

SPLIT TYPE ROOM AIR CONDITIONER

Cassette Type

INSTALLATION INSTRUCTION SHEET

(PART NO. 935992042)

For authorized service personnel only.

WARNING	
①	For the room air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
②	Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available from our standard parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.
③	Installation work must be performed in accordance with national wiring standards by authorized personnel only.
④	Do not turn on the power until all installation work is complete.

- Be careful not to scratch the air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operating manual.
- Let the customer keep this installation instruction sheet because it is used when the air conditioner is serviced or moved.
- The maximum length of the piping is shown in Table 1. If the units are further apart than this, correct operation cannot be guaranteed.

STANDARD PARTS

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

INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Coupler heat insulation	2	For indoor side pipe joint
Special nut A (large flange)	4	For installing indoor unit
Special nut B (small flange)	4	For installing indoor unit
Template	1	For ceiling hole cutting
Remote control unit	1	Use for air conditioner operation
Battery (penlight)	2	For remote control unit
Remote control unit holder	1	For mounting the remote control unit
Tapping screw (φ3 x 12)	2	For remote control unit holder installation

OUTDOOR UNIT ACCESSORIES

Drain pipe Assy	1	For outdoor unit drain piping work (Heat & Cool model only)
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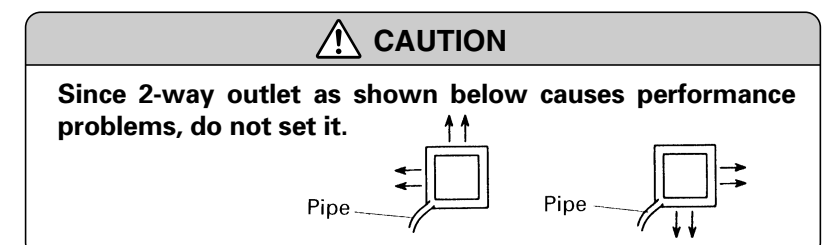
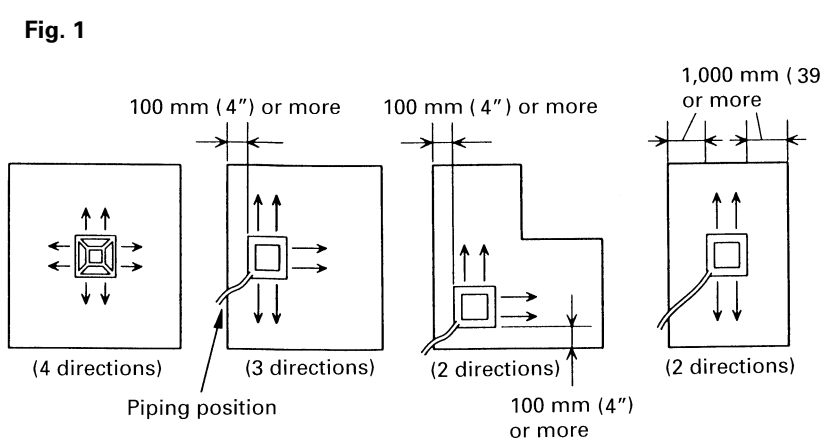
GRILLE ACCESSORIES

Bolt	4	For mounting grille
Washer	4	For mounting grille
Blower cover insulation	2	For discharged air

SELECTING THE MOUNTING POSITION

Especially, the installation place is very important for the split type air conditioner because it is very difficult to move from place after the first installation.

Decide the mounting position together with the customer as follows: The discharge direction can be selected as shown below.



CONNECTION PIPE REQUIREMENT

Diameter	Maximum length	Maximum height (between indoor and outdoor)	
			Small
6.35 mm (1/4 in)	12.7 mm (1/2 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.

ELECTRICAL PIPE REQUIREMENT

- Electric wire size and fuse capacity:

POWER CORD (mm ²)	MAX	12,000/14,000 BTU/h class	18,000 BTU/h class
		MIN	MIN
Connection cord (mm ²)	MAX	3.0	3.0
	MIN	1.5	2.5
Fuse capacity (A)		15	20

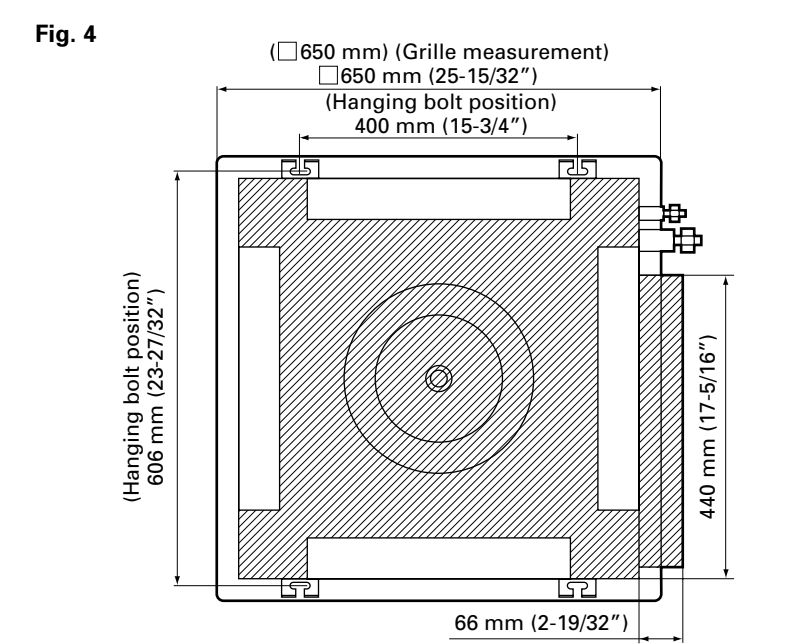
- Always use H07RN-F or equivalent as the connection cord.
- Install the circuit breaker nearby the units. (Both indoor unit and outdoor unit)

INSTALLATION PROCEDURE

Install the room air conditioner as follows:

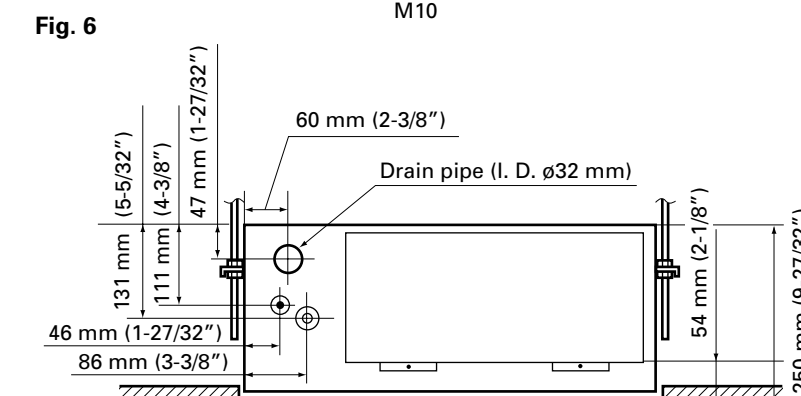
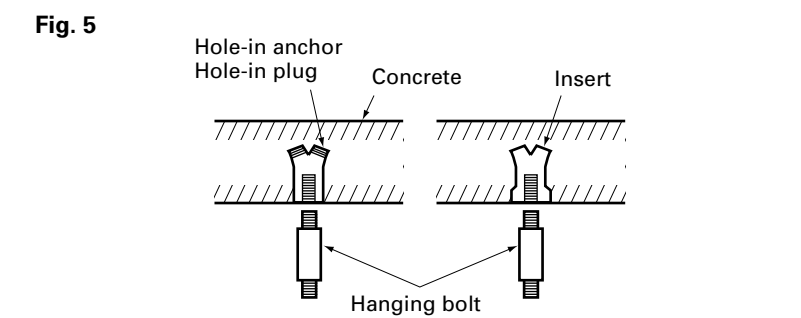
1 INDOOR UNIT INSTALLATION

