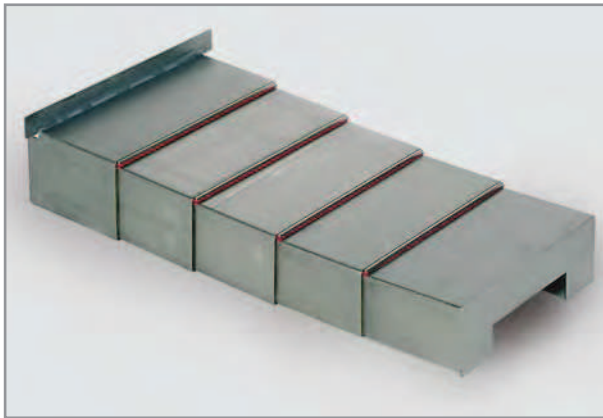


GLADIATOR TELESCOPIC STEEL COVERS

Telescopic steel covers are used to protect slideways in certain machine tool applications. They offer effective protection against swarf and other debris. Liquid or coolant ingress can be effectively reduced by feature design and the use of suitable wiper systems.

The benefits:

- Cost efficient production
- Efficient wiper systems
- High quality production
- Repair service and spare parts ex stock
- Fast design and delivery times



Design

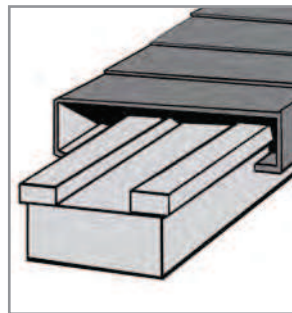
- The depth of one individual box section should not be larger than 750 mm
- The cover height should not be larger than the length of the cover because of the danger of it falling over.
- The relation of box depth to box width should not exceed 1:6
- Principally use only graded types where each wiper rests on the adjacent box section. Designs where wiper overhang can result in swarf ingress.
- With coolant, the top of the covers should be inclined at an angle of 5°
- In principal, allow space for an underside return of the box sections, as this will stiffen the structure and will provide a constant pretension
- The minimum distance of the smallest box to the guiding position should be 12 mm
- For calculating the travel of the cover, add 5 mm of reserve per box to the travel of the machine
- For covers used in vertical position, gliders should be used for the underside return, which should be screwed on at least to one side for later (dis)mounting
- As a general rule is: maximum extension and minimum compression should be at maximum in the ratio 10:1

Material

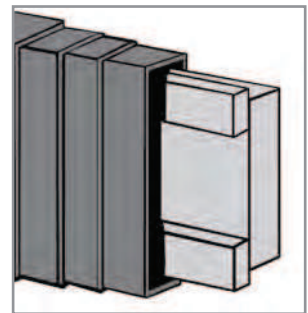
The steel covers are produced from high quality cold-worked sheet steel in material thickness from 1.5 to 3 mm, or if required in stainless steel.

For all common types of machines a suitable type of cover (e.g. horizontal, vertical, inclined; transversed) together with the corresponding guide way solutions is available.

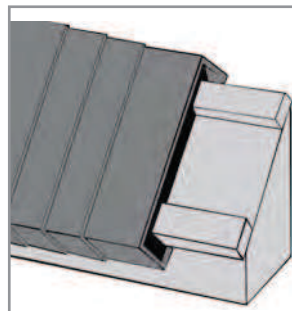
Samples of cover type



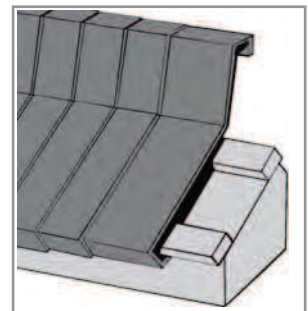
Horizontal



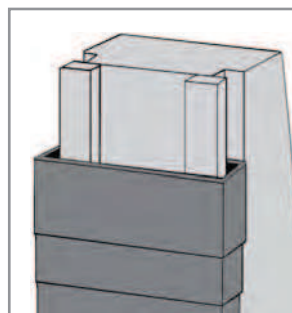
Transversed



Inclined



Inclined, folded



Vertical

Impermeability of telescopic steel covers to coolant

Due to the design of steel covers a complete sealing against fluids cannot be guaranteed.

