INSTALLATION INSTRUCTIONS
VRF System Air Conditioner

Panasonic®

This air conditioner uses the refrigerant R410A.

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

Model No.

Indoor Units											
Type	**Indoor Unit Type**	**7**	**9**	**12**	**15**	**18**	**19**	**24**	**36**	**48**	**54**
U1	4-Way Cassette			S-12MU1U6 (CZ-36KPU2U)**		S-18MU1U6 (CZ-36KPU2U)**		S-24MU1U6 (CZ-36KPU2U)**	S-36MU1U6 (CZ-36KPU2U)**		
Y1	4-Way Cassette 60 × 60			S-12MY1U6 (CZ-18KPY1U)**		S-18MY1U6 (CZ-18KPY1U)**					
D1	1-Way Cassette	S-07MD1U6 (CZ-12KPD1U)**	S-09MD1U6 (CZ-12KPD1U)**	S-12MD1U6 (CZ-12KPD1U)**							
F1	Low Silhouette Ducted	S-07MF1U6	S-09MF1U6	S-12MF1U6	S-15MF1U6	S-18MF1U6		S-24MF1U6	S-36MF1U6	S-48MF1U6	S-54MF1U6
M1	Slim Low Static Ducted	S-07MM1U6	S-09MM1U6	S-12MM1U6	S-15MM1U6	S-18MM1U6					
E1	High Static Pressure Ducted								S-36ME1U6	S-48ME1U6	
T1	Ceiling			S-12MT1U6		S-18MT1U6		S-24MT1U6			
K1	Wall Mounted	S-07MK1U6	S-09MK1U6	S-12MK1U6		S-18MK1U6	S-19MS1U6*	S-24MK1U6			
P1	Floor Standing	S-07MP1U6	S-09MP1U6	S-12MP1U6	S-15MP1U6	S-18MP1U6		S-24MP1U6			
R1	Concealed Floor Standing	S-07MR1U6	S-09MR1U6	S-12MR1U6	S-15MR1U6	S-18MR1U6		S-24MR1U6			

* Necessary to install the External Electronic Expansion Valve Kit (Optional : CZ-P56SVK1U)

** Panel (optional parts)

Optional Controllers

RC	Timer Remote Controller	CZ-RTC2
	Wireless Remote Controller (For F1, M1, E1, P1, R1 Types)	CZ-RWSC1U
	Wireless Remote Controller (For U1 Type)	CZ-RWSU1U
	Wireless Remote Controller (For Y1 Type)	CZ-RWSY1U
	Wireless Remote Controller (For D1, T1 Types)	CZ-RWST1U
	Wireless Remote Controller (For K1 Type)	CZ-RWSK1U
	Simplified Remote Controller	CZ-RE2C2
	System Controller	CZ-64ESMC1U
	Schedule Timer	CZ-ESWC2
	Intelligent Controller	CZ-256ESMC1U
	Communication Adaptor	CZ-CFUNC1U
	Remote Sensor	CZ-CSRC2
	LonWorks Interface	CZ-CLNC1U

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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 over-heating 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 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 5 feet away from the unit.

…In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

…In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

…In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- Ventilate the room well, in the event that is 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.
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- 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.

WARNING

- When performing piping work do not mix air except for specifled 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.

- 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 frostbite.

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.

WARNING

- Do not clean inside the indoor and outdoor units by users. Engage authorized dealer or specialist for cleaning.
- In case of malfunction of this appliance, do not repair by yourself. Contact to the sales dealer or service dealer for a repair.

CAUTION

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.
- 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 after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

Others

CAUTION

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.
- Do not sit or step on the unit, you may fall down accidentally.
- Do not stick any object into the FAN CASE.
  You may be injured and the unit may be damaged.

Check of Density Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its density will not exceed a set limit.

The refrigerant (R410A), which is used in the air conditioner, is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws imposed to protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its density should rise excessively. Suffocation from leakage of refrigerant is almost non-existent. With the recent increase in the number of high density buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power, etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared to conventional individual air conditioners. If a single unit of the multi air conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its density does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

ASHRAE and the International Mechanical Code of the ICC as well as CSA provide guidance and define safeguards related to the use of refrigerants, all of which define a Refrigerant Concentration Level (RCL) of 25 pounds per 1,000 cubic feet for R410A refrigerant. For additional guidance and precautions related to refrigerant safety, please refer to the following documents:

International Mechanical Code 2009 (IMC-2009) (or more recently revised)
ASHRAE 15
ASHRAE 34

CONTENTS

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 outdoor unit and make sure all accessory parts listed are with the system before beginning.

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

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

1-2. Accessories Supplied

See Tables 1-1 – 1-9.

1-3. Type of Copper Tube and Insulation Material

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

1. Deoxidized annealed copper tube for refrigerant tubing.
2. Foamed polyethylene insulation for copper tubes as required to precise length of tubing. Wall thickness of the insulation should be not less than 5/16 in.
3. Use insulated copper wire for field wiring. Wire size varies with the total length of wiring.
   Refer to "**4. ELECTRICAL WIRING**" for details.

CAUTION

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

1-4. Additional Materials Required for Installation

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

Table 1-1 (4-Way Cassette)

Part Name	Figure	Q'ty	Remarks
Full-scale installation diagram		1	Printed on container box
Drain hose		1	For securing drain hose
Hose band		1	For securing drain hose
Drain insulator		1	For drain joint
Flare insulator		1	For liquid tube
		1	For gas tube
Insulating tape	 White (heat-resisting)	2	For gas tube joint
Packing		1	For drain joint
Wiring cover		1	For covering electrical wiring
Screw		4	For full-scale installation diagram
Washer		8	For suspending indoor unit from ceiling
Screw		1	For fixing the wiring cover

Table 1-2 (1-Way Cassette)

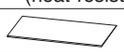
Part Name	Figure	Q'ty	Remarks
Full-scale installation diagram		1	Printed on container box
Drain hose		1	For securing drain hose
Hose band		1	For securing drain hose
Drain insulator		1	For drain joint
Flare insulator		1	For liquid tube
		1	For gas tube
Insulating tape	 White (heat-resisting)	2	For gas tube joint
Packing		1	For drain joint
Washer		8	For suspending indoor unit from ceiling
Screw		4	For full-scale installation diagram
Bushing		1	For electrical junction box

Table 1-3 (Low Silhouette Ducted)

Part Name	Figure	Q'ty	Remarks
Drain hose		1	For securing drain hose
Hose band		1	For securing drain hose
Packing		1	For drain joint
Drain insulator		1	For drain joint
Flare insulator		1	For liquid tube
Insulating tape	 White (heat-resisting)	2	For gas and liquid tubes flare nuts
Flare insulator		1	For gas tube
Washer		8	For suspending indoor unit from ceiling
Sealing putty		1	For sealing recessed portion of power supply
Vinyl clamp		8	For flare and drain insulators

- Use M10 or 3/8" for suspending bolts.
- Field supply for suspending bolts and nuts.

Table 1-4 (High Static Pressure Ducted)

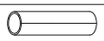
Part Name	Figure	Q'ty	Remarks
Washer		8	For suspending indoor unit from ceiling
Nut		8	For suspending indoor unit from ceiling
Flare insulator		1	For gas tube
		1	For liquid tube
Drain socket		1	For drain pipe connection

Table 1-5 (Ceiling)

Part Name	Figure	Q'ty	Remarks
Full-scale installation diagram		1	Printed on container box
Washer		4	For temporarily suspending indoor unit from ceiling
Flare insulator	 T1/8"	2	For gas and liquid tube joints
	 T3/16"	2	
Insulating tape	 White (heat-resisting)	2	For gas and liquid tubes flare nuts
Vinyl clamp		8	For flare and drain insulators
Drain hose	 L5-1/2"	1	For main unit and PVC pipe joints
Hose band		2	For drain hose connection
Drain insulator		1	For drain hose joint
Gum eyelet		2	For power supply inlet and 3 way wiring inlet

Table 1-6 (Wall Mounted)

Part Name	Figure	Q'ty	Remarks
Tapping screw	 5/32" × 1"	10	For fixing the rear panel
Plastic cover		1	For improved tubing appearance
Insulator		1	For insulating flare nut (1862, 1962, 2452)

Table 1-7 (4-Way Cassette 60 × 60)

Part Name	Figure	Q'ty	Remarks	Part Name	Figure	Q'ty	Remarks
Washer		8	For temporarily suspending indoor unit from ceiling	Full-scale installation diagram		1	Printed on container box
Flare insulation	 T3 T5	2 set	For gas / liquid tube connection	Washer head screw		4	For full-scale installation diagram
Insulation tie		2	For gas / liquid tube / flare nut connection	Drain hose	 L140	1	For unit & PVC tube connection
Vinyl tie		8	For flare / drain insulating connection	Hose band		2	For drain hose connection
Drain hose insulation	 T10	1	For drain tube connection				

- Use M10 or 3/8" for suspending bolts.
- Field supply for suspending bolts and nuts.

Table 1-8 (Slim Low Static Ducted)

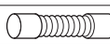
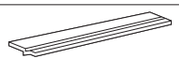
Part Name	Figure	Q'ty	Remarks
Washer		8	For suspension fitting
Flare insulation	 T3 T5	2 set	For gas / liquid tube connection
Insulation tape		2	For gas / liquid tube / flare nut connection
Vinyl tie		8	For flare / drain insulating connection
Drain hose insulation	 T10	1	For drain tube connection
Drain hose	 L140	1	For unit & PVC tube connection
Hose band		2	For drain hose connection
Short circuit connection		1	For high static pressure (Located on the back of the electrical component box lid.)

Table 1-9 (Floor Standing & Concealed Floor Standing)

Part Name	Figure	Q'ty	Remarks
Connection pipe		1	For connecting gas tubes
Flare insulator		2	For gas and liquid tubes
Insulating tape	 (White)	2	For gas and liquid tube flare nuts
Insulating tape	 (Black)	2	For gas and liquid tubes
Vinyl clamp		7	For ends of flare insulator
Insulating tape (black and long)		1	For drain pipe
Drain insulator		1	For drain hose joint
Binding strap		2	

- Use M10 or 3/8" for suspending bolts.
- Field supply for suspending bolts and nuts.

2. SELECTING THE INSTALLATION SITE

2-1. Indoor Unit

AVOID:

- areas where leakage of flammable gas may be expected.
- places where large amounts of oil mist exist.
- direct sunlight.
- locations near heat sources which may affect the performance of the unit.
- locations where external air may enter the room directly. This may cause “sweating” on the air discharge ports, causing them to spray or drip.
- locations where the remote controller will be splashed with water or affected by dampness or humidity.
- installing the remote controller behind curtains or furniture.
- locations where high-frequency emissions are generated.

DO:

- select an appropriate position from which every corner of the room can be uniformly cooled.
- select a location where the ceiling is strong enough to support the weight of the unit.
- select a location where tubing and drain pipe have the shortest run to the outdoor unit.
- allow room for operation and maintenance as well as unrestricted air flow around the unit.
- install the unit within the maximum elevation difference above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed in the installation manual packed with the outdoor unit.
- allow room for mounting the remote controller about 3 ft. off the floor, in an area that is not in direct sunlight nor in the flow of cool air from the indoor unit.
- The elevation (Low Silhouette Ducted, Slim Low Static Ducted) between the bottom unit and the floor surface should be at least 8 feet.
- If the elevation (Low Silhouette Ducted, Slim Low Static Ducted) between them is less than 8 feet, install a filter (optional/field supply) or a protective device (field supply) not to touch the electrical parts or fan with hands.
- The air intake and outtake openings should be provided with the same location of a room.

NOTE

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

Slim Low Static Ducted Type
Low Silhouette Ducted (High Static Pressure) Type
4-Way Cassette (60 × 60) Type

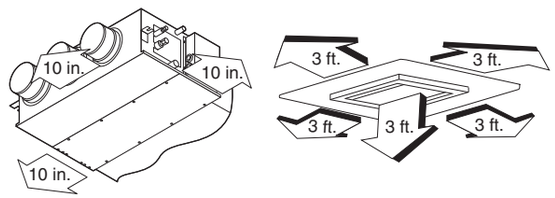
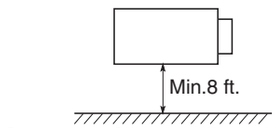


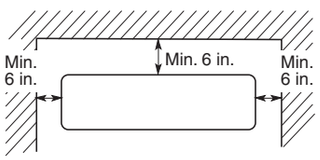
Fig. 2-1



Shows Low Silhouette Ducted Type
and Slim Low Static Ducted Type

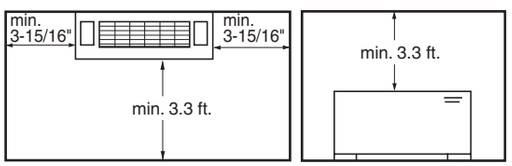
Fig. 2-2

Wall Mounted Type



Front View
Fig. 2-3

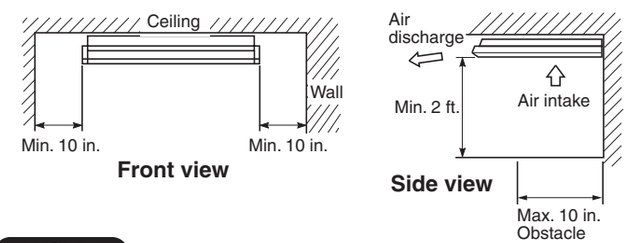
Floor Standing, Concealed Floor Standing Type



Horizontal view **Vertical view**

Fig. 2-4

Ceiling Type



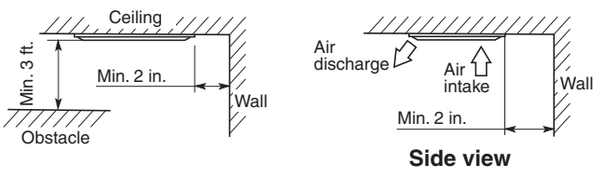
Front view **Side view**

NOTE

The rear of the indoor unit can be installed flush against the wall.

Fig. 2-5

1-Way Cassette Type



Side view

Fig. 2-6

3. HOW TO INSTALL THE INDOOR UNIT

Note: For DC Fan Tap Change Procedure for 4-Way Cassette, see page 16.

■ 4-Way Cassette Type (U1 Type)

3-1. Preparation for Suspending

This unit uses a drain pump. Use a level gauge 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 (Figs. 3-1 and 3-2), by attaching them to the ceiling support structure, or by any other method that ensures that the unit will be securely and safely suspended.

(2) Follow Fig. 3-2 and Table 3-1 to make the holes in the ceiling.

Table 3-1 Unit: in. (mm)

Length / Type	A	B	C	D
12, 18, 24, 36	31-1/32 (788)	28-15/32 (723)	34-27/32 (885)	34-27/32 (885)

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

Table 3-2 Unit: in. (mm)

Length / Type	A	B	C	D	E
12, 18, 24	4-29/64 (113)	6-13/16 (173)	10-5/64 (256)	8-17/64 (210)	3-15/32 (88)
36	4-29/64 (113)	6-13/16 (173)	12-9/16 (319)	8-17/64 (210)	3-15/32 (88)

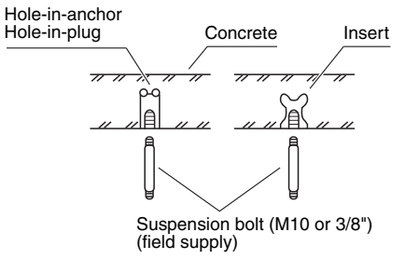


Fig. 3-1

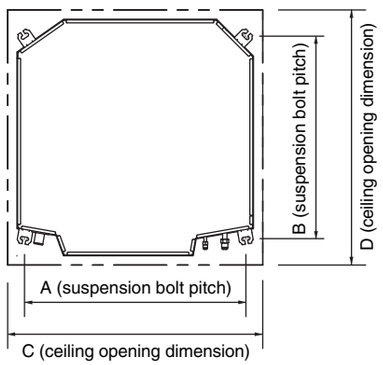


Fig. 3-2

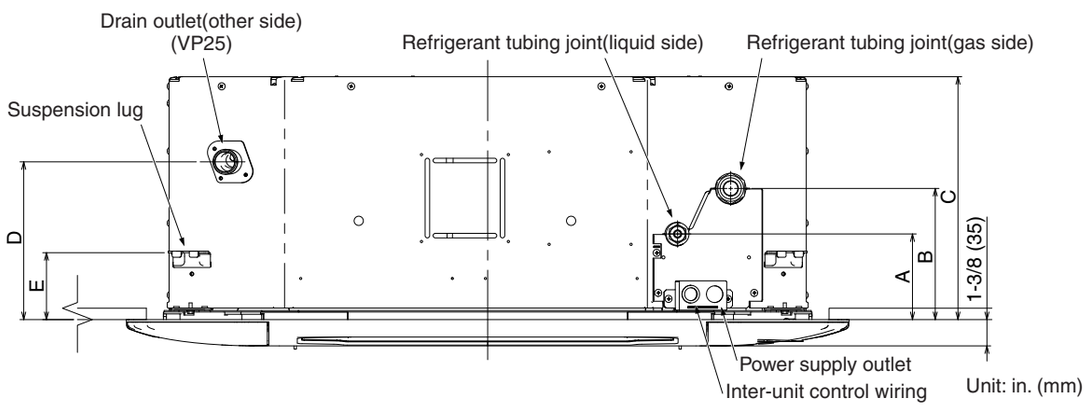


Fig. 3-3

3-3. Placing the Unit Inside the Ceiling

(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts using the supplied full-scale installation diagram. (Fig. 3-4)
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.

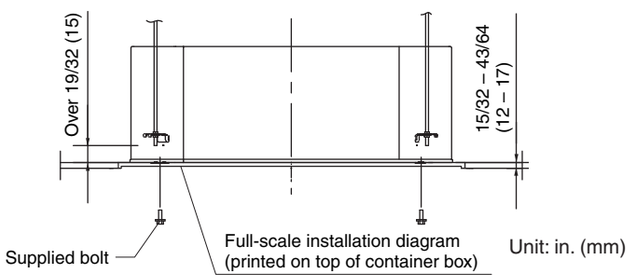


Fig. 3-4

(2) 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" as shown in Fig. 3-5.

(3) Thread the 3 hexagonal nuts and 2 washers (field supply) onto each of the 4 suspension bolts as shown in Fig. 3-5. 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.

(4) Adjust so that the distance between the unit and the ceiling bottom is 15/32" to 43/64". Tighten the nuts on the upper side and lower side of the suspension lug.

(5) Remove the protective polyethylene used to protect the fan parts during transport.

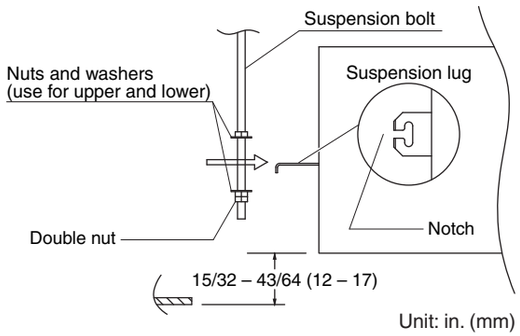


Fig. 3-5

3-4. Installing the Drain Piping

(1) Prepare a standard hard PVC pipe (O.D. 1-1/4") for the drain and use the supplied drain hose and hose band to prevent water leaks.
The PVC pipe must be purchased separately. The unit's transparent drain port allows you to check drainage. (Fig. 3-6)

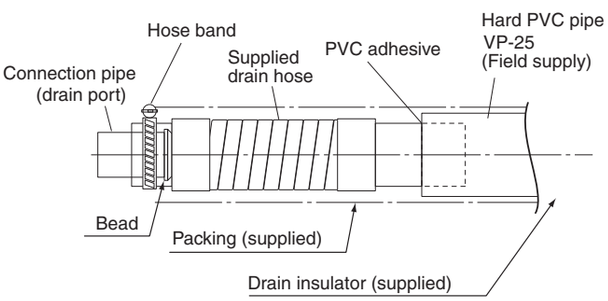


Fig. 3-6

CAUTION

- **Insert the drain pipe until it contacts the socket, as shown in Fig. 3-6, then secure it tightly with the hose band.**
- **Do not use adhesive when connecting the supplied hose.**
  Reasons: 1. 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.
  2. The pipe cannot be removed when maintenance is needed.
- **Do not bend the supplied drain hose 90° or more. The hose may slip off.**
- **Align the hose bands with the end of the hose. Tighten the hose band firmly. Please make sure that the bead is not covered by the hose band. (Fig. 3-6)**

CAUTION

Tighten the hose clamps so their locking nuts face upward. (Fig. 3-6)

(2) After checking the drainage, wrap the supplied packing and drain pipe insulator around the pipe. (Fig. 3-7)

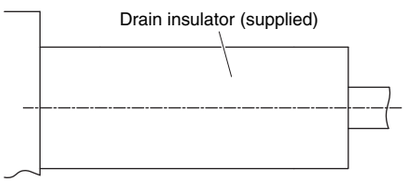


Fig. 3-7

NOTE

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

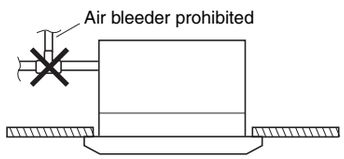


Fig. 3-8

CAUTION

- **Do not install an air bleeder as this may cause water to spray from the drain pipe outlet. (Fig. 3-8)**

CAUTION

- **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 33-15/32" above the bottom surface of the ceiling. Under no conditions attempt to raise it higher than 33-15/32" above the bottom surface of the ceiling. Doing so will result in water leakage. (Fig. 3-9)**
- **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. 3-10)**
- **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. 3-11)**
- **Provide insulation for any pipes that are run indoors.**

Refer to "■ SUPPLEMENT ON DRAIN PIPING".

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.

(1) Connect power to the power terminal board (R, S terminals) inside the electrical component box.

(2) Slowly pour approx. 0.3 gal of water into the drain pan to check drainage. (Fig. 3-12)

(3) Short the check pin (CHK) on the indoor control board and operate the drain pump. Check the water flow through the transparent drain pipe and see if there is any leakage.

(4) When the check of drainage is complete, open the check pin (CHK) and remount the tube cover.

CAUTION **Be careful since the fan will start when you short the pin on the indoor control board.**

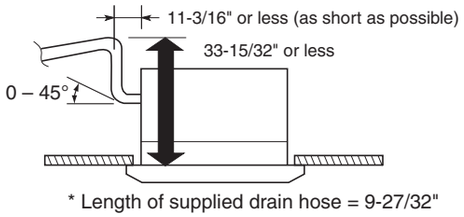


Fig. 3-9

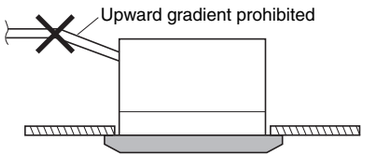


Fig. 3-10

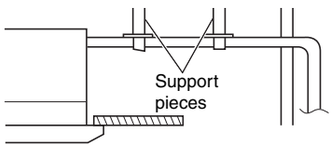


Fig. 3-11

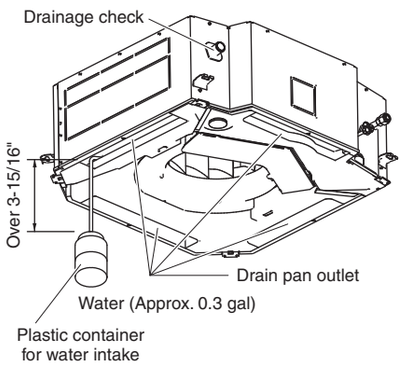


Fig. 3-12

3-6. How to Install the Ceiling Panel

3-6-1. Before Installing the Ceiling Panel

Checking the unit position

(1) Check that the ceiling hole is within this range: 33-55/64 × 33-55/64 to 35-53/64 × 35-53/64 in.

(2) Use the full-scale installation diagram (from the packaging) that was supplied with the unit to determine the positioning of the unit on the ceiling surface. If the positions of the ceiling surface and unit do not match, air leakage, water leakage, flap operation failure, or other problems may occur.

CAUTION

- **Never place the panel face-down. Either hang it vertically or 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.)**

Remove the air-intake grille and air filter from the ceiling panel. (Figs. 3-15, 3-16 and 3-17)

a) Remove the 2 screws on the latch of the air-intake grille. (Fig. 3-15)

b) Slide the air-intake grille catches in the direction shown by the arrows ① to open the grille. (Fig. 3-16)

c) 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. 3-17)

Removing the corner cover

a) Slide the corner cover to the direction shown by the arrow ① to remove the corner cover. (Fig. 3-18).

Ⓐ must be within the range of 15/32" – 43/64" (Fig. 3-13)
If not within this range, malfunction or other trouble may occur.

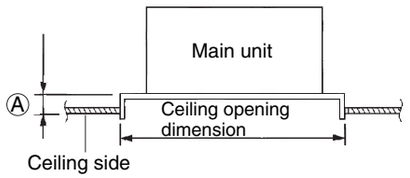


Fig. 3-13

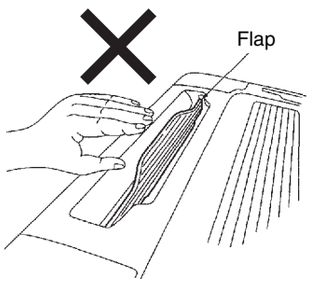


Fig. 3-14

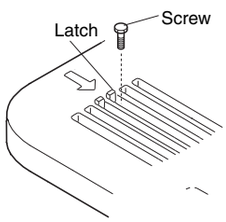


Fig. 3-15

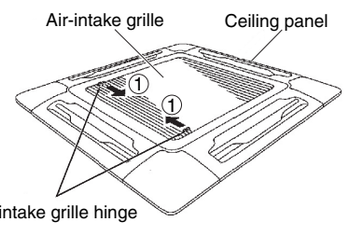


Fig. 3-16

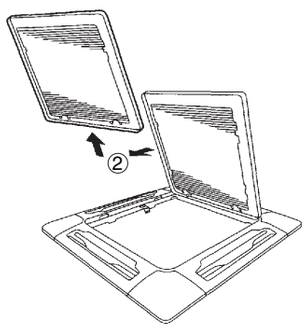


Fig. 3-17

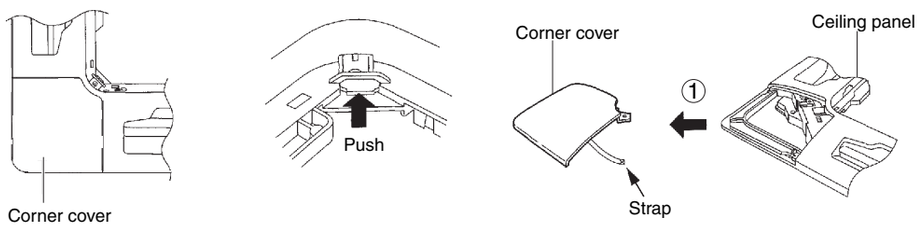


Fig. 3-18

3-6-2. Installing the Ceiling Panel

After completing the wiring process, install the supplied wiring cover before installing the panel.
It is not possible to install the wiring cover after installing the panel.
The power must be turned ON in order to change the flap angle. (Do not attempt to move the flap by hand. Doing so may damage the flap.)

(1) Insert the temporary fasteners (stainless steel) on the inside of the ceiling panel into the square holes on the unit to temporarily fasten the ceiling panel in place. (Fig. 3-20-1)

- 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.
- To remove the ceiling panel, support the ceiling panel while pressing the temporary fasteners toward the outside. (Fig. 3-20-1)

(2) Align the panel installation holes and the unit screw holes.

(3) Tighten the supplied washer head screws at the 4 panel installation locations so that the panel is attached tightly to the unit. (Fig. 3-20-2)

(4) Check that the panel is attached tightly to the ceiling.

- 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. (Fig. 3-21)
- 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. 3-21)

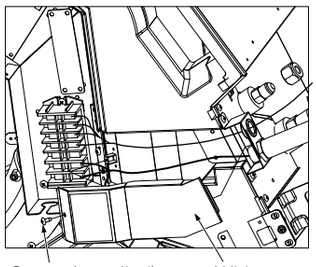


Fig. 3-19-1

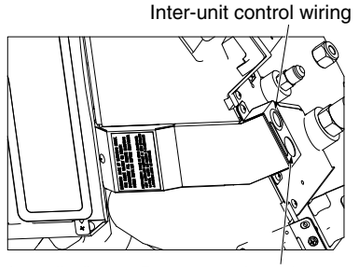


Fig. 3-19-2

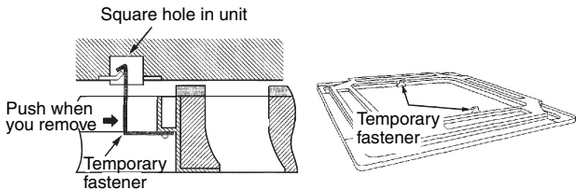


Fig. 3-20-1

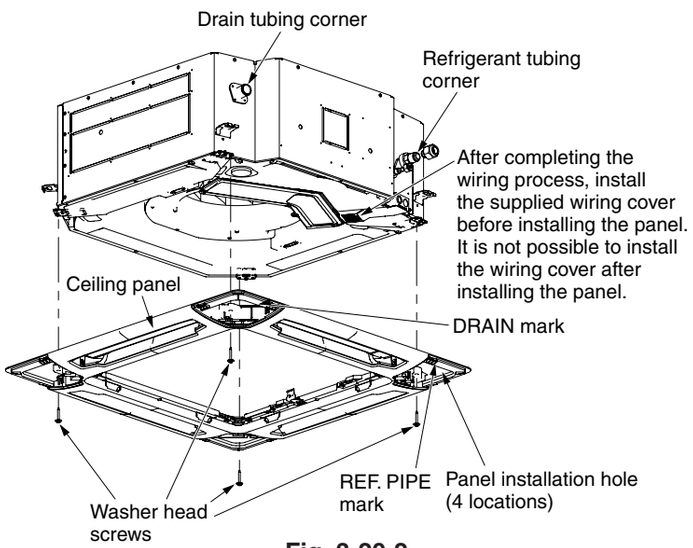


Fig. 3-20-2

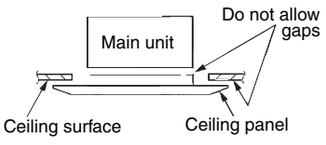


Fig. 3-21

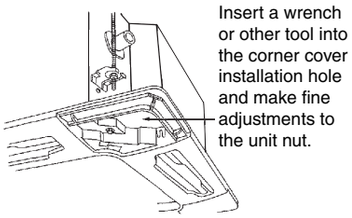
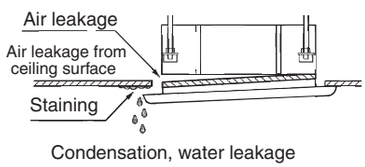


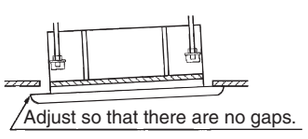
Fig. 3-22

CAUTION

- 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.

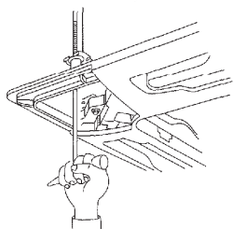


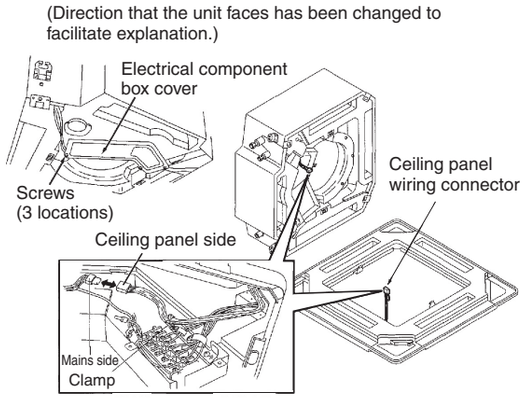
Fig. 3-23

3-6-3. Wiring the Ceiling Panel

(1) Open the cover of the electrical component box.

(2) Connect the 7P wiring connector (red) from the ceiling panel to the connector in the unit electrical component box. (Fig. 3-24)

- If the connectors are not connected, the Auto flap will not operate. Be sure to connect them securely.
- Check that the wiring connector is not caught between the electrical component box and the cover.
- Check that the wiring connector is not caught between the unit and the ceiling panel.



* Pass the wiring connector through the clamp to fasten it in place, as shown in the figure.