1. Position the ceiling hole and hanging bolts as shown in Fig. 4.



2. Hanging preparations

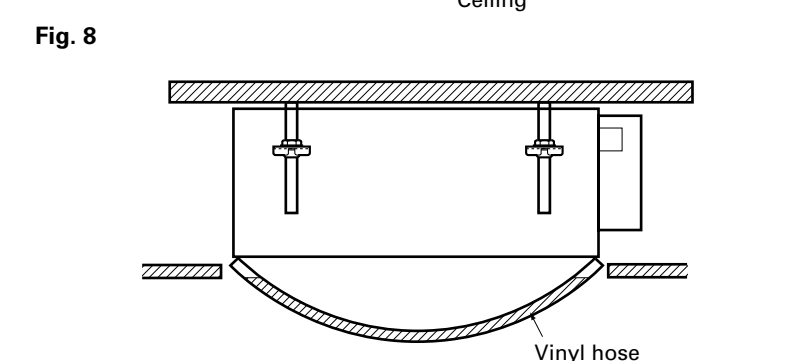
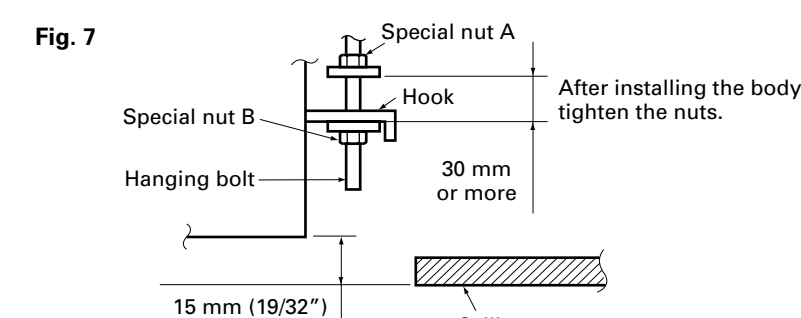
Firmly fasten the hanging bolts as shown in Fig. 5 or by another method.



3. Body installation

- Install special nut A, then special nut B onto the hanging bolt. (Fig. 7)
- Raise the body and mount its hooks onto the hanging bolt between the special nuts. (Fig. 7)
- Turn special nut B to adjust the height of the body. (Fig. 7)
- Leveling
Using a level, or vinyl hose filled with water, fine adjust so that the body is level.

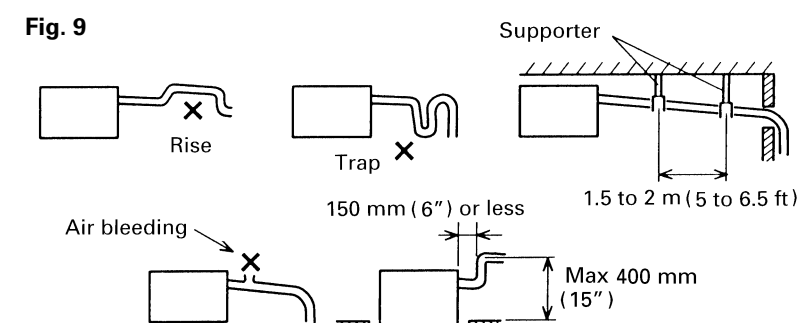
WARNING
Perform final tightening by tightening the double nut firmly.



2 INSTALLING DRAIN PIPE

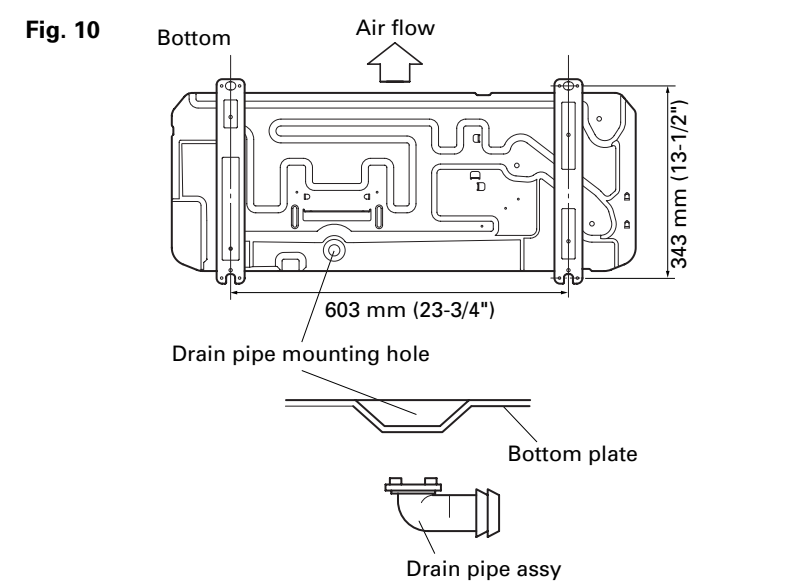
Note: Install the drain pipe.

- Install the drain pipe with downward gradient (1/50 to 1/100) and so there are no rises or traps in the pipe.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 32 mm (1-1/4") and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the pipe is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain pipe.
- When desiring a high drain pipe height, raise it up to 400 mm (15") or less from the ceiling within a range of 150 mm (6") from the body. A rise dimension over this range will cause leakage.



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. 10)
- Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to an commercial 16 mm hose.
- 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. 10)



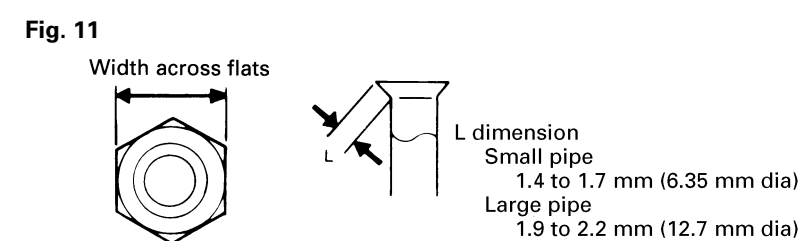
NOTE:
Installation in cold regions. Do not use the accessory drain pipe. (If the drain pipe is used, the drain water in the pipe may freeze in extremely cold weather.)

4 CONNECTING THE PIPING

1. Flare processing

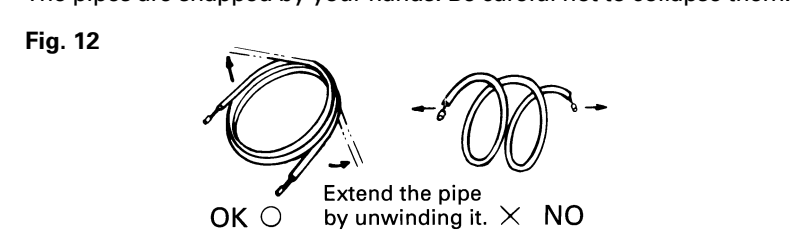
- Cut the connection pipe with pipe cutters so that the pipe is not deformed.
- Holding the pipe downward so that cuttings cannot enter the pipe, remove the burrs.
- Remove the flare nut from the indoor unit pipe and outdoor unit and assemble as shown in (Table 3) and insert the flare nut onto the pipe, and flare with a flaring tool.
- Check if the flared part "L" (Fig. 11) is spread uniformly and that there are no cracks.

Pipe	Flare nut
Small pipe	Small (width across flats 17 mm)
Large pipe	Large (width across flats 24 mm)

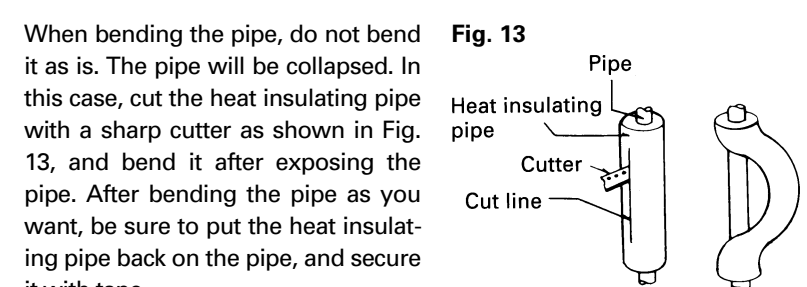


2. Bending pipes

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



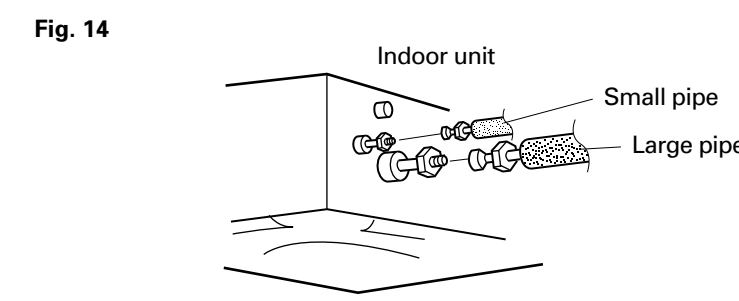
Do not bend the pipes in an angle more than 90°. When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.



CAUTION
① To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm or over.
② If the pipe is bent repeatedly at the same place, it will break.

