Installation Instructions

For
R410-A
Refrigerant

SPLIT SYSTEM
Premium Line
AC CONDENSERS

Save This Manual for Future Reference

421 01 3204 03
Dec. 2004

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

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

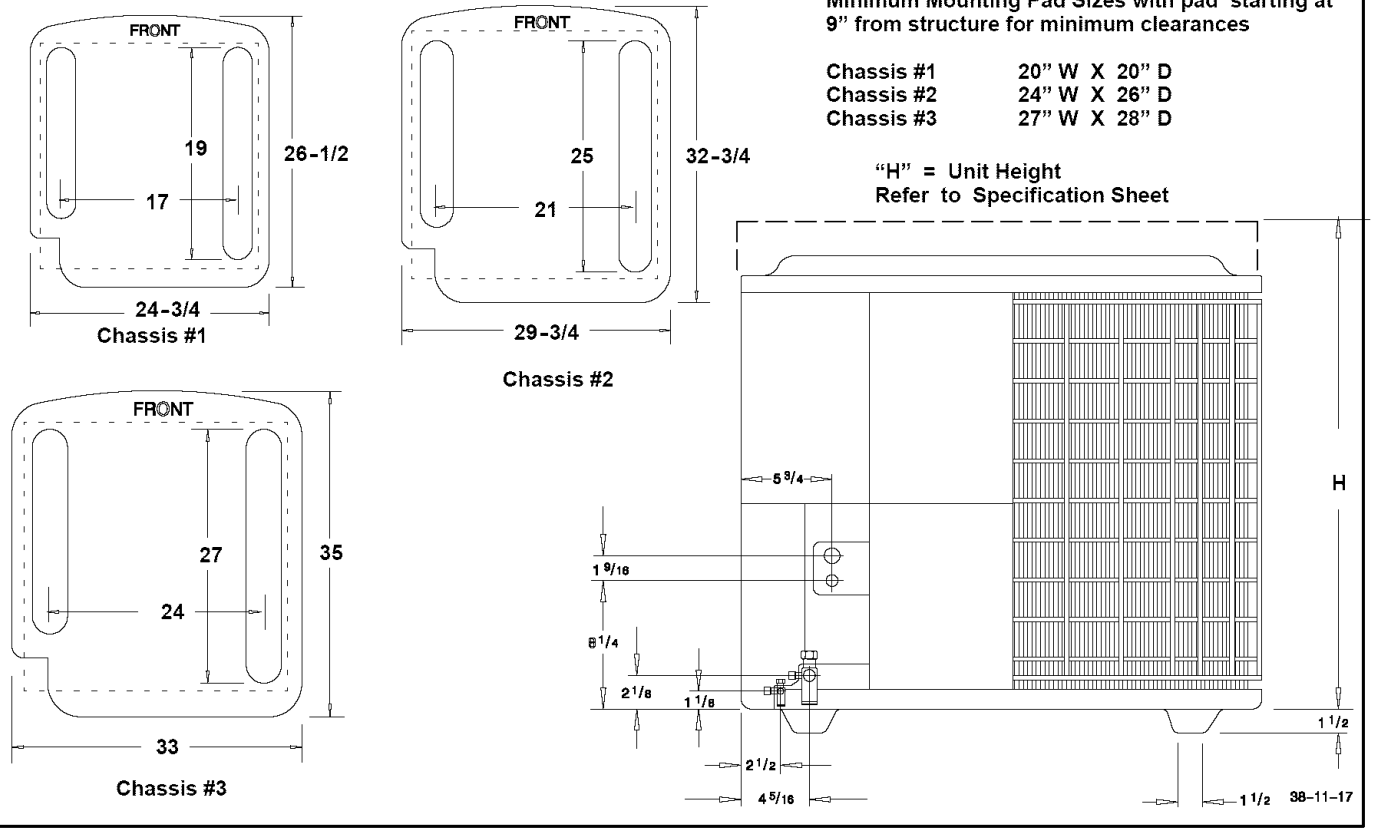
1. Always wear safety eye wear and work gloves when installing equipment.
2. Never assume electrical power is disconnected. Check with meter and disconnect.
3. Keep hands out of fan areas when power is connected to equipment.
4. Refrigerant causes frost-bite burns.
5. Refrigerant is toxic when burned.

