

APPENDIX C INSTALLATION INSTRUCTIONS

CS-MKS9NB4U & CZ-18BT1U
CS-MKS12NB4U & CZ-18BT1U
CS-KS18NB4UW & CZ-18BT1U

(852-6-4190-582-00-0)

INSTALLATION INSTRUCTIONS

Split System Air Conditioner



This air conditioner uses the refrigerant R410A.

Contents

NOTE External diameter of service port R410A: 5/16"

Page

Model Combinations

Combine indoor and outdoor units only as listed below.

Model No.

<u>Indoor Unit</u>	<u>Outdoor Unit</u>
CS-MKS9NB4U	CU-3KS19NBU
CS-MKS12NB4U	CU-4KS24NBU
CS-KS18NB4UW	CU-4KS31NBU

Power Source:
60 Hz, single-phase, 230 / 208 VAC

Ceiling Panel
CZ-18BT1U

IMPORTANT!

Please Read Before Starting 2

- 1. GENERAL** 4
 - 1-1. Tools Required for Installation (not supplied)
 - 1-2. Accessories Supplied with Unit
 - 1-3. Optional Copper Tubing Kit
 - 1-4. Type of Copper Tube and Insulation Material
 - 1-5. Additional Materials Required for Installation
- 2. INSTALLATION SITE SELECTION** 5
 - 2-1. Indoor Unit
 - 2-2. Embedding the Tubing and Wiring
- 3. HOW TO INSTALL THE INDOOR UNIT** 7
 - 3-1. Preparation for Suspending
 - 3-2. Suspending the Indoor Unit
 - 3-3. Placing the Unit Inside the Ceiling
 - 3-4. Installing the Drain Piping
 - 3-5. Checking the Drainage
 - 3-6. How to Install the Ceiling Panel
 - 3-7. Wiring Instructions
 - 3-8. Wiring Instructions for Inter-unit Connections
- 4. HOW TO TEST RUN THE AIR CONDITIONER** ... 14
- 5. REMOTE CONTROLLER INSTALLATION POSITION** 15
 - 5-1. Mounting on a Wall
- 6. ADDRESS SWITCH** 16
 - 6-1. Address Setting of the Remote Controller
- 7. CONNECTING A HOME AUTOMATION DEVICE** 17
- 8. INSTALLATION CHECK SHEET** 17

IMPORTANT!

Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.



WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation


The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

WARNING When Wiring



ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death**.
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- To prevent possible hazards from insulation failure,  the unit must be grounded.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing...

Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.

...In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.



CAUTION

Keep the fire alarm and the air outlet at least 1.5 m away from the unit.

When Connecting Refrigerant Tubing




WARNING

- When performing piping work do not mix air except for specified refrigerant (R410A) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigerant cycle.
- Refrigerant gas leakage may cause fire.
- Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
- Ventilate the room well, in the event that refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- Do not add any refrigerant, air, or substance into the refrigeration circuit other than the designated refrigerant (R410A). Adding anything other than the specified refrigerant may cause the pressure to rise excessively in the refrigeration circuit, rupturing the circuit and causing injury or damage.
- Use all-new tubing and flare nuts to make the tubing connections. Using any previous parts (from R22-based systems) may result in damage to the equipment, and may lead to the refrigeration circuit rupturing, causing a serious accident.

- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.
- Do not leak refrigerant while piping work for an installation or re-installation, and while repairing refrigeration parts. Handle liquid refrigerant carefully as it may cause frost-bite.

When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring. 
- Keep your fingers and clothing away from any moving parts.

- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

Others



CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm upon completing installation that no refrigerant gas is leaking. If escaped gas comes in contact with a stove, gas water heater, electric room heater or other heat source, it can produce dangerously toxic gas.

NOTE

The illustrations are based on the typical appearance of a standard model. Consequently, the shape may differ from that of the air conditioner that you are installing.

1. General




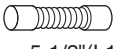








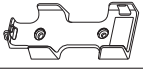


This booklet briefly outlines where and how to install the air conditioning system. Please read over the entire set of instructions for the indoor and outdoor units and make sure all accessory parts listed are with the system before beginning.

1-1. Tools Required for Installation (not supplied)

- | | | |
|------------------------------|------------------------------|----------------------------|
| 1. Standard screwdriver | 6. Sabre saw or key hole saw | 11. Tube cutter |
| 2. Phillips head screwdriver | 7. Hacksaw | 12. Tube flaring tool |
| 3. Knife or wire stripper | 8. Core bits | 13. Torque wrench |
| 4. Tape measure | 9. Hammer | 14. Adjustable wrench |
| 5. Carpenter's level | 10. Drill | 15. Reamer (for deburring) |

1-2. Accessories Supplied with Unit

Table 1

Parts	Figure	Q'ty	Remarks	Parts	Figure	Q'ty	Remarks
Washer		8	For temporarily suspending indoor unit from ceiling	Truss head screw	 3/16×13/32" (5×10mm)	4	For full-scale installation diagram
Flare insulation	 1/8"(T3) 3/16"(T5)	2 set	For wide / narrow tube connection	Drain hose	 5-1/2"(L140)	1	For unit & PVC tube connection
Insulation tape	 3/32"(T2)	2	For wide / narrow tube / flare nut connection	Hose band		2	For drain hose connection
Vinyl tie		8	For flare / drain insulating connection	Tapping screw	Truss-head Phillips 5/32×5/8" (4×16mm) 	2	
Drain hose insulation	 13/32"(T10)	1	For drain tube connection	Truss head screw	 5/32×15/32" (4×12mm)	4	Packed in the ceiling panel
Remote controller		1		Special screw	 3/16×1-9/16" (5×40mm)	4	
Remote control holder		1		<ul style="list-style-type: none"> • Use M10 or 3/8" for suspension bolts. • Suspension bolts and nuts (locally purchased) 			
AAA alkaline battery		2					
Full-scale installation diagram		1	Printed on container box				

1-3. Optional Copper Tubing Kit

Copper tubing for connecting the outdoor unit to the indoor unit is available in kits which contain the narrow and wide tubing, fittings and insulation. Consult your nearest sales outlet or air conditioning workshop.

1-4. Type of Copper Tube and Insulation Material

If you wish to purchase these materials separately from a local source, you will need:

- Deoxidized annealed copper tube for refrigerant tubing as detailed in Table 2.
Cut each tube to the appropriate lengths 1' to 1'4" (30 cm to 40 cm) to dampen vibration between units.
- Foamed polyethylene insulation for the specified copper tubes as required to precise length of tubing. Wall thickness of the insulation should be not less than 5/16" (8 mm).
- Use insulated copper wire for field wiring. Wire size varies with the total length of wiring. Refer to 3-7. Wiring Instructions for details.

Table 2

Model	Narrow Tube		Wide Tube	
	Outer Dia.	Thickness	Outer Dia.	Thickness
CS-MKS9NB4U CS-MKS12NB4U	1/4" (6.35 mm)	0.0314" (0.8 mm)	3/8" (9.52 mm)	0.0314" (0.8 mm)
CS-KS18NB4UW	1/4" (6.35 mm)	0.0314" (0.8 mm)	1/2" (12.70 mm)	0.0314" (0.8 mm)



CAUTION

Check local electrical codes and regulations before obtaining wire. Also, check any specified instructions or limitations.

