

# Protective elements

for moving machine parts.

Folded bellows | Positioning gaiters | Box-style gaiters | Slideway bellows | Sleeves



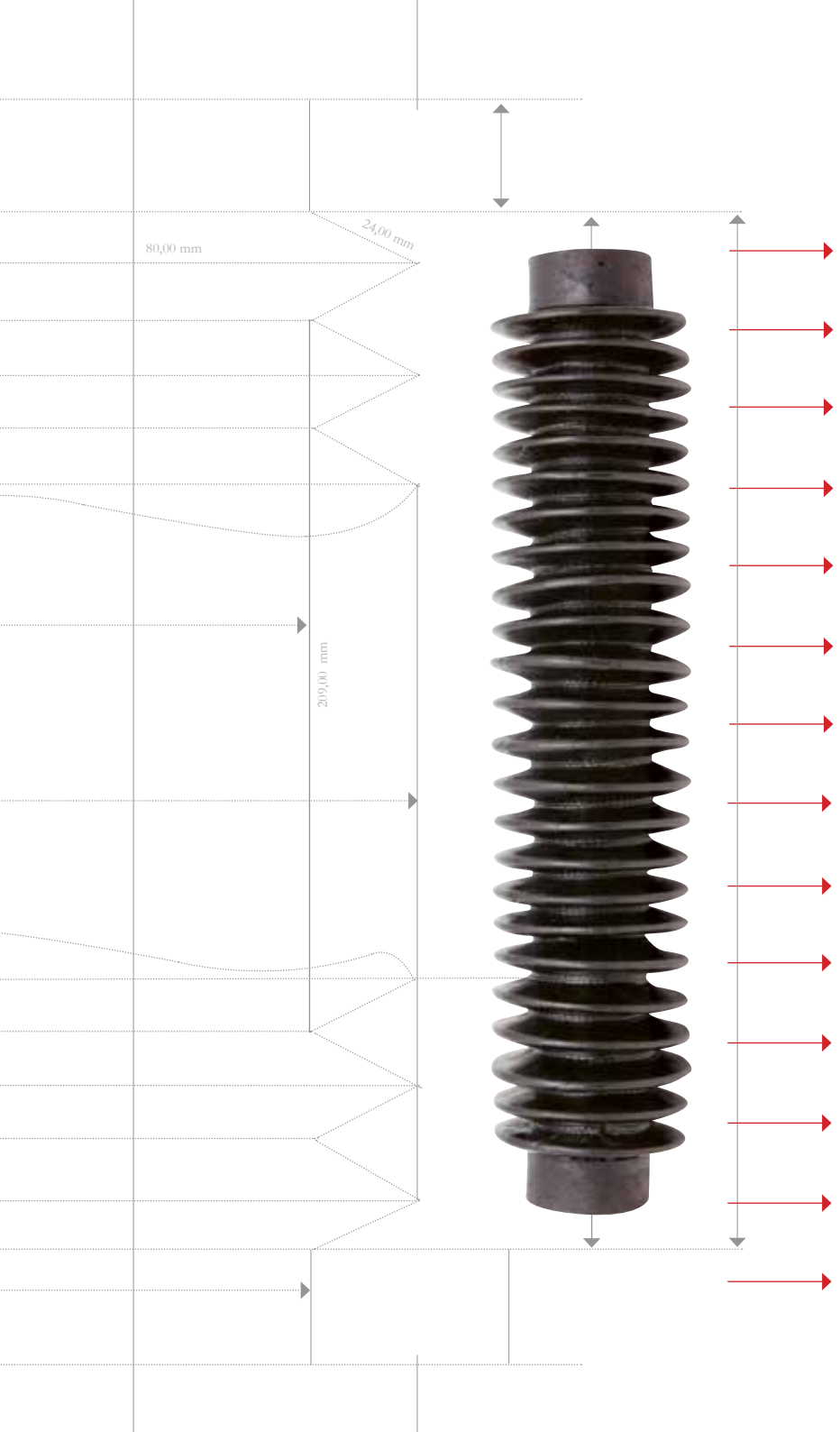
Cable protection | Loading hoses | Telescopic springs | Protective roller blinds | Expansion joints

PENKERT



**August Penkert**  
Technische Leder- und  
Kunststofferzeugnisse

[www.penkert.com](http://www.penkert.com)



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# THE COMPANY

For over 40 years, August Penkert GmbH has been one of the leading manufacturers of high-quality occupational health and safety products in Germany.

Folded bellows protect spindles & pistons, and are used in television studios for air conditioning. They are also used in continuous casting to avoid reactions of the liquid steel with atmospheric moisture. For decades, we have been supplying folded bellows, slideway bellows and loading hoses to renowned industrial enterprises.

As reliable partner for your safety we are developing practical solutions for different application areas using modern technology. Our expertise, flexibility and trustworthiness are here the factors that create the base for a good cooperative partnership.

We are committed to satisfy our customers. For this reason, the basis of our company's philosophy lies in the quest to gain the partnership and trust of the customer through exemplary quality standards and an acceptable price. We follow the principle of starting work as we mean to go on, carrying it out with competence.

