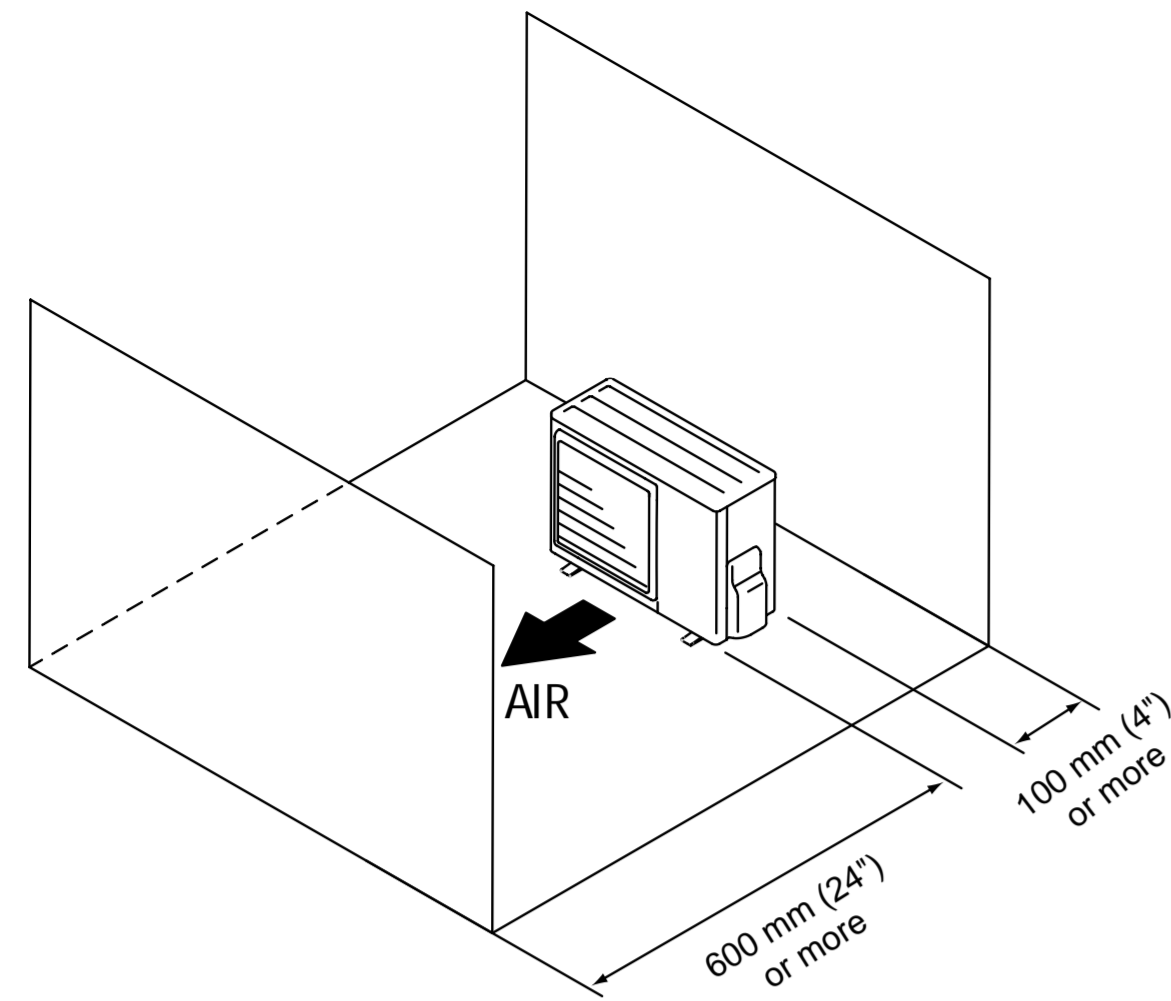
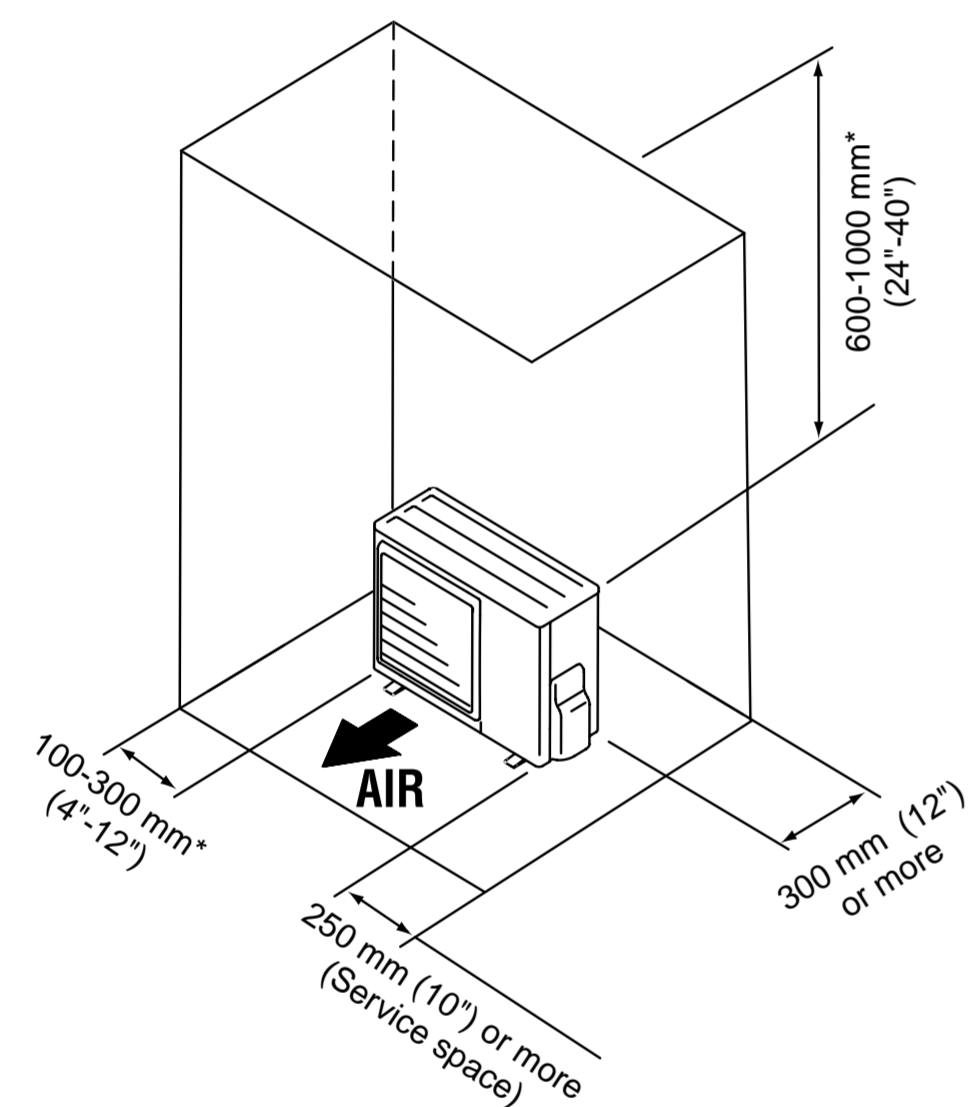


