This product utilizes **R-454B** *refrigerant*

MRCOOL® Signature Series Stud-Mount Air Handler

Installation & Owner's Manual

MODELS:

MCAEAWPEF*21AA

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 a medium level of risk which, if not avoided, may result in death or serious injury.
CAUTION	Indicates a low degree of risk which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates important information but not danger.

SAFETY WARNING

Safety Hazard:
This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. MRCOOL® or the dealer will not be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.
Sharp Edge hazard. Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing. Personal injury may result.

Hazardous Voltage:
Disconnect all electrical power, including remote disconnects before installing or servicing. Follow proper lockout/tag out procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before servicing could result in death or injury.

Live Electrical Components:
During installation, testing, servicing, and troubleshooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

Explosion Hazard:
Do not store corrosive or combustible materials, gasoline, or other flammable vapors or liquids near the unit. Failure to follow this warning could result in property damage, serious personal injury, or death.

Electrical Hazard:
Grounding required! Follow proper local and state electrical code on requirements for grounding. Failure to follow this warning could result in property damage, serious personal injury, or death.

Hazardous Vapors:
Do not install an air handler with a non-ducted return in the same closet, alcove, or utility room as a fossil fuel device. Hazardous vapors can be distributed throughout the conditioned space and equipment damage can result.

Corrosion Hazard:
To prevent shortening of its service life, the air handler should not be used during the finishing phases of construction. The low return air temperatures can lead to the formation of condensation. Condensate in the presence of chlorides and compounds, and cement creates a corrosive condition which may cause rapid deterioration of the cabinet and internal components.

PROPOSITION 65

This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to the State of California to cause cancer. All manufacturer products meet current federal OSHA Guidelines for safety. California Proposition 65 warnings are required for certain products, which are not covered by OSHA standards. California's Proposition 65 requires warnings for products sold in California that contain or produce any of over 600 listed chemicals known to the State of California to cause cancer or birth defects such as fiberglass insulation, lead in brass, and combustion products from natural vapor. All "new equipment" shipped for sale in California will have labels stating that the product contains and/or produces Proposition 65 chemicals. Although we have not changed our processes, having the same label on all our products facilitates manufacturing and shipping. We cannot always know "when, or if" products will be sold in the California market. You may receive inquires from customers about chemicals found in, or produced by, some of our heating and air-conditioning equipment, or found in natural vapor used with some of our products. Listed below are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers.

- Glass Wool (Fiberglass) Insulation
- Carbon Monoxide (CO)
- Formaldehyde
- Benzene

More details are available at the websites for OSHA (Occupational Safety and Health Administration), at www.osha.gov and the State of California's OEHHA (Office of Environmental Health Hazard Assessment), at www.oehha.org. Consumer education is important since the chemicals and substances on the list are found in our daily lives. Most consumers are aware that products present safety and health risks, when improperly used, handled and maintained.

LOCATION WARNING

Only use this unit in a well-ventilated area and ensure the unit's airflow inlet and outlet will not be impeded by obstructions. Do not use this unit in the following locations:

- Locations with mineral oil.
- Locations with saline atmospheres, such as a seaside location.
- Locations with sulfurous atmospheres, such as near natural hot springs.
- Where high voltage is present, such as certain industrial locations.
- On vehicles or vessels, such as trucks or ferry boats.
- Where exposure to oily or very humid air may occur, such as kitchens.
- In proximity to sources of electromagnetic radiation, such as high-frequency transmitters or other high strength radiation devices.

NOTE

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by MRCOOL®.
- The appliance should 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.
- Comply with national gas regulations.

This appliance is not intended for use by people (including children) with reduced physical, sensory or mental capabilities, or persons that 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.

WARNINGS FOR PRODUCT INSTALLATION

Any person who is involved with working on or operating a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerant safely in accordance with an industry recognized assessment credential.
Servicing should 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 that 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 period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the surroundings.
When electrical components are being changed, they should be to the correct specification. At all times MRCOOL® maintenance and service guidelines shall be followed. If in doubt, consult MRCOOL® Customer Service at 270-366-0457 or at support@mrcool.com.
The following checks need to be followed when installing systems containing flammable refrigerants.

- The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.
- Ventilation, machinery, and outlets are operating adequately and are not obstructed.
- If an indirect refrigerating circuit is being used, the secondary circuit should be checked for the presence of refrigerant.
- Equipment markings must remain visible and legible. Markings and signs that are illegible should be corrected.

Make sure that 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, then no power supply should 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 there are no live electrical components and wiring exposed while charging, recovering, or purging the system.

SERVICE WARNING

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

- Work should be undertaken according to controlled procedures to minimize the risk of the presence of flammable gases or vapors while the work is being preformed.
- All maintenance staff and others working in the local area should be instructed on the nature of the work being carried out. Work in confined spaces should be avoided.
- The area should 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 that 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 should 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 away from the site

SERVICE WARNING

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 make sure that there are no flammable hazards or ignition risks. "No smoking" signs shall be clearly displayed.

- Sealed electrical components shall be replaced.
- Intrinsically safe components must be replaced.

Check that the 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 should 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) should 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 should 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 should 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/extinguished.

If a leakage of refrigerant which requires brazing is found, all of the refrigerant should be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

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.

Note: 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 is followed, since flammability is a consideration.

The following procedure should be adhered to:

- safely remove refrigerant following local and national regulations
- evacuate
- purge the circuit with inert gas
- evacuate
- continuously flush or purge with inert gas when using flame to open circuit
- open the circuit

The refrigerant charge should 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 should 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 the atmosphere, and finally pulling down to a vacuum. This process should 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 should not be close to any potential ignition sources, and ventilation should be available.

Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines should be as short as possible to minimize the amount of refrigerant they contain.

Cylinders should 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 to not overfill the refrigeration system.

Prior to recharging the system, it should be pressure-tested with the appropriate purging gas. The system needs to be leak-tested on completion of charging but prior to commissioning. A follow up leak test should be

SERVICE WARNING

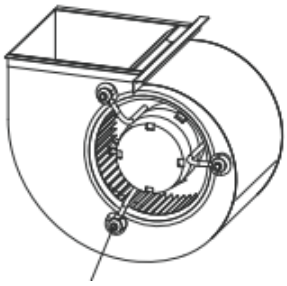
carried out prior to leaving the site.
Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample should 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 the system electrically.
- Become familiar with the equipment and its operation.
- Before attempting the procedure ensure that:
  - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
  - all personal protective equipment is available and used correctly;
  - the recovery process is supervised at all times by a competent person;
  - recovery equipment and cylinders conform to the appropriate standards.
- Pump down the refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed form various parts of the system.
- Make sure that 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.
- When the cylinders have been filled correctly and the process has been completed, make sure that the cylinder and the equipment are removed from the 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 should be labeled stating that it has been decommissioned and emptied of refrigerant. The label should 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 the 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 a 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 should be complete with leak-free disconnect couplings and in good condition.
- The recovered refrigerant should be processed according to local legislation in the correct recovery cylinder, and the relevant water 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 that they have been evacuated to an acceptable level to be certain that flammable refrigerant does not remain within the lubricant. The compressor body should not be heated by an open flame or other ignition sources to accelerate the process. When oil is drained from a system, it should 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 or unplug the supply cord. Otherwise, electric shock and injury may occur.
- In order to avoid electric shock or fire, make sure that 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

SERVICE WARNING

become caught or the unit may break down.

- Objects touching the fan at high speeds 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 for information regarding the connection systems available.
- 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, heater, or 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 that the refrigerant leak is repaired. Keep ventilation openings clear of obstruction.
- Be sure the system is grounded in order to prevent electric shock 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 can 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 that 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 in 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 air flow 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.



Blower motor and shipping bolt

NOTE

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

WARNING

This appliance uses R454B refrigerant.

Symbols Displayed on the Unit		
	**WARNING**	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	**WARNING**	This symbol shows that the appliance shall be installed, operated, and stored in a room with a floor area no less than the minimum room area.
	**CAUTION**	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	**CAUTION**	
	**CAUTION**	This symbol shows that information is available such as the operating manual or installation manual.

