

INSTALLATION INSTRUCTIONS

Single Package Heat Pump - Single Stage, R-410A



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.

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IMPORTANT SAFETY INFORMATION

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 indoor blower.
 - When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.
 - Verify proper operation after servicing.
-

WARNING:

These units are fully charged with R-410A refrigerant 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 attempted 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 homeowner attempt to install and/or service this equipment. Failure to comply with this warning could result in equipment damage, personal injury, or death.

WARNING:

Do not place combustible material on or against the unit cabinet. Do not place combustible materials, including gasoline and any other flammable vapors and liquids, in the vicinity of the unit.

WARNING:

PROPOSITION 65 WARNING: This product contains fiberglass wool, a product known to the state of California to cause cancer. Disturbing the insulation of this product during installation, maintenance, or repair will expose you to fiberglass wool.

- Breathing this material may cause respiratory irritations or may cause lung cancer.
 - Fiberglass wool may also cause eye irritation, skin sensitization, or other allergic responses in susceptible individuals.
 - Always wear goggles, disposable gloves, long sleeved shirt, and appropriate breathing protection when working near this insulation. If contact with skin occurs, wash immediately with soap and water. In case of contact with eyes, flush immediately with water for at least 15 minutes. Contact a physician if needed.
-

WARNING:

The information listed below and on the next page must be followed during the installation, service, and operation of this unit. Unqualified individuals should not attempt to interpret these instructions or install this equipment. Failure to follow safety recommendations could result in possible damage to the equipment, serious personal injury or death.

- Before beginning the installation, verify that the unit model is correct for the job. The unit model number is printed on the data label.
- 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 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.
- The installer should become familiar with the units wiring diagram before making any electrical connections to the unit. See the unit wiring label or [Figure 9 \(page 19\)](#), [Figure 10 \(page 20\)](#), & [Figure 11 \(page 21\)](#).
- 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.

REQUIREMENTS & CODES

- All electrical wiring must be completed in accordance with local, state & 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.
- 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.
- 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.
- Consult [Table 2 \(page 10\)](#), and the rating plate for the proper circulating air flow and temperature rise. It is important that the duct system be designed to provide the correct flow rates and external pressure rise. An improperly designed duct system can result in nuisance shutdowns, and comfort or noise issues.
- This unit is designed for outdoor installations only and should be positioned as described in [Locating the Heat Pump](#).

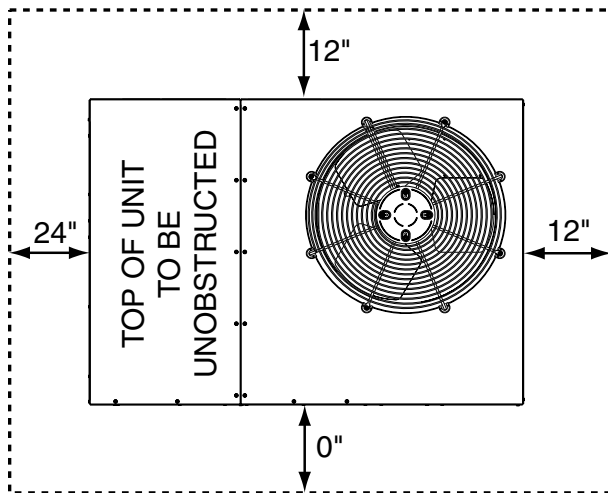


Figure 1. Minimum Unit Clearances

GENERAL INFORMATION

Single packaged heat pumps are ready for easy and immediate installation and can be readily connected into the high static duct system of a home. This unit is completely assembled, wired, and run tested at the factory. **This heat pump is designed for outdoor installation only.** The only connections needed for installation are the supply and return ducts, the line voltage, and thermostat wiring. Use of components other than those specified may invalidate AHRI Certification, Code Agency Listing, and limited warranty on the air conditioner.

Before You Install this Unit

- ✓ 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. If there is any question concerning the power supply, contact the local power company.
- ✓ 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 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. Select a solid, level position, preferably on a concrete slab, slightly above the grade level, and parallel to the home. If possible, select a site for the unit that is as close as possible to the proposed return grille location. **DO NOT PLACE UNIT UNDER THE HOME.**
- The unit should be located with consideration of minimizing the length of the supply and return ducts with no sharp radius bends. If practical, place the heat pump and its ducts in an area where they will be shaded from the afternoon sun, when the heat load is greatest.
- Consideration should also be given to availability of electric power, service access, noise, and shade.
- Overhead obstructions, poorly ventilated areas, and areas subject to accumulation of debris should be avoided. The hot condenser air must be discharged up and away from the home, and if possible, in a direction with the prevailing wind. Do not place the unit in a confined space. See [Figure 8 \(page 13\)](#) for unit dimensions.
- Sufficient clearance for unobstructed airflow through the outdoor coil must be maintained in order to achieve rated performance. For minimum clearances to obstructions, see [Figure 1](#).

Minimum Clearances

Minimum clearances MUST be maintained from adjacent structures to provide room for proper servicing and air circulation. DO NOT install unit in a confined or recessed area that will allow discharge air from the unit to re-circulate into the condenser air inlet, through the coil. See [Figure 1](#).

Service Access Clearance:

Blower access panel side	24"
Electrical compartment access panel side	12"
Clearance between overhang and top of unit	72"
Clearance around condenser coil area to wall or shrubs (excludes duct panel side).....	12"

Clearances to Combustibles:

Combustible base - wood or Class A, B, or C roof covering material	0"
Supply & return air ducts	0"
Duct connection side	0"

Air Duct System

Air ducts should be installed in accordance with the standards of the National Fire Protection Association "Standard 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 codes. NFPA publications are available by writing to: National Fire Protection Association, Batterymarch Park, Quincy, ME 02269 or visit www.NFPA.org on the web.

- Design the duct work according to methods described by the Air Conditioning Contractors of America (ACCA).
- The supply duct system, including the number and type of registers, will have much more effect on the performance of the system than any other factor. The duct must be sufficiently large to conduct an adequate amount of air to each register. See [Figure 3 \(page 6\)](#).
- Duct work should be attached directly to the unit flanges for horizontal applications.
- For highly resistive duct systems it may be necessary to add an additional return air duct and or supply to achieve maximum performance and prevent coil icing and refrigerant flood back.
- **The heat pump system will not cool or heat the home if air is lost to the outside through leaks in the duct system. Ducts that are collapsed or restricted by foreign objects will also prevent adequate air flow.**
- 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.

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.

The heat pump system will not cool or heat the home if air is lost to the outside through leaks in the duct system. Ducts that are collapsed or restricted by foreign objects will also prevent adequate air flow.

HEAT PUMP INSTALLATION

Unpacking the Unit

It is recommended that the unit be unpacked at the installation site to minimize damage due to handling.

⚠ CAUTION:

Do not tip the unit on its side. Oil may enter the compressor cylinders and cause starting trouble. If unit has been set on its side, restore to upright position and do not run for several hours. Then run unit for a few seconds. Do this three or four times with five minutes between runs.

1. Remove the bands from around the unit.
2. Unfold the top and bottom cap flanges.
3. Carefully remove the top cap and tube.

Installing Return & Supply Air Collars

If the supply and return collars are supplied with the unit, they will be located in the supply duct. They can be easily positioned over the unit openings and secured with sheet metal screws. See [Figure 2](#).

- The diameter of the return duct collar is 14".
- **NOTE:** 2 ton units are designed with 12" returns.
- The diameter of the supply duct collar is 12".
- Before permanently installing the collars, it is recommended you pre-fit them over the openings first to determine best fit and alignment.

