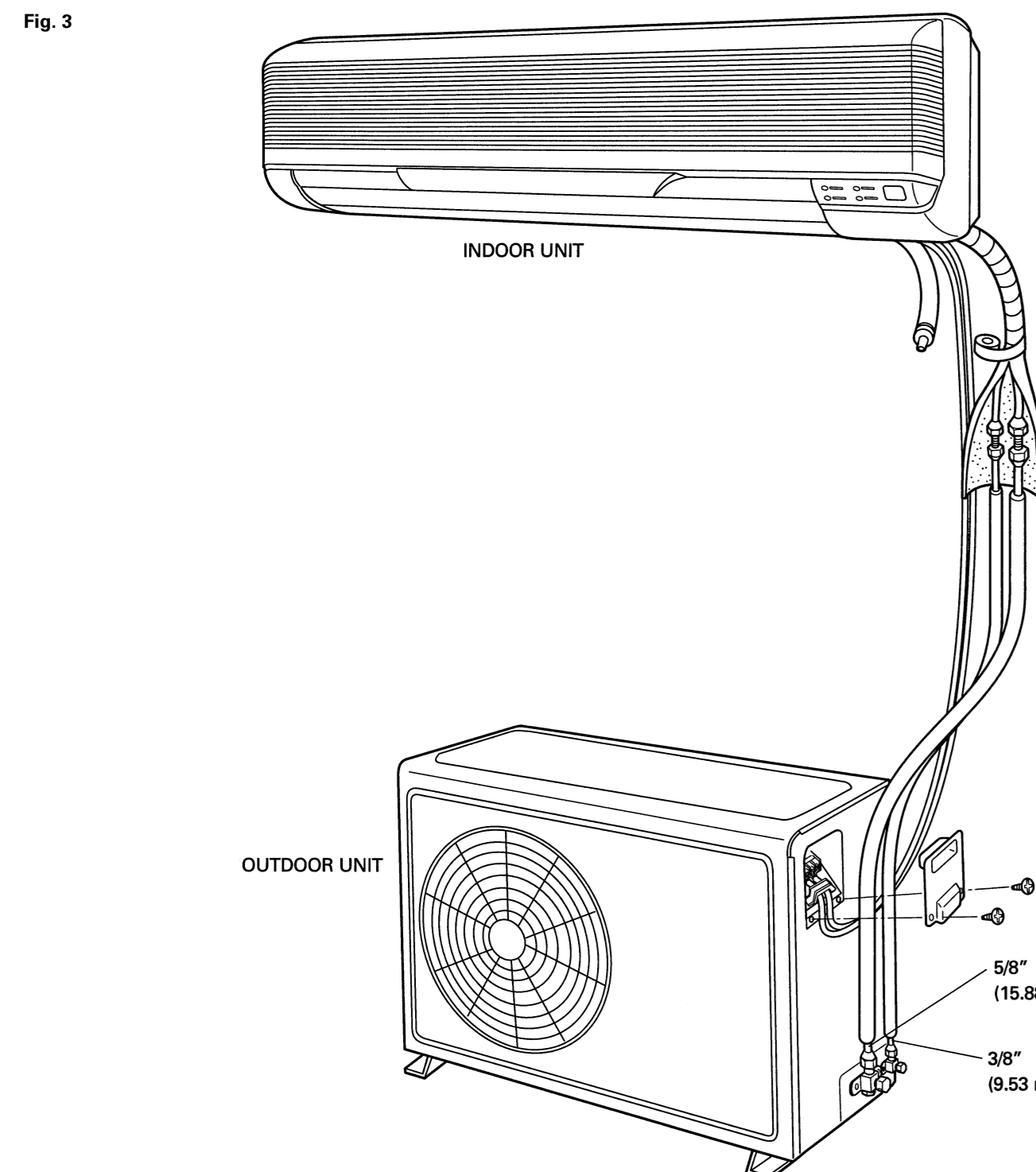
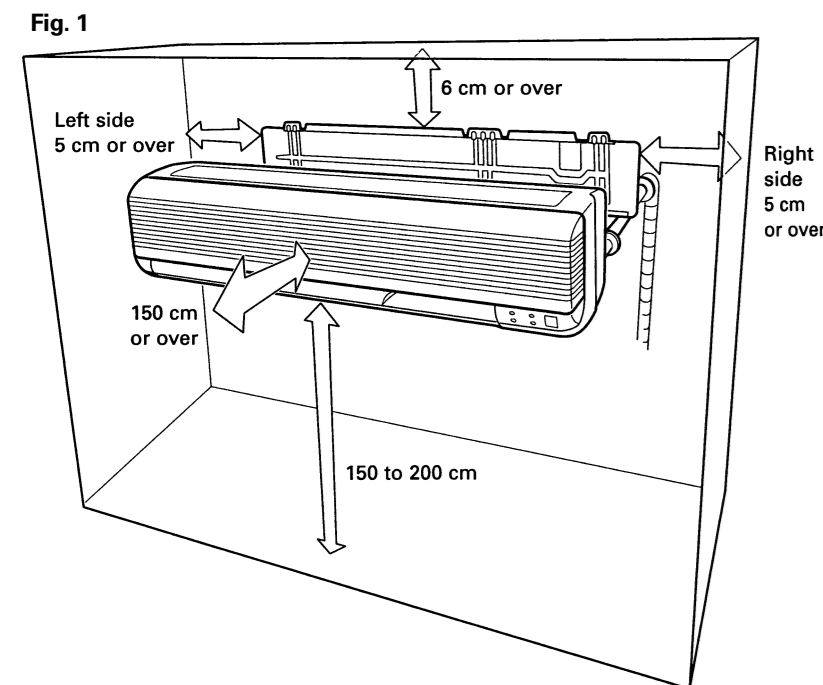
CAUTION

- 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

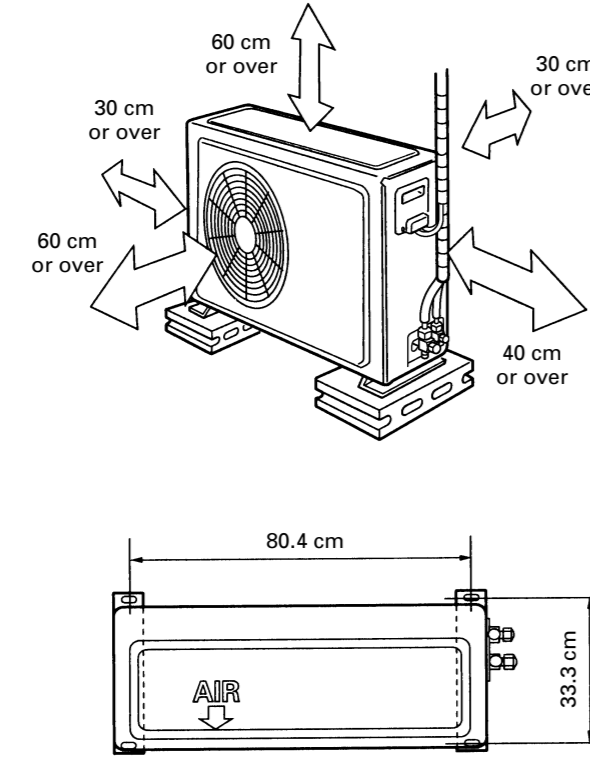
- Install the indoor unit level on a strong wall which is not subject to vibration.
- The inlet and outlet ports should not be obstructed: the air should be able to blow all over the room.
- Install the unit near an electric outlet or special branch circuit.
- Do not install the unit where it will be 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.



2. OUTDOOR UNIT

- 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.)
- Do not install the unit where a strong wind blows or where it is very dusty.
- Do not install the unit where people pass.
- Take your neighbors into consideration so that they are not disturbed by air blowing into their windows or by noise.
- 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 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
Remote control unit	1	Use for air conditioner operation
Battery (penlight)	4	For remote control unit
Remote control unit holder	1	Use as remote control unit holder
Tapping screw (big) (ø4 x 20)	12	For wall hook bracket installation
Tapping screw (small) (ø3 x 12)	3	For remote control unit holder installation

OUTDOOR UNIT ACCESSORIES

Hexagon wrench	1	For air purge
Drain pipe	1	For outdoor unit drain piping work (Heat & Cool model (Reverse cycle) only)
Flexible tube	1	For outdoor unit drain piping work (Heat & Cool model (Reverse cycle) only)
Drain cap	2	

ELECTRICAL REQUIREMENT

- Electric wire size and fuse capacity:

