

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

# Owner & Installation Manual



**MRCOOL®**

COMFORT MADE SIMPLE

**DIY® E Star™ Series**

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

V100220

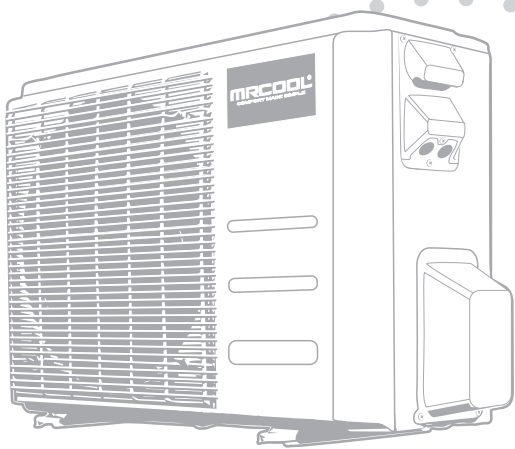
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**DISCLAIMER:** You are assuming the risk by handling materials containing refrigerants under pressure that if not handled properly, refrigerant can cause bodily injury. If you do not feel comfortable conducting this installation process yourself, we recommend you retain the services of a qualified HVAC professional.

**Electrical work must be completed by a qualified electrical technician.**

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# Safety Precautions



## Read Before Using

**Incorrect usage 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**

**DISCLAIMER:** You are assuming the risk by handling materials containing refrigerants under pressure that if not handled properly, refrigerant can cause bodily injury. If you do not feel comfortable conducting this installation process yourself, we recommend you retain the services of a qualified HVAC professional.

**Electrical work must be completed by a qualified electrical technician.**

- ⊘ **DO NOT** share the electrical circuit with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- ⊘ When connecting refrigerant piping, **DO NOT** let substances or gases other than the refrigerant enter the unit. 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.
  1. Installation must be performed according to installation instructions. Improper installation may cause water leakage, electrical shock, fire, or may void the warranty.
  2. In North America, service or repair must be performed in accordance with the requirement of NEC and CEC (by authorized personnel or authority having jurisdiction only.) Contact an authorized service technician for repair or maintenance of the unit.
  3. 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.
  4. 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.
  5. For all electrical work, follow all appropriate wiring standards, regulations, and the Installation Manual.
  6. 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.



## **WARNING**

7. 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.
8. 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. If connecting power to fixed wiring, an all-pole disconnection device which has at least 3mm clearances in all poles, and have a leakage current that may exceed 10mA, the residual current device (RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
9. 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.
10. 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.

## **CAUTION**

- ⊘ For units that have an auxiliary electric heater, ***DO NOT*** install the unit within 3 feet (1 meter) of combustible materials.
  - ⊘ ***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.
  - ⊘ ***DO NOT*** operate the air conditioner with wet hands. This may cause electrical shock.
  - ⊘ ***DO NOT*** climb onto or place objects on top of the outdoor unit.
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 Flourinated Gasses:**

1. This air-conditioning unit contains flourinated gases.
2. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
3. Service, maintenance, and repair of this unit must be performed by a certified technician.
4. Product uninstallation 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.
6. Keep a record of all leak checks for the lifetime of the unit.

**NOTE:** The installation must be performed in accordance with the requirement of local and national standards. Both power cable and signal cable should be protected by the conduit.

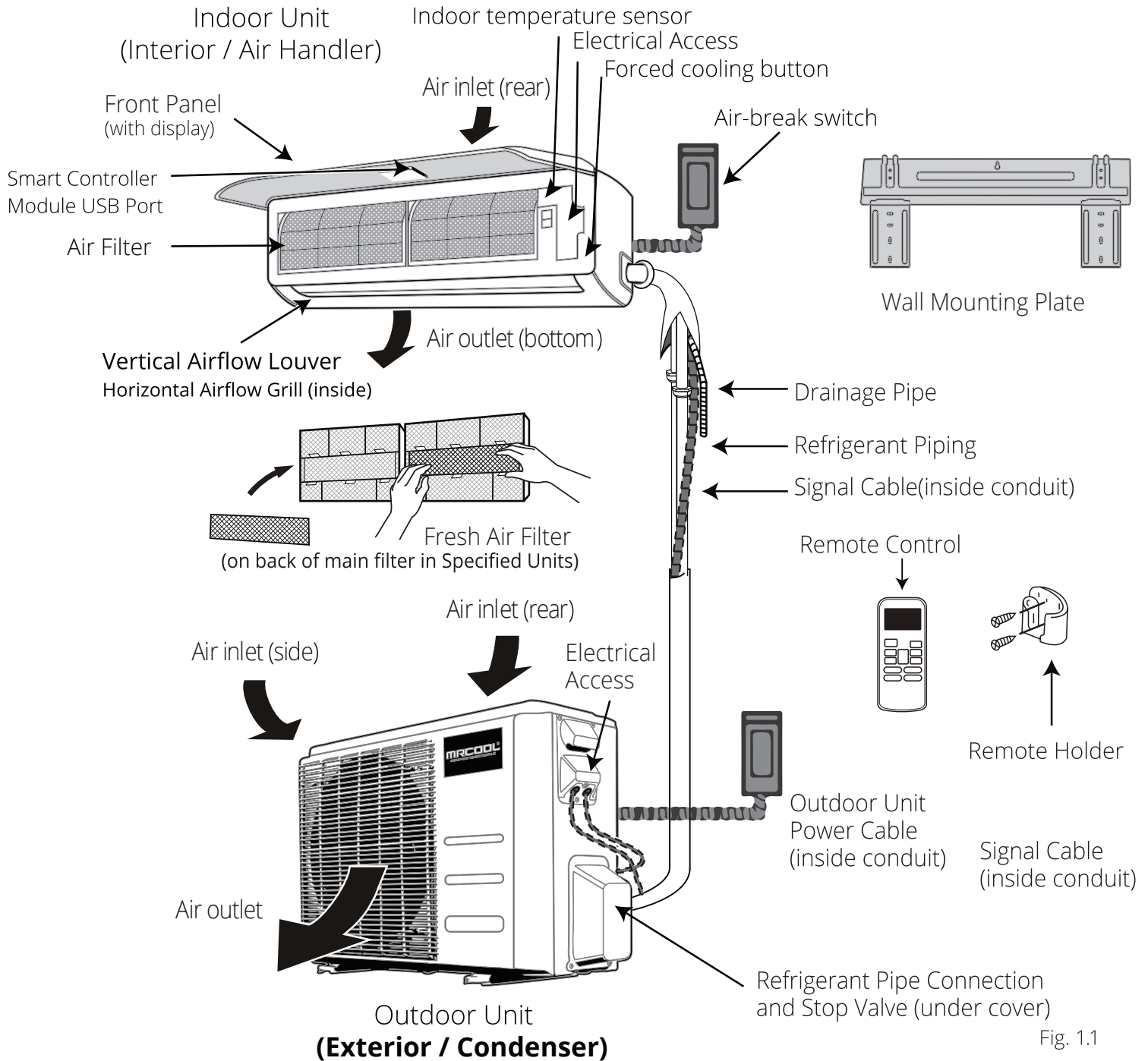


Fig. 1.1

## NOTE ON ILLUSTRATIONS

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

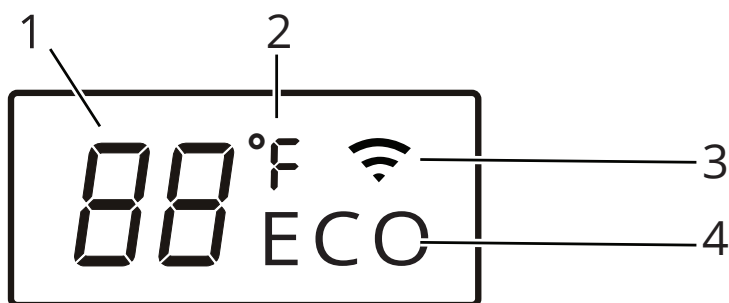


Fig. 1.2

**Display** (on front panel of indoor unit) see fig. 1.2

## 1. Digital Display:

Displays the Temperature Setting when the air conditioner is operational.

Displays the Room Temperature when in FAN mode.

Displays the self-diagnostic codes.

Displays "ON" for three seconds when the Timer is ON and/or Fresh, Swing, Turbo or Silence feature is activated.

Displays "OF" for three seconds when the Timer is switched OFF.

Displays "OF" for three seconds when the Fresh, Swing, Turbo or Silence feature is canceled.

Displays "dF" when Defrosting operation is active.

Displays "cF" when Anti-Cold Air feature is active in HEAT mode (when air temp is low).

Displays "SC" during Self Clean operation (if feature is available).

Displays "FP" when Freeze Protection is active, operating under 46.4 °F (8 °C) (if feature is available).

## 2. Units of Measurement:

Displays "°C" for Celsius or "°F" for Fahrenheit. Default units are "°F" (Fahrenheit) and can be switched by simultaneously pressing and holding both the up and down buttons on the remote control.

According to the operation mode (heat / cool, etc.), the Units of Measurement will display in different colors;

- Under Cool or Dry mode, it always displays as cool colors.
- Under Heat mode, it always displays as a warm color.

## 3. Wireless Mode:

Displays when the wireless control feature is activated.

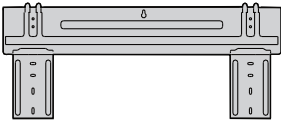




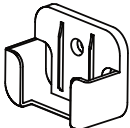




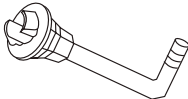

NOTE: A guide for using the infrared remote - "Remote Manual" - is included in this literature package.

## 4. Energy Saving Mode:

Displays when Energy Saving Feature is active. Not available when the unit does not have Energy Saving Mode





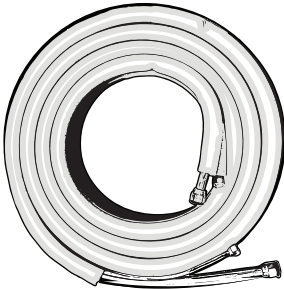


# Accessories

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	
Anchor		5	
Mounting plate fixing screw		5	
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	
Allen wrench		1	
Drain joint		1 (Only for use when elevated)	
Neoprene		1 (Sealant for Wall Sleeve)	

*Note: Illustrations are for explanatory purposes only - The actual shape may vary.*

# Accessories

PART	LOOKS LIKE...	QUANTITY
<b>Owner &amp; Installation Manual</b>		<p>1</p>
<b>Remote Control Manual</b>		<p>1</p>
<b>Smart Controller Kit</b>		<p>1 (w/ Manual in Controller Box)</p>
<b>Sound deadening pads</b>		<p>2</p>
<b>Quick Connect® line set (refrigerant pipe)</b>		<p>1</p>
<b>Insulation material</b>		<p>2 (Apply to the quick connectors of the pipe)</p>
<b>Non-Adhesive U.V. Tape</b>		<p>1</p>

	Cooling Operation	Heating Operation	Drying Operation
Room Temperature	(17°C~32°C) 63°F~90°F	(0°C~30°C) 32°F~86°F	(10°C~32°C) 50°F~90°F
Outdoor Temperature	(0°C~50°C) 32°F~122°F	(-15°C~24°C) 5°F~75°F	(0°C~50°C) 32°F~122°F
	5°F~122°F / -15°C~50°C (For the models with low ambient cooling system)		

**NOTE:**

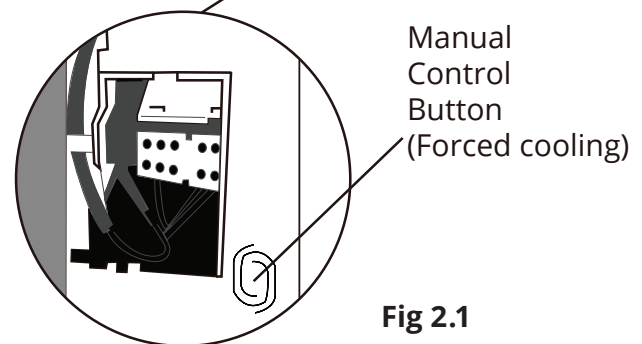
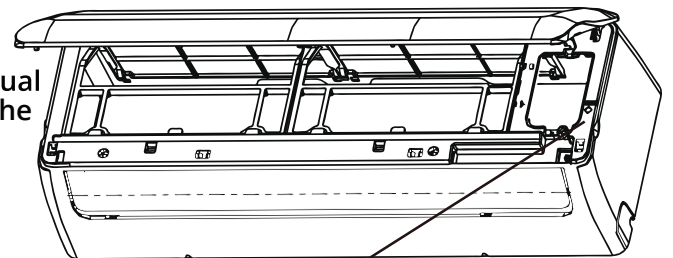
1. Optimum performance will be achieved within these operating temperatures. If air conditioner is used outside of the above conditions, certain safety protection features might come into operation and cause the unit to function abnormally.
2. If the air conditioner runs for a long time in cooling mode and the humidity is high (over 80%), condensed water may drip out of the unit. In this case, set the vertical air flow louver to its maximum angle (vertical toward the floor), and set it to HIGH fan mode.

