In addition to external factors, such as temperature, chemical environment and mechanical stress, “sharp edges” still represent one of the main causes for damage on the lifting gear itself and have therefore a frequent cause of accidents. The most damage on sharp or rough edges occurs by moving the load transversely to the lifting gear. This is known relative motion. If the edge is “sharp”, the lifting gear can, in the worst case, separate the load moves to the side, a cutting motion occurs at the edge. Being comparable with the blade of a knife, the edge can cut unprotected lifting gear.

For handling loads with sharp edges, one often improvises and finds an insufficient solution. Therefore, a pile of gloves or paper are used for edge protection, among other things. This can result in fatal accidents.

Machinery components that could potentially have sharp edges can already be planned hand in hand with our lifting technology specialists before or during their construction so that sharp edges are avoided by means of mountable and demountable attachment points located on the load. Direct contact between the lifting gear and the component is avoided in this manner. In the above-mentioned case, use of edge or abrasion protection can be done without.

So-called “rough loads” with a robust surface and cutting edges where scratches and indentations do not play a large role and that are damaged by the physical impacts of force such as gripping or pushing can be moved using grippers or lifted using heavy chains/wire cable in combination with an edge protector.

In contrast to rough loads, sensitive constructions with sharp edges have to be handled especially gently. For this, textile lifting gear, such as lifting straps or round slings, are suitable. When lifting or moving, the goods and textile lifting gear must not be damaged. To protect textile lifting gear from being cut by sharp edges, cut-proof sleeves made of polyurethane elastomer or HMPE high-performance fibre maintain the gentle characteristic of textile lifting gear and protect these from being cut by sharp edges.
We have something against "sharp edges".

Years of experience, in-house test procedures, testing equipment and on-site consultation in the case of especially complicated loads provide the sound knowledge when dealing with sharp edges. Furthermore, we would like to provide optimal support to companies and their employees in handling "sharp edges" in order to effectively avoid risks during the course of daily work. For this reason, SpanSet offers training and further education opportunities in the field of "sharp edges" on an annual basis that convey state-of-the-art knowledge in a practical manner, being held by certified instructors. Special constructions and support in the case of the most difficult lifting procedures make up our day-to-day business.

An overview of SpanSet’s edge protector range

- Edge protector
  - Consultation, training and accessories
  - A complete range of protective measures and seminars
  - Operating manuals, documentation with detailed statements on edge radii and lifting gear
  - Product identification using labels and transponders
  - Edge protector products certified by DEKRA
  - Special solutions in dialogue with customers

For further information, please refer to the following addresses:

- www.secutex.com
- www.spanset.de

We offer:
- A complete range of protective measures and seminars
- Operating manuals, documentation with detailed statements on edge radii and lifting gear
- Product identification using labels and transponders
- Edge protector products certified by DEKRA
- Special solutions in dialogue with customers

Consultation, training and accessories

- Page 12 and 15
In just a few steps, find the right edge protector for your lifting gear directly in a simple manner.

Product selection made easy with the free online tool, NoCut® “Product Finder”.

In line with the low intrinsic weight of NoCut®, we also make the selection of products easy.

Using the free Product Finder, you can define the appropriate NoCut® product for textile lifting gear online in just a few steps.

1. Enter, the lifting gear used must be selected. Here, the most common lifting straps and round slings by SpanSet can be selected.
   - Lifting straps HB, PB, PC, PCS
   - Round slings Liftfix, MagnumPlus, Magnum-X, SupraPlus, Twintex

2. Next, the bearing capacity [WLL] of the lifting gear must be specified.

3. Then, the working length of the lifting gear must be specified.

4. Following this, the edge radius of the load has to be defined. Radius from 0 to 3 mm are possible.

5. Finally, the length of the NoCut® sleeve/pad must be defined. Should the NoCut® pad be the right product for the application, the user can still choose between several designs in the case of the fastening element.

6. The attachment must be determined to be single or double stranded.

In line with the low intrinsic weight of NoCut®, we also make the selection of products easy.

Using the free Product Finder, you can define the appropriate NoCut® product for textile lifting gear online in just a few steps.

The Product Finder can be found here: http://configurator.spanset-nocut.de

The user can select the lifting gear, the edge protector and the length of the product.

