



SPLIT TYPE ROOM AIR CONDITIONER INSTALLATION INSTRUCTION SHEET

(PART NO. 9373856023)

For authorized service personnel only.

This installation instruction sheet describes how to install the outdoor unit. Refer to the installation instruction sheet included with the indoor unit.

- CAUTION** This mark indicates procedures which, if improperly performed, are most likely to result in the death of or serious injury to the user or service personnel.
- WARNING** This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
- CAUTION** This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

This air conditioner uses new refrigerant R410A.

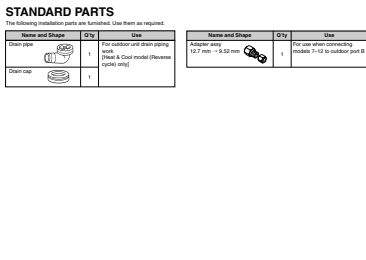
- The basic installation work procedures are the same as conventional refrigerant models.
- Since the working pressure is 1.6 times higher than that of conventional refrigerant models, some of the piping and installation and service tools are special. (See the table below.)
- Especially, when replacing a conventional refrigerant model with a new refrigerant R410A model, always replace the conventional piping and flare nuts with the R410A piping and flare nuts.
- Monitor the coil refrigerant R410A charge amount. A different charging port thread diameter is provided. (Refer to the R410A charge amount chart.)
- Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
- When changing the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.

| Total name | | Contents of change | |
|---------------|-------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group model | R410A | Pressure | Pressure is high and cannot be measured with conventional gauge. To prevent excessive charging of other refrigerant, the diameter of each part has been changed. |
| Change type | R410A | Charging | A is recommended for the gauge with max. ch. 1 to 3 MPa, -10 to 10 MPa for high pressure, -1 to 1 MPa for low pressure. |
| Mounting pump | R410A | Charging | A is recommended for the gauge with max. ch. 1 to 3 MPa, -10 to 10 MPa for high pressure, -1 to 1 MPa for low pressure. |
| Charge gas | R410A | Charging | A is recommended for the gauge with max. ch. 1 to 3 MPa, -10 to 10 MPa for high pressure, -1 to 1 MPa for low pressure. |

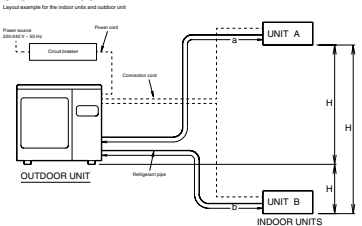
| Copper pipes | Thickness of Annealed Copper Pipes (R410A) | |
|--------------------|--------------------------------------------|-----------|
| | Pipe outside diameter | Thickness |
| 6.35 mm (1/4 in.) | 0.50 mm | |
| 9.52 mm (3/8 in.) | 0.80 mm | |
| 12.70 mm (1/2 in.) | 1.00 mm | |
| 15.88 mm (5/8 in.) | 1.00 mm | |
| 19.05 mm (3/4 in.) | 1.50 mm | |

STANDARD PARTS

| Name and Shape | Qty | Use |
|------------------------------------------|-----|------------------------------------------|
| Chill pipe | 1 | For indoor unit drain piping |
| Chill cap | 1 | For indoor unit drain piping |
| Adapter ring | 1 | For indoor unit drain piping |
| Flare & Cool mount (Flareless pipe only) | 1 | Flare & Cool mount (Flareless pipe only) |



SYSTEM LAYOUT



1. CONNECTABLE INDOOR UNIT CAPACITY TYPE

If the total capacity of the connected indoor units, an error will be displayed and the units will not operate. (For information on error displays, refer to the installation instruction sheets included with the indoor unit.)

- To install an indoor unit, refer to the installation instruction sheet included with the indoor unit.
- All heat three indoor units must be connected to the outdoor unit.

| Model | Outdoor unit | Connectable indoor name |
|-------|--------------|-------------------------|
| A | 7-12 | A, B |
| B | 7-12/14-18 | A, B |

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|-------|--------------|-------------------------|
| A | 7-12 | A, B |
| B | 7-12/14-18 | A, B |

*1 When connecting models 7-12 to the outdoor unit, the included adapter is necessary. (For more information, refer to HOW TO USE ADAPTER.)