The standard types generally provide sufficient coolant protection. For high coolant flow rates, additional internal drainage channels, or a thermally bonded ELASTIC bellow underneath can offer additional protection.

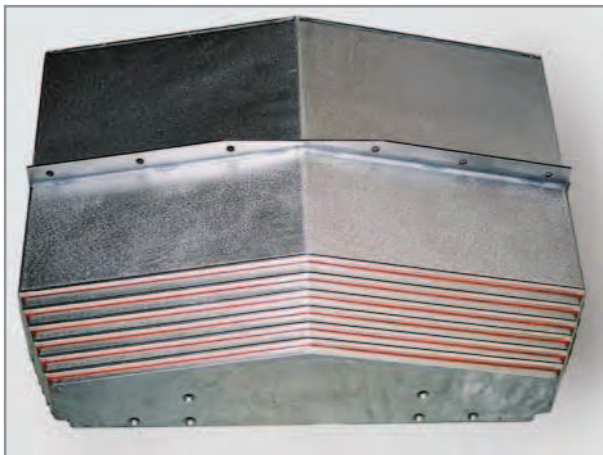
GLADIATOR COMPONENTS

Telescopic Steel Covers can be custom built to suit any application by adding further individual components.

Wiper profiles

For Telescopic Steel Covers different wiper systems are available. In addition to standard wipers also wiper systems with replaceable lips or additional lip protection are available.

All systems come with optimised wiper profiles and differing degree of hardness for dry and wet machining. For more detailed information of these systems please see the following pages.



Wiper

Support and guideway gliders

Telescopic Steel Covers up to a weight of approx. 50 kg can be supported by guideway gliders. Special profiled brass parts with sufficient contact width (appr. 5 mm) suitable for hardened and soft guideways, or with PUR inserts.



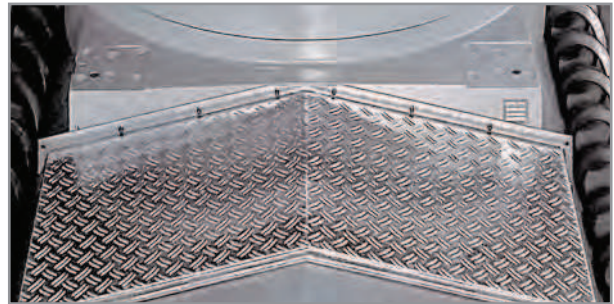
Supporting rollers with lateral brass guides

Supporting rollers

For covers greater than 50 kg unloaded weight supporting rollers are recommended. Hardened guideways (>58 HRC) or separate support/guideways are required, no matter how large the total number of rollers, assume that the total weight is supported on no more than for rollers.

Walk-on area

As an option a chequered plate to walk on can be added to the largest box section for easier maintenance of the machine.



Walk on area on largest box

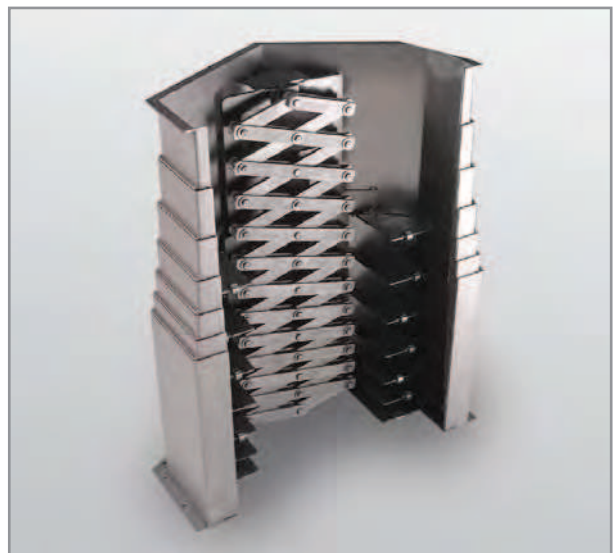
Access window

By building in access windows (an option) into the largest box, the maintenance and repair of the machine parts underneath can be achieved without having to remove the complete cover.

Pantograph systems

For high speed of more than 30m/min we build in pantograph systems (graded versions as well).

The space required will be increased in this case.



