

DAIKIN

INSTALLATION MANUAL

SPLIT SYSTEM Air Conditioners

MODELS

Ceiling-mounted Duct type

FBQ18PVJU

FBQ24PVJU

FBQ30PVJU

FBQ36PVJU

FBQ42PVJU

English

Français

Español

Read these instructions carefully before installation.
Keep this manual in a handy place for future reference.

Lire soigneusement ces instructions avant l'installation.
Conserver ce manuel à portée de main pour référence ultérieure.

Lea cuidadosamente estas instrucciones antes de instalar.
Guarde este manual en un lugar a mano para leer en caso de tener alguna duda.

CONTENTS

| | |
|---|----|
| 1. SAFETY CONSIDERATIONS | 1 |
| 2. BEFORE INSTALLATION | 3 |
| 3. SELECTING INSTALLATION SITE | 4 |
| 4. PREPARATIONS BEFORE INSTALLATION | 5 |
| 5. INDOOR UNIT INSTALLATION..... | 6 |
| 6. REFRIGERANT PIPING WORK..... | 7 |
| 7. DRAIN PIPING WORK | 8 |
| 8. DUCT WORK..... | 10 |
| 9. ELECTRIC WIRING WORK..... | 11 |
| 10. WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER..... | 11 |
| 11. FIELD SETTING | 15 |
| 12. TEST RUN | 16 |

1. SAFETY CONSIDERATIONS





Read these **SAFETY CONSIDERATIONS for Installation** carefully before installing air conditioning equipment. After completing the installation, make sure that the unit operates properly during the startup operation.

Instruct the customer on how to operate and maintain the unit. Inform customers that they should store this Installation Manual with the Operation Manual for future reference.

Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.

Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE**

Symbols:

-  **DANGER**..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
-  **WARNING**..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
-  **CAUTION**..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
-  **NOTE**..... Indicates situations that may result in equipment or property-damage accidents only.

DANGER

- **Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**

- **Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.**
- **If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes in contact with fire. Exposure to this gas could cause severe injury or death.**
- **After completing the installation work, check that the refrigerant gas does not leak throughout the system.**
- **Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.**
- **Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.**

WARNING

- **Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.**
- **When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.**
- **Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.**
- **Install the air conditioner on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.**
- **Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.**
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local, state and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.**
- **Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.**
- **When wiring, position the wires so that the control box cover can be securely fastened. Improper positioning of the control box cover may result in electric shocks, fire, or the terminals overheating.**

- Before touching electrical parts, turn off the unit.
- Be sure to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.
- Securely fasten the outdoor unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outdoor unit causing fire or electric shock.
- When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.
- Do not change the setting of the protection devices. If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may occur.

 CAUTION

- Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.
- Do not allow children to play on or around the unit to prevent injury.
- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- Heat exchanger fins are sharp enough to cut. To avoid injury wear glove or cover the fins when working around them.
- Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.
- Insulate piping to prevent condensation.
- Be careful when transporting the product.
- Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.
- Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.
- Refrigerant R410A in the system must be kept clean, dry, and tight.
 - (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
 - (b) Tight -- R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation. R410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter Refrigerant Piping and follow the procedures.

- Since R410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.
- The indoor unit is for R410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.
- Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.
- Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors.
- Do not install the air conditioner in the following locations:
 - (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.
Plastic parts may deteriorate and fall off or result in water leakage.
 - (b) Where corrosive gas, such as sulfurous acid gas, is produced.
Corroding copper pipes or soldered parts may result in refrigerant leakage.
 - (c) Near machinery emitting electromagnetic waves.
Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
 - (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.
- Take adequate measures to prevent the outdoor unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.

 NOTE

- Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.
 - Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.
 - Do not use the following tools that are used with conventional refrigerants: gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.
 - If the conventional refrigerant and refrigerator oil are mixed in R410A, the refrigerant may deteriorate.
 - This air conditioner is an appliance that should not be accessible to the general public.
 - The wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.
-

2. BEFORE INSTALLATION

- When moving the unit while removing it from the carton box, be sure to lift it by holding on to the four lifting lugs without exerting any pressure on other parts, especially, the refrigerant piping, drain piping, flanges and other resin parts.
- Be sure to check the type of R410A refrigerant to be used before installing the unit. (Using an incorrect refrigerant will prevent normal operation of the unit.)
- The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them!
- Decide upon a line of transport.
- Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.
- When moving the unit or after opening, hold the unit by the hanger brackets (× 4). Do not apply force to the refrigerant piping, drain piping, flanges or plastic parts.
- For the installation of outdoor unit, refer to the installation manual attached to the outdoor unit.
- Do not install or operate the unit in rooms mentioned below.
 - **Laden with mineral oil, or filled with oil vapor or spray like in kitchens. (Plastic parts may deteriorate which could eventually cause the unit to fall out of place, or could lead to leaks.)**
 - **Where corrosive gas like sulfurous gas exists. (Copper tubing and brazed spots may corrode which could eventually lead to refrigerant leaks.)**
 - **Where exposed to combustible gases and where volatile flammable gas like thinner or gasoline is used. (Gas in the vicinity of the unit could ignite.)**
 - **Where machines can generate electromagnetic waves. (Control system may malfunction.)**
 - **Where the air contains high levels of salt such as that near the ocean and where voltage fluctuates greatly such as that in factories. Also in vehicles or vessels.**
- This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment. If installed as a household appliance it could cause electromagnetic interference.

2-1 PRECAUTIONS

- Be sure to read this manual before installing the indoor unit.
- Entrust installation to the place of purchase or a qualified serviceman. Improper installation could lead to leaks and, in worse cases, electric shock or fire.
- Use only parts provided with the unit or parts satisfying required specifications. Unspecified parts could cause the unit to fall out of place, or could lead to leaks and, in worse cases, electric shock or fire.
- Be sure to mount an air filter (part to be procured in the field) in the suction air passage in order to prevent water leaking, etc.

2-2 ACCESSORIES

Check that the following accessories are provided and that each accessory is correct in amount. Refer to the Fig. 1 of this page.

[PRECAUTION]

The accessories are required for the installation of the air conditioner. Be sure to keep them until the installation work is completed.

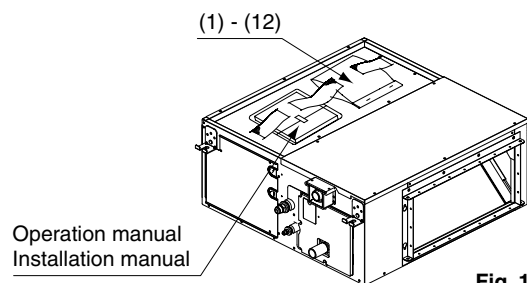


Fig. 1

| Name | Metal clamp (1) | Drain hose (2) | Screws for duct flanges (3) | Insulation for fitting | | | | |
|-------------------|-----------------|----------------|--|------------------------|----|--------------|----|--|
| Quantity | 1 pc. | 1 pc. | As described in table below | 1 each | | | | |
| Shape | | | M5x5/8 <table border="1"> <tr> <td>18 • 24 • 30 type</td> <td>18</td> </tr> <tr> <td>36 • 42 type</td> <td>26</td> </tr> </table> | 18 • 24 • 30 type | 18 | 36 • 42 type | 26 | Thin for liquid pipe (4) Thick for gas pipe (5) |
| 18 • 24 • 30 type | 18 | | | | | | | |
| 36 • 42 type | 26 | | | | | | | |

| Name | Sealing pad | Clamp (8) | Washer fixing plate (9) | Wire sealing material (10) |
|----------|--|-----------|-------------------------|----------------------------|
| Quantity | – | 11 pcs. | 4 pcs. | 2 pcs. |
| Shape | 1 pc. Large (Dark gray) (6) 2 pcs. Middle (Dark gray) (7) | | | Small (Gray) |

| Name | Washer (11) | Insulation tube (12) | (Other) • Operation manual • Installation manual |
|----------|-------------|----------------------|--|
| Quantity | 8 pcs. | 2 pcs. | |
| Shape | | | |

2-3 OPTIONAL ACCESSORIES

- These is one type of remote controller: wired.

NOTE

- If you wish to use a remote controller that is different from the above, select a suitable remote controller after consulting catalogs and technical materials.

