

**USER'S MANUAL & INSTALLATION INSTRUCTIONS****Single Package Air Conditioner - 2 Stage, R410A****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.**



## USER INFORMATION

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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 AC.
- 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.

**NOTE:** If the temperature level is re-adjusted, or the system mode is reset, the fan and compressor in the unit may not start immediately. A protective timer circuit holds the compressor and the outdoor fan off for approximately three minutes following a previous operation or the interruption of the main electrical power.

### 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

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 compressor, outdoor fan, and blower motor will cycle on and off to maintain the indoor temperature at the desired heating level.

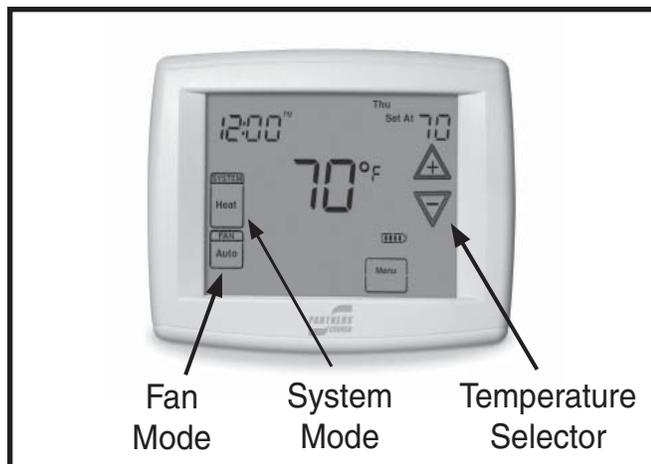


Figure 1. Digital Thermostat

## 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.

## 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.

### **WARNING:**

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.

### **WARNING:**

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

### **WARNING:**

P5RF 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.

### **CAUTION:**

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

### **WARNING:**

**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.**

- 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 CI) 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 6.
- 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 P5RF 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 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 8 & Table 4 (page 14) 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 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 Combustible Materials

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

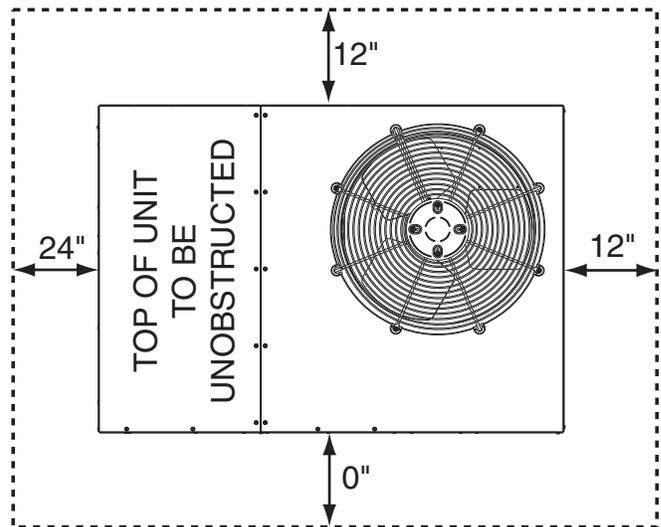


Figure 2. Minimum Unit Clearances

### 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 7).

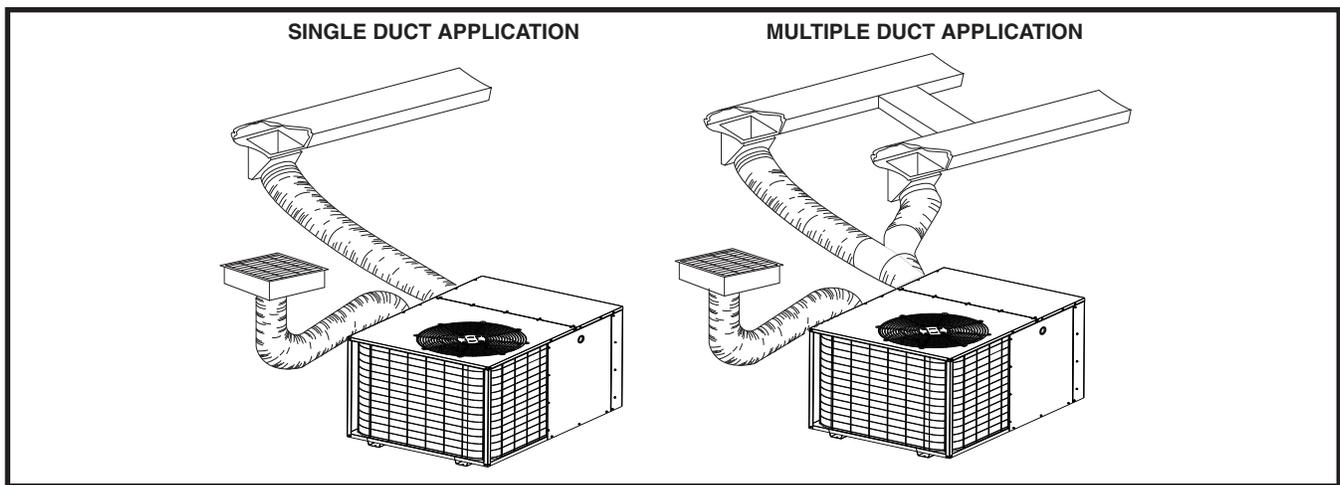


Figure 3. Single & Multiple Duct Applications

- 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 air conditioning output of the system will not cool 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.

