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, system parts and knitting cylinders.

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.
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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.

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

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

Knitting cylinder
Single jersey cylinders with and without sinker ring as well as double jersey cylinders
## Product designations

### What information is included in the product designation?

#### Knitting machine needles

<table>
<thead>
<tr>
<th><strong>LS+™ 141.41 G 001</strong></th>
<th><strong>Vo-LS™ 141.41 G 001</strong></th>
<th><strong>Wo 110.52 G 0019</strong></th>
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- **LS+™ 141.41 G 001**
  - 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
  - 7: Variant from Groz-Beckert

- **Vo-LS™ 141.41 G 001**
  - 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: 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

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<tr>
<th><strong>SNK-OL 46.20 G 16</strong></th>
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- **SNK-OL 46.20 G 16**
  - 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

#### Knitting cylinder

<table>
<thead>
<tr>
<th><strong>ZP-SATZ 30-24 G1</strong></th>
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- **ZP-SATZ 30-24 G1**
  - 1: Cylinder
  - 2: Sinker ring
  - 3: System with knitting capacity = cylinder with sinker ring
  - 4: Diameter
  - 5: Gauge
  - 6: Variant from Groz-Beckert

#### Knitting cylinder

<table>
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<tr>
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#### What information can I find on the product labels?

- **Original Groz-Beckert product**
- **Packaging unit/quantity**
- **Material number**
- **Material designation/product name**
- **Batch number**

- **DataMatrix code with numerical material designation**
**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 |

**Knitting cylinders**

| Z | Cylinder |
| P | Sinker ring |
| R | Dial |

**ZPR-SATZ, ZP-SATZ or ZR-SATZ**

System with knitting capacity = cylinder with sinker ring and dial

**Special features**

| LC | Loop Control®: highest precision for fine gauges |
| LS | litespeed®: reduced energy consumption, reduced machine temperature, reduced CO₂ 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.
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.

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.

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

Quality
Uniform loops and flawless fabric quality.
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?

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.

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.

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, system parts and knitting cylinders. Strictest production tolerances are a central precondition for the production of ultrafine fabrics with a perfectly uniform and flawless loop structure.

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

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.

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 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.
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.
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.
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.

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

**Quality**
Uniform loops and flawless fabric quality.

**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.

**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.
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.
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.

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.

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.
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.
App myGrozBeckert

Your personal work tool

As it is one of the most essential prerequisites of working effectively, Groz-Beckert traditionally places great importance on sharing knowledge and experience. In order to provide mobile access to this know-how and make it available offline, Groz-Beckert developed an app in 2011 that contains well-founded knowledge along the textile value chain and about the company.

Since then, myGrozBeckert has continuously been developed further, and as part of the 2017 relaunch a completely customizable navigation was implemented. This allows users to save favorites and preferred topics themselves, and change them any time as needed. This is how myGrozBeckert becomes a personal and individually configured work tool.

myGrozBeckert works with all iOS and Android smartphones and tablets, and is available in German, English, and Chinese. The free app can be downloaded through the Google Play Store, the Apple App Store or through various Chinese app stores.

myGrozBeckert
Individual information on your personal dashboard

Products
The extensive Groz-Beckert product and service portfolio

Toolbox
Recommendations, tools and calculation aids

Contact
The Groz-Beckert contact partners – worldwide

Media
Animations, videos and brochures

News
All news about the textile world of Groz-Beckert

Exhibition
Data and facts on the Groz-Beckert trade fair presence

Search
Key word search across all areas