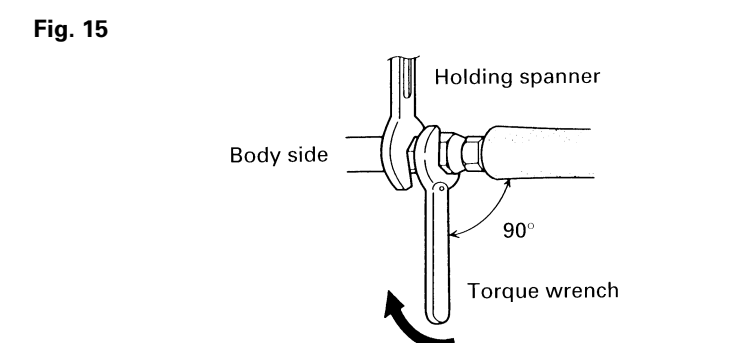
3. Connection pipes

(1) Indoor unit side



CAUTION
① 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.
② Do not remove the flare nut from the indoor unit pipe unit immediately before connecting the connection pipe.

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench. (Fig. 15)

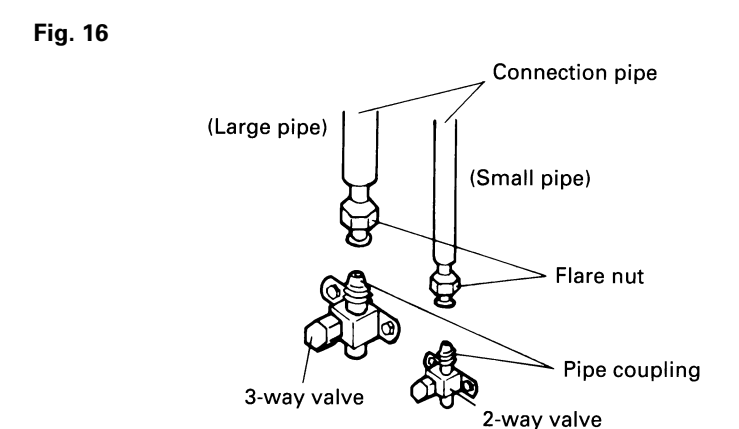


CAUTION
Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 15, in order to tighten the flare nut correctly.

Flare nut	Tightening torque
Small pipe 6.35 mm dia.	14.7 to 19.6 N·m (150 to 200 kgf-cm)
Large pipe 12.7 mm dia.	49.0 to 53.9 N·m (500 to 550 kgf-cm)

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

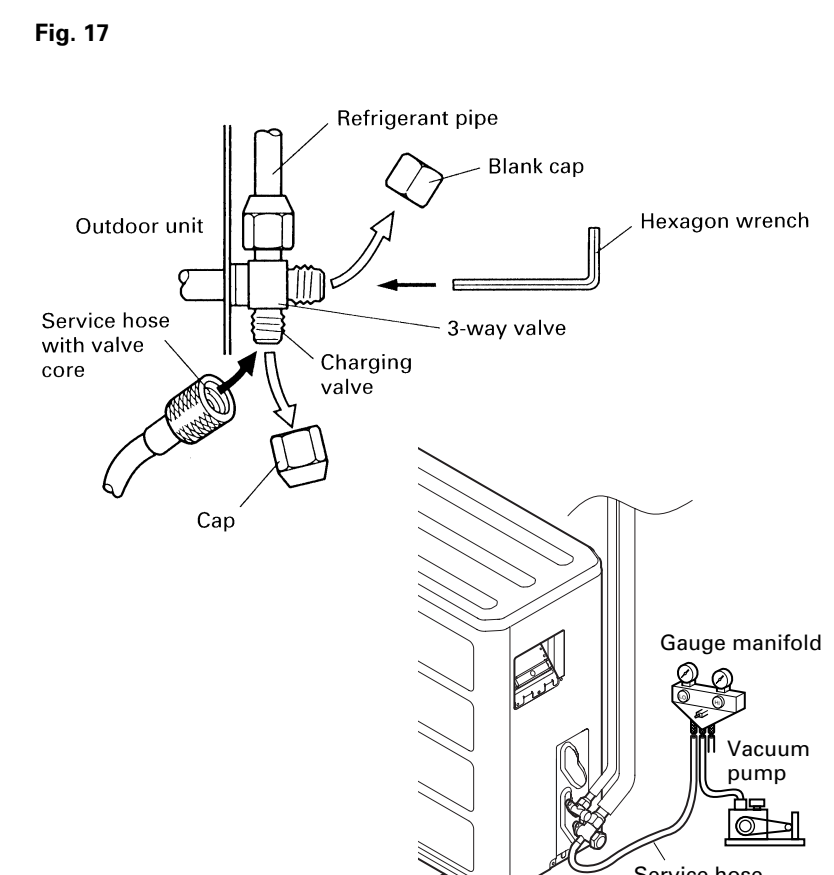
(2) Outdoor unit side
Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same as that as at the indoor side.



5 AIR PURGE

1. 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).



2. Additional charge

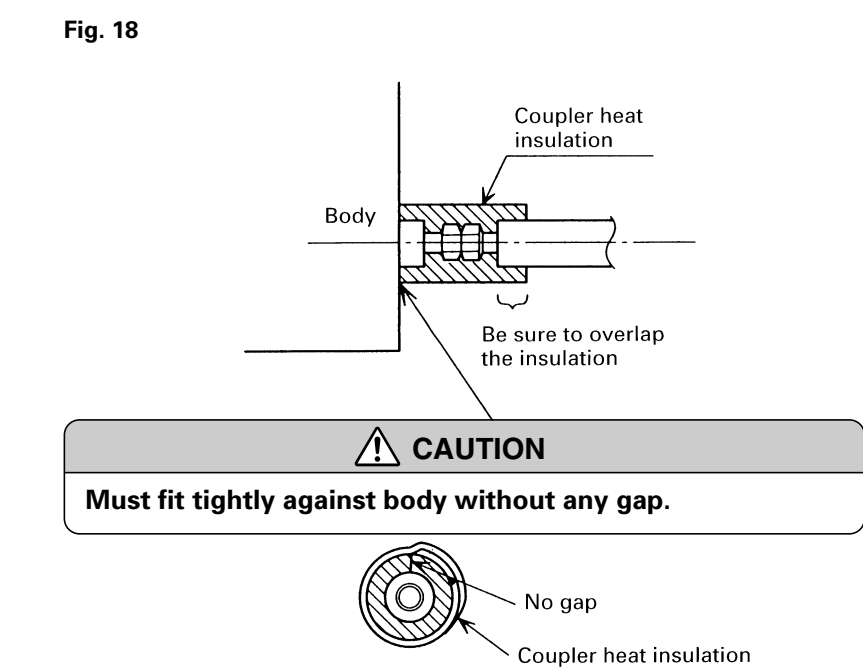
Refrigerant suitable for a piping length of 7.5 m is charged in the outdoor unit at the factory. When the piping is longer than 7.5 m, additional charging is necessary. For the additional amount, see the table below.

Pipe length	7.5 m (25 ft)	10 m (33 ft)	15 m (49 ft)	20 m (66 ft)
Additional refrigerant	None	37.5 g (1.3 oz)	112.5 g (4.0 oz)	187.5 g (6.6 oz)
Heat & Cool model (Reverse cycle)	None	75 g (2.6 oz)	225 g (7.9 oz)	375 g (13.2 oz)
				15 g/m (0.53 oz/3.3 ft)
				30 g/m (1.06 oz/3.3 ft)

CAUTION
① When moving and installing the air conditioner, do not mix gas other than the specified refrigerant (R22) inside the refrigerant cycle.
② When adding refrigerant, add the refrigerant from the charging valve at the completion of work.
③ The maximum length of the piping is 20 m. If the units are further apart than this, correct operation cannot be guaranteed.

