

INSTALLATION INSTRUCTIONS

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a qualified installer, service agency or the gas supplier

⚠ CAUTION

Danger of sharp metallic edges. Can cause injury. Take care when servicing unit to avoid accidental contact with sharp edges.

Table Of Contents

Dimensions	Page 2
Parts Arrangements	Page 3
Shipping and Packing List	Page 4
General	Page 4
Requirements	Page 4
Unit Support	Page 5
Duct Connection	Page 5
Rigging Unit For Lifting	Page 5
Horizontal Air Discharge	Page 6
Condensate Drains	Page 6
Gas Piping	Page 8
Pressure Test Gas Piping	Page 8

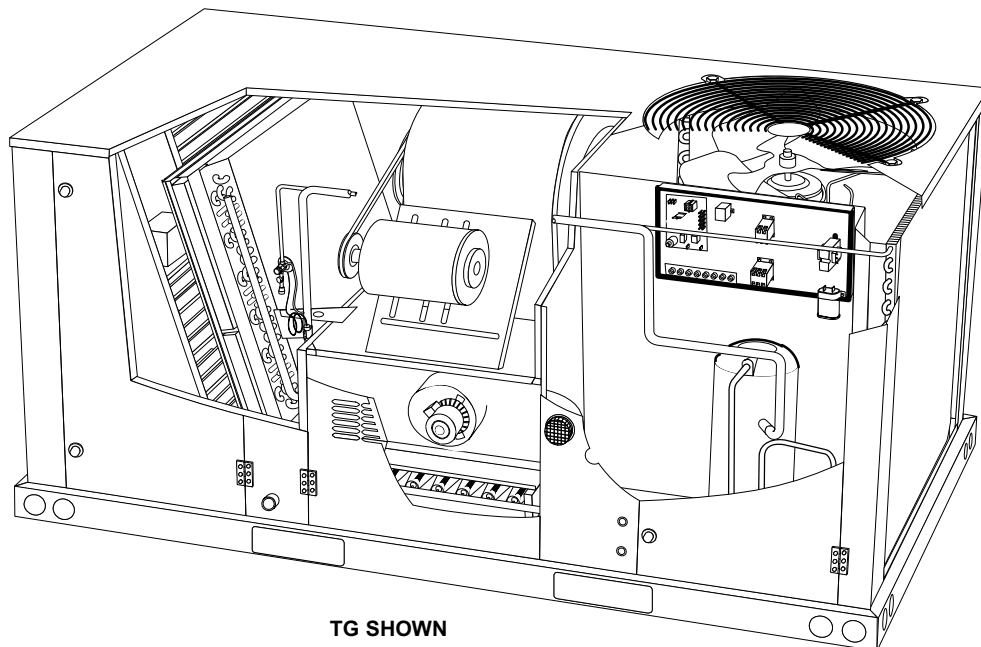
KGA/KCA024
KGA/KCA030
KGA/KCA036
KGA/KCA048
KGA/KCA060
KGA/KCA072
KGA/KCA090

2, 2-1/2, 3, 4, 5, 6 and 7-1/2 Ton

GAS AND COOLING PACKAGED UNITS
 506001-01
 4/2012
 Supersedes 9/2011

High Altitude Derate	Page 9
Electrical Connections	Page 9
Blower Operation and Adjustments	Page 10
Cooling Start-Up	Page 29
Gas Heat Start-Up	Page 31
Heating Operation and Adjustments	Page 32
Electric Heat Start-Up	Page 33
Service	Page 33

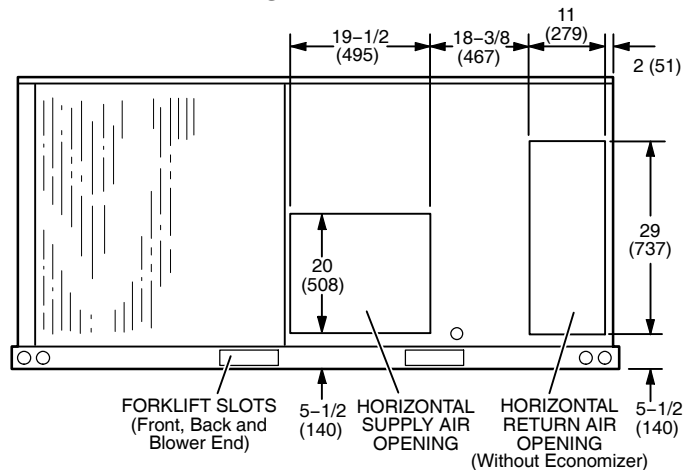
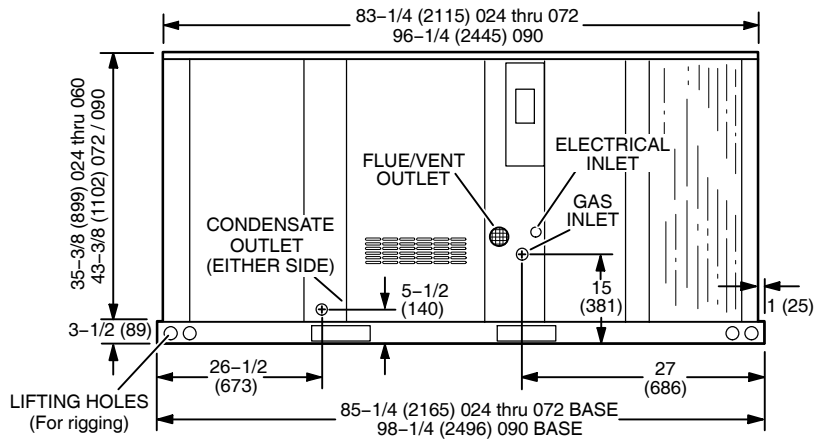
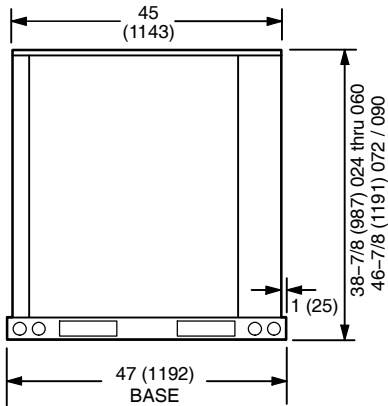
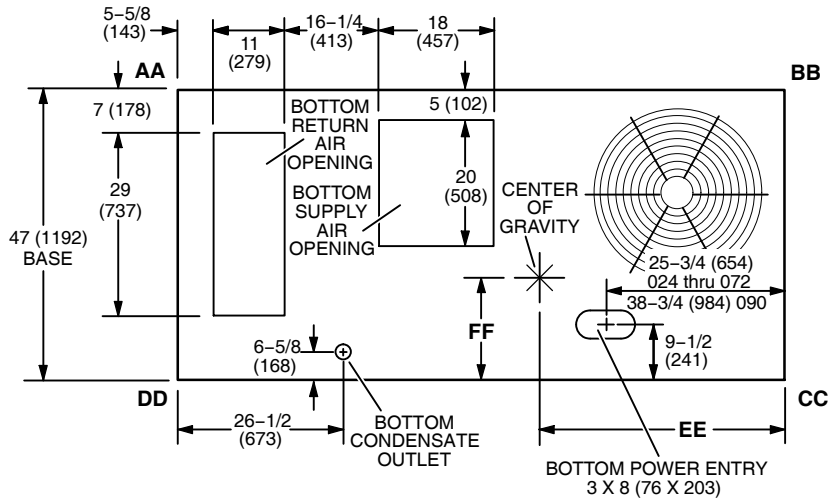
RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE



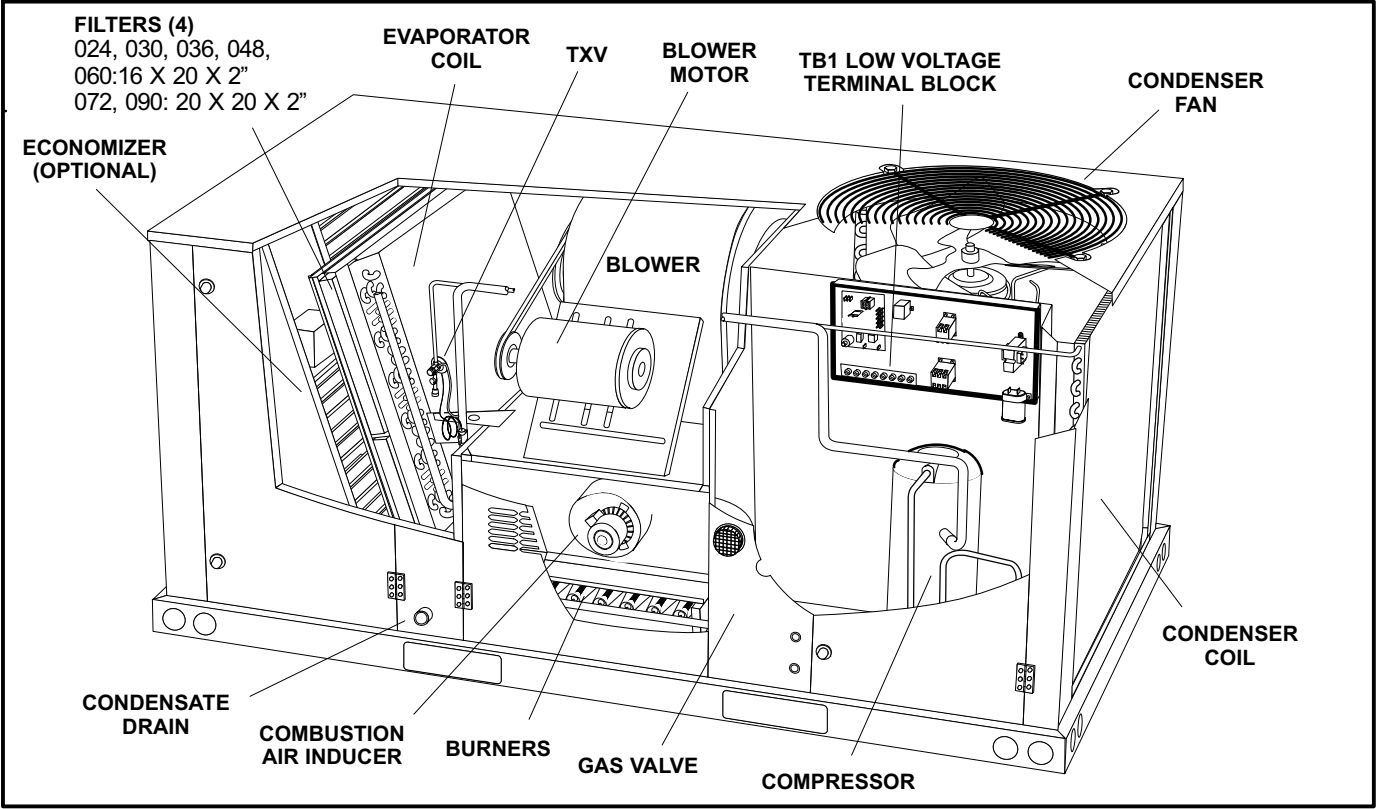
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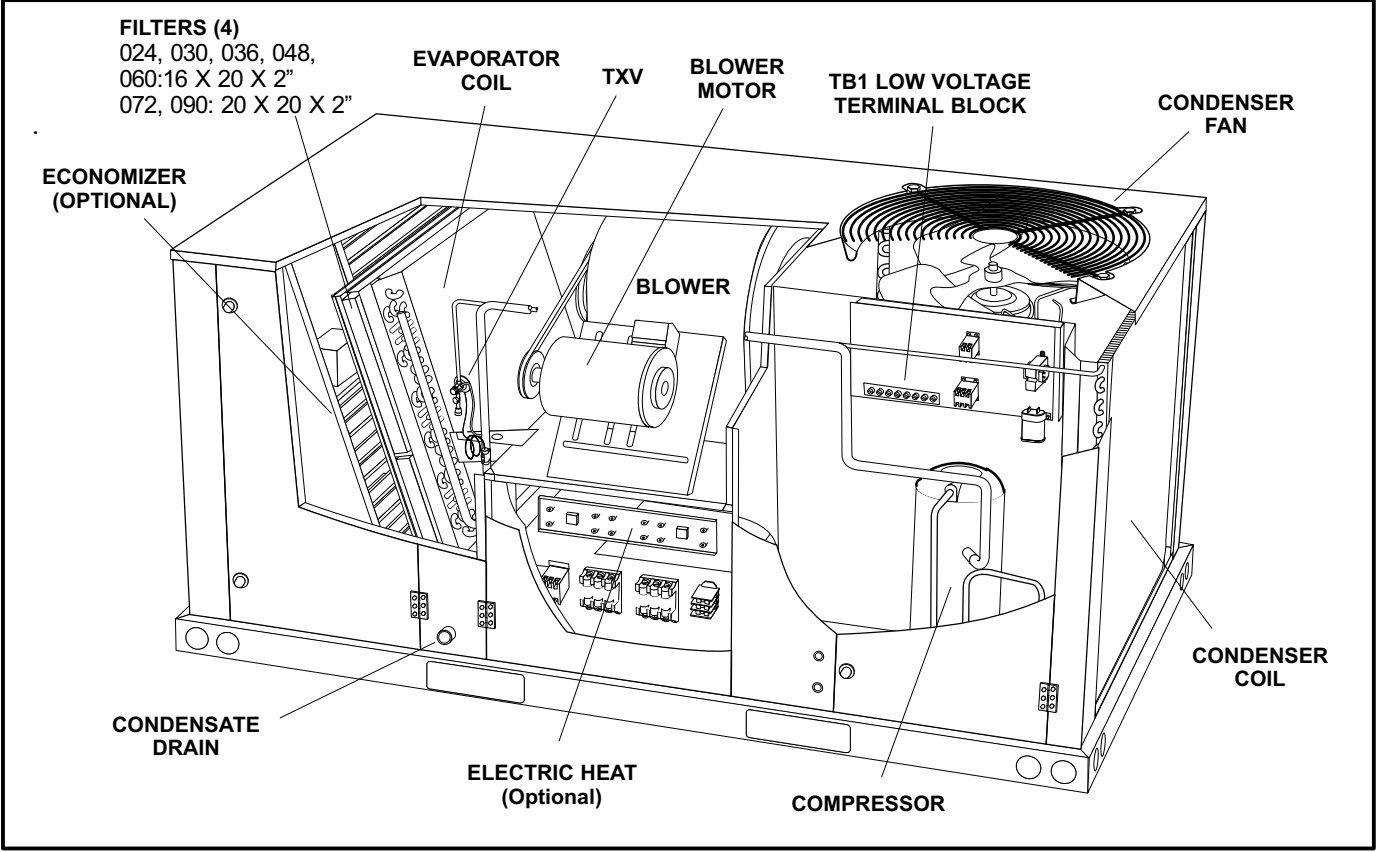
KG/KCA024, 030, 036, 048, 060, 072, & KG 090 DIMENSIONS in. - Gas heat section shown



KGA024, 030, 036, 048, 060, 072, & KG 090 PARTS ARRANGEMENT



KCA024, 030, 036, 048, 060, 072, & KC 090 PARTS ARRANGEMENT



Shipping and Packing List

Package 1 of 1 contains:

1- Assembled unit

Check unit for shipping damage. Receiving party should contact last carrier immediately if shipping damage is found.

General

These instructions are intended as a general guide and do not supersede local codes in any way. Authorities having jurisdiction should be consulted before installation.

The KG units are available in three heating inputs. The KC cooling packaged rooftop unit is the same basic design as the KG unit except for the heating section. Optional electric heat is available for KC units. KG and KC units have identical refrigerant circuits with respective 2, 2-1/2, 3, 4, 5 and 6 ton cooling capacities. In addition, KG/KC units are available with 7-1/2 tons of cooling.

Availability of units and options varies by brand.

Requirements

NOTICE

Roof Damage!
This system contains both refrigerant and oil. Some rubber roofing material may absorb oil, causing the rubber to swell. Bubbles in the rubber roofing material can cause leaks. Protect the roof surface to avoid exposure to refrigerant and oil during service and installation. Failure to follow this notice could result in damage to roof surface.

WARNING



Electric shock hazard and danger of explosion. Can cause injury, death or product or property damage. Turn off gas and electrical power to unit before performing any maintenance or servicing operations on the unit. Follow lighting instructions attached to unit when putting unit back into operation and after service or maintenance.

IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFC's and HCFC's) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for non-compliance.

See figure 1 for unit clearances.

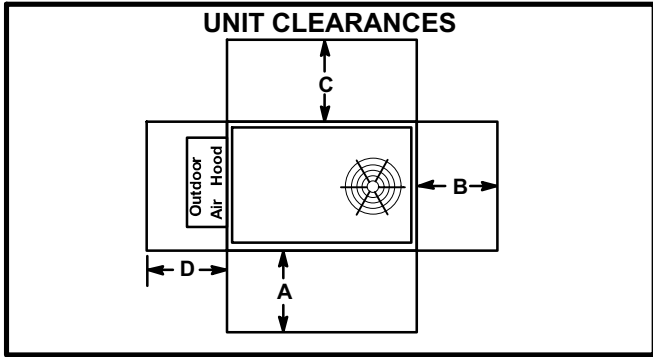


FIGURE 1

¹ Unit Clearance	A in.(mm)	B in.(mm)	C in.(mm)	D in.(mm)	Top Clearance
Service Clearance	48* (1219)	36 (914)	36 (914)	36 (914)	Unobstructed
Clearance to Combustibles	36 (914)	1 (25)	1 (25)	1 (25)	Unobstructed
Minimum Operation Clearance	36 (914)	36 (914)	36 (914)	36 (914)	Unobstructed

*KC 090 unit A dimension is 36" (1219mm).

Note - Entire perimeter of unit base requires support when elevated above mounting surface.

¹ **Service Clearance** - Required for removal of serviceable parts.

Clearance to Combustibles - Required clearance to combustible material (gas units).

Minimum Operation Clearance - Required clearance for proper unit operation.

Use of this unit as a construction heater or air conditioner is not recommended during any phase of construction. Very low return air temperatures, harmful vapors and operation of the unit with clogged or misplaced filters will damage the unit.

If this unit has been used for heating or cooling of buildings or structures under construction, the following conditions must be met or the warranty will be void:

- A room thermostat must control the unit. The use of fixed jumpers that will provide continuous heating or cooling is not allowed.
- A pre-filter must be installed at the entry to the return air duct.
- The return air duct must be provided and sealed to the unit.
- Return air temperature range between 55°F (13°C) and 80°F (27°C) must be maintained.
- Air filters must be replaced and pre-filters must be removed upon construction completion.
- The input rate and temperature rise must be set per the unit rating plate.
- The heat exchanger, components, duct system, air filters and evaporator coil must be thoroughly cleaned following final construction clean-up.
- The unit operating conditions (including airflow, cooling operation, ignition, input rate, temperature rise and venting) must be verified according to these installation instructions.

Unit Support

In downflow discharge installations, install the unit on a non-combustible surface only. Unit may be installed on combustible surfaces when used in horizontal discharge applications or in downflow discharge applications when installed on a T1CURB or K1CURB roof mounting frame. KG/KC 024, 030, 036, 048, 060 and 072 units are installed on T1CURB frames. KG/KC 090 units are installed on K1CURB frames.

NOTE - Securely fasten roof frame to roof per local codes.

A-Downflow Discharge Application

Roof Mounting with T1CURB or K1CURB

- 1- The T1CURB/K1CURB roof mounting frame must be installed, flashed and sealed in accordance with the instructions provided with the frame.
- 2- The T1CURB/K1CURB roof mounting frame should be square and level to 1/16" per linear foot (5mm per linear meter) in any direction.
- 3- Duct must be attached to the roof mounting frame and not to the unit; supply and return plenums must be installed before setting the unit.

Installer's Roof Mounting Frame

Many types of roof frames can be used to install the unit depending upon different roof structures. Items to keep in mind when using the building frame or supports are:

- 1- The base is fully enclosed and insulated, so an enclosed frame is not required.
- 2- The frames or supports must be constructed with non-combustible materials and should be square and level to 1/16" per linear foot (5mm per linear meter) in any direction.
- 3- Frame or supports must be high enough to prevent any form of moisture from entering unit. Recommended minimum frame height is 14" (356mm).
- 4- Duct must be attached to the roof mounting frame and not to the unit. Supply and return plenums must be installed before setting the unit.
- 5- Units require support along all four sides of unit base. Supports must be constructed of steel or suitably treated wood materials.