1-5. Additional Materials Required for Installation

1. Refrigeration (armored) tape
2. Insulated staples or clamps for connecting wire
(See local codes.)
3. Putty
4. Refrigeration lubricant
5. Clamps or saddles to secure refrigerant tubing

2. Installation Site Selection

2-1. Indoor Unit



WARNING

To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may block air flow.

AVOID:

- direct sunlight.
- nearby heat sources that may affect performance of the unit.
- areas where leakage of flammable gas may be expected.
- placing or allowing any obstructions near the air conditioner inlet or outlet.
- installing in rooms that contain instant-on (rapid-start) fluorescent lamps. (These may prevent the air conditioner from receiving signals.)
- places where large amounts of oil mist exist.
- installing in locations where there are devices that generate high-frequency emissions.

DO:

- select an appropriate position from which every corner of the room can be uniformly cooled.
- select a location that will hold the weight of the unit.
- select a location where tubing and drain hose have the shortest run to the outside.
- allow room for operation and maintenance as well as unrestricted air flow around the unit. (Fig. 1)
- install the unit within the maximum elevation difference (H1, H2, H3, H4) above or below the outdoor unit and within a total tubing length (L1+L2+L3, L1+L2+L3+L4) from the outdoor unit as detailed in Table 3 and Fig. 2.

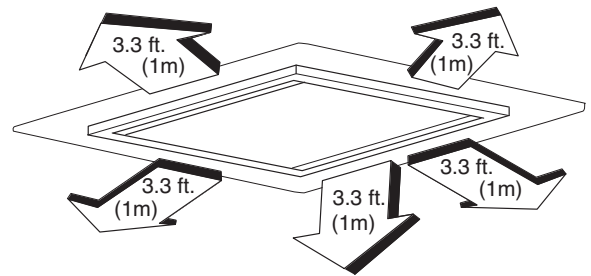


Fig. 1

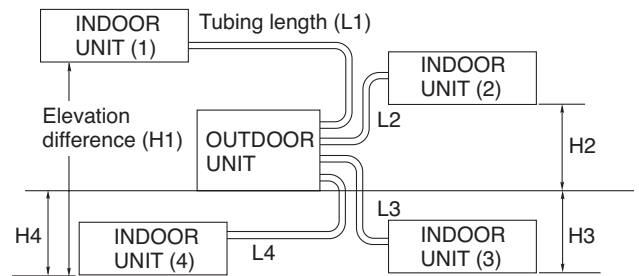


Fig. 2



CAUTION

Air delivery will be degraded if the distance from the floor to the ceiling is greater than 10 ft. (3 m).

- install the indoor unit more than 3.3' (1 m) away from any antenna or power lines or connecting wires used for television, radio, telephone, security system, or intercom. Electrical noise from any of these sources may affect operation.
- install in a sturdy manner to avoid increased operating noise.

Table 3

Model	Max. Allowable Tubing Length Per Unit (ft.)	Max. Allowable Total Tubing Length at Shipment (L1+L2+L3) or (L1+L2+L3+L4) (ft.)	Limit of Total Tubing Length (L1+L2+L3) or (L1+L2+L3+L4) (ft.)	Limit of Elevation Difference (H1, H2, H3, H4) (ft.)	Required Amount of Additional Refrigerant (oz./ft.)*
CU-3KS19NBU	82	150 (L1+L2+L3)	150 (L1+L2+L3)	50	—
CU-4KS24NBU	82	150 (L1+L2+L3+L4)	200 (L1+L2+L3+L4)	50	0.22
CU-4KS31NBU	100	150 (L1+L2+L3+L4)	230 (L1+L2+L3+L4)	50	0.22

* If total tubing length becomes 150 to 200 ft. (Max.) or 150 to 230 ft. (Max.), charge additional refrigerant (R410A) by 0.22 oz./ft. No additional charge of compressor oil is necessary. For more detailed charging information, refer to the Technical & Service Manual.

2-2. Embedding the Tubing and Wiring

- Before beginning embedding installation work, consult fully with agencies or offices related to the building's foundation, construction, electricity, and water.
- Wait to make connections to the embedded portion. Each connection step is described later in this manual.
- Securely cover the end of the embedded tubing to prevent intrusion of dirt or moisture.
- If an embedded tube is to be left for a long time, fill the tube with nitrogen and seal both ends securely. If a tube is left open for an extended time, moisture in the air inside the tubing may condense into water droplets, and lead to water contamination of the refrigerant circuit.
- In order to prevent insulation breakdown and ground faults, do not allow wiring ends to come in contact with rainwater, or be subjected to condensation or dew.
- Apply sufficient thermal insulation to the refrigerant tubing and drain pipes.

3. How to Install the Indoor Unit

3-1. Preparation for Suspending

This unit uses a drain pump. Use a carpenter's level to check that the unit is level.

3-2. Suspending the Indoor Unit

(1) Fix the suspension bolts securely in the ceiling using the method shown in the diagrams, by attaching them to the ceiling support structure, or by any other method that ensures that the unit will be securely and safely suspended. (Fig. 6-1)

(2) Follow the diagram to make the holes in the ceiling.

(3) Determine the pitch of the suspension bolts using the supplied full-scale installation diagram. The diagram shows the relationship between the positions of the suspension fitting, unit, and panel. (Fig. 6-2)

3-3. Placing the Unit Inside the Ceiling

(1) Be sure to remove the fan protection (4pcs) for transportation before hanging up the indoor unit.

(2) When placing the unit inside the ceiling, determine the pitch of the suspension bolts using the supplied full-scale installation diagram. (Fig. 6-3)

Tubing and wiring must be laid inside the ceiling when suspending the unit. If the ceiling is already constructed, lay the tubing and wiring into position for connection to the unit before placing the unit inside the ceiling.

(3) The length of suspension bolts must be appropriate for a distance between the bottom of the bolt and the bottom of the unit of more than 19/32" (15 mm) as shown in the diagram. (Fig. 6-3)

(4) Thread the 3 hexagonal nuts (locally purchased) and 2 supplied washers onto each of the 4 suspension bolts as shown in the diagram. Use 1 nut and 1 washer for the upper side, and 2 nuts and 1 washer for the lower side, so that the unit will not fall off the suspension lugs. (Fig. 6-4)

(5) Adjust so that the distance between the unit and the ceiling bottom is 1/2" (13 mm) to 23/32" (18 mm). Tighten the nuts on the upper side and lower side of the suspension lug. (Fig. 6-4)