NOTE

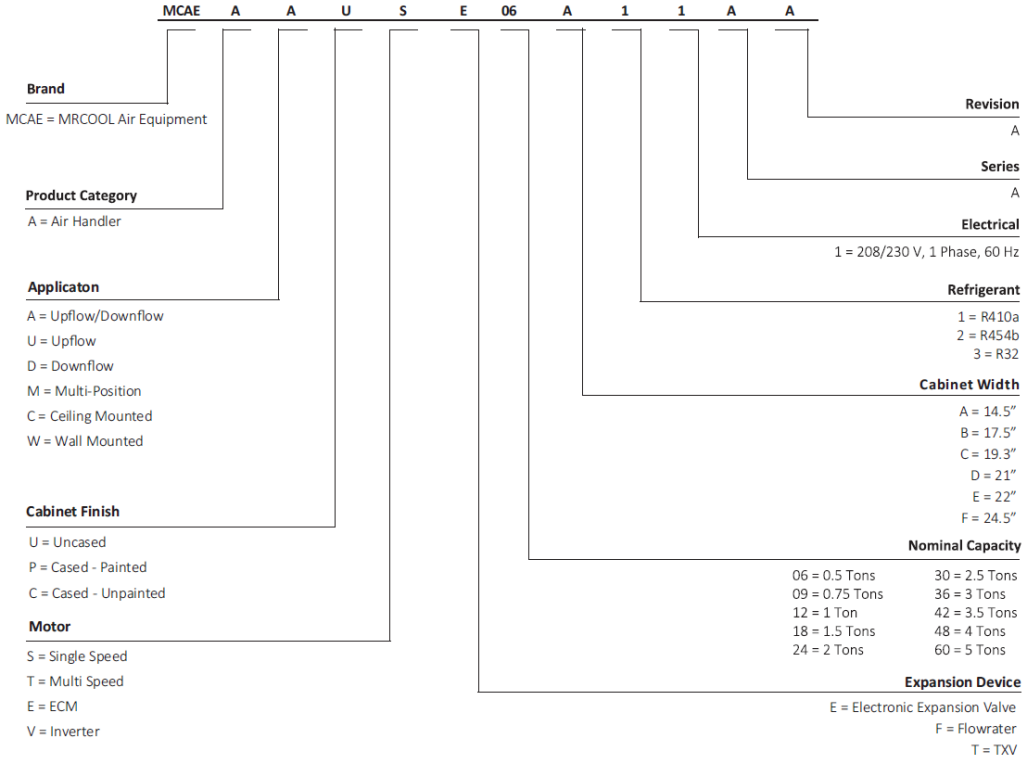
These instructions do not cover all variations in systems nor provide for every possible contingency to be met in connection with the installation. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing contractor or local dealer.
Installation of this unit should be made in accordance with the National Electric Code, NFPA No. 90A and 90B, and any other local codes or utilities requirements.
Small air handlers have been evaluated in accordance with the Code of Federal Regulations, Chapter XX, Part 3280 or the equivalent. "SUITABLE FOR MOBILE HOME USE".

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 qualified disposal specialists. This unit uses flammable refrigerant R-454B, please contact a technician when you wish to dispose of this unit. The law requires that the collection, transportation, and disposal of refrigerants must conform with the regulations governing the collection and destruction of hydro-fluorocarbons.

2 SPECIFICATIONS

2.1 Nomenclature



2.2 Piston Size

Condenser Unit Nom. Cooling (BTUH)	(Orifice) Piston Model	(Orifice) Piston Size (mm)
18K	052	1.3208
24K	054	1.3716
30K	060	.1524
36K	066	1.6764

2.3 Unit Dimensions

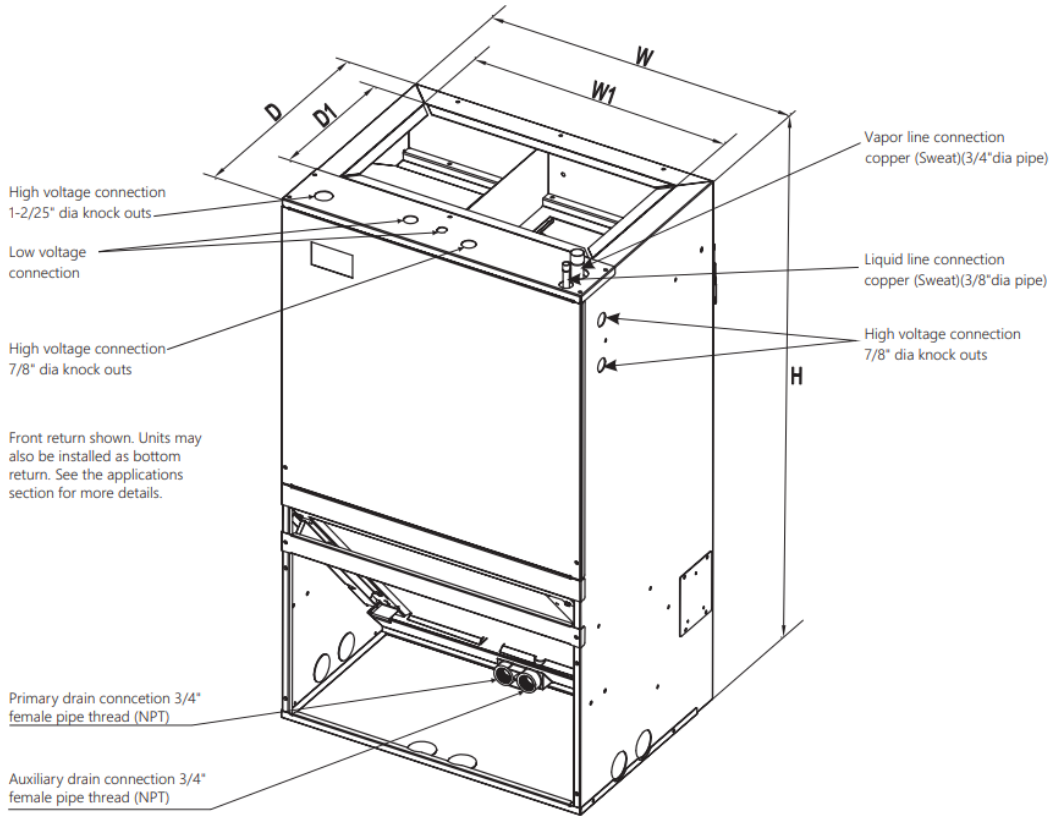


Fig. 2.1

Model	Dimensions- in (mm)					Unit Weight/ Shipping Weight lbs (kg)
	Height H	Width W	Width W1	Depth D	Depth D1	
18K	36 (915)	20.5 (522)	17.4 (422)	15 (381)	9.6 (244)	88/97 (40/44)
24K	36 (915)	20.5 (522)	17.4 (422)	15 (381)	9.6 (244)	88/97 (40/44)

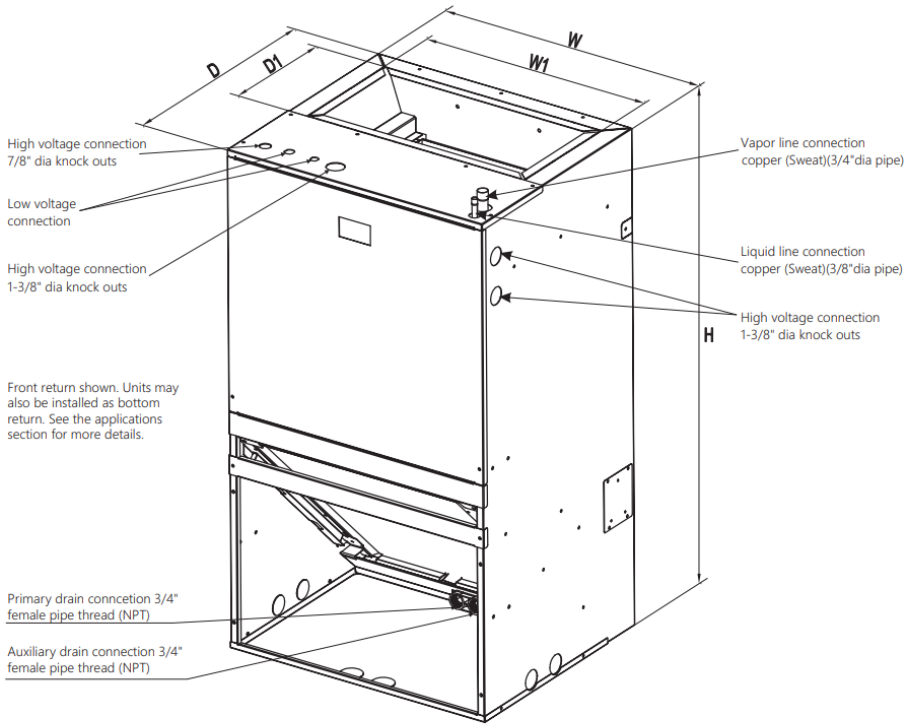


Fig. 2.2

All units are configured for vertical upflow.
Units cannot be installed in any other configuration.

Model	Dimensions- in (mm)					Unit Weight/ Shipping Weight lbs (kg)
	Height H	Width W	Width W1	Depth D	Depth D1	
30K	39.6 (1006)	22 (559)	18.8 (477)	19 (485)	10 (251)	122/123 (51/56)
36K	39.6 (1006)	22 (559)	18.8 (477)	19 (485)	10 (251)	122/123 (51/56)

Unit Back Dimensions

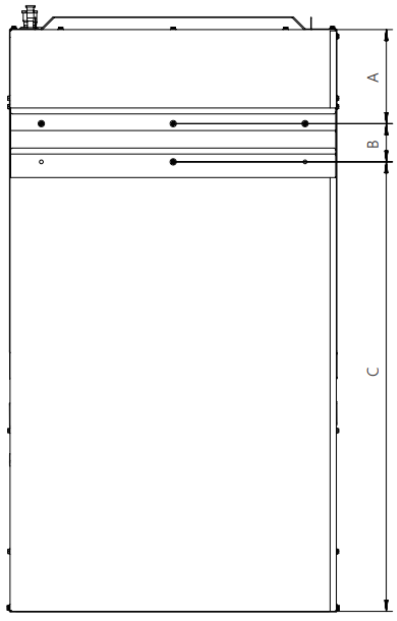


Fig. 2.3

Model	Dimensions- in (mm)		
	A	B	C
18K	5.375 (136)	2.4 (61)	28.25 (718)
24K	5.375(136)	2.4 (61)	28.25 (718)
30K	6 (151)	2.4 (61)	31.25 (794)
36K	6 (151)	2.4 (61)	31.25 (794)

