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Dallas, Texas, USA



THIS MANUAL MUST BE LEFT WITH THE HOMEOWNER FOR FUTURE REFERENCE

⚠ WARNING

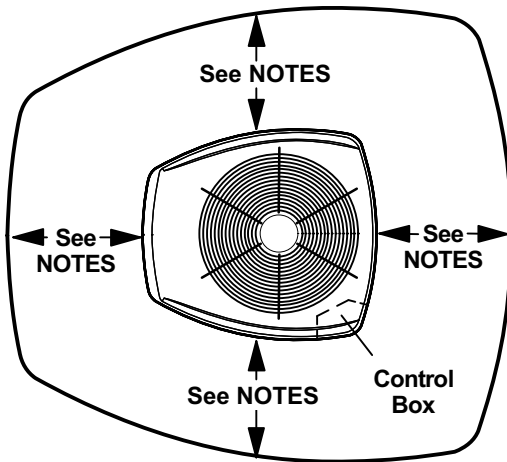
The State of California has determined that this product may contain or produce a chemical or chemicals, in very low doses, which may cause serious illness or death. It may also cause cancer, birth defects, or reproductive harm.

General

This XP14 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 XP14 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.

STEP 1 -- SETTING THE UNIT -- Clearances



NOTES:

Service clearance of 30 in. must be maintained on one of the sides adjacent to the control box.

Clearance to one of the other three sides must be 36 in.

Clearance to one of the remaining two sides may be 12 in. and the final side may be 6 in..

A clearance of 24 in. must be maintained between two units.

48 in. clearance required on top of unit.

FIGURE 1

INSTALLATION INSTRUCTIONS

Elite® Series XP14 Units

HEAT PUMP
506772-01
6/2013
Supersedes 1/2013

TPD Technical
Publications
Litho U.S.A.

⚠ WARNING

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

Installation and service must be performed by a licensed professional installer (or equivalent) or service agency.

NOTICE !

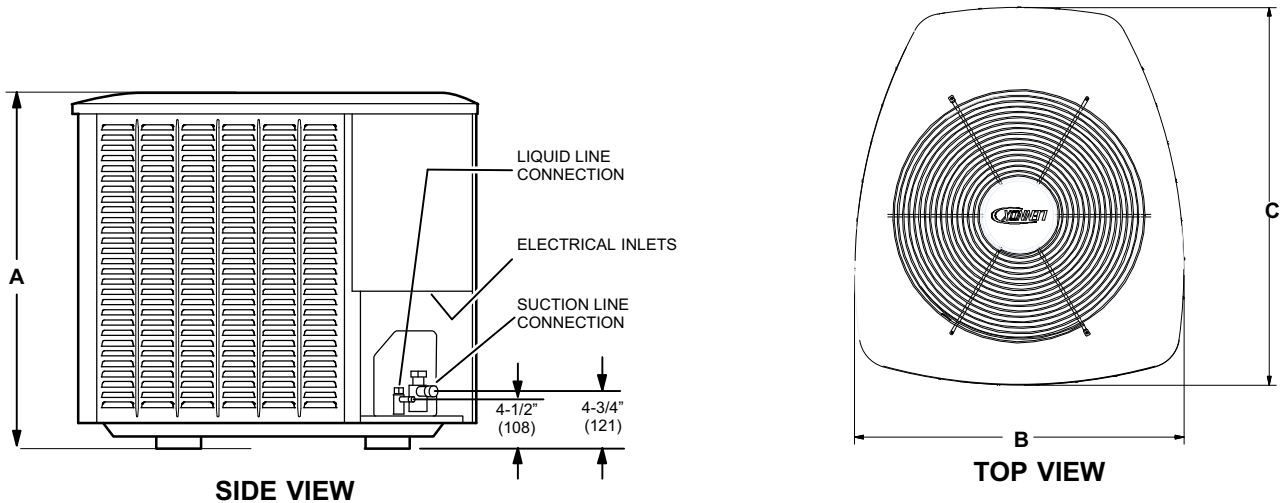
For more in-depth information, consult the Installation and Service Procedures manual, available as Corp. 0721-L7 on DaveNet or through the Technical Support department at 800-453-6669.

⚠ CAUTION

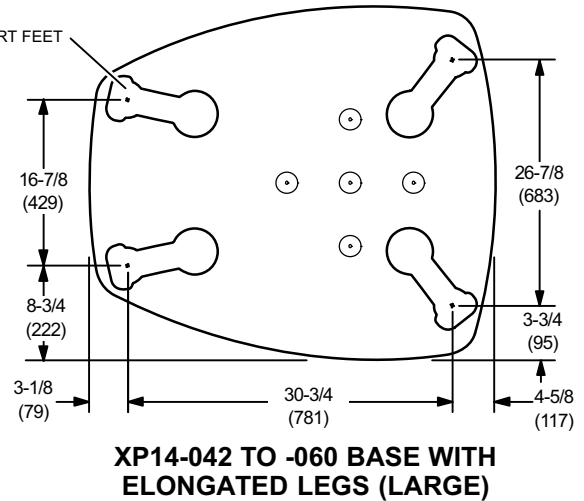
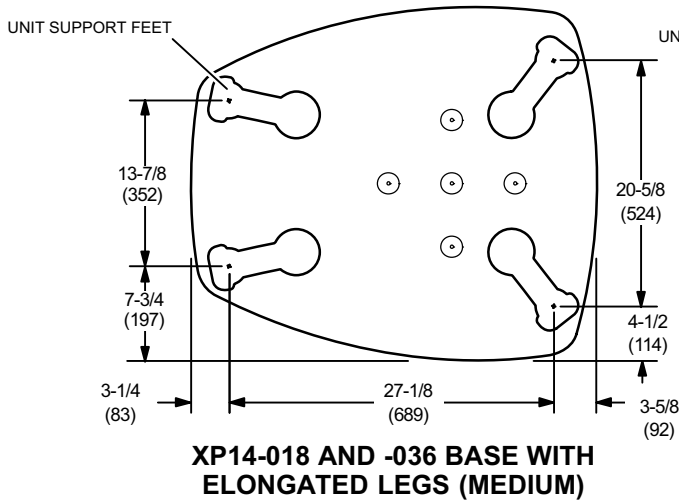
As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment.



