

SPLIT TYPE AIR CONDITIONER

Duct Type

INSTALLATION INSTRUCTION SHEET

(PART NO. 9365623015)

For authorized service personnel only.

WARNING!	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
CAUTION!	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 standard 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
Installation template	1	For positioning the indoor unit
Hanger	4	For suspending the indoor unit from ceiling
Tapping screw (ø4×10)	8	For installing the hanger
Special nut A (large flange)	4	For suspending the indoor unit from ceiling
Special nut B (small flange)	4	For suspending the indoor unit from ceiling
Coupler heat insulation (large)	1	For indoor side pipe joint (large pipe)
Coupler heat insulation (small)	1	For indoor side pipe joint (small pipe)
Binder	small 1 large 4	For remote controller and remote controller cord binding
Remote controller	1	
Remote controller cord clamp	10	For installing the remote controller cord
Tapping screw (flush heads)	10	For installing the remote controller cord clamp
Filter	3	
Drain hose insulation	1	Insulates the drain hose and vinyl hose connection

OUTDOOR UNIT ACCESSORIES

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

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

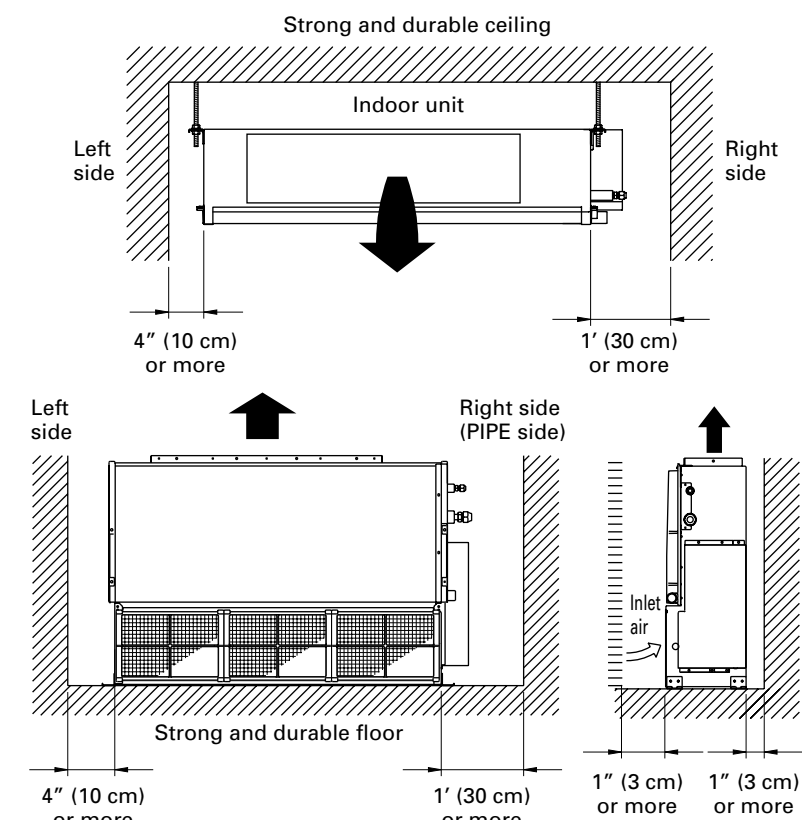
- Do not install where there is the danger of combustible gas leakage.
- Do not install near heat sources.
- If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.
- Take precautions to prevent the unit from falling.

Decide the mounting position with the customer as follows:

INDOOR UNIT

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

Fig. 1



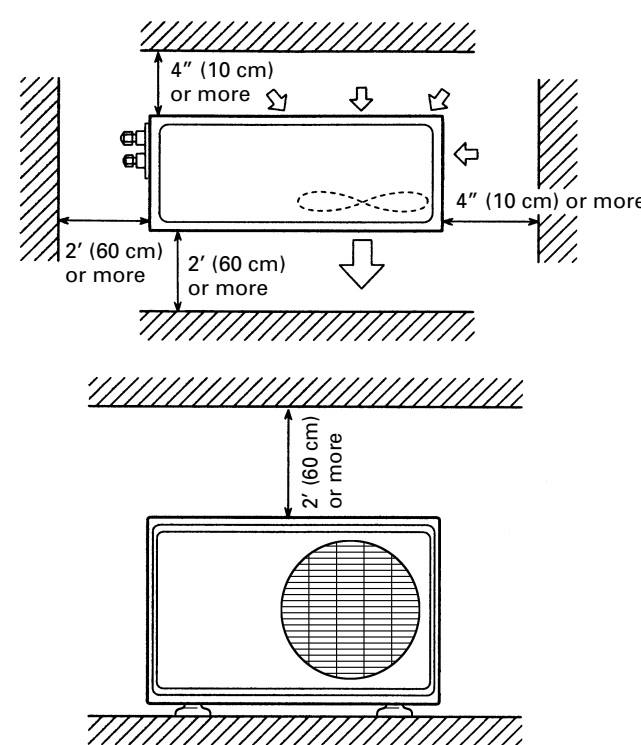
OUTDOOR UNIT

WARNING

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

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

Fig. 2



CONNECTION PIPE REQUIREMENT

Table 1

Diameter		Maximum length	Maximum height (between indoor and outdoor)
Small	Large		
6.35 mm (1/4 in)	12.7 mm (1/2 in)	15 m (49 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 REQUIREMENT

- Electric wire size and fuse capacity:

Table 2

Power cord (mm ²)	MAX	2.0
	MIN	1.5
Connection cord (mm ²)	MAX	2.0
	MIN	1.5
Fuse capacity (A)		15

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

INSTALLATION PROCEDURE

Install the air conditioner as follows:

1 INDOOR UNIT INSTALLATION

A. CEILING CONCEALED TYPE

- INSTALL THE FILTERS

- Install the filters to the unit (Fig. 3).

Fig. 3-1)

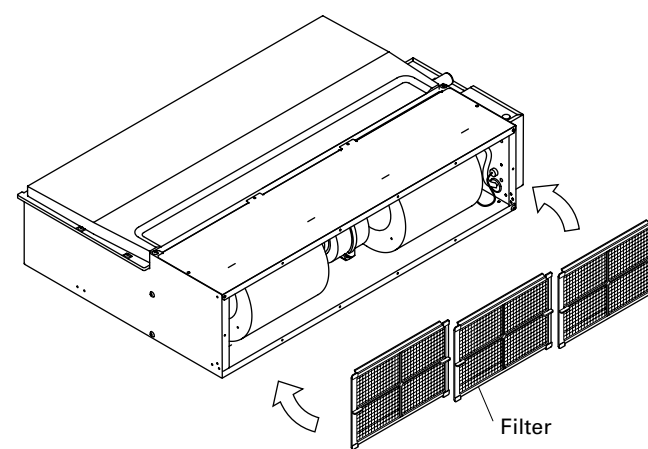
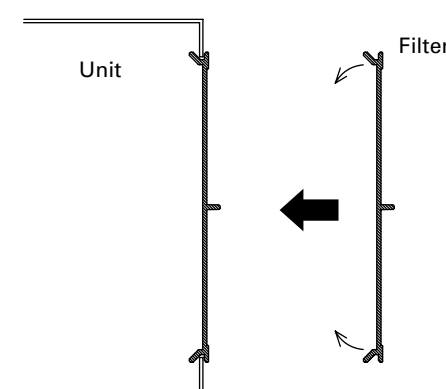


Fig. 3-2)

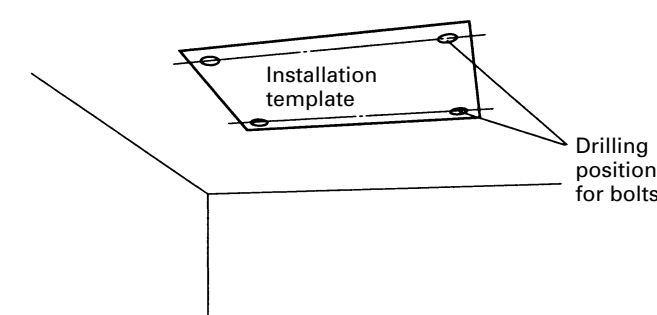


The inlet port can be installed at the bottom of this unit. For more details, refer to Fig. 11 and 12.

2. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS

- Using the installation template, drill holes for bolts (4 holes). (Fig. 4)

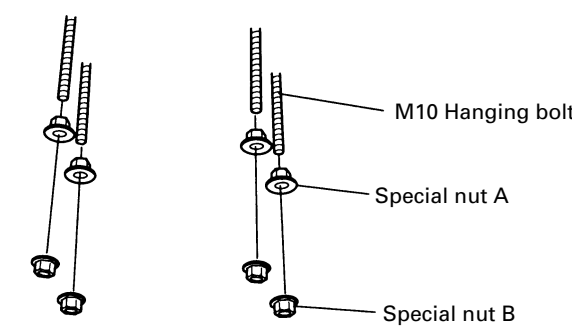
Fig. 4



3. INSTALLING THE HANGERS

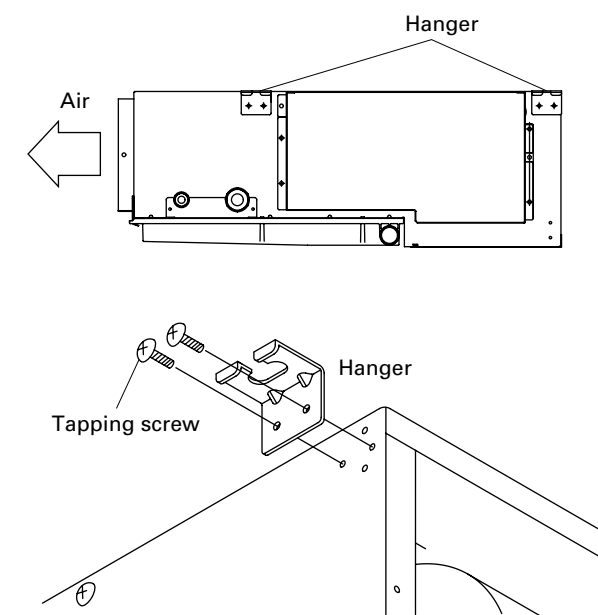
- Fasten the hanging bolts to the ceiling and install special nuts A and B.

Fig. 5



- Install the hangers to the unit (4 places).

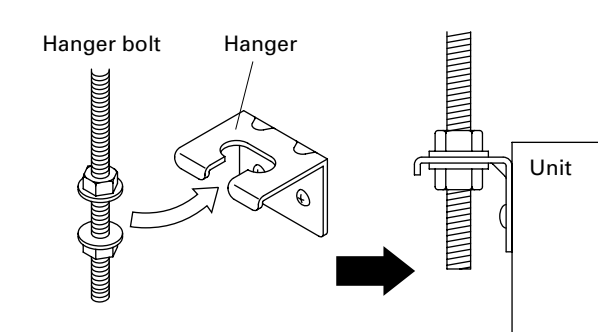
Fig. 6



- Hang the unit.

- Fasten the hanging bolts through the hangers (4 places).

Fig. 7



CAUTION

Fasten the unit securely with special nuts A and B.

4. LEVELING

Base horizontal direction leveling on top of the unit.

Fig. 8

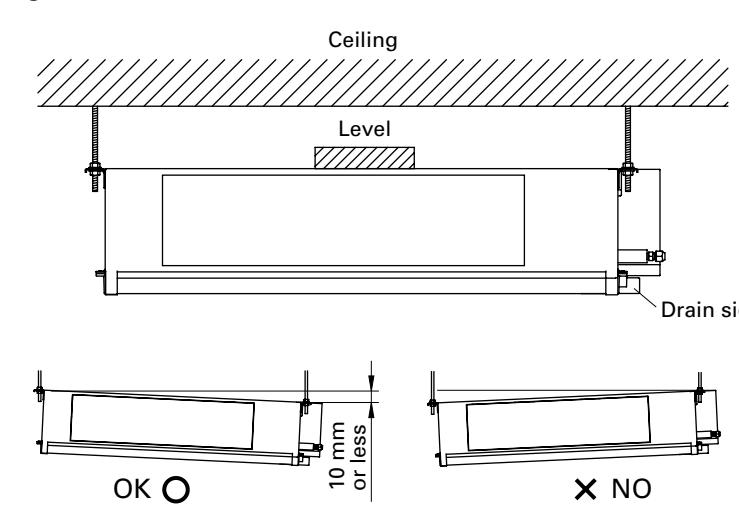
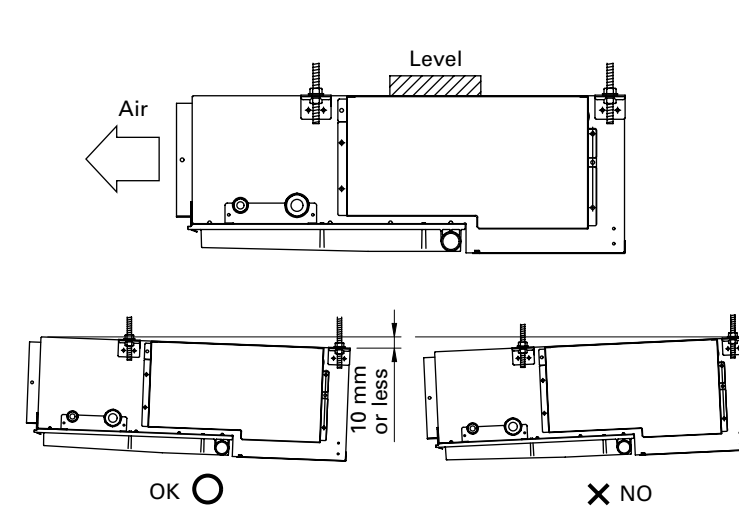


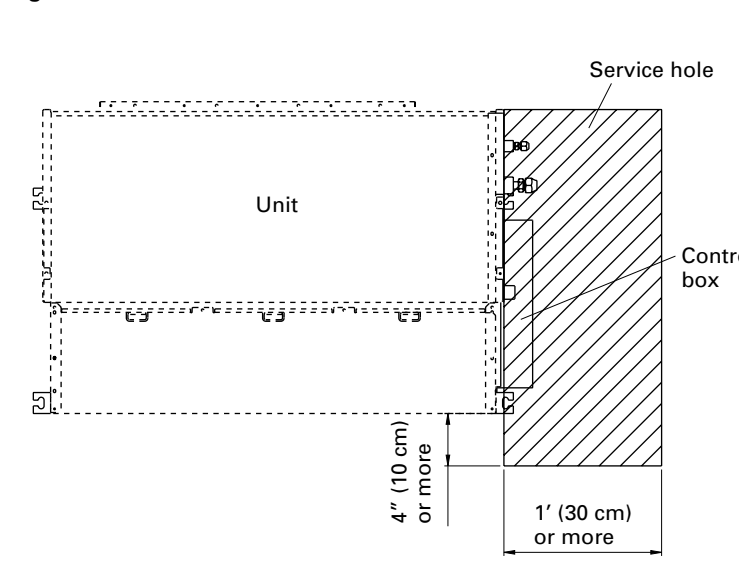
Fig. 9



5. SERVICE HOLE DIMENSIONS

Open a service hole with the dimensions shown below.

Fig. 10



B. FLOOR STANDING CONCEALED TYPE

1. INSTALL THE FILTERS

- Remove the 4 tapping screws, and then remove cover.
- Install the cover with the 4 tapping screws as shown in the illustration below.

