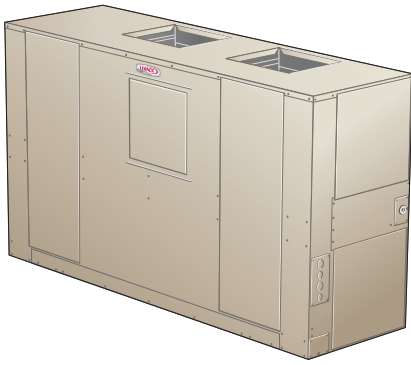




**RETAIN THESE INSTRUCTIONS
FOR FUTURE REFERENCE**

⚠ WARNING

Horizontal application requires adjustment of the drain pan and drip pan. Refer to instruction sections Horizontal Applications and Installing Condensate Drain.

⚠ 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 licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

⚠ WARNING

Electric Shock Hazard.

Can cause injury or death.

Foil-faced insulation has conductive characteristics similar to metal. Be sure there are no electrical connections within 1/2" of the insulation. If the foil-faced insulation comes in contact with electrical voltage, the foil could provide a path for current to pass through to the outer metal cabinet. While the current produced may not be enough to trip existing electrical safety devices (e.g., fuses or circuit breakers), the current can be enough to cause an electrical shock hazard that could cause personal injury or death.



INSTALLATION INSTRUCTIONS

Elite® ELA Series

AIR HANDLERS

6 TO 20 TONS

507742-01

3/2018

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General

The ELA Series air handler units are designed for installation with a matched remote outdoor unit that is charged with HFC-410A refrigerant and optional field-installed electric heat. The air handler units are for indoor installation only and are designed for upflow or horizontal applications.

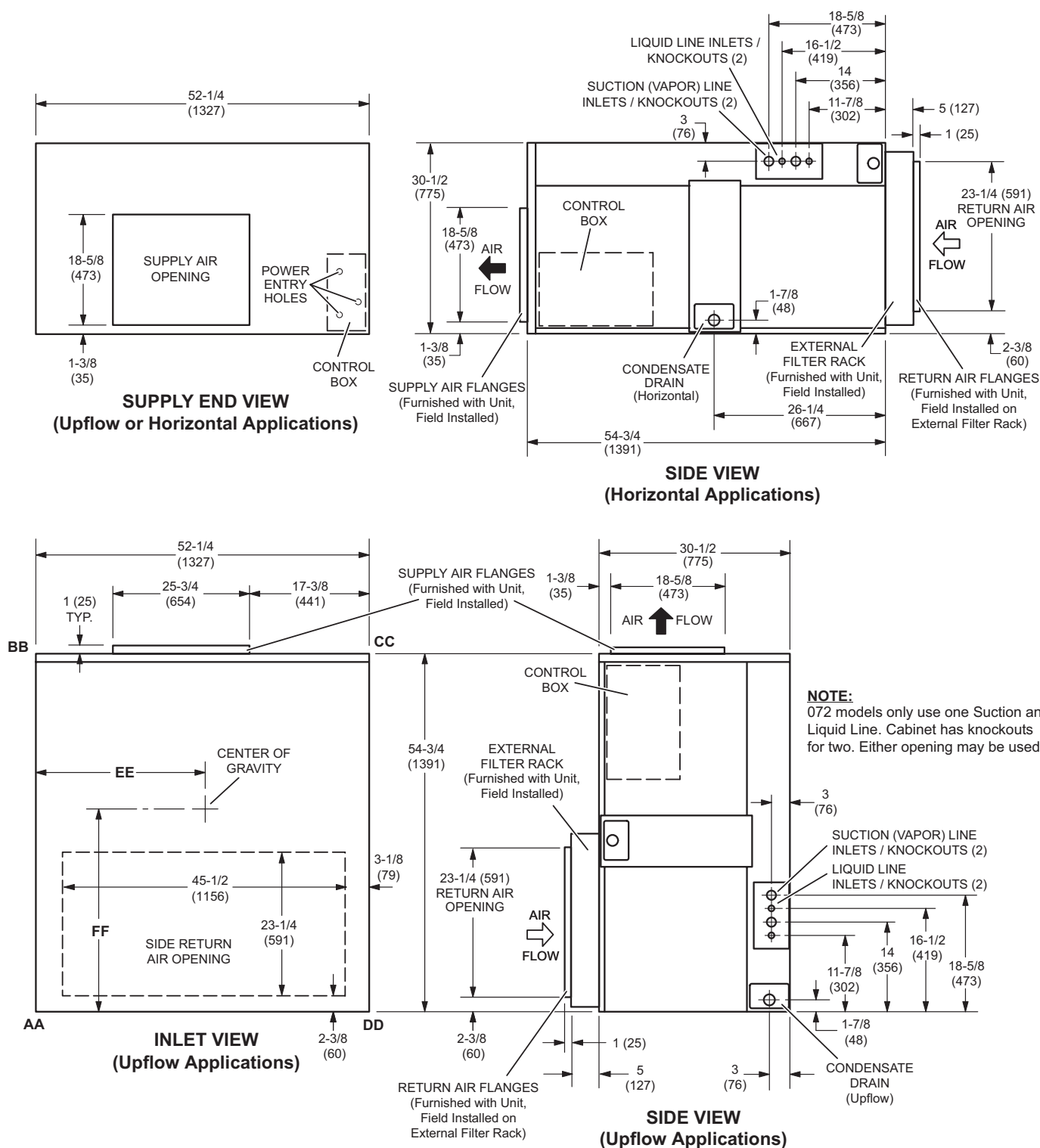
Shipping and Packing List

Package contains the following:

- 1 – Assembled blower coil unit
- 1 – Filter rack (shipped inside unit)
- 8 – Supply and return air flanges (shipped inside unit) listed in Table 2 on page 13
- 1 – Bag assembly that consists of the following:
 - Installation instruction
 - Two wiring diagrams (unit wiring and thermostat connections)
 - Six plastic grommets (various sizes) for line set knockouts

Check package contents for shipping damage; if found, immediately report damage to last carrier.

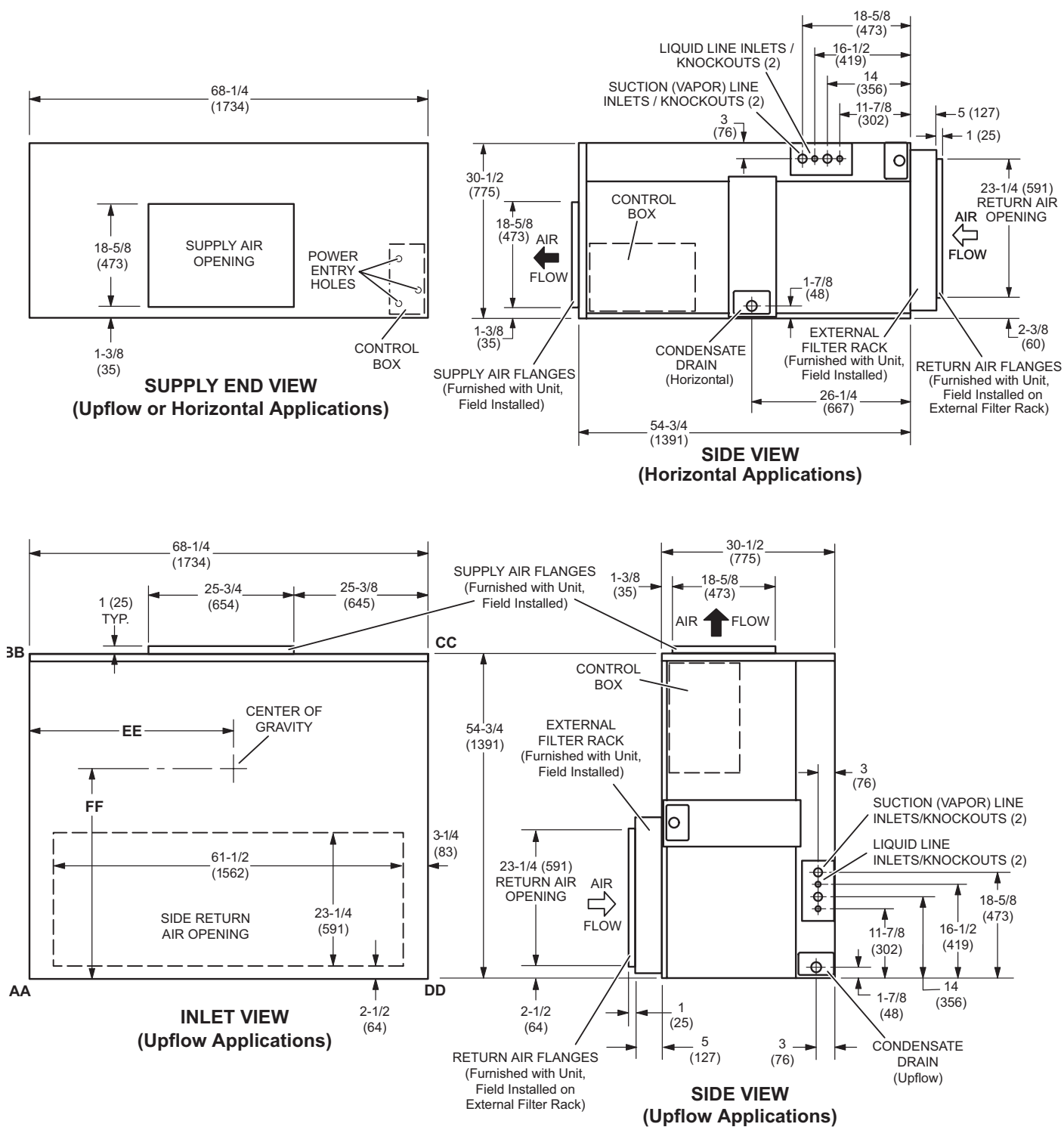
ELA072 and ELA090 Unit Dimensions – Inches (mm)



CORNER WEIGHTS

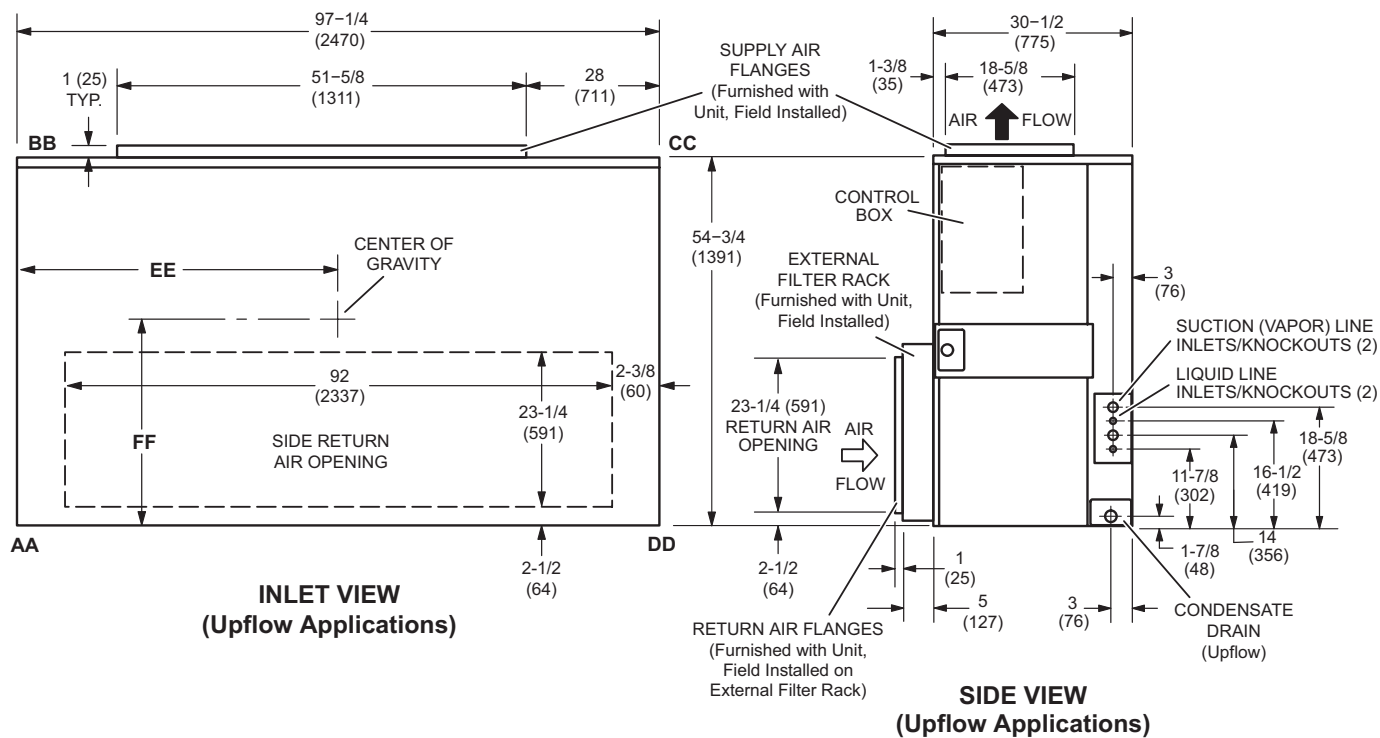
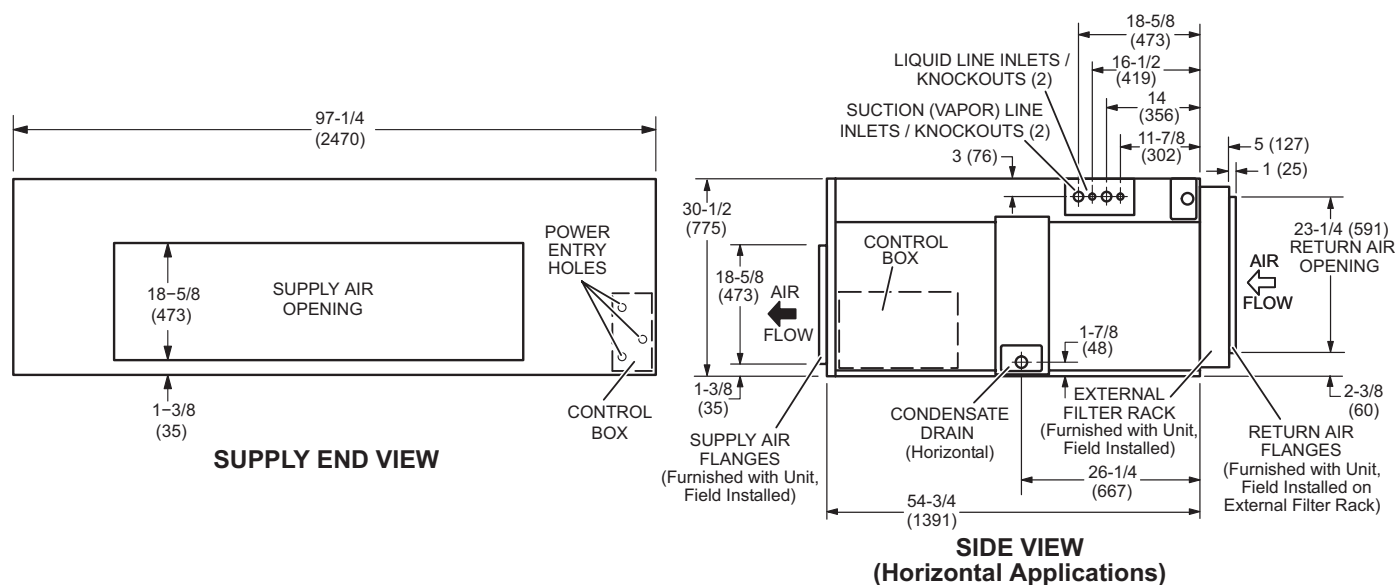
Model No.	AA		BB		CC		DD		CENTER OF GRAVITY			
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	EE		FF	
ELA072	102	46	102	46	102	46	102	46	26.1	640	27.4	671
ELA090	108	49	108	49	108	49	108	49	26.1	640	27.4	671
ELA120	126	57	121	55	121	55	126	57	34.1	836	25.9	635
ELA150	130	59	125	57	125	57	130	59	34.1	836	25.9	635
ELA180	176	80	176	80	187	85	187	85	50.6	1240	27.4	671
ELA240	189	86	189	86	211	96	211	96	52.1	1277	27.4	671

ELA120 and ELA150 Dimensions – Inches (mm)



CORNER WEIGHTS									CENTER OF GRAVITY			
Model No.	AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm
ELA072	102	46	102	46	102	46	102	46	26.1	640	27.4	671
ELA090	108	49	108	49	108	49	108	49	26.1	640	27.4	671
ELA120	126	57	121	55	121	55	126	57	34.1	836	25.9	635
ELA150	130	59	125	57	125	57	130	59	34.1	836	25.9	635
ELA180	176	80	176	80	187	85	187	85	50.6	1240	27.4	671
ELA240	189	86	189	86	211	96	211	96	52.1	1277	27.4	671

ELA180 and ELA240 Dimensions – Inches (mm)



