





OUTDOOR UNIT

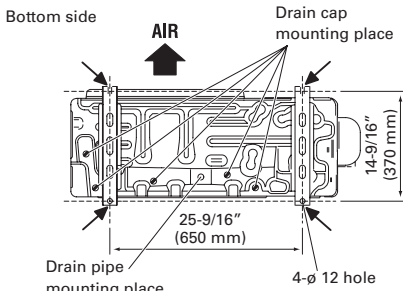
OUTDOOR UNIT INSTALLATION

WARNING

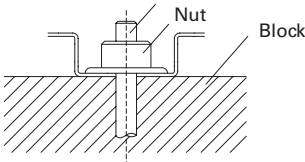
Install the unit where it will not be tilted by more than 3°. However, do not install the unit with it tilted towards the side containing the compressor.

When installing the outdoor unit where it may exposed to strong wind, fasten it securely.

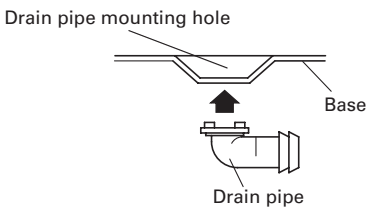
- (1) Outdoor unit to be fasten with bolts at the four places indicated by the arrows without fail.



- (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 5/8" (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 (0 °C) 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)

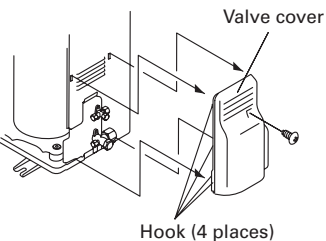
CONNECTING THE PIPE

1. CONNECTION PIPES

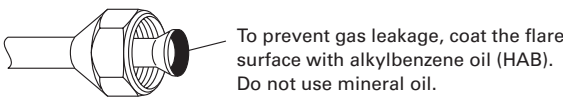
Outdoor unit

Valve cover removal.

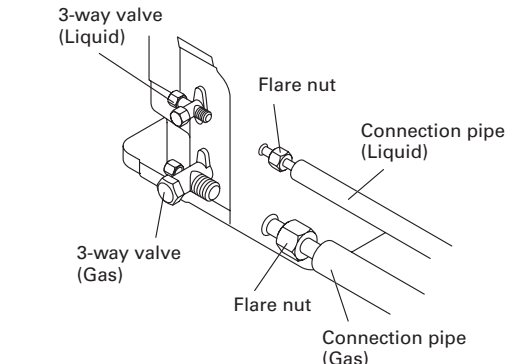
- Remove the one mounting screw.
- Remove the valve cover by sliding upward.



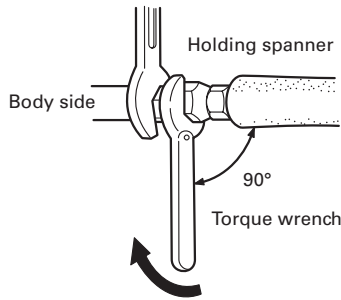
- (1) Detach the caps and plugs from the pipes.
- (2) Centering the pipe against port on the outdoor unit, turn the flare nut with your hand.



- (3) Tighten the flare nut of the connection pipe at the outdoor unit valve connector.



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



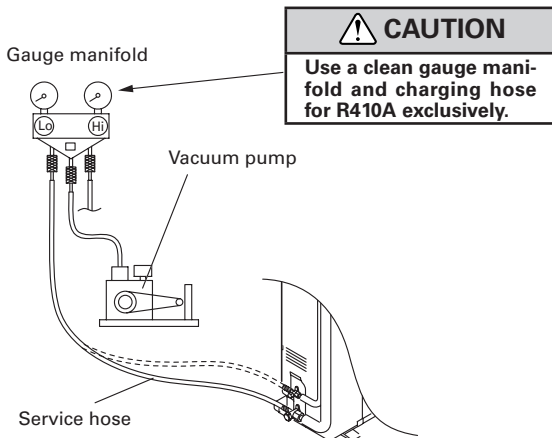
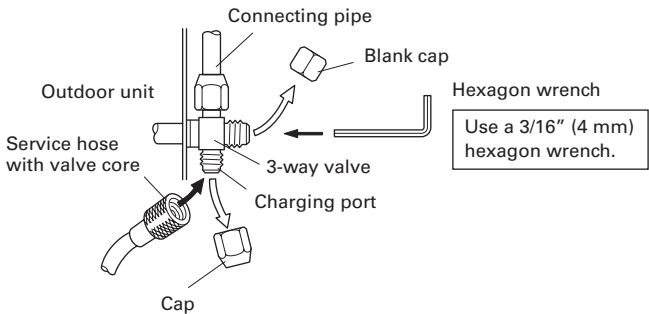
Flare nut tightening torque