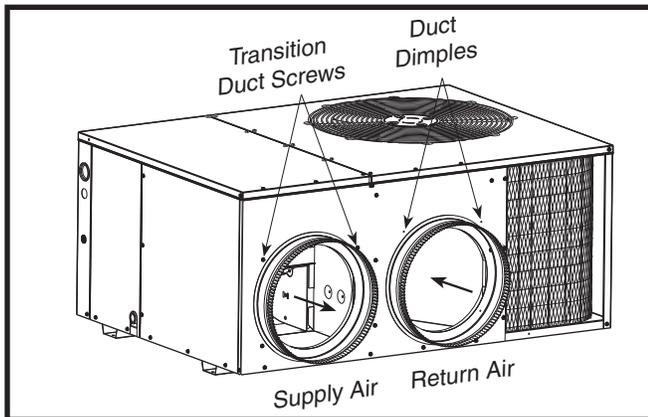


Figure 4. Return & Supply Air Collars

## 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. Verify the filter is readily accessible.

#### 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.**

#### Condensate Drainage

A 3/4" condensate fitting extends out of the side of the unit as shown in Figure 5. 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 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.

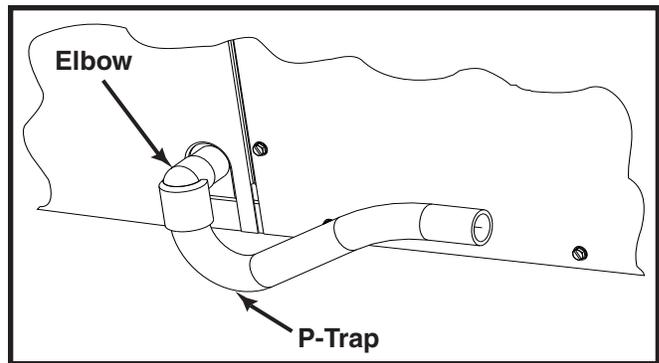


Figure 5. Drain Trap

## 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 12 & 13, pages 16 & 17). 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 6). Connect **L1 & L2** directly to the contactor.
- The unit requires both power and control circuit electrical connections. Refer to the wiring diagram / schematic for identification and location of unit field wiring interfaces (Figures 12 & 13, pages 16 & 17). 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.

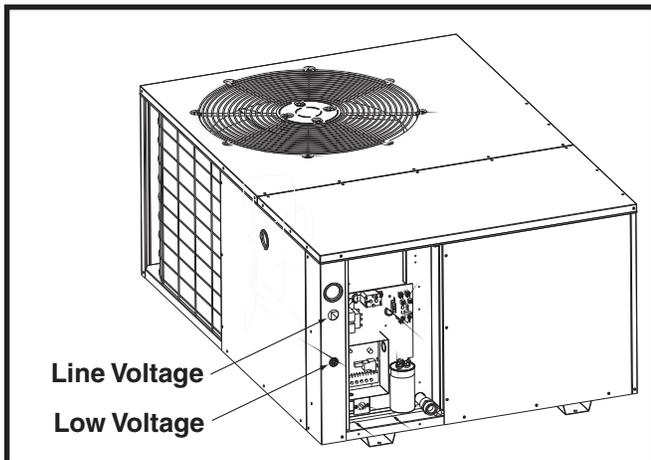


Figure 6. Power Entry

## 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.

### 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

### Thermostat / Low Voltage Connections

The 15 SEER air conditioner uses a special two speed compressor to achieve a high level of efficiency in a compact frame. 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.

- 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 6, page 9) near the power entrance. Connect the control wires to the defrost board and blower relay wire (Figure 7). Recommended wire gauge and wire lengths for typical thermostat connections are listed in Table 2.
- 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, 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.

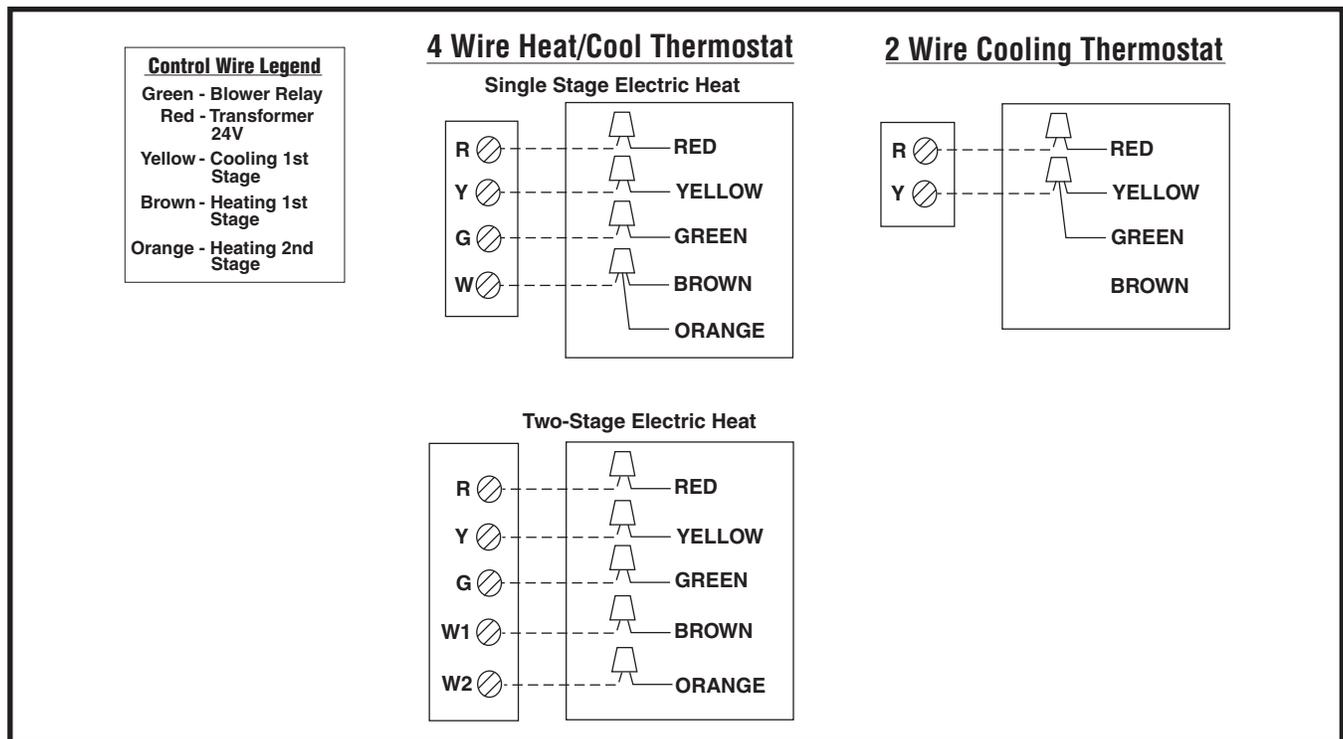
- NOTE:** If installing unit with an external furnace, refer to the installation instructions supplied with the furnace for proper heat anticipator setting.

