

Please read this manual carefully before installation and keep it for future reference.

Installation Manual



Advantage Series

22K ONLY



- Please read this manual before installing.
- Inspect all packaged components thoroughly.
- If the power cord is damaged, replacement work may be performed by authorized personnel only.
- Installation work must be performed in accordance with National Wiring Standards by authorized personnel only.
- Contact an authorized service technician for repair, maintenance, or installation of this unit.


INSTALLATION PRECAUTIONS

- Please read the installation manual carefully before you begin the installation process.
- Check to ensure that the power cord is not damaged. If it is damaged, replacement work should only be performed by authorized persons.
- MRCOOL LLC requires installation be performed in accordance with NEC and CEC requirements. As such, you should contact a licensed HVAC service technician for installation, maintenance, or repair.
- MRCOOL Advantage is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities. Persons who lack experience and knowledge of HVAC equipment should also not install or operate the MRCOOL Advantage.
- Children should not be allowed to play with the MRCOOL Advantage. It is not a toy.
- Graphics in the MRCOOL Advantage Installation Manual are for descriptive purposes only.
- Future MRCOOL Advantage product generations may change both design and specification without prior notice. Please consult with your sales agent for details.

SAFETY PRECAUTIONS

- Read the safety preparation section completely and carefully before installation.
- Follow all safety guidelines.

 WARNING	This symbol indicates the possibility of death or serious injury.
 CAUTION	This symbol indicates the possibility of injury or damage to property.

 WARNING

- Follow all MRCOOL Advantage installation instructions. Deviation may result in defective operation, water leakage, electrical shock, or fire.
- Use the accessories and parts included with your MRCOOL Advantage. Use of non-standard accessories or parts could cause defective operation, water leakage, electrical shock, or fire.
- Mount the MRCOOL Advantage in a location able to support its weight. Insufficient structural integrity could eventually lead to unit dislocation which may damage the unit or cause injury.
- Follow all applicable wiring standards and regulations along with relevant installation manual instructions when completing the electrical work on the MRCOOL Advantage. An independent circuit and single outlet must be used. Insufficient electrical capacity may cause electrical shock or fire.
- Use the appropriate cable, connect tightly, and clamp properly to prevent an external force from acting on the terminal. Improper connection or fitting may cause heat-up or fire at the connection site.
- Wire routing must be properly managed to ensure proper control board function. Improper wire routing management may cause overheating at the connection point which could lead to fire or electrical shock.
- Ensure foreign substances do not enter the refrigerant pipe when piping connections are made. Foreign material in the refrigerant pipeline may lead to lower capacity operation, abnormally high pressure in the refrigeration cycle, explosion, or injury.
- Do not modify the length of the power supply cord or use an extension cord, and do not share the single outlet with other appliances. Such actions could lead to fire or electrical shock.

 CAUTION

- Equipment must be properly grounded and installed with a ground leakage current breaker. Improper grounding may lead to electrical shock.
- Do not install the MRCOOL Advantage in a location in which it may be exposed to flammable gas. Gas accumulation around the unit may cause fire.
- Installation drainage as outlined later in the instruction manual. Improper drainage may lead to interior water damage.

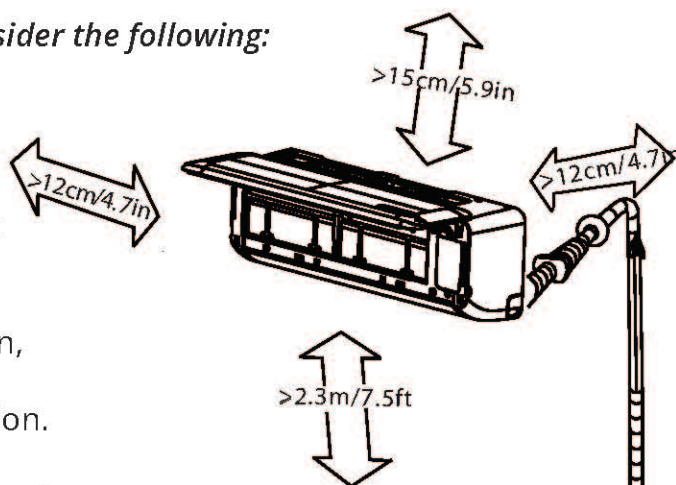
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Interior Air Handler