Fig. 11

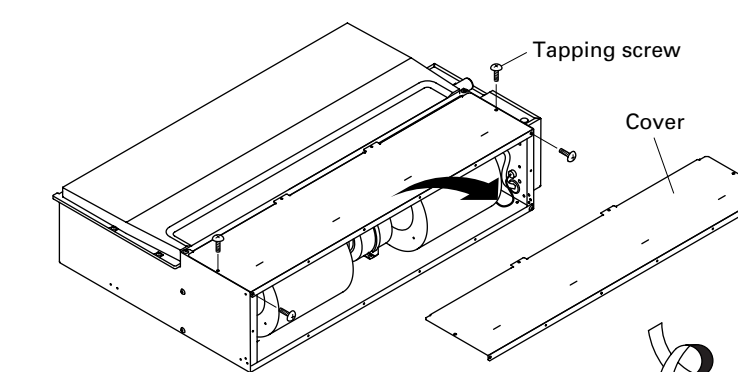
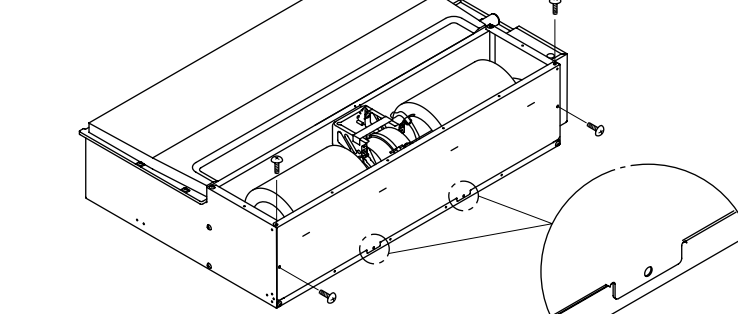
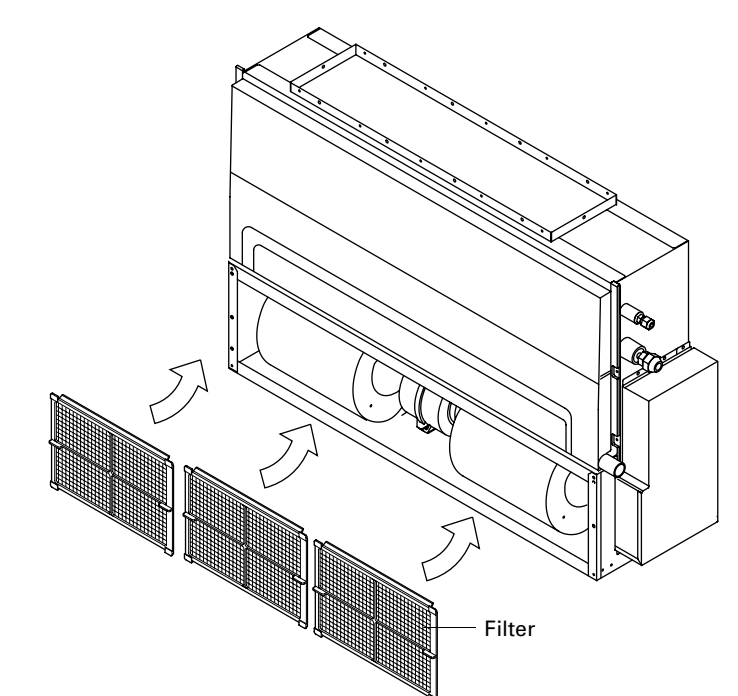


Fig. 12



- Install the filters to the unit refer to Fig. 3-1-2).

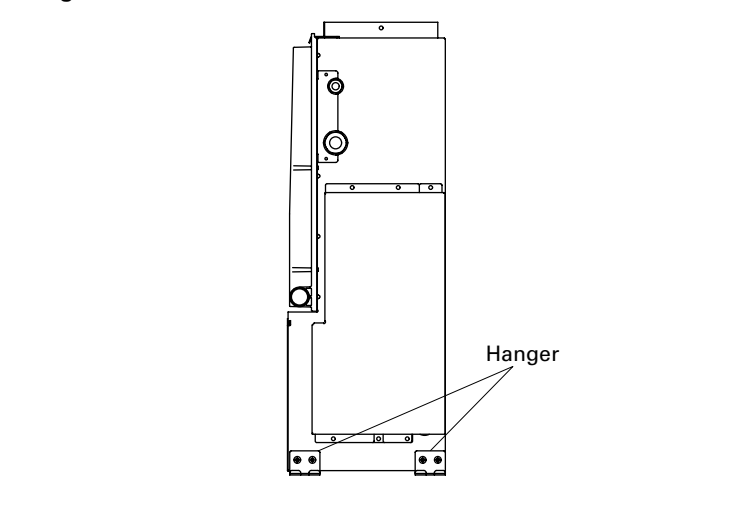
Fig. 13



2. INSTALLING THE HANGERS

- Install the hangers to the unit (4 places).

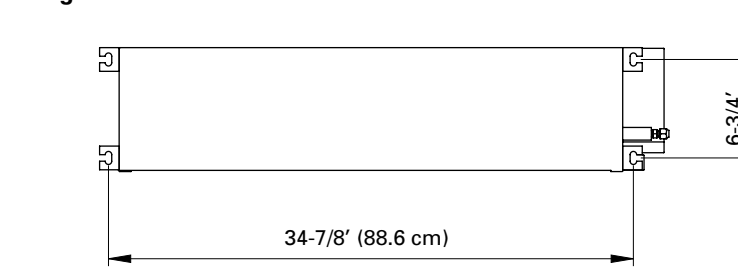
Fig. 14



3. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS

- Drilling position for bolts.

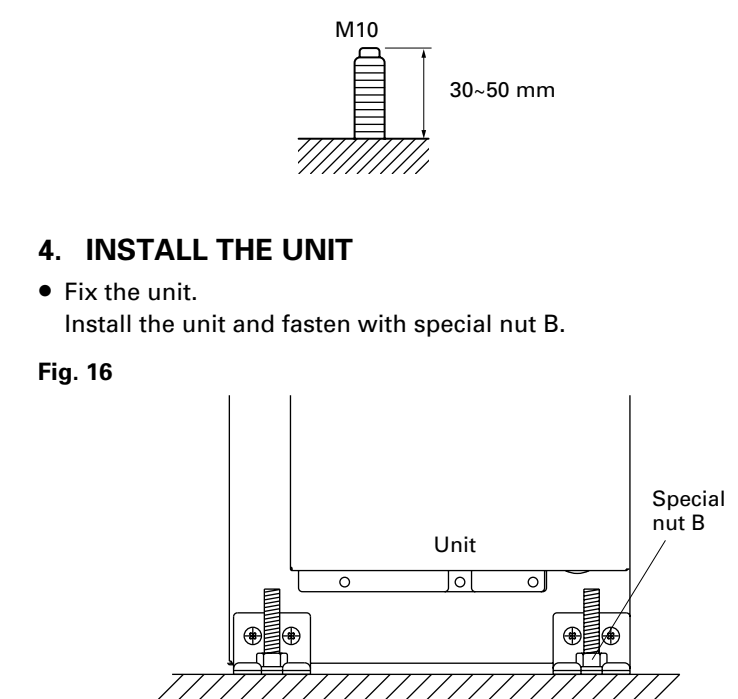
Fig. 15



CAUTION

Mount using M10 anchor bolts or similar fasteners. If it is difficult to attach the unit to the floor, use a stand or some other frame.

Fig. 16



5. LEVELING

Base horizontal and vertical direction leveling on top of the unit.