Flare nut [in. (mm)]	Tightening torque [lbf-ft (N-m)]
3/8 (9.52) dia.	23.6 to 31.0 (32 to 42)
5/8 (15.88) dia.	46.5 to 55.3 (63 to 75)

2. 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 60 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 (60 to 70 kgf-cm)].
- (6) Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque.

		Tightening torque
Blank cap	3/8" (9.52 mm)	20 to 25 N-m (200 to 250 kgf-cm)
	5/8" (15.88 mm)	30 to 35 N-m (300 to 350 kgf-cm)
Charging port cap		12.5 to 16 N-m (125 to 160 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.

3. ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 66ft(20m) is charged in the outdoor unit at the factory.

When the piping is longer than 66ft(20m), additional charging is necessary.

For the additional amount, see the table below.

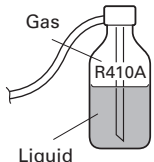
Piping length	66ft (20m)	99ft (30m)	131ft (40m)	165ft (50m)	Rate
Additional charge	None	14.2oz (400g)	1lb 12oz (800g)	2lb 10oz (1200g)	0.43oz/ft (40g/m)

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 cannot be guaranteed.

4. GAS LEAKAGE INSPECTION

CAUTION

After connecting the piping, check the all joints for gas leakage with gas leak detector.

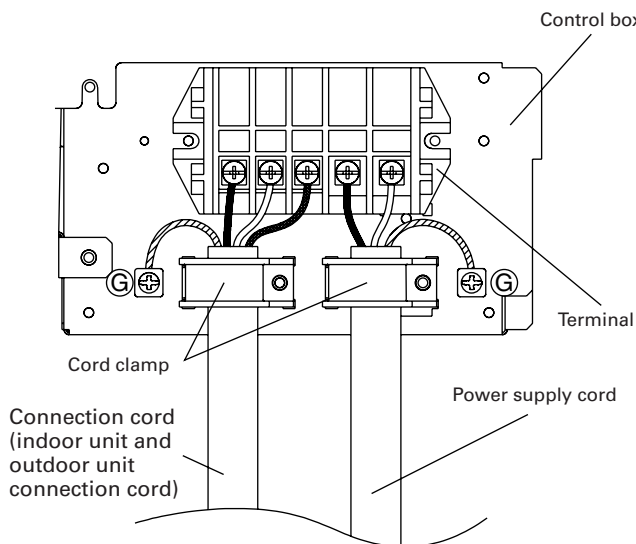
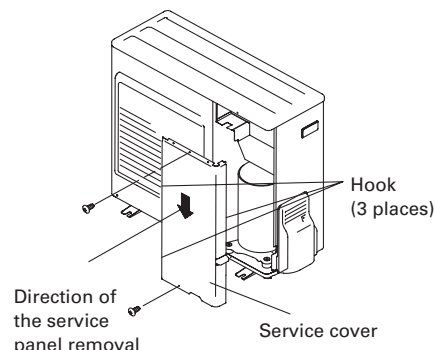
When inspecting gas leakage, always use the vacuum pump for pressure. Do not use nitrogen gas.

ELECTRICAL WIRING (OUTDOOR UNIT)

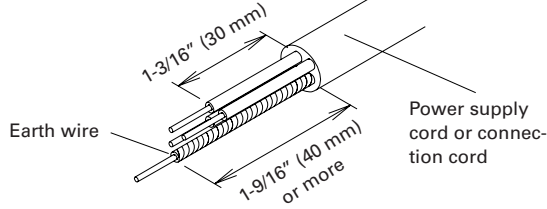
CAUTION

When connecting the power supply cord, make sure that the phase of the power supply matches with the phase of the terminal board. If the phases do not match, the compressor will rotate in reverse and will not be able to compress.

- (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 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.



Keep the earth wire longer than the other wires.



WARNING

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

Disconnect switch

20A

CAUTION

Be sure to comply with local codes while running the wire from the indoor unit to the outdoor unit (size of wire and wiring method, etc.).

