

INSTALLATION INSTRUCTIONS

10ACE Series Units

CONDENSER UNITS
 505,128M
 03/06
 Supersedes 01/06

TP Technical
 Publications
 Litho U.S.A.

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**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 qualified installer or service agency.

⚠ IMPORTANT

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

⚠ 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

⚠ 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.

10ACE Outdoor Units

Lennox Merit® 10ACE outdoor units are designed for use in either fixed orifice or expansion valve (TXV) systems. The TXV may require a field-installed hard start kit. Refer to the Lennox Engineering Handbook for expansion valve kits which must be ordered separately.

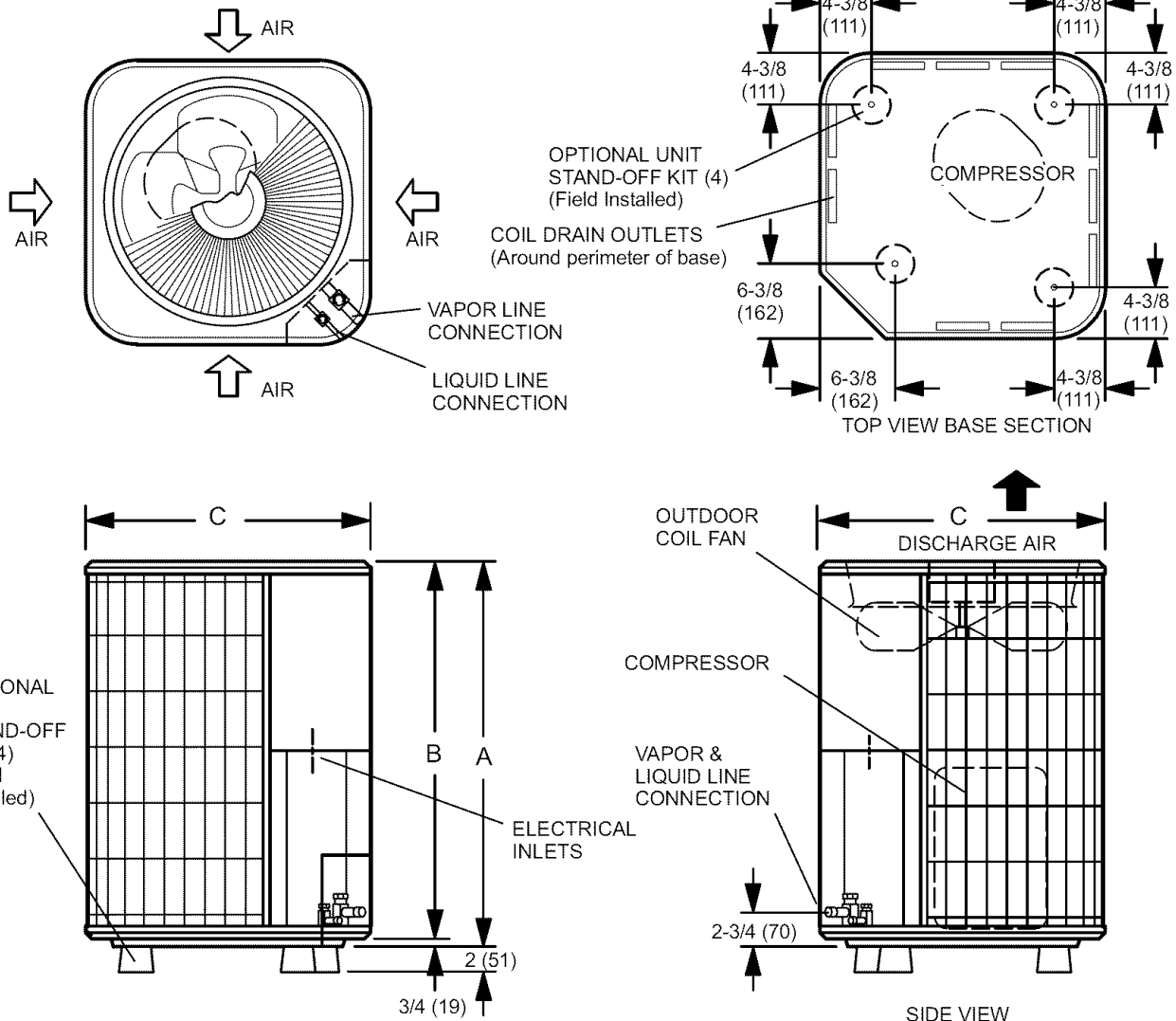
Shipping & Packing List

- 1 - Assembled outdoor unit
- 1 - Fixed orifice refrigerant metering device

Check the unit for shipping damage. Consult last carrier immediately if damage is found.



