

The Advantage Series is **NOT** designed for amateur installation. Installation **SHOULD** be performed by an authorized technician. Please read this manual carefully before installation and keep it for future reference.

Installation Manual



MRCOOL®

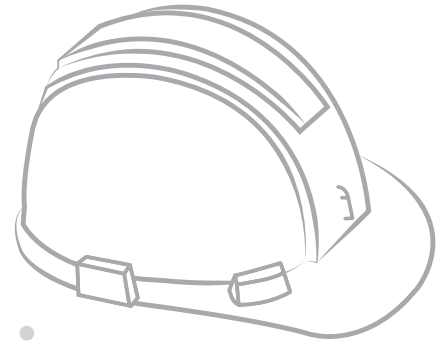
COMFORT MADE SIMPLE

Advantage Series

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice. Please visit www.mrcool.com/documentation to ensure you have the latest version of this manual.

Version Date: 01-27-22

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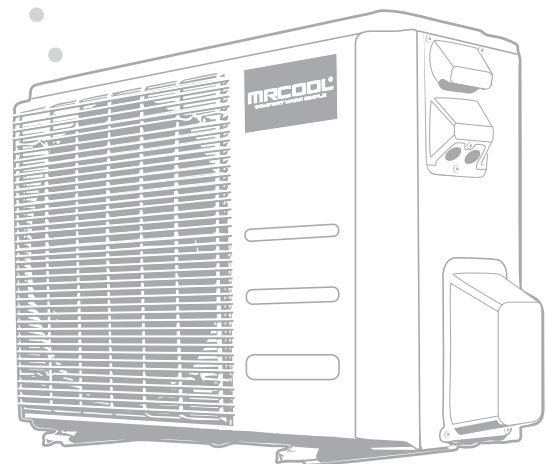


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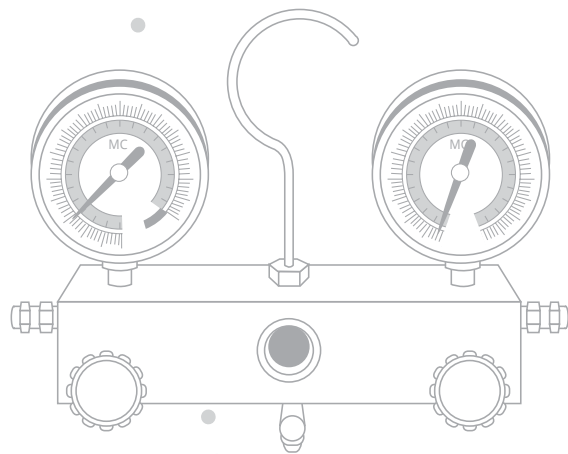
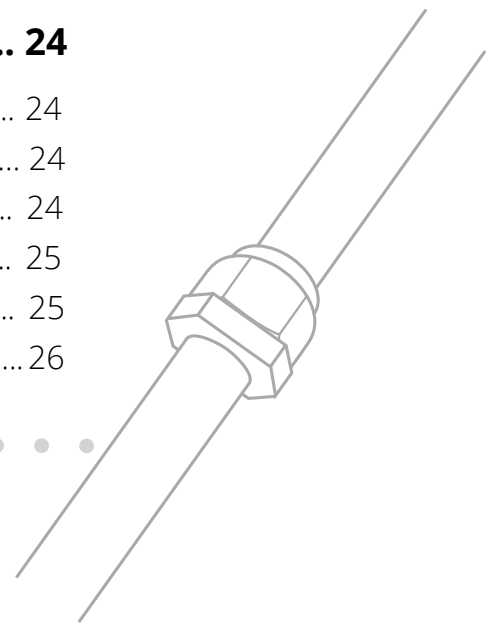
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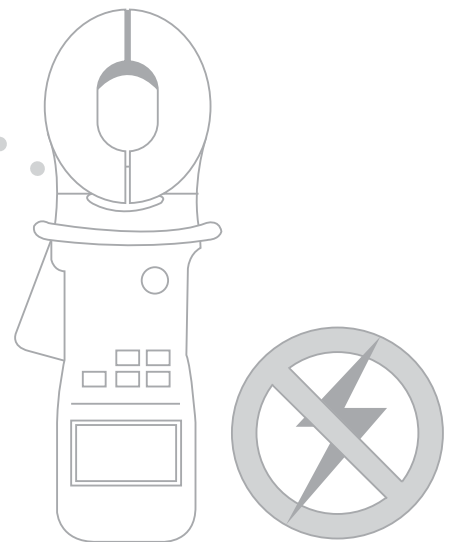
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Safety Precautions



Read Before Installation

Incorrect installation may cause serious damage or injury.

The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



WARNING

This symbol indicates ignoring instructions may cause death or serious injury.



CAUTION

This symbol indicates that ignoring instructions may cause moderate injury to your person, damage to your unit, or other property.



This symbol indicates that you should ***never*** perform the indicated action.



WARNING

- ⊘ ***DO NOT*** modify the length of the power supply cord or use an extension cord to power the unit. Only use the specified power cord. If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid a hazard.
 - ⊘ ***DO NOT*** share the electrical circuit with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
 - ⊘ ***DO NOT*** let substances or gases other than the refrigerant enter the unit when connecting refrigerant piping. The presence of other gases or substances will lower the unit's capacity, and may cause abnormally high pressure in the operation cycle. This may cause explosion and injury.
 - ⊘ ***DO NOT*** allow children to play with the air conditioner. Children should be supervised around the unit at all times.
 - ⊘ ***DO NOT*** turn on power until all work/installation has been completed.
1. Installation must be performed by an authorized technician. Improper installation may cause water leakage, electrical shock, or fire. The moving and relocation of the unit also requires consulting an authorized technician for the disconnection and re-installation steps.
 2. Installation must be performed according to installation instructions. Improper installation may cause water leakage, electrical shock, or fire.
 3. In North America, installation must be performed in accordance with the requirement of NEC and CEC (by authorized personnel only.) Contact an authorized service technician for repair or maintenance of the unit.
 4. Only use the included accessories and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, or fire and may cause the unit to fail.
 5. Install the unit in a firm location that can support the unit's weight. If the installation location cannot support the weight, or the installation is performed improperly, the unit may fall and cause serious injury and/or damage.
 6. For all electrical work, follow all appropriate wiring standards, regulations, and the Installation Manual.



WARNING

7. You must use an independent circuit to supply power. **DO NOT** connect other appliances to the same circuit. Insufficient electrical capacity or defects in electrical work can cause electrical shock or fire.
8. For all electrical work, fuse the specified cables. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections may overheat, causing fire and/or electrical shock.
9. All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to overheat, causing fire and/or electrical shock.
10. In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
11. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
12. If connecting power to fixed wiring, the following must be incorporated within it, in accordance with the wiring rules; an all-pole disconnection device (which has at least 1/8 in (3 mm) of clearances in all poles), and have a leakage current that may exceed 10 mA, the residual current device (RCD) having a rated residual operating current not exceeding 30 mA, and disconnection all must be present.



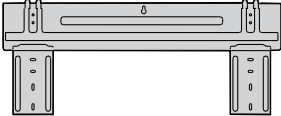


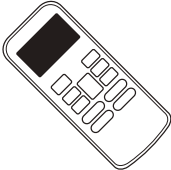

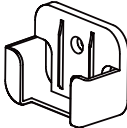



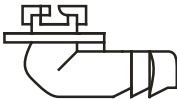

CAUTION

- ⊘ **DO NOT** install the unit within 3 feet (1 meter) of combustible materials if the unit has an auxiliary electric heater.
 - ⊘ **DO NOT** install the unit in a location that may be exposed to combustible gases. If combustible gas accumulates around the unit, it may cause fire.
 - ⊘ **DO NOT** operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water may cause electrical components to short circuit.
1. The product must be properly grounded during installation, or electrical shock may occur.
 2. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.





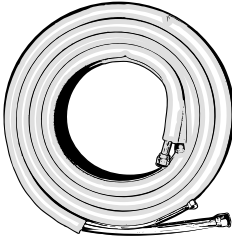
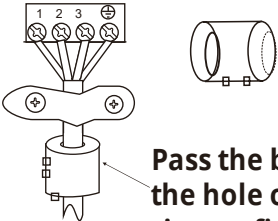
Note about Fluorinated Gases:

1. This air-conditioning unit contains fluorinated greenhouse gases.
2. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself or the Owner's Manual.
3. Installation, service, maintenance and repair of this unit must be performed by a certified technician.
4. Product removal/un-installation and recycling must be performed by a certified technician.
5. If the system has a leak-detection system installed, it should be checked for leaks at least every 12 months. Keeping a record of all leak checks for the lifetime of the unit is strongly recommended.
6. For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO₂ equivalent or more, but less than 50 tonnes of CO₂ equivalent, if the system has a leak-detection system installed, it must be checked for leaks at least every 24 months.

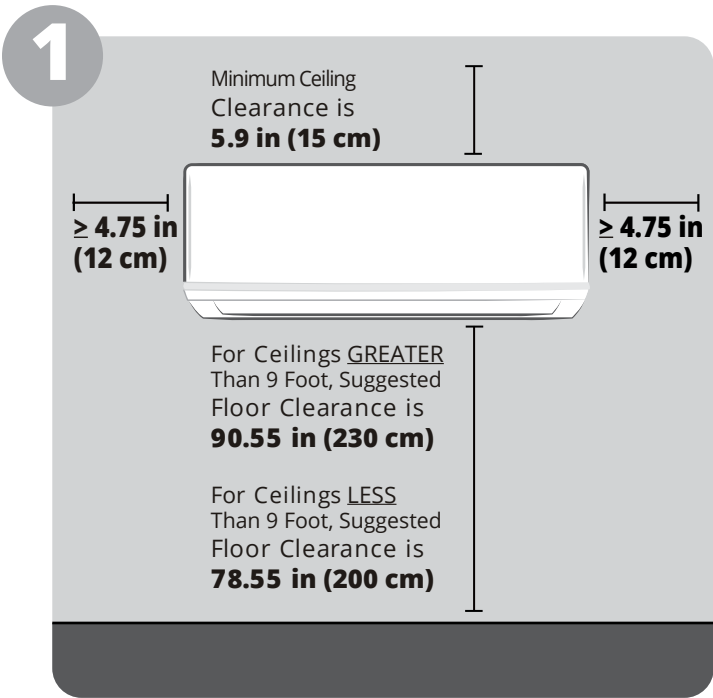
The air conditioning system includes the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock, fire, or equipment failure.

PART	LOOKS LIKE...	QUANTITY	
Mounting plate		1	
Clip anchor		5-8 (depending on model)	
Mounting plate screw ST3.9 X 25		5-8 (depending on model)	
Remote control		1	
Fixing screw for remote controller holder ST2.9 x 10		2	Optional Parts
Remote control holder		1	
Dry battery AAA.LR03		2	
Air freshening filter		1	
Seal		1	
Drain joint (for cooling & heating models)		1	
Neoprene		1 (Sealant for Wall Sleeve)	

Accessories

PART	LOOKS LIKE...	QUANTITY
<p>Owner's Manual</p>		<p>1</p>
<p>Installation Manual</p>		<p>1</p>
<p>Remote Control Manual</p>		<p>1</p>
<p>Smart Controller Kit</p>		<p>1 (w/ Manual in Controller Box)</p>
<p>Line Set Gas / Liquid Pipe Assembly</p>		<p>1</p>
<p>Magnetic Ring & Belt (if supplied, please refer to the wiring diagram to install it on the connective cable)</p>	 <p>Pass the belt through the hole of the Magnetic ring to fix it on the cable</p>	<p>Varies by model</p>

1



Minimum Ceiling Clearance is **5.9 in (15 cm)**

≥ **4.75 in (12 cm)**

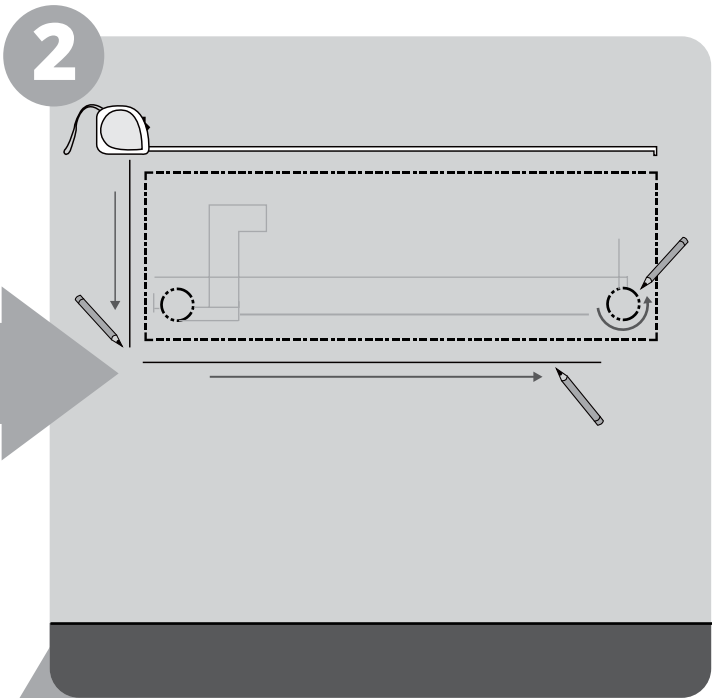
≥ **4.75 in (12 cm)**

For Ceilings **GREATER** Than 9 Foot, Suggested Floor Clearance is **90.55 in (230 cm)**

