A1
REFRIGERANT

AAM
AEM
SERIES

Multi-Position, Electric Heat Copper Coil Air Handler

LAM
LEM
SERIES

Multi-Position, Electric Heat Aluminum Coil Air Handler

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INSTALLATION GUIDE & OPERATION MANUAL

FOR ASPEN R410A MULTI-POSITION AIR HANDLERS

CONTENT

1. IMPORTANT SAFETY INSTRUCTION

Potential safety hazards are alerted using the following symbols. The symbol is used in conjunction with terms that indicate the intensity of the hazard. It is the responsibility of the owner and the installer to read and comply with the safety information and the instructions accompanying these symbols.


Read the precautions in this manual carefully before operating the unit.


Read the instructions in this manual carefully before operating the unit.


Read the instructions in this manual carefully before servicing the unit.

Read the instructions in this manual carefully before wiring the unit.


Warning or Caution

WARNING **This symbol indicates a potentially hazardous situation, which if not avoided, could result in serious injury, property damage, product damage or death.**

CAUTION **This symbol indicates a potentially hazardous situation, which if not avoided, may result in moderate injury or property damage.**

WARNING **Certified technicians or those individuals meeting the requirements specified by NATE may use this information. Property and product damage or personal injury hazard may occur without such background.**

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children must be supervised to ensure that they do not play with the appliance.

Product designed and manufactured to permit installation in accordance with local and national building codes. It is the installer's responsibility to ensure that the product is installed in strict compliance with the aforementioned codes. Manufacturer assumes no responsibility for damage (personal, product or property) caused due to installations violating regulations.

WARNING **Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury, or death.**

WARNING **Unit is not approved for outdoor installations.**

WARNING **HAZARDOUS VOLTAGE!**
Failure to follow this warning could result in property damage, severe personal injury, or death.
Disconnect ALL electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized.

WARNING **The unit is designed for operation with 208/240 V, single phase, 60 Hz power supply. Aspen will not be responsible for damages caused due to modification of the unit to operate with alternative power sources.**

WARNING **When this unit is installed in an enclosed area, such as a garage or utility room with any Carbon Monoxide producing devices (i.e. automobile, space heater, water heater etc.) ensure that the enclosed area is properly ventilated.**

WARNING **This product designed and manufactured to permit installation in accordance with local and national building codes. It is the installer's responsibility to ensure that product is installed in strict compliance with national and local codes. Manufacturer takes no responsibility for damage (personal, product or property) caused due to installations violating regulations. 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.**

WARNING **Do not bypass safety devices.**

WARNING **PRESSURIZED REFRIGERANT!**
Failure to follow this warning could result in personal injury. System contains oil and refrigerant under high pressure. Recover refrigerant before opening the system. Do not use non-approved refrigerants or refrigerant substitutes or refrigerant additives.

WARNING **If any hot work is to be conducted on the refrigerating equipment or an associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.**

CAUTION **Only factory authorized kits and accessories should be used when installing or modifying this unit unless it is so noted in these instructions. Some localities may require a licensed installer/service personnel.**

WARNING **This product can expose you to chemicals including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.65Warnings.ca.gov**

WARNING **Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.**

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

Do not pierce or burn. Be aware that refrigerants may not contain an odor.

- This appliance shall be installed in accordance with national wiring regulations.
- The of the space necessary for correct installation of the appliance including the minimum permissible distance to adjacent structures is specified in Section 4 of this manual under "INSTALLATION INSTRUCTIONS AND CLEARANCES".
- For air handlers with supplementary heaters, the minimum clearance from the appliance to combustible surfaces is specified in Section 5 of this manual under "INSTALLATION INSTRUCTIONS AND CLEARANCES",the equipment was tested for 0" clearance.

- A wiring diagram with clear indication of the connections to external control devices and supply cord can be found in Section 16 of this manual.
- The range of external static pressure at which the appliance was tested (add-on heat pumps and ducted appliances with supplementary heaters only) is available in section 12 of this manual.
- The method of connecting the appliance to the electrical supply and interconnection of separate components is detailed in Section 11, LOW VOLTAGE CONNECTIONS and in Section 16, WIRING DIAGRAMS.
- None of the components in this product family are designed or approved to be suitable for outdoor use.
- Refer to Section 14 of this manual for details of Electric Heat Kits that may be used in conjunction with the appliance, field installed heater kit fitting/installation instructions are supplied with the heater kits.

This Air Handler unit is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements of Standard UL 60335-2-40/CSA 22.2 NO. 60335-2-40, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this Standard.

This appliance is not intended for use at altitudes exceeding 2,000 meters.

2. INTRODUCTION & GENERAL INFO.

These air handlers are versatile multi-positional unit with the following standard features:

- **Application Versatility:** This unit is designed for use in upflow, downflow, horizontal left and horizontal right applications. Follow section 5 & 6 for installation and conversion instructions.

Can be AHRI matched with most brands of air conditioners or heat pumps outdoor sections R22 or R410a REFRIGERANT when proper metering device is used.

Product design for use with R22 or R410a refrigerant specified on the nameplate.

- **Motor:** ***(A/L)EM models:*** Constant torque ECM speeds and torques are controlled by software embedded in the motor to maintain constant torque. Motors are pre-programmed at the factory. ***(A/L)AM models:*** are equipped with a PSC motor.
- **Cabinet:** Sturdy, short, galvanized steel cabinet with painted front panels. Cabinet fully insulated with 1/2" faced insulation to prevent sweating and mold growth, to encapsulate glass fibers, and to provide excellent R-value. Stick pins ensure insulation remains in place. Units ship with disposable filter in filter rack.
- **Modular Electric Heat Kits:** Heat kits available with either circuit breakers or terminal blocks. Available in 3, 5, 6, 8, & 10 KW. Models with electric heat include sequencers and temperature limit switches for safe, efficient operation. Modules are easily installed in the field using Molex plugs or can be ordered factory installed. Controls are accessible from the front for easy service.

  Electrical connections can be made from the top or left. Disconnect does not protrude through the wall panel. Fan time delay relay standard for increased efficiency.
- **Blower:** Direct drive multi-speed blowers circulate air quietly and efficiently. Motor speeds can be easily selected via motor terminals. Swing mounted blowers can be easily removed for service.
- **Electronic Circuit Board:** Electronic circuit board provides 30 sec. ON/OFF blower time delay extracting more heat/cool from the coil.
- **DX Coil:** High efficiency rifled aluminum tubes and enhanced aluminum fins provide maximum heat transfer. All coils factory leak tested with two-stage pressure decay and mass spectrometer process then nitrogen pressurized, and factory sealed for maximum reliability. Coil mounted Schrader allows pre-installation pressure testing.

  Available with either check style flowrater or TXV metering device. Field-installable TXVs are also available.

  Galvanized metal drain pan with bottom primary and secondary drain connections or alternate right side primary. All connections 3/4" FPT. Access door allows for coil cleaning.
- **Warranty:** Ten-year limited parts warranty.

3. INSPECTION

On receiving the product, visually inspect it for any major shipping related damages. Shipping damages are the carrier's responsibility. Inspect the product labels to verify the model number and options are in accordance with your order. Manufacturer will not accept damage claims for incorrectly shipped product.

4. INSTALL. INSTRUCTIONS & CLEARANCES

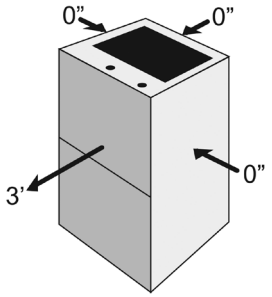


FIGURE 4.1
MINIMUM CLEARANCE FOR AIR HANDLERS

This unit is designed for zero clearance installation on three sides and adequate clearance to provide access for service in the front. A minimum of 2.5 – 3.5 feet clearance is recommended on the front end (Fig 4.1).

4.1 MOUNTING OPTION

If the unit is to be installed in garages, warehouses or other areas where they may be subjected to physical damage, adequate protective barriers must be installed. Unit must be installed 18" away from source of ignition.

If the unit is located in high humidity areas like attics or unconditioned garage; the air handler casing might experience nuisance sweating. In such installation scenarios, wrapping the casing with a 2" fiberglass insulation with vapor barrier should be used.

4.2. CONDENSATE DRAIN PREPARATION

4.2.1. CONDENSATE DRAIN

- Condensate drain is located at front as shown in picture with primary and secondary drain port.
- Pipe condensate system using proper PVC fittings.
- Ensure a minimum 2” trap is installed in the condensate drain. Locate the trap near to the connection opening on the air handler. See illustration.

FIG 4.2A

An auxiliary drain pan must be provided by the installer and placed under the entire unit with a separate drain line that is properly sloped and terminated in an area visible to the homeowner. The auxiliary pans provide extra protection to the area under the unit should the primary and secondary drain plug up and overflow. As expressed in our product warranty; **ASPEN WILL NOT BE BILLED FOR ANY STRUCTURAL DAMAGES CAUSE BY FAILURE TO FOLLOW THIS INSTALLATION REQUIREMENT.** The drains from the auxiliary drain pan must be installed according to the local building codes.