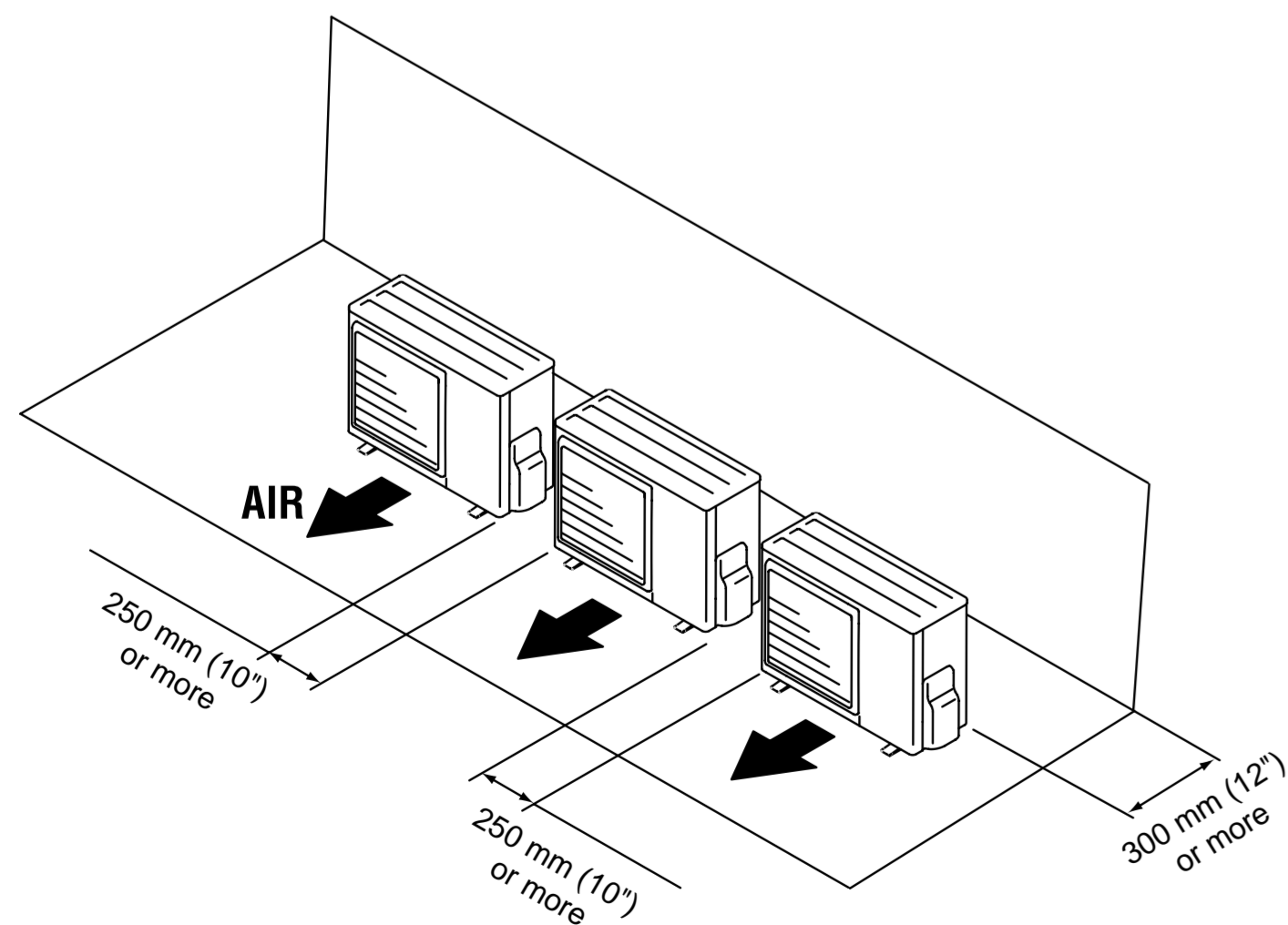
When there are obstacles at the back and front sides.