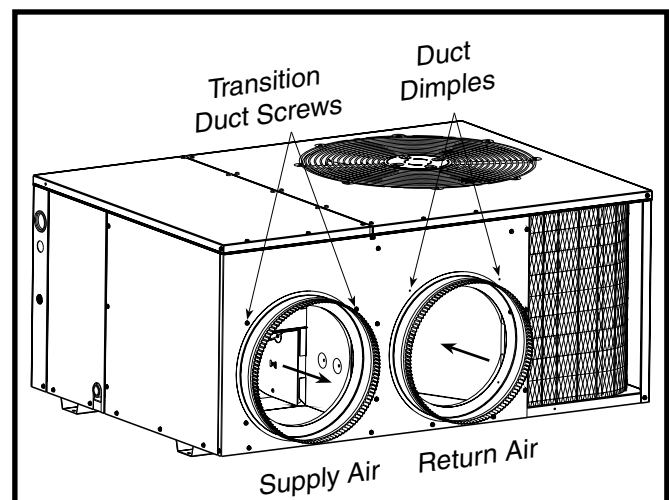


Figure 2. Return & Supply Air Collars

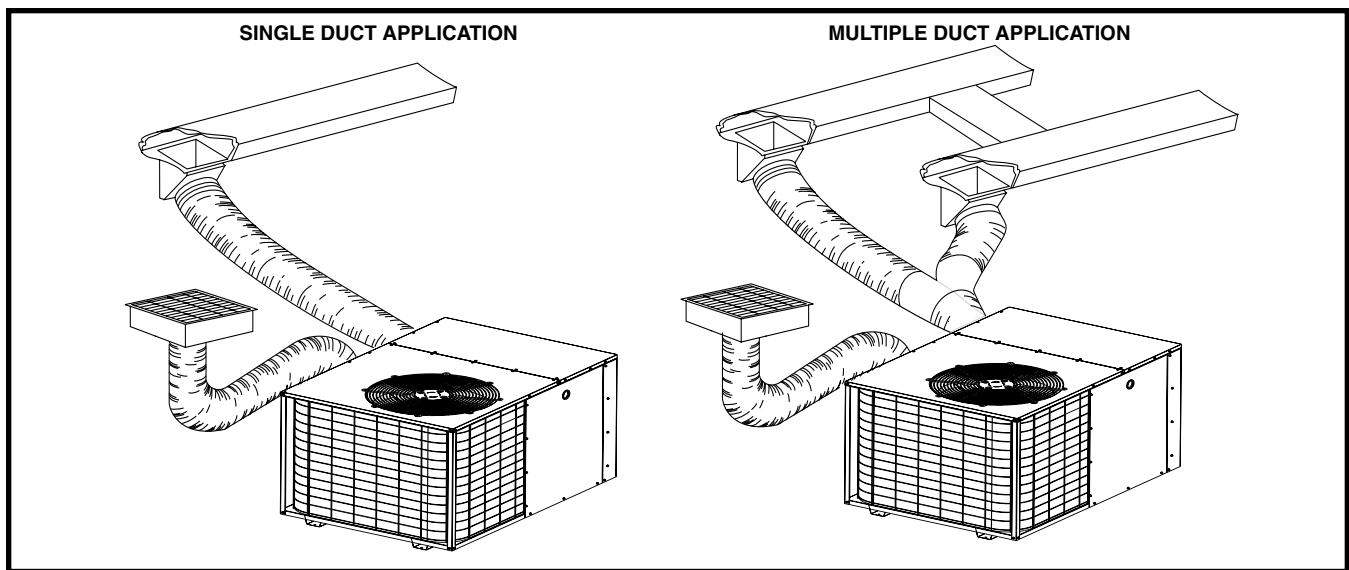


Figure 3. Typical Duct Applications

Supply Duct

1. Assemble the collar by overlapping the two ends.
NOTE: One end of the collar is slotted and the opposite end has two small holes. Position the end with small screw holes underneath the slotted end.
2. Fasten the collar ends with two self drilling sheet metal screws.
3. Position the collar over the opening and align the 4 holes in the collar with the 4 holes (or dimples depending on model) in the rear panel.
4. Using self-drilling screws (10-16x.5), secure the collar to the rear panel.

Return Duct

1. Assemble the collar by overlapping the two ends.
NOTE: One end of the collar is slotted and the opposite end has two small holes. Position the end with small screw holes underneath the slotted end.
2. Fasten the collar ends with two self drilling sheet metal screws.
3. Position the collar over the opening. Align the four holes in the collar with the four dimples or holes (depending on unit model) in the panel.
4. Secure the collar to the rear panel using self tapping screws (10-16x.5).

Connecting Return & Supply Air Flexible Ducts

- Flexible ducts may be cut to the required length and spliced with sheet metal sleeves and clamps. **Keep all ducts as short and straight as possible. Avoid sharp bends.** Please follow all instructions packed with duct.
- Flexible ducts can be secured to the corresponding collars with the provided clamps. After the inner duct is connected to the collar, pull the insulation and plastic sleeve over the connection and clamp. **NOTE:** To prevent a loss in cooling capacity, make sure all connections are tight.

- Homes with multiple supply ducts (or special applications), a Y fitting is available for dividing the supply air to different areas of the home for more efficient cooling. **NOTE:** For maximum performance, insulate the Y fitting.

Locating & Installing the Return Air Assembly

To simplify installation, locate and install the return air assembly first. See [Figure 4 \(page 7\)](#). If desired, the return opening can be located inside a closet with louvered doors that has an open area equal to or greater than a 12" x 20" grille. The return air grille can be placed in the wall of a closet and the ducted into the filter box through a boxed-in area at the closet floor level. **Make sure the filter is readily accessible.**

NOTE: The return air box with grille and filter should not be located in heavy traffic areas like hallways or center of rooms. A good spot is in a corner or under a table, if a minimum two inch clearance is available.

1. Start the installation from under the home by cutting a small hole in the sub-floor. Determine how the floor joist location will affect cutting the opening needed for the return air box. **NOTE:** Floor joists are generally located on 16" centers, leaving 14-3/8" between joists.
2. After measuring the return air box (approximately 12-1/4" x 20-1/4"), cut the hole through the floor so that the box will fit between the floor joists. Care should be taken when cutting through carpeting to avoid snags. **NOTE:** In most installations it will be necessary to cut a similar hole in the fiberboard directly under the hole in the floor. However, if the floor is more than ten inches deep, it will only be necessary to cut a hole for the collar on the return air box or for the insulated duct.
3. Set the box into the opening and fasten with screws or nails.
4. Install the filter and return air grille in place.

