

INSTALLATION MANUAL

airHome 400

SPLIT UNIT AIR CONDITIONER

INDOOR UNIT
RAK-DH10PCAST
RAK-DH13PCAST



OUTDOOR UNIT
RAC-DH10PCAST
RAC-DH13PCAST

EN INSTRUCTION MANUAL

FOR SERVICE PERSONNEL ONLY

- 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.



Access the full version of the User Installation Manual by scanning the code.



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

INDOOR UNIT	<p>WARNING</p> <ul style="list-style-type: none"> The unit should be mounted at stable, non-vibratory location which can provide full support to the unit. 	OUTDOOR UNIT	<p>WARNING</p> <ul style="list-style-type: none"> The outdoor unit must be mounted at a location which can support heavy weight. Otherwise, noise and vibration will increase.
	<p>CAUTION</p> <ul style="list-style-type: none"> 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 must be 2.3m or more. 		<p>CAUTION</p> <ul style="list-style-type: none"> Selecting the installation location: Suitable location that will reduce the impact from rain and direct sun that may affect the unit performance. Besides that, 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 and front are specified in figure below. At least three 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 connection wire 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. Do not install the outdoor unit in a place where small animals may build their nests. If small animal goes inside the unit and touches the electrical parts, failure of the unit, smoke or fire may be caused. Request your customer to keep the surrounding of the unit is clean.

Names of Indoor Components

No.	Component's Name	Qty
①	Mounting Plate	1
②	Screw for Mounting Plate (4.1 x 32)	6
③	Holder for Remote Controller	1
④	AAA Size Battery	2
⑤	Screw for holder of Remote Controller (3.1 x 16)	2
⑥	Remote Controller	1
⑦	Purifying Filter	2

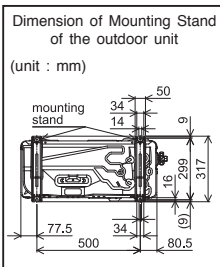
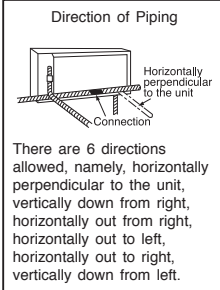
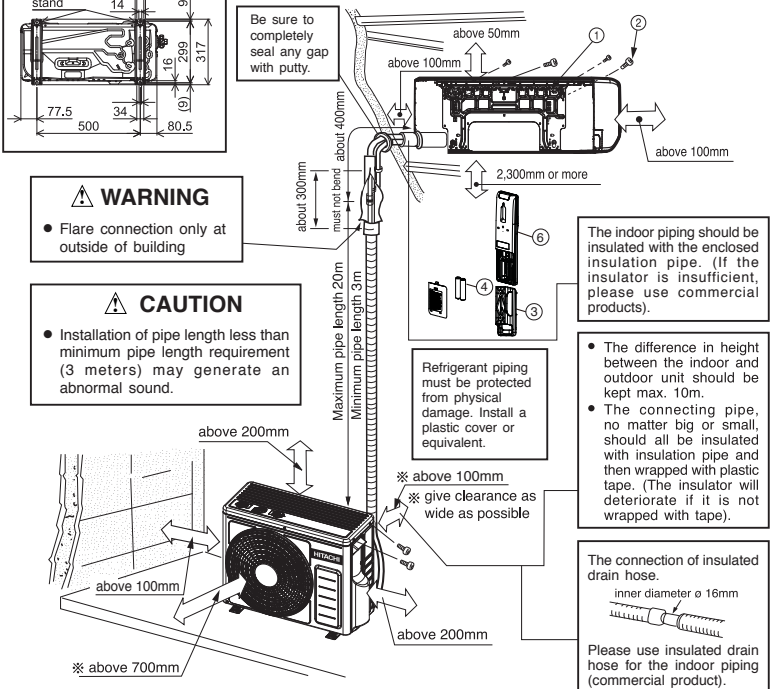


Figure showing the Installation of Indoor and Outdoor Unit.

In case the pipe length is more than the recommended length for chargeless, add refrigerant R32 as below. Do not exceed the maximum pipe length.

