

SPLIT TYPE ROOM AIR CONDITIONER INSTALLATION INSTRUCTION SHEET

(PART NO. 9374747030)

For authorized service personnel only.

This installation instruction sheet describes how to install the outdoor unit only. To install the indoor unit, refer to the installation instruction sheet included with the indoor unit.

 **CAUTION**

**R410A
REFRIGERANT**

This Air Conditioner contains and operates with refrigerant R410A and Polyol Ester oil.

THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.

Refer to Commonwealth, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

IMPORTANT!

Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all danger, warning, and caution notices given in this manual.

WARNING: This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION: This symbol refers to a hazard or unsafe practice which can result in personal injury and the potential for product or property damage.

- Hazel alerting symbols



Electrical



Safety / alert

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing...

...In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

...In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

...In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

...In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE:

Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion the refrigerant tubing for your particular model is specified as either "small" or "large" rather than as "liquid" or "gas".

When Servicing

- Turn the power OFF at the main circuit breaker panel before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- After installation, explain correct operation to the customer, using the operating manual.

⚠ DANGER

Never touch electrical components immediately after the power supply has been turned off. Electrical shock may occur. After turning off the power, always wait 5 minutes or more before touching electrical components.

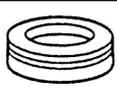
⚠ WARNING

- ① For the room air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
- ② Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available standards parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.
- ③ Installation work must be performed in accordance with national wiring standards by authorized personnel only.
- ④ Also, do not use an extension cord.
- ⑤ Do not turn on the power until all installation work is complete.
- ⑥ Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation.
- ⑦ There is not extra refrigerant in the outdoor unit for air purging.
- ⑧ Use a vacuum pump for R410A exclusively.
- ⑨ Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.
- ⑩ Use a clean gauge manifold and charging hose for R410A exclusively.
- ⑪ If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.

- Be careful not to scratch the room air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operating manual.
- Let the customer keep this installation instruction sheet because it is used when the room air conditioner is serviced or moved.

STANDARD PARTS

The following installation parts are furnished. Use them as required.

| Name and Shape | Q'ty | Use |
|---|------|------------------------------------|
| Drain pipe  | 1 | For outdoor unit drain piping work |
| Drain cap  | 5 | |

36 type only

| Name and Shape | Q'ty | Use |
|--|------|---|
| Adapter assy 12.7 mm → 9.52 mm (1/2 in.) (3/8 in.)  | 1 | For use when connecting models 9–12 to outdoor port A |

OPERATING RANGE

| | Temperature | Indoor air intake | Outdoor air intake |
|---------|-------------|-------------------|--------------------|
| Cooling | Maximum | 90 °F DB | 115 °F DB |
| | Minimum | 65 °F DB | 32 °F DB |
| Heating | Maximum | 86 °F DB or less | 75 °F DB |
| | Minimum | — | 14 °F DB |

Indoor humidity about 80% or less

This air conditioner uses new refrigerant HFC (R410A).

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

- ① 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.
- ② Models that use refrigerant R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant and for safety. Therefore, check beforehand. [The charging port thread diameter for R410A is 1/2 UNF 20 threads per inch.]
- ③ Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
- ④ When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.

Special tools for R410A

| Tool name | Contents of change |
|----------------------|--|
| Gauge manifold | Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other refrigerants, the diameter of each port has been changed. It is recommended the gauge with seals -0.1 to 5.3 MPa (-76 cmHg to 53 kgf/cm ²) for high pressure. -0.1 to 3.8 MPa (-76 cmHg to 38 kgf/cm ²) for low pressure. |
| Charge hose | To increase pressure resistance, the hose material and base size were changed. |
| Vacuum pump | A conventional vacuum pump can be used by installing a vacuum pump adapter. |
| Gas leakage detector | Special gas leakage detector for HFC refrigerant R410A. |

Copper pipes

It is necessary to use seamless copper pipes and it is desirable that the amount of residual oil is less than 40 mg/10 m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants. As an air conditioner using R410A incurs pressure higher than when using conventional refrigerant, it is necessary to choose adequate materials. Thicknesses of copper pipes used with R410A are as shown in the table. Never use copper pipes thinner than that in the table even when it is available on the market.

Thicknesses of Annealed Copper Pipes (R410A)

| Pipe outside diameter | Thickness |
|-----------------------|---------------------|
| 6.35 mm (1/4 in.) | 0.80 mm (1/32 in.) |
| 9.52 mm (3/8 in.) | 0.80 mm (1/32 in.) |
| 12.70 mm (1/2 in.) | 0.80 mm (1/32 in.) |
| 15.88 mm (5/8 in.) | 1.00 mm (5/128 in.) |
| 19.05 mm (3/4 in.) | 1.20 mm (3/64 in.) |

SELECTING THE MOUNTING POSITION

⚠ WARNING

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.

⚠ CAUTION

- ① Do not install where there is the danger of combustible gas leakage.
- ② Do not install the unit near heat source of heat, steam, or flammable gas.
- ③ If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

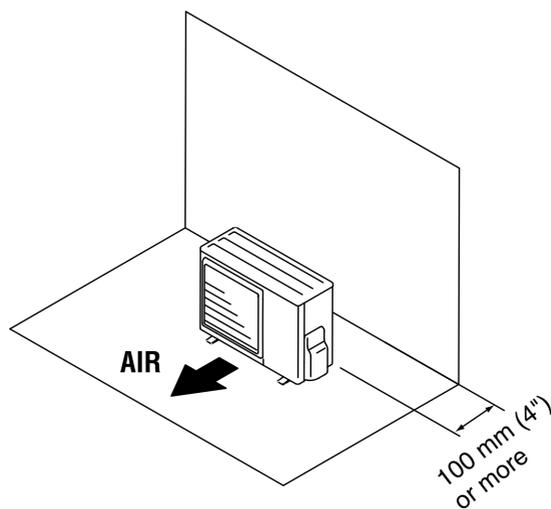
⚠ WARNING

- ① Install the unit where it will not be tilted by more than 3°. However, do not install the unit with it tilted towards the side containing the compressor.
- ② When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.

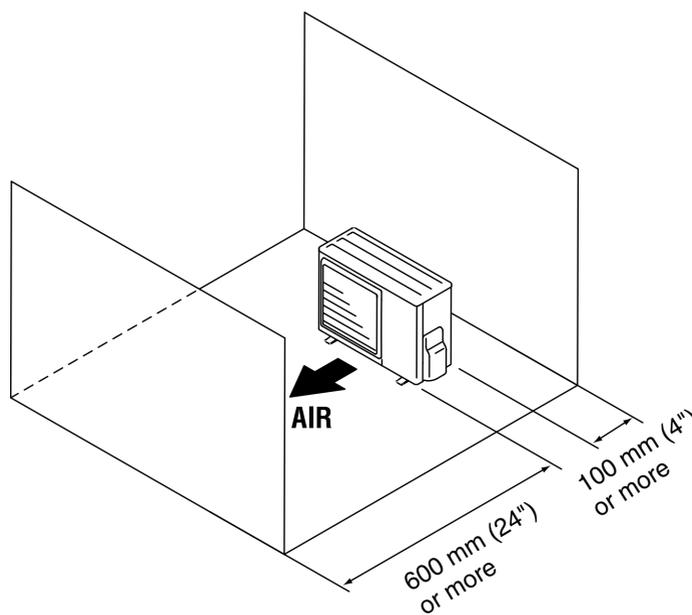
Decide the mounting position with the customer as follows:

- (1) Install the outdoor unit in a location which can withstand the weight of the unit and vibration, and which can install 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.
(If necessary, install a blind that does not interfere with the airflow.)
- (4) Do not install the unit near a source of heat, steam, or flammable gas.
- (5) During heating operation, drain water flows from the outdoor unit.
Therefore, install the outdoor unit in a place where the drain water flow will not be obstructed. (Reverse cycle model only)
- (6) Do not install the unit where strong wind blows or where it is very dusty.
- (7) Do not install the unit where people pass.
- (8) Install the outdoor unit in a place where it will be free from being dirty or getting wet by rain as much as possible.
- (9) Install the unit where connection to the indoor unit is easy.

