

## INSTALLATION INSTRUCTIONS

SINGLE PACKAGE AIR CONDITIONER - SINGLE STAGE, R-410A



### IMPORTANT

#### ATTENTION INSTALLERS:

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

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

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

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## IMPORTANT SAFETY INFORMATION

Please read all instructions before servicing this equipment. Pay attention to all safety warnings and any other special notes highlighted in the manual. Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored. **WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death. **CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

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### **WARNING:**

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#### **ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD**

Failure to follow safety warnings exactly could result in serious injury or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- Before servicing, disconnect all electrical power to the indoor blower.
  - When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.
  - Verify proper operation after servicing.
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### **WARNING:**

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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 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 R-410A refrigerant. **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. If you do not possess mechanical skills or tools, call your local dealer for assistance. 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.
- Use caution when handling this appliance or removing components. Personal injury can occur from sharp metal edges present in all sheet metal constructed equipment.
- This unit is designed for outdoor installations only and should be located in a position as shown on [page 4](#). Unit dimensions are shown in [Figure 9 & Table 4, \(page 12\)](#).
- 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.
- The installer should become familiar with the units wiring diagram before making any electrical connections to the unit. See the unit wiring label or [Figure 10 \(page 13\)](#) and [Figure 11 \(page 14\)](#).

## GENERAL INFORMATION

This 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 AHRI 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. Unit dimensions are shown in [Figure 9 & Table 4, \(page 12\)](#). **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 9 & Table 4, \(page 12\)](#) 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

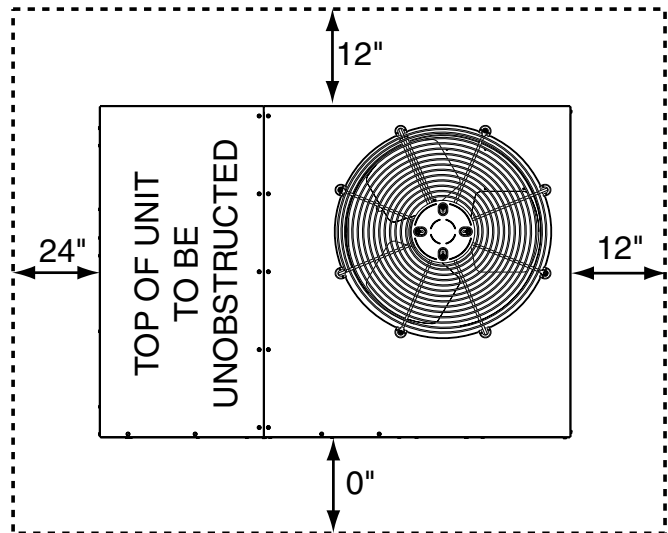
Sufficient clearance for unobstructed airflow through the outdoor coil must be maintained in order to provide room for proper servicing and achieve rated performance. See [Figure 1](#) for minimum clearances to obstructions.

#### 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 1. 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 2 \(page 5\)](#).

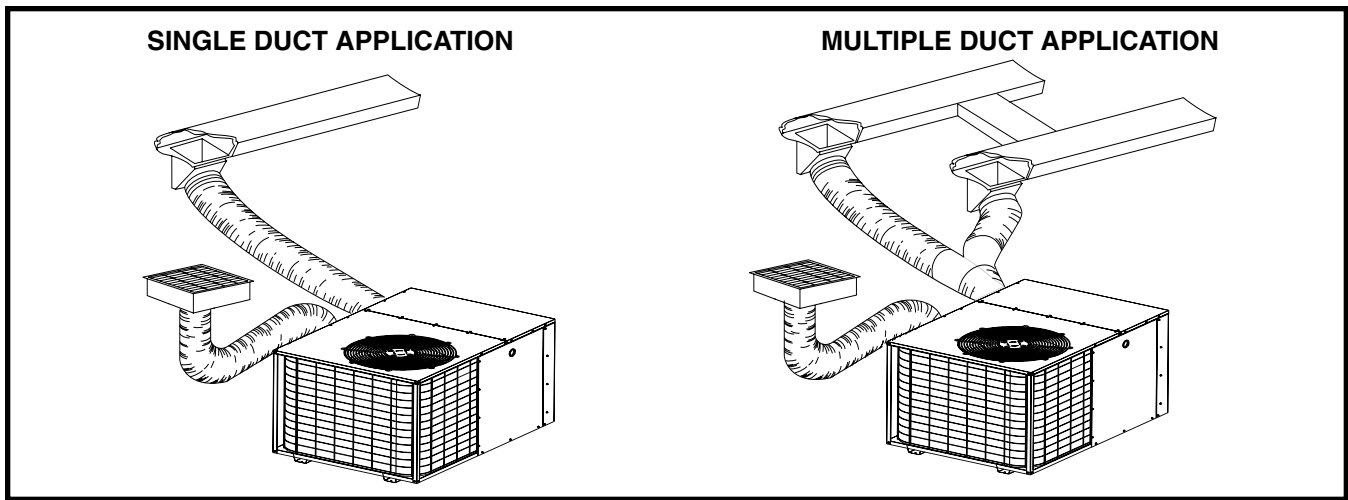


Figure 2. Single & Multiple Duct Applications

- 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.