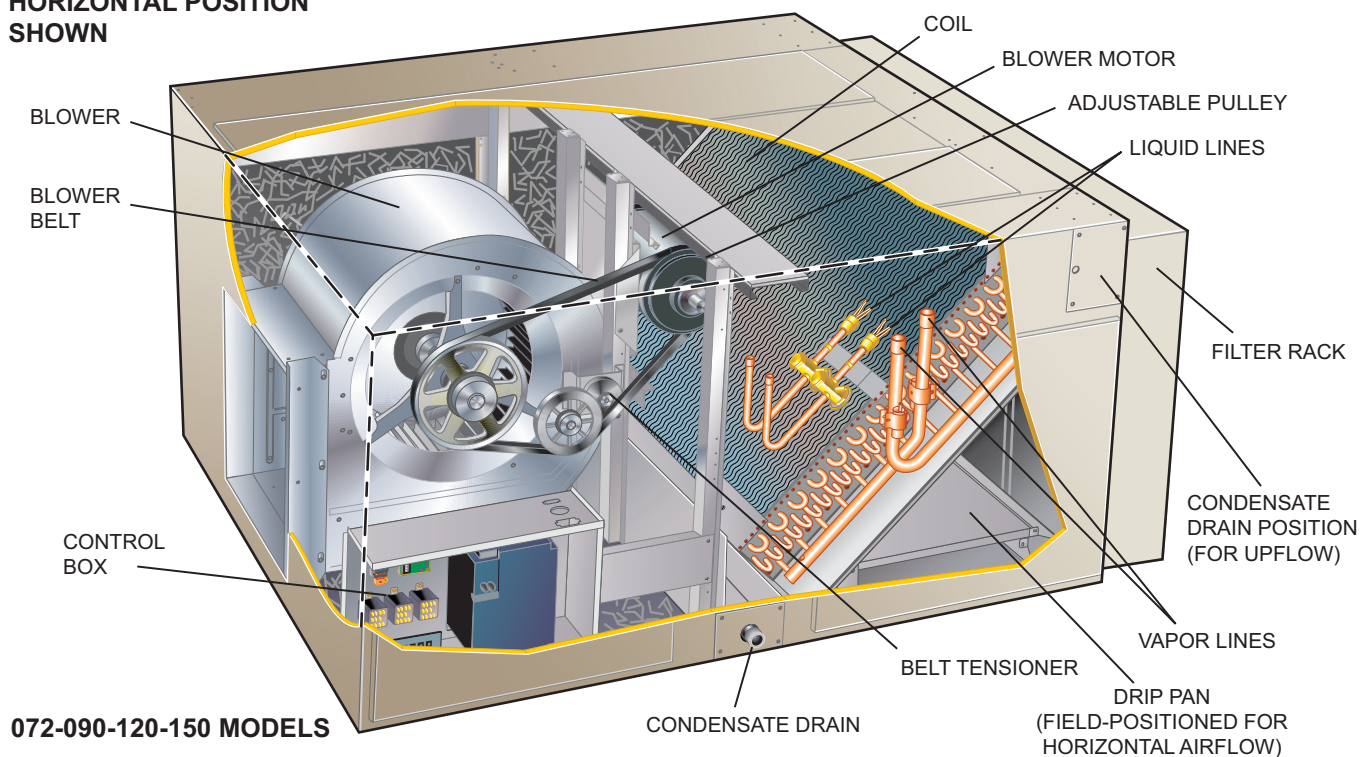
CORNER WEIGHTS

Model No.	AA		BB		CC		DD		CENTER OF GRAVITY			
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	EE		FF	
ELA072	102	46	102	46	102	46	102	46	26.1	640	27.4	671
ELA090	108	49	108	49	108	49	108	49	26.1	640	27.4	671
ELA120	126	57	121	55	121	55	126	57	34.1	836	25.9	635
ELA150	130	59	125	57	125	57	130	59	34.1	836	25.9	635
ELA180	176	80	176	80	187	85	187	85	50.6	1240	27.4	671
ELA240	189	86	189	86	211	96	211	96	52.1	1277	27.4	671

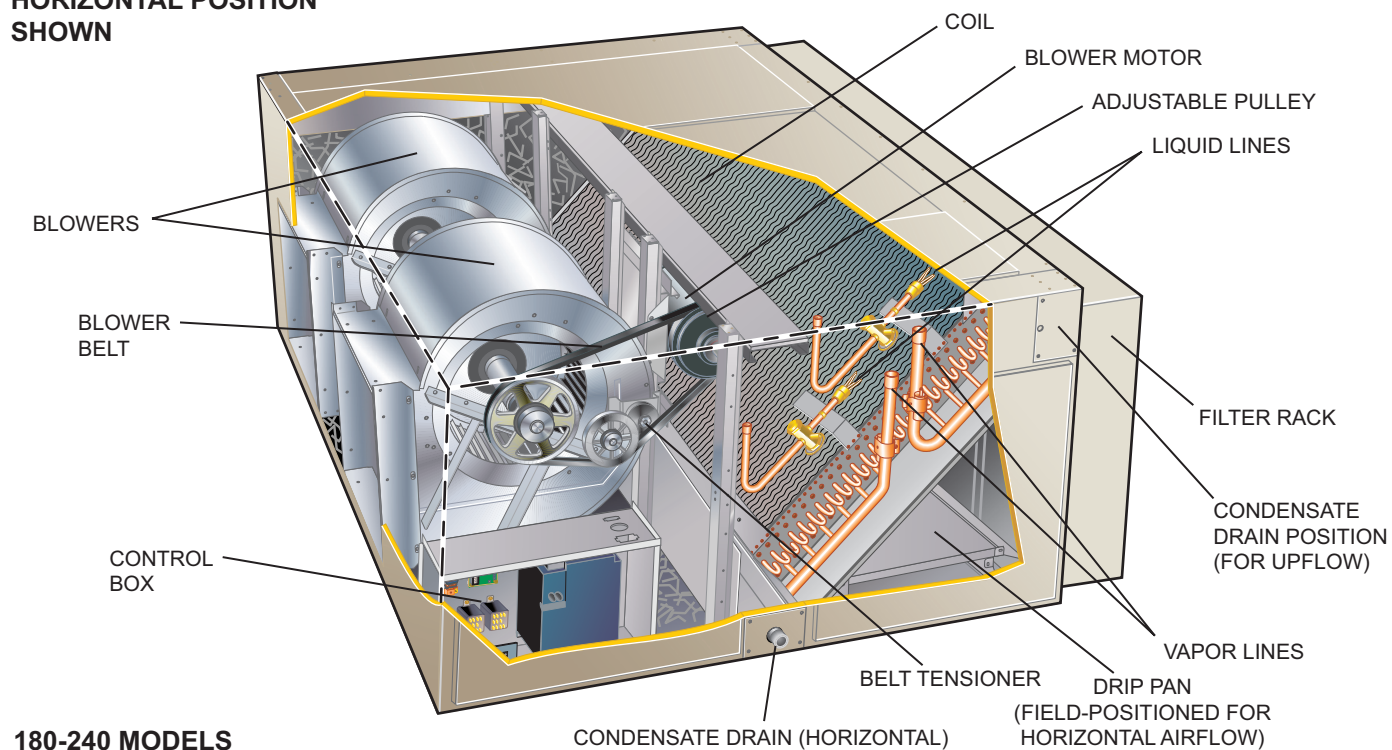
Unit Parts Arrangement

All ELA Series

HORIZONTAL POSITION SHOWN

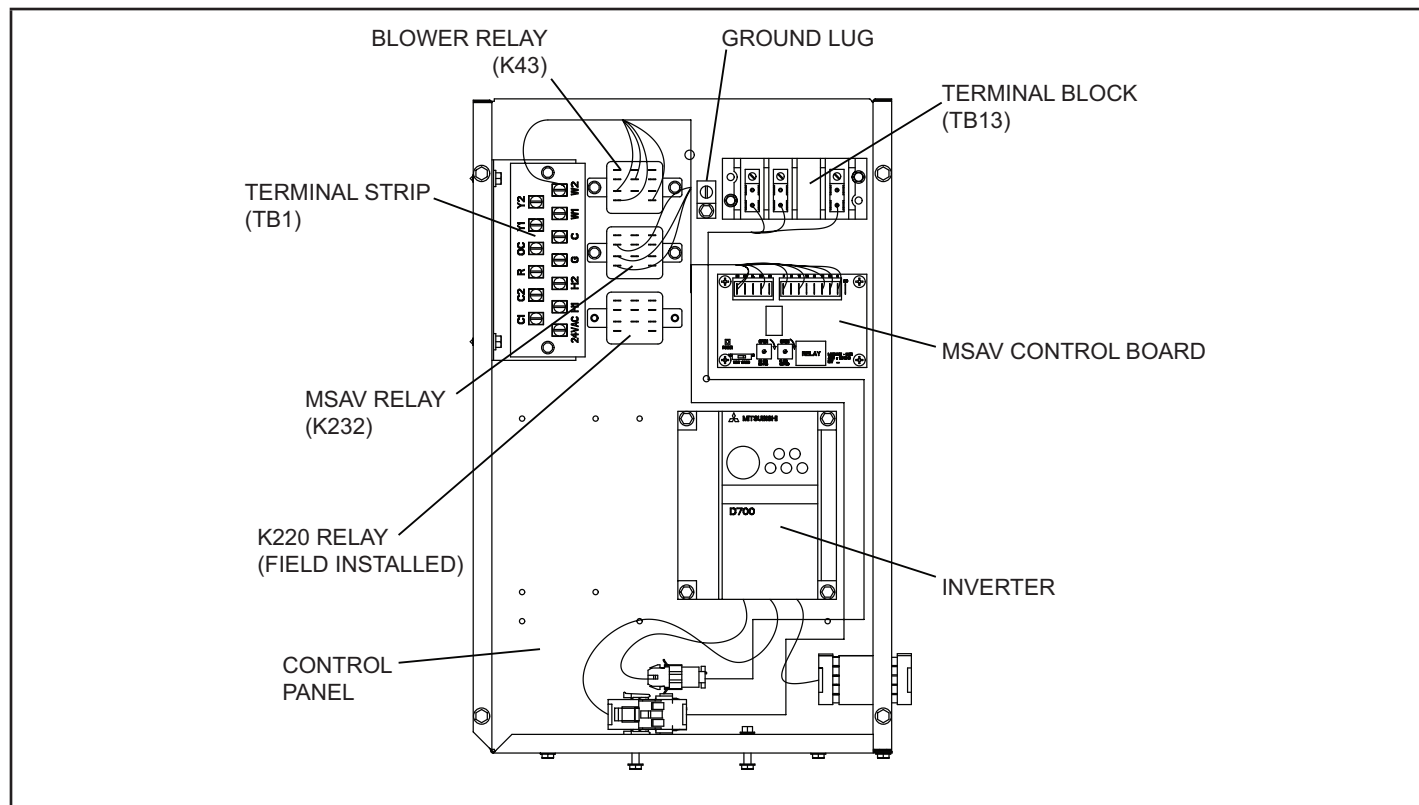


HORIZONTAL POSITION SHOWN



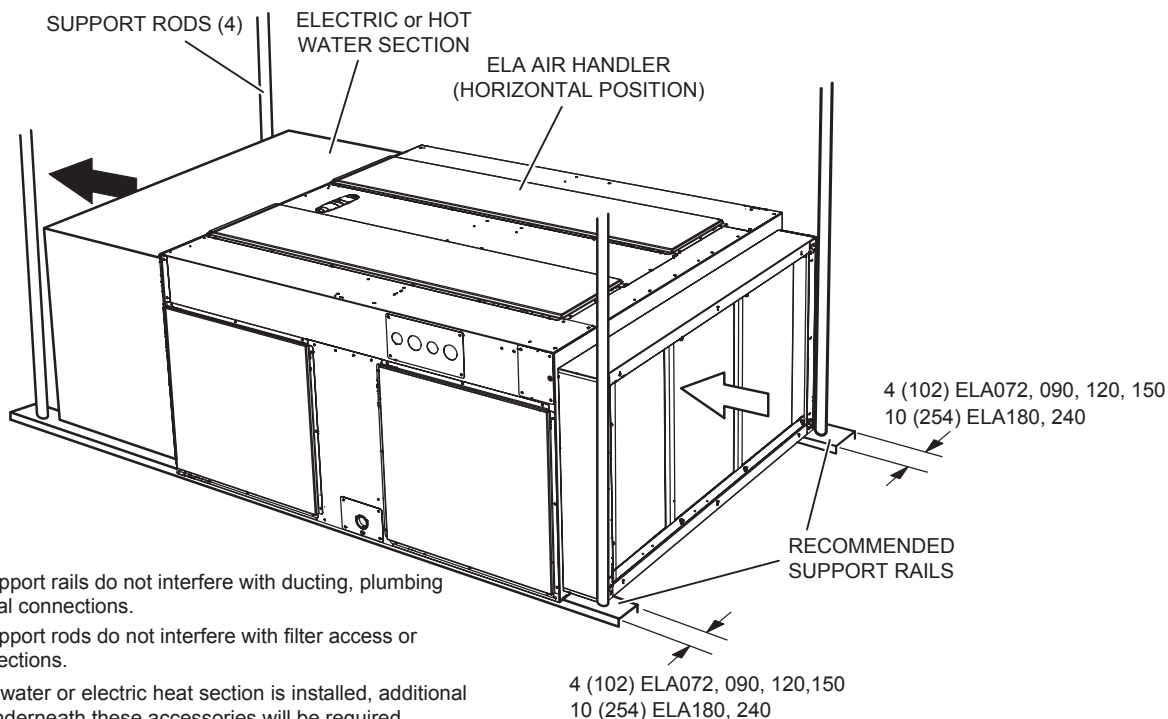
Unit Control Box Components Arrangement

All ELA Series



Typical Installation Support Method

TYPICAL SUPPORT METHOD FOR AIR HANDLER WITH HEAT SECTION IN HORIZONTAL POSITION



NOTES:

1. Ensure support rails do not interfere with ducting, plumbing or electrical connections.
2. Ensure support rods do not interfere with filter access or duct connections.
3. When hot water or electric heat section is installed, additional support underneath these accessories will be required.
4. Support rods and rails are field supplied.

Requirements

These instructions are intended as a general guide and do not supersede local or national codes in any way. Consult authorities having jurisdiction before installation.

In addition to conforming to manufacturer's installation instructions and local municipal building codes, installation of Lennox air handler units (with or without optional electric heat), shall conform with the following National Fire Protection Association (NFPA) standards:

- NFPA No. 90A – Standard for Installation of Air Conditioning and Ventilation Systems
- NFPA No. 90B – Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems

This unit is approved for installation clearance to combustible material as stated on the unit rating plate. Accessibility and service clearances must take precedence over combustible material clearances.

WARNING

Improper installation of the air handler can result in personal injury or death.

Do not allow external combustion products or other contaminants to enter the return air system or to be mixed with air that will be supplied to the living space. Use sheet metal screws and joint tape or duct mastic to seal return air system to air handler. In platform installations, the air handler should be sealed airtight to the return air plenum. A door must never be used as a portion of the return air duct system. The base must provide a stable support and an airtight seal to the air handler. Allow absolutely no sagging, cracks, gaps, etc.

For no reason should return and supply air duct systems ever be connected to or from other heating devices such as a fireplace or stove, etc. Fire, explosion, carbon monoxide poisoning, personal injury and/or property damage could result.

Refrigerant Piping Connections

ELA series evaporator coils have a holding charge of nitrogen or dry air. If there is no pressure when the rubber plugs are removed, check the coil for leaks before installing. After installation, pull a vacuum on the coil and line set before releasing the outdoor unit charge into the system.

**TABLE 1. ELA Series Refrigerant Connections
Size / Quantity**

Models	Liquid Line	Vapor / Suction Line
-072S4S	5/8" (1)	7/8" (1)
-090S4D, -120S4D, -150S4D	5/8" (2)	7/8" (2)
-180S4D, -240S4D	5/8" (2)	1-1/8" (2)

For single-stage applications, pipe the upper and lower evaporator circuits together (does not apply to ELA072).

For two-stage applications, pipe the stage 1 system to the lower part of the evaporator and the stage 2 system to the upper part of the evaporator. Table 1 lists piping connection sizes at the evaporator coil. The line set between the ELA air handler and outdoor unit should be sized per the Lennox Refrigerant Piping Guidelines.

- 1 - Route piping through either side of the unit.
- 2 - Remove the knockouts from the piping mullion. Install the rubber grommets into the piping holes.
- 3 - Remove the plugs from the vapor and liquid line stubs.
- 4 - Wrap a wet rag around each TXV before brazing to avoid overheating the valve.
- 5 - Remove protective coil cover between TXVs and evaporator coil as illustrated in Figure 1.