CAUTION **Drain lines from the auxiliary drain pan should NOT be connected to the primary drain line of the coil.**

The drain lines must be installed with 1/4” per foot pitch to provide free drainage. A condensate trap MUST be installed on the primary drain line to ensure proper drainage of the condensate. The trap must be installed in the drain line below the bottom of the drain pan (Fig. 4.2b)

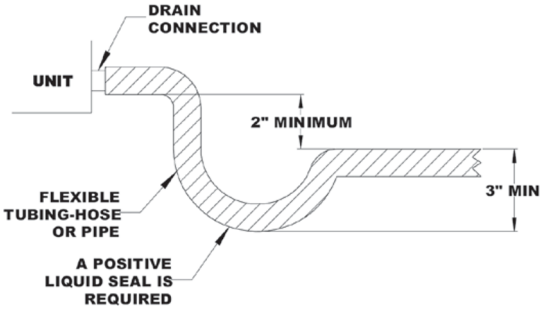


FIGURE 4.2B CONDENSATE DRAIN TRAP

CAUTION **Since coil is upstream of the blower, all drains MUST be trapped or sealed. Failure to do so will result in condensate overflow from the drain pan. Aspen will NOT be responsible for any damages resulting from failure to follow these instructions.**

CAUTION **If the drain pan is constructed of nylon or plastic; use Teflon tape to connect the drain lines to the threads in the drain pan. DO NOT USE SOLVENT BASED PIPE DOPE. THIS WILL REDUCE THE LIFE OF THE PAN.**

The drain pan has primary (white) and secondary (red) drain connections. If a secondary drain line is required, it should be run separately from the primary and should terminate in a highly visible location.

Condensate disposal through the secondary drain line indicates that the primary drain line is plugged and needs cleaning. If a secondary drain line will not be provided, plug the secondary drain. Drain plugs are NOT to be reused without plumbers’ tape or putty. Drain line connection should be finger tightened, then turned no more than one complete turn as needed to ensure a firm connection. DO NOT over-tighten connection or damage may occur.

4.3. DUCTWORK

Duct systems should be installed in accordance with standards for air-conditioning systems, National Fire Protection Association Pamphlet No. 90A or 90B. They should be sized in accordance with National Environmental System Contractors Association Manual K, or whichever is applicable.

On any job, non-flammable flexible collars should be used for the return air and discharge connections to prevent transmission of vibration (Fig 4.3). Although these units have been specially designed for quiet vibration-free operation, air ducts can act as soundboards, can, if poorly installed, amplify the slightest vibration to the annoyance level.

FIGURE 4.3

All main supply and return air drops should be properly sized as determined by the designer of the duct system and should not necessarily be the size of the duct flange openings of the unit. (The duct size should never be smaller than the flange openings of the air handler supply and return air openings.)

FIGURE 4.4

Filter sizes vary for each model (see spec sheet) that needs to be installed in the filter rack that is provided (Fig 4.4). Inspect and clean or replace filter every month. A blocked filter reduce airflow to the coil and hinder the performance of the system.

It is recommended that wherever supply and return air sheet metal ducts pass through unconditioned areas, they be insulated to prevent excessive heat loss during heating operation. When applied in conjunction with summer air conditioning, sheet metal duct routed through unconditioned areas should be insulated and have an outside vapor barrier to prevent formation of condensation.

5. INSTALLATION

CAUTION **Ensure that the unit is adequately sized. The tonnage of the outdoor unit should never exceed the tonnage of this unit.**

WARNING **The coil was manufactured with a dry nitrogen pre-charge. Release the pressure through the Schrader valve test port prior to installation. If holding pressure is not present, return coil to distributor for exchange.**

CAUTION **Some Aspen coils may include a Schrader valve on the suction manifold. Ensure that the Schrader valve and valve core (where present) are protected from heat during brazing and installation to prevent leakage. Use a core removal tool to temporarily remove the core when brazing. Replace the core once brazing is completed.**

CAUTION **Insulation on the suction line MUST extend into the cabinet and continue as far as possible to eliminate condensate dripping onto the access door.**

- ✓ Clean coil fins with degreasing agent or mild detergent and rinse fins clean prior to installation.
- ✓ The refrigerant line sizes should be selected according to the recommendations of the outdoor unit manufacturer.
- ✓ Care must be taken to ensure all connection joints are burr-free and clean. Failure to do so may increase chances of a leak. It is recommended to use a pipe cutter to remove the spun closed end of the suction line.
- ✓ To reduce air leakage, rubber grommets may be present where the lines pass through the coil case. To avoid damage, remove grommets prior to brazing by sliding over the lines. Use a quenching cloth or allow the lines to cool before reinstalling the grommets.
- ✓ Use of wet rags/quenching cloth is highly recommended to prevent weld-related damages to the casing and Schrader valve (if present).

5.1. AIR HANDLER ORIENTATION

This unit can be installed in upflow, counterflow, horizontal right and horizontal left discharge. See Fig. 5.1-A

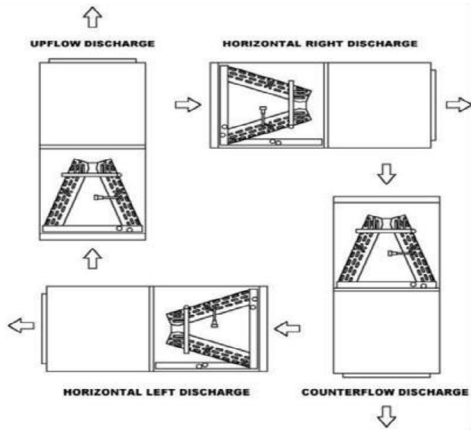


FIGURE 5.1A

When installing in an upflow or counterflow discharge it is recommended to remove the horizontal drain pan that comes with the unit. See Fig 5.1-B

FIGURE 5.1B

5.1.1. HORIZONTAL LEFT-HAND DISCHARGE CONVERSION

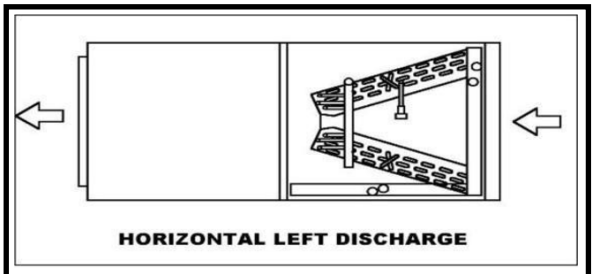
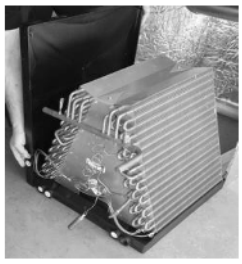
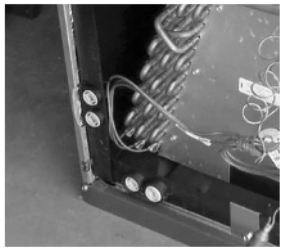
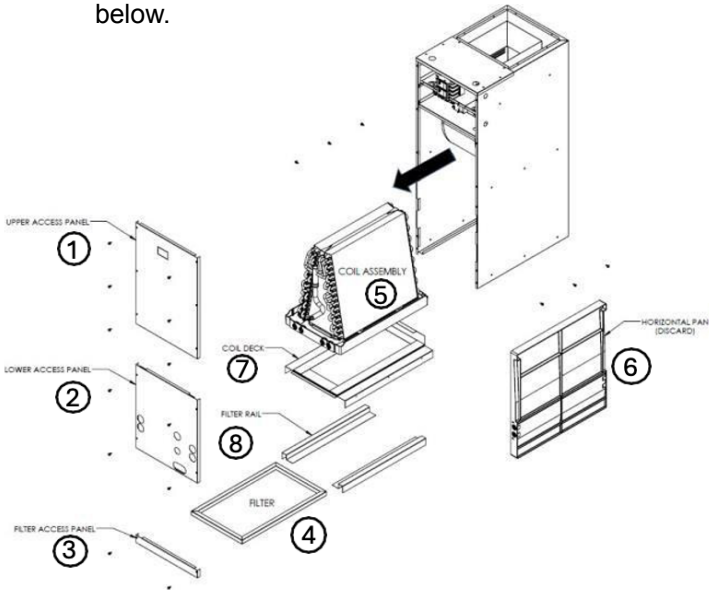


FIGURE 5.1.1

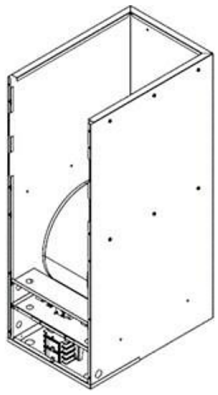
1. Remove all access panels.	
2. Pull out the coil and remove the horizontal drain pan.	
3. Install the horizontal drain pan that was pull out to the left-hand side of the coil.	
4. Re-install the coil back to the cabinet and mount the access panels back into the unit.	

5.1.2 COUNTERFLOW OR DOWNFLOW CONVERSION

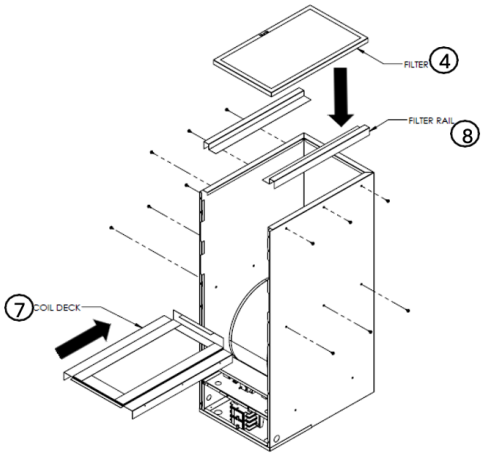
1. Unscrew and open the access panels – upper (1), lower (2) and filter cover (3). Pull-out the filter (4), coil assembly (5) and discard horizontal pan (6) then unscrew the coil deck (7) and filter rail (8) on both sides of the cabinet before pulling out as shown in figure below.