FOR THE FOLLOWING ITEMS, TAKE SPECIAL CARE DURING CONSTRUCTION AND CHECK AFTER INSTALLATION IS FINISHED.

a. Items to be checked after completion of work

| Items to be checked | If not properly done, what is likely to occur. | Check |
|--|--|-------|
| Are the indoor and outdoor unit fixed firmly? | The units may drop, vibrate or make noise. | |
| Was the installation of the outdoor unit completed? | The unit may malfunction or the components burn out. | |
| Is the gas leak test finished? | No cooling or heating. | |
| Is the unit fully insulated? (Refrigerant piping, drain piping, and duct) | Condensate water may drip. | |
| Dose drainage flow smoothly? | Condensate water may drip. | |
| Does the power supply voltage conform to the indication on the name plate? | The unit may malfunction or the components burn out. | |
| Are wiring and piping correct? | The unit may malfunction or the components burn out. | |
| Is the air conditioner properly grounded? | Dangerous in case of current leakage. | |
| Is wiring size according to specifications? | The unit may malfunction or the components burn out. | |
| Is something blocking the air outlet or inlet of either the indoor or outdoor units? | No cooling or heating. | |
| Did you set the external static pressure? | No cooling or heating. | |
| Are refrigerant piping length and additional refrigerant charge noted down? | The refrigerant charge in the system is not clear. | |
| Did you check that no wiring connection screws were loose? | Electric shock or fire. | |

Also review the "SAFETY CONSIDERATIONS".

b. Items to be checked at time of delivery

| Items to be checked | Check |
|--|-------|
| Are you sure the control box cover, air filter, air inlet grille, and air outlet grille are mounted? | |
| Did you explain about operations while showing the operation manual to your customer? | |
| Did you deliver the operation manual along with the installation manual to the customer? | |
| Did you explain the customer the handling and cleaning methods of the field supplies (e.g., the air filter, air inlet grilles, and air outlet grille)? | |
| Did you deliver instruction manual, if any, for the field supplies to the customer? | |

c. Points for explanation about operations

The items with \triangle WARNING and \triangle CAUTION marks in the operation manual are the items pertaining to possibilities for bodily injury and material damage in addition to the general usage of the product. Accordingly, it is necessary that you make a full explanation about the described contents and also ask your customers to read the operation manual.

2-4 NOTE TO INSTALLER

- Be sure to instruct customers how to properly operate the unit (especially cleaning filters, operating different functions, and adjusting the temperature) by having them carry out operations themselves while looking at the manual.

3. SELECTING INSTALLATION SITE

〈Hold the hanger brackets in the case of moving the indoor and outdoor units at the time of and after opening the packages. Do not impose undue force on other parts, such as the refrigerant piping, drain piping, or flanges, in particular.〉

〈Add heat insulation material to the indoor unit if the temperature above the ceiling is likely to exceed 86°F and a relative humidity of 80%.〉

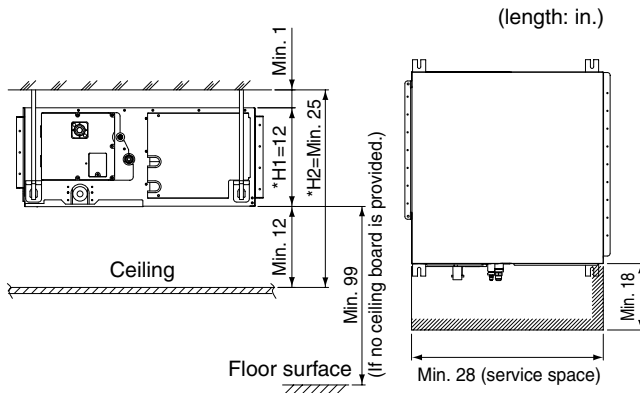
〈Make sure that the insulation material is made of glass wool or polyethylene foam, has a minimum thickness of 3/8 in., and can be accommodated in the opening on the ceiling.〉

- (1) Select an installation site where the following conditions are fulfilled and that meets with your customer's approval.
 - A place where cool (warm) air is delivered to the entire room.
 - Where nothing blocks the air passage.
 - Where condensate can be properly drained.
 - If supporting structural members are not strong enough to take the unit's weight, the unit could fall out of place and cause serious injury.
 - Where the false ceiling is not noticeably on an incline.
 - Where there is no risk of flammable gas leakage.
 - Where sufficient clearance for maintenance and service can be ensured. (Refer to Fig. 2-1)
 - Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the installation manual of the outdoor unit.)

CAUTION

- Install the indoor and outdoor units, power supply wiring and connecting wires at least 3.3 ft away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 3.3 ft may not be sufficient enough to eliminate the noise.)
- In the case of the installation of a wireless remote controller, the transmission distance of the wireless remote controller may be shortened if the room has a fluorescent light of electronic lighting type (i.e., an inverter or rapid-start fluorescent light). Keep the distance between the receiver and the fluorescent light as far as possible.

- (2) Use suspension bolts to install the indoor unit. Check that the place of installation withstands the weight of the indoor unit. Secure the suspension bolts with proper beams if necessary.



- The H1 dimension indicates the height of the product.
 - Determine the H2 dimension by maintaining a downward slope of at least 1/100 as specified in "7. DRAIN PIPING WORK".
- [Required installation place]
The dimensions indicate the minimum required space of installation.

Fig. 2-1

4. PREPARATIONS BEFORE INSTALLATION

- (1) Check the positional relationship between the ceiling opening hole and the suspension bolt of the unit.
- For the maintenance, inspection, and other servicing purposes of the control box and drain pump, prepare one of the following service spaces.
 1. Inspection hatch 1 (17-3/4 × 17-3/4) for the control box and a minimum space of 12 in. for the lower part of the product. **(Refer to Fig. 2-2)**
 2. Inspection hatch 1 (17-3/4 × 17-3/4) for the control box and inspection hatch 2 for the lower part of the product (see arrow view A-1). **(Refer to Fig. 2-3)**
 3. Inspection hatch 3 for the lower part of the product and the lower part of the control box (see arrow view A-2). **(Refer to Fig. 2-3)**

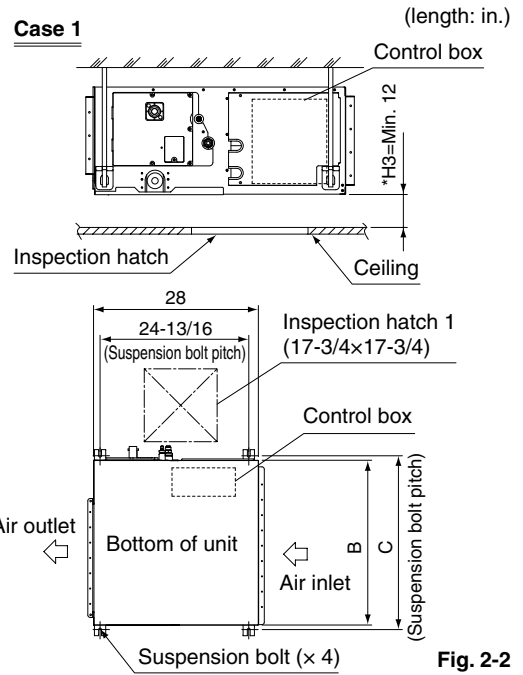


Fig. 2-2

Case 2, 3

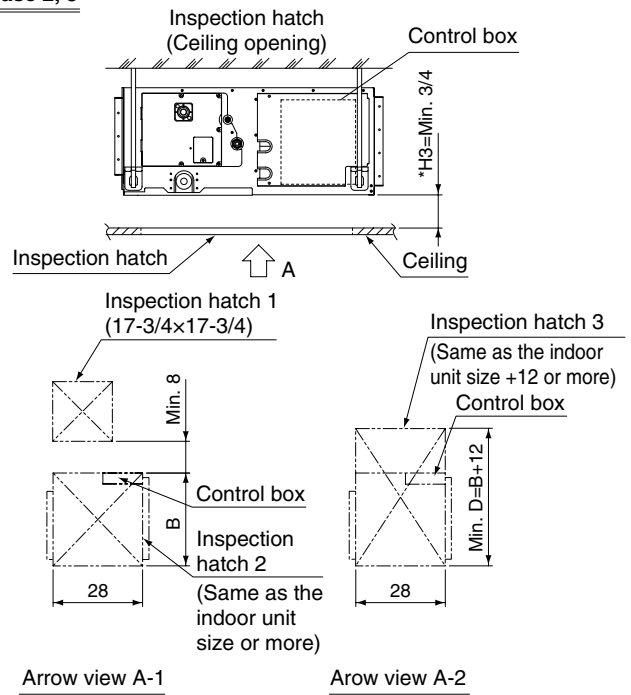


Fig. 2-3

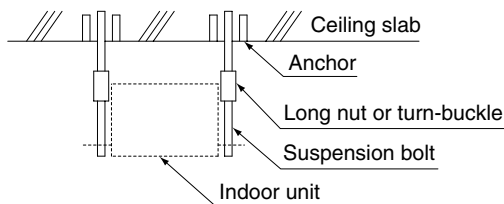
- Determine the H3 dimension by maintaining a downward slope of at least 1/100 as specified in "7. DRAIN PIPING WORK".

