**WARNING**

The State of California has determined that this product may contain or produce a chemical or chemicals, in very low doses, which may cause serious illness or death. It may also cause cancer, birth defects, or reproductive harm.

**General**

This XC17 outdoor heat pump is designed for use with HFC-410A refrigerant only. This unit must be installed with an approved indoor air handler or coil. See the Lennox XC17 Product Specifications bulletin (EHB) for approved indoor component match ups.

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

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**STEP 1 -- SETTING THE UNIT -- Clearances**

**CLEARANCE ON ALL SIDES — INCHES (MILLIMETERS)**

- Clearance to access panel must be 30 inches (762mm).
- Clearance to one of the other three sides must be 36 inches (914mm).
- Clearance to one of the remaining two sides may be 12 inches (305mm) and the final side may be 6 inches (152mm).

**MINIMUM CLEARANCE ABOVE UNIT**

- Clearance above the unit must be 48 inches (1219mm).

**MINIMUM CLEARANCE BETWEEN TWO UNITS**

- Clearance between two units must be 24 inches (610mm).

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For more in-depth information, consult the Installation and Service Procedures manual, available as Corp.1022-L3 on DaveNet or through the Technical Support department at 800-453-6669.

---

**CAUTION**

Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.
UNIT DIMENSIONS - INCHES (MM)

4-5/8 (117)
39.40" (1003)
35.50" (902)
18.60" (470)
8.00" (203)
1 (25)

SIDE VIEW

LIQUID LINE INLET

SUCTION LINE INLET

ELECTRICAL INLETS

ACCESS VIEW

UNIT SUPPORT FEET

16-7/8 (429)
8-3/4 (222)
3-1/8 (79)
30-3/4 (781)
4-5/8 (117)

BASE WITH ELONGATED LEGS

STEP 1 -- SETTING THE UNIT (Continued)

-- Unit Placement

WARNING

To prevent personal injury, as well as damage to panels, unit or structure, observe the following:
While installing or servicing this unit, carefully stow all removed panels so that the panels will not cause injury to personnel, objects or nearby structures. Also, take care to store panels where they will not be subject to damage (e.g., being bent or scratched).
While handling or stowing the panels, consider any weather conditions (especially wind) that may cause panels to be blown around and damaged.

CAUTION

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

NOTICE !

Roof Damage!
This system contains both refrigerant and oil. Some rubber roofing material may absorb oil, causing the rubber to degrade. Failure to follow this notice could result in damage to roof surface.
IMPORTANT!

Exhaust vents from dryers, water heaters and furnaces should be directed away from the outdoor unit. Prolonged exposure to exhaust gases and the chemicals contained within them may cause condensation to form on the steel cabinet and other metal components of the outdoor unit. This will diminish unit performance and longevity.

PLACEMENT

INSTALL UNIT AWAY FROM WINDOWS

TWO 90° ELBOWS INSTALLED IN LINE SET WILL REDUCE LINE SET VIBRATION

FIGURE 2

SLAB MOUNTING

Install unit level or, if on a slope, maintain slope tolerance of 2 degrees (or 2 inches per 5 feet [50 mm per 1.5 m]) away from building structure.

FIGURE 3

ELEVATED SLAB MOUNTING USING FEET EXTENDERS

Use additional 2” SCH 40 male threaded adapters which can be threaded into the female threaded adapters to make additional adjustments to the level of the unit.

FIGURE 4

STABILIZING UNIT ON UNEVEN SURFACES

Concrete slab — use two plastic anchors (hole drill 1/4”)

FIGURE 5

IMPORTANT!

Unit Stabilizer Bracket Use (field-provided):
Always use stabilizers when unit is raised above the factory height.
(Elevated units could become unstable in gusty wind conditions.)
Stabilizers may be used on any unit installed on unstable and uneven surfaces.
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 the furnace or air handler installation instructions for additional wiring application diagrams and refer to unit nameplate for minimum circuit ampacity and maximum overcurrent protection size.

24VAC TRANSFORMER
Use the transformer provided with the furnace or air handler for low-voltage control power (24VAC - 40 VA minimum).

**WARNING**

Electric Shock Hazard. Can cause injury or death. Unit must be grounded in accordance with national and local codes.

Line voltage is present at all components when unit is not in operation on units with single-pole contactors. Disconnect all remote electric power supplies before opening access panel. Unit may have multiple power supplies.