6 INSTALLING THE COUPLER HEAT INSULATION

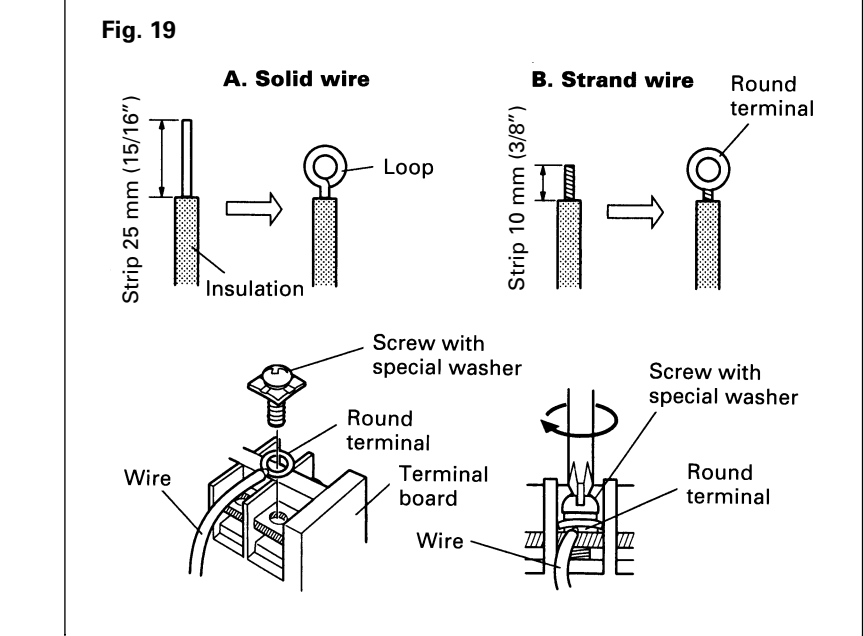
After checking for gas leaks, insulate by wrapping insulation around the two parts (large and small) of the indoor unit coupling, using the coupler heat insulation.



7 ELECTRICAL WIRING

HOW TO CONNECT WIRING TO THE TERMINALS

- A. For solid core wiring (or F-cable)**
- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (15/16") 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 end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm (3/8") 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.



1. Indoor unit side

- Remove the control box cover and install the connection cord. (Figs. 20 and 21)

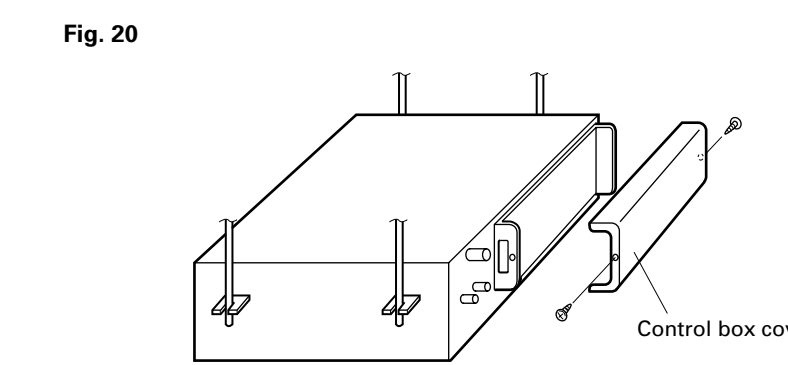
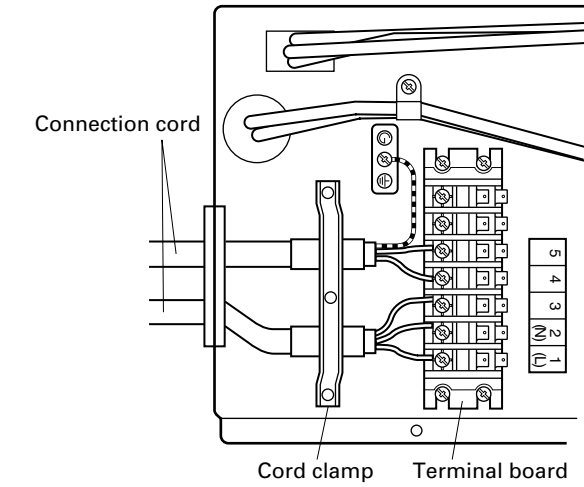
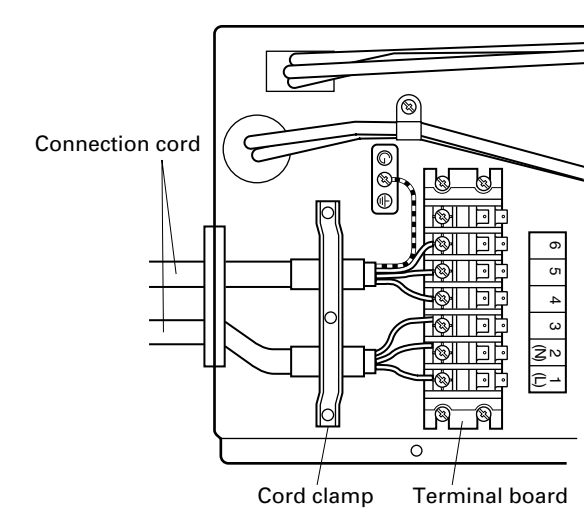


Fig. 21 [Cooling model]



[Heat & Cool model (Reverse cycle)]



2. Outdoor unit side

- WARNING**
- Before starting work, check that power is not being supplied to the outdoor unit.
 - Match the terminal board 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 and the power cord firmly to the terminal board. Imperfect installation may cause a fire.
 - Always fasten the outside covering of the connection cord and the power cord with cord clamps. (If the insulator is chafed, electric leakage may occur.)
 - Always connect the ground wire.

- Remove the terminal cover of the outdoor unit, and insert the end of the connection cord and the power cord into the terminal board.
- Fasten the connection cord and the power cord with the cord clamps.