Fig. 3-24

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

Attaching the corner cover and air-intake grille

A. Attaching the corner cover

(1) Check that the safety cord from the corner cover is fastened to the ceiling panel pin, as shown in the figure. (Fig. 3-25)

(2) Use the supplied screws to attach the corner cover to the ceiling panel. (Fig. 3-25)

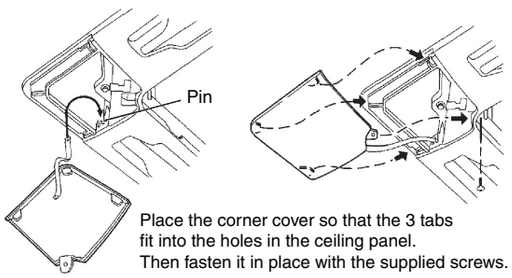


Fig. 3-25

B. Attaching the air-intake grille

- To install the air-intake grille, follow the steps for **Removing the grille** 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. Coordinate the directions of the air-intake grilles when installing multiple units, and change the directions according to customer requests. (Fig. 3-26)
- **When attaching the air-intake grille, be careful that the flap lead wire does 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 the figure at right.**
- With this ceiling panel, the directions of the air-intake grille lattices when installing multiple units, and the position of the label showing the company name on the corner panel, can be changed according to customer requests, as shown in the figure below. However, the optional wireless receiver kit can only be installed at the refrigerant-tubing corner of the ceiling unit. (Fig. 3-27)

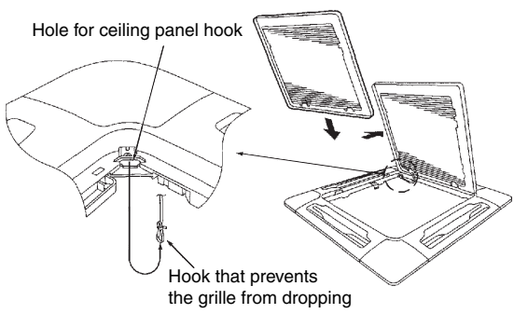


Fig. 3-26

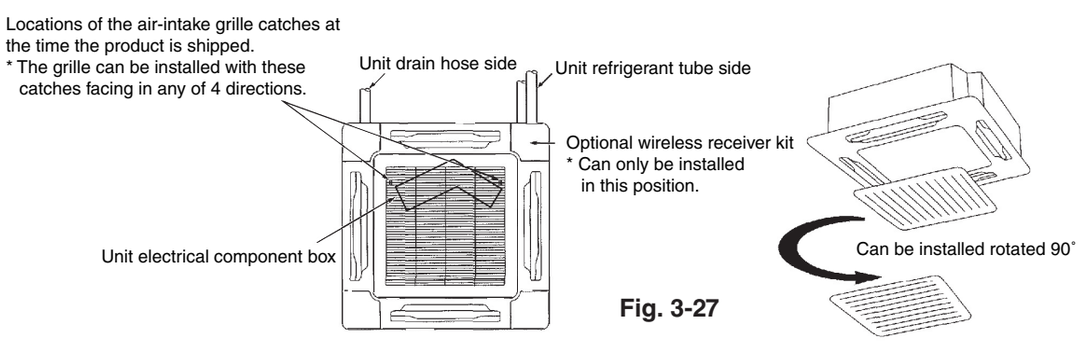


Fig. 3-27

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. (“P09” is displayed on the remote controller.) 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 wiring connector inside the electrical component box, and then remove the 4 mounting screws.

3-6-7. Adjusting the Auto Flap

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

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

NOTE

- Never attempt to move the louver 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. Special Remarks

DC Fan Tap Change Procedure

Be sure to turn OFF the power (at mains) before beginning the work below.

(1) In the table below, check the field-supply parts that will be used. (If this setting is not made, the airflow may decrease and condensation may occur.)

Setting	
(a)	Air shield material (for use with 3-direction discharge)*
	Air shield material (for use when a discharge duct is connected)*
(b)	Air shield material (for use with 2-direction discharge)*

* Use field-supply air shield material.

Setting (a): Go to (2).
Setting (b): Go to (3).

(2) Setting (a)
Open the cover of the electrical component box. Short the short-circuit pin TP3 (2P, yellow) on the indoor unit control PCB. (Fig. 3-28)

(3) Setting (b)
Open the cover of the electrical component box. Short the short-circuit pin TP6 (2P, white) on the indoor unit control PCB. (Fig. 3-28)

Indoor unit control PCB

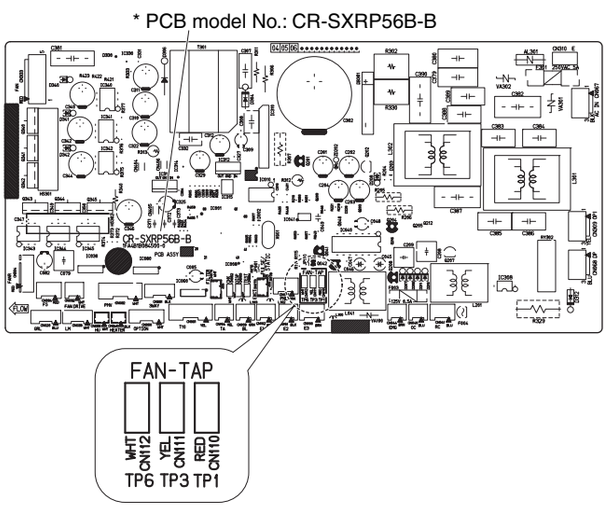


Fig. 3-28

■ 4-Way Cassette 60 × 60 Type (Y1 Type)

3-8. Preparation for Suspending

This unit uses a drain pump. Use a level gauge to check that the unit is level.

3-9. 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. 3-29)

(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. 3-30)

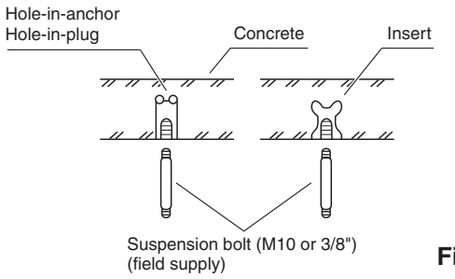
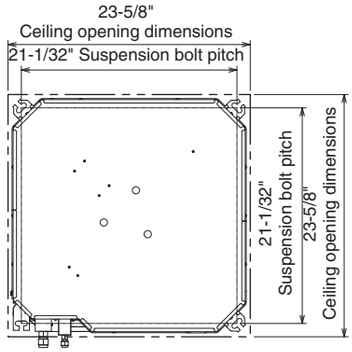


Fig. 3-29



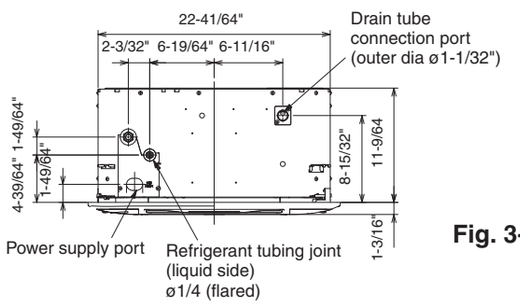


Fig. 3-30

3-10. Placing the Unit Inside the Ceiling

(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts using the supplied full-scale installation diagram. (Fig. 3-31)

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.

(2) 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" as shown in the diagram. (Fig. 3-31)

(3) Thread the 3 hexagonal nuts and 2 washers (field supply) 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. 3-32)

(4) Adjust so that the distance between the unit and the ceiling bottom is 33/64" to 45/64". Tighten the nuts on the upper side and lower side of the suspension lug. (Fig. 3-32)

(5) Remove the protective polyethylene used to protect the fan parts during transport.

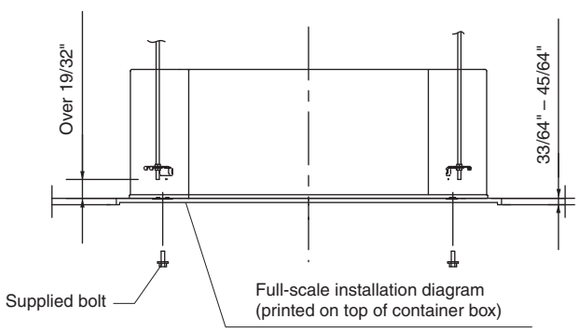


Fig. 3-31

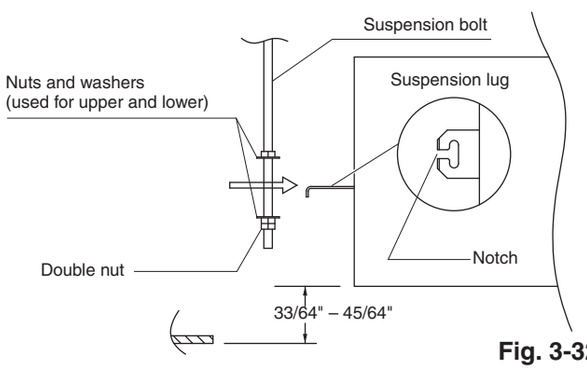


Fig. 3-32

3-11. Installing the Drain Piping

(1) Prepare standard hard PVC pipe (O.D. 1-1/32") for the drain and use the supplied hose band to prevent water leaks. (Fig. 3-33)
The PVC pipe must be purchased separately.
The transparent drain part on the unit allows you to check drainage.

(2) Installing the drain hose

- 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. 3-33)
- 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: 1. 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.
  2. The pipe cannot be removed when maintenance is needed.
- 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.

CAUTION

- **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. above the bottom surface of the ceiling. Under no conditions attempt to raise it higher than 2.78 ft. above the bottom surface of the ceiling. Doing so will result in water leakage. (Fig. 3-34)**
- **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. 3-35)**
- **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. 3-36)**
- **Provide insulation for any pipes that are run indoors.**

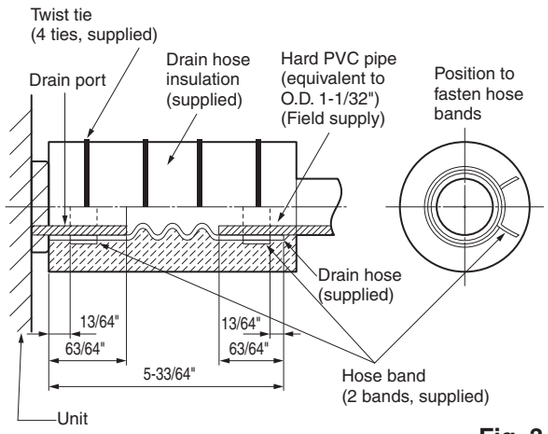
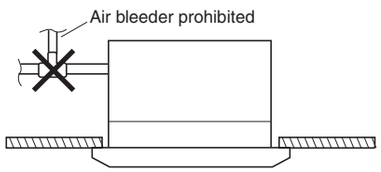


Fig. 3-33

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 13/64" to 63/64" from the end of the supplied drain hose.**



CAUTION

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

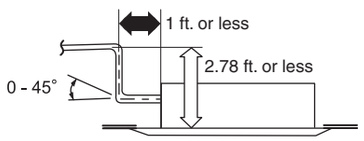


Fig. 3-34

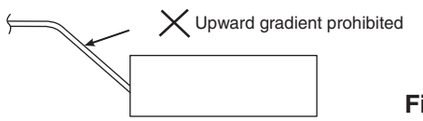


Fig. 3-35

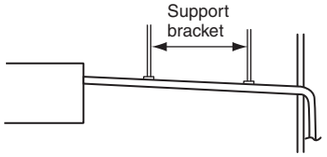


Fig. 3-36

3-12. 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.

(1) Connect power to the power terminal board (R, S terminals) inside the electrical component box.

(2) Slowly pour approx. 0.13 gal of water into the drain pan to check drainage. (Fig. 3-37)

(3) Short the check pin (CHK) on the indoor control board and operate the drain pump. Check the water flow through the transparent drain pipe and see if there is any leakage.

(4) When the check of drainage is complete, open the check pin (CHK) and remount the tube cover.

CAUTION

Be careful since the fan will start when you short the pin on the indoor control board.

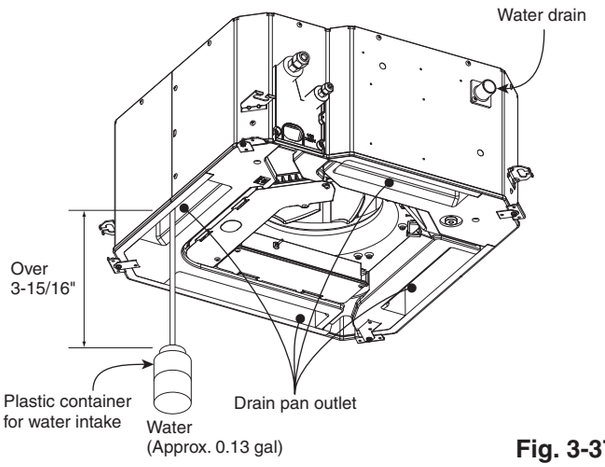


Fig. 3-37

3-13. How to Install the Ceiling Panel

Checking the unit position

(1) Check that the ceiling hole is within this range: 23-5/8" × 23-5/8"

(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.

CAUTION

- **Never place the panel face-down. Either hang it vertically or 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.)**

Ⓐ must be within the range of 33/64" to 45/64". (Fig. 3-38)
If not within this range, malfunction or other trouble may occur.

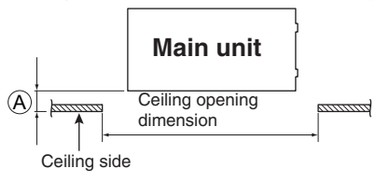


Fig. 3-38

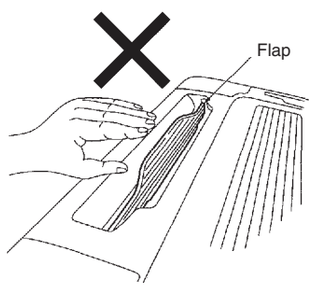


Fig. 3-39

3-13-1. Before Installing the Ceiling Panel

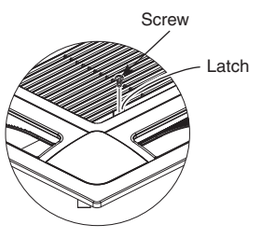
(1) Remove the air-intake grille and air filter from the ceiling panel.

a) Slide the air-intake grille catches in the direction shown by the arrows ① to open the grille. (Fig. 3-40)

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. 3-41)

(2) Removing the corner cover

a) Remove the screws on the corner and slide the latches in the direction of the arrow ① to disconnect the hinges (3 locations). (Fig. 3-42) Then, remove the air-intake grille in the direction of the arrow ②. (Fig. 3-43)



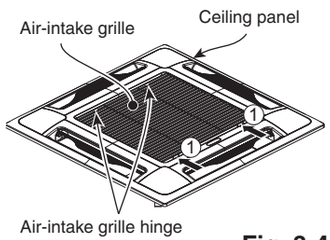


Fig. 3-40

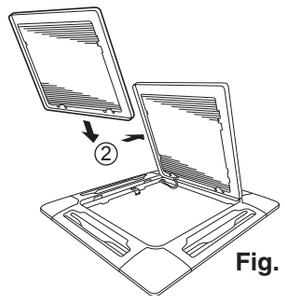


Fig. 3-41

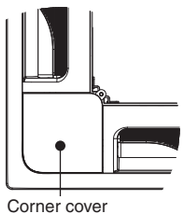
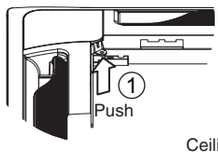


Fig. 3-42



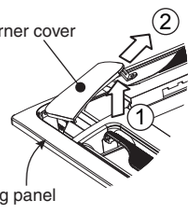


Fig. 3-43

3-13-2. Installing the Ceiling Panel

The power must be turned ON in order to change the flap angle. (Do not attempt to move the flap by hand. Doing so may damage the flap.)

(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. 3-44)

- 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. 3-45)

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

(4) Check that the panel is attached tightly to the ceiling. (Fig. 3-46)

- 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.

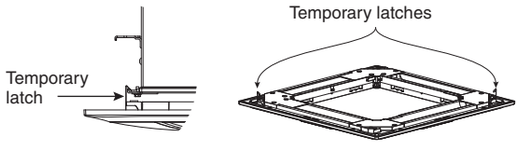


Fig. 3-44

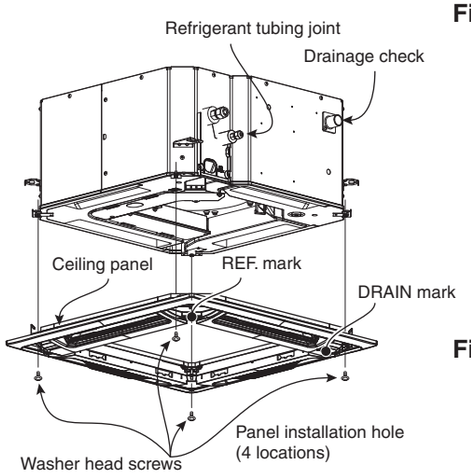


Fig. 3-45

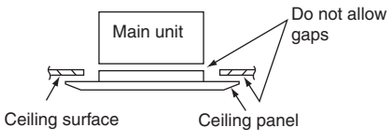


Fig. 3-46

CAUTION

- 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.

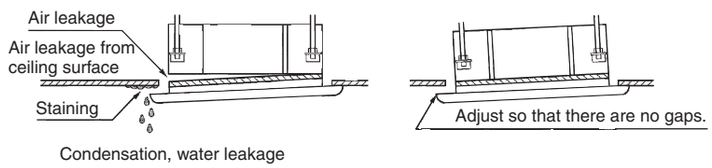


Fig. 3-47

3-13-3. Wiring the Ceiling Panel

(1) Open the cover of the electrical component box for control PCB.

(2) Connect the 7P wiring connector (red) from the ceiling panel to the connector on the control PCB in the unit electrical component box. (Fig. 3-48)

- If the connectors are not connected, the Auto flap will not operate. Be sure to connect them securely.
- Check that the wiring connector is not caught between the electrical component box and the cover.
- Check that the wiring connector is not caught between the unit and the ceiling panel.

(Direction that the unit faces has been changed to facilitate explanation.)

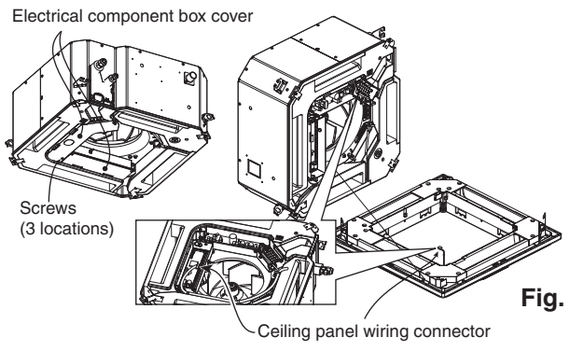


Fig. 3-48

* Pass the wiring connector through the clamp to fasten it in place, as shown in the figure.

3-13-4. How to Attach the Corner & Air-Intake Grille

Attaching the corner cover and air-intake grille

A. Attaching the corner cover

(1) Check that the safety cord from the corner cover is fastened to the ceiling panel pin, as shown in the figure. (Fig. 3-49)

(2) Use the supplied screws to attach the corner cover to the ceiling panel.

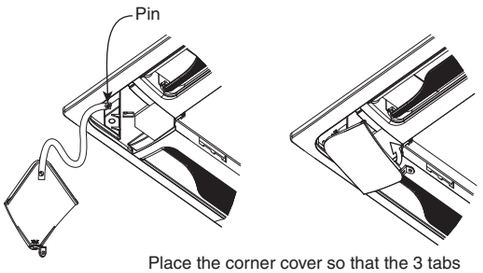


Fig. 3-49

B. Attaching the air-intake grille

- To install the air-intake grille, follow the steps for **Removing the grille** 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. Coordinate the directions of the air-intake grilles when installing multiple units, and change the directions according to customer requests. (Fig. 3-50)
- **When attaching the air-intake grille, be careful that the flap lead wire does 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 the figure at right.**
- With this ceiling panel, the directions of the air-intake grille lattices when installing multiple units, and the position of the label showing the company name on the corner panel, can be changed according to customer requests, as shown in the figure below. However, the optional wireless receiver kit can only be installed at the refrigerant-tubing corner of the ceiling unit. (Fig. 3-51)

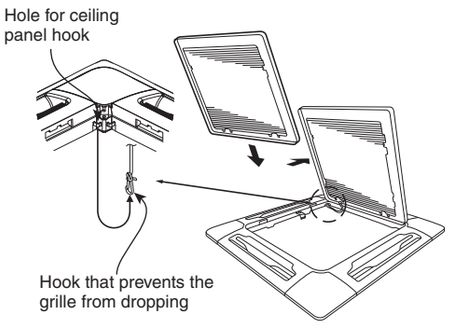


Fig. 3-50

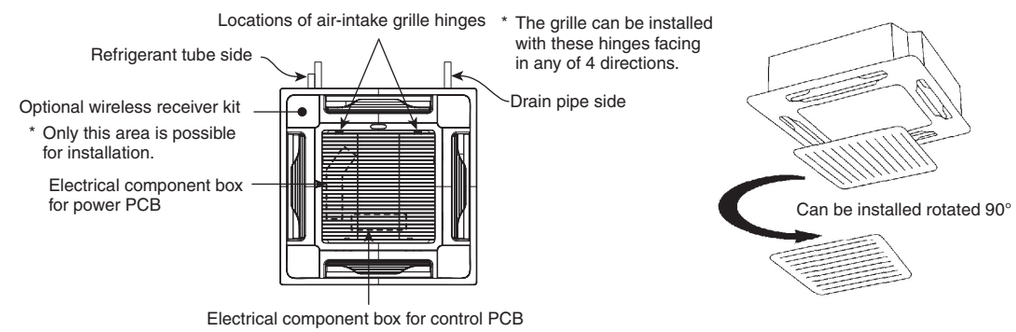


Fig. 3-51

3-13-5. 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. (“P09” is displayed on the remote controller.) In addition, water leakage and condensation may occur.

3-13-6. When Removing the Ceiling Panel for Servicing

When removing the ceiling panel for servicing, remove the air-intake grille and air filter, disconnect the wiring connector inside the electrical component box, and then remove the 4 mounting screws.

3-13-7. Adjusting the Auto Flap

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

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

NOTE

- Never attempt to move the louver 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.

■ 1-Way Cassette Type (D1 Type)

3-14. Suspending the Indoor Unit

(1) Follow the diagrams to make the holes in the ceiling. (Figs. 3-52 and 3-53)

(2) Depending on the ceiling type:

- Insert suspension bolts as shown in Fig. 3-54 or
- Use existing ceiling supports or construct a suitable support as shown in Fig. 3-55.
- Make sure that the length of suspension bolts from the bottom of the unit is 19/32" or more. (Fig. 3-56)

WARNING

It is important that you use extreme care in supporting the indoor unit from the ceiling. Ensure that the ceiling is strong enough to support the weight of the unit. Before hanging the unit, test the strength of each attached suspension bolt.

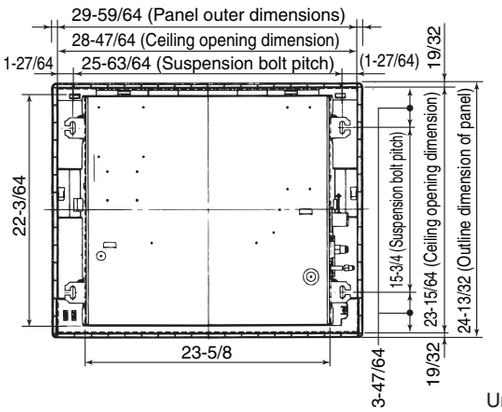
(3) Calculate the suspension bolt pitch using the full-scale installation diagram (printed on the package). The relationship between the positions of the suspension lugs, unit, and ceiling panel is as shown in Fig. 3-53.

(4) Cut the ceiling material, if necessary. (Figs. 3-52 and 3-53)

If the system requires fresh air to be drawn into the unit, cut and remove the insulation (both externally and internally) at the location shown as Ⓐ in Figs. 3-57 and 3-58.

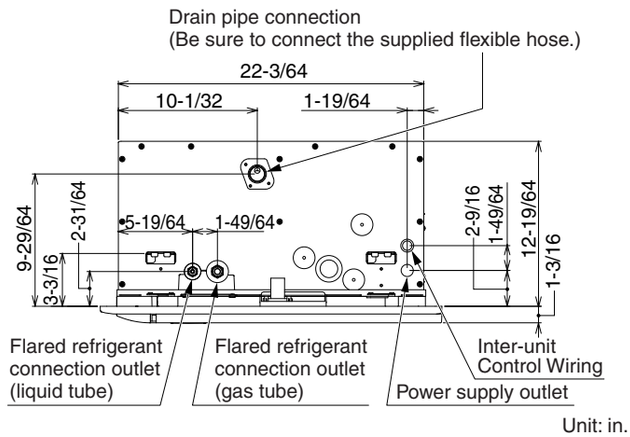
CAUTION

When making the cuts to the insulation, be careful not to damage the drain pan.



Unit: in.

Fig. 3-52



Unit: in.

Fig. 3-53

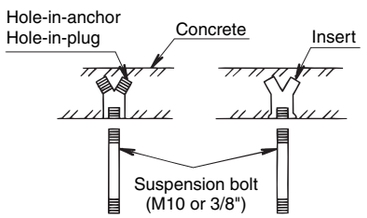


Fig. 3-54

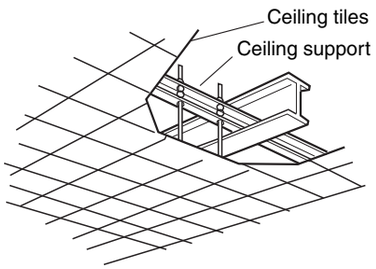


Fig. 3-55

3-15. Placing the Unit Inside the Ceiling

CAUTION

Be sure to use a level gauge and confirm that the unit is level. If it is not level, water leakage may occur.

(1) Use the supplied M5 or 3/16" screws (4) to attach the full-scale installation diagram to the indoor unit suspension lugs, in order to obtain the ceiling opening dimensions for suspending the unit. (Fig. 3-56)

Caution: Piping and wiring work must be performed inside the ceiling after the unit is suspended. Therefore if the ceiling is already installed, the wiring and piping work should be completed up to the connection points prior to suspending the unit.

(2) Attach the special washers (supplied) and nuts (field supply) to the suspension bolts (4 locations).

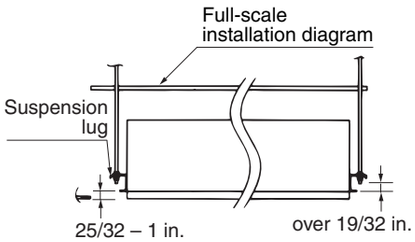
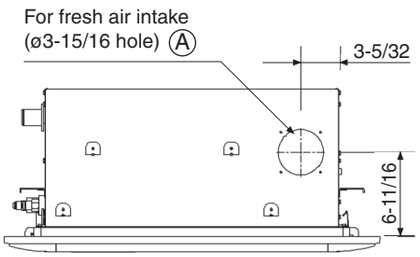


Fig. 3-56



Unit: in.

Fig. 3-57

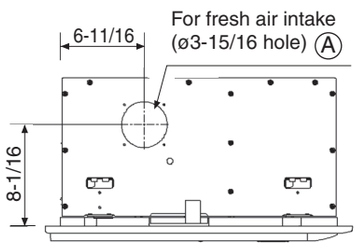
CAUTION

- Use M10 or 3/8" nuts.
- The length of the suspension bolts must be such that there is a space of at least 19/32" below the bottom of the suspension lugs, as shown in Fig. 3-56. If the length of the suspension bolts is too long, the bolts may interfere with the ceiling panel and louver motor, preventing their installation.

(3) Thread the 3 hexagonal nuts and 2 washers (field supply) onto each of the 4 suspension bolts as shown in Fig. 3-59. 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.

(4) Lift up the indoor unit and fit the suspension bolts into the notches in the suspension lugs.

(5) Adjust so that the distance between the bottom of the indoor unit suspension lugs and the bottom of the ceiling panel is 25/32-1". Then tighten the nuts above and below each suspension lug. The full-scale installation diagram can be used to help adjust the height of the indoor unit.



Unit: in.

Fig. 3-58

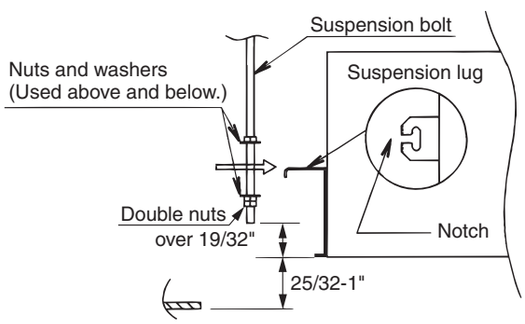
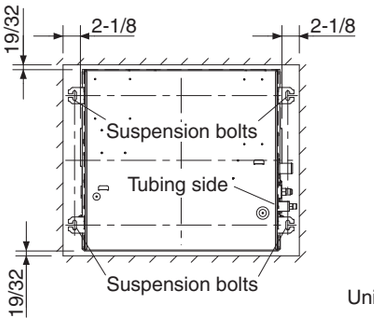


Fig. 3-59

CAUTION

- **The indoor unit includes a drain pump. Be sure to use a level gauge and verify that the unit is level.**
- **Before inserting the ceiling material, complete as much of the drain piping work and refrigerant tubing work as possible.**

(6) The distance between the unit and the opening of the ceiling and the distance between the bottom surface of the ceiling and the bottom surface of the flange of the unit should follow the dimensions given in Figs. 3-60 and 3-61.



Unit: in.

Fig. 3-60

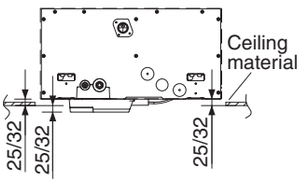


Fig. 3-61

3-16. Installing the Drain Piping

(1) Prepare standard hard PVC pipe (O.D. 1-1/4") for the drain and use the supplied drain hose and hose band to prevent water leaks.
The PVC pipe must be purchased separately. The unit's transparent drain port allows you to check drainage. (Fig. 3-62)

CAUTION

- Do not use adhesive at the drain connection port on the indoor unit.
- Insert the drain pipe until it contacts the socket, as shown in the figure at right, then secure it tightly with the hose band.
- Tighten the hose clamps so their locking nuts face upward. (Fig. 3-62)
- Do not use the supplied drain hose bent at a 90° angle. (The maximum permissible bend is 45°.)
- Check the drainage at the unit drain port (transparent).

(2) After checking the drainage, wrap the supplied packing and drain pipe insulator around the pipe, then secure it with the supplied clamps. (Fig. 3-63)

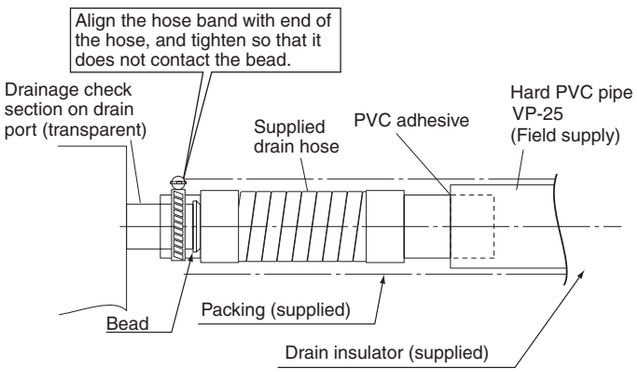


Fig. 3-62

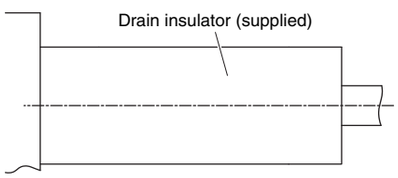


Fig. 3-63

NOTE

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

CAUTION

- **Do not install an air bleeder as this may cause water to spray from the drain pipe outlet. (Fig. 3-64)**
- **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 33-15/32" above the bottom surface of the ceiling. Under no conditions attempt to raise it higher than 33-15/32" above the bottom surface of the ceiling. Doing so will result in water leakage. (Fig. 3-65)**
- **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. 3-66)**
- **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. 3-67)**
- **Provide insulation for any pipes that are run indoors.**

Refer to "■ SUPPLEMENT ON DRAIN PIPING".

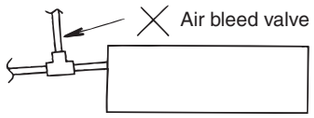


Fig. 3-64

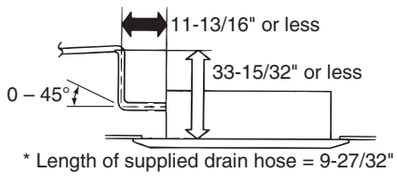


Fig. 3-65

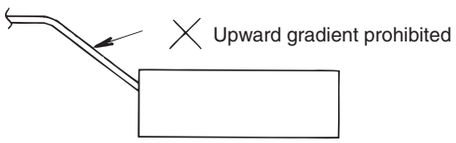


Fig. 3-66

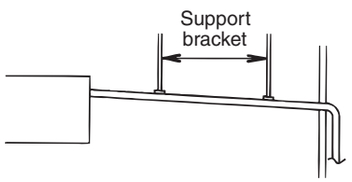


Fig. 3-67

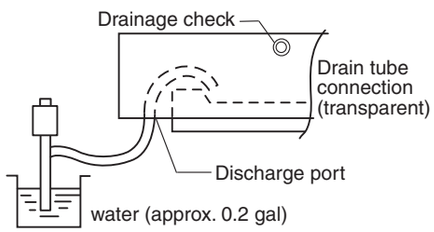


Fig. 3-68

3-17. 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.

(1) Connect power to the power terminal board (R, S terminals) inside the electrical component box.

(2) Slowly pour approx. 0.2 gal of water into the drain pan using a siphon pump through the air outlet grille. (Fig. 3-68)

(3) Short the check pin (CHK) on the indoor control board and operate the drain pump. Check the water flow through the transparent drain pipe and see if there is any leakage.

CAUTION

Be careful since the fan will start when you short the pin on the indoor control board.

(4) When the drainage check is complete, open the check pin (CHK) and remount the insulator.

CAUTION

The bottom drain port is for use only during test runs and servicing inspections. Do not connect the drain pipe to the bottom drain port.

