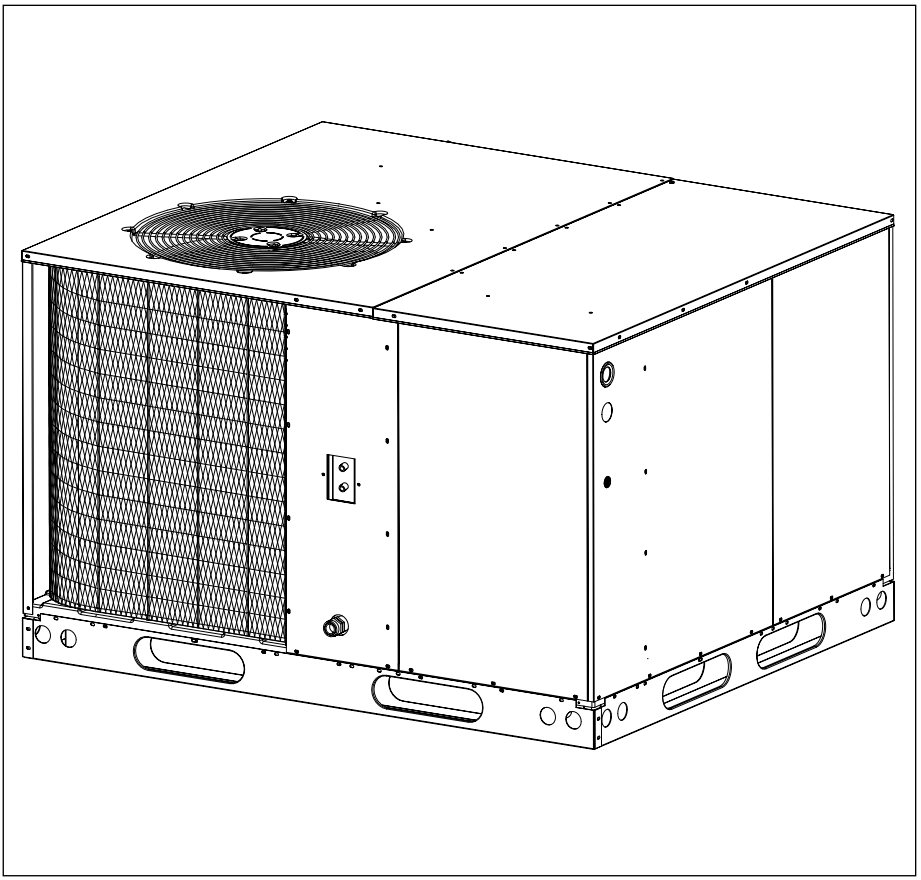
Single Package Heat Pump

Installation Instructions

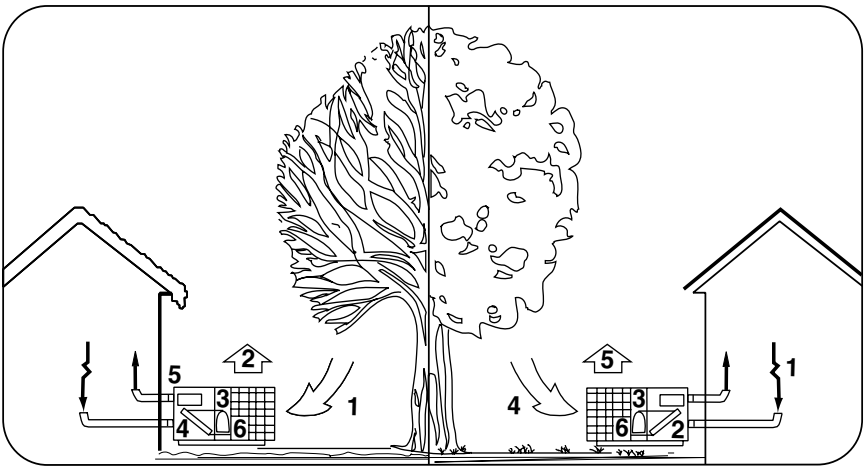


IMPORTANT

These instructions are primarily intended to assist qualified individuals experienced in the proper installation of heating and/or air conditioning appliances. Some local codes require licensed installation/service personnel for this type equipment. All installations must be in accordance with these instructions and with all applicable national and local codes and standards.

Read these instructions thoroughly before starting the installation. Follow all precautions and warnings contained within these instructions and on the unit.

SECTION 1. OWNER INFORMATION



WINTER HEATING

1. Outdoor air enters the heat pump.
2. The cold, heat-transfer section (outdoor coil) extracts the heat from the air as the refrigerant evaporates from a liquid to a cold gas.
3. The refrigerant, compressed to a hot gas by the heat pump, carries the heat to the heat-transfer section (indoor coil).
4. The hot, heat-transfer section (indoor coil) releases the heat as the refrigerant condenses from a gas to a liquid.
5. The blower circulates the heat throughout the home via the supply duct.
6. The refrigerant returns to the outdoor coil and evaporates once again to absorb more heat.

SUMMER COOLING

1. Indoor air enters the return air duct.
2. The cold, heat-transfer section (indoor coil) extracts the heat from the air as the refrigerant evaporates from a liquid to a cold gas.
3. The refrigerant, drawn to the heat pump and compressed to a hot gas, carries the heat outdoors.
4. The hot, heat-transfer section (outdoor coil) releases the heat as the refrigerant condenses from a gas to a liquid.
5. The heat pump (outdoor fan) discharges the heat to the outside air.
6. The refrigerant returns to the indoor coil and evaporates once again to absorb more heat.

It is the sole responsibility of the homeowner to make certain that heat pump has been correctly set up and adjusted to operate properly.

The Manufacturer warrants the heat pump to be free from defects in material or workmanship for a period of one year. We will not be responsible for any costs found necessary to correct problems due to improper setup, improper installation, adjustments, improper operating procedure on the part of the user, etc.

Some specific examples of service calls which are not included in the limited warranty are:

1. Correcting wiring problems in the electrical circuit supplying the heat pump.
2. Resetting circuit breakers or other switches.
3. Adjusting or calibrating of thermostat.

To avoid misunderstandings at a later date, carefully review these responsibilities with your dealer or service company.

The heat pump system will heat and cool your home and save your energy dollars.

During the summer, a heat pump cools a house by absorbing heat from within the house and exhausting it outdoors. During the winter, a heat pump heats a house by absorbing heat outdoors and exhausting it indoors. This is an efficient heating means because you pay for “moving” heat from outdoors to indoors, but do not pay to generate the heat.

OPERATING INSTRUCTIONS

To Operate Your Heat Pump For Cooling —

1. Set the thermostat system switch to COOL and the thermostat fan switch to AUTO. **See Figure 1.**

2. Set the thermostat temperature selector to the desired cooling temperature. The outdoor unit fan, the indoor blower, and the compressor will all cycle on and off to maintain the indoor temperature at the desired cooling level.

