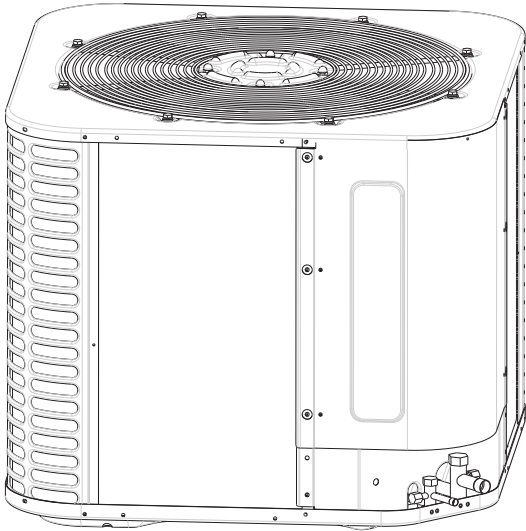


Air conditioning & Heating



Installer's Guide

Condensing Units

Split System Heat Pump & Air Conditioner
Up to 18 SEER
2-5 Tons
R410A

NOTE: Appearance of unit may vary.

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

IMPORTANT — This Document is customer property and is to remain with this unit. Please return to service information pack upon completion of work.

These instructions do not cover all variations in systems or provide for every possible contingency to be met in connection with the installation. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing dealer or local distributor.

Note : *The manufacturer recommends installing only approved matched indoor and outdoor systems. All of the manufacturer's split systems are A.H.R.I. rated only with TXV indoor systems. Some of the benefits of installing approved matched indoor and outdoor split systems are maximum efficiency, optimum performance and the best overall system reliability.*

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Section 1. Safety

Important - This document contains a wiring diagram and service information. This is customer property and is to remain with this unit. Please return to service information pack upon completion of work.



CAUTION

This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.



WARNING

HAZARDOUS VOLTAGE!

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



WARNING

REFRIGERANT OIL!

Any attempt to repair a central air conditioning product may result in property damage, severe personal injury, or death.

These units use R-410A refrigerant which operates at 50 to 70% higher pressures than R-22. Use only R-410A approved service equipment. Refrigerant cylinders are painted a "Rose" color to indicate the type of refrigerant and may contain a "dip" tube to allow for charging of liquid refrigerant into the system. All R-410A systems with variable speed compressors use a PVE oil that readily absorbs moisture from the atmosphere. To limit this "hygroscopic" action, the system should remain sealed whenever possible. If a system has been open to the atmosphere for more than 4 hours, the compressor oil must be replaced. Never break a vacuum with air and always change the driers when opening the system for component replacement.



CAUTION

HOT SURFACE!

May cause minor to severe burning. Failure to follow this Caution could result in property damage or personal injury. Do not touch top of compressor.



CAUTION

CONTAINS REFRIGERANT!

Failure to follow proper procedures can result in personal illness or injury or severe equipment damage.

System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening system.



CAUTION

GROUNDING REQUIRED!

Failure to inspect or use proper service tools may result in equipment damage or personal injury. Reconnect all grounding devices. All parts of this product that are capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.



WARNING

SERVICE VALVES!

Failure to follow this warning will result in abrupt release of system charge and may result in personal injury and/or property damage. Extreme caution should be exercised when opening the Liquid Line Service valve. Turn valve stem counterclockwise only until the stem contacts the rolled edge. No torque is required.



WARNING

BRAZING REQUIRED!

Failure to inspect lines or use proper service tools may result in equipment damage or personal injury. If using existing refrigerant lines make certain that all joints are brazed, not soldered.



WARNING

HIGH LEAKAGE CURRENT!

Failure to follow this warning could result in property damage, severe personal injury, or death.

Earth connection essential before connecting electrical supply.

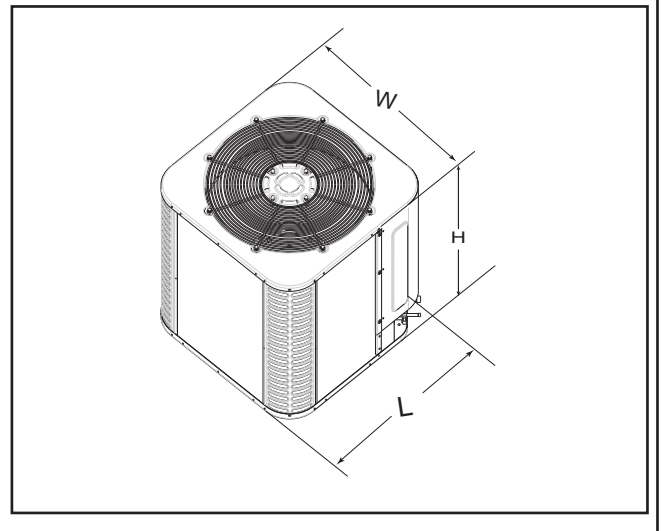
Section 2 Unit Location Considerations

2.1 Unit Dimensions

Unit Dimensions	
Models	H x W x L (Inches)
24/36	24-15/16 x 29-1/8 x 29-1/8
48/60	32-7/8 x 29-1/8 x 29-1/8

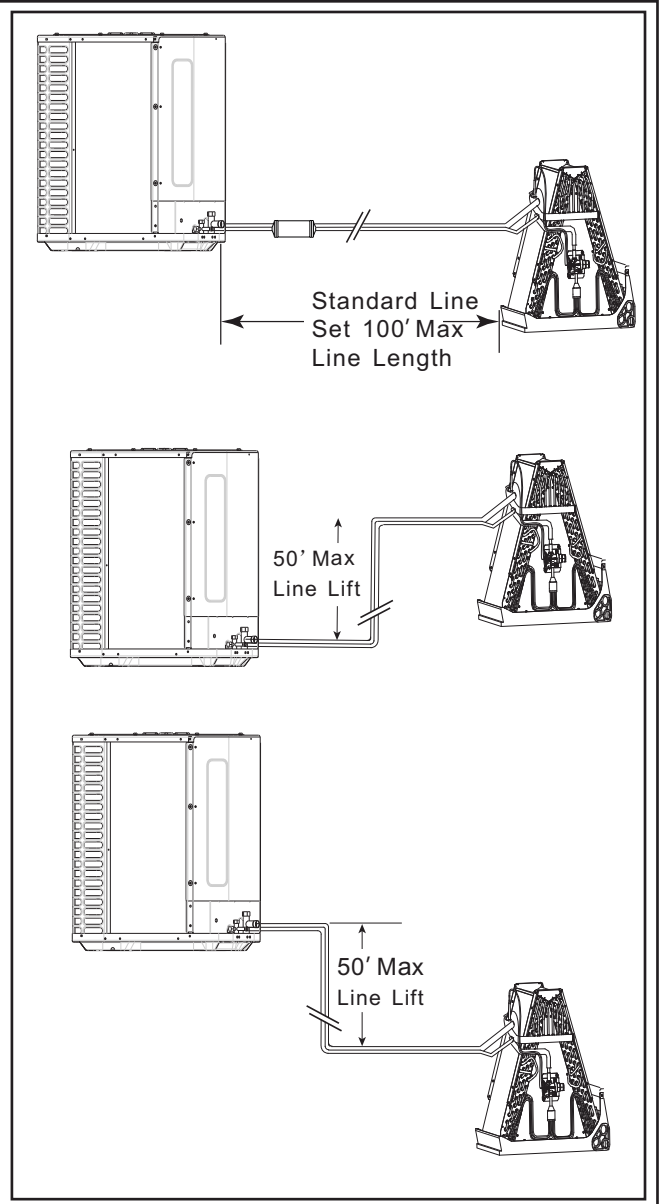
The unit's weight values is on the carton box.