**IMPORTANT !**

If unit is equipped with a crankcase heater, it should be energized 24 hours before unit start-up to prevent compressor damage as a result of slugging.

---

**CAUTION**

Electrostatic discharge can affect electronic components. Take care during unit installation and service to protect the unit’s electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the unit, the control and the technician at the same electrostatic potential. Touch hand and all tools on an unpainted unit surface before performing any service procedure to neutralize electrostatic charge.

1. **Size Circuit and Install Disconnect:** Refer to the unit nameplate for minimum circuit ampacity, and maximum fuse or circuit breaker size (HACR per NEC). Install power wiring and properly sized disconnect switch.

   **NOTE** - Units are approved for use only with copper conductors. Ground unit at disconnect switch or connect to an earth ground.

2. **Install Thermostat:** Install room thermostat (ordered separately) on an inside wall in the center of the conditioned area and 5 feet (1.5m) from the floor. The thermostat should not be installed on an outside wall or where it can be affected by sunlight or drafts.

   **NOTE** - 24VAC, Class II circuit connections are made in the control box.
A. ROUTE CONTROL WIRES — NON-COMMUNICATING

Install low voltage control wiring from outdoor to indoor unit and from thermostat to indoor unit. All low voltage wiring must enter unit through provided field-installed busing installed in electrical inlet.

Run 24VAC control wires through hole with grommet. Make 24VAC control wire connections to heat pump control (A175).

NOTE - Do not bundle any excess 24VAC control wires inside control box.

NOTE - Wire tie provides low voltage wire strain relief and maintains separation of field-installed low and high voltage circuits.

NOTE - For proper voltages, select control wires gauge per table below.

<table>
<thead>
<tr>
<th>WIRE RUN LENGTH</th>
<th>AWG#</th>
<th>INSULATION TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LESS THAN 100' (30 METERS)</td>
<td>18</td>
<td>TEMPERATURE RATING</td>
</tr>
<tr>
<td>MORE THAN 100' (30 METERS)</td>
<td>16</td>
<td>35ºC MINIMUM</td>
</tr>
</tbody>
</table>

B. ROUTE CONTROL WIRES — COMMUNICATING

Maximum length of wiring (18 gauge) for all connections on the RSBus is 1500 feet (457 meters). Wires should be color-coded, with a temperature rating of 95ºF (35ºC) minimum, and solid-core (Class II Rated Wiring). All low voltage wiring must enter unit through provided field-installed busing installed in electrical inlet.

Communicating systems using the iComfort™-enabled thermostat require four thermostat wires between the thermostat and the furnace/air handler control and four wires between the outdoor unit and the furnace/air handler control. When a thermostat cable with more than four wires is used, the extra wires must be properly connected to avoid electrical noise (see illustration below).

Use a wire nut to bundle the four unused wires at each end of the cable. Each bundle should also include an additional wire that should be connected on each end to the C terminal as shown in the figure below.

ROUTE HIGH VOLTAGE AND GROUND WIRES

Any excess high voltage field wiring should be trimmed and secured away from any low voltage field wiring. To facilitate a conduit, a cutout is located in the bottom of the control box. Connect conduit to the control box using a proper conduit fitting.

* Attach field-provided green ground wire to provided ground lug.

NOTE - Grounding wire must be a single, continuous wire run from unit ground lug to earth ground.

DO NOT splice wire.
**STEP 2 -- ELECTRICAL (Continued) -- Outdoor Control (A175) Jumpers and Terminals**

### J4 - Compressor Shift Delay
- 30 SECOND DELAY (DEFAULT)
- 0 SECOND DELAY

### J2 - Second-stage Lock-In Temperature
(TWO-STAGE HEAT PUMP ONLY)
- 55 DEGREE TARGET
- 50 DEGREE TARGET
- 45 DEGREE TARGET
- 40 DEGREE TARGET (DEFAULT)

### J3 - Defrost Auto
(HEAT PUMP ONLY)
- JUMPER ON PINS 1 AND 2: DEFROST AUTO ENABLED
- JUMPER ON PINS 2 AND 3: DEFROST AUTO DISABLED (DEFAULT)

### J1 - Defrost Termination Temperature
(HEAT PUMP ONLY)
- MAX TARGET
- 90 DEGREE TARGET (DEFAULT)
- 70 DEGREE TARGET (DEFAULT WHEN JUMPER IS REMOVED OR MISSING)

### DS to R Link - EDA Application
(TWO-STAGE UNIT ONLY)
- NOTE - LINK NOT APPLICABLE TO SINGLE-STAGE UNIT. CUTTING LINK WILL HAVE NO EFFECT ON OPERATION OF SINGLE-STAGE UNITS.
- CUT FOR HUMIDITROL® - ENHANCED DEHUMIFICATION ACCESSORY (EDA) APPLICATIONS.