2.4 Internal Parts

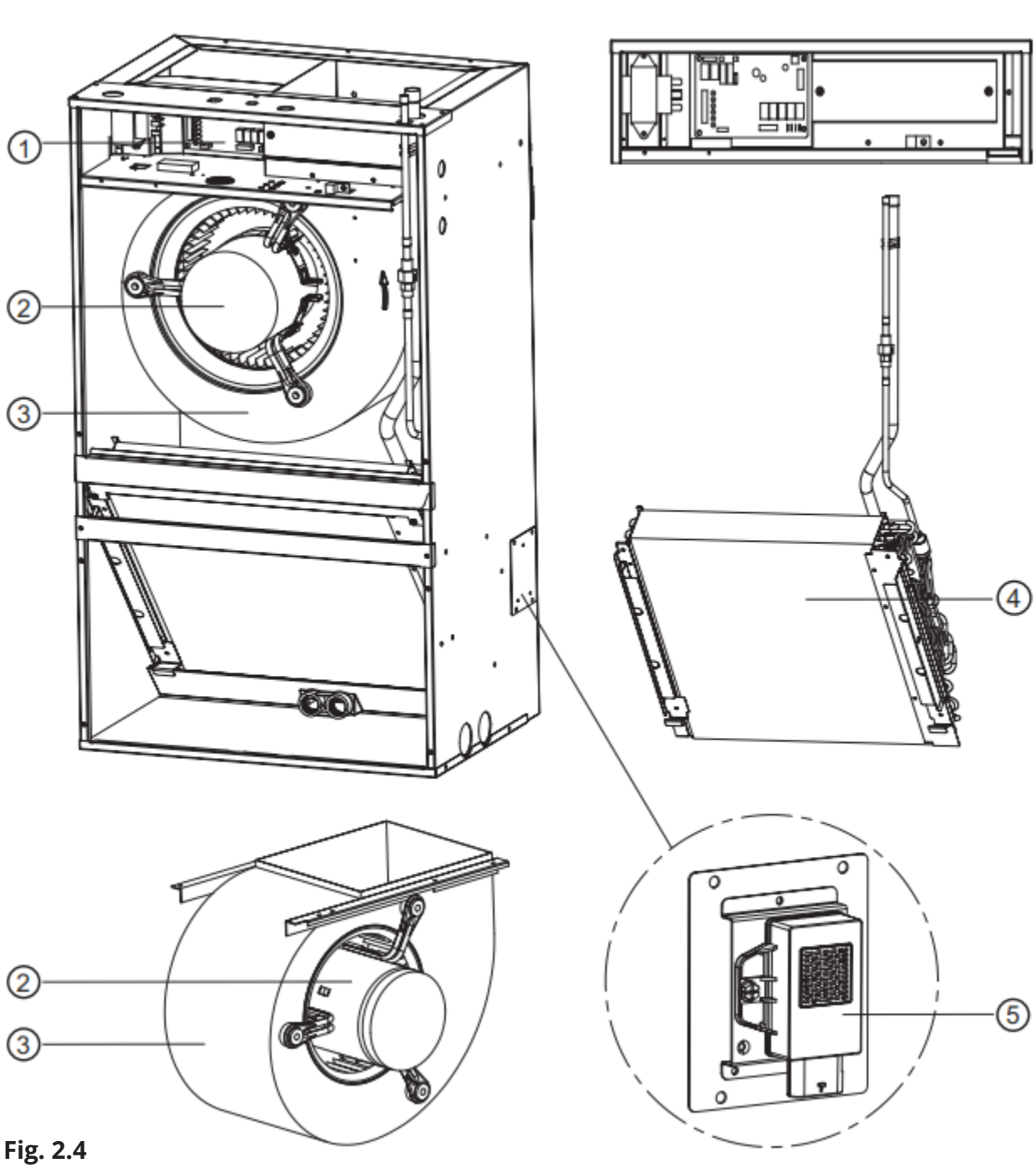


Fig. 2.4

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

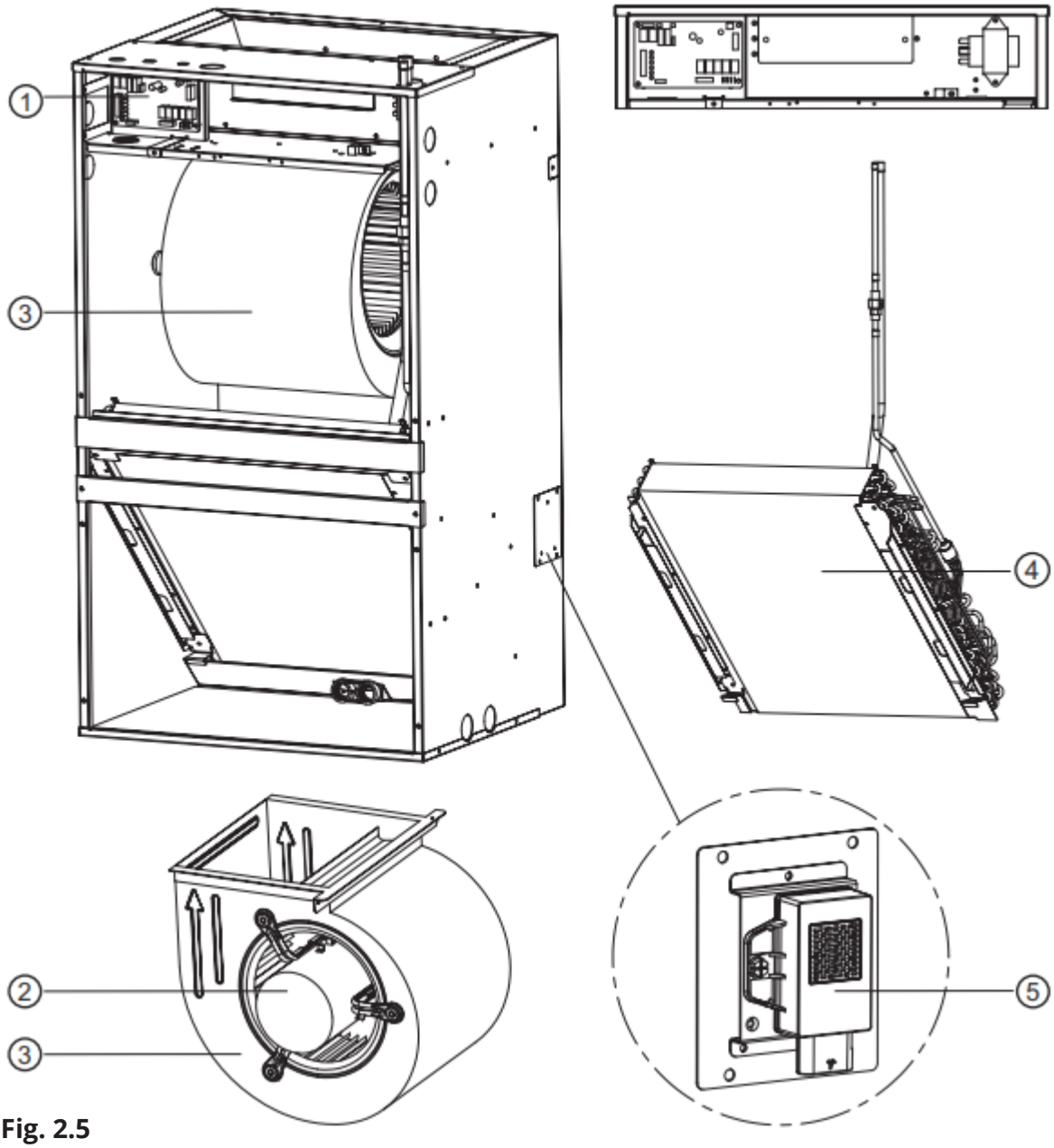


Fig. 2.5

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

3.1 Area Limitations

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.

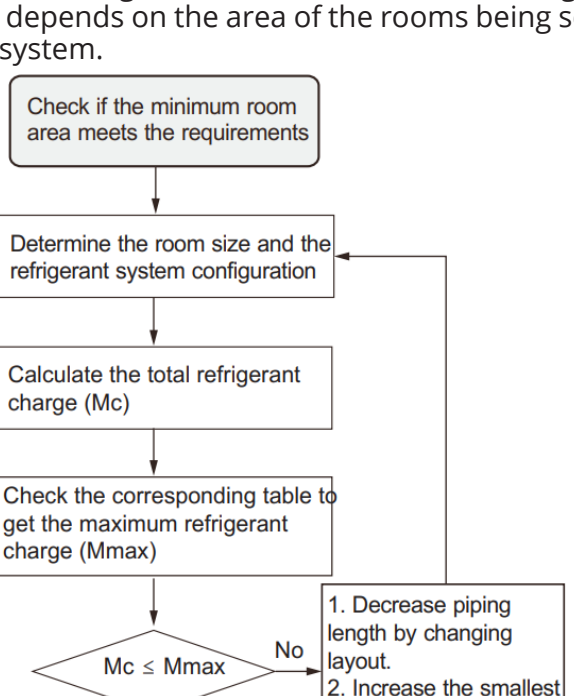


Fig. 3.1

NOTE

The nouns in this section are explained as follows:
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.

