

# SPLIT TYPE ROOM AIR CONDITIONER

## Cassette Type

# INSTALLATION INSTRUCTION SHEET

(PART NO. 9359992073)

For authorized service personnel only.

<b>WARNING</b>	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
<b>CAUTION</b>	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

- WARNING**
- For the air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
  - Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available from our standards parts. This installation instruction sheet 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.
  - If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.
  - 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 × 12)	2	For remote control unit holder installation

### OUTDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Hexagon wrench	1	For opening the refrigerant valve on the outdoor unit
Drain pipe	(1)	For outdoor unit drain piping work [Heat & Cool (Reverse cycle) model only]
Drain cap	(2)	

### 18000 BTU/h model

Name and Shape	Q'ty	Application
Drain pipe	1	For outdoor unit drain piping work [Heat & Cool (Reverse cycle) model only]
Drain cap	1	

### GRILLE ACCESSORIES

Name and Shape	Q'ty	Application
Bolt	4	For mounting grille
Washer	4	For mounting grille
Blower cover insulation	2	For discharged air

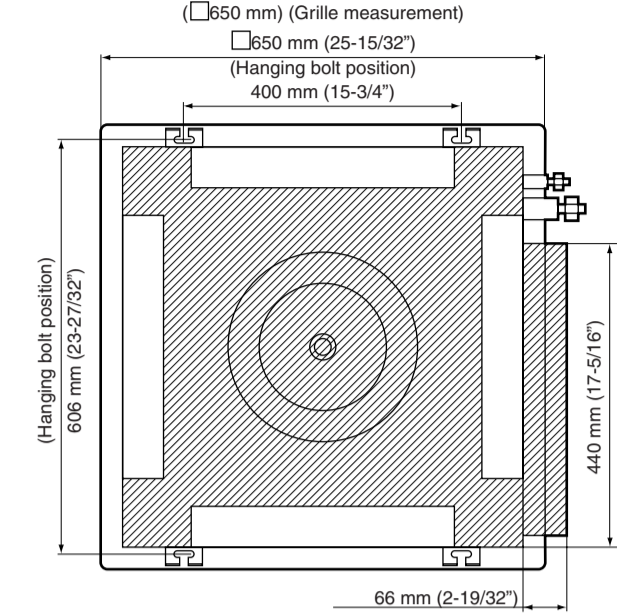
## INSTALLATION PROCEDURE

Install the room air conditioner as follows:

## 1 INDOOR UNIT INSTALLATION

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

Fig. 4



2. Hanging preparations

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

Fig. 5

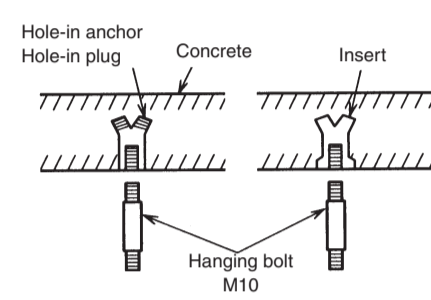
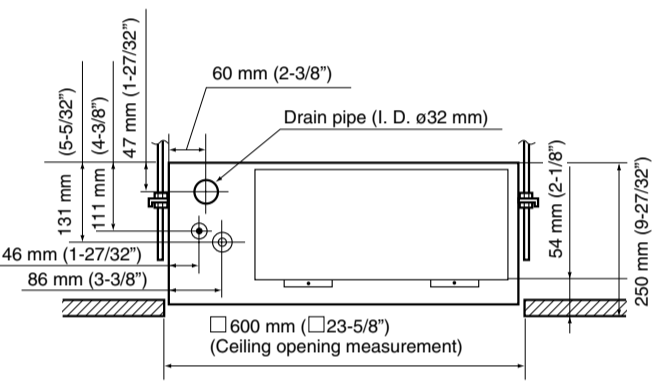


Fig. 6



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.

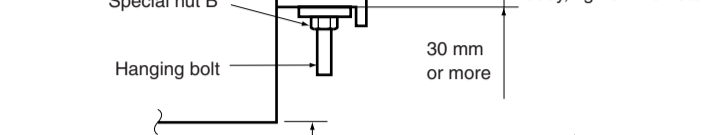
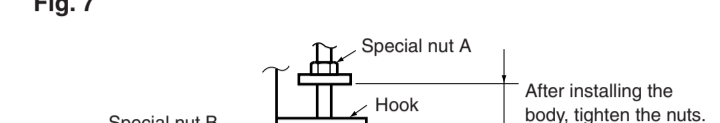
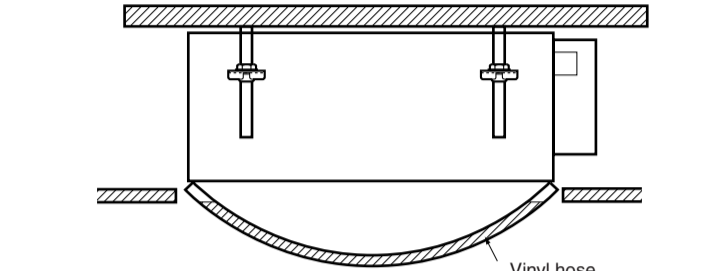


Fig. 7

Fig. 8



## 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.

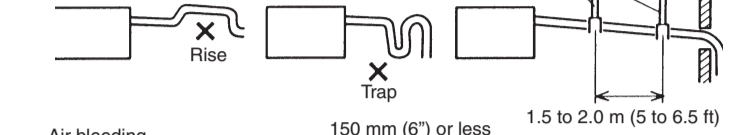


Fig. 9

Fig. 10



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Fig. 46

## 3 OUTDOOR UNIT INSTALLATION

- 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.
- 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. (Heat & Cool model (Reverse cycle) only)
- When installing the drain pipe, plug all the holes (• hole at one place or 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) (Heat & Cool model (Reverse cycle) only)

**CAUTION**  
Installation in cold regions. Do not use the accessory drain pipe and drain cap. (If the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold weather.)

