This product utilizes R-454B *refrigerant*

MRCOOL® Signature Series Multi-Position Air Handler

INSTALLATION & OWNER'S MANUAL

MODELS:

- **MCAEAMPSF*C21AA**
- **MCAEAMPEF*C21AA**
- **MCAEAMPEF*E21AA**

Read this manual carefully before installation and keep it where the operator can easily find it for future reference.

Due to updates and constantly improving performance, the information and instructions within this manual are subject to change without notice.

Version Date: August 26, 2025

Please visit www.mrcool.com/documentation to ensure you have the latest version of this manual.

MRCOOL®
COMFORT MADE SIMPLE

CONTENTS

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	Indicates the most serious hazard which will result in severe personal injury, property and/or product damage, or death.
CAUTION	Indicates hazards which could result in moderate personal injury and/or property and product damage.
NOTE	Indicates suggestions which will result in enhanced installation, relaibility, or operation

Symbols Displayed on Unit		
	**WARNING**	This symbol shows that this appliance uses a mild flammable refrigerant. If the refrigerant leaks and is exposed to an external ignition source, there is risk of a fire.
	**CAUTION**	This symbol shows that the appliance shall be installed, operated, and stored in a room with a floor area not less than the minimum room area.
	**CAUTION**	This symbol shows that the operation manual should be read carefully.
	**CAUTION**	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	**CAUTION**	This symbol shows that information is available such as the operating manual or installation manual.

WARNING

- These instructions are intended as an aid to qualified licensed service personnel for proper installation, adjustment and operation of this unit. Read these instructions thoroughly before attempting installation or operation.
- Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury, or death.
- MRCOOL® warranty does not cover any damage or defect to the unit caused by the attachment or use of any components, accessories, or devices (other than those authorized by MRCOOL®) into, onto or in conjunction with the unit. You should be aware that the use of unauthorized components, accessories or devices may adversely affect the operation of the heat pump and may also endanger life and property. MRCOOL® disclaimer any responsibility for such loss or injury resulting from the use of such unauthorized components, accessories, or devices.
- Disconnect all power to the unit before installing or servicing. Failure to do so can result in severe electrical shock or death.
- Do not, under any circumstances, connect return ductwork to any other heat producing device such as a fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, property damage, severe personal injury, or death.
- The unit must be permanently grounded. A grounding lug is provided. Failure to ground this unit can result in fire or electrical shock causing property damage, severe personal injury, or death.
- Only electric heater kits supplied by this manufacturer as described in this publication have been designed, tested and evaluated by a nationally recognized safety testing agency for use with this unit. Use of any other MRCOOL® electric heaters installed within this unit may cause hazardous conditions resulting in property damage, fire, bodily injury, or death.

1 SAFETY

WARNING: PROPOSITION 65

This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to the state of California to cause cancer.

GENERAL WARNINGS FOR SAFETY

- The first 36 inches of supply air plenum and ductwork must be constructed of sheet metal as required by NFPA 90B. The supply air plenum or duct must have a solid sheet metal bottom directly under the unit with no openings, registers, or flexible air ducts located in it. If flexible supply air ducts are used they may be located only in the vertical walls of rectangular plenum, a minimum of 6 inches from the solid bottom. Metal plenum of duct may be connected to the combustible floor base, if not, it must be connected to the unit supply duct exposed to the supply air opening from the downflow unit. Exposing combustible (non-metal) material to the supply opening of a down-flow unit can cause a fire resulting in property damage, personal injury or death. Exception warning to downflow: Installations on concrete floor slab with supply air plenum and ductwork completely encased must be not less than 2 inches of concrete (See NFPA 90A).
- Only use this unit in a well-ventilated area and ensure unit's airflow inlet and outlet would not be impeded by obstructions.
- Do not use this unit in the following locations:
  - Locations with mineral oil.
  - Locations with saline atmospheres, such as seaside locations.
  - Locations with sulfurous atmospheres, such as near natural hot springs.
  - Where high-voltage electricity is present, like in certain industrial locations.
  - On vehicles or vessels, such as trucks or ferry boats.
  - Where exposure to oily or very humid air may occur, like kitchens.
  - In proximity to sources of electromagnetic radiation, such as high-frequency transmitters or other high strength radiation devices.
  - Do not attempt to accelerate the defrosting process to clean, unless utilizing procedures recommended by MRCOOL®.
  - The appliance shall be stored in a room that does not have a continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
  - Do not pierce or burn the unit. Be aware that refrigerants may not contain an odor.
  - If refrigerant gas leaks during installation, ventilate the area immediately.
  - Comply with national gas regulations.

When repairing the refrigerating system, comply with the following precautions prior to conducting work on the system:

- Work must be undertaken according to controlled procedures to minimize the risk of the presence of flammable gases or vapors while the work is being performed.
- All maintenance staff and others working in the local area should be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable environment. Ensure the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e., non-sparking, adequately sealed or intrinsically safe.
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available and easily accessible. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
- When carrying out work in relation to a refrigerating system that involves exposing any pipe work, no sources of ignition should be used in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking , should be kept sufficiently far away from the site of installation, repair, or removal and disposal of the unit, during which refrigerant can possibly be released into the surrounding space. Prior to beginning work, the area around the equipment is to be surveyed to ensure there are no flammable hazards or ignition risks. “No Smoking” signs must be clearly displayed.
- This appliance is not intended for use by people (including children) with reduced physical, sensory or mental capabilities, or people who lack experience and knowledge, unless they are supervised or have been given instructions concerning the use of the appliance by a person responsible for their safety.

GENERAL WARNINGS FOR SAFETY CONT.

- Children should be supervised to ensure that they do not play with the appliance.
- Any person who is involved with working on or opening a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely.
- Servicing shall only be performed as recommended by MRCOOL®.
- Maintenance and repair requiring the assistance of other skilled personnel should be carried out under the supervision of a person competent in the use of flammable refrigerants.
- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to minimize the risk of ignition.
- Ensure the area is in the open or that it is adequately ventilated before opening the system or conducting any hot work. A degree of ventilation should continue during the duration of the work. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the surroundings.
- Where electrical components are being changed, they must be fit according to their purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the MRCOOL® Customer Service team for assistance. The following checks shall be applied to installations using flammable refrigerants:
- The actual refrigerant charge is in accordance with the room size within which the refrigerant-containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- If an indirect refrigerating circuit is being used, the secondary circuit need to be checked for the presence of refrigerant.
- Equipment marking must remain visible and legible. Markings and signs that are illegible must be corrected.
- Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substances which may corrode refrigerant-containing components, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

Repair and maintenance of electrical components should include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, the no electrical supply shall be connected to the circuit until the fault has been dealt with:

- That there is continuity of grounding.
- That capacitors are discharged. This should be done in a safe manner to avoid the possibility of sparking.
- That no live electrical components and wiring are exposed while charging, recovering, or purging the system.

- Flammable refrigerant-
  - Sealed electrical components shall be replaced.
  - Intrinsically safe components must be replaced.
  - Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.
  - Under no circumstances shall potential sources of ignition be used while searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
  - Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need recalibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
  - Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and should be calibrated for the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.
  - If a leak is suspected, all naked flames should be removed or extinguished.
  - If a leakage of refrigerant which requires brazing is found, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

GENERAL WARNINGS FOR SAFETY CONT.

- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine should be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- Examples of leak detection fluids are, the bubble method.
- When breaking into the refrigerant circuit to make repairs or for any other purpose, conventional procedures should be used.
- However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.

The following procedure shall be adhered to:

1. Safely remove refrigerant following local and national regulations.
2. Evacuate.
3. Purge the circuit with inert gas.
4. Evacuate.
5. Continuously flush or purge with inert gas when using flame to open circuit.
6. Open the circuit.

- The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system should be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.
- For appliances containing flammable refrigerants, refrigerant purging should be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process must be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system should be vented down to atmospheric pressure to enable work to take place.
- The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation should be available.
- Ensure contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant they contain.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.
- Label the system when charging is complete (if it is not already labeled).
- Take extreme care not to overfill the refrigeration system.
- Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow-up leak test should be carried out prior to leaving the site.
- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to reuse of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.
- Isolate system electrically.
- Become familiar with the equipment and its operation.

Before attempting the procedure ensure that:

1. Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
2. All personal protective equipment is available and used correctly;
3. The recovery process is supervised at all times by a competent person;
4. Recovery equipment and cylinders conform to the appropriate standards.

- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure the cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate it in accordance with the manufacturer's instructions.
- Do not overfill cylinders. (No more than 80% volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.

GENERAL WARNINGS FOR SAFETY CONT.

- When the cylinders have been filled correctly and the process has been completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off. Recovered refrigerant should not be charged into another refrigeration system unless it has been cleaned and checked. Equipment shall be labeled stating that it has been decommissioned and emptied of refrigerant. The label shall be dated and signed.
- Ensure that there are labels on the equipment stating that the equipment contains flammable refrigerant.
- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders should be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment must be in good working order and come with a set of instructions for proper usage. Furthermore, the equipment should be suitable for safely recovering flammable refrigerants. If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales should be available and in good working order. Hoses need to be complete with leak-free disconnect couplings and in good condition.
- The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure they have been evacuated to an acceptable level to be certain that flammable refrigerant does not remain within the lubricant. The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.
- Do not use the air conditioner for other purposes. In order to avoid any quality deterioration. do not use the unit for the cooling of precision instruments, food, plants, animals, or works of art. Before cleaning, be sure to stop the operation, turn the breaker off and unplug the supply cord. Otherwise, electric shock and injury may occur.
- In order to avoid electric shock or fire, make sure a ground leak detector is installed.
- Never touch the air outlet or the horizontal blades while the swing flap is in operation. Your fingers may be come caught or the unit may break down.
- Never put any objects into the air inlet or outlet.
- Objects touching the fan at high speed can be dangerous.
- Never inspect or service the unit by yourself.
- Ask a qualified service person to perform this task.
- If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, harming your health and well-being.
- Do not dispose of this product as unsorted municipal waste. This waste should be collected separately for special treatment. Do not dispose of electrical appliances as unsorted municipal waste. Use separate collection facilities. Contact your local government agency for information regarding the connection systems available.
- To prevent refrigerant leak, contact your local dealer or the MRCOOL® Customer Service team.
- When the system is installed and operated in a small room, it is required to maintain the concentration of the refrigerant below the limit, in case a leak occurs. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
- The refrigerant in the air conditioner is safe and normally does not leak.
- If the refrigerant leaks into the room and comes into contact with the fire of a burner, a heater or a cooker, a harmful gas could be released.
- Turn off any combustible heating devices, ventilate the room, and contact the dealer from whom you purchased the unit.
- Do not use the air conditioner until a service person confirms the refrigerant leak is repaired.
- Keep ventilation openings clear of obstruction.This unit uses R454B refrigerant. A2L R454B

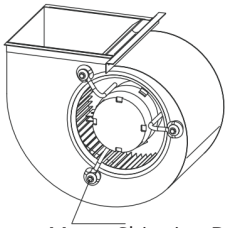
! CAUTION

- Be sure the air conditioner is grounded.
- In order to avoid electric shock, make sure the unit is grounded and that the ground wire is not connected to a gas or water pipe, lightning conductor or telephone ground wire.
- Do not operate the air conditioner with wet hands. An electric shock may happen.
- Do not touch the heat exchanger fins. These fins are sharp and could cut you.
- To avoid oxygen deficiency, ventilate the room sufficiently if equipment with a burner is used together with the air conditioner.
- Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause wetting of the building, furniture, etc.
- Never touch the internal parts of the controller.
- Do not remove the blower access panel. Some parts inside are dangerous to touch, and machine issues may occur.
- Attention is drawn to the fact that additional transportation regulations may exist with respect to the equipment containing a flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transport regulations.
- Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.
- All required signs are to be maintained and employers should ensure employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs.
- The effectiveness of signs should not be diminished by too many signs being placed together.
- Any pictograms used should be as simple as possible and contain only essential details.
- The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.
- Storage package protection should be constructed such a way that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge.
- The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.
- Do not operate the air conditioner when using a room fumigation - type insecticide. Failure to observe this precaution could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals. It may also cause the refrigerant sensor to alarm.
- Do not place appliances which produce open flames in places exposed to the airflow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.
- Do not install the air conditioner in a location where flammable gas may leak out. If the gas leaks out and stays around the air conditioner, a fire may break out.

NOTE

Make sure the blower motor support is tight (3-motor mount bolts) then check to see if the wheel is secured to motor shaft before operating the unit, as indicated in the figure to the right.