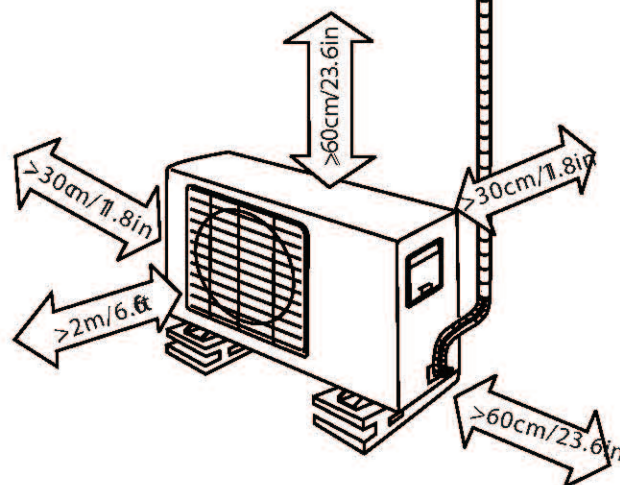
When selecting an interior location for installation, consider the following:

- Avoid heat sources or heat streams.
- Ensure furniture or other obstacles will not block air circulation.
- Do not install the unit near or over a doorway.
- Allow sufficient clearance above, below, left, and right of the unit as described in the side diagram.
- Do not place the unit in direct sunlight.
- Ideally, choose a site that will allow good air circulation, effective drainage, and minimize operating noise. An elevated spot on an exterior wall is often a good location.



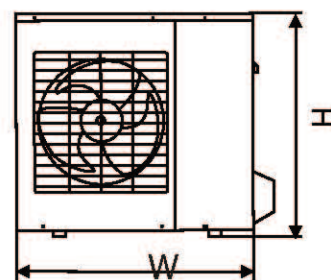
Exterior Condenser

- Ensure there is sufficient clearance on all sides of the unit as described in the side diagram.
- Do not place the exterior unit close to any plants or animals which could be adversely affected by hot air discharge.
- If you install an awning or shade to prevent direct sunlight, make sure the covering does not obstruct required airflow.
- Do not place any objects around the exterior unit which may affect the airflow necessary for an efficient operating cycle.



Exterior Unit Settlement

- Anchor the exterior condenser securely with a bolt and nut on a concrete or rigid mount. Refer to the following table according to unit dimensions.

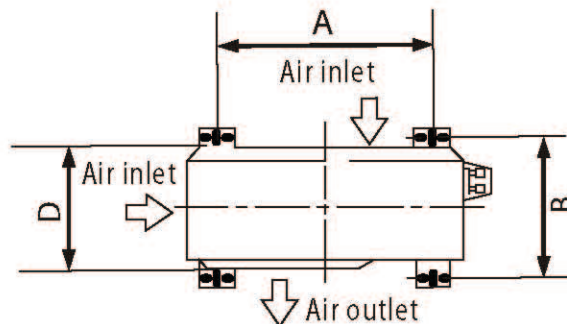


Outdoor Unit Dimension mm/in (WxHxD)	Mounting Dimensions	
	A (mm/in)	B (mm/in)
700x540x240/29.5x21.3x9.4	458/18	250/9.8
685x430x260/27x16.9x10.2	460/18.1	276/10.9
780x540x250/30.7x21.3x9.8	549/21.6	276/10.9
760x590x285/29.9x23.2x11.2	530/20.9	290/11.4
845x700x320/33.3x27.6x12.6	560/22.1	335/13.2
775x545x310/30.5x21.5x12.2	600/23.6	320/12.6
670x540x265/26.4x21.3x10.4	481/18.9	276/10.9

ACCESSORIES

Number	Name of Accessories	Qty	
1	Installation Plate	1	
2	Clip Anchor	5-8(dependent on models)	
3	Self-tapping Screw AST3.9x25	5-8(dependent on models)	
4	Seal(For cooling & heating models only)	1	
5	Drain joint(For cooling & heating models only)	1	
6	Refrigerant Pipe Assembly	Parts you must purchase. The pipe sizes differ depending on application. Consult a certified technician for sizing.	
	Liquid side		Φ6.35(1/4in)
			Φ9.52(3/8in)
	Gas side		Φ9.52(3/8in)
		Φ12.7(1/2in)	
		Φ16(5/8in)	
7	Remote control	1	
8	Self-tapping Screw BST2.9x10	optional	
9	Remote controller holder	parts	
10	Air freshening filter(used to install on air filter)	1	

Note: Except the parts provided above, other parts needed for installation are sold separately