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Fig. 49

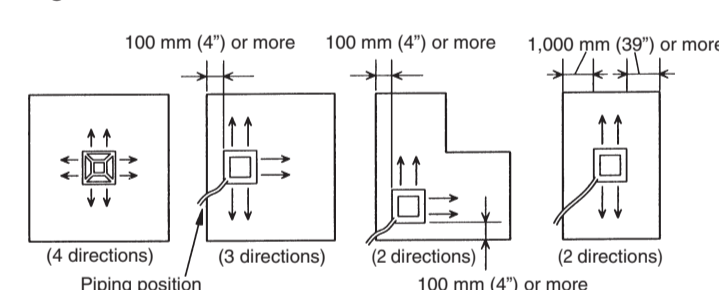
Fig. 50

Fig. 51

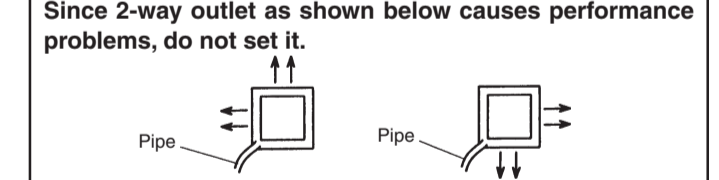
## SELECTING THE MOUNTING POSITION

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.

Fig. 1



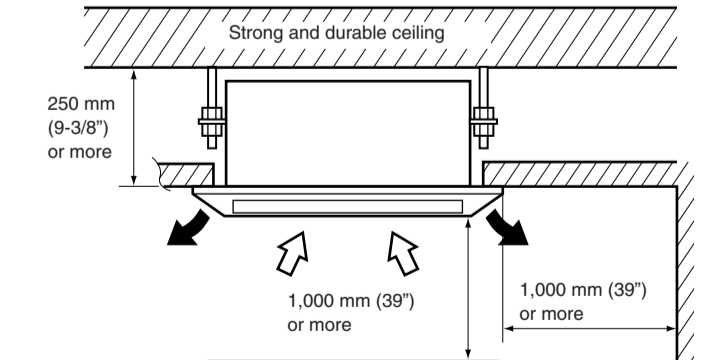
**CAUTION**  
Since 2-way outlet as shown below causes performance problems, do not set it.



### INDOOR UNIT

- Install the indoor unit on a place having a sufficient strength so that it withstands against the weight of the indoor unit.
- The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
- Leave the space required to service the air conditioner. (Fig. 2)
- The ceiling rear height is 250 mm (9-3/8) or more.
- A place from where the air can be distributed evenly throughout the room by the unit.
- A place from where drainage can be extracted outdoors easily.

Fig. 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.

## CONNECTION PIPE REQUIREMENT

Diameter		Maximum length	Maximum Height (between indoor and outdoor)
Small	Large	20 m (66 ft)	8 m (26 ft)
6.35 mm (1/4 in.)	12.7 mm (1/2 in.)		

- 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.

**CAUTION**  
Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks. Use heat insulation with heat resistance above 120 °C. (Reverse cycle model only)

In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70%, install heat insulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat insulation that is 15 mm or thicker and if the expected humidity exceeds 80%, use heat insulation that is 20 mm or thicker. If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.045 W/(m·K) or less (at 20 °C).

## ELECTRICAL REQUIREMENT

• Electric wire size and fuse capacity:

MODEL	12000 BTU/h model	18000 BTU/h model
Power supply cord (mm <sup>2</sup> )	MAX. 3.0 MIN. 1.5	3.0 2.5
Connection cord (mm <sup>2</sup> )	MAX. 1.5 MIN. 1.0	1.5 1.0
Fuse capacity (A)	15	20

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

## 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.

**CAUTION**  
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)

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

Fig. 11

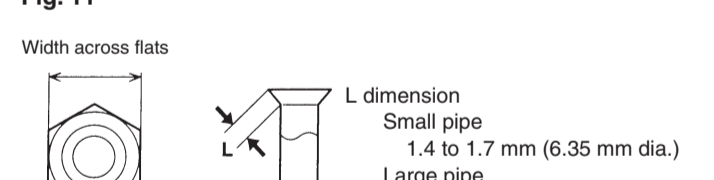


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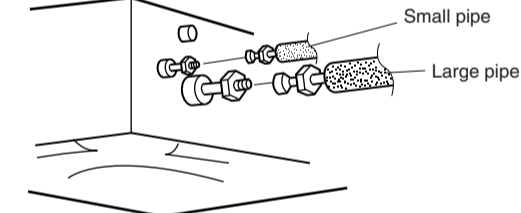
Fig. 25

Fig. 26

## 3. Connection pipes

(1) Indoor unit side

Fig. 14



**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 immediately before connecting the connection pipe.

Fig. 15

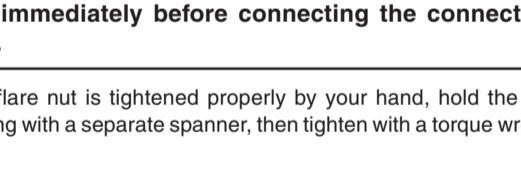


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## Table 4 Flare nut tightening torque

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 side connector. The tightening method is the same as that at the indoor side.

Fig. 16

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Fig.

## 7 ELECTRICAL WIRING

### HOW TO CONNECT WIRING TO THE TERMINALS

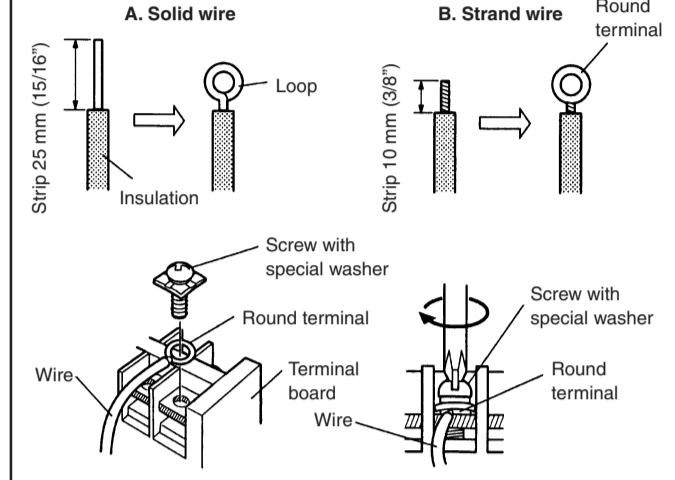
#### A. For solid core wiring (or F-cable)

- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (1 5/16") 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 screwdriver.