CAUTION

R410-A systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on Enviromax equipment.

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.

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. (+or- 3/8 in./ ft) per compressor manufacturer specifications.

CAUTION

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:

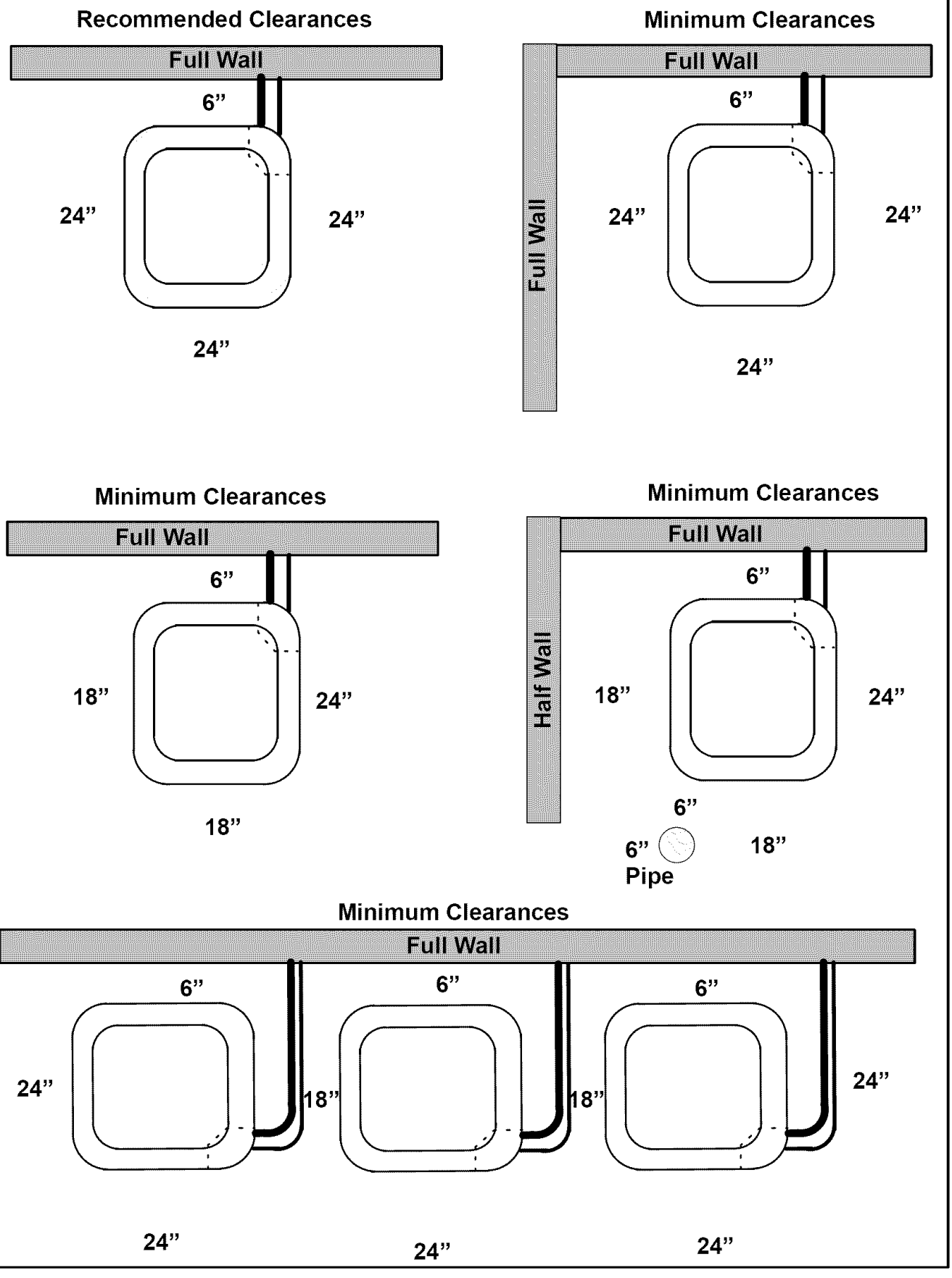
This type of installation is not recommended on wood frame structures where low noise levels are required.