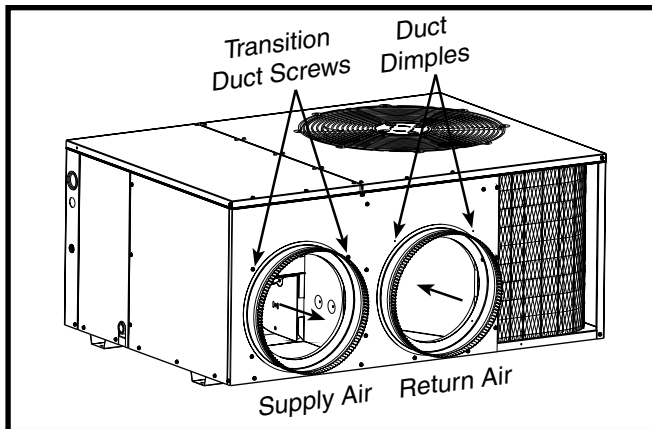


Figure 3. Return & Supply Air Collars

## 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 3) and secured with sheet metal screws. Return and supply duct opening sizes are shown in Figure 9 & Table 4, (page 12). **NOTE:** Before permanently installing the collars, it is recommended you pre-fit them over the openings first to determine alignment and best fit.

#### 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 3 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 4). **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 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.

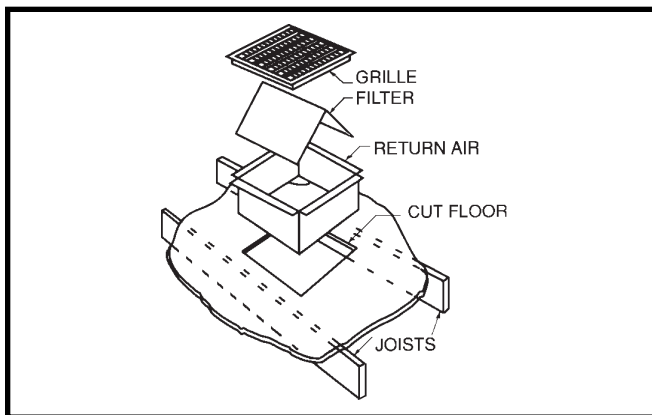


Figure 4. Return Air Box

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 9 & Table 4, (page 12). **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 should be located in the bottom of the main duct, forward of center of the home, at least three feet from the nearest register. See Figure 5 (page 7). 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.
3. Cut a 9-1/8" x 13-1/8" hole in the duct and bend over all tabs flat on the inside of the heat duct.
4. Insert the damper into the duct and bend over all tabs flat on the inside of the heat duct.
5. Seal the opening between the fiberboard and damper or flexible duct.

## ELECTRICAL CONNECTIONS

### **WARNING:**

#### **ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD**

Failure to follow safety warnings exactly could result in serious injury or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

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

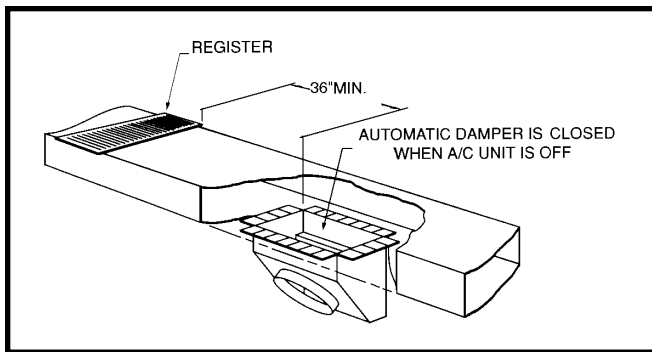
- All electrical connections must be in compliance with all applicable local codes and ordinances, and with the current revision of the National Electric Code (ANSI/NFPA 70).
- For Canadian installations the electrical connections and grounding shall comply with the current Canadian Electrical Code (CSA 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 [Figure 10 \(page 13\)](#) and [Figure 11 \(page 14\)](#). 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 7](#)). Connect L1 & L2 directly to the contactor.

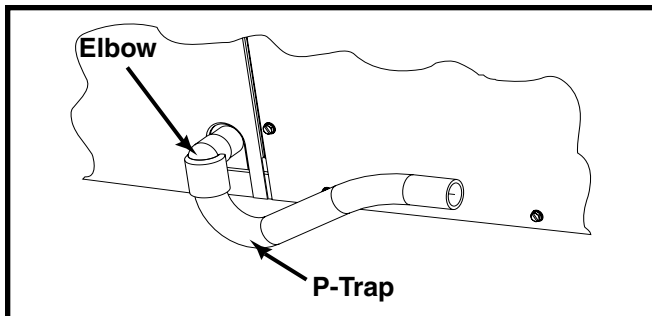


**Figure 5. Supply Damper**

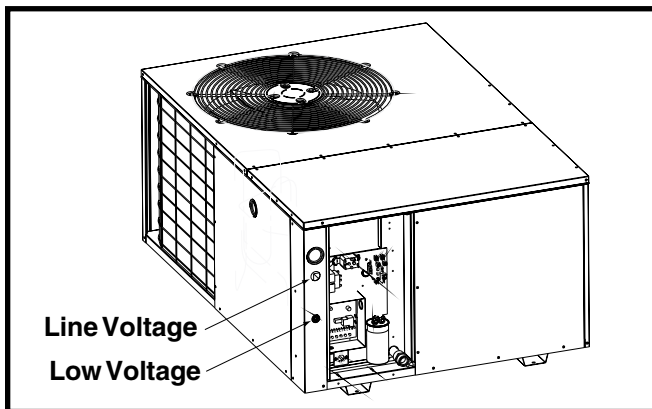
#### **Condensate Drainage**

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

1. Thread the elbow provided with the unit into the drain connection until hand tight.
2. Connect the condensate tubing onto the fitting, forming a trap 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 6. Drain Trap**