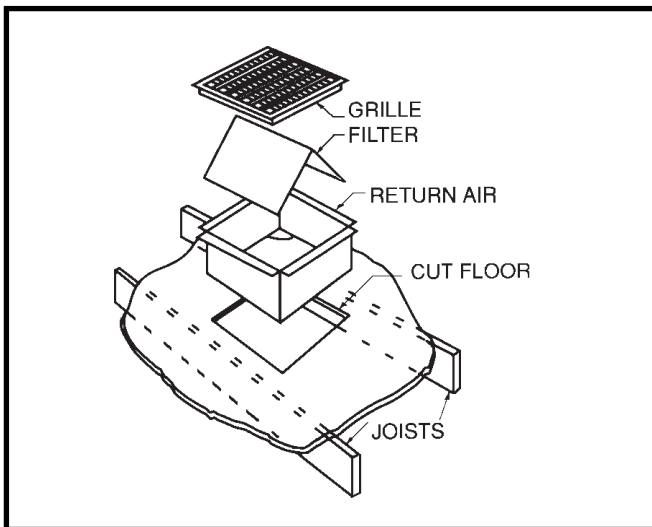


Figure 4. Return Air Assembly

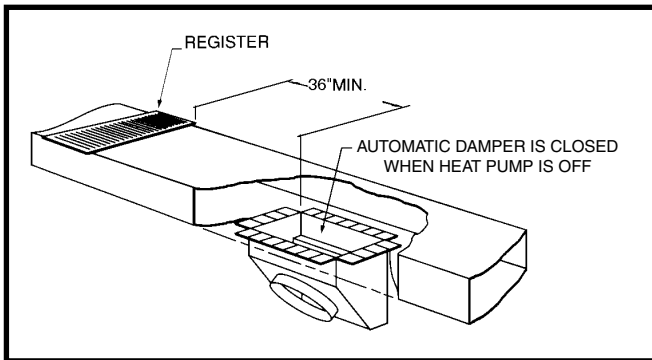


Figure 5. Supply Damper

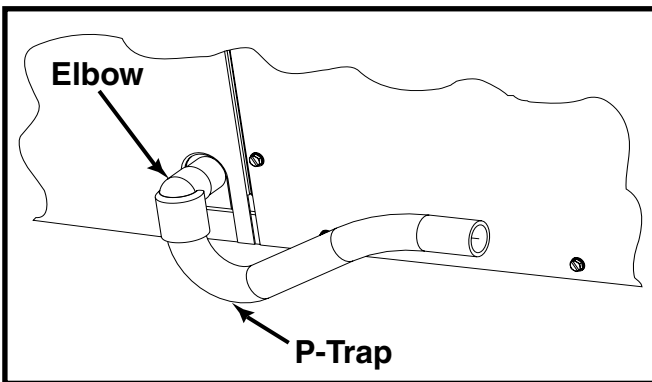


Figure 6. Drain Trap

Locating & Installing the Supply Damper(s)

When locating the supply damper(s), carefully check floor joists and frame members that could interfere with the installation of the damper or flexible duct. Ideally, the damper (Figure 5) should be located in the bottom of the main duct, forward of center of the home, at least three feet from the nearest register. The round supply opening in the slanted side of the damper should face the side of the home where the heat pump is located.

1. Locate the center of the heat duct by cutting a small hole in the fiberboard below the duct at the desired location.
2. Cut a hole approximately 3/4" larger than the damper opening in the fiberboard.
3. Cut a 9-1/8" x 13-1/8" hole in the duct and bend over all tabs flat on the inside of the heat duct.
4. Insert the damper into the duct and bend over all tabs flat on the inside of the heat duct.
5. Seal the opening between the fiberboard and damper or flexible duct.

Condensate Drainage

A 3/4" condensate fitting extends out of the side of the unit as shown in Figure 6. The drain trap, shipped in the electrical compartment, must be installed to prevent water from collecting inside the unit.

1. Thread the elbow provided with the unit into the drain connection until hand tight.
2. Connect the condensate tubing onto the fitting, forming a trap (Figure 6) near the drain connection.
3. Route the condensate tube from the trap to a suitable drain. **NOTE:** For proper drainage, make sure the trap is level to the ground and tubing outlet is below trap level.

ELECTRICAL CONNECTIONS

WARNING:

To avoid electric shock, personal injury, or death, turn off the electric power at the disconnect or the main service panel before making any electrical connections.

- 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. See [Figure 9 \(page 19\)](#), [Figure 10 \(page 20\)](#), & [Figure 11 \(page 21\)](#). Inspect for loose connections.

Line Voltage

- It is recommended that the line voltage to the unit be supplied from a dedicated branch circuit containing the correct fuse or circuit breaker for the 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. See unit data label for proper incoming field wiring. Any other wiring methods must be acceptable to authority having jurisdiction.
- 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. Extend leads through power wiring hole. See [Figure 7](#). Connect **L1** & **L2** directly to the contactor.

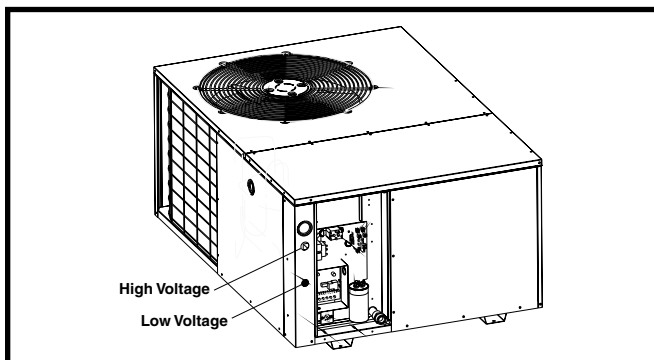


Figure 7. Power Entry

- 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.
- See the unit wiring label for proper high and low voltage wiring. Make all electrical connections in accordance with all applicable codes and ordinances. See [Figure 9](#), [Figure 10](#), & [Figure 11](#).

CAUTION:

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

- Units are shipped from the factory wired for 240 volt transformer operation. For 208V operation, remove the lead from the transformer terminal marked 240V and connect it to the terminal marked 208V.

Overcurrent Protection

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. Generally, the best fuse or breaker for any heat pump is the smallest size that will permit the equipment to run under normal usage and provide maximum equipment protection. Properly sized fuses and breakers also prevent nuisance trips during unit startup. **If a fuse blows or a breaker trips, always determine the reason. Do not arbitrarily install a larger fuse or breaker and do not, in any case, exceed the maximum size listed on the data label of the unit.**

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 AWG (1% voltage drop)

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 Connections

- The heat-cool thermostat is equipped with a system HEAT-COOL switch, which provides a positive means of preventing simultaneous operation of the heating and cooling units. The thermostat is also equipped with an ON-AUTO fan switch which allows the home owner to operate the indoor blower when air circulation is desired.
- Connect the low voltage wires to the respective terminals on the thermostat base. See [Figure 11 \(page 21\)](#) and the thermostat instruction sheet for more detailed wiring information.
- 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 information.

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.
- To determine operating status or fault conditions, refer to [Table 3 \(page 10\)](#) for diagnostic description.

Electric Heat Package (optional)

This heat pump is shipped without an auxiliary electric heat kit installed. If electric heat is desired, an accessory heater kit must be field installed. Refer to [Table 2 \(page 10\)](#) for blower speeds.

- Select the correct size heat package for the installation. See specifications sheet for available kits and application. Install the heater kit according to the to the installation instructions provided with the kit.
- Installation is most easily accomplished before making duct or electrical connections.

Outdoor Thermostat (Factory Option)

Select models are equipped with an outdoor thermostat from the factory. This prevents the operation of supplemental electrical resistance heat at outdoor temperatures above 40° F, except for defrost operation. Models without an outdoor thermostat have a white wire from **W2** on the terminal strip to **W2** on the defrost board for the use of supplemental electrical resistance heat for a **W2** or **E** call. A jumper wire is supplied from **W2** to **E** on the terminal strip on all models.

Blower Speed

For optimum system performance and comfort, it may be necessary to change the factory speed setting. See [Table 2](#) for factory settings.

WARNING:

To avoid electric shock, personal injury, or death, turn off the electric power at the disconnect or the main service panel before making any electrical connections.

CAUTION:

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

CAUTION:

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

1. Disconnect all electrical power to the unit and remove the service panel.
2. Verify the required speed from the airflow data found in [Table 2](#). Place appropriate wire on the appropriate motor speed tap for the required airflow.
3. Check all factory wiring per the unit wiring diagram and inspect the factory wiring connections make sure no wires loosened during shipping or installation.