Telescopic steel cover with pantograph

Glider and damper systems

Glider and damper systems reduce impact, noise and friction. Optionally, wipers with dampers can be used as well.

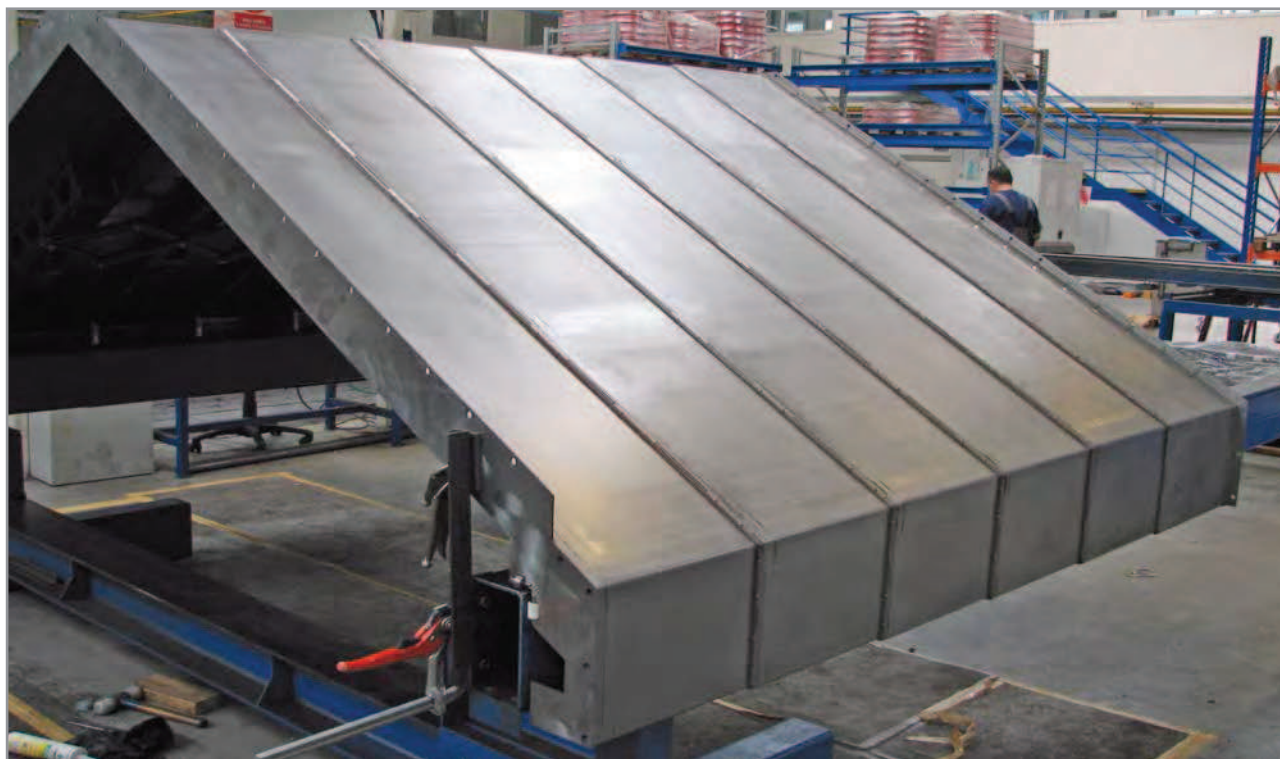
Mounting

For mounting/dismounting and transport, suitable lifting lugs can be fitted.

SERVICE & QUALITY	02
STANDARD BELLOWS	08
SAUMRAI BELLOWS	18
SPECIAL BELLOWS	26
BACKWALL SYSTEMS	36
GLADIATOR STEEL COVERS	39
ROLLER SYSTEMS	46
DURASPRING SPIRAL SPRINGS	58
VIEWING SYSTEMS	68

GLADIATOR REALIZATION

02	SERVICE & QUALITY
08	STANDARD BELLOWS
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26	SPECIAL BELLOWS
34	BACKWALL SYSTEMS
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68	VIEWING SYSTEMS



GLADIATOR Telescopic steel cover



GLADIATOR Telescopic steel covers are individually designed for each machine to meet special requirements.