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.



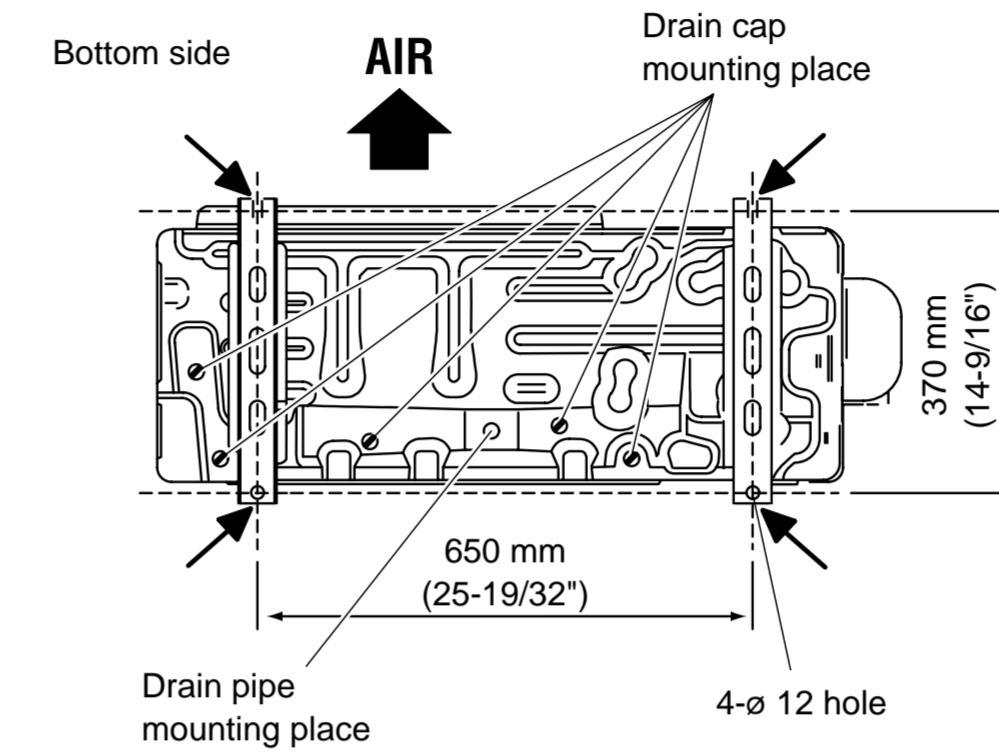
* If the space is larger than that is stated, the condition will be the same as that there are no obstacles.

INSTALLATION PROCEDURE

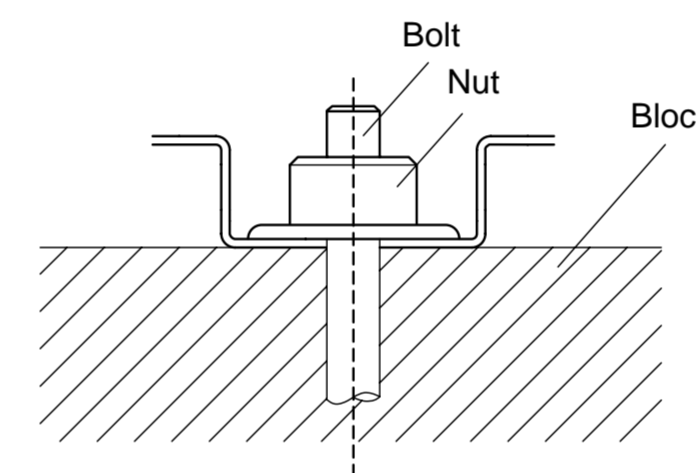
1 OUTDOOR UNIT INSTALLATION

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.)

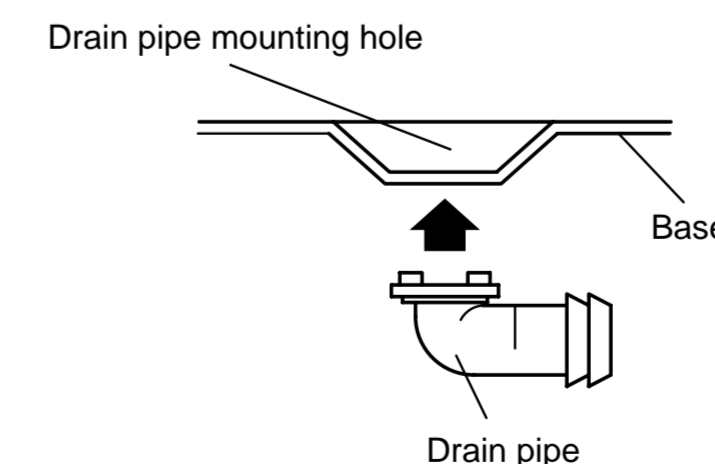


(3) Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to a commercial 16 mm (5/8") hose. (Reverse cycle model only)

(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)