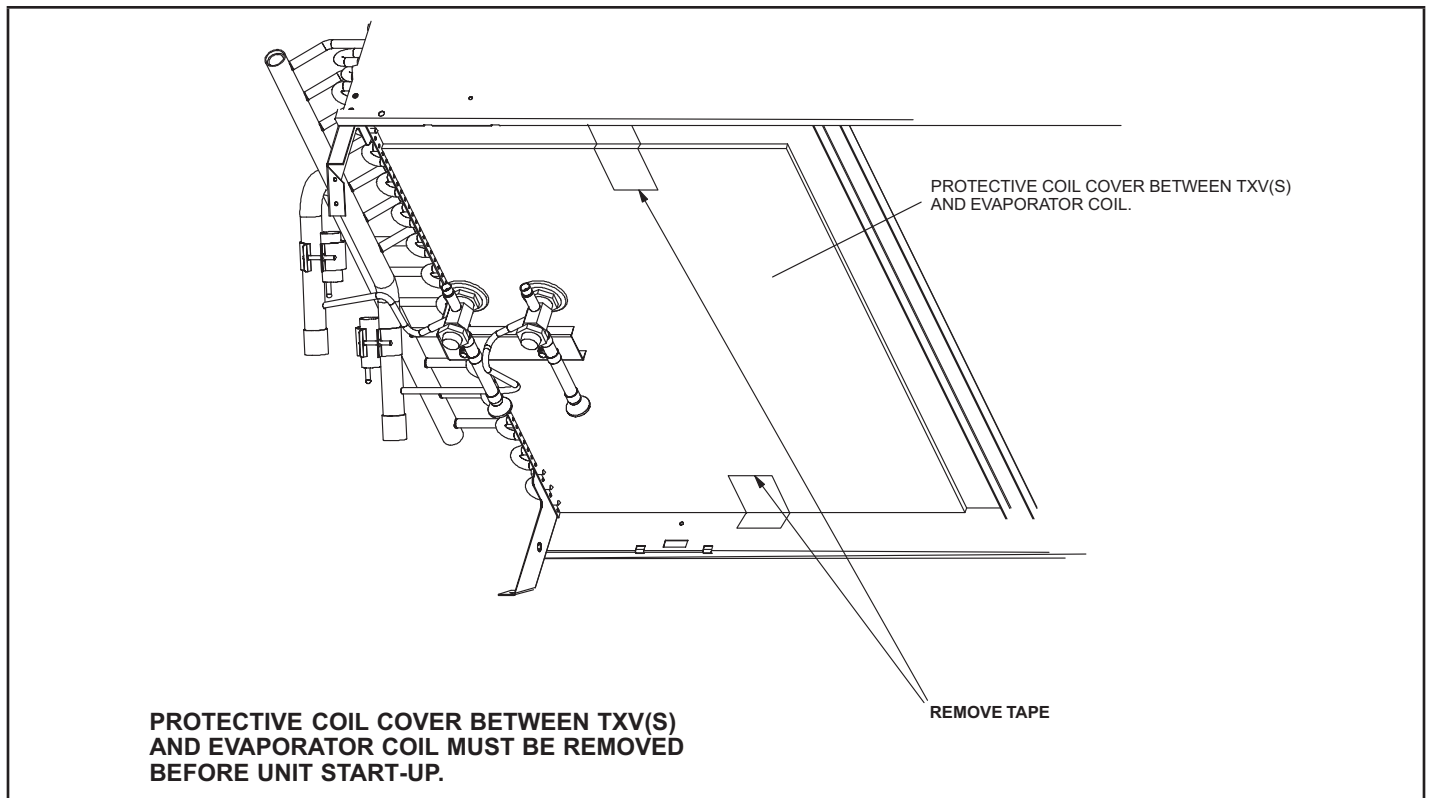


FIGURE 1. Protective Coil Cover Removal

Horizontal Applications

This section provides information regarding drip pan orientation and installation.

Drip Pan Orientation

If the unit is installed for horizontal airflow, the drip pan must be positioned as shown in figure 2.

Horizontal Position Drip Pan Installation

- 1 - Remove screws securing side covers. Remove side covers from unit.
- 2 - Remove screws securing the drip pan.
- 3 - Pull drip pan from the unit.
- 4 - Move drip pan to location shown in figure 2. Ensure that insulation parts remain on the bottom of drip pan.
- 5 - Reinstall screws to secure drip pan.
- 6 - Reinstall side covers with screws.

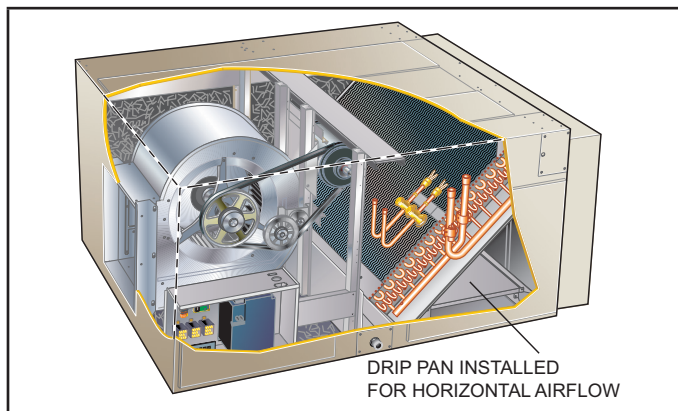


FIGURE 2. Drip Pan in Horizontal Airflow Position

Upflow Applications

This section provides information regarding drip pan orientation and installation.

Drip Pan Orientation

If the unit is installed for upflow airflow, the drip pan must be positioned as shown in figure 3.

Upflow Position Drip Pan Installation

- 1 - Remove screws securing side covers. Remove side covers from unit.
- 2 - Remove screws securing the drip pan.
- 3 - Pull drip pan from the unit.
- 4 - Move drip pan to location shown in figure 3. Ensure that insulation parts remain on the bottom of drip pan.
- 5 - Reinstall screws to secure drip pan.
- 6 - Reinstall side covers with screws.

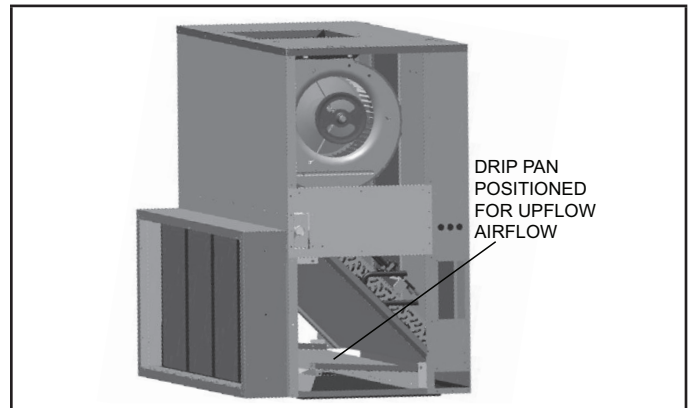
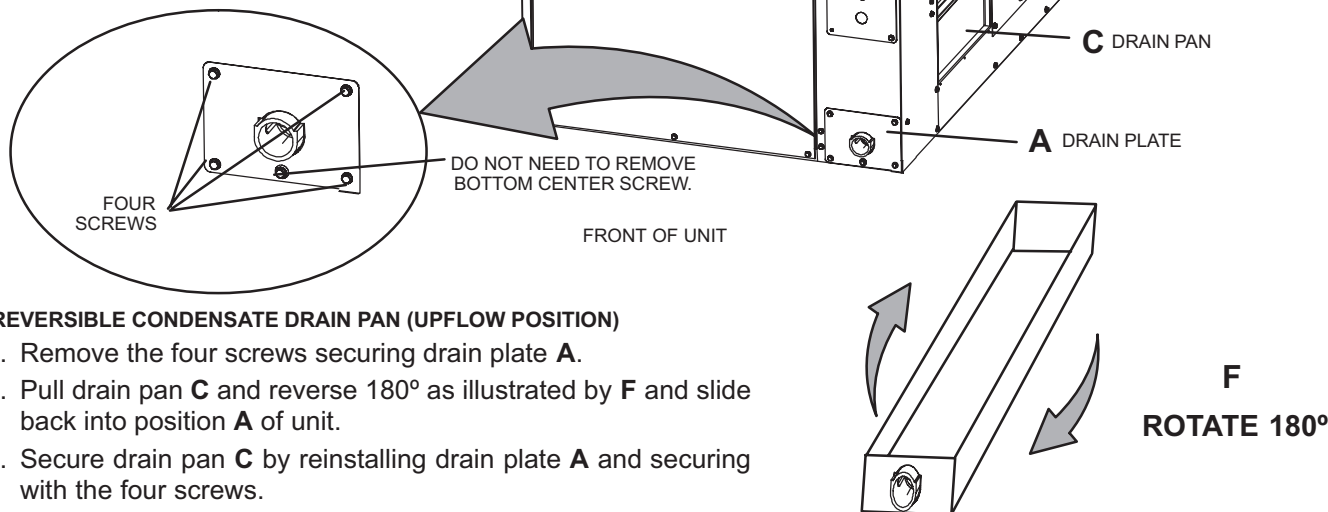


FIGURE 3. Drip Pan in Upflow Airflow Position

UPFLOW POSITION SHOWN

HORIZONTAL POSITION CONDENSATE DRAIN PAN INSTALLATION

1. Remove four screws securing drain plates **A** and **B** then remove plates.
2. Remove four screws securing blank plates **D** and **E** then remove plates.
3. Move drain plate **B** to position **E** and secure with four screws.
4. Pull drain pan **C** and slide into position **D**.
5. Move drain plate **A** to position **D** and secure with four screws.
6. Move blank plates **D** and **E** to positions **A** and **B** and secure with four screws.



REVERSIBLE CONDENSATE DRAIN PAN (UPFLOW POSITION)

1. Remove the four screws securing drain plate **A**.
2. Pull drain pan **C** and reverse 180° as illustrated by **F** and slide back into position **A** of unit.
3. Secure drain pan **C** by reinstalling drain plate **A** and securing with the four screws.

FIGURE 4. Reposition Drain Pan for Horizontal Applications

Installing Condensate Drain

Before connecting drain line, check drain hole to verify that drain opening is fully open and free of any debris. Also check to make sure that no debris has fallen into the drain pan during installation that may plug up the drain opening.

CONDENSATE DRAIN INSTALLATION

Connect main condensate drain (1 in. N.P.T.) and route downward to an open drain or sump. 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. Do not connect drain to a closed waste system. See figure 4 for typical condensate trap configuration.

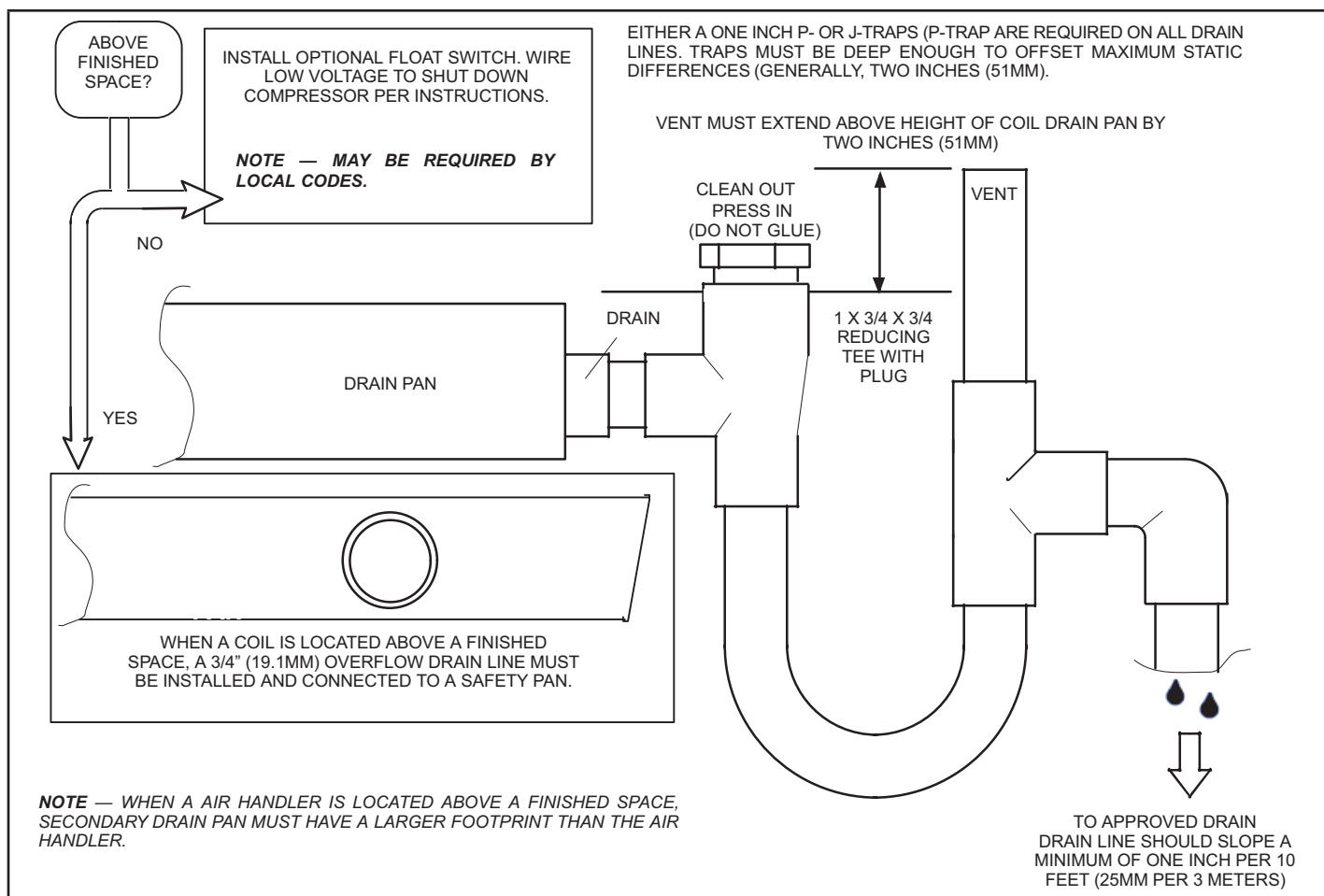


FIGURE 5. Typical Condensate Drain Connections

Freezestat Connections

Two-Compressor / Single-Speed Units

- 1 - Remove and discard jumper harness on control harness. Refer to figure 6.
- 2 - Connect S49 and S50 freezestats to appropriate connections in harness. S49 will be located at lower end of coil, depending on upflow or horizontal orientation. S50 will be located at the top of the coil. See figure 7.

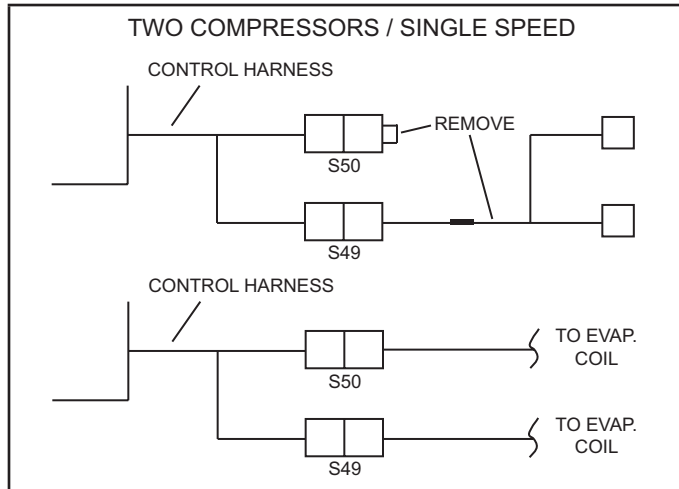


FIGURE 6. Remove and Discard Jumper Harness

One-Compressor / Dual-Speed Units

- 1 - Leave jumper harness connected to main control harness and S50 jumper plug. Refer to figure 8.
- 2 - Connect S49 and S50 freezestats to appropriate harness connections. S49 will be located at lower end of coil, depending on upflow or horizontal orientation. See figure 7.

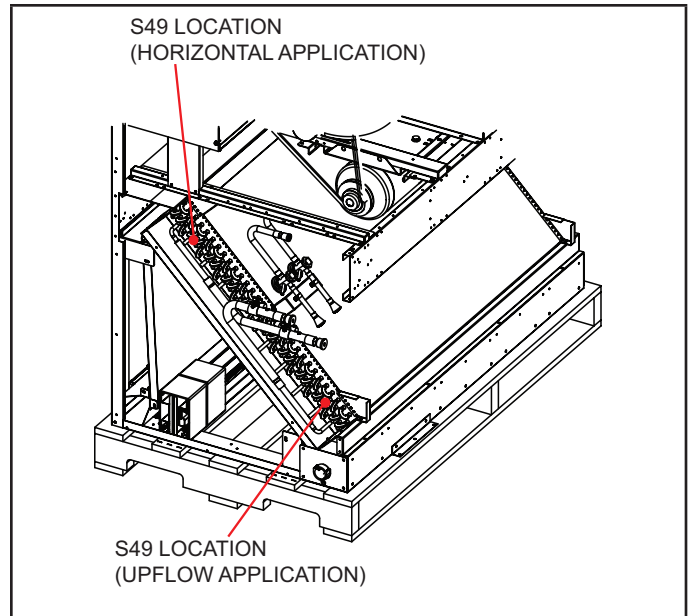


FIGURE 7. Location of S49 Freezestat

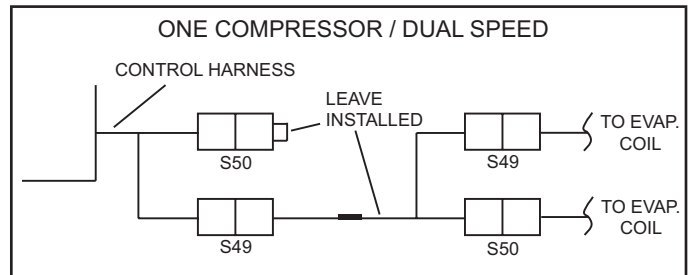


FIGURE 8. Jumper Harness Remains Installed

Filter Rack Installation

The filter rack cabinet is shipped unassembled inside the unit and must be unpacked and assembled prior to use. Refer to figure 9 to ensure that all necessary components are included before assembly. The cabinet is designed to house 2" MERV 8 or MERV 13 filters, purchased separately.

