

# P

# E

# I

**P**rotezioni  
**E**laborazioni  
**I**ndustriali





# GENERAL CATALOGUE



A LABEL  
THAT MEANS **QUALITY**

## Welcome to P.E.I.

**P.E.I. Srl** was founded in Bologna and has been operating for over 40 years in the field of workplace safety and protective covers for machine tools, becoming a leader in this market.

Commercial skills, extensive know-how in production engineering and constant technical innovation represent the set of driving values in **P.E.I.**: our products are distributed worldwide through a widespread network of sales technicians that guarantees coverage across the whole of Italy and Germany as well as a major part of the rest of Europe.

The company invests considerable resources in research and development, study of new product applications and state-of-the-art production techniques.

Research and technological innovation, combined with a predisposition to enter new markets, have always been the elements that distinguish us and make us proud.

Our history is characterised by an entrepreneurial attitude open to new challenges, to anticipate new market trends and to exploit opportunities for growth.

## Our figures



## Our brands



**PEI Mobility**, a brand of P.E.I. Srl, is specialised in the production and sale of articulated bus bellows for 15 years and since 2022 has extended its production range by introducing articulated joints and becoming a partner of the world's leading articulated vehicles manufacturers.

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



**PEI VM S.r.l.** with its 20-years experience in the NVH (Noise, Vibration & Harshness) provides consultancy and vibration diagnostics systems in many application areas, such as power transmission automotive, motorcycle, powertools, packaging.

[www.peivm.it](http://www.peivm.it)



**Nuova Metal S.r.l.** is an ISO 9001:2015 certified company with 30-years experience in light metal carpentry sector, specialised in designing and manufacturing metal furniture for different purposes, in particular for medical and food sectors.

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



**Zanini S.r.l.** is a UNI EN 3834-2 certified company with great experience in the field of medium and light metal carpentry, specialised in metal machining for the railway and packaging sectors.

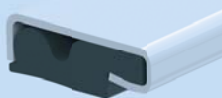
[www.zaninisrl.net](http://www.zaninisrl.net)

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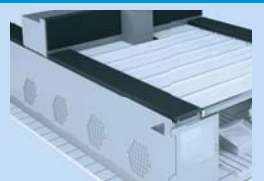
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### TELESCOPIC STEEL COVERS

#### For all types of machine tools

The steel used is extremely high quality in terms of flatness, corrosion resistance and wear resistance. Sheet thickness ranges from 1.5 to 3 mm.

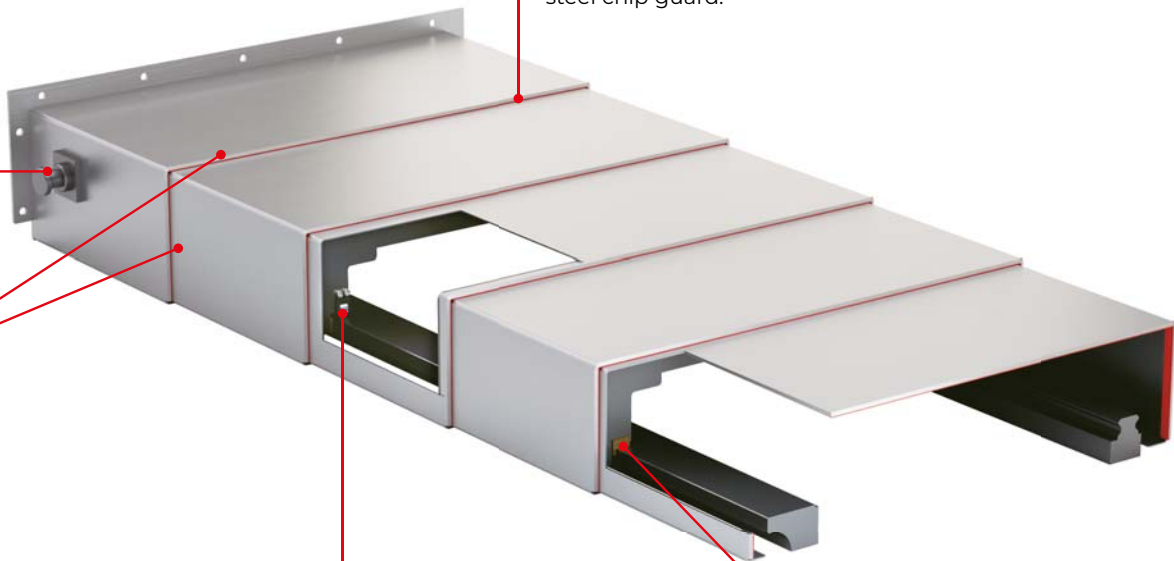
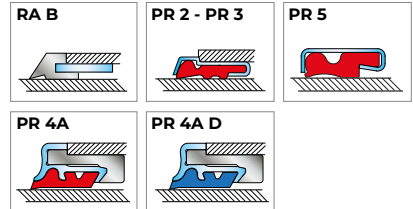
Telescopic Steel Covers may also be made of stainless steel.



**Lifting systems** can be applied to telescopic covers of various forms and have different characteristics according to customers' needs and the weight of the protection.



**Wipers** keep the surface clean and prevent chips from getting under the plates. They are made of polyurethane to resist against heat and coolants, with or without a protective stainless steel chip guard.



In case of high speed, (patented) **shock absorbers** reduce noises and oscillations. Made of polymer that does not deteriorate in contact with coolants. They are very effective in reducing impact between boxes during movement.



**Rollers and bearings**, in case of high speeds or loads, are inserted to preserve safe and noiseless running. Both rollers and bearings are assembled on bolted housings allowing correct alignment as well as quick and easy maintenance.



Special anti-friction **sliders**, made of brass or non-metallic material, do not wear out the guideways of the machine on which they run. Available in many sizes and cross-sections.





## Working Positions

### Horizontal

For horizontal working positions.  
This is the most common solution regardless of size of cover and length of stroke.

In most cases, mounting in the machine is done by lowering the cover from above, thus handling is easier even in narrow spaces.



### Transverse

For frontal working positions.  
Suitable for small to large-sized covers.  
To prevent the cover boxes from jumping out of the guideways, on the upper side special retaining slides are mounted, designed for fitting exactly the profile of the guideways.  
The cover can be mounted frontally by sliding it onto the guides or it may be lowered from above.  
In case of frontal covers between two carriages, their design must consider the frontal mounting from above.



### Vertical

For vertical working positions.  
Suitable for small to medium-sized covers.  
To prevent the cover boxes from jumping out of the guideways, special retaining slides are mounted to fit exactly the profile of the guideways.  
For larger dimensions it is possible to fit retaining slides that allow the cover to be mounted directly onto the guides from the front, without inserting it.  
If desired, plates can be worked out inside the cover particularly to prevent lubricants from leaking onto hydrostatic guides.

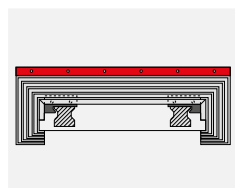


### Multi-axis for lathe

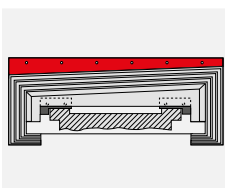
Telescopic cover for lathes Z-axis or axes that run parallel to the Z-axis, such as counter spindles, lathe centres and steady rests.  
Based on the axis involved, the shape of the telescopic elements, the shape and position of the guides, mounting can be done from the front or it may be necessary to slide the cover onto the guides.



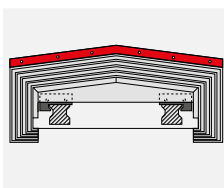
## Configurations



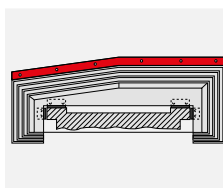
Form 1



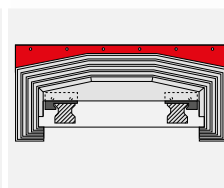
Form 2



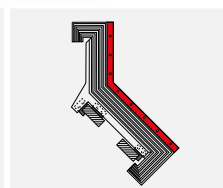
Form 3



Form 3, variant



Form 4



For lathe

Fill in the form available on our website to receive a tailored offer of the most suitable Telescopic Protection according to your project requirements

[click here](#)



## Pulling System

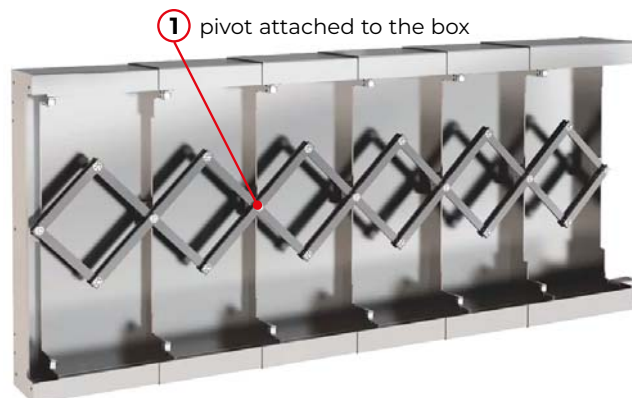
### TRADITIONAL PANTOGRAPH

Our traditional scissor system is designed for synchronised movement of all cover boxes of a telescopic cover. This allows all boxes to move together and evenly.

As there is no stop between the cover boxes, the system runs independently of the drive speed and thus enables high travel speeds.

Proper sizing of the components of the scissor system, as well as proper design concerning dimensions and shape of the cover boxes, make this system robust and durable. The machine must provide the drive force to move all the cover boxes simultaneously, even for short strokes.

The pantograph supports constant keeping of roughness in high-finish machining.



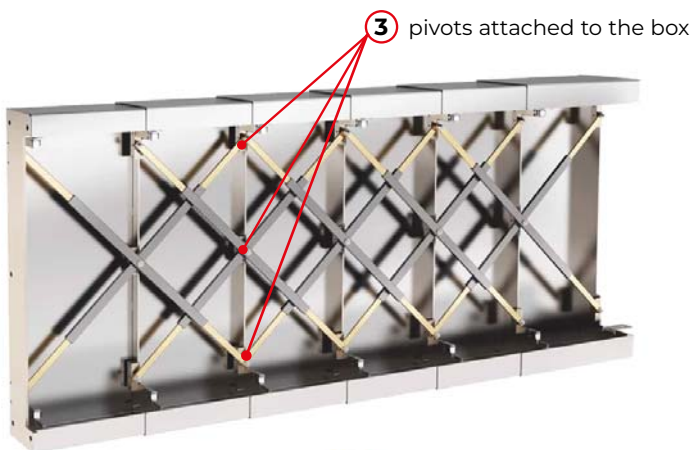
### SYNCHRO-TEL TECH (Patented)

The system harmonises opening and closure of medium-sized telescopic covers and is suitable for high speeds and accelerations.

The coupling tolerance between the metal rods is reduced to a minimum.

Unlike a normal pantograph, it can have up to three pivots attached directly to the boxes, thus avoiding vibrations.

Mathematical calculations and operating tests guarantee that **SYNCHRO-TEL TECH** is the most reliable and durable solution, compared to known synchronisation mechanisms.



watch on YouTube



### DAMPER-SHELL EVO (Patented)

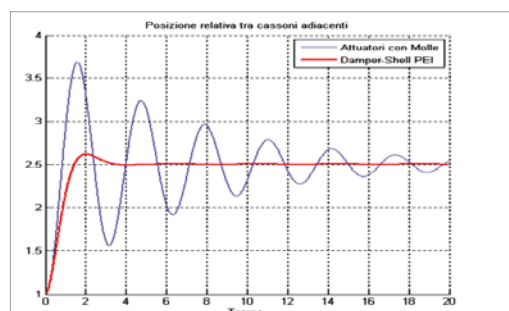
Viscoelastic shock absorbers for energy dissipation in large scale telescopic covers working in horizontal and frontal positions.

Made of polymer of a special **P.E.I.** formulation, it is manufactured in two geometric dimensions.

**DAMPER-SHELL** guarantees up to 2.000.000 cycles and is ideal for working speeds up to 100m/min and acceleration up to 1g.

Free from boost residue whether the telescopic cover is closed or in resting position, it opens smoothly during expansion without causing friction on the boxes.

This damper is ideal for long strokes being a silent, durable, reliable and maintenance-free solution.







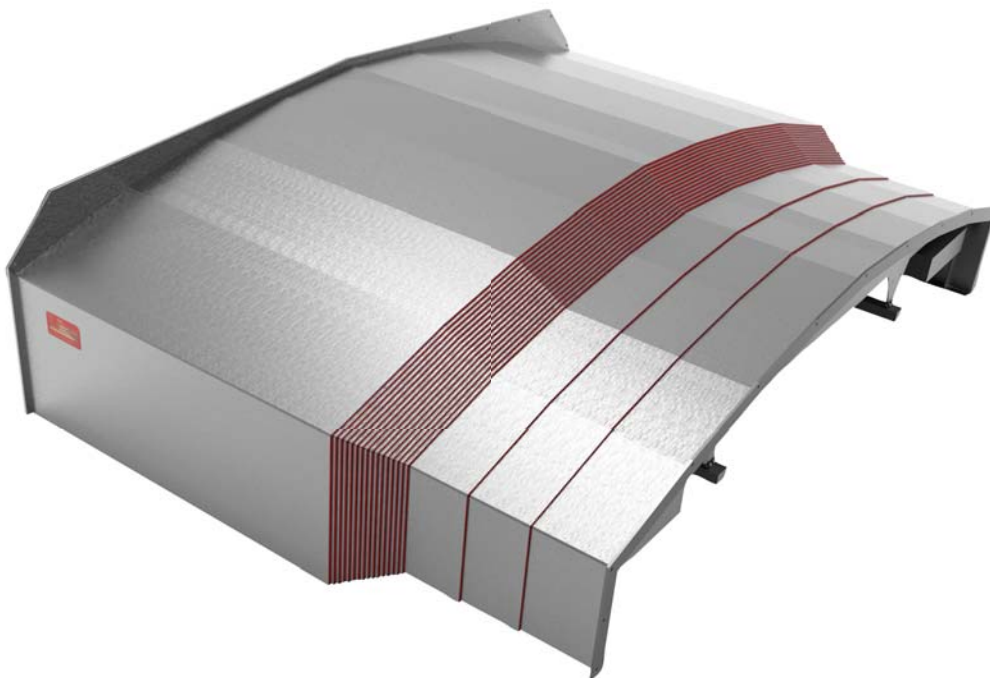
## MULTIBEND

### The A++ telescopic cover for horizontal axes

The telescopic cover **MULTIBEND** has a weight reduction by up to 50 percent compared to a standard telescopic cover. The decrease in moving masses leads to a reduction of inertia, the telescopic cover can properly support the high dynamics of current machines.

The calculation software has been specially developed by **P.E.I.** to calculate bending of the boxes and consequently to optimise geometry and cost savings.

The abatement of the power required for driving the machine tool results in reduction of CO<sub>2</sub> emissions, thus saving raw materials and resources.

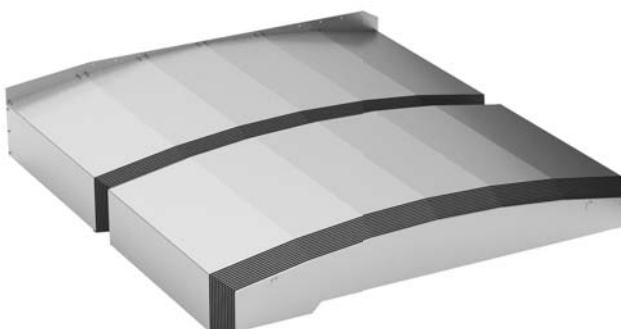


## TELESCOPIC STEEL COVERS ■ Special



### Some examples of our special telescopic covers:

Two telescopic covers joined together for long strokes.



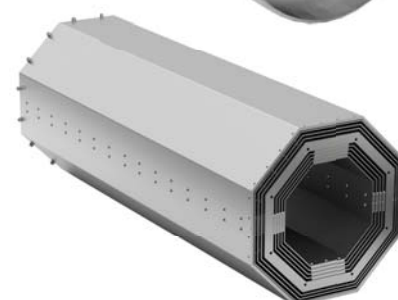
Stainless steel aspirator with telescopic column synchronised by pantograph.



Double telescopic cover with rectangular shape.



Double telescopic vertical protection especially suitable for worm gears and screws.





### **SHEET-POCKET™** (Patented)

The **SHEET-POCKET™** Telescopic Steel Cover solves issues in shielding the Y-axis (vertical) in horizontal machining centers and in boring machines, even in case of very large strokes.

It is supplied in a fully enclosed frame that is independent from the machine structure: the self-contained steel cover is easy to install and remove for maintenance or inspection.

The rigid and steady geometry of the elements ensures that they keep fastened together and well aligned.

This allows perfect scraping and extends the life of the **SHEET-POCKET™** even with large quantities of chips.

Minimal maintenance required.

The double-stepped version prevents fluid penetration during machining.

Speeds up to 150 m/min. Accelerations of 2 g.

The **SHEET-POCKET™** Telescopic Steel Cover can be easily combined with [SURE-SPRING®](#) roll-up covers or with protective shields with laminations.





## SHEET-POCKET™ PROSHD (Patented)

The compact double telescopic cover **SHEET-POCKET™ PROSHD** is a protective shield which separates the working area from the motor in a machine tool while allowing the spindle to move freely.

The special design keeps even the smallest chips, usually produced when machining hard metals, brass alloys or aluminium, from penetrating.

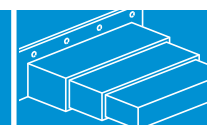
The wiper between the elements especially prevents the penetration of liquids.

These covers are suitable for medium-size horizontal machining centres.

In horizontal installation position, equipped with wipers and pressurisation system, the cover prevents the penetration of coolants and oils.



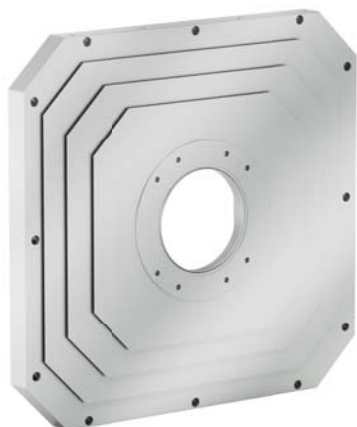
## TELESCOPIC STEEL COVERS ■ Compact round and square



The telescopic steel covers **ROUND SLIDING COVER™** and **SQUARE SLIDING COVER™** were designed to meet special needs that frequently arise on special or transfer machines and small machining centers.

### ROUND SLIDING COVER™ and SQUARE SLIDING COVER™

- For dual-axis operation
- High speed
- Compact size
- Easy to install





### SNAP TELESCOPIC COVER

#### The "EASY-ACCESS" Cover

This innovative cover can be totally dismantled and is ideal for protecting frontal and vertical axes in small to medium working centres, transfer machines, lathes and milling borers.

Easy access to both the whole cover and machine tool: maintenance works can be carried out quickly, while the overall time required for all steps is minimized.

Due to the "modular" design of this cover, individual damaged elements can be replaced without use of special tools. The cover is assembled weldless and can therefore be completely disassembled into its individual parts.

This telescopic cover is made of highly resistant steel, the recommended maximum dimensions are one metre in width and 4.5 metres in height.

This new telescopic cover is characterised by a closed design that is independent of the supporting machine structure.

The passage of the work spindle can be sealed with PU wipers. Equipped with a synchronisation mechanism, the cover reaches speeds of up to 150 m/min and accelerations up to 2g.

[watch on](#)  **YouTube**



### Features

- MAINTENANCE: quick inspection operations
- DISASSEMBLY: the components can be disassembled directly on the machine
- ASSEMBLY: manual, as there are no welded parts
- MATERIAL: highly resistant steel
- DIMENSIONS: up to 1 metre wide and 4.5 metres high
- SPEED: up to 150m/min and acceleration up to 2g.

### Disassembly







## TELESCOPIC COVER OVERHAULING

- Overhaul of all types of telescopic covers for machine tools
- Renew or replacement of worn-out or damaged sections
- Replacement of sliders or guide rollers
- Replacement of worn brass or PU wipers
- Cleaning and buffing to original finish
- On-site inspection of **P.E.I.** staff: If the protective cover cannot be repaired, we can offer you a tailored new one.
- **P.E.I.** staff can provide in-depth technical consultancy and recommend any changes or make suggestions for improvement customisations.
- Short delivery time.



INSPECTION OF P.E.I. STAFF FOR ON-SITE MEASUREMENTS





## DUAL BARRIER SYSTEM

The leak-tight protections of **DUAL BARRIER SYSTEM** consist of a telescopic cover with integrated bellow sections. The "double insulation" system is mostly used, that is a thermic-welded bellows underneath a telescopic cover.

In the **DUAL BARRIER SYSTEM** the telescopic cover and the thermic-welded water-repellent bellow are combined to form an absolutely leak-tight protective cover.

The bellow conveys the coolant to the conveyor or to the cooling tank, thus preventing the coolant from mixing with the hydrostatic oil.

For applications in the field of occupational safety, the **DUAL BARRIER SYSTEM** telescopic covers can also be offered in walk-on version.

## DUAL BARRIER - 2EVO (Patented)

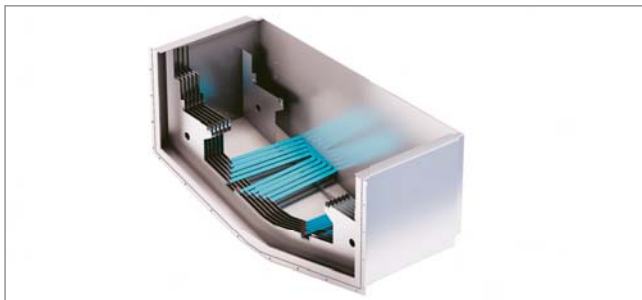
**DUAL BARRIER 2EVO** features an innovative system: each cover box of the telescopic cover contains a bellows segment. In this way, the machine manufacturer obtains a complete cover and only has to mount one guideway, onto which the bellows is guided by the telescopic cover.



[watch on](#)  YouTube

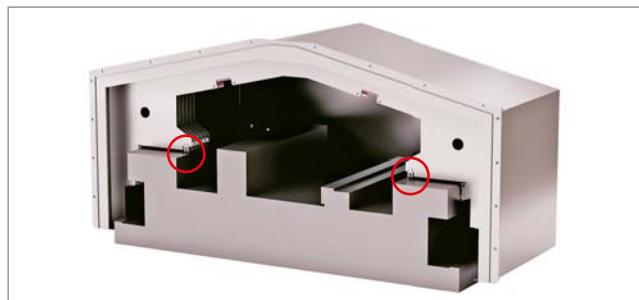


### Closed length



The closed length dimension is greater than that of a normal telescopic cover: the difference varies depending on the space conditions in the machine and the specific requirements.

### Features



**DUAL BARRIER - 2EVO** has only the telescopic cover running on the 2 slideways, the bellow sections are sustained by brackets integrated in the cover.



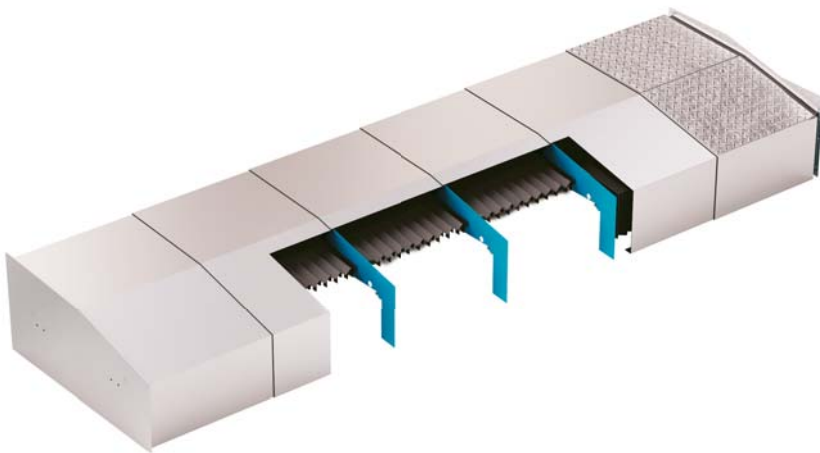
## DUAL BARRIER - 4SPC

A complete protection system consisting of a telescopic cover with integrated bellow sections.