**Figure 7. Power Entry**

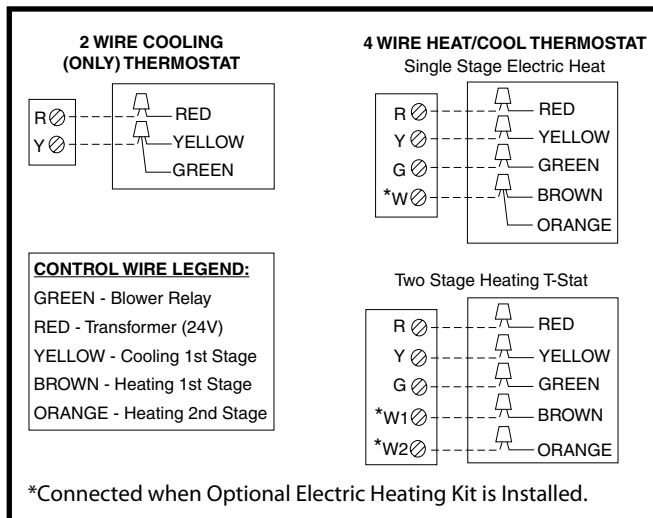
- The unit requires both power and control circuit electrical connections. Refer to the wiring diagrams (Figure 10 (page 13) & Figure 11 (page 14)) for identification and location of unit field wiring interfaces. Make all electrical connections in accordance with all applicable codes and ordinances.
- 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.

## 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.



**Figure 8. Low Voltage Connections**

## 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.**

## 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 near the power entrance. See Figure 7 (page 7). Recommended wire gauge and wire lengths for typical thermostat connections are listed in Table 2, (page 9).
- Single stage or two-stage heating thermostats can be used with this equipment depending on optional accessories 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 8.

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**



WIRE GAUGE	RECOMMENDED MAXIMUM WIRE LENGTH (FT) FROM UNIT TO THERMOSTAT
22	45
20	70
18	115
16	180

Table 2. Control Wiring (24V)

HEAT RISE DATA (BASED ON NOMINAL 10KW ELECTRIC HEAT KIT)																	
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
018K	Tap T1	609	52	541	58	522	61	450	70	390	81	333	95	-	-	-	-
	Tap T2*	729	43	690	46	651	49	599	53	542	58	475	67	421	75	357	88
	Tap T3	859	37	813	39	768	41	724	44	673	47	609	52	555	57	497	64
	Tap T4**	1123	28	1100	29	1065	30	1023	31	978	32	929	34	877	36	820	39
	Tap T5	1359	23	1320	24	1302	24	1280	25	1243	25	1205	26	1162	27	1112	28
024K	Tap T1*	950	33	823	38	881	36	832	38	788	40	722	44	655	48	593	53
	Tap T2**	1123	28	1100	29	1065	30	1023	31	978	32	929	34	877	36	820	39
	Tap T3	1189	27	1158	27	1141	28	1084	29	1047	30	1009	31	959	33	906	35
	Tap T4	1291	24	1246	25	1236	26	1195	26	1161	27	1120	28	1075	29	1031	31
	Tap T5	1359	23	1320	24	1302	24	1280	25	1243	25	1205	26	1162	27	1112	28
030K	Tap T1	950	33	823	38	881	36	832	38	788	40	722	44	655	48	593	53
	Tap T2**	1123	28	1100	29	1065	30	1023	31	978	32	929	34	877	36	820	39
	Tap T3*	1189	27	1158	27	1141	28	1084	29	1047	30	1009	31	959	33	906	35
	Tap T4	1291	24	1246	25	1236	26	1195	26	1161	27	1120	28	1075	29	1031	31
	Tap T5	1359	23	1320	24	1302	24	1280	25	1243	25	1205	26	1162	27	1112	28
036K	Tap T1**	1215	26	1175	27	1130	28	1075	29	1020	31	970	33	900	35	840	38
	Tap T2	1313	24	1277	25	1236	26	1190	27	1153	27	1104	29	1051	30	992	32
	Tap T3	1460	22	1415	22	1385	23	1335	24	1275	25	1225	26	1170	27	1120	28
	Tap T4*	1502	21	1466	22	1437	22	1388	23	1345	23	1305	24	1251	25	1204	26
	Tap T5	1565	20	1525	21	1490	21	1450	22	1410	22	1370	23	1315	24	1270	25
042K	Tap T1	1375	23	1345	23	1310	24	1275	25	1240	25	1205	26	1160	27	1120	28
	Tap T2**	1470	21	1435	22	1400	23	1370	23	1335	24	1300	24	1260	25	1215	26
	Tap T3*	1600	20	1570	20	1535	21	1505	21	1470	21	1440	22	1400	23	1355	23
	Tap T4	1715	18	1680	19	1650	19	1620	20	1585	20	1545	20	1505	21	1470	21
	Tap T5	1895	17	1865	17	1830	17	1795	18	1760	18	1730	18	1695	19	1655	19
048K	Tap T1	1375	23	1345	23	1310	24	1275	25	1240	25	1205	26	1160	27	1120	28
	Tap T2**	1470	21	1435	22	1400	23	1370	23	1335	24	1300	24	1260	25	1215	26
	Tap T3	1600	20	1570	20	1535	21	1505	21	1470	21	1440	22	1400	23	1355	23
	Tap T4*	1715	18	1680	19	1650	19	1620	20	1585	20	1545	20	1505	21	1470	21
	Tap T5	1895	17	1865	17	1830	17	1795	18	1760	18	1730	18	1695	19	1655	19
X60K	Tap T1**	1390	23	1350	23	1310	24	1270	25	1240	25	1205	26	1160	27	1120	28
	Tap T2	1540	21	1510	21	1480	21	1440	22	1410	22	1380	23	1340	24	1310	24
	Tap T3	1700	19	1670	19	1630	19	1600	20	1580	20	1540	21	1510	21	1480	21
	Tap T4*	1770	18	1740	18	1700	19	1660	19	1640	19	1600	20	1580	20	1540	21
	Tap T5	2080	15	2030	16	2020	16	1970	16	1940	16	1910	17	1870	17	1840	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

