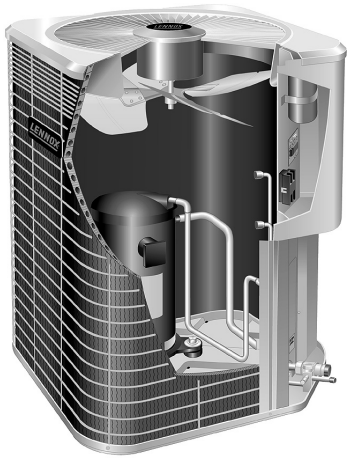
INSTALLATION INSTRUCTIONS

Merit® Series 13ACX Units



AIR CONDITIONER
506081-01
09/08
Supersedes 07/08

Technical Publications
Litho U.S.A.

RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

⚠ WARNING

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

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

⚠ CAUTION

Physical contact with metal edges and corners while applying excessive force or rapid motion can result in personal injury. Be aware of, and use caution when working near these areas during installation or while servicing this equipment.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

⚠ IMPORTANT

This unit must be matched with an indoor coil as specified in Lennox Engineering Handbook. Coils previously charged with HCFC-22 must be flushed.

Table of Contents

Shipping and Packing List

Check the unit for shipping damage and listed times below are intact. If damaged, or if parts are missing, immediately contact the last shipping carrier.

1 — Assembled outdoor unit

1 — Refrigerant flow control kit (Fixed Orifice)

1 — Liquid line filter drier

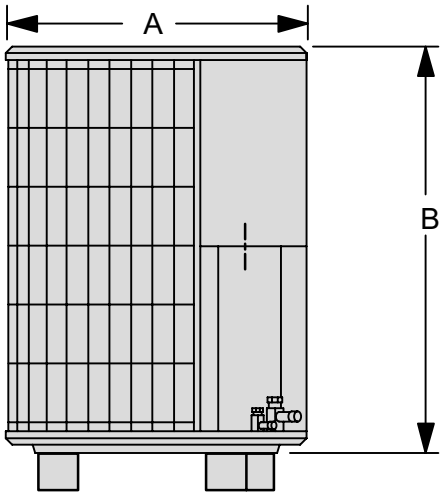
13ACX Air Conditioners

13ACX Air Conditioners, which will also be referred to in this instruction as the outdoor unit, uses HFC-410A refrigerant. This outdoor unit must be installed with a matching indoor unit and line set as outlined in the *Lennox* 13ACX *Engineering Handbook*.

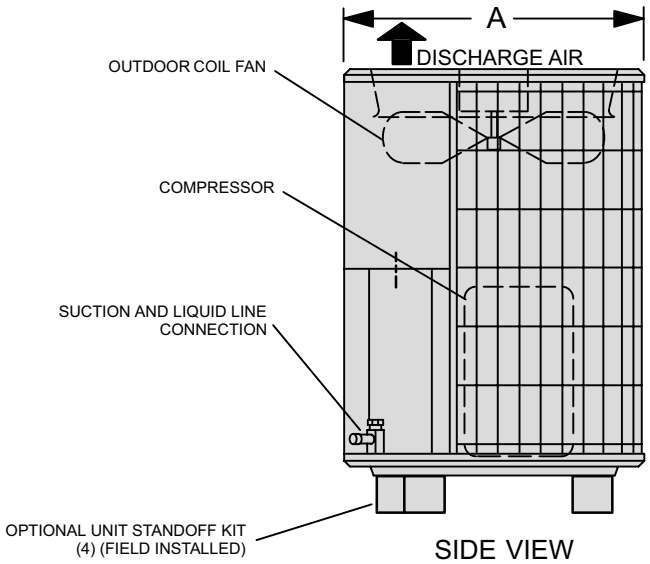
This outdoor unit is designed for use in systems that use one of the following refrigerant metering devices:

- Thermal expansion valve (TXV)
- Fixed orifice

Unit Dimensions - Inches (mm)



SIDE VIEW



SIDE VIEW

Model Numbers	A	B
-018	24-1/4 (616)	25-1/4 (641)
-024	24-1/4 (616)	25-1/4 (641)
-030	24-1/4 (616)	29-1/4 (743)
-036	24-1/4 (616)	29-1/4 (743)
-042	28-1/4 (724)	29-1/4 (743)
-048	28-1/4 (724)	37-1/4 (925)
-060	28-1/4 (724)	33-1/4 (845)

⚠ WARNING

This product and/or the indoor unit it is matched with 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

General Information

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

When servicing or repairing HVAC components, ensure the fasteners are appropriately tightened. Table 1 shows torque values for fasteners.

Table 1. Torque Requirements

Parts	Recommended Torque	
Service valve cap	8 ft.- lb.	11 NM
Sheet metal screws	16 in.- lb.	2 NM
Machine screws #10	28 in.- lb.	3 NM
Compressor bolts	90 in.- lb.	10 NM
Gauge port seal cap	8 ft.- lb.	11 NM

USING MANIFOLD GAUGE SETS

When checking the system charge, only use a manifold gauge set that features low loss anti-blow back fittings. See figure 1 for a typical manifold gauge connection setup.

Manifold gauge sets used with HFC-410A refrigerant systems must be capable of handling the higher system operating pressures. The gauges should be rated for use with pressures of 0 - 800 on the high side and a low side of 30” vacuum to 250 psi with dampened speed to 500 psi. Gauge hoses must be rated for use at up to 800 psi of pressure with a 4000 psi burst rating.

OPERATING SERVICE VALVES

⚠ IMPORTANT

Only use Allen wrenches of sufficient hardness (50Rc - Rockwell Harness Scale minimum). Fully insert the wrench into the valve stem recess.

Service valve stems are factory-torqued (from 9 ft-lbs for small valves, to 25 ft-lbs for large valves) to prevent refrigerant loss during shipping and handling. Using an Allen wrench rated at less than 50Rc risks rounding or breaking off the wrench, or stripping the valve stem recess.

The liquid and suction line service valves are used for removing refrigerant, flushing, leak testing, evacuating, checking charge and charging.

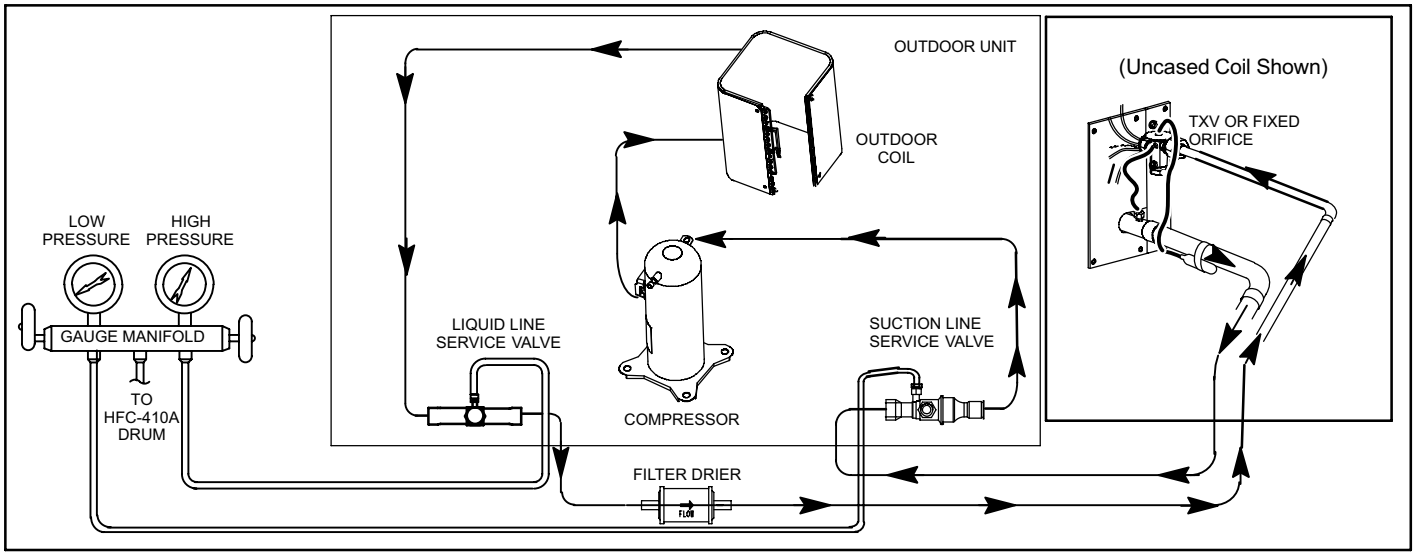


Figure 1. Typical Manifold Gauge Connection Setup

Each service valve is equipped with a service port which has a factory-installed valve stem.

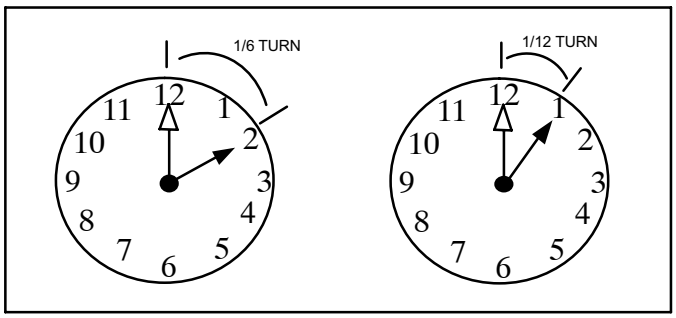


Figure 2. Cap Tightening Distances

⚠ IMPORTANT

To prevent stripping of the various caps used, the appropriately sized wrench should be used and fitted snugly over the cap before tightening.

Operating Angle-Type Service Valve

To Access Angle-Type Service Port:

A service port cap protects the service port core from contamination and serves as the primary leak seal.

1. Remove service port cap with an appropriately sized wrench.
2. Connect gauge to the service port.
3. When testing is completed, replace service port cap and tighten as follows:
   - *With Torque Wrench*: Finger tighten and then tighten per table 1.
   - *Without Torque Wrench*: Finger tighten and use an appropriately sized wrench to turn an additional 1/6 turn clockwise as illustrated in figure 2.

To Open and Close Angle-Type Service Valve:

A valve stem cap protects the valve stem from contamination and assures a leak-free seal.

1. Remove stem cap with an appropriately sized wrench.
2. Use a service wrench with a hex-head extension (3/16" for liquid-line valve sizes and 5/16" for suction-line valve sizes) to back the stem out counterclockwise as far as it will go.
3. Replace the stem cap and tighten as follows:
   - *With Torque Wrench*: Finger tighten and then tighten per table 1.
   - *Without Torque Wrench*: Finger tighten and use an appropriately sized wrench to turn an additional 1/12 turn clockwise as illustrated in figure 2.

NOTE - A label with specific torque requirement may be affixed to the stem cap. If the label is present, use the specified torque.

NOTE- To prevent stripping of the cap, the appropriately sized wrench should fit snugly over the cap before tightening the cap.

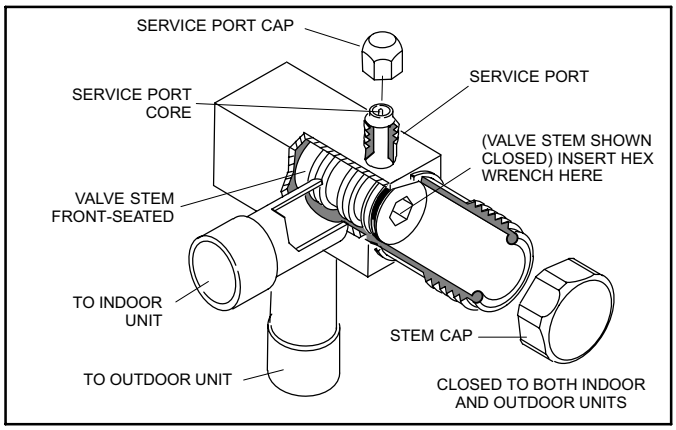


Figure 3. Angle-Type Service Valve (Front-Seated Closed)

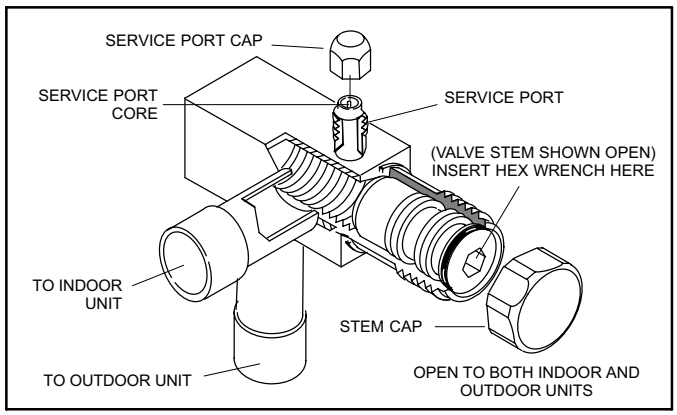


Figure 4. Angle-Type Service Valve (Back-Seated Opened)

Operating Ball-Type Service Valve

To Access Ball-Type Service Port:

A service port cap protects the service port core from contamination and serves as the primary leak seal.

