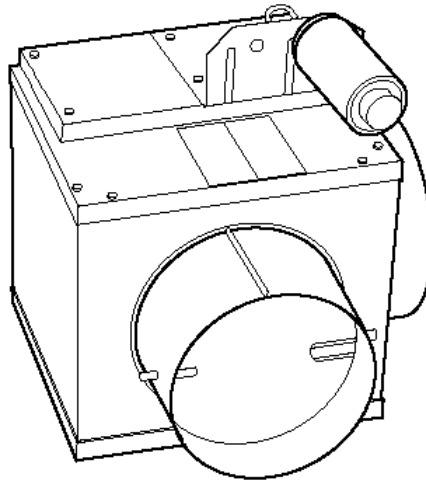


# **KRUEGER** By-Pass Terminal Unit

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## **PRE-INSTALLATION**

**General** — The KLB is a single duct, variable volume terminal available with factory installed pneumatic or electric control options. Figure 1 shows the basic box.



**FIGURE 1 –KLB Single Duct Box (Sizes 6-18)**

**STORAGE AND HANDLING** — Inspect for damage upon receipt. Shipping damage claims should be filed with shipper at time of delivery. Store in a clean, dry, and covered location. Do not stack cartons. When unpacking units, care should be taken that the inlet collars and externally mounted components do not become damaged. Do not lift units using collars, or externally mounted components as handles. Do not lay uncrated units on end or sides. Do not stack uncrated units over 6 ft high. Do not manhandle. Do not handle control boxes by tubing connections or other external attachments. Table 1 shows component weights.

**Table 1 – KLB Unit Weights:**

Weights		
Unit Size	Bare unit (lb)	W/ Actuator (lb)
6	19	22
8	21	24
10	26	29
12	32	35
14	40	43
16	44	47
18	47	50

**INITIAL INSPECTION** — Once items have been removed from the carton, check carefully for damage to duct connections, coils or controls. File damage claim immediately with transportation agency and notify Factory.

**UNIT IDENTIFICATION** — Each unit is supplied with a shipping label and an identification label (Fig. 2).

**INSTALLATION PRECAUTION** — Check that construction debris does not enter unit or ductwork. Do not operate the central-station air-handling fan without final or construction filters in place. Accumulated dust and construction debris distributed through the ductwork can adversely affect unit operation.

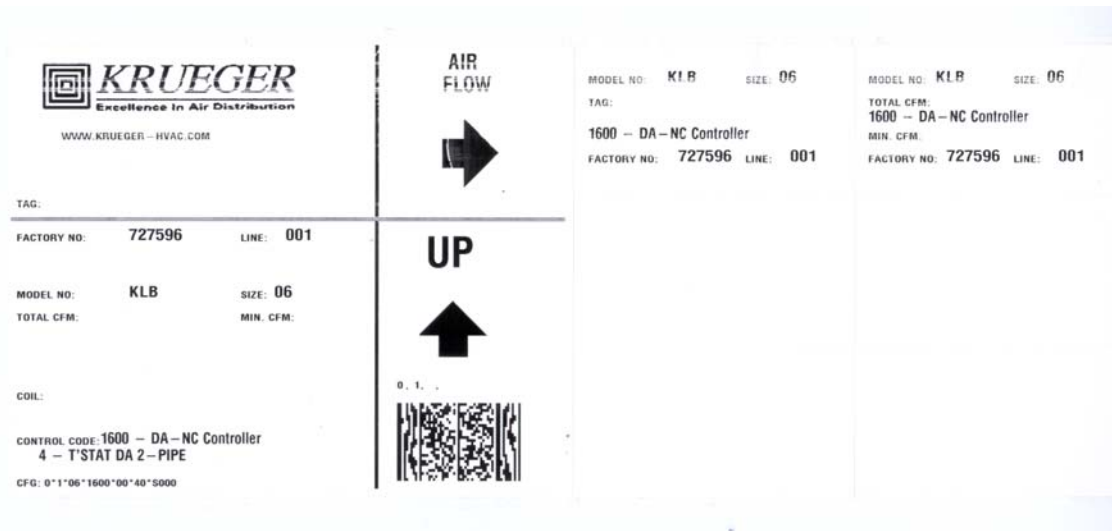


Figure 2 – Unit Identification Label

**SERVICE ACCESS** — Provide service clearance for unit access.

**CODES** — Install units in compliance with all applicable code requirements.

**UNIT SUSPENSION** — See Fig. 3 for unit suspension details.

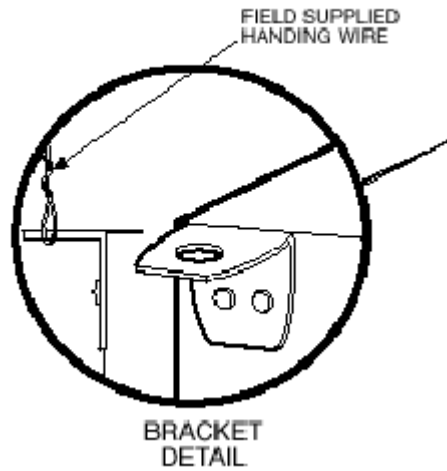


Figure 3 – Unit Suspension Bracket

**Warranty** — All Krueger furnished items carry the standard warranty.

**MAINTENANCE**

No periodic preventative maintenance required, unless called for specific control sequence.

