

DAIKIN

INSTALLATION MANUAL

SPLIT SYSTEM Air Conditioners

MODELS

RZQ18PVJU (9)

RZQ24PVJU (9)

RZQ30PVJU

RZR18PVJU

RZR24PVJU

RZR30PVJU

English

Français

Español

Read these instructions carefully before installation.
Keep this manual in a handy place for future reference.
This manual should be left with the equipment owner.

Lire soigneusement ces instructions avant l'installation.
Conserver ce manuel à portée de main pour référence ultérieure.
Ce manuel doit être donné au propriétaire de l'équipement.

Lea cuidadosamente estas instrucciones antes de instalar.
Guarde este manual en un lugar a mano para leer en caso de tener alguna duda.
Este manual debe permanecer con el propietario del equipo.

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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 Work 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 refrigeration 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.

〈Safety Precaution〉

The PCI Data Station is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

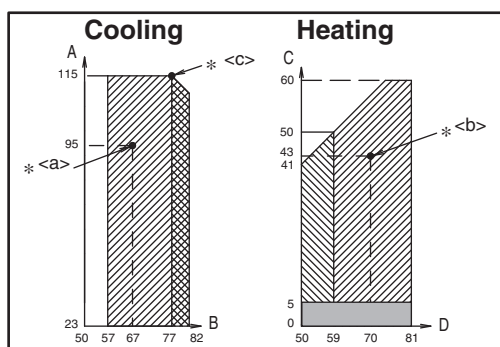
2. INTRODUCTION

2-1 Standard operation limit

The figures below assume following operating conditions for indoor and outdoor units:

Equivalent pipe length.....25 ft.

Level difference.....0 ft.



- A Outdoor temperature (°FDB)
- B Indoor temperature (°FWB)
- C Outdoor temperature (°FWB)
- D Indoor temperature (°FDB)
- Range for continuous operation
- Range for pull down operation
- Range for warming up operation
- Range for operation

2-2 Technical specifications

(*<a> and * in the table indicate the operating condition (shown in the left figure).)

Model		RZQ18PVJU RZR18PVJU	RZQ24PVJU RZR24PVJU	RZQ30PVJU RZR30PVJU	Precaution
Refrigerant		R410A			
Power		208/230V 60Hz			
[FAQ] Wall mounted					
Cooling (MBh)		18.0	24.0	—	*<a>
Heating (MBh) (RZQ only)		20.0	26.0	—	*
[FCQ] Ceiling mounted					
Cooling (MBh)		18.0	24.0	30.0	*<a>
Heating (MBh) (RZQ only)		20.0	27.0	34.0	*
[FHQ] Ceiling Suspended					
Cooling (MBh)		18.0	24.0	30.0	*<a>
Heating (MBh) (RZQ only)		20.0	27.0	34.0	*
(RZQ only)					
[FTQ] Air Handling Unit					
Cooling (MBh)		18.0	24.0	—	*<a>
Heating (MBh)		20.0	26.0	—	*
Dimensions H × W × D	(inch)	30-5/16 × 35 7/16 × 12 5/8			
Weight	(lb.)	150			
Connections					
Gas	(inch)	5/8			
Liquid	(inch)	3/8			

2-3 Electrical specifications

(*<c> in the table indicate the operating condition (shown in the left figure).)

Model		RZQ18PVJU RZR18PVJU	RZQ24PVJU RZR24PVJU	RZQ30PVJU RZR30PVJU	Precaution
Power					
Phase		~			
Frequency	(Hz)	60			
Voltage	(V)	208/230			
Voltage tolerance	(%)	±10			
Max.Overcurrent Protective device	(A)	20			
Min. Circuit Amps.	(A)	16.5			*<C>
Compressor					
Phase		3~			
Frequency	(Hz)	60			
Voltage	(V)	208/230			

2-4 Accessories

Confirm that the following accessories are supplied.

Clamp	Insulation tube				Cover (Handle)
	(Large-1)	(Large-2)	(Small-1)	(Small-2)	
 (1 pc.)	 (2 pcs.)	 (1 pc.)	 (2 pcs.)	 (1 pc.)	
Screw	Conduit mounting plate		Others		
 (1 pc.)	 (2 pcs.)	 (2 pcs.)	• Installation manual		

2-5 Main components

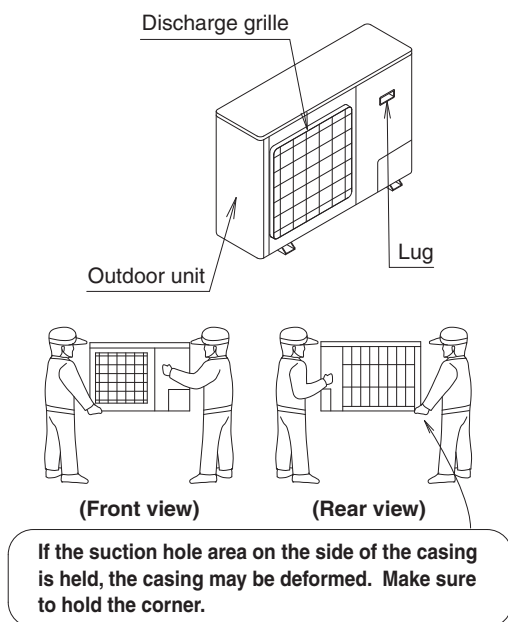
For main components and function of the main components, refer to the Engineering Data Book.

3. BEFORE INSTALLATION

(Bringing-in)

Bring in the outdoor unit slowly by holding the lugs provided on the left and right sides as shown in the figures below.

(Take care so that hands and objects do not touch the fin on the rear.)



◎ Make sure to use accessories and specified specification parts in the installation work.

4. SELECTION OF INSTALLATION LOCATION

The refrigerant R410A itself is nontoxic, nonflammable and safe. If the refrigerant should leak however, its concentration may exceed the allowable limit depending on room size. Due to this it could be necessary to take measures against leakage. Refer to the chapter "Caution for refrigerant leaks".

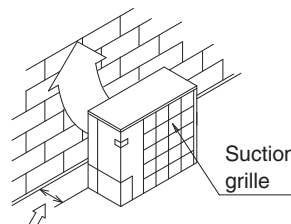
(1) Select a proper location satisfying the following requirements with approval of the customer.

- Sufficient ventilation is secured.
- Adjacent houses are not annoyed.
- The foundation is strong enough to support the weight and withstand vibrations of the outdoor unit, and the location is safe and allows horizontal installation.
- The outdoor unit is exposed to rain as less as possible.
- The space for installation and servicing is secured around the outdoor unit.
- The indoor/outdoor piping length and wiring length are within the allowable range.

(2) When installing the outdoor unit in a location affected by strong wind, pay special attention to the following items.

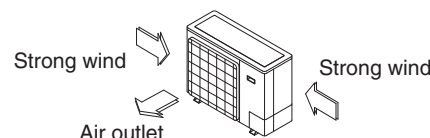
- If strong wind whose velocity is 11 mph or more blows to the outdoor unit from the air outlet side, the air flow rate of the outdoor unit is reduced, the outlet air is sucked again (short-circuit), and the following effect may be caused:
 - The capacity is deteriorated.
 - The adhered frost increases during heating operation.
 - The operation is stopped by pressure rise.
- If excessive strong wind continuously blows from the air outlet side of the outdoor unit, the fan may rotate in the reverse direction at high speed, and lead to damage. Install the outdoor unit in reference to the following figures.

- **Position the air outlet side toward the building wall, fence or windbreak screen.**



(Secure the space for installation and servicing.)

- **Let the air outlet direction face be at right angles to the wind direction.**



(3) When installing the outdoor unit in a location with heavy snowfall, pay special attention to the following items:

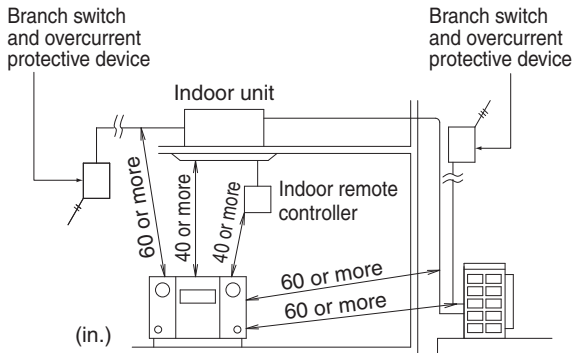
- Prepare strong foundation.
- Attach the snow hood (optional accessory).
- Remove the suction grill on the rear so that snow will not be accumulated in the rear fin.

(4) When there is a possibility of short-circuit depending on the ambient situation, use the wind direction adjusting plate (optional accessory).

(5) The inverter type air conditioner may cause noise in electric products.

When selecting an installation location, keep sufficient distance from the air conditioner units and wiring to radios, personal computers, stereos, etc. as shown in the figure below.

In areas with weak electric waves, keep a distance of 120 in. or more from the indoor remote controller, etc., put the power cables and connection cables in conduit tubes, and ground the conduit tubes.



⚠ DANGER

- Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.
- Refrigerant is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

Installation place (unit: inch)

⚠ Cautions on continuous installation

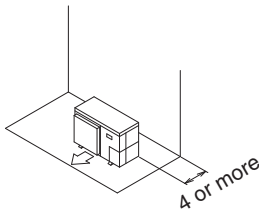
- The connection piping outlet direction in the continuous installation shown in the figures below is frontward or downward.
- When routing the piping rearward, secure space of 10 in. or more on the right side of the outdoor unit. (The unit of numeric values below is "inch".)
- Make some space for wiring with conduit and servicing between the units.

(A) When an obstruction is present on the air inlet side

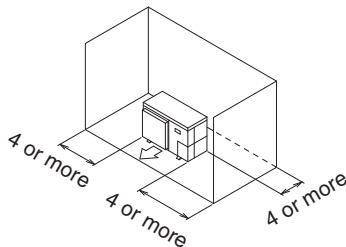
• When the upward area is open

(1) When one outdoor unit is installed individually

- When an obstruction is present only on the air inlet side

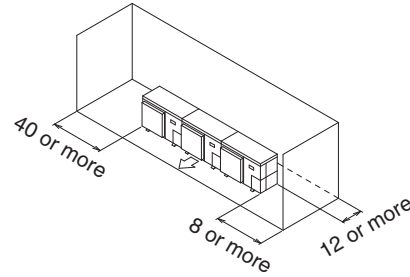


- When an obstruction is present on the both sides



(2) When two or more outdoor units are installed side by side

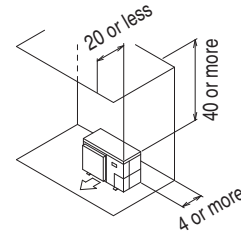
- When an obstruction is present on the both sides



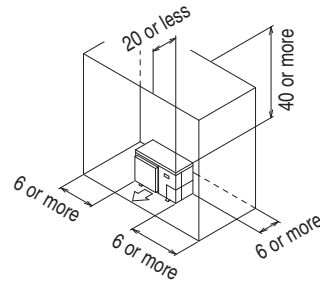
• When an obstruction is present also in the upward area

(1) When one outdoor unit is installed individually

- When an obstruction is present also on the air inlet side

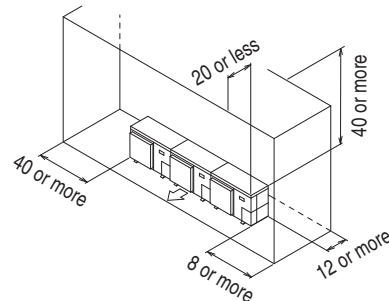


- When an obstruction is present also on the air inlet side and both sides



(2) When two or more outdoor units are installed side by side

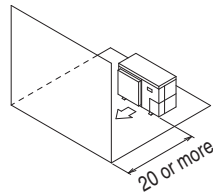
- When an obstruction is present also on the air inlet side and both sides



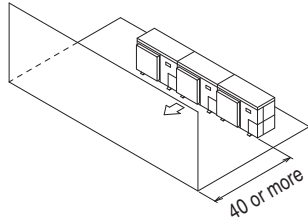
(B) When an obstruction is present on the air outlet side

• When the upward area is open

(1) When one outdoor unit is installed individually

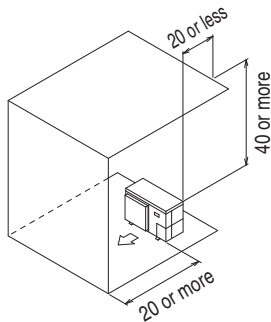


(2) When two or more outdoor units are installed side by side

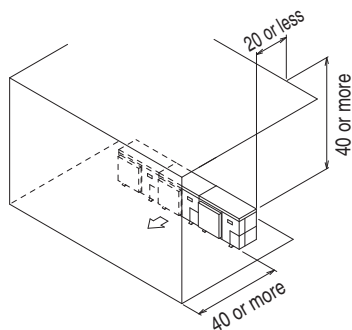


• When an obstruction is present also in the upward area

(1) When one outdoor unit is installed individually



(2) When two or more outdoor units are installed side by side



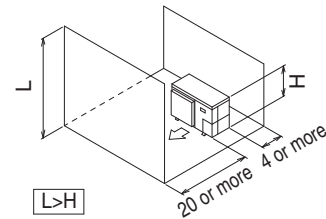
(C) When an obstruction is present on both the air inlet and air outlet sides

<Pattern 1>

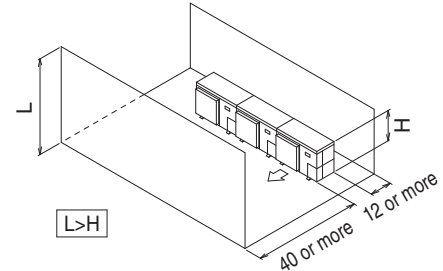
When an obstruction on the air outlet side is higher than the outdoor unit (There is no restriction in the height of obstruction on the air inlet side.)

• When the upward area is open

(1) When one outdoor unit is installed individually

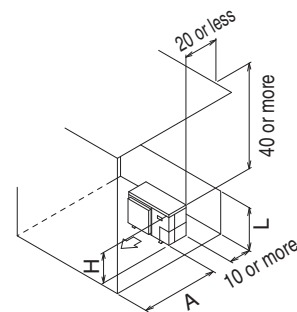


(2) When two or more outdoor units are installed side by side



• When an obstruction is present also in the upward area

(1) When one outdoor unit is installed individually



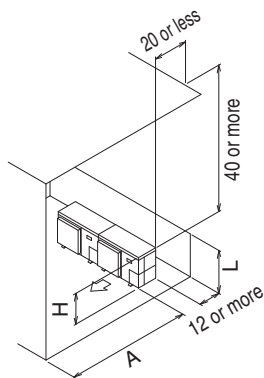
The dimensional relationship between H, L and A is as shown in the table below.

	L	A
$L \leq H$	$0 < L \leq 1/2H$	30
	$1/2H < L \leq H$	40
$H < L$	Install the frame to achieve " $L \leq H$ ".	

NOTE

- Close the area under the frame so that the outlet air does not bypass there.

(2) When only two outdoor units are installed side by side



The dimensional relationship between H, L and A is as shown in the table below.

