

OXBOX™
A TRANE® BRAND

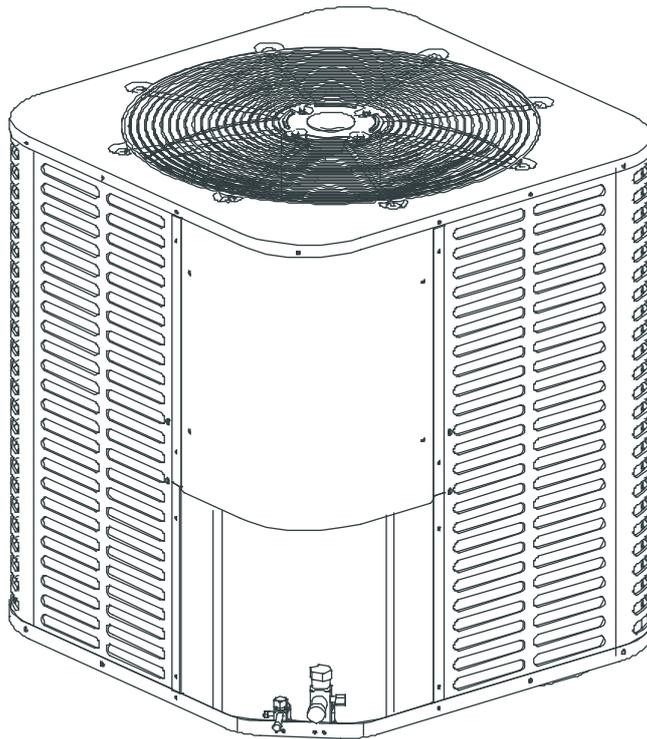
INSTALLATION INSTRUCTIONS

13 SEER

Split System Air Conditioner

1.5-5 Tons J4AC3 Series

R410A



NOTE: Appearance of unit may vary.



RECOGNIZE THIS SYMBOL AS AN INDICATION OF IMPORTANT SAFETY INFORMATION

WARNING

These instructions are intended as an aid to qualified licensed service personnel for proper installation, adjustment and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service or maintenance possibly resulting in fire, electrical shock, property damage, personal injury or death.



DO NOT DESTROY THIS MANUAL

Please read carefully and keep in a safe place for future reference by a serviceman.

BX-SVN-J4AC3-1A-EN

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This document is customer property and is to remain with this unit. These instructions do not cover all the different variations of systems nor does it provide for every possible contingency to be met in connection with installation.

All phases of this installation must comply with NATIONAL, STATE, AND LOCAL CODES. If additional information is required please contact your local distributor.

1.0 SAFETY



This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.



This is an attention alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.

Understand and pay particular attention to the signal words DANGER, WARNING, or CAUTION.

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation, which, if not avoided may result in minor or moderate injury. It is also used to alert against unsafe practices and hazards involving only property damage.

 WARNING
Improper installation may create a condition where the operation of the product could cause personal injury or property damage. Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual for assistance or for additional information, consult a qualified contractor, installer or service agency.

 CAUTION
This product must be installed in strict compliance with the installation instructions and any applicable local, state, and national codes including, but not limited to building, electrical, and mechanical codes.

 WARNING
FIRE OR ELECTRICAL HAZARD Failure to follow the safety warnings exactly could result in serious injury, death or property damage. A fire or electrical hazard may result causing property damage, personal injury or loss of life.

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

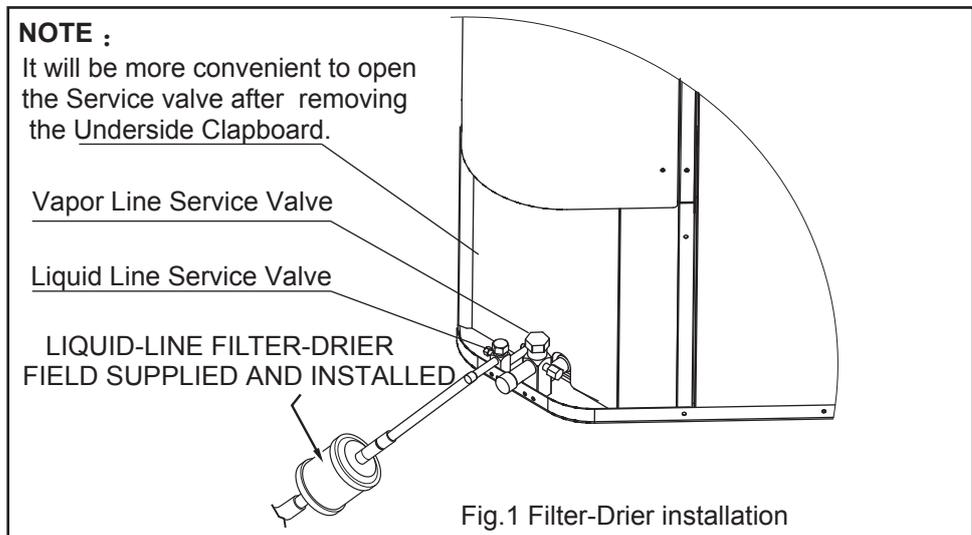
 CAUTION
Scroll compressor dome temperatures may be hot. Do not touch the top of compressor; it may cause minor to severe burning.

1.1 INSPECTION

As soon as a unit is received, it should be inspected for possible damage during transit. If damage is evident, the extent of the damage should be noted on the carrier's delivery receipt. A separate request for inspection by the carrier's agent should be made in writing. See Local distributor for more information.

Requirements For Installing/Serviceing R410A Equipment

- Gauge sets, hoses, refrigerant containers, and recovery system must be designed to handle the POE or PVE type oils.
- Manifold sets should be 800 PSIG high side and 250 PSIG low side with 550 PSIG low side restart.
- All hoses must have a 700 PSIG service pressure rating.
- Leak detectors should be designed to detect R410A.
- Recovery equipment (including refrigerant recovery containers) must be specifically designed to handle R410A.
- **Do not use an R-22 TXV.**
- Good Refrigeration practices require the installation of a field supplied liquid line drier, as shown in Fig.1.



1.2 LIMITATIONS

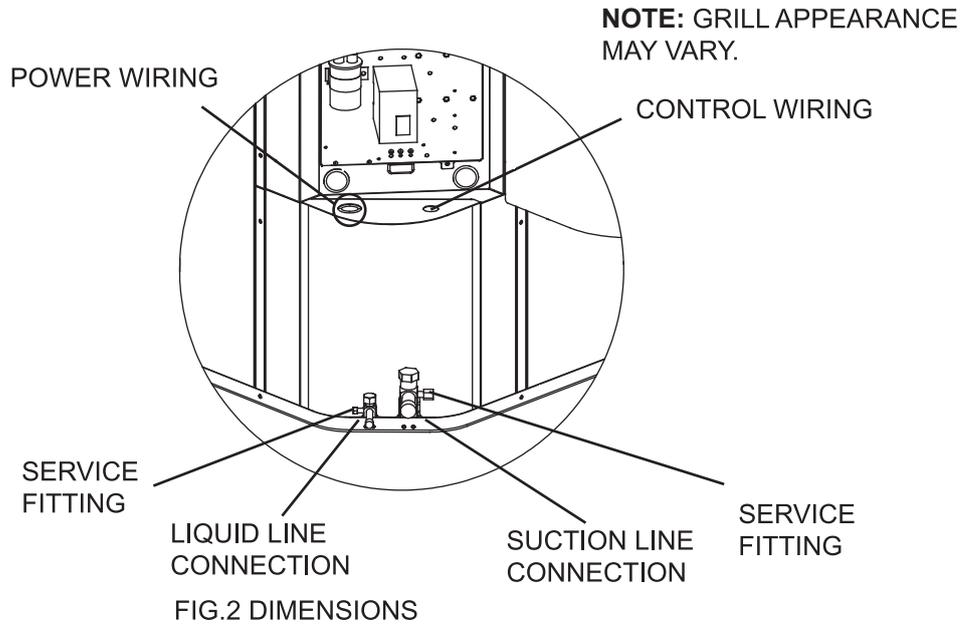
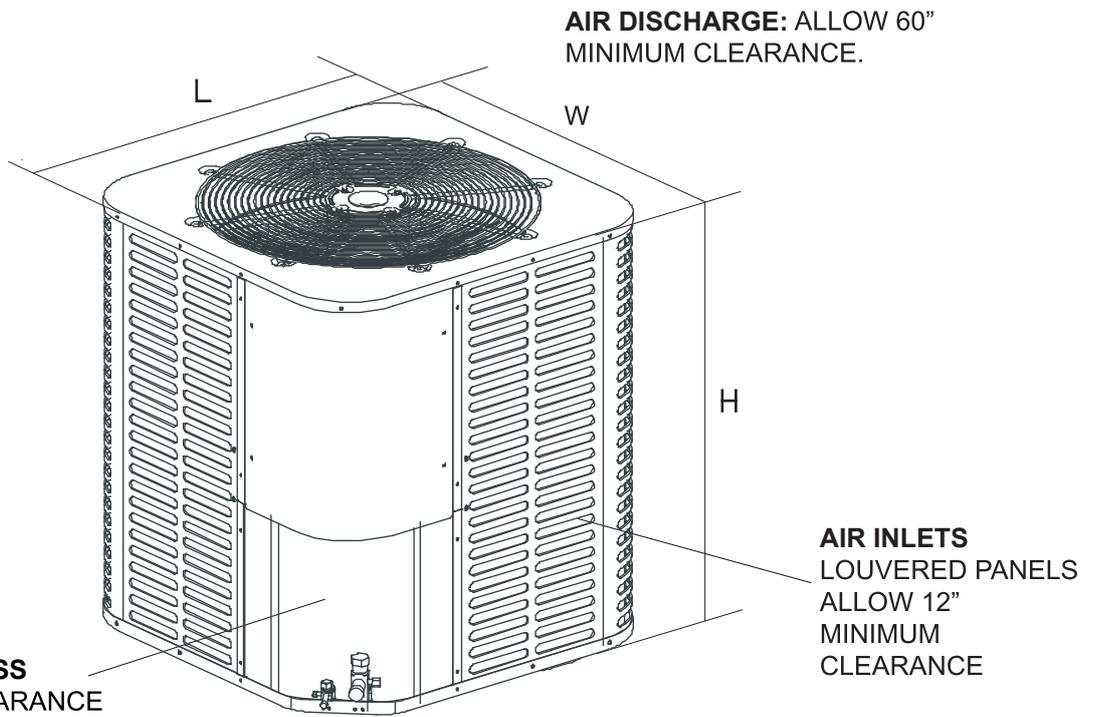
The unit should be installed in accordance with all National, State, and Local Safety Codes and the limitations listed below:

- 1.Limitations for the indoor unit, coil and appropriate accessories must also be observed.
- 2.The outdoor unit must not be installed with any duct work in the air stream. The outdoor fan is the propeller type and is not designed to operate against any additional external static pressure.
- 3.The maximum and minimum conditions for operation must be observed to assure a system that will give maximum performance with minimum service.
- 4.This unit is not designed to operate with a low ambient kit. Do not modify the control system to operate with any kind of low ambient kit.
- 5.The maximum allowable line length for this product is 150 feet.

2.0 GENERAL

The outdoor units are designed to be connected to a matching indoor coil with braze connect lines. Units are factory charged with refrigerant for a matching indoor coil plus 15 feet of field supplied lines.

Matching indoor coils are available with a thermostatic expansion valve or an orifice for the most common usage. The orifice size and/or refrigerant charge may need to be changed for some indoor-outdoor unit combinations, elevation differences or total line lengths.



DIMENSIONAL DATA

MODEL SIZE	Dimensions (Inches)			Refrigerant Connection Service Valve Size	
	"H" in. [mm]	"W" in. [mm]	"L" in. [mm]	Liquid in.	Suction in.
18L	24-15/16[633]	21-7/8[554]	21-7/8[554]	3/8	3/4
24L	24-15/16[633]	21-7/8[554]	21-7/8[554]	3/8	3/4
30L	24-15/16[633]	29-1/8[740]	29-1/8[740]	3/8	3/4
36L	24-15/16[633]	23-5/8[600]	23-5/8[600]	3/8	3/4
42L	33-3/16[843]	28[710]	28[710]	3/8	3/4
48L	29-7/8[759]	28[710]	28[710]	3/8	7/8
60L	33-3/16[843]	28[710]	28[710]	3/8	7/8

3.0 UNIT INSTALLATION

3.1 LOCATION

Before starting the installation, select and check the suitability of the location for both the indoor and outdoor unit. Observe all limitations and clearance requirements. The outdoor unit must have sufficient clearance for air entrance to the condenser coil, for air discharge and for service access. See Fig.2



NOTE

For multiple unit installations, units must be spaced a minimum of 24 inches apart. (Coil face to coil face.)

If the unit is to be installed on a hot sun exposed roof or a black-topped ground area, the unit should be raised sufficiently above the roof or ground to avoid taking the accumulated layer of hot air into the outdoor unit.

Provide an adequate structural support.

3.2 GROUND INSTALLATION

The unit may be installed at ground level on a solid base that will not shift or settle, causing strain on the refrigerant lines and possible leaks. Maintain the clearances shown in Fig.2 and install the unit in a level position.

Normal operating sound levels may be objectionable if the unit is placed directly under windows of certain rooms (bedrooms, study, etc.).

Top of unit discharge area must be unrestricted for at least 60 inches above the unit.



WARNING

The outdoor unit should not be installed in an area where mud or ice could cause personal injury or system damage.

Elevate the unit sufficiently to prevent any blockage of the air entrances by snow in areas where there will be snow accumulation. Check the local weather bureau for the expected snow accumulation in your area. Isolate the unit from rain gutters to avoid any possible wash out of the foundation.

3.3 ROOF INSTALLATION

When installing units on a roof, the structure must be capable of supporting the total weight of the unit, including a padded frame unit, rails, etc., which should be used to minimize the transmission of sound or vibration into the conditioned space.

3.4 UNIT PLACEMENT

1. Provide a base in the pre-determined location.
2. Remove the shipping carton and inspect for possible damage.
3. Compressor tie-down nuts should remain tightened.
4. Position the unit on the base provided.



CAUTION

This system uses R410A refrigerant which operates at higher pressure than R-22. No other refrigerant may be used in this system. Gauge sets, hoses, refrigerant containers, and recovery system must be designed to handle R410A. If you are unsure, consult the equipment manufacturer.

The outdoor unit must be connected to the indoor coil using field supplied refrigerant grade copper tubing that is internally clean and dry. Units should be installed only with the tubing sizes for approved system combinations. The refrigerant charge shown in the nameplate is for standard size interconnecting liquid line lengths up to 15 feet.

 NOTE
Using a larger than specified line size could result in oil return problems. Using a too small line will result in loss of capacity and other problems caused by insufficient refrigerant flow. Slope horizontal suction lines at least 1" every 20 feet toward the outdoor unit to facilitate proper oil return.

3.5 UNIT MOUNTING

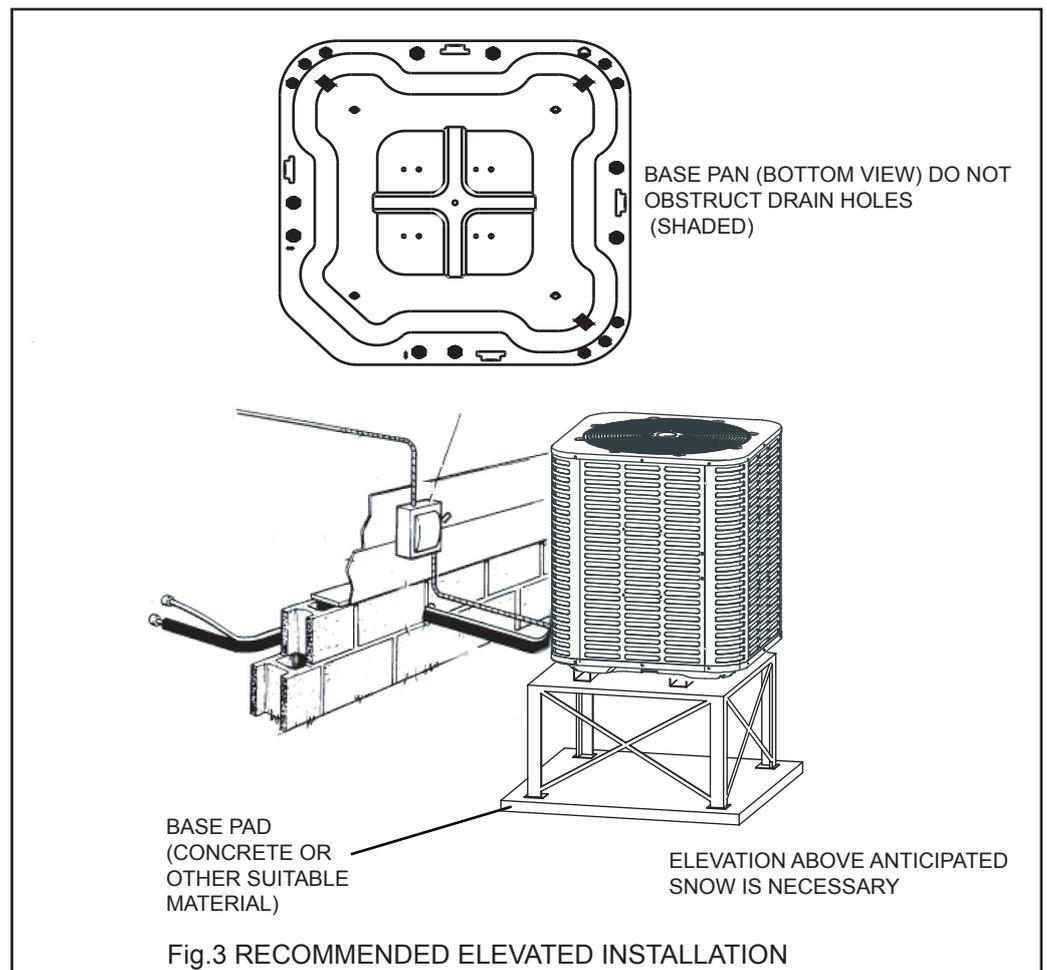
If elevating the heat pump, either on a flat roof or on a slab, observe the following guidelines.