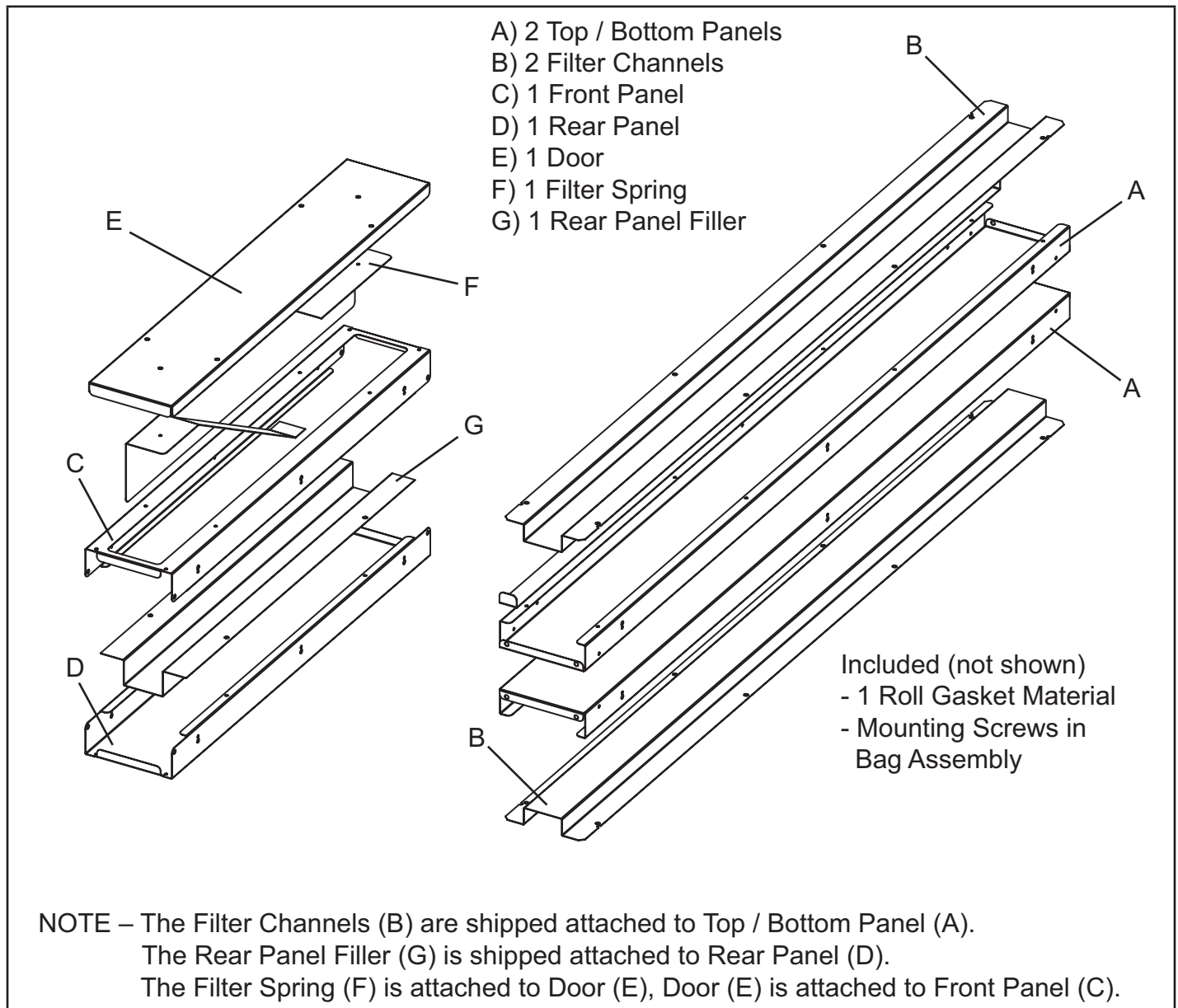


FIGURE 9. Filter Rack Components

Filter Cabinet Assembly

The cabinet sections are designed to be attached together. Align the edges as shown in figure 10.

NOTE – The screws provided to attach the filter rack (#10x16x5/8") are used only on one side. While mounting filter rack on unit, make sure that the side without screws is flush with the unit.

- 1 - Place one Top / Bottom Panel A on a firm surface. Align front panel C into one end of side panel A (see figure 8). Attach Panel C to Panel A as shown in figure 10 using provided screws.

- 2 - Align and attach rear panel D into Top / Bottom Panel A (see figure 12).

- 3 - Align and attach remaining Top / Bottom Panel A into front panel C and rear panel D. Verify that all screws are tight before attaching filter rack to unit.

NOTE – The Filter Channels and Rear Panel Filler are attached to the cabinet after the cabinet is installed on the unit.

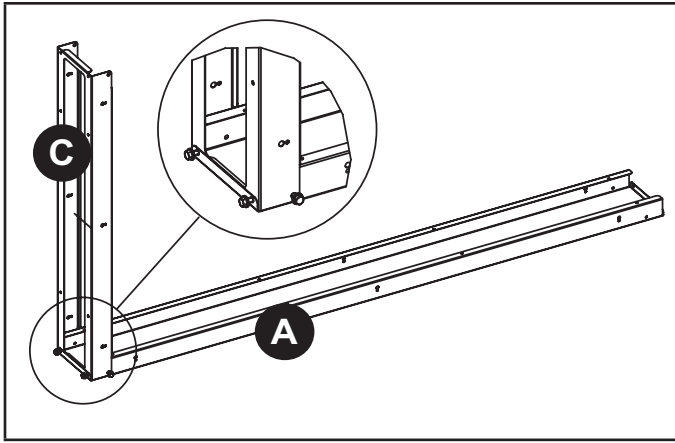


FIGURE 10. Assemble Front Panel (C) to Bottom Panel (A)

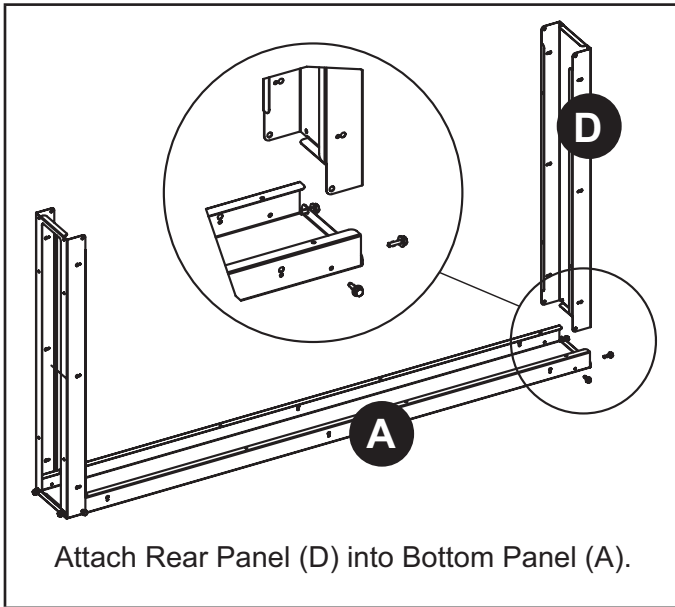


FIGURE 11. Assemble Rear Panel (D) to Bottom Panel (A)

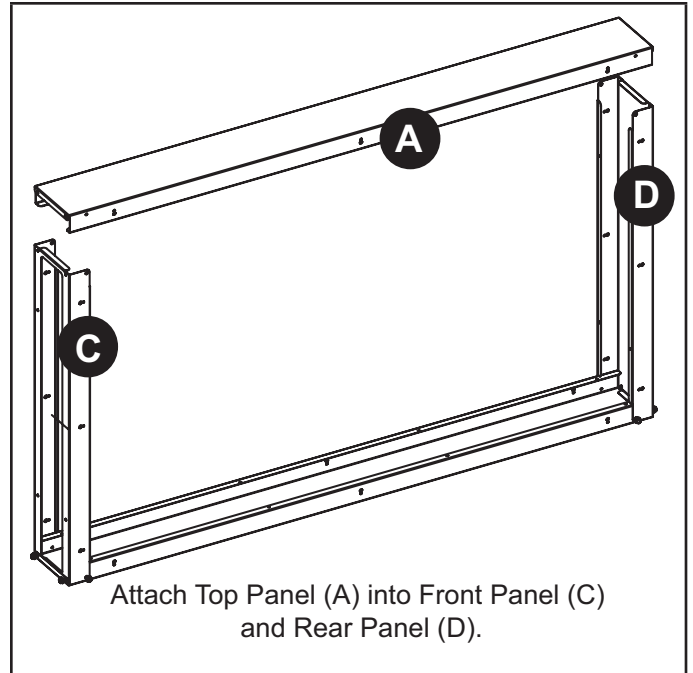


FIGURE 12. Install Top Panel (A)

Filter Cabinet Installation

- 1 - Align the cabinet with the return air opening on the air handler with the access door opening facing outward.
- 2 - Secure the cabinet to the unit using the screws provided (#10x16x5/8").
- 3 - Insert Filter Channel (B) into the cabinet and use the provided screws (#10x16x5/8") to secure them to the cabinet at both the top and bottom. Insert the Rear Panel Filler (G) and attach it to the Rear Panel with the screws provided.
- 4 - Attach the duct to the filter cabinet. Use foil tape to seal all duct joints to prevent dust from entering the air stream.
- 5 - Slide the filters into the filter channel.
- 6 - Attach the filter spring to the cabinet door using the provided (2) #10x16x3/8" screws. Secure the door to the front panel using the provided (4) #10x16x1 screws.
- 7 - Install provided gasket material on all sides of filter access door.

Duct Connections

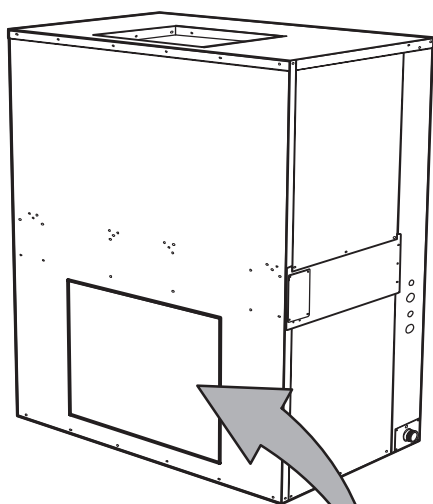
SIDE RETURN AIR COVER PLATE RELOCATION

UNIT IS SHIPPED FOR INSTALLATION IN AN UPFLOW APPLICATION.

REMOVE SCREWS THAT SECURE SIDE COVER PLATE ON SIDE RETURN AIR OPENING. USE EXISTING SCREWS TO RE-SECURE COVER PLATE OVER BOTTOM OPENING.

INSTALL FILTER RACK PER INSTRUCTIONS BEFORE INSTALLING DUCT FLANGES.

072-090-120-150 MODELS



SIDE VIEW

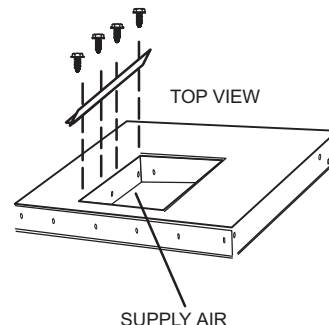
SIDE RETURN AIR COVER PLATE (SHIPPED FROM FACTORY INSTALLED)

NOTE — SIDE RETURN AIR COVER PLATE CAN BE RELOCATED TO BOTTOM RETURN AIR LOCATION.

SUPPLY AND RETURN AIR FLANGES ARE PROVIDED AND ARE STORED INSIDE UNIT FOR SHIPPING. SEE TABLE 2 FOR FLANGE LENGTHS.

INSTALLATION OF FLANGES

ALIGN PROVIDED FLANGES WITH PRE-DRILLED HOLES IN BOTH RETURN AND SUPPLY AIR LOCATIONS AND SECURE WITH FIELD-PROVIDED SHEET METAL SCREWS (#10-16 X 5/8").

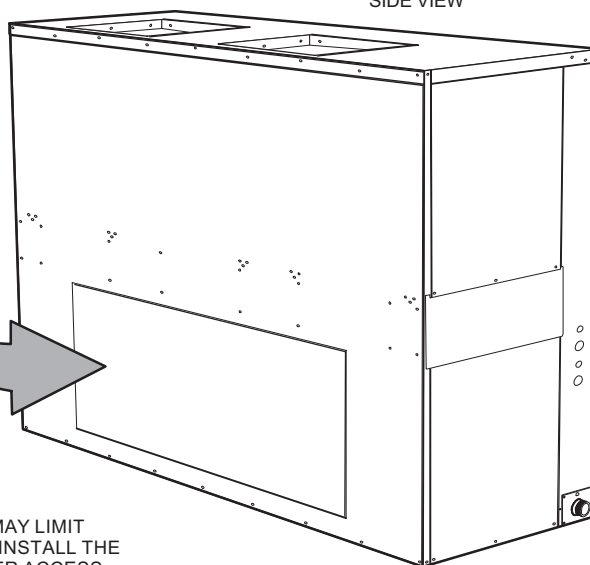


TOP VIEW

SUPPLY AIR

180-240 MODELS

NOTE — ON DUAL-BLOWER UNITS, FLANGES ENCOMPASS BOTH OPENINGS.



SIDE VIEW

IF A RETURN AIR PLENUM IS NOT USED, INSTALLATION CODES MAY LIMIT INSTALLATION TO SINGLE-STORY STRUCTURES ONLY. DO NOT INSTALL THE SUPPLY AIR PLENUM WITHIN 18 INCHES (457 MM) OF THE BLOWER ACCESS PANEL.

NOTE — Use flexible duct to eliminate vibration.

FIGURE 13. Cover Plate Relocation and Installation of Flanges

TABLE 2. ELA Duct Flange Lengths – Inches (mm)

Models	ELA072/090	ELA120/150	ELA180/240
Return air flanges - Common (2)	23-1/4" (591)	23-1/4" (591)	23-1/4" (591)
Return air flanges - Long (2)	45-1/2" (1158)	61-1/2" (1562)	92" (2337)
Discharge air flanges - Common (2)	18-1/2" (470)	18-1/2" (470)	18-1/2" (470)
Discharge air flanges - Long (2)	25-5/8" (651)	25-5/8" (651)	51-3/8" (1305)

Sealing the Unit

Seal the unit so that warm air is not allowed into the cabinet. Warm air introduces moisture, which results in water blow-off problems. This is especially important when the unit is installed in an unconditioned area.

WARNING

There must be an airtight seal between the bottom of the air handler and the return air plenum. Use fiberglass sealing strips, caulking, or equivalent sealing method between the plenum and the air handler cabinet to ensure a tight seal. Return air must not be drawn from a room where this air handler or any gas-fueled appliance (i.e., water heater), or carbon monoxide-producing device (i.e., wood fireplace) is installed.

Wiring

WARNING

Run 24V Class II wiring only through specified low voltage opening. Run line voltage wiring only through specified high voltage opening. Do not combine voltage in one opening.

NATIONAL AND LOCAL CODE RESTRICTIONS

Wiring must conform to the current National Electric Code ANSI/NFPA No. 70, or Canadian Electric Code Part I, CSA Standard C22.1, and local building codes. Refer to following wiring diagrams. See unit nameplate for minimum circuit ampacity and maximum over-current protection size.

Select the proper supply circuit conductors in accordance with tables 310-16 and 310-17 in the National Electric Code, ANSI/NFPA No. 70 or tables 1 through 4 in the Canadian Electric Code, Part I, CSA Standard C22.1.

Separate openings have been provided for 24V low voltage and line voltage. Refer to the dimension illustration of specific location.