UNIT DIMENSIONS - INCHES (MM)



Model Number	A	B	C
XP14-018-230	31 (787)	30-1/2 (775)	35 (889)
XP14-024-230	39 (991)		
XP14-030-230	39 (991)		
XP14-036-230	35 (889)	35-1/2 (902)	39-1/2 (1003)
XP14-042-230	39 (991)		
XP14-048-230	39 (991)		
XP14-060-230	45 (1143)		



STEP 1 -- SETTING THE UNIT (Continued)
-- Unit Placement

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.

! 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).

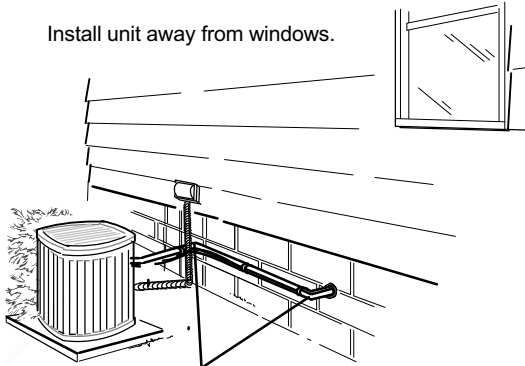
While handling or stowing the panels, consider any weather conditions (especially wind) that may cause panels to be blown around and damaged.

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.

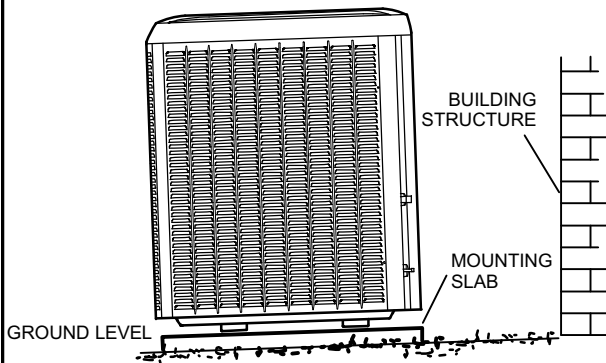
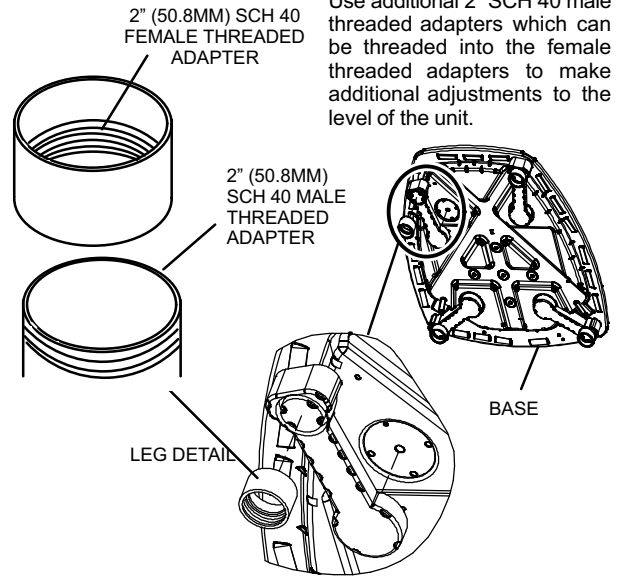


FIGURE 3

CAUTION

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

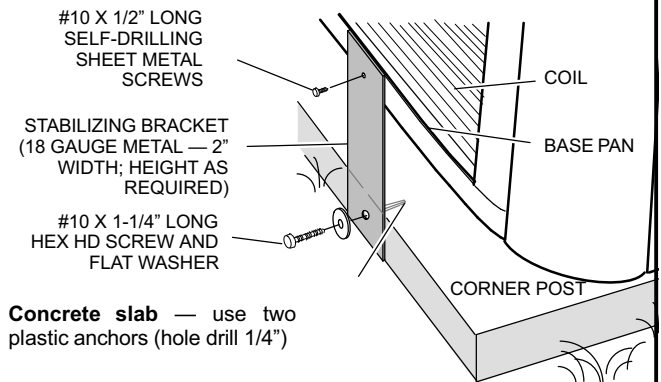
ELEVATED SLAB MOUNTING USING FEET EXTENDERS



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



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.

FIGURE 5

STEP 2 -- 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
REFRIGERANT LINE SET — INCHES (MM)**

Model	Valve Field Connections		Recommended Line Set		
	Liquid Line	Vapor Line	Liquid Line	Vapor Line	L15 Line Sets
-018	3/8 in. (10 mm)	3/4 in. (19 mm)	3/8 in. (10 mm)	3/4 in. (19 mm)	L15-41 — 15 ft. - 50 ft. (4.6 m - 15 m)
-024					
-030					
-036	3/8 in. (10 mm)	7/8 in. (22 mm)	3/8 in. (10 mm)	7/8 in. (22 mm)	L15-65 — 15 ft. - 50 ft. (4.6 m - 15 m)
-042					
-048					
-060	3/8 in. (10 mm)	1-1/8 in. (29 mm)	3/8 in. (10 mm)	1-1/8 in. (29 mm)	Field Fabricated

NOTE — Some applications may required a field provided 7/8" to 1-1/8" adapter

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



When using a high pressure gas such as nitrogen to pressurize a refrigeration or air conditioning system, use a regulator that can control the pressure down to 1 or 2 psig (6.9 to 13.8 kPa).

! 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

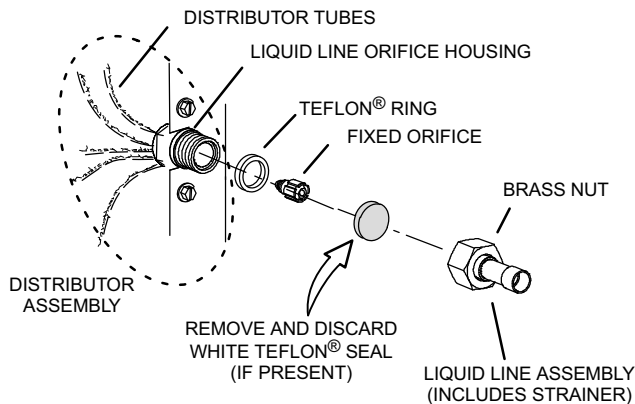
Polyol ester (POE) oils used with HFC-410A refrigerant absorb moisture very quickly. It is very important that the refrigerant system be kept closed as much as possible. DO NOT remove line set caps or service valve stub caps until you are ready to make connections.