#### 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.

Fig. 19



#### 1. Indoor unit side

##### WARNING

- Before starting work, check that power is not being supplied to indoor unit and the outdoor unit.
- Match the terminal board numbers and connection cord colors with those of the outdoor unit side. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords firmly to the terminal board. 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) Remove the control box cover and install the connection cord. (Figs. 20 and 21)

Fig. 20

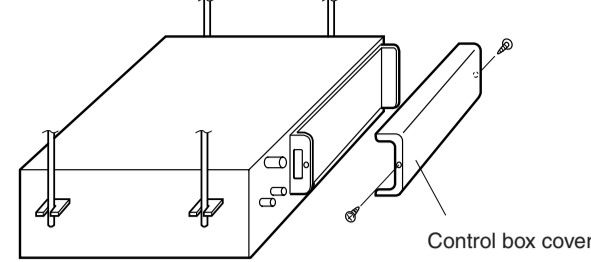
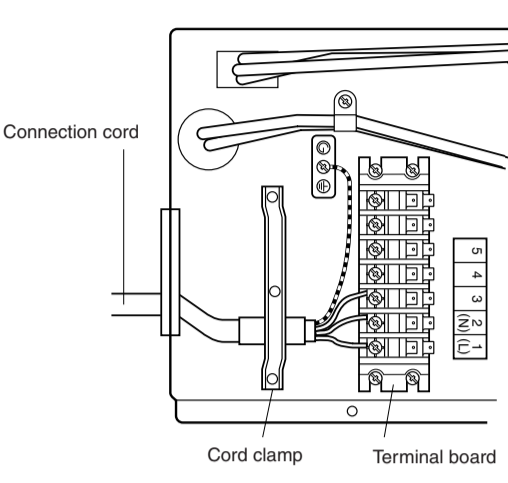
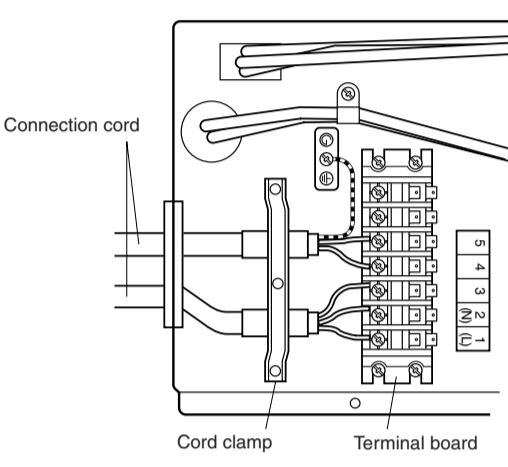


Fig. 21

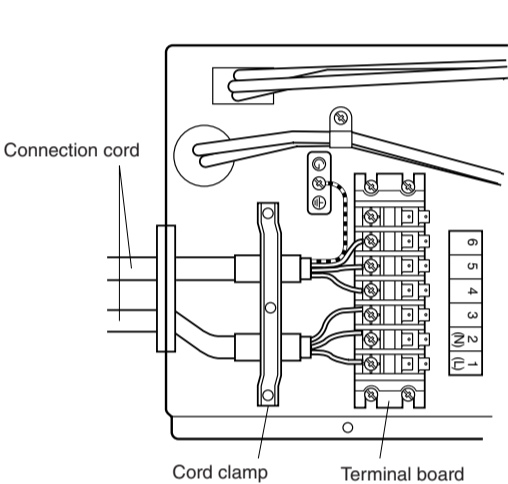
[12000 BTU/h Cooling model]



[18000 BTU/h Cooling model]



[12000 and 18000 BTU/h Heat & Cool model (Reverse cycle)]



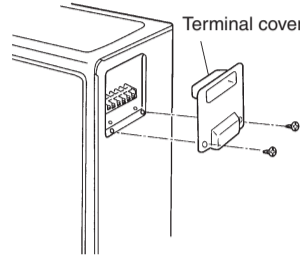
#### 2. Outdoor unit side

##### WARNING

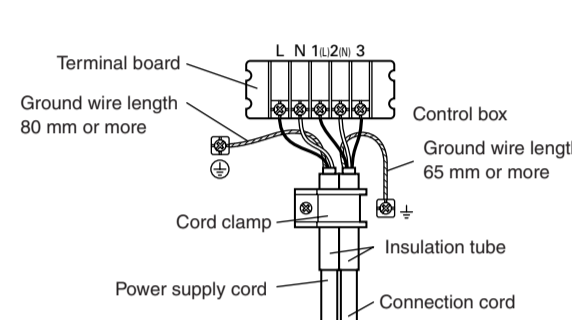
- Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
- Match the terminal board numbers and connection cord colors with those of the indoor unit side. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords and the power supply cord firmly to the terminal board. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cord and the power supply 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 supply cord into the terminal board.
- Fasten the connection cord and the power supply cord with the cord clamps.
- Install the terminal cover.

Fig. 22



[12000 BTU/h Cooling model]



[12000 BTU/h Heat & Cool model (Reverse cycle)]

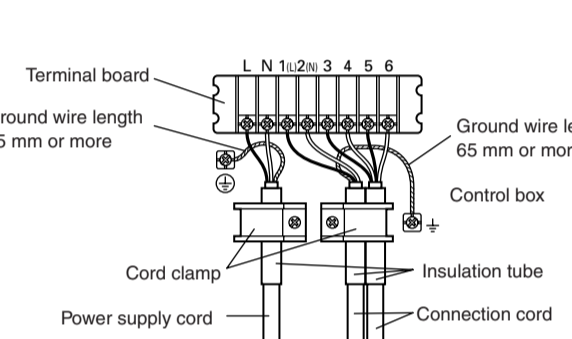
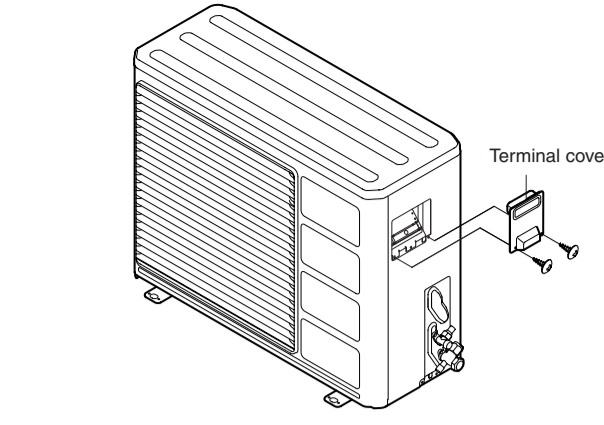
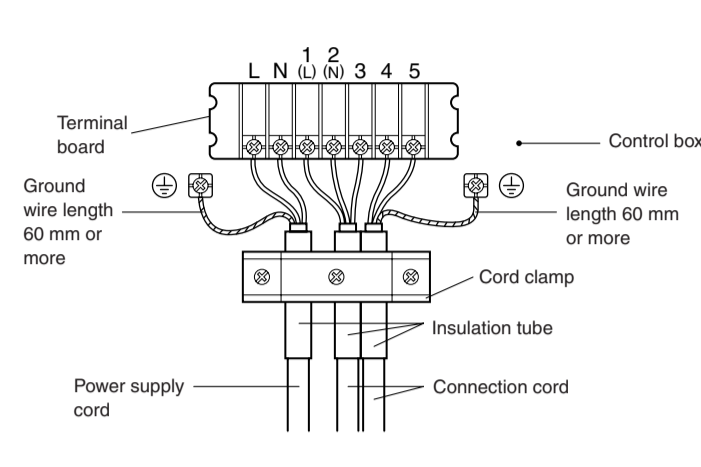