**CONTROL ARRANGEMENTS**

The 35K unit offers pneumatic and electric control offerings, with a damper actuator that responds directly to a thermostat output to control room temperature.

The control offerings are identified as follows:

Control Type	Description
0000	No Controls
1600	Pneumatic Direct Acting Normally Closed
1601	Pneumatic Reverse Acting Normally Open
3500	Electric Temperature Responsive (Note 2, Page 2)
8200	Pressure Dependent Cooling Only VVT
XXXX	Custom

**INSTALLATION**

**Step 1 — Install Volume Control Box**

1. Move unit to installation area. Remove unit from shipping package. Do not handle by controls or damper extension rod.
2. Unit with factory-installed brackets shown in Fig. 3.
3. Suspend units from building structure with straps, rods, or hanger wires. Secure the unit and level it in each direction.

## Step 2 — Make Duct Connections

1. Install supply ductwork on unit inlet collar. Check that air-supply duct connections are airtight and follow all accepted medium-pressure duct installation procedures. (Refer to Table 2 for Pressure Data).

NOTE: To ensure proper equipment performance, it is recommended that a length of rigid straight duct equal to 3 times the duct diameter be provided to the inlet. An inlet balancing damper should either be included with the unit (optional) or installed upstream of the unit in supply ductwork.

2. Install the discharge duct. Where a multiple outlet connector is used on the box, connect appropriately sized ductwork to the outlets. Use adapter caps to seal unused outlets. Fully open all balancing dampers. To ensure use of common diameter air duct, coordinate diameters of box inlet and multiple outlet collars. Insulate duct as required. A straight length of inlet duct is not required before the unit inlet. Ninety-degree elbows or tight radius flexible duct immediately upstream of inlet collar should be avoided.

Inlet Size	Max Flow		ByPass Closed		ByPass Opened	
			Min ΔPs		Min ΔPs	
	CFM	(L/s)	"WG	(pa)	"WG	(pa)
6	500	(236)	0.025	(6.2)	0.431	(107.3)
8	900	(425)	0.026	(6.6)	0.440	(109.6)
10	1300	(614)	0.021	(5.3)	0.377	(93.8)
12	2000	(944)	0.025	(6.2)	0.430	(107.1)
14	2500	(1180)	0.021	(5.2)	0.379	(94.3)
16	3600	(1699)	0.025	(6.3)	0.440	(109.6)
18	4400	(2077)	0.024	(5.9)	0.410	(102.0)

**Step 3 — Install Sensors and Make Field Wiring Connections — Electric Actuator or electric/electronic controls by others**— Refer to specific unit dimensional submittals and control application diagrams for control specifications. All field wiring must comply with National Electrical Code (NEC) and local requirements. Refer to the wiring diagram on the unit for specific wiring connections. A field-supplied transformer is required if the unit was not equipped with a factory-installed transformer. See Fig. 4.

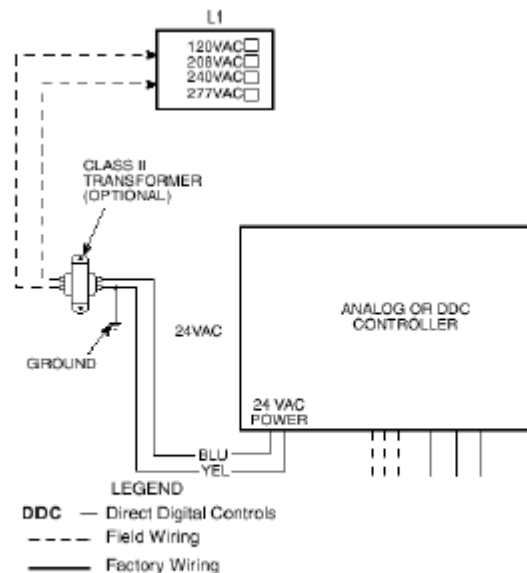


FIGURE 4 – Wiring of Optional Factory-Mounted Transformer

## **CONTROL SETUP - BALANCING**

**General** — The bypass VAV terminal is designed to supply a varying quantity of cold primary air to a space in response to a thermostat demand, with excess air diverted to a secondary discharge outlet. This type of VAV terminal is not equipped with pressure compensating controls, but rather, the thermostat or pressure dependent controller is directly connected to the actuator. To balance the unit it is necessary to establish a pressure balance between the straight through and full bypass modes of operation.

### **Balancing Steps:**

- 1.) With the actuator fully open (no bypass) and the air system operating normally, establish the desired maximum cooling or heating airflow to be delivered by adjusting either the optional inlet balancing damper or a separate damper installed upstream of the unit. (Note – failure to limit the airflow at the inlet of the unit may result in damper failure under some conditions). Discharge airflow may be determined in whatever means is appropriate for balancing the diffusers in the system in accord with established balancing procedures.
- 2.) Determine the supply duct inlet pressure.
- 3.) Set the unit actuator to full bypass mode.
- 4.) Adjust the bypass balancing damper so the inlet duct pressure is the same as when in the fully open position. This assures that the position of the bypass damper will have minimum effect on the operation of the main air handler.