NOTE-When installing a unit on a combustible surface for downflow discharge applications, a T1CURB/K1CURB roof mounting frame is required.

B-Horizontal Discharge Applications

- 1- Units which are equipped with an optional economizer and installed in horizontal airflow applications must use a horizontal conversion kit.
- 2- Specified installation clearances must be maintained when installing units. Refer to figure 1.

- 3- Top of support slab should be approximately 4" (102mm) above the finished grade and located so no run-off water from higher ground can collect around the unit.

- 4- Units require support along all four sides of unit base. Supports must be constructed of steel or suitably treated wood materials.

Duct Connection

All exterior ducts, joints and openings in roof or building walls must be insulated and weather-proofed with flashing and sealing compounds in accordance with applicable codes. Any duct passing through an unconditioned space must be insulated.

⚠ CAUTION

In downflow applications, do not drill or punch holes in base of unit. Leaking in roof may occur if unit base is punctured.

Rigging Unit For Lifting

Rig unit for lifting by attaching four cables to holes in unit base rail. See figure 2.

- 1- Detach wooden base protection before rigging.
- 2- Remove all six base protection brackets before setting unit.
- 3- Connect rigging to the unit base using both holes in each corner.
- 4- All panels must be in place for rigging.
- 5- Place field-provided H-style pick in place just above top edge of unit. Frame must be of adequate strength and length. (H-style pick prevents damage to unit.)

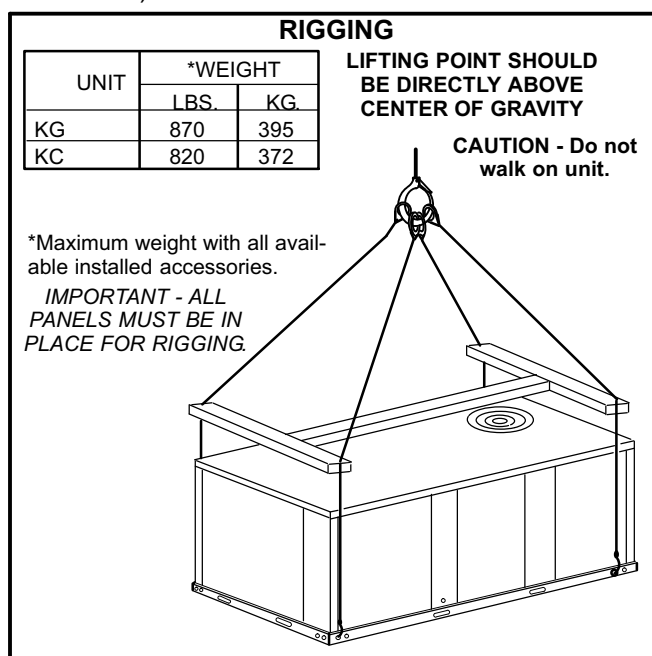


FIGURE 2

Horizontal Air Discharge

Unit is shipped with panels covering the horizontal supply and return air openings. Remove horizontal covers and place over downflow openings for horizontal air discharge. See figure 3. Secure in place with sheet metal screws.

Units Equipped With An Optional Economizer

- 1- Remove the horizontal supply air cover and position over the downflow supply air opening. Secure with sheet metal screws.
- 2- Leave the horizontal return air cover in place.
- 3- Locate the separately ordered horizontal air discharge kit. Place the kit panel over the downflow return air opening.
- 4- Remove and retain the barometric relief dampers and lower hood.
- 5- Install return air duct beneath outdoor air intake. See figure 4. Install barometric relief damper in lower hood and install in ductwork as shown in figure 4.

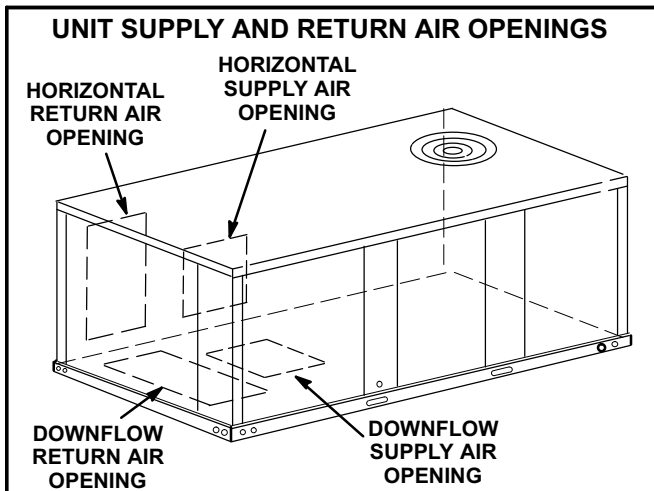


FIGURE 3

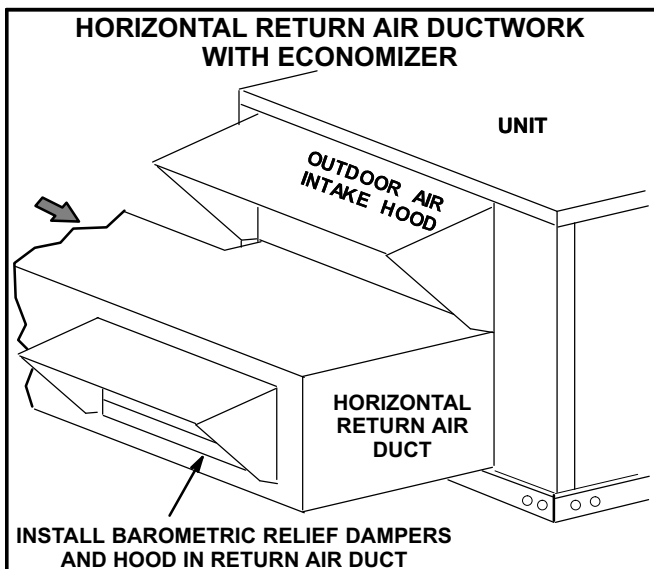


FIGURE 4

Condensate Drains

Make drain connection to the drain coupling provided on unit. Older model units have a 3/4" N.P.T. coupling and newer model units have a 1" N.P.T. coupling.

Note - The drain pan is made with a glass reinforced engineered plastic capable of withstanding typical joint torque but can be damaged with excessive force. Tighten pipe nipple hand tight and turn an additional quarter turn.

A trap must be installed between drain connection and an open vent for proper condensate removal. See figure 5 or 6. It is sometimes acceptable to drain condensate onto the roof or grade; however, a tee should be fitted to the trap to direct condensate downward. The condensate line must be vented. Check local codes concerning condensate disposal. Refer to pages 1 and 2 for condensate drain location.

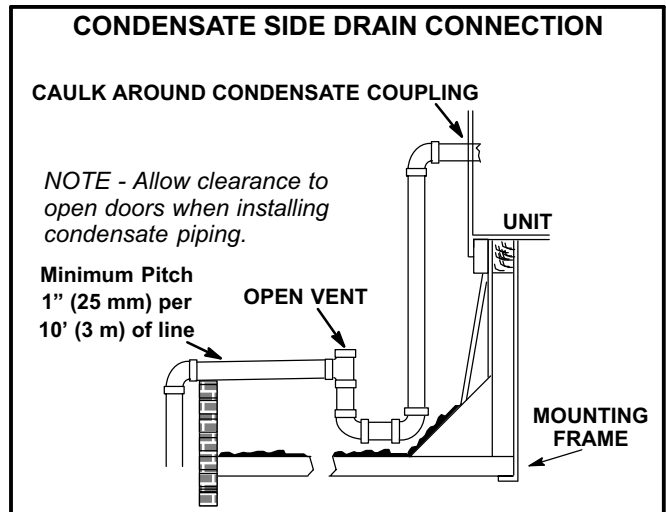


FIGURE 5

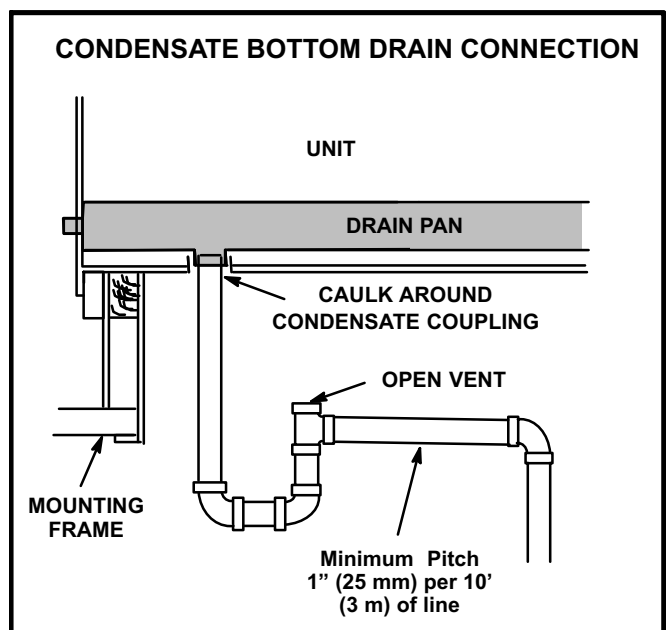


FIGURE 6

Units are shipped with the drain coupling facing the front of the unit. Condensate can be drained from the back or bottom of the unit with the following modifications. The unit can be installed in either downflow or horizontal air discharge regardless of condensate drain location.

Rear Drain Connection

- 1- Remove the condensate drain mullion. See figure 7. Remove the two panels on each side of the mullion.

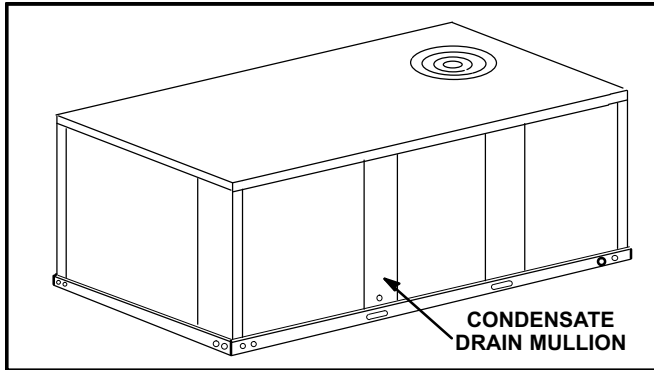


FIGURE 7

If the unit has hinged panels, two hinge screws must be removed in addition to the mullion screws. See figure 8.

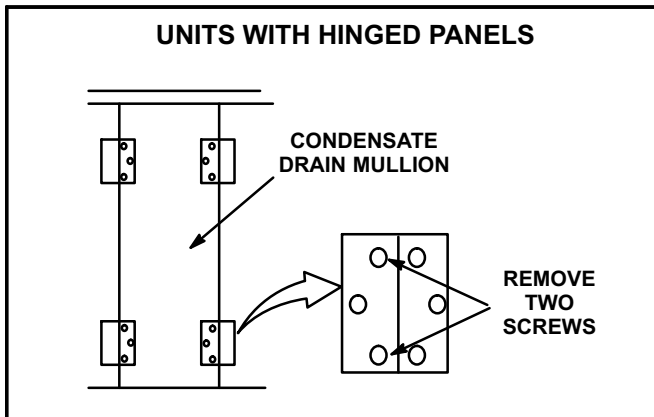


FIGURE 8

- 2- Lift the front edge of the drain pan and slide pan out of unit. See figure 9.

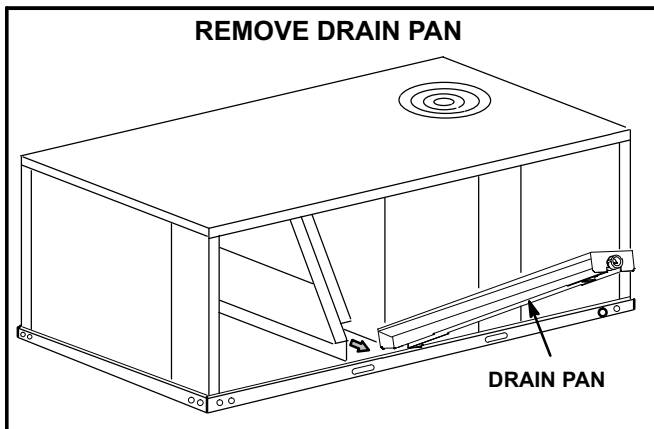


FIGURE 9

- 3- Make sure the cap over the unit bottom drain hole is secure.
- 4- Rotate the drain pan until the downward slope is toward the back of the unit. Slide the drain pan back into the unit. Be careful not to dislodge the cap over the bottom drain hole.
- 5- From the back side of the unit, pull the drain pan coupling through the rear condensate opening.
- 6- Replace the condensate drain mullion.

Bottom Drain Connection

- 1- Remove the condensate drain mullion. See figure 7.
- 2- Lift the front edge of the drain pan and slide pan out of unit. See figure 9.
- 3- Turn the drain pan upside down and drill a pilot hole through the bottom of the drain pan in the center of the coupling. See figure 10.

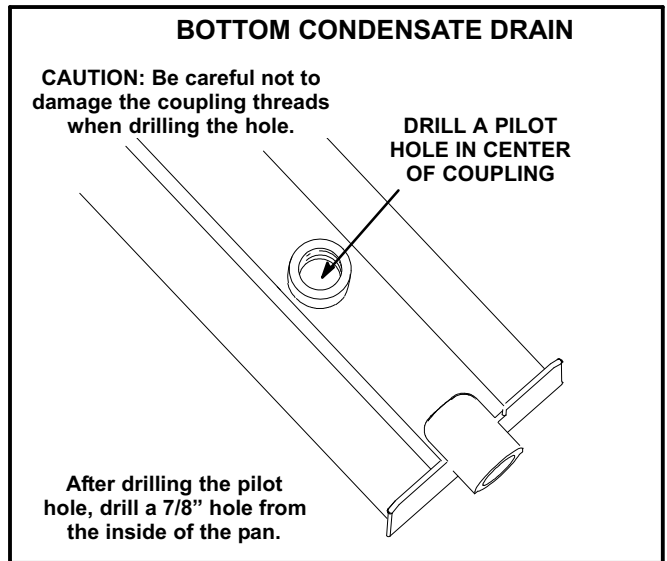


FIGURE 10

- 4- From the inside of the pan, use a Vari-Bit® bit to enlarge the hole to 7/8". Do not damage coupling threads.
- 5- Remove the cap over the unit bottom drain hole.
- 6- Slide the drain pan back into the unit.
- 7- From the back side of the unit, pull the drain pan coupling through the rear condensate opening.
- 8- From the front side of the unit, move the drain pan until the bottom coupling settles into the unit bottom drain opening. Once in place, check to make sure the coupling is still positioned through the rear condensate drain hole.
- 9- Use a field-provided 3/4" plug to seal side drain connection.
- 10- Replace the condensate drain mullion.

Connect Gas Piping (Gas Units)

Before connecting field-provided piping, check with gas company or authorities having jurisdiction for local code requirements. When installing gas supply piping, length of run from gas meter must be considered in determining pipe size for 0.5" w.c. (.12kPa) maximum pressure drop. Do not use supply pipe smaller than unit gas connection. Operating pressures at the unit gas connection must be as shown in table 1.

**TABLE 1
OPERATING PRESSURE AT GAS CONNECTION "w.c."**

	Natural Gas		LP / Propane Gas	
	Min.	Max.	Min.	Max.
024-090	4.5	10.5	11	13

When making piping connections a drip leg should be installed on vertical pipe runs to serve as a trap for sediment or condensate. A 1/8" N.P.T. plugged tap is located on gas valve for test gauge connection. Refer to Heating Start-Up section for tap location. Install a ground joint union between the gas control manifold and the main manual shut-off valve. See figure 11 for gas supply piping entering outside the unit. Figure 12 shows complete bottom gas entry piping.

Compounds used on threaded joints of gas piping shall be resistant to the action of liquified petroleum gases.

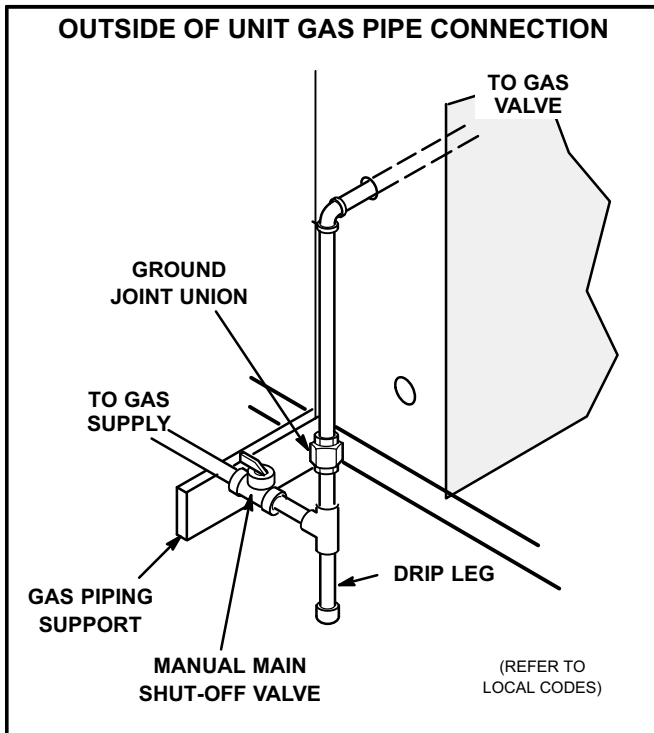


FIGURE 11

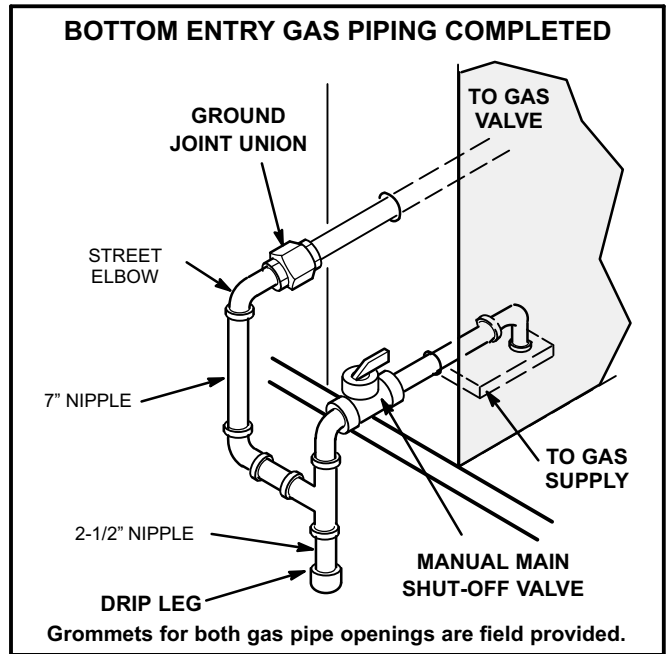


FIGURE 12

Pressure Test Gas Piping (Gas Units)

When pressure testing gas lines, the gas valve must be disconnected and isolated. Gas valves can be damaged if subjected to more than 0.5 psig (3.48kPa). See figure 13.

NOTE-Codes may require that manual main shut-off valve and union (furnished by installer) be installed in gas line external to unit. Union must be of the ground joint type.

After all connections have been made, check all piping connections for gas leaks. Also check existing unit gas connections up to the gas valve; loosening may occur during installation. Use a leak detection solution or other preferred means. Do not use matches candles or other sources of ignition to check for gas leaks.

CAUTION

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

WARNING



Danger of explosion. Can cause injury or product or property damage. Do not use matches, candles, flame or other sources of ignition to check for leaks.

NOTE-In case emergency shut down is required, turn off the main manual shut-off valve and disconnect main power to unit. These devices should be properly labeled by the installer.

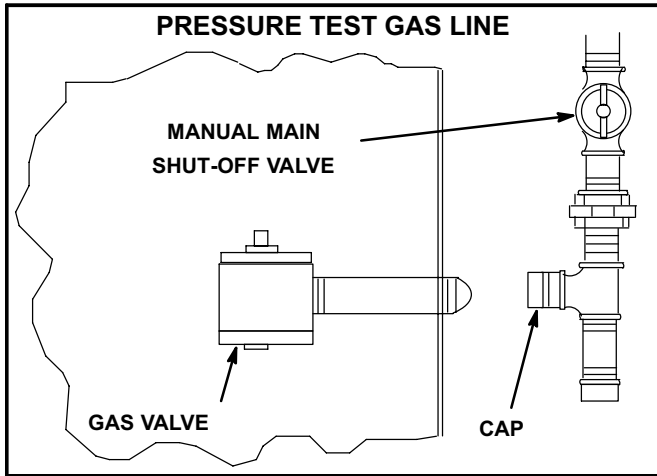


FIGURE 13

High Altitude Derate

Locate the high altitude conversion sticker in the unit literature bag. Fill out the conversion sticker and affix next to the unit nameplate.

