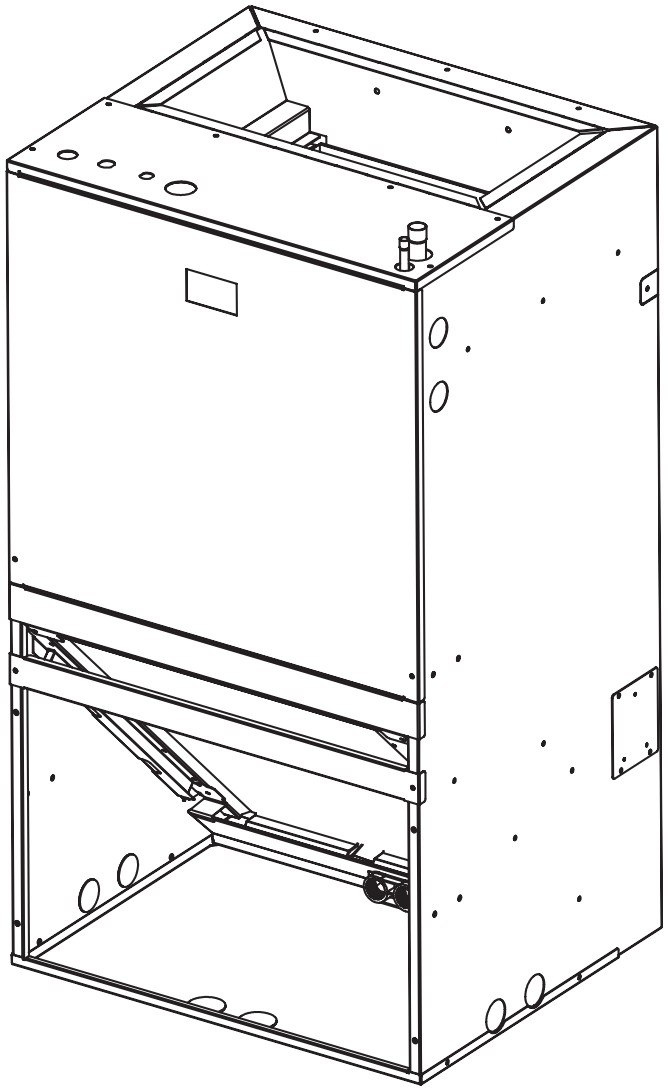
A-SERIES WALL MOUNT AIR HANDLER



Installation Manual

Outdoor Split System Unit 1.5, 2, 2.5, & 3 Ton R454B	*Split System* *Heat Pump & Air Conditioner*	*Version Date:* *10 / 20 / 26*

Initial Release ..... **07 / 24 / 25**

Revision A ..... 10 / 20 / 26

IMPORTANT SAFETY INFORMATION

WARNING

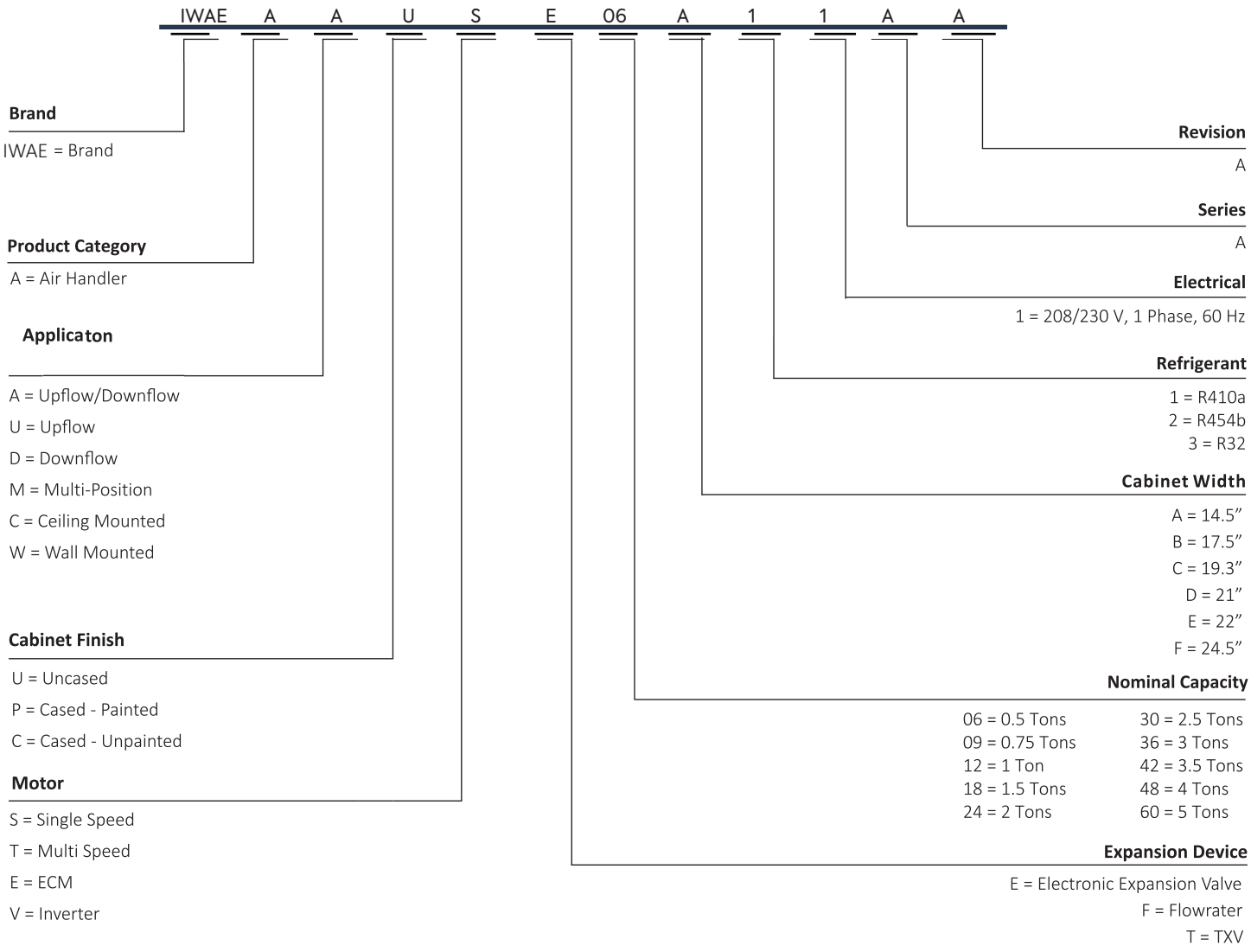
THESE INSTRUCTIONS ARE INTENDED FOR REFERENCE BY QUALIFIED LICENSED PERSONNEL FOR THE PROPER INSTALLATION, ADJUSTMENT, AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING ANY INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE, OR MAINTENANCE, POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, PERSONAL INJURY, OR DEATH.

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ETL LISTED C US Intertek

DO NOT DESTROY THIS MANUAL
Please read carefully and keep in a safe place for future reference by a serviceman.



Product Features

- Front or bottom return air.
- Blower slides out easily for maintenance.
- 5, 7.5 and 10 kW single phase electric heaters.
- Painted finish on galvanized steel.
- Thermoplastic drain pan with bottom primary and secondary drain connections.
- 208/230 VAC operation.
- Stud or wall mounting installation.
- Direct-drive, multi-speed motor allows air volume variation for heating/cooling.
- Built-in filter rack
- Wall-hanging brackets.
- Fully insulated cabinet.
- 3/4” NPT primary and secondary drains.
- AHRI certified and ETL listed.

This document is customer property and must remain with the unit. These instructions do not cover all system variations nor does it include every possible installation scenario. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use. All phases of this installation must comply with ***NATIONAL STATE AND LOCAL CODES****. If additional information is required, contact your local distributor.*

IMPORTANT
Installation of this unit shall be made in accordance with the National Electric Code, NFPA No. 90A and 90B, and any other local codes or utilities requirements.

i. CREATING A SAFE WORKING AREA

1. Safety checks are necessary prior to beginning work on systems containing flammable refrigerants to minimize the risk of ignition.
2. Ensure that the work area is open or that it is adequately ventilated before opening the system or conducting any hot work. Ventilation must continued during the period of work. The ventilation should safely disperse any released refrigerant and preferably expel it externally.
3. 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 personal injury or death.
4. 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.
5. Signs for similar appliances used in a work area are generally addressed by local regulation and give the minimum requirements for the provision of safety and/or health signs for a work location.
6. The effectiveness of signs should not be diminished by too many signs being placed together.
7. Any pictograms used should be as simple as possible and contain only essential details.

NOTE
The 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.”

ii. SAFETY RULES AND INSTALLER RECOMMENDATIONS

1. Because of possible damage to equipment and risk of personal injury, the installation, service, and maintenance of this unit should only be performed by a trained, qualified service personnel. Consumer servicing is only recommended for air filter cleaning/replacement.
2. These instructions are intended as an aid to qualified, licensed service personnel for the 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.
3. This unit must be permanently grounded. Failure to do so can result in electrocution, personal injury, or death.
4. If removal of the blower assembly is required, all disconnect switches supplying power to the equipment must be de-energized and locked (if not in sight of the unit) so the field power wires can be safely removed from the blower assembly. Failure to do so can cause electrical shock, resulting in personal injury or death.

5. Make sure the blower motor support is tight (with 3 motor mount bolts) then check to see if the wheel is secured to the motor shaft before operating the unit, as shown in **Fig. i-1**.
6. 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. Otherwise, it must be connected to the unit supply duct exposed to the supply air opening from the down flow 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.

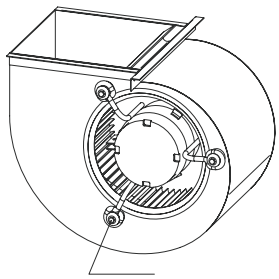


Fig. 1-1 Checking Motor Fix Status

7. Only use this unit in a well-ventilated area and ensure the unit's airflow inlet and outlet are not 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 sulphurous atmospheres, such as near natural hot springs
   - Where high voltage electricity is present, such as in 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

⚠ WARNING: EXPLOSION HAZARD ⚠

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. 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.

8. Do not use means to accelerate the defrosting process or to clean the unit other than those recommended by the manufacturer.
9. This appliance must be stored in a room that does not have continuously operation ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater.)
10. Do not pierce or burn the unit.
11. You must comply with national gas regulations.

