

INSTALLATION INSTRUCTIONS

T6BE - 024, 030, 036, & 042 (2, 2.5, 3, & 3.5 TON) SERIES SINGLE PHASE MODELS

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IMPORTANT

ATTENTION INSTALLERS:

It is your responsibility to know this product better than your customer. This includes being able to install the product according to strict safety guidelines and instructing the customer on how to operate and maintain the equipment for the life of the product. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Pay attention to all safety warnings and any other special notes highlighted in the manual. Improper installation of the furnace or failure to follow safety warnings could result in serious injury, death, or property damage.

These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/service personnel for this type of equipment. Please read all instructions carefully before starting the installation. Return these instructions to the customer's package for future reference.

DO NOT DESTROY. PLEASE READ CAREFULLY & KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

IMPORTANT SAFETY INFORMATION

INSTALLER: Please read all instructions before servicing this equipment. Pay attention to all safety warnings and any other special notes highlighted in the manual. Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

WARNING:

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in serious injury or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- **Before servicing, disconnect all electrical power to the unit.**
 - **When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.**
 - **Verify proper operation after servicing.**
-

WARNING:

This split system heat pumps is shipped charged with R410A refrigerant and ready for installation. If repairs make it necessary for evacuation and charging, it should only be attempted by qualified trained personnel thoroughly familiar with this equipment. Under no circumstances should the owner attempt to install and/or service this equipment. Failure to comply with this warning could result in property damage, personal injury, or death.

CAUTION:

This unit uses R-410A refrigerant. DO NOT use any other refrigerant in this unit. Use of another refrigerant will damage the unit.

WARNING:

Unless noted otherwise in these instructions, only factory authorized parts or accessory kits may be used with this product. Improper installation, service, adjustment, or maintenance may cause explosion, fire, electrical shock or other hazardous conditions which may result in personal injury or property damage.

- Installation of equipment may require brazing operations. Installer must comply with safety codes and wear appropriate safety equipment (safety glasses, work gloves, fire extinguisher, etc.) when performing brazing operations.
 - Follow all precautions in the literature, on tags, and on labels provided with the equipment. Read and thoroughly understand the instructions provided with the equipment prior to performing the installation and operational checkout of the equipment.
 - Use caution when handling this appliance or removing components. Personal injury can occur from sharp metal edges present in all sheet metal constructed equipment.
-

WARNING:

The information listed below and the next page must be followed during the installation, service, and operation of this furnace. Failure to follow safety recommendations could result in possible damage to the equipment, serious personal injury or death.

- The installer must comply with all local codes and regulations which govern the installation of this type of equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. Consult local building codes and the National Electrical Code (ANSI C1) for special installation requirements.
- All electrical wiring must be completed in accordance with local, state and national codes and regulations and with the National Electric Code (ANSI/NFPA 70) or in Canada the Canadian Electric Code Part 1 CSA C.22.1.
- This equipment contains liquid and gaseous refrigerant under high pressure. **DO NOT USE ANY PORTION OF THE CHARGE FOR PURGING OR LEAK TESTING.** Installation or servicing should only be performed by qualified trained personnel thoroughly familiar with this type equipment.
- Fully annealed, refrigerant grade copper tubing should be used when installing the system. Refrigerant suction line tubing should be fully insulated.
- This unit is designed for outdoor installations only and should be positioned as shown on [page 3](#).

HEAT PUMP INSTALLATION

General Information

Split system heat pumps are designed only for outdoor rooftop or ground level installations. This unit has been tested for capacity and efficiency in accordance with AHRI Standards and will provide many years of safe and dependable comfort, providing it is properly installed and maintained. Abuse, improper use, and/or improper maintenance can shorten the life of the appliance and create unsafe hazards.

To achieve optimum performance and minimize equipment failure, it is recommended that periodic maintenance be performed on this unit. The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools.

Refer to the Quick Reference Data sheet for additional electrical, charging and unit information.

Before You Install the Heat Pump

- ✓ The cooling load of the area to be conditioned must be calculated and a system of the proper capacity selected. It is recommended that the area to be conditioned be completely insulated and vapor sealed.
- ✓ Check the electrical supply and verify the power supply is adequate for unit operation. The system must be wired and provided with circuit protection in accordance with local building codes. If there is any question concerning the power supply, contact the local power company.
- ✓ The indoor section (air handler, furnace, etc) should be installed before routing the refrigerant tubing. Refer to the indoor unit's installation instructions for installation details.
- ✓ All units are securely packed at the time of shipment and upon arrival should be carefully inspected for damage prior to installing the equipment at the job site. Verify coil fins are straight. If necessary, comb fins to remove flattened or bent fins. Claims for damage (apparent or concealed) should be filed immediately with the carrier.
- ✓ Please consult your dealer for maintenance information and availability of maintenance contracts. Please read all instructions before installing the unit.

Locating the Heat Pump

- Survey the job site to determine the best location for mounting the outdoor unit.
- Overhead obstructions, poorly ventilated areas, and areas subject to accumulation of debris should be avoided. See [Figure 1](#).
- Sufficient clearance for unobstructed airflow through the outdoor coil must be maintained in order to achieve rated performance. See [Figure 1](#) for minimum clearances to obstructions.
- Consideration should be given to availability of electric power, service access, noise, and shade.

Packaging Removal

To prevent damage to the tubing connections, carefully remove the carton and user's manual from the equipment. Discard the shipping carton.

Ground Level

Ground level installations must be located according to local building codes or ordinances and these requirements:

- Clearances must be in accordance with those shown in [Figure 1](#).
- A suitable mounting pad must be provided and be separate from the building foundation. The pad must be level and strong enough to support the unit's weight. The slab height must be a minimum of 2" (5 cm) above grade and with adequate drainage. See [Figure 1](#).

Rooftop

- The method of mounting should be designed so that it does not overload roof structures or transmit noise to the interior of the structure. The roof must be structurally capable of handling the weight of the unit.
- Full perimeter support is required under the unit. Support must be made of weather resistant materials and installed prior to unit installation.
- The support must be built to raise the unit 6" above the roof.

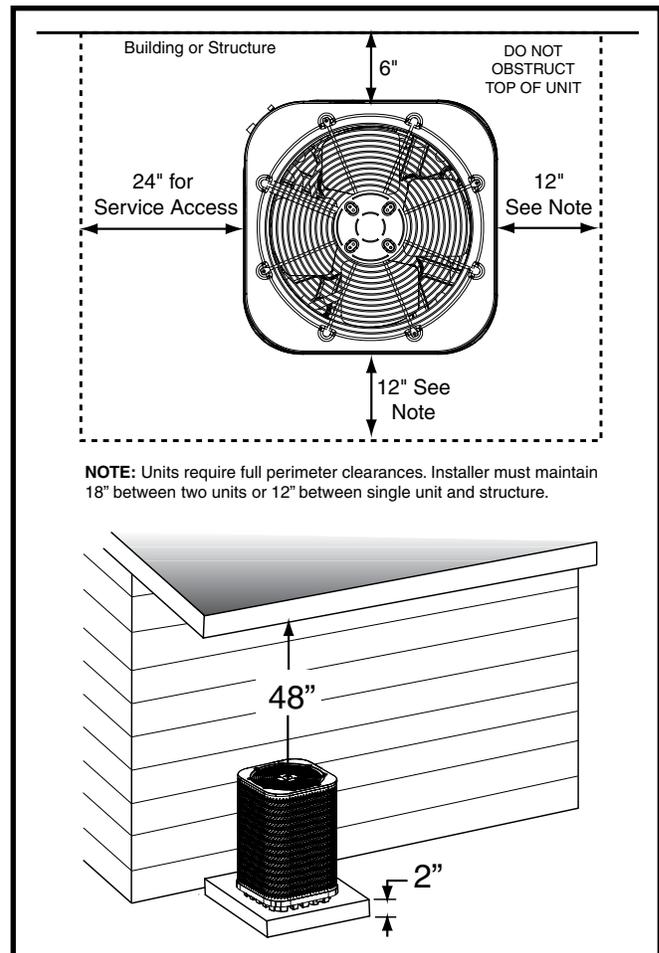


Figure 1. Clearance Requirements

Connecting Refrigerant Tubing Between the Indoor & Outdoor Unit

⚠ CAUTION:

When servicing, cover or seal openings to minimize the exposure of the refrigerant system to air to prevent accumulation of moisture and other contaminants.

After outdoor and indoor unit placement has been determined, route refrigerant tubing between the equipment in accordance with sound installation practices.

