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

Installation & Owner's Manual



MRCOOL®

COMFORT MADE SIMPLE

Ducted Air Handler

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.

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***Pat. https://mrcool.com/mrcool-patents/**

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IMPORTANT INSTALLATION INFORMATION!

Refrigerant Line Set Connection Options, Requirements, and Stipulations

18K/24K/30K Capacity Units - Are designed to use the MRCOOL® Quick Connect® Pre-Charged Line Set as the preferred type of refrigerant piping. If this method is used, you ***DO NOT*** have to retain the services of professional HVAC installer. However, these capacity units can also be installed using a traditional flare nut configuration of refrigerant piping. If this method is selected, you ***ARE REQUIRED*** to retain the services of a professional HVAC installer and additional components to complete this form of installation will have to be purchased separately. This form of installation also ***WILL REQUIRE*** the refrigerant piping to be properly insulated, otherwise sweating will occur and could cause property damage. If any other form of installation is attempted, or these stipulations are not followed, the ***WARRANTY WILL BE VOIDED.***

36K/48K/60K Capacity Units - Are designed to be installed using either a traditional flare nut configuration of refrigerant piping or the optional MRCOOL® No-Vac® Quick Connect® Pre-Charged Line Set. If the optional No-Vac Quick Connect Line Set is used, you ***DO NOT*** have to retain the services of a professional HVAC installer. If the traditional flare nut configuration is selected, you ***ARE REQUIRED*** to retain the services of a professional HVAC installer. Stub pipes and copper nuts are included with these capacity units to complete this type of installation. If any other form of installation is attempted, or these stipulations are not followed, the ***WARRANTY WILL BE VOIDED.***

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

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

Safety Precautions

Read Before Using

Incorrect usage may cause serious damage or injury.

The symbols below are used throughout this manual to indicate instructions that should be followed closely or actions that should be avoided to prevent death, injury, and/or property damage.



WARNING

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



CAUTION

This symbol indicates ignoring instructions may cause bodily injury, damage to the unit, or other surrounding property.



This symbol indicates that you should NEVER perform the indicated action.

WARNING FOR PRODUCT INSTALLATION

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

******ELECTRICAL WORK MUST BE COMPLETED BY A QUALIFIED ELECTRICAL TECHNICIAN******

- ⊘ ***DO NOT*** **install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it could cause fire.**
- ⊘ ***DO NOT*** **turn on the power until the installation and all work has been completed.**
- ⊘ ***DO NOT*** **install a unit equipped with an auxiliary electric heater within 3 ft (1 m) of any combustible materials.**

1. Installation must be performed according to the installation instructions. Improper installation could cause water leakage, electrical shock, fire, and could void the warranty. (In North America, installation must be performed in accordance with the requirements of NEC and CEC by authorized personnel only.)
2. Contact an authorized service technician for repair or maintenance of this unit. This appliance should be installed in accordance with national wiring regulations.
3. Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and/or failure of the unit.
4. Install the unit in a firm location that can support the unit's weight. If the location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
5. Install the drainage piping according to the instructions in this manual. Improper drainage could cause water damage to your home and/or property.
6. When moving or relocating the air conditioner, consult experienced service technicians for disconnection and re-installation of the unit.
7. For detailed information of how to install the indoor and outdoor units to their respective supports, please refer to the indoor unit installation and outdoor unit installation sections of this manual.
8. Excessive Weight Hazard: Use two or more people when moving and installing the unit. Failure to do this could result in personal injury.

⚠ WARNING FOR PRODUCT USE

⊘ ***DO NOT*** **insert fingers, rods, or other objects into the air inlet or outlet. This could cause injury, since the fan may be rotating at high speeds.**

⊘ ***DO NOT*** **use flammable sprays such as hair spray, lacquer or paint near the unit, as this could cause fire and/or an explosion.**

⊘ ***DO NOT*** **operate the unit in places near or around combustible gases. Emitted gas may collect around the unit and cause an explosion.**

⊘ ***DO NOT*** **allow children to play with the air conditioner. Children must be supervised around the unit at all times.**

⊘ ***DO NOT*** **operate the unit in a room where it could be exposed to excessive amounts of water, such as a bathroom or laundry room. Exposure to excessive water amounts can cause the electrical components to short circuit.**

⊘ ***DO NOT*** **expose your body directly to direct cool airflow from the unit for a prolonged period of time.**

1. If the unit operates abnormally (emits strange noises or a burning a smell), immediately turn off the unit and disconnect the power in order to avoid electric shock, fire, and/or injury. Call your local dealer, or MRCOOL® tech support at (270) 366-0457, for further assistance.
2. If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room in order to avoid an oxygen deficiency.
3. In certain functional environments (such as kitchens and server rooms etc.), the use of specially designed air-conditioning units is highly recommended.
4. This appliance can be used by children (8 years and older) and persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge if they have been given instruction concerning the use of the appliance and understand the hazards involved.
5. This unit is not designed for non-ducted (freeblow) applications. Electric heat kits and the blower are easily accessible without ducting. Operating this unit without ducting would create a major safety hazard and the potential for electric shock and/or personal injury.

⚠ ELECTRICAL WARNINGS

******ELECTRICAL WORK MUST BE COMPLETED BY A QUALIFIED ELECTRICAL TECHNICIAN******

⊘ ***DO NOT*** **share the power supply with other appliances. An improper or insufficient power supply could cause fire and/or electrical shock.**

1. The product must be properly grounded during installation or electrical shock could occur.
2. Appropriate wiring standards, regulations, and the installation manual must be followed for all electrical work.
3. 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 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, all must be present.
4. 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 could overheat, causing fire and/or electrical shock.
5. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and out door units.
6. All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not properly closed, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.

⚠ WARNING FOR CLEANING & MAINTENANCE

⊘ ***DO NOT*** **clean the unit with excessive amounts of water.**

⊘ ***DO NOT*** **clean unit with combustible cleaning agents, as these could cause deformation and/or fire.**

1. Turn off the device and disconnect the power before cleaning. Failure to do this could result in electrical shock.
2. Children should not be allowed to play with the appliance or perform cleaning and user maintenance.

TAKE NOTE OF FUSE SPECIFICATIONS

- **The unit's circuit board (PCB) is designed with a fuse to provide over-current protection.**
- **The specifications of the fuse are printed on the circuit board, examples of such are T5A/250VAC and T10A/250VAC.**

! CAUTION

⊘ ***DO NOT*** **allow the air conditioner to operate for extended periods of time with the doors or windows open, or in very high humidity.**

⊘ ***DO NOT*** **operate the air conditioner with wet hands, as this could cause electric shock.**

⊘ ***DO NOT*** **use device for any other purpose than its intended use.**

⊘ ***DO NOT*** **climb onto or place objects on top of the outdoor unit.**

1. Make sure that water condensation can drain smoothly and unhindered from the unit.
2. Turn off the unit and disconnect the power if the unit will not be used for an extended period of time.
3. As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Ensure care is taken when handling the unit and any of its accessories by wearing gloves and protective clothing.

NOTE ON FLUORINATED GASES (NOT APPLICABLE FOR R-290 UNITS):

1. This 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.
3. Service, maintenance, and repair of this unit must be performed by a certified technician.
4. Product un-installation and recycling must be performed by a certified technician.
5. For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO_2 equivalent or more, but less than 50 tonnes of CO_2 equivalent, and has a leak-detection system installed, it must be checked for leaks at least every 24 months.
6. Keeping a record of all leak checks for the lifetime of the unit is strongly recommended.

NOTE ON STATIC PRESSURE

The allowed static pressure range of the air conditioner on site 0.00-0.80 in H20 (0-200 Pa).

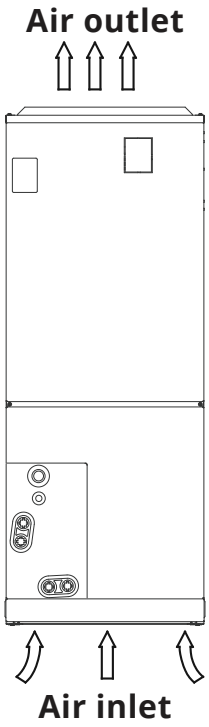
The data below represents the static pressures at the full required airflow used for AHRI testing.

Model	12-24K	30-36K	48-60K
Pressure	0.10 in H20 (25 Pa)	0.15 in H20 (37 Pa)	0.20 in H20 (50 Pa)

Units: Inch of Water Column (Pascals)

NOTE: The maximum functional total external static pressure cannot exceed 0.80 in WC (200 Pa). The airflow reduces significantly pressures above and beyond 0.80 in WC (200 Pa). The system design should allow for the increased resistance of filters as they become dirty.

Indoor Unit Overview



Operating Temperature Ranges

	COOL Mode	HEAT Mode	DRY Mode
Room Temperature	61°F - 90°F (16°C - 32°C)	32°F - 86°F (0°C - 30°C)	50°F - 90°F (10°C - 32°C)
Outdoor Temperature	18K & 24K Capacities -13°F - 122°F (-25°C - 50°C) 30K-60K Capacities 5°F - 122°F (-15°C - 50°C)	18K & 24K Capacities -13°F - 75°F (-25°C - 24°C) 30K-60K Capacities 5°F - 75°F (-15°C - 24°C)	32°F - 122°F (0°C - 50°C)

NOTE: The unit is designed to be operated in the temperatures in the above chart for safe and effective operation. If the unit is operated outside of these temperatures, it could become less efficient and/or malfunction.

For Units with an Auxiliary Electric Heater: When the outside temperature is below 32°F (0°C), it is strongly recommended to keep the unit plugged in at all times to ensure smooth, unhindered performance.

Features

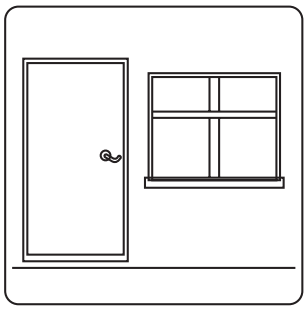
Refrigerant Leak Detection System (some models)

In the event of a refrigerant leak, the LCD screen will display "EL0C" and the LED indicator light will flash.

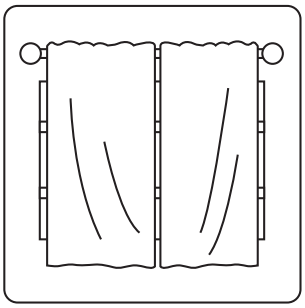
NOTE

1. **Requirements of wired controller: Control AXU function for live heating.**
2. **The default temperature of the unit during the first start up is 60.8°F (16°C) during cooling mode and 86°F (30°C) during heating mode. When the temperature stops it is at the current room temperature.**

Optimal Operation



Doors and windows should be kept closed.



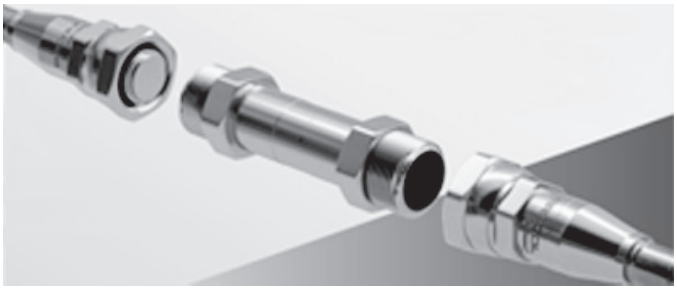
Closing the curtains while heating also helps keep the heat in

To achieve optimal performance, please note the following:

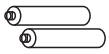
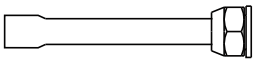
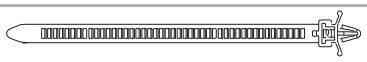
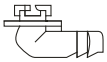
- ⃠ ***DO NOT*** **put any objects near the air inlets & outlets. Doing this would impair performance.**
- ⃠ ***DO NOT*** **set the unit to excessive or extreme temperature levels.**
- **While cooling, close curtains to avoid direct sunlight.**
- **Keep windows and doors closed, as this will keep cool or warm air in the room.**
- **Limit energy usage by using scheduling functions.**
- **Clean the air filter every two weeks.**
- **Replace the air filter every 30 to 90 days depending on thickness and the filter's MERV rating (minimum efficiency reporting value).**
- **Adjust louvers properly and avoid direct airflow.**

Additional Line Sets & Coupler Kit

If you find the default line set lengths are not sufficient for your application, additional line sets are available for purchase. You will also need a coupler kit (pictured below), which allows line sets to be connected together. The coupler kit is installed and checked for leaks by following the same steps described in this manual for connecting the line set to the indoor air handler (Refer to Section 6: Refrigerant Piping Connections for these steps).



The listing below shows the accessories and parts (these may vary depending on purchase & options). Use all of the installation parts and accessories to install the system. Improper installation may result in water leakage, electrical shock, fire, and/or equipment failure.

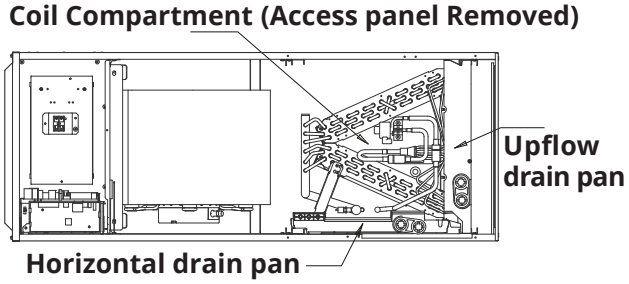
PART	LOOKS LIKE...	QUANTITY	
Owner's & Installation Manual		1	
Remote Controller		1	
Remote Controller User Manual		1	
Batteries		2	
Stub Pipes (included with 36K-60K units only) (2 packed with indoor unit, 2 packed outdoor unit)		4	
Thermostat		1	
Thermostat Manual		1	
Fastening Belts		2	
Drain Joint		1	
Seal		1	
Sponge		4	
Copper Nut (included with 36K-60K units only)		2	
DIYPRO™ Cable (not included with 36K-60K units)		1	
Quick Connect® Line Set* (refrigerant piping for 18K-30K models only)		1	Preferred Installation Method for 18K-30K Models
No-Vac® Quick Connect® Line Set* (optional refrigerant piping for 36-60K models only)		Not Included	Optional Parts

*Pat. https://mrcool.com/mrcool-patents/

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

INDOOR UNIT INSTALLATION

Indoor Unit Parts



Safety Precautions

WARNING

⊘ ***DO NOT*** **install the indoor unit in a bathroom, laundry room, or any location where it could be exposed to excessive amounts of moisture. This could cause the wiring of the unit to short or corrode.**

- **Securely install the indoor unit on a structure that can sustain the weight of the unit. If the structure is too weak, the unit could fall and cause personal injury, unit or property damage, and/or death.**
- **Keep flammable materials and vapors (such as gasoline) away from the air handler. Also, ensure that any heating elements are at least 18 in (46 cm) above the floor if the air handler is being installed in a garage. Failure to follow these instructions could result in death, fire, and/or explosion.**

CAUTION

- **Install the indoor and outdoor units, cables, and wires at least 3.2 ft (1 m) away from televisions or radios to prevent static or image distortion. Depending on the appliances, a 3.2 ft (1 m) distance may not be sufficient.**
- **If the indoor unit is installed on metal, it must be electrically grounded.**

Indoor Unit Installation Instructions

The indoor unit should be installed in a location that meets the following requirements:

- ☑ **Enough room for the installation and maintenance to be performed.**
- ☑ **Enough room for the refrigerant piping and drain pipe.**
- ☑ **The ceiling is horizontal and its structure can sustain the weight of the indoor unit.**
- ☑ **The air inlet and outlet are not impeded.**
- ☑ **Room for properly sized return and supply ducts must be maintained.**
- ☑ **There is no direct radiation from heaters.**

CAUTION

DO NOT **install the indoor unit in any of the following locations:**

- ⊘ **Areas where oil drilling or fracking is being performed.**
- ⊘ **Coastal areas with high salt content in the air.**
- ⊘ **Areas with caustic gases in the air, such as near laundry vents.**
- ⊘ **Areas where power fluctuations can occur, such as near a factory.**
- ⊘ **Enclosed spaces, such as cabinets.**
- ⊘ **Areas with strong electromagnetic waves.**
- ⊘ **Areas where flammable materials or gas are stored.**
- ⊘ **Rooms with high humidity, such as bathrooms or laundry rooms.**

IMPORTANT

- **Be sure to apply sealant around any places where wires, refrigerant piping, and condensate piping enter the air handler cabinet.**
- **Use duct tape and/or Permagum to seal any space around the holes where condensate piping exits the cabinet. Warm air must not be allowed to enter through any gaps or holes in the cabinet.**

Indoor Unit Dimensions and Clearance Requirements

WARNING

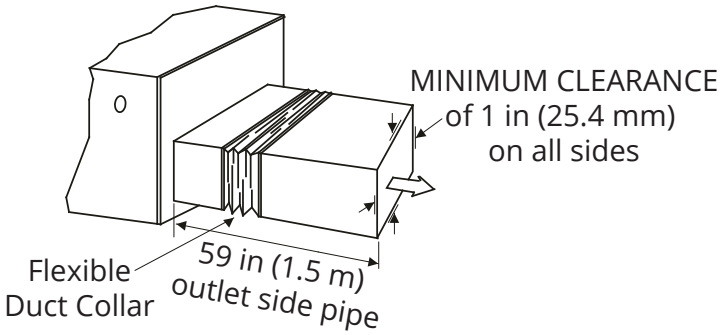
- **There must be an airtight seal between the bottom of the air handler and the return air plenum. In order to achieve this, use fiberglass sealing strips, foil duct tape, caulking, or an equivalent sealing method to ensure a tight seal.**
- **Return air must not be drawn from a room where the air handler or any gas-fueled appliance (ex: water heater), or carbon monoxide-producing device (ex: wood fireplace) is installed.**

Indoor Unit Clearance Requirements

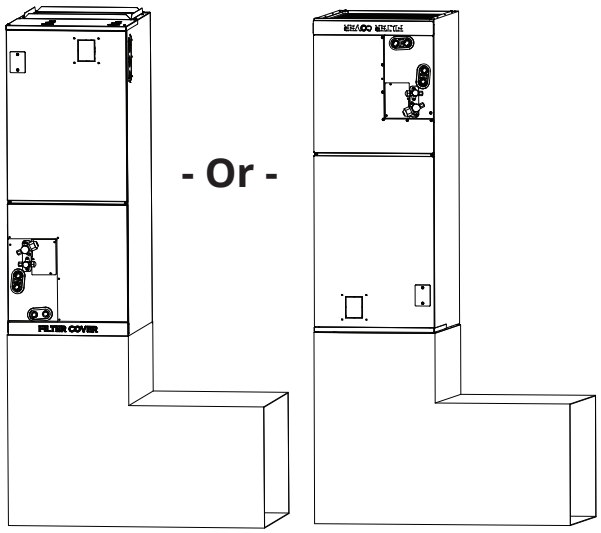
The distance between the mounted indoor unit should meet the specifications illustrated in the following diagram.

Horizontal Installations

Plenum Clearances

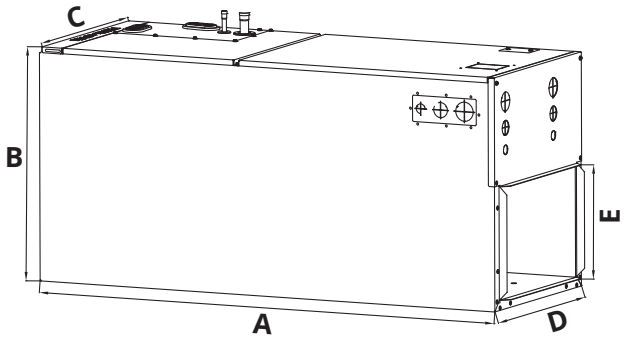


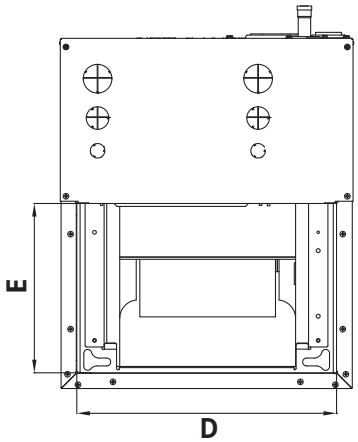
Vertical Installations



Mounting instructions: When installed vertically (upflow or downflow), the lower end of the air outlet needs to be connected to the L-shaped metal air duct and fastened by screws.

Indoor Unit Dimensions





Unit: inch (millimeter)

Dimensions	Model Capacity (Btu/h)		
	18K~24K	30K~48K	60K
Length of A	45 in (1143 mm)	49 in (1245 mm)	53 in (1346 mm)
Length of B	21 in (533 mm)	21 in (533 mm)	21 in (533 mm)
Length of C	17.5 in (445 mm)	21 in (534 mm)	24.5 in (622 mm)
Length of D	15.75 in (400 mm)	19.3 in (490 mm)	22.85 in (580 mm)
Length of E	10.25 in (260 mm)	10.25 in (260 mm)	10.25 in (260 mm)

Filter Dimensions

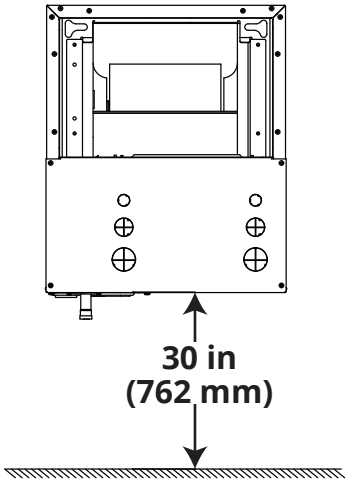


Unit: inch (millimeter)

Model Capacity (Btu/h)	Width	Depth	Thickness
12-24K	16 in (406.4 mm)	20 in (508 mm)	1 in (25.4 mm)
30-48K	19.5 in (495.3 mm)	20 in (508 mm)	1 in (25.4 mm)
60K	23 in (584.2 mm)	20 in (508 mm)	1 in (25.4 mm)

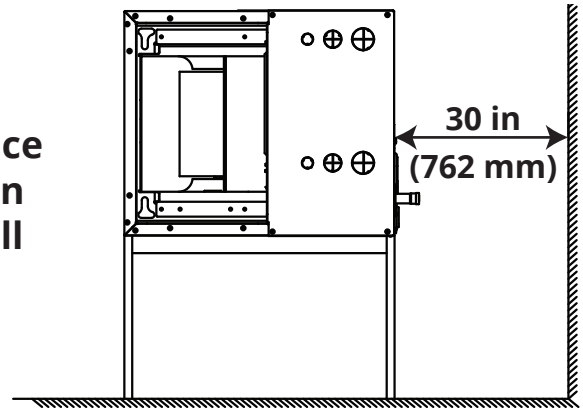
Indoor Unit Dimensions and Clearance Requirements (continued)

Vertical installations



Minimum clearance required between air handler & wall

Horizontal installations



Note on Ductwork & Connections

Air supply and return can be handled in one of several ways depending on which is best suited for the type of installation. Please see the dimensions on the previous page to determine duct inlet and outlet connection sizes to match the air handler. The vast majority of problems encountered with combination cooling systems can be linked to improperly designed or installed ductwork. For this reason, it is highly important that the duct system be properly designed and installed.

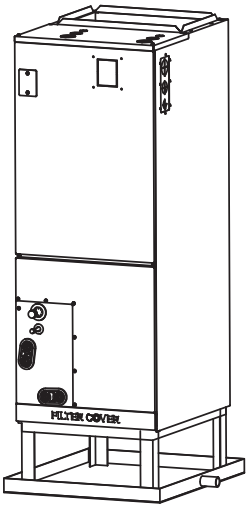
The use of flexible duct collars will minimize the transmission of vibration and noise into the conditioned space. In an installation where the return air duct is short, or where sound is likely to be a problem, a sound absorbing liner should be used inside the duct.

Insulation of the ductwork is a requirement anywhere it runs through an uncooled space during the cooling season. The use of a vapor barrier is recommended to prevent absorption of moisture from the surrounding air into the insulation. The supply air duct should utilize a properly sized transition in order to match the unit opening. All ducts should be suspended using flexible hangers and never fastened directly to the structure. This unit is not designed for non-ducted (free-blow) applications. Ductwork should be fabricated and installed in accordance with local and/or national codes.

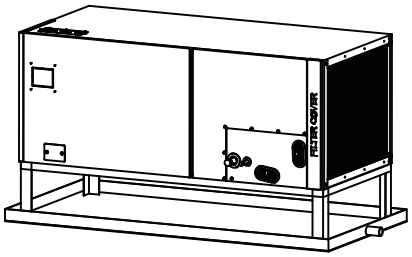
Installation Mounting Positions

The unit can be installed in a vertical (downflow or upflow) or a Horizontal (right or left) configuration.

Vertical up installations



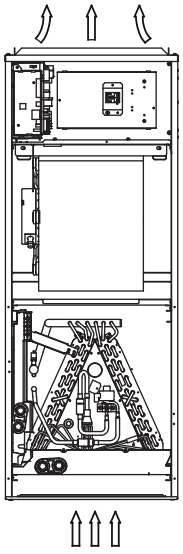
Horizontal installations



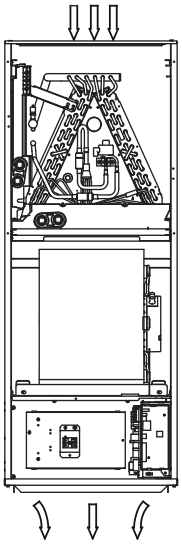
IMPORTANT

- **A field-fabricated secondary drain pan (not included), with a drain pipe to the outside of the building is required in all installations over a finished living space or in any area that may be damaged by overflow from the main drain pan. NOTE: A secondary drain pan is required for horizontal installations.**
- **This unit is not designed for non-ducted (free-blow) applications. Electric heat kit elements and/or blower is easily accessible without ductwork and creates a safety hazard that could result it electric shock and/or personal injury.**

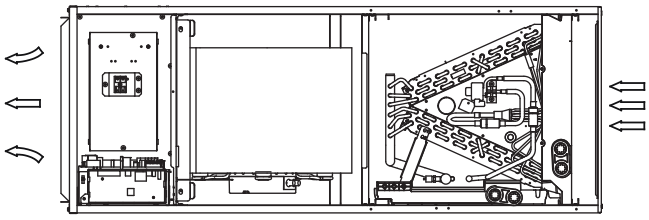
Installation Mounting Positions (continued)



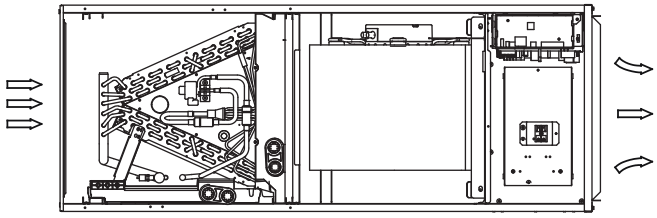
Vertical Upflow



Vertical Downflow



Horizontal Left

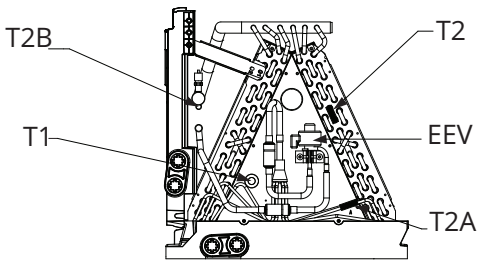


Horizontal Right

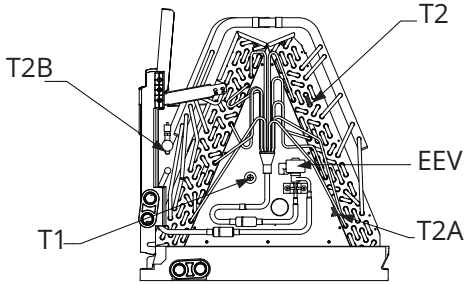
Temperature Sensor Locations

The illustrations below represent the position of each temperature sensor of the evaporator coils. Location dependent on model/capacity.

