

Installation Instructions

**For
R-410A
Refrigerant**

**SPLIT SYSTEM
Premium Line
HP CONDENSERS**

See Back Cover for R-410A Quick Reference Guide

Save This Manual for Future Reference

Installation/ Startup Information

These instructions must be read and understood completely before attempting installation.

WARNING

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation **MUST** conform with local building codes or, in the absence of local codes, with the the National Electrical Code NFPA 70/ANSI C1-1999 or current edition and Canadian Electrical Code Part 1 CSA C.22.1.

The information contained in this manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

After uncrating unit, inspect thoroughly for hidden damage. If damage is found, notify the transportation company immediately and file a concealed damage claim.

CAUTION

UNIT OR PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in property damage or personal injury.

Improper installation, adjustment, alteration, service or maintenance can void the warranty.

The weight of the condensing unit requires caution and proper handling procedures when lifting or moving to avoid personal injury. Use care to avoid contact with sharp or pointed edges.

Safety Precautions

1. Always wear safety eye wear and work gloves when installing equipment.
2. Never assume electrical power is disconnected. Check with meter and disconnect.
3. Keep hands out of fan areas when power is connected to equipment.
4. Refrigerant causes frost-bite burns.
5. Refrigerant is toxic when burned.

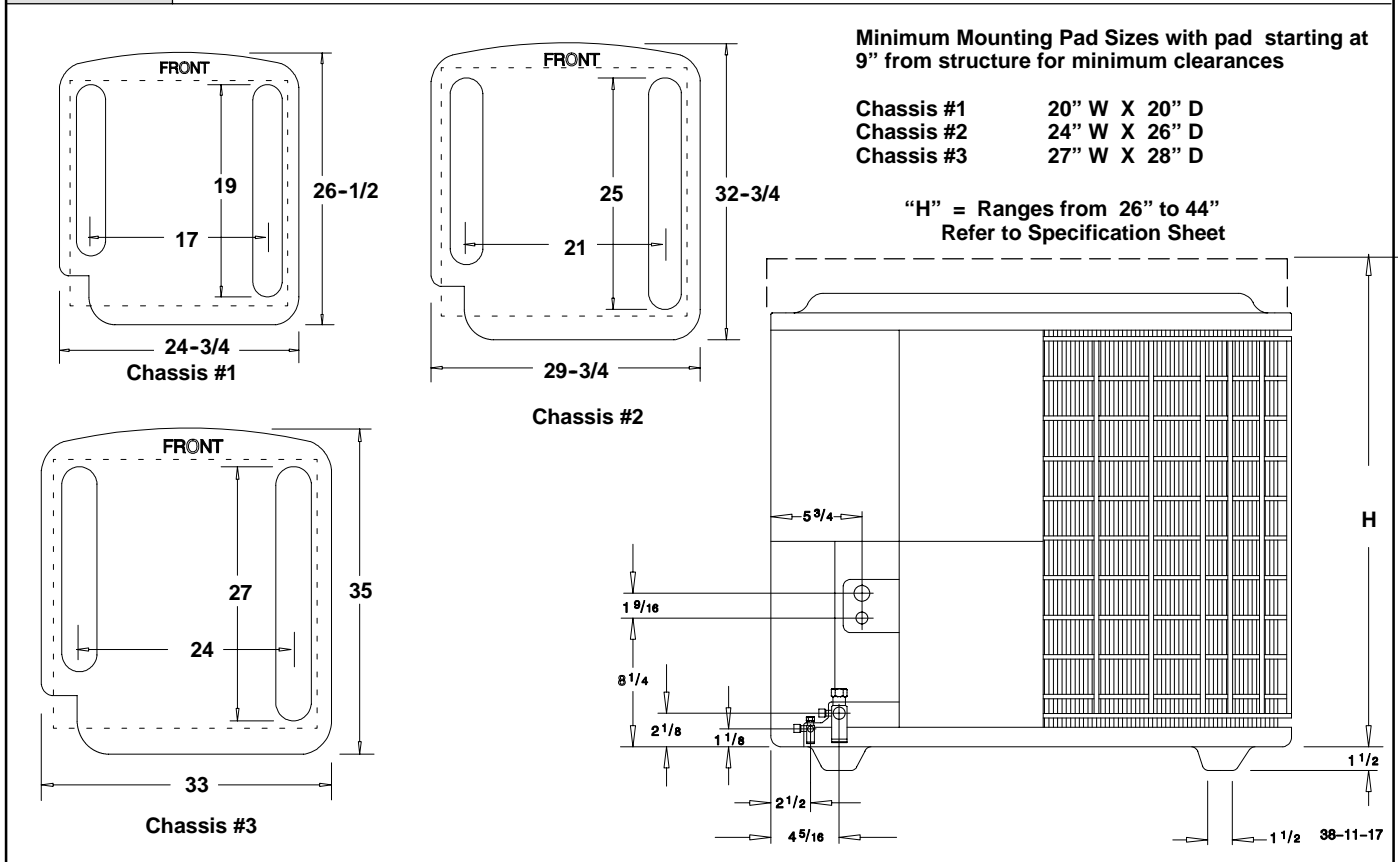
CAUTION

UNIT OR PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in property damage.

R-410A systems operate at higher pressures than standard R-22 systems. Use only service equipment and replacement componets rated or approved for R-410A.

NOTE TO INSTALLING DEALER: The Owners Instructions and Warranty are to be given to the owner or prominently displayed near the indoor Furnace/Air Handler Unit.

Figure 1 **Dimensions**

Locating The Outdoor Unit:

Check local codes covering zoning, noise, platforms.

If practical, avoid locating next to fresh air intakes, vent or bedroom windows. Noise may carry into the openings and disturb people inside.

Placement of the unit should be in a well drained area or unit must be supported high enough so runoff will not enter the unit.

Do not locate where heat, lint or exhaust fumes will be discharged on unit (as from dryer vents).

Roof top installations are acceptable providing the roof will support the unit and provisions are made for water drainage and the noise or vibration through the structure.

NOTE: Roof mounted units exposed to winds above 5 mph may require wind baffles. Consult the factory for additional information.

Do not install the unit in a recessed or confined area where recirculation of discharge air may occur.

Heat Pumps Only: The top surface of platform must be above average winter snow levels to prevent coil blockage.