⚠ WARNING ⚠

Refrigerants may not contain an odor. If refrigerant gas leaks during installation, ventilate the area immediately.

12. Servicing may only be performed as recommended by the equipment manufacturer.
13. Maintenance and repair requiring the assistance of other skilled personnel must be carried out under the supervision of a person competent in the use of flammable refrigerants.

⚠ WARNING: DANGEROUS VOLTAGE ⚠

Disconnect all power before maintenance, including remote disconnection. Follow proper locking/tagging procedures to ensure that the power supply will not be energized accidentally. Failure to observe this warning may result in property damage, serious personal injury or death.

14. Where electrical components are being charged, they must be implemented according to their intended purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines must be followed. If in doubt, consult the manufacturer's technical department for assistance.
15. The following checks must be applied to installations using flammable refrigerants:
    - Actual refrigerant charge is determined by the room size where the refrigerant containing parts are installed
    - The ventilation machinery and outlets are operating adequately and are not obstructed
    - If an indirect refrigerating circuit is used, the secondary circuit must be checked for the presence of refrigerant
    - Equipment markings must remain visible and legible. Markings and signs that are illegible must be corrected.
16. Ensure that refrigerating pipes or components are installed in a position where they are unlikely to be exposed to any substances that may corrode refrigerant containing parts, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.
17. Repair and maintenance of electrical components must include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, no electrical supply may be connected to the circuit until the fault has been dealt with. You must ensure that:
    - There is continuity of grounding
    - Capacitors are discharged. This must be done in a safe manner to avoid the possibility of sparking
    - No live electrical components and wiring are exposed while charging, recovering, or purging the system
18. Check that cabling will not be subject to wear, corrosion, excessive pressure, vibrations, sharp edges, or any other adverse environmental effects. The check must also take into account the effects of aging or continual vibration from sources such as compressors or fans.
19. In order to avoid electric shock or fire, make sure that a ground leak protector is installed.
20. Objects touching the fan at high speed can be dangerous.
21. 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.
22. When the system is installed and operated in a small room, you must maintain the refrigerant concentration below the limit, in case a leak occurs. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
23. Keep ventilation openings clear of obstruction.
24. Be sure the air conditioner is grounded to avoid electric shock. Make sure the unit is ground and the ground wire is not connected to a gas or water pipe, lightning conductor, or telephone ground wire.
25. To avoid oxygen deficiency, ventilate the room sufficiently if equipment with a burner is used with the air conditioner.
26. Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause leaks that can damage the building, furniture, etc.
27. 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 with be determined by the applicable transport regulations.
28. The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.
29. 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.
30. The maximum number of equipment permitted to be stored together is determined by local regulations.

⚠ WARNING: CORROSION HAZARD ⚠

To prevent shortening 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 condensate. Condensate in the presence of chlorides and fluorides from paint, varnish, stains, adhesives, cleaning compounds, and cement creates a corrosive condition which may cause rapid deterioration of the cabinet and internal components.

iii. SAFETY PROHIBITIONS

1. 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 by a person responsible for their safety concerning the use of the appliance. Do not allow children to play with the appliance.
2. 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 operation, turn off the breaker or unplug the supply cord. Otherwise, electric shock and injury may occur.
3. Never touch the air outlet or the horizontal blades while the swing flap is in operation. Your fingers may get caught or the unit may break down.
4. Never put any objects into the air inlet or outlet.
5. Never inspect or service the unit by yourself
6. 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.
7. If a leak is found, do not use the air conditioner until a service person confirms that the refrigerant leak is repaired.
8. Do not operate the air conditioner with wet hands, or else you could be electrocuted.
9. Do not touch the heat exchanger find. These fins are sharp and could cut you.
10. Never touch the internal parts of the controller.
11. Do not remove the blower access panel. Some parts inside are dangerous to touch, and machine issues may occur.
12. Never operate this unit when the access panels are removed.
13. Do not operate the air conditioner when using a room fumigation type of 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 trigger the refrigerant sensor alarm.
14. Do not place appliances that 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.
15. 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.

⚠ FLAMMABLE REFRIGERANT WARNING ⚠

Sealed electrical components must be replaced

Intrinsically safe components must be replaced

iv. REPAIRING REFRIGERANT SYSTEMS

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

1. 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.
2. Work must be undertaken according to controlled procedures to minimize the risk of leaking flammable gases or vapors while work is being performed.
3. All maintenance staff and other working in the local area must be instructed on the nature of the work being carried out. You must avoid working in confined spaces.
4. The work area must be checked with an appropriate refrigerant detector prior to and during work, to ensure that the technician is aware of potentially toxic or flammable environments. 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.
5. If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment must be available and easily accessible. Keep a dry powder or CO2 fire extinguisher near the charging area.
6. When carrying out work on a refrigerating system that involves exposing any pipe work, do not use any sources of ignition in a manner that may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoke, should be kept sufficiently far away from the installation, repair, or removal and disposal site, during which refrigerant can be released into the surrounding space. Prior to beginning work, the area around the equipment should be surveyed to make sure there are no flammable hazards or ignition risks. “No Smoking” signs much be clearly displayed.

v. DETECTING REFRIGERANT LEAKS

1. The refrigerant in the air conditioner is safe and normally does not leak.
2. If the refrigerant leaks into the room and comes into contact with a burner fire, 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 if this occurs.
3. Under no circumstances may potential sources of ignition be used while searching for or detecting refrigerant leaks. A halide torch (or any other detector using a naked flame) must not be used.
4. 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 must 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 must be set at a percentage of the LFL of the refrigerant and must be calibrated for the refrigerant employed. The appropriate percentage of gas (25% maximum) must be confirmed.
5. If a leak is suspected, all naked flames must be removed or extinguished.
6. If a leakage of refrigerants that requires brazing is found, all refrigerant must be recovered from the system, or isolated by means of shut off valves in a part of the system remote from the leak.
7. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine must be avoided as the chlorine may react with the refrigerant and corrode the copper pipe work.
8. Examples of Leak Detection Fluids:
    - Bubble Method
9. To prevent a refrigerant leak, contact your dealer.

⚠ 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.

vi. RECOVERING & RECHARGING REFRIGERANT

1. When breaking into the refrigerant circuit to make repairs or for any other purpose conventional procedures must be used. However, for flammable refrigerants it is important that best practices be followed, since flammability is a consideration. You must adhere to the following procedure:
   - Safely remove refrigerant following local and national regulations
   - Evacuate the refrigerant
   - Purge the circuit with inert gas
   - Evacuate again
   - Continuously flush or purge with inert gas when using flames to open the circuit
   - Open the circuit
2. The refrigerant must be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system must 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 must not be used for purging refrigerant systems.
3. For appliances containing flammable refrigerants, you must purge refrigerant 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 must be repeated until no refrigerant is in the system. When the final oxygen-free nitrogen charge is used, the system must be vented down to atmospheric pressure to enable work to take place.
4. The vacuum pump outlet must not be near any potential ignition sources, and ventilation must be available.
5. Ensure that the contamination of different refrigerants does not occur when using charging equipment. Hoses or lines must be as short as possible to minimize the amount of refrigerant they contain.
6. Cylinders must be kept upright. Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.
7. Label the system when charging is complete (if it is not already labeled).
8. Take extreme care not to overfill the refrigeration system.
9. Prior to recharging the system, perform a pressure test with the appropriate purging gas. The system must be leak-tested on completion of charging but prior to commissioning. A follow up leak test must be carried out prior to leaving the site.
10. Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample must be taken in case analysis is required prior to reusing the reclaimed refrigerant. It is essential that electrical power is available before the take 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 refrigerant can be removed from various parts of the system
- Make sure that they 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 is complete, make sure that the cylinders and the equipment are removed from the site promptly and all isolation valves on the equipment are closed off
- Recovered refrigerant must not be charged into another refrigeration system unless it has been cleaned and checked

11. Equipment must be labeled stating that it has been decommissioned and emptied of refrigerant. The label must be dated and signed.
12. Ensure that there are labels on the equipment stating that the equipment contains flammable refrigerant.
13. When removing refrigerant from a system, either for servicing or decommissioning, it is recommended that all refrigerants are removed safely.
14. 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 must 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.
15. 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 must be available and in good working order. Hoses must be complete with leak-free disconnect couplings and in good condition.
16. The recovered refrigerant must be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note must be arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
17. 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 must not be heated by any open flame or other ignition sources to accelerate this process. When oil is drained from a system, it must be carried out safely.

⚠ 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.

vii. 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 requires warnings for products sold in California that contain or produce any of the 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 gas. 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 inquiries from customers about chemicals found in, or produced by, some of our heating and air conditioning equipment, or found in natural gas 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 because the chemicals and substances on the list are found in our daily lives. Most consumers are aware that products can present safety and health risks when improperly used, handled, and maintained.

This appliance uses R454B refrigerant.



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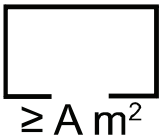
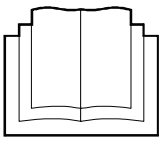
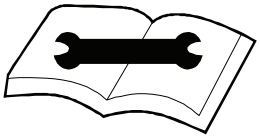
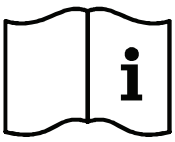
8. Airflow Performance

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The following safety codes are used in this manual. Pay close attention to them to minimize safety risks.

DANGER
Indicates a dangerous situation, which, if not avoided, ***will*** lead to death or serious injury.
WARNING
Indicates a dangerous situation, which, if not avoided, ***may*** lead to death or serious injury.
CAUTION
Indicates a dangerous situation, which, if not avoided, ***may*** cause mild to moderate injury.
Note
Used to indicates additional information unrelated to personal injury, such as installation tips.

The following symbols are displayed on the unit. Pay close attention to them to minimize safety risks.

	**DANGER**	This appliance uses a mildly flammable refrigerant. If this refrigerant leaks and is exposed to an external ignition source, it will create a fire risk.
	**WARNING**	This appliance must be installed, operated, and stored in a room with a floor area no less than the minimum allowed floor area.
	**CAUTION**	Carefully read this manual.
	**CAUTION**	A service personnel should handle this equipment in accordance with this manual.
	**CAUTION**	Relevant information is available in the operational or installation manual.

