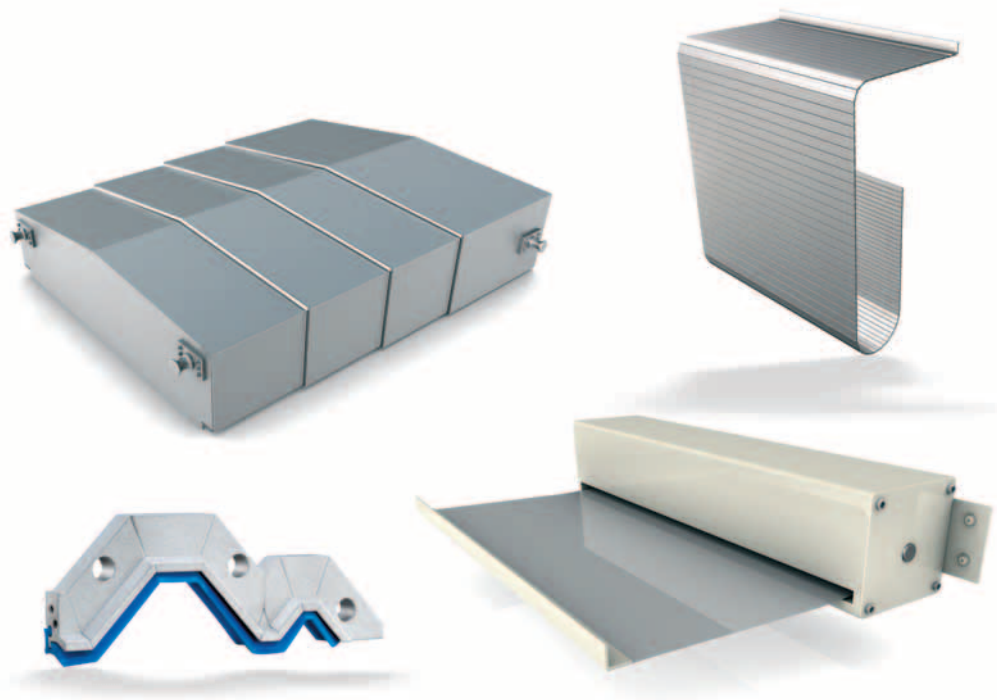


Guideway protection systems.

Perfect protection for guideways on machine tools.



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Telescopic covers.

Perfect protection for guideways on machine tools.

Wherever guideways on machines have to be protected, we have a suitable solution. Our guideway protection systems boast a high

degree of operational reliability, a long service life, and make use of innovative technical solutions.

Every production machine requires protection for its guideway

Today, modern machine tools process workpieces at ever-greater cutting and travel speeds. The protection of guideways, measuring systems, drive elements and other vulnerable parts is absolutely essential. Accelerations and speeds of machines are constantly increasing.

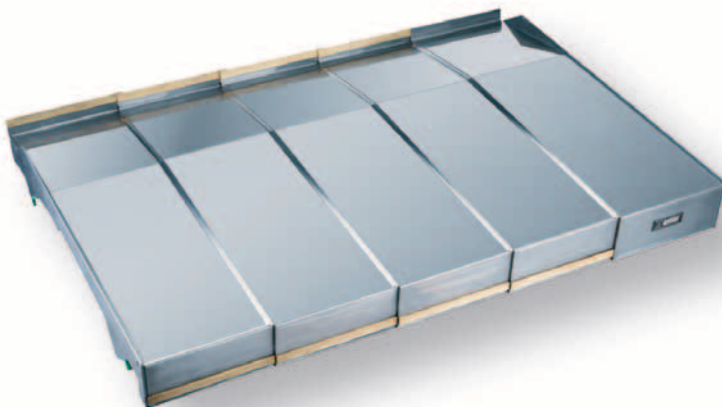
Telescopic covers must also be able to cope with these challenges. This is where telescopic covers with harness mechanisms are used.