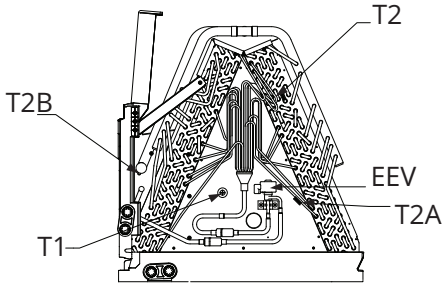
12-24K model



30-48K model



60K model



NOTE: T2A & T2B sensors are only available on some units.

Installation Overview For Horizontal Left or Vertical Upflow

The steps below represent an overview of completing the installation of a horizontal left or vertical upflow indoor unit once it has been securely mounted in place. Please refer to the sections further in this manual for more detailed information of each step.

1.) Open the upper cover.

2.) Open the cover of the electronic control box.

3.) Connect the wiring according to the appropriate wiring diagram (connect wiring to outdoor condenser first). Please refer to the **Electrical Connections** section.

4.) Replace cover of electronic control box & reinstall upper cover.

5.) Connect the refrigerant piping.

6.) Install the drainage pipes.

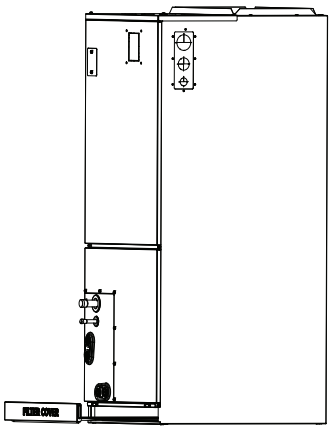
NOTE ON HORIZONTAL RIGHT & VERTICAL DOWNFLOW INSTALLATIONS

If you're planning to install the indoor unit in a horizontal right or vertical downflow configuration, additional steps are required for the unit to be installed in these positions. The evaporator and drain pan will need to be removed from the cabinet and rotated 180° then reinstalled. For more detailed instructions on how to complete these steps, please refer to the next page.

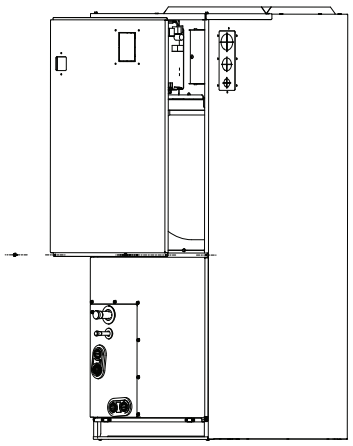
Horizontal Right & Vertical Downflow Conversion & Installation Overview

In order to install the air handler in a horizontal right or vertical downflow position the following steps must be completed. If these steps are not followed, the unit may not operate correctly and it could cause damage to the unit, personal property, and/or cause personal injury.

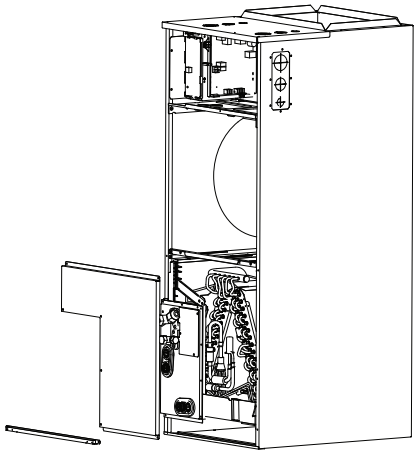
1. Remove the filter door, then remove the filter.



2. Remove the upper cover assembly.



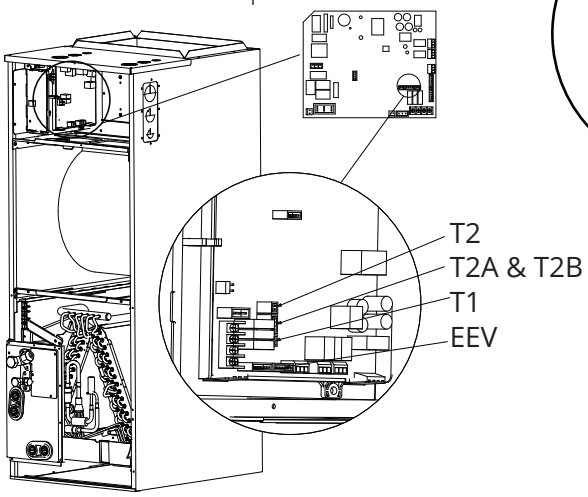
3. Remove evaporator cover plate.



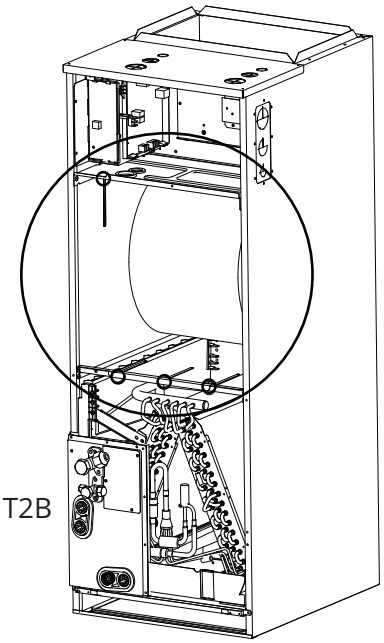
4. Remove T1, T2, T2A, T2B sensor plug, and EEV valve wiring.

   Disassemble T1, T2, T2A, T2B temperature sensor and EEV.

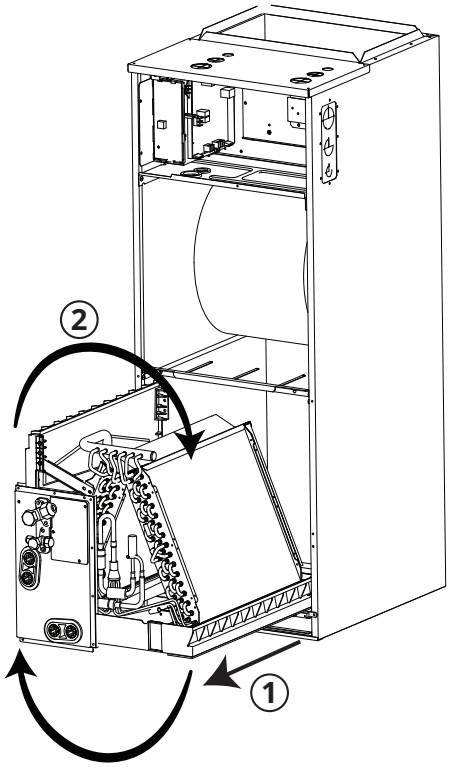
   T2: Evaporator central sensor plug
   T2A: Evaporator input sensor plug
   T2B: Evaporator output sensor plug
   T1: Room temperature sensor
   EEV: Electronic expansion valve



5. Remove T1, T2, T2A, T2B temperature sensor, & EEV wire ties.



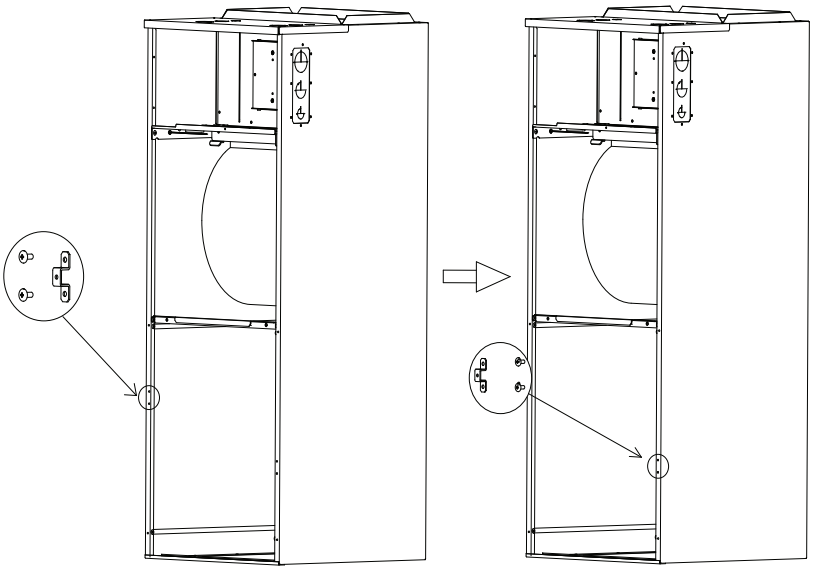
6. Remove the evaporator and drain pan. Then, rotate them 180°



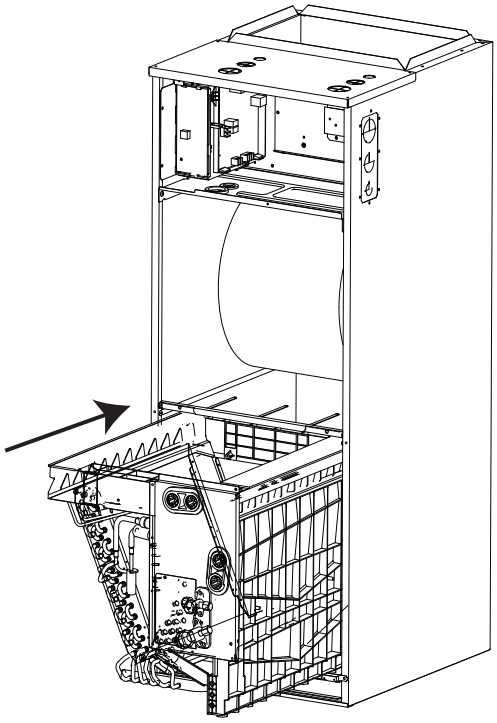
NOTE

The T2A and T2B sensors are only available on some units.

7. Adjust the position of the two mounting brackets .



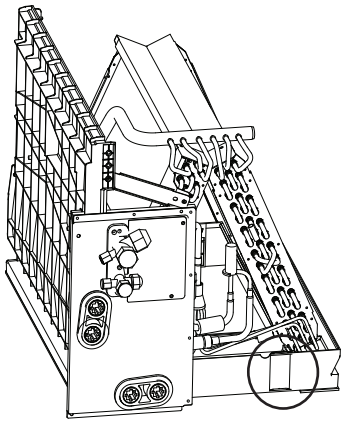
8. Reinstall the evaporator and drain pan.

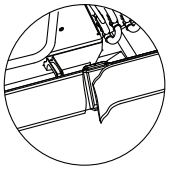


9. Reinstall T1, T2, T2A, T2B sensor plug, EEV, and tie up the temperature sensor wires.

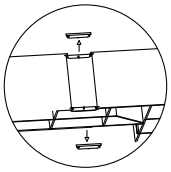
NOTE

The wiring harness needs to be routed so it passes through the groove of the water receiving tray and is then placed on the hook of the water receiving tray as shown below. Follow the directions to the right for step-by-step instructions of how to complete this step.

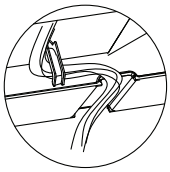




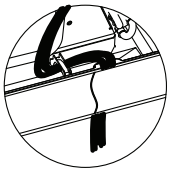
Cut the foam gasket.



Remove knockouts as shown.

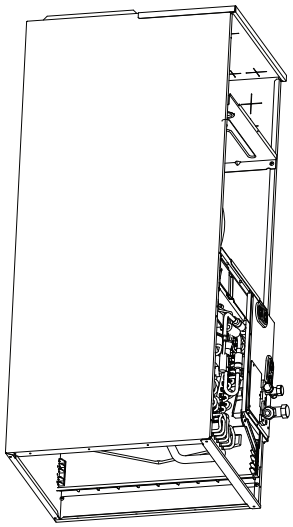


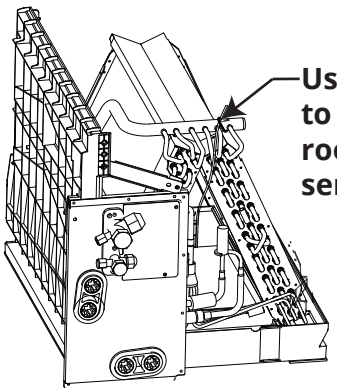
Hook the wire into the buckle and feed it down through the wire slot.



Paste the foam gasket back into place.

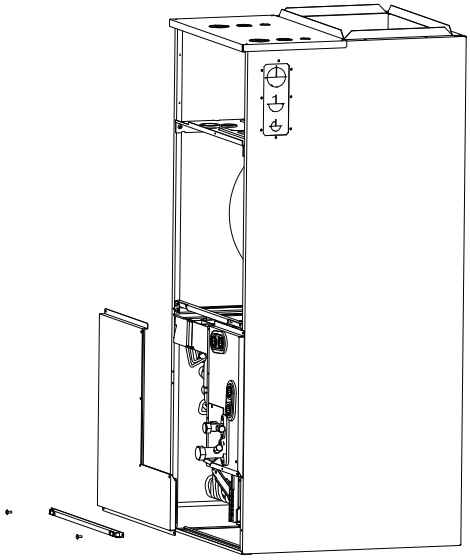
10. Evaporator assembled in place.



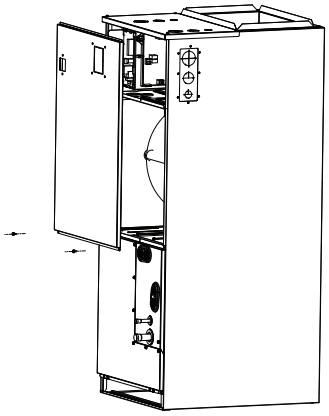


Use cable ties to secure the room temperature sensor as shown.

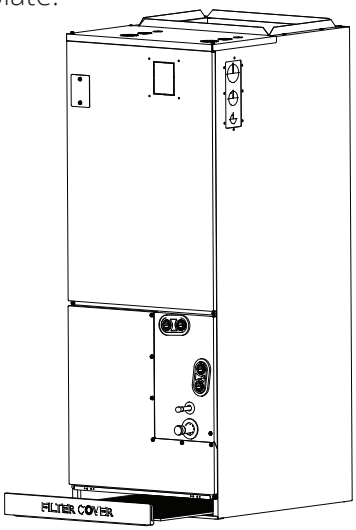
11. Reinstall the evaporator cover plate.



12. Open the cover of the electronic control box.
13. Connect the wiring according to the appropriate wiring diagram (connect wiring to outdoor condenser first). Please refer to the **Electrical Connections** section.
14. Close the cover of the electronic control box.
15. Reinstall the upper cover assembly.



16. Reinstall the filter and filter plate.



17. Connect refrigerant piping.
18. Install drainage pipes.

Installation of Air Handler Heat Kit (Optional, not included)

3

Accessories Included with Heat Kit

PART	LOOKS LIKE.....	QUANTITY
Owner's and Installation Manual		1
Foam Gasket		1
Screws		7
Silicone Breaker Cover		1
Electric Heat Kit Wiring Diagram		1
Air Switch/Circuit Breaker Label		1

NOTE

Installation of heat kit must be performed by an authorized dealer or specialist. Please make sure to wear protective gear and follow all necessary rules and regulations when installing the heat kit.

The heat kits available for the AHU are to be only installed internally within the unit in accordance with the installation instructions on the following pages. The sizes available are 5kw, 8kw, 10kw, 15kw, & 20kw. Only certain capacities of the heat kits are compatible with the different capacities of the AHU.

NOTE: If the incorrect capacity heat kit is used it could cause damage to your unit, property, and/or personal injury. Please use the table below to determine which heat kit capacities are compatible with the AHU being installed and will best suit the needs of the application.

AHU Capacity (BTU/hr)	MRCOOL Heat Kit Compatibility Chart Heat Kit Capacity (Kilowatts)				
	CENTRALHK05 (5kW)	CENTRALHK08 (8kW)	CENTRALHK10 (10kW)	CENTRALHK15 (15kW)	CENTRALHK20 (20kW)
12K	Y	Y	/	/	/
18K	Y	Y	Y	/	/
24K	Y	Y	Y	Y	/
30K	Y	Y	Y	Y	/
36K	Y	Y	Y	Y	Y
48K	/	Y	Y	Y	Y
60K	/	/	Y	Y	Y

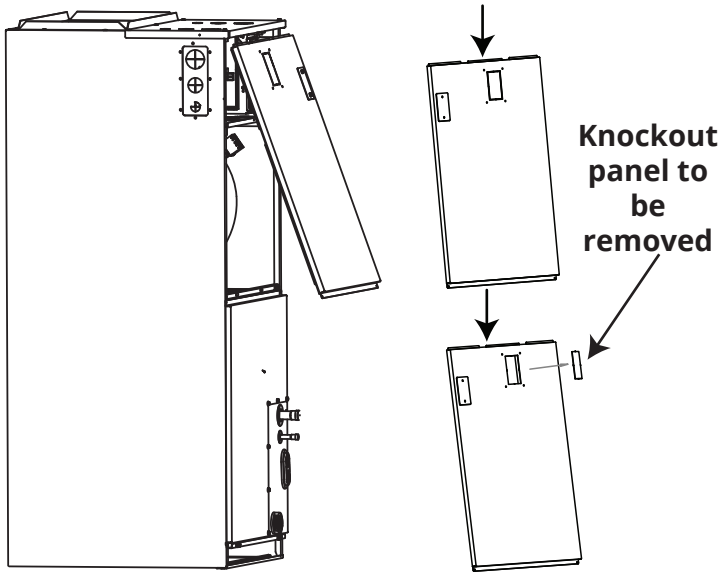
Installation Requirements

Before performing installation of the heat kit, ensure that the heat kit and accessories have not been damaged in shipping. If any damage is found, please contact the MRCOOL® tech department or your local dealer immediately. Also, confirm that all of the included accessories required for the installation are present and accounted for.

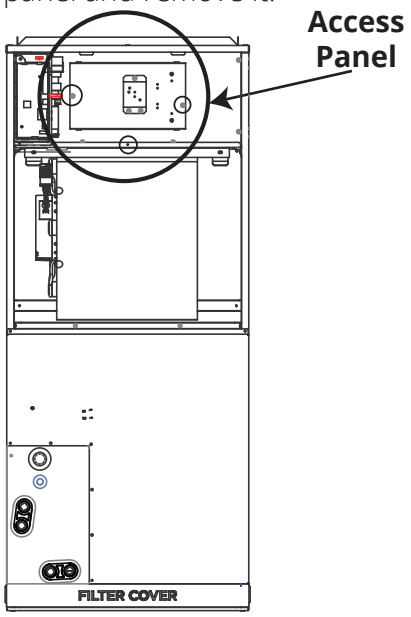
NOTE: Please check the table on the previous page and ensure the capacity of heat kit you have is compatible with the capacity of the air handler being installed.

Heat Kit Installation Instructions

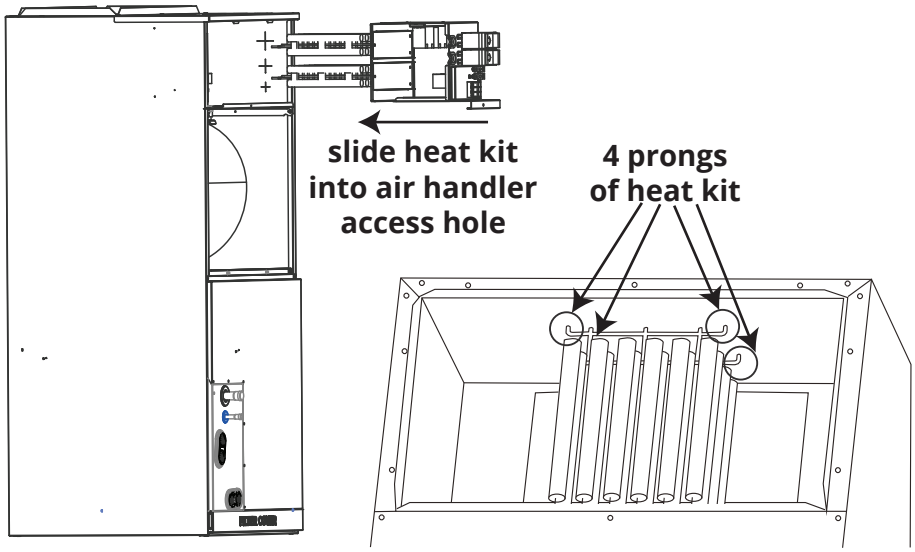
1. Remove the upper cover and use tools to completely remove the knockout panels from the cover.



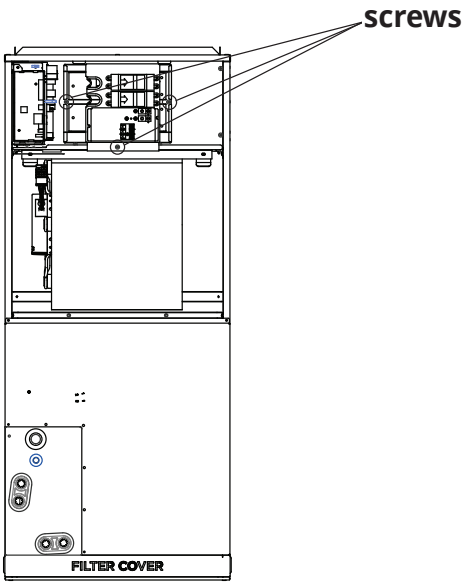
2. Remove the terminal block and power cord. Then, loosen the screws that are securing the access panel and remove it.



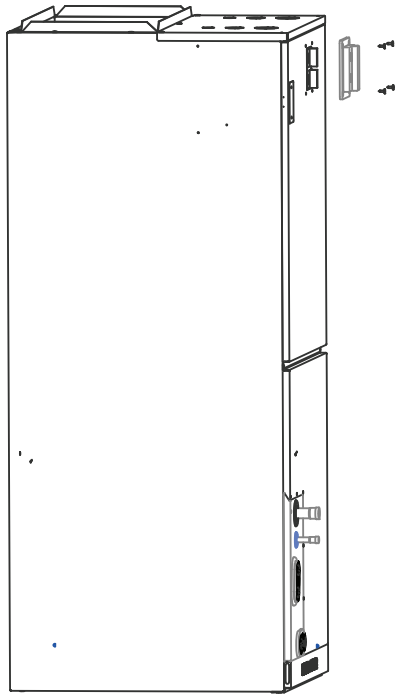
3. Now, slide the electric heat kit into the access hole of the air handler. There are four prongs on the front of the heat kit, ensure these line up and lock into the corresponding four support holes on the back of the cabinet.



4. Secure the heat kit in place with screws.



5. Complete wiring of heat kit according to the wiring nameplate.
6. Reinstall the upper cover of the air handler.
7. Install silicone breaker cover to the upper cover.



Once the electric heat kit wiring is connected and the unit installation is completed, please perform the following checks before powering on the unit and heat kit.

- Check all wiring and ensure that all wiring is securely and properly connected.
- Ensure the screws used to mount the heat kit are securely fastened.
- Ensure the size of the power wire meets the power supply requirements and NEC/local codes using the information below and contained within the electrical connections section further in this manual.

Heat Kit Capacity (kilowatts)	Number of circuit breakers	Number of relays	Number of power cord groups	Number of power cord grounding screws
5kW	1	1	2	2
8kW	1	2	2	2
10kW	1	2	2	2
15kW	2	3	3	3
20kW	2	4	3	3

NOTE

- **The heat kit wiring diagram is with the included accessories.**
- **Please attach or paste the wiring diagram to the inside cover once the installation is complete for future reference.**
- **After installing the heat kit, affix the air switch label near the upper cover air switch.**

Heat Kit Electrical Data 208/230V

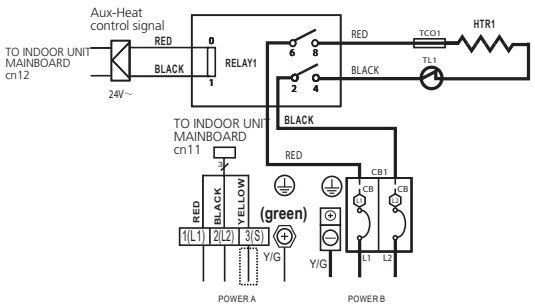
		Circuit 1			Circuit 2			Circuit 2		
Heat Kit Capacity (kilowatt)	Internal Circuit Protection	Heat Kit Amps	MCA (1)	MOCP (2)	Heat Kit Amps	MCA (1)	MOCP (2)	Heat Kit Amps	MCA (1)	MOCP (2)
5kW	Ckt Bkr	18.0/20.0	23.0/27.0	25.0/30.0						
8kW	Ckt Bkr	28.8/32.0	37.0/42.0	40.0/45.0						
10kW	Ckt Bkr	36.1/40.0	46.0/53.0	50.0/60.0						
15kW	Ckt Bkr	18.0/20.0	23.0/27.0	25.0/30.0	36.1/40	46.0/53.0	50.0/60.0			
20kW	Ckt Bkr	36.1/40.0	46.0/53.0	50.0/60.0	36.1/40	46.0/53.0	50.0/60.0			

1. Minimum Circuit Ampacity (Heater Amps + Motor Amps) x 1.25
2. Maximum Overcurrent Protection = 2.25 x (Motor Amps + Heater Amps)

Heat Kit Wiring Diagrams

5KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



NOTE 1:
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

NOTE 2: Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

NOTE 3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.

NOTE 4: POWER A,B,C,D ARE DIFFERENT POWERS.

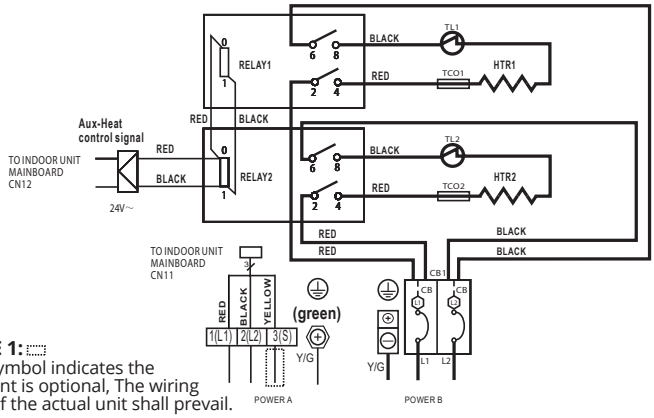
Round hole number	Relay number	Round hole number	Circuit breaker number
○	RELAY 1	○	CB1
○○			
○○○			
○○○○			
○○○○○			

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the outdoor S; for type B, S position shall not be connected.



8KW/10KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



NOTE 1:
This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

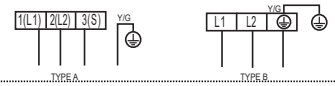
NOTE 2: Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

NOTE 3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.

NOTE 4: POWER A,B,C,D ARE DIFFERENT POWERS.

Round hole number	Relay number	Round hole number	Circuit breaker number
○	RELAY 1	○	CB1
○○	RELAY 2		
○○○			
○○○○			
○○○○○			

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the outdoor S; for type B, S position shall not be connected.