In many cases, we have found feasible solutions ourselves where customers could see no solution themselves and where conventional designs did not provide efficient results. The considerable knowledge and experience we have accumulated over time forms the basis of our expertise. Folded gaiters are manufactured in accordance with detailed specifications. All of the protective systems are produced in large as well as small quantities. Even with folded gaiters, on account of a process which is developed and patented by us, we are able to inexpensively supply pilot products and prototypes at no additional cost.

## The most important aims

- **satisfied customers**
- **by delivering high-grade products**
- **with the agreed quality characteristics**
- **on a confirmed date**
- **at a competitive price**

## The most important milestones

- 1967 Foundation of the company by August Penkert
- 1983 Relocation to new premises in Xantener Str. 12 in Mülheim an der Ruhr
- 1988 Dipl.-Kfm. Bernhard Penkert joins the company
- 1989 Founder member of the Federal Hand Protection Association (Bundesverbandes Handschutz e.V.)
- 2009 new website with attractive shop is launched

# FOLDED BELLOWS

consist of a mobile bellow part and two connection parts for fixture. This simple principle of construction permits diversified use.

A folded bellow is produced by winding, sewing or gluing. When winding, a moistened leather hose is pulled over a multi-part shape. By means of a cord, the hose is brought into the shape. After drying the parts of the shape are removed, piece by piece.

When sewing, no shape is necessary. The shaping is done by wire rings, which are available in almost any diameter. Wire rings and apportioned steel springs give the gaiter form and stability.

## DESIGNS

- round
- rectangular
- polygonal shape

→ **the bellow can be cylindrical, conical or curved**

Folded bellows can be round, rectangular or have a polygonal shape. They are produced for first assembly and in divided form also for retrofitting. When retrofitting we recommend a folded bellow with Velcro or zipper closure.

**REMOVAL RATIO** Within a minimal-maximal length range, folded bellows can be extended and folded.

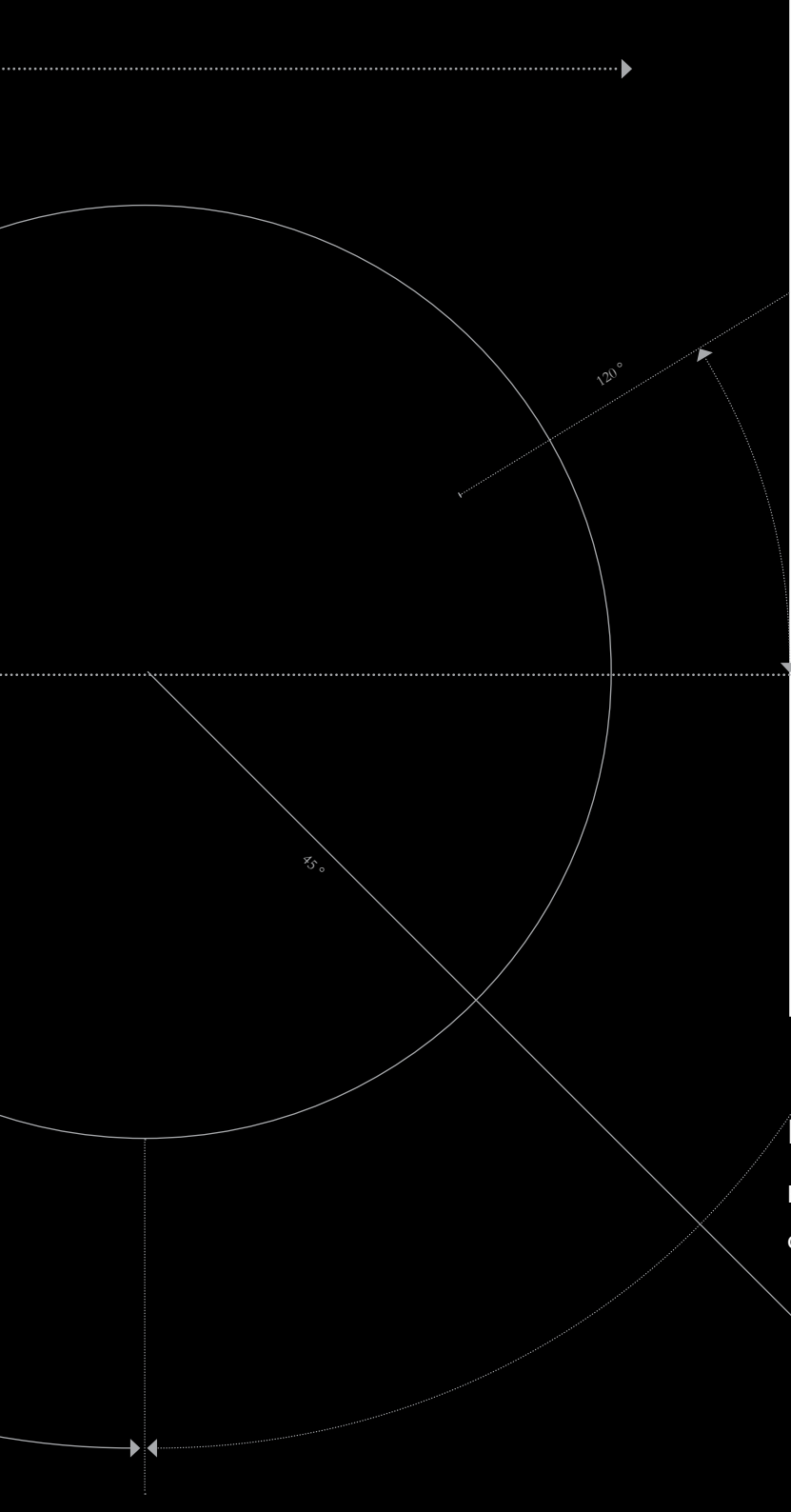
**Removal ratio minimum to maximum 1:6**  
(Kindly contact us for larger diameters to discuss details)

In special cases, in which the outer diameter can be freely chosen, removal ratios up to 1:10 are possible. In the case of conical bellows, where the folds are integrated, we have achieved removal ratios of up to 1:20.

