

INSTALLATION INSTRUCTIONS**SINGLE PACKAGE CONVERTIBLE AIR CONDITIONER (3-PHASE ONLY)****Premium Model Shown****IMPORTANT****ATTENTION INSTALLERS:**

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

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

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

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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.

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USER 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.

ABOUT THE AIR CONDITIONER

The P8 Series single packaged convertible air conditioner is a high efficient self contained cooling unit that will cool your home year round and provide energy saving comfort. Additional features and benefits of the P8 air conditioner include:

- Indoor and outdoor coils are designed to optimize heat transfer, minimize size and cost, and increase durability and reliability.
- Environmentally friendly R-410A Refrigerant.

OPERATING 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 heat accessory 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 a desired temperature level. The indoor blower 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.

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

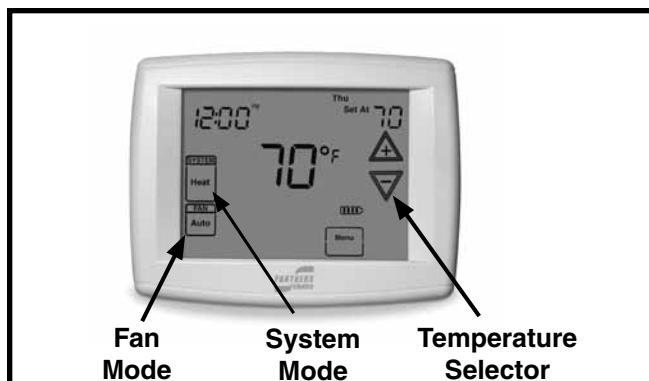


Figure 1. Digital Thermostat

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 outdoor unit clean. Hose off periodically and keep unit fins clear of leaves and grass clippings.
- Keep the outdoor 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 outdoor 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.

Before You Call a Technician:

- 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 outdoor unit and make sure it is clean and not covered with grass or leaves.

INSTALLER INFORMATION

SAFETY INFORMATION

IMPORTANT: 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:

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

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:

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:

These units are fully charged with R-410A refrigerant and ready for installation. When a system is installed according to these instructions, no refrigerant charging is required. If repairs make it necessary for evacuation and charging, it should only be attempted by qualified, trained personnel thoroughly familiar with this equipment. Some local codes require licensed installation service personnel to service this type of equipment. Under no circumstances should the homeowner attempt to install and/or service this equipment. Failure to comply with this warning could result in equipment damage, personal injury, or death.

WARNING:

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

WARNING:

The safety 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 C1) for special installation requirements.
- This equipment contains liquid and gaseous refrigerant under high pressure. Installation or servicing should only be performed by qualified trained personnel thoroughly familiar with this type equipment.
- 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.
- Installation of equipment may require brazing operations. Installer must comply with safety codes and wear appropriate safety equipment (safety glasses, work gloves, fire extinguisher, etc.) when performing brazing operations.
- Install this unit only in a location and position as specified on page 6. This unit is designed only for outdoor installations and should be located with consideration of minimizing the length of the supply and return ducts. Consideration should also be given to the accessibility of fuel, electric power, service access, noise, and shade.
- 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

Packaged Air Conditioner units are ready for easy and immediate installation on rooftops or ground level slabs. Units are shipped for horizontal duct connections and can be easily converted for downflow applications. This air conditioner is designed only for outdoor installations.

This unit has been designed and tested for capacity and efficiency in accordance with AHRI Standards. This unit will provide many years of safe and dependable comfort, providing it is properly installed and maintained. With regular maintenance, this unit will operate reliably year after year. Abuse, improper use, and/or improper maintenance can shorten the life of the appliance and create unsafe hazards.

Pre - Installation Check

- ✓ 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.
- Choose an appropriate location that minimizes the length of the supply and return air ducts.
- Avoid overhead obstructions, poorly ventilated areas, and areas subject to accumulation of debris.
- Sufficient clearance for unobstructed airflow through the outdoor coil must be maintained in order to achieve rated performance. See [Figure 2](#) for minimum clearances to obstructions.

Field Connections for Electrical Power Supply

- All wiring must comply with current provisions of the National Electrical Code (ANSI/NFPA 70) and with applicable local codes having jurisdiction.
- The minimum size of electrical conductors and circuit protection must be in compliance with information listed on the outdoor unit data label.
- Electrical power supplied to the unit must be adequate for proper operation of the equipment. The system must be wired and provided with circuit protection in accordance with local building codes.

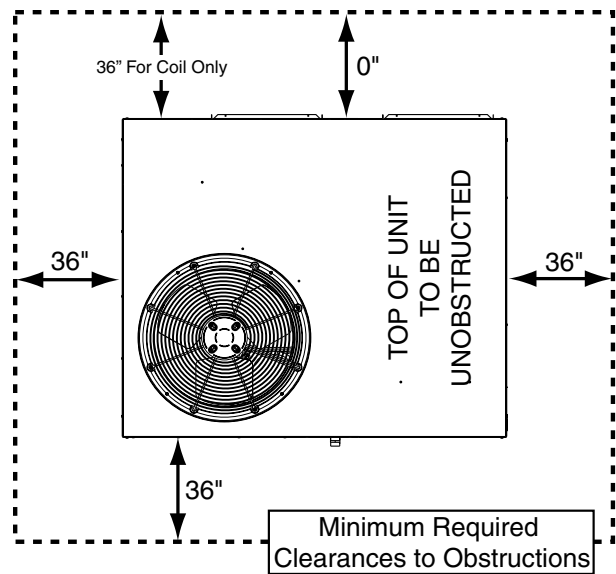


Figure 2. Clearance Requirements

Air Ducts

This unit is designed only for use with a supply and return duct. Air ducts should be installed in accordance with the standards of the National Fire Protection Association Standard for Installation of Air Conditioning Systems (NFPA 90A), Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems (NFPA 90B), and all applicable local codes. NFPA publications are available by writing to: National Fire Protection Association, Batterymarch Park, Quincy, ME 02269 or visit www.NFPA.org on the web.

- Design the duct work according to methods described by the Air Conditioning Contractors of America (ACCA).
- The ducts must be properly sized and not exceed .2" W.C. pressure drop at 400 scfm per nominal ton of cooling capacity.
- Duct work should be attached directly to the unit flanges for horizontal applications.
- If roof curb is installed, the ducts must be attached to the curb hangers, not the unit.