## Manual Operation

Units are equipped with a switch to run emergency operation mode. It can be accessed by opening the front panel. This switch is used for manual operation in case the remote fails to work or maintenance is necessary.

**NOTE:** The unit must be turned off before operating the manual control button. If the unit is operational, continue pressing the manual control button until the unit is off.

1. Open and lift the front panel up to an angle until it remains fixed with a clicking sound.
2. One press of the manual control switch will lead to the forced AUTO operation. If the switch is pressed twice within five seconds, the unit will operate under forced COOL operation.
3. Close the panel firmly to its original position.



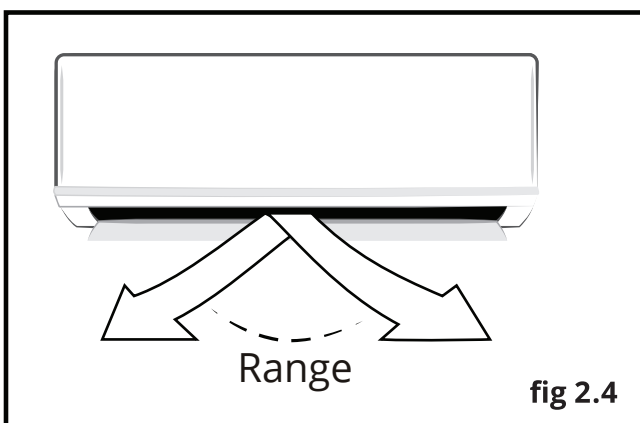
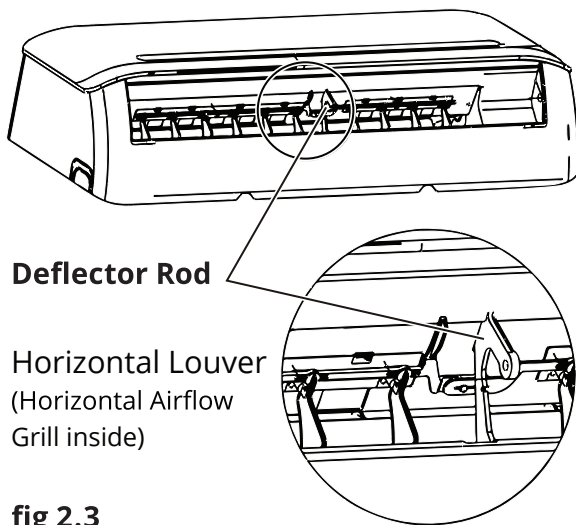
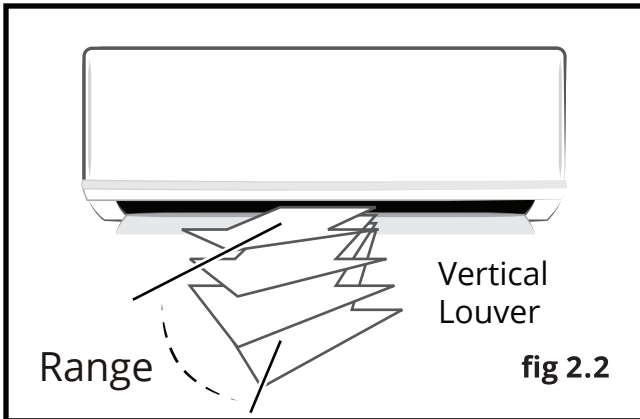
**Fig 2.1**

### **!** CAUTION

- This switch is used for testing purposes only. Please do not use it unless necessary.
- To restore the remote control operation, use the remote control directly.

## Airflow Directional Control

- Adjust the airflow direction properly. Otherwise, it might cause discomfort or uneven room temperatures.
- Adjust the vertical louver using the remote.
- Adjust the horizontal louver manually.



## Adjust Vertical (Up / Down) Air Flow using Vertical Louver (fig2.2):

Perform this function while the unit is in operation. Use the remote control to adjust the Vertical Louver / Vertical Air Flow direction. The vertical louver can move in small increments for each press, or continuously swing up and down automatically. Please refer to the "REMOTE CONTROL USER MANUAL" for details.

## Adjust Horizontal (Left/ Right) Airflow using Horizontal Louver (fig 2.3, fig 2.4):

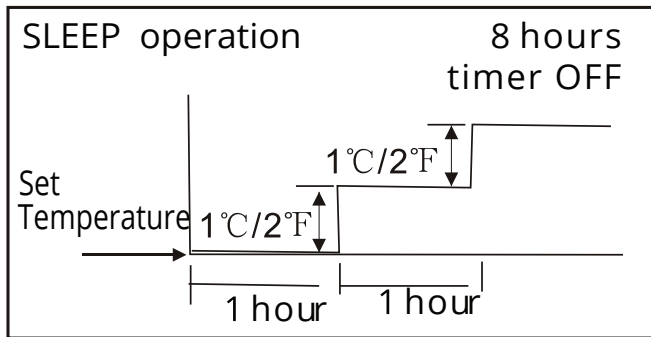
Move the Deflector Rod by pushing in the tab and manually adjusting the air flow side to side (left / right) as desired.

### ! CAUTION

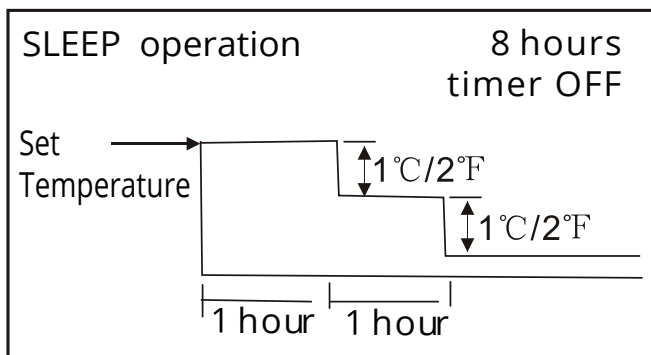
- ⊘ **DO NOT** Do not put your fingers into the panel of the blower and suction side. The high speed fan inside may cause injury.
  - ⊘ **DO NOT** operate the unit for long periods of time with the airflow direction set downward in cooling or dehumidifying mode. Otherwise, condensation might occur on the surface of the vertical louver causing moisture to drop on to the floor or furnishings .
  - ⊘ **DO NOT** move the vertical louver manually. Otherwise, the vertical louver will be out of sync. IF this happens, cease operation, turn off power to the unit, remove the wireless module from the front cover, turn off power to the circuit (at the breaker), wait for a few seconds and turn power back on at the breaker, reinstall wireless module and power the unit back on.
1. After a quick restart, the vertical louver may remain static for approximately 10 seconds.
  2. Open angle of the vertical louver should not be set too small, as it will restrict airflow and reduce COOLING and HEATING performance.



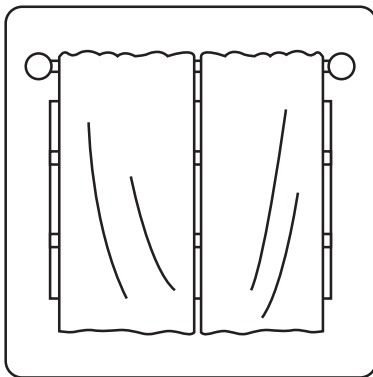
## How the air conditioner works



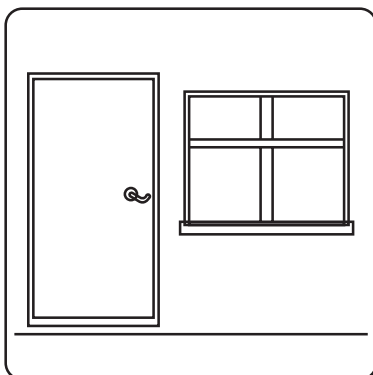
### Cooling



### Heating



Closing the curtains while heating also helps keep the heat in



Doors and windows should be kept closed

## Basic Operation Modes: AUTO / COOL / DRY / HEAT (Model dependent).

### Auto Operation:

When you set the air conditioner in **AUTO** mode, it will automatically select cooling, heating or fan-only operation depending on set temperature and room temperature.

The unit will control the room temperature automatically, according to the temperature point you set.

### SLEEP Operation:

When selected, the temperature will increase while cooling or decrease while heating by 1°C / 2°F per hour for the first 2 hours. Thereafter it keeps this new temperature for 6 hours before **SLEEP** mode switches off.

### DRYING Operation:

The temperature is regulated while dehumidifying by intermittently switching the cooling or fan-only operation on and off. The fan speed is set to **LOW**.

### HEATING Operation:

This unit is a heat pump by design. By reversing the air conditioning process, it absorbs heat from outdoors and transfers it to the indoor unit. As a result, the operating performance and efficiency is reduced as the outdoor air temperature drops. If you feel that the heating performance is insufficient, it is recommended that you supplement heating with other appliances.

### Optimal Operation:

To achieve optimal performance, please note the following:

- Adjust the airflow direction correctly, so that it is not towards people or at an extreme angle.
- Adjust the temperature to achieve moderate comfort levels. An excessively low or high temperature setting wastes energy.
- Keep windows and doors closed, as this improves performance.
- Limit energy usage (run time) by using the TIMER function.
- Do not put any objects near the air inlets / outlets. Doing so would impair performance and possible shut down the unit.
- Inspect the air filters periodically, and clean them as needed.



## Special Functions

### **Refrigerant Leakage Detection (optional):**

When refrigerant leakage is detected, the indoor unit will display “EC” or “ELOC” code or flash LEDs, depending on the model.

### **Louver Angle Memory Function (optional):**

Within the scope of the safe operation angle, the horizontal louver angle is memorized and returns to the position last selected by the user. If it exceeds the safe operation angle, it will default within the safe operation range. However, it will not return to safe operation angle when Turbo mode is set or the unit is in manual control or after a power interruption. Subsequently, it is strongly recommended that the horizontal louver angle not be set too small, to avoid possible condensation leakage.