Afterwards, a SpanSet employee will contact the user. In this way, open questions can be clarified and you can be sure that you have selected the right type of cut protection for the application.
Defining "sharp edges"

The definition of a sharp edge is not recognized as such if all because the edge is seen as a smooth edge and not sharp.

A sharp edge already exists if the edge radius, r, is smaller than the thickness, d, of the material. A sharp edge is considered sharp if the edge radius of the load is smaller than the thickness of the material, d.

Edges are considered sharp if the edge radius of the load is smaller than the nominal thickness of the round steel chain, the thickness of the lifting belt, or the diameter of the rope.

Unprotected lifting straps/round slings may not be pulled over sharp edges or rough surfaces.

Solution:
- the thicker the protection between the component and the lifting gear is, the bigger the radius of the component is, the wider the contact surface is.
- the bigger the radius of the lifting gear, the greater the surface pressure on the lifting gear and enlarges the edge radius by this factor.
- the edge radius of the lifting belt/round sling increases by approx. 90%. The surface pressure on the Magnum-X round slings is given below:

![Diagram showing surface pressure example](image)

Structure

Surface pressure example

<table>
<thead>
<tr>
<th>Lifting capacity: 5 t 6 t</th>
<th>7 t 8 t</th>
<th>9 t 10 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance: 75 mm</td>
<td>150 mm</td>
<td>225 mm</td>
</tr>
<tr>
<td>Pressure: 5 MPa</td>
<td>10 MPa</td>
<td>15 MPa</td>
</tr>
</tbody>
</table>

Please feel free to contact us.
Secutex is a polyurethane elastomer with special physical, chemical and mechanical characteristics and is especially cut-proof and wear resistant. The surface is treated in such a way that it ensures a lasting and reliable “sharp edges” connection that cannot be severed. The textile side is protected against high abrasions while generating less friction. Available in various degrees of hardness, the slippery zones are optimally adapted to the lifting procedure on the basis of the respective load.

Secutex coating

Secutex coating is especially thin sprays coating that penetrates deep into the fabric and seals it. Foreign particles and fluids can no longer penetrate it and are simply removed from the belt surface. The resulting coating, “Powerflex”, is used everywhere where impact protection and extreme resistance to abrasion is essential and where a high level of flexibility of the lifting belt should be maintained. Since the lifting belt is covered, both sides can be used as the side of attachment.

Secumove, easyClip, veloxClip, SF-1, SF-2, Clip-SC, secuwave, one-sided [S1], two-sided [S2]

Secutex Tropic

For use subject to permanent moisture, hydrolysis-resistant "secutex Tropic" is suitable. While common polyurethane elastomers lose their properties under the constant influence of moisture (especially salt water), the lifting straps coated with "secutex Tropic" remain continuously cut-proof – the first choice for offshore use.

Secumove, easyClip, veloxClip, SF-1, SF-2, Clip-SC, secuwave, one-sided [S1], two-sided [S2]

Reinforcement

The patented reinforcement developed by secutex considerably increases the cut resistance of the secutex coating. By specially inserting steel plates, the coated part of the lifting belt is equipped with an additional protective layer. Suitable for sharp edges under 2 mm.

Secumove, easyClip, veloxClip, SF-1, SF-2, Clip-SC, secuwave, one-sided [S1], two-sided [S2]

Powerflex coating

Secutex coating is especially thin sprays coating that penetrates deep into the fabric and seals it. Foreign particles and fluids can no longer penetrate it and are simply removed from the belt surface.

Secumove, easyClip, veloxClip, SF-1, SF-2, Clip-SC, secuwave, one-sided [S1], two-sided [S2]

SFX, Powerflex [PF]

Combination of secutex and Powerflex

The side of attachment coated with secutex, the backside with Powerflex.

HMPE high-performance fibres

HMPE (high-modulus polyethylene) is a high-performance fibre with a high level of cut and abrasion resistance. The material has a low coefficient of sliding friction and has a very high level of notch impact strength. By adding UV stabilising substances to the fibres, the material gains a very good level of light resistance. This fibre hardly absorbs any water at all. Therefore, by means of swelling, the material remains stable. HMPE woven cut-proof sleeves feature a low intrinsic weight and an especially flexible and durable construction.