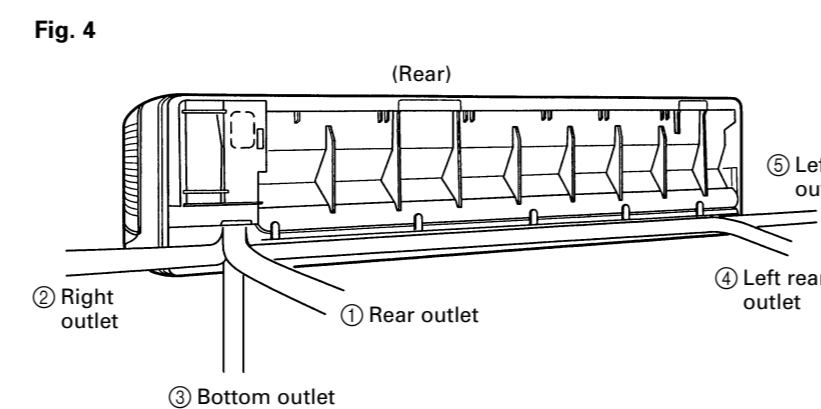
Power cord (mm ²)	Table 1	
	MAX	3.5
Connection cord (mm ²)	MIN	3.0
	MAX	1.5
Fuse capacity (A)	MIN	1.0
	MAX	30

- Always use H07RN-F or equivalent as the connection cord.
- Install the disconnect device with a contact gap of at least 3 mm nearby by the units. (Both indoor unit and outdoor unit)

INSTALLATION PROCEDURE

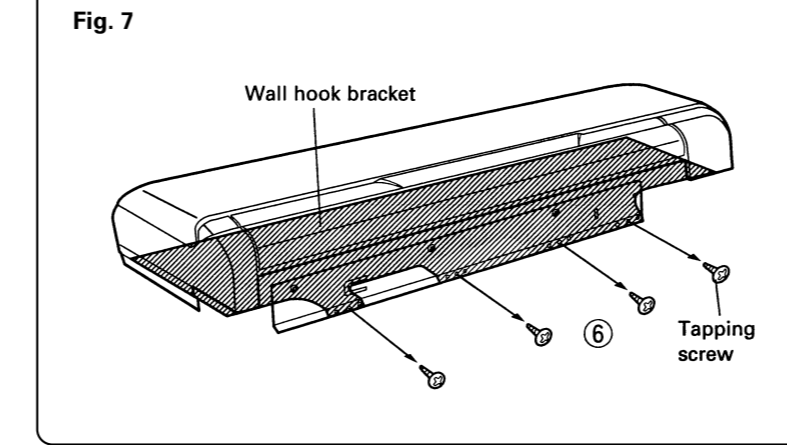
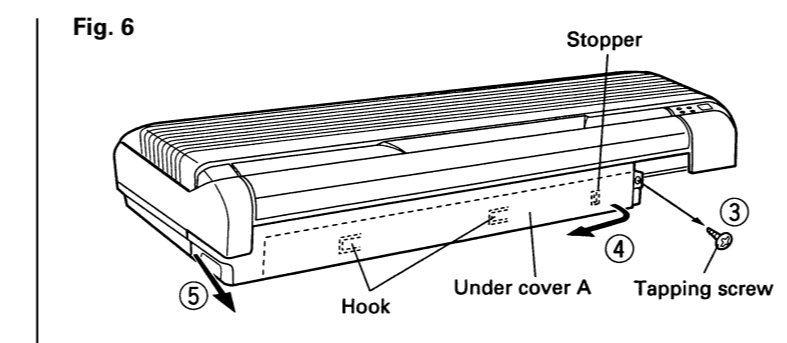
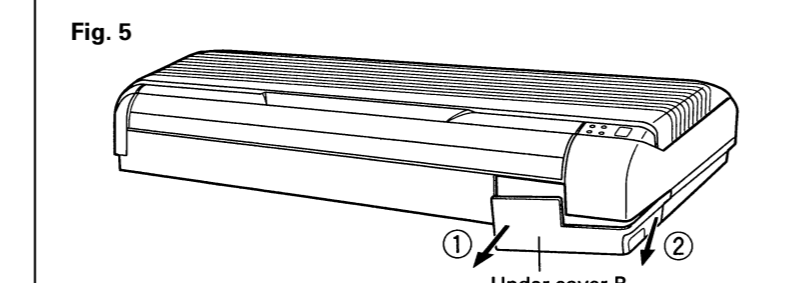
1. INDOOR UNIT INSTALLATION

The piping can be connected in the five directions indicated by ①, ②, ③, ④, and ⑤ in Fig. 4. When the piping is connected in direction ② or ③, cut along the piping groove in the side of the under cover with a hacksaw. When connecting the piping in direction ③, cut a notch in the thin wall at the front bottom of the under cover.



1. INSTALLING THE WALL HOOK BRACKET

- Removing the wall hook bracket**
Remove the wall hook bracket in the following order:
- Remove one side of under cover B by pulling it forward (arrow direction in Fig. 5).
 - Remove the other side of under cover B by pulling it forward (arrow direction in Fig. 5).
 - Remove the tapping screw installed under cover A. (Fig. 6)
 - While pulling the right side of under cover A forward (releasing the inside stopper), slide under cover A to the left and unhook the two inside hooks. (Fig. 6)
 - Next, remove under cover A by pulling the left side forward (arrow direction in Fig. 6).
 - Remove the four tapping screws holding the wall hook bracket. (Fig. 7)

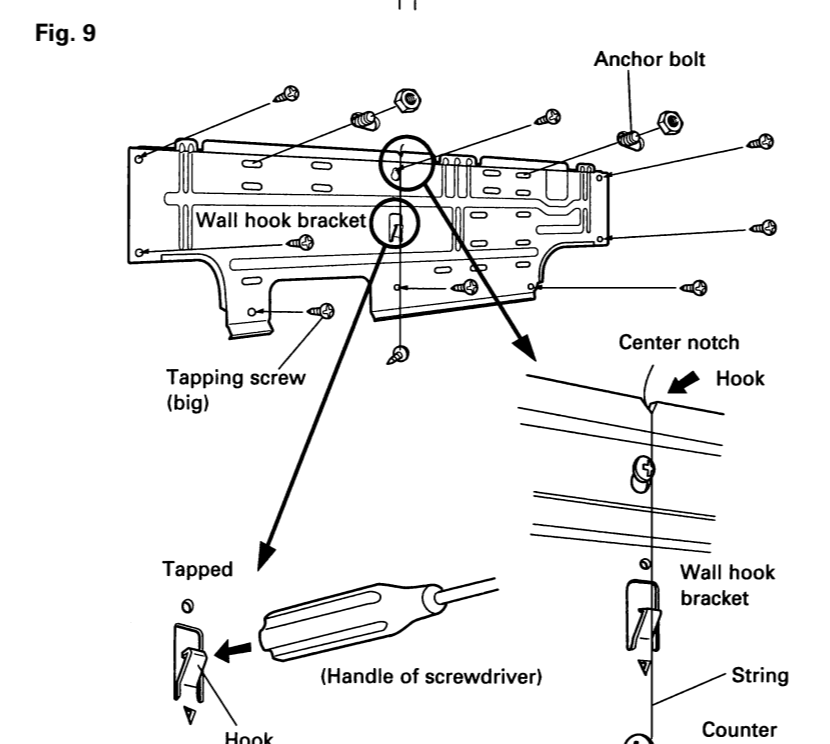
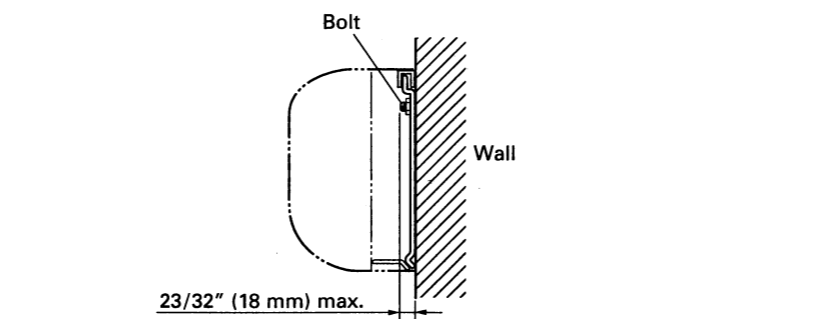
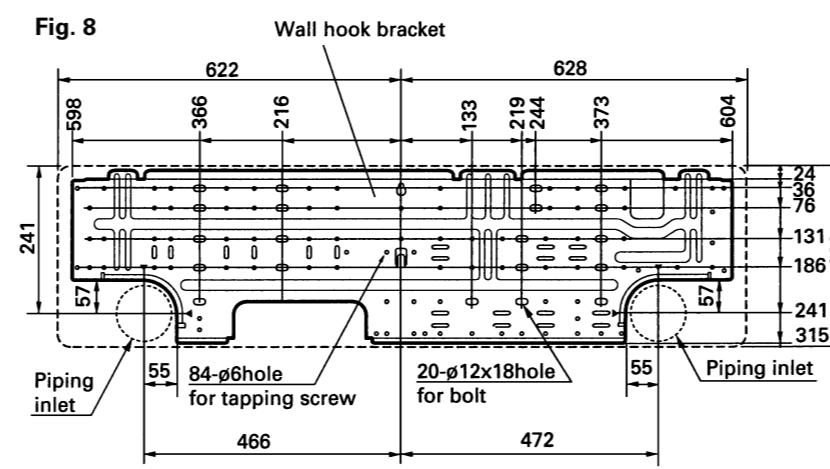


- Install the wall hook bracket so that it is correctly positioned horizontally and vertically. If the wall hook bracket is tilted, water will drip to the floor.
- As the weight of the indoor unit is 37 to 44 lbs (17 to 20 kg), it should be installed after properly examining the place where it is intended to be installed. If the place is not strong enough, a plank or girder should be used to make the place sufficiently strong so that the wall can support the weight.