NOTE: If the thermostat temperature level is re-adjusted, or if the thermostat system switch is re-positioned, the outdoor unit fan and the compressor may not start immediately. A protective timer circuit holds the compressor and the outdoor fan off for approximately six minutes following a previous operation or the interruption of the main electric power

To Operate Your Heat Pump For Heating —

1. Set the thermostat system switch for HEAT and the thermostat fan switch to AUTO. **See Figure 1.**

2. Set the thermostat temperature selector to the desired heating temperature. The outdoor unit fan, the indoor blower, and the compressor will all cycle on and off to maintain the indoor temperature at the desired heating level.

NOTE: If the thermostat temperature level is re-adjusted, or if the thermostat system switch is re-positioned, the outdoor unit fan and the compressor may not start immediately. A protective timer circuit holds the compressor and the outdoor fan off for approx-imately six minutes following a previous operation or the interruption of the main electrical power.

Emergency Heat — Some thermostats will include a system switch position termed EM HT or AUX HT, etc. This is a back-up heating mode to be used only if there is a suspected problem. With the system switch set to EM HT, etc., the compressor and outdoor fan will be locked off and supplemental heat (electric resistance heating) will be used as a source of heat. Sustained use of electric resistance heat in place of the heat pump will result in an increase in electric utility costs.

Figure 1. Typical Thermostat

Defrost — During cold weather heating operation, the outdoor unit will develop a coating of snow and ice on the heat transfer coil. This is normal and the unit will periodically defrost itself. During the defrost cycle, the outdoor fan will stop, while the compressor continues to run and heat the outdoor coil, causing the snow and ice to melt. During defrost, there may be some steam rise from the outdoor unit as the warm coil causes some melted frost to evaporate.

SPECIFICATIONS

Single Package Heat Pumps are designed for outdoor rooftop or ground level slab installations. The units are shipped ready for horizontal duct connections and are easily converted for down flow applications.

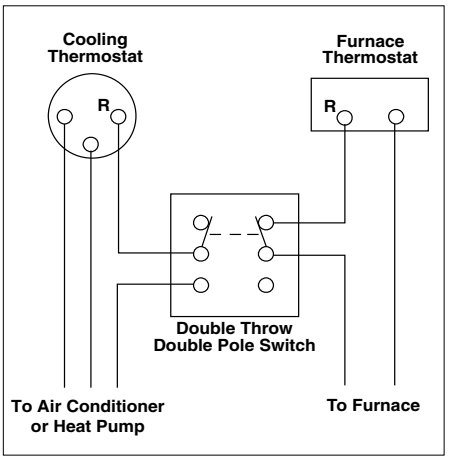


Figure 2. Thermostat Interlock System

All models are shipped from the factory with the following:

1. Zero clearance to combustibles
2. Multi-speed direct-drive blower.
3. Compressor Anti-short-cycle timer for single phase models.
4. Blower Speed Relay.
5. Horizontal or Down flow duct connections.

The unit dimensions are shown in **Figure 3**.

Optional field-installed electric heater kits are available in 5 kw through 20 kw heating capacities. A separate installation instruction document for the electric heaters and their application accompanies this one. A two stage heat 24VAC thermostat should be used with electric heater kits installed.

SAFETY CONSIDERATIONS

It is the responsibility of the installer to ensure that the installation is made in accordance with all applicable local and national codes.

⚠ WARNING:

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. Unless otherwise noted in these instructions, only factory authorized kits or accessories may be used with this product. Noncompliance may void the unit's warranty.

Labels, Tags — When working with this equipment, follow all precautions in the literature, on tags, and on labels provided with the unit and/or approved field installed kits. The type of hazard and severity are described on each label or tag.

Pressures Within The System — This equipment contains liquid and gaseous refrigerant under high pressure. Installation or servicing should only be performed by qualified trained personnel thoroughly familiar with this type equipment.

INSTALLATION REQUIREMENTS

Equipment Check — Before beginning the installation, verify that the unit model is correct for the job. The unit model number is printed on the data label. All units have been securely packaged at the point of shipment. After unpacking the unit, carefully inspect it for apparent and concealed damage. Claims for damage should be filed with the carrier by the consignee.

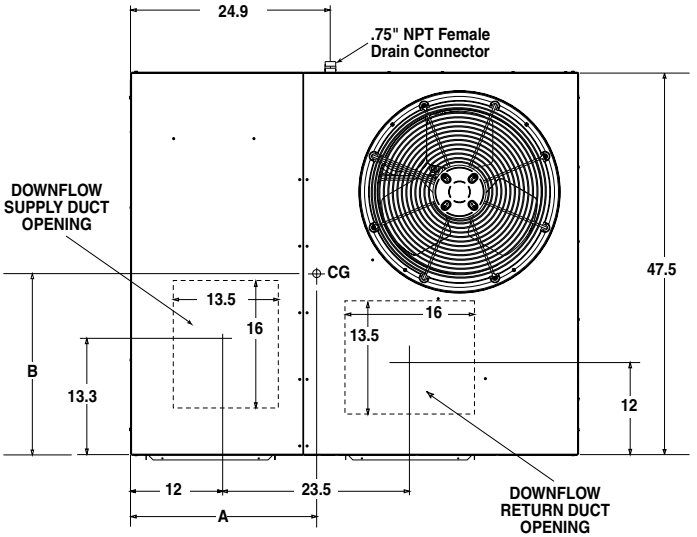
Requirements and Codes — The installer must comply with all local codes and regulations which govern this type equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. All electrical wiring must be made in accordance with local codes and regulations and with the National Electric Code (ANSI/ NFPA 70) or in Canada the Canadian Electric Code Part 1 CSA C.22.1. Air Ducts must be installed in accordance with the standards of the National Fire Protection Association "Standards for Installation of Air Conditioning and Ventilation Systems" (NFPA 90A), "Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems" (NFPA 90B), these instructions and all applicable local codes.

NFPA publications are available by writing:

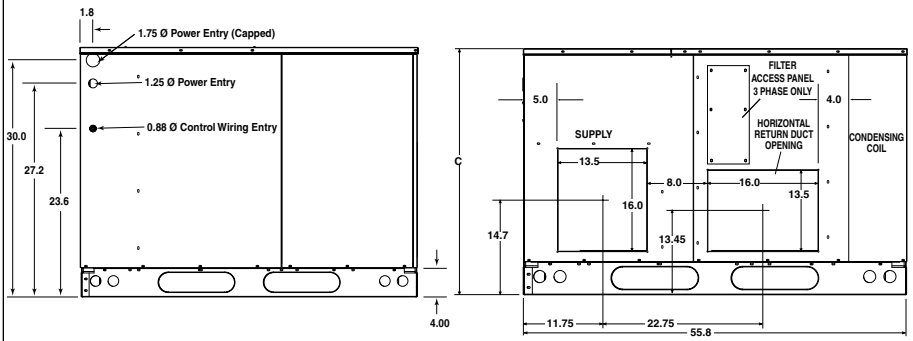
National Fire Protection Association
Batterymarch Park
Quincy, Maine 02269

Unit Location — This heat pump is designed only for outdoor installations. Choosing the location of the unit should be based on minimizing the length of the supply and return ducts. Consideration should also be given to availability of electric power, service access, noise, and shade. Sufficient clearance for unobstructed airflow through the outdoor coil must be maintained in order to achieve rated performance **See Figure 4** for minimum clearances to obstructions.

