

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

RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

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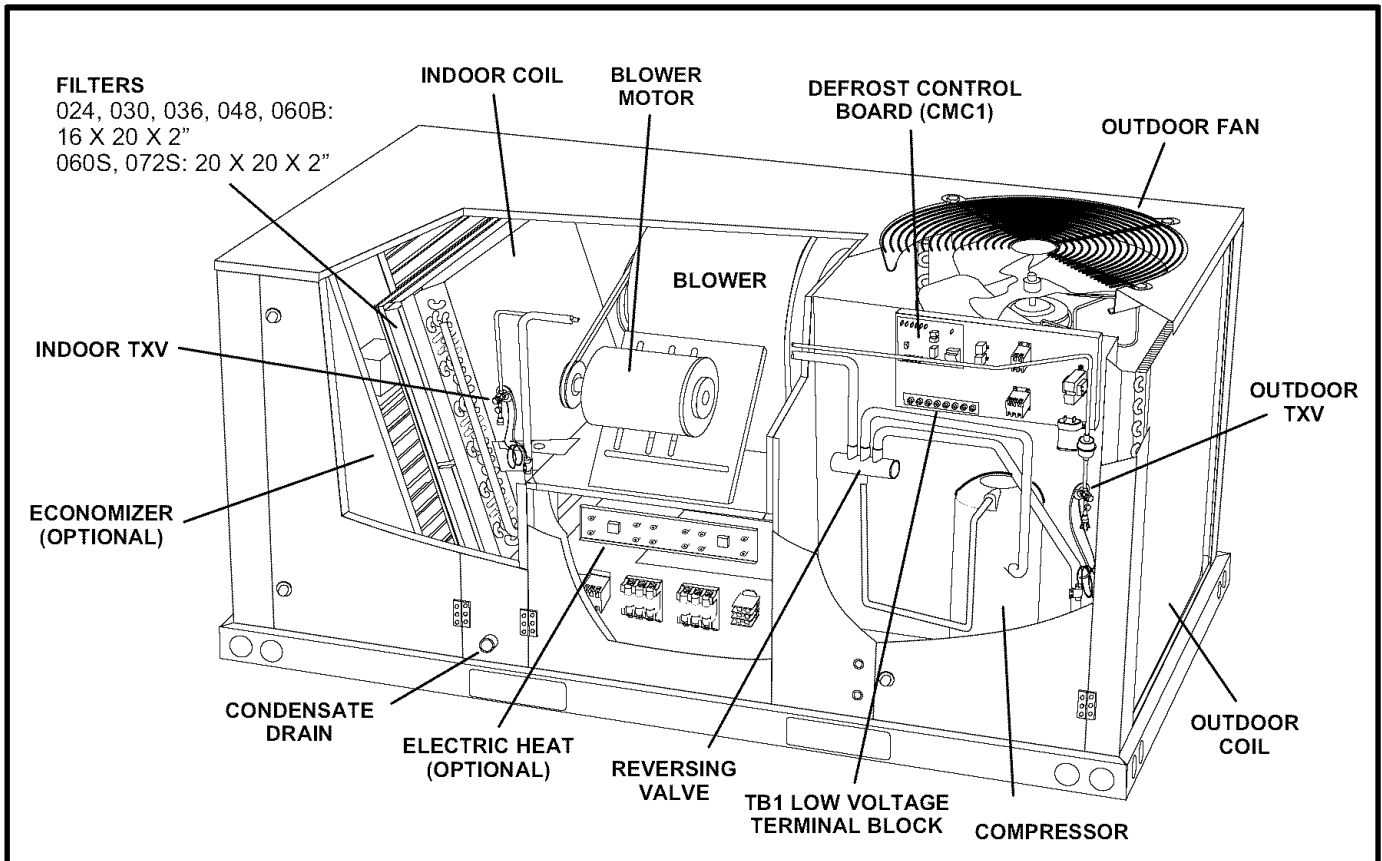
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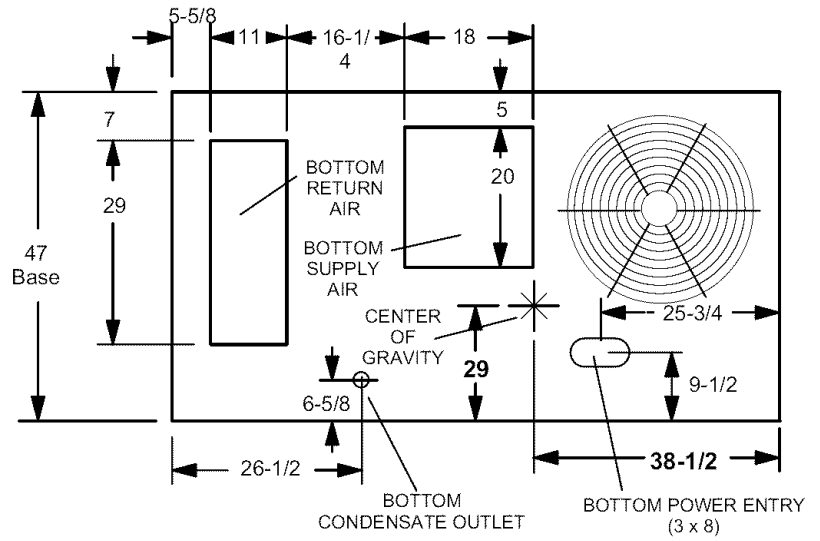
THA024 (2 TON)
THA030 (2-1/2 TON)
THA036 (3 TON)
THA048 (4 TON)
THA060 (5 TON)
THA072 (6 TON)

HEAT PUMP PACKAGED UNITS
 505,308M
 6/2007
 Supersedes 505,098M

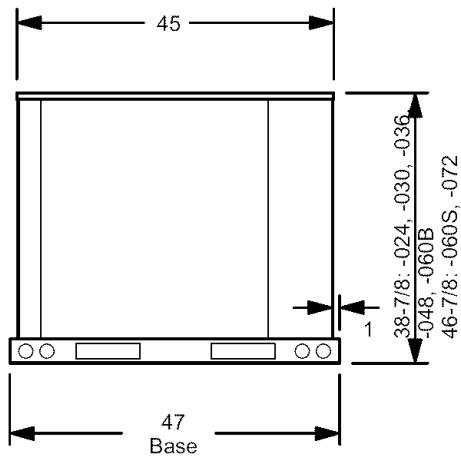
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THA024, 030, 036, 048, 060, 072 PARTS ARRANGEMENT

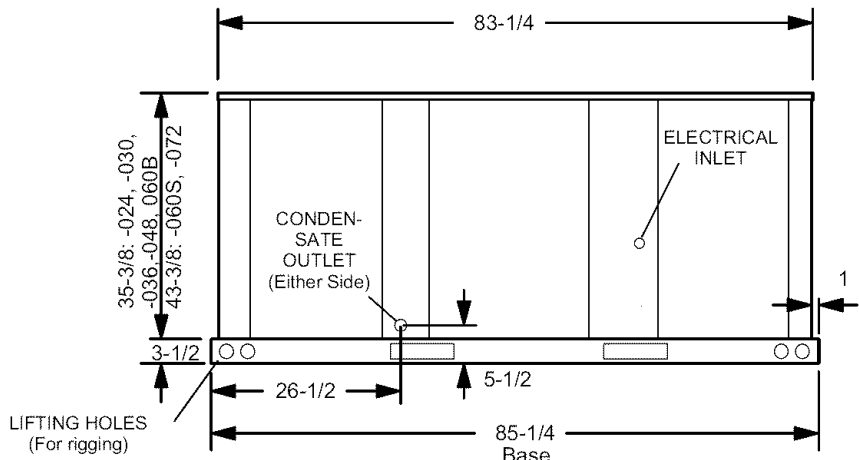




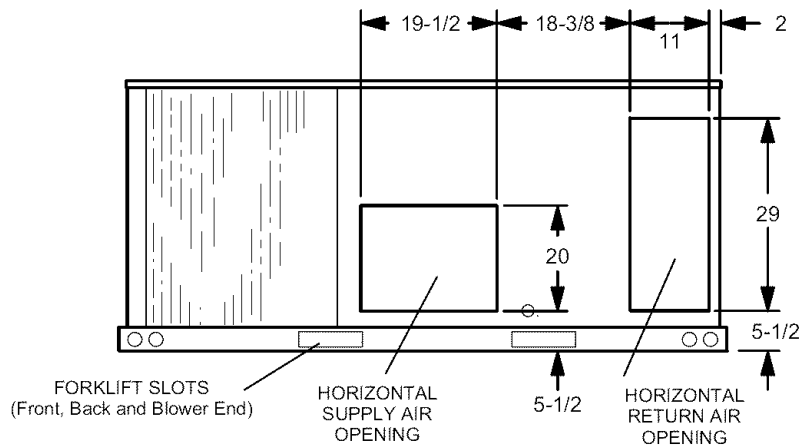
TOP VIEW (Base)



END VIEW



SIDE VIEW



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.

Availability of units and options varies by brand.

Requirements

The THA unit is ETL/CSA certified as a heat pump with cooling and with or without auxiliary electric heat for non-residential use only at the clearances to combustible materials as listed on the unit nameplate and in figure 1.

Installation of THA heat pumps must conform with standards in National Fire Protection Association (NFPA) "Standard for Installation of Air Conditioning and Ventilating Systems NFPA No. 90A," "Standard for Installation of Residence Type Warm Air Heating and Air conditioning Systems NFPA No. 90B," local municipal building codes and manufacturer's installation instructions.

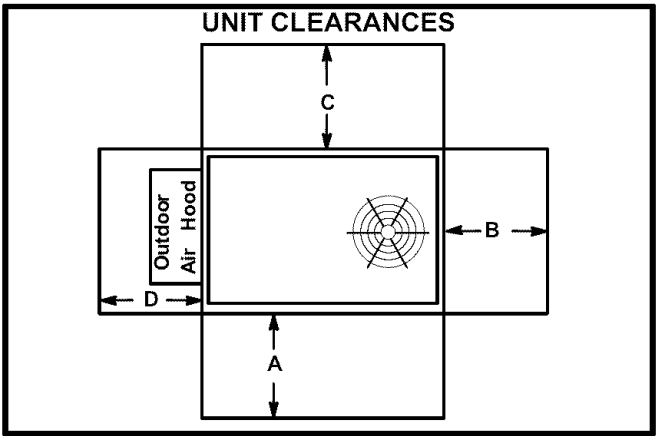


FIGURE 1

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
Minimum Operation Clearance	36 (914)	36 (914)	36 (914)	36 (914)	Unobstructed

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

¹ **Service Clearance** - Required for removal of serviceable parts.
Minimum Operation Clearance - Required clearance for proper unit operation.

The National Electric Code (ANSI/NFPA No. 70-1984) is available from:

National Fire Protection Association
 1 Batterymarch Park
 PO Box 9101
 Quincy, MA 02269-9101

Installation of ETL/CSA certified units must also conform with current standard C273.5 "Installation Requirements for Heat Pumps" and applicable local codes. Authorities having jurisdiction should be consulted before installation.

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-filter must be removed upon construction completion.
- The unit 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, and heating operation) must be verified according to these installation instructions.

⚠ WARNING

Electric shock hazard and danger of explosion. Can cause injury, death or product or property damage. Turn off electrical power to unit before performing any maintenance or servicing operations on the unit.

⚠ CAUTION

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

⚠ 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.

Unit Support

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

A - Downflow Discharge Application

Roof Mounting with T1CURB

- 1- The T1CURB roof mounting frame must be installed, flashed and sealed in accordance with the instructions provided with the frame.
- 2- The T1CURB 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 unit 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 unit on a combustible surface for downflow discharge applications, the T1CURB 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 at least 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 weatherproofed 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

- 1- Detach wooden base protection before rigging.
- 2- Remove all six base protection brackets before setting unit. A 12" or longer extension is recommended when using a drill gun.
- 3- Connect rigging to the unit base using both holes in each corner. See figure 2.
- 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.)