Unit Dimensions - inches (mm)



10ACE Model	A	B	C
-024	25 (635)	24-1/4 (616)	24-1/4 (565)
-036	33 (635)	32-1/4 (616)	24-1/4 (565)
-048	33 (838)	32-1/4 (819)	24-1/4 (616)
-060	33 (940)	32-1/4 (921)	24-1/4 (718)

General Information

These instructions are intended as a general guide and do not supersede national or 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		
Part	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

Setting the Unit

Refer to unit dimensions for sizing mounting slab, platforms or supports. Refer to figure 1 for installation clearances.

Slab Mounting

When installing unit at grade level, install on a level slab high enough above grade to allow adequate drainage of water. Top of slab should be located so run-off water from higher ground will not collect around unit.

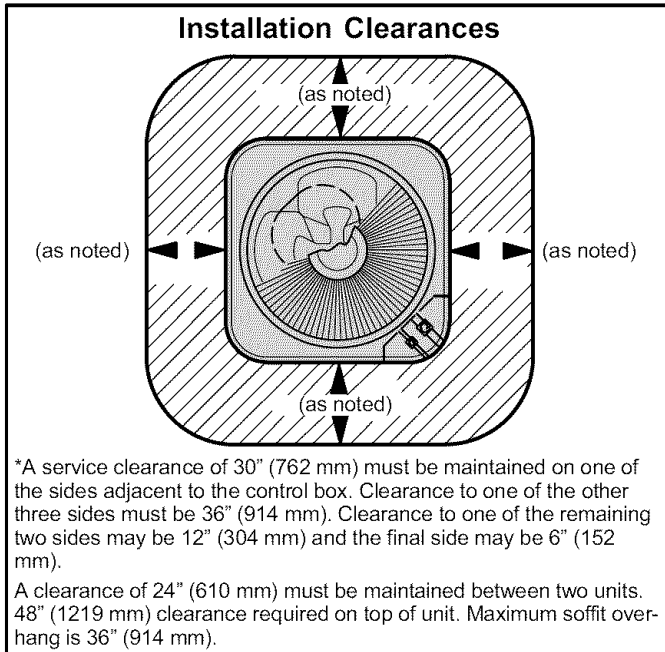


Figure 1

Roof Mounting

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.

Electrical

In Canada, wiring must conform with current local codes and the current Canadian Electrical Code (CEC).

⚠ 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.



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 overcurrent protection size.

1. Install line voltage power supply to unit from a properly sized disconnect switch.
2. 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 (see figures 2 and 3).