**MATERIALS** The correct adjustment of every factor guarantees a high performance and service life. The coated materials processed by us are extremely tear resistant, highly resistant to abrasion and they do not rot. Coating, duplicating and laminating help to adapt material characteristics to practical requirements. These processes can make materials extremely resistant to abrasion, dust, atmospheric influences and pollution caused by oils, greases, acids, emulsions, humidity or gases.

**Other characteristics:** Temperature resistance from - 40 degrees to +450 degrees Celsius, ageing resistance and light resistance, resistance to atmospheric influences.

**INSTALLATION** The connecting parts may be designed differently. The most common designs are with a flange or guard. Made from a sheet or plastic, the flange is fastened using screws. In the case of the guard, a tension band is used.



## FOLDING BELLOWS - WOUND AND SEWN

Folded bellows are flexible protective elements the application areas of which are extremely diverse. They reduce downtime and repair costs and often maintenance is not required at all.

**POSSIBILITIES** Folding bellows can be installed vertically and horizontally. The planned usage plays a decisive role with regard to the specific design features. As a rule an intermediate frame and guide rings are required for horizontal application. In the case of vertical application, removal barriers ensure a smooth and uniform bellow extension.



**WITH ZIPPER** Folded bellows with zipper are perfectly suited for retrofitting. Complex, time-consuming and costly dismantling processes of extensive machine parts are thus avoided.

The assembly for folded bellows with inserted or sewn-in wire rings is very easy:

- open the zipper
- remove the rings at the clamping sleeves
- put the folded bellow around the machine part to be protected
- put the rings into the clamping
- close the zipper carefully, if required reverse spiral spring and tighten with endless screw



**Due to its high flexibility and the possibility to be able to produce almost any size and shape, different application areas have opened up to the folded bellow.**

- ▶ Protection from dust, cinder, chips on cardan shafts, pistons and hydraulic systems.
- ▶ Protection from sand, sparks, heat and material splashes at robots, moulding and casting machines
- ▶ Prevention of generation of dust at vibration hoppers and packaging systems.
- ▶ Sealing-off against incidence of light at optical devices
- ▶ Ensuring mobility in aggressive or humid climate
- ▶ Reduce noise emissions in pipeline system
- ▶ Protection of moving parts of industrial robots



Folding bellow at gateway

# COMPOSITE FOLDED BELLOWS

A new production method permits a composite of high-strength synthetic fibres with rubber, resulting in a cost-effective production alternative even for smallest quantities.

Composite folded bellows are a cost-effective alternative when producing prototypes and pilot series. During production, an elastic, seamless synthetic knit fabric is coated with nitrile or silicone rubber. This creates a composite material of high-tensile strength meeting all quality advantages required from a rubber folded bellow.

It is used where protection from moisture is required (leather folded bellows are a cheaper alternative for applications where the bellows are only used as protection from dust and as hand guard.)

## CHARACTERISTICS

- extremely resistant to oil, chemicals and thermal load
- choosing the right rubber ring ensures concordance with the desired field of application

**Removal ratio minimum to maximum 1:8**

(Kindly contact us for larger diameters to discuss details)

**INSTALLATION** The folded bellows can be easily installed using a clamping strap. In the case of complicated installation conditions we deliver bellows with zipper or Velcro closure.

**ADVANTAGE** Apart from the quality advantages, this production method offers provides a **significant cost advantage** in small batches, pilot runs or prototypes.

**APPLICATION AREA** The folded bellows are suited for all areas where rubber folded bellows are used. The manufacturing method makes it possible to produce inexpensive rubber folded gaiters in small volumes using existing shapes.





# DIPPED BELLOWS

Dipped bellows made from thermoplastic resin can be used almost everywhere.

**APPLICATION AREA** Dipped folded bellows are used when a special shape is needed or a medium number / small scale series between 50-1000 is required. Special connections are possible, as well as inner beading / outer beading connections etc. They serve as a spindle and piston rod protection and in a completely immersed design, are leak-proof and visually appealing.

**PRODUCTION** These bellows are produced by dipping a folded bellow shape into liquid thermoplastic resin. The subsequent insertion of wire rings into the tip of the fold gives the folded gaiter additional rigidity. In order to ensure air exchange air flaps and screens are incorporated.

In order to avoid increased wear and tear as well as sagging when used horizontally, supporting or sliding panels can be used.

**DESIGNS** Folded bellows that are manufactured using the dipping method can be supplied in different Shore hardness levels as well as different colours. The construction of individual shapes enables the production of nearly all models. Dipped folded bellows can be individually produced with a wall thickness of 1 to 3 mm.