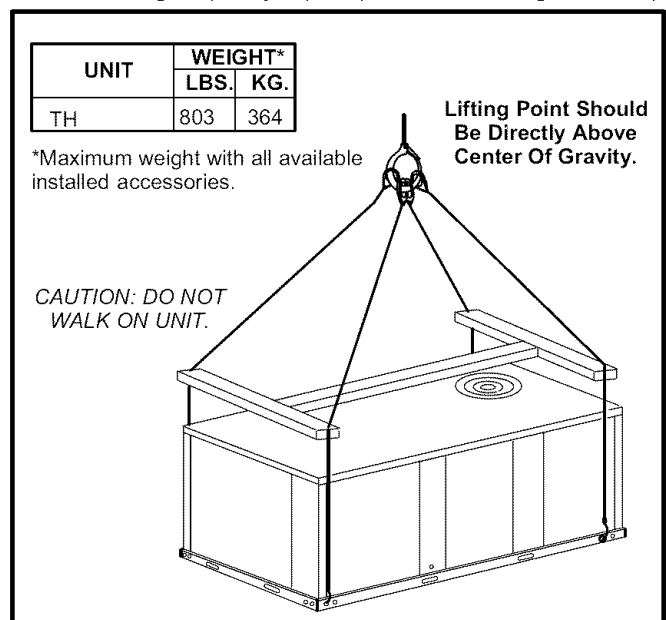


FIGURE 2

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.

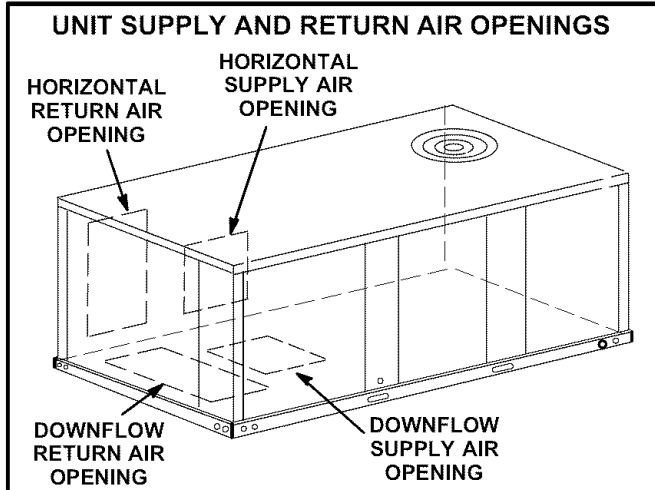


FIGURE 3

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 duct as shown in figure 4.

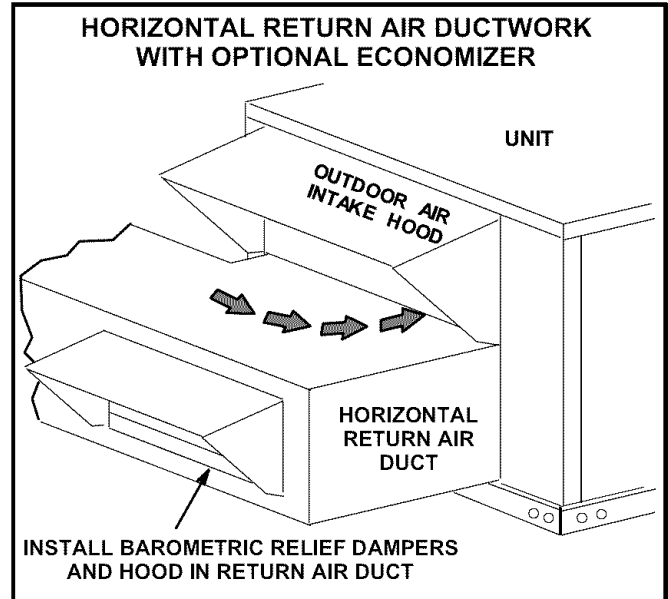


FIGURE 4

Condensate Drains

Make drain connection to the 3/4" N.P.T. drain coupling provided on unit.

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.

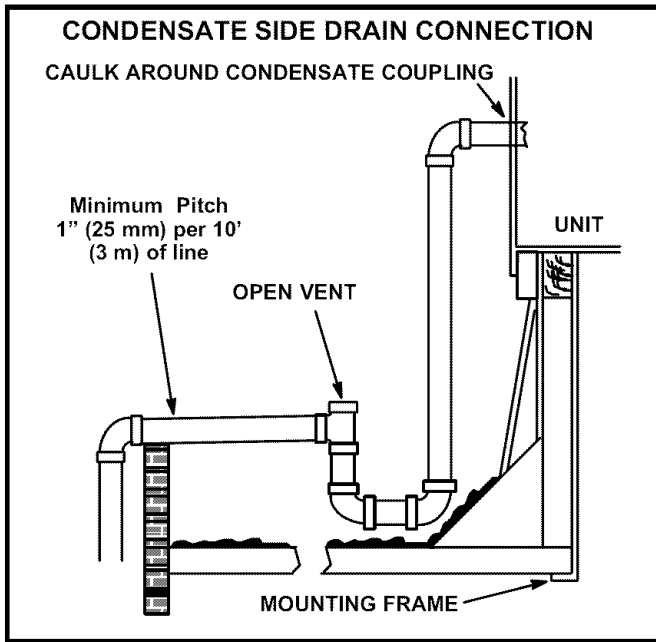


FIGURE 5

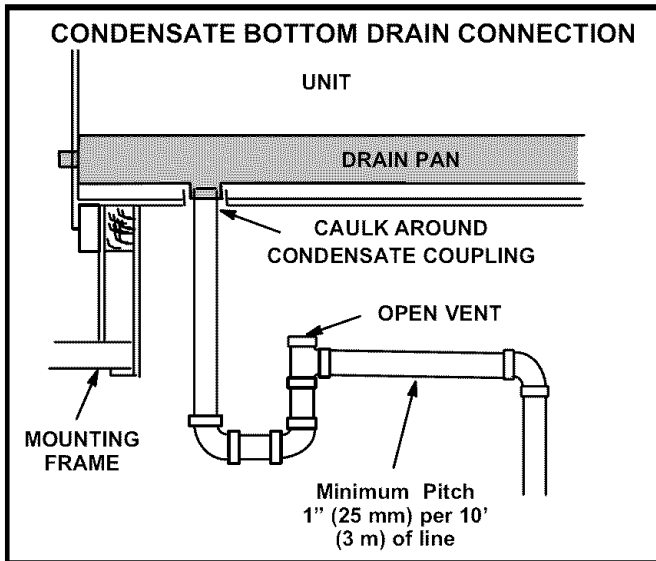


FIGURE 6

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.

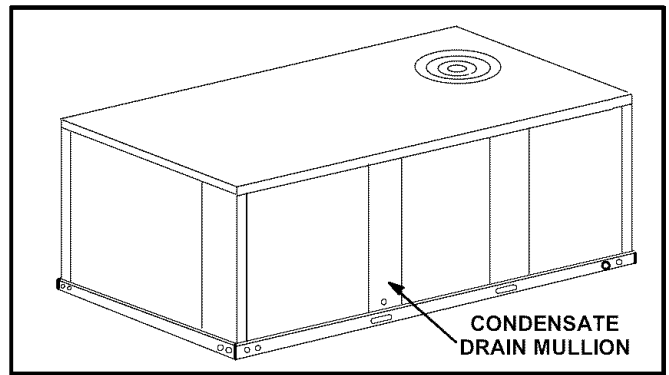


FIGURE 7

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

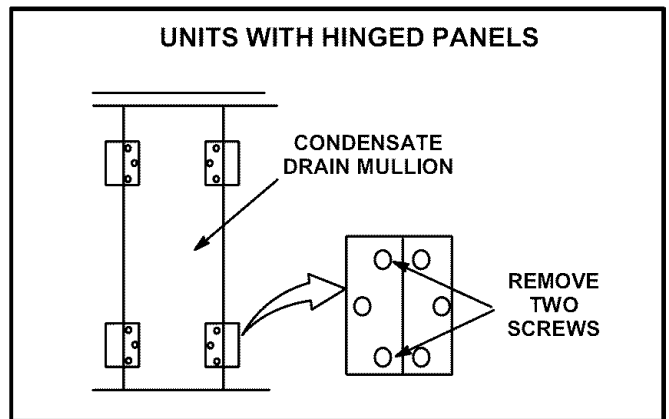


FIGURE 8

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

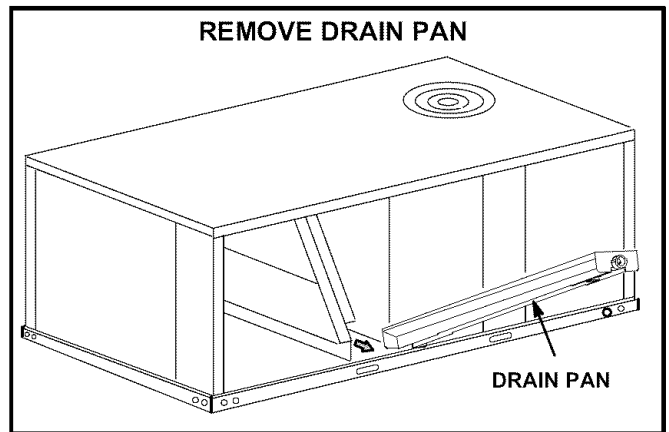


FIGURE 9

- 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.

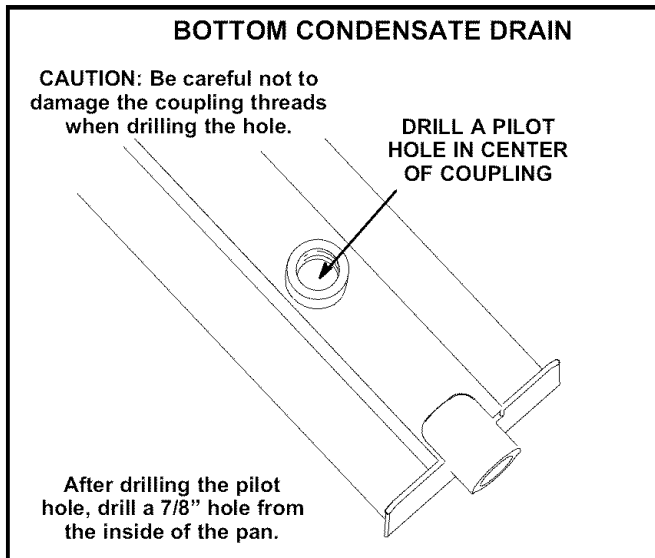


FIGURE 10

- 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.

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. Figure 12 shows a typical unit wiring diagram.

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

- 1- Units are factory-wired for 240,460,575 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 and connect to L1, L2, and L3 on the top of K1 in control area above compressor. Route power to TB2 on units equipped with electric heat. 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 (1524 mm) 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

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.

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).

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 control board on the lower side of the controls hat section. Wire as shown in figure 11 for electro-mechanical and electronic thermostats. If using other temperature control devices or energy management systems see instructions and wiring diagram provided by manufacturer.

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.