For Ceilings **LESS** Than 9 Foot, Suggested Floor Clearance is **78.55 in (200 cm)**

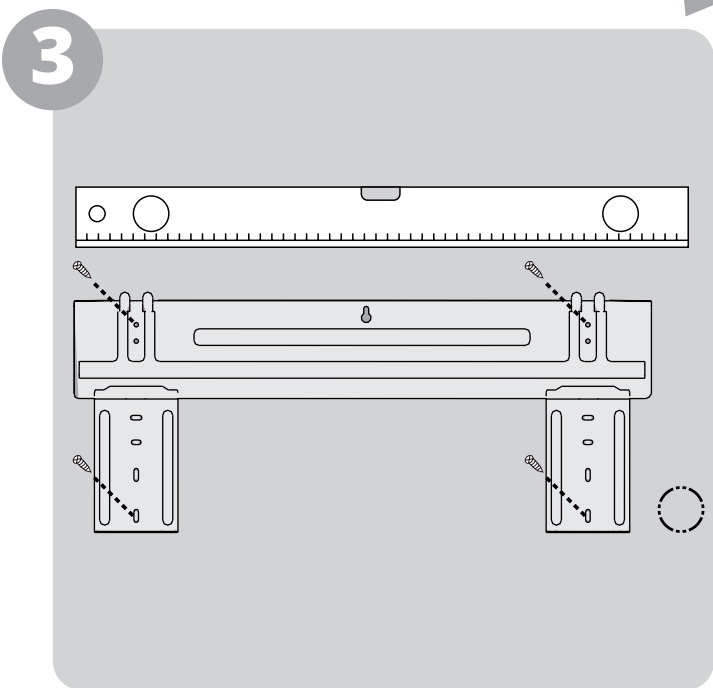
Select Installation Location (Page 10)

2



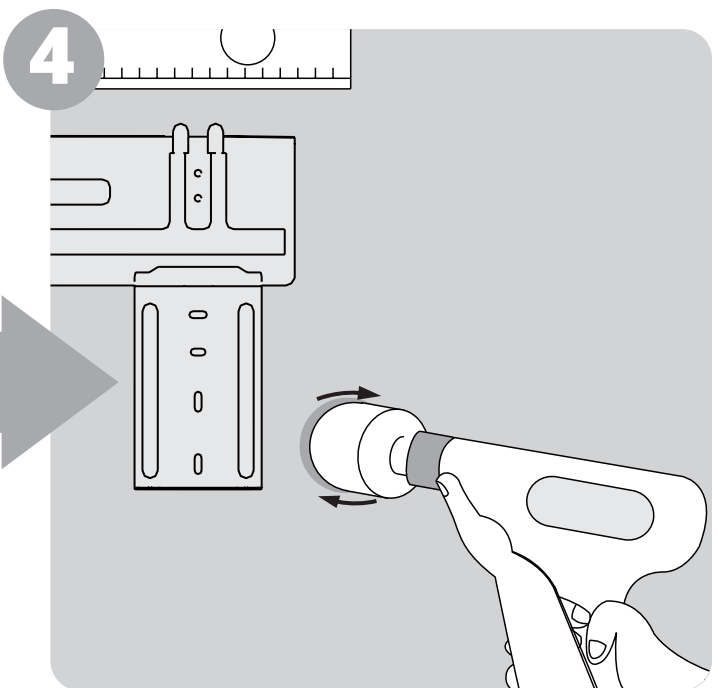
Determine Wall Hole Position (Page 11)

3



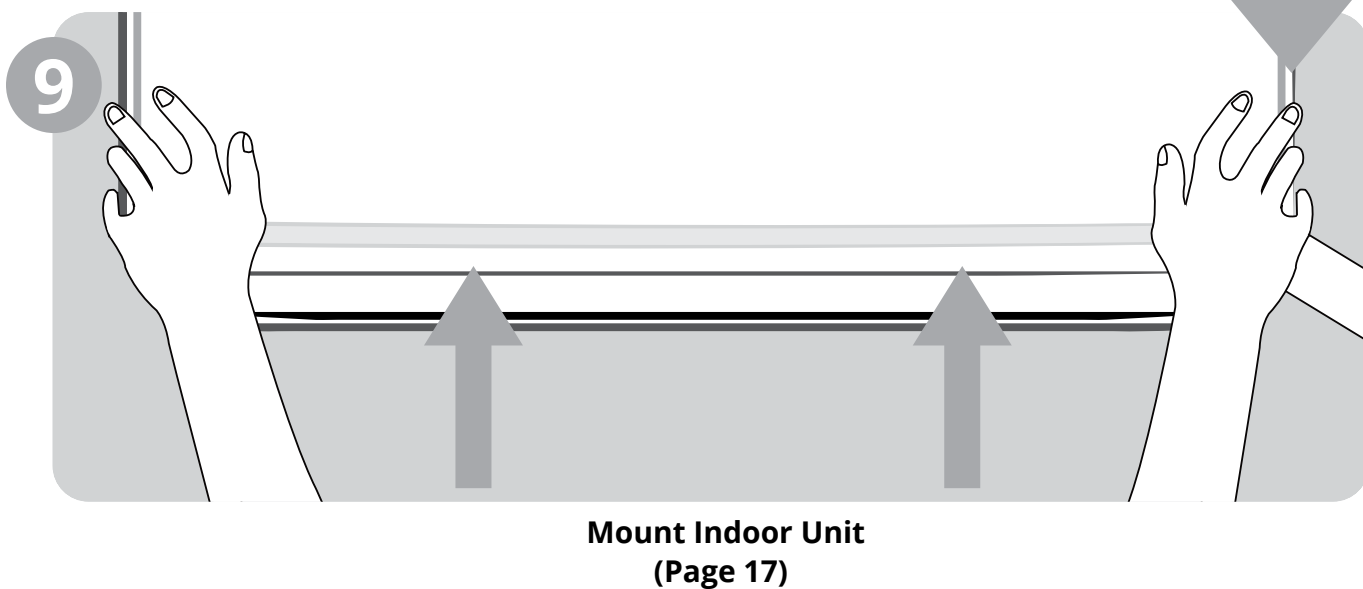
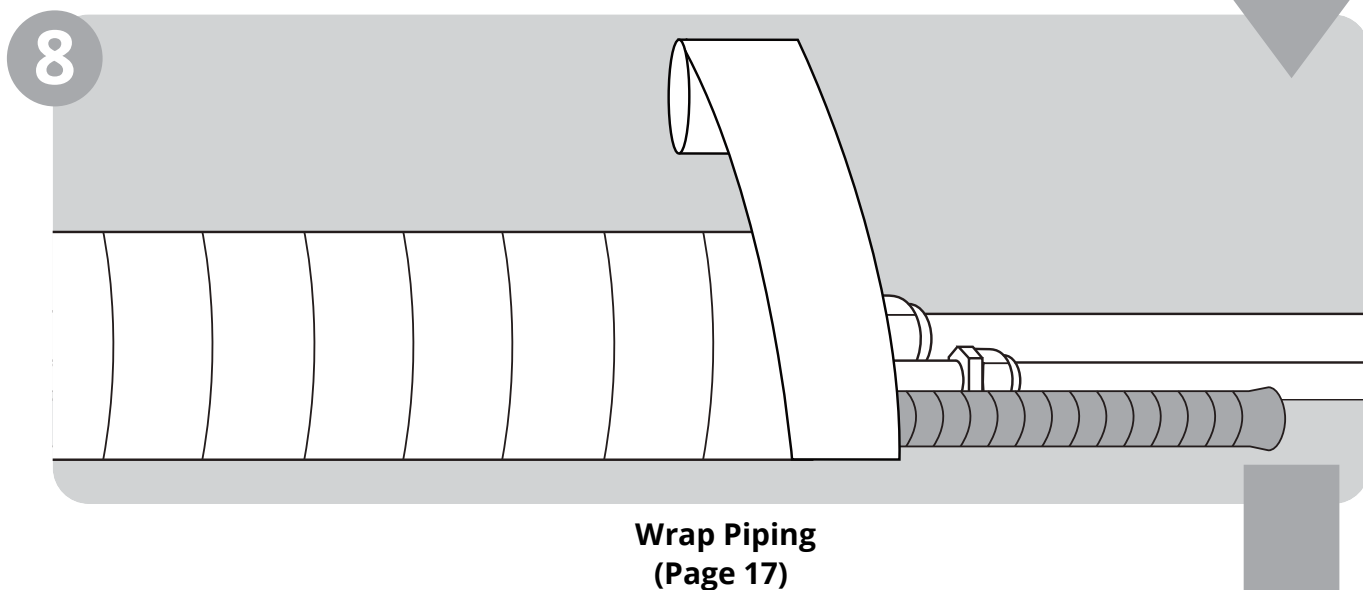
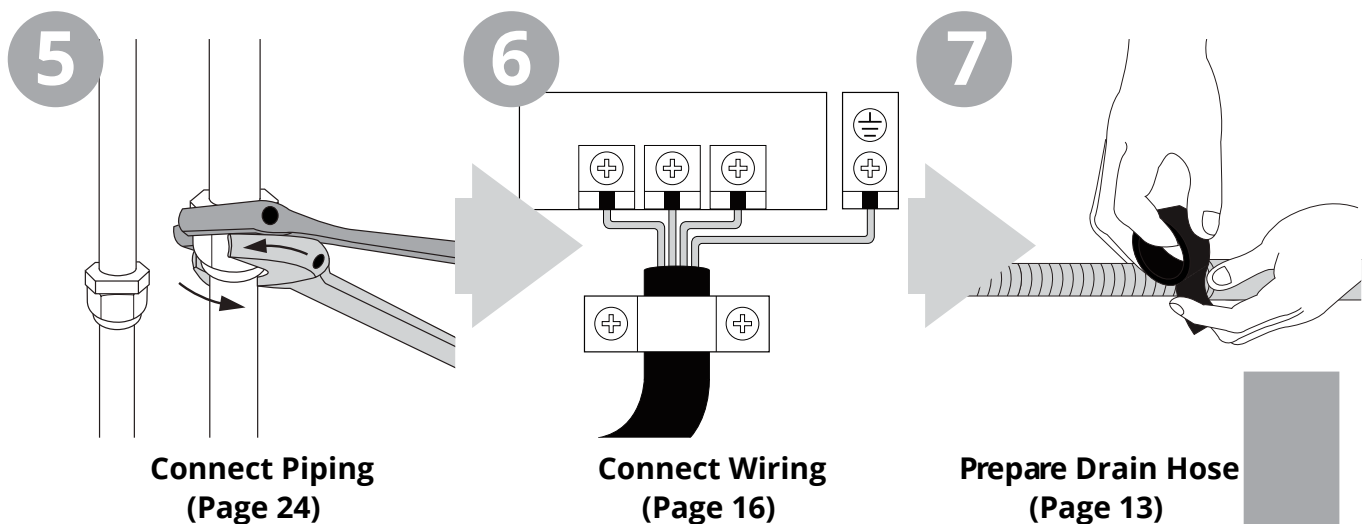
Attach Mounting Plate (Page 11)

