

Custom Poly Urethane Weighing Bellows



- ✓ Standard sizes available
- ✓ Standardized designs available
- ✓ Custom sizes available
- ✓ Custom designs available
- ✓ Large diameter range
- ✓ Fits Imperial and Metric tubing
- ✓ Minimal influence on Weighing process
- ✓ New conical bellow design for hygiene
- ✓ Available with quick connect couplings
- ✓ Antistatic version available
- ✓ Available with short lead time
- ✓ Permanently elastic and break-resistant
- ✓ Decoupling of vertical oscillations
- ✓ Aging resistant
- ✓ Compensation of oscillations or external forces

Poly Urethane Weighing Bellows

Weighing Bellows serve to create a flexible connection between dosing equipment, mixers, feeders or vessels on weighing- / Load cells to supply lines, drain pipes, packaging equipment or other forms of air or powder transport.

Accurate batch sizes are crucial to ensure a high quality end product.

Poly Urethane Weighing Bellows are available in standardized designs and there are many standard sizes available.

Custom designs and sizes are fast and easy available without any minimum order quantity.

Clean workplaces and reproducible product quality are of the greatest importance and are a prerequisite for long-term employee and customer retention. A small component, such as the Filcoflex weighing bellow, can play an absolutely decisive role in attaining these goals when handling dusty bulk materials.

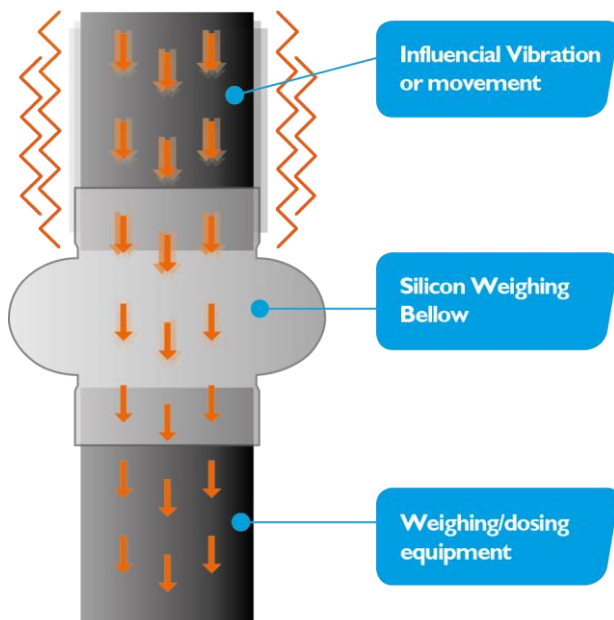
Often, "unclean" product-carrying weighing system facilities mean that frictional connections form which influence the scale and falsify the weighing result.

Many so-called compensators are much too stiff or even permeable; they certainly do not compensate for oscillations or external forces. Especially with materials which are a hazard to health, this leads to safety-relevant aspects which urgently require attention.

The Filcoflex Poly Urethane weighing bellow permanently and reliably eliminates these weak spots.

The many benefits with regard to permanent elasticity, aging resistance, suitability for use with foodstuffs, temperature resistance and the highest flexibility, make it an essential weighing technology component. In addition, it is a popular choice as vibration decoupling for dosing channels, and as a connecting element between system components.

Filcoflex poly urethane weighing bellows are available in a number of designs and shapes as shown and explained further in this document, and possess excellent mechanical properties for decoupling vertical oscillations.



- ✓ Air- & dust-tight
- ✓ Easy to clean
- ✓ Extremely flexible
- ✓ Optimal product flow
- ✓ Removes influence on weighing processes
- ✓ Standardized sizes
- ✓ Universal diameter range
- ✓ Custom made to your requirements
- ✓ Permitted for use with foodstuffs
 - ✓ United States of America FDA
 - ✓ European Food contact regulations
 - ✓ Chinese food contact regulations
- ✓ Also available with Quick Detach couplings
 - ✓ Tri-clamp
 - ✓ Jacob
 - ✓ B shaped Snap in Ring
 - ✓ Flanges and hose clamps

Poly Urethane Weighing Bellows - Conical Flat Top – 3 parts – “PU BG CFT”



The Poly Urethane 3 part designs is based on having a thicker lower cone, with a 60° Angle to prevent piling. A top cuff of a thick PU material. The middle section is a flat section completely horizontal made in PU-UF03, a 0.3mm thick Polyurethane. A flat sheet surface is most flexible because it has no shape memory. This shape has been designed to transfer minimal influence such as vibration or movement from the feeding or receiving equipment to the weighing or dosing equipment. These influences are well below 1 gram.