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**

### 2-Stage Heating

If 2-stage heating is desired, an optional outdoor thermostat may be installed. Connect the thermostat to the orange low voltage wire and the **W** terminal on the indoor thermostat base. Refer to the installation Instructions supplied with the outdoor thermostat for setup details.



**Figure 7. Typical Wiring (Field Supplied) for 2-Stage Cool, 2-Stage Electric Heat**

### Cooling Mode

1. On a call for cooling, the thermostat closes, and applies 24VAC to the **G & Y1** terminals of the control. The compressor contactor closes and operates the compressor in 1st stage.
2. If the thermostat is not satisfied in the required time (based on the operation of the 2-stage cooling thermostat), **Y2** will energize and the compressor will run at 2nd stage. Refer to the thermostat's Installation Instructions for the cooling profile.
3. When the thermostat is satisfied, the **G & Y** terminals on the control board de-energized and open the compressor contactor.

### Electric Heat Package (optional)

This air conditioner is shipped without an auxiliary electric heat kit installed. If electric heat is desired, an accessory heater kit must be field installed.

- 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.
- The blower must be set to high speed for electric heat operation. Refer to Table 3 for blower speeds.

Model P5RF-	Wire Color/Speed Tap	Motor Speed	Air Flow (0.3 in. WC)
X24K	T1	Low	520
	Orange/T2	Medium/Low*	560
	Black/T3	Medium**	800
	Red/T4	Medium/High***	1,040
	T5	High	1,250
X36K	Orange/T1	Low*	630
	T2	Medium/Low	900
	Black/T3	Medium**	1,060
	Red/T4	Medium/High***	1,420
	T5	High	1,500
X48K	Orange/T1	Low*	980
	T2	Medium/Low	1,230
	Red/T3	Medium***	1,400
	Black/T4	Medium/High**	1,500
	T5	High	1,280
	T1	Low	1,060
	Orange/T2	Medium/Low*	1,204
	Red/T3	Medium***	1,504
	Black/T4	Medium/High**	1,700
	T5	High	1,968

\* Denotes factory set low speed cooling / heating.

\*\* Denotes factory set high speed cooling / heating.

\*\*\* Denotes factory set electric heating speed.

**Table 3. Motor Lead Connection**

### Blower Speed

For optimum system performance and comfort, it may be necessary to change the factory speed setting. See Table 3 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.**

To Change the blower speed of the high efficiency 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, black and red wires terminated to the blower motor. The orange wire controls cooling operation, the black wire controls high speed cooling and the red wire controls the heating operation.

### 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.**

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

### Outdoor Motor - 4 & 5 Ton Models Only

The outdoor motor has variable speeds which adjust in conjunction with the compressor and indoor blower motor. The outdoor motor is preset at the factory and wired as shown:

- 4 Ton Model: White wire is connected to **Y1** and the yellow wire is connected to **Y2**.
- 5 Ton Model: Yellow wire is connected to **Y1** and the white wire is connected to **Y2**.

**NOTE:** The blue wire from the outdoor ECM motor is always common for either speed setting.

## 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 listed in Figure 2 (page 6).
- √ 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 (3) 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. If air is insufficient, examine the ductwork for leaks or obstructions. Set the thermostat fan mode to AUTO. The blower should stop running.

### System Cooling

Change the thermostat's system mode to COOL and the fan mode to AUTO. Set 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)

1. Set the thermostat's system mode to EM HT and the fan mode to either AUTO (intermittent air) or to ON (continuous air).
2. Set the thermostat's temperature selector above the existing room temperature and check the following:
  - The thermostat auxiliary heat light (RED) is on.
  - The AC compressor and the fan should not running; low voltage circuit remains energized.
  - The blower will run according to the thermostat's fan mode setting.

### Adjustment of Refrigerant Charge

#### CAUTION:

**Packaged AC units contain 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 "Schrader" depression device present to actuate the valve.

### Charging an R-410A Unit

1. Determine the required liquid refrigerant pressure from your units data label.
2. With the system operating in a steady-state, measure the liquid refrigerant pressure (in psig) at the service valve.
3. Measure the liquid refrigerant temperature (° F) at the service valve.
  - If the pressure measured in step 2 is greater than the required liquid refrigerant pressure determined in step 1, there is too much charge in the system. Remove refrigerant and repeat steps 1 - 2 until the system is correctly charged.
  - If the pressure measured in step 1 is less than the required liquid refrigerant pressure determined in step 2, there is too little charge in the system. Add refrigerant and repeat steps 1 - 3 until the system is correctly charged.