Refer to table 2 for high altitude adjustments.

TABLE 2
HIGH ALTITUDE DERATE

Altitude Ft.*	Gas Manifold Pressure
2000-4500	See Unit Nameplate
4500 And Above	Derate 2% / 1000 Ft. Above Sea Level

*Units installed at 0-2000 feet do not need to be modified.

NOTE - This is the only permissible derate for these units.

Electrical Connections

POWER SUPPLY

Do not apply power or close disconnect switch until installation is complete. Refer to start-up directions. Refer closely to unit wiring diagram.

Refer to unit nameplate for minimum circuit ampacity and maximum fuse size.

- 1- Units are factory-wired for 230,460,575 volt supply. **For 208V supply**, remove the insulated terminal cover from the 208V terminal on the control transformer. Move the wire from the transformer 240V terminal to the 208V terminal. Place the insulated terminal cover on the unused 240V terminal.
- 2- Route power through the bottom power entry area. On KG units, connect power wiring to L1, L2 and L3 on the top of K1 in control area above compressor. On KC units, route power wiring to TB2. Secure power wiring with factory-installed wire ties provided in control box. See unit wiring diagram.

CONTROL WIRING

A-Thermostat Location

Room thermostat mounts vertically on a standard 2" X 4" handy box or on any non-conductive flat surface.

Locate thermostat approximately 5 feet (1524mm) above the floor in an area with good air circulation at average temperature. Avoid locating the room thermostat where it might be affected by:

- drafts or dead spots behind doors and in corners
- hot or cold air from ducts
- radiant heat from sun or appliances
- concealed pipes and chimneys

B-Control Wiring

- 1- Route thermostat cable or wires from subbase to control area above compressor (refer to unit dimensions to locate bottom and side power entry).

IMPORTANT - Unless field thermostat wires are rated for maximum unit voltage, they must be routed away from line voltage wiring. Use wire ties located near the lower left corner of the controls hat section to secure thermostat cable.

Use 18 AWG wire for all applications using remotely installed electro-mechanical and electronic thermostats.

- 2- Install thermostat assembly in accordance with instructions provided with thermostat.
- 3- Connect thermostat wiring to TB1 terminal board on the lower side of the controls hat section. Wire as shown in figure 14 for electro-mechanical and electronic thermostats. If using other temperature control devices or energy management systems see instructions and wiring diagram provided by manufacturer.

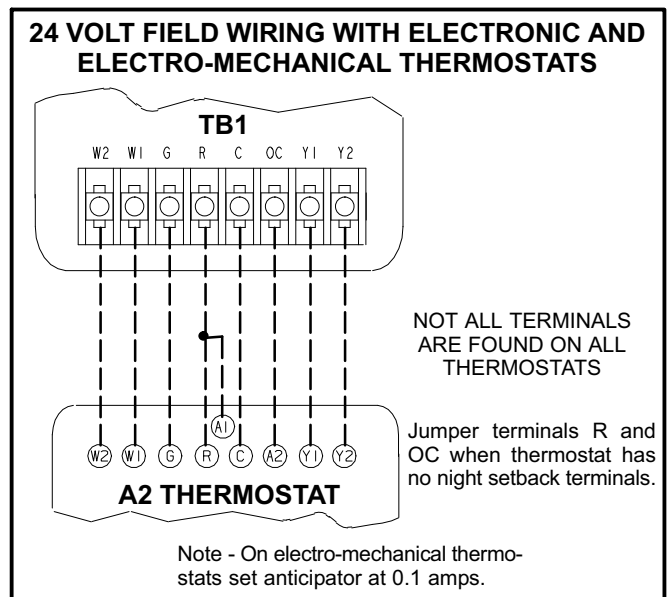


FIGURE 14

IMPORTANT-Terminal connections at the wall plate or subbase must be made securely. Loose control wire connections may allow unit to operate but not with proper response to room demand.

Blower Operation and Adjustments

2 and 2-1/2 ton units are equipped with direct drive blowers only. 3, 4 and 5 ton units are equipped with either direct drive or belt drive blowers. 6 and 7-1/2 ton units are available with belt drive blowers only.

⚠️ IMPORTANT

Three phase scroll compressors must be phased sequentially for correct compressor and blower rotation. Follow "COOLING START-UP" section of installation instructions to ensure proper compressor and blower operation.

A-Blower Operation

Initiate blower demand at thermostat according to instructions provided with thermostat. Unit will cycle on thermostat demand. The following steps apply to applications using a typical electro-mechanical thermostat.

- 1- Blower operation is manually set at the thermostat subbase fan switch. With fan switch in **ON** position, blowers will operate continuously.
- 2- With fan switch in **AUTO** position, the blowers will cycle with demand. Blowers and entire unit will be off when system switch is in **OFF** position.

B-Determining Unit CFM - Direct Drive Blowers

- 1- The following measurements must be made with air filters in place.
- 2- With all access panels in place, measure static pressure external to unit (from supply to return). Add any additional air resistance for options and accessories shown in table 18.
- 3- Use figure 15 to determine the factory set blower speed.
- 4- Use tables 4 through 6, the measured static pressure and the factory-set blower speed to determine CFM. If CFM is lower or higher than the design specified CFM, move the leads as shown in figure 16 for 208/230 volt units and figure 17 for 460/575 volt units. Refer to table 21 or 22 for minimum airflow when electric heat is installed.

BLOWER SPEED FACTORY SETTINGS					
036 Units	024, 030, & 048 Units	060 Units			
<input type="checkbox"/>	1 Com	<input type="checkbox"/>	1 Com	<input type="checkbox"/>	1 Com
<input type="checkbox"/>	2 Hi	<input type="checkbox"/>	2 Hi	<input type="checkbox"/>	2 Hi
<input type="checkbox"/>	3 Med	<input type="checkbox"/>	3 Med*	<input type="checkbox"/>	3 Low*
<input type="checkbox"/>	4 Low*	<input type="checkbox"/>	4 Low	<input type="checkbox"/>	4 Unused
*Factory Setting					

FIGURE 15

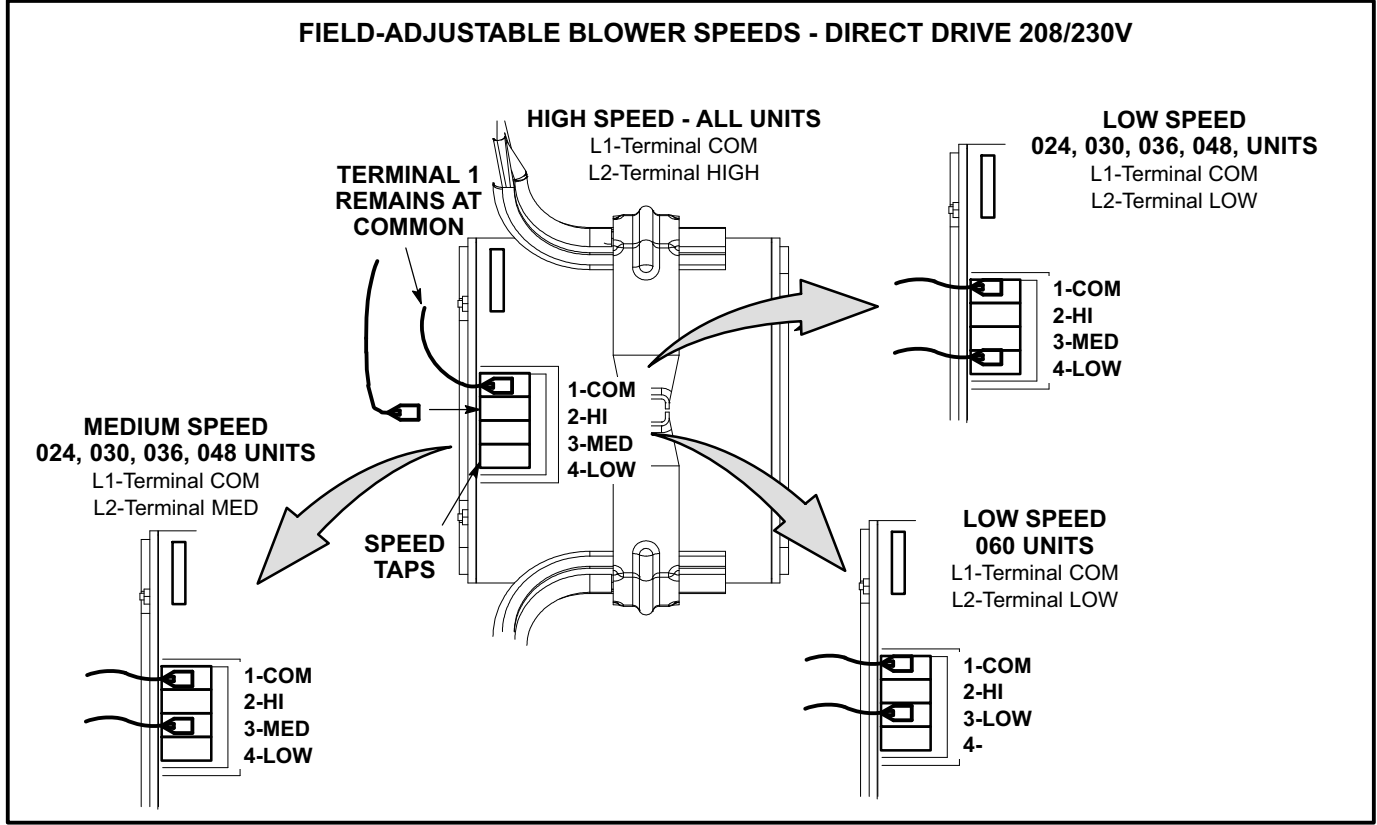


FIGURE 16

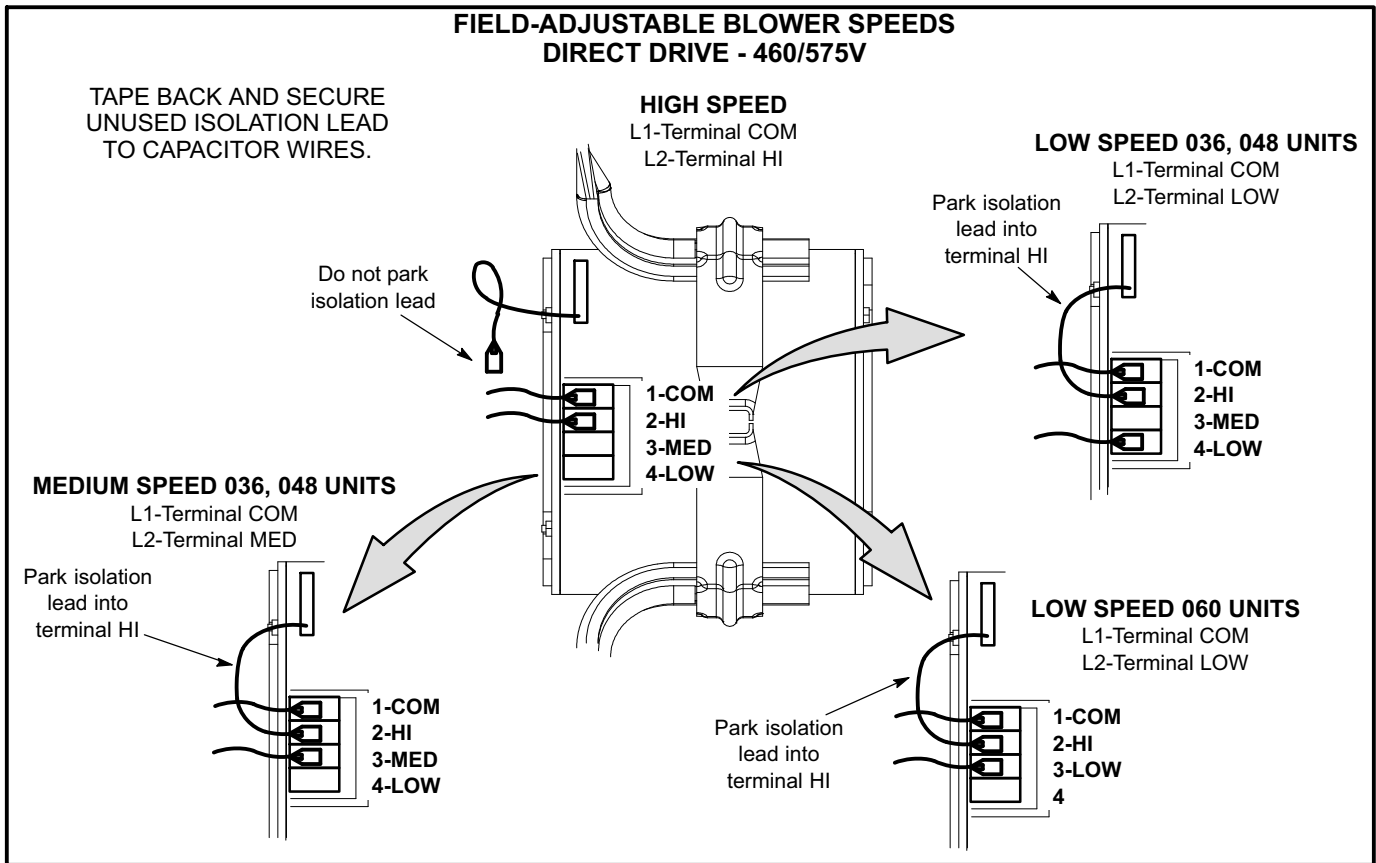


FIGURE 17

C-Determining Unit CFM - Belt Drive Blowers

- 1- The following measurements must be made with air filters in place.
- 2- With all access panels in place, measure static pressure external to unit (from supply to return).
- 3- Measure the indoor blower wheel RPM.
- 4- Referring to tables 7 through 17, use static pressure and RPM readings to determine unit CFM. Use table 18 when installing units with any of the options or accessories listed. Refer to table 21 or 22 for minimum airflow when electric heat is installed.
- 5- The blower RPM can be adjusted at the motor pulley. Loosen Allen screw and turn adjustable pulley clockwise to increase CFM. Turn counterclockwise to decrease CFM. See figure 19. Do not exceed minimum and maximum number of pulley turns as shown in table 3.

D-Blower Belt Adjustment

Maximum life and wear can be obtained from belts only if proper pulley alignment and belt tension are maintained. Tension new belts after a 24-48 hour period of operation. This will allow belt to stretch and seat grooves. Make sure blower and motor pulley are aligned as shown in figure 18.

- 1- Loosen four bolts securing motor base to mounting frame. See figure 19.

- 2- *To increase belt tension -*
Slide blower motor downward to tighten the belt. This increases the distance between the blower motor and the blower housing.
- 3- *To loosen belt tension -*
Slide blower motor upward to loosen the belt. This decreases the distance between the blower motor and the blower housing.
- 4- Tighten four bolts securing motor base to the mounting frame.

**TABLE 3
MINIMUM AND MAXIMUM PULLEY ADJUSTMENT**

Belt	Min. Turns Open	Maxi. Turns Open
A Section	No minimum	5

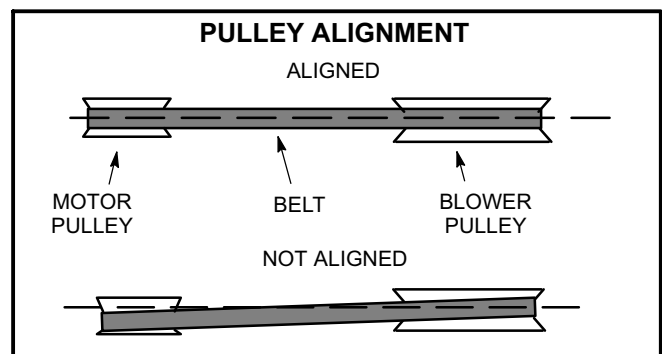


FIGURE 18

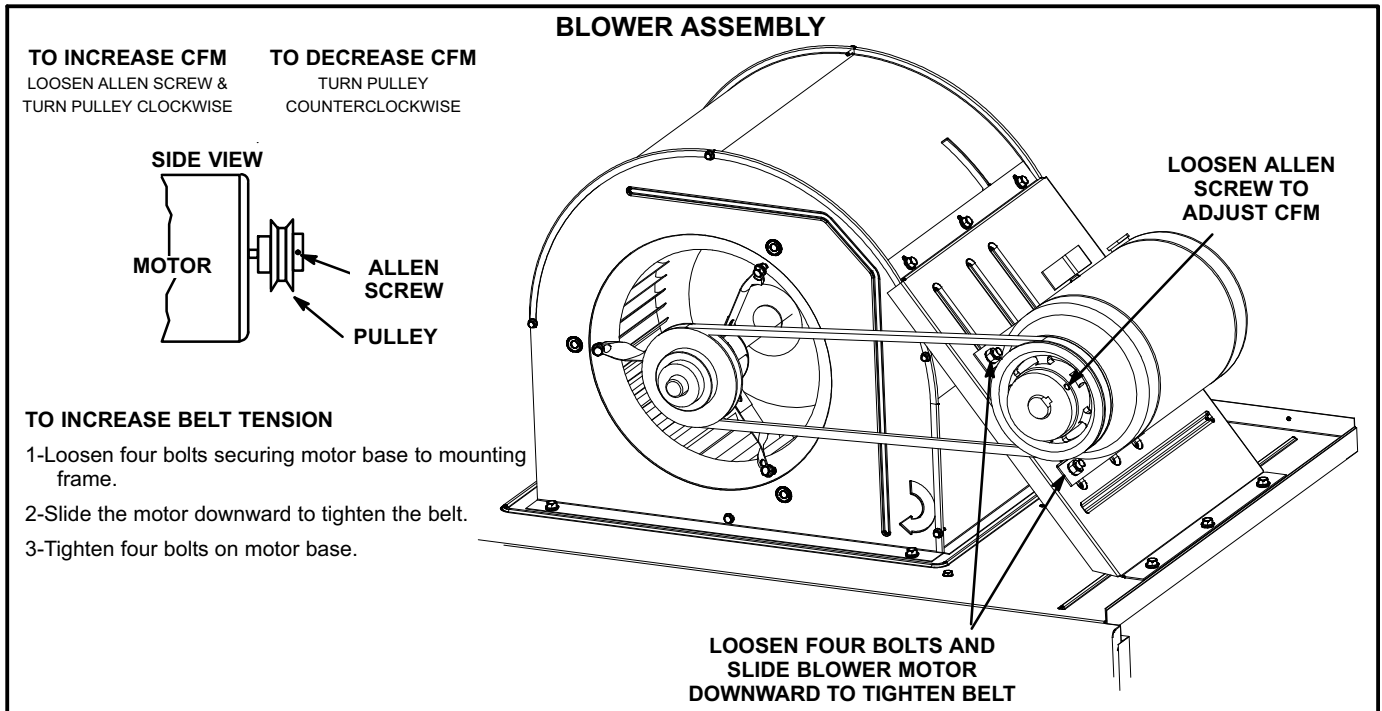


FIGURE 19

E-Blower Belt Adjustment - M Volt Units With 3 HP Blowers Equipped With A Belt Tensioner

- 1- Remove blower belt.
- 2- Remove bracket from blower housing. See figure 21.
- 3- Remove the screw from the back side of the bracket.
- 4- Move the tensioner to the appropriate adjustment hole and reinstall screw.
- 5- Replace bracket.
- 6- Replace blower belt. See figure 22.

F-Check Belt Tension - Units Not Equipped With A Belt Tensioner

Overtensioning belts shortens belt and bearing life. Check belt tension as follows:

- 1- Measure span length X. See figure 20.
- 2- Apply perpendicular force to center of span (X) with enough pressure to deflect belt 1/64" for every inch of span length or 1.5mm per 100mm of span length.
 Example: Deflection distance of a 40" span would be 40/64" or 5/8".
 Example: Deflection distance of a 400mm span would be 6mm.

