TOSHIBA

INSTALLATION MANUAL

AIR CONDITIONER (SPLIT TYPE)

Indoor unit
RAS-24N3KV Series

Outdoor unit
RAS-24N3AV Series
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Before installation, please read these precautions for safety carefully.

- Be sure to follow the precautions provided here to avoid safety risks. The symbols and their meanings are shown below.

**WARNING**: It indicates that incorrect use of this unit may cause severe injury or death.

**CAUTION**: It indicates that incorrect use of this unit may cause personal injury (*1), or property damage (*2).

*1: Personal injury means a slight accident, burn, or electrical shock which does not require admission or repeated hospital treatment.

*2: Property damage means greater damage which affects assets or resources.

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For general public use

Power supply cord of parts of appliance for outdoor use shall be at least polyvinyl chloride sheathed flexible cord (design H07RN-F) or cord designation 60245 IEC66 (3.5 mm² or more). (Shall be installed in accordance with national regulations).

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**CAUTION**

- **THIS AIR CONDITIONER USES THE NEW HFC REFRIGERANT (R410A), WHICH DOES NOT DESTROY THE OZONE LAYER.**

  R410A refrigerant is apt to be affected by impurities such as water, oxidizing membranes, and oils because the pressure of R410A refrigerant is approx. 1.6 times of refrigerant R22. As well as the adoption of this new refrigerant, refrigerating machine oil has also been changed. Therefore, during installation work, be sure that water, dust, former refrigerant, or refrigerating machine oil does not enter the refrigeration cycle of a new-refrigerant air conditioner.

  To avoid mixing refrigerant and refrigerating machine oil, the sizes of charging port connecting sections on the main unit are different from those for the conventional refrigerant, and different size tools are also required. For connecting pipes, use new and clean piping materials with highpressure withstand capabilities, designed for R410A only, and ensure that water or dust does not enter. Moreover, do not use any existing piping as its pressure withstand may be insufficient and may contain impurities.

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**DANGER**

- **FOR USE BY QUALIFIED PERSONS ONLY.**

  - TURN OFF MAIN POWER SUPPLY BEFORE ATTEMPTING ANY ELECTRICAL WORK. MAKE SURE ALL POWER SWITCHES ARE OFF.

  - CONNECT THE CONNECTING CABLE CORRECTLY. IF THE CONNECTING CABLE IS CONNECTED WRONG, ELECTRIC PARTS MAY BE DAMAGED.

  - CHECK THE EARTH WIRES THAT IT IS NOT BROKEN OR DISCONNECTED BEFORE INSTALLATION.

  - **DO NOT INSTALL NEAR CONCENTRATIONS OF COMBUSTIBLE GAS OR GAS VAPORS.**

  - **FAILURE TO FOLLOW THIS INSTRUCTION CAN RESULT IN FIRE OR EXPLOSION.**

  - **TO PREVENT OVERHEATING THE INDOOR UNIT AND CAUSING A FIRE HAZARD, PLACE THE UNIT WELL AWAY (MORE THAN 2 M) FROM HEAT SOURCES SUCH AS RADIATORS, HEATERS, FURNACE, STOVES, ETC.**

  - **WHEN MOVING THE AIR CONDITIONER FOR INSTALLING IT IN ANOTHER PLACE AGAIN, BE VERY CAREFUL NOT TO GET THE SPECIFIED REFRIGERANT (R410A) WITH ANY OTHER GASEOUS BODY INTO THE REFRIGERATION CYCLE. IF AIR OR ANY OTHER GAS IS MIXED IN THE REFRIGERANT, THE GAS PRESSURE IN THE REFRIGERATION CYCLE BECOMES ABNORMALLY HIGH AND IT RESULTINGLY CAUSES BURST OF THE PIPE AND INJURIES ON PERSONS.**

  - **IN THE EVENT THAT THE REFRIGERANT GAS LEAKS OUT OF THE PIPE DURING THE INSTALLATION WORK, IMMEDIATELY LET FRESH AIR INTO THE ROOM. IF THE REFRIGERANT GAS IS HEATED BY FIRE OR SOMETHING ELSE, IT CAUSES GENERATION OF POISONOUS GAS.**

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**WARNING**

- **Never modify this unit by removing any of the safety guards or bypassing any of the safety interlock switches.**

- **Installation work must be requested from the supplying retail dealership or professional vendors. Self-installation may cause water leakage, electrical shock, or fire as a result of improper installation.**

- **Specified tools and pipe parts for model R410A are required, and installation work must be done in accordance with the manual. HFC type refrigerant R410A has 1.6 times more pressure than that of conventional refrigerant (R22). Use the specified pipe parts, and ensure correct installation, otherwise damage and/or injury may be caused. At the same time, water leakage, electrical shock, and fire may occur.**

- **Be sure to install the unit in a place in which can sufficiently bear its weight. If the load bearing of the unit is not enough, or installation of the unit is improper, the unit may fall and result in injury.**

- **Electrical work must be performed by a qualified electrical engineer in accordance with the code governing such installation work, internal wiring regulations, and the manual. A dedicated circuit and the rated voltage must be used. Insufficient power supply or improper installation may cause electrical shock or fire.**

- **Use a cable type wire to connect wires in the indoor/outdoor units. Midway connection, stranded wire, and single-wire connections are not allowed. Improper connection or fixing may cause a fire.**

- **Wiring between the indoor unit and outdoor units must be well shaped so that the cover can be firmly placed. Improper cover installation may cause increased heat, fire, or electrical shock at the terminal area.**

- **Be sure to use improved accessories or the specified parts. Failure to do so may cause the unit to fall, water leakage, fire or electrical shock.**

- **After the installation work, ensure that there is no leakage of refrigerant gas. If the refrigerant gas leaks out of the pipe into the room and is heated by fire or something else from a fanheater, stove or gas range, it causes generation of poisonous gas.**

- **Make sure the equipment is properly earthed. Do not connect the earth wire to a gas pipe, water pipe, lightning conductor, or telephone earth wire. Improper earth work may be the cause of electrical shock.**

- **Do not install the unit where flammable gas may leak. If there is any gas leakage or accumulation around the unit, it can cause a fire.**

- **Do not select a location for installation where there may be excessive water or humidity, such as a bathroom. Deterioration of insulation may cause electrical shock or fire.**

- **Installation work must be performed following the instructions in this installation manual. Improper installation may cause water leakage, electrical shock or fire. Check the following items before operating the unit.**

  - Be sure that the pipe connection is well placed and there are no leaks.
  - Check that the service valve is open. If the service valve is closed, it may cause overpressure and result in compressor damage. At the same time, if there is a leak in the connection part, it may cause air suction and overpressure, resulting in damage to the unit or injury.
  - In a pump-down operation, be sure to stop the compressor unit before removing the refrigerant pipe. If removing the refrigerant pipe while the compressor is operating with the service valve opened, it may cause air suction and overpressure, resulting in damage to the unit or injury.
  - Do not modify the power cable, connect the cable midway, or use a multiple outlet extension cable. Doing so may cause contact failure, insulation failure, or excess current, resulting in fire or electrical shock.
  - **Appliance shall be installed in accordance with national wiring regulation.**

  If you detect any damage do not install the unit. Contact your supplying dealer immediately.

  - Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.
CAUTION

• Exposure of unit to water or other moisture before installation could result in electric shock. Do not store it in a wet basement or expose to rain or water.
• After unpacking the unit, examine it carefully for possible damage.
• Do not install in a place that can increase the vibration of the unit. Do not install in a place that can amplify the noise level of the unit or where noise and discharged air might disturb neighbors.
• Please read this installation manual carefully before installing the unit. It contains further important instructions for proper installation.
• This appliance must be connected to the main power supply by means of a circuit breaker depending on the place where the unit is installed. Failure to do so may cause electrical shock.
• Follow the instructions in this installation manual to arrange the drain pipe for proper drainage from the unit. Ensure that drained water is discharged. Improper drainage can result in water leakage, causing water damage to furniture.
• Tighten the flare nut with a torque wrench using the prescribed method. Do not apply excess torque. Otherwise, the nut may crack after a long period of usage and it may cause the leakage of refrigerant.
• Wear gloves (heavy gloves such as cotton gloves) for installation work. Failure to do so may cause personal injury when handling parts with sharp edges.
• Do not touch the air intake section or the aluminum fins of the outdoor unit. It may cause injury.
• Do not install the outdoor unit in a place which can be a nest for small animals. Small animals could enter and contact internal electrical parts, causing a failure or fire.
• Request the user to keep the place around the unit tidy and clean.
• Make sure to conduct a trial operation after the installation work, and explain how to use and maintain the unit to the customer in accordance with the manual. Ask the customer to keep the operation manual along with the installation manual.
• The manufacturer shall not assume any liability for the damage caused by not observing the description of this manual.

REQUIREMENT OF REPORT TO THE LOCAL POWER SUPPLIER

Please make absolutely sure that the installation of this appliance is reported to the local power supplier before installation. If you experience any problems or if the installation is not accepted by the supplier, the service agency will take adequate countermeasures.
The provided Remote Controller is a wireless type, which also can be used as a wire. Please see “How to Connect The Remote Controller for Wired Operation”, in case of wired control is required.

Remark:
- Detail of accessory and installation parts can see in the accessory sheet.
- Some pictures might be different from the actual parts.

### Optional Installation Parts

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<th>Parts name</th>
<th>Q’ty</th>
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<tr>
<td>A</td>
<td>Refrigerant piping</td>
<td>One each</td>
</tr>
<tr>
<td></td>
<td>Liquid side: 29.52 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gas side: 215.88 mm</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Pipe insulating material</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(polyethylene foam, 8 mm thick)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Putty, PVC tapes</td>
<td>One each</td>
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### Fixing Bolt Arrangement of Outdoor Unit

- Secure the outdoor unit with fixing bolts and nuts if the unit is likely to be exposed to a strong wind.
- Use M10 mm anchor bolts and nuts.
- If it is necessary to drain the defrost water, attach drain nipple and cap water proof to the bottom plate of the outdoor unit before installing it.
**INDOOR UNIT**

### Installation Place
- A place which provides the spaces around the indoor unit as shown in the diagram.
- A place where there are no obstacles near the air inlet and outlet.
- A place which allows easy installation of the piping to the outdoor unit.
- A place where the front panel to be opened.
- The indoor unit shall be installed as top of the indoor unit comes to at least 2 m height. Also, it must be avoided to put anything on the top of the indoor unit.

**CAUTION**
- Direct sunlight to the indoor unit’s wireless receiver should be avoided.
- The microprocessor in the indoor unit should not be too close to RF noise sources. (For details, see the owner’s manual).

### Remote control
- A place where there are no obstacles such as a curtain that may block the signal from the remote control.
- Do not install the remote control in a place exposed to direct sunlight or close to a heating source such as a stove.
- Keep the remote control at least 1 m apart from the nearest TV set or stereo equipment (This is necessary to prevent image disturbances or noise interference).
- The location of the remote control should be determined as shown below.