Fig. 17

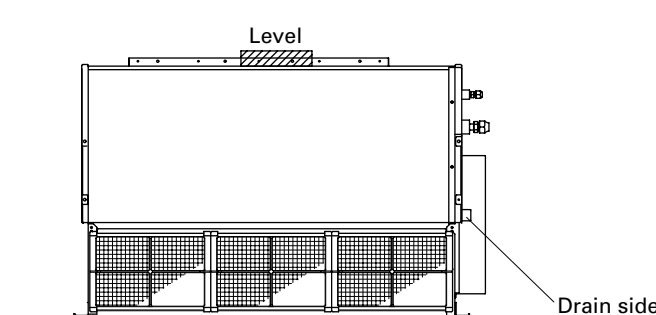
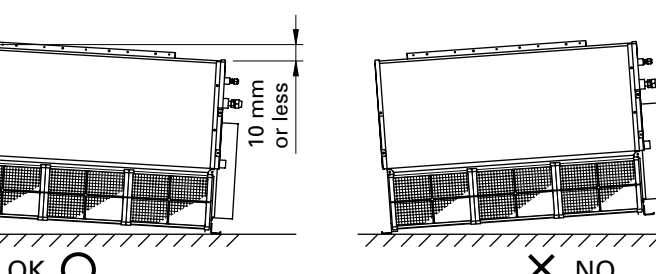


Fig. 18



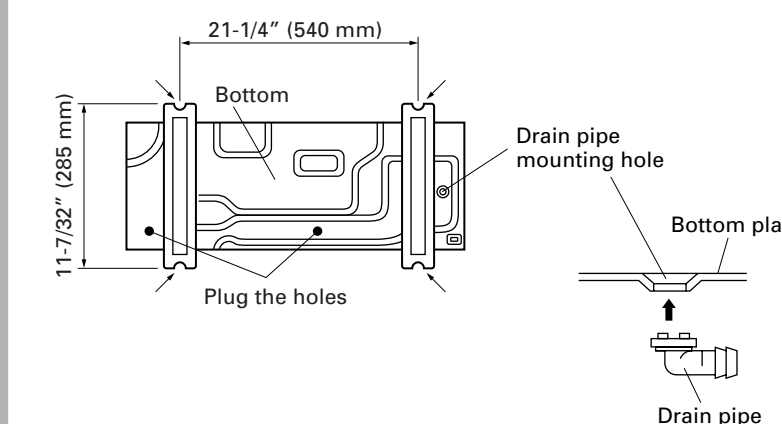
CAUTION

In order to prevent water from leaking around the outlet port, make sure to insulate it (on both the CEILING CONCEALED type and the FLOOR STANDING CONCEALED type).

2 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. 19).
- Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to a commercial 16 mm hose (Reverse cycle model only).
- When installing the drain pipe, plug all the holes (• holes at two places) other than the drain pipe mounting hole in the bottom of the outdoor unit with putty so there is no water leakage (Fig. 19). (Reverse cycle model only)

Fig. 19



3. CONNECTION PIPES

- Indoor unit side
- Detach the caps and plugs from the pipes.

CAUTION

- Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
- Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.

- Centering the pipe against port on the indoor unit, turn the flare nut with your hand. When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, than tighten with a torque wrench (Fig. 23).

Fig. 23

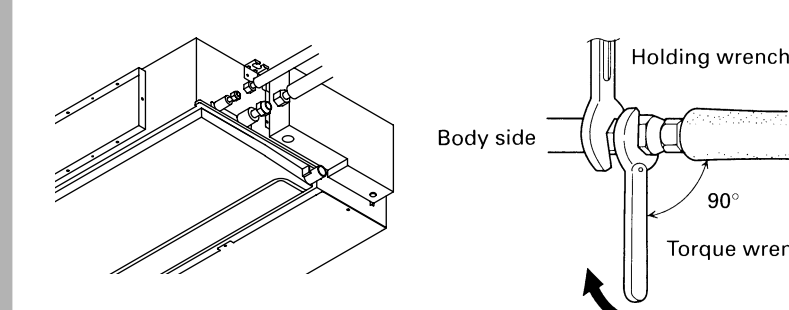
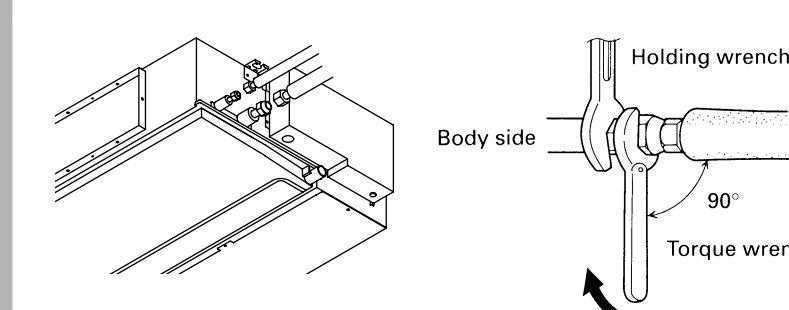


Fig. 24



CAUTION

Hold the torque wrench at its grip, keeping it in the right angle with the pipe as shown in Fig. 24, in order to tighten the flare nut correctly.

Table 4 Flare nut tightening torque

Pipe	Tightening torque
Small pipe	150 to 200 kgf · cm (14.7 to 19.6 N · m)
Large pipe	500 to 550 kgf · cm (49.0 to 53.9 N · m)

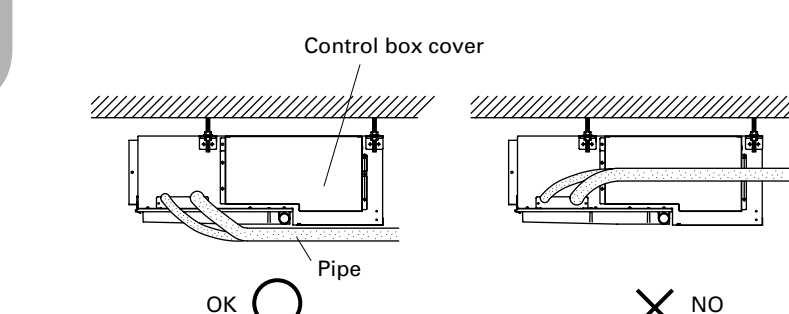
CAUTION

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

- Lay the piping.

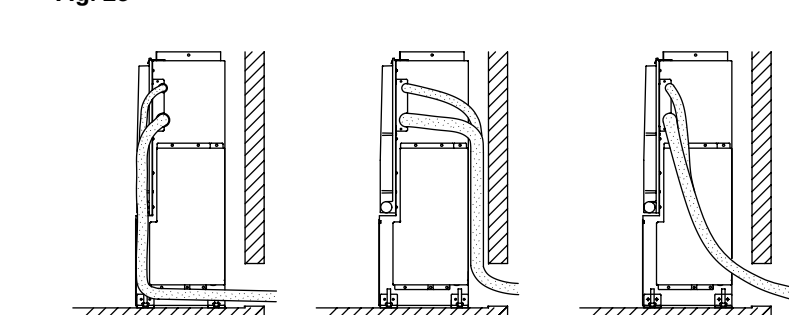
A. CEILING CONCEALED TYPE

Fig. 25



B. FLOOR STANDING CONCEALED TYPE

Fig. 26



CAUTION

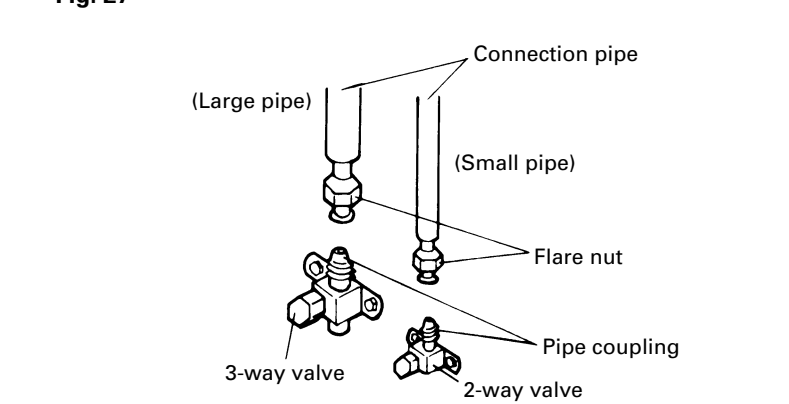
Connect the piping so that the control box cover can easily be removed for servicing when necessary.

In order to prevent water from leaking into the control box, make sure that the piping is well insulated.

(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.