Every wire must be connected firmly.

No wire should be allowed to touch refrigerant tubing, the compressor or any moving part.

Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.

Connect wires to the matching numbers of terminals.

WARNING

Use ring terminals and tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.

Match the terminal block 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 block. 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.)

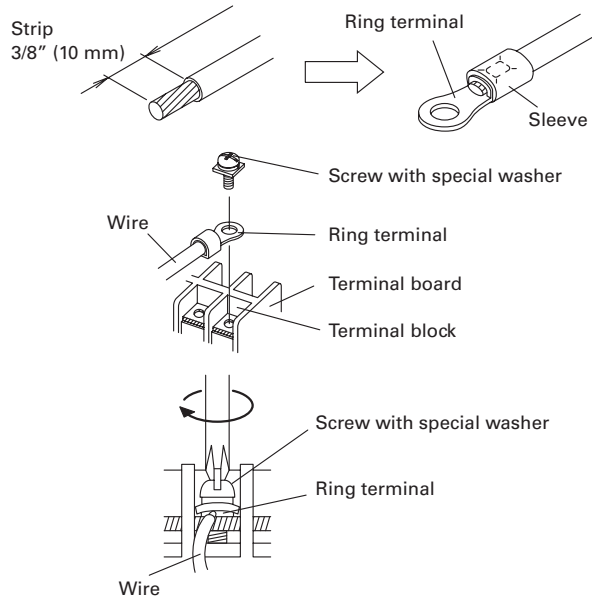
Securely earth the power cord plug.

Do not use the earth screw for an external connector. Only use for interconnection between two units.

HOW TO CONNECT THE WIRE TO THE TERMINALS

- (1) Use ring terminals with insulating sleeves as shown in the figure below to connect to the terminal block.
- (2) Securely clamp the ring terminals to the wires using an appropriate tool so that the wires do not come loose.
- (3) Use the specified wires, connect them securely, and fasten them so that there is no stress placed on the terminals.
- (4) Use an appropriate screwdriver to tighten the terminal screws. Do not use a screwdriver that is too small, otherwise, the screw heads may be damaged and prevent the screws from being properly tightened.
- (5) Do not tighten the terminal screws too much, otherwise, the screws may break.
- (6) See the table below for the terminal screw tightening torques.

	Tightening torque
M4 screw	1.2 to 1.8 N-m (12 to 18 kgf-cm)
M5 screw	2.0 to 3.0 N-m (20 to 30 kgf-cm)



PUMP DOWN OPERATION (FORCED COOLING OPERATION)

To avoid discharging refrigerant into the atmosphere at the time of relocation or disposal, recover refrigerant by doing the cooling operation or forced cooling operation according to the following procedure. (When the cooling operation cannot start in winter, and so on, start the forced cooling operation.)

- (1) Do the air purging of the charge hose by connecting the charging hose of gauge manifold to the charging port of 3-way valve (large) and opening the low-pressure valve slightly.
- (2) Close the valve stem of 3-way valve (small) completely.
- (3) Start the cooling operation or following forced cooling operation.
- When using the remote controller
- Press the TEST RUN button after starting the cooling operation by the remote controller.
- The operation indicator lamp and timer indicator lamp will begin to flash simultaneously during test run.
- When using the MANUAL AUTO button of the indoor unit (The remote controller is lost, and so on.)
- Keep on pressing the MANUAL AUTO button of the indoor unit for more than 10 seconds.
- (The forced cooling operation cannot start if the MANUAL AUTO button is not kept on pressing for more than 10 seconds.)
- (4) Close the valve stem of 3-way valve (large) when the reading on the compound pressure gauge becomes 0.05~0 MPa (0.5~0 kg/cm²).
- (5) Stop the operation.
- Press the START/STOP button of the remote controller to stop the operation.
  - Press the MANUAL AUTO button when stopping the operation from indoor unit side. (It is not necessary to press on keeping for more than 10 seconds.)

CAUTION

During the pump-down operation, make sure that the compressor is turned off before you remove the refrigerant piping. Do not remove the connection pipe while the compressor is in operation 3-way valve open. This may cause abnormal pressure in the refrigeration cycle that leads to breakage and even injury.

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 (120 °C). (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 9/16" (15 mm) or thicker and if the expected humidity exceeds 80%, use heat insulation that is 13/16" (20 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 68 °F (20 °C)].