WIRING DIAGRAMS

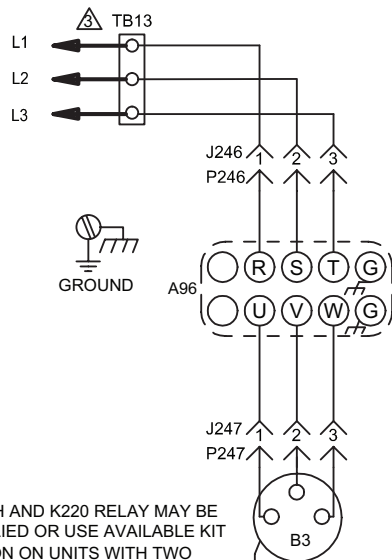
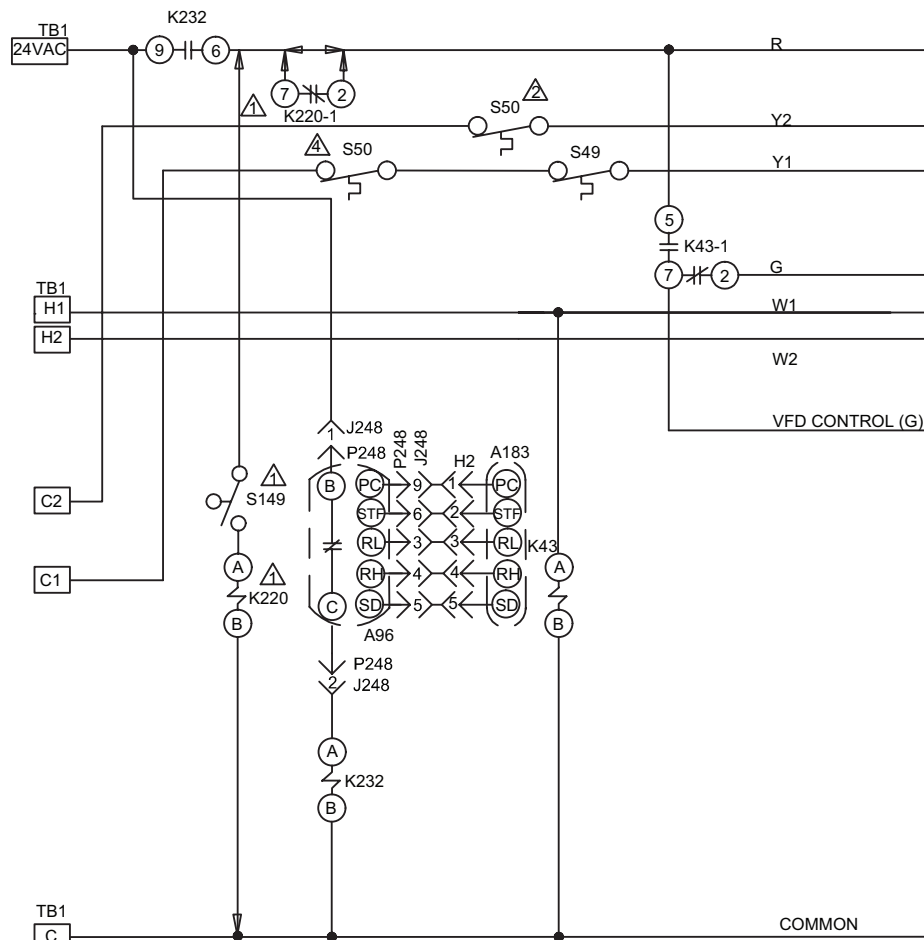
Two wiring diagrams are included in the bag assembly and are for the following:

- Unit wiring diagram
- Thermostat connections

Both diagrams are to be installed on outside cabinet in a convenient location

CAUTION

USE COPPER CONDUCTORS ONLY.



KEY	COMPONENT
A96	CONTROL, INVERTER
A183	CONTROL, VFD BOARD
J/P246	JACK/PLUG POWER TO VFD
J/P247	JACK/PLUG VFD TO MTR
J/P248	JACK/PLUG VFD CONTROL
B3	MOTOR-BLOWER
K43,-1	RELAY-ECONOMIZER BLOWER
K220,-1	RELAY-OVERFLOW
K232,-1	RELAY-INVERTER PROTECTION
S49	SWITCH-FREEZESTAT COMPRESSOR 1
S50	SWITCH-FREEZESTAT COMPRESSOR 2
S149	SWITCH-OVERFLOW
TB1	TERMINAL STRIP-CLASS II VOLT
TB13	TERMINAL BLOCK, POWER DISTRIBUTOR

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

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

DISCONNECT ALL POWER BEFORE SERVICING

← DENOTES OPTIONAL COMPONENTS

- ⚠ S149 SWITCH AND K220 RELAY MAY BE FIELD SUPPLIED OR USE AVAILABLE KIT
- ⚠ S50 LOCATION ON UNITS WITH TWO SINGLE SPEED COMPRESSORS
- ⚠ FOR USE WITH COPPER CONDUCTORS ONLY
- ⚠ S50 LOCATION ON UNITS WITH ONE DUAL SPEED COMPRESSOR

1017

537900-01

WIRING DIAGRAM

10/17

BLOWER

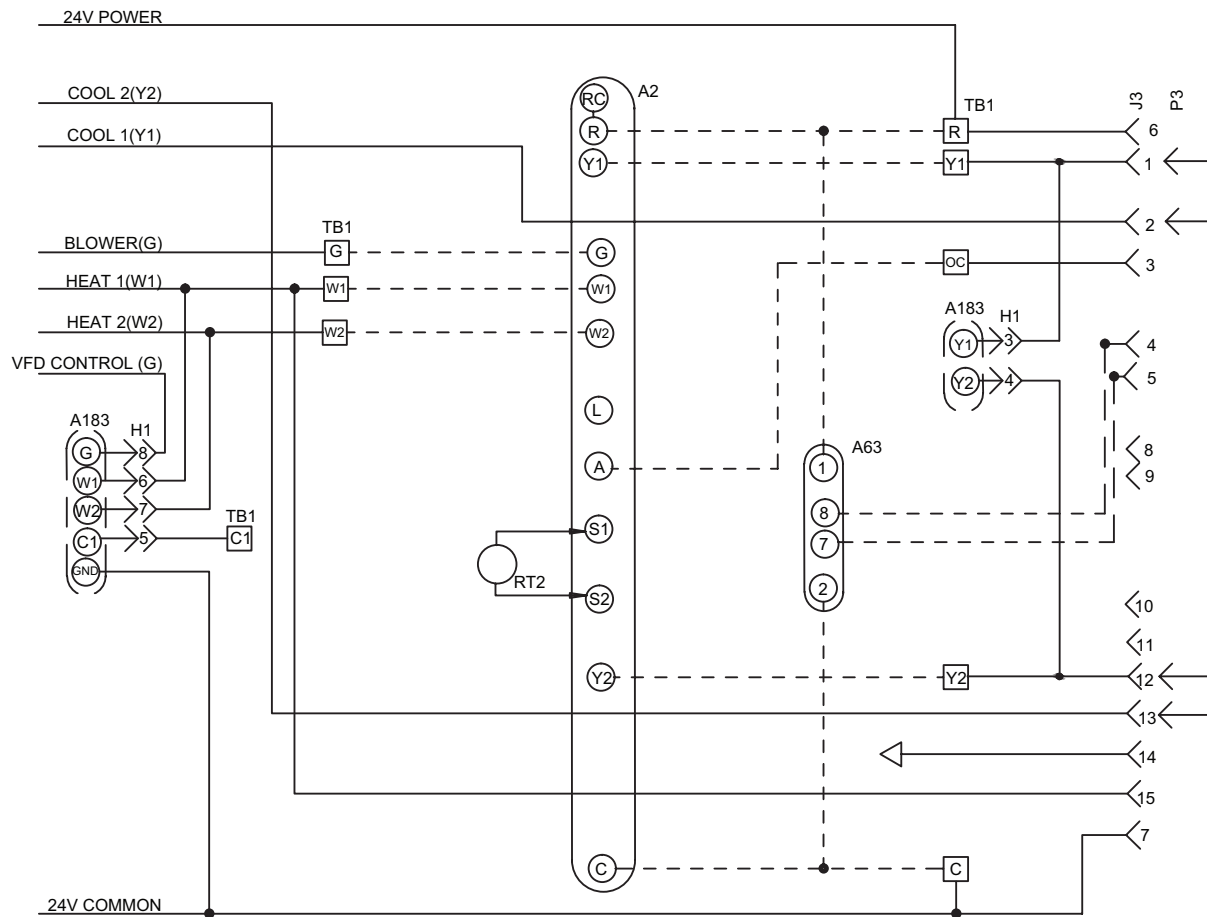
ELA 072-240 - G,J,Y WITH VFD ID BLOWER

Supersedes

New Form No.
537900-01

REV 0

FIGURE 14. Typical Wiring Diagram



KEY	COMPONENT
A2	SENSOR-ELECTRONIC
A63	SENSOR-CO2
J3	JACK-UNIT ECONOMIZER
P3	PLUG-LESS ECONOMIZER
RT2	SENSOR-REMOTE
TB1	TERMINAL STRIP-CLASS II VOLTAGE



⚠ THERMOSTAT SUPPLIED BY USER



⚠ REMOVE P3 WHEN ECONOMIZER IS USED



⚠ J3 MAXIMUM LOAD 20VA 24VAC CLASS II



DESIGNATES OPTIONAL WIRING
CLASS II FIELD WIRING

07/17		WIRING DIAGRAM	07/17
537901-01			
ACCESSORIES			
TOUCHSCREEN THERMOSTAT ELS, ELP UNITS WITH VFD ID BLOWER			
SECTION C			REV. 0
Supersedes	New Form No. 537901-01		

FIGURE 15. Typical Control Wiring used with ELS and ELP Outdoor Units

Blower Motor Belt Tensioning Adjustment

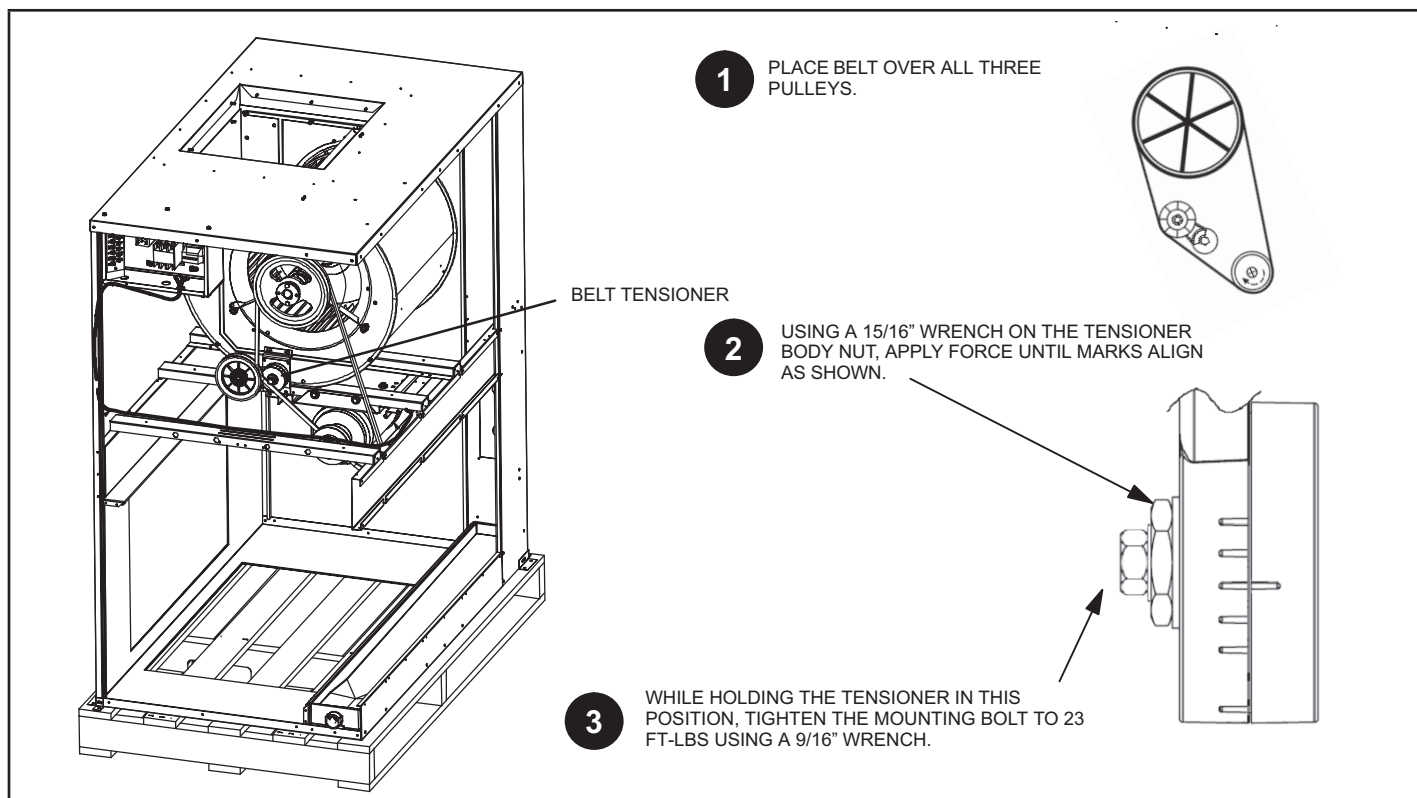


FIGURE 16. Typical Blower Belt Tensioner Adjustment Procedure

Pulley Alignment

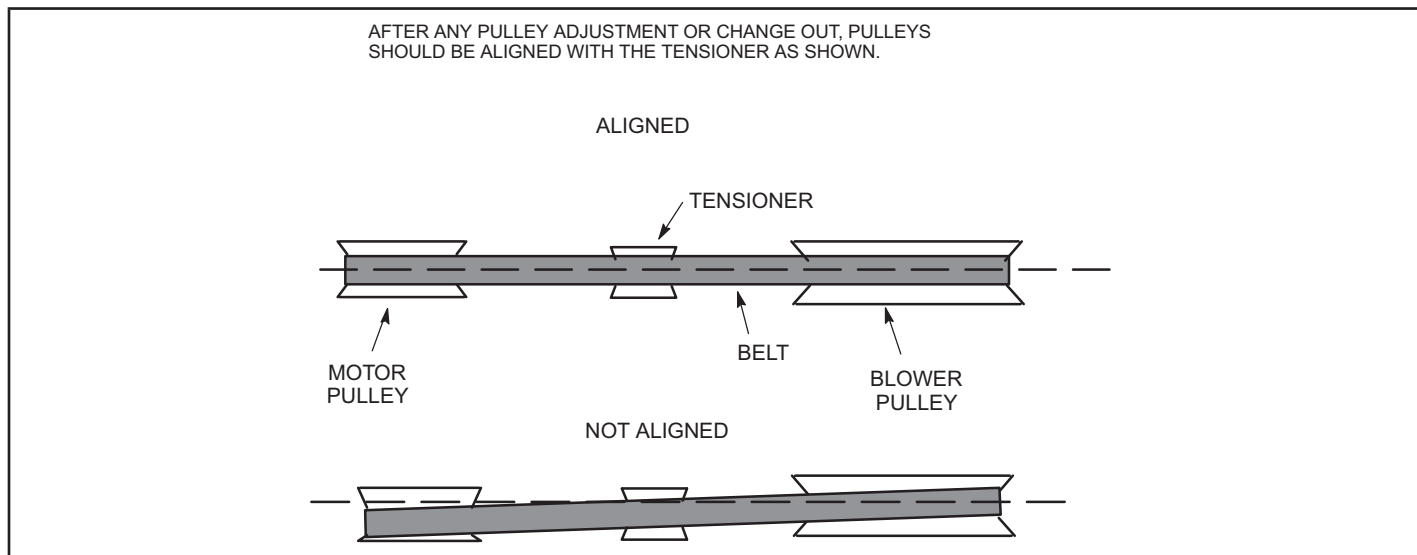


FIGURE 17. Typical Pulley Alignment

Air Volume Adjustment

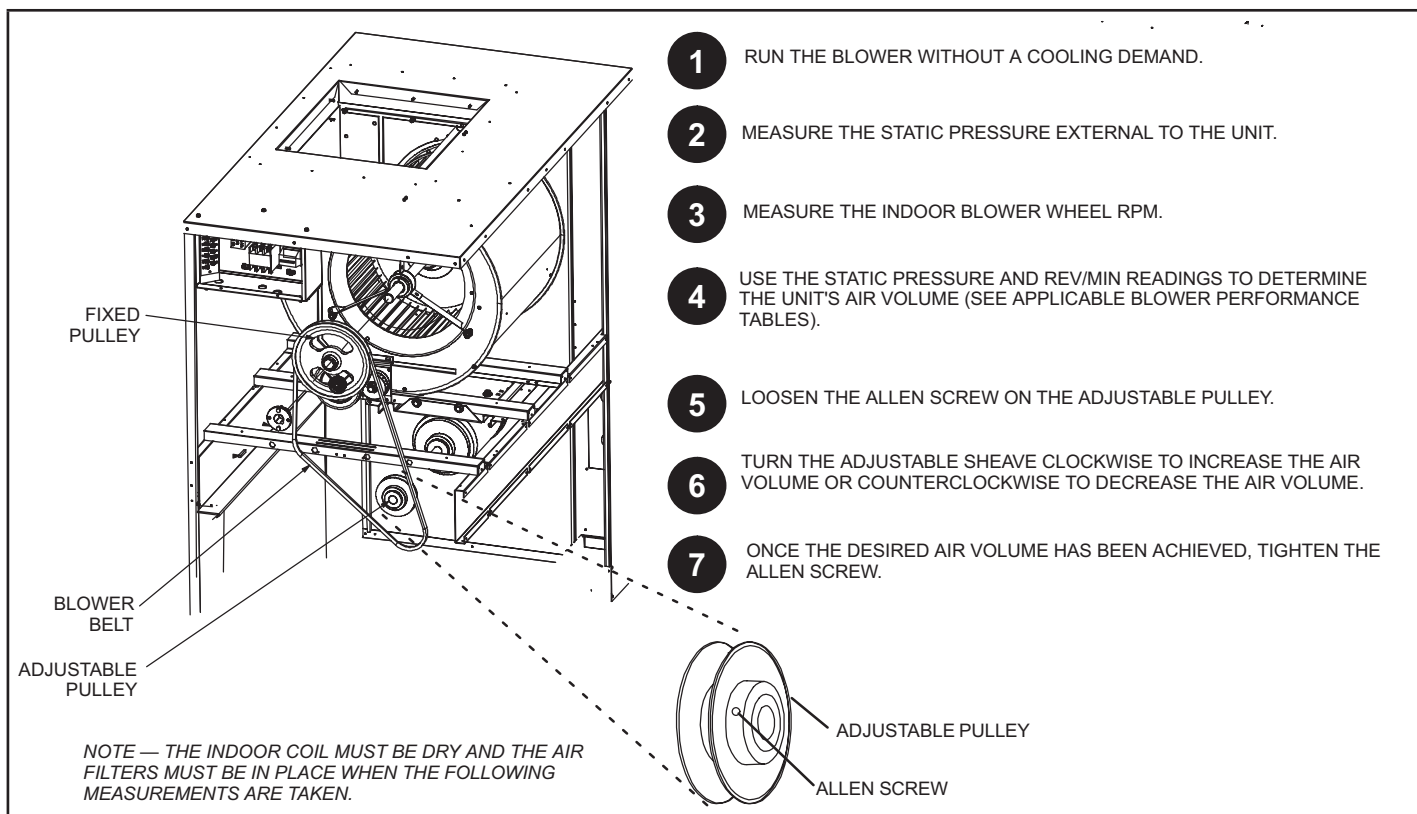


FIGURE 18. Typical Air Volume Adjustment Procedure

Air Volume Adjustment – Caution

Air flow exceeding the CFM per ton listed below for each unit is NOT RECOMMENDED in high humidity applications.

