



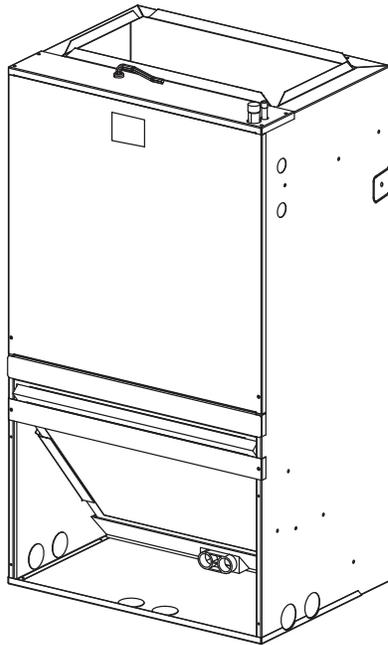
VRF

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INSTALLATION INSTRUCTIONS

VWHA Wall Hung Air Handler

VRF SYSTEMS -- Air Handler
508414-01
09/2023



THIS MANUAL MUST BE LEFT WITH THE OWNER FOR FUTURE REFERENCE

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.

Installation and service must be performed by a licensed professional HVAC installer, service agency or the gas supplier.

Failure to follow safety warnings and these instructions exactly could result in property damage, dangerous operation, serious injury, or death.

Any additions, changes, or conversions required in order for the appliance to satisfactorily meet the application needs must be made by a licensed professional HVAC installer (or equivalent) using factory-specified parts.

Do not use this system if any part has been under water. A flood-damaged appliance is extremely dangerous. Immediately call a licensed professional HVAC service technician (or equivalent) to inspect the system and to replace all controls and electrical parts that have been wet, or to replace the system, if deemed necessary.

CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

General

The VWHA wall hung air handler is designed for indoor installation only. The unit is designed for installation in upflow air discharge applications. The VWHA air handler is matched with a REAL heat pump unit.

Refer to the Product Specification bulletin (EHB) for the proper use of these indoor units with specific heat pumps, branch pipes, line sets and controls.

These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

The air handler is shipped from the factory completely assembled. This unit is provided with flanges for connecting the supply plenum.

Shipping and Packing List

Check the components for shipping damage. If you find any damage, immediately contact the last carrier.

Package 1 of 1 contains the following:

- 1 - Assembled indoor unit
- 2 - Rubber grommets
- 3 - Taunt rope
- 4 - Screws
- 1 - Installation manual

IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance. These units must be installed as a part of a matched system as specified in the Product Specifications (EHB) bulletin.

Safety Requirements

WARNING



ELECTRICAL SHOCK, FIRE, OR EXPLOSION HAZZARD.

Do not touch the unit or the controller if your hands are wet.

DO NOT spray water on the indoor unit for any reason.

Do not replace a fuse with a fuse of a different rating.

Do not use a jumper wire to replace a fuse. Do not insert your hands, tools or any other item into the air intake or air outlet at either the indoor or outdoor unit.

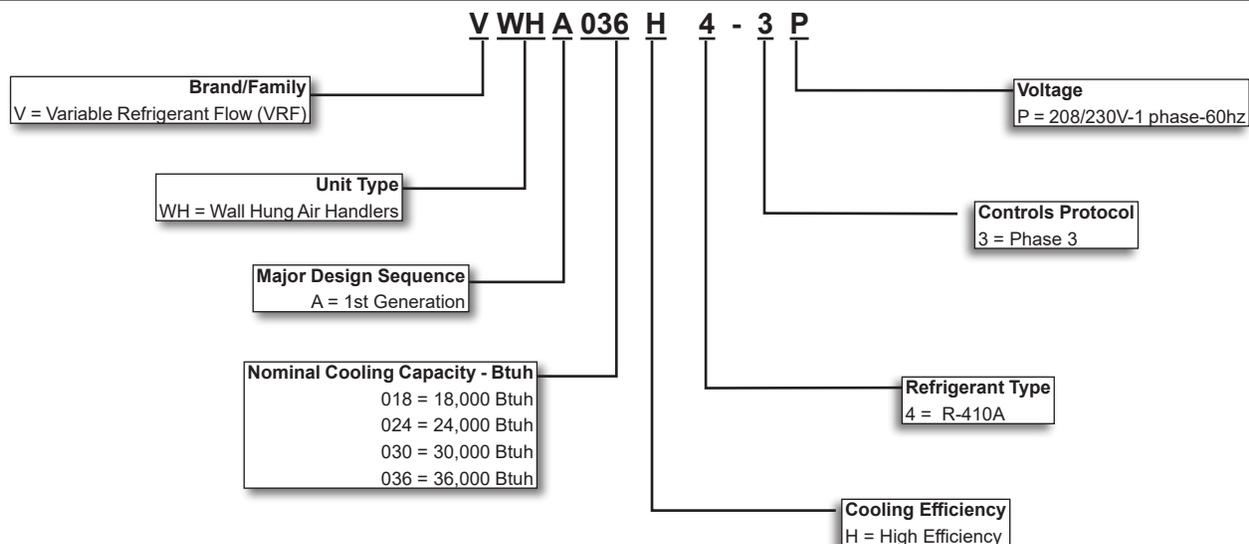
Do not allow children to operate the system.



CAUTION

To ensure proper system performance and reliability, Lennox does not recommend operation of VRF systems during any phase of construction. Construction debris, low temperatures, harmful vapors, and operation of the unit with misplaced filters can damage the units. Failure to follow these guidelines will result in the warranty being voided.

Model Number Identification



Note - Only Lennox VRF indoor units will work with Lennox VRF outdoor units and associated mechanical equipment. Lennox Mini Split indoor units are similar in appearance but must not be connected to a Lennox VRF refrigerant circuit. Please refer to model numbers to confirm compatibility. Model numbers for Lennox VRF units start with a "V" and model numbers for Lennox Mini-Splits start with a "M".