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.**

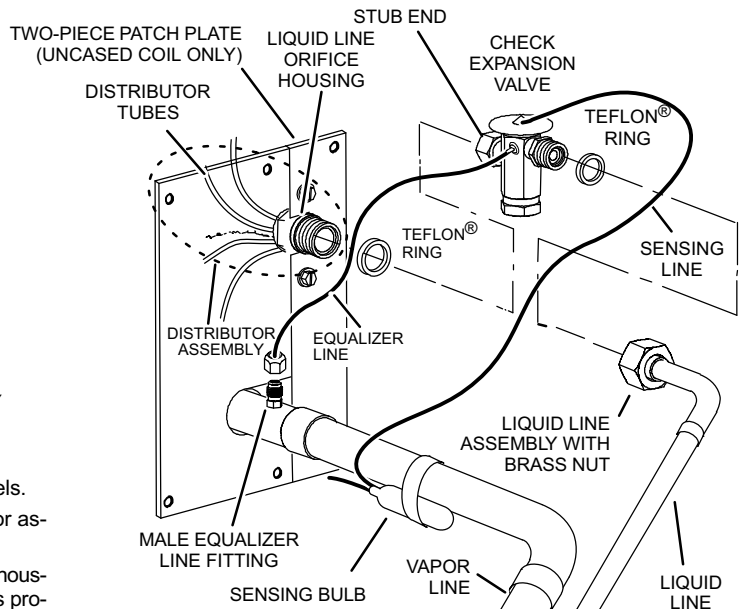
STEP 2 -- REFRIGERANT PIPING -- Removing Existing Indoor Metering Device

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



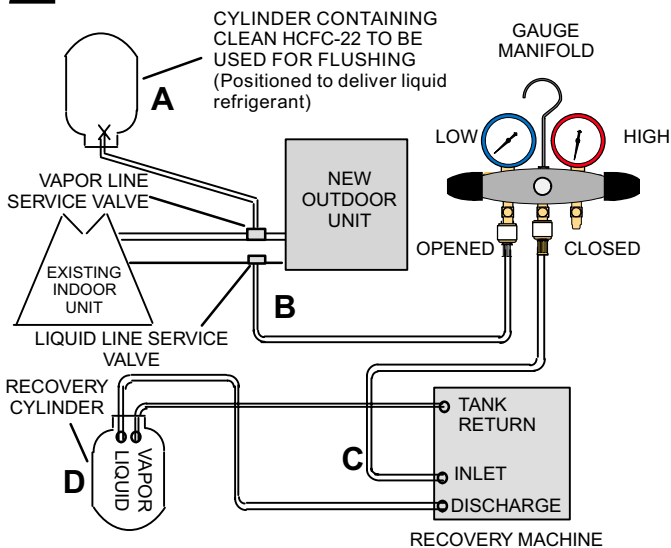
- A. On fully cased coils, remove the coil access and plumbing panels.
- B. Remove any shipping clamps from the liquid line and distributor assembly.
- C. Using two wrenches, disconnect liquid line from liquid line orifice housing. Take care not to twist or damage distributor tubes during this process.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

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



- A. On fully cased coils, remove the coil access and plumbing panels.
- B. Remove any shipping clamps from the liquid line and distributor assembly.
- C. Disconnect the equalizer line from the check expansion valve equalizer line fitting on the vapor line.
- D. Remove the vapor line sensing bulb.
- E. Disconnect the liquid line from the check expansion valve at the liquid line assembly.
- F. Disconnect the check expansion valve from the liquid line orifice housing. Take care not to twist or damage distributor tubes during this process.
- G. Remove and discard check expansion valve and the two Teflon® rings.
- H. 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



- A. HCFC-22 cylinder with clean refrigerant (positioned to deliver liquid refrigerant) to the vapor service valve.
- B. HCFC-22 gauge set (low side) to the liquid line valve.
- C. HCFC-22 gauge set center port to inlet on the recovery machine with an empty recovery tank connected to the gauge set.
- D. 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.

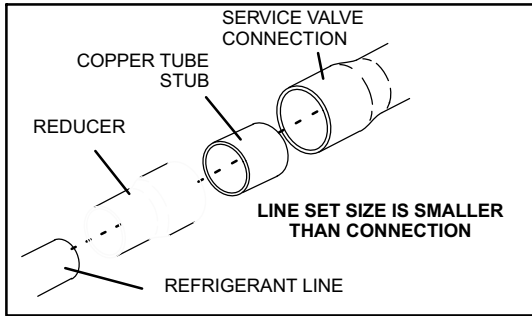
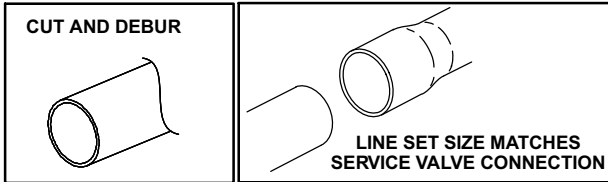
- A. Set the recovery machine for liquid recovery and start the recovery machine. Open the gauge set valves to allow the recovery machine to pull a vacuum on the existing system line set and indoor unit coil.
- B. Position the cylinder of clean HCFC-22 for delivery of liquid refrigerant and open its 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.
- C. 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.
- D. 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 6

STEP 2 -- REFRIGERANT PIPING -- Brazing Procedures

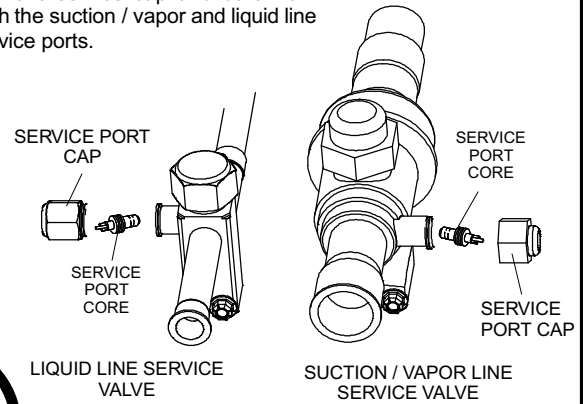
1 CUT AND DEBUR

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.



DO NOT CRIMP SERVICE VALVE CONNECTOR WHEN PIPE IS SMALLER THAN CONNECTION

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

Flow regulated nitrogen (at 1 to 2 psig) through the low-side refrigeration gauge set into the liquid line service port valve, and out of the suction / vapor line service port valve.

- Connect gauge set low pressure side to liquid line service valve (service port).
- Connect gauge set center port to bottle of nitrogen with regulator.
- Remove core from valve in suction / vapor line service port to allow nitrogen to escape.

