



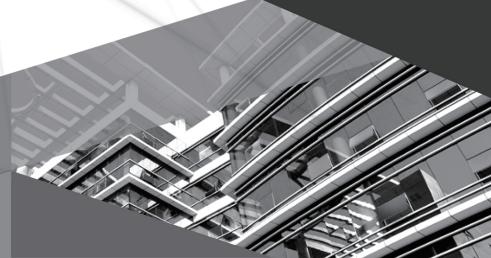
# ***Owner's Manual***

## **Original Instructions**

Split Air Conditioner



Thank you for choosing our product.  
Please read this Owner's Manual carefully before operation and  
retain it for future reference.





GRHART24AS

# Content

## Operation Notices

|                   |   |
|-------------------|---|
| Precautions ..... | 1 |
| Parts Name .....  | 6 |

## Installation Notice

|  |    |
|--|----|
| Installation dimension diagram.....                            | 7  |
| Safety precautions for installing and relocating the unit..... | 8  |
| Tools for installation.....                                    | 9  |
| Selection of installation location .....                       | 9  |
| Requirements for electric connection.....                      | 10 |

## Installation

|                                   |    |
|-----------------------------------|----|
| Installation of outdoor unit..... | 11 |
| Vacuum pumping .....              | 14 |
| Leakage detection.....            | 14 |
| Check after installation.....     | 15 |

## Test and operation

|                      |    |
|----------------------|----|
| Test operation ..... | 15 |
|----------------------|----|

## Attachment

|  |    |
|--|----|
| Configuration of connection pipe ..... | 16 |
| Pipe expanding method.....             | 18 |

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

If it needs to install, move or maintain the air conditioner, please contact dealer or local service center to conduct it at first. Air conditioner must be installed, moved or maintained by appointed unit. Otherwise, it may cause serious damage or personal injury or death.

## Explanation of Symbols

---



**DANGER**

Indicates a hazardous situation that, if not avoided, will result in death or serious injury.



**WARNING**

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.



**CAUTION**

Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

**NOTICE**

Indicates important but not hazard-related information, used to indicate risk of property damage.



Indicates a hazard that would be assigned a signal word **WARNING** or **CAUTION**.

## Exception Clauses

---

Manufacturer will bear no responsibilities when personal injury or property loss is caused by the following reasons.

1. Damage the product due to improper use or misuse of the product;
2. Alter, change, maintain or use the product with other equipment without abiding by the instruction manual of manufacturer;
3. After verification, the defect of product is directly caused by corrosive gas;
4. After verification, defects are due to improper operation during transportation of product;
5. Operate, repair, maintain the unit without abiding by instruction manual or related regulations;
6. After verification, the problem or dispute is caused by the quality specification or performance of parts and components that produced by other manufacturers;
7. The damage is caused by natural calamities, bad using environment or force majeure.



### WARNING

#### **Operation and Maintenance**

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance.
- Cleaning and user maintenance shall not be made by children without supervision.
- Do not connect air conditioner to multi-purpose socket. Otherwise, it may cause fire hazard.
- Do disconnect power supply when cleaning air conditioner. Otherwise, it may cause electric shock.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Do not wash the air conditioner with water to avoid electric shock.
- Do not spray water on indoor unit. It may cause electric shock or malfunction.
- After removing the filter, do not touch fins to avoid injury.
- Do not use fire or hair dryer to dry the filter to avoid deformation or fire hazard.

## Precautions



### WARNING

- Maintenance must be performed by qualified professionals. Otherwise, it may cause personal injury or damage.
- Do not repair air conditioner by yourself. It may cause electric shock or damage. Please contact dealer when you need to repair air conditioner.
- Do not extend fingers or objects into air inlet or air outlet. It may cause personal injury or damage.
- Do not block air outlet or air inlet. It may cause malfunction.
- Do not spill water on the remote controller, otherwise the remote controller may be broken.
- When below phenomenon occurs, please turn off air conditioner and disconnect power immediately, and then contact the dealer or qualified professionals for service.
  - Power cord is overheating or damaged.
  - There's abnormal sound during operation.
  - Circuit break trips off frequently.
  - Air conditioner gives off burning smell.
  - Indoor unit is leaking.
- If the air conditioner operates under abnormal conditions, it may cause malfunction, electric shock or fire hazard.
- When turning on or turning off the unit by emergency operation switch, please press this switch with an insulating object other than metal.
- Do not step on top panel of outdoor unit, or put heavy objects. It may cause damage or personal injury.