Checking Motor Fix Status:

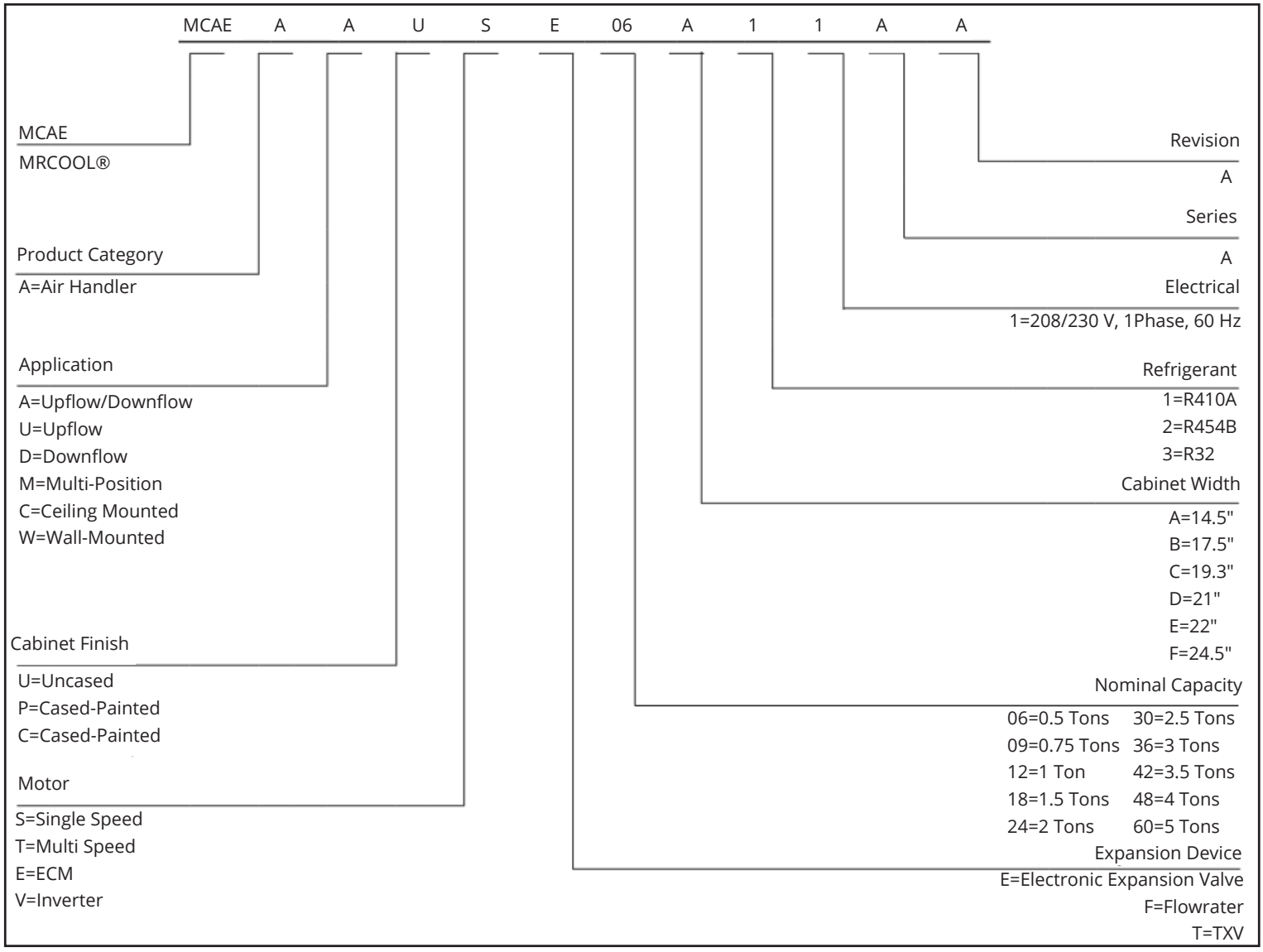


Blower Motor Shipping Bolt

DISPOSAL

Comply with national regulations. Components and accessories from the units are not part of ordinary domestic waste. Complete units, compressors, motors, etc. are only to be disposed of via qualifed disposal specialists. This unit uses fiammable refrigerant R454B Please contact the dealer when you want to dispose of this unit. Law requires that thecollection,transportealion and disposal of rerigerants must confirm with the regulations governing the colleclion and destruction of hydrofluorocarbons.

2.1 Nomenclature



2.2 Unit Information

- The unit can be positioned for vertical upflow, downflow, or horizontal air distribution. The direct-drive motor distributes air volume to match any application. The 3-speed motor allots airflow to meet standard service.
- An access panel for power and control wiring at the top and side of the unit makes the screw terminal more easily reachable.
- If a return air duct is not installed, carefully select the location and method of product installation so airflow into the unit will not be blocked.
- The unit should be installed in a level position to ensure proper condensation drainage. Up to an additional 1/4" rise over the width or depth of the unit is allowed to create additional sloping toward the drain. Unit must be positioned between level and 1/4" rise, sloping toward the drain connections.
- Install the indoor and outdoor unit, power supply wiring, and connecting wires at least 3.5ft (1.0668m) away from televisions or radios in order to prevent image interference or noise. To ensure proper installation, select a solid and level site. Ensure enough space maintained for installation and maintenance. See Figures 2-1 and 2-2.

WARNING

- **DO NOT** install unit in an area where flammable materials are present due to the risk of an explosion resulting in serious injury or death.
- If the supporting structural members are not strong enough to take the unit's weight, the unit could fall out of place and cause serious injury.

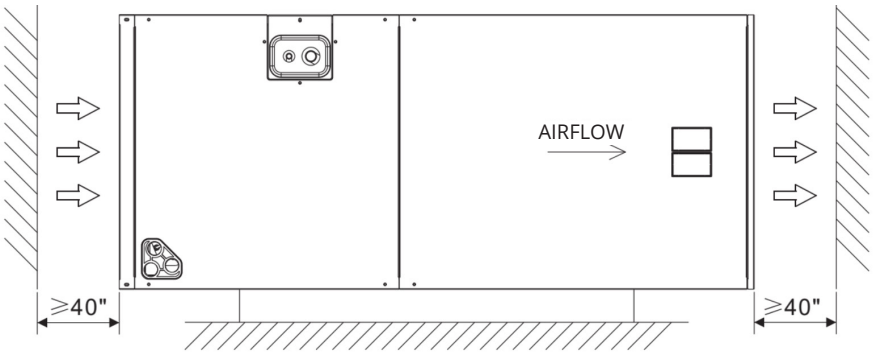


Figure 2-1 Clearances in the Horizontal Position

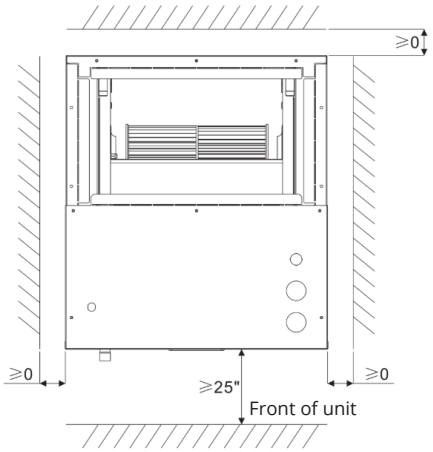
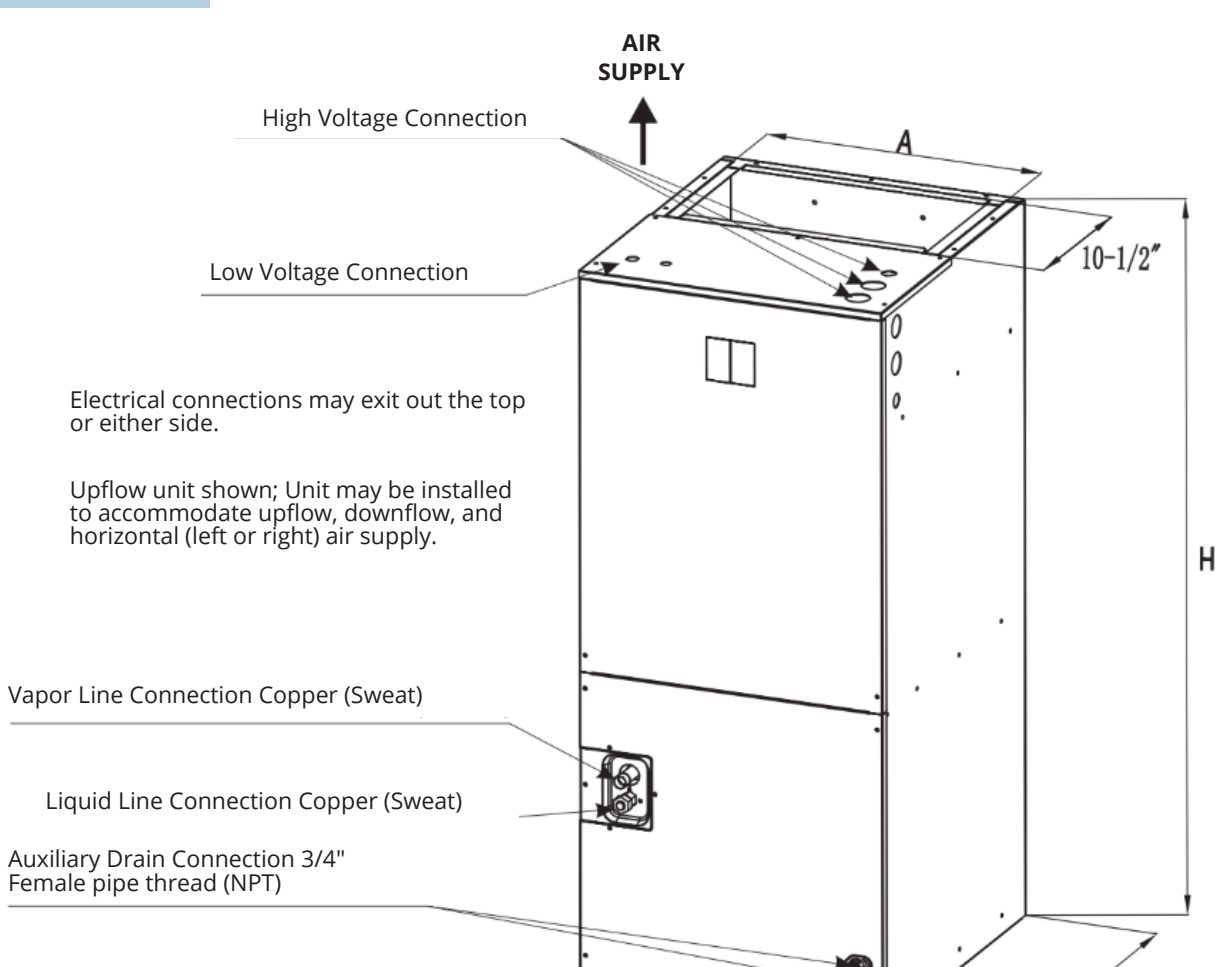


Figure 2-2 Clearances in the Vertical Position

Installation in Hot/Humid Areas:

- If the humidity inside the installation space might exceed 86°F (30°C) and RH 80%, it is recommended to insulate the cabinet exterior.
- Use glass wool or polyethylene foam as insulation so the thickness is more than 2in (5.08cm) and fits inside the installation space opening. Otherwise, condensation may form on the surface of the insulation.
- Be sure to use insulation designed for use with HVAC systems. Condensation may form on the product during cool operation. It is also recommended to use a second drain pan and secure the unit firmly to prevent it from falling.