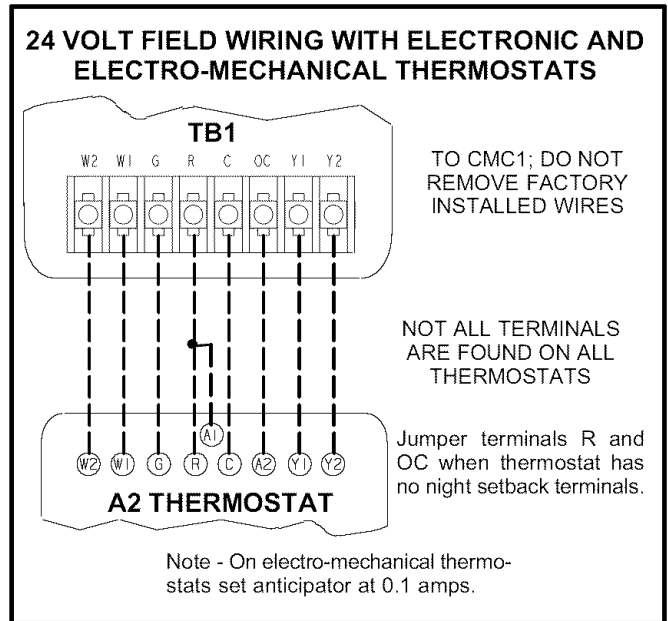


FIGURE 11

TYPICAL THA UNIT WIRING SCHEMATIC

24V POWER

NOTE-FOR USE WITH COPPER CONDUCTORS ONLY
REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT
AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE

S40 IS NOT REQ'D ON 072 UNITS

ECONOMIZER

BLOWER(G)

HEAT 1(W1)

HEAT 2(W2)

COOL 1(Y1)

24V COMMON

KEY	DESCRIPTION
A6	CONTROL-SOLID STATE ENTHALPY
A17	DETECTOR-SMOKE- RETURN AIR
A64	DETECTOR-SMOKE, SUPPLY AIR
B1	COMPRESSOR
B3	MOTOR-BLOWER
B4	MOTOR-OUTDOOR FAN
B7	MOTOR-DAMPER ECONOMIZER
B10	MOTOR-EXHAUST FAN
C1	CAPACITOR-OUTDOOR FAN
C4	CAPACITOR-BLOWER MOTOR
C6	CAPACITOR-EXHAUST FAN

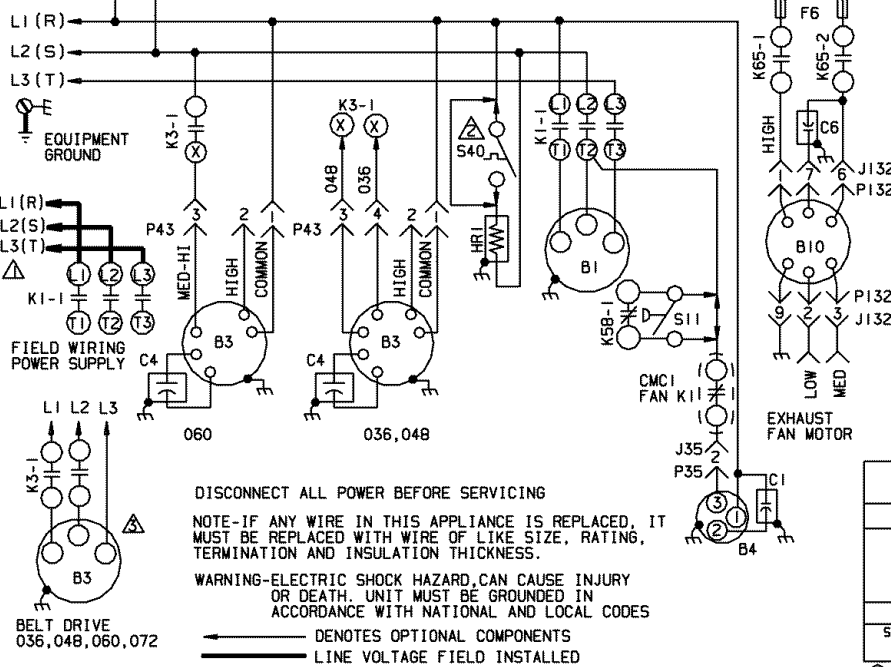
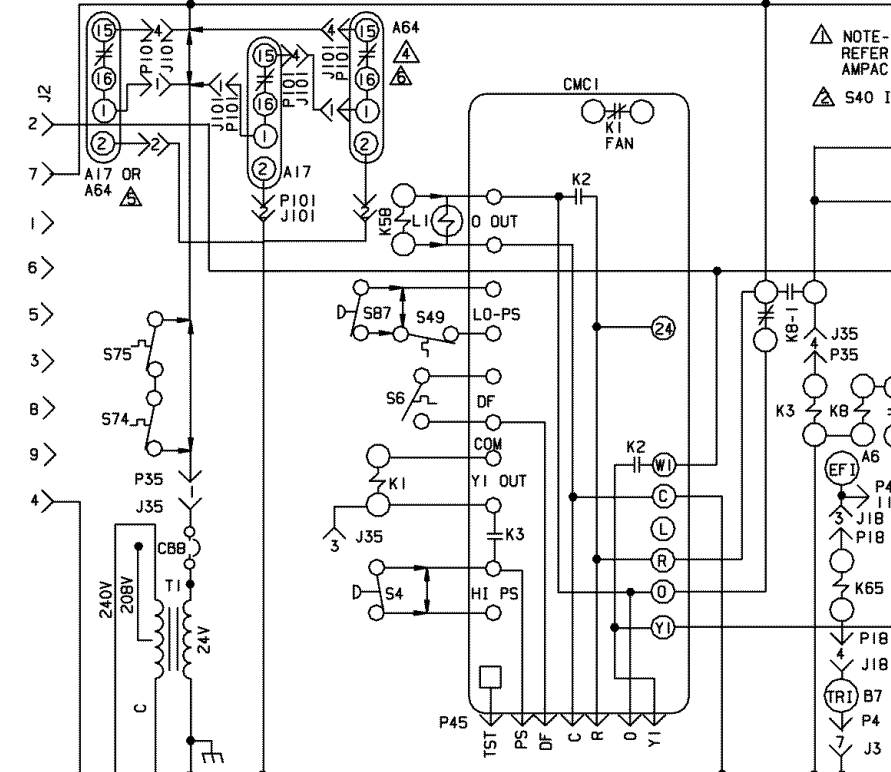
IMPORTANT: TO PREVENT MOTOR BURNOUT, NEVER
CONNECT MORE THAN ONE MOTOR LEAD TO ANY
ONE CONNECTION. TAPE UNUSED MOTOR LEADS

CONNECTIONS FOR REMOTE MOUNTED SMOKE DETECTORS
A17 & A64, MAX LOAD 0.1VA 24VAC CLASS II EACH

A17 ONLY OR A64 ONLY HOOKUP

A17 AND A64 HOOKUP

CBB	CIRCUIT BREAKER-TRANSFORMER T1
CMC1	TIMER-DEFROST, COMPRESSOR 1
F6	FUSE-EXHAUST FAN
HRI	HEATER COMPRESSOR
J2	JACK-HEAT
J3	JACK-UNIT ECONOMIZER
J18	JACK-EXHAUST FAN
J35	JACK-TEST
J132	JACK-BLOWER, EXHAUST FAN MOTOR
K1,-1	CONTACTOR-COMPRESSOR
K3,-1	CONTACTOR-BLOWER
KB,-1,2	RELAY-TRANSFER 1
K5B,-1	RELAY-LOW AMBIENT KIT
K65,-1,2	RELAY-EXHAUST FAN
L1	VALVE-REVERSING
P4	PLUG-ECONOMIZER
P18	PLUG-EXHAUST FAN
P35	PLUG-TEST
P43	PLUG-BLOWER MOTOR
P45	PLUG-INPUT
P132	PLUG-BLOWER EXHAUST FAN MOTOR
S3	SWITCH-LIMIT LOW COMP 1 /COMPRESSOR MONITOR
S4	SWITCH-LIMIT, HI PRESS(MANUAL RESET)
S6	SWITCH-DEFROST, COMPRESSOR 1
S11	SWITCH-LOW PRESS, LOW AMB KIT
S40	THERMOSTAT-CRANKCASE
S49	SWITCH-FREEZESTAT
S74	SWITCH-FIRESTAT 1
S75	SWITCH-FIRESTAT 2
S87	SWITCH-LOW PRESS, COMPRESSOR 1
T1	TRANSFORMER-CONTROL



DISCONNECT ALL POWER BEFORE SERVICING

NOTE-IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT
MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING,
TERMINATION AND INSULATION THICKNESS.

WARNING-ELECTRIC SHOCK HAZARD,CAN CAUSE INJURY
OR DEATH. UNIT MUST BE GROUNDED IN
ACCORDANCE WITH NATIONAL AND LOCAL CODES

← DENOTES OPTIONAL COMPONENTS

— LINE VOLTAGE FIELD INSTALLED

WIRING DIAGRAM 1/06	
COOLING UNITS-PACKAGED	
THA-036,048,060,072-1-Y	
208-230/60/3	
COOLING SECTION B33	
Supersedes Form No.	New Form No.
	535,026W

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Litho U.S.A.

FIGURE 12
Page 8

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. 060S and 072 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

- 1- Set thermostat or temperature control device fan switch to **AUTO** or **ON**. With fan switch in **ON** position, blower will operate continuously. With fan switch in **AUTO** position, the blower will cycle with demand.
- 2- Blower and entire unit will be off when thermostat or temperature control device 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 13.
- 3- Use figure 13 to determine the factory set blower speed.

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 13

- 4- Use tables 2 and 4, the measured static pressure, and the factory-set blower speed to determine CFM. If CFM is lower than the design specified CFM, move the lead from pressure tap 3 or 4 to pressure tap 2. See figure 14. Refer to table 14 for minimum airflow when electric heat is installed.

For 460/575V units, remove the isolation lead from speed tap 2 before moving the wire to speed tap 2. Tape the exposed end of the isolation lead and secure away from other components.

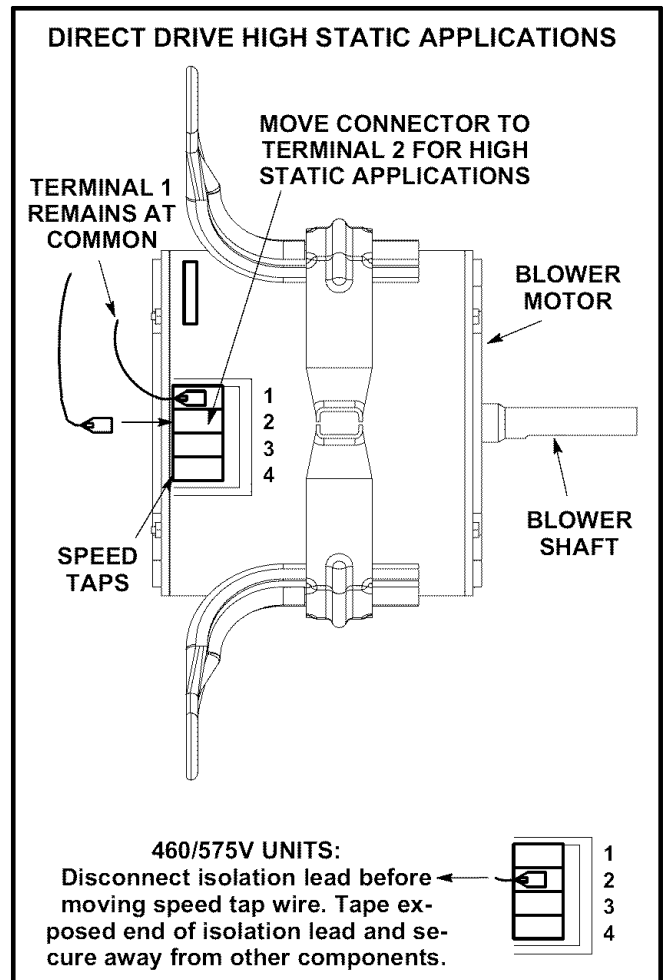


FIGURE 14

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 5 through 12, use static pressure and RPM readings to determine unit CFM. Use table 13 when installing units with any of the options or accessories listed. Refer to table 14 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 16. Do not exceed minimum and maximum number of pulley turns as shown in table 1.

**TABLE 1
MINIMUM AND MAXIMUM PULLEY ADJUSTMENT**

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

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 15.

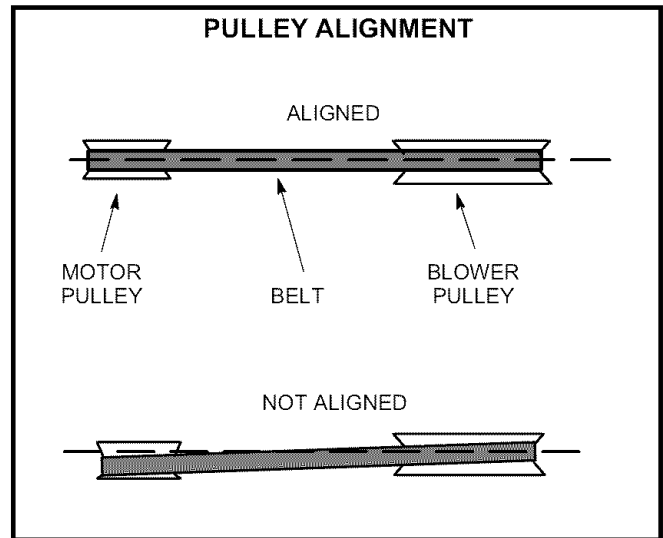


FIGURE 15

- 1- Loosen four bolts securing motor base to mounting frame. See figure 16.
- 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.

To loosen belt tension -
Slide blower motor upward to loosen the belt. This decreases the distance between the blower motor and the blower housing.
- 3- Tighten four bolts securing motor base to the mounting frame.