2

CONNECTING THE PIPE

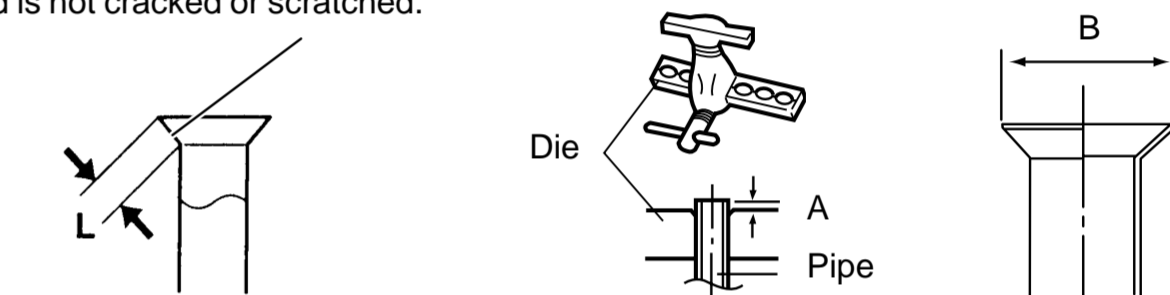
CAUTION

- 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.
- 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 can not be guaranteed.

1. FLARING

- Cut the connection pipe to the necessary length with a pipe cutter.
- Hold the pipe downward so that cuttings will not enter the pipe and remove the burrs.
- 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.

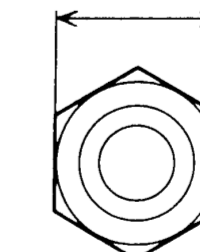


Pipe outside diameter	Dimension A
	Flare tool for R410A, clutch type
6.35 mm (1/4 in.)	0 to 0.5 mm (0 to 0.0197 in.)
9.52 mm (3/8 in.)	
12.70 mm (1/2 in.)	
15.88 mm (5/8 in.)	

Pipe outside diameter	Dimension B $^{+0.4}$
6.35 mm (1/4 in.)	9.1 mm (0.3583 in.)
9.52 mm (3/8 in.)	13.2 mm (0.5197 in.)
12.70 mm (1/2 in.)	16.6 mm (0.6536 in.)
15.88 mm (5/8 in.)	19.7 mm (0.7756 in.)

When using conventional flare tools to flare R410A pipes, the dimension A should be approximately 0.5 mm (1/32") 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 (0.6693 in.)
9.52 mm (3/8 in.)	22 mm (0.8661 in.)
12.70 mm (1/2 in.)	26 mm (1.0236 in.)
15.88 mm (5/8 in.)	29 mm (1.1417 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 bend 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

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

3. CONNECTION PIPES

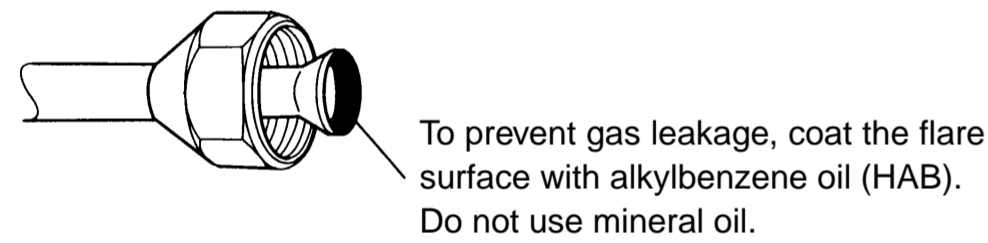
Outdoor unit

- Detach the caps and plugs from the pipes.

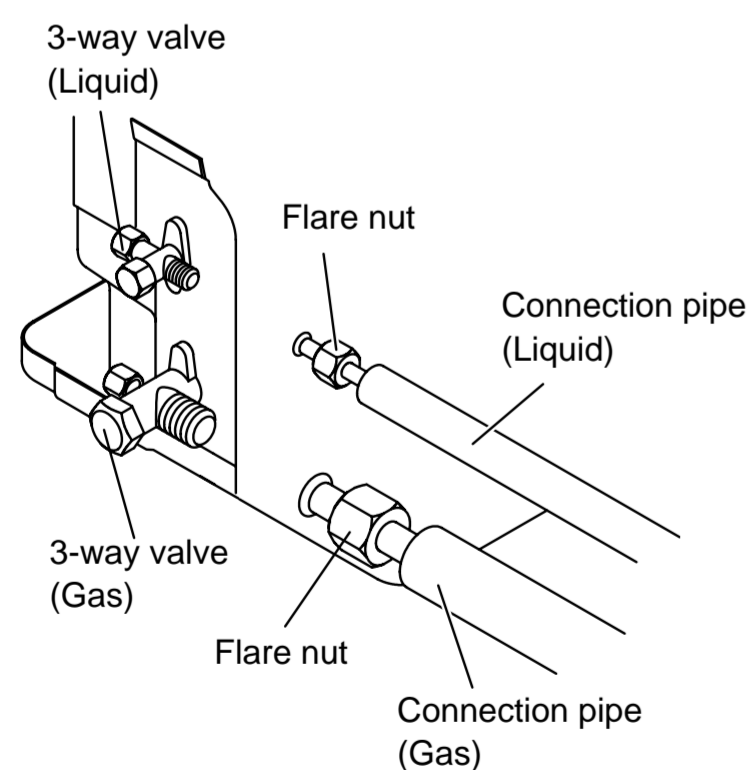
CAUTION

- Be sure to apply the pipe against the port on the indoor unit and the 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.
- Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.

