

HEAT CONTROLLER, INC.

INSTALLATION INSTRUCTIONS

SMA/SMH 18/24

Version B

Single Zone Ductless

Mini-Split Systems

A/C and Heat Pumps

INSTALLATION MANUAL FOR ROOM AIR CONDITIONER

(Split Wall Mounting Type)

- For correct installation, read this manual before starting installation. Please save this manual in a safe place.
- Only trained and qualified service personnel should install, repair or service air conditioning equipment. Users should not install the air conditioner by themselves.
- Pictures in this manual may be slightly different from the air conditioner you purchased. These pictures are only sketches.

INSTALLATION PRECAUTION

- Installation in the following places may cause trouble. If it is unavoidable to use in such places, please consult with the dealer:
- A place full of machine oil.
 - A saline place such as coast.
 - A place full of sulfide gas such as hot-spring resort.
 - Places Where there are high frequency machines such as wireless installation, welding machine, and medical facility.
 - A Place of Special environmental conditions.
 - A place where there is combustible gases and volatile matter.

Indoor Unit

- A place where is no obstacle near the inlet and outlet area.
 - A place which can bear the weight of the indoor unit.
 - A place which provides the spaces around the indoor unit as required right in the diagram.
 - A place 3.3ft or more from TV, radio instrument , in the center of the room is perfect.
 - A place which is far from heat, steam and inflammable gas.
- Install the indoor unit on the wall where the height from the floors more than 7.5 feet.

Outdoor Unit

- A place, which is convenient to installation and not exposed to a strong wind.
- A place can bear the weight of the outdoor unit and where the outdoor unit can be held in the horizontal position.
- A place where the operation noise and discharge air do not disturb you neighbor.
- A place free of a leakage of combustible gases.
- An allowable head level at the connective piping is less than 16 feet. and length of the connective piping is up less than 33 ft.
- A place, which provides the spaces around the outdoor unit as required right in the diagram.
- Unavailable to children.

NOTE:

1. The Appliance shall not be installed in the laundry room. All the connections must be in accordance with Local and national Codes.
2. For power details of the air conditioner, refer to the rating plate of the product. Contact your local dealer if you have any questions.

Installation Parts

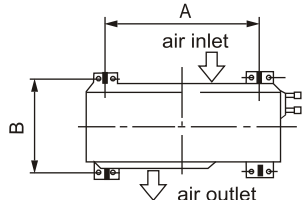
Part No.	Name of part		Q'ty
1	Installation plate		1
2	Clip anchor		8
3	Mounting screw AST3.9x25-C-H		8
4	Remote controller		1
5	Remote controller holder		1
6	Mounting screw B ST2.9x10-C-H		2
7	Refrigerant pipe	Liquid side	φ 1/4 "(<24000Btu/h)
			φ 3/8" ≥24000Btu/h)
		Gas side	φ 1/2" (<24000Btu/h)
			φ 5/8" ≥24000Btu/h)
8	Seal		
9	Drain elbow		

Cautions on remote controller installation

- Keep the remote controller at least 3 feet from the nearest TV set or stereo equipment.
- Do not leave the remote controller in a place exposed to direct sunlight or close to a heating source, such as a stove.
- Note the positive and negative poles are correct when loading batteries.

