



Young Regulator Co.

7100 Krick Rd • Walton Hills, OH 44146

P: 440-232-9700 • F: 440-232-8266

www.youngregulator.com

Model 4092

*Electronic Bypass Damper Round
Pressure Reducing Damper*

Application and Design

The Young Regulator 4092 round bypass damper regulates the total airflow in the system by diverting the excess airflow through a ducted return or ceiling plenum.

An increase in static pressure is sensed by the built in static pressure sensor/controller through the probe. At the desired static pressure, (adjustable by the installer) the motor will begin to open the damper to bypass the excess air flow, reducing static pressure. The damper will remain open until the desired static pressure is attained. Pressure will be maintained until another change in pressure. If zones are satisfied and more zone dampers close, bypass damper will open further. If zones require more air and zone dampers open, pressure reducing damper sensor will sense a decrease in pressure and the bypass damper will close.

The system can also be used to reduce downstream static by limiting the amount of air going into a branch. In that case the controller signals an "Open" on drop in static and a close on Pressure rise.



Static Pressure Sensor/Controller

Solid-State design

Differential Pressure Setpoint Range	0.08 to 1.2 InWC
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Operating Range	-40° to 190° F
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Electrical Switch	Solid State Switching 1Amp @ 24VAC
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Compliance / Enclosure	ETL Recognized / NEMA13 / IP54
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Actuator

Brushless 24VAC Motor Power Open/Power Closed

Volts / Watts / VA	24VAC / 1.5W running(0.2W holding) / 2VA
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Timing / Torque	35 Seconds / 45 in-lbs
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Sizes	8, 10, 12, 14, 16, 18 and 20 inches
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Built-in motor stops for minimum and maximum air

Standard Construction

Bypass assembly of damper, actuator and static pressure sensor are prewired at the factory for a reliable, economical means of controlling pressure in a pressure dependent VAV system.

Shell	24 ga, Steel Shell
Shaft / Bearings	½" Plated Steel / Oil Impregnated Bronze
Seals	Full Circular Closed Seal Gasket - Less than 1% leakage @ 3InWC
Blade	20 ga. Galvanized Steel, Elliptical for linear control of air ±1% accuracy

Quantity	Diameter	Bypass or Pressure Reduction	Notes
PROJECT			LOCATION
CONTRACTOR			DESIGN SPECIFIER



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Model 4092 Electronic Bypass Damper

GENERAL INSTRUCTIONS FOR BYPASS DAMPER ASSEMBLY

HOW THE BYPASS SYSTEM WORKS

As the individual zone dampers open and close, the system static pressure will rise and fall. In order to maintain proper air flow and static pressure through the HVAC system, a bypass system incorporating a reversible type motorized damper and a static pressure control is used. The static pressure control is equipped with solid state switching

INSTALLING THE BYPASS DAMPER AND STATIC PRESSURE CONTROL ASSEMBLY

The bypass damper should be installed with the bypass air being discharged into the return air plenum or above the ceiling if this area is used as a common return (see drawing). The bypass damper must be installed so that the diaphragm of the static pressure control is in the vertical position. The high-pressure side of the static pressure control (P1, dark gray) should be connected to the sensing probe that is inserted into the main supply plenum downstream of the bypass damper and at least 2 to 3 feet from the air handling unit in a straight section of duct. The sensing tube furnished is 2-1/2" (6.4cm) long that is connected to the pressure control with 1/4" O.D. plastic tubing. The probe should be installed and sealed into the duct with the arrow oriented in the direction of airflow. The sensing probe, plastic tubing and mounting fittings are furnished with the damper assembly.

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

1. that the HVAC system has been properly balanced.
2. that all zone dampers are in the open position.

SPECIFICATIONS FOR BYPASS DAMPERS

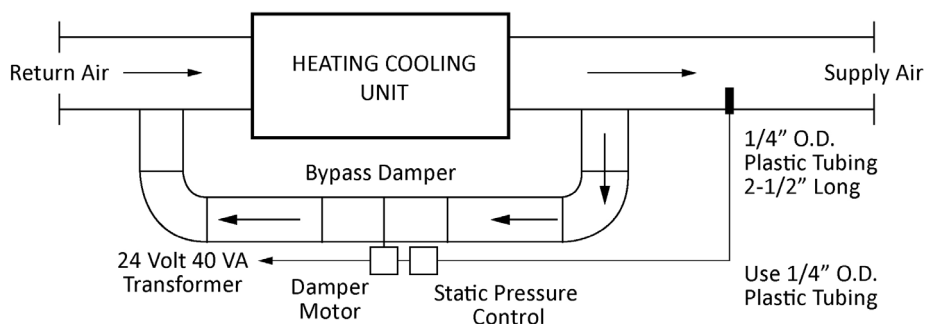
- Pressure Set Point Range: 0.08" to 1.20" (2-30.5mm) InWC.
- Sensing Element: Neoprene diaphragm
- Electrical Connections: Two field connections.
- Pressure Connections: Barbed for 1/4" O.D. plastic tubing.
- Case: NEMA13 / IP54 Plastic Enclosure with 1/2" conduit opening.
- Mounting: Damper to be installed with controller diaphragm in a vertical position.

