

Knitting

Products and services for the fields of hosiery and seamless bodysize

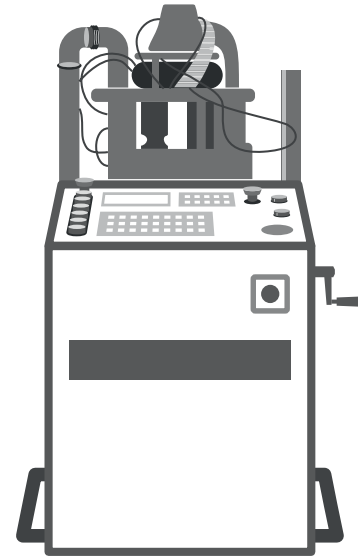


Hosiery and seamless bodysize technologies

Groz-Beckert develops, produces and sells machine needles, precision parts, precision tools and systems for different textile production and joining methods. Its product portfolio serves the fields of knitting and warp knitting, weaving, felting, tufting, carding and sewing. Groz-Beckert offers more than 600 high-performance needles and system parts for the manufacture of hosiery and seamless bodysize textile.



Unlike large circular knitting machines, hosiery and seamless bodysize machines are used to produce individual articles to an advanced degree of product completion. Instead of being taken down as a continuous tube of fabric, here articles are individually ejected. Due to the wide patterning diversity, open cams are required for these machines. Here, needles with a defined bend are used. To produce the different fabric sizes, circular knitting machines with suitable diameters are used. Typical fields of application include the manufacture of hosiery, medical textiles, functional garments and underwear, bodies, swimwear, leisure and sports apparel.



Seamless perfection

There is a growing tendency for fine knit goods such as underwear and sportswear to be produced without a seam. In contrast to large-diameter circular knitting, here the manufacture of finished items entails producing seamless and anatomically fitting or bodysize shapes. Where the garment appearance would otherwise be disrupted by seams, this knitting technology enables flowing transitions.