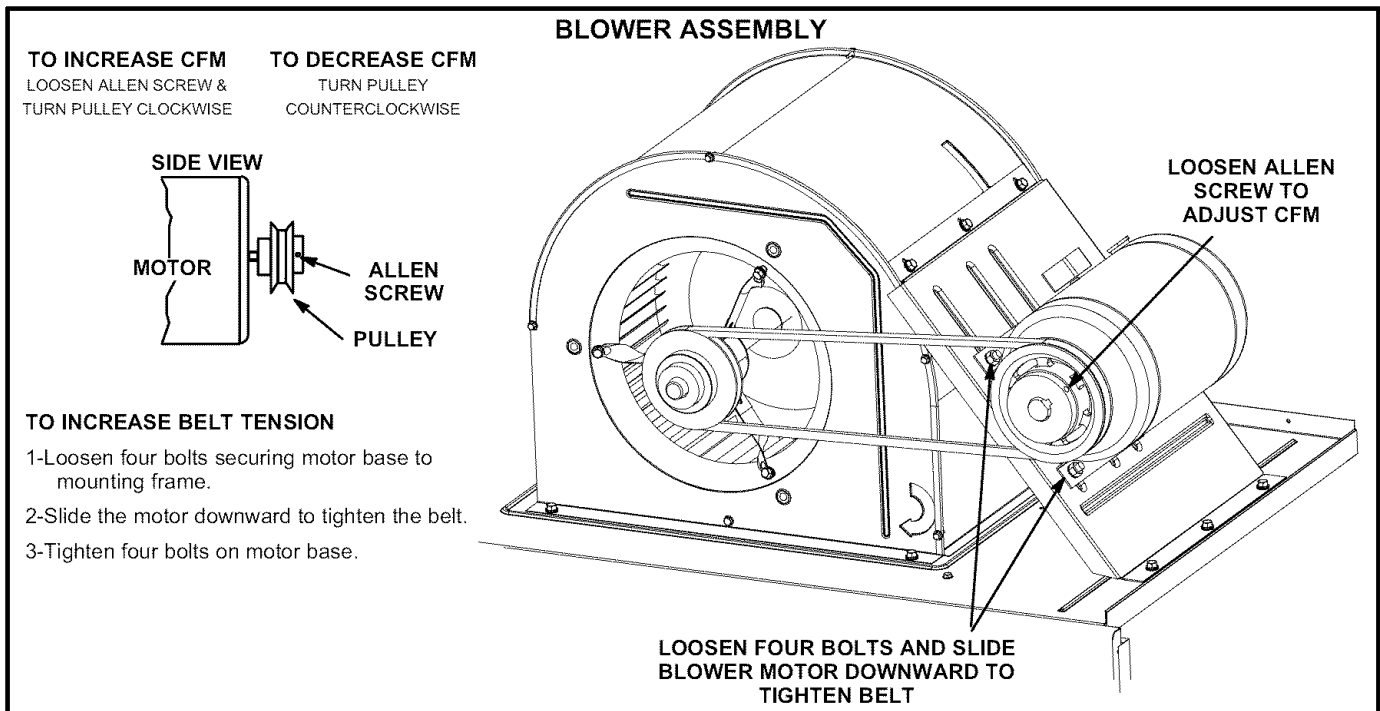


FIGURE 16

E - Check Belt Tension

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

- 1- Measure span length X. See figure 17.
- 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.

F-Field-Furnished Blower Drives

For field-furnished blower drives, use tables 5 through 12 to determine BHP and RPM required. Reference table 15 to determine the drive kit number.

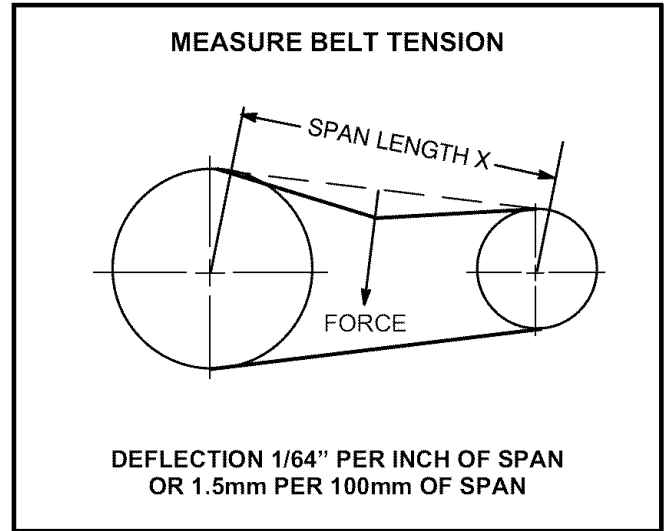


FIGURE 17

**TABLE 2
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
2 and 2.5 Ton Standard Efficiency (Down-Flow)						THA024S and THA030S			
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)						THA024S and THA030S			
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	---	---			
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 Basic Efficiency (Down-Flow)						THA036B and THA048B			
0.0	2025	1635	1145	2225	1845	1330	2125	1750	1220
0.1	1965	1605	1145	2140	1805	1325	2075	1715	1215
0.2	1910	1575	1135	2070	1770	1305	2025	1680	1205
0.3	1855	1545	1105	2010	1730	1275	1975	1640	1185
0.4	1800	1500	1055	1950	1680	1225	1915	1595	1155
0.5	1740	1445	995	1885	1620	1165	1850	1540	1105
0.6	1665	1370	910	1805	1540	1085	1770	1475	1040
0.7	1575	1280	810	1705	1440	990	1680	1400	950
0.8	1460	1165	---	1580	1315	---	1570	1310	---
0.9	1325	1025	---	1425	1155	---	1445	1210	---
1.0	1160	---	---	1230	---	---	1300	---	---
3 and 4 Ton Basic Efficiency (Horizontal)						THA036B and THA048B			
0.0	1920	1560	1090	2110	1760	1265	2125	1770	1265
0.1	1855	1525	1090	2025	1715	1255	2055	1720	1245
0.2	1805	1490	1075	1955	1675	1235	1990	1675	1230
0.3	1755	1455	1045	1900	1635	1205	1930	1635	1210
0.4	1700	1415	1000	1840	1585	1165	1865	1590	1180
0.5	1640	1355	940	1775	1525	1100	1795	1535	1130
0.6	1560	1280	855	1690	1440	1020	1715	1465	1050
0.7	1455	1180	750	1580	1330	920	1620	1370	935
0.8	1325	1050	---	1435	1180	---	1500	1240	---
0.9	1155	885	---	1245	995	---	1365	1075	---
1.0	940	---	---	1000	---	---	1195	---	---

**TABLE 3
DIRECT DRIVE BLOWER PERFORMANCE**

3 Ton Standard Efficiency (Down-Flow)									THA036S
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 Ton Standard Efficiency (Horizontal)									THA036S
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 4
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
4 Ton Standard Efficiency (Down-Flow) THA048S									
0.0	1965	1615	1150	2135	1810	1325	2075	1725	1220
0.1	1910	1585	1145	2070	1775	1315	2025	1690	1215
0.2	1860	1555	1125	2010	1740	1290	1975	1650	1200
0.3	1810	1515	1090	1950	1695	1255	1920	1610	1175
0.4	1750	1465	1035	1890	1635	1200	1855	1555	1135
0.5	1685	1405	970	1815	1565	1135	1785	1500	1085
0.6	1600	1325	885	1730	1480	1055	1700	1430	1015
0.7	1505	1230	785	1620	1375	955	1605	1350	925
0.8	1390	1115	---	1490	1245	---	1495	1260	---
0.9	1250	975	---	1330	1085	---	1365	1160	---
1.0	1085	---	---	1135	---	---	1220	---	---
4 Ton Standard Efficiency (Horizontal) THA048S									
0.0	1865	1535	1090	2025	1725	1260	2055	1730	1255
0.1	1810	1505	1085	1960	1685	1250	1995	1685	1240
0.2	1765	1470	1065	1905	1645	1225	1935	1650	1220
0.3	1710	1430	1035	1845	1600	1190	1870	1605	1200
0.4	1655	1385	985	1785	1545	1140	1805	1555	1160
0.5	1585	1320	915	1710	1475	1075	1730	1495	1100
0.6	1495	1240	835	1615	1380	990	1645	1410	1015
0.7	1390	1135	730	1495	1265	890	1545	1310	895
0.8	1250	1000	---	1340	1115	---	1425	1175	---
0.9	1080	835	---	1150	930	---	1285	1010	---
1.0	875	---	---	915	---	---	1115	---	---
External Static Pressure (in. w.g.)	208 VOLTS		230 VOLTS		460/575 VOLTS				
	High	Low	High	Low	High	Low			
5 Ton Basic Efficiency (Down-Flow) THA060B									
0.0	2180	1670	2360	1970	2300	1745			
0.1	2145	1655	2325	1935	2180	1710			
0.2	2110	1650	2290	1910	2090	1690			
0.3	2080	1640	2250	1880	2035	1680			
0.4	2045	1630	2210	1855	1995	1670			
0.5	2005	1610	2165	1825	1965	1655			
0.6	1960	1580	2110	1785	1940	1635			
0.7	1905	1540	2045	1735	1905	1600			
0.8	1835	1480	1970	1670	1855	1545			
0.9	1750	1405	1875	1590	1780	1465			
1.0	1645	---	1765	---	1670	---			
5 Ton Basic Efficiency (Horizontal) THA060B									
0.0	2070	1600	2235	1890	2285	1800			
0.1	2030	1600	2195	1870	2225	1800			
0.2	1990	1595	2155	1845	2170	1790			
0.3	1945	1580	2110	1815	2120	1775			
0.4	1900	1555	2055	1775	2070	1745			
0.5	1850	1525	2000	1725	2020	1710			
0.6	1795	1480	1930	1670	1965	1660			
0.7	1730	1425	1855	1610	1895	1600			
0.8	1650	1360	1770	1535	1820	1525			
0.9	1560	1280	1675	1450	1730	1440			
1.0	1460	---	1565	---	1620	---			

**TABLE 5
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

3 Ton Basic Efficiency (Down-Flow)

THA036B

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 #1										Drive Kit #5	
900	480	0.10	590	0.15	690	0.25	780	0.30	860	0.40	935	0.55	1005	0.65	1065	0.75
1000	510	0.10	610	0.20	705	0.25	790	0.35	870	0.45	945	0.55	1010	0.65	1075	0.80
1100	540	0.15	635	0.20	720	0.30	805	0.35	880	0.45	955	0.60	1020	0.70	1085	0.85
1200	570	0.15	660	0.25	740	0.30	820	0.40	895	0.50	965	0.60	1030	0.75	1095	0.85
1300	605	0.20	685	0.25	765	0.35	840	0.45	910	0.55	980	0.65	1045	0.80	1105	0.90
1400	640	0.25	715	0.30	790	0.40	860	0.50	930	0.60	995	0.70	1055	0.85	1115	0.95
1500	675	0.30	745	0.35	815	0.45	880	0.55	950	0.65	1010	0.75	1070	0.90	1130	1.00

0.90 to 1.60 in. w.g.

3 Ton Basic Efficiency (Down-Flow)

THA036B

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 #5										Field Furnished					
900	1125	0.90	1185	1.00	1240	1.15	1290	1.30	1340	1.45	1390	1.60	1435	1.75	1480	1.95
1000	1135	0.90	1190	1.05	1245	1.20	1300	1.35	1350	1.50	1395	1.65	1440	1.80	1485	1.95
1100	1145	0.95	1200	1.10	1255	1.25	1305	1.40	1355	1.55	1405	1.70	1450	1.85	1495	2.05
1200	1155	1.00	1210	1.15	1265	1.30	1315	1.45	1365	1.60	1410	1.75	1460	1.95	1505	2.10
1300	1165	1.05	1220	1.20	1270	1.35	1325	1.50	1375	1.65	1420	1.80	1465	2.00	1510	2.15
1400	1175	1.10	1230	1.25	1280	1.40	1335	1.55	1380	1.70	1430	1.90	1475	2.05	1520	2.25
1500	1185	1.15	1240	1.30	1295	1.45	1345	1.60	1390	1.80	1440	1.95	1485	2.15	1530	2.30

0.10 to 0.80 in. w.g.