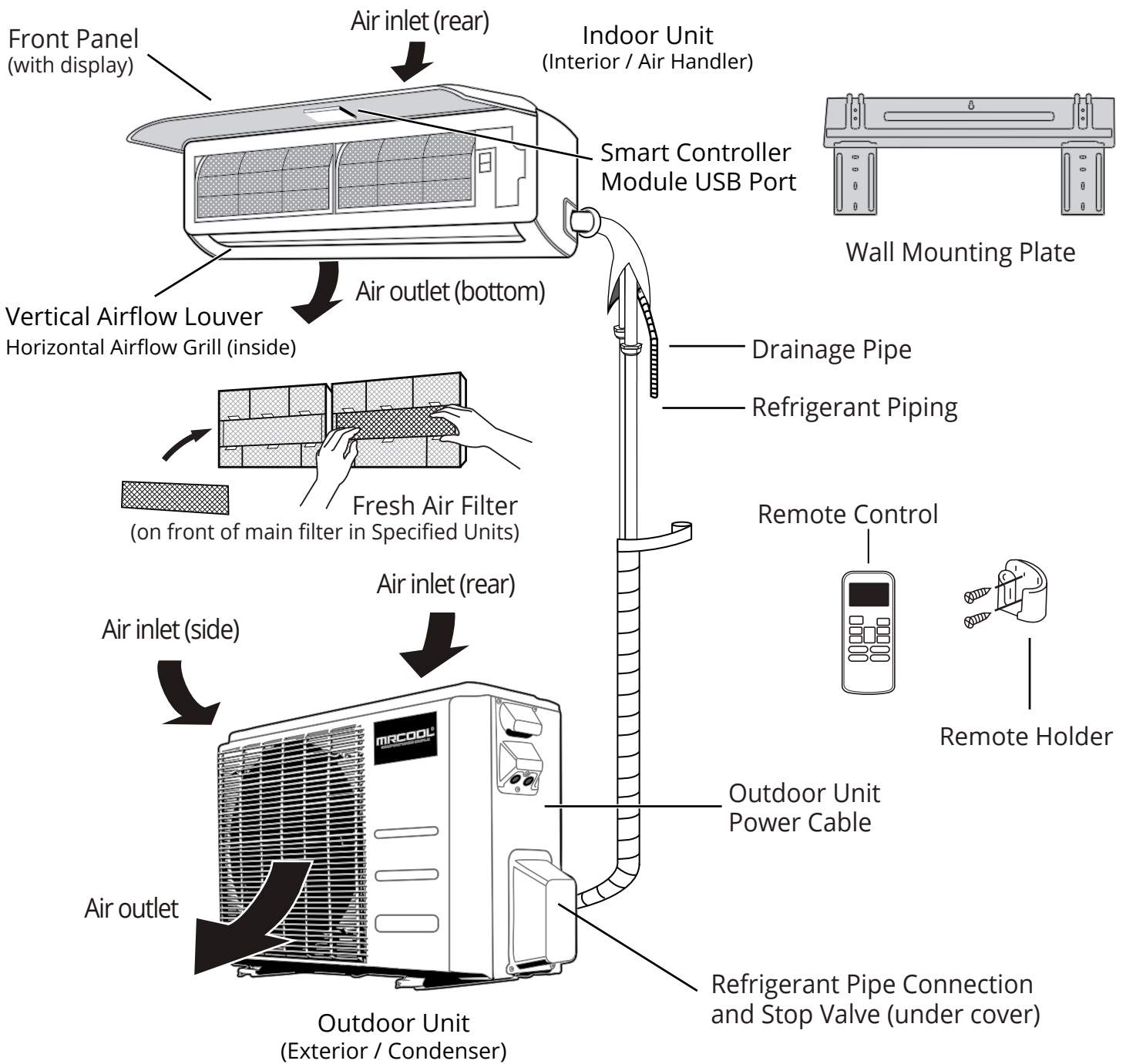
4



Drill Wall Hole (Page 11)

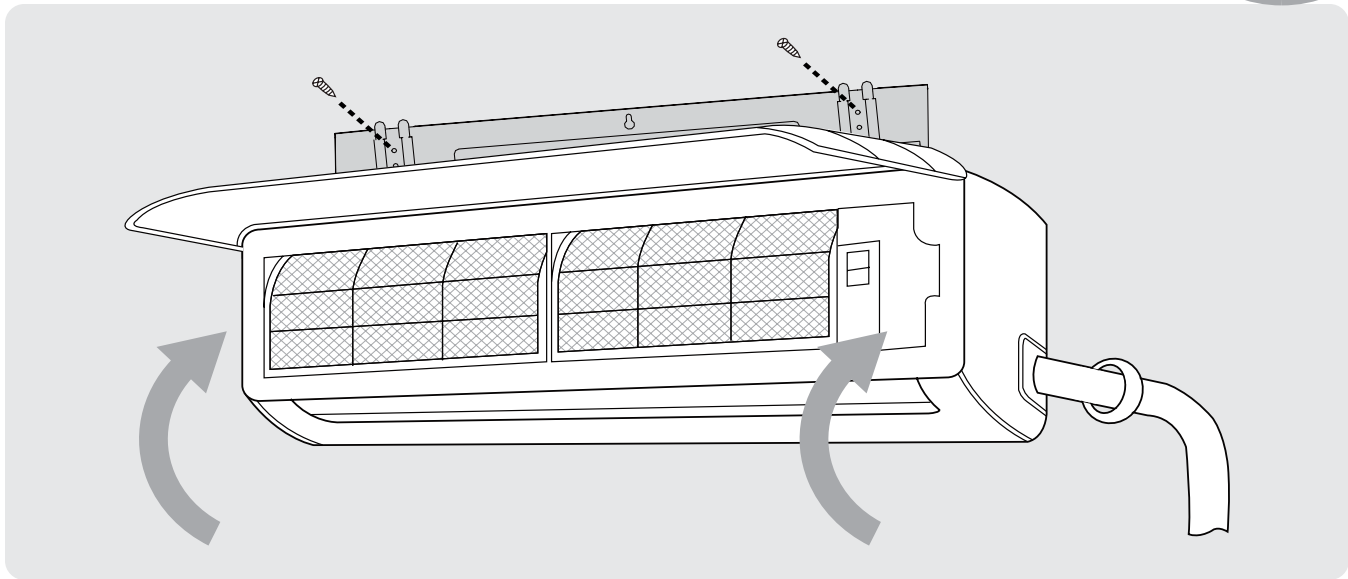
Installation Summary - Indoor Unit





NOTE ON ILLUSTRATIONS

Illustrations in this manual are for explanatory purposes. The actual shape of your unit may vary.



Installation Instructions – Indoor Unit

PRIOR TO INSTALLATION:

Before installing the indoor unit, refer to the label on the product box to make sure that the model number of the indoor unit matches the model number of the outdoor unit.

Step 1: Select installation location

Before installing the indoor unit, you must choose an appropriate location. The following are standards will help you choose an appropriate location.

Proper installation locations meet the following standards:

- Good air circulation
- Convenient drainage
- Noise from the unit will not disturb other people
- Firm and solid—the location will not vibrate
- Strong enough to support the weight of the unit
- A location at least one meter from all other electrical devices (e.g., TV, radio, computer)

DO NOT install unit in the following locations:

- Near any source of heat, steam, or combustible gas
- Near flammable items such as curtains or clothing
- Near any obstacle that might block air circulation
- Near a doorway
- In a location subject to direct sunlight

NOTE ABOUT WALL HOLE:

If there is no fixed refrigerant piping: While choosing a location, be aware that you should leave ample room for a wall hole (see **Drill wall hole for connective piping step**) for the signal cable and refrigerant piping that connect the indoor and outdoor units. The default position for all piping is the right side of the indoor unit (while facing the unit). However, the unit can accommodate piping to left or right.

Indoor Unit Installation

Refer to the following diagram to ensure proper distance from walls and ceiling:

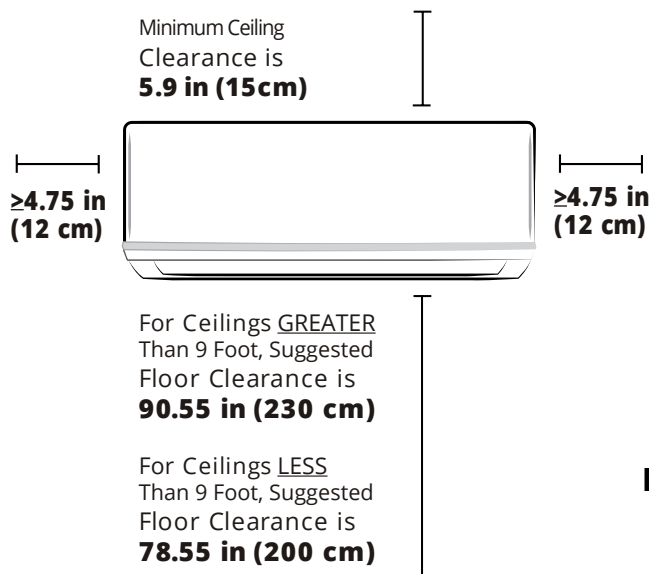
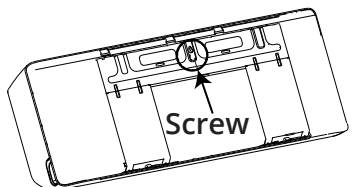


Fig. 4.1

Step 2: Attach mounting plate to wall

The mounting plate is the device on which you will mount the indoor unit

1. Remove the screw that attaches the mounting plate to the back of the indoor unit.



2. Place the mounting plate against the wall in a location that meets the standards in the **Select Installation Location** step. (See **Mounting Plate Dimensions** for detailed information on mounting plate sizes.)
3. Drill holes for mounting screws in places that:
 - have studs and can support the weight of the unit
 - correspond to screw holes in the mounting plate
4. Secure the mounting plate to the wall with the screws provided.
5. Make sure that mounting plate is flat against the wall.

NOTE FOR CONCRETE OR BRICK WALLS:

If the wall is made of brick, concrete, or similar material, drill 0.2 in diameter (5 mm diameter) holes in the wall and insert the sleeve anchors provided. Secure the mounting plate to the wall by tightening the screws directly into the clip anchors.

Step 3: Drill wall hole for connective piping

You must drill a hole in the wall for refrigerant piping, the drainage pipe, and the signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the position of the mounting plate. Refer to **Mounting Plate Dimensions** on the next page to help you determine the optimal position. Refer to **Fig. 4.3** wall hole diameter and install at a slight angle to facilitate drainage.
2. Using a core drill [3.5 in (76.2 mm) for 24K & 36K units, 2.5 in (65 mm) for all others], drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 0.2 to 0.275 in (5 mm-7 mm). This will ensure proper water drainage. (See **Fig. 4.2**)

NOTE: When the gas side connective pipe is 5/8 in (16 mm) or more, the wall hole should be 3.54 in (90 mm).

3. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

! CAUTION

When drilling the wall hole, be sure to avoid wires, plumbing, and other sensitive components.

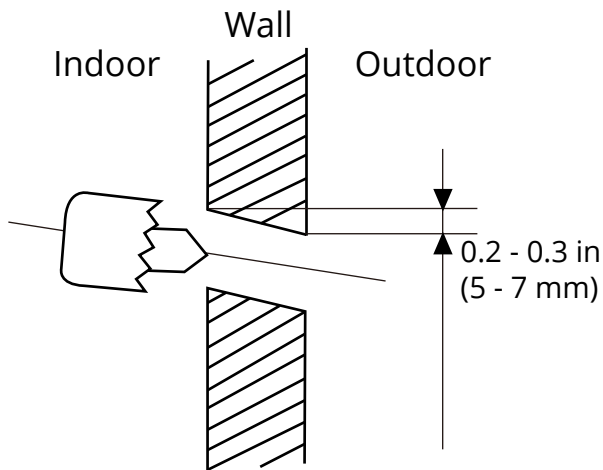
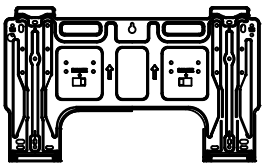


Fig. 4.2

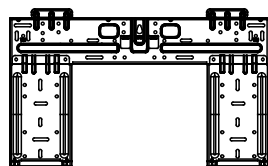
MOUNTING PLATE DIMENSIONS

Different models have different mounting plates. For the different customization requirements, the shape of the mounting plate may be slightly different. However, the installation dimensions are the same for the same size of indoor unit. See the illustrations for Type A and Type B below for an example. In order to ensure that you have ample room to mount the indoor unit, the diagrams to the right show different types of mounting plates along with the following dimensions:

- Height & Width of mounting plate
- Height & Width of indoor unit relative to plate
- Recommended position of wall hole (both to the left and right of mounting plate)
- Relative distances between screw holes

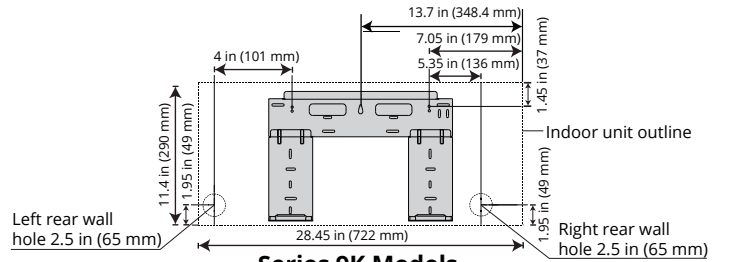
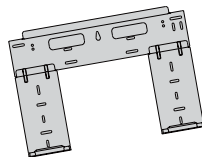
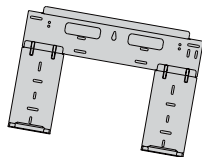
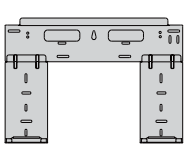


Type A

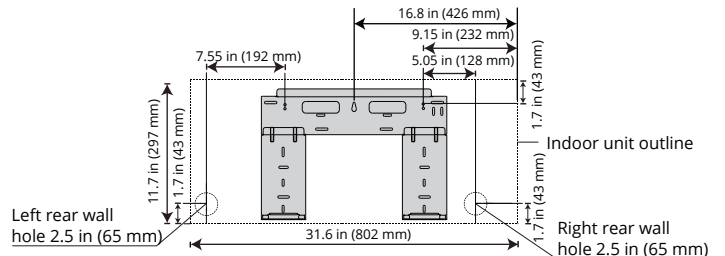


Type B

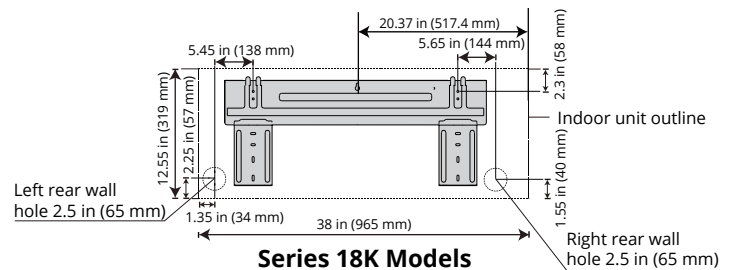
Correct orientation of Mounting Plate



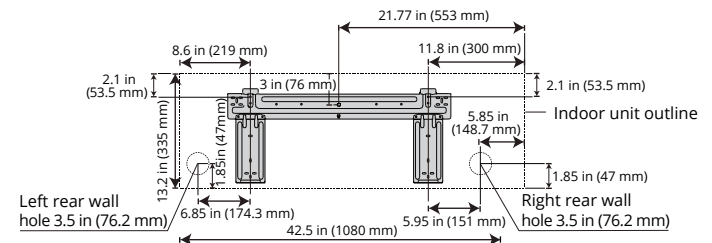
Series 9K Models



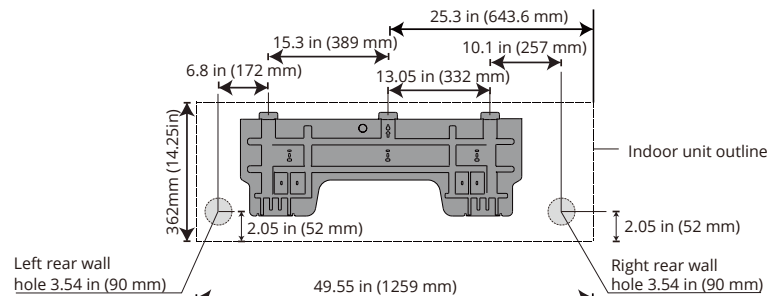
Series 12K Models



Series 18K Models



Series 24K Models



Series 36K Models

Fig. 4.3

Step 4: Prepare refrigerant piping

The refrigerant piping is inside an insulating sleeve attached to the back of the unit. You must prepare the piping before passing it through the hole in the wall. Refer to the **Refrigerant Piping Connection** section of this manual for detailed instructions on pipe flaring and flare torque requirements, technique, etc.

