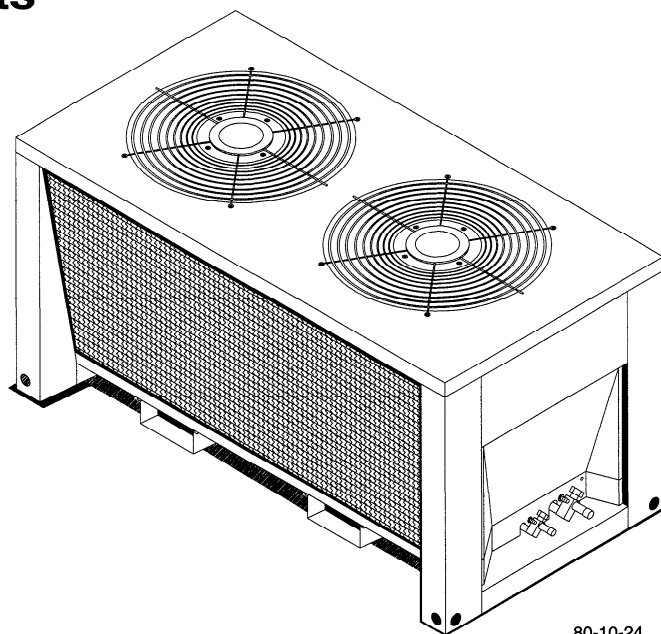
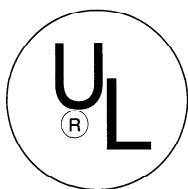


Installation Instructions

- Safety Labeling and Rules
- Installation Requirements
- Location/Clearances
- Wiring
- Start-Up
- Maintenance
- Hoisting/Rigging



80-10-24



Commercial Split System Heat Pumps

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1. Safety Labeling and Signal Words

Danger, Warning and Caution

The signal words **DANGER**, **WARNING** and **CAUTION** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING** and **CAUTION** will be used on product labels and throughout this manual and other manuals that may apply to the product.

Signal Words

DANGER – Immediate hazards which **WILL** result in severe personal injury or death.

WARNING – Hazards or unsafe practices which **COULD** result in severe personal injury or death.

CAUTION – Hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

Signal Words in Manuals

The signal word **WARNING** is used throughout this manual in the following manner:

WARNING

The signal word **CAUTION** is used throughout this manual in the following manner:

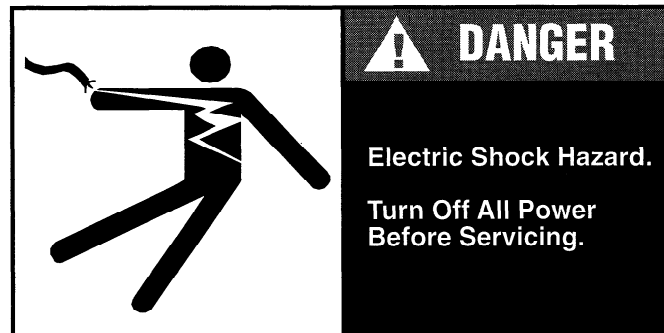
CAUTION

Product Labeling

Signal words are used in combination with colors and/or pictures on product labels. Following are examples of product labels with explanations of the colors used.

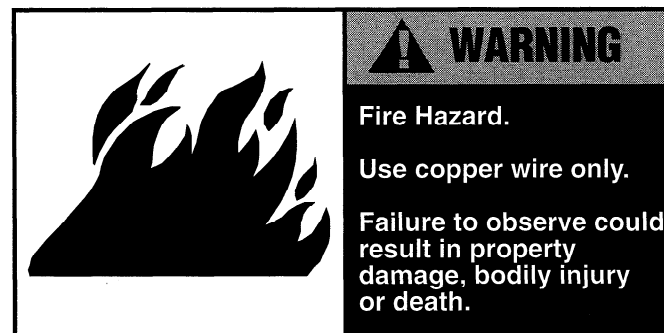
Danger Label

White lettering on a black background except the word **DANGER** which is white with a red background.



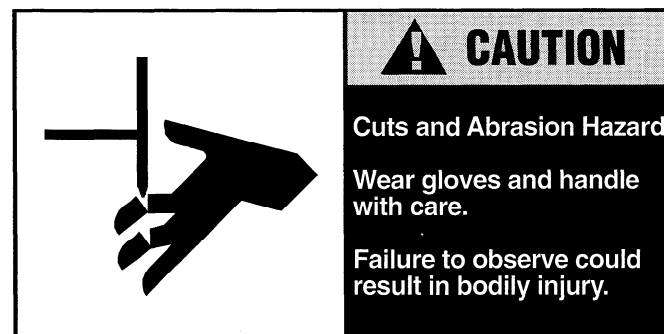
Warning Label

White lettering on a black background except the word **WARNING** which is black with an orange background.