Unconditioned Spaces

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

Acoustical Duct Work

Certain installations may require the use of acoustical lining inside the supply duct work.

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

Air Filter Requirements

WARNING:

Never operate the unit without a filter in place. Dust and lint could accumulate on internal parts, resulting in loss of efficiency, equipment damage and possible fire. Replace disposable filters with the same type and size.

- Air filter(s) are not supplied and must be installed in the unit or in the return air system by the installer. Only three phase units are equipped with an internal filter rack assembly.
- If using an Economizer or Fresh Air Equipment, the factory installed filter rack must be removed prior to installation. See [page 7](#) for removal instructions.
- All return air must pass through the filters before entering the unit. Recommended filter sizes are listed in [Table 1](#). **NOTE:** It is important that all filters be kept clean and replaced frequently to ensure proper operation of unit. Dirty or clogged filters will reduce the efficiency of the unit and result in unit shutdowns.
- Air filter pressure drop must not exceed 0.08 inches WC. When replacing the air filters, a suitable air filter must be installed upstream of the evaporator coil of the return air system.
- Downflow Installations require an internal filter accessory kit to be installed.
- Horizontal Installations require the air filter system be installed in the return air ductwork.

UNIT SIZE	INTERNAL FILTER SIZE
P8SE-X36 P8SE-X48	(2) 14" x 25" or (2) 14" x 25"
P8SE-X60	(2) 18" x 25" or (2) 18" x 25"

Table 1. Internal Filter Size Requirements.

AIR CONDITIONER INSTALLATION

Packaging Removal

Remove the shipping carton and User's Manual from the equipment. Take care not to damage the tubing connections when removing the carton. For rooftop installations, remove and discard the two supports attached beneath the unit.

Rigging & Hoisting

WARNING:

To avoid the risk of property damage, personal injury, or death, it is the rigger's responsibility to ensure that whatever means are used to hoist the unit are safe and adequate:

- **The lifting equipment must be adequate for the load. Refer to [Table 6 \(page 13\)](#) for unit weights.**
- **The unit must be lifted from the holes in the base rails using cables or chains.**
- **Spreader bars are required to protect the unit and ensure even loading.**
- **Keep the unit in an upright position at all times. The rigging must be located outside the units center of gravity. Refer to [Figure 8 \(page 13\)](#) for locating the center of gravity.**
- **All panels must be securely in place during rigging and hoisting.**

Minimum Clearance Requirements

P8SD units are certified as cooling equipment for outdoor installation only. [Figure 2 \(page 5\)](#) displays the minimum clearances to obstructions for both Downflow and Horizontal discharge.

Units may be installed on wood flooring or on Class A, B, or C roof covering material when used with bottom supply and return air ducts. If using bottom discharge with return air ducts, a roof curb must be installed prior to unit installation. See Rigging and Hoisting section for setting of the unit ([page 6](#)).

Ground Level

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

- Clearances must be in accordance with those shown in [Figure 2](#).
- A suitable mounting pad must be provided and separate from the building foundation. The pad must be level to ensure proper condensate disposal and strong enough to support the unit's weight. The slab height must be a minimum of 2" (5cm) above grade and with adequate drainage. See [Figure 3 \(page 7\)](#).
- Allow sufficient clearances for access to the internal filter rack.

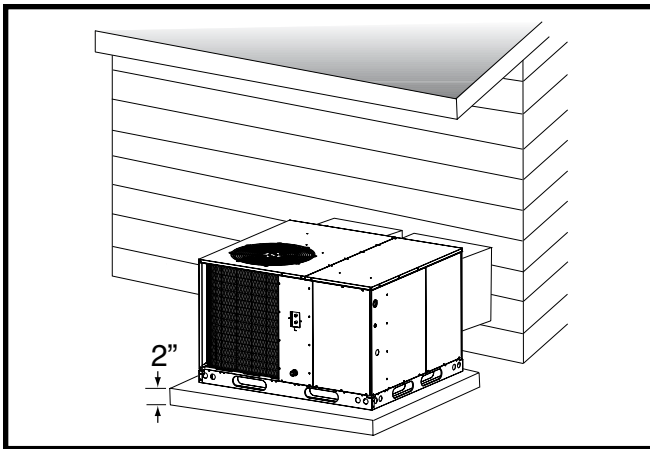


Figure 3. Ground Level Installation

Rooftop

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

- The roof must be capable of handling the weight of the unit. For unit weights, see [Table 6 \(page 13\)](#). Reinforce the roof if necessary.
- The appropriate accessory roof curb ([Figure 4](#)) must be installed prior to unit installation. The roof curb must be square and level to ensure proper condensate drainage. **Please follow all instructions provided with the kit.**
- Secure roof curb or frame to roof using acceptable mechanical methods per local codes. **NOTE:** Make sure the two supports beneath the unit have been removed.

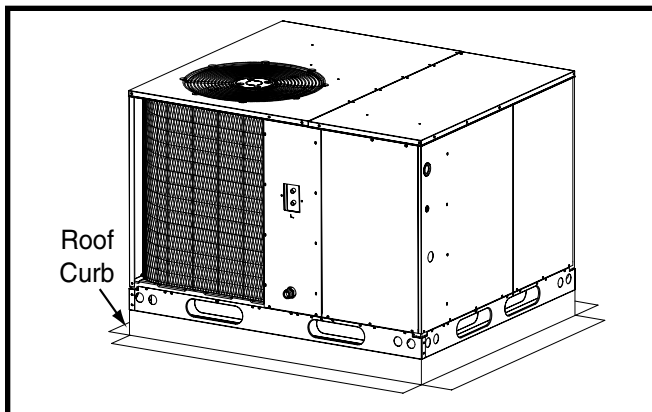


Figure 4. Roof Top Installation

Horizontal to Downflow Conversion

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

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

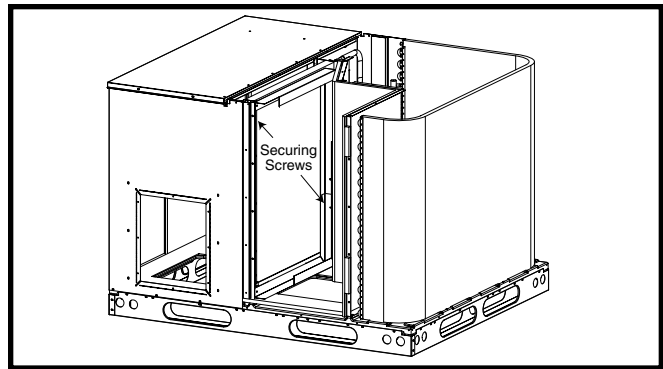


Figure 5. Internal Filter Rack Location

Removal of Internal Filter Rack

1. Remove the return air panel from the unit.
2. Remove the height adjustment screw from the inside of the rack.
3. Remove (1) screw securing the assembly to the coil located on the left leg of the rack. **NOTE:** The assembly can now be easily collapsed and removed from the unit. See [Figure 5](#) for filter rack securing screw locations.