- 3- Measure belt deflection force. For a used belt, the deflection force should be 5 lbs. (35kPa). A new belt deflection force should be 7 lbs. (48kPa).

A force below these values indicates an undertensioned belt. A force above these values indicates an overtensioned belt.

G-Field-Furnished Blower Drives

For field-furnished blower drives, use tables 7 through 17 to determine BHP and RPM required. Reference table 19 for drive component manufacturers numbers and table 20 to determine the drive kit number.

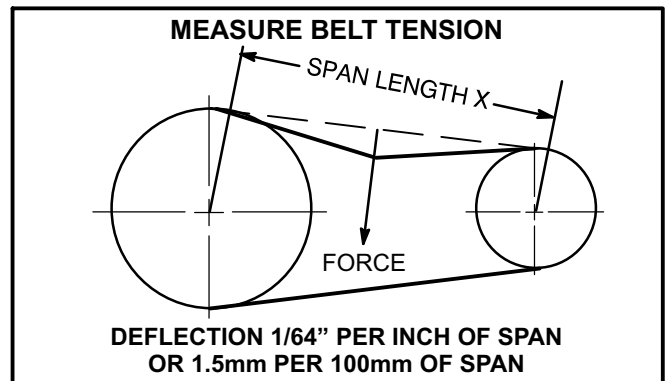


FIGURE 20

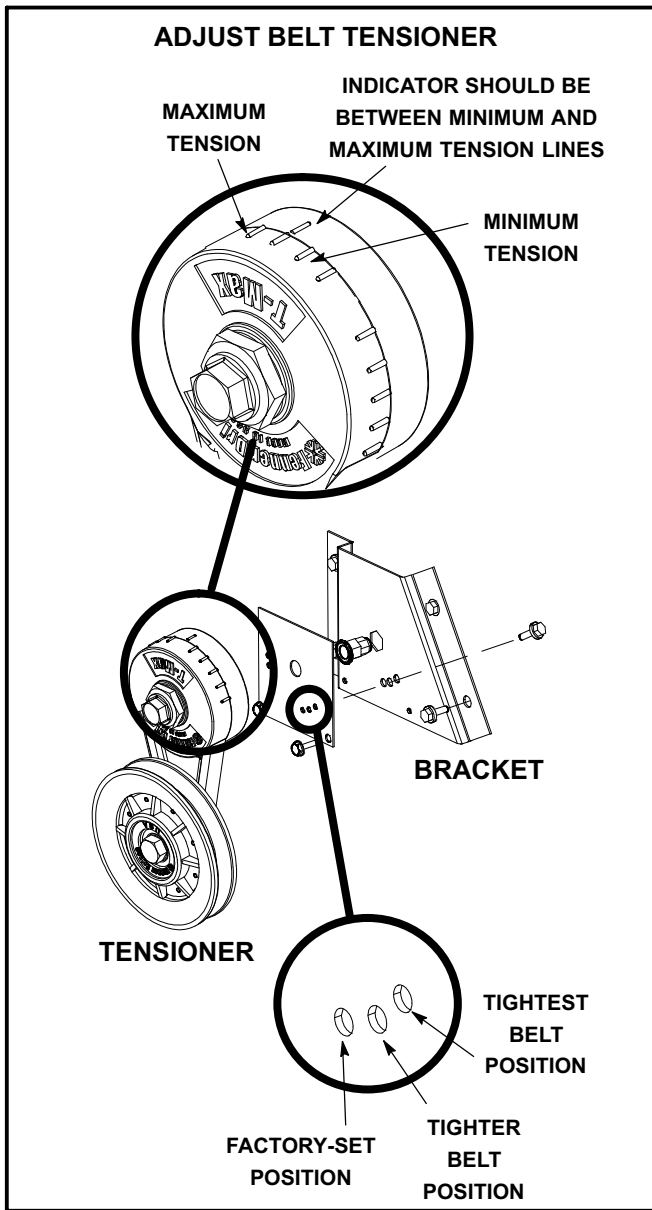


FIGURE 21

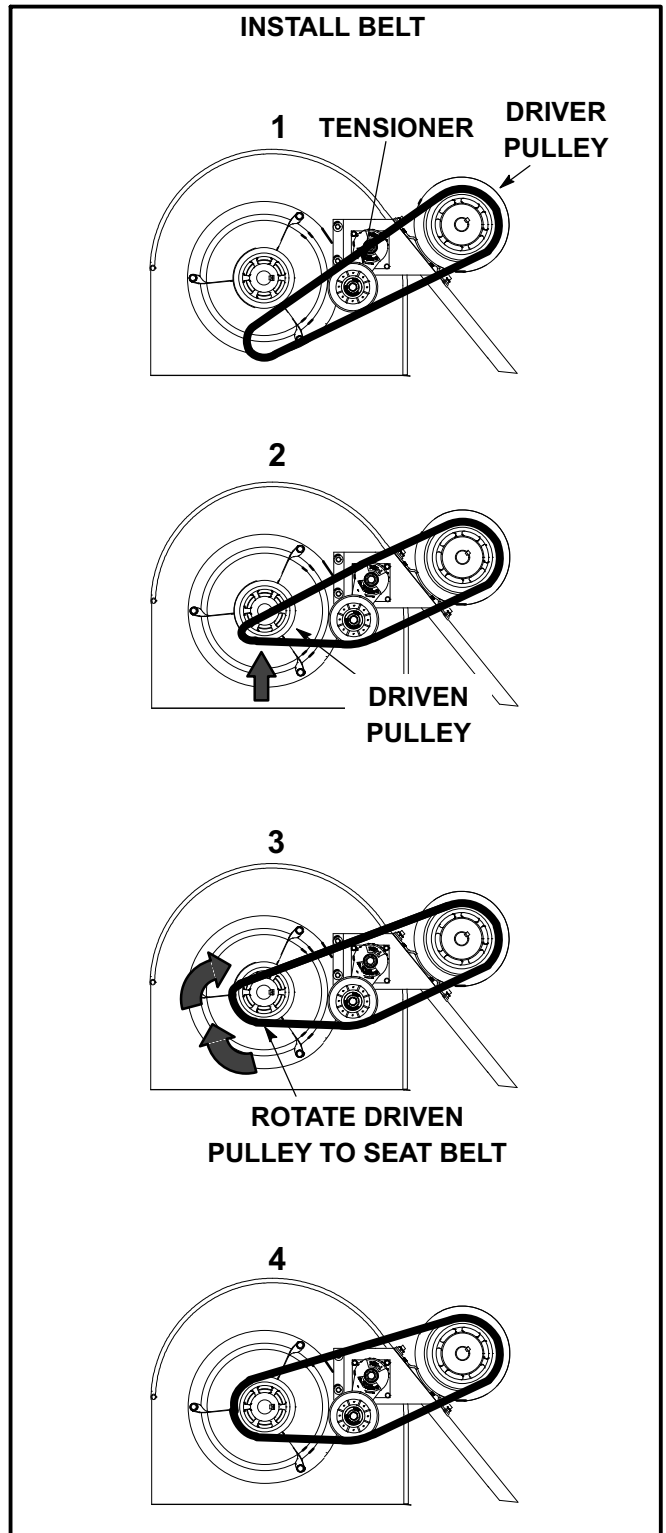


FIGURE 22

**TABLE 4
DIRECT DRIVE BLOWER PERFORMANCE**

External Static Pressure (in. w.g.)	Air Volume (cfm) at Various Blower Speeds					
	208 VOLTS			230 VOLTS		
	High	Medium	Low	High	Medium	Low
2 and 2.5 Ton Standard Efficiency (Down-Flow)				KGA024S and KGA030S		
0.0	1255	985	860	1420	1150	920
0.1	1240	965	830	1410	1120	910
0.2	1225	940	790	1400	1095	890
0.3	1210	910	745	1390	1065	860
0.4	1185	870	695	1365	1030	820
0.5	1150	825	---	1335	985	770
0.6	1100	775	---	1280	935	715
0.7	1035	715	---	1210	865	---
0.8	940	---	---	1115	780	---
0.9	815	---	---	990	---	---
1.0	---	---	---	830	---	---
2 and 2.5 Ton Standard Efficiency (Horizontal)				KGA024S and KGA030S		
0.0	1190	935	815	1345	1090	875
0.1	1175	915	785	1335	1065	865
0.2	1160	890	750	1330	1035	845
0.3	1145	860	705	1315	1010	815
0.4	1125	825	660	1295	975	775
0.5	1090	785	---	1265	935	730
0.6	1045	735	---	1215	885	675
0.7	980	680	---	1150	820	---
0.8	890	---	---	1055	740	---
0.9	775	---	---	935	---	---
1.0	---	---	---	785	---	---
2 and 2.5 Ton Standard Efficiency (Down-Flow)				KCA024S and KCA030S		
0.0	1230	975	845	1425	1125	910
0.1	1220	940	815	1395	1110	875
0.2	1205	910	775	1375	1085	845
0.3	1185	880	730	1350	1055	815
0.4	1155	845	680	1320	1010	780
0.5	1115	800	---	1280	955	740
0.6	1060	750	---	1225	895	690
0.7	985	685	---	1150	830	---
0.8	890	---	---	1050	755	---
0.9	770	---	---	920	680	---
1.0	---	---	---	760	---	---
2 and 2.5 Ton Standard Efficiency (Horizontal)				KCA024S and KCA030S		
0.0	1165	925	800	1350	1065	865
0.1	1155	895	770	1325	1055	830
0.2	1140	865	735	1300	1030	800
0.3	1125	835	695	1280	1000	770
0.4	1095	800	645	1250	955	740
0.5	1055	760	---	1215	905	700
0.6	1005	710	---	1160	850	655
0.7	935	650	---	1090	785	---
0.8	845	---	---	995	720	---
0.9	730	---	---	875	645	---
1.0	---	---	---	720	---	---

**TABLE 5
DIRECT DRIVE BLOWER PERFORMANCE**

External Static Pressure (in. w.g.)	Air Volume (cfm) at Various Blower Speeds								
	208 VOLTS			230 VOLTS			460/575 VOLTS		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
3 and 4 Ton Standard Efficiency (Down-Flow)						KGA036S and KGA048S			
0.0	1965	1640	1150	2145	1845	1330	2070	1755	1220
0.1	1905	1595	1150	2070	1785	1325	2020	1700	1220
0.2	1855	1545	1130	2010	1735	1300	1970	1645	1205
0.3	1810	1500	1095	1955	1680	1260	1920	1595	1180
0.4	1755	1455	1035	1895	1625	1200	1865	1545	1135
0.5	1690	1405	965	1830	1570	1130	1795	1495	1075
0.6	1610	1350	875	1745	1510	1045	1715	1450	1000
0.7	1515	1290	775	1635	1445	945	1615	1410	910
0.8	1385	1220	---	1490	1370	---	1490	1375	---
0.9	1225	1150	---	1310	1290	---	1340	1360	---
1.0	1025	---	---	1075	---	---	1150	---	---
3 and 4 Ton Standard Efficiency (Horizontal)						KGA036S and KGA048S			
0.0	1860	1565	1095	2030	1755	1265	2055	1765	1260
0.1	1805	1510	1090	1960	1695	1255	1990	1700	1245
0.2	1755	1465	1075	1900	1640	1235	1935	1640	1230
0.3	1710	1420	1035	1850	1585	1195	1875	1590	1200
0.4	1660	1370	985	1790	1535	1140	1815	1545	1160
0.5	1595	1320	910	1720	1475	1070	1745	1495	1095
0.6	1510	1260	825	1630	1410	980	1660	1440	1005
0.7	1400	1190	720	1510	1330	880	1555	1375	885
0.8	1255	1100	---	1350	1230	---	1425	1295	---
0.9	1065	990	---	1140	1110	---	1260	1200	---
1.0	830	---	---	875	---	---	1055	---	---
3 and 4 Ton Standard Efficiency (Down-Flow)						KCA036S and KCA048S			
0.0	1990	1625	1145	2175	1825	1330	2100	1735	1220
0.1	1935	1595	1145	2100	1790	1320	2050	1705	1215
0.2	1885	1565	1130	2040	1755	1300	2000	1665	1205
0.3	1830	1530	1095	1980	1710	1265	1945	1625	1180
0.4	1775	1485	1050	1915	1660	1215	1885	1575	1145
0.5	1710	1425	980	1850	1595	1150	1815	1520	1095
0.6	1630	1350	900	1765	1510	1070	1735	1450	1025
0.7	1540	1255	800	1660	1405	975	1640	1375	940
0.8	1425	1140	---	1535	1280	---	1530	1285	---
0.9	1285	1000	---	1375	1120	---	1405	1185	---
1.0	1125	---	---	1180	---	---	1260	---	---
3 and 4 Ton Standard Efficiency (Horizontal)						KCA036S and KCA048S			
0.0	1890	1545	1090	2060	1740	1265	2085	1745	1260
0.1	1830	1515	1090	1990	1700	1255	2020	1700	1240
0.2	1780	1480	1070	1930	1660	1230	1960	1660	1225
0.3	1730	1445	1040	1870	1615	1200	1900	1620	1205
0.4	1675	1400	995	1810	1565	1150	1835	1575	1170
0.5	1610	1340	930	1740	1500	1090	1760	1515	1115
0.6	1530	1260	845	1650	1410	1010	1680	1440	1035
0.7	1420	1160	745	1535	1295	905	1580	1340	915
0.8	1290	1025	---	1385	1150	---	1460	1210	---
0.9	1120	865	---	1195	965	---	1320	1045	---
1.0	910	---	---	960	---	---	1155	---	---

**TABLE 6
DIRECT DRIVE BLOWER PERFORMANCE**

External Static Pressure (in. w.g.)	Air Volume (cfm) at Various Blower Speeds					
	208 VOLTS		230 VOLTS		460/575 VOLTS	
	High	Low	High	Low	High	Low
5 Ton Standard Efficiency (Down-Flow)						KGA060S
0.0	2230	1670	2410	1950	2240	1730
0.1	2205	1680	2380	1945	2175	1725
0.2	2175	1685	2350	1930	2130	1725
0.3	2145	1685	2315	1915	2095	1725
0.4	2110	1670	2270	1890	2070	1720
0.5	2065	1650	2215	1860	2040	1705
0.6	2015	1615	2155	1815	2010	1675
0.7	1950	1565	2085	1755	1960	1630
0.8	1875	1495	2000	1685	1900	1560
0.9	1780	1410	1900	1595	1810	1465
1.0	1675	---	1785	---	1690	---
5 Ton Standard Efficiency (Horizontal)						KGA060S
0.0	2110	1615	2280	1885	2305	1815
0.1	2075	1625	2245	1880	2260	1825
0.2	2040	1625	2205	1860	2215	1820
0.3	2000	1610	2155	1835	2170	1805
0.4	1950	1590	2100	1800	2120	1775
0.5	1900	1555	2040	1750	2065	1735
0.6	1835	1505	1965	1695	2005	1680
0.7	1765	1450	1890	1625	1935	1615
0.8	1685	1375	1800	1545	1855	1535
0.9	1595	1295	1700	1460	1755	1445
1.0	1495	---	1595	---	1645	---
5 Ton Standard Efficiency (Down-Flow)						KCA060S
0.0	2140	1655	2315	1935	2155	1715
0.1	2110	1650	2280	1910	2085	1695
0.2	2080	1645	2245	1885	2035	1685
0.3	2045	1635	2205	1860	2000	1675
0.4	2005	1615	2160	1830	1970	1660
0.5	1965	1590	2105	1790	1940	1640
0.6	1910	1555	2045	1745	1905	1610
0.7	1845	1500	1970	1685	1855	1565
0.8	1765	1435	1885	1615	1790	1495
0.9	1675	1350	1785	1525	1700	1405
1.0	1565	---	1665	---	1580	---
5 Ton Standard Efficiency (Horizontal)						KCA060S
0.0	2030	1600	2190	1870	2215	1800
0.1	1990	1595	2150	1850	2165	1796
0.2	1950	1585	2105	1820	2120	1780
0.3	1905	1565	2055	1780	2070	1750
0.4	1860	1535	2000	1735	2020	1715
0.5	1805	1495	1935	1685	1965	1670
0.6	1740	1450	1865	1625	1900	1615
0.7	1670	1390	1785	1560	1830	1550
0.8	1590	1320	1695	1485	1750	1475
0.9	1500	1240	1600	1400	1650	1385
1.0	1395	---	1485	---	1535	---

**TABLE 7
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

3 Ton Standard Efficiency (Down-Flow)

KGA/KCA036S

Air Volume (cfm)	External Static (in.w.g.)															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Low Static - Drive Kit A01										Kit 5	
900	500	0.10	605	0.15	705	0.25	790	0.30	870	0.40	945	0.50	1010	0.60	1075	0.75
1000	535	0.15	630	0.20	720	0.25	805	0.35	885	0.45	955	0.55	1020	0.65	1085	0.80
1100	570	0.15	655	0.20	740	0.30	820	0.40	895	0.45	970	0.60	1035	0.70	1095	0.80
1200	605	0.20	685	0.25	765	0.35	840	0.40	915	0.50	980	0.60	1045	0.75	1110	0.85
1300	640	0.25	715	0.30	790	0.35	865	0.45	930	0.55	1000	0.65	1060	0.80	1120	0.90
1400	680	0.30	750	0.35	820	0.45	885	0.50	955	0.60	1015	0.70	1080	0.85	1135	0.95
1500	720	0.35	785	0.40	850	0.50	910	0.55	975	0.65	1035	0.80	1095	0.90	1155	1.05

0.90 to 1.60 in. w.g.

3 Ton Standard Efficiency (Down-Flow)

KGA/KCA036S

Air Volume (cfm)	External Static (in.w.g.)															
	0.90		1.0		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	High Static - Drive Kit A05										Field Furnished					
900	1135	0.85	1190	1.00	1245	1.10	1295	1.25	1345	1.40	1390	1.55	1435	1.70	1480	1.85
1000	1145	0.90	1200	1.05	1255	1.15	1305	1.30	1355	1.45	1400	1.60	1445	1.75	1490	1.90
1100	1155	0.95	1210	1.10	1265	1.20	1315	1.35	1365	1.50	1410	1.65	1455	1.80	1500	1.95
1200	1165	1.00	1225	1.15	1275	1.25	1325	1.40	1375	1.55	1425	1.75	1470	1.90	1510	2.05
1300	1180	1.05	1235	1.20	1285	1.30	1340	1.50	1385	1.65	1435	1.80	1480	1.95	1525	2.15
1400	1195	1.10	1245	1.25	1300	1.40	1350	1.55	1400	1.70	1445	1.85	1490	2.05	1535	2.20
1500	1210	1.15	1260	1.30	1315	1.45	1360	1.60	1410	1.75	1455	1.95	1500	2.10	1545	2.30

0.10 to 0.80 in. w.g.

3 Ton Standard Efficiency (Horizontal)

KGA/KCA036S

Air Volume (cfm)	External Static (in.w.g.)															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Low Static - Drive Kit A01											
900	490	0.10	580	0.15	665	0.20	745	0.25	815	0.30	880	0.40	940	0.45	1000	0.55
1000	525	0.10	610	0.15	690	0.25	760	0.30	830	0.35	895	0.45	955	0.50	1010	0.60
1100	560	0.15	640	0.20	710	0.25	780	0.30	850	0.40	910	0.45	970	0.55	1025	0.65
1200	600	0.20	670	0.25	740	0.30	805	0.35	870	0.45	930	0.50	985	0.60	1040	0.70
1300	635	0.25	705	0.30	770	0.35	830	0.40	890	0.50	950	0.55	1005	0.65	1055	0.75
1400	675	0.30	740	0.35	800	0.40	860	0.50	915	0.55	970	0.65	1025	0.70	1075	0.80
1500	715	0.35	775	0.40	830	0.45	885	0.55	940	0.60	995	0.70	1045	0.80	1095	0.90

0.90 to 1.60 in. w.g.