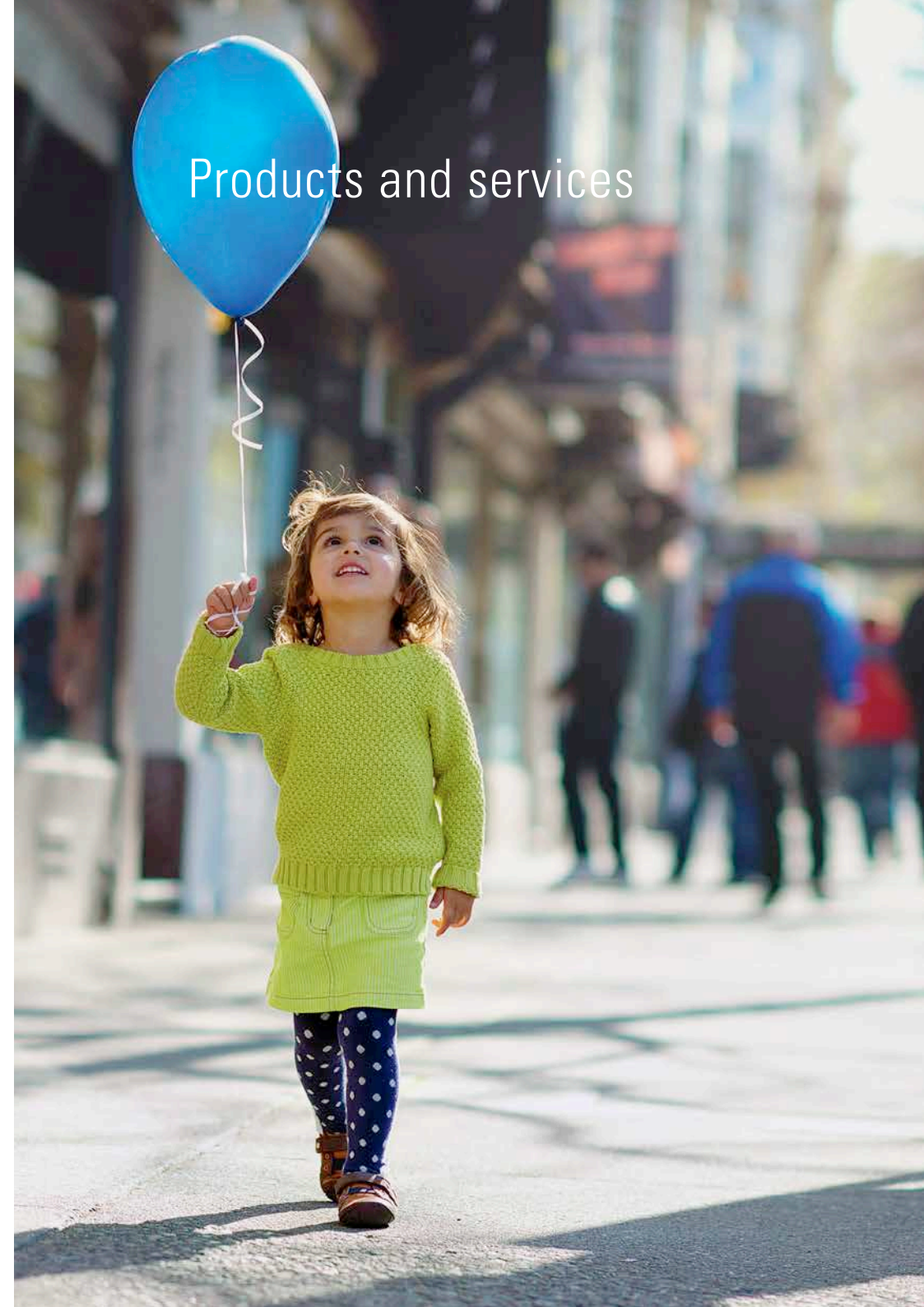


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Over 160 years of experience and a worldwide company network

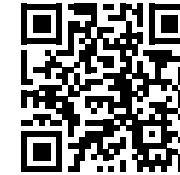
Groz-Beckert stands for outstanding customer service with individually tailored systems and solutions. Alongside knitting machine needles and system parts, the Groz-Beckert performance spectrum encompasses wide-ranging services.



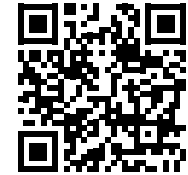
Products and services

Product portfolio

The Groz-Beckert hosiery and seamless bodysize portfolio includes not only knitting machine needles but also system parts.



More information on
system parts



More information on
knitting cylinders

Knitting machine needles

Latch needles in widely varied versions for all different applications: From hosiery through medical articles to high-quality finished articles for underwear, sports and swimwear



Latch needle Vo-LC™ 70.41 G 005 with deflection brake

System parts

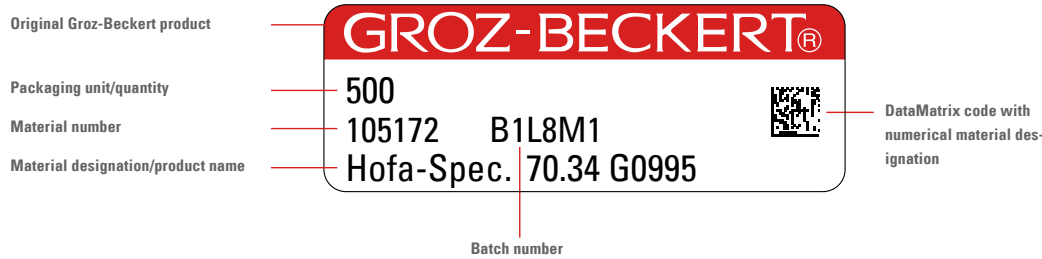
- Sinkers with and without partial hardness
- Selection parts
- Transfer parts
- Joint parts
- Intermediate jacks



Sinker SNK-OL 37.20 G 11 with partial hardening

Product designations

What information can I find on the product labels?



What information does the product designation contain?