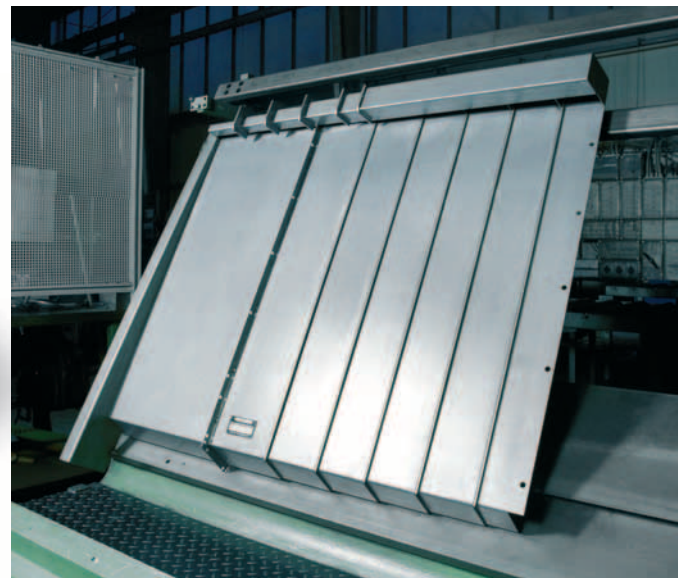
■ Cross-beam cover at a milling machine

From individual manufacture to series production – we have a solution

The number of varieties is immense, no cover for a machine is exactly the same as any other.



■ Series cover



■ Special form of an inclined bed cover on a test framework

Designs and areas of application

Until the 1970s, telescopic covers seldom moved in speed ranges any greater than 15 m/min.

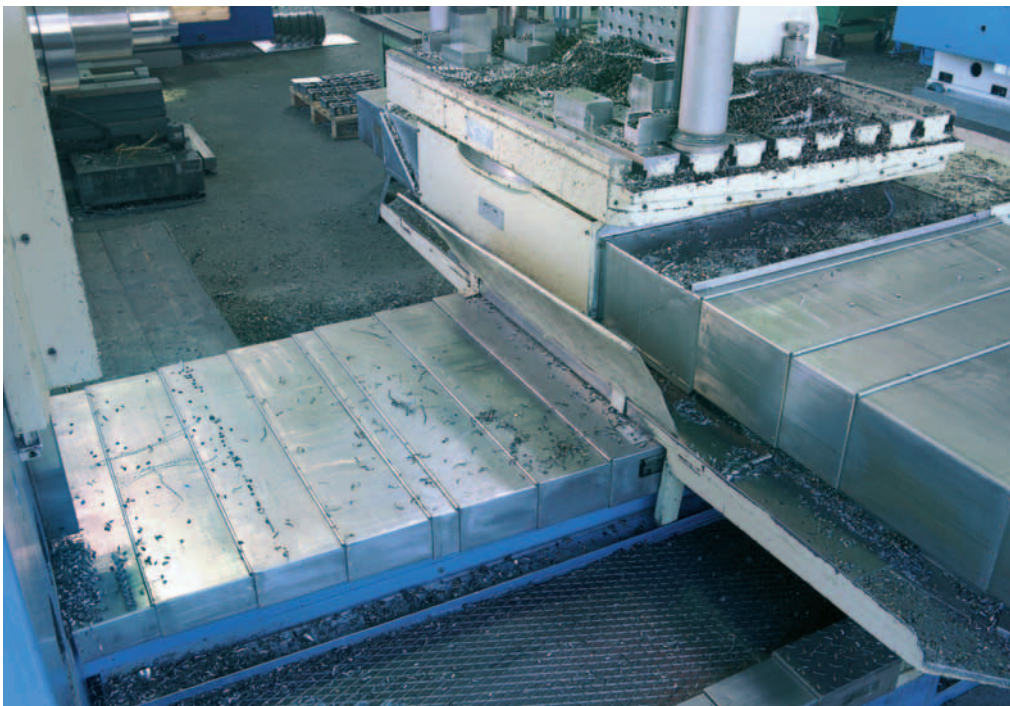
The expansion and compression of the individual boxes took place sequentially. Due to the low speed, there was hardly any impact noise.

Over the years, however, improvements in drive technology have increased the travel speeds of the machines and thus also the speeds of the cover.

At high travel speeds, the impact pulse exerted on the cover becomes truly enormous. This results in loud impact noises. What is more, the telescopic cover is subjected to very large mechanical stresses.