	L	A
$L \leq H$	$0 < L \leq 1/2H$	40
	$1/2H < L \leq H$	50
$H < L$	Install the frame to achieve " $L \leq H$ ".	

NOTE

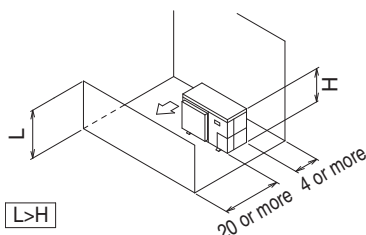
1. Close the area under the frame so that the outlet air does not bypass there.
2. Only two outdoor units can be installed side by side.

<Pattern 2>

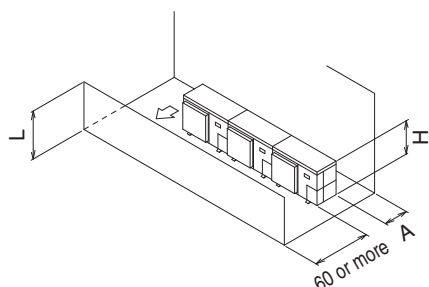
When an obstruction on the air outlet side is lower than the outdoor unit (There is no restriction in the height of obstruction on the air inlet side.)

• When the upward area is open

(1) When one outdoor unit is installed individually



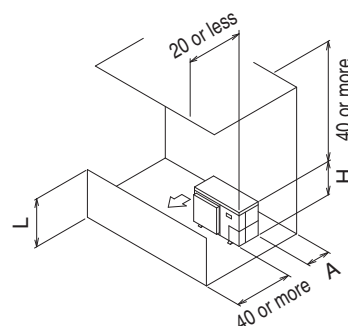
(2) When two or more outdoor units are installed side by side



The dimensional relationship between H, L and A is as shown in the table below.

L	A
$0 < L \leq 1/2H$	10
$1/2H < L \leq H$	12

• When an obstruction is present also in the upward area
(1) When one outdoor unit is installed individually



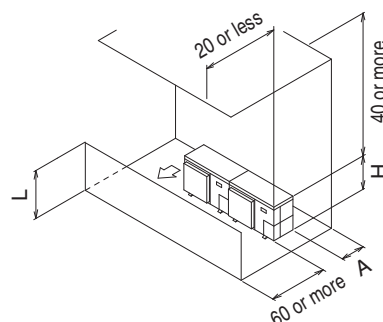
The dimensional relationship between H, L and A is as shown in the table below.

	L	A
$L \leq H$	$0 < L \leq 1/2H$	4
	$1/2H < L \leq H$	8
$H < L$	Install the frame to achieve " $L \leq H$ ".	

NOTE

- Close the area under the frame so that the outlet air does not bypass there.

(2) When only two outdoor units are installed side by side



The dimensional relationship between H, L and A is as shown in the table below.

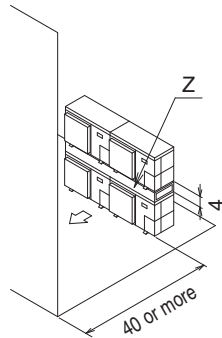
	L	A
$L \leq H$	$0 < L \leq 1/2H$	10
	$1/2H < L \leq H$	12
$H < L$	Install the frame to achieve " $L \leq H$ ".	

NOTE

1. Close the area under the frame so that the outlet air does not bypass there.
2. Only two outdoor units can be installed side by side.

(D) When outdoor units are stacked

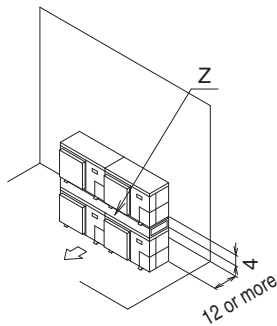
(1) When an obstruction is present on the air outlet side



NOTE

1. Only two outdoor units can be stacked.
2. About 4 in. is required as the drain piping size for the upper outdoor unit.
3. Close the area Z (gap between the upper outdoor unit and the lower outdoor unit) so that the outlet air does not bypass there.

(2) When an obstruction is present on the air inlet side

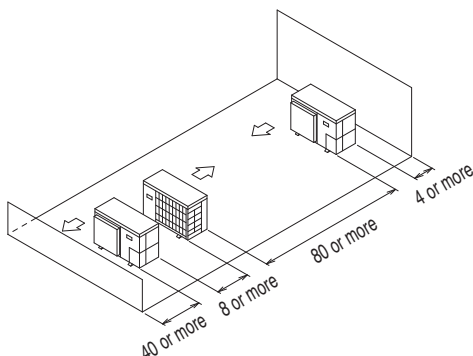


NOTE

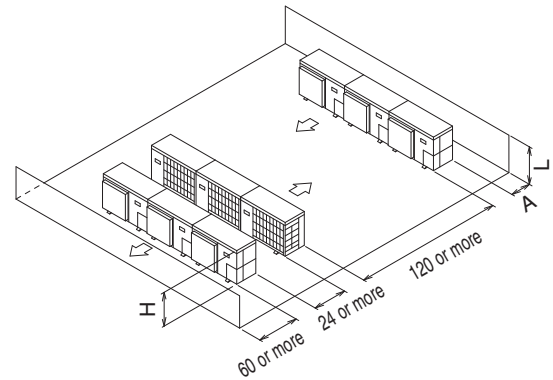
1. Only two outdoor units can be stacked.
2. About 4 in. is required as the drain piping size for the upper outdoor unit.
3. Close the area Z (gap between the upper outdoor unit and the lower outdoor unit) so that the outlet air does not bypass there.

(E) When outdoor units are installed in rows (on the rooftop, etc.)

(1) When one outdoor unit is installed in each row



(2) When two or more outdoor units are installed side by side

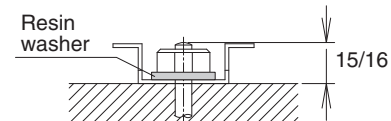


The dimensional relationship between H, L and A is as shown in the table below.

	L	A
$L \leq H$	$0 < L \leq 1/2H$	10
	$1/2H < L \leq H$	12
$H < L$	Installation is not allowed.	

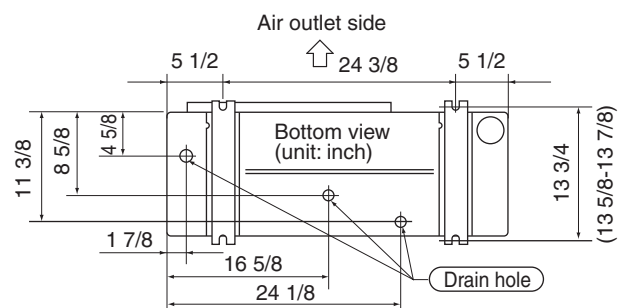
5. CAUTIONS ON INSTALLATION

- Before installation, confirm the strength and levelness of the foundation so that vibrations and noise are not generated.
- Fix the outdoor unit securely on a rigid base with foundation bolts as shown in the foundation drawing below. (Prepare 4 sets of commercially available M12-type or equivalent foundation bolts, nuts and washers.)
- Use resin washers to prevent the paint from being scratched off and rusting.
- The foundation bolts should be protruded by 15/16 in. (Refer to figure)



《Drain treatment》

- In a location where drain from the outdoor unit may cause troubles (for example, where drainage may splash on general passersby), perform the drain piping work using the drain plug (optional).
- For drain treatment, space of at least 4 in. is required under the bottom frame of the outdoor unit.
- In the drain piping work, make sure that drainage is discharged securely. (When routing the piping downward, check for water leakage.)



6. REFRIGERANT PIPING WORK

⚠ CAUTION

<To piping technician>

- **Make sure to open the stop valves after finishing the piping work. (Refer to the table shown in “6-7 Additional refrigerant charge”.)**

(Operating the air conditioner with the stop valve shut may damage the compressor.)

- Use R410A to add refrigerant. (The R410A refrigerant cylinder has a pink stripe painted around it.) All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.

• BRAZING REFRIGERANT PIPING

Do not use flux when brazing copper-to-copper refrigerant piping.

(Particularly for the HFC refrigerant piping) Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.

(Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. Flux containing fluorine will damage refrigeration oil.)

⚠ NOTE

- Maximum piping length between the outdoor and indoor unit:

Indoor unit	FAQ FCQ FHQ	FTQ
Max. piping length	164 ft.	98 ft.

- Installation tools:

Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils such as SUNISO and moisture) from mixing into the system.

(The screw specifications differ for R410A and R407C.)

Vacuum pump (use a 2-stage vacuum pump with a non-return valve):

1. Make sure the pump oil does not flow oppositely into the system while the pump is not working.
2. Use a vacuum pump which can evacuate to -14.6 psi.

6-1 Selection of piping material

1. Foreign materials inside pipes (including oils for fabrication) must be 0.14gr/10ft. or less.
2. Use the following material specification for refrigerant piping:
 - Construction material: Phosphoric acid deoxidized seamless copper for refrigerant.
 - Size: liquid pipe: $\phi 3/8"$
gas pipe: $\phi 5/8"$

6-2 Protection of piping

- Protect the piping to prevent moisture and dusts from coming into the piping.
- Especially, pay attention when passing the piping through a hole or connecting the end of piping to the outdoor.

Location	Working period	Protection method
Outdoor	1 month or more	Pinch pipes
	Less than 1 month	Pinch or tape pipes
Indoor	Regardless of period	

6-3 Piping connection

- For handling of stop valves, refer to “Stop valve operation method” in “6-7 Additional refrigerant charge”.
- Only use the flare nuts attached to the stop valves. Using different flare nuts may cause the refrigerant to leak.
- Be sure to perform a nitrogen blow when brazing.

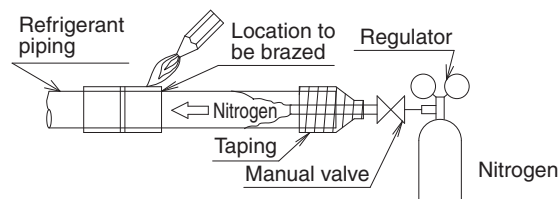
(Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film inside the pipes, adversely affecting valves and compressor in the refrigerating system and preventing normal operation.)

⚠ DANGER

- Use of oxygen could cause an explosion resulting in severe injury or death. Only use nitrogen gas.
- Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.

⚠ NOTE

- When brazing with blowing nitrogen, set the nitrogen pressure to 2.9 psi or less by using a pressure reducing valve.



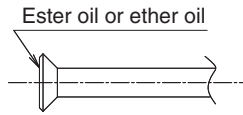
⚠ CAUTION

- Do not use anti-oxidants when brazing. Residue can clog pipes and break the unit.
- Ⓢ Do not let any refrigerant other than the specified refrigerant enter the refrigerant system.
- Ⓢ Do not let any gas such as air enter the refrigerant system.

⚠ Precautions when connecting the piping

- See the following table for flare dimensions.
- When connecting the flare nuts, apply refrigeration oil to the inside of the flares and turn them three or four times at first. (Use ester oil or ether oil.)
- See the following table for tightening torque. (Applying too much torque may cause the flares to crack.)
- After connecting all the piping perform a gas leak check by using nitrogen.

Pipe size	Tightening torque (ft-lbf)	Flare dimension A (in.)	Flare shape (in.)
$\phi 3/8"$	24.1 - 29.4	0.504 - 0.520	
$\phi 5/8"$	45.6 - 55.6	0.760 - 0.776	



- If you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below. After the work is finished, make sure to check that there is no gas leak.
- When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut the angle shown below.

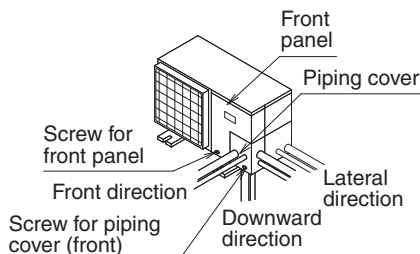
Pipe size	Tightening angle (Guideline)	Recommended arm length of tool (in.)
$\phi 3/8"$	60°~90°	Approx. 7 7/8
$\phi 5/8"$	30°~60°	Approx. 11 13/16

Disposal requirements

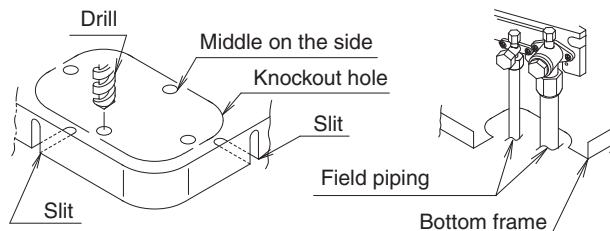
Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts should be comply the relevant local and national regulations.

6-4 Refrigerant piping work procedure

© The field piping can be connected in three directions.



© When connecting the piping downward, remove the knockout hole by making four holes in the middle on the each side of the knockout hole with a drill.



Then cut out the corner of the bottom frame along the slits (in two positions) by using a hacksaw.

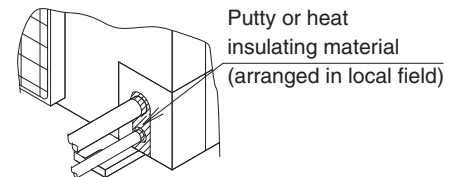
© After removing the parts, it is recommended to apply repair paint on the edges, to prevent rusting.

Cautions on connecting the connection piping

- When it is expected that water condensed in the stop valve will reach the indoor unit through the gap between the heat insulating material and the piping (for example, when the outdoor unit is installed in a higher position than the indoor unit), take proper action such as caulking the connection area.

[Measures to prevent invasion of small creatures and litter]

- Block all gaps in the piping penetration areas with putty or heat insulating material (arranged in the local field) as shown in the figure below.
(If small creatures such as insects or litter enter the outdoor unit, a short-circuit may be caused inside the control box.)



6-5 Heat insulation of piping

- Make sure to insulate the field piping (on both the liquid line and gas line) and refrigerant branching kit.
(If they are not insulated, water leakage may be caused.)

(The maximum temperature of the piping on the gas line is about 248 °F during heating operation. Use an insulation sufficiently resistant to this temperature.)

- Reinforce the refrigerant piping according to the installation environment. If it is not reinforced, condensate may form on the surface of the insulation.

⚠ WARNING

- Make sure to insulate the field piping up to the piping connection area inside the unit. If the piping is exposed, dew condensation and burn by contact may be caused.

6-6 Airtight test and vacuum drying

The unit has been checked for leaks by the manufacturer. Confirm that the valves are firmly closed before airtight test or vacuum drying.

To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A.

Perform the following inspections securely after the piping work.

- **Airtight test** - Make sure to use nitrogen gas. (For the service port position, refer to the figure in "Stop valve operation method".)

[Procedure] Pressurize the air conditioner from the liquid pipe and gas pipe up to 450 psi (Make sure not to exceed 450 psi). When the pressure does not drop for 24 hours, the piping work shall be accepted.

If the pressure drops, check for leakage positions. (Confirm that there is no leakage, then release nitrogen.)

