# Duct Type
## SPLIT TYPE AIR CONDITIONER
# INSTALLATION INSTRUCTION SHEET
## (PART NO. 9374815036)

**⚠ CAUTION**
**R410A REFRIGERANT**
This 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 & operation manuals, before the installation, maintenance and /or service of this product.

**Indoor unit is an appliance not accessible to the general public.**

**For authorized service personnel only.**

| | |
|---|---|
| ⚠ 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:**

1. **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.**
2. **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.]**
3. **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.**
4. **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 53 kgf/cm²) for high pressure. –0.1 to 3.8 MPa (–76 cmHg to 38 kgf/cm²) 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/10m. 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 air conditioner using R410A incurs pressure higher 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.

**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 |

**For authorized service personnel only.**

**⚠ WARNING**

1. **For the room air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.**
2. **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.**
3. **Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
4. **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.**
5. **Do not use an extension cord.**
6. **Do not turn on the power until all installation work is complete.**

**⚠ CAUTION**

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

- **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 air conditioner is serviced or moved.**

## SELECTING THE MOUNTING POSITION

**⚠ WARNING**

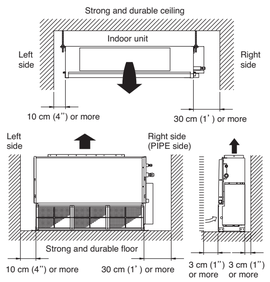
**Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.**

**⚠ CAUTION**

1. **Do not install where there is the danger of combustible gas leakage.**
2. **Do not install near heat sources.**
3. **If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.**
4. **Take precautions to prevent the unit from falling.**

Decide the mounting position with the customer as follows:

### INDOOR UNIT
(1) Install the indoor unit level on a strong wall, floor, ceiling which is not subject to vibration.
(2) The inlet and outlet ports should not be obstructed : the air should be able to blow all over the room.
(3) Install the unit near an electric outlet or special branch circuit.
(4) Install the unit where connection to the outdoor unit is easy.
(5) Install the unit where the drain pipe can be easily installed.
(6) Take servicing, etc. into consideration and leave the spaces shown on the right. Also install the unit where the filter can be removed.
(7) Install the indoor unit where vibrations and noise are not amplified.
(8) When installing the unit on the floor, provide an opening that will allow sufficient air to reach the air inlet panel.




## STANDARD PARTS
The following installation parts are furnished. Use them as required.

### INDOOR UNIT ACCESSORIES

| Name and Shape | Q'ty | Application |
|---|---|---|
| Installation template | 1 | For positioning the indoor unit |
| Hanger | 4 | For suspending the indoor unit from ceiling |
| Tapping screw (ø4 × 10) | 8 | For installing the hanger |
| Special nut A (large flange) | 4 | For suspending the indoor unit from ceiling |
| Special nut B (small flange) | 4 | |

| Name and Shape | Q'ty | Application |
|---|---|---|
| Coupler heat insulation (large) | 1 | For indoor side pipe joint (large pipe) |
| Coupler heat insulation (small) | 1 | For indoor side pipe joint (small pipe) |
| Binder | (Large) 4 | For fixing the coupler heat insulation |
| Filter | 2 | 9000 BTU/h model |
| | 3 | 12000 - 22000 BTU/h models |
| Drain hose insulation | 1 | Insulates the drain hose and vinyl hose connection |

## CONNECTING PIPE REQUIREMENT

**⚠ CAUTION**

**Refer to the installation instruction sheet of the outdoor unit for description of the length of connecting pipe or for difference of its elevation.**

| Diameter | | |
|---|---|---|
| | Small | 6.35 mm (1/4 in.) |
| | Large | 12.70 mm (1/2 in.) |

- Use pipe with water-resistant heat insulation.