Air Filter Requirements — Three phase units "Only" are supplied from the factory with an internal filter rack assembly. Air filters are not supplied; a suitable air filter must be installed in the unit or in the return air system for all units. See **Table 1a** for internal filter size requirements. When utilizing an Economizer or Fresh Air



Top View



Side View

Back View

MODEL NO.	UNIT WEIGHT	CENTER OF GRAVITY		HEIGHT (IN INCHES) C	
		A	B	WITH BASE RAILS	WITHOUT BASE RAILS
3 Ton 10 SEER	420	28.0	26.0	36.0	31.3
4 Ton 10 SEER	510	28.0	26.0	36.0	31.3
5 Ton 10 SEER	540	29.5	26.5	40.0	35.3
3 Ton 12 SEER	455	28.0	25.5	36.0	31.3
4 Ton 12 SEER	565	29.5	26.0	40.0	35.3
5 Ton 12 SEER	575	29.5	26.0	40.0	35.3

Figure 3. Dimensions

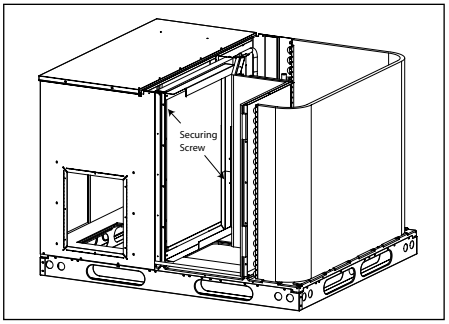


Figure 3a. Internal Filter Rack Location

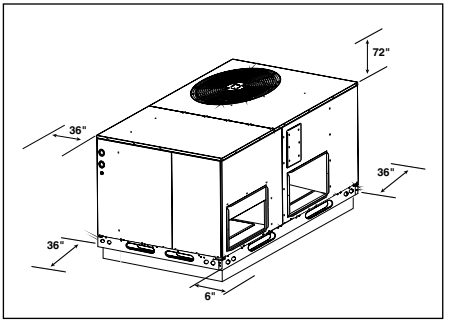


Figure 4. Minimum Clearances

Equipment, the factory installed filter rack assembly must be removed prior to installation. A suitable Air filter must be installed in the return air system. Air filter pressure drop must not exceed 0.08 inches WC @300 fpm. Air filter(s) must be installed in the return air ductwork ahead of the evaporator coil of this unit. All return air to this unit must pass through the filter(s) before entering this unit. (See Routine Maintenance for Installation/Removal of air filters).

Removal of Internal Filter Rack — First remove the Return Air Panel from the unit. Remove the height adjustment screw from the inside of the rack, and the (1) screw securing the assembly to the coil located on the left leg of the rack. The assembly can easily be collapsed and removed from the unit. See **Figure 3a** for filter rack securing screw locations.

For single phase downflow installations only, an internal filter accessory kit can be ordered. For horizontal installations, the air filter system must be installed in the return air ductwork. All return air to this unit must pass through the filter(s) before entering the evaporator coil.

Condensate Drain — Condensate is removed from the unit through the 3/4" female pipe fitting located on the front side of the unit. **(See Figure 5.)** Install a 2 inch condensate trap in the drain line of the same size and prime with water. When connecting rigid drain line, hold the female fitting with a wrench to prevent twisting. **Do not over tighten!** Refer to local codes and restrictions for proper condensate disposal requirements.

UNIT INSTALLATION

Ground Level — When installing the unit at ground level, provide a concrete mounting pad separate from the building foundation. The pad must be level to insure proper condensate disposal and strong enough to support the unit's weight. Refer to **Figure 3.** Make sure the slab is a minimum of 2" above the grade and in an area that drains well **(See Figure 6)**.

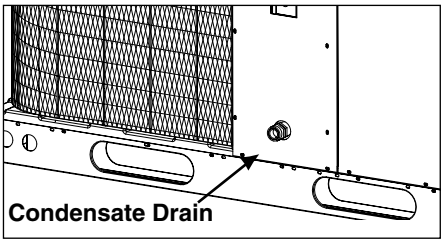


Figure 5. Condensate Drain

Rigging and Hoisting — The unit should be lifted using slings and spreader bars. The spreader bars are necessary to prevent damaging the top of the unit's cabinet. Make sure that the lifting equipment is adequate for the load. Refer to **Figure 3** for unit weights. Keep the unit in an upright position at all times. **For rooftop installations, remove and discard the two supports attached beneath the unit.**

⚠ WARNING:

To avoid the risk of property damage or personal injury; it is the rigger's responsibility to insure that whatever means are used to hoist the unit are safe and adequate.

⚠ CAUTION:

All panels must be securely in place when rigging and hoisting.

The rigging must be located outside the unit's center of gravity. Refer to **Figure 3** for center of gravity locations.

Rooftop — For rooftop installations use the appropriate accessory roof curb and follow all instructions included with it. Make sure the two supports beneath the unit have been removed. Locate the unit according to local building codes and ordinances. The curb must be level to insure proper condensate drainage. **See Figure 7**.

The roof must be capable of handling the weight of the unit. **See Figure 3** for unit weights. Reinforce the roof if required.

AIR DUCTS

This unit is designed only for use with a supply and return duct. Air ducts should be installed in accordance with the standards of the National Fire Protection Association "Standard for Installation of Air Conditioning Systems" (NFPA 90A), "Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems" (NFPA 90B), and all applicable local codes.

Design the duct work according to methods described by the National Warm Air Heating and Air Conditioning Association (ACCA). The ducts must be properly sized not to exceed .2" w.c. pressure drop at 400 scfm per nominal ton of cooling capacity.

Duct work should be attached directly to the unit flanges for horizontal applications. On roof curb installations the ducts must be attached to the curb hangers, not the unit.

Unconditioned Spaces — All duct work passing through unconditioned space must be properly insulated to minimize duct losses and prevent condensation. Use insulation with an outer vapor barrier. Refer to local codes for insulation material requirements.

Acoustical Duct Work — Certain installations may require the use of acoustical lining inside the supply duct work. Acoustical insulation must be in accordance with the current revision of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) application standard for duct liners. Duct lining must be UL classified batts or blankets with a fire hazard classification of FHC-25/50 or less. Fiber duct work may be used in place of internal duct liners if the fiber duct work is in accordance with the current revision of the SMACNA construction standard on fibrous glass ducts. Fibrous duct work and internal acoustical lining must be NFPA Class 1 air ducts when tested per UL Standard 181 for Class 1 ducts.