- **Vacuum drying** - Use a vacuum pump which can evacuate up to -14.6 psi or less.
[Procedure] Operate the vacuum pump for evacuation for 2 hours or more using both liquid pipe and gas pipe until the vacuum pressure reaches -14.6 psi or less. Leave the air conditioner at -14.6 psi or less for 1 hour or more, and confirm that the vacuum pressure indicated by the vacuum gage does not increase.
(If the vacuum pressure increases, the system may contain moisture or have leakage.)

If there is a possibility of moisture remaining in the piping (for example, when there is a possibility of dew condensation inside the piping because the piping work was performed in the rainy season or over a long period of time, or when rainwater may have entered the piping during the work) Perform evacuation described above for 2 hours (vacuum drying), pressurize the air conditioner up to 7 psi (vacuum break) with nitrogen gas, then evacuate the air conditioner using the vacuum pump for 1 hour to achieve -14.6 psi or less (vacuum drying).
(If the vacuum pressure does not reach -14.6 psi or less even after evacuation for 2 hours or more, repeat vacuum break and vacuum drying.) Leave the air conditioner in the vacuum status for 1 hour or more, and confirm that the vacuum pressure indicated by the vacuum gauge does not increase.

6-7 Additional refrigerant charge

!

WARNING

- To avoid injury always use protective gloves and eye protection when charging refrigerant.
- To avoid injury do not charge with unsuitable substances. Use only the appropriate refrigerant.

!

NOTE

- Refrigerant cannot be charged until field wiring has been completed.
Refrigerant may only be charged after performing the air-tight test and the vacuum drying (see above).
When charging refrigerant into the system, take care that its maximum allowable charge is never exceeded, in view of the danger of liquid hammer.
Refrigerant containers shall be opened slowly.
To avoid compressor breakdown, do not charge the refrigerant more than the specified amount to raise the condensing pressure.

- This outdoor unit is factory charged with refrigerant.
- Charge the additional refrigerant calculated by the formula below.

Additional charging amount	=	Liquid piping length × 0.036	+	Additional charging depended on type of indoor unit
(lb.)		(ft.)×0.036		A (lb.)

Indoor unit	FAQ FCQ FHQ	FTQ
Additional charging A (lb.)	0	1.54

Record the additional amount to the label stuck on the back of front panel.

- Charge the refrigerant to the liquid pipe in its liquid state. Since R410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.
- Before filling, check whether the tank has a siphon attached or not.

How to fill a tank with a siphon attached.

Fill with the tank upright.

(

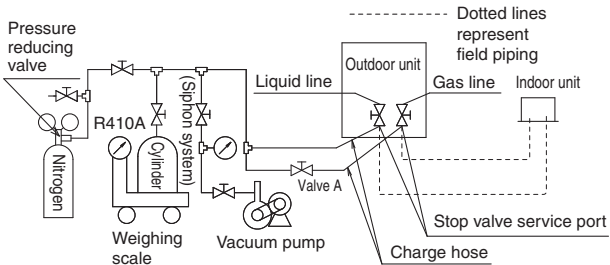
There is a siphon tube inside, so there is no need to turn the tank upside-down.

)

Other ways of filling the tank

Fill with the tank upside-down.

- After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port.
Taking into account following instructions:
1. Check that gas and liquid stop valves are closed.
- 2. Charge the specified amount of refrigerant.
- If the outdoor unit is not in operation and the total amount cannot be charged, follow the procedures for additional refrigerant charge shown below.
- Make sure to use installation tools you exclusively use on R410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.
- Procedures for charging additional refrigerant.

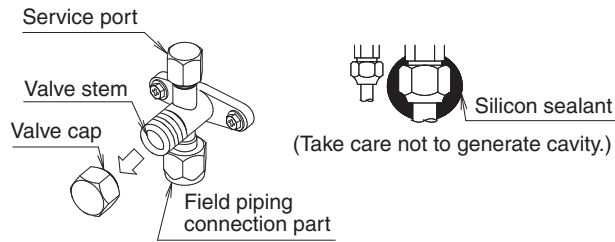


- See the “Cautions on service” label on the back of the front panel for the settings for operation after replenishing refrigerant.
1. Open the gas line stop valve (leaving the liquid line stop valve, valve A in the diagram above, close) and perform the operation to add the refrigerant.
 2. Once the appropriate amount of refrigerant is in, press the confirmation button (BS3) on the outdoor unit PC board (A2P), and stop operation.
 3. Open the stop valves quickly (both liquid and gas line valves).
(This must be done quickly to avoid the possibility that the pipe might burst.)

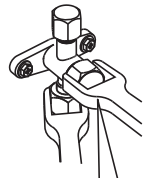
Stop valve operation

Cautions on handling the stop valve

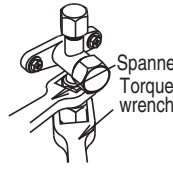
- The figure below shows the name of each part required in handling the stop valve. At the time of shipment, the stop valve is closed.



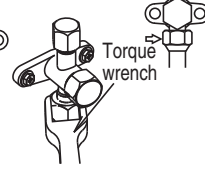
- If only a torque wrench is used to loosen or tighten the flare nut, the side plate may be distorted. Make sure to fix the stop valve with a spanner, then loosen or tighten the flare nut with a torque wrench.



Spanner prohibition to valve cap and body part



Stop valve of two hangs structure

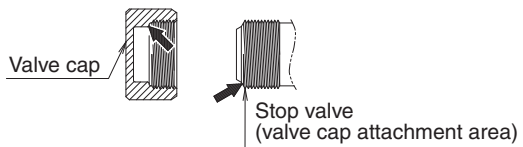


Stop valve of one hang structure

- When it is expected that the operating pressure will be low (for example, when cooling will be performed while the outside air temperature is low), seal sufficiently the flare nut in the stop valve on the gas line with silicon sealant to prevent freezing.

Cautions on handling the valve cap

- The valve is sealed in the arrow area. Take care not to damage the arrow area.



- After handling the valve, make sure to tighten the valve cap securely.

Liquid line	Gas line
10.0~12.2 ft-lbf	16.6~20.3 ft-lbf

Cautions on handling the service port

- Use charge hose equipped with push in the work.
- After the work, make sure to tighten the valve cap securely. Tightening torque.....8.5~10.3 ft-lbf

[Stop valve operation method]

Prepare hexagon wrenches (whose size is 4 mm and 6 mm).

How to open the stop valve

- Insert a hexagon wrench into the valve stem, and turn the valve stem counterclockwise.
- When the valve stem cannot be turned any more, stop turning. Now, the valve is open.

How to close the stop valve

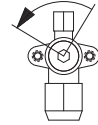
- Insert a hexagon wrench into the valve stem, and turn the valve stem clockwise.
- When the valve stem cannot be turned any more, stop turning. Now, the valve is closed.

Opening direction



<Liquid line>

Opening direction



<Gas line>

7. ELECTRIC WIRING WORK

⚠ DANGER

- Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.

⚠ WARNING

- Disconnect all power to unit to avoid possible electric shock during installation.
- Use only specified wire and connect wires to terminals tightly. Be careful that wires do not place external stress on terminals. Keep wires in neat order so as to not to obstruct other equipment. Incomplete connections could result in overheating, and in worse cases, electric shock or fire. For the details, refer to "7-3 Power supply wiring connection procedure".

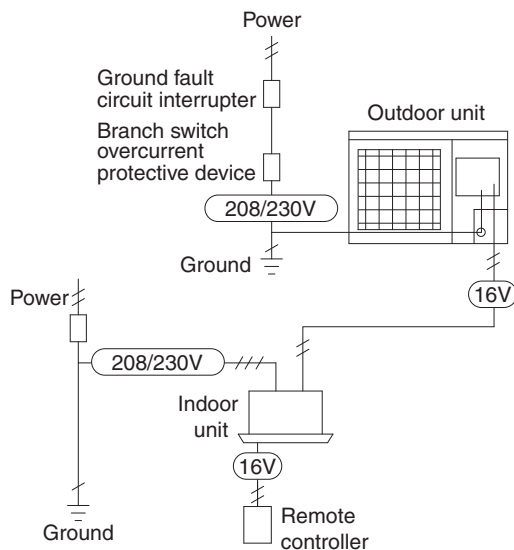
⚠ CAUTION

<To electrician>

- Do not operate the air conditioner until the refrigerant piping work is completed. (Operating the air conditioner before the refrigerant piping work is completed may damage the compressor.)
- Install a ground fault circuit interrupter. (The inverter is provided in the air conditioner. In order to prevent malfunction of the ground fault circuit interrupter itself, use a breaker resistant to higher harmonics.)
- Electricians having sufficient knowledge should perform the electric wiring work. All wiring must comply with local electrical codes and National Electrical Code (NEC).

- Perform the electric wiring work in accordance with the “electric wiring diagram label”.
Make sure to turn OFF the branch switch and overcurrent protective device before starting the work.
- Perform grounding to the indoor unit and outdoor unit.
- Use only copper wires.
- Make sure to turn the power off before starting the electric wiring work.
Do not turn ON any switch until the work is completed.
- The outdoor unit has an inverter which generates noise and charges the outer casing with the leakage current. The outdoor unit should be grounded so that the effect of the generated noise on other equipment can be reduced, and that the outer casing can be discharged.
- As this unit is equipped with an inverter, installing a phase advancing capacitor will not only reduce the power factor improvement factor, but may also cause the capacitor to overheat due to high-frequency waves. Therefore, never install a phase advancing capacitor.
- Never push excessive electric wires into the units.
- Protect electric wires with conduit tubes or vinyl tubes so that they will not be damaged by edges of knockout holes.
- Fix electric wires with clamps as accessories so that they will not come to contact with pipes and stop valves.
(Refer to “7-3 Power supply wiring connection procedure”).

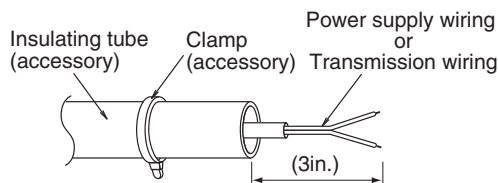
7-1 Connection example of whole system wiring



7-2 Routing power supply wiring and transmission wiring

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

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



⚠️ Precautions when knocking out knockout holes

- To punch the knockout hole, hit it with a hammer.
- After removing the knockout hole, it is recommended that the edges should be painted to prevent rusting.

⚠️ CAUTION

- Use conduit for both the power supply wiring and transmission wiring.
- Outside the unit, make sure to keep the wirings 5 inches away.
Otherwise, the outdoor unit may be affected by electrical noise (external noise), and malfunction or fail.
- Be sure to connect the power supply wiring to the terminal block and secure it as described in “7-3 Power supply wiring connection procedure”.
- Fix the wiring between the units in accordance with “7-4 Transmission wiring connection procedure”.
- Secure the wirings with the clamps (accessory) so that do not touch the piping.
- Make sure the wirings will not be pinched by the front panel, and close the panel firmly.
- Route the conduit along the unit by using an elbow socket and so on to prevent it from being stepped on.

7-3 Power supply wiring connection procedure

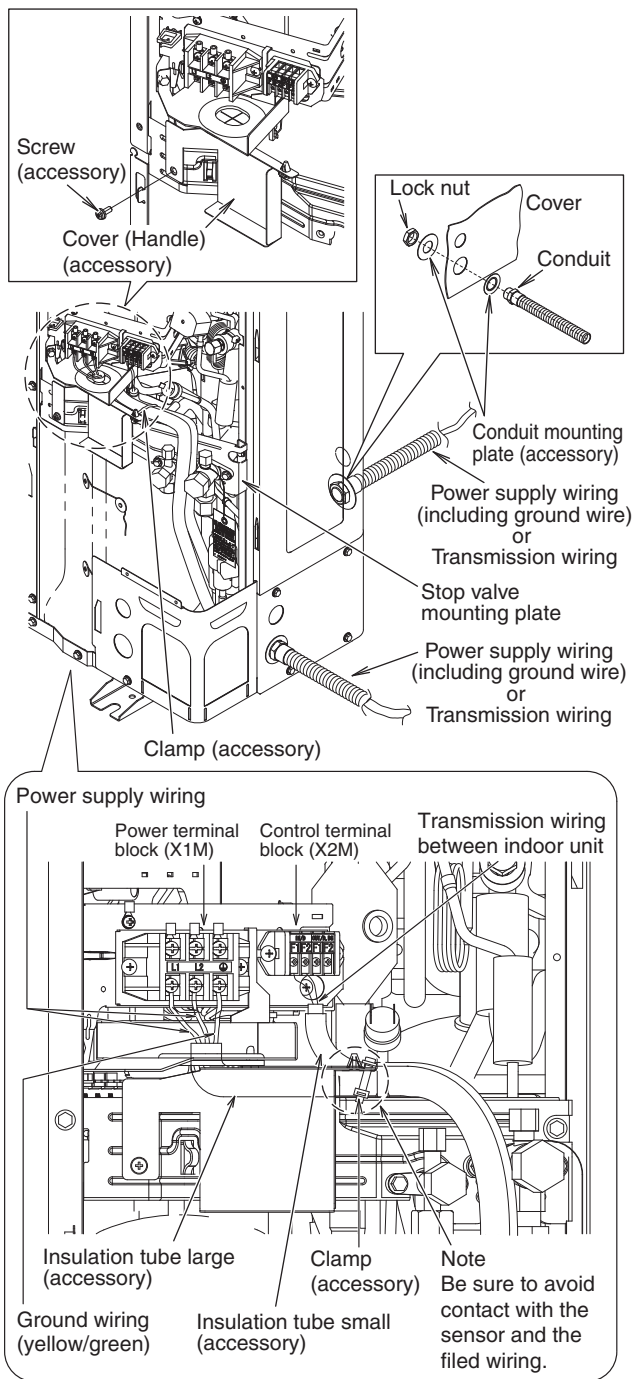
⚠️ WARNING

- Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.

Install a ground fault circuit interrupter.

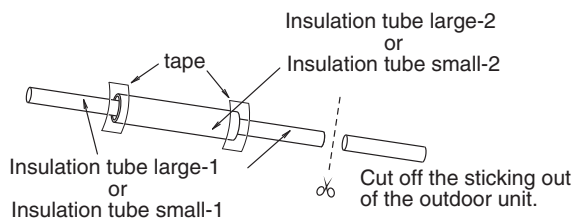
- It is obliged to install a ground fault circuit interrupter to prevent electric shock and fire accident.

Model	Phase and frequency	Voltage	Max. Overcurrent Protective Device	Min. Circuit Amps.
RZQ18PVJU RZR18PVJU	~ 60Hz	208/230V	20A	16.5A
RZQ24PVJU RZR24PVJU				
RZQ30PVJU RZR30PVJU				



How to Insulation tube.

- Use the insulation tube large to cover the power supply wiring.
Use the insulation tube small to cover the transmission wiring.
- Joint the insulation tube with the tape and cut off the tube sticking out of the outdoor unit.

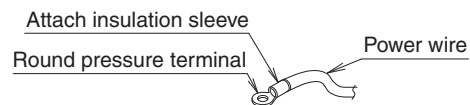


⚠ CAUTION

- After finishing the electric wiring work, confirm that all the wirings are connected securely.