MODEL NUMBER	MOTOR TAP	EXTERNAL STATIC PRESSURE DROP (IN WC)							
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
024K	T1*	930	875	818	761	704	645	585	525
	T2	1158	1119	1076	1028	977	921	861	796
	T3**	1308	1271	1230	1185	1136	1084	1027	967
	T4	1440	1406	1368	1326	1281	1232	1179	1122
	T5	1622	1587	1550	1510	1467	1422	1373	1323
030K	T1	930	875	818	761	704	645	585	525
	T2*	1158	1119	1076	1028	977	921	861	796
	T3**	1308	1271	1230	1185	1136	1084	1027	967
	T4	1440	1406	1368	1326	1281	1232	1179	1122
	T5	1622	1587	1550	1510	1467	1422	1373	1323
036K	T1	1158	1119	1076	1028	977	921	861	796
	T2	1308	1271	1230	1185	1136	1084	1027	967
	T3*	1366	1332	1291	1245	1192	1132	1067	995
	T4**	1518	1481	1442	1400	1355	1307	1256	1202
	T5	1686	1644	1601	1556	1509	1460	1410	1358
042K	T1	1339	1297	1254	1210	1166	1121	1075	1029
	T2**	1459	1422	1383	1342	1300	1256	1211	1164
	T3*	1569	1530	1491	1451	1410	1368	1325	1282
	T4	1709	1674	1638	1601	1562	1521	1479	1436
	T5	1820	1785	1748	1710	1671	1630	1589	1545
048K	T1**	1418	1385	1351	1316	1279	1242	1203	1163
	T2	1530	1500	1467	1433	1396	1358	1318	1275
	T3*	1679	1645	1611	1576	1541	1505	1469	1432
	T4	1787	1757	1726	1693	1658	1621	1582	1542
	T5	2006	1973	1939	1905	1870	1834	1798	1761

NOTES:

* Denotes air flow setting for cooling & heating

** Denotes air flow setting for electric heating (10 KW)

Airflow performance is with a dry coil.

Table 2. Airflow Data

STATUS INDICATOR	STATUS TYPE	DIAGNOSTIC DESCRIPTION
C1	Operating Status	Cooling, 1st Stage
H1	Operating Status	Heating, 1st Stage
SC	Operating Status	Anti Short Cycle Timer
05	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
OF [FLASHING]	Input Error	Forced defrost - test short applied longer than 11 minutes

Table 3. Control Board Status Indicators

STARTUP & ADJUSTMENTS

Pre-Start Checklist

The following check list should be observed prior to starting the unit.

- √ Is the unit level? Unit should be level or slightly slanted toward the drain for proper condensate drainage.
- √ Is the unit installed with the proper clearances as listed on [page 5](#)?
- √ Is the wiring correct according to the wiring diagram and electrical codes?
- √ Are all the wiring connections tight? Check the condenser fan to make sure it turns freely.
- √ Is the overcurrent protection properly sized?
- √ Is the thermostat wired correctly? Is it installed in a proper location?
- √ To achieve rated capacity and efficiency the compressor must be exposed to refrigerant for at least 24 hours prior to running and then must be run for a minimum of 12 hours.

Start-Up Procedure

The control circuit consists of an anti-short cycle timer that will not let the compressor re-start before 5 minutes have elapsed.

1. Set the system mode to OFF and the temperature mode to its highest setting.
2. Turn power on at the disconnect switch.
3. Set the system mode to ON or COOL.
4. Set the temperature mode below room temperature. Verify that the indoor blower, outdoor fan, and compressor energize and the cooling function starts.
5. Verify the discharge air grilles are adjusted and the system air is balanced.
6. Verify the duct work has no air leaks.
7. Verify the condensate drain is installed correctly and functions properly.
8. Set the temperature mode above room temperature. The unit should stop.
9. Instruct the homeowner on unit and thermostat operation and filter servicing.

Air Circulation

Leave the thermostat system mode on OFF, and set the fan mode to ON. Blower should run continuously. Check the air delivery at the supply registers and adjust register openings for balanced air distribution. Examine ducts for leaks or obstruction if insufficient air is detected.

Set the thermostat fan mode to AUTO. The blower should stop running.

System Heating

Set the thermostat system mode to HEAT and the fan mode to AUTO. Change the thermostat temperature selector above the existing room temperature and check for the discharge of warm air at the supply registers.

System Cooling

Set the thermostat's system mode to COOL and the fan mode to AUTO. Change the thermostat temperature selector below the existing room temperature. Allow the cooling system to operate for several minutes and check for the discharge of cool air at the supply registers.

Short Cycle Protection

The control circuit is equipped with a time-delay feature for protection against short cycling. With the system operating in the cooling mode, gradually raise the thermostat temperature setting until the whole system de-energizes. Immediately lower the thermostat temperature to the original setting and verify that the indoor blower is energized. After approximately 5 minutes the compressor and the outdoor fan will energize.

Emergency Heat

(Available only when Electric heat is supplied) Set the thermostat's system mode to EM HT and the fan mode to either AUTO (intermittent air) or to ON (continuous air). Change the thermostat's temperature selector above the existing room temperature and check the following:

1. The thermostat auxiliary heat light (RED) should be on.
2. The heat pump compressor and the fan should not run; low voltage circuit remains energized.
3. The blower will run according to the thermostat's fan mode setting.

Anti Short Cycle Timer Test

The 5 minute time delay feature can be bypassed by shorting the TEST pins together.

Heating Mode

When the TEST pins are shorted together for more than 1 second, the control will switch between defrost mode and heating mode.

Cooling Mode

When the TEST pins are shorted together for more than 1 second, the Anti Short Cycle Timer will be bypassed.

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

Adjustment of Refrigerant Charge

 **CAUTION:**

This heat pump contains liquid and gaseous refrigerant under pressure. Adjustment of refrigerant charge should only be attempted by qualified, trained personnel thoroughly familiar with the equipment and safe responsible refrigerant handling procedures. Under no circumstances should the homeowner attempt to install and/or service this equipment. Failure to comply with this warning could result in equipment damage, personal injury, or death.

Charging the Unit in AC Mode

(with Outdoor Temperatures Above 65° F)

1. With the system operating at steady-state, measure the suction and liquid refrigerant pressures (in psig) at the service valves.
2. Measure the compressor discharge temperature (° F).
3. Use [Table 4 \(page 14\)](#), [Table 5 \(page 14\)](#), [Table 6 \(page 15\)](#), [Table 7 \(page 15\)](#), or [Table 8 \(page 16\)](#) to verify system conditions (during cooling mode) for proper charge amount.

Charging the Unit in Heating Mode

1. Evacuate the refrigerant system.
2. Use [Table 9 \(page 17\)](#), [Table 10 \(page 17\)](#), [Table 11 \(page 17\)](#), [Table 12 \(page 18\)](#), or [Table 13 \(page 18\)](#) as a guide and weigh in the proper charge as shown on the unit rating plate (during heating mode operation). **NOTE:** Unit charge **MUST** be verified in cooling season.
3. Verify the unit is operating properly according to the System Heating section on [page 11](#).