2.3 Unit Dimensions



Note: 25" clearance is required in the front of the unit for filter and coil maintenance

Figure 2-3

Model Size	Dimensions in. [mm]				
	Unit Height "H" in (mm)	Unit Width "W" in (mm)	Unit Length "D" in (mm)	Supply Duct "A" in (mm)	Liquid Line/ Vapor Line in.
18K	45.75" [1162]	19.625" [500]	22" [560]	17.875" [454]	0.375"/ 0.75"
24K	45.75" [1162]	19.625" [500]	22" [560]	17.875" [454]	0.375"/ 0.75"
30K	45.75" [1162]	19.625" [500]	22" [560]	17.875" [454]	0.375"/ 0.75"
36K	45.75" [1162]	19.625" [500]	22" [560]	17.875" [454]	0.375"/ 0.75"
42K	45.75" [1162]	19.625" [500]	22" [560]	17.875" [454]	0.375"/ 0.75"
48K	53.125" [1350]	22" [560]	24.5" [623]	19.5" [496]	0.375"/ 0.875"
60K	53.125" [1350]	22" [560]	24.5" [623]	19.5" [496]	0.375"/ 0.875"

2.4 Parts Introduction

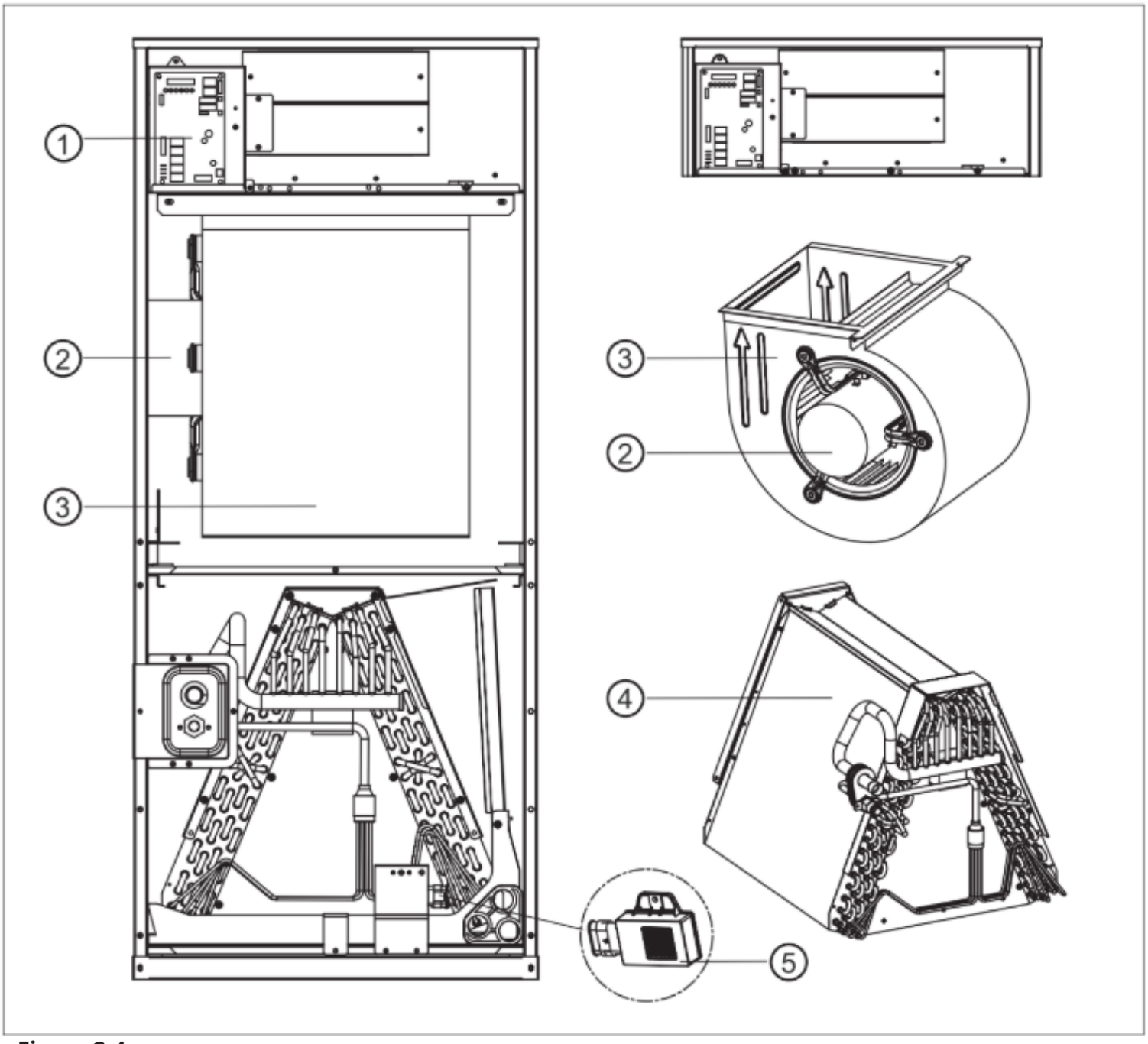


Figure 2-4

Number	1	2	3	4	5
Parts	Control Board	AC Motor	Blower	AL-Evaporator	R454B Refrigerant Sensor

3.1 Unit Orientation

Vertical Upflow

- Vertical upflow configuration is the standard orientation for all factory models, indicated in Figure 3-1.
- If a side-return air opening is required, field fabricates a return air plenum with an opening large enough to supply unit and strong enough to support unit weight.
- If return air is to be ducted, install duct flush with the floor. Use fireproof resilient gasket 1/8"-1/4" in. thick between the ducts (unit and floor). Set unit on floor over opening.

NOTE:
Torque applied to drain connections should not exceed 15 ft/lbs.

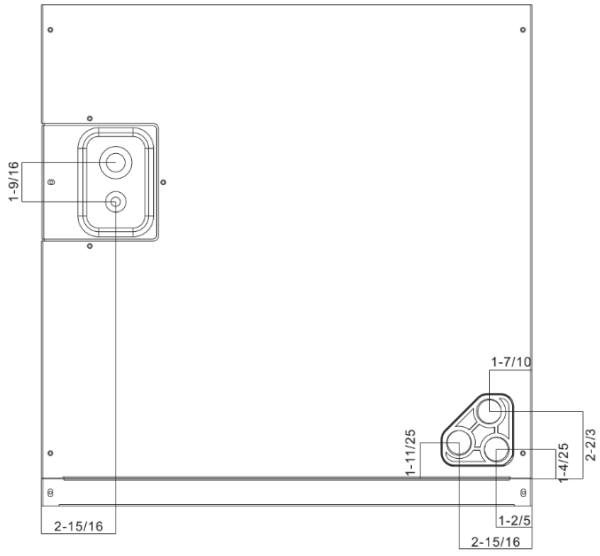
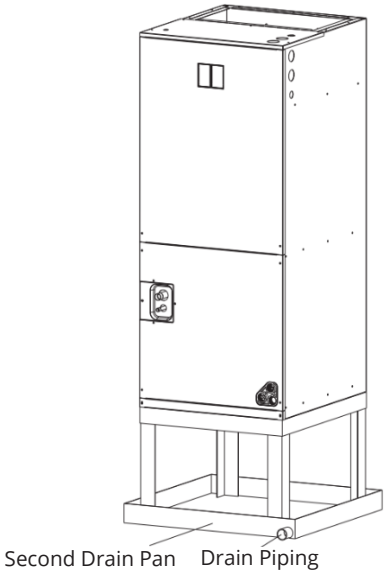


Figure 3-1 Dimensions for Front-Connect Coil

Installed Vertically:



Vertical Downflow

Conversion to Vertical Downflow:

A vertical upflow unit may be converted to vertical downflow. See Figure 3-2.

1. Remove the coil access panel.
2. Remove the refrigerant leak detection sensor and indoor coil.
3. Reinstall the indoor coil 180° from the original position.
4. Reinstall the refrigerant sensor at the location shown in Figure 3-3.

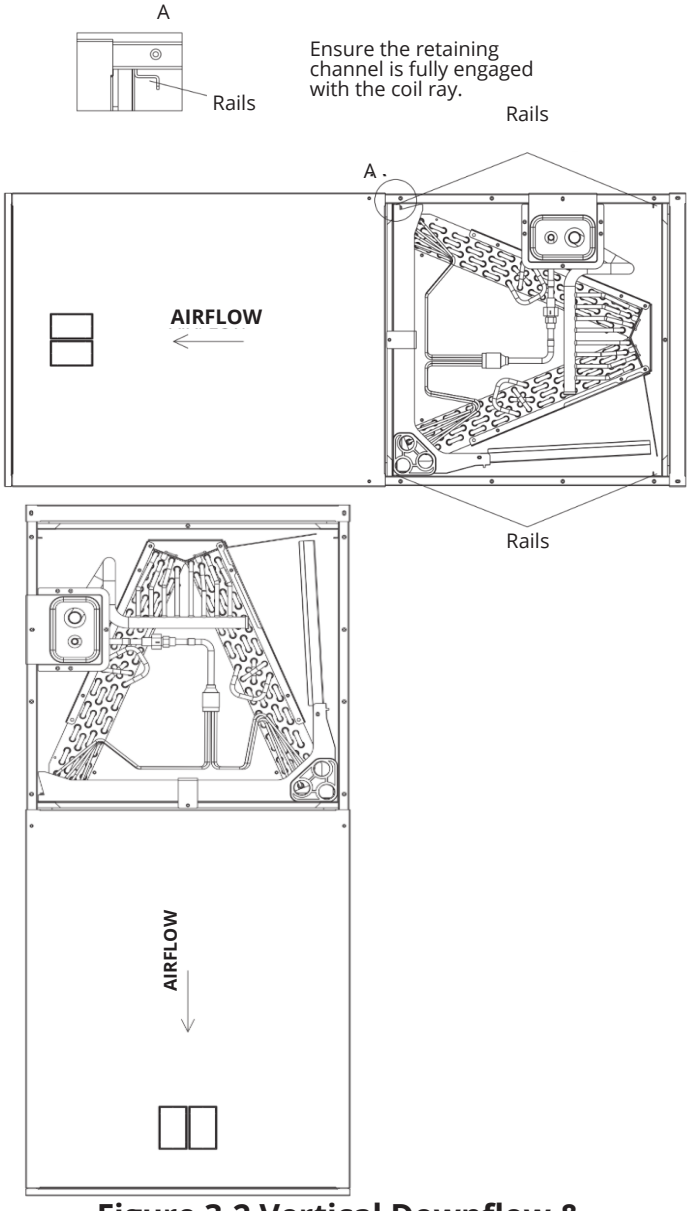


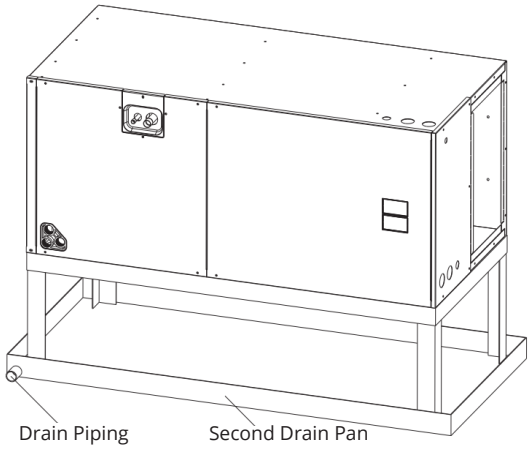
Figure 3-2 Vertical Downflow & Horizontal Left Airflow

Horizontal Airflow

Horizontal right is the default factory configuration for the units. Horizontal left isn't the default factory configuration for the units. Conversion to horizontal left: A vertical upflow unit may be converted to horizontal left by removing the indoor coil assembly and reinstalling the coil as shown for lefthand air supply.

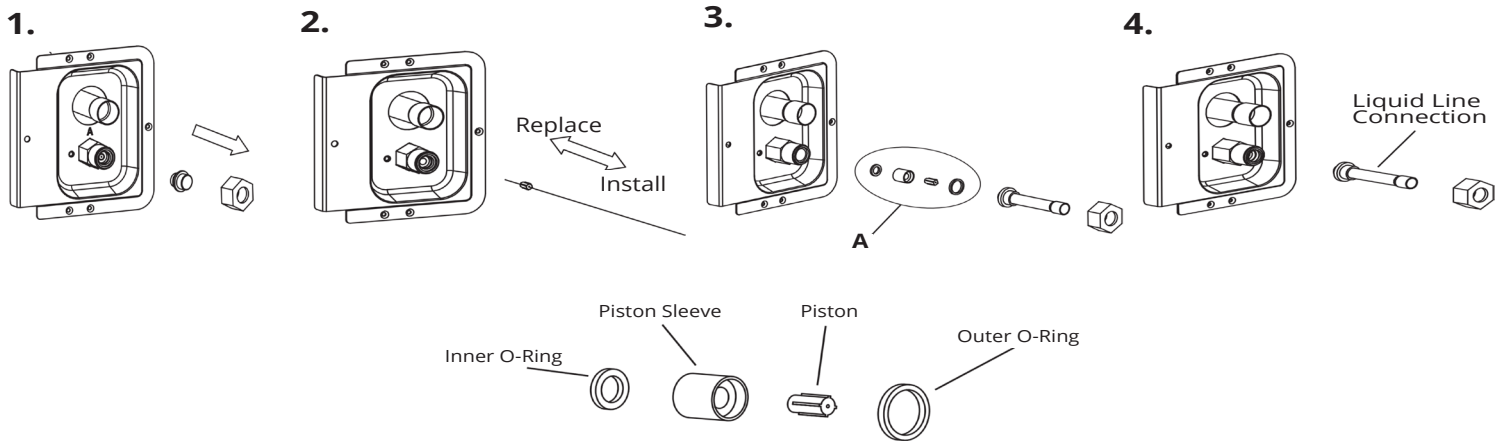
1. Rotate unit into the downflow position with the coil compartment on top and the blower compartment on the bottom. See Figure 3-2.
2. Reinstall the indoor coil 180° from the original position. Ensure the retaining channel is fully engaged with the coil rail. See Figure 3-2.
3. Secondary drain pan kits are recommended when the unit is configured for the horizontal position over a finished ceiling and/or a living space.