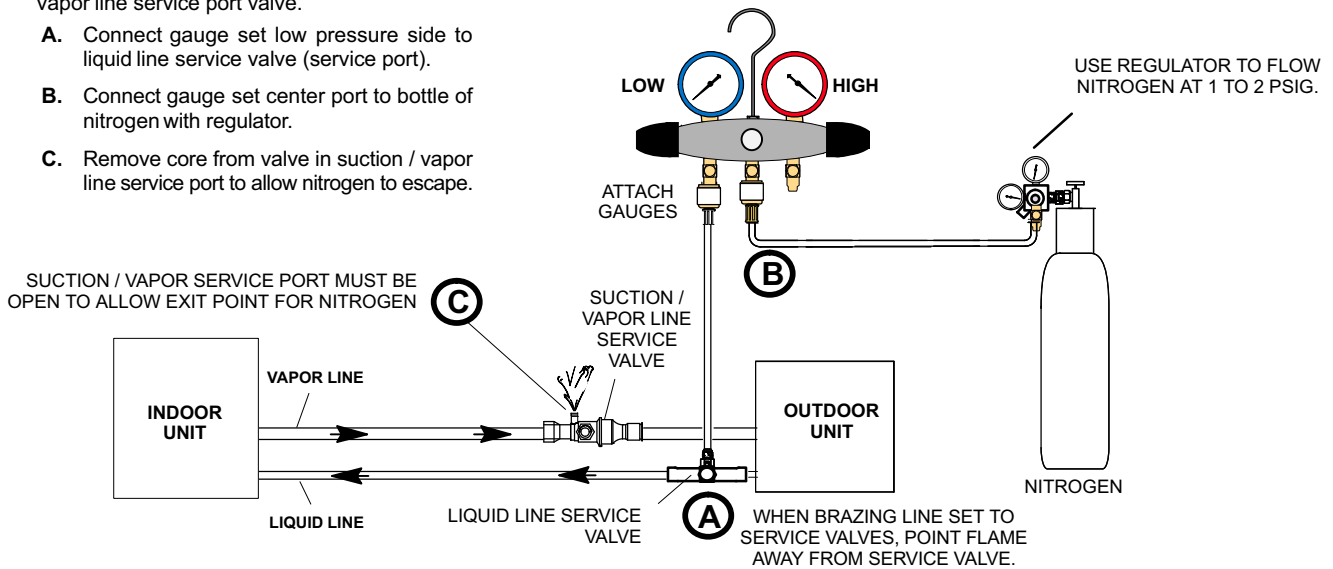


FIGURE 7

⚠ 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.

4 WRAP SERVICE VALVES

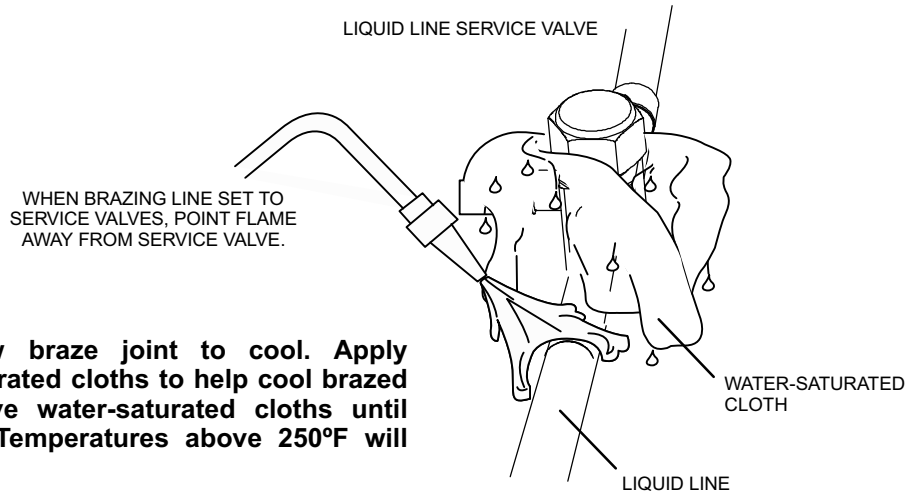
To help protect service valve seals during brazing, wrap water-saturated cloths around service valve bodies and copper tube stubs. Use additional water-saturated cloths underneath the valve body to protect the base paint.

5 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 manifold gauge set connections.

6 BRAZE LINE SET

Wrap both service valves with water-saturated cloths as illustrated here and as mentioned in step 4, before brazing to line set. Cloths must remain water-saturated throughout the brazing and cool-down process.

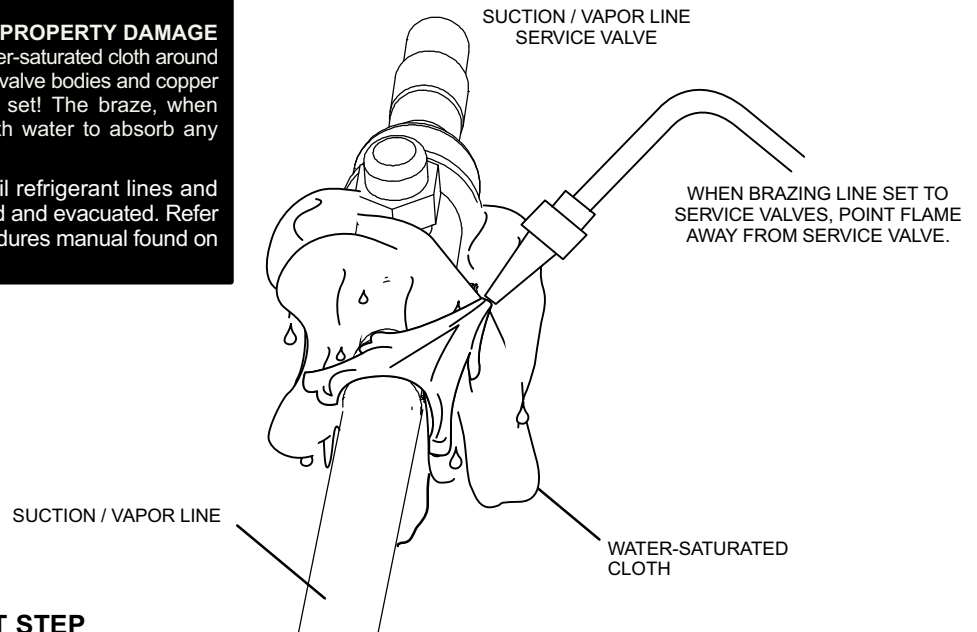


IMPORTANT — Allow braze joint to cool. Apply additional water-saturated cloths to help cool brazed joint. Do not remove water-saturated cloths until piping has cooled. Temperatures above 250°F will damage valve seals.