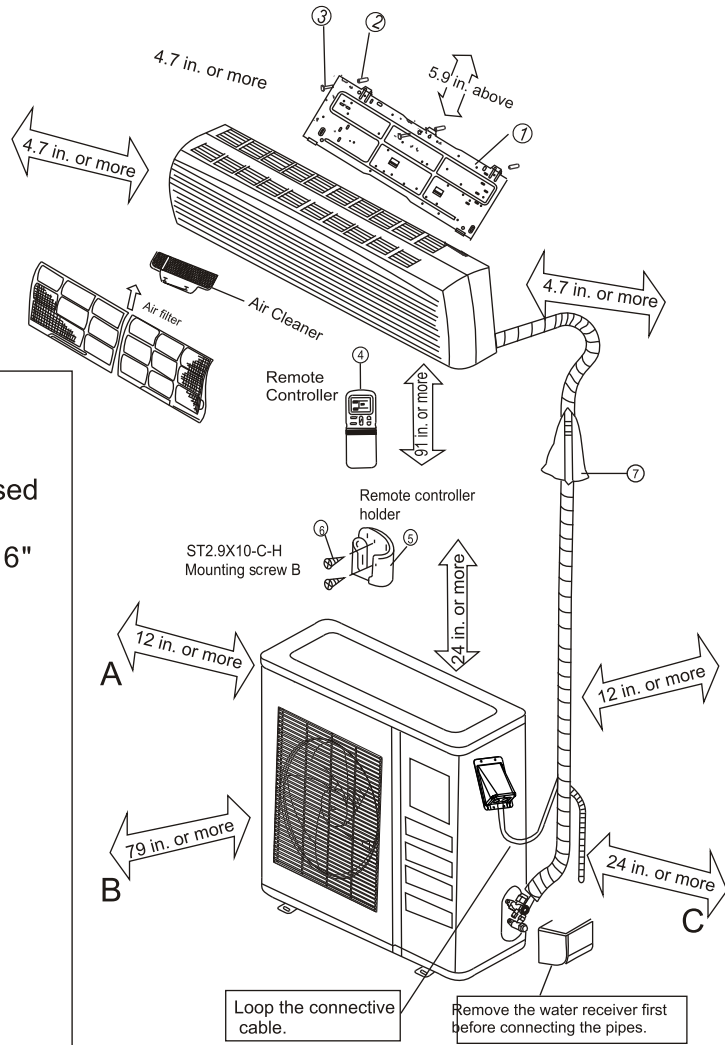
Caution

- The outdoor Units should not be exposed to strong wind.
- Anchor the outdoor unit with φ5/16" anchor bolts.



Model	A	B
<24000Btu/h	24	12
≥24000Btu/h	24	12

- For suspended installation , consult local codes.

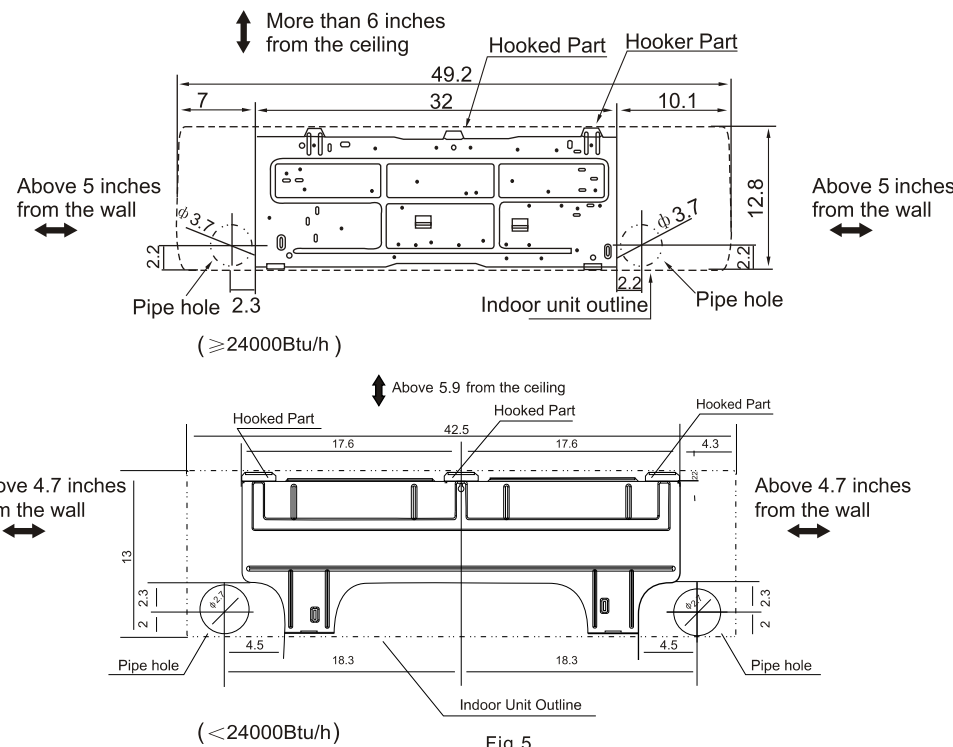


NOTICE: There should be at least two of the A, B, C direction are free from blockages.