| Model | B | C | D |
|-------------------|----|--------|----|
| 18 • 24 • 30 type | 40 | 40-7/8 | 52 |
| 36 • 42 type | 56 | 56-5/8 | 68 |

(length: in.)

- (2) Mount the canvas ducts to the air outlet and inlet so that the vibration of the air conditioner will not be transmitted to the duct or ceiling. Apply a sound-absorbing material (insulation material) to the inner wall of the duct and vibration insulation rubber to the suspension bolts (refer to **8. DUCT WORK**).
- (3) Open installation holes (if the ceiling already exists).
- Open the installation holes on the ceiling. Lay the refrigerant piping, drain piping, power line, transmission wiring, and remote controller wiring for the piping and wiring connection port of the unit.
In the case of the installation of a wireless remote controller, refer to the installation manual provided with the wireless remote controller.
Refer to **6. REFRIGERANT PIPING WORK**, **7. DRAIN PIPING WORK**, and **10. WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER**.
 - The ceiling framework may need reinforcement in order to keep the ceiling horizontal and prevent the vibration of the ceiling after the installation holes are opened. For details, consult your construction or interior contractor.
- (4) Install the suspension bolts. Make sure that the suspension bolts are M10 or the equivalent in size.
- Use hole-in anchors if the suspension bolts already exist; otherwise use embedded inserts and embedded foundation bolts so that they will withstand the weight of the unit. Adjust the distance to the ceiling surface in advance.

< Installation example >



Note) All the above parts are field supplied.

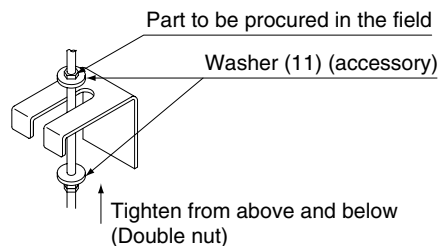
5. INDOOR UNIT INSTALLATION

<It may be easier to install accessories (sold separately) before installing the indoor unit. Refer to the installation manuals provided to the accessories as well.>

Be sure to use the accessories and specified parts for installation work.

- (1) Temporarily install the indoor unit.
- Connect the hanger brackets to the suspension bolts. Be sure to use and tighten the nut and washer (11) for each hanger bracket from both upper and lower sides of the hanger bracket. **(Refer to Fig. 3)** At that time, the fall of the washer (11) for the hanger bracket can be prevented if the washer fixing plate (9) is used.

[Fixing hanger brackets]



[Fixing method of washers]

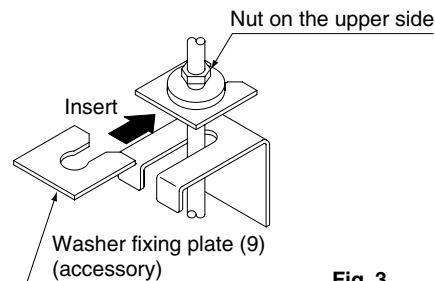


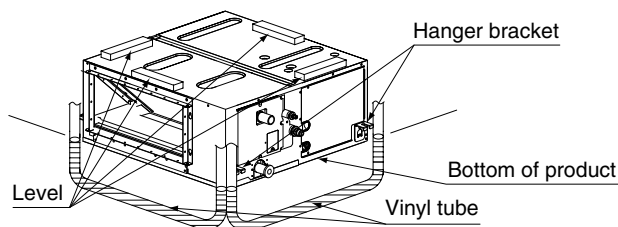
Fig. 3

CAUTION

- During the installation work, perform the curing of the air outlet and protect the resin drain pan of the indoor unit from the intrusion of foreign substances, such as welding spatters.**

Otherwise, water leakage may occur as a result of damage, such as hole damage, to the resin drain pan.

- (2) Make adjustments so that the unit will be in the right position.
- (3) Check the level of the unit.
- (4) Remove the washer fixing plates for the falling prevention of the washers for the hanger brackets, tighten the nuts on the upper side, and securely fix the unit.



— **CAUTION** —

- Use the level and check that the unit is installed horizontally. (4-directions)
- In the case of using a vinyl tube (filled with water) in place of the level, align the bottom of the unit to the water surface at both edges of the vinyl tube to make levelness adjustment. If the unit is installed at a slant with the drain pipe side set high, in particular, the float switch will not operate normally and water leakage may result.

6. REFRIGERANT PIPING WORK

⟨As for the refrigerant piping of the outdoor unit, refer to the installation manual provided to the outdoor unit.⟩

⟨Perform heat insulation work on both gas piping and liquid piping, or otherwise water leakage may result.⟩

⟨Use the insulation material that withstands a temperature of 250°F.⟩

⟨Reinforce the insulation material for the refrigerant piping if the ambient temperature is high, or otherwise dew condensation may result on the surface of the insulation material.⟩

⟨Make sure that the refrigerant is R410A before refrigerant piping work. If the refrigerant is different, the air conditioner will not operate normally.⟩

— **CAUTION** —

This product uses new refrigerant (R410A) only. Be sure to keep the following items and conduct the installation work.

- Use a dedicated pipe cutter and flare tool for R410A.
- When connecting the flare, apply ether oil or ester oil only to inner side of the flare.
- Be sure to use the flare nut provided with the unit. (Do not use a different flare nut (such as a type-1 flare nut), or otherwise refrigerant leakage may result.)
- Perform the curing of the piping with pinching or taping of the piping in order to prevent the intrusion of dirt, dust, and moisture into the piping.

— **CAUTION** —

- Be sure to use the specified type of refrigerant for the refrigeration cycle and do not contaminate the refrigerant with air.
- Ventilate the room in case of refrigerant leakage during installation work.

- Connect the piping.
 - The outdoor unit is filled with refrigerant.
 - When connecting or disconnecting piping to or from the unit, **be sure to use a spanner and a torque wrench.** (Refer to Fig. 4)

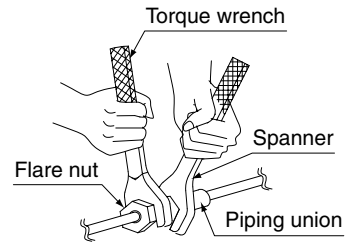


Fig. 4

- Refer to Table 1 for the processing dimensions of the flare.
- Use the flare nut provided with the unit.
- **Apply ether oil or ester oil only to inner side of the flare** and screw in the flare nut three to four turns first by hand at the time of connecting the flare nut. (Refer to Fig. 5)

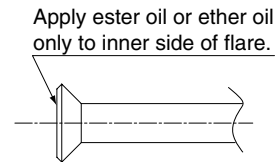


Fig. 5

- Refer to Table 1 for the corresponding tightening torque.

Table 1

| Pipe size | Tightening torque | Flare dimensions A (in.) | Flare shape |
|-----------|--------------------|--------------------------|-------------|
| φ 1/4 | 10.4 – 12.7 lbf-ft | 0.342 – 0.358 | |
| φ 3/8 | 24.1 – 29.4 lbf-ft | 0.504 – 0.520 | |
| φ 1/2 | 36.5 – 44.5 lbf-ft | 0.638 – 0.654 | |
| φ 5/8 | 45.6 – 55.6 lbf-ft | 0.760 – 0.776 | |

— **CAUTION** —

- **Do not excessively tighten the flare nut.** Doing so will break the flare nut and refrigerant leakage may result.
- **Make sure that all parts around the flare are free of oil.** The drain pan and the resin part may be deteriorated if oil is attached.