WARNING

FIRE, PERSONAL INJURY, OR PROPERTY DAMAGE may result if you do not wrap a water-saturated cloth around both liquid and suction line service valve bodies and copper tube stub while brazing the line set! The braze, when complete, must be quenched with water to absorb any residual heat.

Do not open service valves until refrigerant lines and indoor coil have been leak-tested and evacuated. Refer to Installation and Service Procedures manual found on DAVENET.



7 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.

FIGURE 7 (CONTINUED)

STEP 3 -- INSTALLING INDOOR EXPANSION VALVE

This outdoor unit is designed for use in systems that include an check/expansion valve metering device. See the *XP14 Product Specifications bulletin (EHB)* for approved check/expansion valve kit match-ups and application information. The check/expansion valve 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 that will provide access for future service of the check expansion valve. Refer to below illustration for reference during installation of check/expansion valve.

INDOOR EXPANSION VALVE INSTALLATION

(Uncased Coil Shown)

Labels in diagram: TWO PIECE PATCH PLATE (UNCASED COIL ONLY), DISTRIBUTOR TUBES, LIQUID LINE ORIFICE HOUSING, STUB END, CHECK EXPANSION VALVE, TEFLON® RING, SENSING LINE, EQUALIZER LINE, LIQUID LINE ASSEMBLY WITH BRASS NUT, VAPOR LINE, LIQUID LINE, MALE EQUALIZER LINE FITTING (SEE EQUALIZER LINE INSTALLATION FOR FURTHER DETAILS).

Sensing bulb insulation is required if mounted external to the coil casing. sensing bulb installation for bulb positioning.

- C. Install one of the provided Teflon® rings around the stubbed end of the check expansion valve and lightly lubricate the connector threads and expose surface of the Teflon® ring with refrigerant oil.
- D. Attach the stubbed end of the check expansion valve to the liquid line orifice housing. Finger tighten and use an appropriately sized wrench to turn an additional 1/2 turn clockwise as illustrated in the figure above, or tighten to 20 ft-lb.
- E. Place the remaining Teflon® washer around the other end of the check expansion valve. Lightly lubricate connector threads and expose surface of the Teflon® ring with refrigerant oil.
- F. Attach the liquid line assembly to the check expansion valve. Finger tighten and use an appropriately sized wrench to turn an additional 1/2 turn clockwise as illustrated in the figure above or tighten to 20 ft-lb.

1/2 Turn

EQUALIZER LINE INSTALLATION

- A. 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 below.
- B. Remove the field-provided fitting that temporarily reconnected the liquid line to the indoor unit's distributor assembly.

Labels: FLARE SEAL CAP, FLARE NUT, COPPER FLARE SEAL BONNET, MALE BRASS EQUALIZER LINE FITTING, VAPOR LINE.

SENSING BULB INSTALLATION

- A. 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.

- B. Connect the equalizer line from the check 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.

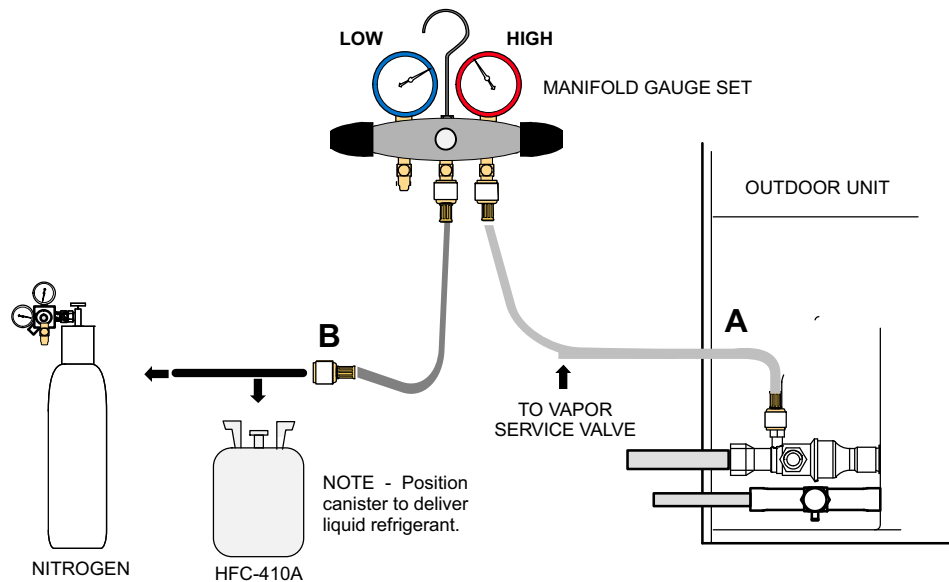
ON LINES SMALLER THAN 7/8", MOUNT SENSING BULB AT EITHER THE 3 OR 9 O'CLOCK POSITION.

ON 7/8" AND LARGER LINES, MOUNT SENSING BULB AT EITHER THE 4 OR 8 O'CLOCK POSITION. NEVER MOUNT THE SENSING BULB ON BOTTOM OF LINE.

NOTE — NEVER MOUNT THE SENSING BULB ON BOTTOM OF LINE.

FIGURE 8

STEP 4 -- LEAK TEST AND EVACUATION



1

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.

2

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.