The landscape for telescopic covers has changed greatly in the last few years.

“Old” designs are less and less in demand, with modern concepts such as covers with differential drives taking their place.



■ Telescopic cover with flat shape on a boring machine

Telescopic covers are generally produced from cold-rolled uncoated thin plates in thicknesses from 1 to 3 mm.

In case of extremely aggressive environmental conditions (e.g. aggressive cooling lubricants), corrosion-resistant stainless steel plates may also be used.

The new generation of KABELSCHLEPP telescopic covers also allows the use of semi-finished products with surface finishings such as:

- Plates with pure zinc coatings
- Plates with zinc/nickel coatings
- Plates with lead/zinc coatings

This ensures substantial protection against corrosion.

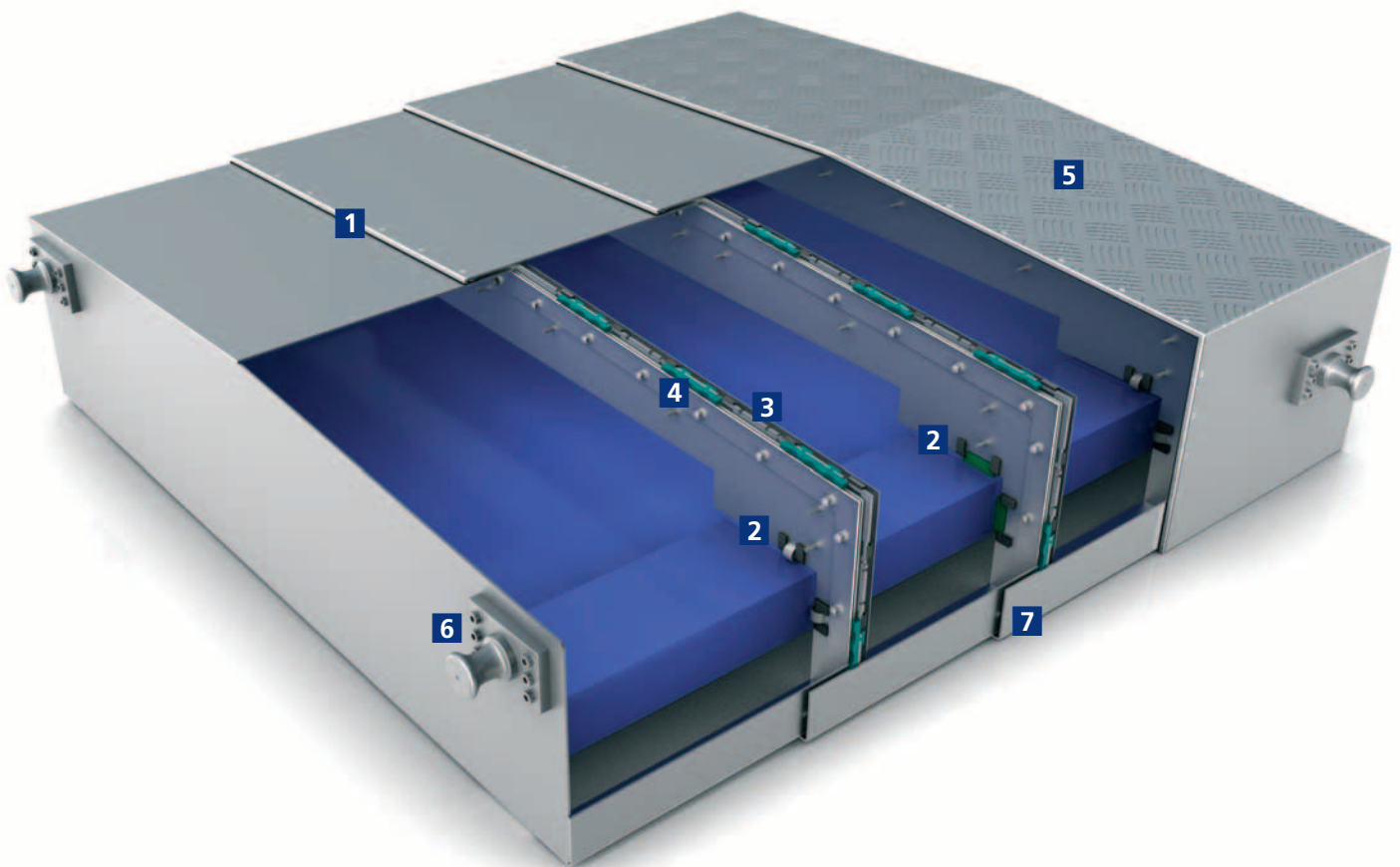
Telescopic covers.