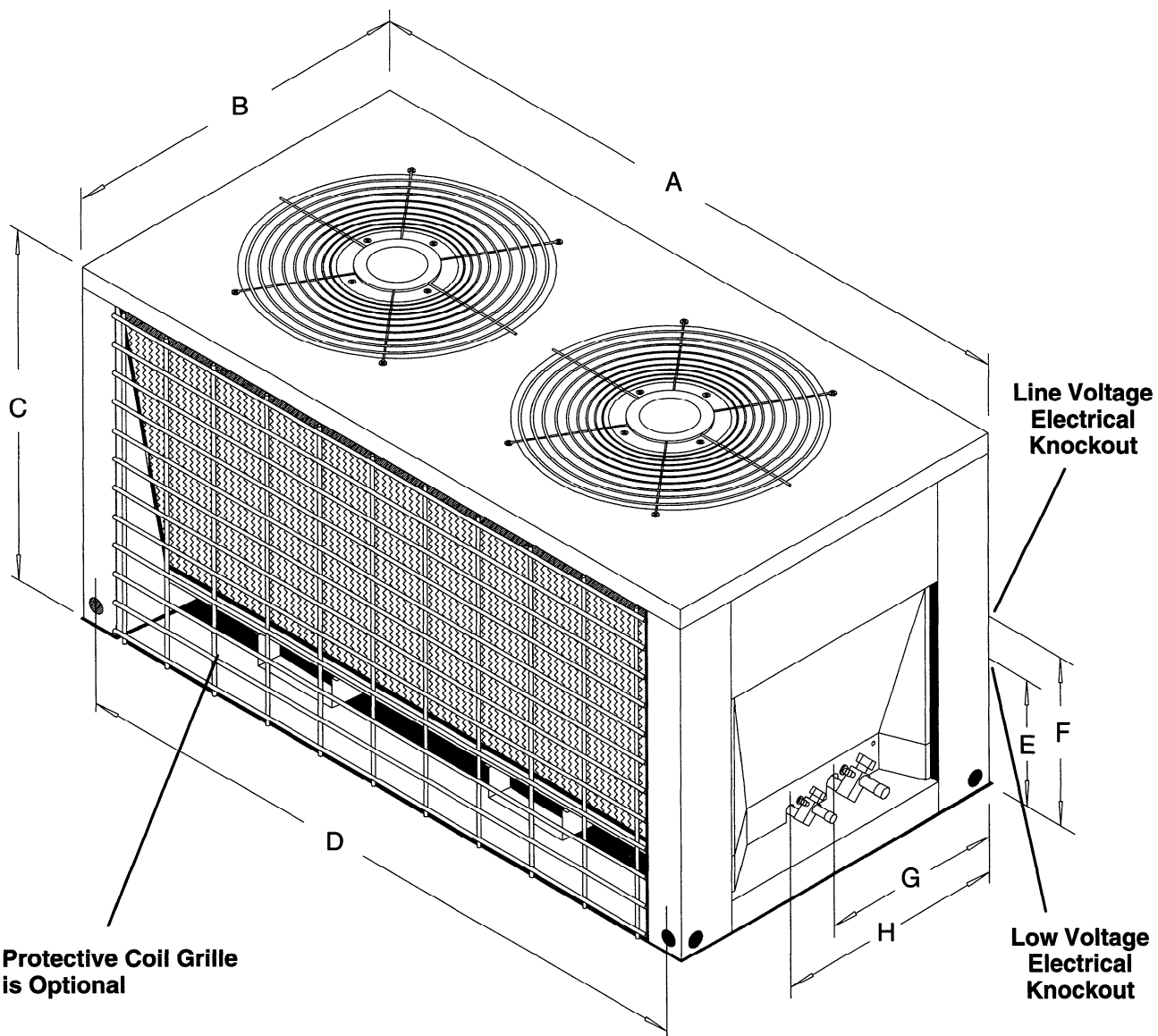


Caution Label

White lettering on a black background except the word **CAUTION** which is black with a yellow background.



2. Unit Dimensions



80-10-23a

MODEL NO.	A	B	C	D	E	F	G	H
7½ Ton	52 29/32" 1344mm	35 9/32" 896mm	34 49/64" 883mm	50 5/64" 1272mm	15 3/64" 382mm	17 51/64" 452mm	17 1/2" 445mm	24" 610mm
10 Ton	68 7/64" 1730mm	35 9/32" 896mm	34 49/64" 883mm	65 9/32" 1658mm	15 3/64" 382mm	17 51/64" 452mm	17 3/4" 451mm	24" 610mm

3. Safe Installation Requirements

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 National Electrical Code ANSI/NFPA 70–1990 or current edition or in Canada with CSA C.22.1 – Canadian Electrical Code Part 1 or current edition.

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

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

- Installation **MUST** conform to the most current version of the following standards or a superseding standard.

In the United States:

- National Electrical Code ANSI/NFPA 70–1990

In Canada:

- CSA C.22.1 – Canadian Electrical Code Part 1.

NOTE: It is the personal responsibility and obligation of the customer to contact a qualified installer to ensure that the installation is adequate and conforms to governing codes and ordinances.

NOTICE

To avoid criminal and/or civil penalties, handling of refrigerants **MUST** comply with the provisions of the Clean Air Act of 1990 or current edition. These requirements supersede any and all instructions contained herein.

4. Location and Set-up

The unit is designed for outdoor installation. The unit may be installed on a level concrete mounting base (or other adequate platform) at ground level or on a flat rooftop with an adequate platform. A typical installation is shown in FIGURE 2.