Abbreviation	Meaning
Mc	Actual refrigerant charge in the system
A	Actual room area where the appliance is installed
A_{min}	Required minimum room area
M_{max}	Allowable maximum refrigerant charge in a room
Q_{min}	Minimum circulation airflow
Anv_{min}	Minimum opening area for connected rooms
TA_{min}	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

NOTE

These instructions are exclusively intended for qualified contractors and authorized installers. This Document is customer property and is to remain with this unit. All phases of this installation must comply with **NATIONAL, STATE AND LOCAL CODES**.

1. 1 Precautions

1. Check the information in this manual to find the dimensions of space needed for proper device installation, including minimum distances allowed compared to adjacent structures.

⚠ WARNING ⚠

The appliance must be stored in a well-ventilated area where the room size corresponds to the room area specified for operation. The appliance must be stored in a room without continuously operating open flames (an operating gas appliance, etc.) and ignition sources (an operating electric heater, etc.)

2. You must comply with national gas regulations.
3. The mechanical connections must be accessible for maintenance purposes.
4. You **must** follow instructions in this manual for handling, installing, cleaning, maintaining, and disposing refrigerant.
5. Make sure ventilation openings are clear of obstruction.
6. The appliance must be stored in a way to prevent mechanical damage from occurring.
7. Any person performing installation, maintenance, repair, or refrigerant handling must a valid and current certification in accordance with UL 60335-2-40, Section HH and recognized by the applicable regulatory authority (e.g., EPA Section 608, F-Gas, or an equivalent). Unauthorized servicing is strictly prohibited
8. Every working procedure that affects safety may only be performed by competent persons.
9. Work on electrical equipment may only be carried out by a qualified electrician.
10. 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.
11. 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 must be constructed so that if any refrigerant were to leak, it will not stagnate and create a fire or explosion hazard.
12. The appliance must be stored to prevent mechanical damage from occurring.
13. Do not stack combustible materials on the surface of the indoor unit.

⚠ WARNING ⚠

1. Do not use any means other than those recommended by the manufacturer to accelerate the defrosting process or to clean the unit.
2. Do not store this appliance near continuously operating fuel sources (e.g. open flames, operating gas appliances, operating electric heaters.)
3. Do not pierce or burn
4. Be aware that refrigerants may not emit an odor.

1. 2 Unpacking

Unpack unit and move to final location. Remove carton, taking care not to damage unit. Remove protective sheet metal from the base of the unit, if equipped. Inspect for damage before installing. File claim with shipping company if shipment is damaged or incomplete. Locate rating plate on unit for information needed to properly install. Check rating plate to be sure unit matches job specifications. A front access panel is provided for access to blower assembly and electrical controls for removal and servicing.

1. 3 R454B Refrigerant Leakage 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 3-1** and **Figure 3-2.**
- The refrigerant leakage sensor can only use the factory model or the specified model indicated in the corresponding 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 shall 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. Please refer to the indoor unit installation manual for specific requirements. 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.
- System will return 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 indoor unit. Unit must be powered on except for during servicing.
- 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 1-2 and Table 1-3.**

⚠ WARNING ⚠
Ensure the apparatus is mounted securely.

⚠ WARNING ⚠

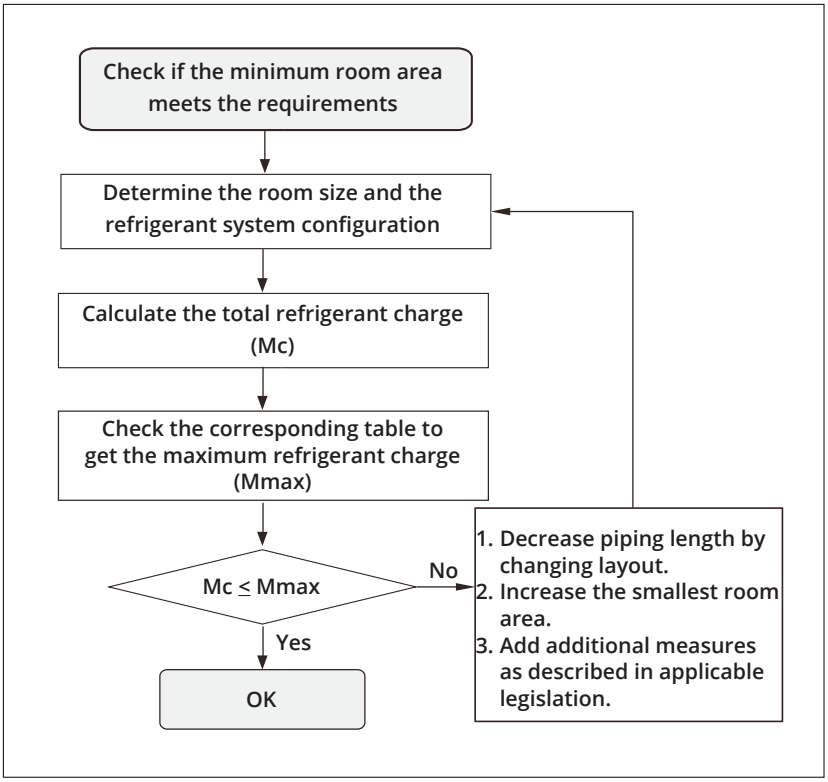
These instructions are exclusively intended for qualified contractors and authorized installers. Work on the refrigerant circuit with flammable refrigerant in safety group A2L may only be carried out by authorized contractors. These heating contractors must be trained in accordance with UL 60335-2-40, 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. If an indoor unit is installed in an unventilated area, the area will be constructed so that if any refrigerant leaks, it will not stagnate and create a fire. 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. Do not stack combustible materials on the surface of the indoor unit.

1. 4 Refrigerant Charge and Room 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 that will limit the area of the rooms being served by the systems.

Similarly, the total amount of refrigerant in the system must 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. Follow the matrix in **Figure 1-1** to determine the appropriate refrigerant charge.

Fig. 1-1 Refrigerant Charge Matrix



1. 5 Room Area Calculation Requirements

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

To determine the room area (A) for use calculating the refrigerant charge limit:

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

Units mounted higher than 70-55/64 inches and spaces divided by partition walls that are no higher than 62-63/64 inches are 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 compliances to A_{min}, 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 food, 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 A_{min}, provided all of the following conditions are met as **Fig 1-2**.

1. 5. 1 Low Level Opening

1. The opening must not be less than Anv_{min} in **Table 1-1**.
2. The area of any openings above 11-13/16 inches from the floor must not be considered in determining compliance with Anv_{min}.
3. At least 50% of the opening area of Anv_{min} must be below 7-7/8 inches from the floor
4. The bottom of the opening is not more than 3-15/16 inches from the floor.
5. The opening is a permanent opening that cannot be closed
6. For openings extending to the floor the height may be no less than 25/32 inches above the floor covering surface.

1. 5. 2 High Level Opening

1. The opening must not be less than 50% of Anv_{min} in **Table 1-1.**
2. The opening is a permanent opening that cannot be closed.
3. The opening must be at least 59 inches above the floor.
4. The height of the opening cannot be less than 25/32 inches.

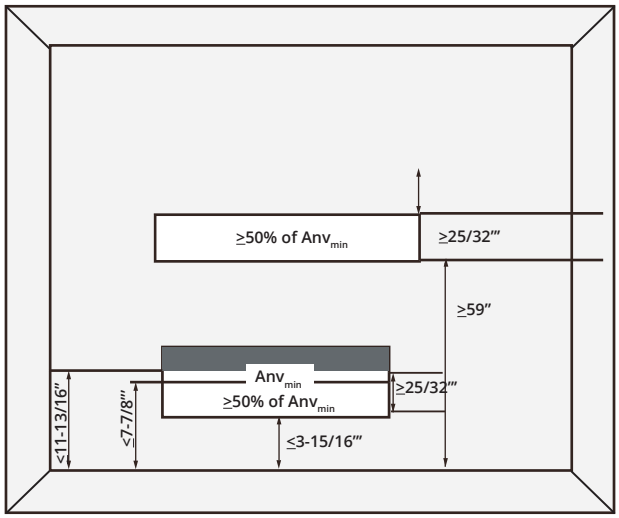
1. 5. 3 Room Size Requirement

1. The room that refrigerant can leak into plus the connected adjacent room(s) must not have a room area less than A_{min}.
2. The room area the unit is installed in cannot be less than 20% of A_{min}.

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.

Fig. 1-2 Opening Conditions for Connected Rooms



The minimum opening for natural ventilation (Anv_{min}) 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 (M_{max}), Anv_{min} can be determined according to **Table 1-1**.

Table 1-1 The Minimum Opening Area for Connected Rooms

A(ft^2)	Mc(□lb□oz)		M_{max}(□lb□oz)		Anv_{min}(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	16	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 3 oz as an example
For appliances serving one or more rooms with an air duct system, the room area calculation is 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.

CAUTION

If the actual room area, air outlet height, and refrigerant charge amount are not reflected in the provided tables, more severe cases need to be considered according to the data in **Table 1-1**, **Table 1-2, Table 1-3**, and **Table 1-4**.

1. 6 The Allowed Maximum Refrigerant Charge and Required Minimum Room Area

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 (M_{max}) and the required minimum room area (A_{min}/TA_{min}) is shown in **Table 1-2** and **Table 1-3**.

CAUTION

The allowable maximum refrigerant charge of **Table 1-2** or the required minimum room area of **Table 1-3** 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. Do not deduct the grill area.
- Minimum airflow rate must meet the corresponding values in **Table 1-4**, which is related to the actual refrigerant charge of the system (Mc).
- R454B refrigerant leakage sensor is configured.

NOTE

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 1-2** or **Table 1-3**.

Table 1-2 The Allowable Maximum Refrigerant Charge

A/TA		M_{max}		A/TA		M_{max}	
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	23.2	16-12	7.6
140	13.0	9-4	4.2	260	24.2	17-13	7.9

Table 1-3 The Required Minimum Room Area

Mc(□lb□oz)		$A_{min}/TA_{min}(ft^2)$	Mc(□lb□oz)		$A_{min}/TA_{min}(ft^2)$
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 1-4 The Minimum Circulation Airflow

Mc(□lb□oz)		Q_{min} (CFM)	Mc(□lb□oz)		Q_{min} (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	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 1-5 Required Minimum Room Area for Altitude Installations Higher than 2000 ft

	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

1. 7 Refrigerant Piping

Refrigerant pipe connections are located on the top of the unit. Refrigerant piping external to the unit shall 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.

1. 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. Some outdoor models may require a start assist kit. See outdoor unit for more information.

1. 9 Blower

This unit is supplied with a multi-speed motor with a direct drive blower wheel which can obtain various air flows. The unit is shipped with 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.