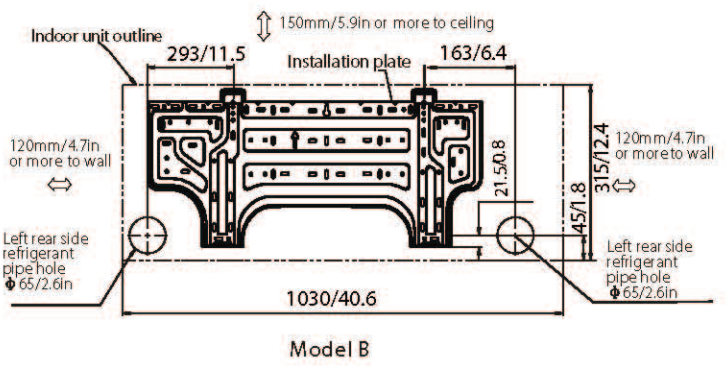
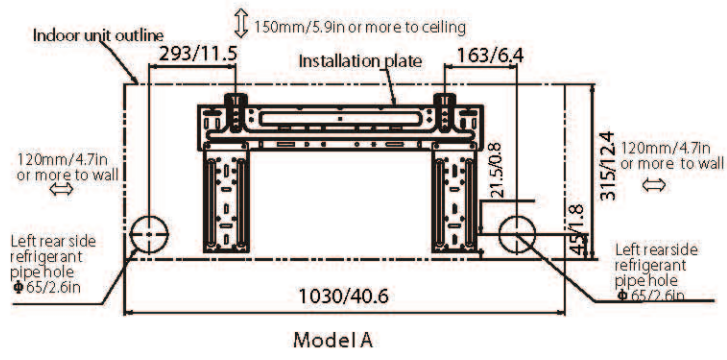
1) INSTALL PLATE MOUNTING

Note:
 Ensure the mounting wall is strong and solid enough to prevent unit dislocation due to normal vibration.

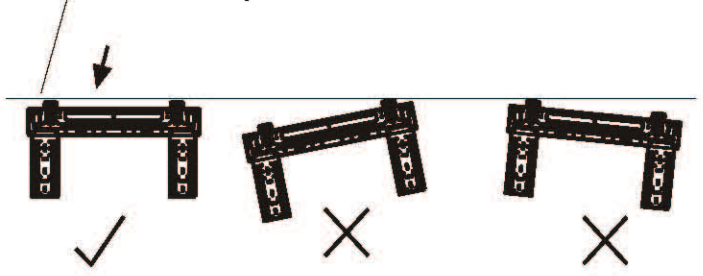
Installation Plate Mounting

1. Site the installation plate horizontally on the wall with sufficient space around the plate as specified in the side diagram.
2. If the walls are brick or concrete, drill five or eight 5mm holes in the surface. Insert clip anchors for the mounting screws.
3. Secure the installation plate with five or eight type "A" screws.

Note:
 Your installation plate may vary slightly from the diagram depending on your particular system. Always drill the holes according to the corresponding mounting points on the installation plate.

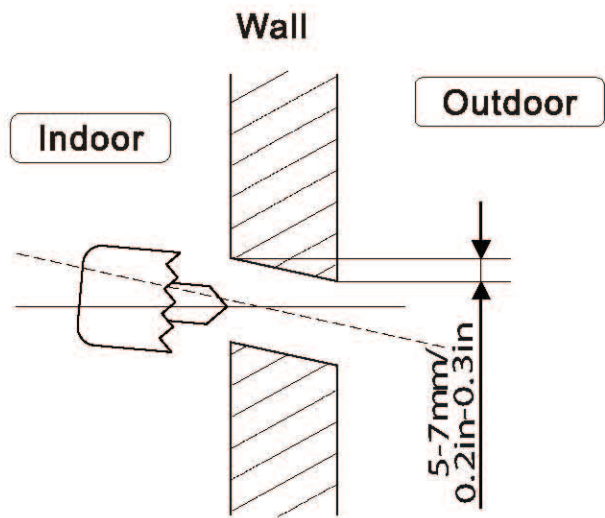


Correct orientation of installation plate



2) DRILL A HOLE IN THE WALL

1. Determine hole positions according to left and right side of the installation plate. The center hole is determined by measuring the distance as shown in the diagram above.
2. Drill the piping plate hole with $\phi 65\text{mm}/2.6\text{in}$ hole-core drill.
3. Drill the piping hole at either the right or left, and the hole should be slightly slanted down towards the outdoor side.
4. Always take steps to protect the pipe when drilling metal grid, metal plate, or other metal surfaces.



3) CONNECT THE CABLE TO AIR HANDLER

Electrical Connections

Follow all electrical safety regulations during the installation process.