SELECTING THE MOUNTING POSITION

Select installation locations that can properly support the weight of the indoor and outdoor units, install the units securely so that they do not topple or fall.

- Do not install where there is the danger of combustible gas leakage.
- Do not install the unit near heat sources of heat, steam, or flammable gas.
- Children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

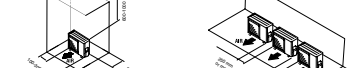
- Install the unit where it will not be filled by more than 3'.
- When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.

Specify the mounting position with the customer as follows:
 1) Install the indoor unit in a location which will not obstruct the sight of the unit and operation, and which can be reached horizontally.
 2) Provide the indicated space to ensure good airflow.
 3) If possible, do not install the unit where it will be exposed to direct sunlight.
 4) If necessary, install a panel that does not interfere with the airflow.
 5) Do not install the unit near sources of heat, steam, or flammable gas.
 6) During handling operation, the drain pipe must be in a vertical state.
 7) Do not install the unit where people pass.
 8) Install the outdoor unit in a place where it will be less from being hit by getting wet by rain as much as possible.
 9) Install the unit where connection to the indoor unit is easy.

- When there are obstacles at the back side.



- When there are obstacles at the back, side(s), and top.



- When there are obstacles at the back side with the installation of more than one unit.



- If the space is larger than that is stated, the condition will be the same as that there are no obstacles.

2. LIMITATION OF REFRIGERANT PIPING LENGTH

The total maximum pipe lengths and height difference of the product are shown in the table. If the units are further apart than this, correct operation cannot be guaranteed.

| Thickness length (m) | Max. height difference (m) |
|----------------------|----------------------------|
| 32 (106' 11") | 10 (32' 8") |
| 35 (114' 8") | 10 (32' 8") |
| 40 (131' 2") | 5 (16' 4") |

*1 Additional refrigerant charging is recommended.

3. SELECTING PIPE SIZES

The diameter of the connection pipes after according to the capacity of the indoor unit. Refer to the following table for the proper diameter of the connection pipes between the indoor and outdoor unit.

| Capacity (kW) | Gas pipe size (nominal diam.) | Liquid pipe size (nominal diam.) |
|---------------|-------------------------------|----------------------------------|
| 14-18 | φ12 (3/8 in.) | φ8 (5/8 in.) |

Operation cannot be guaranteed if the correct combination of pipe, valves, etc. is not used to connect the indoor and outdoor units.

4. HEAT INSULATION AROUND CONNECTION PIPES REQUIREMENTS

Insulate heat insulation around both the gas and liquid pipes. Failure to do so may cause water leakage. Do not install insulation with heat resistance above 100 °C (the heat resistance of the insulation must be at least 70% of the expected humidity level in 70-80%, use heat insulation that is 15 mm or thicker and if the expected humidity exceeds 80%, use heat insulation that is 25 mm or thicker. If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.045 W/m·K or less (at 28 °C).

Connect the connection pipes according to the connection pipe size in this installation instruction sheet.

5. ELECTRICAL REQUIREMENT

Electric wire size and wire capacity.

| Power supply cord (mm ²) | MAX. | MIN. |
|--------------------------------------------------------------|-------------|------|
| Connection cord (mm ²) <td>2.5</td> <td>1.5</td> | 2.5 | 1.5 |
| Power capacity (A) <td>INDOOR UNIT</td> <td>10</td> | INDOOR UNIT | 10 |

*1 Install a disconnected device with a correct pipe of at least 3 mm (1/8 inch) diameter.

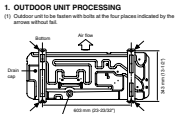
*2 If the indoor unit is an outdoor-power supply, a special switch circuit and a special breaker must be used.

*3 Always use RCD/RCB or equivalent as the power supply cord and the connection cord.

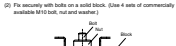
INSTALLATION PROCEDURE

1. OUTDOOR UNIT INSTALLATION

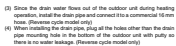
1. Outdoor unit to be fixed with bolts at the four points indicated by the arrows without tilt.



2. Fix securely with bolts on a solid base. Use 4 sets of commercially available M10 bolts (not included).



3. When the outdoor temperature is 0 °C or less, do not use the secondary drain pipe and drain cap. If the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold weather. (Please see cycle model only.)



