# Gas springs

# FIBRO Gas springs

The extensive range of FIBRO Gas springs constitutes an ideal supplement to and expansion of the traditional programmes of spring elements such als helical springs, disc springs and elastomer units. With their minimal space requirement, Gas springs close a gap where ever the accent is on accomodation of the utmot force component within a minimum of space — or where exceedingly large travel is demanded: FIBRO Gas springs take care of both demands, even in combination.

Their self-contained nitrogen charge makes FIBRO Gas springs completely autonomous devices. Feeder pipes or storage vessel are not required.

Monitoring of charge pressure, however, is necessary in certain special cases. Suitable equipment for in-situ pressure control can be found in the Accessories Section.

As long as all mounting detail is laid out with due circumspection, removal and installation of the units presents no problems whatsoever. Instructions are included with every delivery of Gas springs.

Application examples see at the end of chapter F.

# **Functioning**

The pressure medium is a commercially available, environment-friendly nitrogen. FIBRO Gas springs have a standard charge pressure of max. 150 bar (180 bar). Depending on spring size and type, this pressure offers initial force ratings of 2 daN to 20.000 daN.

# Pressure Build-Up

In operation the piston rod enters the spring space whose volume is progressively reduced. The resulting pressure rise can be plotted on the Gas Spring Diagram as a multiplication factor. The spring force is the product of initial force times that pressure-rise factor and can therefore be calculated easily.

# Working temperature

The spring temperature should not exceed as per specified temperature (80°C - 120°C)

# Charge pressure

Modification of charge pressure allows variation of the force rating and can be predetermined from the spring Diagram.

#### Installation

FIBRO Gas springs can be used in any installation position. Whether or not external forces act on them when at rest is of no consequence.



All FIBRO Gas springs meet the requirements of the Pressure Equipment Directive 2014/68/EU.

The Pressure Equipment Directive (2014/68/EU) has been ratified by the European Parliament and the Council of Europe. The requirements of the Pressure Equipment Directive came into force throughout the EU on 29 May 2002.

The directive defines pressure equipment as vessels, pipework, safety devices and pressure accessories. In terms of the Directive a vessel is a casing which is designed and manufactured to contain fluids under pressure.

It follows from this definition that nitrogen Gas springs of all sizes are deemed to be pressure vessels and must in this respect comply with the Pressure Equipment Directive (2014/68/EU) from 29 May 2002.

# Gas springs

#### Maintenance

FIBRO Gas springs were disigned for maintenancefree continual operation. It is recommended to oil the piston rod lightly from time to time.

Guide- and sealing elements can be exchanged easily and expediciously. They are available as a kit. Each kit comes with detailed instructions for maintenance of FIBRO Gas springs.

## Attention

When safety functions are triggered (overstroke, return stroke, or overpressure protection), the gas pressure springs can no longer be repaired!

# Warning

FIBRO Gas springs may be charged only with commercial Grade 5.0 nitrogen gas.

## Accessories

The accessories range for Gas springs comprises fastening devices, charge- and control units, screw connections for these, and connecting lines for compound installations.

FIBRO is not liable if fittings that are not original FIBRO fittings or fastening, accessory, and attachment parts that are not released by FIBRO are used.

# Warning signs

These are available on request. The signs should be affixed near the springs in as prominent a position as possible.

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#### Size 35x50 mm

Language	Order No
german	2480.00.035.050.1
english	2480.00.035.050.2
french	2480.00.035.050.3
italian	2480.00.035.050.4
spanish	2480.00.035.050.5
polish	2480.00.035.050.PL
czech	2480.00.035.050.CZ
turkish	2480.00.035.050.TR
chinese	2480.00.035.050.CN

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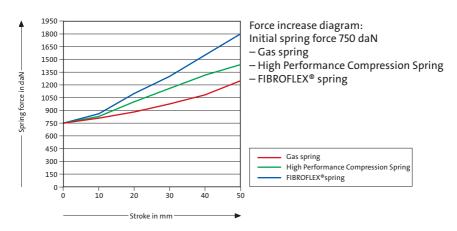
#### Size 75x105 mm

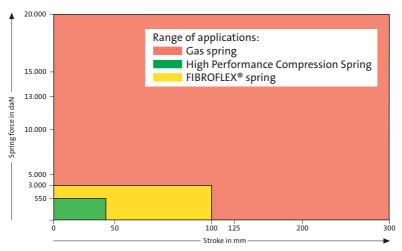
Language	Order No
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english	2480.00.075.105.2
french	2480.00.075.105.3
italian	2480.00.075.105.4
spanish	2480.00.075.105.5
polish	2480.00.075.105.PL
czech	2480.00.075.105.CZ
turkish	2480.00.075.105.TR
chinese	2480.00.075.105.CN