1. The base pan provided elevates the heat pump 2" above the base pad.
2. If elevating a unit on a flat roof, use 4"× 4" (or equivalent) stringers positioned to distribute unit weight evenly and prevent noise and vibration (See Fig.3).

NOTE: Do not block drain openings shown in Fig.3.

3. If unit must be elevated because of anticipated snow fall, secure unit and elevating stand such that unit and/or stand will not tip over or fall off.

NOTE: To tie down unit, see 3.6.



3.6 FACTORY-PREFERRED TIE-DOWN METHOD

Step 1: Prior to installing clear pad of debris.

IMPORTANT

The pad must meet local codes and must be the proper thickness to accommodate fasteners.

Step 2: Center and level unit onto pad.

Step 3: Using field supplied L-shaped bracket to locate holes on concrete and drill pilot holes which is at least 1/4" deeper than fastener being used.

IMPORTANT

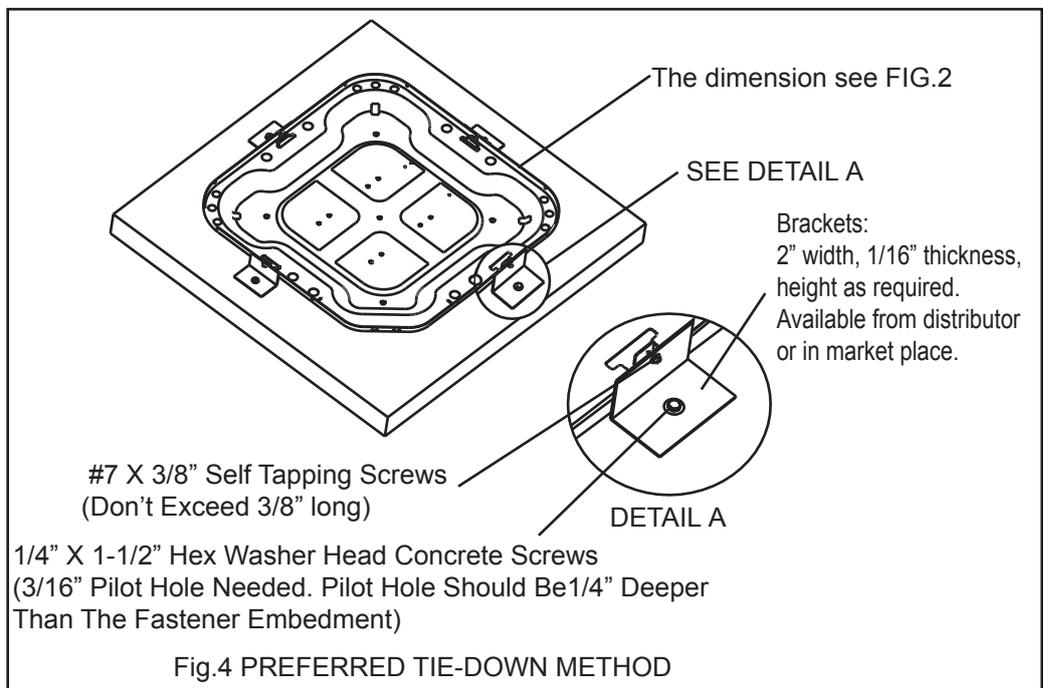
Self drilling screws to base pan should not exceed 3/8" long to avoid damaging coil.

Step 4: Using conventional practices to install brackets, tighten concrete fasteners and self-tapping screws (See Fig.4).

NOTE: 1. One bracket for each side. For extra stability, 2 brackets for each side.
2. Do not over-tighten the concrete fastener to avoid weakening the concrete.

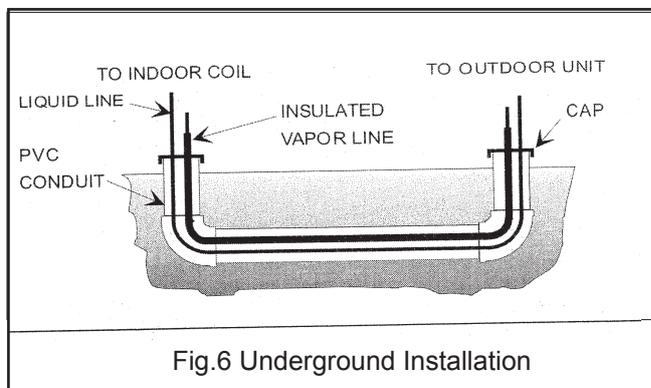
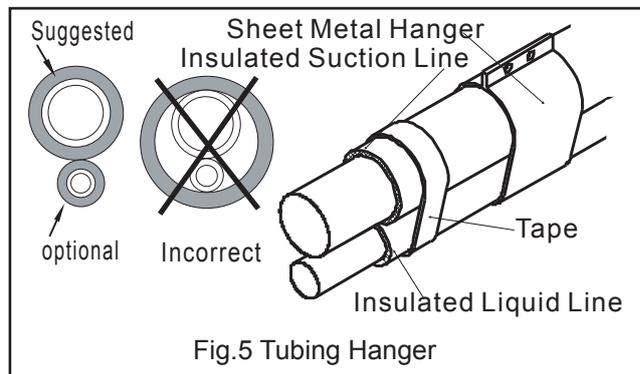
IMPORTANT NOTE:

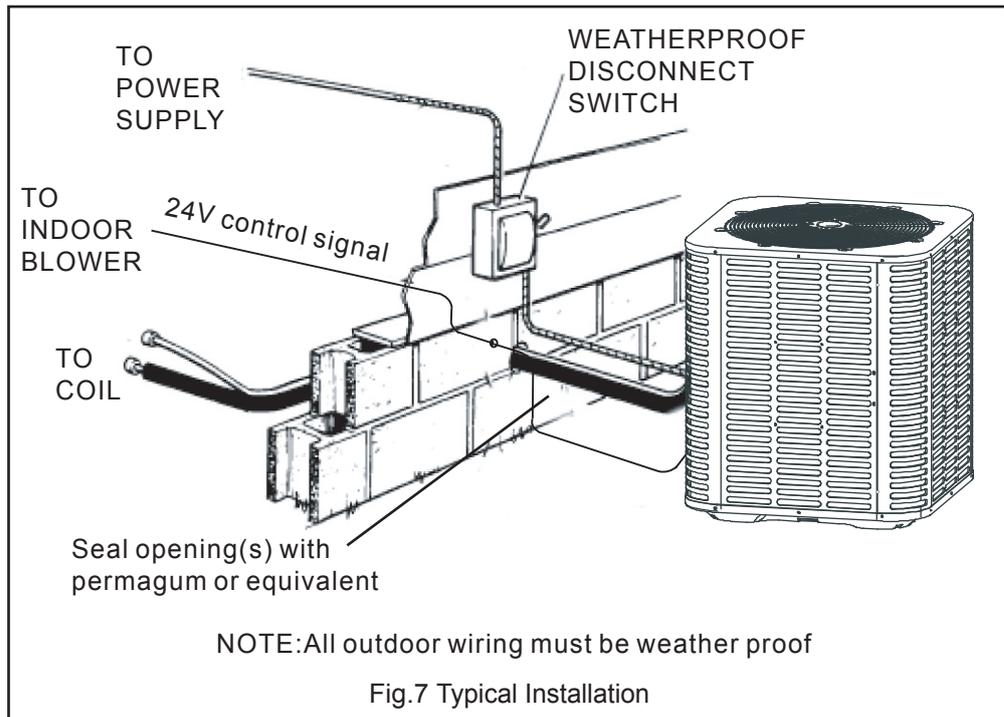
These instructions are intended to provide a method to tie-down system to cement slab as a securing procedure for high wind areas. It is recommended to check Local Codes for tie-down methods and protocols.