Fig. 22

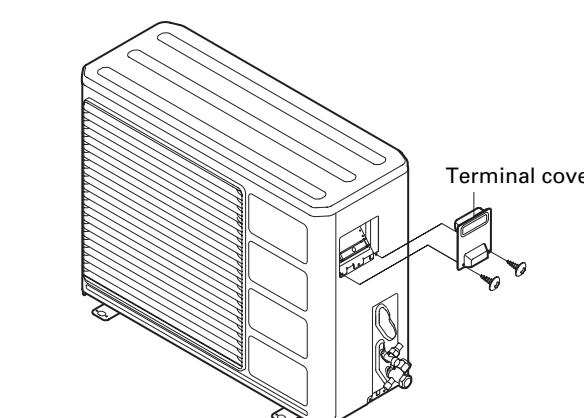
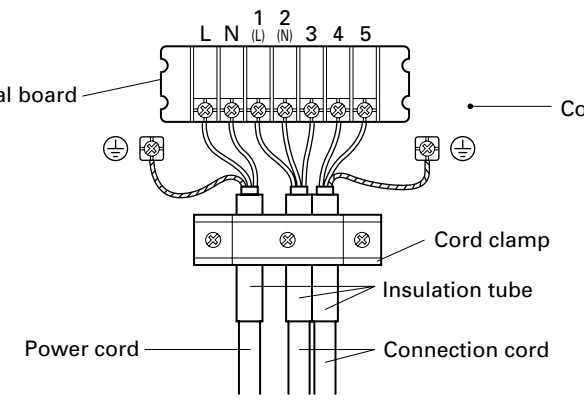
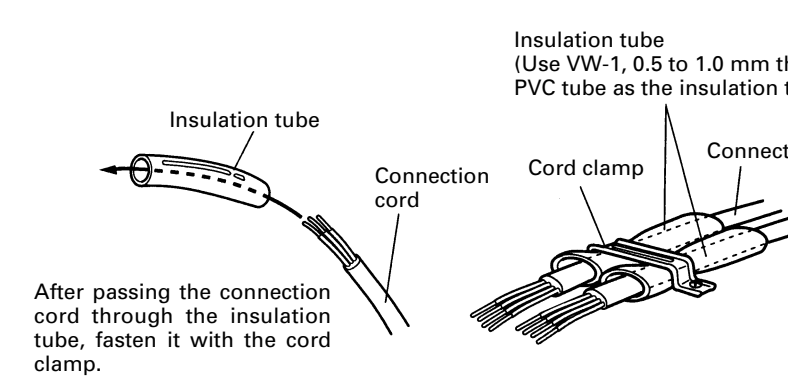
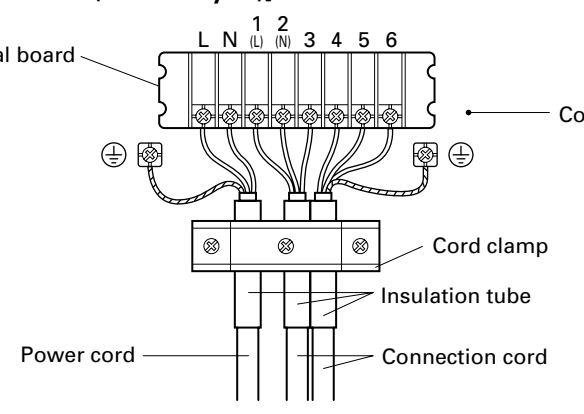
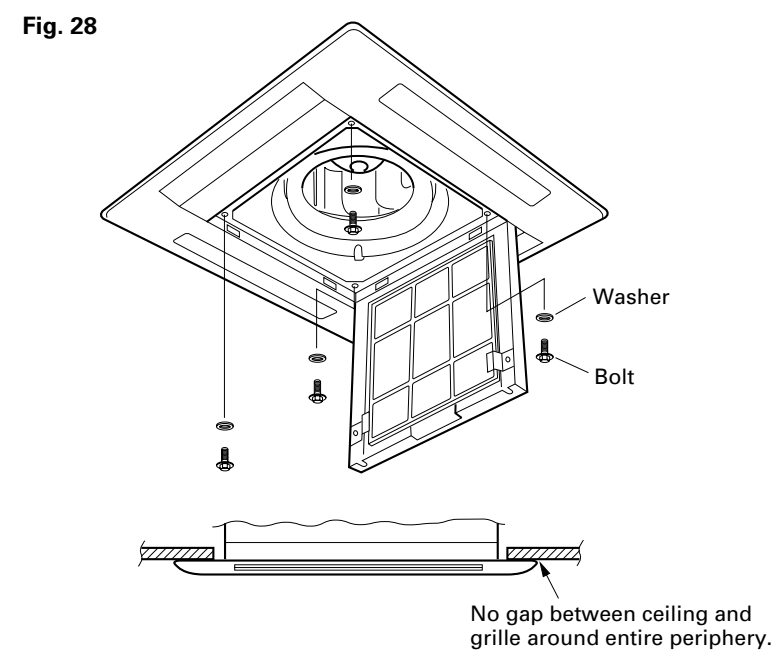
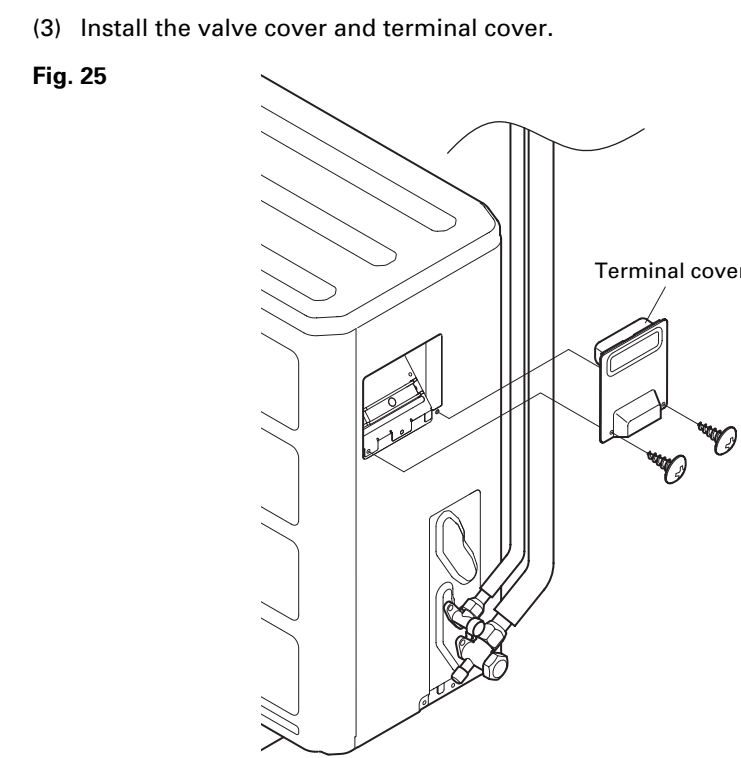
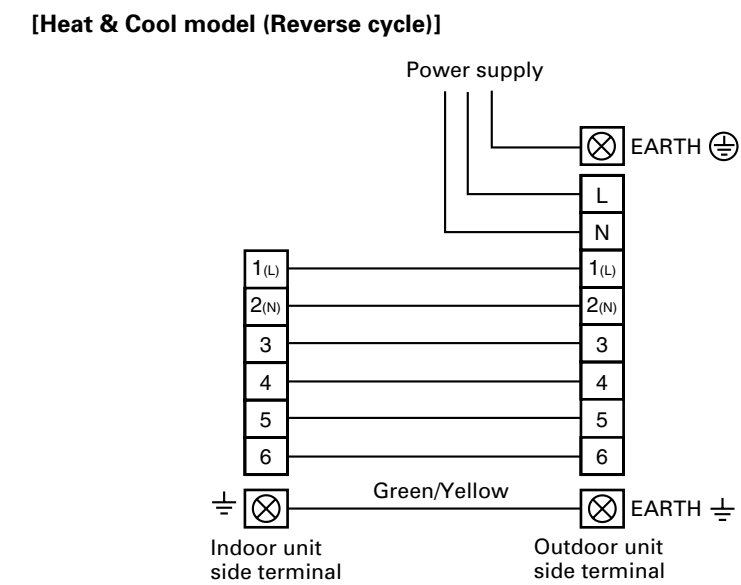
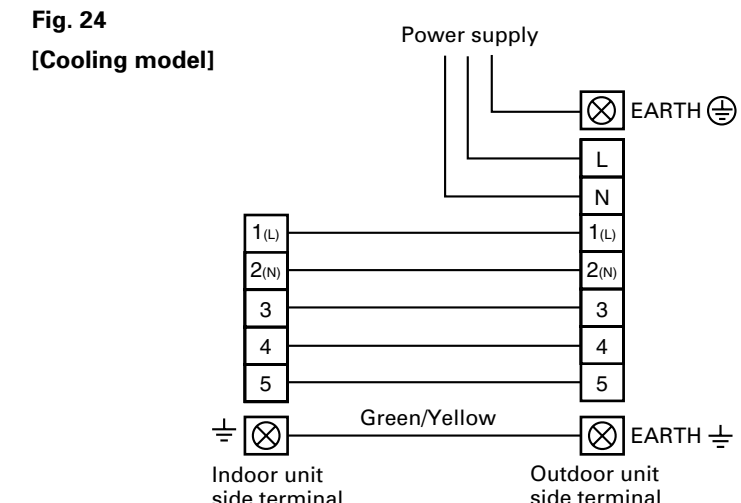


Fig. 23 [Cooling model]

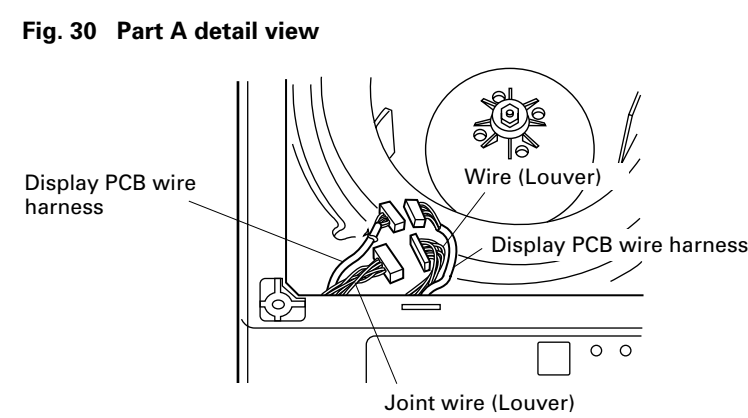
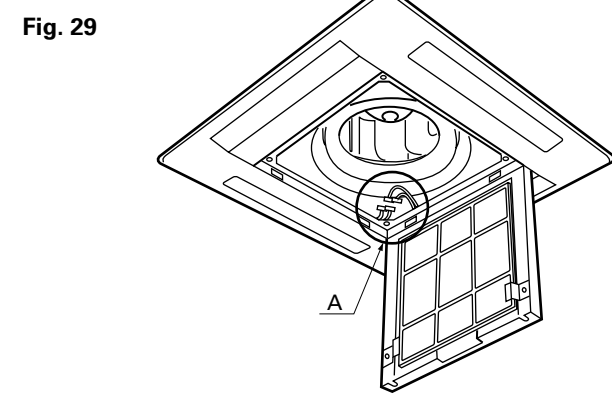


[Heat & Cool model (Reverse cycle)]





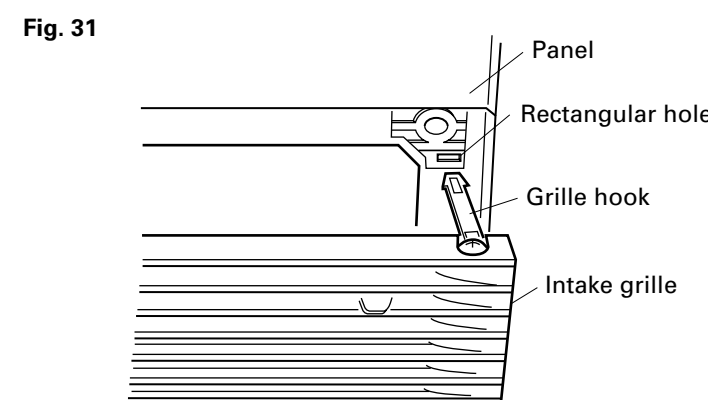
Wireless unit connection wire wiring
Connect the connector in accordance part A detail view. Then clamp the lead wire with clamp so that it does not touch the rotating parts.