---

**FIGURE 7**
STEP 2 -- ELECTRICAL (Continued) -- Field Control Wiring

The following two illustrations provide examples of control wiring connections when using a non-communicating thermostat. For examples of control wiring in complete or partial communicating systems, see the iComfort™-enabled thermostat Quick Start Guide which is provided with the thermostat.

### FIGURE 8

<table>
<thead>
<tr>
<th>On-board link</th>
<th>Low voltage thermostat wiring</th>
<th>Flat metal jumper</th>
</tr>
</thead>
</table>

1. Thermostat T terminals are used for outdoor sensor input. Use for thermostat's outdoor temperature display (optional).

2. R to L connection is required for this model when using the ComfortSense® 7000 - catalog number Y0349 only. Resistor kit (catalog number 47W97) is required and must be ordered separately.

3. Air handler control ships from factory with metal jumpers installed across W1, W2 and W3. For one-stage electric heat, do not remove factory installed metal jumpers.

4. Air handler control ships from factory with metal jumpers installed across W1, W2 and W3. For two-stage electric heat, remove factory installed metal jumper between W1 to W2. Then connect thermostat wire between the air handler control's W2 and the thermostat's W2 terminal.

5. Cut on-board link (clippable wire) DS-R for Humiditrol® or Harmony III/C0153 applications. This will slow the indoor blower motor to the lowest speed setting. See air handler installation instruction or engineering handbook for lowest fan speed information.

### FIGURE 9

<table>
<thead>
<tr>
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</tr>
</thead>
</table>

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2. R to L connection is required for this model when using the ComfortSense® 7000 - catalog number Y0349 only. Resistor kit (catalog number 47W97) is required and must be ordered separately.

3. Cut on-board link (clippable wire) DS-R for Humiditrol® or Harmony III applications. This will slow the indoor blower motor to the lowest speed setting. See furnace installation instruction or engineering handbook for lowest fan speed information.

Cut on-board link (W914) (clippable wire) from DS to R for dehumidification (Optional).
STEP 3 -- REFRIGERANT PIPING -- Flush­ing Existing Line Set & Indoor Coil

Flush the existing line set per the following instruct­ions. For more information, refer to the Installation and Service Procedures manual available on Dave­Net. CAUTION - DO NOT attempt to flush and re-use ex­isting line sets or indoor coil when the system con­tains contaminants (i.e., compressor burn out).

NOTE - When installing refrigerant lines longer than 50 feet, refer to the Refrigerant Piping Design and Fabrication Guidelines manual available on DaveNet (Corp. 9351-L9), or contact the Technical Support Department Product Ap­plication group for assistance.

NOTE - For new or replacement line set installation, refer to Service and Application Note - Corp. 9112-L4 (C-91-4).

### TABLE 1

<table>
<thead>
<tr>
<th>Model Size</th>
<th>Field Connections</th>
<th>Recommended Line Set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Liquid Line</td>
<td>Suction Line</td>
</tr>
<tr>
<td>-024</td>
<td>3/8&quot; (10)</td>
<td>3/4&quot; (19)</td>
</tr>
<tr>
<td>-030</td>
<td>3/8&quot; (10)</td>
<td>7/8&quot; (22)</td>
</tr>
<tr>
<td>-036</td>
<td>3/8&quot; (10)</td>
<td>7/8&quot; (22)</td>
</tr>
<tr>
<td>-042</td>
<td>3/8&quot; (10)</td>
<td>1-1/8&quot; (29)</td>
</tr>
<tr>
<td>-048</td>
<td>3/8&quot; (10)</td>
<td>1-1/8&quot; (29)</td>
</tr>
<tr>
<td>-060</td>
<td>3/8&quot; (10)</td>
<td>1-1/8&quot; (29)</td>
</tr>
</tbody>
</table>

IMPORTANT!