Knitting machine needles

Hofa-Spec. 70.34 G 0995

- 1
- 2
- 3
- 4
- 5

- 1 Needle for hosiery machines
- 2 Total length in mm
- 3 Thickness in 1/100 mm
- 4 Groz-Beckert
- 5 Variant from Groz-Beckert

Vo-LC™ 70.41 G 005

- 1
- 2
- 3
- 4
- 5
- 6
- 7

- 1 Needle for seamless bodysize machines
- 2 Loop Control®
- 3 Total length in mm
- 4 Thickness in 1/100 mm
- 5 Groz-Beckert
- 6 G 00 hook
- 7 Variant from Groz-Beckert

System parts

SNK-OL 37.20 G 11

- 1
- 2
- 3
- 4
- 5
- 6

- 1 Knock-over and holding-down sinker
- 2 OptiLoop®: Special protection against wear
- 3 Total length in mm
- 4 Thickness in 1/100 mm
- 5 Groz-Beckert
- 6 Variant from Groz-Beckert

Glossary

Knitting machine needles

| | |
|------------|---|
| Hofa-Spec. | Punched latch needles, special shape for hosiery machines |
| Vo-LC™ | Punched latch needles with crimp |
| Vo-Spec. | Punched latch needles with transfer area |

System parts

| | |
|-----|--|
| SNK | Sinker (= knockover/holding down sinker) |
| AT | Selection part |
| KT | Joint part |
| UT | Transfer part |
| ZS | Intermediate jacks |

Special features

| | |
|--------|---|
| LC™ | Loop Control®: Ultra-precision for fine gauges (used with needles) |
| OL | OPTILOOP®: Special protection against wear (used with system parts) |
| G00... | The G00 hook breaks if overloaded (preventing stripes in the fabric due to hooks which have been bent open) |

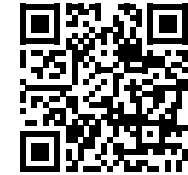
Topics taken from practice



Every customer has individual needs and challenges. By providing experience, expertise and available capacity, Groz-Beckert can help its customers on the road to success as a supplier of systems and solutions. What are your aims?

- Do you want to squeeze the very most out of your production facilities?
- Do you want to produce flawless knit fabric to a premium standard of quality?
- Are you seeking new market fields and applications?
- Do you want your production to be sustainable and gentle on resources?

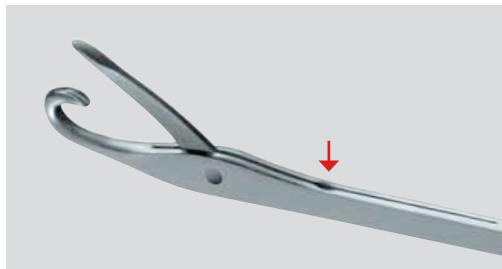
Talk to Groz-Beckert to discover ways of achieving your goals with greater efficiency.



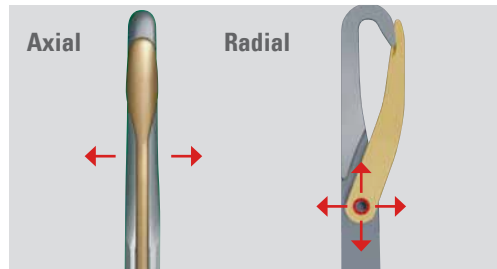
More information about
latch guidance

High-speed production with optimum latch guidance

With growing machine speeds, high performance is also demanded of the knitting elements. Impact speeds of the needle latch of up to 200 kph illustrate what sort of forces are at work here. To ensure that high-speed machine performance is not compromised by the knitting elements, these must be designed to withstand extreme loads and rotational speeds.



Precise-fitting latch seat for optimum latch guidance



Precise latch guidance and bearing

Latch seat

To distribute the forces occurring on impact of the latch over as great a surface area as possible when in the open position, knitting machine needles are given a precise fitting latch seat. The impact is absorbed, which in turn enables high machine speeds and minimizes wear.

Latch guidance and bearing

The precise guidance and bearing of the latch coupled with minimum initial latch play are other underlying requirements to ensure process reliability at even the highest machine speeds.

Profitability/Productivity

Reduced needle consumption and improved process reliability – coupled with extreme machine speeds

Quality

Uniform, flawless fabric quality

Float stitch patterns

When knitting float stitch patterns, unselected yarns are laid as float stitches behind the formed loops. A reliable float function is indispensable for producing flawless fabric.

To support the float function, Groz-Beckert offers a range of needles with float hooks. With this special hook form, the crest of the outside arc of the hook is displaced towards the yarn feeder to ensure that the floated yarn is safely positioned behind the needle.

Productivity/Quality

The even shape and execution quality of this hook form are key factors for ensuring a reliable knitting process and so guaranteeing flawless fabric quality.