NoCut® sleeve, NoCut® pad

Secutex standard surfaces

In particular, secutex-coated lifting belts with a form-fitting surface are suitable for use under the influence of water, ice, and oil. The combination of raised and recessed structures in the surface looks like drainage and maintains the frictional lock.

Types

Smooth

The load is on the entire surface. It is a dry state, i.e., after the largest loss of friction locking and at light slip, the load is transferred to the greatest extent possible.

Green

The surface is slightly rough. It is used if the side of attachment comes into contact with small amounts of fluid.

Fish bone

More than "ground", this surface makes it possible for liquids to run off the surface. By means of an almost linear relationship between lifting friction and sliding, it maintains a high level of friction locking to the load.

Pyramid

The load is only on the tip. Large amounts of fluid can drain as fast as possible without breaking the contact between the side of attachment and the load.

Waves

Large, wave-shaped protrusions make it possible for the load to slide against the lifting gear. secuwave enlarges the deflection radius in such a way that even "sharp edges" do not have any contact with the protective sleeve and therefore are not able to cut.

Smooth

The load is on the entire surface. It is a dry state, i.e., after the largest loss of friction locking and at light slip, the load is transferred to the greatest extent possible.

Green

The surface is slightly rough. It is used if the side of attachment comes into contact with small amounts of fluid.

Fish bone

More than "ground", this surface makes it possible for liquids to run off the surface. By means of an almost linear relationship between lifting friction and sliding, it maintains a high level of friction locking to the load.

Pyramid

The load is only on the tip. Large amounts of fluid can drain as fast as possible without breaking the contact between the side of attachment and the load.

Waves

Large, wave-shaped protrusions make it possible for the load to slide against the lifting gear. secuwave enlarges the deflection radius in such a way that even "sharp edges" do not have any contact with the protective sleeve and therefore are not able to cut.

Smooth

The load is on the entire surface. It is a dry state, i.e., after the largest loss of friction locking and at light slip, the load is transferred to the greatest extent possible.

Green

The surface is slightly rough. It is used if the side of attachment comes into contact with small amounts of fluid.

Fish bone

More than "ground", this surface makes it possible for liquids to run off the surface. By means of an almost linear relationship between lifting friction and sliding, it maintains a high level of friction locking to the load.

Pyramid

The load is only on the tip. Large amounts of fluid can drain as fast as possible without breaking the contact between the side of attachment and the load.

Waves

Large, wave-shaped protrusions make it possible for the load to slide against the lifting gear. secuwave enlarges the deflection radius in such a way that even "sharp edges" do not have any contact with the protective sleeve and therefore are not able to cut.

Smooth

The load is on the entire surface. It is a dry state, i.e., after the largest loss of friction locking and at light slip, the load is transferred to the greatest extent possible.

Green

The surface is slightly rough. It is used if the side of attachment comes into contact with small amounts of fluid.

Fish bone

More than "ground", this surface makes it possible for liquids to run off the surface. By means of an almost linear relationship between lifting friction and sliding, it maintains a high level of friction locking to the load.

Pyramid

The load is only on the tip. Large amounts of fluid can drain as fast as possible without breaking the contact between the side of attachment and the load.

Waves

Large, wave-shaped protrusions make it possible for the load to slide against the lifting gear. secuwave enlarges the deflection radius in such a way that even "sharp edges" do not have any contact with the protective sleeve and therefore are not able to cut.
### Protective sleeves for textile lifting gear

<table>
<thead>
<tr>
<th>Type</th>
<th>Powerflex</th>
<th>secumove</th>
<th>NoCut pad</th>
<th>SFX</th>
<th>easyClip</th>
<th>veloxClip</th>
<th>SF-1</th>
<th>SF-2</th>
<th>Clip-SC</th>
<th>secuwave</th>
<th>NoCut</th>
<th>sleeve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Simple</td>
<td>abrasion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross section</td>
<td>Smooth edge</td>
<td>coating</td>
<td></td>
<td></td>
<td>coating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Lifting procedures are just as different as the respective loads themselves. This also applies to the respective types of protective sleeves. The protective sleeve is adapted to the load and the working range of the lifting gear. In this way, it can protect the lifting strap across the entire or just a short part of its working length. In the case of round slings, the single strand or also the double strand can be protected.