This Flat Top design has limited vertical compensation, due to it's membrane like function.

The top cuff is made in 1.0mm Poly Urethane (standard), 1.5mm Poly Urethane is optional. The bottom cone and cuff are made in 1.0mm Poly Urethane (standard), 1.5mm is optional. The flat middle section is made in 0.3mm Poly Urethane. It can be made in different thicknesses, but it would lose the most of its flexibility, making it less suitable for any precise weighing or dosing application.

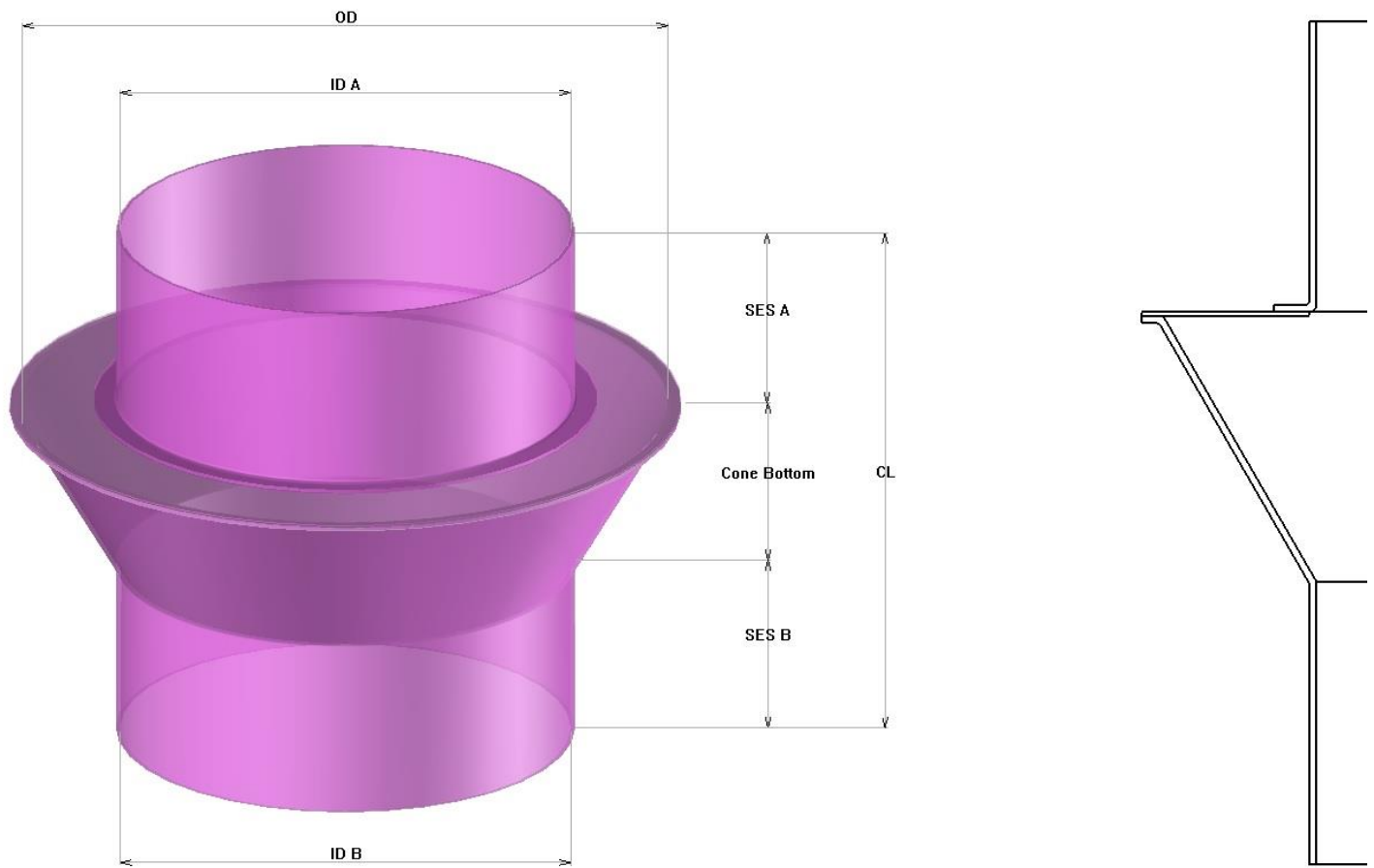
The cuffs on both sides can be extended to achieve a longer total length, mostly the bottom cuff is extended.

