

Required tools for Installation Works

| | | | |
|---|---------------------|-------------------------|-------------|
| 1 Phillips screw driver | 7 Reamer | 12 Megameter | 40.6 lbf.ft |
| 2 Level gauge | 8 Knife | 13 Multimeter | 47.9 lbf.ft |
| 3 Electric drill, hole core drill (ø2 3/4") | 9 Gas leak detector | 14 Torque wrench | 73.8 lbf.ft |
| 4 Hexagonal wrench (5/32") | 10 Measuring tape | 15 Vacuum pump | 13.3 lbf.ft |
| 5 Spanner | 11 Thermometer | 16 Digital Micron Gauge | 31.0 lbf.ft |
| 6 Pipe cutter | | | |

SAFETY PRECAUTIONS

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
- Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

| | |
|----------------|---|
| WARNING | This indication shows the possibility of causing death or serious injury. |
| CAUTION | This indication shows the possibility of causing injury or damage to properties only. |

The items to be followed are classified by the symbols:

| | |
|--|--|
| | Symbol with white background denotes item that is PROHIBITED from doing. |
| | Symbol with dark background denotes item that must be carried out. |

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

WARNING

- Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident.
- Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
- Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
- Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
- Do not sit or step on the unit, you may fall down accidentally.
- Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.
- When installing or relocating air conditioner, do not let any substance other than the specified refrigerant, eg. air etc. mix into refrigeration cycle (piping). Mixing of air etc will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
- Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
- For R410A model, use piping, flare nut and tools which is specified for R410A refrigerant. Using of existing (R22) piping, flare nut and tools may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury.
- Thickness of copper pipes used with R410A must be more than 1/32". Never use copper pipes thinner than 1/32".
- It is desirable that the amount of residual oil is less than 0.0008 oz./ft.
- Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.
- Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
- Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
- Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
- For installation work, follow all electrical, building, plumbing, local codes, regulations and these installation instructions. If electrical circuit capacity is not enough or a defect is found in electrical work, it will cause electrical shock or fire.
- Do not use spliced wires for indoor / outdoor connection cable. Use the specified indoor / outdoor connection cable, refer to instruction ⑤ **INDOOR/OUTDOOR UNIT ELECTRICAL WIRING** and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or wiring is not perfect, it will cause heatup or fire at the connection.
- Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock.
- This equipment must installed with an Earth Leakage Circuit Breaker (ELCB) or Ground Fault Current Interrupter (GFCI) or Appliance Leakage Current Interrupter (ALCI) that has been certified by an NRTL Certified Testing Agency and that is suitable for the voltages and amperages involved. Otherwise, it may cause electrical shock and fire in case of equipment breakdown.
- During installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
- During pump down operation, stop the compressor before removing the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
- Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
- After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant comes into contact with fire.
- Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant comes into contact with fire.
- This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of equipment breakdown or insulation breakdown.

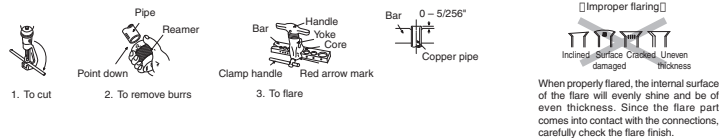
CAUTION

- Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
- Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
- Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
- Do not touch the sharp aluminium fin, sharp parts may cause injury.
- Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
- Select an installation location which is easy for maintenance.
- Power supply connection to the room air conditioner.
- Power supply cord shall be UL listed or CSA approved 3 conductor with minimum AWG12 wires.
- Power supply point should be in an easily accessible place for power disconnection in case of emergency.
- In some countries, permanent connection of this air conditioner to the power supply is prohibited.
- Fix power supply connection to a circuit breaker for permanent connection.
- Use NRTL approved fuse or circuit breaker (rating refers to name plate) for permanent connection.
- Installation work.
- It may need two people to carry out the installation work.

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.

