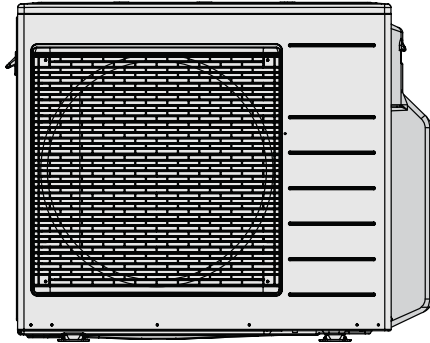


Installation Manual

Air Conditioner



**Outdoor Unit
CU-2E18SBU**

Please file and use this manual together with the service manual for Model No. CS-ME5RKUA CS-ME7RKUA, CS-E9RKUA CS-E12RKUA, CS-ME9SB4U, CS-E12RB4UW, CS-ME5SD3UA CS-ME7SD3UA, CS-E9SD3UAW CS-E12SD3UAW, Order No. PAPAMY1503085CE, PAPAMY1501049CE, PAPAMY1604059CE, PAPAMY1503095CE, PAPAMY1604056CE, PAPAMY1604052CE.

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigerant circuit.

Item		Unit	OUTDOOR UNIT		
Air Volume	High	m ³ /min (ft ³ /min)	41.0 (1447)		
Refrigerant Control Device			Expansion Valve		
Refrigerant Oil		cm ³	FV50S (900)		
Refrigerant (R410A)		g (oz)	2.23k (78.7)		
			Dry Bulb	Wet Bulb	
Indoor Operation Range	Cooling	Maximum	°C (°F)	32 (89.6)	23 (73.4)
		Minimum	°C (°F)	16 (60.8)	11 (51.8)
	Heating	Maximum	°C (°F)	30 (86.0)	—
		Minimum	°C (°F)	16 (60.8)	—
Outdoor Operation Range	Cooling	Maximum	°C (°F)	46 (114.8)	26 (78.8)
		Minimum	°C (°F)	-10 (14.0)	— / —
	Heating	Maximum	°C (°F)	24 (75.2)	18 (64.4)
		Minimum	°C (°F)	-15 (5.0)	-16 (3.2)

Note

- Specifications are subject to change without notice for further improvement.
- **Multi split combination possibility:**
 - A single outdoor unit enables air conditioning of up to two separate rooms for CU-2E18SBU.

			Outdoor Unit	
			CU-2E18SBU	
			A	B
Wall	1.6 kW	CS-ME5RKUA, CS-ME5SD3UA	•	•
	2.0 kW	CS-ME7RKUA, CS-ME7SD3UA	•	•
	2.5 kW	CS-E9RKUAW, CS-ME9SB4U, CS-E9SD3UAW	•	•
	3.2 kW	CS-E12RKUAW, CS-E12RB4UW, CS-E12SD3UAW	•	•
Capacity range of connectable indoor units		From 3.2 kW to 6.4 kW		
Piping Length	1 room maximum pipe length (m (ft))		25 (82.0)	
	Allowable elevation (m (ft))		15 (49.2)	
	Total allowable pipe length (m (ft))		50 (164.0)	
	Total pipe length for maximum chargeless length (m (ft))		20 (65.6)	
	Additional gas amount over chargeless length (g/m (oz/ft))		20 (0.2)	
Note: "•" : Available				