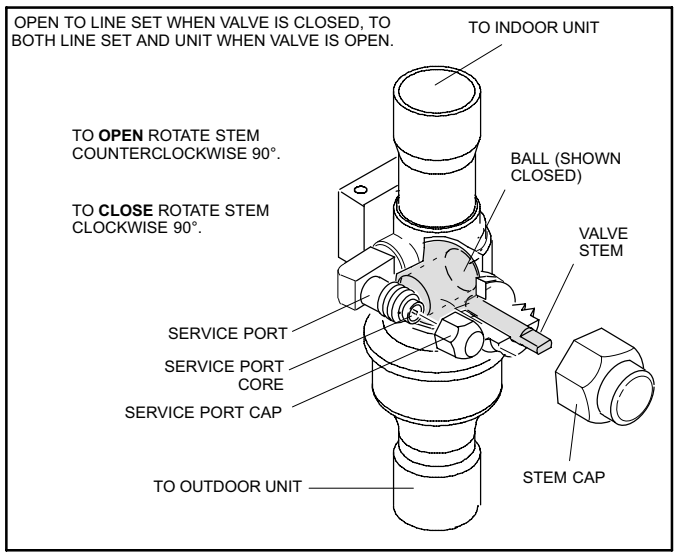


Figure 5. Ball-Type Service Valve

1. Remove service port cap with an appropriately sized wrench.
2. Connect gauge to the service port.
3. When testing is completed, replace service port cap and tighten as follows:
   - *With Torque Wrench*: Finger tighten and then tighten per table 1.
   - *Without Torque Wrench*: Finger tighten and use an appropriately sized wrench to turn an additional 1/6 turn clockwise as illustrated in figure 2.

To Open and Close Ball-Type Service Valve:

A valve stem cap protects the valve stem from contamination and assures a leak-free seal.

1. Remove stem cap with an appropriately sized wrench.
2. Use an appropriately sized wrench to open. To open valve, rotate stem counterclockwise 90°. To close rotate stem clockwise 90°.
3. Replace the stem cap and tighten as follows:
   - *With Torque Wrench*: Finger tighten and then tighten per table 1.
   - *Without Torque Wrench*: Finger tighten and use an appropriately sized wrench to turn an additional 1/12 turn clockwise as illustrated in figure 2.

NOTE - A label with specific torque requirements may be affixed to the stem cap. If the label is present, use the specified torque.

Recovering Refrigerant from Existing System

Remove existing HCFC-22 refrigerant using one of the following methods:

METHOD 1:

Use this method if the existing outdoor unit is not equipped with manual shut-off valves, and plan on using existing HCFC-22 refrigerant to flush the system.

NOTE - Use recovery machine instructions for specific setup requirements.

Perform the following task:

1. Disconnect all power to the existing outdoor unit.
2. Connect to the existing unit a gauge set, clean recovery cylinder and a recovery machine. Use the instructions provided with the recovery machine on how to setup the connections.
3. Remove all HCFC-22 refrigerant from the existing system. Check gauges after shutdown to confirm that the entire system is completely void of refrigerant.

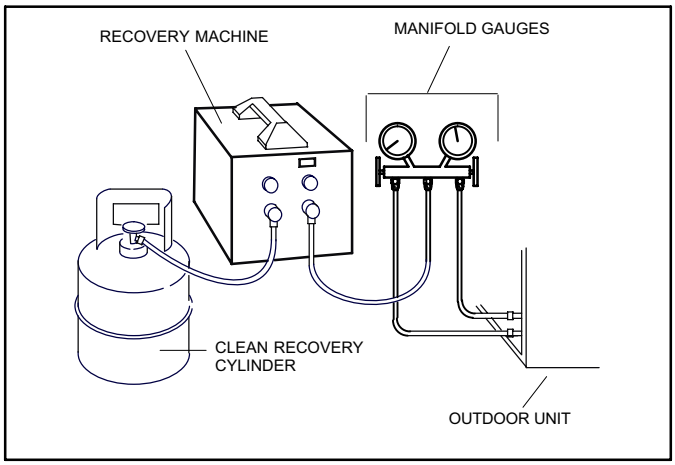


Figure 6. Typical Refrigerant Recovery (Method 1)

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METHOD 2:

Use this method if the existing outdoor unit is equipped with manual shut-off valves, and plan on using new HCFC-22 refrigerant to flush the system.

IMPORTANT: Some system configurations may contain higher than normal refrigerant charge due to either large internal coil volumes, and/or long line sets. The following conditions may cause the compressor to stop functioning:

The following devices could prevent full system charge recovery into the outdoor unit:

- Outdoor unit's high or low-pressure switches (if applicable) when tripped can cycled the compressor **OFF**.
- Compressor can stop pumping due to tripped internal pressure relief valve.
- Compressor has internal vacuum protection that is designed to unload the scrolls (compressor stops pumping) when the pressure ratio meets a certain value or when the suction pressure is as high as 20 psig. (Compressor suction pressures should never be allowed to go into a vacuum. Prolonged operation at low suction pressures will result in overheating of the scrolls and permanent damage to the scroll tips, drive bearings and internal seals).

Once the compressor can not pump down to a lower pressure due to one of the above system conditions, shut off the suction valve. Turn OFF the main power to unit and use a recovery machine to recover any refrigerant left in the indoor coil and line set.

Perform the following task:

1. Start the existing HCFC-22 system in the cooling mode and close the liquid line valve.
2. Pump as much of the existing HCFC-22 refrigerant with the compressor back into the outdoor unit until you have reached the limitations of the outdoor system. Turn the outdoor unit main power **OFF** and use a recovery machine to remove the remaining refrigerant in the system.

NOTE - It may be necessary to bypass the low pressure switches if equipped to ensure complete refrigerant evacuation.

3. When the low side system pressures reach 0 psig, close the suction line valve.
4. Check gauges after shutdown to confirm that the valves are not allowing refrigerant to flow back into the low side of the system.

Removing Existing Outdoor Unit

Perform the following task at the existing outdoor unit:

- Disconnect line set at the service valves.
- Disconnect electrical service at the disconnect switch.
- Remove old outdoor unit.

Positioning New Outdoor Unit

See *Unit Dimensions* on page 2 for sizing mounting slab, platforms or supports. Refer to figure 7 for mandatory installation clearance requirements.

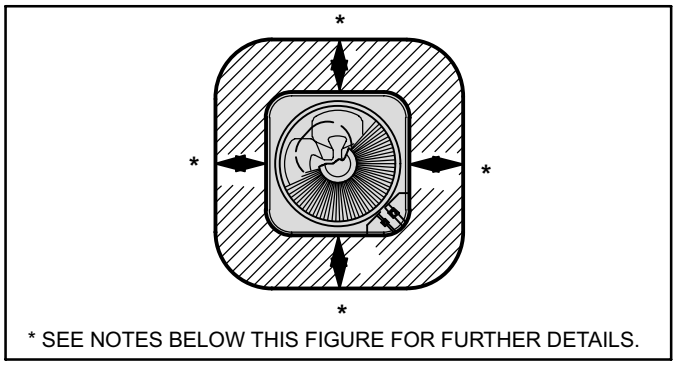


Figure 7. Installation Clearances

NOTES:

- Service panel access clearance of 30 in. (762 mm) must be maintained.
- Clearance to one of the other three sides must be 36 in. (914 mm)·
- Clearance on one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm)·
- Clearance required on top of unit is 48 in. (1219 mm).
- A clearance of 24 in. (610 mm) must be maintained between two units.

POSITIONING CONSIDERATIONS

⚠ CAUTION

In order to avoid injury, take proper precaution when lifting heavy objects.

Consider the following when positioning the unit:

- Some localities are adopting sound ordinances based on the unit's sound level registered from the adjacent property, not from the installation property. Install the unit as far as possible from the property line.
- When possible, do not install the unit directly outside a window. Glass has a very high level of sound transmission. For proper placement of unit in relation to a window see the provided illustration in figure 8.

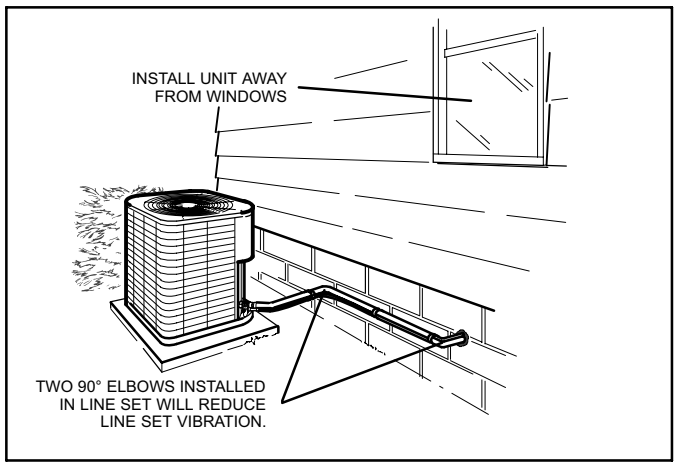


Figure 8. Outside Unit Placement

PLACING OUTDOOR UNIT ON SLAB

When installing a unit at grade level, the top of the slab should be high enough above the grade so that water from higher ground would not collect around the unit as illustrated in figure 9.

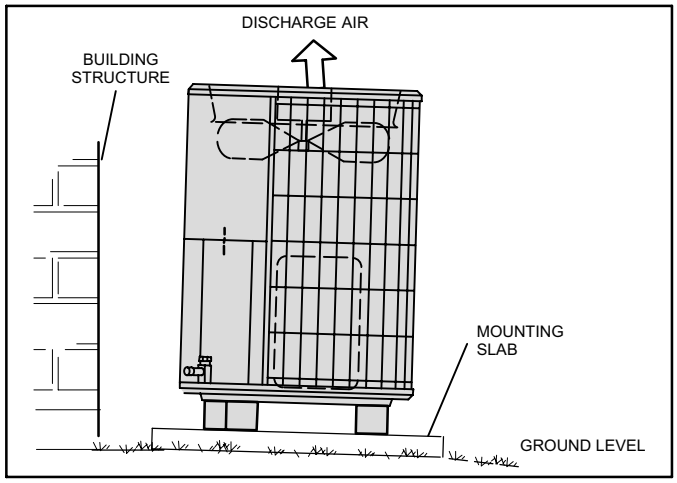


Figure 9. Typical Slab Mounting at Ground Level

Slab may be level or have a slope tolerance away from the building of not more than two degrees, or 2 inches per 5 feet (51 mm per 1524 mm) as illustrated in figure 9.

INSTALLING OUTDOOR UNIT ON ROOF

Install the unit at a minimum of 4 inches (102 mm) above the surface of the roof. Ensure the weight of the unit is properly distributed over roof joists and rafters. Redwood or steel supports are recommended.

New or Replacement Line Set

This section provides information on installation or replacement of existing line set. If line set is not being installed or replace then proceed to *Brazing Connections* on page 8.

If refrigerant lines are routed through a wall, seal and isolate the opening so vibration is not transmitted to the building. Pay close attention to line set isolation during installation of any HVAC system. When properly isolated from building structures (walls, ceilings. floors), the refrigerant lines will not create unnecessary vibration and subsequent sounds.

Also, consider the following when placing and installing a high-efficiency air conditioner:

REFRIGERANT LINE SET

Field refrigerant line set consists of liquid and suction lines from the outdoor unit to the indoor unit coil. Use Lennox L15 (braze, non-flare) series line set, or field-fabricated refrigerant lines that meet the specifications listed below.

Table 2. Refrigerant Line Set

Model	Valve Field Connections		Recommended Line Set		
	Liquid Line	Suction Line	Liquid Line	Suction Line	L15 Line Set
-018 -024 -030	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)
-036 -042 -048	3/8 in. (10 mm)	7/8 in. (22 mm)	3/8 in. (10 mm)	7/8in. (22 mm)	L15-65 15 ft. - 50 ft. (4.6 m - 15 m)
-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 - When installing refrigerant lines longer than 50 feet, contact Lennox Technical Support Product Applications for assistance or Lennox piping manual. To obtain the correct information from Lennox, be sure to communicate the following points:

- Model (13ACX) and size of unit (e.g. -060).
- Line set diameters for the unit being installed as listed in table 2 and total length of installation.
- Number of elbows and if there is a rise or drop of the piping.

MATCHING WITH NEW OR EXISTING INDOOR COIL AND LINE SET

The RFC1-metering line consisted of a small bore copper line that ran from condenser to evaporator coil. Refrigerant was metered into the evaporator by utilizing temperature/pressure evaporation effects on refrigerant in the small RFC line. The length and bore of the RFC line corresponded to the size of cooling unit.

If the 13ACX is being used with either a new or existing indoor coil which is equipped with a liquid line which served as a metering device (RFCI), the liquid line must be replaced prior to the installation of the 13ACX unit. Typically a liquid line used to meter flow is 1/4” in diameter and copper.

LIQUID LINE FILTER DRIER INSTALLATION

The filter drier (one is shipped with each 13ACX unit) must be field installed in the liquid line between the outdoor unit’s liquid line service valve and the indoor coil’s metering device (fixed orifice or TXV) as illustrated in figure 10. This filter drier must be installed to ensure a clean,

moisture-free system. Failure to install the filter drier will void the warranty. A replacement filter drier is available from Lennox. See *Brazing Connections* on page 8 for special procedures on brazing filter drier connections to the liquid line.

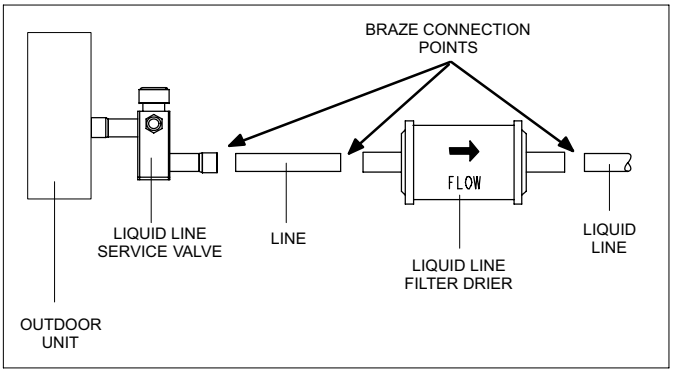


Figure 10. Typical Liquid Line Filter Drier Installation

LINE SET ISOLATION

This following illustrations provide best practices on ensuring proper refrigerant line set isolation:

- Installation of **line set on horizontal runs** is illustrated in figure 11.
- Installation of **line set on vertical runs** is illustrated in figure 12.
- Installation of a **transition from vertical to horizontal** is illustrated in figure 13.