3 Ton Standard Efficiency (Horizontal)

KGA/KCA036S

Air Volume (cfm)	External Static (in.w.g.)															
	0.90		1.0		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	High Static - Drive Kit A05														Field	
900	1055	0.60	1105	0.70	1155	0.80	1205	0.90	1250	0.95	1295	1.05	1335	1.15	1375	1.25
1000	1065	0.65	1115	0.75	1165	0.85	1215	0.95	1260	1.05	1305	1.15	1345	1.20	1385	1.30
1100	1080	0.70	1130	0.80	1175	0.90	1225	1.00	1270	1.10	1315	1.20	1355	1.30	1395	1.40
1200	1090	0.75	1140	0.85	1190	0.95	1235	1.05	1280	1.15	1325	1.25	1365	1.35	1405	1.45
1300	1105	0.80	1155	0.90	1205	1.00	1250	1.10	1295	1.25	1335	1.35	1375	1.45	1415	1.55
1400	1125	0.90	1170	1.00	1220	1.10	1265	1.20	1305	1.30	1350	1.40	1390	1.50	1430	1.65
1500	1145	1.00	1190	1.05	1235	1.15	1280	1.30	1320	1.40	1365	1.50	1405	1.60	1440	1.70

**TABLE 8
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

4 Ton Standard Efficiency (Down-Flow)

KGA/KCA048S

Air Volume (cfm)	External Static (in.w.g.)															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Low Static - Drive Kit A02											
1200	600	0.20	680	0.25	755	0.30	830	0.35	900	0.45	965	0.55	1025	0.65	1085	0.75
1300	640	0.20	710	0.25	780	0.35	850	0.40	915	0.50	980	0.60	1040	0.70	1100	0.80
1400	675	0.25	745	0.30	810	0.40	875	0.45	940	0.55	1000	0.65	1060	0.75	1115	0.85
1500	715	0.30	780	0.35	840	0.45	900	0.50	960	0.60	1020	0.70	1080	0.80	1135	0.90
1600	755	0.35	815	0.45	870	0.50	930	0.60	985	0.65	1045	0.75	1100	0.85	1150	0.95
1700	795	0.45	850	0.50	905	0.55	960	0.65	1015	0.75	1070	0.85	1120	0.95	1170	1.05
1800	835	0.50	885	0.60	940	0.65	990	0.75	1045	0.80	1095	0.90	1145	1.00	1195	1.15
1900	880	0.60	925	0.65	975	0.75	1025	0.80	1075	0.90	1120	1.00	1170	1.10	1220	1.20
2000	920	0.70	965	0.75	1010	0.85	1055	0.90	1105	1.00	1150	1.10	1195	1.20	1245	1.35

0.90 to 1.60 in. w.g.

4 Ton Standard Efficiency (Down-Flow)

KGA/KCA048S

Air Volume (cfm)	External Static (in.w.g.)															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	High Static - Drive Kit A06															
	Field															
1200	1140	0.85	1195	0.95	1245	1.05	1295	1.20	1340	1.30	1385	1.40	1430	1.55	1470	1.65
1300	1155	0.90	1205	1.00	1260	1.10	1305	1.25	1350	1.35	1395	1.50	1440	1.60	1480	1.75
1400	1170	0.95	1220	1.05	1270	1.15	1320	1.30	1365	1.40	1410	1.55	1455	1.70	1495	1.80
1500	1185	1.00	1235	1.10	1285	1.25	1335	1.35	1380	1.50	1425	1.65	1465	1.75	1510	1.90
1600	1205	1.10	1255	1.20	1300	1.30	1350	1.45	1395	1.60	1435	1.70	1480	1.85	1520	2.00
1700	1220	1.15	1270	1.25	1320	1.40	1365	1.55	1410	1.65	1450	1.80	1495	1.95	1535	2.05
1800	1245	1.25	1290	1.35	1335	1.50	1380	1.60	1425	1.75	1465	1.90	1510	2.05	1550	2.15
1900	1265	1.35	1310	1.45	1355	1.60	1400	1.70	1440	1.85	1485	2.00	1525	2.15	1565	2.30
2000	1290	1.45	1330	1.55	1375	1.70	1420	1.80	1460	1.95	1500	2.10	1540	2.25	1580	2.40

0.10 to 0.80 in. w.g.

4 Ton Standard Efficiency (Horizontal)

KGA/KCA048S

Air Volume (cfm)	External Static (in.w.g.)															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Low Static - Drive Kit A02											
1200	590	0.20	665	0.25	735	0.30	805	0.35	870	0.40	930	0.50	990	0.55	1050	0.65
1300	630	0.20	695	0.25	760	0.35	825	0.40	890	0.45	950	0.55	1010	0.65	1065	0.70
1400	670	0.25	730	0.30	790	0.40	850	0.45	910	0.50	970	0.60	1025	0.70	1080	0.75
1500	710	0.35	765	0.40	820	0.45	880	0.50	935	0.60	990	0.65	1045	0.75	1095	0.85
1600	750	0.40	800	0.45	855	0.50	910	0.60	960	0.65	1015	0.75	1065	0.80	1115	0.90
1700	790	0.45	840	0.50	890	0.60	940	0.65	990	0.75	1040	0.80	1090	0.90	1135	1.00
1800	830	0.55	875	0.60	925	0.65	970	0.75	1020	0.80	1065	0.90	1115	1.00	1160	1.10
1900	870	0.65	915	0.70	960	0.75	1005	0.85	1050	0.90	1095	1.00	1140	1.10	1185	1.20
2000	915	0.75	955	0.80	995	0.85	1040	0.95	1080	1.00	1125	1.10	1165	1.20	1210	1.30

0.90 to 1.60 in. w.g.

4 Ton Standard Efficiency (Horizontal)

KGA/KCA048S

Air Volume (cfm)	External Static (in.w.g.)															
	0.90		1.0		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit A02				High Static - Drive Kit A06											
1200	1105	0.75	1155	0.85	1205	0.95	1255	1.05	1300	1.15	1340	1.25	1385	1.35	1425	1.45
1300	1115	0.80	1165	0.90	1215	1.00	1265	1.10	1310	1.20	1355	1.30	1395	1.40	1435	1.55
1400	1130	0.85	1180	0.95	1230	1.05	1275	1.15	1320	1.25	1365	1.40	1405	1.50	1450	1.60
1500	1145	0.90	1195	1.00	1245	1.15	1290	1.25	1335	1.35	1375	1.45	1420	1.55	1460	1.70
1600	1165	1.00	1210	1.10	1260	1.20	1305	1.30	1345	1.40	1390	1.55	1430	1.65	1470	1.75
1700	1185	1.10	1230	1.20	1275	1.30	1320	1.40	1360	1.50	1405	1.60	1445	1.75	1485	1.85
1800	1205	1.15	1250	1.25	1295	1.40	1335	1.50	1380	1.60	1420	1.70	1460	1.85	1500	1.95
1900	1225	1.25	1270	1.35	1315	1.50	1355	1.60	1395	1.70	1435	1.80	1475	1.95	1515	2.10
2000	1250	1.40	1295	1.50	1335	1.60	1375	1.70	1415	1.80	1455	1.95	1490	2.05	1530	2.20

**TABLE 9
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

5 Ton Standard Efficiency (Down-Flow)

KGA/KCA060S

Air Volume (cfm)	External Static (in.w.g.)															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Low Static - Drive Kit A03											
1600	765	0.35	820	0.40	870	0.45	925	0.55	975	0.60	1025	0.65	1075	0.70	1120	0.80
1700	805	0.45	855	0.50	905	0.55	955	0.60	1005	0.65	1055	0.75	1100	0.80	1145	0.85
1800	850	0.50	895	0.55	945	0.60	990	0.70	1035	0.75	1080	0.80	1125	0.90	1170	0.95
1900	890	0.60	935	0.65	980	0.70	1025	0.75	1070	0.85	1115	0.90	1155	1.00	1200	1.05
2000	935	0.70	975	0.75	1020	0.80	1060	0.85	1100	0.95	1145	1.00	1185	1.10	1225	1.15
2100	975	0.80	1015	0.85	1055	0.90	1095	0.95	1135	1.05	1175	1.10	1215	1.20	1255	1.25
2200	1020	0.90	1055	0.95	1095	1.00	1135	1.10	1170	1.15	1210	1.25	1250	1.30	1285	1.40
2300	1060	1.00	1095	1.10	1135	1.15	1170	1.20	1210	1.30	1245	1.35	1280	1.45	1320	1.55
2400	1105	1.15	1140	1.20	1175	1.30	1210	1.35	1245	1.45	1280	1.50	1315	1.60	1350	1.70

0.90 to 1.60 in. w.g.

5 Ton Standard Efficiency (Down-Flow)

KGA/KCA060S

Air Volume (cfm)	External Static (in.w.g.)															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Drive Kit A03				High Static - Drive Kit A07											
1600	1165	0.85	1210	0.95	1255	1.05	1295	1.10	1335	1.20	1375	1.30	1415	1.35	1450	1.45
1700	1190	0.95	1235	1.05	1275	1.10	1315	1.20	1355	1.30	1395	1.35	1430	1.45	1470	1.55
1800	1215	1.05	1255	1.10	1295	1.20	1335	1.30	1375	1.40	1415	1.45	1450	1.55	1485	1.65
1900	1240	1.15	1280	1.20	1320	1.30	1360	1.40	1395	1.50	1435	1.60	1470	1.65	1505	1.75
2000	1265	1.25	1305	1.30	1345	1.40	1380	1.50	1420	1.60	1455	1.70	1490	1.80	1525	1.90
2100	1295	1.35	1335	1.45	1370	1.55	1405	1.60	1445	1.70	1480	1.80	1515	1.90	1550	2.00
2200	1325	1.50	1360	1.55	1395	1.65	1435	1.75	1470	1.85	1505	1.95	1535	2.05	1570	2.15
2300	1355	1.60	1390	1.70	1425	1.80	1460	1.90	1495	2.00	1530	2.10	1560	2.20	1595	2.30
2400	1385	1.75	1420	1.85	1455	1.95	1490	2.05	1520	2.15	1555	2.25	1585	2.35	1620	2.45

0.10 to 0.80 in. w.g.

5 Ton Standard Efficiency (Horizontal)

KGA/KCA060S

Air Volume (cfm)	External Static (in.w.g.)															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Low Static - Drive Kit A03											
1600	750	0.35	805	0.40	865	0.50	925	0.55	980	0.65	1040	0.75	1095	0.85	1150	0.95
1700	790	0.45	845	0.50	900	0.55	955	0.65	1010	0.75	1065	0.80	1115	0.90	1170	1.05
1800	830	0.50	880	0.55	930	0.65	985	0.70	1035	0.80	1090	0.90	1140	1.00	1190	1.10
1900	870	0.60	920	0.65	965	0.75	1015	0.80	1065	0.90	1115	1.00	1165	1.10	1210	1.20
2000	910	0.70	955	0.75	1005	0.85	1050	0.90	1095	1.00	1145	1.10	1190	1.20	1235	1.30
2100	955	0.80	995	0.85	1040	0.95	1085	1.00	1130	1.10	1175	1.20	1220	1.30	1260	1.40
2200	995	0.90	1035	0.95	1075	1.05	1120	1.15	1160	1.20	1205	1.30	1245	1.40	1290	1.55
2300	1035	1.00	1075	1.10	1115	1.15	1155	1.25	1195	1.35	1235	1.45	1275	1.55	1320	1.65
2400	1080	1.15	1115	1.25	1155	1.30	1190	1.40	1230	1.50	1270	1.60	1310	1.70	1345	1.80

0.90 to 1.60 in. w.g.

5 Ton Standard Efficiency (Horizontal)

KGA/KCA060S

Air Volume (cfm)	External Static (in.w.g.)															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Drive Kit A03				High Static - Drive Kit A07											
1600	1200	1.05	1250	1.20	1300	1.30	1350	1.45	1395	1.55	1440	1.70	1485	1.85	1525	2.00
1700	1220	1.15	1270	1.25	1315	1.40	1365	1.50	1410	1.65	1455	1.80	1495	1.90	1540	2.10
1800	1240	1.20	1285	1.35	1335	1.45	1380	1.60	1425	1.75	1470	1.90	1510	2.00	1550	2.15
1900	1260	1.30	1305	1.45	1350	1.55	1395	1.70	1440	1.85	1485	1.95	1525	2.10	1565	2.25
2000	1280	1.40	1325	1.55	1370	1.65	1415	1.80	1455	1.90	1500	2.05	1540	2.20	1580	2.35
2100	1305	1.50	1350	1.65	1390	1.75	1435	1.90	1475	2.05	1515	2.20	1555	2.30	1595	2.50
2200	1330	1.65	1375	1.75	1415	1.90	1455	2.00	1495	2.15	1535	2.30	1575	2.45	1615	2.60
2300	1360	1.80	1400	1.90	1440	2.05	1480	2.15	1515	2.30	1555	2.45	1595	2.60	1630	2.75
2400	1385	1.90	1425	2.05	1465	2.20	1500	2.30	1540	2.45	1580	2.60	1615	2.75	1650	2.90

BLOWER DATA - BELT DRIVE - DOWNFLOW - KGA072

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See page 28 for blower motors and drives and wet coil and options/accessory air resistance data.

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished								Kit A04							
1900	857	0.41	892	0.45	927	0.50	962	0.55	999	0.60	1036	0.65	1074	0.69	1112	0.73
2000	879	0.47	913	0.52	948	0.56	984	0.61	1020	0.67	1058	0.72	1096	0.76	1134	0.80
2100	900	0.53	935	0.58	970	0.63	1007	0.69	1044	0.74	1081	0.79	1119	0.84	1157	0.88
2200	922	0.60	958	0.65	994	0.71	1031	0.76	1068	0.82	1106	0.87	1143	0.91	1180	0.95
2300	947	0.67	983	0.73	1020	0.79	1057	0.85	1094	0.90	1131	0.95	1168	1.00	1205	1.03
2400	974	0.76	1010	0.82	1047	0.88	1084	0.94	1120	0.99	1157	1.04	1193	1.08	1230	1.12
2500	1002	0.85	1039	0.91	1075	0.97	1112	1.03	1148	1.08	1184	1.13	1220	1.17	1257	1.21
2600	1032	0.95	1068	1.01	1105	1.07	1141	1.13	1177	1.17	1213	1.22	1248	1.26	1284	1.31
2700	1062	1.05	1099	1.11	1136	1.17	1172	1.22	1207	1.27	1242	1.32	1277	1.37	1312	1.43
2800	1094	1.16	1131	1.22	1167	1.27	1202	1.32	1237	1.38	1271	1.43	1305	1.49	1339	1.56
2900	1127	1.26	1163	1.32	1198	1.38	1233	1.44	1267	1.50	1300	1.56	1334	1.64	1367	1.71

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit A04												Kit A08			
1900	1150	0.77	1188	0.81	1227	0.85	1267	0.88	1303	0.92	1333	0.97	1360	1.02	1392	1.06
2000	1172	0.84	1210	0.88	1248	0.92	1286	0.96	1321	1.00	1350	1.05	1377	1.10	1409	1.14
2100	1195	0.91	1233	0.95	1269	1.00	1306	1.04	1339	1.09	1367	1.14	1395	1.19	1426	1.23
2200	1218	0.99	1255	1.03	1290	1.09	1324	1.14	1356	1.19	1385	1.24	1413	1.28	1444	1.32
2300	1242	1.07	1277	1.13	1310	1.20	1343	1.26	1374	1.30	1403	1.34	1432	1.38	1464	1.42
2400	1267	1.16	1300	1.23	1332	1.31	1364	1.37	1394	1.41	1423	1.45	1453	1.48	1484	1.53
2500	1292	1.26	1324	1.34	1355	1.42	1387	1.48	1417	1.52	1445	1.56	1475	1.59	1506	1.64
2600	1318	1.38	1350	1.46	1380	1.55	1411	1.60	1440	1.64	1469	1.68	1498	1.71	1529	1.76
2700	1345	1.51	1376	1.60	1406	1.68	1436	1.73	1465	1.77	1493	1.80	1523	1.84	1553	1.88
2800	1372	1.65	1403	1.74	1433	1.82	1462	1.86	1490	1.90	1519	1.93	1548	1.97	1578	2.01
2900	1399	1.80	1430	1.89	1460	1.96	1489	2.00	1516	2.03	1544	2.06	1573	2.10	1603	2.14

BLOWER DATA - BELT DRIVE - HORIZONTAL - KGA072

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See page 28 for blower motors and drives and wet coil and options/accessory air resistance data.

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished										Kit A04					
1900	796	0.38	837	0.43	878	0.48	918	0.53	958	0.58	997	0.62	1036	0.67	1074	0.71
2000	833	0.43	870	0.48	907	0.54	943	0.59	980	0.64	1018	0.69	1055	0.73	1093	0.77
2100	864	0.50	897	0.55	931	0.60	966	0.65	1002	0.71	1038	0.76	1075	0.80	1113	0.83
2200	887	0.57	920	0.62	953	0.67	988	0.73	1024	0.78	1060	0.83	1097	0.87	1135	0.90
2300	909	0.64	942	0.70	976	0.75	1011	0.81	1046	0.86	1083	0.91	1120	0.95	1157	0.98
2400	931	0.72	965	0.78	999	0.83	1035	0.89	1071	0.94	1108	0.99	1144	1.03	1181	1.07
2500	955	0.80	989	0.86	1024	0.92	1061	0.98	1097	1.03	1133	1.08	1170	1.11	1205	1.15
2600	981	0.90	1016	0.96	1052	1.01	1088	1.07	1124	1.12	1160	1.16	1195	1.20	1230	1.25
2700	1009	0.99	1044	1.05	1080	1.11	1116	1.16	1152	1.21	1187	1.26	1221	1.30	1254	1.35
2800	1038	1.10	1073	1.16	1109	1.21	1145	1.26	1180	1.31	1214	1.36	1247	1.40	1279	1.46
2900	1068	1.20	1104	1.26	1139	1.31	1174	1.36	1208	1.41	1240	1.47	1273	1.52	1304	1.58

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit A04														Kit A08	
1900	1112	0.74	1151	0.77	1190	0.81	1228	0.84	1265	0.88	1301	0.92	1335	0.97	1367	1.01
2000	1131	0.80	1170	0.83	1208	0.87	1245	0.91	1281	0.96	1316	1.00	1349	1.04	1380	1.09
2100	1151	0.87	1189	0.90	1227	0.94	1263	0.99	1298	1.04	1331	1.08	1363	1.13	1394	1.17
2200	1173	0.94	1210	0.98	1246	1.02	1281	1.07	1315	1.12	1347	1.17	1379	1.22	1409	1.26
2300	1195	1.02	1231	1.06	1266	1.11	1300	1.16	1333	1.22	1364	1.27	1395	1.32	1424	1.36
2400	1217	1.10	1252	1.15	1286	1.20	1319	1.26	1351	1.32	1382	1.38	1411	1.43	1440	1.48
2500	1240	1.20	1274	1.25	1307	1.31	1339	1.37	1370	1.43	1400	1.49	1428	1.55	1457	1.59
2600	1264	1.30	1297	1.35	1329	1.42	1360	1.49	1389	1.55	1418	1.61	1446	1.67	1475	1.72
2700	1287	1.40	1319	1.47	1350	1.54	1380	1.61	1409	1.68	1437	1.74	1465	1.79	1493	1.84
2800	1311	1.52	1342	1.59	1373	1.66	1402	1.74	1430	1.8	1457	1.87	1485	1.92	1513	1.97
2900	1335	1.65	1366	1.72	1395	1.79	1424	1.87	1451	1.94	1478	2.00	1505	2.05	1533	2.09

BLOWER DATA - BELT DRIVE - KCA072 - DOWNFLOW

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See page 28 for blower motors and drives and wet coil and options/accessory air resistance data.

