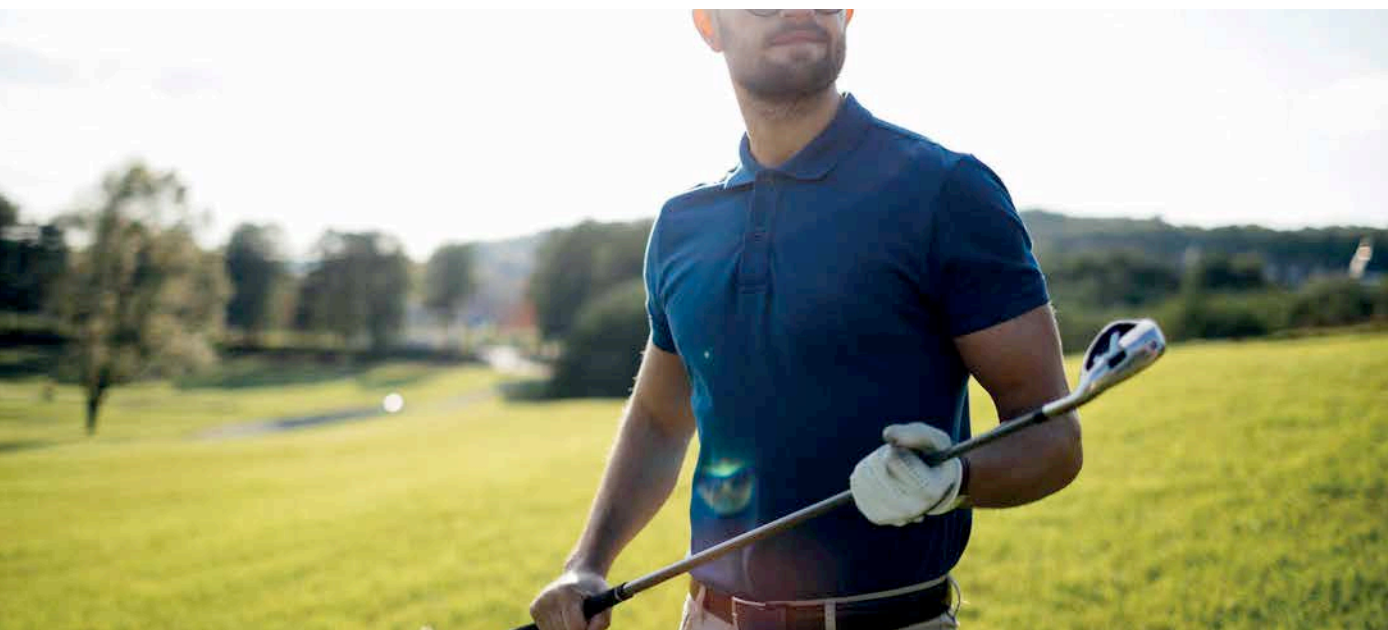


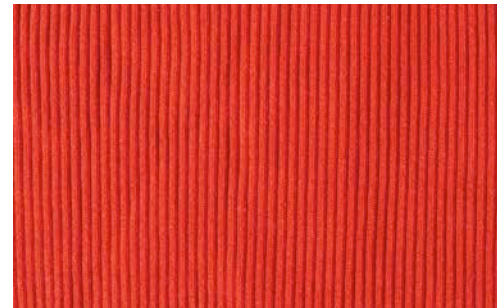
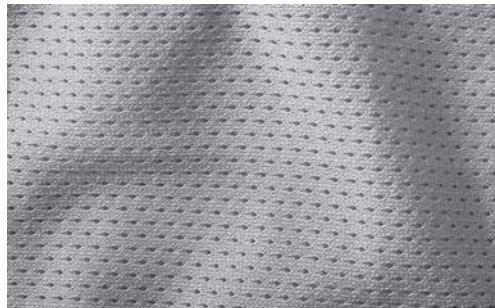
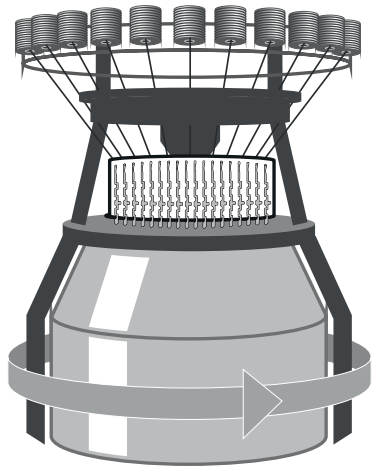
Knitting

Products and services for the large diameter circular knitting sector



Circular knitting technology

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. Specifically for the knitting industry, Groz-Beckert offers more than 12,000 high-performance needles and system parts.



In circular knitting machines, needles arranged in a circle produce continuous tubular fabrics. In double jersey machines, needles are installed both in the cylinder and in the dial, while single jersey machines use needles and sinkers. In bodysize machines, for example, this allows T-shirts to be produced without lateral seams. Especially with tight-fitting clothes this is a great advantage.