Horizontal to Down flow Conversion — The unit is shipped ready for horizontal duct connections. If down flow ducts are required, the unit must be converted following the steps below for both the supply and return ducts.

1) Locate the duct cap inside the duct openings and remove the screw holding it in place.
2) Lift the cap out of the unit. (The cap can be pushed up from the bottom by reaching through the fork slot).
3) Cover the horizontal duct opening with the cap. The insulation will be on the indoor side.
4) Fasten the cover with screws and seal to prevent air leakage.

Clearance — These units are approved for 0 inch clearance.

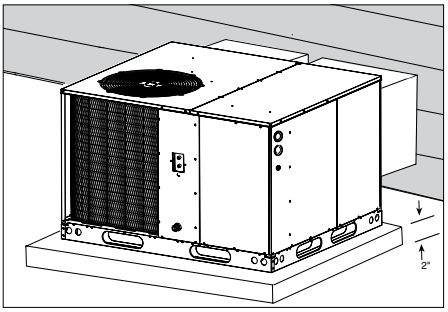


Figure 6. Ground Level Installation

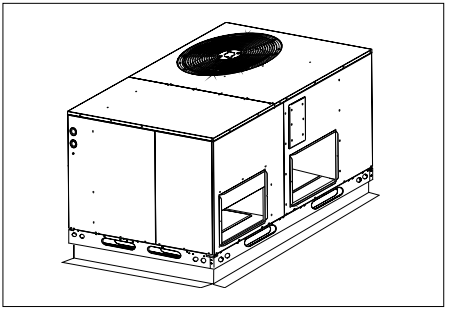


Figure 7. Roof Top Installation

ELECTRICAL WIRING

General — Electrical power wiring must be made in accordance with all applicable local codes and ordinances, and with the current revision of the National Electric Code NFPA 70 or in Canada CSA C.22.1 - Canadian Electrical Code Part 1. If any of the original wire as supplied with the unit must be replaced, it must be replaced with material of the same gage and temperature rating.

⚠ WARNING:

To avoid the 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 power supply.

Line Voltage — Before proceeding with the electrical connections, make certain that the voltage, frequency, and phase of the supply source are the same as those specified on the unit rating plate. Also verify that the service provided by the utility is sufficient to handle the additional load imposed by this equipment.

See the unit wiring label for proper high and low voltage wiring. Make all electrical connections in accordance with all applicable codes and ordinances.

Use a separate branch electrical circuit for this unit. A means of electrical disconnect must be located within sight of and readily accessibility to the unit. Internally mounted circuit breakers are available as field installed options. These circuit breakers can be used as an electrical disconnect.

The unit is shipped from the factory wired for 240 volt transformer operation. For 208 volt operation, remove the lead from the transformer terminal marked 240V and connect it to the terminal marked 208V. For maximum ampacity and over current protection, see the unit rating plate.

Provide power supply (or supplies) for the unit in accordance with the unit wiring diagram, and the unit rating plate. Connect the line-voltage leads to the corresponding terminals on the contactor (or the circuit breaker when the field installed circuit breaker kits are used) inside the control compartment. Use only copper wire for the line voltage power supply to this unit. Use proper code agency listed conduit and a conduit connector for connecting the supply wires to the unit and for obtaining proper grounding. Grounding may also be accomplished by using the grounding lug provided in the control box.

⚠ WARNING:

The unit cabinet must have and uninterrupted or unbroken electrical ground to minimize personal injury if an electrical fault should occur. This ground may consist of electrical wire or approved conduit when installed in accordance with existing national or local codes.

Blower Speed — The blower speed is preset at the factory for operation at the same speed for heating and cooling. For optimum system performance and comfort, it may be necessary to change the factory set speed. To change the blower speed:

1. Disconnect all electrical power to the unit and remove the service panel.
2. Remove the motor lead from terminal #4 of the blower relay. Cut the wire tie holding the motor lead bundle. The motor leads are color coded as shown in **Figure 9.**
3. If the desired heating blower speed is different than the cooling speed, remove and discard the jumper wire between terminals #6 and #4. on the blower relay. Place the desired heating blower speed lead on terminal #6 and the desired cooling blower speed lead on terminal #4 of the blower relay. Use another wire tie (field supplied) to bundle the remaining motor leads.

⚠ CAUTION:

To avoid personal injury or property damage, make certain that the motor leads cannot come into contact with any uninsulated metal components of the unit.

Check all factory wiring per the unit wiring diagram and inspect the factory wiring connections to be sure none loosened during shipping or installation.

Low Voltage Connections

Room Thermostat — Several options are available for a room thermostat depending on the accessories installed with the unit. Select a thermostat which operates in conjunction with the installed accessories. The thermostat should be mounted about five feet above the ground on an inside wall. The thermostat should be kept away from drafts, slamming doors, lamps, direct sunlight, or in line with the supply air flow.

To install the thermostat:

1. Position the sub base on an inside wall and mark the mounting holes and thermostat cable openings.
2. Cut out the cable opening and route the thermostat cable from the unit's low voltage compartment to the thermostat location. The thermostat cable is supplied by the installer.
3. Connect the cable leads to the sub base or thermostat terminals and to the unit's low voltage pigtails as shown in **Figure 10**. A system wiring diagram is also provided on the inside of the control panel cover.
4. Secure sub base or thermostat to the wall using screws provided with the thermostat.
5. If sub base is used, install the correct thermostat housing to sub base.
6. Refer to thermostat instruction sheet for complete detailed mounting information.

Defrost Cycle Timer — The defrost cycle timer controls the time interval of the hot gas defrost after the defrost sensor closes. It is located in the lower left corner of the defrost control board on the low voltage side of the control box. Three interval settings are available: 30 minutes, 60 minutes, and 90 minutes. Time setting selection is dependent on the climate where the unit is being installed.

Example 1. Dry climate of Southern Arizona. A 90 minute setting is recommended.

Example 2. Moist climate of Seattle, Washington. A 30 minute setting is recommended.

To set the cycle timer, place the timing pin on the defrost control board to the desired time interval post.

Note: All units are shipped from the factory with the default time setting of 30 minutes.

Field Installed Electric Heat — These Single Package Heat Pumps are designed to allow optional electric heat to be field installed as required by the building's particular heating load. The options available for each unit are shown in the heater kit installation instructions. As noted in the instructions, a field installed circuit breaker kit is available as a means of electrical disconnect for the unit.

Install the heater kits as directed by the installation instructions that come as part of the heater kit. Follow all cautions and warnings as directed.

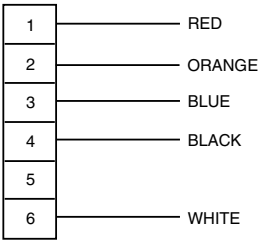
START UP AND SYSTEM CHECK

Pre-Start Check List

- Verify that the unit is level to allow proper condensate drainage.
- Verify that there is free airflow to and from the outdoor coil and that all clearance requirements are met.
- Verify that the duct work is sealed to prevent air leakage.
- 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 all exterior panels are replaced and securely fastened.
- Verify that the outdoor fan turns freely.
- Verify that the power supply branch circuit overcurrent protection is sized properly.
- Verify that the thermostat is wired correctly. The thermostat function switch should be set to "Off' and the thermostat fan switch should be set to "Auto."