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished										Drive Kit A04					
1900	826	0.36	859	0.41	894	0.45	928	0.50	964	0.56	1000	0.61	1036	0.66	1072	0.70
2000	857	0.42	889	0.47	920	0.52	952	0.57	986	0.62	1020	0.68	1055	0.73	1091	0.77
2100	878	0.49	909	0.54	940	0.59	973	0.64	1006	0.70	1041	0.75	1076	0.80	1112	0.85
2200	897	0.55	929	0.61	961	0.66	994	0.72	1028	0.78	1063	0.83	1099	0.89	1134	0.93
2300	918	0.62	950	0.68	983	0.74	1017	0.80	1052	0.86	1087	0.92	1122	0.97	1157	1.02
2400	941	0.70	974	0.77	1008	0.83	1042	0.90	1077	0.96	1111	1.01	1146	1.06	1181	1.11
2500	966	0.79	1000	0.86	1034	0.93	1068	1.00	1103	1.06	1137	1.11	1171	1.16	1205	1.20
2600	994	0.90	1028	0.97	1062	1.04	1096	1.10	1130	1.16	1164	1.21	1197	1.26	1231	1.30
2700	1023	1.01	1057	1.08	1091	1.15	1125	1.22	1159	1.27	1192	1.32	1225	1.37	1258	1.41
2800	1053	1.13	1088	1.21	1122	1.27	1155	1.33	1188	1.39	1221	1.43	1253	1.48	1286	1.53
2900	1085	1.26	1119	1.33	1153	1.40	1186	1.45	1218	1.51	1250	1.55	1281	1.61	1313	1.66

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Drive Kit A04														Kit A08	
1900	1109	0.75	1146	0.79	1183	0.82	1221	0.86	1260	0.90	1294	0.94	1323	0.98	1349	1.02
2000	1128	0.82	1164	0.86	1201	0.89	1239	0.93	1276	0.97	1310	1.01	1336	1.06	1362	1.10
2100	1148	0.89	1185	0.93	1221	0.97	1258	1.01	1294	1.05	1325	1.09	1351	1.14	1376	1.19
2200	1170	0.97	1206	1.01	1242	1.05	1277	1.09	1311	1.14	1341	1.18	1365	1.23	1390	1.28
2300	1193	1.06	1228	1.09	1262	1.14	1295	1.19	1327	1.24	1355	1.29	1380	1.33	1406	1.37
2400	1216	1.15	1250	1.19	1282	1.24	1313	1.30	1343	1.36	1371	1.40	1396	1.44	1423	1.48
2500	1240	1.24	1273	1.29	1302	1.36	1331	1.42	1360	1.48	1388	1.52	1414	1.55	1441	1.58
2600	1265	1.34	1296	1.40	1324	1.47	1352	1.54	1381	1.60	1408	1.64	1434	1.67	1460	1.70
2700	1291	1.46	1321	1.52	1347	1.60	1374	1.67	1403	1.72	1429	1.76	1455	1.79	1481	1.82
2800	1317	1.58	1346	1.66	1372	1.74	1399	1.80	1426	1.85	1451	1.89	1477	1.92	1503	1.95
2900	1343	1.72	1371	1.80	1397	1.88	1424	1.95	1450	1.99	1475	2.02	1500	2.05	1526	2.08

BLOWER DATA - BELT DRIVE - KCA072 - HORIZONTAL

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).

See page 28 for blower motors and drives and wet coil and options/accessory air resistance data.

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished								Drive Kit A04							
1900	853	0.41	886	0.46	919	0.50	952	0.55	986	0.60	1021	0.64	1056	0.69	1091	0.73
2000	883	0.48	913	0.53	944	0.57	976	0.62	1009	0.67	1043	0.71	1078	0.76	1112	0.80
2100	906	0.56	936	0.60	967	0.65	999	0.70	1033	0.75	1067	0.79	1101	0.84	1135	0.88
2200	930	0.64	960	0.68	991	0.73	1024	0.78	1058	0.83	1092	0.88	1126	0.92	1160	0.96
2300	954	0.72	985	0.77	1017	0.82	1051	0.87	1085	0.92	1119	0.96	1152	1.00	1186	1.04
2400	981	0.81	1013	0.86	1046	0.91	1079	0.96	1113	1.00	1146	1.05	1180	1.09	1213	1.13
2500	1010	0.91	1042	0.96	1075	1.00	1109	1.05	1142	1.09	1175	1.14	1207	1.18	1239	1.23
2600	1040	1.01	1073	1.05	1106	1.10	1139	1.14	1171	1.19	1203	1.23	1235	1.28	1266	1.33
2700	1072	1.10	1104	1.15	1137	1.20	1169	1.24	1201	1.29	1232	1.34	1263	1.40	1293	1.46
2800	1105	1.21	1137	1.25	1168	1.30	1200	1.35	1231	1.40	1261	1.46	1291	1.52	1321	1.59
2900	1138	1.32	1169	1.37	1200	1.42	1231	1.47	1261	1.53	1291	1.60	1321	1.66	1350	1.73

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Drive Kit A04														Kit A08	
1900	1126	0.77	1163	0.81	1200	0.85	1237	0.88	1273	0.92	1306	0.96	1339	1.00	1371	1.04
2000	1148	0.84	1183	0.88	1220	0.92	1257	0.96	1291	1.00	1323	1.04	1354	1.08	1385	1.12
2100	1170	0.92	1206	0.96	1242	1.00	1277	1.04	1310	1.08	1340	1.13	1371	1.17	1401	1.21
2200	1195	1.00	1230	1.04	1265	1.08	1299	1.13	1330	1.18	1359	1.23	1388	1.27	1418	1.31
2300	1220	1.08	1254	1.13	1288	1.17	1320	1.23	1350	1.28	1378	1.34	1406	1.38	1435	1.42
2400	1245	1.18	1278	1.22	1311	1.28	1341	1.33	1370	1.40	1397	1.45	1425	1.50	1454	1.54
2500	1271	1.28	1303	1.33	1334	1.39	1363	1.45	1391	1.52	1418	1.57	1446	1.62	1474	1.66
2600	1297	1.39	1328	1.45	1357	1.52	1385	1.58	1412	1.64	1439	1.70	1467	1.74	1495	1.78
2700	1323	1.52	1353	1.58	1382	1.65	1409	1.72	1435	1.77	1462	1.82	1490	1.86	1517	1.90
2800	1351	1.65	1380	1.72	1407	1.78	1434	1.85	1460	1.90	1486	1.95	1513	1.99	1541	2.02
2900	1379	1.79	1407	1.86	1434	1.92	1460	1.98	1485	2.04	1511	2.08	1538	2.12	1565	2.15

**TABLE 14
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 1.00 in. w.g.

7.5 Ton Standard Efficiency (Downflow)

KGA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80		0.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Ex-Low Static - Drive Kit AA01										Low Static - AA02							MED - AA03		
2400	621	0.71	652	0.76	684	0.81	716	0.86	746	0.92	776	0.97	805	1.02	830	1.08	855	1.14	879	1.19
2500	642	0.77	673	0.82	704	0.87	734	0.93	764	0.98	793	1.04	820	1.09	845	1.15	868	1.21	892	1.27
2600	665	0.82	694	0.88	724	0.93	753	0.99	782	1.05	810	1.11	835	1.17	859	1.23	883	1.29	907	1.34
2700	688	0.89	716	0.94	744	1.00	773	1.06	800	1.13	827	1.19	851	1.25	875	1.31	898	1.37	922	1.42
2800	710	0.95	738	1.02	765	1.08	792	1.15	818	1.21	844	1.28	868	1.34	891	1.40	914	1.45	938	1.51
2900	733	1.03	759	1.10	785	1.17	811	1.24	836	1.30	861	1.37	885	1.43	908	1.49	931	1.54	954	1.59
3000	754	1.12	779	1.19	805	1.26	830	1.33	855	1.40	879	1.46	902	1.52	925	1.58	948	1.63	970	1.69
3100	775	1.22	800	1.29	824	1.36	849	1.43	873	1.50	897	1.56	920	1.62	942	1.67	964	1.73	987	1.78
3200	796	1.32	820	1.39	844	1.47	868	1.53	892	1.60	915	1.66	937	1.72	959	1.77	981	1.83	1002	1.88
3300	816	1.43	840	1.50	863	1.57	887	1.64	910	1.70	933	1.76	955	1.82	976	1.88	997	1.93	1018	1.99
3400	837	1.54	860	1.61	883	1.68	906	1.75	929	1.81	951	1.87	972	1.93	993	1.98	1013	2.05	1033	2.11
3500	858	1.66	881	1.73	903	1.79	926	1.86	948	1.92	969	1.98	990	2.04	1009	2.10	1029	2.17	1048	2.24
3600	879	1.77	901	1.84	923	1.91	945	1.97	966	2.04	987	2.10	1006	2.16	1025	2.23	1044	2.3	1062	2.38

0.90 to 2.00 in. w.g.

7.5 Ton Standard Efficiency (Downflow)

KGA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	1.10		1.20		1.30		1.40		1.50		1.60		1.70		1.80		1.90		2.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Medium Static - AA03																	Hi - AA04		
2400	904	1.25	929	1.29	956	1.34	982	1.39	1008	1.43	1032	1.49	1056	1.55	1078	1.62	1099	1.68	1121	1.75
2500	917	1.32	942	1.37	968	1.41	994	1.46	1020	1.51	1044	1.57	1066	1.64	1088	1.70	1108	1.77	1130	1.84
2600	931	1.39	957	1.44	982	1.49	1008	1.54	1032	1.60	1055	1.66	1077	1.73	1098	1.80	1118	1.87	1139	1.94
2700	946	1.47	971	1.52	996	1.57	1021	1.63	1045	1.69	1067	1.76	1088	1.83	1108	1.91	1127	1.98	1148	2.05
2800	962	1.56	986	1.61	1011	1.66	1034	1.72	1057	1.79	1079	1.86	1099	1.94	1118	2.02	1137	2.09	1158	2.16
2900	978	1.65	1001	1.70	1025	1.75	1048	1.82	1069	1.89	1090	1.98	1109	2.06	1128	2.14	1147	2.22	1167	2.28
3000	993	1.74	1016	1.79	1039	1.86	1061	1.93	1081	2.01	1101	2.10	1120	2.18	1138	2.27	1157	2.34	1177	2.41
3100	1009	1.84	1031	1.90	1052	1.97	1073	2.05	1093	2.13	1112	2.22	1130	2.31	1148	2.40	1167	2.47	1187	2.53
3200	1024	1.94	1045	2.01	1065	2.09	1085	2.17	1104	2.26	1123	2.36	1141	2.45	1159	2.53	1178	2.60	1198	2.66
3300	1038	2.06	1058	2.13	1078	2.22	1097	2.31	1116	2.40	1134	2.49	1152	2.58	1170	2.66	1189	2.73	1209	2.79
3400	1053	2.19	1072	2.27	1091	2.35	1109	2.45	1127	2.54	1145	2.63	1163	2.72	1181	2.79	1200	2.86	1220	2.92
3500	1067	2.32	1085	2.41	1103	2.5	1121	2.59	1138	2.69	1156	2.78	1174	2.85	1192	2.93	1212	2.99	1231	3.05
3600	1081	2.46	1098	2.55	1116	2.64	1133	2.74	1151	2.83	1168	2.91	1186	2.99	1205	3.06	1224	3.12	1243	3.17

**TABLE 15
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 1.00 in. w.g.

7.5 Ton Standard Efficiency (Horizontal)

KGA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80		0.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Ex-Low Static - Drive Kit AA01																Low Static - AA02			
2400	572	0.75	602	0.78	633	0.81	664	0.85	695	0.88	725	0.92	755	0.97	784	1.01	811	1.06	836	1.11
2500	591	0.80	620	0.83	650	0.87	680	0.90	711	0.94	740	0.98	769	1.03	797	1.08	823	1.13	847	1.18
2600	610	0.86	639	0.89	668	0.92	697	0.96	727	1.00	755	1.05	783	1.09	810	1.14	835	1.20	859	1.25
2700	630	0.91	658	0.95	686	0.98	715	1.02	743	1.07	771	1.11	798	1.16	824	1.22	848	1.27	872	1.32
2800	650	0.97	677	1.01	705	1.05	732	1.09	760	1.14	787	1.19	813	1.24	838	1.30	861	1.35	885	1.40
2900	670	1.03	697	1.07	724	1.11	750	1.16	777	1.21	803	1.27	828	1.32	852	1.38	876	1.44	898	1.49
3000	691	1.09	717	1.14	743	1.18	769	1.24	794	1.29	819	1.35	844	1.42	868	1.47	890	1.53	913	1.58
3100	712	1.16	737	1.21	762	1.27	787	1.32	812	1.39	836	1.45	860	1.51	883	1.57	906	1.63	928	1.68
3200	732	1.24	756	1.30	781	1.36	805	1.42	829	1.48	853	1.55	876	1.61	899	1.67	921	1.73	943	1.78
3300	752	1.33	776	1.39	799	1.46	823	1.52	847	1.59	870	1.65	893	1.71	916	1.77	937	1.83	959	1.88
3400	772	1.43	795	1.50	818	1.56	842	1.63	865	1.69	888	1.76	910	1.82	932	1.88	953	1.93	974	1.99
3500	792	1.54	815	1.61	838	1.67	861	1.74	883	1.80	906	1.87	928	1.93	949	1.98	970	2.04	990	2.10
3600	812	1.65	834	1.72	857	1.79	880	1.85	902	1.92	924	1.98	945	2.04	966	2.10	986	2.16	1005	2.22

0.90 to 2.00 in. w.g.

7.5 Ton Standard Efficiency (Horizontal)

KGA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	1.10		1.20		1.30		1.40		1.50		1.60		1.70		1.80		1.90		2.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Lo - AA02		Medium Static - AA03																	
2400	861	1.16	886	1.21	911	1.26	937	1.30	963	1.35	988	1.41	1012	1.47	1034	1.53	1055	1.59	1076	1.65
2500	872	1.23	896	1.27	921	1.32	947	1.37	972	1.43	997	1.48	1019	1.55	1041	1.61	1061	1.68	1081	1.74
2600	883	1.30	908	1.35	933	1.40	958	1.45	982	1.50	1006	1.57	1027	1.63	1048	1.70	1068	1.77	1087	1.83
2700	895	1.37	920	1.42	944	1.47	969	1.53	992	1.59	1015	1.65	1036	1.72	1056	1.79	1075	1.86	1094	1.92
2800	908	1.45	932	1.50	956	1.56	980	1.62	1003	1.68	1025	1.75	1045	1.82	1064	1.89	1083	1.96	1102	2.02
2900	922	1.54	945	1.59	969	1.65	992	1.71	1014	1.78	1035	1.85	1055	1.92	1074	2.00	1092	2.07	1111	2.13
3000	936	1.63	959	1.68	982	1.74	1004	1.81	1026	1.88	1046	1.96	1065	2.03	1084	2.11	1102	2.18	1120	2.25
3100	950	1.73	973	1.78	995	1.85	1017	1.91	1037	1.99	1057	2.07	1076	2.15	1094	2.23	1112	2.31	1130	2.38
3200	965	1.83	987	1.89	1008	1.95	1029	2.03	1049	2.11	1068	2.19	1087	2.28	1105	2.36	1123	2.44	1141	2.51
3300	980	1.94	1001	2.00	1022	2.07	1042	2.15	1061	2.23	1080	2.32	1098	2.41	1116	2.50	1134	2.58	1152	2.65
3400	995	2.05	1015	2.12	1035	2.19	1054	2.28	1073	2.37	1092	2.46	1110	2.55	1128	2.64	1145	2.72	1163	2.79
3500	1010	2.17	1029	2.24	1048	2.32	1067	2.41	1086	2.51	1104	2.60	1122	2.70	1139	2.78	1157	2.86	1174	2.93
3600	1024	2.30	1043	2.38	1062	2.46	1080	2.55	1098	2.65	1116	2.75	1133	2.84	1151	2.93	1168	3.01	1186	3.08
			High Static - AA04																	

**TABLE 16
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 1.00 in. w.g.

7.5 Ton Standard Efficiency (Downflow)

KCA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80		0.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Ex-Low Static - Drive Kit AA01															Low Static - AA02				
2400	553	0.65	585	0.71	617	0.78	649	0.85	680	0.91	711	0.98	740	1.04	769	1.10	796	1.15	821	1.21
2500	570	0.71	602	0.78	633	0.84	665	0.91	695	0.97	725	1.04	753	1.10	781	1.16	807	1.22	832	1.27
2600	588	0.77	619	0.84	650	0.91	680	0.97	710	1.04	739	1.10	767	1.16	793	1.22	818	1.28	842	1.33
2700	607	0.84	637	0.91	667	0.97	697	1.04	726	1.11	753	1.17	780	1.23	806	1.29	830	1.35	854	1.40
2800	626	0.91	655	0.97	684	1.04	713	1.11	741	1.18	768	1.24	794	1.30	819	1.36	842	1.42	866	1.47
2900	646	0.98	674	1.05	702	1.11	730	1.18	757	1.25	783	1.32	808	1.38	832	1.44	855	1.49	878	1.54
3000	666	1.06	693	1.12	721	1.19	747	1.26	774	1.33	799	1.40	823	1.46	846	1.52	868	1.57	891	1.62
3100	686	1.14	713	1.21	739	1.28	765	1.35	790	1.41	814	1.48	838	1.55	860	1.61	882	1.66	904	1.70
3200	707	1.22	732	1.29	758	1.36	783	1.43	807	1.50	830	1.57	853	1.64	874	1.70	896	1.75	918	1.79
3300	727	1.31	752	1.38	776	1.46	800	1.53	823	1.60	846	1.67	868	1.73	889	1.79	911	1.84	932	1.89
3400	747	1.41	771	1.48	794	1.55	817	1.63	840	1.70	862	1.77	883	1.83	904	1.89	925	1.94	947	1.98
3500	767	1.51	790	1.58	812	1.66	835	1.73	856	1.80	878	1.87	899	1.93	920	1.99	940	2.04	961	2.08
3600	786	1.61	808	1.69	830	1.77	852	1.84	873	1.91	894	1.98	915	2.04	935	2.09	955	2.14	975	2.19

0.90 to 2.00 in. w.g.

7.5 Ton Standard Efficiency (Downflow)

KCA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	1.10		1.20		1.30		1.40		1.50		1.60		1.70		1.80		1.90		2.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Low Static - AA02				Medium Static - Drive Kit AA03															
2400	846	1.25	870	1.29	895	1.33	920	1.37	947	1.41	972	1.45	996	1.50	1018	1.55	1039	1.61	1059	1.67
2500	856	1.31	880	1.35	905	1.39	930	1.43	956	1.47	980	1.52	1003	1.57	1024	1.63	1044	1.69	1064	1.76
2600	866	1.38	891	1.42	915	1.46	940	1.50	965	1.54	988	1.59	1010	1.65	1031	1.71	1050	1.78	1069	1.84
2700	878	1.44	902	1.48	926	1.52	950	1.57	974	1.61	997	1.67	1018	1.73	1037	1.80	1056	1.87	1075	1.93
2800	889	1.51	913	1.55	937	1.59	961	1.64	984	1.69	1006	1.75	1026	1.82	1044	1.89	1063	1.96	1081	2.03
2900	902	1.58	925	1.63	949	1.67	972	1.72	994	1.78	1015	1.84	1034	1.91	1052	1.99	1069	2.06	1087	2.13
3000	914	1.66	938	1.71	961	1.75	983	1.81	1004	1.87	1024	1.94	1042	2.01	1059	2.09	1076	2.16	1093	2.23
3100	927	1.75	950	1.79	972	1.84	994	1.90	1014	1.96	1033	2.04	1050	2.11	1067	2.19	1083	2.27	1100	2.34
3200	941	1.84	963	1.88	984	1.94	1005	2.00	1024	2.07	1042	2.14	1059	2.23	1075	2.31	1091	2.39	1107	2.46
3300	954	1.93	976	1.98	996	2.04	1016	2.10	1035	2.18	1052	2.26	1067	2.35	1083	2.43	1098	2.51	1114	2.59
3400	968	2.03	989	2.08	1008	2.14	1027	2.22	1045	2.30	1061	2.38	1076	2.47	1091	2.57	1106	2.65	1121	2.73
3500	982	2.13	1001	2.19	1020	2.26	1038	2.33	1054	2.42	1070	2.51	1084	2.61	1099	2.71	1113	2.79	1128	2.87
3600	995	2.24	1014	2.30	1031	2.38	1048	2.46	1064	2.55	1079	2.65	1093	2.76	1107	2.86	1121	2.95	1136	3.03
	Hi Static - Drive Kit AA04																			

**TABLE 17
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 1.00 in. w.g.

7.5 Ton Standard Efficiency (Horizontal)

KCA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80		0.90		1.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Ex-Low Static - Drive Kit AA01														Low Static - Drive Kit AA02					
2400	596	0.79	626	0.82	657	0.85	688	0.89	718	0.92	749	0.96	778	1.01	806	1.06	833	1.11	858	1.16
2500	616	0.85	645	0.88	676	0.91	706	0.95	736	0.99	765	1.03	794	1.08	821	1.13	847	1.18	871	1.23
2600	636	0.91	665	0.94	695	0.98	724	1.02	754	1.06	782	1.10	809	1.15	836	1.20	861	1.25	885	1.30
2700	657	0.97	685	1.01	714	1.04	743	1.08	771	1.13	799	1.17	826	1.22	851	1.27	875	1.32	899	1.37
2800	677	1.03	706	1.07	734	1.11	762	1.16	790	1.20	816	1.25	842	1.30	867	1.35	890	1.40	913	1.45
2900	698	1.10	726	1.14	754	1.19	781	1.23	808	1.28	834	1.33	859	1.38	883	1.43	906	1.48	928	1.54
3000	720	1.17	747	1.22	774	1.26	801	1.31	826	1.36	851	1.41	876	1.46	899	1.52	921	1.57	943	1.63
3100	741	1.25	768	1.3	794	1.35	820	1.40	845	1.45	869	1.50	893	1.56	915	1.61	937	1.67	959	1.73
3200	763	1.34	789	1.39	815	1.44	840	1.49	864	1.54	888	1.60	910	1.66	932	1.72	954	1.78	975	1.84
3300	785	1.43	811	1.48	836	1.53	860	1.59	883	1.65	906	1.71	928	1.77	950	1.83	970	1.90	991	1.96
3400	807	1.53	832	1.58	856	1.64	880	1.70	903	1.76	925	1.82	946	1.88	967	1.95	987	2.02	1007	2.09
3500	830	1.63	854	1.69	877	1.75	900	1.81	922	1.88	944	1.94	964	2.01	985	2.08	1004	2.15	1024	2.23
3600	852	1.74	876	1.81	898	1.87	921	1.94	942	2.01	963	2.07	983	2.15	1002	2.22	1022	2.29	1041	2.37
	Medium Static - Drive Kit AA03																			

0.90 to 2.00 in. w.g.