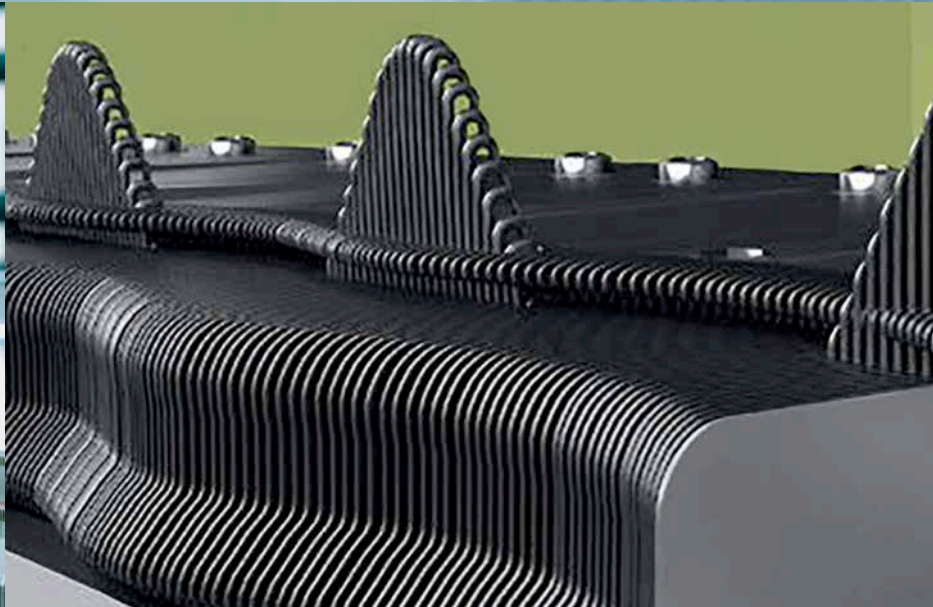
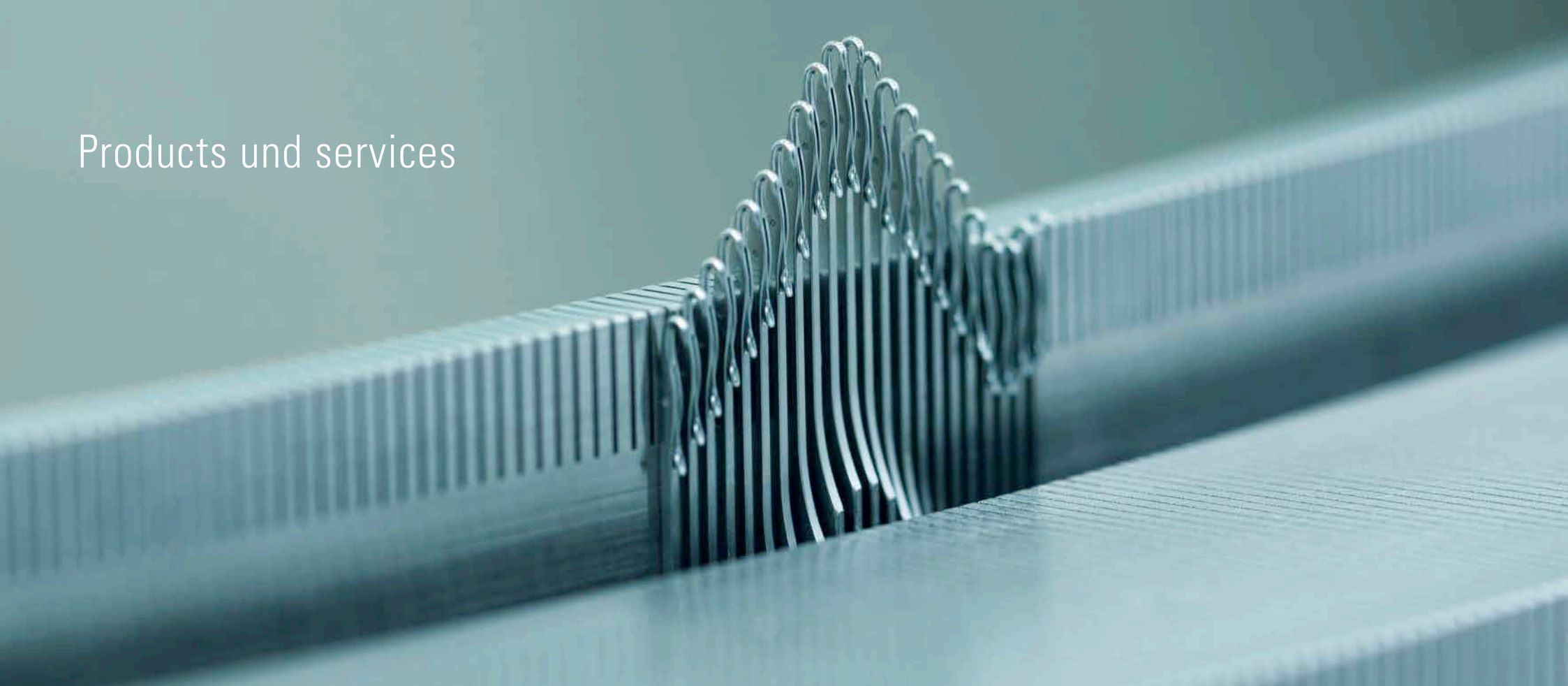
Typical applications are the manufacture of items such as T-shirts, leisure and sportswear, underwear, sleepwear, fabrics for bras, and technical textiles such as smart shirts.