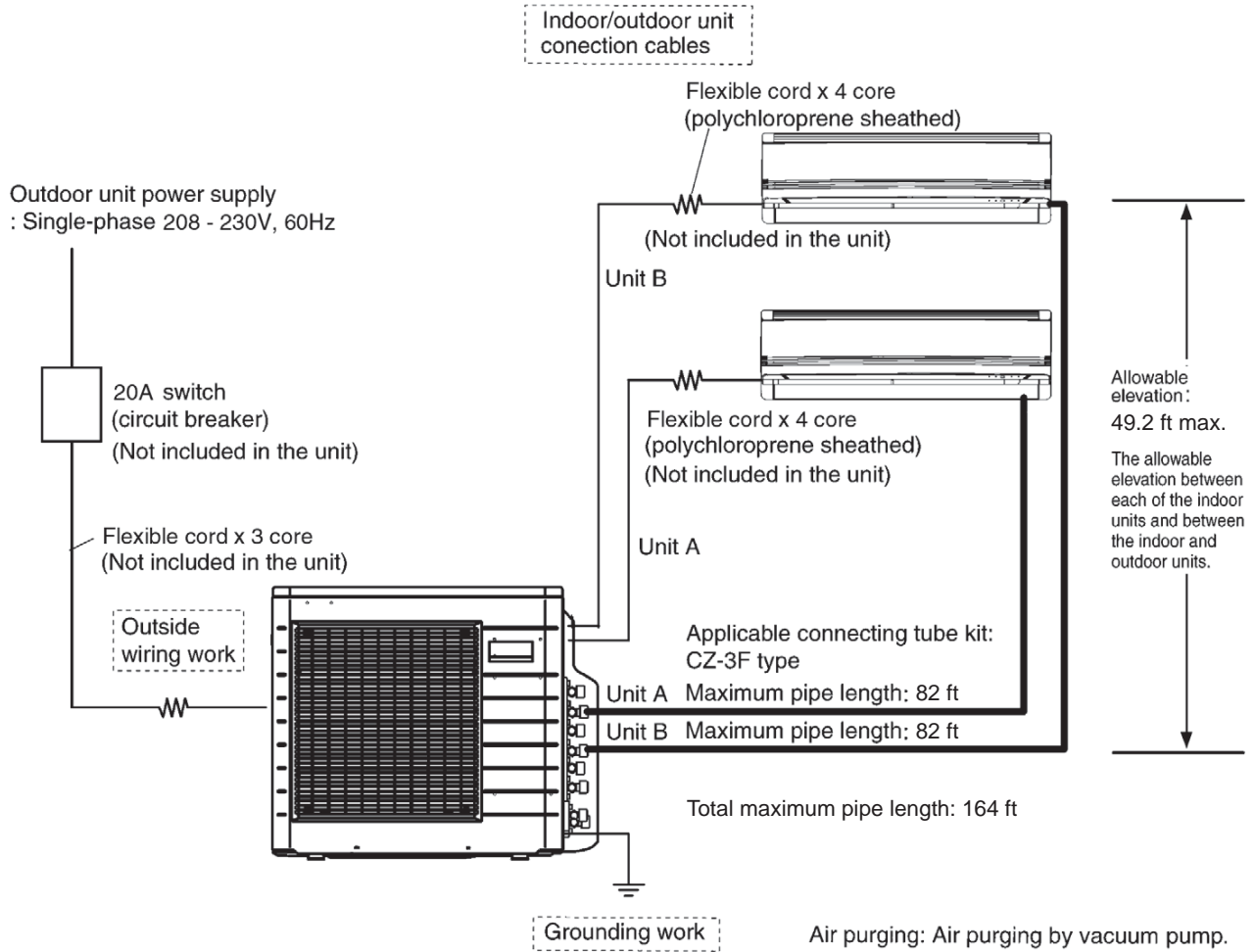
Remarks for CU-2E18SBU

- At least two indoor units must be connected.
- The total nominal cooling capacity of indoor units that will be connected to outdoor unit must be within connectable capacity range of indoor unit.
(as shown in the table above)
Example: The indoor units' combination below is possible to connect to CU-2E18SBU. (Total nominal capacity of indoor units is between 3.2 kW to 6.4 kW)
 - Two CS-E9RKUAW only. (Total nominal cooling capacity is 5.0 kW)
 - One CS-E9RKUAW and one CS-E12RKUAW. (Total nominal cooling capacity is 5.7 kW)

- Specifications are subject to change without notice for further improvement.

