

# ULTRA-ZONE™

Forced Air Zone Controls

## SUBMITTAL SHEET

### Model EBD

### Electronic By-Pass Damper

#### EBD Specifications:

**PS4 Pressure Switch Set point Range** - .1" - 4" W.C.

**Sensing Element** - Reevecote diaphragm.

**Air Pressure Connectors** - 1/4"OD brass barbs included x2.

**Pitot Tubes** - Included x2. **Pressure Tubing** - Included x2.

**Power** - 24vac @ 3.0va / 1.5w, required to pressure switch.

**Wiring** - Pressure switch is factory wired to damper motor.

**Contacts** - SPDT HD contacts rated for 10amp @ 120vac.

**Case** - Cast Aluminum with 1/2" conduit opening.

**PS4 Listings** - UL, CUL, CSA, CE, FM

**Mounting** - The PS4 pressure switch is factory mounted to the damper frame or shell. The pressure switch must be oriented so that the adjustment stem is always straight up, regardless of the position of the bypass damper.

**Refer to pages 3 & 4 for instructions on how to adjust the position of the pressure switch.**

#### How the Bypass System Works:

As the individual zone dampers open and close, the system static pressure will fluctuate. In order to maintain the design static pressure on the the HVAC duct system during zoned operation, a bypass system with a reliable motorized damper, controlled by a heavy duty pressure sensing switch should be installed. The pressure switch monitors the duct static pressure and energizes the damper motor open or close, to maintain the design static pressure value. The bypass damper will modulate to hold the factory set-point of .5"wc or whatever reasonable set-point the installer chooses.

#### Description of Bypass Dampers:

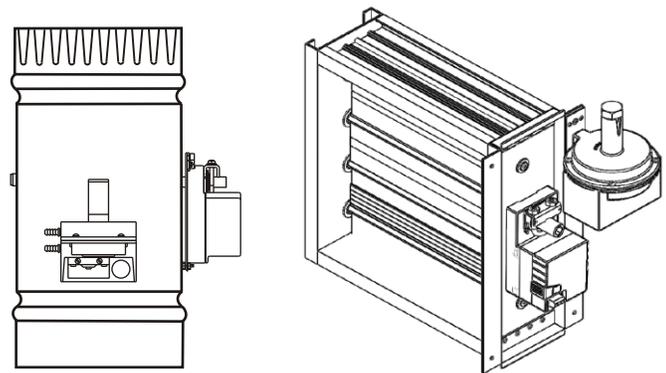
ROUND BYPASS DAMPERS are fabricated from 24 gauge galvanized steel. The rolled shells are furnished with one straight (female) end and one crimped (male) end with stiffening beads for rigidity. Round EBD bypass dampers are equipped with low leakage blade seals.

**\*Specify model EBD - 8", 10", 12", 14", 16", 18", 20"**

RECTANGULAR BYPASS DAMPERS are fabricated from mill finished, extruded 080" aluminum, and a low leakage parallel blade design.

**\*Specify model EBD - 12x8, 12x10, 12x12, 20x8 20x10, 20x12, etc.**

**\*Custom sizes are available, call for details.**



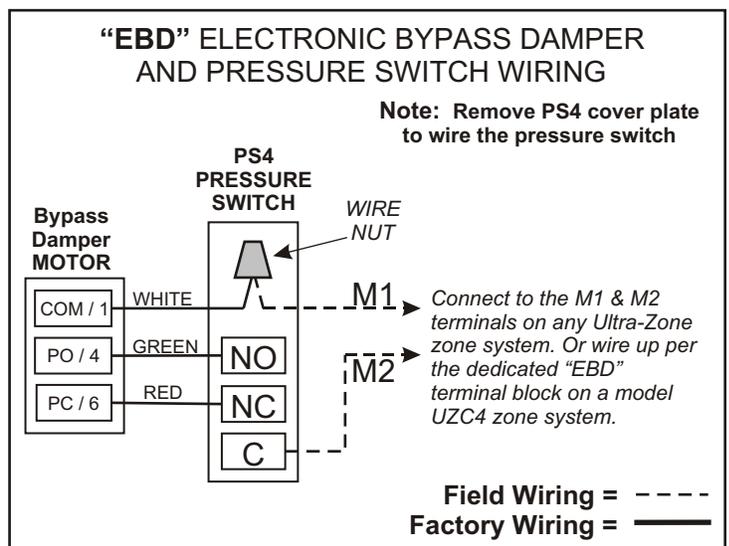
#### Description of the PS4 Static Pressure Control:

The static pressure control is a heavy duty air pressure switch, with a sensitive diaphragm.