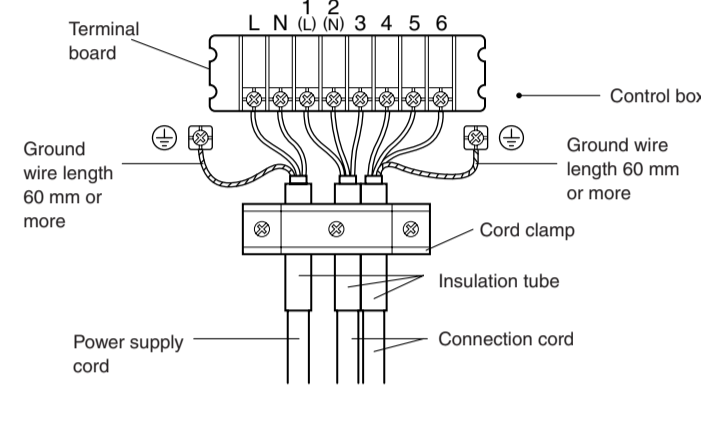
Fig. 23



[18000 BTU/h Cooling model]



[18000 BTU/h Heat & Cool model (Reverse cycle)]



##### CAUTION

When routing the ground wires, leave slack as shown in the illustrations.

Fig. 24

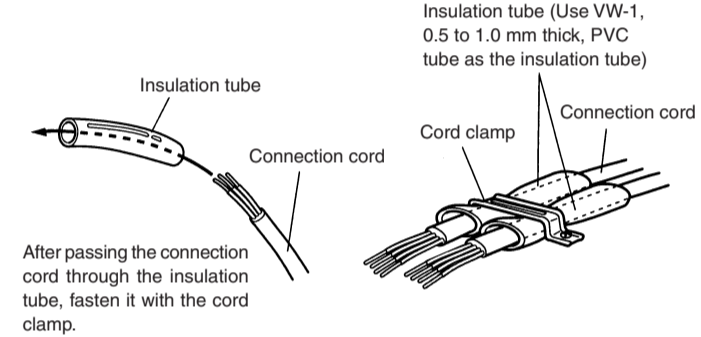
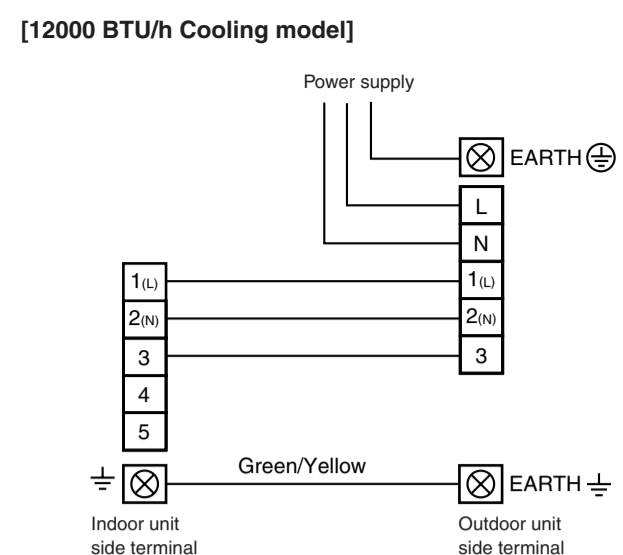
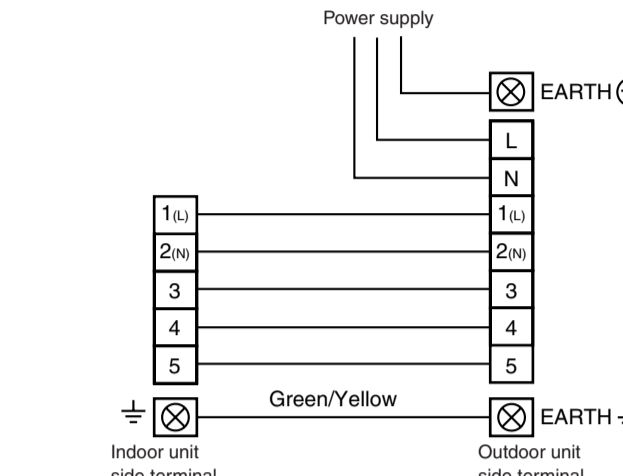


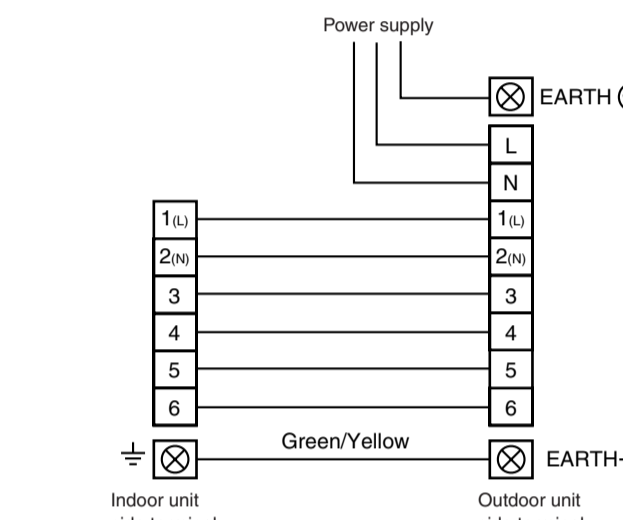
Fig. 25



[18000 BTU/h Cooling model]



[12000 and 18000 BTU/h Heat & Cool model (Reverse cycle)]