Access Panels

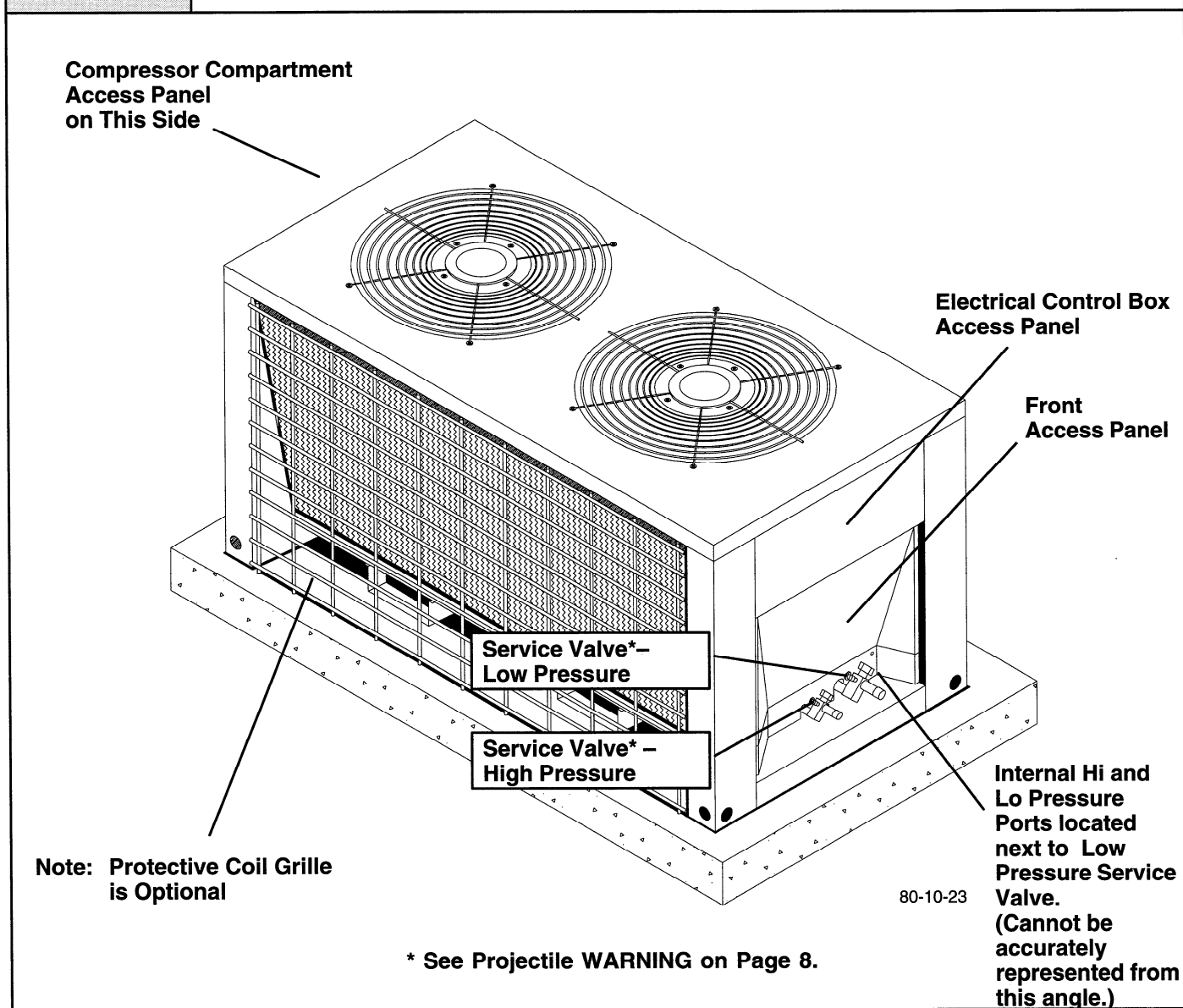
CAUTION

Unit will NOT operate properly without all access panels in place.

Unit MUST NOT be moved unless all access panels are in place.

FIGURE 1

Access Panels and External Refrigeration Access Ports



Clearances and Location

NOTE: Install unit in compliance with all governing codes and local ordinances.

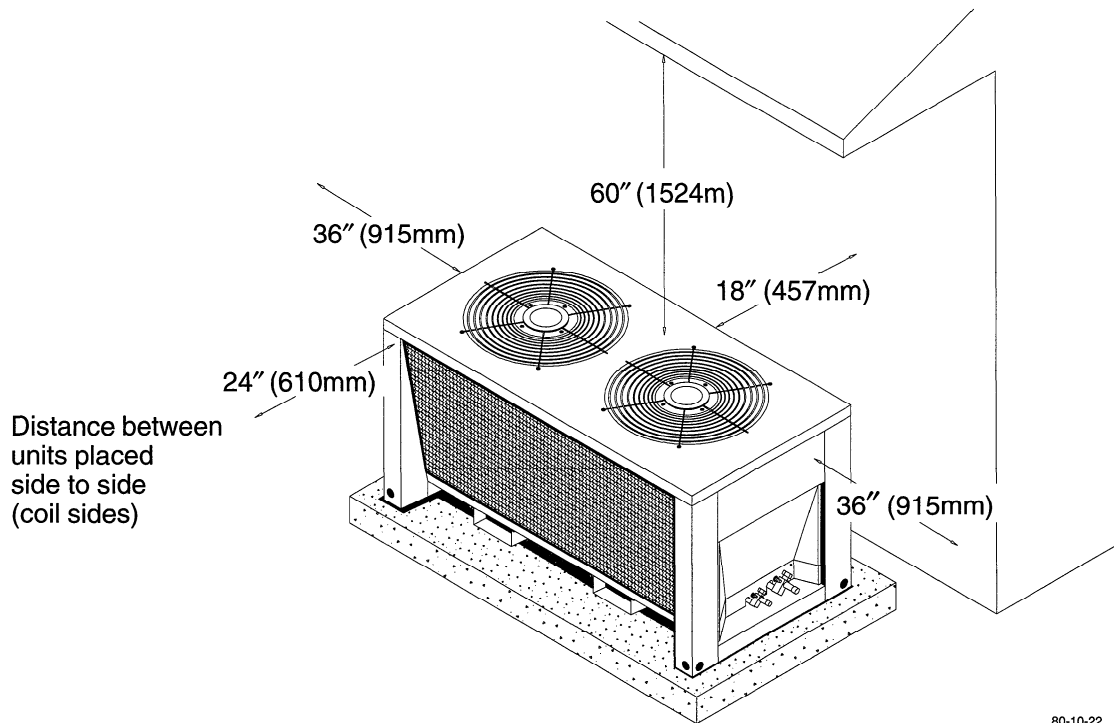
The location **MUST** allow for minimum clearances and should not be adjacent to a patio or other area where the unit's operating sound level might be objectionable.

Minimum clearances, as specified in the following paragraphs and in **FIGURE 2** **MUST** be maintained to provide adequate room for service personnel and to allow proper functioning of the unit.