The speed is decisive.

At speeds below 15 m/min a telescopic cover can still be built in the conventional form of box synchronization. At higher speeds, however, the inevitable impact noises become clearly audible and unpleasant.

So-called differential drives serve to synchronize the boxes and eliminate the impact noises. KABELSCHLEPP has chosen the old, proven harness mechanism principle, in which special materials are used.

Telescopic cover with damping elements



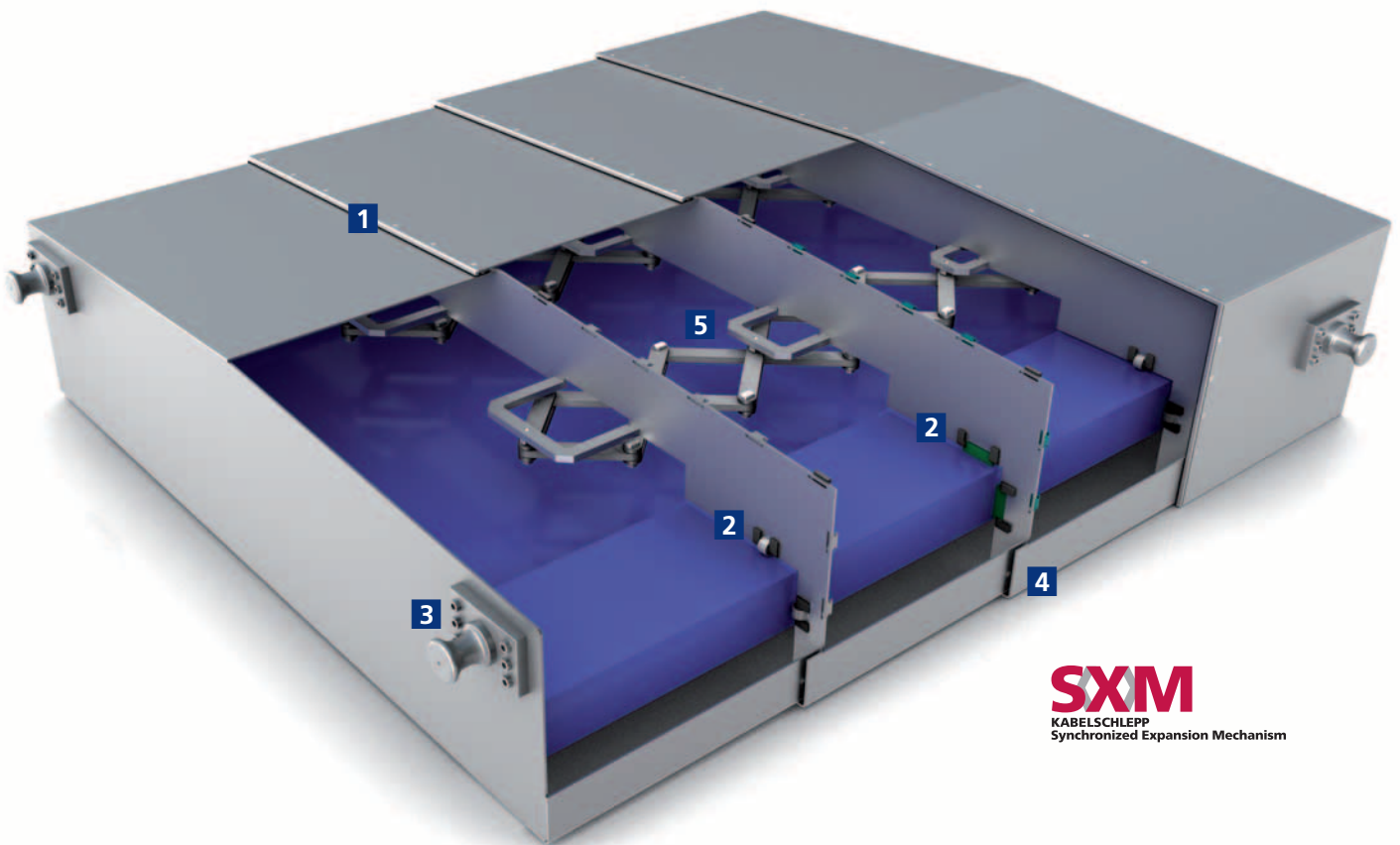
- 1** Wiper systems in various designs
- 2** Rollers / sliders
- 3** Gully in various designs
- 4** Damping systems in various designs