### **Anti-Mildew Function (optional):**

When the unit is turned off, in **COOL, DRY, AUTO** (cool) modes, it will continue to run for about 10 minutes with a low fan airflow. This aids in drying up any condensation inside the unit to prevent mildew growth. Do not restart the air conditioner until the unit is completely off.

### **Optimal Operation:**

In the event of a power interruption such as a blackout, the air conditioner will stop. It will then restart automatically and resume the previous operation when the power supply returns.

### **Wireless Smart Control Function:**

Connect the wireless control module via the USB port in the back of the front cover of the indoor unit for the unit to be controlled by remote control and/or smartphone app.

### **Clean Air Filter Reminder (optional):**

After 240 hours of operation, the indoor display window will display and flash “**CL**” as a reminder to **CLEAN** the air filter for more efficient operation. After 15 seconds, the system will revert back to the previous display again. When the “**CL**” indicator appears and flashes, please press the **LED** button on the remote control 4 times or press the manual control button 3 times to reset the hours. If you don't reset the reminder, the “**CL**” indicator will flash again when you restart the unit.

### **Replace Air Filter Reminder (optional):**

After 2880 hours of operation, the indoor display window will display and flash “**nF**” as a reminder to **REPLACE** the air filter for more efficient operation. After 15 seconds, the system will revert back to the previous display again. When the “**CL**” indicator appears and flashes, please press the **LED** button on the remote control 4 times or press the manual control button 3 times to reset the hours. If you don't reset the reminder, the “**nF**” indicator will flash again when you restart the unit.

### **Mute Function (optional):**

Press the **LED** button on the remote to turn off the **LED** display and silence the buzzer of the indoor unit, creating a quiet comfortable environment.

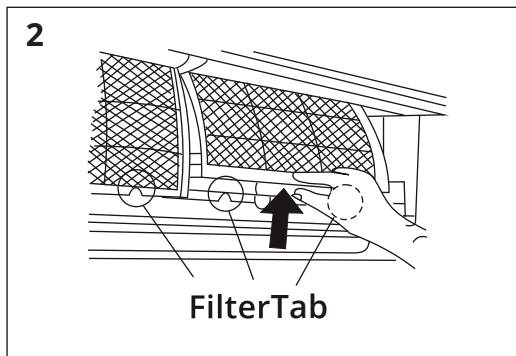
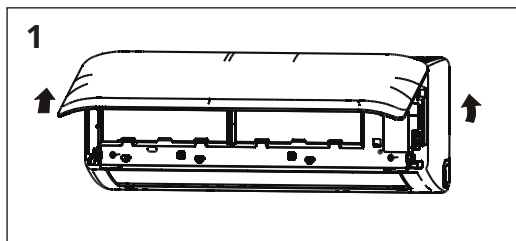
## ! CAUTION

**Power supply must be disconnected before attempting to clean or service. Failure to do so can cause electrical shock.**

- ⊘ **DO NOT** use benzene, thinner, polishing powder, or similar solvents for cleaning. These may cause the plastic to crack and/or deform.
- ⊘ **DO NOT** clean the unit with excessive amounts of water.
- ⊘ **DO NOT** touch the metal parts of the unit when removing the filter. Injuries can occur when handling the sharp metal edges.
- ⊘ **DO NOT** use water to clean inside the air conditioner. Exposure to water can destroy the insulation, leading to possible electric shock.

- ⊘ **DO NOT** use a chemically treated cloth or duster to clean the unit.
- ⊘ **DO NOT** touch air freshening (Plasma) filter for at least 10 minutes after turning off the unit.
- ⊘ **DO NOT** clean the unit with combustible cleaning agents. These could cause fire or deformation.
- ⊘ **DO NOT** wash air filter with water hotter than 40°C / 104°F.
- ⊘ **DO NOT** expose the filter directly to the sun, it may shrink. Dry it in the shade.

**Before performing maintenance, turn the power off to the unit. Then, disconnect the power to the circuit at the breaker.**



### Cleaning the Unit:

Wipe the unit with a soft dry cloth. If the unit is very dirty, wipe it with a cloth soaked in warm water. **DO NOT** use bleach or abrasives.

### Cleaning the Air Filter and Air Freshener:

A clogged air filter can greatly reduce the heating and cooling efficiency of this unit. It is recommended to clean the unit every 2 weeks.

1. Open the front panel by carefully lifting both ends at the same time. At a certain angle, there will be an audible click and the lid becomes self-supporting. For some models, suspension bars are provided and required to prop up the lid.
2. Use the filter tabs to lift the filter slightly upward and then toward you.

3. Then, extract the filter by gently drawing it downward. Replace as necessary.
4. Unclip the small air freshening filter from the larger air filter. Replace as necessary. Otherwise, clean it with a vacuum and clip it back into place after cleaning the larger air filter as outlined in step 5.
5. Clean the large air filter with warm, soapy water. Be sure to use a mild detergent. Rinse with fresh water. Shake off excess water and dry in a cool area.
6. Re-clip air freshening filter into large air filter.
7. Re-fit air filter back into the unit by reversing steps 2 and 3 - gently pushing top up into the unit and then lowering the bottom into place.
8. Close the front panel. Make sure that buckles fully fit and the panel is completely closed.

## Preparation for Extended non-Operation:

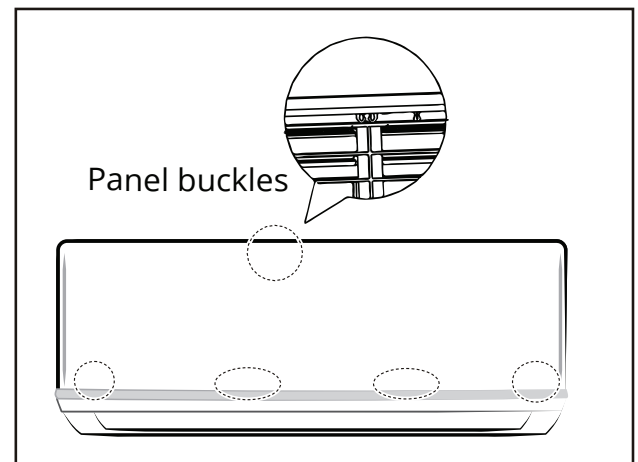
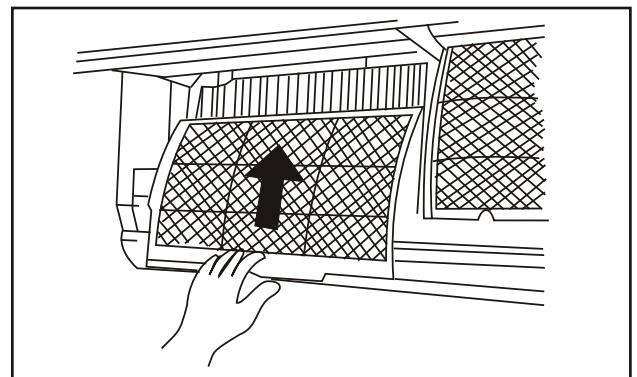
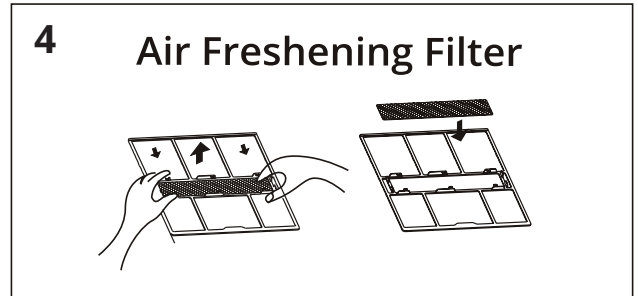
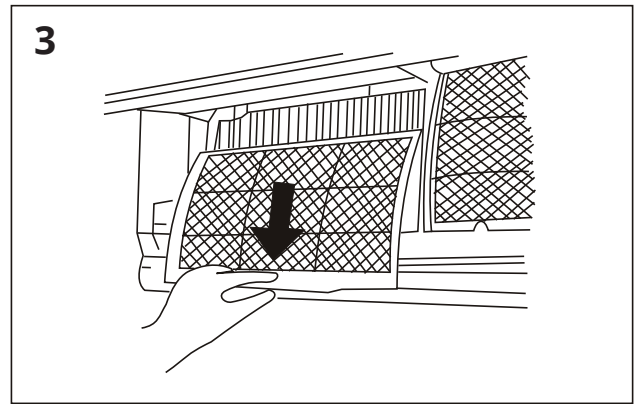
If you plan to not run the unit for a long period of time (e.g. from the end of summer to the beginning of the following summer), perform the following:

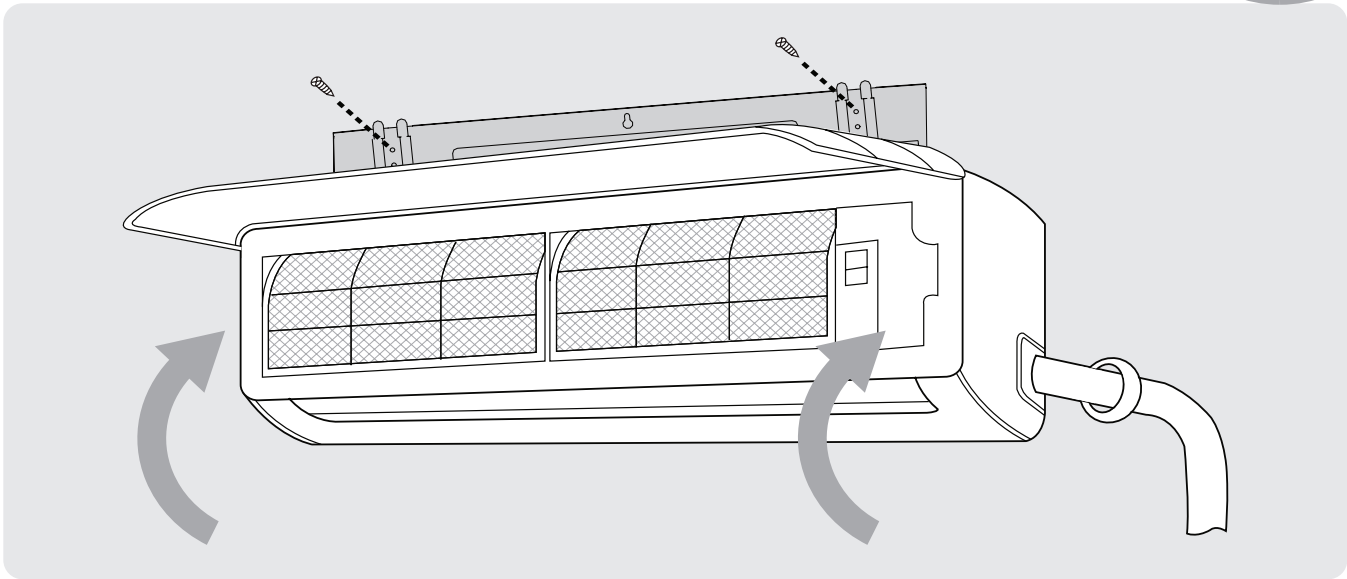
1. Clean the indoor unit and filters as previously outlined.
2. Operate the unit in FAN only mode for at least 8 hours to dry out the inside of the unit.
3. Turn off the unit. Turn off power to the circuit at the breaker. The unit should be the only appliance on the circuit.
4. Remove the batteries from the remote control.
5. The outdoor unit requires periodic maintenance as well. However, do not attempt this on your own. It is highly recommended that you contact a qualified service professional.

