

**USER'S MANUAL & INSTALLATION INSTRUCTIONS**

**Single Package Air Conditioner - Single Stage, R-410A**



**IMPORTANT**

Please read this information thoroughly and become familiar with the capabilities and use of your appliance before attempting to operate or maintain this unit. Keep this literature where you have easy access to it in the future. If a problem occurs, check the instructions and follow recommendations given. If these suggestions don't eliminate your problem, call your servicing contractor.

The Installation 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.

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

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## WARRANTY INFORMATION

A warranty certificate with full details is included with the Air Conditioner. Carefully review these responsibilities with your dealer or service company. The manufacturer 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:

- Correcting wiring problems in the electrical circuit supplying the Air Conditioner.
- Resetting circuit breakers or other switches.
- Adjusting or calibrating of thermostat.

# INSTALLER INFORMATION

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# USER INFORMATION

## IMPORTANT SAFETY INFORMATION

Safety markings are used 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.

## OPERATING INSTRUCTIONS

**NOTE:** Thermostat styles vary. Some models may not include the AUTO mode and others will have the AUTO in place of the HEAT and COOL. Others may include all three. Please refer to the thermostat manufacturer's User manual for detailed programming instructions.

### Cooling Operation

1. Set the thermostat's system mode to COOL or AUTO and change the fan mode to AUTO. See Figure 1.
2. Set the temperature selector to the desired temperature level. The outdoor fan, compressor, and blower motor will all cycle on and off to maintain the indoor temperature at the desired cooling level.

### Heating Operation

(if optional heater kit is installed)

1. Set the thermostat's system mode to HEAT or AUTO and change the fan mode to AUTO. See Figure 1.
2. Set the temperature selector to the desired temperature level. The outdoor fan, blower motor, and heater kit will cycle on and off to maintain the indoor temperature at the desired heating level.

### Turning the Air Conditioner OFF

Change the thermostat's system mode to OFF and the fan mode to AUTO (See Figure 1). **NOTE:** The system will not operate, regardless of the temperature selector setting.

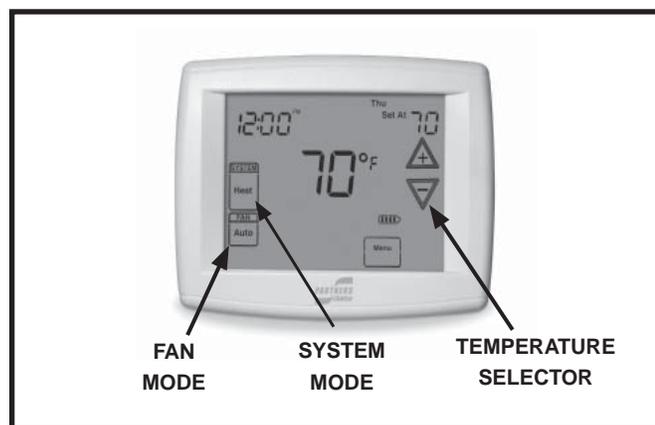


Figure 1. Digital Thermostat

## Operating the Indoor Blower Continuously

The continuous indoor blower operation is typically used to circulate the indoor air to equalize a temperature unbalance due to a sun load, cooking, or fireplace operation.

Set the thermostat fan mode to ON (Figure 1). The indoor blower starts immediately, and will run continually until the fan mode is reset to AUTO.

The continuous indoor blower operation can be obtained with the thermostat system mode set in any position, including OFF.

## AIR CONDITIONER MAINTENANCE

Proper maintenance is most important to achieve the best performance from the appliance and should be performed frequently at the beginning of each air conditioning season.

### **WARNING:**

**Your Air Conditioner contains liquid and gaseous refrigerant under pressure. Installation and servicing should only be attempted by qualified, trained personnel thoroughly familiar with the equipment and safe responsible refrigerant handling procedures. Failure to comply with this warning could result in equipment damage, personal injury, or death.**

- Keep the unit clean. Hose off periodically and keep unit fins clear of leaves and grass clippings.
- Keep the unit clear of obstructions. DO NOT obstruct airflow with tall plants or shrubs. DO NOT store gasoline or other flammable materials on or near the unit.
- Never operate the appliance without a filter installed in the return air duct. Inspect filters frequently and replace when necessary with filter of same dimensional size.

## TROUBLESHOOTING

If the unit fails to operate, check the following:

- Check the thermostat setting. Make sure the system mode and temperature settings are correct.
- Check the electrical panel for tripped circuit breakers.
- Check the filters for dust accumulation.
- Check the unit and make sure it is clean and not covered with grass or leaves.
- If the items above don't resolve your problems, then call your nearest service technician.

# INSTALLER INFORMATION

## 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.

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### **WARNING:**

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**Shut off all electrical power to the unit before performing any maintenance or service on the system. Failure to comply may result in personal injury or death.**

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### **WARNING:**

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

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### **WARNING:**

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**P5RD 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 equipment owner attempt to install and/or service this equipment. Failure to comply with this warning could result in equipment damage, personal injury, or death.**

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### **CAUTION:**

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

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### **WARNING:**

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**The information listed below 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.**

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- The installer must comply with all local codes and regulations which govern the installation of this type of equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. Consult local building codes and the National Electrical Code (ANSI C1) for special installation requirements.
- All electrical wiring must be completed in accordance with local, state and national codes and regulations and with the National Electric Code (ANSI/NFPA 70) or in Canada the Canadian Electric Code Part 1 CSA C.22.1.
- This equipment contains liquid and gaseous refrigerant under high pressure. **DO NOT USE ANY PORTION OF THE CHARGE FOR PURGING OR LEAK TESTING.** Installation or servicing should only be performed by qualified trained personnel thoroughly familiar with this type equipment.
- This unit is designed for outdoor installations only and should be located in a position as shown on page 5.
- 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.

## GENERAL INFORMATION

The P5RD packaged air conditioner is designed only for outdoor ground level installations and can be readily connected to the high static duct system of a home. This unit has been tested for capacity and efficiency in accordance with A.R.I. Standards and will provide many years of safe and dependable comfort, providing it is properly installed and maintained. Abuse, improper use, and/or improper maintenance can shorten the life of the appliance and create unsafe hazards.

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

### 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 (apparent or concealed) should be filed immediately with the carrier.
- ✓ Please consult your dealer for maintenance information and availability of maintenance contracts. Please read all instructions before installing the unit.

### Locating the Air Conditioner

- 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. If practical, place the air conditioner and its ducts in an area where they will be shaded from the afternoon sun, when the heat load is greatest.
- The length of the supply and return ducts should be kept to a minimum with no sharp radius bends.
- 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 10 (page 13) for unit dimensions.