Installing Filters in the Filter Rack

1. Remove access panel screws from return air panel. (Hint: Loosen the unit's top panel screws near the top edge of the access panel. The access panel was designed to be captured underneath the top panel.)
2. Slide the first filter between both guide channels of filter rack and allow the filter to drop easily into place.
3. Verify the bottom of the filter is within the channels of the rack.
4. Slide the 2nd filter between both guide channels of filter rack.
5. Verify the bottom of the filter is within the channels of the rack.
6. Replace access cover by sliding the top edge of panel under the lip of the unit's Top Panel. Secure access panel by replacing the screws.

Removing Filters from Filter Rack

1. Remove access panel screws from return air panel. (Hint: Loosen the unit's top panel screws near the top edge of the access panel. The access panel was designed to be captured underneath the top panel.)
2. Remove upper filter by gently pulling filter through the access panel opening.
3. Remove lower filter by lifting media to top of filter rack. Remove in the same manner as described in step 2.
4. Install new filter in the filter rack as described in the previous section.

Condensate Drain

Condensate is removed from the unit through the 3/4" female pipe fitting located on the front side of the unit. Install a 2 inch condensate trap in the drain line of the same size and prime with water. When connecting rigid drain line, hold the female fitting with a wrench to prevent twisting. **Do not over tighten!** Refer to local codes and restrictions for proper condensate disposal requirements. See [Figure 6 \(page 8\)](#).

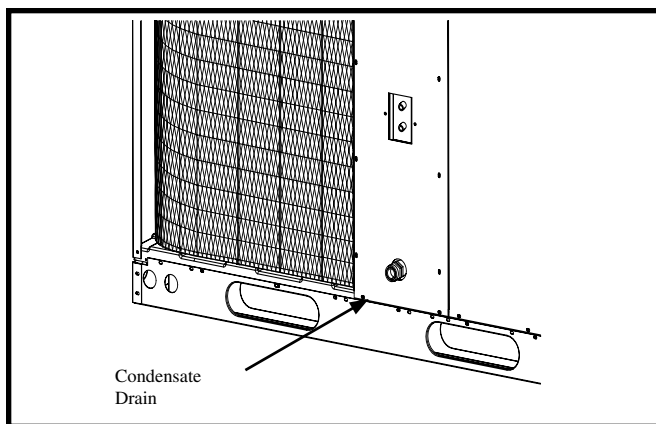


Figure 6. Condensate Drain Location

ELECTRICAL WIRING

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.

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

Pre-Electrical Checklist

- ✓ Verify that the voltage, frequency, and phase of the supply source match the specifications on the unit rating plate.
- ✓ Verify that the service provided by the utility is sufficient to handle the additional load imposed by this equipment. refer to the unit wiring label for proper high and low voltage wiring.
- ✓ Verify factory wiring is in accordance with the unit wiring diagram. See [Figure 9 \(page 14\)](#) & [Figure 10 \(page 15\)](#). Inspect for loose connections.
- ✓ Phase balance on 3 phase units must always be checked. See Unbalanced 3-Phase Supply Voltage section ([page 8](#)).

Line Voltage

- It is recommended that the line voltage to the unit be supplied from a dedicated branch circuit containing the correct fuse or circuit breaker for the unit.
- **An electrical disconnect must be located within sight of and readily accessible to the unit.** This switch shall be capable of electrically de-energizing the outdoor unit. See unit data label for proper incoming field wiring. Any other wiring methods must be acceptable to authority having jurisdiction.
- Use only copper wire for the line voltage power supply to this unit ([Table 2 \(page 9\)](#)). Use proper code agency listed conduit and a conduit connector for connecting the supply wires to the unit. Use of rain tight conduit is recommended.

- See the unit wiring label for proper high and low voltage wiring. Make all electrical connections in accordance with all applicable codes and ordinances.
- 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 maximum circuit ampacity and maximum overcurrent protection limits.
- Check all factory wiring to the wiring diagrams. Verify none of the connections loosened during shipping or installation.
- A wiring diagram/schematic is located on the inside cover of the electrical box of the outdoor unit. The installer should become familiar with the wiring diagram/schematic before making any electrical connections to the outdoor unit. See [Figure 9 \(page 14\)](#) & [Figure 10 \(page 15\)](#).
- Provide power supply for the unit in accordance with the unit wiring diagram, and the unit rating plate.

CAUTION:

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

- Units are shipped from the factory wired for 240 volt transformer operation. For 208V operation, remove the lead from the transformer terminal marked 240V and connect it to the terminal marked 208V.
- Internally mounted circuit breakers are available as field installed options. These circuit breakers can be used as an electrical disconnect.
- Connect the line-voltage leads to the terminals on the contactor inside the control compartment.

Grounding

WARNING:

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

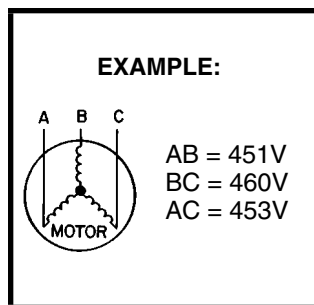
This unit must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code (ANSI/NFPA 70) or the CSA C22.1 Electrical Code. Use the grounding lug provided in the control box for grounding the unit.

Unbalanced 3-Phase Supply Voltage

Voltage unbalance occurs when the voltages of all phases of a 3-phase power supply are no longer equal. This unbalance reduces motor efficiency and performance. Some underlying causes of voltage unbalance may include: Lack of symmetry in transmission lines, large single-phase loads, and unbalanced or overloaded transformers. A motor should never be operated when a phase imbalance in supply is greater than 2%.