## Precautions



### WARNING

#### Attachment

- Installation must be performed by qualified professionals. Otherwise, it may cause personal injury or damage.
- Must follow the electric safety regulations when installing the unit.
- According to the local safety regulations, use qualified power supply circuit and circuit break.
- Do install the circuit break. If not, it may cause malfunction.
- An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
- Including an circuit break with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload.
- Air Conditioner should be properly grounded. Incorrect grounding may cause electric shock.
- Don't use unqualified power cord.
- Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring or malfunction. Please install proper power supply cables before using the air conditioner.
- Properly connect the live wire, neutral wire and grounding wire of power socket.
- Be sure to cut off the power supply before proceeding any work related to electricity and safety.



## Precautions



### WARNING

- Do not put through the power before finishing installation.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
- The appliance shall be installed in accordance with national wiring regulations.
- Installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.
- The air conditioner is the first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
- The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
- The grounding resistance should comply with national electric safety regulations.
- The appliance must be positioned so that the plug is accessible.
- All wires of indoor unit and outdoor unit should be connected by a professional.
- If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.

## Precautions



### WARNING

- For the air conditioner with plug, the plug should be reachable after finishing installation.
- For the air conditioner without plug, an circuit break must be installed in the line.
- If you need to relocate the air conditioner to another place, only the qualified person can perform the work. Otherwise, it may cause personal injury or damage.
- Select a location which is out of reach for children and far away from animals or plants. If it is unavoidable, please add the fence for safety purpose.
- The indoor unit should be installed close to the wall.

### Working temperature range

For models: GRHART24AS

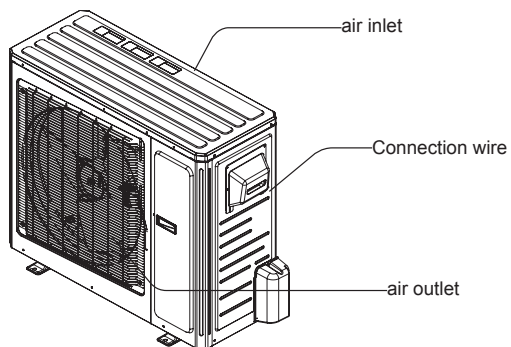
|                 | Indoor side DB/WB(°C/°F) | Outdoor side DB/WB(°C/°F) |
|-----------------|--------------------------|---------------------------|
| Maximum cooling | 26.7/19.4(80/67)         | 46/24(115/75)             |
| Maximum heating | 26.7/-(80/-)             | 24/18(75/65)              |

### **NOTICE:**

- The operating temperature range (outdoor temperature) for cooling is -20°C (-4°F)~46°C (115°F); for heating is -25°C (-13°F)~24°C (75°F).

