FD Series Active Damping System

The Equilibar® FD Series back pressure regulator is now available with an integrated active damping option. It has the same high performance pressure control as the standard FDO regulator with a redesigned bottom cap to accommodate processes with excessive downstream pressure fluctuations due to process equipment such as pumps.

HOW IT WORKS

The FDO Active Damping (AD) system is in the bottom cap and uses a continuous flow of pressurized gas supply to maintain a pressurized lower diaphragm for optimized damping. Optimal supply gas pressure feeding the active damper is 50 psi/ 3.5 bar greater than the average downstream pressure and should not exceed 150 psi/10bar maximum. **(Fig. 2)**. This unique technology will create an equilibrium with the downstream system pressure, even as the system pressure changes over time. For instance, if the downstream pressure of the process increases by 20 psi over the course of the "run", the Active Damping system will self-adjust to provide continuous optimal damping without user interaction. This configuration requires a modified bottom cap and reduces downstream pulsation an average of 50%.

Note: At steady state, the AD system typically consumes 200 ml/min of air.

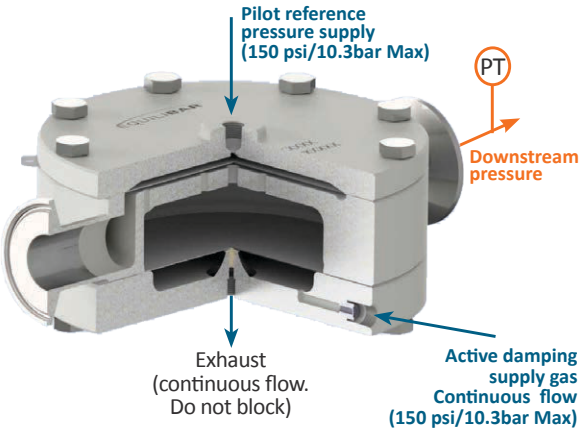


Fig. 2 Cut view of FDO with Active Damping (AD)

Design Highlights

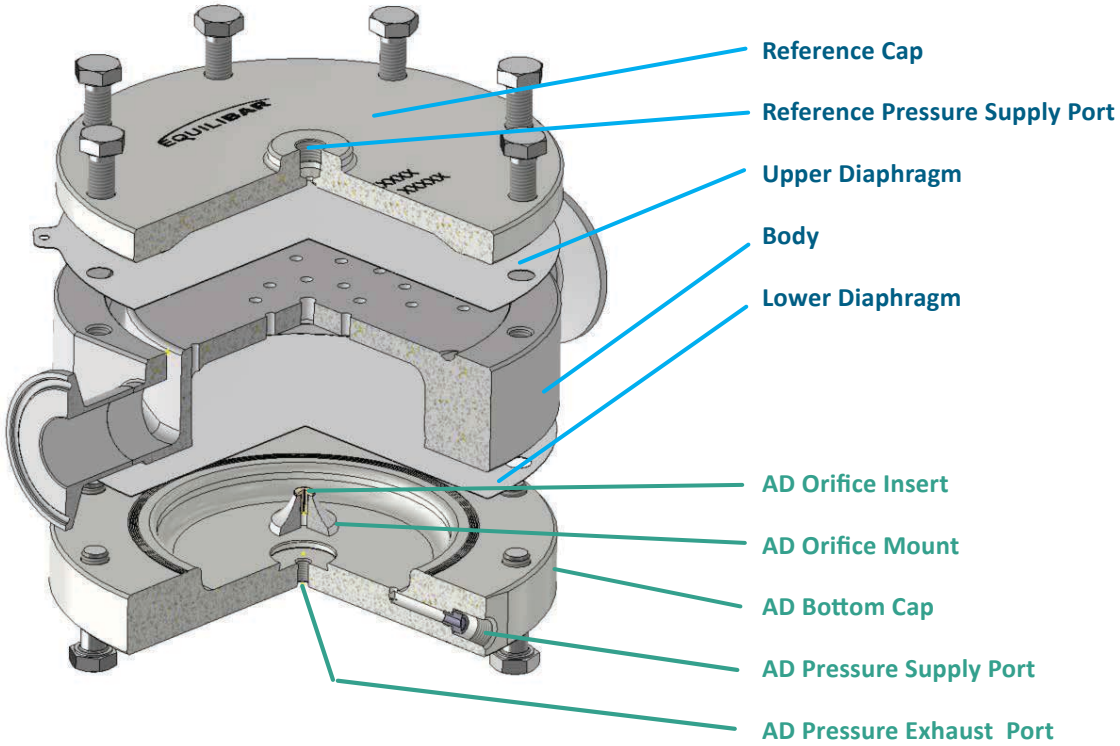


Fig. 2 Exploded view of FDO with Active Damping (AD) System.