When mounting the outdoor unit on a roof, be sure the roof will support the unit's weight. Properly selected isolation is recommended to prevent sound or vibration transmission to the building structure.



2.2 Refrigerant Piping Limits

- ☒ Maximum line length = 100 feet.
- ☒ Maximum vertical length = 50 feet.
- ☒ Compressor crankcase heat is required for line lengths over 50 feet.
- ☒ Use only the line diameters indicated in Table 5.1.
- ☒ Such as the connecting tube is more than 60 feet, does not use large Suction line than recommend.



2.4 Location Restrictions

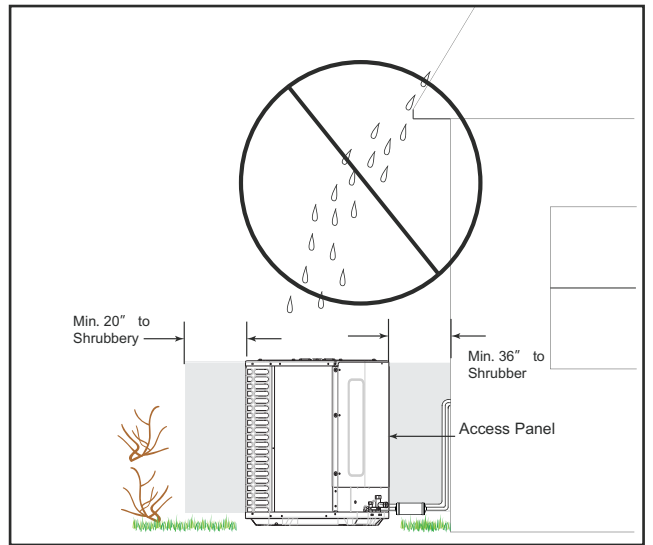
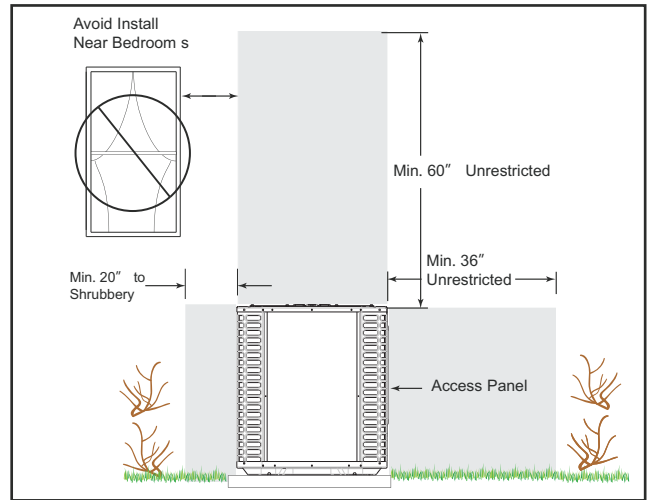
Ensure the top discharge area is unrestricted for at least 60 inches above the unit.

Clearance must be provided in front of the control box (access panels) and any other side requiring service.

Do not locate close to bedrooms, operational sounds may be objectionable.

Position the outdoor unit a minimum of 20 inches from any wall or surrounding shrubbery to ensure adequate airflow.

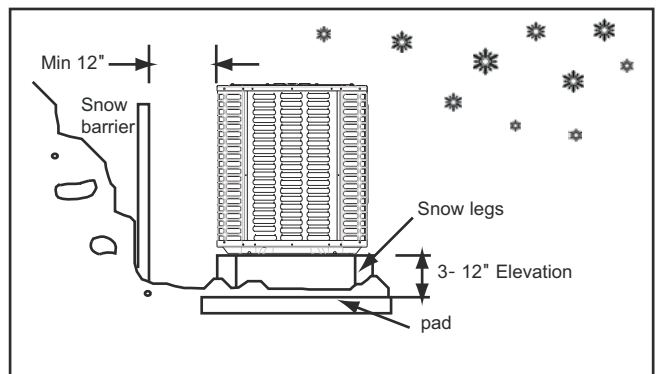
Outdoor unit location must be far enough away from any structure to prevent excess roof runoff water from pouring directly on the unit.



Cold Climate Considerations (Heat Pump Only)

Note: It is recommended that these precautions be taken for units being installed in areas where snow accumulation and prolonged below-freezing temperatures occur.

- Units should be elevated 3–12 inches above the pad or rooftop, depending on local weather. This additional height will allow drainage of snow and ice melted during defrost cycle prior to its refreezing. Ensure that drain holes in unit base pan are not obstructed, preventing drainage of defrost water.
- If possible, avoid locations that are likely to accumulate snow drifts. If not possible, a snow drift barrier should be installed around the unit to prevent a build-up of snow on the sides of the unit.

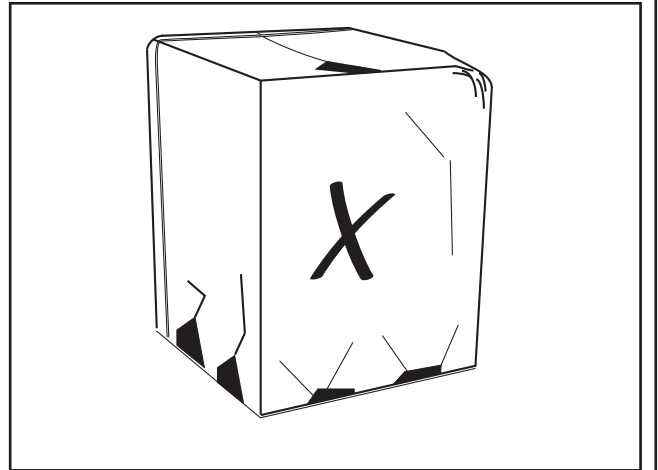


Section 3. Unit Preparation

3.1 Prepare The Unit For Installation

STEP 1 - Check for damage and report promptly to the carrier any damage found to the unit.

The charge port can be used to check to be sure the refrigerant charge has been retained during shipment.

