Dampers

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- **Multi position holding of counterbalanced weights**
- **Simple adjustment to determine correct setting**
- **Finger Tip control**
- **Custom Design, sized to your application**
- **Custom force setting or adjust-yourself option**
- **Safe to use and operate**

An SFC Motion Control Damper is designed to influence the characteristics of movement by providing velocity or time control for applications requiring the controlled arrest of a weight or lid, when moving from one position to another. SFC Dampers can be used to enhance performance in a variety of Industrial applications.

SFC dampers are not ' vibration ' dampers, for example as used in washing machines and they are not dampers required for controlling the sudden stopping of a weight / lid. SFC Motion Control dampers are for low frequency, velocity or time controlled applications, which may involve 10 to 20 activities per day.

Typical Motion Control Problems
Velocity Control
Deceleration Control
Momentum Change

SFC Motion Control dampers can be used to prevent sudden shocks or impacts by providing a controlled and timed movement of a weight / lid, reducing the potential for application damage and therefore increasing an applications life.

SFC Motion Control dampers can provide safer application operation by providing consistent and controlled, application operation and therefore reducing the possibility of injury or damage.

SFC Motion Control Dampers add value to an application by improving operation and protecting equipment and personnel through safer operation.

SFC Dampers are: -

- Self contained rod and tube assemblies without gas (No force). The hydraulic damping unit consists of a tube, rod and piston system, with the movement of the piston through oil creating the damping characteristic.

- Variable rates of damper are available using combinations of oil viscosity and piston orifice.

- SFC dampers are designed using a special piston, which enables you to tune the orifice for the application and also vary oil viscosity. Damping can be in both directions and single direction, with a free flow in the opposite direction. SFC Dampers are nonadjustable once the piston orifice/oil system has been specified.

- SFC Standard Dampers are maintenance free, self contained, compact designs with high durability and reliability. Lab tests so far have indicated life cycles of up to 50,000 cycles are not a problem.

- SFC standard dampers are made using proven technology from our range of gas springs, providing the same high durability nitride steel rods and powder coated steel tubes for long operating life expectancy.

- Operating temperatures range from -40°C to +100°C. Dampers are temperature sensitive and performance will vary within this range.

- SFC dampers provide a definable linear, digressive or progressive damping characteristic.

- SFC dampers can incorporate standard SFC end connector options, making the dampers versatile and easy to install. These must be fixed in position, for example with Loctite.

- Generally standard dampers are mounted rod down, but it is possible to have them mounted rod up if required. Therefore standard dampers can also be used horizontally.

- Progressive damping is feasible with the incorporation of a coil spring within the tube. This can be placed either side of the piston.

- Units can be custom designed to achieve specific damping and mounting requirements

The following questions need to be answered in order to provide the optimum Damper size and mounting solution for your application.

1.) What is the velocity or time (Metres / Second) criteria requirement for the moving object?
You will need to describe the expected damper performance, e.g. speed vs. time / distance.
This is determined by factors such as does the piston travel through a.) Air and Oil, or b.) Oil only. These questions are not dissimilar to a standard SFC gas spring. Due to the manufacturing process you have to leave an air pocket, which means that the full damping characteristic would be less than the full stroke. When configuring a part it is important to avoid the use of the full stroke.

Damping is time or speed dependent, for example;
8-18 standard damping ratio for an oil level of 25mm is 1.33 x 25mm = 33.25mm. AWS 150 (Heaviest Oil) using 'C' orifice piston results in a speed = 2.5mm / second.
If you were to then change the oil to AWS 32 this would result in a 10x increase in speed to 25mm / second. This is still very slow when compared to a standard gas spring; even with lighter oil it is 1/2 to 1/4 the speed of a gas spring velocity.

Speed is a function of the oil viscosity, the range is between 30mm / second to 2 to 3mm / second.
Notes:
a.) Be aware that the mounting points will determine the distance travelled by the damper.
b.) Time of damping will determine performance, for example, use the descriptions "too fast" or "too slow".
These two factors above will determine the speed and hence the choice of orifice and oil combination.

2.) What is the operating environment of the SFC damper? For example, be aware that dampers are sensitive to temperature variation.

3.) What is the cycle frequency expected of the damper?

4.) Is the motion control required in compression, tension or in both directions?

5.) Does the application have the capability of applying a manual stop to prevent the damper from bottoming out in either compression or extension? This is the preferred method of final stop control.

6.) In which orientation is the damper to be mounted, horizontally, vertically (Rod Up, Rod Down), or at an incline.

7.) How many dampers are required to control the weight/lid?

8.) Be aware regarding Stroke(rod) lengths - (If the Stroke is longer than the damping zone). Damping distance - (Not the same as stroke). Stroke lengths are up to the standard of 300mm for an 8-18, 400mm for a 10-23.

9.) What is the weight in Kg of the object/Lid?

If you have any questions about specifying your damper requirement please contact us at:

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