# FOR SERVICE PERSONNEL ONLY

**HITACHI**
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## SPLIT UNIT AIR CONDITIONER INSTALLATION MANUAL

| Indoor Unit | | Outdoor Unit |
|---|---|---|
| RAS-S10CAK | HFC R410A | RAC-S10CAK |

- Carefully read through the procedures of proper installation before starting installation work.
- The sales agent should inform customers regarding the correct operation of installation.

### Tools Needed For Installation Work

- ⊕ ⊖ Screwdriver
- Measuring Tape
- Knife
- Saw
- Pipe Cutter
- Hexagonal Wrench Key ( 4mm)
- Power Drill (ø 65mm ~ ø 80mm)
- Vacuum Pump
- Pliers or Wrench
- Torque Wrench
- Vacuum Pump Adaptor
- Flare Tool
- Gas Leakage Detector
- Manifold Valve
- Charge Hose
- Reammer
- File

## SAFETY PRECAUTION

- Read the safety precautions carefully before operating the unit.
- The contents of this section are vital to ensure safety. Please pay special attention to the following sign.

**⚠ WARNING ..... Incorrect methods of installation may cause death or serious injury.**
**⚠ CAUTION ..... Improper installation may result in serious consequence.**

Be sure that the unit operates in proper condition after installation. Explain to customer the proper way of operating the unit as described in the user's guide.

### This air conditioner uses new refrigerant HFC (R410A)

The basic installation work procedures are the same as conventional refrigerant (R22) models.
However, pay careful attention to the following points:

(1) Since the working pressure is 1.6 times higher than that of conventional refrigerant (R22) models, some of the piping and installation and service tools are special. Especially, when replacing a conventional refrigerant (R22) 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 (R22) 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 (R22) 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.

### ⚠ WARNING

- Please request your sales agent or qualified technician to install your unit. Water leakage, short circuit or fire may occur if you do the installation work yourself.
- Please observe the instructions stated in the installation manual during the process of installation. Improper installation may cause water leakage, electric shock and fire.
- Make sure that the units are mounted at locations which are able to provide full support to the weight of the units. If not, the units may collapse and impose danger.
- Observe the rules and regulations of the electrical installation and the methods described in the installation manual when dealing with the electrical work. Use power cables approved by the authorities of your country.
- Be sure to use the specified wire for connecting the indoor and outdoor units. Please ensure that the connections are tight after the conductors of the wire are inserted into the terminals. Improper insertion and loose contact may cause over-heating and fire.
- Please use the specified components for installation work. Otherwise, the units may collapse or water leakage, electric shock and fire may occur.
- Be sure to use the specified piping set for R410A. Otherwise, this may result in broken copper pipes or faults.
- When installing or removing an air conditioner, only specified refrigerant (R410A) shall be allowed, do not allow air or moisture to remain in the refrigeration cycle. Otherwise, pressure in the refrigeration cycle may become abnormally high so that a rupture may be caused.
- Be sure to ventilate fully if a refrigerant gas leak while at work. If the refrigerant gas comes into contact with fire, a poisonous gas may occur.
- After completion of installation work, check to make sure that there is no refrigeration gas leakage. If the refrigerant gas leaks into the room, coming into contact with fire in the fan-driven heater, space heater, etc., a poisonous gas may occur.
- Unauthorized modifications to the air conditioner may be dangerous. If a breakdown occurs please call a qualified air conditioner technician or electrician. Improper repairs may result in water leakage, electric shock and fire, etc.

### ⚠ CAUTION

- A circuit breaker or fuse (10A time delay) must be installed. Without a circuit breaker or fuse the danger of electric shock exists.
  The external switch shall be incorporated to completely disconnect from power supply. It should disconnect all poles, and a contact separation of at least 3mm must be present.
- Do not install the unit near a location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it.
- Do not install the indoor unit in a machine shop or kitchen where vapor from oil or its mist flows to the indoor unit. The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance and may deform and in the worst case, breake the plastic parts of the indoor unit.
- Please ensure smooth flow of water when installing the drain hose.
- Piping shall be suitable supported with a maximum spacing of 1m between the supports.

## THE CHOICE OF MOUNTING SITE (Please note the following matters and obtain permission from customer before installation).

**INDOOR UNIT**

### ⚠ WARNING

- The unit should be mounted at stable, non-vibratory location which can provide full support to the unit.