## AIR CONDITIONER MAINTENANCE

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### **WARNING:**

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**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.**

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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.**

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- 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

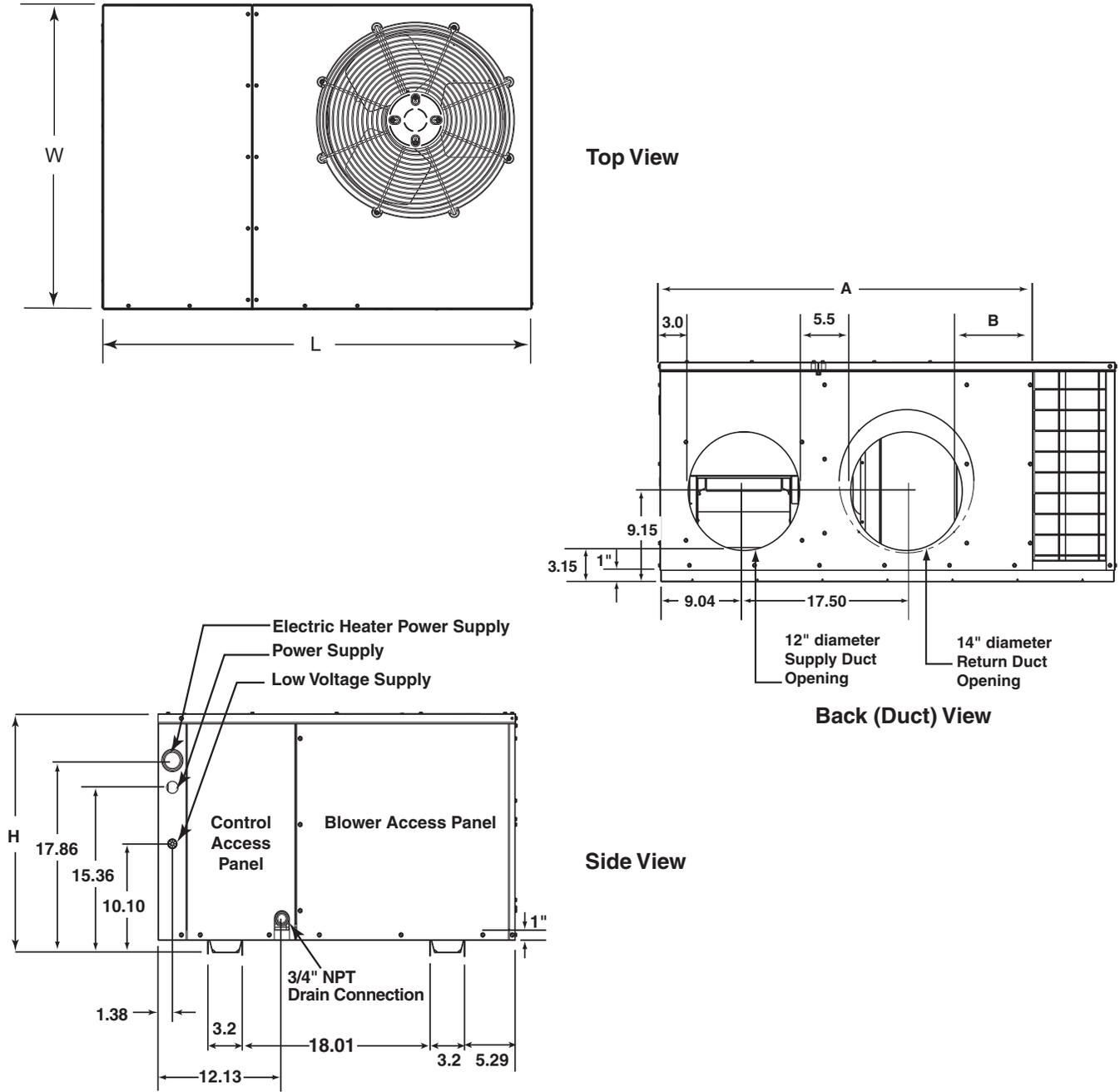


Figure 8. Unit Dimensions

Model No.P5RF-	(L) Length	(W) Width	(H) Height	A	B
X24K	49	35	30.2	35.02	2.48
X36K	49	35	30.2	35.02	2.48
X48K	49	35	38.2	35.02	2.48
X60K	63	35	38.2	35.02	2.48