## Pre-Season Inspection:

After prolonged non-operation perform the following:

1. Check for Damaged or Disconnected Wires.
2. Clean the Indoor Unit and Filters
3. Check for Water and Oil Leaks
4. Check for Blockages in Airflow Inlet and Outlet
5. Replace Batteries





## 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 standards will help you choose an appropriate location for the unit.

#### 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 or where outside air may blow directly on indoor unit
- ⊘ 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). After piping and signal wiring are installed, use provided neoprene to pack the space making it airtight.

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

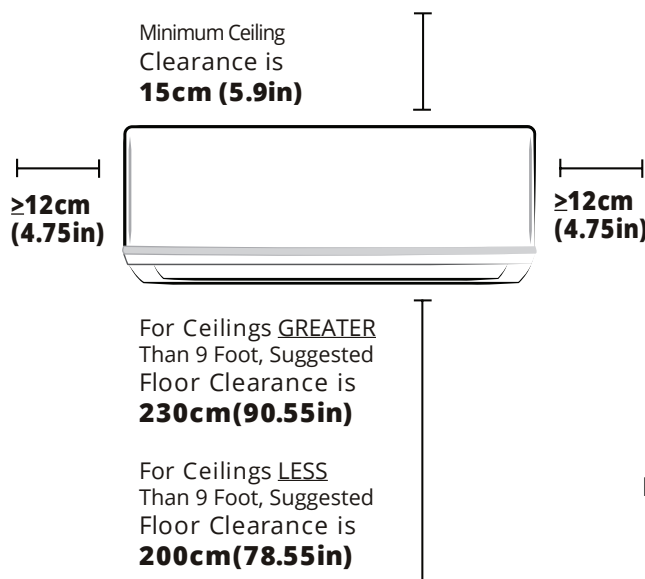


Fig. 4.1

## 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 0.2in-diameter (5mm-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.

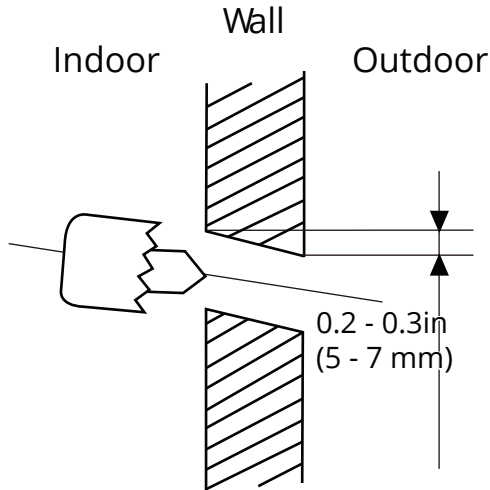
## Step 3: Drill wall hole for connective piping

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 [3.54in (90mm)], 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 0.275in (5mm-7mm). This will ensure proper water drainage. (See Fig. 4.2)
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, nails, screws, and other sensitive components.



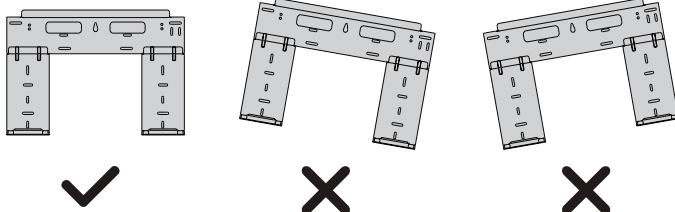
**Fig.4.2**

## MOUNTING PLATE DIMENSIONS

Different models have different mounting plates. 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:

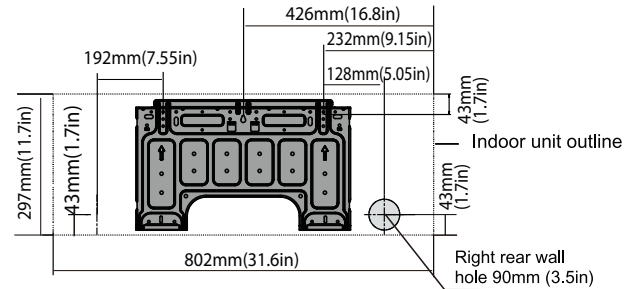
- Width of mounting plate
- Height of mounting plate
- Width of indoor unit relative to plate
- Height of indoor unit relative to plate
- Recommended position of wall hole
- Relative distances between screw holes
- Do not attempt a left rear wall hole.

Correct orientation of Mounting Plate

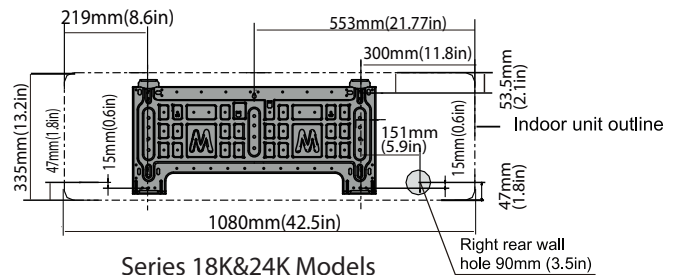


## NOTE REGARDING WALL STUDS

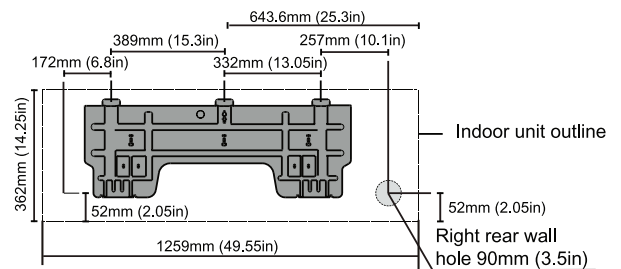
1. Wall Mounting Bracket should be installed on studs.
2. Standard US Studs are 16" on-center.
3. 16" on-center correlates with the holds marked "US" on the metal bracket.



Series 12K Models



Series 18K&24K Models



Series 36K Models

**Fig. 4.3**



## Step 4: Prepare refrigerant piping

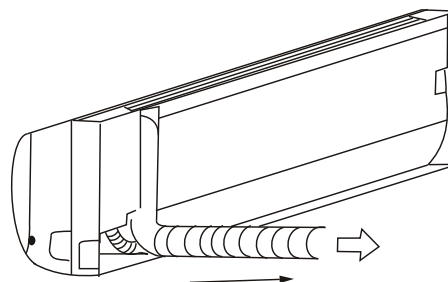
The refrigerant piping is inside an insulating sleeve attached to the back of the unit. You must prepare the piping before passing it through the hole in the wall. Refer to the Refrigerant Piping Connection section of this manual for detailed instructions on torque requirements, technique, etc.

1. The piping will exit the unit from the right side of the air handler.
2. Connect the indoor refrigerant piping to the connective piping that will join the indoor and outdoor units.
3. Based on the position of the wall hole relative to the mounting plate, determine the necessary angle of your piping.
4. Grip the refrigerant piping at the base of the bend.
5. 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 should exit the indoor unit from the right-hand side:

Refer to Fig. 4.4 for details.



The piping will exit the unit from the right side of the air handler

Fig. 4.4

### 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 don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 30-50mm (1.25-1.95in), depending on the model.

1.2-1.95in  
(30-50mm)



1.2-1.95in  
(30-50mm)

Move to left or right

### ! CAUTION

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

## Step 5: Connect Refrigerant Piping to Indoor Unit

### 5.1 Tools needed

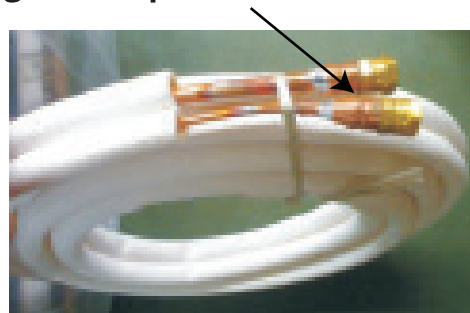
You will require the following tools to carry out this installation work correctly:

- 1x crescent wrench, 19 mm
- 1x crescent wrench, 22 mm/24mm
- 1x crescent wrench, 24 mm/27mm
- 1x Allen key, 5 mm
- 1x Philips screwdriver
- 1x leak detection spray or alternatively soap suds (water/detergent mix)

### 5.2 Important information

- Follow the detailed instructions for connecting the refrigerant pipes to the indoor unit and outdoor unit. We can only provide a warranty if the lines are installed correctly as described in the instructions.
- Do not remove the sealing caps and stoppers until immediately before you install the lines.
- To prevent leaks, ensure that the quick-release screw connections are absolutely free of dirt. Moisture or foreign bodies will adversely affect the function of the quick-release connectors, leading to a risk of refrigerant loss (not covered by the warranty).
- Only install refrigerant lines outdoors in dry weather.
- The refrigerant lines must not be plastered over after they are installed.
- Please make sure that refrigerant is never allowed to enter the environment. Improper handling of refrigerant may be harmful to health. Always wear work gloves and goggles when handling refrigerant.
- Do not smoke during the installation work. The equipment must never be operated without the refrigerant lines connected, otherwise the equipment will be damaged immediately.
- The screw connections may only be tightened using the appropriate open ended (i.e. crescent or adjustable) wrench.

### Refrigerant Pipe Connectors (both ends):



If the screw connections are tightened with too little torque, they will leak. If they are tightened with too much torque, the screw connections may suffer damage. Please refer to the torque requirements section for more information. If you are not confident about connecting the refrigerant line connectors yourself, it is imperative that you contact the MRCOOL® customer service team or a professional.

#### **IMPORTANT:**

The linesets are only designed for one-time installation. Their seal can not be guaranteed if they are installed on more than one occasion. This will also void the warranty.

### 5.3 Connecting the refrigerant pipes to the indoor unit

1. Do not remove the plastic seals from the indoor equipment and the appropriate refrigerant pipe until immediately before you connect them.
2. Align the refrigerant pipes correctly, make sure the dimensions of the connecting refrigerant pipe are the same. Place the screw connector on the refrigerant pipes just on to the thread on the indoor equipment and tighten the first few threads by hand.

#### **IMPORTANT:**

**Before you continue, it is essential that you read the following instructions carefully.**



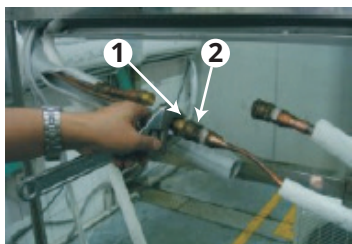


## ! TORQUE REQUIREMENTS

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.

Stamp	Outer Diameter of Pipe (in/mm)	Maximum Tightening Torque (lb•ft / N•m)
1/4"	Ø0.25" (Ø 6.35mm)	11.8lb•ft (16 N•m)
3/8"	Ø0.375" (Ø 9.52mm)	19.18lb•ft (26 N•m)
1/2"	Ø0.5" (Ø12.7mm)	26.55lb•ft (36 N•m)
5/8"	Ø0.63" (Ø16mm)	34.67lb•ft (47.01N•m)

3. Using open ended wrenches (i.e. crescent or adjustable), hold the points marked "1" and turn the nuts only at the points marked "2" (select the appropriate wrench according to the dimensions of the connector).



4. Ensure that the screw connectors do not skew as you tighten them and work quickly.

**IMPORTANT:** Before you continue, it is essential that you read the following instructions carefully.

5. After finishing the connection, use the tape to wrap the refrigerant pipe and connecting cable together.
6. After you finish connecting the quick connectors, pass the drain hose and refrigerant pipes through the wall hole as shown here.