《Precautions when laying power wiring》

- Two electric wires of different thickness cannot be connected to the power terminal block.
(Slack in the electric wires may generate abnormal heat.)
- Use round pressure terminals with insulating sleeve for connection to the power terminal block.
If such terminals are not available for unavoidable reasons, connect an electric wire of the same thickness to each side as shown in the figure.



Connect same-thickness wiring to both sides.



It is forbidden to connect two to one side.



It is forbidden to connect wiring of different thicknesses.



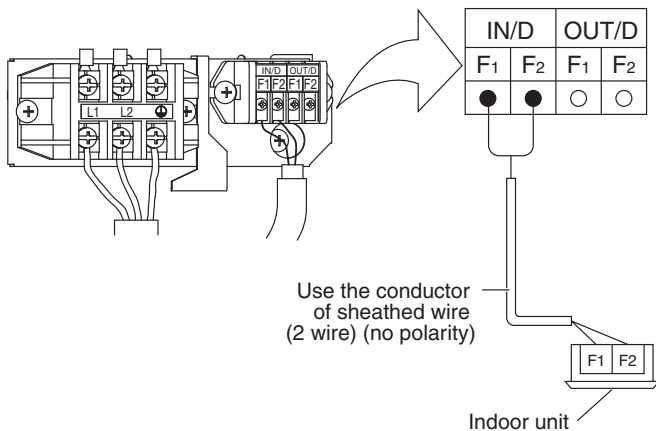
Make sure to observe the following items. If they are not observed, abnormal heat may be generated by slack in electric wires, etc.

- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws.
A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- See the table below for tightening torque for the terminal screws.

Tightening torque (ft-lbf)		
M5	(Power supply and ground terminal block)	1.76 ~ 2.15
M4	(Shielded ground)	0.87 ~ 1.06
M3.5	(Transmission wiring terminal block)	0.58 ~ 0.72

7-4 Transmission wiring connection procedure

- If an excessive force is applied while connecting a cable to the terminal block on the PC board, the PC board may be damaged.



CAUTION

- For low-noise operation, it is necessary to install the optional "External control adaptor for outdoor unit". For details, see the installation manual attached to the adaptor.

Caution on the wiring length between units

Make sure to observe the restrictions below. If they are not observed, transmission error may occur.

Maximum wiring length: 3280 ft.

Cautions on the wiring between units

- Never connect 208/230V to the terminal block for the transmission wiring. Doing so will break the entire system.
- The transmission wiring from the indoor unit must be connected to the F1/F2 (TO IN/D UNIT) terminals on the PC board in the outdoor unit.
- * Make sure to use sheathed two-core cables of AWG18-16 in the wiring shown above.
- * All cables used in the wiring between the units should be procured on the site.

8. CHECKS AFTER COMPLETION OF WORK

After completing the work, make sure to confirm the following items:

1. Connection of drain piping and removal of transport fittings:
Refer to "5. CAUTIONS ON INSTALLATION".
2. Connection of power supply wiring and tightening of screws:
Refer to "7-3 Power supply wiring connection procedure".
3. Connection of transmission wiring and tightening of screws:
Refer to "7-4 Transmission wiring connection procedure".
4. Freezing connection of refrigerant piping
Refer to "6. REFRIGERANT PIPING WORK".

5. Piping size and heat insulation:

Refer to "6-1 Selection of piping material", "6-5 Heat insulation of piping".

6. Check of stop valve:

Confirm that the stop valve is open on both the liquid line and gas line.

7. Record of amount of additional refrigerant:

Record the amount on the label stuck on the back of the front panel.

8. Measurement of insulation in main power circuit:

- Use the megatester for 500 V.
- Do not use any megatester for low voltage electric circuits except 230 V.
(Wiring between the outdoor unit and the indoor unit)

CAUTION

<To piping technician>

- Make sure to open the stop valve after finishing the piping work.
(Operating the air conditioner with the stop valve shut may damage the compressor.)

9. TEST RUN PROCEDURE

A crankcase heater is mounted for smooth startup. Make sure to turn on the power 6 hours before starting operation for supplying the power to the crankcase heater.

WARNING

- Make sure to close the front panel before leaving the outdoor unit in the power ON status.
- To avoid injury, always make sure that the overcurrent protective device on the power supply panel of the installation is switched off before doing any work.

Cautions before turning on the power

- Put the insulating cover securely onto the control box.
- After turning on the power, check the settings and LED indicators on the PC board (A1P) in the outdoor unit through the opening of the insulating cover.

9-1 Power on and check operation

- Make sure to perform the check operation after installation. (If the air conditioner is operated using the indoor remote controller without performing the check operation, the malfunction code "U3" is displayed in the indoor remote controller, and normal operation is disabled.)

- In the check operation, the status of the outdoor unit is checked, and incorrect wiring is checked for.

(1) • Close the front panel of the outdoor unit. • <u>Turn ON the power</u> to the outdoor unit and indoor unit.	 Caution Make sure to turn on the power 6 hours before starting operation for supplying the power to the crankcase heater.																																			
(2) • Open the front panel of the outdoor unit. • Check the LED on the PC board (A1P and A2P) in the outdoor unit to see if the data transmission is performed normally.	The power is supplied to the outdoor unit. Take due care during the work to prevent electric shock.																																			
<table><tr><td></td><td>A1P</td><td colspan="7">A2P</td></tr><tr><td rowspan="2">LED display (Default status before delivery)</td><td>SERVICE MONITOR</td><td>MODE</td><td>TEST/HWL</td><td>IND</td><td>MASTER</td><td>SLAVE</td><td>L.N.O.P.</td><td>DEMAND</td></tr><tr><td>HAP</td><td>H1P</td><td>H2P</td><td>H3P</td><td>H4P</td><td>H5P</td><td>H6P</td><td>H7P</td></tr><tr><td>Outdoor unit installed</td><td>●</td><td>●</td><td>●</td><td>○</td><td>●</td><td>●</td><td>●</td><td>●</td></tr></table> LED display: ● OFF ○ ON ● Blinking		A1P	A2P							LED display (Default status before delivery)	SERVICE MONITOR	MODE	TEST/HWL	IND	MASTER	SLAVE	L.N.O.P.	DEMAND	HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P	Outdoor unit installed	●	●	●	○	●	●	●	●	
	A1P	A2P																																		
LED display (Default status before delivery)	SERVICE MONITOR	MODE	TEST/HWL	IND	MASTER	SLAVE	L.N.O.P.	DEMAND																												
	HAP	H1P	H2P	H3P	H4P	H5P	H6P	H7P																												
Outdoor unit installed	●	●	●	○	●	●	●	●																												
(3) • When performing the low-noise operation (L.N.O.P.) or demand (DEMAND) operation upon request from the customer, perform the setting using the pushbutton switches (BS1 to BS5) on the PC board (A2P) in the outdoor unit. • Press each pushbutton switch from the opening of the insulation cover. (Do not remove the insulation cover.)	• The power is supplied to the outdoor unit. Take due care during the work to prevent electric shock. • Before using the pushbutton switches (BS1 to BS5) for setting, confirm that the microcomputer (SERVICE) monitor is lit. • For the setting method, refer to the [Cautions on service] label attached on the back of the front panel of the outdoor unit. (Make sure to write the contents of setting on the [Cautions on service] label.)																																			
(4) Confirm that the stop valves are open on both the liquid and gas lines. If they are closed, open them.	 Caution Do not leave any stop valve closed. Otherwise the compressor will fail.																																			
(5) Press and hold the test run button (BS4) for 5 seconds or more to start the check operation. For the details, refer to the Check operation procedure on the [Cautions on service] label.	• When leaving the outdoor unit during the check operation for unavoidable reasons, ask another installation worker to watch the outdoor unit, or close the front panel. • The system operates the check operation for about 15 minutes (30 minutes maximum), then stops automatically. The system can start normal operation about 5 minutes <u>after the check operation</u> if the remote controller does not display any malfunction code. • During the check operation, the status under execution is indicated on the remote controller.																																			
(6) After the check operation, make sure to close the front panel of the outdoor unit.																																				

<Cautions on check operation>

- If the air conditioner is started within about 12 minutes after the power of the indoor/outdoor unit is turned on, the H2P indicator lights and the compressor does not run. Confirm that the LED status is as shown in the table in (2) in “9-1 Power on and check operation” before starting the air conditioner.
- The air conditioner may require about 10 minutes maximum until it can start the compressor after start of operation. This period of time is required to homogenize the refrigerant status, and does not indicate any failure.
- The check operation does not provide any means of checking the indoor unit individually. For that purpose, perform the normal operation using the remote controller after finishing the check operation.
- The check operation is not available in any other mode such as the recovery mode.
- Before running a check on the unit, changing the indoor remote controller settings might cause the error code “UF” to be displayed and prevent a proper check to be run.

9-2 Checks in normal operation

- After finishing the check operation, operate the air conditioner normally.
(Heating is not available if the outside air temperature is 75 °F or more. Refer to the operation manual supplied together with the unit.) (Heating is only available for RZQ-P models.)
- Confirm that the indoor and outdoor units are operating normally.
(If a knocking sound is heard in the liquid compression of the compressor, stop the air conditioner immediately and energize the crankcase heater for a sufficient period of time, then start the operation again.)
- Check to see if cold (or hot) air is coming out of the indoor unit.
- Press the fan direction button and fan speed control button on the remote controller to see if the fan is operating normally.

<Cautions for normal operation check>

- Once stopped, the compressor will not start for about 5 minutes even if the “ON/OFF” button on the remote controller is pressed.
- When the system operation is stopped by the remote control, the outdoor unit may continue to operate for a further 3 minutes.
- If the system has not undergone the check operation by the test run button since it was first installed, a malfunction code “U3” is displayed. In this case, perform the check operation by referring to “9-1 Power on and check operation”.

When a malfunction code is displayed in the remote controller

(Check a malfunction code in the remote controller connected to the indoor unit.)

Malfunction code	Cause	Solution
E3	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas and liquid lines.
	The refrigerant is overcharged.	Calculate again the required amount of refrigerant to be charged based on the piping length, recover the refrigerant using the refrigerant recovery device, then achieve proper amount of refrigerant.
E4 F3	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas side and liquid side.
	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on all indoor unit remote controllers to "cooling."
	The refrigerant is insufficient.	- Check whether additional refrigerant charge has been finished correctly. - Calculate again the required amount of refrigerant to be charged based on the piping length, then charge additionally proper amount of refrigerant.
F6	The refrigerant is overcharged.	Calculate again the required amount of refrigerant to be charged based on the piping length, recover the refrigerant using the refrigerant recovery device, then achieve proper amount of refrigerant.
U3	The check operation has not performed.	Perform the check operation.
U4	The power is not supplied to the outdoor unit.	Connect correctly the power supply wiring of the outdoor unit.
UA	Improper type of indoor unit is connected.	Check the type of indoor unit currently connected. If it is not proper, replace it with proper one.
UF	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas and liquid lines.
	The piping and wiring of the indoor unit are not connected correctly to the outdoor unit.	Confirm that the piping and wiring of the indoor unit are connected correctly to the outdoor unit.
	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on indoor unit remote controller to "cooling."
UH	The transmission wiring is not connected correctly.	Connect correctly the transmission wiring to the F1 and F2 (TO IN/D UNIT) terminals on the PC board (A1P) in the outdoor unit.

When nothing is displayed in the remote controller

- There might be a problem with the connection or transmission between the indoor unit and the remote controller. Check connections, and check for wire breakage.

⚠ CAUTION

<To piping technician>

<To electrician>

- After finishing the test run and before using the unit by customer, confirm that the front panel and screws are attached securely to the unit.**

10. CAUTION FOR REFRIGERANT LEAKS

⚠ DANGER

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

(Points to note in connection with refrigerant leaks)

Introduction

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

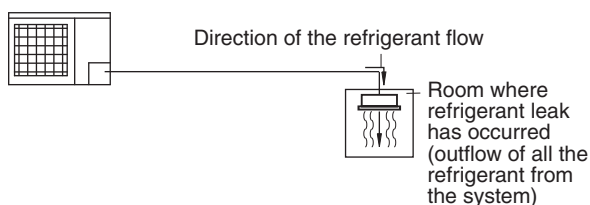
The Split System, like other air conditioning systems, uses R410A as refrigerant. R410A itself is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room which is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is lb./ft³ (the weight in lb. of the refrigerant gas in 1ft³ volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



Pay a special attention to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1 to 4 below and take whatever action is necessary to comply.

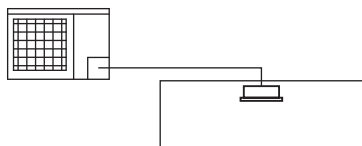
1. Calculate the amount of refrigerant (lb.) charged to each system separately.

amount of refrigerant in the unit (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping and type of indoor unit)	=	total amount of refrigerant (lb.) in the system
--	---	--	---	---

— ⚠ NOTE —

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Calculate a room volume (ft³)



3. Calculate the refrigerant concentration by using the results of the calculations in steps 1 and 2 above.

total amount of refrigerant in the system			maximum concentration level (lb./ft ³)
volume (ft ³) of the room in which there is an indoor unit installed	≤		

4. Deal with the situations where the result exceeds the maximum concentration level.
Where the installation of a facility results in a concentration in excess of the maximum concentration level then it will be necessary to revise the system.
Please consult your dealer.

DAIKIN AC (AMERICAS), INC.

1645 Wallace Drive, Suite 110
Carrollton, TX 75006

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





INSTALLATION MANUAL

SPLIT SYSTEM Air Conditioner

MODELS

Wall-mounted type

FAQ18PVJU

FAQ24PVJU

Read these instructions carefully before installation.
Keep this manual in a handy place for future reference.
This manual should be left with the equipment owner.

Lire soigneusement ces instructions avant l'installation.
Conserver ce manuel à portée de main pour référence
ultérieure.
Ce manuel doit être donné au propriétaire de l'équipement.

Lea cuidadosamente estas instrucciones antes de instalar.
Guarda este manual en un lugar a mano para leer en caso
de tener alguna duda.
Este manual debe permanecer con el propietario del
equipo.

English

Français

Español

CONTENTS

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1. SAFETY CONSIDERATIONS

Please read these “SAFETY CONSIDERATIONS” carefully before installing air conditioning equipment and be sure to install it correctly. After completing the installation, make sure that the unit operates properly during the start-up operation.

Please instruct the customer on how to operate the unit and keep it maintained.

Also, inform customers that they should store this installation manual along with the operation manual for future reference.

This air conditioner comes under the term “appliances not accessible to the general public”.

Meaning 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 situation that may result in equipment or property-damage-only accidents.



DANGER

- **Do not ground the unit to water pipes, telephone wires or lightning rods as incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.**
- **Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.**
- **Refrigerant gas is heavier than air and displaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **If the refrigerant gas leaks during installation, ventilate the area immediately.**
Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas could result in severe injury or death.
- **After completing the installation work, check that the refrigerant gas does not leak.**
Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas could result in severe injury or death.
- **Safely dispose of the packing materials.**
Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries. Tear apart and throw away plastic packaging bags so that children will not play with them. Children playing with plastic bags face the danger of death by suffocation.