An integrated SPDT dry switch assembly and a visual ON/OFF indicator are included. The spring adjustable switch has dual scales calibrated in millimeters and inches of water column for easy field setup.

**The Electronic Bypass design includes either the Model MA-AC1 or MA-ND5 Motor Actuator with Open & Closed LED indicators for Medium Duty applications, or a rugged LM-24(no LED's)Belimo Motor Actuator for Heavy Duty applications!**

**All Ultra-Zone EBD models are designed for long life and easy installation.**



#### SUBMITTAL FORM

SUBMITTED BY: \_\_\_\_\_

JOB: \_\_\_\_\_

ARCHITECT: \_\_\_\_\_

ENGINEER: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

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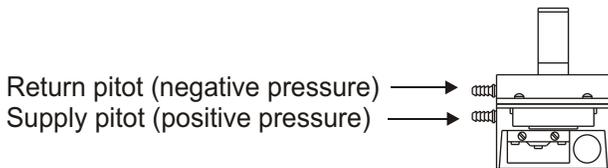
### Installing the EBD Bypass Damper:

The pitot tubes, reference tubing, and mounting hardware are included with the EBD. **Make sure you have removed these items from the shipping box before you throw the box away!**

The bypass damper should be installed with the bypass air being discharged back into the return air plenum or above the ceiling if this area is used as a common return. See Application Note #090376A0169 for bypass design guidance.

Mount both pitot tubes within 5 feet of the air handler on the center line of a straight section on the Supply & Return plenum. *Observe the direction of airflow stamped on the pitot tube mounting plate.*

Connect each pitot tube to the PS4 pressure switch with the supplied 3/8" O.D. plastic tubing, *Keep the 3/8" plastic tubing short as possible with no kinks.*



### Adjusting the PS4 Static Pressure Switch:

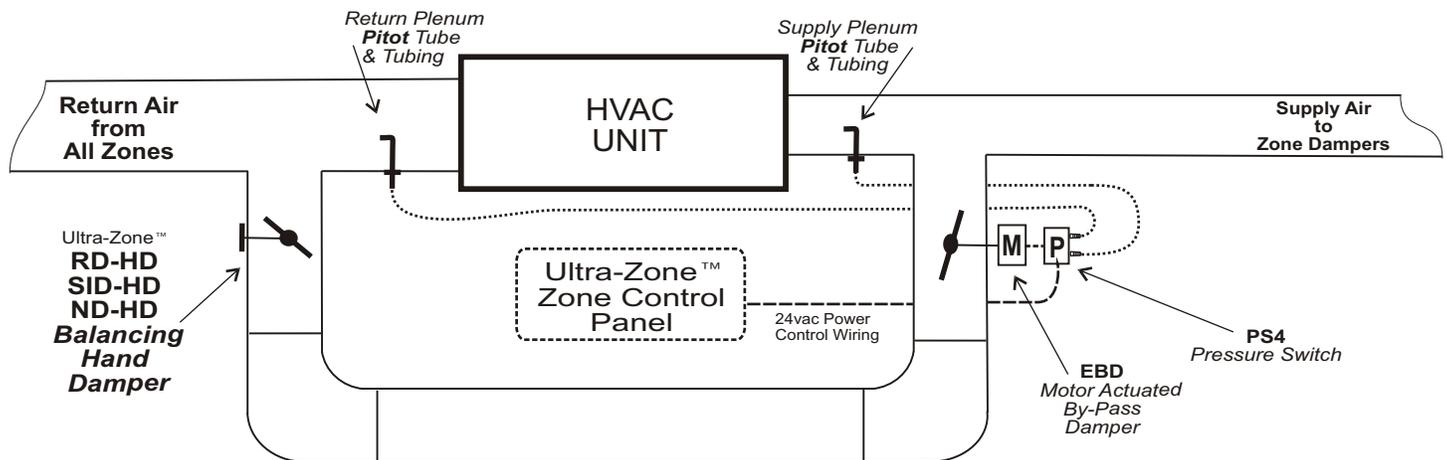
Before adjusting the pressure switch, the installer should confirm the following:

- (1) The PS4 switch is oriented straight up.
- (2) The HVAC System is running at full CFM.
- (3) The Air Filter is new or clean.
- (4) The bypass duct has been properly balanced.
- (5) The zone system is operating properly.
- (6) All zone dampers are in the open position.

### Adjustment Procedure (If Required):

With the air handler running at the highest speed & full CFM rating and the bypass damper system powered, turn the static pressure adjustment screw until the top of the screw aligns with the static pressure scale setting you require. (Factory setting is .5" W.C.) Observe that the bypass damper should be closed when all zone dampers are open. If it's open or partially open, adjust the set point for a higher value. Then, start to close off one or more zone dampers and observe as the static pressure control senses the increased air pressure and modulates the bypass damper, to maintain the set point you have chosen.

## EWC Controls Recommended Bypass Duct Configuration



Note: This drawing of the bypass damper static pressure control and related duct work is intended to serve as a guide. Your actual duct configuration may differ and that's OK, so long as all components are installed correctly.

To ensure proper operation, make sure the PS4 pressure switch is always oriented straight up, regardless of the installed damper position.

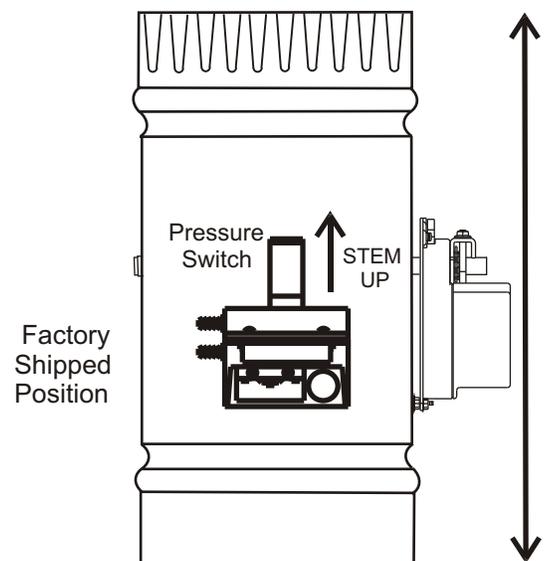
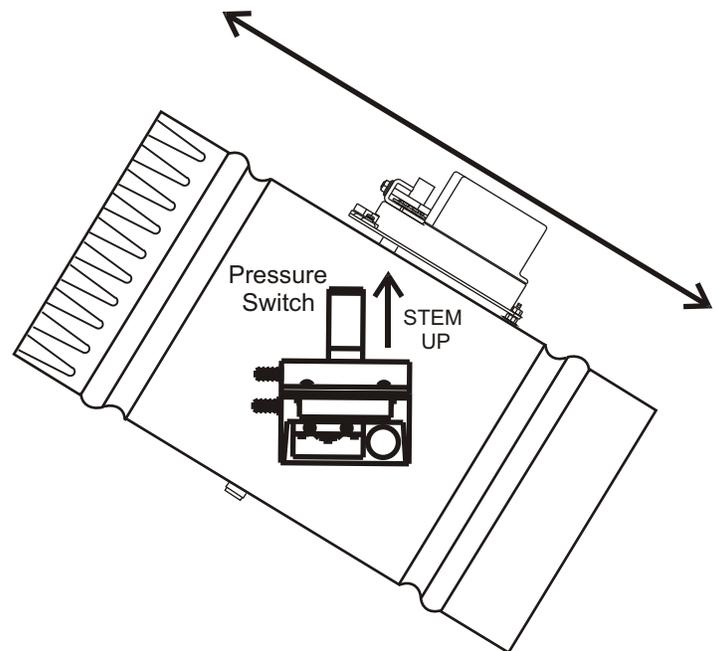
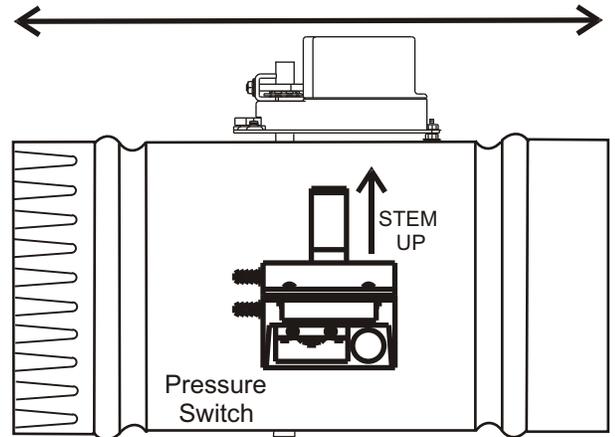
If the round bypass damper is installed horizontally or angled, the position of the pressure switch must be field adjusted.