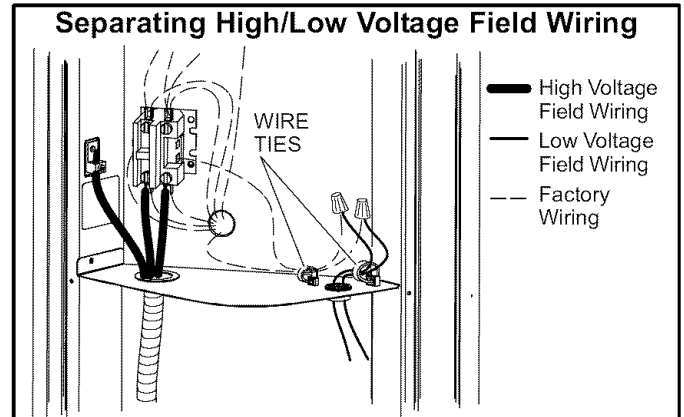


Figure 2

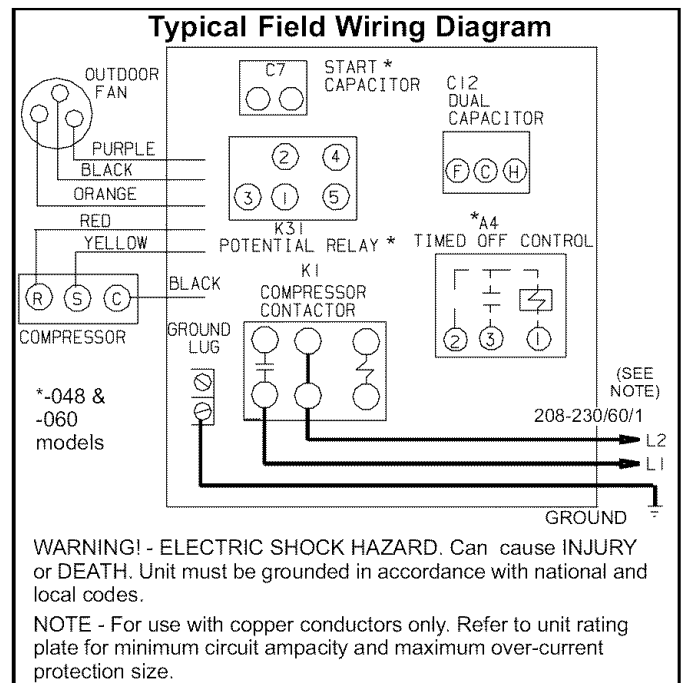


Figure 3

3. Ground unit at unit disconnect switch or to an earth ground.

NOTE - To facilitate conduit, a hole is located in the bottom of the control box. Connect conduit to the control box using a proper conduit fitting. Units are approved for use only with copper conductors.

24V, Class II circuit connections are made to the low voltage pigtails. Refer to figure 3 for field wiring diagram. A complete unit wiring diagram is located inside the unit control box cover.

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 effected by sunlight, drafts or vibrations.

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

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. See figure 4.

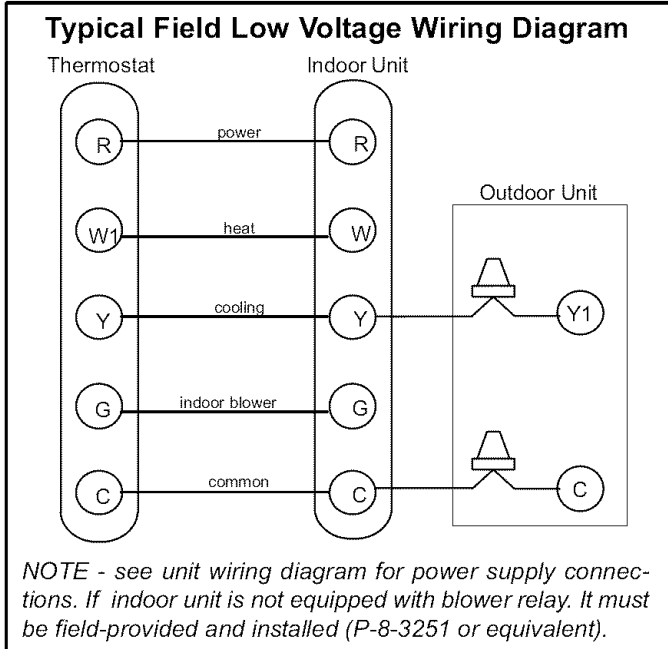


Figure 4

Refrigerant Piping

Field refrigerant piping consists of liquid and vapor lines from the outdoor unit (sweat connections) to the indoor coil (flare or sweat connections). Use Lennox L15 (sweat, non-flare) series line sets as shown in table 2 or use field-fabricated refrigerant lines. Refer to Refrigerant Piping Guide (Corp. 9351-L9) for proper size, type, and application of field-fabricated lines. Valve sizes are also listed in table 2.

Table 2

Refrigerant Line Kits					
Model	Valve Field Size Connections		Recommended Line Set		
	Liquid Line	Vapor Line	Liquid Line	Vapor Line	L15 Line Sets
-024 -036	3/8 in. (10mm)	3/4 in. (19mm)	3/8 in. (10mm)	3/4 in. (19mm)	L15-41 15 ft.- 50 ft. (4.6 m - 15m)
-048	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 - 15m)
-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 - Units are designed for line sets of up to 50 feet (15 m). For applications longer than 50 feet, consult the Lennox Refrigerant Piping Guide (Corp. 9351-L9). Select line set diameters from table 2 to ensure that oil returns to the compressor.

Sweat Connection Procedure

1. Cut ends of the refrigerant lines square (free from nicks or dents). Deburr the ends. The pipe must remain round, do not pinch end of the line.
2. Wrap a wet cloth around the valve body and copper tube stub to protect it from heat damage during brazing. Wrap another wet cloth underneath the valve body to protect the base paint.
3. Quench the joints with a wet cloth to prevent possible heat damage to the valve core and opening port.
4. Install a field-provided filter dryer as close as possible to the expansion device.

Refrigerant Metering Device

Use 10ACE units in either TXV systems or fixed orifice systems. See the Lennox Engineering Handbook for approved TXV and fixed orifice match-ups and application information. Table 2 lists the unit liquid and vapor line sizes and corresponding line sets.