1. Based on the position of the wall hole relative to the mounting plate, choose the side from which the piping will exit the unit.
2. If the wall hole is behind the unit, keep the knock-out panel in place. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit. (See **Fig. 4.4**). This will create a slot through which your piping can exit the unit. Use needle nose pliers if the plastic panel is too difficult to remove by hand.

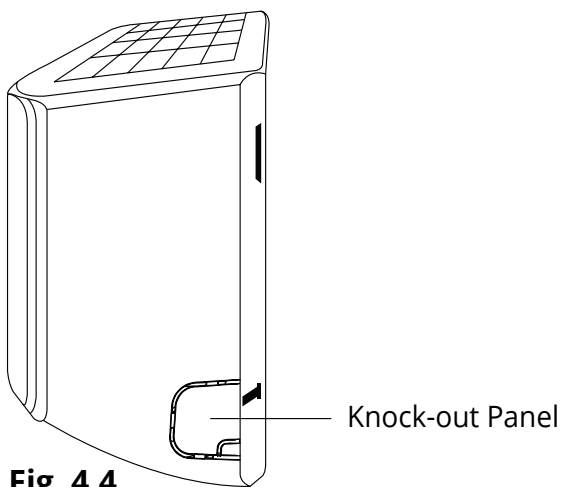
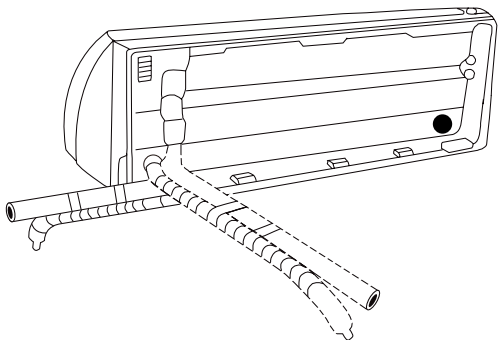


Fig. 4.4



3. Use scissors to cut down the length of the insulating sleeve to reveal about 6 in (15 cm) of the refrigerant piping. This serves two purposes:
 - To facilitate the **Refrigerant Piping Connection** process
 - To facilitate Gas Leak Checks and enable you to check for dents
4. If existing connective piping is already embedded in the wall, proceed directly to the **Connect Drain Hose** step. **If there is no embedded piping**, connect the indoor unit's refrigerant piping to the connective piping that will join the indoor and outdoor units. Refer to the **Refrigerant Piping Connection** section of this manual for detailed instructions.
5. Based on the position of the wall hole relative to the mounting plate, determine the necessary angle of your piping.
6. Grip the refrigerant piping at the base of the bend.
7. Slowly, with even pressure, bend the piping towards the hole. **DO NOT** dent or damage the piping during the process.

NOTE ON PIPING ANGLE

Refrigerant piping can exit the indoor unit from four different angles:

- Left-hand side
- Left rear
- Right-hand side
- Right rear

Refer to Fig. 4.5 for details.

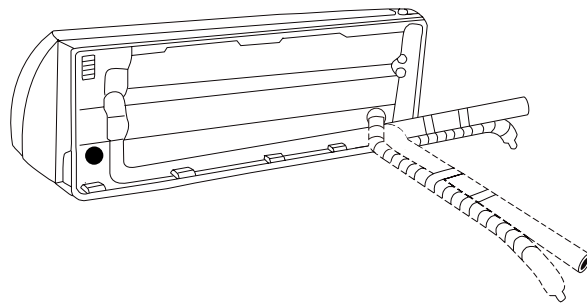


Fig. 4.5

! CAUTION

Be extremely careful not to dent or damage the piping while bending them away from the unit. Any dents in the piping will affect the unit's performance.

Step 5: Connect drain hose

By default, the drain hose is attached to the left-hand side of unit (when you're facing the back of the unit). However, it can also be attached to the right-hand side.

1. To ensure proper drainage, the drain hose must exit the unit on the same side as the refrigerant piping.
2. Wrap the connection point firmly with Teflon tape to ensure a good seal and to prevent leaks.
3. For the portion of the drain hose that will remain indoors, wrap it with foam pipe insulation to prevent condensation.
4. Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.

NOTE ON DRAIN HOSE PLACEMENT

! CAUTION

Make sure to arrange the drain hose according to Fig. 4.6a.

- ⊘ **DO NOT** kink the drain hose.
- ⊘ **DO NOT** create a water trap.
- ⊘ **DO NOT** put the end of drain hose in water or a container that will collect water.

ENSURE UNUSED DRAIN HOLE IS PLUGGED

To prevent unwanted leaks be sure that the factory installed rubber plug is in the unused drain hole.

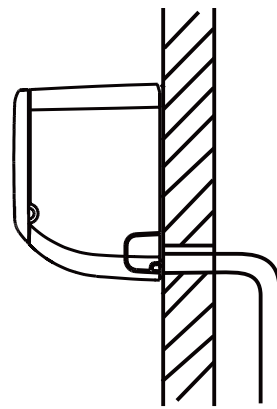
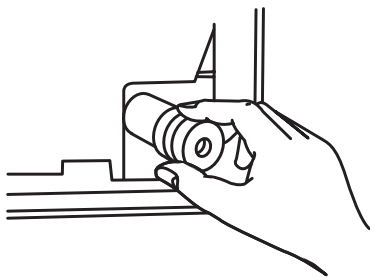
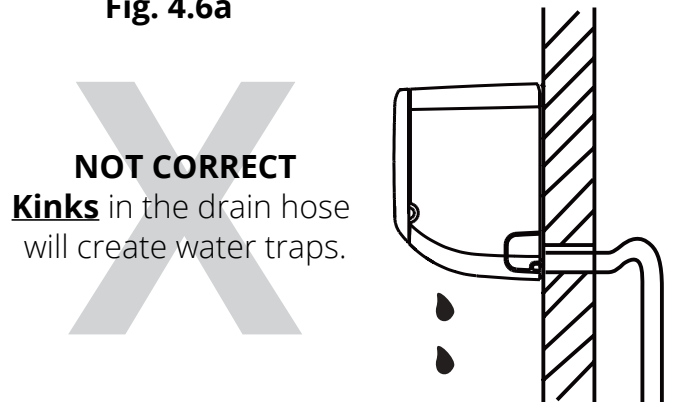


Fig. 4.6a

Make sure there are **NO** kinks or dents in the hose to ensure proper drainage.



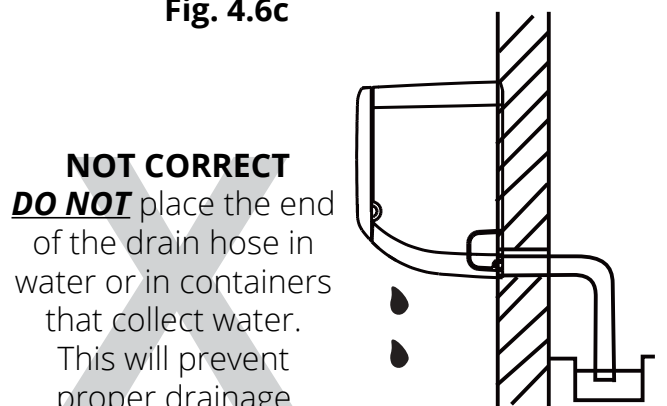
NOT CORRECT
Kinks in the drain hose will create water traps.

Fig. 4.6b



Fig. 4.6c

NOT CORRECT
Dents in the drain hose will create water traps.



NOT CORRECT
DO NOT place the end of the drain hose in water or in containers that collect water. This will prevent proper drainage.

Fig. 4.6d

! BEFORE PERFORMING ELECTRICAL WORK, READ THESE REGULATIONS

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.
 2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
 3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
 4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause a malfunction, electrical shock, or fire.
 5. Circuit, including any switches, should have a capacity 1.5 times the maximum unit current (amps).
 6. If connecting power to fixed wiring, the qualified technician must use an approved circuit breaker or switch that disconnects all poles and has a contact separation of at least 1/8 in (3 mm). It must be incorporated into the fixed wiring.
 7. Make sure to properly ground the air conditioner.
 8. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in malfunction and possible fire.
 9. If the unit has an auxiliary electric heater, it must be installed at least 40 in (1 meter) away from any combustible materials.
 10. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. Always wait 10 minutes or more before touching the electrical components once the power has been turned off.
 11. If connecting power to fixed wiring, a surge protector and main power switch should be installed.
- ⊗ **DO NOT** connect another appliance to the same circuit. Only connect the unit to an individual branch circuit outlet.
- ⊗ **DO NOT** let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

! WARNING

BEFORE PERFORMING ANY ELECTRICAL WORK, TURN OFF ALL POWER TO THE SYSTEM.

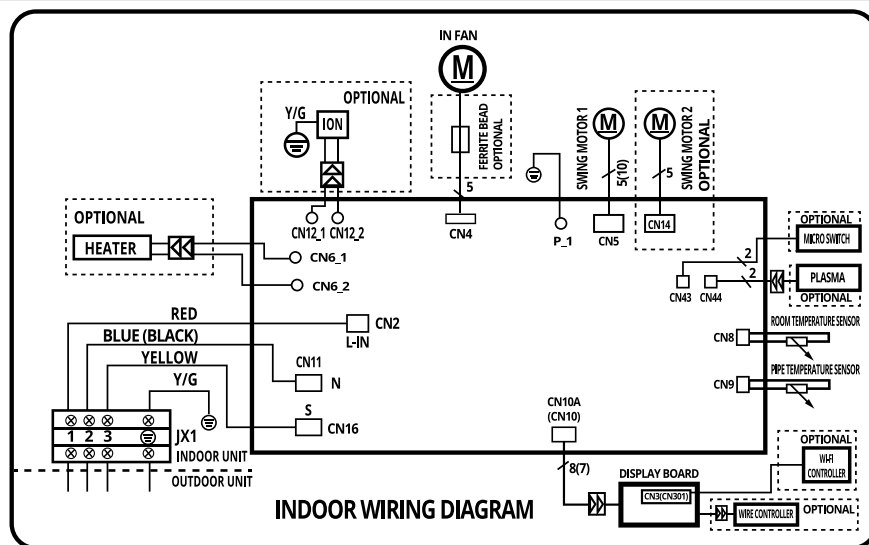


Fig. 4.7a

Step 6: Connect signal cable

CHOOSE THE APPROPRIATE CABLE SIZE

The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum unit current. The maximum unit current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

NOTE: In North America, please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board, such as: T3.15A/250VAC, T5A/250VAC, etc.

1. Prepare the cable for connection:
2. Open front panel of the indoor unit.
3. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.

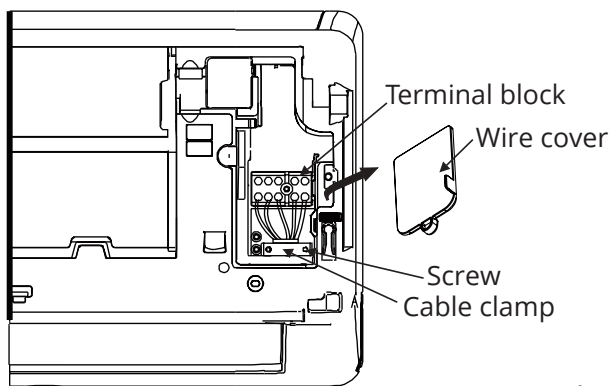


Fig. 4.7b

See **Fig. 4.7A** on previous page for wiring diagram. Wiring diagram also found inside lid of interior unit

! WARNING

All wiring must be performed in accordance with the wiring diagram Fig. 4.7a shown on the previous page.