Contents

Circular knitting technology	2
Products und services	4
Product portfolio	6
Product designations	7
Glossary	8
Needle oil analysis	9
Topics taken from practice	10
Highspeed-production	11
Energy saving	12
Fine gauges	13
Maximum resilience of the needle hook	14
Prevention of lines in the fabric	15
Plating	16
Reduced maintenance effort	17
Wear protection	18
Packaging, transport storage	19
Groz-Beckert Academy	20

Products und services





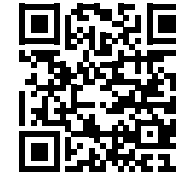
Over 160 years of development and a worldwide company network

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

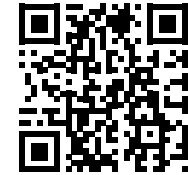


Product portfolio

At Groz-Beckert, all the components of knitting systems are precisely inter-coordinated. The perfect interaction between knitting machine needles and system parts guarantees an even, flawless loop formation process. Machine manufacturers the world over place their trust in Groz-Beckert as a development partner and quality supplier. We continue the further development of our product spectrum on the basis of this broad fund of expertise.



More information
on system parts



More information
on knitting cylinders

Knitting machine needles

- Comprehensive range of latch needles from coarse gauge to E90 with a diversity of shank, hook, and latch shapes
- Transfer needles
- Needles with spring-loaded latch



LCmax™ needle



litespeed® plus needle

System parts

- Sinkers with and without local hardening
- Selecting jacks
- Coupling parts
- Intermediate jacks
- Press jacks



Sinker



SNK SF

Product designations

What information is included in the product designation?

Knitting machine needles

LS+™ 141.41 G 001

1 2 3 4 5 6

- 1 litespeed® plus-needle
- 2 Total length in mm
- 3 Thickness in 1/100 mm
- 4 Groz-Beckert
- 5 G00-hook
- 6 Variant from Groz-Beckert

Vo-LS™ 141.41 G 001

1 2 3 4 5 6 7

- 1 Punched latch needle with one butt
- 2 litespeed®
- 3 Total length in mm
- 4 Thickness in 1/100 mm
- 5 Groz-Beckert
- 6 G00-hook
- 7 Variant from Groz-Beckert

Wo 110.52 G 0019

1 2 3 4 5 6

- 1 Punched latch needle with two butts
- 2 Total length in mm
- 3 Thickness in 1/100 mm
- 4 Groz-Beckert
- 5 G00-hook
- 6 Variant from Groz-Beckert

System parts

SNK-OL 46.20 G 16

1 2 3 4 5 6

- 1 Sinker
- 2 OPTILOOP®: special wear protection
- 3 Total length in mm
- 4 Thickness in 1/100 mm
- 5 Groz-Beckert
- 6 Variant from Groz-Beckert

What information can I find on the product labels?

Original Groz-Beckert product

Packaging unit/quantity

Material number

Material designation/product name



DataMatrix code with numerical material designation

Batch number

Glossary

Knitting machine needles

LS+™	litespeed® plus: further development of the litespeed® needle with higher energy saving capacity
Vo... (Vo, Vosa, Vota, Vosara, Vosata ...)	Punched latch needle with one butt
Wo... (Wo, Wosa, Wora ...)	Punched latch needle with two butts
Deha, Ravisa, Bera ...	Latch needle made of wire

System parts

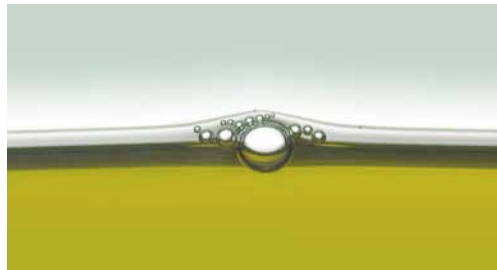
SNK	Sinker
AT	Selecting jack
KT	Coupling part
ZS	Intermediate jack
NT	Press jack

Special features

LC	Loop Control®: highest precision for fine gauges
LS	litespeed®: reduced energy consumption, reduced machine temperature, reduced CO ₂ footprint
OL	OPTILOOP®: special wear protection
G00...	G00 hook breakages when overloaded (prevents lines in the fabric caused by bent open hooks)

Needle oil analysis

The correct use of knitting machine oil is becoming increasingly important. The objective is proper lubrication of all working areas and an optimum fabric washability, using a small amount of detergent at the lowest possible washing temperatures.



Needle oil test kit

With its needle oil test kit Groz-Beckert offers its customers a producer-independent analysis of lubricants. The kit contains a sample flask, test instructions, and an analysis form where the customer defines the desired analysis scope.

Groz-Beckert lubricant database

With far-reaching experience as the world's leading supplier of needles and system parts, Groz-Beckert has built up a database that allows individual oil analyses. All common needle oils from around the world are tested and catalogued according to DIN standard 62136-2014.

On the basis of their test results, needle and sinker oils can be categorized specifically in many respects: from their performance data to their suitability for the relevant knitting process. Last but not least, the detailed laboratory analyses are the basis of advice when it comes to application-related questions.