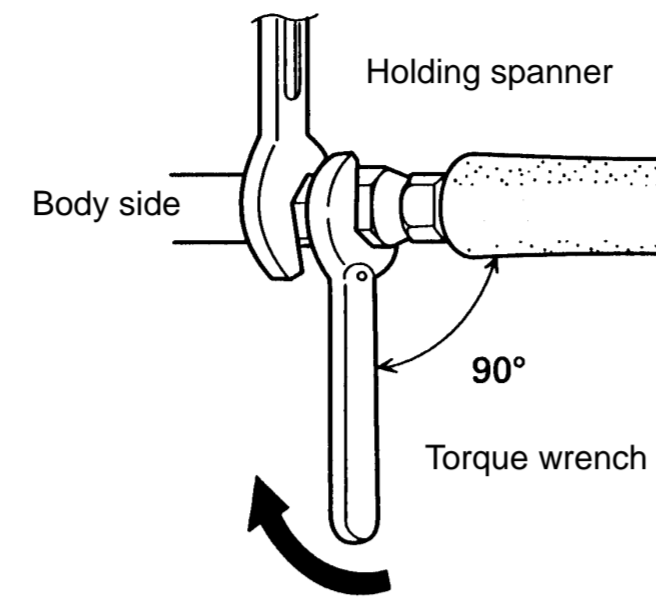
- Centering the pipe against port on the outdoor unit, turn the flare nut with your hand.



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



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



CAUTION

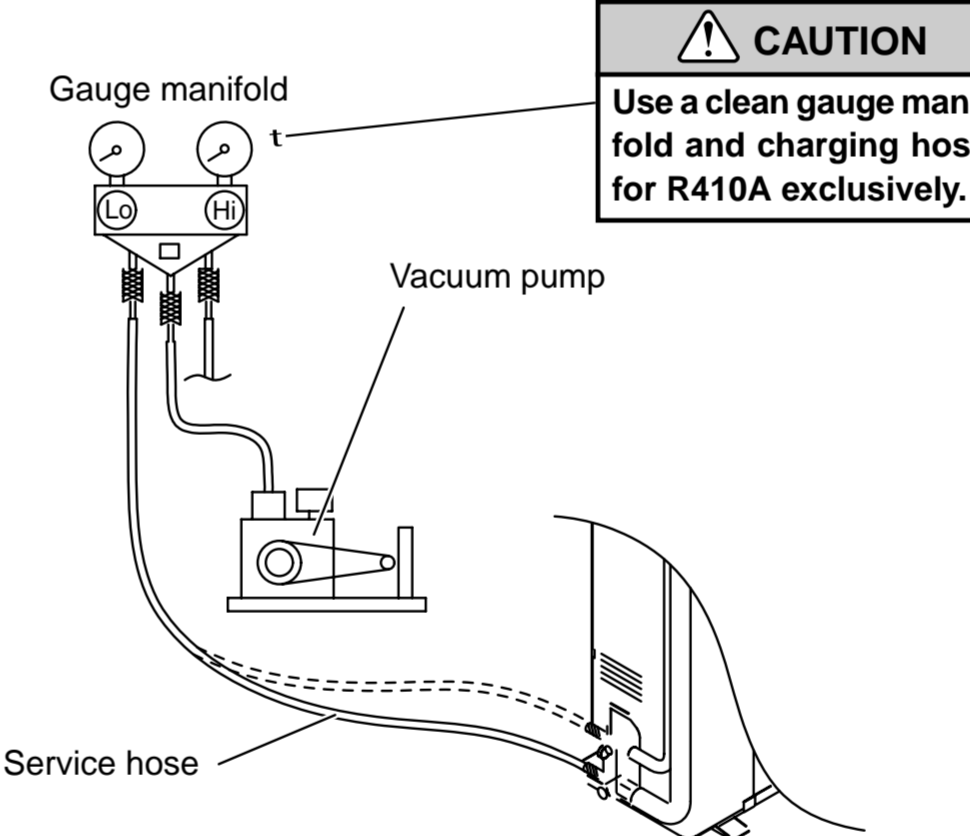
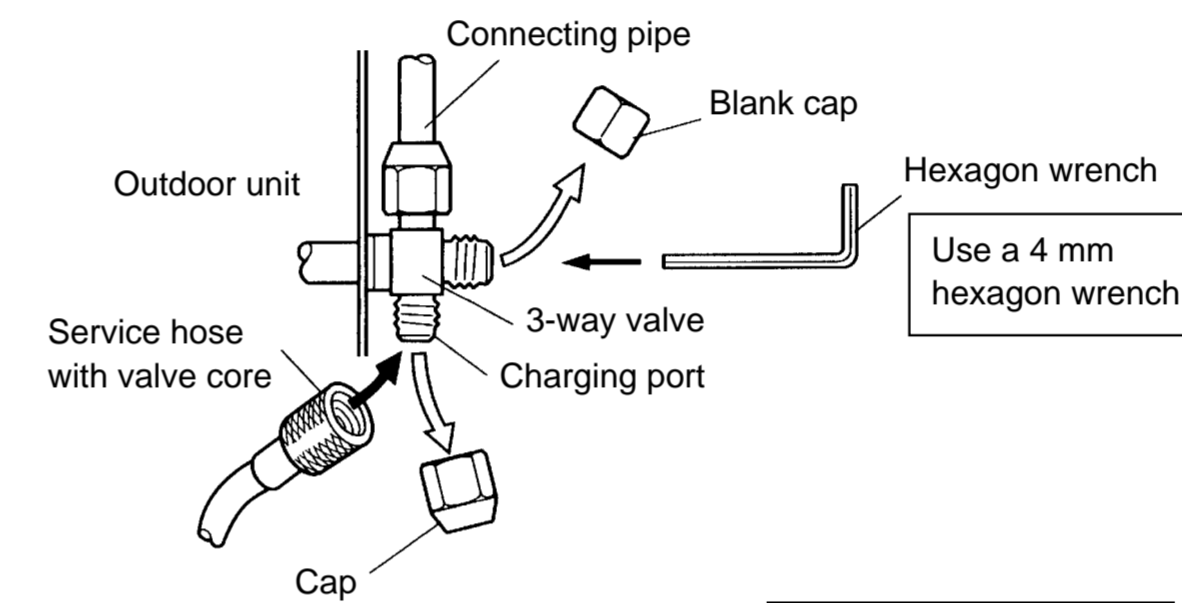
Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.