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.

Figure 2 Clearances



Installing Refrigerant Lines

Component Matches

Check to see that you have the proper system components. **ONLY R410-A APPROVED MATCHED SYSTEM COMPONENTS MAY BE USED. Refer to the Split System Summary or www.ariprimenet.org for match data and orifice sizes.**

The outdoor units are shipped with a refrigerant charge to match the indoor unit and 25 ft. (7.5m) 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.

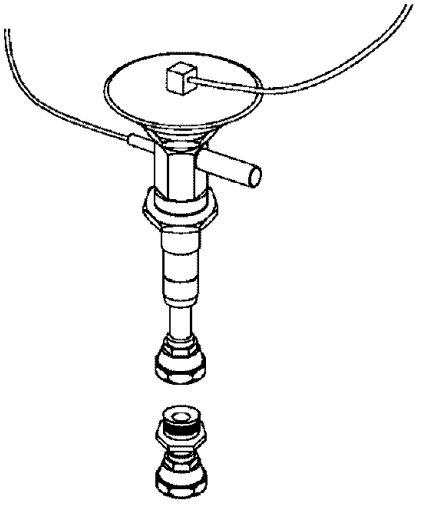
NOTE: A crankcase heater must be used when refrigerant lines exceed 50 ft.

REFRIGERANT TUBING AND FLOW CONTROL (Fig. 3)

Field-supplied tubing must be of refrigerant grade. Suction tube must be insulated. Do not use damaged, dirty, or contaminated tubing because it may plug refrigerant flow-control device. **ALWAYS** evacuate the coil and field-supplied tubing to 500 microns before opening outdoor unit service valves.

CAUTION: Braze with Sil-Fos or Phos-copper on copper to copper joints and wrap a wet cloth around rear of fitting to prevent damage to TXV.

Figure 3 Refrigerant Flow-Control Device



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 without further special consideration. For lengths above 36 in., contact the factory.

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

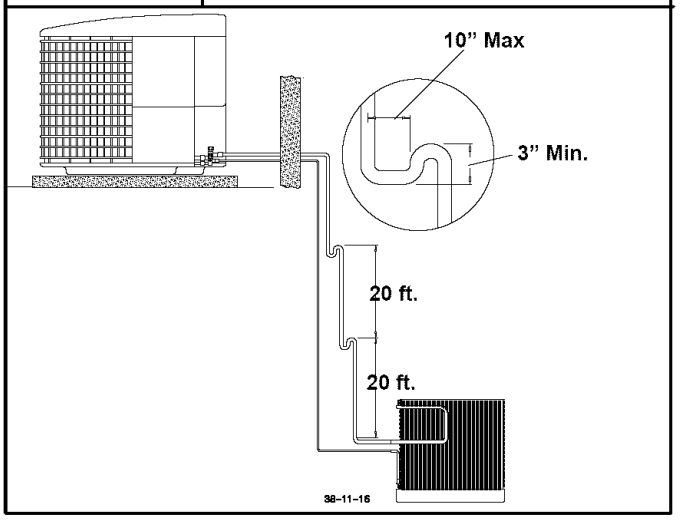
DO NOT fasten liquid or suction lines in direct contact with the floor or ceiling joist. Use an insulated or suspension type of hanger. Keep both lines separate, and insulate the suction line. Both lines should be insulated in long runs in an attic or underground in a raceway.

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 1500 fpm (feet per minute), oil return will be decreased. An oil trap should be installed every 20' of vertical suction line riser (condenser above evaporator.) Refer to line sizing charts.

Figure 4 Oil Traps



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 schraeders installed and require use of charging hoses with depressors.

Brazing Connections

⚠ WARNING

Fire Hazard

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.

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

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

Do not heat valve body above 250 degrees F.

5. Braze joint.
6. Quench the joint and tubing with water using a wet rag. Leave rag on fitting body and re-wet with water to help cool area.