9. Installation Information

9.1 Check Points



QUICK GUIDE PIPING AND ELECTRICAL SPECIFICATION

Indoor (ID) & Outdoor (OD) units: Possible Combination Patterns	Capacity (Btu/h)	Refrigerant	Piping size		Standard pipe length	Max. Elevation	Min. pipe length for each ID unit	Max. from OD to each ID unit	Max. total length	Min. total pipe length for additional gas	Additional refrigerant	Power supply	Power supply wire size	OD-ID connection wire size
			Gas	Liquid										
Outdoor (OD): CU-2E18SBU Indoor (ID): 2 UNITS OF CS-E9RKUAW	16700	R410A	Ø3/8" (Ø9.52mm)	Ø1/4" (Ø6.35mm)	24.6 ft	See Step 1	9.8 ft	82.0 ft	164.0 ft	65.6 ft	0.2 oz / ft	208/230V 60 Hz MCA 20A MOP 25A	AWG12	AWFG16
Outdoor (OD): CU-2E18SBU Indoor (ID): 2 UNITS OF CS-E12RKUAW														
Outdoor (OD): CU-2E18SBU Indoor (ID): 1 UNIT OF CS-E9RKUAW + 1 UNIT OF CS-E12RKUAW														

Example:

If total piping length of all installed indoor units is at 68.6 ft, the quantity of additional refrigerant should be 0.6 oz
 $(68.6 - 65.6) \text{ ft} \times 0.2 \text{ oz/ft} = 0.6 \text{ oz}$.


10. Installation Instruction

- IMPORTANT**

This product has been designed and manufactured to meet ENERGY STAR® criteria for energy efficiency when matched with appropriate coil components. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow the manufacturer's refrigerant charging and air flow instructions. **Failure to confirm proper charge and airflow may reduce energy efficiency and shorten equipment life.**

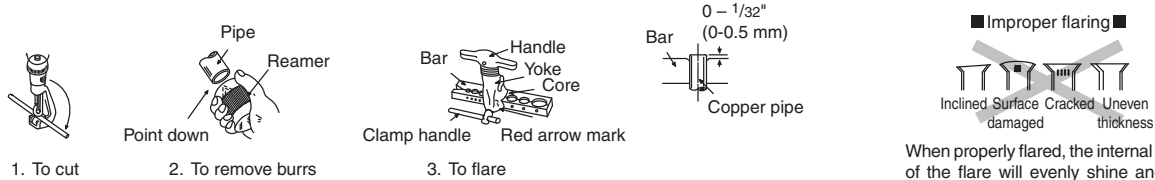
10.1 Accessories Supplied with Outdoor Unit

- The following parts are supplied as accessories with each outdoor unit. Check that all accessory parts are present before installing the outdoor unit.

HEAT PUMP-TYPES ONLY			
Part name	Qty.	Diagram	Application
Drain elbow	1		For connecting the drain pipe

10.2 Cutting and Flaring the Piping

- Please cut using pipe cutter and then remove the burrs.
- Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
- Please make flare after inserting the flare nut onto the copper pipes.