If this unit is being matched with an approved line set or indoor unit coil that was previously charged with mineral oil, or if it is being matched with a coil which was manufactured before January of 1999, the coil and line set must be flushed prior to installation. Take care to empty all existing traps. Polyol ester (POE) oils are used in Lennox units charged with HFC-410A refrigerant. Residual mineral oil can act as an insulator, preventing proper heat transfer. It can also clog the expansion device and reduce system performance and capacity. Failure to properly flush the system per this instruction and the detailed Installation and Service Proce­dures manual will void the warranty.

**WARNING**

Refrigerant can be harmful if it is inhaled. Refrigerant must be used and recovered responsibly. Failure to follow this warning may result in personal injury or death.

**WARNING**

Fire, Explosion and Personal Safety Hazard. Failure to follow this warning could result in damage, personal injury or death. Never use oxygen to pressurize or purge refrigeration lines. Oxygen, when exposed to a spark or open flame, can cause fire and/or an explosion, that could result in property damage, personal injury or death.

**WARNING**

Polyol ester (POE) oils used with HFC-410A refrigerant absorb moisture very quickly. It is very important that the refrigerant system be kept closed as much as possible. DO NOT remove line set caps or service valve stub caps until you are ready to make connections.

**WARNING**

This product and/or the matching indoor unit may contain fiberglass wool. Disturbing the insulation during installation, maintenance, or repair will expose you to fiberglass wool dust. Breathing this may cause lung cancer. (Fiberglass wool is known to the State of California to cause cancer.) Fiberglass wool may also cause respiratory, skin, and eye irritation.

To reduce exposure to this substance or for further information, consult material safety data sheets available from address shown below, or contact your supervisor.

Lennox Industries Inc.
P.O. Box 799900
Dallas, TX 75379-9900

**IMPORTANT!**

Some scroll compressors have an internal vacuum protector that will unload scrolls when suction pressure goes below 20 psig. A hissing sound will be heard when the compressor is running unloaded. Protector will reset when low pressure in system is raised above 40 psig. DO NOT REPLACE COM­PRESSOR.
STEP 4 -- REFRIGERANT PIPING -- Removing Existing Indoor Metering Device

1A TYPICAL EXISTING FIXED ORIFICE REMOVAL PROCEDURE (UNCASED COIL SHOWN)

1. On fully cased coils, remove the coil access and plumbing panels.
2. Remove any shipping clamps from the liquid line and distributor assembly.
3. Using two wrenches, disconnect liquid line from liquid line orifice housing. Take care not to twist or damage distributor tubes during this process.
4. Remove and discard fixed orifice, valve stem assembly (if present) and Teflon® washer as illustrated above.
5. Use a field-provided fitting to temporarily reconnect the liquid line to the indoor unit's liquid line orifice housing.

1B TYPICAL EXISTING EXPANSION VALVE REMOVAL PROCEDURE (UNCASED COIL SHOWN)

1. On fully cased coils, remove the coil access and plumbing panels.
2. Remove any shipping clamps from the liquid line and distributor assembly.
3. Disconnect the equalizer line from the expansion valve equalizer line fitting on the vapor line.
4. Remove the vapor line sensing bulb.
5. Disconnect the liquid line from the expansion valve at the liquid line assembly.
6. Disconnect the expansion valve from the liquid line orifice housing. Take care not to twist or damage distributor tubes during this process.
7. Remove and discard expansion valve and the two Teflon® rings.
8. Use a field-provided fitting to temporarily reconnect the liquid line to the indoor unit's liquid line orifice housing.

2 CONNECT GAUGES AND EQUIPMENT FOR FLUSHING PROCEDURE

1. HCFC-22 cylinder with clean refrigerant (positioned to deliver liquid refrigerant) to the vapor service valve.
2. HCFC-22 gauge set (low side) to the liquid line valve.
3. HCFC-22 gauge set center port to inlet on the recovery machine with an empty recovery tank connected to the gauge set.
4. Connect recovery tank to recovery machine per machine instructions.

3 FLUSHING LINE SET

The line set and indoor unit coil must be flushed with at least the same amount of clean refrigerant that previously charged the system. Check the charge in the flushing cylinder before proceeding.

1. Set the recovery machine for liquid recovery and start the recovery machine. Open the gauge set valves to allow the recovery machine to pull a vacuum on the existing system line set and indoor unit coil.
2. Position the cylinder of clean HCFC-22 for delivery of liquid refrigerant and open its valve to allow liquid refrigerant to flow into the system through the vapor line valve. Allow the refrigerant to pass from the cylinder and through the line set and the indoor unit coil before it enters the recovery machine.
3. After all of the liquid refrigerant has been recovered, switch the recovery machine to vapor recovery so that all of the HCFC-22 vapor is recovered. Allow the recovery machine to pull the system down to 0.
4. Close the valve on the inverted HCFC-22 drum and the gauge set valves. Pump the remaining refrigerant out of the recovery machine and turn the machine off.