System Piping

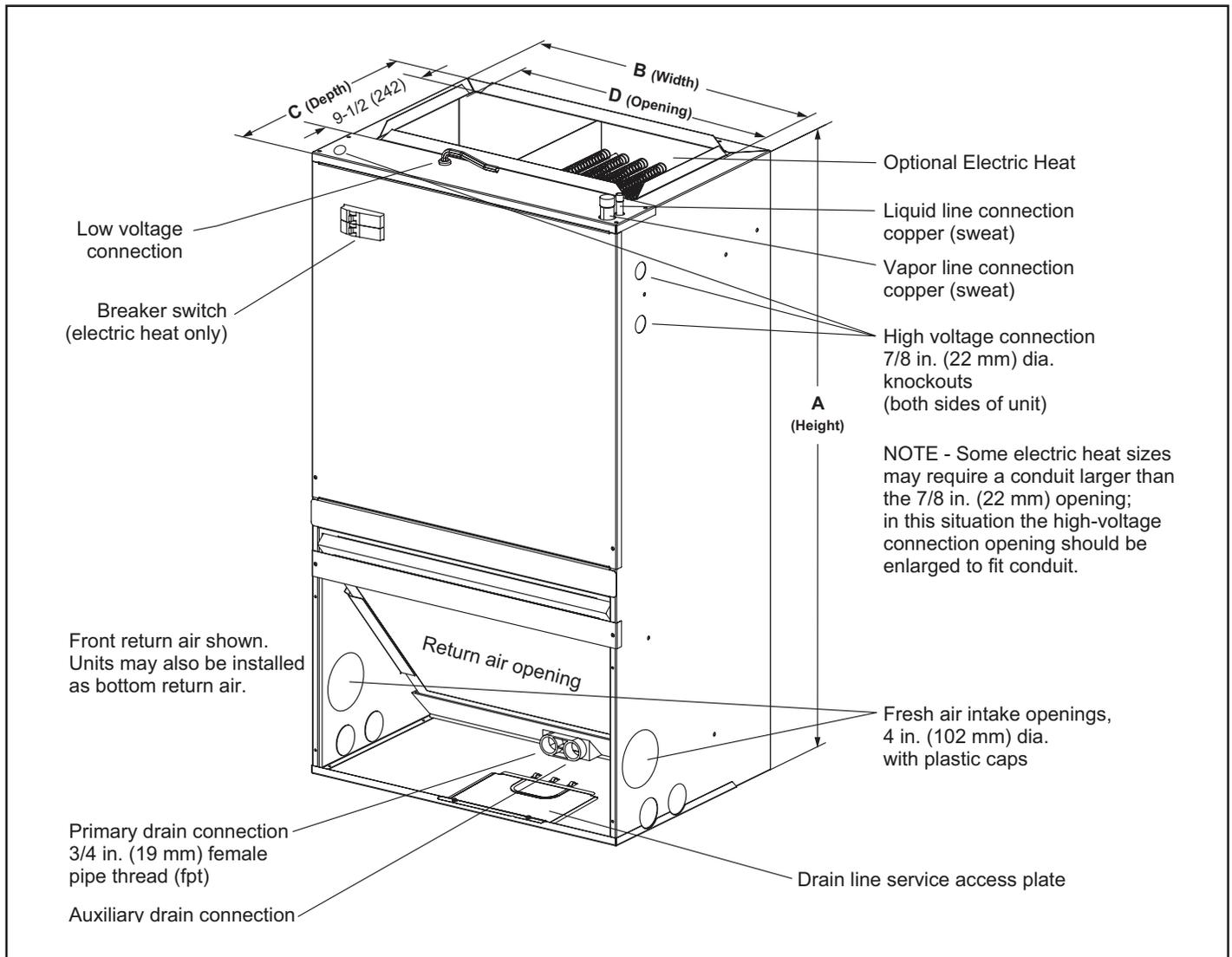
CAUTION

VRF system piping is customized for each installation. The LVSS (Lennox VRF Selection Software) piping report is an engineered design that must be followed. The piping diagram or diagrams included within the LVSS report have been prepared based on the information provided to the Lennox VRF applications department.

When the indicated lengths change from the figures stated within the report, it is imperative that prior to the commencement of the refrigerant pipe work installation, Lennox VRF applications department are informed of these proposed changes. Upon receipt of this new information the Lennox VRF applications department will confirm any changes that may be applicable to this installation. If changes are required, a new piping diagram will be produced and will supersede all other previously provided documents.

Failure to provide this information regarding changes to the original design may lead to insufficient capacity, equipment failure, warranty being made void and the refusal to commission the system.

Dimensions - inches (mm) Upflow Position Shown for Small Box 012-030



Dimension	018-024		030-036	
	in.	mm	in.	mm
A (height)	36-1/2	927	39-1/2	1003
B (width)	20-1/2	521	22	559
C (depth)	15	381	19	483
D (opening width)	17-3/8	441	18-7/8	478

Installation Clearances with Electric Heat

Cabinet	0 inch (0 mm)	0 inch (0 mm)
To Plenum	0 inch (0 mm)	0 inch (0 mm)
To Outlet Duct within 3 feet (914 mm)	0 inch (0 mm)	0 inch (0 mm)
Service / Maintenance	See note below.	

Note - Minimum front service access - 24 inches (610 mm) minimum.

Indoor Unit Placement

WARNING

Use the provided and specified components when installing equipment. Failure to do so may result in unit falling, water leaking or electrical shocks, causing personal injury or equipment or property damage.

Check suitability of structure to which the unit support mechanism will be fixed to. If structure is not capable of carrying the weight of the unit, unit may fall causing personal injury or equipment damage.

Consider the possibility of earthquakes in your area when installing the equipment. If the unit is not correctly secured, it may fall, causing personal injury or equipment damage.

Safely dispose of packing materials, which include nails, wood and other sharp objects, as well as plastic wrapping. Children playing with plastic wrap or bags risk the danger of suffocation.

WARNING

Excessive Weight Hazard - Use two or more people when moving and installing the unit. Failure to do so can result in back or other type of injury.

WARNING



Danger of explosion.
Keep flammable materials and vapors, such as gasoline, away from air handler.
Place air handler so that heating elements are at least 18 inches (46 cm) above the floor for a garage installation.
Failure to follow these instructions can result in death, explosion, or fire.

CAUTION

Do not place items which may be damaged by water under or around the indoor unit.

IMPORTANT

This unit is approved for installation clearance to combustible material as stated on the unit rating plate. Accessibility and service clearances must take precedence over combustible material clearances.

Excessive condensation may occur if the unit is installed in a warm, humid place. When the unit is installed in an unconditioned space, apply sealant around electrical wires, refrigerant piping and condensate lines at the point where they enter the cabinet.

Apply sealant on the inside of the cabinet at the point where the electrical wires exit through the conduit opening.

Sealing the cabinet in this way prevents warm, moist, unconditioned air from entering the cabinet. Warm, moist air in the cabinet forms condensate on the cooler control box and electrical controls.

The air handler must be installed so that free access is allowed to the coil/filter compartment and blower/control compartment.

AVOID

Do not install the unit in the following locations:

- Areas exposed to petrochemicals or petrochemical products
- Areas exposed to salt or other corrosive materials or caustic gasses
- Areas exposed to extreme voltage variations (such as factories)
- Tightly enclosed areas that may impede service of the unit
- Areas exposed to fossil fuels (such as oil or gas in kitchens)
- Areas exposed to strong electromagnetic forces
- Areas exposed to acids or alkaline detergents (laundry rooms)

DO:

- Locate the unit so that it is not exposed to direct sunlight
- Ensure the structural wall can support the weight of the unit.
- Select a location where condensate line will have the shortest run to a suitable drain per local codes.
- Allow sufficient space around unit for proper operation and maintenance
- Install unit a minimum of 3 feet away from any antenna, power cord (line) radio, telephone, security system, or intercom. Electrical interference and radio frequencies from any of these sources may affect operation
- Be sure to instruct customers how to properly operate the unit (especially maintenance of air filter, and operation procedure) by having them carry out operations themselves while looking at the manual provided with the controller.

Installation

It is important to locate the unit where it can be accessed for service in the future. Refer to unit dimensions on Page 3 for exact locations of suspension brackets, return air and supply air openings.

- Make sure that the structural wall is able to support the weight of the indoor unit. It may be necessary to add extra support.
- A front access panel is provided, which permits access to blower assembly and electrical controls for removal and servicing.

Position the Unit

DANGER

Units must not be installed where they may be exposed to potentially explosive or flammable atmosphere. If this instruction is not followed exactly, a fire or explosion may result, causing property damage, injury, or death.

CAUTION

Do not place items which may be damaged by water under or around the indoor unit.

Install the unit in a location that meets the following requirements:

- Allow adequate space for installation, service clearance, piping and electrical connections, and necessary ductwork. Allow clearance according to local and national codes.
- Ensure there is adequate space on top of unit for refrigerant line connections and on bottom of unit for condensate trap. If the unit is to be installed over a finished ceiling and/or living area, building codes may require a field-supplied secondary condensate drain pan to be installed under the entire unit. Consult local codes inspector for additional information.
- Select the unit position with the following points in mind:
- The unit should be installed on a structure that is suitable to support the total weight of the unit, refrigerant piping and condensate.
- Proper access should be provided for maintenance for refrigerant piping, thermostatic expansion valve (TXV), electrical box, and condensate pump. See the Clearances section for minimum clearances all around the unit.
- The unit should not be positioned close to a wall or similar obstruction, or in a position where the discharge air could blow directly on the controller.
- The unit should not be positioned directly above any obstruction.
- The condensate drain should have sufficient downward slope (1 in. per 100 in.) in any horizontal run between unit and drain.