The cuffs can also be cut to length if they are longer than required, we can cut them for you, or you can do so yourselves using a pair of scissors.

All sorts of thickness and color variations are possible.*

(*For instance a 0,3mm middle, a 1,0mm top cuff, and a 1,5mm bottom part)

Poly Urethane Weighing Bellows - Conical Flat Top – 3 parts – “PU BG CFT”



ID A+B	OD	CL	SES A & B
40 / 1.5	83	118 / 4.6"	40 / 1.5
50 / 2	93	118 / 4.6"	40 / 1.5
60 / 2.5	103	118 / 4.6"	40 / 1.5
75 / 3	118	118 / 4.6"	40 / 1.5
100 / 4	143	118 / 4.6"	40 / 1.5
114 / 4.5	157	118 / 4.6"	40 / 1.5
120 / 5	163	118 / 4.6"	40 / 1.5
140 / 5.5	183	118 / 4.6"	40 / 1.5
150 / 6	193	118 / 4.6"	40 / 1.5
168 / 6.6	211	118 / 4.6"	40 / 1.5
200 / 8	243	118 / 4.6"	40 / 1.5
219 / 8.6	262	118 / 4.6"	40 / 1.5
250 / 10	293	118 / 4.6"	40 / 1.5
279 / 11	321	118 / 4.6"	40 / 1.5
300 / 12	343	118 / 4.6"	40 / 1.5

*Metric (mm) / Imperial (Inch)

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Poly Urethane Weighing Bellows – Classical Spherical Design – “PU BG”



The classical Spherical Bellow shape has been designed to transfer minimal influence such as vibration or movement from the feeding or receiving equipment to the weighing or dosing equipment. This design excels in compensating large axial movements, such as compression or extension. The axial compression movement allows for easy 10 to 20mm of travel, or an absolute maximum of 50mm.

2 parts are thermoformed and welded together, to form a spherical bellow shape. Top and bottom part can be made from different Poly Urethane materials.

The top bellow and cuff are made in 0.7mm Poly Urethane (standard), 1.0 & 1.5mm Poly Urethane are optional. The bottom cone and cuff are made in 0.7mm Poly Urethane (standard), 1.0 & 1.5mm Poly Urethane are optional. The standard is to use the same thickness for both parts to make the bellow as flexible as possible.