3-18. Electrical Power Wiring

(1) Wiring connections

The power inlet is on the side of the indoor unit where the refrigerant tubing is located. The electrical component box is on the lower air intake surface of the indoor unit. (Fig. 3-69)

(2) Wiring

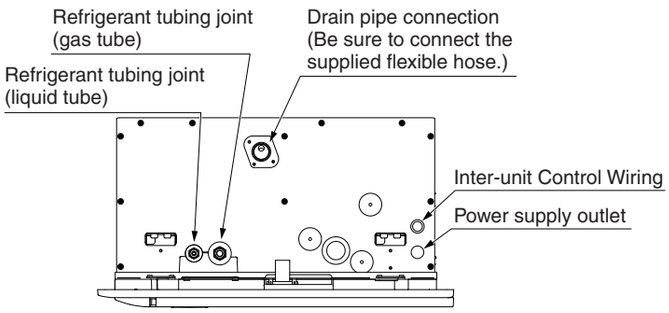


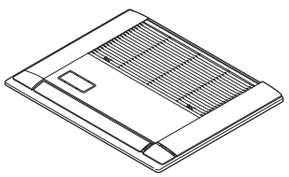
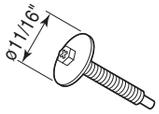
Fig. 3-69

WARNING

- **Route the power wiring into the indoor unit through the power inlet on the side of the unit. At this time, be sure that the wiring passes through the power inlet in the unit power section. If the wiring does not pass through this inlet, it may become pinched by the ceiling panel, and may result in fire.**
- **Pass the wiring through the power inlet on the electrical component box and connect it to the terminal plate. Then fasten the wiring in place with the clamp.**

3-19. How to Install the Ceiling Panel

Component Parts

Part name	Quantity	Appearance	Part name	Quantity	Appearance
Ceiling panel	1		Washer-head screw	4	 M5 × 40 or 5/16" × 9/16"
			Screw	2	 4 × 12 or 5/32" × 15/32" For fastening side panel

3-19-1. Before Installing the Ceiling Panel

Checking the position of the indoor unit

(1) Check that the dimensions of the ceiling opening are the following:

28-47/64" × 23-15/64"

(2) Check that the positions of the ceiling surface and indoor unit are as shown in Fig. 3-70. If the positions of the ceiling surface and indoor unit are not correct, problems such as air leakage, water leakage, and flap operation trouble may occur.

- Do not rest the panel facing downwards, lean up against a wall, or leave it sitting on top of a protruding object. Doing so may scratch the panel surface.
- Do not apply excessive force to the flap. (Fig. 3-71) (Doing so may damage the flap.)

Be sure that this distance is within the range of 25/32 – 1 in.
If it is not within this range, malfunction or other problems may result.

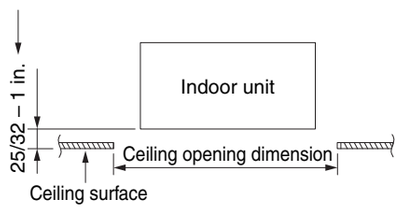


Fig. 3-70

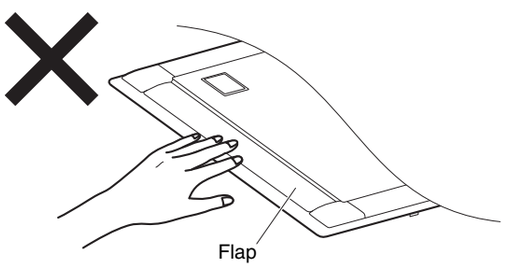


Fig. 3-71

Removing the intake grille

Slide the intake grille hooks (2 locations) in the direction of the arrow to open the intake grille. (Fig. 3-72)

When the intake grille is open, press a flathead screwdriver against the rear tabs (2 locations) and pull out the intake grille. (Fig. 3-73)

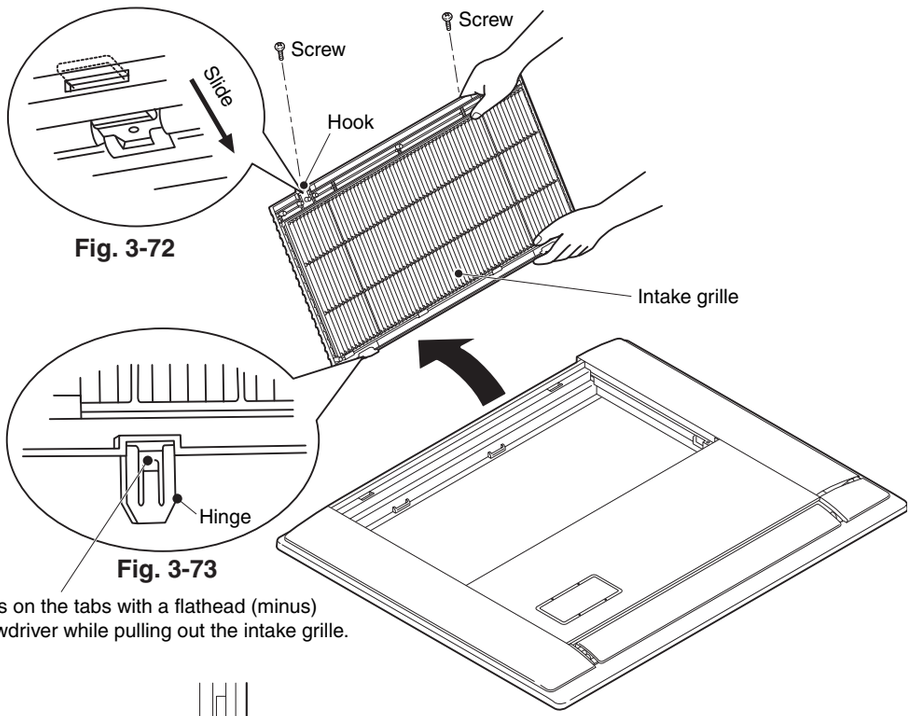


Fig. 3-72

Fig. 3-73

Removing the side panel

Grasp the finger grip on the side panel and slide the panel in the direction of arrow ① to remove the panel. (Fig. 3-74)

(There are 2 panels: 1 each on the left and right sides.)

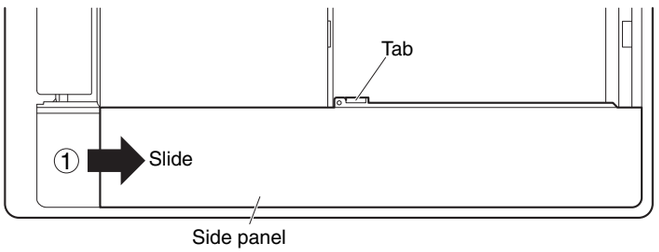


Fig. 3-74

3-19-2. Installing the ceiling panel

(1) Fasten the hooks on both sides of the ceiling panel to the indoor unit. The hooks on one side (2 locations) are stationary, while the hook on the other side is moveable. (Fig. 3-75)

(2) Angle the panel somewhat and fasten the stationary hook into the fastener on the side of the unit.

(3) After verifying that the hook is fastened, press the other end up until the ceiling panel is level. Then press upwards until the moveable hook is fastened into the fastener on the unit.

(4) Verify that the hooks on both sides of the ceiling panel are securely fastened to the unit. If the hooks are not securely fastened, the panel may fall. At this point, the panel is now provisionally fastened to the unit.

● When removing the panel, press the movable hook toward the inside while supporting the panel. (Fig. 3-76)

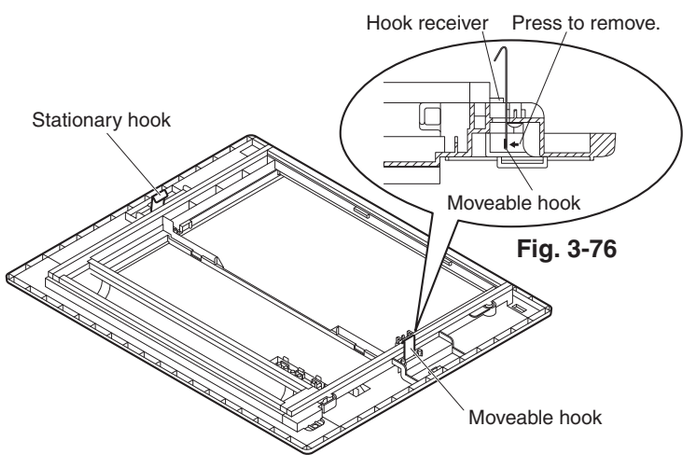


Fig. 3-76

Fig. 3-75

(5) Align the installation holes on the panel with the bolt holes on the unit.

(6) Insert the supplied washer head bolts into the 4 panel installation holes, and tighten until the panel is securely fastened against the unit. (Fig. 3-77)

(7) Verify that the panel is securely fastened against the unit.

- At this time, make sure that there is no gap between the indoor unit and the ceiling panel, or between the ceiling panel and the ceiling surface. (Fig. 3-78)
- If there is a gap between the ceiling panel and the ceiling, leave the panel attached and adjust the installation height of the indoor unit upwards until the gap with the ceiling is eliminated. (Fig. 3-79)
- If the adjustment is small enough that it will not affect the levelness of the indoor unit or the drain piping, then the unit height can be adjusted from the side panel installation holes, with the ceiling panel still attached.

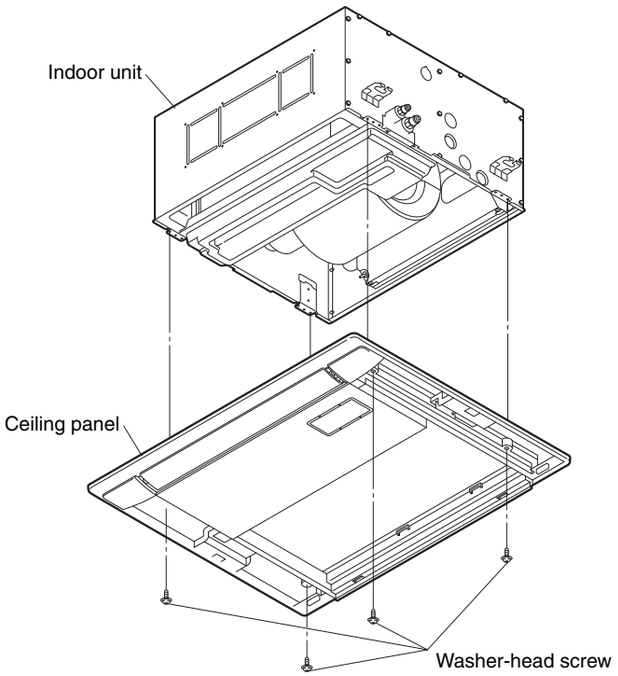


Fig. 3-77

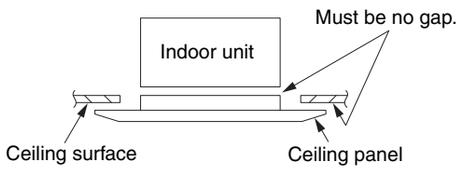


Fig. 3-78

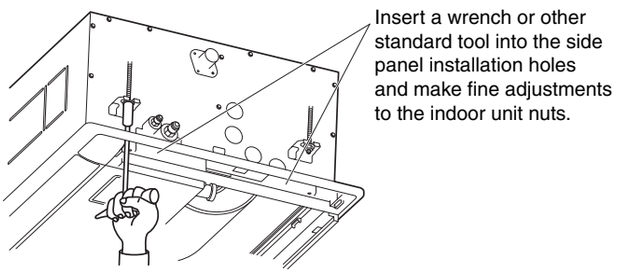
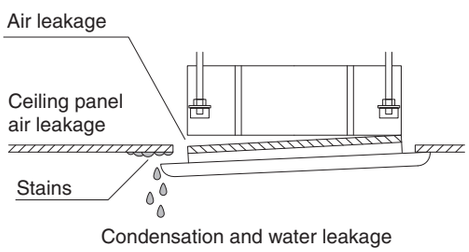


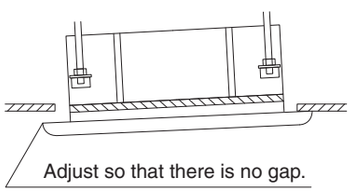
Fig. 3-79

CAUTION

- If the screws are not fully tightened, problems such as those shown below may occur. Be sure to tighten the screws securely.



- If there is a gap between the ceiling surface and the ceiling panel even when the screws are fully tightened, readjust the height of the indoor unit. (Fig. 3-79)



3-19-3. Wiring the ceiling panel

(1) Loosen the 2 screws on the electrical component box lid, and remove the lid. (Fig. 3-80)

(2) Fasten the wiring connector (7P, red) which comes out from the ceiling panel using the lead wire clamps (2 locations) on the unit. Then connect it to the connector (7P, red) inside the indoor unit electrical component box. (Fig. 3-81)

- If the connector is not connected, “P09” is displayed on the remote controller, and the automatic flap will not operate. Be sure to securely connect the connector.
- Check that the wiring connector is not pinched between the electrical component box and the lid.
- Check that the wiring connector is not pinched between the indoor unit and the ceiling panel.

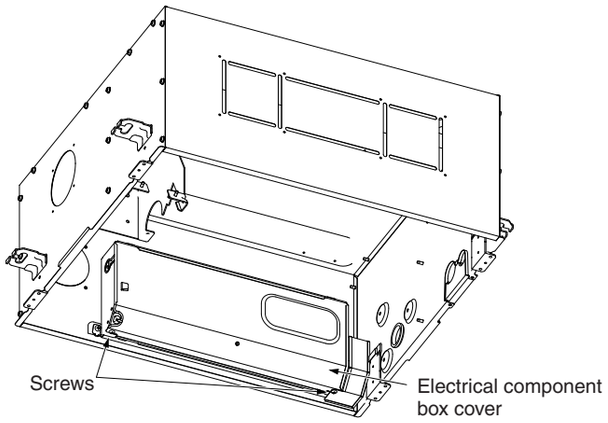


Fig. 3-80

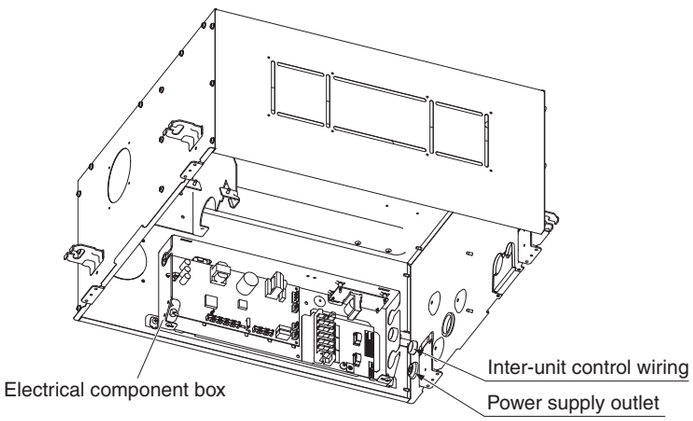


Fig. 3-81

3-19-4. Installing the side panel and intake grille

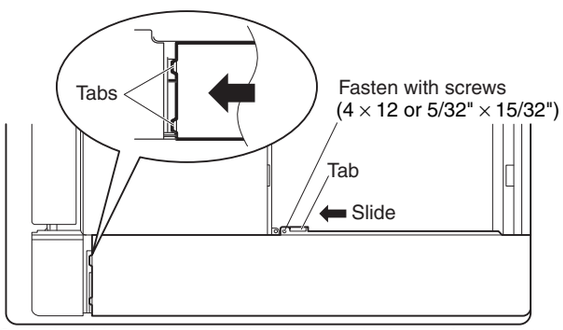
A. Installing the side panel

(1) Grasp the side panel finger grip and slide the panel in the direction of the arrow to install the side panel. (Fig. 3-82)

(2) Fasten the side panel onto the ceiling panel using the supplied screws (4 × 12 or 5/32" × 15/32").

B. Installing the intake grille

- To install the intake grille, follow the procedure for removing it in the reverse order. (Fig. 3-83)
- When installing the intake grille, be careful that the flap lead wire does not become pinched. (Fig. 3-83)



Slide the side panel so that the side panel tabs are fastened to the ceiling panel. Then fasten in place with the supplied screws (4 × 12 or 5/32" × 15/32").

Fig. 3-82

3-19-5. Others

A. Check after installation

- Check again that there is no gap between the indoor unit and the ceiling panel, or between the ceiling panel and the ceiling surface.
  * If there is a gap, then water leakage and condensation may occur.
- Check that the wiring connections are secure.
  * If the wiring is not connected, the automatic flap will not operate. (“P09” is displayed on the remote controller.) In addition, water leakage, condensation, and other problems may occur.

B. If a wireless remote controller is used

- For details concerning the installation procedure, refer to the installation manual which was supplied with the optional wireless remote controller and indoor unit internal receiver.

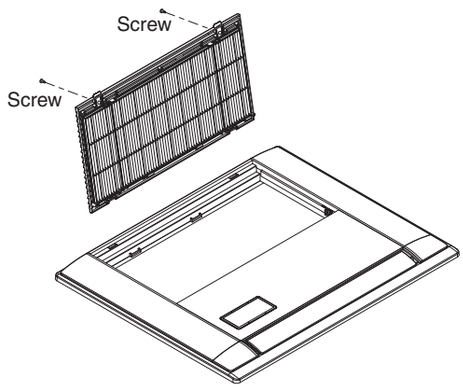
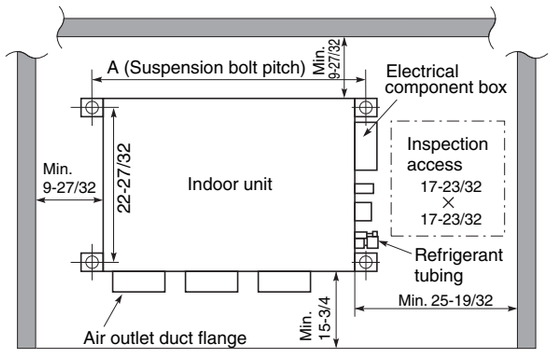


Fig. 3-83

■ Low Silhouette Ducted Type (F1 Type)

3-20. Required Minimum Space for Installation and Service

- This air conditioner is usually installed above the ceiling so that the indoor unit and ducts are not visible. Only the air intake and air outlet ports are visible from below.
- The minimum space for installation and service is shown in Fig. 3-84 and Table 3-3.
- It is recommended that space be provided (17-23/32" × 17-23/32") for checking and servicing the electrical system.
- Fig. 3-85 and Table 3-4 show the detailed dimensions of the indoor unit.



Unit: in.

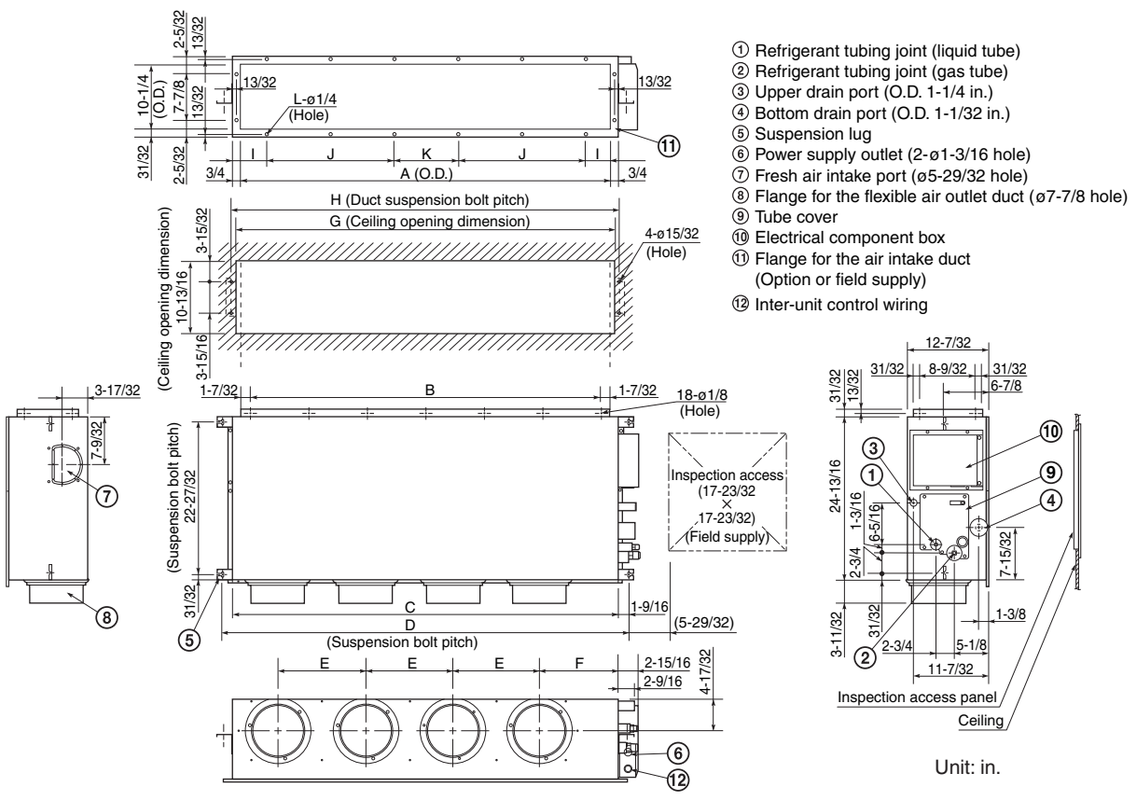
Fig. 3-84

Table 3-3 Unit: in. (mm)

Type	7, 9, 12, 15	18, 24	36, 48, 54
A (Length)	30-23/32 (780)	42-17/32 (1,080)	61-13/32 (1,560)
Number of duct flanges	2	3	4

Table 3-4 Unit: in.

Type \ Dimension	A	B	C	D	E	F	G	H	I	J	K	No. of holes L	No. of holes M
7, 9, 12, 15	26-1/16	23-5/8 (7-7/8 × 3)	27-9/16	30-23/32	11-13/32	10-5/16	26-25/32	28-5/32	7-3/32	–	13-3/8	8	12
18, 24	37-7/8	35-7/16 (7-3/32 × 5)	39-3/8	42-17/32	11-13/32	10-23/32	38-19/32	39-31/32	5-1/8	9-21/32 (9-21/32 × 1)	9-27/32	12	16
36, 48, 54	56-25/32	54-11/32 (9-1/16 × 6)	58-9/32	61-13/32	13-3/16	12-7/32	57-15/32	58-27/32	5-1/8	19-9/32 (9-21/32 × 2)	9-7/16	16	18



Unit: in.

Fig. 3-85

3-21. Suspending the Indoor Unit

Depending on the ceiling type:

- Insert suspension bolts as shown in Fig. 3-86
  or
- Use existing ceiling supports or construct a suitable support as shown in Fig. 3-87.

WARNING

It is important that you use extreme care in supporting the indoor unit inside the ceiling. Ensure that the ceiling is strong enough to support the weight of the unit. Before hanging the unit, test the strength of each attached suspension bolt.

(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts referring to the dimensional data on the previous page. (Fig. 3-84 and Table 3-3)
Tubing must be laid and connected inside the ceiling when suspending the unit. If the ceiling is already constructed, lay the tubing into position for connection to the unit before placing the unit inside the ceiling.

(2) Screw in the suspension bolts allowing them to protrude from the ceiling as shown in Fig. 3-86. (Cut the ceiling material, if necessary.)

(3) Thread the 3 hexagonal nuts and 2 washers (field supply) onto each of the 4 suspension bolts as shown in Figs. 3-88 and 3-89. Use 1 nut and 1 washer for the upper part, and 2 nuts and 1 washer for the lower part, so that the unit will not fall off the suspension lugs.

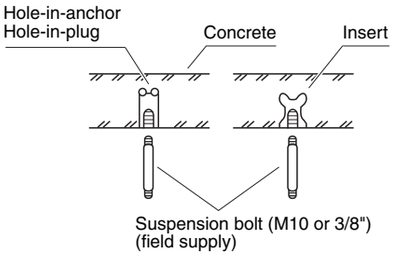


Fig. 3-86

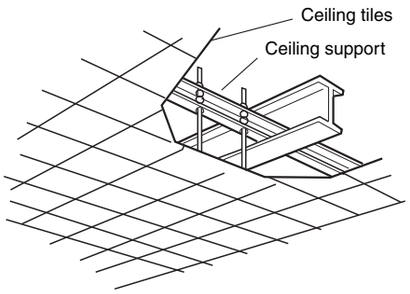


Fig. 3-87

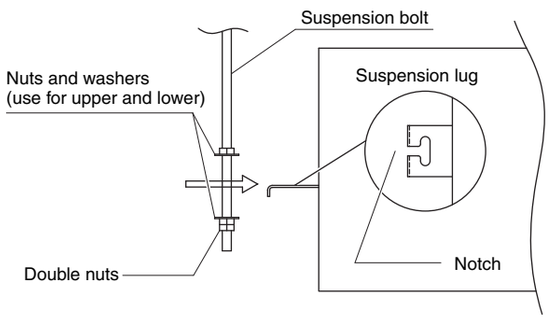


Fig. 3-88

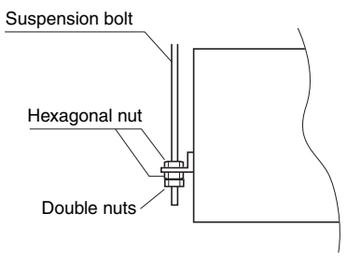


Fig. 3-89

● Fig. 3-90 shows an example of installation.

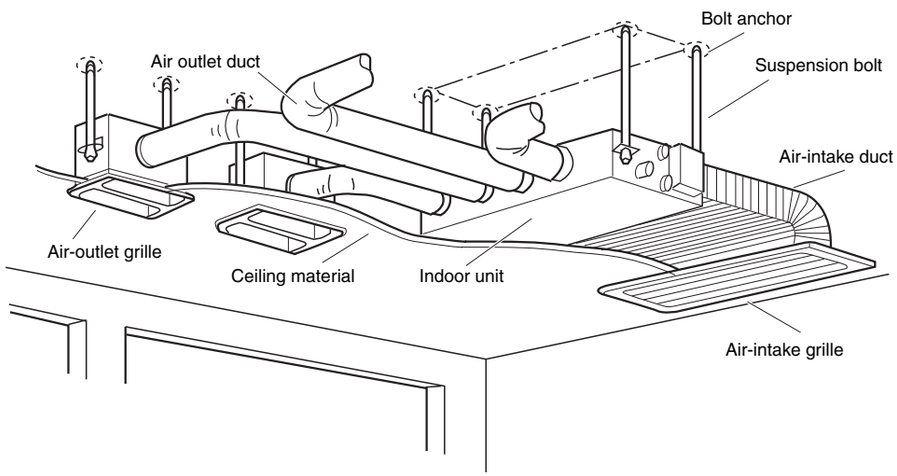


Fig. 3-90

3-22. Installing the Drain Piping

(1) Prepare standard hard PVC pipe (O.D. 1-1/4") for the drain and use the supplied hose band to prevent water leaks. The PVC pipe must be purchased separately. The transparent drain part on the unit allows you to check drainage. (Fig. 3-91)

CAUTION

- **Do not use adhesive at the drain connection port on the indoor unit.**
- **Insert the drain pipe until it contacts the socket, as shown in the figure at right, then secure it tightly with the hose band.**
- **Do not use the supplied drain hose bent at a 90° angle. (The maximum permissible bend is 45°.)**
- **Tighten the hose clamps so their locking nuts face upward. (Fig. 3-91)**

(2) After connecting the drain piping securely, wrap the supplied packing and drain pipe insulator around the pipe, then secure it with the supplied vinyl clamps. (Fig. 3-92)

NOTE

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

CAUTION

- Do not install an air bleeder as this may cause water to spray from the drain pipe outlet. (Fig. 3-93)
- **If it is necessary to increase the height of the drain pipe, the section directly after the connection port can be raised a maximum of 19-11/16". Do not raise it any higher than 19-11/16", as this could result in water leaks. (Fig. 3-94)**
- 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. 3-95)
- 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. 3-96)

Refer to "■ SUPPLEMENT ON DRAIN PIPING".

3-23. 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.

(1) Connect power to the power terminal board (R, S terminals) inside the electrical component box.

(2) Remove the tube cover and through the opening, slowly pour approx. 0.3 gal of water into the drain pan to check drainage.

(3) Short the check pin (CHK) on the indoor control board and operate the drain pump. Check the water flow through the transparent drain port and see if there is any leakage.

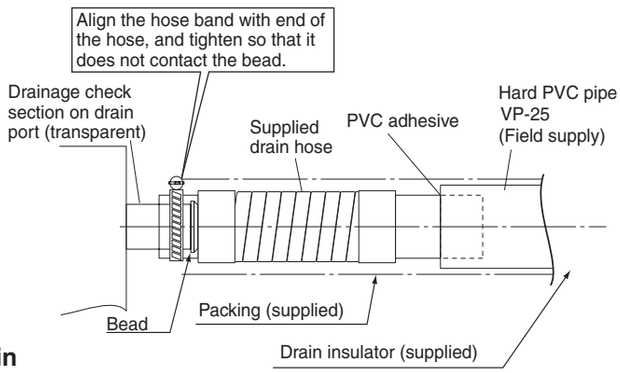


Fig. 3-91

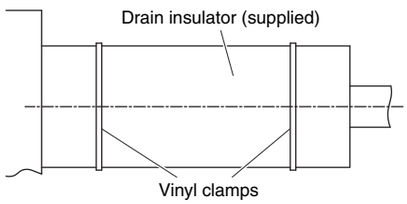


Fig. 3-92

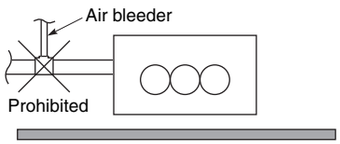


Fig. 3-93

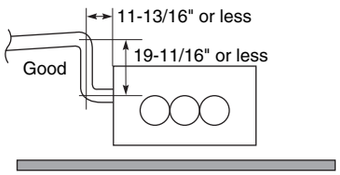


Fig. 3-94

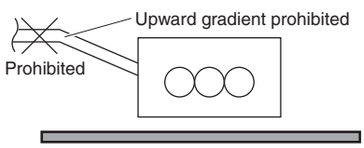


Fig. 3-95

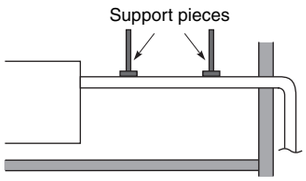


Fig. 3-96

CAUTION **Be careful since the fan will start when you short the pin on the indoor control board.**

(4) When the check of drainage is complete, open the check pin (CHK) and remount the insulator and drain cap onto the drain inspection port.

3-24. Increasing the Fan Speed

If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed using the following procedure:

(1) Remove 4 screws on the electrical component box and remove the cover plate.

(2) Disconnect the fan motor sockets in the box.

(3) Take out the booster cable (sockets at both ends) clamped in the box.

(4) Securely connect the booster cable sockets between the disconnected fan motor sockets in step 2 as shown in Fig. 3-98.

(5) Place the cable neatly in the box and reinstall the cover plate.

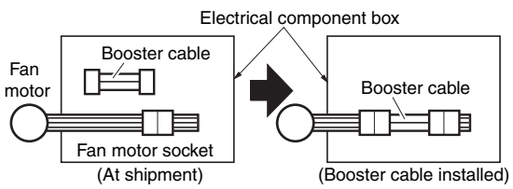


Fig. 3-98

How to read the diagram

The vertical axis is the external static pressure (in. WG) while the horizontal axis represents the air flow (CFM). The characteristic curves for “HT,” “H,” “M” and “L” fan speed control are shown.

The nameplate values are shown based on the “H” air flow. For the 18 and 24 types, the air flow is 635 CFM, while the external static pressure is 0.20 in. WG at “H” position. If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed as explained above.

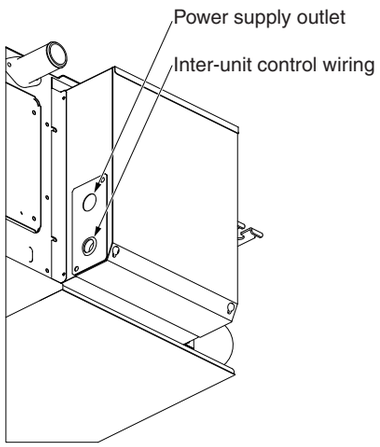
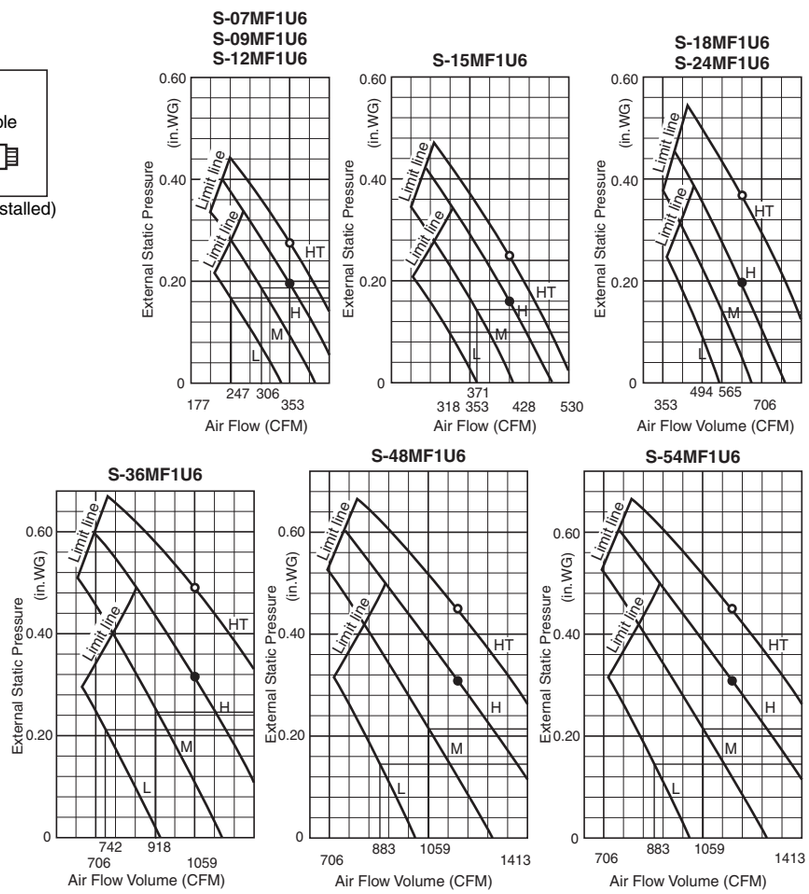


Fig. 3-97



NOTE HT : Using the booster cable
H : At shipment

Fig. 3-99

3-25. When Installing the Indoor Unit

Confirm that the indoor unit should be installed in a horizontal position.
Use the level gauge or vinyl tube and check every four corner of the unit is in horizontal.
If the air outlet duct flange is positioned with downward gradient, there is in danger of water splash or drainage.
Also, dust may sometimes be contaminated inside the drain pan caused by the residual drain water.
Install the air outlet duct flange side in horizontal or upward and within the range of 3/8" in the upward direction.
Never install it with a downward gradient against horizontal.