Mount the Unit

- The unit can be wall mounted or frame mounted.
- The unit must be level from side to side and from front to back.

Wall Mount

The unit comes standard with a wall mounting bracket and frame mounting bracket. See Figure 1.

1. Remove the wall mounting bracket from the back of the unit by removing one screw which attaches the bracket to the unit. Discard the screw.
2. Install bracket on the wall by using three wood screws (not provided) per wall-mount bracket.
3. Make sure the bracket is level in order to provide proper drainage from the unit.
4. Do not attach the wall mounting bracket into unsupported drywall.
5. Lift the unit above the wall mounting bracket and attach the unit to the installed bracket.

Frame Mount

- The fan coil comes with eight clearance holes, four on each side.
- These holes are used to mount the fan coil inside a frame structure (see Figure 2).
- When mounting in this fashion, make sure that the wood screws are mounted from within the fan coil and not outside of the unit. Installing the screws from outside of the unit may damage the coil.

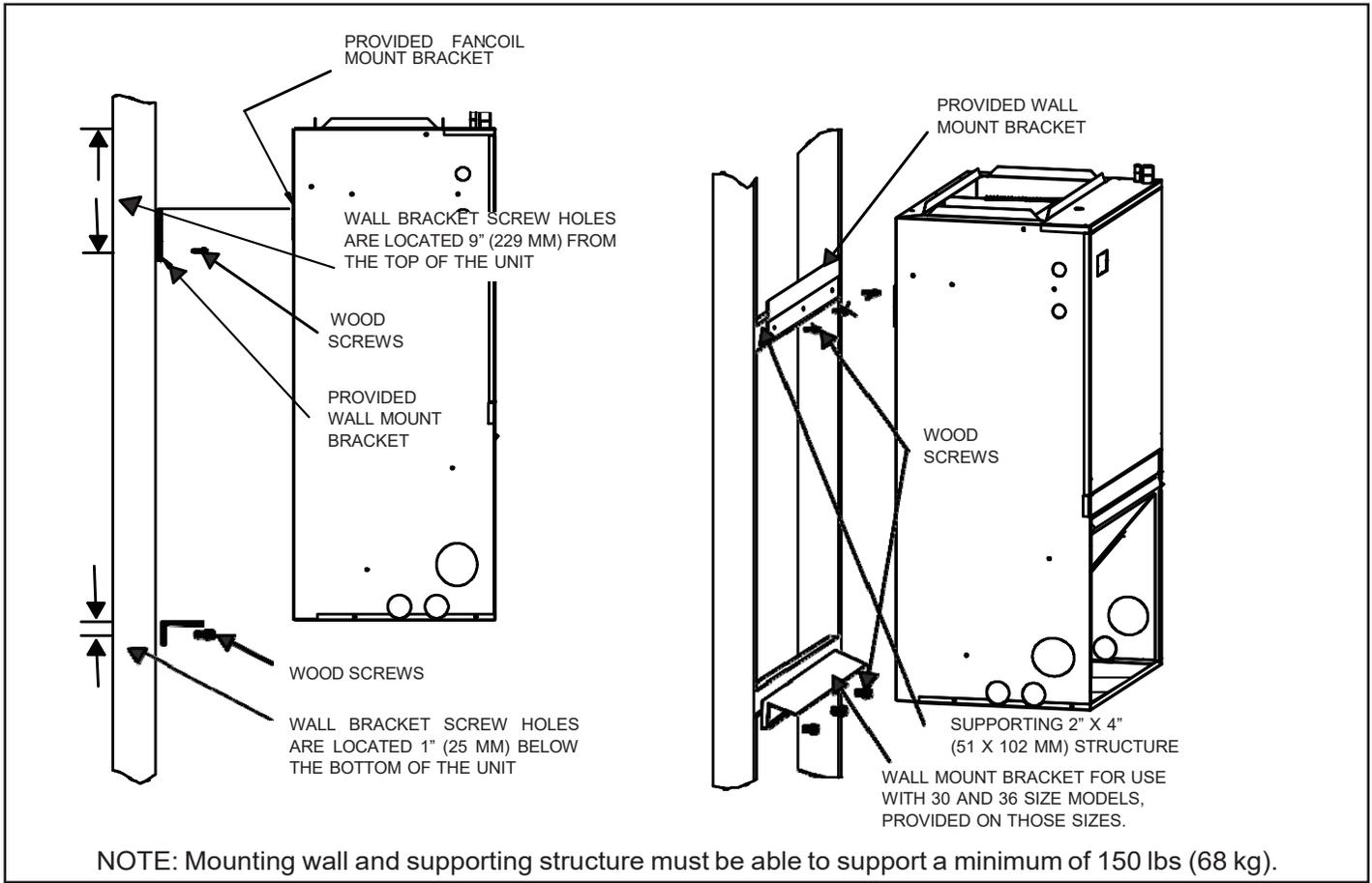


Figure 1. Wall Mount Installation

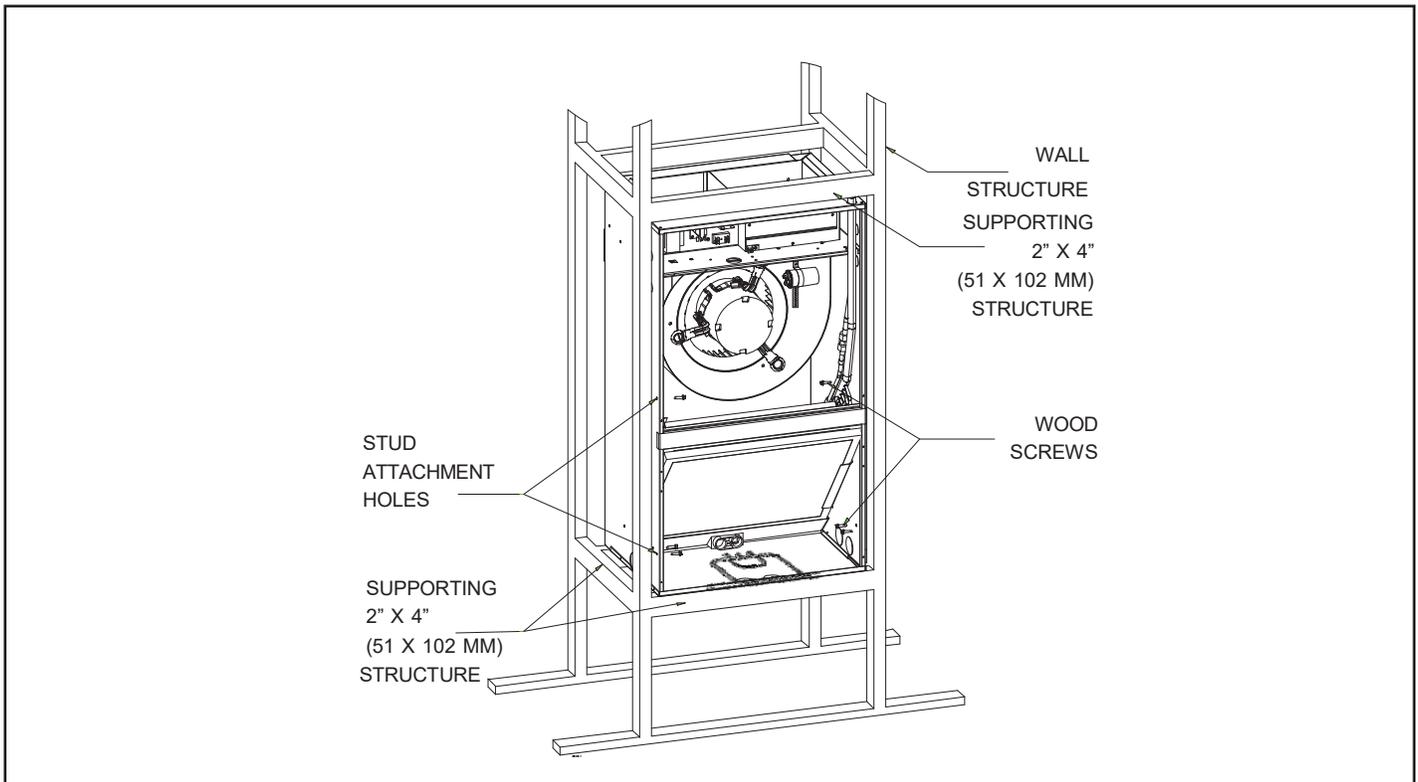


Figure 2. Frame Mount Installation

Refrigerant Piping Connections

WARNING

Refrigerant leaks are unlikely; however, if a refrigerant leak occurs, open a door or windows to dilute the refrigerant in the room. Turn off the unit and all other appliances that may cause a spark. Call a licensed professional HVAC technician (or equivalent) to repair the leak.

