

SPLIT TYPE ROOM AIR CONDITIONER INSTALLATION INSTRUCTION SHEET

(PART NO. 9377863034)

For authorized service personnel only.

This installation instruction sheet describes how to install the outdoor unit only. To install the indoor unit, refer to the installation instruction sheet included with the indoor unit.

DANGER This mark indicates procedures which, if improperly performed, are most likely to result in the death of or serious injury to the user or service personnel.

WARNING This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.

CAUTION This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

DANGER Never touch electrical components immediately after the power supply has been turned off. Electrical shock may occur. After turning off the power, always wait 5 minutes or more before touching electrical components.

This air conditioner uses new refrigerant HFC (R410A).

The basic installation work procedures are the same as conventional refrigerant models.

However, pay careful attention to the following points:

- Since the working pressure is 1.6 times higher than that of conventional refrigerant models, some of the piping and installation and service tools are special. (See the table below.) Especially, when replacing a conventional refrigerant model with a new refrigerant R410A model, always replace the conventional piping and flare nuts with the R410A piping and flare nuts.
- Models that use refrigerant R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant and for safety. Therefore, check beforehand. [The charging port thread diameter for R410A is 1/2 UNF 20 threads per inch.]
- Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
- When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.

Special tools for R410A

Tool name	Contents of change
Gauge manifold	Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other refrigerants, the diameter of each port has been changed. It is recommended the gauge with seals -0.1 to 5.3 MPa (-76 cmHg to 38 kgf/cm ²) for high pressure. -0.1 to 3.8 MPa (-76 cmHg to 38 kgf/cm ²) for low pressure.
Charge hose	To increase pressure resistance, the hose material and base size were changed.
Vacuum pump	A conventional vacuum pump can be used by installing a vacuum pump adapter.
Gas leak detector	Special gas leakage detector for HFC refrigerant R410A.
Thicknesses of Annealed Copper Pipes (R410A)	
Pipe outside diameter	Thickness
6.35 mm (1/4 in.)	0.80 mm
9.52 mm (3/8 in.)	0.80 mm
12.70 mm (1/2 in.)	0.80 mm
15.88 mm (5/8 in.)	1.00 mm
19.05 mm (3/4 in.)	1.20 mm

It is necessary to use seamless copper pipes and it is desirable that the amount of residual oil is less than 40 mg/10 m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants. As an cold refrigerant R410A has a higher viscosity than when using conventional refrigerant, it is necessary to choose adequate materials. Thicknesses of copper pipes used with R410A are as shown in the table. Never use copper pipes thinner than that in the table even when it is available on the market.

DANGER Never touch electrical components immediately after the power supply has been turned off. Electrical shock may occur. After turning off the power, always wait 5 minutes or more before touching electrical components.

WARNING

- For the room air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
- Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available standards parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.
- Installation work must be performed in accordance with national wiring standards by authorized personnel only.
- Also, do not use an extension cord.
- Do not turn on the power until all installation work is complete.
- Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation.
- There is not extra refrigerant in the outdoor unit for air purging.
- Use a vacuum pump for R410A exclusively.
- Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.
- Use a clean gauge manifold and charging hose for R410A exclusively.
- If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.

• Be careful not to scratch the room air conditioner when handling it.

• After installation, explain correct operation to the customer, using the operating manual.

• Let the customer keep this installation instruction sheet because it is used when the room air conditioner is serviced or moved.

STANDARD PARTS

The following installation parts are furnished.

Use them as required.

Name and Shape	Q'ty	Application
Drain pipe	1	For outdoor unit drain piping work
Adapter assy 12.7 mm → 9.52 mm	1	For use when connecting ※12000 BTU model only

1. LIMITATION OF REFRIGERANT PIPING LENGTH

CAUTION
The total maximum pipe lengths and height difference of the product are shown in the table. If the units are further apart than this, correct operation cannot be guaranteed.

Model Type	Pipe length MAX.	Maximum height (between indoor and outdoor)
12,000, 14,000 18,000 BTU class	25 m 30 m	15 m 20 m
24,000 BTU class		

2. SELECTING PIPE SIZES

The diameters of the connection pipes differ according to the capacity of the indoor unit. Refer to the following table for the proper diameters of the connection pipes between the indoor and outdoor units.

Capacity of indoor unit	Gas pipe size (thickness) [mm]	Liquid pipe size (thickness) [mm]
12	ø9.52 (0.8)	ø6.35 (0.8)
14, 18	ø12.7 (0.8)	ø6.35 (0.8)
24	ø15.88 (1.0)	ø6.35 (0.8)

CAUTION
Operation cannot be guaranteed if the correct combination of pipes, valves, etc. is not used to connect the indoor and outdoor units.

3. HEAT INSULATION AROUND CONNECTION PIPES REQUIREMENTS

CAUTION

Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks. Use heat insulation with heat resistance above 120 °C. (Reverse cycle model only) In addition, if the humidity level at the installation location or the refrigerant piping is expected to exceed 70%, install heat insulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat insulation that is 5 mm thick. If the humidity level is over 80%, use heat insulation that is 15-20 mm or thicker. If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.045 W/(m·K) or less (at 20 °C).

Connect the connection pipes according to 2 CONNECTING THE PIPE in this installation instruction sheet.

