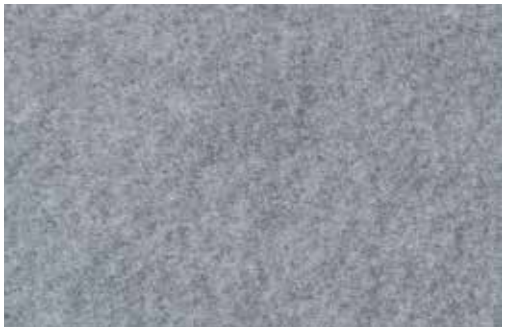
GROZ-BECKERT

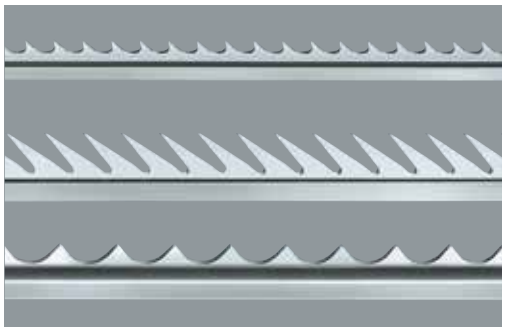
Carding

Card clothing for the nonwovens industry

The technology of carding

Groz-Beckert is the world's leading provider of industrial machine needles, precision parts, and fine tools, as well as systems and services for the production and joining of textile fabrics. Its products and services support the fields of knitting, weaving, felting, tufting, carding, and sewing. With its Carding product range, Groz-Beckert offers a broad array of carding tools (card clothing), services, and accessories: from consulting and product recommendations to an extensive product palette and experienced mounting service team to commissioning of the card. This product range includes all wires for any roller top cards within the nonwovens industry and long staple fiber spinning. Groz-Beckert supports textile machinery manufacturers and supplies textile manufacturers around the world with the latest products and services.





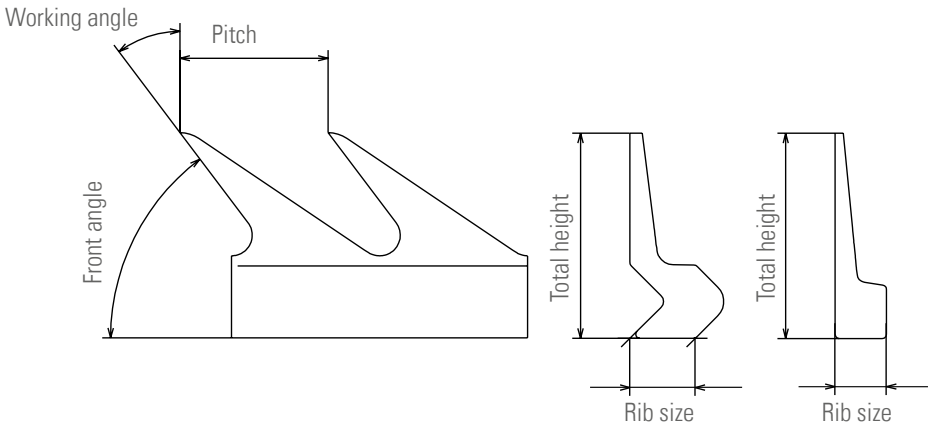
Well carded, a requirement for efficient nonwoven production

Carding is, economically speaking, a very important subprocess in the value chain from fiber to nonwovens material. In carding, the optimal utilization of raw material, with as less fiber loss as possible is established by processing fibers in such a way that they all contribute to the optimum characteristics of the nonwoven end product. During carding, fibers are gently separated and then merged into a uniform fiber composite, the web. At the same time, the raw material components are thoroughly mixed together, and any foreign material is released and cut away. Homogeneous mixing as well as the homogeneous distribution of all fibers in the web is a necessity for economical nonwoven production.

Contents

Description of card clothing: Standard

With metallic card clothing, there are two kinds: interlocked and plain rib wires.