### ⚠ CAUTION

- No nearby heat source and no obstruction near the air outlet is allowed.
- The clearance distances from top, right and left are specified in figure below.
- The location must be convenient for water drainage and pipe connection with the Outdoor unit.
- To avoid interference from noise please place the unit and its remote controller at least 1m from the radio, television and inverter type fluorescent lamp.
- To avoid any error in signal transmission from the remote controller, please put the controller far away from high-frequency machines and high-power wireless systems.
- The installation height of indoor unit from floor must be 2.3m or more.

**OUTDOOR UNIT**

### ⚠ WARNING

- The Outdoor unit must be mounted at a location which can support heavy weight. Otherwise, noise and vibration will increase.

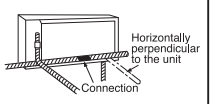
### ⚠ CAUTION

- Do not expose the unit under direct sunshine or rain. Besides, ventilation must be good and clear of obstruction.
- The air blown out of the unit should not point directly to animals or plants.
- The clearances of the unit from top, left, right, front and back are specified in figure below. At least 3 of the above sides must be open air.
- Be sure that the hot air blown out of the unit and noise do not disturb the neighbourhood.
- Do not install at a location where there is flammable gas, steam, oil and smoke.
- The location must be convenient for water drainage.
- Place the Outdoor unit and its connecting cord at least 1m away from the antenna or signal line of television, radio or telephone. This is to avoid noise interference.
- Do not install outdoor unit facing strong wind direction. It may damage the fan motor.

Names of Indoor Components

| No. | Item | Qty |
|---|---|---|
| ① | Hanger | 1 |
| ② | Screw for Hanger (4.1x32) | 6 |
| ③ | Holder for Remote Controller | 1 |
| ④ | AAA Size Battery | 2 |
| ⑤ | Screw for holder of Remote Controller (3.1x16) | 2 |
| ⑥ | Remote Controller | 1 |
| ⑦ | Purifying Filter | 1 |

**Direction of Piping**




There are 4 directions allowed, namely, horizontally perpendicular to the unit, vertically down from right, horizontally out from right and horizontally out to left.
Don't form the piping downward at the left of the unit.

**Dimension of Mounting Stand of the Outdoor unit**

(unit : mm)

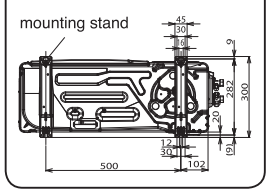


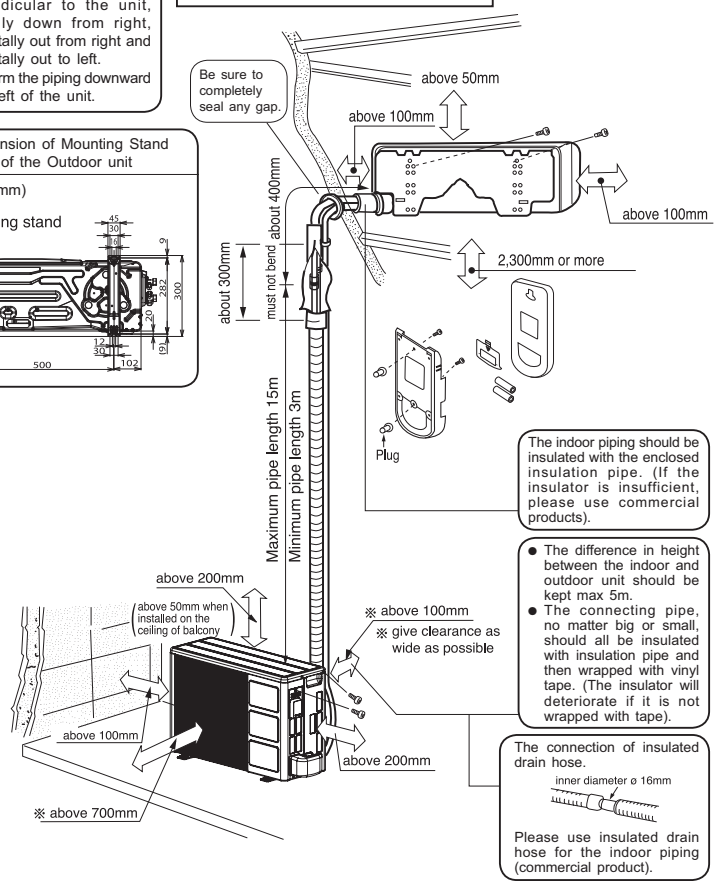

**Figure showing the Installation of Indoor and Outdoor Unit.**

### ⚠ CAUTION

In case the pipe length is more than 8m, add refrigerant R410A at 15 gram per every meter exceeds. However, pipe length shall not exceed 15m.