Bellows sections are combined with the telescopic boxes, to form a single leak-tight cover system.

To access the guides of the machine, easy unscrew only the fastening flange of the telescopic cover.

To remove or install the cover, simply lift it.

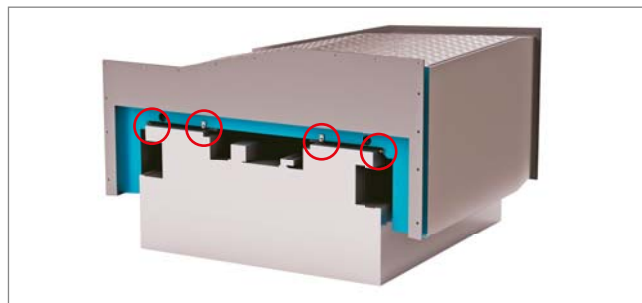


### Closed length



The closed length is made up of the sum of the closed length of the telescopic element and a part of the closed length of each bellow inserted between the telescopic elements.

### Features



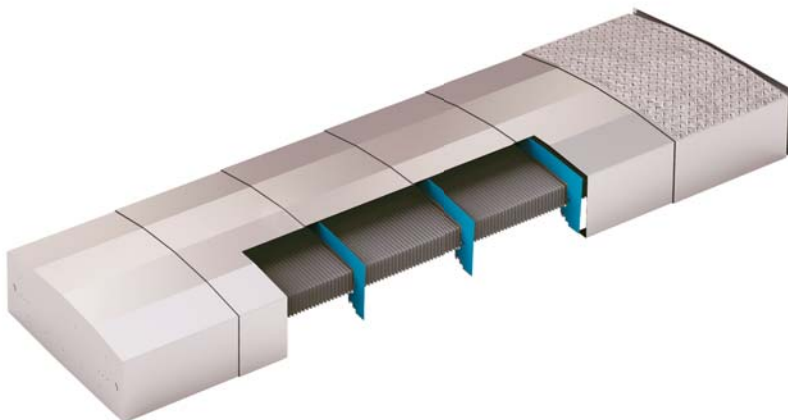
**DUAL BARRIER - 4SPC** requires 2 slideways with 2 bearings for the telescopic cover and further 2 bearings for the bellow sections.

## DUAL BARRIER - 4STD

The complete cover consists of a thermic-welded bellow and a telescopic cover.

To access the guides of the machine, remove both the cover and the bellow mounting flanges.

To remove or install the cover, both the bellow and the telescopic cover must be lifted in two steps.



### Closed length



Same closed length dimension as the telescopic cover.

### Features



**DUAL BARRIER - 4STD** requires 2 slideways for the support of the telescopic cover and further 2 slideways for the bellow.

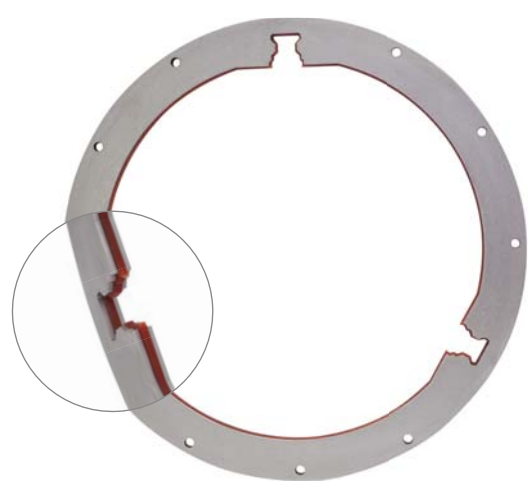
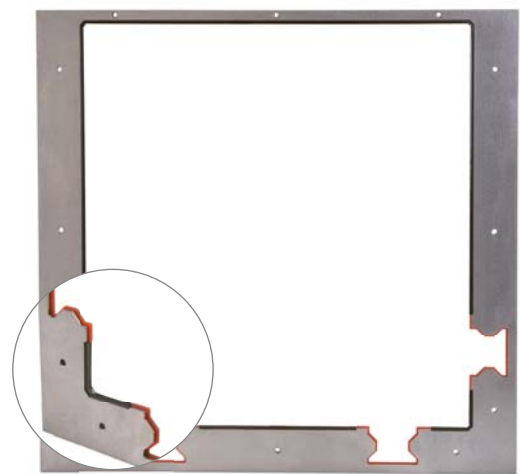
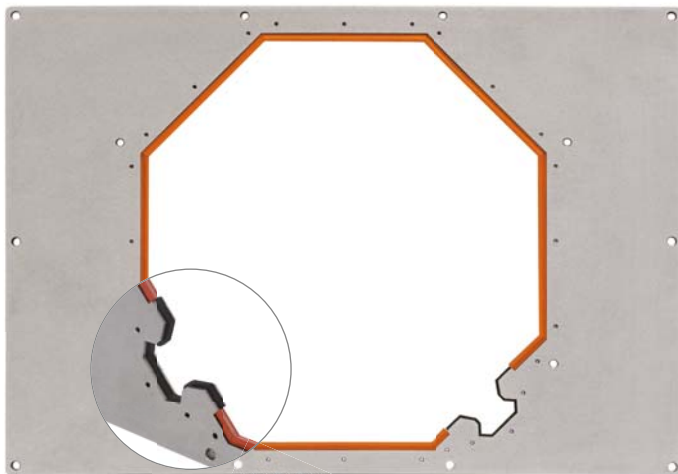


### WIPERS

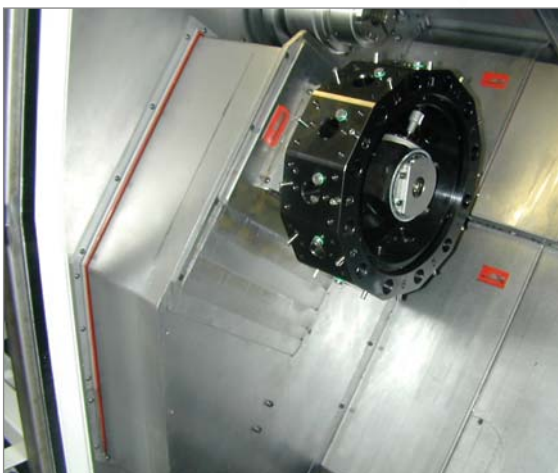
Wipers keep machine tool guides clean of chips, metal dust and abrasive substances.

### PROFILED WIPERS

They are suitable for work environments with a heavy concentration of sharp shavings: their polyurethane profile resists against abrasion and can be easily replaced. Any shapes and dimensions available according to customer drawings. There are no equipment costs, so they can be produced in small series. For fastening them, we recommend counter-sunk hex screws.



### APPLICATION EXAMPLE





The profiled wipers can be manufactured by using traditional technology or innovative additive technology.

### 3D WIPER

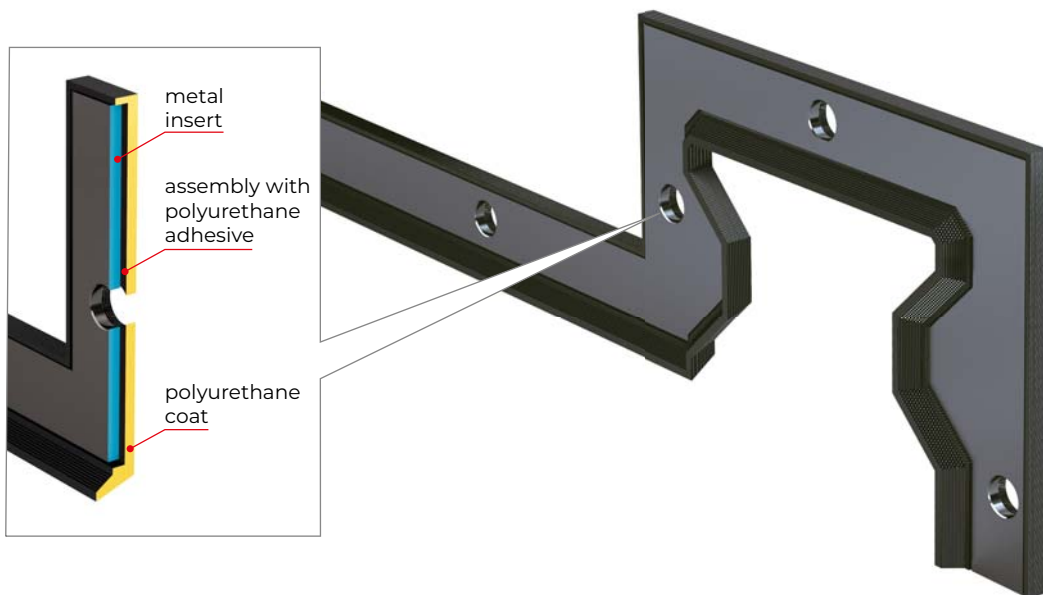
The new line of P.E.I. wipers with polyurethane coat produced by additive technology.

P.E.I. has developed its own additive, unique on the market technology and built its own printers to produce optimally functioning wipers that can match the properties of pressed wipers.

The P.E.I. technology can produce wipers up to 1,000 x 1,000 mm in a single piece, with no interruptions in the polyurethane element.

- Flexible dimensions
- No tools have to be made
- No minimum or maximum production batch sizes.

A detailed 2D drawing or a 3D model of the guideway in any CAD format (including bore coordinates for the connection) is sufficient for the design of conventional wipers as well as wipers manufactured by additive technology. Pre-loading is determined by our engineering department based on the shape of the wiper.



#### APPLICATION EXAMPLES



## BIPLASTIC WIPERS

P.E.I. biplastic wipers are modelled on the client drawing. Strip-lengths are available in prompt delivery.



➔ Also available via our online-shop: <https://shop.pei.it/en/3-wipers>

<p><b>RA 01 BP</b></p> <p>Profile: <b>Polyurethane</b> Length: <b>2000 mm.</b> <b>Rigid polymer insert</b></p>	<p><b>RA 03 BP</b></p> <p>Profile: <b>Polyurethane</b> Length: <b>2000 mm.</b> <b>Rigid polymer insert</b></p>	<p><b>RA 05 BP</b></p> <p>Profile: <b>Polyurethane</b> Length: <b>2000 mm.</b> <b>Steel insert 12x3</b></p>	<p><b>FB40FLEX</b></p> <p>Profile: <b>Polyurethane</b> Length: <b>2000 mm.</b> <b>Steel insert 18x3</b></p>
------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------

## FB WIPERS

FB wipers are modelled on the client drawing or supplied in linear strips.

<p><b>FB 14</b></p> <p>Profile: <b>Polyurethane *</b> Length: <b>530 mm.</b> <b>Stainless steel reinforcement</b></p>	<p><b>FB 18</b></p> <p>Profile: <b>Polyurethane *</b> Length: <b>3000 mm.</b> <b>Stainless steel reinforcement</b></p>	<p><b>FB 18L</b></p> <p>Profile: <b>Polyurethane *</b> Length: <b>1000 mm.</b> <b>Stainless steel reinforcement</b> <b>Shielding in stainless steel 301</b></p>
<p><b>FB 25</b></p> <p>Profile: <b>Polyurethane *</b> Length: <b>3000 mm.</b> <b>Stainless steel reinforcement</b></p>	<p><b>FB 25L</b></p> <p>Profile: <b>Polyurethane *</b> Length: <b>1000 mm.</b> <b>Stainless steel reinforcement</b> <b>Shielding in stainless steel 301</b></p>	<p><b>FB 27</b></p> <p>Profile: <b>NBR *</b> Length: <b>500 mm.</b> <b>Galvanized steel reinforcement</b> <b>Shielding in stainless steel 301</b></p>

\* Prompt delivery

Dimensions in mm.

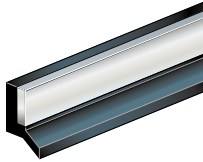
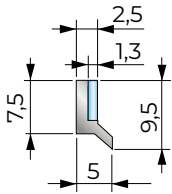




## RA WIPERS

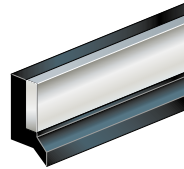
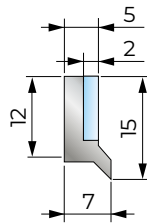
RA wipers are modelled on the client drawing or supplied in linear strips.

RA 01



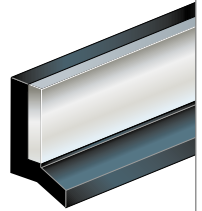
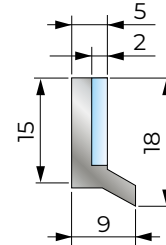
Profile: **NBR \*** or **Viton® \***  
Length: **560 mm.**  
Steel insert

RA 02



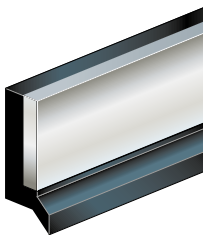
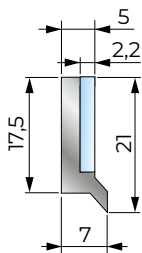
Profile: **NBR \*** or **Viton® \***  
Length: **560 mm.**  
Steel insert

RA 03



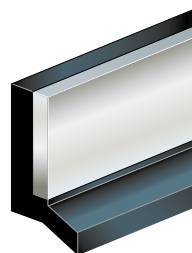
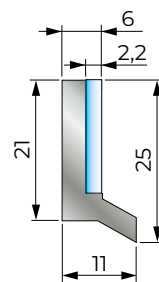
Profile: **NBR \***  
Length: **560 mm.**  
Steel insert

RA 04



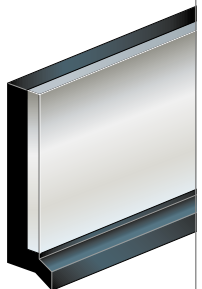
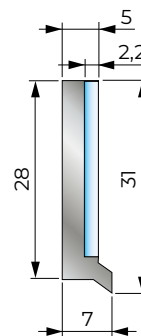
Profile: **NBR \***  
Length: **560 mm.**  
Steel insert

RA 05



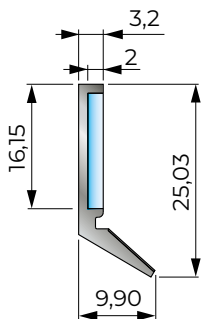
Profile: **NBR \*** or **Viton® \***  
Length: **560 mm.**  
Steel insert

RA 06



Profile: **NBR \***  
Length: **560 mm.**  
Steel insert

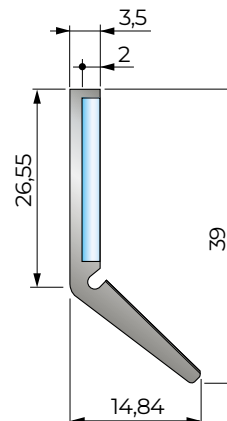
RA 25L



Profile: **NBR \***  
Length: **800 mm.**  
Steel insert

Thin metal protective plate in stainless steel 301

RA 39L



Profile: **NBR \***  
Length: **800 mm.**  
Steel insert

Thin metal protective plate in stainless steel 301

\* Prompt delivery

## WIPERS FOR TELESCOPIC COVERS

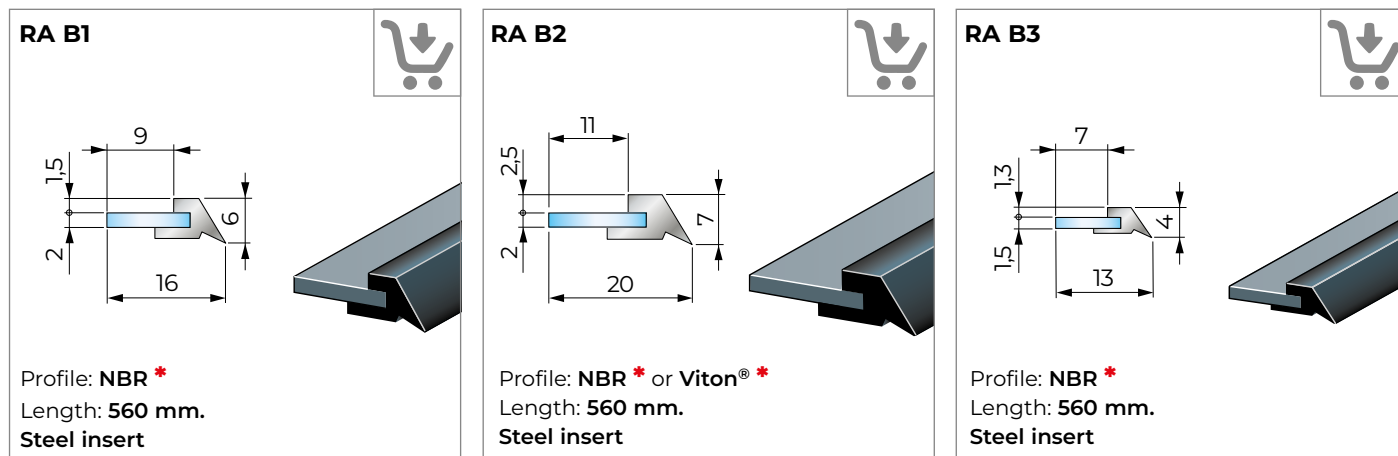
These types of wipers are normally applied to telescopic covers:

Codes **RA B1**, **RA B2** and **RA B3** consists of a metal insert to which an NBR profile has been vulcanized.

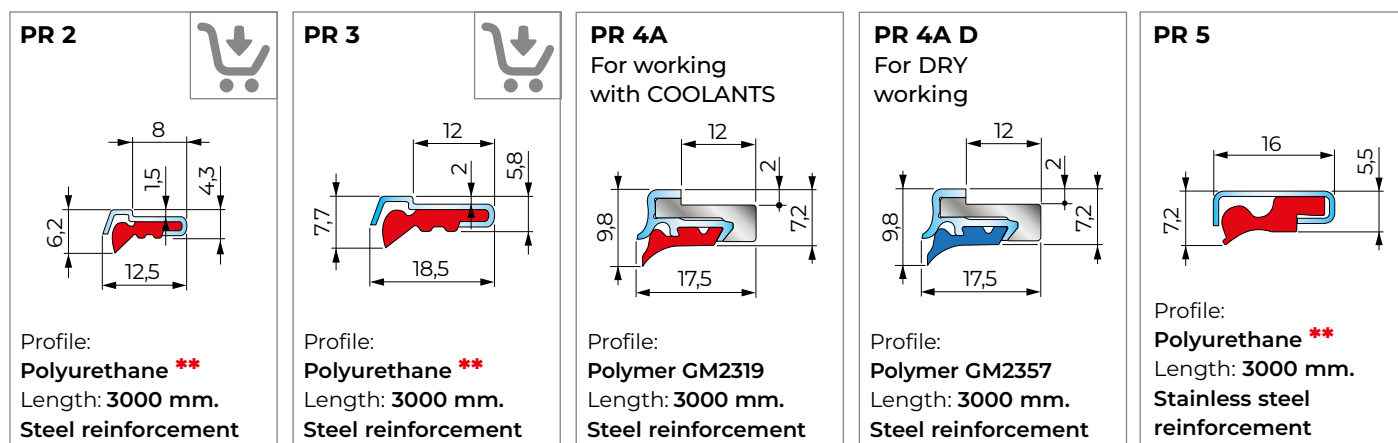
Codes **PR 2** and **PR 3** has steel reinforcement and polyurethane profile.

Codes **PR 4A** and **PR 4A D** can be instantly replaced on the telescopic cover, without disassembling the cover itself. They have a metal reinforcement with a seal designed to clean the cover.

Code **PR 5** is suitable for large-sized telescopic covers. No protrusion from box results in better protection from chips and an aesthetically pleasing appearance of the telescopic cover.



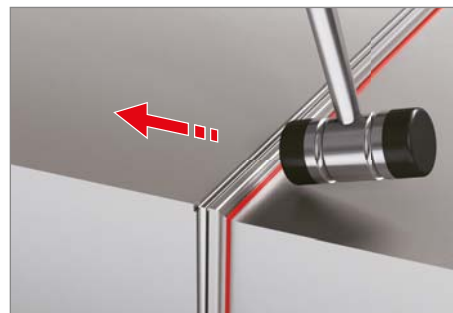
\* Prompt delivery



\*\* Prompt delivery in strips

Dimensions in mm.

### PR 4A, the instantly replaceable and easily dismantable wiper (Patented)



It is made of 3 independent elements: a solid metal profile on the telescopic cover box, then a removable metal profile and finally a seal designed to clean the cover.

The seal offers various technical features depending on the working conditions to which it is subject.

Telescopic covers equipped with **WIPER PR4A** allow the user to independently replace the wiper profile.



## CHARACTERISTICS OF MATERIALS

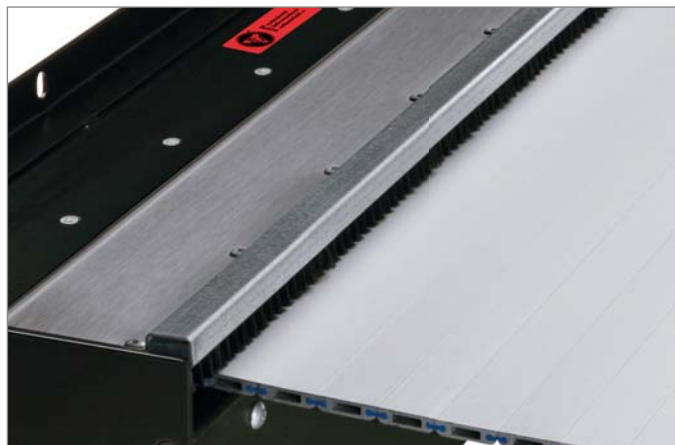
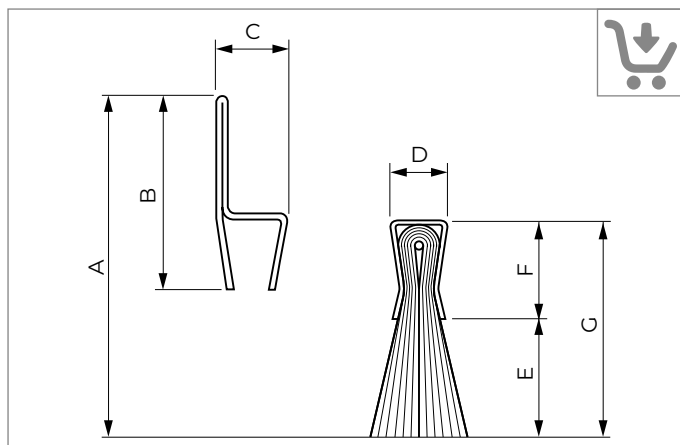
MATERIALS	HEAT RESISTANCE		SYNTHETIC OIL RESISTANCE		MINERAL OIL RESISTANCE		VEGETABLE OIL RESISTANCE		WEAR RESISTANCE	
	Momentary contact °C	Continuous °C	Excellent	Good	Excellent	Good	Excellent	Good	Excellent	Good
NBR	250	-20 ÷ +100		•		•		•		•
Polyurethane	200	-30 ÷ +90	•		•			•	•	
VITON®	1000	-20 ÷ +280	•		•			•		•
Polymeric GM2319 (red) for working with coolants	200	-30 ÷ +90	•		•			•	•	
Polymeric GM2357 (blue) for dry working	280	-30 ÷ +120	•		•			•	•	

## LINEAR BRUSHES WITH SUPPORT FRAME



➔ Also available via our online-shop: <https://shop.pei.it/en/4-brushes>

- Safe sealing against dust from base
- Prevention of system malfunctions due to overheating
- Long service life
- Special dimension and design possible
- Special shapes may be created
- The brush is easy to replace
- The support frame is made of galvanized steel
- Prompt delivery in strips.