Safety Switches

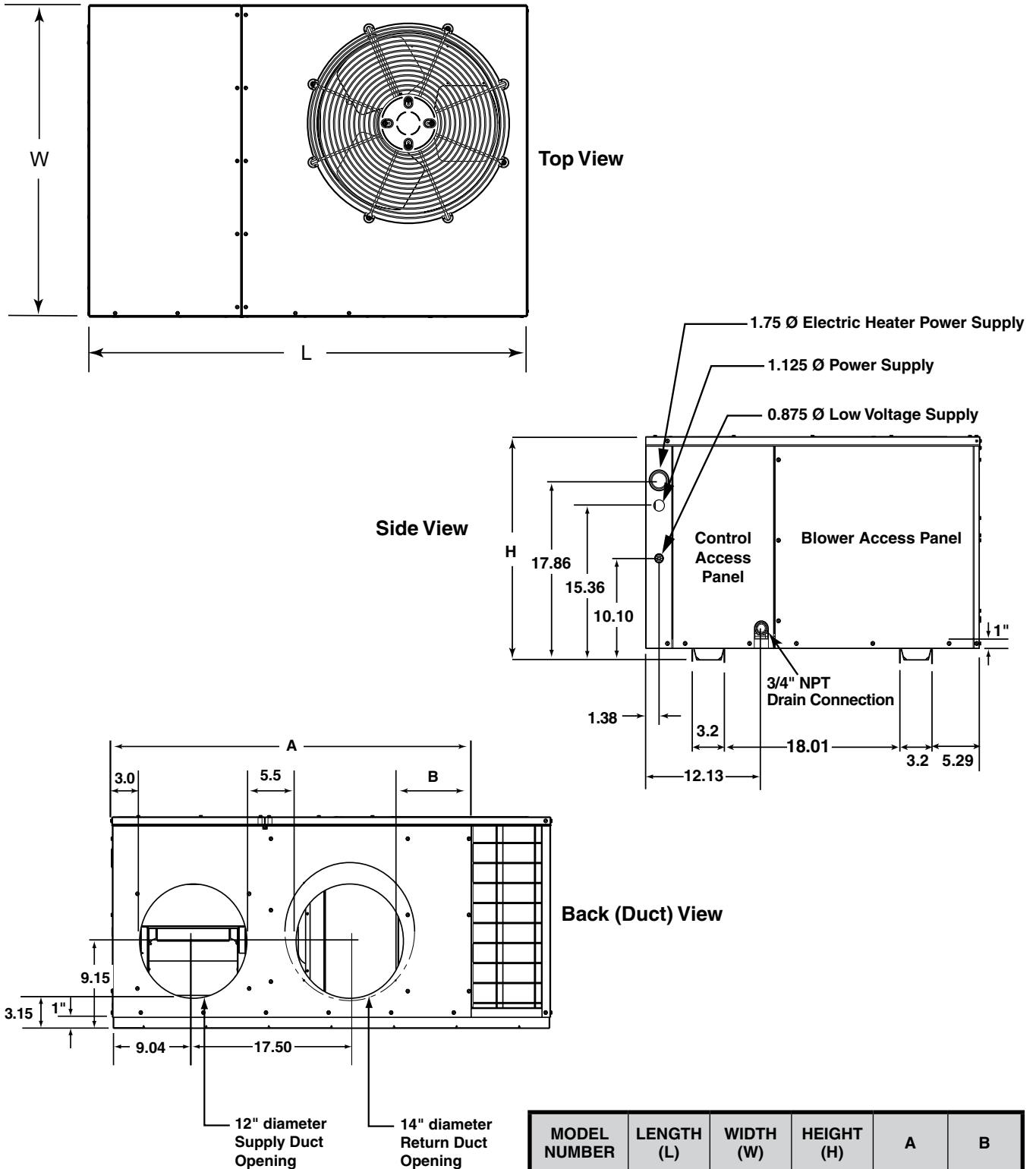
- The low pressure switch (if equipped) is factory installed and located in the suction line internal to the unit. The switch is designed to protect the compressor if a loss of charge occurs. Under normal conditions, the switch is closed.

If the suction pressure falls below 5 psig, then the switch will open and de-energize the unit. The switch will close again once the suction pressure increases above 20 psig. The low pressure switch interrupts the thermostat inputs to the unit. **NOTE:** When the switch opens and then closes, there will be a 5 minute short cycling delay before the unit can energize.

- The high pressure switch is factory installed and located in the compressor discharge line internal to the 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 650 psig, the switch will open and de-energize the unit. The switch will close again once the discharge pressure decreases to 460 psig. The high pressure switch interrupts the thermostat inputs to the unit. **NOTE:** When the switch opens and then closes, there will be a 5 minute short cycling delay before the unit can energize.

FIGURES & TABLES



MODEL NUMBER	LENGTH (L)	WIDTH (W)	HEIGHT (H)	A	B
024K	49	35	30.2	35.02	2.48
030K	49	35	30.2	35.02	2.48
036K	49	35	30.2	35.02	2.48
042K	49	35	30.2	35.02	2.48
048K	63	35	38.2	35.02	2.48

Figure 8. Physical Data & Unit Dimensions

Refrigerant Charging Tables - Cooling

LEGEND

- 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.

NOTES:

1. All pressures are listed psig and all temperatures in °F
2. Discharge temperatures greater than charted values indicate an undercharged system.

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.
135	238	135														
137	239	139	260	136												
139	239	143	261	139	282	137										
141	242	142	262	143	284	140	304	139								
143	243	145	264	144	285	143	306	142	326	142						
145			265	147	286	146	307	145	327	144	347	145				
147					287	149	308	148	329	147	349	147	368	149		
149							309	151	330	150	351	149	370	150	389	153
151							310	155	331	154	352	152	372	152	391	155
153									332	157	353	156	374	154	393	156
155											354	159	375	157	396	156
157													376	161	397	159
159															398	163
161																

Table 4. Charging Table for 2 Ton Models

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.
133	249	131														
135	250	134	271	135												
137	251	137	272	137	293	139										
139	252	140	274	140	295	141	315	143								
141	253	143	274	143	296	144	317	145	337	147						
143			275	146	297	147	318	147	339	149	359	152				
145					298	150	319	151	340	151	361	153	381	156		
147							320	153	341	154	363	155	383	158	403	161
149							321	156	342	157	363	158	385	159	405	162
151									343	160	364	160	386	161	407	163
153											365	163	387	164	408	165
155													388	167	409	168
157															410	170
159																

Table 5. Charging Table for 2.5 Ton Models

LEGEND

- 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.

NOTES:

1. All pressures are listed psig and all temperatures in °F
2. Discharge temperatures greater than charted values indicate an undercharged system.

036K 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.
131	262	143														
133	264	144	287	145												
135	266	146	288	146	311	146										
137	266	156	290	147	313	148	335	148								
139	268	160	291	157	315	149	337	149	360	150						
141			292	160	316	157	339	151	361	151	384	152				
143					317	161	340	157	363	152	386	153	408	154		
145							342	161	365	158	388	154	410	155	432	156
147							343	165	366	162	389	158	412	156	434	157
149									368	165	391	162	414	158	436	158
151											392	166	415	162	438	159
153													417	166	440	162
155															442	166
157																

Table 6. Charging Table for 3 Ton Models

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.
135	268	137														
137	270	139	292	141												
139	271	142	294	143	316	145										
141	273	144	296	145	318	147	340	149								
143	274	147	297	148	320	149	342	151	364	153						
145			299	151	321	152	344	153	366	155	388	157				
147					323	155	345	156	368	157	390	159	412	162		
149							347	159	370	160	392	161	414	163	436	166
151							349	161	371	162	394	164	416	165	438	167
153									373	165	395	166	418	167	441	169
155											397	169	420	170	442	171
157													421	173	444	174
159															445	177
161																

Table 7. Charging Table for 3.5 Ton Models

LEGEND

- 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.

