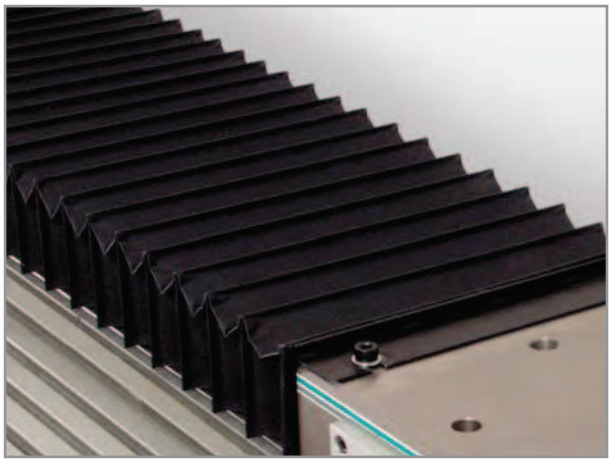
ELASTIC Bellows

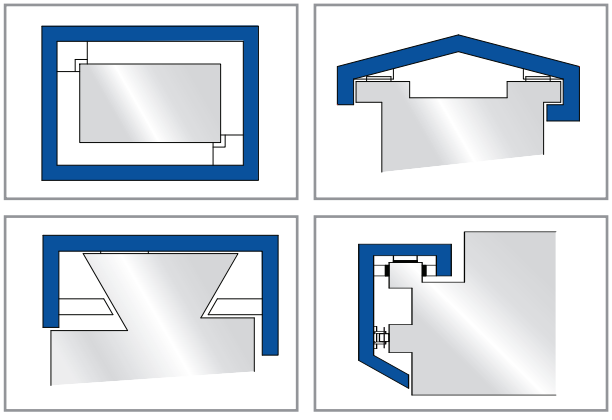
ELASTIC Bellows are commonly used for protecting machines and devices against debris and chips. They are also used in many variations for safety at work.
The experience resulting from the production of many thousands of ELASTIC Bellows and their use in working applications has been converted directly into product improvements, new developments, and enhanced product lifetime.



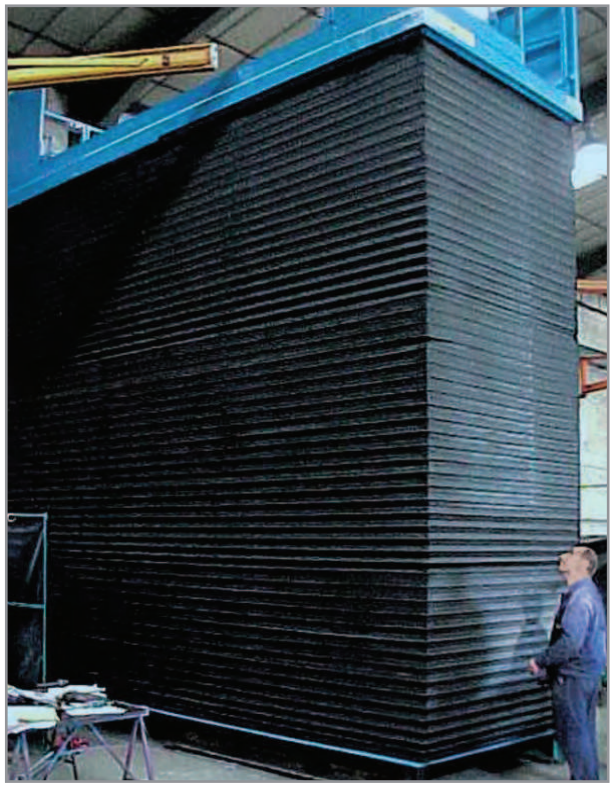
U shape ELASTIC Bellows mounted with metal frame

Constantly growing demands for ever greater machine speeds and ever lower noise emissions are consistently implemented by our engineers.

- Optimal use of space
- Machine size reduced with special materials and space saving designs
- Complete systems - bellows integrated in the machine's rear wall covering, complete with guides and mounting devices
- High temperature resistant materials up to 600°C for laser, plasma and welding applications
- Special designs with antistatic surfaces for medical technology and clean room conditions
- Special designs for HSC applications
- Impermeability to coolants