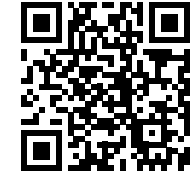


Float hook with latch spoon



Float hook with hook groove





More information on the conical hook

Maximum load capacity of the needle hook

During the knitting process the hook, and in particular the base of the hook, are subjected to high levels of stress. Where additional stress is added due to knots, slubs, double or multiple yarns, the hook can bend or break if the elasticity limit is exceeded. Groz-Beckert developed the conical hook specifically to counteract these stress effects.

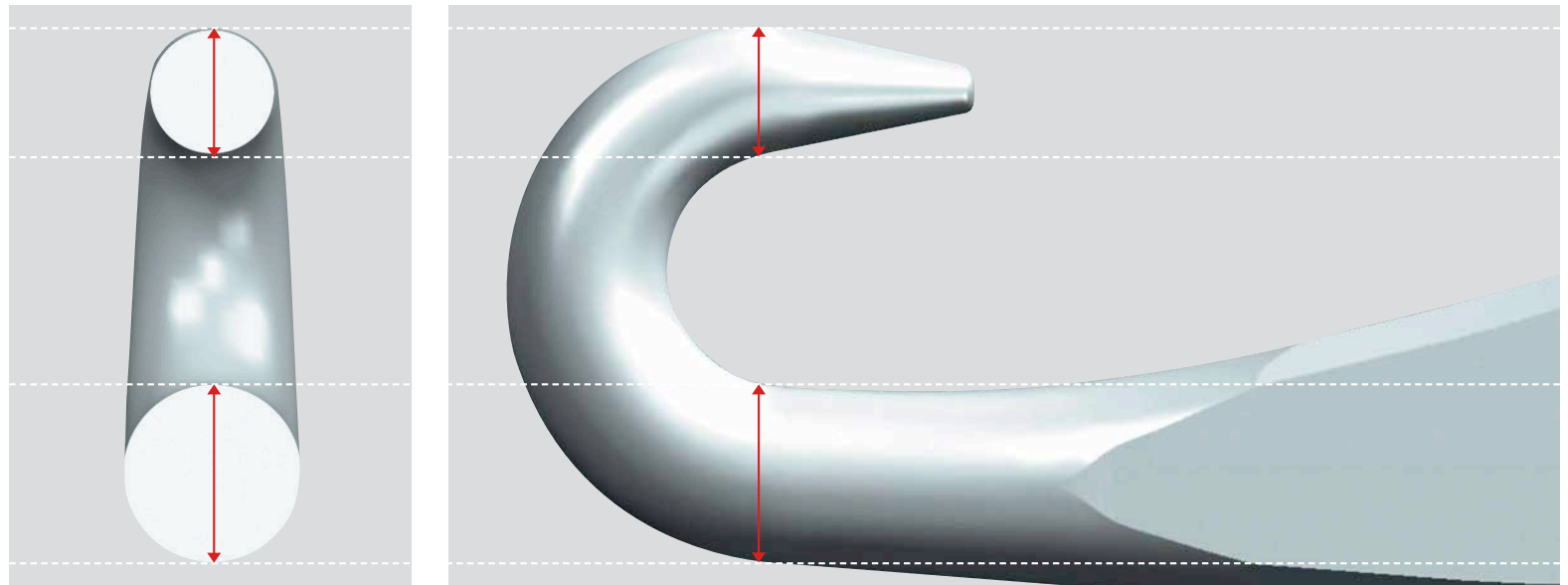
Thanks to the special geometry of the conical hook, greater yarn clearance is created between the loop forming elements. This allows both fancy yarns and also yarns with slubs and knots to be knitted without problems.