Topics taken from practice



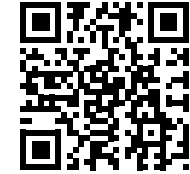
Each customer faces individual requirements and challenges. With experience, knowledge, and problem solving advice, Groz-Beckert contributes to the customers' success. What are your objectives?

- You want to get the most out of your production facilities?
- You want flawless fabrics of top quality?
- You are looking for new market fields and applications?
- You want sustainable, resource saving production?

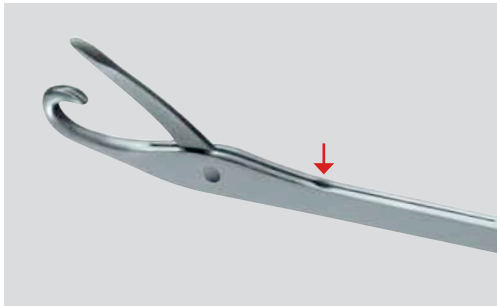
Contact Groz-Beckert to reach your goals efficiently.

Highspeed production with optimum latch guidance

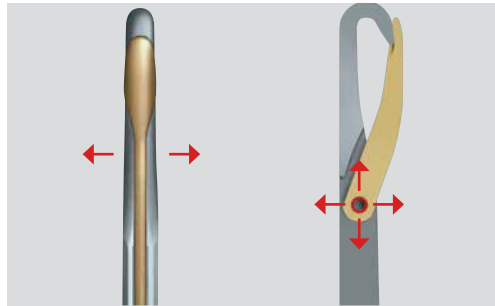
With increasing machine speeds the knitting elements must meet highest requirements. An impact speed of the needle latch of up to 200 km/h gives a rough idea of the extreme forces the needles are subjected to during the knitting process. To prevent the capacity of state of the art highspeed knitting machines being compromised by the knitting elements, the needles must be designed to withstand extreme stress even at highest machine speeds.



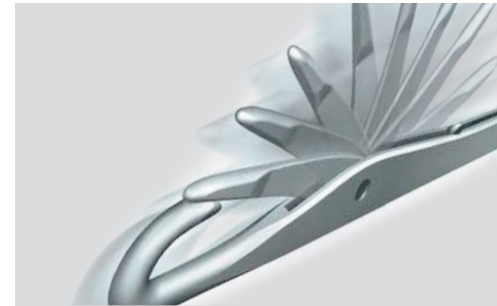
More information on
optimum latch guidance



Matching shape of the latch seat for an optimum latch guidance



Exact guidance and bearing of the latch



Highspeed production

Profitability/ productivity

Reduced needle consumption and increased process reliability at highest machine speeds.

Quality

Uniform loops and flawless fabric quality.

Latch seat

In order to distribute the impact force of the latch also in open position over the largest possible area, knitting machine needles have a matching latch seat. This cushions the impact and consequently allows high machine speeds and minimizes the amount of wear.

Latch guidance and bearing

An exact guidance and bearing of the latch in combination with a minimal initial latch play are further requirements that guarantee process reliability even at highest machine speeds.

Highspeed needle

The Highspeed Solution stands for an optimized cheek geometry designed to reduce the impact speed of the latch when it hits the latch seat.

Groz-Beckert Patent

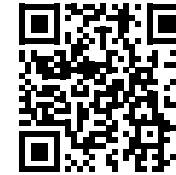
EP 1921189 B1, JP 4 547 414 B2,
CN 101177838 B, US 7,469,562 B2,
KR 10-937598

Energy saving with litespeed® and litespeed® plus needles

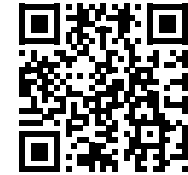
High energy costs have an impact on the economic success of a company. In the age of dynamic markets and increasing requirements, the cost situation of a knitting producer is a primary competitive factor and decisive for the success or failure of a company. The question is: How can costs be reduced?

Groz-Beckert Patent

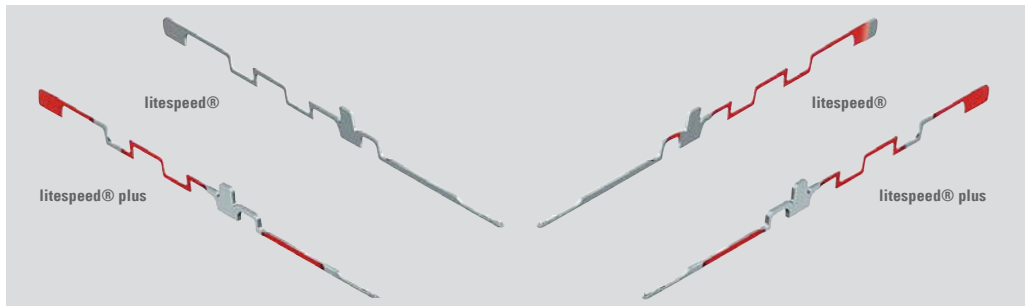
EP 2927360 B1, US 9765456 B2,
JP 6621417 B2, CN 106460265 B



More information on
litespeed® plus needles



More information on
litespeed® needles



Right needle side

Left needle side

A lower energy consumption and reduced machine temperature are just two of the advantages provided by the litespeed® needle family, designed for the use in high performance circular knitting machines.