- 5** Structural metal plates to prevent slipping (on the largest box)
- 6** Lifting element
- 7** Locking system

Travel speed	Damper elements / harnesses
Up to 15 m/min	Not required
Up to 30 m/min	Damper elements
Up to 60 m/min	Damper elements / harnesses

The use of damping elements depends on the travel speed and the moving mass. The information in the table should therefore only be viewed as guide values.

Telescopic cover with harness mechanism



SXM
KABELSCHLEPP
Synchronized Expansion Mechanism

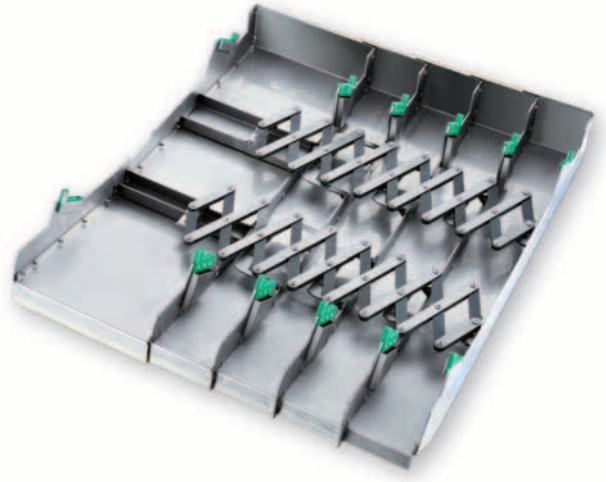
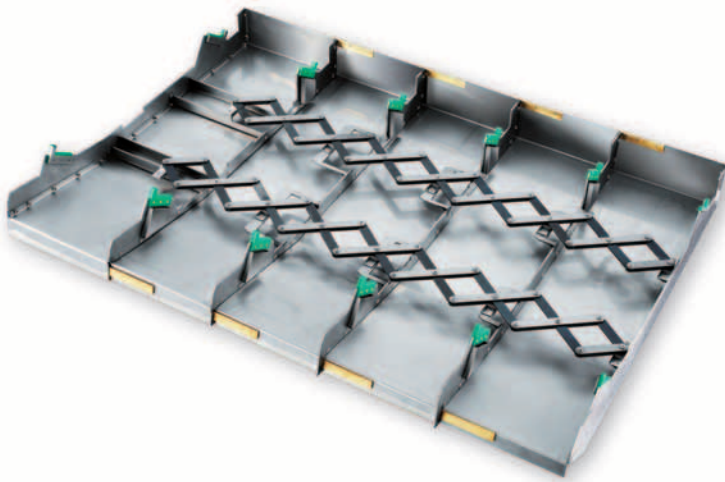
- 1** Wiper systems in various designs
- 2** Rollers / sliders
- 3** Lifting element
- 4** Locking system
- 5** Synchronising device (harnesses) for fast-running telescopic covers

SXM – Mechanical elements with harnesses.

KABELSCHLEPP sets the mark.

To ensure impact-free expansion / compression of telescopic covers, they are used with so-called synchronisers (harnesses). As a result, all of the cover boxes move

evenly during expansion and compression. The individual boxes move relative to each other only at a differential speed.



- Telescopic cover with proven harness mechanism in various expansion states.

SXM

KABELSCHLEPP
Synchronized Expansion Mechanism

SXM – Synchronized Expansion Mechanism.

