

TYPICAL DAMPER REQUIREMENTS AND SIZING EXAMPLE:

APPLICATION REQUIREMENTS	SQUARE DAMPER	ROUND DAMPER
Damper Length	24"	
Damper Width	12"	
Damper (Round)		12"
Blade Type	Opposed	Round
Edge Seals	Edge Seals	
Design CFM	1800 CFM	700 CFM
Fail-Safe	Yes	Yes
Supply Voltage	24 Volt	24 Volt
Control Signal	2-10 VDC	2-10 VDC
CALCULATIONS		
Damper Area (sq inches)	24" x 12" = 288 in ²	$\pi r^2 = 113.04 \text{ in}^2$
Damper Area (sq feet)*	288 in ² x 1ft/12 in x 1ft/12 in = 2 ft ²	113.04 in ² / 1ft/12in x 1ft/12in = 0.785 ft ²
Velocity	1800 ft ³ /min / 2 ft ² = 900 ft/min See chart under <1000 FPM (ft/min)	700 ft ³ /min / .785 ft ² = 892 ft/min See chart under <1000 FPM (ft/min)
Rated Torque Loading (in-lbs/ft ²)**	Select 5 in-lbs/ft ² for Opposed Blade/Edge Seals	Select 10 in-lbs/ft ² for Round Damper
EXAMPLE EQUATION		
	*Damper Area (sq ft) x **Rated Torque Loading of Damper (in-lbs/ft²) = Total in-lbs Required	
	2 ft ² x 5 in-lbs/ft ² = 10 in-lbs Belimo LF24-SR US @ 35 in-lbs	0.785 ft ² x 10 in-lbs/ft ² = 7.85 in-lbs Belimo LF24-SR US @ 35 in-lbs

CONTROL SIGNAL OVERVIEW

Belimo actuators are compatible with many control inputs and all direct digital control (DDC) systems. There are many signals to select from with today's controllers.

On/Off or Open-Close: The actuator is able to drive either to its full clockwise (CW) position, or to its full counter-clockwise (CCW) position. The same indication is used for spring return type actuators. Where the actuator will drive to its full CW position and spring return to its CCW position. This can also be reversed.

3-point, Tri-State, Floating Point: The actuator has both clockwise (CW) and counter-clockwise (CCW) control inputs. One drives the actuator to its CW, the other to its CCW position. If there is no signal (Null point) on either input the actuator simply stays in its last position.

Proportional Control: The actuator drives proportional to its control input and modulates throughout its angle of rotation. This control type is usually a variation of VDC. Common values are:

0-10 VDC 2-10 VDC

It is common to also have a 0-20/4-20 mA output from a controller. This can be very easily converted to 0-10 VDC or 2-10 VDC with a 500 Ω resistor.

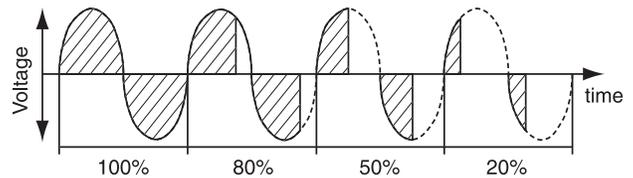
Pulse Width Modulation (PWM): The actuator drives to a specified position according to a pulse duration, the "length" of signal. The pulse can originate from a dry contact closure or a triac sink or source controller. An example of PWM control:

Time base: 0 to 10 seconds

Output pulse: 5 seconds

Actuator position: 50%

Phasecut: An actuator drives depending on the power result of a remaining wave. This signal type cuts the amplitude of the wave and the actuator recognizes this signal as a proportional movement.



Multi-Functional Technology (MFT): This technology was developed by Belimo for incorporation into our damper and valve actuators. MFT provides the ability to program certain characteristics of the actuators. Some of the key characteristics to change are:

CONTROL INPUT

Selectable on/off, VDC, PWM or floating point

MOTION VALUES

Selectable running time adjustment

FEEDBACK

Selectable feedback values