4. Unscrew the cable clamp below the terminal block and place it to the side.
5. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.
6. Feed the signal wire (protected by conduit) through this slot, from the back of the unit to the front.
7. Facing the front of the unit, match the wire colors with the labels on the terminal block, connect the u-lug and firmly screw each wire to its corresponding terminal.

! CAUTION

⚠ DO NOT MIX UP LIVE AND NULL WIRES
This is dangerous, and can cause the air conditioning unit to malfunction.

8. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.
9. Replace the wire cover on the front of the unit, and the plastic panel on the back.

! WARNING

THE WIRING CONNECTION PROCESS MAY DIFFER SLIGHTLY BETWEEN UNITS AND REGIONS.

North America

Model Series (Indoor Unit)	Appliance Amps (A)	
	MCA	MOP
All Capacity Wall Mounted Air Handlers	3	15

Step 7: Wrap piping

Before passing the piping and drain hose through the wall hole, you must bundle them together to protect them, insulate them, and save space.

1. Bundle the drain hose and refrigerant pipes according to **Fig. 4.8**.

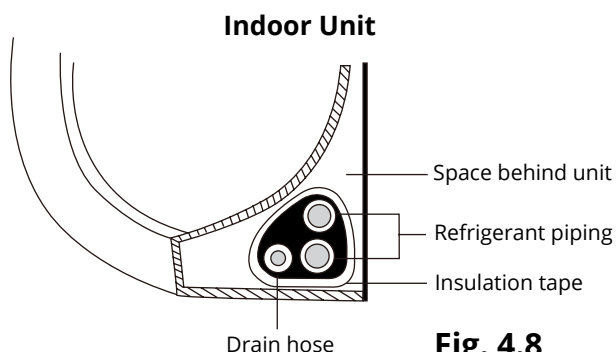


Fig. 4.8

DRAIN HOSE MUST BE ON BOTTOM

Make sure that the drain hose is at the bottom of the bundle. Putting the drain hose at the top of the bundle can cause the drain pan to overflow, which may lead to fire or water damage.

SIGNAL CABLE PROTECTION

The signal cable must be protected by conduit before being pushed through the wall hole.

2. Using vinyl tape, attach the drain hose to the underside of the refrigerant pipes.
3. Using insulation tape, wrap the refrigerant pipes and drain hose tightly together. Double-check that all items are bundled in accordance with **Fig. 4.8**.

DO NOT WRAP ENDS OF PIPING

When wrapping the bundle, keep the ends of the piping unwrapped. You need to access them to test for leaks at the end of the installation process (refer to **Electrical Checks and Leak Checks** section of this manual).

Step 8: Mount indoor unit

If you installed new connective piping to the outdoor unit, do the following:

1. If you have already passed the refrigerant piping through the hole in the wall, proceed to Step 4.
2. Otherwise, double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign material from entering the pipes.
3. Slowly pass the wrapped bundle of refrigerant pipes and drain hose through the hole in the wall.
4. Hook the top of the indoor unit on the upper hook of the mounting plate.
5. Check that unit is hooked firmly on mounting plate by applying slight pressure to the left and right-hand sides of the unit. The unit should not jiggle or shift.
6. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.
7. Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.

If refrigerant piping is already embedded in the wall, do the following:

1. Hook the top of the indoor unit on the upper hook of the mounting plate.
2. Use a bracket or wedge to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose. Refer to **Fig. 4.9** for an example.

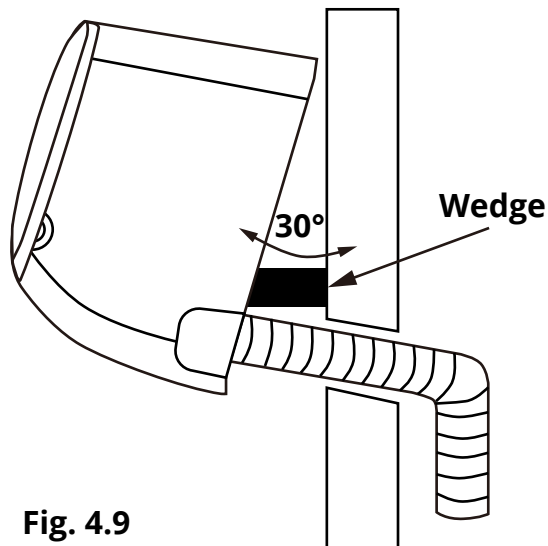


Fig. 4.9

3. Connect drain hose and refrigerant piping (refer to **Refrigerant Piping Connection** section of this manual for instructions).
4. Keep piping connections exposed to perform the leak test (refer to **Electrical Checks and Leak Checks** section of this manual).
5. After the leak test, wrap the piping connection points with insulation tape.
6. Remove wedge bracket or wedge that is propping up the unit.
7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

UNIT IS ADJUSTABLE

Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit. If you find that you do not have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 1.25 in - 1.95 in (30 mm - 50 mm), depending on the model. (See **Fig. 4.10**)

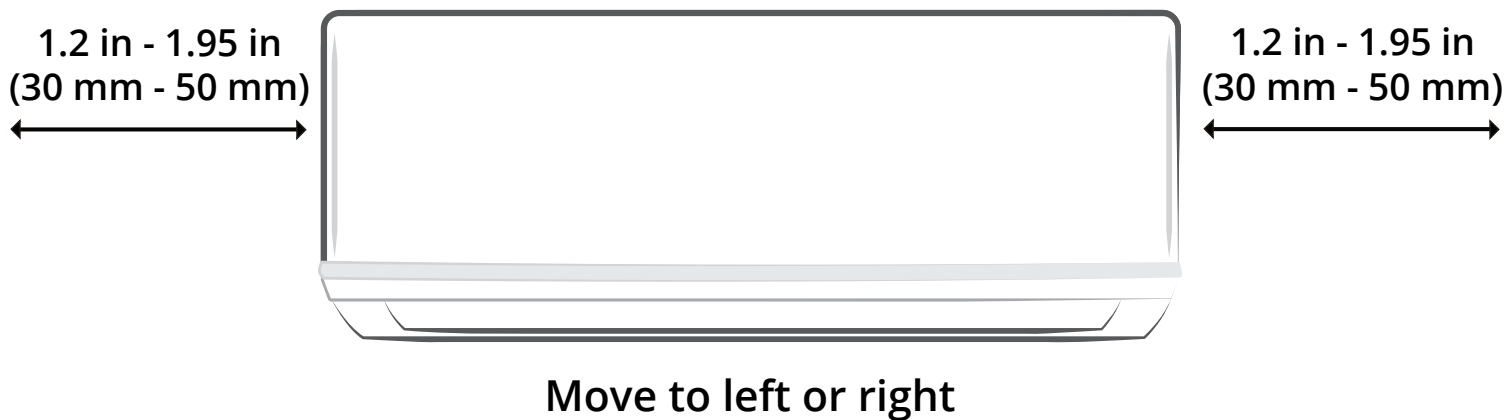
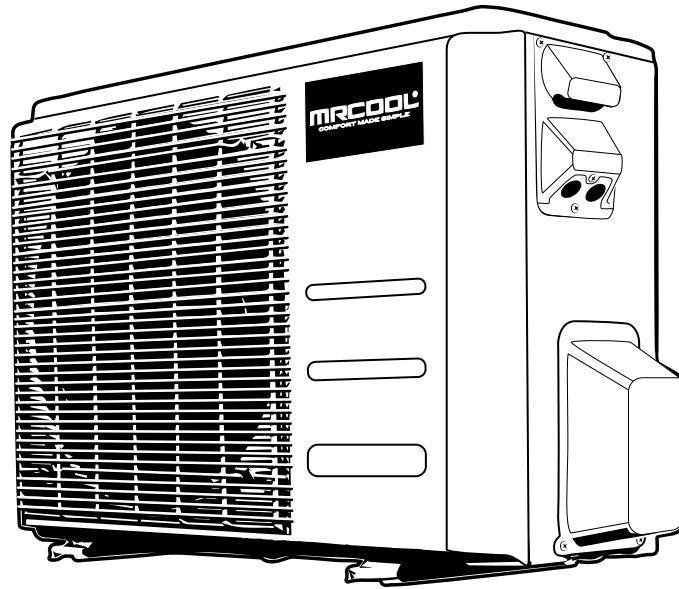


Fig. 4.10



Installation Instructions - Outdoor Unit

Step 1: Select installation location

Before installing the outdoor unit, you must choose an appropriate location. The following standards will help you choose an appropriate location.

Proper installation locations meet the following standards:

- ☑ Meets all spatial requirements shown in Installation Space Requirements (**Fig. 5.1**).
- ☑ Good air circulation and ventilation.
- ☑ Firm and solid location that can support the unit and will cause vibration.
- ☑ Noise from the unit will not disturb others.
- ☑ Protected from prolonged periods of direct sunlight or rain.
- ☑ Where snowfall is anticipated, raise the unit above the base pad to prevent ice buildup coil damage. Mount the unit high enough to be above the average accumulated area snowfall. The minimum height must be 18 inches.

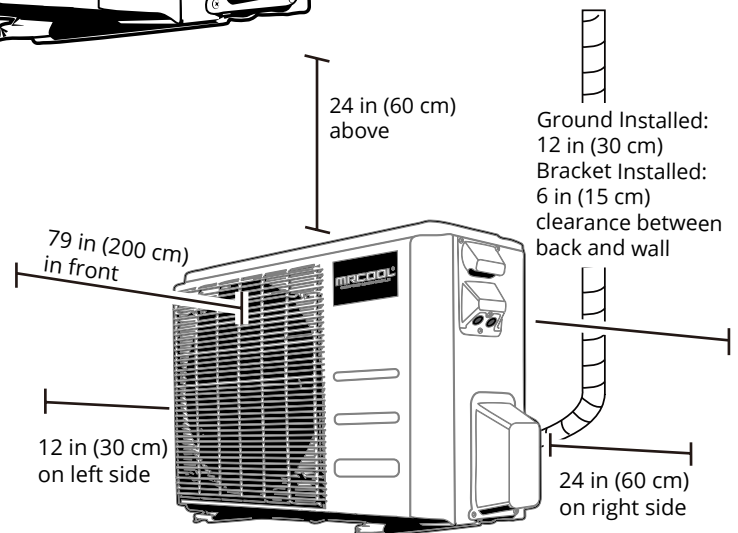


Fig. 5.1

DO NOT install unit in the following locations:

- ⊘ Near an obstacle that will block air inlets and outlets
- ⊘ Near a public street, crowded areas, or where noise from the unit will disturb others
- ⊘ Near animals or plants that will be harmed by hot air discharge
- ⊘ Near any source of combustible gas or in a location that is exposed to large amounts of dust
- ⊘ In a location exposed to a excessive amounts of salty air

Outdoor Unit Installation

SPECIAL CONSIDERATIONS FOR EXTREME WEATHER

If the unit is exposed to heavy wind:

Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. Ensure the wind barrier does not block necessary airflow. See **Fig. 5.2** and **Fig. 5.3** below.

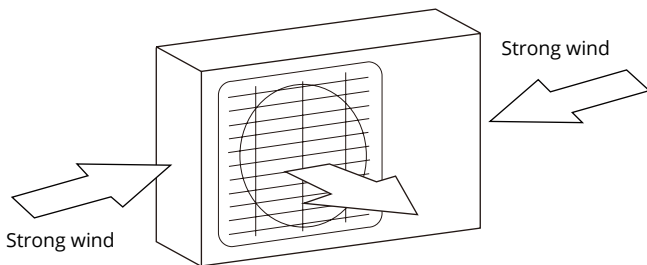


Fig. 5.2

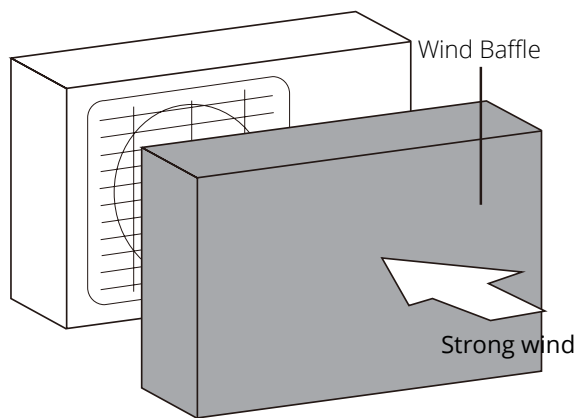


Fig. 5.3

If the unit is frequently exposed to heavy rain or snow:

Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

If the unit is frequently exposed to salty air (seaside):

Use the outdoor unit that is specially designed to resist corrosion.

Step 2: Install drain joint

Heat pump units require a drain joint. Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit.

NOTE: that there are two different types of drain joints depending on the type of outdoor unit.

