

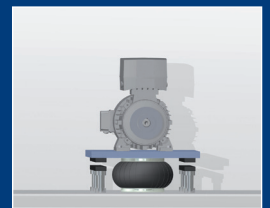
## Air Spring

WBE 410

Single-Convolution Air Spring



**ONLINE**  
Calculation +  
2D / 3D CAD Download



## Benefits

### Design type:

- Single-Convolution Air Spring

### General:

- Compact design
- Lateral misalignment: Weforma - air springs can be used with a misalignment of up to 10 mm
- Depending on the bellow design, angle settings up to 20° are possible: release of Weforma necessary.
- Dual function - combining vibration isolation with height adjustment
- Insulating properties irrespective of load
- Easy installation
- Maintenance free
- No friction (no stick-slip-effect)

### CrVI-free according to:

- 2002/95/EG

### RoHS - compliant:

- Directive 2002/95/EC

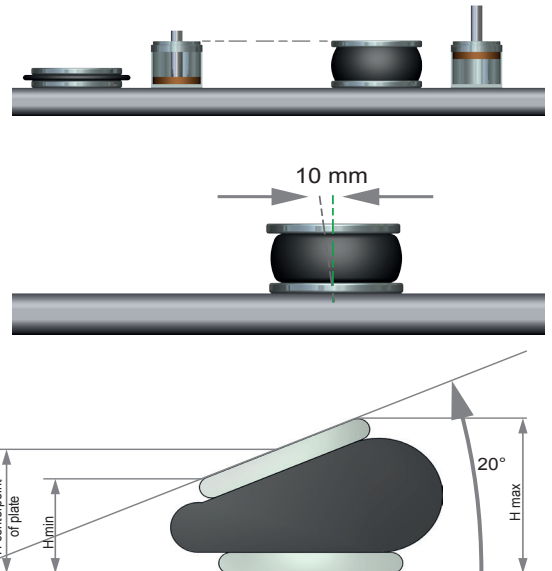
### Temperature:

- Standard: -40°C - +50°C (+70°C)

### Special Versions Hightemperature ECO on request:

+50°C - +115°C (+130°C)

The numbers in parentheses indicate the maximum permissible operating temperature, but with limited life expectancy.