- When connecting refrigerant linesets together, it is recommended that dry nitrogen be flowing through the joints during brazing. This will prevent internal oxidation and scaling from occurring.
- Refrigerant tubing should be routed in a manner that minimizes the length of tubing and the number of bends in the tubing.
- Refrigerant tubing should be supported in a manner that the tubing will not vibrate or abrade during system operation.
- Tubing should be kept clean of foreign debris during installation.
- Every effort should be made by the installer to ensure that the field installed refrigerant containing components of the system have been installed in accordance with these instructions and sound installation practices to insure reliable system operation and longevity.
- The maximum recommended interconnecting refrigerant line length is 75 feet, and the vertical elevation difference between the indoor and outdoor sections should not exceed 20 feet.
- If precise forming of refrigerant lines is required, a copper tubing bender is recommended. Avoid sharp bends and contact of the refrigerant lines with metal surfaces.
- A filter dryer is provided with the unit and must be installed in the liquid line of the system. If the installation replaces a system with a filter dryer already present in the liquid line, the filter dryer must be replaced with the one supplied with the unit. The filter dryer must be installed in strict accordance with the manufacturer's installation instructions.
- Optional equipment such as liquid line solenoid valves, low ambient, etc., should be installed in strict accordance with the manufacturer's installation instructions.

Outdoor Orifice Removal & Installation

The orifice installed in the outdoor unit has been sized for use with the most popularly matched indoor units. Depending on the indoor coil that the unit is being matched with, the outdoor restrictor may need to be changed. Please refer to the Quick Reference Data sheet that is supplied with the outdoor unit for more information.

If the outdoor unit has the liquid valve shown in [Figure 2](#), then the restrictor is located inside the swivel nut

connection of the liquid valve and not inside the outdoor unit's distributor. Perform steps 1 - 5 if the outdoor restrictor needs to be changed.

⚠ CAUTION:

When servicing, cover or seal openings to minimize the exposure of the refrigerant system to air to prevent accumulation of moisture and other contaminants.

⚠ CAUTION:

To prevent damage to the unit or internal components, it is recommended that two wrenches be used when loosening or tightening nuts. Do not over tighten!

1. Using two wrenches loosen the nut and liquid valve. Turn the assembly nut counter-clockwise until the orifice body halves are separated.

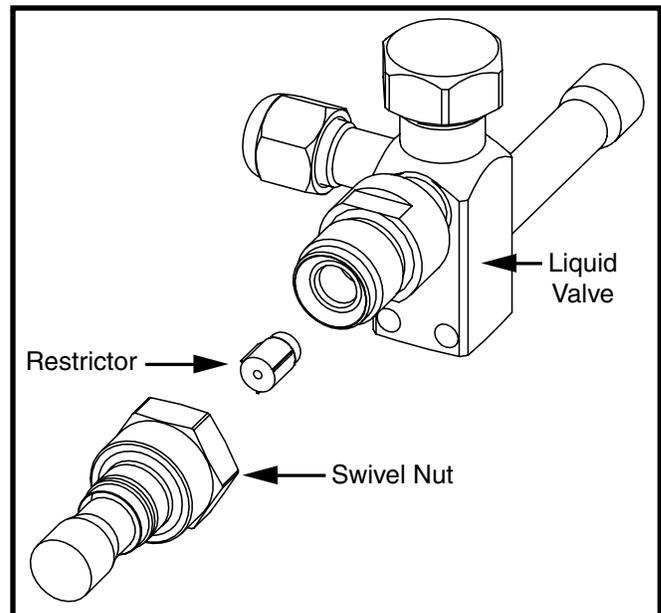


Figure 2. Liquid Valve, Restrictor, & Swivel Nut Adapter

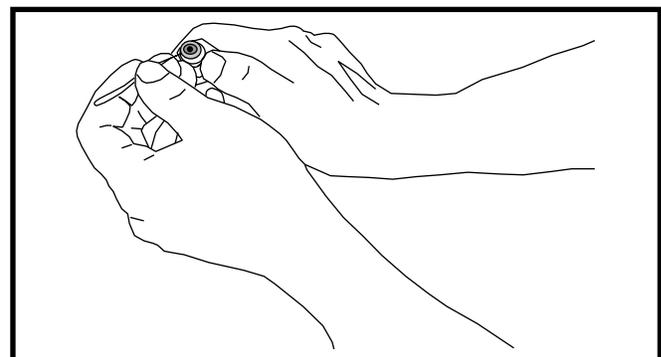


Figure 3. Removal of Orifice

2. Insert a light-gauge wire hook between the valve body and the restrictor orifice while being careful not to scratch either part. Carefully remove the restrictor orifice from the valve body. See [Figure 3 \(page 4\)](#).
3. Check the actual size of the new orifice. **NOTE:** The size is stamped on its side. Do not use pin gauges to measure the orifice diameter.
4. Insert the new orifice into the valve body, with the rounded end facing into the valve. See [Figure 2 \(page 4\)](#).

⚠ CAUTION:

To prevent damage to the unit or internal components, it is recommended that two wrenches be used when loosening or tightening nuts. Do not over tighten!

5. Realign the assembly nut on the valve body and hand tighten both components. Mark a line on both bodies and then tighten an additional ¼ turn using two wrenches. The movement of the two lines will show how much the nut is tightened.

ELECTRICAL WIRING

⚠ WARNING:

To avoid risk of electrical shock, personal injury, or death, disconnect all electrical power to the unit before performing any maintenance or service. The unit may have more than one electrical supply.

Label all wires prior to disconnection when servicing the unit. Wiring errors can cause improper and dangerous operation.

- All electrical connections must be in compliance with all applicable local codes and ordinances, and with the current revision of the National Electric Code (ANSI/NFPA 70).
- For Canadian installations the electrical connections and grounding shall comply with the current Canadian Electrical Code (CSA C22.1 and/or local codes).

Pre-Electrical Checklist

- ✓ Verify that the voltage, frequency, and phase of the supply source match the specifications on the unit rating plate.
- ✓ Verify that the service provided by the utility is sufficient to handle the additional load imposed by this equipment. Refer to the unit wiring label for proper high and low voltage wiring.
- ✓ Verify factory wiring is in accordance with the unit wiring diagram. Inspect for loose connections. See [Figure 9 \(page 16\)](#) & [Figure 10 \(page 17\)](#).

Line Voltage

- A wiring diagram is located on the inside cover of the electrical box of the outdoor unit. The installer should become familiar with the wiring diagram before making any electrical connections to the outdoor unit.
- **An electrical disconnect must be located within sight of and readily accessible to the unit.** This switch shall be capable of electrically de-energizing the outdoor unit.
- Line voltage to the unit should be supplied from a dedicated branch circuit containing the correct fuse or circuit breaker for the unit. Incoming field wiring and minimum size of electrical conductors and circuit protection must be in compliance with information listed on the outdoor unit data label. Any other wiring methods must be acceptable to authority having jurisdiction.
- The outdoor unit requires both power and control circuit electrical connections. Refer to the wiring diagrams ([Figure 9](#), & [Figure 10](#)) for identification and location of outdoor unit field wiring interfaces. Make all electrical connections in accordance with all applicable codes and ordinances.
- Overcurrent protection must be provided at the branch circuit distribution panel and sized as shown on the unit rating label and according to applicable local codes. See the unit rating plate for minimum circuit ampacity and maximum overcurrent protection limits.
- Provide power supply for the unit in accordance with the unit wiring diagram, and the unit rating plate. Connect the line-voltage leads to the terminals on the contactor inside the control compartment.
- Use only copper wire for the line voltage power supply to this unit as listed in [Table 1](#). Use proper code agency listed conduit and a conduit connector for connecting the supply wires to the unit. Use of rain tight conduit is recommended.
- 208/230 Volt units are shipped from the factory wired for 230 volt operation. For 208V operation, remove the lead from the transformer terminal marked 240V and connect it to the terminal marked 208V.

COPPER WIRE SIZE — AWG (1% VOLTAGE DROP)				
SUPPLY WIRE LENGTH-FEET				SUPPLY CIRCUIT AMPACITY
200	150	100	50	
6	8	10	14	15
4	6	8	12	20
4	6	8	10	25
4	4	6	10	30
3	4	6	8	35
3	4	6	8	40
2	3	4	6	45
2	3	4	6	50
2	3	4	6	55
1	2	3	4	60

Wire Size based on N.E.C. for 60° type copper conductors.