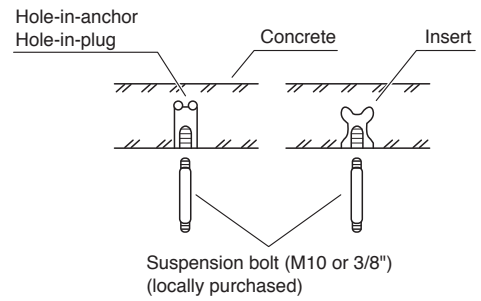


Fig. 6-1

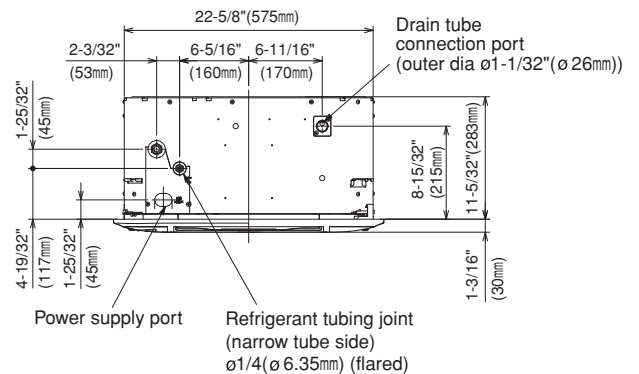
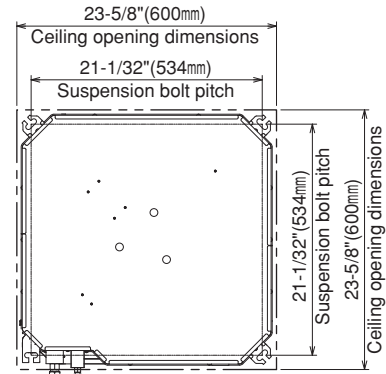


Fig. 6-3

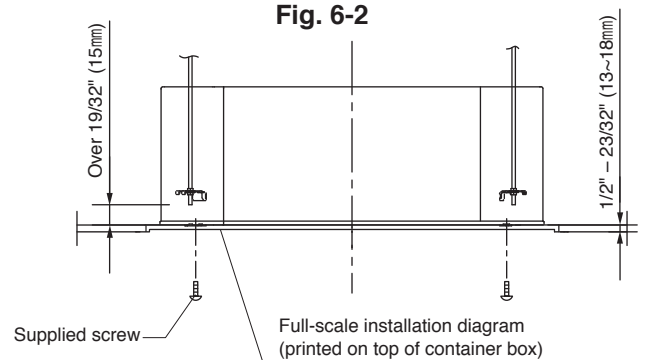


Fig. 6-4

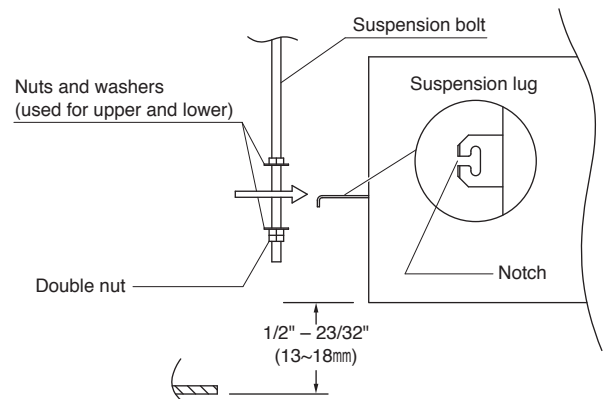


Fig. 6-4

3-4. Installing the Drain Piping

- (1) Prepare standard hard PVC pipe (locally purchased O.D. 1-1/32" (26 mm)) for the drain and use the supplied hose band to prevent water leaks. (Fig. 6-5)
- (2) To install the drain hose, first place 1 of the 2 hose bands over the unit drain port and the other hose band over the hard PVC pipe (not supplied). Then connect both ends of the supplied drain hose. (Fig. 6-5)
- (3) On the unit drain side, grasp the hose band with pliers and insert the drain hose all the way to the base.
 - If other commercially available hose bands are used, the drain hose may become pinched or wrinkled and there is danger of water leakage. Therefore be sure to use the supplied hose bands. When sliding the hose bands, be careful to avoid scratching the drain hose.
 - Do not use adhesive when connecting the supplied drain hose to the drain port (either on the main unit or the PVC pipe).
 - Reasons:
 - a) It may cause water to leak from the connection. Since the connection is slippery just after the adhesive has been applied, the pipe easily slips off.
 - b) The pipe cannot be removed when maintenance is needed.
- (4) Wrap the hose with the supplied drain hose insulation and use the 4 twist ties so that the hose is insulated with no gaps.
 - Do not bend the supplied drain hose 90° or more. The hose may slip off.

NOTE

Make sure the drain pipe has a downward gradient (1/100 or more) and that there are no water traps.



- In cases where it is necessary to raise the height of the drain piping, the drain piping can be raised to a maximum height of 2.78 ft. (850 mm) above the bottom surface of the ceiling. Under no conditions attempt to raise it higher than 2.78 ft. (850 mm) above the bottom surface of the ceiling. Doing so will result in water leakage. (Fig. 6-7)
- Do not use natural drainage.
- Do not install the pipe with an upward gradient from the connection port. This will cause the drain water to flow backward and leak when the unit is not operating. (Fig. 6-8)
- Do not apply force to the piping on the unit side when connecting the drain pipe. The pipe should not be allowed to hang unsupported from its connection to the unit. Fasten the pipe to a wall, frame, or other support as close to the unit as possible. (Fig. 6-9)
- Provide insulation for any pipes that are run indoors.

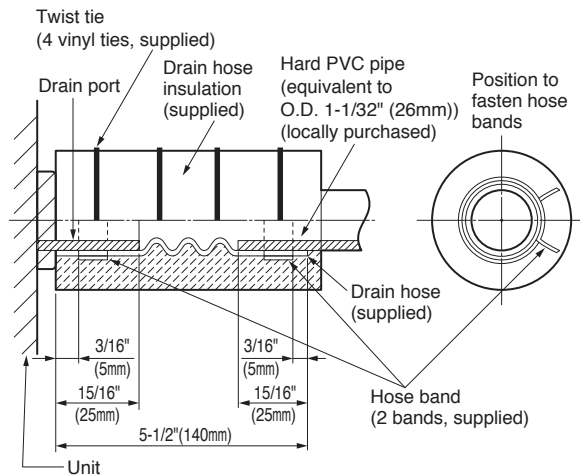


Fig. 6-5



CAUTION

- Attach so that the hose band fastener is on the side of the drain port.
- Attach the hose bands so that each is approximately 3/16" (5 mm) to 15/16" (25 mm) from the end of the supplied drain hose.

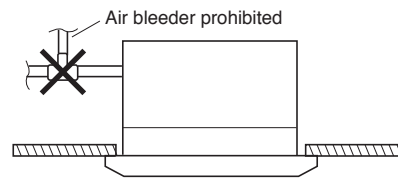


Fig. 6-6



CAUTION

- Do not install an air bleeder as this may cause water to spray from the drain pipe outlet. (Fig. 6-6)

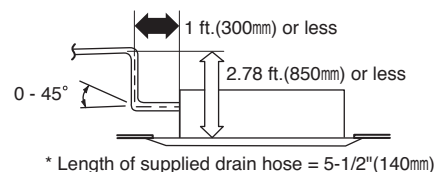


Fig. 6-7

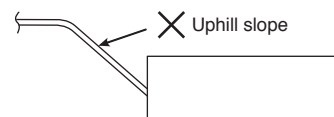


Fig. 6-8

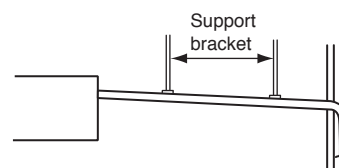


Fig. 6-9

3-5. Checking the Drainage

After wiring and drain piping are completed, use the following procedure to check that the water will drain smoothly. For this, prepare a bucket and wiping cloth to catch and wipe up spilled water.