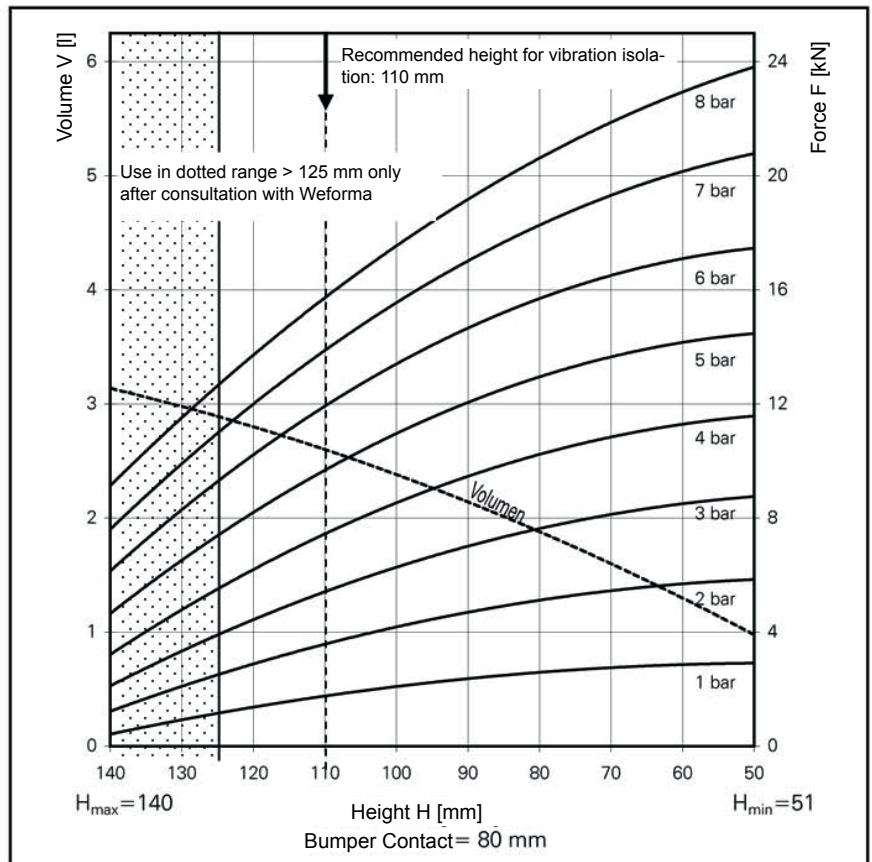
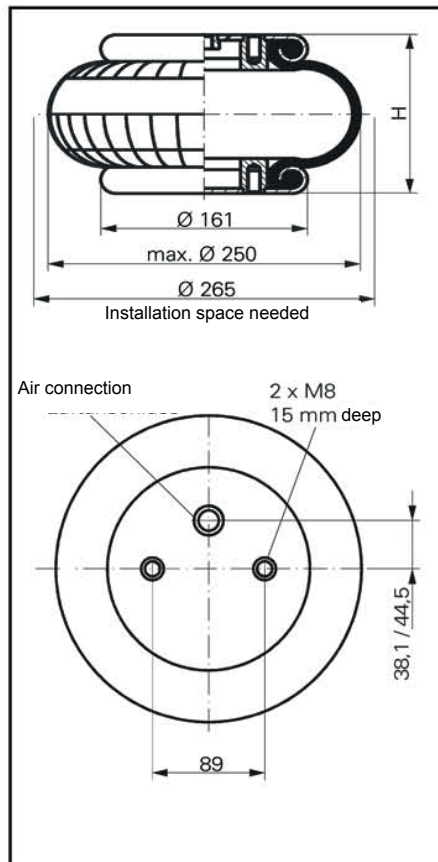
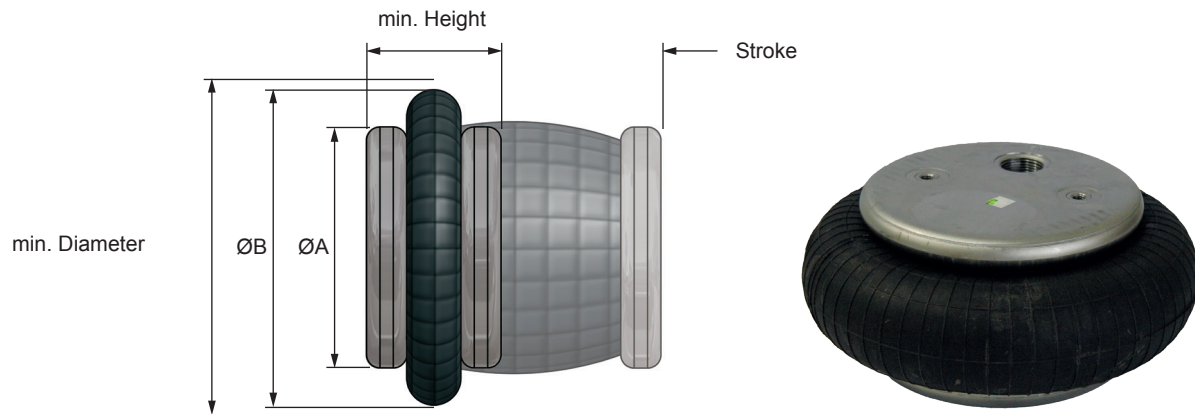
### Special Versions Stainless Steel:

#### Features:

- Highly resistant to media, e.g. to acids, chemicals and cleaning products
- Corrosion resistant
- Wear-resistant (even at high temperatures and high mechanical stress)

#### Applications:

- Offshore
- Pharmaceutical and processing industry
- Chemical industry
- Cellulose and paper industry
- Food industry
- Wellness industry



Force-height diagramm

## Technical Data

### Air connection

WBE 410-E1      G1/4

### Technical data

Min. pressure	0 bar
Return force to min. height	≤ 200 N
Overall weight with clamped plates	2,3 kg

### Vibration isolation - dynamic characteristic values

Design height      empf. 110mm. minimal 90mm

Pressure p	[bar]	3	4	5	6	7	8	Vol. V[l]
Force (Load)	[kN]	5,5	7,5	9,6	11,9	14,0	15,7	2,7
Spring rate c	[N/cm]	1500	2050	2600	3150	3700	4250	
Natural frequenz f0	[Hz]	2,6	2,6	2,6	2,6	2,6	2,6	

### Pneumatic application - static characteristic values

Force F [kN]

Pressure p	[bar]	3	4	5	6	7	8	Vol.[l]
Height H [mm]	120	4,5	6,2	8,2	10,4	12,1	13,8	2,8
	110	5,5	7,5	9,6	11,9	14,0	15,7	2,7
	100	6,3	8,6	11,0	13,4	15,5	17,5	2,3
	90	7,0	9,4	12,1	14,6	17,0	19,2	2,2
	80	7,6	10,2	13,0	15,7	18,2	20,6	1,8
	70	8,1	10,9	13,6	16,5	19,3	21,9	1,6
	60	8,5	11,3	14,2	17,1	20,1	23,0	1,3