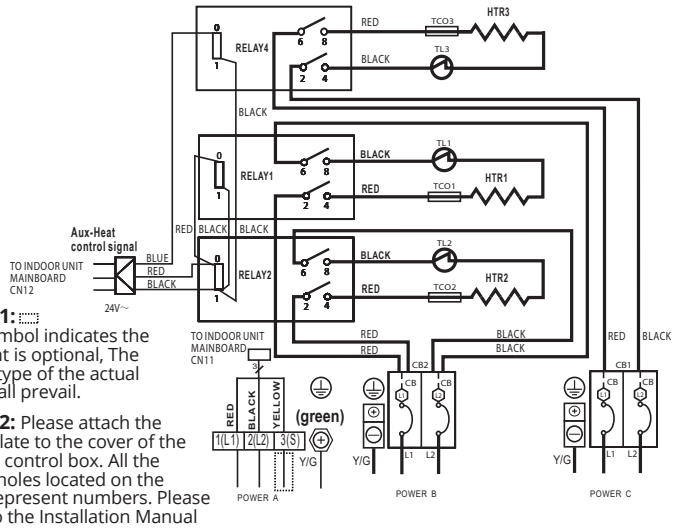


NOTE

The optional heat kits use a power supply that is independent of the power supply of the air handler & blower. Please be aware of this when wiring the heat kit.

15KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



NOTE 1: This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

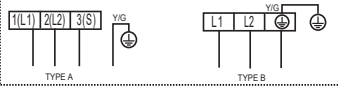
NOTE 2: Please attach the nameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

NOTE 3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.

NOTE 4: POWER A,B,C,D ARE DIFFERENT POWERS.

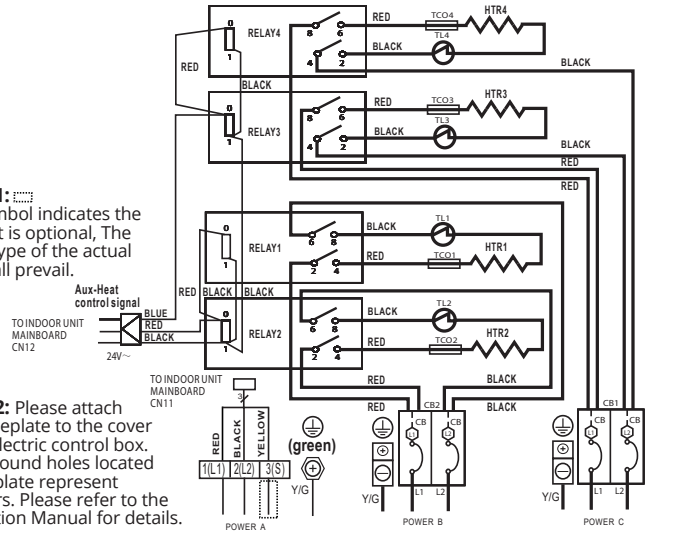
Round hole number	Relay number	Round hole number	Circuit breaker number
○	RELAY 1	○	CB1
○○	RELAY 2	○○	CB2
○○○	RELAY 4		
○○○○			
○○○○○			

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the outdoor S; for type B, S position shall not be connected.



20KW HEAT KIT

:thermal cut-out
:thermal link, self-resetting



NOTE 1: This symbol indicates the element is optional, The wiring type of the actual unit shall prevail.

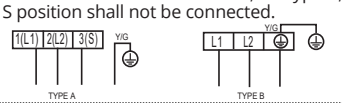
NOTE 2: Please attach thenameplate to the cover of the electric control box. All the round holes located on the plate represent numbers. Please refer to the Installation Manual for details.

NOTE 3: TO BE WIRED IN ACCORDANCE WITH NEC AND LOCAL CODES.

NOTE 4: POWER A,B,C,D ARE DIFFERENT POWERS.

Round hole number	Relay number	Round hole number	Circuit breaker number
○	RELAY 1	○	CB1
○○	RELAY 2	○○	CB2
○○○	RELAY 3		
○○○○	RELAY 4		
○○○○○			

The wiring mode of power supply A shall be based on the type of original wiring terminal of AHU; for type A, S position must be connected to the outdoor S; for type B, S position shall not be connected.



NOTE

The optional heat kits use a power supply that is independent of the power supply of the air handler & blower. Please be aware of this when wiring the heat kit.

NOTE: Install the unit by following local codes and regulations, these may slightly differ between regions.

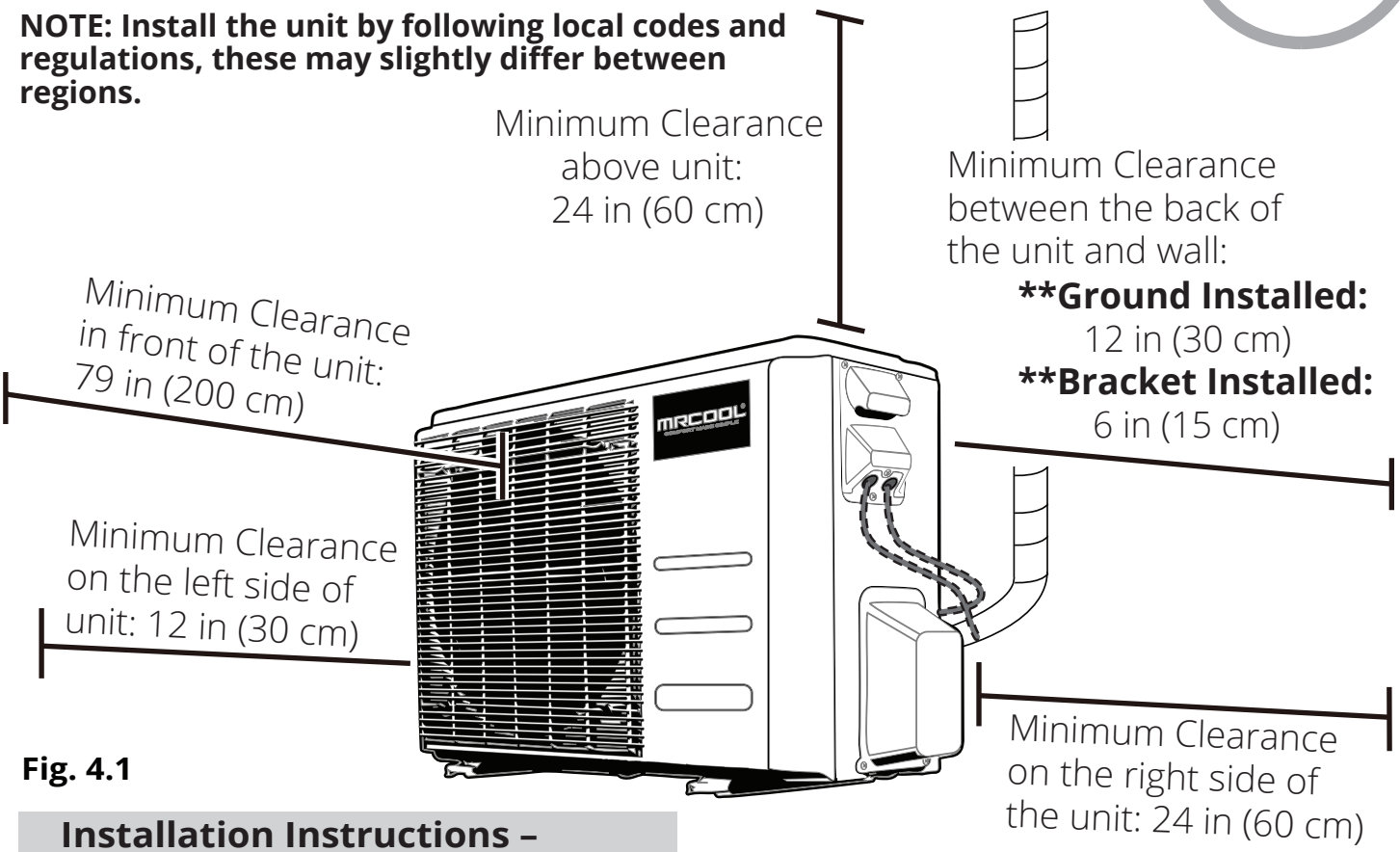


Fig. 4.1

Installation Instructions – Outdoor Unit

Step 1: Selecting an Installation Location

Before installing the outdoor unit, you must choose an appropriate location. Use the following guidelines to help you select an appropriate location.

Proper installation locations should meet following guidelines:

- ☑ **Meets all spatial requirements shown in in the illustration above (Fig. 4.1)**
- ☑ **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 exposure to direct sunlight or rain**
- ☑ **If installed in an area where snowfall is expected, take appropriate measures to prevent ice buildup and coil damage. If necessary, mount the unit on risers of at least 6 in (15 cm) or per local code to be above the average snowfall for the area.**

***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 could 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 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 the unit so the 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. 4.2** and **Fig. 4.3** below.

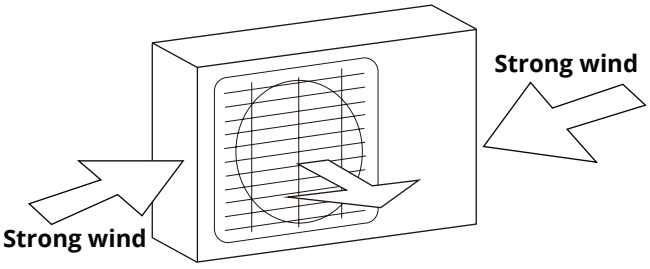


Fig. 4.2

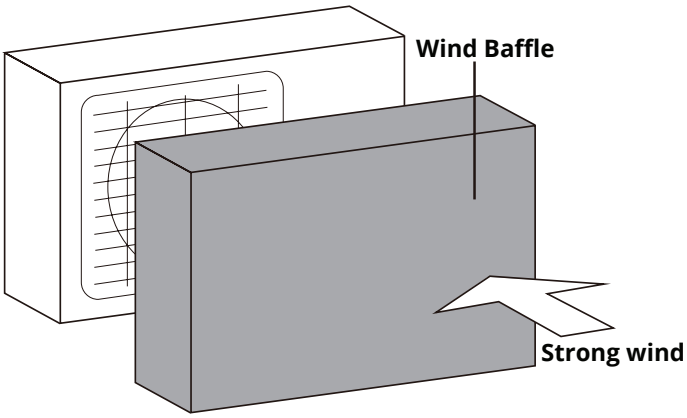


Fig. 4.3

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 airflow around the unit.

If the unit is frequently exposed to salty air (seaside): Use an outdoor unit that is specially designed to resist corrosion.

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: 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. 4.4 - 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 does not come with a rubber seal (see Fig. 4.4 - 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.

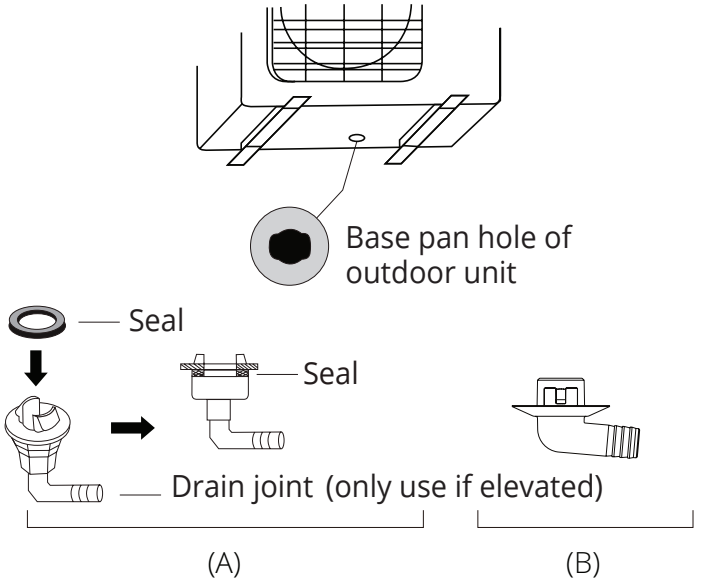


Fig. 4.4

DRAINAGE 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 in the hose and flood the unit.

Outdoor Unit Dimensions

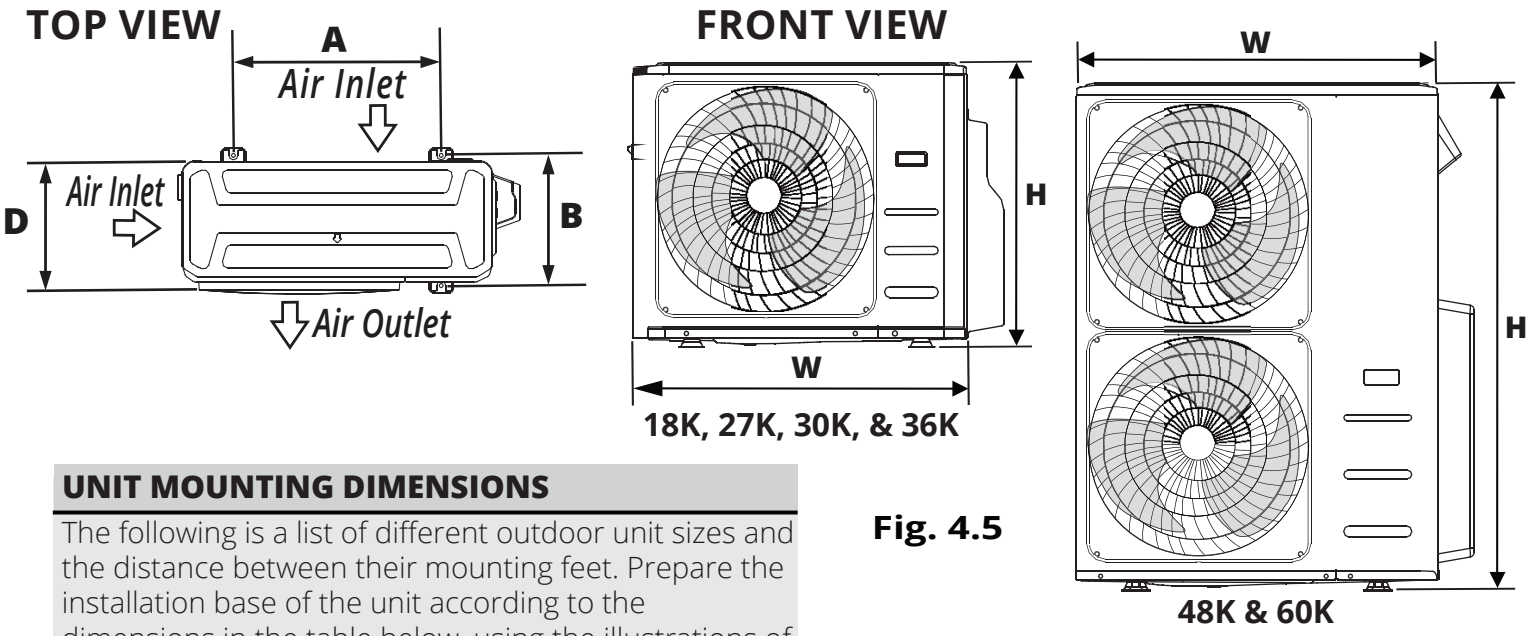


Fig. 4.5

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 in the table below, using the illustrations of the units above **(Fig 4.5)** as a guide to correspond with the table.

Outdoor Unit Model#	Outdoor Unit Dimensions: Inches (Millimeters) Width (W) x Height (H) x Depth (D)	Mounting Dimensions: Inches (Millimeters) Width (A)	Depth (B)
CENTRAL-18-HP-C-230-25	35.04 in x 26.50 in x 13.46 in (890 mm x 673 mm x 342 mm)	26.10 in (663 mm)	13.94 in (354 mm)
CENTRAL-24-HP-C-230-25	37.24 in x 31.90 in x 16.14 in (946 mm x 810 mm x 410 mm)	26.50 in (673 mm)	15.87 in (403 mm)
CENTRAL-30-HP-C-230-25	37.24 in x 31.90 in x 16.14 in (946 mm x 810 mm x 410 mm)	26.50 in (673 mm)	15.87 in (403 mm)
CENTRAL-36-HP-C-230-00	37.24 in x 31.90 in x 16.14 in (946 mm x 810 mm x 410 mm)	26.50 in (673 mm)	15.87 in (403 mm)
CENTRAL-48-HP-C-230-00	37.48 in x 52.48 in x 16.34 in (952 mm x 1333 mm x 415 mm)	24.96 in (634 mm)	15.90 in (404 mm)
CENTRAL-60-HP-C-230-00	37.48 in x 52.48 in x 16.34 in (952 mm x 1333 mm x 415 mm)	24.96 in (634 mm)	15.90 in (404 mm)

Step 3: Anchor Outdoor Unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket using M-10 bolts. Prepare the installation base of the unit according to the dimensions on the previous page.

If you are installing the outdoor unit on the ground, or a concrete mounting platform, use the following steps:

1. Mark the positions for four expansion bolts based on dimensions in the **Mounting Dimensions** chart and illustrations on the previous page.
2. Pre-drill holes for expansion bolts.
3. Clean concrete dust away from the 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 the expansion bolts, and place outdoor unit on bolts.
7. Put a washer on each of the expansion bolts, then reinstall 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 are installing the unit on a wall-mounted bracket, follow these steps:

⚠ CAUTION

Before installing a wall-mounted unit, make sure that the wall is made of solid brick, concrete, or a similarly strong material. The wall must be able to support at least 4 times the weight of the unit.

1. Mark the position of the bracket holes based on the dimensions in the Mounting Dimensions chart on the previous page.
2. Pre-drill the holes for the expansion bolts.
3. Clean dust and debris away from the holes.
4. Place a washer and nut on the end of each expansion bolt.
5. Thread expansion bolts through the holes in the mounting brackets. Then, put the mounting brackets in position and hammer the expansion bolts into the wall.
6. Check that the mounting brackets are level.
7. If the feet of the outdoor unit have rubber pads already installed, and you're using a MRCOOL® wall-mounted bracket, remove them before attempting to mount the condenser to the bracket. The mounting bracket has rubber isolating pads on it that will take the place of these.
8. Carefully lift the unit and place its mounting feet on the brackets.
9. Then, 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.

Drain Pipe Installation

5

The condensate drain pipe is used to drain condensate (water) away from the unit. Improper installation of the drain pipe could result in unit and/or property damage. A drain pipe is not included with this air handler and must be purchased separately.

NOTE ON PURCHASING DRAIN PIPE

Drain pipe installation requires a polyethylene tube (internally threaded tube 3/4 inch), which can be obtained at your local hardware store or dealer.

CAUTION

- ***DO NOT*** **pull the drain pipe forcefully as this could cause it to become disconnected.**
- **Insulate all piping to prevent condensation, which could lead to water damage.**
- **If the drain pipe is bent or installed incorrectly, water could leak and cause the water level switch to malfunction.**
- **In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area in order to avoid water damage and possiblity of slipping.**

IMPORTANT

- **After removing drain pan plug(s), check the drain hole(s) to verify that the drain opening is fully open and free of any debris. Also ensure that no debris has fallen into the drain pan during the installation that could impede flow through the drain opening.**
- **Be sure to seal around the exiting drain pipe, as well as around the liquid and suction lines to prevent infiltration of humid air.**
- **The blower within this unit draws air through the coil rather than blowing air through it. This can cause the blower to draw air in through the drainage piping and into the air supply. In order to prevent this, traps must be installed in the drainage piping (primary & auxiliary, if used).**

Indoor Unit Drain Pipe Installation

These units operate with a negative pressure at the drain connections and a drain trap is required. The trap needs to be installed as close to the unit as possible. Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan. Please refer to **Fig. 5.1** below as a guide.

1. Install the drain pipe into the main drain hole. Then, cover the drain pipe with heat insulation to prevent condensation from forming and leakage from occurring.

VERTICAL DISCHARGE

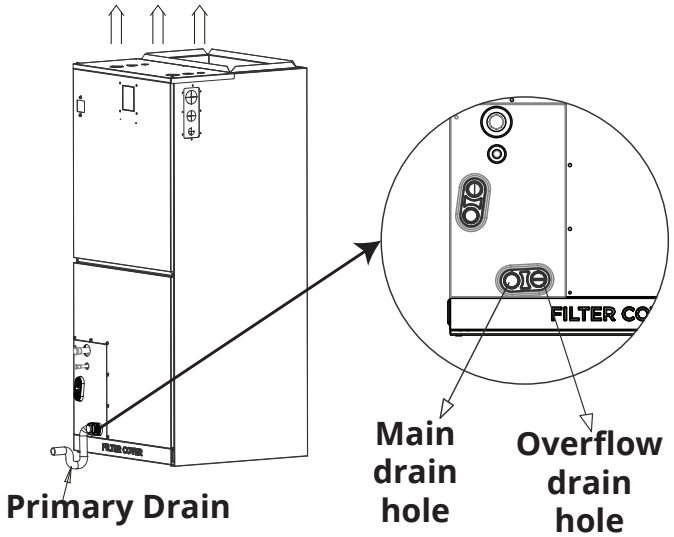
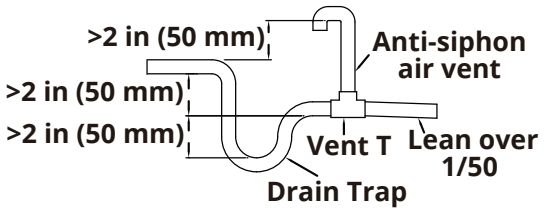


Fig. 5.1

NOTE ON HORIZONTAL PIPE RUNS

Horizontal runs must also have an anti-siphon air vent (stand pipe) installed ahead of the horizontal run to eliminate any air trapping. Please see the illustration below.



NOTE ON DRAIN PIPE INSTALLATION

- When using an extended drain pipe, tighten the indoor connection with an additional protection tube to prevent it from pulling loose.
- The illustrations on the previous page show how to trap and plug all drains during vertical and right-hand discharge.
- The seal plug provided in the accessories should be screwed in and tightened by hand.
- Improper installation of the drain pipe could cause water to flow back into the unit and flood.

2. Next, using a 3.5 in (90 mm) core drill, drill a hole into the wall to allow the drain pipe to be routed to the exterior of the building. When drilling the hole, be sure to drill it at a slightly downward angle, so that the outdoor end of the hole is lower than the indoor end by roughly 0.5 in (12 mm). This will ensure proper drainage. Please refer to **Fig. 5.2** below as a guide. **NOTE: This hole will also be used to run the refrigerant piping/line set and wiring through that will connect the air handler to the outdoor unit.**

NOTE ON DRILLING THE WALL HOLE

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

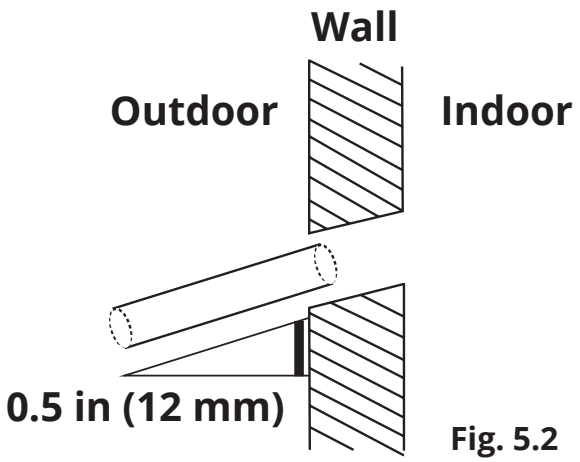


Fig. 5.2

3. Pass the drain pipe through the wall hole to the exterior of the building. Ensure that it will drain to a safe location where it will not cause water damage or the possibility of the water being expelled from the pipe being slipped on and creating a hazard.
4. Once the entire installation is complete be sure to fill the remaining space of the hole with some sort of sealant (ex: spray foam).

NOTE ON DRAIN PIPE OUTLET

- The drain pipe outlet should be at least 1.9 in (5 cm) above the ground. If the drain pipe outlet is allowed to touch the ground, it could become blocked and cause the unit to malfunction.
- If you discharge the water directly into a sewer, make sure that the drain has a U or S pipe to catch odors that could come back into the building.

Line Set Length Specifications

Unit: feet (meters)

Air Handler Capacity (BTU/hr)	18K	24K	30K	36K	48K	60K
Max. refrigerant pipe length	98.42 ft (30 m)	98.42 ft (30 m)	164.04 ft (50 m)	213.25 ft (65 m)	213.25 ft (65 m)	213.25 ft (65 m)
Max. height difference between indoor and outdoor unit	65.62 ft (20 m)	65.62 ft (20 m)	82.02 ft (25 m)	98.42 ft (30 m)	98.42 ft (30 m)	98.42 ft (30 m)

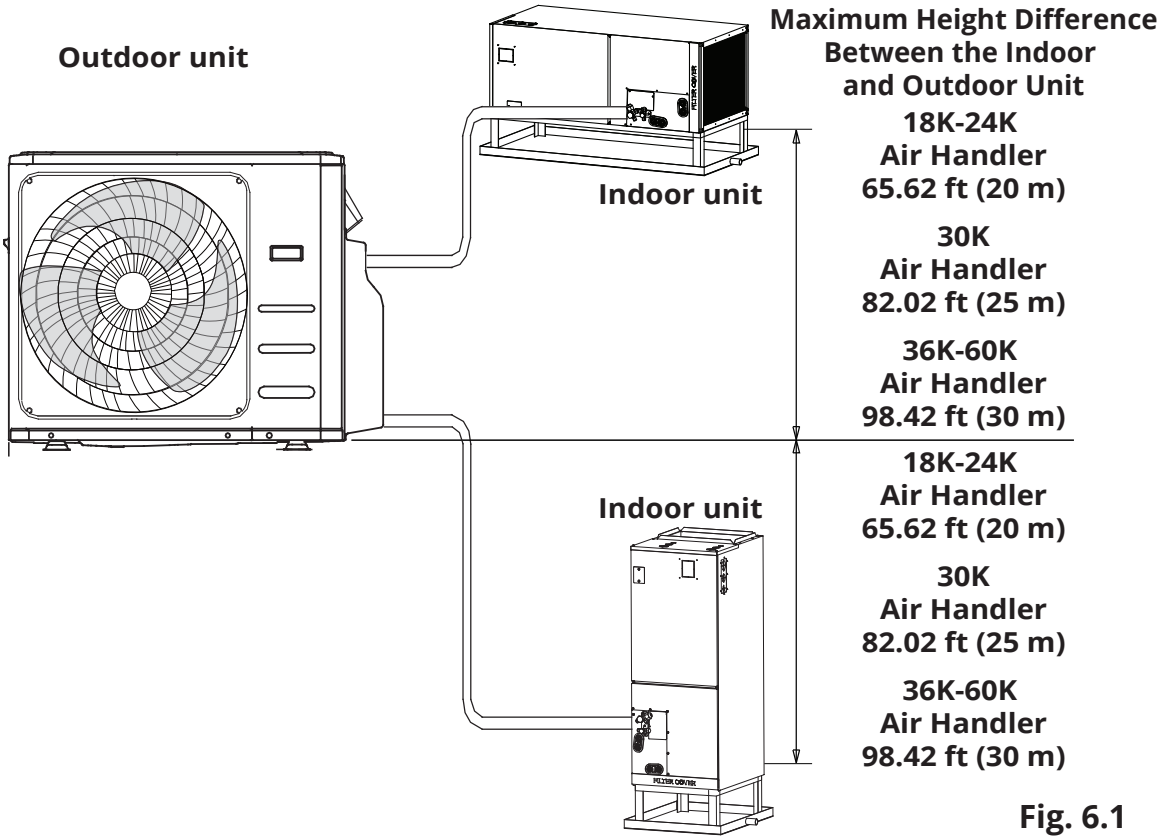


Fig. 6.1

IMPORTANT INSTALLATION INFORMATION!