Table 3. Blower Data

### 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 8](#).

### Blower Speed - ECM Motor

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## **WARNING:**

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

---

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

1. Disconnect all electrical power to the unit and remove the service panel.
2. Locate the orange and red wires terminated to the blower motor. **NOTE:** The orange wire controls cooling operation and the red wire controls the heating operation.
3. Verify the required speed from the airflow data found in [Table 3, \(page 9\)](#). 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 shown in [Figure 1 \(page 4\)](#).
- √ 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.
- √ 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.

### Start-Up Procedure

**NOTE:** The control circuit thermostat may consist of an anti-short cycle timer that will not let the compressor re-start before 3 - 5 minutes have elapsed.

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

### System Cooling

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

### System Heating

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

1. The compressor and outdoor fan should not run.
2. The blower will run according to the thermostat's fan mode setting.

## REFRIGERANT CHARGING

### Charging the Unit

*(with Outdoor Temperatures Above 65° F)*

---

## **CAUTION:**

---

**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.**

---

**NOTE:** 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.

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 [Table 5, \(page 15\)](#), [Table 6, \(page 15\)](#), [Table 7, \(page 16\)](#) & [Table 8, \(page 16\)](#), [Table 9, \(page 17\)](#) & [Table 10, \(page 17\)](#) for 1.5, 2, 2.5, 3, 3.5, & 4 ton units. For 5 ton units see [Figure 12 \(page 18\)](#).
- 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.
  - 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 through 3 until the system is correctly charged.

#### **Safety switches**

The 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 650 psig, the switch will open and de-energize the unit. The switch will close again when the liquid pressure decreases to 460 psig.

The low-pressure switch (if equipped) is factory-installed and located in the suction line internal to the unit. The switch is designed to protect the compressor 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.