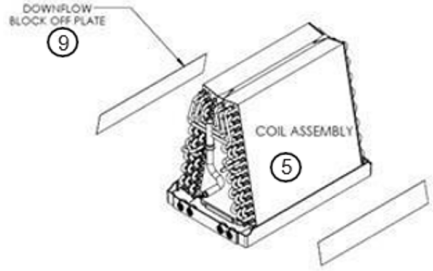
2. Rotate the unit 180° as shown in the figure.



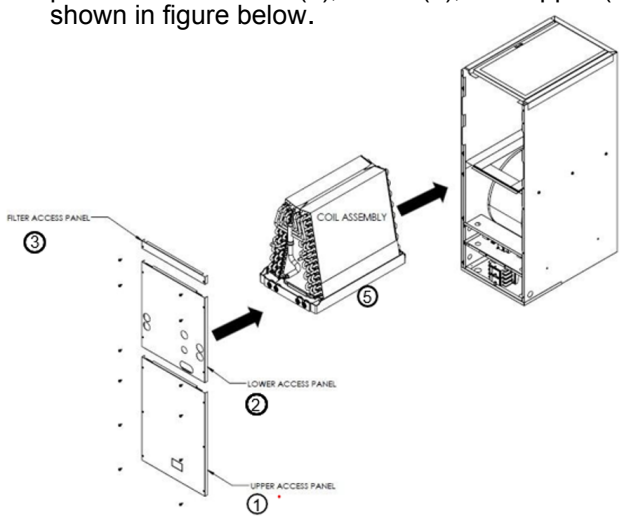
3. Re-install the coil deck (7), filter rail (8) and filter (4) as shown in figure below.



4. Add Block Off Plate (9) on coil assembly (5).



5. Slide the coil assembly (5) back into the cabinet then finally re-install and fasten all the access panels – filter cover (3), lower (2), and upper (1) as shown in figure below.



5.2. CONNECTING DUCTING

5.2.1. Secure supply air ducting to the top of the air handler. Canvas connectors are recommended for reducing potential noise transmission.

6. CONNECTING REFRIGERANT LINES

WARNING **The coil is manufactured with dry nitrogen pre-charge. Release the pressure through the Schrader valve test port prior to installation. If holding pressure is not present, return coil to distributor for exchange.**

NOTICE **Refrigerant tubing must be routed to allow accessibility for service and maintenance of the unit.**

Pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements:

The minimum test pressure for the low side of the system shall be the low side design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system, cannot

be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.

Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0.25 times the maximum allowable pressure. No leak shall be detected. **REFER TO SECTION 14 FOR SYSTEM CHARGING INSTRUCTIONS.**

Clean coil fins with degreasing agent or mild detergent and rinse fins clean prior to installation. Refer to Section 10 of this manual for coil cleaning / maintenance guidance.

The refrigerant line sizes should be selected according to the recommendations of the outdoor unit manufacturer.

Care must be taken to ensure all connection joints are burr-free and clean. Failure to do so may increase chances of a leak. It is recommended to use a pipe cutter to remove the spun closed end of the suction line.

To reduce air leakage, rubber grommets may be present where the lines pass through the coil case. To avoid damage, remove grommets prior to brazing by sliding over the lines. Use a quenching cloth or allow the lines to cool before reinstalling the grommets.

Use of wet rags/quenching cloth is highly recommended to prevent weld-related damage to the casing and Schrader valve (if present).

WARNING **The coils may include a Schrader valve on the suction manifold. Ensure that the Schrader valve and valve core (where present) are protected from heat to prevent leakage.**

FIGURE 6.1

6.1. Release nitrogen holding charge by depressing the Shrader Valve on the coil. If no gas releases from the coil, contact distributor regarding potential leak.

FIGURE 6.2

6.2. Cut off the liquid line connection from the coil. Use a tubing cutter for this step. Clean the burr from the cut tubing to reduce the chance of future leaks. Connect the liquid line coming from the outdoor to the liquid line at the indoor unit.

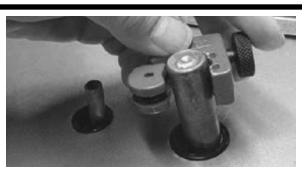


FIGURE 6.3

6.3. Use a tubing cutter to cut the suction line connection at the air handler. Clean the burr from the cut tubing to reduce the chance of future leaks. Connect the suction line coming from the outdoor to the suction line at the indoor unit.

6.4 To avoid heat damage to grommets where present, remove these prior to brazing by sliding them over the refrigerant lines and out of the way.

6.5. Check to determine if the evaporator coil has a Shrader fitting on the suction manifold. If yes, remove the valve core to prevent heat damage during brazing. Replace the valve core once the piping has cooled.

6.6. If the air handler has a TXV metering device, remove the sensing bulb from the suction line prior to brazing to prevent heat damage from occurring. Replace the sensing bulb once the piping has cooled.

FIGURE 7.6A

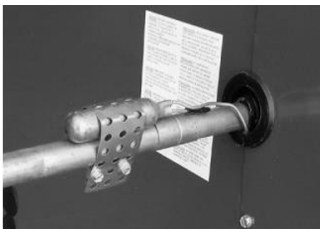


FIGURE 7.6B

6.7 Flow nitrogen through the piping when brazing.

6.8 Braze both refrigerant line connections using proper brazing procedures.

6.9 When all line connections are brazed, perform a proper system evacuation procedure per the outdoor unit manufacturer instructions.

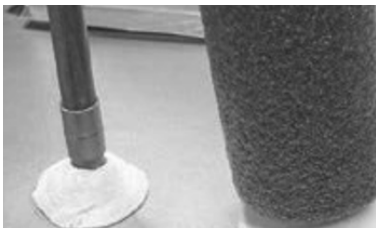


FIGURE 6.10

6.10 Seal the penetration openings where the line-set piping enters the air handler cabinet.

7. METERING DEVICES/LIQUID LINE CONNECTION

Aspen coils are available with two kinds of metering devices a) flowrater / fixed orifice, or b) TXV. The following instructions are separated into sections by metering device.

7.1 Flowrater / Piston or Fixed Orifice

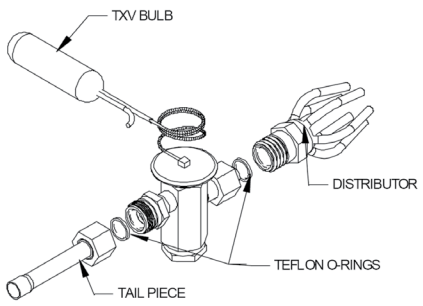


FIGURE 7.1
FLOWRATER ASSEMBLY COMPONENTS

CAUTION Use Piston sizes recommended by the outdoor unit manufacturer whenever possible. The piston should be sized according to the capacity of the outdoor unit.

WARNING Failure to install the proper piston can lead to poor system performance and possible compressor damage.

7.1.1. INSTALLATION OF PISTON/FIXED ORIFICE

NOTE: Photos are for basic illustration / reference purposes only. Actual equipment configuration may differ from that shown.

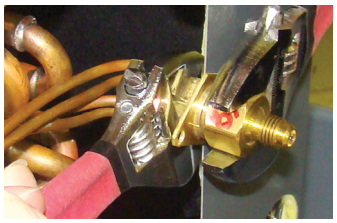


FIGURE 7.2

I-1. Disassemble flowrater body using two wrenches and unscrewing with a counterclockwise motion.

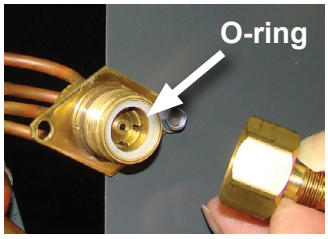


FIGURE 7.3

I-2. Replace the Teflon O-ring (located between the halves). Discard Schrader if present.

CAUTION Be aware of the Teflon O-ring. Be sure to replace the O-ring to attain a proper seal. (The Teflon O-ring is located between the two halves of the flowrater).

I-3. Slide the attachment nut onto the liquid line stub out.

I-4. Braze the stub-out portion to the liquid line and let cool.

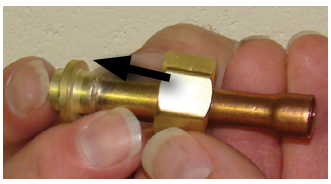


FIGURE 7.4

I-5. Taking care that the white Teflon seal is still in place inside the flowrater body, firmly seat the stub and screw the attachment nut to flowrater body.

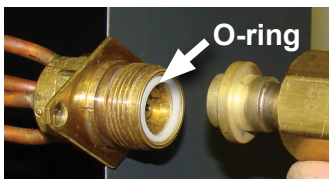


FIGURE 7.5

I-6. Tighten nut using no more than 10 ft-lbs of torque. A flare nut open end wrench is recommended to evenly distribute the force across all six sides of the nut to ensure piston body is not deformed.

8.1.2. PISTON REPLACEMENT

NOTE: Photos are for basic illustration / reference purposes only. Actual equipment configuration may differ from that shown.

FIGURE 7.6

During some installations, a piston change may be required. If so, the installer MUST change the piston. Use piston sizes recommended by the outdoor unit manufacturer. If a sizing chart is not available, use the piston size chart provided below to size the required piston. The size of the piston is stamped on the piston body (Fig 8.6).

II-1. Evacuate the system as per manufacturer guidelines and recommendations.

II-2. Turn the 13/16" nut once to release any residual pressure in the coil.