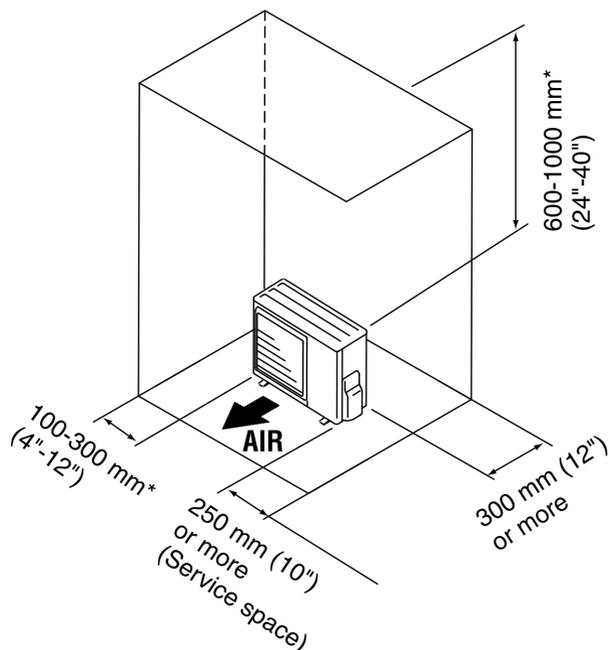
- When there are obstacles at the back side.



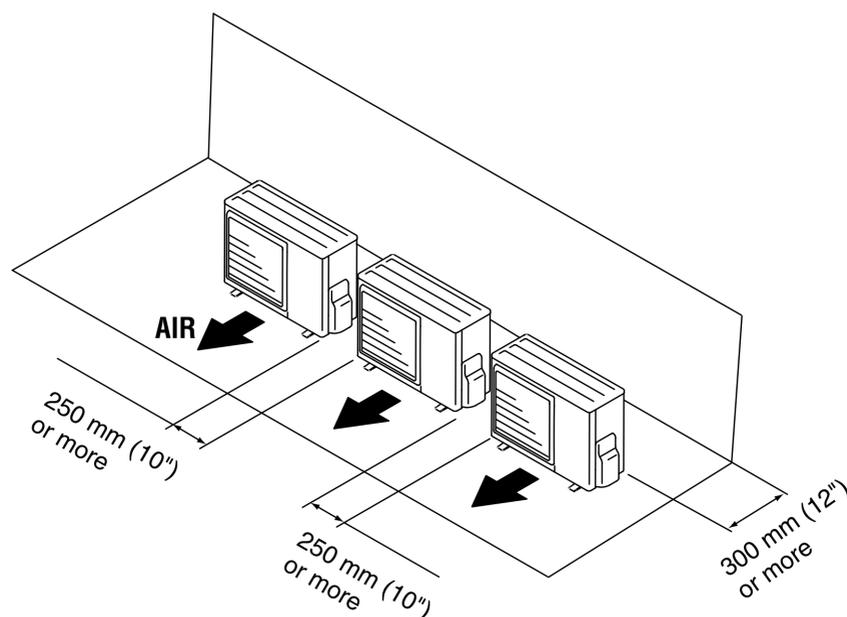
- When there are obstacles at the back and front sides.



- 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.



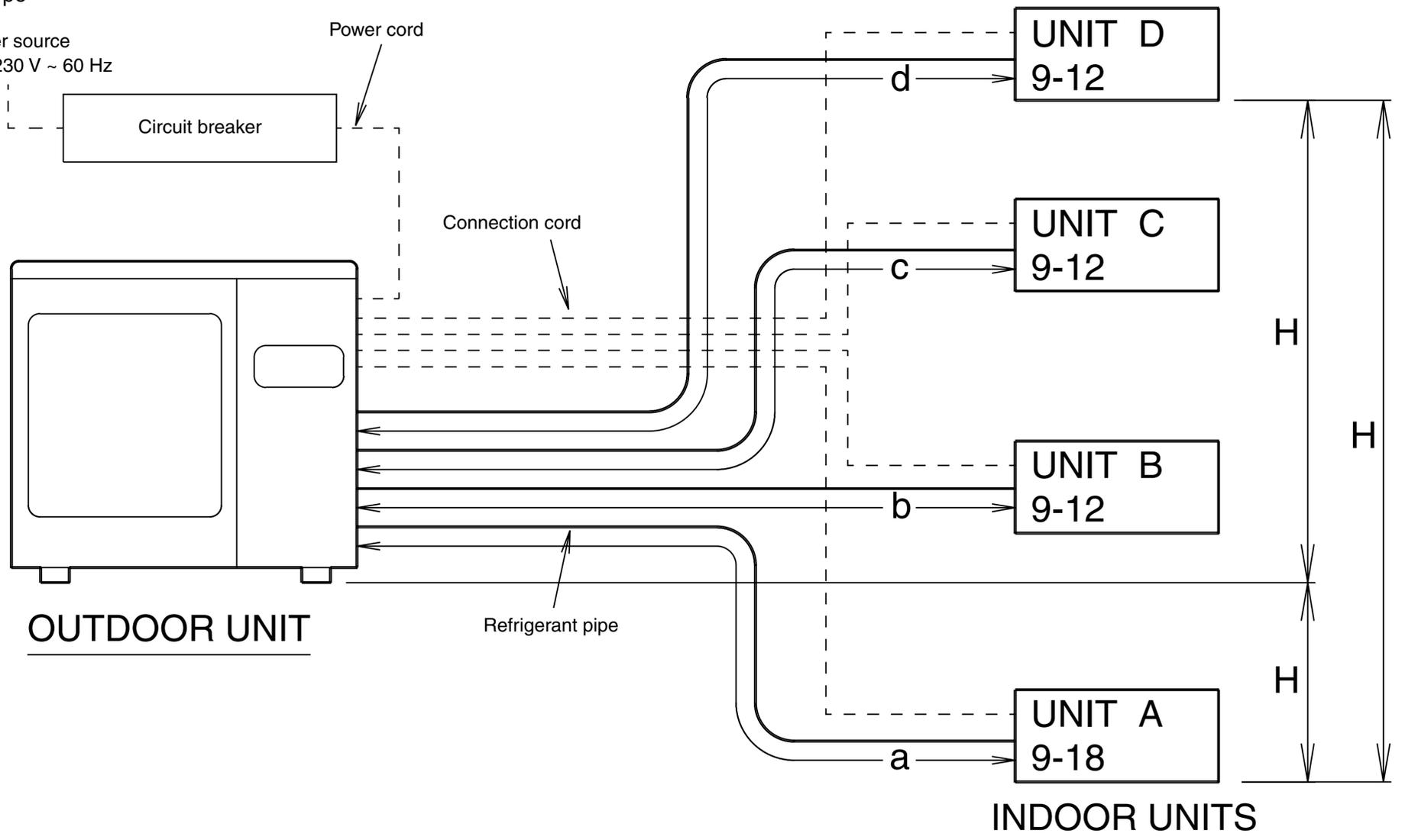
* If the space is larger than that is stated, the condition will be the same as that there are no obstacles.

SYSTEM LAYOUT

Layout example for the indoor units and outdoor unit

36 type

Power source
208/230 V ~ 60 Hz



1. CONNECTABLE INDOOR UNIT CAPACITY TYPE

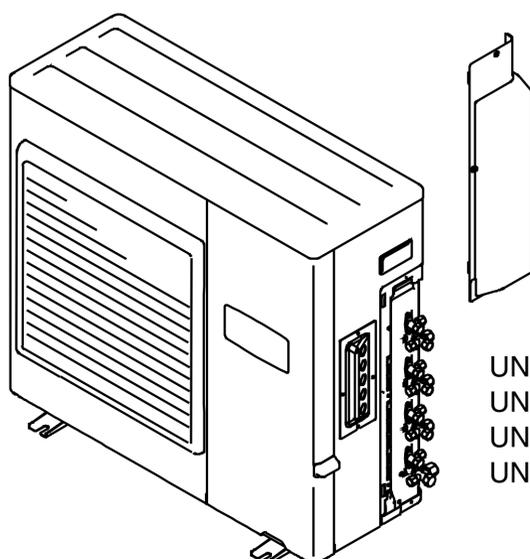
⚠ CAUTION

- The total capacity of the indoor units connected must be between 27,000 and 36,000 BTU. (Refer to the Table.)
Ex. Maximum connection of four indoor units: $9,000+9,000+9,000+9,000=36,000$
- If the total capacity of the connected indoor units exceeds 36,000 BTU, 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 units.)