Model	Factory charge R32	Indoor A _{min} (m ²)	Chargeless up to	Additional R32	Maximum charge R32
RAC-DH10PCAST	0.50kg	0.24m ²	8m	10g/m	0.62kg
RAC-DH13PCAST	0.60kg	0.34m ²	8m	10g/m	0.72kg



- CAUTION**
 - A brazed, welded or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts. A vacuum valve shall be provided to evacuate the interconnecting pipe and/or any uncharged refrigerating system.
 - Mechanical connectors used indoor shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flare joints are reused indoors, the flare part shall be re-fabricated.
 - Refrigerant tubing shall be protected or enclosed to avoid damage.

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 mounting plate 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 mounting plate.

Procedures of Installation and Precautions

- Procedures to fix the mounting plate.
 - Drill holes on wall.
 - Push plug into the holes.
 - Fix the mounting plate on wall with 4.1 x 32 screw (As shown in figure below)
- Procedures to fix the holder of remote control.
 - Drill holes on wall.
 - 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 with putty 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 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 mounting plate.
- The projection at the lower part of the indoor unit is hooked onto the mounting plate.

HORIZONTAL PIPING

Preparation

- 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.

Change of Drain Hose and Installation Procedures.

- Remove the cap for drain hose installation.

CAUTION

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

CAUTION

For horizontally out to right piping

GOOD

- Press the upper side of clamp.
- Unfold the pipe to downward slowly.
- Bend the pipe to the right side of chassis.

BAD

Following bending from left to right directly could cause damage to pipe.

CAUTION

Condensed water may leak out if not inserted properly.

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.

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 end of the refrigerating pipes are at locations marked with "▽" symbol.

CAUTION

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

Installation

Hang the Indoor unit onto the mounting plate. Use the temporary stand at the back of the Indoor unit to push its lower part 15cm forwards.

- 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 mounting plate.

3 Installation of Drain Hose

CAUTION

- Do not guide the drain hose to places where corrosive gases (sulfur, ammonia, etc.) are generated, such as septic tanks and sewer.
- Corrosive gas may flow backward from the drain hose to the indoor unit, corrode the copper pipe, or it may cause offensive odors in the room.
- Cut the drain hose at a position 100 mm higher than the floor surface. It may cause water leakage due to air lock or clogging of foreign matter.

CAUTION

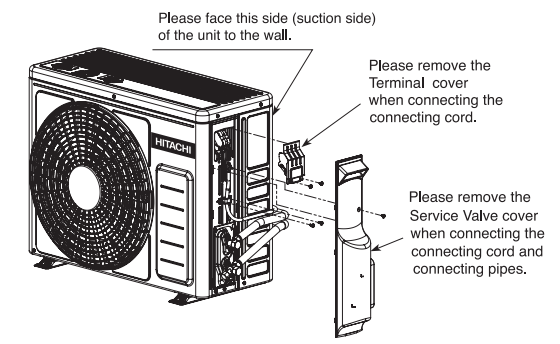
Be sure that the drain hose is not loosely connected or bend.

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.)

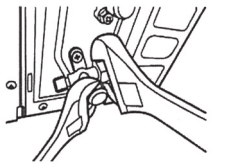
OUTDOOR UNIT

- Please mount the Outdoor unit on stable ground to prevent vibration and increase of noise level.
- Decide the location for piping after sorting out the different types of pipe available.
- Open the service valve cover by unscrewing the screws as shown below.



WARNING

- Use the two spanners on the service valve nuts to tighten and loosen so that the service valve will not deform. Gas leak from the crushed part, stagnation, touching fire, rarely cause ignition.



PURGING OF REFRIGERANT IS PROHIBITED

Purging of refrigerant will cause the unit to be lacked of refrigerant which may affect the capacity performance and lead to severe dew formation causing problem such as dew water drop or splashing from the unit.

When connecting pipes. If you tighten the flare nut by excess torque, the service valve on the small pipe side may be broken. The flare nut on the small pipe side should be torqued to 122 - 165lb.ft.in (140 - 190kgf.cm).