1. If the power supply is damaged, do not install the unit. Immediately contact your site of purchase or MRCOOL LLC.
2. Power voltage should be in the range of 90% to 110% of rated voltage.
3. The surge protector and main power switch with 1.5 times capacity of maximum current should be installed in the power circuit. Ensure the unit is properly grounded.
4. Install the MRCOOL Advantage in accordance with all applicable electrical regulations.
5. Do not install the MRCOOL Advantage in a high moisture area like a bathroom or laundry room.
6. An all-pole disconnection device must have 3mm clearance in all-poles and a leakage current that may exceed 10mA. The residual current device (RCD) must have a rated residual operating current not exceeding 30mA, and disconnection must be incorporated into the fixed wiring.
7. If the unit is fitted with an auxiliary heat kit, ensure it remains at least 1 meter from any combustible materials.
8. Refer to the Electrical Connection Diagram located on the inside panel when it is necessary to complete the wiring.
9. All wiring must follow local and national electrical codes and be installed by a certified electrician.
10. An individual branch circuit and single receptacle must be available only for this unit. Refer to the following table for suggested wire size and fuse specifications.

Suggested Minimum Wire Size

(AWG: American Wire Gage):

Application Amps	AWG Wire Size
10	18
13	16
18	14
25	12
30	10

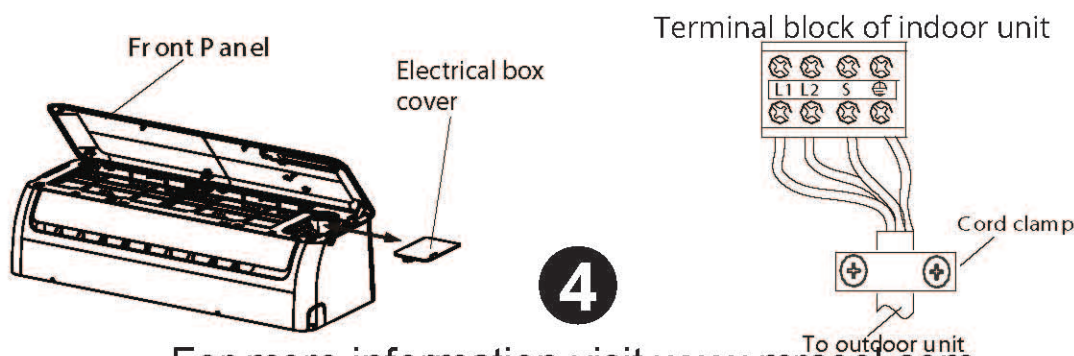
Note:

- The wire size of the power supply cord and interconnected wire and the current of the fuse or switch are determined by the maximum current indicated on the nameplate which is located on the side panel of the unit. Please refer to the nameplate before selecting the wire size, fuse or switch.
- The controller of the air conditioner is designed with a fuse protection function under abnormal conditions, the specifications of the fuse are printed on the circuit board, such as: 3.15A/250VAC, T5A/250VAC, etc.

Connect the cables to the indoor unit

Note: Before performing any electrical work, turn off the main power to the system.

1. The inside and outside connecting cable can be connected without removing the front grill.
2. Lift the indoor unit panel, remove the cover to the electrical box by loosening the screw(s).
3. Ensure the color of the outdoor units wires and the terminal numbers are the same as the indoor units respectively.
4. Wrap the cables not connected to terminals with insulation tape, so they will not touch any electrical componets. Secure the cable onto the control board with the cord clamp.



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4) REFRIGERANT & DRAIN INSTALL

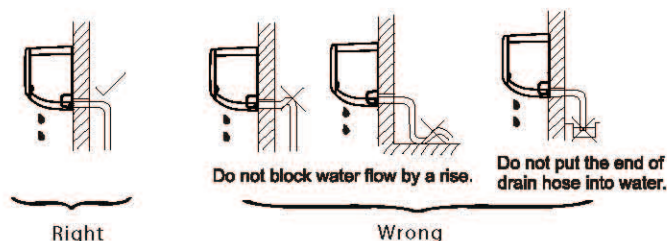
Basic installation equipment accounts for a single right or left side drain hose connection. Ensure the opposite side drain is plugged properly before beginning operation. For 9k or 12k models, please use the left side drain hose connection point.

If the customer wishes to drain both sides simultaneously, a secondary drain hose will be required.

Do not place any foreign object inside the condensate drain pan.

Drain Hose

1. Ensure the drain hose slopes downward.
2. When connecting extension drain hose, insulate the connection section with a shield pipe, and do allow slack to remain.