NOTES:

1. All pressures are listed psig and all temperatures in °F
2. Discharge temperatures greater than charted values indicate an undercharged system.

048K SERIES (WITH RESTRICTOR)																
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	254	143														
132	255	146	276	146												
134	256	150	278	149	299	150										
136	259	149	279	153	300	153	321	153								
138	260	152	281	153	301	156	322	156	343	157						
140			282	155	303	157	324	159	344	160	365	162				
142					305	159	325	161	346	162	367	164	386	166		
144							327	163	348	164	369	166	389	168	408	171
146							328	165	349	166	370	168	391	170	410	172
148									351	169	371	170	392	172	413	174
150											373	172	394	174	415	176
152													395	176	416	178
154															418	180
156																

Table 8. Charging Table for 4 Ton Models

Refrigerant Charging Tables - Heating

LEGEND

- Shaded boxes indicate flooded conditions.
- Rated design values.

NOTE:

- All pressures are listed psig and all temperatures in °F

024K SERIES																										
OUTDOOR TEMPERATURE (° F)																										
SUC. PRESS.	0			10			20			30			40			50			60							
	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.								
52	224	89		56	233	99		59	241	110		63	249	120		80	268	136		111	319	155		141	371	175
53	231	87		57	238	97		60	246	108		64	253	118		81	275	133		112	326	151		142	378	169
54	238	85		58	244	95		61	250	106		65	257	116		82	282	130		113	333	146		143	385	162
55	245	83		59	250	93		62	255	104		66	260	114		83	289	127		114	340	142		144	392	156
56	252	81		60	256	91		63	260	102		67	264	112		84	296	124		115	347	137		145	399	150
57	259	79		61	262	89		64	265	100		68	268	110		85	303	121		116	354	133		146	406	144
58	266	77		62	268	87		65	270	98		69	271	108		86	310	119		117	361	128		147	413	138

Table 9. Charging Table for 2 Ton Models

030K SERIES																										
OUTDOOR TEMPERATURE (° F)																										
SUC. PRESS.	0			10			20			30			40			50			60							
	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.								
48	221	93		53	232	104		58	244	115		63	256	126		80	279	144		109	336	168		139	392	192
49	228	91		54	238	102		59	249	113		64	260	124		81	286	141		110	343	163		140	399	186
50	235	89		55	244	100		60	254	111		65	264	122		82	293	138		111	350	159		141	406	180
51	242	87		56	250	98		61	259	109		66	267	120		83	300	136		112	357	154		142	413	173
52	249	85		57	256	96		62	263	107		67	271	118		84	307	133		113	364	150		143	420	167
53	256	83		58	262	94		63	268	105		68	275	116		85	314	130		114	371	146		144	427	161
54	263	81		59	268	92		64	273	103		69	278	114		86	321	127		115	378	141		145	434	155

Table 10. Charging Table for 2.5 Ton Models

036K SERIES																										
OUTDOOR TEMPERATURE (° F)																										
SUC. PRESS.	0			10			20			30			40			50			60							
	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.		SUC. PRESS.	Liq. PRESS.	DIS. TEMP.								
41	217	113		50	238	120		59	258	126		68	279	132		83	300	147		104	345	171		125	389	194
42	224	111		51	243	118		60	263	124		69	283	130		84	307	145		105	352	166		126	396	188
43	231	109		52	249	116		61	268	122		70	287	128		85	314	142		106	359	162		127	403	182
44	238	107		53	255	114		62	273	120		71	290	126		86	321	139		107	366	157		128	410	176
45	245	105		54	261	112		63	278	118		72	294	124		87	328	136		108	373	153		129	417	170
46	252	103		55	267	110		64	282	116		73	298	122		88	335	133		109	380	148		130	424	163
47	259	101		56	273	108		65	287	114		74	301	120		89	342	130		110	387	144		131	431	157

Table 11. Charging Table for 3 Ton Models

042K SERIES																					
OUTDOOR TEMPERATURE (° F)																					
Suc. Press.	0			10			20			30			40			50			60		
	Liq. Press.	Dis. Temp.	Suc. Press.	Liq. Press.	Dis. Temp.	Suc. Press.	Liq. Press.	Dis. Temp.	Suc. Press.	Liq. Press.	Dis. Temp.	Suc. Press.	Liq. Press.	Dis. Temp.	Suc. Press.	Liq. Press.	Dis. Temp.	Suc. Press.	Liq. Press.	Dis. Temp.	
40	220	112	48	234	118	55	247	124	62	261	130	78	282	147	103	332	174	127	382	201	
41	227	110	49	239	116	56	252	122	63	265	128	79	289	144	104	339	170	128	389	195	
42	234	108	50	245	114	57	257	120	64	269	126	80	296	141	105	346	165	129	396	189	
43	241	106	51	251	112	58	262	118	65	272	124	81	303	138	106	353	161	130	403	183	
44	248	104	52	257	110	59	267	116	66	276	122	82	310	136	107	360	156	131	410	177	
45	255	102	53	263	108	60	271	114	67	280	120	83	317	133	108	367	152	132	417	170	
46	262	100	54	269	106	61	276	112	68	283	118	84	324	130	109	374	147	133	424	164	

Table 12. Charging Table for 3.5 Ton Models

048K SERIES																					
OUTDOOR TEMPERATURE (° F)																					
SUC. PRESS.	0			10			20			30			40			50			60		
	LIQ. PRESS.	DIS. TEMP.	SUC. PRESS.	LIQ. PRESS.	DIS. TEMP.	SUC. PRESS.	LIQ. PRESS.	DIS. TEMP.	SUC. PRESS.	LIQ. PRESS.	DIS. TEMP.	SUC. PRESS.	LIQ. PRESS.	DIS. TEMP.	SUC. PRESS.	LIQ. PRESS.	DIS. TEMP.	SUC. PRESS.	LIQ. PRESS.	DIS. TEMP.	
36	209	117	46	236	125	57	263	134	68	290	143	83	317	161	103	367	187	123	417	214	
37	216	115	47	242	123	58	268	132	69	294	141	84	324	158	104	374	183	124	424	208	
38	223	113	48	248	121	59	273	130	70	298	139	85	331	155	105	381	178	125	431	201	
39	230	111	49	254	119	60	278	128	71	301	137	86	338	152	106	388	174	126	438	195	
40	237	109	50	260	117	61	282	126	72	305	135	87	345	149	107	395	169	127	445	189	
41	244	107	51	266	115	62	287	124	73	309	133	88	352	146	108	402	165	128	452	183	
42	251	105	52	272	113	63	292	122	74	312	131	89	359	144	109	409	160	129	459	177	