**NOTE:** Before continuing to steps 7 - 10 ensure the line set has been properly tested for leaks and unit start up has been completed.

- 7 In order to prevent Quick Connect® parts from being exposed to air, sound deadening pads should be used during the installation.



8. Wrap the Quick Connect® with the sound deadening pads, pack down the pads tightly as shown here.
9. Wrap up the Quick Connect® with the black insulation material. For the top exposed part, use the white insulation material (supplied in Accessories box) to wrap completely as shown here.
10. At last, use tape to wrap the refrigerant pipe and connecting cable together.

### NOTE:

The Quick Connect® must be placed outside of the room. Using the wall hole sleeve, cap and neoprene to seal the wall hole. Both power cable and signal cable should be protected by conduit.

## Step 6: 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).

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 included 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 included insulation material 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. 4.5a.

- ⊘ 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 hollow center rubber plug is in the unused drain hole.

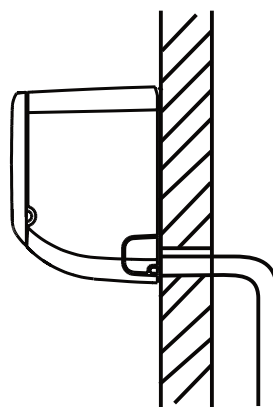


Fig. 4.5a

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

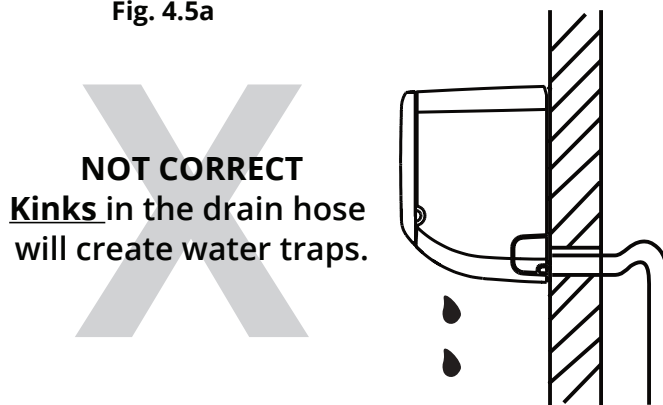


Fig. 4.5b

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

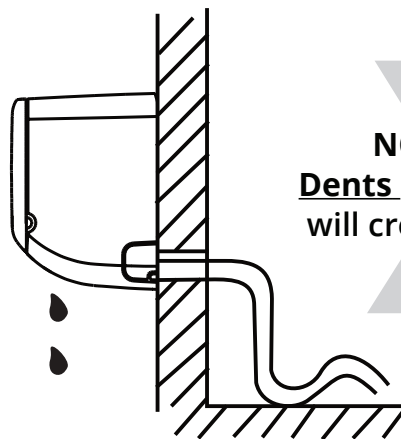


Fig. 4.5c

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

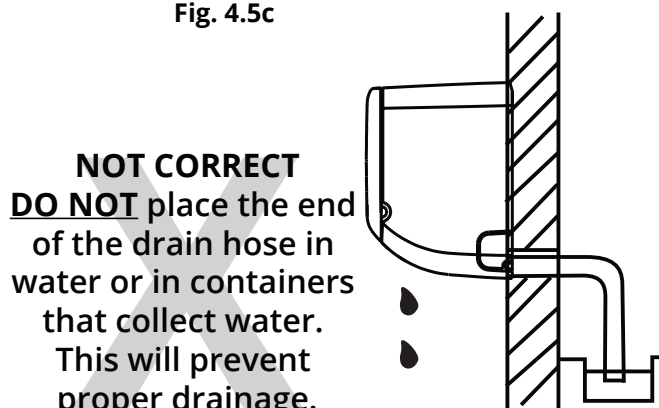


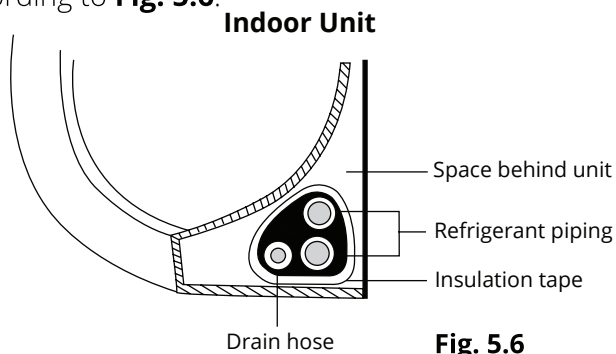
Fig. 4.5d

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

## Step 7: Wrap piping and cables

Before passing the piping, drain hose, and signal cable through the wall hole, you must bundle the piping and drain hose together and tightly wrap them together with the provided tape. The signal wire needs to be protected by conduit.

1. Bundle the drain hose and refrigerant pipes according to **Fig. 5.6**.



**Fig. 5.6**

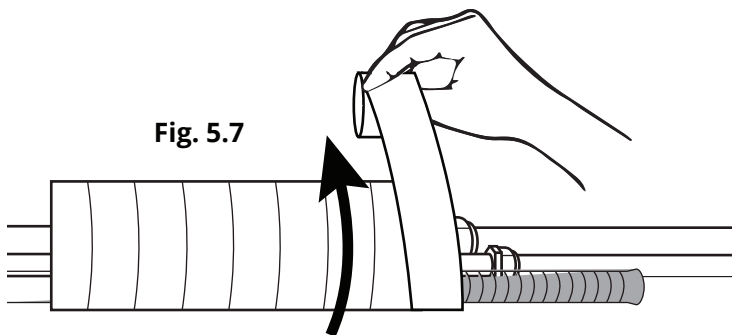
### DRAIN HOSE MUST BE ON BOTTOM

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. See **Fig. 5.7** for example. Double-check that all items are bundled in accordance with **Fig. 5.6**.



**Fig. 5.7**

### 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 as well as the signal wire (protected by conduit) 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.

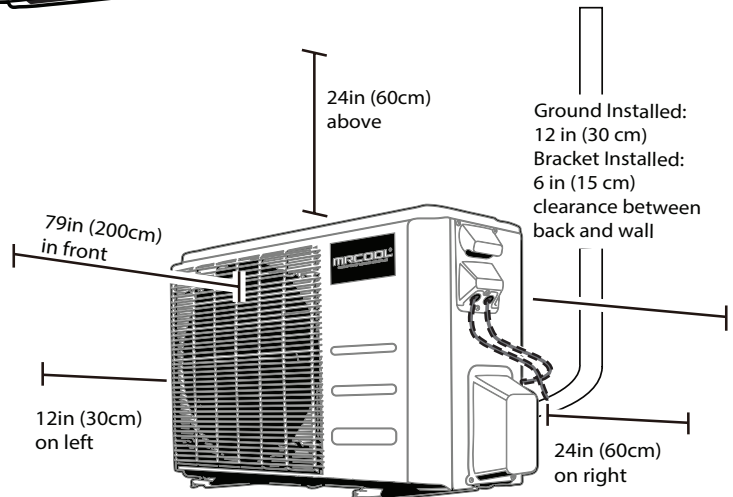
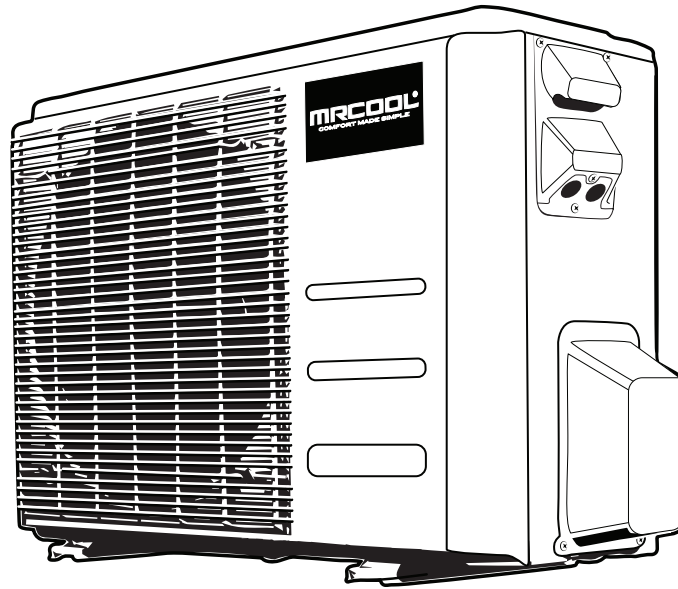


Fig. 5.1

## 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 not cause vibration
- ☑ Noise from the unit will not disturb others
- ☑ Protected from prolonged periods of direct sunlight or rain

### **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 in a location that is exposed to large amounts of dust
- ⊘ In a location exposed to a excessive amounts of salty air
- ⊘ In a location that exposes the unit to large amounts of forced water

## 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 air flow. See Fig. 5.2 and Fig. 5.3 below.

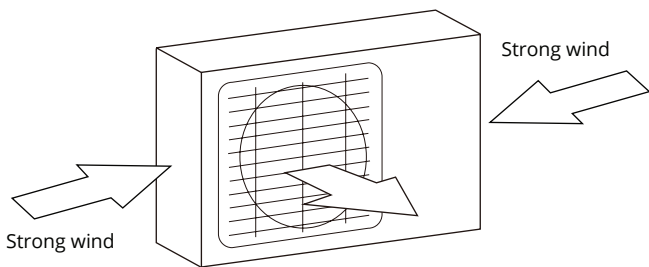


Fig. 5.2

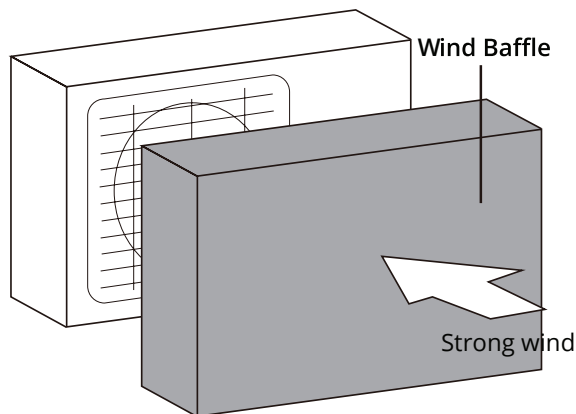


Fig. 5.3

**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.

### Step 2: Install drain joint

Heat pump units require a drain joint if the unit is elevated. 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.