Table 1. Copper Wire Size

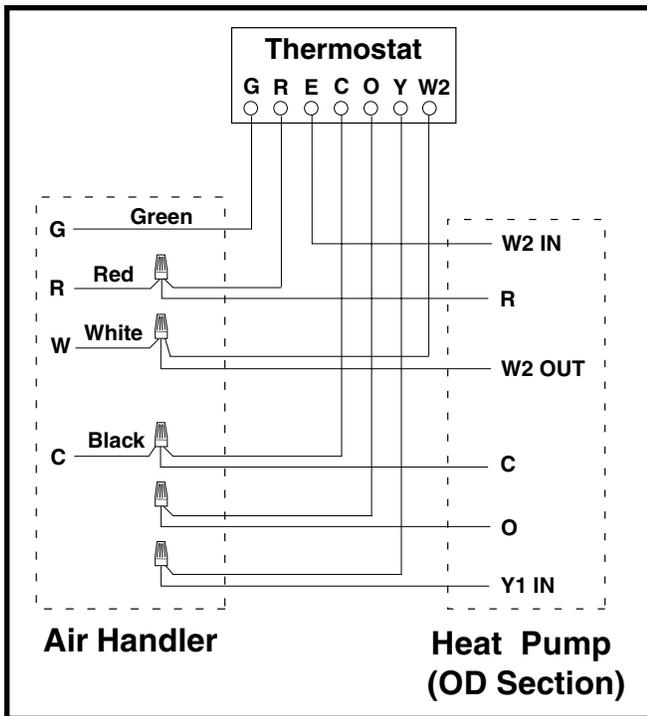


Figure 4. Typical Thermostat Connections

THERMOSTAT WIRE GAUGE	MAXIMUM RECOMMENDED THERMOSTAT WIRE LENGTH (FT)
24	25
22	45
20	70
18	110

Table 2. Thermostat Wire

- Optional equipment requiring connection to the power or control circuits must be wired in strict accordance of the NEC (ANSI/NFPA 70), applicable local codes, and the instructions provided with the equipment.

Grounding

⚠ WARNING:

The unit cabinet must have an uninterrupted or unbroken electrical ground to minimize personal injury if an electrical fault should occur. Do not use gas piping as an electrical ground!

This unit must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code (ANSI/NFPA 70) or the CSA C22.1 Electrical Code. Use the grounding lug provided in the control box for grounding the unit.

Thermostat / Low Voltage Connections

- Thermostat connections should be made in accordance with the instructions supplied with the thermostat and the indoor equipment. A typical installation with a heat pump thermostat and air handler is shown in Figure 4.
- The outdoor unit is designed to operate from a 24 VAC Class II control circuit. The control circuit wiring must comply with the current provisions of the NEC (ANSI/NFPA 70) and with applicable local codes having jurisdiction.
- The low voltage wires must be properly connected to the unit's low voltage terminal block. Recommended wire gauge and wire lengths for typical thermostat connections are listed in Table 2.
- The thermostat should be mounted about 5 feet above the floor on an inside wall. DO NOT install the thermostat on an outside wall or any other location where its operation may be adversely affected by radiant heat from fireplaces, sunlight, or lighting fixtures, and convective heat from warm air registers or electrical appliances. Refer to the thermostat manufacturer's instruction sheet for detailed mounting and installation information.

START UP & ADJUSTMENTS

Pre-Start Check List

- ✓ Verify the unit is level and has sufficient clearances for unobstructed airflow.
- ✓ Verify the outdoor coil and top of the unit are free from obstructions and debris, and all equipment access/control panels are in place.
- ✓ Verify that the line voltage power leads are securely connected and the unit is properly grounded.
- ✓ Verify that the low voltage wires are securely connected to the correct leads on the low voltage terminal strip.
- ✓ Verify that the power supply branch circuit overcurrent protection is sized properly.
- ✓ Verify that the thermostat is wired correctly.

Start-Up Procedures

⚠ WARNING:

This unit is equipped with a crankcase heater. Allow 24 hours prior to continuing the start up procedures to allow for heating of the refrigerant compressor crankcase. Failure to comply may result in damage and could cause premature failure of the system. This warning should be followed at initial start up and any time the power has been removed for 12 hours or longer.

Operating Temperatures

This equipment has been designed to operate within the temperatures specified in Table 3 (page 7). Running the equipment in heating at higher than 70°F may require the use of a Heat Pump Mild Weather Control Kit or changing over to emergency or auxiliary heating.

COOLING		HEATING	
MIN (°F)	MAX (°F)	MIN (°F)	MAX (°F)
60	115	-10	70

Table 3. Heat Pump Operating Temperatures

Air Circulation - Indoor Blower

1. Set the thermostat system mode on OFF and the fan mode to ON.
2. Verify the blower runs continuously. Check the air delivery at the supply registers and adjust register openings for balanced air distribution. If insufficient air is detected, examine ductwork for leaks or obstructions.
3. Set the thermostat fan mode to AUTO and verify the blower stops running.

Short Cycle Protection

1. Set the thermostat system mode to COOL. Observe the temperature setting of the thermostat and gradually raise the set-point temperature until the unit de-energizes.
2. Immediately lower the set point temperature of the thermostat to its original setting and verify that the indoor blower is energized and outdoor unit remains de-energized.
3. After approximately 5 minutes, verify the outdoor unit energizes and the temperature of the discharge air is cooler than the room temperature.

System Cooling

1. Set the thermostat's system mode to COOL and the fan mode to AUTO. Gradually lower the thermostat temperature setpoint below room temperature and verify the outdoor unit and indoor blower energize.
2. Verify blower wheel is spinning in direction indicated by arrow. Feel the air being circulated by the indoor blower and verify that it is cooler than ambient temperature. Listen for any unusual noises. If unusual sounds occur, determine the source of the noise and correct as necessary.
3. Verify HI and LO refrigerant pressures.
4. Allow the system to operate for several minutes and then set the temperature selector above room temperature. Verify the fan and compressor cycle off with the thermostat. **NOTE:** The blower should also stop unless fan switch is set to the ON position.

System Heating

1. Set the thermostat's system mode to HEAT and the temperature mode to below room temperature.
2. Verify the outdoor unit and indoor fan stop running. After 5 minutes, increase the temperature on the thermostat to it's maximum setting.
3. Verify the outdoor unit and indoor blower energize. Feel the air being circulated by the indoor blower and verify that it is warmer than ambient temperature. Listen for any unusual noises. If unusual sounds occur, determine the source of the noise and correct as necessary.

Defrost Control Board Test Pins

- Placing a jumper between the test pins for less than 1 second will bypass the Anti-Short Cycle Timer.
- Placing a jumper between the test pins for more than 1 second will force the unit into a defrost cycle. As soon as the jumper is removed, the defrost cycle will end as determined by the typical criteria.
- Verify the Status Indicator (on the control board) against the codes listed in [Table 4](#) to determine proper diagnostic description.

STATUS INDICATOR	STATUS TYPE	DIAGNOSTIC DESCRIPTION
C 1	Operating Status	Cooling, 1st Stage
H 1	Operating Status	Heating, 1st Stage
SC	Operating Status	Anti Short Cycle Timer
DF	Operating Status	Defrost
--	Operating Status	Power on, no call for operation
01	Fault	Pressure switch, low
02	Fault	Pressure switch, high
03	Fault	Temperature Sensor, Ambient
04	Fault	Temperature Sensor, Coil
05	Fault	Board
DF (FLASHING)	Input Error	Forced defrost - test short applied longer than 11 minutes

Table 4. Defrost Control Board Status Indicators

HEAT PUMP MAINTENANCE

WARNING:

To prevent electrical shock, personal injury, or death, disconnect all electrical power to the unit before performing any maintenance or service. The unit may have more than one electrical supply.

Proper maintenance is important to achieve optimum performance from the heat pump. The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools. If you do not possess these skills, contact your dealer for maintenance. Consult your local dealer about the availability of maintenance contracts. Routine maintenance should include the following:

- Inspect and clean or replace air filters at the beginning of each heating and cooling season, or more frequently if required.
- Inspect the outdoor coil at the beginning of each cooling season. Remove any debris. Clean the outdoor coil and louvers as necessary using a mild detergent and water. Rinse thoroughly with water.
- Inspect the electrical connections for tightness at the beginning of each heating and cooling season. Service as necessary.

CAUTION:

The unit should never be operated without a filter in the return air system. Replace disposable filters with the same type and size.

- Do not add additional oil to motors unequipped with oil tubes. The compressor is hermetically sealed at the factory and does not require lubrication.

REFRIGERANT CHARGING

WARNING:

This split system heat pump is shipped charged with R410A refrigerant and ready for installation. If repairs make it necessary for evacuation and charging, it should only be attempted by qualified trained personnel thoroughly familiar with this equipment. Under no circumstances should the owner attempt to install and/or service this equipment. Failure to comply with this warning could result in property damage, personal injury, or death.

After refrigerant line connections are completed, it is required that you leak check and evacuate the indoor section and all line connections (using proper methods) before finalizing the full system refrigerant charge.