Installed Horizontally:



3.2 Coil Piston Replacement and Installation

1. Use a wrench to loosen the nut and pull out the rubber plug.
2. Replacement installation method of valve core.
3. Take out the inner O-ring, piston sleeve, piston, outer O-ring, liquid line connection from the accessories, and install them in sequence. Ensure the direction is correct. The inner O-ring is installed together with the piston sleeve.
4. Re-attach the liquid line with the nut and tighten it up to 1/6th turn past hand-tightened.



Condensing Unit Nom. Cooling (BTUH)	(Orifice) Piston Model	(Orifice) Piston Size (mm)
18,000	054	1.3716
24,000	054	1.3716
30,000	060	1.524
36,000	066	1.6764
42,000	076	1.9304
48,000	082	2.0828
60,000	092	2.3368

3.3 Refrigerant Sensor

R454B refrigerant leakage sensor is configured for the indoor unit. To meet different installation scenarios, the refrigerant sensor has two installation positions. The factory set of the refrigerant sensor is applied to the vertical upflow and horizontal right applications. The refrigerant sensor needs to be relocated for vertical downflow and horizontal left. Before installing the indoor unit, check whether the refrigerant sensor is correctly installed according to Figure 3-3.

Steps for Changing Cabinet Orientation for Refrigerant Sensor:

1. Remove the screws, upper side plate, lower side plate, filter cover plate, and support strip. Disconnect the refrigerant sensor on the control board. See Figure 3-3, step 1.
2. Cut off the zipper buckle of the refrigerant leakage sensor harness, and then unscrew the screws from the support strip and the refrigerant leakage sensor mounting plate to remove the sensor. See Figure 3-3, step 2.
3. Reinstall the indoor coil 180° from its original position and install the refrigerant leakage sensor in the position shown in Figure 3-3, step 3.
4. Replace the wiring harness in the correct position and secure it in place. Insert the refrigerant sensor cable back into the control board. See Figure 3-3, step 3.
5. Reinstall the upper side panel and other components, and fix them with screws.

NOTE:
The refrigerant detection sensor needs to be relocated in this application. Please follow subsequent steps.

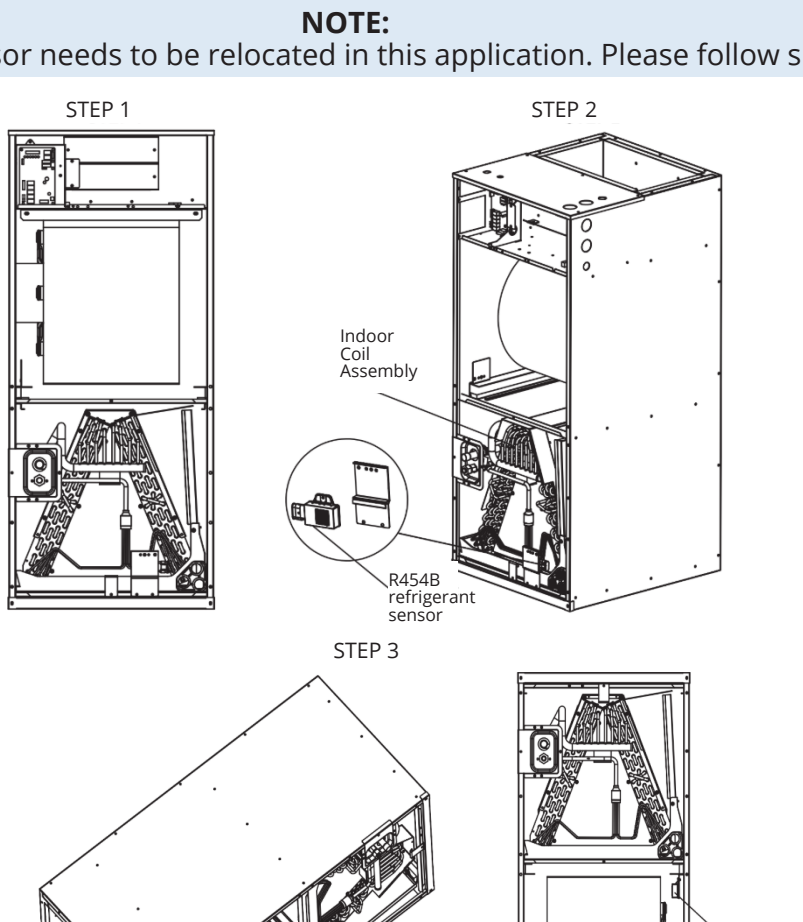


Figure 3-3 Vertical downflow & horizontal left applications conversion

WARNING

- The refrigerant leakage sensor can only use the factory model of the specified model indicated in the corresponding manual.
- The R454B refrigerant leakage sensor must be used to activate the refrigerant shutoff device, the alarm device, incorporated circulation airflow or other emergency controls, which should give an electrical signal at a predetermined alarm set point in response to leaked refrigerant.
- The location of leakage sensors shall be chosen in relation to the different installation scenarios.
- The installation of the refrigerant leakage sensor shall allow access for checking, repair or replacement by an authorized person.
- The refrigerant leakage sensor shall be installed so its function can be verified easily.
- The refrigerant leakage sensor shall be protected to prevent tampering or unauthorized resetting of the pre-set value.
- To be effective, the refrigerant leakage sensor must be electrically powered at all times after installation, other than when servicing.
- If the refrigerant leakage sensor detects a refrigerant leak, the fan will keep running, the compressor will stop, and electric heater will be shut off. You should immediately leave the leak area and notify a professional for handling.
- The system will return to normal operation when refrigerant is no longer detected in 5 minutes.
- The service life of the refrigerant sensor is 15 years, and it should be replaced after the service life.
- To ensure the detection accuracy of the refrigerant sensor, it is recommended to blow dust off the surface of the refrigerant sensor after it is used for a long time.
- Leak Detection System installed on the indoor unit. The unit must be powered on except during servicing.
- Ensure the apparatus is mounted securely.
- These instructions are exclusively intended for qualified contractors and authorized installers.
- Work on the refrigerant circuit with flammable refrigerant in safety group A2L may only be carried out by authorized contractors. These heating contractors must be trained in accordance with UL 60335-2-40, Section HH. The certificate of competence from an industry accredited body is required.
- Work on electrical equipment may only be carried out by a qualified electrician.
- Before initial commissioning, all safety – related points must be checked by the particular certified heating contractors. The system must be commissioned by the system installer or a qualified person authorized by the installer.
- For installation of the indoor unit, refer to the corresponding installation and operation manual. If an indoor unit is installed in an unventilated area, the area shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.
- The appliance shall be stored so as to prevent mechanical damage from occurring.
- Do not stack combustible materials on the surface of the indoor unit.

The R454B refrigerant leakage sensor is configured for the indoor unit. The fan operation can be initiated by the R454B refrigerant sensor, ensuring that it meets the required circulation airflow requirements. The allowed maximum refrigerant charge (Mmax) and the required minimum room area (Amin) can be determined according to Table 4-1 and Table 4-2.

3.4 Refrigerant Connections

- Keep the coil connections sealed until refrigerant connections are made. See the installation instructions for the outdoor unit for details on line sizing, tubing installation, and charging information.
- Coil is shipped without charge. Evacuate the system before charging with refrigerant.
- Install refrigerant tubing so that it does not block service access to the front of the unit.
- Nitrogen should flow through the refrigerant lines while brazing.
- Use a brazing shield to protect the cabinet's paint and a wet rag to protect the rubber grommet from being damaged by torch flames. After the refrigerant connections are made, seal the gap around the connections with pressure sensitive gasket.

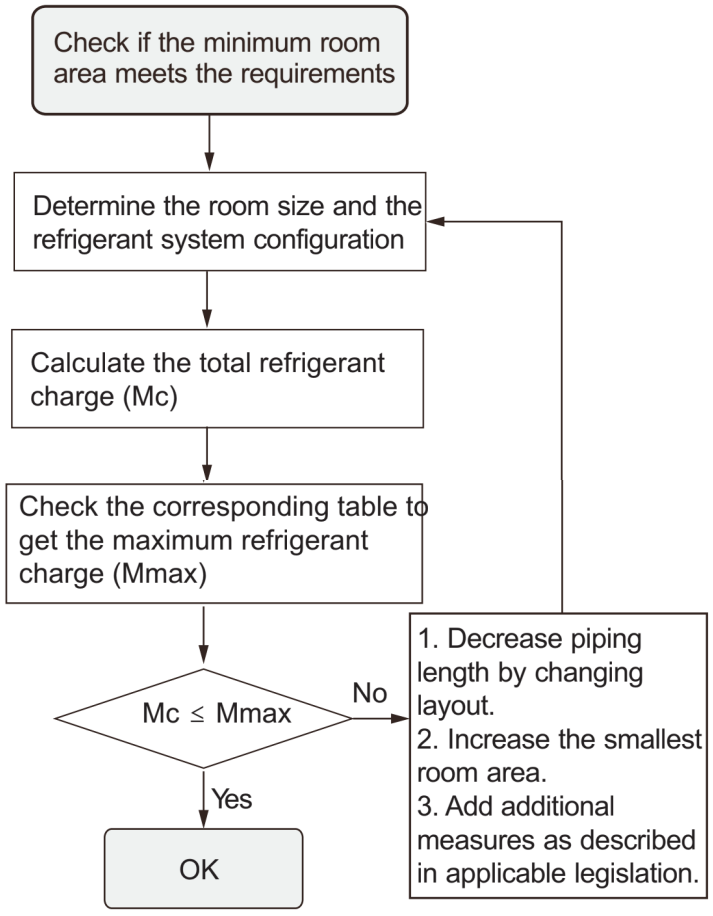
4.1 Refrigerant Charge

In UL/CSA 60335-2-40, R454B refrigerant is classified as class A2L, which is mildly flammable. Therefore, R454B refrigerant is suitable for systems needing additional refrigerant charge and which will limit the area of the rooms being served by the system.

Similarly, the total amount of refrigerant in the system should be less than or equal to the allowable maximum refrigerant charge. The allowable maximum refrigerant charge depends on the area of the rooms being served by the system.

Area Formula	
Mc	The actual refrigerant charge in the system.
A	The actual room area where the appliance is installed.
Amin	The required minimum room area.
Mmax	The allowable maximum refrigerant charge in a room.
Qmin	The minimum circulation airflow.
Anvmin	The minimum opening area for connected rooms.
TAmin	The total area of the conditioned space (for appliances serving one or more rooms with an air duct system).
TA	The total area of the conditioned space connected by air ducts.

Installation scheme flow chart



4.2 Room Area Calculation Requirements

! CAUTION

- The space considered should be any space which contains refrigerant-containing parts or, into where, refrigerant could be released.
- The room area (A) of the smallest, enclosed, occupied space should be used in the determination of the refrigerant quantity limits.

For determination of room area (A) when used to calculate the refrigerant charge limit, the following should apply:

- The room area (A) should be defined as the room area enclosed by the projection to the base of the walls, partitions, and doors of the space where the appliance is installed.
- Spaces connected by only drop ceilings, ductwork, or similar connections should not be considered a single space.

Units mounted higher than 70.85in (175.61cm) and spaces divided by partition walls that are no higher than 62.98in (157.48cm) should be considered a single space. Rooms on the same floor and connected by an open passageway between the spaces can be considered a single room when determining compliance to Amin, if the passageway complies with all of the following:

- It is a permanent opening.
- It extends to the floor.
- It is intended for people to walk through.

4 ROOM AREA LIMITATIONS

The area of the connected rooms, on the same floor, connected by a permanent opening in the walls and/or doors between occupied spaces, including gaps between the wall and the floor can be considered a single room when determining compliance to Amin, provided all the following conditions are met.