3.7 PRECAUTIONS DURING LINE INSTALLATION

1. Install the lines with as few bends as possible. Care must be taken not to damage the couplings or kink the tubing. Use clean hard drawn copper tubing where no appreciable amount of bending around obstruction is necessary, if soft copper must be used, care must be taken to avoid sharp bends which may cause a restriction.
2. The lines should be installed so that they will not obstruct service access to the coil, air handling system or filter.
3. Care must also be taken to isolate the refrigerant lines to minimize noise transmission from the equipment to the structure.
4. The suction line must be insulated. Tape and suspend the refrigerant lines as shown. DO NOT allow tube metal-to-metal contact. See Fig.5.
5. Use PVC piping as a conduit for all underground installations as shown in Fig.6. Buried lines should be kept as short as possible to minimize the build up of liquid refrigerant in the suction line during long periods of shutdown.
6. Pack a sealing material such as perma gum around refrigerant lines where they penetrate a wall to reduce vibration and to retain some flexibility.





3.8 PRECAUTIONS DURING BRAZING OF LINES

All outdoor unit and evaporator coil connections are copper-to-copper and should be brazed with a phosphorous-copper alloy material such as Silfos-5 or equivalent. DO NOT use soft solder. The outdoor units have reusable service valves on both the liquid and suction connections. The total system refrigerant charge is retained within the outdoor unit during shipping and installation. The reusable service valves are provided to evacuate and charge per this instruction.

Serious service problems can be avoided by taking adequate precautions to assure an internally clean and dry system.



CAUTION

Dry nitrogen should always be supplied through the tubing while it is being brazed, because the temperature required is high enough to cause oxidation of the copper unless an inert atmosphere is provide. The flow of dry nitrogen should continue until the joint has cooled. Always use a pressure regulator and safety valve to insure that only low pressure dry nitrogen is introduced into the tubing. Only a small flow is necessary to displace air and prevent oxidation.

3.9 PRECAUTIONS DURING BRAZING SERVICE VALVE

Precautions should be taken to prevent heat damage to service valve by wrapping a wet rag around it as shown in Fig.8. Also, protect all painted surfaces, insulation, during brazing. After brazing cool joint with wet rag.

The valve can be opened by removing the plunger cap and fully inserting a hex wrench into the stem and backing out counter-clockwise until valve stem just touches the chamfered retaining wall.

Connect the refrigerant lines using the following procedure:

1. Remove the cap and Schrader core from both the liquid and suction service valve service ports at the outdoor unit. Connect low pressure nitrogen to the liquid line service port.

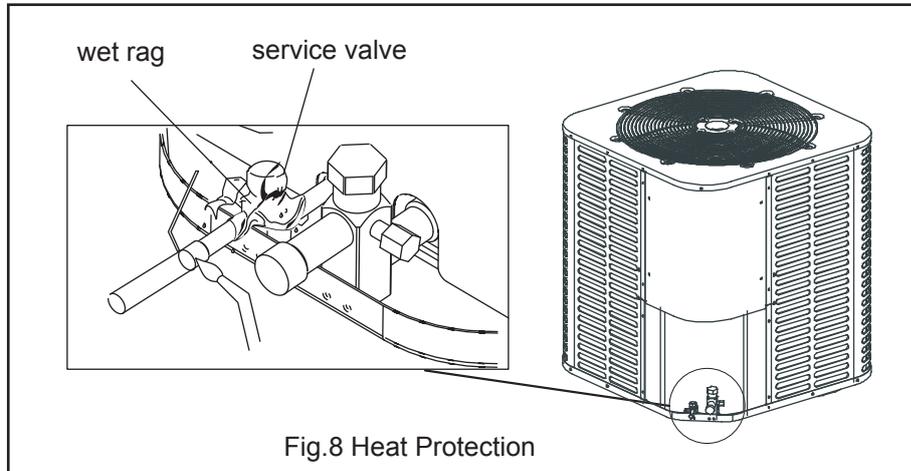


Fig.8 Heat Protection

2. Braze the liquid line to the liquid valve at the outdoor unit. Be sure to wrap the valve body with a wet rag. Allow the nitrogen to continue flowing. Refer to the Tabular Data Sheet for proper liquid line sizing.
3. Carefully remove the rubber plugs from the evaporator liquid and suction connections at the indoor coil.
4. Braze the liquid line to the evaporator liquid connection. Nitrogen should be flowing through the evaporator coil.
5. Slide the plastic cap away from the suction connection at the indoor coil. Braze the suction line to the evaporator suction connection. Refer to the Table 1 for proper suction line sizing.
6. Protect the suction valve with a wet rag and braze the suction line connection to the outdoor unit. The nitrogen flow should be exiting the system from the suction service port connection. After this connection has cooled, remove the nitrogen source from the liquid fitting service port.
7. Replace the Schrader core in the liquid and suction valves.
8. Leak test all refrigerant piping connections including the service port flare caps to be sure they are leak tight. **DO NOT OVER TIGHTEN (between 40 and 60 inch -lbs. maximum).**
9. Evacuate the suction line, evaporator, and the liquid line, to 350 microns or less.

Table 1: Recommended Liquid and Suction Tube Diameters (In.)

MODEL SIZE	LIQUID	SUCTION
	Tube Diameter	Tube Diameter
18	3/8	3/4
24	3/8	3/4
30	3/8	3/4
36	3/8	3/4
42	3/8	3/4
48	3/8	7/8
60	3/8	7/8

10. Replace cap on service ports. Do not remove the flare caps from the service ports except when necessary for servicing the system.
11. Release the refrigerant charge into the system. Open both the liquid and suction valves by removing the plunger cap and with an hex wrench back out counter-clockwise until valve stem just touches the chamfered retaining wall.
12. Replace plunger cap finger tight, then tighten an additional 1/12 turn (1/2 hex flat). Cap must be replaced to prevent leaks.



WARNING

Never attempt to repair any brazed connections while the system is under pressure. Personal injury could result.

See "System Charge" section for checking and recording system charge.

4.0 INTERCONNECTING TUBING

4.1 SUCTION AND LIQUID LINES

Keep all lines sealed until connection is made.

Make connections at the indoor coil first.

Refer to Line Size Information in Tables 2 and 3 for correct size and multipliers to be used to determine capacity for various suction line diameters and lengths of run. The losses due to the lines being exposed to outdoor conditions are not included.

The factory refrigerant charge in the outdoor unit is sufficient for 15 feet of standard size interconnecting liquid line. Calculate actual charge required with installed liquid line size and length as below.

- 5/16" ± .4 oz. per foot
- 3/8" ± .6 oz. per foot
- 1/2" ± 1.2 oz. per foot

4.2 MAXIMUM LENGTH OF LINES

The maximum length of interconnecting line is 150 feet.

Always use the shortest length possible with a minimum number of bends.

NOTE: Excessively long refrigerant lines cause loss of equipment capacity.

4.3 VERTICAL LIFT

Keep the vertical lift to a minimum. Use the following guidelines when installing the unit:

1. DO NOT exceed the vertical lift as indicated on Table 3.
2. It is recommended to use the smallest liquid line size permitted to minimize system charge which will maximize compressor reliability.
3. Table 3 may be used for sizing horizontal runs.

5.0 EVACUATION

It will be necessary to evacuate the system to 350 microns or less. If a leak is suspected, leak test with dry nitrogen to locate the leak. Repair the leak and test again. To verify that the system has no leaks, simply close the valve to the vacuum pump suction to isolate the pump and hold the system under vacuum. Watch the micron gauge for a few minutes. If the micron gauge indicates a steady and continuous rise, it's an indication of a leak. If the gauge shows a rise, then levels off after a few minutes and remains fairly constant, it's an indication that the system is leak free but still contains moisture and may require further evacuation if the reading is above 350 microns.

LINE SIZING

TABLE 2: SUCTION LINE LENGTH/SIZE VS CAPACITY MULTIPLIER(R410A)

Model Size		1 1/2 Ton	2 Ton	2 1/2 Ton	3 Ton	3 1/2 Ton	4 Ton	5 Ton
Suction Line Connection Size		3/4" O.D.	7/8" O.D.	7/8" O.D.				
Suction Line Run—Feet		5/8 Opt.	3/4 Opt.	1 1/8 Opt.				
		3/4* Std.	7/8* Std.	7/8* Std.				
25'	Optional	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Standard	1.00	1.00	1.00	1.00	1.00	1.00	0.99
50'	Optional	0.97	0.97	0.97	0.97	0.98	0.98	0.99
	Standard	0.98	0.98	0.98	0.99	0.98	0.98	0.98
100'	Optional	0.94	0.94	0.94	0.94	0.95	0.95	0.98
	Standard	0.95	0.95	0.96	0.97	0.97	0.97	0.94
150'	Optional	0.90	0.90	0.90	0.90	0.91	0.92	0.97
	Standard	0.92	0.92	0.93	0.96	0.96	0.96	0.90

NOTES:

* Standard size

Using suction line larger than shown in chart will result in poor oil return and is not recommended.

the system capacity published in AHRI is 17800Btu/h. This data is based on the AHRI test condition and 25ft line set with standard suction tube size(3/4" tube). If you need to add the line set more than 25ft or use the optional suction tube size, you need to recalculate the capacity with the coefficient in the table. For example: for 50ft line and 5/8" suction tube, the capacity will be 17800*0.97=17266Btu/h.