FIGURE 10
### STEP 5 -- REFRIGERANT PIPING -- Brazing Procedures

#### 1 PIPING PANEL REMOVAL / PREPARING LINE SET

Remove piping panel to access service valves. Cut ends of the refrigerant lines square (free from nicks or dents) and debur the ends. The pipe must remain round. Do not crimp end of the line.

#### 2 CAP AND CORE REMOVAL

Remove service cap and core from both the suction / vapor and liquid line service ports.

#### 3 ATTACH THE MANIFOLD GAUGE SET FOR BRAZING LIQUID AND SUCTION / VAPOR LINE SERVICE VALVES

A. Connect gauge set low pressure side to liquid line service valve (service port).
B. Connect gauge set center port to bottle of nitrogen with regulator.
C. With valve core removed from the suction / vapor line service port, nitrogen flow will have an exit point.
**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.

**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.

**WRAP SERVICE VALVES**

To help protect service valve seals during brazing, wrap water-saturated cloths around service valve bodies and copper tube stubs. Use additional water-saturated cloths under the valve body to protect the base paint.

**FLOW NITROGEN**

Flow regulated nitrogen (at 1 to 2 psig) through the refrigeration gauge set into the valve stem port connection on the liquid service valve and out of the suction / vapor valve stem port. See steps 3A, 3B and 3C on the previous page and below for manifold gauge setup.

**BRAZE LINE SET**

Cloths must remain water-saturated throughout the brazing and cool-down process.

1. Braze liquid line to liquid line service valve.
2. Braze suction / vapor line to suction / vapor service valve.

**IMPORTANT !**

Allow braze joint to cool. Apply additional water-saturated cloths to help cool brazed joints. Do not remove water-saturated cloths until piping has cooled. Temperatures above 250°F will damage valve seals.

**PREPARATION FOR NEXT STEP**

After all connections have been brazed, disconnect manifold gauge set from service ports. Apply additional water-saturated cloths to both services valves to cool piping. Once piping is cool, remove all water-saturated cloths.
STEP 6 -- INSTALLING INDOOR EXPANSION VALVE

THIS OUTDOOR UNIT IS DESIGNED FOR USE IN SYSTEMS THAT USE A CHECK EXPANSION VALVE METERING DEVICE. SEE THE LENNOX XC17 PRODUCT SPECIFICATION FOR APPROVED EXPANSION VALVE KIT MATCH-UPS AND APPLICATION INFORMATION.

THE EXPANSION VALVE UNIT CAN BE INSTALLED INTERNAL OR EXTERNAL TO THE INDOOR COIL. IN APPLICATIONS WHERE AN UNCASED COIL IS BEING INSTALLED IN A FIELD-PROVIDED PLENUM, INSTALL THE CHECK EXPANSION VALVE IN A MANNER WHICH PROVIDES ACCESS FOR FIELD SERVICING OF THE EXPANSION VALVE. REFER TO BELOW ILLUSTRATION FOR REFERENCE DURING INSTALLATION OF EXPANSION VALVE UNIT.

1. ATTACH THE VAPOR LINE SENSING BULB IN THE PROPER ORIENTATION AS ILLUSTRATED TO THE RIGHT USING THE CLAMP AND SCREWS PROVIDED.

   NOTE - CONFIRM PROPER THERMAL CONTACT BETWEEN VAPOR LINE AND CHECK EXPANSION BULB BEFORE INSULATING THE SENSING BULB ONCE INSTALLED.

2. CONNECT THE EQUALIZER LINE FROM THE EXPANSION VALVE TO THE EQUALIZER VAPOR PORT ON THE VAPOR LINE. FINGER TIGHTEN THE FLARE NUT PLUS 1/8 TURN (7 FT-LBS) AS ILLUSTRATED BELOW.

   CONNECT THE EQUALIZER LINE TO THE EQUALIZER VAPOR PORT ON THE VAPOR LINE. FINGER TIGHTEN THE FLARE NUT PLUS 1/8 TURN (7 FT-LBS) AS ILLUSTRATED BELOW.