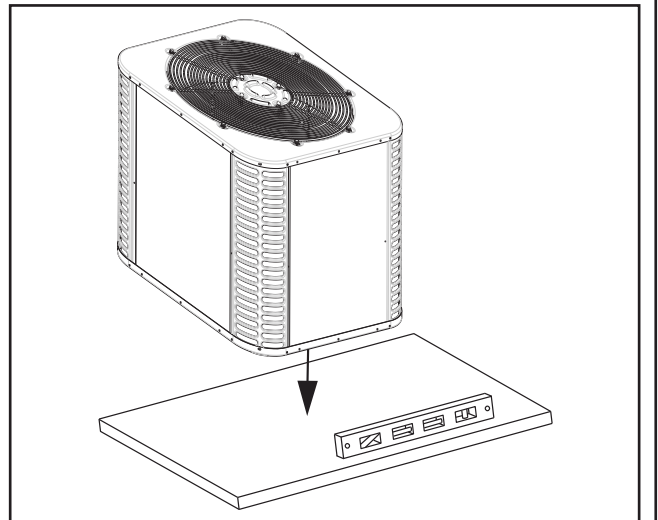


Section 4. Setting the Unit

4.1 Pad Installation

When installing the unit on a support pad, such as a concrete slab, consider the following:

- The pad should be at least 1-2" larger than the unit on all sides.
- The pad must be separate from any structure.
- The pad must be level.
- The pad should be high enough above grade to allow for drainage.
- The pad location must comply with National, State, and Local codes.



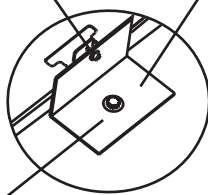
IMPORTANT NOTE:

These instructions are intended to provide a method to tie-down system to cement slab as a securing procedure for high wind areas. It is recommended to check Local Codes for tie-down methods and protocols.

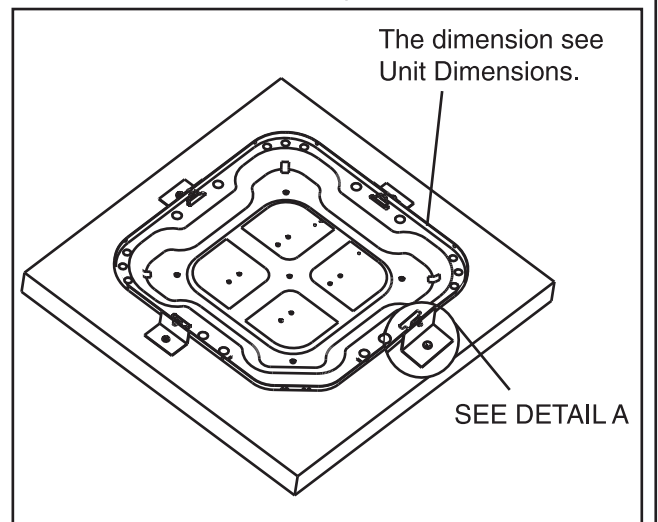
#7 X 3/8" Self Tapping Screws
(Don't Exceed 3/8" long)

Brackets:
2" width, 1/16" thickness,
height as required.
Available from distributor
or in market place.

DETAIL A



1/4" X 1-1/2" Hex Washer Head Concrete Screws
(3/16" Pilot Hole Needed. Pilot Hole Should Be 1/4" Deeper Than The Fastener Embedment)



Section 5 Refrigerant Line Considerations

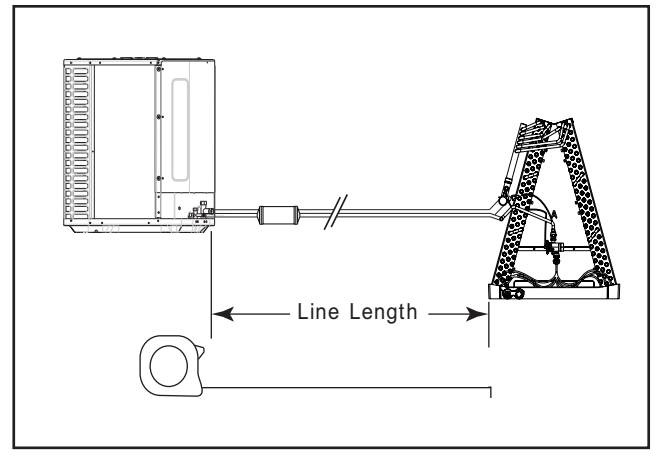
5.1 Refrigerant Line and Service Valve Connection Sizes

Table 5.1

Model	Line Sizes		Service Valve Connection Sizes	
	Suction Line	Liquid Line	Suction Line Connection	Liquid Line Connection
24/36	3/4	3/8	3/4	3/8
48/60	7/8	3/8	7/8	3/8

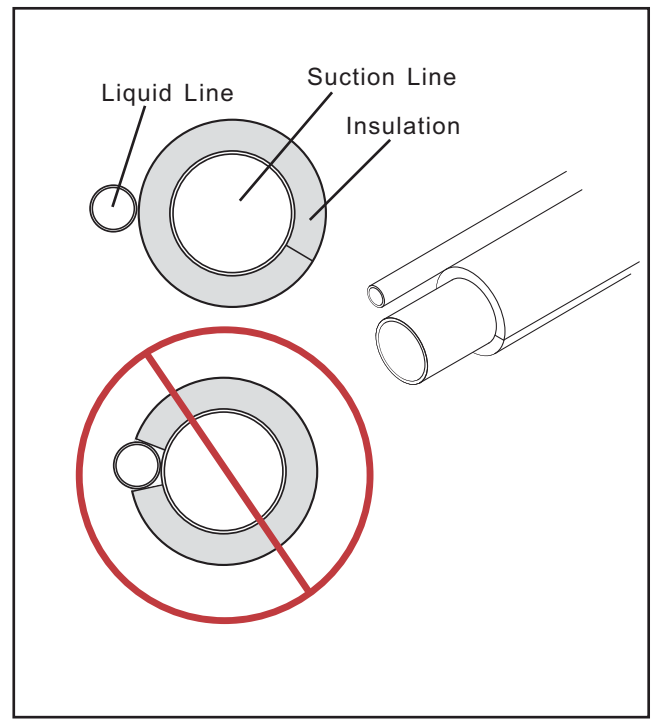
5.2 Required Refrigerant Line Length

Determine required line length.



5.3 Refrigerant Line Insulation

Important: The Suction Line must always be insulated DO NOT allow the Liquid Line and Suction Line to come in direct (metal to metal) contact.



5.4 Reuse Existing Refrigerant Lines

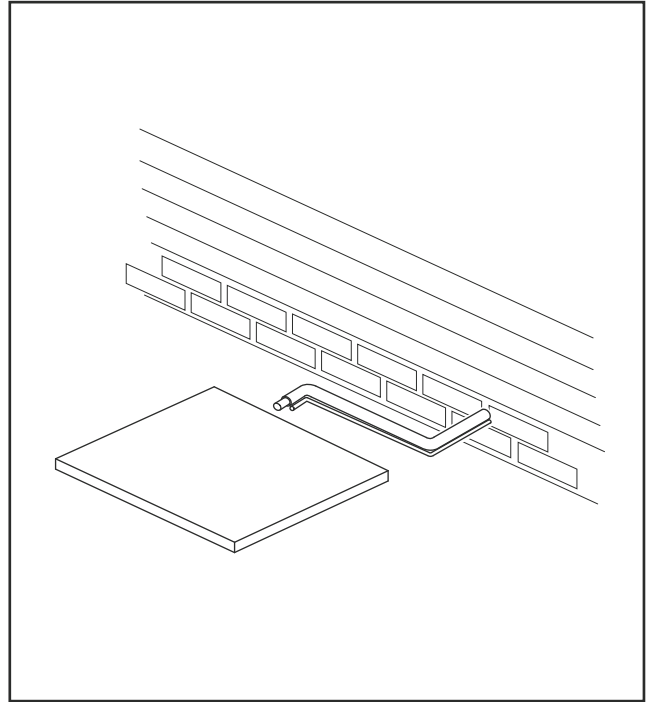
⚠ CAUTION

If using existing refrigerant lines make certain that all joints are brazed, not soldered.