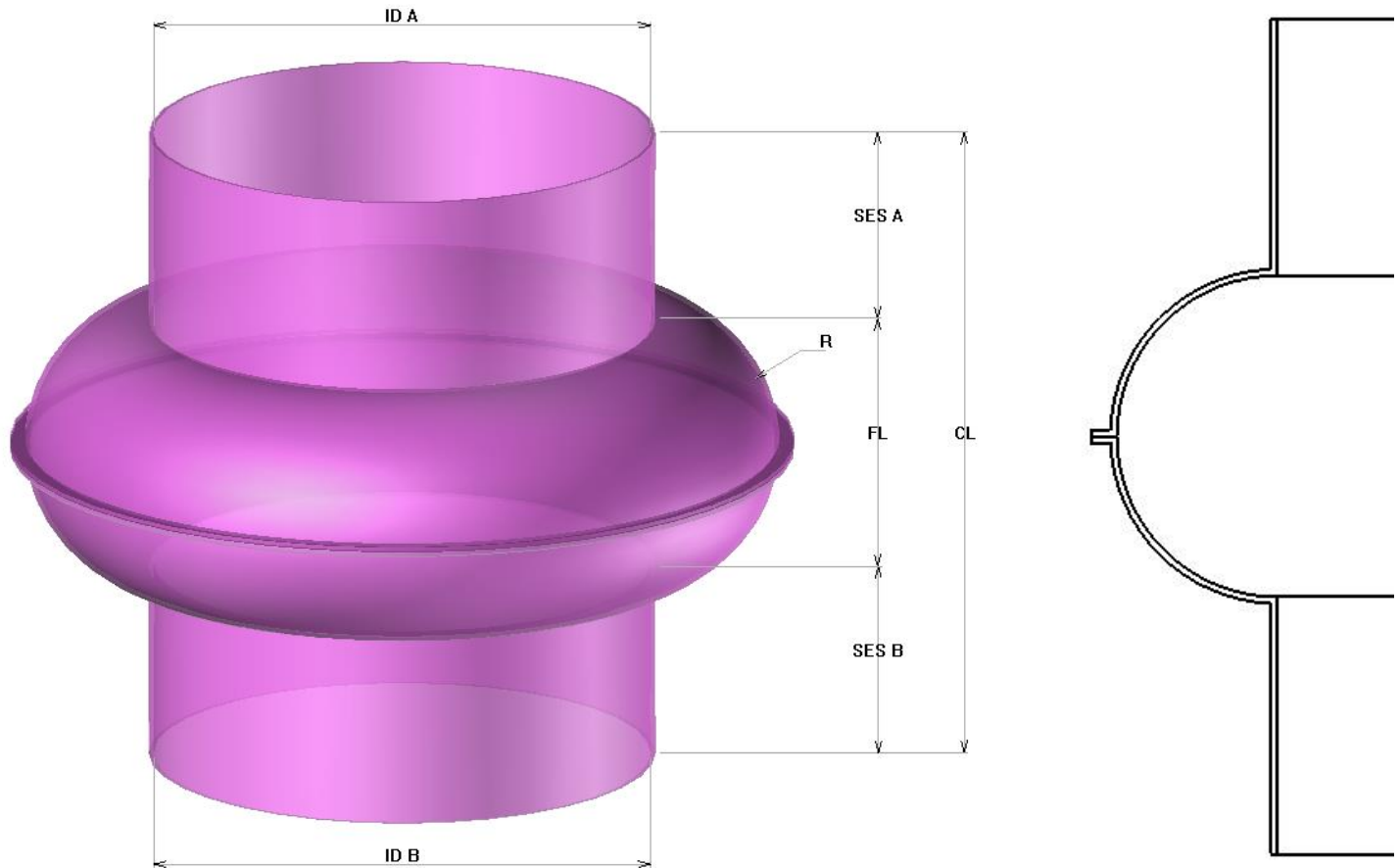
Some customers choose to have the lower part of the bellow in thicker Poly Urethane than the top, The bottom part to keep its shape as much as possible, and the top provide the flexibility. The main reason is to reduce powder pile-up inside the bellow. Another option for that is to use the conical bellows PU BG CFT or PU BG AC.

The cuffs on both sides can be extended to achieve a longer total length, mostly the bottom cuff is extended.

The cuff can also be cut to length if they are longer than required, we can cut them for you, or you can do so yourselves using a pair of scissors.

All sorts of thickness and color variations are possible.*
(*For instance a 0,7mm top and a 1,5mm bottom part)

Poly Urethane Weighing Bellows – Classical Spherical Design – “PU BG”



ID A+B	OD	CL	FL	R	SES A & B
40 / 1.5	90	90 / 3.5	50 / 2"	25 / 1"	20
50 / 2	100	90 / 3.5	50 / 2"	25 / 1"	20
60 / 2.5	110	90 / 3.5	50 / 2"	25 / 1"	20
75 / 3	125	90 / 3.5	50 / 2"	25 / 1"	20
100 / 4	150	130 / 3.5	50 / 2"	25 / 1"	40
114 / 4.5	164	130 / 3.5	50 / 2"	25 / 1"	40
120 / 5	170	130 / 3.5	50 / 2"	25 / 1"	40
140 / 5.5	190	130 / 3.5	50 / 2"	25 / 1"	40
150 / 6	200	130 / 3.5	50 / 2"	25 / 1"	40
168 / 6.6	218	130 / 3.5	50 / 2"	25 / 1"	40
200 / 8	250	130 / 3.5	50 / 2"	25 / 1"	40
219 / 8.6	269	130 / 3.5	50 / 2"	25 / 1"	40
250 / 10	300	130 / 3.5	50 / 2"	25 / 1"	40
279 / 11	329	130 / 3.5	50 / 2"	25 / 1"	40
300 / 12	350	130 / 3.5	50 / 2"	25 / 1"	40

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Poly Urethane Weighing Bellows - Asymmetrical Conical – 2 parts – “PU BG AC”



The asymmetrical conical shape has been designed to prevent any powder from sticking to the lower half of the bellow. At a 60° Angle its slope is steep enough for powder not to collect inside the bellow. The upper cone allows a 10mm axial compression movement. This sort of bellow has been designed to transfer minimal influence such as vibration or movement from the feeding or receiving equipment to the weighing or dosing equipment.