Clearances:

Nominal operating clearances, where practical, are 48 inches (120 cm) above unit for discharge air and 18 inches (40cm) around coil for intake air on three sides. Clearance on one side (normally between unit and structure) may be reduced to 6 inches (15cm). Nominal clearances are based from a solid parallel object, wall, roof overhang, etc.

Do Not install under roof overhangs without guttering. A minimum vertical clearance of 48" is required to overhang.

The clearance may be reduced from a single object with a small surface area, such as the end of a wall, outside corner of a wall, fence section or a post, etc. As a general rule the width of the object should equal the minimum clearance from the unit. For example, a 4 inch (10cm) fence post could be 4 inches (10cm) from the unit.

Inside corner locations on single story structures require evaluation. Large overhanging soffits may cause air recirculation in a corner area even though recommended clearances are maintained. As a guide locate the unit far enough out so that half of the discharge grille is out from under the soffit.

Two or more units may be spaced with 18 inches (45cm) between units.

A service clearance of 24 inches (60cm) is desirable from control box end or side. Control box and corner panel below it can be loosened and moved out to the side to facilitate servicing. Internal components can be accessed through control box corner or top only.

Unit Support:

The unit must be level, and supported above grade by beams, platform or a pad. Platform or pad can be of open or solid construction but should be of permanent materials such as concrete, bricks, blocks, steel or pressure treated timbers approved for ground contact. Refer to Unit Clearances to help determine size of supports etc. Soil conditions should be considered so the platform or pad does not shift or settle excessively and leave the unit only partially supported.

NOTE: Unit must be level to within 2 deg. ($\pm 3/8$ in./ft) per compressor manufacturer specifications.



CAUTION

UNIT OR PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in property damage.

Inadequate support could cause excessive vibration and noise or binding and stress on refrigerant lines resulting in equipment failure.

To minimize vibration or noise transmission, it is recommended that supports not be in contact with the building structure. However, slabs on grade constructions with an extended pad are normally acceptable.

A. Ground Level Installation:

If beams or an open platform are used for support it is recommended that the soil be treated or area be graveled to retard the growth of grasses and weeds.

B. Roof Top Installation:

This type of installation is not recommended on wood frame structures where low noise levels are required.

Supporting structure or platform for the unit must be level. If installation is on a flat roof the unit should be 4 inches (10cm.) above roof level. Four by four posts placed over a load bearing wall make a suitable mounting platform.

If possible, place the unit over one or more load bearing walls. If there are several units, mount them on platforms that are self-supporting and span load bearing walls. These suggestions are to minimize noise and vibration transmission through the structure. If the structure is a home or apartment, avoid (if practical) locating the unit over bedrooms or study.

NOTE: When condensing unit is to be installed on a bonded guaranteed roof, a release must be obtained from the building owner to free the installer from all liabilities.



CAUTION

UNIT OR PROPERTY DAMAGE HAZARD

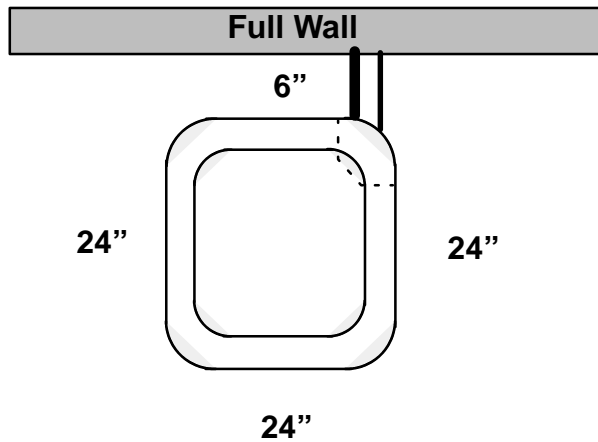
Failure to follow this caution may result in property damage.

Do not allow **POE** Lubricant to come in contact with roofing material. **POE** may damage certain types of synthetic roofing.