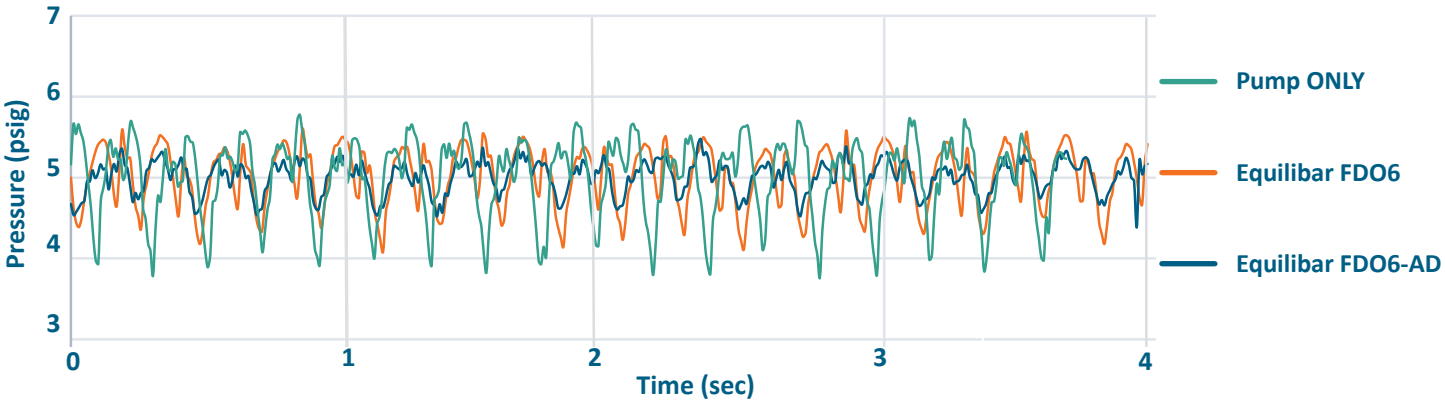
PATENT INFORMATION www.equilibar.com/support/patents/

Performance and Specifications

The easiest way to identify pulsations in a system is to evaluate a system's pressure profile. Below is a plot of pressure data collected downstream of a common 3-phase diaphragm pump set to 30 Hz. This snapshot shows a typical downstream pressure profile at the pump outlet at steady state conditions. The plot compares pressure profiles under three different conditions:

1. Pump only; 2. With an Equilibar FDO6 downstream; 3. With an Equilibar Active Damping FDO6 downstream.

Fig. 2 Pressure Profile Downstream of Common 3-Phase Pump



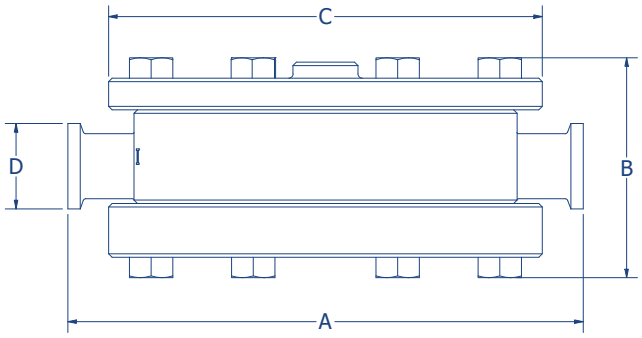


Fig. 3 FDO Regulator with Active Damping - Dimensional Drawing

Table 3 FDO Regulator with Active Damping - Dimensions

MODEL	DIM A INCH (MM)	DIM B INCH (MM)	DIM C INCH (MM)	DIM D INCH (MM)
FDO6	5.9 (151)	2.3(58)	5.0 (127)	1.0 (25)
FDO8	8.1 (204)	2.6 (66)	6.0 (152)	2.0 (50)
FDO12	9.1 (230)	3.2 (81)	7.0 (178)	2.0 (50)
FDO16	11.1 (280)	3.8 (97)	9.0 (229)	2.5 (64)
FDO24	14.8 (375)	5.1 (130)	11.2 (286)	3.6 (91)

About Equilibar

Equilibar provides innovative and robust fluid control technology for researchers and engineers worldwide. We are proud to design, manufacture and test our products in our factory overlooking the Blue Ridge Mountains near Asheville, NC.

APPLICATION ENGINEERING –WHAT SETS US APART

Unlike mass-market regulator distributors, we focus on working with you, the scientist or engineer with a complex fluid control scenario.

Our application engineers work collaboratively with clients to identify the optimal model, trim, and diaphragm for each application's unique challenges. No matter where you are on the globe, you can stay in close contact with your engineer by email, telephone, or video conference.

After installation, your application engineer will support you with start-up information and fine-tuning as needed.

Equilibar, LLC
320 Rutledge Rd.
Fletcher, NC 28732
United States
+1-828-650-6590
inquiry@equilibar.com

Made in the USA

Equilibar's quality system is **ISO 9001:2015** certified.

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