- To achieve rated capacity and efficiency, the compressor must be exposed to refrigerant for at least 24 hours prior to running and then the compressor must be run for a minimum of 12 hours.
- Cooling mode charging charts and tables are applicable only to matched assemblies of this equipment and listed airflows for the indoor coil. Refer to the Quick Reference Data sheet for additional charging information. Outdoor units with non-AHRI listed indoor coils are not recommended and deviations from rated airflows or non-listed combinations may require modification to the expansion device and refrigerant charging procedures for proper and efficient system operation. For correct system charging, refer to [Figure 5 \(page 9\)](#), [Figure 6 \(page 10\)](#), [Figure 7 \(page 10\)](#), & [Figure 8 \(page 11\)](#), and [Table 5 \(page 12\)](#), [Table 6 \(page 12\)](#), & [Table 7 \(page 13\)](#).

- The refrigerant charge can be checked and adjusted through the service ports provided external to the outdoor unit. Use only gage line sets which have a “Schrader” depression device present to actuate the valve. A common suction port for heating mode charging is included and located on the compressor access panel above the outdoor unit service valves.
- Heat Mode Verification Tables are provided for quick reference when the unit is in heating mode and for the inspection of the liquid line pressures and temperatures. See [Table 8 \(page 15\)](#), [Table 9 \(page 15\)](#), [Table 10 \(page 15\)](#), & [Table 11 \(page 15\)](#)
- A high-pressure switch is factory-installed and located in the compressor discharge line internal to the outdoor unit. The switch is designed to de-energize the system when very high pressures occur during abnormal conditions. Under normal conditions, the switch is closed. If the discharge pressure rises above 575 psig, then the switch will open and de-energize the outdoor unit. The switch will close again once the liquid pressure decreases to 460 psig. Please note that the switch interrupts the thermostat inputs to the unit. When the switch opens and then closes, there will be a 5 minute short cycling delay before the outdoor unit will energize.

Charging the Unit in AC Mode

(With Outdoor Temperatures Above 55° F for Optimized Sub-Cooling of 10° F to 12° F)

1. With the system operating at steady-state, measure the liquid refrigerant pressure (in psig) at the outdoor unit service valve.
2. Measure the liquid refrigerant temperature (in Fahrenheit) at the service valve.
3. Determine the required liquid refrigerant pressure from [Figure 5 \(page 9\)](#), [Figure 6](#), [Figure 7](#), & [Figure 8](#).
 - If the pressure measured in Step 1 is greater than the required liquid refrigerant pressure determined in Step 3, then there is too much charge in the system. Remove refrigerant and repeat Steps 1 through 3 until the system is correctly charged.
 - If the pressure measured in Step 1 is less than the required liquid refrigerant pressure determined in Step 3, there is too little charge in the system. Add refrigerant and repeat Steps 1 through 3 until the system is correctly charged.

Application Notes & Charging Charts (Cooling Mode Only)

- This equipment's cooling system contains refrigerant under high pressure. Always use safe and environmentally sound methods when handling refrigerant handling or servicing the unit. Review the factory literature and safety warnings prior to servicing.
- When repairing system leaks, always use a nitrogen (inert) gas to protect the refrigerant system and pressure check the repair before re-charging. Always replace the filter-dryers when performing any repair to the refrigeration system with one capable of acid removal. After completing the repairs, evacuate the system to 350 - 500 microns and weigh in the refrigerant to the amount specified on the unit rating label.
- Charging charts are valid for a variety of indoor, return air conditions and are most influenced by the outdoor ambient temperature, outdoor fan operation and the unit operating voltage. Before using these charts, make sure the unit is in a stable operating mode. As shown in the charging charts: [Figure 5 \(page 9\)](#), [Figure 6](#), [Figure 7 \(page 10\)](#), & [Figure 8 \(page 11\)](#). The ideal system sub-cooling can vary over the range of operation. Reference the charts to determine the ideal amount of sub-cooling for a given liquid pressure. Units charged to other values will not perform at the rated unit efficiency (EER) or rated Coefficient of Performance (COP) in heating mode.
- To inspect a systems operation using quality instruments, match the measured liquid temperature to the units chart. The measured liquid pressure reading should be within 3% of the charts value for most installations.
- For systems that are operating with more than a 5% deviation, inspect the unit for the proper voltage and phase balance and the refrigeration system for leaks.
- Units that are operating at less then 95% of the nominal voltage or with a 2% phase imbalance may see a more significant deviation than the amount stated above.
- **DO NOT** use the charts in systems that have a fan cycling under low-ambient control. Refer to the low-ambient kit instructions for more information. (If applicable)