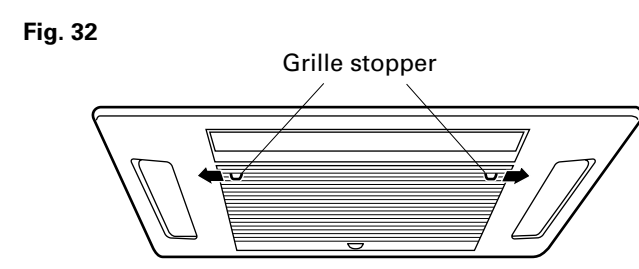
INSTALLING/REMOVING THE INTAKE GRILLE

1. Installing the intake grille

(1) Fully insert the intake grille hooks into the rectangular holes in the panel.

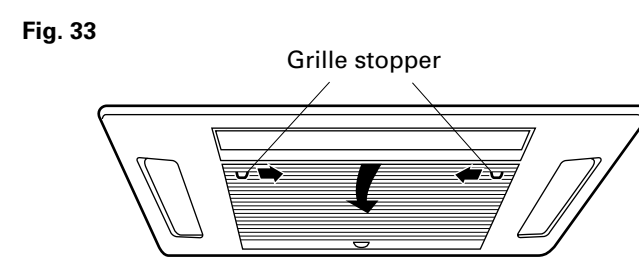


(2) Close the intake grille, then slide the two grille stoppers outward.

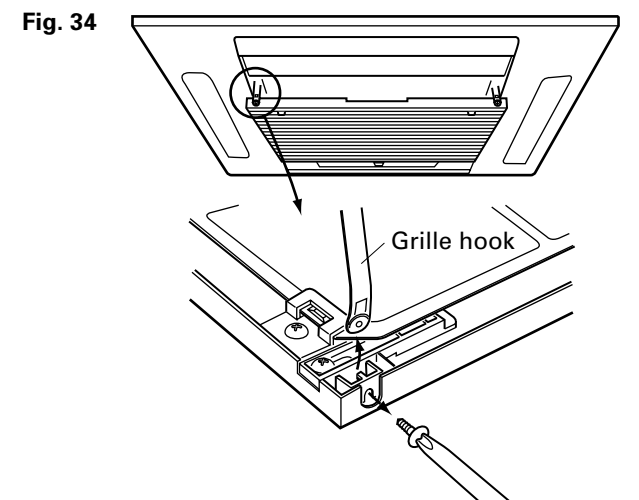


2. Removing the intake grille

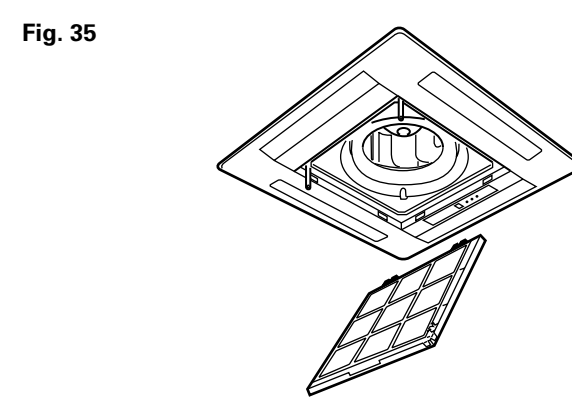
(1) Slide the two grille stoppers inward, then open the intake grille.



(2) Remove the grille hook screws, then open the intake grille.



(3) Open the intake grille so that it is at an angle of 20° to 40°, then remove the grille.



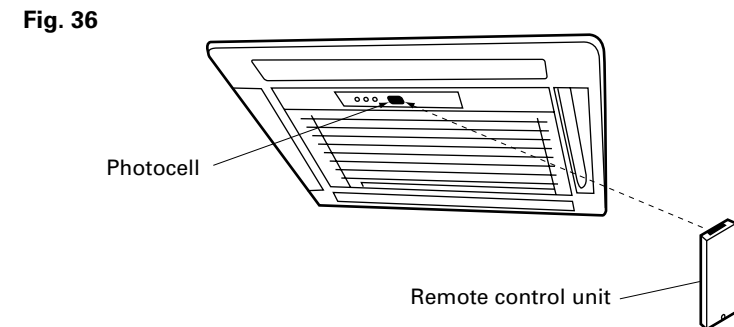
CAUTION

- The louver angle cannot be changed if the power is not on, (if moved by hand, it may be damaged.)
- The grille assembly is directional relative to the air conditioner body.
- Install so that there is no gap between the grille assembly and the air conditioner body.

9

REMOTE CONTROL UNIT INSTALLATION

• Install the remote control unit so that the front is facing the photocell. (Fig. 36)



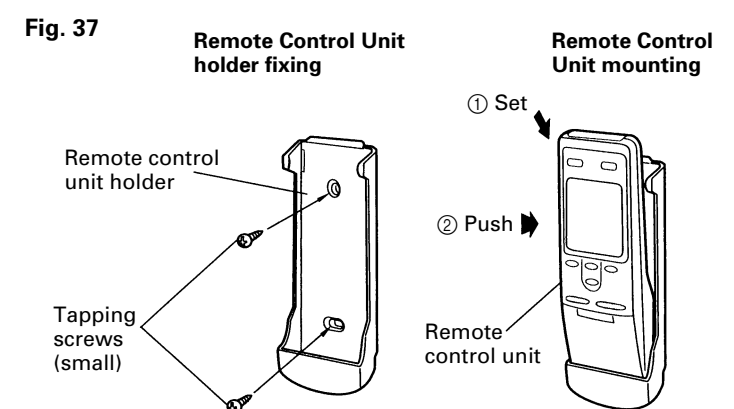
• Install the remote control unit with a distance of 5 m between the remote control unit and the grille photocell as the criteria. However, when installing the remote control unit, check that it operates positively.

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 setting 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.

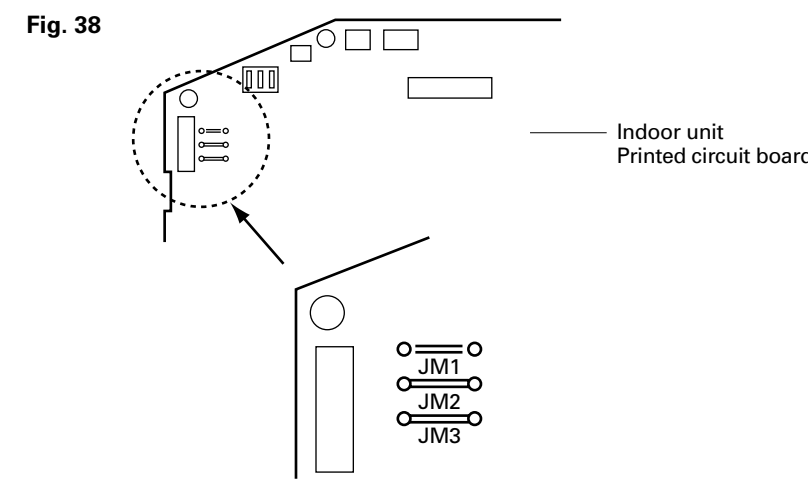
1. REMOTE CONTROL UNIT HOLDER INSTALLATION

• Install the remote control unit holder to a wall or pillar with the tapping screws.

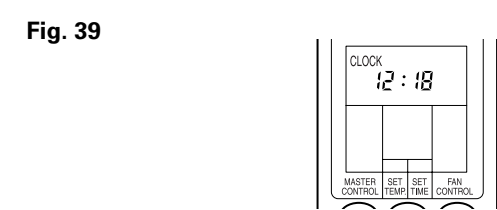


2. SWITCHING REMOTE CONTROL UNIT SIGNAL CODES

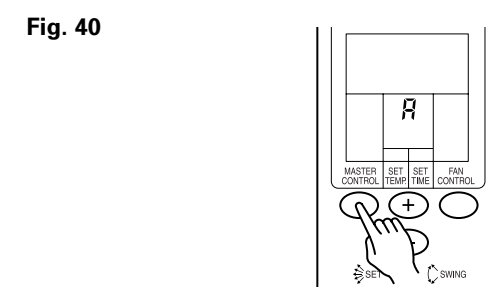
• Air conditioner settings



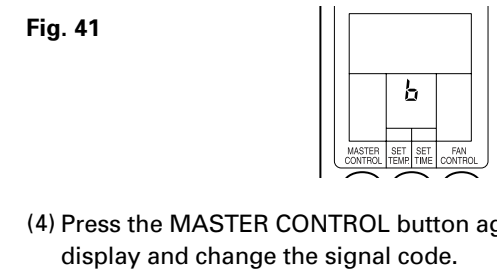
• Remote control unit settings
(1) Press the START/STOP button and display only the clock.