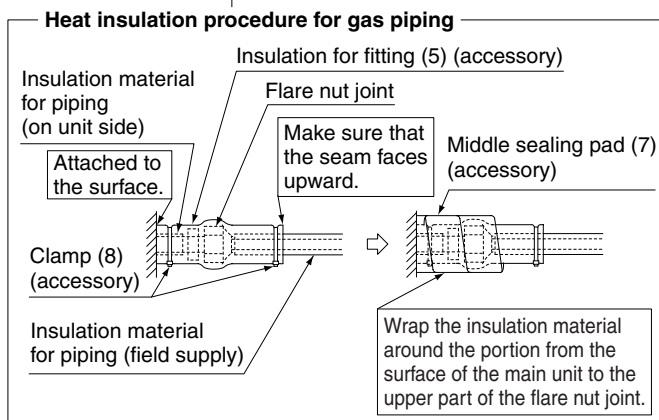
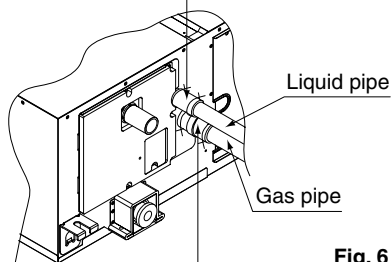
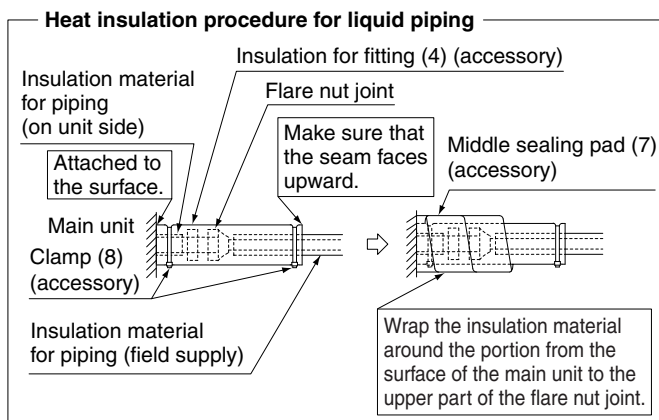
- If no torque wrenches are available, refer to Table 2 as a standard.

When the flare nut is tightened with the spanner, the tightening torque should increase suddenly. Tighten the flare nut further for the corresponding angle shown in Table 2.

Table 2

| Pipe size | Further tightening angle | Recommended arm length of tool |
|-----------|--------------------------|--------------------------------|
| φ 1/4 | 60 to 90 degrees | Approx. 5-7/8 in. |
| φ 3/8 | 60 to 90 degrees | Approx. 7-7/8 in. |
| φ 1/2 | 30 to 60 degrees | Approx. 9-13/16 in. |
| φ 5/8 | 30 to 60 degrees | Approx. 11-13/16 in. |

- (2) On completion of installation work, **check that there is no gas leakage.**
- (3) Refer to the following illustration and be sure to perform heat insulation work on the piping joints after gas leakage checks. (Refer to Fig. 6)



- Use the insulation for fitting (4) and (5) provided to the liquid piping and gas piping, respectively, and conduct heat insulation work. (Tighten both edges of the insulation for fitting (4) and (5) for each joint with the clamp (8).)
- Make sure that the joint of the insulation for fitting (4) and (5) for the joint on the liquid piping and gas piping side faces upward.

- Wrap the middle sealing material (7) around the insulation for fitting (4) and (5) for the joint (flare nut part).

CAUTION

- **Be sure to perform the heat insulation of the local piping up to the piping joint.**

If the piping is exposed, dew condensation may result. Furthermore, a burn may be caused if a human body comes in contact with the piping.

- Perform nitrogen substituent or apply nitrogen into the refrigerant piping (see NOTE 1) in the case of refrigerant piping brazing (see NOTE 2). Then perform the flare connection of the indoor unit. (Refer to Fig. 7)

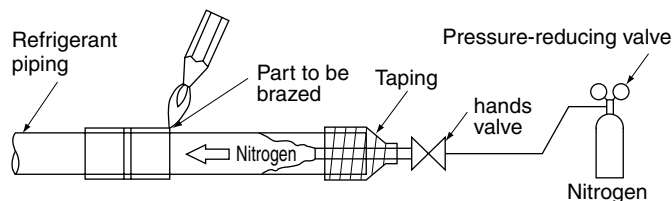


Fig. 7

CAUTION

- **Do not use any antioxidant at the time of piping brazing.** The piping may be clogged with a residual antioxidant and parts may malfunction.

NOTE

1. At the time of brazing, set the pressure of nitrogen to approximately 2.9 PSI (close to the pressure of a breeze coming in contact with the cheek) with a pressure-reducing valve.
2. Do not use flux at the time of brazing and connecting the refrigerant piping. Use a copper phosphorus brazing alloy (BCuP-2/BCu 93P-710/795), which does not require flux, for brazing. (Flux has a bad influence on the refrigerant piping. Chlorine-based flux will cause piping corrosion. Furthermore, if it contains fluorine, the flux will deteriorate refrigerant oil.)

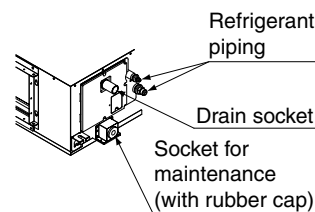
- As for the branching of the refrigerant piping or refrigerant, refer to the installation manual provided with the outdoor unit.

7. DRAIN PIPING WORK

- (1) Conduct drain piping work.

Check that the piping ensures proper draining.

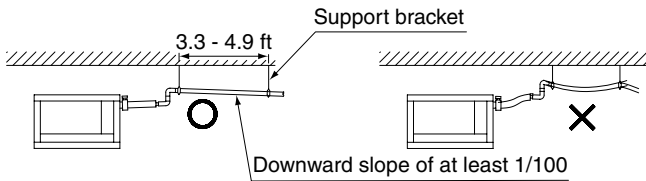
- Make sure that the diameter of the piping excluding the rising part is the same as or larger than the diameter of the connecting pipe (vinyl chloride pipe with an outer diameter of 1-1/4 in. and a nominal inner diameter of 31/32 in.).
- Make sure that the piping is short enough **with a downward slope of at least 1/100** and that there is no air bank formed. No drain trap is required.



CAUTION

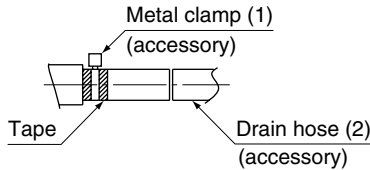
- The drain piping will be clogged with water and water leakage may result if the water is accumulated in the drain piping.

- Conduct drain-up piping work if the gradient is insufficient.
- Attach a support bracket at 3.3 to 4.9 ft intervals for the prevention of piping deflection.



- Be sure to use the drain hose (2) and metal clamp (1). **Insert the drain hose (2) deep into the base of the drain socket, and securely fasten the metal clamp (1) within the taped part on the insertion front end of the hose.**

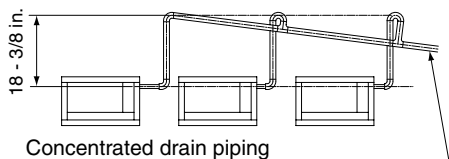
Be sure to fasten the screw of the metal clamp (1) until the margin of the screw thread decreases to 3/16 in. or less.



NOTE

Be sure to follow the instructions as below.