### Cutting a Hole and Mounting Installation Plate

#### Cutting a hole
When installing the refrigerant pipes from the rear
1. After determining the pipe hole position on the mounting plate ( ), drill the pipe hole (∅65 mm) at a slight downward slant to the outdoor side.

**NOTE**
- When drilling a wall that contains a metal lath, wire lath or metal plate, be sure to use a pipe hole brim ring sold separately.

#### Mounting the installation plate

**When the installation plate is directly mounted on the wall**
1. Securely fit the installation plate onto the wall by screwing it in the upper and lower parts to hook up the indoor unit.
2. To mount the installation plate on a concrete wall with anchor bolts, use the anchor bolt holes as illustrated in the below figure.
3. Install the installation plate horizontally in the wall.

**CAUTION**
When installing the installation plate with a mounting screw, do not use the anchor bolt holes. Otherwise, the unit may fall down and result in personal injury and property damage.

**NOTE**
- Secure four corners and lower parts of the installation plate with 4 to 6 mounting screws to install it.
- In case of block, brick, concrete or similar type walls, make 5 mm dia. holes in the wall.
- Insert clip anchors for appropriate mounting screws.

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**Remote control**

**CAUTION**
- Direct sunlight to the indoor unit’s wireless receiver should be avoided.
- The microprocessor in the indoor unit should not be too close to RF noise sources. (For details, see the owner’s manual).

**Cutting a Hole and Mounting Installation Plate**

**Cutting a hole**
When installing the refrigerant pipes from the rear
1. After determining the pipe hole position on the mounting plate ( ), drill the pipe hole (∅65 mm) at a slight downward slant to the outdoor side.

**NOTE**
- When drilling a wall that contains a metal lath, wire lath or metal plate, be sure to use a pipe hole brim ring sold separately.
Wiring Connection

How to connect the connecting cable

Wiring of the connecting cable can be carried out without removing the front panel.

1. Remove the air inlet grille.
2. Securely remove four screws at the front panel.
3. Insert the connecting cable (according to the local rule) into the pipe hole on the wall.
4. Take out the connecting cable through the cable slot on the rear panel so that it protrudes about 15 cm from the front.
5. Insert the connecting cable fully into the terminal block and secure it tightly with screws.
6. Securely connect the control wire to terminal of Display unit board as shown on figure 3.
7. Set the control wire throughout at slot on front cover of Display unit then reassemble Display with main casing by reverse process of figure 3.
8. Set the control wire out from indoor unit same portion as power supply and connecting cable as shown on figure 4.
9. Reassemble the indoor unit by reverse process of 1 to 3.

CAUTION
• Be sure to refer to the wiring system diagram labeled inside the front panel.
• Check local electrical cords and also any specific wiring instructions or limitations.

NOTE
• Use stranded wire only.
• Wire type: More than 1.5 mm² (H07RN-F or 60245 IEC66) or 1.3 mm² (AWG-16)

How to Connect Remote Controller for Wire Operation

For indoor unit

1. Remove cover of remote controller by sliding down and take it out.
2. If batteries are exist, please take them out. The combination of using wire controller and batteries may cause of batteries explosion.
3. Mark and arrange hole for fix below screw (∅3.1 x 16L) on the wall to hang remote controller as shown on figure 7.
4. Insert control wire from rear side of remote controller as shown on figure 6.
5. Fix provided screw (∅3.1 x 25L) as shown on figure 8.
6. Make hole for insert control wire by use screwdriver break the polyester sheet close hole (3.1 x 25L) to fix battery cover together with wall as shown on figure 9 (tighten firmly but not over 0.15 N·m (0.02 kgf·m)).
7. Set the control wire out position (tighten firmly but not over 0.12 N·m (0.01 kgf·m)).
8. Set the control wire throughout at position (0.12 N·m (0.01 kgf·m)).
9. Assembly battery cover which provided with accessory bag then use provide screw (∅3.1 x 25L) to fix battery cover together with wall as shown on figure 10 (tighten firmly but not over 0.15 N·m (0.82 kgf·m)).
10. Reassemble cover of remote controller.

For remote controller

1. Remove the air inlet grille upward.
2. Slightly open the lower part of the front panel then pull the upper part of the front panel toward you to remove it from the rear plate as shown on figure 1.
3. Insert the connecting cable (according to the local rule) into the pipe hole on the wall.
4. After removing the front panel, remove the screws and Display unit from the unit as shown on figure 2 then open the front cover of Display unit as shown on figure 3.
5. Arrange the control wire as detail and specification as shown on figure 4.
6. Securely connect the control wire to terminal of Display unit board as shown on figure 5 (tighten firmly but not over 0.12 N·m (0.01 kgf·m)).
7. Open the air inlet grille upward.
8. Securely connect the control wire to terminal of Display unit board as shown on figure 5.
9. Take out the connecting cable through the cable slot on the rear panel so that it protrudes about 15 cm from the front.
10. Insert the connecting cable fully into the terminal block and secure it tightly with screws.
11. Tighten firmly but not over 1.2 N·m (0.12 kgf·m)
12. Tighten firmly but not over 0.12 N·m (0.01 kgf·m).
13. Tighten firmly but not over 0.25 N·m (0.03 kgf·m)
14. Insert control wire from rear side of remote controller as shown on figure 6.
15. Fix control wire which arrange as shown on figure 7 and 16 to terminal by provided screws (tighten firmly but not over 0.25 N·m (0.03 kgf·m)).
16. Set control wire through gutter way at rear side of remote controller as shown on figure 11.
17. Fix provided screw (∅3.1 x 16L) on the wall to hang remote controller as shown on figure 12.
18. Mark and arrange hole for fix below screw (∅3.1 x 25L) as shown on figure 13.
19. Assembly battery cover which provided with accessory bag then use provide screw (∅3.1 x 25L) to fix battery cover together with wall as shown on figure 14 (tighten firmly but not over 0.15 N·m (0.02 kgf·m)).
20. Reassemble cover of remote controller.

* Wire size 28-22 AWG (0.08~0.32 mm²) Outer diameter not over 4.7 mm, control wire length 30 m. or less.
Piping and Drain Hose Installation

1. Die-cutting front panel slit
Cut out the slit on the leftward or right side of the front panel for the left or right connection and the slit on the bottom left or right side of the front panel for the bottom left or right connection with a pair of nippers.

2. Changing drain hose
For leftward connection, bottom-leftward connection and rear-leftward connection's piping, it is necessary to change the drain hose and drain cap.

How to remove the drain hose
- The drain hose can be removed by removing the screw securing the drain hose and then pulling out the drain hose.
- When removing the drain hose, be careful of any sharp edges of steel plate. The edges can injuries.
- To install the drain hose, insert the drain hose firmly until the connection part contacts with heat insulator, and then secure it with original screw.

How to remove the drain cap
Clip the drain cap by needle-nose pliers and pull out.

How to fix the drain cap
1) Insert hexagon wrench (4 mm) in a center head.
2) Firmly insert the drain cap.

CAUTION
Firmly insert the drain hose and drain cap; otherwise, water may leak.

In case of right or left piping
- After scribing slits of the front panel with a knife or a making-off pin, cut them with a pair of nippers or an equivalent tool.

In case of bottom right or bottom left piping
- After scribing slits of the front panel with a knife or a making-off pin, cut them with a pair of nippers or an equivalent tool.

Left-hand connection with piping
- Bend the connecting pipe so that it is laid within 43 mm above the wall surface. If the connecting pipe is laid exceeding 43 mm above the wall surface, the indoor unit may unstably be set on the wall.
- When bending the connecting pipe, make sure to use a spring bender so as not to crush the pipe.

Bend the connecting pipe within a radius of 30 mm.
To connect the pipe after installation of the unit (figure)

* Remark:
1. Recommend to use double insulation lead wire for connect remote control and air conditioner.
2. For wire operation, 1 remote control can control only 1 indoor unit.
3. In wire operation, remote controller will return to initial condition (PRESET, TIMER and CLOCK will return to initial condition) when user shutdown power supply of Air conditioner.

When attaching the air inlet grille, perform the same process as for removal but in reverse order.
**NOTES**

If the pipe is bent incorrectly, the indoor unit may unstably be set on the wall. After passing the connecting pipe through the pipe hole, connect the connecting pipes to the auxiliary pipes and wrap the facing tape around them.

**CAUTION**

- Bind the auxiliary pipes (two) and connecting cable with facing tape tightly. In case of leftward piping and rear-leftward piping, bind the auxiliary pipes (two) only with facing tape.
- Carefully arrange pipes so that any pipe does not stick out of the rear plate of the indoor unit.
- Carefully connect the auxiliary pipes and connecting pipes to one another and cut off the insulating tape wound on the connecting pipe to avoid double-taping at the joint; moreover, seal the joint with the vinyl tape, etc.
- Since dewing results in a machine trouble, make sure to insulate both connecting pipes. (Use polyethylene foam as insulating material)
- When bending a pipe, carefully do it, not to crush it.

**Drainage**

1. Run the drain hose sloped downwards.

**NOTE**

- The hole should be made at a slight downward slant on the outdoor side.

2. Put water in the drain pan and make sure that the water is drained out of doors.

3. When connecting extension drain hose, insulate the connecting part of extension drain hose with shield pipe.

**CAUTION**

- Arrange the drain pipe for proper drainage from the unit. Improper drainage can result in dew-dropping.

**Indoor Unit Fixing**

1. Pass the pipe through the hole in the wall and hook the indoor unit on the installation plate at the upper hook.
2. Swing the indoor unit to right and left to confirm that it is firmly hooked up on the installation plate.
3. While pressing the indoor unit onto the wall, hook it at the lower part on the installation plate. Pull the indoor unit toward you to confirm that it is firmly hooked up on the installation plate.

- For detaching the indoor unit from the installation plate, pull the indoor unit toward you while pushing its bottom up at the specified parts.

**OUTDOOR UNIT**

**Accessory Parts**

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<th>Part name</th>
<th>Q'ty</th>
<th>Shape</th>
<th>Usage</th>
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<tr>
<td>Cable tie</td>
<td>2</td>
<td>![Cable tie image]</td>
<td>For fixing the Power cord</td>
</tr>
<tr>
<td>Protective bush</td>
<td>1</td>
<td>![Protective bush image]</td>
<td>For protecting wire (pipe cover)</td>
</tr>
<tr>
<td>Guard material for passage part</td>
<td>1</td>
<td>![Guard material for passage part image]</td>
<td>For protecting passage part (pipe cover)</td>
</tr>
<tr>
<td>Drain ripple</td>
<td>1</td>
<td>![Drain ripple image]</td>
<td>For Heat pump model</td>
</tr>
<tr>
<td>Waterproof rubber cap</td>
<td>5</td>
<td>![Waterproof rubber cap image]</td>
<td>For Heat pump model</td>
</tr>
</tbody>
</table>
### Installation Place

- A place which provides enough spaces around the outdoor unit as shown in the diagram.
- A place which can bear the weight of the outdoor unit and does not allow an increase in noise level and vibration.
- A place where the operation noise and discharged air do not disturb your neighbors.
- A place which is not exposed to a strong wind.
- A place free of a leakage of combustible gases.
- A place which does not block a passage.
- When the outdoor unit is to be installed in an elevated position, be sure to secure its feet.
- An allowable length of the connecting pipe is up to 30 m.
- There is no need to add refrigerant as long as the length of the connection piping is 20 m or less.
- You will need to add 30g of refrigerant per meter of added connection piping for installations requiring connection piping to be between 21 m to 30 m.
- An allowable height level is up to 20 m.
- A place where the drain water does not cause any problems.