Model	CFM per Ton
ELA090	450 CFM per ton
ELA150	400 CFM per ton
ELA240	400 CFM per ton

Blower Data

Blower Drive Specifications, 50/60Hz

Static	RPM Range	Motor HP		072	090	120	150	180	240
		Nominal	Maximum						
Low	563 - 798	1.5	1.5	O S O					
Standard	798 - 1033	1.5	1.5						
High	878 - 1097	2	2						
Low	562 - 796	2	2		O				
Standard	796 - 1030	2	2		S				
High	865 - 1071	3	3		O				
Low	560 - 793	2	2			O			
Standard	793 - 1027	3	3			S			
High	865 - 1071	3	3			O			
Low	653 - 887	3	3				O		
Standard	846 - 1081	5	5				S		
High	896 - 1146	5	5				O		
Low	598 - 820	3	3					O	
Standard	820 - 1041	5	5					S	
High	875 - 1111	5	5					O	
Low	689 - 875	5	5						O
Standard	810 - 1036	7.5	7.5						S
High	963 - 1232	7.5	7.5						O

ELA Supply Air Inverter Startup

A-General

Units equipped with a supply air inverter are available which provide two blower speeds. The blower will operate at lower speeds when cooling demand is low and higher speeds when cooling demand is high. This results in lower energy consumption.

Inverter-driven blowers will operate at high speed during ventilation (blower "G" only signal) but can be adjusted to operate at low speed.

Low speed is approximately 2/3 of the full speed RPM.

B-Set Maximum Blower CFM

- 1 - Initiate a blower (G) only signal from the room thermostat or control system.
- 2 - Adjust the blower pulley to deliver the full (high speed) CFM in the typical manner. See *Determining Unit CFM* in the Blower Operation and Adjustment section.

C-Set Blower Speed During Ventilation

To save energy during ventilation, the blower speed can be set to low. This is accomplished by changing the ventilation speed switch on the VFD control board to "LO". See figure 17.

NOTE – On units equipped with an economizer, set damper minimum position as shown in the next section. After adjusting the low speed minimum position, the ventilation speed switch will be in the "LO" position.

D-Set Damper Minimum Position (Units with Economizer)

To maintain required minimum ventilation air volumes when the unit is in the occupied mode, two minimum damper positions must be set. A high and a low speed potentiometer are provided on the VFD control board to adjust minimum damper position. See figure 17.

Set High Speed Minimum Position

- 1 - Initiate a blower (G) only AND occupied demand from the room thermostat or control system.
- 2 - Set the ventilation speed switch on the VFD control board to "HI".
- 3 - Rotate the high speed potentiometer on the VFD control board to set the high speed minimum damper position.
- 4 - Measure the intake air CFM. If the CFM is lower than the design specified CFM for ventilation air, use the potentiometer to increase the damper percent open. If the CFM is higher than specified, decrease the damper percent open.

NOTE – Intake air CFM can also be determined using the outdoor air temperature, return air temperature and mixed air temperature. Refer to the economizer or outdoor air damper installation instructions.

Set Low Speed Minimum Position

- 1 - Initiate a blower (G) only AND occupied demand from the room thermostat or control system.
- 2 - Set the ventilation speed switch on the VFD control board to "LO".
- 3 - Rotate the low speed potentiometer on the VFD control board to set the low speed minimum damper position.
- 4 - Measure the intake air CFM. If the CFM is lower than the design specified CFM for ventilation air, use the potentiometer to increase the damper percent open. If the CFM is higher than specified, decrease the damper percent open.

NOTE – Intake air CFM can also be determined using the outdoor air temperature, return air temperature and mixed air temperature. Refer to the economizer or outdoor air damper installation instructions.

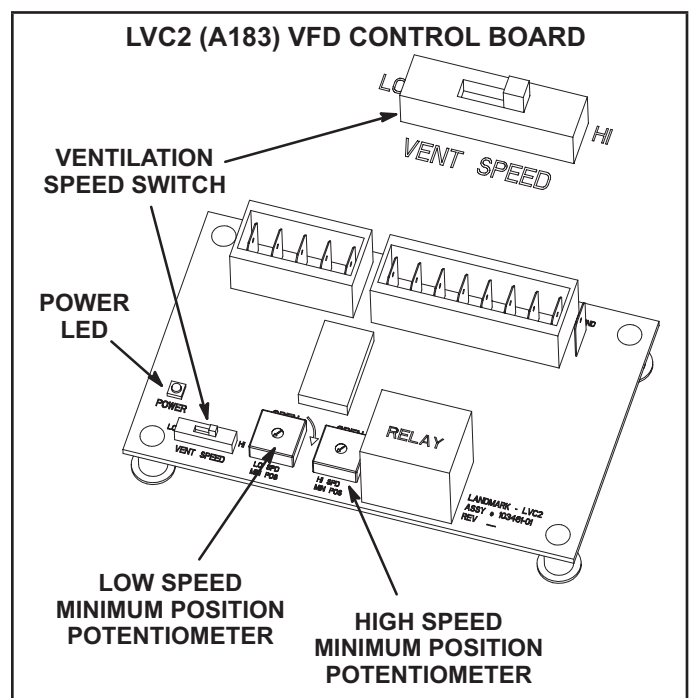
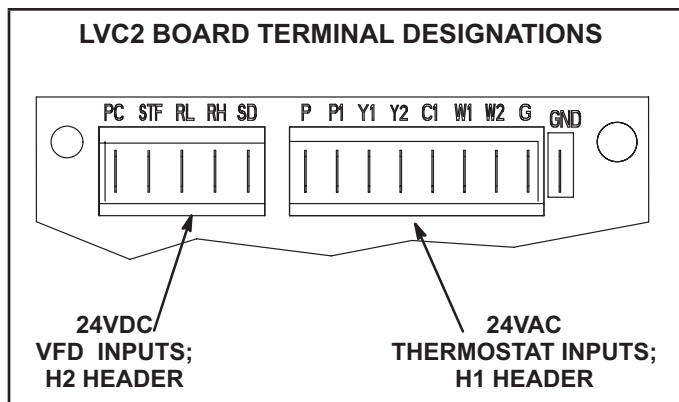


FIGURE 19

Troubleshoot LVC2 Board (A183)

Refer to wiring diagram sections B (unit), C (control) and D (economizer) located on inside of unit panels.

- 1 - Inspect the LVC2 for damaged components. Replace the LVC2 if damaged components are found.
- 2 - Check all wire connections to LVC2; secure if loose.
- 3 - Check for 24VAC signal at the thermostat blower input (G to GND terminal). See figure 18.



- 4 - If there is no thermostat signal, troubleshoot back toward the thermostat.
- 5 - Check the power LED on the board. See figure 17.
- 6 - If the power LED is not on, check voltage between LVC2 terminals PC (H2-1) and SD (H2-5). Voltage should read 24VDC.
- 7 - If voltage does not read 24VDC, disconnect the H2 header from the LVC2 VFD inputs terminal block (to make sure the LVC2 is not shorting 24VDC supply from the inverter). Measure the voltage between the end terminals on the H2 header. If 24VDC is present, replace the LVC2 board. If no voltage is read, troubleshoot the VFD.

- 8 - When LVC2 24VAC thermostat blower (G) input and 24VDC power are present, check the LVC2 low and high speed outputs. The LVC2 uses inverse logic to enable the blower; 1VDC will be read at the enabled blower speed terminal. See table 3.
- 9 - If all inputs are correct and the unit still does not operate as intended, replace LVC2 board.

TABLE 3
LVC2 BOARD BLOWER OUTPUTS

Output Terminals	Voltage	Blower Operation
RL-SD	1VDC	Low Speed
RH-SD	24VDC	
RL-SD	24VDC	High Speed
RH-SD	1VDC	
RL-SD	1VDC	Illegal State (replace board)
RH-SD	1VDC	
RL-SD	24VDC	Blower Off (replace board)
RH-SD	24VDC	

Blower Drive Components

Blower Drive Components, 50/60Hz

Unit	Static	Adjustable Sheave		Fixed Sheave		Belt		Bushing		Key	
		OEM No	MFG No	OEM No	MFG No	OEM No	MFG No	OEM No	MFG No	OEM No	Dimensions
ELA072	Low	79J0301	1VP40 x 7/8	49K4101	BK85 x 1	100245-25	AX54	-	-	LB-21259	1/4x1/4x1-1/2
	Standard	P-8-2187	1VP50 x 7/8	49K4101	BK85 x 1	100245-26	AX55	-	-	LB-21259	1/4x1/4x1-1/2
	High	P-8-1494	1VP56 x 7/8	P-8-9659	BK90 x 1	100245-27	AX56	-	-	LB-21259	1/4x1/4x1-1/2
ELA090	Low	79J0301	1VP40 x 7/8	49K4101	BK85 x 1	100245-25	AX54	-	-	LB-21259	1/4x1/4x1-1/2
	Standard	P-8-2187	1VP50 x 7/8	49K4101	BK85 x 1	100245-26	AX55	-	-	LB-21259	1/4x1/4x1-1/2
	High	80K5501	1VP60 x 7/8	P-8-9659	BK90 x 1	100245-27	AX56	-	-	LB-21259	1/4x1/4x1-1/2
ELA120	Low	79J0301	1VP40 x 7/8	49K4101	BK85 x 1	100245-25	AX54	-	-	LB-21259	1/4x1/4x1-1/2
	Standard	P-8-2187	1VP50 x 7/8	49K4101	BK85 x 1	100245-26	AX55	-	-	LB-21259	1/4x1/4x1-1/2
	High	80K5501	1VP60 x 7/8	79J2701	BK95 x 1	100245-28	AX57	-	-	LB-21259	1/4x1/4x1-1/2
ELA150	Low	P-8-1488	1VP44 x 7/8	49K4101	BK85 x 1	100245-25	AX54	-	-	LB-21259	1/4x1/4x1-1/2
	Standard	41C1301	1VP60 x 1-1/8	100788-03	BK80H	78L5301	BX57	100073-04	H-1	LB-21259	1/4x1/4x1-1/2
	High	41C1301	1VP60 x 1-1/8	P-8-9659	BK90 x 1	59A5001	BX59	-	-	LB-21259	1/4x1/4x1-1/2
ELA180	Low	79J0301	1VP40 x 7/8	100244-09	BK85 x 1-7/16	100245-11	BX56	-	-	LB-20769	3/8x3/8x1-3/4
	Standard	P-8-1977	1VP50 x 1-1/8	100244-09	BK85 x 1-7/16	78L5301	BX57	-	-	LB-20769	3/8x3/8x1-3/4
	High	P-8-1977	1VP50 x 1-1/8	100788-03	BK80H	100245-11	BX56	49M6201	H-1-7/16	provided with bushing	
ELA240	Low	P-8-1977	1VP50 x 1-1/8	100788-05	BK100H	100245-07	BX58	49M6201	H-1-7/16	provided with bushing	
	Standard	78L5501	1VP60 x 1-3/8	100788-05	BK100H	97J5501	BX63	49M6201	H-1-7/16	provided with bushing	
	High	78L5501	1VP60 x 1-3/8	100244-09	BK85 x 1-7/16	100245-10	BX60	- - -	- - -	LB-20769	3/8x3/8x1-3/4

Blower Performance

ELA072 BLOWER PERFORMANCE

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																	
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	411	0.11	453	0.2	494	0.26	535	0.31	584	0.32	638	0.31	688	0.32	729	0.37	762	0.46
1300	416	0.14	458	0.23	499	0.29	541	0.34	589	0.36	642	0.35	692	0.36	733	0.41	765	0.5
1400	421	0.16	463	0.25	505	0.32	546	0.37	594	0.39	647	0.38	696	0.4	736	0.45	768	0.54
1500	427	0.19	468	0.28	510	0.35	551	0.4	599	0.42	651	0.42	699	0.44	739	0.49	771	0.58
1600	432	0.22	473	0.3	515	0.38	556	0.44	604	0.46	656	0.46	703	0.48	742	0.53	774	0.62
1700	438	0.24	479	0.33	520	0.41	561	0.47	609	0.49	660	0.5	707	0.52	745	0.58	777	0.67
1800	444	0.27	485	0.36	526	0.44	567	0.5	614	0.53	665	0.54	711	0.56	749	0.62	780	0.71
1900	450	0.3	491	0.39	532	0.47	573	0.53	619	0.57	670	0.58	715	0.6	752	0.67	783	0.76
2000	457	0.33	497	0.42	538	0.5	579	0.57	625	0.6	674	0.62	719	0.65	756	0.71	786	0.8
2100	464	0.36	504	0.45	544	0.53	585	0.6	631	0.64	679	0.66	723	0.69	759	0.76	790	0.85
2200	471	0.4	511	0.49	551	0.57	591	0.64	636	0.68	684	0.7	728	0.74	763	0.81	794	0.9
2300	478	0.43	518	0.52	558	0.61	598	0.68	643	0.72	690	0.75	732	0.79	767	0.86	797	0.95
2400	485	0.47	525	0.56	565	0.65	605	0.72	649	0.77	695	0.79	737	0.83	771	0.91	802	1.01
2500	493	0.51	533	0.6	572	0.69	612	0.76	655	0.81	701	0.84	742	0.88	776	0.96	806	1.06
2600	500	0.55	540	0.64	580	0.73	619	0.8	662	0.85	707	0.89	747	0.93	780	1.01	810	1.12
2700	508	0.59	548	0.68	588	0.77	627	0.84	670	0.9	713	0.93	752	0.99	785	1.07	815	1.18
2800	516	0.63	556	0.72	596	0.81	635	0.88	678	0.94	720	0.98	758	1.04	790	1.13	820	1.25
2900	523	0.67	564	0.76	604	0.85	644	0.92	686	0.98	727	1.03	763	1.1	795	1.19	826	1.31
3000	531	0.71	573	0.8	613	0.89	653	0.96	694	1.03	734	1.08	769	1.15	801	1.26	831	1.38

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																			
	1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9		2	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	790	0.55	817	0.64	844	0.7	871	0.75	897	0.8	924	0.85	951	0.9	979	0.96	1008	1.01	1036	1.07
1300	793	0.59	820	0.68	847	0.74	874	0.79	900	0.85	927	0.9	954	0.95	982	1.01	1011	1.06	1039	1.12
1400	796	0.63	823	0.72	850	0.78	877	0.84	903	0.89	930	0.95	958	1	986	1.06	1014	1.11	1043	1.18
1500	799	0.68	827	0.76	853	0.82	880	0.88	906	0.94	933	0.99	961	1.05	989	1.11	1018	1.17	1046	1.23
1600	802	0.72	830	0.8	857	0.87	883	0.93	909	0.99	936	1.04	964	1.1	992	1.16	1021	1.23	1050	1.29
1700	805	0.76	833	0.84	860	0.91	886	0.97	913	1.03	940	1.1	967	1.16	996	1.22	1025	1.28	1054	1.35
1800	808	0.81	837	0.89	864	0.96	890	1.02	916	1.08	943	1.15	971	1.21	999	1.28	1029	1.35	1058	1.42
1900	812	0.85	840	0.94	867	1.01	894	1.07	920	1.14	946	1.2	974	1.27	1003	1.34	1032	1.41	1062	1.48
2000	815	0.9	844	0.98	871	1.06	898	1.12	924	1.19	950	1.26	978	1.33	1007	1.4	1036	1.47	1066	1.55
2100	819	0.95	848	1.04	876	1.11	902	1.18	928	1.25	954	1.32	982	1.39	1011	1.47	1040	1.54	1070	1.62
2200	823	1	852	1.09	880	1.16	907	1.24	932	1.31	958	1.38	986	1.46	1015	1.54	1045	1.61	1074	1.69
2300	827	1.06	857	1.14	885	1.22	912	1.3	937	1.37	962	1.45	990	1.53	1020	1.61	1049	1.69	1078	1.77
2400	832	1.11	862	1.2	890	1.28	917	1.36	942	1.44	967	1.52	995	1.6	1024	1.68	1053	1.76	1083	1.85
2500	836	1.17	867	1.26	896	1.34	923	1.43	949	1.51	973	1.59	1000	1.67	1029	1.76	1058	1.84	1087	1.92
2600	841	1.23	872	1.32	901	1.41	929	1.49	955	1.58	979	1.66	1006	1.75	1034	1.83	1063	1.92	1091	2.01
2700	846	1.29	877	1.39	907	1.48	935	1.57	962	1.66	986	1.74	1012	1.83	1039	1.91	1067	2	1096	2.09
2800	852	1.36	883	1.46	913	1.55	941	1.64	968	1.73	992	1.82	1017	1.91	1044	2	1072	2.08	1100	2.17
2900	857	1.43	889	1.52	919	1.62	947	1.71	974	1.81	998	1.9	1023	1.99	1049	2.08	1077	2.17	1105	2.26
3000	863	1.49	894	1.6	925	1.69	953	1.79	979	1.89	1004	1.99	1028	2.08	1054	2.17	1081	2.26	1109	2.35