Fixed Orifice Systems

10ACE units are shipped with a fixed orifice refrigerant metering device. Replace the existing indoor unit fixed orifice with the orifice supplied with the outdoor unit. Place the supplied fixed orifice sticker on the indoor cabinet after installation. See table 3 for the fixed orifice size for each unit. In nonstandard applications, the provided fixed orifice may not be appropriately sized. Refer to the Engineering Handbook for specific orifice information.

Table 3

Fixed Orifice Drill Sizes		
Unit	Fixed Orifice Catalog #	Fixed Orifice Drill Size
10ACE-024	100484-12	.062
10ACE-036	100484-22	.073
10ACE-048	100484-33	.086
10ACE-060	100484-44	.098

Install the fixed orifice as shown in figure 5. Do not twist the cap tubes when loosening the seal nut from the orifice housing.

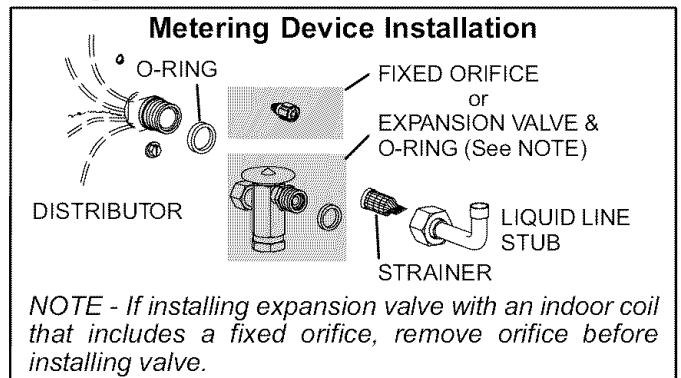


Figure 5

Expansion Valve Systems

Expansion valves equipped with Chatleff fittings are available from Lennox. Refer to the Engineering Handbook for expansion valves for use with specific match-ups.

If you install an expansion valve with an indoor coil that includes a fixed orifice, remove the orifice before the expansion valve is installed.

⚠ IMPORTANT

Failure to remove the fixed orifice when installing an expansion valve on the indoor coil will result in improper operation and damage to the system.

Manifold Gauge Set

When checking the unit charge, use a manifold gauge set that is equipped with “low loss” hoses. Do not use a manifold gauge set with anything other than a “low loss” hose.

Service Valves

The service valves (liquid line - figure 6, vapor line - figures 7 and 8) and gauge ports are used for leak testing, evacuating, charging and checking charge. Each valve is equipped with a service port which has a factory-installed Schrader valve. A service port cap protects the Schrader valve from contamination and serves as the primary leak seal.

To Access Schrader Port:

1. Remove service port cap with an adjustable wrench.
2. Connect gauge to the service port.
3. When testing is complete, replace service port cap. Tighten finger tight, then torque per table 1 (Page 2) .

To Open Front-Seated Service Valves:

1. Remove stem cap with an adjustable wrench.
2. Use a service wrench with a hex-head extension (3/16” for liquid-line valve sizes; 5/16” for vapor-line valve sizes) to back the stem out counterclockwise as far as it will go.
3. Replace the stem cap. Tighten finger tight, then torque per table 1 (Page 2) .

To Close Front-Seated Service Valves:

1. Remove the stem cap with an adjustable wrench.
2. Use a service wrench with a hex-head extension (3/16” for liquid-line valve sizes; 5/16” for vapor-line valve sizes) to turn the stem clockwise to seat the valve. Tighten it firmly.
3. Replace the stem cap. Tighten finger tight, then torque per table 1 (Page 2) .

Vapor Line Ball Valve

Ball-type service valve (10ACE-060 only, figure 8) functions the same way as the other valves but cannot be rebuilt; if one fails, replace with a new valve. The ball valve is equipped with a service port with a factory-installed Schrader valve. A service port cap protects the Schrader valve from contamination and assures a leak-free seal.