Code	A	B	C	D	E	F	G	Length	Bristle
<b>SN1</b>	32	21	17	14	9	9	18	1000	Nylon Ø 0,15
<b>SN2</b>	46	20	9	6	26	5	31	2000	Nylon Ø 0,15
<b>SN3</b>	72	32	15	10	40	10	50	2000	Nylon Ø 0,25
<b>SN4</b>	92	32	15	10	60	10	70	2000	Nylon Ø 0,50
<b>SN5</b>	112	32	15	10	80	10	90	2000	Nylon Ø 0,50
<b>SN6</b>	132	32	15	10	100	10	110	2000	Nylon Ø 0,50
<b>S01</b>	44	20	9	6	24	5	29	2000	Brass Ø 0,15
<b>S02</b>	74	20	9	6	54	5	59	2000	Brass Ø 0,15
<b>S03</b>	104	20	9	6	84	5	89	2000	Brass Ø 0,15



### ROLL-UP COVERS WITH OR WITHOUT CANISTER

**P.E.I.** roll-up covers are normally equipped with our **patented system** of multiple springs.

This offers countless advantages:

- Extremely high speeds
- Resistance to high and low temperatures
- Up to 1,000,000 movements guaranteed
- Compact size
- Easy installation
- Constant tensioning.



### CERAMIX BAND

**Aerospace technology in machine tools: a potent and cost-effective innovation**

Features of **CERAMIX** band:

- Band material covered by a high ceramic polymer coating
- It is highly resistant against the impact of hot shavings during dry-working
- It has an excellent abrasion resistance and shear strength and is recommended for the use of mineral oils
- CERAMIX band material has a thickness of 1,8 mm and weights 2 kg/sqm
- It is antistatic.

This kind of band can be used on all **P.E.I.** roll-up covers with mechanisms from 70 mm tube diameter.



### CERAMIX LIGHT BAND

**Identical resistance at half the weight**

**CERAMIX LIGHT** offers all the characteristics of CERAMIX, but at a thickness of 0,9 mm and 1 kg weight per sqm.

- Antistatic
- Suitable for roll-up covers with mechanisms from 20 mm tube diameter.

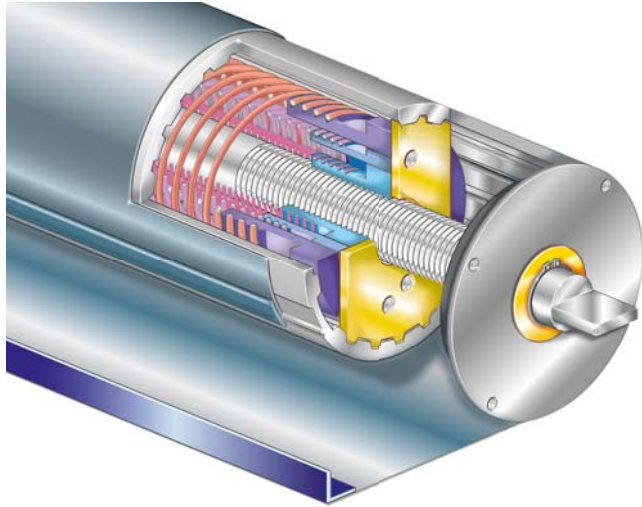
[watch on](#)  **YouTube**



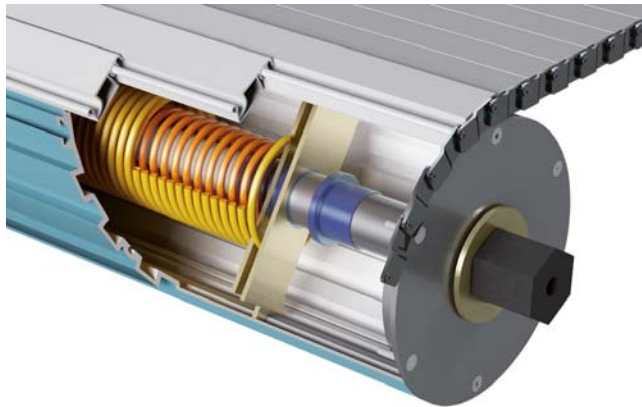


## SURE-SPRING® MECHANISM (Patented)

The **P.E.I.** patented design known as **SURE-SPRING®** represents the most advanced level of technical innovation in the field of roll-up covers.



- Suitable for high speed operation
- The multiple springs remain coaxial
- The springs never intersect
- Reduced overall diameters
- Advancement speeds of up to 150 m/min
- Acceleration of up to 2 g
- 2,000,000 Movements guaranteed
- Secure attachment of the band to the tube, because no adhesive products are used
- Quick and easy maintenance
- Also suitable for use in work environments where strongly aggressive chemicals are applied.

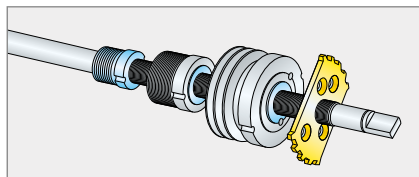


## SURE-SPRING® MECHANISM - HP VERSION

The **SURE-SPRING® HP** winding mechanism is the answer to the elevated power required to wind up large size protective covers.

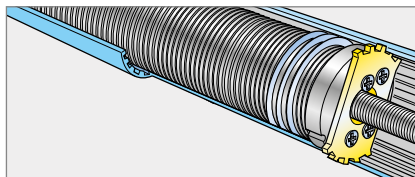
An optimal dimensioning of the springs guarantees the tensile force required for moving "J"-series apron covers.

### Transmission



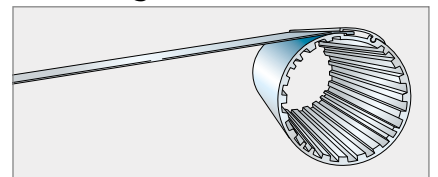
The rotary movement of the tube in relation to the fixed central shaft is transmitted by a sliding spline. This system compensates for the elongation of the multiple springs by moving the spring mounting point axially along a threaded shaft.

### Innovative features



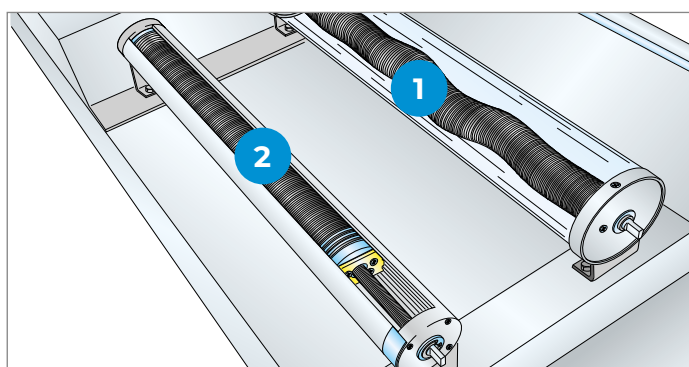
This new system allows the multiple springs to work according to an ideal geometry, keeping their coils properly spaced.

### Fastening



This is the most reliable system for insuring a secure mechanical fastening between the band to the tube.

## SURE-SPRING® Operating diagram



In **Mechanism 1 (traditional system)** the springs are rigidly attached to the fixed caps at the ends of the shaft.

In this system the springs helically twist and snake while winding or unwinding, causing obvious problems of friction and wear between the coils as well as between the coils and the central shaft.

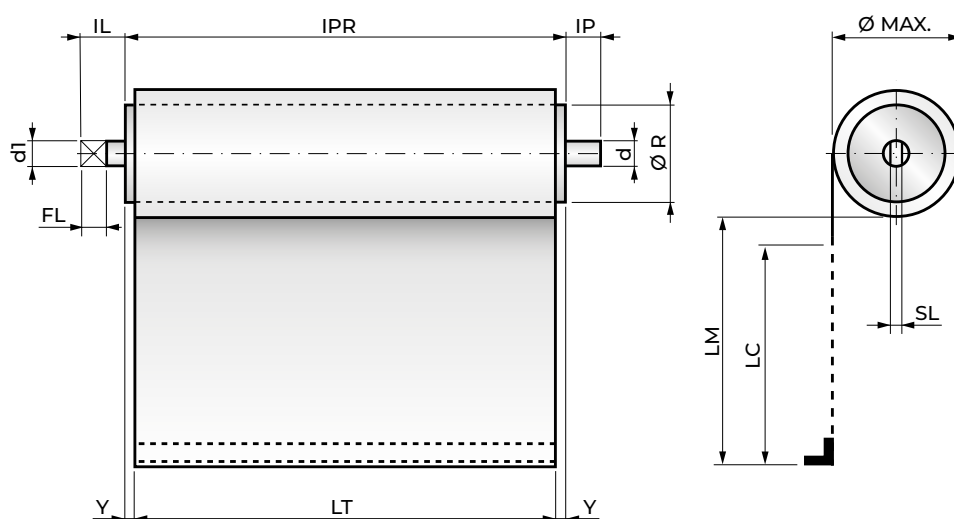
In **Mechanism 2 (SURE-SPRING® system)** the springs are attached to a special moving cap, which slides lengthwise while winding and unwinding, keeping the spring coils packed and concentric at all times.

This spring configuration avoids most of the wear mentioned above, allowing better performance and a much longer operating life-span for the spring mechanism.





## ROLL-UP COVERS WITHOUT CANISTER



- Ø Max** = Wound-up maximum diameter  
**SL** = Tab thickness  
**LC** = Stroke length  
**LM** = Max length  
**LT** = Band width  
**Ø R** = Winding roller diameter  
**IPR** = Overall width

The IPR overall dimension of the roll-up cover depends on the Y dimension, which is calculated by our engineers. Contact our engineering department for any questions you may have.

### SHAFT SIZES

#### Standard Roll-up Covers

Ø ROLLER	dI	IL	FL	SL	d	IP
30	6	8	8	2.6	7	8
40-50-60-70-80-90-100-120	10	15	12	4	10	10

P.E.I. manufactures shafts according to customer's drawing.

#### SURE-SPRING® Roll-up Covers

Ø ROLLER	dI	IL	FL	SL	d	IP
39-52-71	10	15	12	4	10	10

LM		2 · Y =
from	to	
0	400	4
401	600	5
601	800	6
801	1200	8
1201	1600	10
1601	2400	14
2401	3000	18
3001	3850	22
3851	4700	26
4701	5550	32

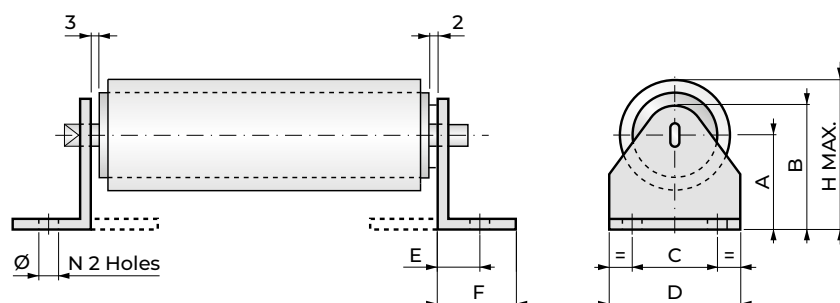
### Formula for calculating the OVERALL WIDTH

$$IPR = LT + 2Y$$

Example:

LM = 1000      LT = 500      2Y = 8  
OVERALL WIDTH = 508

### DIMENSIONS FOR STANDARD SUPPORTS



Code	A	B	C	D	E	F	Ø	Hmax	Material
33	33	45	26	40	11	18	6,5	59	galvanized Fe 15/10
50	50	62	26	40	11	18	6,5	93	galvanized Fe 15/10
60	60	76	36	50	15	22	6,5	112	galvanized Fe 20/10
80	80	96	42	60	17	26	6,5	151	galvanized Fe 25/10
119	119	136	54	106	37	70	10	225	galvanized Fe 40/10

Dimensions in mm.

### Formula for calculating max. Ø

$$\text{Ø MAX.} = 2 \cdot \sqrt{\frac{L \cdot s \cdot 1,20}{\pi} + r^2}$$

L = MAX. LENGTH TO WIND  
 s = BAND THICKNESS\*  
 r = ROLLER Ø/2

(\* You find the [materials list](#) on our website [www.pei.it](http://www.pei.it))

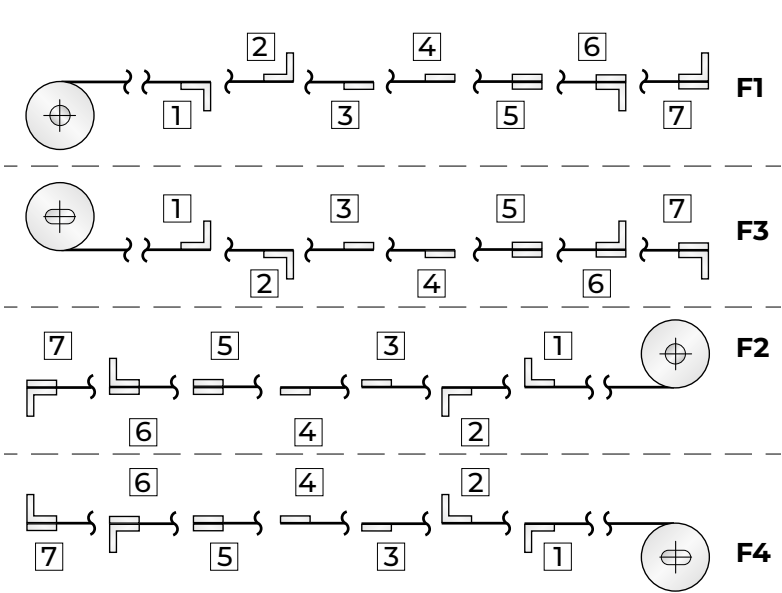


Installation

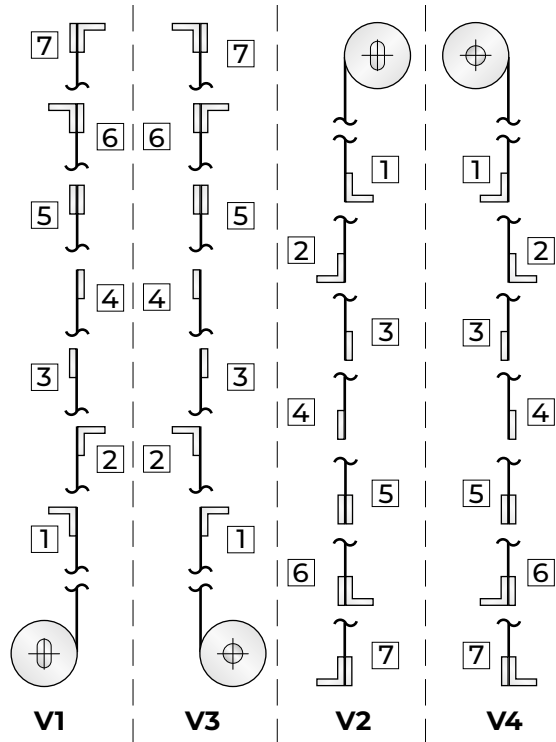
This diagram is valid for all Roll-up Covers without canister, and shows:

- Terminal type
- Band output direction
- Terminal position on the band
- View of shaft/tab

Horizontal and frontal work positions



Vertical work positions



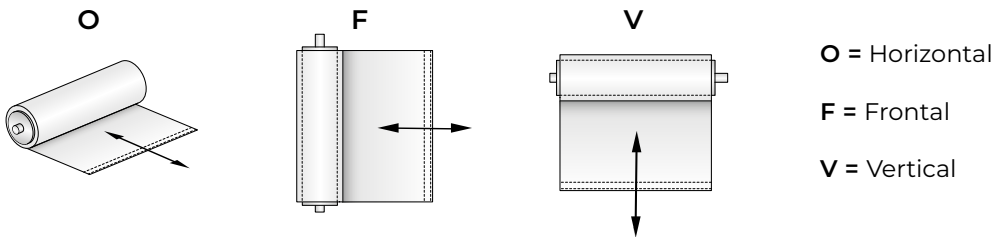
Fastening terminals

The terminals consist of strips and angles with holes according to the customer's requirements.  
Terminal materials: Aluminum, Steel.

B x H	
14x2	25x3
14x3	25x5.5
15x2	28x2
15x3	28x3
18x2	30x2
20x2	30x3
20x3	40x3
25x2	50x8

L x L x S	
15x15x2	
15x15x3	
20x20x2	
20x20x3	
25x25x2	
25x25x3	
30x20x5.5	
30x30x2	
30x30x3	

Work positions

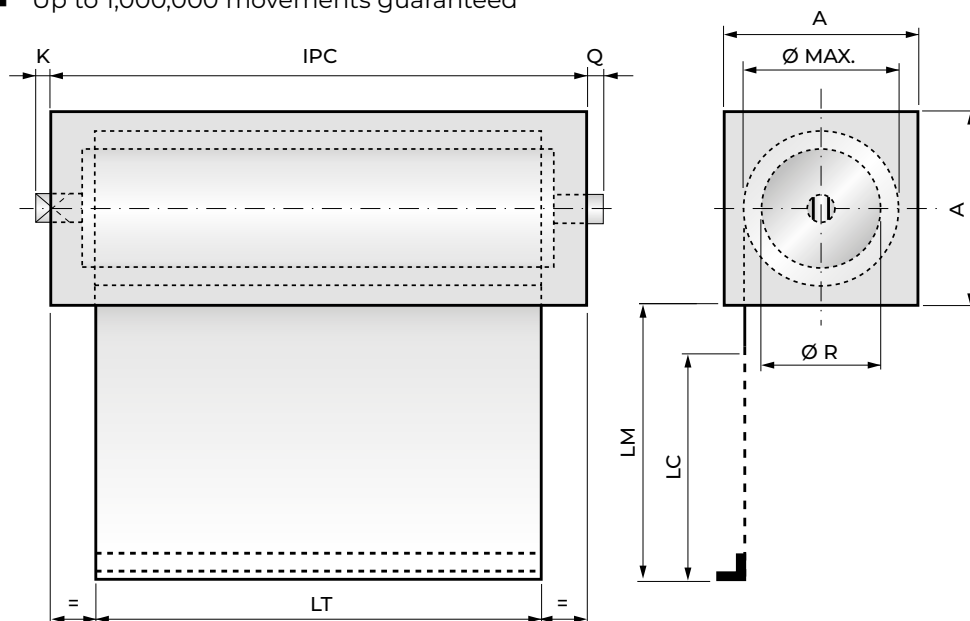




## ROLL-UP COVERS WITH CANISTER

Enclosing the roller into a canister offers many advantages:

- Attractive appearance
- Wide variety of fastening systems
- Up to 1,000,000 movements guaranteed



Canisters A x A
40 x 40
50 x 50
60 x 60
70 x 70
80 x 80
90 x 90
100 x 100
110 x 110
120 x 120
130 x 130
140 x 140
150 x 150

- A** = Canister dimensions  
**Ø Max** = Wound-up maximum diameter  
**LC** = Stroke length  
**LM** = Max length  
**LT** = Band width  
**Ø R** = Winding roller diameter  
**IPC** = Overall width with canister

The IPC overall dimension of the roll-up cover depends on the K and Q dimensions, which are calculated by our engineers. Contact our engineering department for any questions you may have.

Formula for calculating the minimum canister size = DC

$$DC = \text{Ø MAX} + 8$$

Canister material	K	Q	Z*
Steel	10	7	13
Stainless steel	10	7	13

Z\* = Fixed coefficient

Formula for calculating the OVERALL WIDTH with Steel and Stainless Steel canister

$$IPC = LT + Z + 2Y* + \left( \frac{LM}{100} \right)$$

Example with Steel canister:

LT= 500      2Y= 8      LM =1000

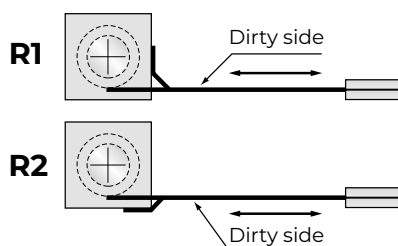
LM/100 =10      Z= 13

IPC = 531

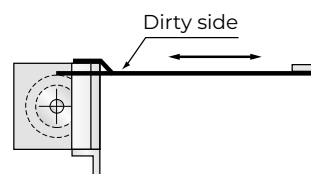
(\* see 2Y table on page 22)

### Wiper

This diagram shows the 2 ways to install the wiper to the canister:



### Example for assembling code



Working position	<b>F1</b>
Terminal fastening	<b>2</b>
Canister fastening	<b>T5</b>
Wiper position	<b>R2</b>

Dimensions in mm.

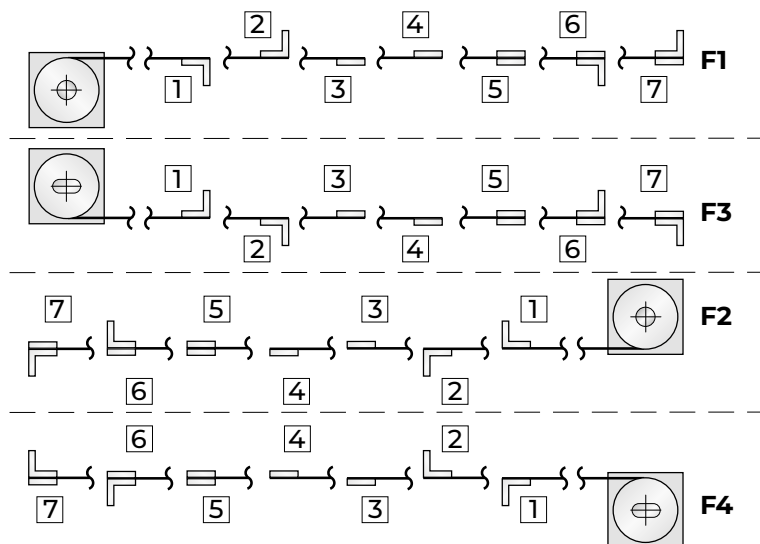


## Installation

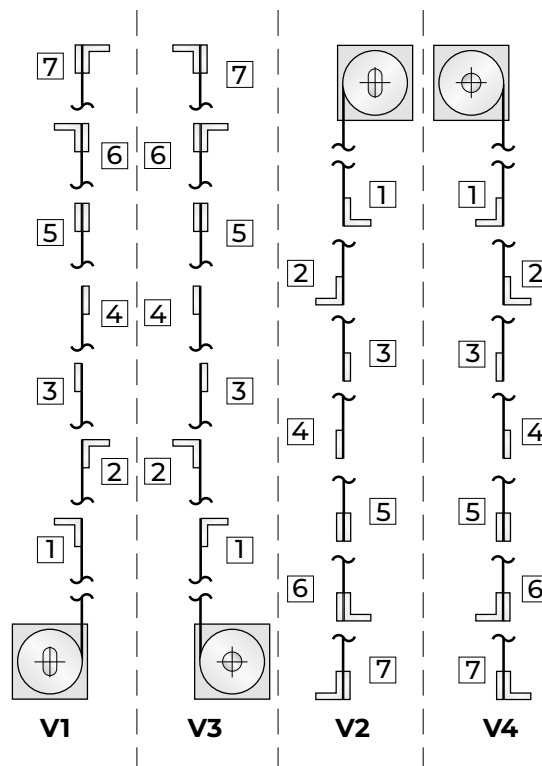
This diagram is valid for all Roll-up Covers with canister, and shows:

- Terminal type
- Band output direction
- Terminal position on the band
- View of shaft/tab

### Horizontal and frontal work positions



### Vertical work positions



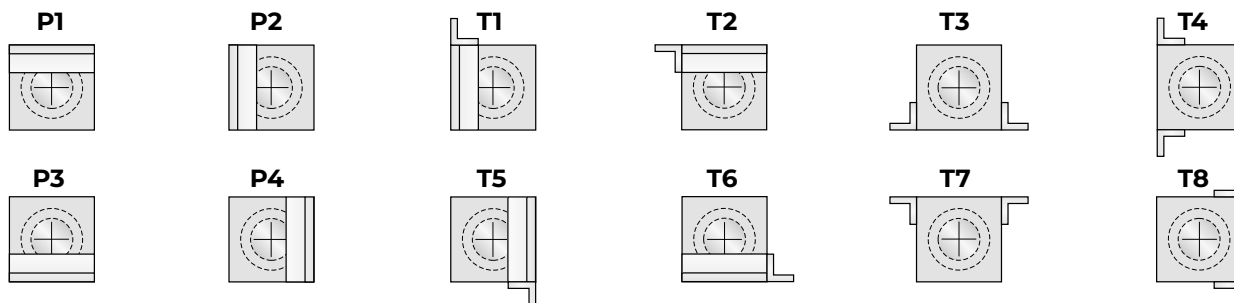
### Fastening terminals

The terminals consist of strips and angles with holes according to the customer's requirements. Terminal materials: Aluminum, Steel.