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 25 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.**

CAUTION

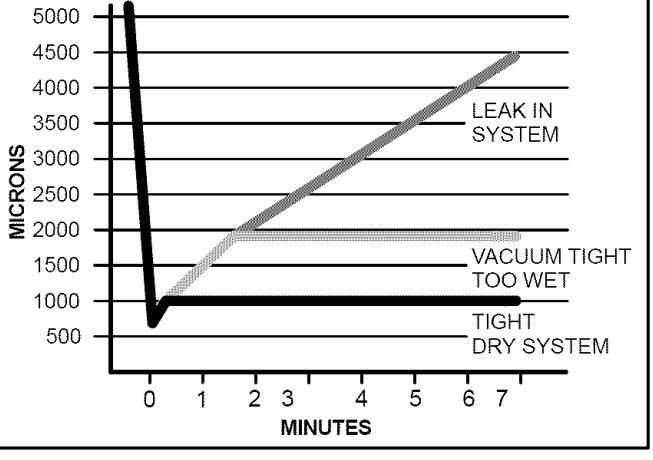
Never use the system compressor as a vacuum pump.

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. 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

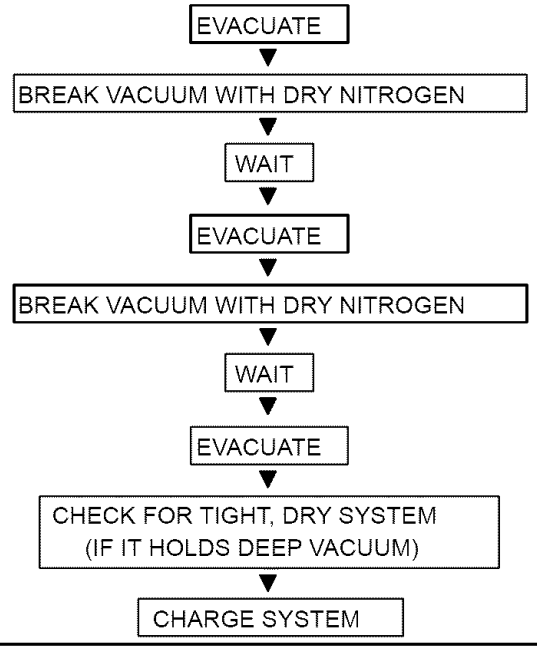


Triple Evacuation Method

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. 8 and proceed is 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

Remove the service valve cap, if there is a male valve stem see instructions for Ball Valves. For the standard service valve there are two variations, but both have internal stems. The first style uses an internal snap ring to retain the valve stem and the second has a rolled top and also has finer threads on the valve cap. **NOTE: You may encounter more than one type of valve on a unit.**

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: All Valves

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

Ball Valves

On models with ball type valves use a 6" crescent wrench to rotate the valve stem 90° counter clockwise. Retighten valve cap to 6-8 ft. lbs. If torque wrench is not available, tighten cap finger tight and then tighten one (1/2) additional wrench flat.

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 superheat method and performance curves. The oil charge is sufficient for 50 feet.

For oil requirements refer to **Figure 7.** For piping lengths up to 75 feet refer to **Figure 8** for pipe size, and **Figure 9** for refrigerant adjustment.

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

Figure 7 - Addition of Refrigeration Oil

Distance (Feet)	Suction Line Size	
	5/8, 3/4, 7/8	1-1/8
0-50	-	-
51	1 oz.	2 oz.
60	2 oz.	4 oz.
75	3 oz.	6 oz.

Figure 8 - LINE SIZING

Model Series	Size-ton	Liquid	Suction
All Series	1 1/2 to 3	3/8"	3/4"
All Series	3 1/2 to 5	3/8"	7/8"

Figure 9 Addition of Refrigeration Charge

Liquid Line Diameter	oz. Per Linear Ft. *
3/8	.60
1/2	1.20

Electrical Wiring

⚠ WARNING

Electrical Shock Hazard.

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

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

The supply voltage should be 208–230 volts (196 volt minimum to 253 volts maximum) 60Hz single phase.

APPROVED FOR USE WITH COPPER CONDUCTORS ONLY. DO NOT USE ALUMINUM WIRE.

REFER TO UNIT RATING PLATE FOR CIRCUIT PROTECTION.

Grounding

Permanently ground unit in accordance with the National Electrical Code and local codes or ordinances. Use a copper conductor of the correct size from the grounding terminal in control box to a grounded connection in the service panel or a properly driven and electrically grounded ground rod.