For retrofit applications, where the existing refrigerant lines will be used, the following precautions should be taken:

- ☒ Ensure that the refrigerant lines are the correct size. Refer to Section 2.2 listed and Table 5.1.
- ☒ Ensure that the refrigerant lines are free of leaks, acid, and oil.

Note: The manufacturer recommends installing only approved matched indoor and outdoor systems. All of the manufacturer's split systems are A.H.R.I. rated only with TXV indoor systems. Some of the benefits of installing approved matched indoor and outdoor split systems are maximum efficiency, optimum performance and the best overall system reliability.



Section 6. Refrigerant Line Routing

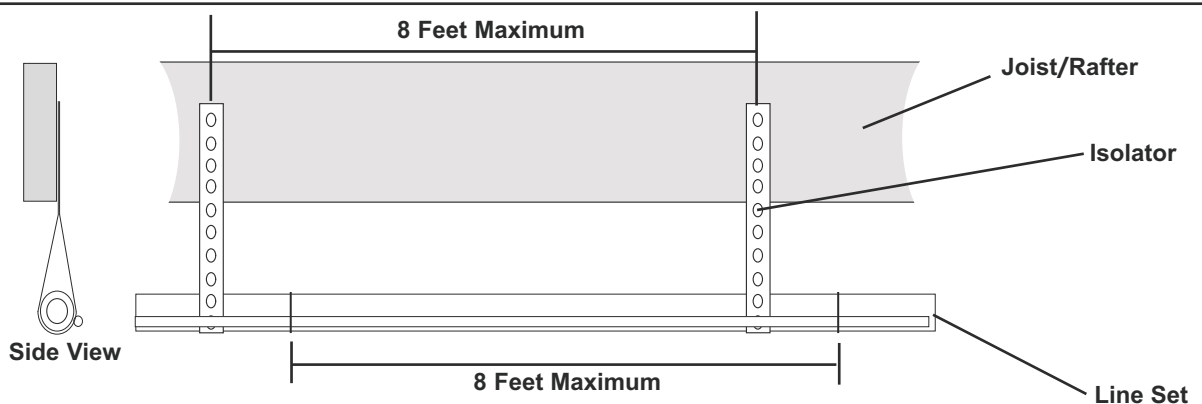
6.1 Precautions

Important: Take precautions to prevent noise within the building structure due to vibration transmission from the refrigerant lines.

Comply with National, State, and Local Codes when isolating line sets from joists, rafters, walls, or other structural elements.

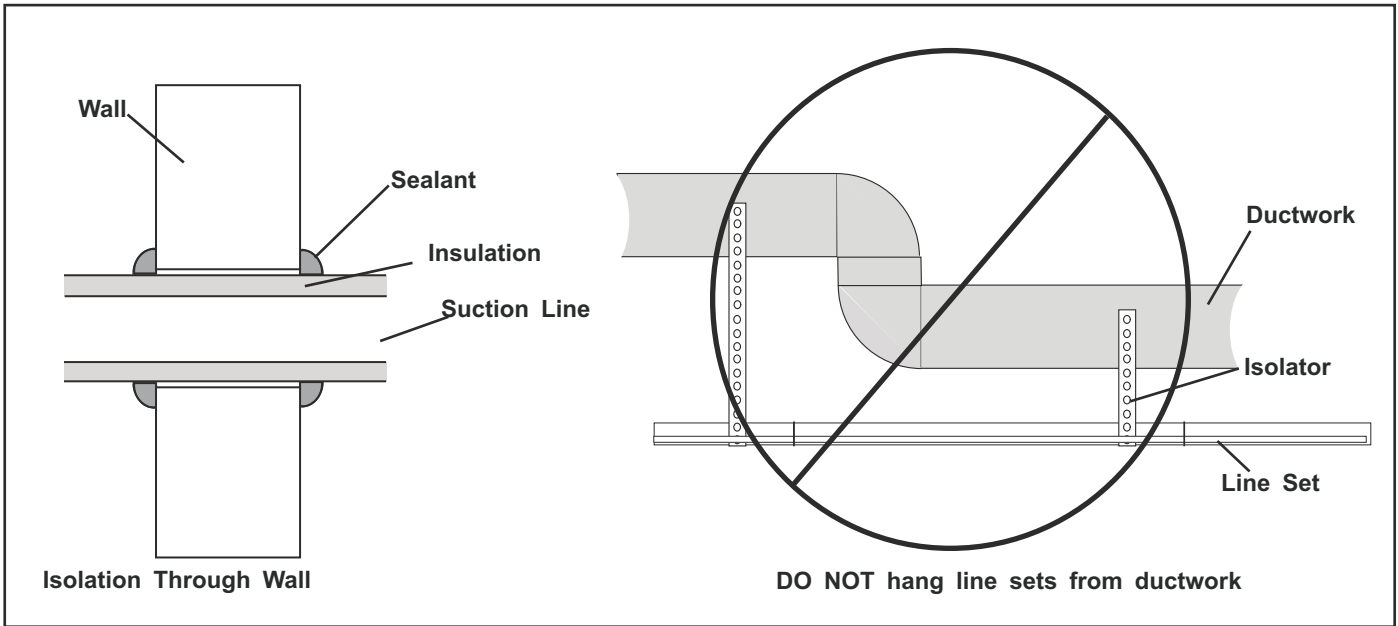
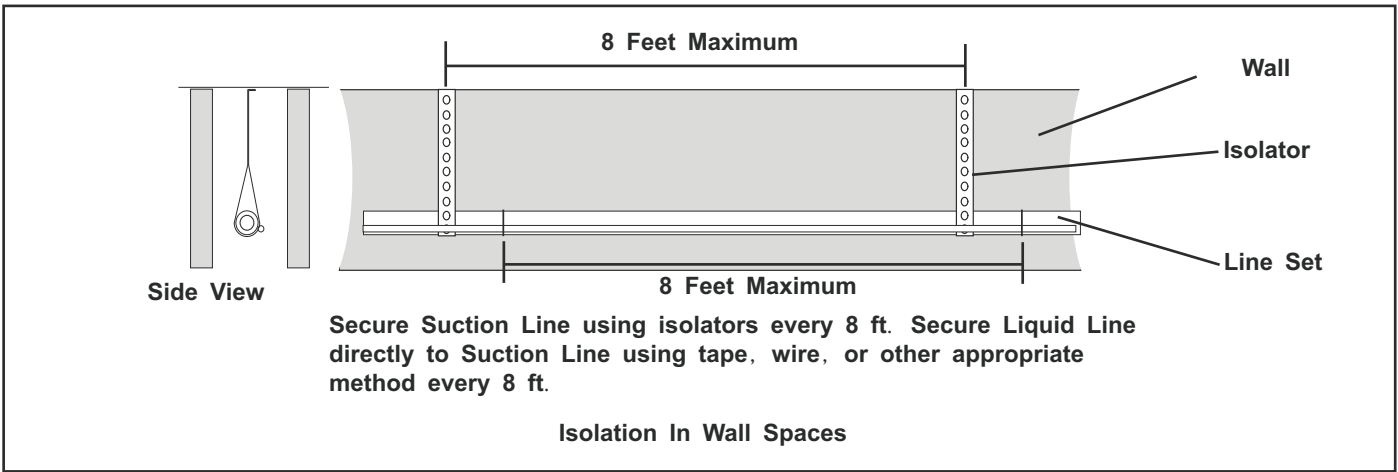
For Example:

- ☒ When the refrigerant lines have to be fastened to floor joists or other framing in a structure, use isolation type hangers.
- ☒ Isolation hangers should also be used when refrigerant lines are run in stud spaces or enclosed ceilings.
- ☒ Where the refrigerant lines run through a wall or sill, they should be insulated and isolated.
- ☒ Isolate the lines from all ductwork.
- ☒ Minimize the number of 90° turns.