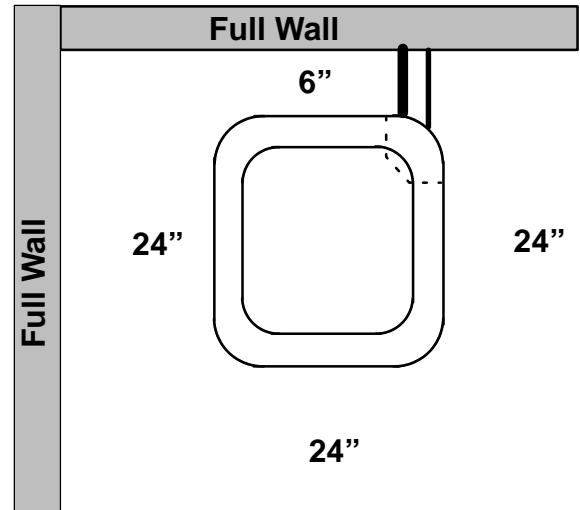
Figure 2

Clearances

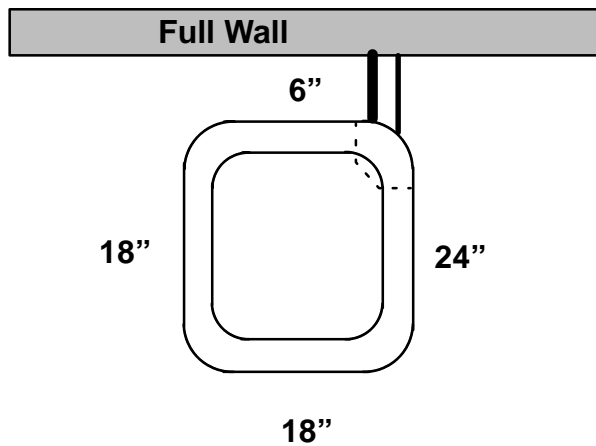
Recommended Clearances



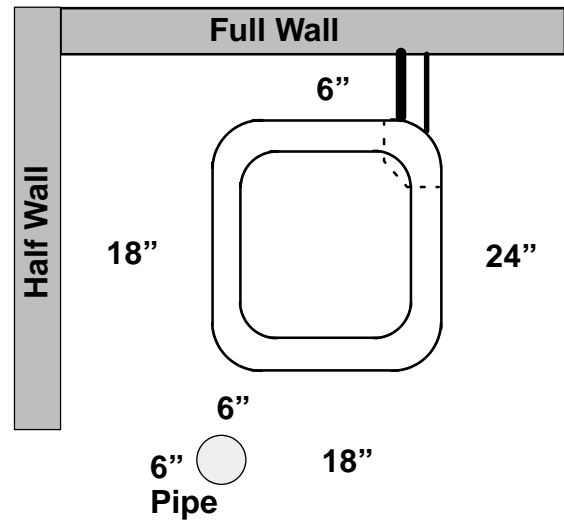
Minimum Clearances



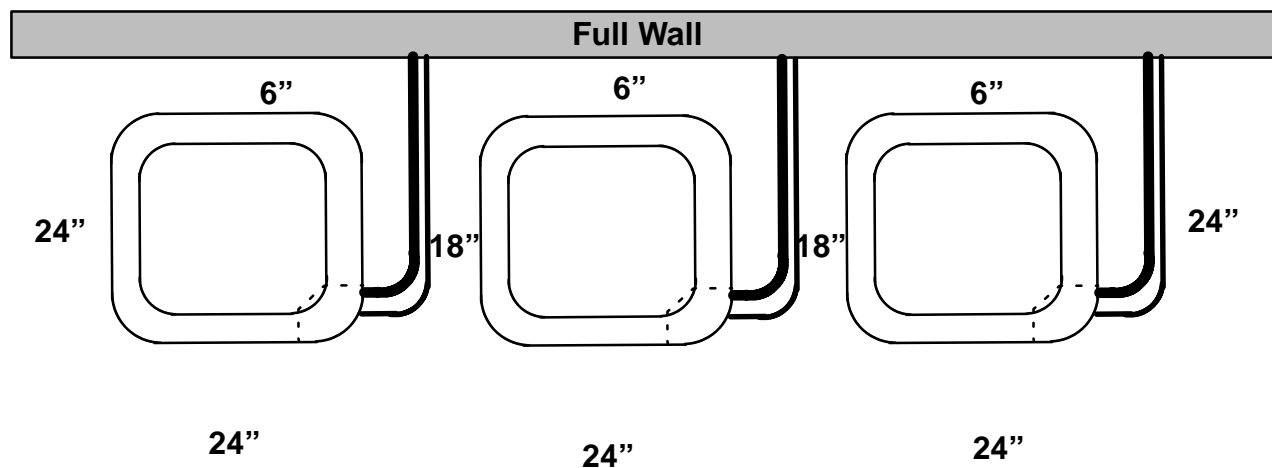
Minimum Clearances



Minimum Clearances



Minimum Clearances



Installing Refrigerant Lines

Component Matches

Check to see that you have the proper system components. **ONLY R-410A APPROVED MATCHED SYSTEM COMPONENTS MAY BE USED.** Refer to the Sales Specification Sheet, Split System Summary or visit WWW.ARIPRIMENET.ORG for match data.

The outdoor units are shipped with a refrigerant charge to match the indoor unit and 15 ft. (4.5m) of refrigerant line. If shorter or longer lines are used, the charge will have to be adjusted.

TOTAL LENGTH OF REFRIGERANT LINES MUST NOT EXCEED 75 ft. WITH A MAXIMUM VERTICAL SEPARATION OF 50 ft. BETWEEN THE OUTDOOR AND INDOOR UNITS WITH 2 TRAPS.

NOTE: A crankcase heater must be used when refrigerant lines exceed 50 ft.

Indoor Expansion Device

Some matched indoor combinations may have the factory installed R-22 TXV. For proper system operation this must be replaced with an R-410A TXV.

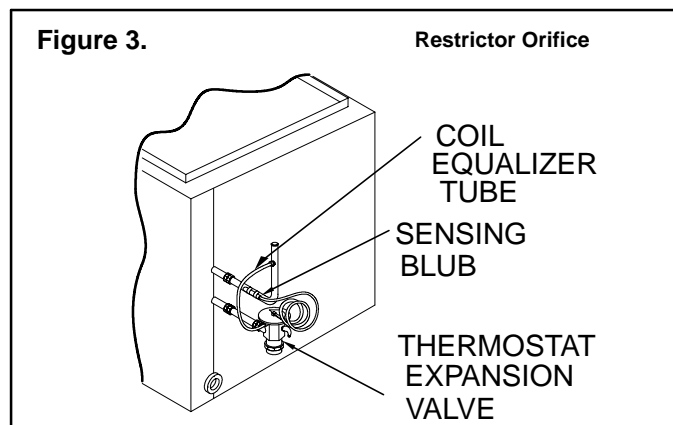


Fig. 3 - Typical TXV Installation
Check Indoor Expansion Device



CAUTION

UNIT or PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in property damage.

For proper unit operation and reliability, units must be installed with hard shutoff TXV specifically designed to operate with R-410A. Do not use R-22 TXV. Do not install with evaporator coils having capillary tube metering devices or restrictor orifices.

For TXV kit part number and charging instructions, refer to TXV label in outdoor unit.

FURNACE COILS

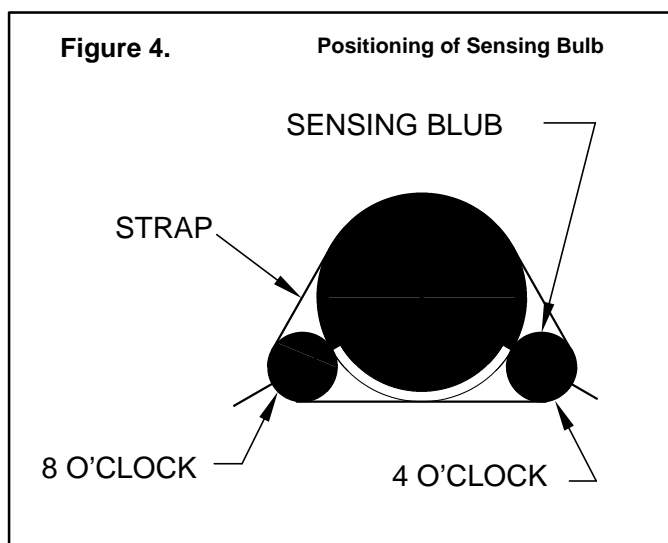
If TXV installation is required, remove existing restrictor orifice from indoor coil. Refer to Fig. 3 and 4 and install TXV kit (specifically designed for R-410A) as Follows:

1. Install suction tube adapter.
2. Install liquid flare - to- sweat adapter.
3. Connect external equalizer tube to fitting on suction tube adapter.
4. Position sensing bulb on horizontal portion of suction tube adapter. Secure using supplied hardware.
5. Insulate bulb after installation.
6. Leak check all connections.