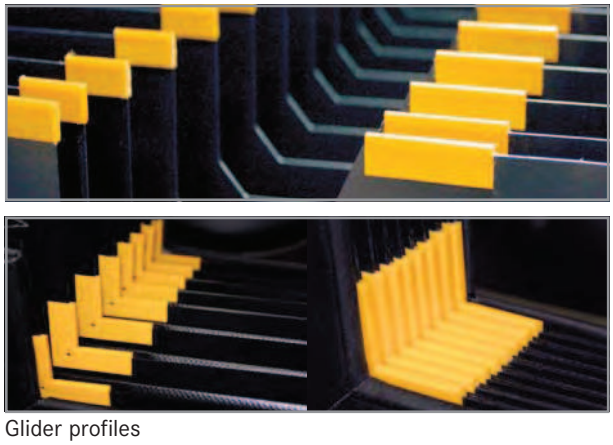
Types



Bellows for elevating platform

Design

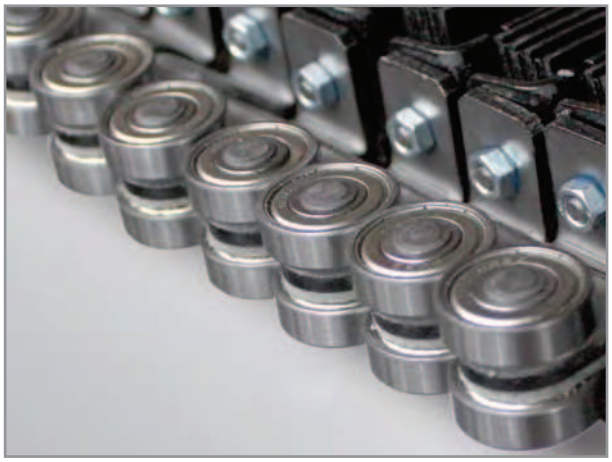
ELASTIC Bellows are a series of products with many combinations and options. Their basic components, materials, forms, processing methods, and dimensions are easily adaptable.
For applications such as elevating platforms, bellows can be produced with up to 30 square meters. All ELASTIC Bellows may be deployed horizontally or vertically.
They can be easily attached to the machine with metal frames or Velcro tapes.
Efficient glider profiles and roller or ball bearings improve quiet running and also serve to extend life cycles and minimise friction during HSC applications as well.



Glider profiles

All dimensions in mm if not marked otherwise. Errors and omissions excepted.

ELASTIC BELLOWS



Roller bearing

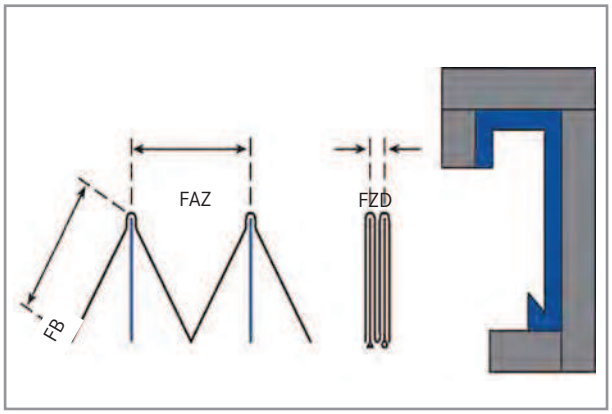
During high starting accelerations extension limiters help to reduce the load on the first folds, even out the extension, and stabilise travelling.

Material

Standard materials are black, but also signal colours such as yellow or white materials for medical applications are available.
The material is selected from a large range of products to match the intended use of the ELASTIC Bellows.
Also self extinguishing heat resisting materials under the UL 94 standard are available.

Design of ELASTIC Bellows

The essential component of the ELASTIC Bellows is a stabilising PVC frame inside every fold that lends the ELASTIC Bellows high dimensional stability. Reversion to the original shape is therefore assured after direct impacts.
Beside PVC frames PP and Polyamide can be offered as an alternative material for the support frames.



Bellows construction with stabilising PVC frame

ELASTIC bellows are available in the following versions depending on how their frames are permanently joined to the outer fold material:

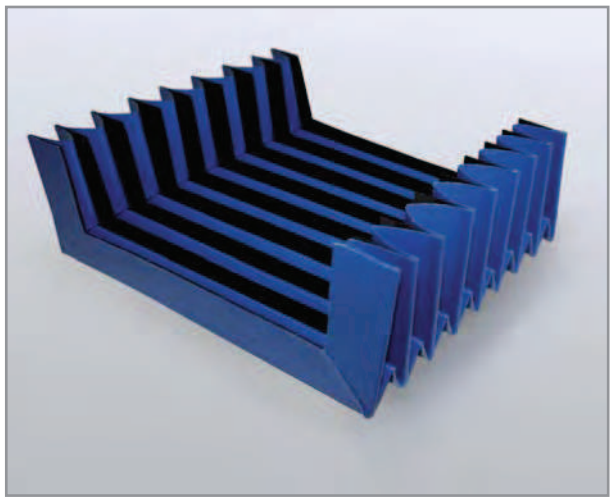
- thermal bonded version
- HF welded version
- sewn version

Thermal bonded version

Under the action of heat and a specially developed flux permanent bonding is achieved between the inner PVC frame and the outer fold material.
Thermal bonded ELASTIC Bellows are maintenance free, water and dust proof as well as oil resistant and, to a certain extent, acid resistant.