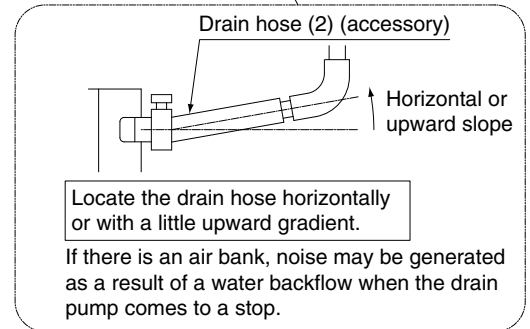
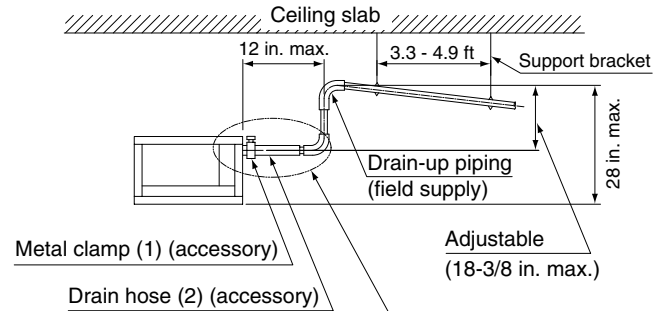
- Do not connect the drain piping directly to a sewer that smells of ammonia. The ammonia in the sewer may reach through the drain piping and corrode the heat exchanger of the indoor unit.
- Do not bend or twist the provided drain hose (2) in order not to impose excessive force on the hose. (Doing so may result in water leakage.)
- Take the procedure shown in the following illustration to perform concentrated drain piping.



Maintain a downward slope of at least 1/100 so that no air bank will be formed.

The drain piping will be clogged with water and water leakage may result if the water is accumulated in the drain piping.

- Select the diameter of the concentrated drain piping to suit the capacity of equipment connecting to the concentrated drain piping (see the equipment design sheet).



Locate the drain hose horizontally or with a little upward gradient.

If there is an air bank, noise may be generated as a result of a water backflow when the drain pump comes to a stop.

- Check the smooth draining of the piping on completion of the installation of the piping.

[Before electrical work]

CAUTION

- A licensed electrical engineering technician must conduct electrical wiring work (including grounding work).
- If no licensed electrical engineering technician is available, take steps 3 and 4 after the test run of the air conditioner is finished.

- Remove the control box cover, and connect the single-phase electric wires to terminals L1 and L2 of the terminal block and the ground wiring to the ground terminal.

Perform wiring according to 10-1. CONNECTING POWER SUPPLY, GROUND, REMOTE CONTROLLER, AND TRANSMISSION WIRING in 10. WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER.

CAUTION

- In order not to impose tension on the wire connections, perform clamping securely with the provided clamp (8) specified in 3 in 10-1. CONNECTING POWER SUPPLY, GROUND, REMOTE CONTROLLER, AND TRANSMISSION WIRING.

- Check that the control box cover is closed before turning the air conditioner ON.
- Provide approximately 1/4 gal of water gradually into the drain pan through the water inlet on the bottom of the drain socket or the outlet. Make sure that the water is not spilled onto the drain pump.
- The drain pump will operate with the power turned ON. Check that the pump drains water smoothly. (The drain pump will stop automatically in 10 minutes.)

The drainage can be checked with the water level change in the drain pan through the water inlet.

CAUTION

- **Do not touch the drain pump.**
Otherwise, an electric shock may be received.
- **Do not impose external force on the float switch.**
Otherwise, a failure may result.

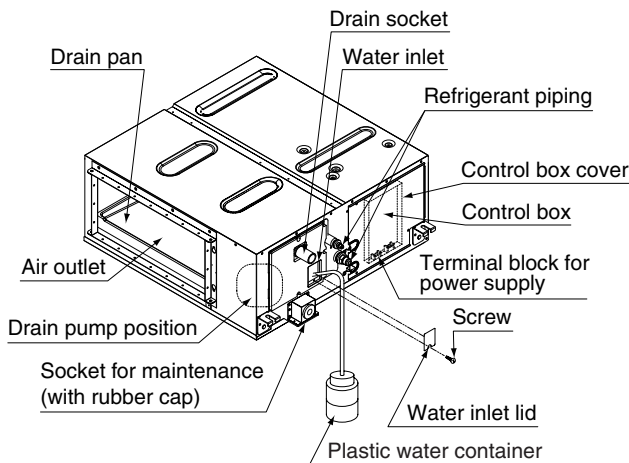
5. On completion of the drainage check, shut off the power supply and disconnect the power supply line.
6. Put the control box cover to the original position.

[After electrical work]

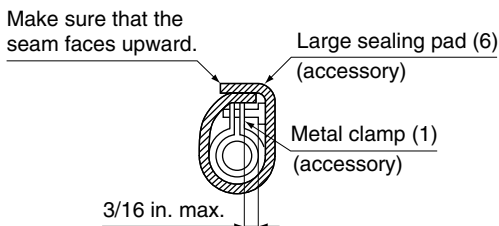
- After completion of **8. DUCT WORK** provide **approximately 1/4 gal of water** gradually into the drain pan through the water inlet on the bottom of the drain socket, and check that the water is drained while the air conditioner is in cooling operation according to **11. FIELD SETTING** and **12. TEST RUN**. Make sure that the water is not spilled onto the electric parts of the drain pump and others.

(3) Be sure to conduct heat insulation work on the following portions, or otherwise water leakage may occur as a result of dew condensation.

- **Drain piping indoors**
- **Drain socket**



- On completion of the drainage check, refer to the following illustration, and use the provided large sealing pad (6) and heat insulate the metal clamp (1) and drain hose (2).



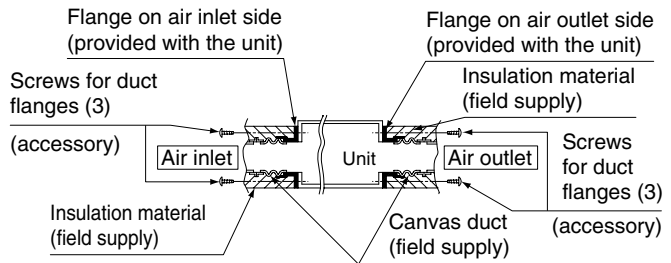
8. DUCT WORK

Pay the utmost attention to the following items and conduct the ductwork.

- Check that the duct will not be in excess of the setting range of external static pressure for the unit. (Refer to the technical datasheet for the setting range. Each model has each setting range of external static pressure.)
- Attach a canvas duct each to the air outlet and air inlet so that the vibration of the equipment will not be transmitted to the duct or ceiling.
Use a sound-absorbing material (insulation material) for the lining of the duct and apply vibration insulation rubber to the suspension bolts.
- At the time of duct welding, perform the curing of the duct so that the sputter will not come in contact with the drain pan for the filter.
- If the metal duct pass through a metal lath, wire lath, or metal plate of a wooden structure, separate the duct and wall electrically.
- Be sure to heat insulate the duct for the prevention of dew condensation. (Material: Glass wool or styrene foam; Thickness: 31/32 in.)
- Be sure to attach the field supply air filter to the air inlet of the unit or field supply inlet in the air passage on the air suction side. (Be sure to select an air filter with a duct collection efficiency of 50 weight percent.)
- Explain the operation and washing methods of the locally procured components (i.e., the air filter, air inlet grille, and air outlet grille) to the customer.
- Locate the air outlet grille on the indoor side for the prevention of drafts in a position where indirect contact with people.
- The air conditioner incorporates a function to adjust the fan to rated speed automatically. **(11. FIELD SETTING)**
Therefore, do not use booster fans midway in the duct.

Connection method of ducts on air inlet and outlet sides.

- Connect the field supply duct in alignment with the inner side of the flange.
- Connect the flange and unit with the flange connection screw (3).
- Wrap aluminum tape around the flange and duct joint in order to prevent air leakage.



CAUTION

Connect the flange and unit with the flange connection screw (3) regardless of whether the duct is connected to the air inlet side.

9. ELECTRIC WIRING WORK

9-1 GENERAL INSTRUCTIONS

- All field supplied parts and materials and electric works must conform to local codes.
- Use copper wire only.
- For electric wiring work, refer to also "Wiring diagram" attached to the control box cover.
- For remote controller wiring details, refer to the installation manual attached to the remote controller.
- All wiring must be performed by an authorized electrician.
- A circuit breaker capable of shutting down power supply to the entire system must be installed.
- Refer to the installation manual attached to the outdoor unit for the size of power supply wiring connected to the outdoor unit, the capacity of the ground fault circuit interrupter and switch, and wiring instructions.
- Be sure to ground the air conditioner.
- Do not connect the ground wiring to gas and water pipes, lightning rods, or telephone ground wires.
 - Gas pipes : might cause explosions or fire if gas leaks.
 - Water pipes : no grounding effect if hard vinyl piping is used.
 - Telephone ground wires or lightning rods : might cause abnormally high electric potential in the ground during lightning storms.