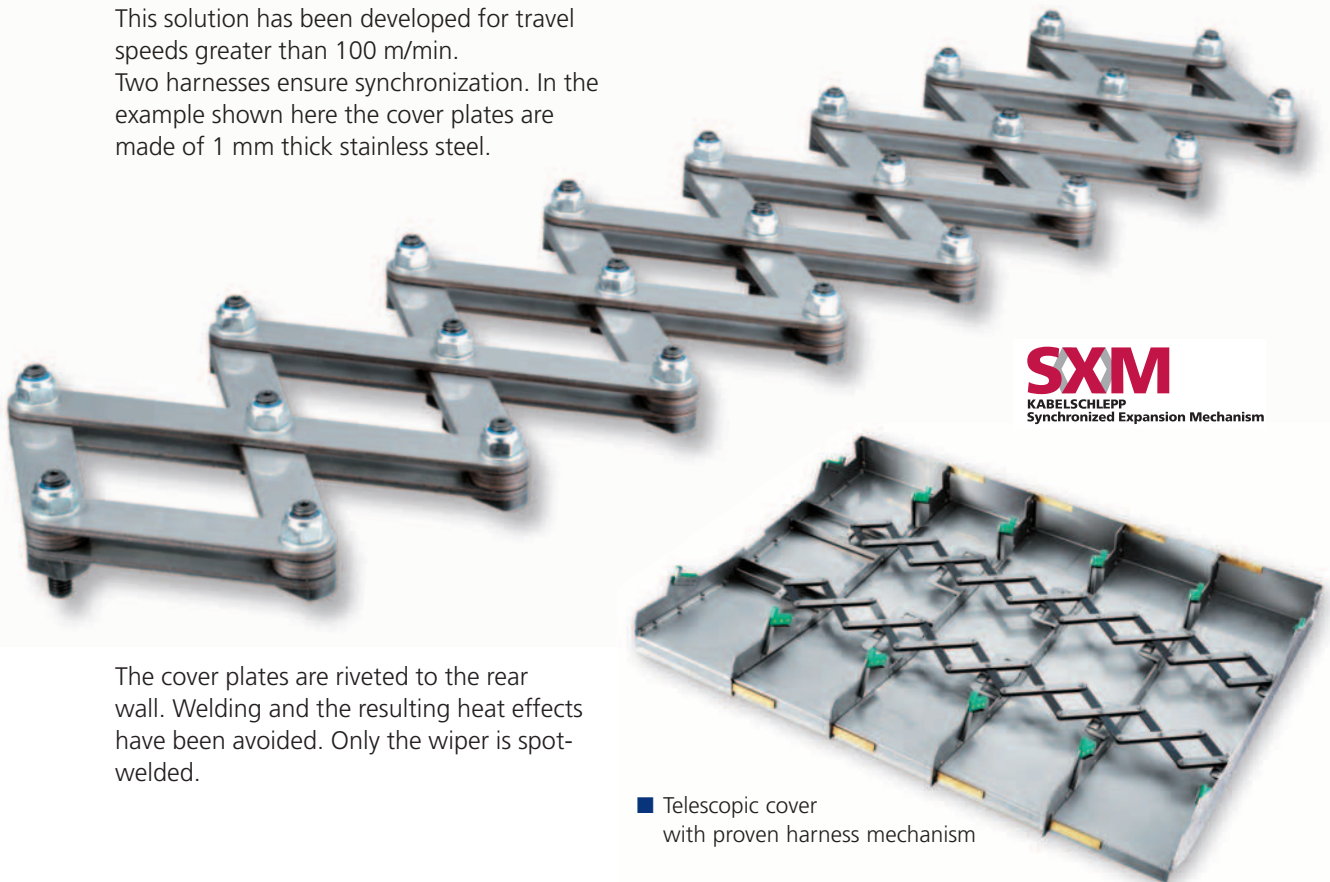
The KABELSCHLEPP harness technology is used wherever you find this symbol.

Telescopic covers with harness mechanisms have many advantages:

- High travel speeds up to 200 m/min are possible.
- **Acceleration forces** and speeds are **uniformly distributed across all the plates**. This also applies to the resultant inertial forces.
- The **force peaks** that would normally occur when the telescopic covers dashed against each other **do not occur**.
- The disruptive **impact noise** of the boxes **is eliminated**.