When to use a permanent coating and when to use a protective sleeve

With a suspended textile protective sleeve, the lifting gear can move freely through the sleeve while the load “hooks itself” into the soft surface. If movement of the lifting gear is unwanted, or if the load has to be attached in a certain position, preference is given to a permanent coating. It is coated over the entire working range. The load stays in a fixed position and movement is prevented.

### Protective sleeve types

<table>
<thead>
<tr>
<th>Type</th>
<th>Powerflex</th>
<th>secumove</th>
<th>NoCut pad</th>
<th>SFX</th>
<th>easyClip</th>
<th>veloxClip</th>
<th>SF-1</th>
<th>SF-2</th>
<th>Clip-SC</th>
<th>secuwave</th>
<th>NoCut</th>
<th>sleeve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Simple</td>
<td>abrasion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross section</td>
<td>Smooth edge</td>
<td>coating</td>
<td></td>
<td></td>
<td>coating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Lifting procedures are just as different as the respective loads themselves. This also applies to the respective types of protective sleeves. The protective sleeve is adapted to the load and the working range of the lifting gear. In this way, it can protect the lifting strap across the entire or just a short part of its working length. In the case of round slings, the single strand or also the double strand can be protected.

When to use a permanent coating and when to use a protective sleeve

With a suspended textile protective sleeve, the lifting gear can move freely through the sleeve while the load “hooks itself” into the soft surface. If movement of the lifting gear is unwanted, or if the load has to be attached in a certain position, preference is given to a permanent coating. It is coated over the entire working range. The load stays in a fixed position and movement is prevented.
highly hydrolysis-resistant “secutex Tropic” has been developed for use subject to “sharp edges”. The lifting straps coated with “secutex Tropic” remain continuously cut-proof.

Lifting straps for offshore use

Above all, the edge of a vessel lots of demand on all lifting equipment. The lifting straps coated with “secutex Tropic” are the first choice for offshore use. The coating protects the textile fabric against penetrating moisture and salt deposits – two factors that can considerably impair the overall load-bearing capacity of lifting straps.

Individual contour and surface

secutex is molded. The manufacturing process has many advantages since many forms and structures can be depicted. The in-house production and CNC supported mould-making make the optimization of the respective lifting situation to be devised together with our applications engineers. In this way, the contour of the lifting belt can contain holding points for example or the contour specific contours and surfaces. By means of a flexible fabric construction, NoCut® can be easily positioned at various sharp edges and certifed by DEKRA!”

By means of a flexible fabric construction, NoCut® can be easily positioned at various sharp edges and certifed by DEKRA!”

For the development of NoCut®, special testing equipment was constructed and built to allow the cut resistance of the respective lifting straps to be determined under realistic cutting loads. This additional protection of the processed edge.

NoCut® has been constructed with a fabric rib on both sides. On the outside, the ribbed construction increases cut resistance and on the inside, it facilitates sliding of the lifting gear in the sleeve which makes turning and rotating sharp-edged loads possible.

NoCut® provides for a high level of reliability by means of testing both sides, offering the highest level of reliability at the same time since misuse can be ruled out. The NoCut® Label that is sewn on also contributes to the high level of reliability at the same time since misuse can be ruled out. The NoCut® Label that is sewn on also contributes to the high level of reliability at the same time since misuse can be ruled out. The NoCut® Label that is sewn on also contributes to the high level of reliability at the same time since misuse can be ruled out. The NoCut® Label that is sewn on also contributes to the high level of reliability at the same time since misuse can be ruled out.
When turning and raising coils, protective sleeves cannot be done without.

The lifting belt is hung into the crate hooks and lay onto the load with the protective sleeve. When lifting, the lifting belt freely moves in side of the protective sleeve while this firmly lays against the load.

Our tips for safe rotation:
- The lifting belt is located exactly at 12 o'clock in the eye of the coil.
- Only individual, unpacked and clean would may be used.
- A slip-resistant base such as the secutex turning mat can be used.
- Rolling in the coal or slippage in a transverse direction to the lifting belt must be prevented.
- Diagonally "pulling out" a coil is not permitted.