WARNING

BURST HAZARD

Do not allow air, etc. to get into refrigerant cycle (piping)

RISK OF EXPLOSION

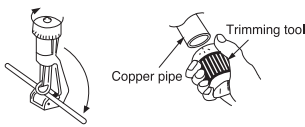
Compressor must be stopped before removing refrigerant pipes.

All service valve must be fully closed after pumping down operation.

INSTALLATION OF REFRIGERATING PIPES AND AIR REMOVAL

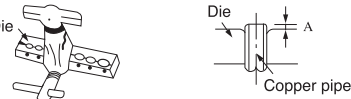
1 Preparation of Pipe

- Use a pipe cutter to cut the copper pipe.



CAUTION

- Jagged edge will cause leakage.
- Point the side to be trimmed downwards during trimming to prevent copper chips from entering the pipe.
- Before flaring, please put on the flare nut.



- Recommend to use R32 flaring tool.

Outer Diameter (mm)	Thickness (mm)	A (mm)		
		Flare tool for R32 Clutch type	Conventional flare tool Clutch type	Wing nut type
6.35 (1/4)	0.8	0.0 ~ 0.5	1.0~1.5	1.5~2.0
9.52 (3/8)	0.8	0.0 ~ 0.5	1.0~1.5	1.5~2.0

2 Pipe Connection

CAUTION

- When removing flare nut from the Indoor unit, please ensure to use proper tooling.
- Prevent pipe from coming in contact with water or working in wet area.



	Outer dia. of pipe	Torque N-m (kgf·cm)
Small dia. side	6.35 (1/4")	13.7 - 18.6 (140 - 190)
Large dia. side	9.52 (3/8")	34.3 - 44.1 (350 - 450)
Valve head cap	Small dia. side	6.35 (1/4") 19.6 - 24.5 (200 ~ 250)
	Large dia. side	9.52 (3/8") 19.6 - 24.5 (200 ~ 250)
Valve core cap		12.3 - 15.7 (125 ~ 160)

3 Removal Of Air From The Pipe And Gas Leakage Inspection

Procedures of using Vacuum Pump for Air Removal

As shown in right figure, remove the cap of valve core. Then, connect the charge hose. Remove the cap of valve head. Connect the vacuum pump adapter to the vacuum pump and connect the charge hose to the adapter.

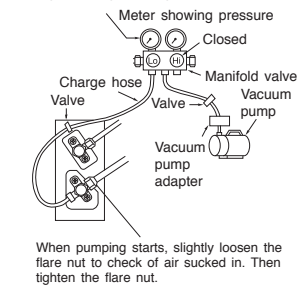
Fully tighten the "Hi" knob of the manifold valve and completely unscrew the "Lo" knob. Run the vacuum pump for about 10-15 minutes, then completely tighten the "Lo" knob and switch off the vacuum pump. After vacuuming, confirm that the needle of the manifold gauge is stable for 3-5 minutes.

Remove the charge hose and tighten the cap of valve core. Check the cap's periphery if there is any gas leakage.

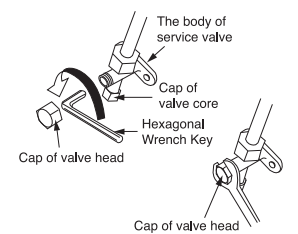
Completely unscrew the spindle of the service valve (at 2 places) in anti-clockwise direction to allow the flow of refrigerant (using Hexagonal Wrench key).

Re-cap the service valve and tighten using wrench. Check the cap's periphery if there is any gas leakage. The task is then completed.

When the meter reaches -101KPa (-76cmHg) during pumping, fully tighten the shuttle.



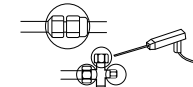
When pumping starts, slightly loosen the flare nut to check of air sucked in. Then tighten the flare nut.



Gas Leakage Inspection

Please use gas leakage detector to check if leakage occurs at the connection of Flare nut as shown on the right.

If gas leakage occurs, further tighten the connection to stop leakage. (Use the detector provided for R32)



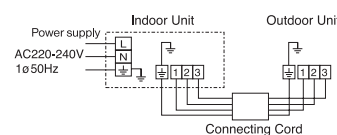
CONNECTION OF POWER CORD

WARNING THIS APPLIANCE MUST BE EARTHED.