Profitability/Productivity

Reduced needle consumption and improved process reliability due to hook stability, improved casting off behavior due to an enlarged hook interior and greater thread clearance

Quality

Uniform, flawless fabric quality



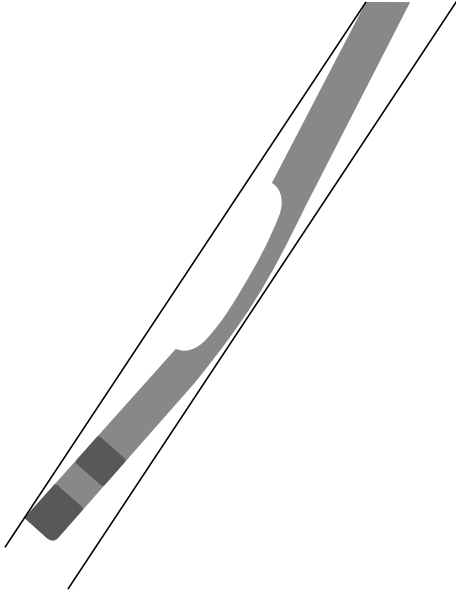
Conical hook form for more thread clearance and improved hook stability

Bending the needle

Due to the wide-ranging patterning possibilities and knitting techniques offered by small circular knitting and seamless bodysize machines, for technical reasons these are equipped with open cams. In other words, the needle butts are not guided around the entire periphery in a closed track. To ensure that the needles are still reliably vertically positioned in the channel, these needles are produced with a defined lateral bend in the needle shank. This provides the necessary retention force in the channel.

To ensure correct positioning of the needle in the needle channel even at high speeds, with direction reversal or after long periods of machine standstill, and so prevent butt breakages, this bend must be correctly defined and precisely executed.

When developing a needle, the most suitable bend geometry is defined in each case. The precise execution of this bend is key to ensuring the reliable function of the knitting machine in the long term. This is why particular attention is paid to this characteristic at Groz-Beckert.



Bent needle in the needle channel

Profitability/Productivity

Machine function ensured in the long term and improved process reliability due to fewer butt breakages

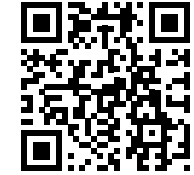
Quality

Uniform loop structure

Environment

Reduced energy consumption

Plating



More information on needles with prim latch type

The elastane plating process can give rise to a range of different faults. These include holes caused by cuts into in the elastane yarn, twisted yarns or also structural faults due to unwanted float stitches caused by the elastane yarn not being laid in across one or more wales. These can be avoided by ensuring optimum machine settings in association with the use of high-grade knitting elements.

Hook form

Alongside the classical plating hook, the Groz-Beckert range also includes a variety of other hook shapes depending on the machine. These ensure that the threads are laid in, held and cast off in the correct position during plating.

Prim latch type needle

Even after a long running period, the special latch design ensures that wear-related cutting into the elastane yarn is avoided. This extends the service life of the needle set while reducing waste fabric.

Needle surface

To prevent yarn twist and consequently plating errors, the surfaces of Groz-Beckert needles are treated to enable optimum stitch gliding, not only in the visible area but also in the inside arch of the hook which is so important to successful plating.

Hook coverage

During plating, the feeders are frequently set in such a way that the latch movement supports yarn lay-in. To prevent the yarn from catching on the tip of the hook, precise coverage of the tip by the latch is vital. This is guaranteed by the precise-fitting groove design of Groz-Beckert needles.

With a range of special slot designs and latch geometries, Groz-Beckert offers additional innovations which specifically target the prevention of plating errors.

Profitability/Productivity

Reduced needle consumption and improved process reliability – coupled with maximum productivity

Quality

Uniform, flawless fabric quality



Round hook



Plating hook



Reverse plating hook



Prim latch type needle (latch without groove)

Transfer/lacy patterns

Using transfer technology, high-grade lacy patterns can be produced on single-cylinder machines.

With the support of the transfer wing, a loop can be transferred from one needle to the adjacent one on the same needle carrier. This allows transfer in one direction within the same needle carrier. A needle with transfer wing has a transfer area between the loop forming area and the needle butt which is shaped like a wing. This wing forms a permanent part of the needle shank.

Quality

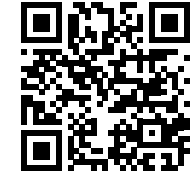
Uniform, flawless fabric quality and wide-ranging patterning possibilities



Transfer needle with transfer wing
Vo-Spec. 100.50 G 01



Lacy patterns



More information on
the G00 hook

Stripe-free knitting with G00 technology

Depending on the fabric, stripes caused by a hardly perceptible bend in a hook may only be noticeable after finishing - and possibly only after large quantities have been produced.