## CRITERIA

- can be used almost everywhere
- use of standard connections
- special connections are possible
- ordering small quantities and series is possible
- hard and soft dipping
- different colours possible
- can be divided for retrofitting
- can be divided for retrofitting



# HEAT-RESISTANT FOLDED

Folded bellows are not only used under normal climatic conditions, but also in areas with high temperatures.

For high thermal load materials with particular material qualities are used. Robust, thermally resistant materials are used for heat-resistant bellows. These include heat-resistant leather and other current fabrics made from inorganic fibres: fibreglass, aramid, Kynol, Preox. All these materials can be laminated with aluminium foil, whereby a higher mechanical strength is achieved. Heat resistance and mechanical stress of the materials are different, therefore, it is necessary to decide on the material in each case.

**DESIGN** Heat-resistant materials are both wrapped and sewn. In the case of large dimensions, wire rings on the inside and coil springs on the outside ensure an exact folding process.

**Removal ratio minimum to maximum 1:5**  
(All lengths and diameters from approx. 80 mm are available)

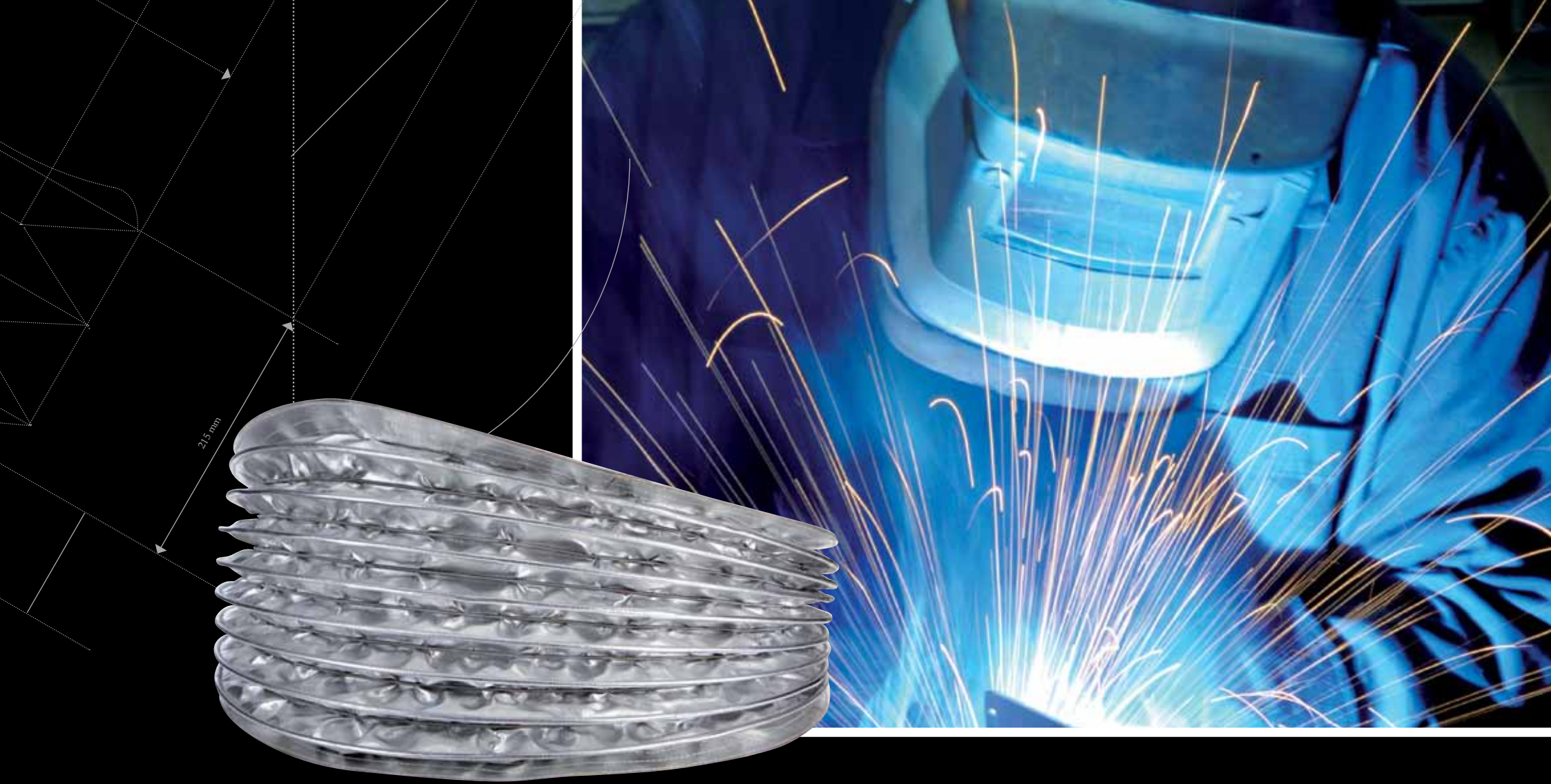
**APPLICATION AREA** Folding bellows can be installed vertically and horizontally. The planned usage plays a decisive role with regard to the specific design features. Folded bellows are used in steel mills, metallurgical works, rolling mills, glass factories and other industrial sectors. They protect pistons, spindles and shafts from dust, sparks and cinder. In the case of industrial robots, moving parts and cables are protected from welding beads or increased heat radiation. In the automobile trade, they serve as thermally resilient vacuum hoses.