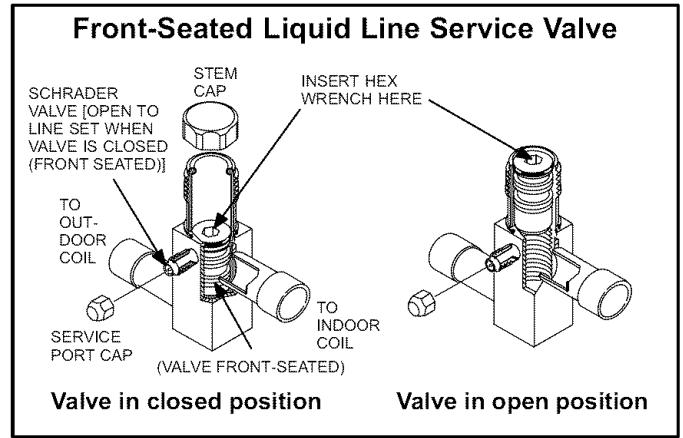


Figure 6

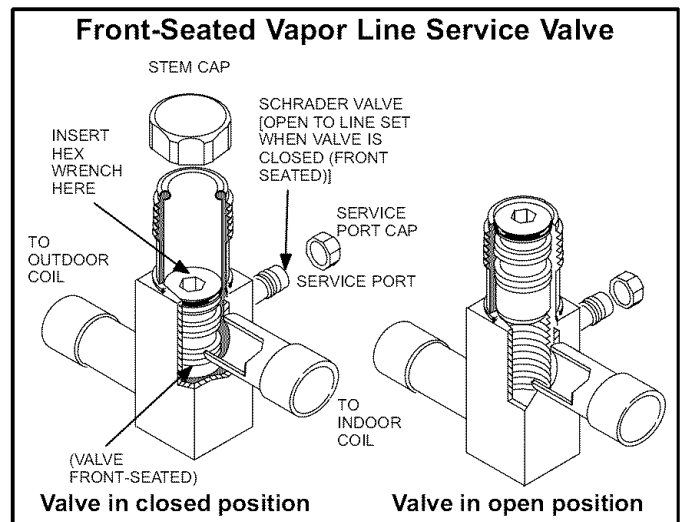


Figure 7

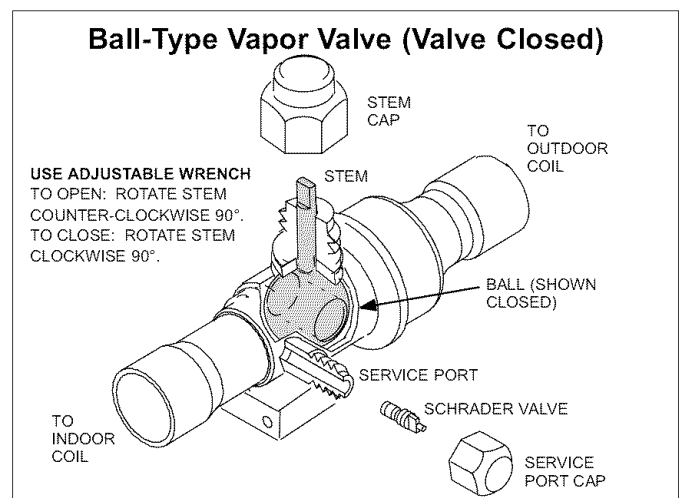


Figure 8

Leak Testing

After the line set has been connected to the indoor and outdoor units, check the line set connections and indoor unit for leaks.

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 unbrazing.

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

Danger of explosion!



Can cause equipment damage, injury or death. Never use oxygen to pressurize a refrigeration or air conditioning system. Oxygen will explode on contact with oil and could cause personal injury.

WARNING

Danger of explosion!



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).

Using an Electronic Leak Detector or Halide

1. Connect a cylinder of HCFC-22 to the center port of the manifold gauge set.
2. With both manifold valves closed, open the valve on the HCFC-22 cylinder (vapor only).
3. Open the high pressure side of the manifold to allow the HCFC-22 into the line set and indoor unit. Weigh in a trace amount of HCFC-22. [A trace amount is a maximum of 2 ounces (57 g) or 3 pounds (31 kPa) pressure.] Close the valve on the HCFC-22 cylinder and the valve on the high pressure side of the manifold gauge set. Disconnect the HCFC-22 cylinder.

4. Connect a cylinder of nitrogen with a pressure regulating valve to the center port of the manifold gauge set.
5. Connect the manifold gauge set high pressure hose to the vapor valve service port. (*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.*)
6. Adjust the nitrogen pressure to 150 psig (1034 kPa). Open the valve on the high side of the manifold gauge set which will pressurize line set and indoor unit.
7. After a few minutes, open a refrigerant port to ensure the refrigerant you added is adequate to be detected. (Amounts of refrigerant will vary with line lengths.) Check all joints for leaks. Purge nitrogen and HCFC-22 mixture. Correct any leaks and recheck.