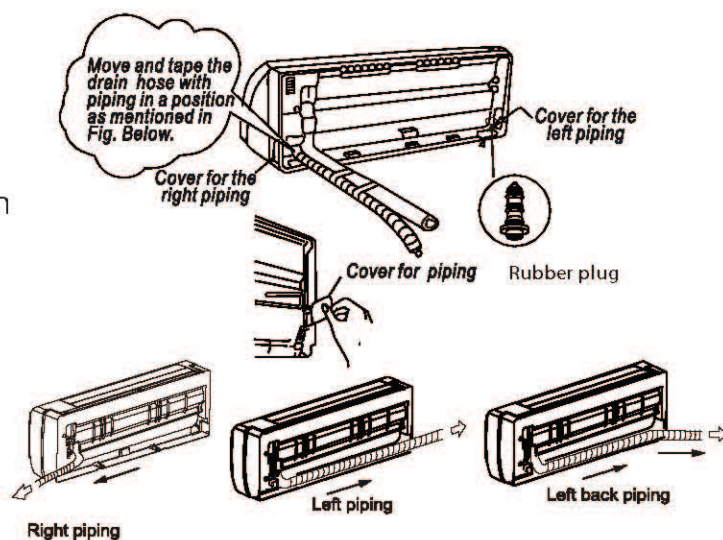


Refrigerant Line

1. For left-hand and right-hand tubing, remove the pipe cover from the side panel.
2. For right-hand and back-hand tubing, install the refrigerant line as shown in the side diagram.
3. Bundle the refrigerant lines, drain hose, and connection cable securely with tape as shown in the side diagram.

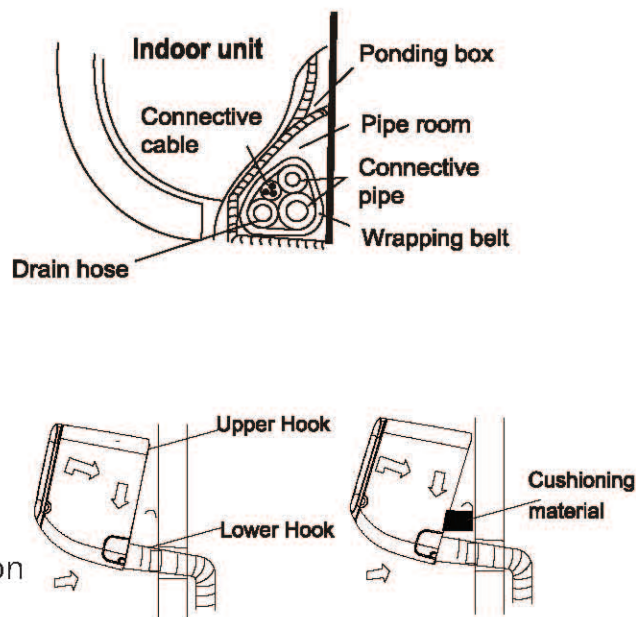
CAUTION

- Connect the interior air handler before running the bundled connection to the exterior condenser.
- Do not allow the piping to let out from the back of the interior air handler.
- Do not allow slack in the drain hose.
- Apply insulation material to the interior extension drain hose.
- The drain hose should be located at the lowest side of the bundle to ensure the drain pan does not overflow.
- Do not intercross or intertwist the power wire with any other of the connection lines.



Interior Air Handler Connection

1. Feed the bundle through the hole in the wall.
2. Hook the air handler onto the upper portion of the installation plate. Make sure the hooks are properly seated on the installation plate by shifting the unit left and right.
3. The bundle connections can be made more easily by placing a cushioning material between the air handler and the wall. Remove the material after the connections are completed.
4. Press the lower left and right of the unit against the installation plate until the hooks engage with their appropriate slots.

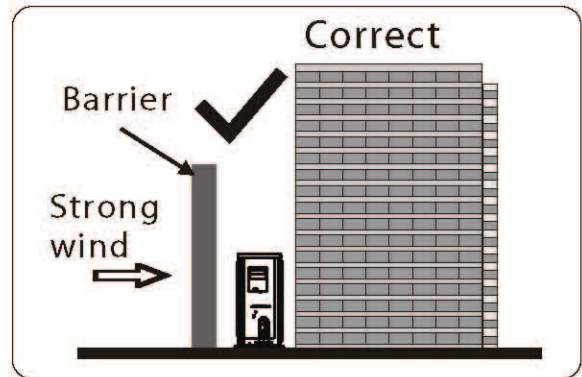
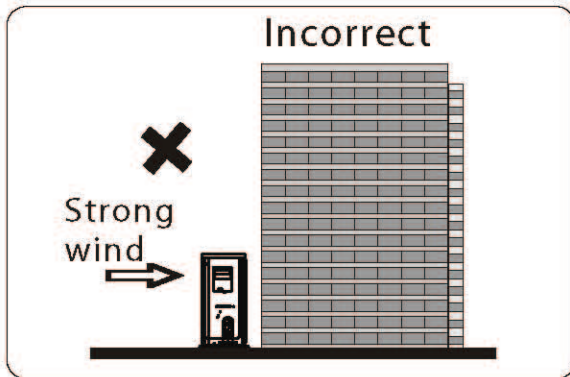


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1) CONDENSER INSTALL PREPARATION

- Install the condenser on a rigid pad to reduce operating vibration and noise.
- Ensure air discharge outlet will not be blocked.
- In certain environments, such as along the coast or in other high wind areas, a dust or shield plate may be required to ensure effective operation.
- All connections between bracket and wall must be firm, stable, and reliable.
- Make certain there are no obstacles around the condenser which could block airflow.