7.5 Ton Standard Efficiency (Horizontal)

KCA090S

Air Volume (cfm)	External Static (in.w.g.)																			
	1.10		1.20		1.30		1.40		1.50		1.60		1.70		1.80		1.90		2.00	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Medium Static - Drive Kit AA03																			
2400	883	1.21	907	1.25	931	1.30	955	1.35	979	1.40	1003	1.45	1027	1.51	1050	1.57	1072	1.63	1094	1.69
2500	895	1.28	919	1.32	942	1.37	966	1.42	990	1.48	1013	1.53	1036	1.59	1059	1.65	1081	1.71	1102	1.78
2600	908	1.35	931	1.40	955	1.45	978	1.50	1001	1.56	1024	1.62	1046	1.68	1068	1.74	1089	1.80	1110	1.87
2700	922	1.43	945	1.48	967	1.53	990	1.59	1013	1.65	1035	1.71	1056	1.77	1078	1.84	1099	1.90	1119	1.96
2800	936	1.51	958	1.56	980	1.62	1003	1.68	1025	1.74	1046	1.80	1067	1.87	1088	1.93	1109	2.00	1129	2.06
2900	950	1.60	972	1.66	994	1.72	1016	1.78	1037	1.84	1058	1.91	1079	1.97	1099	2.04	1119	2.11	1139	2.17
3000	965	1.69	986	1.76	1008	1.82	1029	1.88	1050	1.95	1070	2.02	1091	2.08	1110	2.15	1130	2.22	1149	2.28
3100	980	1.80	1001	1.86	1022	1.93	1043	2.00	1063	2.07	1083	2.13	1103	2.2	1122	2.27	1141	2.33	1160	2.40
3200	995	1.91	1016	1.98	1036	2.05	1057	2.12	1077	2.19	1096	2.26	1116	2.33	1134	2.39	1153	2.46	1171	2.52
3300	1011	2.03	1031	2.11	1051	2.18	1071	2.25	1091	2.32	1110	2.39	1129	2.45	1147	2.52	1165	2.59	1183	2.65
3400	1027	2.16	1047	2.24	1067	2.31	1086	2.38	1105	2.45	1124	2.52	1142	2.59	1160	2.66	1178	2.72	1196	2.78
3500	1043	2.30	1063	2.38	1082	2.45	1101	2.52	1120	2.59	1138	2.66	1156	2.73	1174	2.8	1191	2.86	1208	2.92
3600	1060	2.45	1079	2.52	1098	2.6	1117	2.67	1135	2.74	1153	2.81	1170	2.87	1188	2.94	1205	3.00	1222	3.06
	High Static - Drive Kit AA04																			

**TABLE 18
ADDITIONAL AIR RESISTANCE - in. w.g.**

OPTIONS / ACCESSORIES AIR RESISTANCE FOR 024-072 MODELS - in. w.g.

Air Volume cfm	Economizer	Gas Heat		Electric Heat
		Medium Input	High Input	
800	0.04	0.02	0.02	0.01
1000	0.04	0.02	0.02	0.03
1200	0.04	0.02	0.02	0.06
1400	0.04	0.02	0.03	0.09
1600	0.04	0.03	0.04	0.12
1800	0.05	0.03	0.05	0.15
2000	0.05	0.04	0.06	0.18
2200	0.05	0.04	0.07	0.20
2400	0.05	0.05	0.08	0.22
2600	0.06	0.05	0.09	0.24
2800	0.06	0.06	0.10	0.26
3000	0.06	0.07	0.11	0.28

OPTIONS / ACCESSORIES AIR RESISTANCE FOR 090 MODELS - in. w.g.

Air Volume cfm	Economizer	Gas Heat High Input	Electric Heat	Wet Indoor Coil
2600	0.06	0.04	0.24	0.09
2800	0.06	0.04	0.26	0.10
3000	0.06	0.04	0.28	0.11
3200	0.06	0.04	0.30	0.12
3400	0.06	0.05	0.31	0.14
3600	0.06	0.05	0.32	0.15
3800	0.07	0.05	0.33	0.16
4000	0.07	0.06	0.34	0.18

**TABLE 19
DRIVE COMPONENT MANUFACTURER'S NUMBERS**

Drive No.	DRIVE COMPONENTS					
	MOTOR PULLEY		BLOWER PULLEY		BELTS	
	Browning No.	OEM Part No.	Browning No.	OEM Part No.	Browning No.	OEM Part No.
A01	1VP34 X 7/8	31K6901	AK54 X 1	100244-19	A40	100245-17
A02	1VP34 X 7/8	31K6901	AK49 X 1	100244-18	A39	100245-16
A03	1VP34 X 7/8	31K6901	AK44X 1	100244-16	A39	100245-16
A04	1VP40 X 7/8	79J0301	AK49 X 1	100244-18	A41	100245-18
A05	1VP34 X 7/8	31K6901	AK41 X 1	100244-15	A38	100245-15
A06	1VP44 X 7/8	P-8-1488	AK51 X 1	18L2201	A41	100245-18
A07	1VP50 X 7/8	53J1501	AK54 X 1	100244-19	AX43	73K8201
A08	1VP44 X 7/8	P-8-1488	AK46 X 1	100244-17	A40	100245-17
AA01	1VP34 X 7/8	31K6901	AK69 X 1	37L4701	A51	13H0101
AA02*	1VP40 X 7/8	79J0301	BK80H	100788-03	A53	P-8-4951
AA03	1VP40 X 7/8	79J0301	AK59 X 1	31K6801	A50	100245-29
AA04	1VP44 X 7/8	P-8-1488	AK59 X 1	31K6801	A51	13H0101

*Split bushing supplier no.: H1; OEM no. 10073-04

**TABLE 20
DRIVE KIT SPECIFICATIONS**

Model No.	Motor hp		Drive Kits and RPM Range							
	Nominal	Maximum	A01	A02	A03	A04	A05	A06	A07	A08
036-072	1.5	1.72	673 - 1010	745 - 1117	833 - 1250	968 - 1340	897 - 1346	1071 - 1429	1212 - 1548	1193 - 1591
	2	2.3								

Model No.	Motor hp		Drive Kits and RPM Range			
	Nominal	Maximum	AA01 1 AA01T	AA02 1 AA02T	AA03 1 AA03T	AA04 1 AA04T
090	1	1.15	522 - 784	---	---	---
	2	2.3	---	632 - 875	798 - 1105	---
	3	3.45	---			921 - 1228

NOTE - Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor hp required. Maximum usable hp of motors furnished by Lennox are shown. In Canada, nominal motor hp is also maximum usable motor hp. If motors of comparable hp are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

¹ Factory installed AA drive kit with Blower Belt Auto-Tensioner.

**TABLE 21
MINIMUM AIRFLOW-KC UNITS WITH ELECTRIC HEAT
(BELT DRIVE) - KC 024-072**

Kw	CFM	
	Downflow	Horizontal
30	1900	2000
22.5	1500	1600
15	1200	1300
7.5	1050	1200

Direct drive units with electric heat (7.5-22.5kW) can operate on low speed up to 0.6" w.g. maximum static pressure.

**TABLE 22
MINIMUM AIRFLOW-KC UNITS WITH ELECTRIC HEAT
(BELT DRIVE) - KC 090**

Kw	CFM	
	Downflow	Horizontal
30	2400	2400
22.5	2400	2400
15	2400	2400
7.5	2400	2400

Cooling Start-Up

A-Operation

- 1- Initiate first and second stage cooling demands according to instructions provided with thermostat.
- 2- *No Economizer Installed in Unit* -
A first-stage cooling demand (Y1) will energize compressor 1 and the condenser fan. An increased cooling demand (Y2) will not change operation.
Units Equipped With Economizer -
When outdoor air is acceptable, a first-stage cooling demand (Y1) will energize the economizer. An increased cooling demand (Y2) will energize compressor 1 and the condenser fan. When outdoor air is not acceptable unit will operate as though no economizer is installed.
- 3- Units contain one refrigerant circuit or stage.

- 4- Unit is charged with R-410A refrigerant. See unit rating plate for correct amount of charge.
- 5- Refer to Refrigerant Charge and Check section for proper method to check refrigerant charge.

B-Three Phase Scroll Compressor Voltage Phasing

Three phase scroll compressors must be phased sequentially to ensure correct compressor and blower rotation and operation. Compressor and blower are wired in phase at the factory. Power wires are color-coded as follows: line 1-red, line 2-yellow, line 3-blue.

- 1- Observe suction and discharge pressures and blower rotation on unit start-up.
- 2- Suction pressure must drop, discharge pressure must rise and blower rotation must match rotation marking.

If pressure differential is not observed or blower rotation is not correct:

- 3- Disconnect all remote electrical power supplies.
- 4- Reverse any two field-installed wires connected to the line side of K1 contactor. Do not reverse wires at blower contactor.
- 5- Make sure the connections are tight.

Discharge and suction pressures should operate at their normal start-up ranges.

C-Refrigerant Charge and Check

WARNING-Do not exceed nameplate charge under any condition.

This unit is factory charged and should require no further adjustment. If the system requires charge, reclaim the charge, evacuate the system and add required nameplate charge.

NOTE - System charging is not recommended below 60°F (15°C). In temperatures below 60°F (15°C), the charge **must** be weighed into the system.

If weighing facilities are not available, or to check the charge, use the following procedure:

- 1- Attach gauge manifolds and operate unit in cooling mode until system stabilizes (approximately five minutes). Make sure outdoor air dampers are closed.
- 2- Use a thermometer to accurately measure the outdoor ambient temperature.
- 3- Apply the outdoor temperature to tables 23 through 29 to determine normal operating pressures.
- 4- Compare the normal operating pressures to the pressures obtained from the gauges. Minor variations in these pressures may be expected due to differences in installations. Significant differences could mean that the system is not properly charged or that a problem exists with some component in the system. **Correct any system problems before proceeding.**
- 5- If discharge pressure is high, remove refrigerant from the system. If discharge pressure is low, add refrigerant to the system.
 - Add or remove charge in increments.
 - Allow the system to stabilize each time refrigerant is added or removed.
- 6- Use the following approach method along with the normal operating pressures to confirm readings.

D-Charge Verification - Approach Method

- 1- Using the same thermometer, compare liquid temperature to outdoor ambient temperature.

Approach Temperature = Liquid temperature minus ambient temperature.
- 2- Approach temperature should match values in table 30. An approach temperature greater than value shown indicates an undercharge. An approach temperature less than value shown indicates an overcharge.
- 3- Do not use the approach method if system pressures do not match pressures in tables 23 through 29. The approach method is not valid for grossly over or undercharged systems.

**TABLE 23
KG/KC 024S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65°F	239	149
75°F	275	151
85°F	317	152
95°F	363	154
105°F	416	156
115°F	471	160

**TABLE 24
KG/KC 030S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65°F	255	140
75°F	292	141
85°F	332	150
95°F	377	152
105°F	427	156
115°F	482	159

**TABLE 25
KG/KC 036S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65° F	269	146
75° F	311	148
85° F	357	150
95° F	407	152
105° F	466	155
115° F	532	157

**TABLE 26
KG/KC 048S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65° F	280	142
75° F	321	144
85° F	365	147
95° F	414	149
105° F	467	151
115° F	526	153

**TABLE 27
KG/KC 060S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65° F	265	136
75° F	302	137
85° F	344	139
95° F	391	142
105° F	442	146
115° F	499	148

**TABLE 28
KG/KC 072S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Discharge ±10 psig	Suction ± 5 psig
65° F	270	132
75° F	310	133
85° F	353	135
95° F	400	137
105° F	450	140
115° F	525	147

**TABLE 29
KG/KC 090S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Discharge ± 10 psig	Suction ± 5 psig
65° F	298	133
75° F	330	134
85° F	368	135
95° F	412	137
105° F	461	139
115° F	515	142

**TABLE 30
APPROACH TEMPERATURE**

Unit	Liquid Temp. Minus Ambient Temp.
KG/KC 060S KG/KC 072S	6°F ± 1 (3.3°C ± 0.5)
KG/KC 024S KG/KC 036S	7°F ± 1 (3.9°C ± 0.5)
KG/KC 048S	11°F ± 1 (6.1°C ± 0.5)
KG/KC 030S	9°F ± 1 (5.0°C ± 0.5)
KG/KC 090S	10°F ± 1 (5.6°C ± 0.5)

E-Compressor Controls

See unit wiring diagram to determine which controls are used on each unit. Optional controls are identified on wiring diagrams by arrows at junction points.

1- Freezestat (S49)

Switch de-energizes compressor when evaporator coil temperature falls below 29°F (-2°C) to prevent evaporator freeze-up. Switch resets when evaporator coil temperature reaches 58°F (15°C).

2- High Pressure Switch (S4)

The high pressure switch is a manual reset SPST N.C. switch which opens on a pressure rise.

S4 is located in the compressor discharge line and is wired in series with the compressor contactor coil.

When discharge pressure rises to 640 \pm 10psig (4412 \pm 69kPa), indicating a problem with the system, the switch opens. The respective compressor is de-energized but the economizer can continue to operate.

3- Compressor High Temperature Limit (S5)

The temperature limit switch is provided on revision 2 units (see the second to the last character in the unit model number).

S5 is located on the top of the compressor and is wired in series with the high pressure switch S4.

Gas Heat Start-Up (Gas Units)

FOR YOUR SAFETY READ BEFORE LIGHTING

⚠ WARNING



Electric shock hazard. Can cause injury or death. Do not use this unit if any part has been under water. Immediately call a qualified service technician to inspect the unit and to replace any part of the control system and any gas control which has been under water.

⚠ WARNING



Danger of explosion. Can cause injury or product or property damage. If overheating occurs or if gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off electrical supply.

⚠ WARNING



Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

⚠ WARNING

SMOKE POTENTIAL

The heat exchanger in this unit could be a source of smoke on initial firing. Take precautions with respect to building occupants and property. Vent initial supply air outside when possible.

BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

The gas valve may be equipped with either a gas control lever or gas control knob. Use only your hand to push the lever or turn the gas control knob. Never use tools. If the the lever will not move or the knob will not push in or turn by hand, do not try to repair it. Call a qualified service technician. Force or attempted repair may result in a fire or explosion.

⚠ WARNING



Danger of explosion. Can cause injury or death. Do not attempt to light manually. Unit has a direct spark ignition system.

This unit is equipped with an automatic spark ignition system. There is no pilot. In case of a safety shutdown, move thermostat switch to **OFF** and return the thermostat switch to **HEAT** to reset ignition control.


A-Placing Unit In Operation

⚠ WARNING



Danger of explosion and fire. Can cause injury or product or property damage. You must follow these instructions exactly.

Gas Valve Operation (figure 23 and 24)

- 1- Set thermostat to lowest setting.
- 2- Turn off all electrical power to appliance.
- 3- This appliance is equipped with an ignition device which automatically lights the burner. Do **not** try to light the burner by hand.
- 4- Open or remove the heat section access panel.
- 5- *Honeywell VR8205 Gas Valve with ON/OFF Lever* - Switch gas valve lever to **OFF**. See figure 23.
Honeywell VR8205 Gas Valve with Knob - Turn knob on gas valve clockwise  to **OFF**. Do not force. See figure 24.
- 6- Wait five (5) minutes to clear out any gas. If you then smell gas, **STOP!** Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas, go to the next step.

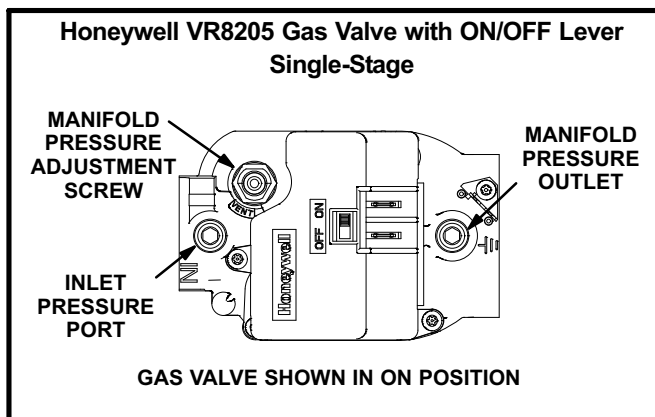


FIGURE 23

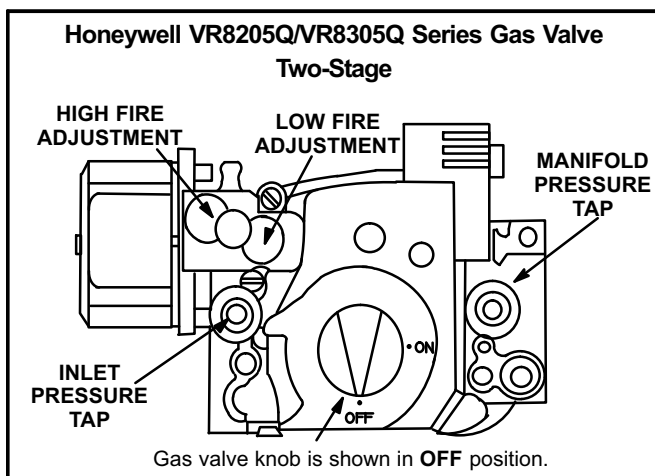




FIGURE 24

- 7- *Honeywell VR8205 Gas Valve with ON/OFF Lever* - Switch gas valve lever to **ON**. See figure 23.
Honeywell VR8205 Gas Valve with Knob - Turn knob on gas valve counterclockwise  to **ON**. Do not force. See figure 24.

- 8- Close or replace the heat section access panel.
 - 9- Turn on all electrical power to appliance.
 - 10- Set thermostat to desired setting.
- NOTE - When unit is initially started, steps 1 through 9 may need to be repeated to purge air from gas line.*
- 11- The ignition sequence will start.
 - 12- If the furnace does not light the first time (gas line not fully purged), it will attempt up to two more ignitions before locking out.
 - 13- If lockout occurs, repeat steps 1 through 10.
 - 14- If the appliance will not operate, follow the instructions "Turning Off Gas to Appliance" and call your service technician or gas supplier.

Turning Off Gas to Unit

- 1- If using an electromechanical thermostat, set to the lowest setting.
- 2- Before performing any service, turn off all electrical power to the appliance.
- 3- Open or remove the heat section access panel.
- 4- *Honeywell VR8205 Gas Valve with ON/OFF Lever* - Switch gas valve lever to **OFF**.
Honeywell VR8205 Gas Valve with Knob - Turn knob on gas valve clockwise  to **OFF**. Do not force.
- 5- Close or replace the heat section access panel.

⚠ WARNING



Danger of explosion. Can cause injury or death. Do not attempt to light manually. Unit has a direct spark ignition system.