Rib size in mm:
from fine (rib size: 0.38 mm) to coarse (rib size: over 6 mm)

Front/working angle:
from 45° to 134° (front angle) / 45° to -44° (working angle)

Total height in mm:
from small total height (1.8 mm) to large total height (10.0 mm)

Pitch in mm:
Linear distance of two card clothing teeth (1.27 mm to over 20.0 mm)

Points per square inch:
indicates the number of points per square inch of a roller

Service life of the metallic card clothing

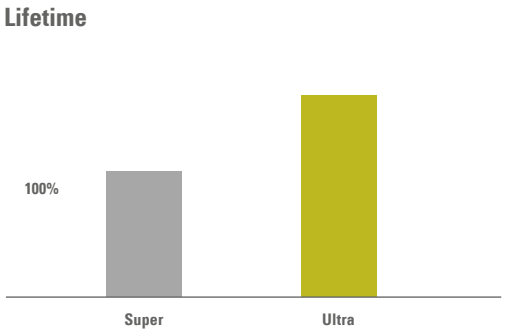
The metallic card clothing of a roller top card fills a demanding role. This makes the correct choice of card clothing geometry critical. Only the perfectly chosen card clothing type will contribute to a homogeneous fiber distribution in the web. The visible proof of a perfectly chosen card clothing type includes abrasion to the card clothing teeth.

The metallic card clothing used in a card is subject to very different forces depending on their task. The service life is estimated based on the stress and associated wear. The fiber material to be processed has also a great influence on the service life; matted fibers and recycled raw fiber materials as well as high throughputs negatively impact the lifetime.

To optimize the lifetime of metallic card clothing, custom types of steel are used in addition to custom production technologies.

The majority of metallic card clothing is made of high-grade **Super** steel using a reliable process.

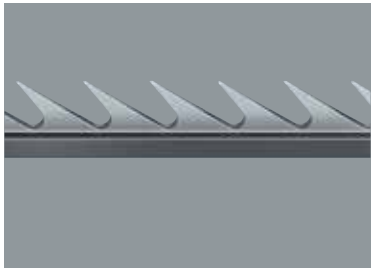
Specific kinds of card clothing is, however, made from the **Ultra** steel grade with special added alloys. These types of card clothing are used in high-speed spunlace machines for cylinder rollers and random rollers.



Surface structure of the metallic card clothing

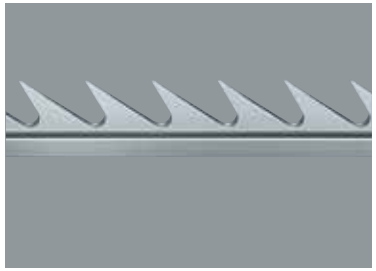
The geometric characteristics of metallic card clothing, especially the surface condition of the wire tooth, has a decisive influence on its benefit. The surface structure is chosen depending on whether the adhesive effect between card clothing and fiber should be stronger or weaker.

Groz-Beckert offers three different surface structures:



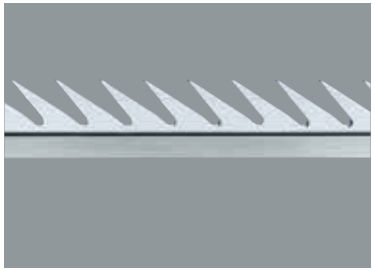
Without surface treatment

This is the surface for all applications for which there are no special requirements for fiber retention.



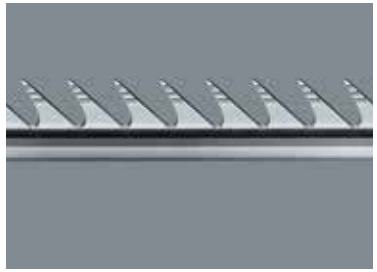
Pearlech

The Pearlech surface generates significantly higher fiber adhesion and is therefore recommended for high volume throughput and high nonwoven speeds for worker and doffer wires.



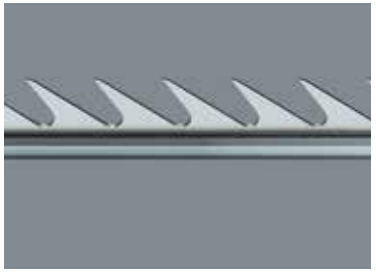
Plattinium

Compared to the Pearlech surface, Plattinium reduces fiber retention. The specially deburred and polished surface proves its benefit on cylinder, condensing, and take-off wires, in particular when processing extremely fine fibers.



F6

Compared to Pearlech finishing, F6 possesses a cleaner surface from superior Groz-Beckert InLine sandblasting process, and highly consistent finishing quality throughout the coil and across different coils thanks to the innovative Groz-Beckert InLine technology.