## NOTES

- folded bellows need to be ventilated
- protection against excessive expansion required in the case of dead weight over 10 kg (by means of straps, chains)
- in the case of horizontal application, supporting or sliding panels are required (prevents sagging)

Material	Thermal resilience	Mechanical resilience	Examples for application areas
Silicate fabrics „Siltemp“, „Refrasil“, „Hitco“	350 °C short-term 600 °C	minimal	folded bellows in continuous casting plants, blast furnace environments
Aramid fabrics „Kevlar“	180 °C aluminium side 350 °C Kevlar	very good	vacuum hoses, vacuum arms and folded bellows for welding robots etc.
Special leather coated with aluminium	120 °C	good	folded bellows and cable protection, protection of machine parts against radiation heat, welding beads
„Preox“	350 °C short-term 600 °C	good	folded bellows and sleeves in the case of radiation heat
„Kynol“	300 °C short-term 600 °C	good	folded bellows and sleeves in the case of radiation heat





Heat-resistant, spark-resistant, able to bear mechanical and thermal load folded bellows are used in steel mills, metallurgical works and rolling mills, in glass factories and other industrial sectors

# POSITIONING GAITERS

can be used for almost every area of application thanks to their distinct adaptability - however difficult it may be.

**APPLICATION AREA** Positioning gaiters are used if a maximum  $L_{max}/L_{min}$  ratio is required (approx. 1:20). They serve to protect the spindle and piston rod and in a vulcanised design, are absolutely sealed and visually pleasing. Positioning gaiters are suited for use as single piece or small series as no shaping costs will occur.

**Removal ratio minimum to maximum 1:20**  
(Kindly contact us for larger diameters to discuss details)

**DESIGNS** Sewn or vulcanised. Sewn positioning gaiters can be manufactured in nearly all materials. For example, heat resistant, anti-static or food-safe designs are all conceivable. Depending on the intended use, vulcanised positioning gaiters are welded of single PVC or NBR blanks. In order to avoid increased wear and tear as well as sagging when used horizontally, supporting or sliding panels can be used.

**MANUFACTURING** Depending on the material, positioning gaiters are sewn from single material blanks (canvas, textile and leather) or vulcanised from elastomeric films. Wire springs can be inserted, as additional stabilisation for the folds.

## ADVANTAGES

- enormous removal ratios with high dimensional stability
- quick availability
- good resistance to chemical influences
- resistant to ozone and UV
- long durability
- practically unlimited material choice when design is selected

**INSTALLATION** Positioning gaiters are installed by means of steel or rubber flanges and also using sleeves with hose clips.



## BOX-STYLE GAITERS

For covering lifting tables with medium load to prevent industrial accidents and for a more attractive appearance.

There are two basic models of box-style gaiters:

„robust model“ with sewn-in wire rings

**APPLICATION** Robust box-style gaiters are mainly used for lifting tables and lifting platforms with medium-hard to hard load.

„filigree model“ welded, glued and sewn, with an exact interior folded shape

**APPLICATION** Filigree box-style gaiters are used for lifting tables with medium load and ensure a pleasing appearance.

**DESIGNS** Box-style gaiters are available in various materials with a sewn-in wire frame and reversible coil springs.

Stitched boxed gaiters can be produced from all materials (used in planning) such as Neoprene, PVC, polyurethane, Teflon coated materials and heat-resistant KEVLAR®.

If a minimum dimension as well as an attractive appearance is needed, flat plastic frames can also be incorporated instead of the sturdy wire frame. In this design, accurate folding is predetermined by a thermal process. Exact fitting is effected by means of metal flanges.

**MANUFACTURING** Manufacturing is effected via a sewing machine (manufacturing aid by gluing). For retrofitting the folded bellow can also be manufactured as a divided model (zipper/Velcro tape).



KEVLAR®

# SLIDEWAY BELLOWS

The exact adaptation of slide protectors to the operational requirements is the basis for reliable protection.

Slideway bellows reduce the number of repairs and downtimes. By keeping slides free from sharp-edged filings, slag, emery dust, welding sparks and cinders, they represent a reliable, economic solution to the problem.

**APPLICATION AREA** They can be found in nearly all areas of the metal industry: grinding machines, drilling machines, milling machines and planing machines.

## ADVANTAGES

- Dimensional stability with optimum removal ratios
- suitable for high speeds
- no corroding parts
- additional surface protection in heat thanks to mobile steel lamellae

**DESIGNS** Slideway bellows are available in the following designs:

- support at the side pieces
- support of the construction bar (vertical application with heat protection)

**CRITERIA** The manufacturing of slideway bellows is possible in almost every length and width. The material is coated on both sides and is resistant against water, cutting oil and coolant emulsions. Reinforcement elements in the folds ensure that the shape retains its stability. In the case of dampness, the apt shape ensures that moisture runs off unhindered.

Abrasion-proof sliding members ensure a perfect course. Built-in removal barriers prevent the gaiter overstretching.