FIGURE 9

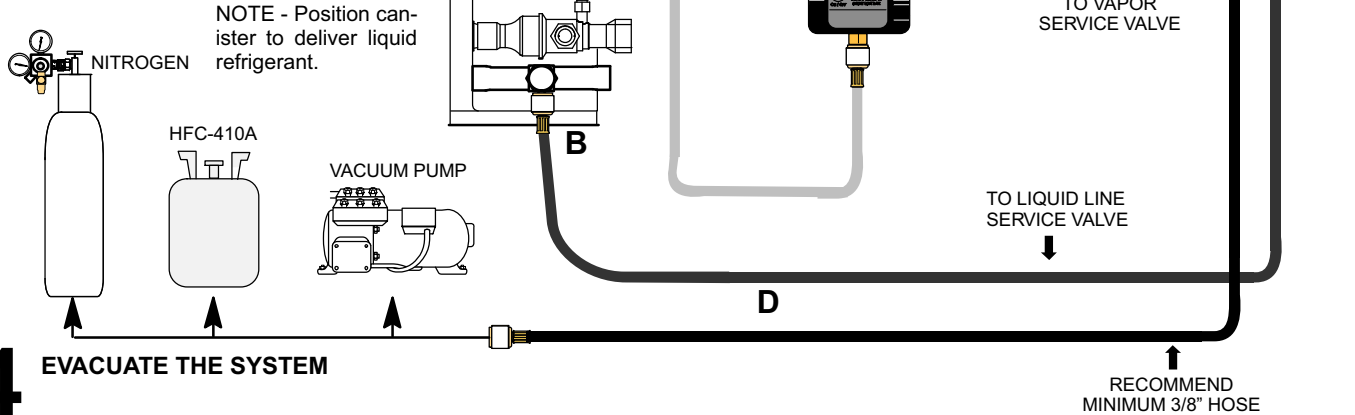
STEP 4 -- LEAK TEST AND EVACUATION (Continued)

3 EVACUATION

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 available micron gauge 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.



NOTE - Position canister to deliver liquid refrigerant.

4 EVACUATE THE SYSTEM

- A Open both manifold valves and start the vacuum pump.
- B Evacuate the line set and indoor unit to an **absolute pressure** of 23,000 microns (29.01 inches of mercury).

NOTE— During the early stages of evacuation, it is desirable to close the manifold gauge valve at least once. A rapid rise in pressure indicates a relatively large leak. If this occurs, **repeat the leak testing procedure**.

NOTE— The term **absolute pressure** means the total actual pressure above absolute zero within a given volume or system. Absolute pressure in a vacuum is equal to atmospheric pressure minus vacuum pressure.
- C When the absolute pressure reaches 23,000 microns (29.01 inches of mercury), perform the following:
 - Close manifold gauge valves.
 - Close valve on vacuum pump.
 - Turn off vacuum pump.
 - Disconnect manifold gauge center port hose from vacuum pump.
 - Attach manifold center port hose to a nitrogen cylinder with pressure regulator set to 150 psig (1034 kPa) and purge the hose.
 - Open manifold gauge valves to break the vacuum in the line set and indoor unit.
 - Close manifold gauge valves.
- D Shut off the nitrogen cylinder and remove the manifold gauge hose from the cylinder. Open the manifold gauge valves to release the nitrogen from the line set and indoor unit.
- E 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.
- F When the absolute pressure requirement above has been met, disconnect the manifold hose from the vacuum pump and connect it to a 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.
- G Perform the following:
 - Close manifold gauge valves.
 - Shut off HFC-410A cylinder.
 - Reinstall service valve cores by removing manifold hose from service valve. Quickly install cores with core tool while maintaining a positive system pressure.
 - Replace stem caps and finger tighten them, then tighten an additional one-sixth (1/6) of a turn as illustrated.

WARNING !

Possible equipment damage.

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

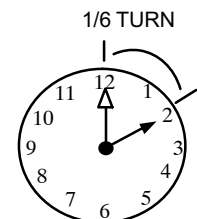


FIGURE 10

STEP 5 -- ELECTRICAL -- Circuit Sizing and Wire Routing

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.

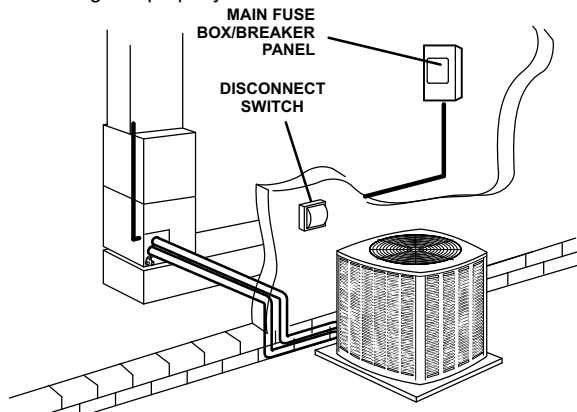
CAUTION

ELECTROSTATIC DISCHARGE (ESD) Precautions and Procedures

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 SWITCH

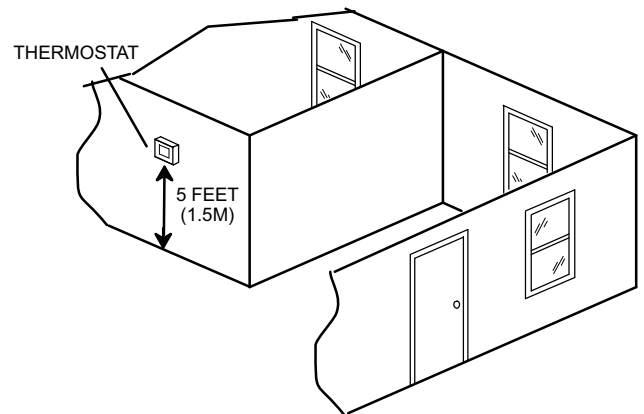
Refer to the unit nameplate for minimum circuit ampacity, and maximum fuse or circuit breaker (HACR per NEC). Install power wiring and properly sized disconnect switch.



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 approximately in the center of the conditioned area and 5 feet (1.5m) from the floor. It 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 panel.

FIGURE 11

3 Unit Low Voltage Wiring

HIGH VOLTAGE FIELD WIRING
 FACTORY WIRING
 LOW VOLTAGE (24V) FIELD WIRING

WIRE RUN LENGTH	AWG#	INSULATION TYPE
LESS THAN 100' (30 METERS)	18	TEMPERATURE RATING
MORE THAN 100' (30 METERS)	16	35°C MINIMUM.

- A** Run 24VAC control wires through cutout with grommet.
- B** Run 24VAC control wires through wire tie.
- C** Make 24VAC control wire connections using field provided wire nuts.
- D** Tighten wire tie to security 24V control wiring.

NOTE - FOR PROPER VOLTAGES, SELECT THERMOSTAT WIRE (CONTROL WIRES) GAUGE PER TABLE ABOVE.

NOTE - WIRE TIE PROVIDES LOW VOLTAGE WIRE STRAIN RELIEF AND MAINTAINS SEPARATION OF FIELD-INSTALLED LOW AND HIGH VOLTAGE CIRCUITS.

NOTE - DO NOT BUNDLE ANY EXCESS 24VAC CONTROL WIRES INSIDE CONTROL BOX.