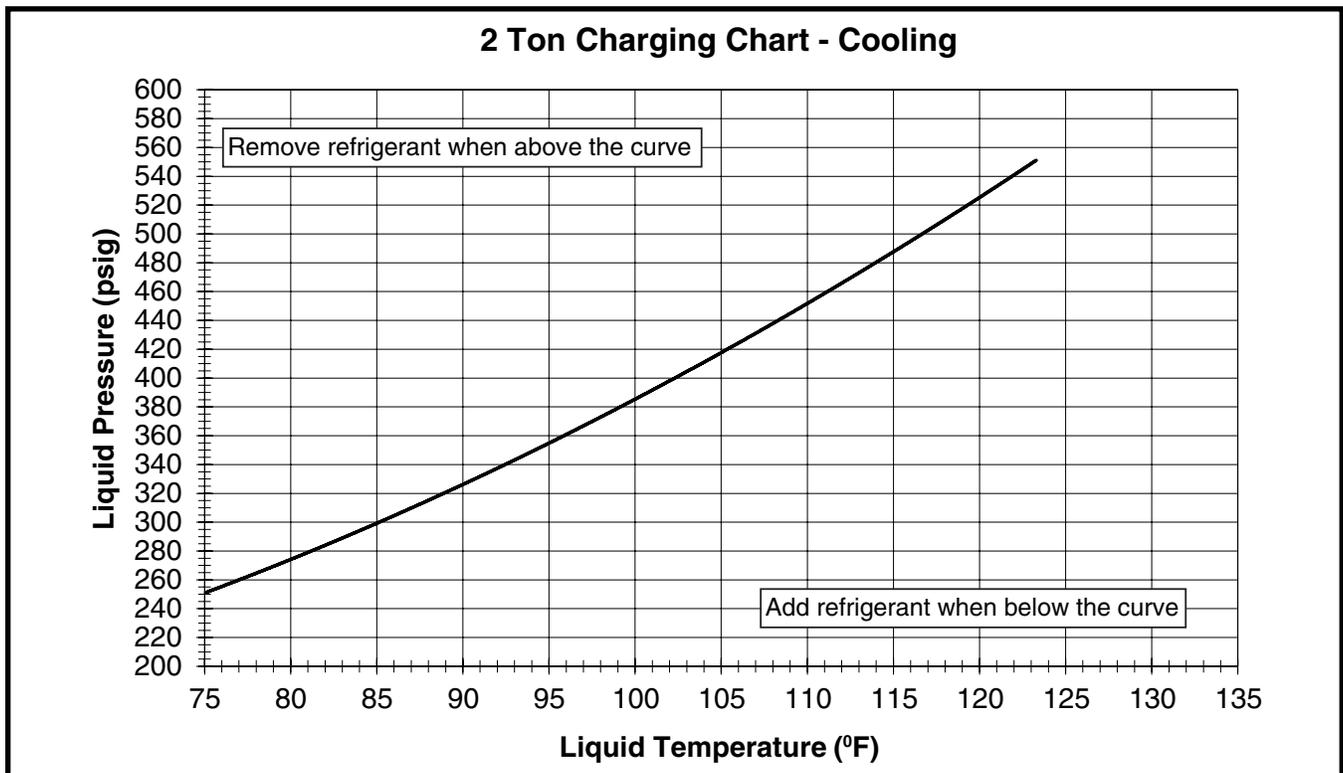
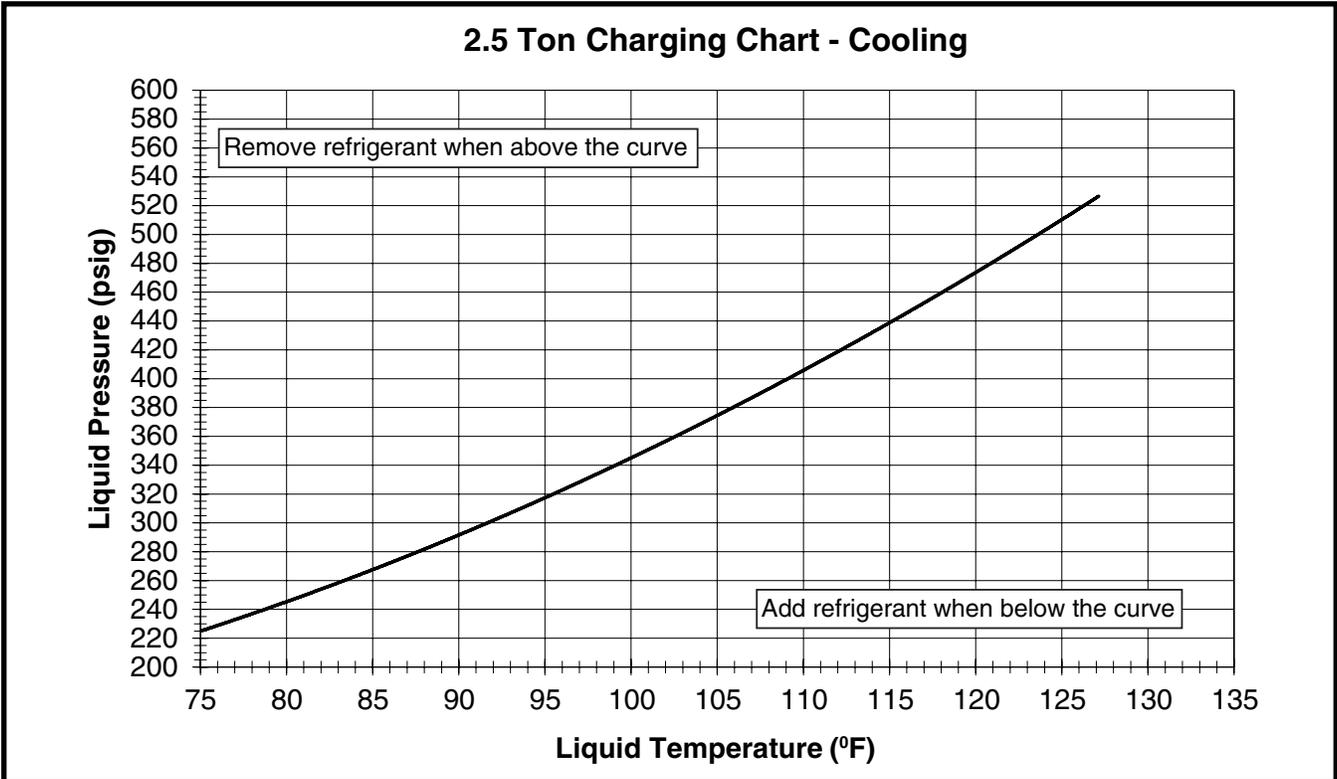
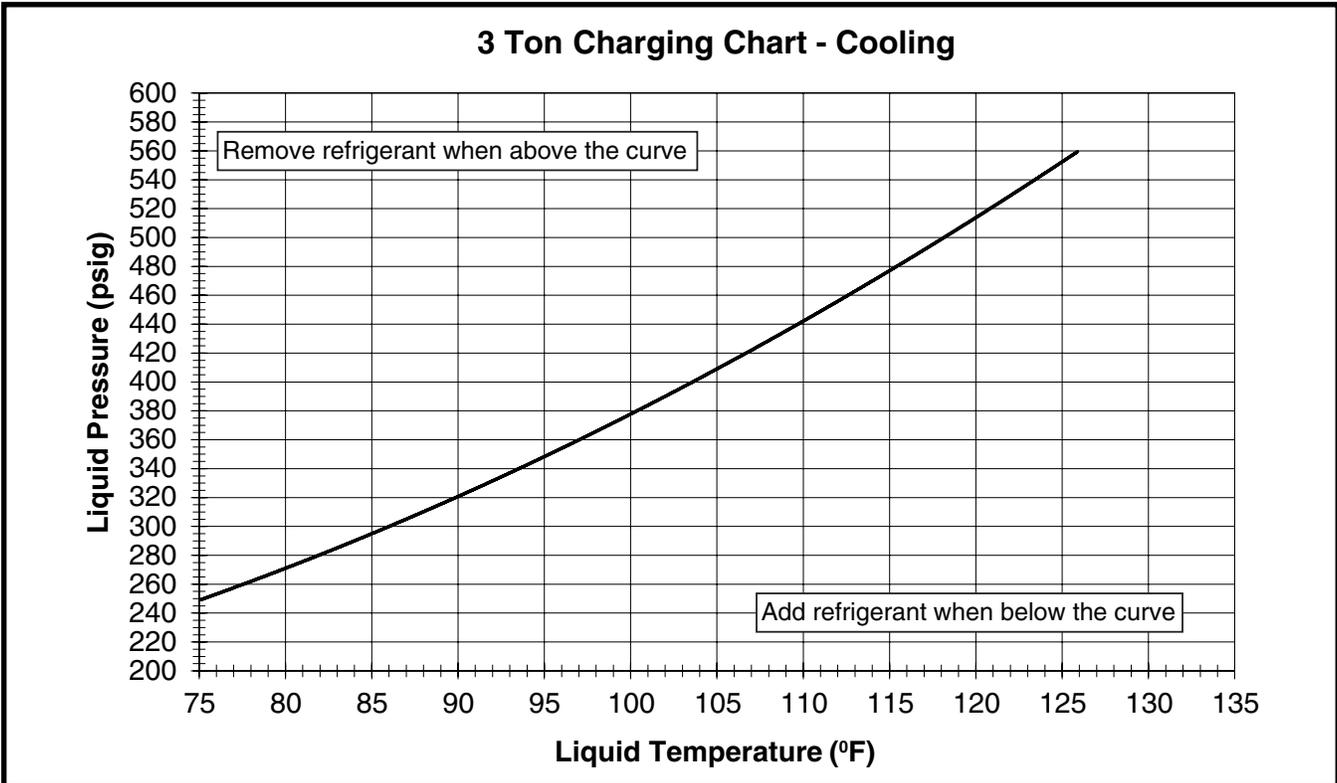


Figure 5. Charging Chart for 2 Ton Models
(TXV Matches)



**Figure 6. Charging Chart for 2.5 Ton Models
(TXV Matches)**



**Figure 7. Charging Chart for 3 Ton Models
(TXV Matches)**

3.5 Ton Charging Chart - Cooling

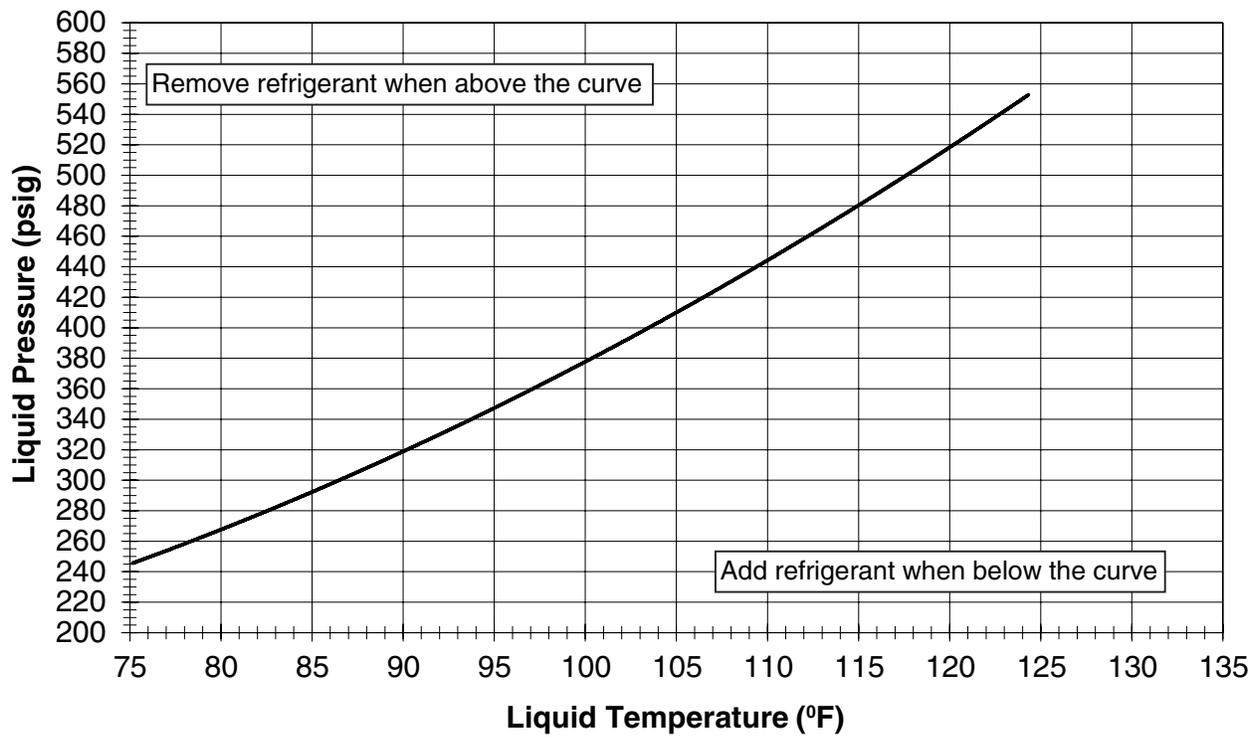


Figure 8. Charging Chart for 3.5 Ton Models
(TXV Matches)

Refrigerant Charging Tables (Cooling Mode Only)

■ Shaded boxes indicate flooded conditions.