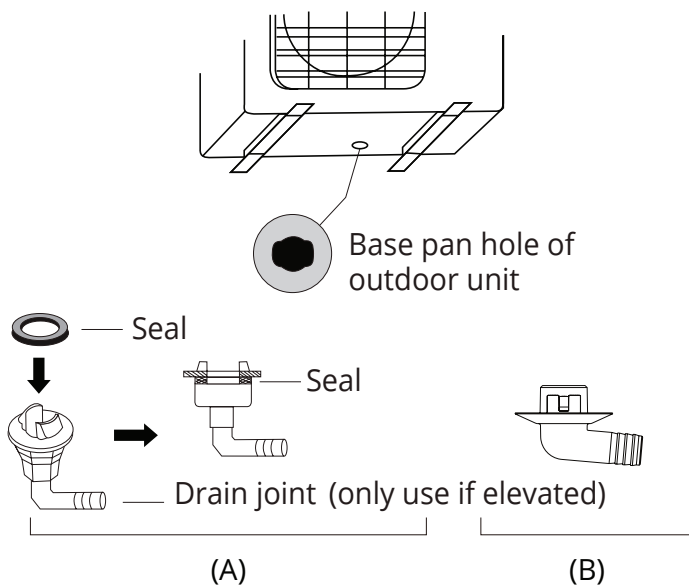


Fig. 5.4

### ! IN COLD CLIMATES

**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.**

# Outdoor Unit Installation

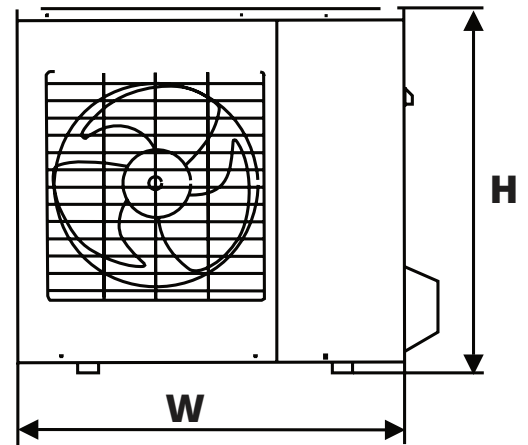
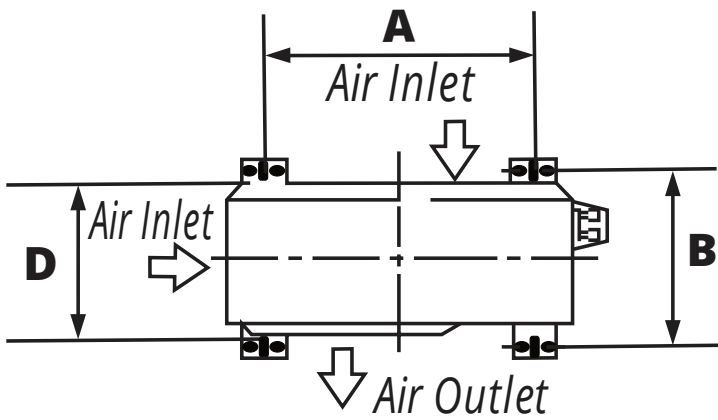


Fig. 5.5

### Step 3: Anchor outdoor unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket.

### 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.

Outdoor Unit Dimensions (inches)	Mounting Dimensions (inches)	
	Width (W) x Height (H) x Depth (D)	Width (A)      Depth (B)
DIY-12-HP-C-115B	31.5 x 21.8 x 13.1 (inches) 800 x 554 x 333 mm	20.24 in. 514 mm      13.39 in. 340 mm
DIY-18-HP-C-230B	33.25 x 27.63 x 14.29 (inches) 845 x 702 x 363 mm	21.26 in. 540 mm      13.8 in. 350 mm
DIY-24-HP-C-230B	37.21 x 31.9 x 16.53 (inches) 946 x 810 x 420 mm	26.5 in. 673 mm      15.87 in. 403 mm
DIY-36-HP-C-230B	37.21 x 31.9 x 16.53 (inches) 946 x 810 x 420 mm	26.5 in. 673 mm      15.87 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 bolts.
7. Put 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. Check that the mounting brackets are level.
7. Carefully lift unit and place its mounting feet on brackets.
8. 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.**

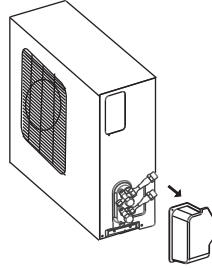


## Connecting the refrigerant pipe to outdoor unit

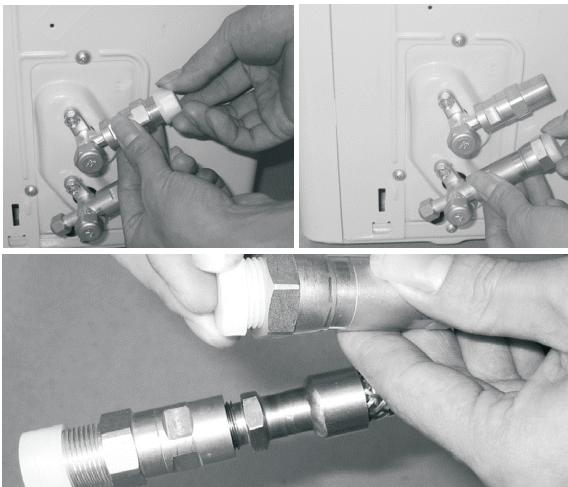
### ! CAUTION

For your safety, always wear goggles and work gloves when connecting the pipes.

1. First remove the water tray on the outdoor unit as shown.

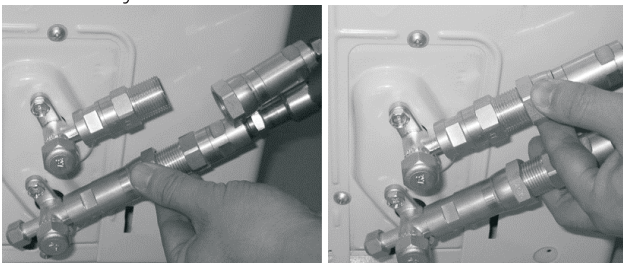


2. Do not remove the plastic seals from the outdoor unit and the appropriate refrigerant pipes until immediately before you connect them.



**NOTE:** Ensure the adapters attached to the outdoor valves have been tightened properly before attempting to connect the line set.

3. Align the refrigerant pipes correctly so that they line up with the valves and are not stressed. Place the screw connector on the refrigerant line just on to the thread on the outdoor unit and tighten the first few threads by hand.



**NOTE:** The refrigerant pipes must be connected to the valves on the outdoor unit with as little stress as possible.

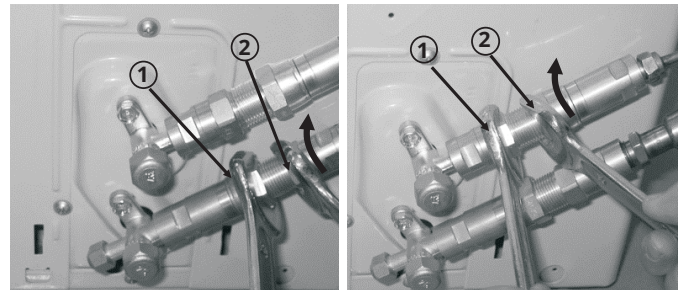
**IMPORTANT:** Before you continue, it is essential that you read the following instructions carefully.

4. Now tighten the bottom screw connector first and then the top screw connector using the open ended wrench (i.e. crescent or adjustable). Using the wrench, hold the points marked "1" and turn the nuts only at the points marked "2" (Select the appropriate wrench according to the dimensions of the connector).

Ensure that the screw connectors do not skew as you tighten them and work quickly. See below for the proper torque requirements.

### ! IMPORTANT

Since the coupling works with tapping rings, it may leak if you undo and reconnect the pipes. This will also void the warranty.



After completing steps 1- 4, check that all the connections are sealed correctly using leak detection spray or soap suds. If any bubbles form, the system has a leak and the screw connectors must be retightened using an crescent or adjustable wrench.



# Refrigerant Piping Connection

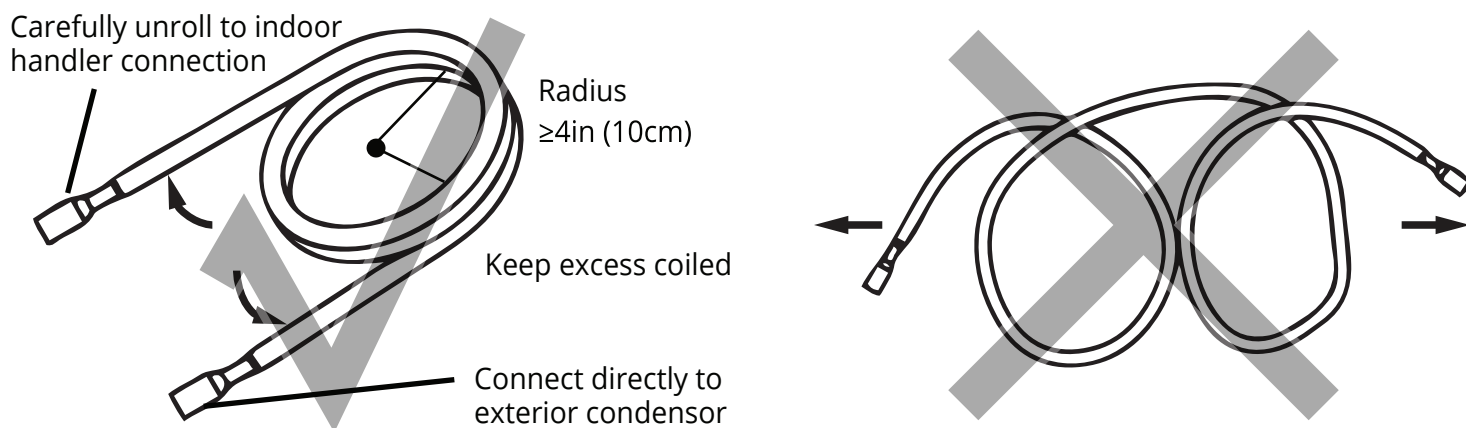
## Extend the pipe by unwinding it

1. Use your hands to slowly unwind the copper piping (Quick Connect® line set). Only unwind as much as necessary for use.
2. If the pipe is repeatedly bent or extended, it will become hard and difficult to manipulate. Avoid bending or extending the pipe for more than 3 times.
3. Do not bend the pipe excessively, otherwise it will break.

Refer to **Fig. 6.1**

### MINIMUM BEND RADIUS

When bending connective refrigerant piping, the minimum bending radius is 4 in. Refer to **Fig. 6.1**



**Fig. 6.1**

## ! 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.

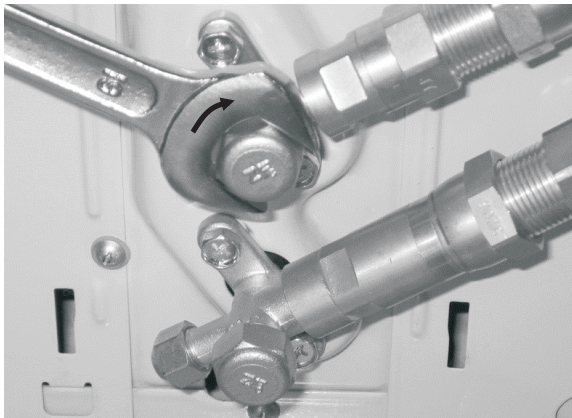
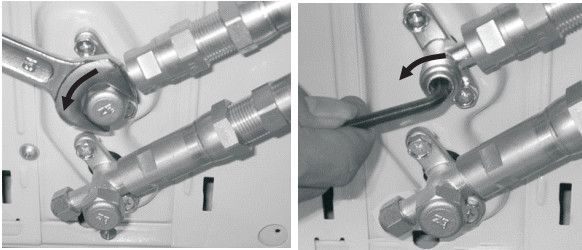
Stamp	Outer Diameter of Pipe (in/mm)	Tightening Torque (lb·ft / N·m)	Add. Tightening Torque (lb·ft / N·m)
1/4"	Ø0.25" (Ø 6.35mm)	11 lb·ft (14.91 N·m)	11.8lb·ft (16 N·m)
3/8"	Ø0.375" (Ø 9.52mm)	18.4 lb·ft (24.95 N·m)	19.18lb·ft (26 N·m)
1/2"	Ø0.5" (Ø12.7mm)	25.8 lb·ft (34.98 N·m)	26.55lb·ft (36 N·m)
5/8"	Ø0.63" (Ø16mm)	33.19 lb·ft (45 N·m)	34.67lb·ft (47.01N·m)