   TEFLON® RING
   LIQUID LINE ORIFICE HOUSING
   STUB END
   EXPANSION VALVE
   LIQUID LINE ASSEMBLY WITH BRASS NUT
   MALE EQUALIZER LINE FITTING (SEE EQUALIZER LINE INSTALLATION FOR FURTHER DETAILS)
   SENSING LINE
   LIQUID LINE

   SENSING BULB INSULATION IS REQUIRED IF MOUNTED EXTERNAL TO THE COIL CASING. SEE SENSING BULB INSTALLATION FOR BULB POSITIONING.

SENSING BULB INSTALLATION

1. ATTACH THE VAPOR LINE SENSING BULB IN THE PROPER ORIENTATION AS ILLUSTRATED TO THE RIGHT USING THE CLAMP AND SCREWS PROVIDED.

   NOTE - CONFIRM PROPER THERMAL CONTACT BETWEEN VAPOR LINE AND CHECK EXPANSION BULB BEFORE INSULATING THE SENSING BULB ONCE INSTALLED.

2. CONNECT THE EQUALIZER LINE FROM THE EXPANSION VALVE TO THE EQUALIZER VAPOR PORT ON THE VAPOR LINE. FINGER TIGHTEN THE FLARE NUT PLUS 1/8 TURN (7 FT-LBS) AS ILLUSTRATED BELOW.

   TEFLON® RING
   LIQUID LINE ORIFICE HOUSING
   STUB END
   EXPANSION VALVE
   LIQUID LINE ASSEMBLY WITH BRASS NUT
   MALE EQUALIZER LINE FITTING (SEE EQUALIZER LINE INSTALLATION FOR FURTHER DETAILS)
   SENSING LINE
   LIQUID LINE

   SENSING BULB INSULATION IS REQUIRED IF MOUNTED EXTERNAL TO THE COIL CASING. SEE SENSING BULB INSTALLATION FOR BULB POSITIONING.

EQUALIZER LINE INSTALLATION

REMOVE AND DISCARD EITHER THE FLARE SEAL CAP OR FLARE NUT WITH COPPER FLARE SEAL BONNET FROM THE EQUALIZER LINE PORT ON THE VAPOR LINE AS ILLUSTRATED IN THE FIGURE TO THE RIGHT.

FIGURE 13
**STEP 7 -- LEAK TEST**

**CONNECT GAUGE SET**

A. Connect the high pressure hose of an HFC-410A manifold gauge set to the vapor valve service port.

   **NOTE** - Normally, the high pressure hose is connected to the liquid line port. However, connecting it to the vapor port better protects the manifold gauge set from high pressure damage.

B. With both manifold valves closed, connect the cylinder of HFC-410A refrigerant to the center port of the manifold gauge set.

   **NOTE** - Later in the procedure, the HFC-410A container will be replaced by the nitrogen container.

**TEST FOR LEAKS**

After the line set has been connected to the indoor and outdoor units, check the line set connections and indoor unit for leaks. Use the following procedure to test for leaks:

A. With both manifold valves closed, connect the cylinder of HFC-410A refrigerant to the center port of the manifold gauge set. Open the valve on the HFC-410A cylinder (vapor only).

B. Open the high pressure side of the manifold to allow HFC-410A into the line set and indoor unit. Weigh in a trace amount of HFC-410A. *[A trace amount is a maximum of two ounces (57 g) refrigerant or three pounds (31 kPa) pressure.]* Close the valve on the HFC-410A cylinder and the valve on the high pressure side of the manifold gauge set. Disconnect the HFC-410A cylinder.

C. Connect a cylinder of nitrogen with a pressure regulating valve to the center port of the manifold gauge set.

D. Adjust nitrogen pressure to 150 psig (1034 kPa). Open the valve on the high side of the manifold gauge set in order to pressurize the line set and the indoor unit.

E. After a few minutes, open one of the service valve ports and verify that the refrigerant added to the system earlier is measurable with a leak detector.

F. After leak testing, disconnect gauges from service ports.
STEP 8 -- EVACUATION

Evacuating the system of non-condensables is critical for proper operation of the unit. Non-condensables are defined as any gas that will not condense under temperatures and pressures present during operation of an air conditioning system. Non-condensables and water suction combine with refrigerant to produce substances that corrode copper piping and compressor parts.

⚠️ WARNING

Danger of Equipment Damage. Avoid deep vacuum operation. Do not use compressors to evacuate a system. Extremely low vacuums can cause internal arcing and compressor failure. Damage caused by deep vacuum operation will void warranty.