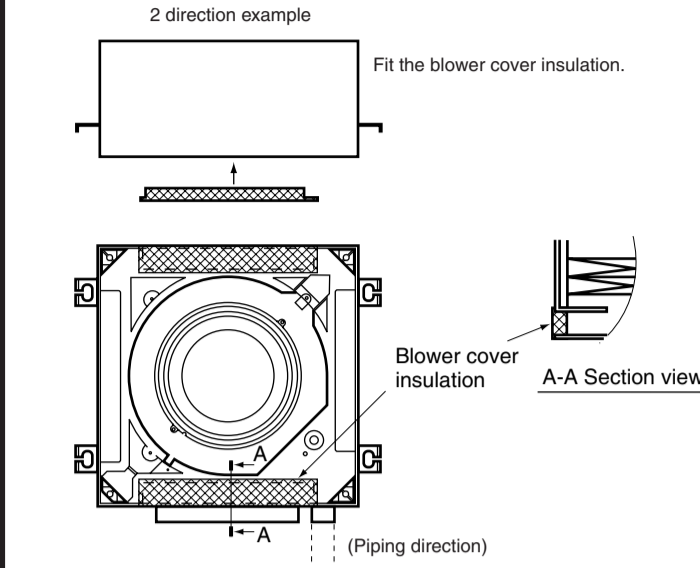


## 8 GRILLE INSTALLATION

#### 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.

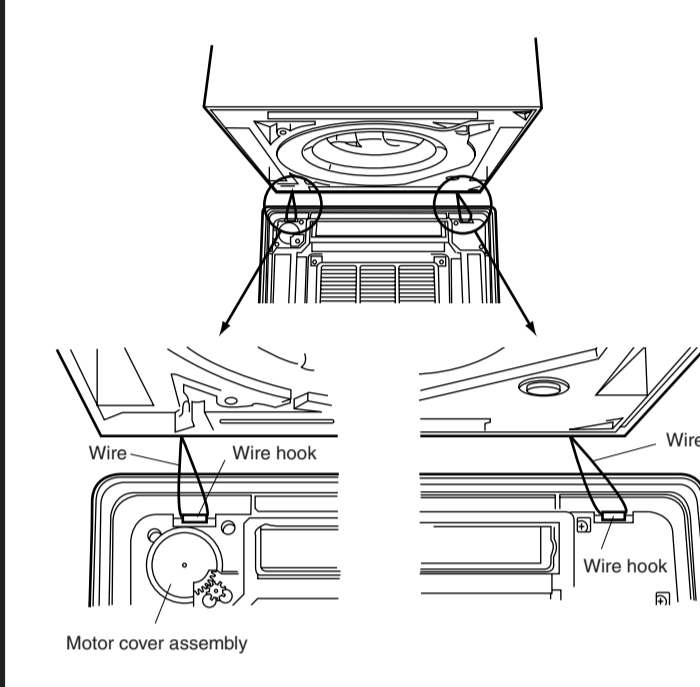
Fig. 26



#### 2. Installing grille assembly to body

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

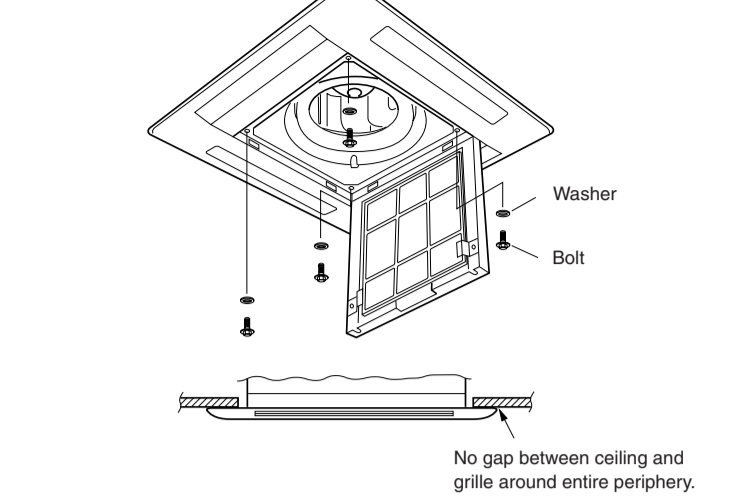
Fig. 27



#### Bolting the grille assembly to the body

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

Fig. 28



#### 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.

Fig. 29

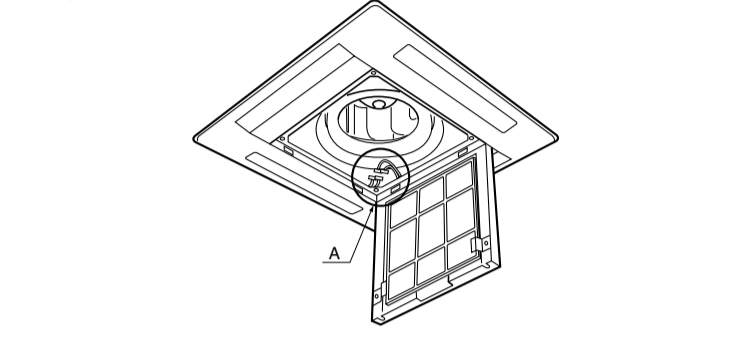
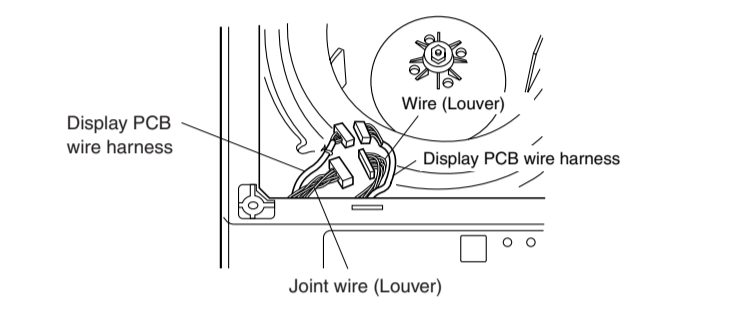


Fig. 30 Part A detail view

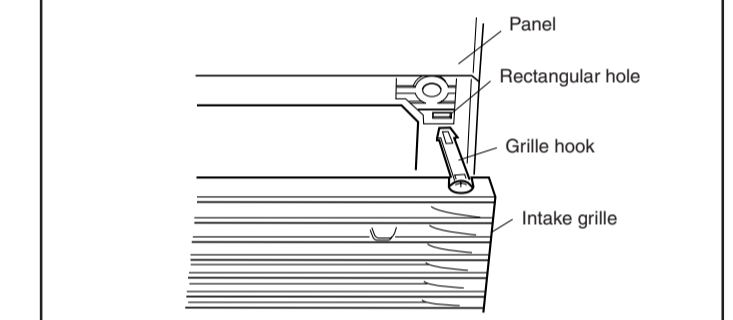


#### INSTALLING/REMOVING THE INTAKE GRILLE

##### 1. Installing the intake grille

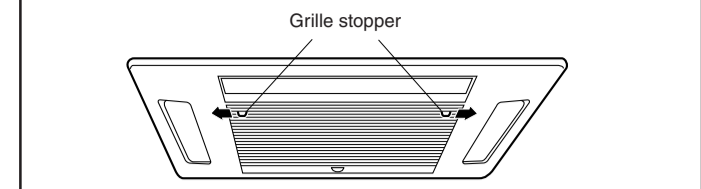
(1) Fully insert the intake grille hooks into the rectangular holes in the panel.