# CABLE PROTECTION

The condition of supply lines and cable strands is decisive for robots and production machines working reliably.

In order to avoid damage to supply lines, these are protected by hoses, sheaths or casings.

**MATERIALS** Various materials are available. The material is selected according to the functional, mechanical and thermal requirements. One material that has proven particularly resilient, is leather. It is flexible, does not burn and when scorched, does not emit toxic vapours. In addition, through coatings or reinforcements, it is possible to directly influence the material properties. Folded bellows can be used to protect supply lines, but can also take on the function of expansion joints. As soft expansion joints, they are made of leather and technical fabrics.

The material and design are criteria which are important even at the planning stage. Here, expertise and experience are required.

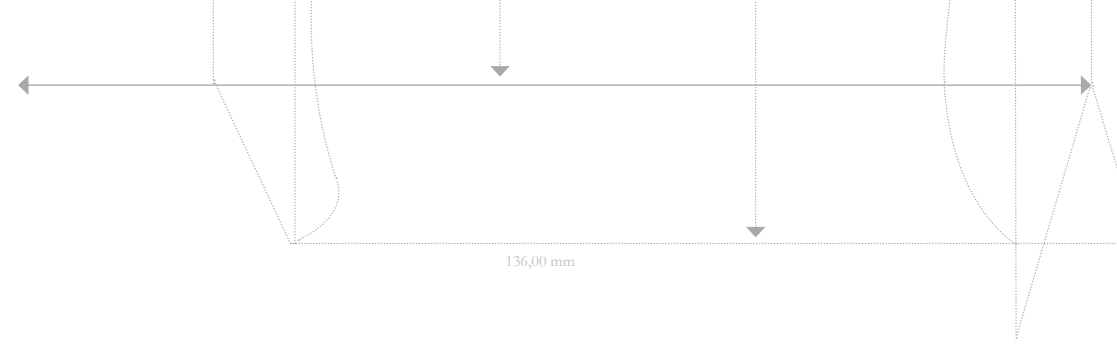
## DESIGNS

- protective hose, long side closed
- protective hose with a press stud closure, Velcro closure or zip closure for retrofitting
- as folded bellow
- as a combination of hose and folded bellow
- as protective cover

## CRITERIA

- ideal protection
- high bending elasticity
- problem-free adaptation to the course of the movement
- slip-proof installation
- correct choice of material, especially in the case of high levels or thermal or mechanical stress





# LOADING HOSES

Loading hoses permit the environmentally-friendly discharge, loading and conveying of bulk solids.

Loading hoses can be used in factory halls and outdoors, in dry and wet weather conditions, in winter and summer. This means that their ability to perform has to be ensured regardless of the climatic and thermal loads. Fast, smooth running, with no environmental pollution, are important requirements when discharging, loading and conveying bulk material.

**In order for loading hoses to meet these practical requirements imposed on them, they have to fulfil a number of technological requirements.**

- guaranteed continuous discharge process
- dust-free conveying and/or loading
- all weather use
- resistance to abrasion, even in the case of abrasive goods
- prevention of static charge in the case of flammable materials
- heat resistance in the case of hot conveyed goods

- a large range, in order to fill small vehicles and containers as well
- small design height, guarantees maximum overhead clearance

Precise adaptation to the discharged good and the operating constraints ensure easy handling and extended durability.

**MATERIALS** Products are only successful if they are maintenance free and durable. The material is specified depending on the types of goods to be loaded. In general, the raw material is leather, textile fabric or plastic sheeting. By coating with plastic or laminating with a film, the material properties can be adapted to the application accordingly.

It is important that both the conveyed goods to be discharged as well as the operating conditions are taken into account.

**DIMENSION** Our loading hoses are manufactured in sizes ranging from a nominal width of approx. 200 mm, and increase in increments of 50 mm, up to a diameter of approx. 2000 mm. Other dimensions are available on request.

**DESIGN** In order to ensure exact folding, rings made from spring wire are sewn in. Extra stabilisation is provided by prorated coil springs that return the hose without any problems.

**Deviation ratio minimum to maximum 1:10**

**INSTALLATION** A connection plate is mounted onto the silo and/or the conveyor system which has a support for fastening the loading hose. Installing the hose to it is easy. At the lower end of the hose, it is possible to fit a filling cone which fits into the openings of the silo vehicles and the container.



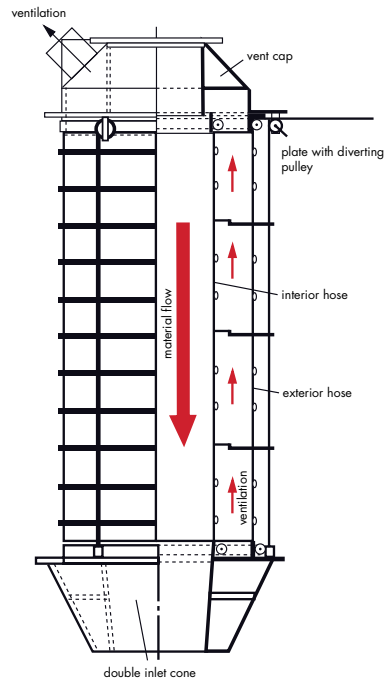
**In each case we strive  
to adapt the material  
and design to the  
practical requirements  
of the customer.  
Our many years  
of experience is a solid  
basis for this ability.**



**APPLICATION AREA** Loading hoses are used to discharge, load or convey small-sized, granular and powdered, hot and abrasive products. Main users are cement factories, chemical factories, mills, malting plants, feed manufacturers, salt mines, coal mines, coal power stations, and companies in the food industry.