9-2 ELECTRICAL CHARACTERISTICS

| Model | Power supply | | | | Fan motor | | |
|-----------|--------------|---------------|------------------------|-----|-----------|-------|-----|
| | Hz | Volts | Voltage range | MCA | MOP | KW | FLA |
| FBQ18PVJU | 60 | 208V /230V | Max. 253V Min. 187V | 1.6 | 15 | 0.350 | 1.3 |
| FBQ24PVJU | | | | 1.8 | 15 | 0.350 | 1.4 |
| FBQ30PVJU | | | | 2.3 | 15 | 0.350 | 1.8 |
| FBQ36PVJU | | | | 2.9 | 15 | 0.350 | 2.3 |
| FBQ42PVJU | | | | 3.4 | 15 | 0.350 | 2.7 |


MCA: Minimum Circuit Ampacity (A)

MOP: Maximum Overcurrent Protective Device (A)

kW: Fan Motor Rated Output (kW)

FLA: Full Load Ampacity (A)

9-3 SPECIFICATIONS FOR FIELD SUPPLIED FUSES AND WIRE

| Model | Power supply wiring | | Remote controller wiring Transmission wiring | |
|-----------|--|------------------------------------|---|----------|
| | Field fuses  | Size | Wire | Size |
| FBQ18PVJU | 15A | Size must comply with local codes. | Sheathed wire (2 wire) | AWG18-16 |
| FBQ24PVJU | | | | |
| FBQ30PVJU | | | | |
| FBQ36PVJU | | | | |
| FBQ42PVJU | | | | |

Allowable length of transmission wirings and remote controller wiring are as follows.

- (1) Outdoor unit – Indoor unit:
Max. 3280 ft (Total wiring length: 6560 ft)
- (2) Indoor unit – Remote controller:
Max. 1640 ft

NOTE

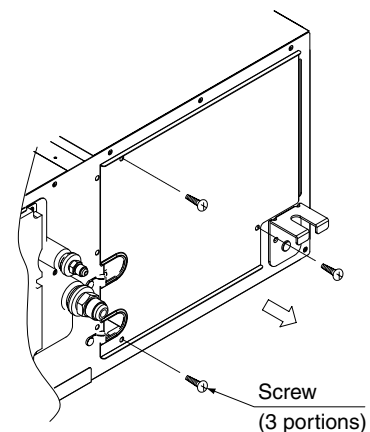
1. Shows only in case of protected pipes. Use H07RN-F in case of no protection.
2. Vinyl cord with sheath or cable (Insulated thickness : 0.04 in. or more)

10. WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER

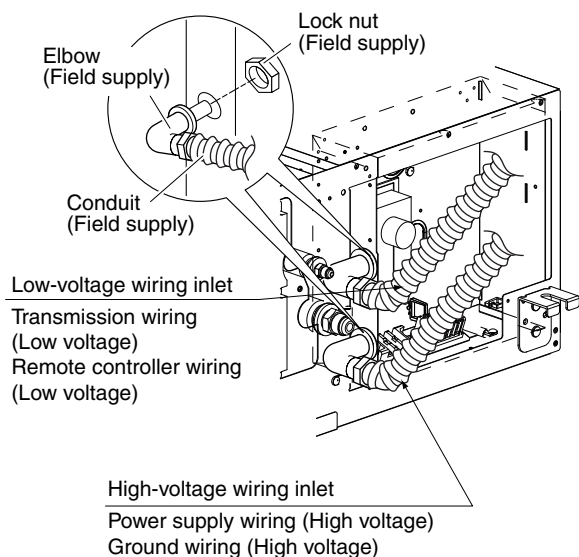
10-1 CONNECTING POWER SUPPLY, GROUND, REMOTE CONTROLLER, AND TRANSMISSION WIRING

(Remove the control box cover as shown below and connect each wire.)

- (1) Remove the control box cover.



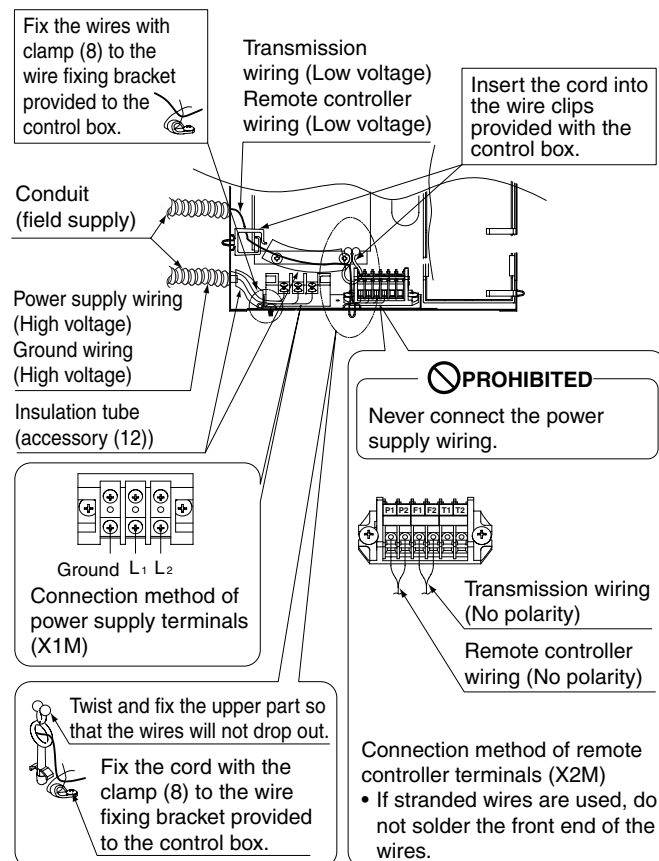
(2) Lay the wires in the control box through the wire inlet on the side of the control box.



CAUTION

- Do not lay the remote controller wiring or transmission wiring along with the power supply wiring or other electric wiring in the same route. Separate the remote controller wiring and transmission wiring at least 2 in. from the power supply wiring or other electric wiring, or otherwise malfunctions or failures may be caused by external electric noise that may interfere with the remote controller wiring and transmission wiring.
- For the installation and wiring of the remote controller, refer to the remote controller installation manual provided with the remote controller.
- For power supply wiring, refer to the wiring diagram as well.
- Be sure to connect the remote controller wiring and transmission wiring correctly to the right terminal block.

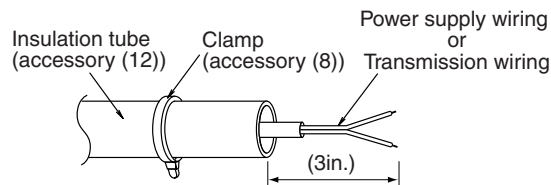
(3) Follow the instructions below, and lay the wires in the control box.



Routing power supply wiring and transmission wiring

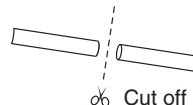
Let the power supply wiring with a conduit pass through one of the holes on the side cover, and let the transmission wiring with a conduit pass through another hole.

- For protection from uninsulated live parts, thread the power supply wiring or the transmission wiring through the included insulation tube and secure it with the included clamp.



When use the insulation tube

- Cut off the insulation tube as need length.

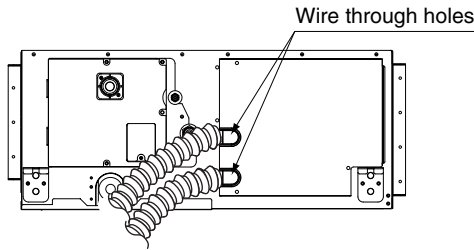


WARNING

Trim and lay the wiring neatly and attach the control box cover securely.

An electric shock or fire may result if the control box cover catches any wiring or the wires push up the cover.