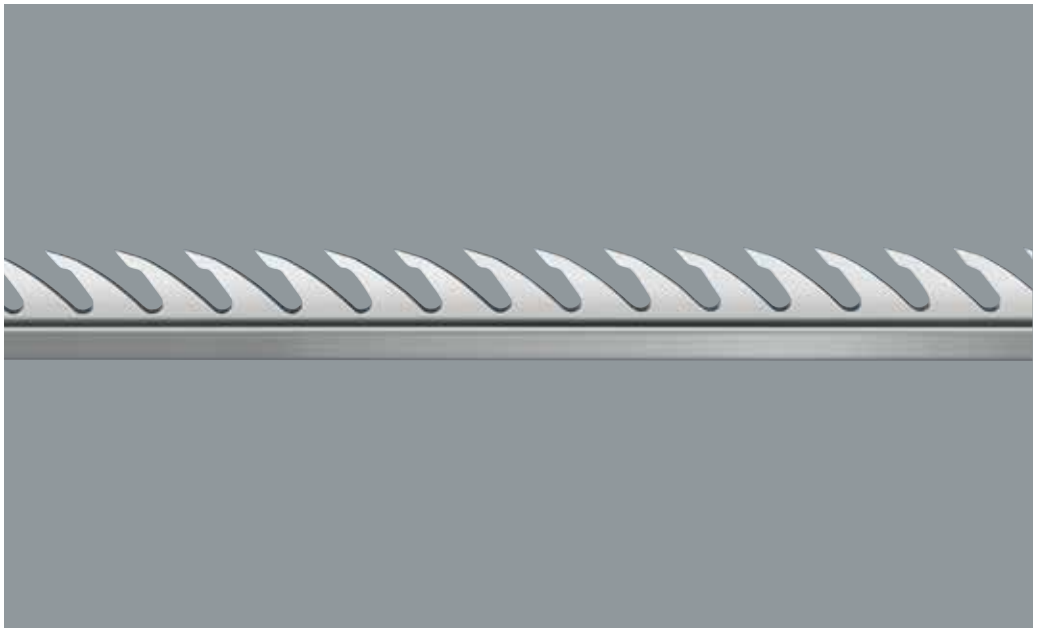
F8

Stands out with mirror-like highly smooth surfaces with zero oxide scale and burrs, as well as well protected sharp wire tips and working edges on the tooth body. Highly consistent finishing quality can be achieved throughout the coil and across different coils thanks to the innovative Groz-Beckert InLine technology. Its low fiber retention characteristic further reduces the chances of loading in some applications when used on cylinder, condenser and take-off wires.Groz-Beckert InLine technology.

The perfect combination for added value

The correct selection and combination of metallic card clothing for a given application, as well as the geometry and surface structure, guarantee both the lowest possible use of raw materials as well as the highest possible throughput.

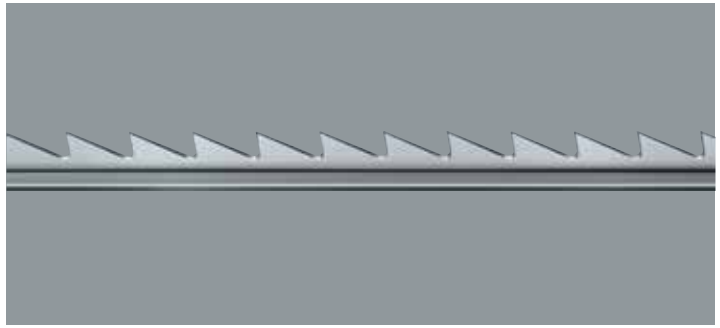
Quality – Groz-Beckert InLine metallic card clothing

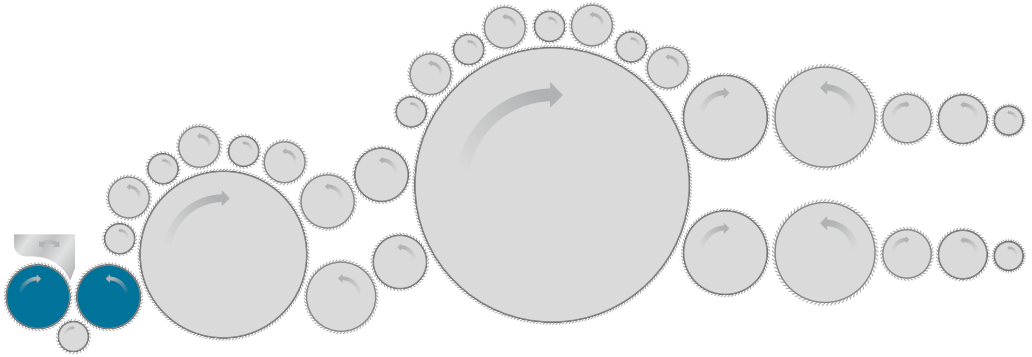


Anyone who has worked with Groz-Beckert values the company's commitment to the highest quality. Its high degree of process and production know-how, its proximity to the customer, and its cooperation with fiber manufacturers at the Technology and Development Center equip Groz-Beckert perfectly for the demands of the market. Groz-Beckert has now developed a new, patented manufacturing process to provide customized solutions and meet the high requirements of the nonwovens industry. With this process, metallic card clothing is produced with new properties and the highest quality: the Groz-Beckert InLine card clothing. At the same time Groz-Beckert contributes to environmental protection with its energy-efficient production process.