When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

10.3 Select the Best Location

10.3.1 Outdoor Unit

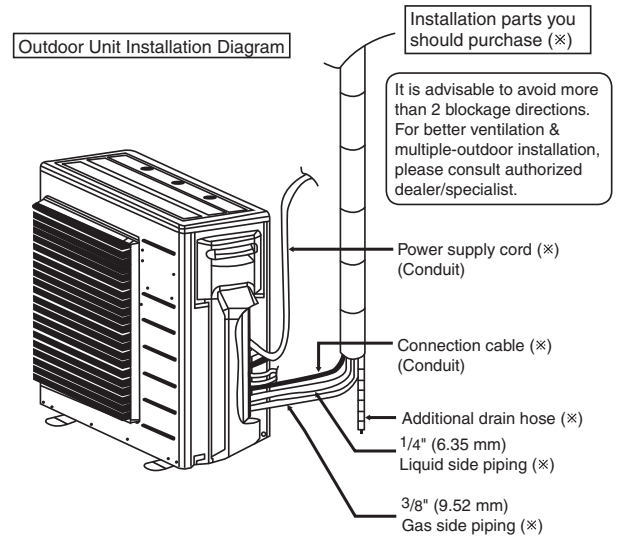
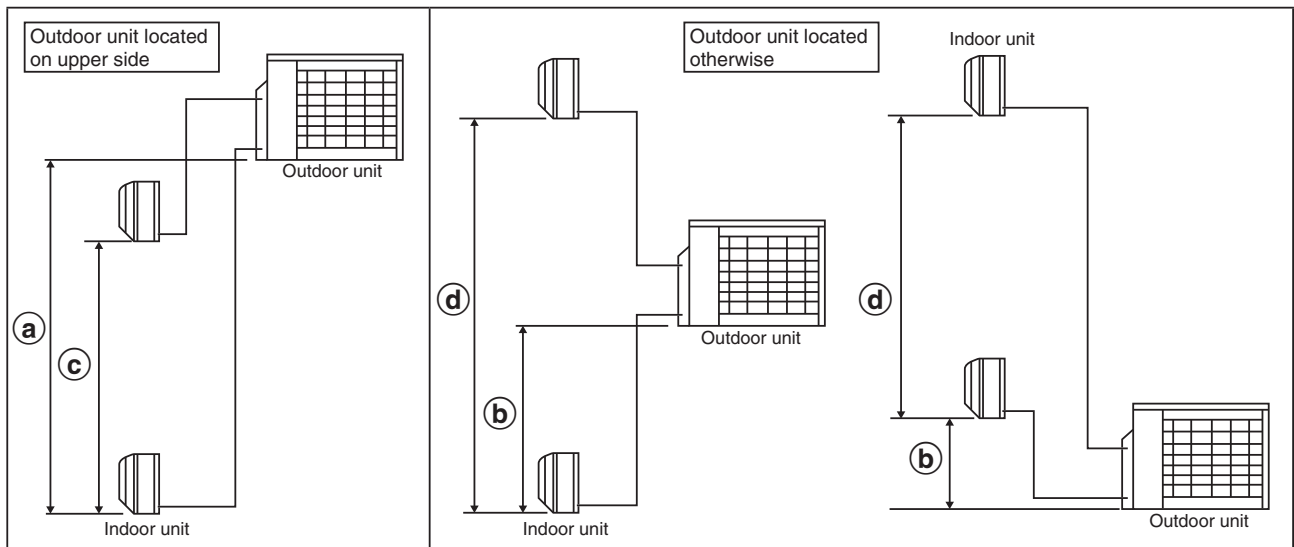
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- Recommended installation height for outdoor unit should be above the seasonal snow level.

Refrigerant piping size	
Outdoor Unit	CU-2E18**
Liquid - side	ø1/4" (ø6.35 mm) thickness 1/32" (t0.8 mm)
Gas - side	ø3/8" (ø9.52 mm) thickness 1/32" (t0.8 mm)

Outdoor Unit	CU-2E18**
Min. total piping length for additional gas	65.6 ft (20 m)

- If total piping length of all indoor units exceeds the minimum length listed above, additionally charge with 0.2 oz (20 g) of refrigerant (R410A) for each additional feet (meter) of piping.

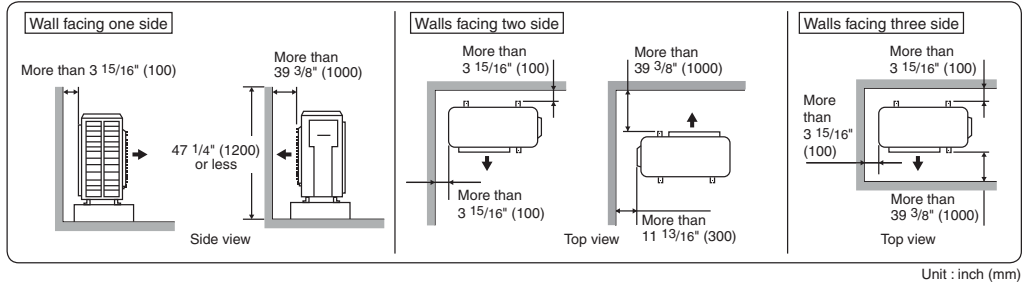
Allowable piping length			
Outdoor Unit			CU-2E18***
Allowable piping length of each indoor unit (min. ~ max.)			9.8 ft ~ 82.0 ft (3 m ~ 25 m)
Allowable total piping length of all indoor units			164.0 ft (50 m) or less
Height difference between indoor and outdoor units	Outdoor unit located on upper side	(a)	49.2 ft (15 m) or less
	Outdoor unit located otherwise	(b)	24.6 ft (7.5 m) or less
Height difference between indoor units	Outdoor unit located on upper side	(c)	24.6 ft (7.5 m) or less
	Outdoor unit located otherwise	(d)	49.2 ft (15 m) or less



- This illustration is for explanation purposes only.
- * Note: Respective indoor unit installation procedure shall refer to instruction manual provided in the indoor unit packaging.