[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 and anchor bolts through the holes near the outer edge of the bracket.
 - Do not install the wall hook bracket at only one place or at an angle. For a concrete wall, embed anchor bolts (10 mm dia.) into the wall at the wall hook bracket holes (12 x 18 mm dia.). Allow the anchor bolts to stick out at least 18 mm from the wall. (Fig. 8) Install the unit to the anchor bolts with nuts through the wall hook bracket. Use 2 bolts for concrete wall and 4 bolts for blister concrete wall.
 - Finally tighten the bolts and wood screws after confirming, using the level indicator, that the clamp is horizontal.

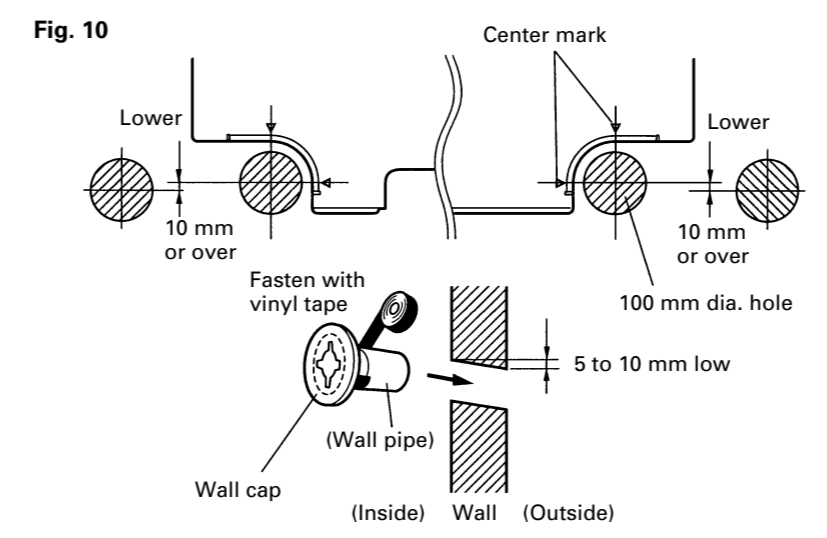
CAUTION
Install the wall hook bracket horizontally and perpendicularly. If the wall hook bracket is tilted, water will drip to the floor.



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 100 mm diameter hole in the wall at the position shown in Fig. 10.
- 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 wall cap, fasten the cap with vinyl tape, and stick the pipe through the hole. (The connection pipe is supplied in the installation set.) (Fig. 10)

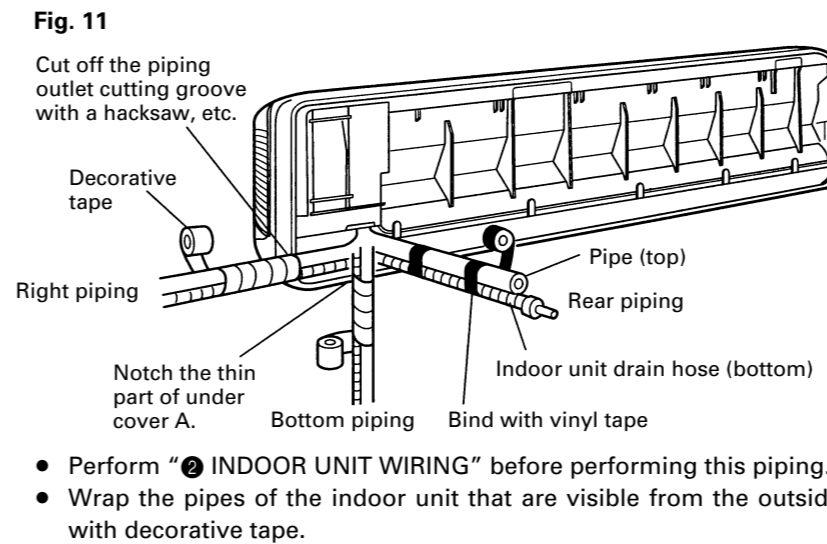


- For ② left piping and ③ right piping, cut the hole a little lower so that drain water will flow freely. (Fig. 10)

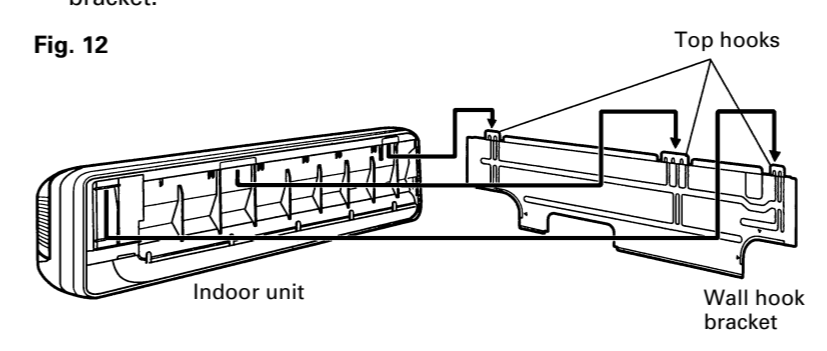
3. FORMING THE DRAIN HOSE AND PIPE

- 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. 11)
 - Install the piping so that the drain hose is at the bottom.



- Perform "INDOOR UNIT WIRING" before performing this piping.
- Wrap the pipes of the indoor unit that are visible from the outside with decorative tape.

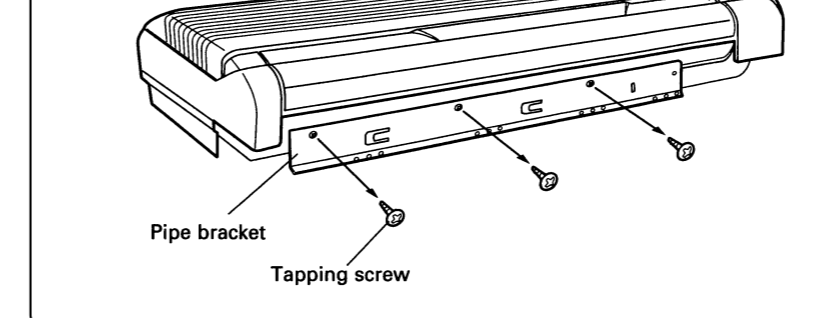


[For ④ Left rear piping, ⑤ Left piping]

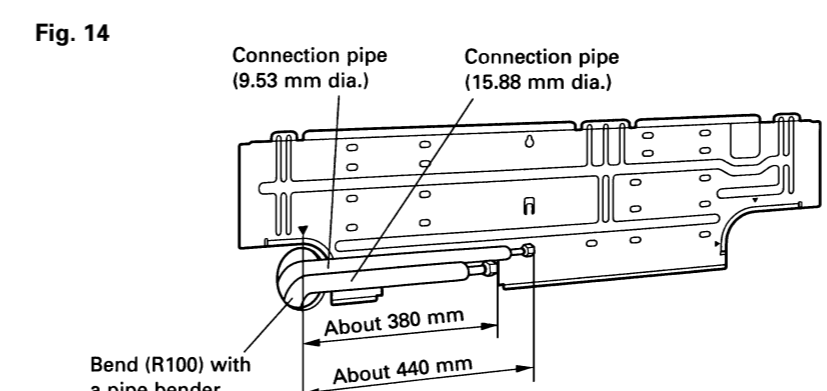
- Left piping and left rear piping can be easily installed by removing the pipe bracket.

Removing the pipe bracket

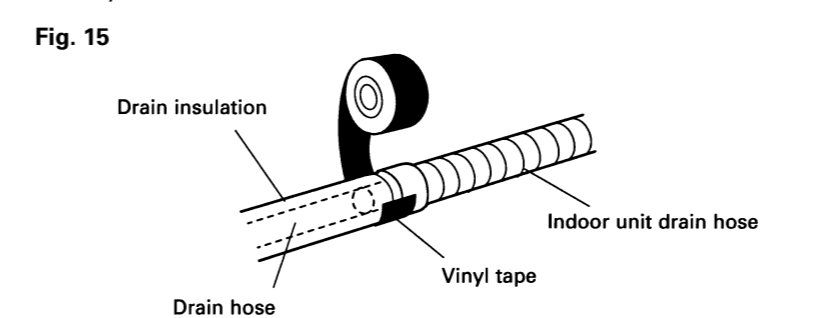
Remove the three tapping screws holding the pipe bracket as shown below.