WARNING

- **Ask your dealer or an authorized personnel to carry out installation work. Do not try to install the unit by yourself.**
Improper installation may result in water leakage, electric shocks or fire.
- **Perform installation work in accordance with this installation manual.**
Improper installation may result in water leakage, electric shocks or fire.
- **Be sure to use only the specified accessories and parts for installation work.**
Failure to use the specified parts may result in water leakage, electric shocks, fire or the unit falling.
- **Install the air conditioner on a foundation strong enough to withstand the weight of the unit.**
A foundation of insufficient strength may result in the equipment falling and causing injuries.
- **Carry out the specified installation work after taking account of strong winds, typhoons or earthquakes.**
Improper installation work may result in the equipment 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 an authorized personnel according to local laws and regulations and this installation manual.**
An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- **Make sure that all wiring is secured, the specified wires are used, and no external forces act on the terminal connections or wires.**
Improper connections or installation may result in fire.
- **When wiring the power supply and connecting the remote controller wiring and transmission wiring, position the wires so that the electric parts box lid can be securely fastened.**
Improper positioning of the electric parts box lid may result in electric shocks, fire or the terminals overheating.
- **Before touching electrical parts, turn off the unit.**
- **Do not touch the switch with wet fingers.**
Touching a switch with wet fingers can cause electric shock.
- **Be sure to install an earth leakage breaker.**
Failure to install an earth leakage breaker may result in electric shocks, or fire.
- **Do not install the air conditioner in the following locations:**
(a) where a mineral oil mist or an 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 result in a malfunction of the equipment.

(d) where flammable gases may leak, where there are carbon fiber or ignitable dust suspensions in the air, or where volatile liquids such as thinner or gasoline are handled.

Operating the unit in such conditions may result in fire.

- **Heat exchanger fins are sharp enough to cut.**

To avoid injury wear gloves to cover the fins when working around them.

- **Refrigerant pipes may be very hot or very cold during or immediately after operation.**

Touching them could result in burns or frostbite. To avoid injury give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.



CAUTION

- **While following the instructions in this installation manual, insulate piping in order to prevent condensation.**

Improper piping insulation may result in water leakage and property damage.

- **Be very careful about product transportation.**

Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.

- **Do not turn off the power immediately after stopping operation.**

Always wait at least five minutes before turning off the power. Otherwise, water leakage and trouble may occur.

- **Make sure to provide for adequate measures in order to prevent that the outdoor unit be used as a shelter by small animals.**

Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.



NOTE

- **Install the indoor and outdoor units, power supply wiring and connecting wires at least 3.5ft. away from televisions or radios in order to prevent image interference or noise.**

(Depending on the radio waves, a distance of 3.5ft. may not be sufficient enough to eliminate the noise.)

- **Remote controller (wireless kit) transmitting distance can result shorter than expected in rooms with electronic fluorescent lamps. (inverter or rapid start types)**

Install the indoor unit as far away from fluorescent lamps as possible.

- **Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.**

2. BEFORE INSTALLATION

- **When moving the unit while removing it from the packing case, be sure to lift it by the four hanger brackets. Avoid putting any pressure on other parts, especially, horizontal flaps, the refrigerant piping, drain piping, and other resin parts.**

- Be sure to remove a cushion (corrugated paper) located between the heat exchanger and the right air filter.

- 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.

- For the installation of an outdoor unit, refer to the installation manual attached to the outdoor unit.
- When using the wireless remote controller, refer to the installation manual attached to the wireless remote controller.
- 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 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.



WARNING

- Entrust installation to the place of purchase or an authorized serviceman. Improper installation could lead to leaks and, in worse cases, electric shock or fire.
- Use of unspecified parts could lead to the unit falling, leaks and, in worse cases, electric shock or fire.

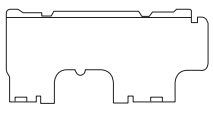
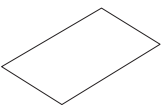
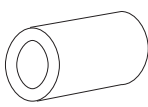


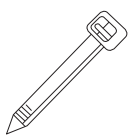
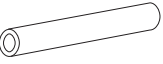
NOTE

- Be sure to read this manual before installing the indoor unit.

2-1 ACCESSORIES

Check the following accessories are included with your unit.

Name	(1) Installation panel	(2) Attachment screws for the installation panel	(3) Paper pattern for installation	(4) Insulating tape
Quantity	1 set	9 pcs.	1 pc.	1 pc.
Shape		 M4 × 25L		

Name	(5) Clamp	(6) Securing screws	(7) Insulating tube	(Other) • Operation manual • Installation manual
Quantity	1 large 4 small	2 pcs.	1 long 1 short	
Shape		 M4 × 12L		

2-2 OPTIONAL ACCESSORIES

Remote controller type	Model
Wired type	BRC1C71
Wireless type	BRC7E818

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

1. 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.	
Is the gas leak test finished?	It may result in insufficient cooling.	
Is the unit fully insulated?	Condensate water may drip.	
Does drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage correspond to that shown 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 unit safely grounded?	It may be dangerous at electric 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?	It may result in insufficient cooling.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	

2. Items to be checked at time of delivery

* Also review the "SAFETY CONSIDERATIONS"

Items to be checked	Check
Did you explain about operations while showing the operation manual to your customer?	
Did you hand the operation manual over to your customer?	

2-3 NOTE TO THE 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

(1) Select an installation site where the following conditions are fulfilled and that meets with your customer's approval.

- In the upper space (including the back of the ceiling) of the indoor unit where there is no possible dripping of water from the refrigerant pipe, drain pipe, water pipe, etc.
- Where the wall is strong enough to bear the indoor unit weight.
- Where sufficient clearance for installation and maintenance can be ensured.
(Refer to Fig. 1 and Fig. 2)
- Where optimum air distribution can be ensured.
- Where nothing blocks the air passage.
- Where condensate can be properly drained.

- Where the wall is not significantly tilted.
- Where piping between indoor and outdoor units is possible within the allowable limit.
(Refer to the installation manual of the outdoor unit.)
- Install the indoor and outdoor units, power supply wiring and connecting wires at least 3.5ft. away from televisions or radios in order to prevent image interference or noise.
(Depending on the radio waves, a distance of 3.5ft. may not be sufficient enough to eliminate the noise.)
- Where the cool (warm) air reaches all across the room.

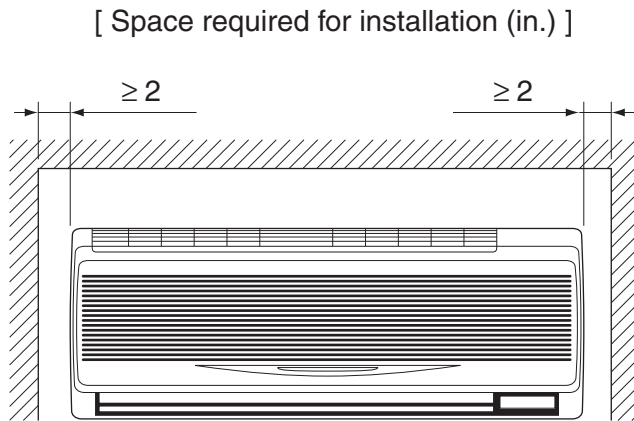


Fig. 1

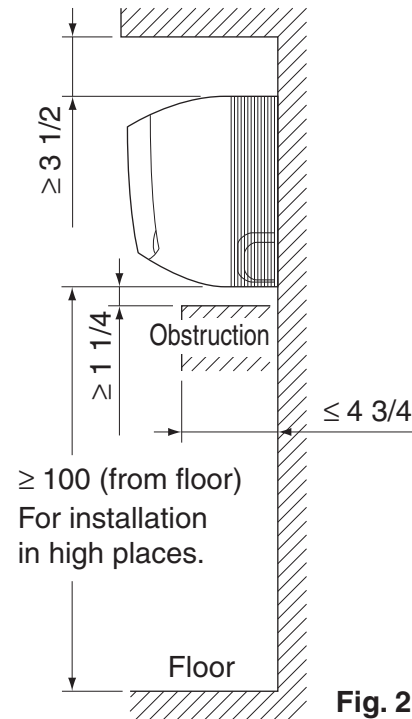


Fig. 2

- (2) Consider whether the place where the unit will be installed can support the full weight of the unit, and reinforce it with boards and beams, etc. if needed before proceeding with the installation. Also, reinforce the place to prevent vibration and noise before installing.
(The installation pitch can be found on the paper pattern for installation (3), so refer to it when considering the necessity for reinforcing the location.)
- (3) The indoor unit may not be directly installed on the wall. Use the attached installation panel (1) before installing the unit.



DANGER

- Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.



WARNING

- If the supporting structural members are not strong enough to take the unit's weight, the unit could fall out of place and cause serious injury.

4. INDOOR UNIT INSTALLATION

- Use only accessories and parts which are of the designated specification when installing.

— CAUTION —

- Install so that the unit does not tilt to either side or forward.
- Do not hold the unit by the horizontal flaps when lifting it. (This may damage the horizontal flaps.)

(1) Open the piping through-hole.

- The refrigerant pipe and drain pipe can be passed out in one of 5 directions: left, bottom-left, back-left, bottom-right, and back-right. **(Refer to Fig. 3)**
- Using the paper pattern for installation (3), choose where to pass the piping out and open a through-hole ($\phi 3 \frac{1}{8}$ ") in the wall.

Open the hole so that there is a downward slope for the drain piping. (See "6.DRAIN PIPING WORK")

(2) Remove the installation panel (1) from the unit and attach to the wall.

(The installation panel is temporarily attached to the unit with a screw. (In case of 12 type))

(Refer to Fig. 3)

- Check the location for the hole using the included paper pattern for installation (3).
 - Choose a location so that there is at least a $3 \frac{1}{2}$ " gap between the ceiling and the main unit.
- Temporarily attach the installation panel (1) at the temporary-securing position on the paper pattern for installation (3) and use a level to make sure the drain hose is either level or tilted slightly downward.
- Secure the installation panel (1) to the wall using either screws or bolts.
 - If using the attachment screws for the installation panel (2), attach using at least 4 screws on either side (for a total of 9 screws) of the recommended installation cleat position on the included paper pattern for installation (3).
 - If using bolts, attach using a M8 - M10 bolt or equivalent (for a total of 2 bolts) on either side.
 - If dealing with concrete, use commercially available foundation bolts (M8 - M10 or equivalent).

(3) If using the left, bottom-left, or bottom-right positions for the piping, cut out the through-hole for the piping in the front grill. (Refer to Fig. 4)

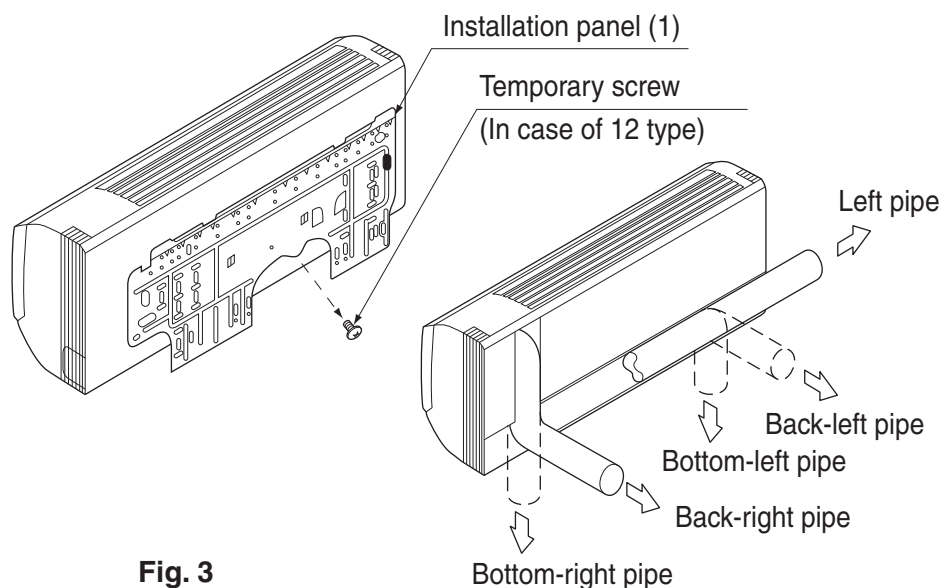


Fig. 3

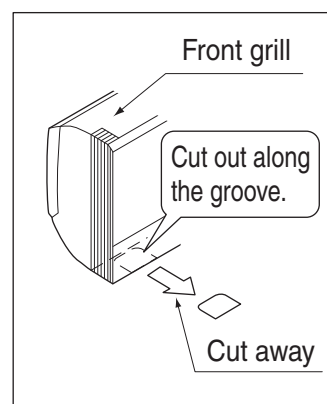


Fig. 4

(4) Remove the front panel and the service lid. (Refer to Fig. 5)

< How to remove the front panel and service lid >

- (1) Open the front panel to the point where it stops.
- (2) Push the axes on either side of the front panel towards the center of the main unit and remove. (You can also remove it by sliding the front panel either to the left or right and pulling it forward.)
- (3) Remove the screw from the service lid and pull the handle forward.

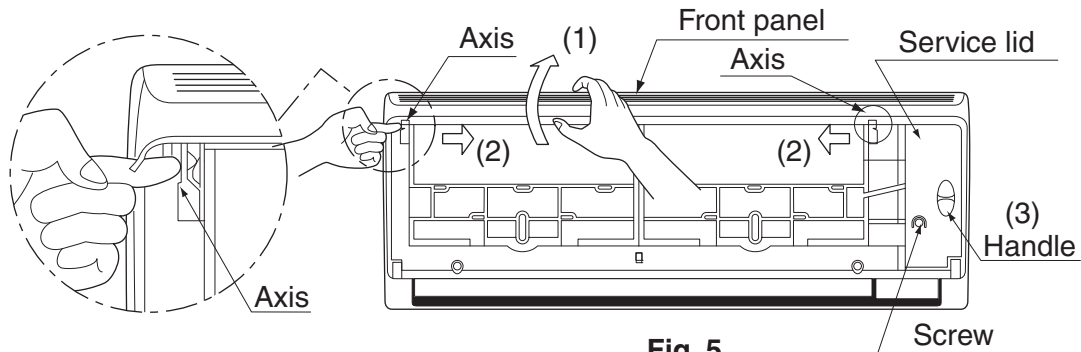


Fig. 5

(5) Point the pipe in the direction it will be passed out.

For bottom-right and back-right piping (Refer to Fig. 6)

- Wrap the drain hose and the refrigerant piping together with the insulating tape (4) so that the drain hose is below the refrigerant piping.

For left, bottom-left, and back-left piping

- Remove the front grill. (Refer to Fig. 7)

< How to remove the front grill >

Remove the front grill as described below when securing the indoor unit with screws or when attaching Optional Accessories (wireless remote controller, adapter PC board, etc.).