#### CAUTION

1. Install the outdoor unit in a location where the discharge air is not blocked.
2. When an outdoor unit is installed in a location that is always exposed to strong winds like a coast or on the high stories of a building, secure normal fan operation by using a duct or wind shield.
3. When installing the outdoor unit in a location that is constantly exposed to strong winds such as on the upper stairs or rooftop of a building, apply the windproofing measures referred to in the following examples.

1) Install the unit so that its discharge port faces the wall of the building. Keep a distance 500 mm or more between the unit and wall surface.

2) Consider the wind direction during the operational season of the air conditioner, and install the unit so that the discharge port is set at a right angle relative to the wind direction.

For reference

- When using an air conditioner under low outside temperature conditions (Outside temp: -5 °C or lower) in COOL mode, prepare a duct or wind shield so that it is not affected by the wind.

<Example>

- If a heating operation is to be continuously performed for a long time under the condition that the outdoor temperature is 0°C or lower, draining defrosted water may be difficult due to the bottom plate freezing, resulting in trouble with the cabinet or fan.
- It is recommended to procure an anti-freeze heater locally in order to safely install the air conditioner.
  
For details, contact the dealer.
Refrigerant Piping

Knockout of pipe cover

Knockout procedure

- The indoor/outdoor connecting pipes can be connected in 4 directions. Take off the knockout part of the pipe cover through which pipes or wires will pass through the base plate.
- Detach the pipe cover and tap on the knockout section a few times with the shank of a screwdriver. A knockout hole can easily be punched.
- After punching out the knockout hole, remove burrs from the hole and then install the supplied protective bush and guard material around the passage hole to protect wires and pipes. Be sure to attach the pipe covers after pipes have been connected. Cut the slits under the pipe covers to facilitate the installation. After connecting the pipes, be sure to mount the pipe cover. The pipe cover is easily mounted by cutting off the slit at the lower part of the pipe cover.

* Be sure to wear heavy work gloves while working.

Supplied protective bush

Supplied passage hole guard material

* Attach the guard material securely so that it does not come loose.

Refrigerant Piping Connection

Flaring

1. Cut the pipe with a pipe cutter.

2. Insert a flare nut into the pipe and flare the pipe.

Projection margin in flaring : A (Unit : mm)

Rigid (clutch type)

<table>
<thead>
<tr>
<th>Outer dia. of copper pipe</th>
<th>A R410A tool used</th>
<th>Conventional tool used</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.52 mm</td>
<td>0 to 0.5</td>
<td>1.5 to 2.0</td>
</tr>
<tr>
<td>15.88 mm</td>
<td>1.0 to 1.5</td>
<td>2.0 to 2.5</td>
</tr>
</tbody>
</table>

Flaring dia. meter size : A (Unit : mm)

<table>
<thead>
<tr>
<th>Outer dia. of copper pipe</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.52 mm</td>
<td>13.2</td>
</tr>
<tr>
<td>15.88 mm</td>
<td>19.7</td>
</tr>
</tbody>
</table>

* In case of flaring for R410A with the conventional flare tool, pull it out approx. 0.5 mm more than that for R22 to adjust to the specified flare size. The copper pipe gauge is useful for adjusting the projection margin size.

Piping connection

<table>
<thead>
<tr>
<th>Liquid side</th>
<th>Outer diameter</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.52 mm</td>
<td>0.8 mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gas side</th>
<th>Outer diameter</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.88 mm</td>
<td>1.0 mm</td>
<td></td>
</tr>
</tbody>
</table>

Tightening of connecting part

1. Align the centers of the connecting pipes and fully tighten the flare nut with your fingers. Then fix the nut with a wrench as shown in the figure and tighten it with a torque wrench.

2. As shown in the figure, be sure to use two wrenches to loosen or tighten the flare nut of the valve on the gas side. If you use a single crescent, the flare nut cannot be tightened to the required tightening torque. On the other hand, use a single crescent to loosen or tighten the flare nut of the valve on the liquid side.
After the piping has been connected to the indoor unit, you can perform vacuuming together at once.

### VACUUMING

Evacuate the air in the connecting pipes and in the indoor unit using a vacuum pump. Do not use the refrigerant in the outdoor unit. For details, see the manual of the vacuum pump.

#### Using a vacuum pump

Be sure to use a vacuum pump with counter-flow prevention function so that inside oil of the pump does not flow backward into pipes of the air conditioner when the pump stops. (If oil inside of the vacuum pump enters the air conditioner, which use R410A, refrigeration cycle trouble may happen)

1. Connect the charge hose from the manifold valve to the service port of the packed valve at gas side.
2. Connect the charge hose to the port of the vacuum pump.
3. Open fully the low pressure side handle of the gauge manifold valve.
4. Operate the vacuum pump to start evacuating. Perform evacuating for about 15 minutes if the piping length is 20 meters (15 minutes for 20 meters) (assuming a pump capacity of 27 liters per minute). Then confirm that the compound pressure gauge reading is –101 kPa (–76 cmHg).
5. Close the low pressure side valve handle of the gauge manifold valve.
6. Open fully the valve stem of the packed valves (both gas and liquid sides).
7. Remove the charging hose from the service port.
8. Securely tighten the caps on the packed valves.

### CAUTION

- After the installation work, be sure to check for gas leaks of the pipe connections with nitrogen.
- Pressure of R410A is higher than that of R22 (Approx. 1.6 times). Therefore, using a torque wrench, tighten the flare pipe connecting sections that connect the indoor/outdoor units at the specified tightening torque.

Incomplete connections may cause not only a gas leak, but also trouble with the refrigeration cycle.

**CAUTION**

1. Do not put the crescent wrench on the cap or cover. The valve may break.
2. If applying excessive torque, the nut may break according to some installation conditions.

- Do not apply refrigerant oil to the flared surface.

### Packed valve handling precautions

- Open the valve stem all the way out, but do not try to open it beyond the stopper.

<table>
<thead>
<tr>
<th>Pipe size of Packed Valve</th>
<th>Size of Hexagon wrench</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.70 mm and smallers</td>
<td>A = 4 mm</td>
</tr>
<tr>
<td>15.88 mm</td>
<td>A = 5 mm</td>
</tr>
</tbody>
</table>

- Securely tighten the valve cap with torque in the following table:

<table>
<thead>
<tr>
<th>Cap size (H)</th>
<th>Cap</th>
<th>Valve Rod Cap</th>
<th>Service Port Cap</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>H17 - H19</td>
<td>14–18 N·m</td>
<td>14–18 N·m</td>
<td>14–18 N·m</td>
<td>14–18 N·m</td>
</tr>
<tr>
<td>H2 - H3</td>
<td>35–42 N·m</td>
<td>35–42 N·m</td>
<td>35–42 N·m</td>
<td>35–42 N·m</td>
</tr>
<tr>
<td>H14</td>
<td>8–12 N·m</td>
<td>8–12 N·m</td>
<td>8–12 N·m</td>
<td>8–12 N·m</td>
</tr>
<tr>
<td>H17</td>
<td>14–18 N·m</td>
<td>14–18 N·m</td>
<td>14–18 N·m</td>
<td>14–18 N·m</td>
</tr>
</tbody>
</table>

* KEEP IMPORTANT 5 POINTS FOR PIPING WORK.
1. Take away dust and moisture (inside of the connecting pipes).
2. Tighten the connections (between pipes and unit).
3. Evacuate the air in the connecting pipes using a VACUUM PUMP.
4. Check gas leak (connected points).
5. Be sure to fully open the packed valves before operation.
CAUTION

• Wrong wiring may cause a burn-out of some electrical parts.
• Be sure to use the cord clamps attached to the product.
• Do not damage or scratch the conductive core or inner insulator of the power and inter-connecting wires when peeling them.
• Use the power and Inter-connecting wires with specified thicknesses, specified types and protective devices required.

WARNING

1. Using the specified wires, ensure that the wires are connected, and fix wires securely so that the external tension to the wires does not affect the connecting part of the terminals. Incomplete connection or fixation may cause a fire, etc.
2. Be sure to connect the earth wire. (grounding work) Incomplete grounding may lead to electric shock.
3. Connect the floor and the connecting cable carefully into the terminal block and secure it tightly with screws.
4. Locate them so that they do not touch any electrical or metal parts.
5. Secure the power cord and the connecting cable with the cord clamp.
6. Attach the electric parts cover and the valve cover on the outdoor unit.

For the air conditioner, connect a power wire with the following specifications.

Model: 24 Class

- Power supply: 220-240 V~, 50 Hz
- Maximum running current: 20A
- Installation fuse rating: 25 A (all types can be used)
- Power wire: H07RN-F or 60245 IEC66 (3.5 mm² or more)
- Indoor/outdoor connecting wires: H07RN-F or 60245 IEC66 (1.5 mm² or more)

How to wire

1. Connect the connecting wire to the terminal as identified by the matching numbers on the terminal block of indoor and outdoor unit.
2. When connecting the connecting wire to the outdoor unit terminal, prevent water from coming into the outdoor unit.
3. Insulate the unsheathed cords (conductors) with electrical insulation tape. Process them so that they do not touch any electrical or metal parts.
4. For interconnecting wires, do not use a wire joined to another on the way. Use wires long enough to cover the entire length.

Electrical Work

How to wire

1. Connect the connecting wire to the terminal as identified by the matching numbers on the terminal block of indoor and outdoor units.
2. When connecting the connecting wire to the outdoor unit terminal, prevent water from coming into the outdoor unit.
3. Insulate the unsheathed cords (conductors) with electrical insulation tape. Process them so that they do not touch any electrical or metal parts.
4. For interconnecting wires, do not use a wire joined to another on the way. Use wires long enough to cover the entire length.
CAUTION

- An installation fuse must be used for the power supply line of this air conditioner.
- Incorrect/incomplete wiring may lead to an electrical fire or smoke.
- Prepare an exclusive power supply for the air conditioner.
- This product can be connected to the mains power.

Fixed wire connections:
A switch that disconnects all poles and has a contact separation of at least 3 mm must be incorporated in the fixed wiring.