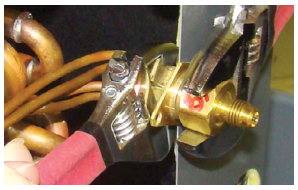


FIGURE 7.7

II-3. After ensuring that the coil is free of any residual pressure, disassemble the flowrater body completely using two wrenches. Take great care not to distort the feeder tubes. The wrench used to clasp the nut should be turned in counterclockwise direction to unscrew the nut.

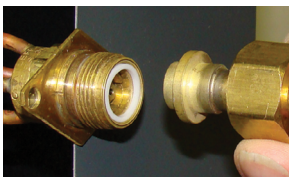


FIGURE 7.8

II-4. Slide the 13/16" nut over the line-set and separate the two halves of the flowrater.

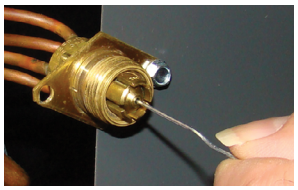


FIGURE 7.9

II-5. Pull the piston out using a small wire or pick. Verify the piston size (size is typically stamped on the body of the piston - Fig 7.6). If a different piston size is required by the outdoor unit manufacturer, replace the piston using the small wire provided with the piston kit.

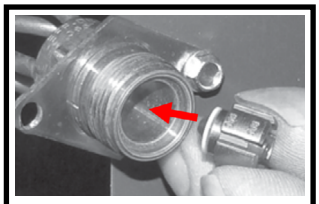


FIGURE 7.10

II-6. Replace the piston with one of the correct size. Do not force the new piston into the body. Make sure the piston moves freely in body.

CAUTION Pay close attention to the piston orientation. The pointed end of the piston MUST go into the distributor body, towards the coil. Failure to ensure this orientation will cause the piston to be bypassed during operation which might damage the outdoor unit.

II-7. Assemble the two halves correctly and ensure that the Teflon O-ring is present between the two halves (See I-5). Slide the 13/16" nut onto the distributor body.

CAUTION **Be aware of the Teflon O-ring. Be sure to replace the O-ring to attain a proper seal. (The Teflon O-ring is located between the two halves of the flowrater).**

II-8. Tighten the nut to a torque of approximately 10 ft-lbs. Do NOT over-tighten the nut. Over-tightening could crack the nut and/or impede the piston movement during operation.

II-9. If present, slide the rubber grommet back to position to prevent air leakage.

7.2 TXV COILS

WARNING **The sensing bulb and TXV body MUST be protected from overheating during brazing. The sensing bulb and TXV body must be covered using a quench cloth or wet cloth when brazing. Pointing the brazing flame away from the valve and sensing bulb provide partial protection only.**

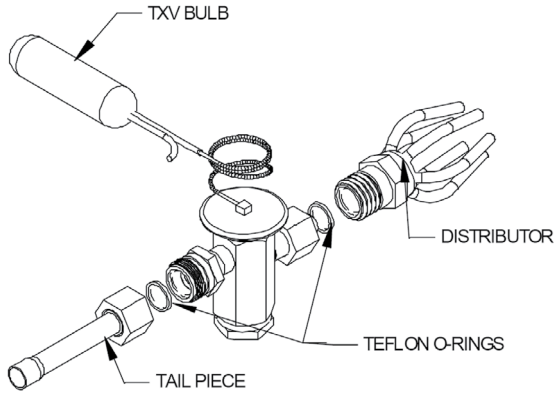


FIGURE 7.11
COMPONENTS OF TYPICAL TXV ASSEMBLY

WARNING **Ensure that the TXV selected is compatible with the refrigerant used in the outdoor system. The TXV body is marked with R454B, or R32.**

WARNING **The valves should be sized according to the capacity of the outdoor unit. Failure to install the right valve can lead to poor performance and possible compressor damage.**

I. TXV BULB HORIZONTAL MOUNTING

The orientation and location of the TXV bulb has a major influence on the system performance.

WARNING **Ensure that the TXV bulb is in direct contact with the suction/vapor line. Gap between the bulb and tube should be avoided. Failure to do so will impair the proper functioning of the TXV valve.**

It is recommended that the TXV bulb be installed parallel to the ground (on a horizontal plane). The bulb position should be at 2 o'clock or 10 o'clock. Fig. 7.12 shows the recommended position for the TXV bulb installation in the horizontal plane.

The TXV sensing bulb SHOULD be mounted on the suction line approximately 6" from the TXV or coil housing using the metal clamp provided. In order to obtain a good temperature reading and correct superheat control, the TXV sensing bulb must conform to ALL of the following criteria:

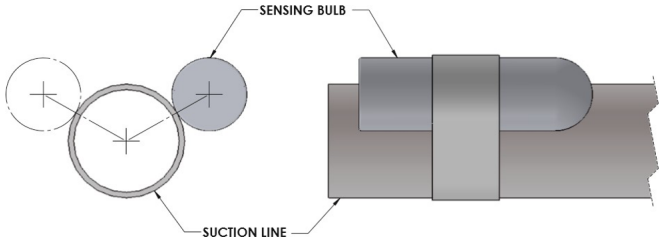


FIGURE 7.12 - RECOMMENDED LOCATION FOR HORIZONTAL TXV BULB MOUNT

1. The sensing bulb MUST be in direct and continuous contact with the suction line.
2. The sensing bulb should be mounted horizontally on the suction line.
3. The sensing bulb MUST be mounted at the 2 o'clock or 10 o'clock position on the circumference of the suction line.
4. The sensing bulb MUST be insulated from outside air.

A properly mounted sensing bulb will prevent false readings caused by liquid refrigerant that may have formed inside the suction/vapor line. Insulation will protect the sensing bulb from false readings due to contact with warm air.

II. TXV BULB VERTICAL MOUNTING

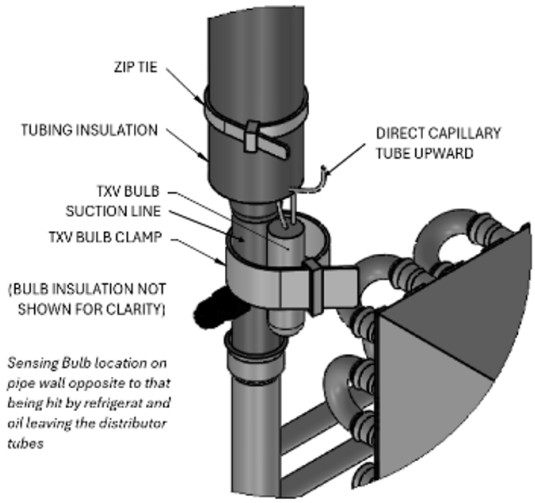


FIGURE 7.13 - RECOMMENDED LOCATION FOR VERTICAL TXV BULB MOUNT

As recommended in Section 7.2, the TXV sensing bulb should be mounted in a horizontal plane in relation to the suction/vapor line. However, some installation configurations may require that the sensing bulb be mounted vertically. In this instance, place the bulb opposite the piping wall being hit by refrigerant and oil leaving the distributor tubes, and with capillary tubes directed upwards as shown in Fig. 7.13.

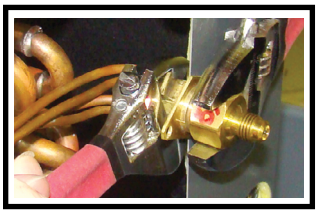
CAUTION **If the TXV sensing bulb is mounted vertically; the capillary MUST be directed upwards. The bulb must be mounted on the wall opposite to that being directly hit by the refrigerant and oil leaving the distributor tubes.**

III. FIELD-INSTALLED TXV RETROFIT

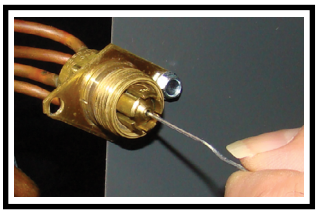
Note: Photos are for basic illustration purposes only. Actual equipment configuration may differ from that shown.

When installing an expansion valve, it is not necessary to slide the coil out of the housing.

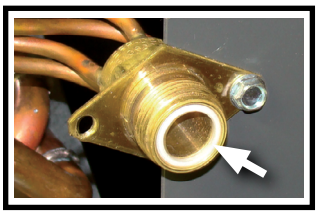
WARNING **Do not attempt to touch brazed joints while hot. Severe burns may result.**



III-1. Disassemble the flowrater body using two wrenches. Unscrew the body with a counterclockwise motion.

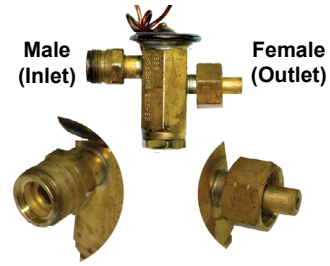


III-2. Remove the existing flowrater piston using a small wire or pick.

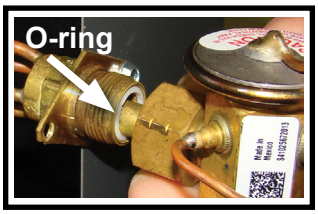


III-3. Replace the Teflon O-ring seal in place (located between the halves).

III-4. Inspect the TXV box to confirm that the valve is compatible with the refrigerant in the system.



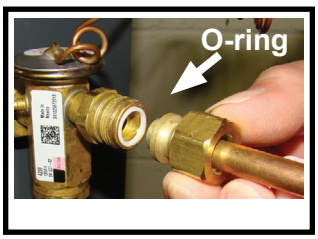
III-5. Remove the valve from the box and note the location of the inlet side (threaded male port) and the outlet side (female swivel nut port).



III-6. After ensuring that the Teflon O-ring seal is still in place inside the flowrater body, screw the female swivel nut onto the flowrater body.