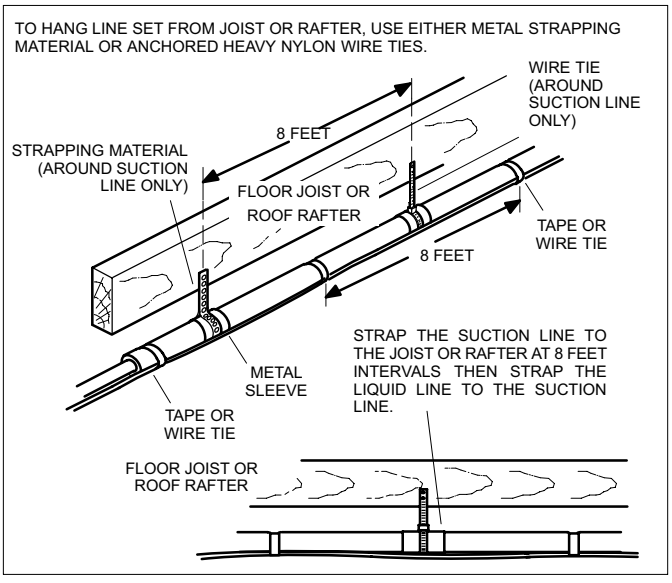


Figure 11. Refrigerant Line Set: Installing Horizontal Runs

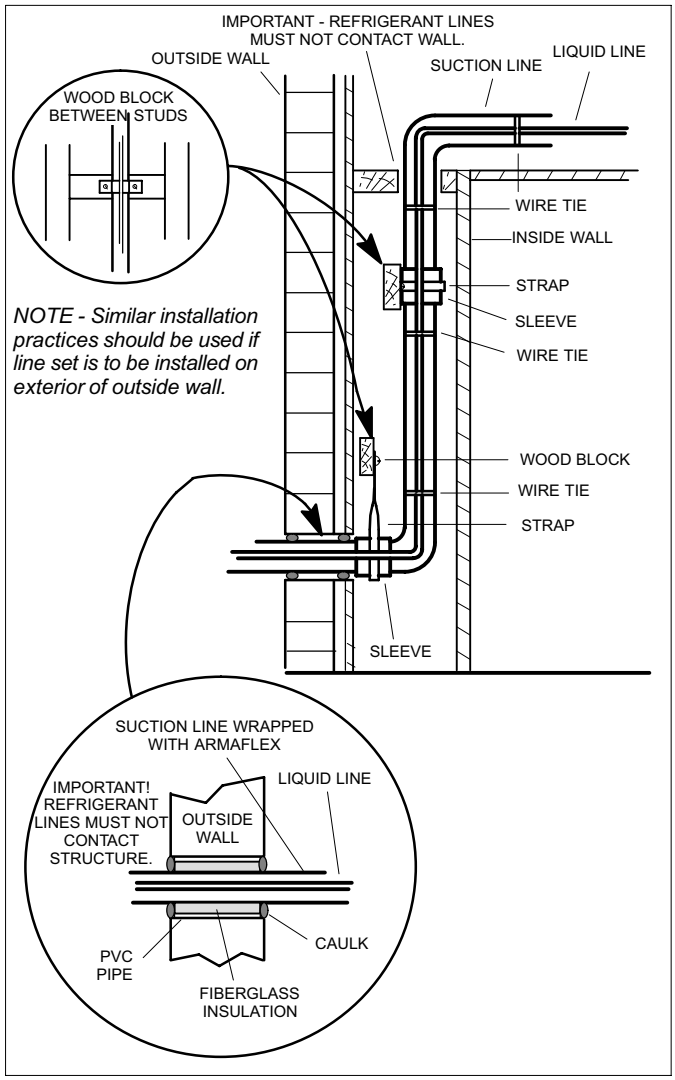


Figure 12. Refrigerant Line Set: Installing Vertical Runs (New Construction Shown)

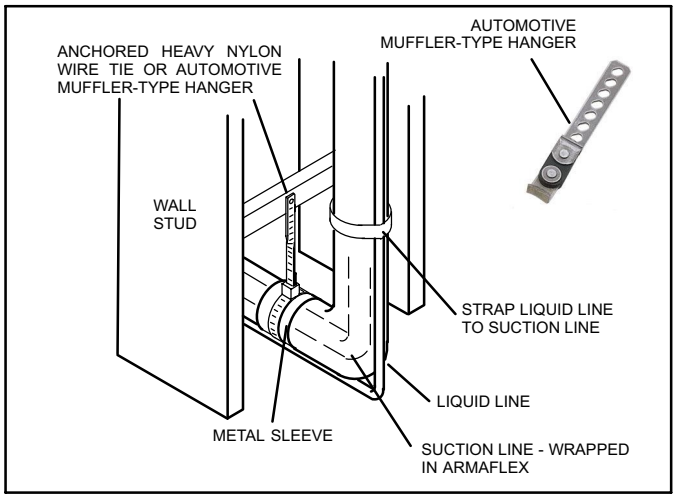


Figure 13. Refrigerant Line Set: Transition from Vertical to Horizontal

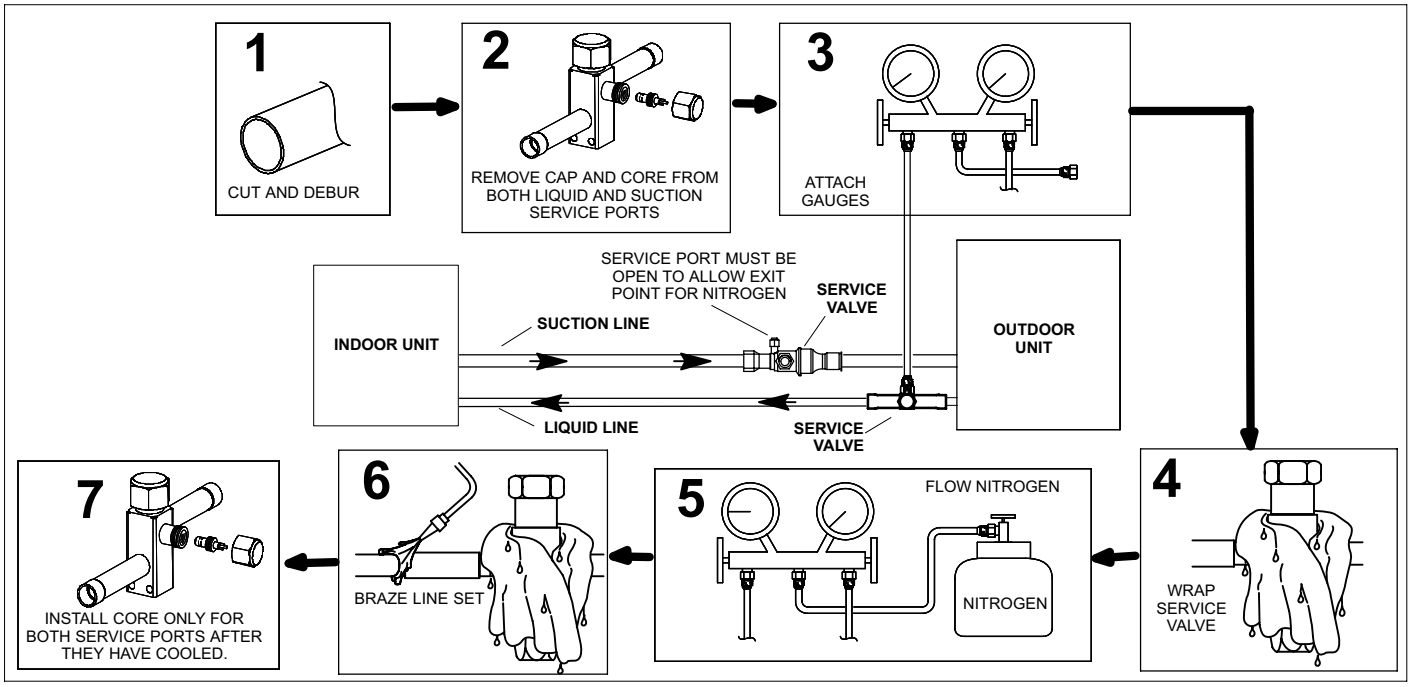


Figure 14. Brazing Connections

Brazing Connections

Use the following procedure to braze the line set to the new air conditioner unit. Figure 14 is provided as a general guide for preparing to braze the line set to the air conditioner unit.

⚠ 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

Danger of fire. Bleeding the refrigerant charge from only the high side may result in the low side shell and suction tubing being pressurized. Application of a brazing torch while pressurized may result in ignition of the refrigerant and oil mixture - check the high and low pressures before un-brazing.

⚠ WARNING

When using a high pressure gas such as dry 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).

⚠ 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.

Use the following procedure to braze the line set to the new air conditioner unit. Figure 14 is provided as a general guide for preparing to braze the line set to the air conditioner unit.

1. Cut ends of the refrigerant lines square (free from nicks or dents). Debur the ends. The pipe must remain round, do not pinch end of the line.
2. Remove service cap and core from both the suction and liquid line service ports.
3. Connect gauge low pressure side to liquid line service valve.
4. To protect components during brazing, wrap a wet cloth around the liquid line service valve body and copper tube stub and use another wet cloth underneath the valve body to protect the base paint.
5. Flow regulated nitrogen (at 1 to 2 psig) through the refrigeration gauge set into the valve stem port connection on the liquid line service valve and out of the valve stem port connection on the suction service valve. The TXV metering device at the indoor unit coil will allow low pressure nitrogen to flow through the system.)

NOTE - The fixed orifice or TXV metering device at the indoor unit will allow low pressure nitrogen to flow through the system.)

NOTE - Use silver alloy brazing rods with five or six percent minimum silver alloy for copper-to-copper brazing or 45 percent silver alloy for copper-to-brass or copper-to-steel brazing.

6. Braze the liquid line to the liquid line service valve. Turn off nitrogen flow.

⚠ IMPORTANT

Repeat procedure starting at paragraph 4 for brazing the suction line to service port valve.

7. After all connections have been brazed, disconnect manifold gauge set the from service ports and remove wrapping. Reinstall the service port core for both of the outdoor unit's service valves.

Removing Indoor Unit Metering Device

Remove the existing HCFC-22 fixed orifice or TXV from the indoor coil. The existing indoor unit HCFC-22 metering device is not approved for use with HFC-410A refrigerant and may prevent proper flushing.

REPLACEMENT PARTS

If replacement parts are necessary for the indoor unit, order catalog number 69J46 (LB-95325A). The kit includes the following:

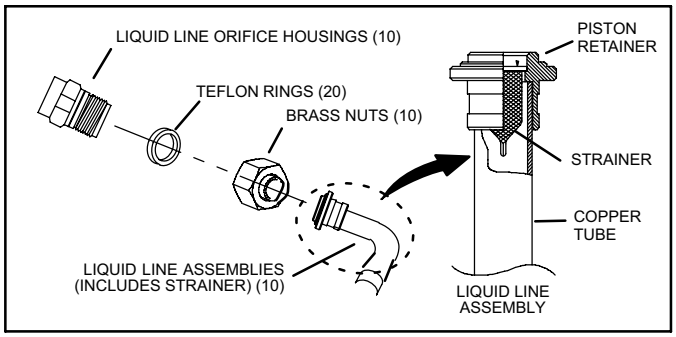


Figure 15. Kit 69J46 Components

TYPICAL FIXED ORIFICE REMOVAL PROCEDURE

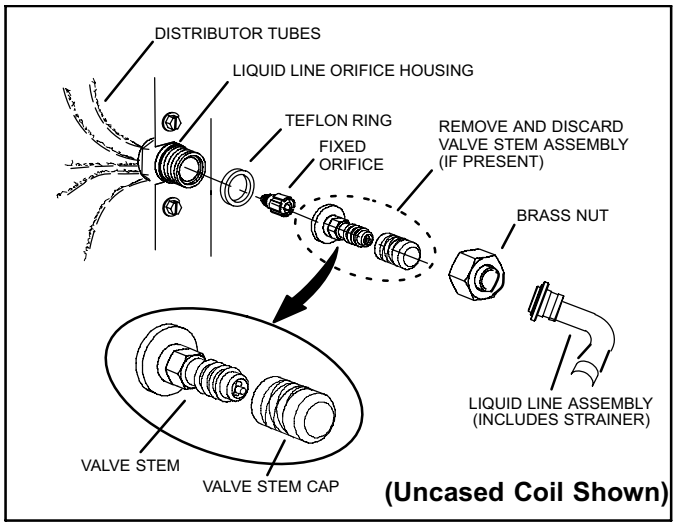


Figure 16. Typical Fixed Orifice Removal

1. On fully cased coils, remove the coil access and plumbing panels.
2. Remove any shipping clamps holding 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 ring as illustrated in figure 16.
5. Use a field-provided fitting to temporary reconnect the liquid line to the indoor unit's liquid line orifice housing.