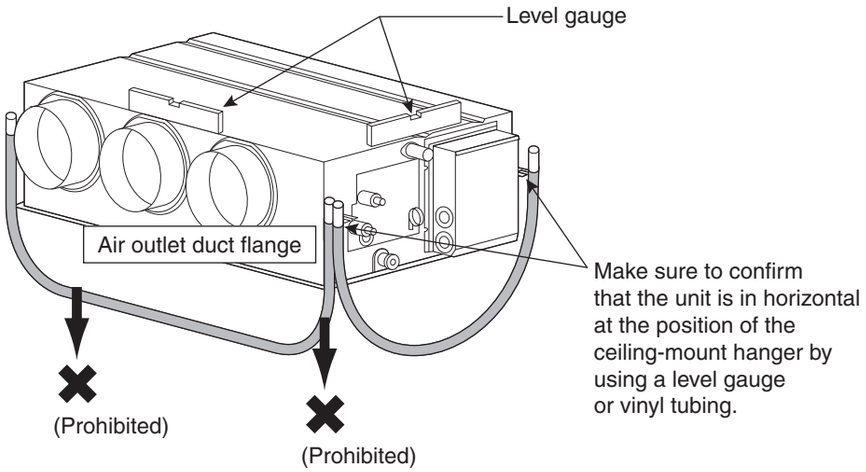


Fig. 3-100

3-26. Required Minimum Space for Installation and Service

If the ceiling tiles cannot be removed, provide the opening holes on the lower side of the indoor unit for removing the unit in order to maintain and clean the drain pan and heat exchanger or provide a minimum of 1.0 ft. or more space.

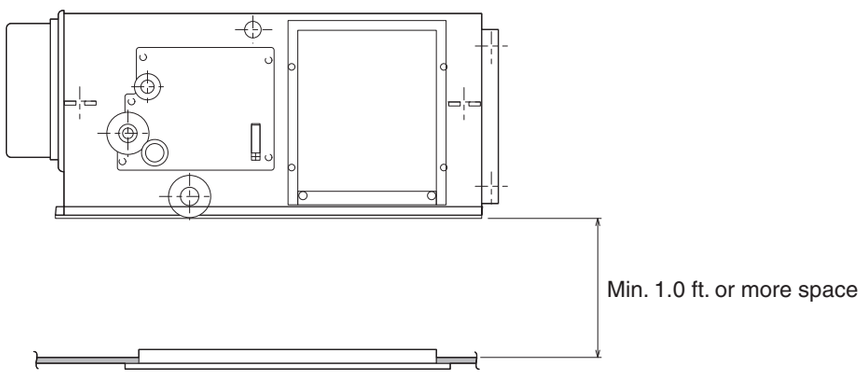


Fig. 3-101

■ Slim Low Static Ducted Type (M1 Type)

3-27. Required Minimum Space for Installation and Service

- This air conditioner is usually installed above the ceiling so that the indoor unit and ducts are not visible. Only the air intake and air outlet ports are visible from below.
- The minimum space for installation and service is shown in the diagram.
- *H dimension means the minimum height of the unit.
- Select the *H dimension such that a downward slope of at least 1/100 is ensured as indicated in “3-32. Installing the Drain Piping”.

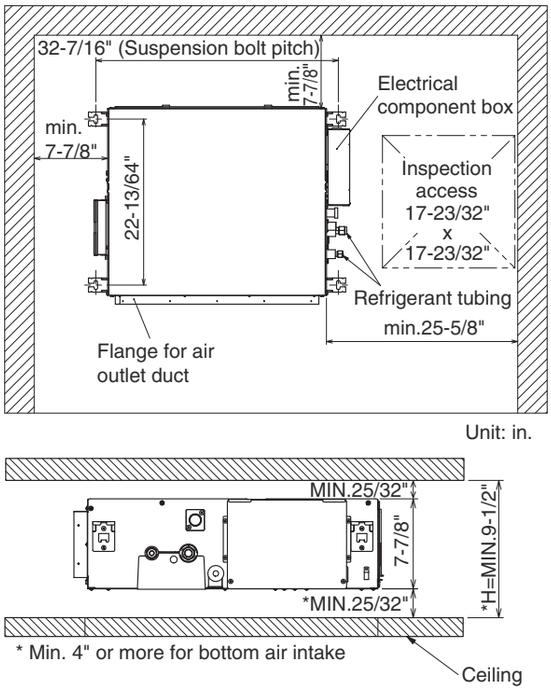


Fig. 3-102

- The diagram shows the detailed dimensions of the indoor unit.

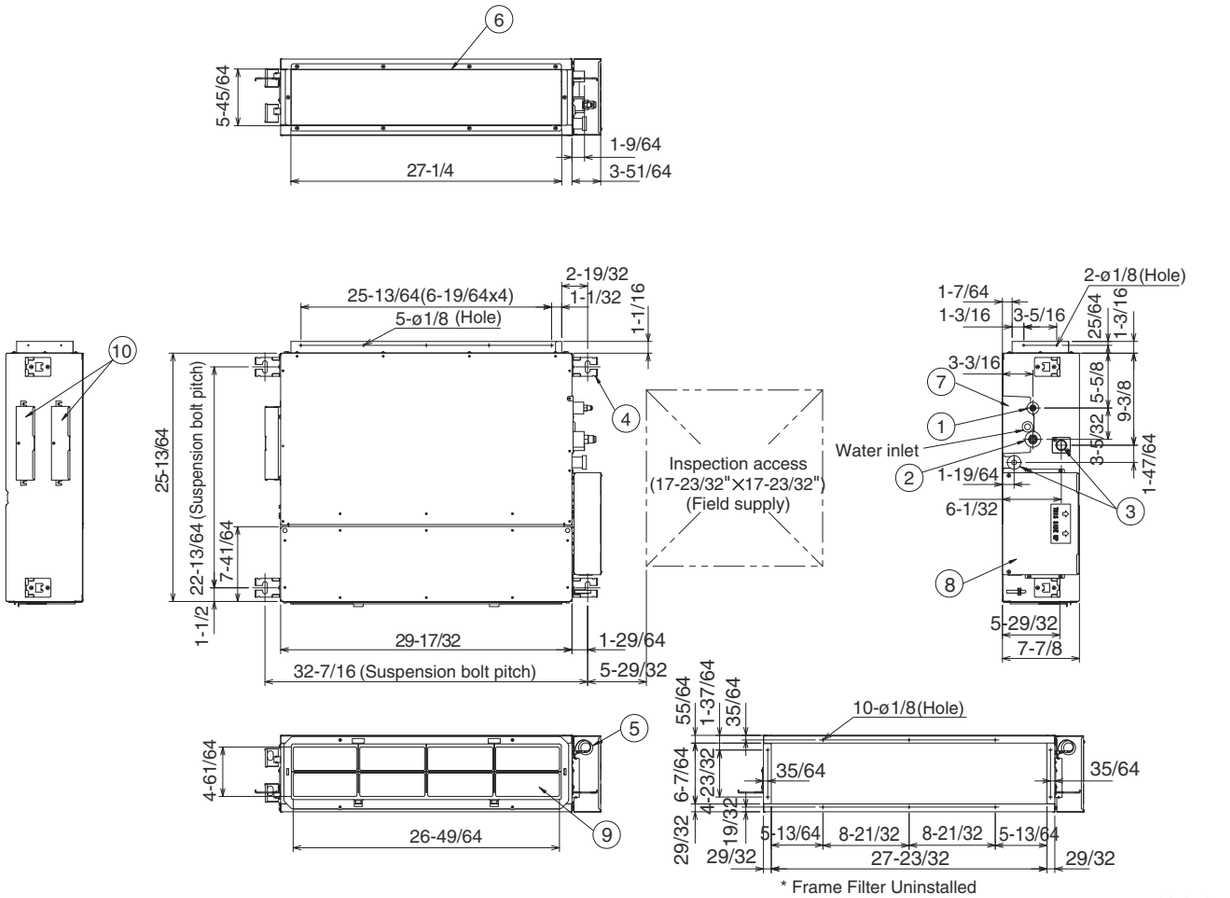
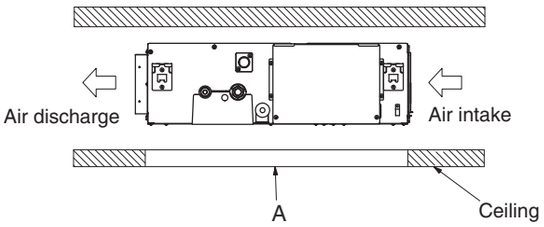


Fig. 3-103

3-28. Preparations Before Installation

(1) Confirm the positional relationship between the unit and suspension bolts. (Refer to the diagram.)
- Install the inspection opening on the control box side where maintenance and inspection of the control box are easy.
  The drain pump can only be inspected through the bottom of the unit.
  Install the inspection opening also in the lower part of the unit.



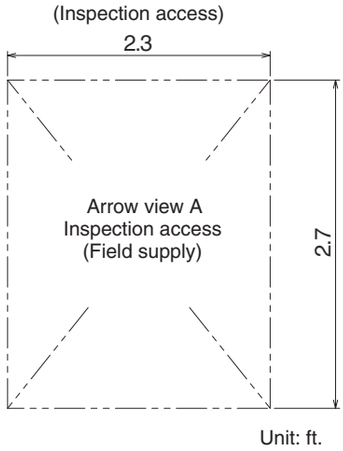


Fig. 3-104

(2) Make sure the range of the unit's external static pressure is not exceeded.
(See the technical documentation for the range of the external static pressure setting.)

(3) Open the installation hole. (Pre-set ceilings)
- Once the installation hole is opened in the ceiling where the unit is to be installed, pass refrigerant piping, drain piping, transmission wiring, and remote control wiring (It is not necessary if using a wireless remote controller) to the unit's piping and wiring holes.
  See "5. HOW TO PROCESS TUBING, 3-32. Installing the Drain Piping" and "4. ELECTRICAL WIRING".
- After opening the ceiling hole, make sure ceiling is level if needed. It might be necessary to reinforce the ceiling frame to prevent shaking. Consult an architect or carpenter for details.

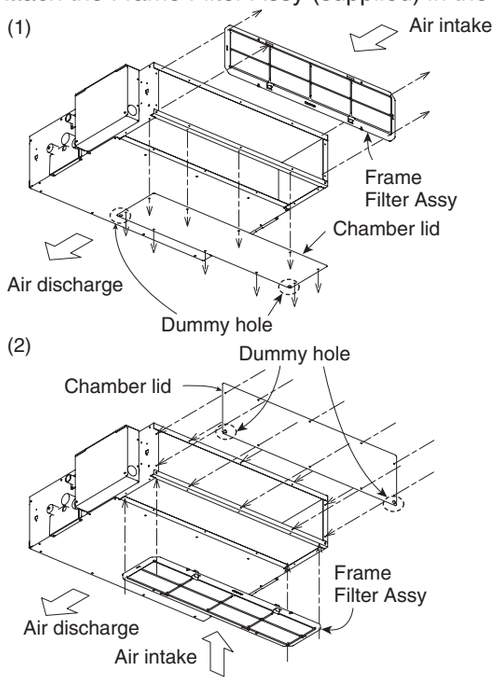
3-29. For Bottom Intake

For bottom intake, replace the chamber lid and protection net in the procedure shown in the diagram.

(1) Remove the Frame Filter Assy.
Remove the chamber lid.

(2) Refer to the diagram to attach the chamber lid and Frame Filter Assy in the direction of the arrow.
Note: Attach the lid with the dummy holes downward.

(3) Attach the Frame Filter Assy (supplied) in the manner shown in the diagram.



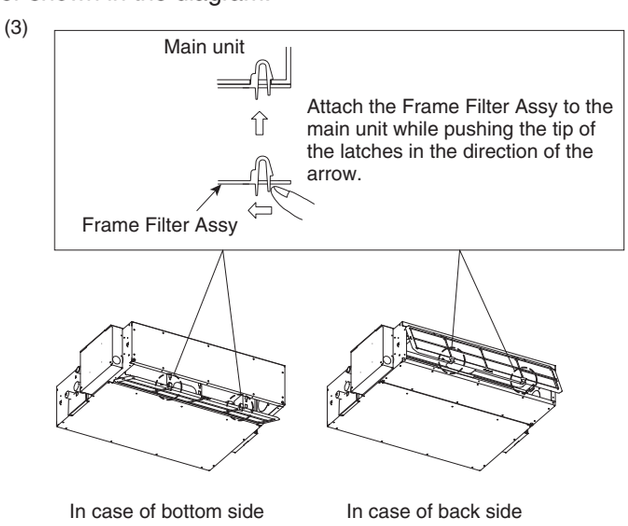


Fig. 3-105

3-30. Installing the Duct

Connect the duct supplied in the field.

Air inlet side

- Attach the duct and intake-side flange (field supply).
- Connect the flange to the main unit with 10 - Ø1/8" (Hole) screws.
- Wrap the intake-side flange and duct connection area with aluminum tape or something similar to prevent air escaping.

CAUTION

When attaching a duct to the intake-side, be sure to attach an air filter inside the air passage on the intake-side.
(Use an air filter whose dust collecting efficiency is at least 50% in a gravimetric technique.)
The included filter is not used when the intake duct is attached.

Air outlet side

- Connect the duct according to the air outside of the outlet-side flange.
- Wrap the outlet-side flange and the duct connection area with aluminum tape or something similar to prevent air escaping.

CAUTION

- Be sure to insulate the duct to prevent condensation from forming.
  (Material: glass wool or polyethylene foam, 1 in. thick)
- Use electric insulation between the duct and the wall when using metal ducts to pass metal laths of the net or fence shape or metal plating into wooden buildings.
- Be sure to explain about the way of maintaining and cleaning local procurements (air filter, grille [both air outlet and suction grille], etc.) to your customer.

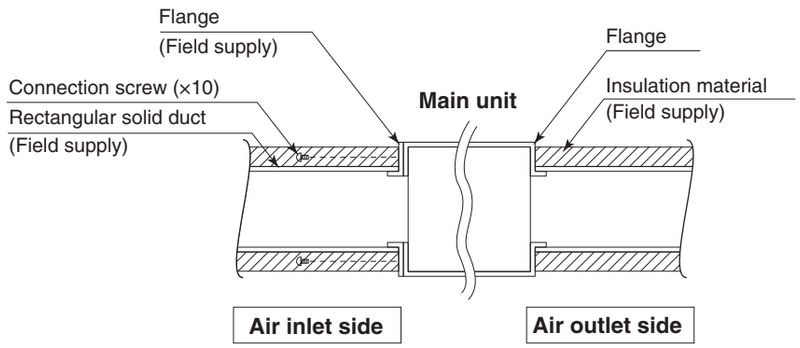


Fig. 3-106

3-31. Suspending the Indoor Unit

Depending on the ceiling type:

- Insert suspension bolts as shown in the diagram or
- Use existing ceiling supports or construct a suitable support as shown in the diagram.

WARNING

It is important that you use extreme care in supporting the indoor unit inside the ceiling. Ensure that the ceiling is strong enough to support the weight of the unit. Before hanging the unit, test the strength of each attached suspension bolt.

(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts referring to the dimensional data on the previous page. Tubing must be laid and connected inside the ceiling when suspending the unit. If the ceiling is already constructed, lay the tubing into position for connection to the unit before placing the unit inside the ceiling.

(2) Screw in the suspension bolts allowing them to protrude from the ceiling as shown in the diagram. (Cut the ceiling material, if necessary.)

(3) Thread the 3 hexagonal nuts and 2 washers (field supply) onto each of the 4 suspension bolts as shown in the diagram. Use 1 nut and 1 washer for the upper part, and 2 nuts and 1 washer for the lower part, so that the unit will not fall off the suspension lugs.

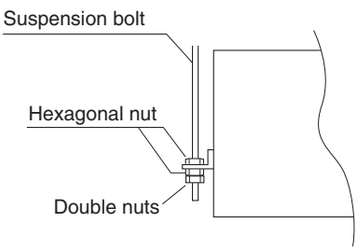


Fig. 3-109

(4) Adjust the height of the unit.

(5) Check the unit is horizontally level.

CAUTION

- **Make sure the unit is installed level using a level or a plastic tube filled with water. In using a plastic tube instead of a level, adjust the top surface of the unit to the surface of the water at both ends of the plastic tube and adjust the unit horizontally. (One thing to watch out for in particular is if the unit is installed so that the slope is not in the direction of the drain piping, this might cause leaking.)**

(6) Tighten the upper nut.

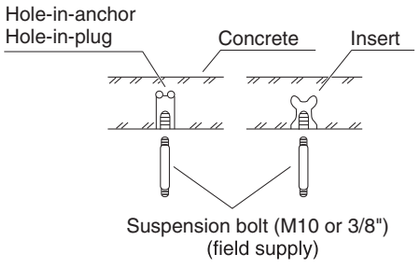


Fig. 3-107

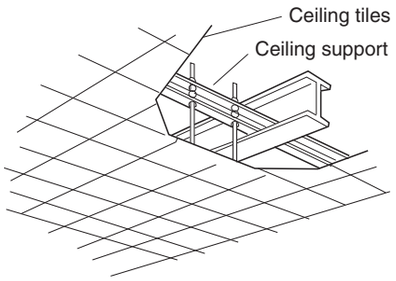


Fig. 3-108

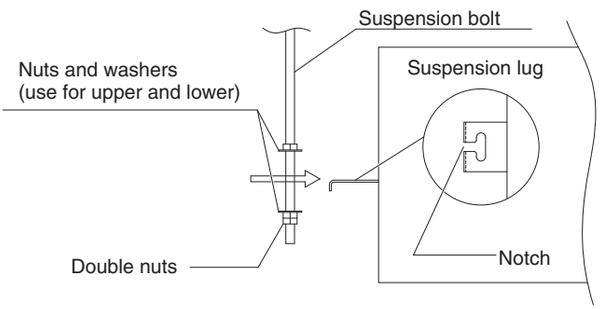


Fig. 3-110

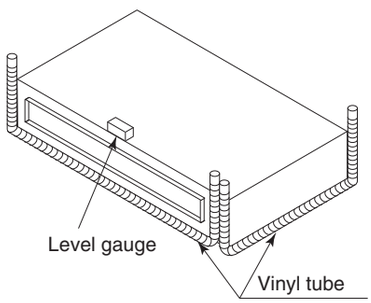


Fig. 3-111

3-32. Installing the Drain Piping

(1) Prepare standard hard PVC pipe (O.D. 1-1/32") for the drain and use the supplied hose band to prevent water leaks.
The PVC pipe must be purchased separately. The transparent drain part on the unit allows you to check drainage.

CAUTION

- **Do not use adhesive at the drain connection port on the indoor unit.**
- **Insert the drain pipe until it contacts the socket, as shown in the figure at right, then secure it tightly with the hose band.**
- **Do not use the supplied drain hose bent at a 90° angle. (The maximum permissible bend is 45°.)**
- **Tighten the hose clamps so their locking nuts face in the horizontal direction.**
- **Make sure that the drain port is not a downward gradient from the joint section (may lead to abnormal noise).**

NOTE

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

CAUTION

- Do not install an air bleeder as this may cause water to spray from the drain pipe outlet.
- **If it is necessary to increase the height of the drain pipe, the section directly after the connection port can be raised a maximum of 19-11/16". Do not raise it any higher than 19-11/16", as this could result in water leaks.**
- 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.
- 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.

3-33. 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.

(1) Connect power to the power terminal board (R, S terminals) inside the electrical component box.
(2) Remove the eyelet cap and through the opening, slowly pour about 0.13 gal of water into the drain pan to check drainage.
(3) Short the check pin (CHK) on the indoor control board and operate the drain pump. Check the water flow through the transparent drain port and see if there is any leakage.

Unit: in.

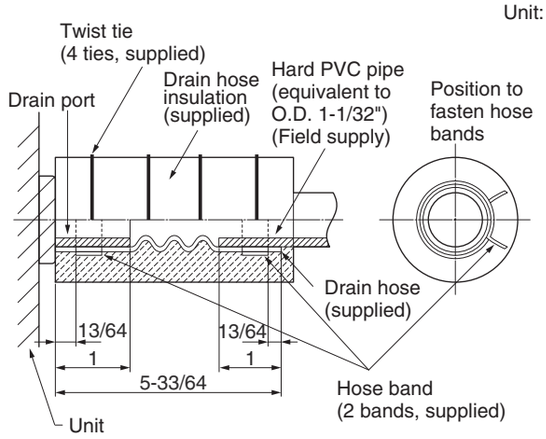


Fig. 3-112

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 1/4" to 1" from the end of the supplied drain hose.**

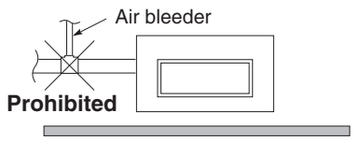


Fig. 3-113

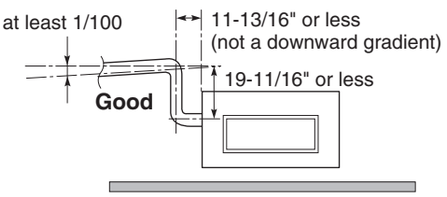


Fig. 3-114

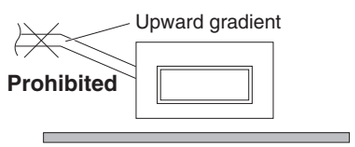


Fig. 3-115

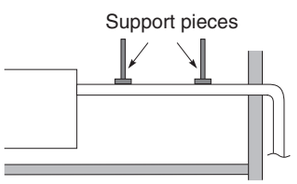


Fig. 3-116

CAUTION **Be careful since the fan will start when you short the pin on the indoor control board.**

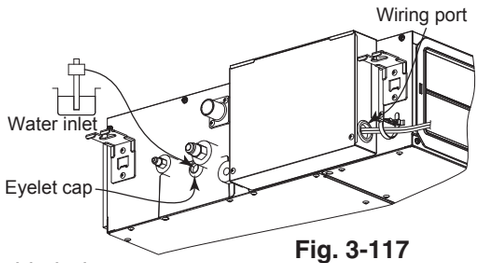


Fig. 3-117

(4) When the check of drainage is complete, open the check pin (CHK) and remount the insulator and drain cap onto the drain inspection port.

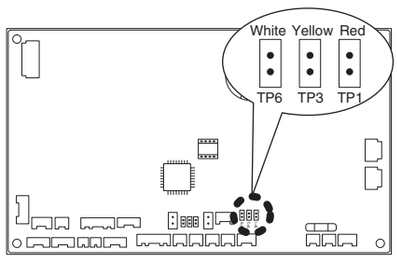
3-34. Increasing the Fan Speed

■ **For Short Circuit Connection**

- The standard (before shipment) external static pressure is shown in the table below.
- When using with a higher static pressure, it is necessary to change to the high static pressure mode.

External static pressure

Type	7	9	12	15	18
Standard (in.WG)	0.04	0.06	0.06	0.06	0.06
High static pressure (in.WG)	0.12	0.12	0.16	0.16	0.16



Indoor control board

When using with high static pressure mode, set the indoor unit control board as shown at right. Follow the below procedure while the unit is turned off.

(1) Open the cover of the electrical box and confirm that it is the indoor unit control board.

(2) Connect the short circuit connector to the short circuit pin TP3 (2P: Yellow) of the indoor unit control board.

- In case of wired remote controller setting, do not use the short circuit connector.

■ **For Wired Remote Controller**

① Press and hold the [🔧], [⌂] and [CANCEL] buttons simultaneously for 4 seconds or longer.

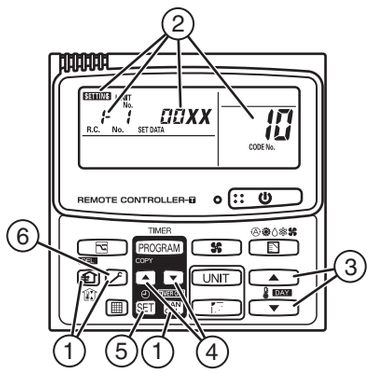
② "SETTING," unit No. "1- 1" (or "ALL" in the case of group control), item code "10," and settings data "00XX" are displayed blinking on the remote controller's LCD display.
At this time, the indoor unit fan (or all indoor unit fans in the case of group control) begins operating.

③ Press the temperature setting [▲] / [▼] buttons to select the item code "5d".

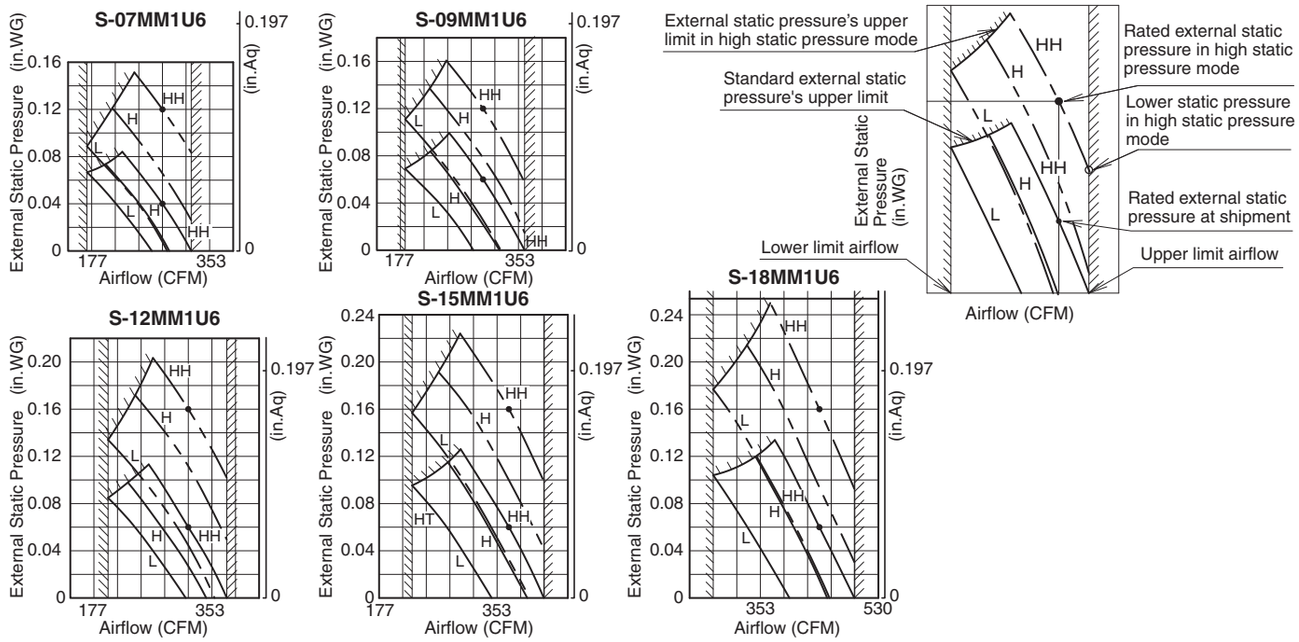
④ Press the timer time [▲] / [▼] buttons to select the desired setting data.
* For item codes and setting data, refer to the right table.

⑤ Press the [SET] button.
(The display stops blinking and remains lit, and setting is completed.)

⑥ Press the [🔧] button to return to normal remote controller's display.



Item code	No.	Description
5d	0000	Standard (setting at shipment)
	0003	High static-pressure



■ High Static Pressure Ducted Type (E1 Type)

3-35. Required Minimum Space for Installation and Service

- This air conditioner is usually installed above the ceiling so that the indoor unit and ducts are not visible. Only the air intake and air outlet ports are visible from below.
- The minimum space for installation and service is shown in Fig. 3-118.
- It is recommended that space be provided (23-5/8" × 23-5/8") for checking and servicing the electrical system.
- Fig. 3-119 and Table 3-5 show the detailed dimensions of the indoor unit.

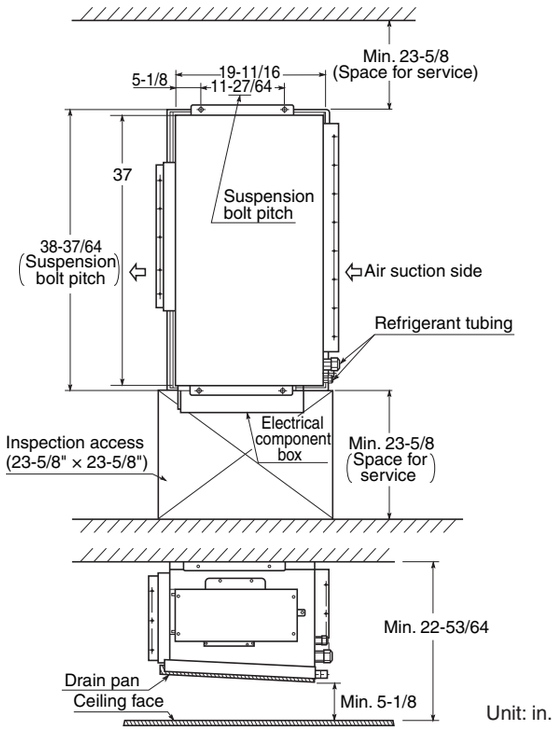


Fig. 3-118

Table 3-5 Unit: in.

Type \ Length	A	B	C
36	16-17/32	15-35/64	2-43/64
48	17-23/32	16-47/64	3-55/64

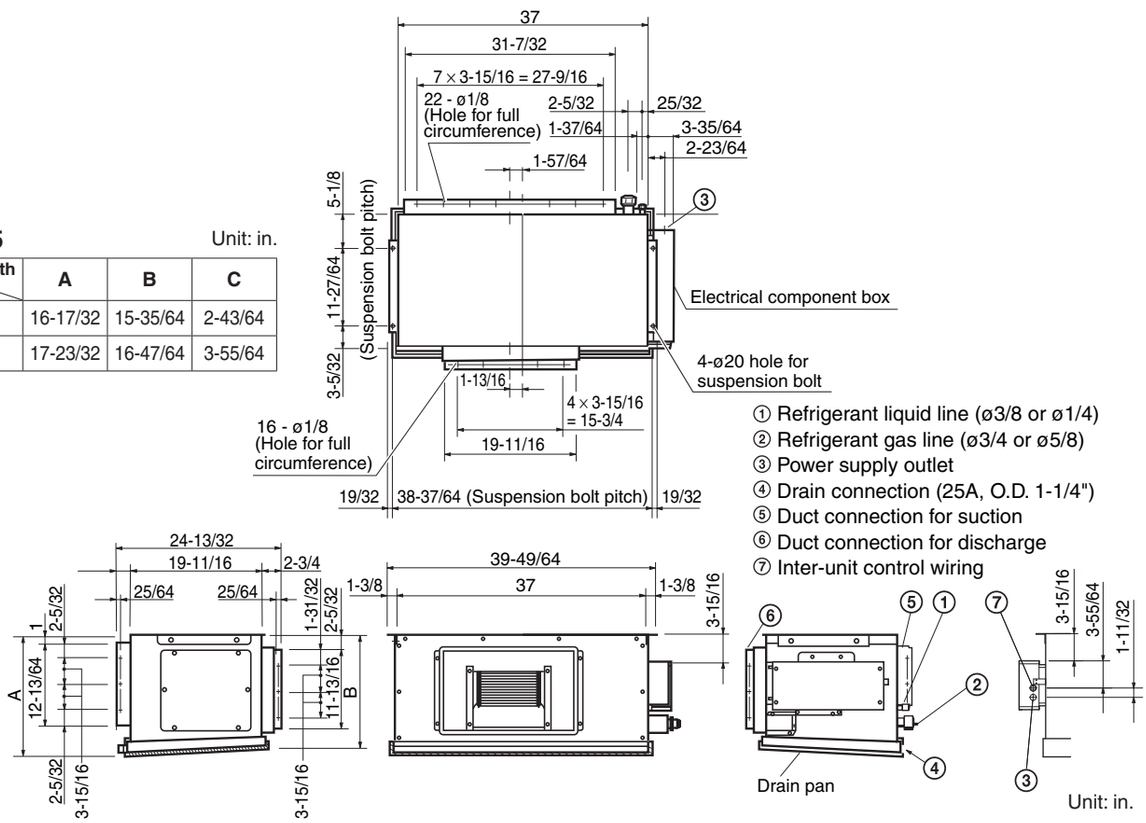


Fig. 3-119

3-36. Suspending the Indoor Unit

Depending on the ceiling type:

- Insert suspension bolts as shown in Fig. 3-120
  or
- Use existing ceiling supports or construct a suitable support as shown in Fig. 3-121.