Evacuation

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

IMPORTANT

Use a thermocouple or thermistor electronic vacuum gauge that is calibrated in microns. Use an instrument that reads from 50 microns to at least 23,000 microns.

1. Connect manifold gauge set to the service valve ports as follows:
 - low pressure gauge to *vapor* 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). 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 **absolute pressure**. A rapid rise in pressure indicates a relatively large leak. If this occurs, repeat the leak testing procedure.
*NOTE - The term **absolute pressure** is defined as 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 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.

CAUTION

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.

7. 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.
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 HCFC-22 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 HCFC-22 cylinder and remove the manifold gauge set.

Start Up

IMPORTANT

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

1. Rotate the fan to check for frozen bearings or binding.
2. Inspect all factory- and field-installed wiring for loose connections.
3. After evacuation is complete, open the liquid line and vapor line service valves to release refrigerant charge (contained in outdoor unit) into the system.
4. Replace the stem caps and secure finger tight, then tighten an additional one-sixth (1/6) of a turn.
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 the power company and the voltage condition has been corrected.
6. Set the thermostat for a cooling demand. Turn on power to the indoor blower and close the outdoor unit disconnect switch to start the unit.
7. Recheck voltage while the unit is running. Power must be within range shown on the nameplate.

Refrigerant Charging

Units are factory charged with the amount of HCFC-22 refrigerant indicated on the unit nameplate. This charge is based on a matching indoor coil and outdoor coil with a 15 ft. (4.6 m) line set. For varying lengths of line set, refer to table 4 for refrigerant charge adjustment check.

Table 4

Refrigerant Charge per Line Set Lengths	
Liquid Line Set Diameter	Oz. per 5 ft. (g per 1.5 m) adjust from 15 ft. (4.6 m) line set*
5/16 in. (8 mm)	2 ounce per 5 ft. (57 g per 1.5 m)
3/8 in. (9.5 mm)	3 ounce per 5 ft. (85 g per 1.5 m)
NOTE - *If line length is greater than 15 ft. (4.6 m), add this amount. If line length is less than 15 ft. (4.6 m), subtract this amount.	

The outdoor unit should be charged during warm weather. However, applications arise in which charging must occur in the colder months. *The method of charging is determined by the unit's refrigerant metering device and the outdoor ambient temperature.*

Measure the liquid line temperature and the outdoor ambient temperature as outlined below:

- Connect the manifold gauge set to the service valves:
 - low pressure gauge to vapor valve service port
 - high pressure gauge to liquid valve service port
- Connect the center manifold hose to an upright cylinder of HCFC-22. Close manifold gauge set valves.
- Set the room thermostat to call for heat. This will create the necessary load for properly charging the system in the cooling cycle.
- Use a digital thermometer to record the outdoor ambient temperature.
- When the heating demand has been satisfied, switch the thermostat to cooling mode with a set point of 68°F (20°C). When pressures have stabilized, use a digital thermometer to record the liquid line temperature.
- The outdoor temperature will determine which charging method to use. Proceed with the appropriate charging procedure.

Charge Using Weigh-in Method (Fixed Orifice/ TXV Systems) - Outdoor Temp. <65°F (18°C)

If the system is void of refrigerant, or if the outdoor ambient temperature is cool, use the weigh-in method to charge the unit. Do this after any leaks have been repaired.

- Recover the refrigerant from the unit.

- Conduct a leak check, then evacuate as previously outlined.
- Weigh in the charge according to the total amount shown on the unit nameplate.

If weighing facilities are not available or if you are charging the unit during warm weather, follow one of the other procedures outlined below.

Charge Using Subcooling Method (Fixed Orifice Systems) - Outdoor Temp. ≥65°F (18°C)

If you charge a fixed orifice system when the outdoor ambient is 65°F (18°C) or above, use the subcooling method to charge the unit.

- With the manifold gauge hose still on the liquid service port and the unit operating stably, use a digital thermometer to record the liquid line temperature.
- At the same time, record the liquid line pressure reading.
- Use a temperature/pressure chart for R-22 to determine the saturation temperature for the liquid line pressure reading.
- Subtract the liquid line temperature from the saturation temperature (according to the chart) to determine subcooling.

$$\begin{array}{r} \text{---}^\circ \text{ Saturation Temperature } ^\circ\text{F (}^\circ\text{C)} \\ - \text{---}^\circ \text{ Liquid Line Temperature } ^\circ\text{F (}^\circ\text{C)} \\ \hline = \text{---}^\circ \text{ Subcooling Value } ^\circ\text{F (}^\circ\text{C)} \end{array}$$
- Compare the subcooling value with those in table 5. If subcooling is greater than shown, recover some refrigerant. If subcooling is less than shown, add some refrigerant.

