

## Model CLBD Constant Load ByPass Damper

Leave this bulletin on the job site for future reference!

The model CLBD Bypass Damper is an easy and economical way to manage system static pressure, in a zoned HVAC system.

Damper adjustment is easily achieved by increasing or decreasing the force applied to the bypass damper blade, until the desired static pressure is achieved. See Page 2 for details.

Due to the constant load applied to the damper blade and the unique magnetic latch, the CLBD Bypass Damper can be installed in any position on your bypass duct-work, to manage the HVAC system's static pressure during zoned operations.

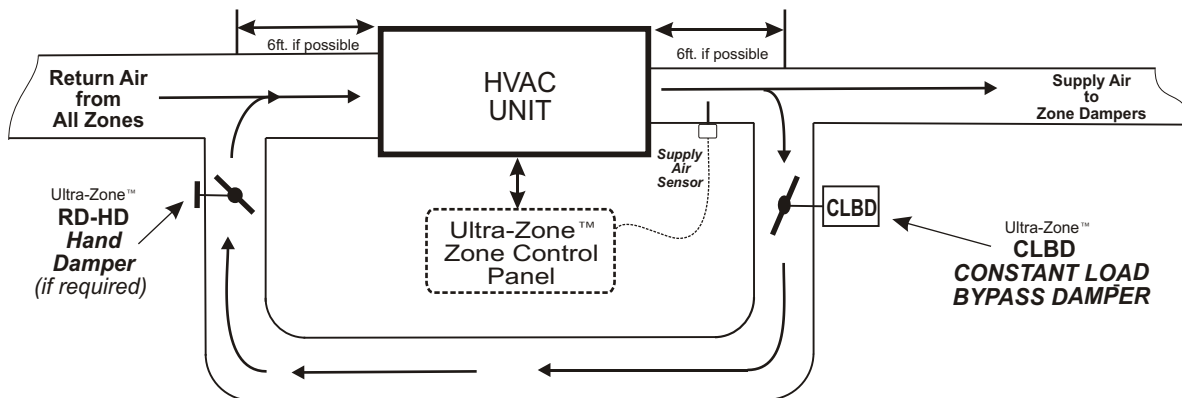
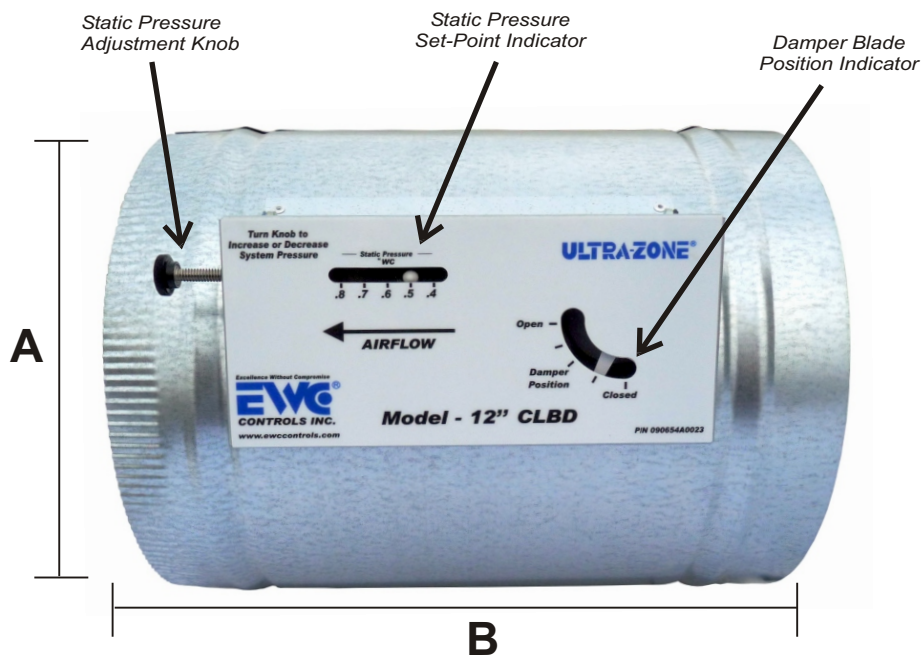
The CLBD minimizes bypass volume, while still preventing the HVAC system static pressure from rising above the selected Static Pressure set-point.