1. Do **NOT** install the unit in a recessed or confined location that will permit discharged air from the condenser to recirculate into the condenser inlet.
 2. Do **NOT** locate unit where heat, lint or exhaust fumes are discharged onto unit. Avoid locating unit next to fresh air intakes or vents.
 3. Avoid locating unit under roof overhang without guttering. Water draining from roof onto unit could produce excessive noise.
 4. Large overhanging soffits on an inside corner of a single story structure may cause air recirculation even though recommended clearances are maintained. As a general rule, locate the unit so that at least half of the discharge grille is not underneath the soffit.
 5. Nominal operating clearances, where practical, are 60" (1524mm) above the unit for discharge air and 18" (457mm) around coil for intake air (see **FIGURE 2**). Nominal clearances are based on measurements from a solid parallel object, wall, roof overhang, etc.
- Clearance may be reduced if the object isn't very large, such as the end of a wall, outside corner of a wall, fence section, fence post, etc. As a general rule, the width of the object should equal the minimum clearance from the unit. For example, a 4" (102mm) fence post could be 4" (102mm) from the unit.
6. Two units may be spaced with 24" (610mm) between them placed side to side (coil sides).
 7. A service clearance of 36" (0.9m) is desirable from unit ends.

FIGURE 2

Minimum Clearances for Typical Platform Installation



Installation

CAUTION

Unit will **NOT** operate properly unless it is installed level front to rear and side to side. The slope **MUST** **NOT** be greater than 1/8" per foot (10mm per meter).

CAUTION

Do **NOT** tip the unit on its side. This can damage the internal parts. Do **NOT** lift or move unit by grasping coil or top of unit.

CAUTION

Inadequate platform support can cause excessive vibration, noise, and binding and/or stress on refrigerant lines resulting in equipment failure.

Ground Level Installation

Ground level support requirements:

1. The unit **MUST** be situated to provide safe access for servicing.
2. Support may be of open or solid construction, and **MUST** be made of either concrete, steel or pressure treated wood and **MUST** be level and strong enough to support unit weight.
3. Position platform separate from building foundation.
4. Install in well-drained area, with top surface of platform above grade level.

Rooftop Installation

Rooftop support requirements:

1. The unit **MUST** be situated to provide safe access for servicing.
2. The existing roof structure **MUST** be adequate to support the weight of the unit or the roof **MUST** be reinforced.

Check the weight of the unit in relation to the roof structure and local building codes or ordinances and reinforce roof structure if necessary. See **FIGURE 13** on the back cover of this manual for unit weights and corner weights.

3. Support for the unit may be of open or solid construction and **MUST** be level and strong enough to support unit weight. The support may consist of a platform or a combination of platform and roof beams or curb.

The support may be constructed of steel or pressure treated wood and may be covered with Class A, B or C roof covering.

4. See *Hoisting* section below for hoisting instructions.

Hoisting

CAUTION

When hoisting unit at least two slings and two spreader bars **MUST** be used to prevent damage to unit.

NOTE: All access panels **MUST** be in place before hoisting.

The unit should be hoisted with two lifting slings. Two spreader bars **MUST** be placed on top of the unit to protect the unit from damage from the pressure exerted by the slings. Make sure that all equipment is adequate to handle the weight of the unit and that the slings will not allow the unit to shift.

Refer to **FIGURE 13** on the back cover of this manual for illustrated rigging instructions and weight chart.

Component Matches

Note: Condenser **MUST** be matched with an indoor evaporator unit that has a thermostatic expansion valve (TXV) as a metering device.

1. Ensure that the matched system components are correct.
2. Units are shipped with a nitrogen holding charge that **MUST** be removed by approved procedures. See **Connecting Piping** section on Page 7.
3. Do **NOT** remove any protective caps or valve stems from service valves or tubing until ready to make connections.
4. Total length of refrigerant lines **MUST NOT** exceed 100 feet (30.3m) (without consulting factory) with a maximum vertical separation of 60 feet (18.3m) between the outdoor and indoor units. Oil traps **MUST** be placed in the suction line every 20 vertical feet (6.1m). See the following **Refrigerant Piping** section for more details.

5. Refrigerant Piping

NOTE: All refrigerant piping **MUST** comply with applicable local, state and national safety codes. Use only refrigeration grade copper tubing which is internally clean and damage free.

General Notes

Run lines by the most direct route and support properly allowing for pipe expansion and contraction. See **FIGURE 3** for line support spacing. Do **NOT** run lines underground unless they are installed in a chase with appropriate insulation.

Vertical separation of indoor and outdoor sections **MUST NOT** exceed 60' (18.3m).

FIGURE 3	Maximum Spans for Line Supports Type L Copper Tube
O.D. (Inches)	Maximum Span (Feet(m))
$\frac{1}{2} - \frac{3}{4}$	6 (1.8)
$\frac{7}{8} - 1\frac{1}{8}$	8 (2.4)
$1\frac{3}{8} - 1\frac{5}{8}$	9 (2.7)
$2\frac{1}{8}$	10 (3)

Design

NOTE: Piping design is the most important step in ensuring trouble free operation with maximum performance.

Properly design piping to achieve maximum system capacity with minimum installation costs and minimum refrigerant charges while providing proper refrigerant control. This will provide maximum system load flexibility without compressor lubrication and temperature problems and provide

minimum power consumption due to efficient compressor operation.