2 parts are thermoformed and welded together, to form an asymmetrical double conical bellow shape. Top and bottom part can be made from different Poly Urethane materials.

The top cone and cuff are made in 0.7mm Poly Urethane (standard), 0.3, 1.0 & 1.5mm Poly Urethane are optional.

The bottom cone and cuff are made in 1.0mm Poly Urethane (standard), 0.7 & 1.5mm Poly Urethane are optional. The standard thicknesses are to provide a more flexible top cone than bottom cone.

The top cone would provide the required flexibility. The bottom cone is to keep its shape as much as possible to prevent powder pile-up inside the bellow.

A more flexible version is available with the PU BG CFT.

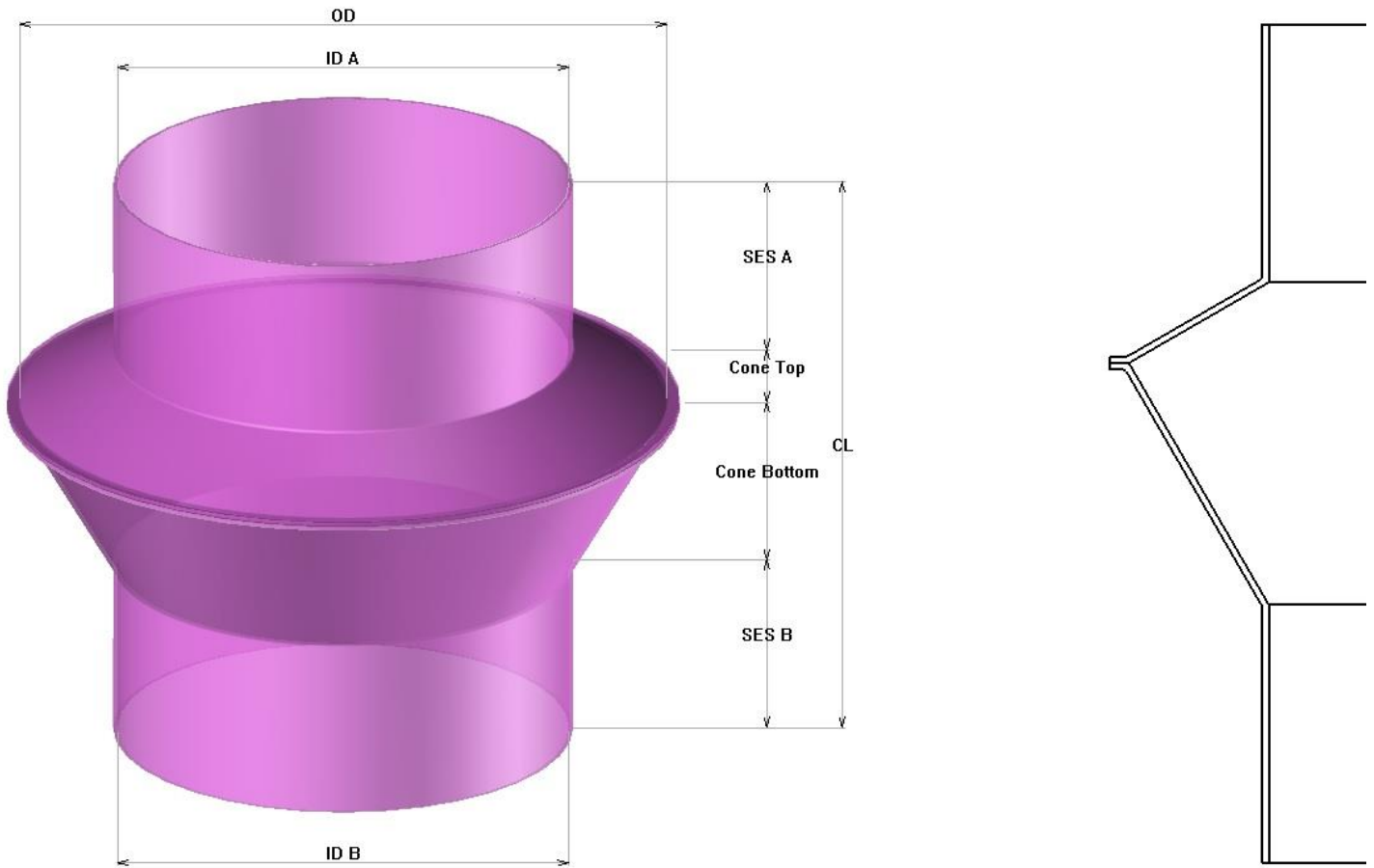
The cuffs on both sides can be extended to achieve a longer total length, mostly the bottom cuff is extended.