Table 4. P5RF Physical Data

## REFRIGERANT CHARGING CHARTS

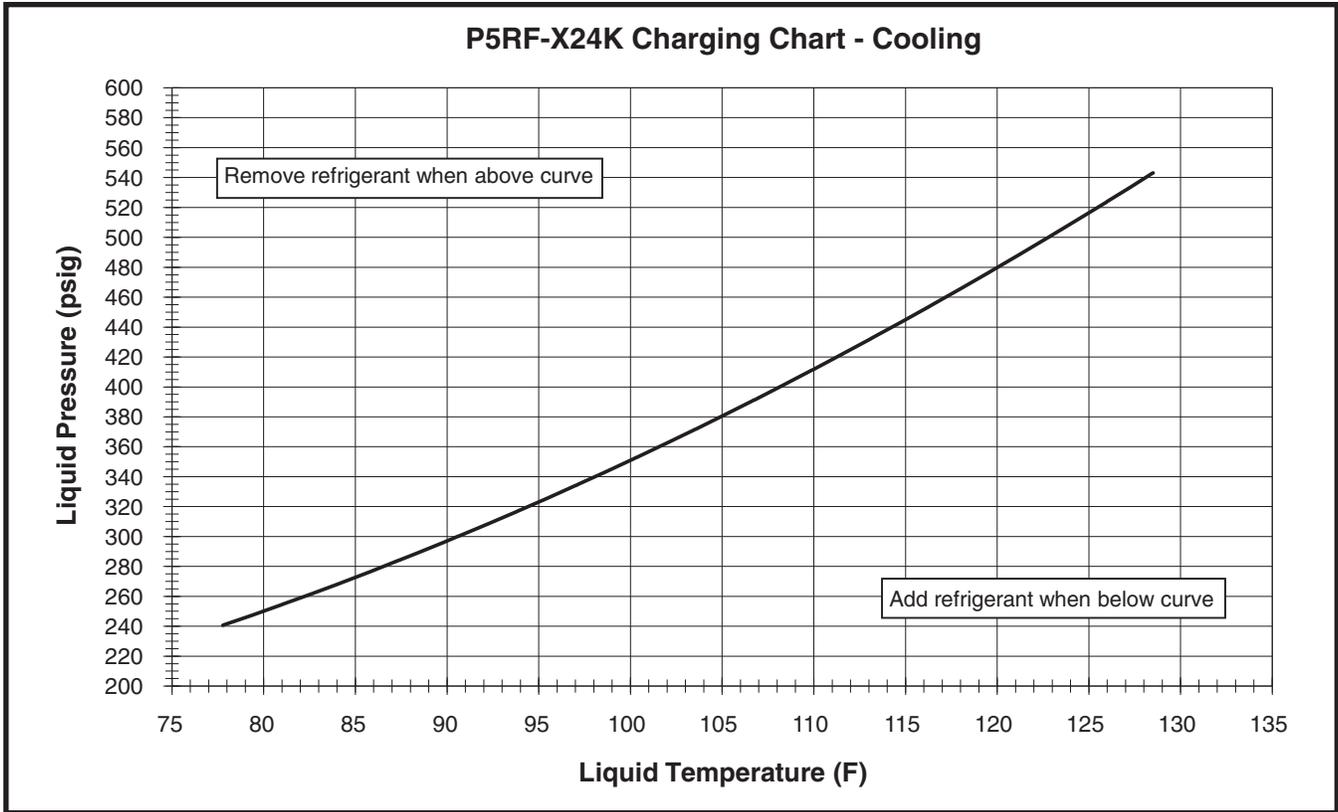


Figure 9. Charging Chart for 2 ton Units

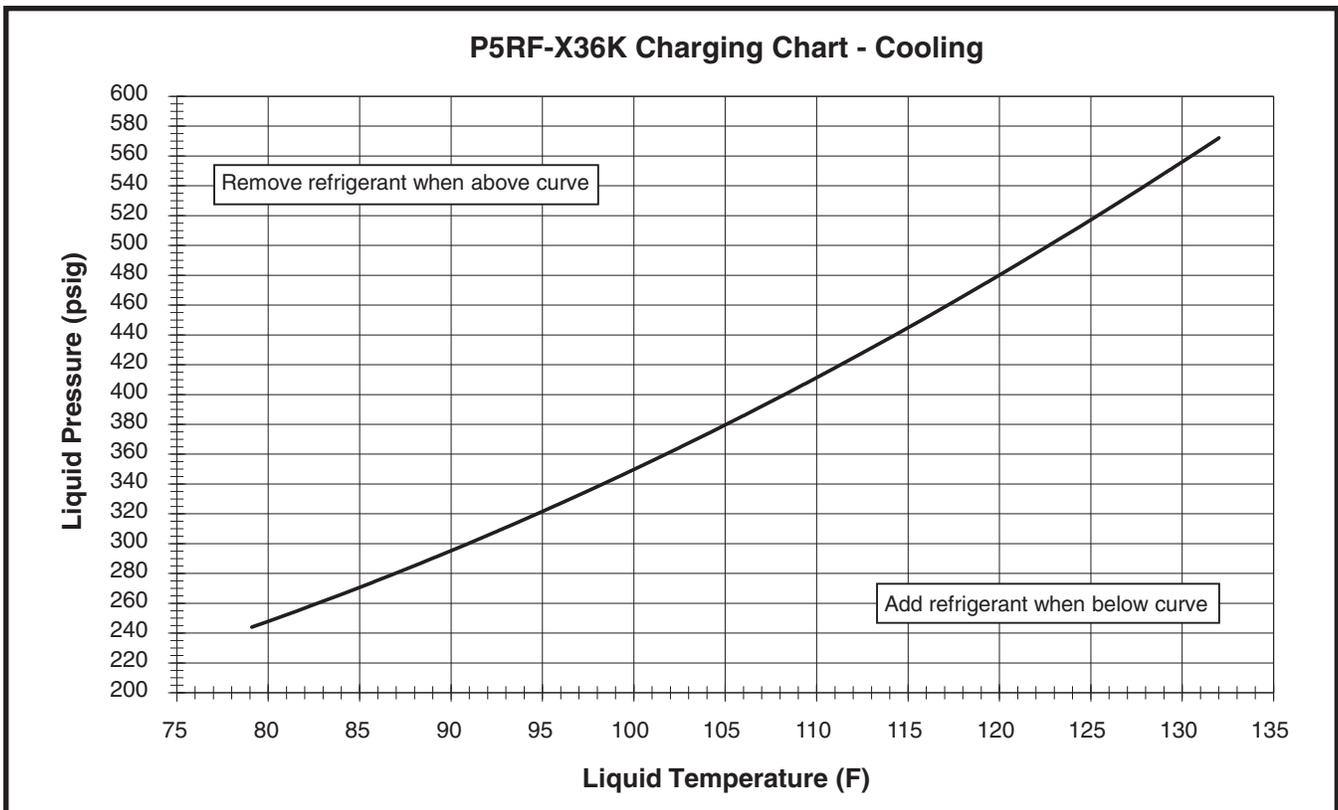


Figure 10. Charging Chart for 3 ton Units