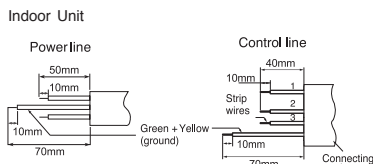
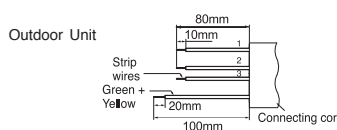
Must install air conditioner according to the electrical installation standards for Thailand of the Engineering Institute of Thailand under The Royal Patronage of His Majesty the King.

Procedures of Wiring

In case that power is supplied from Indoor Unit



Detail of cutting the connecting cord



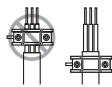
When removing the connecting wires for the indoor unit, please remove the low cover panel in front of the unit.

WARNING

- The naked part of the wire core should be 10 mm fit to the terminal tightly. Then try to pull the individual wire to check if the contact is tight. Improper insertion may burn the terminal.
- Be sure to use only wire specified for the use of air-conditioner.
- Please refer to the manual for wire connection and the wiring technique should meet the standard of the electrical installation.
- There is an AC voltage drop between the LN terminal if the power is on. Therefore, be sure to remove the plug from its socket.

WARNING

- Leave some space in the connecting cord for maintenance purpose and be sure to secure it with the cord band.
- Secure the connecting cord along the coated part of the wire using the cord band. Do not exert pressure on the wire as this may cause overheating or fire.
- Supply cords, current-carrying conductors become taut before earthing conductor, if the cord slips out of the cord band.



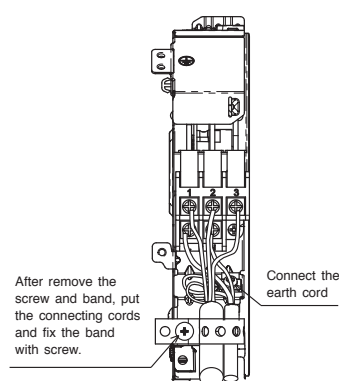
Checking for the electric source and the voltage range

- Before installation, the power source must be checked and necessary wiring work must be completed. To make the wiring capacity proper, use the wire gauge list below for the wiring from house distribution fuse box to the outdoor unit in consideration of the locked rotor current.
- Investigate the power supply capacity and other electrical conditions at the installation location. Depending on the model of room air conditioner to be installed, request the customer to make arrangements for the necessary electrical work etc. The electrical work includes the wiring work up the outdoor. In localities where electrical conditions are poor, use of a voltage regulation is recommended.

Wiring Of The Indoor Unit

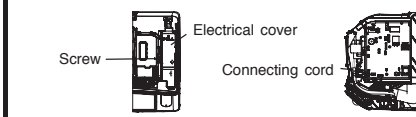
- For wire connection of the Indoor unit, you need to remove front panel and electrical cover.

Method to remove front panel
• Please refer to Instruction Manual - "Removing the Front Panel" under "Cleaning of Front Panel".



Method to remove electrical cover

- Remove the screw and electrical cover.
- Insert the connecting cord (1, 2, 3) from the back of unit.
- Fixed the wire to terminal wires firmly as shown as below.



IMPORTANT

Wire length	Wire gauge
up to 20m	1.5mm ²

Note:
• Outdoor supply cords shall not be lighter than polychloroprene sheathed flexible cord, 60245 IEC 57.

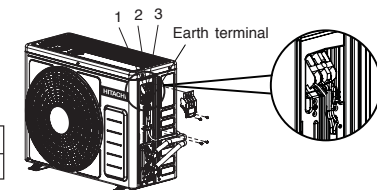
CAUTION

Wiring Of The Outdoor Unit

- Please remove the side plate for wire connection.

WARNING

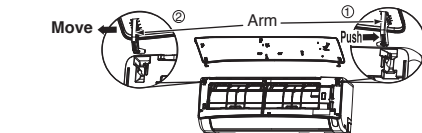
- If you cannot attach the side plate due to the connecting cord, press the connecting cord in direction to the front panel to fix it.
- Be sure that the hooks of the side plate is fixed in certainly. Otherwise water leakage may occur and this causes short circuit or faults.