#### Size 110x150 mm

5.10 110 X		
Language	Order No	
german	2480.00.110.150.1	
english	2480.00.110.150.2	
french	2480.00.110.150.3	
italian	2480.00.110.150.4	
spanish	2480.00.110.150.5	
polish	2480.00.110.150.PL	
czech	2480.00.110.150.CZ	
turkish	2480.00.110.150.TR	
chinese	2480.00.110.150.CN	

# General overview of Gas springs - High Performance Compression Spring - FIBROFLEX® springs



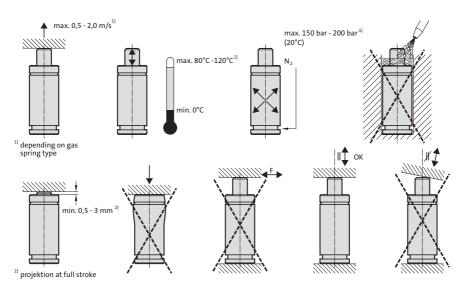






To achieve the best possible service-life and safety from the gas spring, the directions below must be followed.

# Mounting instructions



- ► Secure the gas spring to the tool/machine whenever possible, using the threaded hole(s) in the base of the gas spring or a suitable flange. Never exceed the maximum torque values for the threads in the base of the gas spring: (M6 = 10 Nm; M8 = 24 Nm; M10 = 45 Nm; M12 = 80 Nm)
- ► The threaded hole in the piston rod top should not be used for mounting purposes. It is only to be used when carrying and servicing the gas spring.
- ▶ Do not use the gas spring in such a way that the piston rod is realised freely from its compressed position, as this could cause internal damage to the gas spring.
- ▶ Make sure the gas spring is mounted parallel to the direction of the compression stroke.
- ► Ensure the contact surface of the piston rod top is perpendicular to the direction of the compression stroke and is sufficiently hardened.
- ▶ The gas spring should not be subjected to the side loads.
- Protect the piston rod against mechanical damage and contact with fluids.
- ▶ We do not recommend the last 5 mm or 10% of the nominal stroke be utilised.
- ► The maximum charging pressure (at 20°C) must not be exceeded as it may effect the safety of the product.
- Exceeding the gas spring's recommended operating temperature will shorten the service-life of the gas spring.
- ► The entire contact surface of the piston rod / piston should be used.
- ▶ Do not remove bottom 2480./2497.00.20. from spring until all gas pressure has been discharged.

# FIBRO-Gas Springs - The Safer Choice Optimum safety for tools and operators

At FIBRO, safety and reliability are paramount. Particularly when it comes to our gas springs. With their unique range of safety features, FIBRO gas springs are the safest on the market.

FIBRO safety features 1)



#### The benefit for you:

#### PED approval for 2 million strokes

FIBRO gas springs are developed, manufactured and tested for a minimum of 2 million\* full strokes in accordance with DGRL 2014/68/EU. The springs deliver this full performance at the maximum permissible limits in terms of filling pressure and operating temperature - even when combined with any of the various mounting types available.

\* Calculation value for durability

#### Guaranteed safety and reliability for the entire service life of the spring

Repair kits and qualified training sessions available through FIBRO Service offer increased effectiveness and process reliability.





Gasdruckfeder – Warnungt Nicht öffinen – hoher Druck; Fülldruck max. 150 bar. Bitte Bedenungsanleitung beschlent Gas Spring. – Warning Do not open-hölp pressure; filling pressure max. 150 bar. Please follow instructions for use! Ressort à gaz. – Attention! Ne pas curvi – haute pression; pression de remplissage max. 15 MPa. Veullier observer les instructions d'emploil. Molle a gas - Attenzione! Non aprire - pression alta massima; pressione de riempimento max. 150 bar. Si prega di observare le istruzioni per l'uso ¡Muelle de gas - Atención! No abrir - alta presión; cardago a mass. 150 bar. ¡Por favor observar las instrucciones!



#### 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:

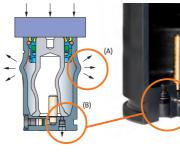
in the event of an overstroke and depending on the spring type the patented protection system will ensure that either the cylinder wall of the gas spring is deformed in a predefined manner (A) or the piston rod destroys a rupture bolt in the floor of the cylinder (B), thereby allowing the gas to escape into the atmosphere.

#### The benefit for you:

Possible causes of triggering:

#### No risk of parts flying around in the event of an overstroke

Lack of stroke limitations in the tool/machine and placing the piston rods under a load (e.g. sheet-metal holder, slide reset, etc.), double sheet, incorrect installation position,





#### Return stroke protection

A particularly dangerous situation can arise with conventional gas springs if tool components become jammed and the pressure on the compressed piston rod is then abruptly released: in this case, the piston rod is then fired out of the cylinder like a missile.