- (1) Remove the front panel.
- (2) Remove the screws (3 places) securing the front grill.
- (3) Remove the tabs (3 places) securing the front grill by pushing them in the direction of the arrows.
- (4) Making sure not to catch the horizontal flaps, remove the front grill by pulling in the direction of the arrow.

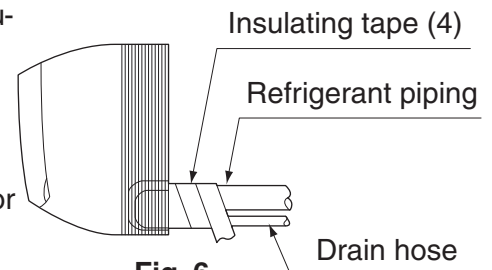


Fig. 6

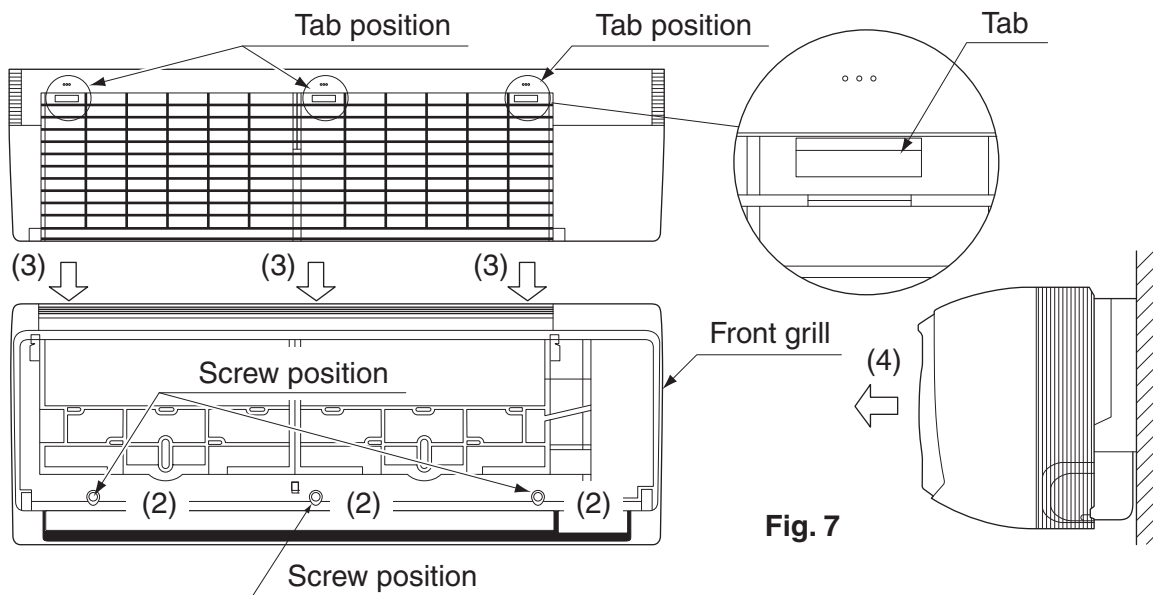


Fig. 7

- Remove the drain plug, the insulation tube, and the drain hose from the drain pan and replace.
(Refer to Fig. 8)
- Connect the local refrigerant piping ahead of time, matching it to the liquid pipe and gas pipe marks engraved on the installation panel (accessory) (1).

< Replacing the drain hose and drain plug >

- (1) Remove the drain plug and insulation tube.
- (2) Remove the drain hose and replace onto the left side.
- (3) Replace the drain plug and the insulation tube onto the right side.

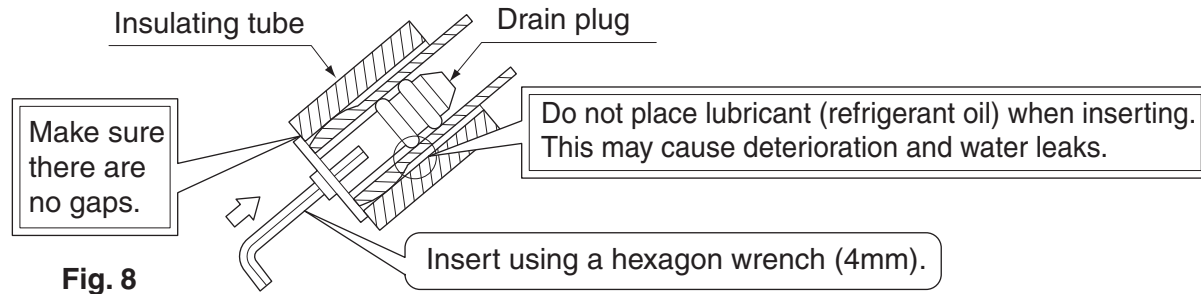


Fig. 8

(6) Hook the indoor unit onto the installation panel. (Refer to Fig. 9)

- Placing buffering material between the wall and the indoor unit at this time will make work easier.

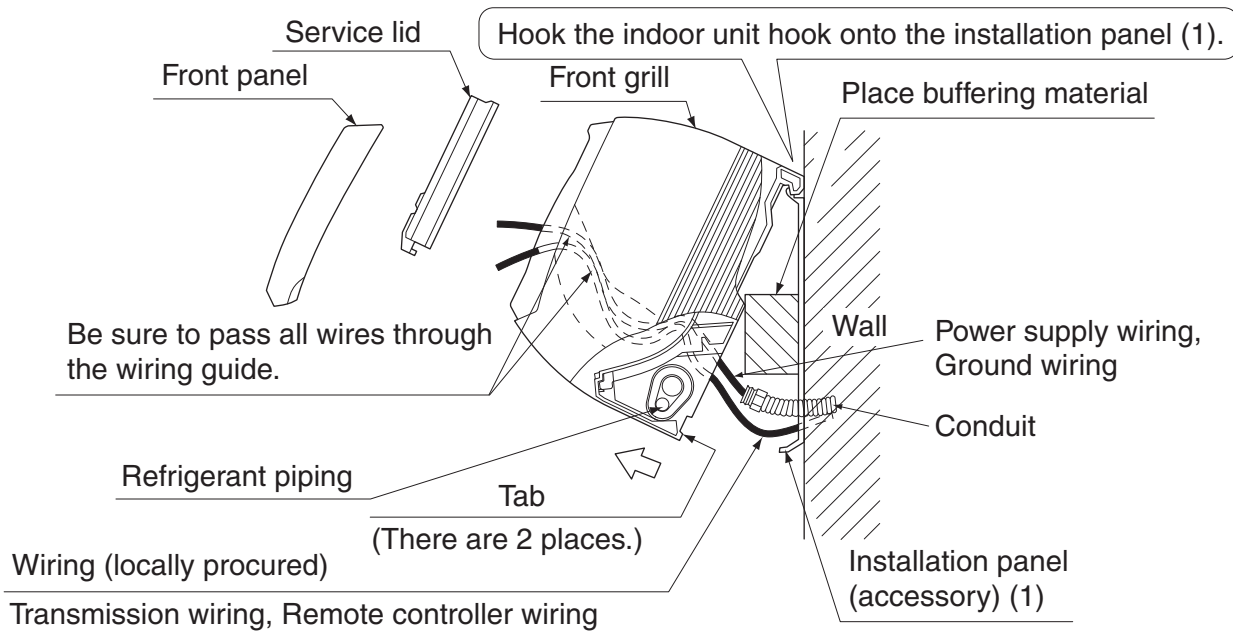


Fig. 9

For bottom-right and back-right piping

- Pass the drain hose and the refrigerant piping to the wall.

(7) Pass power supply wiring and ground wiring threaded through conduit (For connecting the conduit to the unit, see "8-1 HOW TO CONNECT WIRINGS"), and remote controller wiring through the wiring guide in through the back of the indoor unit and to the front.

(8) Connect the piping. (See “5.REFRIGERANT PIPING WORK” and Fig. 10)

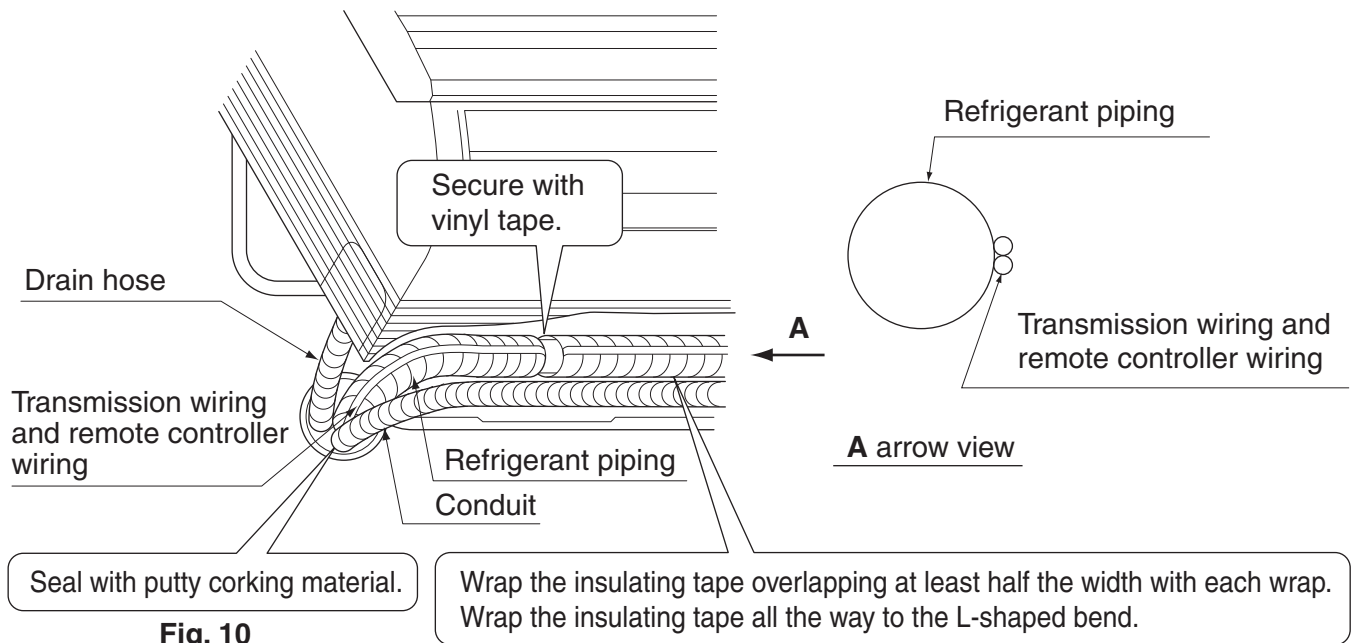


Fig. 10

- Seal the piping through-hole with putty corking material.

(9) Push on both bottom edges of the indoor unit using both hands and hook the tab on the back of the indoor unit onto the installation panel (1). (Refer to Fig. 9)

- At this time remove the buffering material placed in step (6).
- Make sure power supply wiring, transmission wiring, ground wiring and remote controller wiring are not caught inside the indoor unit.

■ When screwing in the indoor unit

- Remove the front grill. (Refer to Fig. 7)
- Secure the indoor unit to the installation panel (1) with the securing screws (6). (Refer to Fig. 11)

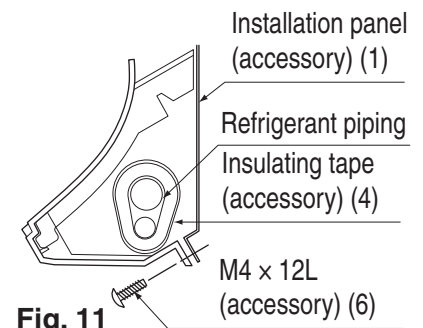


Fig. 11

5. REFRIGERANT PIPING WORK

⟨For refrigerant piping of outdoor units, see the installation manual attached to the outdoor unit.⟩

⟨Execute heat insulation work completely on both sides of the gas piping and the liquid piping.

Otherwise, a water leakage can result sometimes.⟩

(When using a heat pump, the temperature of the gas piping can reach up to approximately 250°F, so use insulation which is sufficiently resistant.)

⟨Also, in cases where the temperature and humidity of the refrigerant piping sections might exceed 86°F or RH80 %, reinforce the refrigerant insulation. (13/16" or thicker) Condensation may form on the surface of the insulating material.⟩

⟨Before refrigerant piping work, check which type of refrigerant is used. Proper operation is not possible if the types of refrigerant are not the same.⟩

⚠ DANGER

- Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan, heater, stove or cooking device. Exposure to this gas could result in severe injury or death.

NOTE

- Use a pipe cutter and flare suitable for the type of refrigerant.
- To prevent dust, moisture or other foreign matter from infiltrating the tube, either pinch the end or cover it with tape.
- Do not allow anything other than the designated refrigerant to get mixed into the refrigerant circuit, such as air, etc.
- If any refrigerant gas leaks while working on the unit, ventilate the room thoroughly right away.

- The outdoor unit is charged with refrigerant.
- Use copper alloy seamless pipes.
- Be sure to use both a spanner and torque wrench together, as shown in the drawing, when connecting or disconnecting pipes to/from the unit. (Refer to Fig. 12)
- Refer to "Table 1" for the dimensions of flare.
- When connecting the flare nut, coat the flare section with ester oil or ether oil, rotate three or four times first, then screw in. (Refer to Fig. 13)

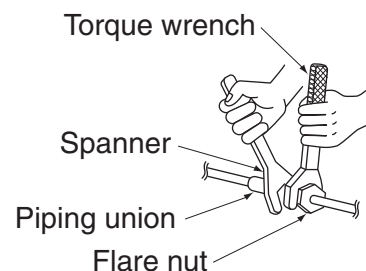


Fig. 12

Ester oil or ether oil

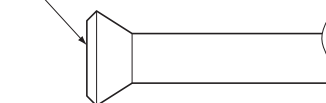


Fig. 13

CAUTION

- Over-tightening may cause the flare nuts to crack or the refrigerant to leak.
- Use the flare nut included with the unit.

- Refer to Table 1 for tightening torque.

Table 1

Pipe size	Tightening torque (ft-lbf)	Flare dimensions A (in.)	Flare shape (in.)
ϕ 3/8"	24.1 – 29.4	0.504 – 0.520	
ϕ 5/8"	45.6 – 55.6	0.760 – 0.776	

Not recommended but in case of emergency

You must use a torque wrench but if you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below.

After the work is finished, make sure to check that there is no gas leak.

When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut the angle shown below:

Table 2

Pipe size (in.)	Further tightening angle	Recommended arm length of tool (in.)
ϕ 3/8"	60 to 90 degrees	Approx. 7 7/8"
ϕ 5/8"	30 to 60 degrees	Approx. 11 13/16"

CAUTION

• **CAUTION TO BE TAKEN WHEN BRAZING REFRIGERANT PIPING**

“Do not use flux when brazing refrigerant piping. Therefore, use the phosphor copper brazing filter metal (BCuP) which does not require flux.”

(Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. If the flux contains fluorine, it will damage the refrigerant oil.)