Cover with two harnesses

This solution has been developed for travel speeds greater than 100 m/min. Two harnesses ensure synchronization. In the example shown here the cover plates are made of 1 mm thick stainless steel.



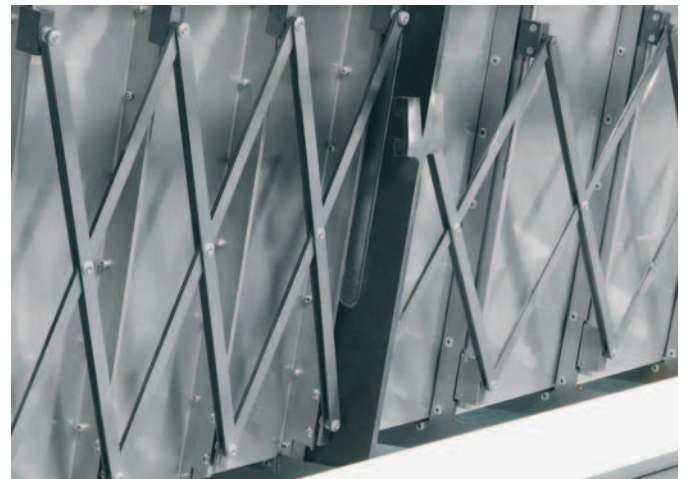
The cover plates are riveted to the rear wall. Welding and the resulting heat effects have been avoided. Only the wiper is spot-welded.

■ Telescopic cover with proven harness mechanism

Cover with one harness

This particularly lightweight solution has been developed for "small" machine tools. The cover plates are made of 1 mm thick normal steel.

The travel speed in this special application is only 30 m/min. The harness mechanism serves to ensure synchronization, however, and the reduced mass of all the elements means that it was possible to develop an especially cost-effective solution here.



■ Telescopic cover with only one harness

Telescopic covers.

Perfect protection for guideways on machine tools.



Photograph: Waldrich Siegen Werkzeugmaschinen GmbH

Designs

Machine tools come in a wide variety of designs. That is why a modern lathe needs another type of telescopic cover than, for

example, a large bed-type milling machine. The following designs provide an overview of typical designs.

Flat shape

The U-shaped design is generally used in a horizontal, lying position for milling table guides. With this design the maximum width of the telescopic cover should be limited to 1.5 m.



Roof shape, centric (eccentric)

This design is always advisable when cooling lubricants are used. The inclined surface allows the water – and naturally also the chips – to run off more easily. With large covers (> 3 m width) for reasons of stability, etc. at least three roof angles should be provided.



Flattened roof shape

The flattened roof shape is a special construction method with two roof angles. Primarily for dry operation and widths > 3 m.



Shape with incline to one side

The shape with incline to one side has a special roof shape. Depending on the possible incline, covers can be constructed with widths of up to 1.5 m. This shape is likewise a recommended solution when large amounts of coolant are present. Depending on the angle of incline, this form also helps to discharge coolants / chips.



Vertically-installed telescopic cover

Standing covers are used on larger machine tools, mostly in the area above and below the cross beam. They can take many different shapes.



Blind cover

With blind telescopic covers, the cover plates move in separate guide rails, each of which is mounted on the machine at the sides. It is used exclusively in a vertical arrangement. The guide rails are generally made of brass.



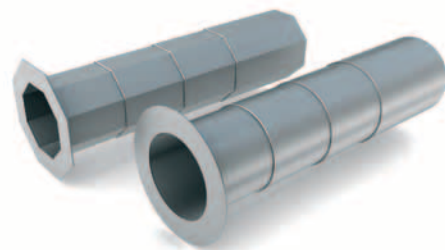
Cross-beam cover

These covers are predominantly used on large gantry machine tools on a cross beam to the left and right of the support. The boxes are suspended vertically and protect the support guides from chips and cooling lubricants.



Tubular cover, polygonal cover

Tubular covers or covering shafts, spindles, etc. They can be made either with a round or a polygonal shape.



The enquiry form and the design dimensions can be found on page 75ff.

Other forms and special designs tailored to your specific requirements are possible. Please do get in touch with us, we will be happy to advise you!