WARNING

- Be sure to connect the earth wire. (grounding work)
- Incomplete grounding may cause an electric shock.

Connect the earth line properly following applicable technical standards. Connecting the earth line is essential to preventing electric shock and to reducing noise and electrical charges on the outdoor unit surface due to the high-frequency wave generated by the frequency converter (inverter) in the outdoor unit.

If you touch the charged outdoor unit without an earth line, you may experience an electric shock.

Test Run

- Turn on the leakage breaker at least 12 hours before starting a test run to protect the compressor during startup.

To protect the compressor, power is supplied from the 220-240 VAC input to the unit to preheat the compressor.

- Check the following before starting a test run:
  - That all pipes are connected securely without leaks.
  - That the valve is open.
  - If the compressor is operated with the valve closed, the outdoor unit will become overpressurized, which may damage the compressor or other components.
  - If there is a leak at a connection, air can be sucked in and the internal pressure further increases, which may cause a burst or injury.
  - Operate the air conditioner in the correct procedure as specified in the Owner’s Manual.

Annual Maintenance

- For an air conditioning system that is operated on a regular basis, cleaning and maintenance of the indoor/outdoor units are strongly recommended.
  As a general rule, if an indoor unit is operated for about 8 hours daily, the indoor/outdoor units will need to be cleaned at least once every 3 months. This cleaning and maintenance should be carried out by a qualified service person.
  Failure to clean the indoor/outdoor units regularly will result in poor performance, icing, water leaking and even compressor failure.

Functions to be Implemented Locally

Night operation control

- Low-noise operation is available during nighttime hours by connecting a commercially available timer and separately sold applicable control wire TCB-KBOS1E.
  For more information, refer to the manuals of these parts.
- The power saving function of the air conditioner reduces the level of nighttime operating noise.
- Sufficient capacity for low-noise operation cannot always be provided, depending on external conditions, including the outside air temperature.

Handling existing pipe

When using the existing pipe, carefully check for the following:
- Wall thickness (within the specified range)
- Scratches and dents
- Water, oil, dirt, or dust in the pipe
- Flare looseness and leakage from welds
- Deterioration of copper pipe and heat insulator

Cautions for using existing pipe

- Do not reuse a flare nut to prevent gas leaks.
- Replace it with the supplied flare nut and then process it to a flare.
- Blow nitrogen gas or use an appropriate means to keep the inside of the pipe clean. If discolored oil or much residue is discharged, wash the pipe.
- Check welds, if any, on the pipe for gas leaks.

When the pipe corresponds to any of the following, do not use it. Install a new pipe instead.
- The pipe has been opened (disconnected from indoor unit or outdoor unit) for a long period.
- The pipe has been connected to an outdoor unit that does not use refrigerant R22, R410A or R407C.
- The existing pipe must have a wall thickness equal to or larger than the following thicknesses.

<table>
<thead>
<tr>
<th>Reference outside diameter (mm)</th>
<th>Wall thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø9.52</td>
<td>0.8</td>
</tr>
<tr>
<td>Ø15.88</td>
<td>1.0</td>
</tr>
<tr>
<td>Ø19.1</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Earthing

Connect the earth line properly following applicable technical standards. Connecting the earth line is essential to preventing electric shock and to reducing noise and electrical charges on the outdoor unit surface due to the high-frequency wave generated by the frequency converter (inverter) in the outdoor unit.

If you touch the charged outdoor unit without an earth line, you may experience an electric shock.

Finishing

After the refrigerant pipe, inter-unit wires, and drain pipe have been connected, cover them with finishing tape and clamp them to the wall with off-the-shelf support brackets or their equivalent.

Keep the power wires and indoor/outdoor connecting wires off the valve on the gas side or pipes that have no heat insulator.
• Do not use any pipe with a wall thickness less than these thicknesses due to insufficient pressure capacity.

• To use an existing Ø19.1 mm pipe, set bit 3 of SW802 (switch for existing pipe) on the P.C. board of the outdoor unit to ON. In this case, the heating performance may be reduced depending on the outside air temperature and room temperature.

<table>
<thead>
<tr>
<th>SW802</th>
<th>When shipped from factory</th>
<th>When using existing pipe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recovering refrigerant

• Use refrigerant recovery switch SW801 on the P.C. board of the outdoor unit to recover refrigerant when the indoor or outdoor unit is moved.

Procedure
1. Turn on the power of the air conditioner.
2. Select the FAN mode for indoor unit operation with the remote controller.
3. Set SW804 on the P.C. board of the outdoor unit to all OFF, and then press SW801 for 1 second or more. The air conditioner enters the forced cooling mode for up to 10 minutes. Operate or handle the valve to recover refrigerant during this time period.
4. Upon completion of refrigerant recovery, close the valve and press SW801 for at least 1 second to stop operation.
5. Turn off the power.

DANGER
Be careful of electric shock because the P.C. board has an electrical current running through it.

Troubleshooting

You can perform fault diagnosis of the outdoor unit with the LEDs on the P.C. board of the outdoor unit in addition to using the check codes displayed on the wired remote controller of the indoor unit. Use the LEDs and check codes for various checks. Details of the check codes displayed on the wired remote controller of the indoor unit are described in the Installation Manual of the indoor unit.

Verifying current abnormal status
1. Check that DIP switch SW803 is set to OFF.
2. Jot down the states of LED800 to LED804. (Display mode 1)
3. Press SW800 for at least 1 second. The LED status changes to display mode 2.
4. Check the code whose display mode 1 equals the LED states jotted down and display mode 2 equals the current flashing status of LED800 to LED804 from the following table to identify the cause.

Verifying an abnormal state in the past although the abnormal state no longer occurs
1. Set bit 1 of DIP switch SW803 to ON.
2. Jot down the states of LED800 to LED804. (Display mode 1)
3. Press SW800 for at least 1 second. The LED status changes to display mode 2.
4. Find an error whose display mode 1 equals the LED states jotted down and display mode 2 equals the current flashing states of LED800 to LED804 from the following table to identify the error.

• An outside air temperature (TO) sensor error can be checked only while it occurs.
<table>
<thead>
<tr>
<th>No.</th>
<th>Cause</th>
<th>Display mode 1</th>
<th>Display mode 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>D800</td>
<td>D801</td>
</tr>
<tr>
<td>1</td>
<td>Normal</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>2</td>
<td>Discharge (TD) sensor error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3</td>
<td>Heat exchanger (TE) sensor error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>4</td>
<td>Heat exchanger (TL) sensor error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>5</td>
<td>Outside air temperature (TO) sensor error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>6</td>
<td>Suction (TS) sensor error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>7</td>
<td>Heat sink (TH) sensor error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>8</td>
<td>Outdoor temperature sensor (TE/TS) connection error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>9</td>
<td>Outdoor EEPROM error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>10</td>
<td>Compressor lock</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>11</td>
<td>Compressor lock</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>12</td>
<td>Current detection circuit error</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>13</td>
<td>Thermostat for compressor activated</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>14</td>
<td>Model data not set (on the service P.C. board)</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>15</td>
<td>MCU-MCU communication error</td>
<td>●</td>
<td>○</td>
</tr>
<tr>
<td>16</td>
<td>Discharge temperature error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>17</td>
<td>Abnormal power (open phase detected or abnormal voltage)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>18</td>
<td>Heat sink overheat</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>19</td>
<td>Gas leak detected</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>20</td>
<td>4-way valve reverse error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>21</td>
<td>High pressure release operation</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>22</td>
<td>Outdoor fan motor error</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>23</td>
<td>Compressor driver short-circuit protection</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>24</td>
<td>Position detection circuit error in one-line display</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

* The LEDs and DIP switches are located on the lower left of the P.C. board of the outdoor unit.

Enlarged view of LEDs:
Appendix

Work instructions:
The existing R22 and R407C piping can be reused for our digital inverter R410A product installations.

NOTE

Confirming the existence of scratches or dents on the existing pipes and confirming the reliability of the pipe strength are conventionally referred to the local site.
If the specified conditions can be cleared, it is possible to update existing R22 and R407C pipes to those for R410A models.

Basic conditions needed to reuse existing pipes
Check and observe the presence of three conditions in the refrigerant piping works.
1. Dry (There is no moisture inside of the pipes.)
2. Clean (There is no dust inside of the pipes.)
3. Tight (There are no refrigerant leaks.)

Restrictions for use of existing pipes
In the following cases, the existing pipes should not be reused as they are. Clean the existing pipes or exchange them with new pipes.
1. When a scratch or dent is heavy, be sure to use new pipes for the refrigerant piping works.
2. When the existing pipe thickness is thinner than the specified “Pipe diameter and thickness,” be sure to use new pipes for the refrigerant piping works.
   • The operating pressure of R410A is high (1.6 times that of R22 and R407C). If there is a scratch or dent on the pipe or a thinner pipe is used, the pressure strength may be inadequate, which may cause the pipe to break in the worst case.
   • Pipe diameter and thickness (mm)

<table>
<thead>
<tr>
<th>Pipe outer diameter</th>
<th>Ø6.4</th>
<th>Ø9.5</th>
<th>Ø12.7</th>
<th>Ø15.9</th>
<th>Ø19.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R410A</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>R22 (R407C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• In case the pipe diameter is Ø12.7 mm or less and the thickness is less than 0.7 mm, be sure to use new pipes for the refrigerant piping works.
3. When the outdoor unit was left with the pipes disconnected, or the gas leaked from the pipes and the pipes were not repaired and refilled.
   • There is the possibility of rain water or air, including moisture, entering the pipe.
4. When refrigerant cannot be recovered using a refrigerant recovery unit.
   • There is the possibility that a large quantity of dirty oil or moisture remains inside the pipes.
5. When a commercially available dryer is attached to the existing pipes.
   • There is the possibility that copper green rust has been generated.
6. When the existing air conditioner is removed after refrigerant has been recovered.
   • The refrigerator oil is copper rust green in color.
   • There is the possibility that moisture has mixed with the oil and rust has been generated inside the pipe.
   • There is discoloration, a large quantity of residue, or a bad smell.
   • A large quantity of shiny metal dust or other wear residue can be seen in the refrigerant oil.
7. When the air conditioner has a history of the compressor failing and being replaced.
   • When discolored oil, a large quantity of residue, shiny metal dust, or other wear residue or mixture of foreign matter is observed, trouble will occur.
8. When temporary installation and removal of the air conditioner are repeated such as when leased etc.
9. If the type of refrigerator oil of the existing air conditioner is other than the following oil (Mineral oil), Suniso, Freol-S, MS (Synthetic oil), alkyl benzene (HAB, Barrel-freeze), ester series, PVE only of ether series.
   • The winding-insulation of the compressor may deteriorate.

NOTE

The above descriptions are results have been confirmed by our company and represent our views on our air conditioners, but do not guarantee the use of the existing pipes of air conditioners that have adopted R410A in other companies.