WARNING **It is important that you use extreme care in supporting the indoor unit inside the ceiling. Ensure that the ceiling is strong enough to support the weight of the unit. Before hanging the unit, test the strength of each attached suspension bolt.**

(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts referring to the dimensional data given previously. (Figs. 3-118 and 3-119)

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

(2) Screw in the suspension bolts allowing them to protrude from the ceiling as shown in Fig. 3-120. (Cut the ceiling material, if necessary.)

(3) Suspend and fix the indoor unit using the 2 hexagonal nuts (field supply) and special washers (supplied with the unit) as shown in Fig. 3-122.

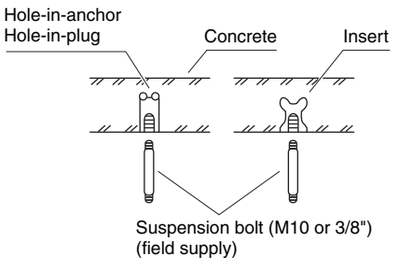


Fig. 3-120

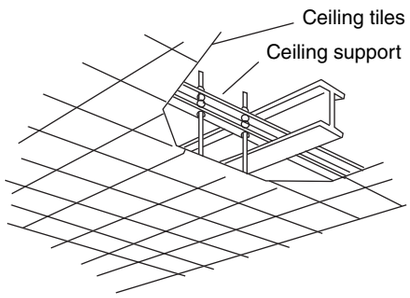
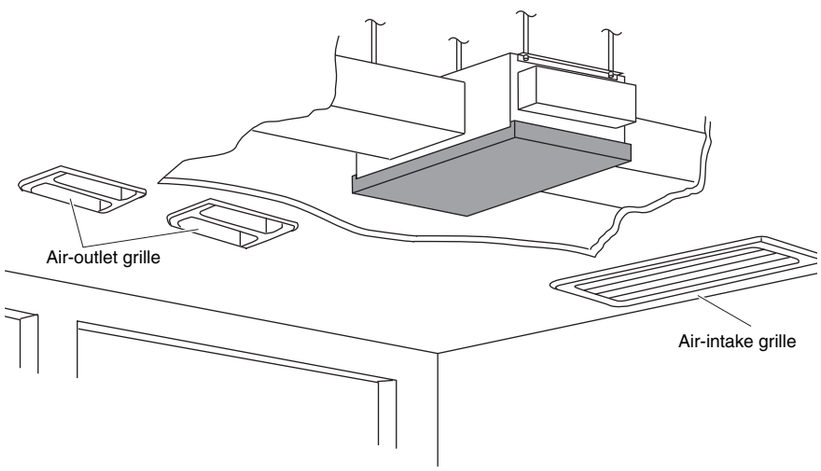


Fig. 3-121



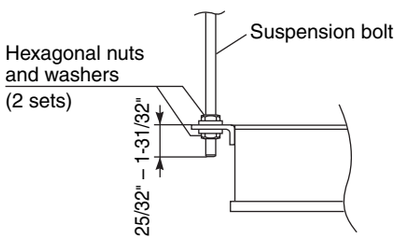


Fig. 3-122

3-37. Installing the Drain Piping

(1) Prepare standard hard PVC pipe (O.D. 1-1/4") for the drain and use the supplied drain socket to prevent water leaks. The PVC pipe must be purchased separately. When doing this, apply adhesive for the PVC pipe at the connection point.

(2) If connecting a drain joint (supplied) to the threaded drain port, first wrap the drain port threads with sealing tape, then connect the joint. (Fig. 3-123)

(3) After connecting the drain pipe securely, wrap insulator (field supply) around the pipe.

(4) Ensure the drain pipe has a downward gradient (1/100 or more) and prepare traps as indicated in Fig. 3-124.

(5) Also, in another part of the pipe arrangement, prepare traps with an inspection plug to clean dust or debris that may cause leaking of water. (Fig. 3-125)

(6) After connecting the drain piping, slowly pour water into the drain pan to check that the water drains smoothly.

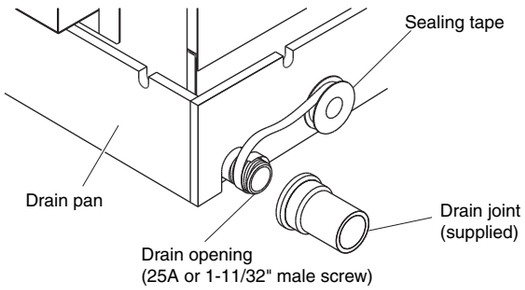


Fig. 3-123

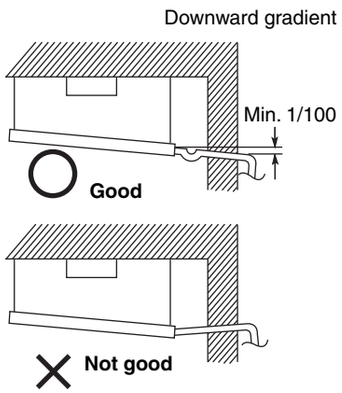


Fig. 3-124

3-38. Caution for Ducting Work

- This unit has high static pressure (applicable external static pressure Max. 0.68 – 0.88 in. WG. In the case of small pressure resistance (for instance, a short duct), install a damper for adjusting air flow volume as air flow volume / air flow noise increases.
- If the air conditioner is to be installed in a room such as an office or meeting room which needs a low sound level, provide a supply and return noise absorption chamber with an acoustic liner.
- Include an air filter (field supply) at the return duct.

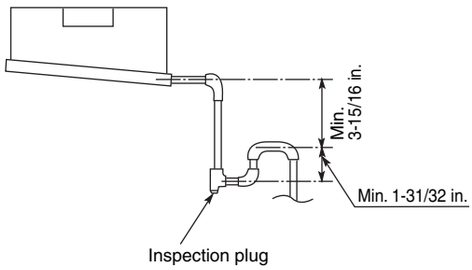
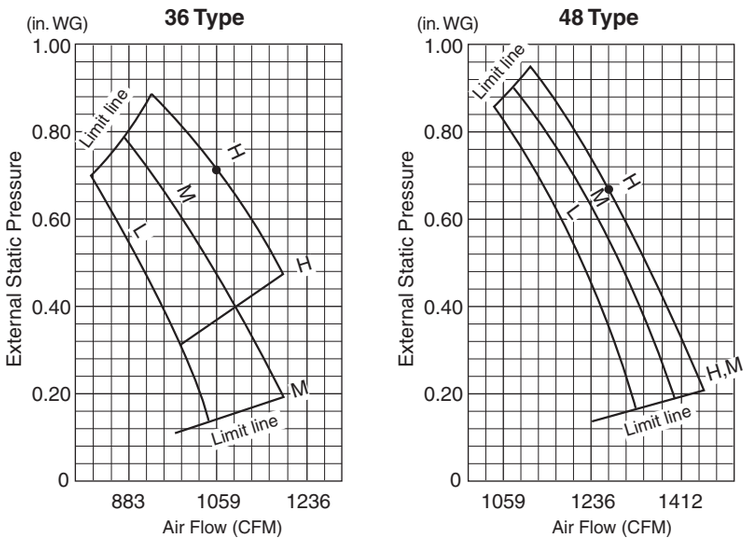


Fig. 3-125

3-39. Indoor Fan Performance

How to Read the Diagram

The vertical axis is the External Static Pressure (in. WG) while the horizontal axis represents the Air Flow (CFM). The characteristic curve for the "H," "Med," and "Lo" fan speed control.
The nameplate values are shown based on the "H" air flow. Therefore in the case of 36 Type, the flow is 1059 CFM, while the External Static Pressure is 0.72 in. WG at "H" position. If the external static pressure is too great (due to long extension of duct, for example), the air flow volume may drop too low at each air outlet. (Fig. 3-126)



NOTE H: At shipment

Fig. 3-126

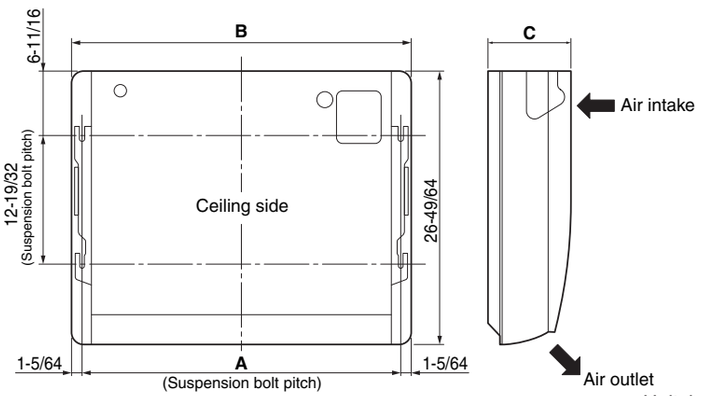
■ Ceiling Type (T1 Type)

3-40. Required Minimum Space for Installation and Service

(1) Dimensions of suspension bolt pitch and unit

Table 3-6 Unit: in.

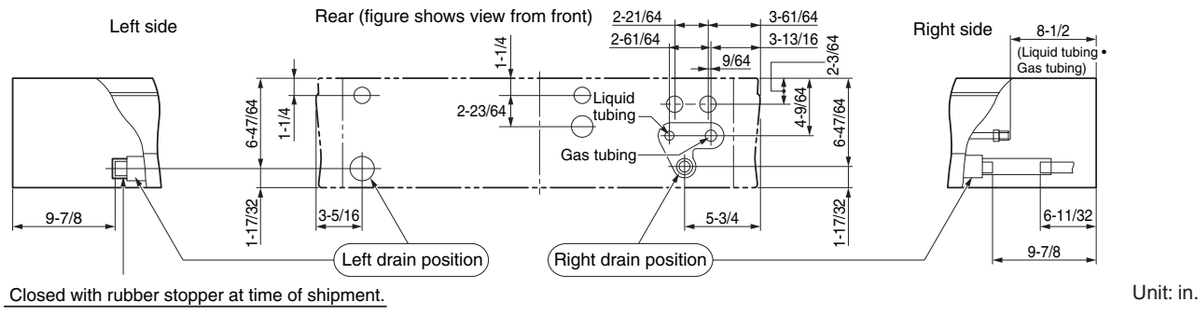
Type \ Dimension	A	B	C
12, 18	33-21/32	35-53/64	8-17/64
24	44-19/64	46-29/64	8-17/64



Unit: in.

Fig. 3-127

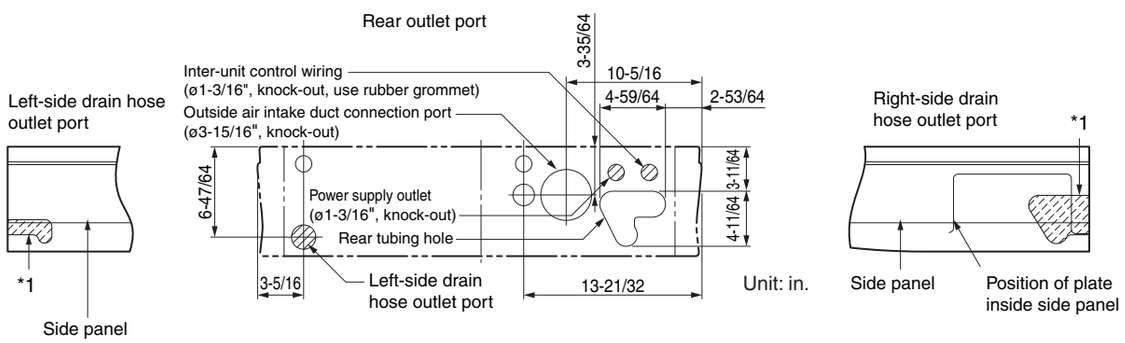
(2) Refrigerant tubing • drain hose position



Unit: in.

Fig. 3-128

(3) Unit opening position (Refrigerant tubing • drain hose • power inlet port • remote control wiring inlet port)

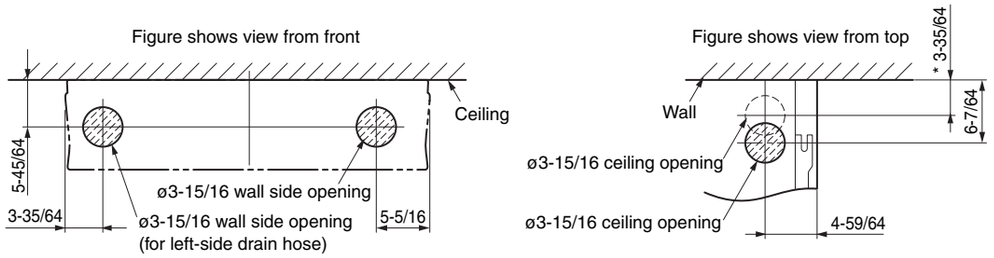


Unit: in.

*1 Use a compass saw, jig saw or similar tool and cut along the indented portion of the side panel.

Fig. 3-129

(4) Wall and ceiling side opening position



* If the optional drain up kit is installed, create a ø3-15/16" hole along the dotted line (part marked with * in figure).

Fig. 3-130

3-41. Suspending the Indoor Unit

(1) Place the full-scale diagram (supplied) on the ceiling at the spot where you want to install the indoor unit. Use a pencil to mark the drill holes. (Fig. 3-131).

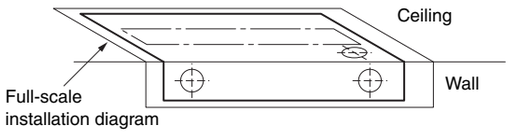


Fig. 3-131

NOTE

Since the diagram is made of paper, it may shrink or stretch slightly because of high temperature or humidity. For this reason, before drilling the holes maintain the correct dimensions between the markings.

(2) Drill holes at the 4 points indicated on the full-scale diagram.

(3) Depending on the ceiling type:

a) Insert suspension bolts as shown in Fig. 3-132.
or

b) Use existing ceiling supports or construct a suitable support as shown in Fig. 3-133.

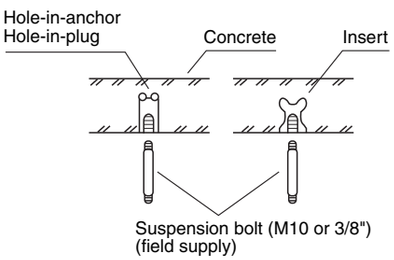


Fig. 3-132

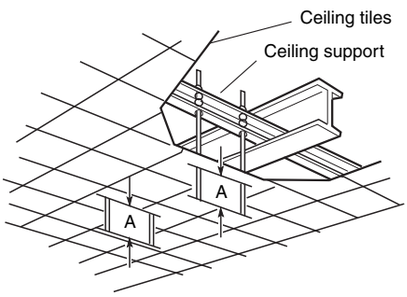


Fig. 3-133

WARNING **It is important that you use extreme care in supporting the indoor unit from the ceiling. Ensure that the ceiling is strong enough to support the weight of the unit. Before hanging the ceiling unit, test the strength of each attached suspension bolt.**

(4) Screw in the suspension bolts, allowing them to protrude from the ceiling as shown in Figs. 3-132 and 3-133. The distance of each exposed bolt must be of equal length within 1-15/16". (Fig. 3-134)

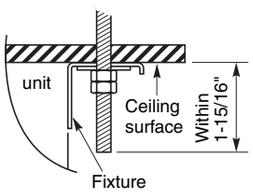


Fig. 3-134

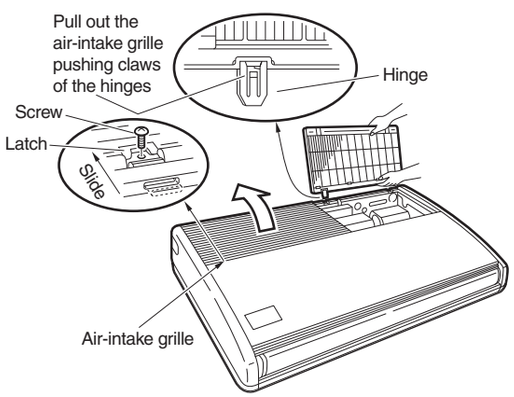


Fig. 3-135

(5) Before suspending the indoor unit, remove the 2 or 3 screws on the latch of the air-intake grilles, open the grilles, and remove them by pushing the claws of the hinges as shown in Fig. 3-135. Then remove both side panels sliding them along the unit toward the front after removing the 2 attachment screws. (Fig. 3-136)

(6) Carry out the preparation for suspending the indoor unit. The suspension method varies depending on whether there is a suspended ceiling or not. (Figs. 3-137 and 3-138)

(7) Suspend the indoor unit as follows:

a) Mount 1 washer and 2 hexagonal nuts on each suspension bolt as shown in Fig. 3-139.

b) Lift the indoor unit, and place it on the washers through the notches, in order to fix it in place. (Fig. 3-140)

c) Tighten the 2 hexagonal nuts on each suspension bolt to suspend the indoor unit as shown in Fig. 3-141.

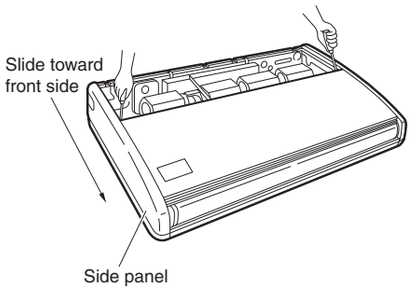


Fig. 3-136

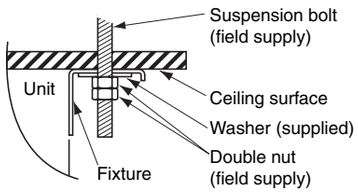


Fig. 3-137

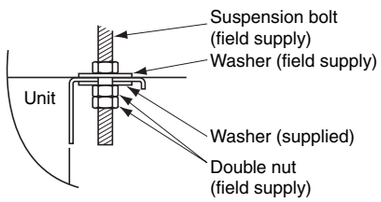


Fig. 3-138

NOTE

The ceiling surface is not always level. Please confirm that the indoor unit is evenly suspended. For the installation to be correct, leave a clearance of about 3/8" between the ceiling panel and the ceiling surface and fill the gap with an appropriate insulation or filler material.

(8) If the tubing and wiring are to go towards the rear of the unit, make holes in the wall. (Fig. 3-142)

(9) Measure the thickness of the wall from the inside to the outside and cut PVC pipe at a slight angle to fit. Insert the PVC pipe in the wall. (Fig. 3-143)

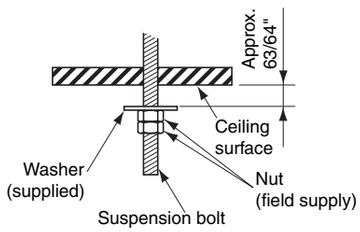


Fig. 3-139

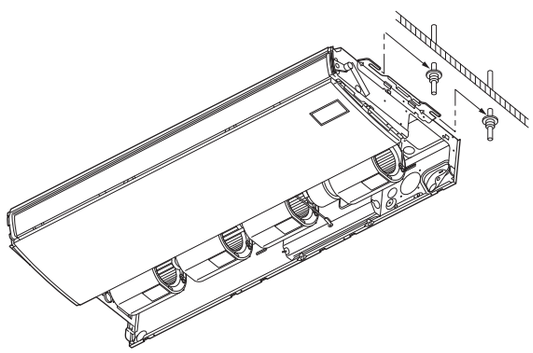


Fig. 3-140

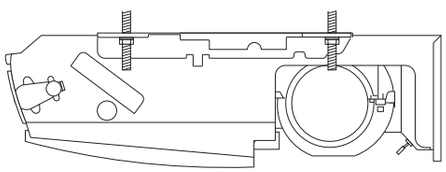


Fig. 3-141

NOTE

The hole should be made at a slight downward slant to the outside.

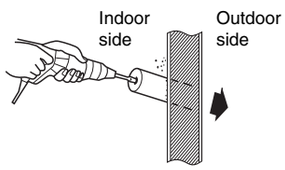


Fig. 3-142

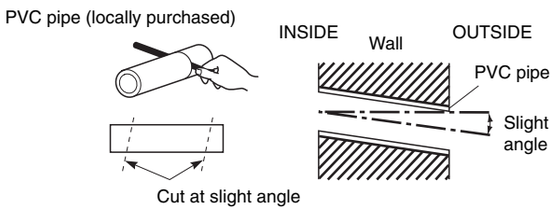


Fig. 3-143

3-42. Duct for Fresh Air

There is a duct connection port (knock-out hole) at the right-rear of the top panel of the indoor unit for drawing in fresh air. If it is necessary to draw in fresh air, remove the cover by opening the hole and connecting the duct to the indoor unit through the connection port. (Fig. 3-144)

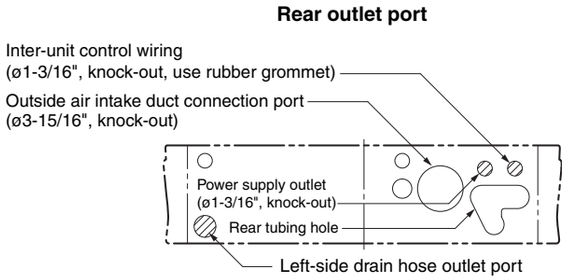


Fig. 3-144

3-43. Shaping the Tubing

- The positions of the refrigerant tubing connections are shown in the figure below. (The tubing can be routed in 3 directions.)

* When routing the tubing out through the top or right sides, knock out the appropriate parts in the top panel and cut notches in the side panel as shown in Fig. 3-129.

* When routing the tubing out through the top, the optional L-shape tubing kit is required.

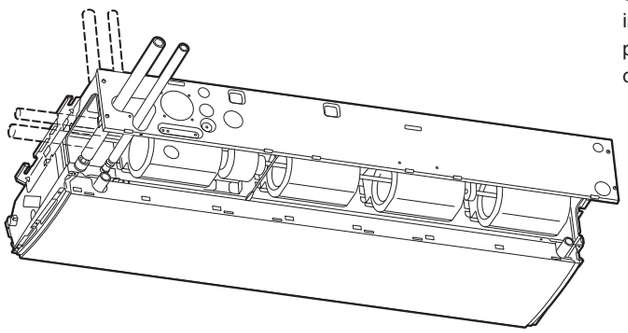


Fig. 3-145

If the tubing is to be routed out together, use a box cutter or similar tool to cut out the part of the rear cover indicated by the marked area in the figure below, to match the positions of the tubes. Then draw out the tubing.

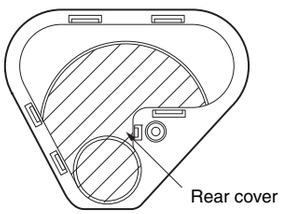


Fig. 3-146

3-44. Installing the Drain Piping

- Prepare standard PVC pipe for the drain and connect it to the indoor unit drain pipe with the supplied hose clamps to prevent water leaks.

(1) Drain hose connection

- The drain hose is connected below the refrigerant tubing.

(2) Installing the drain hose

- 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.
- 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).
- Wrap the hose with the supplied drain hose insulation and use the 4 twist ties so that the hose is insulated with no gaps.
- Connect the drain piping so that it slopes downward from the unit to the outside. (Fig. 3-147)

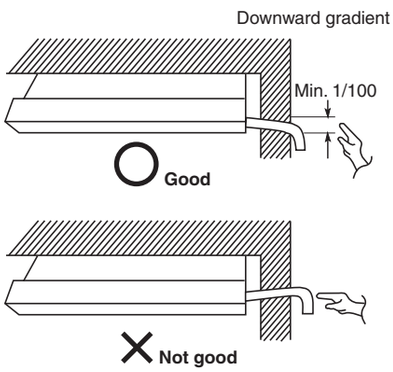


Fig. 3-147

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 13/64 – 63/64 in. from the end of the supplied drain hose.**

- Never allow traps to occur in the course of the piping.
- Insulate any piping inside the room to prevent dripping.
- After the drain piping, pour water into the drain pan to check that the water drains smoothly.
- If the drain hose is to be raised, use the optional drain up kit.
  The drain hose can be raised 23-5/8" above the top of the main unit. (For details, refer to the manual of the optional part.)

* If the drain hose is routed through the left side, refer to Fig. 3-145, and follow the procedure above to install the hose. Re-attach the rubber stopper that was earlier removed onto the right side. (Fig. 3-148)
  The rubber stopper can be inserted easily by using a screwdriver or similar tool to press the stopper into the drain port on the main unit. Press the stopper into the main unit drain port as far as it will go.

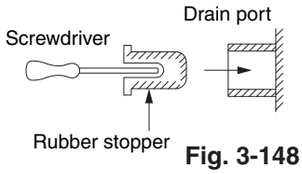


Fig. 3-148

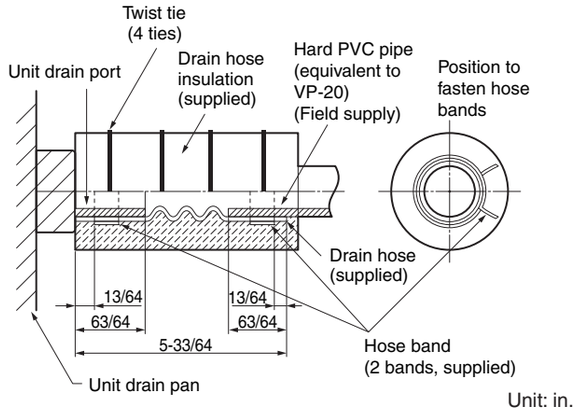


Fig. 3-149

CAUTION

Check local electrical codes and regulations before wiring. Also, check any specified instruction or limitations.

How to carry out power supply wiring

(1) Wiring connection ports

The power inlet ports are located at the rear and top. The remote control wiring inlet ports are located at the rear and top (for use with the wired remote controller). For details, refer to Fig. 3-144. For the method used to insert the wiring, refer to the figure below. (Fig. 3-150)

CAUTION

When removing the fastening bracket from the cover of the electrical component box, use caution to avoid dropping the bracket.

(2) How to carry out wiring

- Open the knock-out hole on the rear or top of the main unit. Attach the supplied rubber grommet and pull the power wiring into the main unit.
- Feed the wiring into the wiring inlet port on the electrical component box. Connect the wiring to the terminal plate and fasten in place with the supplied clamp.
- Perform electrical and grounding work in accordance with the package A/C power specifications, and following local electrical codes and regulations.

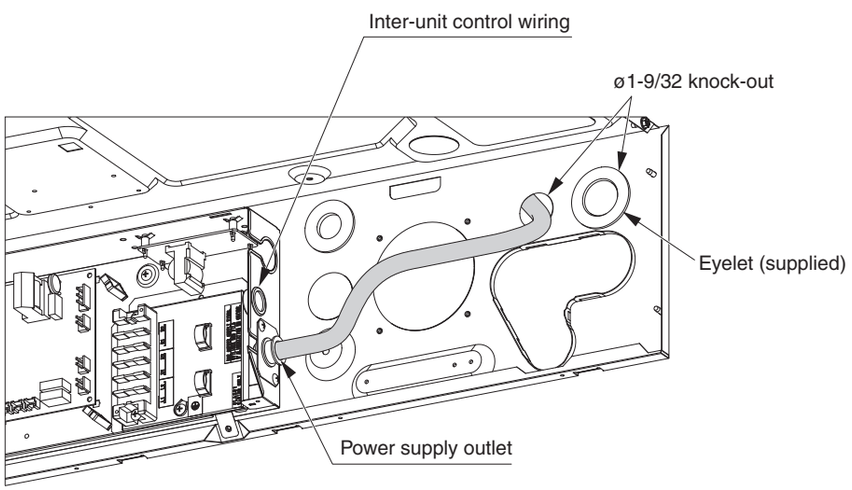


Fig. 3-150

■ Wall Mounted Type (K1 Type)

3-45. Removing the Rear Panel from the Unit

(1) Remove the set screws used to fasten the rear panel to the indoor unit during transportation.

(2) Press up on the frame at the 2 locations shown by the arrows in the figure at right, and remove the rear panel.

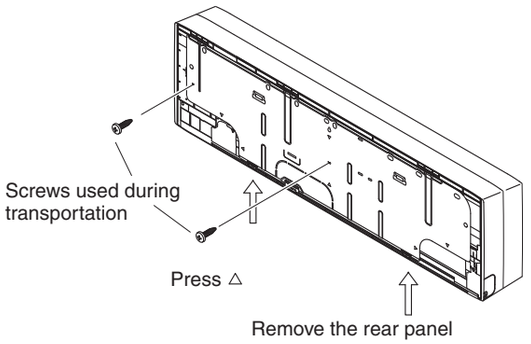


Fig. 3-151

NOTE

Tubing can be extended in 4 directions as shown in Fig. 3-152. Select the direction which will provide the shortest run to the outdoor unit.

Except S-18MK1U6, S-19MS1U6

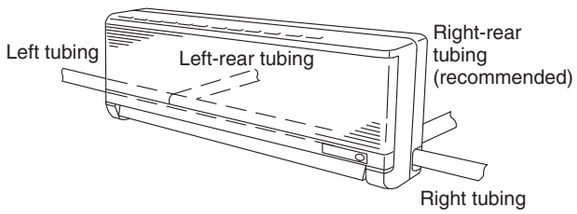


Fig. 3-152-1

For S-18MK1U6, S-19MS1U6

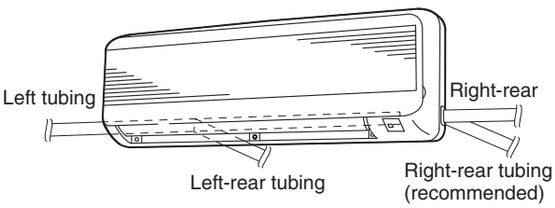


Fig. 3-152-2

3-46. Selecting and Making a Hole

(1) Remove the rear panel from the indoor unit and place it on the wall at the location selected. Fix the rear panel and hook the unit onto it temporarily. Make sure the unit is horizontal using a level gauge or tape measure to measure down from the ceiling.

(2) Determine which notch of the rear panel should be used. (Fig. 3-153)

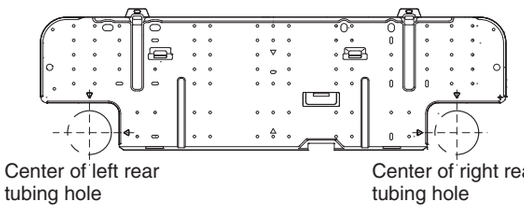
(3) Before drilling a hole, check that there are no studs or pipes behind the determined location. The above precautions are also applicable if tubing goes through the wall in any other location.

(4) Using a sabre saw, key hole saw or hole-cutting drill attachment, make a hole (dia. 3-5/32") in the wall. (Fig. 3-154)

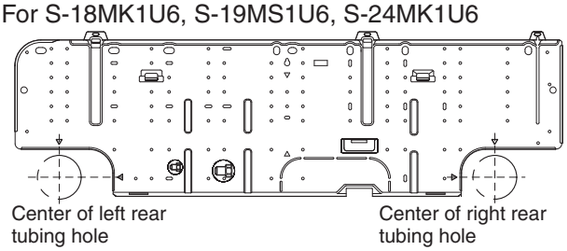
(5) Measure the thickness of the wall from the inside edge to the outside edge and cut the PVC pipe at a slight angle 15/64" shorter than the thickness of the wall. (Fig. 3-155)

(6) Place the plastic cover over the end of the pipe (for indoor side only) and insert in the wall. (Fig. 3-156)

For S-07MK1U6, S-09MK1U6, S-12MK1U6



For S-18MK1U6, S-19MS1U6, S-24MK1U6



Tubing hole diameter	ø3-5/32

Fig. 3-153

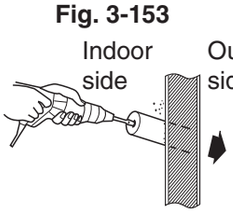


Fig. 3-154

NOTE

The hole should be made at a slight downward gradient to the outside.

CAUTION **Avoid areas where electrical wiring or conduits are located.**

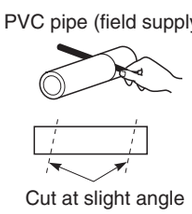


Fig. 3-155

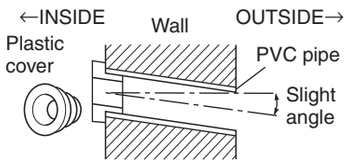


Fig. 3-156

3-47. Installing the Rear Panel onto the Wall

Confirm that the wall is strong enough to support the unit.
See either Item a) or b) below depending on the wall type.

a) If the Wall is Wooden

(1) Attach the rear panel to the wall with the 10 screws provided. If you are not able to line up the holes in the rear panel with the beam locations marked on the wall, use Rawl plugs or toggle bolts to go through the holes on the panel or drill 3/16" dia. holes in the panel over the stud locations and then mount the rear panel.