1. 10 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. A filter must be installed. Consult the filter manufacturer for proper sizing and maximum velocity requirements.

Table 1-6 Air Filter Sizes

Model	Filter Sizes in. [mm]
18K/24K	15*19 [381*483]
30K/36K	20*20 [508*508]

1. 11 Maintenance

The system air filter(s) should be inspected, cleaned or replaced at least monthly. Make certain 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.

2. 1 Overall Dimensions

Table 2-1 Overall Unit Dimensions

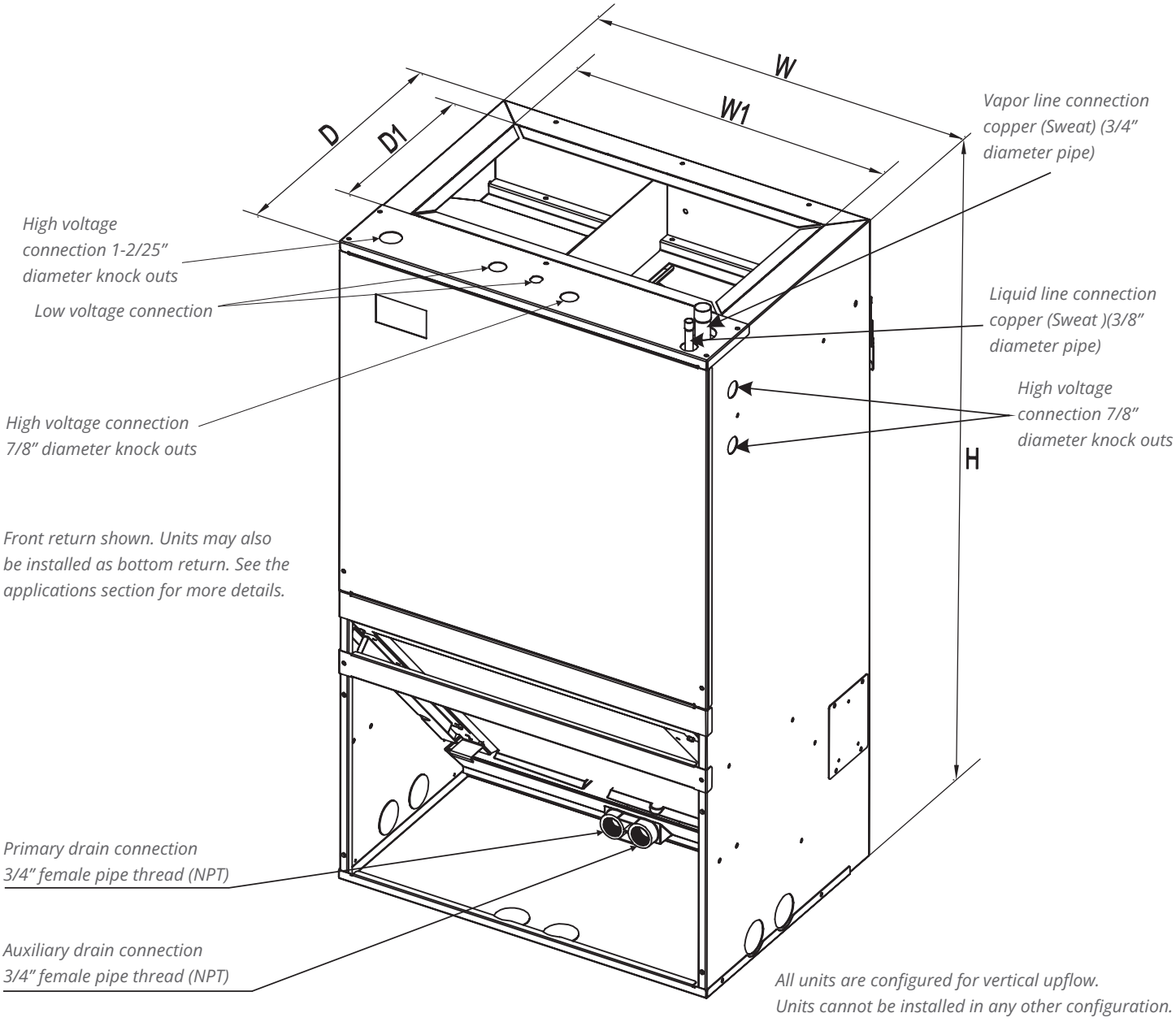


Table 2-1 Overall Unit Dimensions

Model	Dimensions- In. (mm)					Unit Weight / Shipping Weight lbs. (kg)
	Height (H)	Width (W)	Width (W1)	Depth (D)	Depth (D1)	
18K	36 (915)	20-1/2 (522)	17-2/5 (442)	15 (381)	9-3/5 (244)	88 / 97 (40 / 44)
24K	36 (915)	20-1/2 (522)	17-2/5 (442)	15 (381)	9-3/5 (244)	88 / 97 (40 / 44)
30K	39-3/5 (1006)	22 (559)	18-4/5 (477)	19 (485)	10 (251)	112/ 123 (51 / 56)
36K	39-3/5 (1006)	22 (559)	18-4/5 (477)	19 (485)	10 (251)	112/ 123 (51 / 56)

2. 2 Unit Back Dimensions

Fig. 2-2 Unit Back Dimensions

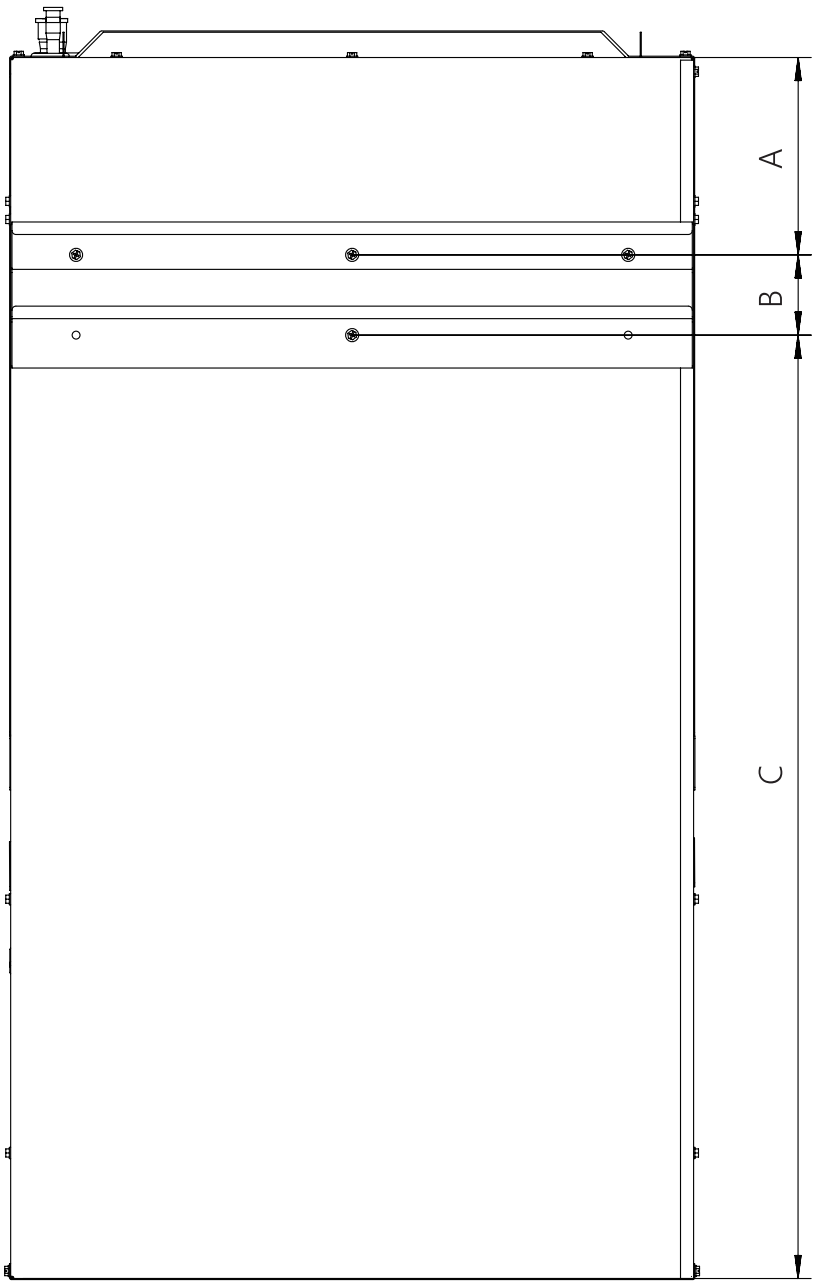
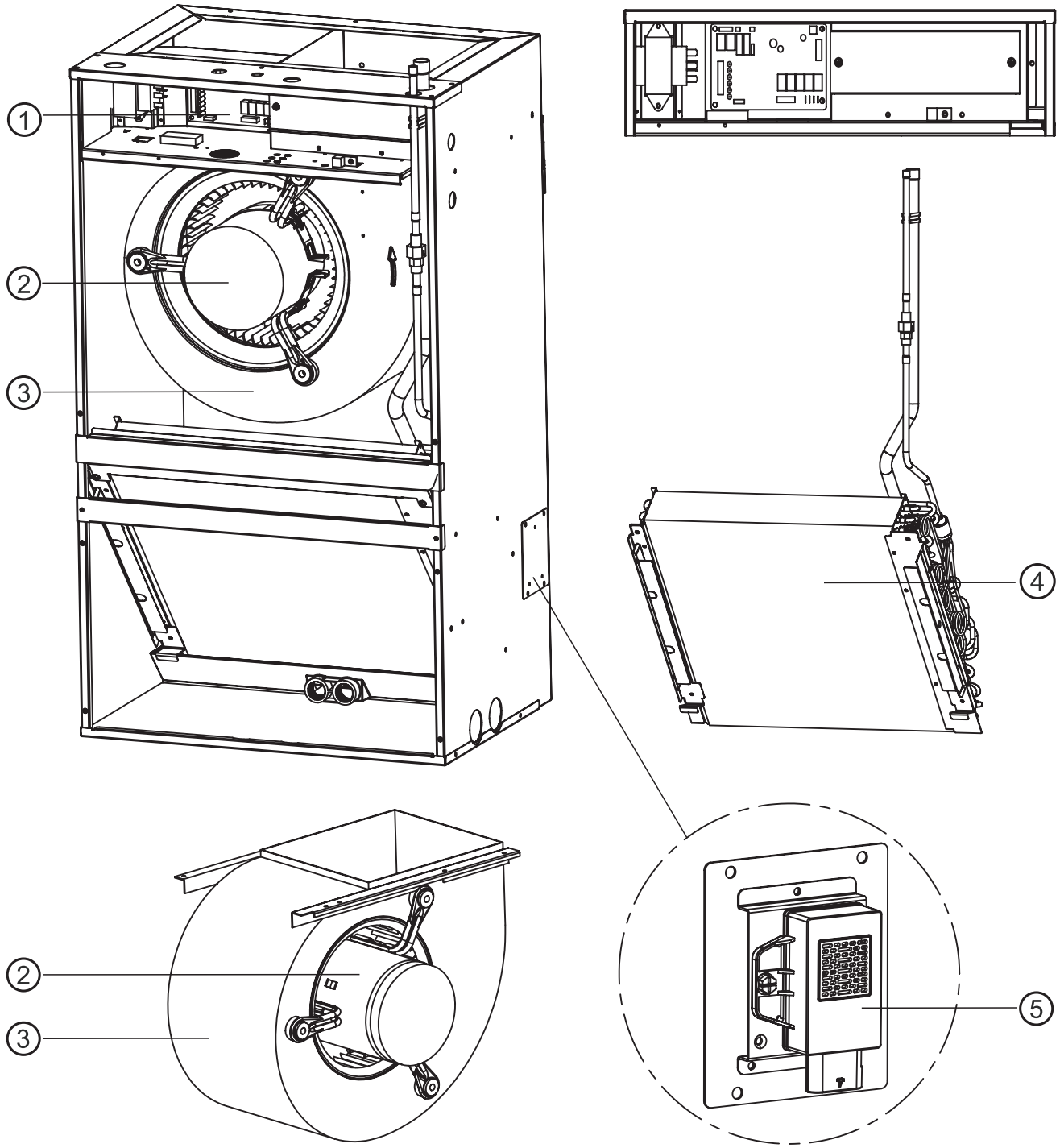