Branching pipe for simultaneous operation system
• In the concurrent twin system, when TOSHIBA has specified that branching pipe is to be used, it can be reused.
Branching pipe model name: RBC-TWP30E2
On the existing air conditioner for simultaneous operation system (twin system), there are cases of branch pipes being used that have insufficient compressive strength. In such case, please change the piping to a branch pipe for R410A.

Curing of pipes
When removing and opening the indoor or outdoor unit for a long time, cure the pipes as follows:
• Otherwise rust may be generated when moisture or foreign matter due to condensation enters the pipes.
• The rust cannot be removed by cleaning, and new pipes are necessary.

<table>
<thead>
<tr>
<th>Placement location</th>
<th>Term</th>
<th>Curing manner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoors</td>
<td>1 month or more</td>
<td>Pinching</td>
</tr>
<tr>
<td>Less than 1 month</td>
<td>Pinching or taping</td>
<td></td>
</tr>
<tr>
<td>Indoors</td>
<td>Every time</td>
<td></td>
</tr>
</tbody>
</table>

Curing manner
Pinching
This is where the pipe is pinched using a pipe clamp. This is used for curing pipes that are not connected to the indoor or outdoor side unit.
Pinching or taping
This is where a pipe with end caps is pinched using a pipe clamp. This is used for curing pipes that are connected to the indoor or outdoor side unit.

Placement location
This is where the pipe is placed or left.

Term
This is the period of time the pipe is cured.

Curing manner
This is the method of curing the pipe.

Placement location
This is where the pipe is placed or left.

Term
This is the period of time the pipe is cured.

Curing manner
This is the method of curing the pipe.
Are there scratches or dents on the existing pipes?  
- NO: Existing pipes: Cannot be used.  
- YES: Use new pipes.

Is it possible to operate the existing air conditioner?  
- NO: Clean the pipes and recovering oil.  
- YES: After the existing air conditioner is operated in cooling mode for approx. 30 minutes or longer,* recover the refrigerant.  
  - For cleaning the pipes and recovering oil  
  - Refrigerant recovery: Pump down method

Remove the existing air conditioner from the piping and carry out flushing (nitrogen pressure 0.5 MPa) to remove any remains inside of the pipe.  
- Note: In case of twin pipes, also be sure to flush the branching pipe.

Was largely discolored oil or a large quantity of remains discharged? (When the oil deteriorates, the color of the oil changes to a muddy or black color.)  
- YES: Clean the pipes or use new pipes.  
- NO: Connect the indoor/outdoor units to the existing pipe.  
  - Use a flare nut attached to the main unit for the indoor/outdoor units. (Do not use the flare nut of the existing pipe.)  
  - Re-machine the flare machining size to size for R410A.

In case that a gas pipe ∅19 mm or bigger is used for the outdoor unit of (3 HP): (Our R410A model 3 to 5 HP gas pipe size is ∅15.9 mm)  
- Turn the existing pipe switch on the cycle control PC board of the outdoor unit to ON side. At shipment from factory OFF → ON for existing pipe (Refer to the table below.)  
  (Be sure to set the contents in the table below in order to restrict the refrigerating cycle pressure of the equipment in the pipe standard.)

Connect the indoor/outdoor units to the existing pipe.  
- Use a flare nut attached to the main unit for the indoor/outdoor units. (Do not use the flare nut of the existing pipe.)  
- Re-machine the flare machining size to size for R410A.

* Airtight test, Vacuum dry, Refrigerant charge, Gas leak check  

NO  

Triall run  

---

### Piping necessary to change the flare nut/ machining size due to pipe compression

1) Flare nut width: H

<table>
<thead>
<tr>
<th>Copper pipe outer diameter</th>
<th>∅6.4</th>
<th>∅9.5</th>
<th>∅12.7</th>
<th>∅15.9</th>
<th>∅19.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>For R410A</td>
<td>17</td>
<td>22</td>
<td>26</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>For R22</td>
<td>Same as above</td>
<td>24</td>
<td>27</td>
<td>Same as above</td>
<td></td>
</tr>
</tbody>
</table>

2) Flare machining size: A

<table>
<thead>
<tr>
<th>Copper pipe outer diameter</th>
<th>∅6.4</th>
<th>∅9.5</th>
<th>∅12.7</th>
<th>∅15.9</th>
<th>∅19.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>For R410A</td>
<td>9.1</td>
<td>13.2</td>
<td>16.6</td>
<td>19.7</td>
<td>24.0</td>
</tr>
<tr>
<td>For R22</td>
<td>9.0</td>
<td>13.0</td>
<td>16.2</td>
<td>19.4</td>
<td>23.3</td>
</tr>
</tbody>
</table>

(Becomes a little larger for R410A)

Do not apply refrigerator oil to the flare surface.
**OTHERS**

### Remote Control A-B Selection
- When two indoor units are installed in the same room or adjacent two rooms, if operating a unit, two units may receive the remote control signal simultaneously and operate. In this case, the operation can be preserved by setting either one remote control to B setting (Both are set to A setting in factory shipment).
- The remote control signal is not received when the settings of indoor unit and remote control are different.
- There is no relation between A setting/B setting and A room/B room when connecting the piping and cables.

To separate using of remote control for each indoor unit in case of 2 air conditioners are installed near.

**Remote Control B Setup.**
1. Press [RESET] button on the indoor unit to turn the air conditioner ON.
2. Point the remote control at the indoor unit.
3. Push and hold [CHECK] button on the Remote Control by the tip of the pencil. "00" will be shown on the display (Picture 1).
4. Press [MODE] during pushing [CHECK]. "B" will show on the display and "00" will disappear and the air conditioner will turn OFF. The Remote Control B is memorized (Picture 2).

**Note:**
1. Repeat above step to reset Remote Control to be A.
2. Remote Control A have not “A” display.
3. Default setting of Remote Control from factory is A.

### Test Operation
To switch the TEST RUN (COOL) mode, press [RESET] button for 10 seconds. (The beeper will make a short beep.)

### Auto Restart Setting
This product is designed so that, after a power failure, it can restart automatically in the same operating mode as before the power failure.

**Information**
The product was shipped with Auto Restart function in the off position. Turn it on as required.

**How to set the Auto Restart**
1. Press and hold the [RESET] button on the indoor unit for 3 seconds to set the operation (3 beep sound and OPERATION lamp blink 5 time/sec for 5 seconds).
2. Press and hold the [RESET] button on the indoor unit for 3 seconds to cancel the operation (3 beep sound but OPERATION lamp does not blink).
- In case of ON timer or OFF timer are set, AUTO RESTART OPERATION does not activate.
安全預防措施

安裝前，請仔細閱讀這些安全預防措施。
確保依照此處提供的預防措施操作，以避免安全危險。符號及其含義如下所示。

警告: 表示對本機的錯誤使用會導致嚴重傷害或死亡。
注意: 表示對本機的錯誤使用會導致個體傷害或財物損失。

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警告

• 決不可移除本機的任何安全防護裝置或忽視任何的安全組合開關等以變更本機。
• 必須讓銷售商或專業供應商進行安裝工作。自行安裝可能會因安裝不正確造成漏水、電擊或火災。
• 必須使用R410A型號的指定工具和配管部件，並根據本手冊進行安裝工作。

注意

• 本空調器採用新型HFC冷凍劑（R410A），此冷凍劑不會損耗臭氧層。

危險

• 僅由合資格者使用。
• 在嘗試進行任何電氣工作之前，請關閉主電源。確保所有電源開關都已關閉否則，可能會導致電擊。
• 連接或固定不正確可能會造成漏水、電擊或火災。

警告

• 决不可移除本機的任何安全防護裝置或忽視任何的安裝步驟。
• 必須讓銷售商或專業供應商進行安裝工作。自行安裝可能會因安裝不正確造成漏水、電擊或火災。
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警告

• 安全預防措施

從主電源上斷開此設備

室外機組各部分的電源線應至少是聚氯丁二烯護套軟線（H07RN-F）或指定電纜。（必須按國家規則進行安裝。）
### 注意

- 在安裝前若本機浸水或被弄濕，將會造成觸電。請勿在溼的地下室存放本機或者將它暴露於雨中或水中。
- 在打開本機的包裝之後，請仔細檢查本機以避免可能存在的損壞。
- 請勿將本機安裝於可增強其震動之處。切勿安裝在會使噪音增大的地方，或安裝在噪音和排氣會干擾鄰居之處。
- 在安裝本機之前，請詳細閱讀本安裝手冊。它含有正確安裝本機的重要說明。
- 視本機的安裝地點而定，必須透過斷路器，將本機連接到主電源，否則可能會造成電擊。
- 請按照本安裝手冊中的指示配置排水管，使本機正確排水。排水不當可能會導致漏水，造成傢俱浸泡。
- 依指定的方法，使用扭結法或用錐形螺帽，請勿使用過大的扭矩，否則，經長時間使用後，螺帽可能會被破壞，造成冷凍劑洩漏。
- 進行安裝工作時，請配戴手套（厚手套，如棉質手套）。否則，使用銳利邊緣的部件時，可能會造成個人傷害。
- 請勿觸摸室外機的進氣部分或銅片。可能造成個人傷害。
- 請勿將室外機安裝在可能有小動物居住的地方。小動物可能會進入並接觸內部電氣部件，造成故障或火災。
- 請使用者維護本機週遭環境的整潔。
- 安裝工作完成後，務必嘗試運作，並根據手冊向顧客說明如何使用與維護本機。請顧客將操作手冊與安裝手冊放在一起。
- 製造商對於未依照本手冊說明所致之損壞，不承擔任何責任。

### 通知您當地電力供應者的要求

在安裝之前，務必通知當地電力供應者有關空調安裝事宜。若您遇到任何問題，或電力供應者不同意安裝，則我們的服務代理商會採取妥善的相應措施。
選購性安裝零部件

<table>
<thead>
<tr>
<th>部件編號</th>
<th>部件名稱</th>
<th>數量</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>配管管緣材料（鋼乙殼砶，8 mm 厚）</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>配管絕熱材料</td>
<td>各一個</td>
</tr>
</tbody>
</table>

提供的遙控器為無線型，也可用作有線型。
如果需要有線控制，請參閱“如何連接遙控器以進行有線操作”。

備註：
- 附件和安裝零部件的詳情，可參閱附件單。
- 一些圖片可能與實際零部件有所不同。

室內與室外機組的安裝圖

供左後及右配管

請在室內機組和牆壁之間插入墊子，並且提起室內機組以便工作更容易。

請勿讓排水管鬆弛。

請務必讓排水管向下方傾斜運行。

輔助管可連接在左、左後、右後、右、右底或左底部位。

用絕緣材料分別為冷凍劑配管絕緣，而非一起進行。

8 mm 厚耐熱聚乙烯泡沫

進行完排水測試後，用乙烯樹脂帶來包裹。

輔助管可連接在左、左後、右後、右、右底或左底部位。

須及早塞入電源插座。

室內與室外機組的安裝圖

室外機組的固定螺栓布置

- 若本機可能暴露在強風中，請用固定螺栓與螺母穩固室外機組。
- 請使用直徑 10 mm 錐狀螺栓與螺母。
- 如果需要排出除霜產生的水，請在安裝室外機之前將排水接頭和防水罩裝在室外機上。