Where there is unusually high stress on the hook caused by knots or slubs in the yarn, when knitting special constructions or sensitive fabrics, or at high machine speeds, Groz-Beckert offers the ideal solution with its G00 needle version.

What makes it special? The G00 hook does not allow any plastic deformation to take place, but breaks when overloaded. Any resulting flaw in the fabric is noticed immediately. The broken needle has to be replaced.

Profitability/Productivity

Increased process reliability coupled with maximum productivity and reduced fabric waste

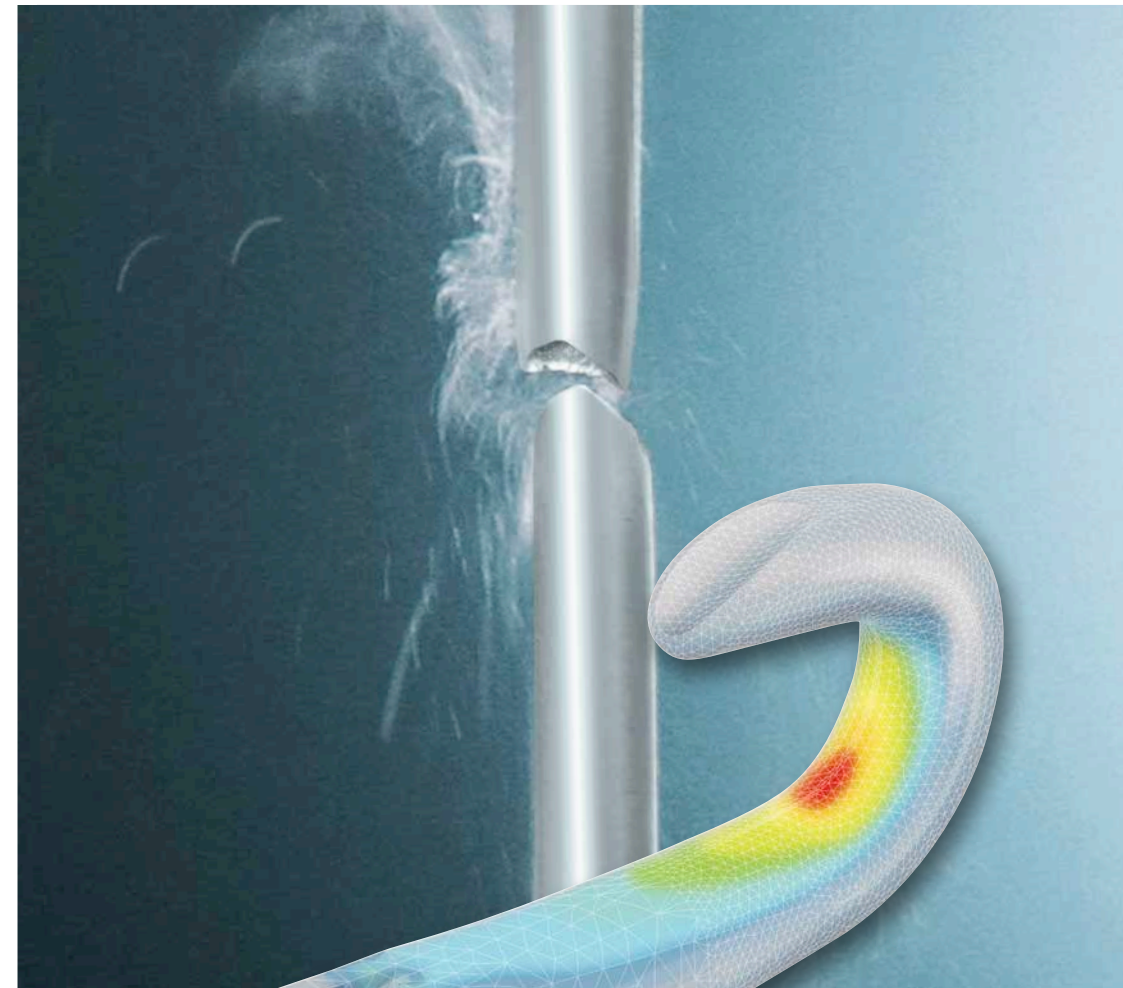
Quality

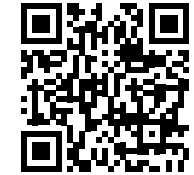
Prevention of stripes in the knit fabric: Possible faults are immediately noticed in the process chain