(2) Check with a tape measure or level gauge. This is important so that the unit is correctly installed. (Fig. 3-157)

(3) Make sure the panel is flush against the wall. Any space between the wall and unit will cause noise and vibration.

b) If the Wall is Brick, Concrete or Similar

Drill 3/16" dia. holes in the wall. Insert Rawl plugs for appropriate mounting screws. (Fig. 3-158)

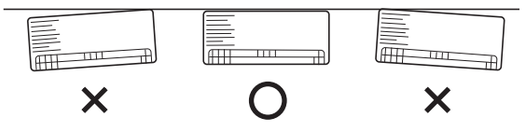


Fig. 3-157

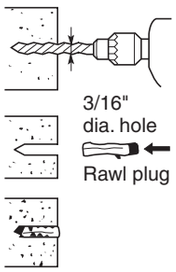


Fig. 3-158

3-48. Removing the Grille to Install the Indoor Unit

In principle, with this model wiring can be completed without removing the grille.
However, if it is necessary to change the settings on the PCB, follow the procedure below excepting S-18MK1U6 and S-19MS1U6.

Removing the grille

(1) Lift up on both sides of the air-intake grille to open it. (Fig. 3-159)

(2) Remove the filter. (Fig. 3-159)

(3) Adjust the flap so that it is horizontal. (Fig. 3-160)

(4) Open the installation screw covers below the grille (3 locations). (Fig. 3-160)

(5) Remove the screws. (Fig. 3-160)

(6) Remove the grille. (Fig. 3-161)

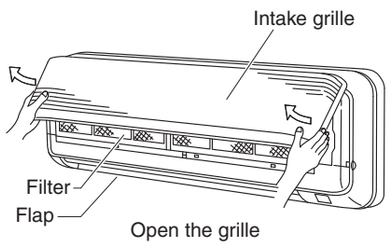


Fig. 3-159

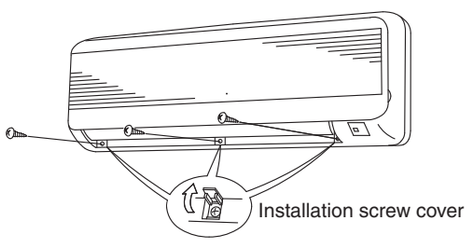


Fig. 3-160

Attaching the grille

(1) Close the flap.

(2) Keep the grille installation tabs aligned with the top portion of the grille, and reinstall the lower portion of the grille.
Fit the installation tabs into the grooves and press the lower portion of the grille back into its original position to install it.

(3) Press on the installation tabs to completely close the grille.
Check that the grille and frame are fitted tightly together.

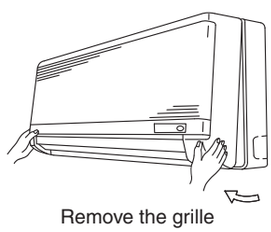


Fig. 3-161

3-49. Preparing the Tubing

(1) Arrangement of tubing by directions

a) Right or left tubing
The corner of the right or left frame should be cut with a hack saw or similar. (Fig. 3-162)

b) Right-rear or left-rear tubing
In this case, the corners of the frame do not need to be cut.

(2) Be sure to insulate the part of the drain hose that is run indoors, and the refrigerant tubing.
If these are not insulated, condensation may result in dripping and damage to walls and furniture.
The flare nuts on the 24-type (only) are large;
therefore, use the supplied insulation material.

(3) To mount the indoor unit on the rear panel.

1. When installing the indoor unit, position the indoor unit onto the installation tabs on the upper part of the rear panel. (Fig. 3-163)
2. Press on the air outlet to hold it in place, and press the lower part of the indoor unit until a “click” sound is heard and the indoor unit is securely fastened to the installation tabs on the lower side of the rear panel. (Fig. 3-164)

Raising the clamp to lift up the indoor unit will facilitate this work. (Fig. 3-165)

To remove the indoor unit, press up on the 2 locations (△ marks) on the lower part of the unit frame to disconnect the installation tabs. Refer to Section 3-45. “Removing the Rear Panel from the Unit” (Fig. 3-151).
Then lift up the indoor unit to remove it.

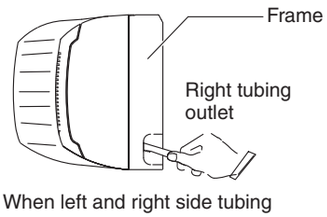


Fig. 3-162

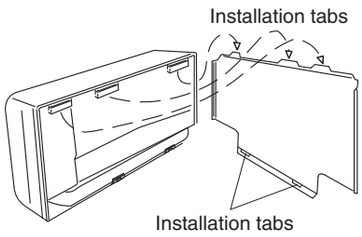


Fig. 3-163

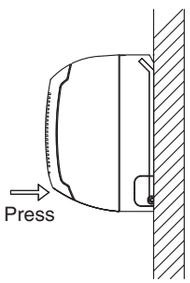


Fig. 3-164

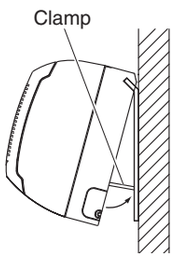


Fig. 3-165

3-50. Shaping the Tubing

Right-rear tubing

(1) Shape the refrigerant tubing so that it can easily go into the hole. (Fig. 3-166)

(2) After performing a leak test, wrap both the refrigerant tubing and drain hose together with insulating tape.
The drain hose should be positioned below the refrigerant tubes, and should be given sufficient space so that no strong tension is applied to it.

(3) Push the wiring, refrigerant tubing and drain hose through the hole in the wall. Adjust the indoor unit so it is securely seated on the rear panel.

Left or left-rear tubing

(1) Pass the tubing and drain hose into the rear of the indoor unit. Provide sufficient length for the connections to be made. Next, bend the tubing with a pipe bender, and connect them. (Fig. 3-167)

(2) After performing a leak test, wrap the refrigerant tubing and drain hose together with insulating tape, as shown in the figure at right. (Fig. 3-168)
Then fit the tubing into the tubing storage space in the rear of the indoor unit and clamp in place.

(3) Adjust the indoor unit so that it is securely installed onto the rear panel.

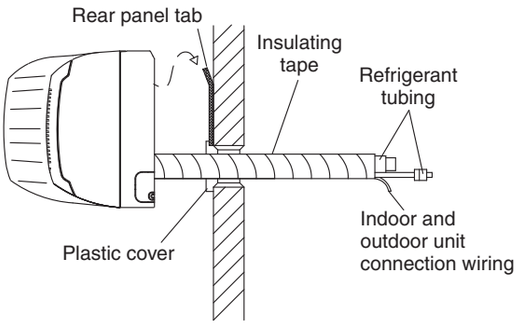


Fig. 3-166

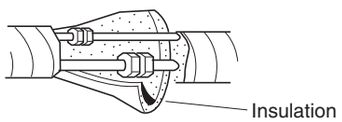


Fig. 3-167

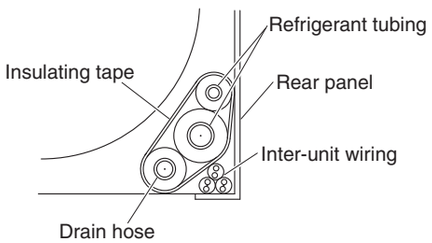


Fig. 3-168

NOTE

It is necessary to install the external electronic expansion valve kit for the model S-19MS1U6. For installation, refer to “3-53. External Electronic Expansion Valve Kit (CZ-P56SVK1U)”.

3-51. Installing the Drain Hose

a) The drain hose should be slanted downward to the outside. (Fig. 3-169)

b) Never form a trap in the course of the hose.

c) If the drain hose will run in the room, insulate the hose* so that chilled condensation will not damage furniture or floors.
* Foamed polyethylene or its equivalent is recommended.

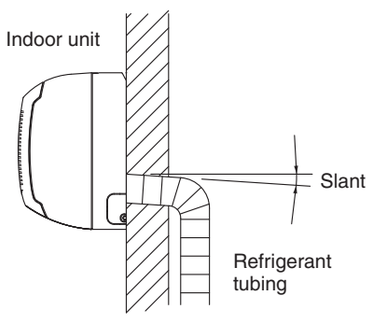


Fig. 3-169

WARNING **Do not supply power to the unit or operate it until all tubing and wiring to the outdoor unit are completed.**

3-52. When Using Wireless Remote Controller Instead of Wired Remote Controller

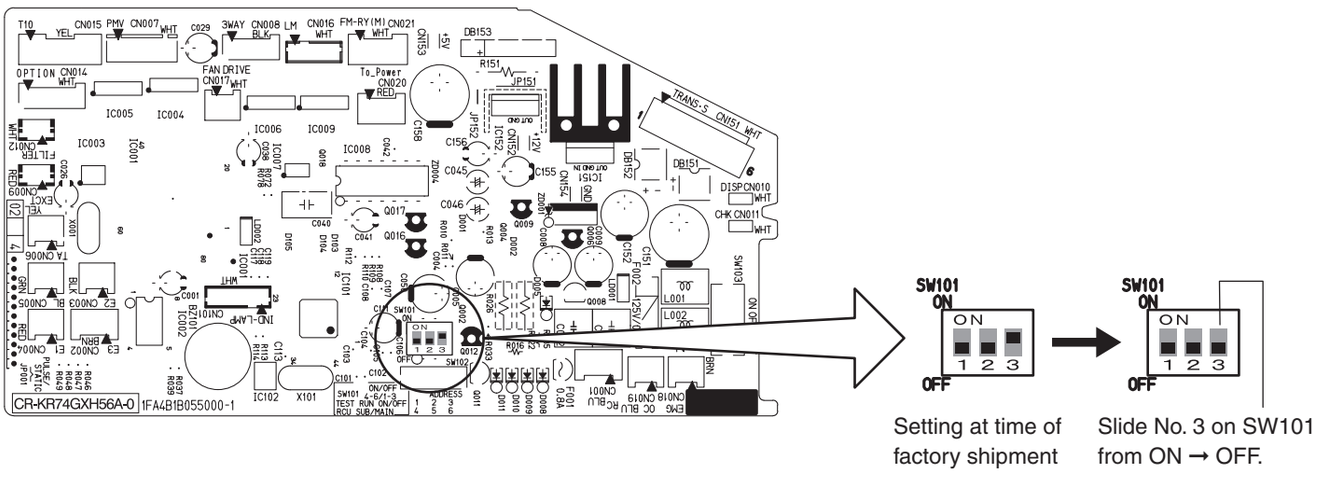
When the wireless remote controller is to be used, slide the switch on the indoor unit control PCB.

- If this setting is not made, an alarm will occur. (The operation lamp on the display blinks.)
- This setting is not necessary if both the wired remote controller and wireless remote controller are used.
- The location of the switch varies depending on the type of PCB used. Check the model name before making the setting.

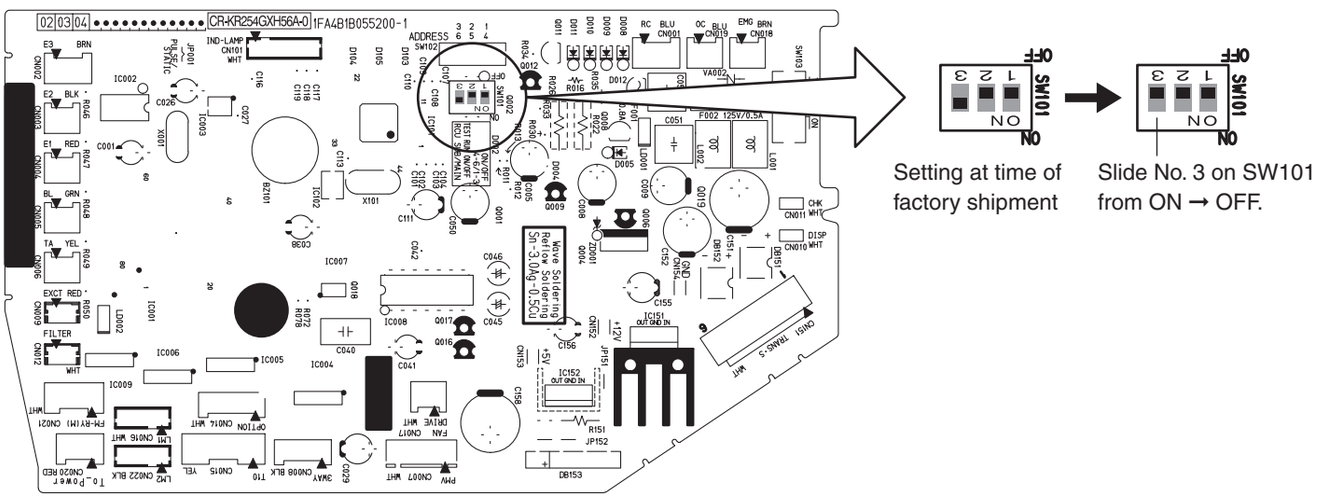
NOTE

This setting is necessary also in case of “non-using wired/wireless” remote controller.
(ex. central control using only an intelligent/system controller)

- **S-07MK1U6 / S-09MK1U6 / S-12MK1U6**



- **S-18MK1U6 / S-19MS1U6 / S-24MK1U6**



3-53. External Electronic Expansion Valve Kit (CZ-P56SVK1U)

Precautions in this manual are given in the form of “Warnings” or “Cautions.” Both types of precautions contain important information related to your safety, the safety of users, and the correct operation, installation, or maintenance of the air conditioning system. Be sure to carefully observe all relevant precautions.

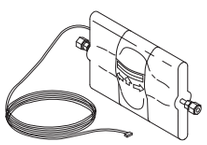
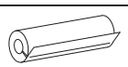
WARNING This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

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

- This external electronic expansion valve is compatible with the refrigerants listed below.
  R410A, R407C, R22

1. Checking Parts

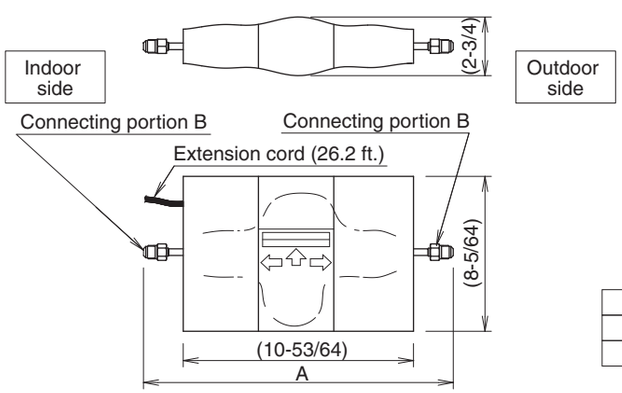
Please check these parts below that came in the box.

	Description	Shape	Q’ty		Description	Shape	Q’ty
1	External electronic expansion valve (Extension cord 26.2 ft.)		1	3	Clamp (Large: 13-25/32", Small: 7-7/8")		Large: 2 Small: 4
				4	Installation manual		1
2	Flare insulator		2	5	Insulating tape	 White (heat resisting)	2

2. Positioning for Installation

- The valve should be connected to the liquid tube. Determine the position for installation referring to the diagram of outer dimensions. (Fig. 3-170) Refrigerant-flow noise may occur from the external electronic expansion valve. As a guide, the distance from the indoor unit should be a minimum of 16.4 feet, but less than 26.2 feet. (Install away from locations where strictly quiet operation is required.)
  If this distance is unavailable, install inside the ceiling or in another location where noise insulation is possible.
  This is a functional component, and therefore may require inspection and replacement. Consider this when deciding the installation location. (For example, place near an inspection port, or provide one.)
- This valve is for indoor use. Do not install the valve outdoors.

Diagram of outer dimensions



Type	56	160
A	12-51/64	14-11/64
B	ø 1/4	ø 3/8

Unit: in.

Fig. 3-170

3. Cutting and Flaring of Liquid Tube

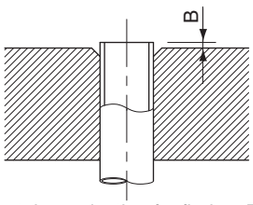
After determining the position for installation, cut the liquid tube and flare the connecting portion.
(Pay attention to the notes below when flaring the tubes.)

NOTE

- After cutting the tube, deburr and finish the end face smoothly and correctly.
- Do not damage tubes while flaring.
- Take care not to allow dirt and deburred chips into the tube.
- Use the flare nut which came with External Electronic Expansion Valve Kit.
- The flaring dimensions for R410A are different from the conventional dimensions for R407C and R22. For R410A, the specially created flaring tool is recommended. However a conventional tool can be used by adjusting the amount of copper tube projection as shown in the table below.

Unit : in.

Rigid (clutch type)		
R410A		R407C, R22
If special R410A tool is used	If conventional tool is used	If conventional tool is used
B = 0 - 1/64	3/64 - 1/16	0 - 1/64



Copper tube projection for flaring: B (in.)

Fig. 3-171

4. Connection of External Electronic Expansion Valve with Tubing

In connection with tubing, take care to fit the external electronic expansion valve in the right direction.
Be sure to install with the UP mark on the label pointing upwards. Also when connecting the flare, use the arrow marks on the label to check the directions of the indoor unit side and outdoor unit side.
(The wiring outlet side faces the indoor unit.) (Refer to Fig. 3-172.)

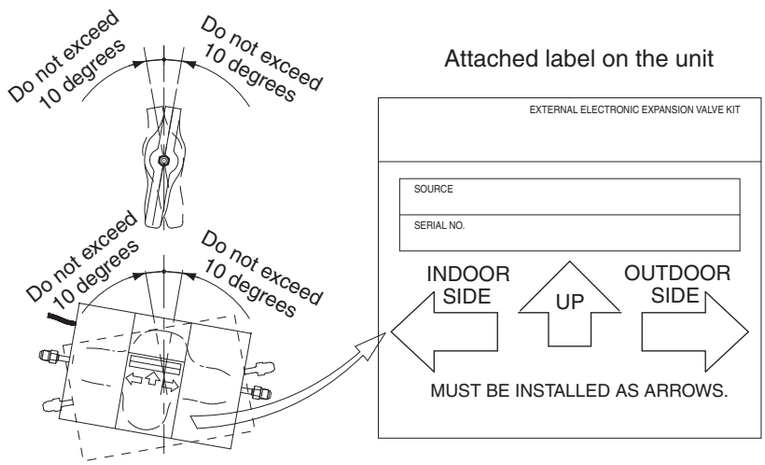


Fig. 3-172

- Tightening flare nuts

CAUTION

Be sure to use 2 spanners together when removing or tightening the flare nuts. After connection with the tubing, tighten the flare nuts by the correct torque. Failure to tighten the nuts correctly can cause loosening and damage on the flared portion, resulting in accidents by oxygen deficiency due to refrigerant leaks.

Tubing size	Tightening torque
1/4" (Ø6.35)	120 - 160 lbs • inch (140 - 180 kgf • cm)
3/8" (Ø9.52)	300 - 360 lbs • inch (340 - 420 kgf • cm)

5. Flare Insulation of Tubing

After completing a leakage test, apply heat insulation. (Fig. 3-191)

* Use the flare insulator provided with the product.

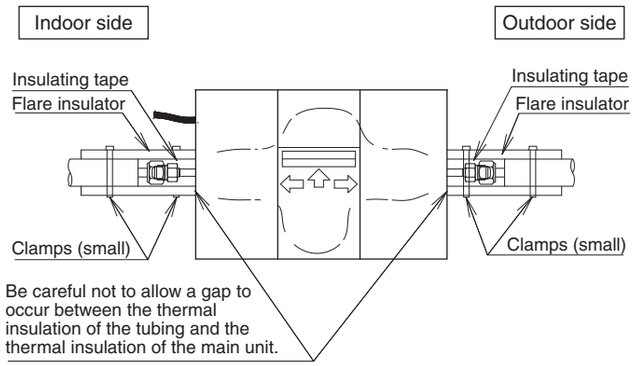
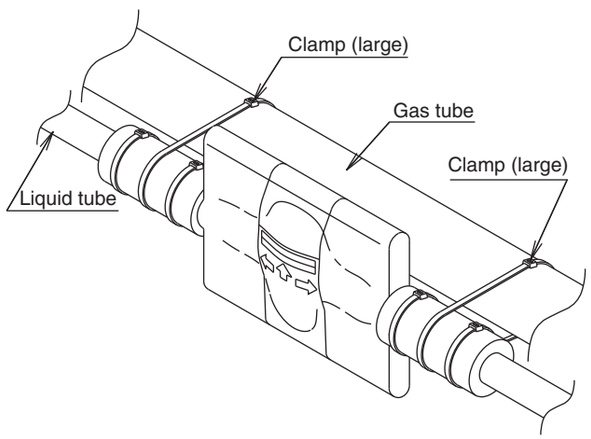


Fig. 3-173

6. Securing the External Electronic Expansion Valve After Connection with Tubing

After connection with tubing, secure the external electronic expansion valve using the supplied clamps (large) to hold it against the gas tube. (Fig. 3-174)



* Be careful not to tighten the clamps with excessive force in order to avoid deforming the tubing or other parts.

Fig. 3-174

7. Wiring Procedure

WARNING **Be sure to turn the power off at the mains before removing or connecting connectors to avoid electric shock hazard.**

Connection of External Electronic Expansion Valve with Extension Cord

(1) Turn the power off.

(2) Turn the power on.

(3) Wait 1 minute after the power is on and then turn the power off again at the mains.
* The electronic expansion valve becomes full-open in the 1 minute.
Do not give instructions for operation through the remote controller during this time.

(4) Open the electrical component box. From the control PCB, disconnect the connector to the indoor unit internal electronic expansion valve.

(5) Connect the external electronic expansion valve connector to the indoor unit control PCB (PMV). (Fig. 3-175)
After completing the wiring process, close the cover of the electrical component box.

(6) Turn on the main breaker. This procedure is now completed.

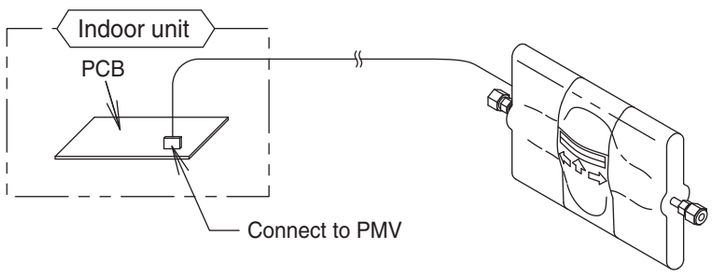


Fig. 3-175

The model S-19MS1U6 is only applied for the following procedure.

(1) Turn the power off.

(2) Open the electrical component box.

(3) Connect the external electronic expansion valve connector to the indoor unit control PCB (PMV). (Fig. 3-176)
After completing the wiring process, close the cover of the electrical component box.

(4) Turn on the main breaker. This procedure is now completed.

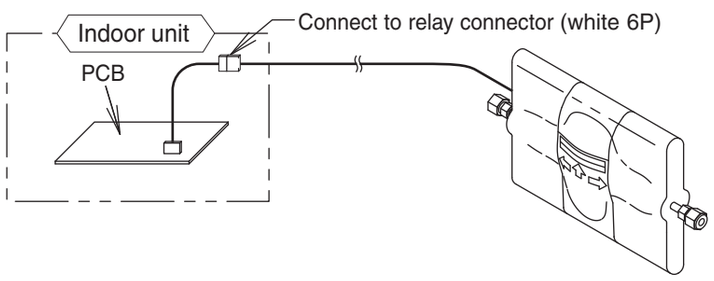


Fig. 3-176

■ Floor Standing Type (P1 Type)
Concealed Floor Standing Type (R1 Type)

3-54. Required Minimum Space for Installation and Service

Install the unit where cooled or heated air from the unit can circulate well in the room. Do not put obstacles which may obstruct the air flow in front of the air intake and outlet grilles.

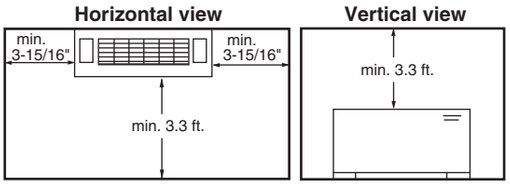


Fig. 3-177

NOTE

Ensure there is adequate space for maintenance of the electrical component box, air filter, and refrigerant tubes.

3-55. Dimensions and Part Names

Floor Standing Type (P1 Type)

① 4-Ø15/32" holes (for fastening the indoor unit to the floor with screws)
② Air filter
③ Refrigerant connection outlet (liquid tube)
④ Refrigerant connection outlet (gas tube)
⑤ Level adjusting bolt
⑥ Drain outlet (20 A)
⑦ Power cord outlet (downward, rear)
⑧ Refrigerant tubing outlet (downward, rear)
⑨ Location for mounting the remote controller (remote controller can be attached within the room)

Unit: in.

Type \ Length	A	B	C	Liquid tube	Gas tube
7, 9, 12	41-59/64	26-3/16	24-7/8	Ø1/4	Ø1/2
15, 18	54-21/64	38-37/64	37-9/32		
24				Ø3/8	Ø5/8

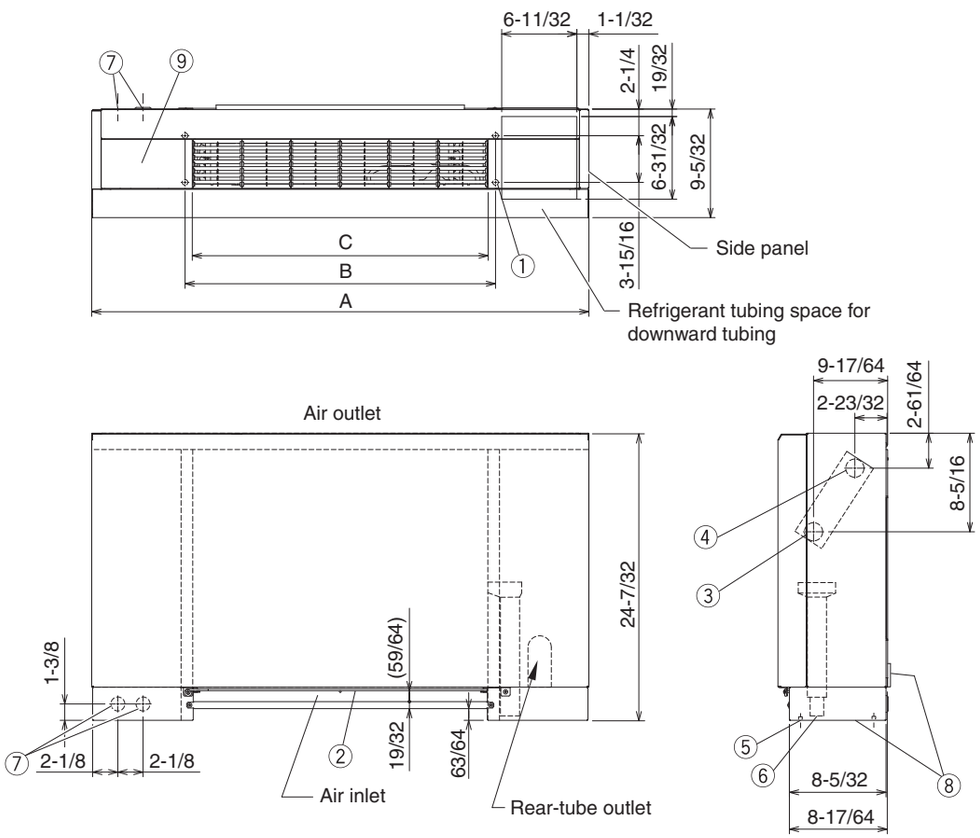


Fig. 3-178

Concealed Floor Standing Type (R1 Type)

① 4-Ø15/32" holes (for fastening the indoor unit to the floor with screws)
② Air filter
③ Refrigerant connection outlet (liquid tube)
④ Refrigerant connection outlet (gas tube)
⑤ Level adjusting bolt
⑥ Drain outlet (20 A)
⑦ Flange for air-outlet duct

Unit: in.

Type \ Length	A	B	C	D	E	F	Liquid tube	Gas tube
7, 9, 12	35-19/32	27-1/4	26-29/64	26-3/16	19-11/16	3-25/64	Ø1/4	Ø1/2
15, 18	47-63/64	39-41/64	39-29/64	38-37/64	35-7/16	2-1/64		
24							Ø3/8	Ø5/8

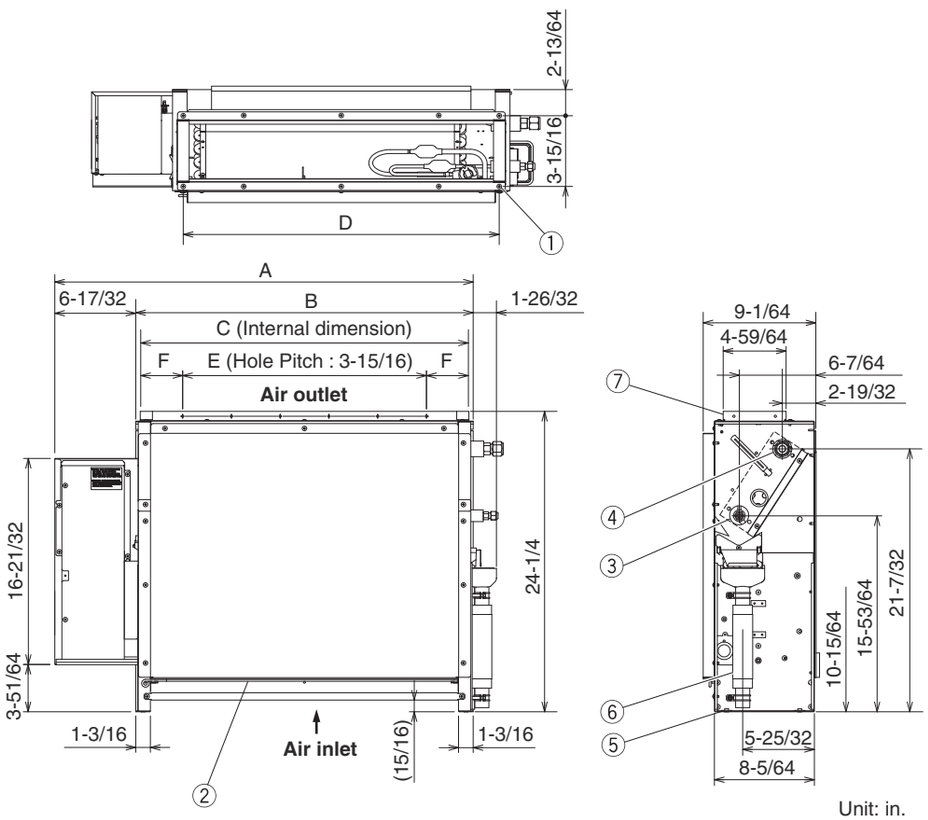


Fig. 3-179

NOTE

Make an opening in the housing of the unit so that maintenance service can be peformed on the electrical component box, air filter, refrigerant tubing connection, and drain pipe.

3-56. Removing and Attaching the Front Panel (Floor Standing Type)

NOTE

A dew-prevention heater is secured behind the front panel.
When removing or attaching the panel, take care not to damage the lead wire to the heater.

How to remove the front panel

(1) Remove the 2 screws at the lower part of the front panel.
(2) Holding **A** at the upper right of the unit, push up at **B** at the lower right of the panel. The right side of the front panel is removed. Then remove the left side of the front panel following the same procedure.
(3) Cut off the binding strap to loosen the glass fiber tube.
(4) Disengage the lead-wire connector from the dewprevention heater by pressing the tab.
(5) Remove the string connecting the front panel of the unit by unhooking it from the fixture attached to the panel.

How to attach the front panel

(1) Hook the string to the fixture of the front panel.
(2) Expose the tip of the dew-prevention heater from the glass fiber tube in order to make connection smoothly.
(3) Connect the lead-wire connector to the dew-prevention heater until the click sounds.
(4) After the connection, tighten the glass fiber tube nearby connected area inside the tube with the binding strap.
(5) Align the slots at the lower part of the front panel to the tabs at the lower part of the indoor unit and put the upper trim tab of the front panel on the groove of the unit. Then press down the panel.
(6) Insert the 2 screws at the lower part of the front panel.

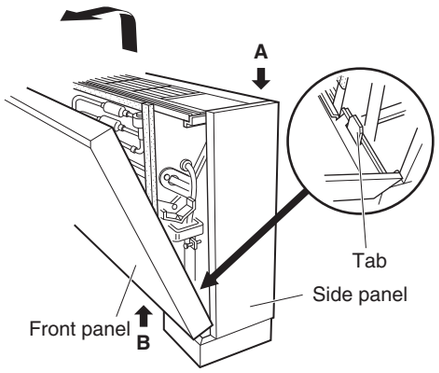


Fig. 3-180

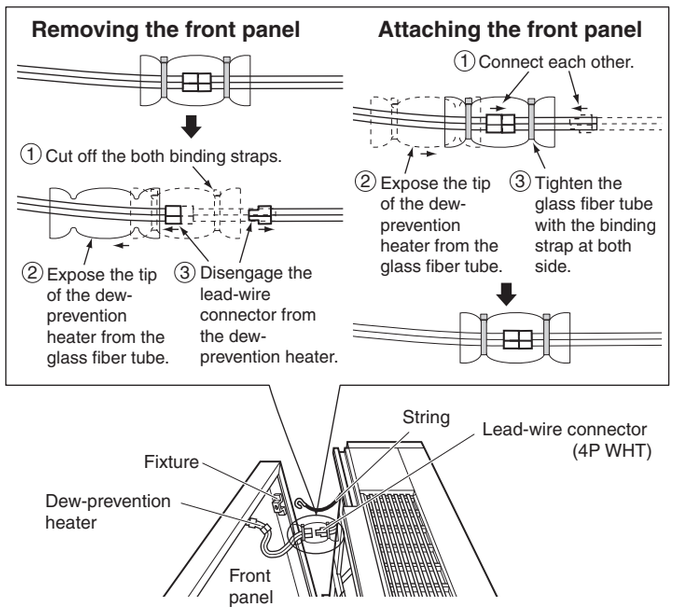


Fig. 3-181

3-57. Installing the Refrigerant Tubing

(1) When connecting the gas tube use the supplied tubing.
(2) Tubes can be extended in 2 directions: downward and at rear.