Start-Up Procedure

Close all electrical disconnects to energize the system.



PIN NUMBER	WIRE COLOR	MOTOR SPEED
1	RED	LOW
2	ORANGE	N/A
3	BLUE	MEDIUM
4	BLACK	HIGH
5	N/A	N/A
6	WHITE	COMMON

Figure 9. Motor Lead Connector

⚠ WARNING:

If the 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.

Air Circulation — Leave the thermostat system switch set to "Off" and set the thermostat fan switch to "On." The blower motor should run continuously. Check for air delivery at the register(s). Ensure that there are no obstructions at the registers or in the duct work. Set thermostat fan switch to "Auto."

Short Cycle Protection — With the system operating in cooling mode, note the temperature setting of the thermostat and gradually raise the set-point temperature until the unit de-energizes. Immediately lower the set point temperature of the thermostat to its original setting and verify that the indoor blower is energized. Verify that after approximately 5 minutes the compressor and fan energize and that the temperature of the discharge air is cooler than the room temperature. This is available only for the single phase models.

System Cooling

1. Set the thermostat system switch to "Cool" and the thermostat fan switch to "Auto". Gradually lower the thermostat temperature switch below room temperature and observe that the blower, compressor, and fan energize. Check that air cooler than room temperature is being discharged at the register. Listen for any unusual noises.
2. After allowing the unit to run for several minutes, set the temperature selector above room temperature.
   - The fan and compressor cycles off with the thermostat.
   - The blower should also stop unless fan switch is set to "ON" position.

System Heating — If the unit has been equipped with optional electric heater kits, set the system thermostat switch to HEAT and set the thermostat fan switch to AUTO. Verify that the compressor and outdoor fan are not energized but that the blower and heaters are. Check for warm air at the supply registers.

DEFROST CONTROL BOARD OPERATION AND TESTING

1. Terminals "R"-"C" must have 24±V present between them in order for the time delay and defrost sequences to be operational.

2. Jumper the "T2"-"DFT" test pins. This will indicate to the board that the defrost T-stat is closed(if the compressor is running). Defrost T-stat is closed at 32° or below and is open at 68° or above. But it's state is unknown if the temperature is between 32°F and 68°F. The defrost thermostat tells the board whether a defrost cycle needs to be started or terminated. With the DFT closed the unit will run for 30/60/90 minutes in heat mode and then defrost the outdoor coil. The defrost will turn off the outdoor fan, turn on the compressor and raise the coil temperature to 68°F. This will open the DFT and terminate the defrost. If the DFT does not open the defrost will end after 10 minutes.

3. Defrost board speed-up. With compressor running in heat mode, next jump the "Test"

pin to “C” on terminal strip. This will initiate a defrost test in 5, 10 or 15 seconds (This is determined by the 30, 60 or 90 minute defrost pin settings. The factory setting will be 30 minutes). Note that this will bypass the compressor off delay when the unit goes into defrost test and if left in defrost test, the delay will be bypassed when the test is terminated by the processor. If the jumper is removed before the test is over the processor will perform the remainder of a normal defrost. See step 2 above.

4. Remove the jumpers.

Note: The delay/no-delay pin concerns compressor operation during defrosts. The default setting is delay. Reciprocating compressors should only use this setting in conjunction with an approved hard start kit. Scroll compressors that have noise issues while going into or coming out of defrost should use this 30 second delay to reduce the defrost noise. To switch from no-delay to delay remove the pin from the “no-delay” pin location and shift it to the “delay” pin location.

Speed up changes:

Manually initiating a defrost will cause the compressor to run continually when entering defrost.

Normal defrost operation:

To test normal defrost operation when the temperature is above 35°F, jumper “R” to “DFT” on the 624656 board and allow the unit to run for 30 minutes. Defrost will continue until the “R” to “DFT” jumper is removed or for 10 minutes. Remove the jumper.

The 5 minute time delay feature can be shortened 1 time to 1 second by jumping the “Test” to “C” terminal. Remove the jumper and repeat as desired.

Note: If jumper is left on the “Test” to “common” pins permanently, the defrost cycle will become inoperable.

Defrost Test Procedure for 624656

1. Jumper “T2” to “DFT” at the test terminals.
2. With unit running in heat mode, short the “TEST” terminal to the common terminal near it. This will speed up the board and cause it to enter defrost mode in 5/10/15 seconds depending on the defrost time selection. Compressor delay will not function during speed-up.
3. This test will end in 5 seconds if the “TEST”-common short is not removed.
4. Remove both the short and the “T2” to “DFT” jumper to terminate the defrost cycle. The 30 second compressor delay should operate normally.
5. Test is complete, reset thermostat to home owner preference.

UNIT MAINTENANCE

⚠ 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.

Refrigerant Charging — Packaged heat pumps are fully charged at the factory . The system refrigerant charge can be checked and adjusted through the service ports provided in the front panel. Use only gauge lines which have a “Schrader” depression device present to actuate the valve. Draw a vacuum on gauge lines to remove air before attaching them to the service ports on the unit. Refrigerant charging must be done by qualified personnel familiar with safe and environmentally responsible refrigerant handling procedures.

⚠ WARNING:

Single Packaged Heat Pumps are shipped fully charged and ready for installation. When a system is installed according to these instructions, no refrigerant charging is required. If repairs make it necessary for evacuation and charging, it should only be done by qualified, trained personnel thoroughly familiar with this equipment. Some local codes require licensed installation/ service personnel to service this type of 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:

Use care when removing parts from this unit. Personal injury can result from sharp metal edges present in all equipment of sheet metal construction.

Routine Maintenance — 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. At a minimum, routine maintenance should include the following:

1. Inspect and clean or replace air filters at the beginning of each heating and cooling season, or more frequently if required.
2. Inspect the condensate drain and 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.
3. Inspect the electrical connections for tightness at the beginning of each heating and cooling season. Service as necessary.
4. The motors for the circulating air blower and the outdoor fan are pre-lubricated at the factory. No further oiling is required for the life of this product.