Flare nut	Tightening torque
6.35 mm (1/4 in.) dia.	16 to 18 N·m (160 to 180 kgf·cm)
9.52 mm (3/8 in.) dia.	30 to 42 N·m (300 to 420 kgf·cm)
12.70 mm (1/2 in.) dia.	49 to 61 N·m (490 to 610 kgf·cm)
15.88 mm (5/8 in.) dia.	63 to 75 N·m (630 to 750 kgf·cm)

4. 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 60 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)
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.

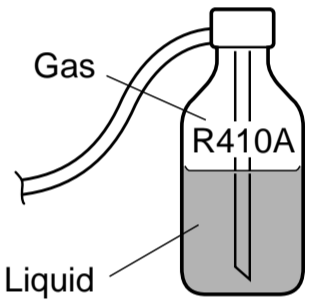
5. ADDITIONAL CHARGE

- 24,000 BTU/h class
 - 36,000 BTU/h class
- Refrigerant suitable for a piping length of 15 m (49 ft) is charged in the outdoor unit at the factory. When the piping is longer than 15 m (49 ft), additional charging is necessary. For the additional amount, see the table below.

Pipe length	49 ft (15 m)	66 ft (20 m)	98 ft (30 m)	131 ft (40 m)	164 ft (50 m)	oz/ft
Model type						
24,000 BTU/h class	None	7.1 oz (200 g)	1 lb 5 oz (600 g)	2 lb 3 oz (1000 g)	3 lb 1 oz (1400 g)	1.4 oz/3.3 ft (40 g/m)
36,000 BTU/h class	None	7.1 oz (200 g)	1 lb 5 oz (600 g)	2 lb 3 oz (1000 g)	3 lb 1 oz (1400 g)	1.4 oz/3.3 ft (40 g/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 can not be guaranteed.



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.