Use only R410A refrigerant to charge this system. Use of other refrigerant or gas will damage the equipment.

Do not allow air or other contaminants to enter system during installation of refrigerant piping. Contaminants will result in lower system capacity and abnormally high operating pressures and may result in system failure or explosion.

Insulate all refrigerant piping.

Refrigerant pipes may be very hot during unit operation. Do not allow contact between wiring and bare copper pipes.

After refrigerant piping connections have been completed, check the system for leaks per commissioning instructions.

IMPORTANT

The compressor in the unit this air handler is matched with contains PVE oil (Polyvinyl ether). PVE oil is formulated for hydrofluorocarbon (HFC) refrigerants, such as R410A, which this system contains. While it may have some miscibility properties with mineral-based oil and POE oil (Polyolester), it is not recommended to mix PVE oil with any other type of refrigerant oil.

Field provided piping consists of two HVAC/R rated copper lines connected to the indoor unit.

Final equipment connections must be brazed connections. Compression or other types of fittings are not permitted for final connections.

Table 1. Refrigerant Piping Connections

Size (Btuh)	Liquid Line	Vapor Line
VWHA018-036	3/8"	3/4"

Brazing Refrigerant Lines

Refrigerant lines must be connected by a qualified technician in accordance with established procedures.

WARNING



Danger of fire. Bleeding the refrigerant charge from only the high side may result in pressurization of the low side shell and suction tubing. Application of a brazing torch to a pressurized system may result in ignition of the refrigerant and oil mixture. Check the high and low pressures before applying heat.

CAUTION

Brazing alloys and flux contain materials which are hazardous to your health.

Avoid breathing vapors or fumes from brazing operations. Perform operations only in well-ventilated areas.

Wear gloves and protective goggles or face shield to protect against burns.

Wash hands with soap and water after handling brazing alloys and flux.

CAUTION

Purge low pressure nitrogen [1 to 2 psig (6.0 to 12.8 kPA)] through the refrigerant piping during brazing. This will help to prevent oxidation and the introduction of moisture into a system.

To prevent the build-up of high levels of nitrogen when purging be sure it is done in a well ventilated area.

IMPORTANT

Refrigerant lines must be clean, dry, refrigerant-grade copper lines. Air handler coils should be installed only with specified line sizes for approved system combinations.

Handle refrigerant lines gently during the installation process. Sharp bends or kinks in the lines will cause restrictions.

IMPORTANT

Only use brazing rods/sticks which are suitable/recommended for air conditioning pipework installations - Do Not Use Soft Solder.

1. The seal on the unit refrigerant piping connections should remain in place until the last possible moment. This will prevent dust or moisture from getting into the refrigerant piping before it is connected.
2. To avoid damaging the rubber grommets in the cabinet while brazing, slide the rubber grommets over the refrigerant lines until they are away from the heat source.
3. Remove rubber plug from both liquid and gas lines or cut pipework tails to suit field installation conditions
4. Connect the liquid and gas lines to the evaporator coil.
5. Place a wet rag against piping plate and around the line connections. **Take care to protect the cabinet and internal components.**
6. Ensure nitrogen is flowing at all times during the brazing process.
7. Braze connections. Allow pipe to cool before removing wet rag.
8. Reinstall the rubber grommets into the refrigerant piping panel.
9. Insulate both pipes individually.

Sealing the Unit

Seal the unit so that warm air is not allowed into the cabinet. Warm air introduces moisture, which results in water blow-off problems.

This is especially important when the unit is installed in an unconditioned area.

If installed in an unconditioned space, sealant should be applied around the electrical wires, refrigerant tubing, and condensate lines where they enter the cabinet.

WARNING

There must be an air-tight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this air handler or any gas-fueled appliance (i.e. water heater) or carbon monoxide-producing device (i.e. wood fireplace) is installed.

Condensate Piping Connections

The unit is provided with 3/4" NPT condensate drain connections.

! CAUTION

Make sure that drain piping is properly routed and insulated in order to prevent both leaks and condensation. Follow these instructions exactly to ensure proper drainage and unit operation.

! IMPORTANT

Drain should have a slope of at least 1/4 inch per foot and should be approved corrosion-resistant pipe. You must confirm operation of every drain and pump in the system as part of the commissioning procedure.

! IMPORTANT

A field-fabricated secondary drain pan, with a drain pipe to the outside of the building, is required in all installations over a finished living space or any area that may be damaged by overflow from the main drain pan.

1. Install properly sized, field-provided connection fittings and connect primary drain line to the main drain pan connection (3/4" I.D.). **NOTE** - When installing drain line connection fittings to the drain pan, hand tighten the fitting and use a thread sealant. Over-tightening the fittings can split connections on the drain pan.
2. If the secondary drain line is to be used, remove the plug or the knockout and route the drain line so that water draining from the outlet will be easily noticed by the user. Refer to local codes for drain trap requirements on the secondary drain line.
3. Check again to ensure drain ports and drain pan are free of all debris.
4. Plug and check any unused drain pan openings for tightness to prevent water leaks or seepage from the drain pan.
5. Install a 3" trap in the main (primary) drain lines as close to the unit as practical (see Figure 3). Make sure the top of the trap is below the connection to the drain pan to allow complete drainage of the pan. **NOTE** - Horizontal runs must have an anti-siphon air vent (standpipe) installed ahead of the horizontal run. An extremely long horizontal run may require an oversized drain line to eliminate air traps. **NOTE** - Do not operate air handler without a trap in the main (primary) drain. The condensate drain is on the negative pressure side of the blower; therefore, air being pulled through the condensate line will not allow positive drainage without a proper trap.

6. Route the drain line to the outside or to an appropriate drain. Drain lines must be installed so they do not block service access to the front of the air handler. A 24" clearance is required for filter, coil, or blower removal and service access. **NOTE** - Check local codes before connecting the drain line to an existing drainage system. Insulate the drain lines where sweating could cause water damage.
7. Optional extrusions are provided on the bottom panel to secure drain lines. See Figure 3.
8. After the system installation is complete, the condensate drain line must be checked for leaks and proper drainage. If a field-provided condensate pump has been installed, it must be checked to ensure proper operation. This check is part of the commissioning sequence.

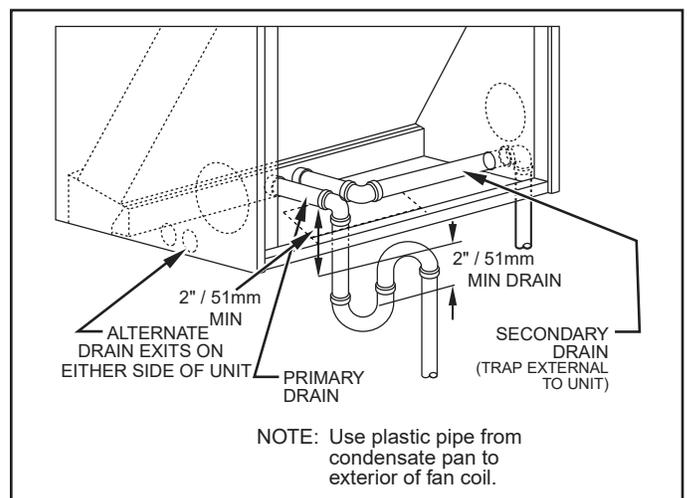


Figure 3. Condensate Drain

! IMPORTANT

You must confirm operation of every drain and pump in the system as part of the commissioning procedure.