III-7. Slide attachment the nut onto the liquid line stub out *(See Section 8.1.1, I-3, Fig. 8.4)*

III-8. Braze the stub-out portion to the liquid line and let cool.



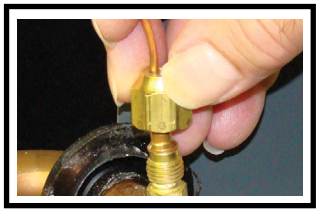
III-9. Remove the additional Teflon O-ring seal from the box and place on the shoulder just inside the TXV inlet port. Screw the nut attached to the stub-out portion of the flowrater body onto the inlet port of the TXV.

III-10. Tighten all connections taking care to use proper back up. Tighten the nut to a torque of approximately 10-30 ft-lbs.

III-11. Remove the valve identification sticker from the valve and place it adjacent to the Aspen model number on unit name plate.

III-12A. Some Aspen coils come with a Schrader valve on the suction line. If a Schrader port is present:

A. Remove the valve stem from the Schrader port mounted on the suction line.



B. Screw flare nut on TXV equalization tube on to the Schrader valve stem.

CAUTION **When handling or manipulating the equalizer tube, take great care not to kink or make extreme bends in the tubing.**

CAUTION **Using a non-bleed expansion valve may require the use of a hard-start kit. Follow the outdoor unit manufacturer's guidelines.**

8. LEAK CHECK / STANDING PRESSURE TEST / VACUUM TEST

8.1. STANDING PRESSURE TEST

1. Following outdoor unit manufacturer instructions and recommendations, Using dry nitrogen or dry helium, pressurize the field piping and indoor coil to the lower of the maximum operating pressures listed on the nameplates of the indoor and outdoor units (likely 600 psi).
2. The test pressure after removal of the pressure source shall be maintained for at least one (1) hour no decrease of pressure indicated by the test gauge, with the test gauge resolution not exceeding 30 psi.
3. Check for leaks by using a soapy solution at each field-made brazed joint and screw-on line connections. A leak will produce bubbles in the soap solution. No refrigerant shall be used for pressure testing to detect leaks.

FIGURE 8.1

4. If any leaks are discovered, remove nitrogen pressure and repair leaks. Repeat steps 1-3.

8.2 VACUUM TEST

Important: *Do not open the service valves until the refrigerant lines and indoor coil leak check and evacuation are completed.*

1. Evacuate until the micron gauge reads no higher than 350 microns, then close off the valve to the vacuum pump.
2. Observe the micron gauge. Evacuation is complete if the micron gauge does not rise above 500 microns in one (1) minute and 1500 microns in ten (10) minutes.
3. Once evacuation is complete, blank off the vacuum pump and micron gauge, and close the valve on the manifold gauge set.
4. All procedures for charging the system with refrigerant shall be according to the instructions provided by the manufacturer of the outdoor unit.

Important: *Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks.*

After charging the system, all indoor field-made joints of the field piping shall be checked for refrigerant leaks using an electronic leak detector calibrated for R32 or R454B (depending on the application) having a sensitivity of 5 grams per year or better.

With no leaks or weak connections present, evacuate the system and charge as per the outdoor unit manufacturer instructions and specifications.

NOTICE **Test pressures for field made refrigerant joints shall have a sensitivity of 5 grams per year of refrigerant or at least 25 times the maximum allowable pressure. No leaks shall be detected in the systems.**

9. ELECTRICAL LINE VOLTAGE WIRING

WARNING **Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury, or death.**

WARNING **Before obtaining access to terminals, all supply circuits must be disconnected.**

WARNING **A fused disconnect switch must be field provided for the unit to be in compliance with UL 60335-2-40 Clause 7.12.2.**

These units are designed for single phase 208/240 volts, 60 HZ power supply. Wire selection and wiring must be in accordance with the latest edition of the National Electric Code, or in Canada the Canadian electrical Code, and local codes to determine correct wire sizing. Unit terminals are designed to accommodate copper and aluminum wiring. If aluminum wiring is used: All applicable local and national codes must be followed please observe special precautions relative to sizing, wire connections and corrosion protection.

All models with 3, 5, 6, 8, 10 kW electric heaters are arranged for single circuit connections. Models larger than 10 kW are arranged for multi-circuit protection. Not intended for simultaneous operation of electric heat and reverse cycle heating. Refer to the top part of wiring diagram at the end of this guide for detailed information. Refer to section 13 for Electric Heat Kit applications.

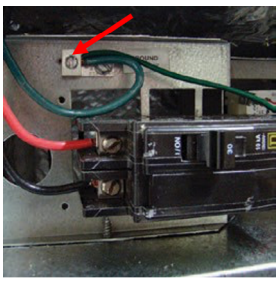


FIGURE 9.1

Line voltage wiring should be routed through the access holes at the top of the air handler. To minimize air leakage, seal the wiring entry point on the outside of the unit. Proper electrical conduit connection fittings should be used.

Connect the power wiring to the line side connections on the air handler. The electrical ground wire should be connected to the grounding lug. Ensure both the field supplied ground wire and air handler GREEN ground wire are both secured to the grounding lug of the air handler.

10. LOW VOLTAGE CONNECTIONS

FIGURE 10

A 24 V power supply is provided by an internally wired low voltage transformer that is standard on all models. If the line voltage being supplied to the air handler is 208-volt single phase, the line voltage tap on the low voltage transformer needs to be moved from the 240-volt tap to the 208-volt tap (See Fig 10). If this is not done, the secondary output voltage of the transformer will be too low. See the Wiring diagram, Fig. 15.5 & 15.6.

Connect the field wiring at the pigtails supplied with the air handler as specified in Wiring diagram, Fig. 15.1, 15.2, 15.3, and 15.4. To air leakage, seal the wiring entry point at the outside of the unit.

NOTICE **All wiring must comply with local and national electrical code requirements. Read and heed all unit caution labels.**

10.1 SINGLE STAGE COOLING WITH ELECTRIC HEAT

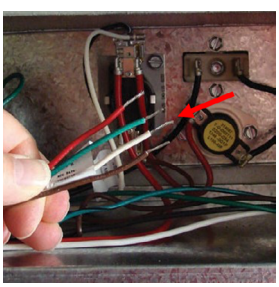


FIGURE 10.1

The air handler comes factory setup for a single stage cooling system. If factory installed accessory electric heaters are pre-installed, the unit will also have a low voltage wire for the electric heat (Fig 10.1).

During cooling mode operation, the indoor blower G wire will energize a time delay relay inside the air handler. After a short time delay period, the time delay relay will send out a 24-volt signal to the low voltage terminal on the motor. Fan delay periods are 7 seconds ON delay and 65 seconds OFF delay. (See

wiring in Section 15).

The Y wire from the thermostat is not connected at the air handler. This wire goes directly to the outdoor unit 24 volt wiring to turn on the outdoor condensing unit when a call for cooling takes place. The 24-volt common for the outdoor unit circuits is connected at the air handler Brown wire.

The electric heater low voltage wiring W terminal is wired directly from the thermostat to the air handler. The blower will delay on a heat call ON for a period of 5 seconds. The OFF-delay period is 60 seconds.

10.2 TWO STAGE CONDENSING UNITS

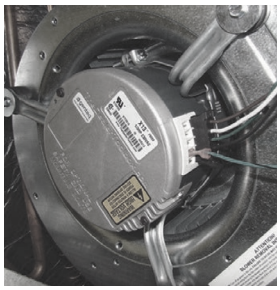


FIGURE 10.2

If the outdoor condensing unit is a two-stage model, a field provided Y2 wire can be connected to the motor using an electrical spade connector. The number 4 and 5 terminals on the motor are speed taps that will increase the blower speed for second stage cooling operation. Both the G and Y2 terminals will be energized at the same time during a call for second stage blower speed operation. The motor will run at the speed where the Y2 wire is connected (Fig 10.2).

Operating CFM based upon each speed tap number is shown on the electrical wiring diagram of the unit. Final air volume adjustments should be made by referencing total external static pressure (Table 11.2, below).

11. AIR VOLUME ADJUSTMENT

Air volume needs to be set to the level recommended by the outdoor unit equipment manufacturer. Most systems will require around 400 CFM of indoor air for every 1 ton of system cooling capacity. The air volume must be set prior to attempting system charge.

The AEM/LEM Series uses a constant torque ECM Motor. This motor will try to maintain proper motor torque to achieve programmed air volume levels at varying levels of external static pressure. The air volume level produced by the air handlers at varying external static pressure levels is shown in Tables 11.2a(AEM) & 11.2b(LEM).

FIGURE 11.1

Use a Magnehelic Gauge with a 1" scale and two static pressure tips to measure the static pressure during the air volume adjustment procedure (Fig. 11.1). The high port static pressure tip should be placed in the supply duct near the outlet of the air handler. The low port static pressure tip should be placed in the return air duct near the entrance to the air handler. The factory provided air filter should be in place inside of the air handler.

11.1.1. Select a starting speed tap from the CFM table. The blower motor has selectable speed taps labeled 1 through 5 (Fig. 12.2). The speed taps are energized by 24 volts received from the time delay relay. When two stage cooling units are used, both the first and second stage fan speed taps will be energized at the same time. The motor will run at the speed generated at the highest motor speed tap.

11.1.2. Call for fan only operation at the thermostat.

11.1.3. Read the external static pressure level on the Magnehelic gauge.

11.1.4. Make speed tap selection changes to get the air volume as close as possible to the required level.

11.1.5. If the static pressure is above 0.5" w.c., excessive turbulence or duct friction needs to be reduced. (Obstructions in the duct system can also cause excessive static pressure.)