3 Ton Basic Efficiency (Horizontal)

THA036B

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 #1											
900	475	0.10	565	0.15	650	0.20	725	0.30	800	0.35	870	0.45	930	0.55	990	0.65
1000	510	0.10	590	0.15	665	0.25	740	0.30	815	0.40	880	0.50	940	0.60	1000	0.70
1100	545	0.15	615	0.20	690	0.25	760	0.35	825	0.40	890	0.50	950	0.60	1010	0.75
1200	585	0.20	650	0.25	715	0.30	780	0.40	845	0.45	905	0.55	965	0.65	1020	0.75
1300	625	0.25	680	0.30	740	0.35	800	0.40	860	0.50	920	0.60	980	0.70	1030	0.80
1400	665	0.30	715	0.35	770	0.40	830	0.50	885	0.55	940	0.65	995	0.75	1045	0.85
1500	705	0.35	750	0.40	805	0.45	855	0.55	910	0.60	960	0.70	1010	0.80	1065	0.90

0.90 to 1.60 in. w.g.

3 Ton Basic Efficiency (Horizontal)

THA036B

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 #5										Field					
900	1045	0.75	1100	0.90	1150	1.00	1195	1.10	1240	1.25	1285	1.40	1325	1.50	1365	1.65
1000	1055	0.80	1105	0.90	1155	1.05	1205	1.15	1250	1.30	1295	1.45	1335	1.55	1375	1.70
1100	1065	0.85	1115	0.95	1165	1.10	1215	1.20	1260	1.35	1305	1.50	1345	1.60	1385	1.75
1200	1075	0.90	1125	1.00	1175	1.15	1220	1.25	1270	1.40	1310	1.55	1355	1.70	1395	1.80
1300	1085	0.90	1135	1.05	1185	1.20	1230	1.30	1275	1.45	1320	1.60	1365	1.75	1405	1.90
1400	1100	1.00	1150	1.10	1195	1.25	1240	1.35	1285	1.50	1330	1.65	1370	1.80	1415	1.95
1500	1115	1.05	1160	1.15	1210	1.30	1255	1.45	1295	1.55	1340	1.70	1380	1.85	1420	2.00

**TABLE 6
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 1.00 in. w.g.

3 Ton Standard Efficiency (Down-Flow)

THA036S

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 #1								Kit 5			
900	485	0.10	595	0.15	690	0.20	780	0.30	860	0.40	930	0.50	1000	0.60	1065	0.75
1000	520	0.10	615	0.20	705	0.25	790	0.35	870	0.45	945	0.55	1010	0.65	1075	0.75
1100	550	0.15	640	0.20	725	0.30	805	0.35	885	0.45	955	0.55	1020	0.70	1085	0.80
1200	585	0.20	665	0.25	745	0.30	825	0.40	900	0.50	965	0.60	1030	0.70	1095	0.85
1300	620	0.20	695	0.30	770	0.35	845	0.45	915	0.55	980	0.65	1045	0.75	1105	0.90
1400	660	0.25	730	0.35	795	0.40	865	0.50	935	0.60	995	0.70	1060	0.80	1120	0.95
1500	695	0.30	760	0.40	825	0.45	890	0.55	955	0.65	1015	0.75	1075	0.85	1135	1.00

0.90 to 1.60 in. w.g.

3 Ton Standard Efficiency (Down-Flow)

THA036S

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 #5								Field Furnished							
900	1125	0.85	1180	1.00	1230	1.10	1285	1.25	1330	1.35	1380	1.50	1425	1.65	1465	1.80
1000	1130	0.90	1190	1.00	1240	1.15	1295	1.30	1340	1.40	1390	1.60	1435	1.75	1475	1.85
1100	1140	0.90	1200	1.05	1250	1.20	1300	1.35	1350	1.50	1400	1.65	1445	1.80	1485	1.95
1200	1150	0.95	1210	1.10	1260	1.25	1310	1.40	1360	1.55	1410	1.70	1455	1.85	1495	2.00
1300	1165	1.00	1220	1.15	1270	1.30	1320	1.45	1370	1.60	1415	1.75	1465	1.90	1505	2.05
1400	1175	1.05	1230	1.20	1280	1.35	1330	1.50	1380	1.65	1425	1.80	1470	1.95	1515	2.15
1500	1190	1.15	1240	1.25	1295	1.40	1345	1.55	1390	1.70	1435	1.90	1480	2.05	1525	2.20

0.10 to 0.80 in. w.g.

3 Ton Standard Efficiency (Horizontal)

THA036S

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 #1											
900	480	0.10	570	0.15	655	0.20	735	0.30	810	0.35	875	0.45	940	0.55	1000	0.65
1000	520	0.15	595	0.15	675	0.25	750	0.30	820	0.40	890	0.50	950	0.60	1010	0.70
1100	555	0.15	625	0.20	695	0.25	765	0.35	835	0.45	900	0.50	960	0.60	1020	0.75
1200	595	0.20	660	0.25	725	0.30	790	0.40	850	0.45	915	0.55	975	0.65	1030	0.75
1300	635	0.25	690	0.30	750	0.35	810	0.40	870	0.50	930	0.60	990	0.70	1045	0.80
1400	675	0.30	730	0.35	785	0.40	840	0.50	895	0.55	950	0.65	1005	0.75	1060	0.85
1500	720	0.35	765	0.40	815	0.45	870	0.55	920	0.60	970	0.70	1025	0.80	1075	0.95

0.90 to 1.60 in. w.g.

3 Ton Standard Efficiency (Horizontal)

THA036S

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 #5												Field			
900	1055	0.75	1105	0.90	1155	1.00	1200	1.10	1245	1.25	1285	1.35	1325	1.50	1365	1.60
1000	1065	0.80	1115	0.90	1165	1.05	1210	1.15	1255	1.30	1300	1.40	1340	1.55	1380	1.70
1100	1075	0.85	1125	0.95	1175	1.10	1220	1.20	1265	1.35	1310	1.50	1350	1.60	1395	1.75
1200	1085	0.90	1135	1.00	1185	1.15	1235	1.25	1280	1.40	1320	1.55	1365	1.70	1405	1.85
1300	1095	0.95	1145	1.05	1195	1.20	1245	1.30	1290	1.45	1330	1.60	1375	1.75	1415	1.90
1400	1110	1.00	1160	1.10	1210	1.25	1255	1.40	1300	1.50	1340	1.65	1385	1.80	1425	1.95
1500	1125	1.05	1175	1.15	1220	1.30	1265	1.45	1310	1.60	1355	1.75	1395	1.85	1435	2.05

**TABLE 7
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

4 Ton Basic Efficiency (Down-Flow)

THA048B

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 #2									
1200	570	0.15	655	0.20	735	0.30	815	0.35	885	0.45	955	0.55	1015	0.65	1075	0.75
1300	605	0.20	680	0.25	760	0.30	830	0.40	900	0.50	965	0.60	1030	0.70	1090	0.80
1400	640	0.25	710	0.30	785	0.35	855	0.45	920	0.55	985	0.65	1045	0.75	1100	0.85
1500	675	0.25	740	0.35	810	0.40	875	0.50	940	0.60	1000	0.70	1060	0.80	1115	0.90
1600	710	0.30	775	0.40	835	0.45	900	0.55	960	0.65	1020	0.75	1080	0.85	1135	0.95
1700	745	0.40	805	0.45	865	0.50	925	0.60	985	0.70	1040	0.80	1095	0.90	1150	1.05
1800	785	0.45	840	0.50	895	0.60	955	0.70	1010	0.80	1065	0.90	1115	1.00	1170	1.10
1900	820	0.50	875	0.60	930	0.65	980	0.75	1035	0.85	1090	0.95	1140	1.10	1190	1.20
2000	860	0.60	910	0.65	960	0.75	1010	0.85	1065	0.95	1115	1.05	1165	1.15	1210	1.30

0.90 to 1.60 in. w.g.

4 Ton Basic Efficiency (Down-Flow)

THA048B

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 #6										Field Furnished					
1200	1135	0.85	1190	1.00	1240	1.10	1290	1.25	1340	1.35	1385	1.50	1430	1.65	1475	1.80
1300	1145	0.90	1200	1.05	1250	1.15	1300	1.30	1350	1.45	1395	1.55	1440	1.70	1485	1.85
1400	1160	0.95	1210	1.10	1260	1.20	1310	1.35	1360	1.50	1405	1.65	1450	1.75	1490	1.90
1500	1170	1.00	1225	1.15	1275	1.30	1325	1.40	1370	1.55	1415	1.70	1460	1.85	1500	2.00
1600	1185	1.10	1235	1.20	1285	1.35	1335	1.50	1380	1.60	1425	1.75	1470	1.90	1515	2.10
1700	1200	1.15	1255	1.30	1300	1.40	1350	1.55	1395	1.70	1440	1.85	1480	2.00	1525	2.15
1800	1220	1.25	1270	1.35	1315	1.50	1365	1.65	1410	1.80	1450	1.90	1495	2.10	1535	2.25
1900	1240	1.30	1285	1.45	1335	1.60	1380	1.75	1420	1.85	1465	2.00	1505	2.15	1550	2.35
2000	1260	1.40	1305	1.55	1350	1.70	1395	1.80	1440	2.00	1480	2.10	1520	2.25	1560	2.45

0.10 to 0.80 in. w.g.

4 Ton Basic Efficiency (Horizontal)

THA048B

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 #2									
1200	580	0.15	645	0.20	710	0.25	770	0.35	835	0.40	895	0.50	950	0.55	1005	0.65
1300	620	0.20	675	0.25	735	0.30	795	0.35	855	0.45	910	0.50	965	0.60	1020	0.70
1400	660	0.25	710	0.30	765	0.35	820	0.40	875	0.50	930	0.55	985	0.65	1035	0.75
1500	700	0.30	745	0.35	800	0.40	850	0.50	900	0.55	950	0.60	1000	0.70	1050	0.80
1600	740	0.35	785	0.40	830	0.45	880	0.55	930	0.60	975	0.70	1025	0.80	1070	0.85
1700	780	0.45	820	0.50	865	0.55	910	0.60	955	0.70	1000	0.75	1045	0.85	1090	0.95
1800	820	0.50	860	0.55	900	0.60	945	0.70	985	0.75	1030	0.85	1070	0.90	1115	1.00
1900	860	0.60	900	0.65	940	0.70	980	0.80	1020	0.85	1060	0.95	1100	1.00	1140	1.10
2000	905	0.70	940	0.75	975	0.80	1015	0.90	1050	0.95	1090	1.05	1130	1.10	1165	1.20

0.90 to 1.60 in. w.g.

4 Ton Basic Efficiency (Horizontal)

THA048B

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 2		High Static - Drive Kit #6													
1200	1060	0.75	1110	0.85	1155	0.95	1205	1.05	1245	1.15	1290	1.30	1330	1.40	1370	1.55
1300	1070	0.80	1120	0.90	1165	1.00	1210	1.10	1255	1.20	1300	1.35	1340	1.45	1380	1.60
1400	1085	0.85	1130	0.95	1180	1.05	1225	1.15	1265	1.25	1310	1.40	1350	1.50	1390	1.65
1500	1100	0.90	1145	1.00	1190	1.10	1235	1.20	1280	1.35	1320	1.45	1360	1.60	1400	1.70
1600	1115	0.95	1160	1.05	1205	1.15	1250	1.30	1290	1.40	1330	1.50	1370	1.65	1410	1.80
1700	1135	1.05	1180	1.15	1220	1.25	1265	1.35	1305	1.50	1345	1.60	1385	1.75	1425	1.85
1800	1155	1.10	1200	1.20	1240	1.35	1280	1.45	1320	1.55	1360	1.70	1400	1.80	1435	1.95
1900	1180	1.20	1220	1.30	1260	1.40	1300	1.55	1340	1.65	1375	1.75	1415	1.90	1450	2.05
2000	1205	1.30	1245	1.40	1280	1.50	1320	1.65	1355	1.75	1395	1.90	1430	2.00	1465	2.15

**TABLE 8
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

4 Ton Standard Efficiency (Down-Flow)

THA048S

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 #2											
1200	590	0.15	670	0.20	745	0.30	820	0.35	890	0.45	955	0.50	1020	0.60	1080	0.70
1300	630	0.20	700	0.25	770	0.30	840	0.40	910	0.45	970	0.55	1035	0.65	1090	0.75
1400	670	0.25	735	0.30	800	0.35	865	0.45	930	0.50	990	0.60	1050	0.70	1105	0.80
1500	705	0.30	765	0.35	830	0.40	890	0.50	950	0.55	1010	0.65	1070	0.75	1125	0.85
1600	745	0.35	800	0.40	860	0.50	920	0.55	975	0.65	1030	0.70	1085	0.80	1140	0.90
1700	785	0.40	840	0.50	895	0.55	945	0.60	1000	0.70	1055	0.80	1110	0.90	1160	1.00
1800	825	0.50	875	0.55	925	0.60	980	0.70	1030	0.80	1080	0.85	1130	0.95	1180	1.05
1900	865	0.55	915	0.65	960	0.70	1010	0.80	1060	0.85	1105	0.95	1155	1.05	1205	1.15
2000	910	0.65	950	0.70	995	0.80	1045	0.90	1090	0.95	1135	1.05	1180	1.15	1230	1.25

0.90 to 1.60 in. w.g.