- (4) Put the control box cover, and wrap the wire sealing material (Small) (10) around the conduit so as to block the wire through holes.

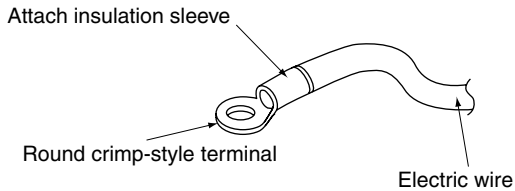


CAUTION

- After all the wiring connections are done, fill in any gaps in the through holes with putty or insulation (procured locally) to prevent small animals and insects from entering the unit from outside. (If any do get in, they could cause short circuits in the control box.)

[Precautions for Power Supply Wiring]

- Connect round crimp-style terminals provided with insulation sleeves to the terminal block for power supply.



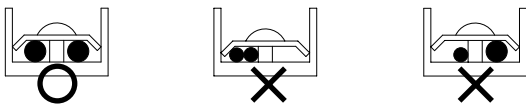
Be sure to follow the instructions provided below if the specified terminals cannot be used.

Otherwise, abnormal heat may be generated as a result of the loosening of the wires.

Connect the wires evenly.

Do not connect a wire to the single side only.

Do not connect wires different from each other in diameter.



- If stranded wires are used, do not solder the front end of the wires.
- Connect proper wires securely and fix the wires so that external force will not be imposed on the terminals.
- Use an appropriate screwdriver to tighten the terminal screws. The screw heads may be damaged if the screwdriver is too small and the terminal screws will not be tightened properly.
- Do not tighten the terminal screws excessively, or otherwise the screw heads may be damaged.
- Refer to the table below for the required tightening torque values of the terminal screws.

| | Tightening torque (lbf·ft) |
|---|----------------------------|
| Terminal block for remote controller and transmission wires | 0.58 - 0.72 |
| Terminal block for power supply Ground wiring | 0.87 - 1.06 |

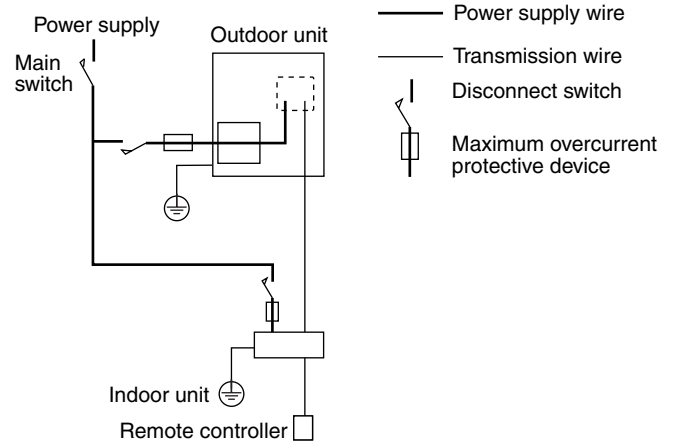
10-2 WIRING EXAMPLE

WARNING

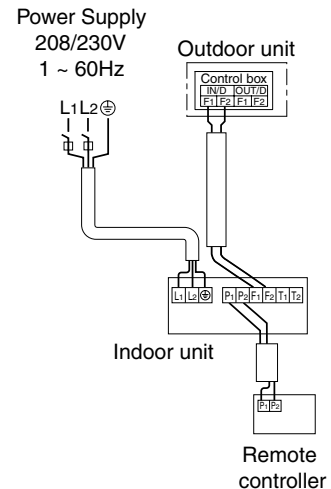
Install a ground fault circuit interrupter.

The installation of a ground fault circuit interrupter is imperative for the prevention of electric shocks and fire accidents.

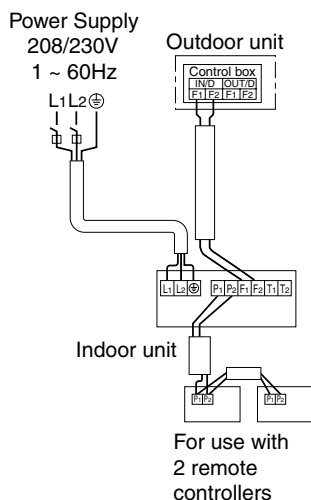
COMPLETE SYSTEM EXAMPLE



1. When using 1 remote controller (Normal operation)



2. When using 2 remote controllers



[PRECAUTIONS]

1. Make sure that the ground fault circuit interrupter is designed to protect the air conditioner from ground faults, overloads, and short-circuiting.
2. The remote controller wiring (P1 and P2) and transmission wiring (F1 and F2) have no polarity.

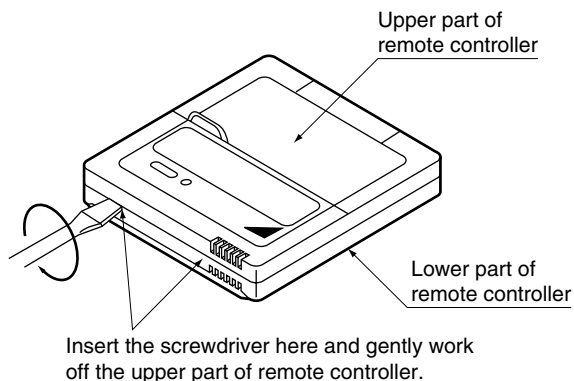
10-3 CONTROL BY 2 REMOTE CONTROLLERS (Controlling 1 indoor unit by 2 remote controllers)

- Set one of the remote controllers to main and the other to sub in the case of remote control with two remote controllers.

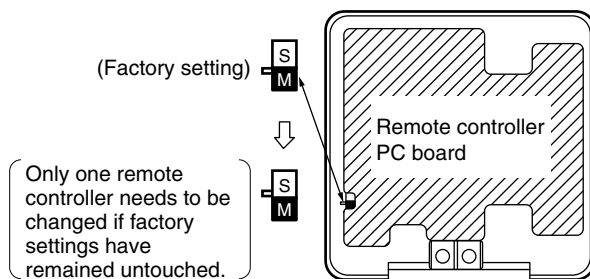
Switching Main/Sub

- The setting of the BRC1E71 remote controller should be switched referring to the manual supplied with the remote controller.
- In case of BRC1D71 remote controller.

- (1) Insert a ⊖ screwdriver into the clearance between the grooves of the lower casing and the upper casing to remove the upper casing. (2 grooves) (The remote controller PCB is attached to the upper casing.)

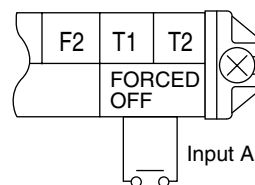


- (2) Set the main/sub switch on one of the remote controller PCBs to sub. (Keep the switch of the other remote controller PCB set to main.)



10-4 COMPUTERIZED CONTROL (FORCED OFF AND ON/OFF OPERATION)

- (1) Wire specifications and how to perform wiring
 - Connect the external input to terminals T1 and T2 of the terminal block for remote controller.



| | |
|--------------------|---|
| Wire specification | Sheathed vinyl cord or cable (2 wire) |
| Gauge | AWG18-16 |
| Length | Max. 328 ft |
| External terminal | Contact that can ensure the minimum applicable load of 15 V DC, 1 mA. |

- (2) Actuation
 - The following table explains FORCED OFF and ON/OFF OPERATIONS in response to Input A.

| FORCED OFF | ON/OFF OPERATION |
|--|--------------------------------|
| Input "ON" stops operation (impossible by remote controllers.) | Input OFF → ON turns ON unit. |
| Input OFF enables control by remote controller. | Input ON → OFF turns OFF unit. |

- (3) How to select FORCED OFF and ON/OFF OPERATION
 - Turn the power on and then use the remote controller to select operation.

10-5 CENTRALIZED CONTROL

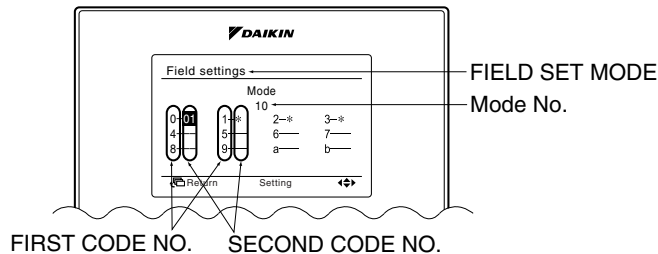
- For centralized control, it is necessary to designate the group No. For details, refer to the manual of each optional controllers for centralized control.