If the drain joint comes with a rubber seal (see Fig. 5.4 - A), do the following:

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

If the drain joint doesn't come with a rubber seal (see Fig. 5.4 - B), do the following:

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

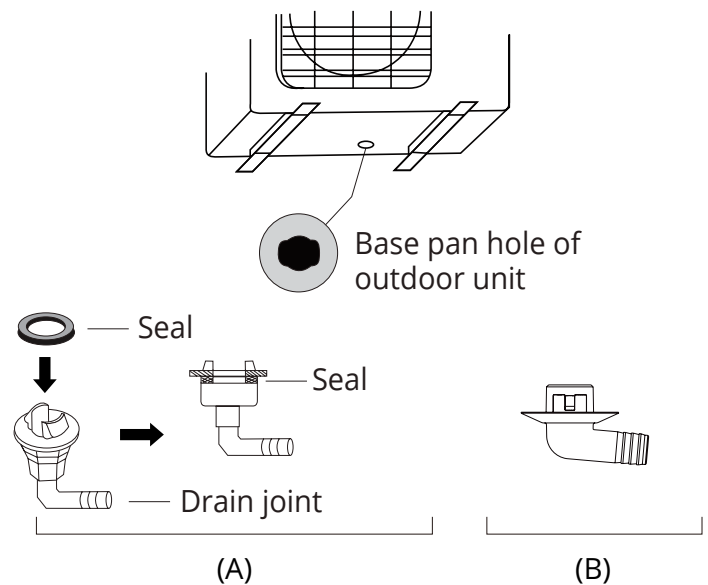


Fig. 5.4

! CAUTION

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

Outdoor Unit Installation

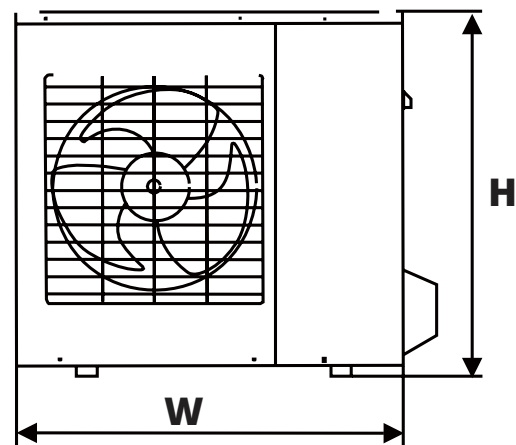
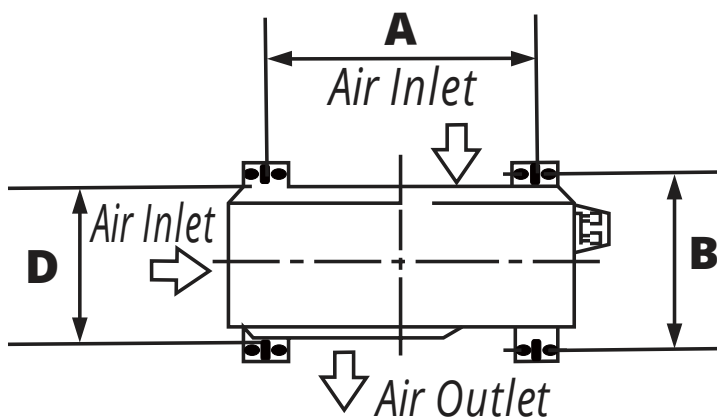


Fig. 5.5

Step 3: Anchor outdoor unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket with bolts (M10). Prepare the installation base of the unit according to the dimensions below.

UNIT MOUNTING DIMENSIONS

The following is a list of different outdoor unit sizes and the distance between their mounting feet. Prepare the installation base of the unit according to the dimensions below.

Units: Inches (millimeters)

Outdoor Unit Dimensions	Mounting Dimensions		
	Width (W) x Height (H) x Depth (D)	Width (A)	Depth (B)
A-09-HP-C-115B & A-09-HP-C-230B	30.31 x 21.85 x 11.81 in. (770 x 555 x 300 mm)	19.2 in. (487.68 mm)	11.73 in. (297.94 mm)
A-12-HP-C-115B & A-12-HP-C-230B	31.50 x 21.81 x 13.11 in. (800 x 554 x 333 mm)	19.2 in. (487.68 mm)	11.73 in. (297.94 mm)
A-18-HP-C-230B	31.50 x 21.81 x 13.11 in. (800 x 554 x 333 mm)	19.2 in. (487.68 mm)	11.73 in. (297.94 mm)
A-24-HP-C-230B	33.27 x 27.64 x 14.29 in. (845 x 702 x 363 mm)	21.26 in. (540 mm)	13.8 in. (350.52 mm)
A-36-HP-C-230B	37.24 x 31.89 x 16.14 in. (946 x 810 x 410 mm)	26.5 in. (673 mm)	15.9 in. (403 mm)

If you will install the unit on the ground or on a concrete mounting platform, do the following:

1. Mark the positions for four expansion bolts based on dimensions in the **Unit Mounting Dimensions** chart.
2. Pre-drill holes for expansion bolts.
3. Clean concrete dust away from holes.
4. Place a nut on the end of each expansion bolt.
5. Hammer expansion bolts into the pre-drilled holes.
6. Remove the nuts from expansion bolts, and place outdoor unit on the bolts.
7. Put a washer on each expansion bolt, then replace the nuts.
8. Using a wrench, tighten each nut until snug.

WARNING

WHEN DRILLING INTO CONCRETE, EYE PROTECTION IS RECOMMENDED AT ALL TIMES.

If you will install the unit on a wall-mounted bracket, do the following:

CAUTION

Before installing a wall-mounted unit, make sure that the wall is made of solid brick, concrete, or of similarly strong material. The wall must be able to support at least FOUR times the weight of the unit.

1. Mark the position of bracket holes based on dimensions in the Unit Mounting Dimensions chart.
2. Pre-drill the holes for the expansion bolts.
3. Clean dust and debris away from holes.
4. Place a washer and nut on the end of each expansion bolt.
5. Thread expansion bolts through holes in mounting brackets, put mounting brackets in position, and hammer expansion bolts into the wall.
6. Ensure that the mounting brackets are level.
7. Carefully lift the unit and place its mounting feet on the brackets.
8. Using a wrench, bolt the unit firmly to the brackets.

TO REDUCE VIBRATION OF WALL-MOUNTED UNIT

If allowed, you can install the wall-mounted unit with rubber gaskets to reduce vibration and noise.

Step 4: Connect signal and power cables

The outside unit's terminal block is protected by an electrical wiring cover on the side of the unit. A comprehensive wiring diagram is printed on the inside of the wiring cover.



BEFORE PERFORMING ELECTRICAL WORK, READ THESE REGULATIONS

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.
 2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
 3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
 4. Power voltage should be within 90-100% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
 5. Circuit, including any switches, should have a capacity 1.5 times the maximum unit current (amps).
 6. The qualified technician must use an approved circuit breaker or switch that disconnects all poles and has a contact separation of at least 1/8 in (3 mm).
 7. Make sure to properly ground the air conditioner.
 8. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in malfunction and possible fire.
 9. If the unit has an auxiliary electric heater, it must be installed at least 40 in (1 meter) away from combustible materials.
- ⚠ **DO NOT** connect another appliance to the same circuit.
- ⚠ **DO NOT** let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

! WARNING

BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAINPOWER TO THE SYSTEM.

1. Prepare the cable for connection:

USE THE RIGHT CABLE

- See table below for gauge requirements

North America Minimum Wire Gauge for Power Cables

	Model Capacity (BTU/hr)	Appliance Amps (A)		AWG	
		MCA	MOP	Min.	Pref.
115V	9K	15	20	14	12
	12K	15	20	14	12
208/ 230V	9K	10	15	14	14
	12K	15	15	14	12
	18K	15	20	14	12
	24K	20	25	12	10
	36K	25	35	10	8

2. Remove the electrical wiring cover from the unit by loosening the 3 retaining screws. Refer to **Fig. 5.6**.
3. Remove the caps on the conduit panel.
4. Temporarily mount the conduit tubes (not included) on the conduit panel.
5. Properly connect both the power supply and low voltage lines to the corresponding terminals on the terminal block.
6. Ground the unit in accordance with local codes.
7. Be sure to size each wire so that it allows for it to be several inches longer than the required length for wiring.
8. Use lock nuts to secure the conduit tubes.
9. Replace the wire cover and reinstall the 3 screws.

! WARNING

ALL WIRING MUST PERFORMED STRICTLY IN ACCORDANCE WITH THE WIRING DIAGRAM LOCATED INSIDE THE OUTDOOR UNIT'S WIRE COVER.

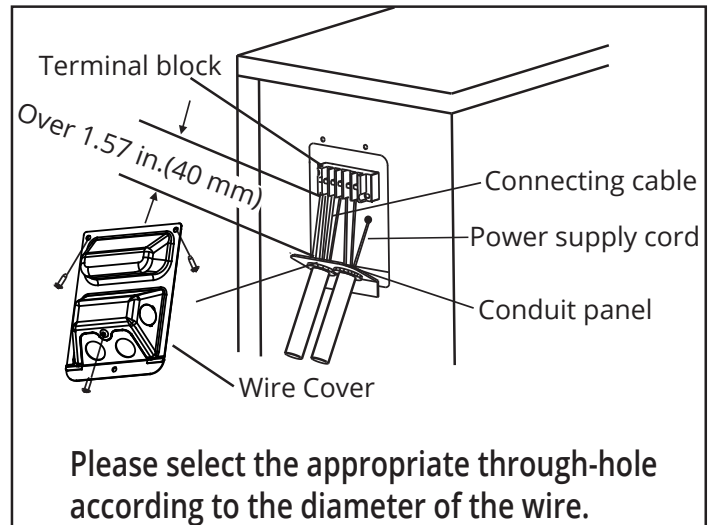
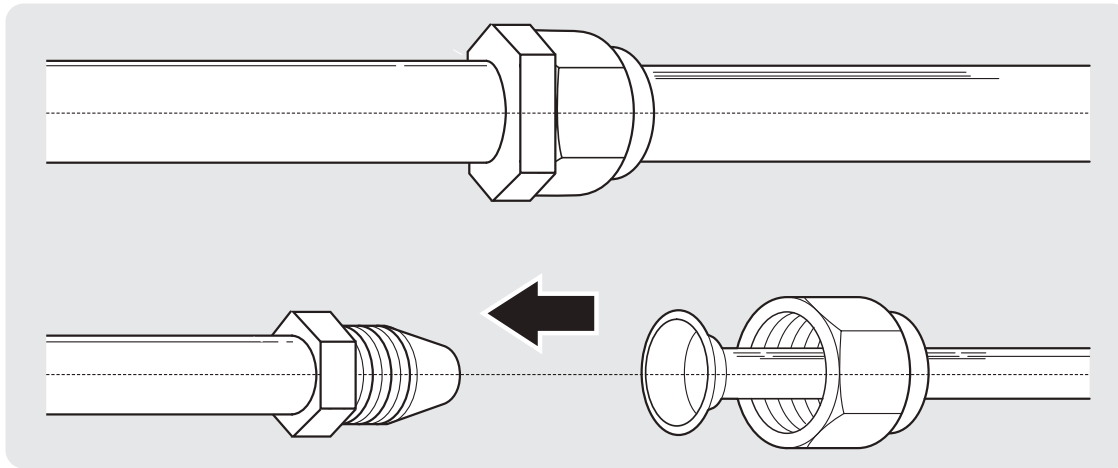


Fig. 5.6



When connecting the refrigerant piping, **DO NOT** let substances or gases other than the specified refrigerant enter the unit. The presence of other gases or substances will lower the unit's capacity, and can cause abnormally high pressure in the refrigeration cycle. This could cause an explosion and/or injury.

NOTE ON PIPE LENGTH

The length of refrigerant piping will affect the performance and energy efficiency of the unit. Nominal efficiency is tested on units with a pipe length of 16.5 ft (5 m). In North America, the standard pipe length is 25 ft (7.5 m). A minimum pipe run of 9.8 ft (3 m) is required to minimize vibration and excessive noise.

Refer to the table below for specifications on the maximum length and drop height of piping.

Maximum Length and Drop Height of Refrigerant Piping per Unit Model

Model	Capacity (BTU/h)	Max. Length (ft/m)	Max. Drop Height (ft/m)
R410A Inverter Split Air Conditioner	< 15,000	82 ft (25 m)	33 ft (10 m)
	≥ 15,000 and < 24,000	98.5 ft (30 m)	66 ft (20 m)
	≥ 24,000 and < 36,000	164 ft (50 m)	82 ft (25 m)
	36,000	213 ft (65 m)	98 ft (30 m)

Connection Instructions - Refrigerant Piping

Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.

2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
3. Make sure that the pipe is cut at a perfect 90° angle. Refer to **Fig. 6.1** for bad cut examples.

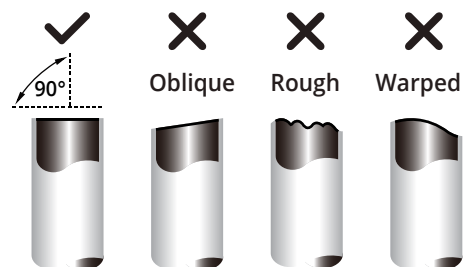


Fig. 6.1

Refrigerant Piping Connection



DO NOT DEFORM PIPE WHILE CUTTING

Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

Step 2: Remove burrs

Burrs can affect the air-tight seal of refrigerant piping connection. They must be completely removed.