Table 13. Charging Table for 4 Ton Models

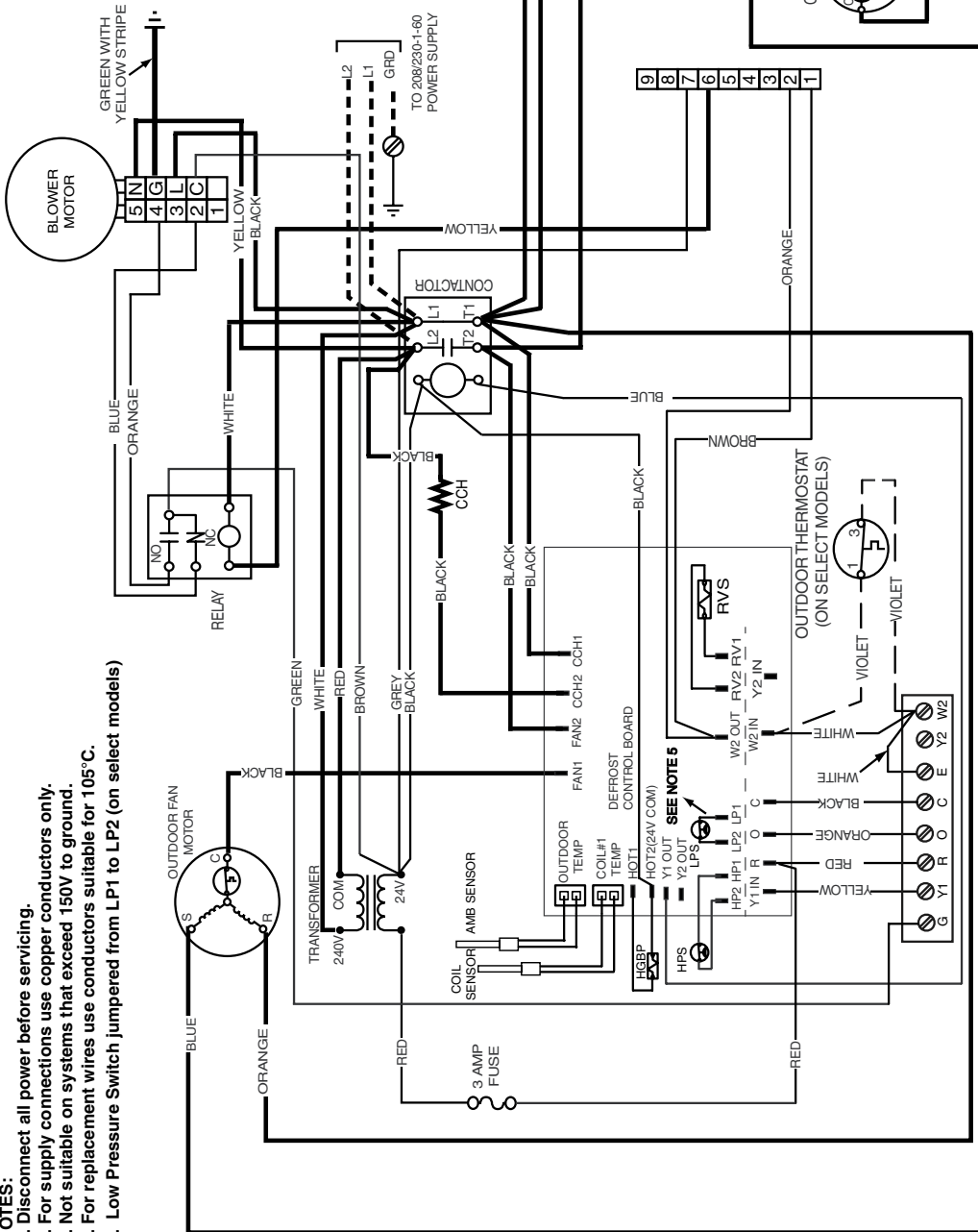
Wiring Diagrams

WIRING DIAGRAM

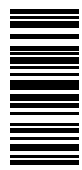
SMALL PACKAGED HEAT PUMP - SINGLE PHASE 2 AND 2.5 TON

208/230 VOLT 60HZ

- NOTES:**
1. Disconnect all power before servicing.
 2. For supply connections use copper conductors only.
 3. Not suitable on systems that exceed 150V to ground.
 4. For replacement wires use conductors suitable for 105°C.
 5. Low Pressure Switch jumpered from LP1 to LP2 (on select models)



1. Couper le courant avant de faire letrétine.
2. Employez uniquement des conducteurs en cuivre.
3. Ne convient pas aux installations de plus de 150V a la terre.
4. Remplacement pour utiliser les fils conducteurs adapté à 105°C.
5. Contacteur de basse pression sur une sélection de modèles ou ponté du LP1 et LP2.



711388A
(Replaces 7113880)
09/14

Figure 9. W.D. for 2 & 2.5 Ton Models

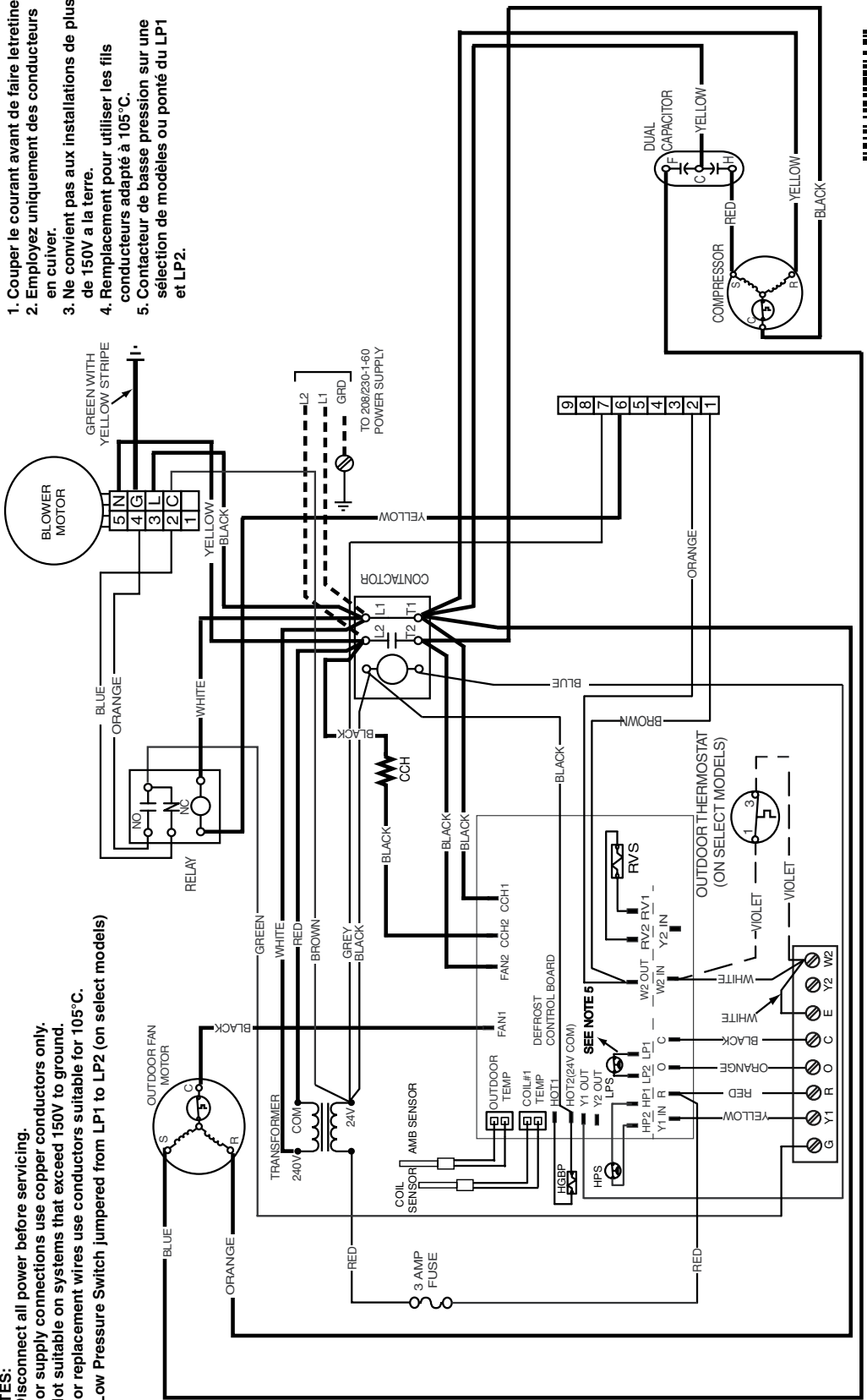
WIRING DIAGRAM

SMALL PACKAGED HEAT PUMP - SINGLE PHASE 3, 3.5, 4 TON

208/230 VOLT 60HZ

- NOTES:**
1. Disconnect all power before servicing.
 2. For supply connections use copper conductors only.
 3. Not suitable on systems that exceed 150V to ground.
 4. For replacement wires use conductors suitable for 105°C.
 5. Low Pressure Switch jumpered from LP1 to LP2 (on select models)

1. Couper le courant avant de faire letretine.
2. Employez uniquement des conducteurs en cuiver.
3. Ne convient pas aux installations de plus de 150V a la terre.
4. Remplacement pour utiliser les fils conducteurs adapté à 105°C.
5. Contacteur de basse pression sur une sélection de modèles ou ponté du LP1 et LP2.