Fig. 27



4. CHECKING THE PIPE CONNECTIONS FOR GAS LEAKING

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

CAUTION

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

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

- After checking for gas leaks, insulate by wrapping insulation around the two parts (large and small) or the indoor unit coupling, using the coupler heat insulation.
- After installing the coupler heat insulation, wrap both ends with vinyl tape so that there is no gap.
- After affixing the coupler heat insulation, secure it with two binders (large), one on each end of the insulation. Make sure that the binders overlap the heat insulating pipe.

Fig. 28

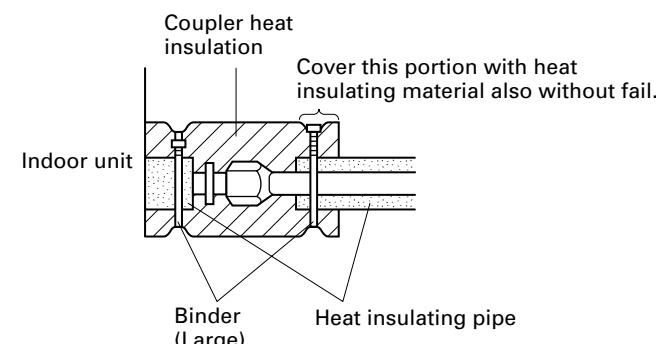
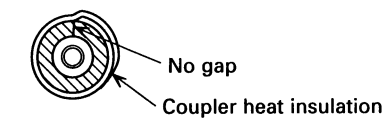


Fig. 29

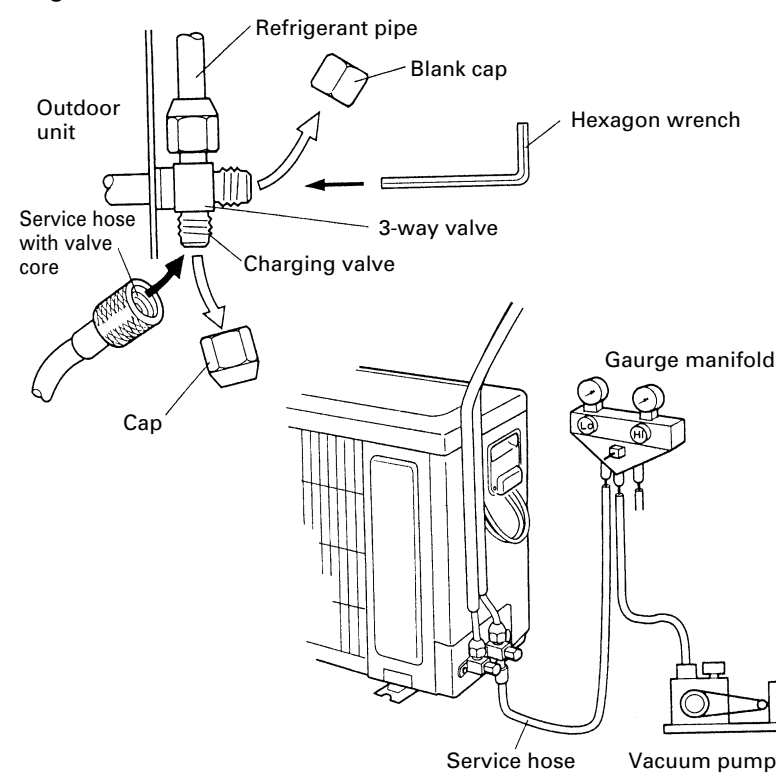


4 VACUUM PROCESS

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 kgf·cm).
- Remove the blank caps, and fully open the spindles of the 2-way and 3-way valves with a hexagon wrench (Torque: 2-way valve: 70 to 90 kgf·cm, 3-way valve: 100 to 120 kgf·cm).
- Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque (200 to 250 kgf·cm).

Fig. 30



2. ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 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	Additional refrigerant		
	25 ft (7.5 m)	33 ft (10 m)	49 ft (15 m)
Additional refrigerant	12R	None	
	14R	None (50 g)	5.3 oz (150 g)

Between 7.5 m and 15 m, when using a connection pipe other than that in the table, charge additional refrigerant with 0.7 oz (20 g)/3.3 ft (1 m) (14R model) as the criteria.

CAUTION

- When moving and installing the air conditioner, do not mix gas other than the specified refrigerant (R22) inside the refrigerant cycle.
- When adding refrigerant, add the refrigerant from the charging valve at the completion of work.
- If the units are further apart than the maximum pipe length, correct operation can not be guaranteed.

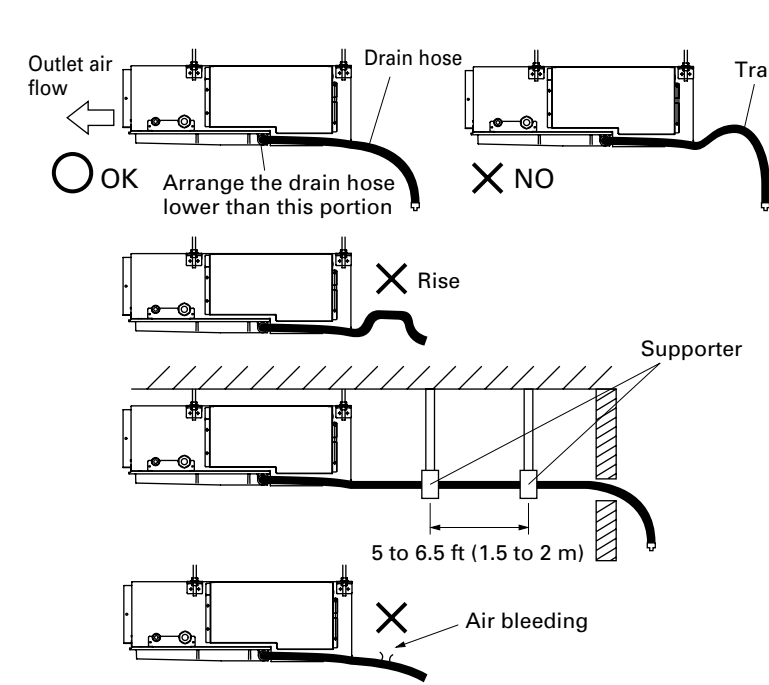
5 INSTALLING DRAIN HOSE

INSTALL THE DRAIN HOSE

- Install the drain hose with downward gradient (1/50 to 2/50) and so there are no rises or traps in the hose.
- Use general hard polyvinyl chloride pipe and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the hose is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain hose.

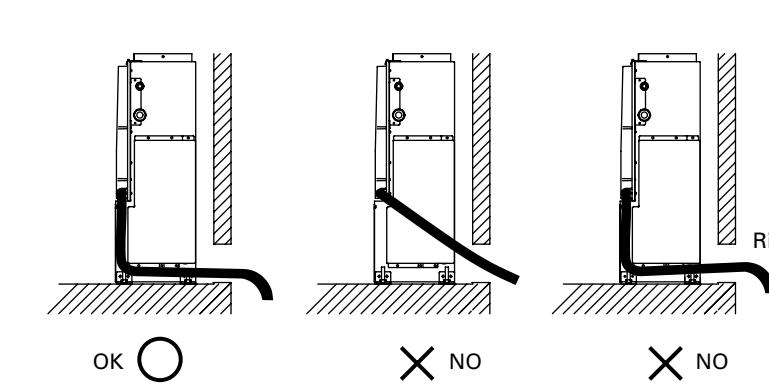
A. CEILING CONCEALED TYPE

Fig. 31



B. FLOOR CONSOLE TYPE

Fig. 32

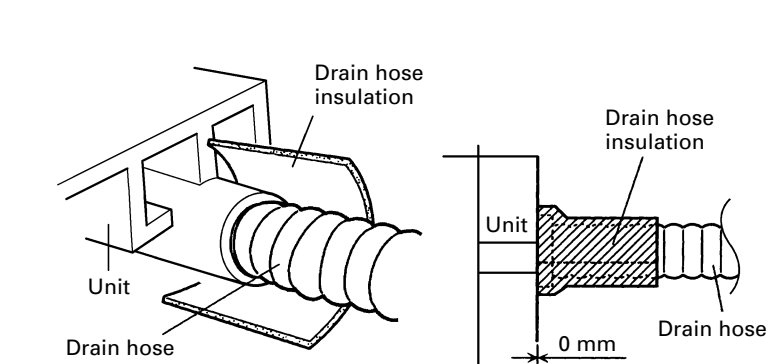


CAUTION

- Connect the drain hose so that the control box cover can easily be removed for servicing when necessary.
- In order to prevent water from leaking into the control box, make sure that the piping is well insulated.
- After finishing the piping, the drain hose installation and the wiring, seal the holes in the wall.