## **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:**

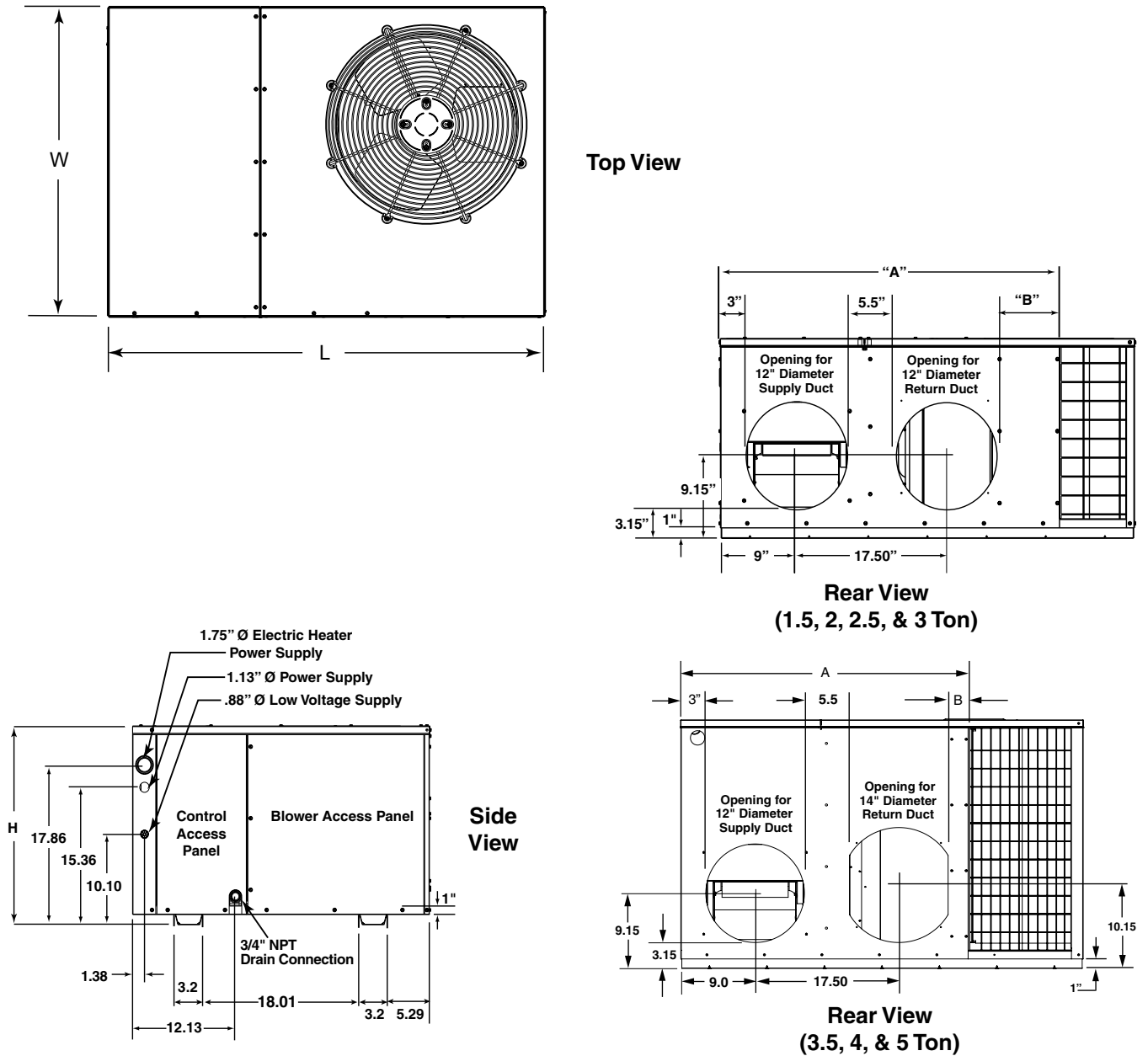
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**The unit should never be operated without a filter in the return air system. Replace disposable filters with the same type and size.**

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

## FIGURES & TABLES



**Figure 9. Unit Dimensions**

MODEL NUMBER	LENGTH -L-	WIDTH W	HEIGHT -H-	-A-	-B-	RETURN DIAMETER (IN)	SUPPLY DIAMETER (IN)
018K	49	35	22.2	35.02	2.48	12	12
024K	49	35	22.2	35.02	2.48	12	12
030K	49	35	22.2	35.02	2.48	12	12
036K	49	35	22.2	35.02	2.48	12	12
042K	49	35	30.2	35.02	2.48	14	12
048K	49	35	30.2	35.02	2.48	14	12
X60K	49	35	34.2	35.02	2.48	14	12