- Sufficient clearance for unobstructed airflow through the outdoor coil must be maintained in order to achieve rated performance.
- Consideration should also be given to availability of electric power, service access, noise, and shade.

### Minimum Clearance Requirements

Sufficient clearance for unobstructed airflow through the outdoor coil must be maintained in order to provide room for proper servicing and achieve rated performance. See Figure 2 for minimum clearances to obstructions.

#### Service Access Clearances

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

#### Clearances to Combustible Materials

Supply and return air ducts .....	0"
Duct connection side .....	0"

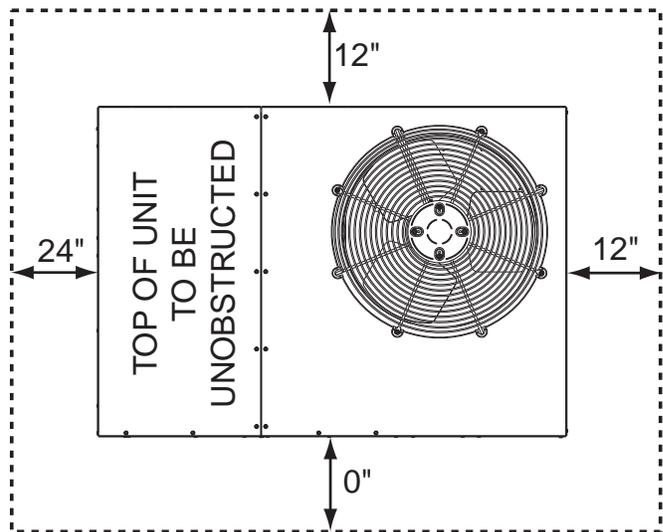


Figure 2. Minimum Unit Clearances

### Air Duct System

Air ducts must 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](http://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).

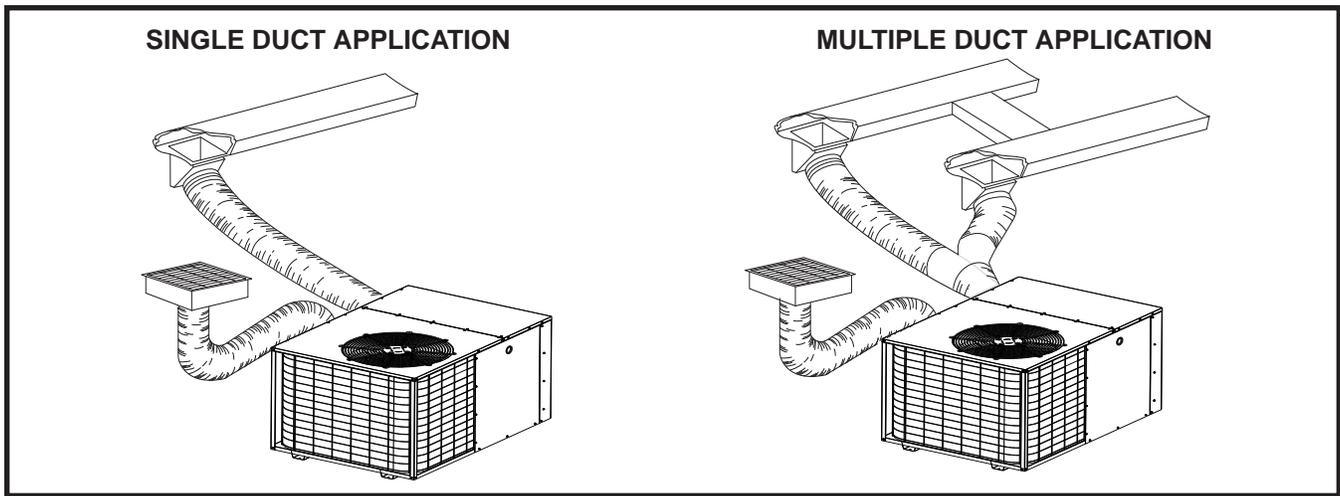


Figure 3. Single & Multiple Duct Applications

- 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.

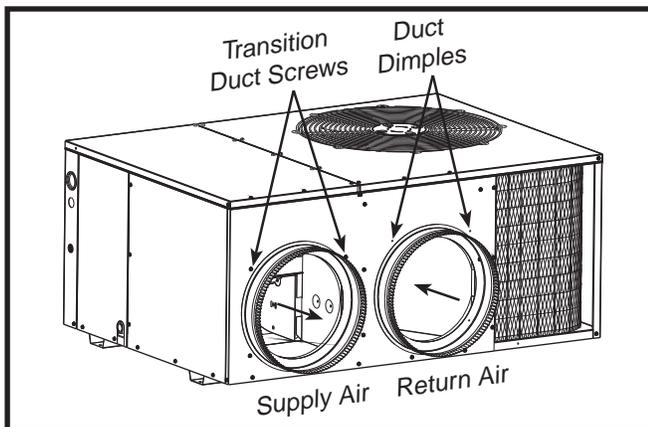


Figure 4. Return & Supply Air Collars

## AIR CONDITIONER 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 (Figure 4) and secured with sheet metal screws.

- The diameter of the return duct collar is 14”.
- 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.

### Supply Duct

1. Position the supply duct collar so the edge of the unit opening fits between the flange and the bead.
2. Overlap the collar ends keeping the small screw holes underneath.
3. Align the holes in the crimped area and install one screw. **NOTE:** It may be necessary to loosen the four screws that hold the transition duct in order to install the supply fitting. Re-tighten when installation is complete.

4. Tap collar (if necessary) to ensure engagement with unit opening and install second screw.
5. Tighten first screw and rotate collar clockwise so joint is near three o'clock position.

#### 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 unit 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 drilling screws (10-16x.5).

#### Locating & Installing the Return Air Assembly

To simplify installation, locate and install the return air assembly first. 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 air ducted into the filter box through a boxed-in area at the closet floor level (Figure 5). **Verify 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 subfloor. 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

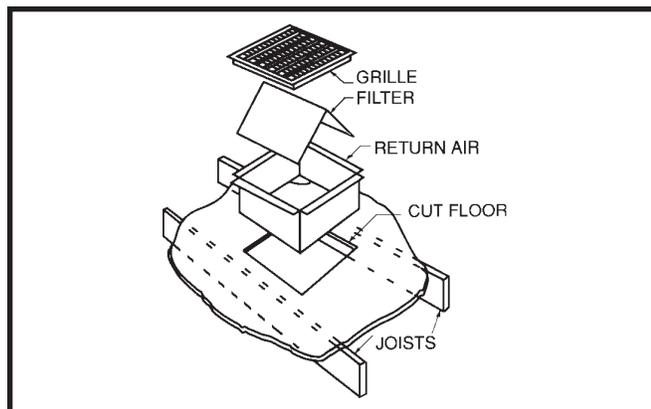


Figure 5. Return Air Box

- 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 the air box.