5

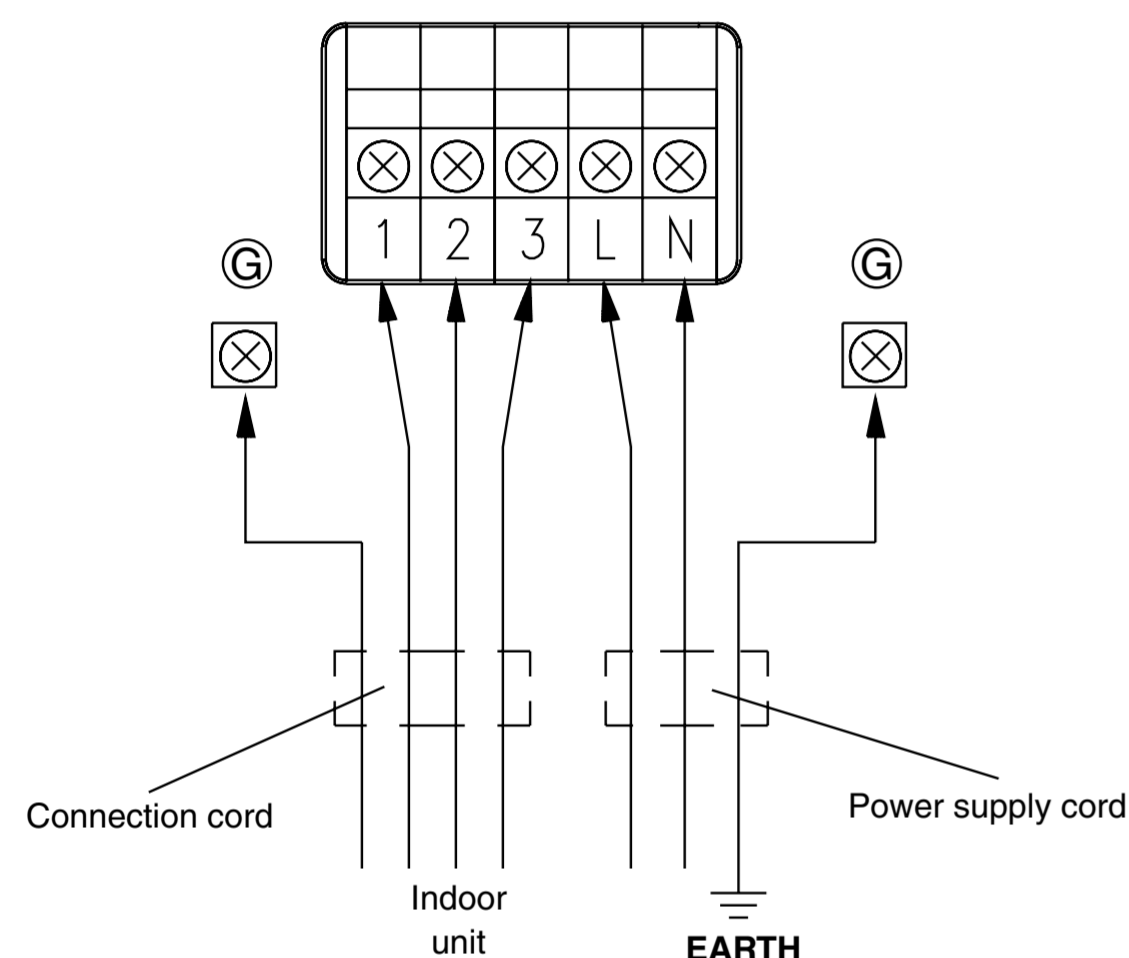
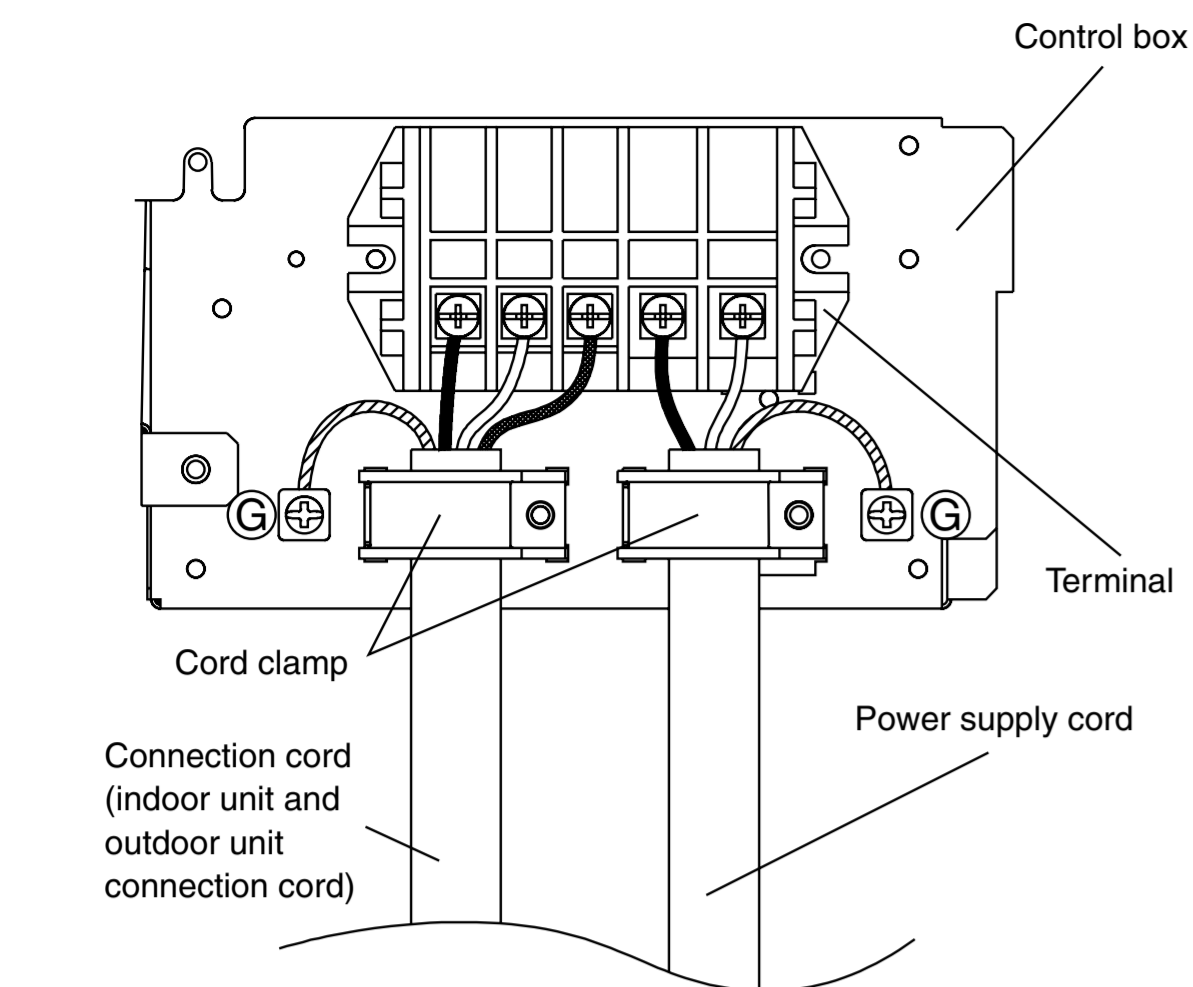
TEST RUN

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

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	Discharge pipe temperature sensor
3 flash	Outdoor heat exchanger temperature sensor
4 flash	Outdoor temperature sensor
7 flash	Compressor temperature sensor
8 flash	Heat sink temperature sensor
9 flash	Pressure switch abnormal
12 flash	IPM error
13 flash	Compressor rotor position cannot detect
14 flash	Compressor cannot operate
15 flash	Outdoor fan abnormal (upper fan)
16 flash	Outdoor fan abnormal (lower fan)
lighting	No error



6

SPECIAL INSTALLATION SETTING

PUMP DOWN (Refrigerant collecting operation)

Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

1. When the product is stopped:

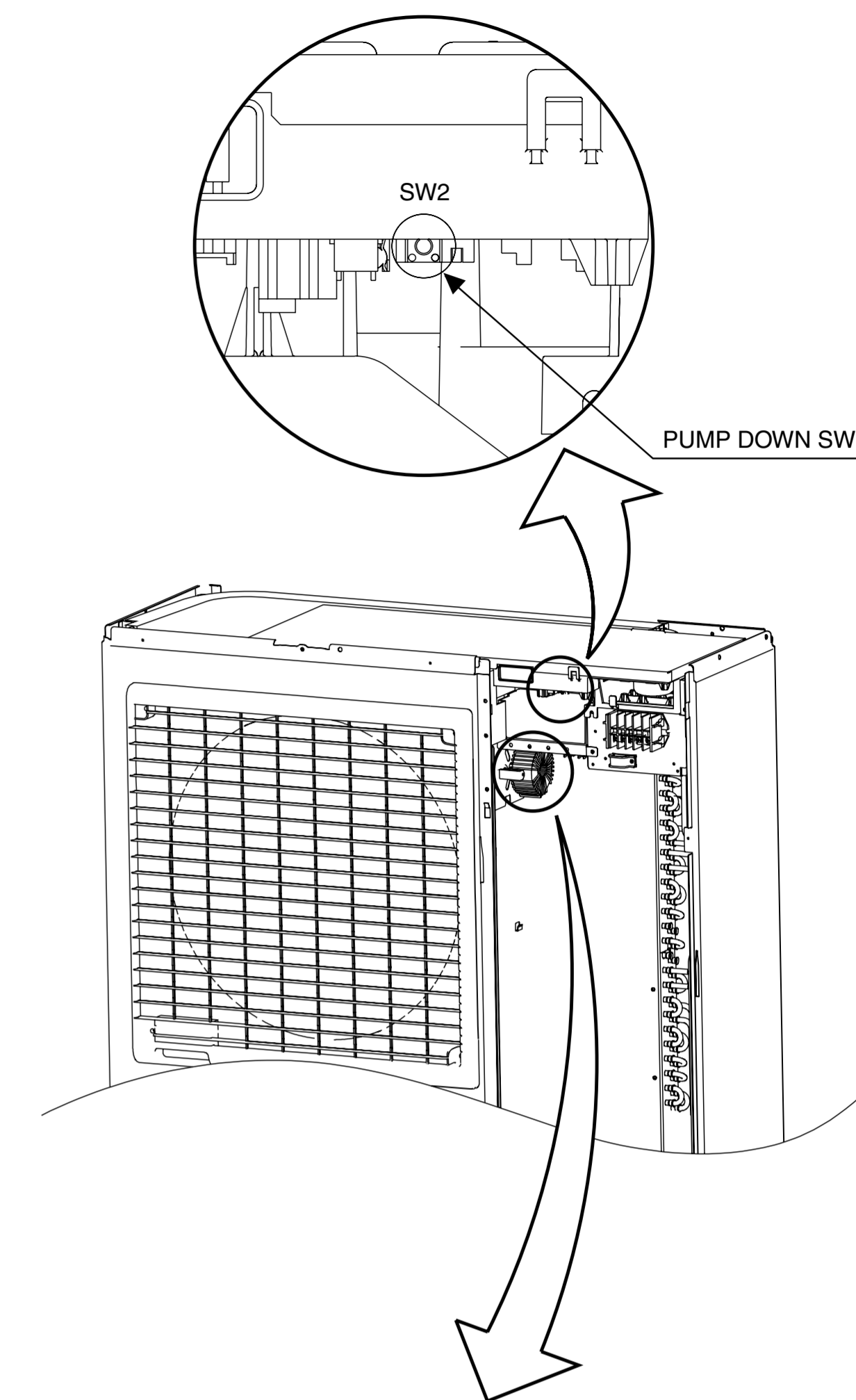
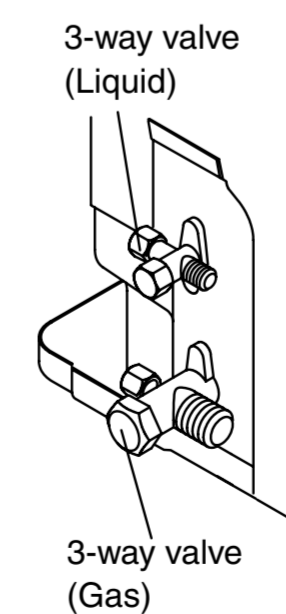
①	Press the PUMP DOWN switch on the outdoor unit. (The LED on the outdoor unit circuit board lights.)
②	The pump down operation (cooling operation) begins right away. After operation starts, close the three-way valve (liquid).
③	After 2 – 3 minutes, operation stops. Close the three-way valve (gas) within one minute after operations stops.
④	The LED will go out three minutes after it stops. Disconnect the power supply after confirming that the LED has gone out.

2. When the product is operating:

①	Press the PUMP DOWN switch on the outdoor unit. The LED on the outdoor unit circuit board lights, and operation stops. At this point, recovery has not been completed, so do not close the two- and three-way valves.
②	The pump down operation (cooling operation) begins after three minutes. Close the three-way valve (liquid) after operation starts.
③	After 2 – 3 minutes, operation stops. Close the three-way valve (gas) within one minute after operations stops.
④	The LED will go out three minutes after it stops. Disconnect the power supply after confirming that the LED has gone out.

*When the pump down operation is repeated, temporarily disconnect the power supply after opening the closed valves (both liquid and gas). Reconnect the power supply after 2 - 3 minutes and perform the pump down operation.

*When the start of the operation after pump down operation has been completed, temporarily disconnect the power supply after opening the closed valves (both liquid and gas). Reconnect the power supply after 2 - 3 minutes and be sure to perform a test operation for cooling.



⚠ DANGER

This part (Choke coil) generates high voltages. Never touch this part.