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

| Outdoor port | | Connectable model name |
|--------------------|-----------|--------------------------|
| Standard port size | | |
| D | 6.35/9.52 | 9 – 12 |
| C | 6.35/9.52 | 9 – 12 |
| B | 6.35/9.52 | 9 – 12 |
| A | 6.35/12.7 | 9 – 12 ^{*1} /18 |

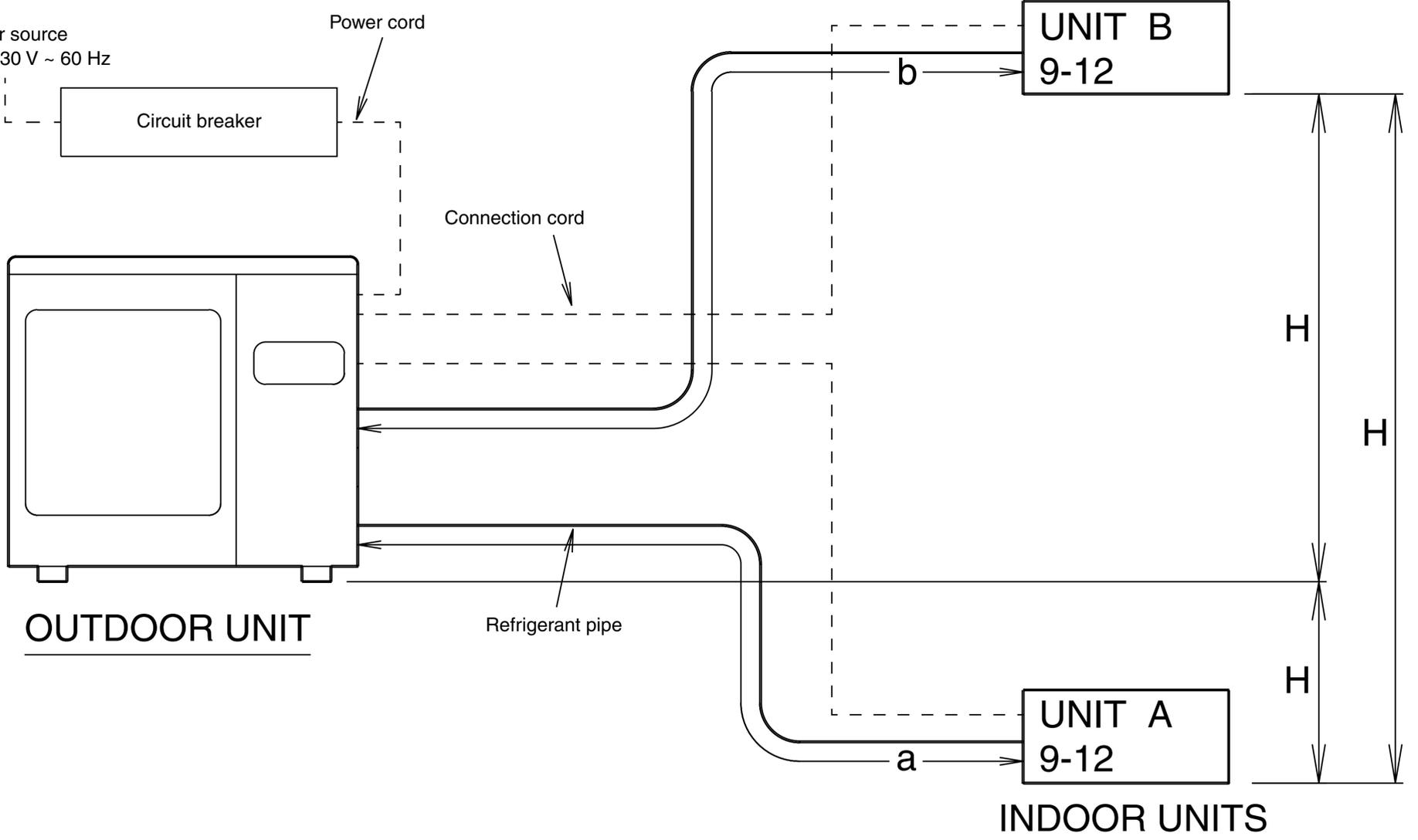
*1 When connecting models 9–12 to the outdoor unit, the included adapter is necessary. (For more information, refer to “**2**-4 HOW TO USE ADAPTER”.)



UNIT D ø6.35, ø9.52
UNIT C ø6.35, ø9.52
UNIT B ø6.35, ø9.52
UNIT A ø6.35, ø12.7

24 type

Power source
208/230 V ~ 60 Hz



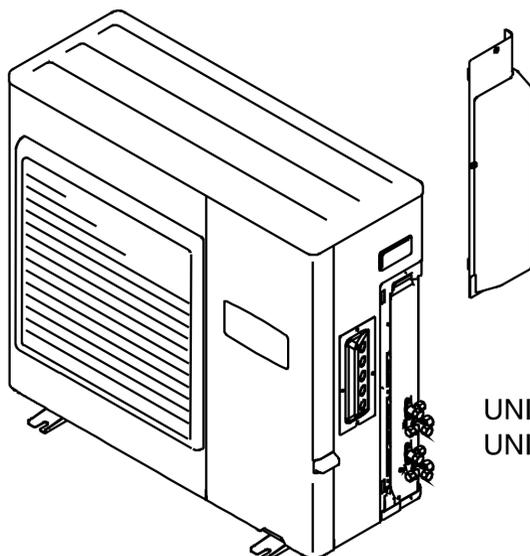
2. CONNECTABLE INDOOR UNIT CAPACITY TYPE

⚠ CAUTION

- The total capacity of the indoor units connected must be between 18,000 and 24,000 BTU. (Refer to the Table.)
Ex. Maximum connection of four indoor units: 12,000+12,000=24,000
- If the total capacity of the connected indoor units exceeds 24,000 BTU, 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 units.)

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

| Outdoor port | | Connectable model name |
|--------------------|-----------|------------------------|
| Standard port size | | |
| B | 6.35/9.52 | 9 – 12 |
| A | 6.35/9.52 | 9 – 12 |



UNIT B ø6.35, ø9.52
UNIT A ø6.35, ø9.52

3. LIMITATION OF REFRIGERANT PIPING LENGTH

⚠ CAUTION

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

36 type

| | |
|---|-----------------------------|
| Total max. length (a+b+c+d) | 70 m (230 ft) ^{*2} |
| Max. length for each indoor unit (A, B, C, or D) | 25 m (82 ft) |
| Max. height difference (H) | 15 m (49 ft) |
| Min. length for each indoor unit (A, B, C, or D) | 5 m (16 ft) |

*2 If the total piping length is 51 m (167 ft) or longer, additional refrigerant charging is necessary. (For more information, refer to “**2**-6 ADDITIONAL CHARGE”.)

24 type

| | |
|--|--------------|
| Total max. length (a+b) | 30 m (98 ft) |
| Max. length for each indoor unit (A or B) | 25 m (82 ft) |
| Max. height difference (H) | 10 m (33 ft) |
| Min. length for each indoor unit (A or B) | 5 m (16 ft) |

4. SELECTING PIPE SIZES

The diameters of the connection pipes differ according to the capacity of the indoor unit.

Refer to the following table for the proper diameters of the connection pipes between the indoor and outdoor units.

| Capacity of indoor unit | Gas pipe size (thickness) | Liquid pipe size (thickness) |
|-------------------------|----------------------------------|----------------------------------|
| 9 – 12 | ø9.52 mm (0.8 mm) (3/8" (1/32")) | ø6.35 mm (0.8 mm) (1/4" (1/32")) |
| 18 | ø12.7 mm (0.8 mm) (1/2" (1/32")) | ø6.35 mm (0.8 mm) (1/4" (1/32")) |

⚠ CAUTION

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

5. HEAT INSULATION AROUND CONNECTION PIPES REQUIREMENTS

⚠ CAUTION

Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks. Use heat insulation with heat resistance above 248 °F. (Reverse cycle model only)
In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70%, install heat insulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat insulation that is 5.9 in. or thicker and if the expected humidity exceeds 80%, use heat insulation that is 7.9 in. 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 68 °F).

Connect the connection pipes according to “**2** CONNECTING THE PIPING” in this installation instruction sheet.

6. ELECTRICAL REQUIREMENT

Always make the air conditioner power supply a special branch circuit and provide a special switch and receptacle. Do not extend the power cord.