Perform the following steps to determine the percentage of voltage imbalance:

1. Measure the line voltages of your 3-phase power supply where it enters the building and at a location that will only be dedicated to the unit installation. (at the units circuit protection or disconnect).



2. Determine the average voltage in the power supply.

In this example, the measured line voltages were 451, 460, and 453. The average would be 454 volts $(451 + 460 + 453 = 1,364 / 3 = 454)$.

3. Determine the maximum deviation:

EXAMPLE

From the values given in step 1, the BC voltage (460V) is the greatest difference in value from the average:

$$460 - 454 = 6$$

$$454 - 451 = 3$$

$$454 - 453 = 1$$

4. Determine percent of voltage imbalance by using the results from steps 2 & 3 in the following equation.

EXAMPLE

$$100 \times \frac{6}{454} = 1.32\%$$

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

The amount of phase imbalance (1.32%) is satisfactory since the amount is lower than the maximum allowable 2%. Please contact your local electric utility company if your voltage imbalance is more than 2%.

Thermostat Connections

Several thermostat options are available depending on the accessories installed with the unit. See [Figure 11 \(page 16\)](#) for 208/230V units or [Figure 12 \(page 16\)](#) for 460V units. Select a thermostat that operates in conjunction with the installed accessories. The low voltage wires must be properly connected to the units low voltage terminal block. Recommended wire gauge and wire lengths for typical thermostat connections are listed in [Table 3](#).

IMPORTANT NOTE:

The thermostat should be mounted about 5 feet above the floor on an inside wall. DO NOT install the thermostat on an outside wall or any other location where its operation may be adversely affected by radiant heat from fireplaces, sunlight, or lighting fixtures, and convective heat from warm air registers or electrical appliances. Refer to the thermostat manufacturer's instruction sheet for detailed mounting and installation information.

**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 2. Copper Wire Size

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

Table 3. Thermostat Wire Gauge

Optional Outdoor Thermostat

An outdoor thermostat can be installed in the field with 2-stage electric heat. To install the outdoor thermostat, remove the orange wire from the E terminal on the terminal block, and connect to the outdoor thermostat. Connect the other side of the outdoor thermostat to **W2** from the thermostat.

Optional Electric Heater Kits

This packaged air conditioner is designed to allow optional electric heat to be field installed as required by the building's particular heating load. The options available for each unit are shown in the heater kit installation instructions.

Optional field-installed electric heater kits are available in 5 kw to 20 kw heating capacities for single phase, and 9 kw to 15 kw heating capacities for three phase. A separate installation instruction document for the electric heaters and their application is shipped with the heater kits.

A single stage 24VAC thermostat should be used with these units. If electric heat is installed, a single-stage or two- stage heating thermostat will be required depending on the heater kit. Install the heater kits as directed by the instructions supplied with the heater kit. Follow all cautions and warnings as directed.

AIRFLOW

All heater kit temperature rise data in [Table 4](#) was calculated using 10kW heaters (9kW for 3 phase units). For other sized heater kits, use the following steps below to determine the heat rise for your particular heater kit.

1. Determine your CFM. **NOTE:** Find this data by locating your blower motor tap settings in the data supplied with the Installation Instructions.
2. Locate your heater kits kW value and Btu/h in [Table 5](#) ([page 11](#)).
3. Input the values into the following equation:

$$\text{Temp Rise: } \Delta T = (\text{Btu/h}) / (\text{CFM} \times 1.08)$$

NOTE: Generally the heat rise should be 30 - 40 degrees. Anything above 40 degrees should be avoided.

Blower Speed



CAUTION:

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

The blower speed is preset at the factory for operation at the same speed for heating and cooling. Factory settings are listed in [Table 4](#). For optimum system performance and comfort, it may be necessary to change the factory set speed.

208 / 230V																		
MODEL # P8SD -		FT OZ	EXTERNAL STATIC PRESSURE DROP - INCHES WATER COLUMN															
			0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8	
X36C	Tap 1**	19	1126	25	1065	27	1024	28	940	30	853	33	768	37	702	41	637	45
	Tap 2*	25	1315	22	1268	22	1206	24	1144	25	1076	26	987	29	907	31	839	34
	Tap 3	32	1492	19	1438	20	1386	21	1337	21	1287	22	1230	23	1171	24	1062	27
	Tap 4	36	1587	18	1534	19	1494	19	1439	20	1388	20	1338	21	1280	22	1216	23
	Tap 5	40	1684	17	1638	17	1591	18	1541	18	1492	19	1444	20	1390	20	1336	21
X48C	Tap 1**	20	1238	23	1170	24	1108	26	1051	27	986	29	890	32	817	35	755	38
	Tap 2	25	1403	20	1351	21	1301	22	1232	23	1175	24	1125	25	997	29	955	30
	Tap 3*	38	1772	16	1727	16	1670	17	1621	18	1568	18	1509	19	1463	19	1399	20
	Tap 4	46	1968	14	1926	15	1873	15	1823	16	1774	16	1717	17	1665	17	1619	18
	Tap 5	60	2242	13	2183	13	2143	13	2098	14	2044	14	1995	14	1953	15	1907	15
X60	Tap 1**	21	1161	24	1116	25	1084	26	1031	28	954	30	895	32	834	34	779	37
	Tap 2	31	1553	18	1521	19	1474	19	1437	20	1379	21	1335	21	1276	22	1183	24
	Tap 3*	40	1862	15	1818	16	1766	16	1731	16	1678	17	1635	17	1599	18	1539	18
	Tap 4	46	2009	14	1973	14	1923	15	1887	15	1838	15	1796	16	1752	16	1703	17
	Tap 5	60	2288	12	2246	13	2210	13	2170	13	2132	13	2094	14	2050	14	2014	14