ELA090 BLOWER PERFORMANCE

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																	
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1600	444	0.24	485	0.33	527	0.4	568	0.45	617	0.47	669	0.46	715	0.49	752	0.55	782	0.65
1700	451	0.27	492	0.36	534	0.43	575	0.49	623	0.51	674	0.5	719	0.53	756	0.6	786	0.7
1800	458	0.3	499	0.39	541	0.46	582	0.52	630	0.54	680	0.55	724	0.58	760	0.65	790	0.75
1900	466	0.33	507	0.42	548	0.5	589	0.56	636	0.58	686	0.59	729	0.62	764	0.7	794	0.8
2000	474	0.37	514	0.46	555	0.53	596	0.6	643	0.62	691	0.63	734	0.67	769	0.75	799	0.85
2100	482	0.4	522	0.49	563	0.57	603	0.64	650	0.67	697	0.68	739	0.72	773	0.8	803	0.9
2200	490	0.44	531	0.53	571	0.61	611	0.68	657	0.71	704	0.73	745	0.77	778	0.85	808	0.95
2300	499	0.48	539	0.57	579	0.65	619	0.72	664	0.75	710	0.77	750	0.82	783	0.9	814	1.01
2400	508	0.52	548	0.61	588	0.69	627	0.76	672	0.8	717	0.82	756	0.87	788	0.96	819	1.07
2500	517	0.56	557	0.65	597	0.73	636	0.8	680	0.84	724	0.87	762	0.93	794	1.02	825	1.13
2600	526	0.61	566	0.69	606	0.77	645	0.84	688	0.88	731	0.92	768	0.98	800	1.08	831	1.2
2700	535	0.65	576	0.74	615	0.81	655	0.88	697	0.93	738	0.97	774	1.04	806	1.15	837	1.26
2800	545	0.69	586	0.78	625	0.85	665	0.92	706	0.97	746	1.02	781	1.1	812	1.21	844	1.33
2900	555	0.73	596	0.82	636	0.9	675	0.97	715	1.02	754	1.08	788	1.17	819	1.28	850	1.4
3000	566	0.78	606	0.86	646	0.94	685	1.01	725	1.07	762	1.14	795	1.24	826	1.35	857	1.47
3100	577	0.82	618	0.91	657	0.98	696	1.06	734	1.13	770	1.2	802	1.31	833	1.43	864	1.55
3200	589	0.87	629	0.95	668	1.03	706	1.11	744	1.19	778	1.27	810	1.38	840	1.5	872	1.62
3300	601	0.93	641	1	679	1.08	717	1.17	753	1.25	787	1.35	817	1.46	848	1.58	879	1.7
3400	614	0.98	653	1.06	691	1.14	727	1.23	763	1.32	795	1.42	825	1.54	855	1.66	886	1.78
3500	627	1.05	665	1.13	702	1.21	738	1.3	772	1.4	803	1.51	833	1.63	863	1.75	894	1.86
3600	641	1.11	678	1.19	714	1.28	749	1.37	782	1.48	812	1.59	841	1.71	871	1.83	901	1.95

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																			
	1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9		2	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1600	811	0.75	838	0.82	865	0.88	891	0.94	918	1	945	1.06	973	1.12	1001	1.18	1030	1.25	1059	1.31
1700	815	0.79	842	0.87	869	0.93	895	0.99	922	1.06	949	1.12	977	1.18	1006	1.24	1035	1.31	1063	1.38
1800	819	0.84	847	0.92	873	0.98	899	1.04	926	1.11	953	1.17	981	1.24	1010	1.31	1039	1.37	1068	1.44
1900	823	0.89	851	0.97	878	1.03	904	1.1	930	1.16	958	1.23	986	1.3	1015	1.37	1044	1.44	1073	1.51
2000	828	0.94	856	1.02	883	1.08	909	1.15	935	1.22	962	1.29	991	1.36	1020	1.44	1049	1.51	1078	1.58
2100	833	0.99	861	1.07	888	1.14	914	1.21	939	1.28	967	1.36	995	1.43	1025	1.5	1054	1.58	1083	1.66
2200	838	1.05	867	1.13	893	1.2	919	1.27	945	1.35	972	1.42	1000	1.5	1030	1.58	1059	1.65	1088	1.73
2300	844	1.11	872	1.19	899	1.26	925	1.34	950	1.41	977	1.49	1006	1.57	1035	1.65	1064	1.73	1093	1.81
2400	849	1.17	878	1.25	906	1.32	931	1.4	956	1.48	983	1.56	1012	1.65	1041	1.73	1070	1.81	1099	1.89
2500	855	1.23	885	1.32	912	1.39	939	1.47	963	1.56	989	1.64	1018	1.72	1046	1.81	1075	1.89	1104	1.97
2600	862	1.3	891	1.38	919	1.46	946	1.55	971	1.63	996	1.72	1024	1.8	1052	1.89	1081	1.97	1110	2.06
2700	868	1.37	898	1.45	927	1.54	953	1.63	978	1.71	1003	1.8	1030	1.89	1058	1.97	1087	2.06	1115	2.15
2800	875	1.44	905	1.53	934	1.61	961	1.71	985	1.8	1010	1.88	1037	1.97	1064	2.06	1092	2.15	1121	2.24
2900	882	1.51	912	1.6	941	1.69	968	1.79	992	1.88	1017	1.97	1043	2.06	1070	2.15	1098	2.24	1126	2.33
3000	889	1.58	919	1.68	948	1.77	974	1.87	999	1.97	1024	2.06	1049	2.15	1076	2.24	1104	2.33	1132	2.43
3100	896	1.65	926	1.75	955	1.86	981	1.96	1006	2.05	1030	2.15	1055	2.24	1082	2.33	1110	2.43	1138	2.53
3200	903	1.73	933	1.84	962	1.94	988	2.04	1012	2.14	1036	2.24	1061	2.33	1088	2.43	1116	2.53	1144	2.63
3300	910	1.81	940	1.92	968	2.03	994	2.13	1018	2.23	1042	2.33	1067	2.43	1094	2.53	1122	2.63	1150	2.74
3400	917	1.89	947	2.01	975	2.12	1000	2.23	1024	2.33	1048	2.43	1074	2.53	1100	2.63	1128	2.74	1156	2.84
3500	924	1.98	954	2.09	981	2.21	1006	2.32	1030	2.43	1055	2.53	1080	2.63	1106	2.74	1134	2.84	1162	2.95
3600	932	2.07	960	2.19	987	2.3	1012	2.42	1036	2.53	1061	2.63	1086	2.74	1113	2.84	1140	2.95	1169	3.05

ELA120 BLOWER PERFORMANCE

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																	
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2000	484	0.31	515	0.39	547	0.47	582	0.55	618	0.63	657	0.71	695	0.8	732	0.87	766	0.94
2200	492	0.38	523	0.46	555	0.54	589	0.62	626	0.7	665	0.78	703	0.87	738	0.95	772	1.02
2400	501	0.46	531	0.54	563	0.61	598	0.69	635	0.77	673	0.86	710	0.94	745	1.02	778	1.1
2600	511	0.54	541	0.62	573	0.69	607	0.77	644	0.85	681	0.94	718	1.03	752	1.11	785	1.19
2800	521	0.63	551	0.7	583	0.78	617	0.85	653	0.94	690	1.02	726	1.11	760	1.2	792	1.28
3000	532	0.72	562	0.79	594	0.87	628	0.94	664	1.03	700	1.12	735	1.21	768	1.3	800	1.38
3200	544	0.81	574	0.88	606	0.96	640	1.04	675	1.12	710	1.22	744	1.31	777	1.41	808	1.49
3400	556	0.9	586	0.98	618	1.06	652	1.14	687	1.23	721	1.33	754	1.43	786	1.52	816	1.61
3600	570	1.01	600	1.09	632	1.17	665	1.26	699	1.35	732	1.44	764	1.54	795	1.64	825	1.73
3800	585	1.12	615	1.21	647	1.29	679	1.38	712	1.47	744	1.56	775	1.66	806	1.76	835	1.86
4000	600	1.25	631	1.34	662	1.42	694	1.51	725	1.59	757	1.69	787	1.79	817	1.9	845	2
4200	617	1.38	647	1.47	678	1.55	709	1.64	739	1.73	769	1.82	799	1.93	828	2.04	856	2.15
4400	635	1.53	664	1.61	694	1.69	724	1.78	754	1.87	783	1.96	812	2.07	840	2.19	867	2.32
4600	653	1.68	682	1.76	711	1.84	740	1.92	768	2.01	797	2.11	825	2.23	852	2.36	879	2.51
4800	672	1.83	700	1.91	728	1.99	756	2.08	783	2.17	811	2.28	838	2.41	865	2.56	891	2.71

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																			
	1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9		2	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2000	798	1.01	828	1.07	857	1.13	885	1.19	912	1.26	938	1.33	963	1.4	987	1.47	1012	1.54	1035	1.62
2200	804	1.09	834	1.15	863	1.22	890	1.29	917	1.36	943	1.43	968	1.5	992	1.58	1017	1.66	1040	1.74
2400	810	1.17	840	1.24	869	1.31	896	1.38	922	1.46	948	1.54	973	1.62	998	1.7	1022	1.78	1045	1.87
2600	816	1.26	846	1.33	875	1.41	902	1.49	928	1.57	954	1.66	978	1.75	1003	1.83	1027	1.92	1051	2.01
2800	823	1.36	853	1.43	881	1.52	908	1.6	934	1.69	959	1.79	984	1.88	1008	1.97	1032	2.07	1056	2.16
3000	830	1.46	859	1.54	887	1.63	914	1.73	940	1.83	965	1.93	990	2.03	1014	2.13	1038	2.22	1062	2.32
3200	838	1.57	867	1.66	894	1.76	920	1.86	946	1.97	971	2.08	996	2.18	1020	2.29	1044	2.39	1068	2.49
3400	846	1.69	874	1.79	901	1.89	927	2	953	2.12	978	2.24	1002	2.35	1026	2.46	1050	2.57	1074	2.68
3600	854	1.82	882	1.92	909	2.04	935	2.16	960	2.29	984	2.41	1008	2.53	1032	2.65	1056	2.76	1080	2.87
3800	864	1.96	891	2.07	917	2.2	942	2.33	967	2.46	991	2.59	1015	2.72	1039	2.84	1062	2.96	1086	3.07
4000	873	2.11	900	2.24	925	2.37	950	2.51	975	2.65	998	2.79	1022	2.92	1045	3.04	1069	3.16	1092	3.28
4200	883	2.28	909	2.41	934	2.56	959	2.7	982	2.85	1006	2.99	1029	3.13	1052	3.25	1075	3.38	1099	3.5
4400	894	2.46	919	2.61	944	2.76	967	2.91	991	3.06	1014	3.21	1037	3.35	1059	3.48	1083	3.6	1106	3.73
4600	905	2.66	930	2.82	953	2.98	977	3.14	1000	3.29	1022	3.44	1045	3.58	1067	3.71	1090	3.84	1114	3.97
4800	916	2.88	941	3.05	964	3.22	987	3.38	1009	3.54	1031	3.69	1053	3.83	1076	3.97	1099	4.1	1123	4.23

ELA150 BLOWER PERFORMANCE

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																	
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2600	511	0.54	541	0.62	573	0.69	607	0.77	644	0.85	681	0.94	718	1.03	752	1.11	785	1.19
2800	521	0.63	551	0.7	583	0.78	617	0.85	653	0.94	690	1.02	726	1.11	760	1.2	792	1.28
3000	532	0.72	562	0.79	594	0.87	628	0.94	664	1.03	700	1.12	735	1.21	768	1.3	800	1.38
3200	544	0.81	574	0.88	606	0.96	640	1.04	675	1.12	710	1.22	744	1.31	777	1.41	808	1.49
3400	556	0.9	586	0.98	618	1.06	652	1.14	687	1.23	721	1.33	754	1.43	786	1.52	816	1.61
3600	570	1.01	600	1.09	632	1.17	665	1.26	699	1.35	732	1.44	764	1.54	795	1.64	825	1.73
3800	585	1.12	615	1.21	647	1.29	679	1.38	712	1.47	744	1.56	775	1.66	806	1.76	835	1.86
4000	600	1.25	631	1.34	662	1.42	694	1.51	725	1.59	757	1.69	787	1.79	817	1.9	845	2
4200	617	1.38	647	1.47	678	1.55	709	1.64	739	1.73	769	1.82	799	1.93	828	2.04	856	2.15
4400	635	1.53	664	1.61	694	1.69	724	1.78	754	1.87	783	1.96	812	2.07	840	2.19	867	2.32
4600	653	1.68	682	1.76	711	1.84	740	1.92	768	2.01	797	2.11	825	2.23	852	2.36	879	2.51
4800	672	1.83	700	1.91	728	1.99	756	2.08	783	2.17	811	2.28	838	2.41	865	2.56	891	2.71
5000	691	1.99	719	2.07	745	2.16	772	2.25	799	2.36	826	2.48	852	2.62	879	2.77	904	2.94
5200	711	2.16	737	2.24	763	2.33	789	2.44	815	2.55	841	2.69	867	2.84	893	3.01	917	3.2
5400	731	2.34	756	2.43	781	2.53	806	2.64	832	2.78	857	2.93	882	3.09	907	3.28	931	3.47
5600	751	2.53	775	2.63	799	2.74	824	2.87	849	3.02	874	3.19	898	3.37	922	3.57	946	3.77
5800	770	2.74	794	2.85	818	2.98	842	3.13	866	3.29	891	3.47	915	3.68	938	3.89	961	4.1
6000	790	2.97	813	3.1	837	3.25	860	3.41	884	3.59	908	3.79	932	4.01	955	4.23	977	4.45

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																			
	1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9		2	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2600	816	1.26	846	1.33	875	1.41	902	1.49	928	1.57	954	1.66	978	1.75	1003	1.83	1027	1.92	1051	2.01
2800	823	1.36	853	1.43	881	1.52	908	1.6	934	1.69	959	1.79	984	1.88	1008	1.97	1032	2.07	1056	2.16
3000	830	1.46	859	1.54	887	1.63	914	1.73	940	1.83	965	1.93	990	2.03	1014	2.13	1038	2.22	1062	2.32
3200	838	1.57	867	1.66	894	1.76	920	1.86	946	1.97	971	2.08	996	2.18	1020	2.29	1044	2.39	1068	2.49
3400	846	1.69	874	1.79	901	1.89	927	2	953	2.12	978	2.24	1002	2.35	1026	2.46	1050	2.57	1074	2.68
3600	854	1.82	882	1.92	909	2.04	935	2.16	960	2.29	984	2.41	1008	2.53	1032	2.65	1056	2.76	1080	2.87
3800	864	1.96	891	2.07	917	2.2	942	2.33	967	2.46	991	2.59	1015	2.72	1039	2.84	1062	2.96	1086	3.07
4000	873	2.11	900	2.24	925	2.37	950	2.51	975	2.65	998	2.79	1022	2.92	1045	3.04	1069	3.16	1092	3.28
4200	883	2.28	909	2.41	934	2.56	959	2.7	982	2.85	1006	2.99	1029	3.13	1052	3.25	1075	3.38	1099	3.5
4400	894	2.46	919	2.61	944	2.76	967	2.91	991	3.06	1014	3.21	1037	3.35	1059	3.48	1083	3.6	1106	3.73
4600	905	2.66	930	2.82	953	2.98	977	3.14	1000	3.29	1022	3.44	1045	3.58	1067	3.71	1090	3.84	1114	3.97
4800	916	2.88	941	3.05	964	3.22	987	3.38	1009	3.54	1031	3.69	1053	3.83	1076	3.97	1099	4.1	1123	4.23
5000	929	3.12	952	3.3	975	3.47	997	3.64	1019	3.8	1041	3.95	1063	4.1	1085	4.23	1108	4.37	1132	4.5
5200	941	3.38	964	3.57	987	3.75	1008	3.92	1030	4.08	1051	4.23	1073	4.38	1095	4.51	1118	4.65	1142	4.78
5400	955	3.67	977	3.86	999	4.04	1020	4.21	1041	4.37	1063	4.53	1084	4.67	1106	4.81	1129	4.94	1153	5.08
5600	969	3.97	990	4.17	1012	4.35	1033	4.52	1054	4.68	1074	4.84	1096	4.98	1117	5.11	1140	5.25	1165	5.38
5800	983	4.3	1005	4.5	1025	4.68	1046	4.85	1066	5.01	1087	5.16	1108	5.3	1130	5.43	1153	5.57	1177	5.7
6000	998	4.65	1019	4.84	1040	5.03	1060	5.2	1080	5.35	1100	5.5	1121	5.63	1143	5.76	1166	5.89	1190	6.03