- Be sure to do the wiring between the units before installing the ceiling panel. (Refer to 3-8. Wiring Instructions for Inter-unit Connections)
- (1) Turn on the power. (Here, "power" refers to the power supply from the outdoor unit.)
 - (2) Slowly pour approx. 16 ounces (500 ml) of water into the drain pan to check drainage. (Fig. 6-10a)
 - (3) Remove the 2 screws from the control box cover, then open the cover. Be careful not to drop the cover at this time.
 - (4) Disconnect the FS 3P connector (red) on the control PCB and operate the drain pump. (Fig. 6-10b) Check the water flow through the transparent drain pipe and see if there is any leakage.
 - (5) When the check of drainage is complete, reconnect the FS 3P connector and remount the control cover.

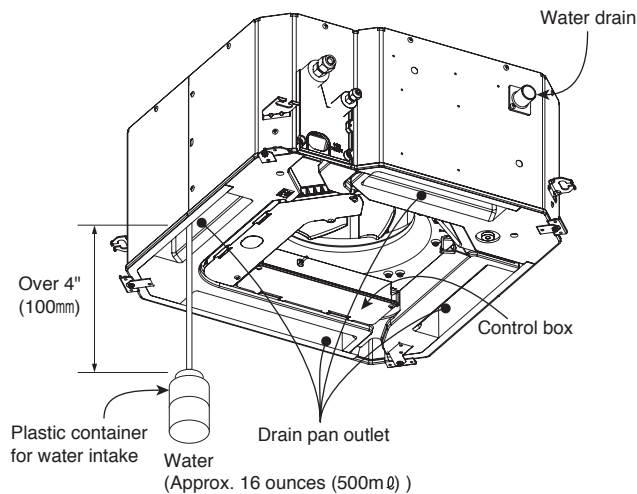


Fig. 6-10a

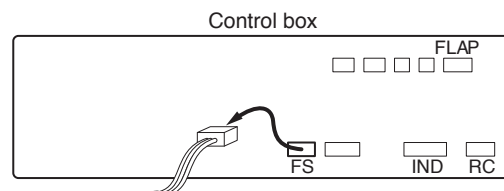


Fig. 6-10b



CAUTION

The drain pump will continue to operate for a minimum of 6 minutes after the FS 3P connector is reconnected.

Ⓐ must be within the range of 1/2"(13mm) to 23/32"(18mm). (Fig. 6-11)
If not within this range, malfunction or other trouble may occur.

3-6. How to Install the Ceiling Panel

Checking the unit position

- (1) Check that the ceiling hole is 23-5/8" (600 mm) × 23-5/8" (600 mm) (Fig. 6-11)
- (2) Confirm that the position of the indoor unit and the ceiling as shown in the diagram. If the positions of the ceiling surface and unit do not match, air leakage, water leakage, flap operation failure, or other problems may occur. (Fig. 6-11)

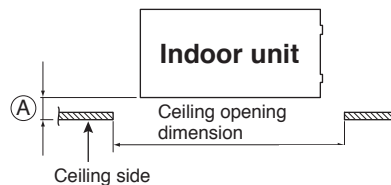


Fig. 6-11



CAUTION

- Never place the panel face-down. Neither hang it vertically nor place it on top of a projecting object. Placing it face-down will damage the surface.
- Do not touch the flap or apply force to it. (This may cause flap malfunction.) (Fig. 6-12)

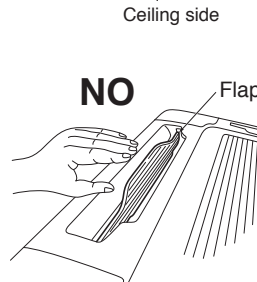


Fig. 6-12

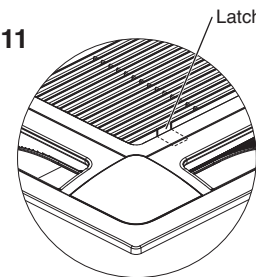


Fig. 6-13

3-6-1. Before Installing the Ceiling Panel

- (1) Remove the air-intake grille and air filter from the ceiling panel.
 - a) Press on and slide the two latches of the air-intake grille with your thumb in the direction shown by the arrow ① to open the grille. (Figs. 6-13 and 6-14)
 - b) With the air-intake grille opened, remove the grille hinge from the ceiling panel by sliding it in the direction shown by the arrow ②. (Fig. 6-15)

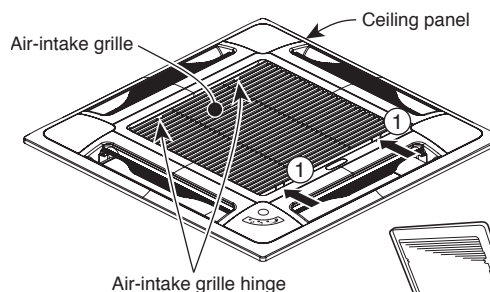


Fig. 6-14

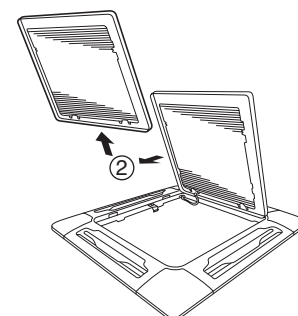


Fig. 6-15

(2) Removing the corner cover and indicator cover

- a) While lightly pressing the center of the corner cover, pull up the tab for the screw hole. Use the same procedure to remove the indicator cover.

(Fig. 6-16)

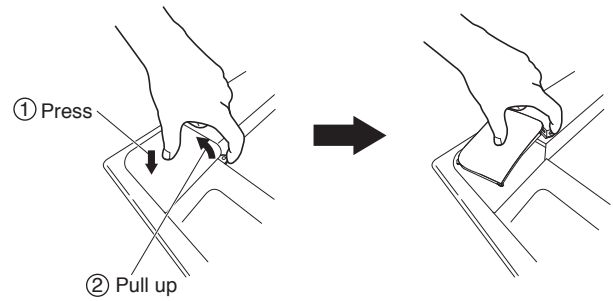
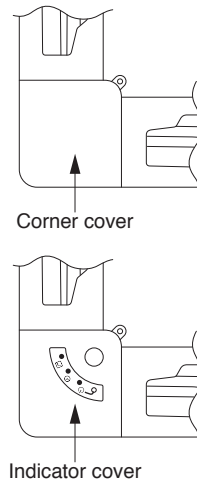


Fig. 6-16

3-6-2. Installing the Ceiling Panel

- (1) Hang the temporary latches on the inside of the ceiling panel to the receptacle on the unit to temporarily attach the ceiling panel in place. (Fig. 6-17)

- The ceiling panel must be installed in the correct direction relative to the unit. Align the REF. PIPE and DRAIN marks on the ceiling panel corner with the correct positions on the unit.