HF welded version

This type is used particularly for the production of large, shutter type ELASTIC Bellows.
High frequency welding is used to join the PVC frames with the outer bellow material for a perfect shape and a regular overall appearance.



U shape Bellows with stabilising PVC frame

Sewn version

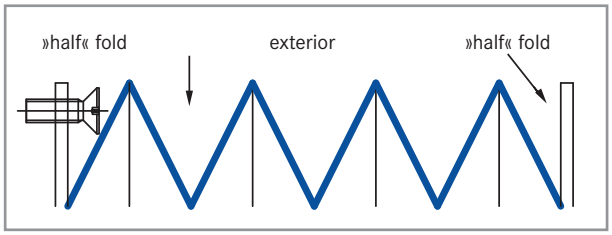
The sewn version consists primarily of high temperature materials. Strong fabrics therefore assure a long lasting solution even under extreme loads.

Mounting

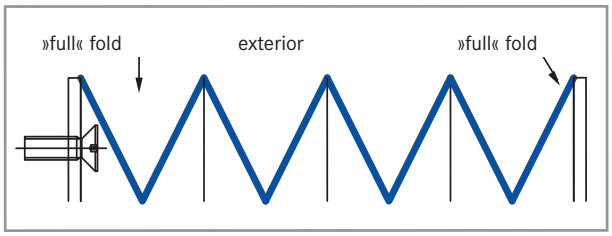
ELASTIC Bellows can be easily mounted on machines and devices with components such as:

- frames of metal or synthetic material attached to both ends and designed to customer specifications
- Velcro tape, easy and fast, maintenance friendly
- clip fasteners combined with metal frames

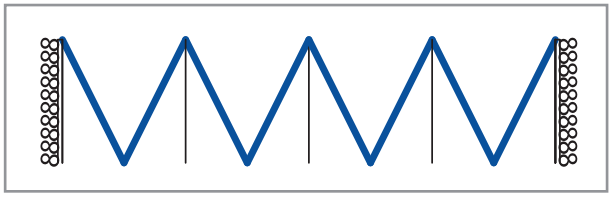
ELASTIC Bellows

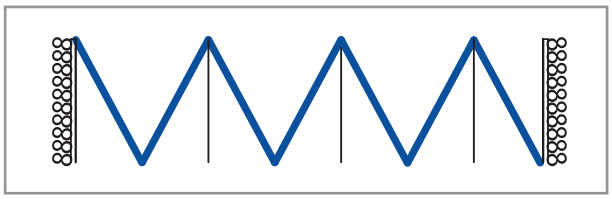


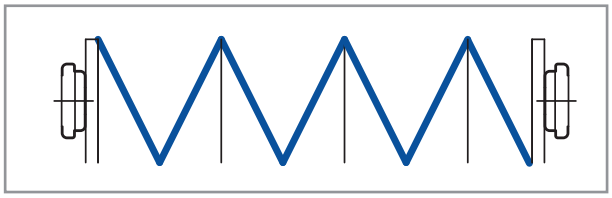
End flanges can also be mounted from the outside

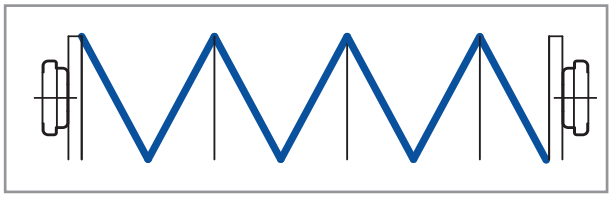


aEnd flanges can be mounted only from the inside


Mounted with velcro tape, both sides full fold


Mounting with velcro tape, one side half, one side full fold


Mounted with clip fasteners, both sides full fold


Mounted with clip fasteners, one side half, one side full fold

Legend and formulae for calculation

FB	Width of the fold
FZ	Number of folds
FZD	Compression per fold
FAZ	Extension per fold
BE	Width of the terminal fixture
AZ	Maximum extension
ZD	Minimum compression

Formulae for calculation

ZD	AZ-Hub
FZ	$\frac{AZ}{FAZ}$
ZD	$\frac{(AZ \times FZD) + BE}{FAZ}$
AZ	$\frac{(ZD - BE) \times FAZ}{FZD}$

FB (mm)	FAZ (mm)	FZD*(mm)
15	22	3 - 5
17,5	24	3 - 5
20	30	3 - 5
25	38	3 - 5
30	48	3 - 5
35	55	3 - 5
40	65	3 - 5
45	75	3 - 5
50	85	3 - 5

* depending on material


Rear view of complete solution, ELASTIC Bellows used for X axis

All dimensions in mm if not marked otherwise. Errors and omissions excepted.