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2. CONNECTING THE PIPE

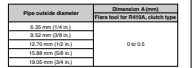
Do not use air mineral oil on flare nut. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

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

The maximum lengths of this product are shown in the table. If the units are further apart than this, correct operation cannot be guaranteed.

1. FLARING

- 1) Cut the connection pipe to the necessary length with a pipe cutter.
- 2) Flare the pipe diameter on the cutting end not on the flare pipe and remove the burrs.
- 3) Insert the flare nut (inserted into the flare) on the end of the flare and tighten it with a flare nut.
- 4) Use the flare nut (not included) on the connection flare nut.



| Pipe outside diameter | Dimension A (mm) |
|-----------------------|------------------|
| 6.35 mm (1/4 in.) | 12.7 |
| 9.52 mm (3/8 in.) | 15.2 |
| 12.70 mm (1/2 in.) | 17.8 |
| 15.88 mm (5/8 in.) | 19.0 |
| 19.05 mm (3/4 in.) | 25.4 |

When using conventional flare nuts for R410A pipes, the dimension A should be approximately 0.5 mm more than indicated in the table for the piping. (R410A flare nuts to adhere to the specified piping, use a flare gauge to measure the dimension A.)

| Pipe outside diameter | Width across flats (mm) |
|-----------------------|-------------------------|
| 6.35 mm (1/4 in.) | 12.7 |
| 9.52 mm (3/8 in.) | 15.2 |
| 12.70 mm (1/2 in.) | 17.8 |
| 15.88 mm (5/8 in.) | 19.0 |
| 19.05 mm (3/4 in.) | 25.4 |

2. BENDING PIPES

The pipes are applied by your hands. Be careful not to collapse them. Do not bend the pipes at an angle other than 90°.

To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm or more.

If the pipe is bent repeatedly at the same place, it will break.

3. CONNECTION PIPES

Outdoor unit

1) Detach the caps and plugs from the pipes.

2) Be sure to apply the pipe against the port on the indoor unit and outdoor unit correctly. If the connection is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.

3) Do not remove the flare nut from the indoor unit pipe immediately before connecting the connection pipe.

4) Connecting the pipe against port on the indoor unit, turn the flare nut with your hand.

To prevent gas leakage, use flare nut when installation is completed. Do not use rubber cap.

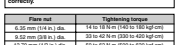


4. HOW TO USE ADAPTER (Connection ports of outdoor unit)

When using the ADAPTER, be careful not to cover the nut, or the adapter pipe may be damaged.

Apply a coat of anti-rust oil to the threads of the connection port of the low-pressure secondary line to prevent the connection from loosening.

Apply anti-rust oil to the threads of the indoor unit and outdoor unit.



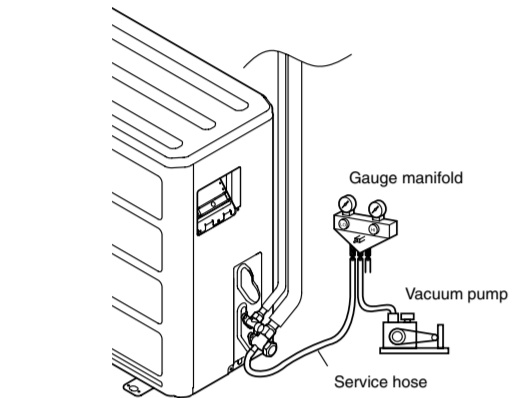
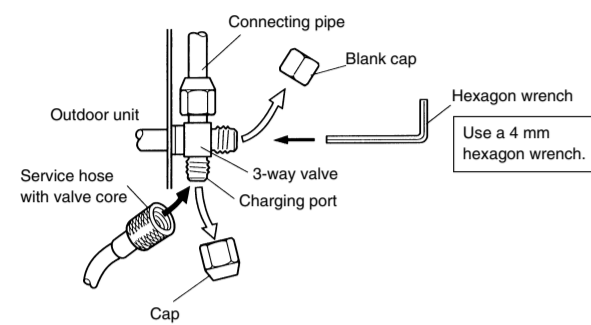
Hold the torque wrench at 45°, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.