#### Connecting the Return & Supply Air Flexible Ducts

- Flexible ducts can be connected to the corresponding fittings with the clamps provided with the ducts. See Figure 10 (page 13). **NOTE:** To prevent a loss in cooling capacity, make sure all connections are tight.
- The flexible ducts may be cut to the required length, see instructions packed with duct. Keep all ducts as short and straight as possible. Avoid sharp bends.
- Ducts may be spliced with sheet metal sleeves and clamps.
- After the inner duct is connected to the proper fitting, the insulation and plastic sleeve should be pulled over the connection and clamped.
- Homes with multiple supply ducts (or special applications), a Y fitting is available to divide the supply air so it can be ducted to different areas of the home for more efficient cooling. **NOTE:** For maximum performance, insulate the Y fitting.

#### Locating & Installing the Supply Damper(s)

### CAUTION:

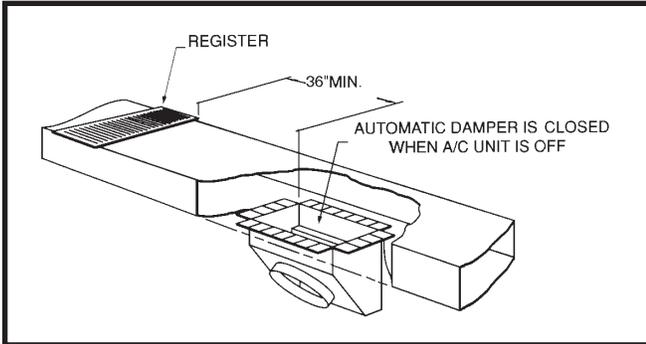
**If installing this air conditioning system in conjunction with a furnace, a damper must be installed in the furnace base assembly to prevent cold air from being discharged around the heat exchanger. Damage to the heat exchanger and asphyxiation may occur if a damper is not installed.**

**Check with the furnace manufacturer for damper requirements. Failure to install the required furnace damper may invalidate code agency listing and limited warranty on the furnace.**

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 6, page 8) 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 air conditioner 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.

- 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.
- Insert the damper into the duct and bend over all tabs flat on the inside of the heat duct.
- Seal the opening between the fiberboard and damper or flexible duct.

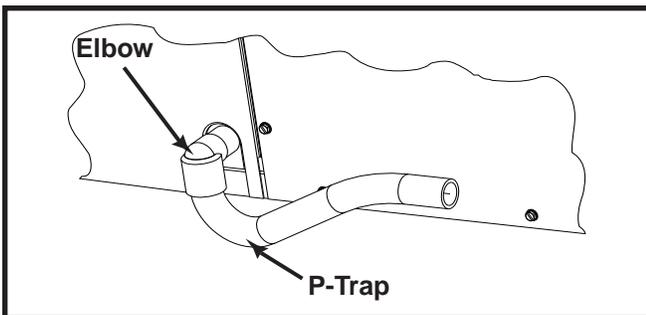


**Figure 6. Supply Damper**

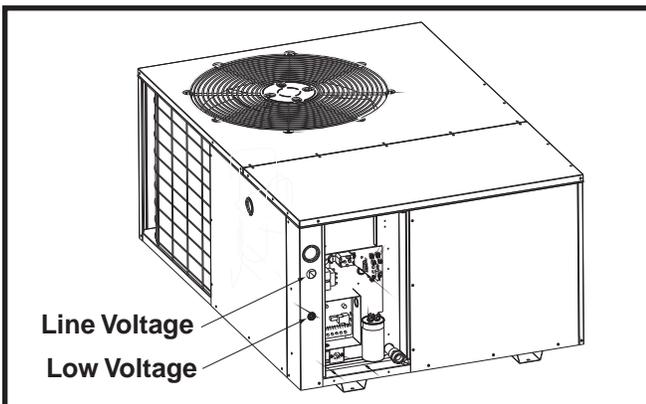
### Condensate Drainage

A 3/4" condensate fitting extends out of the side of the unit (Figure 7). The drain trap, shipped in the electrical compartment, must be installed to prevent water from collecting inside the unit.

- Thread the elbow provided with the unit into the drain connection until hand tight.
- Connect the condensate tubing onto the fitting, forming a trap near the drain connection.
- 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.



**Figure 7. Drain Trap**



**Figure 8. Power Entry**

## ELECTRICAL CONNECTIONS

### **WARNING:**

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

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

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

### Pre-Electrical Checklist

- ✓ Verify that the voltage, frequency, and phase of the supply source match the specifications on the unit rating plate.
- ✓ Verify that the service provided by the utility is sufficient to handle the additional load imposed by this equipment. Refer to the unit wiring label for proper high and low voltage wiring.
- ✓ Verify factory wiring is in accordance with the unit wiring diagram (Figures 11 or 12, pages 14 - 15). Inspect for loose connections.

### Line Voltage

- A wiring diagram is located on the inside cover of the electrical box of the unit. The installer should become familiar with the wiring diagram before making any electrical connections to 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 unit.
- Line voltage to the unit should be supplied from a dedicated branch circuit containing the correct fuse or circuit breaker for the unit. Incoming field wiring and minimum size of electrical conductors and circuit protection must be in compliance with information listed on the unit data label. 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 (Figure 8). Connect L1 & L2 directly to the contactor.

- The unit requires both power and control circuit electrical connections. Refer to the wiring diagram / schematic (Figures 11 & 12, pages 14 & 15) for identification and location of unit field wiring interfaces. Make all electrical connections in accordance with all applicable codes and ordinances.
- Overcurrent protection must be provided at the branch circuit distribution panel and sized as shown on the unit rating label and according to applicable local codes. See the unit rating plate for minimum circuit ampacity and maximum overcurrent protection limits.
- Use only copper wire for the line voltage power supply to this unit as listed in Table 1. Use proper code agency listed conduit and a conduit connector for connecting the supply wires to the unit. Use of rain tight conduit is recommended.
- 208/230 Volt units are shipped from the factory wired for 230 volt operation. For 208V operation, remove the lead from the transformer terminal marked 240V and connect it to the terminal marked 208V.
- Optional equipment requiring connection to the power or control circuits must be wired in strict accordance of the NEC (ANSI/NFPA 70), applicable local codes, and the instructions provided with the equipment.

