

General user manual for gas springs 01-04-2017

General description: A gas spring consists of a cylinder and a piston rod with a piston and is filled with high-pressure nitrogen. The front of the cylinder tube is sealed with a guide bush where the piston rod is sealed to the outside and the back is sealed with a bottom piece. The pressure is equal on both sides of the piston, by means of a flow channel in the piston. A (small) amount of added oil ensures end damping of both inbound- and outbound strokes.

Design: Standard gas springs are manufactured from/with/by:

- A. Cylinder tubes made of St. 37-2 BK or NBK according to DIN 2391/93/94, coated, silver-colour galvanized.
- B. Hard chrome-plated piston rods made of CK45 or 20 Mn V6.
- C. Guides, plastic (Airax) or material-nr. 2.1090 (Rg7) (T-Technics) and bottom pieces made of Alu 51ST or ST9MnPb28K (T-Technics)
- D. Piston rod seals made of thermoplastic polyurethane or rubber.
- E. O-rings made of NBR (nitrile elastomer) 70 Shore A hardness.

Stainless steel gas springs:

- A. Cylinder tube made of the austenitic material nr. 1-4435 (316 l) or 1.4571 (316Ti).
- B. Piston rods made of hardened chrome-plated shaft material nr. 1-4057 (AISI 431) or AISI316.
- C. Guides and bottom pieces made of material nbr.2.1090 (Rg 7).
- D. Piston rod seals made of thermoplastic polyurethane.
- E. O-rings made of NBR (nitrile elastomer) 70 Shore A hardness.

Please verify yourself whether these materials are the right ones for your application. T-Technics is authorized to make changes in material/types and/or choices.

Use: Gas springs are designed for use by/with/in (see also our complete gas springs documentation):

Temperature range: -30 to +80 degrees Celsius. In case of other temperatures, ask T-Technics for advice.

The force F1 is measured at + 20 degrees Celsius. Per 10 degrees Celsius a deviation of +/- 4% pressure increase/reduction occurs.

See T-Technics documentation for tolerances on pull-out forces and length sizes.

Gas springs must be free of lateral forces, shocks and vibrations under all circumstances. The piston rods must be free from damage and dirt. Harsh detergents and/or modes are not allowed.

The venting hole of a gas-pull-spring must remain free and should not become clogged. Gas pull-springs should only be disassembled without load. Do not use Loctite to mount a screw to the bottom piece, for instance. Avoid no load snap back of cylinder piston and/or cylinder.

The piston rods at gas springs should preferably be installed pointing down. Gas pull springs should point up! For advice on different installations, contact T-Technics.

When using eyelets, a minimum axial clearance of 0.3 to 0.5 mm and a lateral clearance of 0.5 to 1.0 mm should be respected.

Preferably, use ball joints and/or rod heads. These fasteners must be fully tightened.

At continuous use a pressure loss of 15% can occur at an average of 30,000 strokes (counting from up to 500 mm). The number of full strokes can be up to 5 strokes (counting from up to 500 mm) per minute. In the case of in-out-sliding speeds of up to 300 mm per second.

A gas spring is not a security product, i.e. if gas springs are used in places where failure of the gas spring can pose a danger or risk to persons and/or environment, additional protections need to be applied.

A gas spring should not be used as end stop. The gas springs can be loaded with an additional force of 25% on top of the maximum push or pull force of the gas spring loads.

Seals in gas springs are not suitable for rotational piston rod movements.

Gas springs may only be applied in the aerospace in applications after written permission of T-Technics BV.

Inventory management: At normal ambient temperatures filled gas springs can be stored horizontally for up to 3 months. In case of longer time-frames, store the gas springs with the piston rod pointing down. Storage times longer than 1 year should be avoided.

Guaranteed term: 2 Years or 30,000 strokes (whichever comes first) from the indicated delivery date and/or production/ R E F.-number on the gas spring. Removing or damaging this data can result in voiding the warranty. Changes made to the gas spring by T-Technics will not result in losing the warranty.

Environmental protection: The gas used in the gas springs (nitrogen) is a natural component of our ambient air. Any pressure loss is therefore completely harmless. The other components of the gas springs, except the used oil, are mostly made of steel, which can be regularly recycled.

The oil should be disposed of in the regular manner.

Junking: Gas springs are filled with a pressure between 10 and 250 bars and must be vented for junking. Ask T-Technics for the right advice.

General: We deliver according to our registered general sales, delivery and payment terms, of which a copy will be sent on request. Check our website for further gas springs documentation.