### ⚠ CAUTION

- The installation height of indoor unit must be 2.3m or more.



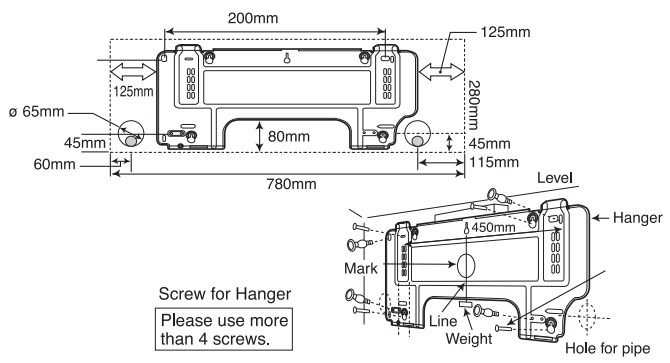

## 1 Installation of Hanger, Wall Penetration and Installation of Protection Pipe

### ⚠ CAUTION

- The draining of the water container inside the indoor unit can be done from the left. Therefore the hanger must be fixed horizontally or slightly tilted towards the side of drain hose. Otherwise, condensed water may overflow the water container.

### Direct Mounting On The Wall

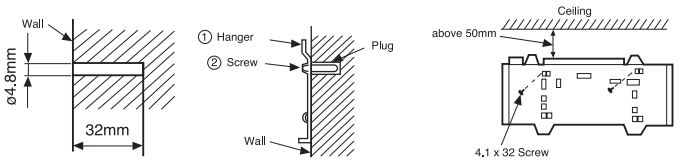
- Please use hidden beams in the wall to hold the hanger.




### Procedures of Installation and Precautions

- Procedures to fix the hanger.

1. Drill holes on wall. (As shown below)
2. Push plug into the holes. (As shown below)
3. Fix the hanger on wall with 4.1 x 32 screw (As shown in figure below)

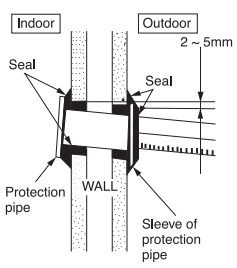



- Procedures to fix the holder of remote control.

1. Drill holes on wall. (As shown below)
2. Push plug into the holes. (As shown below)

### Wall Penetration and Installation of Protection Pipe

- Drill a ø 65mm hole on wall which is slightly tilted towards the outdoor side. Drill the wall at a small angle.
- Cut the protection pipe according to the wall thickness.
- Empty gap in the sleeve of protection pipe should be completely sealed to avoid dripping of rain water into the room.




### ⚠ WARNING

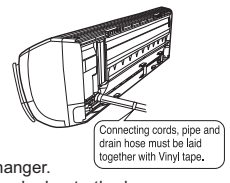
Be sure that the wire is not in contact with any metal in the wall. Please use the protection pipe as wire passing through the hollow part of the wall so as to prevent the possibility of damaged by mouse.
Unless it seals completely, any air with high humidity flows from outdoor and any dew may drop.

## 2 Installation of the Indoor Unit

### VERTICALLY DOWNWARD PIPING

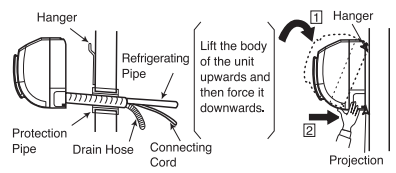
**Preparation**

- Connect connecting cord.
- Pull out the pipe, connecting cord and drain hose.




**Installation**

- The upper part of the Indoor unit is hanged on the hanger.
- The projection at the lower part of the Indoor unit is hooked onto the hanger.

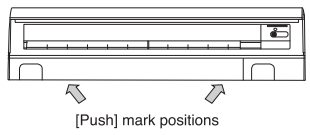



### ⚠ CAUTION

Please pull the lower part of the Indoor unit outwards to check if the unit is hooked onto the hanger. Improper installation may cause vibration and noise.