Table 2-2 Unit Back Dimensions

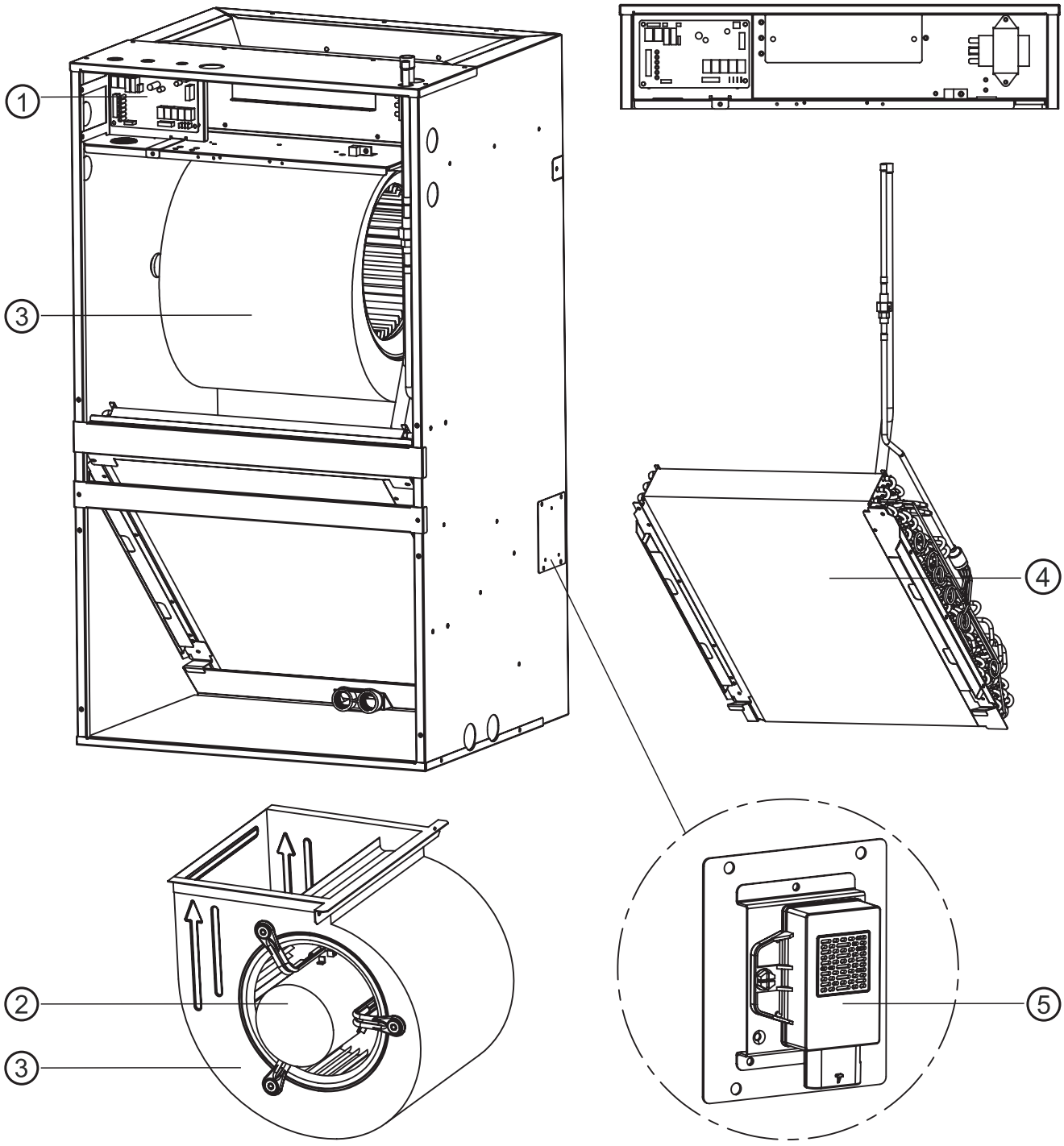
Model	Dimensions- In. (mm)		
	A	B	C
18K	5-3/8 (136)	2-2/5 (61)	28-1/4 (718)
24K	5-3/8 (136)	2-2/5 (61)	28-1/4 (718)
30K	6 (151)	2-2/5 (61)	31-1/4 (794)
36K	6 (151)	2-2/5 (61)	31-1/4 (794)

Fig. 3-1 Parts Diagram 1



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

Fig. 3-2 Parts Diagram 2



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

The small air handler should be centrally located and may be installed in a closet, alcove, utility room, or basement. Minimum clearances must be met.

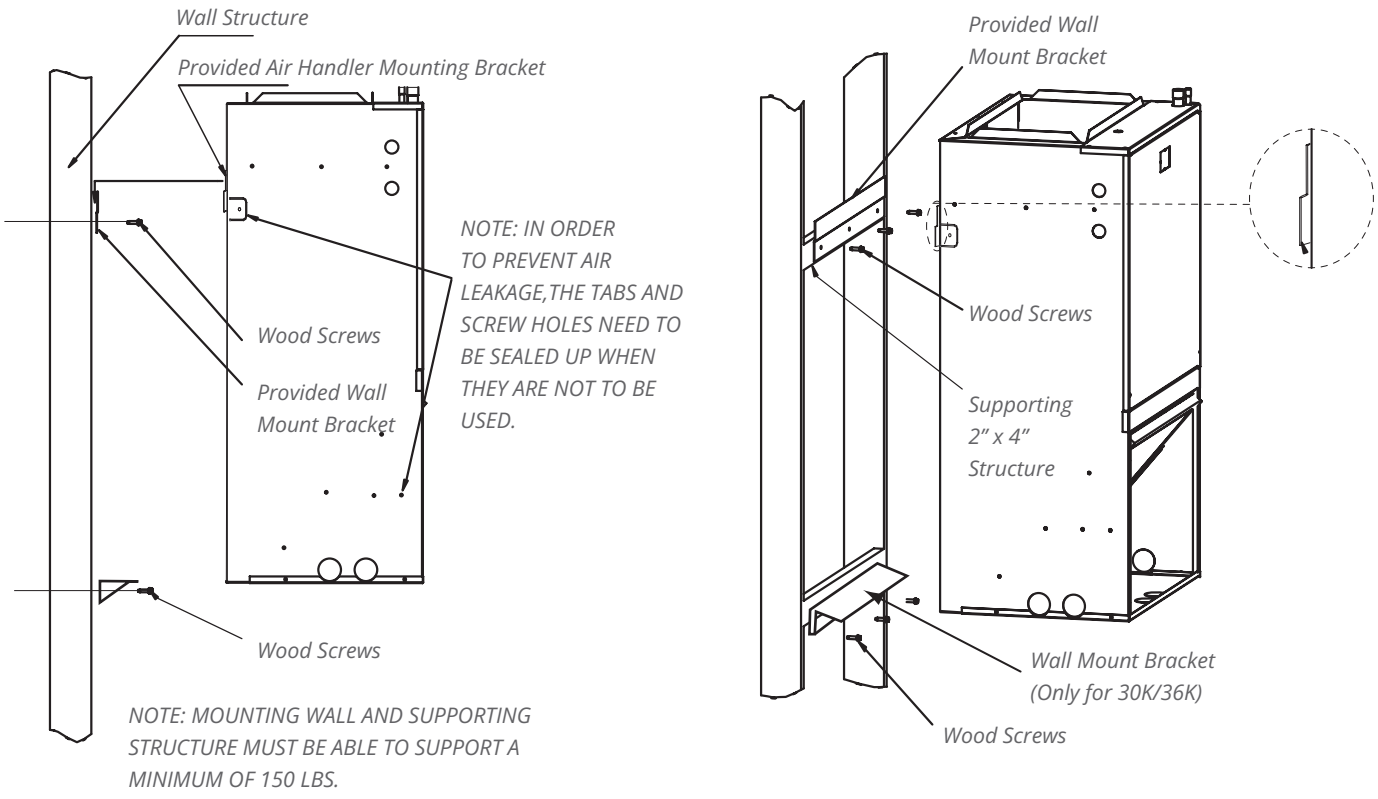
The air handler comes standard with two different options for mounting, wall mount or frame mount. Both mounting options require the unit to be level from side to side and from front to back to allow proper condensate drainage, or else condensate may leak from the unit, potentially causing damage to the surrounding support structures, dry wall, carpet, etc. Both mounting structures must accommodate a minimum of 150 lb load, or else it may damage to the support structure and potentially damage the unit.