Step 1: Determination of the minimum length of the protective sleeve
- \(2 \times \text{Height} + 3 \times \text{Width} + 2 \times \text{Supernatant} \, 25 \, \text{cm}\)

Step 2: Determination of the minimum length of the lifting strap
- \(2 \times \text{Height} + 2 \times \text{Loop length}\)

Turn by 90°

Step 1: Determination of the minimum length of the protective sleeve
- \(2 \times \text{Height} + 2 \times \text{Width} + 2 \times \text{Supernatant} \, 25 \, \text{cm}\)

Step 2: Determination of the minimum length of the lifting strap
- \(1.5 \times \text{Height} + 2 \times \text{Loop length}\)

Turn by 180°

Step 1: Determination of the minimum length of the protective sleeve
- \(2 \times \text{Height} + 2 \times \text{Width} + 2 \times \text{Supernatant} \, 25 \, \text{cm}\)

Step 2: Determination of the minimum length of the lifting strap
- \(2 \times \text{Height} + 2 \times \text{Loop length}\)

Do not lift loads without receiving prior training!

Never lift edge radii smaller than 1 mm without having received prior professional consultation! Don’t take any risks and arrange a consultation appointment with our applications engineers.

Carefully plan the lifting procedures using the constructed documentation as an aid.

Use coating lifting belts only with mounting hardware when suspending with a chock hitch.

Read the operating manual for textile lifting gear before lifting!

Use the flexible NoCut® sleeve and pad for deflections and narrow gaps!

Carefully plan the lifting procedures using the constructed documentation as an aid!

Use protective sleeves to balance the lifting gear when lifting sharp-edged loads!

Lifting gear always has to be protected from sharp edges.

Relative motion between the load and the cut protectors is not permitted! Don’t take any risks and arrange a consultation appointment with our applications engineers.

The 10 commandments of sharp edges for lifting belts and round slings

- Never lift edge radii smaller than 1 mm without having received prior professional consultation! Don’t take any risks and arrange a consultation appointment with our applications engineers.
- Carefully plan the lifting procedures using the constructed documentation as an aid.
- Use coating lifting belts only with mounting hardware when suspending with a chock hitch.
- Read the operating manual for textile lifting gear before lifting!
- Use the flexible NoCut® sleeve and pad for deflections and narrow gaps!
- Carefully plan the lifting procedures using the constructed documentation as an aid!
- Use protective sleeves to balance the lifting gear when lifting sharp-edged loads!
- Lifting gear always has to be protected from sharp edges!
- Relative motion between the load and the cut protectors is not permitted! Don’t take any risks and arrange a consultation appointment with our applications engineers.

EDGE PROTECTOR RANGE
Safe raising and turning

Our recommendation
When raising/turning with NoCut® sleeves overlap by at least +20% the length of the sleeve.
The new SpanSet app, "Lifting Calculator", determines the necessary load-bearing capacities quickly and accurately. With the new app, "Lifting Calculator", SpanSet GmbH & Co. KG located in Übach-Palenberg is expanding its extensive portfolio of services offered in the field of attachment and lifting technology. The new is the further development into a digital version of the tried and tested analogue "Lifting Force Controller" and serves to determine the required lifting gear for all occurring tasks for lifting and moving loads. The program is free of charge and available at the AppStore and at GooglePlay.

It is quite simple to use. Two parameters have to be input: the weight of the load and the attachment type, e.g. a strand, several strands, with or without an angle, choke hitch, etc. Altogether, with the app, you can select between 14 different attachment types. Angles can be manually entered if they are known. As an alternative, provided that the strand length as well as the length and width of the load are known, they can also be calculated or measured with the aid of smartphone sensors.

A special feature of the app is its high level of accuracy when calculating and determining load-bearing capacities based on DIN EN 1492-2 and 1492-1:2009. In this way, not only angles corresponding to the standard can be selected, in the specified ranges of 6 to 45 degrees and 45 to 60 degrees.

This not only contributes to an increased level of safety and security, but can also be of great benefit from an economic perspective because the amount of lifting gear and its load-bearing capacity can be more precisely adapted to the workflow at hand. The load-bearing capacity is displayed as a WLL (Working Load Limit). Followed by this, you can select corresponding SpanSet lifting gear or order it directly on line if required.

Further important information on APPs can be found online at the following address: www.spanset.de, apps.