The cuff can also be cut to length if they are longer than required, we can cut them for you, or you can do so yourselves using a pair of scissors.

All sorts of thickness and color variations are possible.*

(*For instance a 0,7mm top and a 1,5mm bottom part)

Poly Urethane Weighing Bellows - Asymmetrical Conical – 2 parts – “PU BG AC”



ID A+B	OD	CL	SES A & B	Cone Top	Cone Bottom	Angle Bottem
40 / 1.5	83	130 / 3.5	40 / 1.5"	12.5	37.5	60°
50 / 2	93	130 / 3.5	40 / 1.5"	12.5	37.5	60°
60 / 2.5	103	130 / 3.5	40 / 1.5"	12.5	37.5	60°
75 / 3	118	130 / 3.5	40 / 1.5"	12.5	37.5	60°
100 / 4	143	130 / 3.5	40 / 1.5"	12.5	37.5	60°
114 / 4.5	157	130 / 3.5	40 / 1.5"	12.5	37.5	60°
120 / 5	163	130 / 3.5	40 / 1.5"	12.5	37.5	60°
140 / 5.5	183	130 / 3.5	40 / 1.5"	12.5	37.5	60°
150 / 6	193	130 / 3.5	40 / 1.5"	12.5	37.5	60°
168 / 6.6	211	130 / 3.5	40 / 1.5"	12.5	37.5	60°
200 / 8	243	130 / 3.5	40 / 1.5"	12.5	37.5	60°
219 / 8.6	263	130 / 3.5	40 / 1.5"	12.5	37.5	60°
250 / 10	293	130 / 3.5	40 / 1.5"	12.5	37.5	60°
279 / 11	322	130 / 3.5	40 / 1.5"	12.5	37.5	60°
300 / 12	343	130 / 3.5	40 / 1.5"	12.5	37.5	60°

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Flexible Material availability

All poly urethane weighing bellow designs are available in a number of flexible materials. These materials can be combined together to form a 2 or 3 part fused weighing bellow. We offer transparent, blue metal detectable, white and antistatic poly urethane materials.

Material	Thickness	Color	Flexibility	Comments
PU-UF03	0,3mm	Transparent	++++	superior flexibility, most used bellow upper
PU-UF07	0,7mm	Transparent	+++	good flexibility, better pressure resistance than 0,3
PU-UF1	1,0mm	Transparent	++	ideal for the bellow lower
PU-UF15	1,5mm	Transparent	+	ideal for bellow lower for more permanent shape
PUW1	1,0mm	White (solid)	++	non transparent, no translucency
PUMAG08	0,8mm	Blue	++	metal and color detectable

On the Flexible Materials page you will find all material datasheets of each mentioned poly urethane film, showing the exact material characteristics and technical data as well as explosion safety and food contact compliancy certifications and declarations.

Custom dimensions and designs

Some of our standard designs may not suit your application. We manufacture custom tools in house to make your desired design. In house manufacturing of tools and products allow us to easily advise on which options we can offer to help make a suitable design for you.

It is possible to make bellows that have different diameter or non-aligned inlet and outlets. We can make special lengths, or multiple corrugations.

We can offer extended bellows by welding an extending sleeve to 1 or 2 ends. This allows you to use the benefits of our standard tooling, but extending these to your required length without any glue or adhesives.

In the event our readily available diameters are no match for your bulk material process, we can custom make the right diameter or bellow design.

Rectangular or Oval connection shapes are also possible. Transition bellows can also be made from round to rectangular, oval, or any specific shape. In case of non-aligned tubes, special offset shapes can be made. Bellows with multiple corrugations, harmonica bellows, and many other designs.

Special transition ends can be made where there is a stepped lip that covers the top of the tube on which the bellow is fixed. The inside diameter of the bellow would be the same as the tubing, the inside diameter of the cuffs is as large as the outside tube diameter. This may prevent powder build up on the top of the tube surface.



Production Method

All poly urethane weighing bellows are made by thermoforming 2 or 3 parts from a poly urethane sheet material. Thermoforming the poly urethane sheet material results in a shaped part that does not have any height seam.