TYPICAL TXV REMOVAL PROCEDURE

1. On fully cased coils, remove the coil access and plumbing panels.
2. Remove any shipping clamps holding the liquid line and distributor assembly.
3. Disconnect the equalizer line from the TXV equalizer line fitting on the suction line.
4. Remove the suction line sensing bulb as illustrated in figure 17.
5. Disconnect the liquid line from the TXV at the liquid line assembly.
6. Disconnect the TXV from the liquid line orifice housing. Take care not to twist or damage distributor tubes during this process.
7. Remove and discard the TXV along with the two Teflon rings.

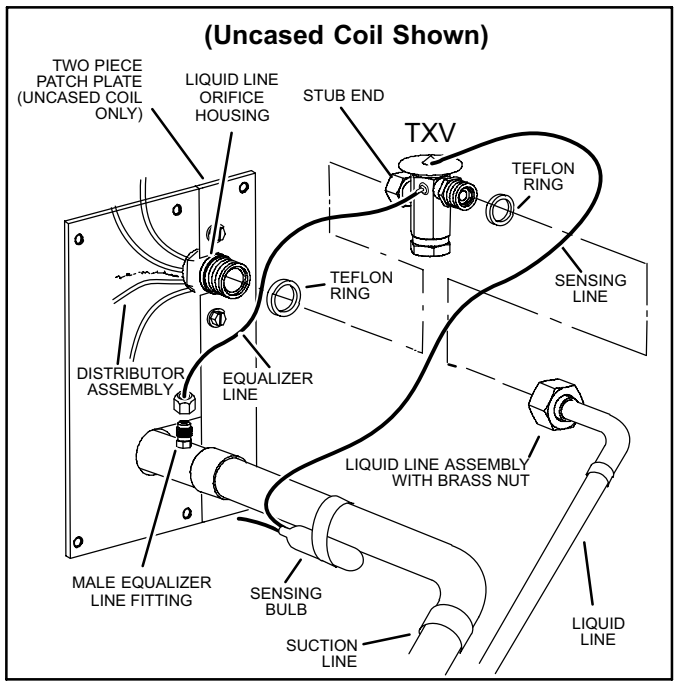


Figure 17. Typical TXV Removal

8. Use a field-provided fitting to temporary reconnect the liquid line to the liquid line orifice housing.

Flushing the System

⚠ IMPORTANT

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.

⚠ IMPORTANT

If this unit is being matched with an approved line set or indoor unit coil which 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 the system performance and capacity.

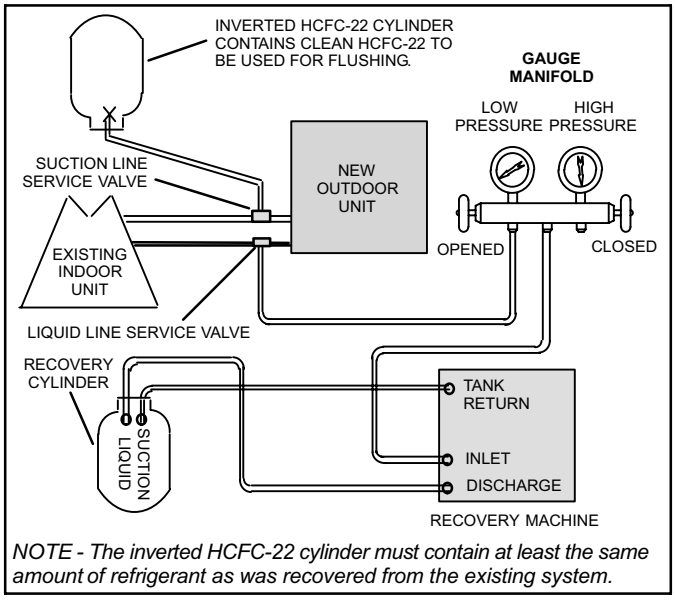
Failure to properly flush the system per the instructions below will void the warranty.

⚠ IMPORTANT

The Environmental Protection Agency (EPA) prohibits the intentional venting of HFC refrigerants during maintenance, service, repair and disposal of appliance. Approved methods of recovery, recycling or reclaiming must be followed.

If the original system used:

- HCFC-22 refrigerant, then flush the system using the procedure provided in this section.
- HFC-410A refrigerant, then proceed to *Installing New Refrigerant Metering Device*.



NOTE - The inverted HCFC-22 cylinder must contain at least the same amount of refrigerant as was recovered from the existing system.

Figure 18. Typical Flushing Connection

⚠ CAUTION

This procedure should not be performed on systems which contain contaminants (Example: compressor burn out).

REQUIRED EQUIPMENT

Equipment required to flush the existing line set and indoor unit coil:

- Two clean HCFC-22 recovery bottles,
- Oilless recovery machine with pump-down feature,
- Two gauge sets (one for HCFC-22; one for HFC-410A).

FLUSHING PROCEDURE

1. Connect the following:
   - HCFC-22 cylinder with clean refrigerant to the suction service valve,
   - HCFC-22 gauge set to the liquid line valve,
   - Recovery machine with an empty recovery tank to the gauge set.
2. 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.
3. Invert the cylinder of clean and open its valve to allow liquid refrigerant to flow into the system through the suction 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.
4. After all of the liquid refrigerant has been recovered, switch the recovery machine to suction recovery so that all of the suction is recovered. Allow the recovery machine to pull a vacuum on the system.

5. Close the valve on the inverted drum and the gauge set valves. Pump the remaining refrigerant out of the recovery machine and turn the machine off.
6. Use dry nitrogen to break the vacuum on the refrigerant lines and indoor unit coil before removing the recovery machine, gauges and refrigerant drum.

Installing New Indoor Unit Metering Device

13ACX units can be configured for use in with HFC-410A fixed orifice or TXV metering devices. This section provides instructions on installing either a fixed orifice or TXV refrigerant metering device.

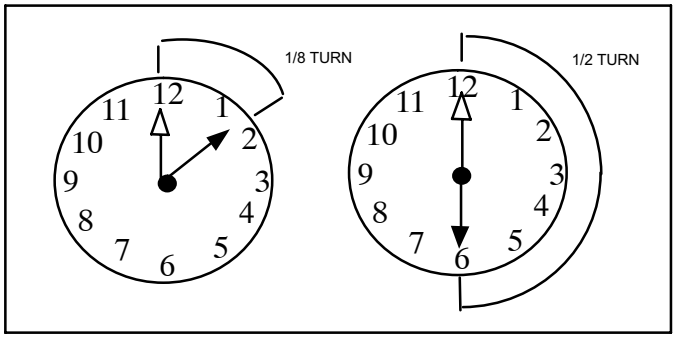


Figure 19. Tightening Distance

13ACX ENGINEERING HANDBOOK

See the 13ACX *Engineering Handbook* for approved indoor/outdoor match-ups, applicable fixed orifice and TXV kits, and application information.

Figures 20 and 21 illustrates the typical RFC and TXV kit parts and quantities.

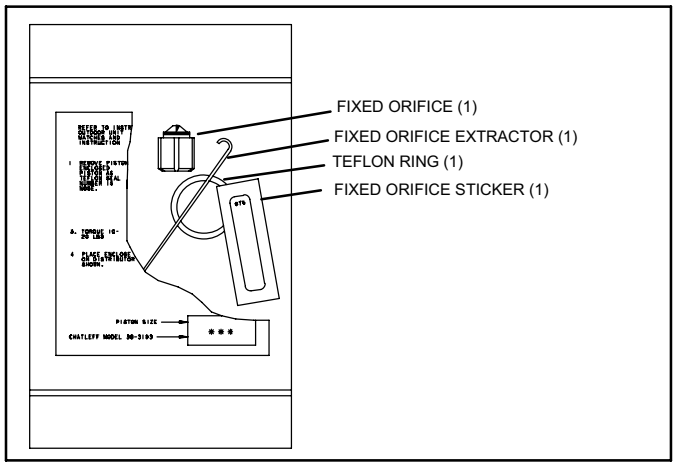


Figure 20. Fixed Orifice Kit Components

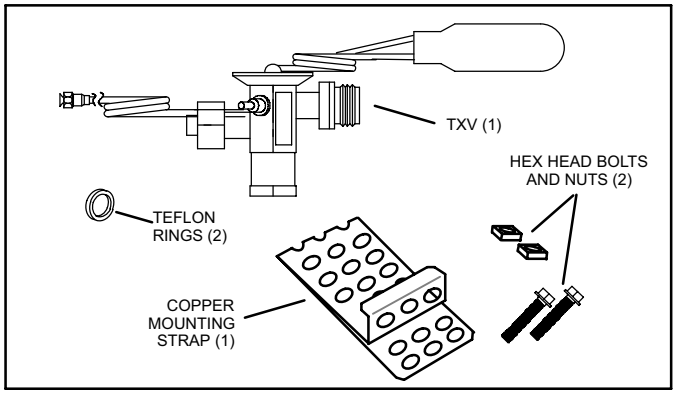


Figure 21. TXV Kit Components

TYPICAL FIXED ORIFICE INSTALLATION PROCEDURE

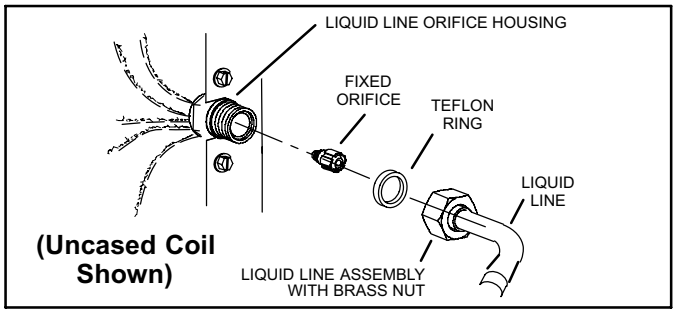


Figure 22. Typical Fixed Orifice Installation

1. Remove the field-provided fitting that temporary reconnected the liquid line to the indoor unit's liquid line orifice housing.
2. Ensure that the fixed orifice supplied with the outdoor unit is installed with the nylon seat pointing toward the liquid line orifice housing.
3. Apply a small amount of refrigerant oil on the Teflon ring and insert securely into the liquid line orifice housing.
4. Attached the liquid line assembly 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 figure 19, or 20 ft-lb.
5. Place the supplied fixed orifice sticker on the indoor cabinet after installation.

TYPICAL TXV INSTALLATION PROCEDURE

The TXV 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 TXV in a manner that will provide access for field servicing of the TXV. Refer to Figure 23 for reference during installation of TXV unit.

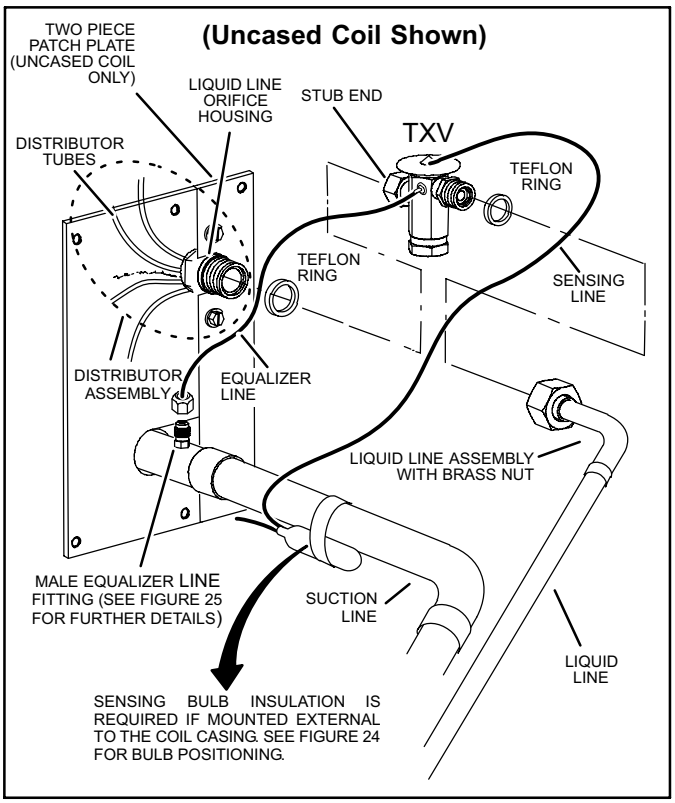


Figure 23. Typical TXV Installation

To prevent any possibility of water damage, properly insulate all parts of the TXV assembly that may sweat due to temperature differences between the valve and its surrounding ambient temperatures.

1. Remove the field-provided fitting that temporary reconnected the liquid line to the indoor unit's liquid line orifice housing.
2. Install one of the provided Teflon rings around the stubbed end of the TXV and lightly lubricate the connector threads and expose surface of the Teflon ring with refrigerant oil.
3. Attach the stubbed end of the kit 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 figure 19, or 20 ft-lb.
4. Place the remaining Teflon ring around the other end of the TXV. Lightly lubricate connector threads and expose surface of the Teflon ring with refrigerant oil.
5. Attach the liquid line assembly to the TXV. Finger tighten and use an appropriately sized wrench to turn an additional 1/22 turn clockwise as illustrated in figure 19, or 20 ft-lb.
6. Attach the suction line sensing bulb in the proper orientation as illustrated in figure 24 using the copper mounting strap and fastening hardware provided.

NOTE - Insulating the sensing bulb once installed may be required when the bulb location is external to the coil casing.