LINE SET AND INDOOR COIL

CONNECT GAUGE SET

NOTE - Remove cores from service valves (if not already done).

A Connect low side of manifold gauge set with 1/4 SAE in-line tee to vapor line service valve.
B Connect high side of manifold gauge set to liquid line service valve.
C Connect micron gauge available connector on the 1/4 SAE in-line tee.
D Connect the vacuum pump (with vacuum gauge) to the center port of the manifold gauge set. The center port line will be used later for both the HFC-410A and nitrogen containers.

If vacuum must be interrupted during the evacuation procedure, always break vacuum with dry nitrogen.

Deep Vacuum Method

The deep vacuum method requires a vacuum pump capable of pulling a vacuum to 500 microns and a vacuum gauge capable of accurately measuring this vacuum level. The deep vacuum method is the most positive way of assuring a system is free of air and water.

Watch the vacuum gauge as the system is pulling down. The response of the gauge is an indicator of the condition of the system (refer to figure 16).

With no leaks in the system, allow the vacuum pump to run for 30 minutes minimum at the deep vacuum level.

EVACUATE LINE SET AND INDOOR COIL

The unit is shipped with a factory refrigerant charge. The liquid and suction line valves were closed after final testing at the factory. Do not operate these valves until the line set and indoor coil have been evacuated and leak checked, or the charge is lost.

Note: Do not use any portion of the factory charge for purging or leak testing. The factory charge is for filling the system only after a complete evacuation and leak check has been performed.

Line set and indoor coil should be evacuated using the recommend deep vacuum method of 500 microns. If deep vacuum equipment is not available, the alternate triple evacuation method may be used by following the specified procedure.
FIGURE 16

Triple Evacuation Method
The triple evacuation method should only be used when system does not contain any water in liquid form and vacuum pump is only capable of pulling down to 28 inches of mercury (711mm Hg). Refer to figure 17 and proceed as follows:

1. Pull system down to 28 inches of mercury (711mm Hg) and allow pump to continue operating for an additional 15 minutes.
2. Close manifold valves or valve at vacuum pump and shut off vacuum pump.
3. Connect a nitrogen cylinder and regulator to system and fill with nitrogen until system pressure is 2 psig.
4. Close nitrogen valve and allow system to stand for one hour. During this time, dry nitrogen will diffuse throughout the system absorbing moisture.
5. Repeat this procedure as indicated in figure 17.
6. After the final evacuate sequence, confirm there are no leaks in the system. If a leak is found, repeat the entire process after repair is made.
7. Reconnect the manifold gauge to the vacuum pump, turn the pump on, and continue to evacuate the line set and indoor unit until the absolute pressure does not rise above 500 microns (29.9 inches of mercury) within a 20-minute period after shutting off the vacuum pump and closing the manifold gauge valves.
8. Disconnect the manifold hose from the vacuum pump and connect it to an inverted cylinder of HFC-410A positioned to deliver liquid refrigerant. Open the manifold gauge valve 1 to 2 psig in order to release the vacuum in the line set and indoor unit.
9. Perform the following:
   - Close manifold gauge valves.
   - Shut off HFC-410A cylinder.
   - Slowly open the service valves.
   - Refer to the charging sticker on the unit to complete the outdoor unit installation.

FIGURE 17

Triple Evacuation Sequence

1. EVACUATE
2. BREAK VACUUM WITH DRY NITROGEN
3. WAIT
4. BREAK VACUUM WITH DRY NITROGEN
5. WAIT
6. EVACUATE
7. CHECK FOR TIGHT, DRY SYSTEM (IF IT HOLDS DEEP VACUUM)
8. CHARGE SYSTEM

Charging
The XC17 unit is factory-charged with enough HFC-410A refrigerant to accommodate a 15-foot length of refrigerant piping. Charge should be checked and adjusted using the tables provided on the charging procedure sticker on the unit access panel. Detailed information is given in the XC17 Installation and Service Procedures manual, which is available on DaveNet.

Homeowner Information

**CAUTION**
Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.

Cleaning of the outdoor unit’s coil should be performed by a licensed professional service technician (or equivalent). Contact your dealer and set up a schedule (preferably twice a year, but at least once a year) to inspect and service your outdoor unit. The following maintenance may be performed by the homeowner.