The out side diameter of drain port is 26 mm, use a suitable drain hose.

Fig. 33



6 ELECTRICAL WIRING

HOW TO CONNECT WIRING TO THE TERMINALS

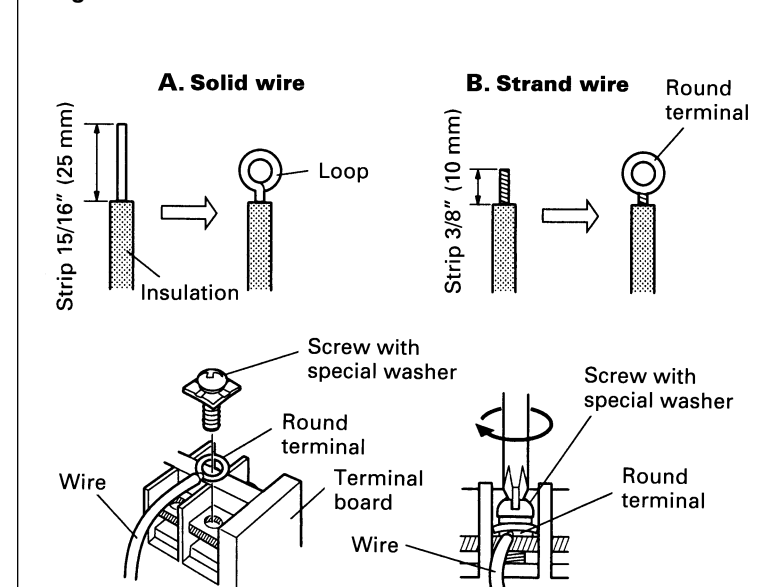
A. For solid core wiring (or F-cable)

- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 15/16" (25 mm) to 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 3/8" (10 mm) to 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 with a screwdriver.

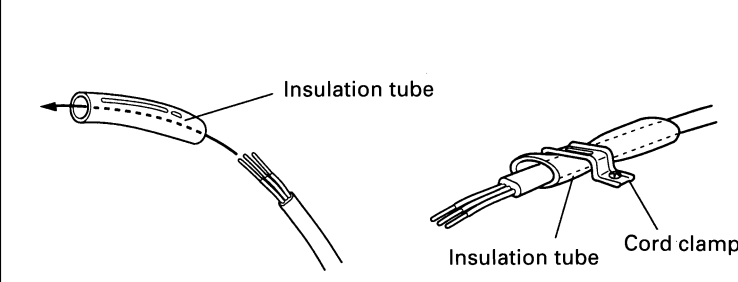
Fig. 34



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

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

Fig. 35

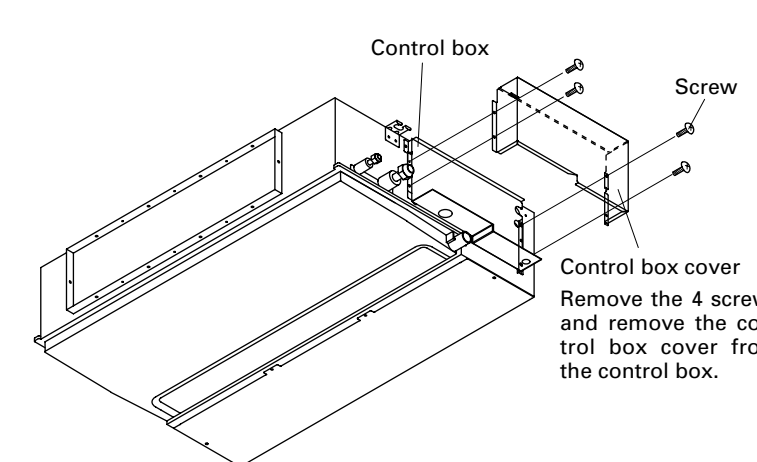


Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

1. INDOOR UNIT SIDE

- Remove the control box cover from the control box.

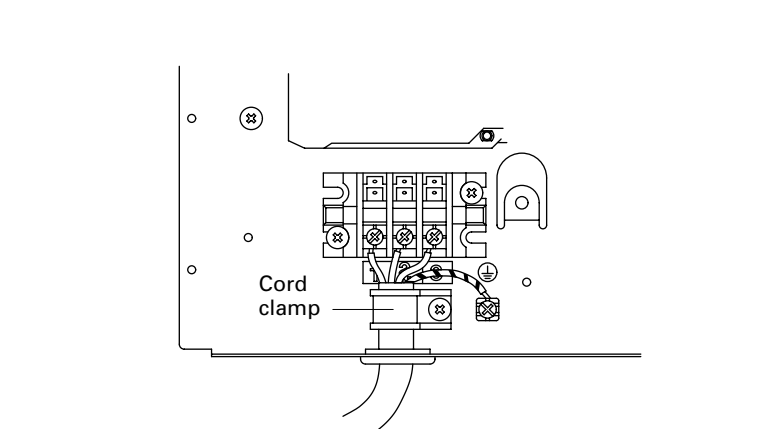
Fig. 36



2. Connection cord connection.

- Clamp the connection cord with the cable clamp.
- Connect the connection cord to the terminals.

Fig. 37



3. Remote controller cord connection.

- Clamp and the remote controller cord with the nylon clamp.
- Connect the remote controller cord to the PCB with the black connector.
- Remove the Nylon clamp and pass the remote controller cord, and then fix the Nylon clamp to the control box.

Fig. 38

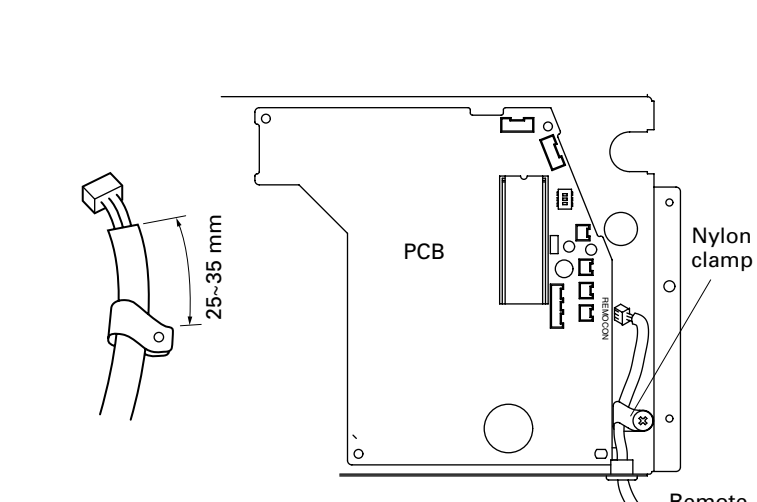
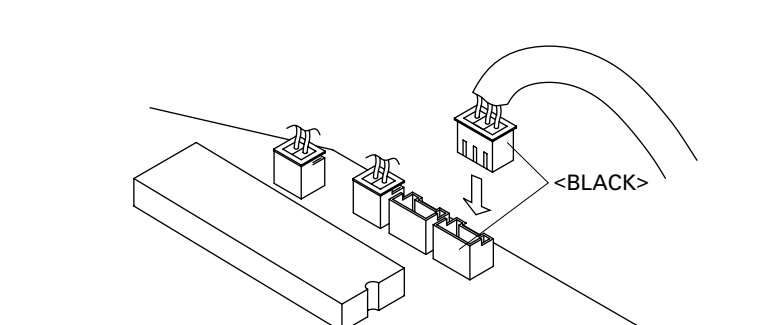