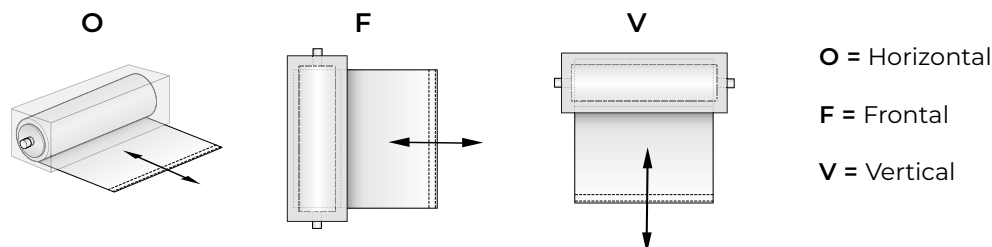
B x H		L x L x S
B	H	
14x2	25x3	15x15x2
14x3	25x5.5	15x15x3
15x2	28x2	20x20x2
15x3	28x3	20x20x3
18x2	30x2	25x25x2
20x2	30x3	25x25x3
20x3	40x3	30x20x5.5
25x2	50x8	30x30x2
		30x30x3

### Standard canister mounting systems

To select the most suitable mounting system, we recommend placing the fastening variants shown over the selected roller variant you have chosen, without turning the former.



### Work positions

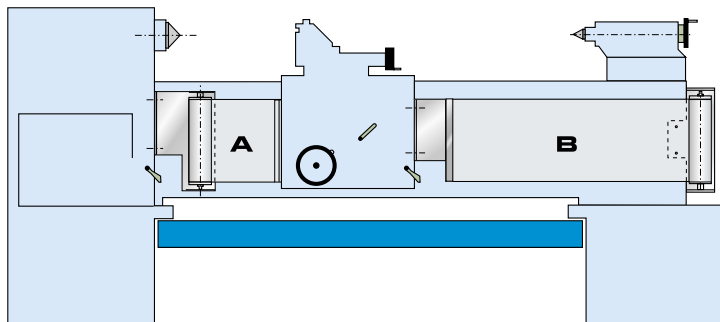


Dimensions in mm.



## ROLL-UP COVERS FOR LATHES

**P.E.I.** roll-up covers for lathes respond to the need to limit hazards caused by movement of the lead screw and/or spline shaft (Conforming to norm for Machinery Directives 2006/42/CE).

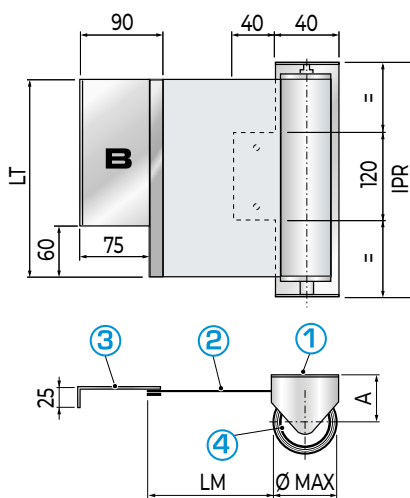
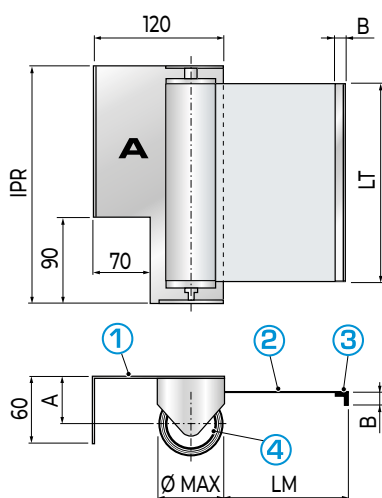


**P.E.I.** roll-up covers for lathes offer the following advantages:

- Ease of installation
- Adaptable to any type of lathe
- Compact size
- Shatter-proof in case of accidental breakage.

This is a kit designed to protect the machine operator from the lathe's lead and draw spindles and to prevent direct contact with the machine parts in motion.

The system consists of two separate roll-up covers that have to be attached to the two sides of the cross slide and to the machine base of the corresponding side.



### ① ③ BRACKETS

The ID codes:  
LT150LM1200- LT200LM1500-  
LT200LM2000- LT250LM3000  
are of galvanized steel.

The ID codes:  
LT300LM4000- LT350LM5000-  
LT400LM6000- LT450LM7000  
are black painted

### ② BAND

of coolant and oil resistant fabric

### ④ RETURN MECHANISM

with single or multiple springs

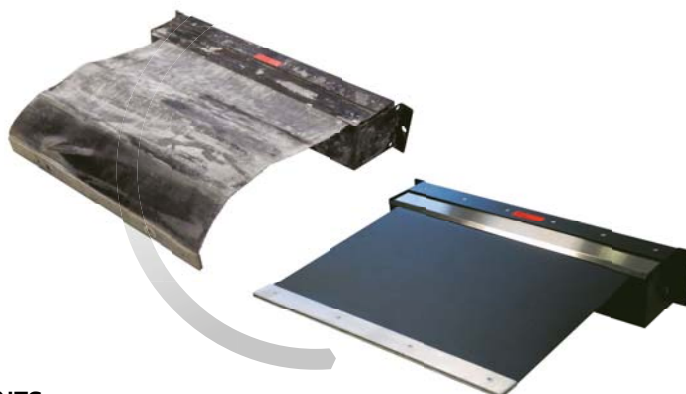
### STANDARD SIZE

Legend	Description	ID code							
		LT150LM1200	LT200LM1500	LT200LM2000	LT250LM3000	LT300LM4000	LT350LM5000	LT400LM6000	LT450LM7000
LT	Band Width	150	200	200	250	300	350	400	450
LM	Max. Length	1.200	1.500	2.000	3.000	4.000	5.000	6.000	7.000
Ø MAX	Max. Diameter	48	52	62	83	100	121	141	144
A	Distance between supports	33	50	50	50	60	80	80	80
BxB	Raw aluminium corner	15x15x3	15x15x3	15x15x3	15x15x3	15x15x3	15x15x3	20x20x3	20x20x3

**DIMENSIONS IN MM ■ OVERALL GUARD SIZE (IPR) = LT + 30 ■ PROMPT DELIVERY**

## ROLL-UP COVERS OVERHAULING

- Overhaul of all types of roll-up covers and aprons with or without canister
- Replacement of the damaged apron or band of any kind
- Replacement of the winding mechanism
- Replacement of wipers or any other component if worn-out
- Cleaning of all surfaces to original finish
- If the roll-up cover should be too damaged, we can build a new one
- Short delivery time.



### INSPECTION OF P.E.I. STAFF FOR ON-SITE MEASUREMENTS

Fill in the form available on our website to receive a tailored offer of the most suitable Roll-up Cover according to your project requirements

[click here](#)





## X-Y 4R SHIELD

The **X-Y 4R** roll-up shield is a truly effective solution to the problem that occurs in horizontal machining centers when separating the tool working area from the motor area.

It allows the spindle to move freely in all directions and uses four (Patented) SURE-SPRING® roll-up covers.

The **X-Y 4R** shields are designed for accelerations up to 1,5g and speed up to 90 m/min.

For higher applications, please contact our engineering department.



### APPLICATION EXAMPLES



[watch on](#)  YouTube



## X-Y SP-2R SHIELD

The **X-Y SP-2R** shield represents the most reliable system for protecting the work area, on the horizontal and vertical machining centers, in an environment where a large quantity of hot shavings is produced.

As shown in the picture, this system is mounted on a (patented) SHEET-POCKET™ Steel Cover on the Y-axis and two rollers on X-axis with Ceramix bands (other types of bands are available depending on requirements).

The design of this system takes into account ease of access for inspection as well as quick and easy assembly.

### APPLICATION EXAMPLES





### MOTOR ROLL-UP COVER

#### Roll-up cover for vertical application

All P.E.I. apron covers can be equipped with a motor and serve as a dividing wall between the working area and the machine operator. This allows fast changing of the tool or the workpiece.

The apron cover works in a vertical position and can be designed with or without canister. The motor can be installed on the left or the right side, vertically or horizontally.

**All "J"-series apron covers are impact tested according to ISO 16090-1:2017.**

Our design department is pleased to help you with any questions.

#### VERSION WITH CANISTER AND WITHOUT CANISTER



#### APPLICATION FOR THE TOOL CHANGE



#### EXAMPLE OF A COVER WITH CANISTER AND SLIDE BEARING





## WALL ROLL-UP COVER

### Frontal roll-up covers for machine tools

**WALL ROLL-UP COVER** is a dividing wall between the working area and the machine room in large lathes. **WALL ROLL-UP COVER** consists of special **P.E.I.** roll-up covers.

The X-axis is equipped with an aluminium "J"-series apron, the Y-axis with a telescopic SHEET-POCKET™ cover with way wipers.

All "J"-series apron covers are impact tested according to ISO 16090-1:2017.

Our design department is pleased to help you with any questions.



### APPLICATION EXAMPLE





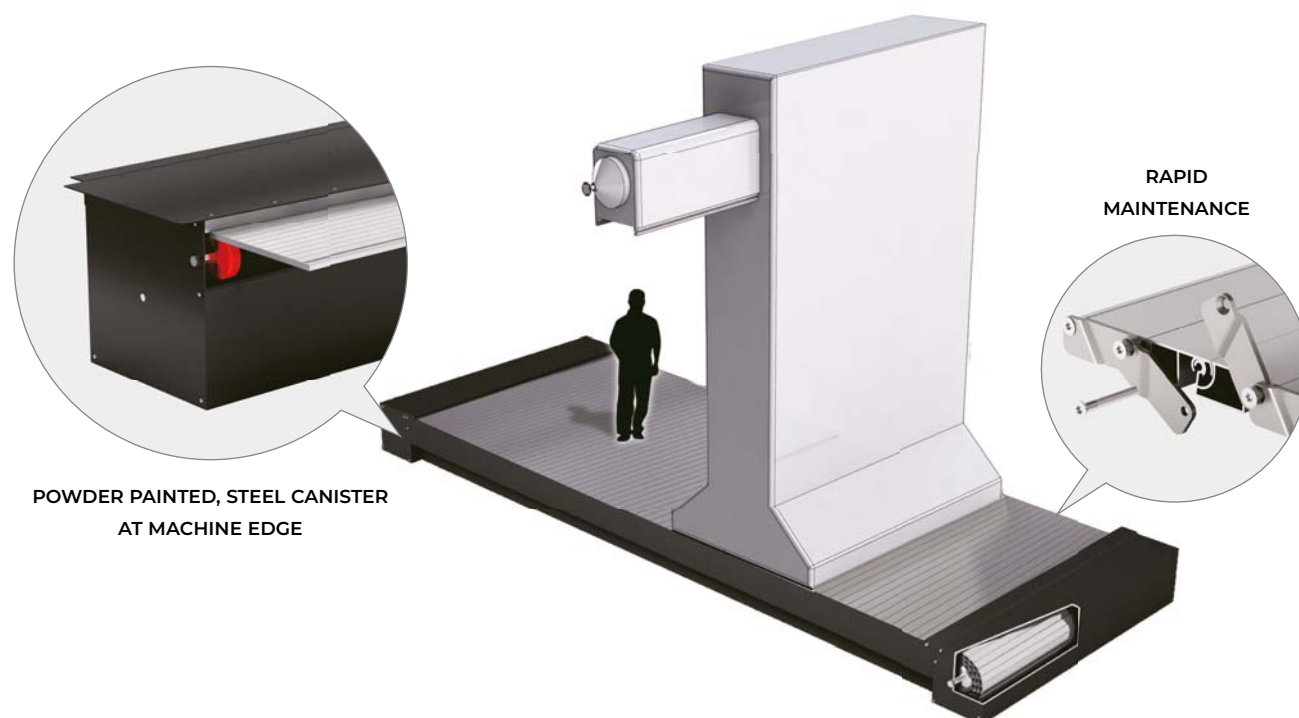
### PIT ROLL-UP COVER

#### Walk-on roll-up covers for horizontal application

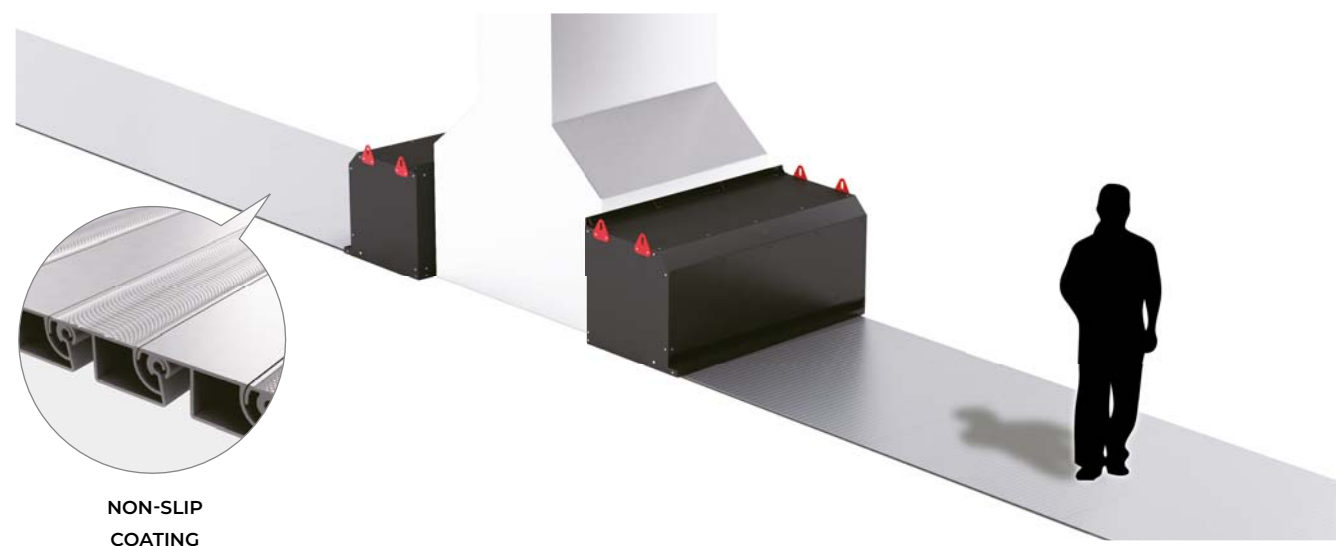
**PIT ROLL-UP COVER** closes the upper part of the pit of machines whose base (or other parts) lie below the tread. By use of this horizontally installed apron, current accident prevention regulations can be complied with. By installing the "J"-series apron cover, the machine pit / base can be walked-on at any time.

- Suitable for wet and dry machining
- Speed up to 120 m/min
- Guaranteed service life: 1.000.000 movements
- Entirely made of metal
- The side facing the flying chips has an absolutely even surface
- Cleaned by way wipers
- The mechanical winding mechanism produces no impact or vibration noise
- The lateral apron guide is designed in such a way that the chips fall into the chip conveyor
- Closed lateral steel plates produce a "chain effect"
- Modular system with single exchangeable elements
- Joint protected by an integrated labyrinth.

#### VERSION WITH CANISTERS INSTALLED AT THE BEGINNING OF THE PIT



#### VERSION WITH CANISTERS ATTACHED TO THE MACHINE COLUMN







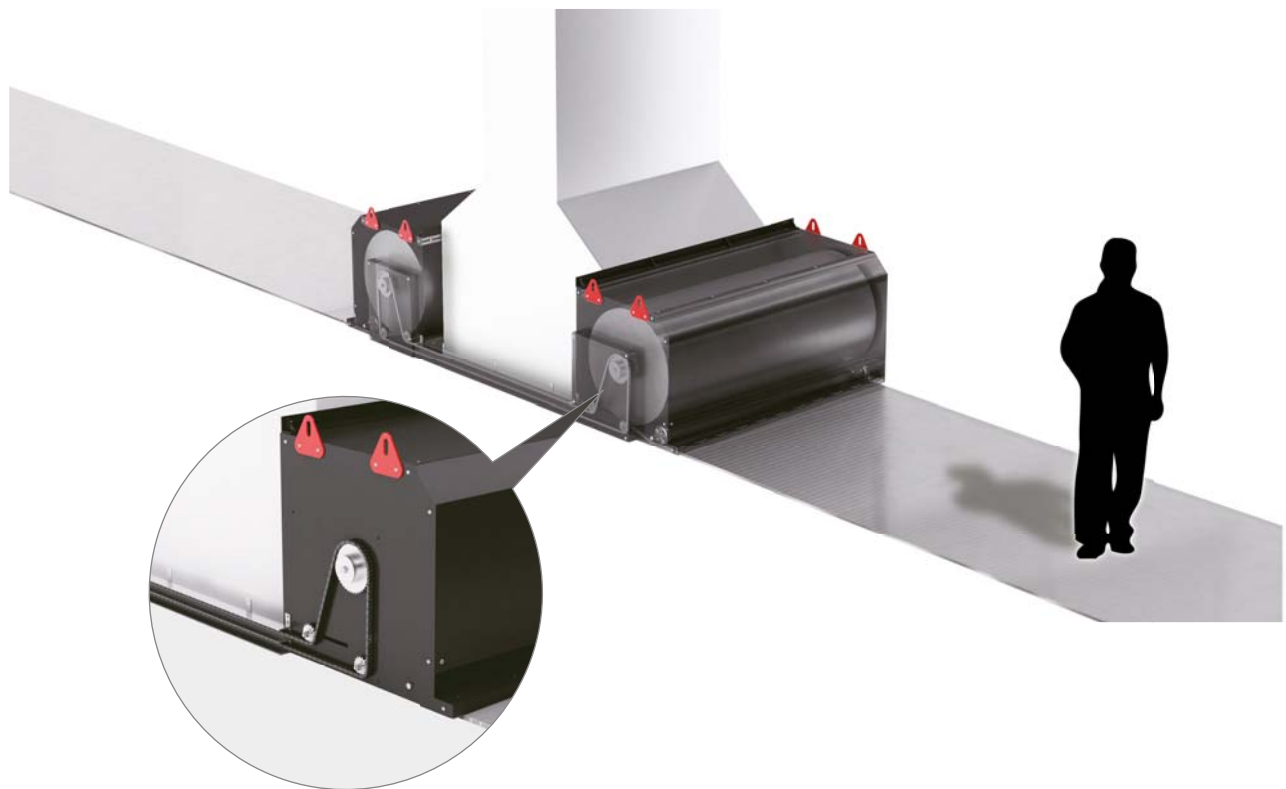
## CHAIN ROLL-UP COVER

### Walk-on roll-up covers, horizontal application for large runs

**P.E.I.** roll-up covers with chain movement (patented system).

They have the essential feature of keeping the strip perfectly fixed while the machine is running.

- The band is fixed relative to the floor, allowing people to cross the machine trench at any time even while the machine is in operation
- The winding tubes incorporated in the canisters are attached to the machine column
- A system compensating the diameter automatically allows for a concerted unwinding of the aprons
- The dimensions, layout, and speed of travel are developed for each order and can meet your exact needs
- Upon request, we can design a system using DC or pneumatic motors.



### APPLICATION EXAMPLE







### CORNER ROLL-UP COVER JM (Patented)

#### Roll-up cover for horizontal / vertical application

**CORNER ROLL-UP COVER JM** is a new **P.E.I.** application: a roll-up cover that protects more than one side, both vertically and horizontally.

It is rolled up using a **P.E.I.** winding mechanism driven by a motor with integrated side chains fixed to the apron, creating a rack effect.

This roll-up cover is provided with a new, 15.5 mm thick **JM** aluminium profile.

All "J"-series apron covers are impact tested according to ISO 16090-1:2017.



It is possible as a standard to equip the cover with **illumination** inside



Option of viewing panel in versions:

- transparent
- tinted for welding work
- tinted for laser working

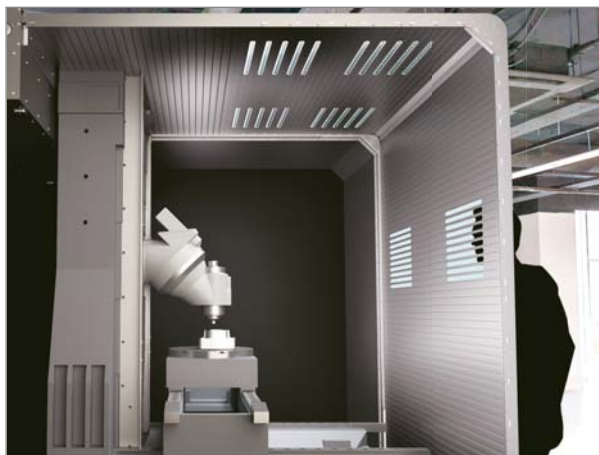
(after specification of equipment type and radiant source)



[watch on](#)  **YouTube**



#### APPLICATION EXAMPLES





## EXTRUDED APRONS

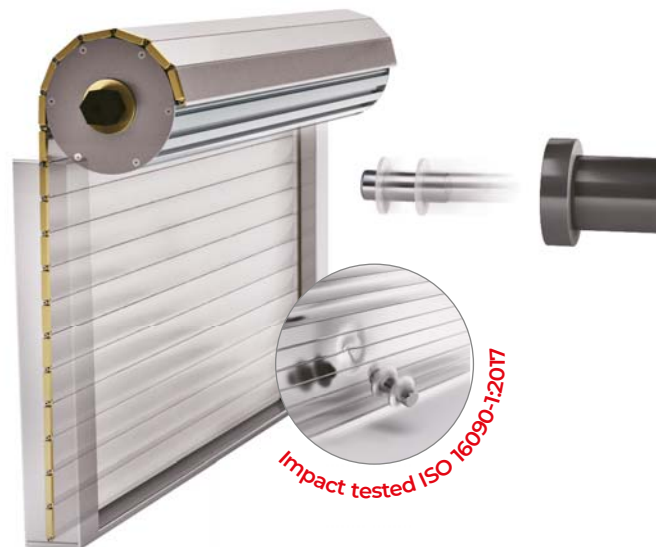
Extruded aprons are particularly robust: they are used where maximum protection of the guides from hot chips is required.

Their functioning may be "drop-down" or by **P.E.I.** roll-up mechanism.