The optimized shank geometry of the litespeed® needle generates less friction in the machine and consequently reduces power consumption.

Profitability/productivity

Reduced energy consumption and increased product reliability, easier running of the machine and improvements in all consequent processes.

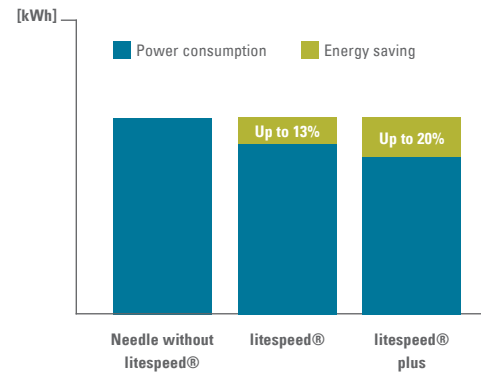
Quality

Uniform loops and flawless fabric quality.

Environment

Provable reduction of CO₂ footprint.

Reduced power consumption



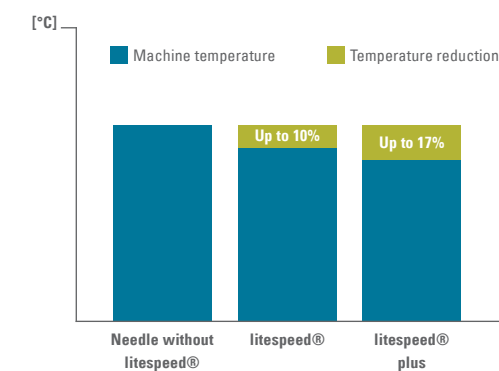
Possible reduction of oil consumption

The partially reduced thickness of the needle shank allows a better distribution of the needle oil in the needle track.



Needle without litespeed® Needle oil

Reduced machine temperature



litespeed® and litespeed® plus Reduced oil resistance Improved oil distribution

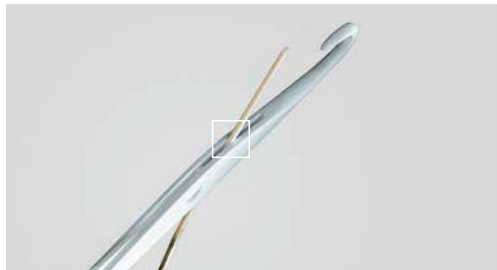
Test results by the example of a single jersey circular knitting machine (values can vary depending on the machine parameters).

Production of ultrafine fabrics with needles Vo-LC™

The production of fine and ultrafine fabrics on circular knitting machines imposes stringent demands on the precision and dimensional accuracy of knitting machine needles and system parts. Strictest production tolerances are a central precondition for the production of ultrafine fabrics with a perfectly uniform and flawless loop structure.



A bee in comparison to a needle of gauge E 60



Vo-LC™ needle in comparison to a human hair (25 times magnified, in yellow)



PremioBox for fine gauge needles

The production tolerances of a Vo-LC™ needle are smaller than the diameter of a human hair. This means the LoopControl® execution counts among the record holders in the area of fine and ultrafine fabrics. With a thickness of less than 0.36 mm, needles used in large diameter circular knitting machines carry the addition LC™ in their product designation. The finest needle has a thickness of just 0.18 mm.

Profitability/productivity

High process reliability – even with sensitive fabric qualities

Quality

Ultrafine fabric with a perfectly uniform loop structure

Innovation

State of the art needle technology enables innovative fabrics to be produced for new application fields

The finer the needle, the more difficult its handling. With the PremioBox Groz-Beckert has developed an intelligent packaging solution especially for fine gauges – for optimal protection, improved removal, and safe needle handling.

Groz-Beckert Patent

EP 2671821 B1, JP 5868899 B2,
CN 103508105 B, KR 101506477 B1

World record with E 90

Together with Brescia-based Italian circular knitting machine builder Santoni SpA, Groz-Beckert developed a cylinder of gauge E 90. The result? 8,472 needles with a thickness of only 0.18 mm, distributed on a cylinder diameter of 30 inches.



More information on
the conical hook

Maximum resilience with the conical needle hook

During the knitting process, the hook and, in particular the base of the hook, are subject to great strain. If additional stress is added in the form of knots, thick slubs, double and multiple threads, the hook can bend or break if the elasticity limit is exceeded. To meet this challenge, Groz-Beckert has developed the conical hook.