Environment

Sustainable production thanks to reduced incidence of waste

**G00 technology: Hook breakage
on overload**





More information on
partially hardened sinkers

Protection against wear due to partially hardened sinkers

Extreme stresses in the loop forming process due to mechanical influences will result in premature wear. The causal factor of particularly pronounced forms of wear are usually abrasive yarns. In the case of natural fiber yarns, these are usually contaminants which are harder than steel, and in chemical fiber yarns which are treated to induce matting, the culprits are titanium dioxide crystals which protrude from the yarn surface and literally saw into the steel.

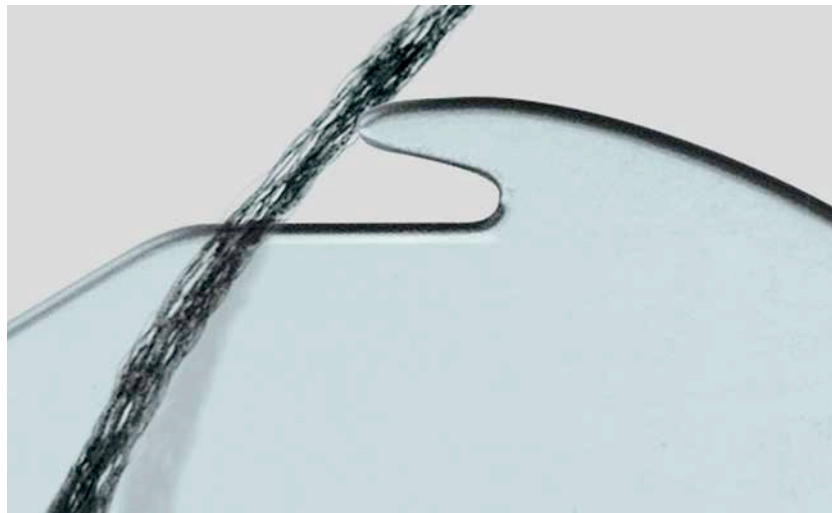
Groz-Beckert partially hardened sinkers provide precisely positioned protection against wear in areas coming into contact with the yarn. Their special feature is a precisely balanced ratio between basic and adapted hardness. These sinkers are particularly well suited for production at high speeds and when using abrasive yarns.

Profitability/Productivity

Reduced sinker wear and improved process reliability
– coupled with maximum productivity

Quality

Consistent, flawless fabric quality due to extreme,
precisely placed protection against wear



Optimum edge rounding and partially hardened material in areas coming into contact with the yarn

Groz-Beckert product quality

The use of top-class raw materials, coupled with stringent ISO-certified processing standards provides a guarantee of a flawless surface finish and optimum geometry. These benefits make our products ideally suited to cope with extreme loads in the loop forming process. Durable knitting elements have a positive impact on cost-efficient production.

Precision and dimensional stability

The optimum fitting accuracy, narrow production tolerances and precise workmanship of Groz-Beckert products leave no easy point of attack for wear, ensuring an even, uniform stitch appearance for longer than any competitor product.

Packaging, transport and storage

Smart packaging solutions from Groz-Beckert provide you with active support in improving your cost efficiency. Less work effort directly reduces your set-up times. The effect: Reduced production costs compared to competitors.



Corrosion protection paper and protective film with corrosion protection oil



Packaging made of fracture-resistant material with adhesive tape



Compartmentalized container

Packaging solution for needles and system parts

Climatic influences such as humidity and temperature fluctuations have a permanent impact on knitting machine parts and could compromise quality due to corrosion.

To counter this effect, Groz-Beckert developed systems for packaging its products which can comprise three components:

- Corrosion protection oil surrounds the product with an active corrosion protection.
- Corrosion protection paper reduces the influence of oxygen and water on the product.
- Plastic packaging prevents damage during transport and storage.

Packaging solutions for hosiery needles

To protect the sensitive needles and simplify handling, the majority of these needles are packaged in special compartmentalized containers. This packaging solution simplifies needle fitting and replacing and prevents needle damage during transit and also on the customer's premises.

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