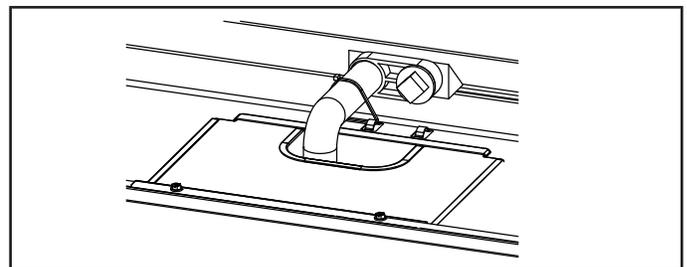


Figure 4. Secure Drain Line Extrusions

Duct System

The air handler is provided with flanges for the connection of the supply plenum.

Supply and return duct system must be adequately sized to meet the system's air requirements and static pressure capabilities. Supply plenum should be the same size as the flanged opening provided around the blower outlet and should extend at least 3 ft. from the air handler before turning or branching off plenum into duct runs. The plenum forms an extension of the blower housing and minimizes air expansion losses from the blower.

Field installed duct 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 duct to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such of devices may result in fire, carbon monoxide poisoning, explosion, personal injury or property damage.

! 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.

The front flange on the return duct if connected to the blower casing 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.

Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return duct, grills, special filters, accessories, etc. are accounted for in total resistance.

Supply plenum is attached to the 3/4" duct flanges supplied with the unit. Attach flanges around the blower outlet.

Secure the supply and return duct to the unit flanges, using proper fasteners for the type of duct used.

Installation Guidelines

- Install a field-provided isolation grommet to prevent transmission of vibration from unit to structural ceiling.
- Provide separate support for the weight of the duct system. Duct system must not be supported by the indoor unit.
- Use flexible joints (canvas) at the point where the duct connects to the unit on both ends. Material must meet all local and national code requirements.
- When unit is being installed in a location where even the slightest noise would be a problem (meeting room or other very quiet space), design duct system to avoid transmission of vibration to the structure to the extent possible.

Installing Duct System

- Connect supply air duct to the flange on top of the air handler. If an isolation connector is used, it must be nonflammable.
- When sizing the return air filter grille, a minimum surface area of 200 sq. in. per ton is recommended.

Conversion to Bottom Return

The unit is shipped configured for front return and can be converted for bottom return.

To convert the unit to bottom return,

1. Remove the bottom panel.
2. Remove the lower front panel (short panel above front opening and below the filter slot).
3. Attach the panel removed from the bottom of the unit to the front return opening.

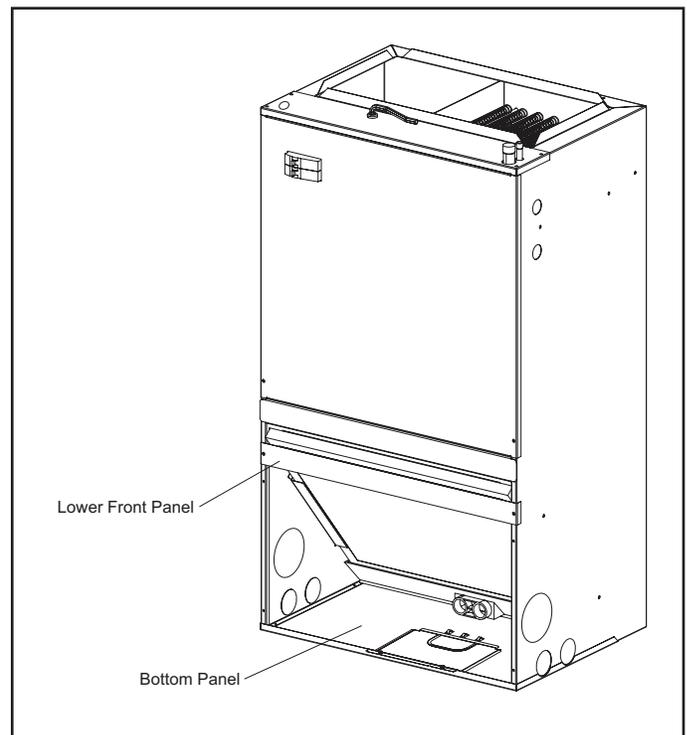


Figure 5. Conversion to Bottom Return

Wiring Connections

⚠ WARNING

Isolate the power supply before accessing unit electrical terminals.

Install unit so that unit disconnect is accessible.

Follow all local and national codes, as well as this installation instruction, during installation. Do NOT overload electrical circuit, as this may lead to failure and possible fire.

Use specified wiring and cable to make electrical connections. Clamp cables securely and make sure that connections are tight to avoid strain on wiring. Insecure wiring connections may result in equipment failure and risk of fire.

Wiring must be installed so that all cover plates can be securely closed.

In the U.S.A., 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).

Refer to unit nameplate for minimum circuit ampacity and maximum overcurrent protection size.

⚠ CAUTION

This unit must be properly grounded and protected by a circuit breaker. The ground wire for the unit must not be connected to a gas or water pipe, a lightning conductor or a telephone ground wire.

Do not connect power wires to the outdoor unit until all other wiring and piping connections have been completed.

Install all wiring at least 3 feet away from televisions, radios or other electronic devices in order to avoid the possibility of interference with the unit operation.

Do not install the unit near a lighting appliance that includes a ballast. The ballast may affect remote control operation.

1. Remove the screws that secure the control box cover. Remove the cover and place it to the side where it will not be damaged.
2. Locate the terminal strip in the control box. Connect the power wiring (sized per NEC/CEC and local codes). Refer to unit nameplate for rated voltage.
3. Configure 208VAC and 240VAC transformer.
4. Connect 24V cables per Figure 9 or Figure 10.

⚠ IMPORTANT

DO NOT adjust DIP switch settings. Settings may only be adjusted by a trained technician as part of the commissioning procedures.

Tightening torque for the terminal screws

- Use the correct screwdriver for fighting the terminal screws. If the screwdriver blade is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are over tightened, screws might be damaged.
- Refer to the Table 3 for the tightening torque of the terminal screws.
- After wiring, confirm all connections are correct; Then turn on power supply to the unit.

Table 2. Terminal Screw Tightening Torque

	Tightening torque (lb-ft)
Terminal base of remote controller/Signal transmission wire (X2M)	0.58-0.72
Terminal base of power supply (X1M)	0.87-1.06
Grounding terminal (M4)	1.06-1.43

Transformer Connections

All units are shipped from the factory wired for 240VAC transformer operation. For 208VAC operation, move primary lead from the 240VAC terminal to the 208VAC terminal.