The space considered should be any space which contains refrigerant-containing parts or into which 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 will 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 in which the appliances are installed.
Spaces connected by only drop ceilings, ductwork, or similar connections should not be considered a single space.
Units mounted higher than 70.86in (179.98cm) and spaces divided by partitions walls that are no higher than 62.98in (159.96cm) 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:

1. It is a permanent opening.
2. It extends to the floor.
3. It is intended for people to walk through.

The area of the connected rooms, on the same floor, connected by 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 of the following conditions are met as Fig. 3.1.

1. **Low Level Opening:**
- The opening should not be less than Anvmin in Table 4.
- The area of any openings above 11.81in (29.99cm) from the floor should not be considered in determining compliance with Anvmin.
- At least 50% of the opening area of Anvmin should be below 7.875in (20cm) from the floor.
- The bottom of the opening is no more than 3.94in (10cm) from the floor.
- The opening is a permanent opening that cannot be closed.
- For openings extending to the floor the height should be no less than 0.69in (1.75cm) above the surface of the floor covering.

2. **High Level Opening:**
- The opening should be no less than 50% of Anvmin in Table 2.
- The opening is a permanent opening that cannot be closed.
- The opening should be at least 59in (149.86cm) above the floor.

- The height of the opening is no less than 0.78in (1.98cm).

3. **Room Size Requirement:**

- The room into which refrigerant can leak, plus the connected adjacent room(s), should have a total area of no less than Amin.
- The room area in which the unit is installed should be no less than 20% Amin.

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.

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 1.

Fig. 3.2 Opening Conditions for Connected Rooms

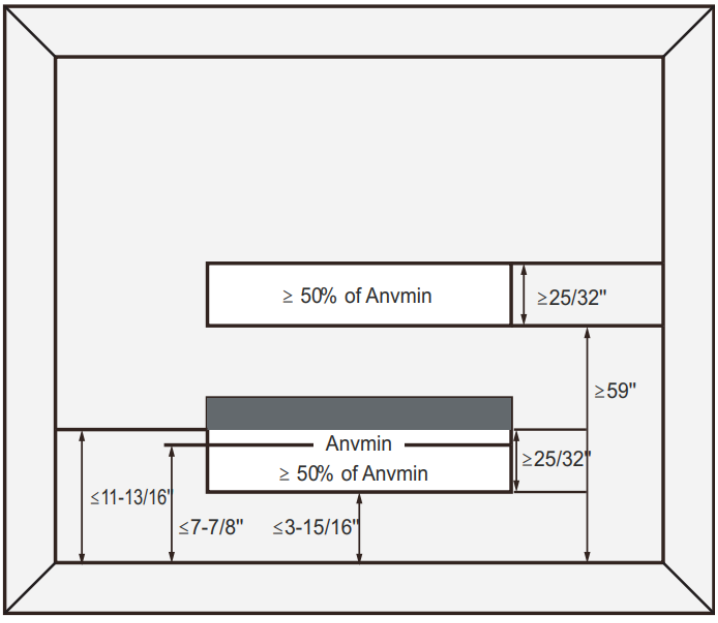


Table 1: Minimum Opening Area for Connected Rooms

A (ft²)	MC (lb/oz)		Mmax (lb/oz)		Anvmin (ft²)
	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

Note: Take the MC=17 lb 3oz as an example.
For appliances serving one or more rooms with an air duct system, the room area calculation should be determined based on the total area of the conditioned space (TA) connected by ducts taking into consideration that 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.
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 Table 2 and Table 3.

Table 2: 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	.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	23.2	16-12	7.6
140	13	9-4	4.2	260	24.2	17-13	7.9

Table 3: 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	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
7	7	112.4	14	1	211.6
7	15	119	14	8	218.2
8	6	125.6	14	15	224.8
8	13	132.2	15	6	231.4
9	4	1.8.8	15	14	238
9	11	145.5	16	5	244.6
10	2	152.1	16	12	251.2
10	9	157.8	17	3	257.9

Table 4: Minimum Circulation Airflow

Mc (lb/oz)		Qmin (CFM)	Mc (lb/oz)		Qmin (CFM)
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	1919	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 5: Minimum Room Area Above 2000 ft

	Altitude (m)							
	201-400	401-600	601-800	801-1000	1001-1200	1201-1400	1401-1600	Above 16000
Charge lb	Minimum Conditioned Space (m^2)							
2	2.8	2.8	2.8	2.9	3	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	6.1	6.2	6.4
5	7	7	7.1	7.3	7.5	7.7	7.8	8
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	14.4
10	13.9	13.9	14.2	14.6	14.9	15.3	15.6	16
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	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	23.4	24
16	22.3	22.3	22.7	23.4	23.8	24.5	25	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	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

CAUTION

The allowable maximum refrigerant charge of Table 2 or the required minimum room area of Table 3 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 not be deducted.
Minimum airflow rate must meet the corresponding values in Table 4, which is related to the actual refrigerant charge of the system (Mc).
R454B refrigerant leakage sensor is configured.
The maximum refrigerant limit described above applies to unventilated areas. If adding additional measures, such as areas with mechanical ventilation 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 Table 2 or Table 3.
If the actual room area, air outlet height, and refrigerant charge amount are not reflected in the above table, more severe cases need to be considered according to the data in the Table 1, 2 , 3, 4.

3.2 Unpacking

Unpack the unit and move it to our install location. Remove the carton while taking care to not damage the unit. Remove the protective sheet metal from the base of the unit (if equipped). Inspect the equipment for any damage prior to installation (if there is damage file a claim with the shipping company if the shipment is damaged or incomplete). Locate the rating plate on the unit as it contains information needed to properly install the unit. Check the rating plate to make sure it matches the job specifications. A front access panel is provided, which permits access to the blower assembly and electrical controls for removal and servicing.

3.3 Location

The air handler should be centrally located and may be installed in a closet, alcove, utility room, or basement while retaining the minimum clearances. The air handler comes standard with two different options for mounting, wall mount or frame mount. Both mounting options require the unit to be level from side to side and from front to back in order to allow condensate to properly drain from the unit. Failure to do this will result in condensate leaking out from the unit, potentially causing structural damage to the surrounding support structures, dry wall, carpet, etc. Also, both mounting structures require the ability to accommodate a minimum of 150lbs load. Failure to do this will cause damage to the support structure and potentially damage the unit.

Wall Mount:
The air handler comes standard with a wall mounting bracket and air handler mounting bracket. Reference Figure 3.3 for more details.

1. Remove the lower wall mounting bracket from the back of the unit by removing one screw which attaches the bracket to the air handler. Note: Discard the screw after you have removed the wall mounting bracket.
2. Install the bracket on the wall by using 3 wood screws (not provided). Make sure the bracket is level in order to provide proper drainage from the unit. Note: Do not attach the wall mounting bracket into unsupported dry wall. Make sure that the wood screws are going into a structure that can support a minimum load of 150lbs.
3. Lift the air handler above the wall mounting bracket and attach the unit to the installed bracket. Reference Figure 3.3.
4. Install the additional bottom plate for extra support for this type of mounting (see Figure 3.3).

Note: The additional plate is shipped in the bottom of the shipping carton.

Frame Mount:
The air handler comes with 8 clearance holes (4 on each side). These holes are used to mount the air handler inside of a frame structure (see Figure 3.4). When mounting in this fashion, make sure that the wood screws are mounted from within the air handler and not from outside the unit in order to avoid damaging the coil. If the frame does not provide support in the front of the unit and additional support is needed, open up the tabs and fix the unit to the frame or other support structure with the screws. Select a solid and level site to ensure proper installation of the frame mount. Verify that there is sufficient space for installation and maintenance (see Figure 3.4).

NOTE

The (8) wood screws are not provided with the unit. #12 x 1.5in wood screws are recommended. When the unit is installed on a wood frame, the screws should be used to fix the unit to the studs. If they are not used, the unit may fall down or cause other damage. See Fig. 3.4 for frame mount installation.