### HOW TO REMOVE INDOOR UNIT

- Push up the (PUSH) sections at the bottom of the indoor unit and pull the bottom plate towards you. Then the claws are released from the stationary plate.
  (The (PUSH) sections are indicated by 2 arrows in the right figure)



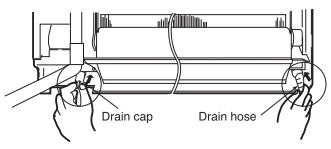

### HORIZONTAL PIPING

**Preparation**

**Change of Drain Hose and Installation Procedures.**

- Exchange the location of drain hose and drain cap during horizontal piping as shown in figure below. Be sure to plug in the drain hose until the insulating material folds upon itself.

- Please use pliers to pull out the drain cap. (This is an easier way to remove the drain cap).

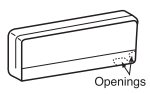


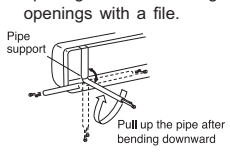
### ⚠ CAUTION

Condensed water may leak out if not inserted properly.

### HORIZONTAL & DOWNWARD PIPING – MAKING OPENINGS

- During horizontal or downward piping, use a knife to cut openings as shown in figure. Then smoothen the edges of openings with a file.

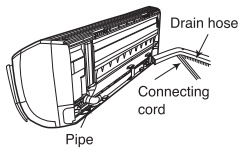


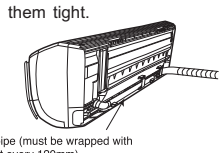




- Turn the piping while holding down the lower portion of pipe-support by hand.

### INSTALLATION OF REFRIGERATING PIPES AFTER CONNECTION

- The refrigerating pipes should be adjusted to fit into the hole on the wall and then ready for further connection.
- The terminals of 2 connected pipes must be covered with insulator used for terminal connection. Then the pipes are wrapped with insulation pipe.
- Connect the connecting cord after removing electrical cover. (Refer to "CONNECTION OF POWER CORD")
- After adjustment, fit the connecting cord and pipes into the space available under the indoor unit. Use holder to hold them tight.

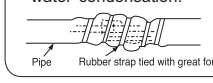



- Holder can be attached at the either of 2 places. Please select the easier position.

### ⚠ CAUTION

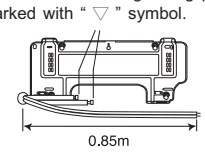
- The rubber strap used for fixing the insulator should not be tied with great force. Otherwise, this will damage heat insulation and causes water condensation.




### THE CONNECTION OF REFRIGERATING PIPE DURING THE INSTALLATION OF INDOOR UNIT

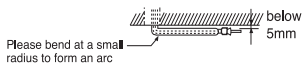
**Preparation To Install Refrigerating Pipes**

- The refrigerating pipes and connecting cord arrangement are attached.
- The end of the refrigerating pipes are at locations marked with " ▽ " symbol.




### ⚠ CAUTION

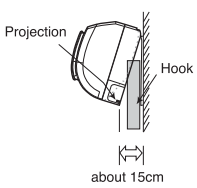
- Please fix in the plastic core after flaring to avoid plastic chips entering the pipes.

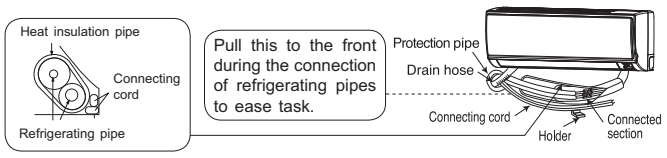



**Installation**

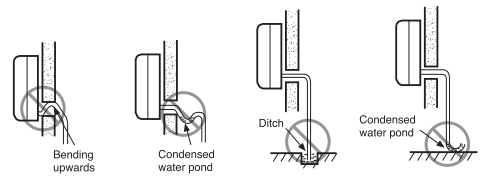
Hang the Indoor unit onto the hanger. Use the temporary stand at the back of the Indoor unit to push its lower part 15cm forwards. (Shown as right figure)

- Place the drain hose through the hole on the wall.
- Wrap the refrigerating pipes with insulation pipe after connecting refrigerating pipe.
- Connect the connecting cord after removing electrical cover. (Refer to "Connection of Power Cord")
- After adjustment, the connecting cord and refrigerating pipes are placed into the space available under the Indoor unit.
- The projection of Indoor unit must hook to the hanger.




## 3 Installation of Drain Hose




### ⚠ CAUTION

Be sure that the drain hose is not loosely connected or bend.

| ⚠ CAUTION | You are free to choose the side (left or right) for the installation of drain hose. Please ensure the smooth flow of condensed water of the Indoor unit during installation. (Carelessness may result in water leakage.) |
|---|---|

INDOOR UNIT