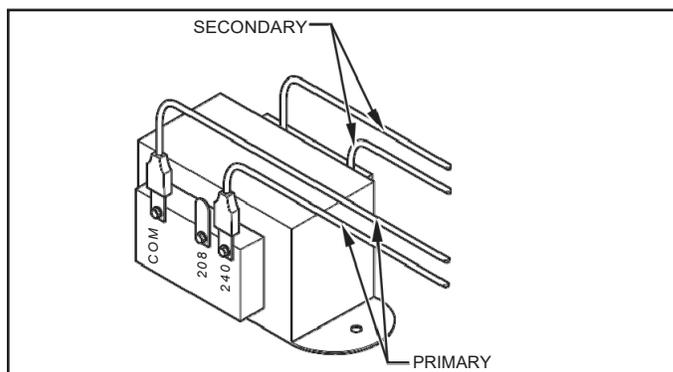


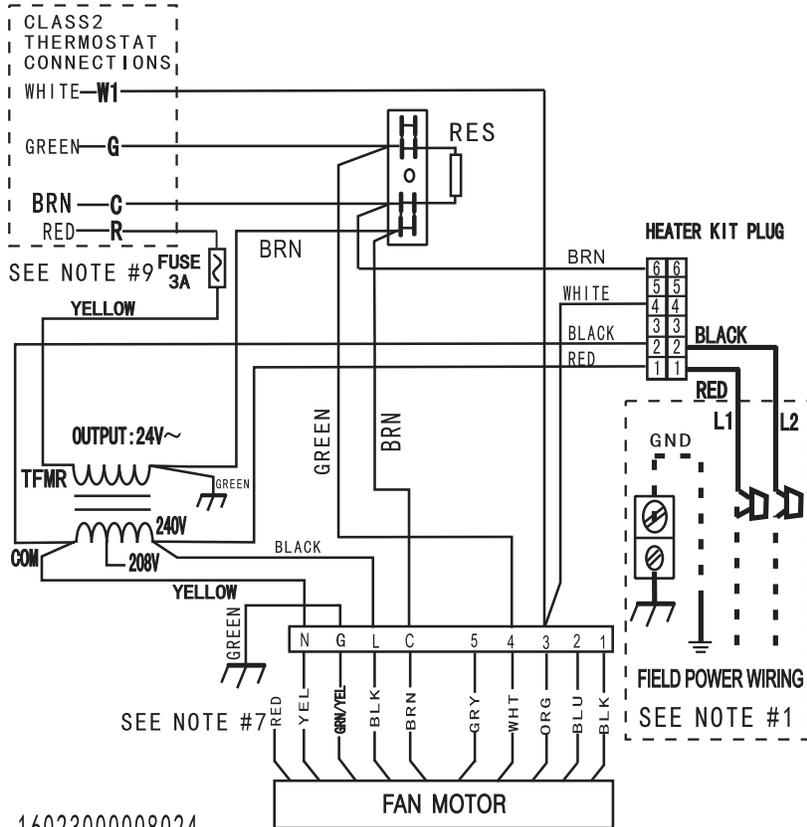
Figure 6. 208VAC & 240VAC Transformer

SCHEMATIC DIAGRAM

**SEE RATING PLATE FOR VOLTS&HERTZ
FIELD POWER WIRING**

CAUTION:
NOT SUITABLE FOR USE ON SYSTEMS EXCEEDING 150V TO GROUND
ATTENTION:
NE CONVIENT PAS AUX INSTALLATIONS DE PLUS DE 150V ALA TERRE

W1 WHITE
R RED
C BROWN
G GREEN
CAP AND SEAL THE UNUSED WIRE

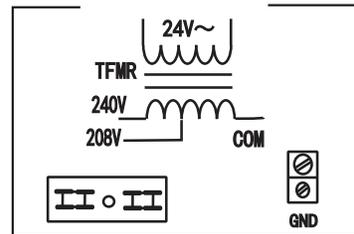


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NOTES:

- 1: Use Copper Wire (75°C Min) Only Between Disconnect Switch And Unit .
- 2: To Be Wired In Accordance With NEC And Local Codes.
- 3: If Any Of The Original Wire ,As Supplied, Must Be Replaced. Use The Same Or Equivalent Type Wire.
- 4: Connect R To R, G To G, Etc. See Outdoor Instruction For Details.
- 5: To Change Speed Tap, Move Green Wire To Desired Terminal 1 Through 5.
- 6: See Airflow Tables For Tap Usage.
- 7: Do Not Use Red Wire From Motor.
- 8: Taps 2 & 4 Have a 90s Delay Off, Taps 1, 3 & 5 are 30s.
- 9: The Fuse Model Is 32V/3A.
Fuse Manufacturer: Littelfuse, fuse part number: 0257003.

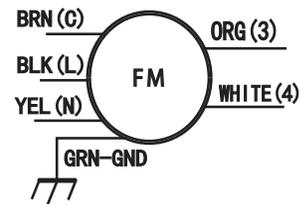
COMPONENT ARRANGEMENT



SPEED TAP SELECTION

- 1 LOW
- 2 MEDIUM LOW
- 3 MEDIUM
- 4 MEDIUM HIGH
- 5 HIGH

SEE NOTE #5, #6 & #8.



TFMR TRANSFORMER
FM FAN MOTOR
GND GROUND
RES RESISTOR
- - - FIELD POWER WIRING

NOTE - Typical wiring diagram. Refer to wiring diagram on the unit for actual wiring.

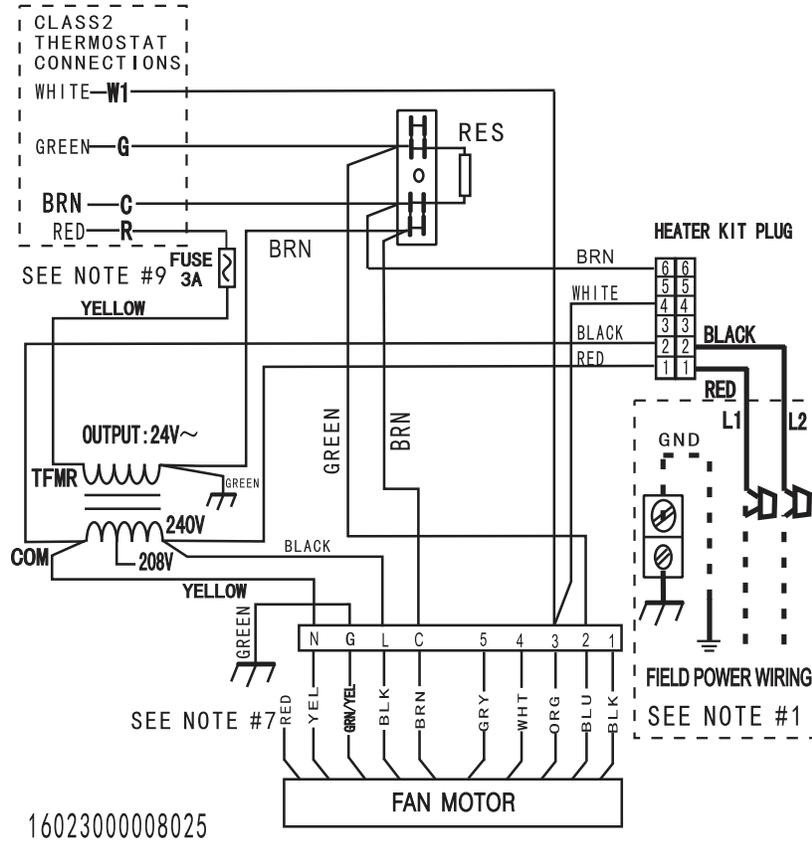
Figure 7. VWHA024 & 036 Typical Wiring Diagram

SCHEMATIC DIAGRAM

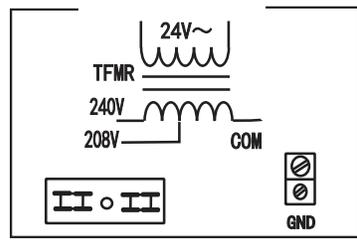
SEE RATING PLATE FOR VOLTS&HERTZ
FIELD POWER WIRING

CAUTION:
 NOT SUITABLE FOR USE ON SYSTEMS EXCEEDING 150V TO GROUND
ATTENTION:
 NE CONVIENT PAS AUX INSTALLATIONS DE PLUS DE 150V ALA TERRE

- W1 WHITE
 - R RED
 - C BROWN
 - G GREEN
- CAP AND SEAL THE UNUSED WIRE**



COMPONENT ARRANGEMENT



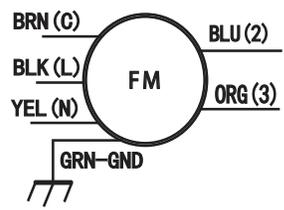
SPEED TAP SELECTION

- 1 LOW
- 2 MEDIUM LOW
- 3 MEDIUM
- 4 MEDIUM HIGH
- 5 HIGH

SEE NOTE #5, #6 & #8.