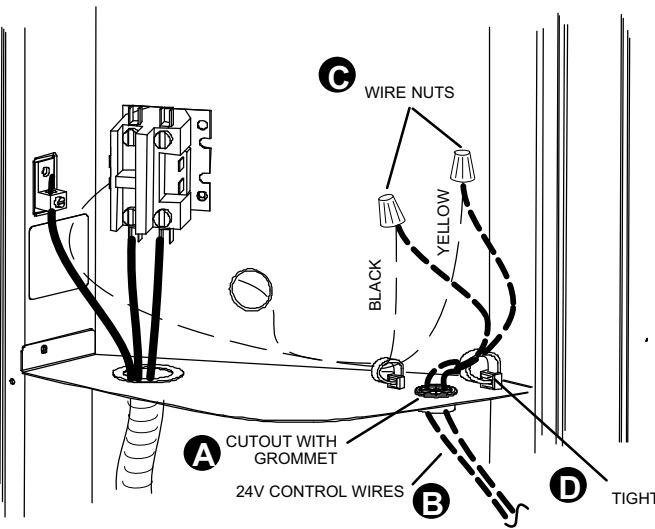
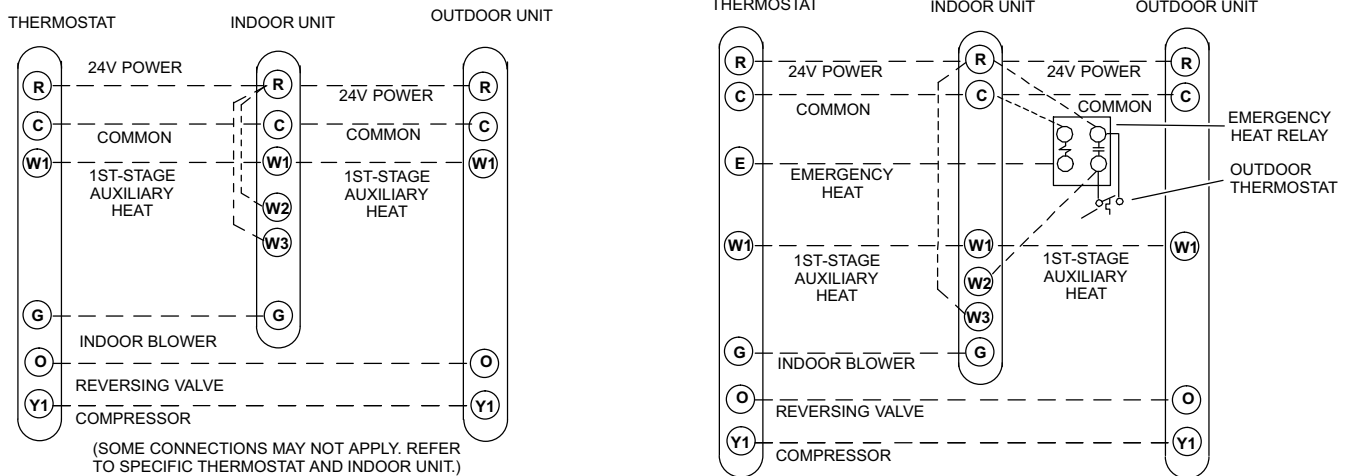
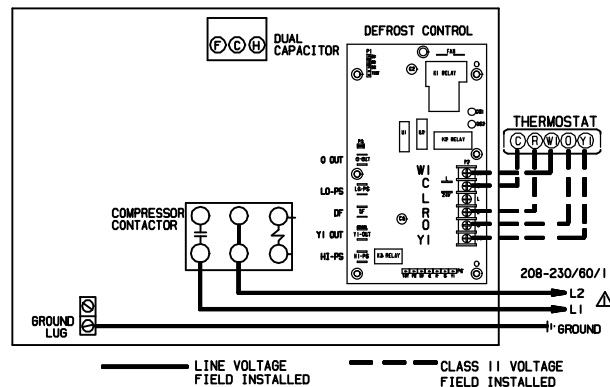


FIGURE 12

Typical 24VAC Control Wiring Diagrams (Field Installed)



(SOME CONNECTIONS MAY NOT APPLY. REFER TO SPECIFIC THERMOSTAT AND INDOOR UNIT.)



WARNING! - ELECTRIC SHOCK HAZARD. Can cause INJURY or DEATH. Unit must be grounded in accordance with national and local codes.

NOTE - For use with copper conductors only. Refer to unit rating plate for minimum circuit ampacity and maximum over-current protection size.

FIGURE 13

Charging

The XP14 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 XP14 Installation and Service Procedures manual, which is available on DaveNet.

Defrost System

The defrost system includes a defrost thermostat (S6) and a defrost control (CMC1).

DEFROST CONTROL (CMC1)

This defrost control includes the combined functions of a time/temperature defrost control, defrost relay, time delay, diagnostic LEDs, and a terminal strip for field wiring connections.

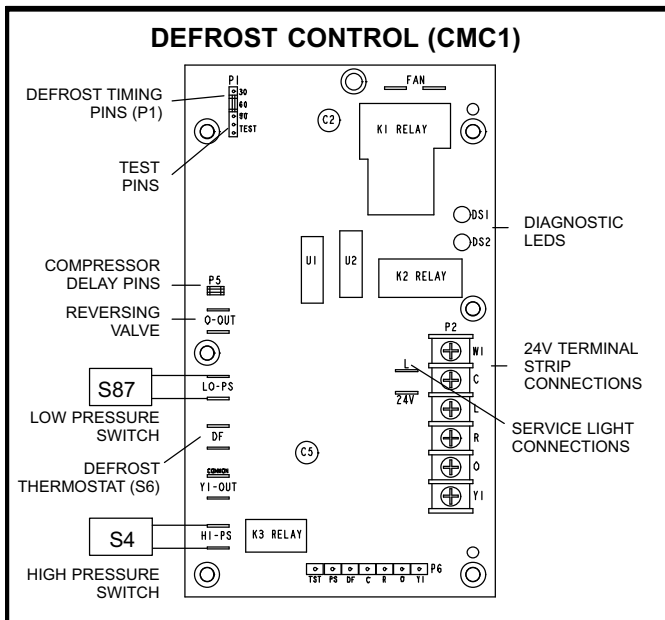


FIGURE 14

The defrost control provides automatic switching from normal heating operation to defrost mode and back. When the defrost thermostat is closed, the control accumulates compressor run time at 30, 60 or 90 minute field adjustable intervals. When the selected compressor run time interval is reached, the defrost relay is energized and defrost begins.