# Parts Name

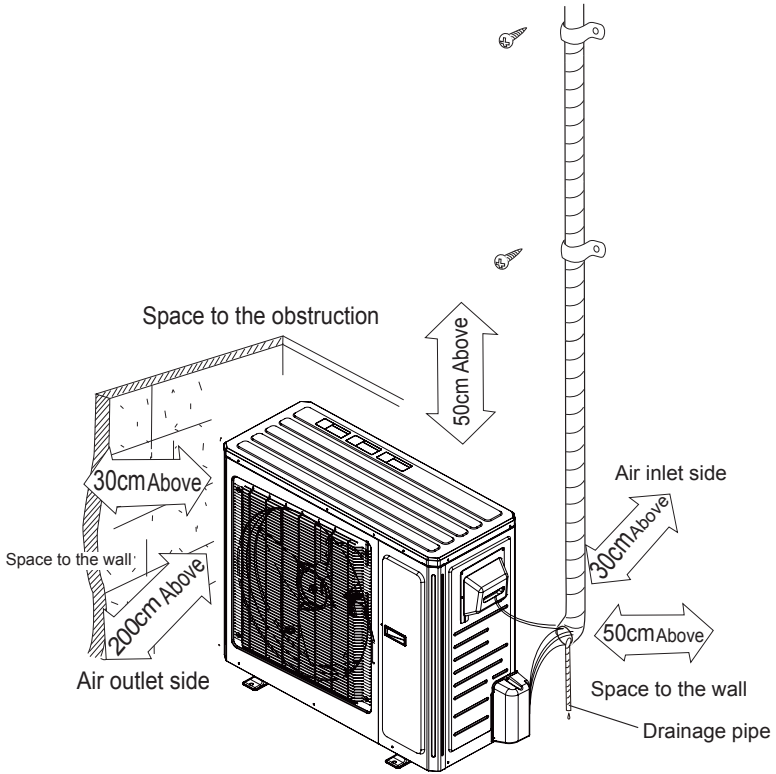
## Outdoor Unit



### **NOTICE:**

Actual product may be different from above graphics, please refer to actual products.

# Installation dimension diagram



# Safety precautions for installing and relocating the unit

To ensure safety, please be mindful of the following precautions.

## Warning

- **When installing or relocating the unit, be sure to keep the refrigerant circuit free from air or substances other than the specified refrigerant.**  
Any presence of air or other foreign substance in the refrigerant circuit will cause system pressure rise or compressor rupture, resulting in injury.
- **When installing or moving this unit, do not charge the refrigerant which is not comply with that on the nameplate or unqualified refrigerant.**  
Otherwise, it may cause abnormal operation, wrong action, mechanical malfunction or even series safety accident.
- **When refrigerant needs to be recovered during relocating or repairing the unit, be sure that the unit is running in cooling mode. Then, fully close the valve at high pressure side (liquid valve). About 30-40 seconds later, fully close the valve at low pressure side (gas valve), immediately stop the unit and disconnect power. Please note that the time for refrigerant recovery should not exceed 1 minute.**  
If refrigerant recovery takes too much time, air may be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- **During refrigerant recovery, make sure that liquid valve and gas valve are fully closed and power is disconnected before detaching the connection pipe.**  
If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- **When installing the unit, make sure that connection pipe is securely connected before the compressor starts running.**  
If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- **Prohibit installing the unit at the place where there may be leaked corrosive gas or flammable gas.**  
If there leaked gas around the unit, it may cause explosion and other accidents.
- **Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire.**  
Poor connections may lead to electric shock or fire.
- **Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so that their terminals receive no external stresses.**  
Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.

## Tools for installation

|                          |                   |                    |
|--------------------------|-------------------|--------------------|
| 1 Level meter            | 2 Screw driver    | 3 Impact drill     |
| 4 Drill head             | 5 Pipe expander   | 6 Torque wrench    |
| 7 Open-end wrench        | 8 Pipe cutter     | 9 Leakage detector |
| 10 Vacuum pump           | 11 Pressure meter | 12 Universal meter |
| 13 Inner hexagon spanner |                   | 14 Measuring tape  |

### Note:

- Please contact the local agent for installation.
- Don't use unqualified power cord.

## Selection of installation location

### Basic requirement

Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:

1. The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
2. The place with high-frequency devices (such as welding machine, medical equipment).
3. The place near coast area.
4. The place with oil or fumes in the air.
5. The place with sulfureted gas.
6. Other places with special circumstances.
7. The appliance shall not be installed in the laundry.
8. It's not allowed to be installed on the unstable or motive base structure (such as truck) or in the corrosive environment (such as chemical factory).

### Outdoor unit

1. Select a location where the noise and outflow air emitted by the outdoor unit will not affect neighborhood.
2. The location should be well ventilated and dry, in which the outdoor unit won't be exposed directly to sunlight or strong wind.
3. The location should be able to withstand the weight of outdoor unit.
4. Make sure that the installation follows the requirement of installation dimension diagram.
5. Select a location which is out of reach for children and far away from animals or plants. If it is unavoidable, please add the fence for safety purpose.

# Requirements for electric connection

## Safety precaution

1. Must follow the electric safety regulations when installing the unit.
2. According to the local safety regulations, use qualified power supply circuit and air switch.
3. Make sure the power supply matches with the requirement of air conditioner.  
Unstable power supply or incorrect wiring or malfunction. Please install proper power supply cables before using the air conditioner.
4. Properly connect the live wire, neutral wire and grounding wire of power socket.
5. Be sure to cut off the power supply before proceeding any work related to electricity and safety.
6. Do not put through the power before finishing installation.
7. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
8. The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
9. The appliance shall be installed in accordance with national wiring regulations.