**Table 4. Physical Data**

# Wiring Diagrams

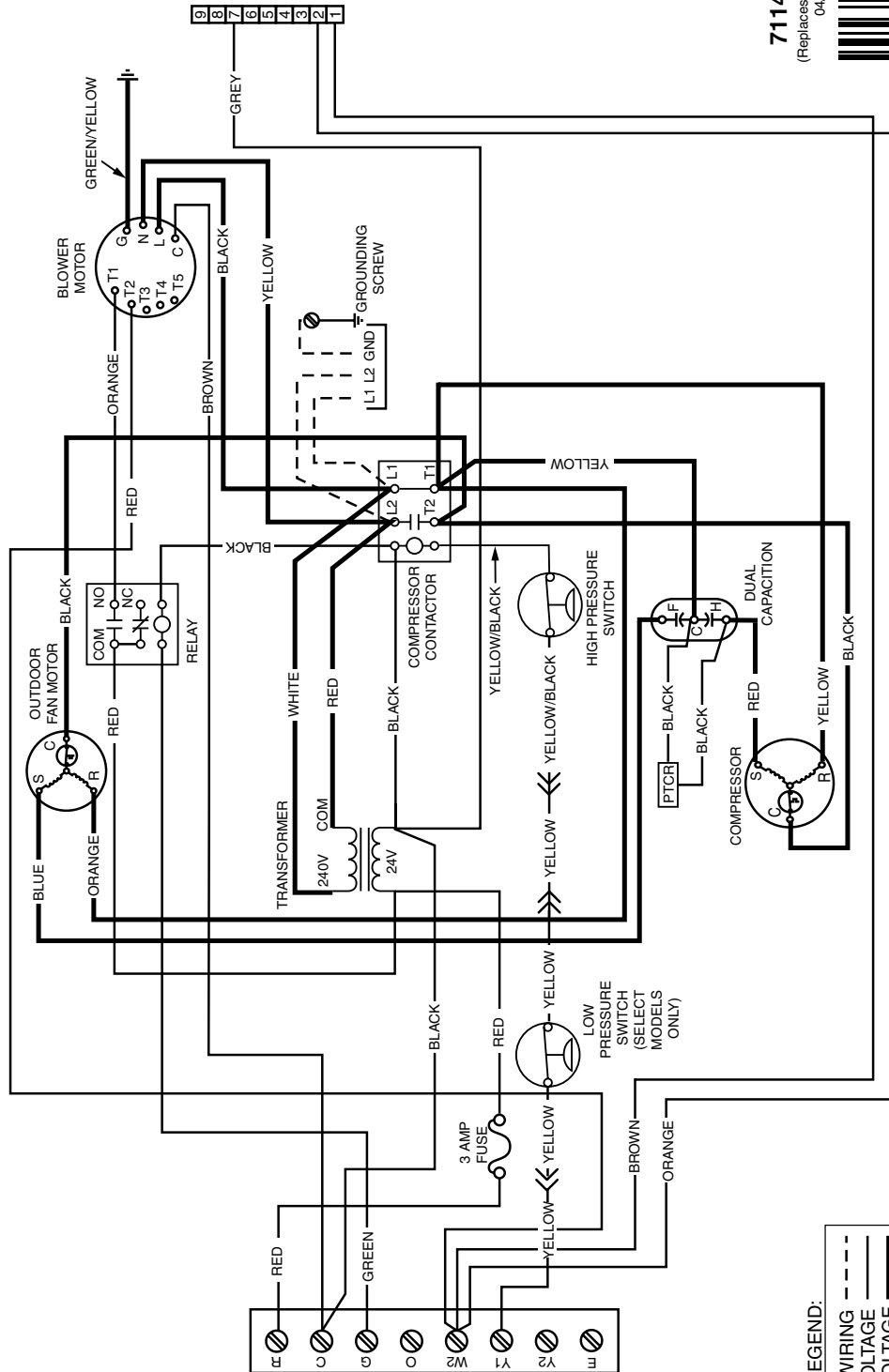
## WIRING DIAGRAM

### 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.

1. Couper le courant avant de faire le rattrapage.
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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(Replaces 711407B)  
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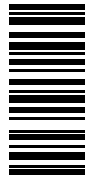


Figure 10. Wiring Diagram (1.5, 2, & 2.5 Ton Models)

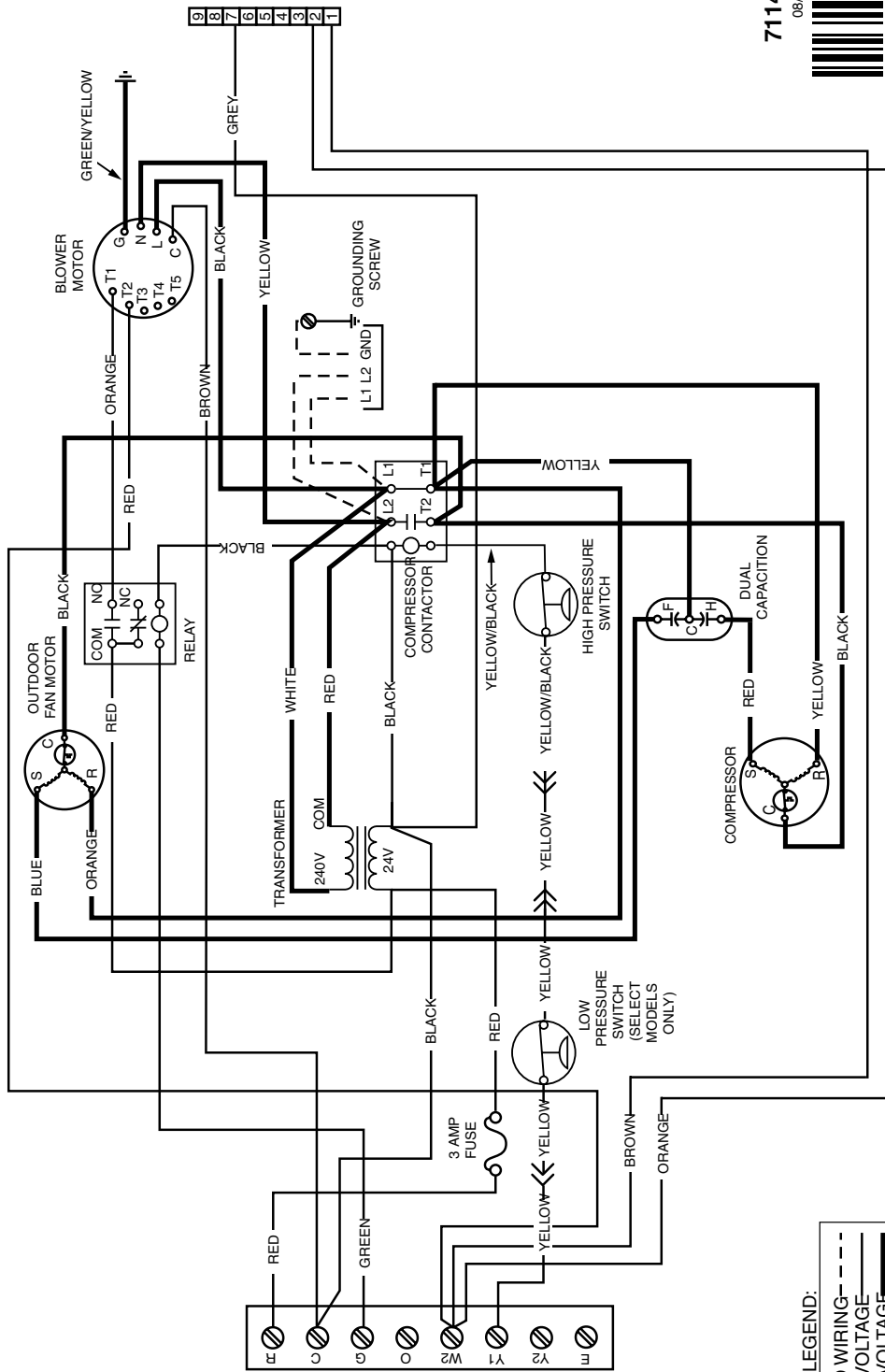
# WIRING DIAGRAM

## 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.

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



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### LEGEND:

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

Figure 11. Wiring Diagram (3, 3.5, 4, & 5 Ton Models)

## Refrigerant Charging Tables

**LEGEND**

- Shaded boxes indicate flooded conditions.
- Rated design values. The suction pressure will vary from design value if outdoor air flow, entering dry bulb, or entering wet bulb temperatures vary.

**NOTES:**

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

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	245	130														
136	247	130	267	134												
138	250	130	269	134	289	138										
140	248	130	272	134	292	138	312	142								
142	248	130	271	134	294	138	314	142	335	146						
144			271	134	293	138	316	142	336	146	358	150				
146					294	137	316	141	338	145	359	150	381	154		
148							317	141	338	145	360	149	381	154	404	158
150							317	141	339	145	361	149	382	153	404	158
152									340	145	362	149	383	153	405	157
154											363	149	384	153	406	157
156													386	153	407	157
158															408	157
160																

**Table 5. Charging Table for 1.5 Ton Units  
(018K Model)**

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.
128																
130	252	146														
132	253	157	275	139												
134	255	169	277	149	297	134										
136	252	207	279	159	300	143	317	133	333	127						
138	253	224	278	186	300	158	321	139	337	134	352	127				
140			279	201	302	172	323	149	341	143	356	134	371	128		
142					303	186	324	161	344	149	360	140	375	134	389	130
144							326	175	347	158	366	143	379	140	393	135
146									349	168	368	153	387	140	398	141
148											371	163	390	149	409	137
150													392	159	411	146
152															414	155
154																

**Table 6. Charging Table for 2 Ton Units  
(024K Model)**

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.
128																
130	258	138														
132	259	150	281	138												
134	260	161	283	148	303	139										
136	259	191	285	158	306	148	325	142	343	139						
138	260	208	284	181	307	161	328	148	346	147	364	142				
140			286	195	309	175	330	157	350	155	368	149	385	145		
142					310	188	332	170	353	163	372	155	389	151	405	149
144							334	184	355	172	376	161	393	157	410	155
146									357	182	378	171	398	162	415	160
148											380	181	401	172	421	164
150													403	181	423	173
152															426	182
154																

**Table 7. Charging Table for 2.5 Ton Units  
(030K Model)**

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.
128																
130	260	122														
132	262	133	284	127												
134	263	145	286	137	307	130										
136	263	166	288	147	310	139	330	136	350	135						
138	264	183	289	163	312	149	334	142	354	142	373	139				
140			290	178	314	162	337	149	357	151	377	146	396	143		
142					315	176	339	161	361	157	381	153	400	150	419	148
144							340	176	363	166	385	158	405	156	424	154
146									365	176	388	168	410	161	428	160
148											390	178	412	170	434	164
150													414	180	436	173
152															439	182
154																

**Table 8. Charging Table for 3 Ton Units  
(036K Model)**



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.
123	257	140														
125	259	145	282	142												
127	261	151	284	147	307	145										
129	267	148	286	152	309	150	332	147								
131	271	151	292	152	311	154	334	152	357	150						
133			295	155	316	156	336	157	359	154	382	153				
135					320	159	341	159	361	159	384	157	408	156		
137							344	163	365	162	387	161	410	160	433	159
139							348	167	369	166	390	165	412	164	435	163
141									372	170	393	169	415	168	437	166
143											397	173	418	172	439	170
145													421	177	443	175
147															446	179
149																

**Table 9. Charging Table for 3.5 Ton Units (042K Model)**

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	263	133														
131	265	139	288	138												
133	267	144	290	143	313	142										
135	271	146	292	148	315	147	338	147								
137	275	149	296	150	317	152	340	151	363	151						
139			300	154	321	155	342	156	365	156	388	156				
141					325	158	346	159	367	160	390	160	414	160		
143							349	163	371	164	393	164	416	164	439	165
145							353	167	374	168	396	168	418	168	441	168
147									378	172	399	172	421	172	443	172
149											403	176	424	177	446	177
151													428	181	449	181
153															453	185
155																