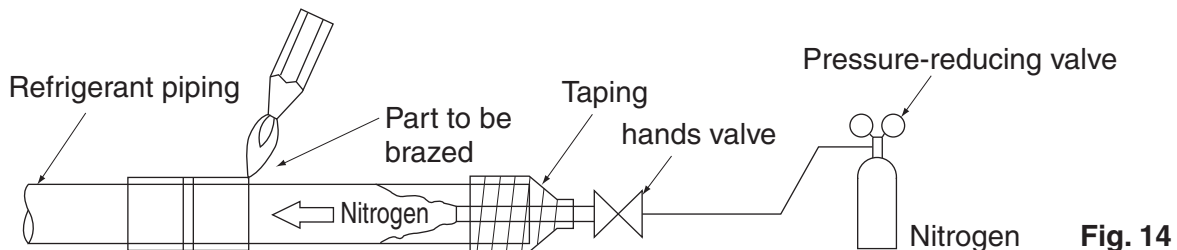
- When brazing the refrigerant piping, only begin brazing after having carried out nitrogen substitution (NOTE 1) or while inserting nitrogen into the refrigerant piping (NOTE 2). Once this is done, connect the indoor unit with a flared or a flanged connection.

DANGER

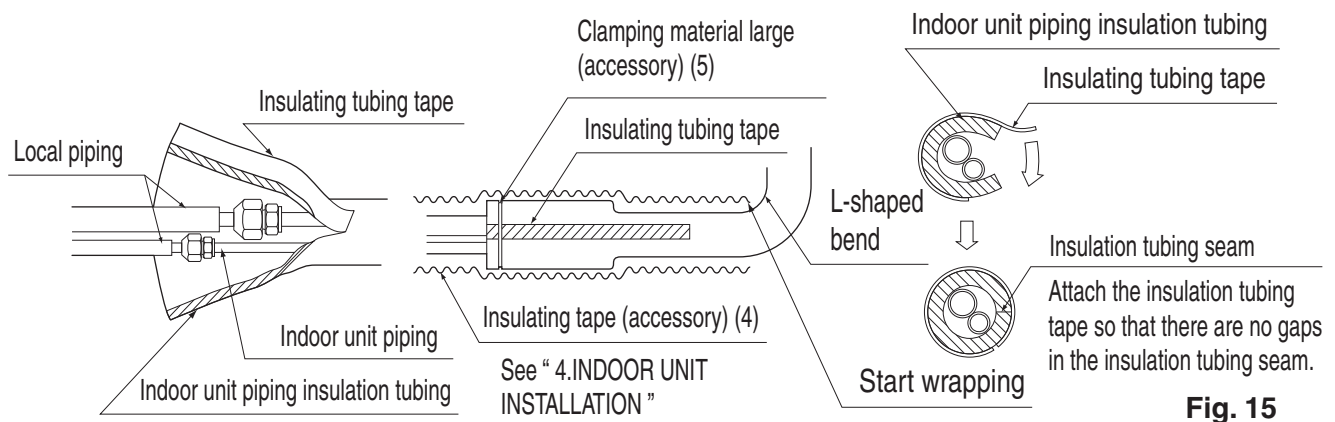
- Use of oxygen may cause an explosion resulting in serious injury or death. Only use nitrogen gas.

NOTE

1. Refer to the “Manual for Multi Installation for Buildings” for directions on how to carry out nitrogen substitution. (Inquire with your dealer.)
2. Nitrogen should be set to 2.9 psi with a pressure-reducing valve if brazing while inserting nitrogen into the piping. **(Refer to Fig. 14)**



- After checking for gas leaks, be sure to insulate the pipe connections using the supplementary piping insulation tubing and insulating tape (4). The insulating tape (4) should be wrapped from the L-shaped bend all the way to the end inside the unit. **(Refer to Fig. 15)**



CAUTION

- Be sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensate or burns if touched.

6. DRAIN PIPING WORK

(1) Install the drain piping. (Refer to Fig. 16)

- The drain pipe should be short with a downward slope and should prevent air pockets from forming.
- Watch out for the points in the figure 16 when performing drain work.

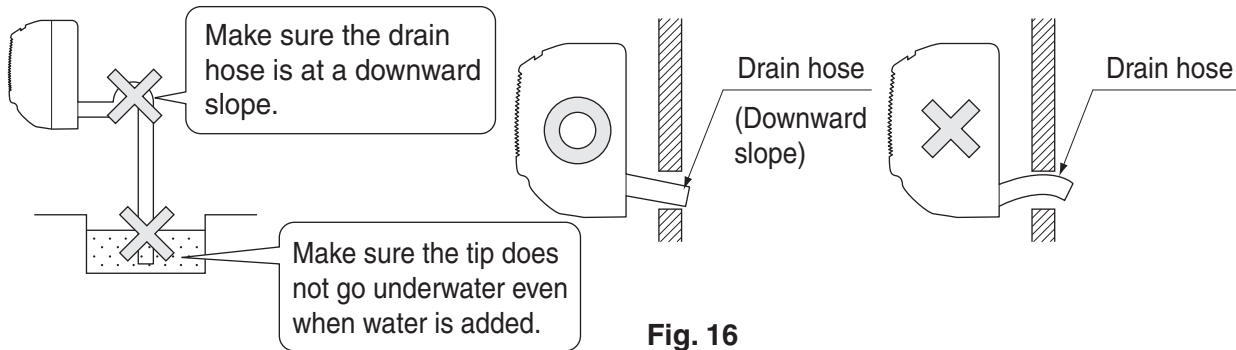


Fig. 16

- When extending the drain hose, use a commercially available drain extension hose, and be sure to insulate the extended section of the drain hose which is indoors. (Refer to Fig. 17)

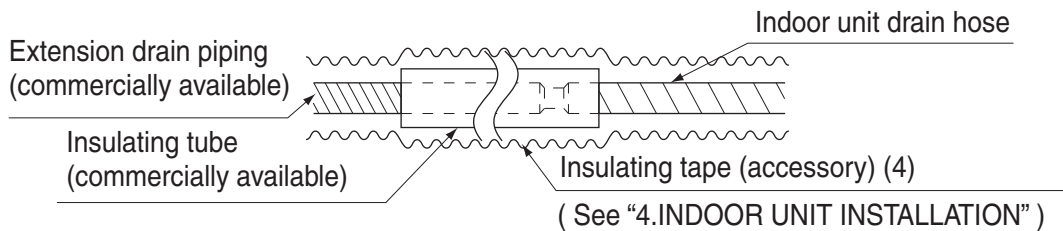


Fig. 17

- Make sure the diameter of the extension drain piping is the same as the indoor unit drain hose (hard vinyl chloride, I.D. 9/16") or bigger.
- In case of converging multiple drain pipes, install them referring to Fig. 18.
- Select diameter of drain piping which adapts to the capacity of the unit connected.

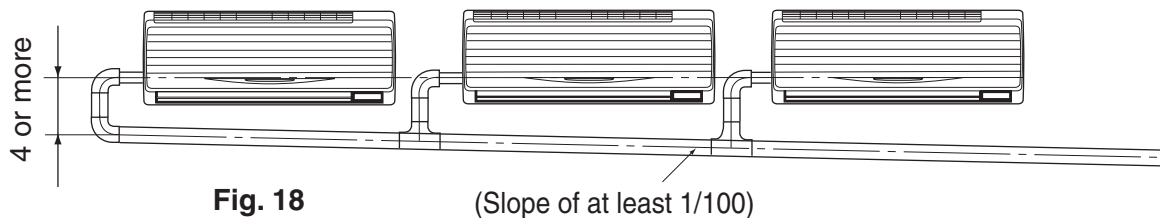


Fig. 18

(2) Make sure the drain works properly.

- After drain work is complete, perform a drain check by opening the front panel, **removing the air filter**, pouring water into the drain pan, and making sure water flows smoothly out of the drain hose. (Refer to Fig. 19)

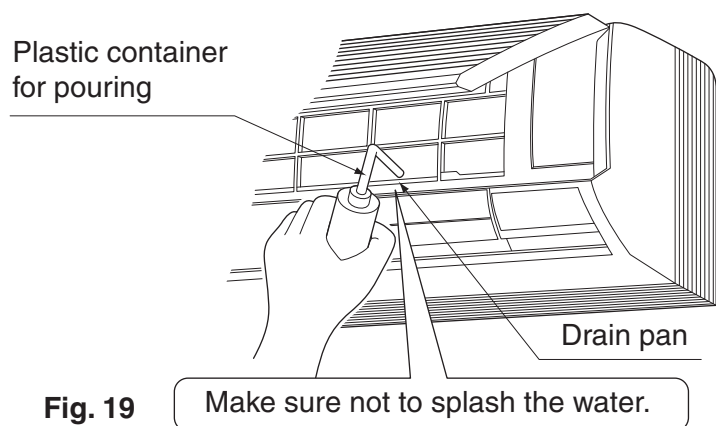


Fig. 19



CAUTION

- Drain piping connections

Do not connect the drain piping directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger.

Keep in mind that it will become the cause of getting drain pipe blocked if water collects on drain pipe.

7. ELECTRIC WIRING WORK

7-1 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 unit.
- For remote controller wiring details, refer to the installation manual attached to the remote controller.
- All wiring must be performed by an authorized electrician.
- This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal block wiring to the outdoor unit and BS unit is properly matched. If wiring and piping between the outdoor unit and indoor unit are mismatched, the system may cause a malfunction.
- 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 circuit breaker and switch, and wiring instructions.
- Be sure to ground the air conditioner.



DANGER

- Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.

7-2 ELECTRICAL CHARACTERISTICS

Units				Power supply		Fan motor	
Model	Hz	Volts	Voltage range	MCA	MFA	W	FLA
FAQ18PVJU	60	208-230	Max. 253	0.4	15	43	0.3
FAQ24PVJU			Min. 187	0.6	15	43	0.5

MCA: Min. Circuit Amps (A);

MFA: Max. Fuse Amps (A)

W: Fan Motor Rated Output (W);

FLA: Full Load Amps (A)

7-3 SPECIFICATIONS FOR FIELD SUPPLIED FUSES AND WIRE

Model	Power supply wiring		Remote controller wiring Transmission wiring	
	Field fuses 	Size	Wire	Size
FAQ18PVJU	15A	Size must comply with local codes.	Sheathed wire (2 wire)	AWG18-16
FAQ24PVJU				

- Allowable length of transmission wiring and remote controller wiring are as follows.
 - (1) Outdoor unit - Indoor unit:Max.3280ft. (Total wiring length: 6560ft.)
 - (2) Indoor unit - Remote controller:Max.1640ft.
- Insulated thickness: 1/16" or more.

8. WIRING EXAMPLE AND HOW TO SET THE REMOTE CONTROLLER

8-1 HOW TO CONNECT WIRINGS

- Conduit for power supply wiring

Unscrew and remove the conduit mounting plate from the electric parts box. **(Refer to Fig. 20)**
Fix a conduit to the plate with a lock nut and reattach them at original position.

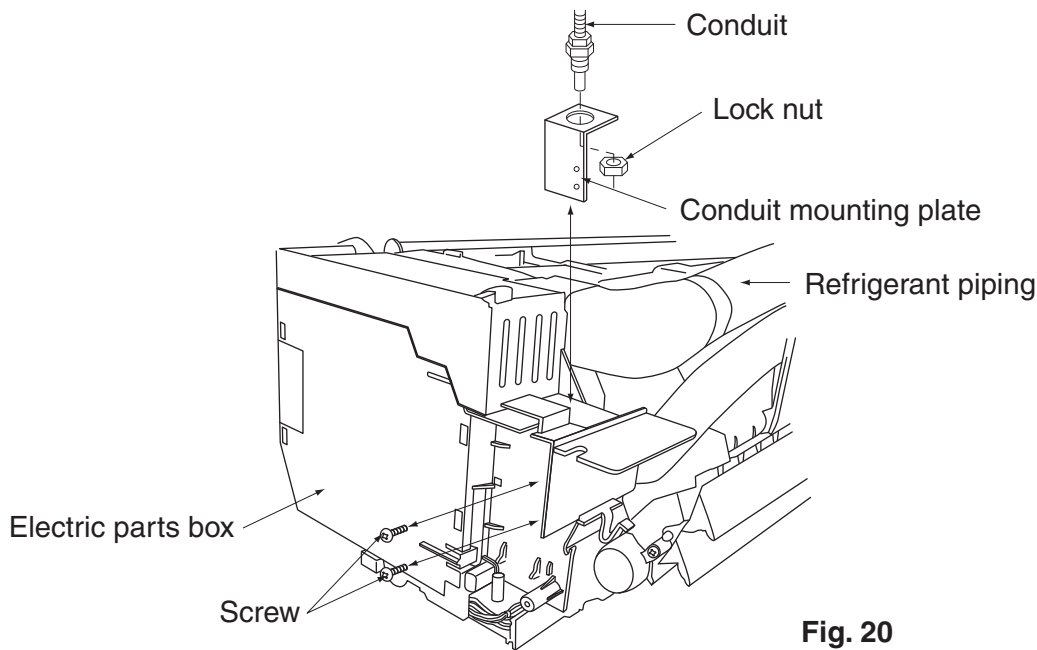


Fig. 20

- Power supply wiring and ground wiring

Unscrew and remove the service lid.

Thread the power supply wiring and ground wiring through the included insulating tube (short) (7) and secure them with the included clamp (small) (5). **(Refer to Fig. 21)**

Connect the power supply wiring and ground wiring to the power supply terminal block (3P).

When doing this, firmly secure using the included clamp (small) (5) according to the figure.

(Refer to Fig. 22)

- Transmission wiring and remote controller wiring

Unscrew and remove the service lid.

Thread the remote controller wiring and transmission wiring through the included insulating tube (long) (7) and secure them with the included clamp (small) (5). **(Refer to Fig. 21)**

Connect the remote controller wiring and the transmission wiring to the terminal block (6P).