(2) Press the MASTER CONTROL button continuously for more than five seconds to display the current signal code.



(3) Change the signal code with the \odot/\ominus button (R-b-c-d).



(4) Press the MASTER CONTROL button again to return to the clock display and change the signal code.

Confirm the setting of the remote control unit signal code and the printed circuit board setting.

If these are not confirmed, the remote control unit cannot be used to operate for the air conditioner.

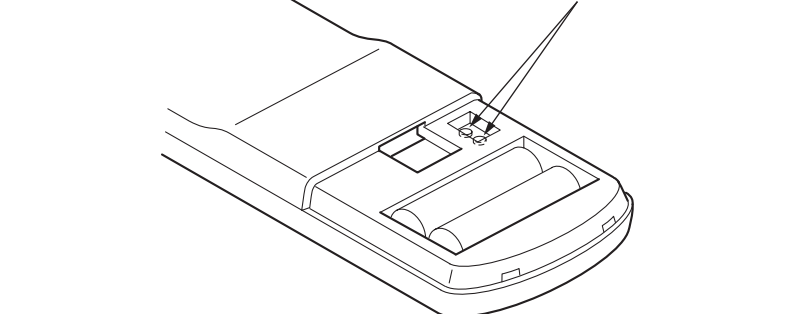
Jumper wire		Remote control unit signal code
JM 2	JM 3	A (Primary setting)
Connect	Connect	B
Connect	Disconnect	C
Disconnect	Connect	D
Disconnect	Disconnect	

10

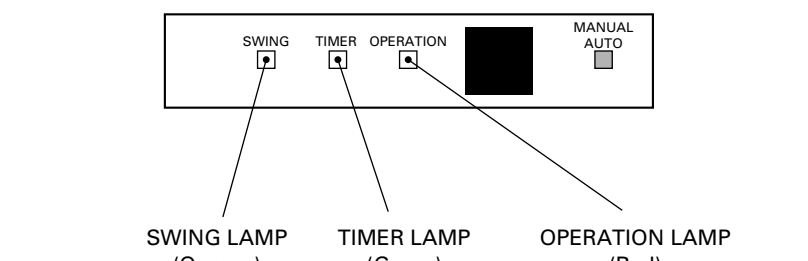
TEST RUNNING

- 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, the 'TEST RUN' signal is received during air conditioner operation (use a metallic object to short the two metal contacts under the battery compartment lid and send the 'TEST RUN' signal from the remote control unit).

Short the two metal contacts under the battery compartment lid.



• To end test operation, press the remote control unit START/STOP button.
(When the air conditioner is run by pressing the remote control unit TEST RUN button, the OPERATION and TIMER lamps will simultaneously flash slowly.)



Operation can be checked by lighting and flashing of the grille 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, TIMER and SWING lamps operate as follows (Table 7) according to the error contents.

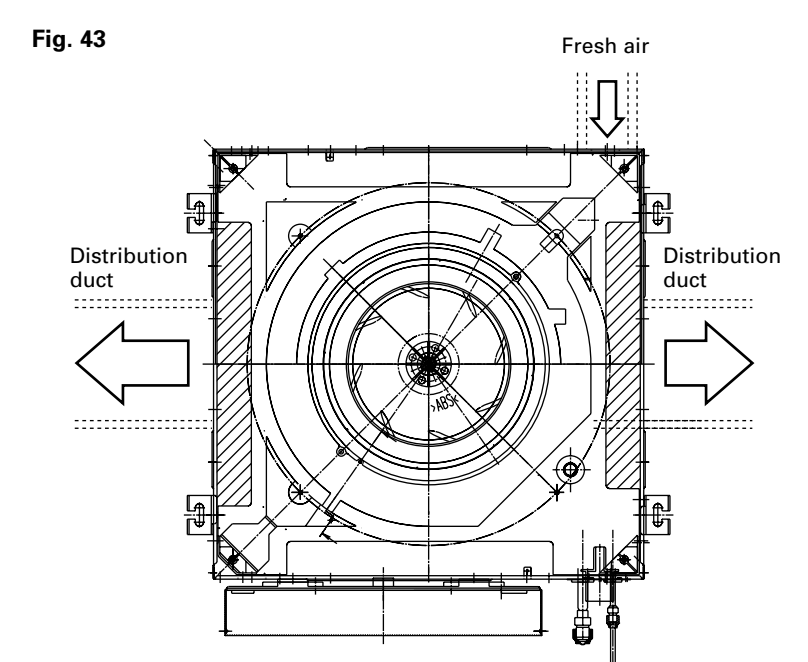
Error display			Error contents
OPERATION lamp	TIMER lamp	SWING lamp	
Blinks	Blinks	Goes off	Model information abnormal (permanent type)
Pulses 4 times	Blinks	Goes off	Drain abnormal (permanent type)
Pulses 6 times	Blinks	Goes off	Indoor fan abnormal
Pulses 2 times	Blinks	Goes off	Room air temperature thermistor open circuit
Pulses 3 times	Blinks	Goes off	Room air temperature thermistor short circuit
Pulses 3 times	Blinks	Goes off	Piping thermistor open circuit
Pulses 3 times	Blinks	Goes off	Piping thermistor short circuit

CHECK ITEMS

- 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?
 - 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.

11

OPENING THE DUCT CONNECTION HOLE



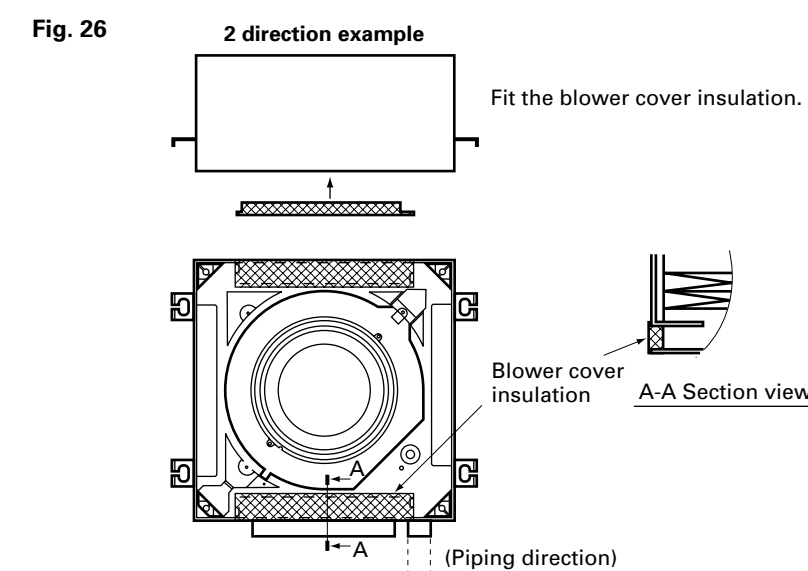
CAUTION

- When performing hole opening work, be careful not to damage the drain pan.
- When connecting the distribution duct, to make the air flow easily, block the outlet port with the blower cover insulation as shown by the hatched lines in Fig. 43. For the blocking direction, refer to Fig. 26.