With its InLine card clothing series, the nonwovens industry profits from Groz-Beckert's customary commitment to the highest quality as well as to product reliability. The InLine card clothing series guarantees carding of the highest level, considerably reducing the rib height without the card clothing losing strength. The new highly reliable production process guarantees a higher resistance to damage in the wire teeth. Groz-Beckert InLine card clothing thus has a higher lifetime potential than conventional card clothing. Another characteristic of the Groz-Beckert InLine series is its entirely scale-free production, which is reflected in shorter run-in phases for the card clothing. Conventional card clothing will show its full potential in the card only after an initial phase of approx. 1 to 2 weeks after re-clothing. Groz-Beckert InLine card clothing is strong in character and remains constant in its behavior during carding. In the future, Groz-Beckert will also work on expanding its previous portfolio in order to promote new innovation internally and in cooperation with our partners.

Card clothing for feed rollers and licker-in





Feed rollers

Feed roller wires control a heavy fiber mat and guide it uniformly into the roller top card. Groz-Beckert provides the best-suited metallic card clothing for all feeding systems, whether they are conventional and have multiple feed rollers and a cleaning roller, a feed assembly with one feed roller with bottom plate or an upper feeding system. Card clothing for feed rollers is normally V8 or V6 and has a working angle of 20° or 30°.

Concerning the upper feed roller systems, there is a difference between systems with and without cleaning rollers. The system without the cleaning roller requires card clothing with a working angle of 5° to a maximum of 10°, while the system with the cleaning roller is used with a working angle of 20°.

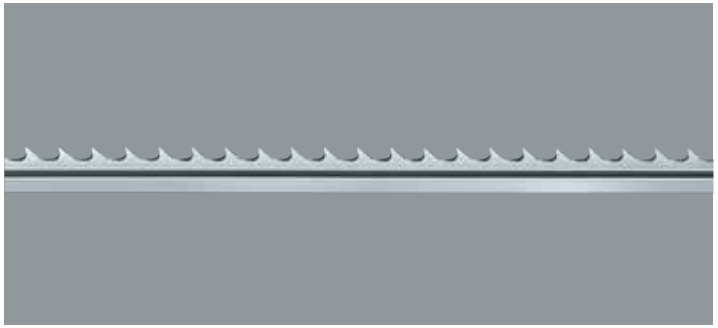
Licker-in

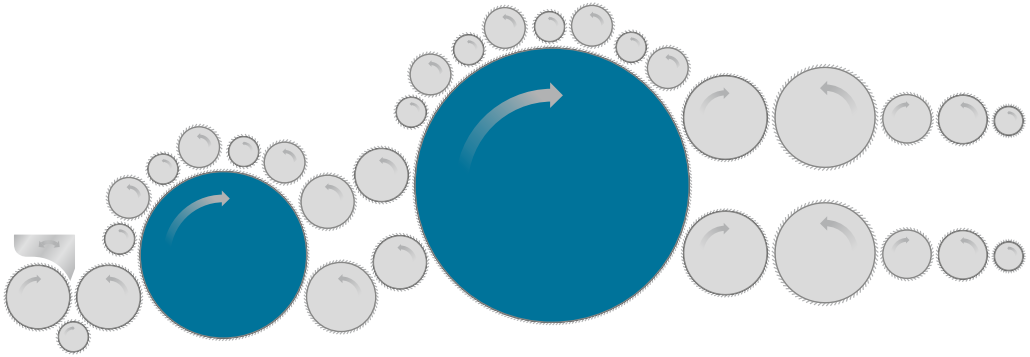
The licker-in and its card clothing releases individual tufts of fiber from the fiber tufts on the fiber mat. The working angle of the card clothing is normally between 10° and 20°; the rib width ranges from V8 to V12 depending on the fiber fineness.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
VF08/650/70+*	5.50	3.17	6.50	20°	70°	31
VF08/650/80+	5.50	3.17	6.50	10°	80°	31
VN08/550/95+	5.50	3.17	5.50	-5°	95°	37
VF10/630/70+	4.70	2.54	6.30	20°	70°	40
VF10/530/70+	4.70	2.54	5.30	20°	70°	48
VM10/400/75+	4.70	2.54	4.00	15°	75°	64

* + = New generation of tooth tips “Full Aquiline” featured with optimized tip design and punching quality.