Table 5

Outdoor Temp. °F (°C)	Liquid Subcooling [± 1°F (.6°C)]			
	10ACE-24	10ACE-36	10ACE-48	10ACE-60
65 (18)	10 (5.6)	17 (9.5)	15 (8.3)	14 (8)
70 (21)	9 (5)	17 (9.5)	14 (8)	15 (8.3)
75 (24)	8 (4.5)	16 (9)	13 (7)	15 (8.3)
80 (27)	7 (3.9)	15 (8.3)	13 (7)	14 (8)
85 (29)	6 (3.3)	14 (8)	12 (6.7)	14 (8)
90 (32)	5 (2.8)	14 (8)	12 (6.7)	13 (7)
95 (35)	4 (2.2)	12 (6.7)	12 (6.7)	13 (7)
100 (38)	4 (2.2)	11 (6)	11 (6)	12 (6.7)
105 (41)	3 (1.7)	10 (5.6)	10 (5.6)	12 (6.7)
110 (43)	3 (1.7)	9 (5)	9 (5)	11 (6)
115 (45)	2 (1.1)	8 (4.5)	8 (4.5)	10 (5.6)

**Charge Using Approach Method (TXV Systems)
- Outdoor Temperature $\geq 65^{\circ}\text{F}$ (18°C)**

The following procedure is intended as a general guide and is for use on expansion valve (TXV) systems only. For best results, indoor temperature should be 70°F (21°C) to 80°F (26°C). Monitor system pressures while charging.

1. Record outdoor ambient temperature using a digital thermometer.
2. Attach high pressure gauge set and operate unit for several minutes to allow system pressures to stabilize.
3. Compare stabilized pressures with those provided in table 7, "Normal Operating Pressures."

⚠ IMPORTANT
Use table 7 to help perform maintenance checks. Table 7 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.
Pressures higher than those listed indicate that the system is overcharged. Pressures lower than those listed indicate that the system is undercharged. Verify adjusted charge using the approach method.

NOTE - For best results, use the same digital thermometer to check both outdoor ambient and liquid temperatures.

4. Check the liquid line temperature. The difference between the ambient and liquid temperatures should match values given in table 6. Loss of charge results in low capacity and efficiency.
5. If the values do not agree with the those in table 6, add refrigerant to lower the approach temperature, or recover refrigerant from the system to increase the approach temperature.

Table 6

Approach Values				
10ACE Model	-024	-036	-048	-060
Temp. °F (°C)	18 (10)	11 (6)	8 (4.5)	13 (7)
Approach Value is the Liquid Line Temperature minus Outdoor Ambient Temperature [$^{\circ}\text{F}$ ($^{\circ}\text{C}$) $\pm 1^{\circ}\text{F}$ (0.5°C)]				

Table 7

Normal Operating Pressures*								
Temp °F (°C)**	10ACE-024		10ACE-036		10ACE-048		10ACE-060	
	Liq.	Suc.	Liq.	Suc.	Liq.	Suc.	Liq.	Suc.
Expansion Valve								
65 (18)	163	70	162	70	159	71	170	74
75 (24)	193	71	187	74	188	72	201	76
85 (29)	225	72	219	75	220	73	234	77
95 (35)	260	73	253	77	251	76	270	79
105 (41)	298	74	291	79	290	77	309	79
110 (43)	318	75	310	80	309	78	331	80
115 (45)	338	75	329	81	328	79	351	81
Fixed Orifice								
65 (18)	165	63	168	67	163	68	189	72
75 (24)	194	67	195	71	190	71	203	74
85 (29)	224	70	224	75	220	74	233	77
95 (35)	257	73	255	78	251	77	265	79
105 (41)	293	76	289	82	288	79	301	82
110 (43)	313	78	305	83	307	80	319	83
115 (45)	332	79	324	84	325	82	339	84
* Values shown are typical pressures (in. psig ± 2 psig); 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.								

System Operation

The outdoor unit and indoor blower cycle on demand from the room thermostat. When the thermostat blower switch is in the **ON** position, the indoor blower operates continuously.

Maintenance

NOTE - White residue may surface on guards and grilles of outdoor units. This is caused by mild acids present in minute quantities in the plasticizer applied to make the coating flexible. The residue is comprised of non-toxic, common fatty acids found in natural animal and vegetable oils, and can be removed by wiping the parts with a cloth. Once outside, and over time, the rain will wash off any remaining residue.