4. 1 Wall Mount

The air handler comes standard with a wall mounting bracket and air handler mounting bracket.

1. Remove 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 bracket on the wall by using 3 wood screws (not provided). Make sure the bracket is level in order to provided 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 150 lb.
3. Lift the air handler above the wall mounting bracket and attach the unit to the installed bracket.
4. Install the additional bottom plate for extra support for this type mounting.
   Note: The additional plate is shipped in the bottom of the shipping carton.

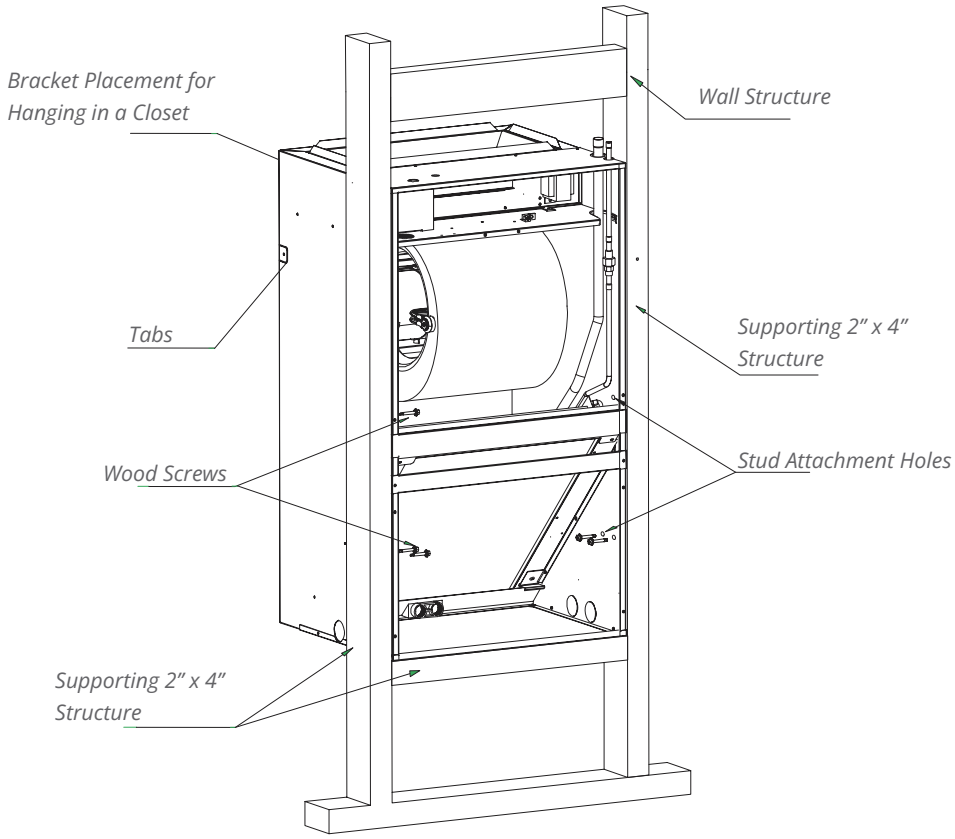
Fig. 4-1 Wall Mount



4. 2 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 4-2**). 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 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. 4 -3**).

Fig. 4-2 Frame Mount



NOTE

The (8) wood screws are not provided with the unit. #12 x 1 ½˝ 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 **Figure 4-2** for frame mount installation.

4. 3 Ductwork

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

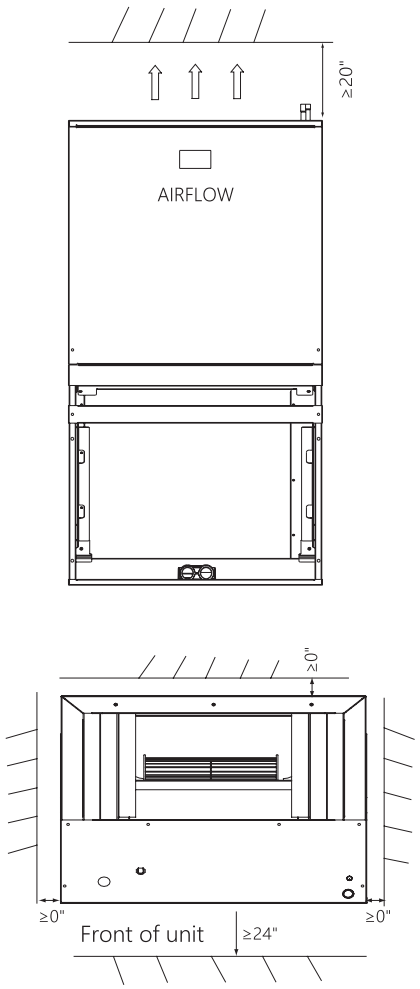
⚠ WARNING ⚠

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 National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on ductwork and insulation.

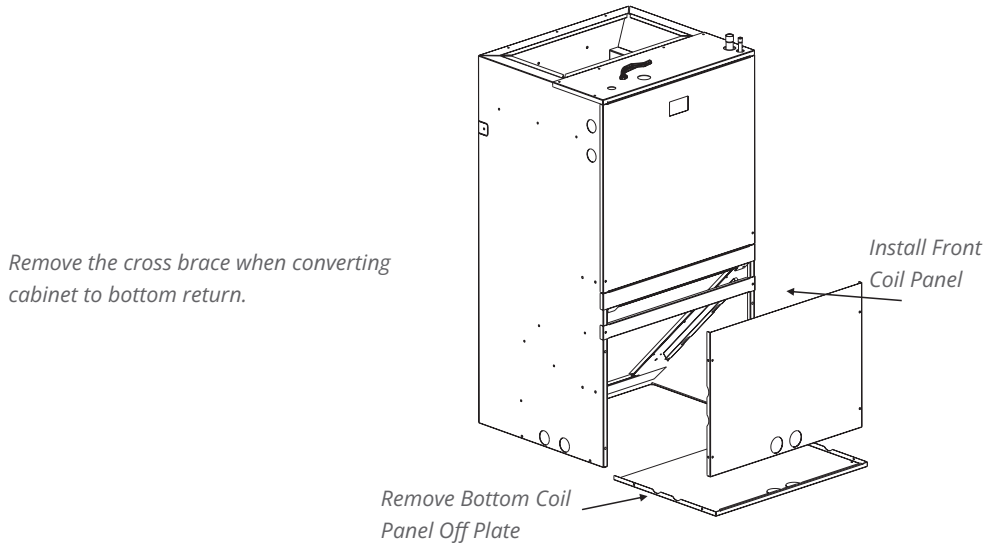
- Duct system must be designed within the range of external static pressure the unit is designed to operate against. The system airflow must be adequate. Make sure supply and return ductwork, grilles, special filters, accessories, etc. are accounted for in total resistance. **See Section 8. Airflow Performance.**
- 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 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 system.
- Supply plenum is attached to the 3/4" 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 insulation on wires located inside 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.

Fig. 4-3 Space for Frame Mount



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

Fig. 4-4 Different Air Supply



4. 4 Condensate Drain

The unit is supplied with primary and auxiliary condensate drains that have 3/4" 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. Condensate should be piped to an open drain or to the outside. All drains must pitch downward away from the unit a minimum of 1/4" per foot of line to ensure proper drainage. Insulate the primary drain line to prevent sweating where dew point temperatures may be met. (Insulation is optional depending on climate and application needs.)

IMPORTANT: If cleanout Tee is used, standpipe must be sealed/capped.

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

⚠ WARNING ⚠

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

⚠ WARNING ⚠

Installation and servicing 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.

⚠ 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 wire only with this product.

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 circuiting or electric leakage and result in danger. Wires should be fixed well. Otherwise, the connectors may loosen or the terminal may be damaged when they are pulled.

NOTE

Electrostatic discharge can affect the electronic components. Take care during the 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.

5. 1 Power Wiring

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 installation instructions.

- If required, install a branch circuit disconnect of adequate size in sight of and readily accessible to the unit.
- **IMPORTANT**: After the electric heater is installed, units may be equipped with one 60 amp. circuit breaker. This breaker protects the internal wiring in the event of a short circuit and serve as a disconnect. Circuit breakers installed in the unit do not provide over-current protection of the supply wiring and may be sized larger than the branch circuit protection.
- Supply circuit power wiring must be 75°C minimum copper conductors only. See **Section 5. 4 Electrical Data** for ampacity, wire size, and circuit protector requirements. 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 7/8" diameter concentric knockouts are provided for connection of power wiring to unit.
- Power wiring is connected to the power cable in unit electric cabinet.

In the USA, 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 (CEC).

5. 2 Control Wiring

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

- Low voltage control wiring should be 18 AWG. color-coded. For lengths longer than 100ft., use 16 AWG wire.
- Low voltage control connections are made to low voltage pigtails extending from top of air handler. Connections for control wiring are made with wire nuts. Control wiring knockouts (7/8˝) are provided on the right and left side of the unit for side connection.
- See the wiring diagrams attached to the indoor and outdoor sections to be connected.
- After installation, make sure the separation of the control wiring and the power wiring has been maintained.

5. 3 Grounding

- Grounding is achieved when installed in accordance with electrical codes by bonding the metal conduit to the unit cabinet or 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 (upflow). 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 ⚠

Natural grounding poles embedded in the ground can be used, but do not connect the ground wire to the following locations:

- Pipes of flammable or explosive gases, which may otherwise lead to an explosion or fire.
- Insulated plastic pipes. They provide no grounding effects.
- Telephone lines or lightning rods. These will increase the ground potential during lightning strikes.

⚠ CAN CAUSE INJURY OR DEATH ⚠

The unit must be permanently grounded in accordance with national and local codes. Failure to do so can result in electrical shock, personal injury, or death.

5. 4 Electrical Data

Table 5-1 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)

5. 5 MCA/MOP Data for Electric Heat Kits

Table 5-2 Electric Heat Kit MCA/MOP Data

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)
**AEHWD5X1AA	18K	5	22.8	24.9	25	25	●	×	×	×
**AEHWD7X1AA		7.5	34.8	37.9	35	40	●	×	×	×
**AEHWD10X1AA		10	45.4	49.8	50	50	●	×	×	×
**AEHWD5X1AA	24K	5	22.8	24.9	25	25	●	●	●	●
**AEHWD7X1AA		7.5	34.8	37.9	35	40	●	●	●	●
**AEHWD10X1AA		10	45.4	49.8	50	50	●	●	●	●
**AEHWD5X1AA	30K	5	22.8	24.9	25	25	●	●	●	●
**AEHWD7X1AA		7.5	34.8	37.9	35	40	×	●	×	●
**AEHWD10X1AA		10	45.4	49.8	50	50	×	●	×	●
**AEHWD5X1AA	36K	5	22.8	24.9	25	25	●	●	●	●
**AEHWD7X1AA		7.5	34.8	37.9	35	40	×	●	●	●
**AEHWD10X1AA		10	45.4	49.8	50	50	×	●	●	●

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.