Refrigerant Line Set Connection Options, Requirements, and Stipulations

18K/24K/30K Capacity Units - Are designed to use the MRCOOL® Quick Connect® Pre-Charged Line Set as the preferred type of refrigerant piping. If this method is used, you ***DO NOT*** have to retain the services of professional HVAC installer. However, these capacity units can also be installed using a traditional flare nut configuration of refrigerant piping. If this method is selected, you ***ARE REQUIRED*** to retain the services of a professional HVAC installer and additional components to complete this form of installation will have to be purchased separately. This form of installation also ***WILL REQUIRE*** the refrigerant piping to be properly insulated, otherwise sweating will occur and could cause property damage. If any other form of installation is attempted, or these stipulations are not followed, the ***WARRANTY WILL BE VOIDED.***

36K/48K/60K Capacity Units - Are designed to be installed using either a traditional flare nut configuration of refrigerant piping or the optional MRCOOL® No-Vac® Quick Connect® Pre-Charged Line Set. If the optional No-Vac Quick Connect Line Set is used, you ***DO NOT*** have to retain the services of a professional HVAC installer. If the traditional flare nut configuration is selected, you ***ARE REQUIRED*** to retain the services of a professional HVAC installer. Stub pipes and copper nuts are included with these capacity units to complete this type of installation. If any other form of installation is attempted, or these stipulations are not followed, the ***WARRANTY WILL BE VOIDED.***

Conventional Line Set Installation

WARNING

- **All field piping must be completed by a licensed technician and must comply with the local and national regulations.**
- **When the unit is installed in a small room, measures must be taken in order to prevent the refrigerant concentration in the room from exceeding the safety limit should refrigerant leakage ever occur. If refrigerant should leak and its concentration exceeds the proper limit, it may create hazards due to a lack of oxygen.**
- **When installing the refrigeration system, ensure that air, dust, moisture, or any other foreign substances do not enter the refrigeration circuit. Contamination within the system could cause the operating capacity of the unit to become poor or create high pressure in the refrigeration cycle, which could cause an explosion and/or personal injury.**
- **If refrigerant leakage should occur during the installation, ventilate the room immediately. Refrigerant gas is both toxic and flammable. Ensure there is no refrigerant leakage after completing the installation.**

Note on Pipe Length and Elevation

Ensure that the length of the refrigerant piping, the number of bends, and the drop height between the outdoor and indoor units meet the requirements listed in the table below:

The Maximum Length and Drop Height Based on Model Capacity

Units: feet (meters)

Type of Model	Capacity (Btu/h)	Length of Piping	Maximum Drop Height
North America, Austraila and the EU frequency conversion Split Type	<15K	82 ft (25 m)	32.8 ft (10 m)
	≥15K - <24K	98.4 ft (30 m)	65.6 ft (20 m)
	≥24K - <36K	164 ft (50 m)	82 ft (25 m)
	≥36K - ≤60K	213 ft (65 m)	98.4 ft (30 m)

CAUTION

Oil Traps

If oil flows back into the outdoor unit's compressor, this could cause liquid compression or deterioration of the oil return. Installing oil traps in the rising gas piping can prevent this. Please refer to **Fig. 6.2 b**elow as a guide.

- **For units less than 36,000 Btu/h,** an oil trap should be installed every 20 ft (6 m) of vertical suction line riser.
- **For units 36,000 Btu/h or greater,** an oil trap should be installed every 32.8 ft (10 m) of vertical suction line riser.

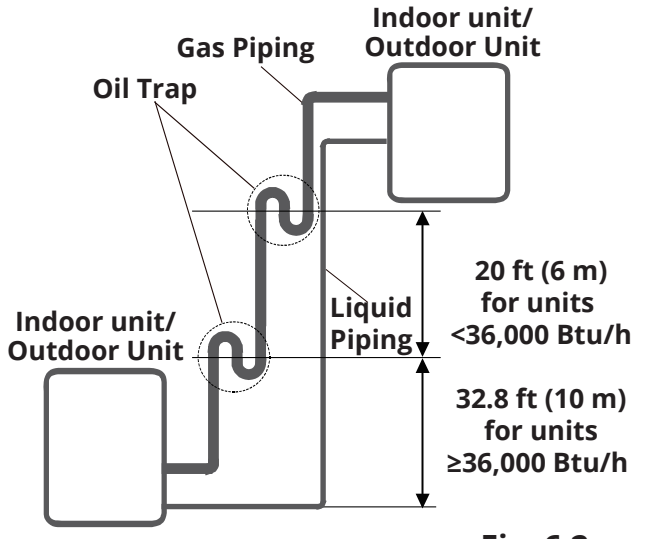


Fig. 6.2

CAUTION

⊘ ***DO NOT*** **install the connecting piping until the installation of the indoor and outdoor units have been completed.**

- **The branching pipe must be installed horizontally. If it is installed with an angle of more than 10°, it could cause a malfunction.**
- **Insulate both the gas and liquid piping in order to prevent water leakage.**

Name	Shape	Capacity (Btu/h)	Piping Diameter	Note
Connecting Pipe Assembly	Liquid side	18K	Φ1/4 in (6.35 mm)	*When installing the 60K, the gas side of the AHU is 3/4 in (19 mm), a 3/4 in (19 mm) to 7/8 in (22 mm) connector is included in the AHU accessories.
		24K/30K/36K/48K/60K	Φ3/8 in (9.52 mm)	
	Gas side	18K	Φ1/2 in (12.7 mm)	
		24K/30K	Φ5/8 in (15.9 mm)	
		36K/48K	Φ3/4 in (19 mm)	
		60K	Φ7/8 in (22 mm)*	

Connecting Refrigerant Piping

Step 1: Cut Pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure an airtight seal, 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. Ensure the pipe is cut at a perfect 90° angle. Please refer to **Fig 6.3** below for cut examples.

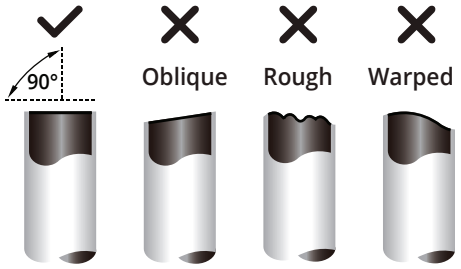


Fig. 6.3

CAUTION

⊘ ***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 airtight seal of the refrigerant piping connection. They must be completely removed by following these steps:

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 pipe. Refer to **Fig. 6.4** above.

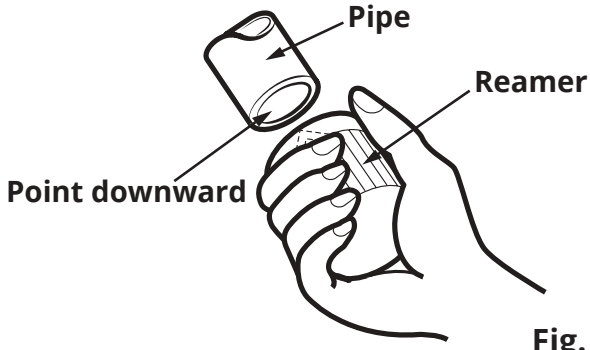
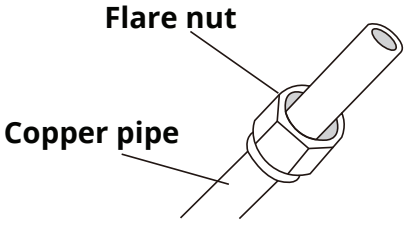


Fig. 6.4

Step 3: Flare Pipe Ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from the 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 the pipe. Ensure they are facing the correct direction because once the pipe is flared you will be unable to change their direction.



4. Remove the PVC tape from the ends of the pipe right before performing flaring work.
5. Clamp the flare form on the end of the pipe to be flared. The end of the pipe must extend beyond the flare form. Please refer to **Fig. 6.5** below.

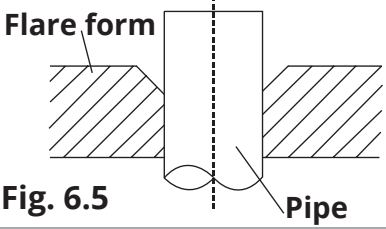


Fig. 6.5

6. Place flaring tool onto the form.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions in the table and **Fig. 6.6** below.

FLARE SHAPE

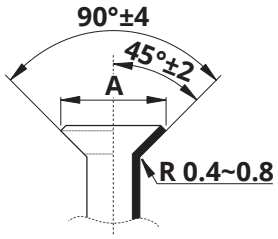


Fig. 6.6

PIPING EXTENSION BEYOND FLARE FORM

Pipe gauge	Tightening Torque lb-ft (Nm)	Flare dimension (A) Inch (millimeter)	
		Min.	Max.
Ø 1/4 in	13.3-14.8 lb-ft (18-20 Nm)	0.33 in (8.4 mm)	0.34 in (8.7 mm)
Ø 3/8 in	18.4-19.2 lb-ft (25-26 Nm)	0.52 in (13.2 mm)	0.53 in (13.5 mm)
Ø 1/2 in	25.8-26.6 lb-ft (35-36 Nm)	0.64 in (16.2 mm)	0.65 in (16.5 mm)
Ø 5/8 in	33.2-34.7 lb-ft (45-47 Nm)	0.76 in (19.2 mm)	0.78 in (19.7 mm)
Ø 3/4 in	47.9-49.4 lb-ft (65-67 Nm)	0.91 in (23.2 mm)	0.93 in (23.7 mm)
Ø 7/8 in	55.3-62.7 lb-ft (75-85 Nm)	1.04 in (26.4 mm)	1.06 in (26.9 mm)

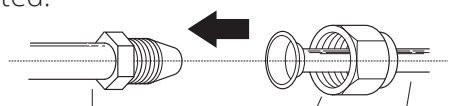
8. Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

Step 4: Connect Pipes

In this step you will connect the copper refrigerant pipes to the indoor unit first, and then to the outdoor unit. The low pressure pipe should be connected first and then the high pressure pipe can be connected.

NOTE: If you are installing a 60K capacity air handler, please refer to the instructions on the next page as it requires additional steps.

1. When connecting the flare nuts, apply a thin coat of refrigerant oil to the flared ends of the pipes.
2. Align the center of the two pipes that are to be connected.



Indoor unit tubing **Flare nut** **Pipe**

3. Tighten the flare nut by hand as tightly as possible.
4. Using a spanner, grip the nut on the unit tubing.
5. While firmly gripping the nut on the unit tubing with the spanner, use an HVAC torque wrench to tighten the flare nut (**Fig 6.7** below). Continue to tighten the flare nut with the torque wrench until specified torque rating listed in the table to the left is reached.

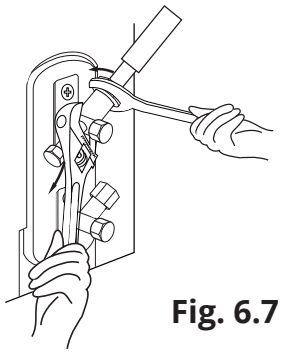


Fig. 6.7

NOTE ON TIGHTENING TORQUE

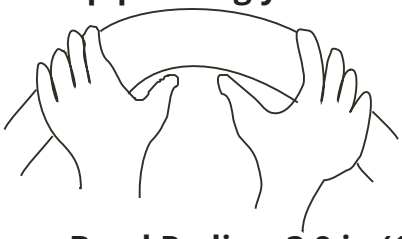
When torquing the flare nut be sure to use the correct torque rating according to the table. *DO NOT* overtighten the flare nut as this could damage it and under tightening it could also cause it to leak.

6. Then, carefully route and bend the piping to the exterior through the wall hole so it can be connected to the outdoor unit. For more detailed information about bending the piping and the minimum pipe radius please refer to the note and **Fig. 6.8** below.

NOTE ON MINIMUM BEND RADIUS

Carefully bend the refrigerant piping in the middle according to the illustration below. *DO NOT* bend the piping at an angle greater than 90° or more than 3 times as it could become damaged and/or break.

Bend the pipe using your thumbs



Minimum Bend Radius: 3.9 in (10 cm)

Fig. 6.8

7. Then, connect the refrigerant piping to the outdoor unit by repeating steps 1-5.
8. Evacuate air and moisture from the refrigerant lines. Please refer to the **Air Evacuation & Adding Refrigerant** section of this manual for more detailed instructions for completing this step.
9. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

CAUTION

Once the refrigerant piping is connected and the installation of the indoor and outdoor units has been completed, perform leak tests to ensure the system is not leaking. Should you detect a refrigerant leak, ventilate the area immediately and evacuate the system (refer to the Air Evacuation section of this manual).

9. Once the unit is installed, and you have confirmed the system does not leak, insulate and wrap all the piping, including the valve bodies with thermal insulation material to prevent condensation. Ensure the valve is sealed. Please refer to **Fig. 6.9**.

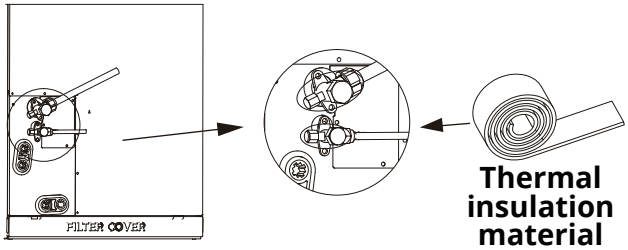


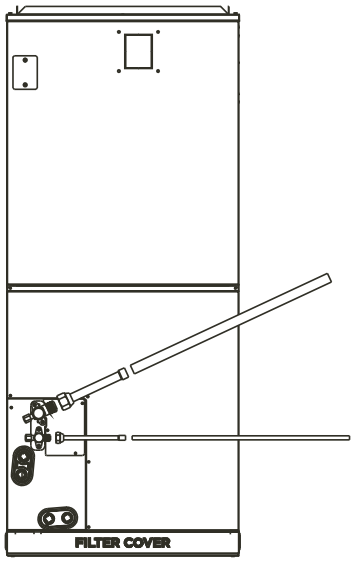
Fig. 6.9

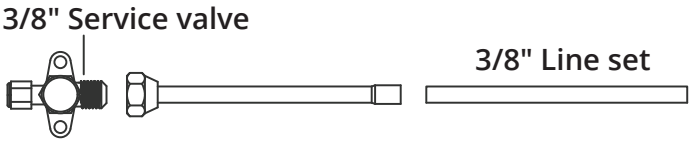
CAUTION

Ensure to wrap insulation around the piping. Direct contact with bare piping may result in burns or frostbite.

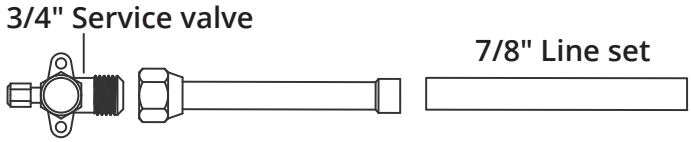
60K Indoor Air Handler Piping Connection Instructions

When connecting refrigerant piping to a 60K capacity air handler additional steps are required. Complete the piping connections to the indoor unit as shown below. Only use flare-to-braze 3/4” to 7/8” & 3/8” to 3/8” connect the 7/8” line set. If you attempt to connect the line set in any other manner than the one shown below, it will cause the performance of the unit to decrease.





Flare-to-braze (3/8" to 3/8")



Flare-to-braze (3/4" to 7/8")

Quick Connect® Line Set Installation (18K-30K models only)*

The following pages contain instructions of how to install the Quick Connect® Line Set (preferred installation method) to the Ducted Air Handler. Please follow the instructions and use the illustrations as a guide. Connections should be made as specified to avoid refrigerant leaks and/or system damage.

NOTE

***The Quick Connect® Line Set installation method is only for use with 18K-30K capacity models that are pre-charged with refrigerant and equipped with quick connect fittings.**

***For 36K, 48K, & 60K capacity units an optional No-Vac® Quick Connect® line set can be used. Please refer to the separate No-Vac Line Set instructions if this installation is being performed.**

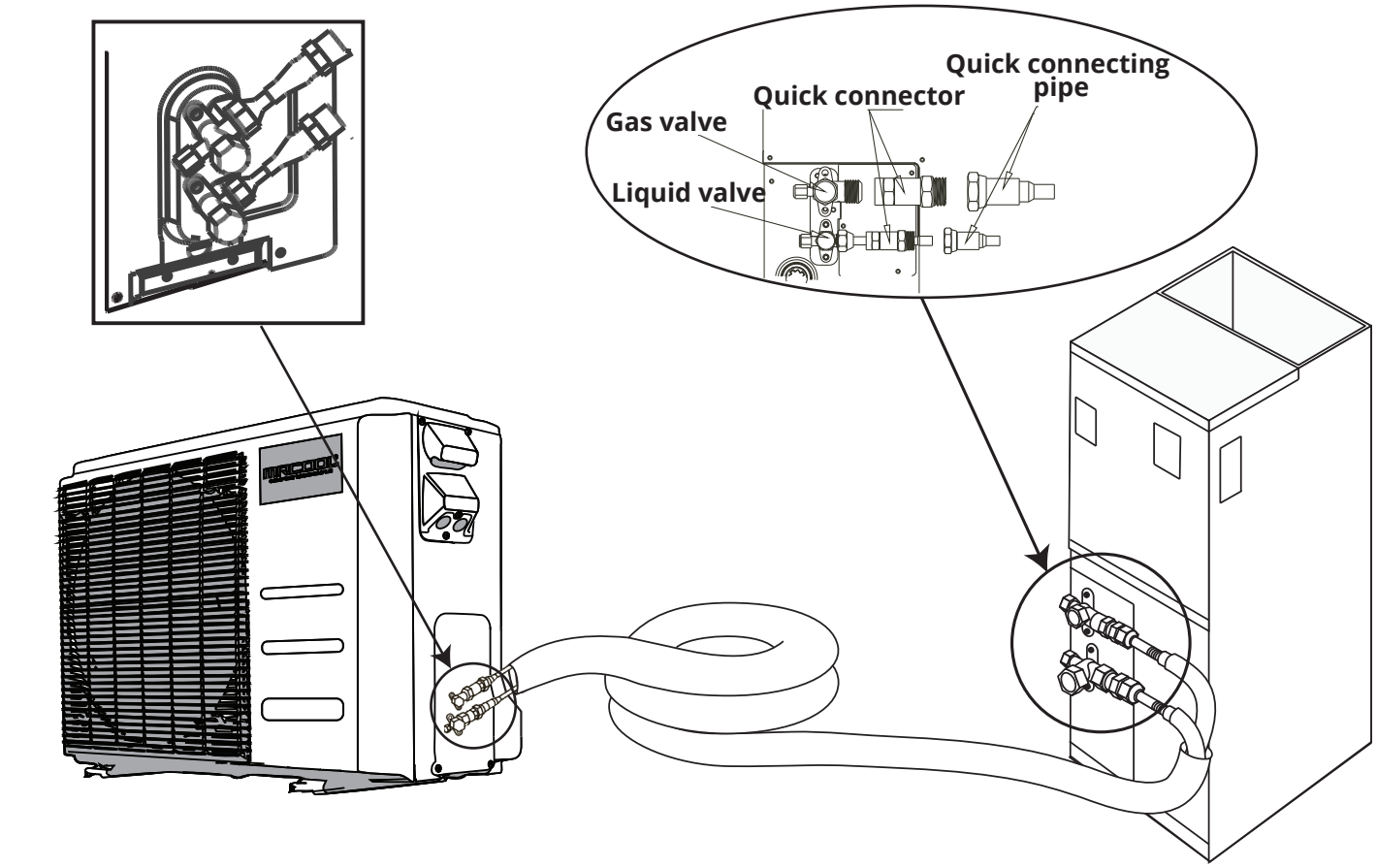
IMPORTANT

- Follow the detailed instructions for connecting the line set to the indoor unit and outdoor units. We can only provide a warranty if the line set is installed correctly as described in the instructions.
- To prevent leaks, ensure that the Quick Connect® connectors are free of dirt. Moisture or foreign bodies will adversely affect the function of the connectors and could lead to a risk of refrigerant loss (not covered by the warranty).
- Only install the line set outdoors in dry weather.
- The line set must not be plastered over after being installed.
- Always wear work gloves and goggles and use caution when handling refrigerant. Please make sure that refrigerant is never allowed to enter the environment. Improper handling of refrigerant may be harmful to your health.
- The equipment must never be operated without the line set connected, otherwise the equipment will be damaged immediately.
- Quick Connect® line set connections must only be tightened using the appropriate open-ended or crescent (adjustable-type) wrenches.

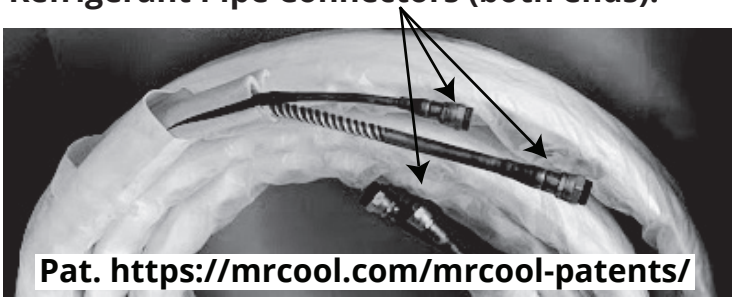
⊘ ***DO NOT*** **remove the sealing caps and stoppers from the line set or valves until immediately before they are to be connected.**

⊘ ***DO NOT*** **smoke during the installation.**

Quick Connect Line Set Installation Overview



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 could suffer damage. Please refer to the torque requirements section for more information. If you do not feel confident connecting the line set connectors yourself, it is imperative that you contact the MRCOOL® customer service team or an HVAC professional.

IMPORTANT:

The line sets are designed to only be installed once. The seal within the line set cannot be guaranteed if they are installed more than once. This will void the warranty. They also contain a compression fitting to seal and do not require a thread sealant (Teflon tape, etc.). Using a sealant may actually cause the connection to leak over time.

Unwind Quick Connect® Line Set

1. Use your hands to slowly unwind the copper piping of one end of the Quick Connect® Line Set. The end you unwind will connect to the indoor unit. You should unwind the end until the connectors are close to flat on the ground (with little to no bend). If this is not done, it could make the line set difficult to maneuver when aligning the connectors with the air handler connectors. Only unwind as much as necessary for your application, and allow any excess to remain coiled.



2. Carefully route the end of the line set to be connected to the air handler through the exterior wall hole. Use caution when bending the line set to suit your application refer to **Fig. 6.10** above.

MINIMUM BEND RADIUS

When bending connective refrigerant piping, it needs to have a minimum bend radius of 4 inches (Refer to Fig 6.10).

CAUTION

If the pipe is repeatedly bent or extended, it will become hard and difficult to manipulate. Avoid bending or extending the pipe more than 3 times, or at an angle greater than 90°, as it could break.

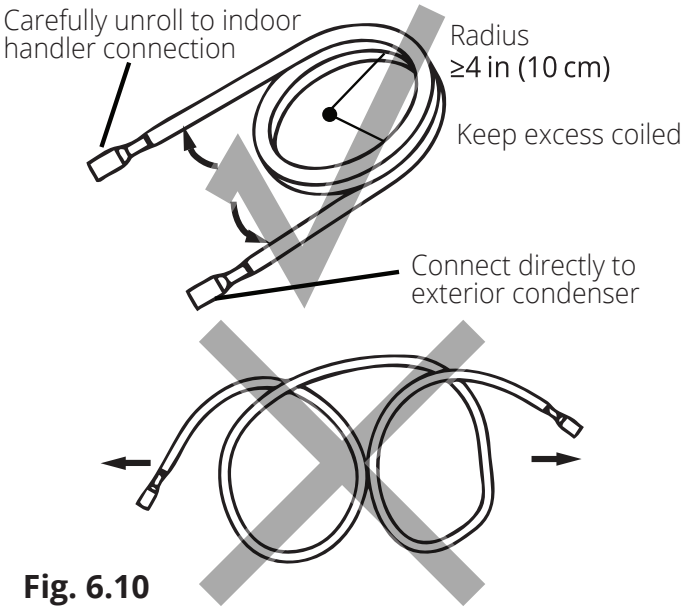
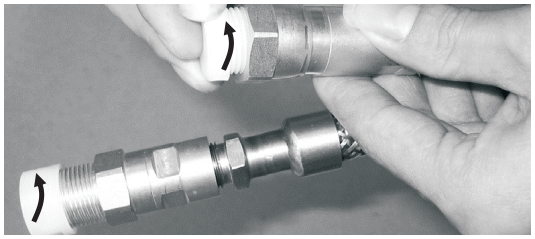


Fig. 6.10

Connecting Line Set

Step 1: Connecting the Quick Connect® Line Set to the indoor unit

1. Do not remove the plastic seals on the connectors of the indoor unit, or the appropriate line set connector, until immediately before they are to be connected. The plastic seals on each of the connectors should be color-coded to match the seals of the corresponding pipes they are to be connected to.
2. Align the refrigerant pipes correctly, making sure the dimensions of the connecting refrigerant pipe match. Unscrew the seals and place the screw connector of the line set just onto the threads of the piping from the indoor unit and tighten the first few threads by hands.



3. Using **Fig. 6.11** below as a guide, and the steps outlined in this paragraph, you will now tighten the nuts of the screw connectors of the Quick Connect® line set to the indoor unit. Using two appropriate sized open-ended wrenches (depending on the dimensions of the connector) or adjustable crescent wrenches, place one of the wrenches on the nut marked "1", and the other wrench on the nut marked "2," as shown in the image below. Now, turn the wrench on the nut marked "2" in the direction of the rotational arrows, as shown, while holding the other wrench in place. Continue to tighten the connector until snug.
NOTE: work quickly and make sure the screw connectors do not become crooked as you tighten them.
*** If an HVAC torque wrench is available:**
Once the connector is snug, using the torque wrench, tighten the connector to the specified torque rating, as listed in the table below (based on pipe/coupling size).
*** If an HVAC torque wrench is NOT available:**
Using the two wrenches you used to tighten the connector, once the connector is snug, turn the wrench slightly beyond that point to torque the connector, but do not over-tighten it.

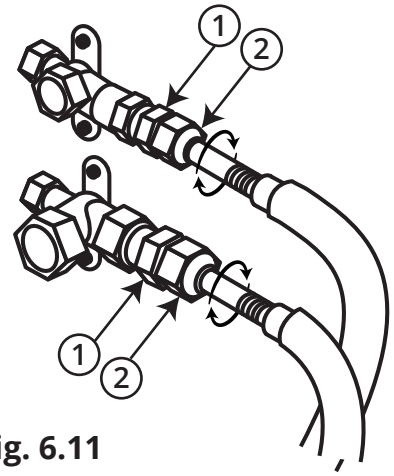


Fig. 6.11

4. Repeat steps 1-3 for the second line.

Stamp (on connector)	Coupling Size inch (millimeter)	Tightening Torque lb-ft (N-m)
FA06	3/8 in (9.5 mm)	18-20 lb/ft (24.4-27.1 Nm)
FA09	1/2 in (12.7 mm)	30-35 lb/ft (40.6-47.4 Nm)
FA12	3/4 in (19.1 mm)	45-50 lb/ft (61.0-67.7 Nm)
FA16	1 in (25.4 mm)	60-65 lb/ft (81.3-88.1 Nm)

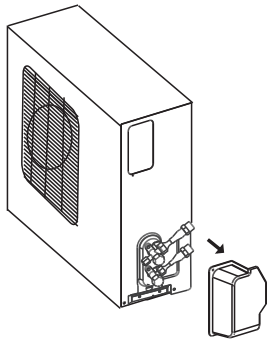
TORQUE REQUIREMENTS

1. Excessive force can break the connector or damage the refrigerant piping. You must not exceed the 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. Please note that there may be differences in Torque Wrenches (i.e. an automotive torque wrench versus an HVAC torque wrench) and that a socket style wrench cannot be used in this installation.