All parts are welded together with High Frequency welding equipment. Our latest HF welding equipment allows for nearly seamless looking welds, creating a part that has an equal finish of a casted or molded part.

All Poly Urethane flexible materials described can be combined together to form the weighing bellow end product.

Combinations between different thicknesses can be made.

When thermo forming a TPU sheet the original thickness is reduced. This thickness reduction allows for an even more flexible bellow. Often the bottom parts are made of the thicker 1,0 or 1,5mm poly urethane sheet materials. The extra thickness provides extra rigidity for the bottom part of the bellow designs, preventing powder or bulk piling caused by deformation of the original bellow design.

The top part of the bellow is meant to be most flexible.

The bottom cone and end connection cuffs need to be thicker for a better product flow, and a good resistance of the clamp force of the coupling used to connect to the equipment.



ATEX on Poly Urethane weighing bellows

Several of the available Poly Urethane sheet materials have been tested for their electrostatic properties as well as pressure resistance.

We will be happy to help you design an ATEX suitable weighing bellow for your process.

Temperature resistance

All of these Poly Urethane materials can withstand a constant temperature up to 90°C / 194°F
Please read the material datasheets for each material for the specific material properties.

Pressure resistance

The pressure resistance depends on the thickness of the Poly Urethane film.

More information can be found on the datasheet of each material datasheet.

We also offer pressure testing for your custom weighing bellow.

From our knowledge and experience we would be happy to make our recommendations

Food contact compliancy

All TPU films are food contact compliant according to international food contact regulations.

PU-UF03, PU-UF07, PU-UF1, PU-UF15 and PU-UF3 have been migration tested for specific food contact compliancy, and comply with following regulations.

Some other may only be available with a food contact compliancy declaration



- United States Food contact safety regulations FDA 21 CFR
 - o 175.105
 - o 177.1680
 - o 177.2600



- European Food contact safety regulations
 - o (EC) 1935/2004
 - o (EC) 10/2011
 - o (EC) 2023/2006



- Chinese Food Contact regulations
 - o GB 4806.7 – 2016
 - o GB 5009.156
 - o GB 31604.1 – 2015
 - o GB 4806.6 – 2016
 - o GB 9685 – 2016

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Related Filcoflex Product Coupling Ends

Poly Urethane weighing bellows can be combined with many other products and product features:

Flexible Connectors

- Hoseclamp Fitted
- Bolt Pattern Flange Fitted
- Harmonica sleeves



Jacob Flexible Connections

- FSC
- FDM



Tri-clamp Flexible Connections

- LFR
- LFRc
- CFL
- TDP
- TDF



Available Product Features

Extended Poly Urethane weighing bellows

1 or 2 side extension



Integrated Reinforcement rings

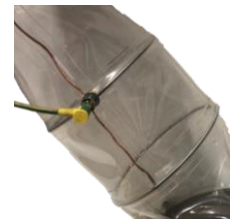
To withstand vacuum collapse or over pressure expansion.

- Stainless Steel, 3mm / 5mm / 8mm (VR)
- PE 6x10mm poly ethylene (VRPE)



Earth / Ground

- Earth connection on integrated Flanges with M6 Stud or Nut (A)
- Earth connection on integrated rings with M6 Stud or Nut (VRA)
-



Sleeve within a Sleeve

- Inside Cone / Inside Sleeve (7)

Padding on Flange or Cuff

- Stitched on gasket on bolt pattern flanges (VF)
- Stitched on gasket on end cuffs (VF)



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Available Optional Product Features

Label

- NFC chip encased in Poly Urethane pocket
- Printed label encased in Poly Urethane pocket
Can contain customized Text, Bar code, QR code
3 optional colors (yellow/blue/white)
- RFID chip encased in Poly Urethane pocket



Pneumatic / Compressed Air Hoses

- TPU compressed air hoses 8x5,5mm welded in.



Embossing

- Embossed logo or marking welded in thermoplastic material



Related Products and Recommended Accessories

Hoseclamps

- KLB09, 9mm hoseclamp



- KLB20, 20mm Hoseclamps



Weighing Flexible Connections

HECHT Bellow

- HECHT hoseclamp fitted bellow
- HECHT TRI-clamp bellow



Silicone Weighing Bellows

- Silicone weighing bellow white FDA
- Silicone Weighing Bellow Conductive Black FDA
- Silicone Weighing Bellow Asymmetrical Conical FDA



Step Bellows