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- NOTES:**
- 1: Use Copper Wire (75°C Min) Only Between Disconnect Switch And Unit .
 - 2: To Be Wired In Accordance With NEC And Local Codes.
 - 3: If Any Of The Original Wire ,As Supplied, Must Be Replaced. Use The Same Or Equivalent Type Wire.
 - 4: Connect R To R, G To G, Etc. See Outdoor Instruction For Details.
 - 5: To Change Speed Tap, Move Green Wire To Desired Terminal 1 Through 5.
 - 6: See Airflow Tables For Tap Usage.
 - 7: Do Not Use Red Wire From Motor.
 - 8: Taps 2 & 4 Have a 90s Delay Off, Taps 1, 3 & 5 are 30s.
 - 9: The Fuse Model Is 32V/3A.
 Fuse Manufacturer: Littelfuse, fuse part number: 0287003.



- TFMR TRANSFORMER
- FM FAN MOTOR
- GND GROUND
- RES RESISTOR
- - FIELD POWER WIRING

NOTE - Typical wiring diagram. Refer to wiring diagram on the unit for actual wiring.

Figure 8. VWHA018 & 030 Typical Wiring Diagram

Cooling and 1-Stage Heat

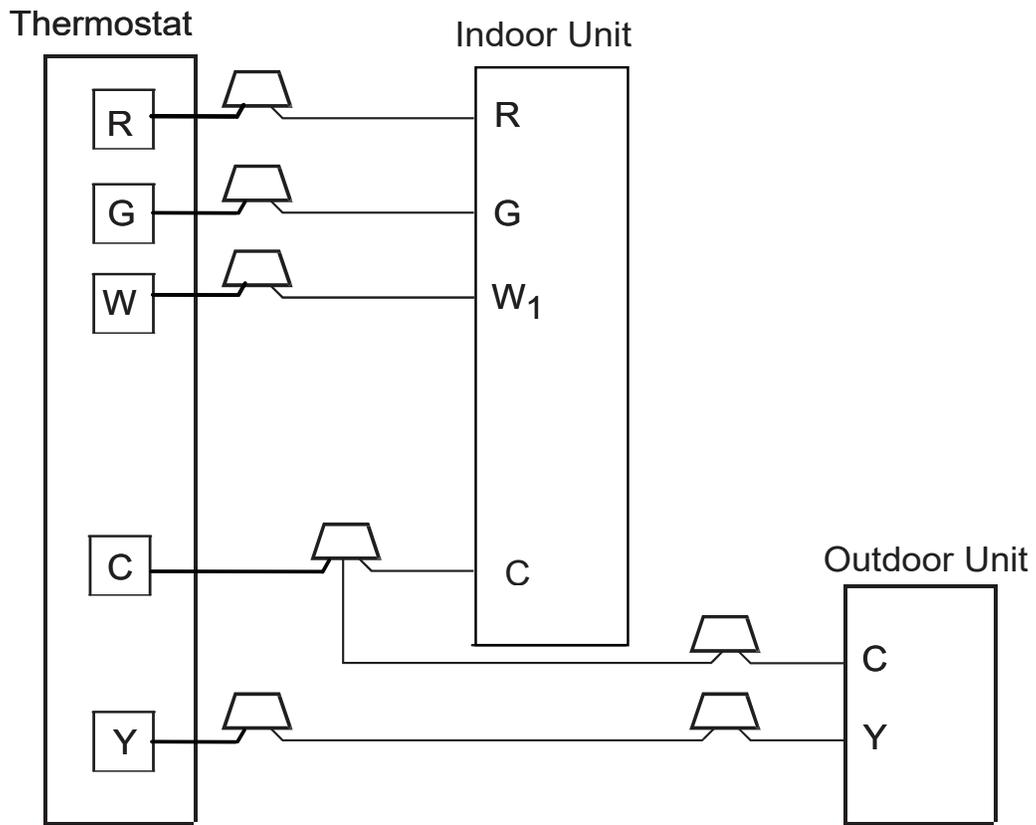


Figure 9. Low Voltage Wiring - Cooling and 1-Stage Heat

Cooling and 2-Stage Heat

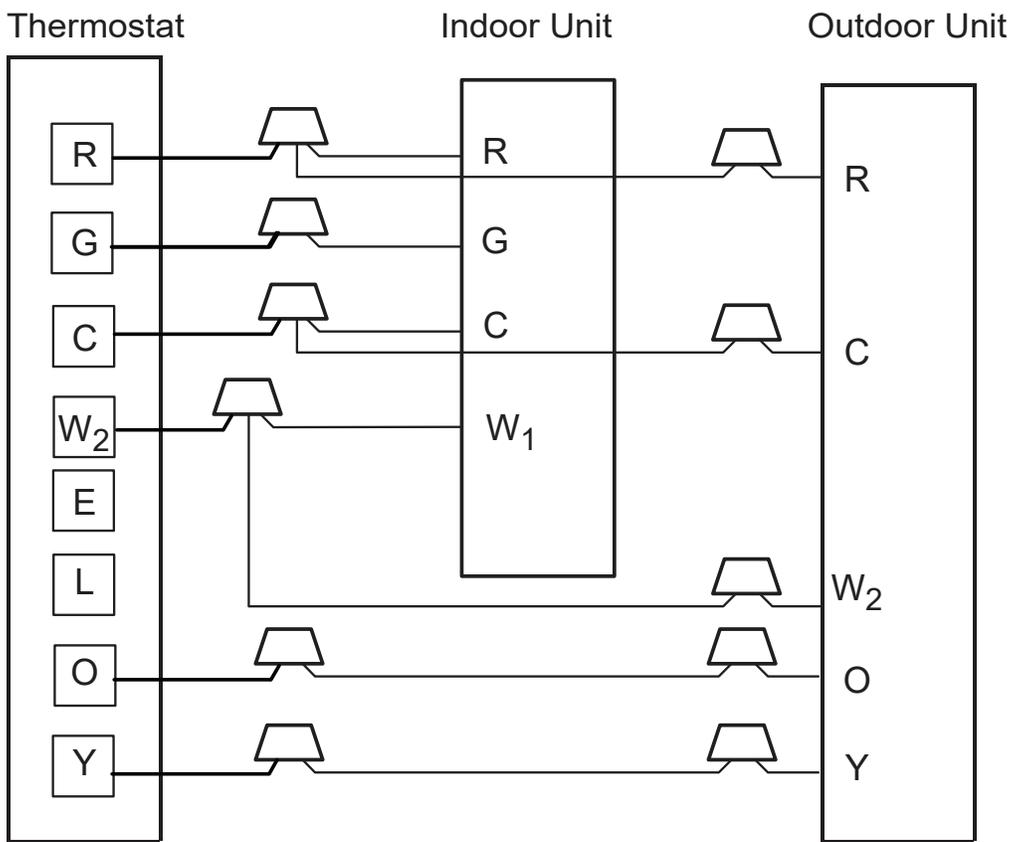


Figure 10. Low Voltage Wiring - Cooling and 2-Stage Heat

ECM Motor Speed Taps

Adjust Fan Speed

At the motor connection plug, connect the Green wire to the desired motor tap number indicated on the motor plug. See Figure 11.

For electric heat fan speed selection, connect the White wire to the desired motor tap number indicated on the motor plug.