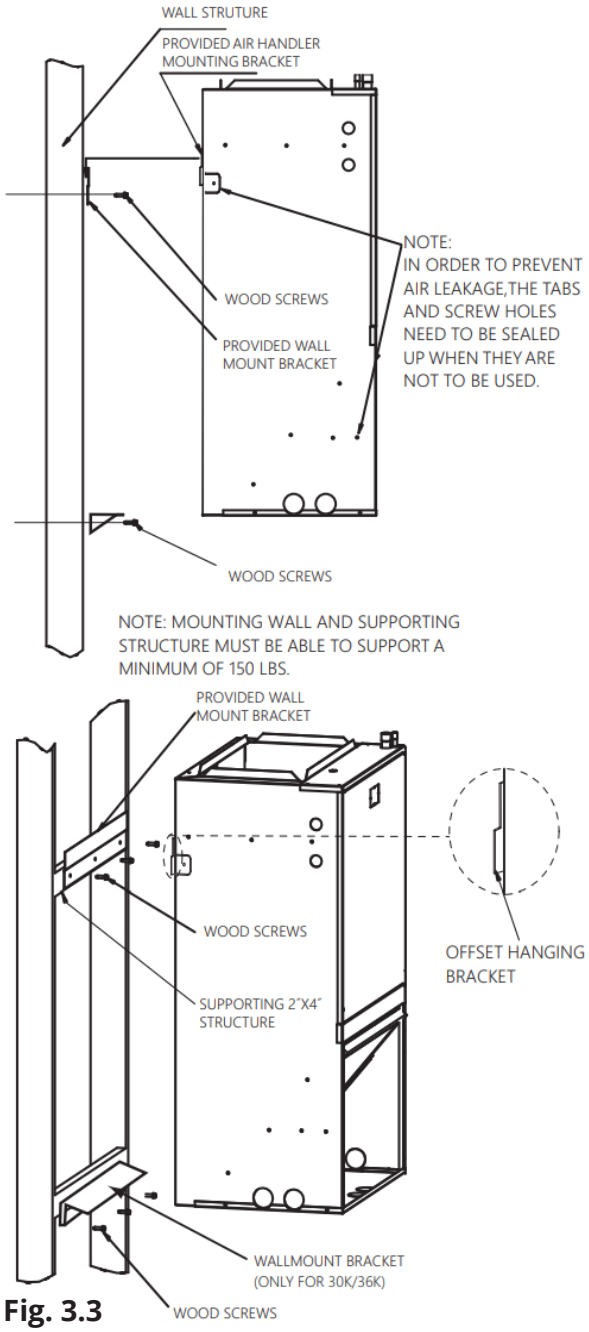


Fig. 3.3

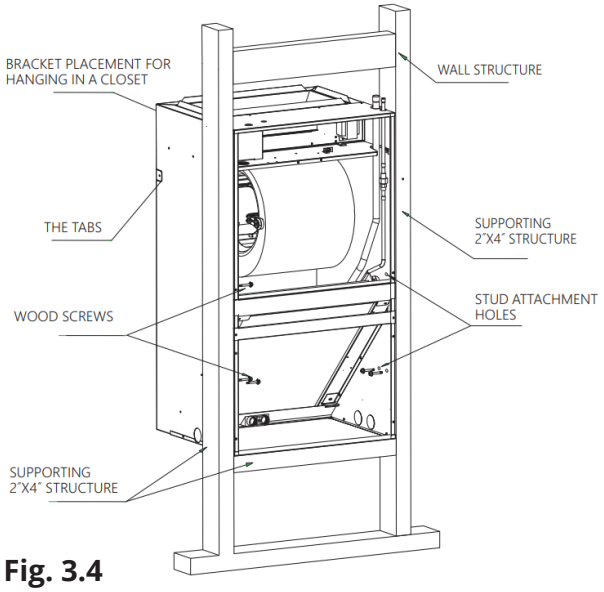


Fig. 3.4

3.4 Ducting

Field ductwork must comply with the National Fire Protection Association NFPA 90A, NFPA 90B, and any applicable local ordinance.

WARNING

Do not, under any circumstances, connect return ductwork to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury, or property damage.

Sheet metal ductwork run in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous ductwork may be used if constructed and installed in accordance with SMACNA Construction Standard on Fibrous Glass Ducts. Ductwork must comply with the National Fire Protection Association as tested by U/L Standard 181 for Class 1 Air Ducts. Check local codes for requirements on ductwork and insulation.

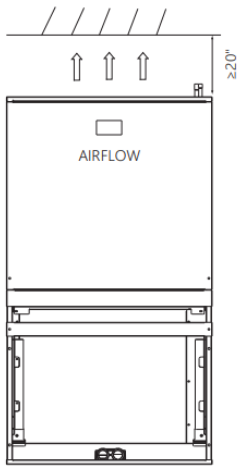
- The duct system must be designed within the range of external static pressure that the unit is designed to operate against. It is important that the systems air flow is adequate. Make sure the supply and return ductwork, grilles, special filters, accessories, etc. are accounted for in total resistance. See Performance Data in this manual.
- Design the duct system in accordance with "ACCA" Manual "0" Design for Residential Winter and Summer Air Conditioning and Equipment Selection. Latest editions are available from: "ACCA" Air Conditioning Contractors of America. If the duct system incorporates flexible air duct, be sure pressure drop information (straight length

plus all turns) shown in "ACCA" Manual "D" is accounted for in the system.

- The supply plenum is attached to the 3/4 in duct flanges supplied with the unit.
- **Important:** If an elbow is included in the plenum close to the unit, it must not be smaller than the dimensions of the supply duct flange on the unit.
- **Important:** If connected to the blower casing, the front flange on the return duct must not be screwed into the area where the power wiring is located. Drills or sharp screw points can damage the insulation on the wires located inside the unit.
- Secure the supply and return ductwork to the unit flanges, using proper fasteners for the type of duct used and tape the duct-to-unit joint as required to prevent air leaks.

NOTE

The unit can have auxiliary heater installed, the minimum clearance from the appliance to combustible surfaces is 0 in.



Top view of the indoor unit clearance (including air duct).

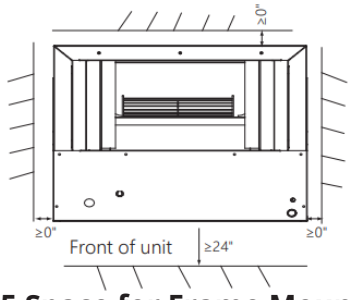


Fig. 3.5 Space for Frame Mount

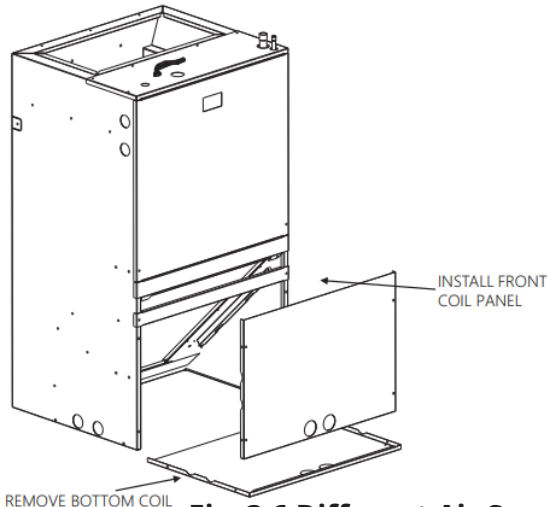


Fig. 3.6 Different Air Supply

NOTE

Remove the cross brace when converting the cabinet to bottom return.

3.5 Drainage

The unit is supplied with primary and auxiliary condensate drains that have 3/4 in NPT connections. Both drains must be trapped outside the unit and piped in accordance with applicable materials and building codes. Do not reduce the drain line size less than the connection size on the drain pan. The condensate should be piped to an open drain or to the outside. All drains must pitch downward and away from the unit at a minimum of 1/4 in per ft of line to ensure proper drainage. Insulate the primary drain line to prevent sweating where dew point temperature may be met. (Insulation is optional depending on climate and application needs). **Important:** If a clean out Tee is used, the standpipe must be sealed/capped.

3.6 Refrigerant Sensor

The R454B refrigerant leakage sensor is configured for the indoor unit. The refrigerant sensor is factory set for front or bottom return air, and the refrigerant sensor has only one installation position. Before installing the indoor unit, check whether the refrigerant sensor is correctly installed according to Figure 2.4 and 2.5.

WARNING

- The refrigerant leakage sensor can only use the factory model or the specified model indicated in this manual.
- The R454B refrigerant leakage sensor must be used to activate the refrigerant shut-off device, the alarm device, incorporated circulation airflow, or other emergency controls, which will give an electrical signal at a predetermined alarm set point in response to leaked refrigerant.
- The installation of the refrigerant leakage sensor shall allow access for checking, repair, or replacement by an authorized person.
- The refrigerant leakage sensor should be installed so its function can be verified easily.
- The refrigerant leakage sensor should 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 the electric heater will shut off. Leave immediately from the leak area and notify a professional for handling.
- The system will return to operation when refrigerant is no longer detected within 5 minutes.
- The service life of the refrigerant sensor is 15 years, and should be replaced after its service life.
- To ensure the detection accuracy of the refrigerant sensor, it is recommended to blow dust off of the surface of the refrigerant sensor after it is used for a long period.
- The unit must be powered on except for during servicing.
- Ensure the apparatus is mounted securely.
- 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)).

NOTE

These instructions are exclusively intended for qualified contractors and authorized installers. Work on refrigerant circuits with flammable refrigerant in safety group A2L may only be carried out by authorized contractors. These 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. If an indoor unit is installed in an unventilated area, the area should be constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard. The appliance should be stored so as to prevent mechanical damage from occurring. Do not stack combustible materials on the surface of the indoor unit.

3.7 Refrigerant Piping

Refrigerant pipe connections are located on the top of the unit. Refrigerant piping external to the unit should be sized in accordance with the instructions of the outdoor equipment. When units are recessed mounted in the wall, make certain that piping connections are pressure tested prior to the wall being closed. While brazing, be sure to protect the cabinet and grommets from heat damage.

3.8 Metering Device

All units are shipped and installed with an orifice designed for air conditioning or heat pump operation. Pressures equalize after shut down.

3.9 Air Filter

An air filter must be installed before air enters the evaporator coil in order to protect the coil, blower, and other internal parts from excessive dirt and dust.

Model	Filter Sizes in (mm)
18K/24K	15*19 (381*483)
30K/36K	20*20 (508*508)

4 WIRING

4.1 Power Wiring

Field wiring must comply with the National Electric Code (C.E.C. in Canada) and any applicable local ordinance.