- (2) Align the panel installation holes and the unit screw holes. (Fig. 6-18)

- (3) Tighten the supplied special screws at the 4 panel installation locations so that the panel is attached tightly to the unit.

- Check that the wiring connectors are not caught between the unit and the ceiling panel.

- (4) Check that the panel is attached tightly to the ceiling. (Fig. 6-19)

- At this time, make sure that there are no gaps between the unit and the ceiling panel, or between the ceiling panel and the ceiling surface.

- If there is a gap between the panel and the ceiling, leave the ceiling panel attached and make fine adjustments to the installation height of the unit to eliminate the gap with the ceiling.

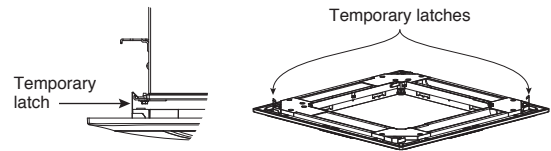


Fig. 6-17

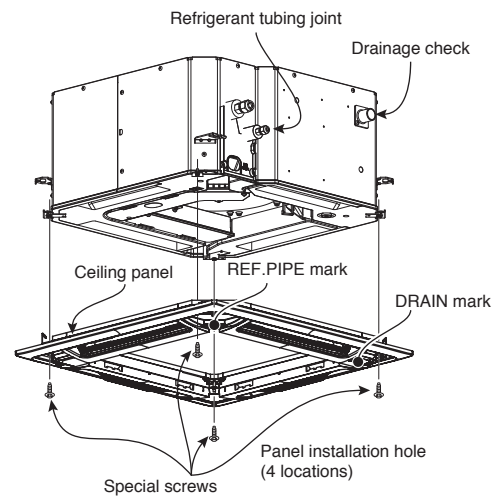


Fig. 6-18

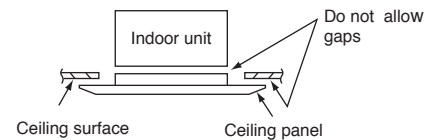
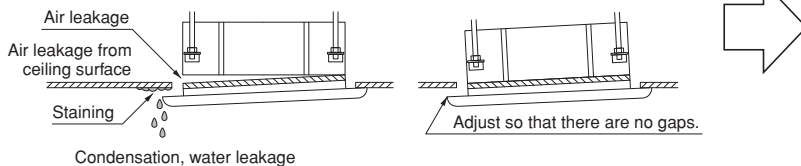


Fig. 6-19



- If the screws are not sufficiently tightened, trouble such as that shown in the figure below may occur. Be sure to tighten the screws securely.

- If a gap remains between the ceiling surface and the ceiling panel even after the screws are tightened, adjust the height of the unit again.



The height of the unit can be adjusted from the ceiling panel corner hole, with the ceiling panel attached, to an extent that does not affect the unit levelness, the drain hose, or other elements.

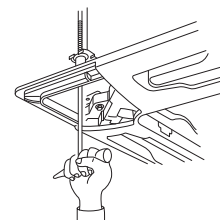
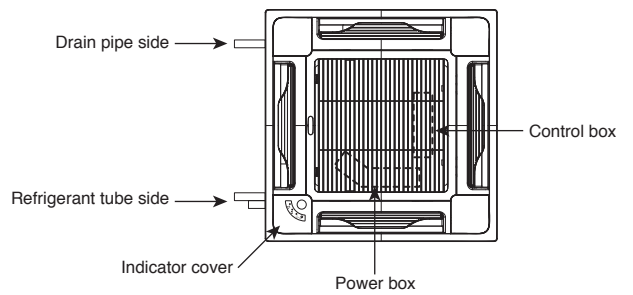


Fig. 6-20

3-6-3. Wiring the Ceiling Panel and the Indicator

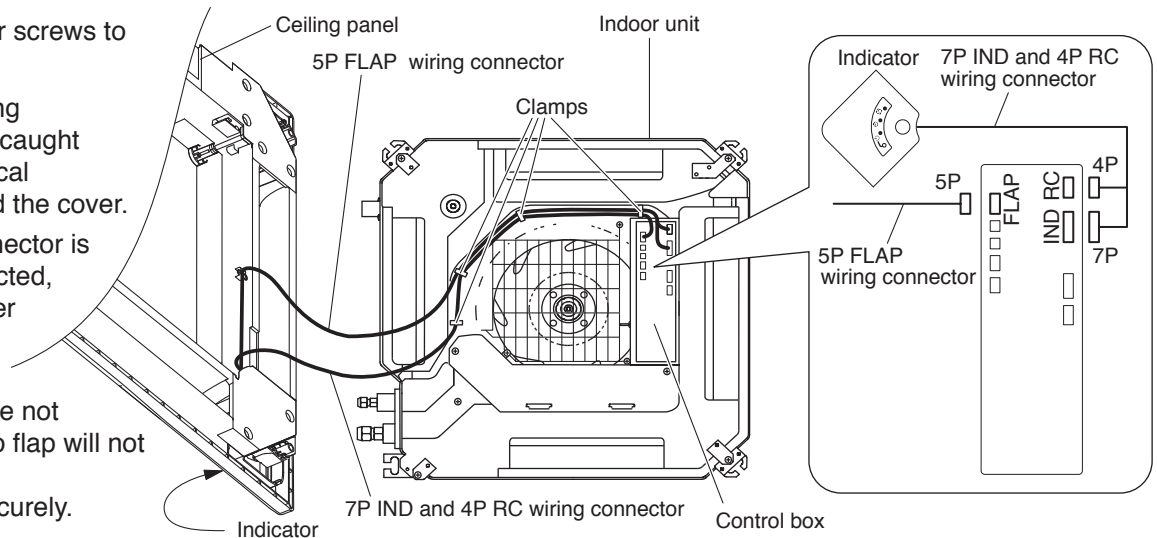
- (1) Remove the 2 screws from the control box cover, then open the cover. Be careful that the cover does not fall.
- (2) Connect the 5P FLAP wiring connector from the ceiling panel to the connector on the control PCB in the control box. (Fig. 6-21)
- (3) Connect the 7P IND and 4P RC wiring connector from the indicator to the connectors on the control PCB in the control box. (Fig. 6-21)
- (4) Be sure to use the clamps to fasten the connector wires in place. (Fig. 6-21)



As to how to attach the indicator cover, refer to Fig. 6-23.

Fig. 6-22

- (5) Tighten the 2 cover screws to close the cover.
 - Check that the wiring connectors are not caught between the electrical component box and the cover.
 - If the indicator connector is not securely connected, the remote controller signal will not be received.
 - If the connectors are not connected, the auto flap will not operate. Be sure to connect them securely.