⚠ CAUTION:

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

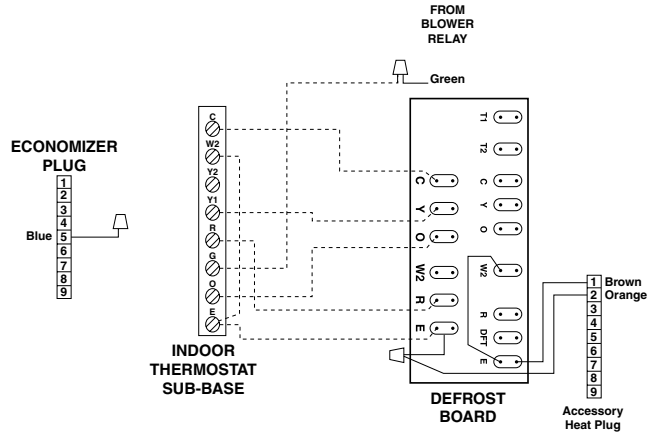
UNIT SIZE	INTERNAL FILTER SIZE
R4GA 024-042, R4BC 024 P4SA 036, P4SA 048 P4SC 036, Q4SA 036	(2) 14" x 25" x 1" or (2) 14" x 25" x 2"
R4GA 048-060, R4GC 030-042 P4SA 060, P4SC 048-060, Q4SA 048-060, Q4SC-048-060	(2) 16" x 25" x 1" or (2) 16" x 25" x 2"
R4GC 048-060 R4GM 024-072 Q4SC 048-060	(2) 18" x 25" x 1" or (2) 18" x 25" x 2"

Table 1a. Internal Filter Size Requirements.

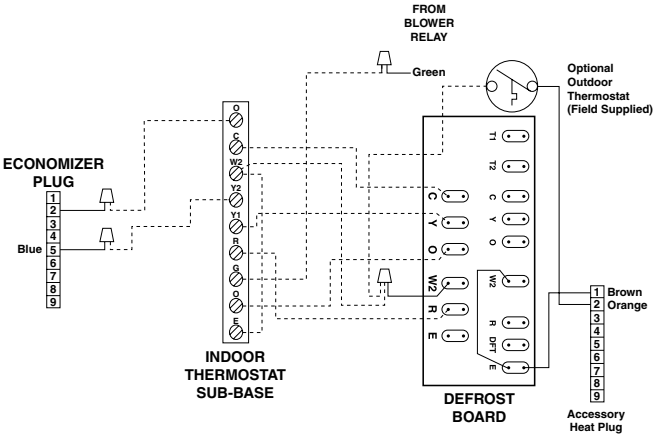
		External Static Pressure Drop - inches water column							
Model	**Speed**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**
2.5 Ton	High	1600	1510	1410	1310	1200	1070	930	760
3 Ton	Medium	1410	1330	1250	1150	1050	940	820	670
10 SEER	Low	1130	1070	1000	930	850	760	650	530
3.5 Ton	High	2200	2140	2070	2000	1930	1850	1770	1690
4 Ton	Medium	1940	1890	1830	1760	1700	1630	1560	1490
10 SEER	Low	1560	1510	1460	1410	1360	1310	1250	1200
5 Ton	High	220	2140	2070	2000	1930	1850	1770	1690
10 SEER	Medium	1940	1890	1830	1760	1700	1630	1560	1490
	Low	1560	1510	1460	1410	1360	1310	1250	1200
3 Ton	High	1600	1510	1410	1310	1200	1070	930	760
12 SEER	Medium	1410	1330	1250	1150	1050	940	820	670
	Low	1130	1070	1000	930	850	760	650	530
4 Ton	High	2270	2200	2140	2070	2000	1930	1850	1770
12 SEER	Medium	2000	1940	1890	1830	1760	1700	1630	1560
	Low	1600	1560	1510	1460	1410	1360	1310	1250
5 Ton	High	2270	2200	2140	2070	2000	1930	1850	1770
12 SEER	Medium	2000	1940	1890	1830	1760	1700	1630	1560
	Low	1600	1560	1510	1460	1410	1360	1310	1250

- Speed set at factory

Table 1. Blower Curves



Typical Wiring (Field Supplied) for 1-Stage Cool, 1 Stage Electric Heat



Typical Wiring (Field Supplied) for 2-Stage Cool, 2-Stage Electric Heat with an Optional Outdoor Thermostat

Figure 10. Typical Heat Pump Thermostat Connections

Table 2. 10 SEER Heating Charging Charts

2-1/2 TON

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
16	115	118	22	129	128	29	143	137	36	157	147	45	161	161	55	177	180	65	193	200
17	122	116	23	135	126	30	148	135	37	161	145	46	168	158	56	184	176	66	200	193
18	129	114	24	141	124	31	153	133	38	165	143	47	175	155	57	191	171	67	207	187
19	136	112	25	147	122	32	157	131	39	168	141	48	182	153	58	198	167	68	214	181
20	143	110	26	153	120	33	162	129	40	172	139	49	189	150	59	205	162	69	221	175
21	150	108	27	158	118	34	167	127	41	176	137	50	196	147	60	212	158	70	228	169
22	157	106	28	164	116	35	172	125	42	179	135	51	203	144	61	219	153	71	235	163

3 TON

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
17	123	138	22	135	138	27	146	138	32	158	137	41	164	149	54	190	171	67	215	194
18	130	136	23	141	136	28	151	136	33	161	135	42	171	146	55	197	167	68	222	187
19	137	134	24	147	134	29	156	134	34	165	133	43	178	143	56	204	162	69	229	181
20	144	132	25	152	132	30	161	132	35	169	131	44	185	140	57	211	158	70	236	175
21	151	130	26	158	130	31	165	130	36	172	129	45	192	137	58	218	153	71	243	169
22	158	128	27	164	128	32	170	128	37	176	127	46	199	134	59	225	149	72	250	163
23	165	126	28	170	126	33	175	126	38	180	125	47	206	132	60	232	144	73	257	157

Table 2a. 10 SEER Heating Charging Charts

3-1/2 Ton

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
13	125	116	19	141	123	24	157	131	30	173	138	39	180	159	52	199	195	65	219	231
14	132	114	20	147	121	25	162	129	31	177	136	40	187	157	53	206	191	66	226	225
15	139	112	21	153	119	26	167	127	32	181	134	41	194	154	54	213	186	67	233	219
16	146	110	22	159	117	27	172	125	33	185	132	42	201	151	55	220	182	68	240	212
17	153	108	23	164	115	28	176	123	34	188	130	43	208	148	56	227	177	69	247	206
18	160	106	24	170	113	29	181	121	35	192	128	44	215	145	57	234	173	70	254	200
19	167	104	25	176	111	30	186	119	36	196	126	45	222	142	58	241	168	71	261	194

4 Ton

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
14	129	134	20	143	135	25	158	135	31	172	136	39	178	141	51	200	152	62	222	162
15	136	132	21	149	133	26	162	133	32	175	134	40	185	138	52	207	147	63	229	156
16	143	130	22	155	131	27	167	131	33	179	132	41	192	136	53	214	143	64	236	150
17	150	128	23	161	129	28	172	129	34	183	130	42	199	133	54	221	138	65	243	144
18	157	126	24	167	127	29	177	127	35	186	128	43	206	130	55	228	134	66	250	137
19	164	124	25	173	125	30	181	125	36	190	126	44	213	127	56	235	129	67	257	131
20	171	122	26	179	123	31	186	123	37	194	124	45	220	124	57	242	125	68	264	125

* Note: All pressures are listed in psig. and all temperatures in deg. F.

— Shaded Boxes indicate flooded conditions

— Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

— Discharge temperatures greater than charted values indicates a refrigerant undercharge.