| Pipe size | Tightening torque |
|--------------------|----------------------------------|
| 6.35 mm (1/4 in.) | 11.0 to 13.0 (1/4 to 1/2 kgf·cm) |
| 9.52 mm (3/8 in.) | 22.0 to 26.0 (1/2 to 3/4 kgf·cm) |
| 12.70 mm (1/2 in.) | 33.0 to 39.0 (3/4 to 1 kgf·cm) |
| 15.88 mm (5/8 in.) | 44.0 to 53.0 (1 to 1.2 kgf·cm) |
| 19.05 mm (3/4 in.) | 66.0 to 79.0 (1.5 to 1.8 kgf·cm) |

5. VACUUM

- Remove the cap, and connect the gauge manifold and the vacuum pump to the charging valve by the service hoses.
- Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -0.1 MPa (-76 cmHg).
- When -0.1 MPa (-76 cmHg) is reached, operate the vacuum pump for at least 30 minutes.
- Disconnect the service hoses and fit the cap to the charging valve to the specified torque.
- Remove the blank caps, and fully open the spindles of the 2-way and 3-way valves with a hexagon wrench [Torque: 6-7 N·m (60 to 70 kgf·cm)].
- Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque.

| | Tightening torque | |
|-------------------|----------------------------------|----------------------------------|
| Blank cap | 6.35 mm (1/4 in.) | 20 to 25 N·m (200 to 250 kgf·cm) |
| | 9.52 mm (3/8 in.) | 20 to 25 N·m (200 to 250 kgf·cm) |
| | 12.70 mm (1/2 in.) | 25 to 30 N·m (250 to 300 kgf·cm) |
| | 15.88 mm (5/8 in.) | 30 to 35 N·m (300 to 350 kgf·cm) |
| | 19.05 mm (3/4 in.) | 35 to 40 N·m (350 to 400 kgf·cm) |
| Charging port cap | 10 to 12 N·m (100 to 120 kgf·cm) | |



CAUTION

- Do not purge the air with refrigerants, but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!
- Use a vacuum pump and gauge manifold and charging hose for R410A exclusively. Using the same vacuum for different refrigerants may damage the vacuum pump or the unit.
- Charging of additional refrigerant (R410A) according to the piping length is unnecessary.

6. GAS LEAKAGE INSPECTION

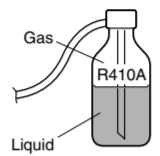
CAUTION

- After connecting the piping, check the all joints for gas leakage with gas leak detector.
- When inspecting gas leakage, always use the vacuum pump for pressure. Do not use nitrogen gas.

7. RECHARGING THE REFRIGERANT

CAUTION

- When moving and installing the air conditioner, do not mix gas other than the specified refrigerant (R410A) inside the refrigerant cycle.
- When charging the refrigerant R410A, always use an electronic balance for refrigerant charging (to measure the refrigerant by weight).
- When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.
- Add refrigerant from the charging valve after the completion of the work.
- If the units are further apart than the maximum pipe length, correct operation can not be guaranteed.



3

POWER

WARNING

- The rated voltage of this product is 220-240 V A.C. 50 Hz.
- Before turning on verify that the voltage is within the 198 V to 264 V range.
- Always use a special branch circuit and install a special receptacle to supply power to the air conditioner.
- Use a special branch circuit breaker and receptacle matched to the capacity of the air conditioner. (Install in accordance with standard.)
- Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.
- Install a leakage special branch circuit breaker in accordance with the related laws and regulations and electric company standards.

CAUTION

- The power source capacity must be the sum of the air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
- When the voltage is low and the air conditioner is difficult to start, contact the power company the voltage raised.

4

ELECTRICAL WIRING

WARNING

- Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
- Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords firmly to the terminal board. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)
- Always connect the ground wire.