406V																		
MODEL # P8SD -			EXTERNAL STATIC PRESSURE DROP - INCHES WATER COLUMN															
			0.1		0.2		0.3		0.4		0.5		0.6		0.7		0.8	
X36D	Tap 1**		1124	25	1040	27	981	29	908	31	824	35	750	38	687	41	623	46
	Tap 2*		1320	22	1266	22	1210	23	1159	25	1100	26	1029	28	945	30	884	32
	Tap 3		1542	18	1479	19	1443	20	1386	21	1329	21	1283	22	1234	23	1182	24
	Tap 4		1642	17	1594	18	1533	19	1492	19	1441	20	1396	20	1340	21	1300	22
	Tap 5		1750	16	1694	17	1642	17	1600	18	1560	18	1510	19	1467	19	1421	20
X48D	Tap 1**		1279	22	1214	23	1134	25	1078	26	1034	27	944	30	855	33	800	36
	Tap 2		1510	19	1452	20	1399	20	1338	21	1294	22	1236	23	1174	24	1059	27
	Tap 3*		1760	16	1711	17	1641	17	1597	18	1545	18	1488	19	1435	20	1386	21
	Tap 4		1949	15	1912	15	1858	15	1789	16	1748	16	1701	17	1646	17	1603	18
	Tap 5		2242	13	2153	13	2110	13	2063	14	2016	14	1965	14	1922	15	1870	15
X60D	Tap 1**		1228	23	1150	25	1074	26	1014	28	956	30	867	33	769	37	705	40
	Tap 2		1670	17	1617	18	1551	18	1497	19	1458	20	1417	20	1342	21	1303	22
	Tap 3*		1926	15	1891	15	1850	15	1783	16	1741	16	1680	17	1634	17	1579	18
	Tap 4		2087	14	2029	14	1981	14	1939	15	1885	15	1834	16	1780	16	1721	17
	Tap 5		2278	12	2233	13	2193	13	2141	13	2098	14	2046	14	2001	14	1943	15

NOTES:

Airflow performance is with a dry coil

* Denotes factory set cooling speed

** Denotes factory set electric heating speed

Calculations made based on 9KW/H

Table 4. P8 Series Packaged Air Conditioner Blower Curves

KW/H	BTU/H
5	17,060
8	27,297
9	30,709
10	34,121
15	51,182
20	68,242

Table 5. kW & Btu/h Ratings

Fixed Torque ECM Motor

1. Shut off all electrical power to the unit and remove the blower panel. Locate the orange and red wires terminated to the blower motor. **NOTE:** The orange wire controls cooling operation while the red wire controls heating operation.
2. Verify the required speed from the airflow data found in [Table 4](#). Place appropriate wire on the correct motor speed tap for the required airflow point.

START UP & SYSTEM CHECK

Pre-Start Check List

- ✓ Verify the unit is level and allows condensate to drain.
- ✓ Verify the outdoor coil and top of the unit are free from obstructions and debris, and all equipment access/control panels are in place.
- ✓ Verify that the duct work is sealed to prevent air leakage.
- ✓ Verify that the line voltage power leads are securely connected and the unit is properly grounded.
- ✓ Verify that the low voltage wires are securely connected to the correct leads on the low voltage terminal strip.
- ✓ Verify that the outdoor fan turns freely.
- ✓ Verify that the power supply branch circuit overcurrent protection is sized properly.
- ✓ Verify that the thermostat is wired correctly. The thermostat system mode should be set to OFF and the thermostat fan mode should be set to AUTO.

Start-Up Procedure

Close all electrical disconnects to energize the system.

Air Circulation

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

WARNING:

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

System Cooling

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

System Heating

If the unit has been equipped with optional electric heater kits, set the thermostat's system mode to HEAT and the fan mode to AUTO. Verify the compressor and outdoor fan are not energized but that the blower and heaters are. Feel the air being circulated by the indoor blower and verify that it is warmer than ambient temperature. Listen for any unusual noises. If unusual sounds occur, determine the source of the noise and correct as necessary.

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 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.
- Inspect and clean or replace air filters at the beginning of each heating and cooling season, or more frequently if required.

CAUTION:

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

- The motors for the circulating air blower and the outdoor fan are pre-lubricated at the factory. No further oiling is required for the life of this product.

REFRIGERANT CHARGING

WARNING:

Single Packaged Air Conditioners are shipped 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 done by qualified, trained personnel thoroughly familiar with this equipment. Some local codes require licensed installation/service personnel to service this type of equipment. Under no circumstances should the owner attempt to install and/or service this equipment. Failure to comply with this warning could result in property damage, personal injury, or death.

The system refrigerant charge can be checked and adjusted through the service ports provided at the front panel. Use only gauge lines which have a Schrader depression device present to actuate the valve.

NOTES:

- To achieve rated capacity and efficiency the compressor must be exposed to refrigerant for at least 24 hours prior to running and then must be run for a minimum of 12 hours.
- The refrigerant charging chart (Figure 7) is applicable to listed assemblies of equipment and at listed airflow for the indoor coil. Assemblies of indoor coils and outdoor units not listed are not recommended.

Charging the Unit in AC Mode

(Outdoor Temperatures Above 65F.)

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 in Fahrenheit at the service valve.
3. For the temperature measured, determine the required liquid refrigerant pressure from the charging chart (Figure 7).
4. If the pressure measured in step 1 is greater than the required liquid refrigerant pressure determined in step 3, then there is too much charge in the system. Remove refrigerant and repeat steps 1 through 3 until the system is correctly charged.
5. If the pressure measured in step 1 is less than the required liquid refrigerant pressure determined in step 3, then there is too little charge in the system. Add refrigerant and repeat steps 1 - 3 until the system is correctly charged.