- For left piping and left rear piping, preset the end of the pipe to the dimensions shown in Fig. 14 from the mark on the wall hook bracket and form the connection pipe.
- Bend the connection piping at a bend radius of at least 100 mm and position it no more than 50 mm from the wall.



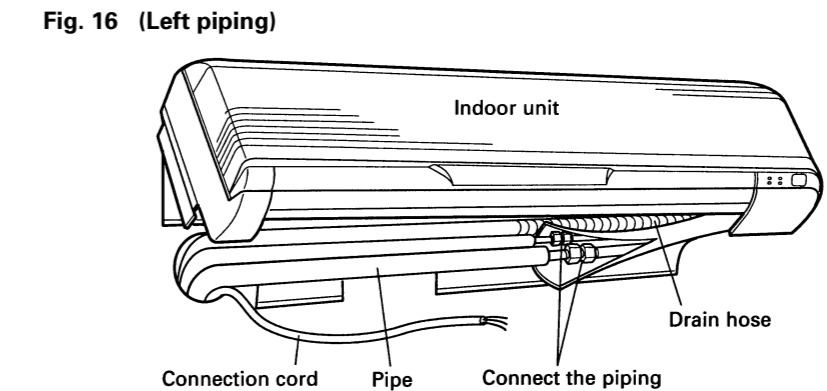
- When extending the drain hose at the indoor unit, install the accessory drain insulation.



- Place the indoor unit drain hose behind the piping.

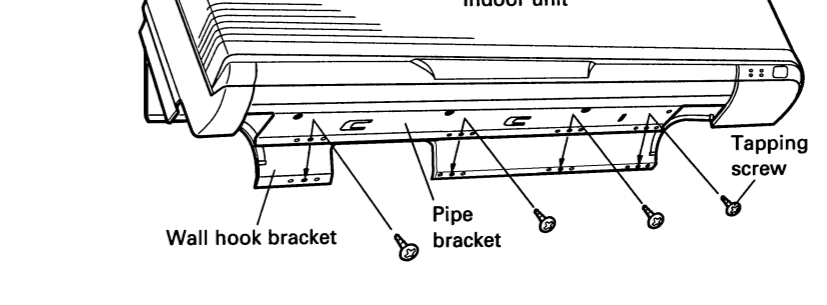
[Installing the indoor unit]

- 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. 16 beforehand.



4. INSTALLING THE INDOOR UNIT

After connecting the piping, fasten the bottom of the indoor unit and the wall hook bracket with the tapping screws.



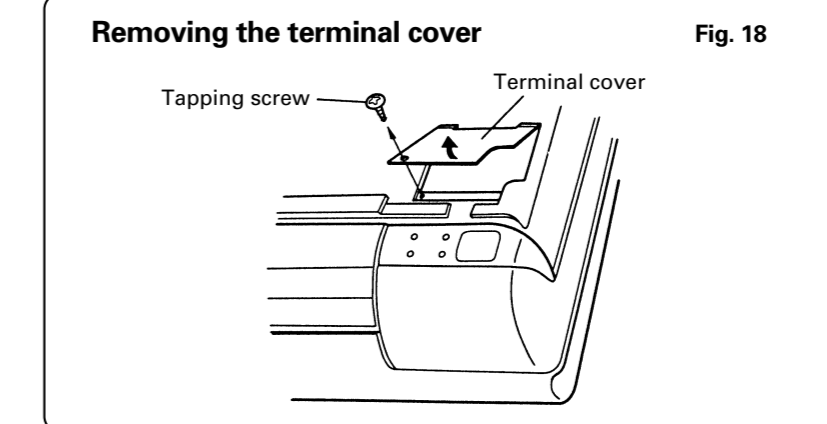
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INDOOR UNIT WIRING

CAUTION

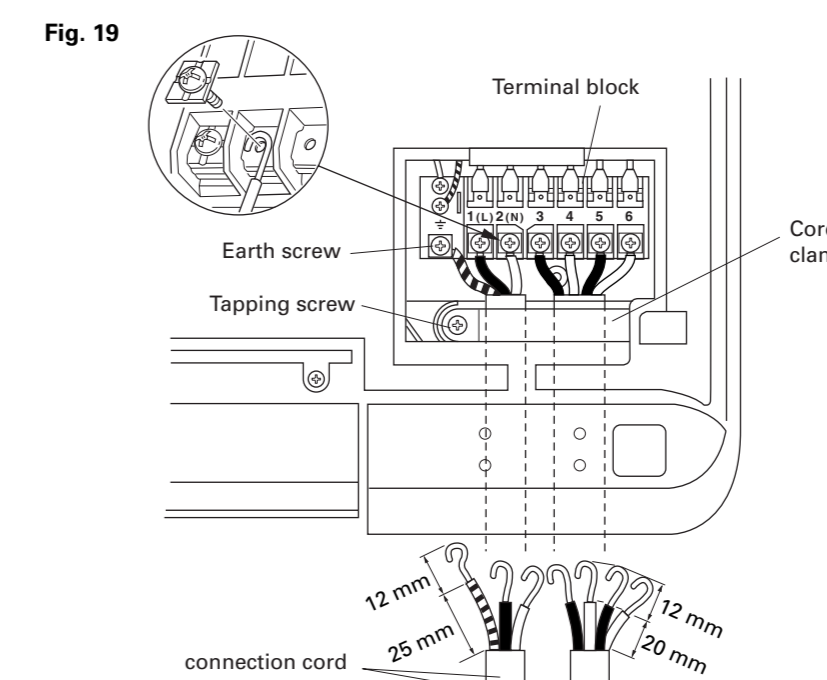
- Match the terminal block numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords firmly to the terminal block. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection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

- Remove the intake grille.
- Remove the terminal cover. (Fig. 18)



[Heat & Cool model (Reverse cycle)]

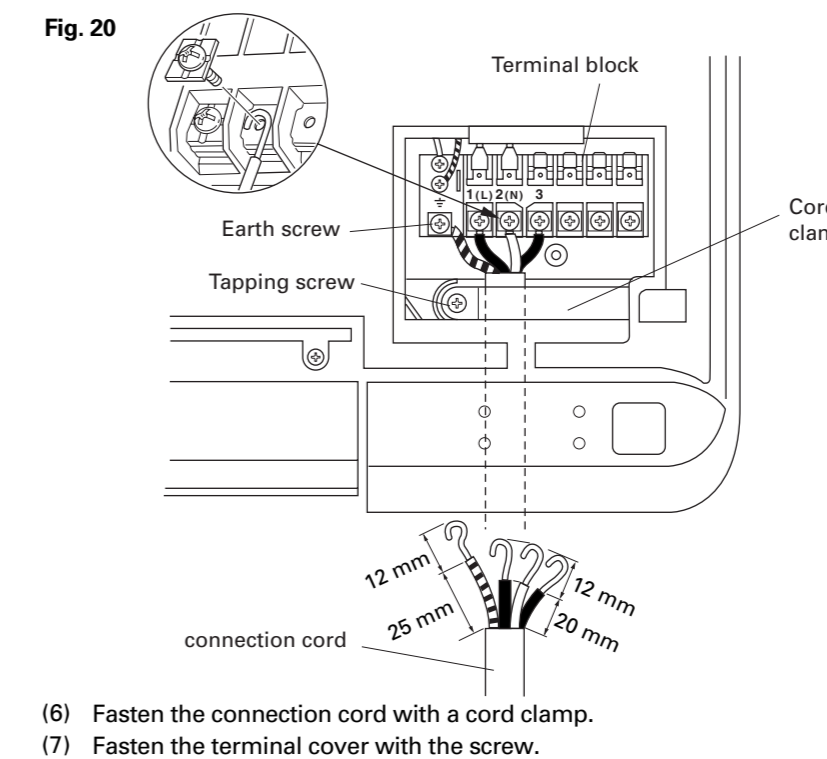
- Remove the cord clamp.
- Process the end of the connection cords to the dimensions shown in Fig. 19.
- Connect the end of the connection cord fully into the terminal block.



- Fasten the connection cord with a cord clamp.
- Fasten the terminal cover with the screw.

[Cooling model]

- Remove the cord clamp.
- Process the end of the connection cords to the dimensions shown in Fig. 20.
- Connect the end of the connection cord fully into the terminal block.



- Fasten the connection cord with a cord clamp.
- Fasten the terminal cover with the screw.