## Grounding requirement

1. The air conditioner is the first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
2. The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
3. The grounding resistance should comply with national electric safety regulations.
4. The appliance must be positioned so that the plug is accessible.
5. An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
6. Including an circuit break with suitable capacity, please note the following table.  
Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload. (Caution: please do not use the fuse only for protect the circuit)

# Installation of outdoor unit

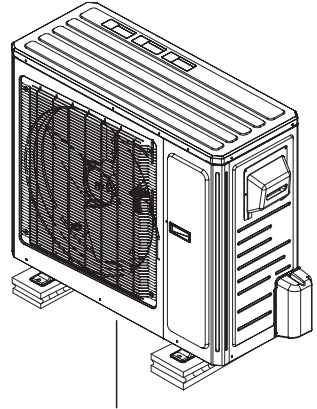
## Step one: fix the support of outdoor unit

(select it according to the actual installation situation)

1. Select installation location according to the house structure.
2. Fix the support of outdoor unit on the selected location with expansion screws.

### Note:

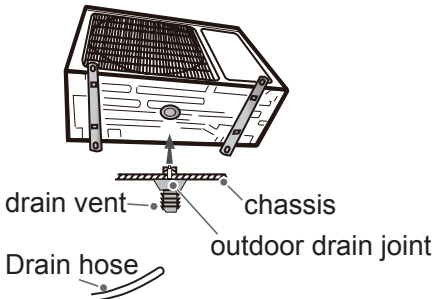
- Take sufficient protective measures when installing the outdoor unit.
- Make sure the support can withstand at least four times of the unit weight.
- The outdoor unit should be installed at least 3cm above the floor in order to install drain joint.
- For the unit with cooling capacity of 2300W ~5000W, 6 expansion screws are needed; for the unit with cooling capacity of 6000W ~8000W, 8 expansion screws are needed; for the unit with cooling capacity of 10000W ~16000W, 10 expansion screws are needed.



at least 3cm above the floor

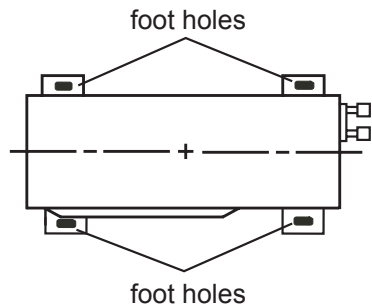
## Step two: install drain joint (Only for cooling and heating unit)

1. Connect the outdoor drain joint into the hole on the chassis, as shown in the picture below.
2. Connect the drain hose into the drain vent.



## Step three: fix outdoor unit

1. Place the outdoor unit on the support.
2. Fix the foot holes of outdoor unit with bolts.

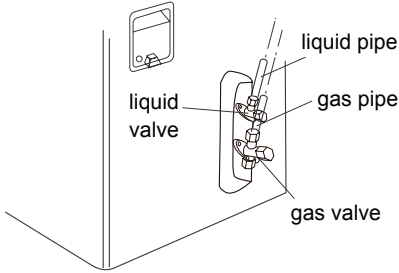




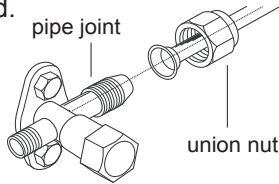
# Installation of outdoor unit

## Step four: connect indoor and outdoor pipes

1. Remove the screw cap of valve and aim the pipe joint at the bellmouth of pipe.



2. Pretightening the union nut with hand.

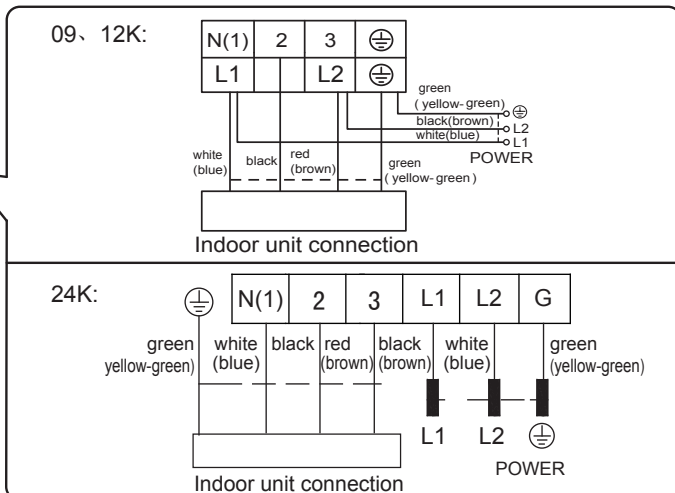
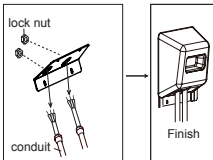
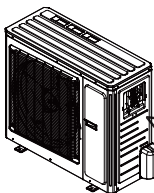