① INDOOR UNIT INSTALLATION

1. Cutting A Hole and Mounting Installation Plate

Installation Plate and Its Measures (Unit: in.)



1. Attach the installation plate.

1. Install the installation plate horizontally on structural members in the wall with the spaces provided around the plate.
2. In case of block, brick, concrete or similar type walls, make use appropriate anchors and mounting screws.
3. Attach the installation plate on the wall.



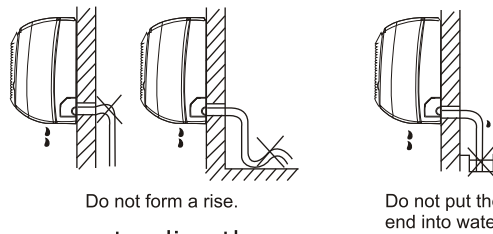
2. Cutting a hole.

1. Determine the pipe hole position using the installation plate, and drill the Pipe hole (φ 3.75 in) so it slants slightly downward.
2. Always use a piping hole liner when piercing a wall, made of metal lath, wire lath or metal plate.

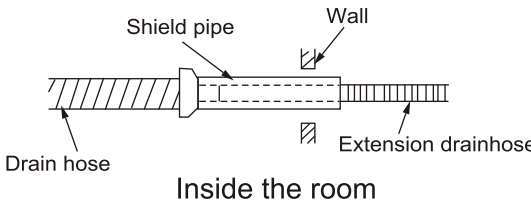
2. Connective Pipe and Drainage Installation

1. Drainage

1. Run the drain hose sloping downward. Do not install the drain hose as illustrated below.

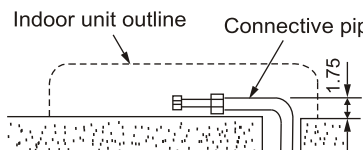


2. When extending the drain hose, insulate appropriately.



2. Connective pipe

1. For the left-hand and rear-left-hand piping, install the piping as shown. Bend the connective pipe so it is 1.75 inches or less from the wall.

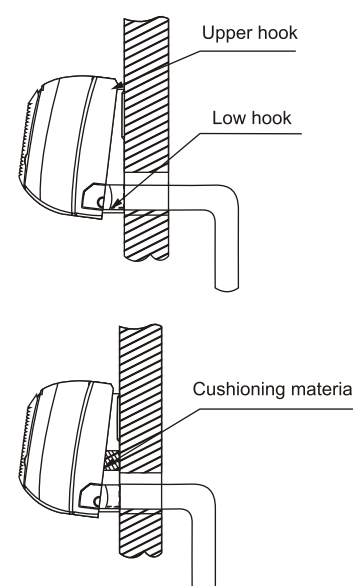


2. Attach the end of the connective pipe to the fitting on the indoor unit.

Caution

- Connect the indoor unit first then the outdoor unit.
- Bend and arrange the pipe carefully.
- Insulate both pipes.
- Wrap the drain hose with the interconnecting pipes.

3. Indoor unit Installation



1. Pass the piping through the hole in the wall.
2. Put the upper claw at the back of the indoor unit on the upper hook of the installation plate. Move the indoor unit from side to side to see that it is securely hooked.
3. Push the lower part of the indoor unit up on the wall. Then move the indoor unit from side to side and up and down to ensure it is securely hooked to mounting plate.
4. Piping can easily be made by lifting the indoor unit with a cushioning material between the indoor unit and the wall. Remove after finished with piping.