#### Overcurrent Protection

Generally, the best fuse or breaker for any air conditioner 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.**

COPPER WIRE SIZE — AWG (1% Voltage Drop)				
Supply Wire Length-Feet				Supply Circuit Ampacity
200	150	100	50	
6	8	10	14	15
4	6	8	12	20
4	6	8	10	25
4	4	6	10	30
3	4	6	8	35
3	4	6	8	40
2	3	4	6	45
2	3	4	6	50
2	3	4	6	55
1	2	3	4	60

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

**Table 1. Copper Wire Size**

#### 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 CSA C22.1 Electrical Code. Ground the air conditioning unit using the green grounding screw provided in the control panel.

#### Thermostat / Low Voltage Connections

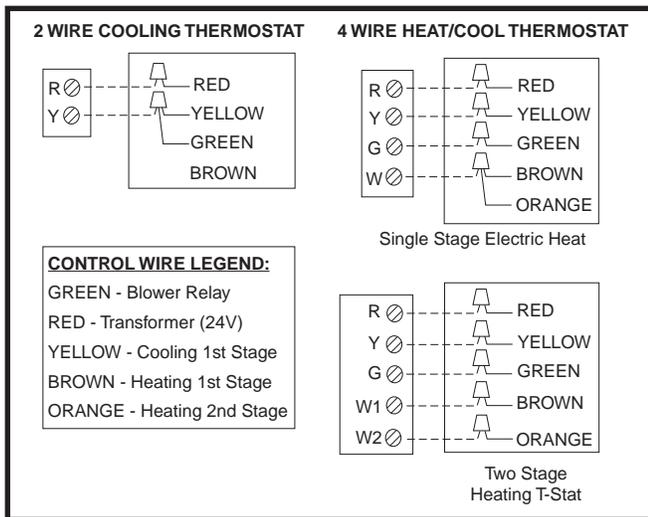
- The unit is designed to operate from a 24 VAC Class II control circuit. The control circuit wiring must comply with the current provisions of the NEC (ANSI/NFPA 70) and with applicable local codes having jurisdiction. Thermostat connections should be made in accordance with the instructions supplied with the thermostat and the indoor equipment.
- The low voltage wires must be properly connected. Route 24V control wires through the sealing grommet (Figure 8, page 8) near the power entrance. Recommended wire gauge and wire lengths for typical thermostat connections are listed in Table 2 (page 10).
- Single stage or two-stage thermostats can be used with this equipment depending on optional accessories (i.e. economizer) installed with the unit. Select a thermostat that operates in conjunction with the installed accessories.
- 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, lighting fixtures or convective heat from warm air registers or electrical appliances. Refer to the thermostat manufacturer's instruction sheet for detailed mounting information.

#### Cooling Only Thermostat

Connect the **red & yellow** wires from the unit to the **R & Y** terminals on the thermostat subbase. Connect the **green** wire to the **yellow** wire at the unit. See Figure 9 (page 10).

#### Heat/Cool Thermostat

For the highest efficiency, the use of a 2-stage Heating/Cooling thermostat is recommended. The heat/cool thermostat prevents simultaneous operation of the heating and cooling units and is equipped with an ON-AUTO fan mode that allows the home owner to operate the indoor blower when only air circulation is desired. Connect the red, yellow, green and brown/orange low voltage wires to the **R** or **RC**, **Y**, **G**, **W** or **W2** (if applicable) terminals on the thermostat base. The black wire is the 24 volt common required on some thermostats. See Figure 9.



**Figure 9. Low Voltage Connections**

### Blower Speed

For optimum system performance and comfort, it may be necessary to change the factory speed setting.

## **⚠ 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.**

#### Standard PSC Motor

1. Disconnect all electrical power to the unit and remove the service panel.
2. Place the desired blower speed lead on the **COM** terminal of the fan control board. Use another wire tie (field supplied) to bundle the remaining motor leads.

#### High Efficiency ECM Motor

1. Disconnect all electrical power to the unit and remove the service panel.

## **⚠ CAUTION:**

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

2. Locate the orange and red wires terminated to the blower motor. The orange wire controls cooling operation and the red wire controls the heating operation.

## **⚠ CAUTION:**

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

Thermostat Wire Gauge	Recommended T-Stat Wire Length (Unit to T-Stat)	
	2-Wire (Heating)	5-Wire (Heating/Cooling)
24	55	25
22	90	45
20	140	70
18	225	110

**Table 2. Thermostat Wire Gauge**

3. Verify the required speed from the airflow data found in Table 3. Place appropriate wire on the appropriate motor speed tap for the required airflow.
4. Check all factory wiring as shown in the wiring diagram and inspect the connections to make sure none of them loosened during shipping or installation.

## START UP & ADJUSTMENTS

### Pre-Start Checklist

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

- ✓ Verify the unit is level and allows proper condensate drainage.
- ✓ Verify the outdoor coil and top of the unit are free from obstructions and debris, and all equipment access/control panels are in place. Unit must be installed with the proper clearances as shown on page 5.
- ✓ 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. Check the condenser fan to make sure it turns freely.
- ✓ Verify the thermostat is wired correctly and installed in a proper location. Make sure the low voltage wires are securely connected to the correct leads on the low voltage terminal strip.
- ✓ Verify that the power supply branch circuit overcurrent protection is sized properly.

### Start-Up Procedure

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

P5RD SERIES SMALL PACK																	
UNIT	BLOWER SETTING	External Static Pressure Drop - inches water column															
		0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8	
		CFM	HEAT RISE	CFM	HEAT RISE	CFM	HEAT RISE	CFM	HEAT RISE	CFM	HEAT RISE	CFM	HEAT RISE	CFM	HEAT RISE	CFM	HEAT RISE
024K	Low*	847	37	808	39	770	41	726	44	664	48	562	56	460	69		
	High**	1104	29	1114	28	1064	30	1010	31	935	34	846	37	710	44	536	59
030K	Low	847	37	808	39	770	41	726	44	664	48	562	56	460	69		
	High†	1104	29	1114	28	1064	30	1010	31	935	34	846	37	710	44	536	59
036K	Low†	1318	24	1284	25	1248	25	1207	26	1160	27	1110	28	1043	30	957	33
	High	1551	20	1521	21	1477	21	1434	22	1388	23	1342	24	1263	25	1180	27
042K	Tap T1	1100	29	900	35	750	42	650	49	580	54	520	61	480	66	455	69
	Tap T2	1208	26	1080	29	1025	31	972	33	926	34	874	36	813	39	752	42
	Tap T3	1262	25	1199	26	1153	27	1110	28	1070	30	1027	31	965	33	906	35
	Tap T4*	1370	23	1333	24	1300	24	1260	25	1230	26	1180	27	1070	30	1010	31
	Tap T5**	1410	22	1340	24	1450	22	1320	24	1280	25	1240	25	1195	26	1150	27
042KA	Low†	1460	22	1440	22	1420	22	1390	23	1360	23	1325	24	1285	25	1235	26
	Med**	1840	17	1815	17	1790	18	1760	18	1715	18	1660	19	1605	20	1535	21
	High	2155	15	2115	15	2065	15	2020	16	1955	16	1895	17	1830	17	1740	18
048K	Tap T1	1480	21	1455	22	1415	22	1390	23	1355	23	1320	24	1290	24	1255	25
	Tap T2**	1575	20	1545	20	1515	21	1475	21	1440	22	1420	22	1385	23	1345	23
	Tap T3*	1635	19	1505	21	1575	20	1545	20	1515	21	1485	21	1455	22	1425	22
	Tap T4	1775	18	1740	18	1715	18	1695	19	1665	19	1635	19	1610	20	1580	20
	Tap T5	2065	15	2040	15	2020	16	1985	16	1960	16	1940	16	1905	17	1850	17
048KA	Low**	1460	22	1440	22	1420	22	1390	23	1360	23	1325	24	1285	25	1235	26
	Med†	1840	17	1815	17	1790	18	1760	18	1715	18	1660	19	1605	20	1535	21
	High	2155	15	2115	15	2065	15	2020	16	1955	16	1895	17	1830	17	1740	18
060K	Tap T1	1480	21	1455	22	1415	22	1390	23	1355	23	1320	24	1290	24	1255	25
	Tap T2**	1575	20	1545	20	1515	21	1475	21	1440	22	1420	22	1385	23	1345	23
	Tap T3	1635	19	1505	21	1575	20	1545	20	1515	21	1485	21	1455	22	1425	22
	Tap T4*	1775	18	1740	18	1715	18	1695	19	1665	19	1635	19	1610	20	1580	20
	Tap T5	2065	15	2040	15	2020	16	1985	16	1960	16	1940	16	1905	17	1850	17