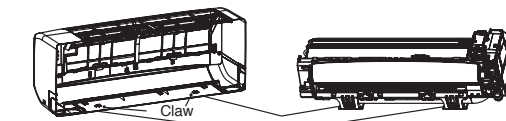
HOW TO REMOVE OR ATTACH THE FRONT COVER

How to Remove the Front Cover

- 1 Remove the front panel

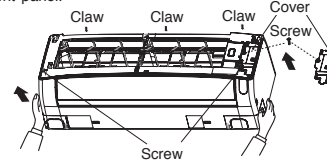


- 1 Push the end of the right-side arm outward to release the tab.
- 2 Move the left-side arm outward to release the left tab, and then pull the panel towards you.
- 2 Remove the filters.
- 3 After removing 3 screws, remove the cover of electric box, pull the center of the front cover towards you and release the claws.
- 4 Pull the side faces (lower sections) of the front cover towards you as shown in the figure and remove the cover.



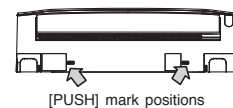
How to Attach the Front Cover

- 1 After installing the front cover onto the unit, hook three claws at upper side of the cover securely. Then, push the center of the front cover to lock the claws.
- 2 Assemble the cover of electric box.
- 3 Tighten the 3 screws.
- 4 Install the filter.
- 5 Attaching the Front Panel
 - Insert the shaft of the left arm along the step on the unit into the hole.
 - Securely insert the shaft of the right arm along the step on the unit into the hole.
 - Make sure that the front panel is securely attached, and then close the front panel.



HOW TO REMOVE INDOOR UNIT

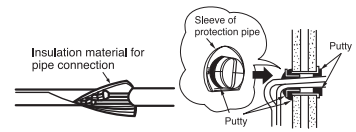
- Push up the (PUSH) sections at the bottom of the indoor unit and pull the bottom plate towards you. Then the claws are released from the stationary plate. (The (PUSH) sections are indicated by 2 arrows as below figure)



FINAL STAGE OF INSTALLATION

1 Insulation And Maintenance Of Pipe Connection

- The connected terminals should be completely sealed with heat insulator and then tied up with rubber strap.
- Please tie the pipe and power line together with vinyl tape as shown in the figure showing the installation of Indoor and Outdoor units. Then fix their position with holders.
- To enhance the heat insulation and to prevent water condensation, please cover the outdoor part of the drain hose and pipe with insulation pipe.
- Completely seal any gap with putty.



3 Power Source And Operation Test

Power Source

CAUTION

- Please use a new socket. Accident may occur due to the use of old socket because of poor contact.
- Please plug in and then remove the plug for 2 - 3 times. This is to ensure that the plug is completely plugged into the socket.
- Keep additional length for the power cord and do not render the plug under external force as this may cause poor contact.
- Do not fix the power cord with U-shape nail.

Operation Test

- Please ensure that the air conditioner is in normal operating condition during the operation test.
- Explain to your customer the proper operation procedures as described in the user's manual.

Trial run

Be sure to measure the supply voltage before connecting the power cord into the power outlet.

- Perform a trial run to make sure that the air conditioner operates properly.
1. Operate with Cooling Mode.
 2. Press the ROOM TEMPERATURE button to set the temperature to 16°C for cooling mode. Set the fan speed to "High".
 3. Operate the air conditioner for at least 20 minutes and make sure that the air from the air conditioner is cool.
 4. Press the ON/OFF button on the remote controller to make sure that the air conditioner stops running.
- If the indication lamps of the indoor unit blink with sounding the buzzer during the operation test, perform a check following the procedures below.

Indicator Blinking Mode	What to check
All indicators blink once repeatedly	Make sure that the voltage of the power outlet is correct according to the product specification.
All indicators blink twice repeatedly.	Make sure that the connecting cord is connected correctly and securely.
All indication lamps blink three times repeatedly.	Make sure that the spindles of both service valves are open. (Outdoor fan might operate for near 15 minutes after the operation stop for the protection. For the reoperation at that case, do it after outdoor fan will stop.)