4 Ton Standard Efficiency (Down-Flow)

THA048S

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 #6															
	Field															
1200	1135	0.80	1185	0.90	1235	1.00	1285	1.15	1330	1.25	1375	1.35	1420	1.50	1460	1.60
1300	1145	0.85	1200	0.95	1250	1.05	1300	1.20	1345	1.30	1390	1.45	1435	1.55	1475	1.70
1400	1160	0.90	1215	1.00	1265	1.15	1310	1.25	1355	1.35	1400	1.50	1445	1.60	1485	1.75
1500	1175	0.95	1225	1.05	1275	1.20	1325	1.30	1370	1.45	1415	1.55	1460	1.70	1500	1.85
1600	1195	1.05	1245	1.15	1290	1.25	1340	1.40	1385	1.50	1430	1.65	1470	1.75	1510	1.90
1700	1210	1.10	1260	1.20	1305	1.35	1355	1.45	1400	1.60	1440	1.70	1485	1.85	1525	2.00
1800	1230	1.20	1275	1.30	1325	1.40	1370	1.55	1415	1.70	1455	1.80	1500	1.95	1540	2.10
1900	1250	1.25	1295	1.40	1340	1.50	1385	1.65	1430	1.75	1470	1.90	1515	2.05	1555	2.20
2000	1275	1.35	1320	1.50	1360	1.60	1405	1.75	1445	1.85	1490	2.00	1530	2.15	1570	2.30

0.10 to 0.80 in. w.g.

4 Ton Standard Efficiency (Horizontal)

THA048S

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 #2											
1200	600	0.20	660	0.20	725	0.25	790	0.35	855	0.40	915	0.50	975	0.60	1030	0.70
1300	640	0.20	695	0.25	755	0.30	815	0.40	875	0.45	935	0.55	990	0.60	1045	0.70
1400	685	0.25	735	0.30	790	0.35	845	0.45	900	0.50	955	0.60	1005	0.65	1060	0.75
1500	725	0.35	770	0.35	820	0.40	870	0.50	925	0.55	975	0.65	1025	0.75	1075	0.80
1600	770	0.40	810	0.45	855	0.50	905	0.55	950	0.60	1000	0.70	1050	0.80	1095	0.90
1700	810	0.45	850	0.50	895	0.55	935	0.65	980	0.70	1030	0.80	1075	0.85	1120	0.95
1800	855	0.55	890	0.60	930	0.65	970	0.70	1015	0.80	1055	0.85	1100	0.95	1145	1.05
1900	900	0.65	935	0.70	970	0.75	1010	0.80	1050	0.90	1090	0.95	1130	1.05	1170	1.15
2000	940	0.75	975	0.80	1010	0.85	1045	0.90	1085	1.00	1120	1.05	1160	1.15	1195	1.25

0.90 to 1.60 in. w.g.

4 Ton Standard Efficiency (Horizontal)

THA048S

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 #6															
1200	1080	0.75	1130	0.85	1180	1.00	1225	1.10	1265	1.20	1305	1.30	1345	1.40	1385	1.55
1300	1095	0.80	1145	0.90	1190	1.00	1235	1.15	1280	1.25	1320	1.35	1360	1.50	1400	1.60
1400	1110	0.85	1160	1.00	1205	1.10	1250	1.20	1295	1.30	1335	1.45	1375	1.55	1415	1.70
1500	1125	0.90	1175	1.05	1220	1.15	1265	1.25	1305	1.35	1350	1.50	1390	1.65	1430	1.75
1600	1145	1.00	1190	1.10	1235	1.20	1280	1.35	1320	1.45	1365	1.60	1405	1.70	1440	1.80
1700	1165	1.05	1210	1.15	1255	1.30	1295	1.40	1335	1.50	1380	1.65	1415	1.75	1455	1.90
1800	1185	1.15	1230	1.25	1270	1.35	1315	1.50	1355	1.60	1395	1.75	1430	1.85	1470	2.00
1900	1210	1.25	1250	1.35	1290	1.45	1330	1.55	1370	1.70	1410	1.80	1450	1.95	1485	2.10
2000	1235	1.35	1275	1.45	1315	1.55	1355	1.70	1390	1.80	1430	1.95	1465	2.05	1500	2.20

**TABLE 9
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g. 5 Ton Basic Efficiency (Down-Flow) THA060B

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 #3									
1600	705	0.30	765	0.35	825	0.40	880	0.50	935	0.55	990	0.60	1040	0.70	1090	0.75
1700	740	0.35	800	0.40	855	0.50	910	0.55	960	0.60	1010	0.70	1060	0.75	1110	0.85
1800	780	0.40	835	0.50	885	0.55	940	0.60	990	0.70	1035	0.75	1085	0.85	1130	0.90
1900	815	0.50	870	0.55	920	0.60	970	0.70	1015	0.75	1065	0.85	1110	0.90	1155	1.00
2000	855	0.55	905	0.60	950	0.70	1000	0.75	1045	0.85	1090	0.90	1135	1.00	1180	1.10
2100	890	0.65	940	0.70	985	0.80	1030	0.85	1075	0.95	1120	1.00	1160	1.10	1205	1.20
2200	930	0.70	975	0.80	1020	0.85	1065	0.95	1105	1.05	1145	1.10	1190	1.20	1230	1.30
2300	970	0.80	1010	0.90	1055	0.95	1095	1.05	1135	1.15	1175	1.20	1215	1.30	1255	1.40
2400	1005	0.90	1050	1.00	1090	1.10	1130	1.15	1170	1.25	1210	1.35	1245	1.45	1285	1.55

0.90 to 1.60 in. w.g. 5 Ton Basic Efficiency (Down-Flow) THA060B

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
	Low Static - Drive Kit #3				High Static - Drive Kit #7											
1600	1135	0.85	1185	0.95	1230	1.00	1275	1.10	1315	1.20	1355	1.30	1400	1.40	1440	1.50
1700	1155	0.90	1200	1.00	1245	1.10	1290	1.20	1330	1.30	1370	1.35	1410	1.45	1450	1.60
1800	1175	1.00	1220	1.10	1265	1.15	1305	1.25	1345	1.35	1385	1.45	1425	1.55	1465	1.65
1900	1200	1.10	1240	1.15	1280	1.25	1325	1.35	1365	1.45	1400	1.55	1440	1.65	1480	1.75
2000	1220	1.15	1260	1.25	1300	1.35	1340	1.45	1380	1.55	1420	1.65	1455	1.75	1495	1.85
2100	1245	1.25	1285	1.35	1325	1.45	1360	1.55	1400	1.65	1440	1.75	1475	1.85	1510	1.95
2200	1270	1.40	1310	1.50	1345	1.55	1385	1.65	1420	1.75	1460	1.90	1495	2.00	1530	2.10
2300	1295	1.50	1335	1.60	1370	1.70	1405	1.80	1445	1.90	1480	2.00	1515	2.10	1550	2.20
2400	1320	1.60	1360	1.70	1395	1.80	1430	1.90	1465	2.05	1500	2.15	1535	2.25	1570	2.35

0.10 to 0.80 in. w.g. 5 Ton Basic Efficiency (Horizontal) THA060B

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 #3									
1600	735	0.35	780	0.40	825	0.45	875	0.50	925	0.55	975	0.65	1025	0.70	1070	0.80
1700	775	0.40	815	0.45	860	0.50	905	0.55	955	0.65	1000	0.70	1045	0.80	1090	0.85
1800	815	0.50	855	0.55	895	0.60	940	0.65	985	0.70	1025	0.80	1070	0.85	1115	0.95
1900	855	0.55	895	0.60	935	0.65	975	0.75	1015	0.80	1055	0.85	1095	0.95	1140	1.05
2000	895	0.65	935	0.70	970	0.75	1010	0.80	1045	0.90	1085	0.95	1125	1.05	1165	1.10
2100	940	0.75	970	0.80	1005	0.85	1045	0.90	1080	1.00	1115	1.05	1155	1.15	1190	1.20
2200	980	0.85	1010	0.90	1045	0.95	1080	1.05	1115	1.10	1150	1.20	1185	1.25	1220	1.35
2300	1020	0.95	1050	1.00	1085	1.10	1115	1.15	1150	1.20	1185	1.30	1215	1.35	1250	1.45
2400	1065	1.10	1095	1.15	1125	1.20	1155	1.30	1185	1.35	1215	1.45	1250	1.50	1280	1.60

0.90 to 1.60 in. w.g. 5 Ton Basic Efficiency (Horizontal) THA060B

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
	Low Static - Drive Kit #3						High Static - Drive Kit #7									
1600	1120	0.90	1165	1.00	1210	1.10	1255	1.20	1295	1.30	1340	1.40	1380	1.50	1420	1.65
1700	1135	0.95	1180	1.05	1225	1.15	1270	1.25	1310	1.35	1350	1.45	1390	1.60	1430	1.70
1800	1155	1.00	1200	1.10	1240	1.20	1285	1.30	1325	1.45	1365	1.55	1405	1.65	1440	1.75
1900	1180	1.10	1220	1.20	1260	1.30	1300	1.40	1340	1.50	1380	1.65	1415	1.75	1455	1.85
2000	1205	1.20	1245	1.30	1280	1.40	1320	1.50	1360	1.60	1395	1.70	1435	1.85	1470	1.95
2100	1230	1.30	1265	1.40	1305	1.50	1340	1.60	1380	1.70	1415	1.80	1450	1.95	1485	2.05
2200	1255	1.40	1290	1.50	1330	1.60	1365	1.70	1400	1.85	1435	1.95	1470	2.05	1505	2.15
2300	1285	1.55	1320	1.65	1355	1.75	1385	1.85	1420	1.95	1455	2.05	1490	2.20	1520	2.30
2400	1315	1.70	1345	1.75	1380	1.90	1415	2.00	1445	2.10	1480	2.20	1510	2.30	1545	2.45