4. ELECTRICAL REQUIREMENT

• Use conformed cord with Type 245 IEC57.

• Electric wire size and fuse capacity:

Power supply cord (mm ²)	MAX.	4.0
	MIN.	3.5
Connection cord (mm ²)	MAX.	2.5
	MIN.	1.5

Fuse capacity (A) OUTDOOR UNIT 25

- Install the disconnect device with a contact gap of at least 3 mm in all ports nearby the units. (both indoor unit and outdoor unit)
- Always make the air conditioner power supply a special branch circuit and provide a special breaker.

• Set the unit on a strong stand, such as one made of concrete blocks to minimize shock and vibration.

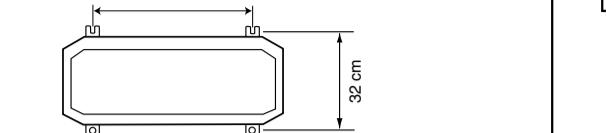
• Do not set the unit directly on the ground because it will cause trouble.

INSTALLATION PROCEDURE

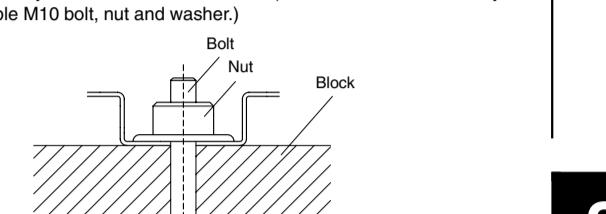
1 OUTDOOR UNIT INSTALLATION

1. OUTDOOR UNIT PROCESSING

(1) Outdoor unit to be fasten with bolts at the four places indicated by the arrows without fail.

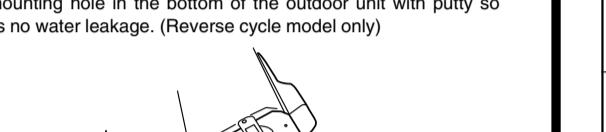


(2) Fix securely with bolts on a solid block. (Use 4 sets of commercially available M10 bolt, nut and washer.)

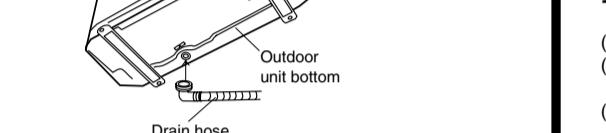


(3) Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to a commercial 16 mm hose. (Reverse cycle model only)

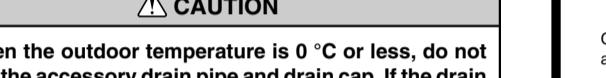
(4) When installing the drain pipe, plug all the holes other than the drain pipe mounting hole in the bottom of the outdoor unit with putty so there is no water leakage. (Reverse cycle model only)



(5) While welding the pipes, be sure to blow dry nitrogen gas through them.

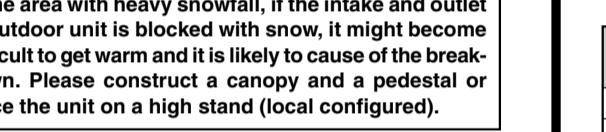


(6) Be sure to apply the pipe against the port on the indoor unit and outdoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

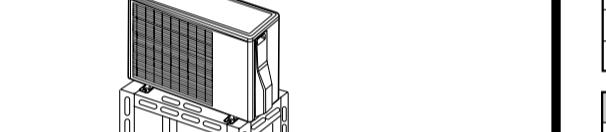


(7) Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.

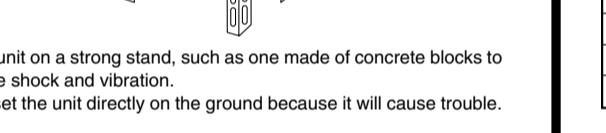
(8) Centering the pipe against port on the indoor unit, turn the flare nut with your hand.



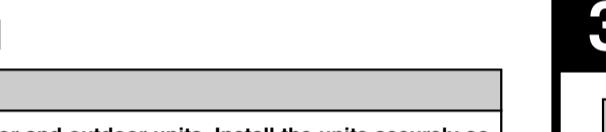
(9) When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.



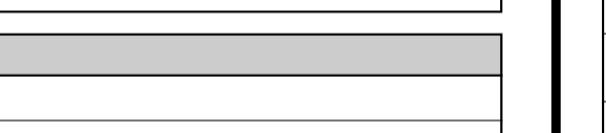
(10) To prevent gas leakage, coat the flare surface with alkyphenoxy oil (HAB). Do not use mineral oil.



(11) Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.



(12) Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.



(13) Increase the pressure up to 0.5 MPa (5 kgf/cm²), let it sit for about 5 minutes and then check for any decrease in pressure.

(14) Increase the pressure up to 1.5 MPa (15 kgf/cm²), let it sit for about 5 minutes and then check for any decrease in pressure.

(15) If the pressure decrease is not as much as the pressure designed for the product and there is no decrease in pressure, it is satisfactory.

(16) If the pressure decrease is confirmed, there is a leak, so it is necessary to specify the leak location and make minor adjustments.

(17) When the pressure is stable, turn off the gas valve.

(18) Turn off the gas valve.

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