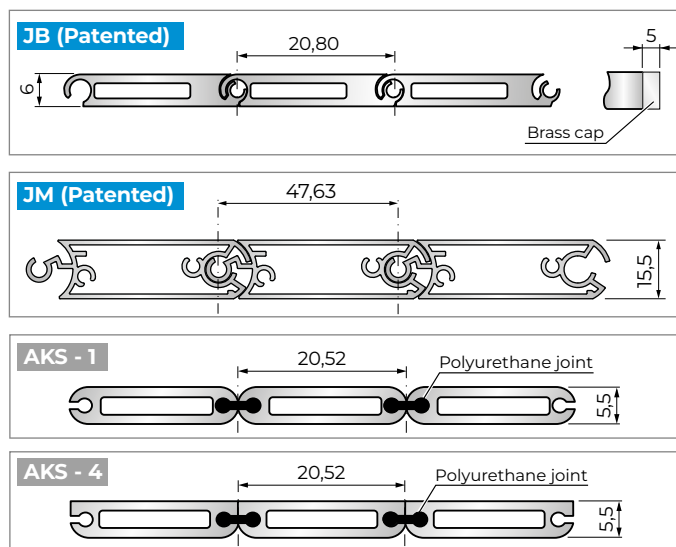
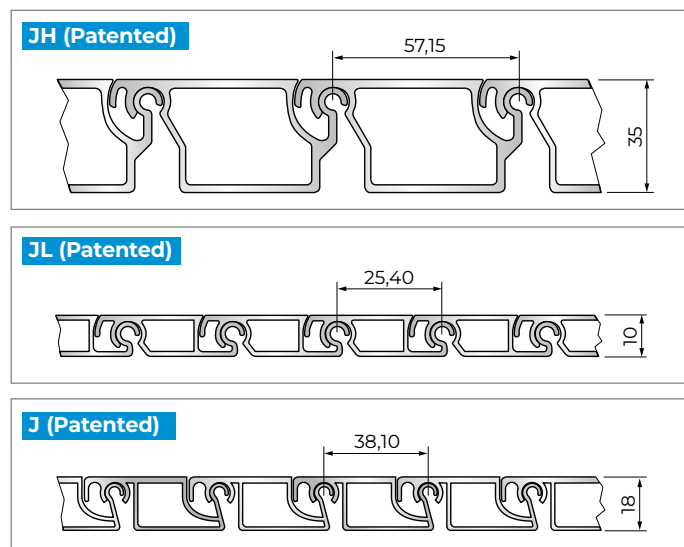
**MATERIAL:** Anodized silver aluminum

**MAX. FEASIBLE WIDTH:** 6000 mm.

All "J"-series apron covers are impact tested according to ISO 16090-1:2017.



### AVAILABLE PROFILES SHAPES AND OVERALL DIMENSIONS



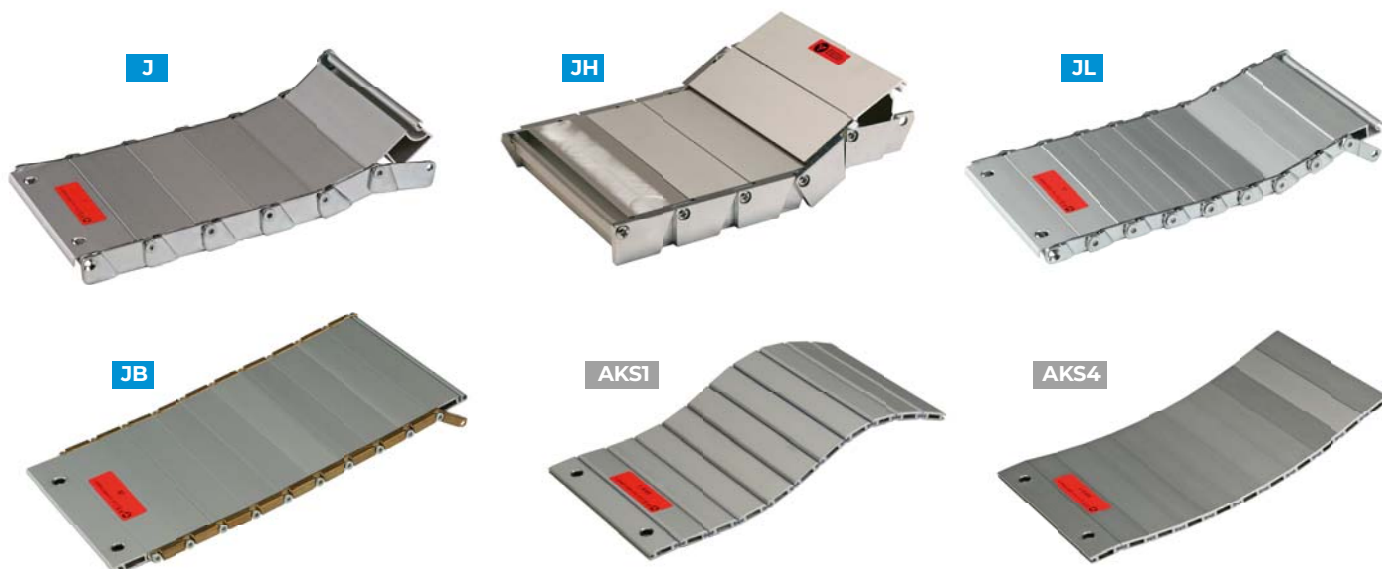
Dimensions in mm.

CODE	Minimum winding diameter		Cover weight	Cover cleaning	Bending strength, support distance*		Max. charge permitted kg each wheel Ø100	Impact tested ISO 16090-1:2017	Anti-slip treatment	Traction strength kN/m
	With upper roller	With lower roller			(90 Kg)	(150 Kg)				
	mm	mm			mm	mm				
JH	200	200	25,0	Wiper	4500	4000	75	230	Upon request	2
JL	100	100	12,2	Wiper	1200	1000	50	90	Upon request	2
J	150	150	12,5	Wiper	2200	1750	50	150	Upon request	2
JB	/	60	9,5	Wiper	750	600	50	150	Not available	2
JM	/	150	14,8	Wiper	2250	1850	50	120	Not available	2
AKS1	50	50	9,0	Brush	750	600	/	/	Not available	1,2
AKS4	/	50	9,0	Wiper	750	600	10	/	Not available	1,2

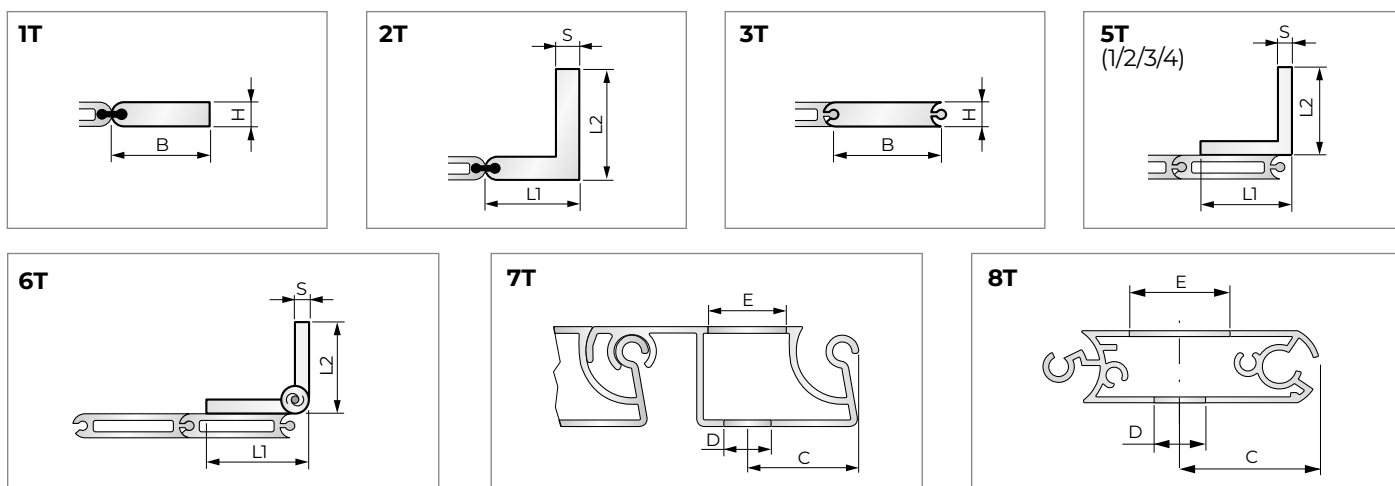
\* Max. bending 1% of the support distance



## SOME AVAILABLE PROFILES



## STANDARD END MOUNT PROFILES



**NOTE:** We can provide end mountings to match customer drawings upon request.

## END MOUNT DIMENSIONS

End mount code	L1xL2xS	BxH	C	D	E	Material	Description	Cover code
1T		25x5,5				Al	Flat	AKS-1 / AKS-4
2T	20x30x5,5					Al	Corner	AKS-1 / AKS-4
3T		20x6				Al	Cover	JB
5T/1	15x15x3					Al-Stl	Corner	JB
5T/2	20x20x3					Al-Stl	Corner	JB
5T/3	30x30x3					Al-Stl	Corner	J / JB / JL / JM
5T/4	40x40x5					Ac	Corner	J / JH / JM
6T	30x30x2					Ac	Stl hinge	AKS-1 / AKS-4 J / JL / JH / JB / JM
7T	Drilling upon request only		18	ø 5,50	ø 10	Al	Cover	JL
			20	ø 8,50	ø 14			J
			35	ø 13	ø 20			JH
8T			30	11	22	Al-Stl	Corner	JM

Al = Aluminium Stl = Steel

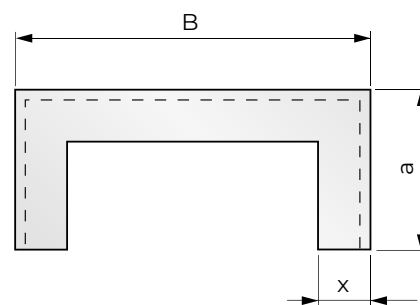
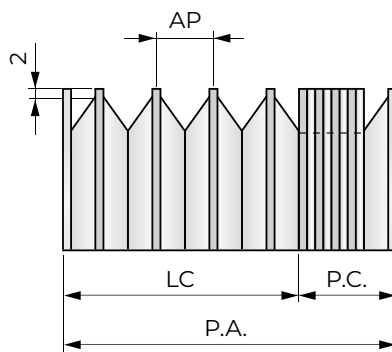
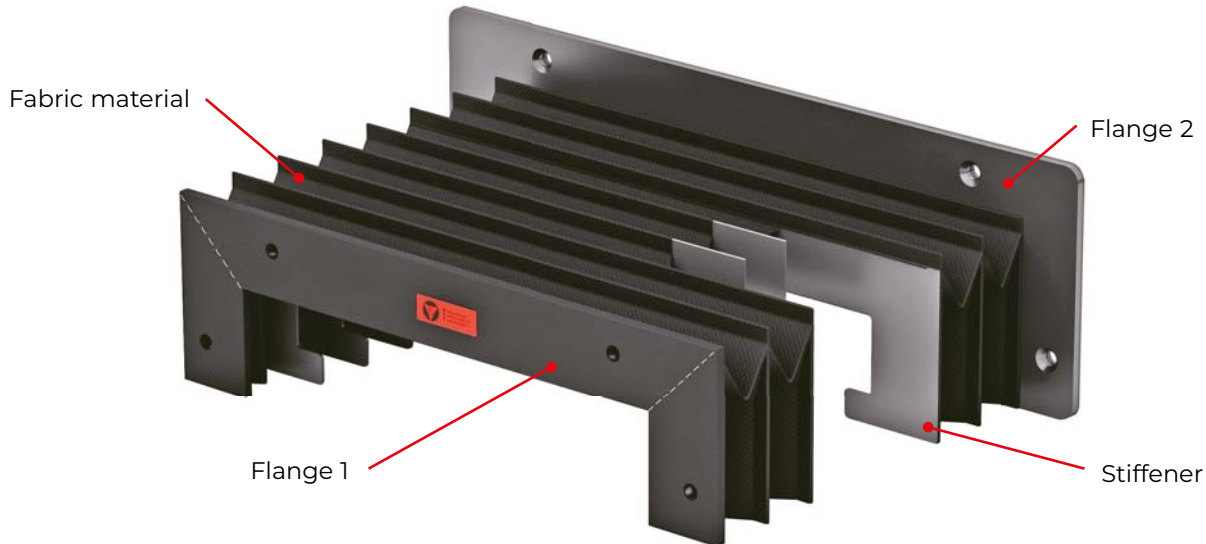
Dimensions in mm.



## THERMIC-WELDED STANDARD COVERS

The **P.E.I.** thermic-welded standard covers guarantee optimal protection for any type of machine tool thanks to the different shapes and the high-quality of the materials.

The selected materials are wear-proof and heat-resistant, making the standard **P.E.I.** thermic-welded covers ideal for protecting the parts of machine tools.



**P.A.** = Open length  
**P.C.** = Closed length  
**LC (Stroke)** = Open length - Closed length

**B** = Outside width  
**a** = Outside height  
**x** = Fold height

### Formula for calculating the CLOSED LENGTH

**AP** = Opening of 1 fold =  $x \cdot 2 - 8$   
**SM** = Fabric thickness \*  
**SS** = Stiffener thickness \*  
**SF** = Flange thickness \*  
**NP** = Number of folds =  $\frac{P.A.}{AP} + 2$   
**P.C.** =  $(SM \cdot 8 + SS) \cdot NP + (SF \cdot 2)$

\* See materials list on page 38.

This data sheet shows only one type of our thermic-welded covers.  
 Contact our engineering department for other types.

Dimensions in mm.

### Example:

Given that: Fold height = 15 mm  
 Open length = 1000 mm

Opening of 1 fold =  $15 \times 2 - 8 = 22$

Number of folds =  $\frac{1000}{22} + 2 = 48$

Closed length =  $(0,25 \times 8 + 1^{**}) \times 48 + (2^{***} \times 2)$

Closed length =  $3 \times 48 + 4 = 148$

**Closed length = 148 mm**

\* We hypothesize the fabric material with code "TEMAT015" (see materials list on page 38)  
 \*\* We hypothesize that the stiffener is 1 mm thick  
 \*\*\* We hypothesize that the flange is 2 mm thick (see materials list on page 38)



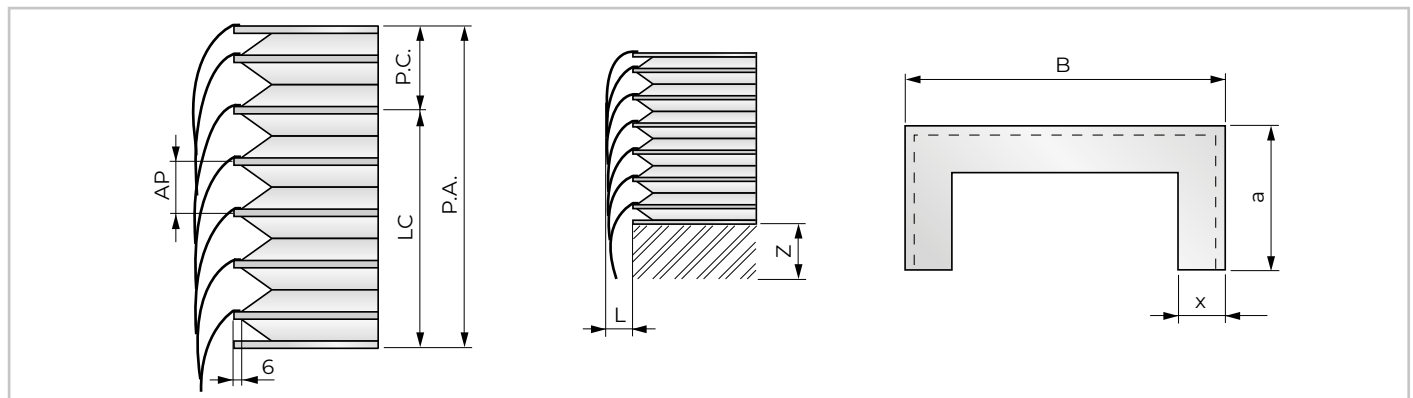
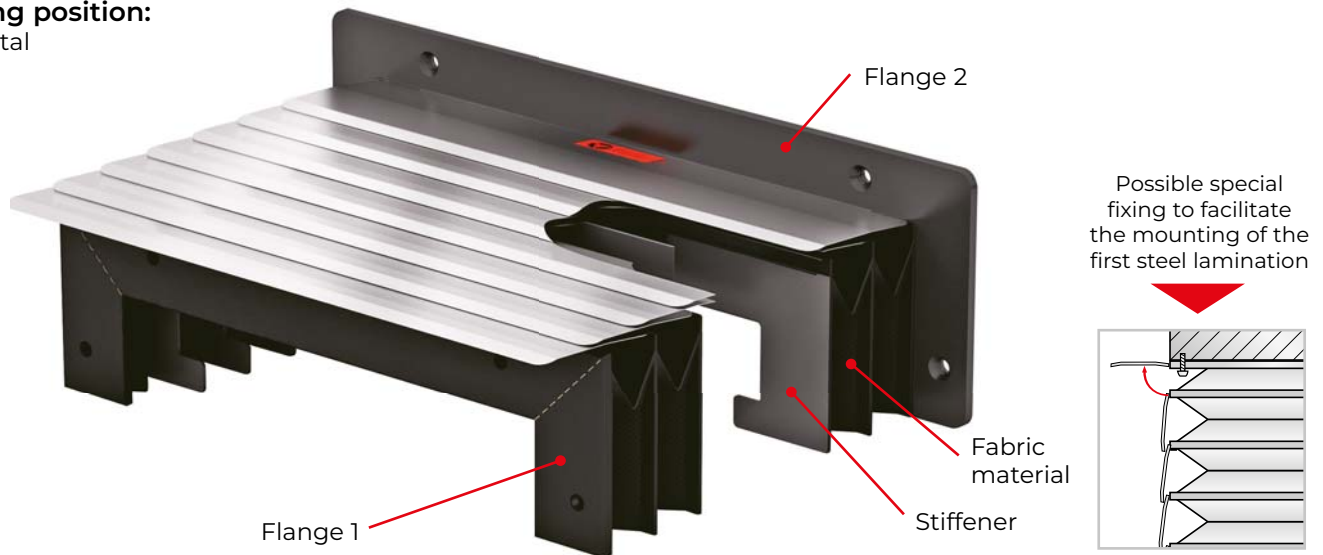
## THERMIC-WELDED COVER WITH FIXED LAMINATIONS

Bellows with fixed laminations are used on every type of machine tool: often used in machining centres and metal-cutting machines.

Metal elements, called "laminations", protect the bellows from shavings and prevent damages.

### Working position:

Horizontal  
Vertical  
Frontal



**P.A.** = Open length  
**P.C.** = Closed length  
**LC (Stroke)** = Open length - Closed length

**B** = Outside width  
**a** = Outside height  
**x** = Fold height

x(mm)	15	20	25	30	35	40	45
L(mm)	16	21	26	33	43	48	56
Z(mm)	45	55	65	75	85	95	105

### Formula for calculating the CLOSED LENGTH

**AP** = Opening of 1 fold =  $x \cdot 2 - 16$

**SM** = Fabric thickness \*

**SS** = Stiffener thickness \*

**SF** = Flange thickness \*

**NP** = Number of folds =  $\frac{P.A.}{AP} + 2$

**P.C.** =  $(SM \cdot 8 + SS) \cdot NP + (SF \cdot 2)$

\* See materials list on page 38

This data sheet shows only one type of our thermic-welded covers.  
Contact our engineering department for other types.

Dimensions in mm.

### Example:

Given that: Fold height = 45 mm

Open length = 1800 mm

Opening of 1 fold =  $45 \times 2 - 16 = 74$

Number of folds =  $\frac{1800}{74} + 2 = 27$

Closed length =  $(0,35 \times 8 + 1^{**}) \times 27 + (3^{***} \times 2)$

Closed length =  $3,8 \times 27 + 6 = 109$

**Closed length = 109 mm**

\* We hypothesize the fabric material with code "TEMAT151" (see materials list on page 38)

\*\* We hypothesize that the stiffener is 1 mm thick

\*\*\* We hypothesize that the flange is 3 mm thick (see materials list on page 38)

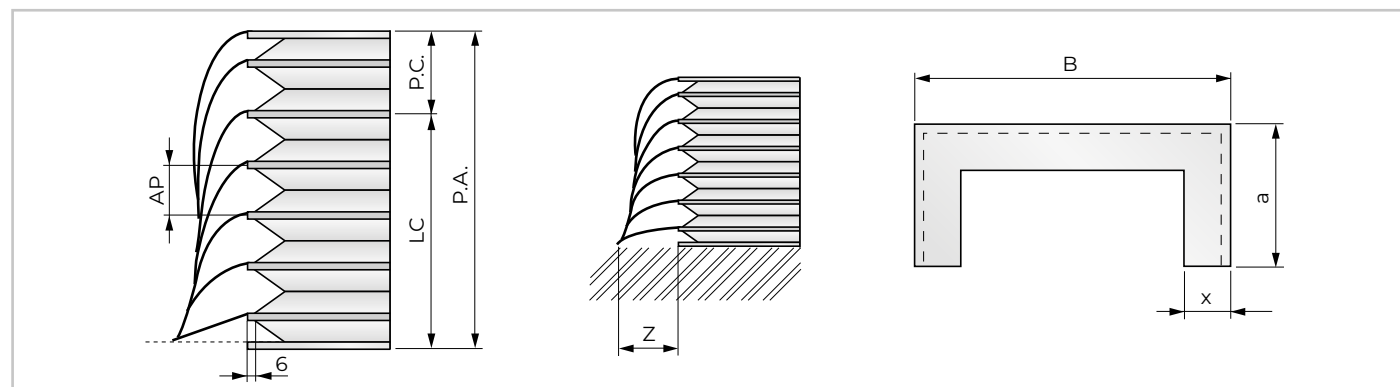
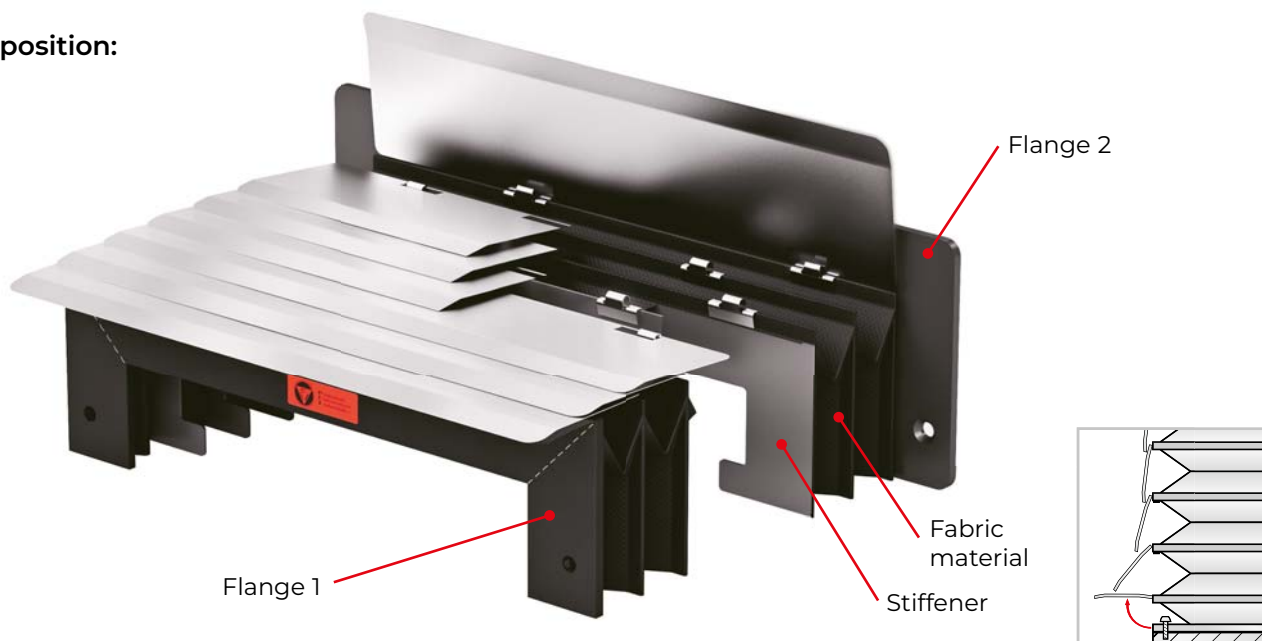


## THERMIC-WELDED COVER WITH FLEXIBLE LAMINATIONS

The **P.E.I.** thermic-welded standard covers are supplied also with flexible laminations, able to guarantee the same protection as the fixed ones, but they offer more flexibility in matching the supporting plan, thanks to their rotating capability.