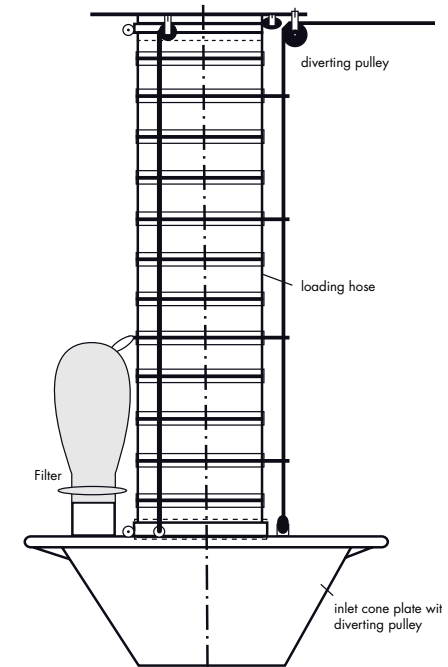
- discharge and loading in halls (PVC-coated fabric)
- outdoor loading (coated with Neoprene on both sides, one side with Hypalon surface layer)
- abrasive materials (coated chrome leather, KEVLAR®)
- flammable goods, e.g. coal dust (antistatic PVC-canvas fabrics)
- foodstuffs (specially coated textile fabric)
- hot conveyed goods (aramid fabric KEVLAR®, modified fibre glass fabric Siltemp®, silk glass fabric)

## DOUBLE LOADING HOSE with ventilation



This type of design is used if, when filling closed containers, air that is full with dust represents a hindrance to the discharge procedure and cannot escape. If the system itself does not have any ventilation lines, double-walled loading hoses are used. The displaced air is returned to the silo between an inner and an outer hose wall.

## SINGLE LOADING HOSE with filter ventilation



Where there is minimum dust, single loading hoses are sufficient. They represent an inexpensive solution. The air which has had its dust removed by a filter escapes into the open, just like the air of a vacuum cleaner. The filter is fitted to the loading cone and can be easily exchanged.

**QUALITY** is seen in:

- an exact folding process
- resistance to any type of weather (for outdoor use)
- high service life
- problem-free installation
- easy handling
- long-standing expertise

**Penkert loading hoses significantly support the main requirements for discharging, loading an conveying bulk solids without polluting the environment.**



# TELESCOPIC SPRINGS

Telescopic springs are always the appropriate form of machine protection when the available space is very limited, i.e. the use of folding bellows is not possible.

**MATERIAL** As telescopic springs are made from high quality steel, they are preferably used where there is an increased incidence of glowing filings or where there is constant sprinkling with emulsion fluids. Spring steel is not sensitive to corrosion. Even in an aggressive environment or at high temperatures, telescopic springs offer optimum protection. Servicing is not necessary. In the case of heavy soiling, cleaning is however recommended followed by the application of a light film of oil.

**INSTALLATION** Installation could not be easier. Centring flanges which allow the spring rotating movements that occur are all that are needed. When installing, nothing needs to be dismantled as the spring can wrap around the object to be protected like a ribbon. They can be used both horizontally and vertically. In the case of horizontal use, the outer diameter (OD) must be measured to be 3-5 mm larger.

**STROKE HEIGHT** Telescopic springs can be compressed to a minimum dimension. This dimension corresponds to the width of the spring steel used.

**DESIGNS** The cross section is always round, and the stretched out telescopic spring always conical. They are manufactured in predetermined diameters and lengths. The faultless functioning of different stroke lengths ensures the appropriate width. Telescopic springs protect shafts, spindles, columns, screws and pistons.



# PROTECTIVE ROLLER BLINDS

If screening off on only one side is required.

For reasons of accident prevention or to avoid soiling, many movable machine parts need special protection. The operational arrangement is often such that with little resources, an effective result can be achieved. The protective roller blind offers simple, inexpensive screening. Delivery takes place according to your needs, with or without housing. Depending on the level of load, the roller cover is manufactured from steel or a plastic strip. Nearly every dimension can be supplied.



## LEATHER SLEEVES

Leather sleeves are ideally suited for water, hydraulic oil and air. Leather is a particularly robust material.

Leather withstands high levels of pressure. For this reason, problems relating to the seal can be solved optimally using leather sleeves. The leather sleeve is ideal, even in the case of old units. The leather fibres penetrate into every groove of the piston and seals in a reliable way.

**ROOF SLEEVES** Similar to lip seal sleeves, roof sleeves are used to seal pistons and pipes. They can be used on top of each other as a „sealing package“. They are therefore also used in very high pressure applications (labyrinth effect). **Note:** Dismantled sleeves are not suitable for working out dimensions!) Protosil thiokol seals are a technically high-grade variant.

**BOWL SHAPED SLEEVES** Bowl shaped sleeves are the ultimate seals for pumps. Even after years of service, they reliably do their job pumping water or air.