Wiring Connections

Make all outdoor electrical supply (Line Voltage) connections with raintight conduit and fittings. Most codes require a disconnect switch outdoors within sight of the unit.

Route Line Voltage wiring through entrance and through hole in the bottom of the Control Box to connect to Contactor and Ground Lug.

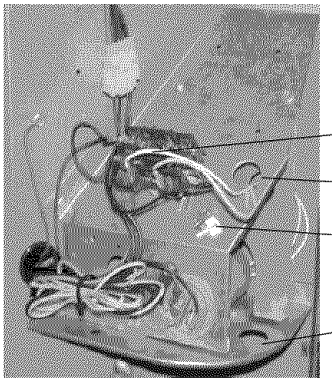
Route Low Voltage wiring through entrance **ONLY** and make ALL low voltage connections to the low voltage pigtails in the area below the Control Box. (Two Yellow wires, AC or W,Y,O,BL). The pigtail wires have 600V insulation meeting approval for use in high voltage areas.

See Figures 10 thru 11 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.

Figure 10 A/C Control Box

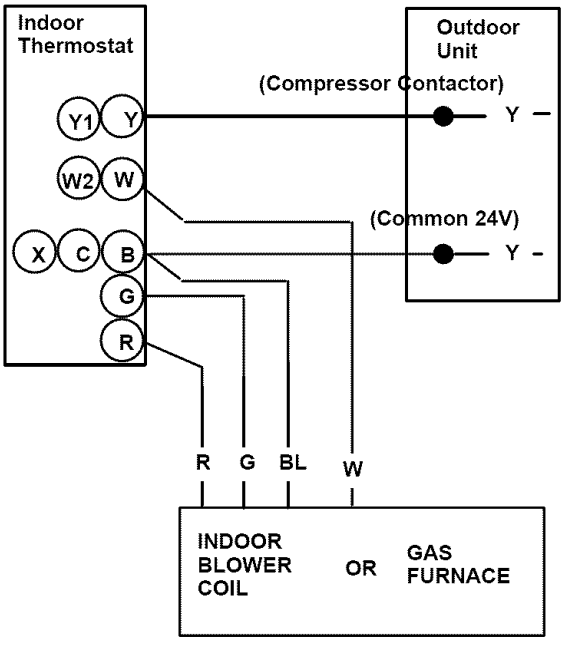


ALL Low Voltage Connections MUST be made in this AREA

Control Box Access

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

Figure 11 A/C Condenser Typical Low Voltage 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 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 R410-A units with cylinder in upright position and a commercial-type metering device in manifold hose. Charge refrigerant into suction line.

NOTE: If superheat or subcooling charging conditions are not favorable, charge must be weighed in accordance with unit rating plate 0.5 oz/ft of 3/8-in. liquid line above or below 25 ft respectively.

To Check System Refrigerant Charge (Superheat Method), 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.

Units with Cooling Mode TXV

Units installed with cooling mode TXV require charging by the subcooling method.

1. Operate unit a minimum of 10 minutes before checking charge.
2. Measure liquid service valve pressure by attaching an accurate gage to service port.
3. Measure liquid line temperature by attaching an accurate thermistor type or electronic thermometer to liquid line near outdoor coil.
4. Refer to unit rating plate for required subcooling temperature.
5. Refer to Figure 12. Find the point where required subcooling temperature intersects measured liquid service valve pressure.
6. 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 3F.

Figure 12
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)					
	8	10	12	14	16	18		8	10	12	14	16	18
189	58	56	54	52	50	48	326	94	92	90	88	86	84
195	60	58	56	54	52	50	335	96	94	92	90	88	86
202	62	60	58	56	54	52	345	98	96	94	92	90	88
208	64	62	60	58	56	54	354	100	98	96	94	92	90
215	66	64	62	60	58	56	364	102	100	98	96	94	92
222	68	66	64	62	60	58	374	104	102	100	98	96	94
229	70	68	66	64	62	60	384	106	104	102	100	98	96
236	72	70	68	66	64	62	395	108	106	104	102	100	98
243	74	72	70	68	66	64	406	110	108	106	104	102	100
251	76	74	72	70	68	66	416	112	110	108	106	104	102
259	78	76	74	72	70	68	427	114	112	110	108	106	104
266	80	78	76	74	72	70	439	116	114	112	110	108	106
274	82	80	78	76	74	72	450	118	116	114	112	110	108
283	84	82	80	78	76	74	462	120	118	116	114	112	110
291	86	84	82	80	78	76	474	122	120	118	116	114	112
299	88	86	84	82	80	78	486	124	122	120	118	116	114
308	90	88	86	84	82	80	499	126	124	122	120	118	116
317	92	90	88	86	84	82	511	128	126	124	122	120	118