#### FIBRO gas springs are different:

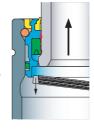
special guides and a patented safety stop in the piston rods ensure your safety. If the speed is too high during the return stroke, the collar on the piston rod will automatically break. The integrated safety stop then destroys the seal, which allows the gas to escape into the atmosphere and the gas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

#### The benefit for you:

Possible causes of triggering:

#### No risk of a piston rod firing out if the return stroke is too fast

Sudden loosening of jammed components, such as sheet-metal holder, slide, ejector, scraper function, etc.







#### Overpressure protection

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

#### FIBRO gas springs are different:

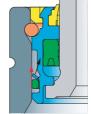
if the pressure rises above the maximum permitted value, the safety collar on the sealing set is automatically destroyed. The gas then escapes into the atmosphere and the gas spring is depressurised.

#### The benefit for you:

Possible causes of triggering:

#### No risk of bursting parts in the event of overpressure

Incorrect filling (max. filling pressure 150 or 180 bar, nitrogen), infeed of liquid operating material, etc.





After a protection function is triggered, the spring cannot be repaired and can no longer be used. It must be replaced completely.

¹¹ The safety features mentioned here have been implemented — with few exceptions — on all FIBRO gas springs.

Please refer to the relevant data sheets to check the current safety equipment which is provided with the gas spring you are interested in, or contact FIBRO GmbH directly for more information

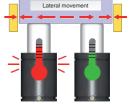
# Gas springs - The Safer Choice

## **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.



Conventional Guide FlexGuideTM System

#### The benefits for you:

- Extended service life
   Increased stroke frequency, i.e. more strokes per minute
  - Flex Guide<sup>M</sup> System

    Plex Guide M System

    Conventional Guide

    Lateral Movement

# Dual Seal

#### Safe hose connections: The Dual Seal™ System

The FIBRO Dual Seal<sup>TM</sup> System combines a metal seal with a soft elastomer seal. On hose connection systems, the system provides two leak-tight connections and prevents rotation.



#### The benefits for you:

- Leak-tight connection, even under vibrations
- High process reliability
- Minimised tool down time
- ► Simple installation thanks to anti-rotation function



#### Wireless monitoring:

#### The Wireless Pressure Monitoring (WPM) System

The optional Wireless Pressure Monitoring System (WPM) (patent pending) wirelessly monitors the pressure and temperature of FIBRO gas springs. Before a defective part is produced, the press operator receives a message from the WPM and can take appropriate action.



The benefits for you:

- Preventative quality assurance
- ► High process reliability
- Minimised tool down time
- Reduced maintenance and costs

Potential faults are individually displayed. As a result, service intervals can be extended.

Maintenance and repair costs are reduced.





#### Protected piston rods: FIBRO Concertina Shrouds

The FIBRO Piston Rod Protection (patented) reliably protects the piston rods in gas springs against dirt, oil and emulsion. In this way, the system prevents damage to the piston rod surface and leaks at internal seals.



The benefits for you:

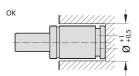
 Significantly longer service life for gas springs under harsh operating conditions

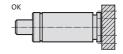
# Installation instructions FML Gas springs



# Mounting examples

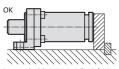
Mounting possibilities for gas springs are listed below. For additional information on mounting, see the corresponding pages in the catalogue.



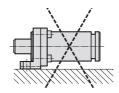


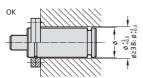
Screw mounted at the base

Screw mounted at the base with 2480.011.

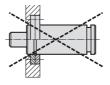


Fastened with 2480.044./045./047.

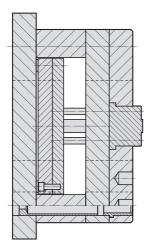


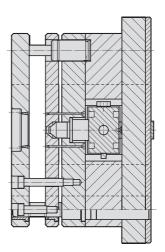


Fastened with 2480.055./057./064.



# Installation principle:



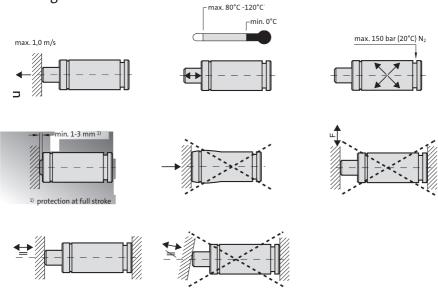


# Mounting directions FML Gas springs



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# Mounting instructions



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- ▶ The entire contact surface of the piston rod / piston should be used.