Defrost Control Timing Pins (P1)

Each timing pin selection provides a different accumulated compressor run time period for one defrost cycle. This time period must occur before a defrost cycle is initiated. The defrost interval can be adjusted to 30 (T1), 60 (T2), or 90 (T3) minutes (see figure 14). The maximum defrost period is 14 minutes and cannot be adjusted.

NOTE — Defrost control part number is listed near the **P1** timing pins.

- Factory default is 90 minutes.

- If the timing selector jumper is missing, the defrost control defaults to a 90-minute defrost interval.

Compressor Delay (P5)

The defrost control has a field-selectable function to reduce occasional sounds that may occur while the unit is cycling in and out of the defrost mode.

The compressor will be cycled off for 30 seconds going in and out of the defrost mode when the compressor delay jumper is installed.

NOTE — The 30-second compressor feature is ignored when jumpering the TEST pins.

Time Delay

The timed-off delay is five minutes long. The delay helps to protect the compressor from short-cycling in case the power to the unit is interrupted or a pressure switch opens. The delay is bypassed by placing the timer select jumper across the TEST pins for 0.5 seconds.

Test Mode

The **TEST** mode is activated by removing the jumper on the defrost termination pins (30, 60 or 90) and placing the jumper on the **TEST** pins after 24VAC is applied to the control. The low pressure input is ignored in **TEST** mode.

⚠ IMPORTANT

The TEST pins are ignored and the TEST function is locked out:

- If the jumper is applied on the TEST pin before 24VAC is applied to the control.
- If there is a jumper on the 30 or 60 minute defrost termination pins.

Bypass-Anti-Short Cycle Delay

The Y1 input must be active **ON**, the high pressure switch must be closed or a jumper must be installed on the high pressure terminals of the control.

Initiate a Force Defrost

The Y1 input must be active **ON**, the high pressure switch must be closed or a jumper must be installed on the high pressure terminals of the control, the defrost thermostat must be closed or a jumper must be placed across the DF terminals on the control and the O terminals must not have 24VAC (no power to reversing valve) before control will enter into a force defrost.

Test Mode Sequence

Using the defrost termination pin, short the **TEST** pins for a period of two seconds:

- Clear timed lockout / or pressure switch lockout function.
- Enter defrost mode

After entering force defrost, if the jumper is removed before 5 seconds has elapsed, the unit will remain in forced defrost mode until defrost thermostat opens or terminated on maximum defrost time (14 minutes). If the jumper is not removed, once 5 seconds has elapsed (7 seconds total),

the unit will terminate defrost and return to heat mode. The **TEST** mode will then be locked-out and no further **TEST** mode operation will be executed until the jumper on the **TEST** pins is removed and re-applied to the applicable defrost termination pins.

Defrost Control Diagnostic LEDs

The defrost board uses two LEDs for diagnostics. The LEDs flash a specific sequence according to the condition.

**TABLE 2
DEFROST CONTROL (CMC1) DIAGNOSTIC LEDs**

Mode	Green LED (DS2)	Red LED (DS1)
No power to control	OFF	OFF
Normal operation / power to control	Simultaneous Slow FLASH	
Anti-short cycle lockout	Alternating Slow FLASH	
High pressure switch fault	Slow FLASH	OFF
High pressure switch lockout	ON	OFF

IMPORTANT

NOTE - After testing has been completed, properly re-position test jumper across desired timing pins.

Service Light Connection

The defrost control includes terminal connections for a service light which provides a signal that activates the room thermostat service light during periods of inefficient operation.

Start-Up and Performance Checklist

Customer _____ Address _____
 Indoor Unit Model _____ Serial _____
 Outdoor Unit Model _____ Serial _____
 Notes: _____

START UP CHECKS

Refrigerant Type: _____

Rated Load Amps: _____ Actual Amps _____ Rated Volts _____ Actual Volts _____

Condenser Fan Full Load Amps _____ Actual Amps: _____

COOLING MODE

Suction Pressure: _____ Liquid Pressure: _____

Supply Air Temperature: _____ Ambient Temperature: _____ Return Air Temperature: _____

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

Subcooling: _____ A — B = SUBCOOLING
 Saturated Condensing Temperature (A)
 minus Liquid Line Temperature (B)

Approach: _____ A — B = APPROACH
 Liquid Line Temperature (A)
 minus Outdoor Air Temperature (B)

Indoor Coil Temperature Drop (18 to 22°F) _____ A — B = COIL TEMP DROP
 Return Air Temperature (A)
 minus Supply Air Temperature (B)

HIGH PRESSURE SWITCH (S4)

This unit is equipped with a high pressure switch which is located on the liquid line. The SPST, normally closed pressure switch opens when liquid line pressure rises above the factory setting of 590 ± 15 psig and automatically resets at 418 ± 15 psig.

Homeowners 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.

- 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.
- Disposable filters should be replaced with a filter of the same type and size.

- 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 thermostat homeowner manual for instructions on how to operate your thermostat.

Heat Pump Operation

Your new Lennox heat pump has several characteristics that you should be aware of:

- Heat pumps satisfy heating demand by delivering large amounts of *warm* air into the living space. This is quite different from gas- or oil-fired furnaces or an electric furnace which deliver lower volumes of considerably *hotter* air to heat the space.
- Do not be alarmed if you notice frost on the outdoor coil in the winter months. Frost develops on the outdoor coil during the heating cycle when temperatures are below 45°F (7°C). An electronic control activates a defrost cycle lasting 5 to 15 minutes at preset intervals to clear the outdoor coil of the frost.
- During the defrost cycle, you may notice steam rising from the outdoor unit. This is a normal occurrence. The thermostat may engage auxiliary heat during the defrost cycle to satisfy a heating demand; however, the unit will return to normal operation at the conclusion of the defrost cycle.

Extended Power Outage

The heat pump is equipped with a compressor crankcase heater which protects the compressor from refrigerant *slugging* during cold weather operation.

If power to your unit has been interrupted for several hours or more, set the room thermostat selector to the EMERGENCY HEAT setting to obtain temporary heat without the risk of serious damage to the heat pump.

In EMERGENCY HEAT mode, all heating demand is satisfied by auxiliary heat; heat pump operation is locked out. After a six-hour compressor crankcase warm-up period, the thermostat can be switched to the HEAT setting and normal heat pump operation may resume.

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.