Fig. 31



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

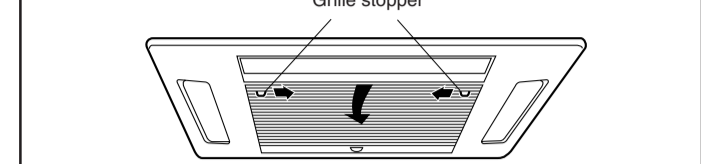
Fig. 32



##### 2. Removing the intake grille

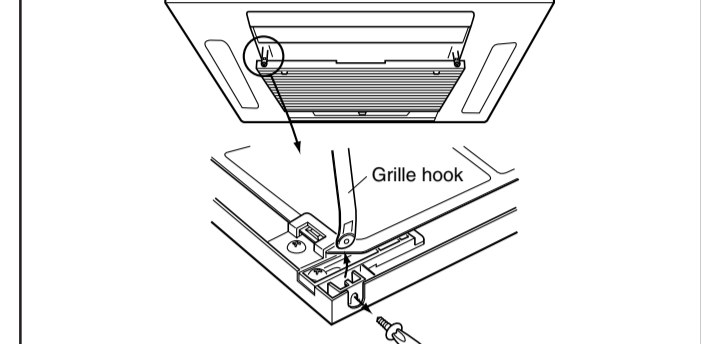
(1) Slide the two grille stoppers inward, then open the intake grille.

Fig. 33



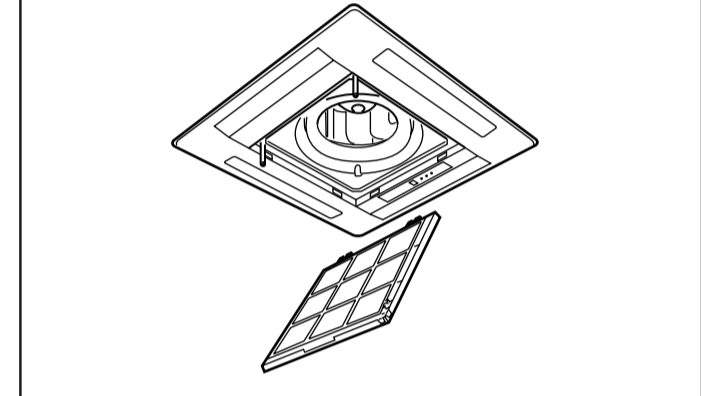
(2) Remove the grille hook screws, then open the intake grille.

Fig. 34



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

Fig. 35



##### 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 POWER

##### WARNING

- The rated voltage of this product is 220-240 V A.C. 50 Hz.
- Before turning on the verify that the voltage is within the 198 V to 264 V range.
- Always use a special branch circuit and install a special breaker 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 3 mm 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.

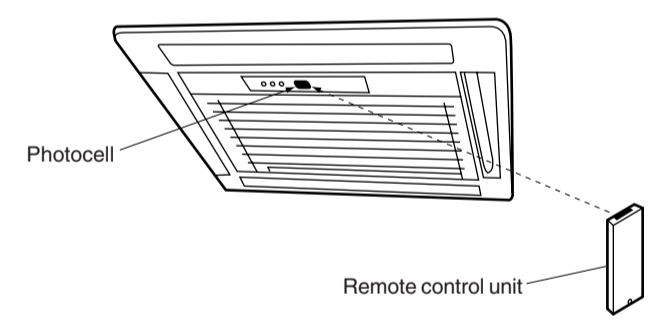
##### CAUTION

- 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.

## 10 REMOTE CONTROL UNIT INSTALLATION

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

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.

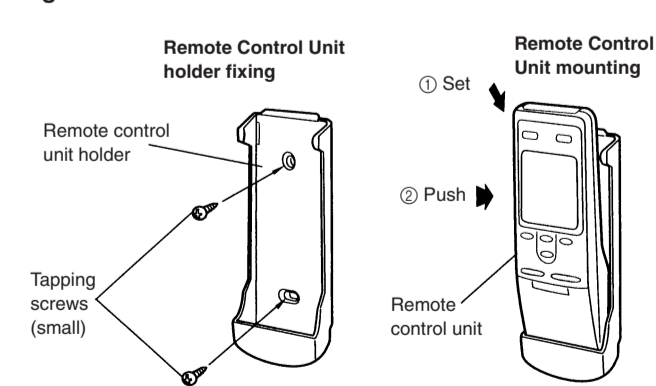
##### CAUTION

- 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 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 holder to a wall, pillar, etc. with the tapping screws.

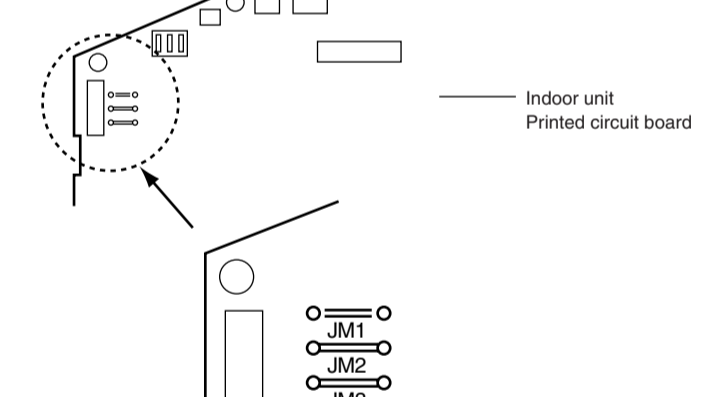
Fig. 37



#### 2. SWITCHING REMOTE CONTROL UNIT SIGNAL CODES

- Air conditioner settings

Fig. 38



- Remote control unit settings

(1) Press the START/STOP button and display only the clock.