11.1.6. When proper air volume is established, move on to the charging procedure.

The AAM Series uses a PSC type motor. The speed of this motor is set by placing the appropriate winding lead wire on the "MTR" terminal of the control board. Unused motor winding leads are to be placed on the "BLANK" terminals on the control board. The air volume level produced by the air handlers at varying external static pressure levels is shown in Table 11.2c

TABLE 11.2a – AEM Airflow Table

MODEL	SPEED TAP	CFM V. EXTERNAL STATIC PRESSURE						
		0.1	0.2	0.3	0.4	0.5	0.6	0.7
AEM 18/19/ 24/25	T5	932	894	862	827	800	762	-
	T4	750	706	674	627	600	561	-
	T3	600	565	539	502	480	449	-
	T2	750	706	674	627	600	561	-
	T1	932	894	862	827	800	762	-
AEM 30/31/ 36/37	T5	1291	1280	1252	1227	1200	1171	-
	T4	1122	1091	1066	1034	1000	982	-
	T3	898	873	853	827	800	786	-
	T2	745	698	668	630	600	558	-
	T1	1291	1280	1252	1227	1200	1171	-
AEM 42/43/ 48/49/ 60/61/ 62	T5	2018	1987	1961	1922	1889	1856	1823
	T4	1738	1696	1667	1636	1598	1566	1527
	T3	1546	1521	1482	1439	1396	1360	1321
	T2	1367	1342	1303	1260	1217	1181	1142
	T1	2018	1987	1961	1922	1889	1856	1823

TABLE 11.2b – LEM Airflow Table

MODEL	SPEED TAP	CFM VS EXTERNAL STATIC									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
LEM 24A-E	T5	1030	1000	975	945	910	880	865	830	795	750
	T4	975	945	910	880	865	830	795	775	715	700
	T3	845	810	780	755	725	705	665	635	600	550
	T2	775	745	725	700	665	645	610	575	525	465
	T1	645	620	590	565	550	510	480	420	370	330
LEM 36L	T5	1250	1225	1200	1175	1150	1125	1050	960	-	-
	T4	1160	1140	1115	1090	1075	1030	1000	975	900	-
	T3	925	900	865	845	810	775	745	710	695	650
	T2	810	770	740	710	680	655	620	590	550	510
	T1	650	640	610	575	540	510	475	420	380	345
LEM 24F-M 36A-E 36K,M 48K	T5	1320	1300	1285	1265	1225	1200	1165	1130	1100	1070
	T4	1150	1130	1115	1090	1060	1020	975	945	880	810
	T3	930	910	875	845	800	765	675	625	590	540
	T2	825	790	755	720	675	600	550	510	485	440
	T1	745	725	675	645	565	525	480	445	400	350
LEM 48L	T5	1375	1340	1315	1300	1255	1200	1150	1120	1090	1050
	T4	1175	1150	1125	1075	1075	1045	990	960	900	845
	T3	915	900	880	850	800	765	705	665	620	590
	T2	850	830	780	730	675	635	585	550	510	450
	T1	725	705	675	620	565	530	485	460	415	380
LEM 36F-J 48A-E 60A-E	T5	1690	1650	1630	1610	1600	1590	1570	1550	1515	1500
	T4	1580	1460	1435	1420	1400	1370	1350	1325	1275	1250
	T3	1300	1275	1260	1240	1200	1165	1130	1100	1075	1050
	T2	1175	1160	1130	1090	1050	1000	960	930	900	860
	T1	1020	975	945	900	850	810	775	715	695	650
LEM 60C	T5	1750	1730	1695	1655	1630	1570	1520	1475	1450	1415
	T4	1560	1520	1475	1435	1435	1375	1350	1325	1275	1250
	T3	1350	1300	1275	1225	1200	1175	1125	1100	1060	1030
	T2	1175	1140	1100	1075	1050	1000	975	928	895	790
	T1	990	940	910	880	850	790	775	675	620	600
LEM 60K-M	T5	2080	2050	2025	2000	1965	1935	1910	1880	1845	1825
	T4	1990	1965	1940	1910	1885	1855	1825	1790	1760	1725
	T3	1855	1830	1795	1775	1745	1710	1680	1645	1615	1580
	T2	1575	1540	1510	1475	1435	1400	1360	1320	1280	1240
	T1	1380	1345	1305	1265	1225	1175	1135	1085	1040	990
LEM 48F-J 60F-J	T5	2130	2090	2050	2005	1965	1920	1875	1855	1830	1780
	T4	1990	1950	1910	1860	1815	1775	1745	1710	1675	1635
	T3	1815	1760	1725	1675	1615	1600	1560	1520	1475	1415
	T2	1635	1595	1560	1500	1435	1415	1370	1300	1200	1125
	T1	1480	1435	1370	1325	1275	1230	1150	1040	980	925

TABLE 11.2C - AAM AIRFLOW TABLE - STANDARD EFFICIENCY

MODEL	SPEED TAP	CFM V. EXTERNAL STATIC							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
AAM 18/19/24/25 LAM24/25	LOW	835	800	790	750	695	-	-	-
	HIGH	915	880	875	825	770	-	-	-
AAM 30/31/36/37 LAM 26/30/31/ 32/36/37/38	LOW	1130	1100	1050	1000	960	-	-	-
	HIGH	1410	1350	1280	1200	1160	-	-	-
AAM 42/43/48/ 49/60/61/62 LAM 42/43/48/ 49/60/61/62	LOW	1520	1500	1485	1460	1440	-	-	-
	MID	1700	1675	1640	1620	1575	-	-	-
	HIGH	2060	2020	1980	1935	1885	-	-	-
LAM24B*	LOW	935	890	840	785	735	650	580	385
	MID	965	915	865	810	750	690	610	390
	HIGH	975	925	875	825	770	705	545	435

NOTE:

- Airflow data indicated is at 230V, front return, dry coil conditions only; tested without filters, and without electric heat installed.
- Air handler units are tested to UL60335-2-40 standards up to 0.6 in. w.c. external static pressure.
- The above charts are for information only. For optimal performance, external static pressures of 0.2 in. w.c. to 0.5 in. w.c. are recommended. Heating applications are tested at 0.5 in. w.c. external static pressure. For satisfactory operation, external static pressure must not exceed value shown.
- Airflow data shown is from testing performed at 230 Volts AEM, and LEM units are equipped with a standard ECM constant torque motor.
- Airflow data shown is from testing performed at 230 Volts AAM units are equipped with a standard 2/3-Speed PSC motor.
- The above data can be used for airflow at other distribution voltages.

12. SYSTEM CHARGING

WARNING **Units designed for use with R410a or R22 refrigerant MUST be charged with R410a or R22 refrigerant.**

CAUTION **An improperly charged system will likely cause loss in system performance and may damage the compressor.**

CAUTION **Refer to outdoor unit manufacturer's charging guidelines and recommendations. The recommendations given below are general in nature and are NOT to supersede outdoor unit manufacturer specifications.**

Where addition of charge is required to complete installation, interconnecting refrigerant piping length and diameter shall be taken into consideration.

1. Bring airflow up to the maximum CFM possible according to Table.
2. Evacuate refrigeration system to micron level required by outdoor unit manufacturer.
3. Release system charge from outdoor unit and call

for cooling.

4. Use outdoor unit equipment manufacturer specific charging charts if available and make proper charge adjustment based upon outdoor unit instructions.
5. If outdoor unit instructions and charts are not available, use Aspen provided charts. Make certain indoor air temperature is near comfort level set point 75F, prior to establishing superheat and subcooling levels.

12.1. TXV COILS:

If the unit is equipped with a **fixed TXV**, add refrigerant until the subcooling measures at the outdoor unit liquid line matches the subcooling recommendations of the outdoor manufacturer. If the charge is unavailable charge the unit to a subcooling value of 8°F +/- 1°F.

If the unit is equipped with an **adjustable TXV**, add refrigerant until the subcooling measures at the outdoor unit liquid line matches the subcooling recommendations of the outdoor manufacturer. If the charge is unavailable charge the unit to a subcooling value of 8°F +/- 1°F.

NOTICE **When adjusting the TXV, the valve stem or adjusting screw should not be adjusted more than a 1/4 turn at a time. To adjust superheat, turn the valve stem clockwise to increase and counterclockwise to decrease.**

12.1.1 If subcooling and superheat are low, adjust TXV to 8°F +/- 1°F superheat, then check subcooling.

12.1.2 If subcooling is low and superheat is high, add charge to raise subcooling to 8°F +/- 1°F then check superheat.

12.1.3 If subcooling and superheat are high, adjust TXV valve to 8°F +/- 1°F superheat, then check subcooling.

12.1.4 If subcooling is high and superheat is low, adjust TXV valve to 8°F +/- 1°F superheat and remove charge to lower the subcooling to 8°F +/- 1°F.

The TXV should NOT be adjusted at light load / ambient conditions of 60°F or below.

12.2. FIXED ORIFICE/PISTON - FLOWRATER COILS

Add refrigerant until the superheat measured at the outdoor unit suction/vapor line matches the superheat from the chart below.