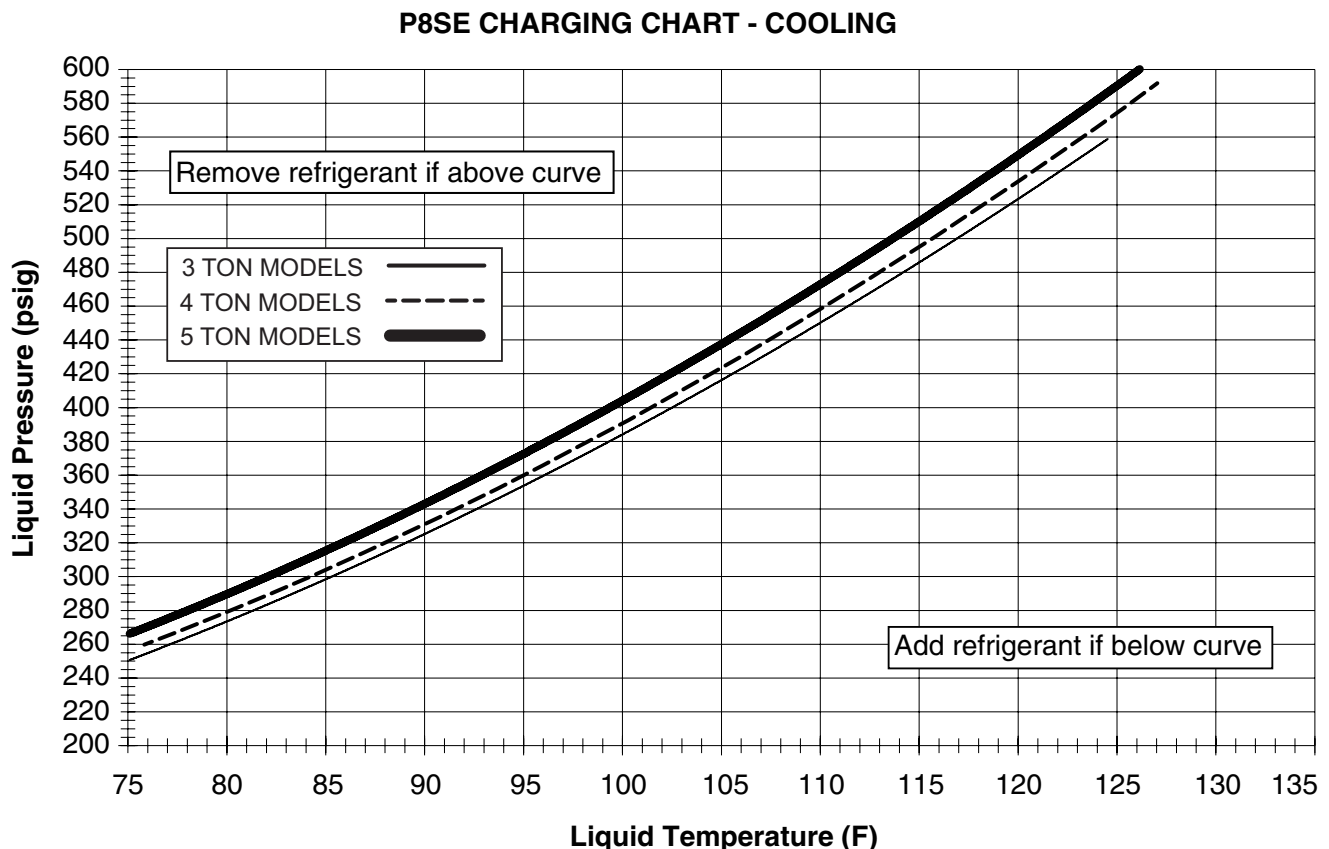


Figure 7. Charging Chart for 3, 4, & 5 Ton Units

FIGURES & TABLES

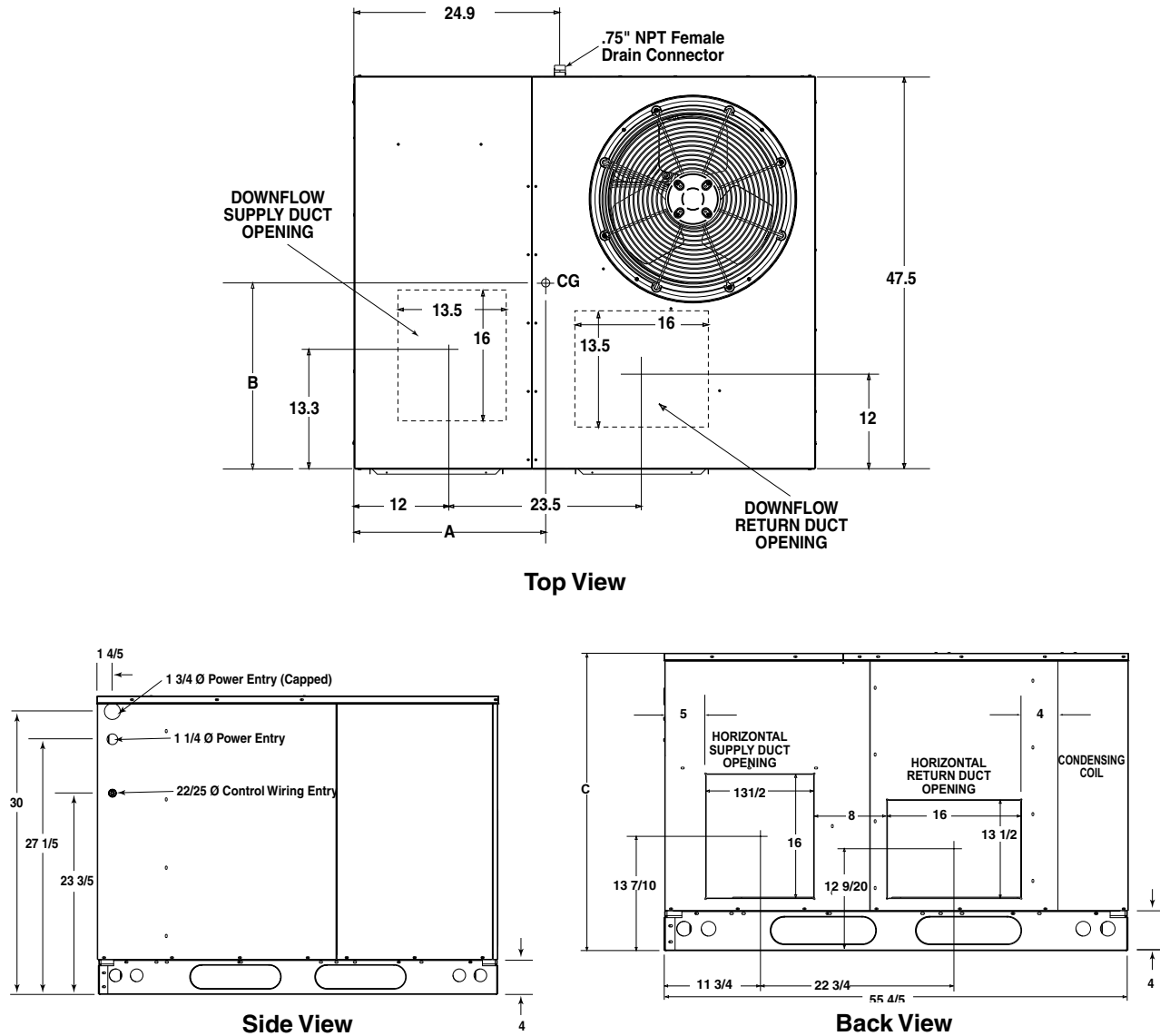


Figure 8. P8SD Air Conditioner Dimensions

MODEL NUMBER P8SE -	UNIT SHIPPING WEIGHT	CENTER OF GRAVITY		HEIGHT -C- (IN INCHES)	
		-A-	-B-	WITH BASE RAILS	WITHOUT BASE RAILS
X36	375	29	20.5	35.0	30.76
X48	398	29	20.5	35.0	30.76
X60	437	27.25	23.5	43.0	39.3

NOTE: To determine unit weight, subtract 21lbs from unit shipping weight.