4. Electrical Work

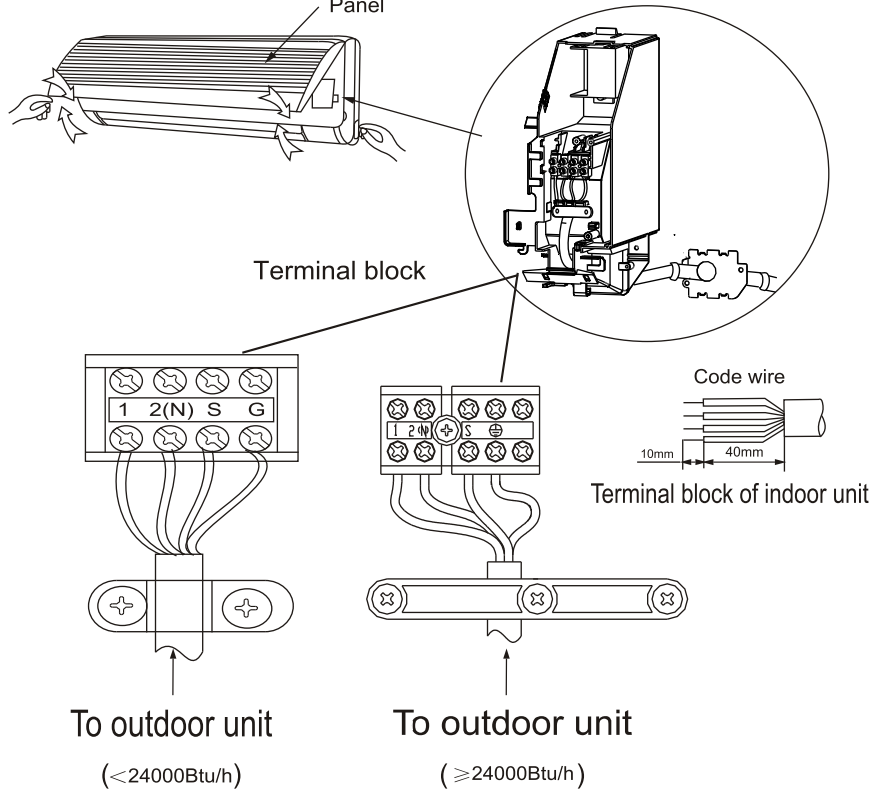
Connect unit to a dedicated circuit.
Refer to the unit's rating plate for proper supply voltage.

Caution

1. To determine wire size (AWG) see unit rating label for minimum circuit ampacity and size per local and national electrical codes.
2. Fuse or HACR circuit breaker for dedicated circuit to be selected based on the maximum fuse size data from unit rating label.
3. Install disconnecting means as necessary at outdoor unit and indoor unit as required by local and national electrical codes.
4. Properly ground the unit in compliance with local and national electrical codes.
5. ALL WIRING TO THE UNIT AND INTERCONNECTING BETWEEN INDOOR AND OUTDOOR UNITS MUST COMPLY WITH LOCAL AND NATIONAL ELECTRICAL CODES.

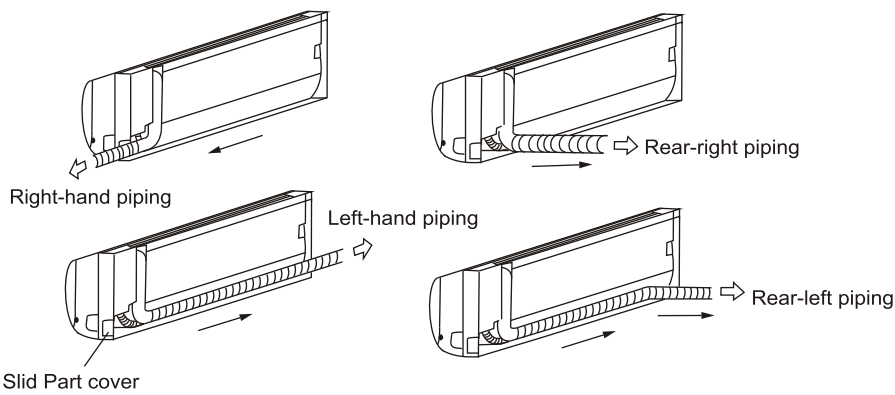
5. Connecting Cables

1. Lift the panel, loosen the screw then open the Electric Box Cover.
2. Connect the wires to the terminals on the control board individually according to the outdoor unit connection.
3. Wrap those cables not connected with terminals with insulation tapes, so that they will not touch any electrical components.