Fig. 39

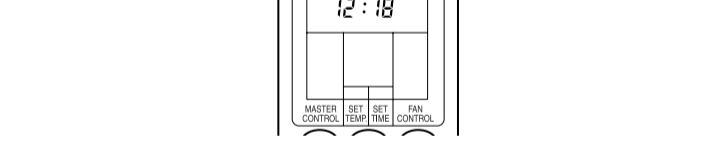


Fig. 40

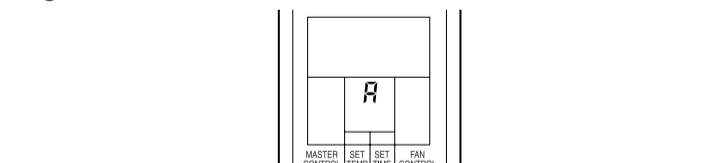
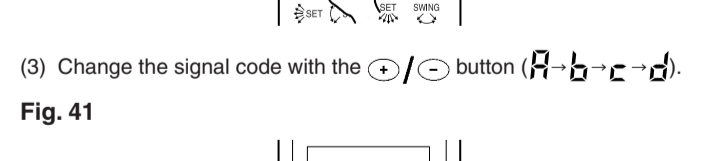


Fig. 41



(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.

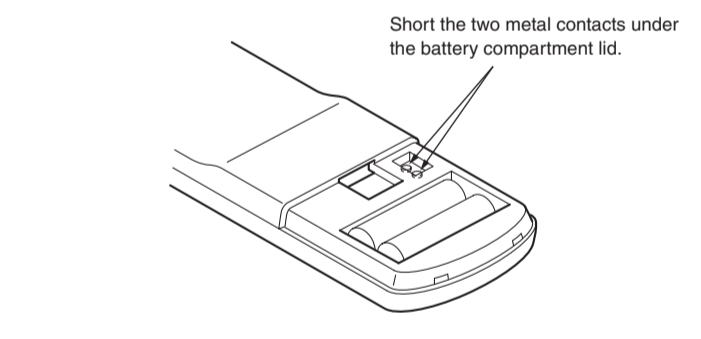
Table 6

Jumper wire	Remote control unit signal code	
JM2	JM3	
Connect	Connect	A (Primary setting)
Connect	Disconnect	B
Disconnect	Connect	C
Disconnect	Disconnect	D

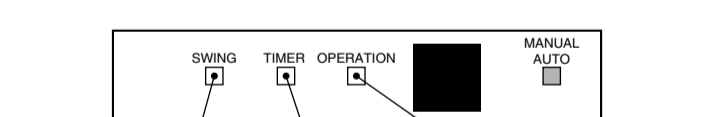
## 11 TEST RUNNING

- 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).

Fig. 42



- 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.

Table 7

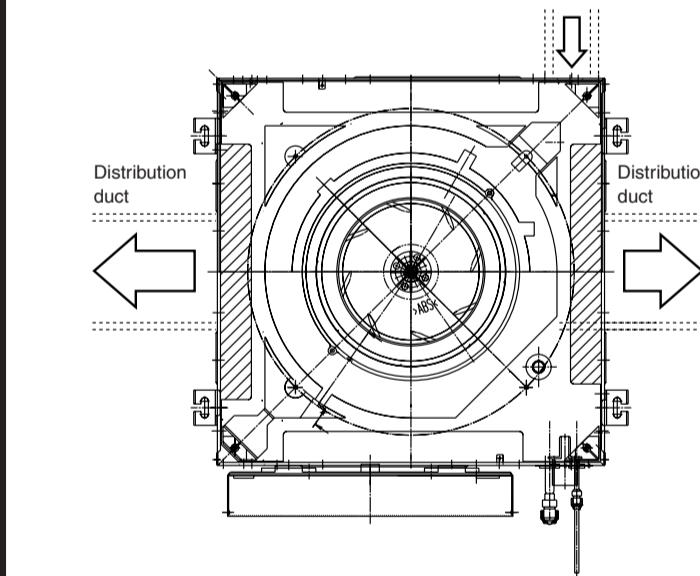
Error display	Error contents		
OPERATION lamp	TIMER lamp	SWING lamp	
Blinks	Blinks	Goes off	Model information abnormal (permanent type)
Pulses 4 times	Blinks	Goes off	Drain abnormal (permanent type)
Pulses 6 times	Blinks	Goes off	Indoor fan abnormal
Pulses 2 times	Blinks	Goes off	Room air temperature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

## 12 OPENING THE DUCT CONNECTION HOLE

Fig. 43



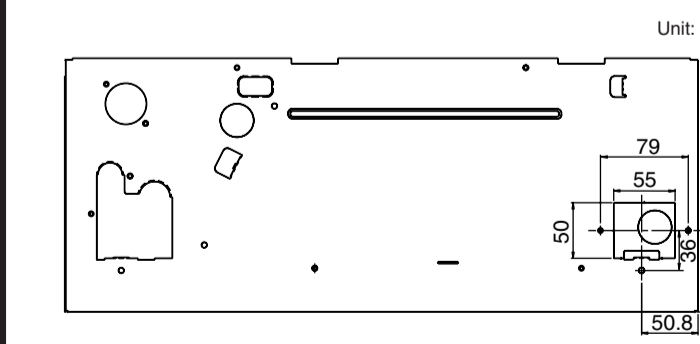
##### CAUTION

- 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.

#### 1. DIMENSION

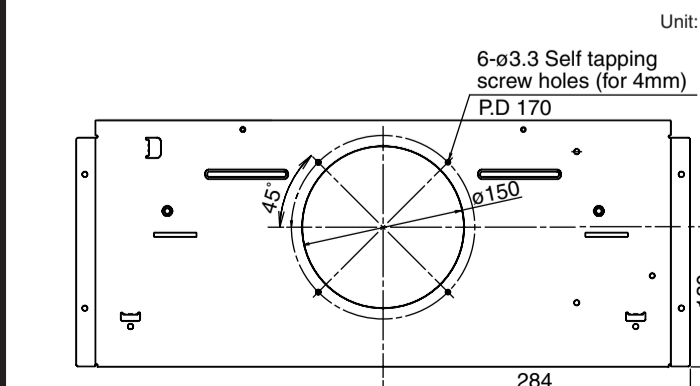
(1) Fresh air duct connection hole and screw positions.