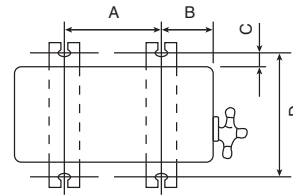
Outdoor Unit Installation Guidelines

- Where a wall or other obstacle is in the path of outdoor unit's intake or exhaust airflow, follow the installation guidelines below.
- For any of the below installation patterns, the wall height on the exhaust side should be 47 1/4" (1200 mm) or less.



10.4 Install the Outdoor Unit

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
 - 1 Fix the unit on concrete or rigid frame firmly and horizontally with bolt nut ($\phi 13/32"$ ($\phi 10$ mm)).
 - 2 When installing on a roof, please consider strong winds and earthquakes.
 - 3 Please fasten the installation stand firmly with bolt or nails.



Model	A	B	C	D
CU-2E18***	24 1/8" (613 mm)	5 5/32" (131 mm)	5/8" (16 mm)	14 3/16" (360.5 mm)

10.5 Connect the Piping

- Remove the control board cover (resin) from the outdoor unit by loosening three screws.

Connecting the Piping to Outdoor Unit

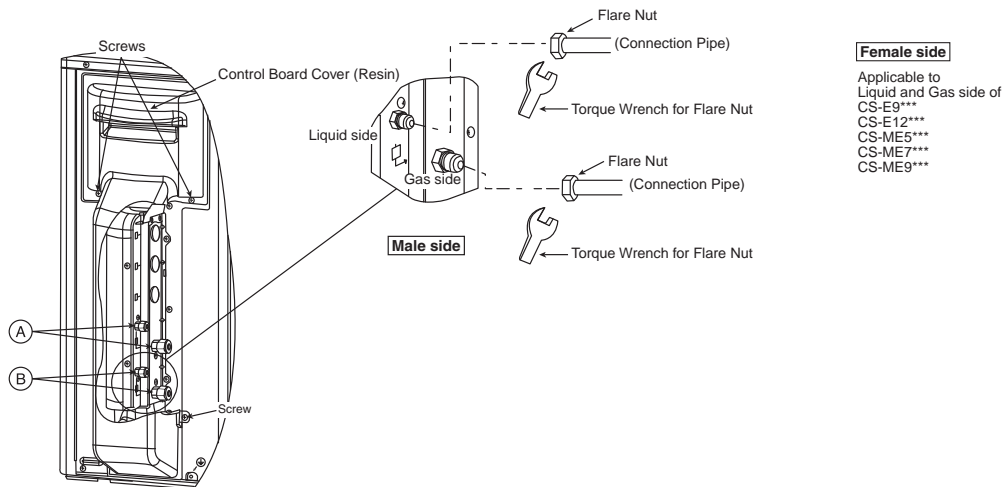
Decide piping length and then cut by using pipe cutter.

Remove burrs from cut edge. Make flare after inserting the flare nut (locate at valve) onto the copper pipe.

Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

Do not overtighten, over tightening may cause gas leakage.

Piping size	Torque
1/4" (6.35 mm)	13.3 lbf·ft [18 N·m (1.8 kgf·m)]
3/8" (9.52 mm)	31.0 lbf·ft [42 N·m (4.3 kgf·m)]
1/2" (12.7 mm)	40.6 lbf·ft [55 N·m (5.6 kgf·m)]
5/8" (15.88 mm)	47.9 lbf·ft [65 N·m (6.6 kgf·m)]
3/4" (19.05 mm)	73.8 lbf·ft [100 N·m (10.2 kgf·m)]