FAN COILS

If indoor unit (fan coil) came factory equipped with a bi-flow hard shutoff TXV specifically designed for R-410A, no TXV change is required.

If fan coil is not designed for R-410A, a R-410A TXV installation is required. Refer to TXV kit Installation Instructions for details on TXV installation.



Refrigeration Line Sets

If it is necessary to add tubing in the field, use dehydrated or dry sealed deoxidized copper refrigeration tube. **DO NOT** use copper water pipe.

**CAUTION**

If ANY refrigerant tubing is buried, provide a 6 in. vertical rise at service valve. Refrigerant tubing lengths up to 36 in. may be buried.

It is important that no tubing is cut or seals broken until you are ready to actually make connections to the evaporator and to the condenser section.

Do not remove rubber plugs or copper caps from the tube ends until ready to make connections at evaporator and condenser.

**CAUTION**

Do not leave system open to atmosphere any longer than minimum required for installation. POE oil in compressor is extremely susceptible to moisture absorption. Always keep ends of tubing sealed during installation.

Be extra careful with sharp bends. This tubing can "kink" very easily, and if this occurs, the entire tube length will have to be replaced. Extra care at this time will eliminate future service problems.

Suspension And Installation Of Refrigeration Lines

DO NOT fasten liquid or suction lines in direct contact with the floor or ceiling joist. Use an insulated or suspension type of hanger. Keep both lines separate, and insulate the suction line. Both lines should be insulated in long runs in an attic or underground in a raceway.

Do not let refrigerant lines come in direct contact with foundation. When running refrigerant lines through the foundation or wall, the openings should be made large enough to allow for a sound absorbing material to be placed or installed between the tubing and the foundation. This will prevent noise transmission between the tubing and the wall section (foundation) or the building.

Installation Instructions For Condensing Units That Are Higher Than Evaporator

It is recommended that vertical suction risers not be upsized. Proper oil return to the compressor should be maintained with suction gas velocity. If velocities drop below 800 fpm (feet per minute), oil return will be decreased.

Install Liquid Line Filter Drier

Installation of filter drier in liquid line is required.

Fit and install a short connector tube and filter drier to the liquid line valve. See Brazing Connections.

Line Valves

The outdoor condensing unit is supplied with straight sweat brass service valves with copper stubs.

All line valves are positioned to seal the refrigerant in the condensing unit with gauge ports open to connecting lines when the Schraeder valve is depressed. Gauge ports have Schraeder installed and require use of charging hoses with depressors.

Brazing Connections

**WARNING****FIRE HAZARD**

FAILURE TO DO SO COULD RESULT IN BODILY INJURY OR DEATH.

Refrigerant and oil mixture under pressure could ignite as it escapes and contacts brazing torch resulting in Fire. Make sure the refrigerant charge is properly removed from both the high and low sides of the system before brazing any component or lines.

Before making braze connections, be sure all joints are clean. Before heat is applied for brazing, nitrogen should be flowing through the tubing to prevent oxidation and scale formation on the inside of the tubing.

Liquid & Suction Lines

Fully annealed refrigeration lines should be used when installing the system.

The following is the recommended method for making braze connections at the refrigerant line connections:

1. Clean refrigerant tube end with emery cloth or steel brush.
2. Use a suitable brazing alloy for copper to copper joints.
3. Insert tubing into swage fitting connection.
4. Apply heat absorbing paste or heat sink product to prevent damage to the service valve.

**CAUTION****UNIT or PROPERTY DAMAGE HAZARD**

Failure to follow this caution may result in property damage.

§ Use a brazing shield

§ Wrap service valves with wet cloth or use a heat sink material.

Evacuating Refrigerant Lines and Coil

NOTE

Intentional release of CFC, HFC or HCFC Refrigerants to the Atmosphere violates Federal Law. It may also violate State and Local Codes. Check all Federal, State and Local Codes before proceeding.

These instructions are intended for use with condensing units that are precharged at the factory with adequate refrigerant to handle 15 feet.

NOTE: Do not use any portion of the charge for purging or leak testing. It is mandatory that a thorough evacuation of the refrigerant in the piping and evaporator be performed.

The liquid line and suction line service valves have been closed after final testing at the factory. **Do not disturb these valves until the lines have been leak checked and evacuated or the charge in the unit may be lost.**

Recommended Method Of Evacuating A System

1. Connect the vacuum pump to the suction and liquid line gauge ports.
2. If the evacuation is being performed on a new system installation, the valves should be kept in the "front seated" (closed) position. This will allow the mechanic to evacuate the refrigeration lines and the indoor coil, without disturbing the factory charge in the outdoor unit.



CAUTION

UNIT or PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in property damage.

Never use the system compressor as a vacuum pump.

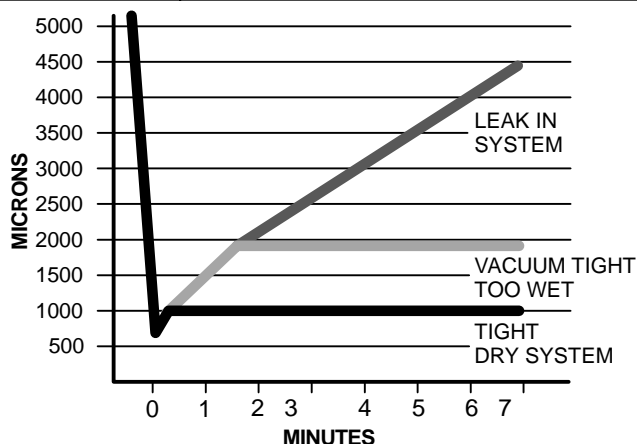
Refrigerant lines and indoor coil should be evacuated using the recommended deep vacuum method of 500 microns. The alternate triple evacuation method may be used if the procedure outlined below is followed. Upon evacuation, isolate the vacuum pump from the system by closing the shut-off valves on the gauge bar. Disconnect the pump. Always break a vacuum with dry nitrogen.