# Refrigerant Piping Connection

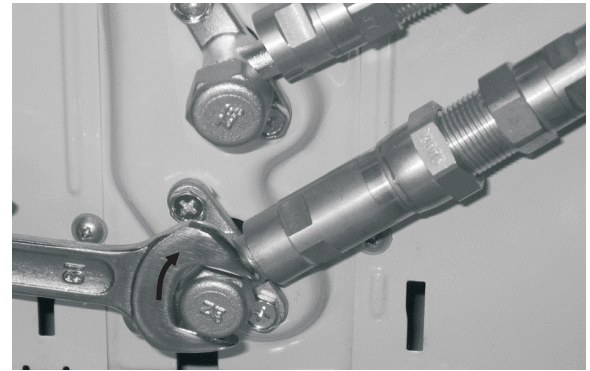
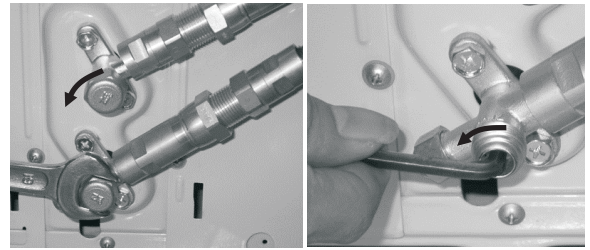
## CAUTION

**All of these steps must be completed BEFORE powering on the unit. Failing to do so could damage the unit.**

5. Now remove the cover on the top valve using a 19 mm open ended wrench (i.e. crescent or adjustable). Open the valve by turning it counter-clockwise as far as it will go using a 5 mm Allen key. The valve is now open. If the valve is not opened fully, the system may malfunction and suffer damage. Screw the cover back on to the top valve and tighten it well to ensure that it is properly sealed.



6. Now remove the cover on the bottom valve using a 19 mm crescent (or adjustable) wrench. Open the valve by turning it counter-clockwise as far as it will go using a 5 mm Allen key. The valve is now open. If the valve is not opened fully, the system may malfunction and suffer damage. Screw the cover back on to the bottom valve and tighten it well to ensure that it is properly sealed.



7. After completing steps 1- 6, check that all the connections are sealed correctly using leak detection spray or soap suds. If any bubbles form, the system has a leak and the screw connectors must be retightened using a crescent or adjustable wrench.
8. Start the equipment so that the operating pressures build up inside the system. Check all the connectors again for signs of leaks
- a) during cooling mode
  - b) in heating mode.

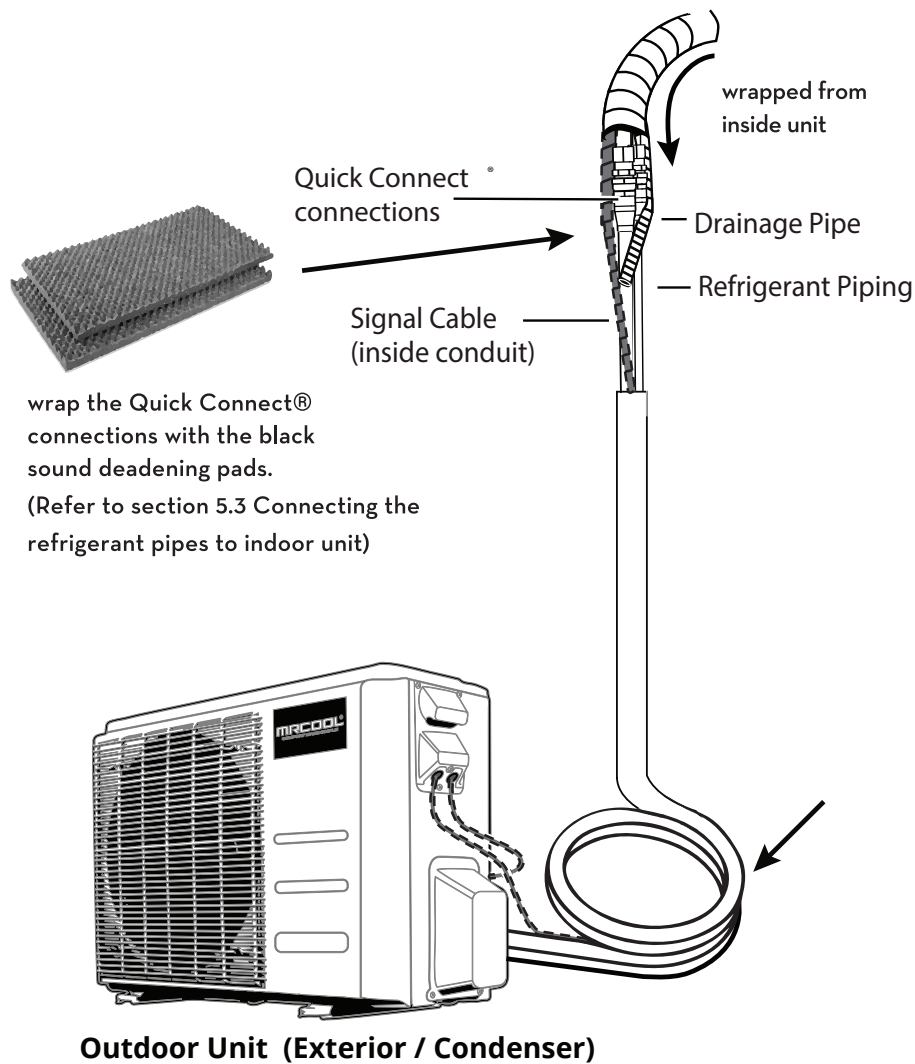
## NOTE

**If any bubbles form, the system has a leak and the screw connectors must be retightened.**

## NOTE

**Keep excess refrigerant hose coiled. Wrap with protective tape and store behind the condenser in a horizontal position (flat with the ground).**

# Refrigerant Piping Connection



## BEFORE PERFORMING ELECTRICAL WORK, READ THESE REGULATIONS

1. All wiring must comply with local and national electrical codes.
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. A qualified technician must use an approved circuit breaker or switch that disconnects all poles and has a contact separation of at least 1/8in (3mm).
7. Do not connect another appliance to the same circuit.
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in malfunction and possible fire.
10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
11. If the unit has an auxiliary electric heater, it must be installed at least 40in (1 meter) away from combustible materials.

## Connect signal and power cables

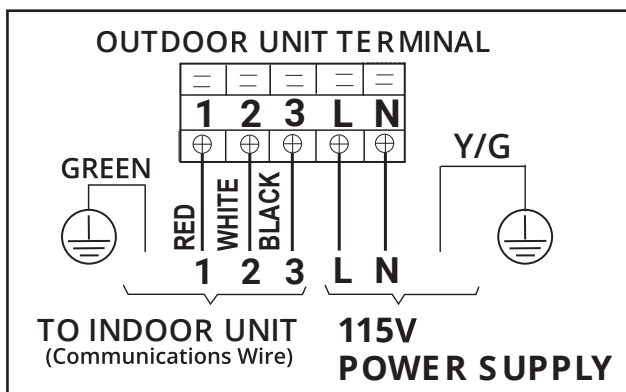
The outside unit's terminal block is protected by an electrical wiring cover on the side of the unit. A comprehensive wiring diagram is printed on the inside of the wiring cover.

### **WARNING**

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

Note that wire colors of this series / model may differ from previous models, other series and general conventions. All wiring must be performed in accordance with the wiring diagrams shown in Fig. 7.1 and demonstrated in the images below.

#### WIRE CONNECTING DIAGRAM (12K Unit Only)



#### WIRE CONNECTING DIAGRAM (All Other Units)

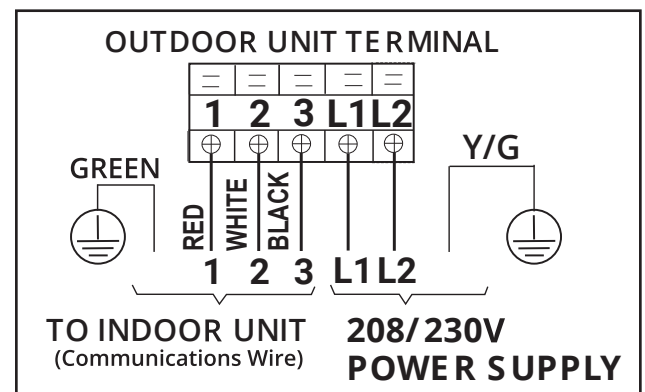


Fig. 7.1

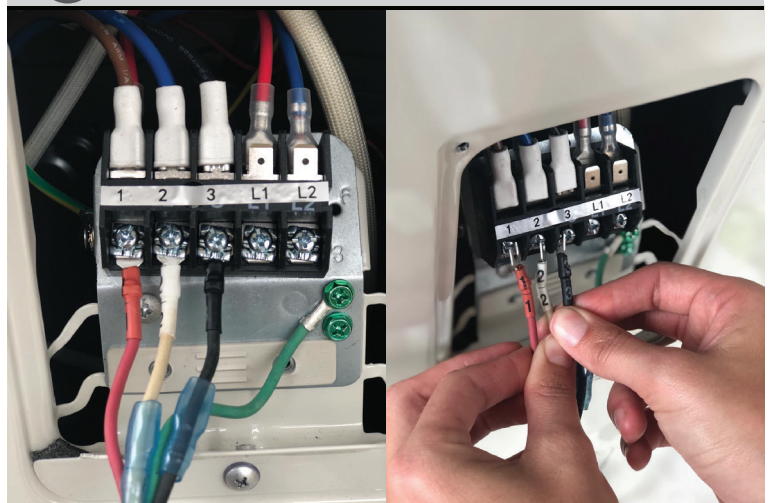
### **WARNING**

#### DO NOT MIX UP LIVE AND NULL WIRES

This is dangerous and can cause the air conditioning unit to malfunction. Make sure you clearly distinguish the Live ("L") Wires from the other wires.

All wiring must be performed in accordance with the wiring diagrams shown in Fig. 7.1 and demonstrated in the images shown here.

### **WIRES AND TERMINALS ARE NUMBERED MATCH AS SHOWN**



1. Prepare the cable for connection:

## USE THE RIGHT CABLE

- See table below for gauge requirements

### Minimum Wire Gauge for Power Cables

Model Series	Appliance Amps (A)	AWG
9K & 12K	20	12
18K	20	12
24K	30	10
36K	40	8

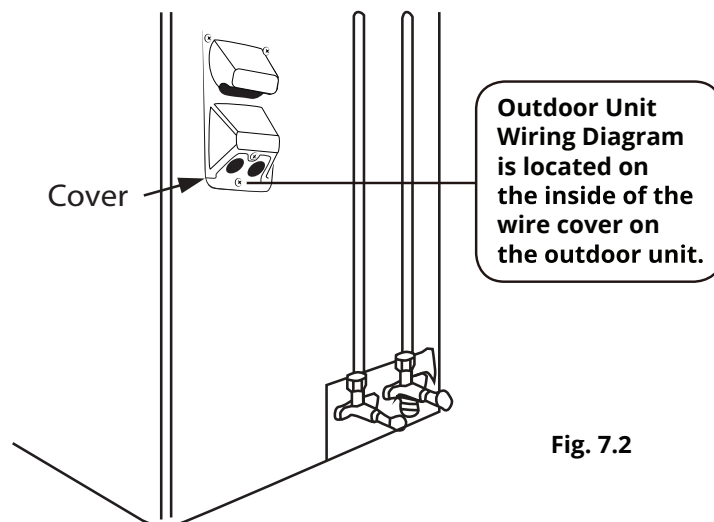


Fig. 7.2

## WARNING

**ALL WIRING MUST BE PERFORMED STRICTLY IN ACCORDANCE WITH THE WIRING DIAGRAM LOCATED AS SHOWN IN FIG 7.2.**

2. Unscrew the electrical wiring cover and remove it.
3. Unscrew the cable clamp below the terminal block and place it to the side.
4. Match the wire colors / labels with the labels on the terminal block, and firmly screw the u-lug of each wire to its corresponding terminal.
5. After checking to make sure every connection is secure, loop the wires around to prevent rain water from flowing into the terminal.
6. Using the cable clamp, fasten the cable to the unit. Screw the cable clamp down tightly.
7. Insulate unused wires with PVC electrical tape. Arrange them so that they do not touch any electrical or metal parts.
8. Replace the wire cover on the side of the unit, and screw it in place.