### Working position:

Vertical



**P.A.** = Open length  
**P.C.** = Closed length  
**LC (Stroke)** = Open length - Closed length  
**B** = Outside width  
**a** = Outside height  
**x** = Fold height

<b>x(mm)</b>	15	20	25	30	35	40	45
<b>Z(mm)</b>	40	50	60	70	80	90	100

### Formula for calculating the CLOSED LENGTH

**AP** = Opening of 1 fold =  $x \cdot 2 - 16$   
**SM** = Fabric thickness \*  
**SS** = Stiffener thickness \*  
**SF** = Flange thickness \*  
**NP** = Number of folds =  $\frac{P.A.}{AP} + 2$   
**P.C.** =  $(SM \cdot 8 + SS) \cdot NP + (SF \cdot 2)$

\* See materials list on page 38

This data sheet shows only one type of our thermic-welded covers.

Contact our engineering department for other types.

Dimensions in mm.

### Example:

Given that: Fold height = 30 mm  
Open length = 1000 mm

Opening of 1 fold =  $30 \times 2 - 16 = 44$

Number of folds =  $\frac{1000}{44} + 2 = 25$

Closed length =  $(0,25 \times 8 + 1^{**}) \times 25 + (2^{***} \times 2)$

Closed length =  $3 \times 25 + 4 = 79$

**Closed length = 79 mm**

\* We hypothesize the fabric material with code "TEMAT015" (see materials list on page 38)

\*\* We hypothesize that the stiffener is 1 mm thick

\*\*\* We hypothesize that the flange is 2 mm thick (see materials list on page 38)

## THERMIC-WELDED COVER MATERIALS

The fabrics selected by **P.E.I.** have excellent mechanical bending and folding strength produced during machinings. They have as well excellent resistance to petroleum products, oils and heavy abrasion, minor welding splatters or hot materials.

Fabric material code	Description			Thickness (mm)	Heat resistance			Primary resistance characteristics
	Visible side	Fabric insert	Internal side		Momentary contact °C	Continuous		
						min. °C	max. °C	
TEMAT106	Ptfe	Polyester	Polyurethane	0,30	+200	-30	+120	Excellent resistance to oils and chemical products. No adhesive surface. Low friction coefficient. Excellent chemical inertia. Excellent resistance to abrasion and bending strength. <b>Mainly used in grinding machines.</b>
TEMAT015	Polyurethane	Polyester	Polyurethane	0,25	+200	-30	+ 90	Excellent resistance to petroleum products, oils and heavy abrasion. Excellent bending strength.
TEMAT151	Polyurethane	Polyester	Polyurethane	0,35	+200	-30	+ 90	
TEMAT164	Polyurethane	Kevlar*	Polyurethane	0,35	+350	-30	+180	Excellent resistance to petroleum products, oils and heavy abrasion. Excellent bending strength. Excellent mechanical strength. Kevlar also has excellent shear strength. Normally used when there is heavy mechanical stress, a large amount of sharp shavings, and at high temperatures. <b>Self-extinguishing.</b>
TEMAT165	Polyurethane	Nomex*	Polyurethane	0,36	+300	-30	+130	Excellent resistance to petroleum products, oils and heavy abrasion. Excellent bending strength. Excellent mechanical strength. Good resistance to minor welding splatter or hot material. Widely used in laser cutting machines. <b>Self-extinguishing.</b>
TEMAT169	Polyurethane	Panox*/Kevlar*	Polyurethane	0,33	+300	-30	+130	Excellent resistance to petroleum products, oils and heavy abrasion . Excellent bending strength. Excellent mechanical strength. Good resistance to minor welding splatter or hot material. <b>It may be considered as the best fabric on the market for use in laser cutting machines. Self-extinguishing.</b>
TEMAT017	PVC	Polyester	PVC	0,36	+100	-30	+ 70	Mainly used around heavy ambient dust, minor splatters of coolant and oil. Also suitable for use around acids.
TEMAT020	PVC	Polyester	PVC	0,25	+100	-30	+ 70	

\* Kevlar, Panox and Nomex are registered trademarks.  
Contact our engineering department for other materials and applications.

## Stiffener materials

Stiffener material code	Description	Thickness (mm)	Notes
<b>PVC 05</b>	PVC	0,50 **	Outside width (B) up to 300 mm
<b>PVC 10</b>	PVC	1	Outside width (B) from 301 up to 700 mm
<b>PVC 15</b>	PVC	1,5	Outside width (B) from 701 up to 1500 mm

\*\* NOT recommended for thermic-welded covers with laminations.

## Flange materials

Flange material code	Description	Thickness (mm)
<b>AL</b>	Aluminium	2 - 3 - 4 - 5
<b>INOX</b>	AISI304	1 - 1,5 - 2 - 2,5 - 3
<b>AC</b>	Carbon steel	1 - 1,5 - 2 - 2,5 - 3 - 4 - 5
<b>PVC</b>	PVC	1 - 1,5 - 2 - 3

## Lamination materials

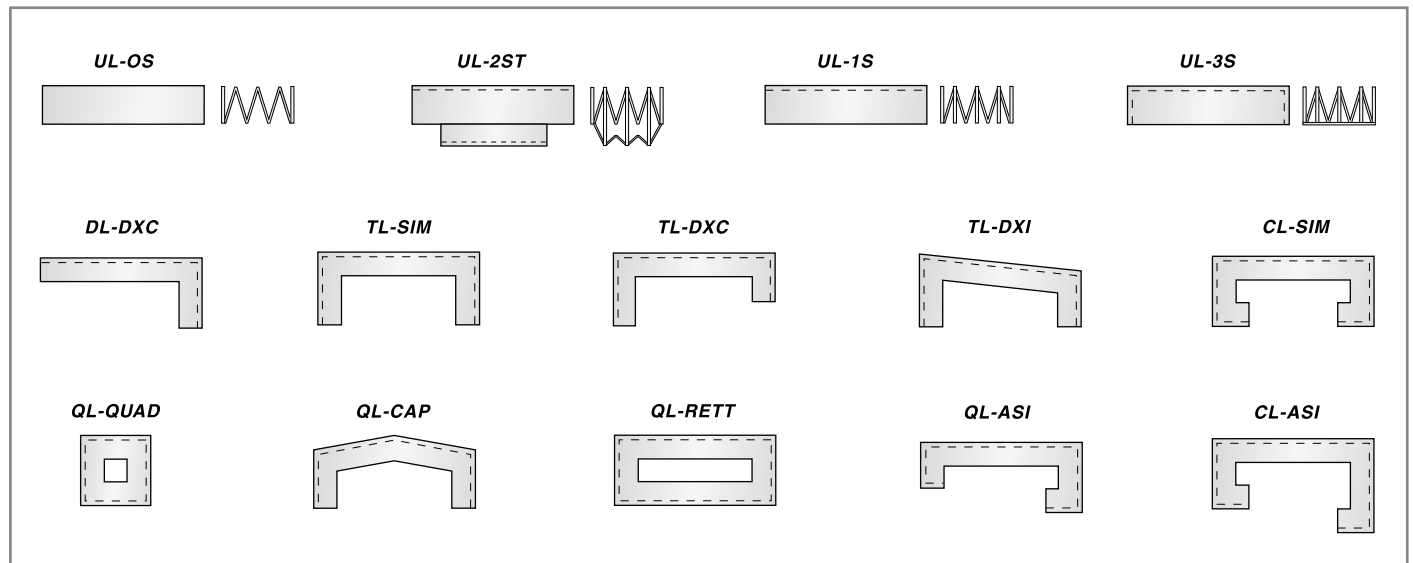
Lamination material code	Description	Primary applications
<b>AL</b>	Aluminium (Baked Enamel Finish)	For use around welding splatter, small and medium-sized hot shavings. Especially suitable for use around continuous sparks. Appropriate where lightweight materials are necessary.
<b>INOX</b>	Stainless Steel	In work environments with large shavings. Especially suitable for use around acids.

Dimensions in mm.



## Shapes

Here below are only standard shapes of thermic-welded covers, other shapes available upon request.



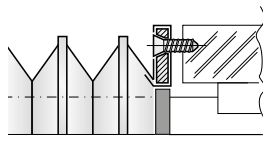
### Code legend:

- UL-OS** = Folding fabric only
- UL-2ST** = Thermic-welded bellows with two weld seams and pull-out stop inside the bellows
- UL-1S** = One-sided bellow with PVC supports
- UL-3S** = One-sided thermic-welded bellows with three welded edges
- DL-DXC** = Thermic-welded bellows with two welded edges
- TL-SIM** = Thermic-welded bellows with three welded edges, symmetrical shape
- TL-DXC** = Thermic-welded bellows with three welded edges, asymmetrical shape
- TL-DXI** = Thermic-welded bellows with three welded edges, slanted shape
- CL-SIM** = Thermic-welded bellows with five welded edges, symmetrical shape
- QL-QUAD** = Thermic-welded bellow, square shape
- QL-CAP** = Thermic-welded bellow, roof shape
- QL-RETT** = Thermic-welded bellow, rectangular shape
- QL-ASI** = Thermic-welded bellows with four welded edge, asymmetrical shape
- CL-ASI** = Thermic-welded bellows with five welded edge, asymmetrical shape

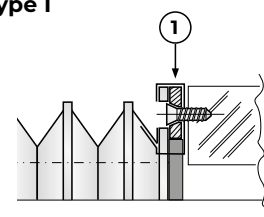
## Flange Fastening Systems

- Fixing flange **Type A**: Flange covered by bellow fabric (without last support)
- Fixing flange **Type I**: Painted flange, fixed to last bellow support
- Solution with sheet steel, aluminium or PVC flange
- Shape and holes per customer drawings

**Type A**



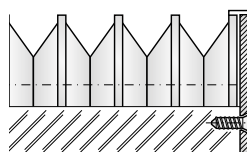
**Type I**



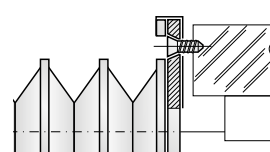
1 = Flange

- Fixing flange **Type B1**: Solution with connector flange protruding inside from the cover profile
- Fixing flange **Type B2**: Solution with connector flange protruding outside from the cover profile
- Solution with sheet steel, aluminum or PVC flange
- Shape and holes per customer drawings

**Type B1**

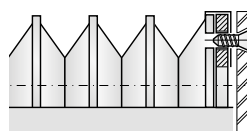


**Type B2**



- Painted flange, fixed to last bellow support with threaded bores
- Solution with sheet steel flange
- Shape and holes per customer drawings
- Threaded flange holes

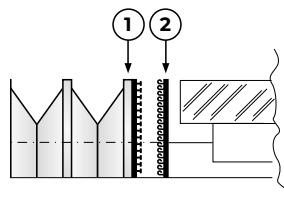
**Type C**



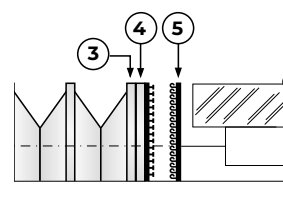
- Solution with rapid VELCRO connection.
- A PVC support acts as a flange, with VELCRO strips applied to the stiffener and directly to the machine.
- This solution offers:
  - Rapid application and removal of the cover
  - Low cost

**Recommended for dry work environments**

**Type E**



**Type H**

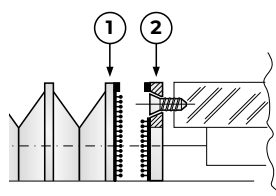


- 1 = PVC cover stiffener
- 2 = Strip of Velcro applied to the machine
- 3 = PVC stiffener
- 4 = Flange
- 5 = Strip of Velcro applied to the machine

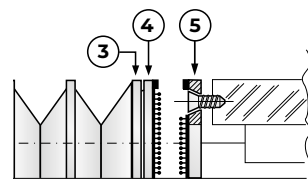
- Solution with STRONG HOLD rapid connection.
- Solution with sheet steel, aluminum or PVC flange. Shape and holes per customer drawings.
- This solution offers:
  - Rapid application and removal of the cover
  - Foam gasket strip provides a tight seal around the connection.

**Recommended for wet work environments**

**Type F**



**Type G (Entire fold in PVC)**



- 1 = PVC stiffener
- 2 = Flange
- 3 = PVC stiffener
- 4 = Flange
- 5 = Counterflange

Fill in the form available on our website to receive a tailored offer of the most suitable Flat Cover according to your project requirements

[click here](#)

## BELLOWS FOR HOISTING PLATFORMS

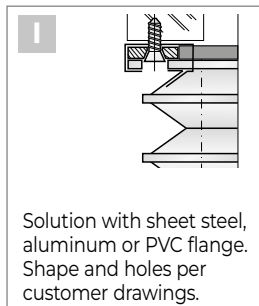
Hoisting platforms are often used in industrial or logistic areas, but are also used as undercarriages for medical equipment and wherever goods need to be moved.

The lifting area underneath the platform is exposed to dust, dirt or other foreign bodies, therefore it should be protected.

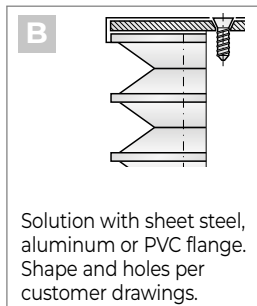
The bellows also act as safety guard, minimising the risk of injury to operators.



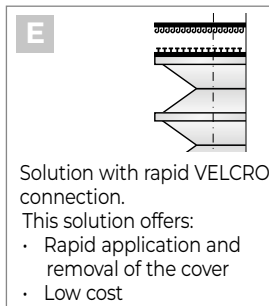
### Standard systems for fastening bellows for lift tables



Solution with sheet steel, aluminum or PVC flange. Shape and holes per customer drawings.

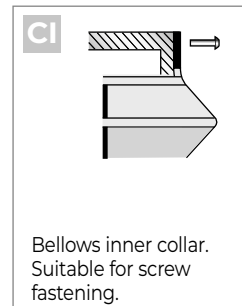


Solution with sheet steel, aluminum or PVC flange. Shape and holes per customer drawings.

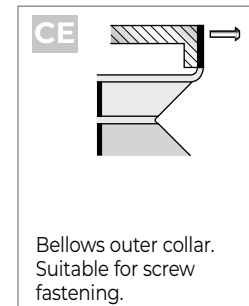


Solution with rapid VELCRO connection. This solution offers:

- Rapid application and removal of the cover
- Low cost



Bellows inner collar. Suitable for screw fastening.



Bellows outer collar. Suitable for screw fastening.

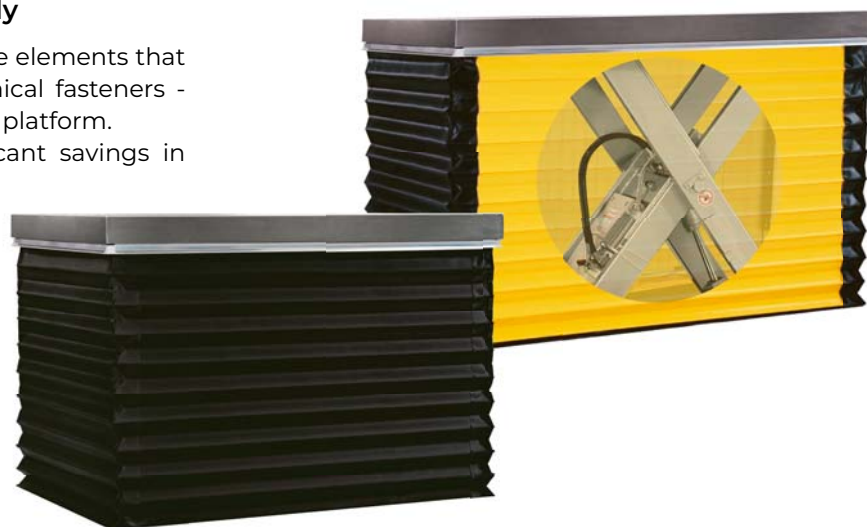
## QUICK BOX BELLOWS (Patented)

This bellow for lifting platforms is supplied disassembled for easy on-site assembly

**QUICK BOX BELLOW** is supplied in separate elements that can be joined together by simple mechanical fasteners - without any tool - and then attached to the platform.

The compact packaging results in significant savings in transport and storage.

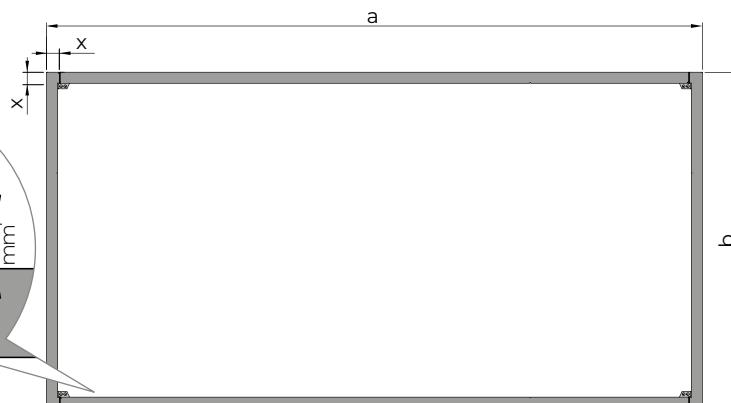
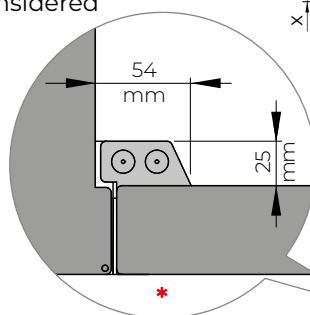
Available in yellow or black.



It is made according to the customer's drawing:

**a - b - x** = Sizes upon request

\* = Internal space to be considered in design phase



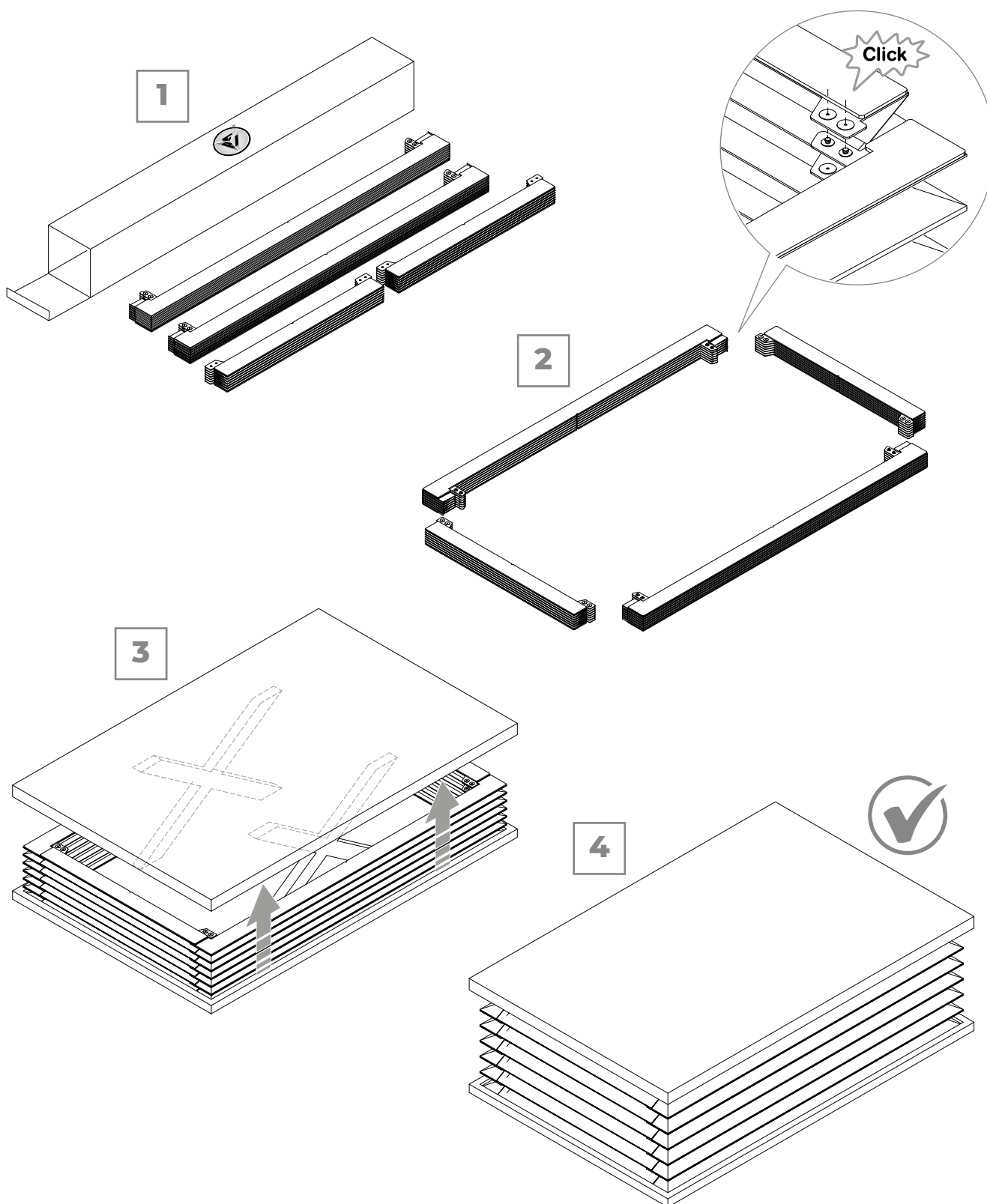
Fill in the form available on our website to receive a tailored offer of the most suitable Bellow for hoisting platforms according to your project requirements

[click here](#)



## QUICK BOX BELLOWS (Patented)

Assembly sequence:



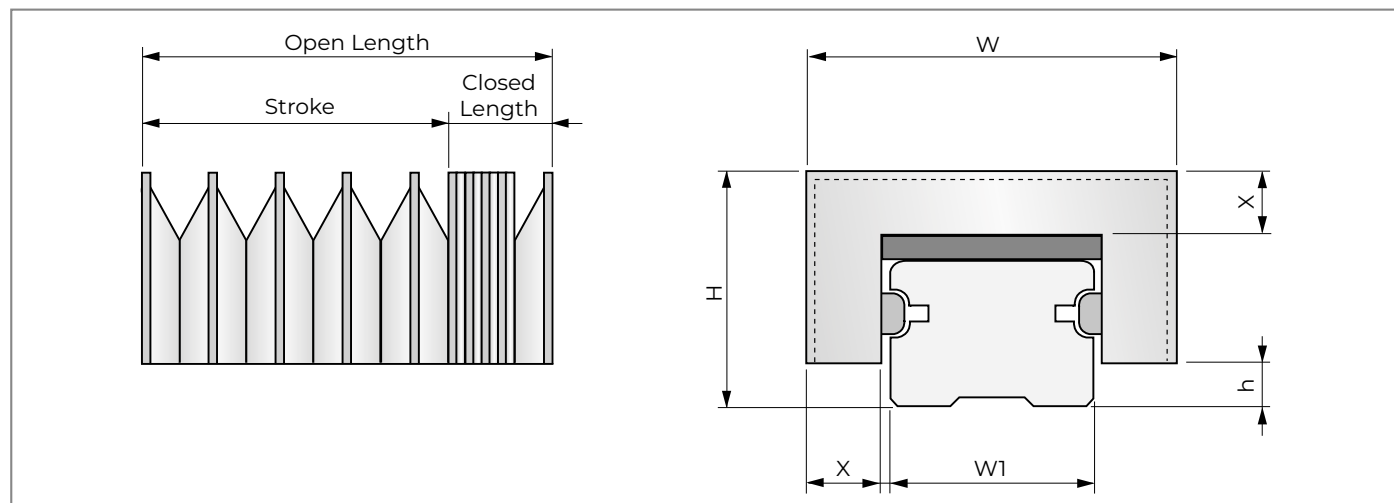
full video available on  YouTube





## THERMIC-WELDED COVERS FOR LINEAR SLIDES

Thanks to the cutting precision of the PVC supports, which guarantees perfect adhesion to the slide, and the range of materials used, **P.E.I.** bellows are widely used in all industrial sectors.