⚠ CAUTION

| | 24 type | 36 type |
|---|---------|---------|
| MINIMUM CIRCUIT AMPACITY | 17 A | 25 A |
| MAXIMUM OVERCURRENT PROTECTION (TIME DELAY FUSE OR HACR TYPE CIRCUIT BREAKER) | 20 A | 30 A |

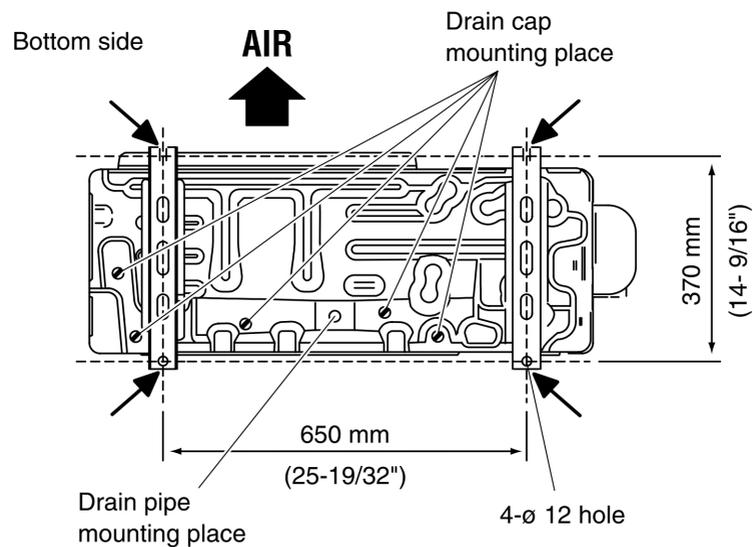
INSTALLATION PROCEDURE

1

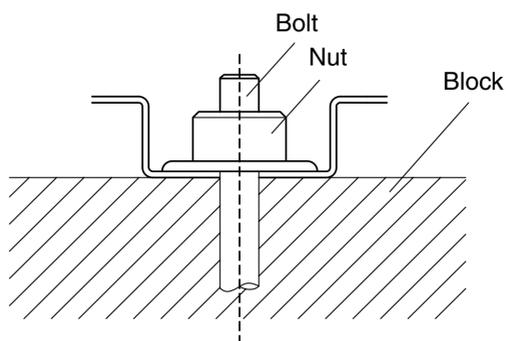
OUTDOOR UNIT INSTALLATION

1. OUTDOOR UNIT PROCESSING

- (1) Outdoor unit to be fasten with bolts at the four places indicated by the arrows without fail.



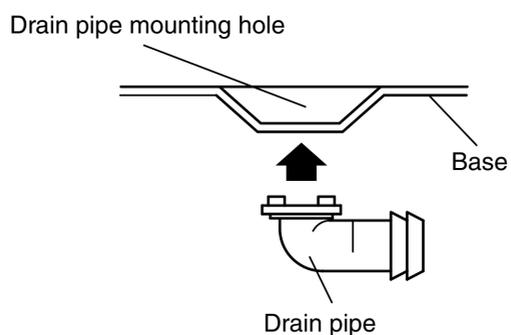
- (2) Fix securely with bolts on a solid block. (Use 4 sets of commercially available M10 bolt, nut and washer.)



- (3) Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to a commercial 16 mm hose. (Reverse cycle model only)
- (4) When installing the drain pipe, plug all the holes other than the drain pipe mounting hole in the bottom of the outdoor unit with putty so there is no water leakage. (Reverse cycle model only)

⚠ CAUTION

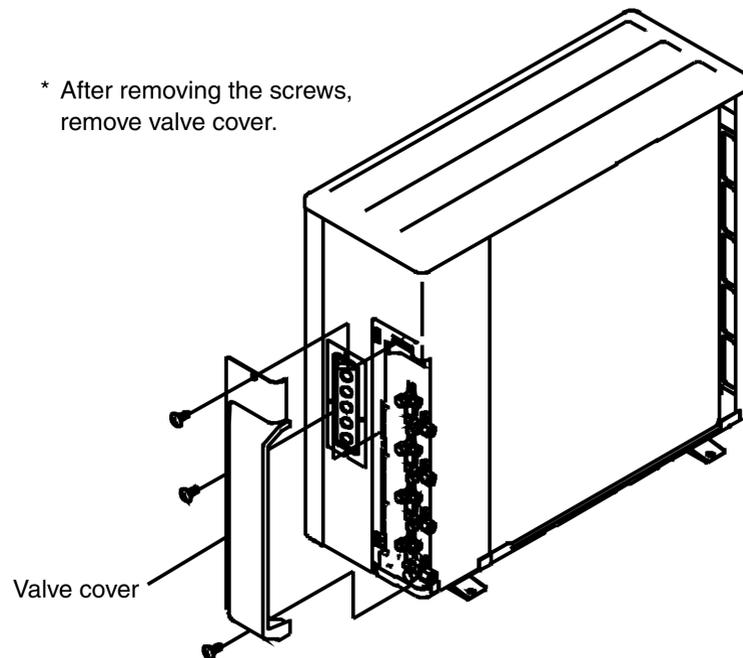
When the outdoor temperature is 32 °F or less, do not use the accessory drain pipe and drain cap. If the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold weather. (Reverse cycle model only)



Outdoor unit connection cord and pipe connection preparations:

Remove outdoor unit valve cover.

* After removing the screws, remove valve cover.



CONNECTING THE PIPE

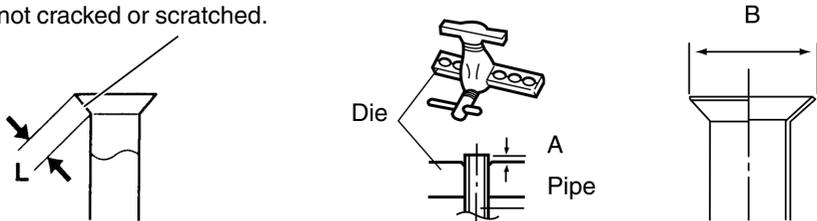
⚠ CAUTION

- ① Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
- ② While welding the pipes, be sure to blow dry nitrogen gas through them.
- ③ The maximum lengths of this product are shown in the table. If the units are further apart than this, correct operation can not be guaranteed.

1. FLARING

- (1) Cut the connection pipe to the necessary length with a pipe cutter.
- (2) Hold the pipe downward so that cuttings will not enter the pipe and remove the burrs.
- (3) Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flare processing with a flare tool.
Use the special R410A flare tool, or the conventional flare tool.

Check if [L] is flared uniformly and is not cracked or scratched.

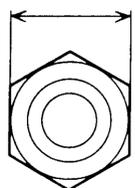


| Pipe outside diameter | Dimension A (mm) |
|-----------------------|-----------------------------------|
| | Flare tool for R410A, clutch type |
| 6.35 mm (1/4 in.) | 0 to 0.5 (0 to 1/32 in.) |
| 9.52 mm (3/8 in.) | |
| 12.70 mm (1/2 in.) | |
| 15.88 mm (5/8 in.) | |
| 19.05 mm (3/4 in.) | |

| Pipe outside diameter | Dimension B ⁰ / _{-0.4} (mm) |
|-----------------------|---|
| 6.35 mm (1/4 in.) | 9.1 (3/8 in.) |
| 9.52 mm (3/8 in.) | 13.2 (17/32 in.) |
| 12.70 mm (1/2 in.) | 16.6 (21/32 in.) |
| 15.88 mm (5/8 in.) | 19.7 (25/32 in.) |
| 19.05 mm (3/4 in.) | 24.0 (15/16 in.) |

When using conventional flare tools to flare R410A pipes, the dimension A should be approximately 1/32 in. more than indicated in the table (for flaring with R410A flare tools) to achieve the specified flaring. Use a thickness gauge to measure the dimension A.

Width across flats



| Pipe outside diameter | Width across flats of Flare nut |
|-----------------------|---------------------------------|
| 6.35 mm (1/4 in.) | 17 mm (11/16 in.) |
| 9.52 mm (3/8 in.) | 22 mm (7/8 in.) |
| 12.70 mm (1/2 in.) | 26 mm (1-1/32 in.) |
| 15.88 mm (5/8 in.) | 29 mm (1-5/32 in.) |
| 19.05 mm (3/4 in.) | 36 mm (1-13/32 in.) |

2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them. Do not bend the pipes in an angle more than 90°. When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

⚠ CAUTION

- ① To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 150 mm (6") or over.
- ② If the pipe is bent repeatedly at the same place, it will break.

3. CONNECTION PIPES

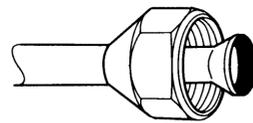
Outdoor unit

- (1) Detach the caps and plugs from the pipes.