Deep Vacuum Method

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

Figure 5

Deep Vacuum Graph



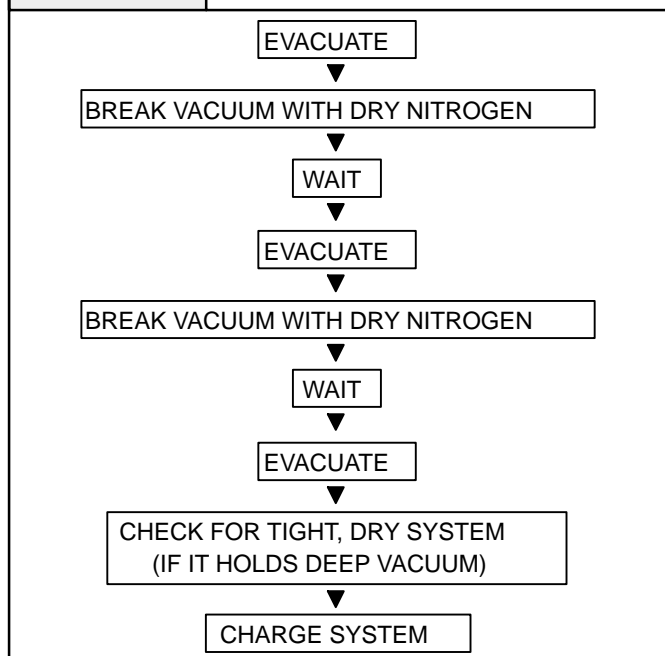
Triple Evacuation Method

The triple evacuation method should only be used when vacuum pump is only capable of pumping down to 28 in. of mercury vacuum and system does not contain any liquid water. Refer to Fig. 6 and proceed as follows:

1. Pump system down to 28 in. of mercury and allow pump to continue operating for an additional 15 minutes.
2. Close service valves and shut off vacuum pump.
3. Connect a nitrogen cylinder and regulator to system and open until system pressure is 2 psig.
4. Close service valve and allow system to stand for 1 hr. During this time, dry nitrogen will be able to diffuse throughout the system absorbing moisture.
5. Repeat this procedure as indicated in Fig. 6. System will then be free of any contaminants and water vapor.

Figure 6

Triple Evacuation Chart



Valve Actuation: Service Valves

For service valves fully insert a hex wrench into the stem. A back-up wrench is required on the valve body to open the valve stem. Backout counterclockwise until the valve stem stops or just touches the retaining ring. **NOTE: THIS IS NOT A BACKSEATING VALVE.** For valves with retainer rings care must be taken to prevent dislodging them when opening valve.

The service valve cap is a primary seal for the valve and must be properly tightened to prevent leaks. Make sure cap is clean and apply refrigerant oil to threads and sealing surface of cap.

For valves with retaining rings: Replace service valve cap and torque to; 8-11 ft. lbs. on 1/4" and 3/8" valves, 12-16 ft. lbs. on 5/8" and 3/4", 15-21 ft. lbs. on 7/8" valves. If torque wrench is not available, tighten cap finger tight and then tighten one (1) additional wrench flat or 1/6 of a turn.

For valves with rolled tops: Replace service valve cap tighten cap finger tight and then tighten one (1) additional wrench flat or 1/6 of a turn to properly seat the sealing surfaces. Subsequent installations will seat with 1/2 to 1 wrench flat of turning.

Gauge Ports

Check for leaks at the schrader port and tighten valve core if necessary. Install plastic caps finger tight.

REFRIGERATION PIPING & CHARGING

The recommended method of addition or removal of refrigerant is by weight.

Some matching coils may need more refrigerant than the factory charge. If you can't determine charge by weight, then check charge by sub-cooling method and performance curves. The oil charge is sufficient for long line applications.

For piping lengths up to 75 feet refer to **Figure 7** for pipe size, and **Figure 8** for refrigerant adjustment.

On applications where liquid floodback to the compressor is likely to occur, use of a crankcase heater is recommended.

Fig. 7		Refrigerant Connections and Recommended Liquid Line and Vapor Tube Diameters (In.)					
UNIT SIZE	CONNECTION DIAMETER		TUBE DIAMETER		TUBE DIA. (ALT)	RST TUBE DIA. NOT PERMITTED	
	Liquid	Vapor	Liquid	Vapor	Vapor	Vapor	
18, 24	3/8	5/8	3/8	5/8	3/4 ACR	3/4	
30	3/8	3/4	3/8	3/4	7/8	1 1/8	
36	3/8	3/4	3/8	3/4	7/8	1 1/8	
42, 48	3/8	7/8	3/8	7/8	7/8	3/4 and 1 1/8	
60	3/8	1 1/8	3/8	1 1/8	7/8	3/4	

Fig. 8		Addition of Refrigeration Charge	
Liquid Line Diameter		oz. Per Linear Ft.*	
3/8		0.6	

See figures 9 thru 10 and Wiring Diagram on unit.

Use of Rigid Metal Conduit

It is recommended that wires be tied together or twisted together inside the conduit. This will minimize any buzzing type sounds that could be produced with high current loads, such as during starting. Under some conditions it may be necessary to use a hard start kit to eliminate problem noises.

Control Box Access

Remove the four screws. Cover is notched so it will slide out from under top edge of unit.