## REFRIGERANT CHARGING CHARTS - CONTINUED

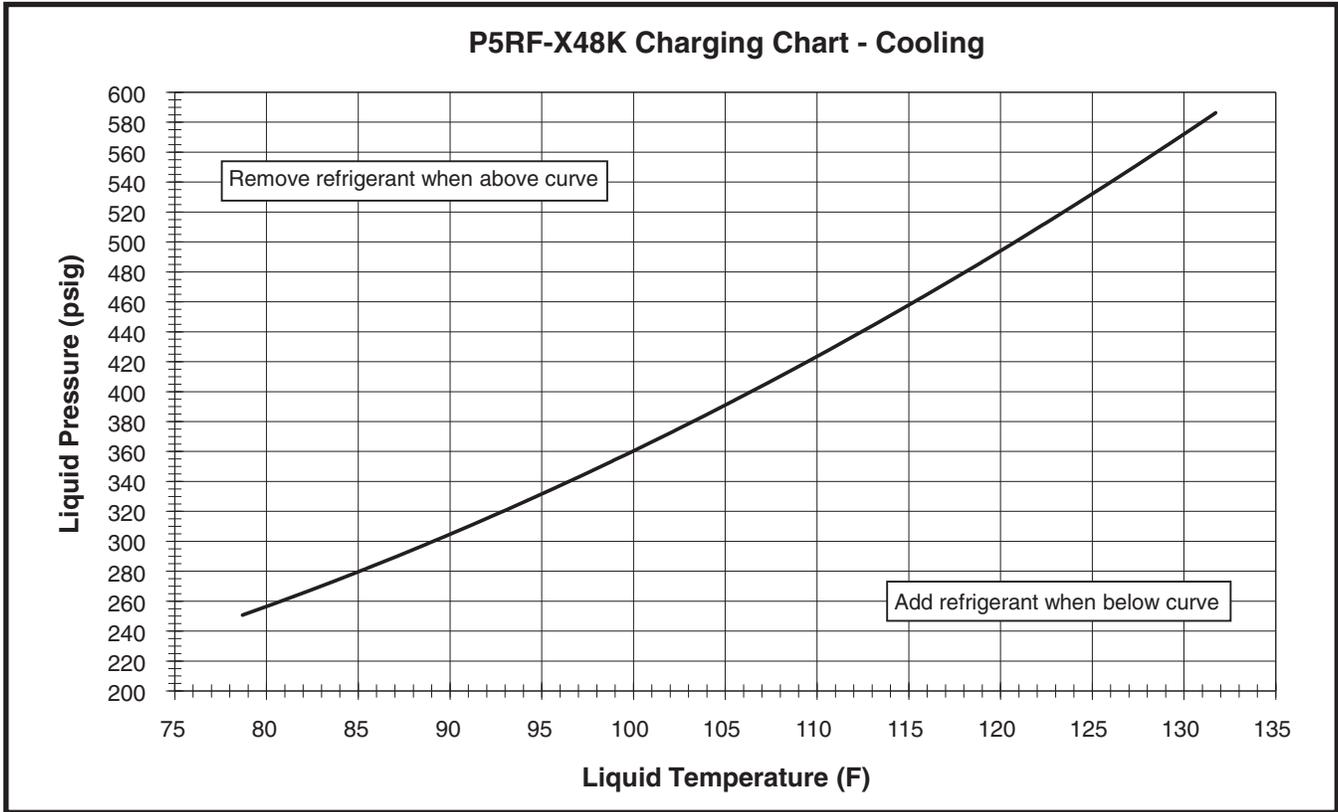


Figure 11. Charging Chart for 4 ton Units

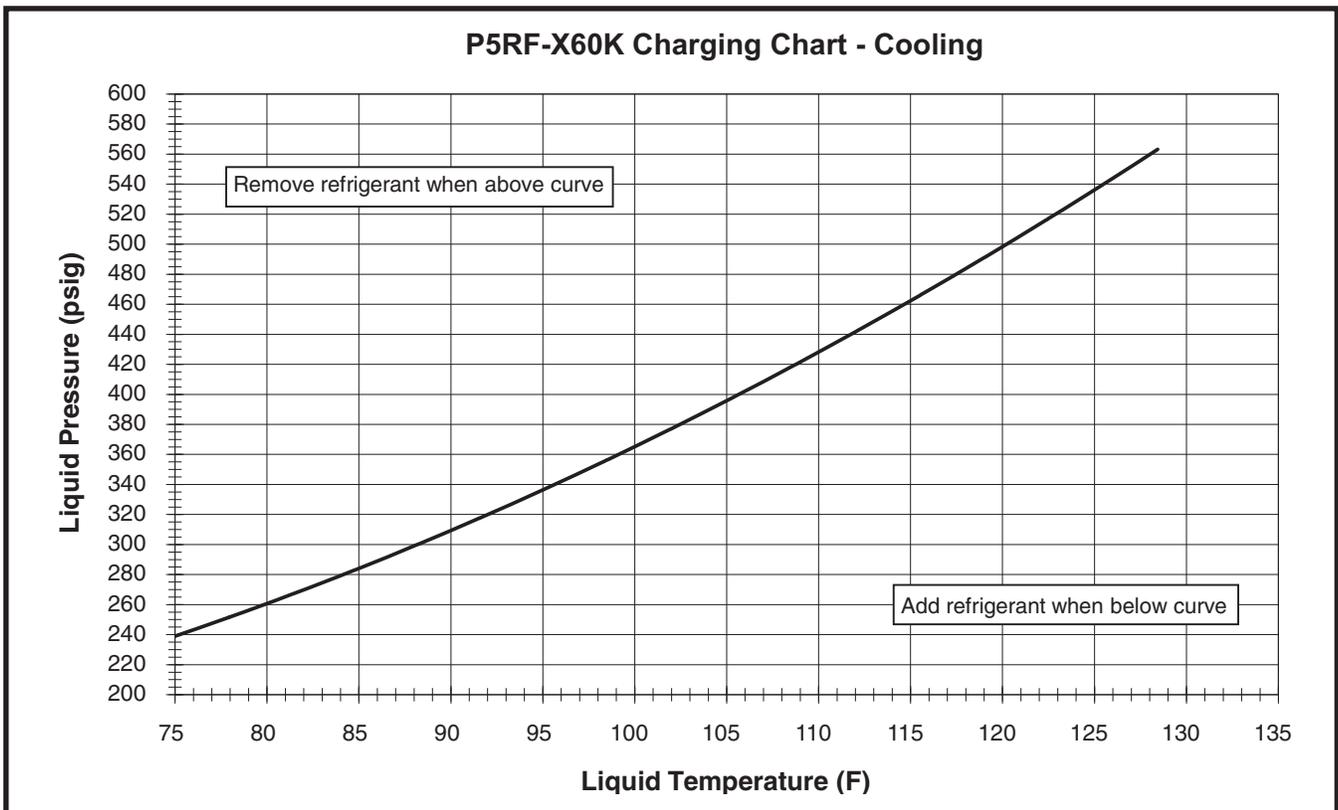


Figure 12. Charging Chart for 5 ton Units

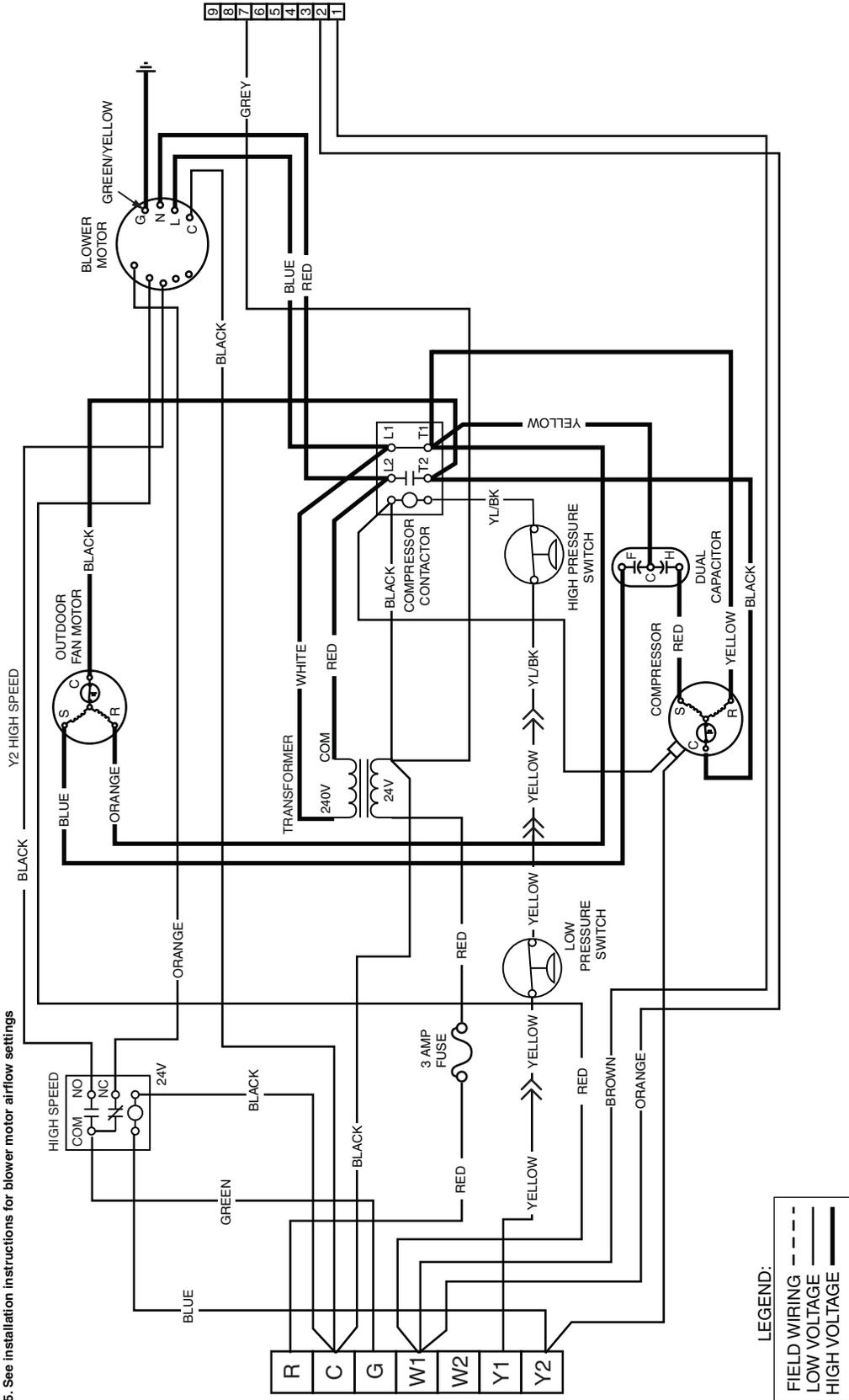
# WIRING DIAGRAMS

## 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

1. Couper le courant avant de faire l'entretien.
2. Employez uniquement des conducteurs en cuivre.
3. Ne convient pas aux installations de plus de 150 V à la terre.



