Gas Springs,
Standard -
HEAVY DUTY

Optimized for the new challenges in sheet metal processing
**Gas springs, Standard - HEAVY DUTY**

**FIBRO - The Safer Choice: Properties of the gas springs Standard - HEAVY DUTY**

**Safety features**
- Initial spring forces of 750 daN to 20000 daN up to stroke lengths of 300 mm
- Standardized dimensions acc. to ISO-VDI-CNOMO
- Unique safety features of FIBRO gas springs:
  - Safety piston rod
  - Overpressure protection
  - Overstroke protection
- The springs can be simply interconnected via the lateral gas filling connection
- High flexibility in fastening by the top retaining ring recess and the lower fastening groove together with the tapped boreholes in the spring bottom
- Optional gas connection in spring bottom for hose interconnection or connection of interconnecting plates

**Reliability features**
- Overtravel protection

**Force advantages of gas springs Standard - HEAVY DUTY compared with the gas springs Standard**

<table>
<thead>
<tr>
<th>Spring forces</th>
<th>2488.13.00750.</th>
<th>.01000.</th>
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<tbody>
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<td>2488.13.01500</td>
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</table>

**View X**

- Overtravel protection
- Threaded connection G 1/8
- M8 valve

**Additional information, see fold-out page or visit www.fibro.de**

**ZUGELASSEN**

97/23/E

für 2 Millionen Hübe
**Technical Information**

<table>
<thead>
<tr>
<th>Order-No.</th>
<th>Spring force in daN at 150 bar / + 20 °C</th>
<th>Initial spring force</th>
<th>Final spring force *</th>
<th>d</th>
<th>d₁</th>
<th>c</th>
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</table>

*with full stroke

**Fastening Variants**

| Stroke | 13 | 25 | 38 | 50 | 63 | 75 | 80 | 100 | 125 | 150 | 160 | 175 | 200 | 250 | 300 |
|--------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2488.13.00750. | l | 111 | 135 | 161 | 185 | 211 | 235 | 245 | 285 | 335 | 385 | 405 | 435 | 485 | -- | -- |
| lₐₙ | 98 | 110 | 123 | 135 | 148 | 160 | 165 | 185 | 210 | 235 | 245 | 260 | 285 | -- | -- |
| 2488.13.01000. | l | 121 | 145 | 171 | 195 | 221 | 245 | 255 | 295 | 345 | 395 | 415 | 445 | 495 | 595 | 695 |
| lₐₙ | 108 | 120 | 133 | 145 | 158 | 170 | 175 | 195 | 220 | 245 | 255 | 270 | 295 | 345 | 395 |
| 2488.13.01500. | l | 121 | 145 | 171 | 195 | 221 | 245 | 255 | 295 | 345 | 395 | 415 | 445 | 495 | 595 | 695 |
| lₐₙ | 108 | 120 | 133 | 145 | 158 | 170 | 175 | 195 | 220 | 245 | 255 | 270 | 295 | 345 | 395 |
| 2488.13.02400. | l | -- | 160 | 186 | 210 | 236 | 260 | 270 | 310 | 360 | 410 | 430 | 460 | 510 | 610 | 710 |
| lₐₙ | -- | 135 | 148 | 160 | 173 | 185 | 190 | 210 | 235 | 260 | 270 | 285 | 310 | 360 | 410 |
| 2488.13.04200. | l | -- | 170 | 196 | 220 | 246 | 270 | 280 | 320 | 370 | 420 | 440 | 470 | 520 | 620 | 720 |
| lₐₙ | -- | 145 | 158 | 170 | 183 | 195 | 200 | 220 | 245 | 270 | 280 | 295 | 320 | 370 | 420 |
| 2488.13.06600. | l | -- | 190 | 216 | 240 | 266 | 290 | 300 | 340 | 390 | 440 | 460 | 490 | 540 | 640 | 740 |
| lₐₙ | -- | 165 | 178 | 190 | 203 | 215 | 220 | 240 | 265 | 290 | 300 | 315 | 340 | 390 | 440 |
| 2488.13.09500. | l | -- | 205 | 231 | 255 | 281 | 305 | 315 | 355 | 405 | 455 | 475 | 505 | 555 | 655 | 755 |
| lₐₙ | -- | 180 | 193 | 205 | 218 | 230 | 235 | 255 | 280 | 305 | 315 | 330 | 355 | 405 | 455 |
| 2488.13.20000. | l | -- | 210 | 236 | 260 | 286 | 310 | 320 | 360 | 410 | 460 | 480 | 510 | 560 | 660 | 760 |
| lₐₙ | -- | 185 | 198 | 210 | 223 | 235 | 240 | 260 | 285 | 310 | 320 | 335 | 360 | 410 | 460 |

**Ordering example:**

Gas spring, Standard - HEAVY DUTY = 2488.13.