**NOTES:**

Temperature rises shaded gray are for reference only. These conditions are not recommended.

\* Denotes factory set cooling speed

\*\* Denotes factory set electric heating speed

† Denotes Factory cooling & electric heating speed

**Table 3. P5RD Series Blower Data - (Single Phase Models)**

- Set the temperature mode above room temperature. The unit should stop.
- Instruct the homeowner on unit and thermostat operation and filter servicing.

**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.

**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:

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

**Adjustment of Refrigerant Charge**



**This air conditioner 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.**

- To achieve rated capacity and efficiency the compressor must be exposed to refrigerant for at least 24 hours prior to running. After unit startup, the compressor must run for a minimum of 12 hours.
- The refrigerant charge can be checked and adjusted through the service ports provided external to the unit. Use only gage line sets which have a "Schradler" depression device present to actuate the valve.

### Charging an R-410A Unit in AC Mode with Outdoor Temperatures Above 55° F

1. With the system operating at steady-state, measure the liquid refrigerant pressure in psig at the service valve.
  2. Measure the liquid refrigerant temperature (° F) at the service valve.
  3. For the temperature measured, determine the required liquid refrigerant pressure from Tables 4 - 10 or Figure 13. See pages 16 - 19.
- If the pressure measured in step 1 is greater than the required liquid refrigerant pressure determined in step 4, then there is too much charge in the system. Remove refrigerant and repeat steps 1 through 3 until the system is correctly charged.
  - If the pressure measured in step 1 is less than the required liquid refrigerant pressure determined in step 4, then there is too little charge in the system. Add refrigerant and repeat steps 1 through 3 until the system is correctly charged.

## AIR CONDITIONER 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 air conditioner. 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.

## COMPONENT FUNCTIONS

### High Pressure Switch (HPS)

A high-pressure switch is factory-installed and located in the liquid line internal to the unit. The switch is designed to protect the system when very high pressures occur during abnormal conditions. Under normal conditions, the switch is closed. If the liquid pressure rises above 575 psig, the switch will open and de-energize the unit. The switch will close again when the liquid pressure decreases to 460 psig.

### Low Pressure Switch (LPS)

A low-pressure switch is factory-installed and located in the suction line internal to the unit. The switch is designed to protect the compressor from a loss of charge. Under normal conditions, the switch is closed. If the suction pressure falls below 5 psig, the switch will open and de-energize the unit. The switch will close again when the suction pressure increases above 20 psig.

## REPLACEMENT PARTS

Replacement parts are available through all Nordyne distributors. Please have the complete model and serial number of the unit when ordering replacement parts.

### ELECTRICAL:

Capacitors	Temperature Limit Switches
Compressors	Thermostats
Contactors	Time Delay Relays
Pressure Switches	Transformers
Relays	