WARNING

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

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

- If required, install a branch circuit disconnect of adequate size, located within sight of, and readily accessible to the unit.
- **Important:** After the Electric Heater is installed, units are equipped with one 60 amp. circuit breaker. 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. Supply circuit protective devices may be either fuses or "HACR" type circuit breakers.
- Power wiring may be connected to either the right or left side. Two 7/8in diameter concentric knockouts are provided for connection of power wiring to the unit.
- Power wiring is connected to the power cable in the units electrical cabinet.

4.2 Grounding

WARNING

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

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

4.3 Control Wiring

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

- Low voltage control wiring should be 18 AWG. color-coded (221°F (105°C) minimum). For lengths longer than 100ft (30.48m) 16 AWG wire should be used.
- Low voltage control connections are made to low voltage pigtails extending from the top of the air handler. Connections for control wiring are made with wire nuts. Control wiring knockouts (7/8in) are also provided on the right and left side of the unit for side connection.
- Make sure after installing to separate the control and power wiring.

4.4 Thermostat

Select a thermostat that is commonly used with a heat pump or straight a/c single stage heating/cooling with electric heat. The thermostat will energize the fan on demand for heating or cooling.
Install the thermostat on an inside wall, away from drafts, lights, or other heat sources in a location that has sufficient air circulation from other rooms being controlled by the thermostat. The thermostat should be mounted 4 to 5 ft above the floor.

4.5 Sequence of Operation

Cooling:
When the thermostat calls for cooling, the circuit from R to G is completed. The blower motor is energized directly by the 24VAC signal from the thermostat.
The circuit from R to Y is also completed, energizing the compressor contactor of the outdoor unit. The contactor will close and start the compressor and condenser fan motor. Certain heat pump model condensers may default to heat on the reversing valve and have an O connection that needs to be energized for cooling to function.
Heating (heat pump):
When the thermostat calls for heating, the circuit from R to G is completed and the blower motor is energized directly by the 24VAC signal from the thermostat.
The circuit from R to Y is also completed, energizing the compressor contactor of the outdoor unit. The contactor will close and start the compressor and condenser fan motor. Circuit R to B (condenser model dependent) energizes the reversing valve to the heating position.
Heating (electric heat only):
Note: the thermostat must be set up to bring the blower on when the electric heat is energized.
When the thermostat calls for heating, the circuit from R to G is completed and the blower motor is energized directly by the 24VAC signal from the thermostat.
The circuit from R to W1 is completed energizing the heating contactor(s).
If the indoor temperature continues to fall, the R to W2 circuit is completed, energizing the electric heat contactor(s).
Defrost:
Supplemental heat during defrost can be provided by connecting the W1 wire from the outdoor unit to W1 on the indoor unit. This will prevent cold air from being discharged from the indoor unit during defrost.

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 can become loose or the terminal may be damaged when they are pulled.

4.6 Electrical Data

Model	Voltage	Herts	Hp	Rpm	Speeds	Circuit Amps.	Maximum Circuit Protector
18K	208/230	60	1/3	1050	5	1.8	3 (A)
24K	208/230	60	1/3	1050	5	1.8	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)

4.7 Wire Gauge

Note: The cross-section areas of wires or lines should not be less than the corresponding ones listed in the table below.

Model			18K	24K	30K	36K
Line Gauge	Indoor Unit Power Line	Line Quantity	3	3	3	3
		Line Diameter (AWG)	16	16	16	16
	Outdoor Unit Power Line	Line Quantity	3	3	3	3
		Line Diameter (AWG)	14	14	12	12
	Indoor-Thermostat Signal Line	Line Quantity	5	5	5	5
		Line Diameter (AWG)	18	18	18	18
	Outdoor-Thermostat Signal Line	Line Quantity	5	5	5	5
		Line Diameter (AWG)	18	18	18	18

4.8 Wiring Diagrams

Fig. 4.1 Wiring Connection for Heat Pumps

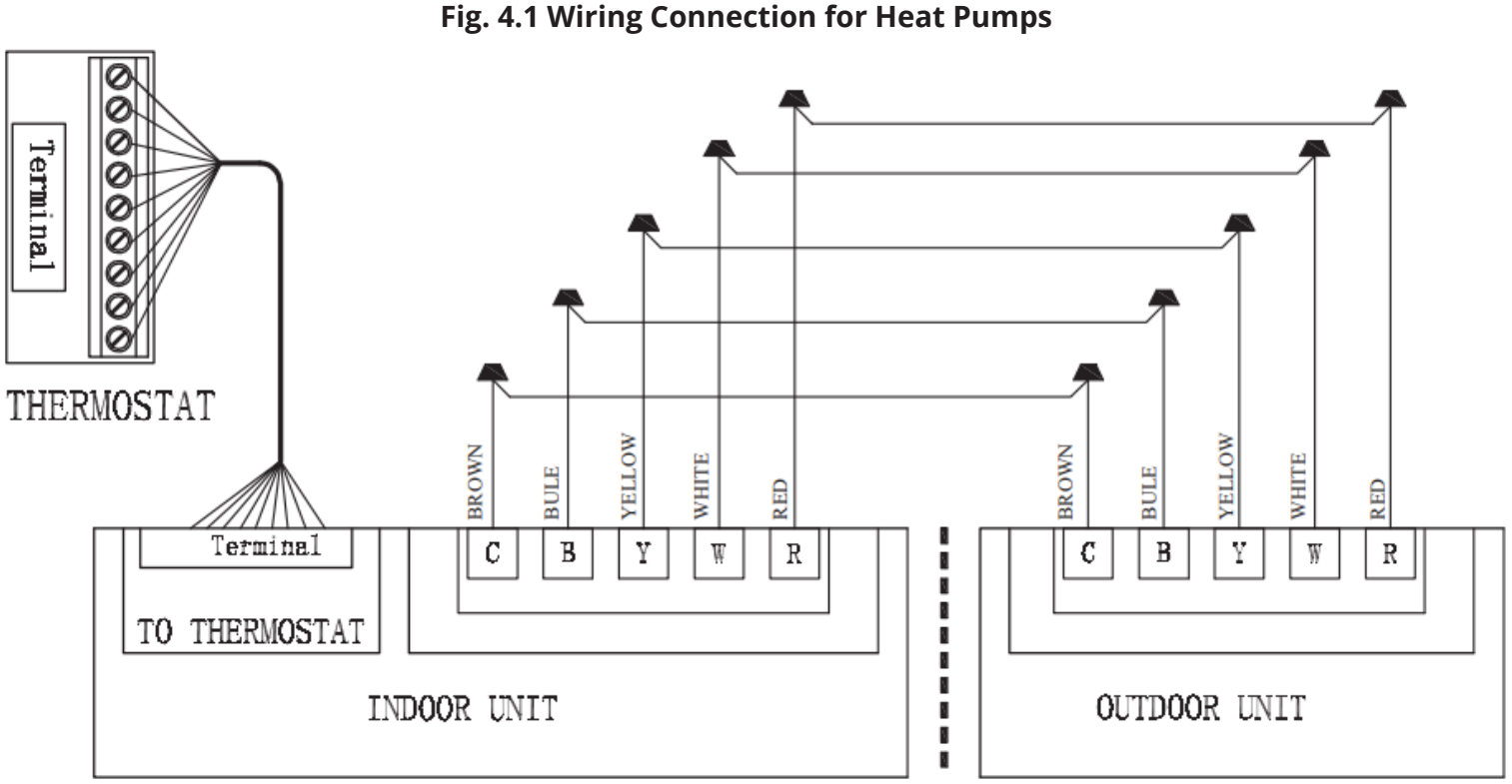
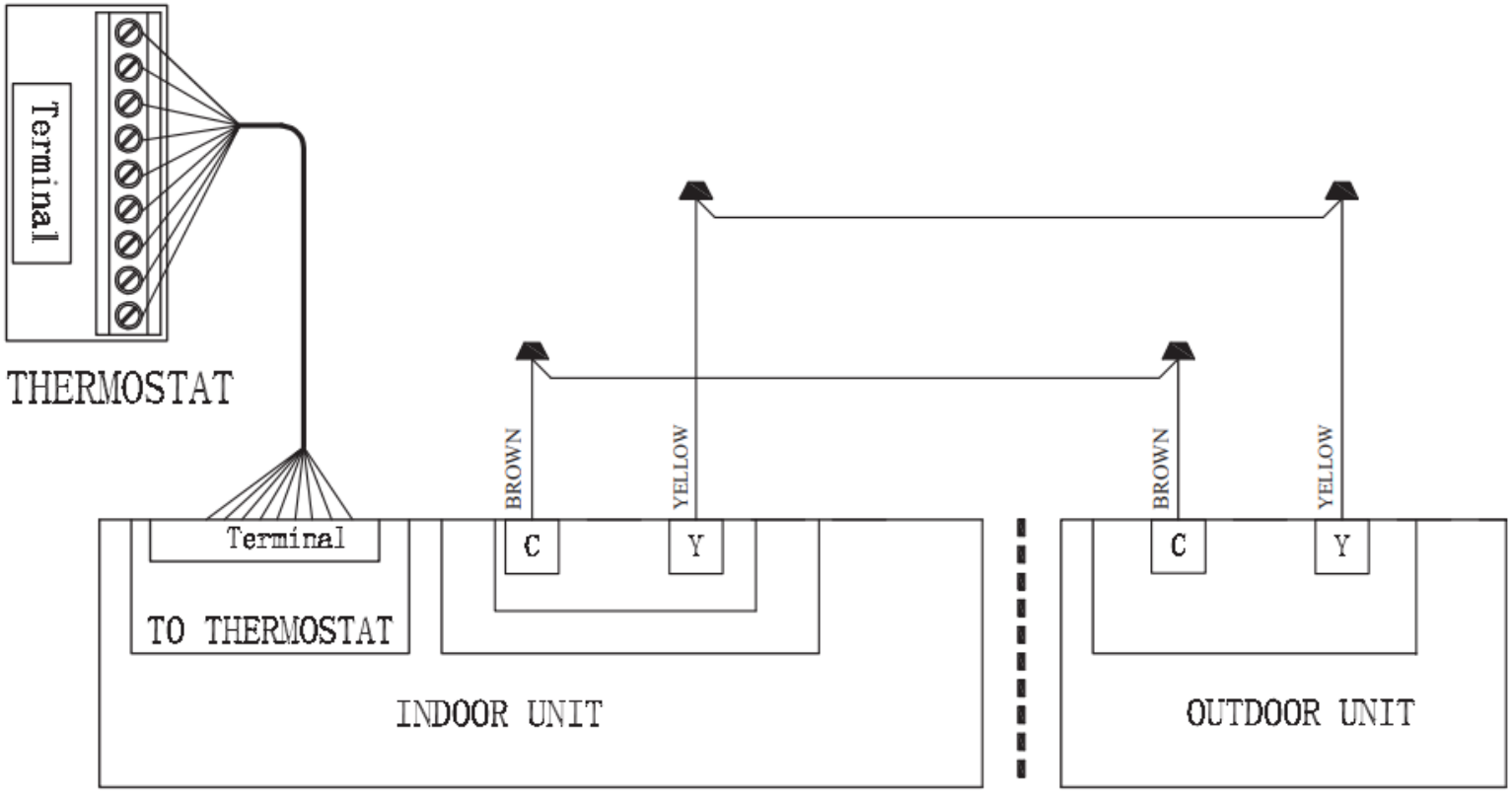
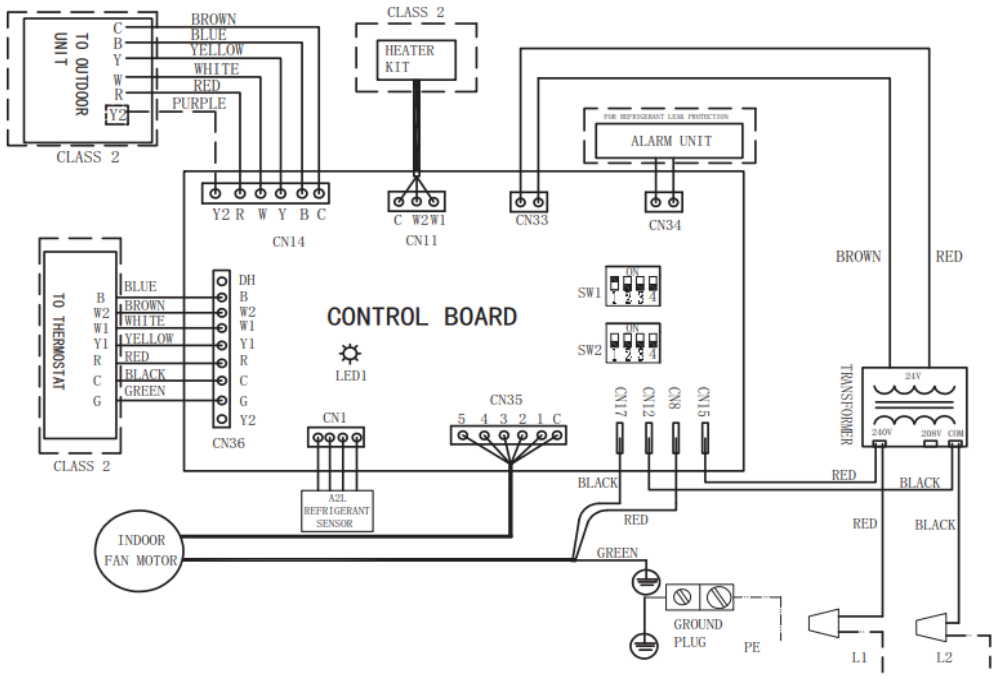