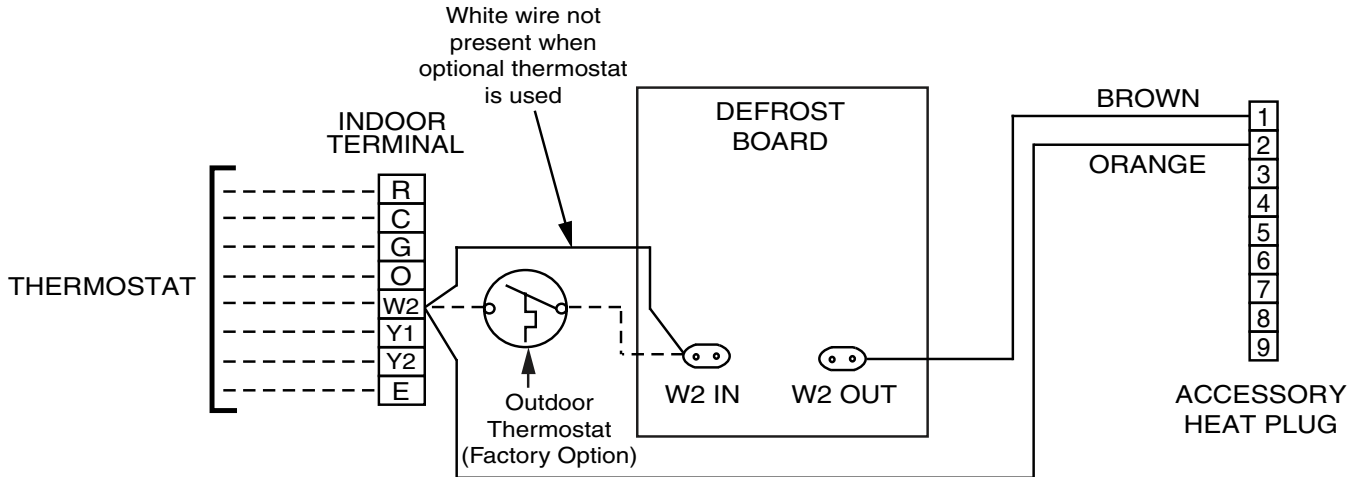


LEGEND:
 FIELD WIRING - - - -
 LOW VOLTAGE
 HIGH VOLTAGE ————

711389A
 (Replaces 7113890)
 09/14

Figure 10. W.D. for 3, 3.5 & 4 Ton Models

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



Typical Wiring (Field Supplied) for 1-Stage Cool, 2 Stage Electric Heat

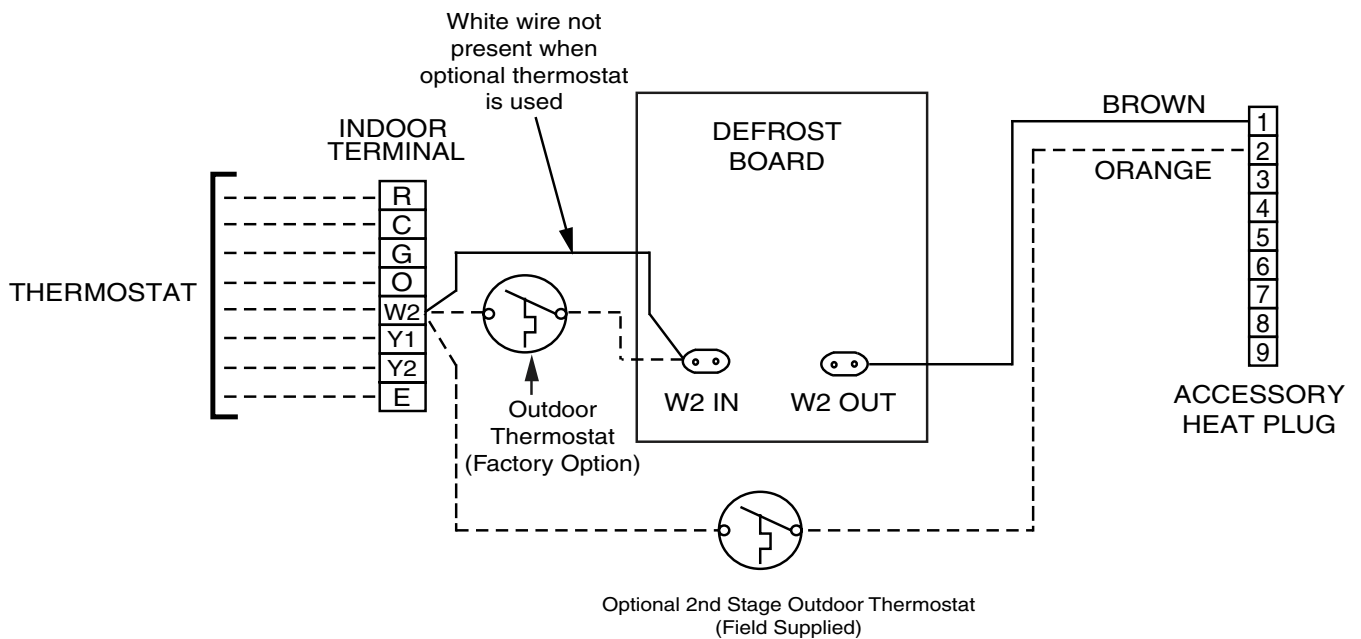


Figure 11. Typical Thermostat Connections

INSTALLATION / PERFORMANCE CHECKLIST

INSTALLATION ADDRESS:		
CITY _____	STATE _____	
UNIT MODEL # _____		
UNIT SERIAL # _____		
Unit Installed Minimum clearances per Figure 1 (page 4)?	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

VENTING SYSTEM		
Is the vent hood installed?	YES	NO
Is vent hood free from restrictions	YES	NO
Filter(s) secured in place?	YES	NO
Filter(s) clean?	YES	NO

REFRIGERATION SYSTEM		
Was unit given 24 hr warm up period for crankcase heaters (if applicable)?	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		
L1-L2 Volts: _____ VOLTS		
Has the thermostat been calibrated?	YES	NO
Is the thermostat level?	YES	NO
Is the heat anticipator setting correct?	YES	NO

INSTALLER: PLEASE LEAVE THESE INSTRUCTIONS WITH THE OWNER.



NORDYNE
COMPLETE COMFORT. GENUINE VALUE.

Specifications & illustrations subject to change without notice or incurring obligations (11/14).



7096500 (NEW)