Spring force = 2400 daN = 2488.13.02400.

Stroke = 50 mm = 02400.

Order-No. = 2488.13.02400.050
The FIBRO reliability features

Flexible guides: The Flex Guide™ System
The Flex Guide™ System is a flexible guide in the gas spring which absorbs lateral movements of the piston rod. It minimises friction and lowers the operating temperature.
Your advantage:
► Long service life
► Higher stroke frequencies, i.e. more strokes per minute

Secure hose connections:
The Dual Seal™ System
The Dual Seal™ System from FIBRO combines a metal seal and a soft elastomer seal. For hose connection systems, the system ensures two sealed connection points and prevents rotation.
Your advantage:
► Sealed connection, even when vibrating
► High process safety
► Minimised tool downtimes
► Simple installation thanks to the anti-rotation function

Wireless monitoring:
The Wireless Pressure Monitoring (WPM) System
The patent-pending Wireless Pressure Monitoring System (WPM) wirelessly monitors the pressure level and temperature of FIBRO gas springs. Before a faulty part is created, the press operator receives a message from the WPM and can initiate appropriate measures.
Your advantage:
► Preventative quality assurance
► High process safety
► Minimised tool downtimes
► Reduced maintenance effort
Possible faults are specifically displayed. Thus, maintenance intervals can be extended. Maintenance and repair costs are reduced.

Protected piston rods: The FIBRO bellows
The patented FIBRO bellows (Piston Rod Protection) reliably protects the piston rods of gas springs against dirt, oil, and emulsion. This prevents damage to the surface of the piston rod and leakage at the inner seals.
Your advantage:
► Significantly longer service life under harsh operating conditions

Energy savings: DS gas springs
The DS gas spring is not forced out for every stroke of the upper part. This saves press energy over the entire spring stroke.
Your advantage:
► Significantly longer service life of the gas spring
► Minimised tool downtimes thanks to reduced wear
► Energy savings of up to 80% compared to the use of standard gas springs as tool distancing
► Reduced maintenance effort

FIBRO training
Take advantage of the FIBRO training programme to get to know and implement the safety and reliability of FIBRO gas springs.
FIBRO - The Safer Choice
At FIBRO, safety and reliability are always our highest priority. Of course, this also applies to FIBRO gas springs. Their unique safety features make them one of the safest gas springs on the market.

The FIBRO safety features

PED certification for 2 million strokes
FIBRO gas springs were developed, manufactured, and tested according to DGRL97/23/EG for 2 million fully utilised strokes*. And this is assured at maximum permitted filling pressure and maximum permitted operating temperature. This also applies in conjunction with all specified mounting types.

* provided no other value is specified on the spring

Your advantage:
► Guaranteed safety over the entire service life of the spring. Repair kits and qualified training by FIBRO service additionally increases the effectiveness and process safety.

Overstroke protection
Conventional gas springs can burst in the event of an over-extended stroke. If this happens, parts flying around can become dangerous projectiles.

FIBRO gas springs are different: In the event of an over-extended stroke, the patented protection system (depending on the spring type) ensures that either the cylinder wall of the gas spring deforms in a specific way (A) or the piston rod destroys a bursting screw in the base of the cylinder (B) allowing the gas to escape.

Your advantage:
► No danger of parts flying around if an overstroke occurs.

Return-stroke protection
If tool components jam and the pressed piston rod is then suddenly released, this would pose a serious risk with conventional gas springs: If this happens, the piston rod can fly out of the cylinder like a projectile.

FIBRO gas springs are different: Special guides and a patented safety stop in the piston rods ensure your safety. If the speed is too high during the return stroke, the collar on the piston rod will automatically break. The integrated safety stop then destroys the seal, this allows the gas to escape into the atmosphere and the gas spring to become depressurised.

Your advantage:
► No risk of a piston rod firing out if the return stroke is too fast

Overpressure protection
Conventional gas springs can burst if the pressure rises above a maximum permitted value. If this happens, parts flying around can become dangerous projectiles.

FIBRO gas springs are different: If the pressure rises above the maximum permitted value, the safety collar on the sealing set is automatically destroyed. The gas then escapes into the atmosphere and the gas spring is depressurised.

Your advantage:
► No bursting parts in the event of overpressure

The safety features mentioned here have been realised for all FIBRO gas springs with only several exceptions. Please refer to the respective data sheets to ascertain the specific safety standard of the gas spring you are interested in or contact FIBRO GmbH directly for this information.