When doing this, tie the remote controller wiring and the transmission wiring using the included clamp (small) (5) and then firmly secure using the included clamp (small) (5) according to the figure. **(Refer to Fig. 22)**

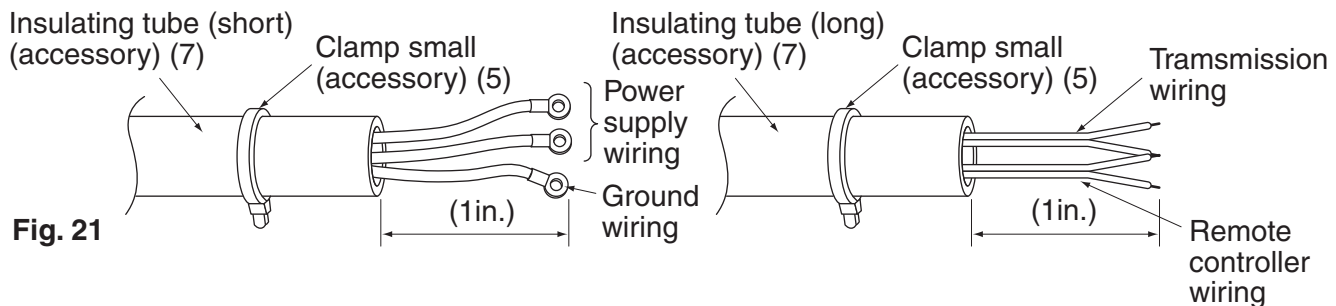


Fig. 21

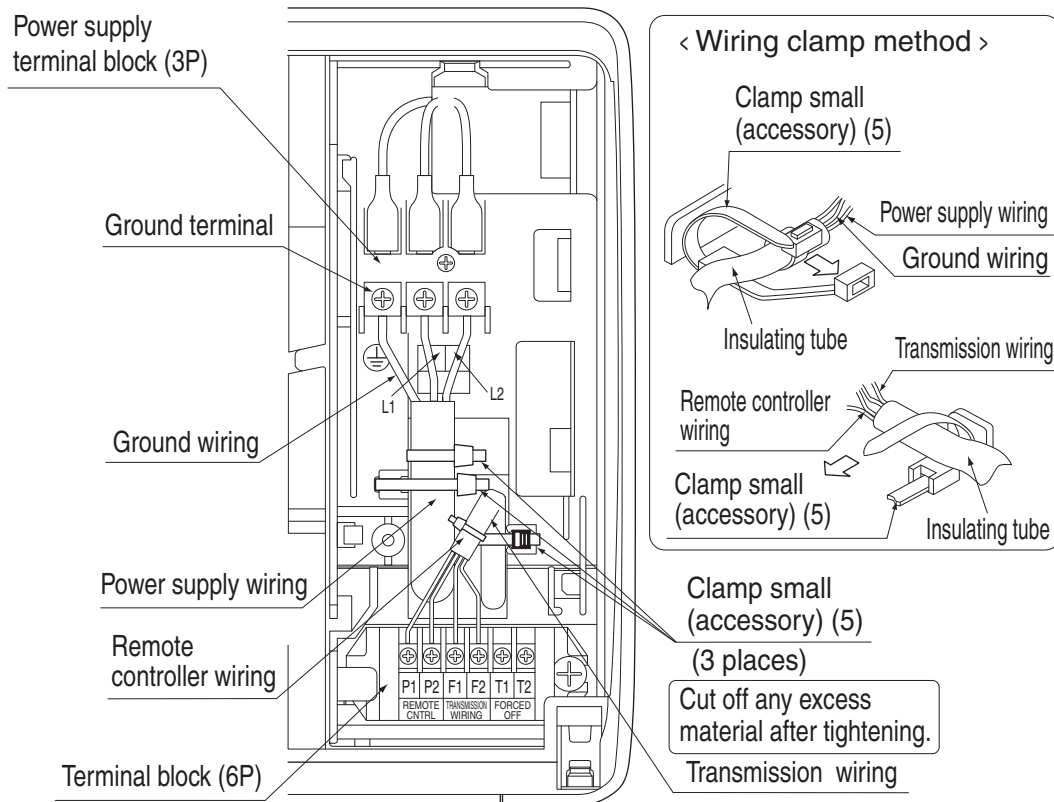


Fig. 22



WARNING

- Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.
- Use only specified wire and connect wires to the terminal tightly. Be careful wires do not place external stress on terminals. Keep wires in neat order so as not to obstruct other equipment. Make sure that the electric box lid fits tightly. Incomplete connections could result in overheating and, in worse case, result in electric shock or fire.
- To avoid a short circuit in the electric parts box, be sure to apply sealing material or putty (not included) to the wiring hole to prevent the infiltration of water as well as insects or other small creatures. Otherwise a short-circuit may occur inside the electric parts box.



CAUTION

- When clamping the wirings, be sure no tension is applied to the wire connections by using the included clamp. Also, when wiring, make sure the lid on the electric parts box fits snugly by arranging the wirings neatly and attaching the service lid firmly. When attaching the service lid, make sure no wirings get caught in the edges. Pass wiring through holes to prevent damage to them.
- Make sure the remote controller wiring and transmission wiring between the units, and other electrical wiring do not pass through the same locations outside the unit, separating them by at least 5", otherwise electrical noise (external static) could cause incorrect operation or breakage.
Use only specified wire and tightly connect wires to terminals. Be careful wires do not place external stress on terminals. Keep wiring in neat order and so as not to obstruct other equipment such as popping open the service cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worse case, electric shock or fire.

[PRECAUTIONS]

1. Use round crimp-style terminals for connecting wires to the power supply terminal block.
(Refer to Fig. 23)

If unavailable, observe the following points when wiring.

- Do not connect wires of different gauge to the same power supply terminal.
(Looseness in the connection may cause overheating.)
- Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal. (Tightening torque: 0.97ft.lbf $\pm$ 10 %)

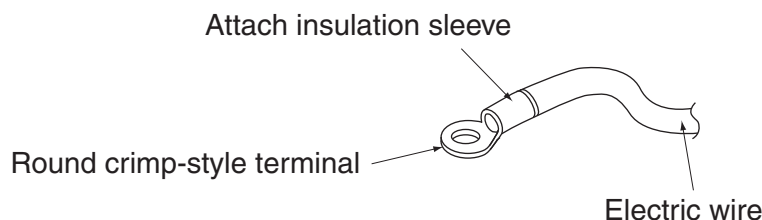


Fig. 23

2. Tightening torque for the terminal screws.

- Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are tightened too hard, screws might be damaged.
- Refer to the table below for the tightening torque of the terminal screws.

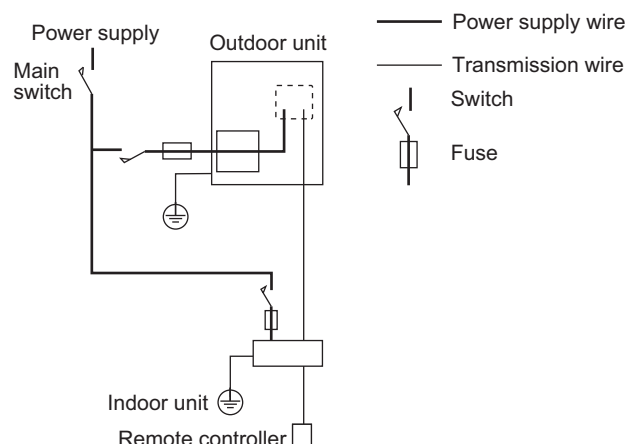
Terminal	Size	Tightening torque (ft-lbf)
Remote controller, Transmission wiring and Forced off terminal block (6P)	M3.5	0.58 – 0.72
Power supply and Ground terminal block (3P)	M4	0.87 – 1.06

3. Do not connect wires of different gauge to the same ground terminal. Looseness in the connection may lessen protection.
4. Keep transmission wiring at least 5" away from power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.
5. For remote controller wiring, refer to the "INSTALLATION MANUAL OF REMOTE CONTROLLER" attached to the remote controller.

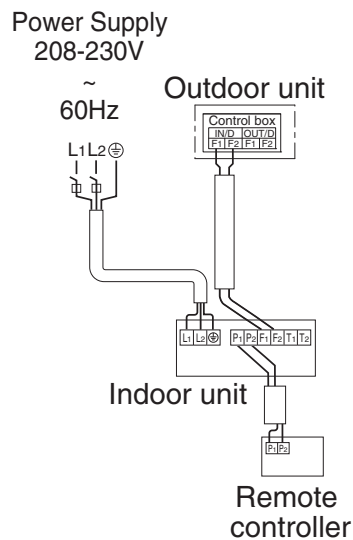
8-2 WIRING EXAMPLE

- Fit the power supply wire of each unit with a switch and fuse as shown in the drawing.

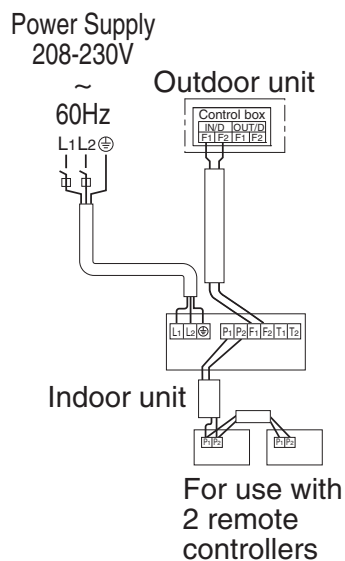
COMPLETE SYSTEM EXAMPLE



1. When using 1 remote controller for 1 indoor unit. (Normal operation)



2. When using 2 remote controllers for 1 indoor unit.



NOTE

1. A single switch can be used to supply power to units on the same system. However, branch switches and branch circuit breakers must be selected carefully.
2. Do not ground the equipment on gas pipes, water pipes or lightning rods, or crossground with telephones. Improper grounding could result in electric shock.

8-3 CONTROL BY 2 REMOTE CONTROLLERS (CONTROLLING 1 INDOOR UNIT BY 2 REMOTE CONTROLLERS)

- When using 2 remote controllers, one must be set to “MAIN” and the other to “SUB”.

MAIN/SUB CHANGEOVER

- Insert a $\ominus$ screwdriver into the recess between the upper and lower part of remote controller, and working from the 2 positions, pry off the upper part. The remote controller PC board is attached to the upper part of the remote controller. (Refer to Fig. 28)

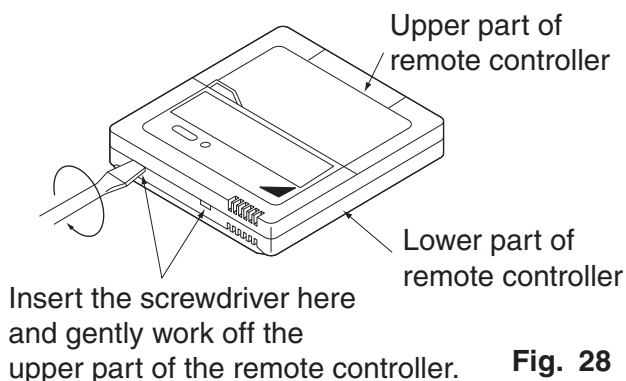


Fig. 28

- Turn the **MAIN/SUB changeover** switch on one of the two remote controller PC boards to “S”. (Leave the switch of the other remote controller set to “M”.) (Refer to Fig. 29)

Wiring Method (See “7.ELECTRIC WIRING WORK”)

- Remove the service lid.
- Add remote control 2 (slave) to the terminal block (6P) for remote controller (P1, P2) in the electric parts box.** (There is no polarity.) (Refer to Fig. 26 and section 7-3 for the wiring size.)

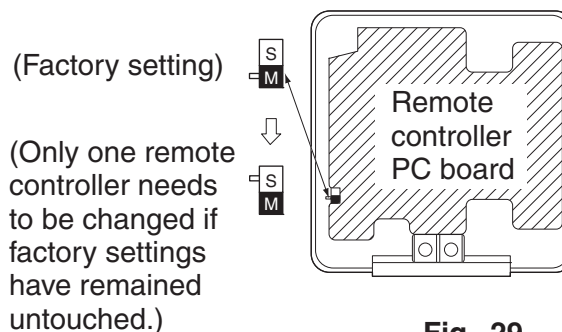


Fig. 29

8-4 COMPUTERISED CONTROL (FORCED OFF AND ON/OFF OPERATION)

- Wire specifications and how to perform wiring
 - Connect the input from outside to terminals T1 and T2 of the terminal block (6P).

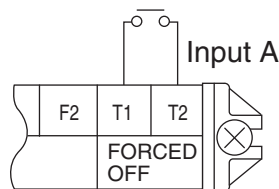


Fig. 30

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 15V DC, 10 mA.

- 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.
- Set the remote controller to the field set mode. For details, refer to the “HOW TO SET IN THE FIELD”, in the remote controller manual.
- When in the field set mode, select mode No. 12, then set the first code (switch) No. to “1”. Then set second code (position) No. to “01” for FORCED OFF and “02” for ON/OFF OPERATION.
(FORCED OFF at factory set) (Refer to Fig. 31)

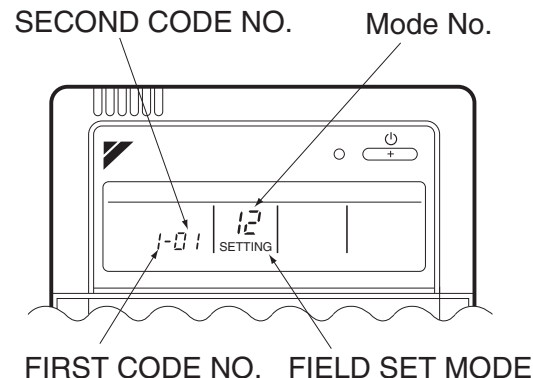


Fig. 31

8-5 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.

9. FIELD SETTINGS

(1) Make sure the service lids are closed on the indoor and outdoor units.

(2) Field settings must be made from the remote controller in accordance with installation conditions.

- Settings can be made by changing the “Mode No”, “FIRST CODE NO.” and “SECOND CODE NO.”. Refer to the installation manual attached to the remote controller.
- The “Field Settings” included with the remote controller lists the order of the settings and method of operation.
*Setting is made in all units in a group. To set for individual indoor units or to check the setting, use the mode Nos. (with “2” in upper digit) in parentheses ().

9-1 SETTING AIR FILTER SIGN

- Remote controllers are equipped with liquid crystal display air filter signs to display the time to clean air filters.
- Change the SECOND CODE NO. according to Table 3 depending on the amount of dirt or dust in the room.
(SECOND CODE NO. is factory set to “01” for air filter contamination-light)

Table 3

Setting	Spacing time of display air filter sign	Mode No.	FIRST CODE NO.	SECOND CODE NO.
Air filter contamination-light	Approx. 200 hrs	10 (20)	0	01
Air filter contamination-heavy	Approx. 100 hrs			02

9-2 SETTING AIR FLOWRATE INCREASE MODE

- It is possible to raise set air flow (HIGH and LOW) from the field. Change the SECOND CODE NO. as shown in Table 4 to suit your needs.
(SECOND CODE NO. is factory set to "01" for Standard.)

Table 4

Setting	Mode No.	FIRST CODE NO.	SECOND CODE NO.
Standard	13 (23)	0	01
A little increase			02
Increase			03

〈When using wireless remote controllers〉

- When using wireless remote controllers, wireless remote controller address setting is necessary. Refer to the installation manual attached to the wireless remote controller for setting instructions.

10. TEST OPERATION

Make sure the service lids are closed on the indoor and outdoor units.

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 of the outdoor unit.
If any of the items in Table 5 are displayed, there may be a problem with the wiring or power, so check the wiring again.

Table 5

Remote controller display	Content
"  " (under centralized 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 on the outdoor unit is off. - The outdoor unit has not been wired for power supply. - Incorrect wiring for the transmission wiring and/or FORCED OFF wiring. - The transmission wiring is cut.
No display	- The power on the indoor unit is off. - The indoor unit has not been wired for power supply. - Incorrect wiring for the remote controller wiring, the transmission wiring, and/or the FORCED OFF wiring. - The remote controller wiring is cut.

- If "U3" is lit up, the malfunction code shows the test operation has not been performed yet.

DAIKIN AC (AMERICAS), INC.

1645 Wallace Drive, Suite 110
Carrollton, TX 75006

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