NOTE: Torque ratings in the table below are to be used if you have access to an HVAC torque wrench. These are available for purchase from online retailers. However, it is possible to complete installation of refrigerant line sets with conventional open-ended/crescent wrenches. It is imperative, however, that you not over-tighten the connector, and that once the lines have been fully connected, you follow the steps to check for leaks. If you do not feel comfortable attempting this, please contact a qualified HVAC technician.

Step 2: Connecting the Quick Connect® Line Set to the outdoor unit

1. Remove the water tray on the outdoor unit as shown in the illustration.

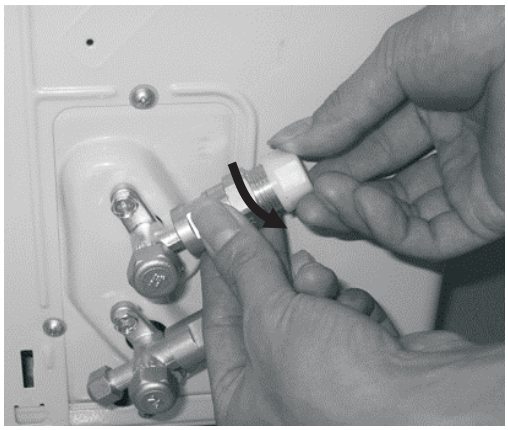


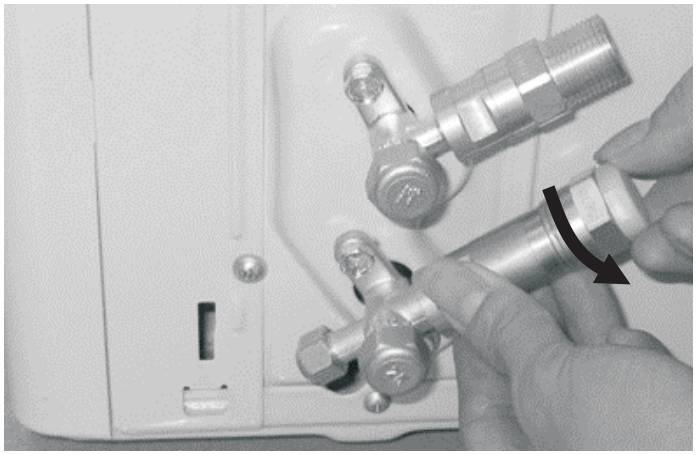
CAUTION

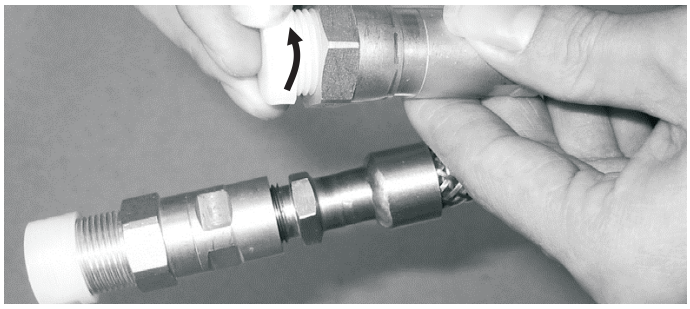
For your safety, always wear goggles and work gloves when connecting the line set.

NOTE: All images and illustrations are for explanatory purposes only. The actual shape and size of the outdoor condenser you purchased may differ slightly.

2. Do not remove the plastic seal caps from the outdoor unit connection ports or the corresponding line set connectors to be attached until immediately before you connect them.







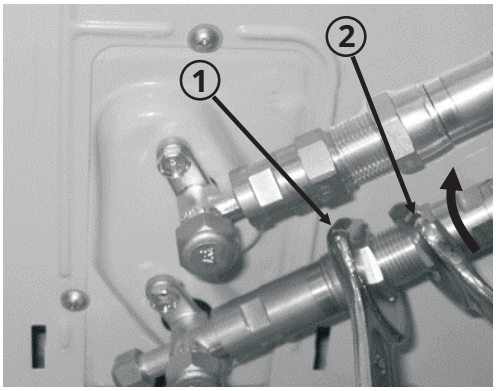
NOTE: Ensure the adapters attached to the outdoor valves have been tightened properly before attempting to connect the line set.

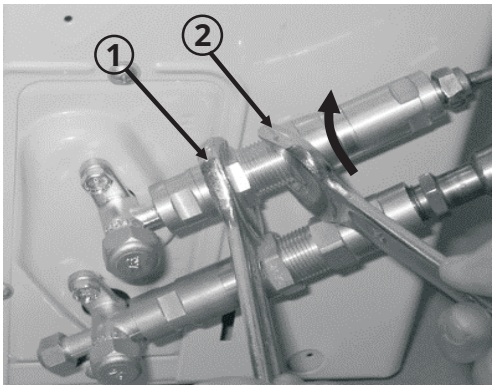
3. Align the refrigerant pipes so they line up with the corresponding valves and have enough slack. **NOTE: The refrigerant pipes must be connected to the valves with as little stress as possible.** Unscrew the plastic seals and place the screw connector of the refrigerant line just onto the threads of the outdoor unit, tightening the first few threads by hand.

IMPORTANT:

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

4. Using the first image below as a guide, starting with the bottom screw connector, you will now tighten the line set to the outdoor unit. Using two appropriate sized open-ended wrenches (depending on the dimensions of the connector), or adjustable crescent wrenches, place one of the wrenches on the nut marked "1", and the other wrench on the nut marked "2," Now, turn the wrench on nut "2" in the direction of the rotational arrow, while holding the other wrench in place, as seen in the first image below. Continue to tighten the connector until snug. **NOTE: work quickly and make sure the screw connectors do not become crooked as you tighten them.**
   ***If an HVAC torque wrench is available:**
   Once the connector is snug, using the torque wrench, tighten the connector to the specified torque rating, listed in the table on the next page (based on the pipe/coupling size).
   ***If an HVAC torque wrench is NOT available:**
   Using the two wrenches you used to tighten the connector, once the connector is snug, then turn the wrench slightly beyond that point to torque the connector, but do not over-tighten it.
5. Repeat the same process for the top screw connector, using the second image below as a guide.





NOTE:

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

TORQUE REQUIREMENTS

1. Excessive force can break the connector or damage the refrigerant piping. You must not exceed the 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. Please note that there may be differences in Torque Wrenches (i.e. automotive torque wrench versus an HVAC torque wrench) and that a socket style wrench cannot be used in this installation.

NOTE: Torque ratings in the table below are to be used if you have access to an HVAC torque wrench. These are available for purchase from online retailers. However, it is possible to complete installation of refrigerant line sets with conventional open-ended/crescent wrenches. It is imperative, however, that you not over-tighten the connector, and that once the lines have been fully connected, you follow the steps to check the pipe connections for leaks (Refer to the Electrical & Gas Leak Checks section of this manual for more information). If you do not feel comfortable attempting this, please contact a qualified HVAC technician.

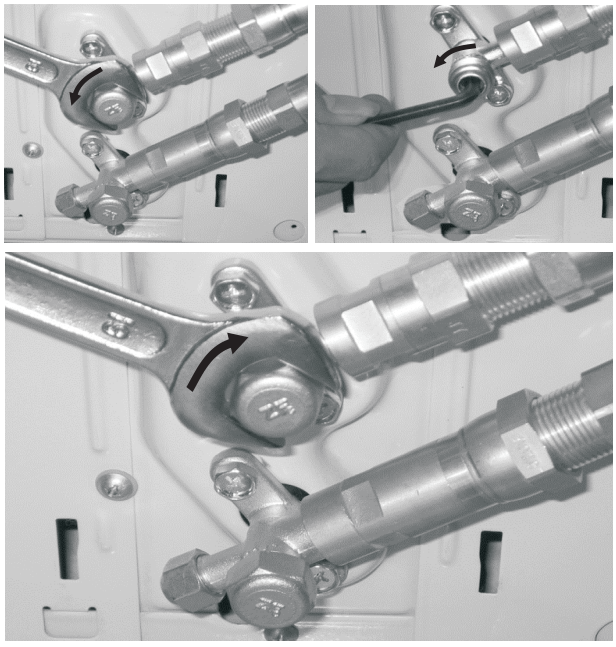
Stamp (on connector)	Coupling Size: inch (millimeter)	Tightening Torque: lb-ft (N-m)
FA06	3/8 in (9.5 mm)	18-20 lb/ft (24.4-27.1 Nm)
FA09	1/2 in (12.7 mm)	30-35 lb/ft (40.6-47.4 Nm)
FA12	3/4 in (19.1 mm)	45-50 lb/ft (61.0-67.7 Nm)
FA16	1 in (25.4 mm)	60-65 lb/ft (81.3-88.1 Nm)

Step 3: Opening the refrigerant valves of the outdoor unit

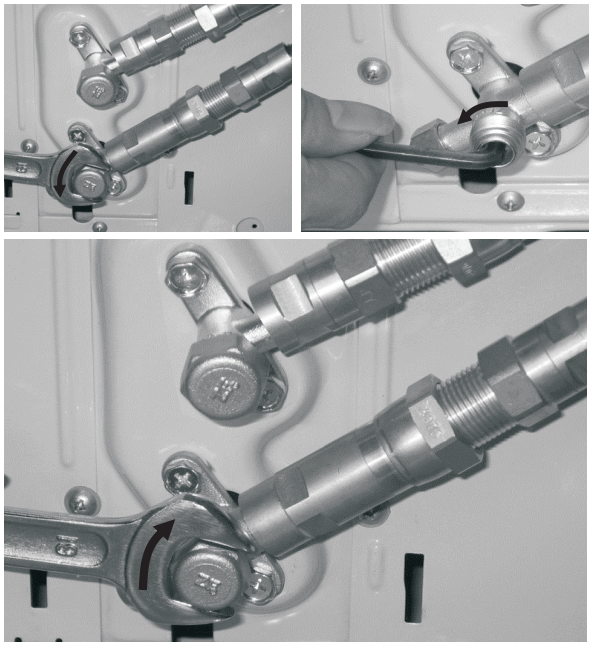
CAUTION

All of these steps must be completed BEFORE powering the unit, or damage could occur.

1. Using the images below as a guide, remove the cover on the top valve, using a 19 mm open-ended wrench or a crescent (adjustable-type) wrench. Then, insert a 5 mm Allen key and open the valve by turning it counter-clockwise as far as it will go. ***DO NOT*** **force it.** The valve is now open. Screw the cover back onto the top valve and tighten it well to ensure that it is properly sealed.



2. Using the images below as a guide, repeat the same process for the bottom valve. Remove the cover on the bottom valve, using a 19 mm open-ended wrench or a crescent (adjustable-type) wrench. Then, insert a 5 mm Allen key and open the valve by turning it counter-clockwise as far as it will go. ***DO NOT*** **force it.** Screw the cove back onto the bottom valve and tighten it well to ensure that it is properly sealed.



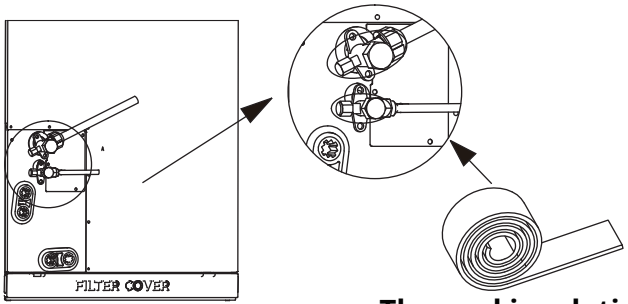
3. After completing steps 1 and 2, you will now need to check all of the piping connections (at indoor unit and outdoor unit) for leaks. You can do this by using leak detection spray, or applying a soapy water solution (liquid detergent/water mixture) to the connection via a spray bottle or brush. If any bubbles begin to form, that indicates there is a leak, and the connection needs to be re-tightened. Tighten the connection and recheck it for leaks. Refer to **Electrical and Gas Leaks Checks** section of this manual for more information.

IMPORTANT:

You will be asked to check for leaks at the piping connections multiple times throughout the following steps of the installation, because the pressures within the lines will change once the unit is turned on and this could reveal leaks not present during the initial check. These are imperative to make sure your connections are not allowing refrigerant to escape the system. When checking for leaks, if any bubbles form, it indicates the system has a leak and the screw connector needs to be retightened. For more information about checking for leaks, please refer to the Electrical and Gas Leak Checks section of the manual.



4. Once you have confirmed there are no leaks, and you have completed the installation, wrap the valve body of the indoor unit with insulation material and ensure the valve is sealed.



Thermal insulation material

INSTRUCTIONS FOR USE WITH NO-VAC® QUICK CONNECT® LINE SET SOLD SEPARATELY
KINK RESISTANT, PRECHARGED, SIMPLE SECURE QUICK CONNECT, 100% CONNECTION GUARANTEE

Please read and follow the instructions and diagram below* :
Connections must be made exactly as specified to avoid system leaks and /or damage

1. Take out matching male connectors **M1** and **M2**.
2. **Remove** protective cap with the copper gasket at each stop valve on the **CONDENSER** and ensure the threads are clean and complete.
3. **Tighten** the **M1** connector to the **cutoff valve *1** with a tightening force of **37 ft/lb (50 Nm)**. **Tighten** the **M2** connector to the **cutoff valve *2** with a tightening force of **52 ft/lb (70.5 Nm)**.
4. **Repeat** step 3 for **AIR HANDLER** at the other end of the **LINE SET**.
5. Unroll and route the **LINE SET** between the **AIR HANDLER** and the **CONDENSER**. Bend the line set piping by hand to route the line set to suit your application. Use care when bending the line set. Please refer to **Pg. 33** for more detailed instructions on how to properly and safely bend refrigerant piping, as well as the correct bend radius.
6. **Remove** the protective caps of the valves at both ends of the **LINE SET.** Verify that all threads are clean and complete.
7. **Tighten** the **LINE SET F1** valve to the **M1 Connector** (attached in step 3) with a force of **33 ft/lb (45 Nm)**. **Tighten** the **LINE SET F2** valve to the **M2 Connector** (attached in step 3) with a tightening force of **48 ft/lb (65 Nm)**.
8. **Repeat** this process for the **AIR HANDLER** at the other end of the **LINE SET**.
9. At the **OUTDOOR UNIT remove** the **protective cap** at the **cutoff valve switch** and **open** the **cutoff valve** with a hex wrench to release refrigerant into the system. **If** there is any fizz, grease or other **leakage**, then **close** the valve **immediately** and **check** that **steps 3 and 7** were done properly. **Otherwise**, using a sponge or spray bottle, apply a soapy water solution to the connection points to check for micro leaks. **If any bubbles form** it indicates there is a leak. If this does occur, **close** the valve **immediately** and **check** that **steps 3 and 7** were done properly and re-tighten the valves and line set if necessary.
10. **After** the correct connection, **re-tighten** the cutoff valve's **protection cap** and **cover** the **M1**, **M2** and **F1**, **F2** connections with the gray **insulating sleeve** to help **prevent condensation**.

NOTE ON WRENCHES

The wrench sizes needed for tightening the No-Vac® Quick Connect® Line Set are listed below. However, based on the availability of the wrench sizes needed, it is recommended to use two large crescent (adjustable-type) wrenches. Using one to hold the valve while using the other wrench to tighten the line set connector.

Piping Size (Stamped on piping)	Wrench Size Required	
	Standard	Metric
3/8"	1"	25 mm
3/4"	1-3/8"	35 mm
Or 2x large crescent (adjustable-type) wrenches		

Allen/Hex Wrench Sizes Needed To Open Stop/Cutoff Valves	
Piping/Valve Size (Stamped on piping)	Allen Wrench Size
3/8"	5 mm
3/4"	8 mm

⚠ IMPORTANT

The stop/cutoff valves on the unit must be opened **AFTER** connecting the lines and **BEFORE** turning on the unit. Otherwise, operation can cause leakage and/or damage to the unit.

Using the No-Vac® Quick Connect® lines

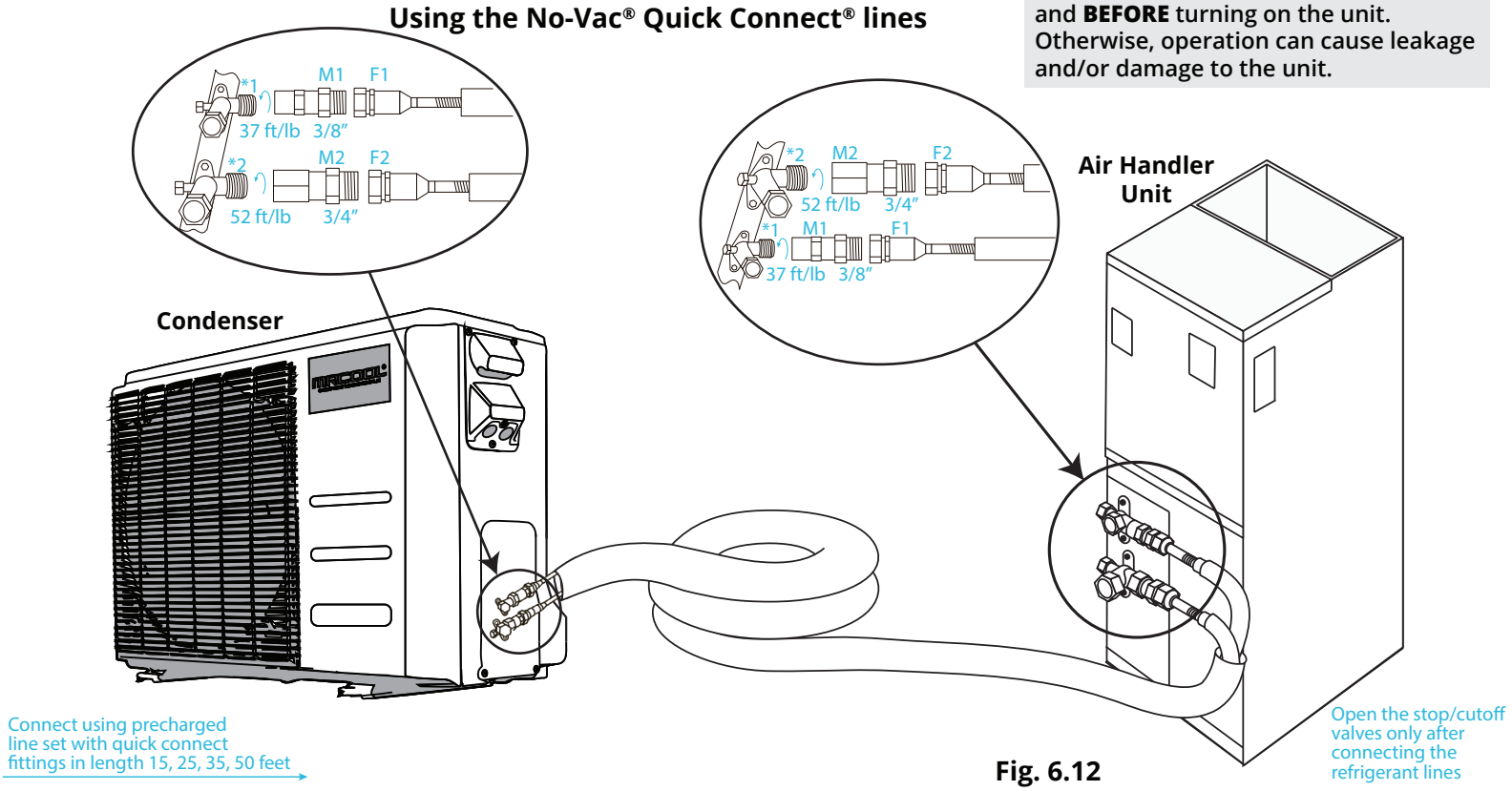


Fig. 6.12

*Failure to follow the instructions provided could result in severe harm to you, this product, or other property. The manufacturer, distributor, and seller are not responsible for any harm resulting from the failure to follow instructions and the failure to follow these instructions will void any and all warranties express or implied.

***Pat. https://mrcool.com/mrcool-patents/**

www.mrcool.com v02-09-2022

BEFORE PERFORMING ELECTRICAL WORK, READ THESE REGULATIONS

****NOTE: ELECTRICAL WORK MUST BE COMPLETED BY A QUALIFIED TECHNICIAN!****

⊘ ***DO NOT*** **connect any other equipment to the power circuit for the unit. Only connect the unit to an individual branch circuit.**

⊘ ***DO NOT*** **allow wires to touch or rest against the refrigerant piping, compressor, or any other moving parts within the unit.**

1. All wiring must comply with local and national electrical codes, regulations, 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 the issue to the client, and refuse to continue the installation until the safety issue is properly resolved.
4. Power voltage should be within 90-110% of the rated voltage. An insufficient power supply can cause a malfunction, electrical shock, and/or fire.
5. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles, and has a contact separation of at least 1/8 in (3 mm), must be incorporated in the fixed wiring. The qualified technician/electrician must use an approved circuit breaker or switch.
6. The circuit, including any switches, should have a capacity 1.5 times the maximum unit current (amps).
7. Installation of an external surge suppressor at the outdoor disconnect is recommended.
8. Make sure the unit/system is properly grounded.
9. Every wire must be firmly and securely connected. Loose wiring can cause the terminal to overheat, which could result in a malfunction and/or fire.
10. If the unit has an auxiliary electric heater, it must be installed as least 40 in (1 m) away from combustible materials.
11. To avoid electrical 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.
13. Ensure that the electrical wiring and signal wiring do not cross. This could cause distortion, interference, or possibly damage to the circuit boards
14. The unit must be connected to the main outlet. Normally, the power supply must have an impedance of 32 ohms.
15. Connect the outdoor wires before connecting the indoor wires.

WARNING

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

NOTE: 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 diagram on the back of the wiring cover of the outdoor condenser and/or the wiring diagrams found in this section of the manual.

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.

IMPORTANT!

Depending upon the capacity of unit and accessories (electric heat kit, wired thermostat, etc.) being installed, additional electrical components (circuit breakers, conduit, air switch, etc.) and wiring may need to be purchased separately to properly connect the system. Selection and installation of these components and wiring should only be performed by a qualified technician.

Outdoor Unit Wiring & Electrical Specifications

SELECT THE CORRECT CABLE TO CONNECT THE POWER SUPPLY TO THE OUTDOOR UNIT

• See table below for gauge requirements of power cables for outdoor condenser.

NOTE: The table below is a standard chart, the AWG ratings and wiring needs will change based on wire length and temperature.

Minimum Wire Gauge for Power Cables

	Model Capacity (BTU/hr)	Appliance Amps (A)		AWG	
		MCA	MOP	Min.	Pref.
Single-Zone Condensers	18K	18	30	12	10
	24K	22	35	10	8
	30K	25	40	8	6
	36K	24	40	8	6
	48K	34	50	8	6
	60K	34	60	8	6

Indoor Unit Wiring & Electrical Specifications (for units without optional electric heat kit)

				BRANCH CIRCUIT	
Unit Capacity	Volts-Phase	Rated Input Current of Power Conversion Equipment Amps	Minimum Circuit Amps	Minimum Wire Size (AWG*)	Fuse/ Circuit Breaker Amps
18K	208/230-1	2.0	2.5	16#	15.0
24K	208/230-1	3.0	4.0	16#	15.0
30K	208/230-1	3.5	4.5	16#	15.0
36K	208/230-1	4.0	5.0	16#	15.0
48K	208/230-1	6.0	7.5	16#	15.0
60K	208/230-1	7.0	9.0	16#	15.0

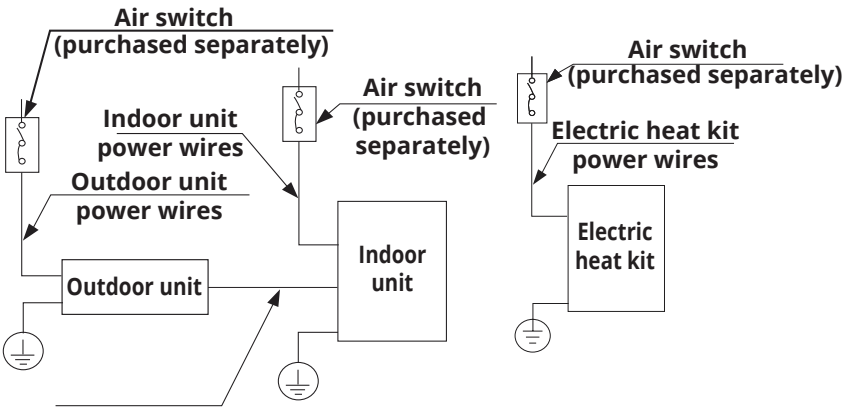
*** Use copper wire only to connect the unit. If anything other than uncoated (non-plated) 75°C copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used consult the applicable tables of the National Electric Code (ANSI/NFPA 70).**

NOTE

- **If branch circuit wire length exceeds 100 ft, consult NEC 210-19a to determine maximum wire length. Use a 2% voltage drop.**
- **If the unit is to have an electric heat kit installed (optional), please refer to the Installation of Air Handler Heat Kit section of manual for more detailed information regarding the electrical specifications.**

Air Switch Diagram

Air switch diagram (shown with optional electric heat kit)



- **18K-30K Capacity Units - DIYPRO™ Cable**
- **36K-60K Capacity Units - cables purchased separately**

NOTE: Diagram shown is for illustration/reference purposes only.

NOTE ON AIR SWITCH

- **When the maximum current of the air conditioner is more than 16A,** an air switch or leakage protection switch with protective device shall be used (purchased separately).

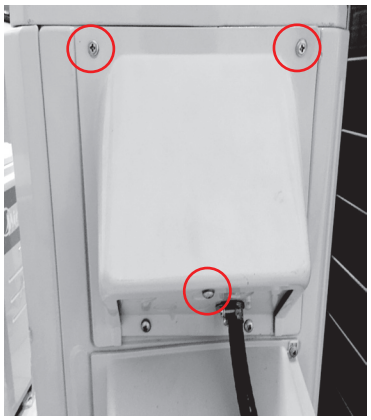
Systems in the North American market should be wired according to NEC & CEC requirements and state & local regulations.

Please note that units that are equipped with an optional heat kit, use a power supply that is independent of the power supply of the air handler & blower. This power supply may also require an air switch as well. Please be aware of this when wiring the heat kit.

Outdoor Unit Wiring for 18K-30K Units Only (Connect DIYPRO™ Cable to Outdoor Condenser)

18K-30K capacity units come with the DIYPRO™ Cable which connects the outdoor condenser to the indoor air handler. Follow the steps below to connect the cable to the outdoor condenser. **NOTE: For more detailed illustrations of the different variations of wiring connections, depending on your specific application, please refer to the wiring diagrams on page 46.**

1. Remove the 3 screws from the electrical wiring cover on the outdoor condenser, as shown in the image below and **Fig. 7.1 ,** and remove the cover.