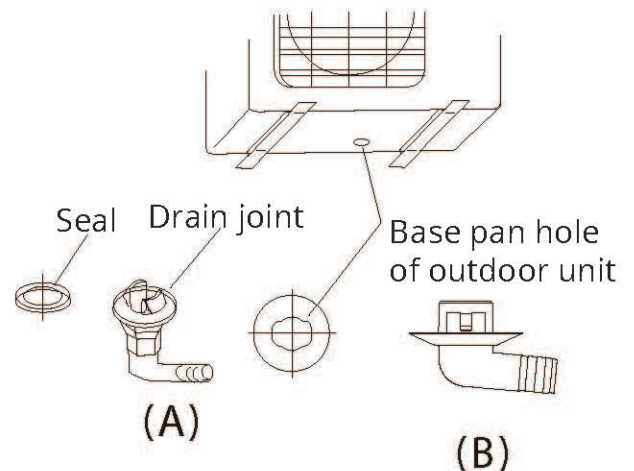
2) DRAIN JOINT INSTALL

NOTE: The drain joint may vary between different units.

For the drain joint with the seal (Fig. A), first fit the seal onto the drain joint, then insert the drain joint into the base pan hole of the outdoor unit, rotate 90° to securely assemble them.

To install drain joint as shown in Fig. B, insert the drain joint into the base pan hole of the outdoor unit until it remains fixed, signified with a clicking sound.

Connect the drain joint with an extension drain hose (locally purchased), for condensation draining off the outdoor unit during heat mode.

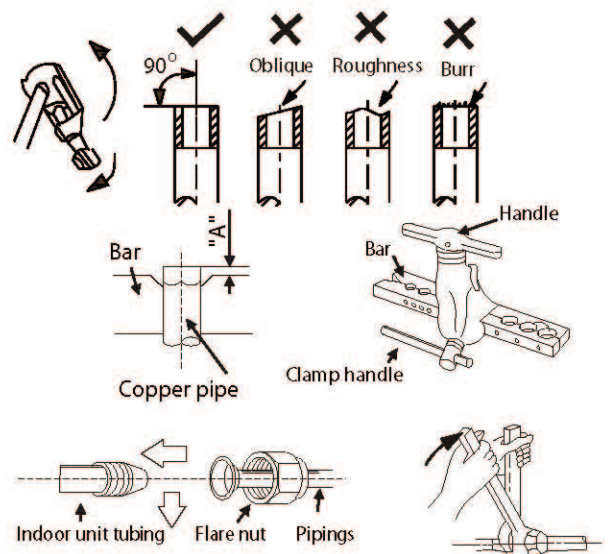


3) REFRIGERANT LINE CONNECTION

Flaring

1. Cut pipe with a pipe cutter.
2. Place flare nuts on pipe/tube, having completed burr removal, and flare the pipe.
3. Firmly hold copper pipe in a die of the dimensions shown in the table below.

Outer diam. (Mm/in)	A(mm/in)	
	Max.	Min.
φ 6.35/1/4	1.3/0.05	0.7/0.03
φ 9.52/3/8	1.6/0.06	1.0/0.04
φ 12.7/1/2	1.8/0.07	1.0/0.04
φ 16/5/8	2.2/0.09	2.0/0.08



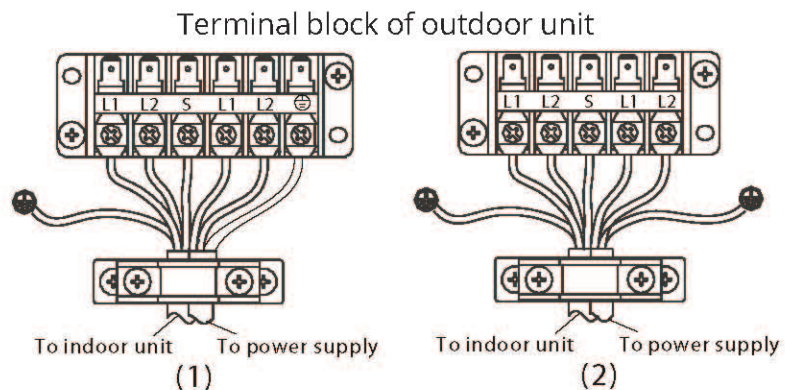
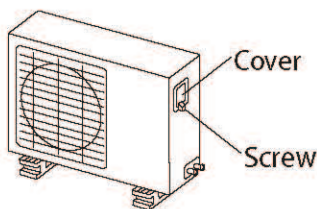
Tightening the connection

- Align pipes to be connected.
- Sufficiently tighten the flare nut with fingers, and then tighten it with a spanner and torque wrench as shown.
- Excessive torque can possibly break flare nuts depending on installation conditions.