TABLE 3 :LIQUID LINE SIZE (R410A)

Model Size	Line Size Connection Size (Inch O.D.)	Compressor Type	Line Size Connection And Line Size (Inch O.D.)	Liquid Line Size Outdoor unit above or below indoor coil					
				Total Equivalent Length - Feet					
				25	50	75	100	125	150
				Maximum Vertical Separation - Feet					
1 1/2 Ton	3/8"	Scroll	1/4	25	40	25	9	N/A	N/A
			5/16	25	50	60	58	40	30
			3/8*	25	50	60	60	40	30
2 Ton	3/8"	Scroll	1/4	23	N/A	N/A	N/A	N/A	N/A
			5/16	25	36	29	23	16	9
			3/8*	25	50	60	60	40	30
2 1/2 Ton	3/8"	Scroll	1/4	25	N/A	N/A	N/A	N/A	N/A
			5/16	25	49	38	27	17	6
			3/8*	25	50	60	60	40	30
3 Ton	3/8"	Scroll	5/16	25	50	37	22	7	N/A
			3/8*	25	50	60	60	40	30
3 1/2 Ton	3/8"	Scroll	5/16	25	23	4	N/A	N/A	N/A
			3/8*	25	50	43	36	30	24
4 Ton	3/8"	Scroll	3/8*	25	46	38	30	22	15
			1/2	25	50	56	55	40	30
5 Ton	3/8"	Scroll	3/8*	25	50	56	44	32	20
			1/2	25	50	60	60	40	30

NOTES:

* Standard line size

N/A Application not recommended.

6.0 ELECTRICAL CONNECTIONS

6.1 GENERAL INFORMATION & GROUNDING

Check the electrical supply to be sure that it meets the values specified on the unit nameplate and wiring label.

Power wiring, control (low voltage) wiring, disconnect switches and over current protection must be supplied by the installer. Wire size should be sized per requirements.



CAUTION

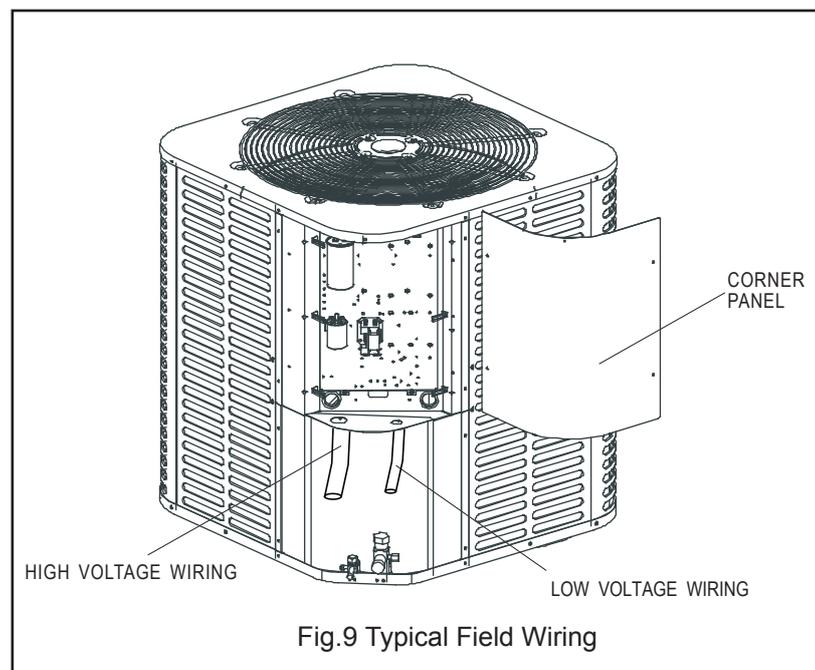
All field wiring must USE COPPER CONDUCTORS ONLY and be in accordance with Local, National Fire, Safety & Electrical Codes. This unit must be grounded with a separate ground wire in accordance with the above codes.

The complete connection diagram and schematic wiring label is located on the inside surface of the unit service access panel and this instruction.

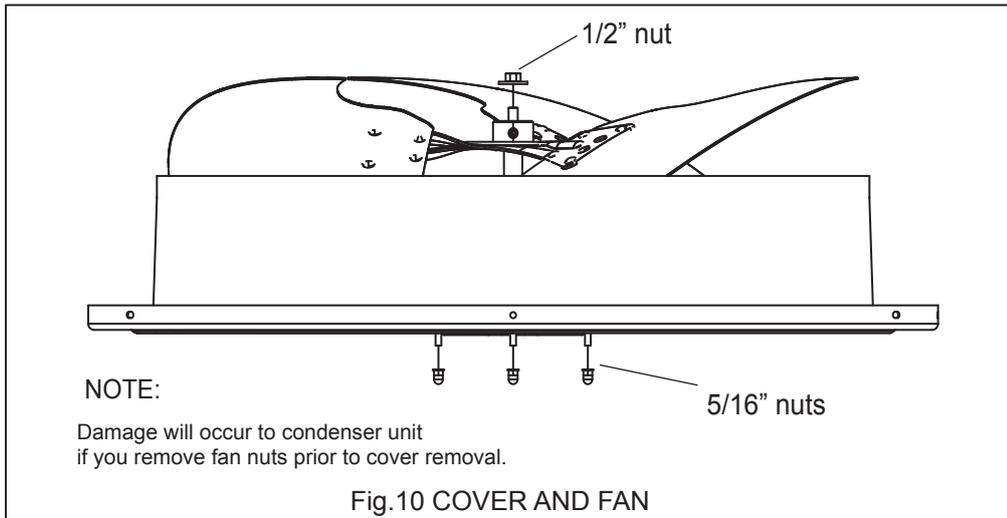
6.2 FIELD CONNECTIONS POWER WIRING

1. Install the proper size weatherproof disconnect switch outdoors and within sight of the unit.
2. Remove the screws at the side of the corner panel. Slide corner panel down and remove from unit. See Fig. 9.
3. Run power wiring from the disconnect switch to the unit.
4. Route wires from disconnect through power wiring opening provided and into the unit control box.
5. Install the proper size time-delay fuses or circuit breaker, and make the power supply connections.
6. Energize the crankcase heater if equipped to save time by preheating the compressor oil while the remaining installation is completed.

NOTE: When changing the motor, remove top cover first.



6.3 REMOVING THE TOP PANEL AND MOTOR



When motor requires changing follow the steps below:

Step 1: Go into electrical panel, disconnect motor power lines.

IMPORTANT NOTE

Disconnect main power to unit. Severe burns and electrical shock will occur if you do not disconnect main power.

Step 2: Remove cover (be careful of motor wires)

Step 3: Be sure to place fan cover unit on the ground as indicated in Fig. 10

IMPROTANT NOTE

Do not place or lean fan blades on ground or against surface.

Step 4: Remove fan motor by removing 5/16" nuts from cover.

Step 5: Remove fan blade from motor by removing 1/2" nut and place fan on the ground.

Step 6: Reverse removal process to reinstall the fan and motor.

IMPROTANT NOTE

When connecting motor wires be sure to check motor direction.

7.0 CHECKING REFRIGERANT CHARGE

Charge for all systems should be checked against the Charging Chart inside the access corner panel or Charging by weight.

IMPORTANT: Do not operate the compressor without charge in system. Addition of R-410A will raise pressures (suction, liquid and discharge).

7.1 CHARGING BY LIQUID PRESSURE

In order to properly charge the system, the following conditions must be met:

- 1) Outdoor temperature above 60°F.
- 2) Indoor temperature between 70°F to 100°F.
- 3) Installation must be complete with brazed joints and drier visually inspected.
- 4) The unit electrical installation must be checked and unit powered for one (1) hour if crank case heater is used or five (5) minutes if no crankcase heater is used.

Follow these steps:

1. Run in cooling mode at least 20 minutes.
2. Measure **OUTDOOR AMBIENT TEMPERATURE** within 6 inches of coil.
3. Measure **SUCTION LINE PRESSURE**.
4. Find the **TARGET LIQUID PRESSURE** at the intersection between the **SUCTION LINE PRESSURE** and the **OUTDOOR AMBIENT TEMPERATURE**, if falls between rows or columns then estimate the **TARGET LIQUID PRESSURE** or **SUCTION LINE PRESSURE** falls between rows or columns then estimate the **TARGET LIQUID PRESSURE** between the rows and columns.