Table 2b. 10 SEER Heating Charging Charts

5 Ton

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
12	122	126	19	139	127	26	156	127	33	172	128	41	179	135	51	199	148	61	220	161
13	129	124	20	145	125	27	160	125	34	176	126	42	186	132	52	206	143	62	227	155
14	136	122	21	151	123	28	165	123	35	180	124	43	193	129	53	213	139	63	234	149
15	143	120	22	156	121	29	170	121	36	183	122	44	200	126	54	220	134	64	241	143
16	150	118	23	162	119	30	175	119	37	187	120	45	207	123	55	227	130	65	248	136
17	157	116	24	168	117	31	179	117	38	191	118	46	214	120	56	234	125	66	255	130
18	164	114	25	174	115	32	184	115	39	194	116	47	221	118	57	241	121	67	262	124

* Note: All pressures are listed in psig. and all temperatures in deg. F.

— Shaded Boxes indicate flooded conditions

— Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

— Discharge temperatures greater than charted values indicates a refrigerant undercharge.

Table 3. 12 SEER Heating Charging Charts

3 Ton

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
17	125	127	22	135	127	27	146	128	32	157	128	41	161	143	54	182	172	68	203	202
18	132	125	23	141	125	28	151	126	33	161	126	42	168	140	55	189	168	69	210	196
19	139	123	24	147	123	29	156	124	34	164	124	43	175	137	56	196	163	70	217	189
20	146	121	25	153	121	30	160	122	35	168	122	44	182	134	57	203	159	71	224	183
21	153	119	26	159	119	31	165	120	36	172	120	45	189	131	58	210	154	72	231	177
22	160	117	27	165	117	32	170	118	37	175	118	46	196	129	59	217	150	73	238	171
23	167	115	28	171	115	33	175	116	38	179	116	47	203	126	60	224	145	74	245	165

4 Ton

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
14	119	124	20	137	124	26	154	124	33	171	125	42	182	138	55	210	165	68	239	191
15	126	122	21	143	122	27	159	122	34	175	123	43	189	135	56	217	160	69	246	185
16	133	120	22	148	120	28	163	120	35	178	121	44	196	133	57	224	156	70	253	179
17	140	118	23	154	118	29	168	118	36	182	119	45	203	130	58	231	151	71	260	173
18	147	116	24	160	116	30	173	116	37	186	117	46	210	127	59	238	147	72	267	166
19	154	114	25	166	114	31	178	114	38	189	115	47	217	124	60	245	142	73	274	160
20	161	112	26	172	112	32	183	112	39	193	113	48	224	121	61	252	138	74	281	154

* Note: All pressures are listed in psig. and all temperatures in deg. F.

— Shaded Boxes indicate flooded conditions

— Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

— Discharge temperatures greater than charted values indicates a refrigerant undercharge.

Table 3a. 12 SEER Heating Charging Charts

5 Ton

OUTDOOR TEMPERATURE (° F)																				
0			10			20			30			40			50			60		
Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.	Suc. Press.	Disch. Press.	Disch. Temp.
9	**121**	**120**	17	**137**	**121**	25	**153**	**122**	33	**168**	**122**	42	**176**	**129**	52	**198**	**143**	62	220	156
10	**128**	**118**	18	**143**	**119**	26	**157**	**120**	34	**172**	**120**	43	**183**	**127**	53	**205**	**138**	63	227	149
11	**135**	**116**	19	**149**	**117**	27	**162**	**118**	35	**176**	**118**	44	**190**	**124**	54	212	134	64	234	143
12	**142**	**114**	20	**155**	**115**	28	**167**	**116**	36	**179**	**116**	45	197	121	55	219	129	65	241	137
13	**149**	**112**	21	**161**	**113**	29	**172**	**114**	37	**183**	**114**	46	**204**	**118**	56	226	125	66	248	131
14	**156**	**110**	22	**166**	**111**	30	**177**	**112**	38	**187**	**112**	47	**211**	**115**	57	**233**	**120**	67	255	125
15	**163**	**108**	23	**172**	**109**	31	**181**	**110**	39	**190**	**110**	48	**218**	**112**	58	**240**	**116**	68	262	119

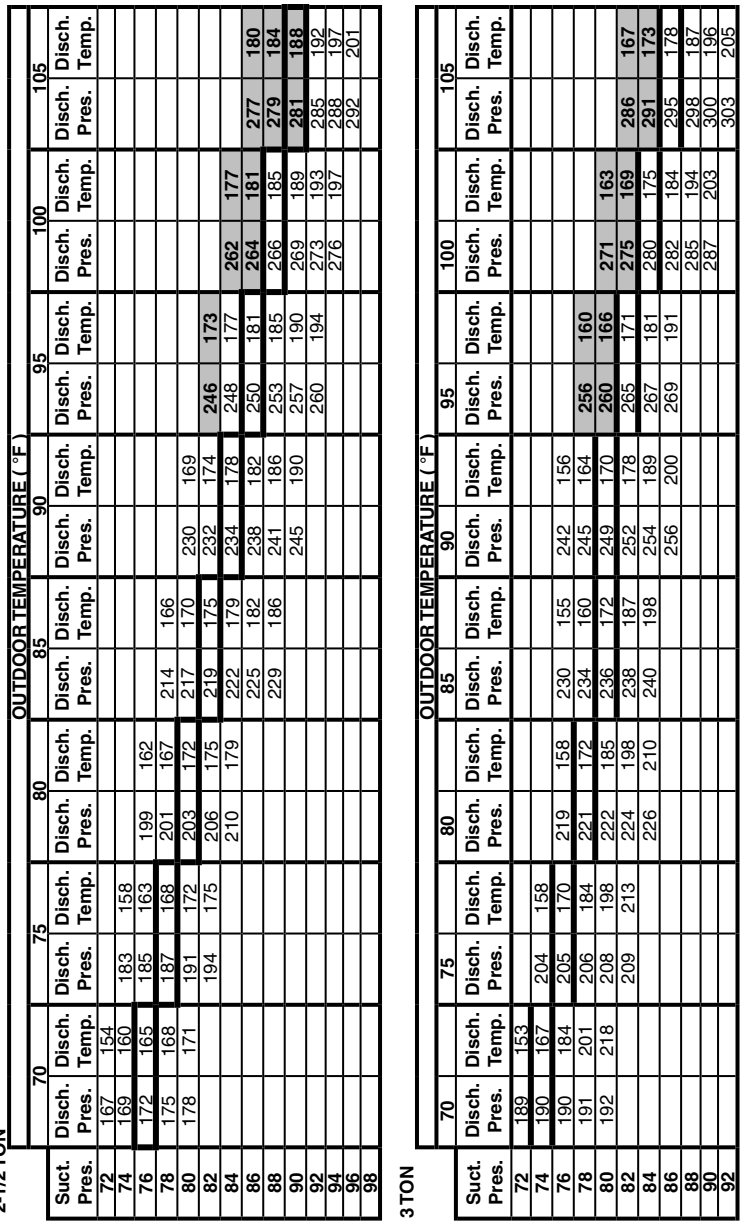
* Note: All pressures are listed in psig. and all temperatures in deg. F.