Figure 13
Superheat Charging

OUTDOOR TEMP (°F)	EVAPORATOR ENTERING AIR TEMPERATURE (°F WB)													
	50	52	54	56	58	60	62	64	66	68	70	72	74	76
55	9	12	14	17	20	23	26	29	32	35	37	40	42	45
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	15	20	23	27
105	—	—	—	—	—	—	—	—	5	9	13	17	22	26
110	—	—	—	—	—	—	—	—	—	6	11	15	20	25
115	—	—	—	—	—	—	—	—	—	—	8	14	18	23

— Where a dash appears, do not attempt to charge system under these conditions or refrigerant slugging may occur. Charge must be weighed in. **NOTE:** Superheat °F is at low-side service port.

Figure 14
Required Suction-Line Temperature

SUPERHEAT	SUCTION PRESSURE AT SERVICE PORT (PSIG)								
TEMP (°F)	107.8	112.2	116.8	121.2	126.0	130.8	138.8	140.8	145.8
0	35	37	39	41	43	45	47	49	51
2	37	39	41	43	45	47	49	51	53
4	39	41	43	45	47	49	51	53	55
6	41	43	45	47	49	51	53	55	57
8	43	45	47	49	51	53	55	57	59
10	45	47	49	51	53	55	57	59	61
12	47	49	51	53	55	57	59	61	63
14	49	51	53	55	57	59	61	63	65
16	51	53	55	57	59	61	63	65	67
18	53	55	57	59	61	63	65	67	69
20	55	57	59	61	63	65	67	69	71
22	57	59	61	63	65	67	69	71	73
24	59	61	63	65	67	69	71	73	75
26	61	63	65	67	69	71	73	75	77
28	63	65	67	69	71	73	75	77	79
30	65	67	69	71	73	75	77	79	81
32	67	69	71	73	75	77	79	81	83
34	69	71	73	75	77	79	81	83	85
36	71	73	75	77	79	81	83	85	87
38	73	75	77	79	81	83	85	87	89
40	75	77	79	81	83	85	87	89	91

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.

In some areas, with high humidity, the temperature termination may require adjustment for complete removal of ice from the coil. For best economy, always set to the lowest temperature that will keep the coil clear of ice.

NOTE: The term ice means hard but not frost. During normal operation, the coils may become coated with frost until they are solid white. The temperature for the defrost should be set so the frost and ice melt off completely without hard ice building up on the coil.

Maintenance

⚠ WARNING

Electrical Shock Hazard.

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

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

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.

R410-A QUICK REFERENCE GUIDE

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

R410-A refrigerant cylinders are rose colored.

R410-A refrigerant cylinders have a dip tube which allows liquid to flow out of cylinder in upright position. Recovery cylinder service pressure rating must be 400 psig, DOT 4BA400 or DOT BW400.

Enviromax systems should be charged with liquid refrigerant. Use a commercial type metering device in the manifold hose. Manifold sets should be 800 psig high side and 250 psig low side with 550 psig low-side retard.

Use hoses with 800 psig service pressure rating.

Leak detectors should be designed to detect HFC refrigerant. R410-A, as with other HFCs, 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. Wrap all filter driers and service valves with wet cloth when brazing. A liquid-line 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 a R410-A TXV. Never open system to atmosphere while it is under a vacuum.

When system must be opened for service, evacuate then break vacuum with dry nitrogen and replace filter driers. **DO NOT** vent R410-A into the atmosphere.

DO NOT use capillary tube coils.

Observe all warnings, cautions, and bold text.

⚠ WARNING

Personal Injuury Hazard

Relieve pressure and recover all refrigerant before system repair or final unit disposal to avoid personal injury or death. Use all service ports and open all flow-control devices, including solenoid valves.