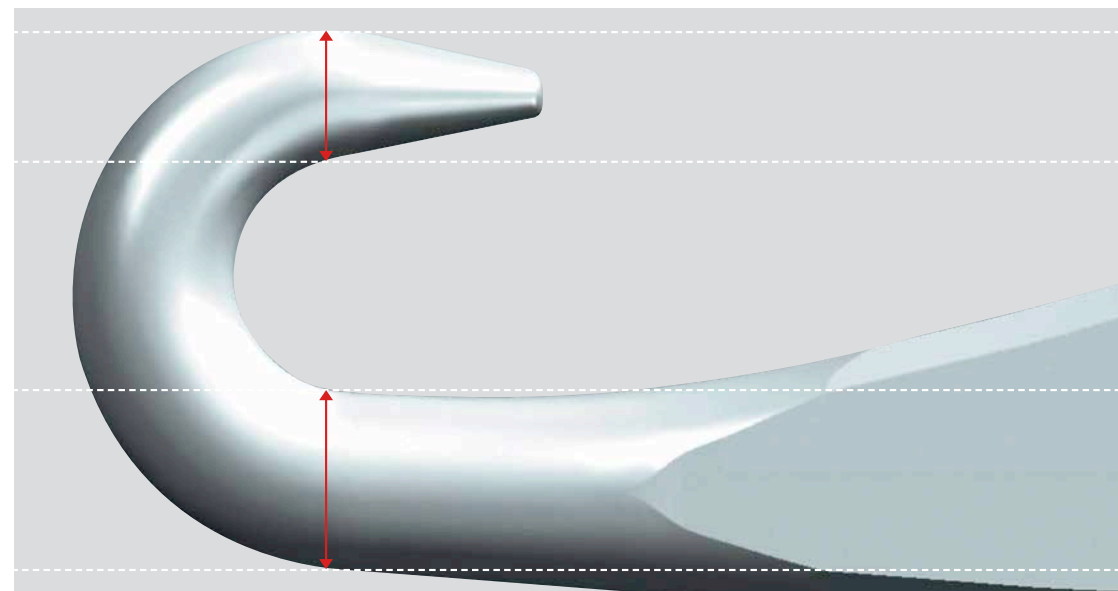
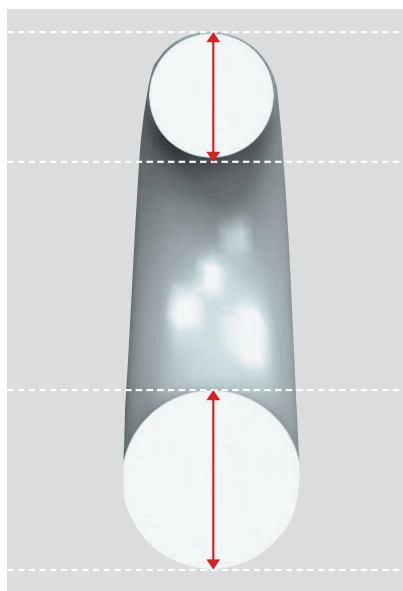
The special shape of the conical hook provides a larger thread clearance between the loop-forming elements. This allows to knit both fancy yarns as well as yarn qualities with slubs and knots without any problem.

Profitability/productivity

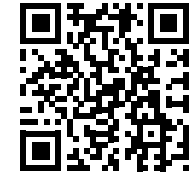
Reduced needle consumption and increased process reliability thanks to a higher hook stability. Optimized cast-off behavior due to a larger space inside the hook and a greater thread clearance.

Quality

Uniform loops and flawless fabric quality.



Conical hook: greater thread clearance due to the reduced cross-section (see upper arrows) and optimized hook stability due to the increased cross-section (see lower arrows)



More information on
on the G00 hook

Prevention of lines in the fabric with the G00 technology

Depending on the kind of fabric, lines caused by almost imperceptibly bent open hooks can become visible only after the finishing process – possibly only after having already produced a larger amount of fabric.

In cases of unusually high amounts of stress to the hook, for example, from knots or slubs in the yarn or when knitting special constructions, sensitive fabrics or at high machine speeds, with its G00 needle execution Groz-Beckert offers the ideal solution.

Its specialty? The G00 hook does not allow a permanent deformation but breaks on overloading. The error this causes in the fabric is immediately detected. The machine stops and the broken needle can simply be replaced. This prevents high consequential costs and a poor knitting quality.

Profitability

- Increased process reliability – with maximum productivity
- Less fabric rejects