11. FIELD SETTING

Make sure the control box covers are closed on the indoor and outdoor units.

Field setting must be made from the remote controller in accordance with the installation conditions.

- Setting can be made by changing the “Mode No.”, “FIRST CODE NO.”, and “SECOND CODE NO.”.
- For setting procedures and instructions, refer to the “FIELD SETTING” in the installation manual of the remote controller.



With wireless remote controller used

Set the wireless remote controller address before using the wireless remote controller.

For the setting method of the address, refer to the operation manual provided with the wireless remote controller.

NOTE

- Before the test run as explained in **12. TEST RUN**, be sure to make the following field settings.
- A “Mode No.” is set on a group basis. To make a mode setting on an individual unit basis or check the setting made, however, set the corresponding mode number in the parentheses.

1. Settings for optional accessories

- In case of connecting optional accessories, refer to the installation manual provided with them and make necessary settings.

2. External static pressure settings

Make settings in either method (a) or method (b) as explained below.

(a) Use the airflow adjustment function to make settings.

Automatic airflow adjustment: The volume of discharge air is automatically adjusted to the rated quantity.

- (1) Check that power supply wiring to the air conditioner is completed along with duct installation. If a closing damper is installed in the air-conditioning system, make sure that the closing damper is opened. Furthermore, check that the air filter as a field supply is attached to the air passage on the suction side.
- (2) If there are a number of air outlets and inlets, adjust the throttles so that the airflow rate of each air outlet and inlet will coincide with the designed airflow rate. At that time, operate the air conditioner in “fan mode”. To change the airflow rate, press and set the airflow adjustment button of the remote controller to HH, H, or L.

- (3) Make settings for automatic airflow adjustment. After setting the air conditioner to “fan mode”, stop the air conditioner, go to “FIELD SET MODE”, select Mode No. “21” (11 in the case of group settings), set the setting “FIRST CODE NO.” to 7, and set the setting “SECOND CODE NO.” to 03.

Return to normal mode after these settings, and press the ON/OFF OPERATION button. Then the operation lamp will be lit and the air conditioner will go into fan operation for automatic airflow adjustment. Do not adjust the throttles of the air outlets or inlets during automatic adjustment of the air conditioner. After the air conditioner runs approximately one to eight minutes, the air conditioner will finish airflow adjustment automatically, the operation lamp will be turned OFF, and the air conditioner will come to a stop.

Table 3

| Mode No. | FIRST CODE NO. | Setting contents |
|-----------------|----------------------------------|-----------------------------|
| 11 (21) | 7 | Airflow adjustment |
| SECOND CODE NO. | | |
| 01 | 02 | 03 |
| OFF | Completion of airflow adjustment | Start of airflow adjustment |

- (4) After the air conditioner stops operating, check with “Mode No. 21” on an indoor unit basis that 02 is set for the “SECOND CODE NO.” in Table 3. If the air conditioner does not stop operating automatically or the “SECOND CODE NO.” is not 02, repeat steps from (3). If the outdoor unit is not turned ON, U4 or UH as explained in Table 7 will be displayed. This display is not problematic, because this function is set for the indoor unit. Continue setting the function. After setting this function, be sure to turn ON the outdoor unit before the test run of the outdoor unit. If any other error is displayed, refer to Table 7 and the operation manual provided with the outdoor unit and check the defective point.

CAUTION

- If there is any change after airflow adjustment in the ventilation paths (e.g., the duct and air outlet), be sure to make automatic airflow adjustment again.
- Consult your Daikin representative if there is any change in the ventilation paths (e.g., the duct and air outlet) after the test run of the outdoor unit is finished or the air conditioner is moved to another place.

(b) Select an external static pressure with the remote controller.

Check that 01 (OFF) is set for the “SECOND CODE NO.” in “Mode No. 21” for airflow adjustment on an indoor unit basis in Table 3. The “SECOND CODE NO.” is set to 01 (OFF) at factory set. Change the “SECOND CODE NO.” as shown in Table 4 according to the external static pressure of the duct to be connected.

- (1) The “SECOND CODE NO.” is set to 07 (an external static pressure of 0.4 inWG) at factory set.

Table 4

| External Static Pressure | Mode No. | FIRST CODE NO. | SECOND CODE NO. |
|--------------------------|----------|----------------|-----------------|
| 0.20 inWG | 13 (23) | 06 | 02 |
| 0.24 inWG | | | 03 |
| 0.28 inWG | | | 04 |
| 0.32 inWG | | | 05 |
| 0.36 inWG | | | 06 |
| 0.40 inWG | | | 07 |
| 0.44 inWG | | | 08 |
| 0.48 inWG | | | 09 |
| 0.52 inWG | | | 10 |
| 0.56 inWG | | | 11 |
| 0.60 inWG | | | 12 |
| 0.64 inWG | | | 13 |
| 0.72 inWG | | | 14 |
| 0.80 inWG | 15 | | |

⚠ CAUTION

Keep in mind that a shortage of airflow quantity or water leakage will result because the air conditioner will be operated outside the rated range of airflow quantity if the external static pressure is wrongly set.

3. Filter sign settings

- The remote controller is provided with an LCD that tells the time of air filter cleaning.
- If the air conditioner is used in places with excessive dust, change the "SECOND CODE NO." as shown in Table 5. The "SECOND CODE NO." is set to 01 (standard) at factory set.

Table 5

| Dirt | Time for display | Mode No. | FIRST CODE NO. | SECOND CODE NO. |
|----------------|--------------------------|----------|----------------|-----------------|
| Standard | Approximately 2500 hours | 10 (20) | 0 | 01 |
| Excessive dust | Approximately 1250 hours | | | 02 |
| No display (*) | | | | 3 |

* Select "No display" under conditions in which the cleaning display is not required, such as the time of regular maintenance.

12. TEST RUN

Refer to the installation manual of the outdoor unit.

- The operation lamp of the remote controller will flash when a malfunction occurs. Check the malfunction code on the liquid crystal display to identify the point of trouble. An explanation of malfunction codes and the corresponding trouble is provided in the installation manual attached to the outdoor unit or the service manual.

If any of the items in Table 7 is displayed, there may be a problem with the wiring or power supply, so check the wiring again.

Table 6

| Remote controller display | Contents |
|---------------------------|---|
| "A8" is lit up | Error in power supply voltage to indoor unit. |
| "C1" is lit up | Fan driver PCB of indoor unit ↔ indoor control PCB transmission error. |
| "C6" is lit up | Improper combination of fan driver PCB of indoor unit or setting failure in control PCB type. |
| "U3" is lit up | Test run of outdoor unit has not been finished. |

Table 7

| Remote controller display | Contents |
|----------------------------------|--|
| "CENTRAL CONTROL" is lit up | • There is a short circuit at the FORCED OFF terminals (T1, T2) |
| "U4" is lit up "UH" is lit up | • The power supply on the outdoor unit is off. • The outdoor unit has not been wired for power supply. • Incorrect wiring for the transmission and / or the FORCED OFF wiring. |
| No display | • The power supply on the indoor unit is off. • The indoor unit has not been wired for power supply. • Incorrect wiring for the remote controller, the transmission and / or the FORCED OFF. |

⚠ CAUTION

If interior finish work is continuing on completion of the test run of the air conditioner, explain the customer not to operate the air conditioner until the interior finish work is completed for the protection of the air conditioner.

Otherwise, substances that will be generated from interior finish work materials, such as paint and adhesive agents, may contaminate the air conditioner.

DAIKIN AC (AMERICAS), INC.

1645 Wallace Drive, Suite 110
Carrollton, TX 75006 USA

info@daikinac.com
www.daikinac.com

DAIKIN INDUSTRIES, LTD.

Head office:

Umeda Center Bldg., 2-4-12, Nakazaki-Nishi,
Kita-ku, Osaka, 530-8323 Japan

Tokyo office:

JR Shinagawa East Bldg., 2-18-1, Konan,
Minato-ku, Tokyo, 108-0075 Japan