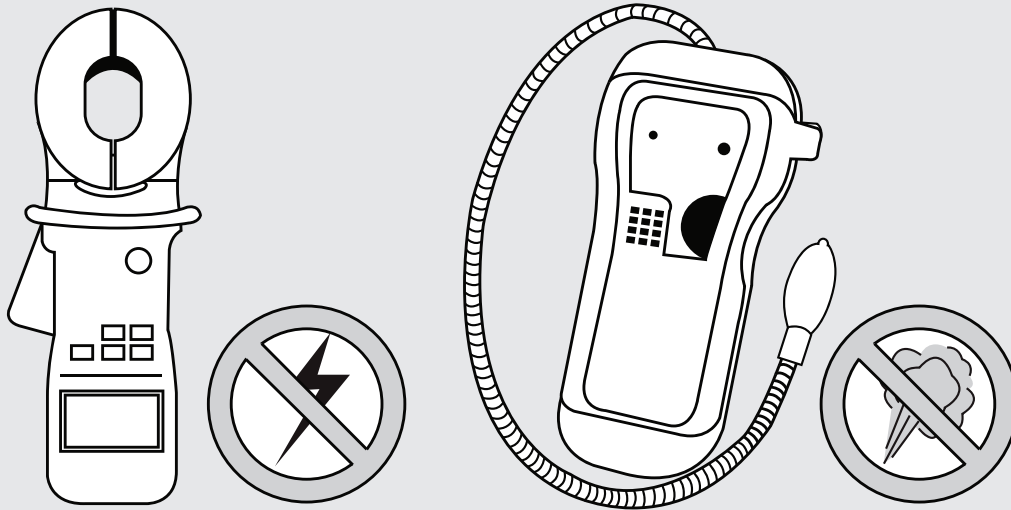
## NOTE ABOUT FUSE SPECIFICATIONS

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.

**EXAMPLE** Indoor unit: T3.15A/250VAC, T5A/250VAC, T3.15A/250VAC, T5A/250VAC, etc.

**EXAMPLE** Outdoor unit:  
T20A/250VAC( $\leq 18000$ Btu/h units),  
T30A/250VAC( $> 18000$ Btu/h units), etc.





## 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 electroprobe 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, STATE, 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 all the pipe connection points DO NOT leak, replace the valve cover on the outside unit.**

## 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 the following checks:

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		
Wall Penetration Sleeve is packed airtight		
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.

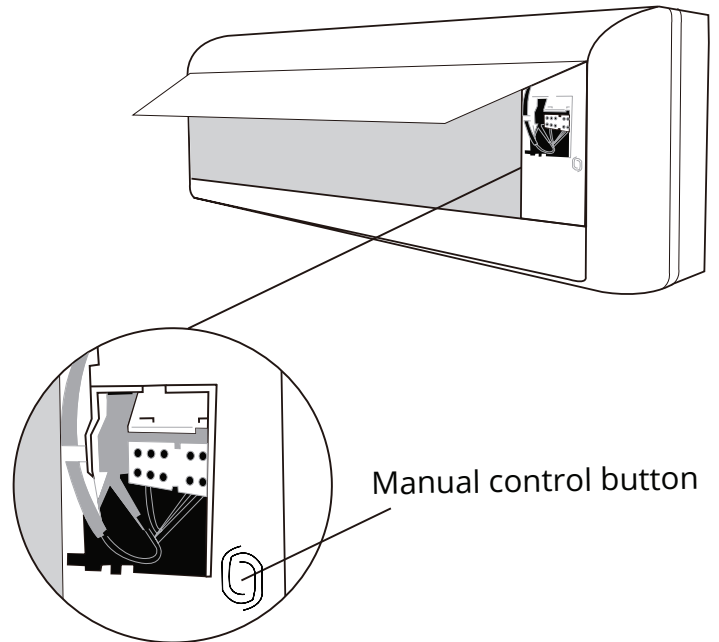


Fig. 9.1

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

You can't 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.

## ! THANK YOU

Thank you for purchasing a MRCOOL ductless mini-split heating and air conditioning product.

MRCOOL is a young, family-owned company, so we are truly thankful you trusted us with your business. Should you need any technical support or just have questions about your MRCOOL product, please don't hesitate to call us at 270-366-0457.

And if you can spare a few minutes today, a review of your new MRCOOL® product on the partner site where you purchased it would really help us out. Real reviews from actual customers like you are invaluable to a growing company like ours.

Again, thanks for being a valued customer!



The following events may occur during normal operation, and may not indicate malfunction.

Symptom	Cause
<b>Operation is delayed after restart</b>	To prevent blowout of the fuse, the compressor will not operate while the protection circuit is working for about 3 minutes after sudden OFF--ON operation of the power supply.
<b>Fan speed changes - off, very slow and then normal</b>	Automatically happens in heating mode : --prevents cold air blowing onto occupants when heating operation starts --perform automatic defrosting operation --perform low temperature heating operation
<b>Heating operation stops suddenly and defrost-light blinks</b>	In HEAT mode, the indoor unit temporarily stops for maximum of 10 minutes to perform the automatic defrosting operation.
<b>Mist coming out of the indoor unit</b>	In COOL mode, a mist generated by condensation formed with sudden cooling process may be emitted.
	Mist may generate due to moisture from defrosting process when the air conditioner restarts in HEAT mode operation after defrosting.
<b>Low volume sounds are emitted by the air conditioner</b>	Hissing sound -- during operation or immediately after stopping the air conditioner, refrigerant flowing sound may be heard.
	Squeaking sound -- normal expansion and contraction of plastic and metal parts caused by temperature change during the operation.
	Rushing air -- when louver resets its position.
<b>Dust discharges from the unit</b>	May occur when air conditioner is used for the first time or has not been used for a long time.
<b>Emits a peculiar odor</b>	Various smells generated from interior textile, furniture, or cigarette smoke absorbed into the air conditioner may be emitted. If not the case, contact a local dealer or your installation contractor.
<b>Changes to fan only while cooling or heating mode</b>	Room temperature reaches the temperature setting of the remote control. If not the case, contact a local dealer or your installation contractor.
<b>Operation is erratic, unpredictable or unresponsive</b>	Interference from cell phone towers and remote boosters may cause the unit to malfunction.
	Turn power off on unit and circuit at breaker, wait 10 seconds and power on.
	Press the ON/OFF button on the remote controller to restart operation.

*NOTE: If the problem is not resolved, please contact a qualified service professional. Be sure to inform them of the detailed malfunctions and unit model number.*

# Troubleshooting

Before you call to request service assistance, troubleshoot a problem by performing the following checks:

Symptom	Diagnostic
<b>Unit will not operate</b>	-- Is there a power failure?
	-- Has a switch been turned off, a circuit breaker tripped or a fuse blown?
	-- Is the timer operating?
	-- Are the batteries used in the remote controller exhausted?
	-- Are the batteries used in the remote controller loaded properly?
<b>Poor cooling or heating performance</b>	-- Are the air filters dirty?
	-- Is air flow unrestricted in & out of indoor & outdoor units?
	-- Are the temperature and mode settings correct?
	-- Are the windows or doors left opened?
	-- Is fan speed on high and louvers allowing maximum flow?
	-- Is direct or strong sunlight shining into the room in cooling operation?
	-- Are there other heating apparatus or computers operating, or too many people in the room in cooling operation?
-- Is the SILENCE function activated? Under SILENCE operation, noise reduction is prioritized and the air-conditioning performance may become lower.	
<b>Indicator lamps continue flashing</b>	-- The unit may stop operation or continue to run in a safety condition (depending on models). Waiting for about 10 minutes, the fault may be recovered automatically, if not, disconnect the power and then connect it again. If the problem still exists, disconnect the power and contact the nearest customer service center.  Note that the wire colors of this series / model may differ from previous models, other series and general conventions. All wiring must be performed in accordance with the wiring diagrams shown in Section 7 Fig. 7.1 and associated images. Wires and terminals are numbered to match accordingly.
<b>Error code appears in the indoor unit, such as: E0,E1,E2.... P1,P2,P3..... or F1, F2,F3.....</b>	

*NOTE: If the problem is not resolved, please contact a qualified service professional. Be sure to inform them of the detailed malfunctions and unit model number.*



## WARNING

**In the case of ANY of the following, turn off the unit immediately!**

- Signal / power cable is damaged or abnormally warm
- Burning odor
- Loud or abnormal sounds
- A power fuse or circuit breaker trips frequently
- Water or other objects fall into or out of the unit

**DO NOT ATTEMPT TO CORRECT THESE ITEMS YOURSELF!**

**CONTACT A SERVICE PROFESSIONAL IMMEDIATELY**

## Indoor Unit Error Display

Operation LED	Timer LED	Display	LED STATUS
☒ 1 time	X	E0	Indoor unit EEPROM parameter error
☒ 2 times	X	E1	Indoor / outdoor units communication error **
☒ 3 times	X	E2	Zero-crossing signal detection error
☒ 4 times	X	E3/E88	Indoor fan speed has been out of control
☒ 5 times	X	E4	Indoor room temperature sensor T1 open circuit or short circuit
☒ 6 times	X	E5	Evaporator coil temperature sensor T2 open circuit or short circuit
☒ 7 times	X	EC	Refrigerant leakage detection
☒ 2 times	O	F1	Outdoor ambient temperature sensor T4 open circuit or short circuit
☒ 3 times	O	F2	Condenser coil temperature sensor T3 open circuit or short circuit
☒ 4 times	O	F3	Compressor discharge temperature sensor T5 open circuit or short circuit
☒ 5 times	O	F4	Outdoor unit EEPROM parameter error
☒ 6 times	O	F5	Outdoor fan speed has been out of control
☒ 1 time	☒	P0	IPM malfunction or IGBT over-strong current protection
☒ 2 times	☒	P1	Over voltage or over low voltage protection
☒ 3 times	☒	P2	High temperature protection of compressor top diagnosis and solution (only for 9k,12k models)
☒ 5 times	☒	P4	Inverter compressor drive error
<del>☒</del>	<del>O</del>	P6	Discharge temp sensor
<del>☒</del>	<del>O</del>	P7	USB Smart Controller module not installed

\*\* Note that the wire colors of this series / model may differ from previous models, other series and general conventions. All wiring must be performed in accordance with the wiring diagrams shown in Section 7 Fig. 7.1 and associated images. Wires and terminals are numbered to match accordingly.

O (light)

X (off)

☒(flash)



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