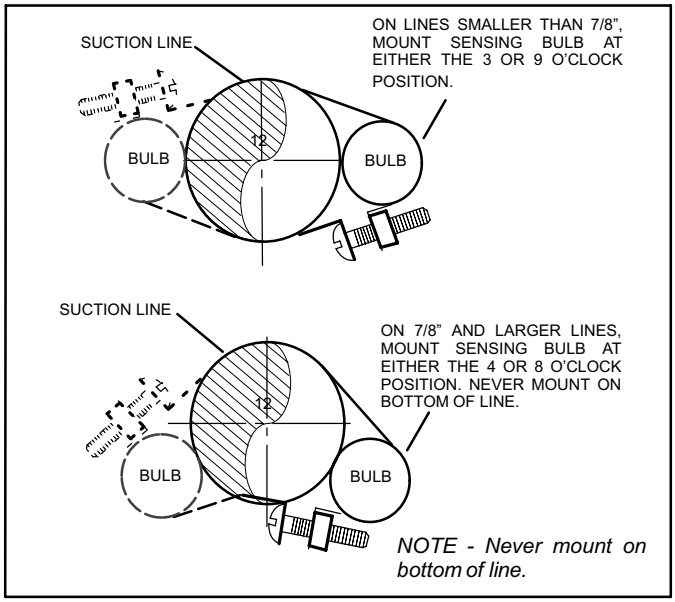


Figure 24. TXV Sensing Bulb Installation

7. Remove and discard either the flare seal cap or flare nut with copper flare seal bonnet from the equalizer line port on the suction line as illustrated in figure 25.

⚠ IMPORTANT

When removing the flare nut, ensure that the copper flare seal bonnet is removed.

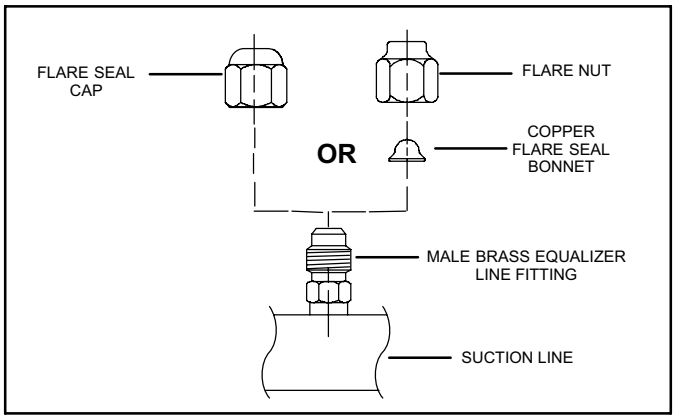


Figure 25. Copper Flare Seal Bonnet Removal

8. Connect the equalizer line from the TXV to the equalizer suction port on the suction line. Finger tighten the flare nut plus 1/8 turn (7 ft-lbs) as illustrated in figure 19.

Testing for Leaks

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

⚠ IMPORTANT

Leak detector must be capable of sensing HFC refrigerant.

⚠ 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 damage by fire and/or an explosion, that could result in personal injury or death.

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

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

2. 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 (suction only).
3. 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.
4. Connect a cylinder of dry nitrogen with a pressure regulating valve to the center port of the manifold gauge set.
5. Adjust dry 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.
6. 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.

NOTE - Amounts of refrigerant will vary with line lengths.

7. Check all joints for leaks.
8. Purge dry nitrogen and HFC-410A mixture.
9. Correct any leaks and recheck.
10. After leak testing disconnect gauges from service ports.

Evacuating the System

⚠ 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.

⚠ IMPORTANT

Use a thermocouple or thermistor electronic vacuum gauge that is calibrated in microns. Use an instrument capable of accurately measuring down to 50 microns.

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.

1. Connect manifold gauge set to the service valve ports as follows:
   - low pressure gauge to *suction* line service valve
   - high pressure gauge to *liquid* line service valve
2. Connect micron gauge.
3. Connect the vacuum pump (with vacuum gauge) to the center port of the manifold gauge set.
4. Open both manifold valves and start the vacuum pump.
5. 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 to determine if there is a rapid rise in sure indicates a relatively large leak. If this occurs, **repeat the leak testing procedure**.

*NOTE - The term **absolute pressure** means the total actual pressure within a given volume or system, above the absolute zero of pressure. Absolute pressure in a vacuum is equal to atmospheric pressure minus vacuum pressure.*

6. When the absolute pressure reaches 23,000 microns (29.01 inches of mercury), close the manifold gauge valves, turn off the vacuum pump and disconnect the

manifold gauge center port hose from vacuum pump. Attach the manifold center port hose to a dry nitrogen cylinder with pressure regulator set to 150 psig (1034 kPa) and purge the hose. Open the manifold gauge valves to break the vacuum in the line set and indoor unit. Close the manifold gauge valves.

7. Shut off the dry nitrogen cylinder and remove the manifold gauge hose from the cylinder. Open the manifold gauge valves to release the dry nitrogen from the line set and indoor unit.
8. 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.
9. When the absolute pressure requirement above has been met, disconnect the manifold hose from the vacuum pump and connect it to an upright cylinder of HFC-410A refrigerant. Open the manifold gauge valves to break the vacuum from 1 to 2 psig positive pressure in the line set and indoor unit. Close manifold gauge valves and shut off the HFC-410A cylinder and remove the manifold gauge set.

Servicing Unit Delivered Void of Charge

If the system is void of refrigerant, clean the system using the procedure described below.

1. Use nitrogen to pressurize the system and check for leaks. Repair all leaks.
2. Evacuate the system to remove as much of the moisture as possible.
3. Use nitrogen to break the vacuum and install a new filter drier in the system.
4. Evacuate the system again. Then, weigh the appropriate amount of HFC-410A refrigerant as listed on unit nameplate into the system.
5. Monitor the system to determine the amount of moisture remaining in the oil. It may be necessary to replace the liquid line filter drier several times to achieve the required dryness level. **If system dryness is not verified, the compressor will fail in the future.**

Electrical Connections

In the United States, 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 blower coil installation instructions for additional wiring application diagrams and refer to unit nameplate for minimum circuit ampacity and maximum over-current protection size.

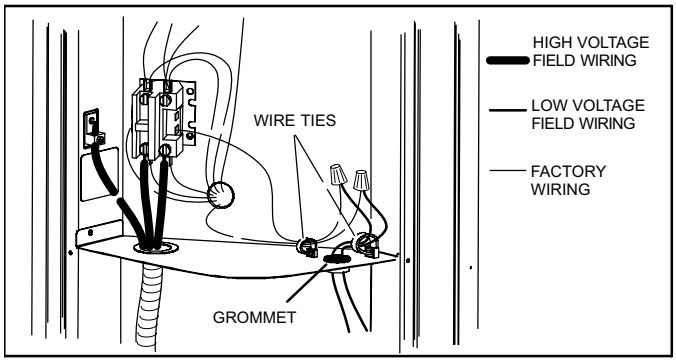


Figure 26. Separating High/Low Voltage Field Wiring (Typical Field Wiring)

⚠ WARNING

Electric Shock Hazard. Can cause injury or death.

Line voltage is present at all components on units with single-pole contactors, even when unit is not in operation!

Unit may have multiple power supplies. Disconnect all remote electric power supplies before opening access panel.

Unit must be grounded in accordance with national and local codes.

WIRING CONNECTIONS

1. Install line voltage power supply to unit from a properly sized disconnect switch. Any excess high voltage field wiring should be trimmed or secured away from the low voltage field wiring as illustrated in figure 28.
2. Ground unit at unit disconnect switch or to an earth ground.
3. Connect conduit to the unit using provided conduit bushing.
4. Install room thermostat (ordered separately) on an inside wall approximately in the center of the conditioned area and 5 feet (1.5 m) from the floor. It should not be installed on an outside wall or where it can be affected by sunlight, drafts or vibrations.

NOTE - For proper voltages, select thermostat wire gauge per the following chart:

Table 3. Wire Run Lengths

Wire Run Length	AWG #	Insulation Type
less than 100' (30m)	18	Color-coded, temperature rating 35°C minimum.
more than 100' (30m)	16	

5. Install low-voltage wiring from outdoor to indoor unit and from thermostat to indoor unit.
6. Do not bundle any excess 24V control wire inside control box. Run control wire through installed wire tie and tighten wire tie to provided low voltage strain relief and to maintain separation of field installed low and high voltage circuits.

NOTE - 24VAC, Class II circuit connections are made in the low voltage junction box

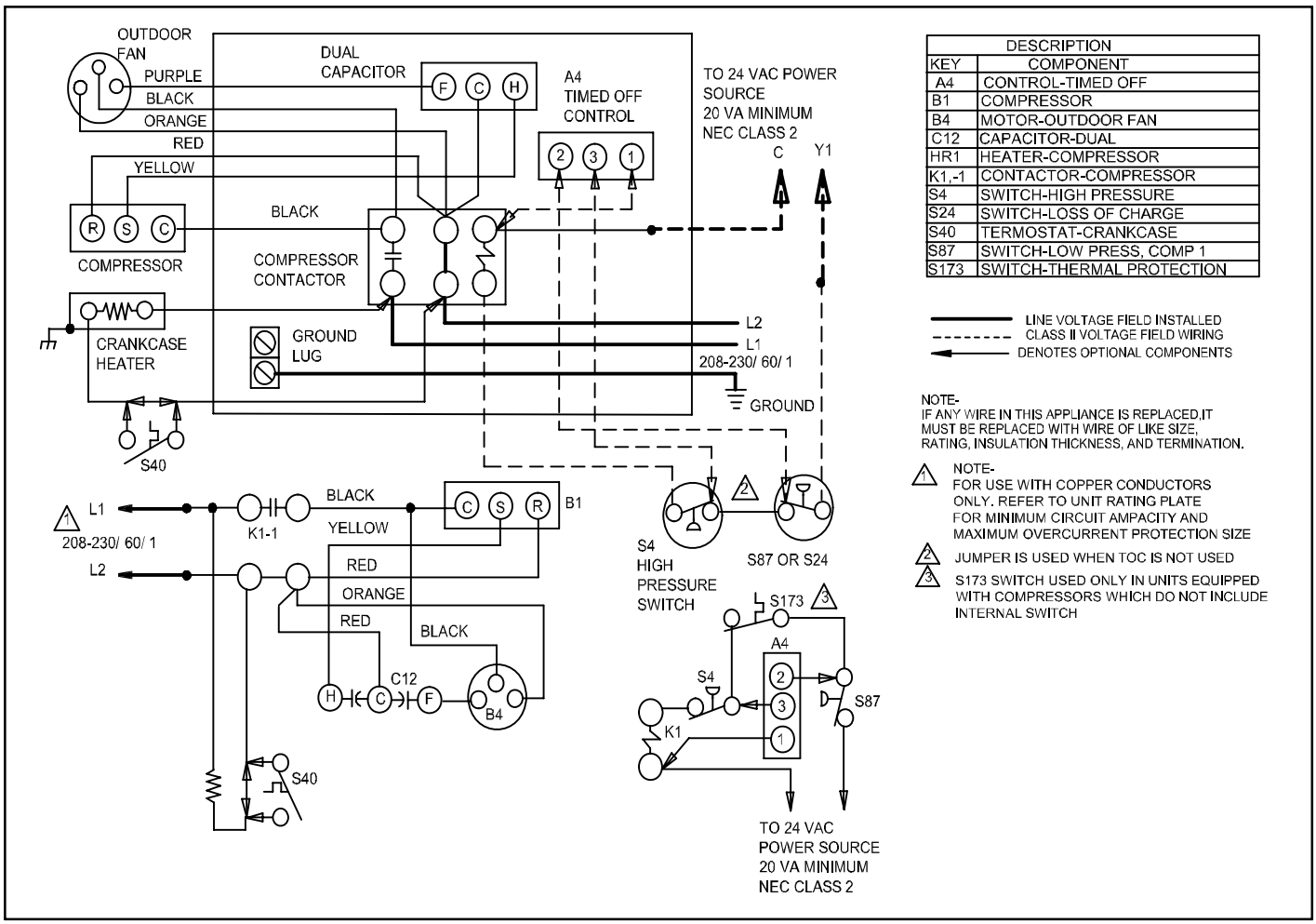


Figure 27. Typical 13ACX Unit Wiring Diagram

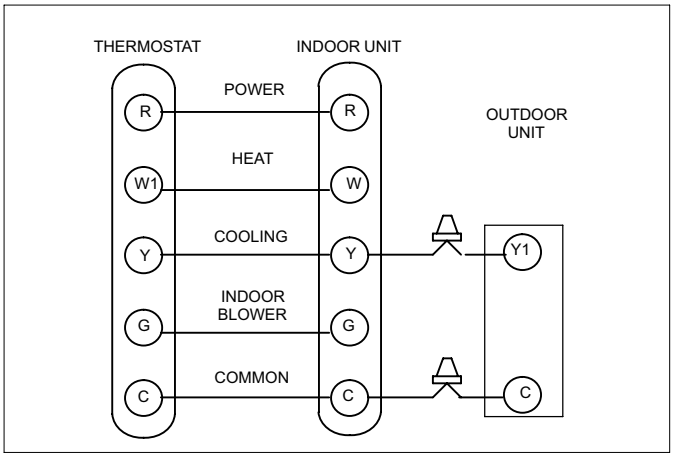


Figure 28. 24VAC Control Wiring Diagrams (Field Installed)

NOTE - To facilitate conduit, a hole is in the bottom of the control box. Connect conduit to the control box using a proper conduit fitting.

NOTE - Units are approved for use only with copper conductors.

NOTE - See unit wiring diagram for power supply connections. If indoor unit is not equipped with blower relay. It must be field-provided and installed (P-8-3251 or equivalent)

Start-Up and Charging Procedures

⚠ 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.

1. Rotate fan to check for binding.
2. Inspect all factory- and field-installed wiring for loose connections.
3. After evacuation is complete, open the liquid line and suction line service valves to release the refrigerant charge (contained in air conditioner) into the system.
4. Replace the stem caps and tighten to the value listed in table 1.