□ Rated design values. The suction pressure will vary from design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

1. All pressures are listed in psig and all temperatures in ° F
2. Discharge temperatures greater than charted values indicate an undercharged system.
3. In Cooling Mode, suction pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.
4. In Heating Mode, charge should be weighed in. It is strongly recommended to verify charge in cooling mode at ambient above 70°F.

T6BE-024K SERIES																	
SUCT. PRESS.	OUTDOOR TEMPERATURE (°F)																
	70		75		80		85		90		95		100		105		
	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	
132	231	90															
134	232	95	252	101													
136	232	100	252	105	273	110											
138	232	105	253	109	273	114	294	119									
140	233	110	254	113	274	117	294	122	315	127							
142			254	117	275	120	295	125	316	129	336	135					
144					276	124	296	127	317	131	337	136	357	141			
146							297	131	318	134	338	138	359	142	379	148	
148							298	135	318	138	339	141	360	143	380	148	
150									319	141	340	144	361	147	382	149	
152											341	147	362	150	382	154	
154													362	153	383	157	
156															384	160	
158																	

**Table 5. Charging Table for 2 Ton Models
(Restrictor Matches)**

T6BE-030K SERIES																	
SUCT. PRESS.	OUTDOOR TEMPERATURE (°F)																
	70		75		80		85		90		95		100		105		
	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	
126	241	125															
128	242	128	263	129													
130	242	131	264	132	285	133											
132	242	134	264	134	285	135	307	136									
134	243	137	264	137	286	138	307	139	328	140							
136			265	140	286	140	307	141	329	142	350	144					
138					286	143	308	144	329	144	351	146	372	148			
140							308	146	330	147	351	148	372	149	394	151	
142							309	149	330	150	351	150	373	151	394	153	
144									330	152	352	153	373	153	395	154	
146											352	155	374	156	395	156	
148													374	158	395	159	
150															396	161	
152																	

**Table 6. Charging Table for 2.5 Ton Models
(Restrictor Matches)**

■ Shaded boxes indicate flooded conditions.

□ Rated design values. The suction pressure will vary from design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

1. All pressures are listed in psig and all temperatures in ° F
2. Discharge temperatures greater than charted values indicate an undercharged system.
3. In Cooling Mode, suction pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.
4. In Heating Mode, charge should be weighed in. It is strongly recommended to verify charge in cooling mode at ambient above 70°F.

T6BE-042K SERIES																	
SUCT. PRESS.	OUTDOOR TEMPERATURE (°F)																
	70		75		80		85		90		95		100		105		
	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	LIQ. PRESS.	DIS. TEMP.	
130	238	132															
132	240	133	260	136													
134	243	134	263	137	283	140											
136	245	134	265	138	285	141	305	144									
138	247	135	268	138	288	141	308	145	328	148							
140			270	139	291	142	311	145	331	149	350	152					
142					293	143	313	146	333	149	353	153	373	156			
144							316	147	336	150	356	153	376	156	396	160	
146							319	147	339	151	359	154	379	157	399	160	
148									342	151	362	154	382	158	402	161	
150											365	155	385	158	405	162	
152													388	159	408	162	
154															411	163	
156																	

**Table 7. Charging Table for 3.5 Ton Models
(Restrictor Matches)**

Application Notes & Heat Mode Verification Tables (Heat Mode Only)

 Shaded boxes indicate flooded conditions.

 Rated design values. The suction pressure will vary from design value if outdoor air flow, entering dry bulb, or entering wet bulb temperatures vary.

1. All pressures are listed in psig and all temperatures in ° F

2. Discharge temperatures greater than charted values indicate an undercharged system.

- **Read all notes and warnings for the Cooling-mode charging charts prior to using these Heating-mode charge verification charts. Always use safe and environmentally sound methods when handling refrigerant handling or servicing the unit. Review the factory literature and safety warnings prior to servicing.**
- When repairing system leaks, always use a nitrogen (inert) gas to protect the refrigerant system and pressure check the repair before re-charging. Always replace the filter-dryers when performing any repair to the refrigeration system with one capable of acid removal. After completing the repairs, evacuate the system to 350 - 500 microns and weigh in the refrigerant to the amount specified on the unit rating label.
- Before using the heat mode verification tables, determine the outdoor ambient temperature and the return air temperature to the unit. Locate the appropriate location on the units verification chart based on those measurements to determine the ideal discharge pressure and temperature. See [Table 8 \(page 15\)](#), [Table 9 \(page 15\)](#), [Table 10 \(page 15\)](#), & [Table 11 \(page 15\)](#). Verify the outdoor fan and compressor are running and the outdoor coil is free from frost accumulation. Also verify the system is not operating in defrost mode before inspecting the system.
- Always use quality instruments that are in good working order to measure the actual operating point of the refrigeration system. The discharge temperature should be within 2 degrees of the ideal value and the pressure should be within 2%.
- The most reliable way of verifying the system is at the correct charge is to evacuate the system and weigh in the charge to the amount shown on the rating label. However, if an inspection with these verification charts does not line up with the values shown and the ambient temperature is above 50° F, then a more accurate way to inspect the system for proper charge is with the cooling mode charging charts. Switch the unit into cooling mode and allow it to operate and stabilize for a few minutes then inspect the unit operation with the

cooling mode charts and procedures.

Before changing the unit charge, always inspect the following items first:

1. Inspect the liquid line temperature on the inlet and outlet of the filter dryers. If it is the factory dryer and in good condition there should be no temperature difference. If the temperature difference is larger than 5°, replace the filter dryer with one that is bi-directional and has acid removal capability. Refer to the unit RPL for the recommended part number and size.
2. Inspect the units input voltage. Units operating at less than 95% of the nominal voltage may deviate more from the chart than previously stated.
3. Inspect the input voltage for a phase imbalance. Units with greater than a 2% disparity will not operate at the rated performance.
4. Verify that the unit filters are installed and are clean. The pressure drop across the filters should not exceed 0.08 in-W.C.
5. Inspect the indoor coil, indoor blower and blower motor for cleanliness, clogging, and proper operation.
6. Inspect the system for leaks. If any leaks are detected, repair them immediately. Re-inspect the return air and ambient temperatures and verify that the correct system point on the verification chart was selected.

DO NOT use the charts in systems that have the fan cycling under a low-ambient control. Low-ambient controls are for cooling operation. In heating mode, the low ambient control should be disabled. Unless the unit is in defrost mode, the outdoor fan should always operate in conjunction with the compressor.

IMPORTANT NOTE:

If the unit is equipped with a liquid valve with an outdoor restrictor as shown in [Figure 2 \(page 4\)](#), then it is not possible to measure the liquid pressure. To approximate the liquid pressure, subtract 7 psig from the discharge pressure.

OUTDOOR TEMPERATURE (DEG. F)																											
0				10				20				30				40				50				60			
SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.
47	209	210	83	54	231	232	97	61	253	254	111	68	274	276	125	86	289	291	137	115	321	322	147	145	353	354	156
48	216	217	81	55	237	238	95	62	257	258	109	69	278	279	123	87	296	298	134	116	328	329	142	146	360	361	150
49	223	224	79	56	243	244	93	63	262	263	107	70	282	283	121	88	303	305	131	117	335	336	138	147	367	368	144
50	230	231	77	57	248	250	91	64	267	268	105	71	285	287	119	89	310	312	128	118	342	343	133	148	374	375	138
51	237	238	75	58	254	255	89	65	272	273	103	72	289	290	117	90	317	319	125	119	349	350	129	149	381	382	132
52	244	245	73	59	260	261	87	66	277	278	101	73	293	294	115	91	324	326	123	120	356	357	124	150	388	389	126
53	251	252	71	60	266	267	85	67	281	282	99	74	296	298	113	92	331	333	120	121	363	364	120	151	395	396	119