Oil Trapping

Horizontal Vapor Lines

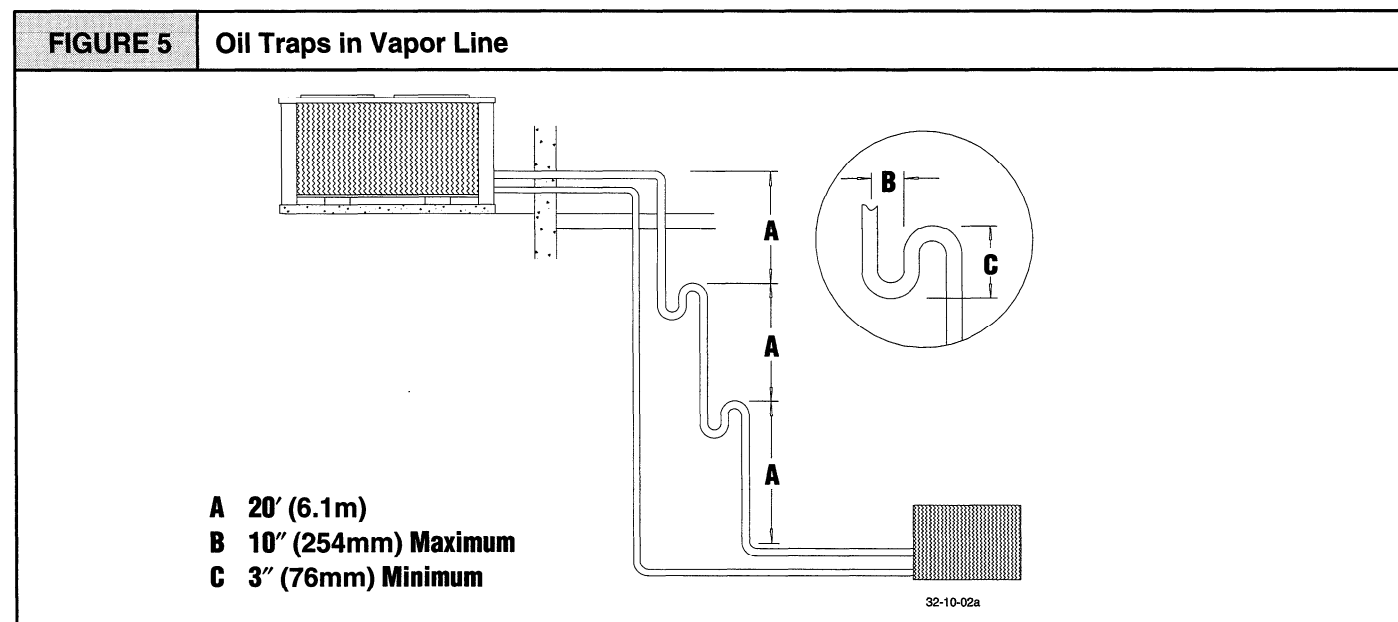
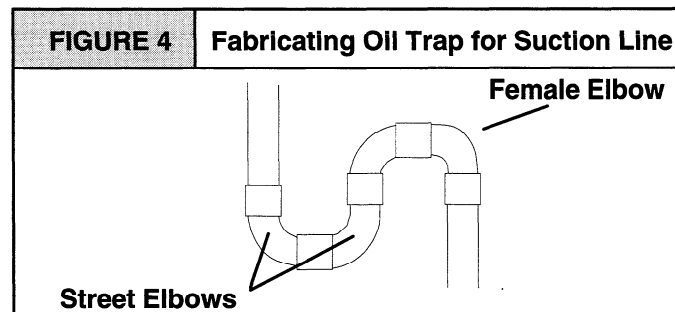
Pitch horizontal suction lines downward toward the outdoor unit aid in oil drainage. Downward pitch **MUST** be at least $\frac{1}{2}$ " per 10' (12.7mm per 3m).

Vertical Vapor Risers

Install a short horizontal section of tubing and a trap for risers that go directly upward from an evaporator to provide a suitable mounting for the thermal expansion valve bulb. Put at least one oil trap in the suction line for every 20' (6.1m) or rise to ensure proper oil return to the compressors (see **FIGURE 5**).

NOTE: The trap serves as a drain area and helps prevent accumulation of liquid refrigerant under the bulb which could cause erratic expansion valve operation.

NOTE: Commercial copper traps are available or traps can be fabricated by using two street and one regular elbow as shown in **FIGURE 4**.



Piping Lengths

Use a layout of the piping system and refer to tables to determine the tubing sizes required for a particular installation.

Determine total refrigerant equivalent line length of run *plus* the equivalent length of each fitting and valve. These tables hold true for both suction and liquid lines.

FIGURE 6 Equivalent Lengths of Tubing for Valves and Fittings in Feet (Meters)

Nominal Pipe Size of Fittings for Type L Copper Tube O.D. (Inches)	1/2"	5/8"	3/4 - 7/8"	1 - 1 1/8"	1 1/4 - 1 3/8"	1 1/2 - 1 5/8"
Globe Valve (Open)	14' (4.3m)	15' (4.6m)	21' (6.4m)	27' (8.2m)	36' (11m)	43' (13.1m)
Angle Valve (Open)	7' (2.1m)	9' (2.7m)	12' (3.7m)	15' (4.6m)	18' (5.5m)	21' (6.4m)
Close Return Bend	3' (0.9m)	3.5' (1.1m)	4' (1.2m)	5.5' (1.7m)	7' (2.1m)	9' (2.7m)
Tee Through Side Outlet	2' (0.6m)	3' (0.9m)	4' (1.2m)	5' (1.5m)	6' (1.8m)	7' (m)
90° or Reducing Tee - 1/2	1' (0.3m)	1.3' (0.4m)	1.7' (0.5m)	2.2' (0.7m)	2.7' (0.8m)	3.2' (1m)
Sweep Elbow or Reducing Tee - 1/4	0.9' (0.3m)	1.1' (0.3m)	1.4' (0.4m)	1.9' (0.6m)	2.3' (0.7m)	2.8' (0.9m)
Straight Tee	0.7' (0.2m)	0.9' (0.3m)	1.1' (0.3m)	1.5' (0.5m)	1.8' (0.5m)	2.2' (0.7m)

Refrigerant Piping Parameters

FIGURE 7 Piping Parameters			
	Minimum Velocity ⁽³⁾ (FPM)	Max Velocity (FPM)	Suggested Maximum Pressure Drop ⁽¹⁾
Vapor Line	500–1500 ⁽²⁾	4000	5 PSI
Liquid Line	60	350	⁽⁴⁾

⁽¹⁾ Suggested pressure drop for satisfactory performance.