5. Check voltage supply at the disconnect switch. The voltage must be within the range listed on the unit's nameplate. If not, do not start the equipment until you have consulted with the power company and the voltage condition has been corrected.

6. Set the thermostat for a cooling demand. Turn on power to the indoor handler and close the air conditioner disconnect switch to start the unit.

7. Recheck voltage while the unit is running. Power must be within range shown on the nameplate.

8. Check system for sufficient refrigerate by using the procedures listed under *Testing and Charging System*.

SETTING UP TO CHECK CHARGE

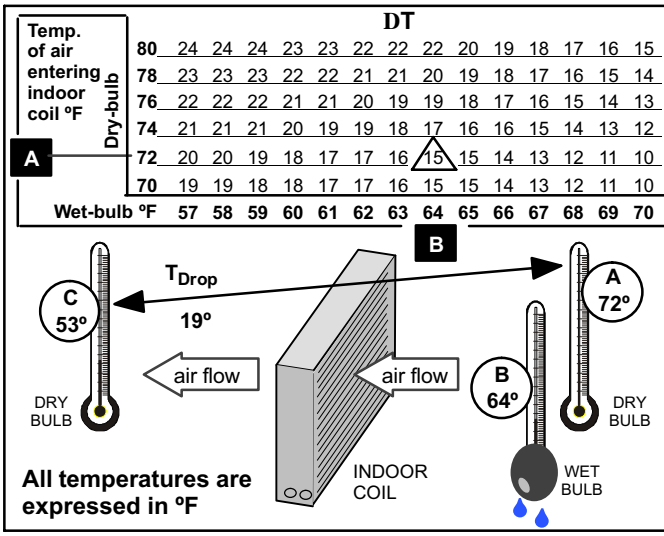
1. Close manifold gauge set valves. Connect the center manifold hose to an upright cylinder of HFC-410A.
2. Connect the manifold gauge set to the unit's service ports as illustrated in figure 1.
   - low pressure gauge to ***suction line service port***
   - high pressure gauge to ***liquid line service port***

INDOOR AIRFLOW CHECK

Check airflow using the Delta-T (DT) process using the illustration in figure 29.

DETERMINING CHARGE METHOD

Use the illustration in figure 30 to determine the correct charging method.



1. Determine the desired DT—Measure entering air temperature using dry bulb (**A**) and wet bulb (**B**). **DT** is the intersecting value of **A** and **B** in the table (see triangle).

2. Find temperature drop across coil—Measure the coil's dry bulb entering and leaving air temperatures (**A** and **C**). Temperature Drop Formula: (T_{Drop}) = **A** minus **C**.

3. Determine if fan needs adjustment—If the difference between the measured T_{Drop} and the desired **DT** (T_{Drop}–**DT**) is within ±3°, no adjustment is needed. See examples: Assume **DT** = 15 and **A** temp. = 72°, these **C** temperatures would necessitate stated actions:

C°	T_{Drop}	–	DT	=	°F	*ACTION*
53°	19	–	15	=	4	*Increase the airflow*
58°	14	–	15	=	-1	*(within ±3° range) no change*
62°	10	–	15	=	-5	*Decrease the airflow*

4. Adjust the fan speed—See indoor unit instructions to increase/decrease fan speed.

Changing air flow affects all temperatures; recheck temperatures to confirm that the temperature drop and DT are within ±3°.