Outer diam. (Mm/in)	Tightening torque (N.cm/lbf.in)	Additional tightening torque(N.cm/lbf.in)
φ 6.35/1/4	1500/132.8	1600/141.59
φ 9.52/3/8	2500/221.34	2600/230.02
φ 12.7/1/2	3500/309.73	3600/318.56
φ 16/5/8	4500/398.23	4700/415.93

4) EXTERIOR ELECTRICAL CONNECTIONS

1. Remove the electrical control board cover from the outdoor unit by loosening the screw(s).
2. Connect the connective cables to the terminals as identified with their respective matched numbers on the terminal block of the indoor and outdoor units.
3. Secure the cable onto the control board with the cord clamp.
4. To prevent entry of water, form a loop with the connective cable as illustrated in the installation diagram of the indoor and outdoor units.
5. Insulate unused cords (conductors) with PVC-tape. Arrange them so they do not touch any electrical or metal parts.



5) AIR PURGING & TEST OPERATION

Note: Connective pipe length will affect the capacity and energy efficiency of the unit. The nominal efficiency is tested based on a pipe length of 25ft(7.5m).

A. Air purging

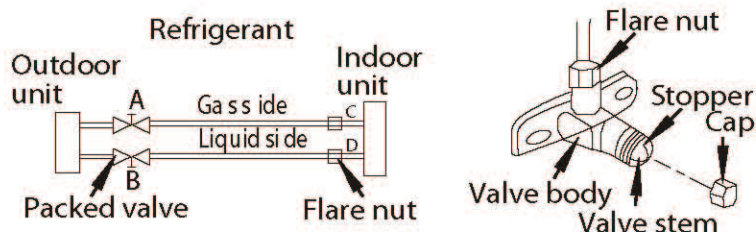
- The indoor unit and tubing between the indoor and outdoor units must be leak tested and evacuated to remove any non-condensables and moisture from the system.
- Check that each tube(both liquid and gas side tubes) between the indoor and outdoor units have been properly connected and check that all wiring for the test run has been completed.
- Pipe length and refrigerant amount:

Connective pipe length	Air purging method	Additional amount of refrigerant to be charged	
Less than 7.5m/25ft	Use vacuum pump		
More than 7.5m /25ft	Use vacuum pump	Liquid side: ϕ 6.35mm/1/4in	Liquid side: ϕ 9.52mm/3/8in:
		R410A: (Pipe length-7.5 (25))x20g/m(0.2oz/ft)	R410A: (Pipe length-7.5(25))x40g/m(0.4oz/ft)

- For the units using R410A refrigerant: Always make sure the refrigerant added to the unit is in liquid form.
- When relocating the unit, use a vacuum pump to perform evacuation.

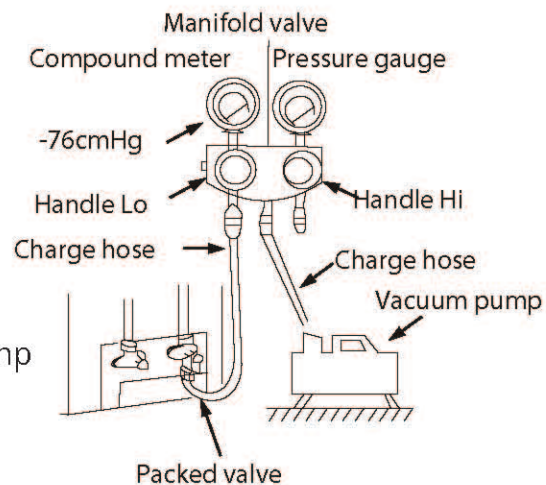
CAUTION

- Open the valve stem until it hits against the stopper. Do not try to open it further.
- Securely tighten the valve stem cap with a spanner wrench.
- For appropriate valve stem tightening torque please see the Tightening torque table.



B. When using the Vacuum Pump

1. Completely tighten the flare nuts, A, B, C, & D, connect the manifold valve charge hose to the charge port of the packed valve on the gas pipe side.
2. Connect the charge hose connection to the vacuum pump.
3. Fully open the handle Lo of the manifold valve.
4. 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)
5. After the evacuation is complete, fully close the handle Lo of the manifold valve and stop the operation of the vacuum pump.