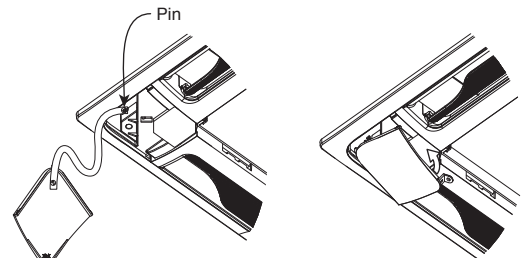
* Pass the wiring connectors through the clamps to fasten them in place, as shown in the figure.

Fig. 6-21

3-6-4. How to Attach the Corner Cover and Air-Intake Grille

A. Attaching the corner cover

- (1) Check that the safety strap from the corner cover is fastened to the ceiling panel pin, as shown in the figure. (Fig. 6-23)
- (2) Use the supplied screws to attach the corner cover to the ceiling panel.



Place the corner cover so that the 3 tabs fit into the holes in the ceiling panel. Then fasten it in place with the supplied screws.

Fig. 6-23

B. Attaching the air-intake grille

- To install the air-intake grille, follow the steps for 3-6-1. **Before Installing the Ceiling Panel** in the reverse order. By rotating the air-intake grille, it is possible to attach the grille onto the ceiling panel from any of 4 directions. (Fig. 6-25)

- **When attaching the air-intake grille, be careful that the flap and the indicator wiring do not become caught.**
- **Be sure to attach the safety cord that prevents the air-intake grille from dropping off to the ceiling panel unit as shown in Fig. 6-24.**

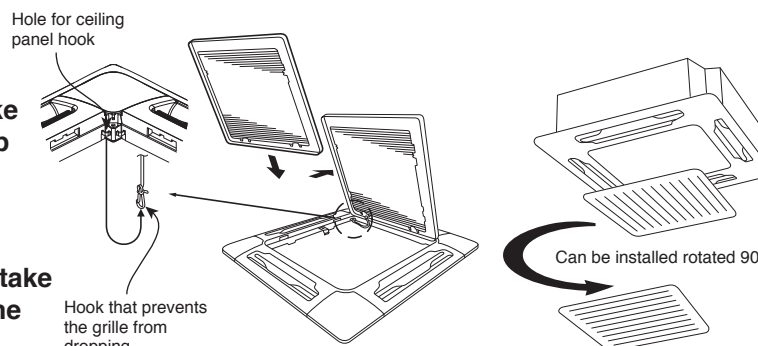


Fig. 6-24

Fig. 6-25

* The grille can be installed with these hinges facing in any of 4 directions.

3-6-5. Checking After Installation

- Check that there are no gaps between the unit and the ceiling panel, or between the ceiling panel and the ceiling surface. Gaps may cause water leakage and condensation.
- Check that the wiring is securely connected.
If it is not securely connected, the auto flap will not operate. In addition, water leakage and condensation may occur.

3-6-6. When Removing the Ceiling Panel for Servicing

When removing the ceiling panel for servicing, remove the air-intake grille and air filter, disconnect the flap and the indicator wiring connectors inside the control box, and then remove the 4 mounting screws.

3-6-7. Adjusting the Auto Flap

The air-direction flap on the ceiling panel outlet can be adjusted as follows.

- Adjust the flap to the desired angle using the remote controller. The flap also has an automatic air-sweeping mechanism.

NOTE

- Never attempt to move the flap by hand.
- Proper air flow depends on the location of the air conditioner, the layout of the room and furniture, etc. If cooling or heating seems inadequate, try changing the direction of the air flow.

3-7. Wiring Instructions

General precautions on wiring

- (1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.
- (2) Provide a power outlet to be used exclusively for each unit, with a power supply disconnect and circuit breaker for overcurrent protection provided in the exclusive line.
- (3) To prevent possible hazards due to insulation failure, the unit must be grounded.
- (4) Each wiring connection must be done tightly and in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.
- (5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- (6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.

3-8. Wiring Instructions for Inter-unit Connections

- (1) Remove the 1 screw from the terminal cover, then open the cover. Be careful that the cover does not fall.
- (2) Remove the 3 screws from the power box cover, then open the cover. Be careful that the cover does not fall.
- (3) Use the screw to securely fasten the ground wire from the outdoor unit in place.
- (4) Remove the transparent plastic cover from the 3P terminal plate.
- (5) While viewing the wiring diagram, connect the inter-unit and power supply line to terminals 1, 2 and 3 on the 3P terminal plate.
- (6) Remount the transparent plastic cover onto the 3P terminal plate.
- (7) Be sure to use the clamping strap to fasten the wires in place.
- (8) Tighten the screws to remount the terminal and the power box cover.

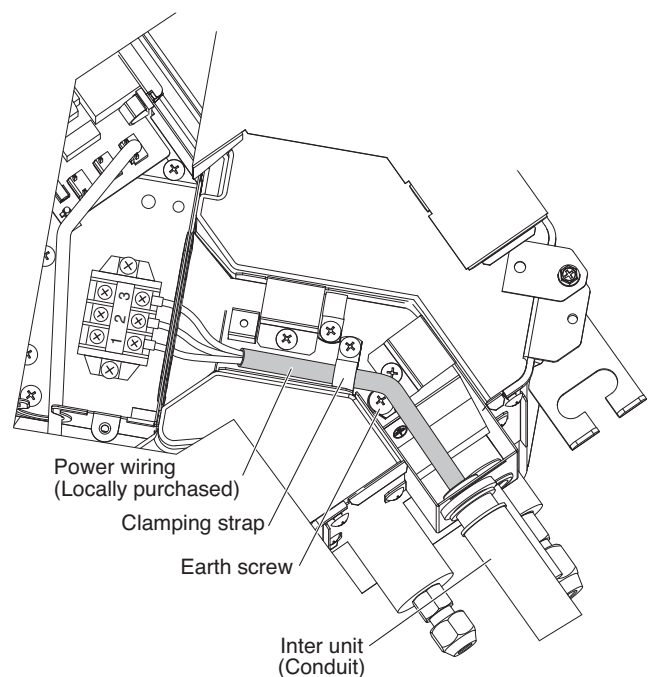


Fig. 8

**WARNING**

Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.

When connecting each power wire to the corresponding terminal, follow the instructions “How to connect wiring to the terminal” and fasten the wire securely tight with the fixing screw of the terminal plate.

