

# SPLIT TYPE ROOM AIR CONDITIONER INSTALLATION INSTRUCTION SHEET

(PART NO. 9377863010)

For authorized service personnel only.

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

⚠ CAUTION		
<b>R410A REFRIGERANT</b>		
The Air Conditioner contains and operates with refrigerant R410A and Polyol Ester oil.		
THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.		

Refer to Commonwealth, State, Territory and local legislation, regulations, codes, installation and operating manuals, before the installation, maintenance and/or service of this product.

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.		
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.		

## 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 changing 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 53 kg/cm <sup>2</sup> ) for high pressure. -0.1 to 3.8 MPa (-76 cmHg to 38 kg/cm <sup>2</sup> ) 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 leakage detector	Special gas leakage detector for HFC refrigerant R410A.
Copper pipes	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 alternative to using R410A, it is necessary to use high materials 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.
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

## ⚠ 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

## 1. LIMITATION OF REFRIGERANT PIPING LENGTH

### ⚠ CAUTION

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

Model Type	Pipe length	Maximum height (between indoor and outdoor)
18,000 BTU/h class	25 m	5 m
24,000 BTU/h class	30 m	20 m

## 2. SELECTING PIPE SIZES

The diameter 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]
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 of 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 15% thicker than the piping. If the humidity level is expected to exceed 80%, use heat insulation that is 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 CONNECTING THE PIPES.

## 4. ELECTRICAL REQUIREMENT

- Use conformed cord with Type 245 IEC57.
- Electric wire size and fuse capacity:

Power supply cord (mm <sup>2</sup> )	MAX.	4.0
MIN.	3.5	
Connection cord (mm <sup>2</sup> )	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 nearby the units.
- 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.

## SELECTING THE MOUNTING POSITION

### ⚠ WARNING

Select installation locations that can properly support the weight of the indoor and outdoor units. Install the units securely so that they do not topple or fall.

### ⚠ CAUTION

Do not install where there is the danger of combustible gas leakage.

Do not install the unit near heat source of heat, steam, or flammable gas.

If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

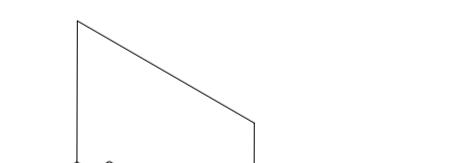
### ⚠ WARNING

When installing the outdoor unit where it may exposed to strong wind, fasten it securely.

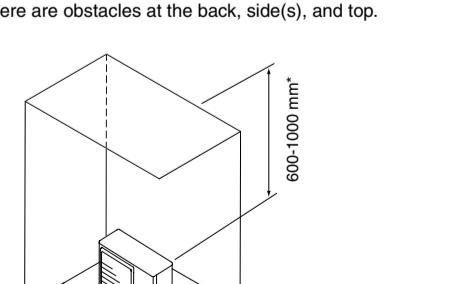
Decide the mounting position with the customer as follows:

- Install the outdoor unit in a location which can withstand the weight of the unit and vibration, and which can install horizontally.
- Provide the indicated space to ensure good airflow.
- If possible, do not install the unit where it will be exposed to direct sunlight.
- Do not install the unit near a source of heat, steam, or flammable gas.
- During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where the drain water flow will not be obstructed. (Reverse cycle model only)
- Do not install the unit where strong wind blows or where it is very dusty.
- Do not install the unit where it will be exposed to rain as much as possible.
- Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
- Install the unit where connection to the indoor unit is easy.

- When there are obstacles at the back side.



- When there are obstacles at the back, side(s), and top.



\* If the space is larger than that stated, the condition will be the same as that there are no obstacles.

## INSTALLATION PROCEDURE

### 1 OUTDOOR UNIT INSTALLATION

#### 1. OUTDOOR UNIT PROCESSING

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

54 cm

32 cm

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

Bolt Nut Block

- Front hooks Rear hooks

Connector cover

### 2 CONNECTING THE PIPE

### ⚠ CAUTION

- Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
- While welding the pipes, be sure to blow dry nitrogen gas through them.

### 3 CONNECTION PIPES

#### Outdoor unit

- Detach the caps and plugs from the pipes.

### ⚠ CAUTION

- 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 is not forced to turn, the threads will be damaged.

### 4 FLARING

- Cut the connection pipe to the necessary length with a pipe cutter.

2 Hold the pipe downward so that cuttings will not enter the pipe and remove.

- Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flaring process with a flare tool.

Use the special R410A flare tool, or the conventional flare tool.

Check if [L] is flared uniformly and is not cracked or scratched.

Die A Pipe B

### ⚠ CAUTION

- When the outdoor temperature is 0 °C or less, do not use the accessory drain pipe and drain cap. If the drain pipe and drain cap are used, the drain water in the pipe may