Table 8. Verification Table for 2 Ton Models

OUTDOOR TEMPERATURE (DEG. F)																											
0				10				20				30				40				50				60			
SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.
48	237	239	115	53	253	255	119	58	268	271	124	63	284	286	129	82	302	304	141	115	345	347	160	147	388	391	179
49	244	246	113	54	259	261	117	59	273	275	122	64	288	290	127	83	309	311	138	116	352	354	156	148	395	398	173
50	251	253	111	55	265	267	115	60	278	280	120	65	291	294	125	84	316	318	135	117	359	361	151	149	402	405	167
51	258	260	109	56	270	273	113	61	283	285	118	66	295	297	123	85	323	325	132	118	366	368	147	150	409	412	161
52	265	267	107	57	276	279	111	62	287	290	116	67	299	301	121	86	330	332	130	119	373	375	142	151	416	419	155
53	272	274	105	58	282	284	109	63	292	295	114	68	302	305	119	87	337	339	127	120	380	382	138	152	423	426	149
54	279	281	103	59	288	290	107	64	297	299	112	69	306	308	117	88	344	346	124	121	387	389	133	153	430	433	142

Table 9. Verification Table for 2.5 Ton Models

OUTDOOR TEMPERATURE (DEG. F)																											
0				10				20				30				40				50				60			
SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.
47	229	232	128	52	236	239	127	57	243	247	126	62	251	254	125	81	263	266	134	113	303	306	153	146	343	346	172
48	236	239	126	53	242	245	125	58	248	251	124	63	254	258	123	82	270	273	131	114	310	313	148	147	350	353	166
49	243	246	124	54	248	251	123	59	253	256	122	64	258	261	121	83	277	280	128	115	317	320	144	148	357	360	159
50	250	253	122	55	254	257	121	60	258	261	120	65	262	265	119	84	284	287	125	116	324	327	139	149	364	367	153
51	257	260	120	56	260	263	119	61	262	266	118	66	265	269	117	85	291	294	123	117	331	334	135	150	371	374	147
52	264	267	118	57	265	269	117	62	267	271	116	67	269	272	115	86	298	301	120	118	338	341	130	151	378	381	141
53	271	274	116	58	271	275	115	63	272	275	114	68	273	276	113	87	305	308	117	119	345	348	126	152	385	388	135

Table 10. Verification Table for 3 Ton Models

OUTDOOR TEMPERATURE (DEG. F)																											
0				10				20				30				40				50				60			
SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.	SUC. PRESS.	LIQUID PRESS.	DISCH. PRESS.	DISCH. TEMP.
33	209	216	123	45	232	239	127	57	255	262	130	69	278	285	133	84	294	301	143	102	325	333	160	119	357	364	178
34	216	223	121	46	238	245	125	58	260	267	128	70	282	289	131	85	301	308	140	103	332	340	156	120	364	371	171
35	223	230	119	47	244	251	123	59	265	272	126	71	285	293	129	86	308	315	137	104	339	347	151	121	371	378	165
36	230	237	117	48	250	257	121	60	269	277	124	72	289	296	127	87	315	322	134	105	346	354	147	122	378	385	159
37	237	244	115	49	255	263	119	61	274	281	122	73	293	300	125	88	322	329	132	106	353	361	142	123	385	392	153
38	244	251	113	50	261	269	117	62	279	286	120	74	296	304	123	89	329	336	129	107	360	368	138	124	392	399	147
39	251	258	111	51	267	275	115	63	284	291	118	75	300	307	121	90	336	343	126	108	367	375	133	125	399	406	141

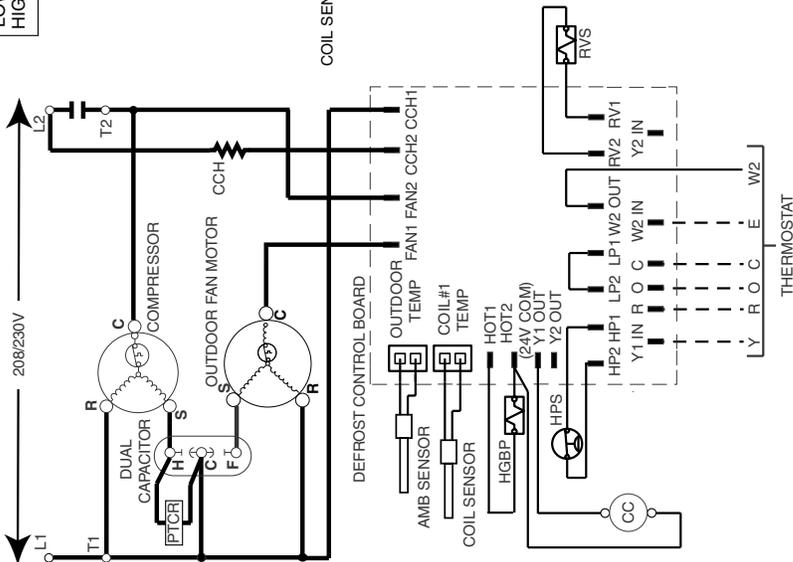
Table 11. Verification Table for 3.5 Ton Models

WIRING DIAGRAM

Split System Heat Pump (Outdoor Section)

NOTES:

1. Disconnect all power before servicing.
2. For supply connections use copper conductors only.
3. Not suitable on systems that exceed 150 volts to ground
4. For replacement wires use conductors suitable for 105° C.
5. For ampacities and overcurrent protection, see unit rating plate.
6. Connect to 24 vac/40va/class 2 circuit. See furnace/air handler installation instructions for control circuit and optional relay/transformer kits.

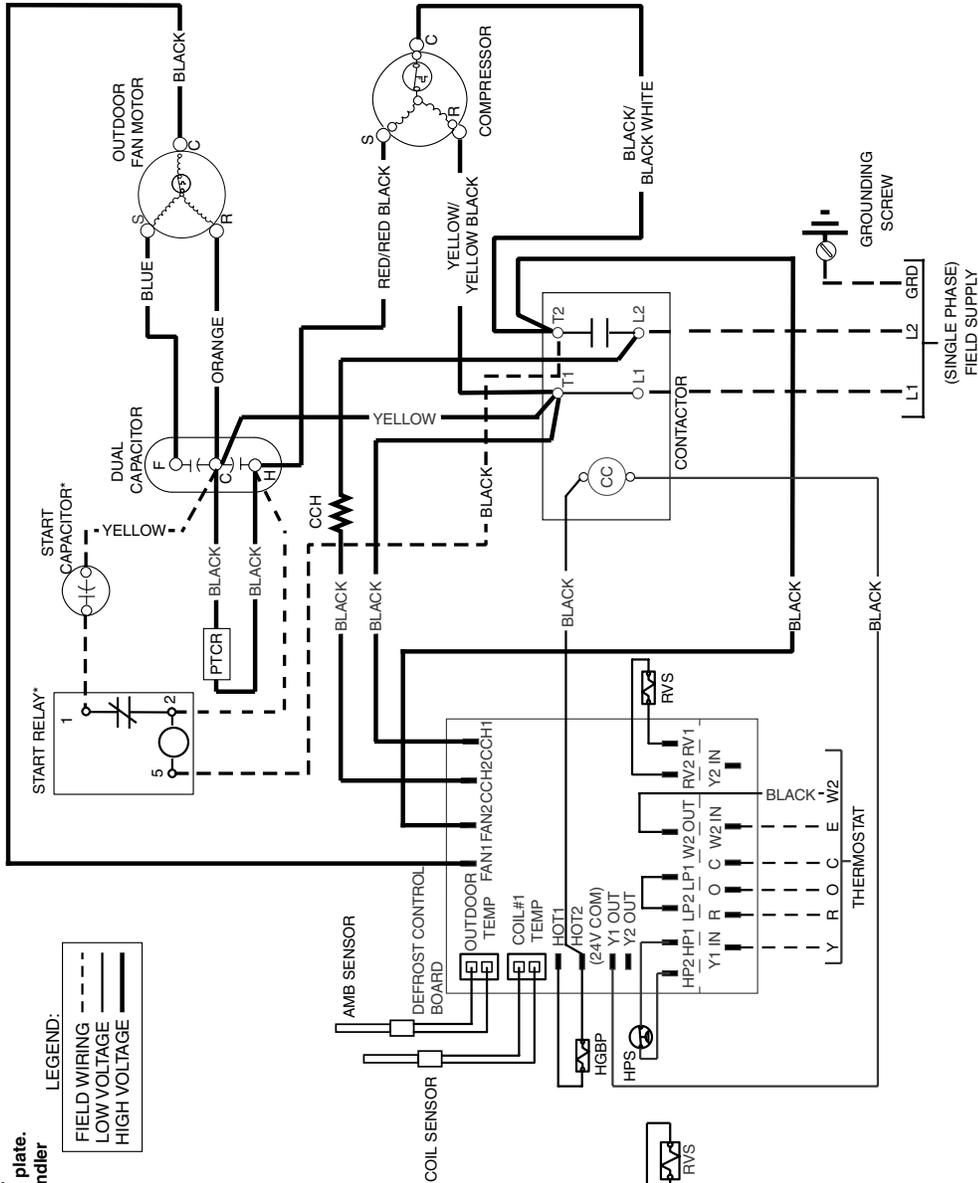


- AMB SENSOR - Ambient Sensor
- CC - Contactor Coil
- CCH - Crankcase Heater
- HPS - High Pressure Switch
- HGBP - Hot Gas By Pass Valve
- RVS - Reversing Valve Solenoid
- * HARD START KIT (OPTIONAL)

WIRING DIAGRAMS

Single Phase

1. Couper le courant avant de faire leretien.
2. Employez uniquement des conducteurs en cuivre.
3. Ne convient pas aux installations de plus de 150 volt a la terre.