3. Tighten the union nut with torque wrench by referring to the sheet below.

| Hex nut diameter | Tightening torque (N·m) |
|------------------|-------------------------|
| Φ 6              | 15~20                   |
| Φ 9.52           | 30~40                   |
| Φ 12             | 45~55                   |
| Φ 16             | 60~65                   |
| Φ 19             | 70~75                   |

## Step five: connect outdoor electric wire

1. Remove the wire clip; connect the power connection wire and signal control wire (only for cooling and heating unit) to the wiring terminal according to the color; fix them with screws.



# Installation of outdoor unit

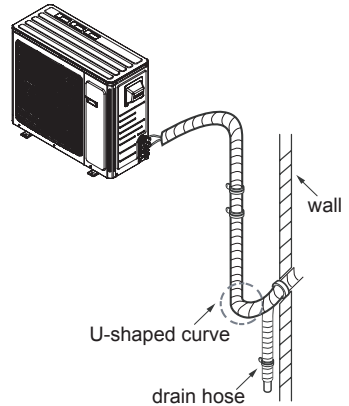
- Fix the power connection wire and signal control wire with wire clip (only for cooling and heating unit).

**Note:**

- After tighten the screw, pull the power cord slightly to check if it is firm.
- Never cut the power connection wire to prolong or shorten the distance.

## Step six: neaten the pipes

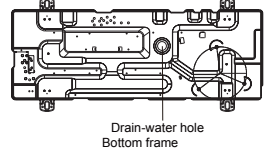
- The pipes should be placed along the wall, bent reasonably and hidden possibly. Min. semidiameter of bending the pipe is 10cm.
- If the outdoor unit is higher than the wall hole, you must set a U-shaped curve in the pipe before pipe goes into the room, in order to prevent rain from getting into the room.



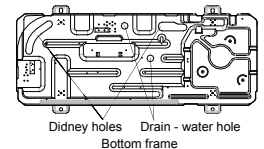
## Outdoor Condensate Drainage

During heating operation, the condensate and defrosting water should be drained out reliably through the drain hose. Install the outdoor drain connector in a  $\Phi 25$  hole on the base plate and attach the drain hose to the connector so that the waste water formed in the outdoor unit can be drained out. The hole diameter 25 must be plugged. Whether to plug other holes will be determined by the dealers to actual conditions.

09K ACD UNIT、12K AFC UNIT:



24K AFE UNIT:



The 09K ACD UNIT、12K AFC UNIT、24K AFE UNIT drainage hole consists of two  $\Phi 25$  and two kidney holes (see the fig.1). The drain plug consists of one  $\Phi 25$  and two kidney plugs.

(The figures in this manual may be different with the material objects, please refer to the material objects for reference)

