**Gas Springs**

Overview

Gas Springs

High pressure gas (Nitrogen gas: non-combustible) is sealed in a cylinder and the gas reaction force is used as a spring. Because this small gas spring requires small initial load in spite of its size, it can be used for wide range of applications including machinery, furniture, cars, office automation equipment, etc.

Feature

- In spite of its size and weight, large spring (reaction) force can be obtained.
- Spring (reaction) force is almost constant throughout its stroke.

About Initial Selection

1. Calculate the necessary reaction force (F) through the following formula, then find out possible model types.

\[ F = \frac{W \times a}{b} \]

- (F): Necessary Reaction Force (at Max. Length)
- (W): Weight of Doors, etc.
- (a): Horizontal Distance between Fulcrum (Door Hinge, etc.) and the Center of Gravity
- (b): Vertical Distance between Fulcrum (Door Hinge, etc.) and the Axis Line

2. Select Fx1.1 or more for the gas spring reaction force.
3. If required reaction force (Fx1) is larger than the reaction force at the max. length of gas spring (< 1 mm), use 2 or more springs.
4. Reaction forces are designed at 20°C. Reaction forces increase or decrease as the temperature changes.

About Final Selection

Load may vary depending on door angles or gas spring mounting positions. Calculate the reaction force moment based on the subject design drawing.

Precautions for Use (for FGS, GSS, FGSS, HFGSS and FRGSS)

Pay attention to temperature of gas springs during use. Do not store for prolonged duration. It will cause premature seal deterioration and reaction force decline. (Product Temperature Range: GSS, FGSS: -20°C~60°C / HFGSS: -20°C~80°C / FRGSS: -30°C~80°C Some products have different temperature range. Confirm for each product page.)

1. Gas reaction force at the max. length: 10 (5) mm and the max. length: 50 mm are listed in this catalog. Gas reaction force generally changes proportionately. If the gas reaction force on a certain stroke is required, connect the 2 points with a straight line as shown in Fig. 3 and extrapolate the stroke value.

2. Gas reaction forces may vary within about ±10%.
3. Use FGS and GSS with the cylinder side up and the rod side down, so that internal oil protects the rubber seal. For FGS, GSS and FRGSS, do not tilt more than 60°.
4. Do not extend gas springs beyond its max. length. Even in the max. stroke (during compression), it must remain about 10mm away from the stroke end. Do not apply forces like bending load and torsion. Receiving load only with gas springs results in unbalanced load, which causes early deterioration and gas/oil leakage. Be sure to see if there is no rust, scratches, adhesives and foreign objects on the rod before use.
5. Reaction force may decrease depending on the operating condition and times of use. Please replace it when it cannot reach the necessary reaction force.
6. Pay attention to temperature of gas springs during use. Do not store for prolonged duration. It will cause premature seal deterioration and reaction force decline.
7. Load may vary depending on door angles or gas spring mounting positions. Calculate the reaction force moment based on the subject design drawing.

Features of Mounting Orientation Free Gas Springs (FGSS)

1. Nitrogen gas (non-combustible) is sealed in the gas chamber C with a free moving piston interworking, and gas reaction force is used as a spring.
2. Gas chamber C has a constant reaction force in extending direction since it pressurizes oil chamber AB. Therefore the size of reaction force depends on the inner pressure of gas chamber C.
3. When rod moves from the predetermined position, oil in chamber AB moves through orifice hole of the piston.
4. The rod volume change in the cylinder is adjusted by the change of gas chamber C.

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Gas Springs Mounting Orientation Free Type

FGSS

No. 15050A – No. 22300B

No. 27150A – No. 27300B

Operating Temperature: -20°C~60°C

Material:
- Cylinder: 1020 Steel Cylinder (Suitable for machinery structural use)
- Rod: 1020 Carbon Steel (Suitable for machinery structural use)

Surface Treatment: Cylinder: Baked-On (Black Matt) / Rod: Hard Chrome Plating

Part Number | Max. Length (mm) | Min. Length (mm) | Stroke (mm) | Unit Price per Unit | Volume Discount
--- | --- | --- | --- | --- | ---
FGSS15050A | 125 | 0 | 125 | 1 | 10-14
FGSS15080A | 190 | 0 | 190 | 1 | 10-14
FGSS15080B | 190 | 0 | 190 | 1 | 10-14
FGSS22050A | 225 | 0 | 225 | 1 | 10-14
FGSS22050B | 225 | 0 | 225 | 1 | 10-14
FGSS22080A | 225 | 0 | 225 | 1 | 10-14
FGSS22080B | 225 | 0 | 225 | 1 | 10-14

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MISUMI
http://us.misumi-ec.com/

Phone: 1-800-681-7475
Fax: 1-800-881-7402
(1-847-843-9107)

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