Figure 29. Checking Indoor Airflow over Evaporator Coil using Delta-T (DT) Chart

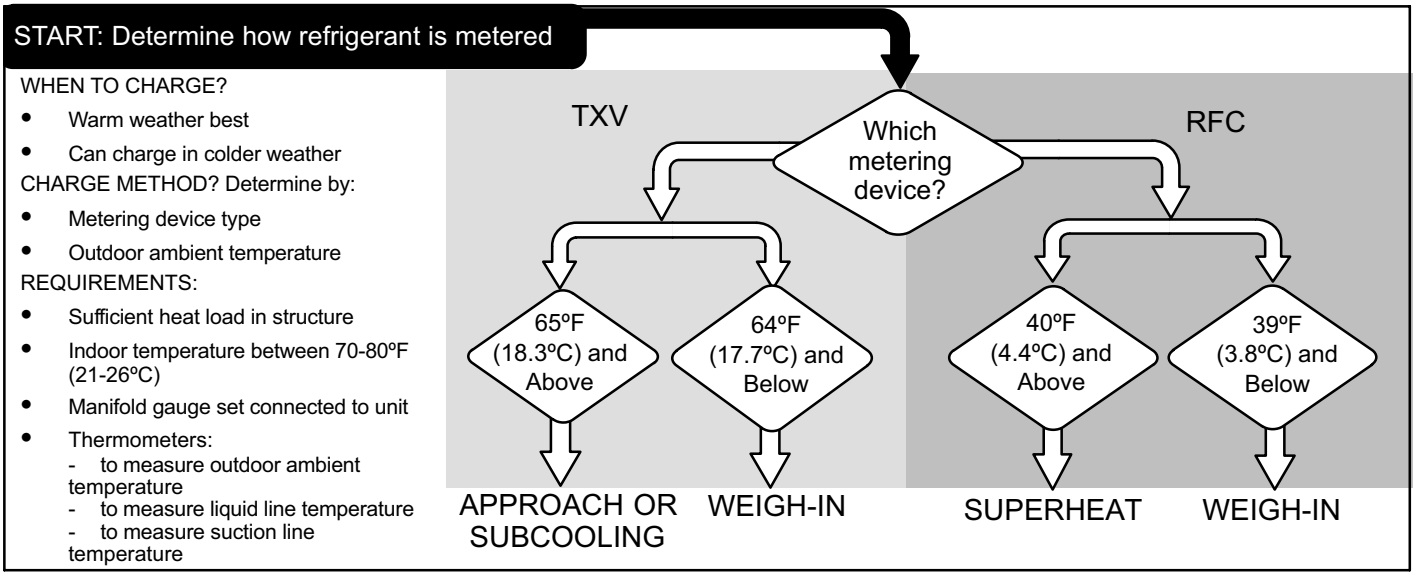


Figure 30. Determining Charge Method

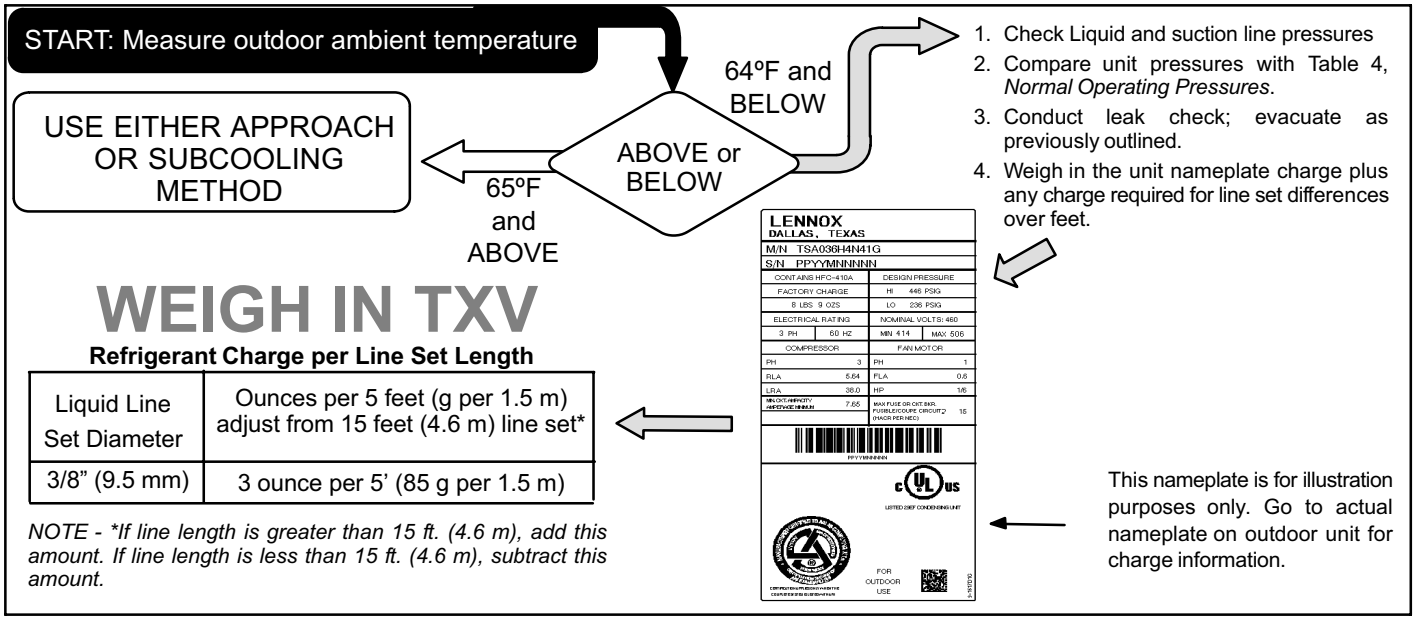


Figure 31. HFC-410A Weigh In TXV Method

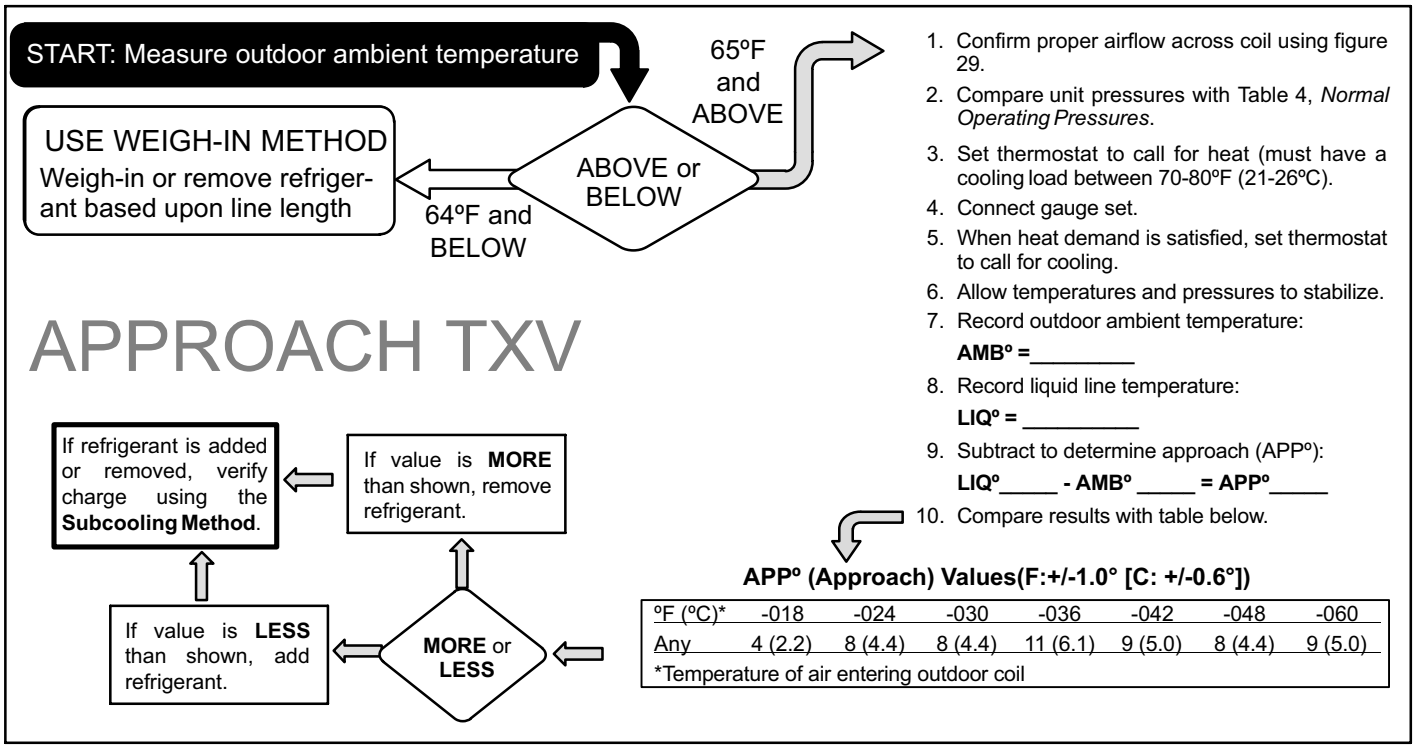


Figure 32. HFC-410A Approach TXV Charge

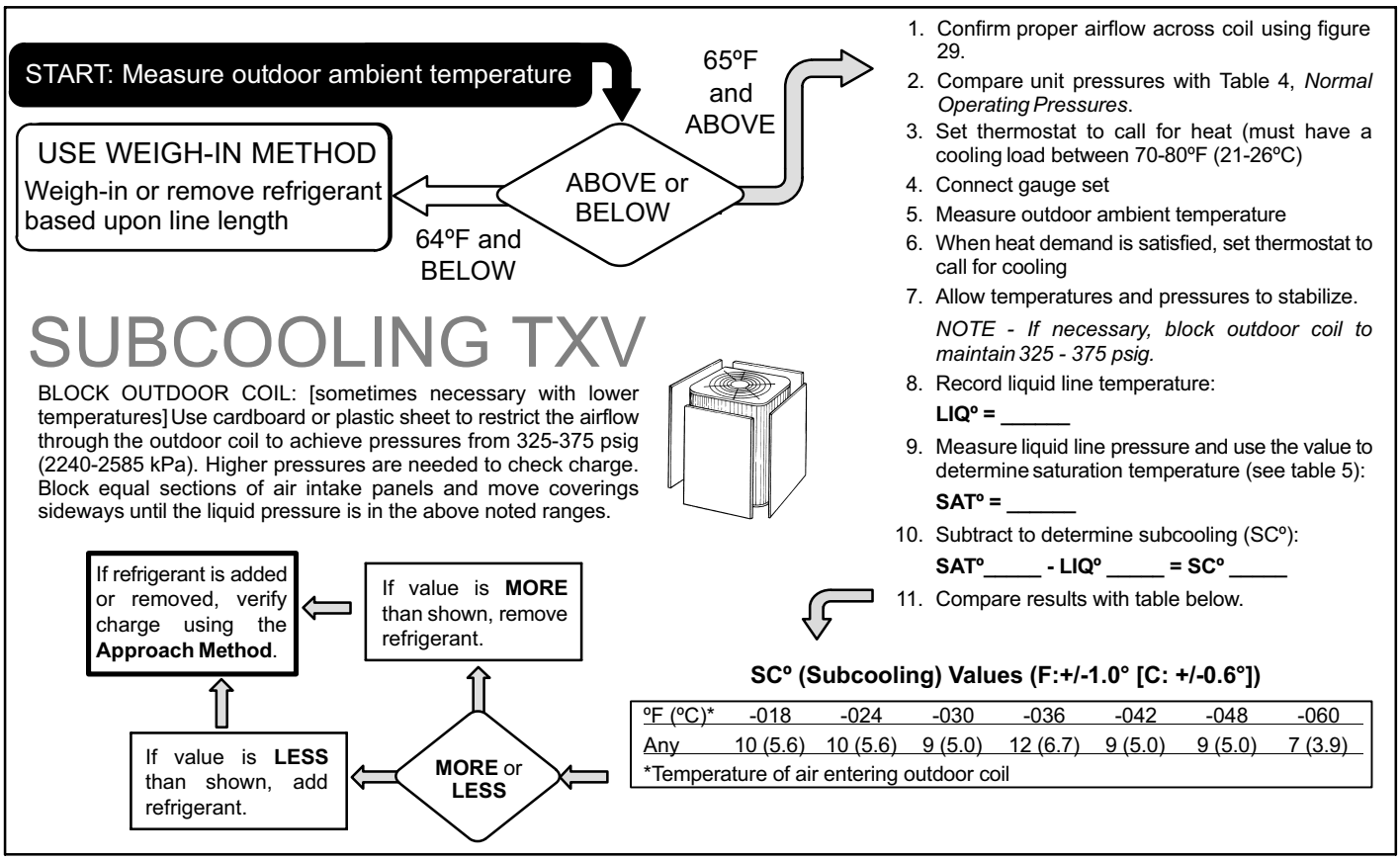


Figure 33. HFC-410A Subcooling TXV Charge

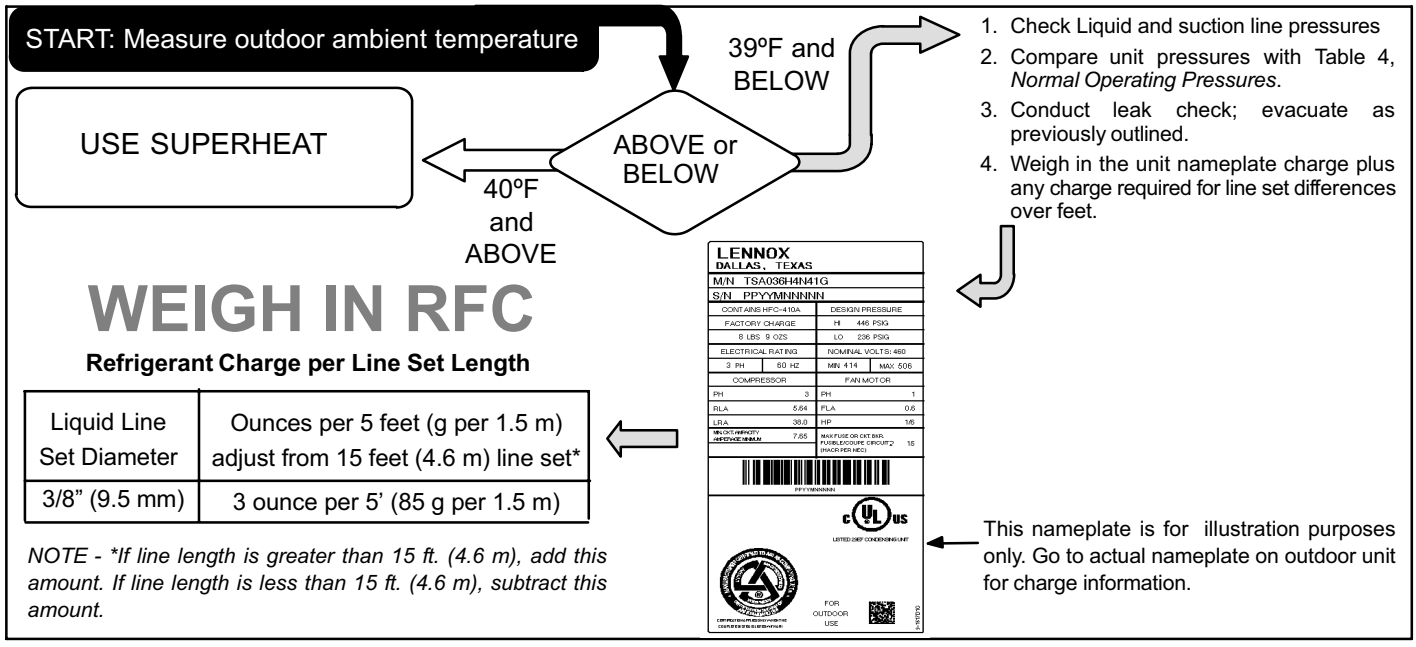
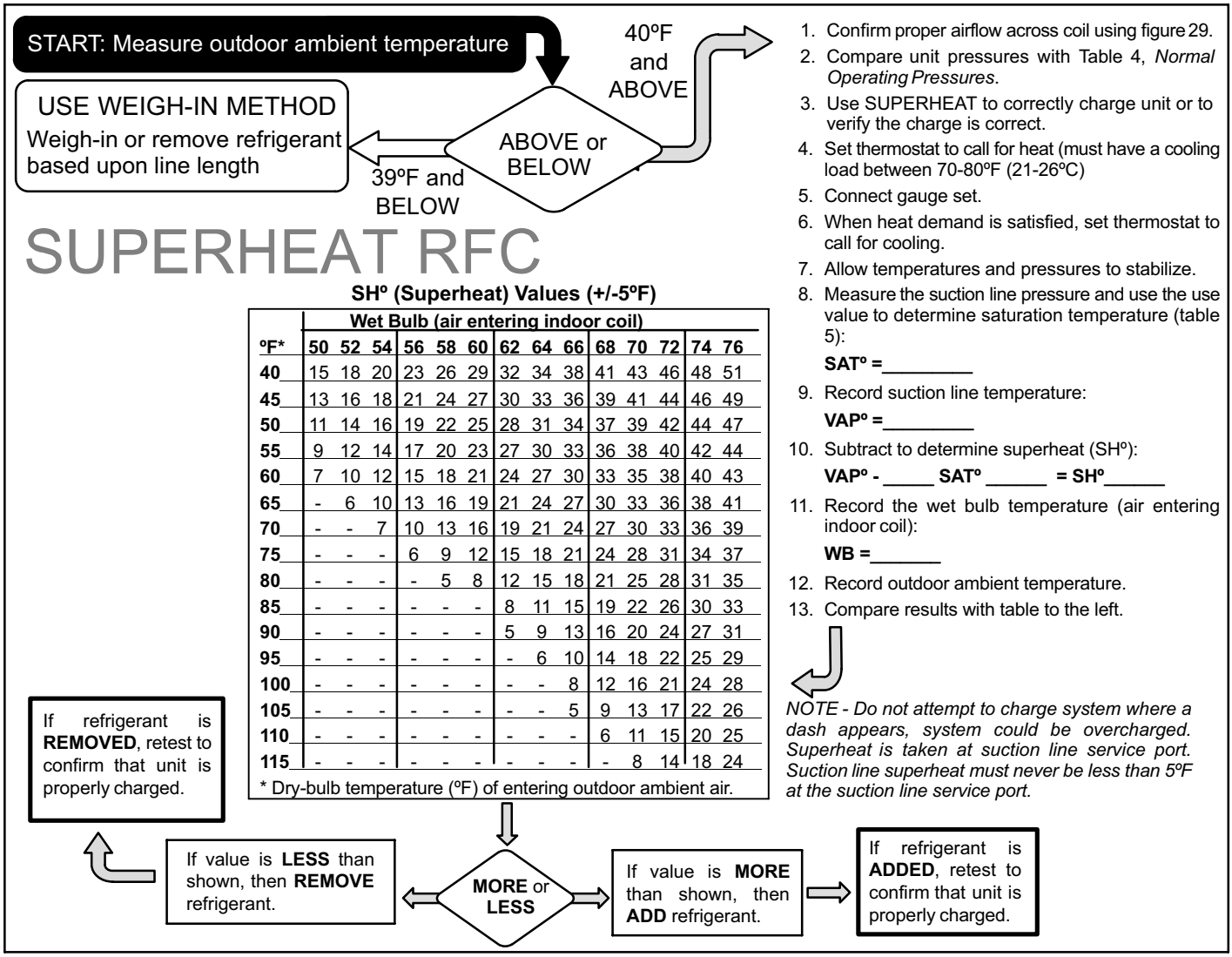


Figure 34. HFC-410A Weigh In RFC Method



SHº (Superheat) Values (+/-5ºF)

	Wet Bulb (air entering indoor coil)													
ºF*	**50**	**52**	**54**	**56**	**58**	**60**	**62**	**64**	**66**	**68**	**70**	**72**	**74**	**76**
40	15	18	20	23	26	29	32	34	38	41	43	46	48	51
45	13	16	18	21	24	27	30	33	36	39	41	44	46	49
50	11	14	16	19	22	25	28	31	34	37	39	42	44	47
55	9	12	14	17	20	23	27	30	33	36	38	40	42	44
60	7	10	12	15	18	21	24	27	30	33	35	38	40	43
65	-	6	10	13	16	19	21	24	27	30	33	36	38	41
70	-	-	7	10	13	16	19	21	24	27	30	33	36	39
75	-	-	-	6	9	12	15	18	21	24	28	31	34	37
80	-	-	-	-	5	8	12	15	18	21	25	28	31	35
85	-	-	-	-	-	-	8	11	15	19	22	26	30	33
90	-	-	-	-	-	-	5	9	13	16	20	24	27	31
95	-	-	-	-	-	-	-	6	10	14	18	22	25	29
100	-	-	-	-	-	-	-	-	8	12	16	21	24	28
105	-	-	-	-	-	-	-	-	5	9	13	17	22	26
110	-	-	-	-	-	-	-	-	-	6	11	15	20	25
115	-	-	-	-	-	-	-	-	-	-	8	14	18	24

* Dry-bulb temperature (ºF) of entering outdoor ambient air.

Figure 35. HFC-410A Superheat RFC Method

Table 4. HFC-410A Normal Operating Pressures (Liquid +10 and Suction +5 psig)

⚠ IMPORTANT

Use this table to perform maintenance checks; it is not a procedure for charging the system. Minor variations in these pressures may be due to differences in installations. Significant deviations could mean that the system is not properly charged or that a problem exists with some component in the system.