Loosen the 5/16" nut on the mounting bracket, rotate the pressure switch so the stem is straight up and re-tighten the 5/16" nut.

There is plenty of slack in the motor power cable to handle the position adjustment. Do not cut the plastic strap unless it's absolutely necessary.

If the round bypass damper is installed vertically there should be no need to adjust the PS4 pressure switch position.

The factory shipped position is shown below to the right.



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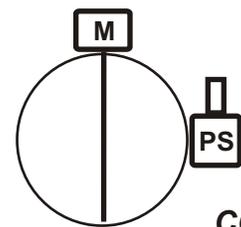
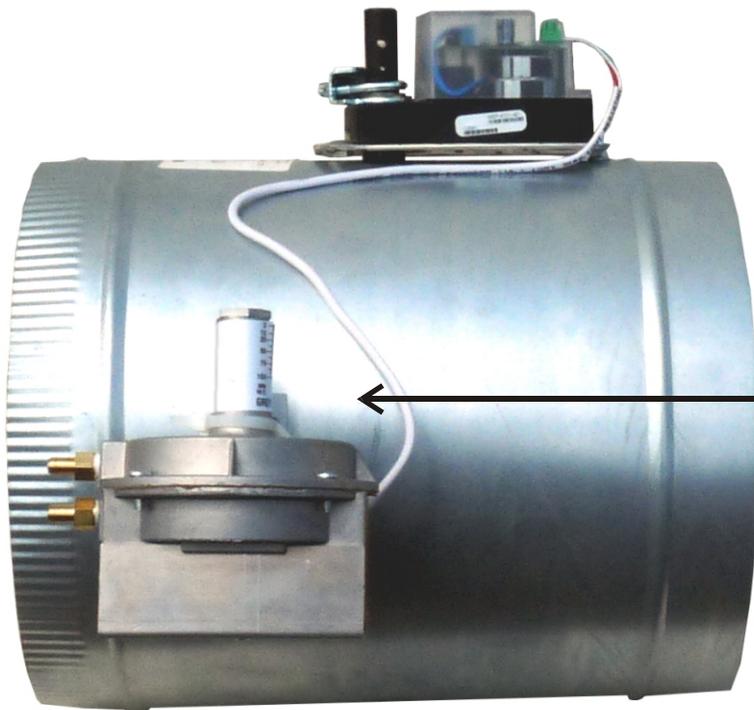
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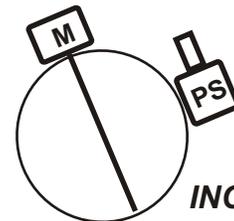
Model EBD  
Electronic By-Pass Damper



The EBD can be mounted in any position, just make sure to properly **ORIENT** the PS 4 switch.



**CORRECT**  
Straight Up



**INCORRECT**