**⚠ 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 mm or thicker and if the expected humidity exceeds 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).**

## ELECTRICAL REQUIREMENT

| Connection cord (mm²) | |
|---|---|
| MAX. | MIN. |
| 2.5 | 1.5 |

- Use conformed cord with Type 245 IEC57.
- Install all electrical works in accordance to the standard.
- Install the disconnect device with a contact gap of at least 3 mm in all poles nearby the units. (Both indoor unit and outdoor unit)

## INSTALLATION PROCEDURE
Install the air conditioner as follows:

## 1 INDOOR UNIT INSTALLATION

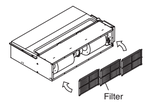
**⚠ WARNING**

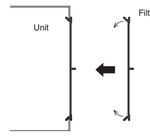
1. **Install the air conditioner in a location which can withstand a load of at least five times the weight of the main unit and which will not amplify sound or vibration. If the installation location is not strong enough, the indoor unit may fall and cause injuries.**
2. **If the job is done with the panel frame only, there is a risk that the unit will come loose. Please take care.**

**⚠ CAUTION**

**For installation, refer to the technical data.**

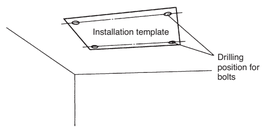
### A. CEILING CONCEALED TYPE
#### 1. INSTALL THE FILTERS
- Install the filters to the unit.



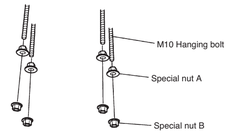




This unit may also be installed with the air inlet facing down. See also 1 - B - 1 for such cases.

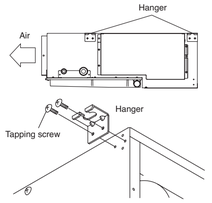
#### 2. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS
- Using the installation template, drill holes for bolts (4 holes).



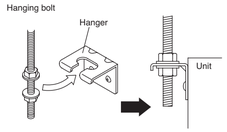

#### 3. INSTALLING THE HANGERS
- Fasten the hanging bolts to the ceiling and install special nuts A and B.




- Install the hangers to the unit (4 places).



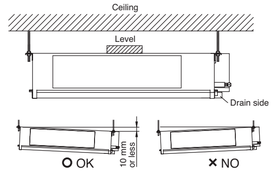

- Hang the unit.
  Pass the hanging bolts through the hangers (4 places).

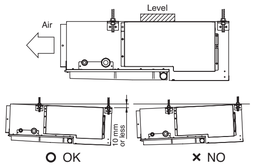



**⚠ CAUTION**

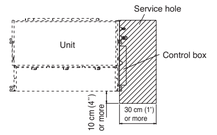
**Fasten the unit securely with special nuts A and B.**

#### 4. LEVELING
Base horizontal direction leveling on top of the unit.

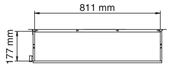


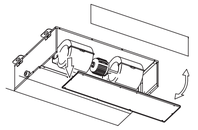

#### 5. SERVICE HOLE DIMENSIONS
Open a service hole with the dimensions shown.



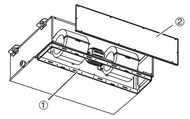

#### 6. INTAKE DUCT CONNECTION
Follow the procedure in the following figure to the ducts.




The air inlet duct can be changed by replacing the intake grille and flange.



For the bottom air intake, follow the procedure of 1 → 2 for installation.
(The factory setting is back air intake.)

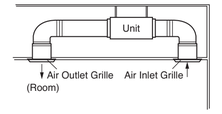



**⚠ CAUTION**

**When air is taken in from the bottom side, the operating sound of the product will easily enter the room.**
**Install the product and intake grilles where the affect of the operating sound is small.**

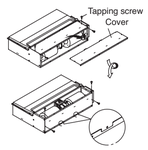
**⚠ CAUTION**

1. **If an intake duct is installed, take care not to damage the temperature sensor (the temperature sensor is attached to the intake port flange).**
2. **Be sure to install the air inlet grille and the air outlet grille for air circulation. The correct temperature cannot be detected.**

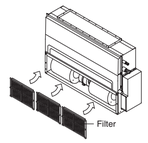



3. **Grills must be fixed so that man cannot touch indoor unit fan, and cannot be removed by only hand operation without tool.**
4. **Be sure to install the air filter in the air inlet. If the air filter is not installed, the heat exchanger may be clogged and its performance may decrease.**

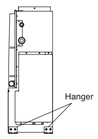
### B. FLOOR STANDING CONCEALED TYPE
#### 1. INSTALL THE FILTERS
- Remove the 4 tapping screws, and then remove cover.
- Install the cover with the 4 tapping screws as shown in the illustration below.