**IMPORTANT !**
Sprinklers and soaker hoses should not be installed where they could cause prolonged exposure to the outdoor unit by treated water. Prolonged exposure of the unit to treated water (i.e., sprinkler systems, soakers, waste water, etc.) will corrode the surface of steel and aluminum parts, diminish performance and affect longevity of the unit.
**Outdoor Coil**
The outdoor unit must be properly maintained to ensure its proper operation.

- Please contact your dealer to schedule proper inspection and maintenance for your equipment.
- Make sure no obstructions restrict airflow to the outdoor unit.
- Grass clippings, leaves, or shrubs crowding the unit can cause the unit to work harder and use more energy.
- Keep shrubbery trimmed away from the unit and periodically check for debris which collects around the unit.
- Keep snow level below the louvered panels to ensure proper performance.

**Routine Maintenance**
In order to ensure peak performance, your system must be properly maintained. Clogged filters and blocked airflow prevent your unit from operating at its most efficient level.

*NOTE - The filter and all access panels must be in place any time the unit is in operation. If you are unsure about the filter required for your system, call your Lennox dealer for assistance.*

1. Ask your Lennox dealer to show you where your indoor unit’s filter is located. It will be either at the indoor unit (installed internal or external to the cabinet) or behind a return air grille in the wall or ceiling. Check the filter monthly and clean or replace it as needed.
2. Disposable filters should be replaced with a filter of the same type and size.
3. The indoor evaporator coil is equipped with a drain pan to collect condensate formed as your system removes humidity from the inside air. Have your dealer show you the location of the drain line and how to check for obstructions. (This would also apply to an auxiliary drain, if installed.)

**Thermostat Operation**
See the ComfortSense® 7000 or iComfort™-enabled thermostat homeowner manual for instructions on how to operate your thermostat.

**Preservice Check**
If your system fails to operate, check the following before calling for service:

- Verify room thermostat settings are correct.
- Verify that all electrical disconnect switches are ON.
- Check for any blown fuses or tripped circuit breakers.
- Verify unit access panels are in place.
- Verify air filter is clean.
- If service is needed, locate and write down the unit model number and have it handy before calling.

**Start-Up Checklists**

**TOOLS REQUIRED**
- Refrigeration gauge set
- Digital volt/amp meter
- Electronic temperature thermometer
- On-off toggle switch
**Important**

This performance check is ONLY valid on systems that have clean indoor and outdoor coils, proper airflow over coils, and correct system refrigerant charge. All components in the system must be functioning properly to correctly perform compressor operational check. (Accurate measurements are critical to this test as indoor system loading and outdoor ambient can affect variations between low and high capacity readings).

### XC17 Start-Up and Performance Checklist

<table>
<thead>
<tr>
<th>Customer</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor Unit Model</td>
<td>Serial</td>
</tr>
<tr>
<td>Outdoor Unit Model</td>
<td>Serial</td>
</tr>
<tr>
<td>Solar Module Mfg and Model</td>
<td>Serial</td>
</tr>
</tbody>
</table>

**Notes:**

### START-UP CHECKS

**Refrigerant Type:**

<table>
<thead>
<tr>
<th>Rated Load Amps</th>
<th>Actual Amps</th>
<th>Rated Volts</th>
<th>Actual Volts</th>
</tr>
</thead>
</table>

| Condenser Fan Full Load Amps | Actual Amps: |

**COOLING MODE**

<table>
<thead>
<tr>
<th>Vapor Pressure</th>
<th>Liquid Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Air Temperature</td>
<td>Ambient Temperature</td>
</tr>
</tbody>
</table>

**HEATING MODE**

<table>
<thead>
<tr>
<th>Vapor Pressure</th>
<th>Liquid Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Air Temperature</td>
<td>Ambient Temperature</td>
</tr>
</tbody>
</table>

System Refrigerant Charge (Refer to manufacturer's information on unit or installation instructions for required subcooling and approach temperatures.)

### Subcooling

\[
\text{Saturated Condensing Temperature (A) } \quad \frac{A - B}{	ext{minus Liquid Line Temperature (B)}} = \text{SUBCOOLING}
\]

### Approach

\[
\text{Liquid Line Temperature (A) } \quad \frac{A - B}{	ext{minus Outdoor Air Temperature (B)}} = \text{APPROACH}
\]

### Indoor Coil Temp. Drop (18 to 22°F)

\[
\text{Return Air Temperature (A) } \quad \frac{A - B}{	ext{minus Supply Air Temperature (B)}} = \text{COIL TEMP DROP}
\]