⁽²⁾ 500 FPM in horizontal lines, 1500 FPM in vertical lines.

⁽³⁾ Velocities must be checked at both full and half capacity.

⁽⁴⁾ Dependent upon system subcooling. Refer to liquid line selection procedure and example.

At typical liquid temperatures (approximately 104°F) a saturated temperature change of 1°F corresponds to 3 PSIG. See Refrigerant 22 Saturation Table.

Connecting Piping

WARNING

Projectile hazard.

Pressurized nitrogen holding charge MUST be removed from both the liquid and suction sides of the system by depressing the valve core stem.

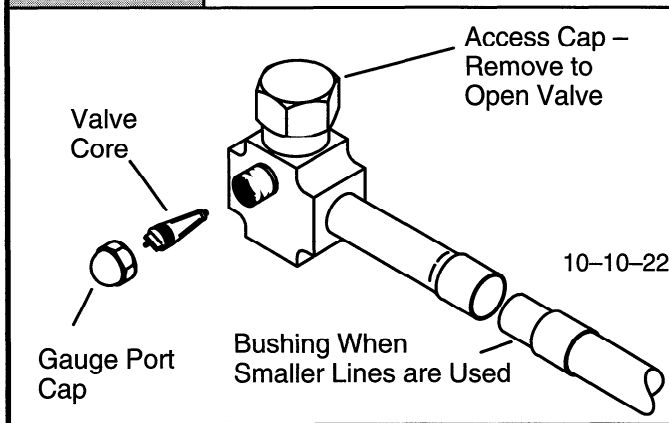
Do NOT remove valve core from the service valve while the system is under pressure.

Failure to follow this warning could result in bodily injury.

- Before connecting the piping to the condensing unit, the nitrogen holding charge **MUST** be bled from both the liquid and suction sides of the system by depressing the valve core stem. Do **NOT** remove valve core from the service valve while the system is under pressure.
- Remove caps from service valves. Open valves by turning valves counterclockwise to full stop. Do **NOT** attempt to open valve any further after reaching stop or valve stem might come out of valve.
- Remove the plastic caps from the suction and liquid line stubs. Make all bends and traps before connecting the evaporator coil to the condensing unit.

FIGURE 8

Service Valve

**CAUTION**

Protect service valve, unit, floor, etc. from excess heat when brazing.

4. Braze field installed inter-connecting tubing onto the suction and liquid line stubs (see next section **Recommended Brazing Materials**).
5. If used, locate the sight glass near the evaporator or as required for accessibility.

Recommended Brazing Materials**Copper to Copper Joints**

Use silver solder or commercial material such as Silphos or equivalent.

Copper to Steel or Brass Joints

Use silver solder with flux or solder having approximately 30% silver, 38% copper and 32% zinc.

Line Insulation

Insulate vapor line to prevent sweating and possible water damage during cooling season. Comply with local codes for insulation thickness. Normal recommended thickness is 1/2" (13mm) in conditioned spaces and 3/4" (19mm) in extreme conditions such as attic or roof exposure, high humidity areas, underground and outdoors.

Line Support

Support all piping properly allowing for pipe expansion and contraction. Refer to **FIGURE 3** on Page 7 for line support spacing chart.

Evacuation

Start the evacuation procedure outlined in the next section. Proceed with electrical connections while the system is being evacuated.

FIGURE 9

Pressure Drop versus Line Length

7 1/2 Ton Units											
Line Size	Velocity Full (Half) Capacity	Equivalent Length (Ft.)									
		10	20	30	40	50	60	70	80	90	100
1/2	300	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7	13.0
5/8	180	.4	.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0
3/4	125	.16	.32	.48	.64	.80	.96	1.12	1.28	1.44	1.60
7/8	4000 (2100)	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0
1 1/8	2250 (1400)	.43	.85	1.28	1.7	2.13	2.55	2.98	3.40	3.83	4.25
1 3/8	1450 (900)	.15	.30	.45	.60	.75	.90	1.05	1.20	1.35	1.50
10 Ton Units											
Line Size	Velocity Full (Half) Capacity	Equivalent Length (Ft.)									
		10	20	30	40	50	60	70	80	90	100
1/2	450	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
5/8	275	.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	7.0
3/4	180	.25	.50	.75	1.0	1.25	1.50	1.75	2.0	2.25	2.5
7/8	125	.14	.28	.42	.56	.70	.84	.98	1.12	1.26	1.4
1 1/8	3200 (1600)	.625	1.25	1.88	2.5	3.13	3.75	4.38	5.0	5.63	6.25
1 3/8	2200 (1100)	.25	.50	.75	1.0	1.25	1.50	1.75	2.0	2.25	2.50
1 5/8	1600 (800)	.09	.18	.27	.36	.45	.54	.63	.72	.81	.90

6. Evacuation, Charging and Leak Testing

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 follow this warning could result in property damage, bodily injury and/or death.