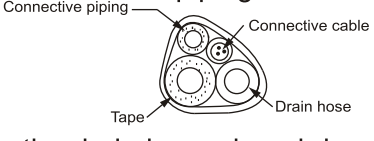
1 INDOOR UNIT INSTALLATION

6. Piping and Wrapping



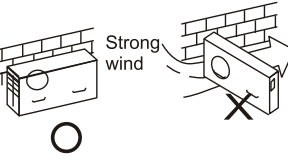
- For the left-hand and right-hand piping, remove the rear plate bushing from the left side of the rear plate.
- Wind the connective cable, drain hose and wiring with tape securely, evenly. (Consult local and national electrical codes for proper routing and placement of electrical wiring.)
- See unit rating plate for minimum circuit ampacity for interconnecting wiring.

Caution

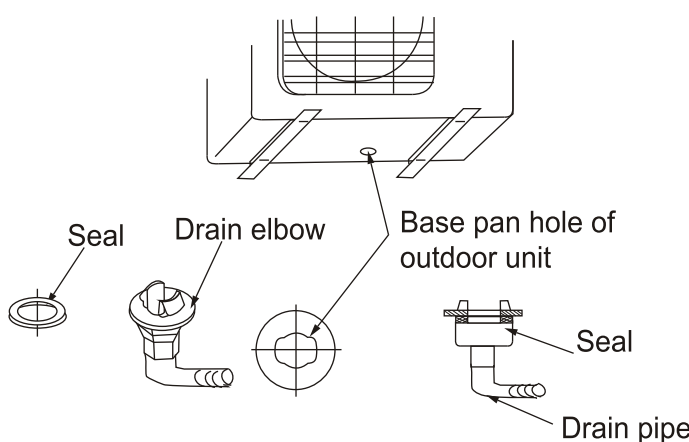
- Install the drain hose at the bottom as shown in the diagram below.
 - Carefully arrange and warp the piping so as to not to damage the drain hose and connective piping.
- 
- Make sure to run the drain hose sloped downward so that condensate drains smoothly.
 - Before wrapping power wiring with interconnecting piping, consult local and national codes for proper installation of line voltage interconnecting wiring.

2 OUTDOOR UNIT INSTALLATION

1. Outdoor Installation Precaution

- Install the outdoor unit on a rigid base to prevent noise and vibration.
 - Determine the air outlet direction where the discharged air is not blocked.
 - In the case that the installation place is exposed to strong wind such as a seaside or high elevation, to ensure normal fan operation place the unit lengthwise along the wall or use shield plates.
 - Especially in windy areas, install the unit to prevent the admission of wind.
 - If suspending the unit, the installation wall should be solid brick, concrete or similar construction, or actions to reinforce the supporting wall should be taken. The connection between bracket and wall, bracket and the air conditioner must be firm, stable and reliable consult local and national building codes.
 - If need suspending the unit, follow the instructions of the bracket manufacturer.
- 

2. Drain Elbow Installation

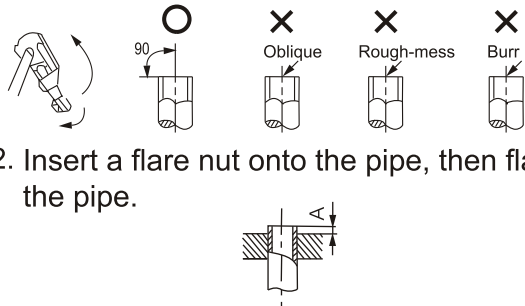


Fit the seal into the drain elbow, then insert the drain elbow into the base pan hole of outdoor unit, rotate 90° to securely assemble them. Connecting the drain elbow with an extension drain hose (Locally purchased), in case of the water draining off the outdoor unit during the heating mode

3. Refrigerant Piping Connection

1. Flaring

- Cut the pipe with a pipe cutter.



Outlet diam. (In.)	A (in.)	
	Max.	Min.
φ 1/4	.05	.03
φ 3/8	.06	.04
φ 1/2	.07	.06
φ 5/8	.09	.08

2. Tightening Connection

- Align pipes to be connected.
- Sufficiently tighten the flare nut with fingers, and then tighten it with a spanner and torque wrench as shown.

Caution

- Excessive torque can break nut depending on installation conditions.