Service instructions

M8 = 25 Nm

G 3/4 = 50 Nm

G 1/4 = 25 Nm

## Ordering information

### WBE 410-E1

WBE	Single-convolutin air spring
410	Size
E1	Air connection G 1/4

## Installation instructions

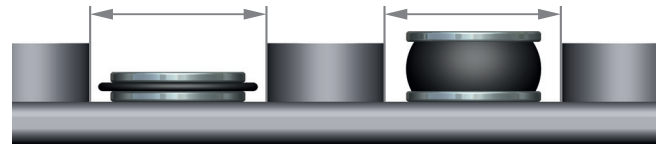
### Return

The air spring is a single-action pneumatic cylinder. The return stroke must be actuated by external forces, for instance a load, a counter cylinder or a spring.



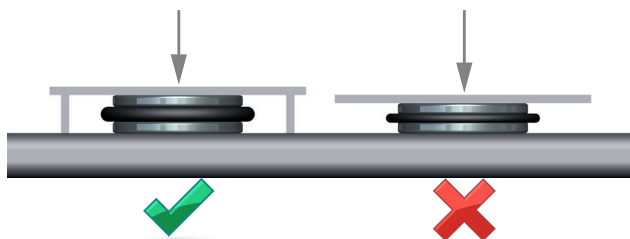
### Installation space

The installation space is to be constructed such that the bellows does not rub against the machine.



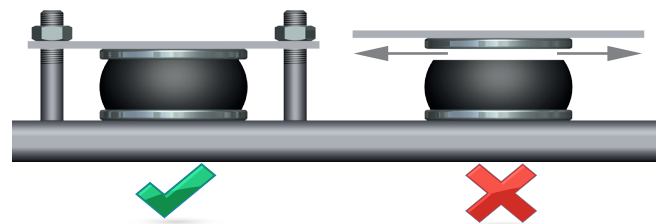
### Down stops

Mechanical down stops prevent the spring from being damaged as a result of overcompression.



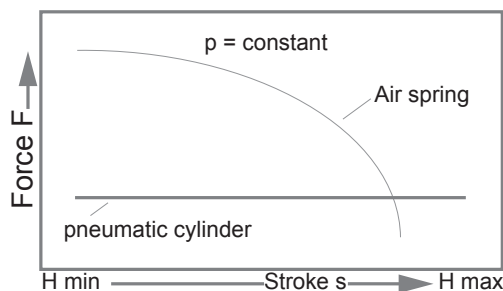
### Up stops

Mechanical up stops prevent the actuator from being overstressed or bursting.



### Force

The force depends directly on the stroke positions. At a constant pressure, the force decreases as the stroke increases.



## General Information

### Permissible working media for air springs

- Compressed air (also containing oil)
- Nitrogen
- Water (also with glycol) for air springs with corrosion-resistant metal parts

### Chemical resistance

Weforma air springs are resistant to:

- compressed air containing oil
- chemically non-aggressive dust and contaminants
- alkaline and acidic cleaning agents
- glycol-based hydraulic fluids
- the effects of weathering

In general, Weforma air springs should not be exposed to mineral oils, synthetic ester oils and solvents. This does not apply however to the temperature-resistant convolution air springs made of epichlorhydrin (ECO), which are also resistant to mineral oils. Please ask for the Weforma chemical resistance list.

### Storage

Weforma air springs should be stored in dark, dry conditions at normal room temperature (DIN 7716).

Weforma air springs are products designed to provide long, reliable service. Their durability and performance also depend of course on careful consideration of the design requirements and on correct handling during service.

The following should be considered when designing and fitting, ensuring that all of the benefits provided by Weforma air actuators are exploited to the fullest, in both pneumatic systems and vibration isolation.

### Safety Information

- Before installing the air spring, check it carefully for any damage it may have suffered from transport or improper storage.
- Do not inflate the air spring until it has been secured properly. There must be an upper height stop.
- The maximum operating pressure for the standard model is 8 bar. Reinforced products suitable for pressures up to 16 bar are available on request.
- The full surface of the metal parts is to be used to bear the forces.
- Air springs must be equipped with lateral guides.
- Deflate the air springs fully before removing.
- Ensure that the bellows is not constantly in contact with hydraulic oil, lubricants, solvents, metal cuttings and welding sparks.
- Should the air spring be subjected to special media in an application, ask Weforma Dämpfungstechnik GmbH for further information, specifying the medium, temperature and concentration.