Outdoor Temp	Superheat		
°F D.B.	Min.	Nom.	Max.
65	30	35	40
70	26	30	34
75	21	25	29
80	17	20	23
85	12	15	18
90	8	10	12
95	4	5	7
100			

13. ELECTRIC HEAT

This air handler is available with factory installed or field installed 3kW to 25kW electric heater kits. Refer to this product's Specification Sheet for electric heater kit electrical data. For field installed electric heater kits, refer to the installation manual provided with the electric heat kit for the correct installation procedure. If installing this option, the ONLY heat kits that are permitted to be used are in Table 13.1a, 13.1b and 13.1c. Refer to the air handler unit's Serial and Rating plate or this product's specification sheets to determine the heat kits compatible with each air handler in this product family. No other accessory heat kit besides stated in Table 13.1a, 13.1b and 13.1c may be installed in these air handlers. Not intended for simultaneous operation of electric heat and reverse cycle heating.

TABLE 13.1A AEM ELECTRIC HEAT KITS

MODEL	MODEL	HEAT KIT	SPEED TAP	MIN. CFM REQ. FOR EHK
AEM 18, 19, 24, 25	LEM 24, 25	E(C,T)S03	T4	570
		E(C,T)S05	T4	570
		E(C,T)S06	T4	570
		E(C,T)S08	T5	760
		E(C,T)S10	T5	760
AEM 30, 31, 36, 37	LEM 26, 30, 31, 32, 37, 38,	E(C,T)M03	T4	950
		E(C,T)M05	T4	950
		E(C,T)M06	T4	950
		E(C,T)M08	T4	950
		E(C,T)M10	T4	950
		E(C,T)M15	T4	950
AEM 42, 43, 48, 49 60, 61, 62	LEM 42, 43, 48, 49 60, 61, 62	E(C,T)L03	T3	1326
		E(C,T)L05	T3	1326
		E(C,T)L06	T3	1326
		E(C,T)L08	T3	1326
		E(C,T)L10	T3	1326
		E(C,T)L15	T3	1326
		E(C,T)L20	T3	1326
		E(C,T)L25	T3	1326

TABLE 13.1A LEM ELECTRIC HEAT KITS

MODEL	HEAT KIT	SPEED TAP	MIN. CFM REQ. FOR EHK
LEM24(A,B,C,D,E) LEM36(L)	N(C,T)S05	T2	632
	N(C,T)S06	T2	632
	N(C,T)S08	T3	689
	N(C,T)S10	T3	689
LEM24(F,G,H,I,J,K) LEM36(A,B,C,D,E) LEM48(K,L)	N(C,T)M03	T3	760
	N(C,T)M05	T3	760
	N(C,T)M06	T3	760
	N(C,T)M08	T4	1007
	N(C,T)M10	T4	1007
	N(C,T)M15	T4	1007
LEM36(F,G,H,I,J) LEM48(A,B,C,D,E) *LEM60(A,B,C,D,E)	N(C,T)L03	T2	998
	N(C,T)L05	T2	998
	N(C,T)L06	T2	998
	N(C,T)L08	T3	1140
	N(C,T)L10	T3	1140
	N(C,T)L15	T3	1140
	N(C,T)L20	T3	1140
*LEM60(K,L,M)	N(C,T)L03	T1	1164
	N(C,T)L05	T1	1164
	N(C,T)L06	T1	1164
	N(C,T)L08	T2	1363
	N(C,T)L10	T2	1363
	N(C,T)L15	T2	1363
	N(C,T)L20	T2	1363
LEM48(F,G,H,I,J) LEM60(F,G,H,I,J)	N(C,T)X03	T2	1363
	N(C,T)X05	T2	1363
	N(C,T)X06	T2	1363
	N(C,T)X08	T2	1363
	N(C,T)X10	T2	1363
	N(C,T)X15	T2	1363
	N(C,T)X20	T2	1363

NOTE: * = The N(C,T)L20 is only available for the LEM60(A-E) & LEM60(K-M)

TABLE 14.1C AAM ELECTRIC HEAT KITS (STANDARD EFFICIENCY)				
MODEL	MODEL	HEAT KIT	SPEED TAP	MIN. CFM REQUIRED F/ EHK
AAM 18/19/ 24/25	LAM 24/25	E(C,T)S03	LO	660
		E(C,T)S05	LO	660
		E(C,T)S06	LO	660
		E(C,T)S08	HI	732
		E(C,T)S10	HI	732
AAM 30/31/ 36/37	LAM 26/30/ 31/32/ 37/38	E(C,T)M03	HI	1102
		E(C,T)M05	HI	1102
		E(C,T)M06	HI	1102
		E(C,T)M08	HI	1102
		E(C,T)M10	HI	1102
		E(C,T)M15	HI	1102
AAM 42/43/ 48/49 60/61/ 62	LAM 42/43/ 48/49 60/61/ 62	E(C,T)L03	LO	1368
		E(C,T)L05	LO	1368
		E(C,T)L06	LO	1368
		E(C,T)L08	LO	1368
		E(C,T)L10	LO	1368
		E(C,T)L15	LO	1368
		E(C,T)L20	LO	1368
		E(C,T)L2P	LO	1368
N/A	LAM 24B*	N(C,T)S03	LOW	735
		N(C,T)S05	LOW	735
		N(C,T)S06	LOW	735
		N(C,T)S08	LOW	735
		N(C,T)S10	MED	750

14. FINAL SYSTEM CHECKOUT

14.1.1. Make certain all cabinet openings are properly sealed, and any grommets moved during installation are moved into proper place.

14.1.2. With cooling system operating, check for condensate leakage.

14.1.3. Perform leak detection inspection of refrigerant circuit and connecting piping.

14.1.4. Secure all cabinet doors. All panels must be in place and secured. For airtight application, all gaskets must remain intact on all surfaces as shipped with the unit at prescribed locations to achieve 1.4% low leakage.

15. WIRING DIAGRAMS

15.1 SINGLE-STAGE AC SYSTEM WIRING

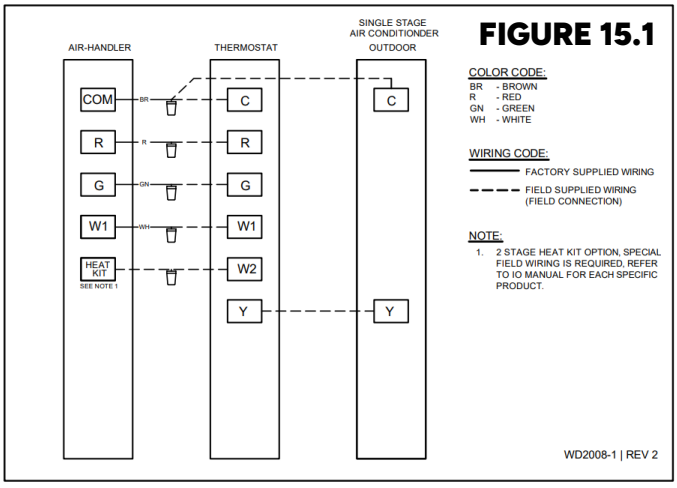


FIGURE 15.1

COLOR CODE:
BR - BROWN
R - RED
GN - GREEN
WH - WHITE

WIRING CODE:
FACTORY SUPPLIED WIRING
FIELD SUPPLIED WIRING (FIELD CONNECTION)

NOTE:
1. 2 STAGE HEAT KIT OPTION, SPECIAL FIELD WIRING IS REQUIRED, REFER TO IO MANUAL FOR EACH SPECIFIC PRODUCT.

15.2 TWO-STAGE AC SYSTEM WIRING

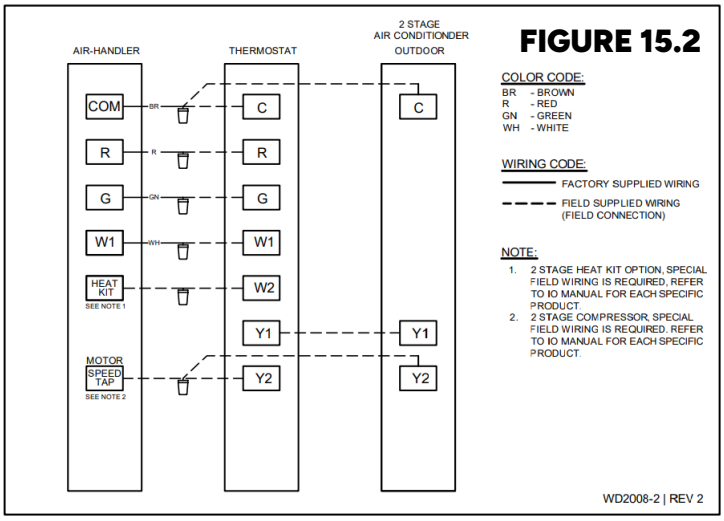


FIGURE 15.2

COLOR CODE:
BR - BROWN
R - RED
GN - GREEN
WH - WHITE

WIRING CODE:
FACTORY SUPPLIED WIRING
FIELD SUPPLIED WIRING (FIELD CONNECTION)

NOTE:
1. 2 STAGE HEAT KIT OPTION, SPECIAL FIELD WIRING IS REQUIRED, REFER TO IO MANUAL FOR EACH SPECIFIC PRODUCT.
2. 2 STAGE COMPRESSOR, SPECIAL FIELD WIRING IS REQUIRED, REFER TO IO MANUAL FOR EACH SPECIFIC PRODUCT.