Table 5-3 Electrical Heater Kits

Model	Description	Ref. Air Handler Use
**AEHWD5X1AA	5kW heater kit,double pole circuit breaker	18/24/30/36
**AEHWD7X1AA	7.5kW heater kit,double pole circuit breaker	
**AEHWD10X1AA	10kW heater kit,double pole circuit breaker	

5. 6 Wiring Diagram

1. To avoid electrocution, connect the air conditioner with the ground lug. The main power plug in the air conditioner has been joined with the ground wiring. Do not change it.
2. The power socket is used as the air conditioner.
3. Don't pull the power wiring too hard.
4. When connecting the air conditioner with the ground, observe local codes
5. If necessary, use the power fuse of the circuit breaker or the corresponding scale ampere

Fig. 5-1 Wiring Connection for Heat Pump Systems

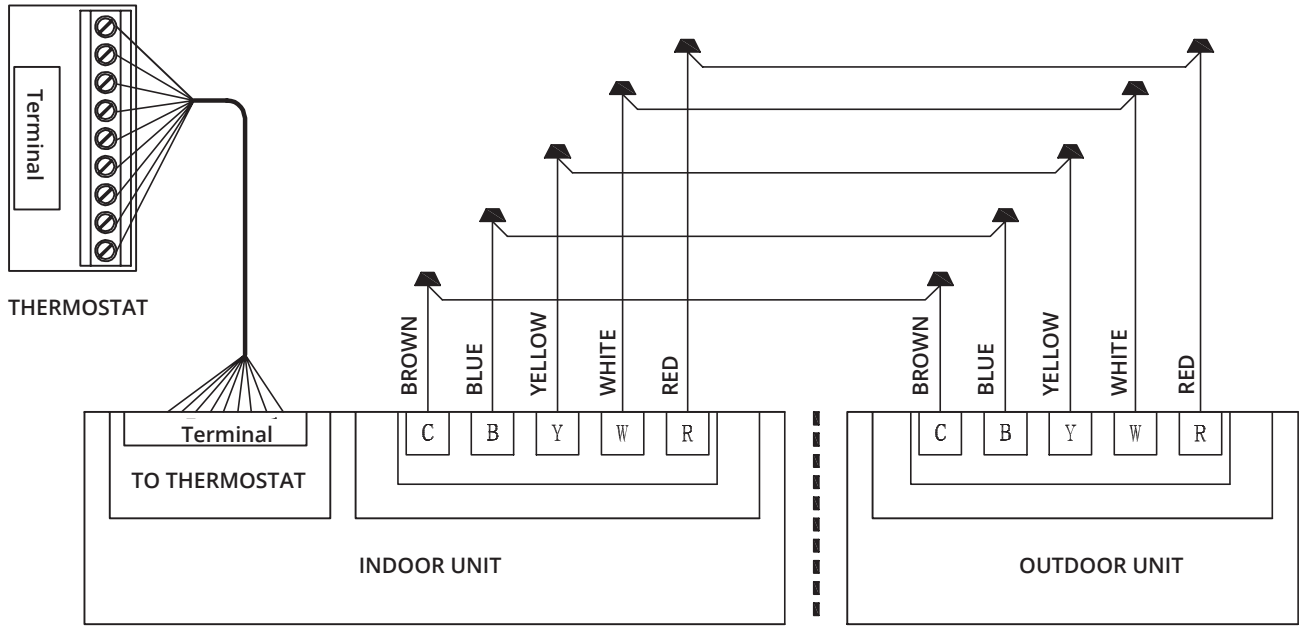


Fig. 5-2 Wiring Connection for A/C Systems

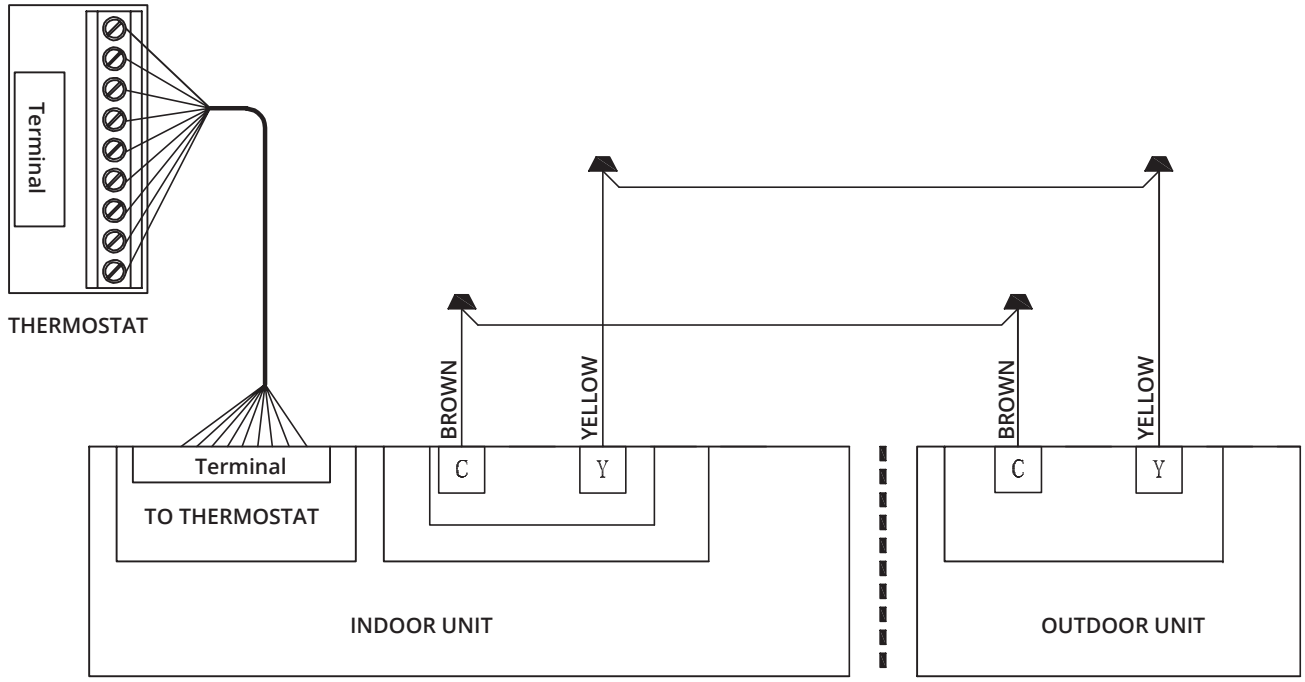
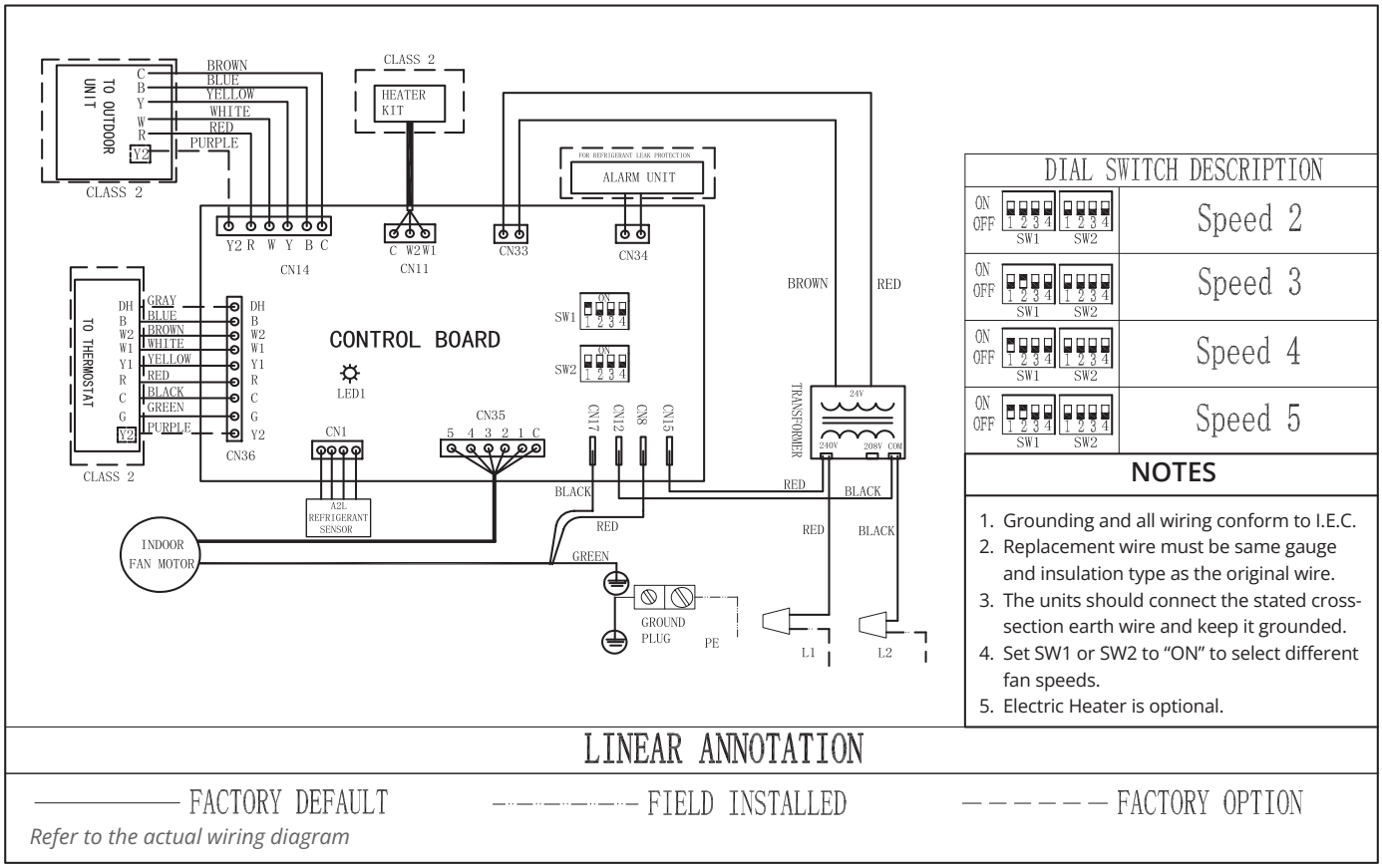


Fig. 5-3 Wiring Connection for 18K, 24K, 30K, 36K



Refer to the actual wiring diagram

Table 5-4 DIP Switches

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

5. 7 Low Voltage Wires Connections with the Thermostat

Connect the control communication cables with wire nuts.