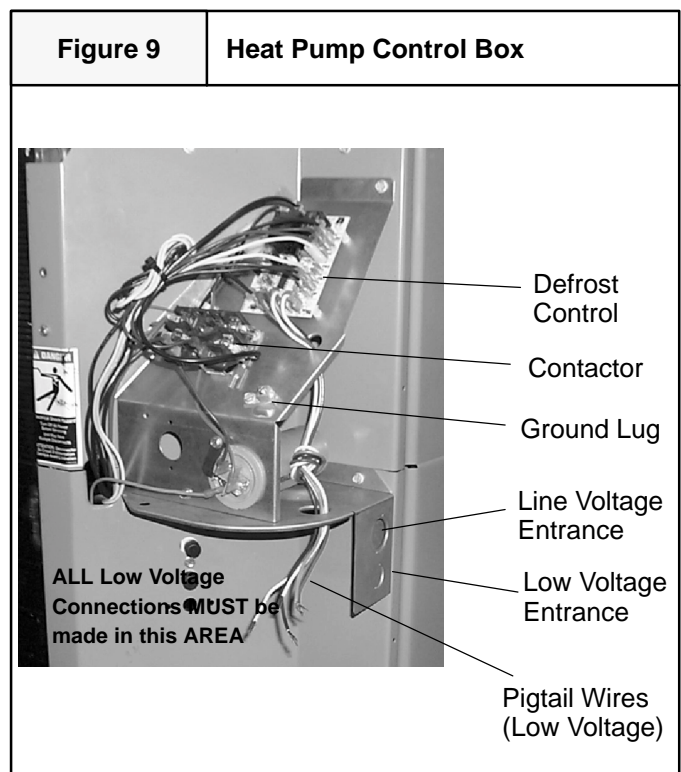
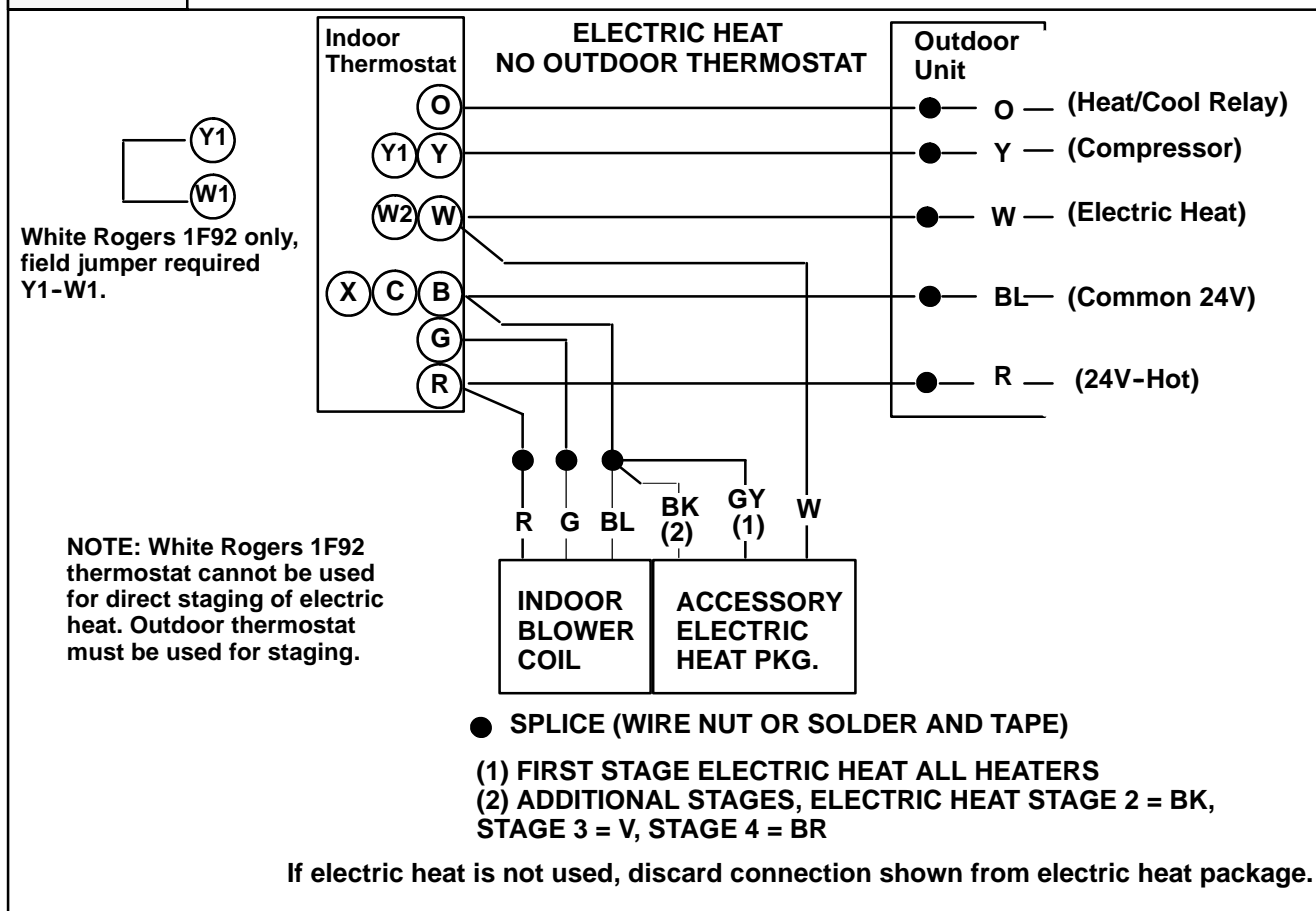


Figure 10

Heat Pump Typical Low Voltage Control Connections



Start-Up Procedure

Start-up Procedure - Cooling Operation

1. Close electrical disconnects to energize system.
2. Energize crankcase heater on units so equipped for 24Hrs, then proceed with Start UP.
3. Set Thermostat selector switch to OFF.
4. Set room thermostat at desired temperature. Be sure setpoint is below indoor ambient temperature for cooling and above indoor ambient for heating.
5. Set the system switch of the thermostat on COOL and fan switch for continuous operation or AUTO, as desired. Operate unit for 15-20 minutes, then check the system refrigerant charge if it was necessary to adjust.
6. After the refrigerant charge has been adjusted, the system is now ready for continuous operation.

Final Refrigeration Charge Adjustment

Before any adjustment is made to the refrigerant charge, it is imperative that the air flow characteristics of the indoor blower be established.

When checking indoor air flow, it is important to remember that the blower will deliver a higher quantity of air across a dry coil versus a wet coil. Blower charts are calculated with a dry coil.

Recommended air flow for installations of cooling units and heat pumps is 350-450 CFM per ton (12,000 BTUH) through a wet coil. Refer to indoor unit installation instructions for proper methods of determining air flow and blower performance.

Factory charge is shown on unit information plate. R-410A refrigerant cylinders contain a dip tube which allows liquid refrigerant to flow from cylinder in upright position. Charge units with cylinder in upright position and a commercial-type metering device in manifold hose. Charge refrigerant into suction line.

NOTE: If subcooling charging conditions are not favorable, charge must be weighed in accordance with unit rating plate 0.6 oz/ft of 3/8-in. liquid line above or below 15 ft respectively.

To Check System Refrigerant Charge, Cooling Only

NOTE: On units with two speed fan control the fan will be on low speed if the temperature is below 83° F. Pull one of the yellow low voltage wires off the fan control and the unit will default to high speed fan for servicing. Reconnect wire after checking.