For Floor Standing type
- When a rear tube is required, it can run through the rear-tube outlet of the rear panel.
- When a downward tube is required, refer to the opening dimensions shown in Fig. 3-182.

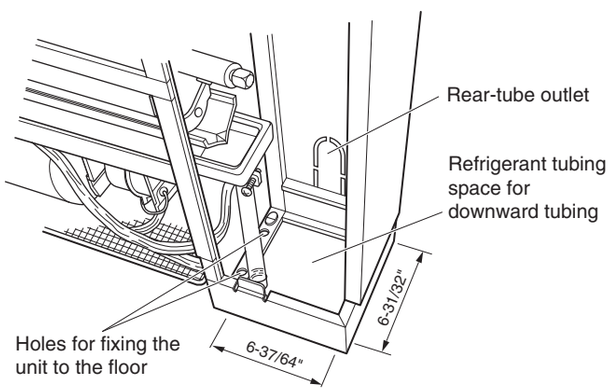


Fig. 3-182

CAUTION **Insulate both gas and liquid tubes.**

● **To insulate tubes**

(1) Wrap the flare nuts with the supplied white insulating tape.

(2) Wrap the flare nuts with the supplied flare insulator.

(3) Fill the clearance between the union insulator and flare insulator with black insulating tape. Fasten both ends of the flare insulator with the supplied vinyl clamps.

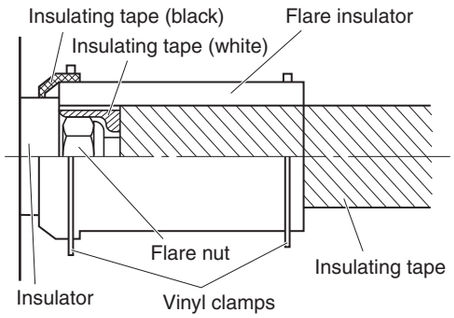


Fig. 3-183

3-58. Installing the Drain Piping

CAUTION **Water leaks may occur if the drain pipes are connected inadequately.**

(1) When rear-side drain piping is required bend the drain hose attached to the indoor unit by 90° . Connect a drain pipe (field supply) to the drain hose through the rear tubing outlet in the rear panel. Use a hard PVC pipe (VP20) for the drain piping.

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

(3) Provide insulation for the drain pipe.

(4) After the drain piping is completed, pour water into the drain pan to check that the water drains smoothly.

(5) Remove any dust or debris in the drain pan so that the pipe is not clogged.

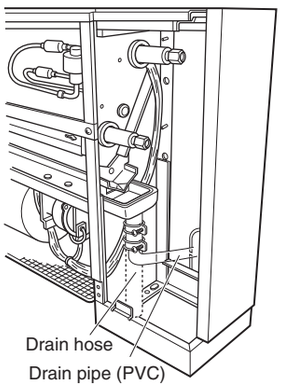


Fig. 3-184

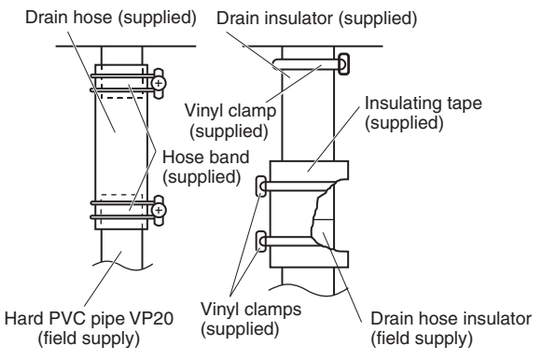


Fig. 3-185

3-59. Installing the Remote Controller

A remote controller (optional wired remote controller) can be mounted in the indoor unit (Floor Standing type).

(1) Remove the cover of the optional wired remote controller. (Fig. 3-186)

(2) Remove the front panel. Remove the screws and fixture. (Fig. 3-187)

(3) Place the remote controller into the space in the unit as shown in Fig. 3-187. Assemble the lead wires of the remote controller to its rear side center and route them to the lead wire guide.

(4) Secure the fixture using the supplied screws.

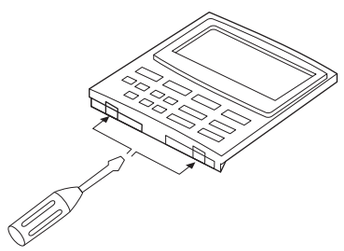


Fig. 3-186

To remove the cover from the remote controller, insert a screwdriver between the cover and the controller as shown in the figure above, and pry off the cover.

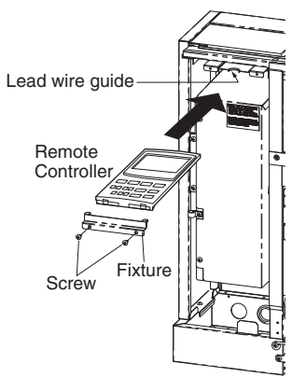
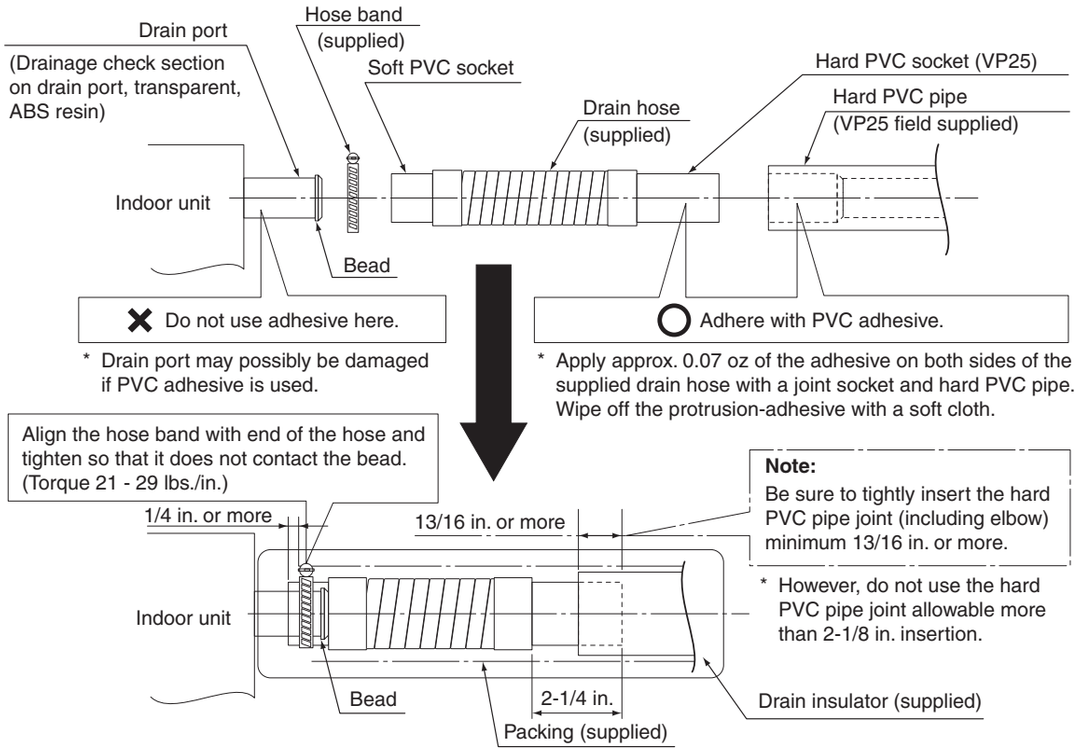


Fig. 3-187

■ SUPPLEMENT ON DRAIN PIPING

1. Drain hose installation



* After checking the drainage, wrap the supplied packing and drain pipe insulator around the pipe.

NOTE

There is possibility to cause water leakage unless the above steps are carried out.

2. Checkpoint after installation

After installation of indoor and outdoor units, panels and electrical wiring, check the following items.

	Checkpoint	Symptom	Check	Remark
1	Make sure whether indoor and outdoor units are correctly installed.	Fall, vibration, noise		
2	Make sure whether gas leakage is tested.	No cooling, no heating		
3	Make sure whether insulation is completed. (Refrigerant piping and drain piping)	Water leakage		
4	Make sure whether drain water is running smoothly.	Water leakage		
5	Make sure whether the power voltage matches the nameplate.	Inoperative, burnout		
6	Make sure whether there is miswiring or incorrect connection.	Inoperative, burnout		
7	Make sure whether the ground construction is completed.	Ground leakage		
8	Make sure whether the wire gauge is followed by the recommended specifications.	Inoperative, burnout		
9	Make sure whether the air intake and air outlet of the indoor and outdoor units are sealed by obstacles.	No cooling, no heating		

4. ELECTRICAL WIRING

4-1. 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, and a power supply disconnect, circuit breaker and earth leakage breaker for overcurrent protection should be provided in the exclusive line.
(3) To prevent possible hazards from insulation failure, the unit must be grounded.
(4) Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to disorder 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 malfunction that occurs as a result of such unauthorized changes.
(7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your LOCAL ELECTRICAL CODES before beginning. You must ensure that installation complies with all relevant rules and regulations.
(8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows:

- The remote control wiring and the inter-unit control wiring should be wired apart from the inter-unit power wiring.

(9) If the power supply cord of this appliance is damaged, it must be replaced by a repair shop appointed by the manufacture, because special purpose tools are required.

4-2. Recommended Wire Length and Wire Diameter for Power Supply System

Indoor unit

Type	Time delay fuse or circuit capacity
K1	10 – 16 A
D1, U1, Y1, T1, F1, M1, P1, R1	10 – 16 A
E1	10 – 16 A

Control wiring

(A) Inter-unit (between outdoor and indoor units) control wiring*	(B) Remote control wiring	(C) Control wiring for group control
AWG #18 (0.75 mm²)	AWG #18 (0.75 mm²)	AWG #18 (0.75 mm²)
Max. 3,280 ft.	Max. 1,640 ft.	Max. 650 ft. (Total)

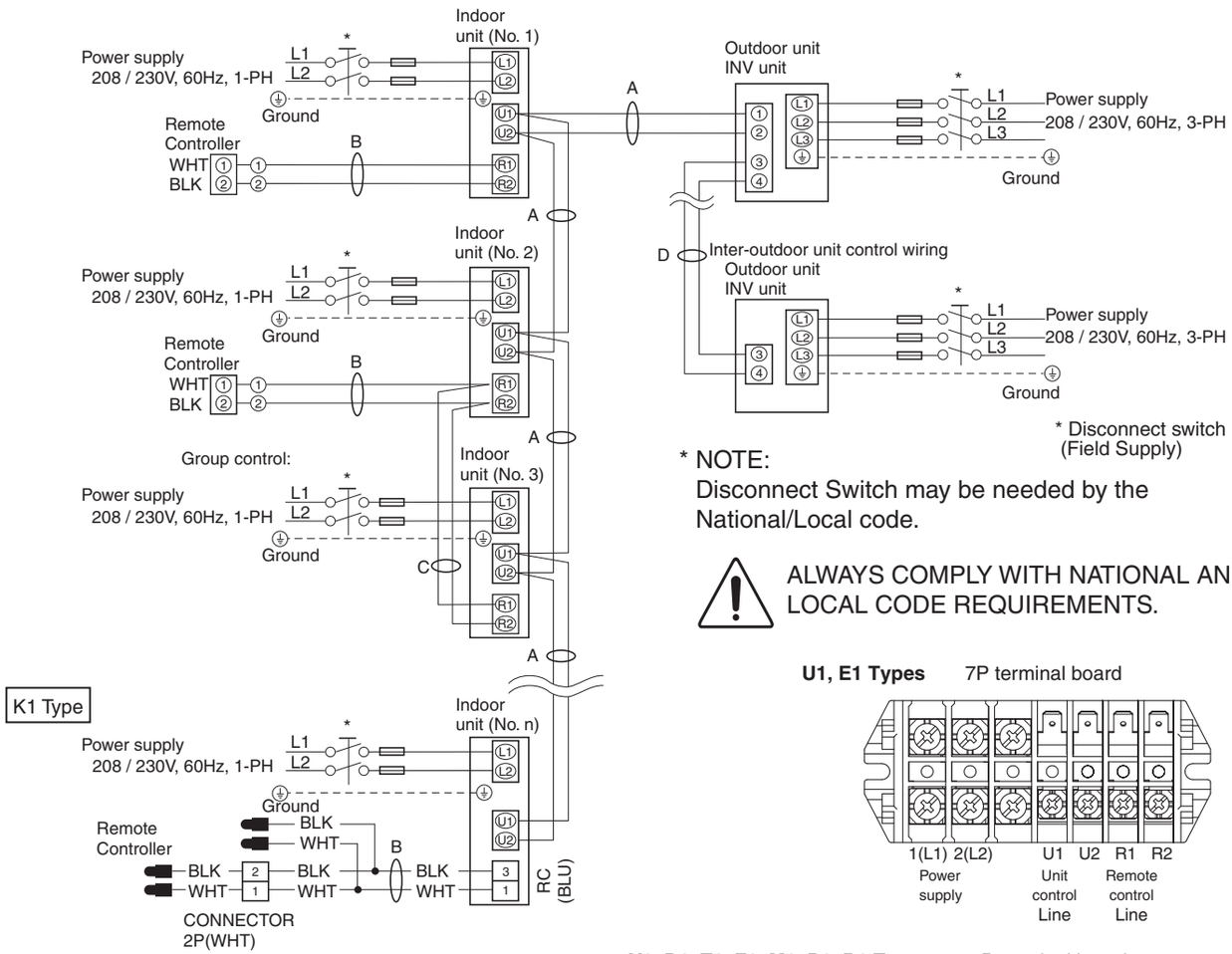
(D) Inter-outdoor unit control wiring
AWG #18 (0.75 mm²)
Max. 980 ft.

NOTE

* With ring-type wire terminal.

4-3. Wiring System Diagram

ex.) W-3WAY ECO-i

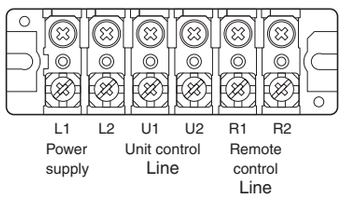


* NOTE:
Disconnect Switch may be needed by the National/Local code.

ALWAYS COMPLY WITH NATIONAL AND LOCAL CODE REQUIREMENTS.

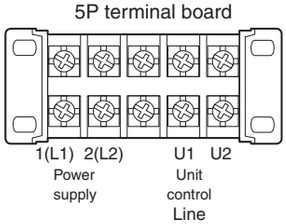
U1, E1 Types 7P terminal board

Y1, D1, T1, F1, M1, P1, R1 Types 6P terminal board



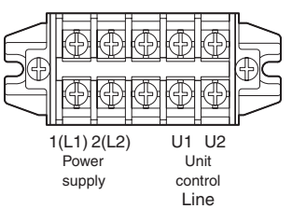
K1 Type
Model : S-07MK1U6
S-09MK1U6
S-12MK1U6

5P terminal board



K1 Type
Model : S-18MK1U6
S-19MS1U6
S-24MK1U6

5P terminal board



NOTE

(1) Refer to Section 4-2. “Recommended Wire Length and Wire Diameter for Power Supply System” for the explanation of “A,” “B,” “C,” and “D,” in the above diagram.
(2) The basic connection diagram of the indoor unit shows the 7P terminal board, so the terminal boards in your equipment may differ from the diagram.
(3) Refrigerant Circuit (R.C.) address should be set before turning the power on.

CAUTION

(1) When linking outdoor units in a network, disconnect the terminal extended from the short plug (CN003, 2P Black, location: right bottom on the outdoor main control PCB) from all outdoor units except any one of the outdoor units. (When shipping: In shorted condition.)
For a system without link (no connection wiring between outdoor units), do not remove the short plug.

(2) Do not install the inter-unit control wiring in a way that forms a loop. (Fig. 4-1)

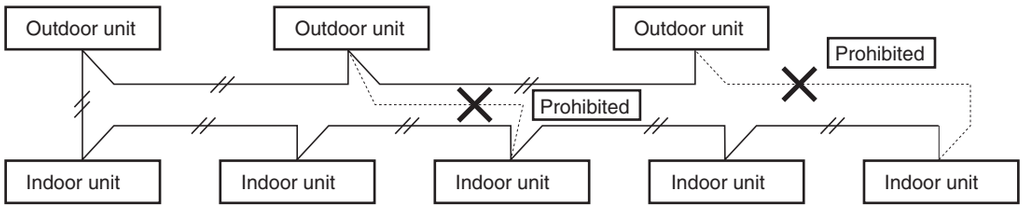


Fig. 4-1

(3) Do not install inter-unit control wiring such as star branch wiring. Star branch wiring causes misaddress setting. (Fig. 4-2)

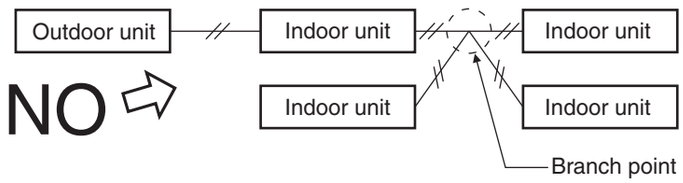


Fig. 4-2

(4) If branching the inter-unit control wiring, the number of branch points should be 16 or fewer. (Branches less than 3.3 ft. are not included in the total branch number.) (Fig. 4-3)

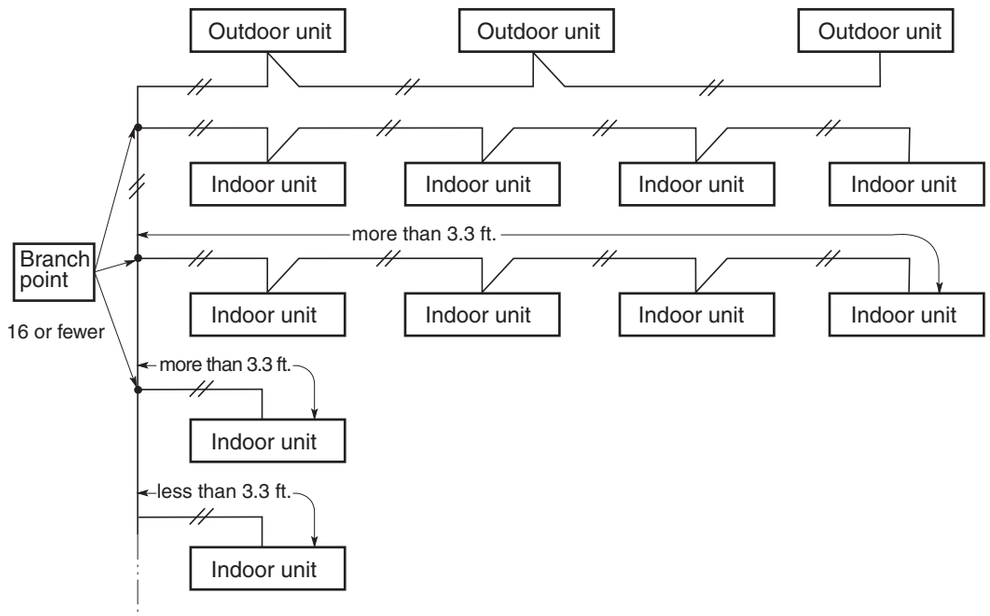


Fig. 4-3

CAUTION

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

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

How to connect wiring to the terminal

■ **For stranded wiring**

(1) Cut the wire end with cutting pliers, then strip the insulation to expose the stranded wiring approx. 3/8 in. and tightly twist the wire ends. (Fig. 4-4)
(2) Using a Phillips head 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 pressure terminal.
(4) Place the ring pressure terminal, and replace and tighten the removed terminal screw using a screwdriver. (Fig. 4-5)

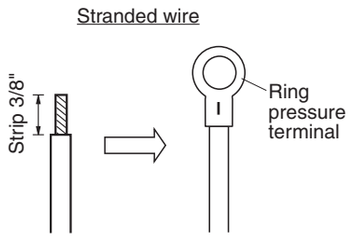


Fig. 4-4

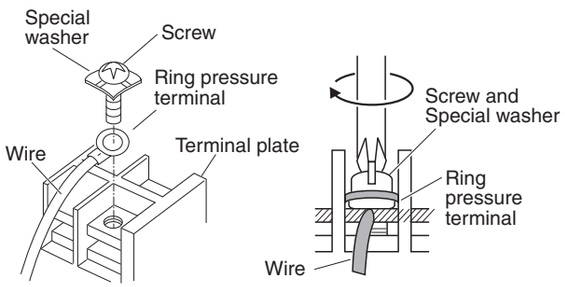
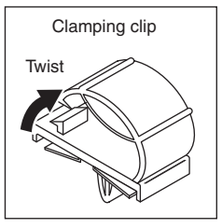


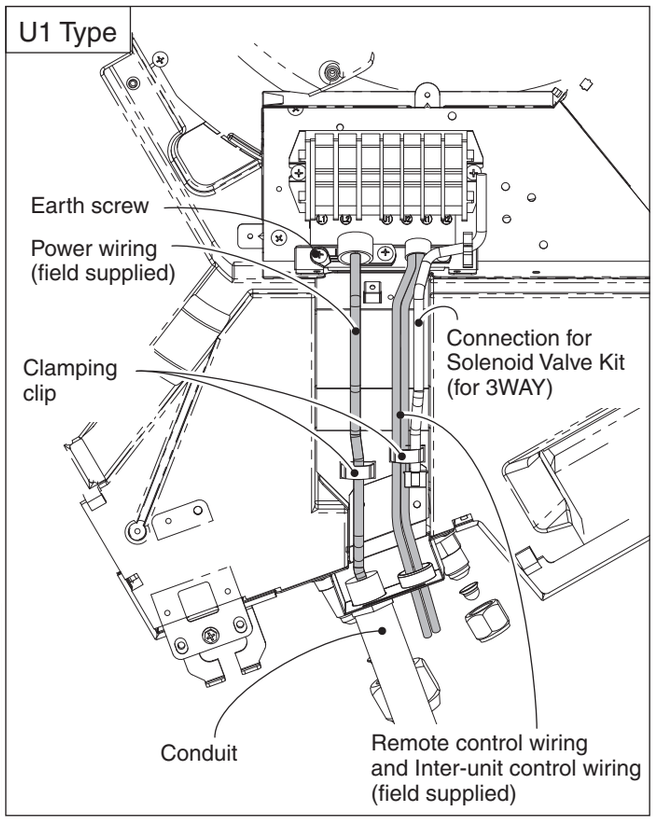
Fig. 4-5

4-4. Important Note When Wiring for Common Type

Connect the wires referring to the diagram.
Note that the control wirings (Low voltages) shall be segregated from the power supply wires (High voltage) as follows:

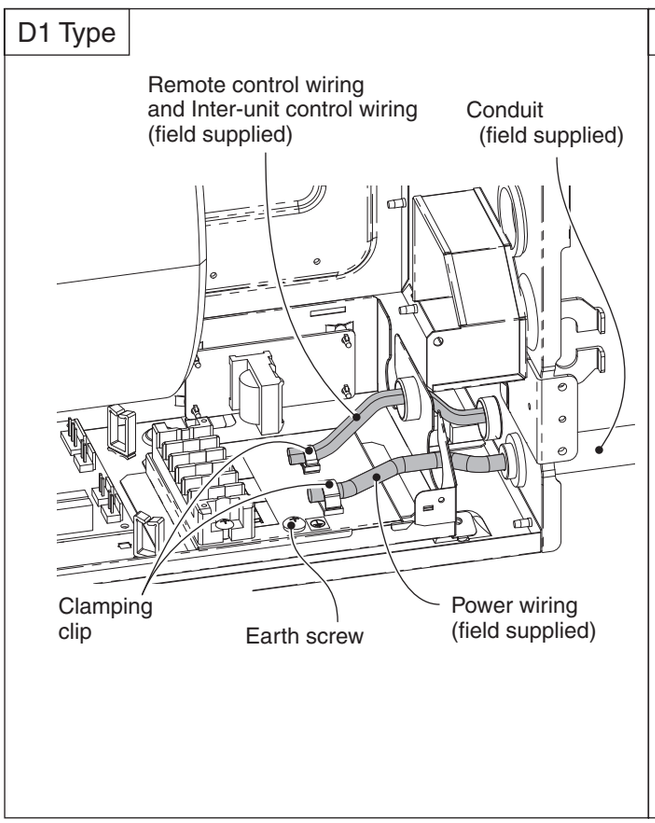
1. Connect the Inter-unit control wiring to U1/U2 terminals and the remote control wire to R1/R2. (excepting K1 type).
2. Connect the power supply wires to “L1, L2” of the terminal block. Be sure to connect the grounding conductor of the incoming power supply to the earth (ground) screw.
3. Securely affix the power supply wires and remote control wires by the clamping strap or clamping clip not to cross each other and not to leave the wirings loose. When loosening the clamping clip, twist the strap and it will come undone.

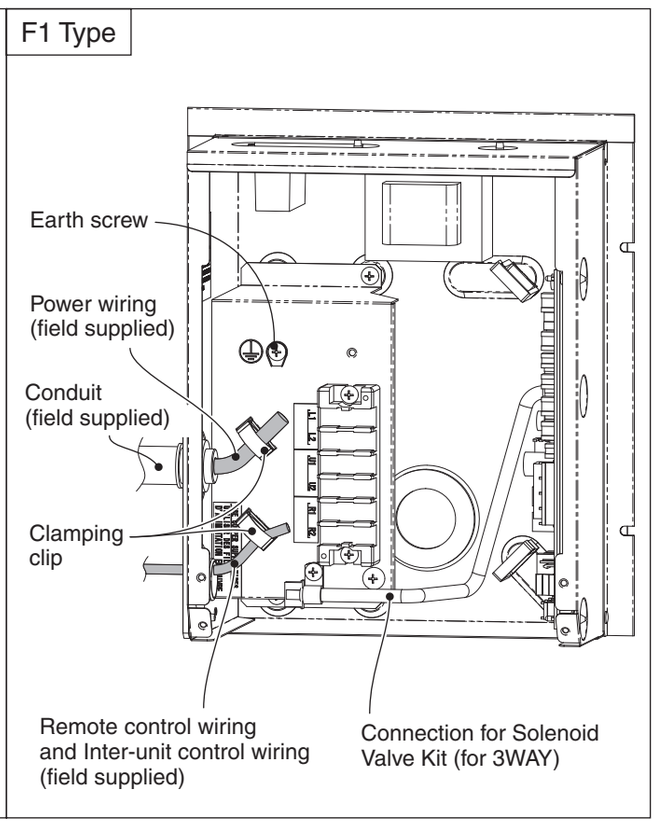




NOTE

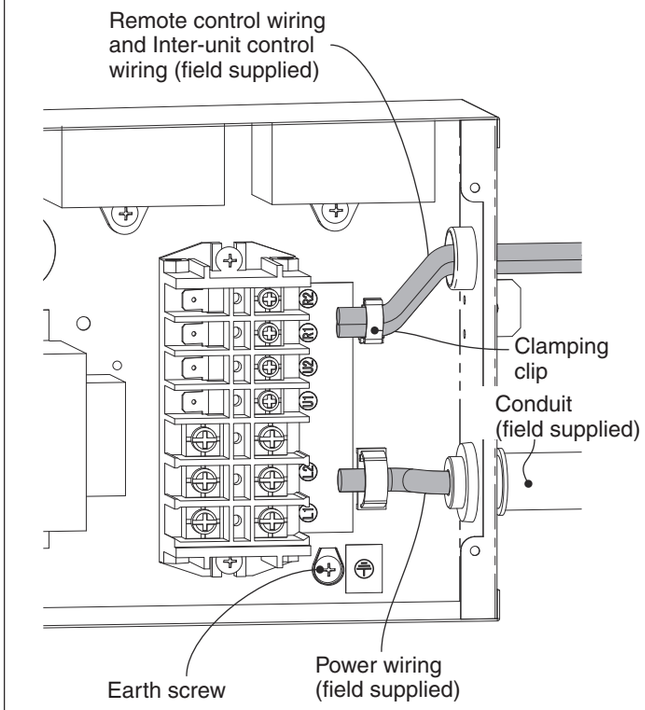
Securely affix the 3-way wiring harness with the remote control wiring (U1 type).