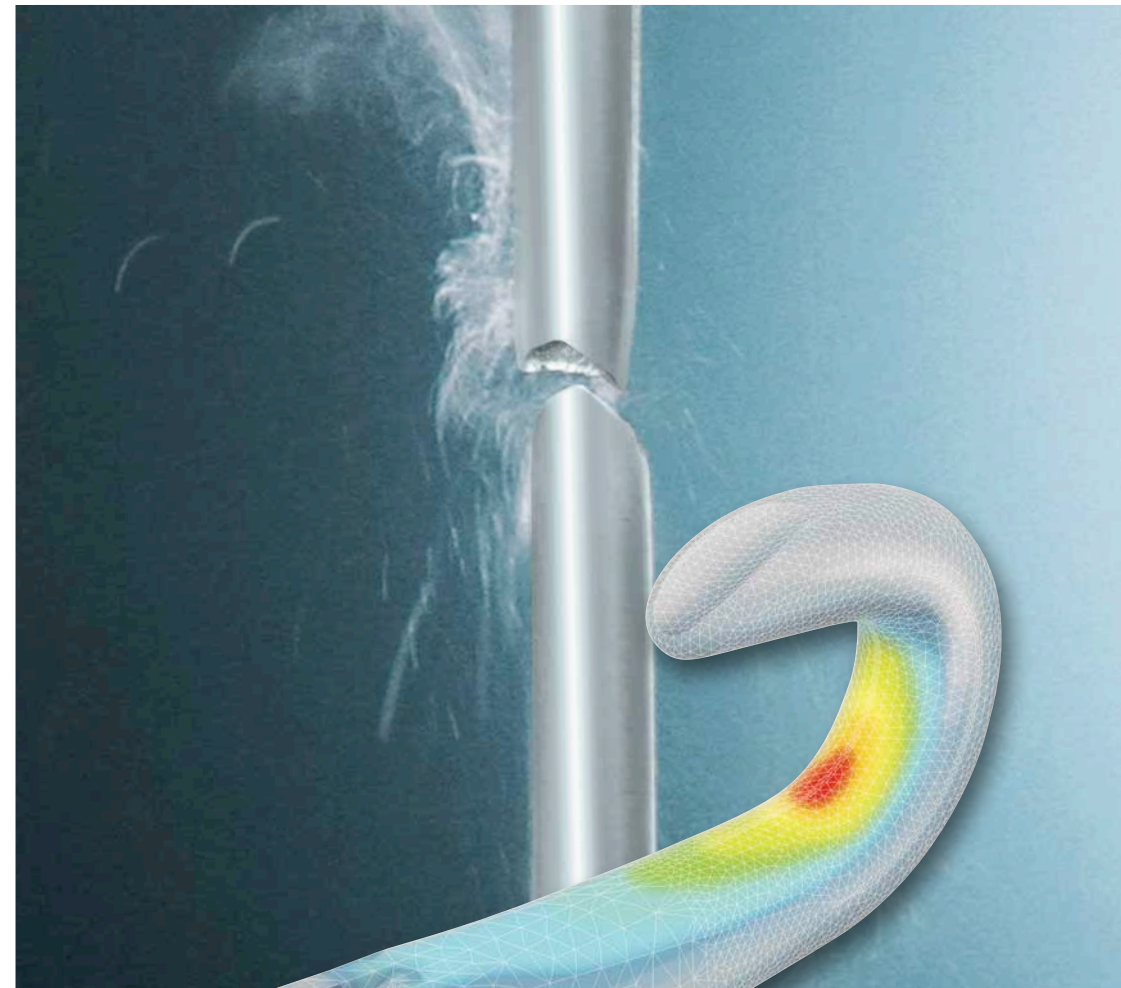
Quality

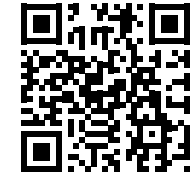
Prevention of vertical lines in the fabric

Environment

Sustainable production thanks to reduced waste generation.

G00 technology:
hook breakage on overloading

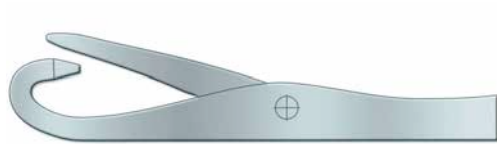




More information on
needles with grooved hook

Plating

When plating elastic, functional or terry fabrics errors can occur. They include holes, cut elastane yarn or twisting of yarns that appears on the fabric face as color error. But there are also structural errors by an unintentional floating of the elastane yarn across several wales. Such errors are particularly costly if they are detected only after the finishing process. They can be prevented by optimum machine settings in combination with the use of high-class knitting elements.



Plating hook



Round hook



Needles with grooved hook: spoonless latch

Hook shape

Besides the classic plating hook, the Groz-Beckert range of products also offers further hook shapes, depending on the machine. They ensure that, during the plating process, the yarn is inserted, maintained, and cast off in the correct position.

Latch fit

For the plating process, the yarn guides are often adjusted in a way that the latch movement helps to insert the yarn. To prevent the yarn from getting caught by the tip of the hook, the tip of the hook must be tidily covered by the latch. This is ensured by the

matching shape of the latch spoon of Groz-Beckert needles

Needle surface

To prevent twisting of the yarns and, therefore, plating errors, the surface of Groz-Beckert needles is absolutely smooth not only in the visible area but also on the inside arc of the hook that is critical for the plating process.

Needle with grooved hook

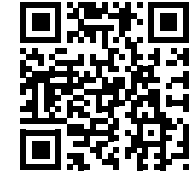
Even after a longer running time, the special latch execution prevents cutting of the yarn caused by wear. This increases the service life of the needle set and, at the same time, reduces rejects. Needles with grooved hook are often preferred for the production of elastic single knit fabrics.

Profitability/productivity

Reduced needle consumption and increased process reliability – with maximum productivity.

Quality

Uniform loops and flawless fabric quality.



More information on
steel-composite needles

Reduced maintenance effort with steel-composite high-performance needles

When spun fibers are used in high-performance machines a lot of fiber fly is generated that mixes with oil and metal particles which accumulate in the needle cut-outs and needle tracks. Dirt deposits along the needles reduce the space in the needle track and increase the friction. Accumulated fibers in the meander bridges and between the needle back and the bottom of the needle track can lift the needles and cause mechanical wear. Another consequence are vertical lines in the fabric as well as an increased energy and needle consumption.