**TABLE 10
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.		5 Ton Standard Efficiency (Down-Flow)														THA060S
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 #3									
1600	675	0.30	730	0.35	785	0.40	835	0.45	885	0.50	935	0.60	985	0.65	1030	0.70
1700	710	0.35	760	0.40	815	0.45	860	0.50	910	0.60	960	0.65	1005	0.70	1050	0.80
1800	745	0.45	795	0.50	845	0.55	890	0.60	935	0.65	980	0.70	1025	0.80	1070	0.85
1900	780	0.50	830	0.55	875	0.60	920	0.65	965	0.75	1010	0.80	1050	0.85	1090	0.95
2000	820	0.60	865	0.65	905	0.70	950	0.75	990	0.80	1035	0.90	1075	0.95	1115	1.05
2100	855	0.65	900	0.70	940	0.80	980	0.85	1020	0.90	1060	1.00	1100	1.05	1140	1.15
2200	890	0.75	935	0.80	970	0.85	1010	0.95	1050	1.00	1090	1.10	1130	1.15	1165	1.25
2300	930	0.85	970	0.90	1005	1.00	1045	1.05	1080	1.10	1120	1.20	1155	1.25	1190	1.35
2400	965	0.95	1005	1.05	1040	1.10	1075	1.15	1115	1.25	1150	1.30	1185	1.40	1220	1.50
0.90 to 1.60 in. w.g.		5 Ton Standard Efficiency (Down-Flow)														THA060S
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
	Low Static - Drive Kit #3						High Static - Drive Kit #7									
1600	1075	0.80	1120	0.85	1160	0.95	1200	1.05	1240	1.10	1280	1.20	1320	1.30	1355	1.35
1700	1090	0.85	1135	0.95	1175	1.00	1215	1.10	1255	1.20	1295	1.30	1330	1.35	1365	1.45
1800	1110	0.95	1155	1.00	1195	1.10	1230	1.20	1270	1.25	1310	1.35	1345	1.45	1380	1.55
1900	1135	1.05	1170	1.10	1210	1.20	1250	1.25	1285	1.35	1325	1.45	1360	1.55	1395	1.65
2000	1155	1.10	1195	1.20	1230	1.30	1270	1.35	1305	1.45	1340	1.55	1375	1.65	1410	1.75
2100	1180	1.20	1215	1.30	1250	1.40	1290	1.45	1325	1.55	1360	1.65	1395	1.75	1425	1.85
2200	1200	1.30	1240	1.40	1275	1.50	1310	1.60	1345	1.70	1380	1.80	1410	1.85	1445	1.95
2300	1225	1.45	1260	1.50	1295	1.60	1330	1.70	1365	1.80	1400	1.90	1430	2.00	1465	2.10
2400	1255	1.55	1285	1.65	1320	1.75	1355	1.85	1385	1.90	1420	2.05	1450	2.10	1480	2.20
0.10 to 0.80 in. w.g.		5 Ton Standard Efficiency (Horizontal)														THA060S
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		Low Static - Drive Kit #3													
1600	785	0.40	845	0.45	900	0.50	955	0.55	1010	0.65	1060	0.70	1110	0.80	1160	0.90
1700	825	0.45	880	0.50	935	0.60	990	0.65	1040	0.70	1090	0.80	1135	0.85	1185	0.95
1800	865	0.50	920	0.60	975	0.65	1020	0.75	1070	0.80	1120	0.90	1165	0.95	1210	1.05
1900	910	0.60	960	0.70	1010	0.75	1060	0.85	1105	0.90	1150	1.00	1195	1.05	1240	1.15
2000	950	0.70	1000	0.80	1050	0.85	1095	0.95	1140	1.00	1185	1.10	1225	1.15	1265	1.25
2100	995	0.80	1040	0.90	1085	0.95	1130	1.05	1175	1.15	1215	1.20	1260	1.30	1300	1.40
2200	1040	0.95	1085	1.00	1125	1.10	1170	1.15	1210	1.25	1250	1.35	1290	1.40	1330	1.50
2300	1080	1.05	1125	1.15	1165	1.20	1205	1.30	1245	1.40	1285	1.45	1325	1.55	1360	1.65
2400	1125	1.20	1165	1.25	1205	1.35	1245	1.45	1285	1.55	1320	1.60	1360	1.70	1395	1.80
0.90 to 1.60 in. w.g.		5 Ton Standard Efficiency (Horizontal)														THA060S
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 #3		High Static - Drive Kit #7													
1600	1210	0.95	1255	1.05	1305	1.15	1350	1.30	1395	1.40	1440	1.55	1485	1.65	1530	1.80
1700	1230	1.05	1275	1.15	1320	1.25	1365	1.35	1410	1.45	1455	1.60	1495	1.70	1540	1.85
1800	1255	1.15	1300	1.25	1340	1.35	1385	1.45	1425	1.55	1470	1.70	1510	1.80	1550	1.95
1900	1280	1.25	1325	1.35	1365	1.45	1405	1.55	1445	1.65	1485	1.75	1525	1.90	1565	2.00
2000	1310	1.35	1350	1.45	1390	1.55	1430	1.65	1470	1.75	1505	1.85	1545	2.00	1585	2.15
2100	1340	1.50	1375	1.55	1415	1.65	1455	1.80	1490	1.90	1530	2.00	1565	2.10	1605	2.25
2200	1370	1.60	1405	1.70	1445	1.80	1480	1.90	1515	2.00	1555	2.15	1590	2.25	1625	2.40
2300	1400	1.75	1435	1.85	1470	1.95	1510	2.05	1545	2.20	1580	2.30	1615	2.40	1650	2.55
2400	1430	1.90	1465	2.00	1505	2.15	1535	2.20	1570	2.35	1605	2.45	1640	2.60	1675	2.70

**TABLE 11
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

6 Ton Standard Efficiency (Down-Flow)

THA072S

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 #4							
1900	775	0.45	820	0.50	870	0.55	915	0.65	965	0.70	1010	0.75	1060	0.85	1105	0.90
2000	810	0.55	855	0.60	900	0.65	945	0.70	990	0.75	1035	0.85	1080	0.90	1125	1.00
2100	850	0.60	890	0.65	935	0.75	975	0.80	1020	0.85	1060	0.95	1105	1.00	1145	1.10
2200	885	0.70	925	0.75	965	0.80	1005	0.90	1045	0.95	1090	1.05	1130	1.10	1170	1.20
2300	920	0.80	960	0.85	1000	0.90	1035	1.00	1075	1.05	1115	1.15	1155	1.20	1195	1.30
2400	960	0.90	995	0.95	1030	1.05	1070	1.10	1105	1.15	1145	1.25	1180	1.30	1220	1.40
2500	995	1.00	1030	1.10	1065	1.15	1100	1.20	1135	1.30	1175	1.35	1210	1.45	1245	1.50
2600	1035	1.15	1065	1.20	1100	1.25	1135	1.35	1170	1.40	1205	1.50	1240	1.60	1275	1.65
2700	1070	1.30	1100	1.35	1135	1.40	1170	1.50	1200	1.55	1235	1.65	1265	1.70	1300	1.80
2800	1105	1.40	1140	1.50	1170	1.55	1200	1.65	1235	1.70	1265	1.80	1295	1.85	1330	1.95
2900	1145	1.60	1175	1.65	1205	1.70	1235	1.80	1265	1.85	1295	1.95	1330	2.05	1360	2.10

0.90 to 1.60 in. w.g.

6 Ton Standard Efficiency (Down-Flow)

THA072S

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
	Low Static - Kit #4				High Static - Drive Kit #8											
1900	1150	1.00	1190	1.10	1235	1.20	1275	1.25	1315	1.35	1355	1.45	1395	1.55	1435	1.65
2000	1165	1.10	1210	1.15	1250	1.25	1290	1.35	1330	1.45	1370	1.55	1410	1.65	1445	1.75
2100	1190	1.15	1230	1.25	1270	1.35	1310	1.45	1350	1.55	1385	1.65	1425	1.75	1460	1.85
2200	1210	1.25	1250	1.35	1290	1.45	1325	1.55	1365	1.65	1400	1.75	1440	1.85	1475	1.95
2300	1235	1.40	1270	1.45	1310	1.55	1345	1.65	1385	1.75	1420	1.85	1455	1.95	1490	2.05
2400	1255	1.50	1295	1.60	1330	1.65	1365	1.75	1400	1.85	1440	2.00	1475	2.10	1505	2.20
2500	1280	1.60	1315	1.70	1355	1.80	1390	1.90	1425	2.00	1455	2.10	1490	2.20	1525	2.30
2600	1310	1.75	1340	1.85	1375	1.95	1410	2.05	1445	2.15	1480	2.25	1510	2.35	1545	2.45
2700	1335	1.90	1370	2.00	1400	2.10	1435	2.20	1465	2.30	1500	2.40	1530	2.50	1565	2.60
2800	1360	2.05	1395	2.15	1425	2.25	1460	2.35	1490	2.45	1520	2.55	1555	2.65	1585	2.80
2900	1390	2.20	1420	2.30	1450	2.40	1485	2.50	1515	2.60	1545	2.70	1575	2.85	1605	2.95

**TABLE 12
BELT DRIVE BLOWER PERFORMANCE**

0.10 to 0.80 in. w.g.

6 Ton Standard Efficiency (Horizontal)

THA072S

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 #4											
1900	905	0.60	955	0.65	1000	0.70	1045	0.75	1090	0.85	1135	0.90	1175	0.95	1215	1.05
2000	945	0.65	995	0.75	1040	0.80	1085	0.85	1125	0.95	1170	1.00	1210	1.05	1250	1.15
2100	990	0.75	1035	0.85	1080	0.90	1120	0.95	1160	1.05	1205	1.10	1240	1.20	1280	1.25
2200	1030	0.85	1075	0.95	1115	1.00	1160	1.10	1200	1.15	1235	1.25	1275	1.30	1310	1.40
2300	1075	1.00	1115	1.05	1155	1.15	1195	1.20	1235	1.30	1275	1.35	1310	1.45	1345	1.50
2400	1115	1.10	1155	1.20	1195	1.25	1235	1.35	1275	1.45	1310	1.50	1345	1.60	1380	1.70
2500	1160	1.25	1200	1.35	1235	1.40	1275	1.50	1310	1.60	1345	1.65	1380	1.75	1415	1.85
2600	1205	1.40	1240	1.50	1275	1.55	1315	1.65	1350	1.75	1385	1.85	1415	1.90	1450	2.00
2700	1245	1.55	1285	1.65	1320	1.75	1355	1.85	1390	1.95	1420	2.00	1455	2.10	1485	2.20
2800	1290	1.75	1325	1.85	1360	1.95	1395	2.00	1425	2.10	1460	2.20	1490	2.30	1520	2.40
2900	1335	1.95	1365	2.00	1400	2.10	1435	2.20	1465	2.30	1500	2.40	1530	2.50	1560	2.60

0.90 to 1.60 in. w.g.

6 Ton Standard Efficiency (Horizontal)

THA072S

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 #8															
1900	1255	1.10	1295	1.15	1335	1.25	1370	1.30	1405	1.40	1440	1.45	1475	1.55	1510	1.65
2000	1285	1.20	1325	1.30	1360	1.35	1395	1.45	1430	1.50	1465	1.60	1500	1.70	1530	1.75
2100	1315	1.35	1355	1.40	1390	1.50	1425	1.55	1460	1.65	1490	1.70	1525	1.80	1555	1.90
2200	1350	1.45	1385	1.55	1420	1.65	1455	1.70	1485	1.80	1520	1.85	1550	1.95	1585	2.05
2300	1380	1.60	1415	1.70	1450	1.75	1480	1.85	1515	1.95	1545	2.00	1580	2.10	1610	2.20
2400	1415	1.75	1450	1.85	1480	1.90	1515	2.00	1545	2.10	1575	2.20	1605	2.25	1635	2.35
2500	1450	1.95	1480	2.00	1515	2.10	1545	2.20	1575	2.25	1605	2.35	1635	2.45	1665	2.55
2600	1480	2.10	1515	2.20	1545	2.25	1575	2.35	1605	2.45	1635	2.55	1665	2.65	1695	2.75
2700	1520	2.30	1550	2.40	1580	2.45	1610	2.55	1640	2.65	1670	2.75	1695	2.85	1725	2.95
2800	1555	2.50	1585	2.60	1615	2.70	1645	2.80	1670	2.85	1700	2.95	1730	3.05	1760	3.20
2900	1590	2.70	1620	2.80	1650	2.90	1675	3.00	1705	3.10	1735	3.20	1760	3.30	1790	3.40

**TABLE 13
ADDITIONAL ACCESSORY AIR RESISTANCE**

Air Volume cfm	Economizer	Electric Heat
800	0.04	0.01
1000	0.04	0.03
1200	0.04	0.06
1400	0.04	0.09
1600	0.04	0.12
1800	0.05	0.15
2000	0.05	0.18
2200	0.05	0.20
2400	0.05	0.22
2600	0.06	0.24
2800	0.06	0.26
3000	0.06	0.28

**TABLE 14
MINIMUM AIRFLOW
TH (BELT DRIVE) UNITS WITH ELECTRIC HEAT**

Kw	CFM	
	Downflow	Horizontal
30	2250	2050
22.5	1750	1800
15	1250	1350
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 15
DRIVE KIT SPECIFICATIONS**

Motor hp		RPM Range							
Nominal	Maximum	Drive 1	Drive 2	Drive 3	Drive 4	Drive 5	Drive 6	Drive 7	Drive 8
1.5	1.7	673 - 1010	745 - 1117	833 - 1250	968 - 1340	897 - 1346	1071 - 1429	1212 - 1548	1193 - 1591
2	2.3								

*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.

Heating Start-Up

1- Set thermostat or temperature control device to initiate a first-stage heating demand.

A first-stage heating demand (W1) will energize compressors 1 and the outdoor fan.

Note - L1 reversing valve is de-energized in the heating mode.

THA Units With Optional Electric Heat -

An increased heating demand (W2) will energize electric heat. Electric heat is also energized during the defrost cycle (W1) to maintain discharge air temperature.

Cooling Start-Up

▲ IMPORTANT

If unit is equipped with a crankcase heater. Make sure heater is energized 24 hours before unit start-up to prevent compressor damage as a result of slugging.