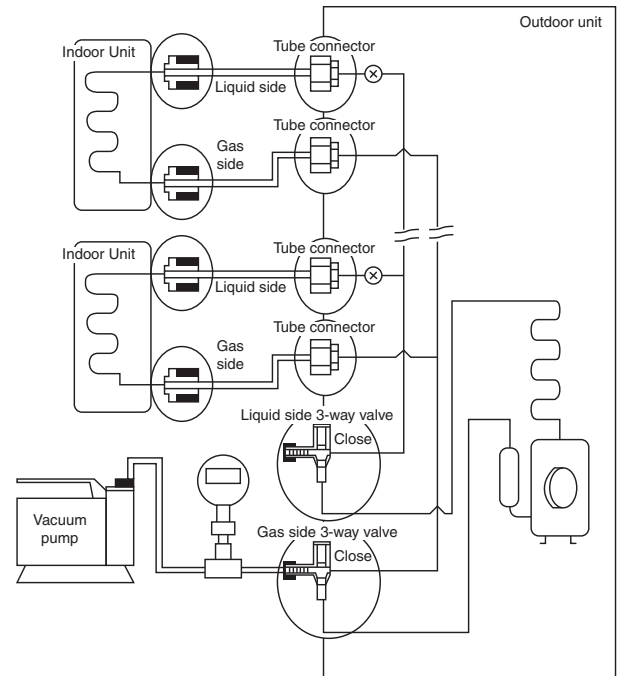
Gas Leak Checking

Pressure test to system to 400 PSIG with dry nitrogen, in stages. Thoroughly leak check the system. If the pressure holds, release the nitrogen and proceed to section 10.7.

10.6 Evacuation of the Equipment

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

- 1 Connect a charging hose with a push pin to the Low side of a charging set and the service port of the gas side 3-way valve.
- 2 Connect the micron gauge between vacuum pump and service port of outdoor units.
- 3 Turn on the power switch of the vacuum pump and make sure that connect digital micron gauge and to pull down to a value of 500 microns.
- 4 To make sure micron gauge a value 500 microns and close the low side valve of the charging set and turn off the vacuum pump.
- 5 Disconnect the vacuum pump hose from the service port of the 3-way valve.
- 6 Tighten the service port caps of gas side 3-way valve at a torque of 13.3 lbf•ft (18 N•m) with a torque wrench.
- 7 Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to "Open" using a hexagonal wrench (5/32" (4 mm)).
- 8 Mount valve caps onto the 2-way valve and 3-way valve.
 - o Be sure to check for gas leakage.

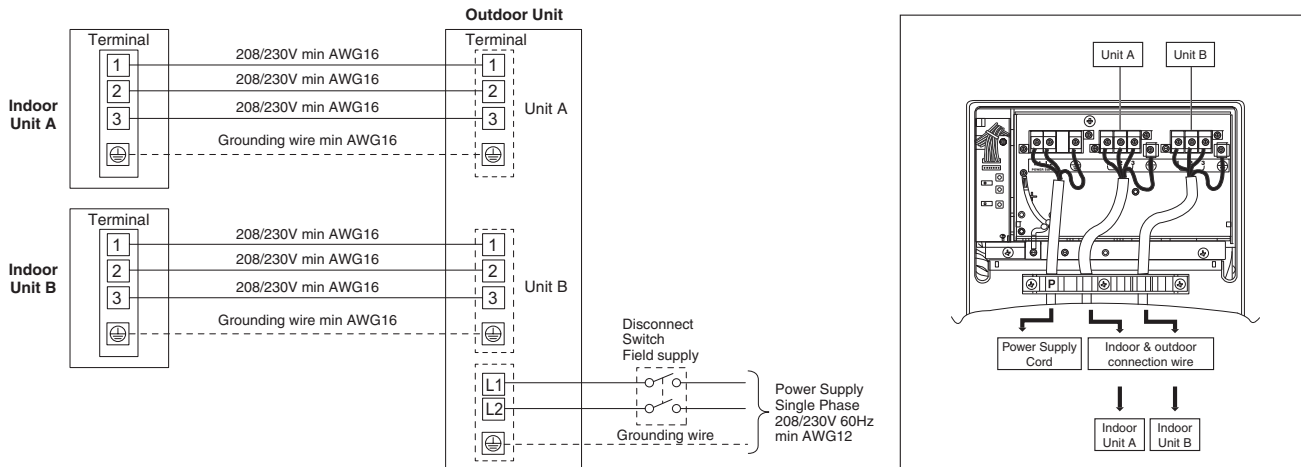
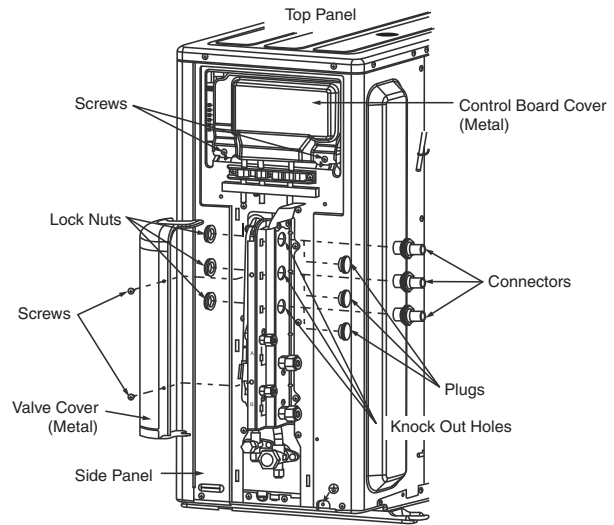