Secure Suction line from joists using isolators every 8 ft. Secure Liquid Line directly to Suction line using tape, wire, or other appropriate method every 8 ft.

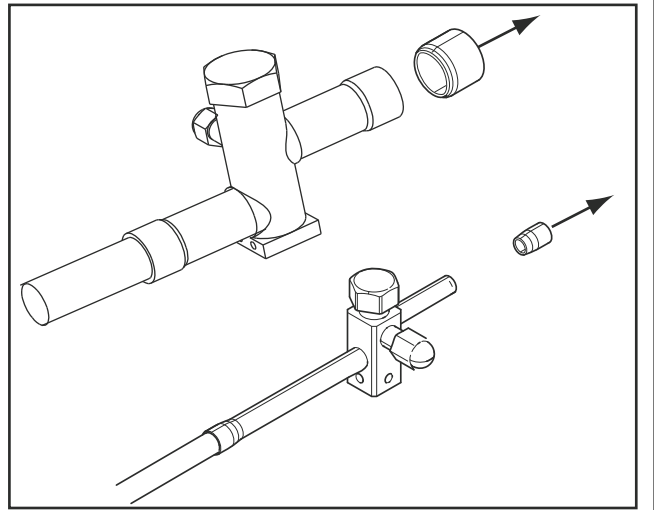
Isolation From Joist/Rafter



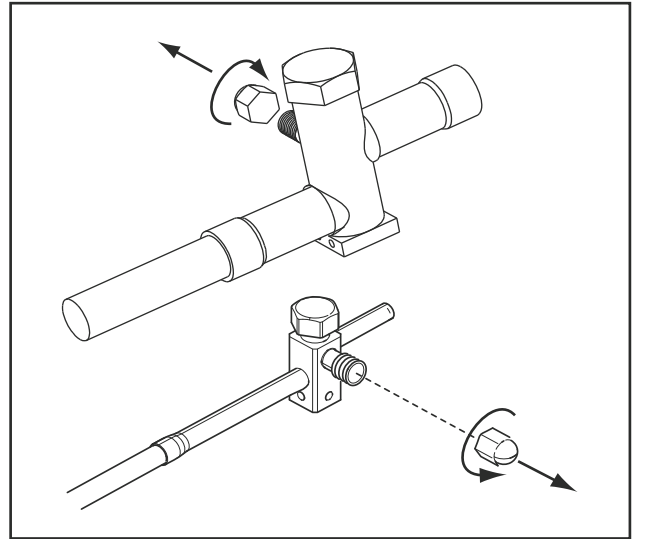
Section 7. Refrigerant Line Brazing

7.1 Braze The Refrigerant Lines

STEP 1 – Remove caps or plugs. Use a deburring tool to deburr the pipe ends. Clean both internal and external surfaces of the tubing using an emery cloth.

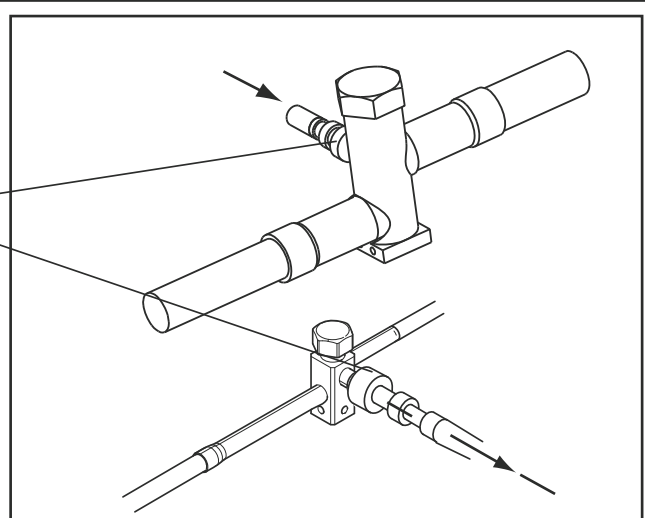


STEP 2 - Remove the pressure tap cap from both service valves.



STEP 3 - Purge the refrigerant lines and indoor coil with dry nitrogen.

This pipe must have a thimble



STEP 4 - Wrap a wet rag around the valve body to avoid heat damage and continue the dry nitrogen purge.

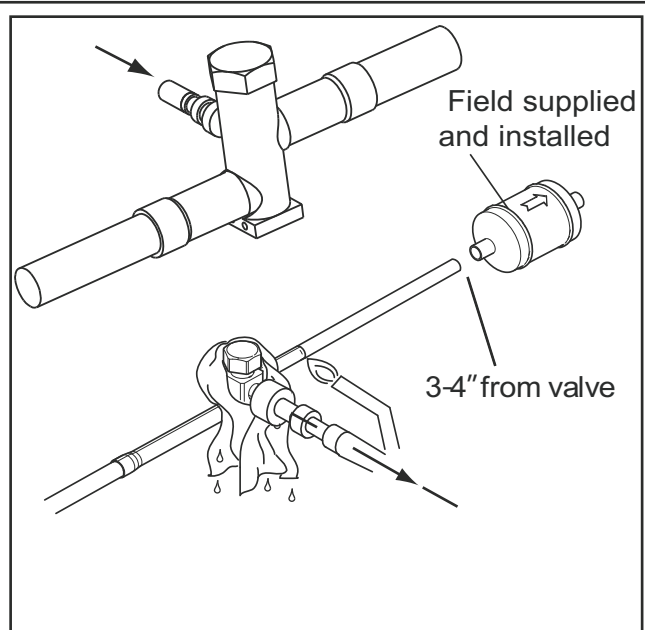
Braze the refrigerant lines to the service valves.

Check liquid line filter drier's directional flow arrow to confirm correct direction of refrigeration flow (away from outdoor unit and toward evaporator coil) as illustrated. Braze the filter drier to the Liquid Line.