1. The unused wires should be insulated
2. Connect the wires with a wire nut

Note: Secure the cable after it is connected with the wire nut.

Fig. 5-4 Connecting the Control Communication Cables

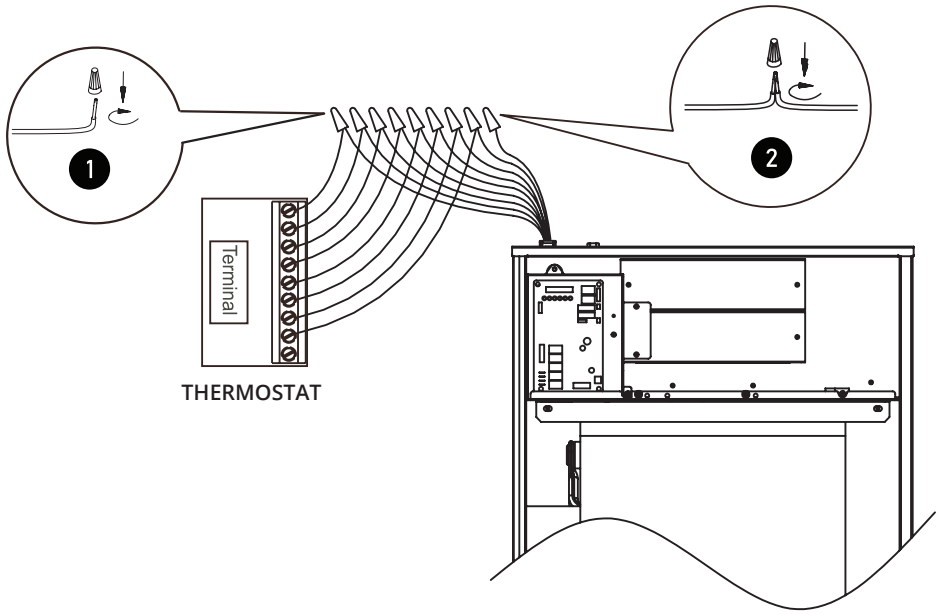
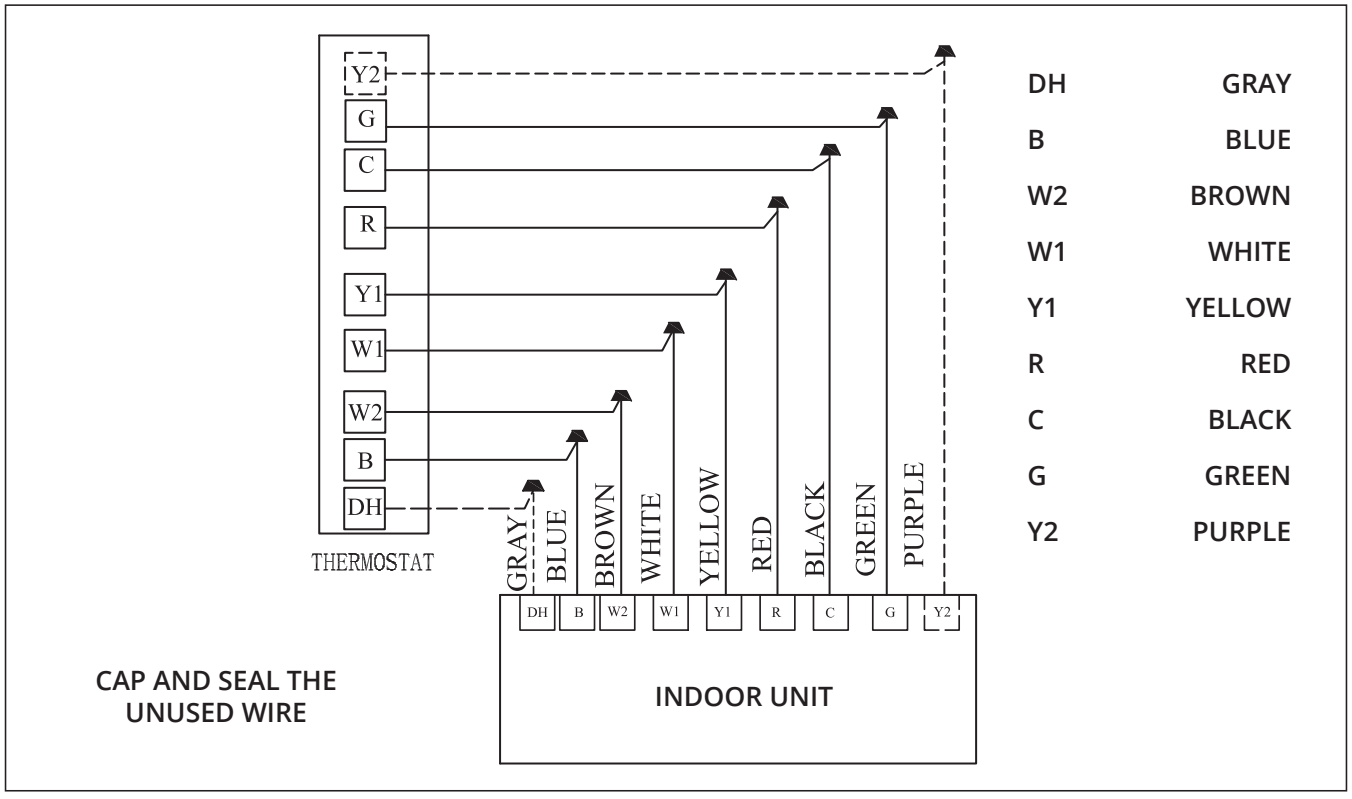


Fig. 5-5 Wiring Diagram for the Thermostat



5. 8 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 from the unit are too long, choose the windings with larger cross-section areas to guarantee the normal power supply.

Table 5-5 Electric Wiring Gauge for Cooling Only Models

Model Cooling Only Type			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	2	2	2	2
		Line Diameter (AWG)	18	18	18	18

Table 5-6 Electrical Wiring Gauge for Cooling & Heat Models

Model Cooling & Heat Type			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

Select a thermostat that is commonly used with HP or AC single stage heating/cooling with electric heat. The thermostat will energize the fan on a 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 feet above the floor.

6. 1 Thermostat Operation Sequence

6. 1. 1 Cooling (Cooling Only)

Constant Torque Version – 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.

6. 1. 2 Cooling (Heat Pump)

Constant Torque Version – 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.

6. 1. 3 Heating (Heat Pump)

Constant Torque Version – 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 energizes the reversing valve to the heating position.

If the indoor temperature continues to fall, the R to W2 circuit is completed, energizing the electric heat contactor(s).

6. 1. 4 Heating (Electric Heat Only)

Note: The thermostat must be setup to bring the blower on when the electric heat is energized.

Constant Torque Version - 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).

6. 1. 5 Defrost

Supplemental heat during defrost can be provided by connecting the W1 (white) wire from the outdoor unit to W1 at the indoor unit. This will prevent cold air from being discharged from the indoor unit during defrost.

Low voltage control wiring should be 18 AWG, color coded (105 degree C minimum). For lengths longer than 100ft., 16 AWG wire should be used. Make certain that separation of control wiring and power wiring has been maintained.

7. 1 Operational & Checkout Procedures

To obtain proper performance, all units must be operated and charge adjustments made in accordance with procedures found in the Service Facts document of the outdoor unit.

After installation has been completed, it is recommended that the entire system be checked against the following list:

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

Select performance table for appropriate unit size external static applied to unit allows operation within the minimum and maximum limits shown in table below for both cooling and electric heat operation.

- 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 a specified airflow. Each ton of 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 through 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 the 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 electrical heater kit model HF75-01 and HF100-01, you need to ensure that the air volume is not less than 1103 CFM.

Table 8-1 Airflow Performance (Standard CFM)

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	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
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

Shaded boxes represent airflow outside the required 300-450 cfm/ton.

NOTE

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

WALL-MOUNTED AIR HANDLER

			**AEAWPEF-18D21AA	**AEAWPEF-24D21AA	**AEAWPE-F30E21AA	**AEAWPE-F36E21AA
Power Supply			208-230V/1N/60 Hz	208-230V/1N/60 Hz	208-230V/1N/60 Hz	208-230V/1N/60 Hz
Min. Circuit Amp.		AMPS	2.52	.5	4.54	.5
Max. Overcurrent ProtectionA		MPS	3366			
Motor	Type		ECM	ECM	ECM	ECM
	Capacitoru	F	////			
	Rated HP		1/31	/3	1/21	/2
	Rated RPM	r/min	960	1010	960	1000
Blower	Diameter	inch	11	11	11	11
	Widthi	nch	66		10	10
Indoor Coil Type			Φ7 inner grooved copper tube and hydrophilic aluminum fin			
Indoor Air Flow			720	840	990	1040
Sound Pressure Level		dB(A)	53	54	55	57
Refrigerant Leakage Sensor			InstalledI	nstalledI	nstalledI	nstalled
Indoor Unit	Dimension (WxHxD)	inch	20-1/2 x36x15	20-1/2 x36x15	22-1/8x39-1/2x19	22-1/8x39-1/2x19
	Packing (WxHxD)	inch	23-2/9x39-3/8x18-1/9	23-2/9x39-3/8x18-1/9	24-3/5x42-8/9x22-1/4	24-3/5x42-8/9x22-1/4
	Net / Gross Weight	lbs	88/97	88/97	110/120	110/120
Refrigerant ControlO			rificeO	rificeO	rificeO	rifice
Refrigerant Connection Valve	Liquid Side	inch	3/83	/8	3/83	/8
	Gas Side	inch	3/43	/4	3/43	/4
Shipping per SDT40HQ			257	257	156	156

A-SERIES WALL MOUNT AIR HANDLER

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