**Table 10. Charging Table for 4 Ton Units (048K Model)**

### 5-TON CHARGING CHART

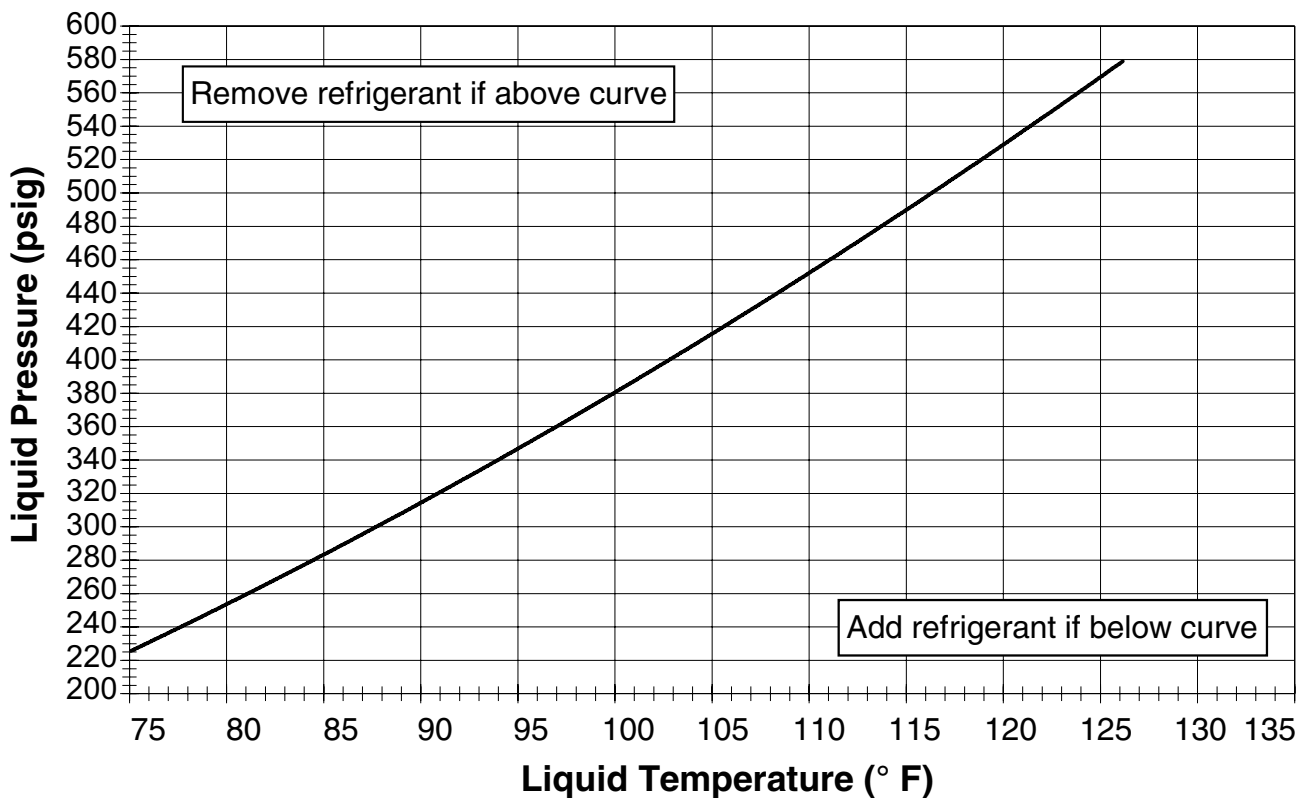


Figure 12. Charging Chart for 5 Ton Units (X60K Model)



## INSTALLATION / PERFORMANCE CHECKLIST

<b>INSTALLATION ADDRESS:</b>		
CITY _____	STATE _____	
UNIT MODEL # _____		
UNIT SERIAL # _____		
Unit Installed Minimum clearances per <a href="#">Figure 1 (page 4)</a> ?	YES	NO
<b>INSTALLER NAME:</b>		
CITY _____	STATE _____	
Has the owner's information been reviewed with the customer?	YES	NO
Has the Literature Package been left with the unit?	YES	NO

REFRIGERATION SYSTEM		
Was unit given 24 hr warm up period for crankcase heaters (if equipped)?	YES	NO
Stage-1 Liquid Pressure (high side) _____		
Stage-1 Suction Pressure (low side) _____		

ELECTRICAL SYSTEM		
Electrical connections tight?	YES	NO
Line voltage polarity correct?	YES	NO
Has the thermostat been calibrated?	YES	NO
Is the thermostat level?	YES	NO
Is the heat anticipator setting correct? (If Applicable)	YES	NO
Rated Voltage: _____ VOLTS		
L1-L2 Volts: _____ VOLTS		

### PROPOSITION 65 WARNING:

**WARNING: This product contains chemicals known to the state of California to cause cancer.**

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

### REPLACEMENT PARTS

Replacement parts are available through your distributor. Please have the complete model and serial number of the unit when ordering replacement parts.

#### ELECTRICAL:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Capacitors</li> <li>• Compressors</li> <li>• Contactors</li> <li>• Pressure Switches</li> <li>• Relays</li> </ul> | <ul style="list-style-type: none"> <li>• Temperature Limit Switches</li> <li>• Thermostats</li> <li>• Time Delay Relays</li> <li>• Transformers</li> </ul> |
|--|--|

#### MOTORS:

- Blower Motor
- Fan Motor

#### COMPONENTS:

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• Blower Assembly</li> <li>• Cabinet Panels</li> <li>• Expansion Valves</li> </ul> | <ul style="list-style-type: none"> <li>• Fan Grille</li> <li>• Filter/Driers</li> </ul> |
|---|---|

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