5. Compare the measured LIQUID LINE PRESSURE to the TARGET LIQUID PRESSURE, add charge to raise the pressure or recover charge to lower it.
6. After running unit for 20 minutes if the SUCTION LINE PRESSURE changes, go back to step 2 otherwise remove test equipment and cover the valves.

7.2 CHARGING BY WEIGHT

For a new installation, evacuation of interconnecting tubing and indoor coil is adequate; otherwise, evacuate the entire system. The factory refrigerant charge in the outdoor unit is sufficient for 15 feet of standard size interconnecting liquid line. Calculate actual charge required with installed liquid line size and length, please see 4.1 of instruction.

With an accurate scale (+/- 1 oz.) adjust charge difference between that shown on the unit data plate and that calculated for the new system Installation. If the entire system has been evacuated, add the total calculated charge.

7.3 FINAL LEAK TESTING

After the unit has been properly evacuated and charged, a halogen leak detector should be used to detect leaks in the system. All piping within the condensing unit, evaporator, and interconnecting tubing should be checked for leaks. If a leak is detected, the refrigerant should be recovered before repairing the leak. The Clean Air Act prohibits releasing refrigerant into the atmosphere.

8.0 WARRANTY

Assist owner with processing Warranty cards and/or online registration.

8.1 MAINTENANCE

1. Dirt should not be allowed to accumulate on the indoor or outdoor coils or other parts in the air circuit. Clean as often as necessary to keep the unit clean. Use a brush, vacuum cleaner attachment, or other suitable means.
2. The outdoor fan motor is permanently lubricated and does not require periodic oiling.
3. Refer to the furnace or air handler instructions for filter and blower motor maintenance.
4. The indoor coil and drain pan should be inspected and cleaned regularly to assure proper drainage.



CAUTION

It is unlawful to knowingly vent, release or discharge refrigerant into the open air during repair, service, maintenance or the final disposal of this unit. When the system is functioning properly and the owner has been fully instructed, secure the owner's approval.

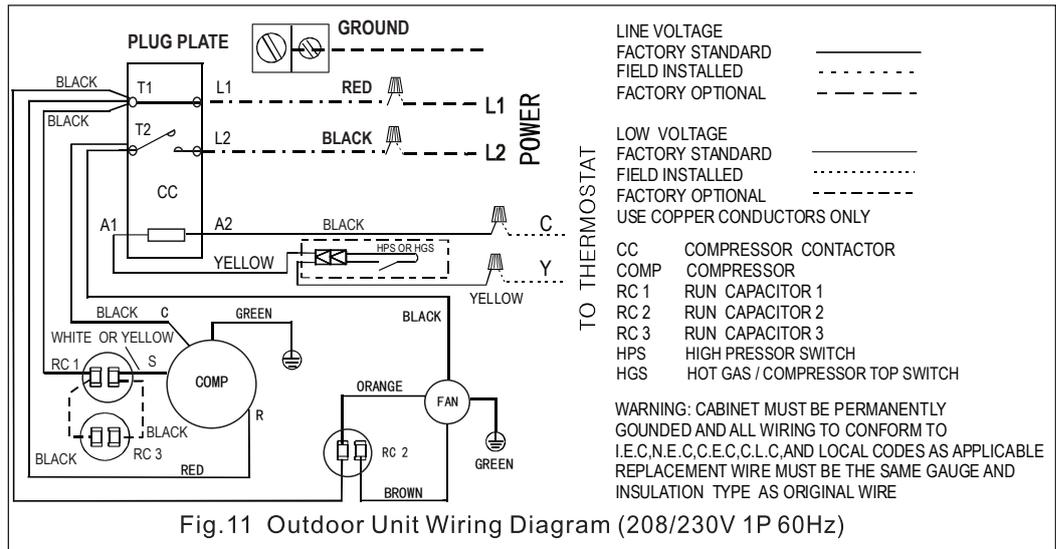
9.0 WIRING DIAGRAM



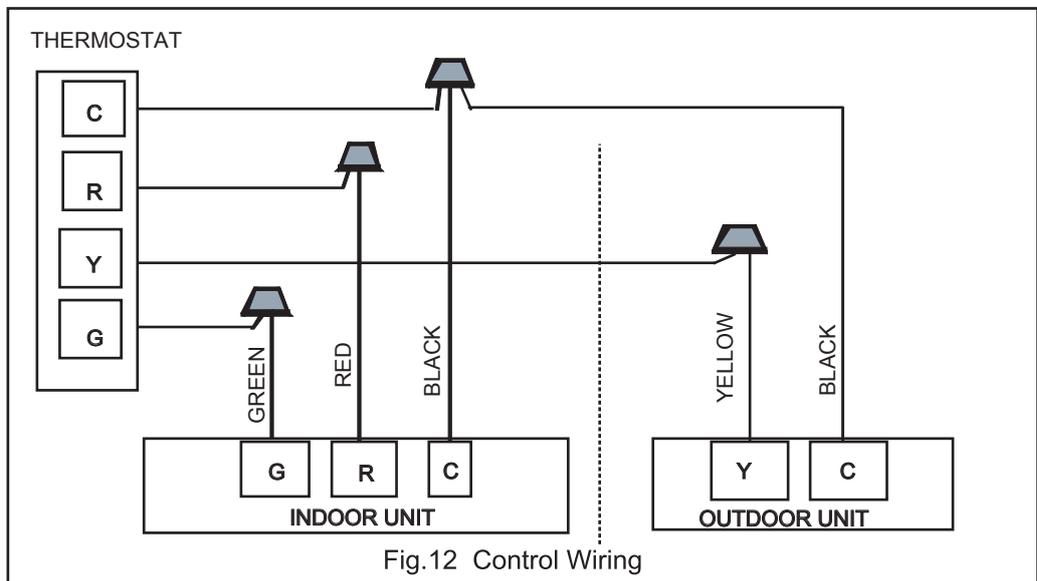
CAUTION

These units must be wired and installed in accordance with all National and Local Safety Codes.

9.1 CONTROL WIRING



Note: The wiring diagram show is for reference only,actual product may vary.



Suggestion: When choosing a thermostat, choose KJR-25B or a non-programmable electric thermostat. Please refer to thermostat electrical manual for wiring schematic.

TABLE 4: Electrical Data:

Model	Minimum Circuit Ampacity(A)	Maximum Circuit Protector(A)
18L	10.4	15
24L	13.4	20
30L	16.2	25
36L	19.1	30
42L	21.6	35
48L	24.6	40
60L	29.6	50

Orifice/TXV Replacement Information

NOTE: The orifice / TXV replacement options noted in this sheet supersede those in the installation guide. Please reference this sheet for all refrigerant metering options.

Step 1: Remove the screws and front coil panel.

Step 2: Remove the rubber plugs from the liquid and vapor lines.

Step 3: Using a back up wrench and loosen the flow assembly. Remove the factory installed piston Reassemble and tighten the flow assembly. Tighten the flow assembly to 11 (±2) ft-lb

Step 4: If replacing the preinstalled orifice with the optional orifice, ensure the replacement orifice is placed in the same orientation as the preinstalled orifice before tightening the flow assembly.

TXV-Specific Steps

Step 5: Drill a small hole in the suction line for the TXV equalizer line. The hole must be on top as noted in the picture.

Step 6: Dry fit the TXV to the liquid line entering the coil. The valve must be in the upright position as pictured. Keep the valve as close to the coil as possible, although a short piece of field fabricated tubing may be needed. The TXV must be mounted in the CORRECT direction of flow. Place the TXV equalizer line 3 to 4 mm inside the small hole drilled in the vapor line.

Step 7: Wrap the TXV and coil panel with a wet rag to prevent overheating while brazing. Use a nitrogen flow and braze all connections.

Step 8: Allow tubing to cool and pressurize line sets with 150 PSI of nitrogen to check braze connections and flow assembly for leaks. Make repairs as needed.

Step 9: Locate and clean a straight section of the vapor line as close to the coil as possible. Use the supplied copper straps to secure the TXV sensing bulb on top of the vapor line as pictured.

Step 10: Insulate the entire vapor line and sensing bulb It is also recommended to insulate the TXV and liquid line between the valve and coil to prevent condensation in hot humid environments.

Step 11: Replace the front coil panel and secure in place.

Step 12: Follow the steps in the installation guide for vacuum requirements and system start up procedures.