ELA180 BLOWER PERFORMANCE

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																	
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3200	421	0.48	471	0.62	521	0.74	573	0.85	624	0.96	663	1.11	692	1.28	724	1.44	756	1.57
3400	428	0.53	478	0.67	528	0.79	580	0.9	630	1.02	668	1.18	697	1.35	729	1.51	761	1.65
3600	436	0.58	485	0.72	535	0.85	587	0.96	636	1.08	673	1.25	701	1.42	733	1.59	766	1.73
3800	444	0.63	493	0.78	542	0.91	594	1.02	642	1.15	678	1.32	706	1.5	738	1.67	770	1.82
4000	452	0.69	501	0.84	550	0.97	601	1.08	648	1.22	683	1.39	711	1.58	743	1.75	775	1.9
4200	461	0.75	509	0.9	558	1.03	608	1.15	655	1.29	688	1.47	715	1.66	748	1.83	781	1.99
4400	470	0.82	518	0.96	566	1.1	616	1.22	662	1.36	694	1.55	720	1.75	753	1.92	786	2.08
4600	480	0.89	527	1.03	575	1.17	624	1.29	669	1.44	700	1.63	726	1.84	758	2.01	792	2.18
4800	490	0.96	537	1.11	584	1.24	633	1.37	676	1.52	706	1.72	731	1.93	764	2.11	798	2.27
5000	501	1.04	547	1.18	594	1.32	642	1.45	684	1.61	712	1.81	736	2.02	769	2.21	804	2.37
5200	512	1.13	557	1.26	604	1.4	651	1.53	692	1.7	719	1.91	742	2.13	775	2.31	810	2.48
5400	524	1.22	568	1.35	614	1.48	662	1.62	701	1.8	726	2.01	749	2.23	781	2.42	816	2.59
5600	536	1.31	580	1.44	625	1.58	672	1.72	710	1.9	734	2.12	755	2.35	788	2.54	823	2.71
5800	549	1.41	592	1.54	637	1.67	683	1.81	720	2	742	2.24	763	2.47	795	2.66	830	2.84
6000	562	1.52	605	1.64	650	1.77	695	1.92	730	2.11	750	2.36	770	2.61	802	2.8	837	2.98
6200	577	1.61	618	1.74	662	1.88	706	2.03	739	2.24	759	2.5	778	2.75	810	2.94	844	3.12
6400	592	1.71	632	1.85	675	2	717	2.17	748	2.39	767	2.65	787	2.9	819	3.09	852	3.27
6600	607	1.81	646	1.98	687	2.15	727	2.34	757	2.56	776	2.82	797	3.06	829	3.25	861	3.43
6800	622	1.93	659	2.12	697	2.32	736	2.53	764	2.75	785	3	807	3.23	838	3.41	870	3.59
7000	636	2.07	671	2.29	707	2.52	743	2.74	771	2.96	793	3.18	817	3.4	848	3.58	879	3.76
7200	649	2.25	682	2.49	716	2.74	750	2.97	778	3.18	802	3.38	828	3.58	858	3.76	889	3.93

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																			
	1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9		2	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3200	789	1.7	822	1.82	856	1.93	888	2.06	918	2.2	947	2.34	976	2.49	1003	2.64	1029	2.8	1054	2.97
3400	794	1.78	827	1.9	860	2.02	892	2.15	922	2.29	951	2.43	979	2.59	1006	2.74	1032	2.91	1057	3.07
3600	799	1.86	832	1.99	864	2.11	896	2.24	926	2.38	954	2.53	982	2.69	1009	2.85	1035	3.01	1060	3.18
3800	803	1.95	836	2.08	869	2.2	900	2.34	930	2.48	958	2.64	985	2.79	1012	2.96	1038	3.12	1063	3.29
4000	808	2.04	841	2.17	874	2.3	905	2.44	934	2.59	962	2.74	989	2.9	1015	3.07	1040	3.23	1066	3.4
4200	814	2.13	847	2.26	879	2.4	909	2.54	938	2.69	965	2.85	992	3.02	1018	3.18	1043	3.35	1068	3.52
4400	820	2.23	853	2.36	884	2.5	914	2.65	942	2.8	969	2.97	995	3.14	1021	3.3	1046	3.47	1071	3.64
4600	826	2.32	858	2.46	890	2.61	919	2.76	947	2.92	973	3.09	999	3.26	1024	3.43	1049	3.6	1074	3.77
4800	832	2.42	865	2.57	895	2.72	924	2.87	951	3.04	977	3.21	1002	3.39	1027	3.56	1052	3.73	1077	3.89
5000	838	2.53	871	2.68	901	2.83	929	3	955	3.17	981	3.34	1006	3.52	1031	3.69	1056	3.86	1080	4.03
5200	844	2.64	877	2.8	907	2.96	934	3.12	960	3.3	985	3.47	1010	3.65	1034	3.82	1059	3.99	1084	4.16
5400	851	2.76	883	2.92	912	3.08	939	3.26	964	3.43	989	3.61	1014	3.79	1038	3.96	1063	4.13	1088	4.3
5600	857	2.88	889	3.05	918	3.22	944	3.39	969	3.58	993	3.75	1018	3.93	1043	4.11	1067	4.28	1092	4.45
5800	863	3.01	895	3.18	924	3.36	950	3.54	974	3.72	998	3.9	1023	4.08	1047	4.26	1072	4.44	1097	4.61
6000	870	3.15	901	3.32	929	3.5	955	3.69	979	3.87	1003	4.06	1028	4.24	1052	4.42	1077	4.6	1102	4.78
6200	877	3.3	908	3.47	935	3.65	961	3.84	984	4.04	1009	4.23	1033	4.41	1058	4.6	1083	4.78	1107	4.96
6400	885	3.45	914	3.62	942	3.81	967	4.01	990	4.21	1015	4.41	1039	4.6	1064	4.78	1088	4.97	1113	5.15
6600	892	3.6	921	3.78	948	3.98	973	4.18	996	4.39	1021	4.59	1045	4.79	1070	4.98	1095	5.16	1119	5.35
6800	900	3.76	929	3.95	954	4.15	979	4.37	1003	4.58	1027	4.79	1052	4.99	1076	5.18	1101	5.37	1126	5.55
7000	909	3.93	936	4.12	961	4.33	985	4.56	1009	4.78	1034	4.99	1058	5.19	1083	5.39	1108	5.57	1132	5.76
7200	917	4.11	943	4.31	968	4.53	992	4.75	1016	4.98	1040	5.2	1065	5.4	1090	5.6	1114	5.78	1139	5.97

ELA240 BLOWER PERFORMANCE

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																	
	0.2		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4200	483	0.82	532	0.96	581	1.08	630	1.21	674	1.36	705	1.56	731	1.75	763	1.93	796	2.08
4400	494	0.88	543	1.02	591	1.15	640	1.28	681	1.45	711	1.65	737	1.85	769	2.02	803	2.17
4600	506	0.95	554	1.09	601	1.22	649	1.36	689	1.54	717	1.74	743	1.94	775	2.12	809	2.27
4800	518	1.02	566	1.16	612	1.3	658	1.45	696	1.64	724	1.85	749	2.04	782	2.22	816	2.37
5000	531	1.1	578	1.24	623	1.38	668	1.55	704	1.75	730	1.96	756	2.14	789	2.32	823	2.48
5200	545	1.18	590	1.32	635	1.47	677	1.66	711	1.87	737	2.07	763	2.25	796	2.43	830	2.59
5400	559	1.27	603	1.41	646	1.58	686	1.78	719	2	744	2.2	770	2.37	803	2.55	837	2.71
5600	573	1.36	615	1.51	657	1.69	695	1.91	726	2.13	752	2.33	778	2.5	811	2.68	845	2.84
5800	587	1.47	628	1.62	668	1.81	705	2.04	735	2.27	760	2.46	787	2.63	819	2.81	853	2.98
6000	601	1.58	640	1.74	679	1.94	714	2.18	744	2.41	769	2.6	796	2.78	828	2.96	861	3.13
6200	615	1.69	653	1.87	690	2.09	724	2.33	752	2.56	778	2.75	805	2.92	837	3.11	870	3.28
6400	629	1.82	665	2.02	700	2.25	733	2.5	761	2.72	788	2.91	815	3.08	847	3.26	879	3.43
6600	643	1.96	676	2.19	710	2.43	742	2.68	771	2.9	798	3.08	826	3.24	857	3.42	889	3.59
6800	655	2.13	688	2.37	720	2.63	752	2.88	780	3.08	808	3.25	837	3.41	868	3.59	898	3.76
7000	667	2.32	699	2.58	730	2.84	761	3.08	790	3.27	819	3.43	849	3.59	879	3.76	908	3.94
7200	679	2.52	710	2.79	741	3.06	771	3.3	801	3.47	830	3.62	860	3.77	889	3.94	918	4.12
7400	691	2.75	721	3.02	752	3.29	782	3.52	812	3.67	842	3.81	871	3.96	900	4.13	927	4.32
7600	704	2.98	733	3.25	763	3.52	793	3.73	823	3.88	853	4	882	4.15	910	4.33	937	4.52
7800	716	3.21	745	3.48	775	3.74	805	3.94	835	4.08	864	4.2	893	4.35	920	4.53	946	4.73
8000	730	3.44	758	3.7	787	3.95	817	4.15	846	4.29	876	4.41	904	4.56	930	4.74	955	4.95
8200	743	3.68	771	3.93	800	4.16	829	4.36	858	4.49	887	4.62	914	4.78	940	4.96	965	5.17
8400	757	3.92	784	4.16	812	4.38	841	4.57	870	4.71	898	4.84	925	5	950	5.19	974	5.4
8600	770	4.16	798	4.39	825	4.61	854	4.79	882	4.93	910	5.06	936	5.22	960	5.42	983	5.63

Air Volume CFM	STATIC PRESSURE EXTERNAL – Inches Water Gauge																			
	1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9		2	
CFM	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4200	829	2.21	862	2.33	893	2.46	923	2.61	950	2.76	977	2.93	1003	3.1	1029	3.26	1054	3.43	1079	3.6
4400	836	2.31	868	2.44	899	2.57	928	2.72	955	2.88	982	3.05	1008	3.22	1033	3.39	1058	3.56	1083	3.73
4600	843	2.41	875	2.54	906	2.69	934	2.84	960	3.01	986	3.18	1012	3.35	1037	3.52	1062	3.69	1087	3.86
4800	850	2.52	882	2.66	912	2.8	939	2.97	965	3.14	991	3.31	1016	3.48	1041	3.66	1066	3.82	1091	3.99
5000	857	2.63	889	2.77	918	2.93	945	3.1	970	3.27	995	3.45	1020	3.62	1045	3.79	1070	3.96	1095	4.13
5200	864	2.74	895	2.9	924	3.06	950	3.23	975	3.41	1000	3.59	1025	3.76	1050	3.93	1075	4.1	1099	4.27
5400	871	2.87	902	3.03	930	3.2	956	3.38	980	3.56	1005	3.73	1030	3.91	1055	4.08	1079	4.25	1104	4.42
5600	878	3	909	3.17	937	3.34	962	3.52	986	3.71	1011	3.89	1035	4.06	1060	4.24	1085	4.41	1110	4.58
5800	886	3.15	916	3.31	943	3.49	968	3.68	992	3.86	1016	4.05	1041	4.22	1066	4.4	1091	4.57	1115	4.75
6000	893	3.29	923	3.47	950	3.65	974	3.84	998	4.03	1023	4.22	1047	4.4	1072	4.58	1097	4.75	1122	4.93
6200	901	3.45	931	3.62	957	3.81	981	4.01	1005	4.21	1029	4.4	1054	4.58	1079	4.76	1103	4.94	1128	5.12
6400	910	3.6	938	3.79	964	3.99	988	4.19	1012	4.4	1036	4.59	1061	4.77	1086	4.96	1110	5.13	1135	5.32
6600	919	3.77	946	3.96	971	4.17	995	4.38	1019	4.59	1044	4.79	1068	4.98	1093	5.16	1117	5.34	1142	5.52
6800	927	3.94	954	4.15	979	4.36	1003	4.58	1027	4.8	1051	5	1076	5.19	1100	5.37	1125	5.55	1150	5.73
7000	936	4.13	962	4.34	986	4.56	1010	4.79	1034	5.01	1059	5.21	1084	5.4	1108	5.58	1132	5.76	1157	5.94
7200	945	4.32	970	4.54	994	4.77	1018	5	1042	5.22	1067	5.43	1091	5.62	1116	5.8	1140	5.98	1165	6.16
7400	953	4.52	978	4.75	1002	4.99	1026	5.22	1050	5.44	1075	5.65	1099	5.84	1124	6.02	1148	6.2	1172	6.38
7600	962	4.73	986	4.97	1010	5.21	1034	5.44	1058	5.66	1083	5.87	1107	6.06	1132	6.25	1156	6.43	1180	6.61
7800	970	4.95	994	5.19	1018	5.43	1042	5.67	1066	5.89	1091	6.1	1116	6.29	1140	6.48	1164	6.65	1188	6.84
8000	979	5.17	1002	5.41	1026	5.66	1050	5.9	1075	6.12	1099	6.33	1124	6.52	1148	6.71	1172	6.89	1196	7.07
8200	988	5.4	1011	5.64	1034	5.89	1058	6.13	1083	6.36	1108	6.56	1132	6.76	1156	6.94	1180	7.12	1204	7.3
8400	997	5.63	1019	5.88	1043	6.13	1067	6.37	1092	6.59	1116	6.8	1141	7	1165	7.18	1188	7.36	1212	7.54
8600	1006	5.87	1028	6.12	1051	6.37	1075	6.61	1100	6.84	1125	7.05	1149	7.24	1173	7.42	1197	7.6	1221	7.78

Repairing or Replacing Cabinet Insulation

! IMPORTANT

DAMAGED INSULATION MUST BE REPAIRED OR REPLACED before the unit is put back into operation. Insulation loses its insulating value when wet, damaged, separated or torn.

Matte- or foil-faced insulation is installed in indoor equipment to provide a barrier between outside air conditions (surrounding ambient temperature and humidity) and the varying conditions inside the unit. If the insulation barrier is damaged (wet, ripped, torn or separated from the cabinet walls), the surrounding ambient air will affect the inside surface temperature of the cabinet. The temperature/humidity difference between the inside and outside of the cabinet can cause condensation on the inside or outside of the cabinet which leads to sheet metal corrosion and subsequently, component failure.

REPAIRING DAMAGED INSULATION

Areas of condensation on the cabinet surface are an indication that the insulation is in need of repair.

If the insulation in need of repair is otherwise in good condition, the insulation should be cut in an X pattern, peeled open, glued with an appropriate all-purpose glue and placed back against the cabinet surface, being careful to not overly compress the insulation so the insulation can retain its original thickness. If such repair is not possible, replace the insulation.

If using foil-faced insulation, any cut, tear, or separations in the insulation surface must be taped with a similar foil-faced tape.

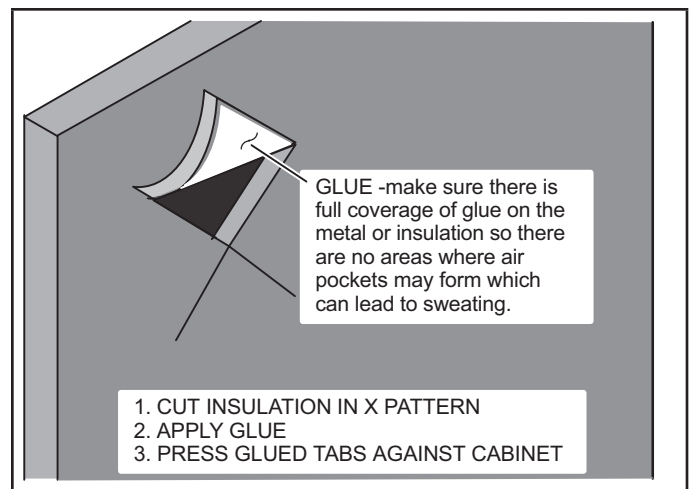


FIGURE 21. Repairing Insulation

Optional Accessories

- Float Switch Kit
- Economizer Kit
- Air Filter Kit
- Hot Water Coil Heating Kit
- Electric Heat Kit