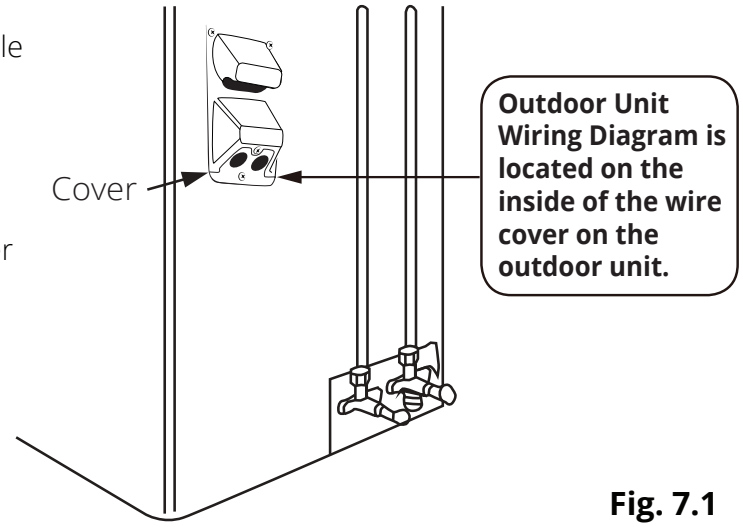


Fig. 7.1

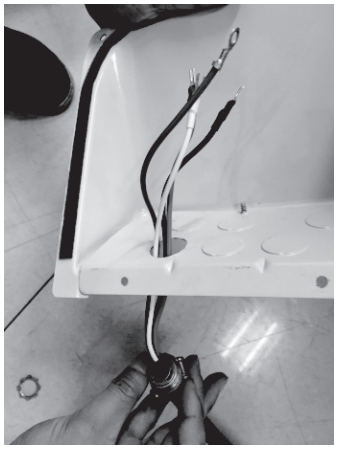
⚠ WARNING

ALL WIRING MUST BE INSTALLED STRICTLY IN ACCORDANCE WITH THE WIRING DIAGRAM LOCATED ON THE INSIDE OF THE OUTDOOR CONDENSER WIRE COVER AS SHOWN IN FIG. 7.1.

2. Remove the retaining nut from the DIYPRO™ cable end as shown in the image below.

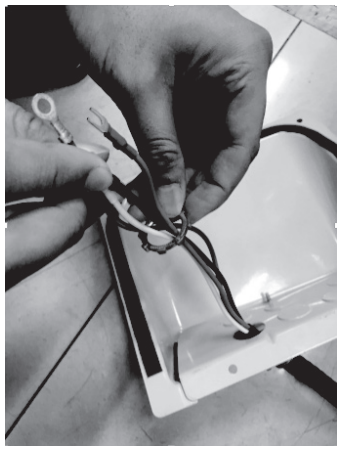


3. Now, pull the end of the DIYPRO™ cable through the hole of the electrical cover you removed earlier. Please refer to the images below.



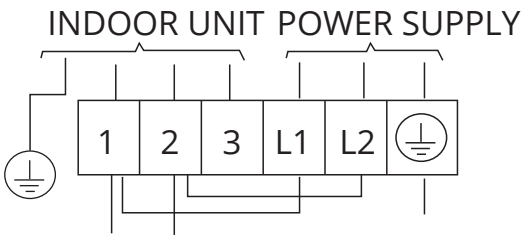


4. Now, secure the DIYPRO™ cable to the electrical cover by pushing the threaded end of the cable into the hole and reinstalling the retaining nut previously removed. Please refer to the images below.





5. Then, you will connect the wires to the terminal block. Each wire should be numbered and correspond with a connection port on the terminal block. Match up each wire with the correct port, and firmly screw the u-lug of each wire to its corresponding terminal. Now, screw the ground wire into the bottom screw of the terminal block, as shown in the image below. **NOTE: Please also refer to the wiring diagrams on page 46 for more detailed information.**



Outdoor Unit Wiring
18K-30K AHU
(Quick Connect Line Set)

⚠ WARNING

- **The risk of electric shock can cause injury or death. Disconnect all remote electric power supplies before servicing.**
- **Isolate the power wires and communication wires and keep them separated to ensure they do not intertwine as this could cause the unit to malfunction. Also ensure the wires have enough slack so that they are not strained.**

6. Then, reinstall the electrical wiring cover and secure it using by reinstalling the screws you previously removed. Once complete, route the cable through the wall hole so it can be connected to the indoor unit.



Outdoor Unit Wiring for 36K-60K Units Only

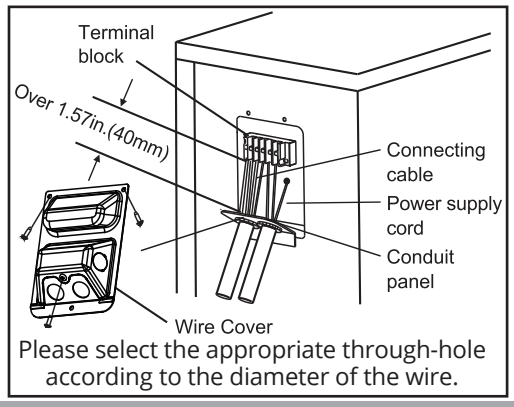
The wiring and other electrical components (insulation or conduit) to connect the indoor and outdoor units of 36K-60K capacity systems must be purchased separately. Please refer to the beginning of Electrical Connections section of the manual for wiring specification guidelines. Follow the steps below to wire the outdoor condenser. **NOTE: For more detailed illustrations of the different variations of wiring connections, depending on your specific application, please refer to the wiring diagrams further in this section of the manual.**

1. Prepare the cables for connection.
   a. Select the correct cable size based on the unit being installed. Ensure to size each wire used so that is several inches longer than the required length for wiring. This will allow for some slack and prevent the wire from being under tension.

NOTE ON CABLE RECOMMENDATIONS

The type of cable that is selected to wire the indoor and outdoor unit are based on local electrical codes and regulations. The recommended gauge (AWG) of the cables used should be based the Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) ratings. These are indicated on the nameplate of the outdoor unit and listed in the tables at the beginning of this section of the manual.

   b. Using wire strippers, strip the jacket from each end of the cable to reveal approximately 6 in (15 cm) of wire.
   c. Strip the insulation from the ends of the wire.
   d. Stranded wire requires u-lugs or ring terminals to be crimped onto the ends of the wire.
2. Remove the 3 screws from the electrical wiring cover on the outdoor condenser. Then, remove the cover, as shown in the image below. **NOTE: Wiring connections must strictly follow the diagram found inside the wiring cover.**

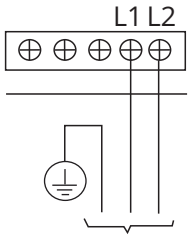


Please select the appropriate through-hole according to the diameter of the wire.

WARNING

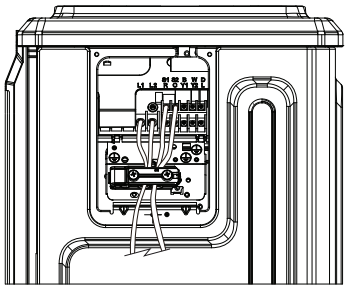
The risk of electric shock can cause injury or death. Disconnect all remote electric power supplies before servicing.

3. Remove the caps on the conduit panel.
4. Mount the conduit tubes (not included, purchased separately) onto the conduit panel.
5. Properly connect the wiring by securely fastening the u-lug or ring terminal of each wire to the corresponding terminal on the terminal block as shown below.

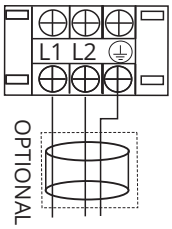


TO POWER SOURCE

Outdoor Unit Wiring for 36K Condenser

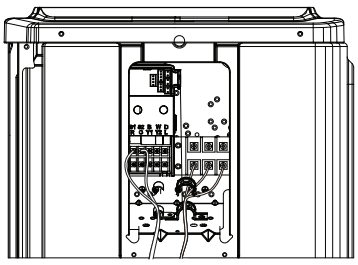


Outdoor Unit (36K)



TO POWER SOURCE

Outdoor Unit Wiring for 48K & 60K Condenser



Outdoor Unit (48K & 60K)

WARNING

Isolate the power wires and communication wires by the strain relief and ensure they have enough slack. Keep them separated and do not allow them to intertwine. If this occurs it could create interference and cause the unit to malfunction.

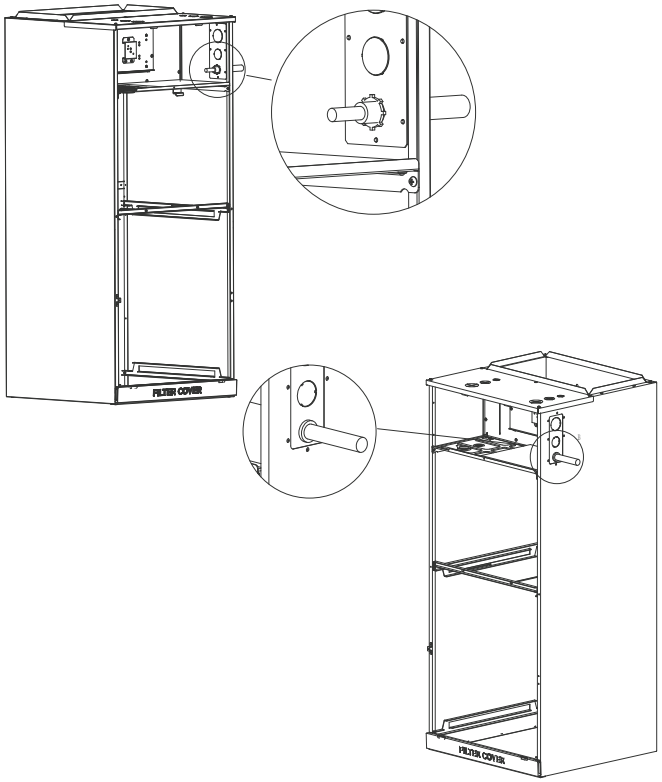
6. Ensure the unit is properly grounded in accordance with any and all state and local codes.
7. Ensure all wiring is properly insulated and protected in accordance with any and all state and local codes.
8. Then, reinstall the electrical wiring cover by positioning it into place and reinstalling the screws. Once complete, route the wiring to be connected to the indoor unit to the air handler.

Indoor Unit Wiring for 18K-30K Units Only (Connect DIYPRO™ Cable to Indoor Air Handler)

1. Open the front panel of the indoor unit. Using a screwdriver, remove the electric control box cover.
2. Remove the retaining nut from the DIYPRO™ cable end that you fed through the wall hole in the previous step, as shown in the image below.



3. Pass the threaded end of the cable through the exterior knockout hole of the air handler cabinet.



4. Thread the retaining nut back onto the end of DIYPRO™ cable and tighten it.
5. Then, you will connect the wires to the terminal block. The wires should be colored/labeled and correspond with a connection port on the terminal block. Match up each wire with the correct port, and firmly screw the u-lug of each wire to its corresponding terminal. Refer to the unit serial number and the wiring diagram located on the electric control box cover (Fig. 7.2). **NOTE: For more detailed illustrations of the different variations of wiring connections, depending on your specific application, please refer to the wiring diagrams on page 46.**

⚠ WARNING

- **Isolate the power wires and communication wires and keep them separated to ensure they do not intertwine as this could cause the unit to malfunction. Also ensure the wires have enough slack so that they are not strained.**

! CAUTION

- **While connecting the wires, strictly follow the wiring diagram.**
- **The refrigerant circuit can become very hot. Keep wiring and cables away from the copper piping.**

6. Reinstall the electric box cover.

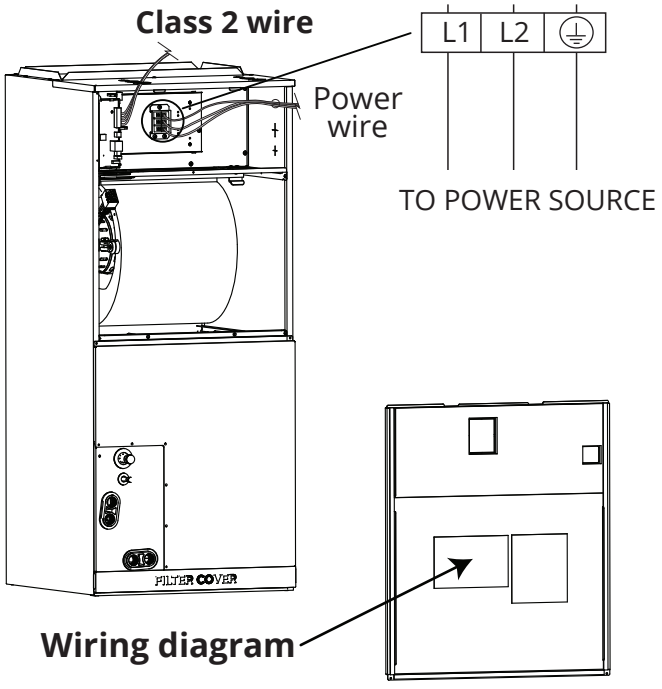


Fig. 7.2

IMPORTANT: AIR SWITCH MAY BE REQUIRED!

If the air handler being installed has a maximum current that is greater than 16 amps, it will require an air brake switch (disconnect box). In this instance the DIYPRO™ cable will need to be run and connected to box before it is connected to the air handler. Please refer to the section on air brakes on pg. 40 of this section for more detailed information on air brake switches.

Indoor Unit Wiring for 36K-60K Units Only

1. Prepare the cables for connection.
   a. Using wire strippers, strip the rubber jacket from the end of the wires to be connected to reveal approximately 6 in (15 cm) of the wire.
   b. Strip the insulation from the end of the wire.
2. Open the front panel of the indoor unit. Then, using a screwdriver, remove the cover of the electric control box of the indoor unit.
3. Route and thread the power and communication cables through the wire outlet.
4. Properly connect the wiring by securely fastening the u-lug or ring terminal of each wire to the corresponding terminal on the terminal block. Refer to the unit serial number and the wiring diagram located on the electric control box cover (Fig. 7.3). **NOTE: For more detailed illustrations of the different variations of wiring connections, depending on your specific application, please refer to the wiring diagrams on pages 47-50.**

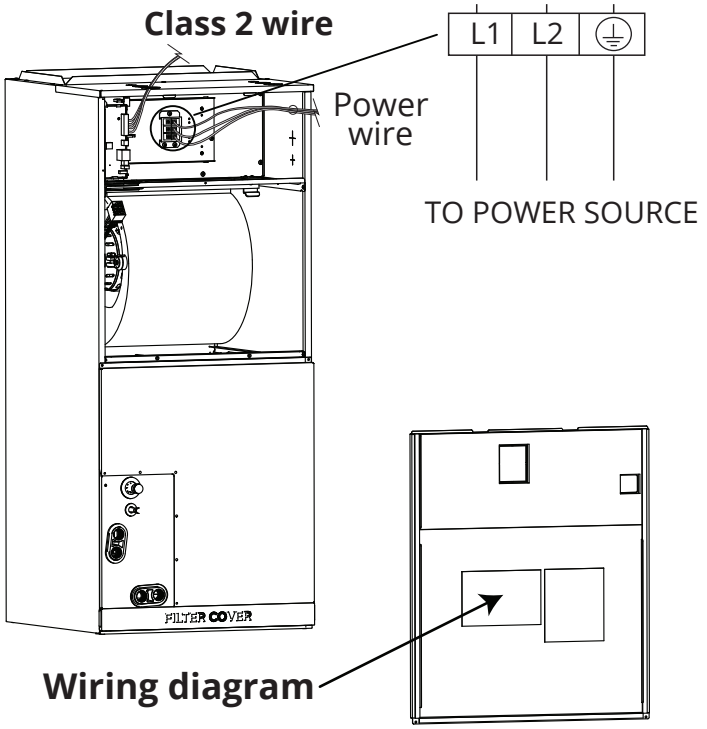


Fig. 7.3

IMPORTANT: AIR SWITCH MAY BE REQUIRED!

If the air handler being installed has a maximum current that is greater than 16 amps, it will require an air brake switch (disconnect box). Please refer to the section on air brakes on pg. 40 of this section for more detailed information on air brake switches.

WARNING

- **Isolate the power wires and communication wires and keep them separated to ensure they do not intertwine as this could cause the unit to malfunction. Also ensure the wires have enough slack so that they are not strained.**

CAUTION

- **While connecting the wires, strictly follow the wiring diagram.**
- **The refrigerant circuit can become very hot. Keep wiring and cables away from the copper piping.**

5. Clamp down the cable with the cable clamp. The cable must not be loose or pull on the u-lugs.
6. Reattach the electric control box cover.

Wiring Diagrams & Connection Methods for 18K-30K Capacity Units

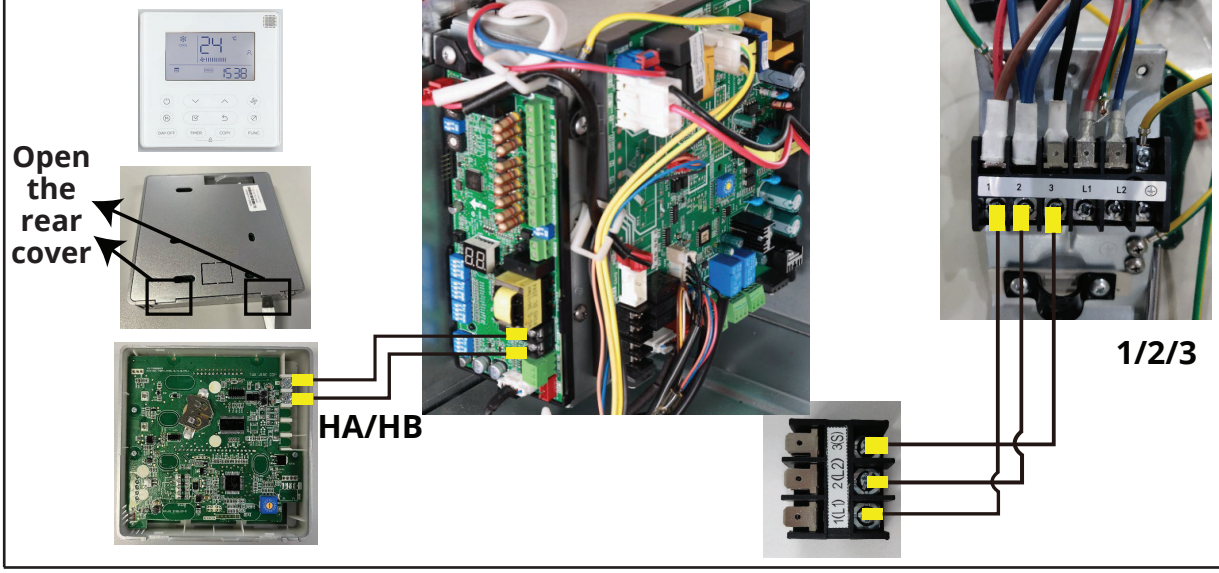
The wiring diagrams below show the proper wiring and DIP switch settings depending on the type of thermostat used (wired controller or 24V thermostat). **NOTE: For 48-60K units refer to the next page.**

Scenario	Controller	Indoor unit	Connection between Indoor and outdoor	Outdoor unit	AHU DIP Switch SW1-1
Scenario 1 (Recommended)	Wired Controller (Standard)	Air handler	Current loop: 1/2/3	Standard outdoor unit	OFF (Default)
Scenario 2	24V Thermostat	Air handler	Current loop: 1/2/3	Standard outdoor unit	ON

NOTE: Adjust dip switch settings before powering on the unit.

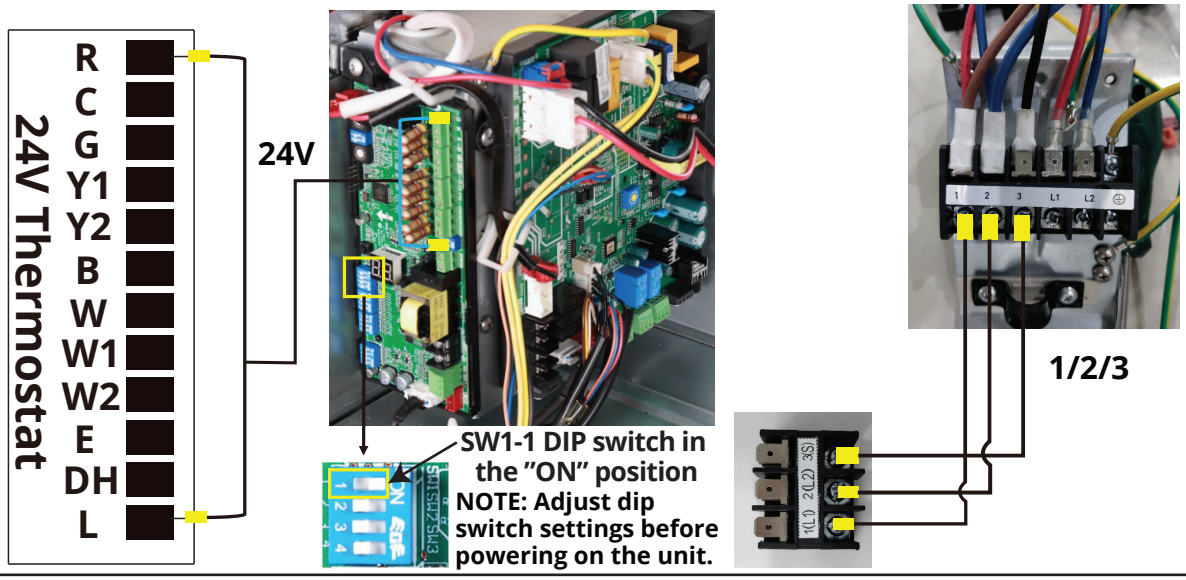
Scenario 1: Standard & Recommended

Wired controller (Standard) + HA/HB + AHU Indoor unit + 1/2/3 + Standard Outdoor unit



Scenario 2:

24V Thermostat + 24V + AHU Indoor unit + 1/2/3 + Standard Outdoor unit



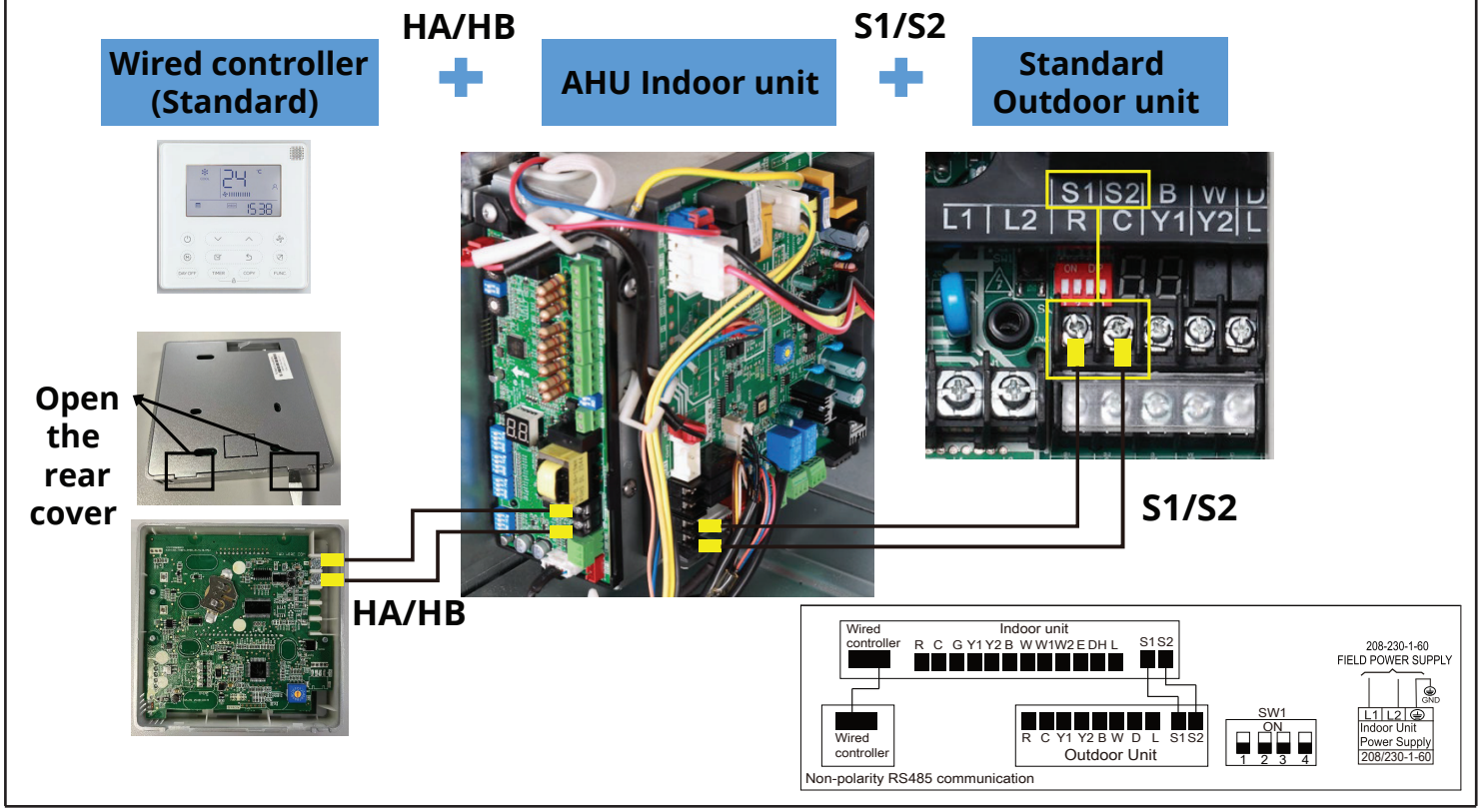
Wiring Diagrams & Connection Methods for 36K-60K Capacity Units

The wiring diagrams below and on the following pages show the proper wiring and DIP switch settings (for indoor and outdoor units) depending upon your application and the type of thermostat used (standard wired controller or 24V thermostat).

Scenario	Controller	Indoor Unit	Connection between indoor & outdoor units	Outdoor Unit	AHU DIP switch		ODU DIP switch
					SW1-1	SW1-4	S1-2
Scenario 1 (Recommended)	Wired controller (Standard)	Air handler	RS485: S1/S2	Standard outdoor unit	OFF (Default)	OFF (Default)	OFF (Default)
Scenario 2	24V Thermostat	Air handler	RS485: S1/S2	Standard outdoor unit	ON	OFF (Default)	OFF (Default)
Scenario 3	24V Thermostat	Air handler	24V: R/C/B/Y1/Y2/G/W	Standard outdoor unit	ON	ON	ON
Scenario 4	24V Thermostat	Air handler	24V: R/C/B/Y1/Y2/G/W	Third party outdoor unit	ON	ON	n/a

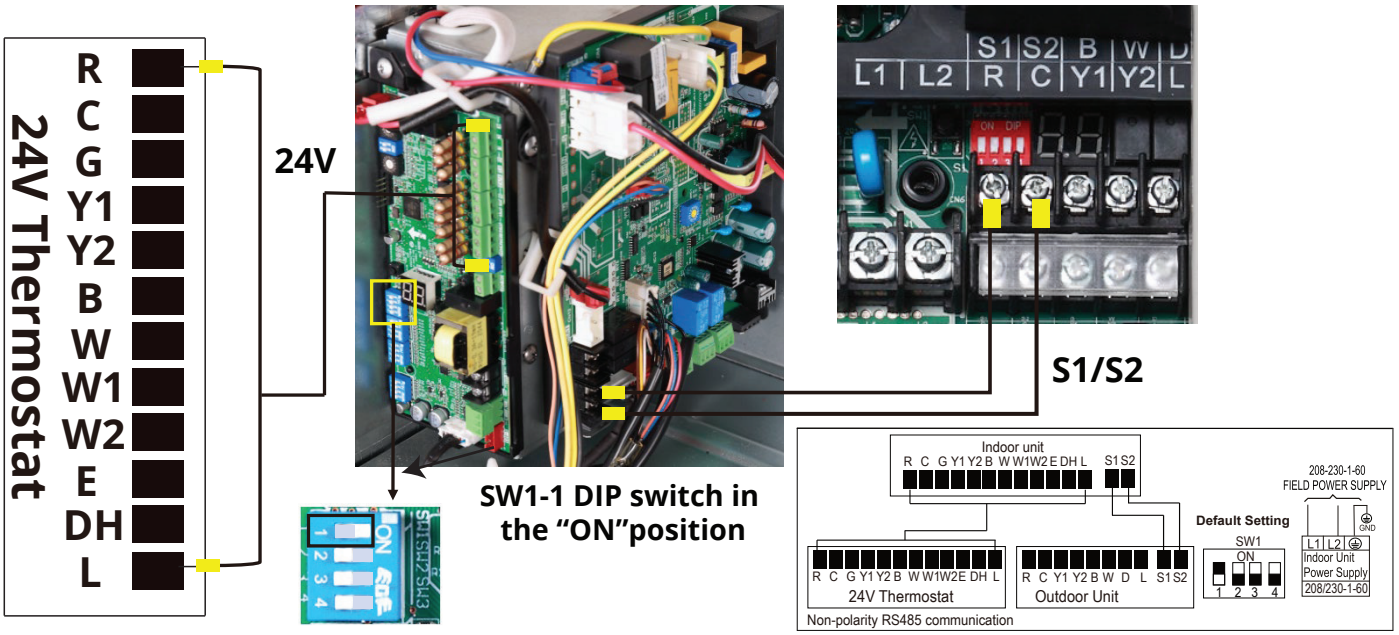
NOTE: Adjust dip switch settings before powering on the unit.