15.3 SINGLE-STAGE HEAT PUMP SYSTEM WIRING

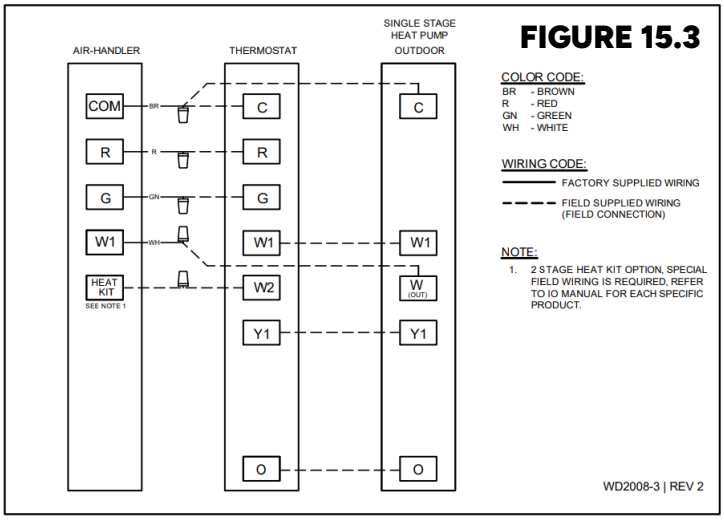


FIGURE 15.3

COLOR CODE:
BR - BROWN
R - RED
GN - GREEN
WH - WHITE

WIRING CODE:
FACTORY SUPPLIED WIRING
FIELD SUPPLIED WIRING (FIELD CONNECTION)

NOTE:
1. 2 STAGE HEAT KIT OPTION, SPECIAL FIELD WIRING IS REQUIRED, REFER TO IO MANUAL FOR EACH SPECIFIC PRODUCT.

15.4 TWO-STAGE HEAT PUMP SYSTEM WIRING

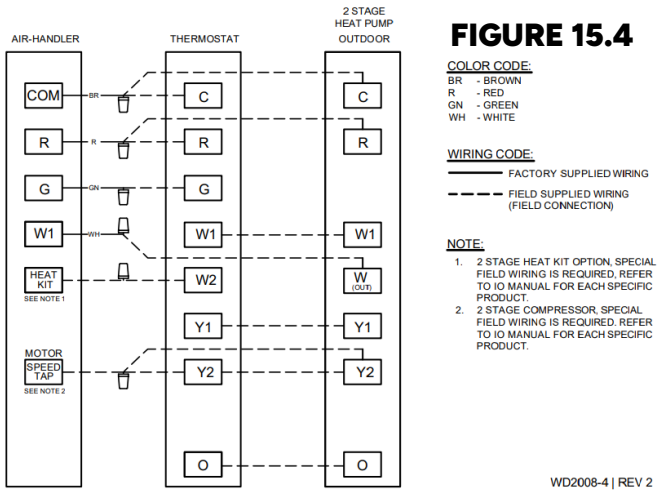


FIGURE 15.4

COLOR CODE:
BR - BROWN
R - RED
GN - GREEN
WH - WHITE

WIRING CODE:
FACTORY SUPPLIED WIRING
FIELD SUPPLIED WIRING (FIELD CONNECTION)

NOTE:
1. 2 STAGE HEAT KIT OPTION, SPECIAL FIELD WIRING IS REQUIRED, REFER TO IO MANUAL FOR EACH SPECIFIC PRODUCT.
2. 2 STAGE COMPRESSOR, SPECIAL FIELD WIRING IS REQUIRED, REFER TO IO MANUAL FOR EACH SPECIFIC PRODUCT.

15. WIRING DIAGRAMS

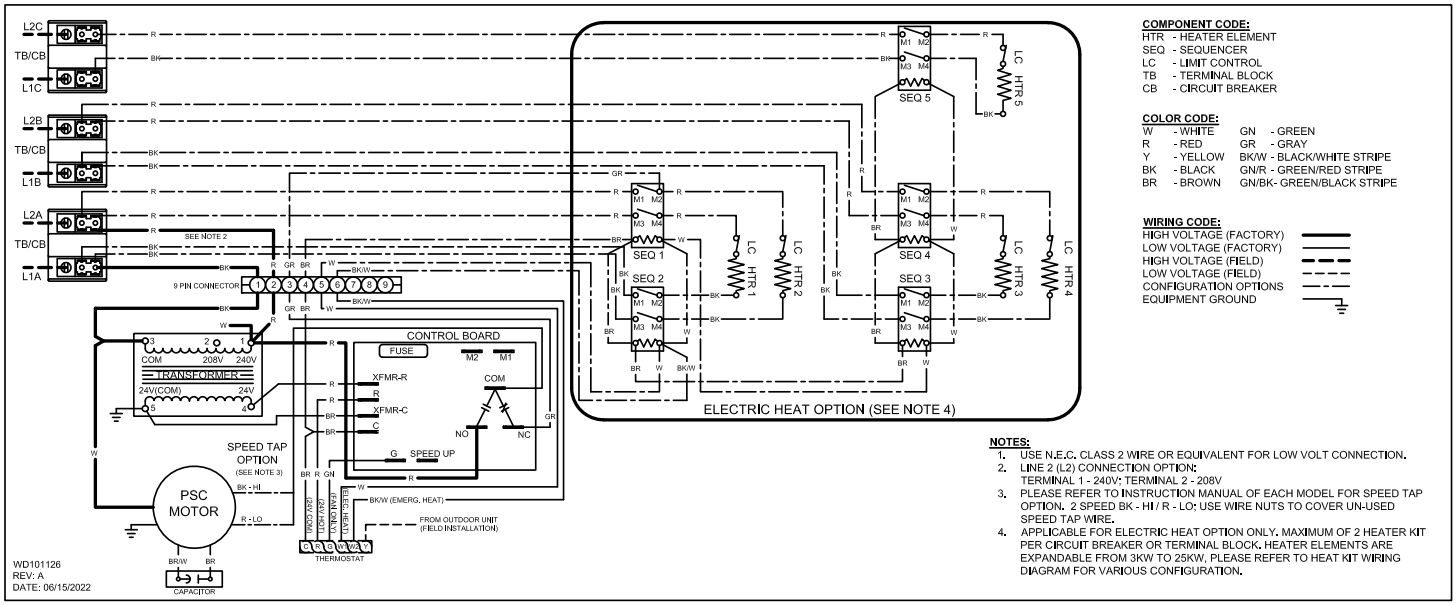


FIGURE 15.5 - PSC MOTOR

NOTE: Wiring Diagram is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

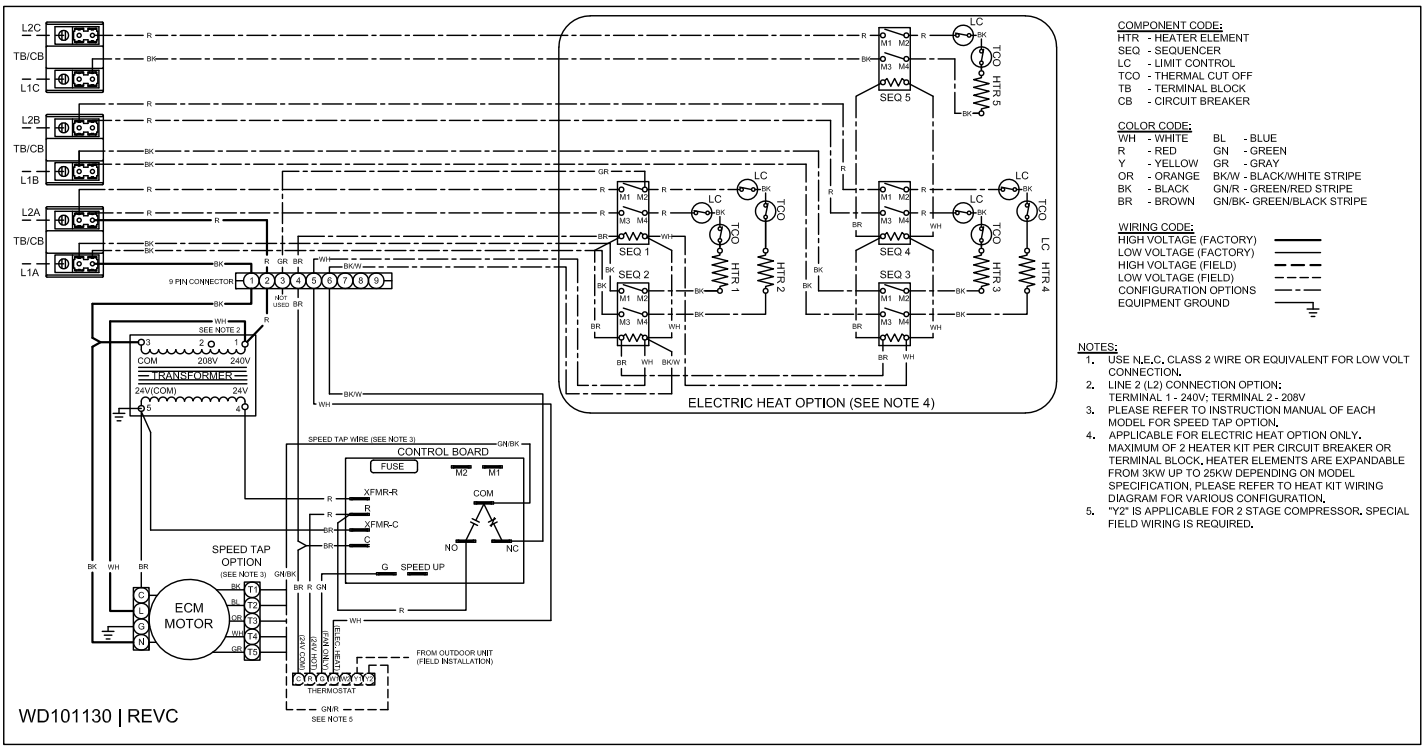


FIGURE 15.6 - ECM MOTOR

NOTE: Wiring Diagram is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

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