- Install the filters to the unit referring to 1 - A -1.



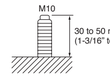

#### 2. INSTALLING THE HANGERS
- Install the hangers to the unit (4 places).



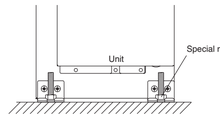

#### 3. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS
- Drilling position for bolts.

**⚠ CAUTION**

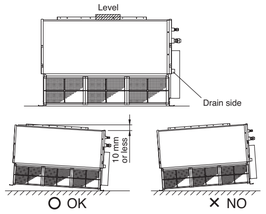
**Secure with an M10 anchor bolts. If securing the unit to the floor is difficult, first build a stand or platform.**




#### 4. INSTALL THE UNIT
- Fix the unit.
  Install the unit and fasten with special nut B.




#### 5. LEVELING
Base horizontal and vertical direction leveling on top of the unit.




**⚠ CAUTION**

**In order to prevent water from leaking around the outlet port, make sure to insulate it (on both the CEILING CONCEALED type and the FLOOR STANDING CONCEALED type).**

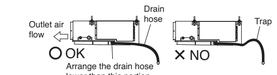
**NOTE: INSTALLING DRAIN HOSE**

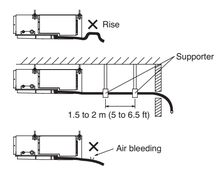
**⚠ CAUTION**

**Install the drain hose in accordance with the instructions in this installation instruction sheet and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.**

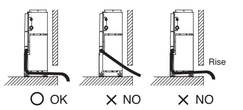
**INSTALL THE DRAIN HOSE**
- Install the drain hose with downward gradient (1/50 to 2/50) and so there are no rises or traps in the hose.
- Use general hard polyvinyl chloride pipe and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the hose is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain hose.

**A. CEILING CONCEALED TYPE**



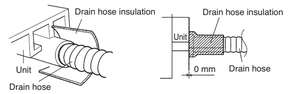

**B. FLOOR STANDING CONCEALED TYPE**




**⚠ CAUTION**

1. **Install the drain hose so that the control box cover can be removed for servicing.**
2. **In order to prevent water from leaking into the control box, make sure that the drain hose is well insulated.**
3. **After the wiring is connected and installation of the piping and drain hose is complete, make a seal around the opening in the wall.**

The outside diameter of drain port is 26 mm, use a suitable drain hose.



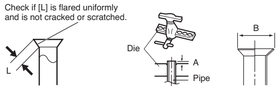

## 2 CONNECTING THE PIPE

**⚠ CAUTION**

1. **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.**
2. **While welding the pipes, be sure to blow dry nitrogen gas through them.**

#### 1. FLARING
(1) 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 the burrs.
(3) Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flare processing 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.




| Pipe outside diameter | Dimension A (mm) |
|---|---|
| | Flare tool for R410A, clutch |
| 6.35 mm (1/4 in.) | 0 to 0.5 |
| 9.52 mm (3/8 in.) | |
| 12.70 mm (1/2 in.) | |

| Pipe outside diameter | Dimension B $^{0}_{-0.4}$ (mm) |
|---|---|
| 6.35 mm (1/4 in.) | 9.1 |
| 9.52 mm (3/8 in.) | 13.2 |
| 12.70 mm (1/2 in.) | 16.6 |

When using conventional flare tools to flare R410A pipes, the dimension A should be approximately 0.5 mm more than indicated in the table (for flaring with R410A flare tools) to achieve the specified flaring. Use a thickness gauge to measure the dimension A.

| Pipe outside diameter | Width across flats of Flare nut |
|---|---|
| 6.35 mm (1/4 in.) | 17 mm |
| 9.52 mm (3/8 in.) | 22 mm |
| 12.70 mm (1/2 in.) | 26 mm |

(Continued to the next page.)