### MOTORS:

Blower Motor  
Fan Motor

### COMPONENTS:

Blower Assembly	Fan Grille
Cabinet Panels	Filter/Driers
Expansion Valves	

## FIGURES & TABLES

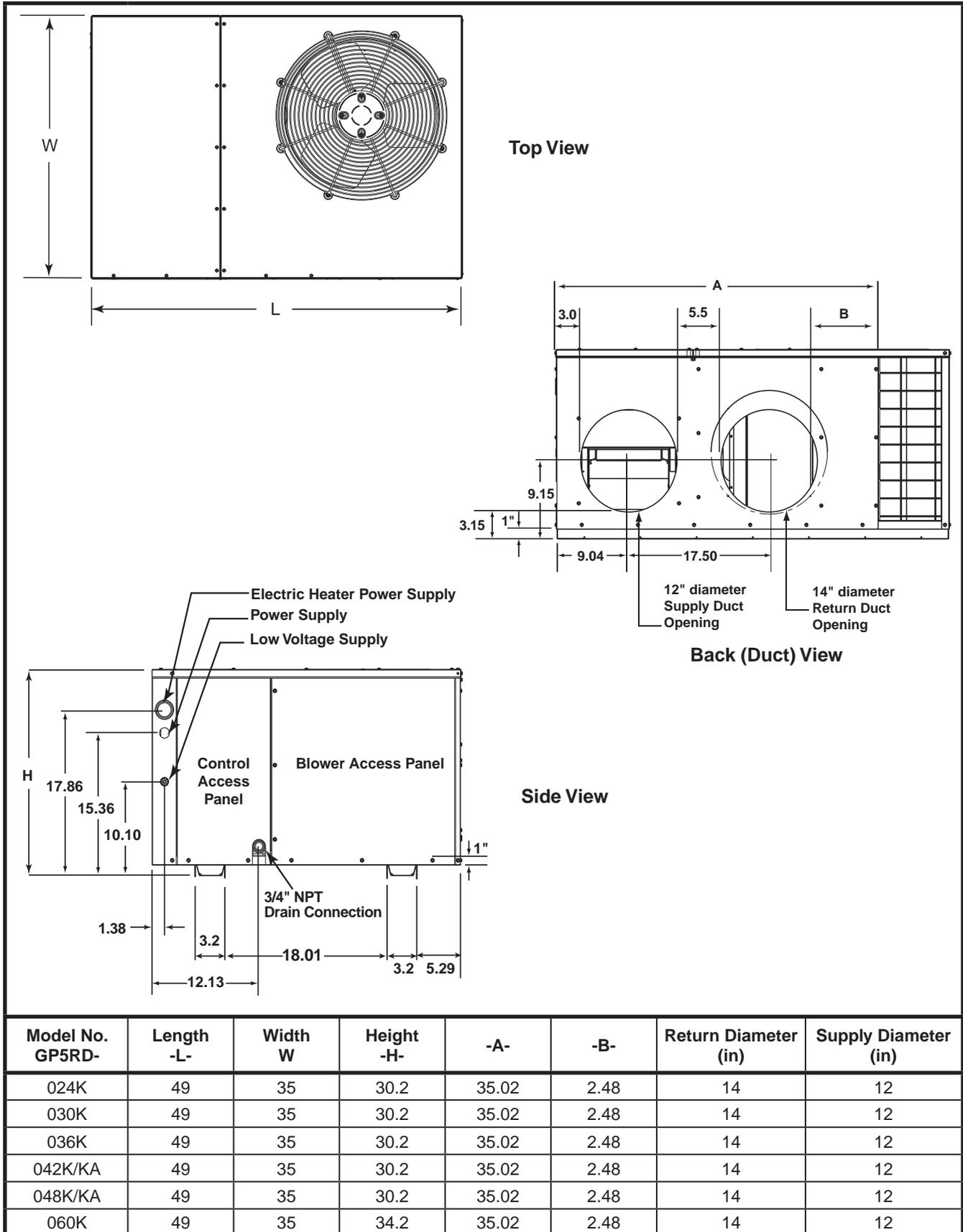


Figure 10. P5RD Physical Data & Unit Dimensions

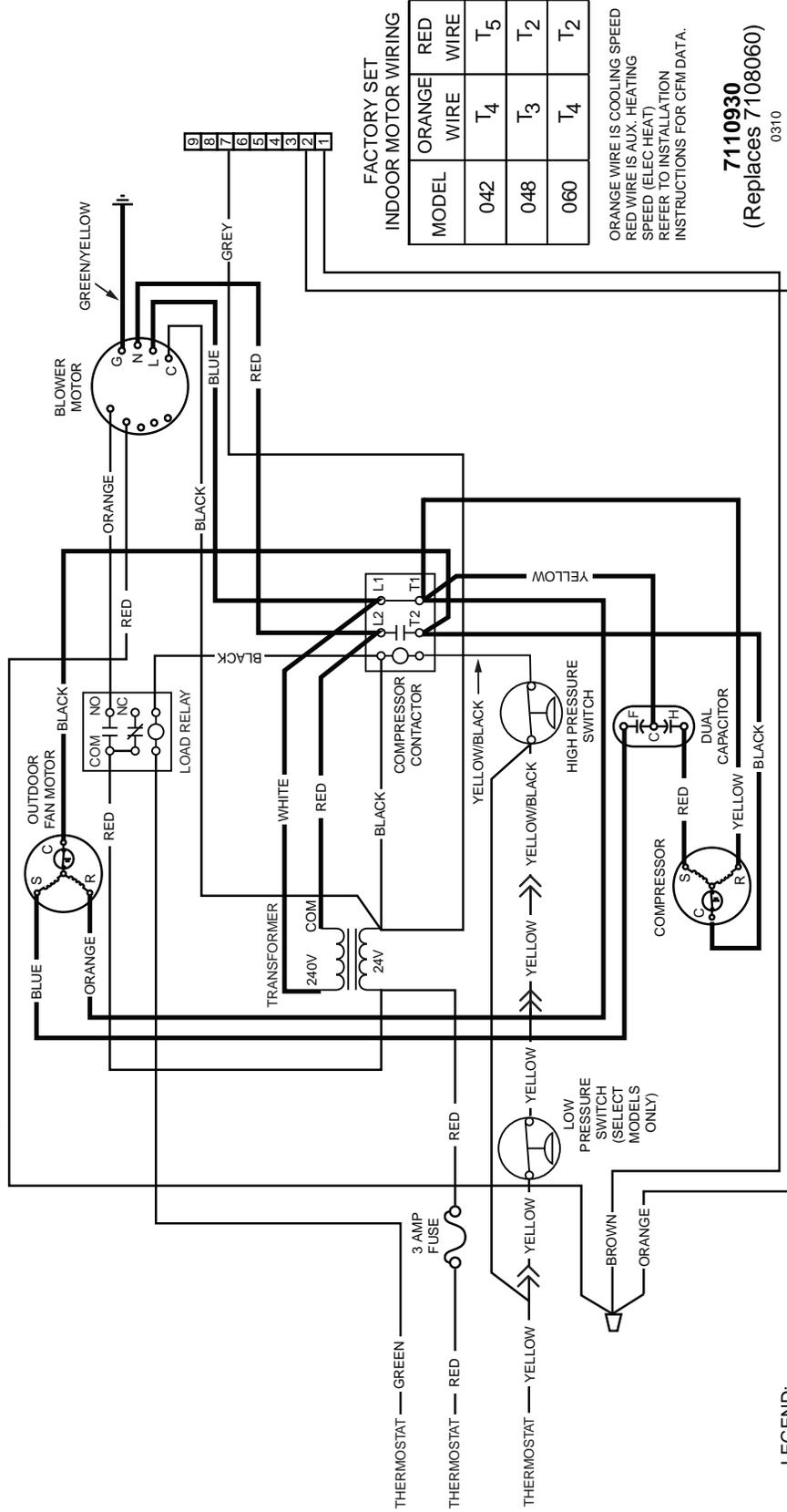
# WIRING DIAGRAMS

## WIRING DIAGRAM

### Packaged Air Conditioner - Single Phase

#### NOTES:

1. Disconnect all power before servicing.
2. For supply connections use copper conductors only.
3. Not suitable on systems that exceed 150 V to ground.
4. For replacement wires use conductors suitable for 105° C.
5. See installation instructions for blower motor airflow settings.



INDOOR MOTOR WIRING

MODEL	ORANGE WIRE	RED WIRE
042	T <sub>4</sub>	T <sub>5</sub>
048	T <sub>3</sub>	T <sub>2</sub>
060	T <sub>4</sub>	T <sub>2</sub>

ORANGE WIRE IS COOLING SPEED  
 RED WIRE IS AUX. HEATING  
 SPEED (ELEC HEAT)  
 REFER TO INSTALLATION  
 INSTRUCTIONS FOR CFM DATA.