Table 6. Center of Gravity & Unit Shipping Weights

Electrical Information

WIRING DIAGRAM

Convertible Packaged Air Conditioner

208/230 Volt

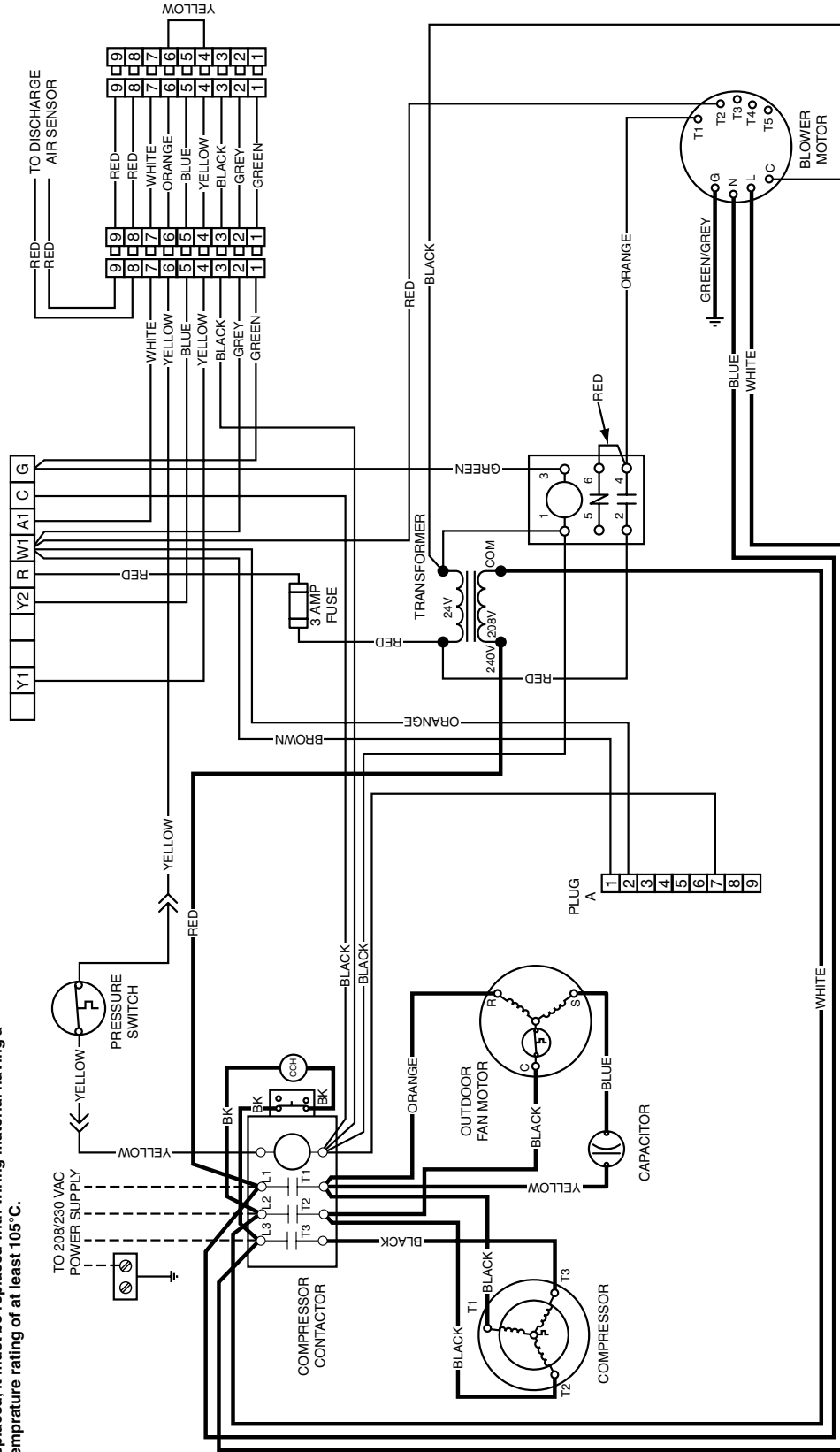
Three Phase 60Hz

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. If any of the original wire as supplied with the furnace must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C.

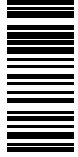
5. For supply wire ampacities and overcurrent protection, see unit rating plate.

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 la terre.



LEGEND:

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



711011A
(Replaces 7110110)
11/14

Figure 9. Wiring Diagram for 208 / 230V Units

WIRING DIAGRAM

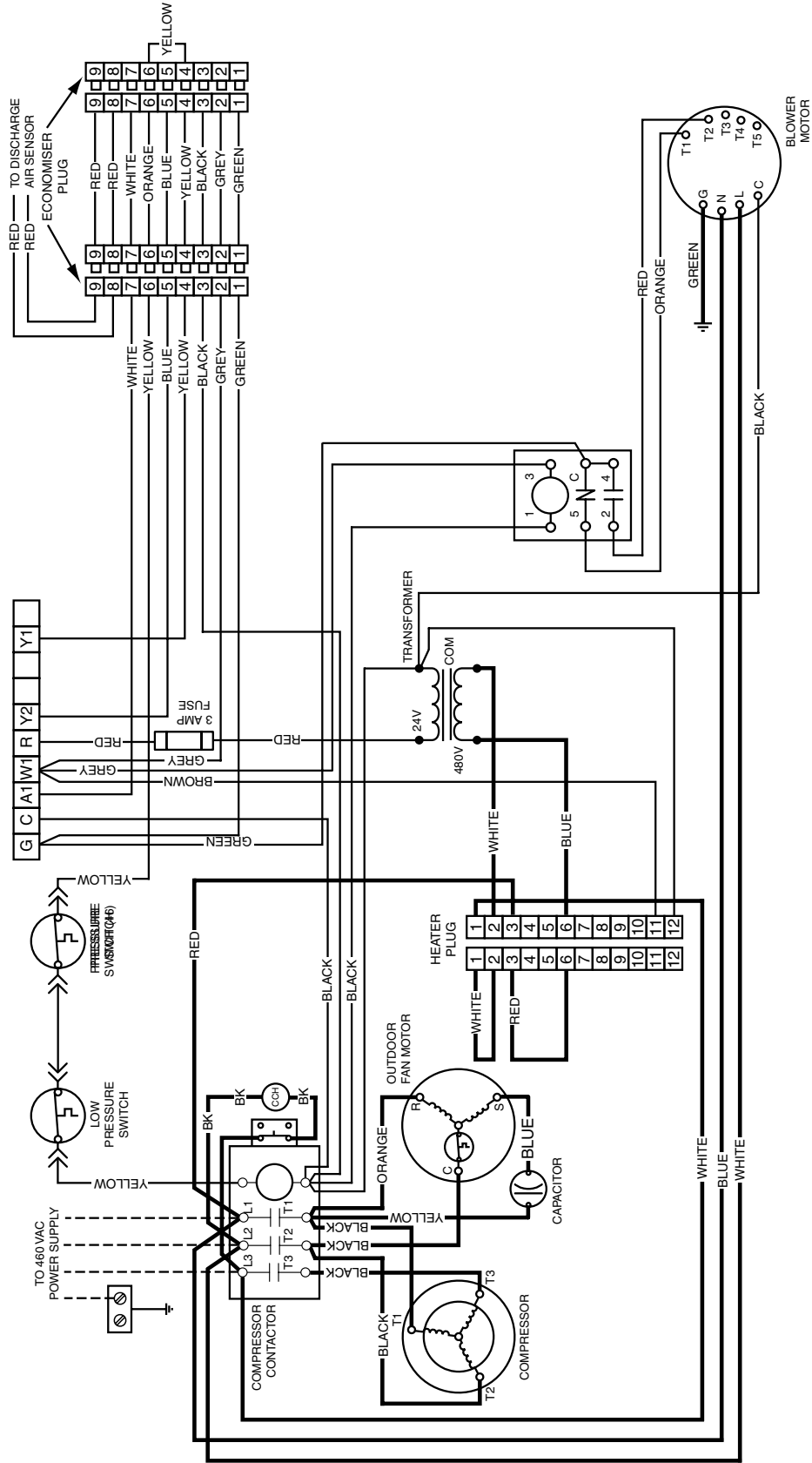
Convertible Packaged Air Conditioner

460 Volt

Three Phase 60Hz

NOTES:

1. Disconnect all power before servicing.
2. For supply connections use copper conductors only.
3. If any of the original wire as supplied with the furnace must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C.
4. For supply wire ampacities and overcurrent protection, see unit rating plate.
1. Couper le courant avant de faire leretien.
2. Employez uniquement des conducteurs en cuivre.



LEGEND:

- FIELD WIRING
- LOW VOLTAGE
- HIGH VOLTAGE



710863A
(Replaces 7108630)

11/1/14

Figure 10. Wiring Diagram For 460V Units

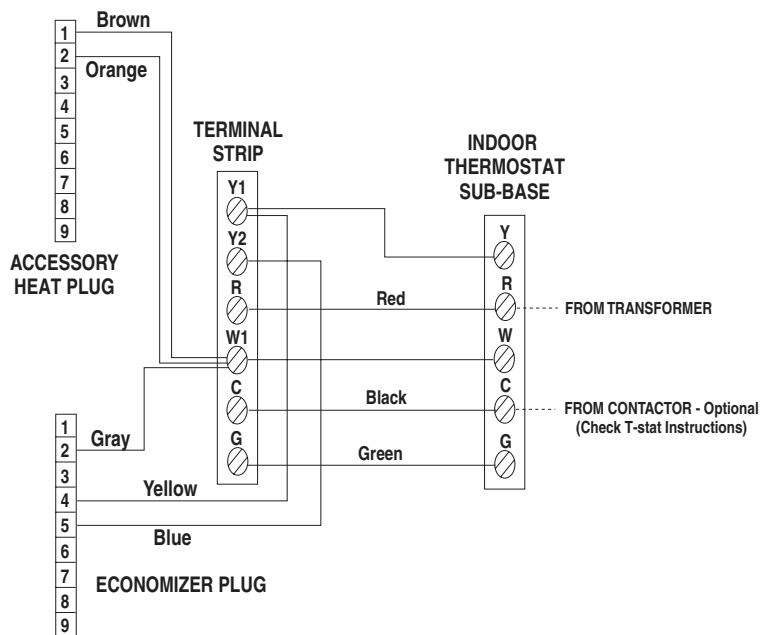


Figure 11. AC Thermostat Connections (208/230V)

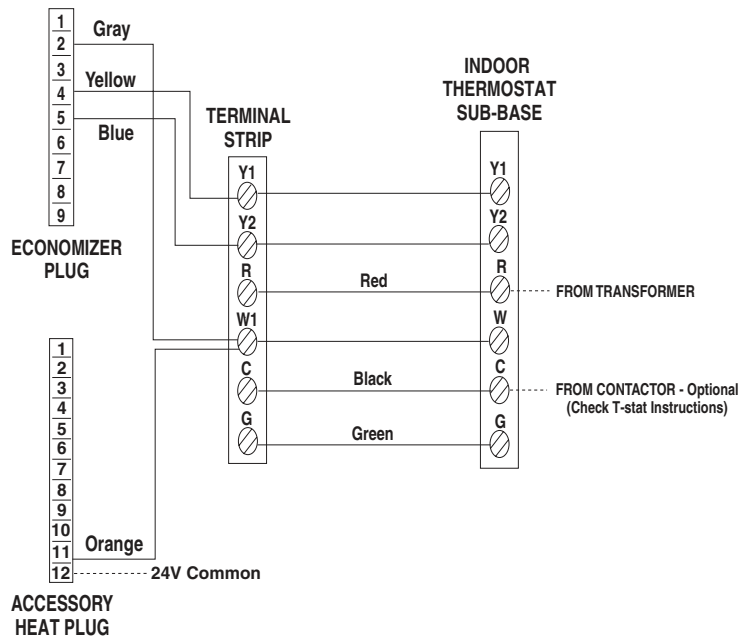


Figure 12. AC Thermostat Connections (460V)