Note:

Bypass damper must be installed so that the diaphragm of the static pressure control is always in the vertical position.

This Drawing of a bypass system is intended to serve only as a guide. Your actual duct work layout may differ substantially.

BYPASS DAMPER AND STATIC PRESSURE CONTROL ASSEMBLY



Manufacturers
of

MOTORIZED ZONE DAMPERS
REMOTE DAMPER CONTROLS
MODULATING VAV DAMPERS
DAMPER REGULATORS
VOLUME CONTROL DAMPERS
REGULATOR ACCESSORIES
DAMPER MOTORS & DRIVES



YOUNG REGULATOR COMPANY

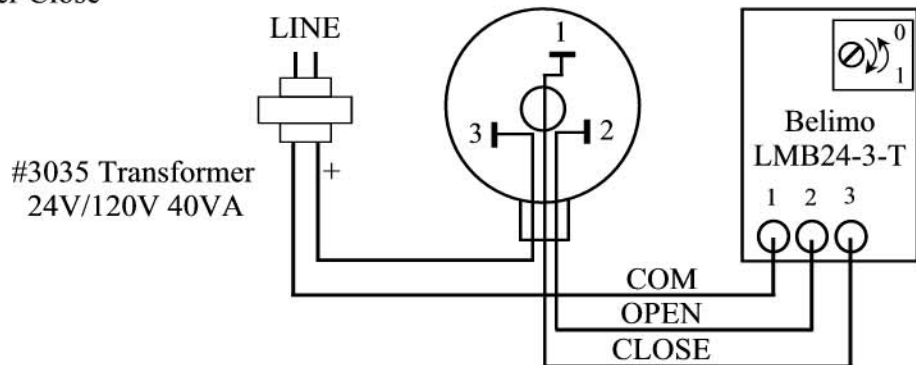
7100 KRICK ROAD - WALTON HILLS, OHIO 44146
TELEPHONE (440) 232-9700 • FAX (440) 232-8266
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STAT: NONE

MODE: **BYPASS - STATIC PRESSURE**

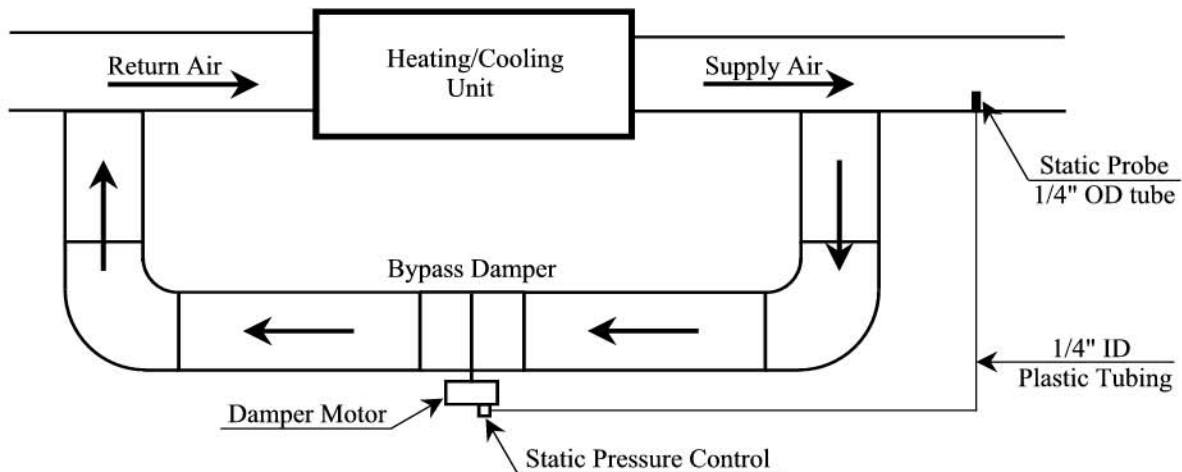
MOTOR: Power open/Power Close

MODEL: 3092B
4092B



NOTES

- * 1 and 2 are pre-wired
- * Transformer is separate and wired in the field
- * Set desired static pressure relief via the round rotary control
- * Static pressure tubing is connected to P1 port



ADJUSTING THE STATIC PRESSURE CONTROL (Models 3092B, 4092B):

- * Confirm that the HVAC system has been properly balanced
 - * Adjust static pressure relief via control knob to specified value
- OR
- * Open all zone dampers
- * With the air handler running and the bypass damper system powered
 - turn the static pressure adjusting knob CCW until the bypass damper starts to open
 - turn the adjusting knob CW just enough so that the damper starts to close