Low Level Opening:

1. The opening should not be less than Anvmin in Figure 4-1.
2. The area of any openings above 11.8125in (27.94cm) from the floor should not be considered in determining compliance with Anvmin.
3. At least 50% of the opening area of Anvmin should be below 7.875in (17.78cm) from the floor.
4. The bottom of the opening is not more than 3.9375in (7.62cm) from the floor.
5. The opening is a permanent opening that cannot be closed.
6. For openings extending to the floor should not be less than 0.78in (1.98cm) above the surface of the floor covering.

High Level Opening:

1. The opening should not be less than 50% of Anvmin, indicated in Table 4-2.
2. The opening is permanent opening and cannot be closed.
3. The opening should be at least 59in (149.86cm) above the floor.
4. The height of the opening is not less than 0.78in (1.98cm).

Room Size Requirement:

1. The room the refrigerant can leak, plus the connected adjacent room(s) should have a total area not less than Amin.
2. The room are where the unit is installed should not be less than 20% Amin.

The minimum opening for natural ventilation (Anvmin) in connected rooms is related to the room area (A), the actual refrigerant charge of refrigerant in the system (Mc), and the allowable maximum refrigerant charge in the system (Mmax), Anvmin can be determined according to Table 4-1.

For appliances serving one or more rooms, the area calculation should be determined based on the total area of the conditioned space (TA) connected by ducts taking into consideration the circulating airflow distributed to all the rooms by the appliance integral indoor fan will mix and dilute the leaking refrigerant before entering any room.

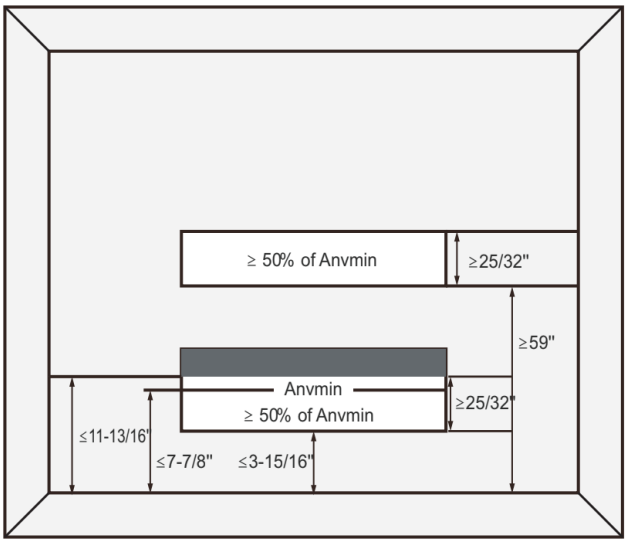


Figure 4-1

The Minimum Opening Area for Connected Rooms

A(ft^2)	Mc (lb-oz)		Mmax (lb-oz)		Anvmin(ft^2)
	lb	oz	lb	oz	
100	17	3	6	10	1.3
110	17	3	7	5	1.2
120	17	3	8	0	1.1
130	17	3	8	10	1.0
140	17	3	9	5	1.0
150	17	3	10	0	0.9
160	17	3	10	10	0.8
170	17	3	11	5	0.7
180	17	3	12	0	0.6
190	17	3	12	10	0.5
200	17	3	13	5	0.5
210	17	3	14	0	0.4
220	17	3	14	10	0.3
230	17	3	15	5	0.2
240	17	3	16	0	0.1
250	17	3	16	10	0.1
260	17	3	17	5	0.0

Table 4-1

Note: Take the Mc=17lb 3oz as an example

NOTE

The requirement for the second opening can be met by drop ceilings, ventilation ducts, or similar arrangements that provide an airflow path between the connected rooms.

4.3 Allowed Maximum Refrigerant Charge

If the fan incorporated in the appliance is continuously operated or operation is initiated by a Refrigerant Detection System with a sufficient circulation airflow rate, the allowable maximum refrigerant charge (Mmax) and the required minimum room area (Amin/TAmin) is shown in Tables 4-2 and 4-3.

The Allowable Maximum Refrigerant Charge

A/TA (ft^2)		Mmax(lb-oz)		A/TA(ft^2)		Mmax(lb-oz)	
ft^2	m^2	lb-oz	kg	ft^2	m^2	lb-oz	kg
30	2.8	2-0	0.9	150	13.9	10-0	4.5
40	3.7	2-9	1.2	160	14.9	10-9	4.8
50	4.6	3-5	1.5	170	15.8	11-4	5.1
60	5.6	3-14	1.8	180	16.7	11-15	5.4
70	6.5	4-9	2.1	190	17.7	12-9	5.7
80	7.4	5-3	2.4	200	18.6	13-4	6.0
90	8.4	5-14	2.7	210	19.5	14-0	6.4
100	9.3	6-9	3.0	220	20.4	14-12	6.7
110	10.2	7-5	3.3	230	21.4	15-7	7.0
120	11.1	7-15	3.6	240	22.3	16-0	7.3
130	12.1	8-9	3.9	250	23.3	16-12	7.6
140	13.0	9-4	4.2	260	24.2	17-13	7.9

Table 4-2

If the altitude of installation is above 2,000 ft, the required minimum room area:

	Altitude (m)							
	201-400	401-600	601-800	801-1000	1001-1200	1201-1400	1401-1600	above 1600
Charge lb	Minimum Conditioned Space (m^2)							
2	2.8	2.8	2.8	2.9	3.0	3.1	3.1	3.2
3	4.2	4.2	4.3	4.4	4.5	4.6	4.7	4.8
4	5.6	5.6	5.7	5.9	6.0	6.1	6.2	6.4
5	7.0	7.0	7.1	7.3	7.5	7.7	7.8	8.0
6	8.4	8.4	8.5	8.8	8.9	9.2	9.4	9.6
7	9.8	9.8	9.9	10.2	10.4	10.7	10.9	11.2
8	11.1	11.1	11.4	11.7	11.9	12.3	12.5	12.8
9	12.5	12.5	12.8	13.2	13.4	13.8	14.0	14.4
10	13.9	13.9	14.2	14.6	14.9	15.3	15.6	16.0
11	15.3	15.3	15.6	16.1	16.4	16.9	17.2	17.6
12	16.7	16.7	17.1	17.6	17.9	18.4	18.7	19.2
13	18.1	18.1	18.5	19.0	19.4	19.9	20.3	20.8
14	19.5	19.5	19.9	20.5	20.9	21.5	21.8	22.4
15	20.9	20.9	21.3	21.9	22.4	23.0	23.4	24.0
16	22.3	22.3	22.7	23.4	23.8	24.5	25.0	25.6
17	23.7	23.7	24.2	24.9	25.3	26.1	26.5	27.2
18	25.1	25.1	25.6	26.3	26.8	27.6	28.1	28.8
19	26.5	26.5	27.0	27.8	28.3	29.1	29.6	30.4
20	27.9	27.9	28.4	29.3	29.8	30.6	31.2	32.0

Table 4-5

The Minimum Circulation Airflow

Mc (lb-oz)		Amin/ TAmin(ft^2)	Mc (lb-oz)		Amin/ TAmin(ft^2)
lb	oz		lb	oz	
4	6	119	11	0	298
4	13	131	11	7	310
5	4	143	11	14	322
5	11	155	12	5	334
6	2	167	12	12	346
6	9	179	13	3	358
7	0	191	13	10	370
7	7	203	14	1	382
7	15	215	14	8	394
8	6	227	14	15	406
8	13	239	15	6	418
9	4	251	15	14	430
9	11	263	16	5	442
10	2	275	16	12	454
10	9	287	17	3	466

Table 4-4

The Required Minimum Room Area

Mc (lb-oz)		Amin/ TAmin(ft^2)	Mc (lb-oz)		Amin/ TAmin(ft^2)
lb	oz		lb	oz	
4	6	66.1	11	0	165.3
4	13	72.7	11	7	171.9
5	4	79.3	11	14	178.5
5	11	86.0	12	5	185.1
6	2	92.6	12	12	191.7
6	9	99.2	13	3	198.4
7	0	105.8	13	10	205.0
7	7	112.4	14	1	211.6
7	15	119.0	14	8	218.2
8	6	125.6	14	15	224.8
8	13	132.2	15	6	231.4
9	4	138.8	15	14	238.0
9	11	145.5	16	5	244.6
10	2	152.1	16	12	251.2
10	9	158.7	17	3	257.9

Table 4-3

NOTE:

- The maximum refrigerant limit described above applies to unventilated areas. If adding additional measures, such as areas with mechanical or natural ventilation, the maximum refrigerant charge can be increased or the minimum room area can be reduced.
- The R454B refrigerant leakage sensor is configured for the indoor unit and meets the incorporated circulation airflow requirements.
- The maximum refrigerant charge or minimum room area can be determined according to Tables 4-2 and 4-3.

CAUTION

The allowable maximum refrigerant charge of Table 4-2 or the required minimum room area of the Table 4-4 is available only if the following conditions are met:

- Minimum velocity of 3.28 ft/s, which is calculated as the indoor unit airflow divided by the nominal face area of the outlet. The grill area should be deducted.
- Minimum airflow rate must meet the corresponding values in Table 4-5, which is related to the actual refrigerant charge of the system (Mc).

R454B refrigerant leakage sensor is configured:
If the actual room area, air outlet height, and refrigerant charge amount are not reflected in Table 4-5, more severe cases need to be considered according to Tables 4-1, 4-2, 4-3, and 4-4.

5.1 Electrical Wiring

Field wiring must comply with the National Electric Code and any applicable local ordinance.

WARNING

Disconnect all power to the unit before installing or servicing. More than one disconnection switch may be required to de-energize the equipment. Hazardous voltage can cause severe personal injury or death.

5.2 Power Wiring

It is important proper electrical power is available for connection to the unit model being installed. See the unit nameplate, wiring diagram, and electrical data in the installation instructions.

- If required, install a branch circuit disconnect of adequate size, located within the sight of and readily accessible to the unit.
- After the electric heater is installed, unit may be equipped with one, two, or three 30/60 amp. circuit breakers. These breaker(s) protect the internal wiring in the event of a short circuit and serve as a disconnect. Circuit breakers installed within the unit do not provide over-current protection of the supply wiring and therefore may be sized larger than the branch circuit protection.
- Supply circuit power wiring must be 167°F (75°C) minimum copper conductors only. See Electrical Data In this section for ampacity, wire size and circuit protector requirement. Supply circuit protective devices may be either fuses or “HACR” type circuit breakers.
- Power wiring may be connected to either the right, left side, or top. Concentric knockouts are provided for connection of power wiring to unit.

5.3 Control Wiring

Class 2 low voltage control wiring should not be run in conduit with main power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used.

- Low voltage control wiring should be 18 AWG color-coded. For lengths longer than 100 ft, 16 Awg. wire should be used.
- See wiring diagrams attached to indoor and outdoor sections to be connected.
- Make sure, after installation, separation of control wiring and power wiring has been maintained.

5.4 Grounding

- Grounding may be accomplished by grounding metal conduit when installed in accord and with electrical codes to the unit cabinet.
- Grounding may also be accomplished by attaching ground wire(s) to ground lug(s) provided in the unit wiring compartment.
- Ground lug(s) are located close to wire entrance on left side of unit (up-flow). Lug(s) may be moved to marked locations near wire entrance on right side of unit (upflow). If alternate location is more convenient.
- Use of multiple supply circuits require grounding of each circuit to lug(s) provided in unit.

WARNING

The unit must be permanently grounded. Failure to do so can result in electrical shock causing personal injury or death.