1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.

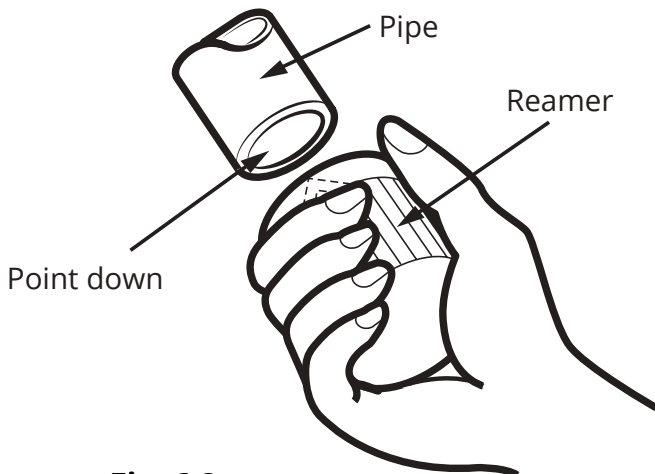


Fig. 6.2

Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you cannot put them on or change their direction after flaring. See Fig. 6.3.

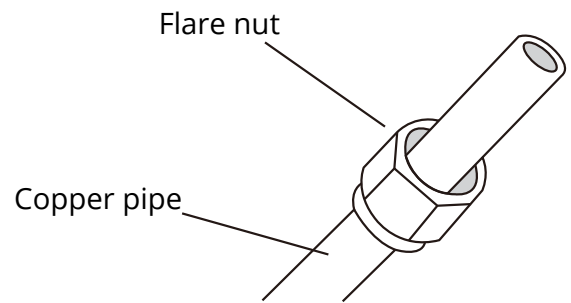


Fig. 6.3

4. Remove PVC tape from ends of pipe when ready to perform flaring work.
5. Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the dimensions shown in the table below.

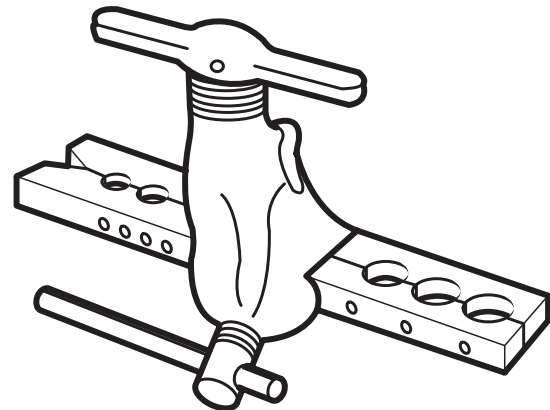


Fig. 6.4

PIPING EXTENSION BEYOND FLARE FORM

Outer Diameter of Pipe (in/mm)	A (in/mm)	
	Min.	Max.
Ø 0.25" (Ø 6.35)	0.0275" (0.7)	0.05" (1.3)
Ø 0.375" (Ø 9.52)	0.04" (1.0)	0.063" (1.6)
Ø 0.5" (Ø 12.7)	0.04" (1.0)	0.07" (1.8)
Ø 0.63" (Ø 16)	0.078" (2.0)	0.086" (2.2)
Ø 0.75" (Ø 19)	0.078" (2.0)	0.094" (2.4)

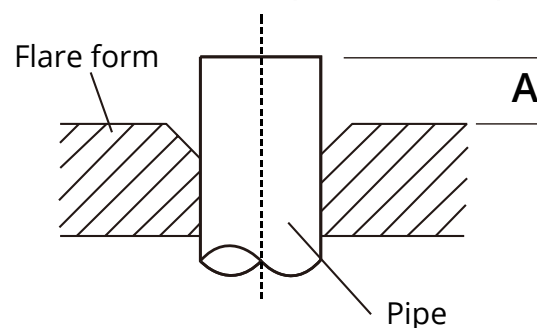


Fig. 6.5

Refrigerant Piping Connection

Step 3: Flare pipe ends continued

6. Place flaring tool onto the form.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared.
8. Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

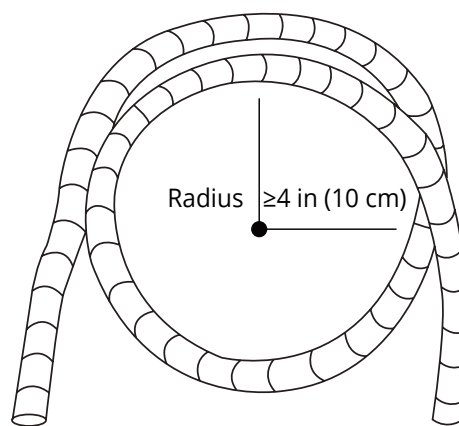


Fig. 6.6

Step 4: Connect pipes

When connecting refrigerant pipes, be careful not to use excessive torque or to deform the piping in any way. You should first connect the low-pressure pipe, then the high-pressure pipe.

MINIMUM BEND RADIUS

When bending refrigerant piping, the minimum bending radius is 10 cm. See Fig 6.6.

! TORQUE REQUIREMENTS

1. Excessive force can break the nut or damage the refrigerant piping. You must not exceed torque requirements shown in the table below.
2. You can find the Outer Pipe Diameter stamped (in inches) on the valve set of the condenser. Refer to this when finding and applying the torque values in the table below.
3. Note that there may be differences in Torque Wrenches (i.e. automotive torque wrench versus a HVAC torque wrench) and that a socket style wrench cannot be used here.

TORQUE REQUIREMENTS TABLE

Outer Diameter of Pipe (in/mm)	Tightening Torque (lb·ft/N·m)	Flare Dimension (B) (in/mm)	Flare Shape
Ø0.25" (Ø 6.35 mm)	13.28-14.75 lb·ft (18-20 N·m)	0.33"-0.34" (8.4-8.7 mm)	<p>The diagram shows a cross-section of a pipe with a flare. The flare is a conical shape. The top angle is labeled $90^\circ \pm 4$. The angle between the flare and the pipe axis is labeled $45^\circ \pm 2$. The width of the flare at its base is labeled 'B'. The radius of the pipe is labeled $R0.4 \sim 0.8$.</p>
Ø0.375" (Ø 9.52 mm)	23.60-28.76 lb·ft (32-39 N·m)	0.52"-0.53" (13.2-13.5 mm)	
Ø0.5" (Ø12.7 mm)	36.14-43.52 lb·ft (49-59 N·m)	0.64"-0.65" (16.2-16.5 mm)	
Ø0.63" (Ø16 mm)	42.04-52.37 lb·ft (57-71 N·m)	0.76"-0.78" (19.2-19.7 mm)	
Ø0.75" (Ø19 mm)	49.42-74.49 lb·ft (67-101 N·m)	0.91"-0.93" (23.2-23.7 mm)	

Instructions for Connecting Piping to Indoor Unit

1. Align the center of the two pipes that you will connect. See **Fig. 6.7**.
2. Tighten the flare nut as tightly as possible by hand.
3. Using an adjustable wrench, grip the nut on the unit tubing.
4. While firmly gripping the nut on the unit tubing, use a torque wrench to tighten the flare nut according to the torque values in the **Torque Requirements** table. Loosen the flaring nut slightly, then tighten again.

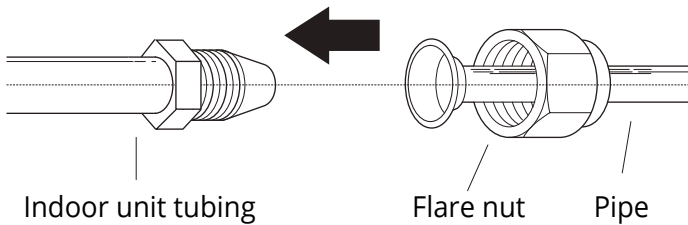


Fig. 6.7

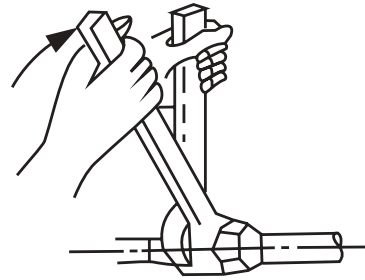


Fig. 6.8

Instructions for Connecting Piping to Outdoor Unit

1. Unscrew the cover from the packed valve on the side of the outdoor unit. (See **Fig. 6.9**)

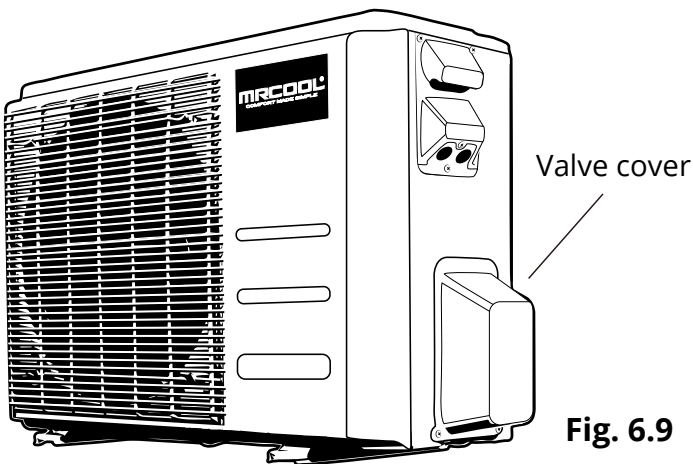


Fig. 6.9

2. Remove protective caps from ends of valves.
3. Align flared pipe end with each valve, and tighten the flare nut as tightly as possible by hand.
4. Using an adjustable wrench, grip the body of the valve. Do not grip the nut that seals the service valve. (See **Fig. 6.10**)

USE ADJUSTABLE WRENCH TO GRIP MAIN BODY OF VALVE

Torque from tightening the flare nut can snap off other parts of valve. See **Fig. 6.10**.

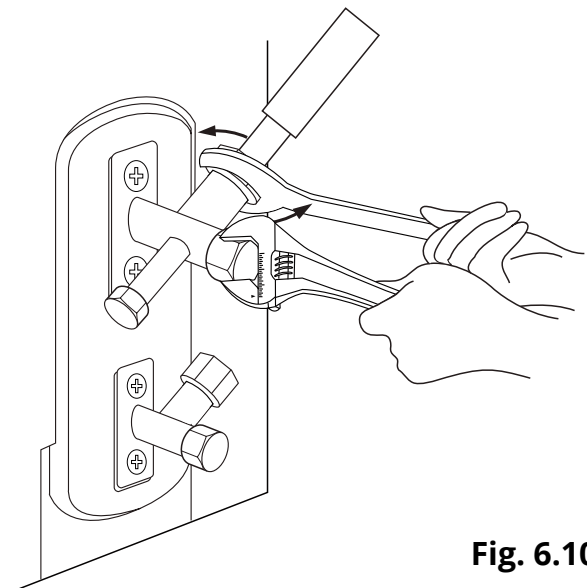
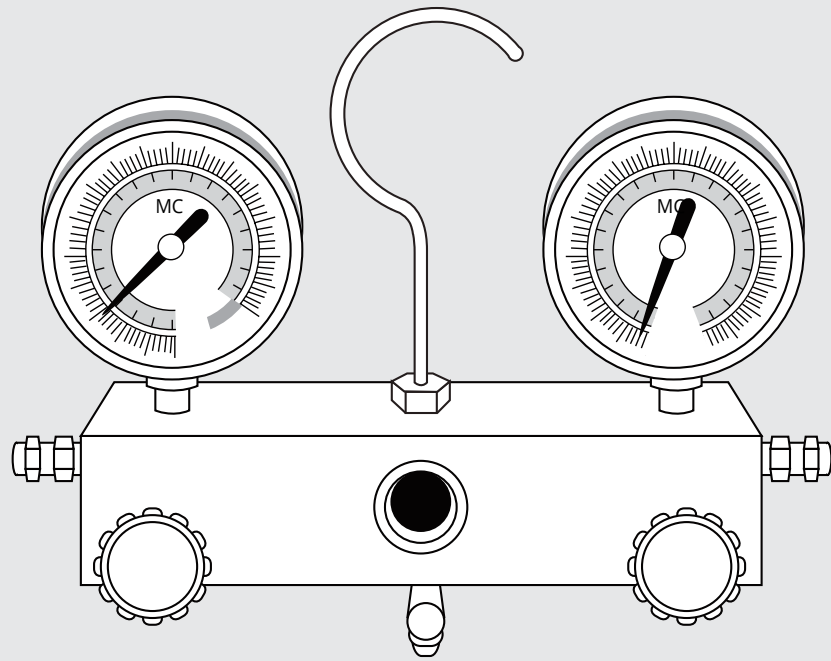


Fig. 6.10

5. While firmly gripping the body of the valve, use a torque wrench to tighten the flare nut according to the correct torque values.
6. Loosen the flaring nut slightly, then tighten again.
7. Repeat Steps 3 to 6 for the remaining pipe.



Preparations and Precautions

Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation and when unit is relocated.

BEFORE PERFORMING EVACUATION

- ☑ Check to make sure that both high-pressure and low-pressure pipes between the indoor and outdoor units are connected properly in accordance with the Refrigerant Piping Connection section of this manual.
- ☑ Check to make sure all wiring is connected properly.