室外機組的固定螺栓布置

部件

<table>
<thead>
<tr>
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<td>配管絕熱材料</td>
<td>各一個</td>
</tr>
<tr>
<td>C</td>
<td>配管絕熱材料</td>
<td>各一個</td>
</tr>
</tbody>
</table>
### 室內機組

#### 安裝地點
- 在室內機周圍有如圖所示空間的地方
- 在空氣進出口附近無障礙物之處
- 有打開前面板之處
- 室內機的安裝應使其頂部至少在 2 米高處，同時，必須避免在室內機的頂部放置任何東西。

#### 注意
- 遵循陽光直接照射到室內機組的無線接收器。
- 室內機的開關開閉不可太靠近 RF 噪音源。

### 遙控器

#### 注意
- 沒有如圖所示的障礙物阻擋來自遙控器的信號之處。
- 請勿將遙控器安放在直接暴露於直射陽光或接近諸如暖爐的熱源之處。
- 請勿將遙控器安放在近電視機或立體聲設備至少 1 米之處。（這是必要的，以避免影像受到干擾和產生噪音。）
- 如圖所示決定遙控器的位置。

### 鑽孔及安置安裝板

#### 鑽孔
當從背面安裝冷凍劑配管時

1. 決定了安裝板（）上的管孔位置後，在稍微向下傾斜至室外機一側之處

#### 備註
- 在含有金屬條、電線條或金屬板的牆上鑽孔時，務必用各別銷售的管孔擴圈。

### 安裝板的安裝

#### 當直接安裝安裝板到牆上時
1. 通過用螺絲釘住上邊和下邊的部份來將安裝板牢牢固定在墙上以掛鉤住室內機組。
2. 若在混凝土或類似牆壁類型，在牆壁上鑽 5 mm 直徑的孔。
3. 插入夾鉗錨於適當的安置螺釘（當地部件）。

#### 注意
- 若沒有穩固安裝本機，本機落下時可能導致個人傷害和財物損失。
- 若是大小磚塊、混凝土或類似牆壁類型，請在牆壁上鑽 5 mm 直徑的孔。
- 插入夾鉗錨於適當的安置螺釘（當地部件）。

### 安裝板（保持水平方向。）

#### 注意
- 使用安裝螺釘來安裝安裝板時，切勿用鐵件螺孔。否則，本機可能掉落而致傷人或造成財物損失。

### 挂鉤

#### 備註
- 用 4 到 6 支安置螺釘於 4 角和較低部份以安裝安裝板。
線路連接

如何連接連接電纜

在沒有取出前面板的情況下也可進行連接電纜的線路工作。

1. 取出空氣進入格柵。
   - 將空氣進入格柵向上打開，並向您所在的方向拉出。
2. 拆開端子蓋及電線夾。
3. 將連接電纜（依照當地法規）插入到牆上的管孔中。
4. 通過後面板上的電纜槽取出連接電纜，使其向前伸出約15 cm。
5. 將連接電纜完全插入到端子板並用螺釘牢固擰緊。
6. 將端子蓋、後面板套管以及空氣入口格柵緊固於室內機上。

注意

- 請務必參照標記在前面板內的線路系統圖。
- 請核對當地的電線及任何特定電路的說明或局限。

備註

- 可使用絞合電線。
- 電線類型：1.5 mm²（H07RN-F或60245）或1.3 mm²（AWG-16）以上。

如何連接遙控器以進行有線操作

遙控器

1. 向下滑遙控器蓋。
2. 如果有電池，請取出，將有線控制器與電池一起使用可能會造成電池爆炸。
3. 用螺絲起子在壓緊片上鑽孔，以便插入控制線，如圖 7 所示。
4. 從遙控器背面插入控制線，如圖 8 所示。
5. 使用提供的螺釘，將如圖 9 所示的控制線固定在端子上（鎖緊，但扭矩不超過 0.25 N·m (0.03 kgf·m)）。
6. 將控制線穿過遙控器背面的開槽，如圖 10 所示。
7. 將提供的螺釘（∅3.1 x 16L）固定在遙控器上，以便掛遙控器，如圖 11 所示。
8. 堆放並配備安裝的電池，以便固定平面螺釘（∅3.1 x 25L），如圖 12 所示。
9. 組裝配備安裝的電池蓋，然後使用提供的螺釘（∅3.1 x 25L）將電池蓋固定於遙控器上，如圖 13 所示（鎖緊，但扭矩不超過 0.15 N·m (0.02 kgf·m)）。
10. 重新組裝遙控器蓋。

室內機組

1. 向上打開空氣入口格柵。
2. 安全取下面板的四個螺釘。
3. 相當打開前面板下部，然後將前面板下部朝您自己的方向拉動，以便從後面板取下，如圖 1 所示。
4. 拆開前面板後，取下本機的螺釘和顯示器，如圖 2 所示，然後打開顯示器的底蓋，如圖 3 所示。
5. 將線接頭與端子管和控制線，如圖 4 所示。
6. 將控制線穿過連接顯示器的電纜通過開槽，如圖 5 所示（鎖緊，但扭矩不超過 0.12 N·m (0.01 kgf·m)）。
7. 將控制線穿過顯示器前蓋槽，然後反向操作圖 2 和圖 3 中的步驟，將顯示器前蓋重新安裝在主體上。確保控制線未被顯示器前蓋和後蓋壓住。
8. 將控制線從室內機穿出，穿出位置與電源線和連接線相同，如圖 6 所示。
9. 反向操作步驟 1 到 3，重新組裝室內機組。

電線尺寸 28-22 AWG (0.08-0.32 mm²)
外徑不超過 4.7 mm。控制線長度 30 m 或以下。
如何移開排水管

- 可以通過按下固定排水管的螺釘，然後拉出排水管來將其移開。
- 移開排水管時，要小心鋼板的任何銳邊。這些銳邊可能引起傷害。
- 要安裝排水管，請牢固插入排水管，直至連接部件對准絕熱體，並用原始螺釘將其固定。

排水蓋取下方法

用尖頭鉗夾住排水蓋將其拉出。

固定排水蓋方法

1) 將六角扳手（4 mm）插入頂端中心。

2) 穩固插入排水蓋。

注意

穩固地插入排水管和排水蓋，否則會產生漏水。

配管與排水管的安裝

配管和排水管的組成

* 由於冷凝水會導致機械故障，必須保證兩種連接配管絕熱良好。
  （使用聚乙烯泡沫作為絕熱材料。）

進行在右或左配管安裝時

- 在用小刀或斷離針將裂口劃破後，再用一對剪鉗或類似工具将其剪下。

進行右底或左底配管安裝時

- 在用小刀或斷離針將裂口劃破後，再用一對剪鉗或類似工具将其剪下。

將配管連接至左側

- 請彎曲連接配管，使其安裝於離牆面43 mm以內的範圍內。若連接配管被放置於離牆表43 mm以上的範圍，安裝於牆上的室內機可能不穩固。彎曲連接配管時，請使用彎管器，以防損壞連接配管。

應在30 mm的範圍內彎曲管子。

安裝機體之後連接管子（圖示）
### 排水

1. 向下傾斜地移動排水管。

### 備註

- 在室外側的洞口應該稍微向下傾斜。

### 注意

- 請小心處理配管，以免沒有任何配管自室內機的後面板伸。
- 請勿接連輔助管與連接管並切斷纏繞在連接管上的絕熱帶以避免接連處的重複管路。此外，請用乙烯基膠帶密封連接管。
- 由於冷凝水管會導致機械故障，必須保證兩種連接管配管絕熱良好。（使用聚乙烯泡沫作為絕熱材料。）
- 在彎曲管子時，請當心不要壓壞它。

### 信息

室內機組的較低部份可能會搖動，視乎配管情況您可能無法將其固定在安裝板上。此時，請使用提供的螺釘來固定本機和安裝板。

### 備註

- 請勿將排水管的尾端浸於水中。
- 請勿將排水管的尾端置於水溝中。
- 備用空調器具有設計用來排出積集的露水的結構。結露形成於室內機背面部並流入排水盤中。因此，請勿將電源線和其它部件存放在高於排水指標器之處。

### 室外機組

#### 附件

<table>
<thead>
<tr>
<th>零件名稱</th>
<th>數量</th>
<th>形狀</th>
<th>用途</th>
</tr>
</thead>
<tbody>
<tr>
<td>電纜扎帶</td>
<td>2</td>
<td></td>
<td>固定電源線</td>
</tr>
<tr>
<td>保護槽蓋</td>
<td>1</td>
<td></td>
<td>保護電纜（管蓋）</td>
</tr>
<tr>
<td>通道部件防護材料</td>
<td>1</td>
<td></td>
<td>保護通道部件（管蓋）</td>
</tr>
<tr>
<td>排水接頭</td>
<td>1</td>
<td></td>
<td>用於熱泵型號</td>
</tr>
<tr>
<td>防水橡膠蓋</td>
<td>5</td>
<td></td>
<td>用於熱泵型號</td>
</tr>
</tbody>
</table>
安装地点

- 安装地点需如图所示的周围
- 室外机周围需有如图所示的空间
- 承受室外机的重量并且不会增加噪音水平和震动之感
- 避免接触强风
- 不会破坏道路
- 可以承受室外机的重量并且不会增加噪音水平和震动之感
- 运行噪音和排出气体不会干挠到您的邻居
- 没有暴露于强风之感
- 没有可燃气体泄漏之处
- 不会阻碍通道之处
- 室外机安装于较高的之处时，需固定脚座
- 连接管的允许长度最大为30 m
- 一旦连接配管的长度为20 m或以下，就不需要添加冷冻剂
- 如果因应安装需求，连接配管必须介于21 m至30 m之间，对于连接配管中增加的部分，每公尺需添加30 g的冷冻剂
- 允许高度最大为20 m
- 排放的水不会引发其它问题

注意

1. 将室外机安装在排风口无障碍的地方。
2. 室外机安装在有强风、如海边或大楼高层等之处时，请使用吸风或防风罩以避免风的影响。
3. 将室外机安装在持续接触强风的位置，如楼梯上层或建筑物顶部，需参考以下示例采取防风措施。
   1) 将本机安装在其排风口面对建筑物墙壁的位置，使本机与墙壁之间的距离保持500 mm或以上。