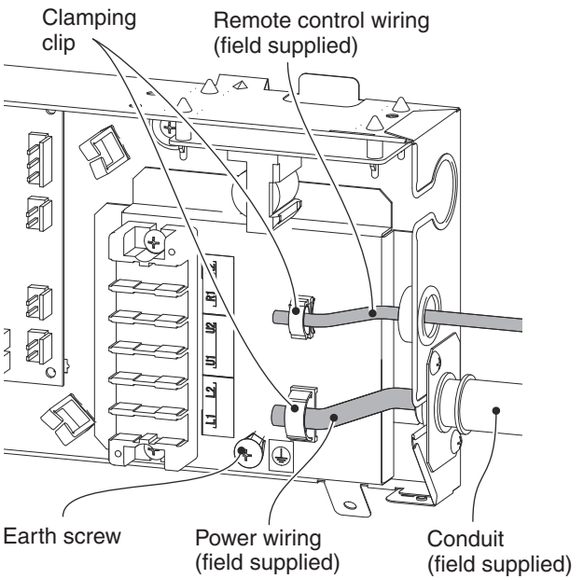


Important Note When Wiring for Common Type (Continued)

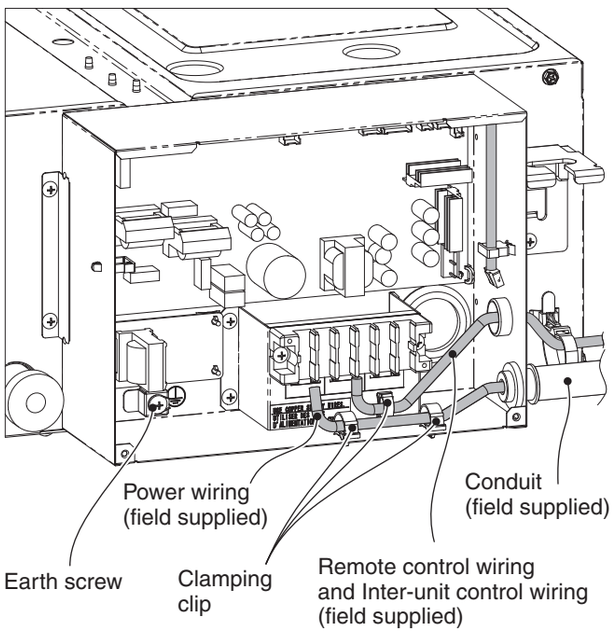
E1 Type



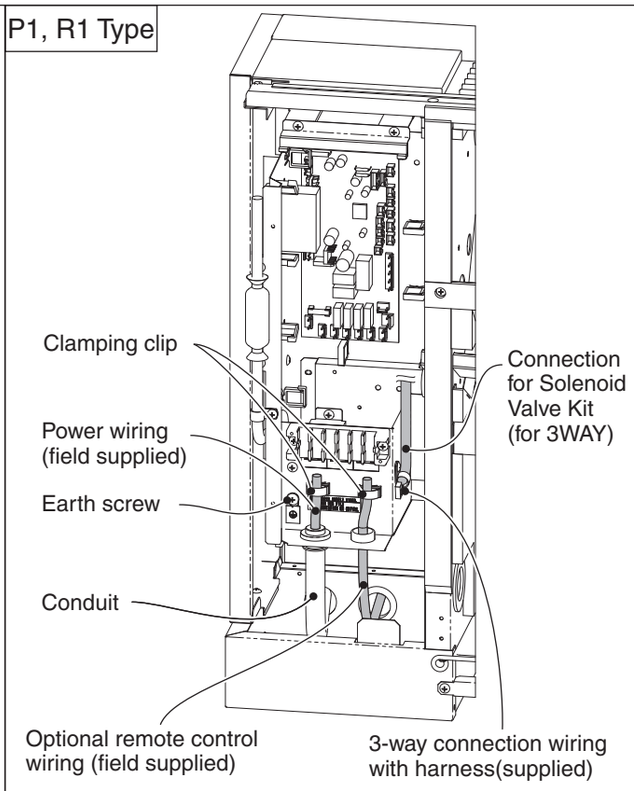
T1 Type



M1 Type



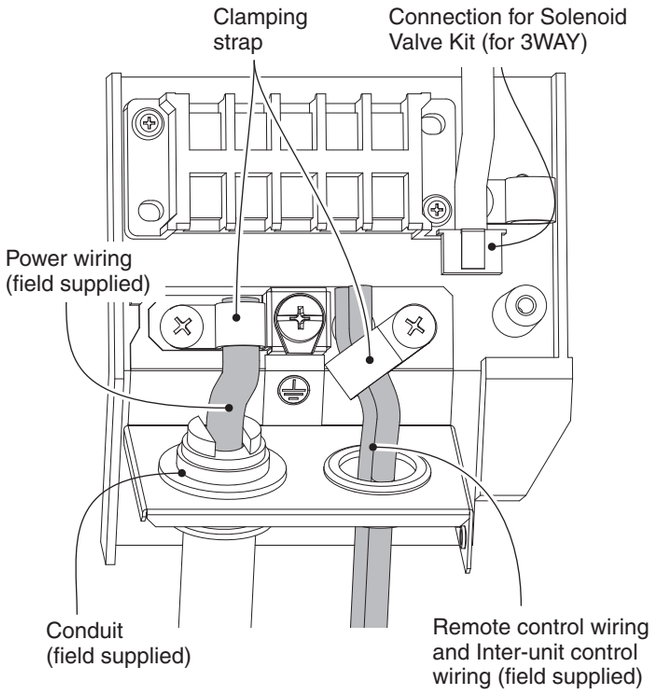
P1, R1 Type



Important Note When Wiring for Common Type (Continued)

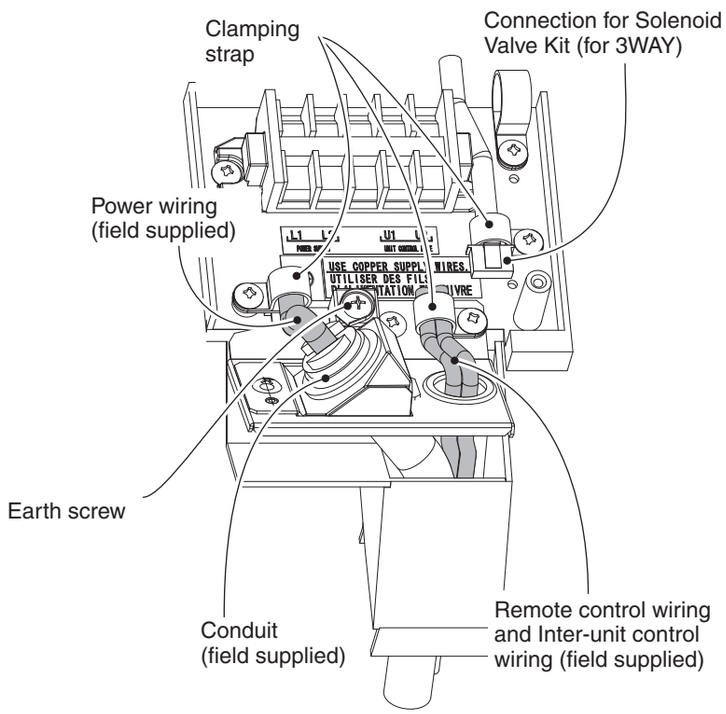
K1 Type

Model : S-07MK1U6
S-09MK1U6
S-12MK1U6



K1 Type

Model : S-18MK1U6
S-19MS1U6*
S-12MK1U6

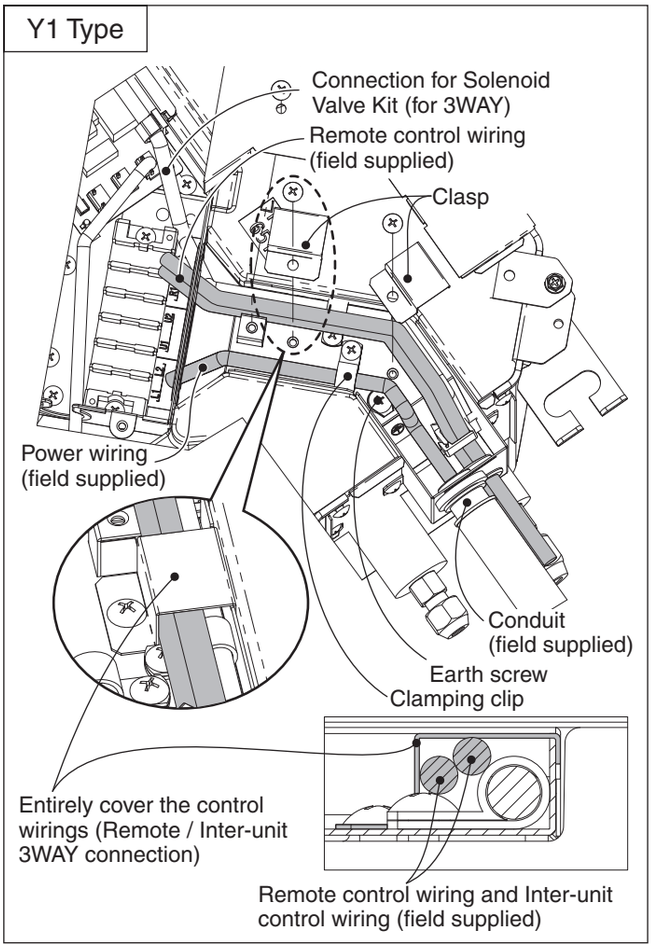


* Necessary to install the External Electronic Expansion Valve Kit (Optional : CZ-P56SVK1U)

4-5. Important Note When Wiring for Y1 Type

Connect the wires referring to the diagram.
Note that the control wirings (Low Voltages) shall be segregated from the power supply wires (High Voltage) as follows:

1. Connect the Inter-unit control wiring to U1/U2 terminals and the remote control wire to R1/R2. Then place and fix the two clasps so that the clasps shall cover both the remote control wires, the Inter-unit control wiring and the 3-way wiring harness as shown in the magnified drawing.
2. Connect the grounding conductor of the incoming power supply to the earth (ground) screw before connecting the power supply conductors to “L1, L2” of the terminal block.
3. Securely affix the two power supply conductors (L1, L2) in the wiring channel by the clamping strap as shown.



NOTE

Take care not to damage the control wirings by the clasp.
Do not leave the control wirings loose.

5. HOW TO PROCESS TUBING

The liquid tubing side is connected by a flare nut, and the gas tubing side is connected by brazing.

5-1. Connecting the Refrigerant Tubing

Use of the Flaring Method

Many of conventional split system air conditioners employ the flaring method to connect refrigerant tubes which run between indoor and outdoor units. In this method, the copper tubes are flared at each end and connected with flare nuts.

Flaring Procedure with a Flare Tool

(1) Cut the copper tube to the required length with a tube cutter. It is recommended to cut approx. 1 – 2 ft. longer than the tubing length you estimate.

(2) Remove burrs at the end of the copper tube with a tube reamer or file. This process is important and should be done carefully to make a good flare. (Fig. 5-1)

NOTE

When reaming, hold the tube end downward and be sure that no copper scraps fall into the tube. (Fig. 5-2)

(3) Remove the flare nut from the unit and be sure to mount it on the copper tube.

(4) Make a flare at the end of copper tube with a flare tool. (Fig. 5-3)

NOTE

A good flare should have the following characteristics:

- inside surface is glossy and smooth
- edge is smooth
- tapered sides are of uniform length

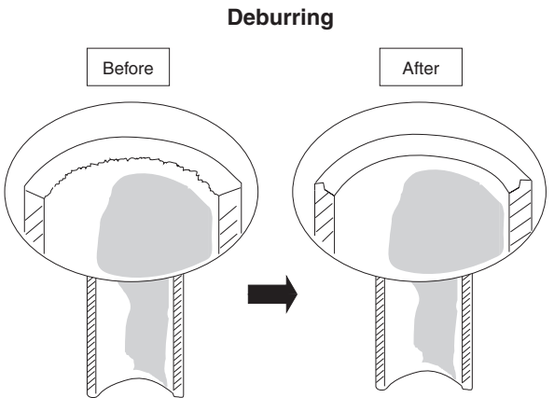


Fig. 5-1

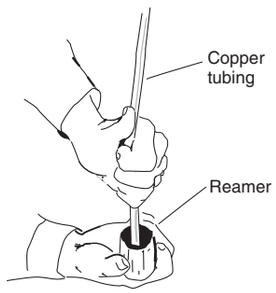


Fig. 5-2

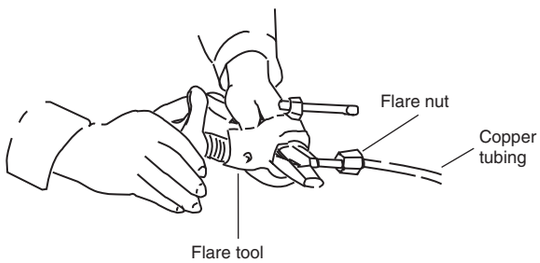


Fig. 5-3

Caution Before Connecting Tubes Tightly

(1) Apply a sealing cap or water-proof tape to prevent dust or water from entering the tubes before they are used.

(2) Be sure to apply refrigerant lubricant to the matching surfaces of the flare and union before connecting them together. This is effective for reducing gas leaks. (Fig. 5-4)

(3) For proper connection, align the union tube and flare tube straight with each other, then screw in the flare nut lightly at first to obtain a smooth match. (Fig. 5-5)

- Adjust the shape of the liquid tube using a tube bender at the installation site and connect it to the liquid tubing side valve using a flare.

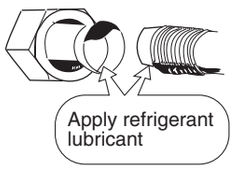


Fig. 5-4

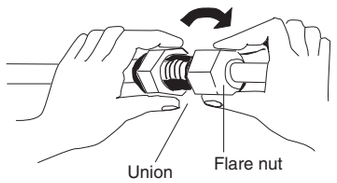


Fig. 5-5

Cautions During Brazing

- **Replace air inside the tube with nitrogen gas to prevent copper oxide film from forming during the brazing process. (Oxygen, carbon dioxide and Freon are not acceptable.)**
- **Do not allow the tubing to get too hot during brazing. The nitrogen gas inside the tubing may overheat, causing refrigerant system valves to become damaged. Therefore allow the tubing to cool when brazing.**
- **Use a reducing valve for the nitrogen cylinder.**
- **Do not use agents intended to prevent the formation of oxide film. These agents adversely affect the refrigerant and refrigerant oil, and may cause damage or malfunctions.**

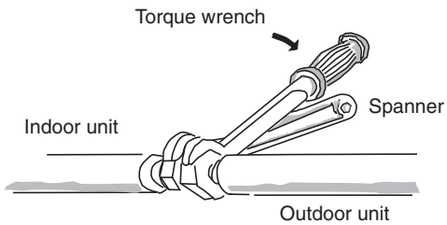


Fig. 5-6

5-2. Connecting Tubing Between Indoor and Outdoor Units

(1) Tightly connect the indoor-side refrigerant tubing extended from the wall with the outdoor-side tubing.

(2) To fasten the flare nuts, apply specified torque as at right:

Tube diameter	Tightening torque, approximate	Tube thickness
ø1/4" (ø6.35 mm)	120 – 160 lbs·inch (140 – 180 kgf·cm)	1/32" (0.8 mm)
ø3/8" (ø9.52 mm)	300 – 360 lbs·inch (340 – 420 kgf·cm)	1/32" (0.8 mm)
ø1/2"(ø12.7 mm)	430 – 480 lbs·inch (490 – 550 kgf·cm)	1/32" (0.8 mm)
ø5/8" (ø15.88 mm)	590 – 710 lbs·inch (680 – 820 kgf·cm)	5/128" (1.0 mm)
ø3/4" (ø19.05 mm)	870 – 1040 lbs·inch (1000 – 1200 kgf·cm)	over 5/128" (1.0 mm)

- When removing the flare nuts from the tubing connections, or when tightening them after connecting the tubing, be sure to use 2 adjustable wrenches or spanners as shown. (Fig. 5-6)
  If the flare nuts are over-tightened, the flare may be damaged, which could result refrigerant leakage and cause in injury or asphyxiation to room occupants.
- For the flare nuts at tubing connections, be sure to use the flare nuts that were supplied with the unit, or else flare nuts for R410A (type 2). The refrigerant tubing that is used must be of the correct wall thickness as shown in the table at right.

  Because the pressure is approximately 1.6 times higher than conventional refrigerant pressure, the use of ordinary flare nuts (type 1) or thin-walled tubes may result in tube rupture, injury, or asphyxiation caused by refrigerant leakage.
- In order to prevent damage to the flare caused by over-tightening of the flare nuts, use the table above as a guide when tightening.
- When tightening the flare nut on the liquid tube, use an adjustable wrench with a nominal handle length of 7-7/8 in.

5-3. Insulating the Refrigerant Tubing

Tubing Insulation

- Thermal insulation must be applied to all unit tubing, including the distribution joint (purchased separately). (Fig. 5-7)
  * For gas tubing, the insulation material must be heat resistant to 248°F or above. For other tubing, it must be heat resistant to 176°F or above.

  Insulation material thickness must be 25/64 in. or greater.

  If the conditions inside the ceiling exceed DB 86°F and RH 70%, increase the thickness of the gas tubing insulation material by 1 step.

CAUTION

If the exterior of the outdoor unit valves has been finished with a square duct covering, make sure you allow sufficient space to use the valves and to allow the panels to be attached and removed.

Taping the flare nuts

Wind the white insulation tape around the flare nuts at the gas tube connections. Then cover up the tubing connections with the flare insulator, and fill the gap at the union with the supplied black insulation tape. Finally, fasten the insulator at both ends with the supplied vinyl clamps. (Fig. 5-8)

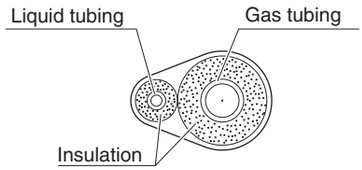
Insulation material

The material used for insulation must have good insulation characteristics, be easy to use, be age resistant, and must not easily absorb moisture. (Fig. 5-9)

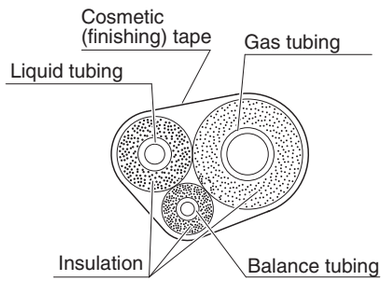
CAUTION

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

Two tubes arranged together



Three tubes arranged together



Three tubes arranged together

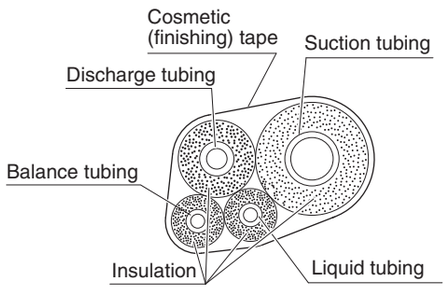


Fig. 5-7

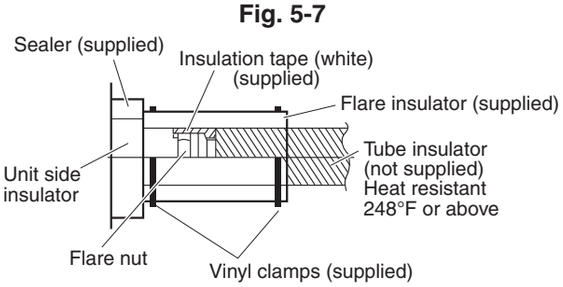


Fig. 5-8

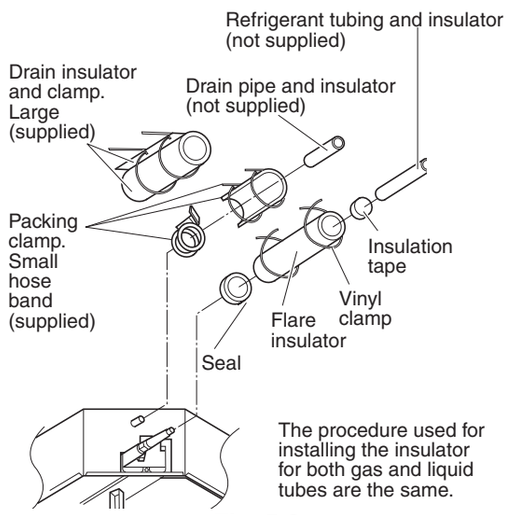


Fig. 5-9

Never grasp the drain or refrigerant connecting outlets when moving the unit.

5-4. Taping the Tubes

(1) At this time, the refrigerant tubes (and electrical wiring if local codes permit) should be taped together with armoring tape in 1 bundle. To prevent the condensation from overflowing the drain pan, keep the drain hose separate from the refrigerant tubing.
(2) Wrap the armoring tape from the bottom of the outdoor unit to the top of the tubing where it enters the wall. As you wrap the tubing, overlap half of each previous tape turn.
(3) Clamp the tubing bundle to the wall, using 1 clamp approx. each ft. (Fig. 5-10)

NOTE

Do not wind the armoring tape too tightly since this will decrease the heat insulation effect. Also ensure that the condensation drain hose splits away from the bundle and drips clear of the unit and the tubing.

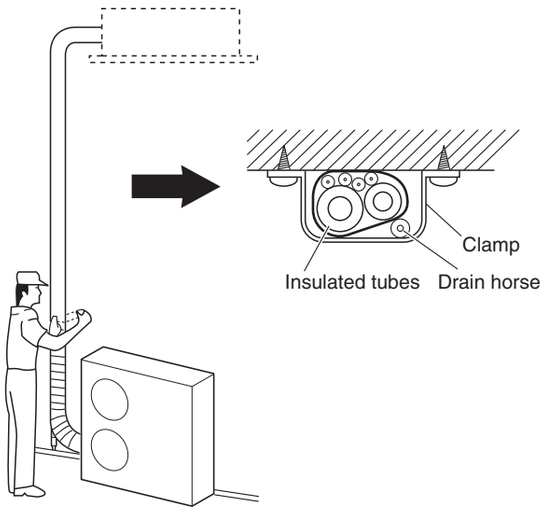


Fig. 5-10

5-5. Finishing the Installation

After finishing insulating and taping over the tubing, use sealing putty to seal off the hole in the wall to prevent rain and draft from entering. (Fig. 5-11)

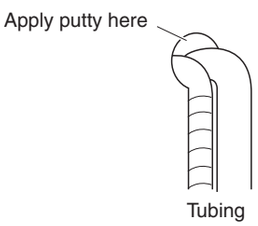
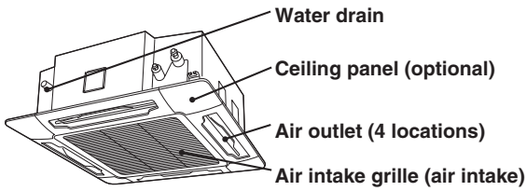


Fig. 5-11

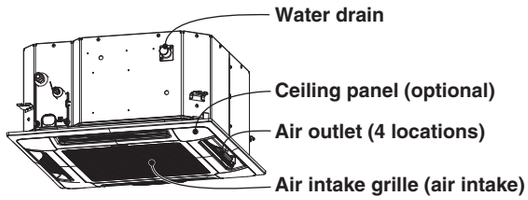
6. APPENDIX

■ NAME OF PARTS

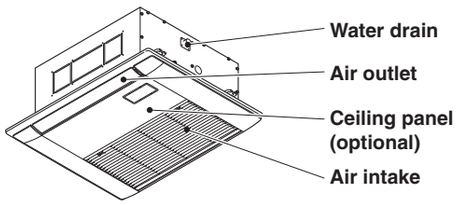
4-Way Cassette (U1)



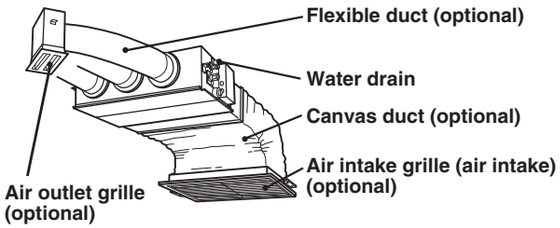
4-Way Cassette 60 × 60 (Y1)



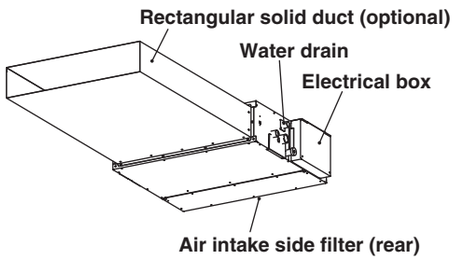
1-Way Cassette (D1)



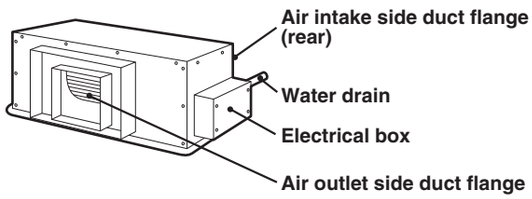
Low Silhouette Ducted (F1)



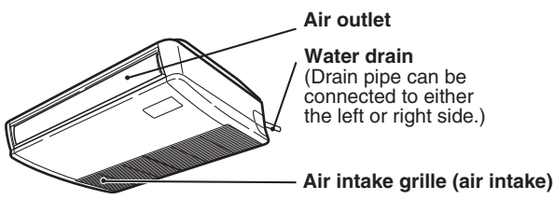
Slim Low Static Ducted (M1)



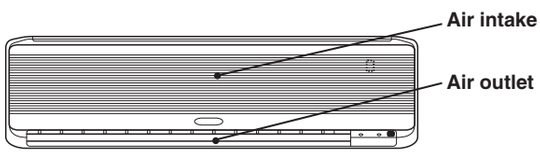
High Static Pressure Ducted (E1)



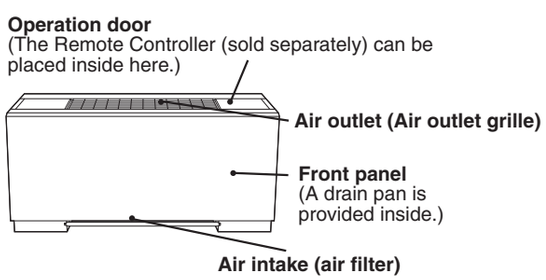
Ceiling (T1)



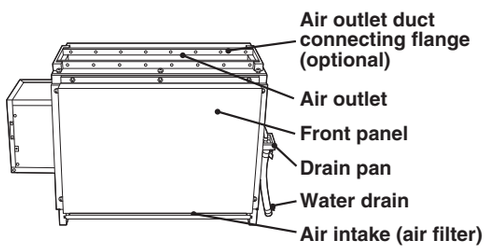
Wall Mounted (K1)



Floor Standing (P1)



Concealed Floor Standing (R1)



■ Care and Cleaning

WARNING

1. **For safety, be sure to turn the air conditioner off and also to disconnect the power before cleaning.**
2. **Do not pour water on the indoor unit to clean it. This will damage the internal components and cause an electric shock hazard.**

Air intake and outlet side (Indoor unit)

Clean the air intake and outlet side of the indoor unit with a vacuum cleaner brush, or wipe them with a clean, soft cloth.

If these parts are stained, use a clean cloth moistened with a mild liquid detergent. When cleaning the air outlet side, be careful not to force the vanes out of place.

CAUTION

1. **Never use solvents or harsh chemicals when cleaning the indoor unit. Do not wipe plastic parts using very hot water.**
2. **Some metal edges and the fins are sharp and may cause injury if handled improperly; be especially careful when you clean these parts.**
3. **The internal coil and other components of the outdoor unit must be cleaned every year. Consult your dealer or service center.**

Air filter

The air filter collects dust and other particles from the air and should be cleaned at regular intervals as indicated in the table below or when the filter indication (▦) on the display of the remote controller (wired type) shows that the filter needs cleaning. If the filter gets blocked, the efficiency of the air conditioner drops greatly.

Type	U1, Y1	D1, T1	F1, M1, E1	P1, R1	K1
Period	Six months	Two weeks	(depending on filter specifications)	Two weeks	Two weeks

***F1, E1 type:**

An air filter is not provided with this air conditioner at the time of shipment. To get clean air and to extend the service life of the air conditioner, an air filter must be installed in the air intake. For installation and cleaning the air filter, consult your dealer or service center.

NOTE

The frequency with which the filter should be cleaned depends on the environment in which the unit is used.

How to clean the filter

1. Remove the air filter from the air intake grille.
2. Use a vacuum cleaner to remove light dust. If there is sticky dust on the filter, wash the filter in lukewarm, soapy water, rinse it in clean water, and dry it.

■ Care and Cleaning (continued)

How to remove the filter

4-Way Cassette (U1):
4-way Cassette 60 × 60 (Y1):

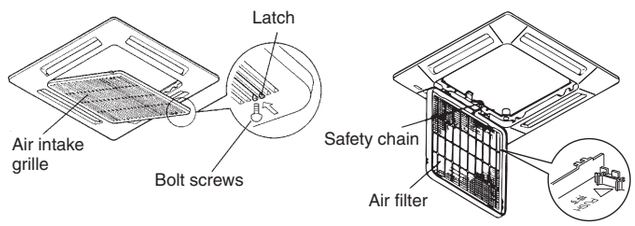
1. Use a screwdriver to remove the bolt screw on each side for the two latches. (Be sure to reattach the two bolt screws after cleaning.)
2. Press on the two latches of the air intake grille with your thumbs in the direction of the arrow to open the grille.
3. Open the air intake grille downward.

CAUTION

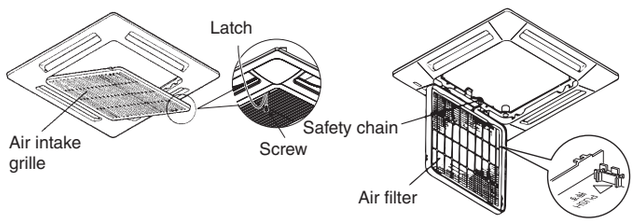
- **When cleaning the air filter, never remove the safety chain. If it is necessary to remove it for servicing and maintenance inside, be sure to reinstall the safety chain securely (hook on the grille side) after the work.**
- **When the filter has been removed, rotating parts (such as the fan), electrically charged areas, etc. will be exposed in the unit's opening. Bear in mind the dangers that these parts and areas pose, and proceed with the work carefully.**

4. Remove the air filter attached to the air intake grille.

4-Way Cassette (U1)

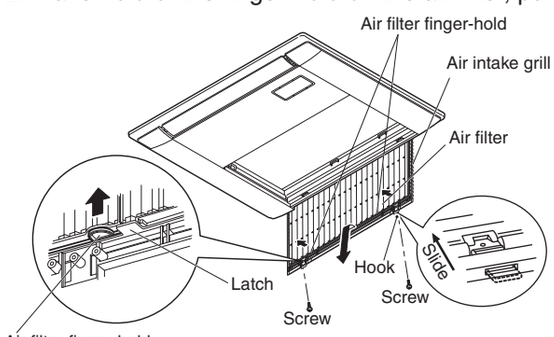


4-way Cassette 60 × 60 (Y1)



1-Way Cassette (D1):

1. Take hold of the finger-hold on the air intake grille and press it to the rear, and the grille will open downward.
2. Take hold of the finger-hold on the air filter, pull it toward you.



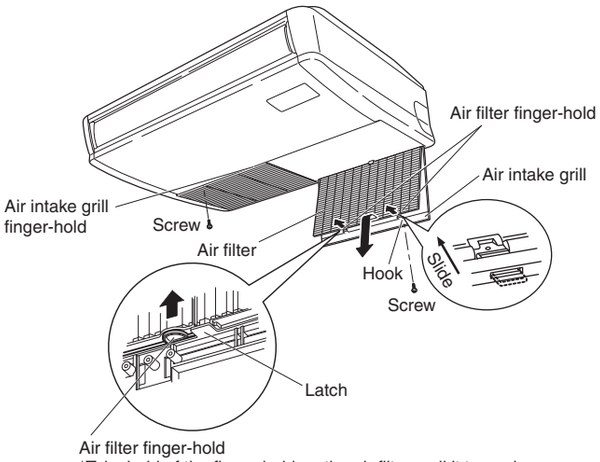
*Take hold of the finger-hold on the air filter, pull it toward you.

■ Care and Cleaning (continued)

How to remove the filter (continued)

Ceiling (T1):

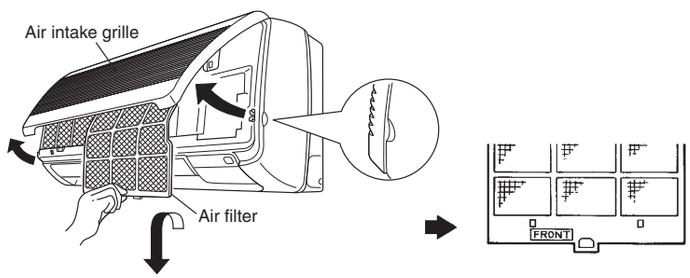
1. Take hold of the finger-hold on the air intake grille and press it to the rear, and the grille will open downward.
2. Take hold of the finger-hold on the air filter, pull it toward you.



*Take hold of the finger-hold on the air filter, pull it toward you.

Wall Mounted (K1):

1. Move the flap on the air outlet grille to its lowest position with the remote controller.
2. The filter is disengaged by pushing the tab up gently. Hold the air filter by the tab at the bottom, and pull downward.



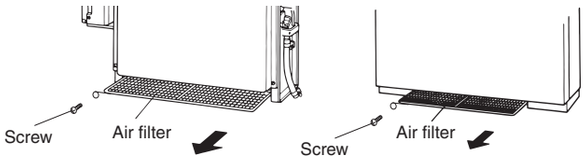
When replacing the filter, make sure that the FRONT mark is facing you. Push it up until you hear it click back into position.

■ Care and Cleaning (continued)

How to remove the filter (continued)

Floor Standing (P1):
Concealed Floor Standing (R1):

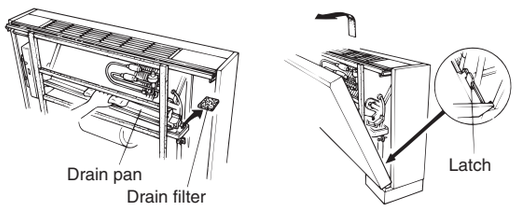
1. Remove the screw at the bottom left of the front panel using a Phillips head screwdriver. (Be sure to replace the screw when cleaning is finished.)
2. Remove the filter by pulling it toward you.



Cleaning the drain filter and drain pan
Floor standing (P1):

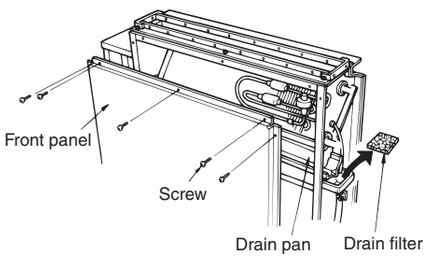
1. **Remove the front panel**
   - Remove the 2 screws fixed to the bottom of the front panel before opening the panel. Open the front panel with a lifting motion to detach the latch.
   - Disengage the dew-prevention heater from the lead-wire connector. Refer to “3-56 Removing and Attaching the Front Panel”.
2. **Cleaning**
   Remove any dirt accumulated in the drain pan, and then wipe it clean.
   Also, clean the drain filter in the same way as the air filter.

(1) Push up
Then
(2) Pull down



Concealed Floor standing (R1):

Remove the screws, open the front panel, and then remove any dirt accumulated inside the drain pan and wipe it clean. Also, clean the drain filter in the same way as the air filter.



CAUTION

1. **Certain metal edges and the condenser fins are sharp and may cause injury if handled improperly; special care should be taken when you clean these parts.**
2. **Periodically check the outdoor unit to see if the air outlet or air intake is clogged with dirt or soot.**
3. **The internal coil and other components of the outdoor unit must also be cleaned periodically. Consult your dealer or service center.**

Care: After a prolonged idle period

Check the indoor and outdoor unit air intakes and outlets for blockage; if there is a blockage, remove it.

Care: Before a prolonged idle period

- Operate the fan for half a day to dry out the inside.
- Disconnect the power supply and also turn off the circuit breaker.
- Clean the air filter and replace it in its original position.
- Outdoor unit internal components must be checked and cleaned periodically. Contact your local dealer for this service.

■ Troubleshooting

If your air conditioner does not work properly, first check the following points before requesting service. If it still does not work properly, contact your dealer or a service center.

Trouble	Possible Cause	Remedy
Air conditioner does not run at all.	1. Power failure. 2. Leakage circuit breaker has tripped. 3. Line voltage is too low. 4. Operation button is turned off. 5. The wireless remote controller or heat pump is malfunctioning. 6. Batteries in wireless remote controller have run down.	1. Restore power. 2. Contact service center. 3. Consult your electrician or dealer. 4. Press the button again. 5. Consult your dealer. 6. Replace batteries.
Compressor runs but soon stops.	1. Obstruction in front of condenser coil.	1. Remove obstruction.
Poor cooling (or heating) performance.	1. Dirty or clogged air filter. 2. Heat source or many people in room. 3. Doors and/or windows are open. 4. Obstacle near air intake or air discharge port. 5. Thermostat is set too high for cooling (or too low for heating). 6. (Outdoor temperature is too low.) 7. (Defrosting system does not work.)	1. Clean the air filter to improve the airflow. 2. Eliminate heat source if possible. 3. Shut them to keep the heat (or cold) out. 4. Remove it to ensure good airflow. 5. Set the temperature lower (or higher). 6. (Try to use a back-up heater.) 7. (Consult your dealer.)
Lamps on the indoor unit are flashing.	1. Trouble in wiring system.	1. Contact service center.

■ Tips for Energy Saving

Avoid

- **Do not block the air intake and outlet of the unit. If either is obstructed, the unit will not work well, and may be damaged.**
- Do not let direct sunlight into the room. Use sunshades, blinds or curtains. If the walls and ceiling of the room are warmed by the sun, it will take longer to cool the room.

Do

- Always try to keep the air filter clean. (Refer to “Care and Cleaning”.) A clogged filter will impair the performance of the unit.
- To prevent conditioned air from escaping, keep windows, doors and any other openings closed.

NOTE

Should the power fail while the unit is running
If the power supply for this unit is temporarily cut off, the unit will automatically resume operation once power is restored using the same settings before the power was cut off.

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