CAUTION

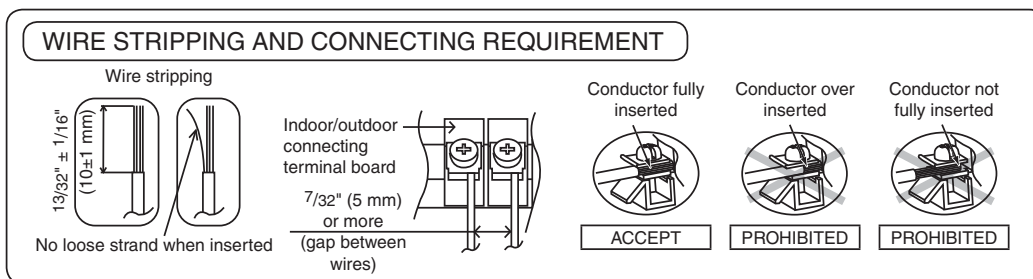
- If micron gauge value does not descend 500 microns, take the following measures:
 - If the leak stops when the piping connections are tightened further, continue working from step ③.
 - If the leak does not stop when the connections are retightened, repair location of leak.
 - Do not release refrigerant during piping work for installation and reinstallation.
 - Take care when handling the liquid refrigerant, it may cause frostbite.

10.7 Connect the Cable to the Outdoor Unit

- 1 Remove Control Board Cover (Metal) by loosening 2 screws.
- 2 Remove Valve Cover (Metal) by loosening 2 screws.
- 3 Remove Plugs.
- 4 Fix the conduit connectors to the knock out holes with lock-nuts, then secure them.
- 5 Connecting wire between indoor unit and outdoor unit should be UL listed or CSA approved 4 conductor wires minimum AWG16 in accordance with local electric codes.
- 6 Wire Connection to the power supply (208/230V 60Hz) through circuit breaker.
 - Connect the UL listed or CSA approved wires minimum AWG12 to the terminal board, and connect to other end of the wires to circuit breaker.
- 7 Connect the power supply cord and connecting wires between indoor unit and outdoor unit according to the diagram as shown.



- 8 For wire stripping and connection requirement, refer to the diagram below.
- 9 Secure the power supply cord and connection cables onto the control board with the holder.
- 10 Attach the control board cover (metal and resin) and valve cover back to the original position with screw.



- ⚡ This equipment must be properly earthed.
 - Earth wire must be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reasons.

10.8 Heat Insulation

CAUTION	Use a material with good heat-resistant properties as the heat insulation for the pipes. Be sure to insulate both the gas-side and liquid-side pipes. If the pipes are not adequately insulated, condensation or water leakages may occur.
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Liquid-side pipes	Material shall withstand 248°F (120°C) or higher
Gas-side pipes	