示例2)
考虑空调机运转期间的风向，安装本机时将排风口与风向呈直角。

在户外低温条件下（户外温度：-5 °C或以下）使用空调机的COOL模式时，需增加风罩或防风罩，以免空调机受到风的影响。

供参考

如果在室外温度为0 °C或更低的环境下连续进行制热操作，由于底板冻结可能导致排水问题，因此需选择防风罩或遮蔽罩。

详细说明，请联系经销商。
選購性安裝零部件

場盖穿孔

穿孔程序

* 可以在 4 個方向連接室內/室外連接管，取下配管或電線將穿過底板的管
盖穿孔部分。
* 拆卸管蓋，然後用螺絲起子在穿孔部分數次，可以輕鬆打開穿孔。
* 打開穿孔後，清除銅管周圍的毛邊，然後在確認銅管周圍安裝隨附保護護套
和防護材料，以保護電線和配管。
務必在連接配管後安裝管蓋，切開管蓋下方的鈎解，以便安裝。
連接配管後，務必安裝管蓋，切開管蓋下部的鈎解，以便輕鬆安裝管蓋。

* 工作時，請配戴厚工作手套。

管蓋穿孔

* 鋼管的外圈直徑

<table>
<thead>
<tr>
<th>鋼管的外徑直徑</th>
<th>使用的 R410A 工具</th>
<th>使用常規工具</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø9.52 mm</td>
<td>0 至 0.5</td>
<td>1.5 至 2.0</td>
</tr>
<tr>
<td>Ø15.88 mm</td>
<td>1.0 至 1.5</td>
<td>2.0 至 2.5</td>
</tr>
</tbody>
</table>

* 如使用傳統擴口工具為 R410A 管口，將其拉出超過 R22 約 0.5 mm 以
調到規定的擴口尺寸。
鋼管可用於調整凸出部分的大小。

緊固連接

1. 校正連接管的中心重用手指盡量按緊擴口螺帽，然後用圖中所示的扳手和
扭矩扳手銜緊。如圖所示用扳手固定螺帽，並用扭矩扳手銜緊。

2. 如圖所示，務必用兩個扳手旋鬆或旋緊管口螺帽。如果您使用
一個活動扳手，關口螺帽無法按緊需要的緊緊扭矩。
另一方面，用一個活動扳手旋鬆或旋緊旋鈕的關口螺帽。

閃爍的（外張的）

1. 用切管器切斷管子。

2. 把擴口螺母套在管子上以擴大管口。

擴口時的推算欄：A（單位：mm）

剛性（咬合型）

配管連接

液體側

外徑 厚度
Ø9.52 mm 0.8 mm

氣體側

外徑 厚度
Ø15.88 mm 1.0 mm

緊固螺母

使用扳手緊固。

使用扭矩扳手銬緊。

配管連接

液體側

外徑 厚度
Ø9.52 mm 0.8 mm

氣體側

外徑 厚度
Ø15.88 mm 1.0 mm

* 工作時，請配戴厚工作手套。

隨附保護護套

隨附通道孔防護材料

* 牢固地安裝防護材料，以免鬆動。
排空

當管線連接到室內機後，可以立即一起執行抽氣。

抽氣

使用真空泵排出總管和室內機組內的空氣。請勿使用室外機組冷凍劑，有關詳細，請參閱真空泵手冊。

使用真空泵

請務必使用具有防逆流功能的真空泵以防防止泵內的油在停工作後流回調器的管子中。

1. 將充氣管從歧管表連接到氣體側壓縮閥的維修槽上。
2. 連接充氣管到真空泵的槽口上。
3. 完全打開歧管表的低壓側把手。
4. 操作真空泵以開始排空。若管的⾧度為20米，請進行排空約15分鐘(20米採用15分鐘)。(假設泵的容量為每分鐘27升)。然後確認複合壓力表的讀數為–101 kPa (–76 cmHg)。
5. 關閉歧管表的低壓側把手。
6. 完全打開壓縮閥(氣體及液體側)的閥心。
7. 從維修槽口取出充氣管。
8. 稳固鎖緊壓縮閥上的螺帽。

注意

1. 請勿將活動扳手放在保護蓋或蓋子上，可能會損壞。
2. 如果扭距過大，在某些安裝情況下，螺帽可能會折斷。

抽氣

使用真空泵排出連接管和室內機組內的空氣。請勿使用室外機組的冷凍劑。

有關詳情，請參閱真空泵手冊。

注意

1. 請勿將活動扳手放在保護蓋或蓋子上，可能會損壞。
2. 如果扭距過大，在某些安裝情況下，螺帽可能會折斷。

凍結測

非冷凍劑填充

• 清除灰塵和濕氣(連接管內側)。
• 緊固連接(管與本機之間)。
• 使用真空泵抽空連接管內的空氣。
• 檢查氣體是否泄漏(連接管)。
• 操作前請確保完全打開壓縮閥。

進行管道工作時請嚴守以下5項要點。
(1) 消除灰塵和濕氣 (連接管內側)。
(2) 緊固連接 (管與本機之間)。
(3) 使用真空泵抽空連接管內的空氣。
(4) 檢查氣體是否泄漏 (連接管)。
(5) 操作前請確保完全打開壓縮閥。

處理壓縮閥的預防措施

• 打開閥心，直至界限。到達界限時，避免過分用力。

處理壓縮閥的預防措施

• 用下表中的扭距牢固地鎖緊開風。

(單位：N·m)

<table>
<thead>
<tr>
<th>管徑尺寸 (mm)</th>
<th>六角扳手尺寸</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.70 mm以下</td>
<td>A = 4 mm</td>
</tr>
<tr>
<td>15.88 mm</td>
<td>A = 5 mm</td>
</tr>
</tbody>
</table>

Toshiba 1115551210 (CT)
注意
• 錯誤的線路連接可能會導致電氣部件燒壞。
• 務必使⽤本產品隨附的導線夾。
• 剝除電源線和內部連接線的導電線芯或內部絕緣體時，切勿使其損壞或刮傷。
• 使⽤規定厚度、規定類型和所需保護裝置的電源線和内部連接線。

警告
1. 使⽤規定的電線，確保電線已連接，並緊固電線，使電線的外部張力不影響線路的連接部分。
2. 務必連接接地線。（接地工作）接地不完全可能會導致電擊。
3. 請依國家接地規定安裝本設備。電路容量不⾜或安裝不完全可能會引起電擊或⽕災。

如何接線
1. 依照室內與室外機組端子板上所標示的匹配號碼將連接電纜連接⾄相應的端子上。
2. 將電源線和連接電纜仔細插⼊到端子板並⽤螺釘牢固擰緊。
3. 將其放置於不會接觸任何電気或⾦屬部件之處。
4. 將在室外機組上安置電氣部件蓋和閥門蓋。
5. 使⽤規定的電線，確保電線已連接，並緊固電線，使電線的外部張力不影響線路的連接部分。

電器工作
警告
1. 使用規定的電線，確保電線已連接，並緊固電線，使電線的外部張力不影響線路的連接部分。
2. 務必連接接地線。（接地工作）接地不完全可能會導致電擊。
3. 請依國家接地規定安裝本設備。電路容量不⾜或安裝不完全可能會引起電擊或⽕災。

注意
• 錯誤的線路連接可能會導致電氣部件燒壞。
• 務必使用本產品隨附的導線夾。
• 剝除電源線和內部連接線的導電線芯或內部絕緣體時，切勿使其損壞或刮傷。
• 使⽤規定厚度、規定類型和所需保護裝置的電源線和內部連接線。
注意
- 本空調機的電源線必須使用安裝保險絲。
- 電線不正確/不完全可能會導致電氣火災或煙霧。
- 準備空調機專用的電源。
- 本產品可連接至主電源。固定電線連接：固定線路中必須含有斷開所有電極且至少保持 3 mm 接觸間隔的切換開關。

警告
- 每年保養
  - 如果空調系統定期運轉，強烈建議清潔與保養室內/室外機組。
  - 一般而言，如果室內機組每週運轉約 8 小時，每 3 個月應至少清潔一次室內/室外機組。此清潔與保養應由合格的維修人員執行。
  - 若未定期清潔室內/室外機組，將造成效能不佳、結冰、漏水、甚至壓縮機故障。

要在本地執行的功能
- 夜間運轉控制
  - 透過連接市售的定時器和另售的適用控制線 TCB-KBOS1E，可在夜間進行低噪運轉。
  - 總體而言，建議使用此功能。

處理現有配管
- 在使用現有配管時，請遵照以下項目：
  - 管壁厚度（規定範圍內）
  - 刮痕及凹痕
  - 配管中的水、油、污垢或灰塵
  - 銅管與熱絕緣體退化

使用現有配管的注意事項
- 請勿重複使用擴口螺帽，以防氣體洩漏。更換成隨附的擴口螺帽，然後加購以擴口。
- 吹入氮氣，或者採取適當的方法以保持配管內部清潔。如果排出髒污的油或許多殘留物，請清洗配管。
- 檢查配管中的焊縫（如果有的話）是否有氣體洩漏。
  - 參考下表的管壁厚度。

<table>
<thead>
<tr>
<th>參考外徑 (mm)</th>
<th>管壁厚度 (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.52</td>
<td>0.8</td>
</tr>
<tr>
<td>15.88</td>
<td>1.0</td>
</tr>
<tr>
<td>19.1</td>
<td>1.0</td>
</tr>
</tbody>
</table>

按照適用的技術標準正確連接接地線。連接接地線可防止電擊，並降低因室外機組中的高頻轉換器所產生的電訊與電荷。

已完成
- 已連接冷凍劑管、機組之間的電線及排水管後，用橡皮帶包住它們，然後以現成的螺絲固定。
- 請務必連接接地線，以確保安全使用。
請勿使用管壁厚度小於上列厚度的任何配管，否則加壓能力不夠。
若要使用現有的 Ø19.1 mm 配管，請將室外機組 P.C. 板上的 SW802（現有配管的開關）位元 3 設定為開。在此情況下，視戶外氣溫與室溫而定，製熱效能可能會減弱。

<table>
<thead>
<tr>
<th>SW802</th>
<th>使用現有配管</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>1 2 &gt; 3 &gt; 4</td>
</tr>
</tbody>
</table>

回收冷凍劑

- 移動室內或室外機時，使用室外機組 P.C. 板上的冷凍劑回收開關 SW801 來回收冷凍劑。

程序
1. 開啟空調機電源。
2. 用遙控器為室內機組運轉選擇 FAN 模式。
3. 將室外機組 P.C. 板上的 SW804 設為全開，然後按 SW801 至少 1 秒。空調機進入器制冷冷模式最多 10 分鐘。操作或處理閥以便在此期間回收冷凍劑。
4. 冷凍劑回收完成時，關閉閥，然後按 SW801 至少 1 秒以停止運轉。
5. 閉電源。

危險
請注意可能會觸電，因為 P.C. 板上有電流經過。

疑難排解

您可以使用室外機組 P.C. 板上的 LED 以及室內機組的線遙控器上顯示的檢查代碼對室外機組執行故障診斷。使用 LED 和檢查代碼進行各項檢查。室內機組有線遙控器上顯示的檢查代碼都如室內機組的安裝手冊中所述。