Fig. 44



(2) Distribution duct connection hole and screw positions.

Fig. 45

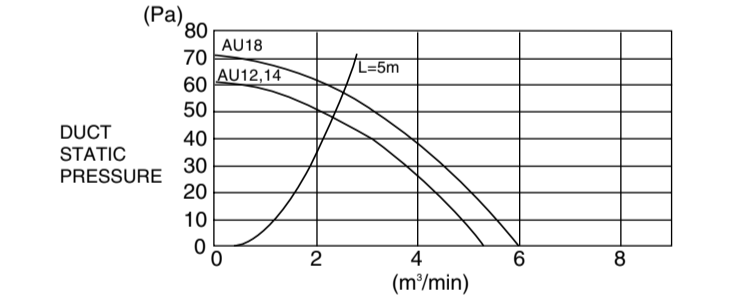
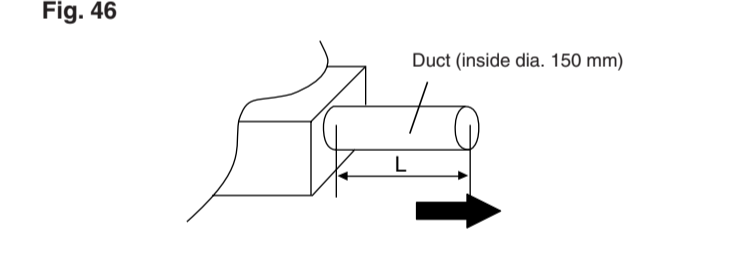


##### CAUTION

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

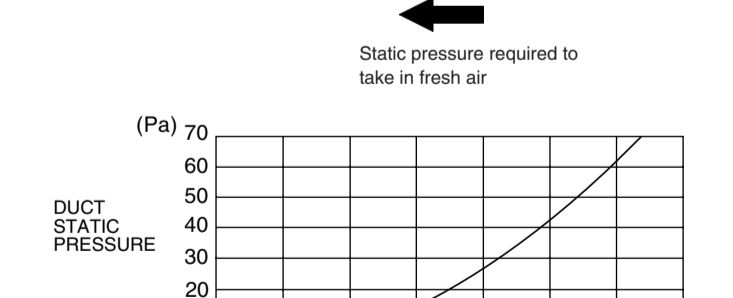
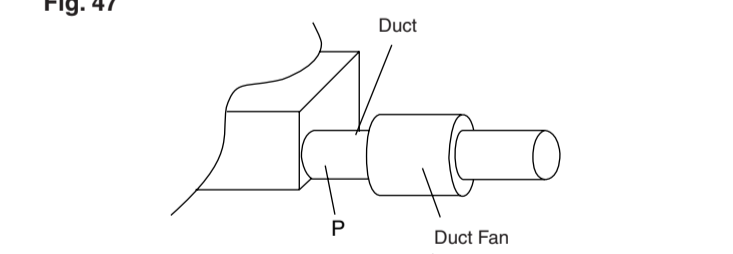
#### OUTLET AIR

Fig. 46



#### FRESH AIR

Fig. 47



## 13 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.

Fig. 48

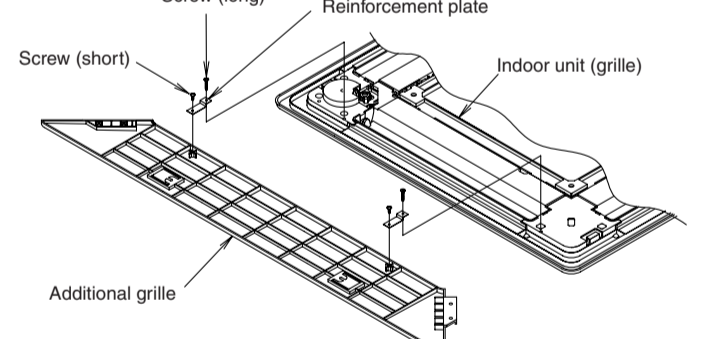
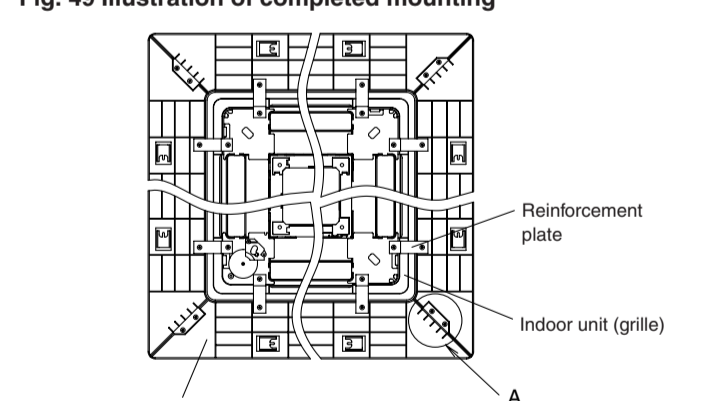
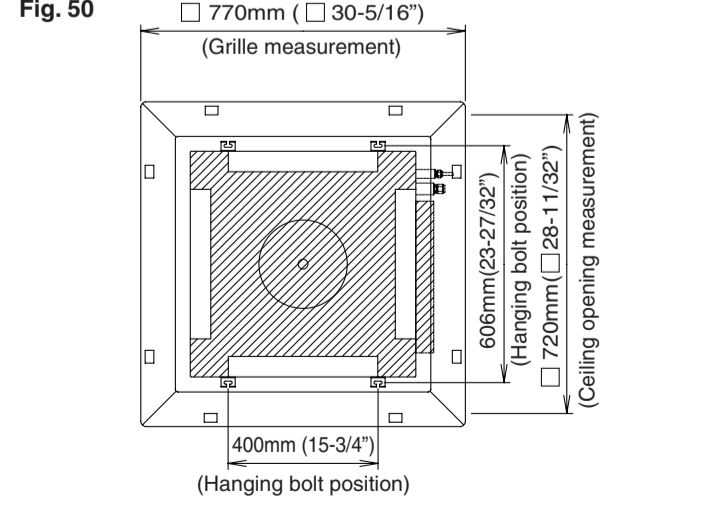


Fig. 49 Illustration of completed mounting



#### POSITION THE CEILING HOLE AND HANGING BOLTS

Fig. 50



##### CAUTION

When installing the additional grille, please refer to the installation instruction sheet supplied with the additional grille.