3

OUTDOOR UNIT INSTALLATION

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

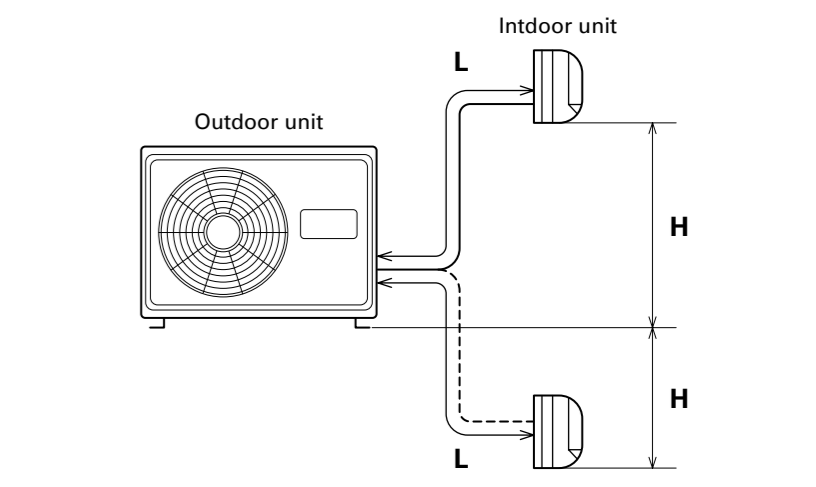
CAUTION

The maximum lengths of this product are shown in table 2. If the units are further apart than this, correct operation can not be guaranteed.

1. LIMITATION OF REFRIGERANT PIPING LENGTH

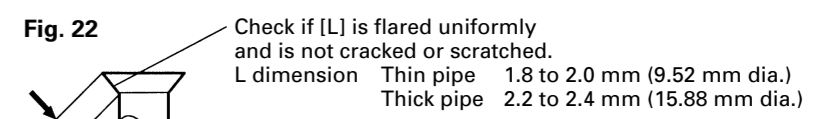
Table 2	
Max length (L)	20 m (66 ft)
Max height difference (H)	8 m (26 ft)

Fig. 21



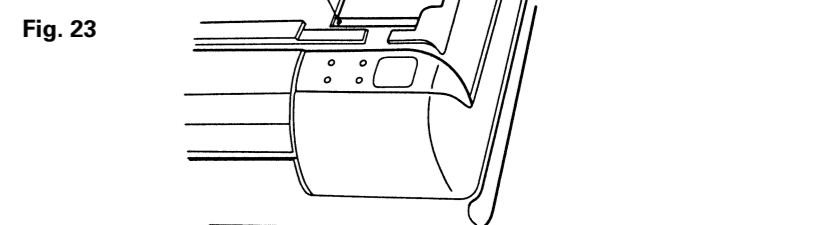
2. FLARING

- 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.



3. BENDING PIPES

The pipes are shaped by hand. Do not use bending tools that will collapse them.



Do not bend the pipes in an angle more than 90°. When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

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. 24

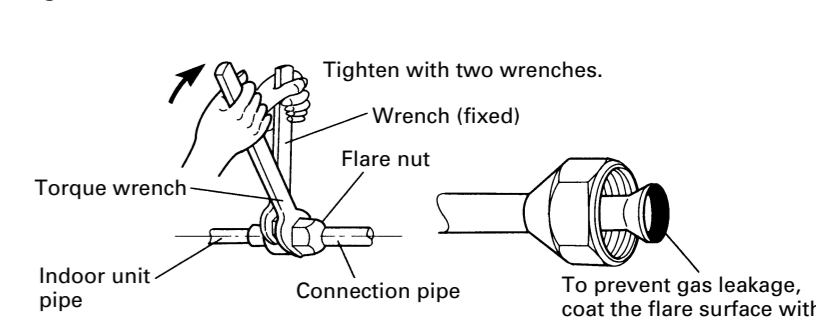


Table 3 Flare nut tightening torque

Flare nut	Tightening torque
9.52 mm dia.	30.4 to 34.3 N · m (310 to 350 kgf · cm)
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.

5

AIR PURGE

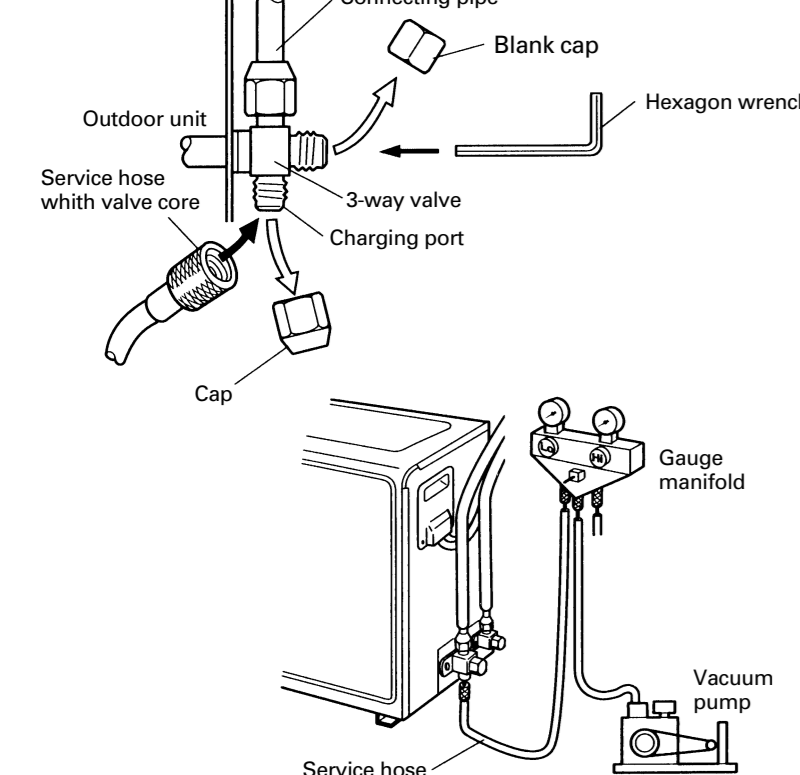
CAUTION

- When moving and installing the room air conditioner, do not mix gas other than the specified refrigerant (R22) inside the refrigerant cycle.
- Charging of additional refrigerant (R22) according to the piping length is unnecessary.

1. VACUUM

- 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 kg·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 kg·cm, 3-way valve: 100 to 120 kg·cm).
- Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque (200 to 250 kg·cm).

Fig. 25



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	16 ft (5 m)	33 ft (10 m)	49 ft (15 m)	66 ft (20 m)
Additional refrigerant	None	2.8 oz (80 g)	5.6 oz (160 g)	8.5 oz (240 g)

Between 5 m and 20 m, when using a connection pipe other than that in the table, charge additional refrigerant with 0.56 oz (16 g) / 3.3 ft (1 m) (Cooling model) as the criteria.

6

GAS LEAKAGE INSPECTION

CAUTION

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

7

OUTDOOR UNIT WIRING

WARNING

- Before starting work, check that power is not being supplied to indoor unit and the outdoor unit.
- 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.

CAUTION

- The power cord is not supplied with the outdoor unit. Use 2.5 mm² to 3.5 mm² H07RN-F or equivalent as the connection cord.
- Use VW-1, 12 mm diameter, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

- Remove the outdoor unit terminal cover.
- Process the end of the connection cords to the dimensions shown in Fig. 27 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

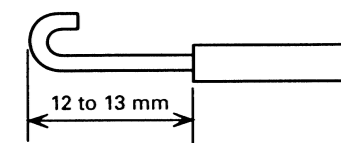
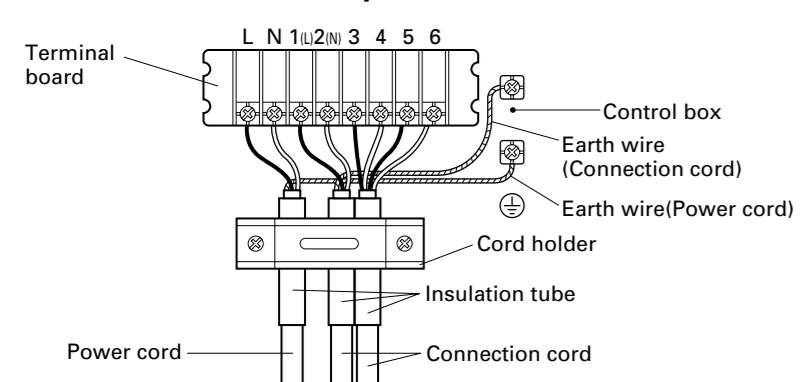
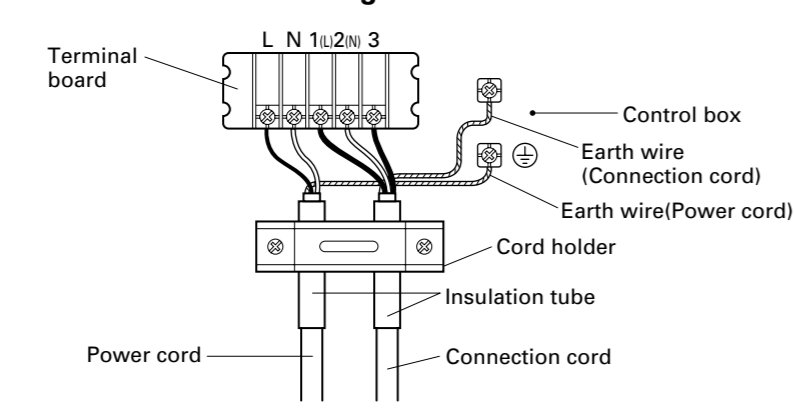


Fig. 27

Heat & Cool model (Reverse cycle)



Cooling model

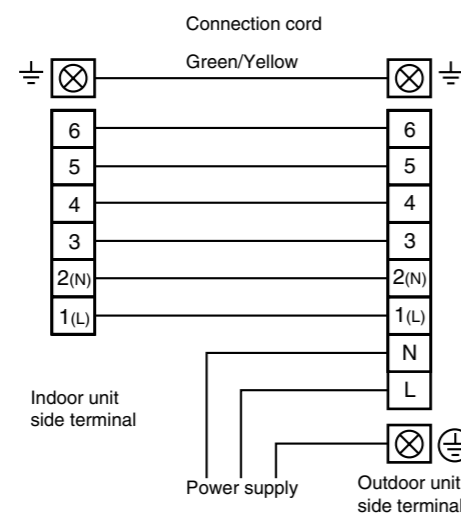


After passing the connection cord through the insulation tube, fasten it with the cord clamp.