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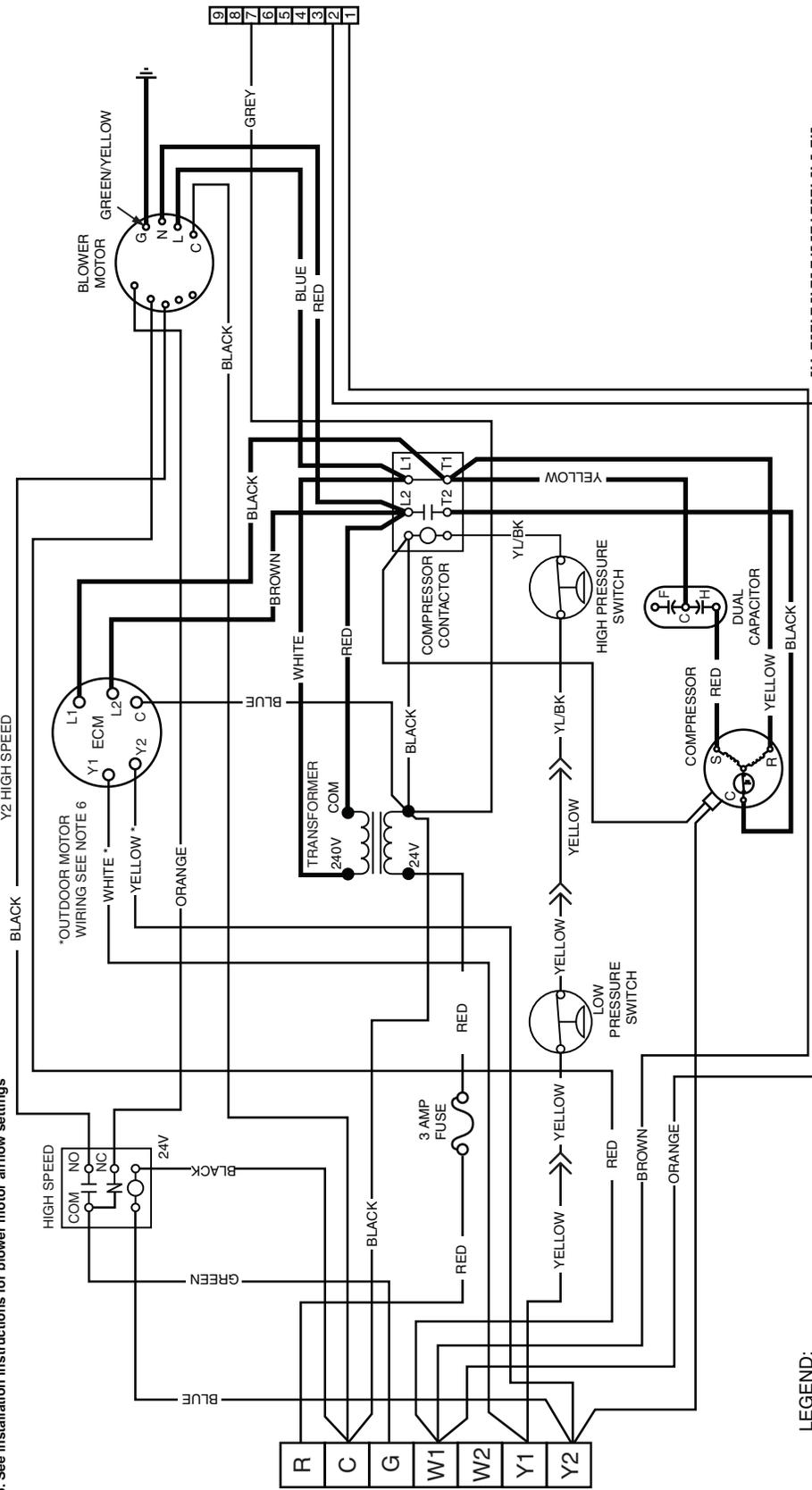
Figure 13. P5 Series Wiring Diagram - 2 & 3 Ton Units

# 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
6. Outdoor fan wiring shown for four ton unit. For five ton outdoor fan wiring, connect YELLOW wire to Y1 and connect WHITE wire to Y2.



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



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Figure 14. P5 Series Wiring Diagram - 4 & 5 Ton Units



## INSTALLATION / PERFORMANCE CHECK LIST

<b>INSTALLATION ADDRESS:</b>		
CITY _____	STATE _____	
UNIT MODEL # _____		
UNIT SERIAL # _____		
Unit Installed Minimum clearances per Figure 2 (page 6)?	YES	NO
<b>INSTALLER NAME:</b>		
CITY _____	STATE _____	

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

<b>ATTENTION INSTALLERS:</b>
<p>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.</p> <p>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.</p>

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

<b>⚠ WARNING:</b>
<p><b>PROPOSITION 65 WARNING: This product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.</b></p>

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Specifications & illustrations subject to change without notice or incurring obligations.  
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