3. Please make flare after inserting the flare nut onto the copper pipes.



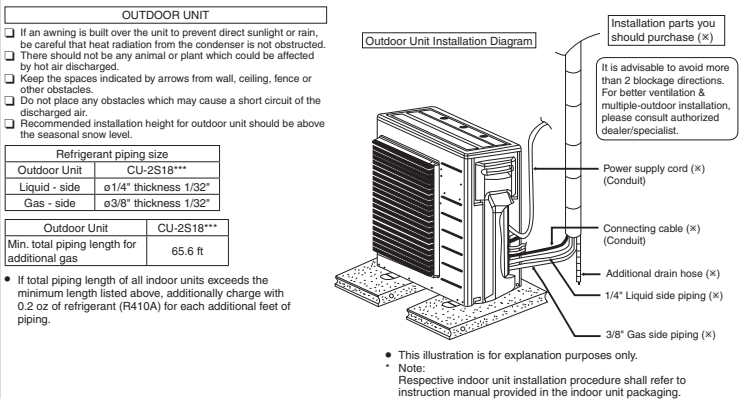
When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

QUICK GUIDE
PIPING & ELECTRICAL SPECIFICATION

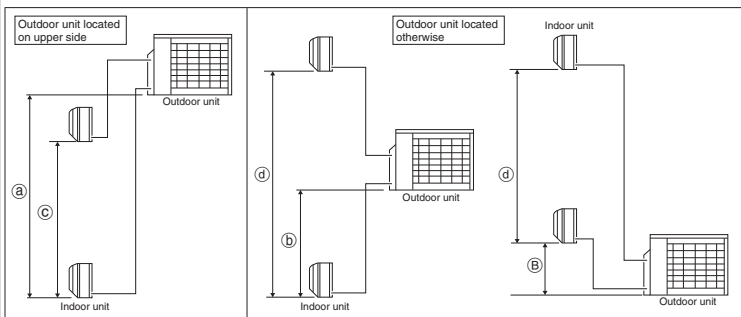
| Indoor(ID) & Outdoor(OO) units: Possible Combination Patterns | Capacity (Btu/h) | Refrigerant | Piping size | | Standard pipe length | Max. Elevation | Min. pipe length for each ID unit | Max. from OO to each ID | Max. total length | Min. total pipe length for additional gas | Additional refrigerant | Power supply | Power supply wire size | OD-ID connection wire size |
|--|---------------------|-------------|--------------------|--------------------|-------------------------|-------------------|--------------------------------------|----------------------------|----------------------|---|---------------------------|---|---------------------------|----------------------------------|
| | | | Gas | Liquid | | | | | | | | | | |
| Outdoor (OO): CU-2S18NB-U1 Indoor (ID): 2 UNITS OF CS-S9NKUW-U1 | 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 | AWG16 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Outdoor (OO): CU-2S18NB-U1 Indoor (ID): 2 UNITS OF CS-S12NKUW-U1 | | | | | | | | | | | | | | |
| Outdoor (OO): CU-2S18NB-U1 Indoor (ID): 1 UNIT OF CS-S9NKUW-U1 + 1 UNIT OF CS-S12NKUW-U1 | | | | | | | | | | | | | | |

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) ft x 0.2 oz./ft. = 0.6 oz.

1 SELECT THE BEST LOCATION

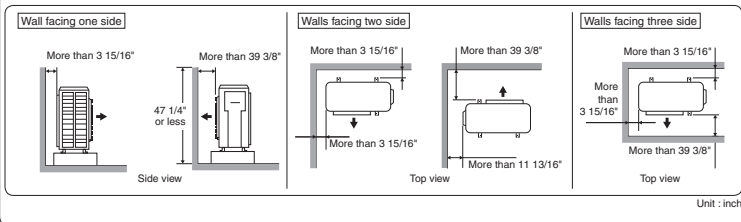


| Allowable piping length | | |
|---|------------------------------------|---------------------|
| Outdoor Unit | | CU-2S18*** |
| Allowable piping length of each indoor unit (min. ~ max.) | | 9.8 ft ~ 82.0 ft |
| Allowable total piping length of all indoor unit | | 164.0 ft or less |
| Height difference between indoor and outdoor unit | Outdoor unit located on upper side | (a) 49.2 ft or less |
| | Outdoor unit located otherwise | (b) 24.6 ft or less |
| Height difference between indoor unit | Outdoor unit located on upper side | (c) 24.6 ft or less |
| | Outdoor unit located otherwise | (d) 49.2 ft or less |



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" or less.