5.5 Electrical Data

Model	Voltage	Herts	HP	RPM	Speeds	Circuit Amps.	Maximum Circuit Protector
18K	208/230	60	1/4	710	3	1.2	3(A)
24K	208/230	60	2/7	770	3	1.4	3(A)
30K	208/230	60	1/2	1050	5	3.2	6(A)
36K	208/230	60	1/2	1050	5	3.2	6(A)
42K	208/230	60	3/4	1050	5	5.5	10(A)
48K	208/230	60	3/4	1050	5	5.5	10(A)
60K	208/230	60	3/4	1050	5	5.5	10(A)

5.6 MCA/MOP Data of Electric Heat Kit

Heat Kit Model	Air Handler Model	Electric Heater (kW)	MCA(Min. Circuit Ampacity)		MOP(Max. Fuse or Breaker (HACR) Ampacity)		Fan Speed(AC/HP)				
			208V	230V	208V	230V	1(Low)	2	3	4	5(High)
MCAEHFD5X1AA	18K	5	22.8	24.9	25	25	•	/	•	/	•
MCAEHFD7X1AA		7.5	34.8	37.9	35	40	•	/	•	/	•
MCAEHFD5X1AA	24K	5	22.8	24.9	25	25	•	/	•	/	•
MCAEHFD7X1AA		7.5	34.8	37.9	35	40	•	/	•	/	•
MCAEHFD10X1AA		10	45.4	49.8	50	50	•	/	•	/	•
MCAEHFD5X1AA	30K	5	22.8	24.9	25	25	X	•	•	•	•
MCAEHFD7X1AA		7.5	34.8	37.9	35	40	X	•	•	•	•
MCAEHFD10X1AA		10	45.4	49.8	50	50	X	•	•	•	•
MCAEHFD5X1AA	36K	5	22.8	24.9	25	25	X	•	•	•	•
MCAEHFD7X1AA		7.5	34.8	37.9	35	40	X	•	•	•	•
MCAEHFD10X1AA		10	45.4	49.8	50	50	X	•	•	•	•
MCAEHFD5X1AA	42K	5	22.8	24.9	25	25	X	•	•	•	•
MCAEHFD7X1AA		7.5	34.8	37.9	35	40	X	•	•	•	•
MCAEHFD10X1AA		10	45.4	49.8	50	50	X	•	•	•	•
MCAEHFD5X1AA	48K	5	22.8	24.9	25	25	X	•	•	•	•
MCAEHFD7X1AA		7.5	34.8	37.9	35	40	X	•	•	•	•
MCAEHFD10X1AA		10	45.4	49.8	50	50	X	•	•	•	•
MCAEHFD5X1AA	60K	5	22.8	24.9	25	25	X	X	X	•	•
MCAEHFD7X1AA		7.5	34.8	37.9	35	40	X	X	X	•	•
MCAEHFD10X1AA		10	45.4	49.8	50	50	X	X	X	•	•

NOTE:

- Heat kit suitable for AHU 4-way position installation.
- Ampacities for MCA and Fuse/breaker including the blower motor.
- Heat pump systems require a specified airflow. Each ton of cooling requires between 350 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally.

Electrical Heater Kits		
Model	Description	Ref. Air Handler Use
MCAEHFD5X1AA	5kW heater kit, double pole circuit breaker	18/24/30/36/42/48/60
MCAEHFD7X1AA	7.5kW heater kit, double pole circuit breaker	18/24/30/36/42/48/60
MCAEHFD10X1AA	10kW heater kit, double pole circuit breaker	24/30/36/42/48/60

6.1 Airflow Performance Data

Airflow performance data is based on cooling performance with a coil and no filter in place. Select performance table for the appropriate unit size.

External static applied to the unit allows operation within the minimum and maximum limits shown in the table below for both cooling and electric heat operation.

Model	Blower Speeds	External Static Pressure (in. w.c.)								
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
18K	L	887	838	772	683	618	550	507	/	/
	M-Factory Default	1086	1041	993	932	823	749	673	587	529
	H	1134	1090	1039	982	869	784	704	614	528
24K	L-Factory Default	1127	1082	1028	973	856	761	679	574	526
	M	1193	1144	1092	1031	897	803	717	622	531
	H	1292	1240	1185	1120	1037	885	787	693	553
30K	2	1131	1074	1012	950	893	836	779	727	679
	3-Factory Default	1245	1197	1145	1093	1045	983	917	865	817
	4	1359	1316	1270	1226	1183	1131	1074	1007	945
	5	1449	1411	1368	1325	1287	1245	1197	1126	1059
36K	2	1131	1074	1012	950	893	836	779	727	679
	3	1245	1197	1145	1093	1045	983	917	865	817
	4-Factory Default	1359	1316	1270	1226	1183	1131	1074	1007	945
	5	1449	1411	1368	1325	1287	1245	1197	1126	1059
42K	2	1298	1257	1216	1162	1107	1011	961	918	873
	3-Factory Default	1451	1414	1379	1344	1301	1254	1217	1085	1005
	4	1588	1550	1512	1476	1440	1402	1368	1202	1035
	5	1730	1695	1660	1611	1562	1484	1410	1224	1037
48K	2	1404	1360	1316	1267	1219	1170	1136	1051	964
	3	1585	1544	1503	1467	1431	1388	1344	1288	1231
	4-Factory Default	1730	1689	1655	1621	1587	1549	1514	1457	1416
	5	1887	1852	1815	1780	1745	1707	1681	1599	1517
60K	2	1404	1360	1316	1267	1219	1170	1136	1051	964
	3	1585	1544	1503	1467	1431	1388	1344	1288	1231
	4-Factory Default	1730	1689	1655	1621	1587	1549	1514	1457	1416
	5	1887	1852	1815	1780	1745	1707	1681	1599	1517

7 DUCT, DRAIN, & FILTERS

NOTE:

1. The advanced airflow must be used as the rated airflow for the full-load operation of the machine.
2. The rated airflow of a system without an electric heater kit requires 300 to 450 cubic feet of air per minute (CFM).
3. The rated airflow of a system with an electric heater kit requires 350 to 450 cubic feet of air per minute(CFM).
4. The air distribution system has the greatest influence on air flow. Therefore, the contractor should only use the procedures recognized by the industry.
5. The design and construction of air duct should be done carefully. Poor design or process will lead to a significant decline in system performance.
6. The air supply duct should be set along the periphery of the air-conditioned space with appropriate size. Improper location of insufficient airflow may lead to insufficient ventilation or noise in the pipeline system
7. The installer should balance the air distribution system to ensure that all rooms in the room have proper quiet airflow. The speedometer or airflow hood can be used to balance and verify the branch pipe and system airflow (CFM).

- When the 36K model used with the electrical heater kit model HR150-01, you need to ensure that the air volume is not less than 1100 CFM.
- When the 42K model used with the electrical heater kit model HR150-01 and HR200-01, you need to ensure that the air volume is not less than 1280 CFM.
- When the 48K model used with the electrical heater kit model HR150-01 and HR200-01, you need to ensure that the air volume is not less than 1415 CFM.

7.1 Condensate Drain Tubing

Consult local codes for specific requirements.

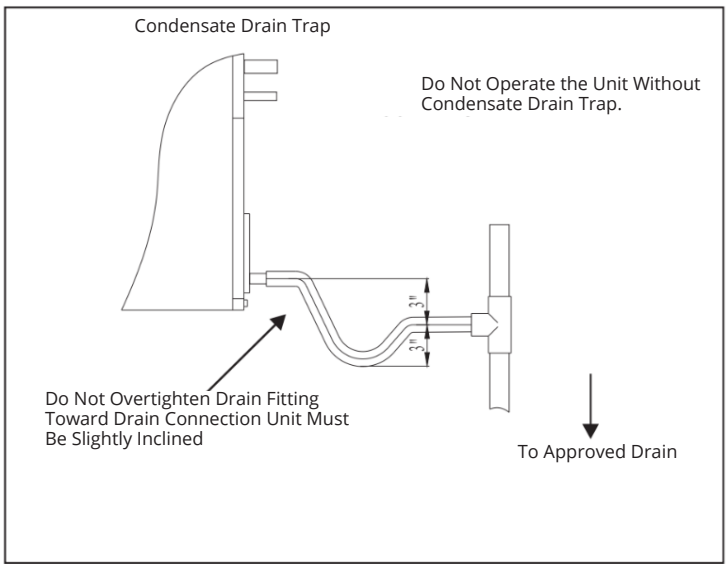


Figure 7-1

1. When connecting drain fittings to the drain pan, use a thin layer of Teflon paste, silicone, or Teflon tape and tighten by hand.
2. Do not over-tighten as this can split the pipe connection to the drain pan.

- Install drain line so they do not block service access to the front of the unit. A minimum clearance of 24 inches is required for filter, coil, or blower removal and service access.
- Make sure the unit is level or pitched slightly toward primary drain connections to ensure water will drain completely from the pan as indicated in Figure 7-1.

- Do not reduce drain line size less than connection size provided on condensate drain pan.
- All drain lines must be pitched downward away from the unit at a minimum of 1/8" per foot of line to ensure proper drainage.
- Do not connect condensate drain line to a closed or open sewer pipe. Run condensate to an open drain or run line to a safe outdoor area.
- The drain line should be insulated where necessary to prevent sweating and damage due to condensate forming on the outside surface of the line.
- Make provisions for disconnecting and cleaning of the primary drain line should it become necessary. Install a 3 inch trap in the primary drain line as close to the unit as possible. Make sure that the top of the trap is below connection to the drain pan to allow complete drainage of pan. See Figure 7-1.
- Auxiliary drain line should be run to a place where it will be noticeable if it becomes operational. Homeowner should be warned that a problem exists if water should begin running from the auxiliary drain line.
- Plug the unused drain connection with the plugs provided in the parts bag, using a thin layer of Teflon paste, silicone or Teflon tape to form a water tight seal.
- Test condensate drain pan and drain line after installation is complete. Pour water into drain pan, enough to fill drain trap and line. Check to make sure drain pan is draining completely, no leaks are found in drain line fittings, and water is draining from the termination of the primary drain line.

7.2 Air Filter

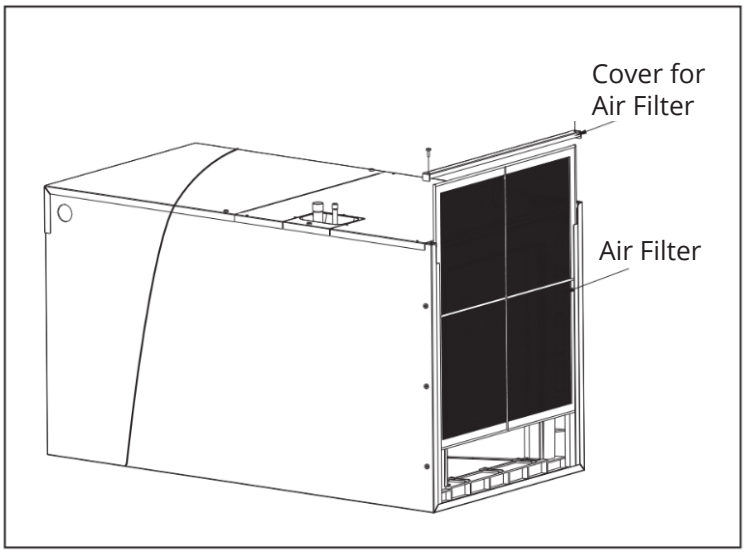
- External filter or other means of filtration is required. Units should be sized for a maximum of 300 feet/min. air velocity or what is recommended for the filter type installed.
- Filter application and placement are critical to airflow, which may affect the heating and cooling system performance. Reduced airflow can shorten the life of the system's major components, such as motor, limits, elements, heat relays, evaporator coil or compressor.
- Consequently, we recommend that the return air duct system have only one filter location. For systems with a return air filter grill or multiple filter grills, can have a filter installed at each of the return air openings.
- If adding high efficiency filters or electronic air filtration systems, it is very important that the air flow is not reduced. If air flow is reduced the overall performance and efficiency of the unit will be reduced. It is strongly recommended that a professional installation technician is contacted to ensure installation of these such filtration systems are installed correctly.

WARNING

- DO NOT operate the system without filters. A portion of the dust entrained in the air may temporarily lodge in the duct runs and at the supply registers.
- Any circulated dust particles could be heated and charred by contact with the air handler elements. This residue could soil ceilings, walls, drapes, carpets, and other articles in the house
- Soot damage may occur with filters in place, when certain types of candles, oil lamps, or standing pilots are burned.

NOTE: Do not double filter the return air duct system or the supply air duct system. This will impact the performance of the unit and reduce airflow.

7.3 Filter Installation Dimensions



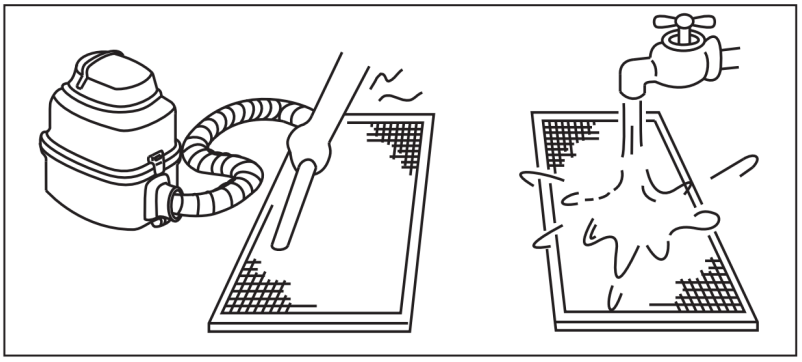
Dimensional Data

Model	Filter Size in (mm)
18/24/30/36/42K	18.1x21.4 (460x544)
48/60K	20.5x23.8 (521x605)

Note: The thickness of the filter should be within 1 in (25mm).