Outlet diam.	Tightening torque	Additional tightening torque
φ 1/4	126(lbf-ft) (160kgf.cm)	157(lbf-ft) (200kgf.cm)
φ 3/8	243(lbf-ft) (310kgf.cm)	274(lbf-ft) (350kgf.cm)
φ 1/2	392(lbf-ft) (500kgf.cm)	431(lbf-ft) (550kgf.cm)
φ 5/8	589(lbf-ft) (750kgf.cm)	606(lbf-ft) (800kgf.cm)

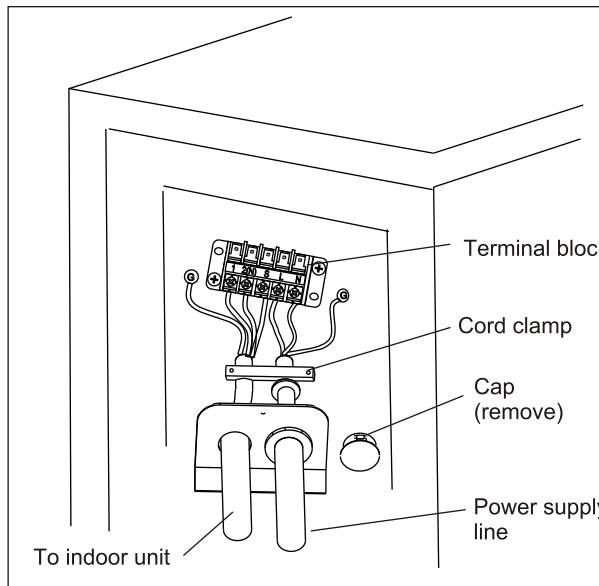
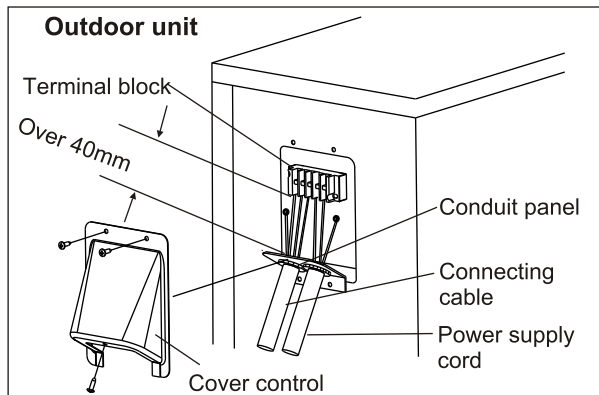
4. Wiring Connection

Note: Use a dedicated circuit. Use HACR breaker, sized per unit rating plate. Size wires according to minimum circuit ampacity shown on the unit rating plate.

- Remove the cover control from the unit by loosening the 3 screws.
- Remove caps on the conduit panel.
- Temporarily mount the conduits (not included) on the conduit panel.
- Properly connect both the power supply and interconnecting lines to the corresponding terminals on the terminal block.
- Ground the unit in accordance with local and national electrical codes.
- Be sure to cut each wire allowing several inches longer than the required length for wiring.
- Use lock nuts to secure the conduit tubes.

WARNING

- Be sure to comply with local and national electrical codes while running the wire from the indoor unit to the outdoor unit. Install disconnects for the outdoor and indoor units as required by national and local electrical codes.
 - Every wire must be connected firmly.
 - No wire should be allowed to touch refrigerant tubing, the compressor or any moving parts.
 - Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exit. Therefore, be sure all wiring is tightly connected.
- Note : To prevent wires loosening secure wires and/or cords under cord clamp.



3 AIR PURGE AND TEST OPERATION

1. Air Purge

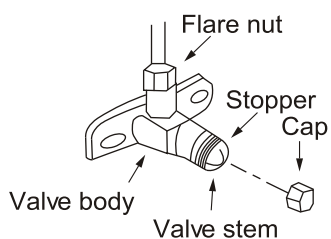
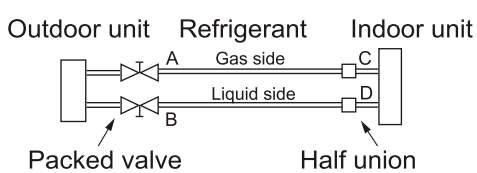
Choose purge method from the table:

Connective pipe length	Air purging method	Additional amount of refrigerant to be charged
Less than 16ft.	Use vacuum pump	-----
16ft~ 33ft.	Use vacuum pump	(L-16)X1 oz.

- For the R407C/R410A refrigerant models, make sure the refrigerant added into the air conditioner is liquid form in all cases.