See Table 3 for factory default settings.

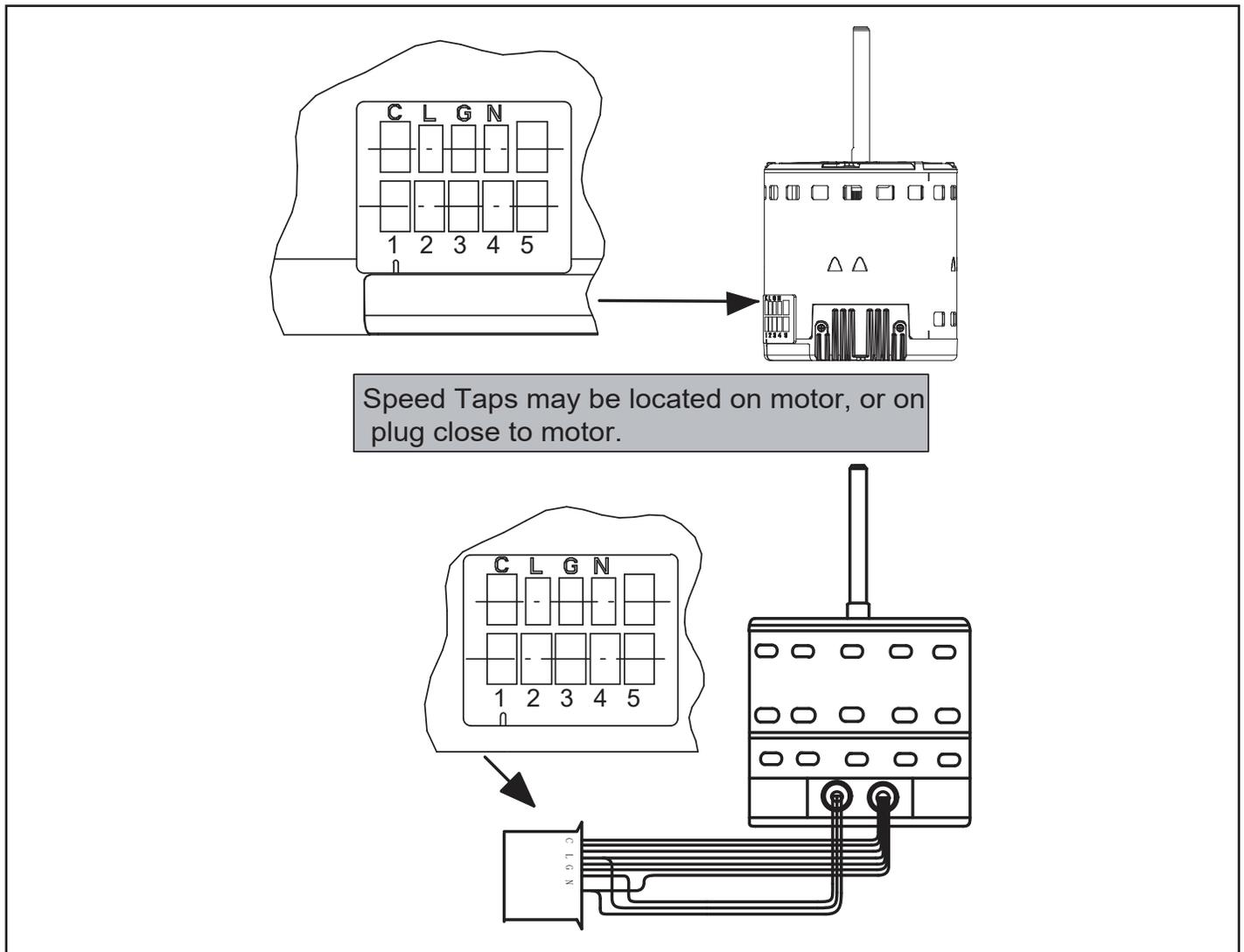


Figure 11. ECM Motor Speed Taps

Table 3. ECM Motor Factory Setting Speed Taps

Tap	Delay Off Time Seconds	18	24	30	36
Tap 1	30	----	----	----	----
Tap 2	60	Default	----	Default	----
Tap 3	30	----	----	----	----
Tap 4	90	----	Default	----	Default
Tap 5	30	----	----	----	----

Air Filter

WARNING

Do not operate the system without filters. A portion of the dust entrained in the air may temporarily lodge in the duct runs and at the supply registers. Any circulated dust particles could be heated and charred by contact with the air handler elements.

This residue could soil ceilings, walls, drapes, carpets and other articles in the house.

Soot damage may occur with filters in place, when certain types of candles, oil lamps or standing pilots are burned.

The air filter is field-provided and installed. Follow these guidelines when selecting and installing the filter.

- External filter or other means of filtration is required.
- Filter application and placement are critical to airflow, which may affect the heating and cooling system performance. Reduced airflow can shorten the life of the system's major components, such as motor, limits, elements, heat relays, evaporator coil or compressor. Consequently, we recommend that the return air duct system have only one filter location. For systems with a return air filter grille or multiple filter grilles, can have a filter installed at each of the return air openings.
- If adding high efficiency filters or electronic air filtration systems, it is very important that the air flow is not reduced. If air flow is reduced the overall performance and efficiency of the unit will be reduced.
- When sizing the return air filter grille, a minimum surface area of 200 sq. in. per ton is recommended.

IMPORTANT

Do not double filter the return air duct system. Do not filter the supply air duct system. This will change the performance of the unit and reduce airflow.

Table 4. Filter Sizes

Model	Filter Size
18/24	16x20x1 in (406 x 508 x 25 mm)
30/36	20x20x1 in (508 x 508 x 1 mm)

Airflow Performance

Model Number	Blower Speeds	External Static Pressure (in. w.c.)								
		0)	0.1	0.18	0.2	0.3	0.4	0.5	0.6	0.7
18	Tap 5	913	881	848	848	818	792	763	731	691
	Tap 4	825	787	756	753	717	682	650	617	580
	Tap 3	737	700	666	663	630	589	550	511	474
	Tap 2 Default	675	632	598	596	555	521	480	440	399
	Tap 1	590	548	512	499	455	430	368	338	309
24	Tap 5	913	881	848	848	818	792	763	731	691
	Tap 4 Default	825	787	756	753	717	682	650	617	580
	Tap 3	737	700	666	663	630	589	550	511	474
	Tap 2	675	632	598	596	555	521	480	440	399
	Tap 1	590	548	512	499	455	430	368	338	309
30	Tap 5	1362	1325	1280	1266	1238	1197	1159	1119	1080
	Tap 4	1282	1242	115	1176	1151	1111	1071	1028	975
	Tap 3	1267	1225	1178	1143	1120	1078	1036	993	942
	Tap 2 Default	1157	1111	1061	1052	1016	971	929	884	842
	Tap 1	1077	1028	987	965	932	886	850	804	768
36	Tap 5	1362	1325	1280	1266	1238	1197	1159	1119	1080
	Tap 4 Default	1282	1242	115	1176	1151	1111	1071	1028	975
	Tap 3	1267	1225	1178	1143	1120	1078	1036	993	942
	Tap 2	1157	1111	1061	1052	1016	971	929	884	842
	Tap 1	1077	1028	987	965	932	886	850	804	768

NOTE -

1. Shaded boxes represent airflow outside the required 300-450 cfm/ton.
2. Airflow based upon dry coil at 230V with no electric heat and factory-approved filter.
3. The airflow at 208V is approximately the same as 230V, the multi-tap ECM motor is a constant torque motor. The torque doesn't drop off at the speed in which the motor operates. Airflow is equivalent for front or bottom return configurations.

Technical Support

1-800-4LENNOX

(1-800-453-6669)

vrftechsupport@lennoxind.com

www.LennoxCommercial.com

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