Card clothing for the breast and main cylinder





Breast cylinder

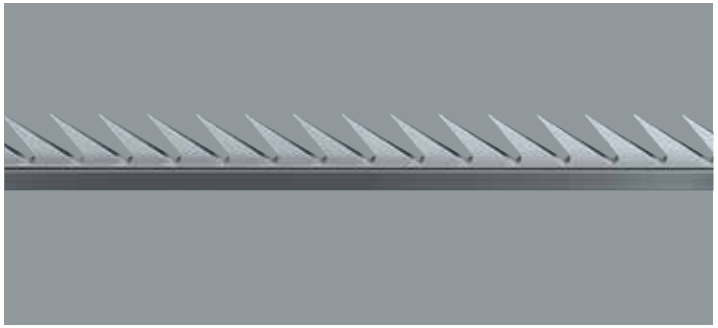
At the breast cylinder, the fiber tufts are opened and mixed by the worker-stripper pairs. The card clothing is normally interlocked and has a working angle between 10° and 20°; a working angle of 20° is recommended with smaller diameters and higher speeds in the breast cylinder.

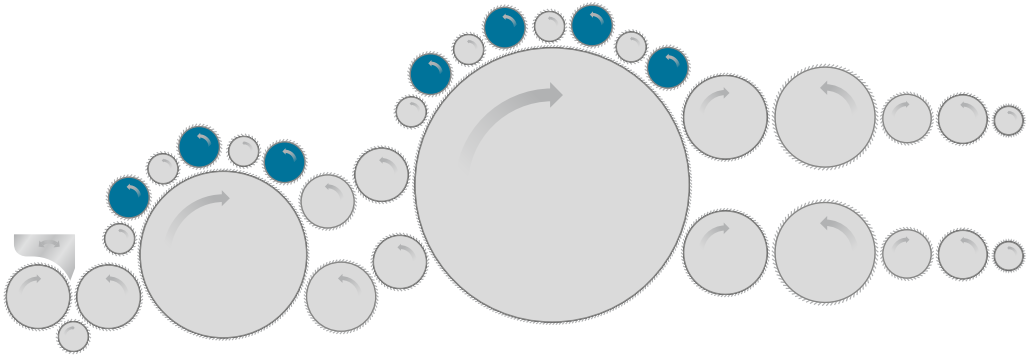
Main cylinder

The main cylinder is the most important roller of the roller card, as the main carding work takes place in this section. Depending on the diameter and speed of the cylinder, the card clothing for a main cylinder has working angles between 10° and 20°. A higher working angle is necessary for better fiber control at higher cylinder speeds. Coarse to very fine card clothing of 50 to 500 points per square inch can be used, depending on the fiber fineness. The special Plattinium surface is also recommended to protect fibers and increase performance when using especially sensitive fibers.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
VF12/400/75+	4.70	2.12	4.00	15°	75°	76
VF16/400/75+	4.50	1.59	4.00	15°	75°	101
VF16/420/75+	3.80	1.59	4.20	15°	75°	97
VF20/320/80+	3.80	1.27	3.20	10°	80°	159
VF20/300/70+	3.80	1.27	3.00	20°	70°	169
VF24/300/75+	3.80	1.06	3.00	15°	75°	206
VF28/320/80+	3.80	0.91	3.20	10°	80°	222
VF28/300/75+	3.80	0.91	3.00	15°	75°	240
VF30/270/75+	3.80	0.85	2.70	15°	75°	285
VF30/180/75+	3.30	0.85	1.80	15°	75°	429
P090/320/70+	3.20	0.90	3.20	20°	70°	227
P090/270/75+	3.20	0.90	2.70	15°	75°	270
P090/130/75+	3.20	0.90	1.30	15°	75°	551
P090/180/75+	3.20	0.90	1.80	15°	75°	396
P065/180/75+	2.80	0.65	1.80	15°	75°	561
P090/160/75	2.50	0.90	1.60	15°	75°	448
P050/280/78+	2.50	0.50	2.80	12°	78°	461