For special requirements, covers greater than 5 metres width and expansion more than 15 metres can be realized

All parts of this construction are individually designed and checked for smooth operation.

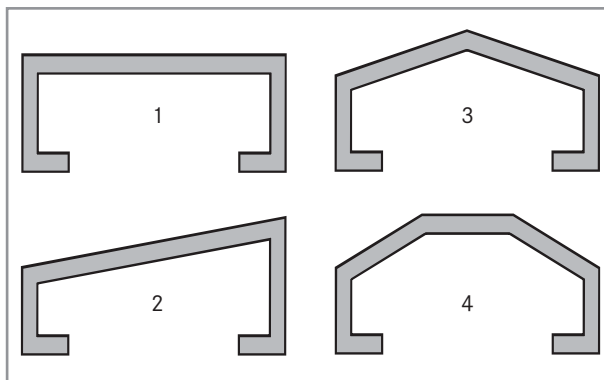


GLADIATOR DESIGNS

Designs

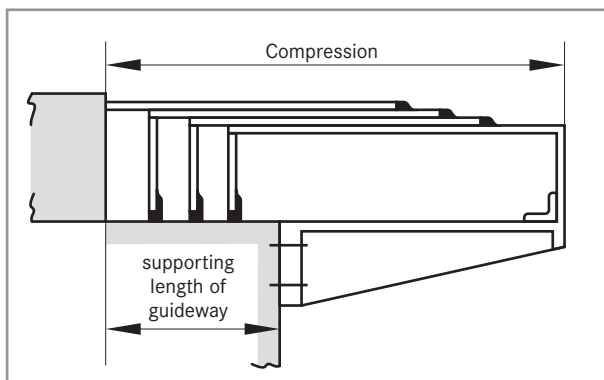
Telescopic steel covers can be produced in different designs:

- Standard design (1): cost-efficient, suitable for most standard applications. It can be used without problem up to a width of 900 mm
- Inclined shape (2): provides optimal drainage of liquids
- Roof shape with single edges (3): for larger widths, additional returns are required to increase the cover stiffness. Provides optimal drainage of coolants.
- Roof shape with double edges (4): for larger widths, additional returns to increase the cover stiffness, optimal drainage of fluids.



If the compression exceeds the available supporting length, a support box section has to be added.

For the opposite case, the largest front box section may be extended by a plate. The problem here is that chips and dirt may accumulate impairing the functioning of the cover.



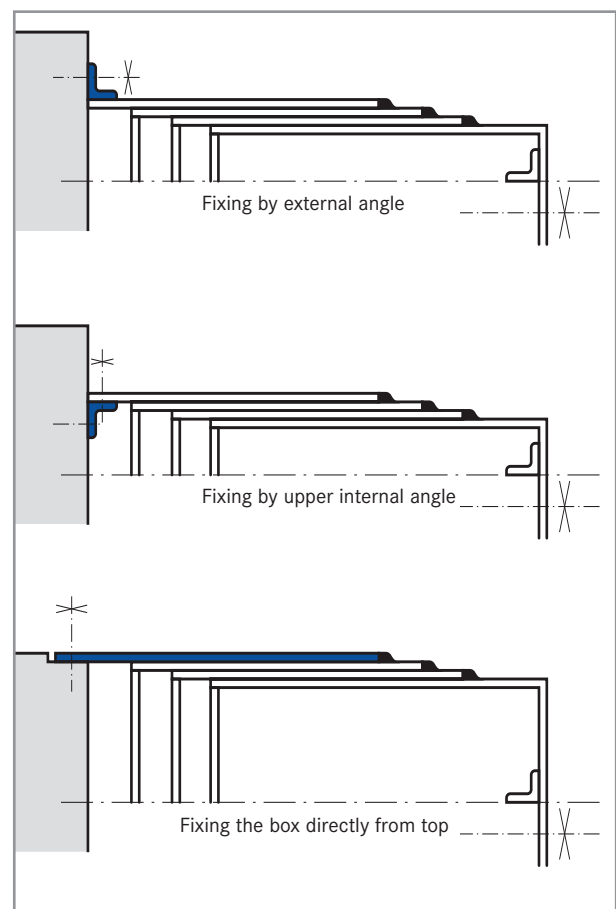
Pay attention to a smooth transition from the guideway to the machine bed extension.