1. Attach an accurate temperature sensing device to the liquid line approximately 4"–6" away from the liquid line service valve. The temperature sensing device should be clamped securely to the liquid line, on a horizontal plane and insulated. Record the the liquid line temperature.
2. Measure and record the liquid line refrigeration pressure. (Measure at the liquid line service valve gauge port.) Figure 11 shows the required liquid line temperature (F) for a particular pressure at the liquid service valve. Refer to unit rating plate for required subcooling temperature.

3. Measure and record the outside ambient air temperature.

Note : If subcooling charging conditions are not favorable, charge must be weighed in accordance with unit rating plate 0.6 oz/ft of 3/8" liquid line above or below 15 ft. respectively.

Note : Each time that charge is added or removed from the system, allow the system to run approximately 15 minutes before pressure and temperature readings are taken.

Note : Indoor Wet Bulb Temperature (and Relative Humidity) will alter subcooling values. All readings should be at 50% humidity inside and 350 to 450 CFM per ton across the indoor coil.

Figure 14

Required Liquid-Line Temperature (°F)

Required Liquid-Line Temperature (°F)

LIQUID PRESSURE AT SERVICE VALVE (PSIG)	REQUIRED SUBCOOLING TEMPERATURE (°F)					LIQUID PRESSURE AT SERVICE VALVE (PSIG)	REQUIRED SUBCOOLING TEMPERATURE (°F)			
	5	10	15	20			5	10	15	20
174	56	51	46	41		398	112	107	102	97
181	58	53	48	43		405	113	108	103	98
188	61	56	51	46		412	114	109	104	99
195	63	58	53	48		419	115	110	105	100
202	65	60	55	50		426	117	112	107	102
209	67	62	57	52		433	118	113	108	103
216	69	64	59	54		440	119	114	109	104
223	71	66	61	56		447	120	115	110	105
230	73	68	63	58		454	122	117	112	107
237	75	70	65	60		461	123	118	113	108
244	77	72	67	62		468	124	119	114	109
251	79	74	69	64		475	125	120	115	110
258	81	76	71	66		482	126	121	116	111
265	82	77	72	67		489	127	122	117	112
272	84	79	74	69		496	129	124	119	114
279	86	81	76	71		503	130	125	120	115
286	88	83	78	73		510	131	126	121	116
293	89	84	79	74		517	132	127	122	117
300	91	86	81	76		524	133	128	123	118
307	93	88	83	78		531	134	129	124	119
314	94	89	84	79		538	135	130	125	120
321	96	91	86	81		545	136	131	126	121
328	97	92	87	82		552	137	132	127	122
335	99	94	89	84		559	138	133	128	123
342	100	95	90	85		566	139	134	129	124
349	102	97	92	87		573	140	135	130	125
356	103	98	93	88		580	141	136	131	126
363	105	100	95	90		587	142	137	132	127
370	106	101	96	91		594	143	138	133	128
377	107	102	97	92		601	144	139	134	129
384	109	104	99	94		608	145	140	135	130
391	110	105	100	95		-	-	-	-	-

To obtain required subcooling temperature at a specific liquid line pressure, add refrigerant if liquid line temperature is higher than indicated or reclaim refrigerant if temperature is lower. Allow a tolerance of +/- 3 F.

Heating Checkout (Heat Pump Only)

1. Turn thermostat heat-cool switch to OFF. Turn thermostat switch to AUTO.
2. Turn on all power except 230 volt line to outdoor section.
3. Turn fan switch on thermostat to ON. Blower should run. Reset to AUTO; blower should turn off.
4. Set thermostat below room temperature. Turn selector switch to heat. Move thermostat above room temperature. Blower should run on heating speed and a click should be heard in the condensing unit outside (contactor closing). The sequencer coils for auxiliary heat should be energized. After approximately 30 seconds the contacts in the sequencers should close and the electric heat elements start heating. Allow 3 minutes for all heaters to come on.
5. Set system switch to OFF. Turn the thermostat above room temperature. Turn on the 230 volt power to the outdoor unit. Nothing apparent will be happening, but the crankcase heater is now energized. If the outdoor temperature is below 70 °F allow the unit to stay in this mode at least 6 hours. This is need to vaporize any refrigerant that may be in the compressor oil.
6. Set the thermostat above room temperature. Move system switch to heat. Count to 5 (about 5 seconds). Turn the electric power off at the condensing unit disconnect switch. Check that there is no clattering or unusual noises. The outdoor fan blade should have started turning and a humming noise should have been heard from the compressor. The indoor fan should continue to run at its normal speed and electric elements continue to heat.
7. Wait 2 minutes, then repeat the procedure and recheck the same things in case you missed something during the first power application.
8. With the unit operating, close all doors, windows, storm windows, and openings to the house. Set the thermostat to the desired setting. Set outdoor thermostat (if installed) to balance point of house. If temperature of house is at least two degrees below thermostat setting, heat pump and auxiliary heat not controlled by outdoor thermostats will continue to run until room temperature approximately 2° below thermostat set point. Auxiliary heat light should go out and auxiliary heat cycle off. Heat pump should continue to run until thermostat reaches set point.

To Check System Refrigerant Charge (Heating Mode)

The recommended method of addition or removal of charge in the heating mode is by weight. The system operation may be checked against the performance charts. Remember, indoor airflow must be approximately 400 CFM per ton to compare operation to performance charts.

Note: When charging is necessary during heating season, charge must be weighed in accordance with unit rating plate, ± 0.6 oz./ft. of 3/8 liquid line above or below 15 ft. respectively. To calculate additional charge required for a 25 ft. line set: 25 ft. - 15 ft. = 10 ft. X 0.6 oz. / ft. = 6 oz. of additional refrigerant.

Defrost System

Time / Temperature Type:

The defrost system is electronic with an adjustable time interval of 90, 60, or 30 minutes. It is factory set at 90 or 60 minutes. At the selected time interval with the outdoor coil temperature at approximately 28° F, the system will defrost. When the sensor sees the correct rise in the outdoor coil temperature or after approximately 10 minutes, the defrost will be terminated.

Time Interval Adjustment

To adjust defrost frequency, turn off all power to the Heat Pump. Remove control box cover and locate the electronic defrost demand board.