How to connect wiring to the terminal**a) For Indoor Unit**

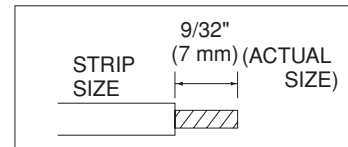
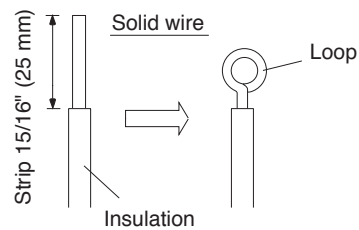
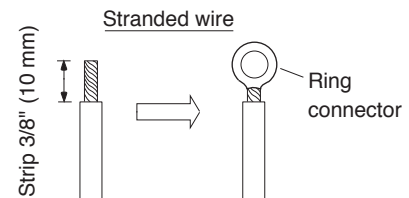
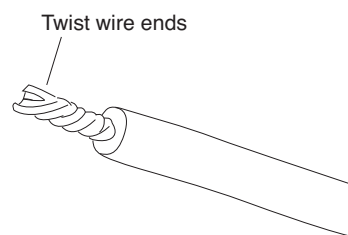
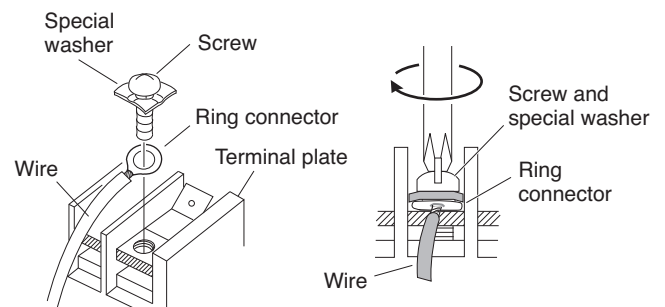
- (1) Cut the wire end with a cutting pliers, then strip the insulation to expose the wire about 9/32" (7 mm). See the label (Fig. 28) near the terminal plate.
- (2) Using a screwdriver, loosen the terminal screw on the terminal plate.
- (3) Insert the wire and tighten the terminal screw completely using a screwdriver.

b) For Outdoor Unit**■ For solid core wiring (or F-cable)**

- (1) Cut the wire end with a cutting pliers, then strip the insulation to expose the solid wire about 15/16" (25 mm). (Fig. 29)
- (2) Using a screwdriver, remove the terminal screw(s) on the terminal plate.
- (3) Using the pliers, bend the solid wire to form a loop suitable for the terminal screw.
- (4) Shape the loop wire properly, place it on the terminal plate and fix it securely with the removed terminal screw using a screwdriver.

■ For stranded wiring

- (1) Cut the wire end with a cutting pliers, then strip the insulation to expose the stranded wiring about 3/8" (10 mm) and tightly twist the wire ends. (Figs. 30 and 31)
- (2) Using a screwdriver, remove the terminal screw(s) on the terminal plate.
- (3) Using a ring connector fastener or pliers, securely clamp each stripped wire end with a ring connector. (Fig. 30)
- (4) Place the ring connector wire, and replace and tighten the removed terminal screw using a screwdriver. (Fig. 32)

**Fig. 28****Fig. 29****Fig. 30****Fig. 31****Fig. 32**

4. How to Test Run the Air Conditioner

After turning on the power of the air conditioner, use the remote controller and follow the steps below to conduct the test run.

- (1) Set the remote controller in Test Run mode. (Fig. 33)
 - a) Press and hold the HIGH POWER button and the 1HR. TIMER button.
 - b) Then press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first.
 - c) Then release the HIGH POWER and 1HR. TIMER buttons.
 - d) ✻ appears and “oP-1” blinking in the remote controller clock display area. (Fig. 34)
- (2) Start Cooling mode test run by pressing the ON/OFF operation button of the remote controller. (Fig. 33)
 - This starts the fan producing uncooled forced air with the 3 indicator lamps (OPERATION lamp, TIMER lamp, and HIGH POWER lamp) on the main unit blinking. (Fig. 35)
 - After 3 minutes, the system shifts into cooling operation, and cool air will start to be felt. Cooling mode test run is unaffected by the room temperature.
- (3) Press the ON/OFF operation button of the remote controller again to stop the test run. (Fig. 33)
- (4) Finally press the ACL (Reset) button of the remote controller to release it from Test Run mode to return to normal mode. (Fig. 33)
 - “✻” and “oP-1” will disappear from the remote controller clock display area.

NOTE

Troubleshooting:

In the event that the green OPERATION lamp is blinking upon powering up the system, an error condition exists. In this case, refer to the self-diagnostics procedure which can be seen by opening the air-intake grille.

IMPORTANT

After the test run is completed, be sure to press the ACL (Reset) button to return to normal mode. The air conditioner will not operate correctly if this is not done.