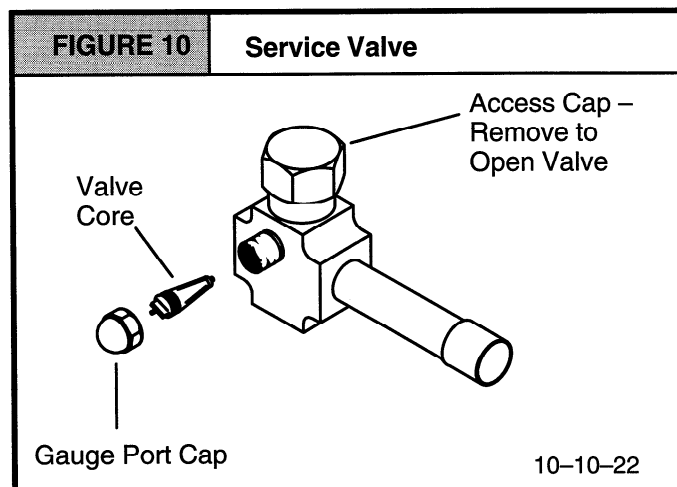
NOTICE

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

Correct evacuation and charge are vital for proper performance and compressor life.

Follow charging and evacuation procedures. No other method of charging and evacuation is acceptable.

The refrigerant charges for lines and coils are listed in a table in **FIGURE 11**. The system can also be charged by use of a sight glass.



WARNING

Projectile hazard.

Pressurized nitrogen holding charge **MUST** be removed from both the liquid and suction sides of the system by depressing the valve core stem.

Do **NOT** remove valve core from the service valve while the system is under pressure.

Failure to follow this warning could result in bodily injury.

1. Remove access caps from service valves.
2. Open valves by turning valves counterclockwise to full stop. Do **NOT** attempt to open valve any further after reaching stop or valve stem might come out of valve.
3. Attach manifold gauge hoses to liquid and suction gauge ports.
4. Pressurize system to 40–50 psig and leak test all connections. Use an Electronic Leak Detector, a Halide Torch or coat the connections with liquid detergent. If using detergent watch for a constant forming of bubbles. They indicate a leak. If a leak is found, check the connections for tightness.

Refrigerant MUST be recovered if used for leak testing.

5. Connect vacuum pump to manifold gauge set and evacuate to 500 microns vacuum through both sides of the line set. All leaks **MUST** be repaired.
6. Close valve to vacuum pump and shut off vacuum pump. When system is balanced (3 minutes) and gauge doesn't go above 500 microns, close all gauge valves.
7. Add proper amount of refrigerant. For unit and line charges refer to **FIGURE 11**.
8. Re-install access caps on service valves. Torque cap on small valve to 8–11 Ft. lbs. and cap on large valve to 12–16 Ft. lbs. Over-tightening caps will damage service valves.
9. Re-install gauge port caps and check for leaks. Tighten valve core and the gauge port caps if leak is found. (Over-tightening caps will damage the gauge ports.)

FIGURE 11**Basic System Charge**

R-22 (lbs.) Condenser with Matching Evaporator (No Lines)	Type L Copper O.D. (In.)	R-22 Refrigerant for Lines													
		Liquid Line (lbs. – oz.) Line Length (Feet / Meters)							Suction Line (oz.) Line Length (Feet / Meters)						
		20' 6.1	30' 9.1	40' 12	50' 16	60' 18	80' 24	100' 32	20' 6.1	30' 9.1	40' 12	50' 16	60' 18	80' 24	100' 32
7½ Ton 18 lbs. 2 oz.	5/8"	2-4	3-6	4-8	5-10	6-13	9-10	11-5							
	7/8"	4-13	7-3	9-9	11-15	14-6	19-2	23-15							
	1 1/8"								3	4	5	7	8	11	13
10 Ton 24 lbs. 5 oz.	1 3/8"								4	6	8	10	12	16	20
	1 5/8"								6	9	12	14	17	23	29

7. Electrical Wiring

WARNING

Electrical shock hazard.

Shut OFF electric power at unit disconnect or service panel before making any electrical connections.

Unit **MUST** be grounded to electrical service panel.

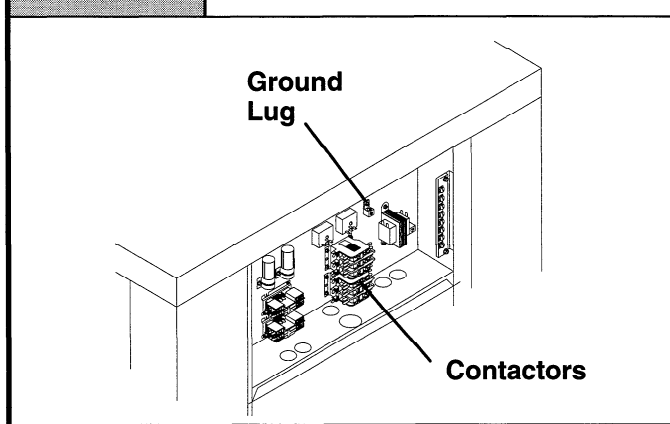
Unit is approved for copper conductors **ONLY**. Do **NOT** use aluminum wire.

Failure to follow this warning can result in property damage, personal injury and/or death.

NOTE: Refer to the *Technical Support Manual* for wiring diagrams and circuit protection information.

FIGURE 12

Electrical Control Box



Ground Connections

A ground lug is installed on the electrical control panel (see **FIGURE 12**). Run a copper conductor of the appropriate size from the ground lug to a grounded connection in the electrical service panel. Check all ground connections to ensure that they are tight.

Line Voltage Wiring

Do **NOT** complete line voltage connections until unit is permanently grounded. All line voltage connections and the ground connection **MUST** be made with copper wire.

Line Voltage Connections

Line voltage wires enter the unit through the knockout located on the cornerpost to the left of the electrical control

box (see **Unit Dimensions** on Page 2). Complete the line service connections to the contactor **L** terminals in the electrical control box. For access, remove the electrical control access panel (for location see **FIGURE 1** on Page 4). Refer to the wiring diagram in the *Technical Support Manual*. Check all screw terminals to ensure that they are tight.

WARNING

Electrical shock hazard.

Do **NOT** run low voltage lines in the same conduit as high voltage lines unless done in accordance with applicable electrical codes.