⚠ CAUTION

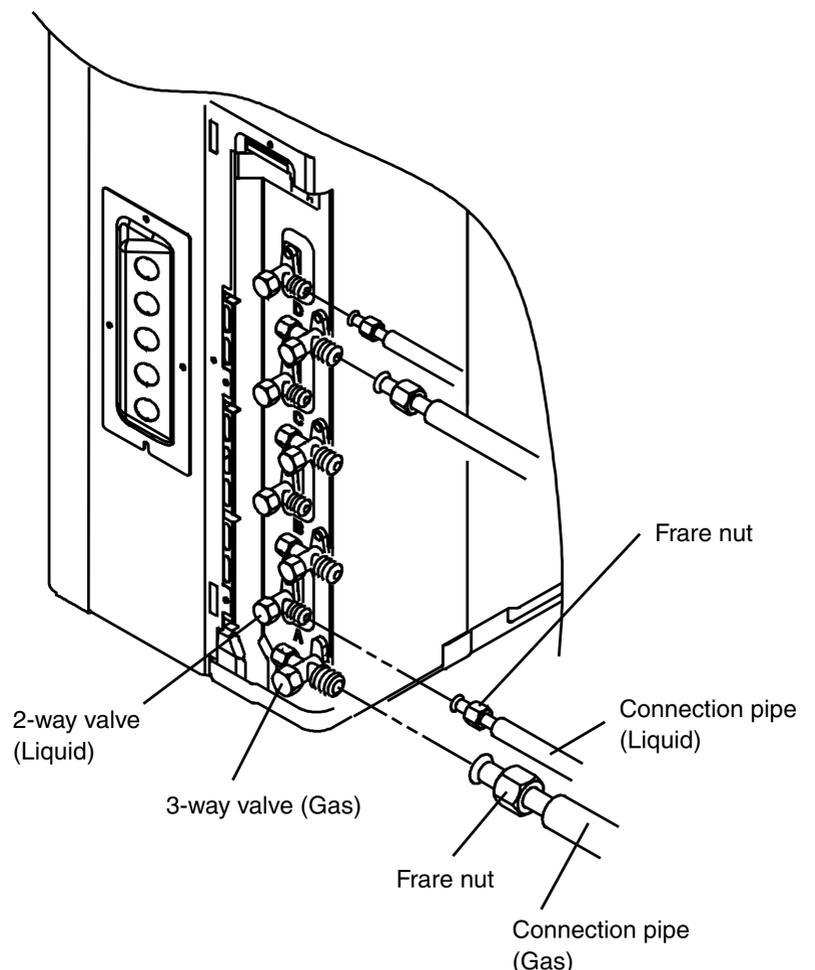
- ① Be sure to apply the pipe against the port on the indoor unit and outdoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
- ② Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.

- (2) Centering the pipe against port on the indoor unit, turn the flare nut with your hand.

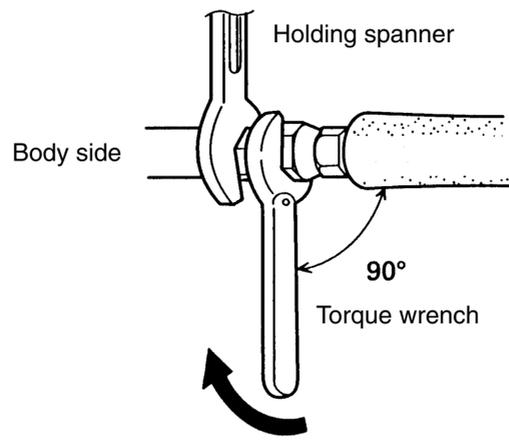


To prevent gas leakage, coat the flare surface with alkylbenzene oil (HAB). Do not use mineral oil.

- (3) Attach the connection pipe.



- (4) When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.



CAUTION

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

| Flare nut | Tightening torque |
|-------------------------|--|
| 6.35 mm (1/4 in.) dia. | 16 to 18 N·m (11.57 to 13.02 lbf·in.) |
| 9.52 mm (3/8 in.) dia. | 30 to 42 N·m (21.70 to 30.38 lbf·in.) |
| 12.70 mm (1/2 in.) dia. | 49 to 61 N·m (35.44 to 44.12 lbf·in.) |
| 15.88 mm (5/8 in.) dia. | 63 to 75 N·m (45.56 to 54.25 lbf·in.) |
| 19.05 mm (3/4 in.) dia. | 90 to 110 N·m (65.10 to 79.56 lbf·in.) |

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

- When using the ADAPTER, be careful not to overtighten the nut, or the smaller pipe may be damaged.
- Apply a coat of refrigeration oil to the threaded connection port of the outdoor unit where the flare nut comes in.
- Use appropriate wrenches to avoid damaging the connection thread by overtightening the flare nut.
- Apply wrenches on both of flare nut (local part), and ADAPTER to tighten them.

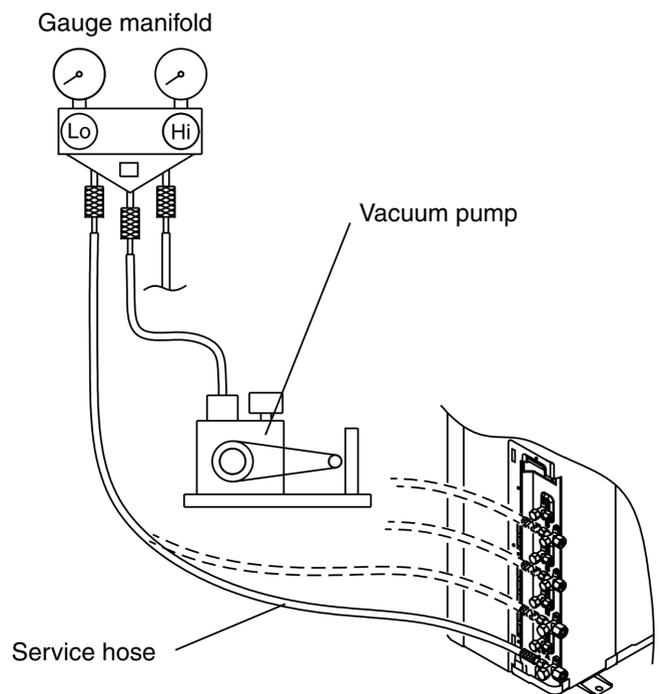
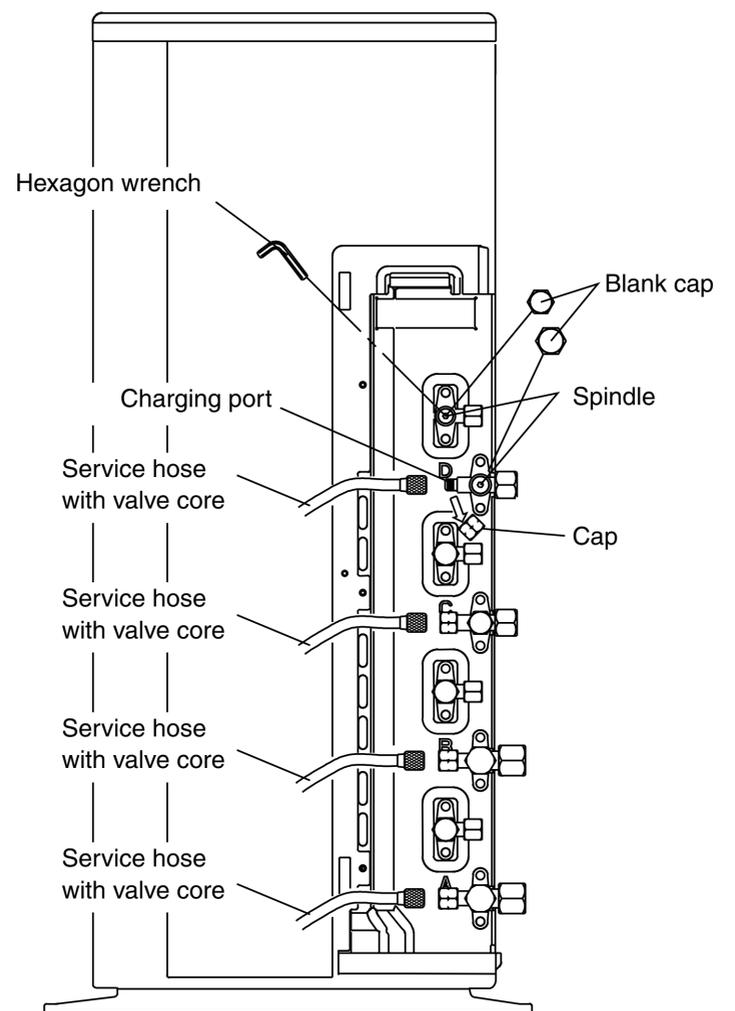
Adapter tightening torque

| Adapter type | Tightening torque |
|--|---------------------------------------|
| ø12.7 mm → ø9.52 mm (1/2 in.) (3/8 in.) | 49 to 61 N·m (35.44 to 44.12 lbf·in.) |

5. VACUUM

- (1) Remove the cap, and connect the gauge manifold and the vacuum pump to the charging valve by the service hoses.
- (2) Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -0.1 MPa (-76 cmHg).
- (3) When -0.1 MPa (-76 cmHg) is reached, operate the vacuum pump for at least 30 minutes.
- (4) Disconnect the service hoses and fit the cap to the charging valve to the specified torque.
- (5) 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 (4.4 to 5.2 lbf·in.)].
- (6) 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 (14.6 to 18.4 lbf·in.) |
| | 9.52 mm (3/8 in.) 20 to 25 N·m (14.6 to 18.4 lbf·in.) |
| | 12.70 mm (1/2 in.) 25 to 30 N·m (18.4 to 22.1 lbf·in.) |
| | 15.88 mm (5/8 in.) 30 to 35 N·m (22.1 to 25.8 lbf·in.) |
| | 19.05 mm (3/4 in.) 35 to 40 N·m (25.8 to 29.5 lbf·in.) |
| Charging port cap | 10 to 12 N·m (7.4 to 8.9 lbf·in.) |



CAUTION

- ① 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!
- ② 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.