A - Start-Up

1- Set thermostat or temperature control device fan switch to **AUTO** or **ON**. Set thermostat or temperature control device to initiate a first-stage cooling demand.

A first-stage Y1 cooling demand will energize L1 reversing valve solenoid and compressor 1.

Units With Optional Economizer -

The optional economizer will start on a first stage (Y1) cooling demand when outdoor air enthalpy is suitable. An increased cooling demand (Y2) will energize compressor 1.

2- Refrigerant circuits are factory charged with HCFC-22 refrigerant. See unit rating plate for correct amount of 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.

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).
- 2- Check each system separately with all stages operating.
- 3- Use a thermometer to accurately measure the outdoor ambient temperature.
- 4- Apply the outdoor temperature to tables 18 through 24 to determine normal operating pressures.

5- 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.**

**TABLE 16
TH 024S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	141	82
75°F	163	84
85°F	189	85
95°F	219	86
105°F	252	87
115°F	289	89

**TABLE 17
TH 030S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	146	81
75°F	167	82
85°F	194	84
95°F	227	85
105°F	261	87
115°F	298	89

**TABLE 18
TH 036B NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	169	81
75°F	196	82
85°F	226	84
95°F	259	85
105°F	296	86
115°F	336	87

**TABLE 19
TH 036S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	154	83
75°F	178	83
85°F	205	84
95°F	236	86
105°F	269	88
115°F	306	89

**TABLE 20
TH 048B NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	185	76
75°F	212	78
85°F	242	80
95°F	276	81
105°F	312	82
115°F	351	84

**TABLE 21
TH 048S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	171	86
75°F	197	86
85°F	227	88
95°F	259	89
105°F	295	90
115°F	335	91

**TABLE 22
TH 060B NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	174	68
75°F	201	71
85°F	232	73
95°F	267	77
105°F	305	80
115°F	346	84

**TABLE 23
TH 060S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	163	81
75°F	189	82
85°F	217	84
95°F	259	85
105°F	285	86
115°F	323	88

**TABLE 24
TH 072S NORMAL OPERATING PRESSURES**

Outdoor Coil Entering Air Temp	Dis. + 10 psig	Suct. +5 psig
65°F	173	70
75°F	203	76
85°F	234	81
95°F	267	84
105°F	304	86
115°F	343	87

6- 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.

7- Use the following approach method along with the normal operating pressures to confirm readings.

D - Charge Verification - Approach Method

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

Approach Temperature = Liquid temperature minus ambient temperature.

9- Approach temperature should match values in table 25. An approach temperature greater than value shown indicates an undercharge. An approach temperature less than value shown indicates an overcharge.

10- Do not use the approach method if system pressures do not match pressures in tables 18 through 24. The approach method is not valid for grossly over or undercharged systems.

**TABLE 25
APPROACH TEMPERATURE**

Unit	Liquid Temp. Minus Ambient Temp.
024S	7°F ± 1 (3.9°C ± 0.5)
030S	8°F ± 1 (4.4°C ± 0.5)
036B	8°F ± 1 (4.4°C ± 0.5)
036S	7°F ± 1 (3.9°C ± 0.5)
048B	16°F ± 1 (8.9°C ± 0.5)
048S	10°F ± 1 (5.6°C ± 0.5)
060B	12°F ± 1 (6.7°C ± 0.5)
060S	6°F ± 1 (3.3°C ± 0.5)
072S	11°F ± 1 (6.1°C ± 0.5)

E - Compressor Controls

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

1- Freezestat (S49)

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

2- Defrost Switch (S6)

Defrost switch closes to initiate defrost when liquid line temperature falls to 42°F (5.6°C). Defrost switch opens when liquid line temperature reaches 70°F (21°C) to terminate defrost. If the liquid line temperature does not rise above 70°F (21°C), the CMC1 will terminate defrost after 14 minutes. The defrost switch is located on the liquid line between the outdoor expansion valve and the distributor

3- Defrost Control (CMC1)

Defrost is liquid line temperature initiated and operates for 14 minutes unless terminated by liquid line temperature.

When the liquid line temperature drops below 42°F (5.6°C), the defrost switch closes and signals the **defrost control** that a defrost cycle is needed. If the defrost switch is still closed after 60 minutes (default), a defrost cycle begins and operates for 14 minutes. The defrost switch can terminate the defrost cycle before the 14 minutes elapses if liquid line temperature reaches 70°F (21°C)

Electric heat is energized during defrost to maintain discharge air temperature.

Defrost Control Board

The defrost thermostat and the defrost control work together to ensure that the heat pump outdoor coil does not ice excessively during the heating mode.

Compressor Accumulated Run-Time Interval

The defrost control will not energize a defrost cycle unless the unit has been operating in heating mode for an accumulated 60 minutes (default). The run time interval can be changed by moving the jumper on the CMC board timing pins. See figure 18.

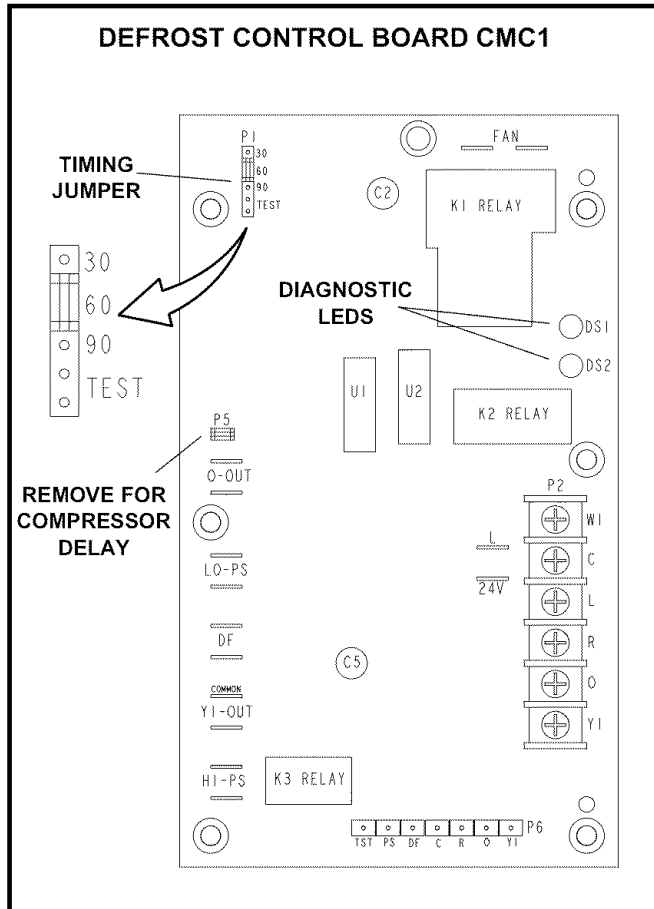


FIGURE 18

The defrost interval can be adjusted to 30, 60, or 90 minutes. The defrost timing jumper is factory-installed to provide a 60-minute defrost interval. If the timing selector jumper is not in place, the control defaults to a 90-minute defrost interval.

Defrost Test Option

A TEST option is provided for troubleshooting. The TEST mode may be started any time the unit is in the heating mode and the defrost thermostat is closed or jumpered. If the timing jumper is in the TEST position at power-up, the defrost control will ignore the test pins. When the jumper is placed across the TEST pins for two seconds, the control will enter the defrost mode. If the jumper is

removed before an additional 5-second period has elapsed (7 seconds total), the unit will remain in defrost mode until the defrost pressure switch opens or 14 minutes have passed. If the jumper is not removed until after the additional 5-second period has elapsed, the defrost will terminate and the test option will not function again until the jumper is removed and re-applied.

Diagnostic LEDs

The defrost board uses two LEDs for diagnostics. The LEDs flash a sequence according to the condition.

TABLE 26

Defrost Control Board Diagnostic LED		
Mode	Green LED (DS2)	Red LED (DS1)
No power to control	OFF	OFF
Normal operation / power to control	Simultaneous Slow FLASH	
Anti-short cycle lockout	Alternating Slow FLASH	
Low pressure switch, freezestat fault	OFF	Slow FLASH
Low pressure switch, freezestat lockout	OFF	ON
High pressure switch fault	Slow FLASH	OFF
High pressure switch lockout	ON	OFF

Service

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

⚠ 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.

⚠ CAUTION

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

A - Lubrication

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

B - Filters

Units are equipped with temporary filters which need to be replaced before the building is occupied. See table 27 for correct filter size. Refer to local codes or appropriate jurisdiction for approved filters.

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 19.

⚠ 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.

**TABLE 27
UNIT FILTERS**

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

C - 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.

D - Indoor Coil

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

E - Outdoor Coil

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

Outdoor 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 20. Flush coils with water following cleaning.

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

F - Filter Drier

The unit is equipped with a biflow filter drier. if replacement is necessary, order another of like design.

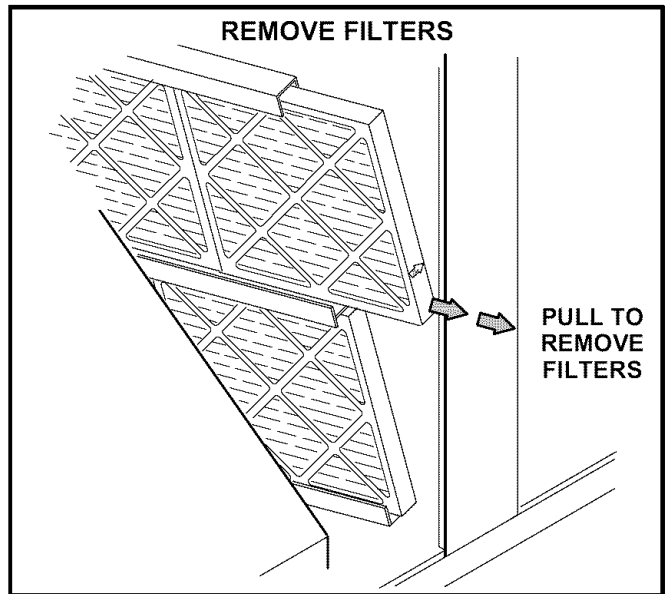


FIGURE 19

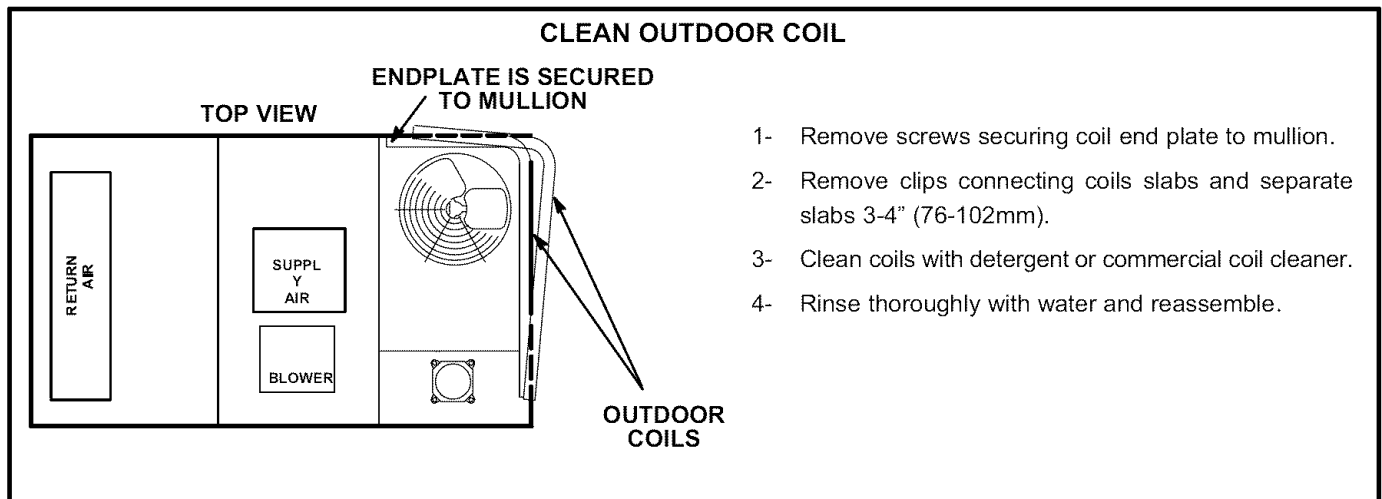


FIGURE 20