Heating Operation and Adjustments

(Gas Units)

A-Heating Sequence of Operation

- 1- On a heating demand the combustion air inducer starts immediately.
- 2- Combustion air pressure switch proves inducer operation. After a 30-second pre-purge, power is allowed to ignition control. Switch is factory set and requires no adjustment.
- 3- Spark ignitor energizes and gas valve solenoid opens.
- 4- Spark ignites gas, ignition sensor proves the flame and combustion continues.
- 5- If flame is not detected after first ignition trial, ignition control will repeat steps 3 and 4 two more times before locking out the gas valve.

6- For troubleshooting purposes, an ignition attempt after lock out may be re-established manually. Move thermostat to "OFF" and return thermostat switch to "HEAT" position.

B-Ignition Control Diagnostic LED's

**TABLE 31
IGNITION CONTROL HEARTBEAT LED STATUS**

LED Flashes	Indicates
Slow	Normal operation. No call for heat.
Fast	Normal operation. Call for heat.
Steady Off	Internal control fault OR no power to control OR Gas Valve Relay Fault.
Steady On	Control internal failure.
2	Lockout. Failed to detect or sustain flame.
3	Prove switch open or closed or rollout switch open.
4	Limit switch is open and/or high limit has opened three times.
5	Flame sensed but gas valve solenoid not energized.

C-Limit Controls

Limit controls are factory-set and are not adjustable. The primary limit is located to the right of the combustion air inducer. See figure 29.

If the primary limit trips three times in the same heating cycle, heating operation will de-energize. Heating will automatically restart after one hour if a heating demand is present. To initiate heating during the one hour timed-off interval, reset the thermostat.

D-Heating Adjustment

Main burners are factory-set and do not require adjustment.

The following manifold pressures are listed on the gas valve.

- Natural Gas Units - Low Fire - 1.7" w.c.
- Natural Gas Units - High Fire - 3.5" w.c.
- LP Gas Units - Low Fire - 5.1" w.c.
- LP Gas Units - High Fire - 10.5" w.c.

Electric Heat Start-Up (KC Units)

Optional electric heat will stage on and cycle with thermostat demand. See electric heat wiring diagram on unit for sequence of operation.

Service

The unit should be inspected once a year by a qualified service technician.

⚠ CAUTION

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

⚠ WARNING

Product contains fiberglass wool. Disturbing the insulation in this product during installation, maintenance, or repair will expose you to fiberglass wool. Breathing this may cause lung cancer. (Fiberglass wool is known to the State of California to cause cancer.) Fiberglass wool may also cause respiratory, skin and eye irritation. To reduce exposure to this substance or for further information, consult material safety data sheets available from address shown on unit nameplate or contact your supervisor.

A-Filters

Units are equipped with temporary filters which must be replaced prior to building occupation. See table 32 for correct filter size. Refer to local codes or appropriate jurisdiction for approved filters.

⚠ WARNING

Units are shipped from the factory with temporary filters. Replace filters before building is occupied. Damage to unit could result if filters are not replaced with approved filters. Refer to appropriate codes.

Approved filters should be checked monthly and replaced when necessary. Take note of air flow direction marking on filter frame when reinstalling filters. See figure 25.

**TABLE 32
UNIT FILTERS**

Unit	Qty	Filter Size - inches (mm)
024, 030, 036, 048, 060	4	16 X 20 X 2 (406 X 508 X 51)
072, 090	4	20 X 20 X 2 (508 X 508 X 51)

NOTE-Filters must be U.L.C. certified or equivalent for use in Canada.

B-Lubrication

All motors are lubricated at the factory. No further lubrication is required.

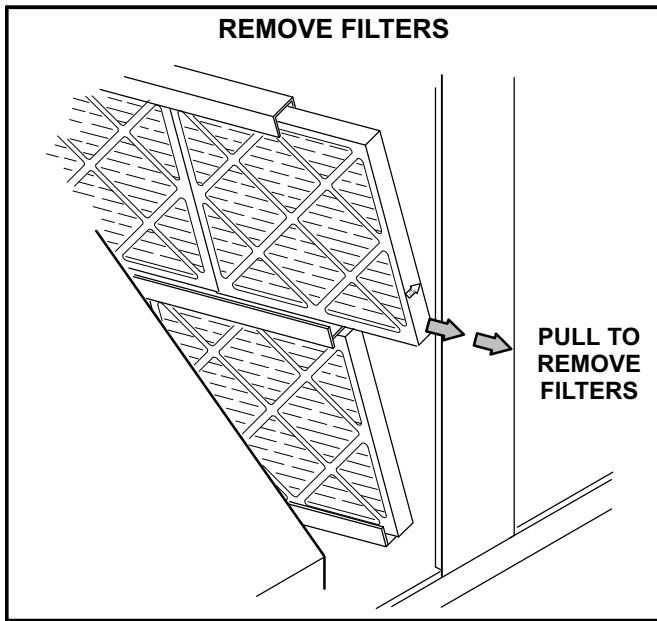


FIGURE 25

C-Burners (Gas Units)

Periodically examine burner flames for proper appearance during the heating season. Before each heating season examine the burners for any deposits or blockage which may have occurred.

Clean burners as follows:

- 1- Turn off both electrical power and gas supply to unit.
- 2- Remove burner compartment access panel.
- 3- Remove top burner box panel.
- 4- Remove two screws securing burners to burner support and lift the burners from the orifices. See figure 26. Clean as necessary.

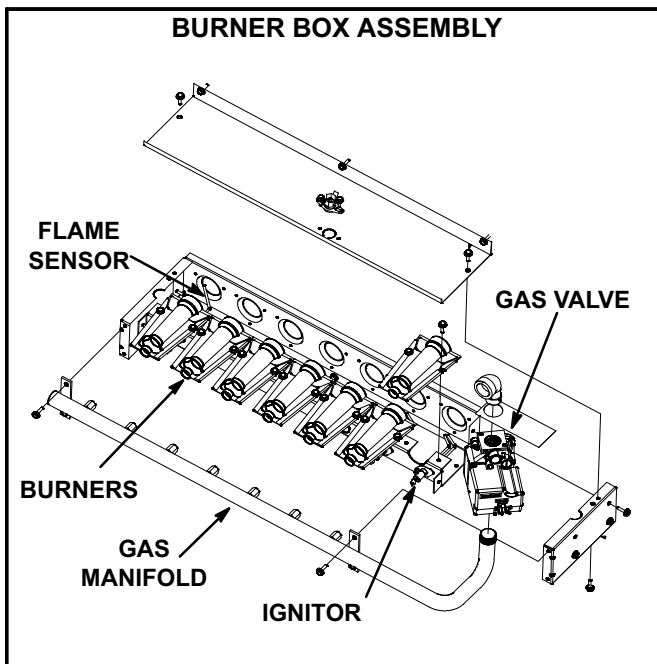


FIGURE 26

- 5- Locate the ignitor under the right burner. Check ignitor spark gap with appropriately sized twist drills or feeler gauges. See figure 27.

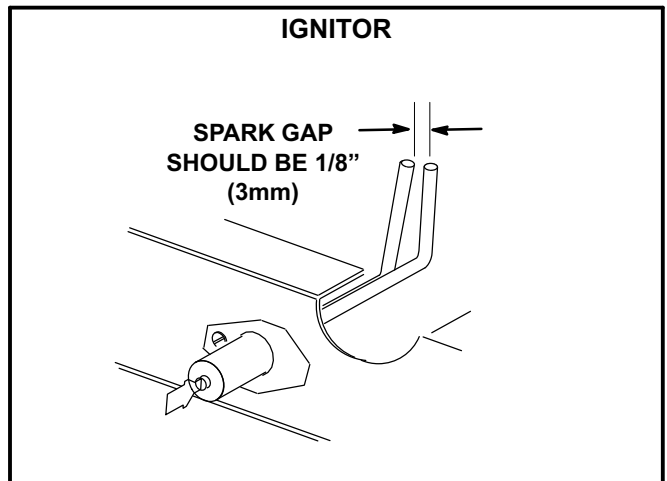


FIGURE 27

- 6- Replace burners and screws securing burner. See figure 28.

⚠ WARNING



Danger of explosion. Can cause injury or death. Do not overtighten main burner mounting screws. Snug tighten only.

- 7- Replace access panel.
- 8- Restore electrical power and gas supply. Follow lighting instructions attached to unit and use inspection port in access panel to check flame.

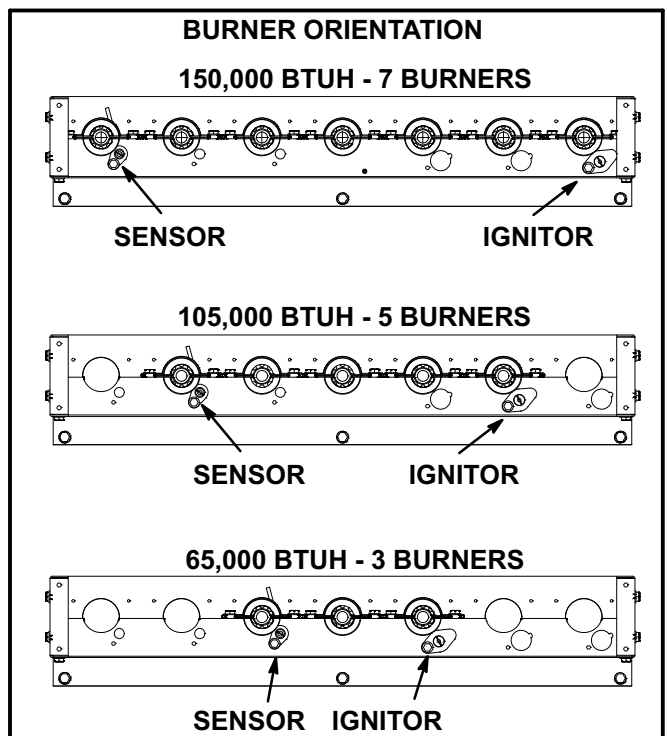


FIGURE 28

D-Combustion Air Inducer (Gas Units)

A combustion air proving switch checks combustion air inducer operation before allowing power to the gas controller. Gas controller will not operate if inducer is obstructed.

Under normal operating conditions, the combustion air inducer wheel should be checked and cleaned prior to the heating season. However, it should be examined periodically during the heating season to establish an ideal cleaning schedule.

Clean combustion air inducer as follows:

- 1- Shut off power supply and gas to unit.
- 2- Remove the mullion on the right side of the heat section.
- 3- Disconnect pressure switch air tubing from combustion air inducer port.
- 4- Remove and retain screws securing combustion air inducer to flue box. Remove vent connector. See figure 29.

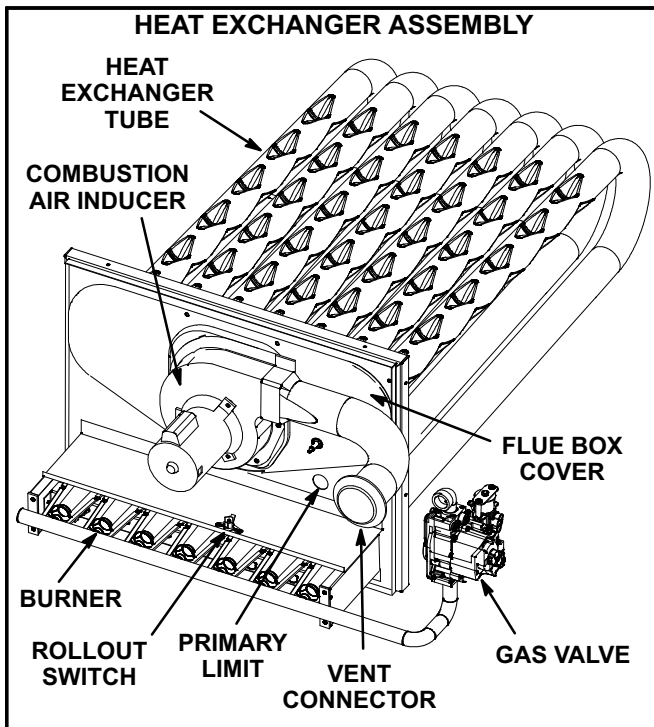


FIGURE 29

- 5- Clean inducer wheel blades with a small brush and wipe off any dust from housing. Take care not to damage exposed fan blades. Clean accumulated dust from front of flue box cover.

- 6- Return combustion air inducer motor and vent connector to original location and secure with retained screws. It is recommended that gaskets be replaced during reassembly.

- 7- Replace mullion.

- 8- Clean combustion air inlet louvers on heat access panel using a small brush.

E-Flue Box (Gas Units)

Remove flue box cover only when necessary for equipment repair. Clean inside of flue box cover and heat exchanger tubes with a wire brush when flue box cover has to be removed. Install a new flue box cover gasket and replace cover. Make sure edges around flue box cover are tightly sealed.

F-Evaporator Coil

Inspect and clean coil at beginning of each cooling season. Clean using mild detergent or commercial coil cleaner. Flush coil and condensate drain with water taking care not to get insulation, filters and return air ducts wet.

G-Condenser Coil

Clean condenser coil annually with detergent or commercial coil cleaner and inspect monthly during the cooling season.

Condenser coils are made of single and two formed slabs. On units with two slabs, dirt and debris may become trapped between the slabs. To clean between slabs, carefully separate coil slabs and wash them thoroughly. See figure 30. Flush coils with water following cleaning.

Note - Remove all screws and gaskets prior to cleaning procedure and replace upon completion.

H-Compressor

If Interlink compressor replacement is necessary, call 1-800-4-LENNOX (1-800-453-6669).

▲ IMPORTANT

Some scroll compressors have an internal vacuum protector that will unload scrolls when suction pressure goes below 20 psig. A hissing sound will be heard when the compressor is running unloaded. Protector will reset when low pressure in system rises above 40 psig. **DO NOT REPLACE COMPRESSOR.**

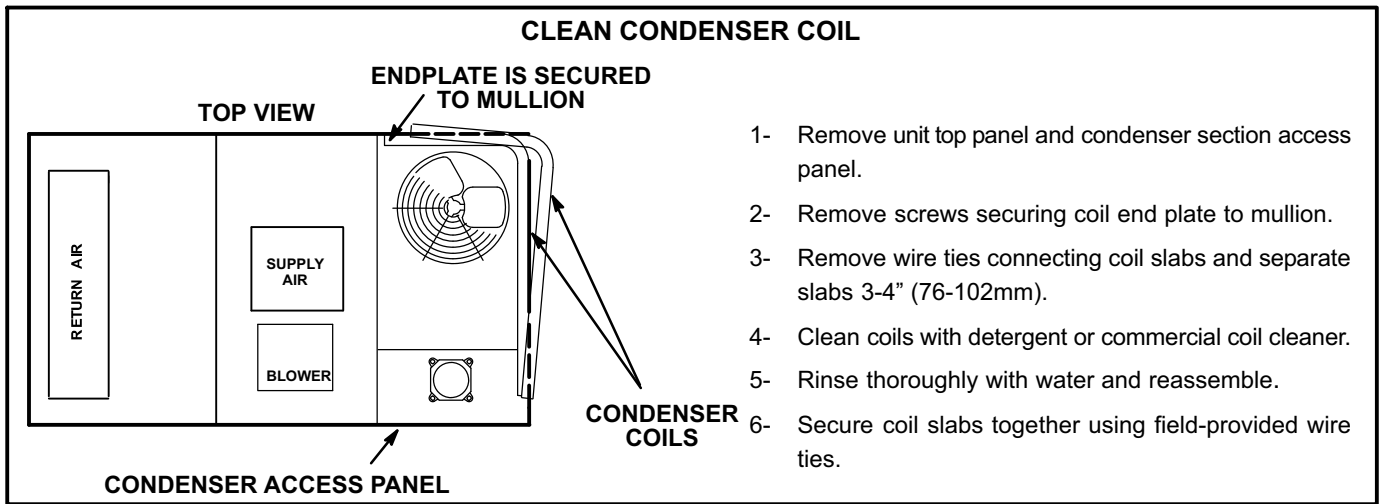


FIGURE 30

J-Supply Air Blower Wheel

Annually inspect supply air blower wheel for accumulated dirt or dust. Turn off power before attempting to remove access panel or to clean blower wheel.

J-Supply Air Blower Replacement

-090 Units Only -

- 1- Peel the rubber seal off of the L-bracket on the blower deck. See figure 31.
- 2- Remove and retain the three screws securing the L-bracket to the blower deck; remove L-bracket.

- 3- Remove and retain the seven screws holding the blower in place. Slide blower out of unit.
- 4- Reinstall blower in channels. Secure blower in place with seven retained screws.
- 5- Replace L-bracket and reinstall screws from the top,
- 6- Replace rubber seal.

⚠ WARNING

Danger of introducing harmful gases into supply air. Failure to replace rubber seal on blower deck could result in injury or death.

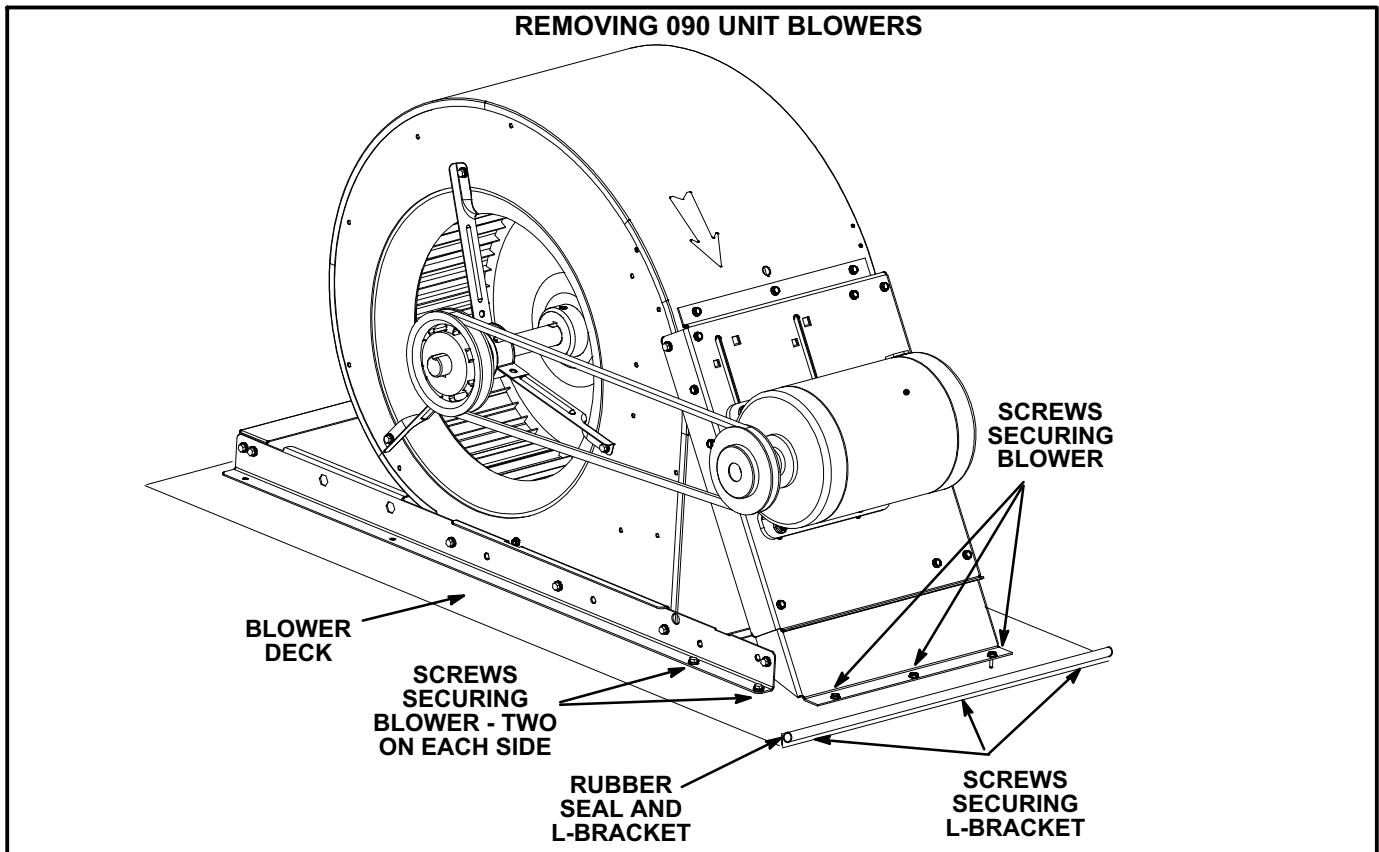


FIGURE 31