6. ADDITIONAL CHARGE

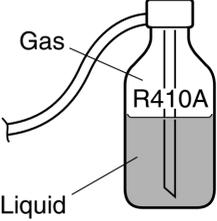
Refrigerant suitable for a total piping length of 164 ft is charged in the outdoor unit at the factory.

When the piping is longer than 164 ft, additional charging is necessary. For the additional amount, see the table below.

| Total piping length | 50 m (164 ft) | 60 m (197 ft) | 70 m (230 ft) | |
|------------------------|------------------|-------------------|--------------------|-----------------------|
| Additional refrigerant | None | 250 g (8.8 oz) | 500 g (17.6 oz) | 25 g/m (0.9 oz/ft) |

⚠ CAUTION

- ① When moving and installing the air conditioner, do not mix gas other than the specified refrigerant (R410A) inside the refrigerant cycle.
- ② When charging the refrigerant R410A, always use an electronic balance for refrigerant charging (to measure the refrigerant by weight).
- ③ 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.


- ④ Add refrigerant from the charging valve after the completion of the work.
- ⑤ If the units are further apart than the maximum pipe length, correct operation can not be guaranteed.

7. GAS LEAKAGE INSPECTION

⚠ CAUTION

- ① After connecting the piping, check the all joints for gas leakage with gas leak detector.
- ② When inspecting gas leakage, always use the vacuum pump for pressure. Do not use nitrogen gas.

⚠ WARNING

- ① The rated voltage of this product is 208/230 V A.C. 60 Hz.
- ② Before turning on verify that the voltage is within the 187 V to 253 V range.
- ③ Always use a special branch circuit and install a special receptacle to supply power to the air conditioner.
- ④ Use a special branch circuit breaker and receptacle matched to the capacity of the air conditioner. (Install in accordance with standard.)
- ⑤ Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.
- ⑥ Install a leakage special branch circuit breaker in accordance with the related laws and regulations and electric company standards.

⚠ CAUTION

- ① 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.
- ② When the voltage is low and the air conditioner is difficult to start, contact the power company the voltage raised.

⚠ WARNING

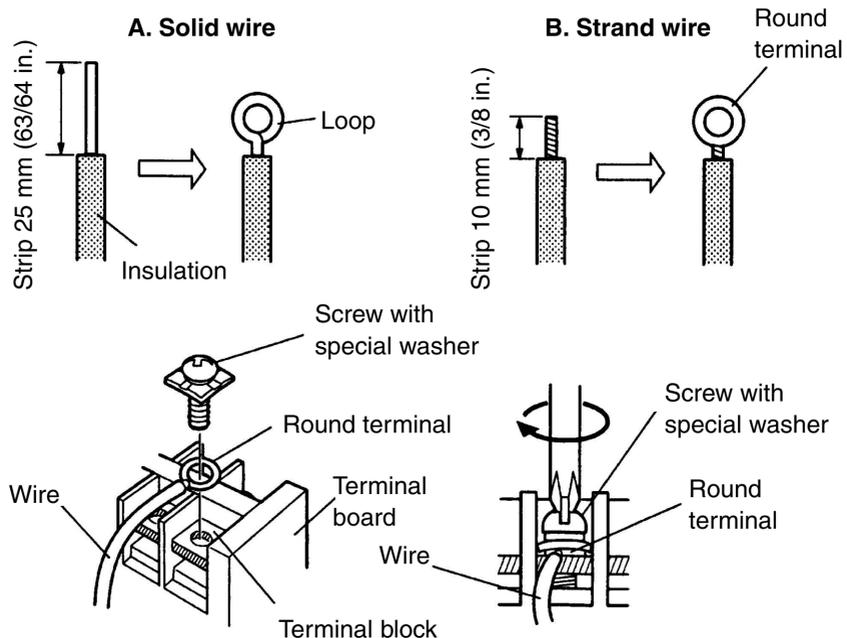
- ① Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
- ② Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- ③ Connect the connection cords firmly to the terminal board. Imperfect installation may cause a fire.
- ④ Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)
- ⑤ Always connect the ground wire.

HOW TO CONNECT WIRING TO THE TERMINALS**A. For solid core wiring**

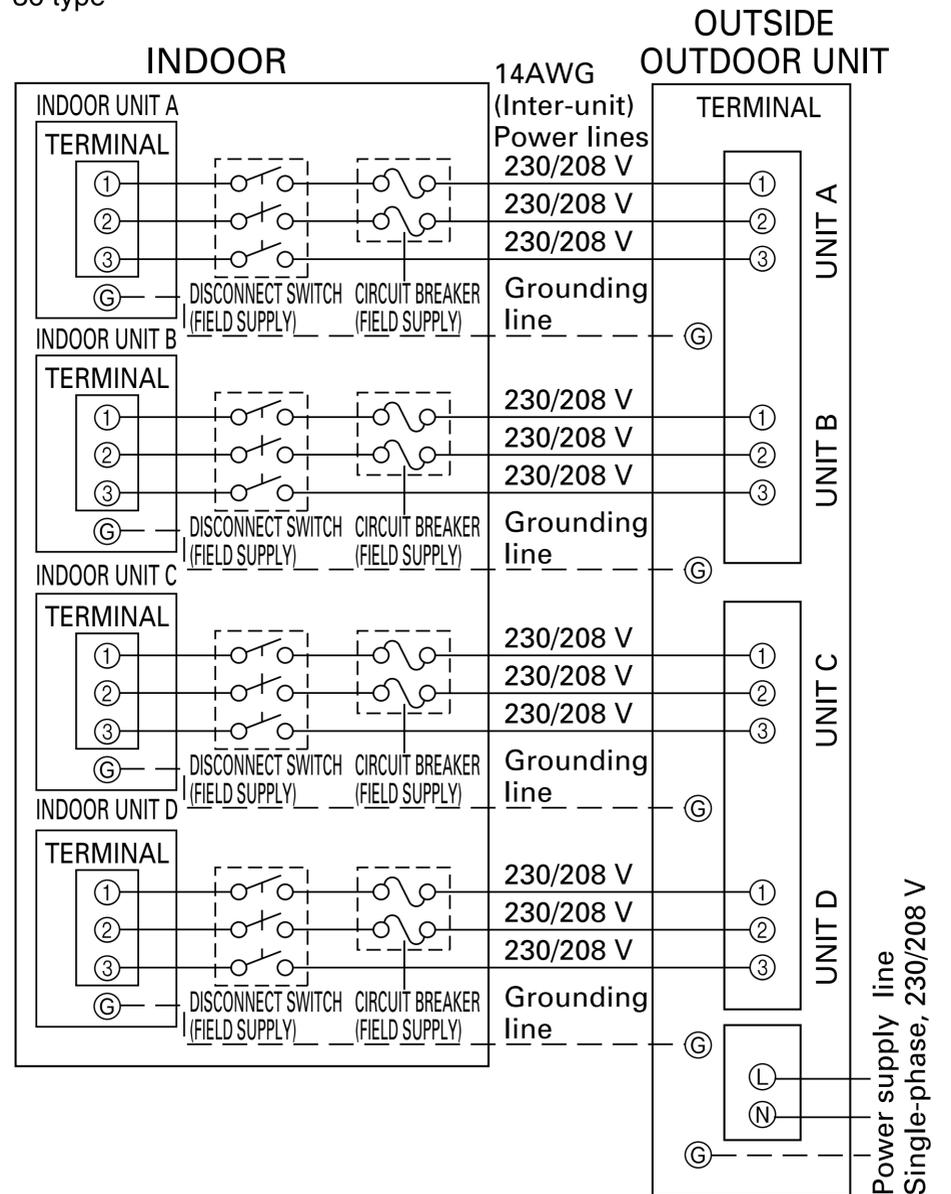
- (1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 63/64 in. to expose the solid wire.
- (2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
- (3) Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- (4) 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