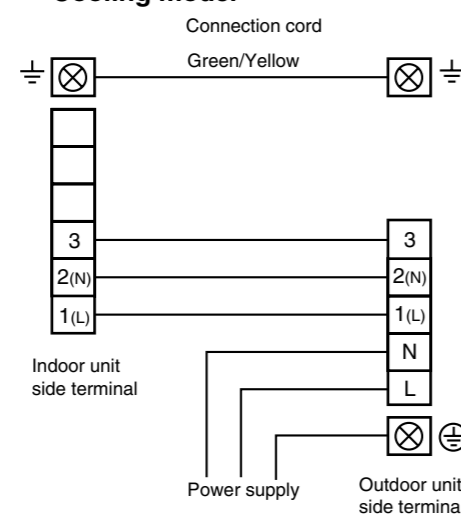
1. CONNECTION DIAGRAM

Fig. 28

Heat & Cool model (Reverse cycle)



Cooling model

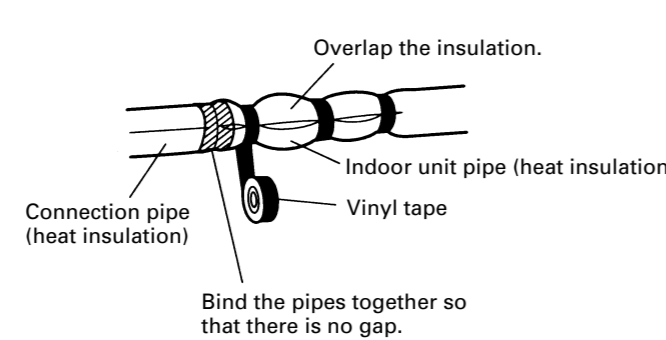


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FINISHING

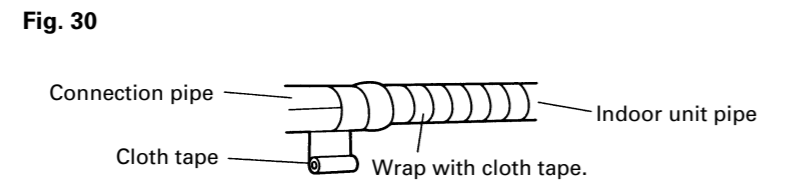
- Insulate between pipes.
 - For rear, right, and bottom piping, overlap the connection pipe heat insulation and indoor unit pipe heat insulation and bind them with vinyl tape so that there is no gap.
 - For left and left rear piping, butt the connection pipe heat insulation and indoor unit pipe heat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

Fig. 29



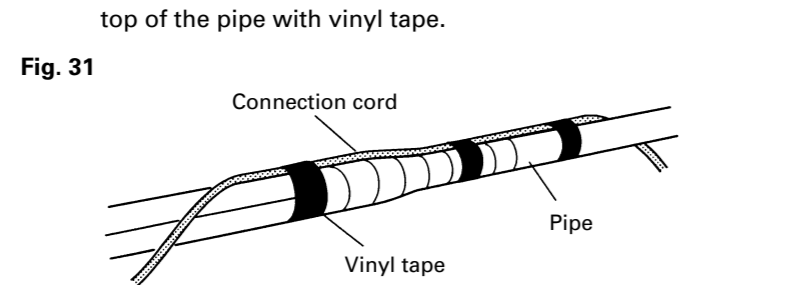
- For left and left rear piping, wrap the area which accommodates the rear piping housing section with cloth tape.

Fig. 30



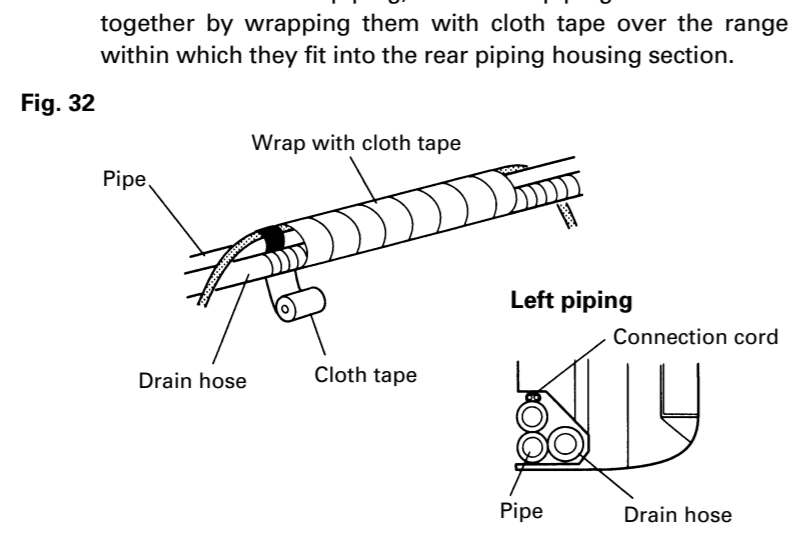
- For left and left rear piping, bind the connection cord to the top of the pipe with vinyl tape.

Fig. 31



- For left and left rear piping, bundle the piping and drain hose together by wrapping them with cloth tape over the range within which they fit into the rear piping housing section.

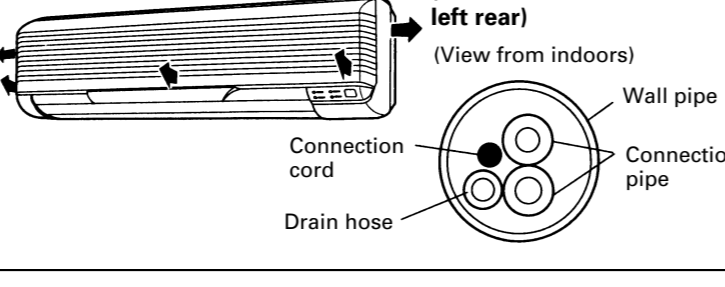
Fig. 32



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.
- When connected from the left rear, the drain hose is at the bottom left of the wall pipe.