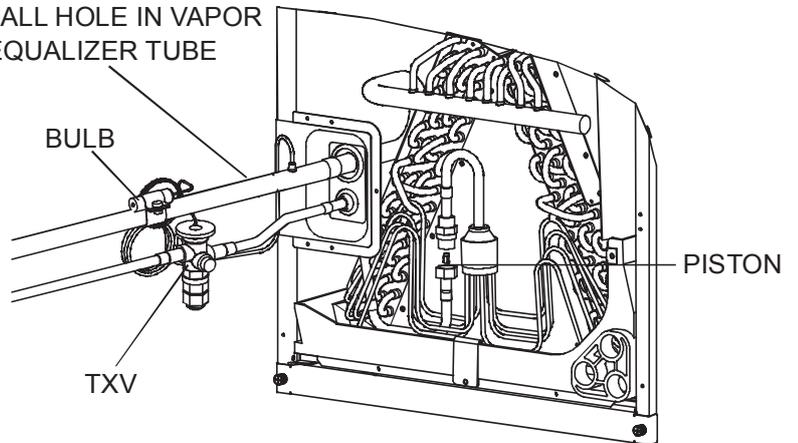
Step 13: Allow system to run for a minimum of 10 minutes in the cooling mode.

A: For fixed orifice installation: Use the superheat charging chart to obtain proper superheat based on indoor / outdoor conditions.

B: For TXV installation: Charge the system to 10 degrees of subcooling. Adjust the expansion valve to achieve 9 (± 3 degrees) of superheat.

Step 14: Allow system to run for an additional 10 minutes to verify the subcooling and superheat readings.

DRILL A SMALL HOLE IN VAPOR LINE FOR EQUALIZER TUBE



Superheat Charging Chart

Outdoor Temp (°F)	Indoor Temperature (°F) Dry Bulb/Wet Bulb					
	95/79	90/75	85/71	80/67	75/63	70/58
115	23	16	7	5	5	5
110	24	17	9	5	5	5
105	26	19	11	5	5	5
100	27	21	13	7	5	5
95	29	23	16	9	5	5
90	30	25	18	12	5	5
85	32	26	20	14	8	5
80	34	28	22	17	11	5
75	35	30	24	19	13	6
70	37	32	26	21	16	10
65	38	34	29	24	19	13
60	40	36	31	27	22	17
55	41	37	33	29	25	21

Note 1: Chart is based on 400 CFM/Ton indoor airflow and 50% relative humidity. If indoor relative humidity is above 70% or below 20%, use indoor wet bulb temperature only. Airflow range is 375 to 425 CFM/Ton.

System Charge Adjustment

Subcooling Charging (Above 55°F Outdoor Temp.)

R-410A SUBCOOLING CHARGING TABLE		
OUTDOOR TEMPERATURE (°F)		
82	95	115
DESIGN SUBCOOLING VALUES (°F)		
10~12	8~10	5~8

Condensing Unit		Air Handle / A-Coil	Piston Size	Optional TXV	SEER	If Preinstalled Piston Replace Required
AC	J4AC3018B1000AA	J4AH4P18A1A00AA	0.050	4AYTXVH3G2436A	13	YES
		J4GXCA001AC6HUA	0.050	4AYTXVH3G2436A	13	YES
		J4MXCA001AC6HCA	0.050	4AYTXVH3G2436A	13	YES
	J4AC3024B1000AA	J4AH4P24A1B00AA	0.056	4AYTXVH3G2436A	13	YES
		J4GXCA001AC6HUA	0.058	4AYTXVH3G2436A	13	NO
		J4MXCA001AC6HCA	0.058	4AYTXVH3G2436A	13	NO
	J4AC3030B1000AA	J4AH4P30A1B00AA	0.063	4AYTXVH3G2436A	13	YES
		J4GXCA001AC6HUA	0.063	4AYTXVH3G2436A	13	YES
		J4MXCA001AC6HCA	0.063	4AYTXVH3G2436A	13	YES
	J4AC3036B1000AA	J4AH4P36A1B00AA	0.070	4AYTXVH3G2436A	13	YES
		J4GXCB002AC6HUA	0.065	4AYTXVH3G2436A	13	YES
		J4MXCB002AC6HCA	0.065	4AYTXVH3G2436A	13	YES
	J4AC3042A1000AA	J4AH4P42A1C00AA	0.075	4AYTXVH3G4248A	13	YES
		J4GXCB004AC6HUA	0.075	4AYTXVH3G4248A	13	YES
		J4MXCB004AC6HCA	0.075	4AYTXVH3G4248A	13	YES
	J4AC3048B1000AA	J4AH4P48A1C00AA	0.083	4AYTXVH3G4248A	13	NO
		J4GXCC009AC6HUA	0.083	4AYTXVH3G4248A	13	YES
		J4MXCC009AC6HCA	0.083	4AYTXVH3G4248A	13	YES
	J4AC3060B1000AA	J4AH4P60B1C00AA	0.090	4AYTXVH3G6000A	13	NO
		J4GXCC009AC6HUA	0.088	4AYTXVH3G6000A	13	NO
		J4MXCC009AC6HCA	0.088	4AYTXVH3G6000A	13	NO

NOTE: Since the manufacturer has a policy of continuous product and product data improvement, if the system combination you are looking for is not listed, check for the latest version of this document at www.oxboxhvac.com.

REFRIGERANT CHARGE FOR AC SYSTEM

Cooling Mode		13 SEER R410A AC Charge Chart 1.5 TON												
		Outdoor Ambient Temperature(°F)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
Suction Pressure at Large Service Valve (psig)	165			276	294	314	335	354	376	396	421	443	467	496
	161			274	292	312	333	352	374	394	419	441	465	494
	157			272	290	310	331	350	372	392	417	439	463	492
	153		246	270	288	308	329	348	370	390	415	437	461	490
	149		244	268	286	306	327	346	368	388	413	435	459	488
	145		242	266	284	304	325	344	366	386	411	433	457	486
	141	230	240	264	282	302	323	342	364	384	409	431	455	484
	137	228	238	262	280	300	321	340	362	382	407	429	453	482
	133	226	236	260	278	298	319	338	360	380	405	427	451	480
	129	224	234	258	276	296	317	336	358	378	403	425	449	478
	125	222	232	256	274	294	315	334	356	376	401	423	447	476
	121	220	230	254	272	292	313	332	354	374	399	421	445	474
	117	218	228	252	270	290	311	330	352	372	397	419	443	472
	113	216	226	250	268	288	309	328	350	370	395	417	441	470
	109	214	224	248	266	286	307	326	348	368	393	415	439	468
	105	212	222	246	264	284	305	324	346	366	391	413	437	466

Cooling Mode		13 SEER R410A AC Charge Chart 2.0 TON												
		Outdoor Ambient Temperature(°F)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
Suction Pressure at Large Service Valve (psig)	165			269	290	310	331	353	375	397	422	446	471	495
	161			267	288	308	329	351	373	395	420	444	469	493
	157			265	286	306	327	349	371	393	418	442	467	491
	153		242	263	284	304	325	347	369	391	416	440	465	489
	149		240	261	282	302	323	345	367	389	414	438	463	487
	145		238	259	280	300	321	343	365	387	412	436	461	485
	141	216	236	257	278	298	319	341	363	385	410	434	459	483
	137	214	234	255	276	296	317	339	361	383	408	432	457	481
	133	212	232	253	274	294	315	337	359	381	406	430	455	479
	129	210	230	251	272	292	313	335	357	379	404	428	453	477
	125	208	228	249	270	290	311	333	355	377	402	426	451	475
	121	206	226	247	268	288	309	331	353	375	400	424	449	473
	117	204	224	245	266	286	307	329	351	373	398	422	447	471
	113	202	222	243	264	284	305	327	349	371	396	420	445	469
	109	200	220	241	262	282	303	325	347	369	394	418	443	467
	105	198	218	239	260	280	301	323	345	367	392	416	441	465

Cooling Mode		13 SEER R410A AC Charge Chart 2.5 TON												
		Outdoor Ambient Temperature(°F)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
Suction Pressure at Large Service Valve (psig)	165			269	290	312	333	355	378	400	426	452	477	503
	161			267	288	310	331	353	376	398	424	450	475	501
	157			265	286	308	329	351	374	396	422	448	473	499
	153		242	263	284	306	327	349	372	394	420	446	471	497
	149		240	261	282	304	325	347	370	392	418	444	469	495
	145		238	259	280	302	323	345	368	390	416	442	467	493
	141	214	236	257	278	300	321	343	366	388	414	440	465	491
	137	212	234	255	276	298	319	341	364	386	412	438	463	489
	133	210	232	253	274	296	317	339	362	384	410	436	461	487
	129	208	230	251	272	294	315	337	360	382	408	434	459	485
	125	206	228	249	270	292	313	335	358	380	406	432	457	483
	121	204	226	247	268	290	311	333	356	378	404	430	455	481
	117	202	224	245	266	288	309	331	354	376	402	428	453	479
	113	200	222	243	264	286	307	329	352	374	400	426	451	477
	109	198	220	241	262	284	305	327	350	372	398	424	449	475
	105	196	218	239	260	282	303	325	348	370	396	422	447	473