- If connecting cord cable connection is not correct, the timer lamp may blink 12 times or blink 21 times during the operation test. If this occurs, check the connection of the connecting cord cable. Please check the service guide for details.
- To reset the power supply by switching the circuit breaker OFF, and ON only after
 - waiting for at least 5 minutes; or
 - pressing the temporary switch button only once while the power is OFF.

CAUTION

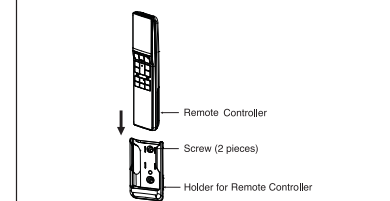
- Don't operate for over 5 minutes with the situation that the spindle of the service valve is closed. This will cause the defect.
- Don't operate by Cool Mode or Dry Mode with the door and windows opened, (the room humidity is always above 80%) for a long period of time. Water will condense and drip down occasionally. This will wet your furniture.

- Explain to your customer the proper operation procedures as described in the user's manual.
- If the indoor unit won't operate, check the cable for correct connection.
- Turn on the lamp in the room where the indoor unit is installed and check the remote controller for normal operation.

2 Installation Of Remote Controller

- The remote controller can be placed in its holder which is fixed on wall or beam.
- To operate the remote controller at its holder, please ensure that the unit can receive signal transmitted from the controller at the place where the holder is to be fixed. The unit will beep when signal is received from the remote controller. The signal transmission is weakened by the fluorescent light. Therefore, during the installation of the remote control holder, please switch on the light, even during day time, to determine the mounting location of the holder.

The controller should be insert from top into bottom side of the holder as shown below.



Pump Down Method When Reuse Existing Piping (R410A Model) for R32 Model

- Compressor oil of R410A model is insoluble in compressor oil of R32 model. The mixing of compressor oil may cause damage of compressor.

Possibility of Mixing

- Reuse of piping of R410A model is dangerous because of its compressor oil.
- When reuse piping of R410A model, pump down must be carried out properly to ensure compressor oil which is remained inside piping is collected away.

CAUTION

Reuse of piping R410A model only apply if previous model is Hitachi and proper pump down method is used.

To Reuse Old Piping

- Piping of R410A model can be reused only when air-conditioner is properly pumped down.
- The purpose of pump down is to collect back the compressor oil (which is mixed with refrigerant and circulating inside refrigeration cycle) properly into the outdoor unit of air conditioner.

Proper Pump Down Method

- 1 Operate air conditioner at cooling mode for 10-15 minutes
 - Most Important Process
 - Purpose: To make the oil & refrigerant mix together. They are in separated condition when air conditioner is stopped.
- 2 After 10-15 minutes of pre operation, close 2s valve. After 3 minutes, close 3s valve. Mixed refrigerant & oil will be collected into outdoor unit.
- 3 Take out air conditioner unit. It is advisable to flush the piping with R32 to avoid any contamination remain before new installation.
- 4 Install New Refrigerant air conditioner

Explanation of symbols displayed on unit

WARNING	
	This symbol shows that this equipment uses a flammable refrigerant. If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition.
	This symbol shows that the Operation Instructions should be read carefully.
	This symbol shows that a service personnel should be handling this equipment with reference to the Installation Manual.
	This symbol shows that there is information included in the Operation Manual and/or Installation Manual.

WARNING

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unfit method or using incompatible material may cause product damage, burst and serious injury.
- The appliance/pipe-work shall be stored in a well ventilated room with floor area larger than A_{min}(m²) and without any continuously operating ignition source. Keep away from open flames, any operating gas appliances or any operating electric heater. Else, it may explode and cause injury or death.
- The appliance/pipe-work shall be installed, and/or operated in a room with floor area larger than A_{min}(m²) and keep away ignition sources, such as heat/spark/open flame or hazardous areas such as gas appliances, gas cooking, reticulated gas supply systems or electric cooking appliances, etc.
- Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat, flame, sparks, or other sources of ignition. Else, it may explode and cause injury or death.