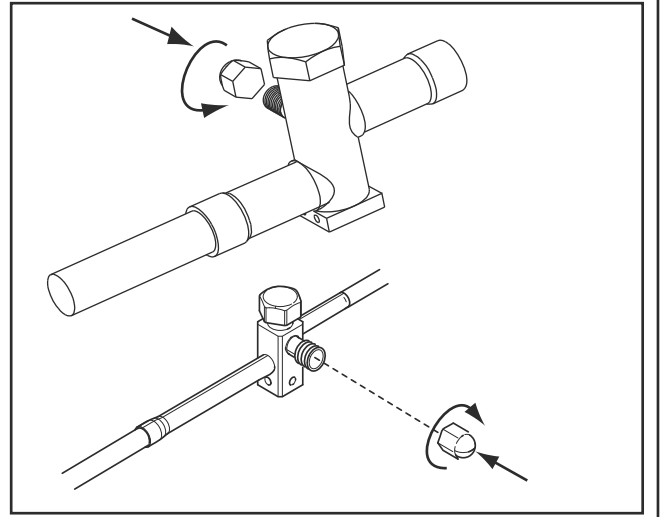
Continue the dry nitrogen purge. Do not remove the wet rag until all brazing is completed.

Important: Remove the wet rag before stopping the dry nitrogen purge.

Note: Install drier in Liquid Line.



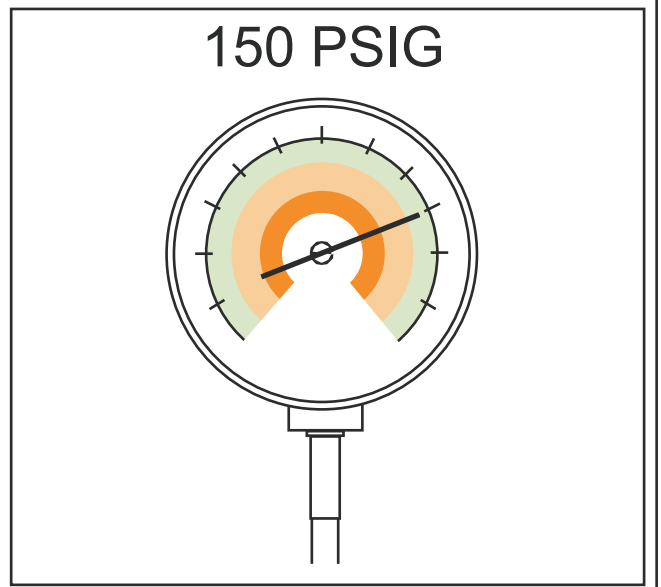
STEP 5 - Replace the pressure tap caps after the service valves have cooled.



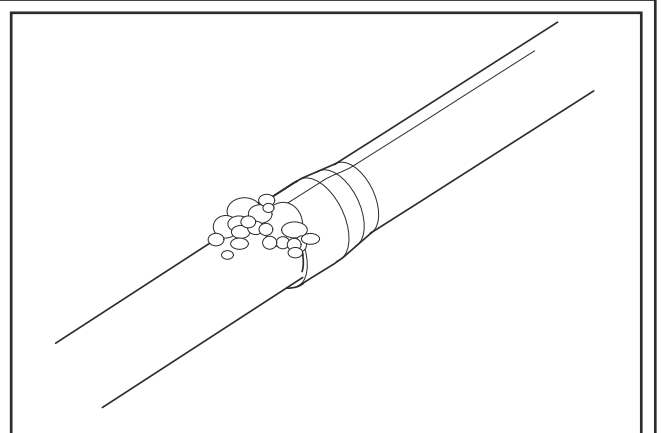
Section 8. Refrigerant Line Leak Check

8.1 Check For Leaks

STEP 1 - Pressurize the refrigerant lines and evaporator coil to 150 PSIG using dry nitrogen.



STEP 2 - Check for leaks by using a soapy solution or bubbles at each brazed location.

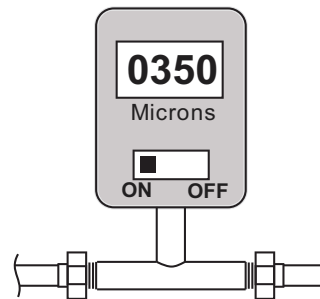


Section 9. Evacuation

9.1 Evacuate the Refrigerant Lines and Indoor Coil

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

STEP 1- Evacuate until the micron gauge reads no higher than 350 microns, then close the valve to the vacuum pump.



STEP 2- Observe the micron gauge. Evacuation is complete if the micron gauge does not rise above 500 microns in one (1) minute.

Once evacuation is complete blank off the vacuum pump and micron gauge, and close the valves on the manifold gauge set.



Section 10. Service Valves

10.1 Open the Service Valves

WARNING

Extreme caution should be exercised when opening the Liquid Line Service Valve. Turn counterclockwise until the valve stem just touches the rolled edge. No torque is required. Failure to follow this warning will result in abrupt release of system charge and may result in personal injury and /or property damage.

Important: Leak check and evacuation must be completed before opening the service valves.

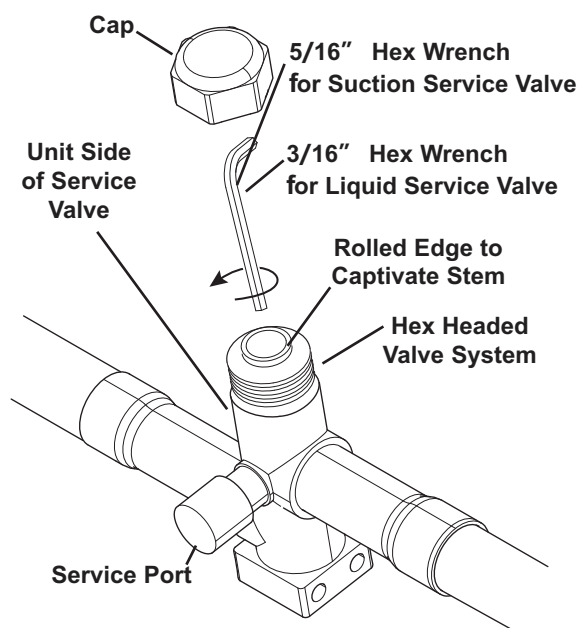
Important: The Suction Service Valve must be opened first BEFORE opening the Liquid Service Valve!

STEP 1 - Remove service valve cap.

STEP 2 - Fully insert hex wrench into the stem and back out counterclockwise until valve stem just touches the rolled edge (approximately five (5) turns.)

STEP 3 - Replace the valve stem cap to prevent leaks. Tighten finger tight plus an additional 1/6 turn.

STEP 4 - Repeat STEPS 1 - 3 for Liquid Service Valve.



Section 11. Electrical - Low Voltage

11.1 Low Voltage Maximum Wire Length

Table 11.1 defines the maximum total length of low voltage wiring from the outdoor unit, to the indoor unit, and to the thermostat.