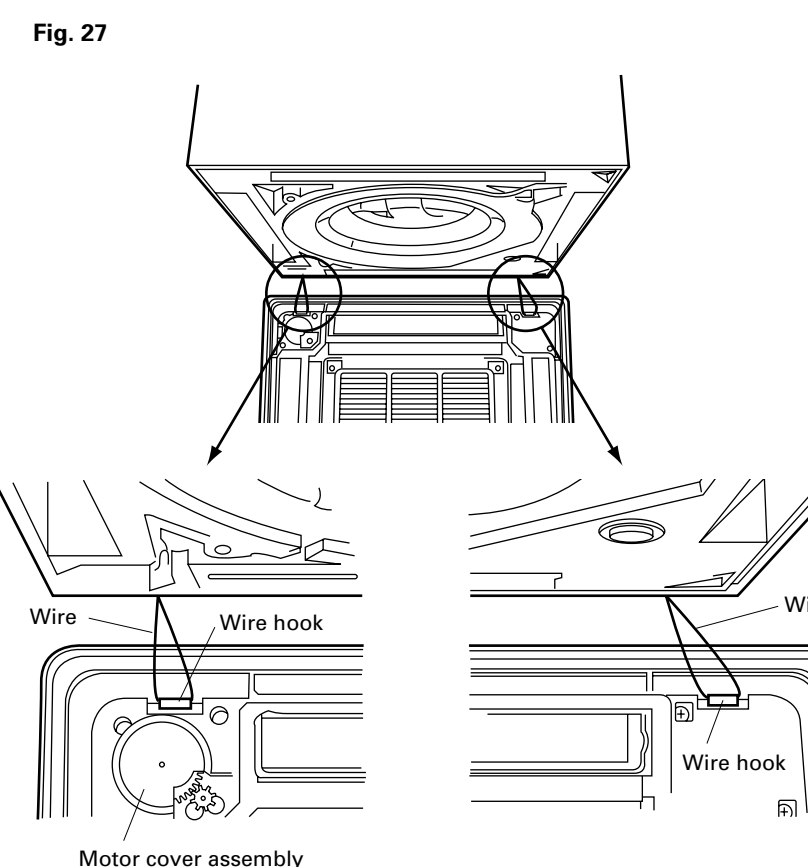
8

GRILLE INSTALLATION

1. Blower cover insulation
Install the blower cover insulation only when the outlet direction is not specified.
Two blower cover insulations are packed with the grille assembly. Install the blower cover insulation at the diffuser position shown in Fig. 26. At the time, use the piping position as the criteria.

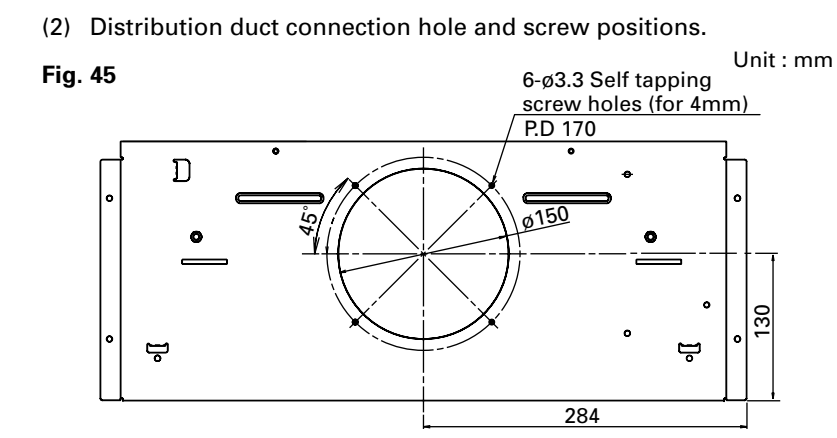
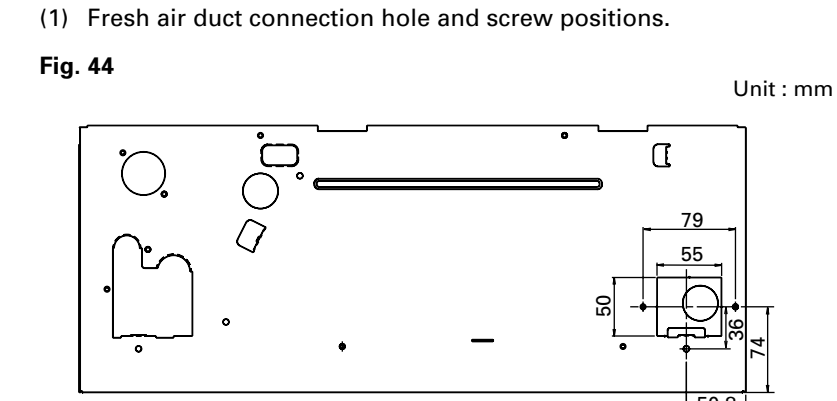


2. Installing grille assembly to body
Hang the grille assembly on the wires attached to the indoor unit as shown in Fig. 27.



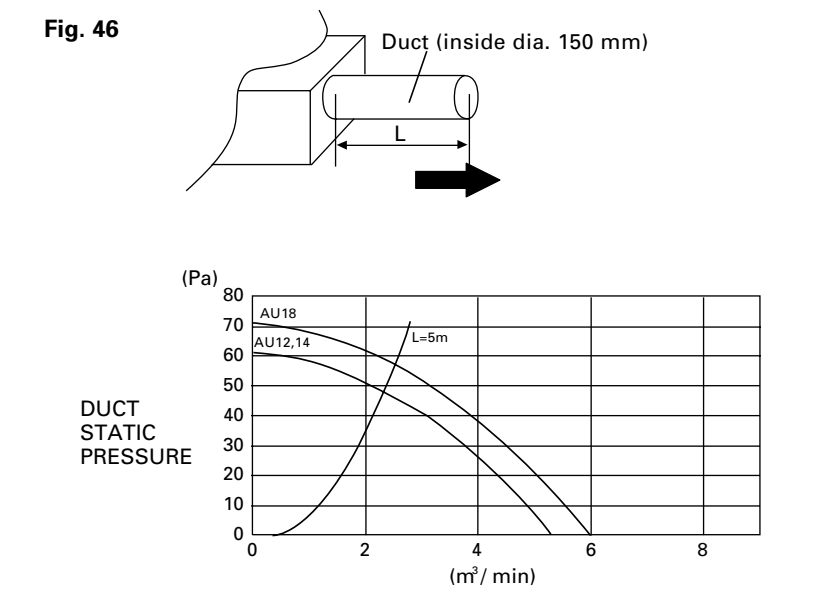
Bolting the grille assembly to the body
Install the grille assembly to the body with the four bolts, spring washers, and washers.

1. DIMENSION

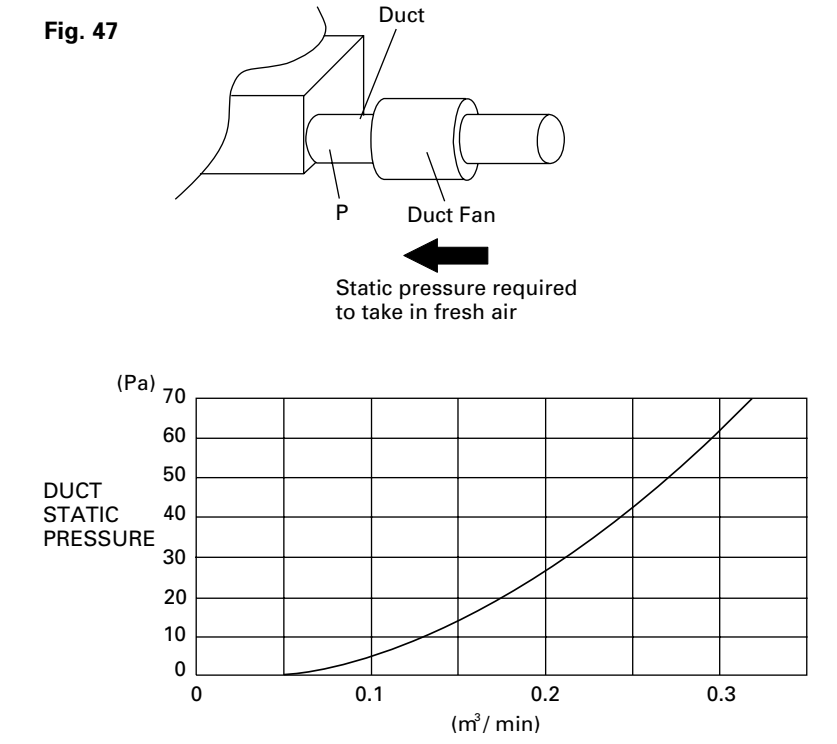


CAUTION
The air conditioner cannot take in fresh air by itself. When connecting a fresh air duct, always use a duct fan.

OUTLET AIR



FRESH AIR



12

INSTALLING THE OPTION PARTS (ADDITIONAL GRILLE)

THE ADDITIONAL GRILLE

- Mount the assembled additional grille to the indoor unit (grille) that has been removed from the main unit.
- Make sure all areas are properly installed the reinforcement plate.
- Mount 4 additional grilles. (Fig. 49)
- After confirming proper meshing of the additional grilles, secure them in place using the 8 screws provided.