Cooling Mode		13 SEER R410A AC Charge Chart 3.0 TON												
		Outdoor Ambient Temperature(°F)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
Suction Pressure at Large Service Valve (psig)	165			277	298	318	339	363	386	410	436	461	487	512
	161			275	296	316	337	361	384	408	434	459	485	510
	157			273	294	314	335	359	382	406	432	457	483	508
	153		250	271	292	312	333	357	380	404	430	455	481	506
	149		248	269	290	310	331	355	378	402	428	453	479	504
	145		246	267	288	308	329	353	376	400	426	451	477	502
	141	224	244	265	286	306	327	351	374	398	424	449	475	500
	137	222	242	263	284	304	325	349	372	396	422	447	473	498
	133	220	240	261	282	302	323	347	370	394	420	445	471	496
	129	218	238	259	280	300	321	345	368	392	418	443	469	494
	125	216	236	257	278	298	319	343	366	390	416	441	467	492
	121	214	234	255	276	296	317	341	364	388	414	439	465	490
	117	212	232	253	274	294	315	339	362	386	412	437	463	488
	113	210	230	251	272	292	313	337	360	384	410	435	461	486
	109	208	228	249	270	290	311	335	358	382	408	433	459	484
	105	206	226	247	268	288	309	333	356	380	406	431	457	482

Cooling Mode		13 SEER R410A AC Charge Chart 3.5 TON												
		Outdoor Ambient Temperature(°F)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
Suction Pressure at Large Service Valve(psig)	165			250	269	288	307	329	351	373	400	426	453	479
	161			248	267	286	305	327	349	371	398	424	451	477
	157			246	265	284	303	325	347	369	396	422	449	475
	153		227	244	263	282	301	323	345	367	394	420	447	473
	149		225	242	261	280	299	321	343	365	392	418	445	471
	145		223	240	259	278	297	319	341	363	390	416	443	469
	141	204	221	238	257	276	295	317	339	361	388	414	441	467
	137	202	219	236	255	274	293	315	337	359	386	412	439	465
	133	200	217	234	253	272	291	313	335	357	384	410	437	463
	129	198	215	232	251	270	289	311	333	355	382	408	435	461
	125	196	213	230	249	268	287	309	331	353	380	406	433	459
	121	194	211	228	247	266	285	307	329	351	378	404	431	457
	117	192	209	226	245	264	283	305	327	349	376	402	429	455
	113	190	207	224	243	262	281	303	325	347	374	400	427	453
	109	188	205	222	241	260	279	301	323	345	372	398	425	451
	105	186	203	220	239	258	277	299	321	343	370	396	423	449

Cooling Mode		13 SEER R410A AC Charge Chart 4 TON												
		Outdoor Ambient Temperature(°F)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
Suction Pressure at Large Service Valve(psig)	165			257	277	298	318	340	362	384	411	439	466	493
	161			255	275	296	316	338	360	382	409	437	464	491
	157			253	273	294	314	336	358	380	407	435	462	489
	153		231	251	271	292	312	334	356	378	405	433	460	487
	149		229	249	269	290	310	332	354	376	403	431	458	485
	145		227	247	267	288	308	330	352	374	401	429	456	483
	141	204	225	245	265	286	306	328	350	372	399	427	454	481
	137	202	223	243	263	284	304	326	348	370	397	425	452	479
	133	200	221	241	261	282	302	324	346	368	395	423	450	477
	129	198	219	239	259	280	300	322	344	366	393	421	448	475
	125	196	217	237	257	278	298	320	342	364	391	419	446	473
	121	194	215	235	255	276	296	318	340	362	389	417	444	471
	117	192	213	233	253	274	294	316	338	360	387	415	442	469
	113	190	211	231	251	272	292	314	336	358	385	413	440	467
	109	188	209	229	249	270	290	312	334	356	383	411	438	465
	105	186	207	227	247	268	288	310	332	354	381	409	436	463

Cooling Mode		13 SEER R410A AC Charge Chart 5 TON												
		Outdoor Ambient Temperature(°F)												
		55	60	65	70	75	80	85	90	95	100	105	110	115
Suction Pressure at Large Service Valve(psig)	165			265	285	306	326	348	369	391	416	441	466	491
	161			263	283	304	324	346	367	389	414	439	464	489
	157			261	281	302	322	344	365	387	412	437	462	487
	153		239	259	279	300	320	342	363	385	410	435	460	485
	149		237	257	277	298	318	340	361	383	408	433	458	483
	145		235	255	275	296	316	338	359	381	406	431	456	481
	141	212	233	253	273	294	314	336	357	379	404	429	454	479
	137	210	231	251	271	292	312	334	355	377	402	427	452	477
	133	208	229	249	269	290	310	332	353	375	400	425	450	475
	129	206	227	247	267	288	308	330	351	373	398	423	448	473
	125	204	225	245	265	286	306	328	349	371	396	421	446	471
	121	202	223	243	263	284	304	326	347	369	394	419	444	469
	117	200	221	241	261	282	302	324	345	367	392	417	442	467
	113	198	219	239	259	280	300	322	343	365	390	415	440	465
	109	196	217	237	257	278	298	320	341	363	388	413	438	463
	105	194	215	235	255	276	296	318	339	361	386	411	436	461

TABLE 5. Troubleshooting

SYSTEM FAULTS	WHAT TO CHECK																																				
	MODE	POWER SUPPLY	HIGH VOLTAGE WIRING	I.D. CONTROL DEF.	COMPRESSOR CAPACITOR	O.D. FAN CAPACITOR	I.D. BLOWER CAPACITOR	CONTACTOR CONTACTOR	LOW VOLTAGE CAPACITOR	CONTROL TRANSFORMER	CONTACTOR CONTACTS	LOW VOLTAGE WIRING	THERMOSTAT	CONTACTOR COIL	STUCK COMPRESSOR	INEFFICIENT FUSE	REF. UNDERCHARGE	REF. OVERCHARGE	EXCESSIVE EVAP. LOAD	NONCONDENSABLES	RES. O.D. AIRFLOW	O.D. AIR RECIRCULATION	TXV STUCK OPEN	RES. I.D. AIRFLOW	REF. CIR. RESTRICTIONS	SUPERHEAT	SOV/ COIL LEAKING	SOV/ COIL DEFECTIVE	CHECK VALVE LEAKING	LPC SENSOR DEF.	DEFROST CONTROL DEF.	T4 TEMP. SENSOR DEF.	T3 TEMP. SENSOR DEF.	HPC/IGS SENSOR DEF.			
REFRIGERANT CIRCUIT																																					
Head Pressure Too High	C																																				
Head Pressure Too Low	C															S	P								S	S	S	S									
Suction Pressure Too High	C															S	P	P							S												
Suction Pressure Too Low	C																P								S	P	S										
Liquid Refrig. Floodback (TXV)	C																							P													
I.D. Coil Frosting	C																P						S	S													
Compressor Runs Inadequate or No Cooling/Heating	C																S	P		S	S				S	P	S	S									
ELECTRICAL																																					
Compressor & O.D. Fan Won't Start	C	P	P				S	S	P	S	P	P																									
Compressor Will Not Start But O.D. Fan Runs	C		P	P													P																				
O.D. Fan Won't Start	C		P		P																																
Compressor Hums But Won't Start	C				P												P																				
I.D. Blower Won't Start	C	P	P	S			P		S	P	S		S																								
DEFROST																																					
Unit Won't Initiate Defrost	C																							S													
Defrost Terminates on Time	C																																				
Unit Icing Up	C																																				

C- Cooling P - Primary Causes S - Secondary Causes

TABLE 6. Operational And Checkout Procedures

Final phases of this installation are the unit Operational and Checkout Procedures. To obtain proper performance, all units must be operated and charge adjustments made in accordance with procedures found in the Service Facts of the Outdoor Unit.

After installation has been completed, it is recommended that the entire system be checked against the following list:

1. Be sure unit suspension(if used) is secure and that there are no tools or loose debris in or around or on top of the unit..... []
2. Properly insulate suction lines and fittings. []
3. Properly secure and isolate all refrigerant lines... []
4. Verify that all electrical connections are tight. []
5. Check all duct outlets; they must be open and unrestricted. []
6. Check drain lines and be sure all joints are tight..... []
7. Be sure that a return air filter is installed. []
8. Operate complete system in each mode to verify proper performance. Verify operation of supplementary electric heater. []