- Perform evacuation for 15 minutes and check that the compound meter indicates -76cmHg(-1.0x10 Pa).
6. Turn the stem of the packed valve B about 45° counter-clockwise for 6~7 seconds after gas is released, then tighten the flare nut again. Make sure the pressure indicator is a little higher than atmospheric pressure.
 7. Remove the charge hose from the Low pressure charge hose.
 8. Fully open the packed valve stems B and A.
 9. Securely tighten the cap of the packed valve.

5) AIR PURGING & TEST OPERATION

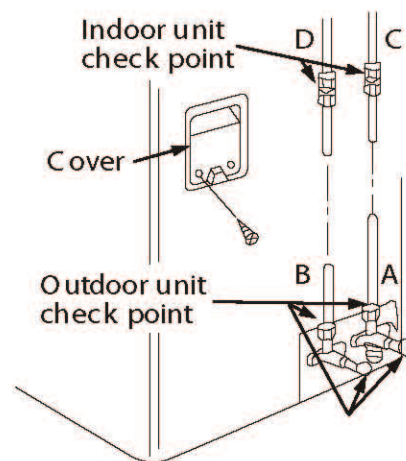
C. Safety and leak check

1. Soapy water method:

Apply soapy water or a liquid neutral detergent on the indoor and outdoor units connections with a soft brush. Bubbles forming is an indication of a leak.

2. Leak detector:

Use the leak detector to check for leakage.



ATTENTION

A: Lo packed valve. B: High packed valve.

C & D: Ends of indoor unit connection.

D. Test running

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.

1. Connect the power, press the ON/OFF button on the remote control to turn the unit on.

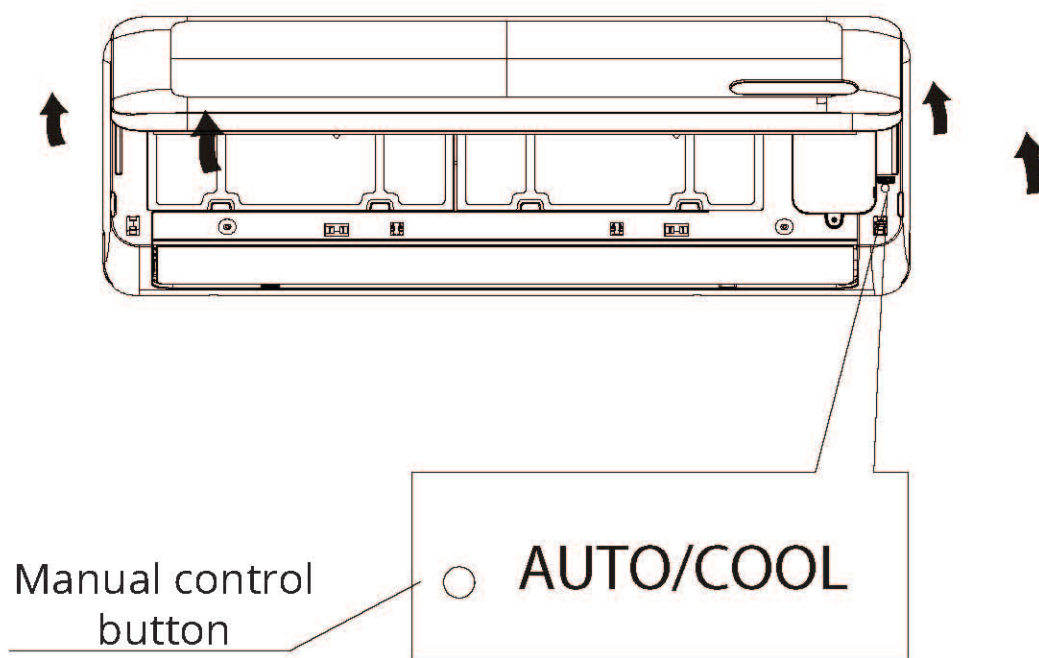
2. Use the MODE button to select COOL, HEAT, AUTO, and FAN to check if all the functions work correctly.

3. When the ambient temperature is lower than about 17°C/62°F the unit can not run in cooling mode by using the remote. You can operate the unit manually, manual operation is used only when the remote control is disabled or maintenance is necessary.

- Hold the panel sides and lift the panel until it remains fixed in place, indicated by a clicking sound.

- Press the manual control button to select the AUTO or COOL mode functions, the unit will operate under Forced AUTO or COOL mode(see User Manual for details).

4. The test operation should last about 30 minutes.



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For more information visit www.mrcool.com.



Advantage Series

The design and specifications are subject to change without prior notice. Consult with the sales agency or manufacturer for details.

For more information visit www.mrcool.com.