Fig. 33



- 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. 34

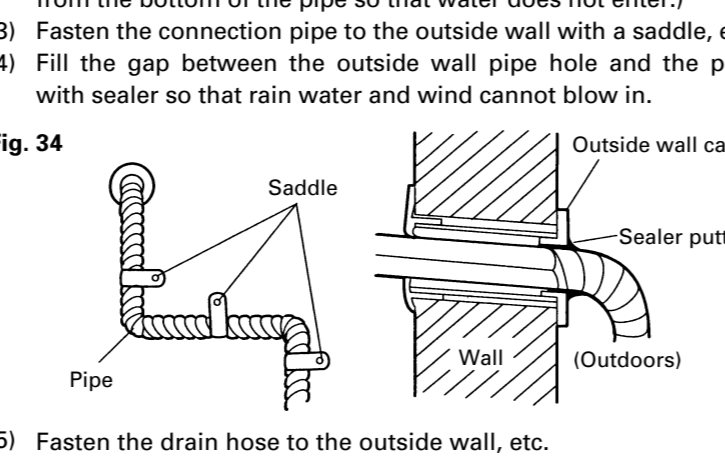


Fig. 35

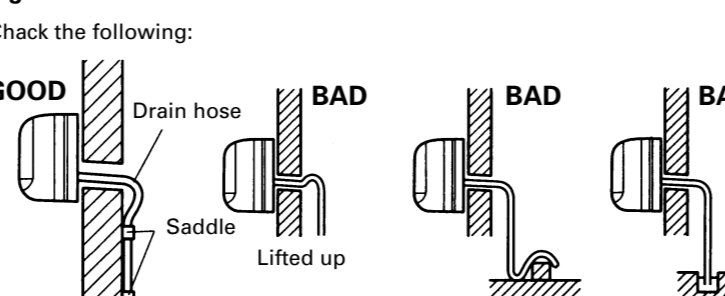


Fig. 36

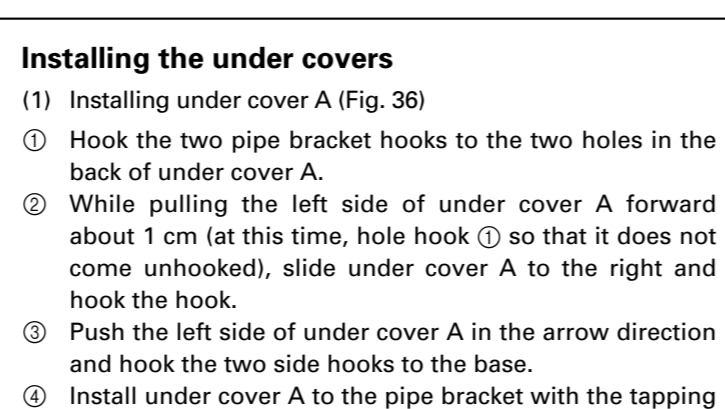


Fig. 37

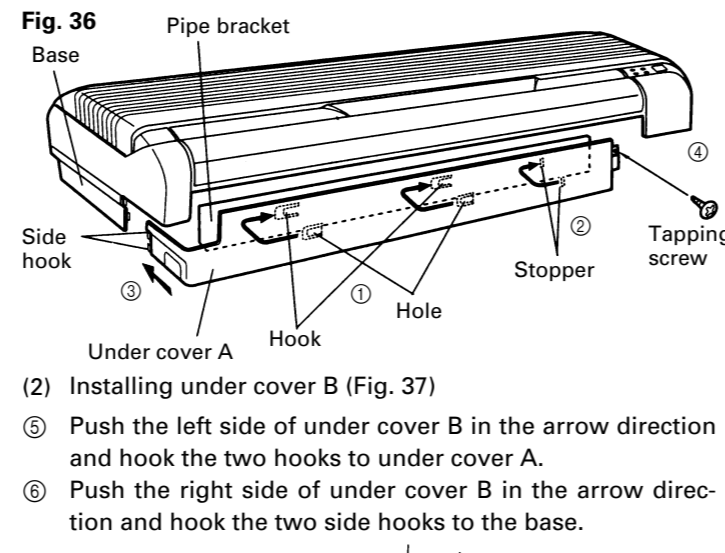


Fig. 38

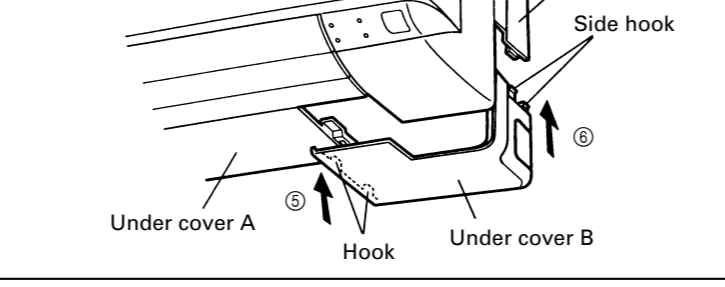


Fig. 39

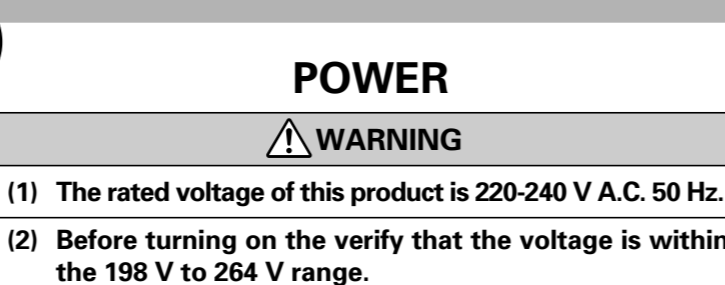


Fig. 40

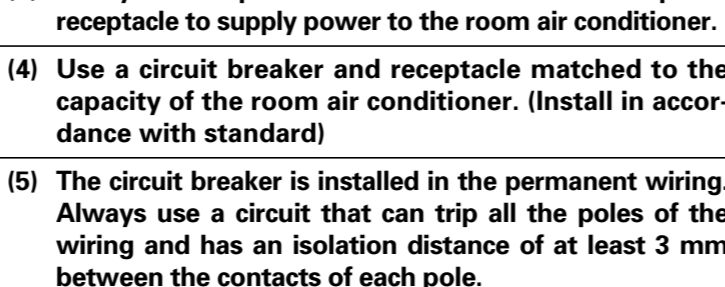


Fig. 41

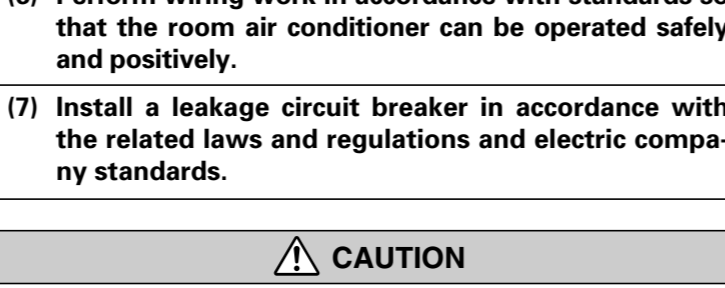
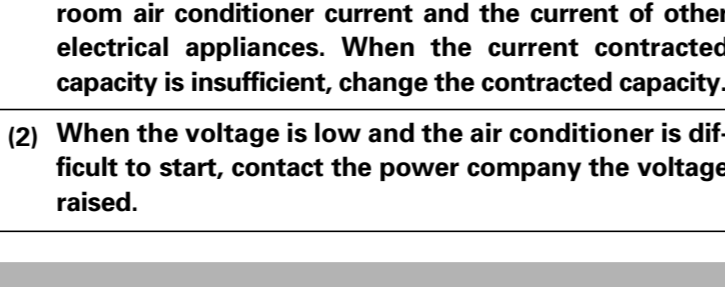


Fig. 42

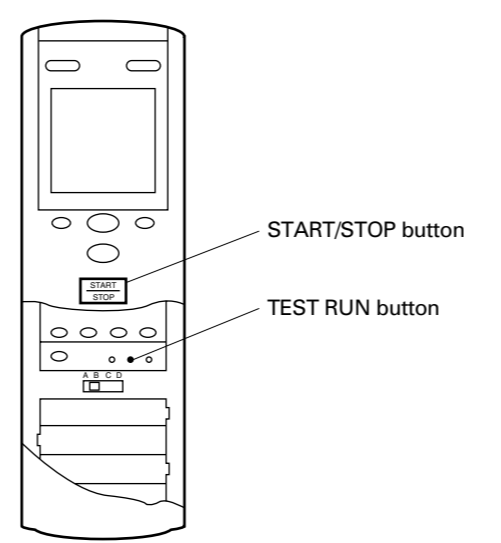


10

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. 38)

Fig. 38



Operation can be checked by lighting and flashing of the display section OPERATION and TIMER lamps. Perform judgement 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 5) according to the error contents.

Table 5

Error display	Error contents
OPERATION LAMP ON 0.5 sec. OFF 5 sec. ON 0.5 sec. OFF 5 sec.	Two quick flashes repeated Room temperature thermostat abnormal temperature detected
TIMER LAMP ON 0.1 sec. OFF 0.1 sec.	0.1 sec ON/OFF repeated Piping thermostat abnormal temperature detected
OPERATION LAMP ON 0.5 sec. OFF 5 sec. ON 0.5 sec. OFF 5 sec.	Three quick flashes repeated Piping thermostat abnormal temperature detected
TIMER LAMP 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.

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

12

FRONT PANEL REMOVAL

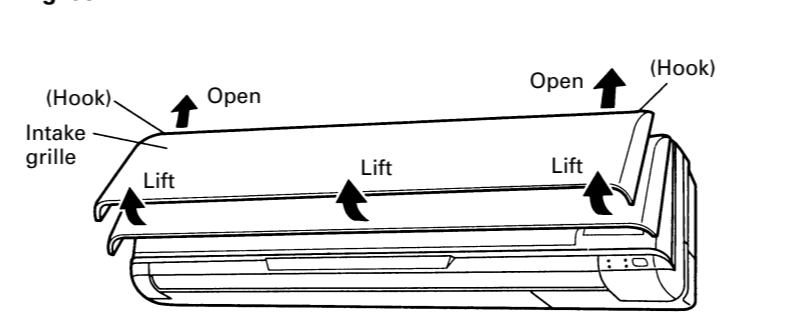
CAUTION

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 and lift the intake grille upward until the hook at the top of the intake grille is unhooked.