The CLBD is a basic, cost effective Bypass Solution for Constant Speed or Variable Speed "zoned" HVAC systems.

MODEL #	SIZE	"A" Dimension	"B" Dimension
CLBD 8	8"	8"	12"
CLBD 10	10"	10"	12"
CLBD 12	12"	12"	14"
CLBD 14	14"	14"	16"
CLBD 16	16"	16"	20"

Bypass CFM Chart

MODEL #	SIZE	CFM
CLBD 8	8"	400
CLBD 10	10"	700
CLBD 12	12"	1100
CLBD 14	14"	1700
CLBD 16	16"	2200



**Note:** This drawing of the Bypass damper, Balancing Hand Damper, and Related duct work is intended to serve only as a guide. Your actual duct work layout and components may differ. Use the graphic as a guide when planning or designing a Zone system regardless of the Equipment type, Duct layout and Airflow configuration.

## BYPASS SIZING EXAMPLE \*\* *see note below*

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1. Start with the HVAC system's Total CFM (**3 ton @ 1200Cfm**) 2 zone system (Zone 1 = 700cfm, Zone 2 = 500cfm).
2. Deduct the cfm for the smallest zone that can demand air by itself (**500cfm**).
3. Deduct damper stop leakage, if applicable (20% per ACCA Manual Zr) on the largest zone (700cfm x .20 = 140cfm) Total = **140cfm**.
4. Deduct the cfm for any non-dampered (open) duct runs if applicable. *ie. Bathrooms, Washer/Dryer area, etc.* (2 x 60cfm = **120 cfm**).
5. Do the math... (1200 - 500 - 140 - 120 = **440 cfm bypass flow**).
6. *The remaining cfm is the bypass cfm!* Refer to the Bypass CFM chart and match the bypass cfm to the correct size CLBD bypass damper.

<b>EXAMPLE:</b>	3 ton system @ 400 cfm per ton = 1200 cfm	1200 cfm
	Subtract Smallest Zone 2 cfm = 500 cfm	- 500 cfm
	Subtract Damper Stop Leakage = 140 cfm	- 140 cfm
	Subtract Open Runs = 120 cfm	- 120 cfm
		= 440 cfm - <i>Bypass Flow</i>
		- 400 cfm - <b>8" CLBD</b>
		<b>Residual = 40 cfm*</b>

\* A smaller bypass is always best. Resist the urge to size up. The 8" bypass (400 cfm) will result in 40cfm of residual air volume. A mere 3.3% (.033) of the total system airflow. This 40 cfm will become "overblow" into the active zone. Thus, when Zone 2 is the only active zone, it will receive 540cfm rather than 500cfm.

\*\* This example assumes single stage HVAC equipment or, Y2 is allowed to activate when the smallest zone calls.

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## CONSTANT LOAD BYPASS DAMPER INSTALLATION AND SETUP

1. Install the CLBD bypass damper in horizontal or vertical bypass duct.
2. Route the bypass airflow from the main supply air plenum or manifold back into the return duct as shown on page 1. Or you can route the bypass airflow into a seldom used area or room that has a return air grille. *Do Not route bypass air into a non-conditioned area such as an attic or crawl space.*
3. If possible, connect the bypass duct to the return duct, 6 feet (or more) away from the air handler.
4. If a Balancing Hand Damper is installed, you should balance the bypass duct first by referring to *Application Note #090376A0169D*.
5. The CLBD comes factory set at 0.5"wc and will function correctly for most residential HVAC applications right out of the box. No further adjustment is required. If necessary, follow the additional steps below.
6. Energize **ALL** zones to operate the HVAC system with the indoor fan running on the highest speed. (*Usually a cooling demand, 2nd stage if applicable*). Confirm the CLBD is closed.
7. Next, turn off all larger cfm zones (*one at a time*) **except** the smallest cfm zone & wait for the zone dampers to move fully closed or nearly closed, if they are adjusted to allow some leakage.
8. Now, monitor the airflow in the smallest zone.
  - \* If there is too much airflow/noise in the smallest zone, adjust the CLBD static pressure setting lower.
  - \* If there is insufficient airflow in the smallest zone, adjust the CLBD static pressure setting higher.
9. To adjust the CLBD, simply turn the "Adjustment Knob" to select a lower static pressure setting or a higher static pressure setting.
10. *Congratulations, your CLBD Bypass Damper is now properly adjusted.*