Fig. 4.2 Wiring Connection for A/C





DIAL SWITCH DESCRIPTION	
ON OFF 1 2 3 4 SW1 SW2	Speed 2
ON OFF 1 2 3 4 SW1 SW2	Speed 3
ON OFF 1 2 3 4 SW1 SW2	Speed 4
ON OFF 1 2 3 4 SW1 SW2	Speed 5

NOTES

1. Grounded and all wiring to conform to I.E.C.
2. Replacement wire must be the same gauge and insulation type as original wire.
3. The units should connect the stated-cross-section earth wire and keep it grounding unfailingly.
4. Set SW1 or SW2 to 'ON' to select different fan speeds.
5. Electric Heater is optional.

LINEAR ANNOTATION

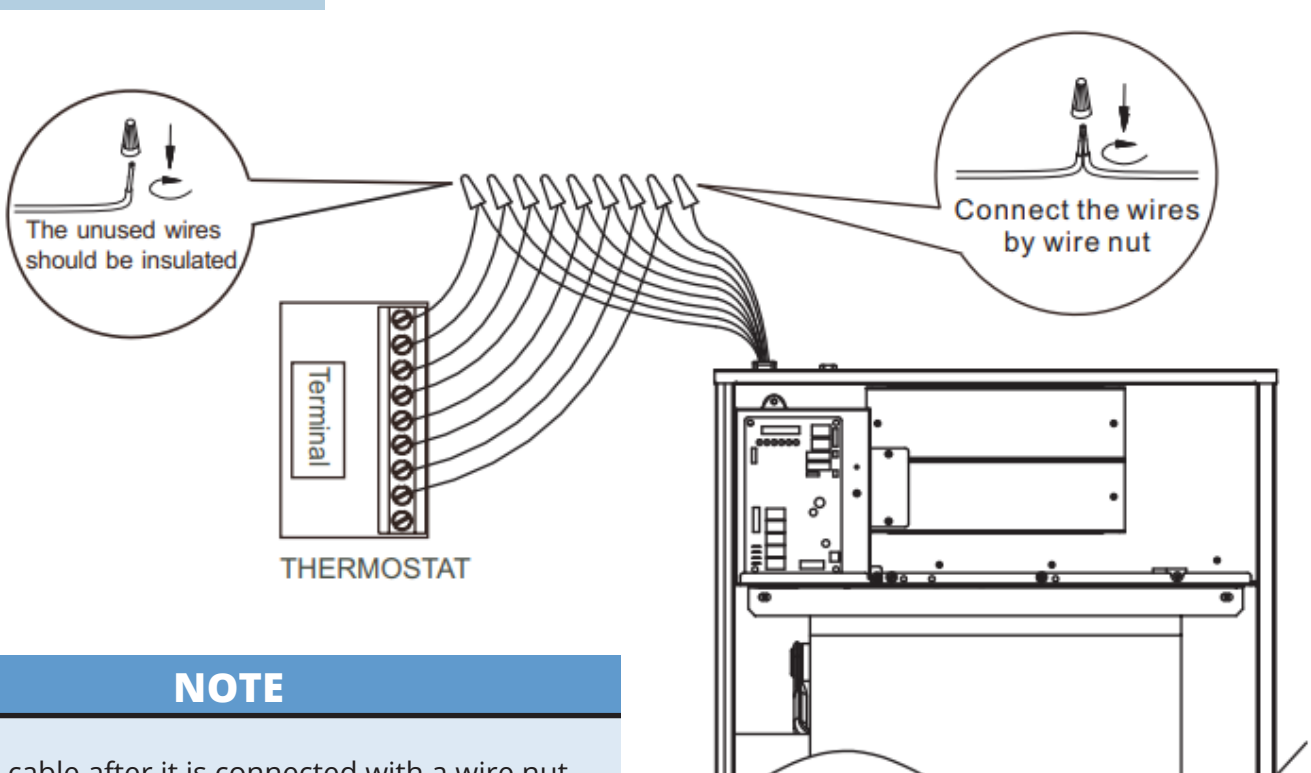
——————— FACTORY DEFAULT –·–·–·–·–·– FIELD INSTALLED – – – – – – – FACTORY OPTION

Please refer to the actual wiring diagram

DIP Switch	Fan Speed	Model	DIP Switch	Fan Speed	Model
ON OFF 1234 SW1 1234 SW2	Speed 2	18K	ON OFF 1234 SW1 1234 SW2	Speed 4	36K
ON OFF 1234 SW1 1234 SW2	Speed 3	24K、30K	ON OFF 1234 SW1 1234 SW2	Speed 5	/