確認電流異常狀態
1. 確認 DIP 開關 SW803 設為開。
2. 記下 LED800 到 LED804 的狀態。（顯示模式 1）
3. 按 SW800 至少 1 秒。LED 狀態變為顯示模式 2。
4. 從下表中查找顯示模式 1 與記下 LED 狀態相同的顯示模式 2。與 LED800 到 LED804 目前閃爍狀態相同的代碼，以指出原因。

確認發生過的異常狀態，雖然該異常狀態不再發生
1. 將 DIP 開關 SW803 的位元 1 設為開。
2. 記下 LED800 到 LED804 的狀態。（顯示模式 1）
3. 按 SW800 至少 1 秒。LED 狀態變為顯示模式 2。
4. 從下表中找出顯示模式 1 與記下 LED 狀態相同的顯示模式 2 与 LED800 到 LED804 目前閃爍狀態相同的代碼，以指出該異常。

- 戶外氣溫 (TO) 感測器錯誤，只有在發生時才被檢查。
<table>
<thead>
<tr>
<th>編號</th>
<th>原因</th>
<th>顯示模式 1</th>
<th>顯示模式 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>正常</td>
<td>● ● ● ●</td>
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<td>2</td>
<td>排氣 (TD) 感測器錯誤</td>
<td>○ ○ ● ●</td>
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<tr>
<td>3</td>
<td>熱交換 (TE) 感測器錯誤</td>
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<td>4</td>
<td>熱交換 (TL) 感測器錯誤</td>
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<tr>
<td>5</td>
<td>戶外氣溫 (TO) 感測器錯誤</td>
<td>○ ○ ● ●</td>
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<tr>
<td>6</td>
<td>遊氣 (TS) 感測器錯誤</td>
<td>○ ○ ● ●</td>
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<tr>
<td>7</td>
<td>散熱槽 (TH) 感測器錯誤</td>
<td>○ ○ ● ●</td>
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<tr>
<td>8</td>
<td>室外溫度感測器 (TE/TS) 連接錯誤</td>
<td>○ ○ ● ●</td>
<td>● ● ○ ○</td>
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<tr>
<td>9</td>
<td>室外 EEPROM 錯誤</td>
<td>○ ○ ● ●</td>
<td>● ● ○ ○</td>
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<tr>
<td>10</td>
<td>掃描機鎖定</td>
<td>● ● ○ ●</td>
<td>○ ○ ● ●</td>
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<tr>
<td>11</td>
<td>壓縮機鎖定</td>
<td>● ● ○ ●</td>
<td>○ ○ ● ●</td>
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<tr>
<td>12</td>
<td>電流偵測電路錯誤</td>
<td>● ● ○ ●</td>
<td>○ ○ ● ●</td>
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<tr>
<td>13</td>
<td>壓縮機速度感測器故障</td>
<td>● ● ○ ●</td>
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<tr>
<td>14</td>
<td>型號資料未設定 (維修 P.C. 板上)</td>
<td>● ○ ○ ●</td>
<td>○ ○ ● ●</td>
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<tr>
<td>15</td>
<td>MCU-MCU 通訊錯誤</td>
<td>● ● ○ ●</td>
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<tr>
<td>16</td>
<td>排氣溫度錯誤</td>
<td>○ ○ ● ●</td>
<td>○ ○ ● ●</td>
</tr>
<tr>
<td>17</td>
<td>電源異常（檢測到開相或電壓異常）</td>
<td>○ ○ ● ●</td>
<td>○ ○ ● ●</td>
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<tr>
<td>18</td>
<td>散熱槽過熱</td>
<td>○ ○ ● ●</td>
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<tr>
<td>19</td>
<td>壓縮機鎖定</td>
<td>○ ○ ● ●</td>
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<tr>
<td>20</td>
<td>向閥反向錯誤</td>
<td>○ ○ ● ●</td>
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</tr>
<tr>
<td>21</td>
<td>高壓釋放運轉</td>
<td>○ ○ ● ●</td>
<td>○ ○ ● ●</td>
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<tr>
<td>22</td>
<td>室外風扇馬達錯誤</td>
<td>○ ○ ● ●</td>
<td>○ ○ ● ●</td>
</tr>
<tr>
<td>23</td>
<td>壓縮機驅動器短路保護</td>
<td>○ ○ ● ●</td>
<td>○ ○ ● ●</td>
</tr>
<tr>
<td>24</td>
<td>一進顯示的位置偵測電路錯誤</td>
<td>○ ○ ● ●</td>
<td>○ ○ ● ●</td>
</tr>
</tbody>
</table>

* LED 和 DIP 開關位於室外機組 P.C. 板的左下角。
工作指示:
现有的R22和R407C配管可重复使用进行R410A产品安装。

备註
确认现有的配管上没有刮痕或凹痕，并确认配管强度符合现场条件。
如果符合指定条件，可将现有的R22和R407C配管更新为R410A型号。

重複使用现有配管的基本条件
查看冷冻剤工作是否符合以下三个条件。
1. 乾燥（配管内没有湿气。）
2. 潔淨（配管内没有灰尘。）
3. 緊固（没有冷冻剤泄漏。）

使用现有配管的限制
在以下情况下，不可重复使用目前状态的现有配管。清除现有的配管或更换新配管。
1. 如果刮痕或凹痕太深，务必使用新配管进行冷冻剤工作。
2. 如果现有的管壁厚度不符合规定的“管壁厚度标准”，务必使用新配管进行冷冻剤工作。
   • R410A的工作压力高（R22和R407C的1.6倍）。如果配管上有刮痕或凹痕，或使用较薄的配管，压力强度可能不够，甚至造成配管破裂。
   • 配管直径与厚度（mm）
<table>
<thead>
<tr>
<th>配管直径</th>
<th>Ø6.4</th>
<th>Ø9.5</th>
<th>Ø12.7</th>
<th>Ø15.9</th>
<th>Ø19.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>厚度</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>
   R410A
   R22 (R407C)
3. 假如总管堵塞，或是配管泄漏时并重新填补时。
4. 禁止使用冷冻剤回收装置回收冷冻剤时。
5. 配管内可能残留大量髒污的油或湿气。
6. 室外机组配管断开，或是配管泄漏时及配管未修理并重新填满时。
7. 无法使用冷冻剤灌注装置回收冷冻剤时。
8. 市售冷冻剤连接到现有的配管时。
   • 置可能已产生銅绿。
9. 已回收冷冻剤后即拆除现有的空调機时。
   • 确认油与普通油是否明显不同。
   • 冷冻剤的油的及髒污或堵塞。湿气可能与油混合，且配管内部可能已生锈。
10. 有髒污的油、大量髒物或恶臭。
    • 在冷冻剤中可看到大量髒污的金属粉末或其他碎屑。
11. 冷冻剤的装置不可拆卸和更换时。
    • 如果有看到髒污的油、大量髒物、闪光的金属粉末或其他碎屑或混合異物時，將發生故障。
12. 冷冻剤的装置安装拆除时，如租贷等。
   • 应使用新冷冻剤装置。
13. 如果现有空调機的冷冻剤油含量显著低于以下标准（石油油）：
   • Suniso、Freon-S、MS（合成油）、烷基苯（HAB，冷冻剤油）、酯类、酯类PVE。
   • 压縮機的線圈绝缘可能會退化。

备註
以上说明为由本公司确认的结果，代表我们对本公司空调機的见解，但
不保证现有配管可使用於其他公司已採用R410A的空调機。

同步运转系统的分歧管路
在同步运转的双系统中，如果TOSHIBA指定使用分歧管路，则可重复使用。
分歧管路型号名称：
RBC-TWP30E2
在同步运转系统双系统（双系统）的现有空调機中，所使用的分歧管路的压縮强度
可能不足。在此情况下，请将分歧管更换为R410A的分歧管路。

改正配管
长期使用除拆除室內或室外机组时，以下改正配管。
• 冷冻剤或环境因凝结进入配管内可能會生锈。
• 禁止使用冷冻剤灌注装置。

<table>
<thead>
<tr>
<th>发生原因</th>
<th>期间</th>
<th>改正方式</th>
</tr>
</thead>
<tbody>
<tr>
<td>室外</td>
<td>1個月或以上</td>
<td>夾住或包住</td>
</tr>
<tr>
<td>室内</td>
<td>少於1個月</td>
<td>夾住或包住</td>
</tr>
</tbody>
</table>

Toshiba 1115551210 (CT)
現有的配管上有刮痕或凹痕？

否

是

現有的配管：無法使用。

使用新配管。

可操作現有的空調機？

否

是

• 現有的空調機在制冷模式中運轉約 30 分鐘或更長後，回收冷凍劑。
• 清潔配管及回收油
• 冷凍劑回收：抽氣方法

將配管上現有的空調機拆除並進行沖洗（氮氣壓力 0.5 MPa），以去除配管內的任何殘留物。
備註：如果使用雙管，也務必沖洗分歧管路。

是否排出大量髒污的油或大量殘留物？
（當油退化時，油的顏色會變成混濁或黑色。）

否

是

清潔配管或使用新配管。

將室內/室外機組連接到現有的配管。
• 將主機隨附的擴口螺釘使用於室內/室外機組。（請勿使用現有配管的擴口螺釘。）
• 將擴口加工尺寸重新加工成 R410A 的尺寸。

土豆 3 22 26 29 36
適用於 R22 同上 24 27 同上

如果 Ø19 mm 或更大的排氣管用於 3 HP 的室外機組：（我們的 R410A 型號 3 到 5 HP 排氣管大小為 Ø15.9 mm）
→ 將室外機組循環控制 PC 板上現有的配管閥轉至開。現有的配管出廠時關閉（請參考下表。）（務必設定下表中的內容，以限制配管標準中的設備製冷循環壓力。）

現有的配管 SW

| 3 HP  | SW802 的位元 3 → 開 |

現有配管

（密封測試），乾式抽真空，冷凍劑填充，氣體洩漏檢查

試運轉

^
在 2 個空調器安裝得比較近的情況下對每個室內機分別使用遙控器。

遙控器 A-B 選擇

要轉換 TEST RUN (COOL) 模式時，按 [RESET]（重設）按鈕 10 秒鐘即可，（嘟嘟機將發出短嘟聲。）

檢測操作

自動重新啟動設定

此產品在電源中斷並恢復電供後，自動重新啟動於電流中斷前的操作模式之設計。

信息

此產品的自動重新啟動功能在出廠前已被設定於關閉位置。需要時可將它打開。

如何設定自動重新啟動

1. 按住室內機組上的 [RESET] 按鈕 3 秒鐘來設定操作。（3 單嘟聲且 OPERATION 燈熄滅 5 秒鐘，1 秒熄滅 5 次）
2. 按住室內機組上的 [RESET] 按鈕 3 秒鐘來取消操作。（3 單嘟聲，但 OPERATION 燈不熄滅）
   • 設定 ON 定時器或 OFF 定時器時，自動重新啟動操作不啟動。