**CAP SLEEVES** Cap sleeves seal rotating shafts. Leather sleeves can be easily installed and they ensure a good seal. At short notice, we are able to supply nearly all of the necessary shapes and dimensions for old and new plant (without shaping costs). A data sheet prepared by us has been printed to help you with your enquiries or subsequently ordering.

**LIP SEAL SLEEVES** Lip seal sleeves serve to seal pistons and conducts in hydraulic presses and pumps. They are used in medium and high pressure ranges.



## EXPANSION JOINTS

Folded bellows are also used as expansion joints..

**There are structural elements that are flexible and variable, like e.g. exhibition halls with suspended roofs.**

Air is transported through fixed glass risers. As the flexible roof rises and lowers through climatic changes, the folded gaiter takes on the necessary adjustment. In this case the vertical effect is about 300 mm. The folded gaiters have a horizontal basis and a chamfered top edge. They are made from a coated fabric and installed using a flange.



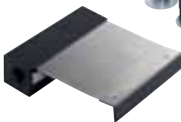
# FOLDING BELLOWS FROM PENKERT

Folded bellows have conquered a variety of application areas. We will be pleased to help you find the correct folded bellow suited best for your application area.

Design	Application area	Removal ratio	Installation
Composite folded bellows (page 8)	<ul style="list-style-type: none"> <li>• suitable for all areas where rubber folded bellows are used</li> </ul>	<b>min. to max. 1:8</b>	<ul style="list-style-type: none"> <li>• by means of clamping strap and flange (also with zipper or Velcro closure)</li> </ul>
Dipped folded bellows (page 9)	<ul style="list-style-type: none"> <li>• are used when special shapes as well as medium quantity/small scale series</li> </ul>	<b>min. to max. 1:5</b>	<ul style="list-style-type: none"> <li>• special connections like inner beading and outer beading etc. are possible</li> </ul>
Heat-resistant folded bellows (page 10)	<ul style="list-style-type: none"> <li>• steel mills, metallurgical works, rolling mills and glass factories</li> <li>• protects pistons, spindles and shafts from dust, sparks and cinder</li> <li>• protects movable parts and cables from welding beads or increased heat radiation</li> <li>• thermally resilient vacuum hoses</li> </ul>	<b>min. to max. 1:5</b>	<ul style="list-style-type: none"> <li>• by means of clamping strap (also with zipper or Velcro closure)</li> <li>• by means of flange</li> </ul>
Positioning gaiters (page 12)	<ul style="list-style-type: none"> <li>• positioning gaiters are used if a maximum removal ratio is required</li> <li>• protects spindle and piston rod</li> <li>• use as single piece and small series, (no shaping costs)</li> </ul>	<b>min. to max. 1:20</b>	<ul style="list-style-type: none"> <li>• steel and rubber flange, sleeves with hose clips</li> </ul>
Box-style gaiters (page 13)	<ul style="list-style-type: none"> <li>• at lifting tables and lifting platforms</li> </ul>	<b>min. to max. 1:7</b>	<ul style="list-style-type: none"> <li>• by means of clamping strap and flange</li> </ul>



Design	Application area	Removal ratio	Installation
Slideway bellow (page 14)	<ul style="list-style-type: none"> <li>protecting slideways from contamination</li> </ul>	<b>min. to max. 1:10</b>	<ul style="list-style-type: none"> <li>by means of steel flange</li> </ul>
Cable protection (page 15)	<ul style="list-style-type: none"> <li>at industrial systems, to protect cables and hoses from mechanical influences like wear or contact with hot chips</li> </ul>		<ul style="list-style-type: none"> <li>installation using a strap (Velcro closure and zipper)</li> </ul>
Loading hoses (page 16)	<ul style="list-style-type: none"> <li>for loading and discharging of bulk solids</li> </ul>	<b>min. to max. 1:10</b>	<ul style="list-style-type: none"> <li>mounting of a connection plate with support for fastening the loading hose at the silo or conveyor system</li> <li>It is possible to fit a filling cone at the end</li> </ul>
Telescopic springs (page 20)	<ul style="list-style-type: none"> <li>at lifting tables and lifting platforms</li> <li>if screening off on only one side is required</li> </ul>	<b>min. to max. 1:15</b>	<ul style="list-style-type: none"> <li>by means of centring flange</li> </ul>
Protective roller blinds (page 20)	<ul style="list-style-type: none"> <li>at lifting tables and lifting platforms</li> <li>if screening off on only one side is required</li> </ul>		<ul style="list-style-type: none"> <li>delivery as per requirements with or without housing</li> <li>flange as required</li> </ul>
Leather sleeves (page 21)	<ul style="list-style-type: none"> <li>are ideal for sealing against water, hydraulic oil and air</li> </ul>		<ul style="list-style-type: none"> <li>versatile, depending on application</li> </ul>
Expansion joints (page 21)	<ul style="list-style-type: none"> <li>as compensation between the building and glass risers on roofs that rise and lower during climatic changes (e.g. exhibition halls)</li> </ul>		<ul style="list-style-type: none"> <li>by means of clamping strap and flange</li> </ul>





**August Penkert**  
Technische Leder- und  
Kunststofferzeugnisse

## PROTECTIVE ELEMENTS

**August Penkert GmbH**

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