Young Regulator Co.
7100 Krick Rd • Walton Hills, OH 44146
P: 440-232-9700 • F: 440-232-8266
www.youngregulator.com

Submit 4092 – 1-10

Model 4092

Round Bypass 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, sensed by the solid-state pressure controller and adjustable by the installer, motor will begin to modulate the damper open to bypass the excess air flow and pressure. The damper will open until the desired static pressure is attained. Damper blade will stall and 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.

STANDARD CONSTRUCTION

Bypass assembly of damper, actuator and static pressure sensor are pre-wired at the factory for a reliable, economical means of controlling pressure in a pressure dependant VAV system

Shell	20 ga. Galvanized Spiral Steel
Blade	20 ga. Galvanized Steel, Elliptical for Linear Control of Air for ±1% Accuracy
Shaft	1/2" Round Plated Steel
Bearings	Oil Impregnated Bronze
Seal	Full Circular Closed Seal Gasket for less than 1 % leakage @ 3" w.c.

STATIC PRESSURE SENSOR / CONTROLLER

Solid State design with built-in LED lights to indicate damper operation and a 15 second time delay to protect the motor and static pressure switch from short cycling on the close

Differential Pressure Setpoint Range	.17" w.c. to 2.0" w.c.
Operating Range	35° to 140°F
Electrical Switch	Floating Point, Single Pole/Double Throw with Integral Arc Suppression. Rated 1.0 amps @ 24 Vac
Compliance	UL Listed
Enclosure	NEMA 1

ACTUATOR

Fast Response Honeywell ML6161. Non Spring Return, Direct-Coupled

Volts	24V
Watts	2
VA	2.2
Timing	90 sec
Torque	35 in. lb.

Built in motor stop for minimum and maximum air

QUANTITY	DIAMETER	NOTES

PROJECT	**LOCATION**
CONTRACTOR	**DESIGN SPECIFIER**

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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 and time delay to enhance its operation and improve its reliability.

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 should be connected to the sensing tube and inserted in 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 at the center line. The sensing tube furnished is a 7" (18cm) length of 1/4" (6mm) O.D. rigid tubing to be connected to the pressure control with 3/8" O.D. plastic tubing, inserted and sealed 6" (15cm) into the duct. The sensing tube, plastic tubing, and mounting fittings are furnished with damper assembly.

ADJUSTING THE STATIC PRESSURE CONTROL

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.

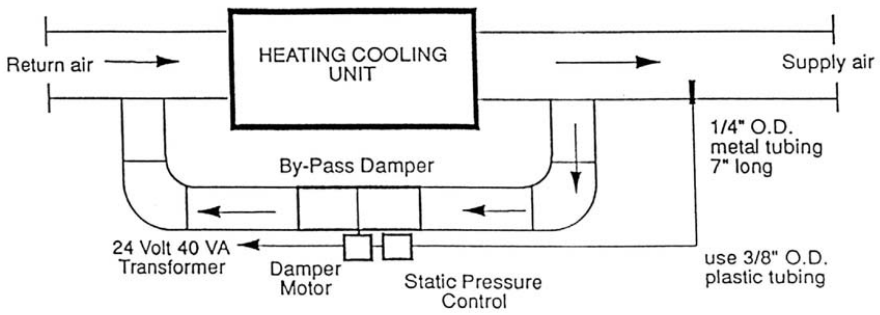
HOW TO PROCEED

With the air handler running and the bypass damper system powered, turn the static pressure adjusting screw clockwise until the bypass damper just starts to open (green light on) then turn the adjusting screw counter clockwise just enough so that the green light goes out and the damper is fully closed.

SPECIFICATIONS FOR BYPASS DAMPERS

- Pressure Set Point Range: .17" to 2" (4.3 to 50.8mm) W.C.
- Sensing Element: Neoprene diaphragm
- Electrical Connections: Two field connections.
- Pressure Connections: Barbed for 3/8" O.D. plastic tubing.
- Case: All metal with ½" conduit opening.
- Mounting: Damper to be installed with controller diaphragm in a vertical position.

BYPASS DAMPER AND STATIC PRESSURE CONTROL ASSEMBLY



Note: Bypass damper must be installed so that the diaphragm of the static pressure control is always in the vertical position.
This drawing of bypass damper, static pressure control and related duct work is intended to serve only as a guide. Your actual duct work layout may differ substantially.