Extensions are required only in the area of the support gliders. They can be manufactured from common steel (i.e. St37K).

Mounting

For mounting and fixing of the steel covers we offer you solutions specifically to the customer's individual requirement. The covers are fixed either directly to the corresponding first or final box section or by additional fixing brackets which may be attached internally or externally.

- Fixing by lateral external angle (recommended)
- Fixing by upper internal angle.
- Fixing the box directly from the top - high positional accuracy is required.



Transport

The covers are transported in the closed position; additionally they should be stored in an environment without humidity.

Before shipping, the telescopic steel covers are sprayed with an anti-corrosion oil and wrapped into plastic foil.

This will protect the steel cover against corrosion during transport and longer storage periods.

Please lubricate the entire steel cover from the outside before operation.

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MAINTENANCE AND CARE

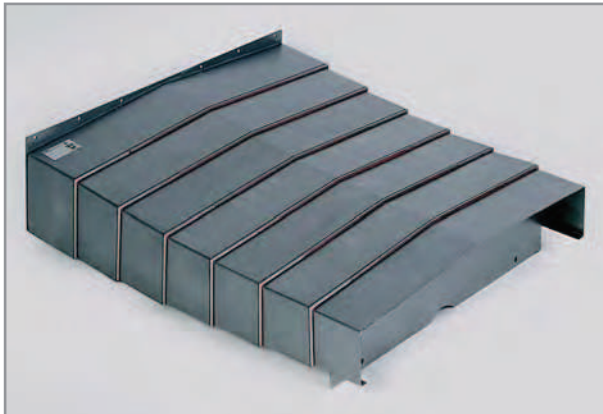
GLADIATOR Telescopic steel covers require regular maintenance during use. To avoid damage, they should be inspected and cleaned regularly, depending on the degree of contamination.



GLADIATOR Telescopic steel cover, sample

Surface of the steel covers

Please extend the steel covers and clean off any dirt. Next you should rub the steel cover with an oil-soaked cloth. This will prevent early wear and corrosion.



GLADIATOR Telescopic steel cover, extended

Do not clean by compressed air, because foreign particles may be forced into the interior of the steel cover.

Steel covers and chip exposure

When heavily exposed to chip, the steel cover should be checked frequently and regularly for ingress of swarf. If swarf is found on the inside, the steel cover should be disassembled and cleaned carefully. Chips located in between the boxes will cause rapid deterioration of the steel cover.

Maintenance

Regular preventive maintenance is the basis for long-term and reliable operation.

Please ensure that the following wearing parts are exchanged at regular intervals, depending on wear:

- Guideways
- Wipers
- Gliders and rollers
- Pantographs
- Seals

Guideways

To inspect the guideways of the machine, compress the steel cover and disconnect at the largest box.

Take this opportunity to spray the underside of the cover with oil.

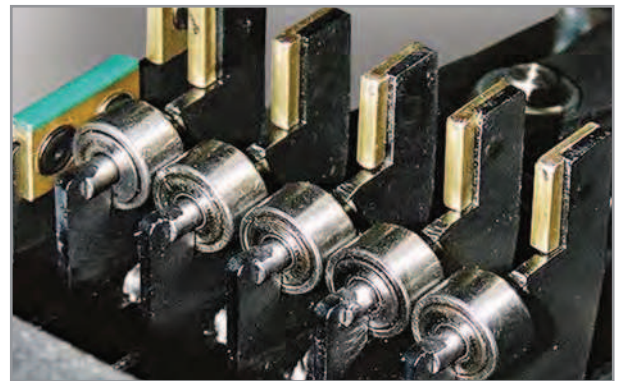
Wipers

Wipers and their lips should be inspected frequently and regularly. Please renew the wipers and lips if the adjoining box sections are no longer in proper contact.

This can be recognised by smear formation or remaining deposits of coolant and chips.

Gliders

Please renew the gliders when their bearing surfaces show heavy wear or deformation or when chips have penetrated.



Roller and glider

Seals

Regularly check joints which had been treated with sealant. Should these seals detach or dissolve, e.g. by aggressive coolants, they have to be replaced with appropriate sealant (e.g. PU or silicon).

Safety information

Please consider the safety information in the service and maintenance manual included with each delivery.