Scenario 1: Standard & Recommended



Scenario 2:

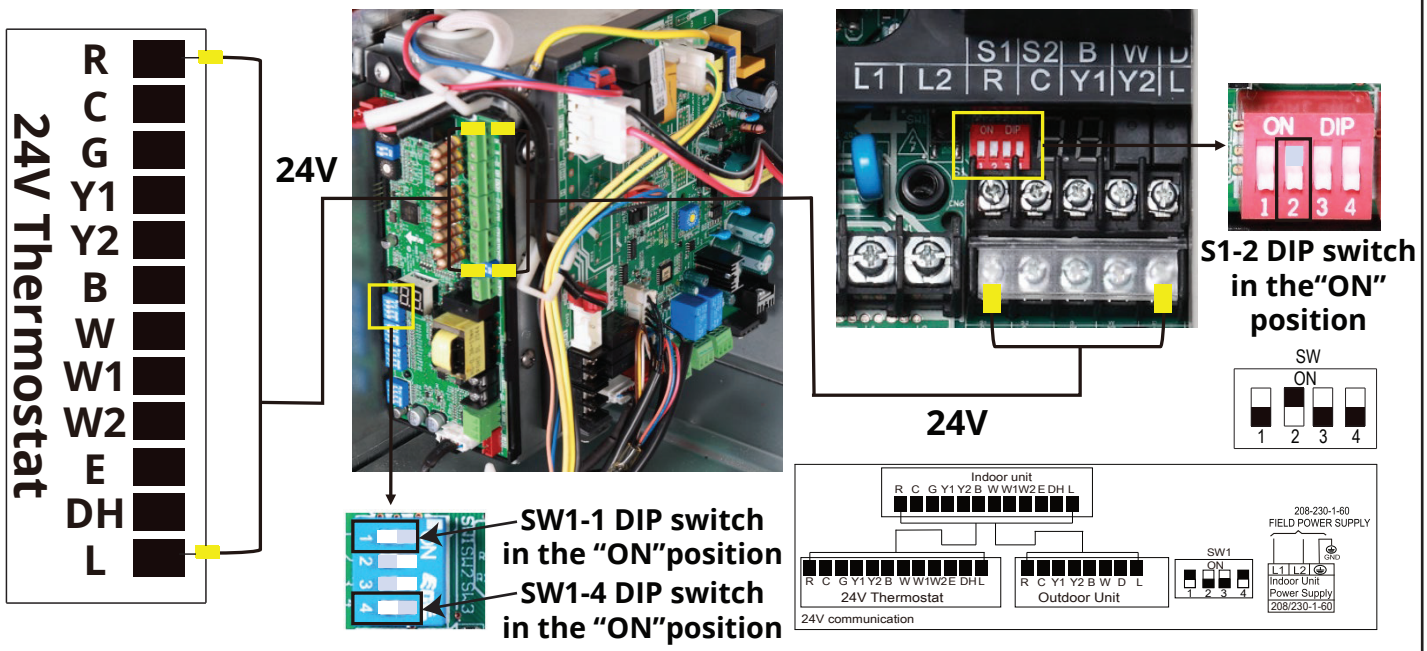
24V Thermostat + AHU Indoor unit (24V) + Standard Outdoor unit (S1/S2)



NOTE: Adjust dip switch settings before powering on the unit.

Scenario 3

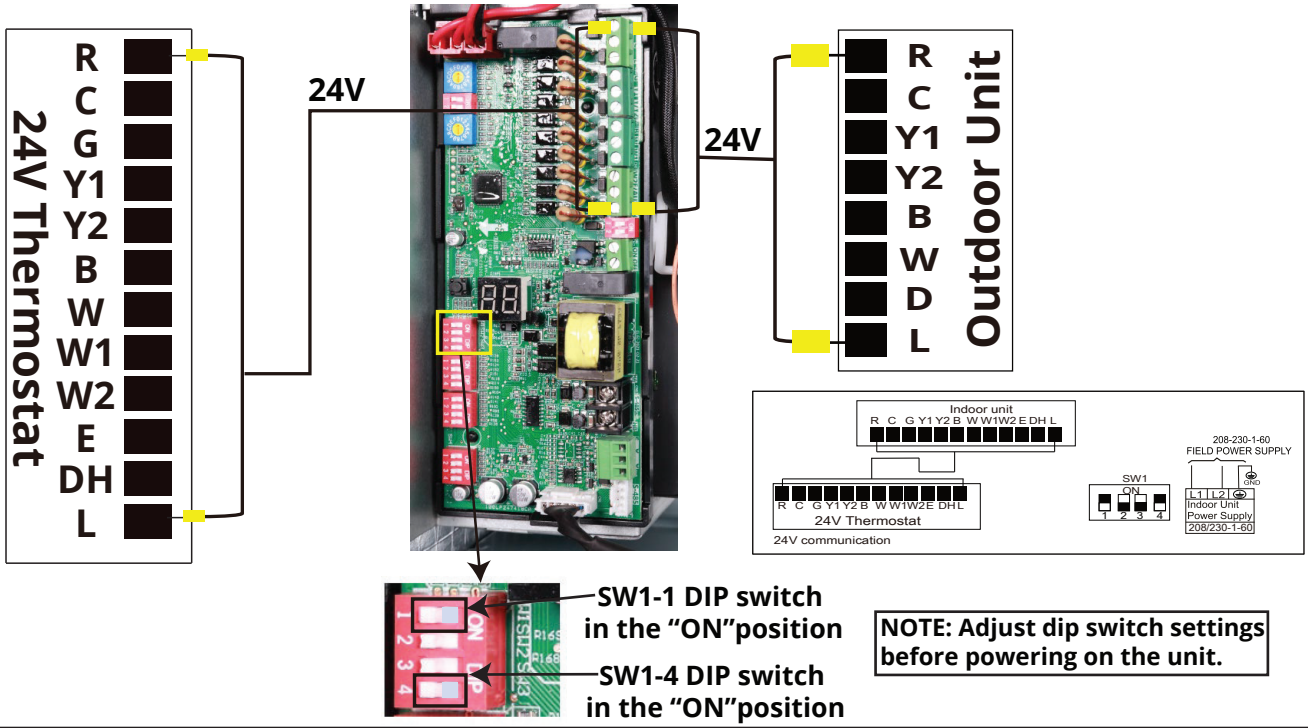
24V Thermostat + AHU Indoor unit (24V) + Standard Outdoor unit (24V)



NOTE: Adjust dip switch settings before powering on the unit.

Scenario 4:

24V Thermostat + 24V **AHU Indoor unit** + 24V **The third party Outdoor Unit**



NOTE: Adjust dip switch settings before powering on the unit.

Wiring Diagrams & Connection Methods 36K-60K (Without Communication)

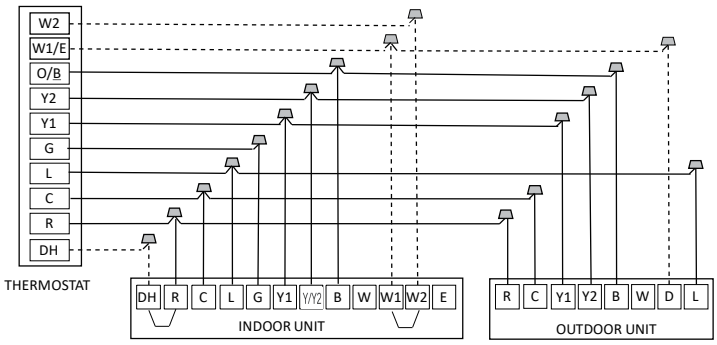
Connection Method C (36K-60K units ONLY):

The following wiring diagrams are suitable for the AHU and outdoor condenser when used with a 24V thermostat without communication.

NOTE

- **This equipment uses B functionality. The terminal is energized for heating functionality. Please ensure thermostat is setup for B functionality.**

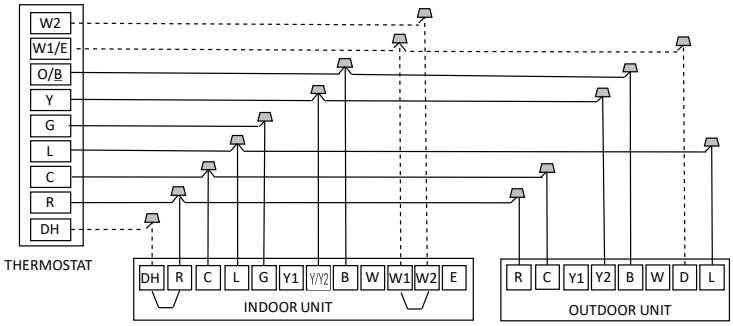
Wiring for 4H and 2C thermostat



S4-1 DIP switch off
Perform disconnection and short-circuit to achieve partition, control or dehumidification

S4-2 DIP switch off
Disconnect and short circuit to realize heating segment

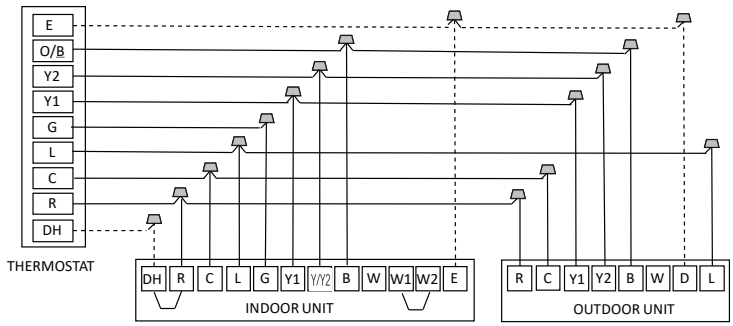
Wiring for 3H and 1C thermostat



S4-1 DIP switch off
Perform disconnection and short-circuit to achieve partition, control or dehumidification

S4-2 DIP switch off
Disconnect and short circuit to realize heating segment

Wiring for 3H and 2C thermostat

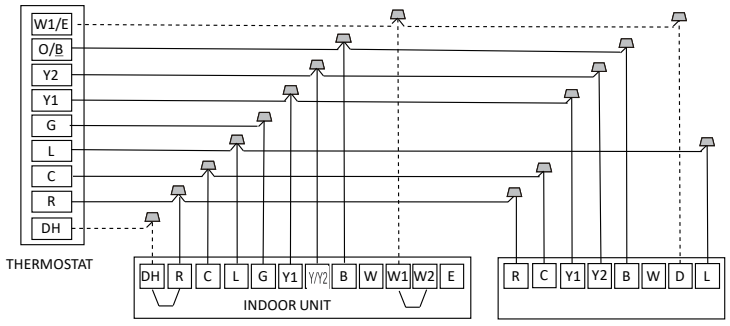


S4-1 DIP switch off
Perform disconnection and short-circuit to achieve partition, control or dehumidification

Emergency heating control two groups of electric heating at the same time

Wiring Diagrams & Connection Methods

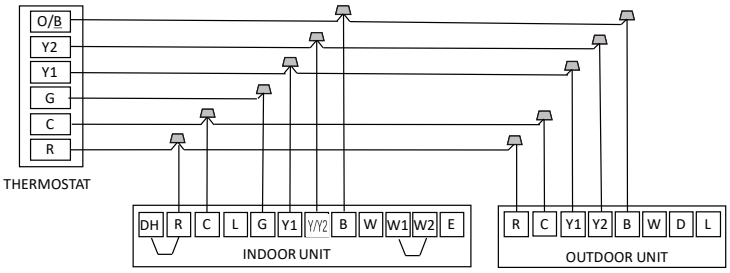
Wiring for 3H and 2C thermostat



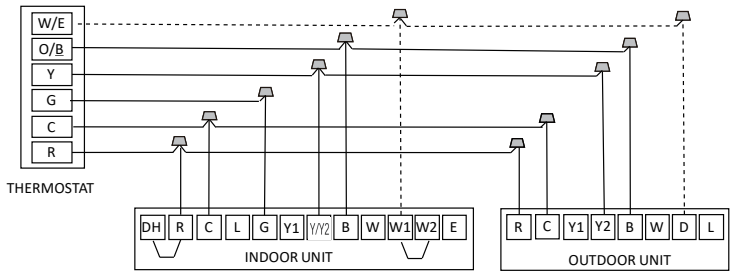
S4-1 DIP switch off
Perform disconnection and short-circuit to achieve partition, control or dehumidification

S4-2 DIP switch off
Disconnect and short circuit to realize heating segment

Wiring for 2H and 2C thermostat

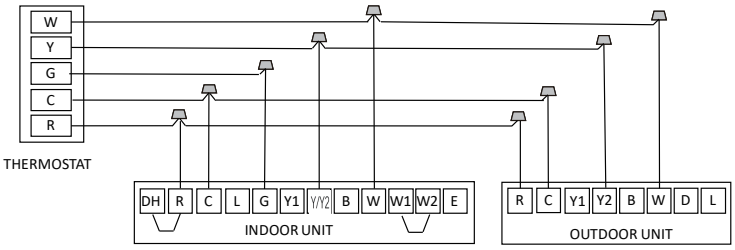


Wiring for 2H and 1C thermostat



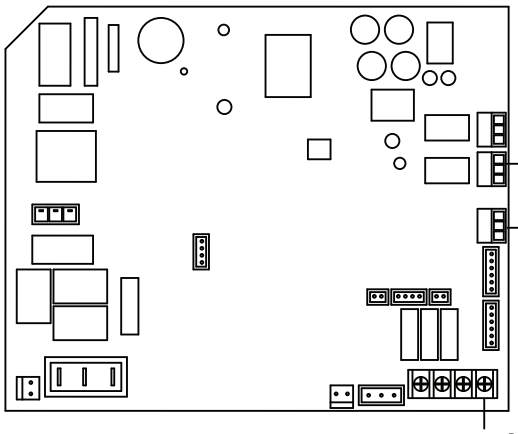
S4-2 DIP switch off
Disconnect and short circuit to realize heating segment

Wiring for 1H and 1C thermostat



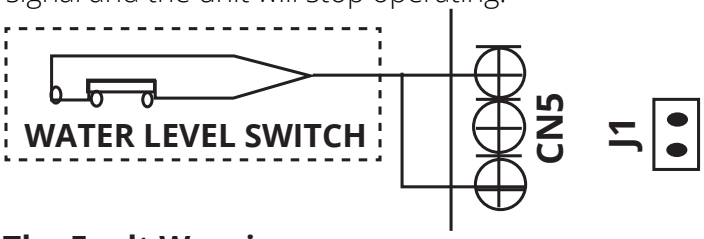
NOTE: This the least preferred method of control wiring and should only be used for emergency situations. Full comfort capacity may not be achieved using this method.

Wiring for Optional Functions

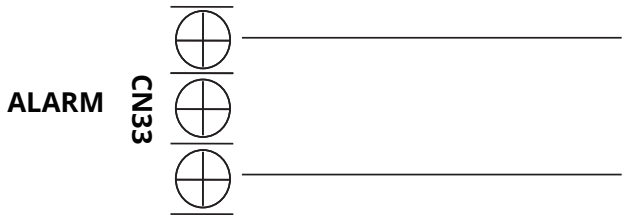


Liquid Level Switch:

This unit has a liquid level detection interface. If you choose to incorporate this function, it will be necessary to purchase a liquid level switch separately, connect it to the CN5 interface, and remove J1. When the water receiving pan is full, the water level switch will become disconnected. Then, the water level switch sends a signal and the unit will stop operating.



The Fault Warning

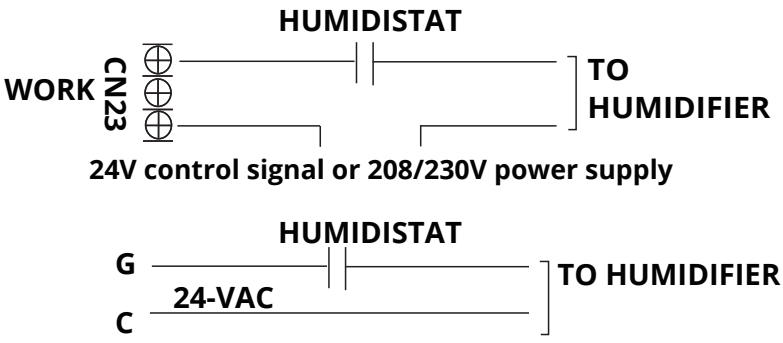


Alarm Output:

An alarm output (CN33) can be utilized if actions are required when a fault is present. This is a passive outlet port, so you will need to input a voltage signal. The relay is normally open during normal operation. It closes when a fault condition is active.

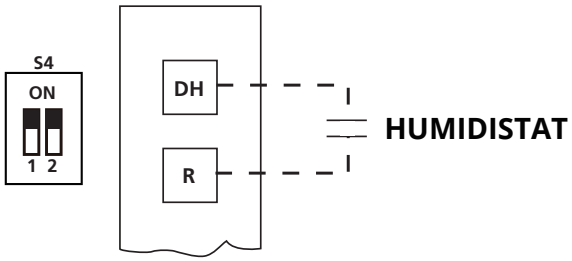
Wiring for Optional Functions (cont'd)

Humidification Control Wiring:



To connect a humidifier, utilize the passive signal "WORK" output (CN23) port, as well as the G and C wires on the controller, and wire the humidistat and humidifier per the above wiring diagram. When the fan is running, the CN23 relay will be closed which will allow power to be routed to the humidifier when the humidistat is below the humidity setpoint. If the thermostat or zone controller has a HUM interface, connect the humidifier directly to the HUM and C ports.

Dehumidification Control Wiring:



Dehumidification control requires an external humidistat at DH and R. Set the S4-2 dip switch to OFF. When the humidity rises and exceeds the set value of the humidistat, the 24V signal of DH changes to 0V, the cooling system then begins the dehumidification operation, and the air volume drops to 80% of the nominal cooling air volume.

Control Logic

Indoor Unit Connector

Connector	Purpose
R	24V Power Connection
C	Common
G	Fan Control
Y	Low Cooling
Y/Y2	High Cooling
B	Heating Reversing Valve
W	Heating Control
W1	Stage 1 Electric Heating
W2	Stage 2 Electric Heating
E/AUX	Emergency Heating
DH/DS/BK	Dehumidification/Zoning Control
L	System Fault Error

Outdoor Unit Connector

Connector	Purpose
R	24V Power Connection
C	Common
Y1	Low Cooling
Y2	High Cooling
B	Heating Reversing Valve
W	Heating Control
D	Defrost Heat
L	System Fault Error

LED Display

The control displays unit status as well as any active fault codes on the LED display. If the unit is functioning normally, the LED will display the current temperature setpoint. Or, if a 24V thermostat is used, a functional display code from the table on the following page will be shown. When a fault code is active, the display will flash the active code.

Please refer to the fault code table located in the troubleshooting section of the Service Manual for more detailed fault code information.

Functional Display

Mode	Priority	G	Y1	Y/Y2	B	W	W1	W2	E/AUX	DH/DS/BK	Display
Shut down	/	0	0	0	0	0	0	0	0	*	00
Fan	7	1	0	0	0	0	0	0	0	1	01
Fan		1	0	0	0	0	0	0	0	0	
Cooling	6	*	1	0	0	0	0	0	0	1	02
Cooling 2		*	*	1	0	0	0	0	0	1	03
Dehumidification 1		*	1	0	0	0	0	0	0	0	04
Dehumidification 2		*	*	1	0	0	0	0	0	0	05
Heating 1	5	*	1	0	1	0	0	0	0	1	06
Heating 2		*	*	1	1	0	0	0	0	1	07
Heating 2		*	*	*	*	1	0	0	0	1	
Electric heating 1	3	*	0	0	0	0	1	0	0	*	08
Electric heating 1		*	0	0	0	0	0	1	0	*	
Electric heating 2		*	0	0	0	0	1	1	0	*	09
Heating 1 + electric heating 1	4	*	1	0	1	0	1	0	0	1	10
Heating 1 + electric heating 1		*	1	0	1	0	0	1	0	1	
Heating 2 + electric heating 1		*	*	1	1	0	1	0	0	1	
Heating 2 + electric heating 1		*	*	*	*	1	1	0	0	1	
Heating 2 + electric heating 1		*	*	1	1	0	0	1	0	1	
Heating 2 + electric heating 1		*	*	*	*	1	0	1	0	1	
Heating 1 + electric heating 2		*	1	0	1	0	1	1	0	1	11
Heating 2 + electric heating 2		*	*	1	1	0	1	1	0	1	
Heating 2 + electric heating 2		*	*	*	*	1	1	1	0	1	
Emergency heating	1	*	*	*	*	*	*	*	1	*	12
Heating zone control	2	*	1	0	1	0	*	*	0	0	13
Heating zone control		*	*	1	1	0	*	*	0	0	
Heating zone control		*	*	*	*	1	*	*	0	0	

NOTES:
- **1 = signal, 0 = no signal**
- **The terminal input signal is stable for 1 second before confirmation.**

DIP Switch Definitions

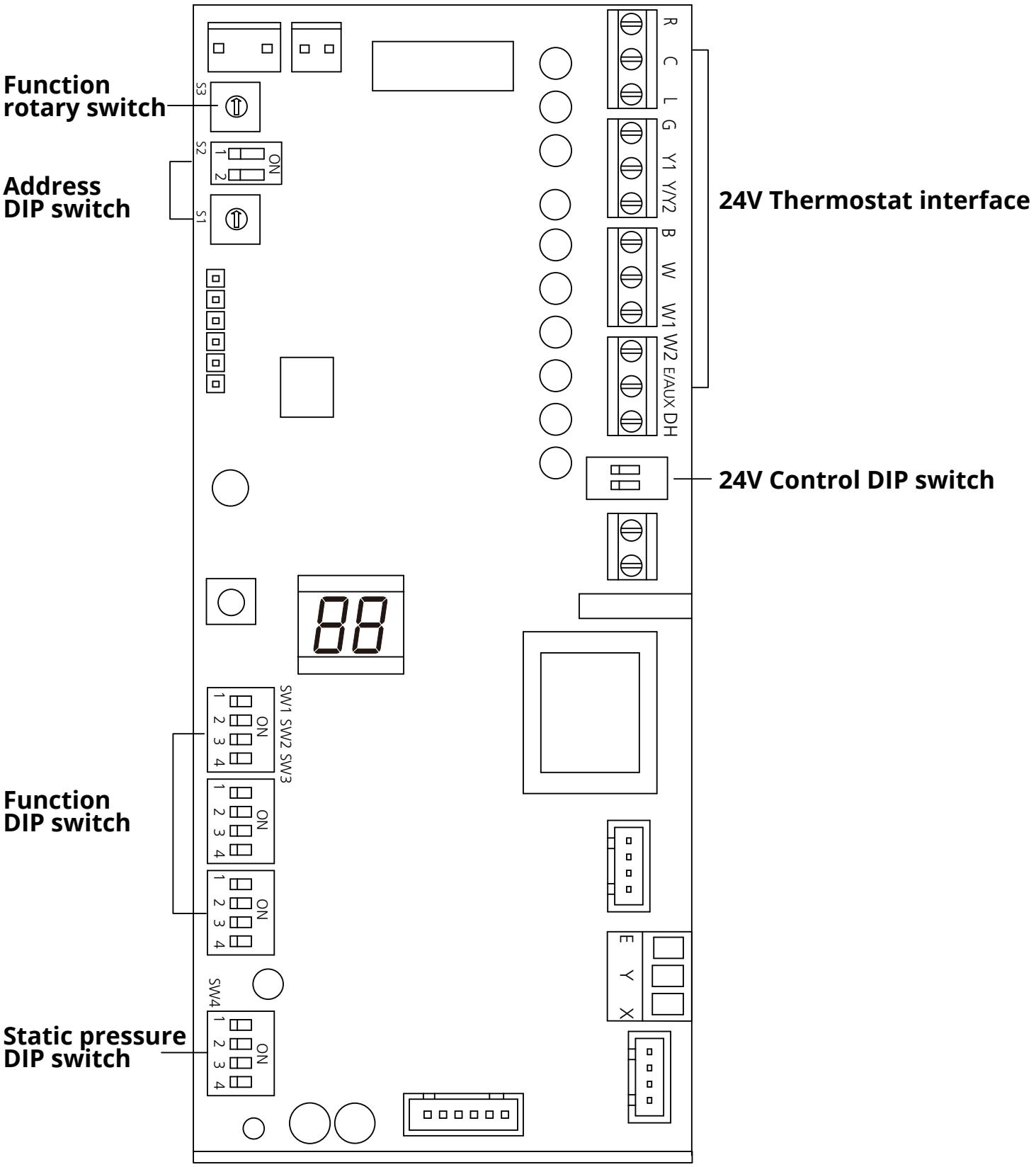


Fig. 7.4

Function DIP Switch Settings

The 24V thermostat mode needs to refer to the following DIP switch settings.



SW4-1 SW4-2 SW4-3	000 is the default 000/001/010/011/100/101/110/111, internal machines with different abilities, electric heating and PSC classification for use

NOTE: The SW4 DIP switch is only for use by certified service technicians for the purpose debugging and adjusting the system, please *DO NOT* touch it.

