Mini Gas Springs with Cushioned Return

- Reduced return force, ideal for press driven cams
- Reduced force increase during travel
- Stroke lengths up to 125 mm
**Cushion Series**

**Nitrogen Gas Springs**

**FCL Series Patented**

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**Ordering Example:**

**Part Number:** Includes Series, Model (503 or 755) and Stroke Length.

**Mount Option:** TO = Basic Model.  
*When not specified, default is TO.* 
See page 3 for mount options.

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**Model**  | **FCL.503** | **FCL.755**
---|---|---
A | 16 | 20
B | 40 | 45
D | 44.5 | 50
E | 16.5 | 17.5
F | R1 | R1.5

Charging Pressure: 15–150 bar (220–2175 psi). When not specified, default is 150 bar.

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**Part No.**  | **S* mm** | **C inch** | **L ±0.25 ±0.010**
---|---|---|---
FCL.____.025 | 24 | 0.94 | 76.5 | 3.01 | 100.5 | 3.957
FCL.____.038 | 36.5 | 1.44 | 89 | 3.50 | 125.5 | 4.941
FCL.____.050 | 49 | 1.93 | 101.5 | 4.00 | 150.5 | 5.925
FCL.____.063 | 61.5 | 2.42 | 114 | 4.49 | 175.5 | 6.909
FCL.____.075 | 74 | 2.91 | 126.5 | 4.98 | 200.5 | 7.894
FCL.____.080 | 79 | 3.11 | 131.5 | 5.18 | 210.5 | 8.287
FCL.____.100 | 99 | 3.90 | 151.5 | 5.96 | 250.5 | 9.862
FCL.____.125 | 124 | 4.88 | 176.5 | 6.95 | 300.5 | 11.831

*Gas Spring has a 1 mm stroke reduction.*

---

**Part No.**

- FCL.____.025
- FCL.____.038
- FCL.____.050
- FCL.____.063
- FCL.____.075
- FCL.____.080
- FCL.____.100
- FCL.____.125

---

**Model**

- FCL.503
- FCL.755

---

*Gas Spring has a 1 mm stroke reduction.*
### FCL Series

#### Nitrogen Gas Springs

<table>
<thead>
<tr>
<th>psi</th>
<th>lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2175</td>
<td>678</td>
</tr>
<tr>
<td>2000</td>
<td>623</td>
</tr>
<tr>
<td>1750</td>
<td>545</td>
</tr>
<tr>
<td>1500</td>
<td>467</td>
</tr>
<tr>
<td>1000</td>
<td>312</td>
</tr>
<tr>
<td>500</td>
<td>156</td>
</tr>
<tr>
<td>250</td>
<td>78</td>
</tr>
</tbody>
</table>

Note: Pressure rise is lower than a typical Ø44.5 mm gas spring.

#### Mount Options

**B27**

![B27 Mount Option](image)

Part No. | A   | B     | C   | D   | E   |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>90.27</td>
<td>63.5</td>
<td>2.500</td>
<td>44.9</td>
<td>1.768</td>
<td>3.25</td>
</tr>
<tr>
<td>90.2700500 (FCL.503)</td>
<td>76.2</td>
<td>3.000</td>
<td>53.9</td>
<td>2.121</td>
<td>3.75</td>
</tr>
</tbody>
</table>

SLIDE INTO DESIRED LOCATION AND LOCK USING THE 5/16-24 LOCK SCREW PROVIDED.

**B312**

![B312 Mount Option](image)

Part No. | A   | B     | C   | D   | E   |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>90.312.00500 (FCL.503)</td>
<td>50</td>
<td>1.969</td>
<td>70</td>
<td>2.76</td>
<td></td>
</tr>
<tr>
<td>90.312.00750 (FCL.755)</td>
<td>56.5</td>
<td>2.224</td>
<td>75</td>
<td>2.95</td>
<td></td>
</tr>
</tbody>
</table>

**B322**

![B322 Mount Option](image)

Part No. | A   | B     | C   | D     | E   |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>90.322.00500 (FCL.503)</td>
<td>52</td>
<td>2.047</td>
<td>70</td>
<td>2.76</td>
<td></td>
</tr>
<tr>
<td>90.322.00750 (FCL.755)</td>
<td>55</td>
<td>2.165</td>
<td>75</td>
<td>2.95</td>
<td></td>
</tr>
</tbody>
</table>

Additional mount options available, refer to the Mini Nitrogen Gas Spring Catalog.

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FCL Series – Cushion Nitrogen Gas Springs

Operating Specifications

<table>
<thead>
<tr>
<th>Charging Medium:</th>
<th>Nitrogen Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charging Pressure Range:</td>
<td>15 – 150 bar (220 – 2175 psi)</td>
</tr>
<tr>
<td>Operating Temperature:</td>
<td>4°C – 71°C (40°F – 160°F)</td>
</tr>
<tr>
<td>Maximum Speed:</td>
<td>500 mm/sec (20 in/sec)*</td>
</tr>
</tbody>
</table>

*For FCL.755 models charged >100 bar (>1500 psi), maximum speed is 330 mm/sec (13 in/sec).

DO NOT EXCEED 90% OF STROKE

Repair Kits

FCL.RK.503
FCL.RK.755

FCL Repair Kits include dust cover, cushion collar assembly, cartridge assembly, bottle of assembly oil and a maintenance manual.

Internal Cushion

Distance of cushion on return travel:
2 mm – 4 mm
.08˝ – .16˝

Maximum Strokes Per Minute

<table>
<thead>
<tr>
<th>bar charging pressure</th>
<th>psi charging pressure</th>
<th>strokes per minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>2175</td>
<td>42</td>
</tr>
<tr>
<td>125</td>
<td>1800</td>
<td>50</td>
</tr>
<tr>
<td>100</td>
<td>1450</td>
<td>60</td>
</tr>
<tr>
<td>75</td>
<td>1100</td>
<td>60*</td>
</tr>
</tbody>
</table>

*Do not exceed 60 strokes per minute.

Application Example

A FCL.755 cushioned nitrogen gas spring is installed in a cam that forms a part with a tool attached to the cam slide, illustrated above. FCL series gas springs are well suited for die driven cam applications. The built-in cushion provides a decelerated force on the return travel and a reduction in the overall pressure rise during operation.

The global leader in nitrogen gas spring technology
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