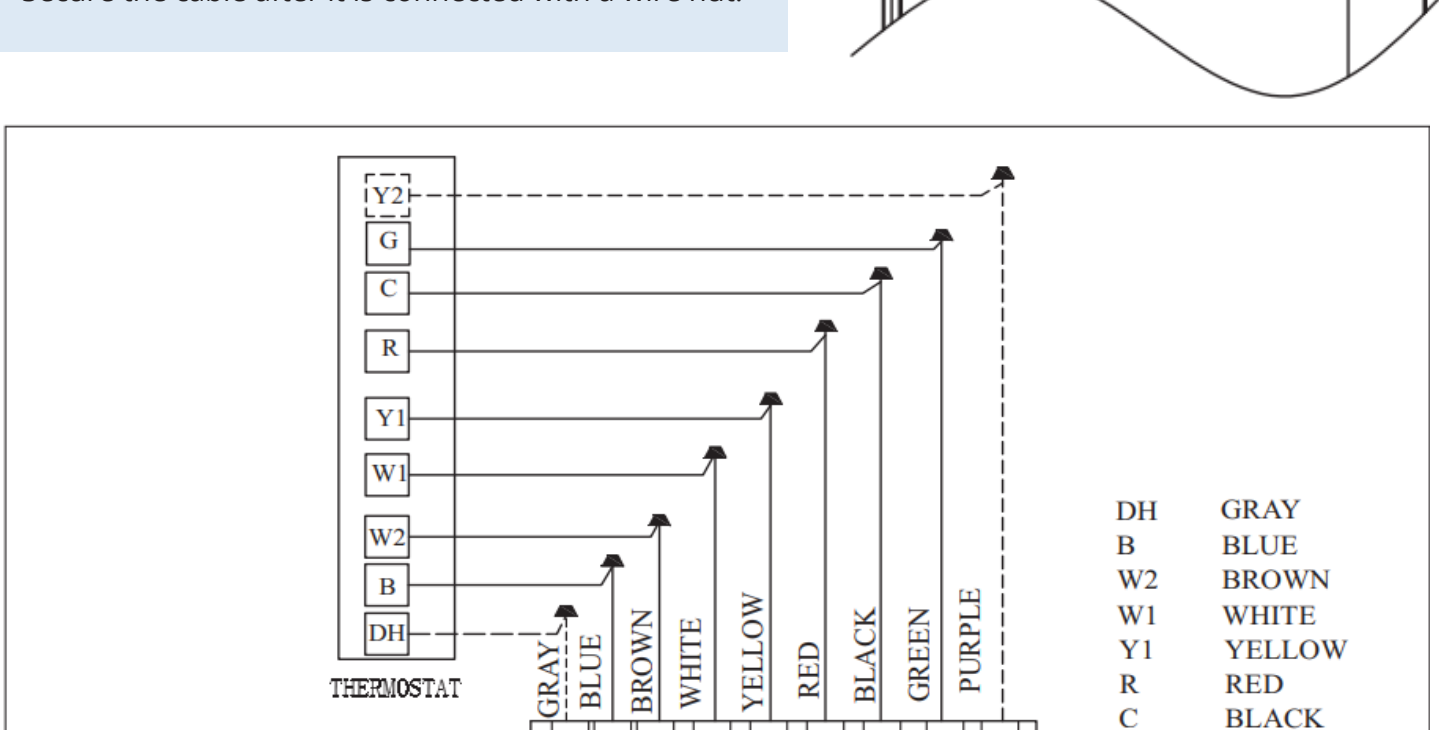
Note: For reference only, the actual wiring diagram shall prevail.

4.9 Low Voltage Connection



NOTE

Secure the cable after it is connected with a wire nut.



-Electric Heat

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	2	3 (Medium)	4	5 (High)
MCAEHWD5X1AA	18K	5	22.8	24.9	25	25	√	x	x	x
MCAEHWD7X1AA		7.5	34.8	37.9	35	40	√	x	x	x
MCAEHWD10X1AA		10	45.4	49.8	50	50	√	x	x	x
MCAEHWD7X1AA	24K	5	22.8	24.9	25	25	√	√	√	√
MCAEWD7X1AA		7.5	34.8	37.9	35	40	√	√	√	√
MCAEHWD10X1AA		10	45.4	49.8	50	50	√	√	√	√
MCAEHWD5X1AA	30K	5	22.8	24.9	25	25	√	√	√	√
MCAEHWD7X1AA		7.5	34.8	37.9	35	40	x	√	x	√
MCAEHWD10X1AA		10	45.4	49.8	50	50	x	√	x	√
MCAEHWD5X1AA	36K	5	22.8	24.9	25	25	√	√	√	√
MCAEHWD7X1AA		7.5	34.8	37.9	35	40	x	√	√	√
MCAEHWD10X1AA		10	45.4	49.8	50	50	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
MCAEHWD5X1AA	5kW heater kit, double pole circuit breaker	18/24/30/36
MCAEHWD7X1AA	7.5kW heater kit, double pole circuit breaker	
MCAEHWD10X1AA	10kW heater kit, double pole circuit breaker	

-Blower

This unit is supplied with a multi-speed motor with a direct drive blower wheel which can obtain various airflows. The unit is shipped with a factory set cooling and heating speed taps. Airflow performance tables are available for additional speed taps. Disconnect all power to the unit before making any adjustments to the motor speed taps. Be sure to check the air flow and the temperature drop across the evaporator coil to ensure sufficient air flow.

Airflow performance data is based on cooling performance with a coil and no filter in place. Select performance table for 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	2-Factory Default	848	811	774	749	712	685	641	608	565
	3	947	914	887	855	829	797	773	742	703
	4	1044	1015	990	960	936	904	880	851	814
	5	1098	1069	1043	1014	986	958	933	902	848
24K	2	848	811	774	749	712	685	644	608	565
	3-Factory Default	947	914	887	855	829	797	773	742	703
	4	1044	1015	990	960	936	904	880	851	814
	5	1098	1069	1043	1014	986	958	933	902	848
30K	2	1048	1008	979	933	884	836	770	724	680
	3-Factory Default	1159	1121	1093	1059	1016	965	915	850	808
	4	1257	1231	1199	1169	1140	1095	1051	1000	943
	5	1360	1337	1302	1279	1246	1208	1173	1121	1063
36K	2	1048	1008	979	933	884	836	770	724	680
	3	1159	1121	1093	1059	1016	965	915	850	808
	4-Factory Default	1257	1231	1199	1169	1140	1095	1051	1000	943
	5	1360	1337	1302	1279	1246	1208	1173	1121	1063
Note: Shaded boxes represent airflow outside the required 30-450 cfm/ton.										

Notes:

1. Airflow based upon dry coil at 230V with no electric heat and no filter. For 18, 24, 30, 36 sizes, airflow at 208V is approximately the same as 230V because of the multi-tap ECM motor is a constant torque motor. The torque doesn't drop off at the speed in which the motor operates.
2. Airflow is equivalent for front or bottom return configurations.

The air distribution system has the greatest effect on airflow. The duct system is totally controlled by the contractor. For this reason, the contractor should use only industry-recognized procedures.

Heat pump systems require specified airflow. Each ton for cooling requires between 350 and 450 cubic feet of air per minute (CFM), or 400 CFM nominally.

Duct design and construction should be carefully done. System performance can be lowered dramatically though bad planning or workmanship. Air supply diffusers must be selected and located carefully. They must be sized and positioned to deliver air along the perimeter of the space. If they are too small for their intended airflow, they become noisy. If they are not located properly, they cause drafts. Air grilles must be properly sized to carry air back to the blower. If they are too small, they also cause noise.

The installers should balance they air distribution system to ensure proper quiet airflow to all rooms in the home. This ensures a comfortable living space.

Important: When model 30 and 36 used with electric heat kit model HF75-01 and HF100-01, you need to ensure that the air volume is no less than 1103 CFM.

7 MAINTENANCE

7.1 Check Procedures

To obtain proper performance, all units must be operated and charge adjustments made in accordance with procedures found in the service document of the outdoor unit.
After installation has been completed, it is recommended that the entire system be checked against the following list:

- Be sure unit suspension (if used) is secure and there are no tools or loose debris in, around, or on top of the unit.
- Properly insulate suction lines and fittings.
- Properly secure and isolate all refrigerant lines.
- Verify that all electrical connections are tight.
- Check all duct outlets; they must be open and unrestricted.
- Check drain lines and be sure all joints are tight.
- Be sure the return air filter is installed.
- Operate the system in each mode to verify proper performance. Verify operation of supplementary electric heater.

7.2 Maintenance

The system air filter(s) should be inspected, cleaned, or replaced at least once a month. Make sure that the access panels are replaced and secured properly before placing the unit back in operation. This product is designed for dependable service; however, periodic maintenance should be scheduled and conducted by trained professional service personnel. This service should be conducted at least annually, and should include testing and inspection of electrical and refrigerant components. The heat transfer surface should be cleaned. The blower motor is permanently lubricated for normal operating conditions.

7.3 Error Codes

Leak Detection System Installed. Unit must be powered except for when in service			
The LED and the Buzzer's Status			
Model	**Green LED**	**Red LED**	**Buzzer Status**
Normal Operation	On	Off	Inactive
Refrigerant Sensor Fault	On	Flashes 3 times and then is off for 3 seconds.	Active
Refrigerant Sensor Communication Fault	On	Flashes 4 times and then is off for 3 seconds.	Active
Refrigerant Leak Alarm	On	Flashes 5 times and then is off for 3 seconds.	Active
If a refrigerant leakage alarm is observed, DO NOT open the unit or turn it off.			

MRCOOL® Signature Series Stud-Mount Air Handler