— Shaded Boxes indicate flooded conditions

— Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

— Discharge temperatures greater than charted values indicates a refrigerant undercharge.

Heat Pump in Cooling



2-1/2 TON

Suct. Pres.	OUTDOOR TEMPERATURE (°F) 70 Disch. Pres.	70 Disch. Temp.	75 Disch. Pres.	75 Disch. Temp.	80 Disch. Pres.	80 Disch. Temp.	85 Disch. Pres.	85 Disch. Temp.	90 Disch. Pres.	90 Disch. Temp.	95 Disch. Pres.	95 Disch. Temp.	100 Disch. Pres.	100 Disch. Temp.	105 Disch. Pres.	105 Disch. Temp.
72	167	154														
74	169	160	183	158												
76	172	165	185	163	199	162										
78	175	168	187	168	201	167	214	166								
80	178	171	191	172	203	172	217	170	230	169						
82			194	175	206	175	219	175	232	174	246	173				
84					210	179	222	179	234	178	248	177	262	177		
86							225	182	238	182	250	181	264	181	277	180
88							229	186	241	186	253	185	266	185	279	184
90									245	190	257	190	269	189	281	188
92											260	194	273	193	285	192
94													276	197	288	197
96															292	201
98																

3 TON

Suct. Pres.	OUTDOOR TEMPERATURE (°F) 70 Disch. Pres.	70 Disch. Temp.	75 Disch. Pres.	75 Disch. Temp.	80 Disch. Pres.	80 Disch. Temp.	85 Disch. Pres.	85 Disch. Temp.	90 Disch. Pres.	90 Disch. Temp.	95 Disch. Pres.	95 Disch. Temp.	100 Disch. Pres.	100 Disch. Temp.	105 Disch. Pres.	105 Disch. Temp.
72	189	153														
74	190	167	204	158												
76	190	184	205	170	219	158	230	155	242	156						
78	191	201	206	184	221	172	234	160	245	164	256	160				
80	192	218	208	198	222	185	236	172	249	170	260	166	271	163		
82			209	213	224	198	238	187	252	178	265	171	275	169	286	167
84					226	210	240	198	254	189	267	181	280	175	291	173
86									256	200	269	191	282	184	295	178
88													285	194	298	187
90													287	203	300	196
92															303	205

* Note: All pressures are listed in psig. and all temperatures in deg. F.

— Shaded Boxes indicate flooded conditions

— Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

— Discharge temperatures greater than charted values indicates a refrigerant undercharge.

Table 4. 10 SEER Cooling Charging Charts

Table 4a. 10 SEER Cooling Charging Charts

3-1/2 Ton

	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suct. Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.
67	184	141														
69	186	146	201	147												
71	188	152	203	152	218	154										
73	189	160	205	158	220	158	235	160								
75	192	163	206	164	223	163	238	164	253	165						
77			210	167	224	169	240	169	255	170	270	171				
79					228	172	242	173	257	174	272	175	287	176		
81							245	177	259	178	274	179	289	180	304	181
83							249	181	263	182	277	183	291	184	306	185
85									266	186	281	187	295	189	308	189
87											284	191	298	193	312	194
89													302	197	316	198
91															319	203
93																

4 TON

	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suct. Pres.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.
68	188	122														
70	191	123	204	135												
72	192	140	207	139	222	137	234	146	248	152						
74	192	157	208	154	224	151	239	147	252	160	266	160				
76	193	174	210	168	226	164	241	160	257	164	270	166	284	167		
78			211	182	227	177	243	174	259	172	274	171	288	173	302	174
80					229	190	245	185	261	183	276	181	292	180	307	180
82									263	193	279	191	294	189	310	188
84													297	199	312	197
86													299	208	315	206
88															317	215

Table 4b. 10 SEER Cooling Charging Charts

5 TON

	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suct. Pres.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.
68	192	157														
70	193	165	208	164												
72	194	182	210	172	226	164	239	165	252	167						
74	195	199	211	187	227	178	243	168	256	175	**269**	**171**				
76	195	216	213	201	229	191	245	181	260	180	**273**	**178**	**287**	**175**		
78			214	215	231	204	247	195	262	188	278	183	**291**	**181**	**304**	**179**
80					232	216	249	207	265	199	280	193	295	188	**309**	**185**
82									267	210	282	203	298	197	313	192
84													300	206	315	201
86													303	216	318	210
88															320	219

* Note: All pressures are listed in psig. and all temperatures in deg. F.

— Shaded Boxes indicate flooded conditions

— Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

— Discharge temperatures greater than charted values indicates a refrigerant undercharge.

Table 5. 12 SEER Cooling Charging Charts

3 Ton

	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suct. Pres.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.
76	170	138														
78	171	149	185	146												
80	172	165	188	156	202	148	215	149	228	152						
82	173	182	189	171	204	162	219	154	231	160	**244**	**157**				
84	173	199	190	185	206	176	221	166	235	166	**248**	**163**	**261**	**161**		
86			191	199	207	188	222	181	237	175	252	170	**265**	**168**	**278**	**167**
88					209	201	224	192	239	185	254	180	268	176	**282**	**173**
90									241	196	256	190	271	185	285	181
92													273	195	287	190
94													275	204	290	199
96															292	208

4 Ton

	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suct. Pres.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.
74	176	143														
76	178	149	191	150												
78	179	166	194	157	209	148	221	150	233	151						
80	180	183	195	171	211	162	225	153	237	159	**250**	**154**				
82	180	200	197	186	212	176	227	165	242	164	**254**	**161**	**267**	**157**		
84			198	200	214	188	229	179	244	172	258	166	**271**	**164**	**284**	**161**
86					215	201	231	191	246	183	261	176	275	170	**289**	**167**
88									248	193	263	186	278	180	292	174
90													280	189	295	183
92													282	198	297	192
94															300	201

Table 5a. 12 SEER Cooling Charging Charts

	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suct. Pres.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.	Disch. Pres.	Disch. Temp.
74	189	147														
76	190	155	205	154												
78	191	172	208	163	224	155	237	155	252	157						
80	192	189	209	177	225	168	241	159	255	165	**270**	**161**				
82	192	206	210	192	227	182	243	172	259	171	**274**	**168**	**288**	**165**		
84			211	206	229	195	245	186	261	180	277	174	**292**	**171**	**306**	**169**
86					230	207	247	198	264	190	280	184	295	179	**311**	**175**
88									266	201	282	194	298	188	314	183
90													300	198	316	192
92													303	207	319	201
94															321	

* Note: All pressures are listed in psig. and all temperatures in deg. F.

— Shaded Boxes indicate flooded conditions

— Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

— Discharge temperatures greater than charted values indicates a refrigerant undercharge.

INSTALLER: PLEASE LEAVE THESE INSTALLATION INSTRUCTIONS WITH THE HOMEOWNER

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