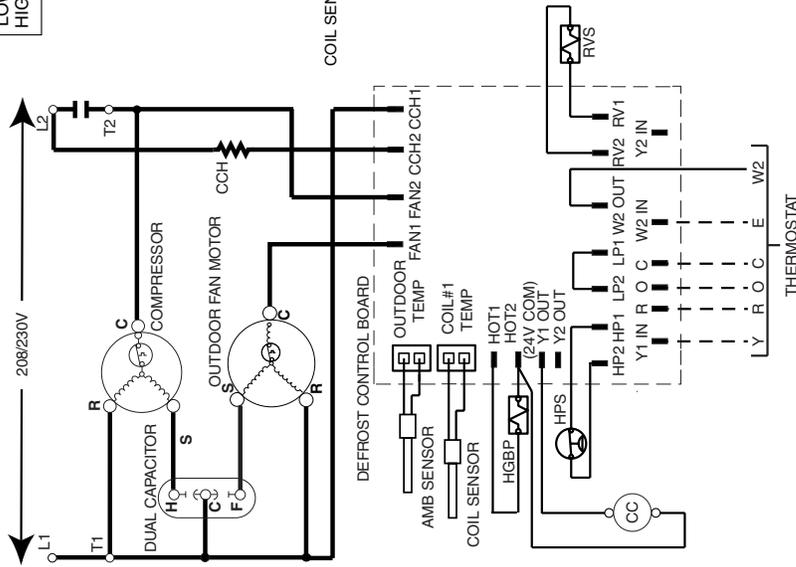
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Figure 9. W.D. for 2.5 - 3 Ton Models

WIRING DIAGRAM

Split System Heat Pump (Outdoor Section)

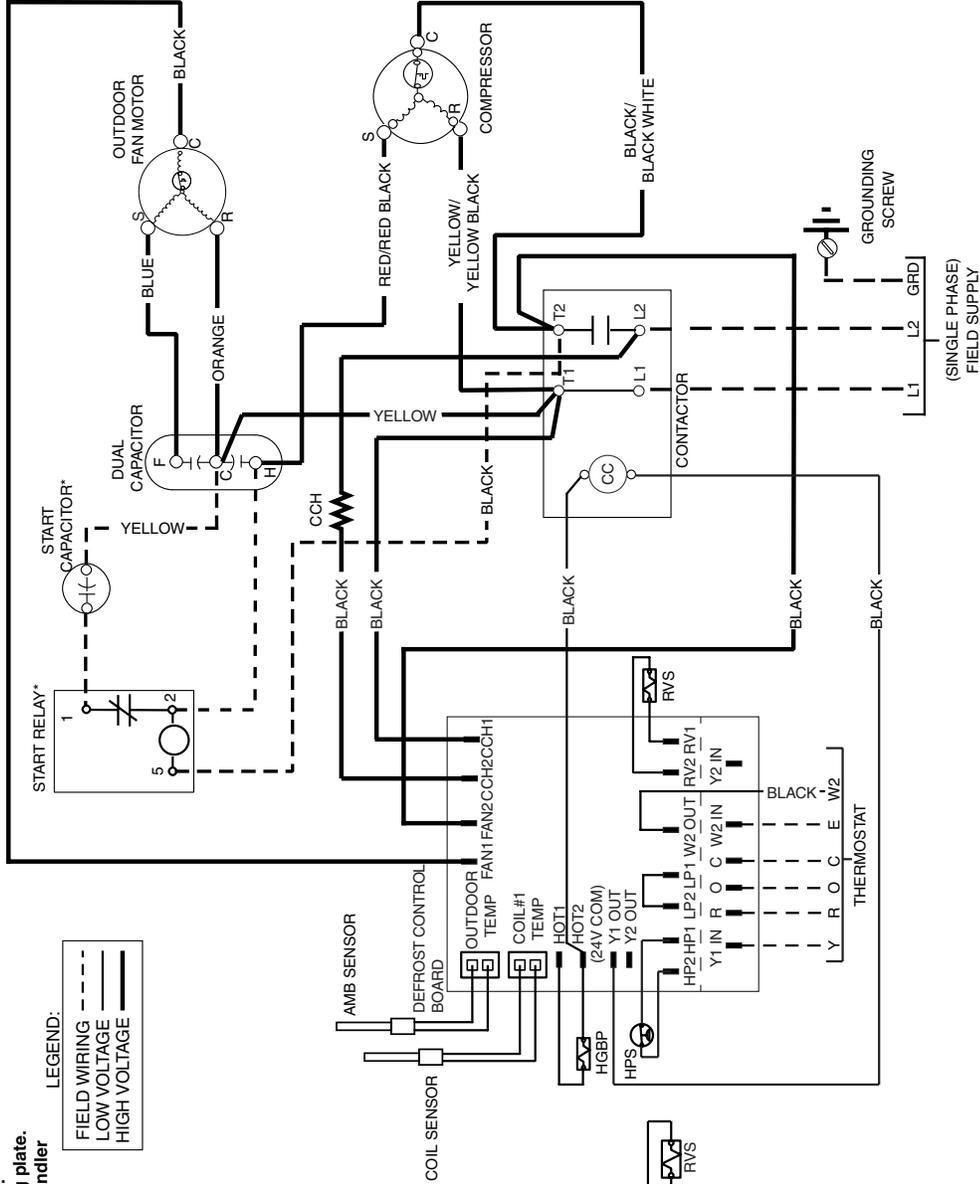
- NOTES:**
1. Disconnect all power before servicing.
 2. For supply connections use copper conductors only.
 3. Not suitable on systems that exceed 150 volts to ground.
 4. For replacement wires use conductors suitable for 105° C.
 5. For ampacities and overcurrent protection, see unit rating plate.
 6. Connect to 24 vac/40va/class 2 circuit. See furnace/air handler installation instructions for control circuit and optional relay/transformer kits.



- AMB SENSOR - Ambient Sensor
- CC - Contactor Coil
- CCH - Crankcase Heater
- HPS - High Pressure Switch
- HGBP - Hot Gas By Pass Valve
- RVS - Reversing Valve Solenoid
- * HARD START KIT (OPTIONAL)

Single Phase

1. Couper le courant avant de faire leretien.
2. Employez uniquement des conducteurs en cuivre.
3. Ne convient pas aux installations de plus de 150 volt a la terre.



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Figure 10. W.D. for 3.5 Ton Models

INSTALLATION / PERFORMANCE CHECK LIST

INSTALLATION ADDRESS:		
CITY:	STATE:	
UNIT MODEL #		
UNIT SERIAL #		
Unit Installed Minimum clearances per Figure 1 (page 3)?	YES	NO
INSTALLER NAME:		
CITY _____	STATE _____	
Has the owner's information been reviewed with the customer?	YES	NO
Has the Literature Package been left with the unit?	YES	NO

REFRIGERATION SYSTEM		
Was unit given 24 hr warm up period for crankcase heaters?	YES	NO
Stage-1 Liquid Pressure (high side)		
Stage-1 Suction Pressure (low side)		

ELECTRICAL SYSTEM		
Electrical connections tight?	YES	NO
Line voltage polarity correct?	YES	NO
Rated Voltage: VOLTS		
Has the thermostat been calibrated?	YES	NO
Is the thermostat level?	YES	NO
Is the heat anticipator setting correct? (If Applicable)	YES	NO

PROPOSITION 65 WARNING:
WARNING: This product contains chemicals known to the state of California to cause cancer.
WARNING: This product contains chemicals known to the state of California to cause birth defects or other reproductive harm.

REPLACEMENT PARTS

Replacement parts are available through your distributor. Please have the complete model and serial number of the unit when ordering replacement parts.

- | | |
|--|--|
| <p>ELECTRICAL:</p> <ul style="list-style-type: none"> Capacitors Compressors Contactors Pressure Switches Relays | <ul style="list-style-type: none"> Temperature Limit Switches Thermostats Time Delay Relays Transformers |
| <p>MOTORS:</p> <ul style="list-style-type: none"> Blower Motor Fan Motor | <p>COMPONENTS:</p> <ul style="list-style-type: none"> Fan Grille Filter/Driers |
| <ul style="list-style-type: none"> Blower Assembly Cabinet Panels Expansion Valves | |