The defrost control board has a jumper clip that fits over two pins. To change the time interval, remove the jumper clip and place it on pins for the desired time interval, 30, 60, or 90 minutes.

Maintenance

! WARNING

Electrical Shock Hazard.

Failure to shut off electric power can result in, property damage, personal injury and/or death.

Shut off electric power at fuse box or service panel before making any electrical connections.

Condensate Drain

During the cooling season check at least monthly for free flow of drainage and clean if necessary.

Cleanliness

These tips will help you keep your air conditioner looking better and working more efficiently:

1. Free air flow is essential. Keep the outdoor coil clean and free of restrictions. Keep fences, shrubs, snow drifts and any other obstructions at least two feet from all coil air inlets.
2. Keep the coil free of grass clippings, weeds and other debris. **BE SURE TO TURN OFF ELECTRICITY BEFORE CLEANING!**

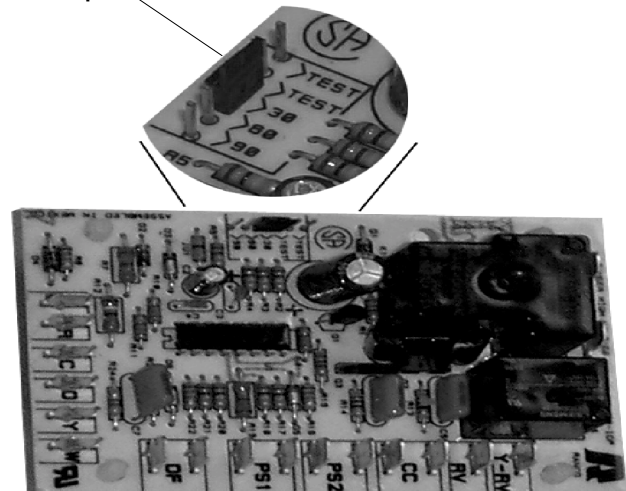
Coils may require cleaning. The coil should always be cold when cleaning. Use an alkaline based cleaner only. Cleaning a hot coil or using an acid based cleaner will remove the paint from the fins and may clog the coil.

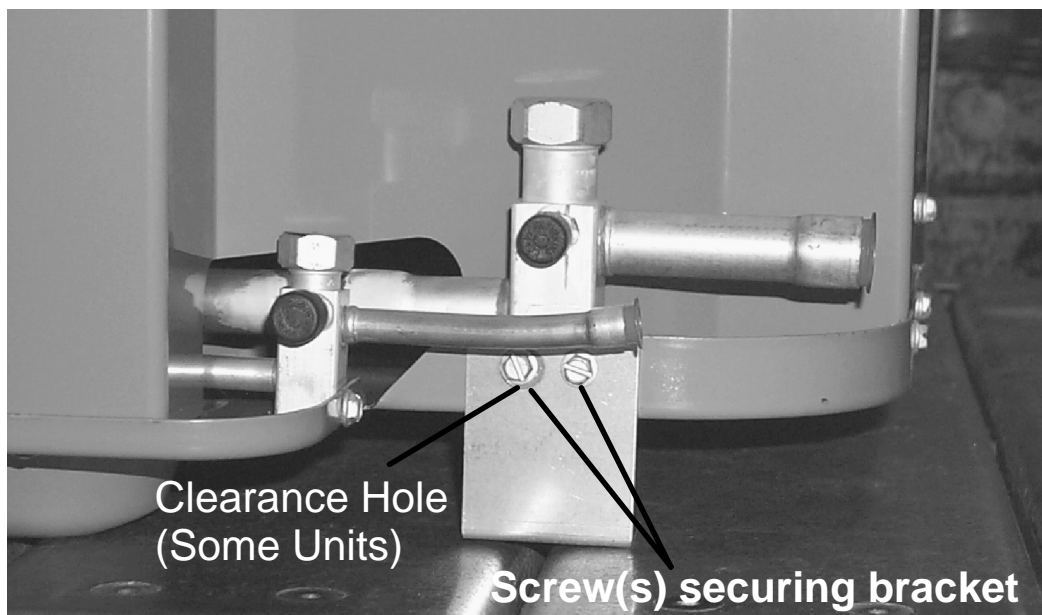
3. Never use a weather cover over the outdoor unit unless it is a ventilated type or made of breathable fabric that will allow moisture to evaporate rapidly. A cover that holds moisture in the unit will cause more rust build-up and damage than normal exposure to weather.

Figure 12

Adjusting Defrost -Demand Type

Jumper





SHIPPING BRACKET

A shipping bracket has been added to some chassis to increase the stacking height for improved warehousing.

If present the bracket may be left in place or removed by the installer.

NOTE: The bracket is installed using the same screw(s) that secure the service valve. If only one screw is used there is a clearance hole that fits over one screw securing the suction valve. If bracket is removed. **MAKE SURE SCREW(S) IS REINSTALLED.**

R-410A Quick Reference Guide

R-410A refrigerant operates at 50 – 70% higher pressures than R-22. Be sure that servicing equipment and replacement components are designed to operate with R-410A.

R-410A refrigerant cylinders are rose colored.

Recovery cylinder service pressure rating must be 400 psig, DOT 4BA400 or DOT BW400.

R-410A systems should be charged with liquid refrigerant. Use a commercial type metering device in the manifold hose.

Manifold sets should be 750 psig high-side and 200 psig low-side with 520 psig low-side retard.

Use hoses with 750 psig service pressure rating.

Leak detectors should be designed to detect HFC refrigerant.

R-410A, as other HFC's, is only compatible with POE oils.

Vacuum pumps will not remove moisture from oil.

Do not use liquid – line filter Driers with rated working pressures less than 600 psig.

Do not install a suction – line filter drier in liquid line.

POE oils absorb moisture rapidly. Do not expose oil to atmosphere.

POE oils may cause damage to certain plastics and roofing materials.

Wrap all filter driers and service valves with wet cloth when brazing.

A liquid filter drier is required on every unit.

Do not use an R-22 TXV.

If indoor unit is equipped with an R-22 TXV, it must be changed to an R-410A TXV.

Never open system to atmosphere while it is under a vacuum.

When system must be opened for service, break vacuum with dry nitrogen and replace filter driers.

Do not vent R-410A into the atmosphere.

Do not use capillary tube indoor coils.

Observe all **warnings**, **cautions** and **bold** text.