The solution is the patented steel-composite high-performance needle by Groz-Beckert ideally combining high performance with low maintenance. The cut-outs in the needles are filled with a special synthetic material to prevent the accumulation of dirt. The needle is suitable for the processing of both fiber and filament yarn and can, therefore, be used as all-rounder type especially in high-performance machines.

Profitability/productivity

Reduced needle consumption and longer intervals between maintenance actions due to minimal fiber and oil deposits. Increased performance capability due to reduced needle weight and optimum vibration dampening of the needle shank.

Quality

Uniform loops and flawless fabric quality, preventing lines in the fabric by reducing fiber deposits in the needle track to a minimum.

The steel-composite high-performance needle combines high performance with low maintenance.



Wear protection with locally hardened sinkers

In the knitting process, extreme stress caused by mechanical influences leads to premature wear. In most cases, the origin of particular heavy manifestations of wear are abrasive yarns. With natural fiber yarns it is foreign particles that are harder than steel, in the case of synthetic fiber yarns treated with mating agents it is titanium dioxide micro crystals protruding from the yarn surface that are literally sawing into the needle steel.

Groz-Beckert sinkers with local hardness provide wear protection precisely in the yarn-impact area. Their specialty is the balance between basic hardness and local hardness. The sinkers are particularly suitable for high-speed production and abrasive yarns.

Profitability/productivity

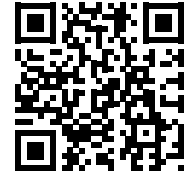
Reduced sinker consumption and increased process reliability – with maximum productivity.

Quality

Uniform loops and flawless fabric quality thanks to highest yarn protection precisely in the yarn-impact area.



Optimal edge rounding and partial hardness in the yarn-impact area.



More information on
sinkers with local hardness

Groz-Beckert product quality

High-class raw material paired with high ISO-certified production standards guarantees an impeccable surface and geometry. This makes our needles particularly suitable for the extreme stress conditions in the knitting process. Long-life knitting elements have a positive impact on a cost-efficient production.

Precision and dimensional stability

Thanks to a high fitting accuracy, tightest production tolerances and precise processing Groz-Beckert products do not provide an easy target for wear and produce a uniform loop structure for a longer time than any competitor product.

Packaging, transport, storage

Groz-Beckert's smart packaging solutions provide active support to customers in improving their cost efficiency. Minimizing the work involved helps directly reduce 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



Special bundling of sinkers

Groz-Beckert Patent

EP 1816247 B1, US 7533546 B2,
CN 101012596 B, JP 4370334 B2,
KR 100859111 B1



PremioBox

Groz-Beckert Patent

EP 2671821 B1, JP 5868899 B2,
CN 103508105 B, KR 101506477 B1

Packaging solution for needles and system parts

Climate-related influences such as humidity and temperature fluctuations have a permanent effect on knitting machine parts and can impair their quality as a result of corrosion.

To prevent this type of deterioration, Groz-Beckert developed systems for packaging its products which can comprise up to three components:

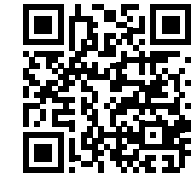
- Corrosion protection oil surrounds the product with an active anti-corrosion protection.
- Corrosion protection paper reduces the influence of oxygen and water on the product.
- Plastic packaging prevents damage during transport and storage.

Packaging solution for sinkers

The sinkers are fitted with an opening on the upper edge of the butt. There is an elastic retainer inserted in this opening, holding the sinker packet safely together during transport and storage. The special bundling of the sinkers makes handling easier in practice. The sinkers are packaged in a parallel position and do not have to be lined up in a time-consuming operation before insertion. After cleaning or for storing the sinkers can be simply put back into the bundled packet.

Packaging solution for fine gauge needles

Where conventional packaging solutions contain only 50 needles, the PremioBox has room for 125 needles. The advantage of the division into five easy-to-handle packs of 25 is that the needles can be inserted into the machine without a problem. A special holding-down element facilitates needle removal. Nothing slips out and nothing gets caught. This ensures perfect conditions for quick machine needling. The loop forming part of the needles is also protected by a special spring that keeps the latch in open position. This enables direct knitting-on.



Download the current training program

Groz-Beckert Academy

Apart from offering personal application advice, Groz-Beckert has always supported their customers by providing product as well as basic knowledge along the textile value chain. Since 2012 this part of the comprehensive service package has a name: The Groz-Beckert Academy has set itself the task of sharing and passing on knowledge, imparting experiences as well as making know-how and competencies accessible.

Whether it is knitting, weaving, felting, tufting, carding or sewing – the Groz-Beckert Academy offers a comprehensive training program that covers all the most important textile production and joining methods. Using a mix of theory and practice, our experienced trainers share expertise and know-how. As a result, the participants are optimally equipped for their tasks within the textile world.

The course range covers various basic, advanced and special training courses, which are held in the Technology and Development Center (TEZ) in Albstadt. Moreover, the Groz-Beckert Academy offers individual trainings on-site at the customer's location.

All courses are offered in German and English. Selected courses are also held in additional languages, such as Spanish and Chinese.



Groz-Beckert KG

Parkweg 2

72458 Albstadt, Germany

Phone +49 7431 10-0

contact-knitting@groz-beckert.com

www.groz-beckert.com



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