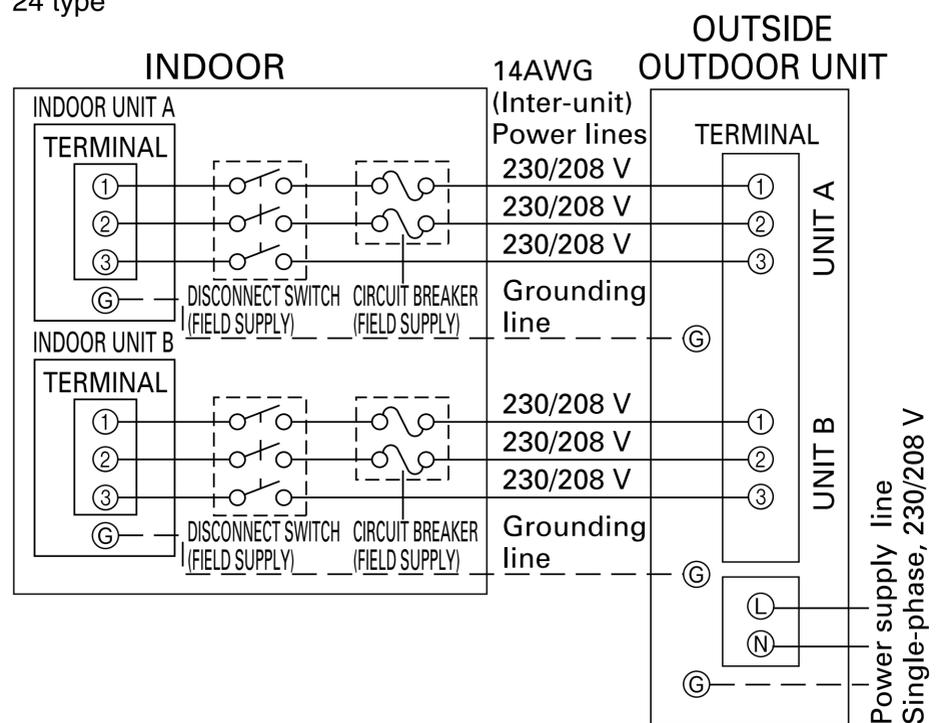
- (1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 3/8 in. to expose the strand wiring.
- (2) Using a screwdriver, remove the terminal screw(s) on the terminal board.
- (3) Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- (4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

**1. CONNECTION DIAGRAMS**

36 type



24 type

**⚠ WARNING**

Disconnect switch and circuit breaker for over current protection given in the table below is to be installed between the indoor unit and the outdoor unit.

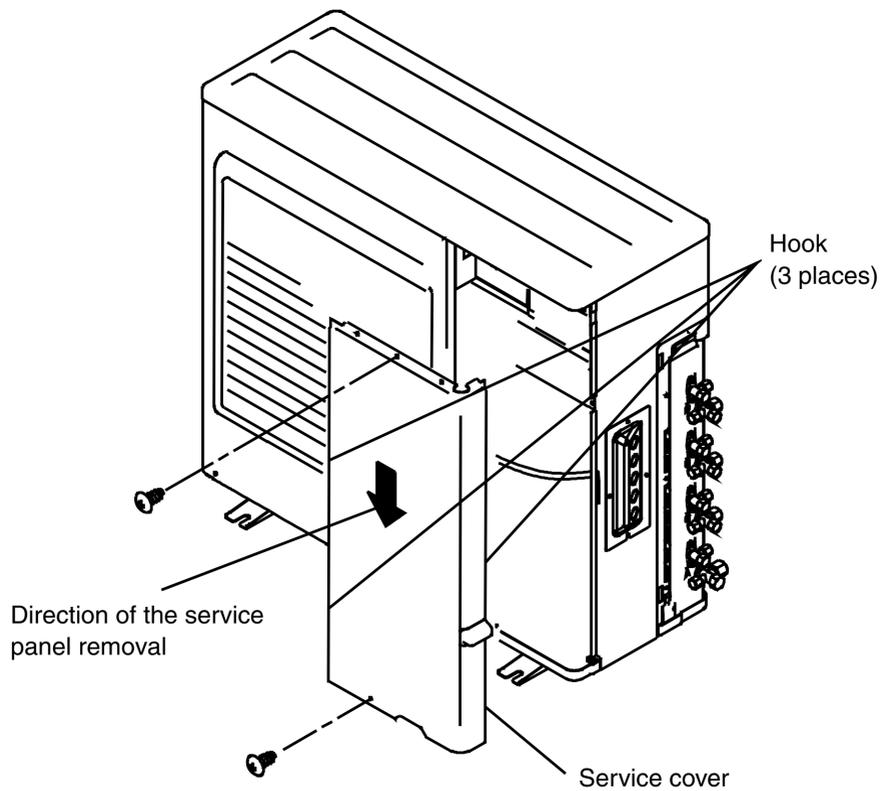
| Disconnect switch | Circuit breaker (or Fuse) |
|-------------------|---------------------------|
| 15A | 240 V - 5A |

⚠ CAUTION

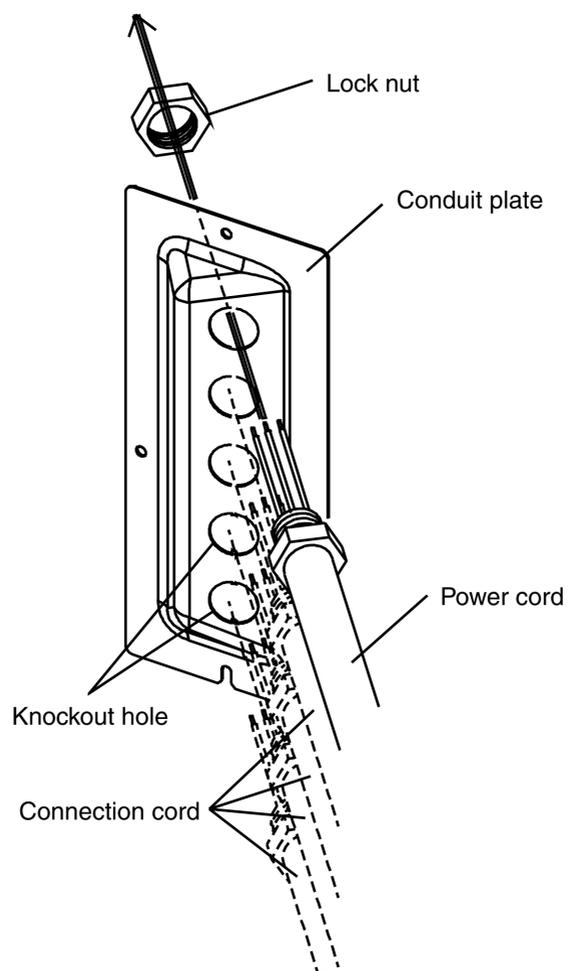
- ① Be sure to refer the above diagram and do correct field wiring. Wrong wiring causes malfunction of the unit.
- ② Check local electrical codes and also any specific wiring instructions or limitation.

2. OUTDOOR UNIT

- (1) Service cover removal
- Remove the two mounting screws.
 - Remove the service cover by pushing downwards.



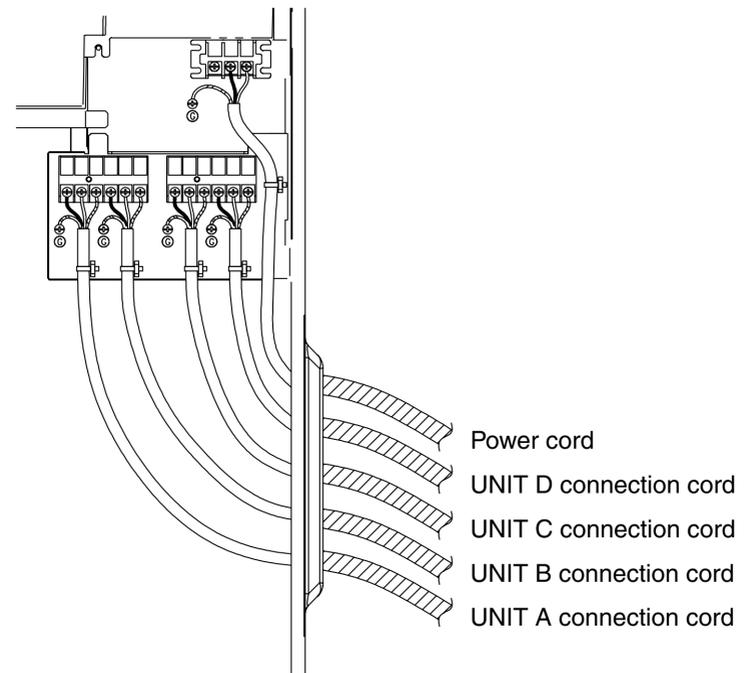
- (2) Fasten the power supply cord and the connection cord to the conduit holder using the lock nut.
(Open the knock out holes with the tool so as not to transform conduit plate if necessary.)
- (3) Connect the power supply cord and the connection cord to terminal.
- (4) Fasten the power supply cord and connection cord with cord clamp.