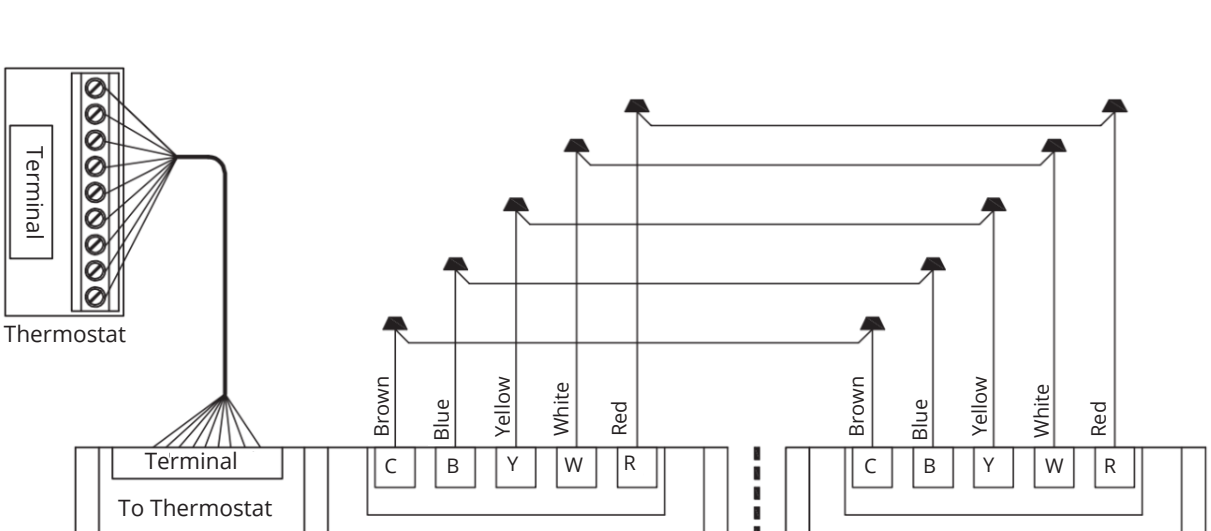
Air Filter Removal:

1. Tear down the bolts signed "A" and "B", take down the cover for the air filter.
2. Hold the edge of the air filter and pull it out.
3. Clean the air filter with a vacuum or water, as indicated in the figure below. If the dust accumulation is too heavy, use a soft brush and mild detergent to clean and dry out in a cool place.

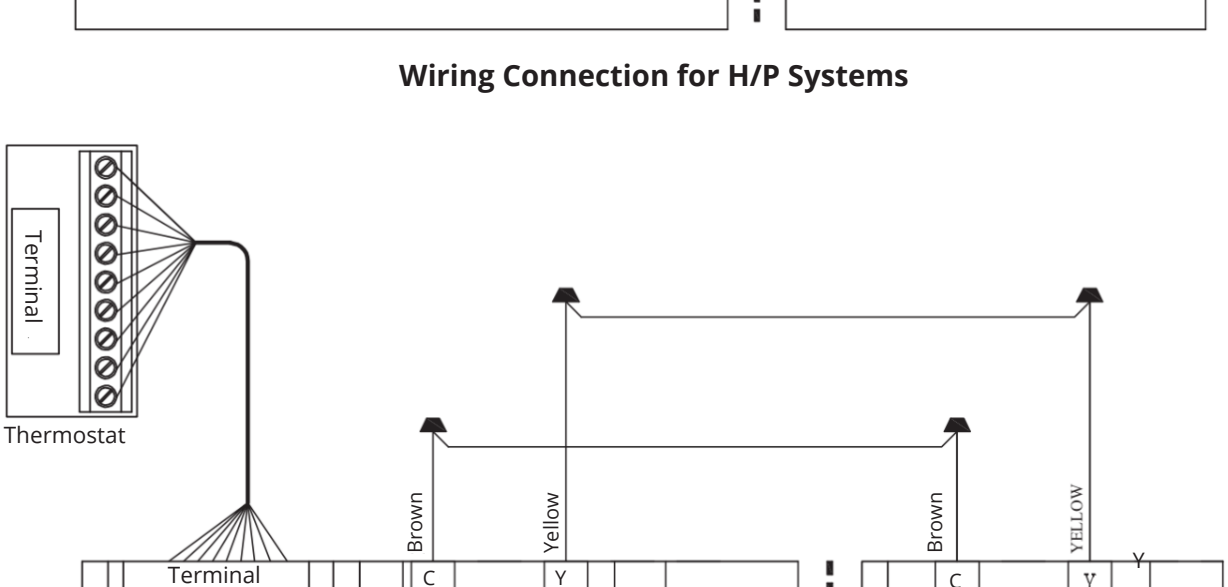


8.1 Wiring Diagram

1. To avoid the electrical shock, please connect the air conditioner with the ground lug. The main power plug in the air conditioner has been joined with the ground wiring, please don't change it freely.
2. The power socket is used exclusively with the air conditioner.
3. Don't pull the power wiring hard.
4. When connecting the air conditioner with the ground wire, observe the local codes.
5. If necessary, use the power fuse or the circuit, breaker, or corresponding scale ampere.



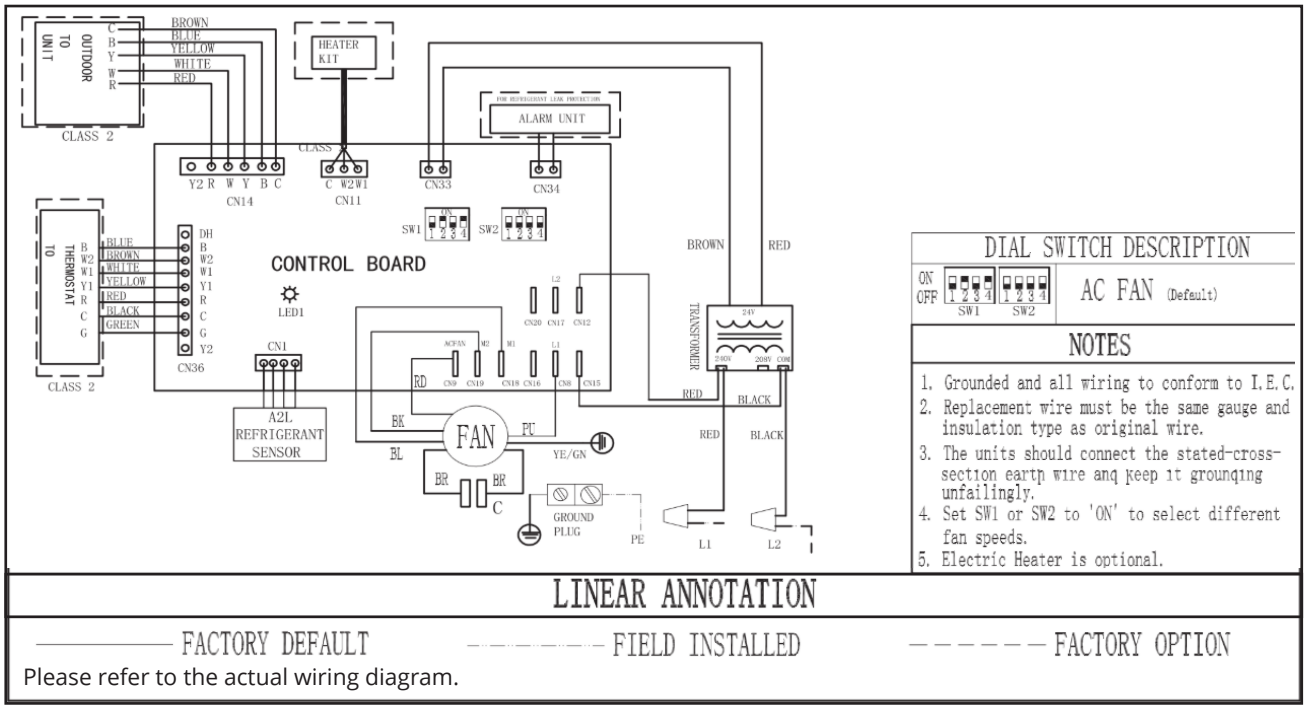
Wiring Connection for H/P Systems



Wiring Connection for A/C Systems

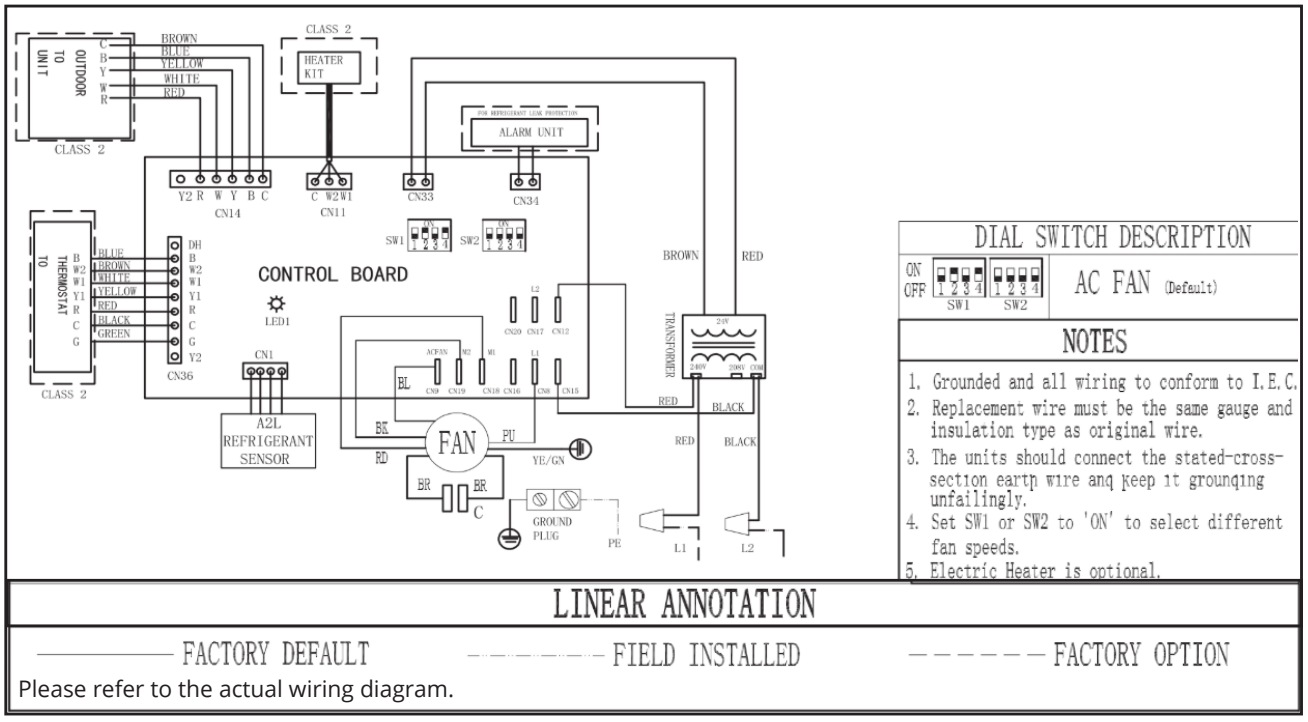
8 WIRING DIAGRAM

18k Model:



Please refer to the actual wiring diagram.