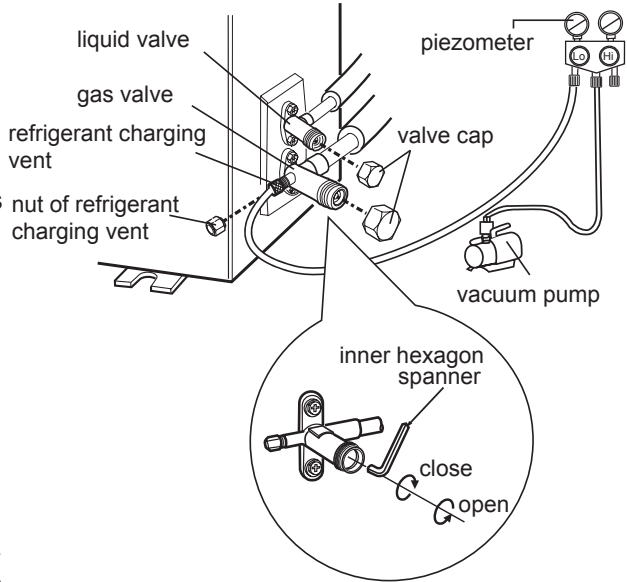


Fig.1

# Vacuum pumping

## Use vacuum pump

1. Remove the valve caps on the liquid valve and gas valve and the nut of refrigerant charging vent.
2. Connect the charging hose of piezometer to the refrigerant charging vent of gas valve and then connect the other charging hose to the vacuum pump.
3. Open the piezometer completely and operate for 10-15min to check if the pressure of piezometer remains in  $-0.1\text{MPa}$ .
4. Close the vacuum pump and maintain this status for 1-2min to check if the pressure of piezometer remains in  $-0.1\text{MPa}$ . If the pressure decreases, there may be leakage.
5. Remove the piezometer, open the valve core of liquid valve and gas valve completely with inner hexagon spanner.
6. Tighten the screw caps of valves and refrigerant charging vent.
7. Reinstall the handle.



# Leakage detection

1. With leakage detector:  
Check if there is leakage with leakage detector.
2. With soap water:  
If leakage detector is not available, please use soap water for leakage detection. Apply soap water at the suspected position and keep the soap water for more than 3min. If there are air bubbles coming out of this position, there's a leakage.

## Check after installation

- Check according to the following requirement after finishing installation.

| Items to be checked  | Possible malfunction   |
|--|--|
| Has the unit been installed firmly?  | The unit may drop, shake or emit noise.                                    |
| Have you done the refrigerant leakage test?                                      | It may cause insufficient cooling (heating) capacity.                      |
| Is heat insulation of pipeline sufficient?                                       | It may cause condensation and water dripping.                              |
| Is water drained well?   | It may cause condensation and water dripping.                              |
| Is the voltage of power supply according to the voltage marked on the nameplate? | It may cause malfunction or damaging the parts.                            |
| Is electric wiring and pipeline installed correctly?                             | It may cause malfunction or damaging the parts.                            |
| Is the unit grounded securely?   | It may cause electric leakage.   |
| Does the power cord follow the specification?                                    | It may cause malfunction or damaging the parts.                            |
| Is there any obstruction in the air inlet and outlet?                            | It may cause insufficient cooling (heating) capacity.                      |
| The dust and sundries caused during installation are removed?                    | It may cause malfunction or damaging the parts.                            |
| The gas valve and liquid valve of connection pipe are open completely?           | It may cause insufficient cooling (heating) capacity.                      |
| Is the inlet and outlet of piping hole been covered?                             | It may cause insufficient cooling (heating) capacity or waster eletricity. |

## Test operation

### 1. Preparation of test operation

- The client approves the air conditioner.
- Specify the important notes for air conditioner to the client.

### 2. Method of test operation

- Put through the power, press ON/OFF button on the remote controller to start operation.
- Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.
- If the ambient temperature is lower than 16°C (60.8°F), the air conditioner can't start cooling.

# Configuration of connection pipe

1. Standard length of connection pipe
  - 5m, 7.5m, 8m.
2. Min. length of connection pipe is 3m.
3. Max. length of connection pipe.

Max length of connection pipe

Unit: m

| Cooling capacity      | Max length of connection pipe |
|-----------------------|-------------------------------|
| 5000Btu/h<br>(1465W)  | 15                            |
| 7000Btu/h<br>(2051W)  | 15                            |
| 9000Btu/h<br>(2637W)  | 15                            |
| 12000Btu/h<br>(3516W) | 20                            |
| 18000Btu/h<br>(5274W) | 25                            |

| Cooling capacity       | Max length of connection pipe |
|------------------------|-------------------------------|
| 24000Btu/h<br>(7032W)  | 25                            |
| 28000Btu/h<br>(8204W)  | 30                            |
| 36000Btu/h<br>(10548W) | 30                            |
| 42000Btu/h<br>(12306W) | 30                            |
| 48000Btu/h<br>(14064W) | 30                            |

4. The additional refrigerant oil and refrigerant charging required after prolonging connection pipe
  - After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.
  - The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):
 
$$\text{Additional refrigerant charging amount} = \text{prolonged length of liquid pipe} \times \text{additional refrigerant charging amount per meter}$$
  - Basing on the length of standard pipe, add refrigerant according to the requirement as shown in the table. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.