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:

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.

1. Clean and inspect the outdoor coil. The coil may be flushed with a water hose. Make sure power is off before cleaning.

The outdoor coil is protected by an inner mesh screen and a wire cage (see figure 9).

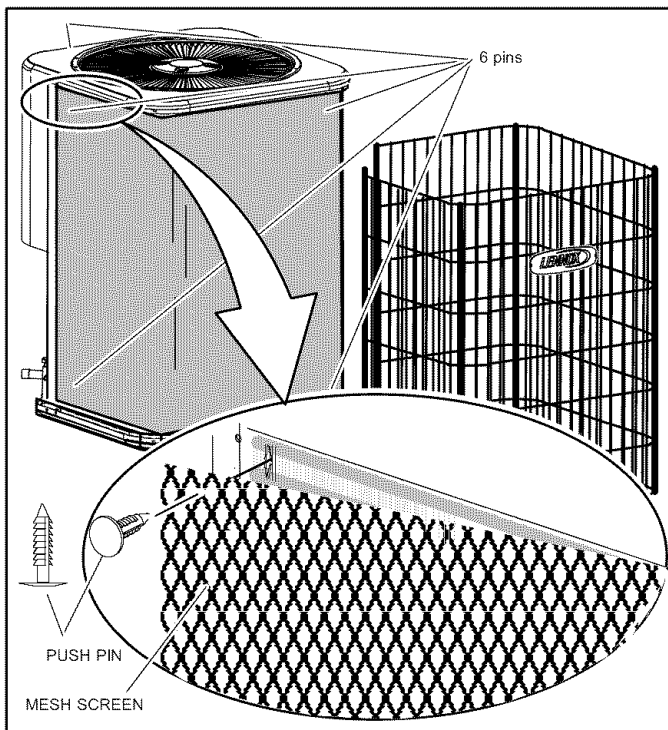


Figure 9

If debris has collected between the mesh screen and the coil and cannot be dislodged by spraying unpressurized water from the 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.

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.

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.

If the push pin is loose and tends not to stay in place, brush the fins with a 22 fpi fin brush (except model -024, 18 fpi). Line up the push pin a couple fins to the right or left of the original hole and re-insert the pin.

2. Condenser fan motor is prelubricated and sealed. No further lubrication is needed.
3. Visually inspect connecting lines and coils for evidence of oil leaks.
4. Check wiring for loose connections.
5. Check for correct voltage at unit (unit operating).
6. Check amp-draw condenser fan motor.
Unit nameplate _____ Actual _____.

NOTE - If the owner reports insufficient cooling, the unit should be gauged and the refrigerant charge should be checked. Refer to the charging section in this instruction.

Indoor Coil

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

Indoor Unit

1. Clean or change filters.
2. Adjust blower speed for cooling. Measure the pressure drop over the coil to determine the correct blower CFM. Refer to the unit information service manual for pressure drop tables and procedure.
3. *Belt Drive Blowers* - Check belt for wear and proper tension.
4. Check all wiring for loose connections
5. Check for correct voltage at unit (blower operating).
6. Check amp-draw on blower motor
Unit nameplate _____ Actual _____.

Optional Accessories

Refer to the Engineering Handbook for optional accessories that may apply to this unit. The following may or may not apply:

- Loss of Charge Kit
- High Pressure Switch Kit
- Compressor Monitor
- Compressor Crankcase Heater (standard on 4 and 5 ton units)
- Hail Guards
- Mounting Bases
- Timed Off Control
- Stand-off Kit
- Sound Cover
- Low Ambient Kit

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? <input type="checkbox"/>	Indoor Filter clean? <input type="checkbox"/>	Supply Voltage (Unit Off) _____	
Indoor Blower RPM _____	S.P. Drop Over Indoor (Dry) _____	Outdoor Coil Entering Air Temp. _____	
Discharge Pressure _____	Vapor Pressure _____	Refrigerant Charge Checked? <input type="checkbox"/>	
Refrigerant Lines: - Leak Checked? <input type="checkbox"/>		Properly Insulated? <input type="checkbox"/>	Outdoor Fan Checked? <input type="checkbox"/>
Service Valves: --- Fully Opened? <input type="checkbox"/>		Caps Tight? <input type="checkbox"/>	Thermostat
Voltage With Compressor Operating _____		Calibrated? <input type="checkbox"/>	Properly Set? <input type="checkbox"/> Level? <input type="checkbox"/>