**7110930**  
 (Replaces 7108060)

0310



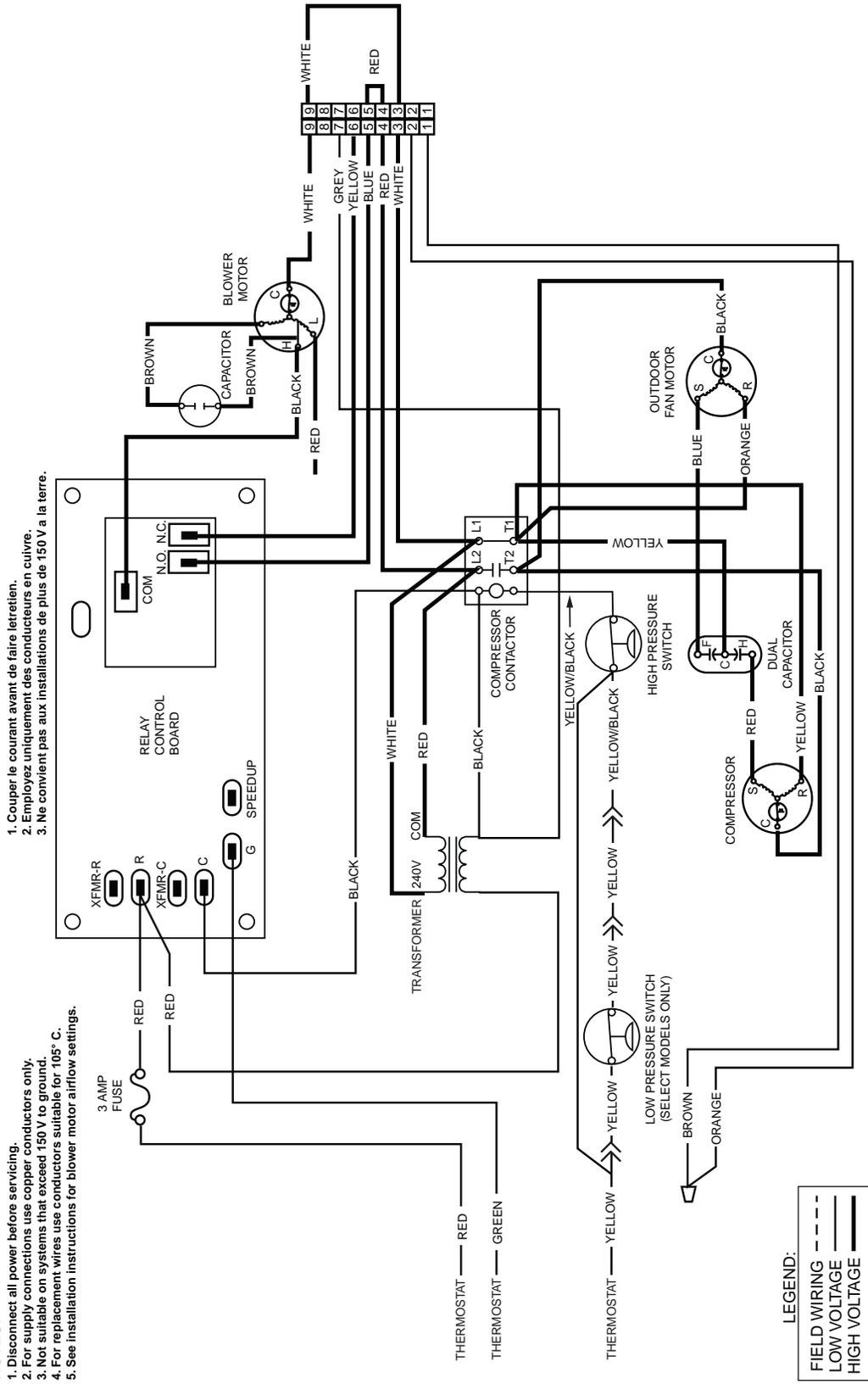
#### LEGEND:

- FIELD WIRING - - - - -
- LOW VOLTAGE - - - - -
- HIGH VOLTAGE ————

Figure 11. P5RD with ECM Motor

# Packaged Air Conditioner - Single Phase

- 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. See installation instructions for blower motor airflow settings.



WD # 7108260

Figure 12. P5RD with PSC Motor

## REFRIGERANT CHARGING TABLES

■ ■ ■ Shaded boxes indicate flooded conditions.

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

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

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.
134	243	132														
136	245	137	265	134												
138	247	143	267	139	287	136										
140	253	141	269	144	289	140	309	138								
142	256	144	274	144	291	145	311	142	331	140						
144			278	147	296	147	313	147	333	144	353	142				
146					299	151	317	150	335	148	355	146	375	144		
148							321	153	339	152	357	150	377	148	397	147
150							324	157	342	156	360	154	379	152	399	150
152									346	160	364	158	382	156	401	154
154											367	163	385	161	404	158
156													389	165	407	163
158															410	167
160																

**Table 4. Charging Table for P5RD-024K Series (2 Ton Units)**

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.
137	254	133														
139	257	139	276	135												
141	259	144	279	140	299	138										
143	265	142	281	146	301	142	321	140								
145	268	144	286	145	303	147	323	145	343	143						
147			290	148	308	149	325	149	345	147	365	145				
149					312	152	330	152	347	151	367	149	388	148		
151							333	156	351	155	369	154	390	152	410	151
153							337	159	355	159	373	158	392	156	412	155
155									358	163	376	162	395	160	414	159
157											380	166	398	164	416	163
159													401	169	420	167
161															423	171
163																

**Table 5. Charging Table for P5RD-030K Series (2.5 Ton Units)**

## REFRIGERANT CHARGING TABLES

■ ■ ■ Shaded boxes indicate flooded conditions.

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

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

Suct. Press.	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.
132	270	149														
134	273	155	296	151												
136	275	160	298	156	322	153										
138	280	159	300	161	324	158	347	156								
140	284	161	305	162	326	163	349	160	373	158						
142			309	165	331	165	352	165	375	163	399	161				
144					334	169	356	168	377	167	401	165	424	163		
146							359	172	381	171	403	169	426	167	450	166
148							363	175	384	175	406	173	428	171	452	170
150									388	178	410	177	431	176	454	174
152											413	181	435	180	457	178
154													438	184	460	182
156															463	187
158																

**Table 6. Charging Table for P5RD-036K Series (3 Ton Units)**

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	269	138														
133	272	143	293	143												
135	274	148	295	148	317	147										
137	278	151	298	153	319	152	341	152								
139	281	153	301	156	321	157	343	157	365	157						
141			305	159	325	160	345	161	367	161	389	161				
143					329	164	349	165	369	165	391	166	413	166		
145							352	168	373	169	393	170	415	170	437	171
147							356	172	376	173	396	174	417	174	439	175
149									379	177	400	178	420	178	441	178
151											403	182	424	183	444	183
153													427	187	447	187
155															451	192
157																

**Table 7. Charging Table for P5RD-042K Series (3.5 Ton Units with X-13 Motor)**

## REFRIGERANT CHARGING TABLES

■ Shaded boxes indicate flooded conditions.