24k Model:

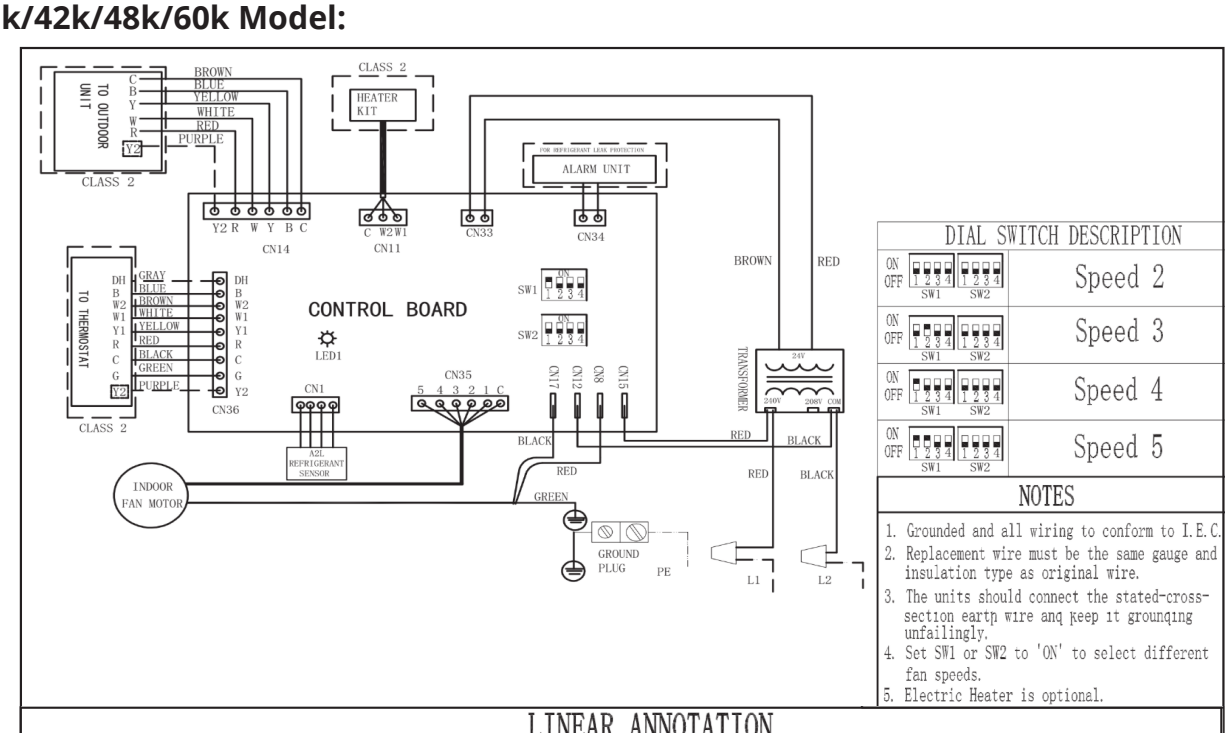


Please refer to the actual wiring diagram.

NOTE FOR SPEED SWITCH:

- Low windshield: The red motor of the motor is connected to the terminal block and the blue wire is connected to the relay (swap plug positions).
- Medium speed wiring: The blue wire of the motor is connected to the terminal block and the red wire is connected to the relay (swap plug positions).

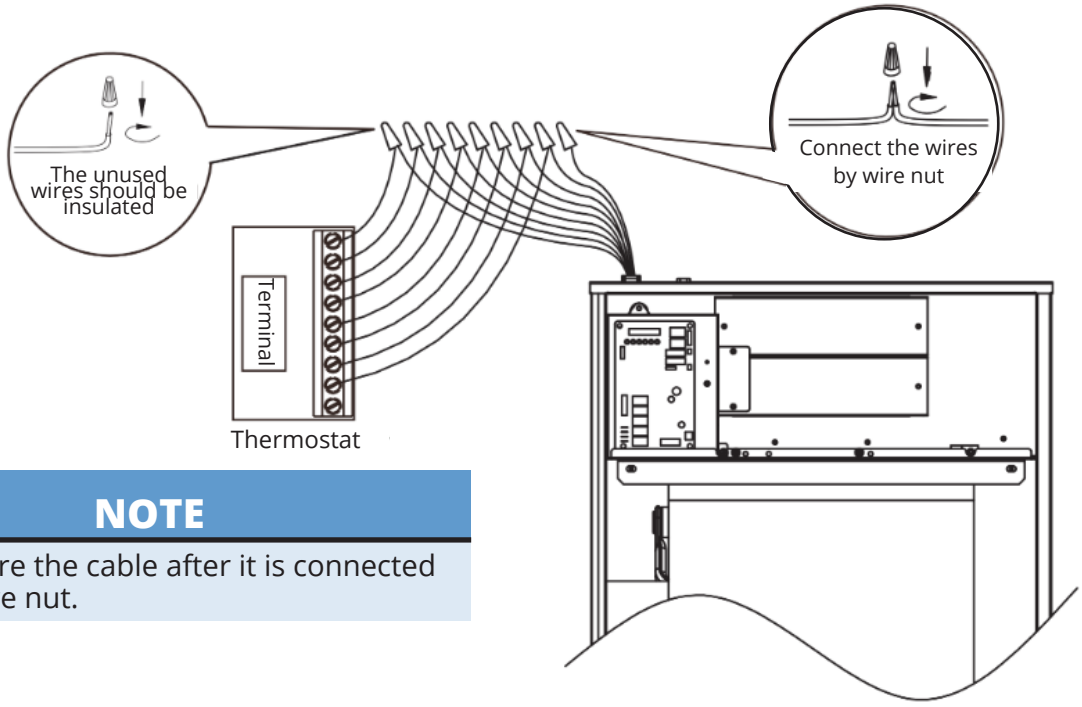
30k/36k/42k/48k/60k Model:



DIP Switch	Fan Speed	Model
ON OFF 1234 1234 SW1 SW2	Speed 2	18k/24k
ON OFF 1234 1234 SW1 SW2	Speed 3	30k
ON OFF 1234 1234 SW1 SW2	Speed 4	36k/60k
ON OFF 1234 1234 SW1 SW2	Speed 5	48k

8 WIRING DIAGRAM

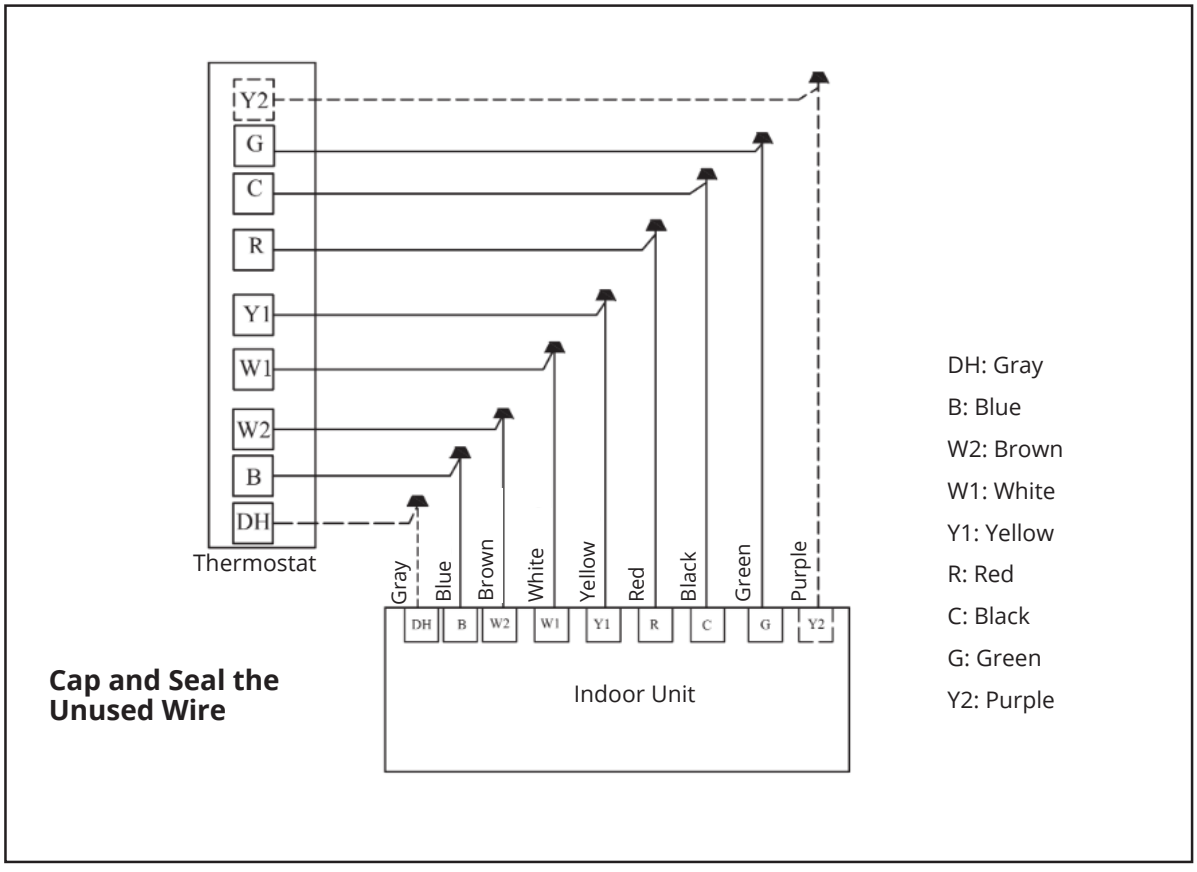
8.2 Wire Connection



NOTE

Please secure the cable after it is connected with the wire nut.

8.3 Thermostat Wiring Diagram



8.4 Power Wiring

In the United States, wiring must conform with current local codes and the current National Electric Code (NEC). In Canada, wiring must conform with current local codes and the current Canadian Electrical Code.

⚠ WARNING

- Installation and servicing of air conditioning equipment can be hazardous due to internal refrigerant pressure and live electrical components. Only trained and qualified service personnel should install or service this equipment. Installation and service performed by unqualified persons can result in property damage, personal injury, or death.
- Risk of electrical shock. Disconnect all remote power supplies before installing or servicing any portion of the system. Failure to disconnect power supplies can result in property damage, personal injury, or death.
- Fire Hazard. Use of aluminum wire with this product may result in a fire, causing property damage, severe injury or death. Use copper wire only with this product.
- Can cause injury or death. Unit must be properly grounded in accordance with national and local codes.
- Natural grounding poles embedded in the ground can be used, but do not connect the ground wire to the following locations:

a. Pipes of flammable or explosive gases, which may otherwise lead to an explosion or fire.
b. Insulated plastic pipes, otherwise there is no grounding effect.
c. Telephone line or lightning rod, otherwise it will be dangerous for increasing the ground potential during lightning strikes.

- The unit must be permanently grounded. Failure to do so can result in electrical shock causing personal injury or death.

! CAUTION

- Sharp metal edges can cause injury. When installing the unit, use care to avoid sharp edges.
- Avoid sharp metal edges for wires to prevent wear, or it may lead to short circuit or electric leakage and cause danger.
- Wires should be fixed well. Otherwise, the connectors may be loose or the terminal may be damaged when they are pulled.

NOTE

- Electrostatic discharge can affect electronic components. Take care during unit installation and service to protect the unit's electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the unit, the control and the technician at the same electrostatic potential. It is strongly recommended to contact a professional installation technician to ensure the correct installation of such filtration systems.
- Do not add phase junction capacitors, otherwise it may cause serious damage to the product.
- Do not start the unit before installing pipes. Otherwise, the compressor will be damaged.

8.5 Electric Wiring Gauge

NOTE:

The cross-section areas of wires or lines should not be less than the corresponding ones listed in the table below. If the power wires are too far from the unit, please choose the windings with the larger cross-section area to guarantee the normal power supply.

9 ERROR CODES

Model (cooling only type)			18K	24K	30K	36K	42K	48K	60K
Line Gauge	Indoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	16	16	16	16	16	16	16
	Outdoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	14	14	12	12	10	10	8
	Indoor-Thermostat Signal Line	Line Quantity	5	5	5	5	5	5	5
		Line Diameter(AWG)	18	18	18	18	18	18	18
	Outdoor-Thermostat Signal Line	Line Quantity	2	2	2	2	2	2	2
		Line Diameter(AWG)	18	18	18	18	18	18	18

Model (cooling & heating type)			18K	24K	30K	36K	42K	48K	60K
Line Gauge	Indoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	16	16	16	16	16	16	16
	Outdoor Unit Power Line	Line Quantity	3	3	3	3	3	3	3
		Line Diameter(AWG)	14	14	12	12	10	10	8
	Indoor-Thermostat Signal Line	Line Quantity	5	5	5	5	5	5	5
		Line Diameter(AWG)	18	18	18	18	18	18	18
	Outdoor-Thermostat Signal Line	Line Quantity	5	5	5	5	5	5	5
		Line Diameter(AWG)	18	18	18	18	18	18	18

-Error Codes

NOTE:
Leak detection system installed. Unit must be powered on except during servicing. If a refrigerant leakage alarm is observed, do not open the unit or turn it off.

The LED and Buzzer Status			
Model	**Green LED**	**Red LED**	**Buzzer Status**
Normal Operation	On	Off	Inactive
Refrigerant Sensor Fault	On	Flash 3 times and then powered off for 3 seconds	Active
Refrigerant Sensor Communition Fault	On	Flash 4 times and then powered off for 3 seconds	Active
Refrigerant Leak Alarm	On	Flash 5 times and then powered off for 3 seconds	Active

MRCOOL® Signature Series Multi-Position Air Handler

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