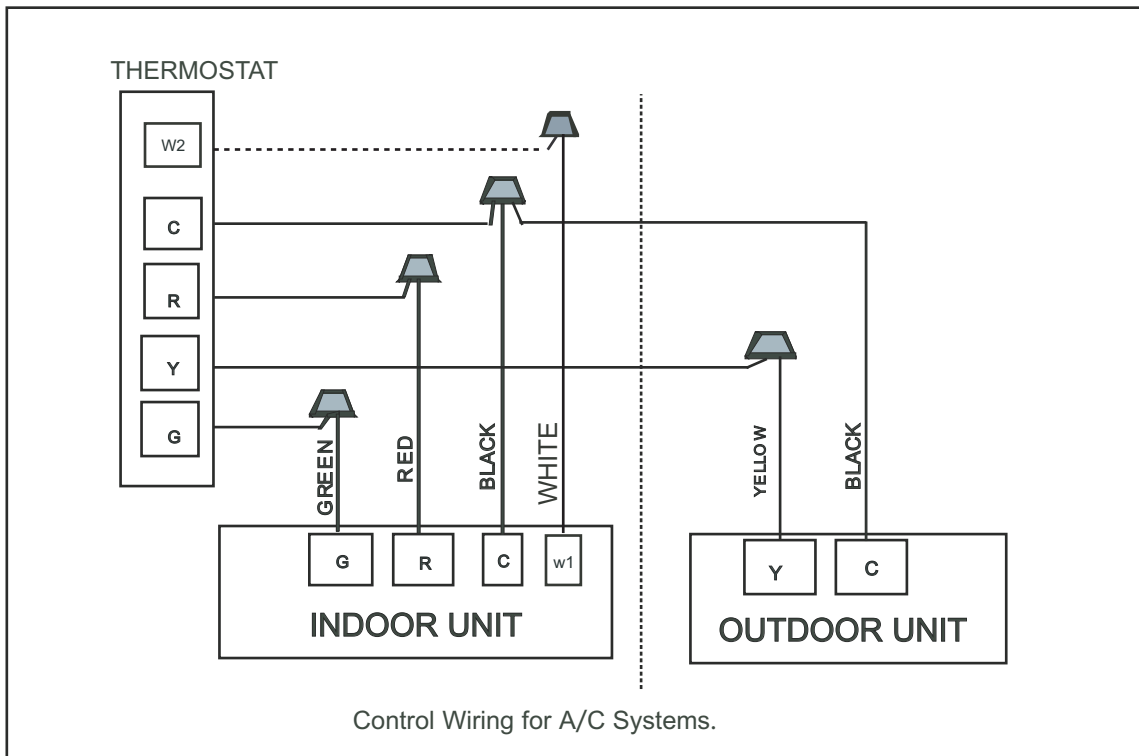
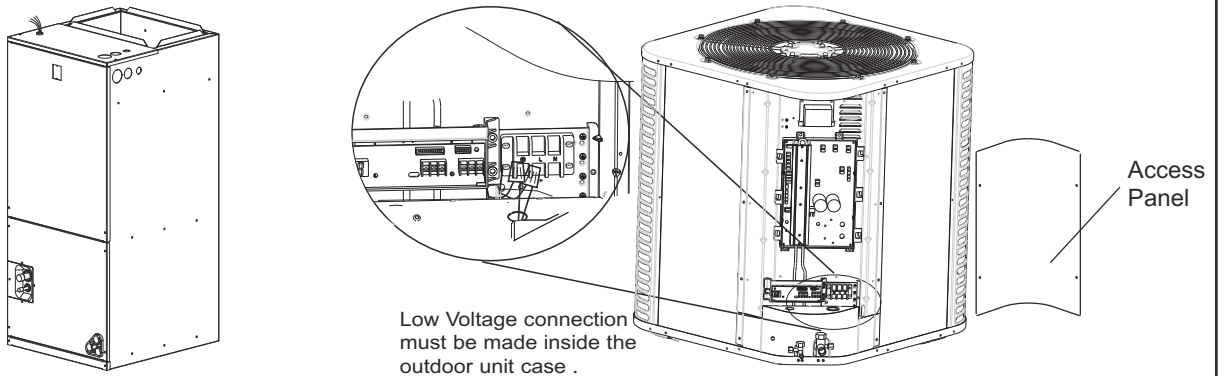
Field provided bushing or strain relief is required at the low voltage wire entry point.

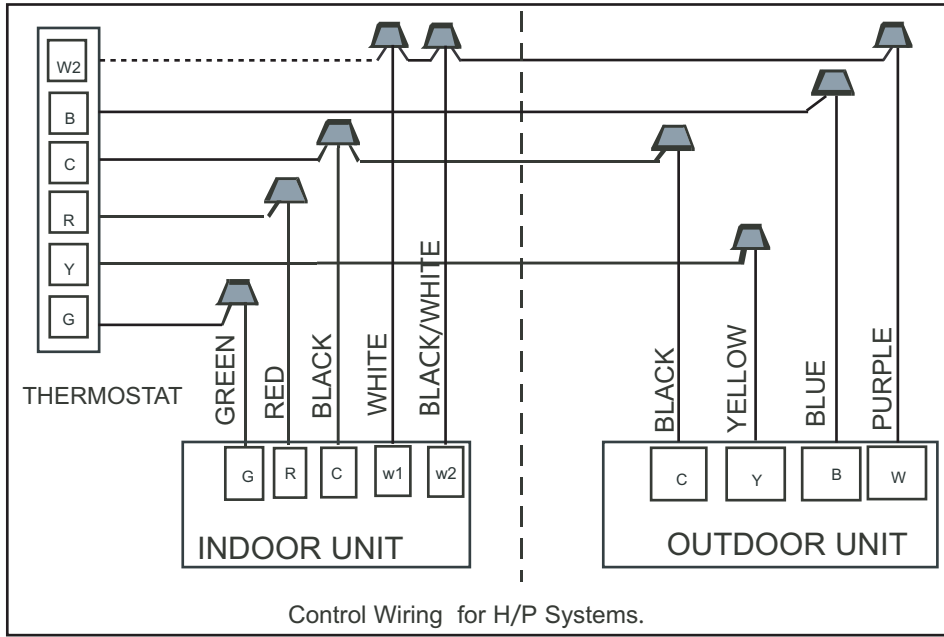
Table 11.1

24 VOLTS	
WIRE SIZE	MAX. WIRE LENGTH
18 AWG	150 Ft.
16 AWG	225 Ft.
14 AWG	300 Ft.

11.2 Low Voltage Hook-up Diagrams

Air Handler Hook-up Diagram





Notes:

1. Be sure power supply agrees with equipment nameplate.
2. Power wiring and grounding of equipment must comply with local codes.
3. Low voltage wiring to be No. 18 AWG minimum conductor.
4. "-----" The electric auxiliary heat connection.

Section 12. Electrical - High Voltage

12.1 High Voltage Power Supply

⚠ WARNING

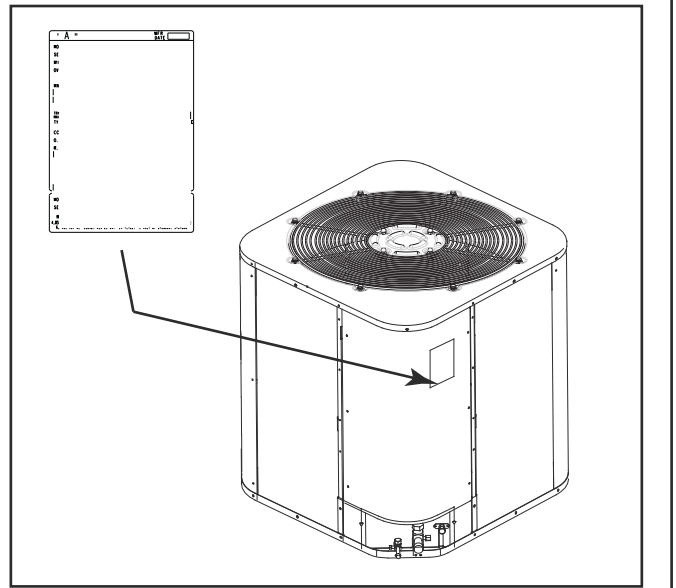
LIVE ELECTRICAL COMPONENTS!