### Standard thermic-welded covers size

Slide nominal value <b>W1</b> (mm)	Ply height <b>X</b> (mm)	Bellow width <b>W</b> (mm)	Total height <b>H</b> (mm)	Slide deviation <b>h</b> (mm)
15	19	56	36	5
20	19	61	40,5	5
25	19	67	43	7,5
30	19	72	51	8
35	19	76,5	51	9
45	19	87,5	61	10
55	25	108	73	15
65	32	132	90	15

(For the W1 slide over size 65, please contact our Technical Dept.)

### Standard materials list

Material Type	Support	Fabric material	Closed length for 1000 mm of open length
<b>S1</b>	PVC 0,50	PVC + Polyester + PVC 0,25 (TEMAT020)	90 mm
<b>P1</b>	PVC 0,50	Polyurethane + Polyester + Polyurethane 0,25 (TEMAT015)	90 mm
<b>LX</b>	PVC 1,00	Polyurethane Panox/Kevlar + Polyurethane 0,33 (TEMAT169)	150 mm

Fill in the form available on our website to receive a tailored offer of the most suitable Thermic-welded Covers for Linear Slides according to your project requirements

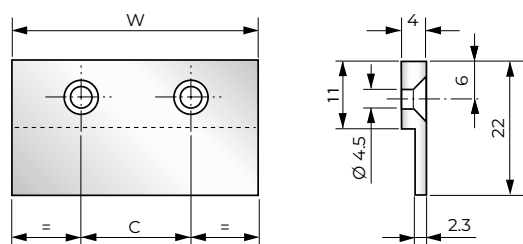
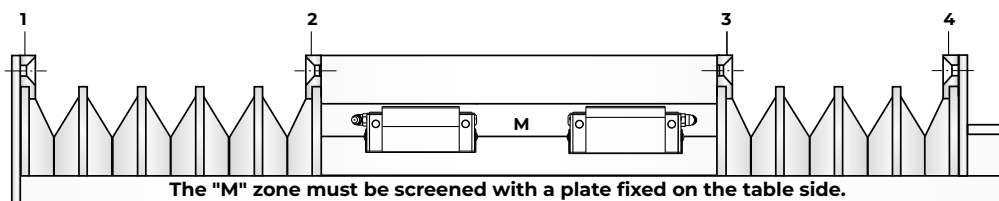
[click here](#)

## Thermic-welded covers standard systems for linear slides

For different sizes, please contact our technical department.

### Solution A: Fastening holdfasts

Suitable for heavy working places and in coolants presence

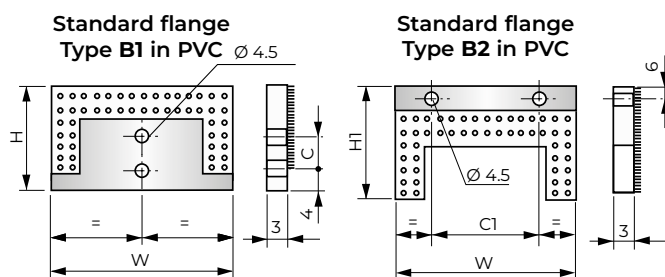
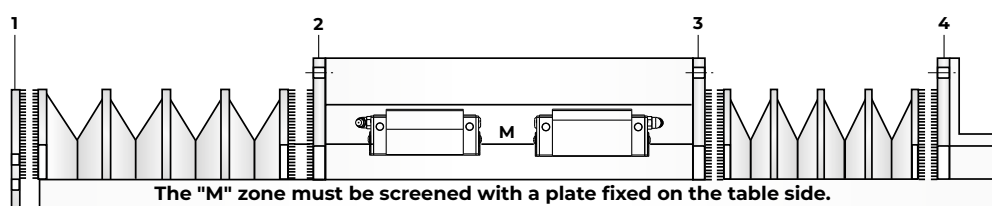


SLIDE	W	C	HOLES No.
15	52	26	2
20	57	29	2
25	63	32	2
30	68	34	2
35	72	36	2
45	83	28	3
55	104	35	3
65	128	32	4

Suitable for bellows fastening in positions **1 - 2 - 3 - 4**, with angular or plate supports provided by customers.

### Solution B: Velcro flange fastening (B1 and B2)

Suitable for dry working places



SLIDE	W	H	C	H1	C1	HOLES No.
15	56	36	0	42	26	2
20	61	40,5	8	46,5	29	2
25	67	43	8	46,5	32	2
30	72	51	8	54	34	2
35	76,5	51	18	53	36	2
45	87,5	61	18	62	28	3
55	108	73	18	69	35	3
65	132	90	18	86	32	4

- Pos. **1** a) Fix the type 1 standard flange at the head of the slide.  
b) Fix the bellows to the type 1 standard flange by pressing strongly.
- Pos. **2-3** a) Fix the table or the mounting plate to the type 2 standard flange by means of screws.  
b) Fix the bellows to the type 2 standard flange by pressing strongly.
- Pos. **4** a) Fix the type 2 standard flange to the angular support provided by the customer by means of screws.  
b) Fix the bellows to the type 2 standard flange by pressing strongly.

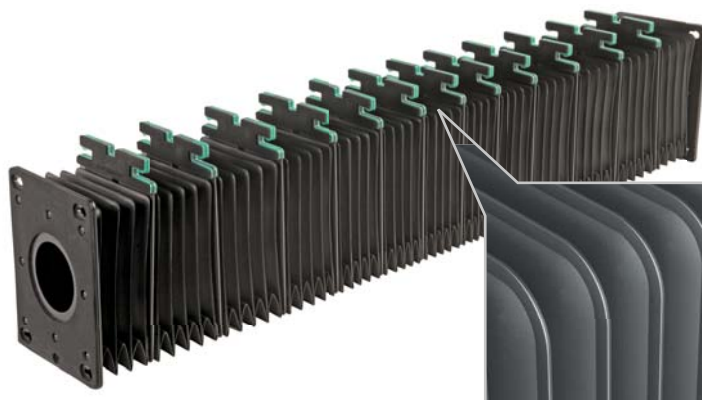
**N.B.** Fastening options showed in Pos. 1-4 are interchangeable

Dimensions in mm.

## BELLOWS FOR LASER MACHINES

The bellows for the mechanical parts are made of fabric with high strength, while the bellows for the optical beam are more complex, as they have to ensure the sealing of the pressurised gas and limit any divergence of the laser beam by means of internal metal inserts.

The fabric must also be self-extinguishing and must not emit dust.





## UNIQUE STEEL COVER EVO (Patented)

### The new lightweight bellow system

**P.E.I.** presents a new type of bellow with stainless steel slats: the lightweight and reliable protection that guarantees high chip resistance with minimum space needed.

**Unique Steel Cover EVO** involves the use of bellows only in some parts of the cover, making the product very light, therefore quick and easy to handle during installation and maintenance.

**Unique Steel Cover EVO** has a green soul: it is manufactured avoiding use of glues and solvents and of materials of which 90% can be recycled. Thanks to its light weight, it allows significant energy saving during handling.

- Reduced oscillations in reverse rapid motion.
- Easy installation on machine tools.
- Quick machine maintenance operations.

[watch on](#)  YouTube



### APPLICATION EXAMPLE



## MULTI-STEEL (Patented)

Thermic-welded bellows with laminations on many sides are the ideal solution for complete protection of the roof and crossbar in multi-shaft working centres.

The corners are closed and steel inox laminations applied with a perfect 90° fold thanks to the elastic deformation of the material and the special geometry.

More than two sides can be covered and with different angles.

For this type of bellow consult our engineering department.



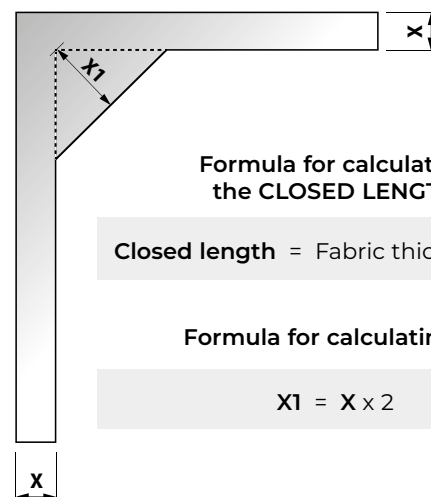
## EVER-CLEAN

The construction of the corner is the main feature of this thermic-welded bellow.

The bellow is guaranteed to be free from chips and sludge, there are no creases in the fabric obstructing the chip falling into the conveyor.

The closed length of the bellow is smaller than traditional thermic-welded bellows due to the absence of folds of fabric in the corner.

For this type of bellow consult our engineering department.



**Formula for calculating the CLOSED LENGTH**

$$\text{Closed length} = \text{Fabric thickness} \times 4,5$$

**Formula for calculating X1**

$$X1 = X \times 2$$

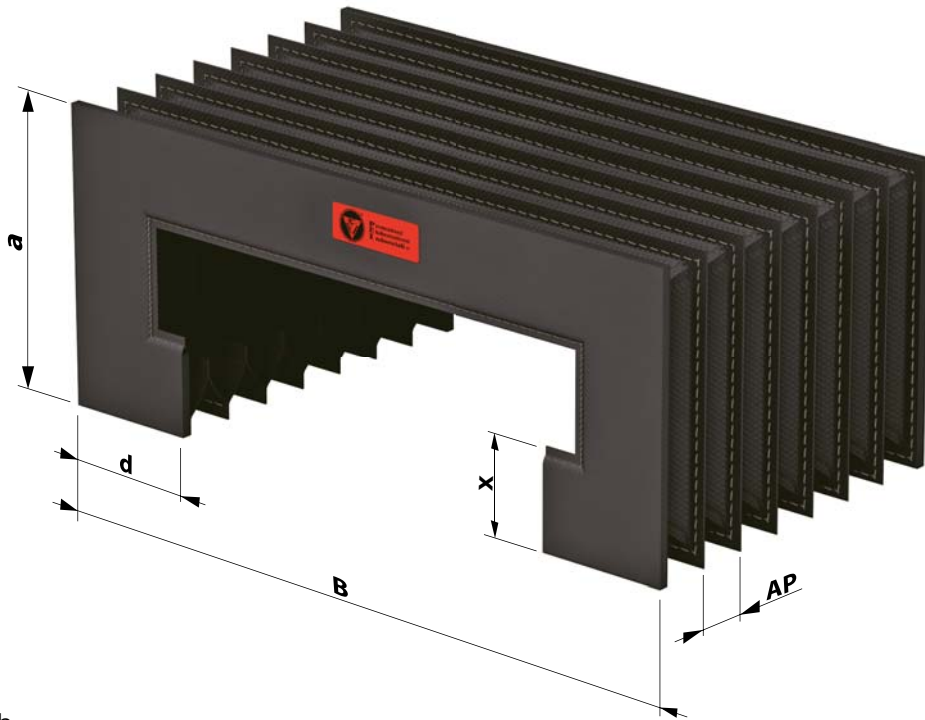
Dimensions in mm.





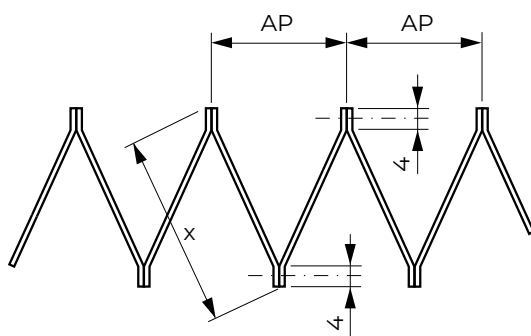
## SEWN FLAT COVERS

**P.E.I.** sewn bellows are very robust and have a very compact closed length in relation to the stroke of the bellows. These bellows are manufactured with a double seam on the folds. Since there is no pleat, the accumulation of chips and emulsions on the bellows is avoided. If the application requires special structural rigidity, profiled metal intermediate elements can be provided for a secure support on the guideway.



- B** = Outside width  
**a** = Outside height  
**d** = Return dimension  
**x** = Fold height  
**AP** = Fold opening

### Sewn style



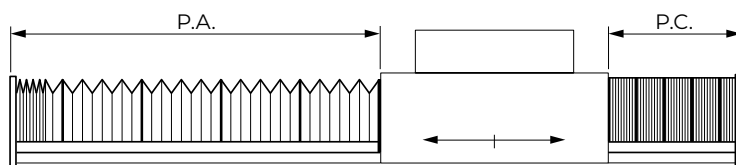
### Formula for calculating the CLOSED LENGTH

$$\mathbf{P.C.} = \mathbf{NP} \cdot 2,5 + \text{flange thickness}$$

$$\mathbf{NP} = \text{Number of folds} = \frac{\mathbf{P.A.}}{\mathbf{AP}} + 2$$

$$\mathbf{AP} = \text{Opening of 1 fold} = (\mathbf{x} - 8) \cdot 1,41$$

Dimensions in mm.



- P.A.** = Open length  
**P.C.** = Closed length

Contact our engineering department for this type of cover.

Fill in the form available on our website to receive a tailored offer of the most suitable Sewn Flat Cover according to your project requirements

[click here](#)



## SEWN ROUND BELLOWS

They are used where a very compact closed length is required.

- High resistance to mechanical and dynamic stress
- Resistance to coolants and oils
- Suitable for high temperatures
- Available with guide bushings and reinforcement rings
- No tooling costs
- Minimum internal diameter starting at 20 mm
- Any size external diameter
- With selected edging (in safety colors upon request)

### Materials available:

Polyester coated with Neoprene\* (from 0,3 to 1,2 thick)

Polyester coated with PVC (from 0,3 to 0,7 thick)

TEMAT007

TEMAT164-TEMAT165

TEMAT009

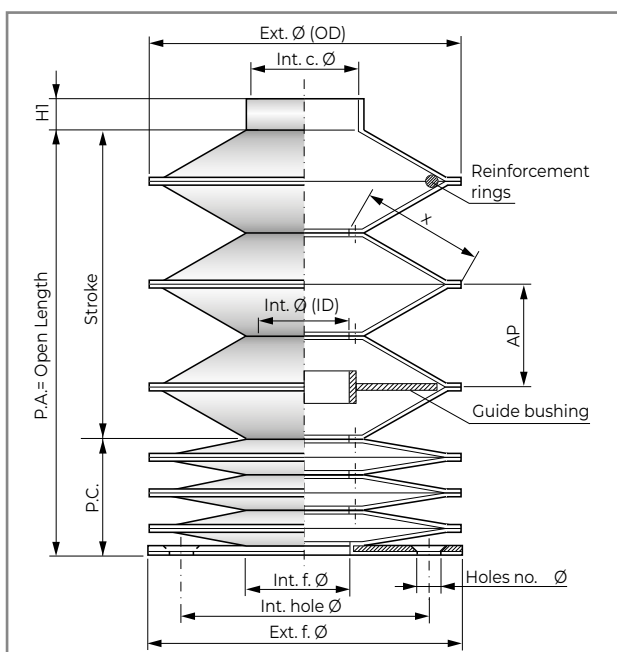
TEMAT011

TEMAT081

\* Neoprene is a registered trademark.

You find the [materials list](http://www.pei.it) on our website [www.pei.it](http://www.pei.it)

Other materials available upon request:  
contact our engineering department.



Dimensions in mm.



### Formula for calculating the CLOSED LENGTH

$$P.C. = \text{Closed length} = NP \cdot SP^*$$

$$NP = \text{Number of folds} = \frac{P.A.}{AP} + 1$$

\* **SP** = Thickness of 1 fold (see [materials list](http://www.pei.it) on our website [www.pei.it](http://www.pei.it))

$$AP = \text{Opening of 1 fold} = \left( \frac{\text{Ext. } \varnothing - \text{Int. } \varnothing}{2} - 6 \right) \cdot 1,2$$

**Note:** When steel rings are required inside the folds, the **P.C.** is calculated by our engineering department.

## THERMIC-WELDED TIGHT BELLOWS

They are used when leak-tight protection of the components (i.e. screws, shafts, etc.) is necessary against the contamination made by coolants.

They have good chemical and heat resistance according to the properties of the materials used. Thermic-welded tight bellows are available in various shapes and dimensions.

Small tooling costs for new moulds should be considered, if not already available in stock.

### Materials available:

TEMAT 018

TEMAT 019

TEMAT 153

TEMAT 153/S

TEMAT 156

TEMAT 081

You find the [materials list](http://www.pei.it) on our website [www.pei.it](http://www.pei.it)

Other materials available upon request: contact our engineering department.





## HEAT-FORMED, OPENABLE ROUND BELLOWS

These are used when high mechanical strength and heat resistance are required.

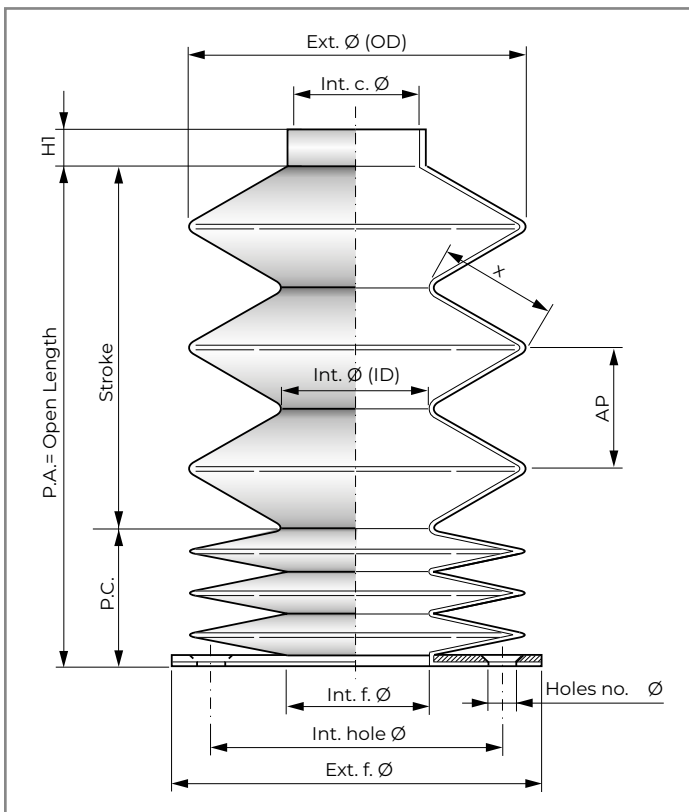
They are characterised by excellent resistance to mechanical stress as well as to coolants and oils. They are also available in cone-shaped according to the needs. They do not involve any cost of equipment and have an excellent quality / price ratio. On request, the heat-formed and openable round bellows are available with guide bushings and reinforcement rings.

### Materials available:

TEMAT202  
TEMAT018  
TEMAT019  
TEMAT081  
TEMAT094

You find the [materials list](#) on our website [www.pei.it](http://www.pei.it)

Other materials available upon request: contact our engineering department.



Upon request with **longitudinal opening** seam when the bellow must be disassembled without dismantling the part to be protected.

### Formula for calculating the CLOSED LENGTH

$$P.C. = \text{Closed length} = NP \cdot SP^*$$

$$NP = \text{Number of folds} = \frac{P.A.}{AP} + 1$$

\* **SP** = Thickness of 1 fold (see [materials list](#) on our website [www.pei.it](http://www.pei.it))

$$AP = \text{Opening of 1 fold} = \left( \frac{\text{Ext. } \varnothing - \text{Int. } \varnothing}{2} \right) \cdot 1,41$$

**Note:** When steel rings are required inside the folds, the **P.C.** is calculated by our engineering department.

Fill in the form available on our website to receive a tailored offer of the most suitable Round Bellow according to your project requirements

[click here](#)

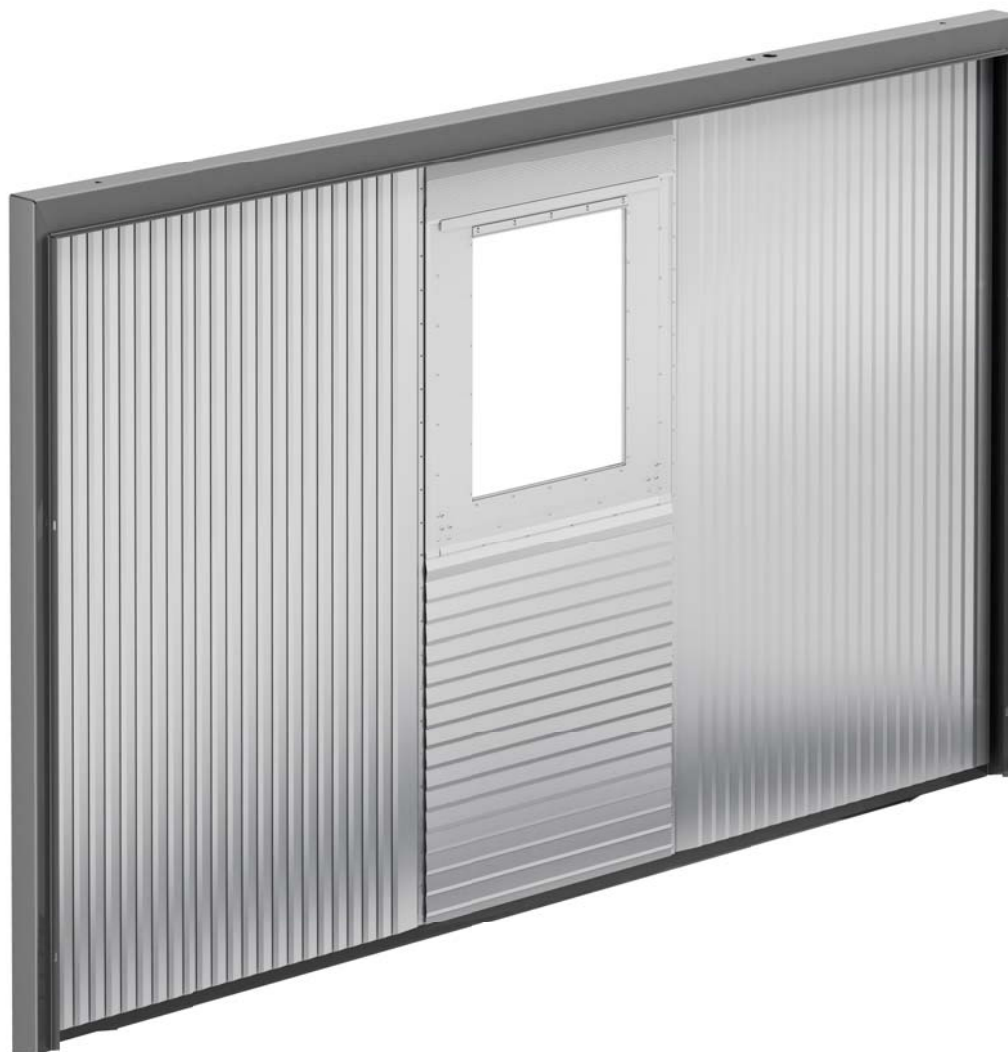
### X-Y SHIELD

#### Dynamic bellows protection

**X-Y SHIELD** is a dynamic complete protective system giving a double protection barrier along the X and Y axes of machine tools. Thermic-welded bellows with stainless steel laminations separate the working area from the motor compartment, ensuring:

- Double protection, as the laminations protect the bellows from hot and sharp-edged chips, while the fabric material safeguards the guides from the inlet of oils and coolants
- High performance: speeds of up to 120 m/min. and accelerations up of 2g
- Versatility: for horizontal and vertical machining centres of any dimensions
- Sturdiness and pleasant appearance: durable and well-finished design
- Customisation: variant with bellows without fabric (see page 45).