2 INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
- Fix the unit on concrete or rigid frame firmly and horizontally with bolt nut (ø13/32").
- When installing on a roof, please consider strong winds and earthquakes.
- Please fasten the installation stand firmly with bolt or nails.

| Model | A | B | C | D |
|------------|---------|---------|------|----------|
| CU-2S18*** | 24-1/8" | 5-5/32" | 5/8" | 14-3/16" |

3 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 over-tighten, over tightening may cause gas leakage.

| Piping size | Torque |
|----------------|--------------------------|
| 1/4" (0.02 ft) | [18 N·m (13.3 lbf. ft)] |
| 3/8" (0.03 ft) | [42 N·m (31.0 lbf. ft)] |
| 1/2" (0.04 ft) | [55 N·m (40.6 lbf. ft)] |
| 5/8" (0.05 ft) | [65 N·m (47.9 lbf. ft)] |
| 3/4" (0.06 ft) | [100 N·m (73.8 lbf. ft)] |

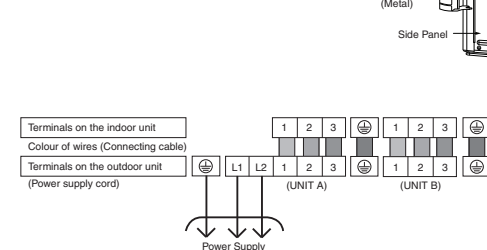
Gas Leak Checking

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 4.

OUTDOOR UNIT

5 CONNECT THE CABLE TO THE OUTDOOR UNIT

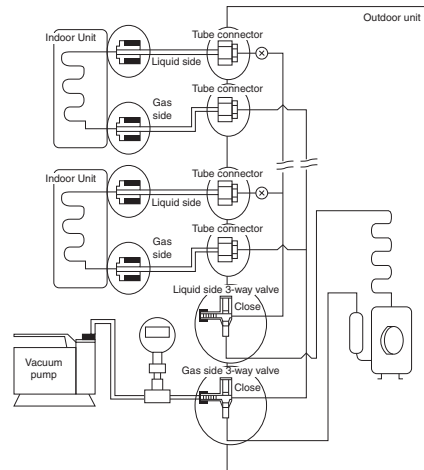
- Remove Control Board Cover (Metal) by loosening 2 screws.
- Remove Valve Cover (Metal) by loosening 2 screws.
- Remove Plugs.
- Fix the conduit connectors to the knock out holes with lock-nuts, then secure them.
- Connecting wire between indoor unit and outdoor unit should be UL listed or CSA approved 4 conductor wires minimum AWG16 in accordance with local electric codes.
- 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.
- Connect the power supply cord and connecting wires between indoor unit and outdoor unit according to the diagram as shown.



4 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.

- 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.
- Connect the micron gauge between vacuum pump and service port of outdoor units.
- 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.
- 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.
- Disconnect the vacuum pump house from the service port of the 3-way valve.
- Tighten the service port caps of gas side 3-way valve at a torque of 13.3 lbf.ft with a torque wrench.
- 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").
- Mount valve caps onto the 2-way valve and 3-way valve.
- 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.

WIRING ERROR CHECK

This product is capable of correcting wiring errors automatically by following these procedures.

- Confirm the valve on the liquid side and gas side is open.
- Press WIRING CHECK switch (SW3) on the display printed circuit board for more than 10 seconds to start wiring check operation.
- Wiring check process will complete in approximately 10 minutes. However, wiring check operation will not start within 3 minutes after compressor is stopped. When outdoor air temperature is less than 41°F or unit is malfunctioning, wiring check will not start. (See NOTE 2)

The LED 2 to 6 in display printed circuit board inside the outdoor unit indicate whether correction is possible or not and the status of the correction, as shown in the table below.

| LED ROOM | 2 | 3 | 4 | 5 | 6 | Message |
|----------|---|---|---|---|---|--|
| Status | A | B | - | - | - | All flashing Automatic correction impossible |
| | LED 2, 4, 6 and LED 3, 5 alternatively flashing | | | | | Wiring check in progress |
| | Flashing one after another | | | | | Automatic correction completed |
| | Other than above | | | | | Unit has abnormality (Note 4) |

If automatic correct is impossible, check the indoor unit wiring and piping manually.

NOTE

- For two rooms, LED 4 and 5 are not illuminated after wiring operation is complete.
- If the outdoor air temperature is less than 41°F or unit has abnormality, wiring operation will not start.
- After wiring check operation is complete, LED indication will be illuminated until normal operation starts.
- Follow the product diagnosis procedure. (Check the diagnostic label at the control board cover.)
- When LED 1 only is illuminated, this indicates that outdoor unit is operating normally.

CHECK ITEMS

- Blocked exhaust air flow from outdoor unit
- Smooth flow of the drain
- Reliable thermal insulation
- Leakage of refrigerant
- Mistake in wiring
- Reliable connection of the grand wire
- Looseness in terminal screw
- Grounding/Earth connection