During installation, testing, servicing, and troubleshooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

The high voltage power supply must agree with the equipment nameplate.

Power wiring must comply with national, state, and local codes.

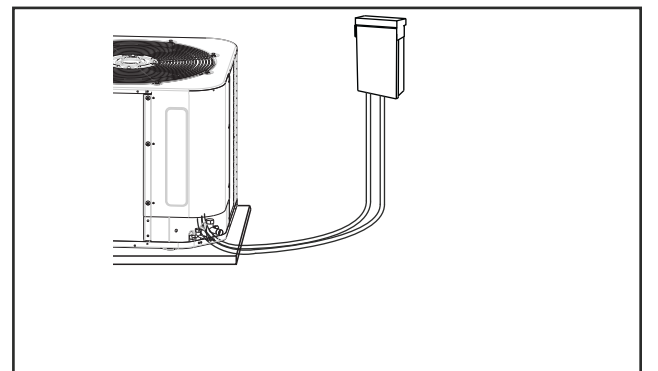
Follow instructions on unit wiring diagram located on the inside of the control box cover and in the Service Facts document included with the unit.



12.2 High Voltage Disconnect Switch

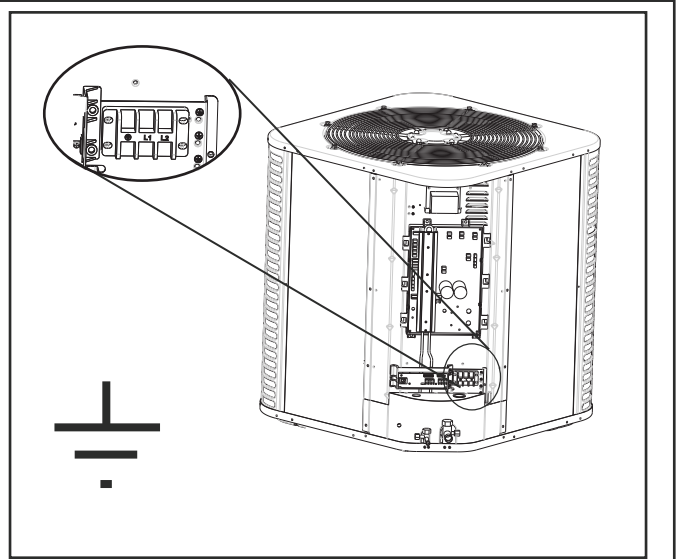
Install a separate disconnect switch at the outdoor unit.

Field provided flexible electrical conduit must be used for high voltage wiring.



12.3 High Voltage Ground

Ground the outdoor unit per national, state, and local code requirements.

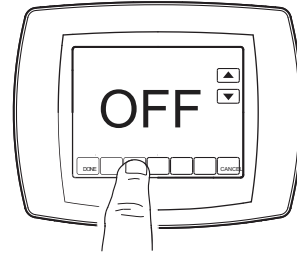


Section 13. Start Up

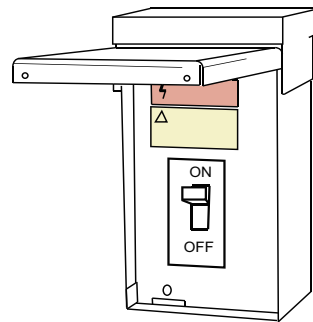
13.1 System Start Up

STEP 1 - Ensure Sections 6, 7, 8, 9, 10, 11, and 12 have been completed.

STEP 2 - Set System Thermostat to OFF.



STEP 3 - Turn on disconnect to apply power to the indoor and outdoor units.

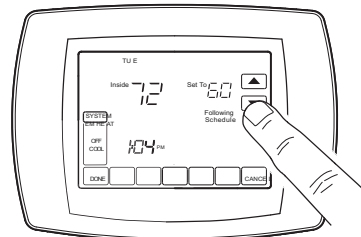


STEP 4 - Wait five (5) minutes before moving to Step 5 if no crankcase heater accessory is used,

Wait one (1) hour before starting the unit if compressor crankcase heater accessory is used and the Outdoor Ambient Temperature is below 70 °F.



STEP 5 - Set system thermostat to ON.



Section 14. System Charge Adjustment

charging: weigh-In Method

weigh-In Method can be used for the Initial installation, or anytime a system charge is being replaced. weigh-In Method can also be used when power is not available to the equipment site or operating conditions (indoor/Outdoor temperatures) are not In range to verify with the subcooling charging method.

A	B	C
Model	Factory Charge	charge multiplier for interconnecting refrigerant tube length
All models	(The data on nameplate)	0.6 oz/ft

Note: The factory charge in the outdoor unit is sufficient for 15 feet of standard size interconnecting liquid line.

Table 19. New Installations — calculating charge using the weigh-In method

<ol style="list-style-type: none"> 1. Measure in feet the distance between the outdoor unit and the indoor unit and record on (Line 1). Include the entire length of the line from the service valve to the IDU. 2. Enter the charge multiplier from column C. 3. Multiply the total length of refrigerant tubing (Line 1) times the value on step 2. Record the resulting value. 4. This is the amount of refrigerant to weigh-in prior to opening the service valves. 	<p>New Installation weigh-In Method worksheet</p> <ol style="list-style-type: none"> 1. Line Length (ft) _____ 2. value from Column C x _____ 3. Refrigerant((Step1-15) x Step2) = _____ <p>Note: If line length is Less than 15 feet , Refrigerant=0,don' t charge.</p>
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Table 20. Sealed-System Repairs — calculating charge using the weigh-In method.

<ol style="list-style-type: none"> 1. Measure in feet the distance between the outdoor unit and the indoor unit and record on (Line 1). Include the entire length of the line from the service valve to the IDU. 2. Enter the charge multiplier from column C. 3. Multiply the total length of refrigerant tubing (Line 1) times the value on (Line 2). Record the result on (Line 3) of the worksheet. 4. Record the value in column B to Line 4 of the worksheet. 5. Add the values from step 3, step 4,and record the resulting value on Line 5. This is the amount of refrigerant to weigh-in. 	<p>New Installation weigh-In Method worksheet</p> <ol style="list-style-type: none"> 1. Line Length (ft) _____ 2. value from Column C x _____ 3. (Step1-15) x step 2 = _____ 4. Factory charge (column B) + _____ 5. Refrlgerant (steps 3+4) = _____ <p>Note: If line length is Less than 15 feet , Refrigerant=factory charge</p>
---	--

Note: The only mode approved for setting validating system charge is using Charging Mode-cooling. Outdoor Temperature must be between 55°F and 120°F with Indoor Temperature kept between 70°F and 80°F.