**X-Y SHIELD** is the most suitable solution if reliability and safety in high-performance industrial environments are required.



#### APPLICATION EXAMPLE





## MODULAR X-Y SHIELD

### A new technology for quick and easy installation

**MODULAR X-Y SHIELD** represents P.E.I.'s new approach to the construction of X-Y shields.

It combines sturdiness and efficiency of the traditional system with a proprietary design technology:

- Modular innovation: a frame of standardised aluminium profiles replaces the ribbed sheet metal, ensuring a lighter, stronger and faster construction
- Reduced time and flexibility: simplified design and manufacture for considerably faster delivery
- Compact design and easy maintainability: smaller overall dimensions and easier assembly for unrivalled operational efficiency.

Not just a protection, with **MODULAR X-Y SHIELD** we offer a solution designed to make maintenance quick and intuitive.



Fill in the form available on our website to receive a tailored offer of the most suitable Shield according to your project requirements

[click here](#)

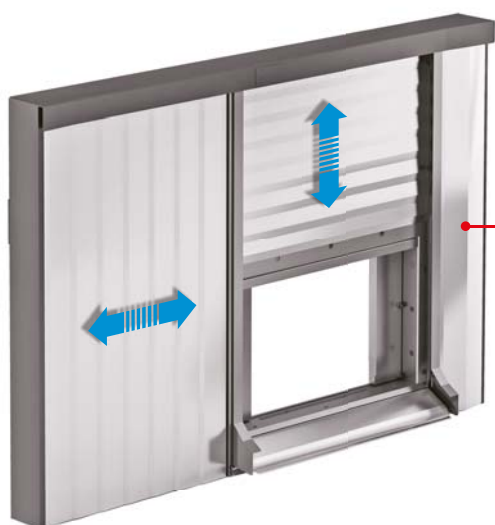




## Most usual options

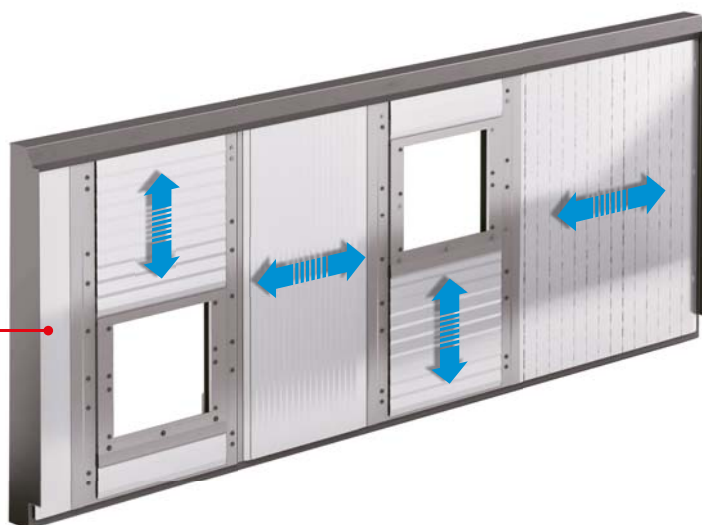
### SHIELD WITH FIXED LAMINATION BELLOWS

The most common solution for complete axes protection.



### SHIELD WITH FLEXIBLE LAMINATION BELLOWS

Suitable for applications in case of tight bellows closed lengths on vertical axis. Optimal performance even in limited space conditions.



### SHIELD FOR MULTIPLE HEADS

Configuration allowing to use bellows with fixed or flexible laminations.

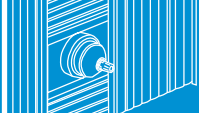


### SHIELD FOR HIGH TEMPERATURE

Resistant bellows, without laminations, specific for applications in high temperature environments. Particularly used for 3D printers.

## CUSTOMIZED OPTIONS

Special configurations can be manufactured for the different operative requirements of machine tools.



## Structure of shield covers with laminations

- 1) SUPPORTING STRUCTURE
- 2) FRONTAL BELLOWS
- 3) VERTICAL BELLOWS
- 4) SPINDLE OPENING
- 5) WIPER



Fill in the form available on our website to receive a tailored offer of the most suitable Shield according to your project requirements

[click here](#)

## GIANT SHIELD

### Large size shield

Gigantic protective wall characterised by its dimensions over standards, which is suited for huge machine tools where large parts have to be machined.

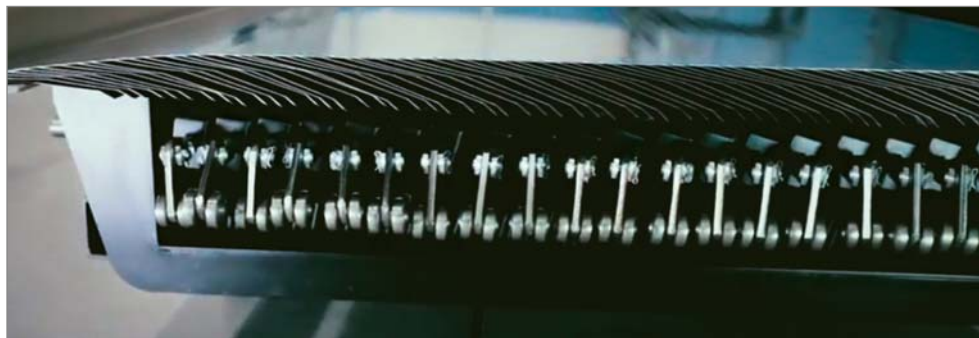
It can be built up to a height of 6000 mm with laminations featured by special characteristics allowing dynamic movement with elasticity, stiffness and effortlessness.

The fabric material at the rear of the blades, made of special texture and thermic-welded along its entire height, provides for an effective protective barrier against the penetration of coolants, which the laminations alone could not guarantee.

**GIANT SHIELD** follows each transverse movement of the machine head.

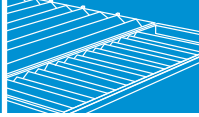


The stainless steel laminations represent the rigid part of the cover, a protective barrier against incandescent chips escaping during the machining of work pieces.



[watch on](#)  YouTube





## WAVE SKY SYSTEM

### Bellows for overhead protection for portal milling machines

This range of bellows limits the escape of fumes, dust and chips from the machining area.



[watch on](#)  YouTube



VERSION	MAX SPEED mt/min.	MAX ACCELERATION g	MAX WIDTH BETWEEN GUIDES mm	MAX STROKE mm	STANDARD FOLD HEIGHT mm	USE
WAVE SKY	90	1	6.000	25.000	100 / 150 / 200 / 250 / 300	applications in the machine tool sector
WAVE SKY LIGHT	60	1	2.000	8.000	100 / 150 / 200 / 250	machine tools / other sectors
WAVE SKY HEAVY	90	1	10.000	25.000	150 / 200 / 250 / 300	for covering over 6.000 mm width
WAVE SKY CHEMICAL	60	1	6.000	25.000	100 / 150 / 200 / 250 / 300	chemical treatment plants
WAVE COVER	to be defined in the design phase					machines with Z-axis less than 2 meters

## WAVE SKY

By using the **WAVE SKY** overhead protective cover, the suction force can be reduced when extracting fumes during machining carbon fibres, composite materials and vaporised cooling lubricant. The special translucent fabric guarantees ample light in the work area.



Movement using rollers



Modular support made of aluminium



Special high strength fabric



Guide cover casing

## WAVE SKY LIGHT

**WAVE SKY LIGHT** is a version of Wave Sky suitable for applications where a small closed length is required despite of long strokes. Stability and durability are the same as for the traditional Wave Sky. The translucent fabric is suitable not only for machine tools, but also for other applications. The same guides are used as for Wave Sky.



Sliding on guides



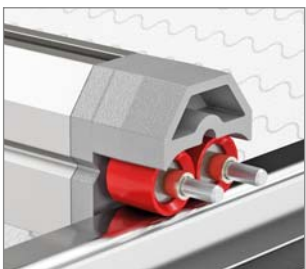
Lateral guides modular and adjustable



Guide cover casing

## WAVE SKY HEAVY

**WAVE SKY HEAVY** is a version of Wave Sky for applications with a **machine width of over 6 metres**. The same guides are used as for Wave Sky.

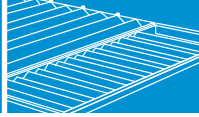


Double bearing sliding



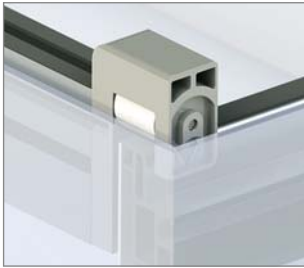
Crossbar guide





## WAVE SKY CHEMICAL

**WAVE SKY CHEMICAL** is a version of Wave Sky, suitable for closure of chemical plants for surface treatments, as galvanic, chromium-plating, painting treatments. It ensures optimal protection of the tanks in a very small space, with easy maintenance and high level of customisation.



Polymer carriages resistant to the aggression of surface treatments



Technical polymer fabric created to resist against the aggression of chemical agents

## WAVE COVER (Patented)

This **P.E.I.** solution is a complete roof cover for gantry and portal machines **with Z-axis up to 2 meters** that allows the machine operators to access the machining chamber without opening the cover.

Differently from Wave Sky, **WAVE COVER** has a portal shape with sides and roof making the structure self-supporting.

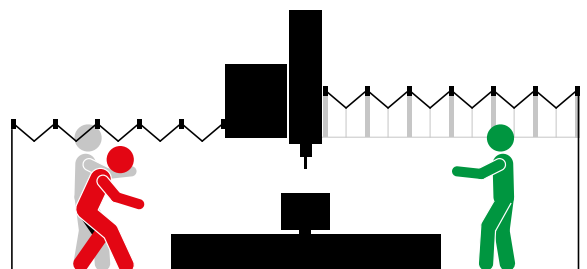


The plastic hinges in the sides are rigid enough to prevent tipping over, but flexible enough to ensure the mechanism opens and closes.

The system is designed so that all the frames remain parallel and vertical to each other.

**WAVE COVER** is based on the same modular construction as Wave Sky, but uses a "gable" roof solution which increases the height of the workspace.

The cover can be fitted at any guide height.



## SMARTDRIVE HP (Patented)

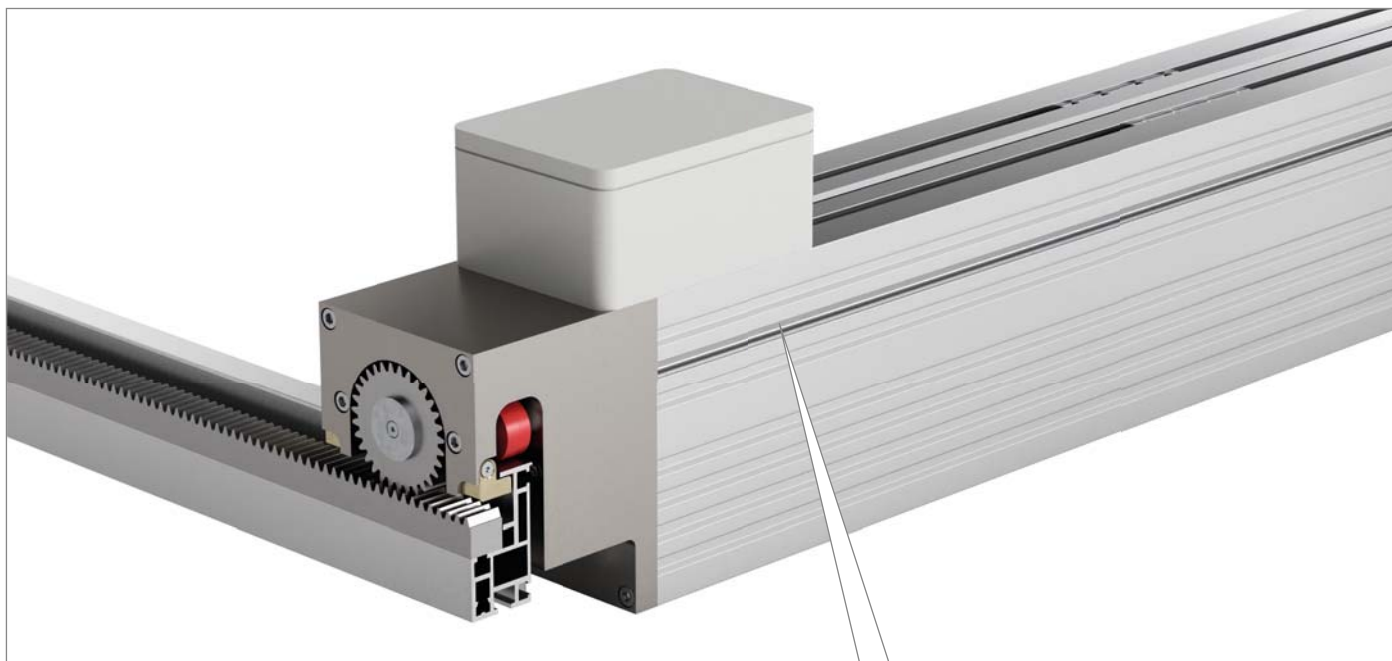
### Motorised solution for Wave Sky roof protection

P.E.I. has updated the design of the range of Wave Sky roof protections, introducing the new **Smartdrive HP**.

The rack has been positioned outside the protective cover, allowing smoother movement, much easier maintenance and longer service life.

This Plug & Play solution enables continuous machine operation, avoiding costly downtime: the range of Wave Sky roof protections becomes even more powerful and reliable.

**Smartdrive HP** is available for all Wave Sky versions (STANDARD, LIGHT and HEAVY).



Compared to the previous version, the pulling and braking force has been doubled thanks to two motors installed in a removable module that can be completely and easily removed for maintenance operations in case of failure.

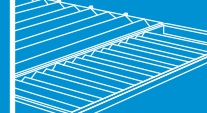
Two electric brakes at the ends of the drive shaft enable the machine to be stopped.

New **Smartdrive HP** is perfectly interchangeable with its previous version: it features the same overall dimensions and it may be easily replaced on current Wave Sky installations.



### APPLICATION EXAMPLE





## FABRICS SUITABLE FOR ROOF PROTECTIVE COVERS

### TEMAT154

Excellent resistance to petrol based products, oils and strong abrasion. The textile insert is made of a special fabric with high rigidity in the diagonal weave and an aesthetically pleasing appearance. It is normally used in environments where there are large quantities of chips. Translucent and antistatic.



Bellow cover in translucent and double weave fabric



Detail of the antistatic feature of the fabric

CODE	Description of materials			Thickness (mm)	Heat resistance	
	Visible side	Fabric insert	Hidden side		Momentary contact °C	Continuous °C
TEMAT154	Polyurethane	Polyester	Polyurethane	0,9	+130	-30 +90

### CERAMIX (P.E.I. CODE TEMAT 180)

It has an excellent abrasion resistance and excellent shear strength. It shows excellent resistance to mineral oils and hot temperatures. The two-ply fabric insert gives an high transverse rigidity and a very attractive appearance. In Wave Sky, Ceramix is only used in the bellow folds close to the working area, when large quantities of aluminium hot and shearing shavings are produced, in cases of high speed chip-removing dry work environments. Antistatic.

### CERAMIX LIGHT (P.E.I. CODE TEMAT 181)

It has an excellent abrasion resistance and excellent shear strength. The fabric insert is made by an antistatic-proof material with good transverse rigidity and a very attractive appearance. Ceramix Light is normally used in case of hot and shearing shavings, or in high speed chip-removing dry or wet work environments. Antistatic.

CODE	Description of materials			Thickness (mm)	Heat resistance	
	Visible side	Fabric insert	Hidden side		Momentary contact °C	Continuous °C
TEMAT180	CPT*	Polyester	-	1,8	+1200	-30 +90
TEMAT181	CPT*	Polyester	-	0,9	+1200	-30 +90

\* Ceramic Polymer Technology





## SOME APPLICATIONS ON MACHINE TOOLS

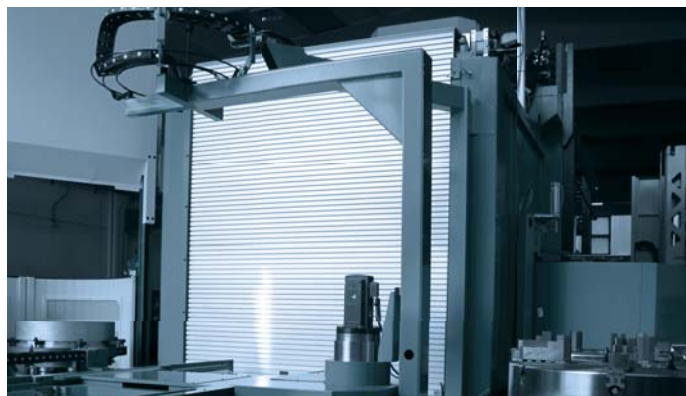
**CNC MACHINING CENTERS**



**GANTRY MACHINING CENTERS**



**TURNING CENTERS**



**MILLING CENTERS**



**VERTICAL TURNING MACHINES**



**CNC TURNING MACHINES**



**BORING AND MILLING CENTERS**



**PORTAL MILLING MACHINES**



More information on our website [www.pei.it](http://www.pei.it)



## FURTHER APPLICATIONS OF THE P.E.I. PROTECTIVE COVERS

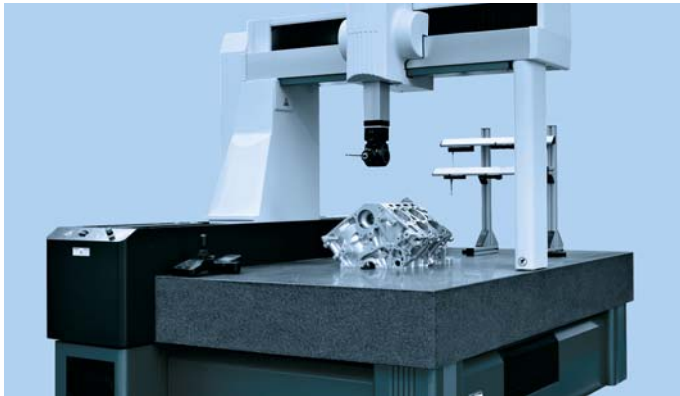
### SECURITY



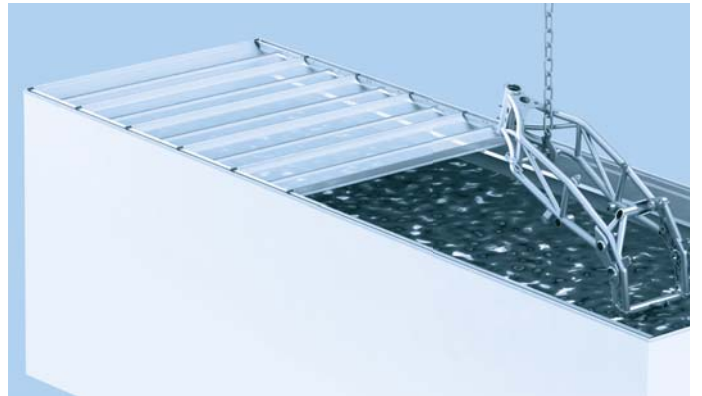
### LABORATORY TESTING MACHINES



### MEASURING MACHINES



### GALVANIC AND SURFACE TREATMENTS



### MEDICAL SECTOR



### LOGISTICS



### AGRICULTURE



### FOOD INDUSTRY



More information on our website [www.pei.it](http://www.pei.it)





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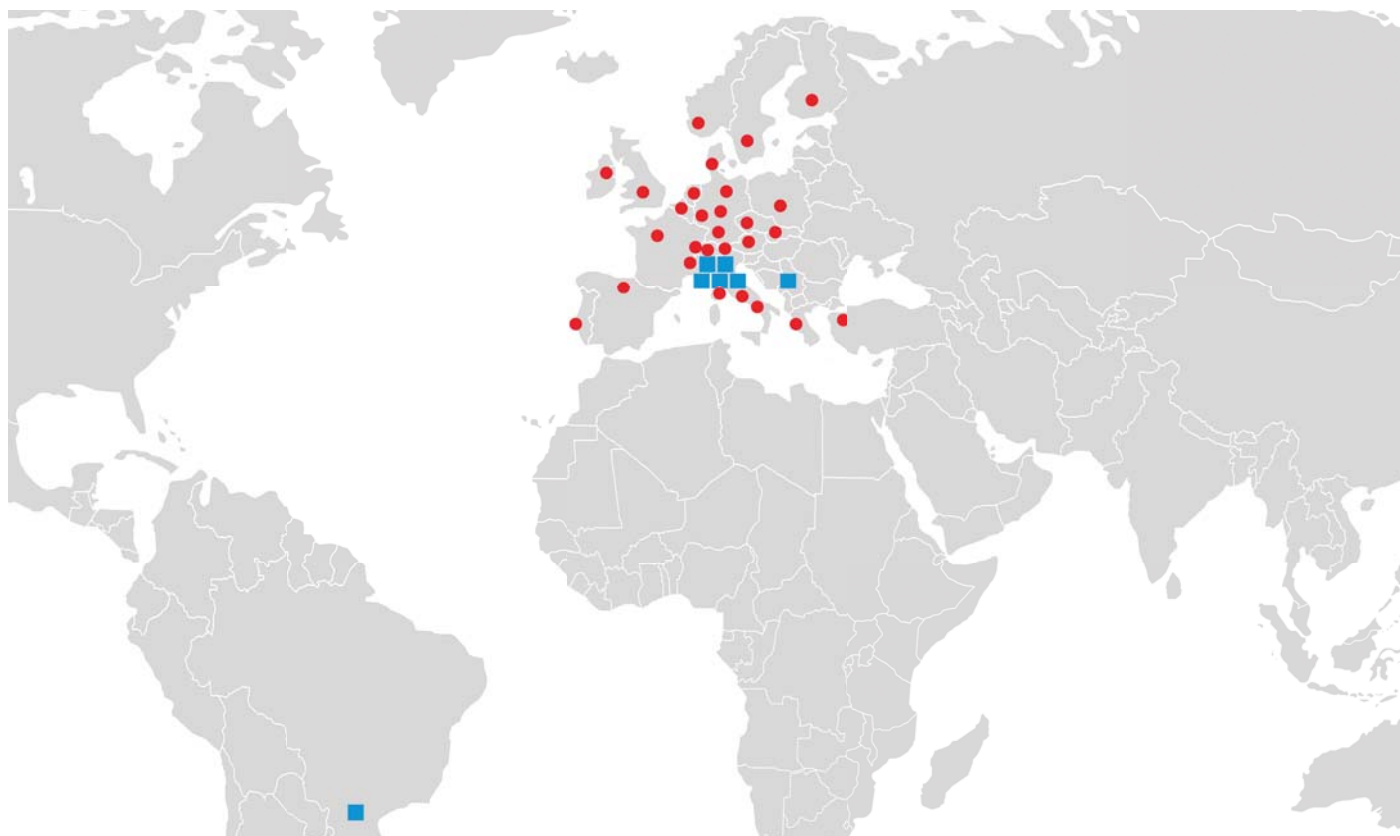
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