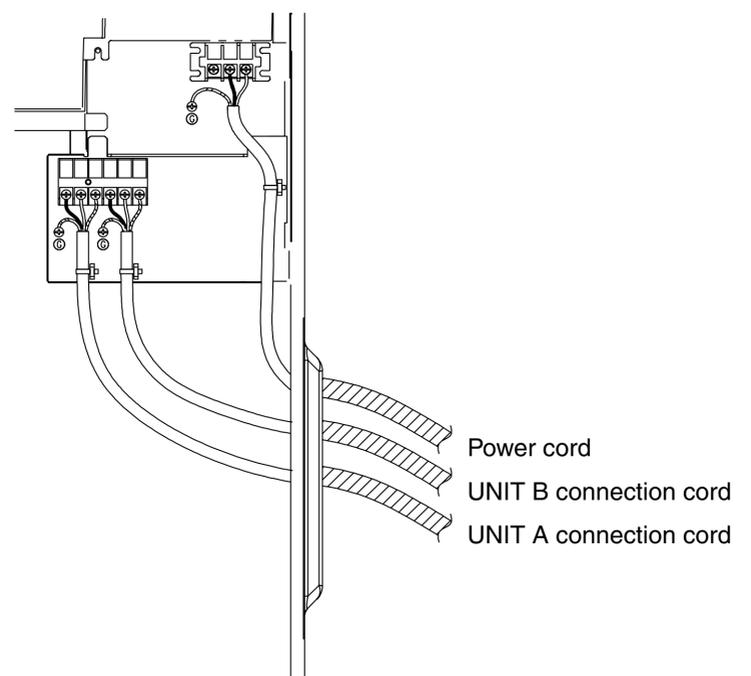
⚠ WARNING

Install the code perfectly. Imperfect installation may cause a risk of fire or electric shock due to dust or water.

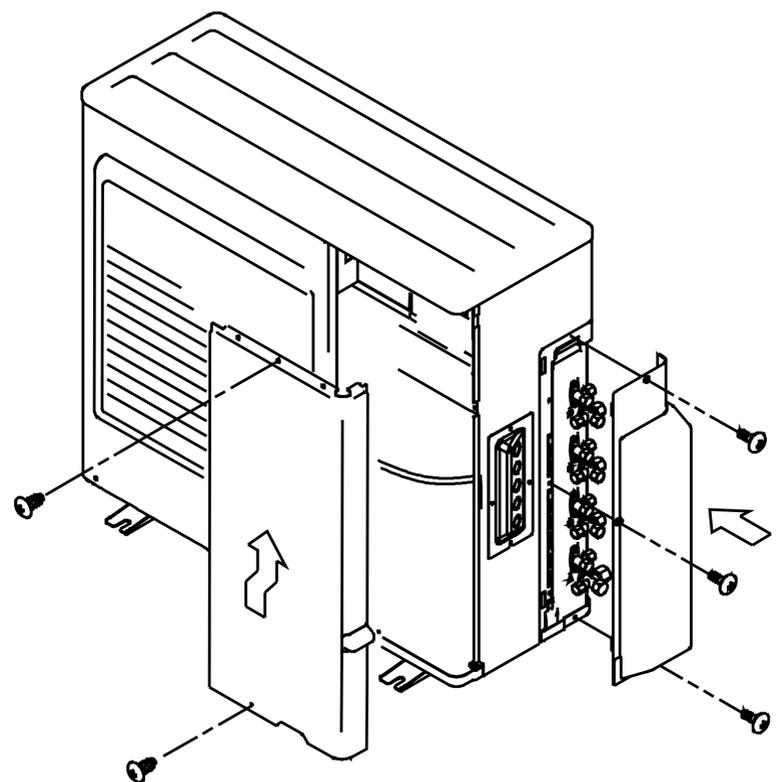
36 type



24 type



- (5) Put the service cover and valve cover back after completion of the work.



CAUTION

Always turn on the power 12 hours prior to the start of the operation in order to ensure compressor protection

1. Make a TEST RUN in accordance with the installation instruction sheet for the indoor unit.

CHECK ITEMS

(1) INDOOR UNIT

- (1) Is operation of each button on the remote control unit normal?
- (2) Does each lamp light normally?
- (3) Do the air flow-direction louver operate normally?
- (4) Is the drain normal?
- (5) Is there any abnormal noise and vibration during operation?

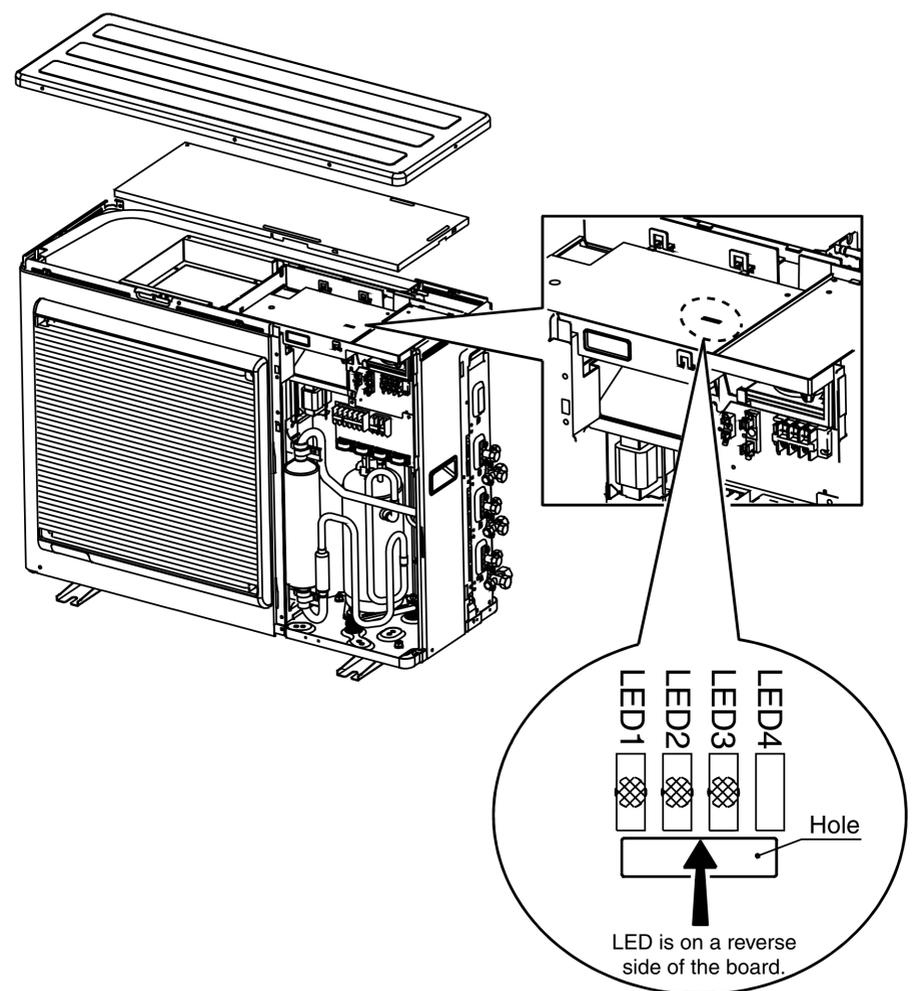
(2) OUTDOOR UNIT

- (1) Is there any abnormal noise and vibration during operation?
 - (2) Will noise, wind, or drain water from the unit disturb the neighbors?
 - (3) Is there any gas leakage?
- Do not operate the air conditioner in the test running state for a long time.
 - For the operation method, refer to the operating manual and perform operation check.

2. OUTDOOR UNIT LEDS

When a malfunction occurs in the outdoor unit, the LED on the circuit board lights to indicate the error. Refer to the following table for the description of each error according to the LED.

| LED | Error contents |
|----------|--|
| 1 flash | Communication error (Indoor unit – Outdoor unit) |
| 2 flash | Discharg pipe temperature sensor |
| 3 flash | Outdoor heat exchanger temperature sensor |
| 4 flash | Outdoor temperature sensor |
| 5 flash | 2 way valve sensor |
| 6 flash | 3 way valve sensor |
| 7 flash | Compressor temperature sensor |
| 8 flash | Heat sink temperature sensor |
| 9 flash | Pressure switch A abnormal |
| 10 flash | Pressure switch B abnormal |
| 11 flash | Connection indoor unit error |
| 12 flash | IPM error |
| 13 flash | Compressor rotor position cannot detect |
| 14 flash | Compressor cannot operate |
| 15 flash | Outdoor fan abnormal |
| 17 flash | Communication error (inverter - multi controller) |
| lighting | No error |



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

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