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

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

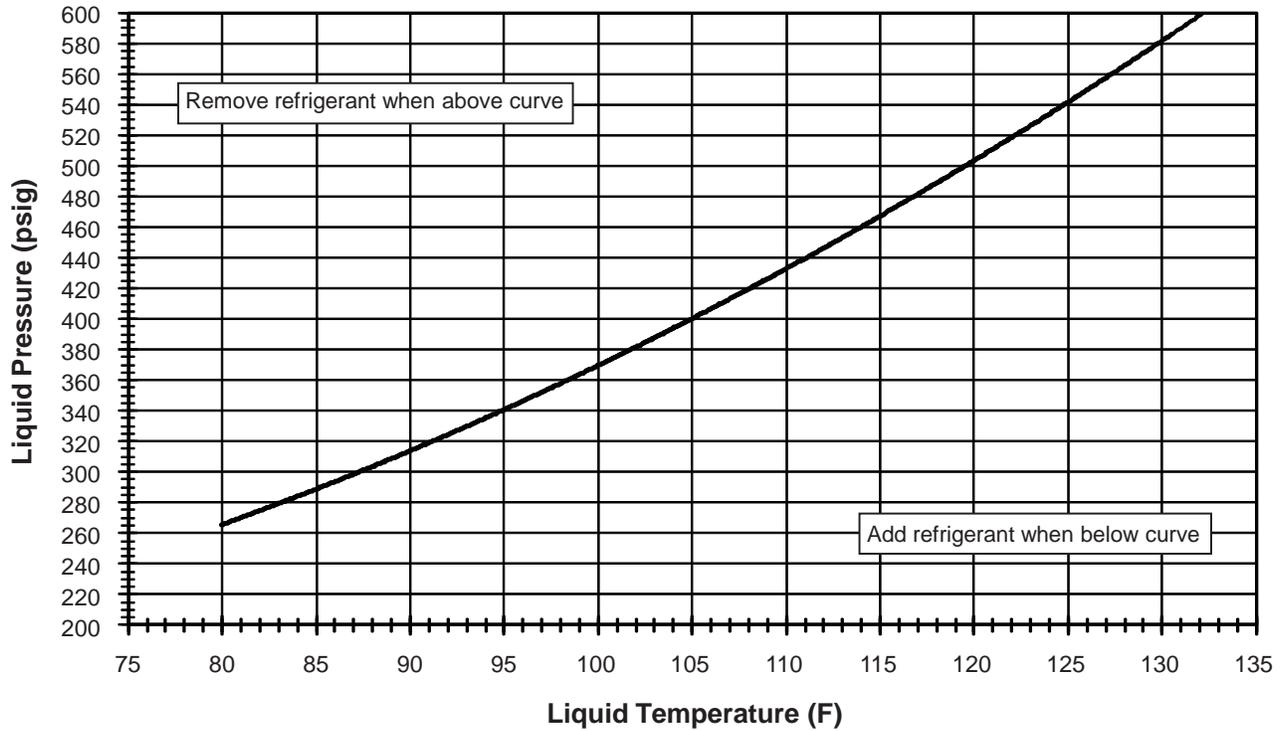
Suct. Press.	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.	Liq. Press.	Dis. Temp.
131	269	141														
133	271	146	294	144												
135	274	151	296	149	319	147										
137	279	150	298	154	321	152	344	151								
139	283	153	303	155	323	157	346	156	369	155						
141			307	158	328	159	348	160	371	159	394	159				
143					331	163	352	163	373	164	396	163	419	162		
145							356	167	377	167	398	167	421	166	444	166
147							359	171	380	171	401	171	423	170	446	170
149									384	175	405	175	426	175	448	174
151											408	179	429	179	450	178
153													433	183	454	183
155															457	187
157																

**Table 8. Charging Table for P5RD-042KA Series (3.5 Ton Units with PSC Motor)**

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	281	142														
133	283	147	306	146												
135	285	152	308	151	330	151										
137	289	155	310	156	332	155	355	155								
139	292	158	313	159	334	160	357	160	379	160						
141			317	162	338	164	359	164	381	164	404	164				
143					341	167	362	168	384	168	406	168	429	168		
145							366	172	387	172	408	172	431	172	453	173
147							369	175	390	176	412	176	433	176	455	176
149									394	180	415	180	436	181	457	180
151											418	185	439	185	461	185
153													443	189	464	189
155															467	194
157																

**Table 9. Charging Table for P5RD-048K Series (4 Ton Units)**

### P5RD-048KA Charging Chart - Cooling



**Figure 13. Charging Chart for P5RD-048KA Series (4 Ton Units with TXV Valve)**

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.
129	279	140														
131	281	145	304	144												
133	283	150	306	149	329	148										
135	287	152	308	154	331	153	353	153								
137	291	155	312	157	333	158	356	157	378	157						
139			315	160	337	161	358	162	380	161	403	161				
141					340	164	361	165	382	166	405	165	428	166		
143							365	169	386	169	407	170	430	170	453	170
145							368	173	389	173	411	174	432	174	455	174
147									393	177	414	178	435	178	457	178
149											417	182	439	182	460	182
151													442	186	463	186
153															467	191
155																

**Table 10. Charging Table for P5RD-060K Series (5 Ton Units)**

## INSTALLATION / PERFORMANCE CHECKLIST

<b>INSTALLATION ADDRESS:</b>		
CITY-----	STATE-----	
UNIT MODEL #-----		
UNIT SERIAL #-----		
Unit Installed Minimum clearances per Figure 2 (page 5)?	YES	NO
<b>INSTALLER NAME:</b>		
CITY-----	STATE-----	

**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.

**⚠ WARNING:**

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

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)-----		
Has the owner's information been reviewed with the customer?	YES	NO
Has the Literature Package been left with the unit?	YES	NO

ELECTRICAL SYSTEM:		
Electrical connections tight?	YES	NO
Line voltage polarity correct?	YES	NO
Rated Voltage: ----- VOLTS		
L1-L2 Volts: ----- VOLTS		
Avg. Volts: ----- VOLTS		
Max. deviation of voltage from avg. volts:----- VOLTS		
% Volt imbalance: ----- VOLTS		
Blower Motor HP: ----- Sheave Setting----- # Turns		
Has the thermostat been calibrated?	YES	NO
Is the thermostat level?	YES	NO
Is the heat anticipator setting correct? (If Applicable)	YES	NO



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