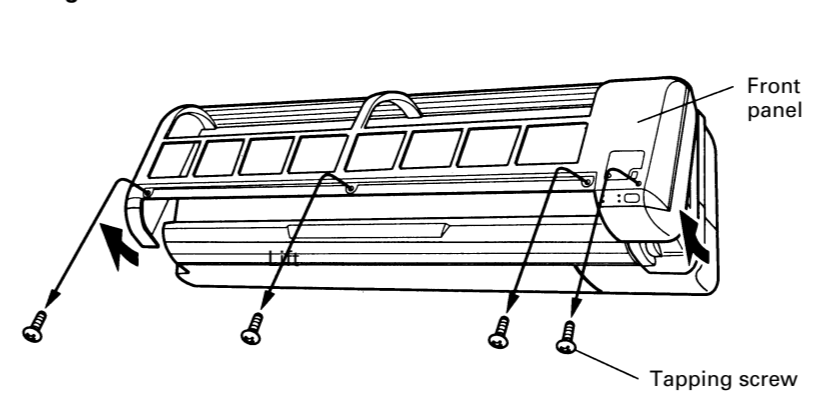
Fig. 39



2. FRONT PANEL REMOVAL

- Remove the four tapping screws.
- Remove the front panel by lifting the bottom of the front panel upward.

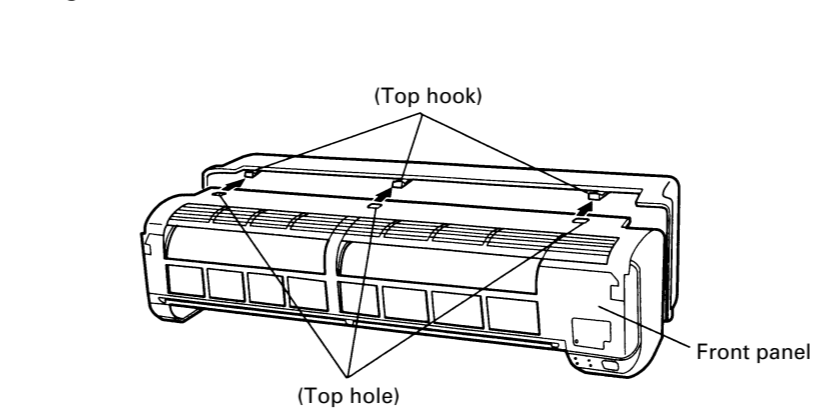
Fig. 40



3. FRONT PANEL INSTALLATION

- Hook the top hole of the front panel to the hook of the base.
- Fasten the front panel with the screw.

Fig. 41



Be sure that the top hole of the front panel is hooked securely to the hook of the base.

13

REMOTE CONTROL UNIT INSTALLATION

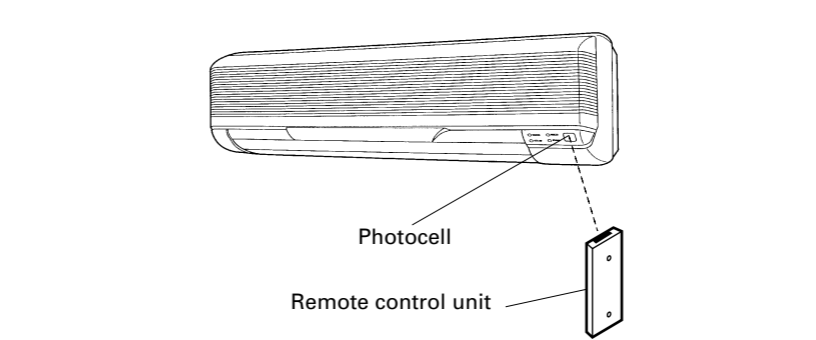
CAUTION

- 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)

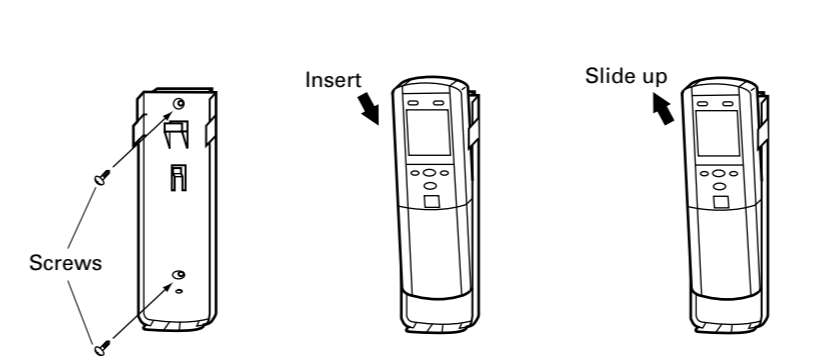
Fig. 42



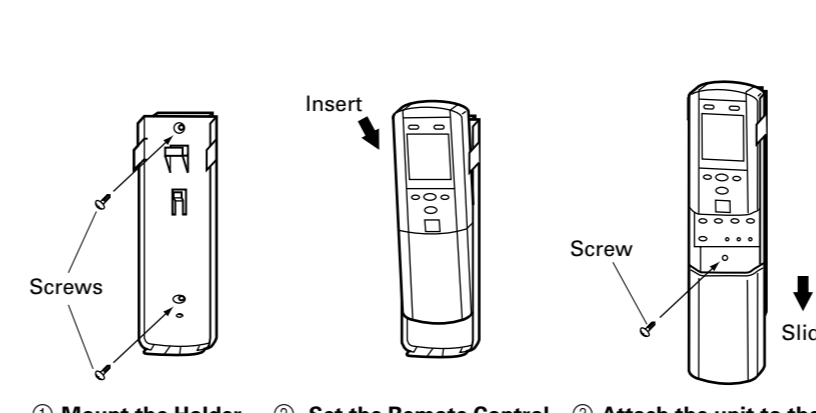
- Install the remote control unit with a distance of 7 m between the remote control unit and the photocell as the criteria. However, when installing the remote control unit, check that it operates positively.
- Install the remote control unit holder to a wall, pillar, etc. with the tapping screw (Fig.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

Fig. 43

For use as Handy Type

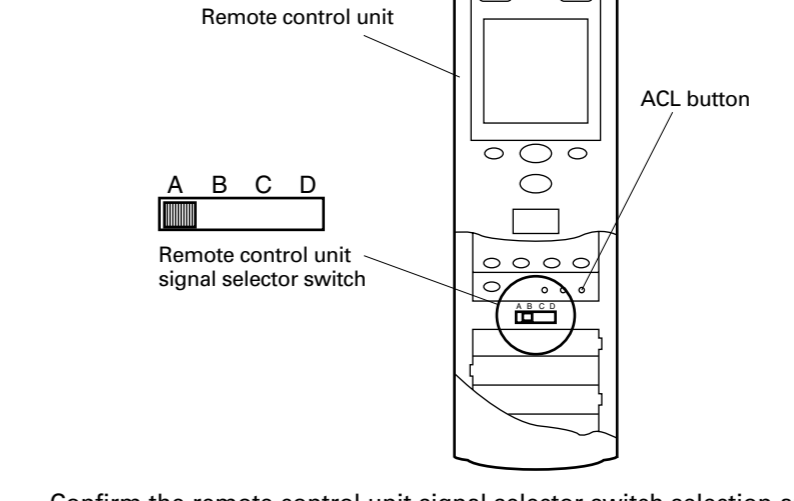
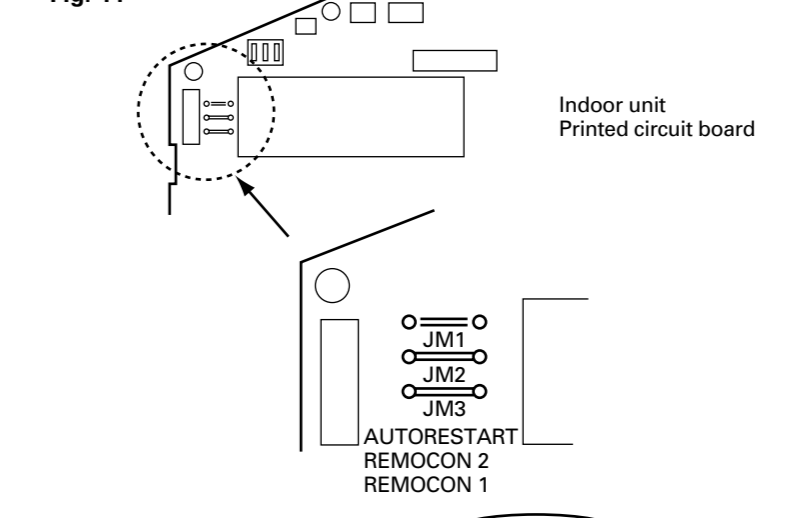


For use as Wall Fixing Type



2. REMOTE CONTROL UNIT CODE SWITCHING

Fig. 44



Confirm the remote control unit signal selector switch selection and the printed circuit board setting. If these are not set to the same setting, the remote control unit cannot be used to operate 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.