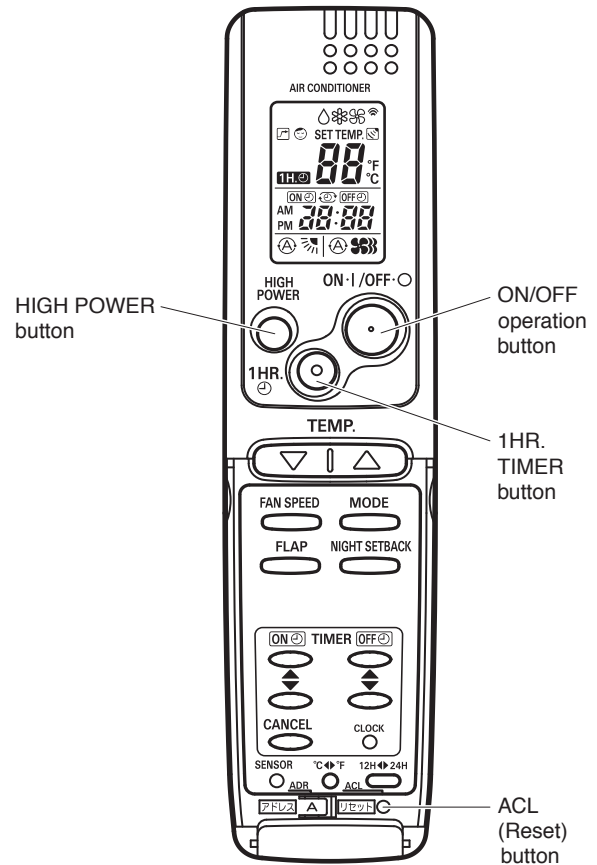


Fig. 33

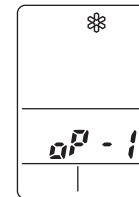


Fig. 34

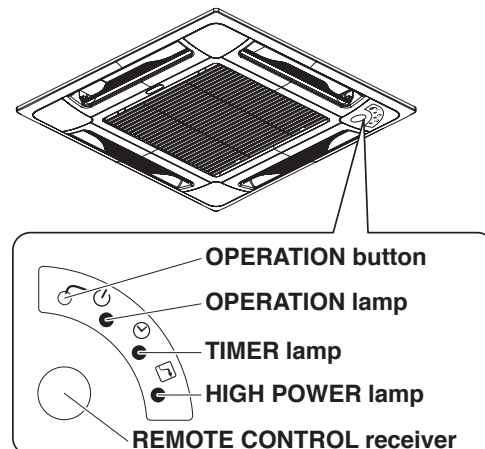


Fig. 35

5. Remote Controller Installation Position

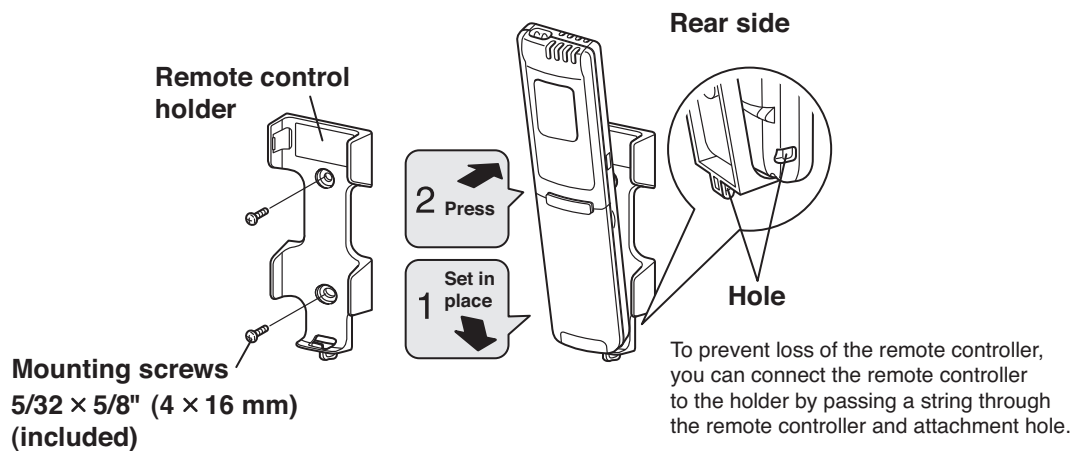
The remote controller can be operated from either a non-fixed position or a wall-mounted position.

To ensure that the air conditioner operates correctly, do not install the remote controller in the following places:

- In direct sunlight
- Behind a curtain or other place where it is covered
- More than 26' (8 m) away from the air conditioner
- In the path of the air conditioner's airstream
- Where it may become extremely hot or cold
- Where it may be subject to electrical or magnetic interference
- Where there is an obstacle between the remote controller and the air conditioner (since a check signal is sent from the remote controller every 5 minutes)

5-1. Mounting on a Wall

Before mounting the remote controller, press the ON/OFF operation button at the mounting location to make sure that the air conditioner operates from that location. The indoor unit should make a beeping sound to indicate that it has received the signal.



To take out the remote controller, pull it forward.

Fig. 36

6. Address Switch

6-1. Address Setting of the Remote Controller

The address can be set in order to prevent interference between remote controllers when 2 indoor units are installed near each other. The address is normally set to "A." To set a different address, it is necessary to change the address on the second remote controller.

NOTE

Once changed, you cannot restore the original address setting of the air conditioner.

- (1) Switch on the power source.
- (2) Break the address-setting tab marked "A" on the second remote controller to change the address (Fig. 37). When the tab is removed, the address is automatically set to B (Fig. 38).
- (3) Press and hold the remote controller HIGH POWER button and 1HR. TIMER button. Then, press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first, then release the HIGH POWER and 1HR. TIMER buttons. "oP-1" (Test Run) appears, blinking in the remote controller clock display area.
- (4) Each time the 1HR. TIMER button is pressed, the display changes as shown below. Press this button 2 times to change the display to "oP-7" (Address setting). (Fig. 39)

oP-1	Test run mode
oP-3	Self-diagnostic mode
oP-7	Address setting mode

- (5) "oP-7" has now been selected for address setting.
- (6) Press the ON/OFF operation button on the remote controller. (Fig. 39) Check that the "beep" signal-received sound is heard from the second indoor unit (approximately 5 times). The sound you hear is the signal that the remote controller address has been changed.
- (7) Finally press the remote controller ACL (Reset) button to cancel the blinking "oP-7" display. (Fig. 39)

Changing of the second remote controller address is now completed.

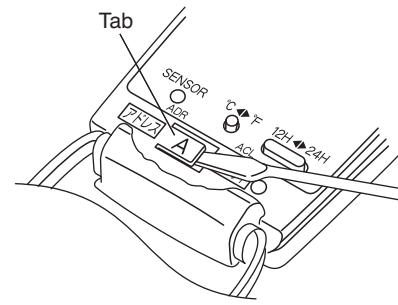


Fig. 37

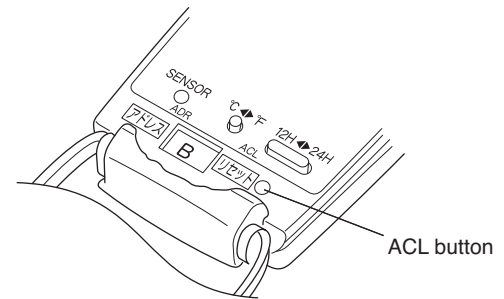


Fig. 38

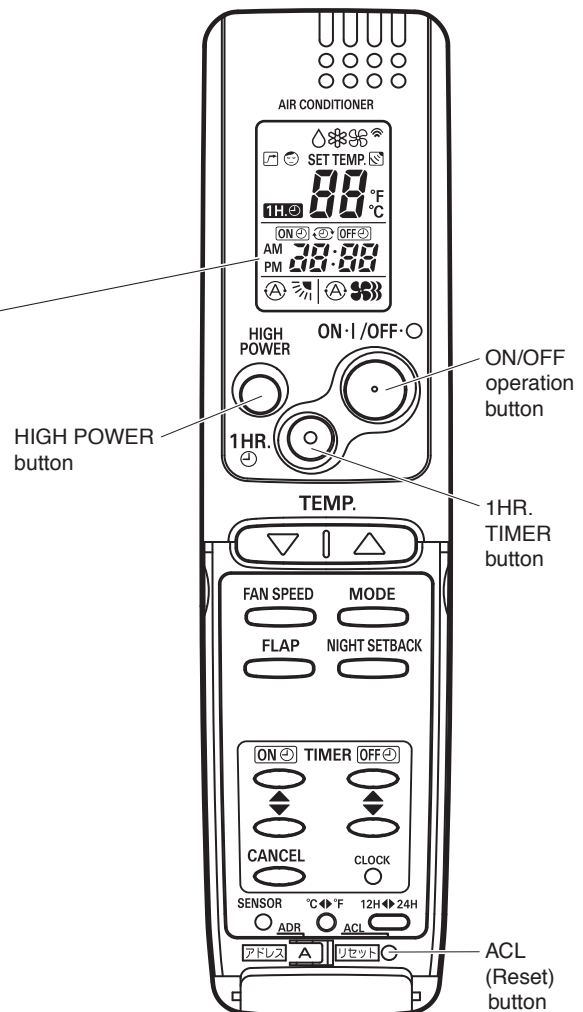


Fig. 39

7. Connecting a Home Automation Device

The HA (white) 4P terminal is located on the indoor unit PCB. If a HA device will be used, connect it to this terminal.

8. Installation Check Sheet

- The strength of the installation location is sufficient to support the air conditioner weight.
- The indoor and outdoor units are installed level and vertically.
- The power and voltage are as specified.
- Inter-unit cables are securely inserted into the terminal block.
- Inter-unit cables are securely fixed.
- The power cable and inter-unit cables are not connected anywhere along their paths.
- The ground wire is securely connected.
- Thermal insulation has been applied to the tubing connections.
- Drain connections are secure and water drains properly.
- Putty has been used to close the hole in the wall.
- Remote controller signals are being positively received.