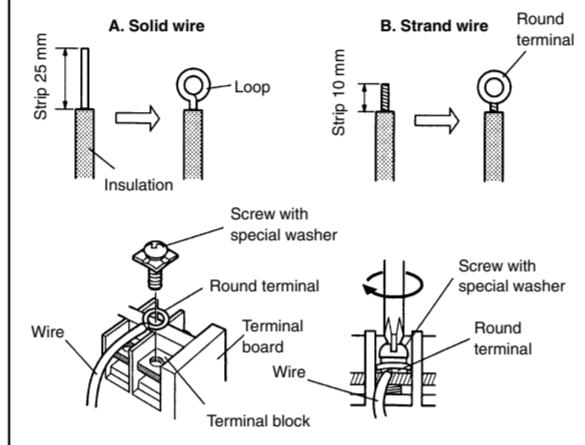
HOW TO CONNECT WIRING TO THE TERMINALS

A. For solid core wiring (or F-cable)

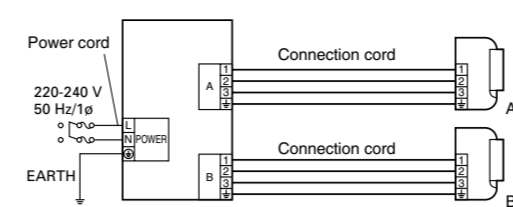
- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm to expose the solid wire.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm to expose the strand wiring.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

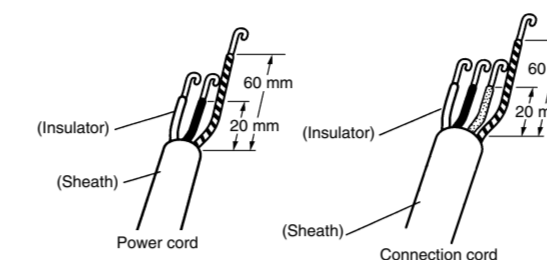


1. CONNECTION DIAGRAMS



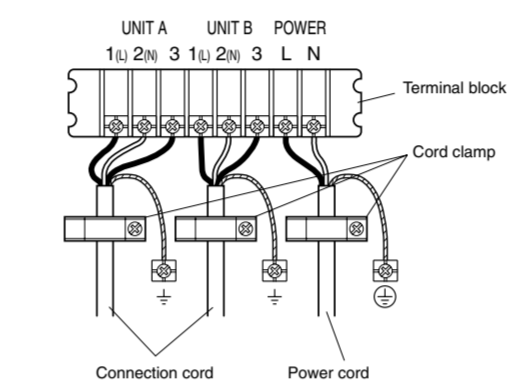
2. CORD PREPARATION

Keep the earth wire longer than the other wires.

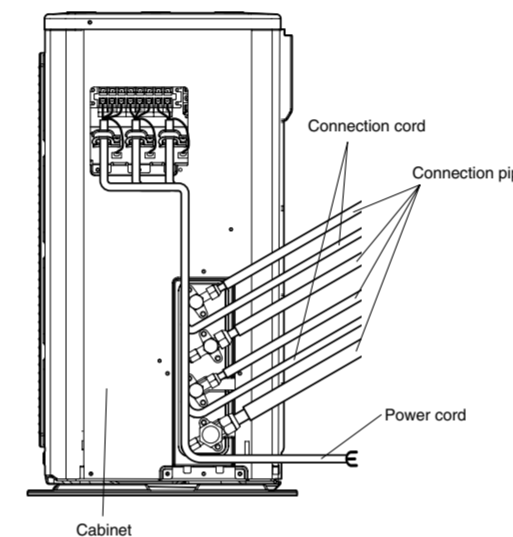


3. OUTDOOR UNIT

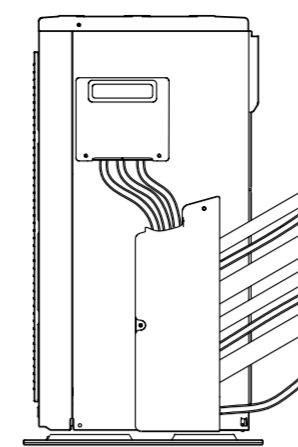
- Connect the power supply cord and the connection cord to terminal.
- Fasten the power supply cord and connection cord with cord clamp.



- Pass the connection cord and power cord through the hole of the 3-way valve bracket and run them to the outside of the cabinet.



- Install the valve cover and terminal cover as shown. Pass the power cord and connections cords through the valve cover when wiring them.



5

TEST RUNNING

The test run method may be different for each indoor unit that is connected. Refer to the installation instruction sheet included with each indoor unit.

6

CUSTOMER GUIDANCE

Explain the following to the customer in accordance with the operating manual:

- Starting and stopping method, operation switching, temperature adjustment, timer, air flow adjustment, and other remote control unit operations.
- Air filter removal and cleaning.
- Give the operating manual and installation instruction sheet to the customer.