Indoor Unit Dial Code

NO.	Dial code	Features	ON	OFF
1	SW1-1	Whether 24V thermostat is used or not.	YES	NO
2	SW1-2	Anti-cold blow protection option.	NO	YES
3	SW1-3	Single cooling/heating and cooling options.	Cooling.	Cooling & Heating.
4	SW1-4	Stand alone indoor unit or full system.	Indoor unit only.	Full system.
5	SW2-1	First stage auxiliary heating.	1°C (1.8°F)	2°C (3.6°F)
6	SW2-2	Electric heat on delay.	30 minutes.	15 minutes.
7	SW2-3	Electric auxiliary heating delay to start time.	YES	NO
8	SW2-4	Compressor / Auxiliary heat outdoor ambient lockout.	The heater will not operate if the outdoor temperature is greater than the temperature set by S3.	The compressor will not operate if the outdoor temperature is lower than the temperature set by S3.
9	SW3-1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 0.5 to 3.0°C to the user set point in the calculated control point to increase capacity and satisfy user set point.	30 minutes.	90 minutes.
10	SW3-2	Cooling and heating Y2 temperature differential adjustment.	1°C (1.8°F)	2°C (3.6°F)
11	SW3-3	Temperature differential to activate second stage auxiliary heating.	2°C (3.6°F)	3°C (5.4°F)
12	Rotary Switch S3	Set outdoor temperature limitation (for auxiliary heat or compressor).	0 means that the temperature protection is not turned on, 1-F is -20-8°C (-4-46°F) respectively, and each scale represents 2°C (3.6°F).	
13	S4-1	Default ON.	Short circuit W1 and W2.	W1, W2 separate.
14	S4-2	DH function selection.	DH is off by default.	DH on.

Outdoor Unit DIP Switch Setting

NO.	Dial code	Features	ON	OFF
1	SW-1	Metering device location	Outdoor throttling (normally closed single-way solenoid valve is not powered on).	Indoor throttling (normally closed single-way solenoid valve store).
2	SW-2	Communication setting	24V communication scheme	485 communication scheme
3	SW-3	Strong cold and strong heat function	The cooling/heating target pressure compensation value is valid.	The cooling/heating target pressure compensation value is invalid.
4	SW-4	Function to be defined	———	———

Address DIP Switch

Address dialing S1+S2: When the user uses the centralized controller, the address dialing is required.

Network address: The address silkscreen is NET address, which is composed of a 16-bit address rotary code S2 plus a two-digit DIP switch S1 (set during electrical installation, no network function needs to be set).

- When S2 is 00 (the dialing code is not connected), the address value is the value of S2.
- When S2 is 10 (corresponding to the switch of the hardware connected to the 10K resisitor), the network address value is S2 plus 32.
- When S2 is 01 (corresponding to the dial code of the 5.1K resistor connected to the hardware is turned on), the network address value is the value of S2 plus 16.
- When S2 is 11 (all dialing codes are on), the network address value is the value of S2 plus 48.

Determined by dial code S2 1-10K 2-5.1K

S2 DIP switch selection	Website address
	**S2 + 48**
	**S2 + 32**
	**S2 + 16**
	**S2**

Air volume table

Model	SW4-1, 2, 3, setting (default) Air Volume (CFM)	001 Air Volume (CFM)	010 Air Volume (CFM)	011 Air Volume (CFM)	NOTES
18K	660	630	600	570	The airflow DIP switch can only change the air volume when the electric heat is turned on, and the unit cooling & heating air volume remains unchanged. If the DIP switch setting is incorrect, the default airflow will be run.
	10KW	8KW, 10KW	8KW	5KW	
24K	880	850	830	800	
	15KW	8KW, 15KW	8KW, 10KW	5KW	
30K	1100	1040	990	930	
	15KW	10KW, 15KW	8KW, 10KW	5KW, 8KW	
36K	1320	1255	1190	1125	
	20KW	15KW	8KW, 10KW	5KW, 8KW	
48K	1760	1675	1580	1490	
	20KW	10KW, 15KW	8KW, 10KW	8KW	
60K	2195	2055	1920	1775	
	- -	15KW, 20KW	10KW, 15KW	10KW	

High, medium and low air volume parameters

18K			24K			30K			36K			48K			60K		
Fan speed	Static pressure (Pa/in WC)	Air volume (CFM)	Fan speed	Static pressure (Pa/in WC)	Air volume (CFM)	Fan speed	Static pressure (Pa/in WC)	Air volume (CFM)	Fan speed	Static pressure (Pa/in WC)	Air volume (CFM)	Fan speed	Static pressure (Pa/in WC)	Air volume (CFM)	Fan speed	Static pressure (Pa/in WC)	Air volume (CFM)
Low	0/0	489	Low	0/0	598	Low	0/0	422	Low	0/0	879	Low	0/0	946	Low	0/0	1151
	25/0.1	493		25/0.1	613		25/0.1	705		25/0.1	883		25/0.1	943		25/0.1	1133
	37/0.15	490		37/0.15	625		37/0.15	713		37/0.15	888		37/0.15	942		37/0.15	1136
	50/0.2	488		50/0.2	630		50/0.2	705		50/0.2	892		50/0.2	948		50/0.2	1132
	75/0.3	501		75/0.3	632		75/0.3	708		75/0.3	893		75/0.3	947		75/0.3	1128
	100/0.4	497		100/0.4	635		100/0.4	711		100/0.4	893		100/0.4	940		100/0.4	1134
	125/0.5	495		125/0.5	631		125/0.5	707		125/0.5	892		125/0.5	940		125/0.5	1130
	150/0.6	492		150/0.6	624		150/0.6	704		150/0.6	890		150/0.6	933		150/0.6	1133
	200/0.8	489		200/0.8	614		200/0.8	702		200/0.8	873		200/0.8	925		200/0.8	1126
	250/1.0	488		250/1.0	624		250/1.0	698		250/1.0	826		250/1.0	925		250/1.0	1118
Mid	0/0	524	Mid	0/0	692	Mid	0/0	813	Mid	0/0	1010	Mid	0/0	1155	Mid	0/0	1367
	25/0.1	528		25/0.1	690		25/0.1	811		25/0.1	1001		25/0.1	1156		25/0.1	1358
	37/0.15	532		37/0.15	685		37/0.15	813		37/0.15	1001		37/0.15	1154		37/0.15	1362
	50/0.2	542		50/0.2	695		50/0.2	816		50/0.2	1000		50/0.2	1154		50/0.2	1361
	75/0.3	523		75/0.3	693		75/0.3	815		75/0.3	995		75/0.3	1143		75/0.3	1360
	100/0.4	524		100/0.4	692		100/0.4	811		100/0.4	995		100/0.4	1147		100/0.4	1352
	125/0.5	533		125/0.5	688		125/0.5	809		125/0.5	996		125/0.5	1149		125/0.5	1353
	150/0.6	523		150/0.6	684		150/0.6	801		150/0.6	983		150/0.6	1143		150/0.6	1348
	200/0.8	521		200/0.8	670		200/0.8	807		200/0.8	996		200/0.8	1140		200/0.8	1340
	250/1.0	519		250/1.0	654		250/1.0	801		250/1.0	969		250/1.0	1113		250/1.0	1316
High	0/0	573	High	0/0	752	High	0/0	899	High	0/0	1137	High	0/0	1325	High	0/0	1608
	25/0.1	577		25/0.1	746		25/0.1	895		25/0.1	1123		25/0.1	1328		25/0.1	1590
	37/0.15	580		37/0.15	750		37/0.15	902		37/0.15	1119		37/0.15	1337		37/0.15	1586
	50/0.2	576		50/0.2	756		50/0.2	898		50/0.2	1120		50/0.2	1337		50/0.2	1560
	75/0.3	579		75/0.3	750		75/0.3	900		75/0.3	1112		75/0.3	1330		75/0.3	1561
	100/0.4	574		100/0.4	746		100/0.4	909		100/0.4	1111		100/0.4	1333		100/0.4	1554
	125/0.5	573		125/0.5	741		125/0.5	901		125/0.5	1113		125/0.5	1338		125/0.5	1549
	150/0.6	576		150/0.6	745		150/0.6	908		150/0.6	1101		150/0.6	1335		150/0.6	1545
	200/0.8	577		200/0.8	735		200/0.8	905		200/0.8	1094		200/0.8	1321		200/0.8	1543
	250/1.0	574		250/1.0	714		250/1.0	899		250/1.0	1088		250/1.0	1321		250/1.0	1548

Preperations and Precautions

If air or foreign matter is present withing the refrigerant system, it can cause abnormal rises in pressure, which can reduce its efficiency, damage the unit, and/or cause personal injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant system to remove any non-condensable gas and moisture from the system.

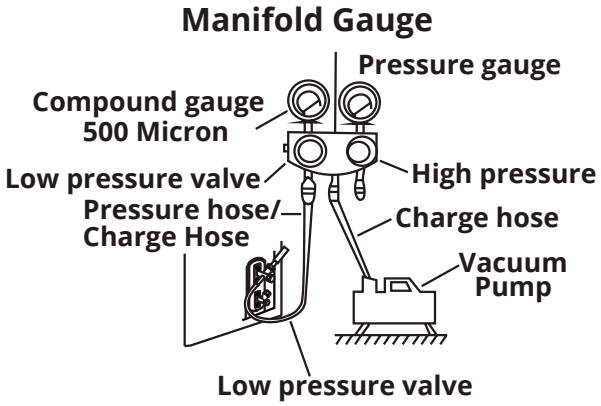
This process should be performed upon initial installation and when refrigerant is removed for any reason.

BEFORE PERFORMING EVACUATION

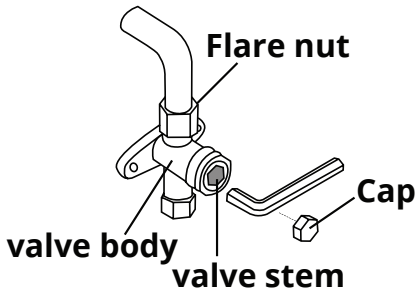
- **Ensure the refrigerant piping between the indoor and outdoor units are connected properly.**
- **Ensure all wiring and electrical connections are properly connected.**

Evacuation Instructions

1. Connect the charge hose of the manifold gauge to the service port on the outdoor unit low pressure valve.
2. Connect another charge hose from the manifold gauge to the vacuum pump.
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 Micron gauge reads 500 micron.



6. Close the low pressure side of the manifold gauge and turn off the vacuum pump.
7. Wait 5 minutes, then check that there has not been any change in system pressure.
8. If there is a change significant change in system pressure, check for leaks. If there is no change in system pressure, unscrew the cap from the high pressure valve.
   - If pressure rises but becomes stable below 1000 Microns, it is ok to open the valves.
   - If the pressure becomes stable above 1000 but below 2000 Microns there is moisture in the system. Further evaluation and dehydration is required.
   - Pressure rises above 2000 Microns or does not become stable, indicates there is a leak.
9. Then, insert an Allen/hexagonal wrench into the high pressure valve. Open the valve by turning the wrench counterclockwise 1/4 of a turn. Listen for gas to exit the system, then close the valve after 5 seconds.
10. Watch the pressure gauge for 1 minute to ensure that there is no change in pressure. The pressure gauge should read slightly higher than atmospheric pressure.
11. Remove the charge hose from the service port.



12. Using an Allen/hexagonal wrench, fully open both the high pressure and low pressure valves.

OPEN VALVES GENTLY

- **When opening the valves, continue turning the Allen/hexagonal wrench gently until it reaches the stopper. *DO NOT* try to force the valve to open further than this.**
- **Ensure the Allen/hexagonal wrench is inserted fully into valve stem socket. Failure to do this, or using a stepped service valve tool could result in stripping the valve stem socket.**

13. Tighten the valve caps on all three valves (service port, high pressure, & low pressure) by hand. You may need to tighten them further using a wrench or torque wrench if necessary.

Note on Adding Refrigerant

Some systems require additional refrigerant 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 system MUST be operating in cooling mode to add refrigerant. The refrigerant should be charged as liquid 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:

	Liquid Side Pipe Diameter		
	ϕ 1/4 in (6.35 mm)	**ϕ3/8 in (9.52 mm)**	**ϕ1/2 in (12.7 mm)**
R410A: (Metering device in the indoor unit):	(Total pipe length - standard pipe length) x 30g (0.32oZ)/m(ft)	(Total pipe length - standard pipe length) x 65g (0.69oZ)/m(ft)	(Total pipe length - standard pipe length) x 115g (1.23oZ)/m(ft)
R410A: (Metering device in the outdoor unit):	(Total pipe length - standard pipe length) x 15g (0.16oZ)/m(ft)	(Total pipe length - standard pipe length) x 30g (0.32oZ)/m(ft)	(Total pipe length - standard pipe length) x 65g (0.69oZ)/m(ft)

CAUTION

⊘ ***DO NOT*** **mix refrigerant types.**

Cleaning the Indoor Unit

BEFORE CLEANING OR PERFORMING MAINTENANCE

Always turn off the system and disconnect its power supply before cleaning or performing any type of maintenance.

- **Contact an authorized service technician for repair or maintenance. Improper repair and maintenance may cause water leakage, electrical shock, and/or fire. It could also void your warranty.**
- **Ensure the drain hose is set up according to the instructions. Failure to do this could result in leakage that could cause personal property damage, fire, and/or electric shock.**
- **Make sure that all wires are connected securely and properly. Failure to connect wires according to the instructions could result in property damage, electrical shock, and/or fire.**

⊘ ***DO NOT*** **substitute a blown fuse with a higher or lower amperage fuse, as this could cause damage to the circuit and/or an electrical fire.**

CAUTION

Only use a soft, dry cloth to wipe the unit clean. If the unit is especially dirty, you can use a cloth soaked in warm water to wipe it clean.

⊘ ***DO NOT*** **use chemicals or chemically treated cloths to clean the unit.**

⊘ ***DO NOT*** **use benzene, paint thinner, polishing powder, or other solvents to clean the unit. They can cause the plastic surface to crack or deform.**

⊘ ***DO NOT*** **use water hotter than 104°F (40°C) to clean the front panel. This can cause the panel to deform or become discolored.**

⊘ ***DO NOT*** **wash the unit under running water, as this could create an electrical hazard.**

Air Filter Replacement

The air filter prevents dust and other particles from entering the indoor unit. Dust can accumulate and reduce the efficiency of the unit. For optimum efficiency, clean the air filter every two weeks, or more frequently if you live in a dusty area. If the filter is heavily clogged and cannot be cleaned, replace the filter with a new one.

CAUTION

- **Before changing the filter or cleaning, turn off the unit and disconnect the power supply.**
- **When removing the filter, do not touch the metal parts of the unit. The sharp metal edges can cut you.**
- **Any maintenance or cleaning of the outdoor unit should be performed by an authorized dealer or a licensed service provider.**
- **Any unit repairs should be performed by an authorized dealer or a licensed service provider.**

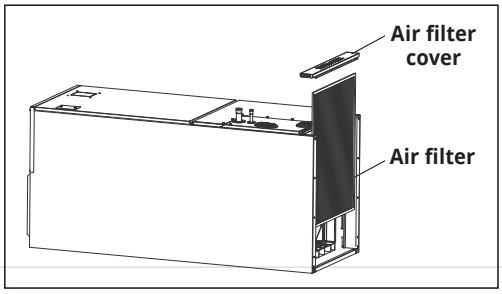
⊘ ***DO NOT*** **use water to clean the inside of the indoor unit. Doing this could destroy the insulation and could cause electrical shock.**

⊘ ***DO NOT*** **expose the filter to direct sunlight when drying, as this could cause it to shrink.**

NOTE ON AIR FILTER REPLACEMENT

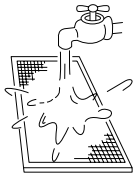
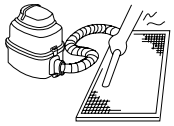
Replace the air filter every 30 to 90 days depending on the Minimum Efficiency Reporting Values (MERVs) Rating.

1. Remove cover plate.
2. Slide out the air filter.
3. Clean the air filter by vacuuming the surface or washing it in warm water with mild detergent.
4. If using water, allow the filter to dry.
5. Reinstall the filter by reversing steps 1 & 2.



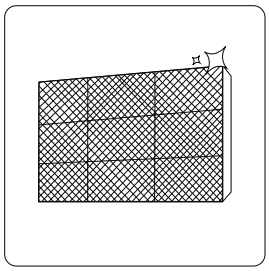
NOTE:

- **In households with animals, the grille will periodically need to be wiped down to prevent animal hair from blocking airflow.**
- **If the unit has a filter installed from the factory, it is only there for an energy efficiency sampling test. The user will need to use a filter that meets the requirements of UL900.**

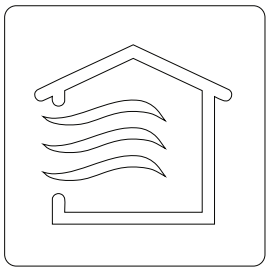
If using water, the inlet side should face down and away from the water stream.	If using a vacuum cleaner, the inlet side should face the vacuum.
	

Maintenance - Preparation for Extended Periods of Non-Use

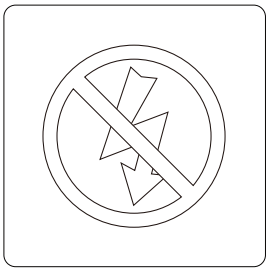
If you plan on not using the air conditioner for an extended period of time, please do the following:



Replace all filters



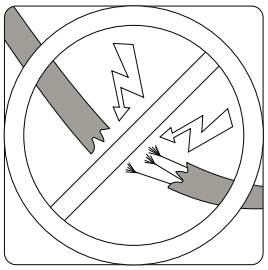
Turn on FAN function until completely dries out



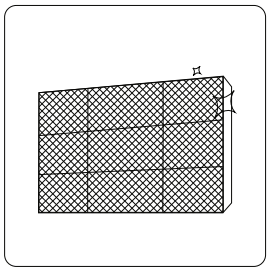
Turn off the unit and disconnect the power

Maintenance - Pre-Season Inspection

After extended periods of non-use, or in preparation for periods of frequent use, please do the following:



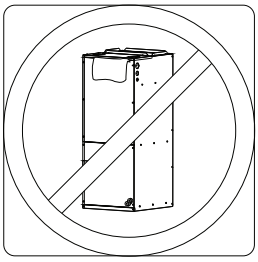
Check for damaged wires



Replace all filters

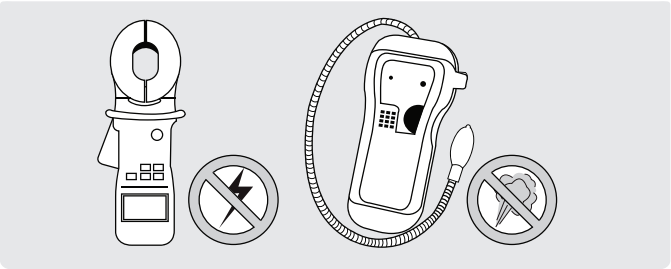


Check for leaks





Make sure nothing is blocking the air inlets and outlets



WARNING – RISK OF ELECTRICAL SHOCK

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

Electrical Safety Checks

After installation is complete, confirm that all electrical wiring has been installed in accordance with local and national regulations, and according to the installation manual.

BEFORE TEST RUN

Check Insulated Resistance
The insulated resistance must be more than 2MΩ.

Check Grounding Work
Measure grounding resistance by visual detection and with a grounding resistance tester. Grounding resistance must be less than 0.1Ω.

NOTE: This may not be required for some locations in North America.

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

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 North America.

Gas Leak Checks

There are two different methods to check for gaseous leaks. Use **Fig. 10.1** below as a guide for the critical points to check for leaks.

Soap and Water Method

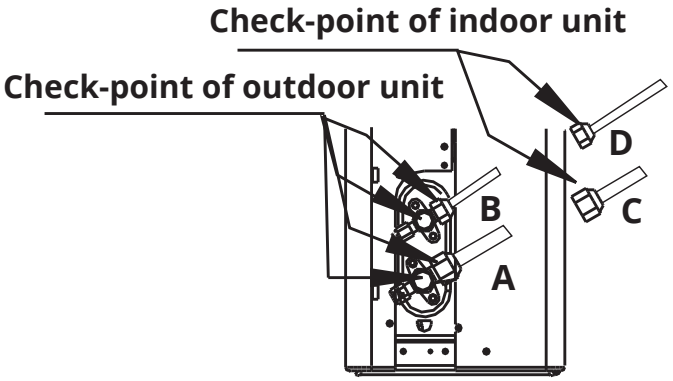
Using a soft brush or spray bottle, apply a soapy water solution to all of the pipe connection points of the indoor and outdoor units, watching to see if any bubbles form. The presence of bubbles indicates there is a leak.

Leak Detector Method

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

AFTER PERFORMING GAS LEAK CHECKS

After confirming that all of the refrigerant pipe connections points ***DO NOT* leak, replace the valve cover on the outside unit and wrap and insulate the piping connections.**



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

Fig. 10.1

NOTE: Fig. 10.1 above is for demonstration purposes only. It represents the connection points to check for leaks.

Test Run

11

Before Test Run

A test run must be performed after the entire system has been completely installed. Complete and confirm the list of checks below before performing a test run.

List of Checks to Perform Before Test Run

- **The indoor & outdoor units are properly installed**
- **Unit is properly grounded**
- **All wiring & electrical terminals are properly covered & connected**
- **The power voltage is the correct voltage for the unit**
- **Length of piping and additional refrigerant stow capacity have been recorded.**
- **All refrigerant piping connection points are properly connected and *DO NOT* leak**
- **Water drains properly from drain pipe and to a safe location**
- **Heating insulation is properly installed**
- **Ensure there are no obstacles near the inlet and outlet of the outdoor or indoor units**
- **Ensure all connection valves on the outdoor condenser are fully opened**

Test Run Instructions

⚠ WARNING

Failure to perform the test run could result in damage to the unit, property, or personal injury. Only perform test run after you have ensure the following steps have been completed:

- **Electrical Safety Checks** - Confirm that the unit's electrical system is safe and operating properly.
- **Gas Leak Checks** - Check all refrigerant piping/line set connections and confirm that the system is not leaking.
- Confirm that the gas and liquid (high and low pressure) stop valves are fully open. **NOTE: If installing a multi-zone condenser, also ensure the two main valves (King Valves) are fully open. If all the valves are not fully opened before the system is turned on, damage could occur.**

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

1. Connect power to the unit. Then, turn on the main power switch and allow the unit to warm up.
2. Set the air conditioner to **COOL** mode.

List of Checks to Perform During Test Run

For Indoor Unit

- **Ensure the room temperature is being registered/displayed correctly**
- **Ensure the manual buttons of the indoor air handler function properly**
- **Check to see that the drainage system is unimpeded and draining smoothly**
- **Ensure there is no vibration or abnormal noise during operation**

For Outdoor Unit

- **Ensure refrigerant system & piping connections *DO NOT* leak**
- **Ensure there is no vibration or abnormal noise during operation**
- **Ensure the wind, noise, and water generated by the unit *DO NOT* pose a safety hazard or cause a disruption to your neighbors**

Drainage System Test

This test is to ensure the drainage system is functioning properly and drains smoothly. New buildings should have this test performed before the ceiling is finished.

1. Remove the test cover. Then, add 2,000 ml of water to the tank through the attached tube.
2. Turn on the main power switch and run the air conditioner in **COOL** mode.
3. Listen to the sound of the drain pump to see if it makes any unusual noises.
4. Ensure that the water is being discharged. It may take up to one minute before the unit begins to drain depending on the drain pipe.
5. Ensure that there are no leaks in any of the piping.
6. Then, stop the air conditioner. Turn off the main power switch and reinstall the test cover.

NOTE: If the unit malfunctions or does not operate correctly, please refer to the Troubleshooting section of this manual before contacting technical support.

Common Issues

The following events may occur during normal operation, and may not indicate a malfunction or a need for repairs.

Symptom	Cause
Unit does not turn on when pressing **ON/OFF** button.	The unit has a 3 minute protection feature that prevents the unit from overloading. The unit cannot be restarted within 3 minutes of being turned off.
	Cooling & Heating models: If the operation light and PRE-DEF (pre-heating/ Defrost) indicators are lit up, the outdoor temperature is too cold and the unit's anti-cold wind is activated in order to defrost the unit.
	In Cooling-Only models: If the FAN-ONLY indicator is lit up, the outdoor temperature is too cold and the unit's antifreeze protection is activated in order to defrost the unit.
The unit changes from **COOL/HEAT** mode to **FAN** mode.	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating in the previously selected mode again.
	Once the set temperature has been reached, at this point the unit turns off the compressor. The unit will continue operating when the temperature fluctuates again.
The indoor unit emits white mist.	In humid regions, a large temperature difference between the room's air and the conditioned air can cause a white mist to occur.
Indoor & outdoor units emit a white mist.	When the unit restarts in **HEAT** mode after defrosting, a white mist may be emitted due to moisture generated from the defrosting process.
The indoor unit makes noises.	A squeaking sound is heard when the system is OFF or in COOL mode. The noise is also heard when the drain pump (optional) is in operation.
	A squeaking sound may occur after running the unit in HEAT mode due to the expansion and contraction of the unit's plastic parts.
Indoor unit and outdoor unit make noises.	A low hissing sound during operation: This is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	A low hissing sound when the system starts, has just stopped running, or is defrosting: This noise is normal and is caused by the refrigerant gas changing direction or stopping.
	Squeaking sound: Normal expansion and contraction of the plastic and metal parts caused by temperature changes during operation can cause squeaking noises.
The outdoor unit makes noises.	The unit will make different noises based on which mode it is currently operating in.
The unit emits a bad odor.	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
Outdoor unit fan does not operate.	During operation, the fan speed is controlled to optimize product operation.
Dust is emitted for the indoor or outdoor unit.	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during extended periods of not being used.

NOTE: If problem persists, contact a local dealer or your nearest customer service center. Provide them with a detailed description of the unit malfunction as well as the model number of your unit.

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

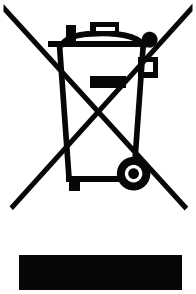
DO NOT ATTEMPT TO CORRECT OR FIX THESE ITEMS YOURSELF!

CONTACT AN AUTHORIZED SERVICE PROVIDER IMMEDIATELY!

Before calling for service assistance, troubleshoot a problem by performing the following checks:

Symptom	Possible Causes	Solution
Poor Cooling Performance	Temperature setting may be higher than ambient room temperature.	Lower the temperature setting
	The air filter is dirty.	Remove the filter and clean it according to the instructions.
	The air inlet or outlet of either unit is blocked.	Turn the unit off, remove the obstruction and turn it back on.
	Doors and windows are open.	Ensure all windows and doors are closed while operating the unit.
	Excessive heat is generated by sunlight.	Close windows and curtains during periods of high heat or bright sunshine.
	Too many other sources of heat in the room (people, computers, electronics, etc.)	Reduce the amount of heat sources
	Low refrigerant due to a leak or long-term use.	Check for leaks, reseal if necessary and top off the refrigerant level.
	The heat exchanger on the indoor or outdoor unit is dirty.	Clean the affected heat exchanger.
The unit is not working	Power failure	Wait for power to be restored
	The power is turned off	Turn on the power
	The fuse is burned out	Replace the fuse
	Remote control batteries are dead	Replace the batteries
	The unit's 3 minute protection feature has been activated	Wait three minutes after restarting the unit
	Timer is activated	Turn timer off.
The unit starts and stops frequently	System circuit is blocked	Determine which circuit is blocked and replace the malfunctioning piece of equipment.
	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant.
	Incompressible gas or moisture has entered the system.	Evacuate and recharge the system with refrigerant.
	The compressor is broken.	Replace the compressor.
	The voltage is too high or too low.	Install a manostat to regulate the voltage.
Poor heating performance	The outdoor temperature is extremely low.	Use auxiliary heating device.
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use.
	Low refrigerant due leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant.

The marking shown below when depicted on the product or its literature, indicates that electrical waste and electrical equipment should not be mixed with general household waste.



Correct Disposal of This Product (Electrical Waste & Electronic Equipment)

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

Ducted Air Handler

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.