Caution in Handling the Packed Valve

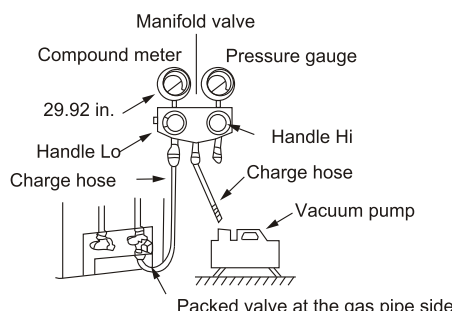
- Open the valve stem until it hits against the stop. Do not try to open it further.
- Securely tighten the valve stem cap with a spanner or the like.
- Valve stem cap tightening torque. (See Tightening torque table above)



Using the Vacuum Pump

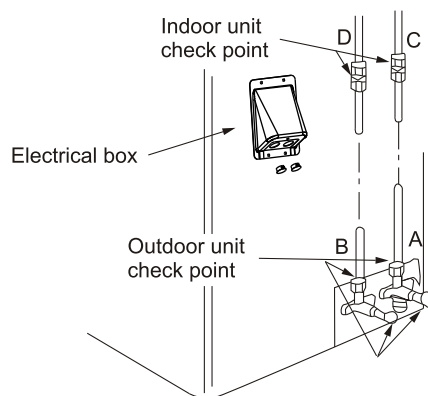
(For method of using a manifold valve, refer to its operation manual)

- Completely tighten the flare nuts A, B, C, D, connect the manifold valve charge hose to a charge port of the packed valve on the gas pipe side.
- Connect the charge hose connection to the vacuum pump.
- Fully open the Lo side handle.
- Operate the vacuum pump to evacuate. After starting evacuation, slightly loosen the flare nut of the packed valve on the gas pipe side and check that the air is entering. (Operation noise of the vacuum pump changes and a compound meter indicates 0 instead of minus.)
- After the evacuation is complete, fully close the Lo side handle and stop the operation of the vacuum pump.
- Continue evacuation for 15 minutes or more and check that the compound meter indicates 29.92 inHg.
- Turn the stem of the packed valve B about 45° counterclockwise, securely tighten the flare nut after 6-7 seconds. Disconnect the charge hose from the charge connection of the packed valve at the gas pipe side.
- Fully open the packed valves B and A.
- Securely tighten the cap of the packed valve.



2. Gas Leak Check

Make sure connections do not leak with leak detector or soap water.



Caution

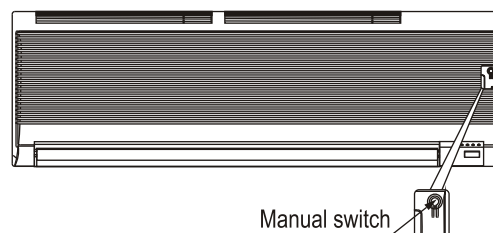
A: Lo packed valve B: Hi packed valve C and D are ends of indoor unit connection.

3. Test Operation

Perform test operation after completing gas leak check at the flare nut connections and electrical safety check.

- Check that all tubing and wiring have been properly connected.
- Check that the gas and liquid side service valves are fully open.

- Connect the power, press the ON/OFF button on the remote controller to turn the unit on.
- Use the MODE button to select COOL, HEAT (cooling & heating models only), AUTO and FAN to check if all the functions work well.
- When the room temperature is too low (lower than 63°F), the unit can not be controlled by the remote controller to run in cooling mode. Use manual operation. Manual operation is used only when the remote controller is disabled or maintenance necessary.
- To access the controls for manual operation, hold the panel sides and lift the panel up to an angle until it remains fixed with a clicking sound.
- Press the Manual control button to select the AUTO or COOL, the unit will operate under Forced AUTO or COOL mode (see User Manual for details).
- The test operation should last about 30 minutes.



**Design, material, performance data and components
subject to change without notice.**

HEAT CONTROLLER, INC.

1900 Wellworth Ave., Jackson, Michigan 49203 • Ph. 517-787-2100 • Fax 517-787-9341

THE QUALITY LEADER IN CONDITIONING AIR

www.heatcontroller.com