# Configuration of connection pipe

Additional refrigerant charging amount for R22, R407C, R410A and R134a

| Diameter of connection pipe |                | Outdoor unit throttle |                          |
|-----------------------------|----------------|-----------------------|--------------------------|
| Liquid pipe(mm)             | Gas pipe(mm)   | Cooling only(g/m)     | Cooling and heating(g/m) |
| Φ6                          | Φ9.52 or Φ12   | 15                    | 20                       |
| Φ6 or Φ9.52                 | Φ16 or Φ19     | 15                    | 50                       |
| Φ12                         | Φ19 or Φ22.2   | 30                    | 120                      |
| Φ16                         | Φ25.4 or Φ31.8 | 60                    | 120                      |
| Φ19                         | —              | 250                   | 250                      |
| Φ22.2                       | —              | 350                   | 350                      |

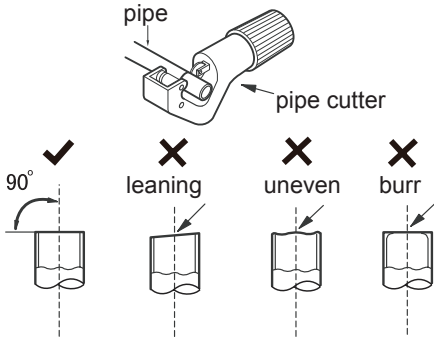
# Pipe expanding method

## Note:

Improper pipe expanding is the main cause of refrigerant leakage. Please expand the pipe according to the following steps:

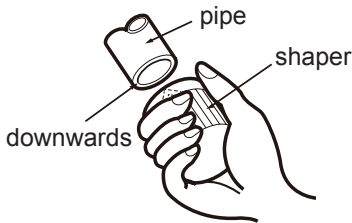
### A: Cut the pipe

- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with pipe cutter.



### B: Remove the burrs

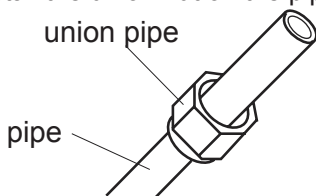
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



### C: Put on suitable insulating pipe

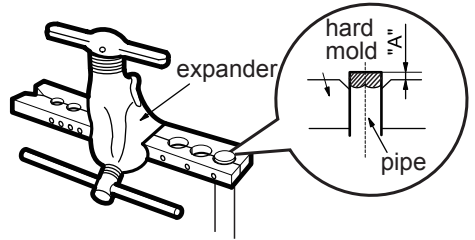
### D: Put on the union nut

- Remove the union nut on the indoor connection pipe and outdoor valve; install the union nut on the pipe.



### E: Expand the port

- Expand the port with expander.



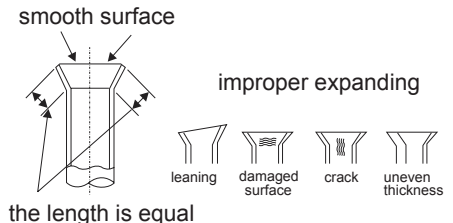
### Note:

- "A" is different according to the diameter, please refer to the sheet below:

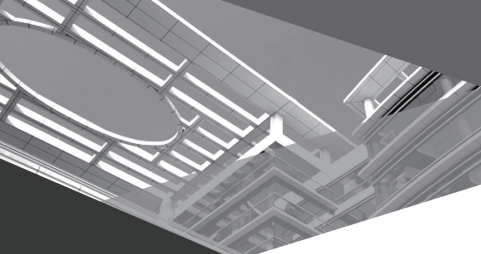
| Outer diameter (mm) | A(mm) |     |
|---------------------|-------|-----|
|                     | Max   | Min |
| Φ6 - 6.35(1/4")     | 1.3   | 0.7 |
| Φ9.52(3/8")         | 1.6   | 1.0 |
| Φ12-12.7(1/2")      | 1.8   | 1.0 |
| Φ15.8-16(5/8")      | 2.4   | 2.2 |

### F: Inspection

- Check the quality of expanding port. If there is any blemish, expand the port again according to the steps above.



the length is equal



Refricenter of Miami, Inc.

7101 N.W. 43rd Street Miami, Florida 33166



66129934092