13ACX	-018	-024	-030	-036	-042	-048	-060
°F (°C)*	Liquid / Suction	Liquid / Suction	Liquid / Suction	Liquid / Suction	Liquid / Suction	Liquid / Suction	Liquid / Suction
Expansion Valve (TXV)							
65 (18)	233 / 132	244 / 137	248 / 127	263 / 135	238 /132	235 / 132	241 / 130
70 (21)	251 / 133	263 / 138	263 / 131	281 / 138	262 / 133	254 / 132	260 / 130
75 (24)	265 / 133	285 / 139	284 / 132	302 / 140	280 / 134	276 / 134	280 / 132
80 (27)	292 / 135	307 / 140	307 / 134	325 / 142	301 / 136	298 / 134	299 / 134
85 (29)	314 / 136	329 / 141	330 / 135	349 / 142	327 / 137	323 / 135	321 / 135
90 (32)	338 / 137	354 / 142	355 / 136	375 / 143	353 / 138	350 / 137	344 / 134
95 (35)	362 / 138	379 / 143	380 / 137	404 / 144	377 / 140	377 / 138	371 / 135
100 (38)	388 / 140	404 / 144	407 / 138	433 / 145	404 / 141	406 / 140	400 / 137
105 (41)	415 / 141	438 / 145	434 / 139	462 / 147	435 / 142	430 / 141	428 / 139
110 (43)	444 / 142	464 / 147	465 / 141	494 / 149	465 / 143	464 / 142	458 / 141
115 (45)	475 / 143	495 / 148	497 / 142	527 / 150	499 / 144	495 / 143	484 / 142
Fixed Orifice (RFC)							
65 (18)	233 / 121	246 / 126	245 / 123	261 / 134	246 / 126	247 / 125	248 / 124
70 (21)	250 / 124	265 / 129	265 / 126	281 / 136	263 / 128	266 / 128	266 / 126
75 (24)	270 / 128	286 / 132	286 / 129	301 / 138	284 / 131	286 / 131	288 / 130
80 (27)	291 / 131	307 /135	308 / 132	324 / 140	305 / 133	307 / 133	309 / 133
85 (29)	313 / 134	330 / 137	331 / 135	346 / 142	327 / 135	329 / 135	330 / 135
90 (32)	335 / 136	353 / 140	355 / 138	371 / 144	350 / 138	353 / 138	354 / 138
95 (35)	359 / 138	378 / 142	380 / 140	396 / 146	374 / 140	377 / 140	377 / 140
100 (38)	383 / 140	402 / 143	405 / 142	422 / 148	399 / 142	403 / 142	406 / 142
105 (41)	409 / 142	428 / 145	431 / 144	448 / 150	424 / 144	428 / 144	431 / 144
110 (43)	436 / 145	456 / 147	458 / 146	477 / 151	452 / 146	455 / 146	457 / 146
115 (46)	464 / 147	486 / 149	487 / 148	506 / 153	481 / 148	483 / 147	484 / 148

**Values shown are typical pressures; indoor unit match up, indoor air quality equipment, and indoor load will cause the pressures to vary.*
***Temperature of the air entering the outside coil.*

Table 5. HFC-410A Temperature (°F) - Pressure (Psig)

°F	Psig	°F	Psig	°F	Psig	°F	Psig	°F	Psig	°F	Psig	°F	Psig	°F	Psig
32	100.8	48	137.1	63	178.5	79	231.6	94	290.8	110	365.0	125	445.9	141	545.6
33	102.9	49	139.6	64	181.6	80	235.3	95	295.1	111	370.0	126	451.8	142	552.3
34	105.0	50	142.2	65	184.3	81	239.0	96	299.4	112	375.1	127	457.6	143	559.1
35	107.1	51	144.8	66	187.7	82	242.7	97	303.8	113	380.2	128	463.5	144	565.9
36	109.2	52	147.4	67	190.9	83	246.5	98	308.2	114	385.4	129	469.5	145	572.8
37	111.4	53	150.1	68	194.1	84	250.3	99	312.7	115	390.7	130	475.6	146	579.8
38	113.6	54	152.8	69	197.3	85	254.1	100	317.2	116	396.0	131	481.6	147	586.8
39	115.8	55	155.5	70	200.6	86	258.0	101	321.8	117	401.3	132	487.8	148	593.8
40	118.0	56	158.2	71	203.9	87	262.0	102	326.4	118	406.7	133	494.0	149	601.0
41	120.3	57	161.0	72	207.2	88	266.0	103	331.0	119	412.2	134	500.2	150	608.1
42	122.6	58	163.9	73	210.6	89	270.0	104	335.7	120	417.7	135	506.5	151	615.4
43	125.0	59	166.7	74	214.0	90	274.1	105	340.5	121	423.2	136	512.9	152	622.7
44	127.3	60	169.6	75	217.4	91	278.2	106	345.3	122	428.8	137	519.3	153	630.1
45	129.7	61	172.6	76	220.9	92	282.3	107	350.1	123	434.5	138	525.8	154	637.5
46	132.2	62	175.4	77	224.4	93	286.5	108	355.0	124	440.2	139	532.4	155	645.0
47	134.6			78	228.0			109	360.0			140	539.0		

INSTALLING SERVICE VALVE CAPS

Disconnect gauge set and re-install both the liquid and suction service valve caps.

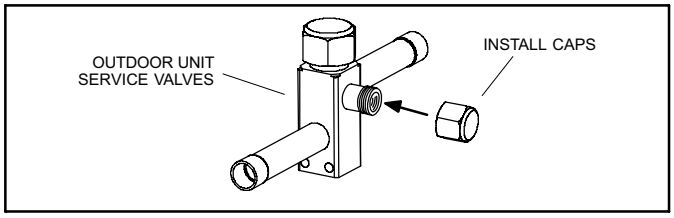


Figure 36. Installing Service Valve Caps

System Operation

The outdoor unit and indoor blower will cycle on and off as dictated by demands from the room thermostat. When the thermostat's blower switch is in the **ON** position, the indoor blower will operate continuously.

HIGH PRESSURE SWITCH

13ACX units are equipped with a high-pressure switch that is located in the liquid line of the compressor as illustrated in figure 37. The switch is a Single Pole, Single Throw (SPST), manual-reset switch with red cap that is normally closed and removes power from the compressor when discharge pressure rises above factory setting at 590 ± 10 psi.

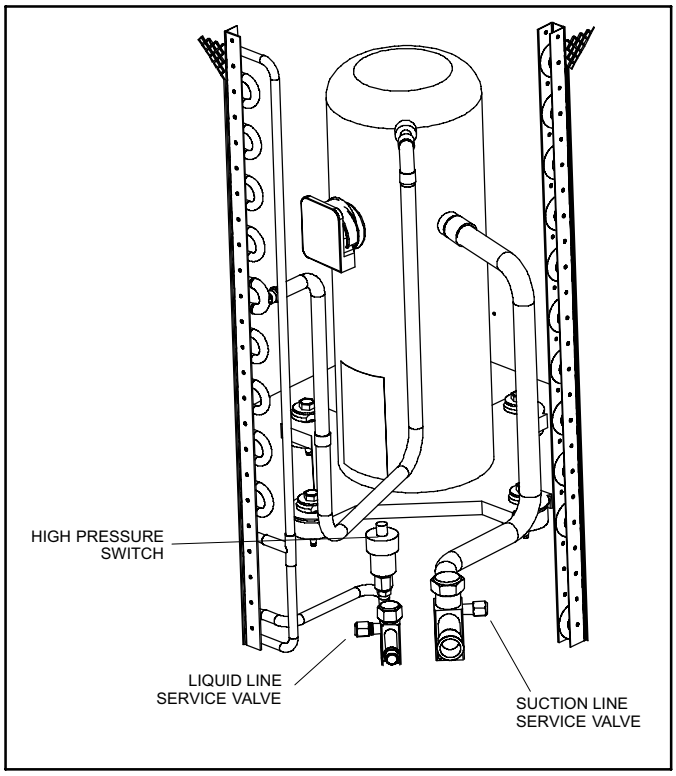


Figure 37. High Pressure Switch Location

Maintenance

⚠ WARNING

Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

⚠ WARNING

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

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

At the beginning of each cooling season, the system should be checked as follows:

OUTDOOR UNIT

1. Clean and inspect outdoor coil (may be flushed with a water hose). Ensure power is off before cleaning.
2. Outdoor unit fan motor is pre-lubricated and sealed. No further lubrication is needed.
3. Visually inspect all connecting lines, joints and coils for evidence of oil leaks.
4. Check all wiring for loose connections.
5. Check for correct voltage at unit (unit operating).
6. Check amperage draw on outdoor fan motor.

   UNIT NAMEPLATE: _____ ACTUAL: _____
7. Inspect drain holes in coil compartment base and clean if necessary.

NOTE - If insufficient heating or cooling occurs, the unit should be gauged and refrigerant charge should be checked.

INDOOR COIL

1. Clean coil if necessary.
2. Check connecting lines, joints and coil for evidence of oil leaks.
3. Check condensate line and clean if necessary.

INDOOR UNIT

1. Clean or change filters.
2. Blower motors are pre-lubricated and permanently sealed. No more lubrication is needed.
3. Adjust blower speed for cooling. Measure the pressure drop over the coil to determine the correct blower cubic feet per minute (CFM). Refer to the unit information service manual for pressure drop tables and procedure.
4. *Belt Drive Blowers* - Check belt for wear and proper tension.
5. Check all wiring for loose connections.
6. Check for correct voltage at unit. (blower operating)
7. Check amperage draw on blower motor.

   UNIT NAMEPLATE: _____ ACTUAL: _____

Homeowner Information

⚠ WARNING

Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

⚠ 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 and diminish performance and longevity of the unit.

NOTE - A white residue may appear on the coil guards and grilles on outdoor units. The residue is a non-toxic byproduct of manufacturing the flexible coating. It can be removed by wiping the coil guard with a cloth.

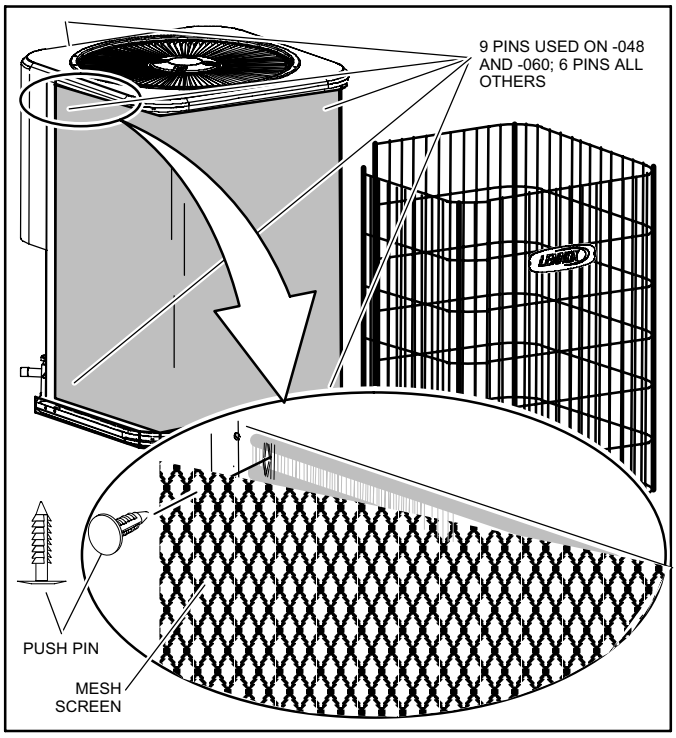


Figure 38. Cleaning debris from mesh

Maintenance and service must be performed by a qualified installer or service agency. At the beginning of each cooling season, the system should be checked as follows:

1. Make sure power is off before cleaning. Clean and inspect outdoor coil. The coil may be flushed with a water hose.
2. The outdoor coil is protected by an inner mesh screen and a wire cage (see figure 38). If debris has collected between the mesh screen and the coil and cannot be dislodged by spraying un-pressurized water from inside coil surface to the outside, the mesh may be removed by first removing the top of the unit which will allow for removal of the wire cage.
3. Then, using pliers to grip the head of the push pins, pull straight out to extract the push pins along one side of the coil. If necessary, remove the push pins along the back of the unit; it is usually unnecessary to fully remove the inner mesh screen.
4. Drape the mesh screen back and wash the coil. When all the debris has been removed from the coil, reinstall the mesh screen by positioning it in its original position and reinserting the push pin. No tool is required to push the pin back into the same slot in the fins.
5. If the push pin is loose and tends not to stay in place, brush the fins with a fin brush (22 fins/in). Line up the push pin a couple fins to the right or left of the original hole and re-insert the pin.

PRESERVICE CHECK

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

- Make sure all electrical disconnect switches are ON.
- Make sure the room thermostat temperature selector AND the system switch are properly set.
- Replace any blown fuses, or reset circuit breakers.
- Make sure unit access panels are in place.
- Make sure air filter is clean.
- Locate and record unit model number before calling.

PROGRAMMABLE THERMOSTATS

Your Lennox system may be controlled by a programmable thermostat. These thermostats provide the added feature of programmable time-of-day set points for both heating and cooling. Refer to the user's information manual provided with your thermostat for operation details.

THERMOSTAT OPERATION

Thermostat operations vary from one thermostat to another. The following provides general operation procedures. Refer to the user's information manual provided with your thermostat for specific operation details.

Temperature Setting Levers	Set the lever or dial to the desired temperature setpoints for both heating and cooling. Avoid frequent temperature adjustment; turning the unit off—then back on—before pressures can equalize will put unusual stress on the unit's compressor.
Fan Switch	In AUTO or INT (intermittent) mode, the blower operates only when the thermostat calls for heating or cooling. This mode is generally preferred when humidity control is a priority. The ON or CONT mode provides continuous indoor blower operation, regardless of whether the compressor or furnace is operating. This mode is required when constant air circulation or filtering is desired.
System Switch	Set the system switch for heating, cooling or auto operation. The auto mode allows the system to automatically switch from heating mode to cooling mode to maintain predetermined comfort settings.
Temperature Indicator	The temperature indicator displays the actual room temperature.

Optional Accessories

Refer to the *Lennox 13ACX Engineering Handbook* for the latest available accessories for this unit. Below is a list of accessories available at the time this instruction was publish.

- Compressor Start Kit
- Loss of Charge Kit
- Low Ambient Kit
- Timed Off Control
- Sound Cover
- Replacement Liquid Line Drier
- Plastic Feet Kit
- Crankcase Heater

Start-Up and Performance Checklist

Job Name _____ Job no. _____ Date _____

Job Location _____ City _____ State _____

Installer _____ City _____ State _____

Unit Model No. _____ Serial No. _____ Service Technician _____

Nameplate Voltage _____

Rated Load Ampacity _____ Compressor _____ Outdoor Fan _____

Maximum Fuse or Circuit Breaker _____

Electrical Connections Tight? ❑ Indoor Filter clean? ❑ Supply Voltage (Unit Off) _____

Indoor Blower RPM _____ S.P. Drop Over Indoor (Dry) _____ Outdoor Coil Entering Air Temp. _____

Discharge Pressure _____ Suction Pressure _____ Refrigerant Charge Checked? ❑

Refrigerant Lines: - Leak Checked? ❑ Properly Insulated? ❑ Outdoor Fan Checked? ❑

Service Valves: --- Fully Opened? ❑ Caps Tight? ❑ **Thermostat**

Voltage With Compressor Operating _____ Calibrated? ❑ Properly Set? ❑ Level? ❑

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