Fig. 39

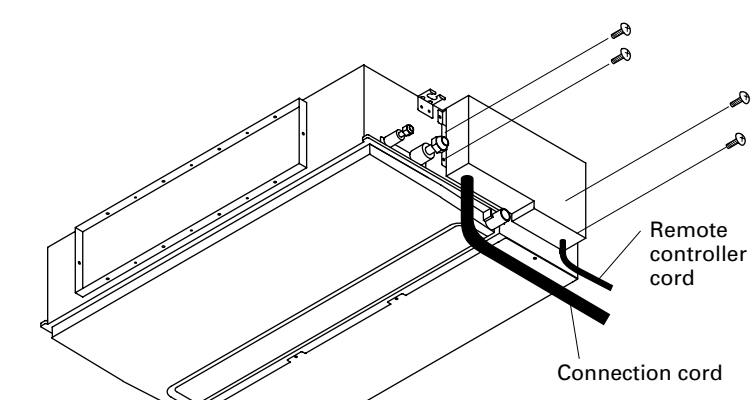


CAUTION

- Tighten the indoor unit connection cord (to the outdoor unit) and power supply indoor and outdoor unit terminal board connections firmly with the terminal board screws. Faulty connection may cause a fire.
- If the indoor unit connection cord (to the outdoor unit) and power supply are wired incorrectly, the air conditioner may be damaged.
- Wire the indoor unit connection cord (to the outdoor unit) by matching the numbers of the outdoor and indoor units terminal board numbers as shown in terminal label.
- Ground both the indoor and outdoor units by attaching a ground wire.
- Unit shall be grounded in compliance with the applicable local and national codes.

- Control box cover installation
Fasten control box cover with the 4 screws.

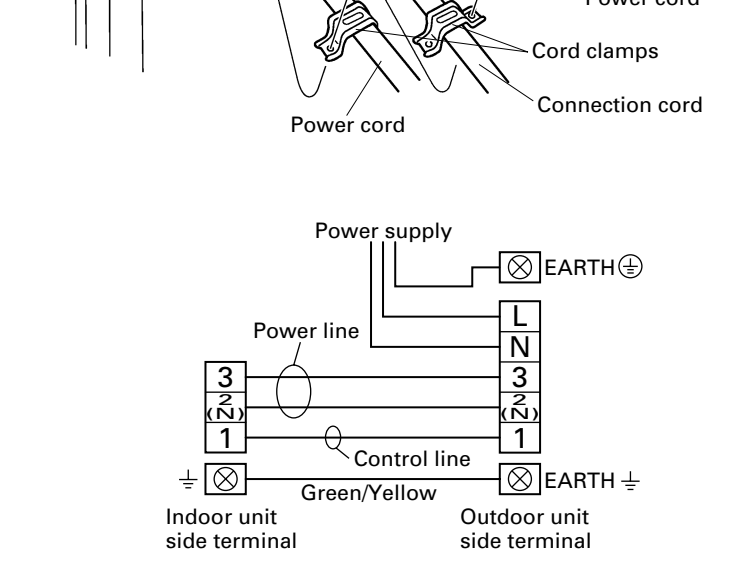
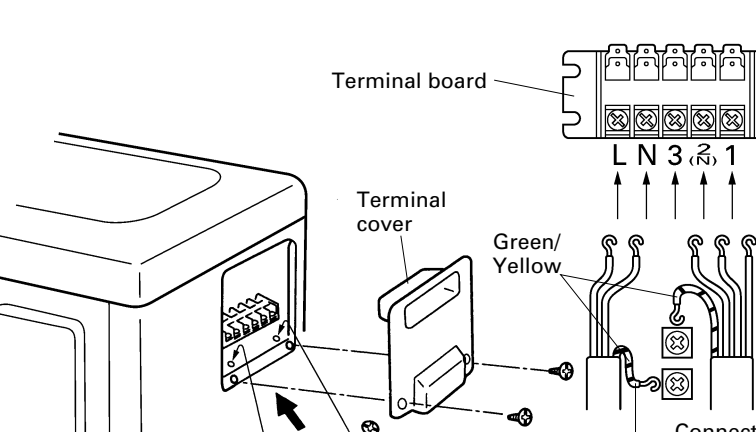
Fig. 40



2. OUTDOOR UNIT SIDE

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

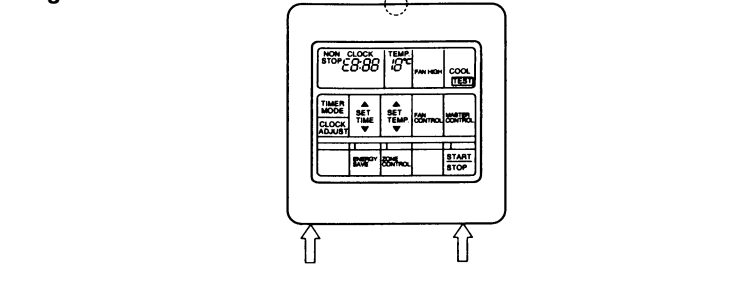
Fig. 41



7 REMOTE CONTROLLER INSTALLATION

- Insert the end of a flat blade screwdriver at the arrow parts of the groove at the side of the remote controller case and remove the remote controller case top by turning the screwdriver.
- Disconnect the remote controller cord from the remote controller terminal board.

Fig. 42



- When remote controller exposed
 - Make a notch in the thin part () part of Fig. 42) at the remote controller case top and bottom with nippers, file, etc.
 - Connect the remote controller cord to the remote controller terminal board specified in (Fig. 43).
 - Clamp the remote controller cord sheath with the binder (small) as shown in Fig. 43.
 - Cut off the excess binder.
 - Clamp the remote controller cord to a wall, etc. with the remote controller cord clamp furnished (Fig. 44).

Fig. 43

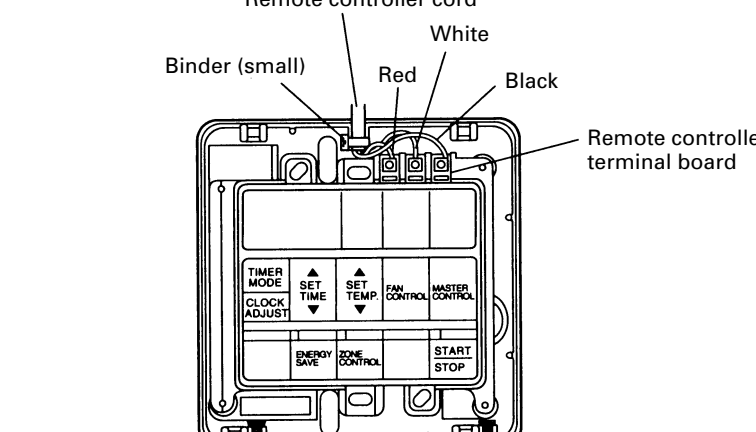
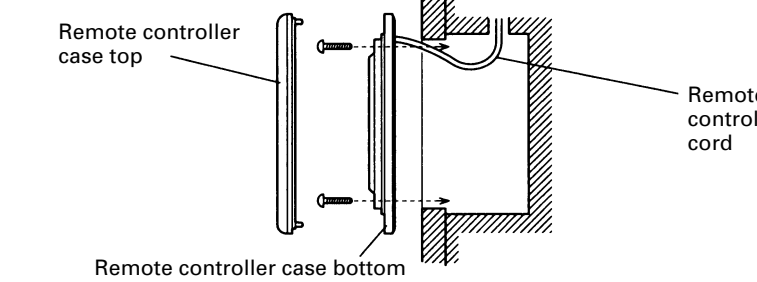


Fig. 44

- When remote controller cord embedded
 - Embed the remote controller cord and box.
 - Pass the remote controller cord through the hole at the remote controller case bottom and install the cord to the box (Fig. 45).
 - Connect the remote controller cord to the remote controller terminal board specified in (Fig. 43).