Failure to follow this warning can result in property damage, personal injury and/or death.

Low voltage wire enters the unit through the grommeted hole to the right of the electrical control box (see unit dimensions on Page 2).

Low Voltage Connections

Low voltage wiring connections for the thermostat are made at the 24V terminal board inside the electrical control compartment. For access, remove the electrical control access panel (for location see **FIGURE 1** on Page 4). Refer to the wiring diagram in the *Technical Support Manual* and to instructions included with the thermostat.

Locate the thermostat on an interior wall approximately 5' (1.5m) above the floor where it will be free from drafts, heat sources and vibrations.

Indoor Blower Coil

Make connections to indoor blower coil. Refer to Indoor Blower Coil manual for additional information.

Wire Connections

Complete connections at terminals or by using wire nuts or solder and tape as appropriate. Tape wire nuts to keep moisture out.

Wiring Check

After wiring is completed, check all electrical connections, including factory wiring, to ensure that all connections are tight. Replace and secure control box access panel before leaving the unit or turning on electric power.

8. Start-up Procedure

WARNING

Electrical shock hazard.

Shut OFF electric power at unit disconnect or service panel as instructed in appropriate steps.

Failure to follow this warning can result in property damage, personal injury and/or death.

EACH STEP MUST CHECK AS OUTLINED.

Make final wiring checks. Be sure that you have correctly wired the system. **MAKE SURE ELECTRIC POWER TO INDOOR AND OUTDOOR SECTION IS OFF.**

Make sure the blowers and motors are not blocked or stalled by tools or other obstructions. Turn them over by hand just to be sure.

Smoke, odors or sparks are abnormal. If found, shut off electric power immediately. Recheck wiring connections.

Supply voltage must not drop below minimum allowable voltage while the unit is running. If it does, a step up transformer must be used.

Cooling Checkout

NOTE: Some thermostats may have a time delay or other features which will require changes in the checkout procedure.

1. 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 (24° C), allow the unit to stay in this mode at least 6 hours to vaporize any refrigerant that may be in the compressor oil.
2. Turn ON the FAN switch. Blower should run.
3. Turn ON the COOL. Set the thermostat below the room temperature. The blower should run and the outside condensing unit should turn on.
4. Turn OFF the electric power at the condensing unit disconnect switch. Check that there is no clattering or unusual noises.

NOTE: Repeat the procedure. Check the same things again in case you have missed one on the first power application. Turn ON the electric power and RESTART the system in the Cool Mode.

5. With the unit operating, close all doors, windows, and other openings in the house. Set the thermostat to the desired setting. The unit may run several hours or even a full day to reduce the initial heat and moisture in the house. This is normal for any air conditioning system.

6. Check to be sure the condensate is draining properly from the indoor unit.

Heating Checkout

1. Turn thermostat heat-cool switch to OFF. Turn thermostat fan switch to AUTO.
2. Turn on all power.
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. 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 75 °F allow the unit to stay in this mode at least 6 hours. This is needed 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 is 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.

Defrost System

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

In some areas, with high humidity, the time interval may require adjustment for complete removal of ice from the coil. For best economy, always set to the longest interval 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 time interval for the defrost should be set so the frost and ice melt off completely without hard ice building up on the coil.

FIGURE 13

Electrical Control Box

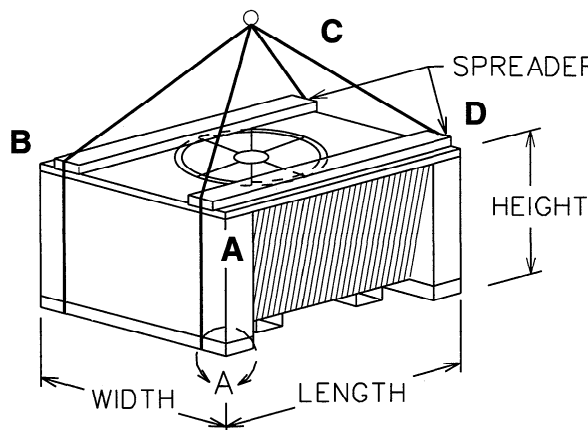
RIGGING INSTRUCTIONS



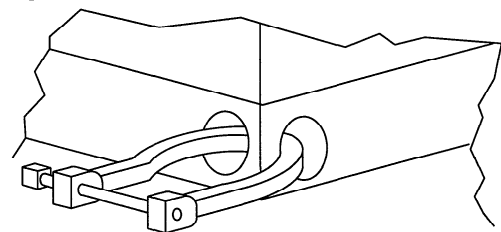
WARNING

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN PROPERTY DAMAGE, BODILY INJURY OR DEATH.

- ALL PANELS MUST BE IN PLACE WHEN RIGGING AND LIFTING.
- HOOK RIGGING SHACKLES THROUGH HOLES IN BASE RAIL, AS SHOWN IN DETAIL-A.
- USE SPREADER BARS, WHEN RIGGING, TO PREVENT UNIT DAMAGE.
- BE SURE RIGGING AND SHACKLES ARE SUFFICIENT TO HANDLE WEIGHT LISTED BELOW.



DETAIL - A



	COOLING CAPACITY RANGE	LENGTH		WIDTH		HEIGHT		MAX. WEIGHT	
		IN	MM	IN	MM	IN	MM	LB	KG
	7.5 TONS	53.00	1346	35.50	902	35.00	889	550	250
	10 TONS	68.25	1734	35.50	902	35.00	889	650	295

CORNER WEIGHTS in LBS. (KG)

UNIT	OPERATING WEIGHT	CORNER WEIGHTS			
		A	B	C	D
7½ ton	474 (216)	122 (55)	147 (67)	112 (51)	93 (42)
10 ton	557 (253)	149 (68)	179 (81)	125 (57)	104 (47)