Evacuation Instructions

Before using the manifold gauge and vacuum pump, read their operation manuals to familiarize yourself with how to use them properly.

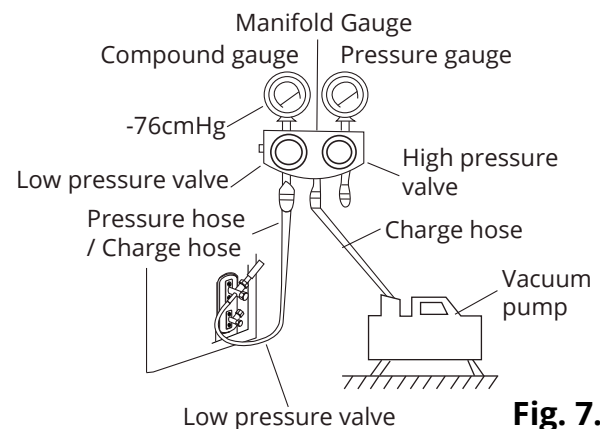


Fig. 7.1

1. Connect the charge hose of the manifold gauge to service port on the outdoor unit's low-pressure valve.
2. Connect another charge hose from the manifold gauge to the vacuum pump.

Air Evacuation

3. Open the low-pressure side of the manifold gauge. Keep the high-pressure side closed.
4. Turn on the vacuum pump to evacuate the system.
5. Run the vacuum for at least 15 minutes, or until the Compound Meter reads -76 cmHG (-10⁵ Pa).
6. Close the low-pressure side of the manifold gauge, and turn off the vacuum pump.
7. Wait for 5 minutes, then check that there has been no change in system pressure.
8. If there is a change in system pressure, refer to **Gas Leak Check** section for information on how to check for leaks. If there is no change in system pressure, unscrew the cap from the packed valve (high-pressure valve).
9. Insert hexagon wrench into the packed valve (high-pressure valve) and open the valve by turning the wrench in a 1/4 counter clockwise turn. Listen for gas to exit the system, then close the valve after 5 seconds.
10. Watch the Pressure Gauge for one minute to make sure that there is no change in pressure. The Pressure Gauge should read slightly higher than atmospheric pressure.

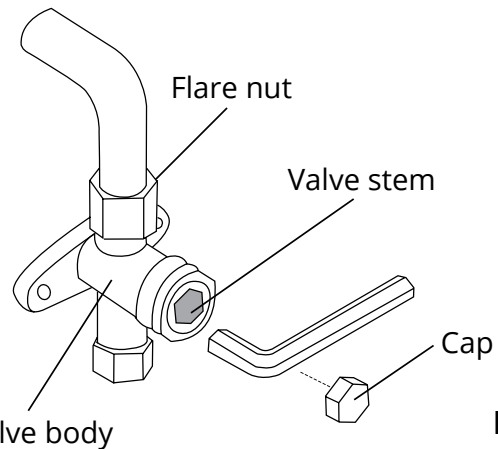


Fig. 7.2

11. Remove the charge hose from the service port.
12. Using hexagon wrench, fully open both the high-pressure and low-pressure valves.
13. Tighten valve caps on all three valves (service port, high-pressure, low-pressure) by hand. You may tighten it further using a torque wrench if needed.

! OPEN VALVE STEMS GENTLY

When opening valve stems, turn the hexagonal wrench until it hits against the stopper. DO NOT try to force the valve to open further.

Note on Adding Refrigerant

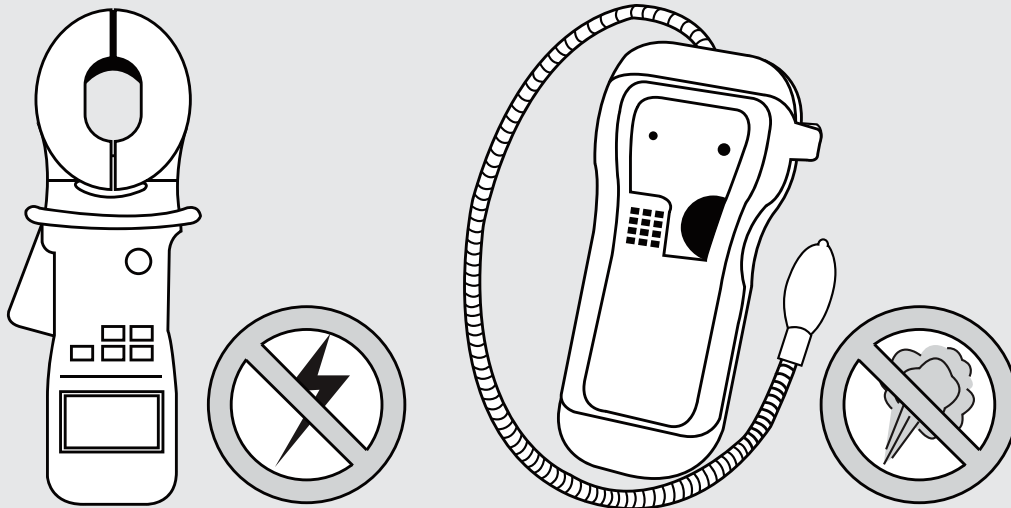
Some systems require additional charging depending on pipe lengths. The standard pipe length varies according to local regulations. For example, in North America, the standard pipe length is 25 ft (7.5 m). In other areas, the standard pipe length is 16 ft (5 m). The refrigerant should be charged from the service port on the outdoor unit's low pressure valve. The additional refrigerant to be charged can be calculated using the following formula:

ADDITIONAL REFRIGERANT PER PIPE LENGTH

Connective Pipe Length (m)	Air Purging Method	Additional Refrigerant	
		N/A	N/A
≤ Standard pipe length	Vacuum Pump	N/A	N/A
> Standard pipe length	Vacuum Pump	Liquid Side: Ø 0.25" (Ø 6.35) Inverter R410A: (Pipe length – standard length) x 15 g/m (Pipe length – standard length) x 0.16 oZ/ft Fixed-frequency R410A: (Pipe length – standard length) x 20 g/m (Pipe length – standard length) x 0.21 oZ/ft	Liquid Side: Ø 0.375" (Ø 9.52) Inverter R410A: (Pipe length – standard length) x 30 g/m (Pipe length – standard length) x 0.32 oZ/ft Fixed-frequency R410A: (Pipe length – standard length) x 40 g/m (Pipe length – standard length) x 0.42 oZ/ft

! CAUTION

⊘ DO NOT mix refrigerant types.



Electrical Safety Checks

After installation, confirm that all electrical wiring is installed in accordance with local and national regulations, and according to the Installation Manual.

BEFORE TEST RUN

Check Grounding Work

Measure grounding resistance by visual detection and with grounding resistance tester. Grounding resistance must be less than 4.

Note: This may not be required for some locations in the US.

DURING TEST RUN

Check for Electrical Leakage

During the **Test Run**, use an electro-probe and multimeter to perform a comprehensive electrical leakage test.

If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.

Note: This may not be required for some locations in the US.



WARNING – RISK OF ELECTRIC SHOCK

ALL WIRING MUST COMPLY WITH LOCAL AND NATIONAL ELECTRICAL CODES, AND MUST BE INSTALLED BY A LICENSED ELECTRICIAN.

Gas Leak Checks

There are two different methods to check for gaseous leaks.

Soap and Water Method

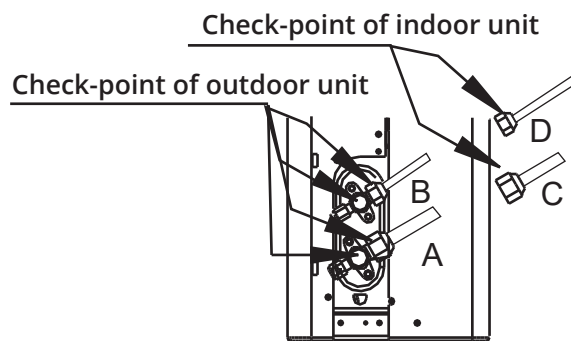
Using a soft brush, apply soapy water or liquid detergent to all pipe connection points on the indoor unit and outdoor unit. The presence of bubbles indicates a leak.

Leak Detector Method

If using leak detector, refer to the device's operation manual for proper usage instructions.

AFTER PERFORMING GAS LEAK CHECKS

After confirming that the all pipe connection points DO NOT leak, replace the valve cover on the outside unit.



A: Low pressure stop valve
 B: High pressure stop valve
 C&D: Indoor unit flare nuts

Before Test Run

Only perform test run after you have completed the following steps:

- **Electrical Safety Checks** – Confirm that the electrical system is safe and operating properly
- **Gas Leak Checks** – Check all flare nut connections and confirm that the system is not leaking
- Confirm that gas and liquid (high and low pressure) valves are fully open

Test Run Instructions

You should perform the **Test Run** for at least 30 minutes.

1. Connect power to the unit.
2. Press the **ON/OFF** button on the remote controller to turn it on.
3. Press the **MODE** button to scroll through the following functions, one at a time:
 - **COOL** – Select lowest possible temperature
 - **HEAT** – Select highest possible temperature
4. Let each function run for 5 minutes, and perform each of the checks listed in the table to the right:

List of Checks to Perform	PASS/FAIL	
No electrical leakage		
Unit is properly grounded		
All electrical terminals properly covered		
Indoor and outdoor units are solidly installed		
All pipe connection points do not leak	Outdoor (2):	Indoor (2):
Water drains properly from drain hose		
All piping is properly insulated		
Unit performs COOL function properly		
Unit performs HEAT function properly		
Indoor unit louvers rotate properly		
Indoor unit responds to remote control		

DOUBLE-CHECK PIPE CONNECTIONS

During operation, the pressure of the refrigerant circuit will increase. This may reveal leaks that were not present during your initial leak check. Take time during the Test Run to double-check that all refrigerant pipe connection points do not have leaks. Refer to **Gas Leak Check** section for instructions.

5. After the Test Run is successfully complete, and you confirm all check points in List of Checks to Perform have PASSED, do the following:
 - a. Using remote control, return unit to normal operating temperature.
 - b. Using insulation tape, wrap the indoor refrigerant pipe connections that you left uncovered during the indoor unit installation process.

IF AMBIENT TEMPERATURE IS BELOW 63°F (17°C)

You cannot use the remote controller to turn on the COOL function when the ambient temperature is below 63°F. In this instance, you can use the **MANUAL CONTROL** button to test the COOL function.

1. Lift the front panel of the indoor unit, and raise it until it clicks in place.
2. The **MANUAL CONTROL** button is located on the right-hand side of the unit. Press it 2 times to select the COOL function. See **Fig.9.1**.
3. Perform Test Run as normal.

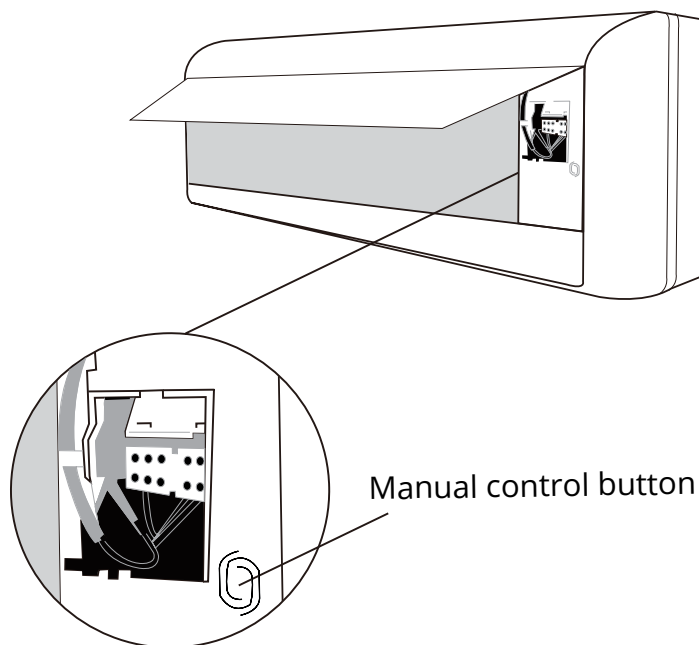


Fig. 9.1

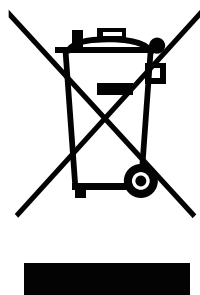
This appliance contains refrigerant and other potentially hazardous materials. When disposing of this appliance, the law requires special collection and treatment. ***DO NOT*** dispose of this product as household waste or unsorted municipal waste.

When disposing of this appliance, you have the following options:

- Dispose of the appliance at a designated municipal electronic waste collection facility.
- When buying a new appliance, the retailer will receive the old appliance free of charge.
- The manufacturer will receive the old appliance free of charge.
- Sell the appliance to certified scrap metal dealers.

Special notice

Disposing of this appliance in the forest or other natural surroundings endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain.





MRCOOL®

COMFORT MADE SIMPLE

Advantage Series

ELECTRICIAN and/or HVAC TECHNICIAN:

LICENSE #:

INSTALLATION DATE:

INSTALLATION LOCATION:

SERIAL NUMBER:

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