Fig. 45 [Example]



- After wiring work is complete, return the remote controller case top to its original state.

CAUTION

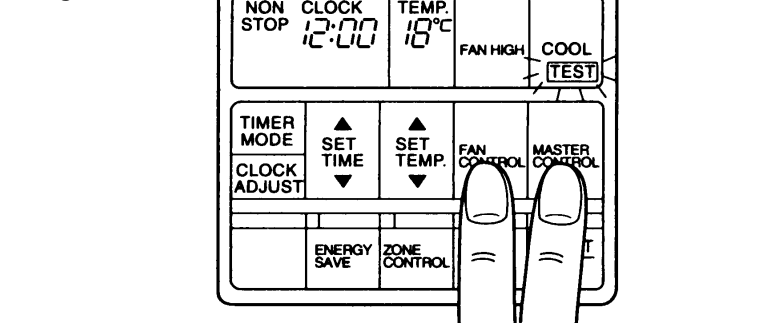
- Do not bundle the remote controller cord, or wire the remote controller cord in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cord. It may cause erroneous operation.
- When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.
- Do not touch the remote controller PCB board and PCB board parts directly with your hands.

8 TEST RUNNING

1. REMOTE CONTROLLER

- For test running, when the remote controller FAN CONTROL button and MASTER CONTROL button are pressed simultaneously for more than three seconds when the air conditioner is not running, the air conditioner starts and TEST is displayed on the remote controller display. However, the SET TEMP. setting button does not function, but all other buttons, displays, and protection functions operate (Fig. 46).

Fig. 46



- When EE:EE blinks at the current time display, there is an error inside the air conditioner. If the ZONE CONTROL button and ENERGY SAVE button are pressed simultaneously for more than three seconds, the self diagnosis check will start and the error contents will be displayed at the current time display (Fig. 47). When the operation lamp lights, press the START/STOP button and after operation lamp goes off, perform the same operation (Fig. 47). Process the error contents by referring to (Table 6).

Fig. 47

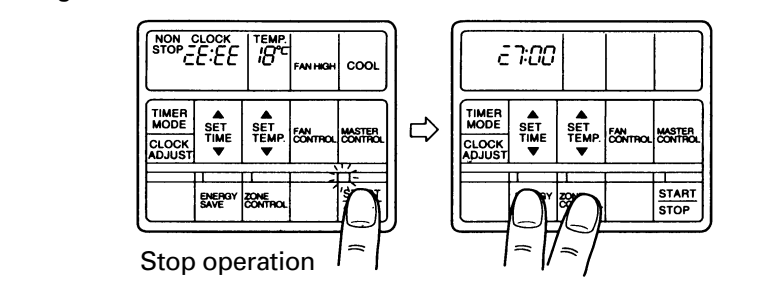


Table 6

Error cord	Error contents
EE:00	Communication error (indoor unit ↔ remote controller)
EE:01	Communication error (indoor unit ↔ outdoor unit)
EE:02	Room temperature sensor open
EE:03	Room temperature sensor shortcircuited
EE:04	Indoor heat exchanger temperature sensor open
EE:05	Indoor heat exchanger temperature sensor short-circuited
EE:06	Outdoor heat exchanger temperature sensor open
EE:07	Outdoor heat exchanger temperature sensor shortcircuited
EE:08	Outdoor temperature sensor open
EE:09	Outdoor temperature sensor shortcircuited
EE:0A	Discharge pipe temperature sensor open
EE:0B	Discharge pipe temperature sensor short-circuited
EE:0C	High pressure abnormal
EE:0D	Discharge pipe temperature abnormal

- To stop test running, press the START/STOP button.
- For the operation method, refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during the test running.

2. OUTDOOR UNIT

When the outdoor temperature drops, the outdoor unit's fans may switch to low speed, or one of the fans may stop intermittently.

ERROR

The LED lamps operate as follows (Table 7) according to the error contents. The LED lamps are on the outdoor unit board.

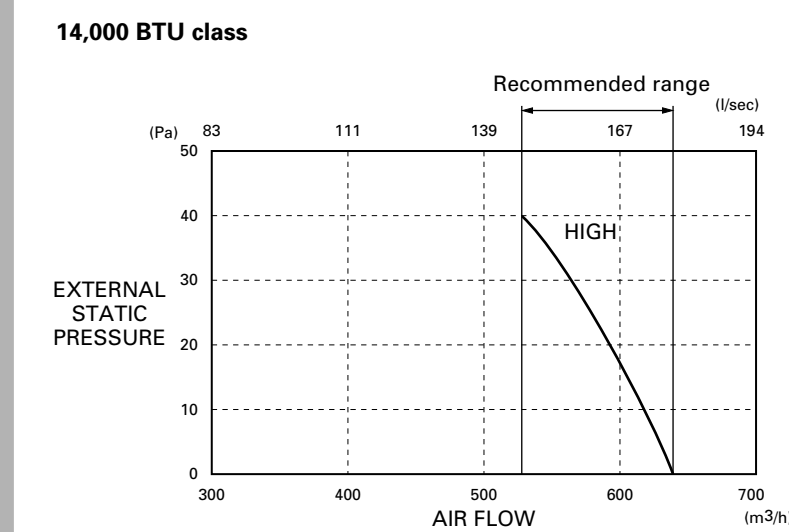
Table 7

Error display	Error contents
ON OFF	Lighting continued Discharge pipe temperature abnormal
ON 0.5 sec OFF 5 sec	Single quick flashes repeated Outdoor heat exchanger temperature sensor abnormal
ON 0.5 sec OFF 5 sec	Two quick flashes repeated Outdoor temperature sensor abnormal
ON 0.5 sec OFF 5 sec	Three quick flashes repeated Discharge pipe temperature sensor abnormal
LED No. 1 Lamp ON OFF	Lighting continue High pressure abnormal

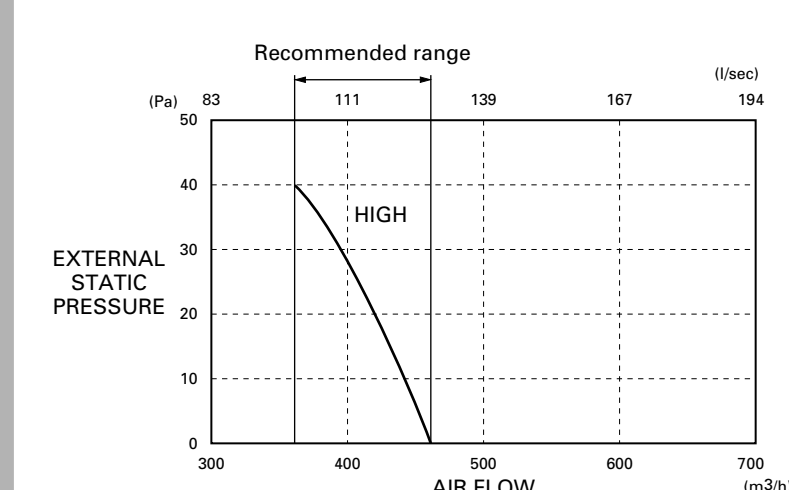
When the fault is cleared, the LED lamp goes off. However, for discharge pipe temperature abnormal and high pressure abnormal, the LED lamp lights continuously for 24 hours, as long as the power is not turned off.

9 STATIC PRESSURE CHARACTERISTIC

Fig. 48 FAN PERFORMANCE AND AIR FLOW EXTERNAL STATIC PRESSURE



12,000 BTU class



10 POWER

WARNING

- The rated voltage of this product is 220-240 V A.C. 50Hz.
- Before turning on the verify that the voltage is within the 198 V to 264 V range.
- Always use a special branch circuit and install a special receptacle to supply power to the room air conditioner.
- Use a circuit breaker and receptacle matched to the capacity of the room air conditioner.
- 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.