Card clothing for worker



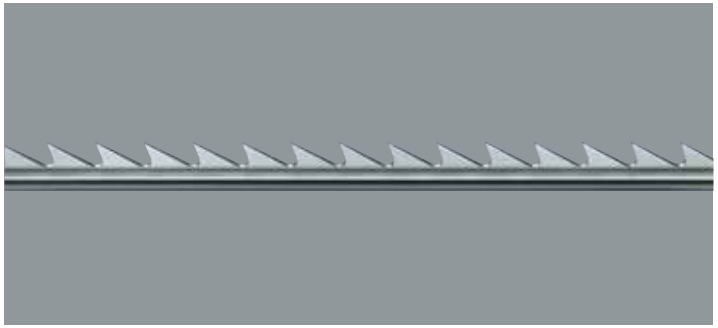


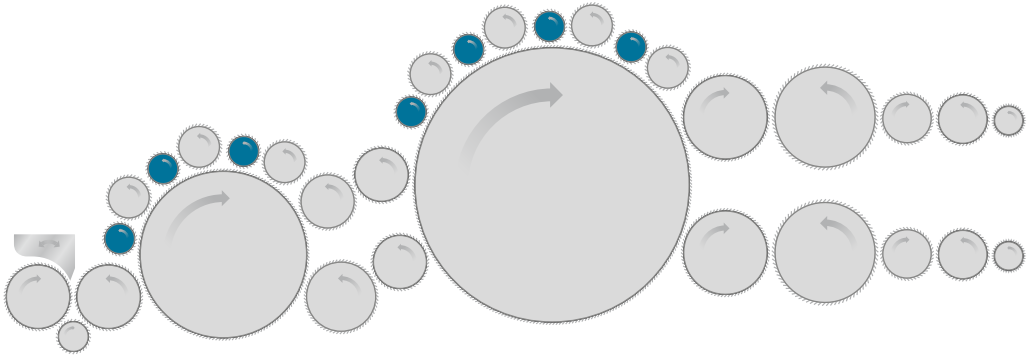
Worker

Worker rollers on the breast cylinder and the main cylinder are of critical importance, because the actual carding occurs between them and the breast/main cylinder. A working angle of 30° to 45° with a large tooth depth is recommended for grabbing and picking up the fibers from the breast/main cylinder card clothing. The surface structure (without treatment, Pearlech, Plattinium) of the fiber must be adapted accordingly for high production capacities. Card clothing with striations is also used for a better fiber control and reducing fiber fly. Card clothing with special geometries like EvoStep™, SiroLock™, or even the high-performance doffer wire from the Groz-Beckert InLine series SiroLock™ plus is used for very high speeds or particularly high web weights.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
VL20/360/50+	5.30	1.27	3.60	40°	50°	141
VL20/360/50 EvoStep™+	5.30	1.27	3.60	40°	50°	141
VL24/360/50+	5.30	1.06	3.60	40°	50°	169
VL24/250/50+	5.30	1.06	2.50	40°	50°	243
VL16/360/53+	5.00	1.59	3.60	37°	53°	113
P100/360/50+	5.00	1.00	3.60	40°	50°	179
P100/220/50+	5.00	1.00	2.20	40°	50°	293
VF20/360/50+	4.50	1.27	3.60	40°	50°	141
VF24/360/50+	4.50	1.06	3.60	40°	50°	169
VF20/250/50+	4.50	0.91	2.50	40°	50°	203
VF28/250/50+	4.50	0.90	2.50	40°	50°	284
P095/250/50+	4.00	0.95	2.50	40°	50°	272
P095/210/50	4.00	0.95	2.10	40°	50°	323

Card clothing for strippers





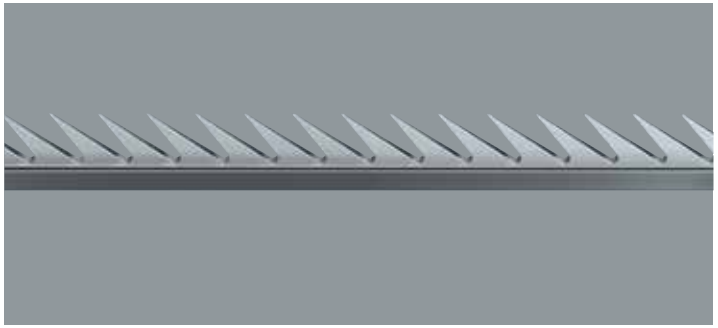
Stripper

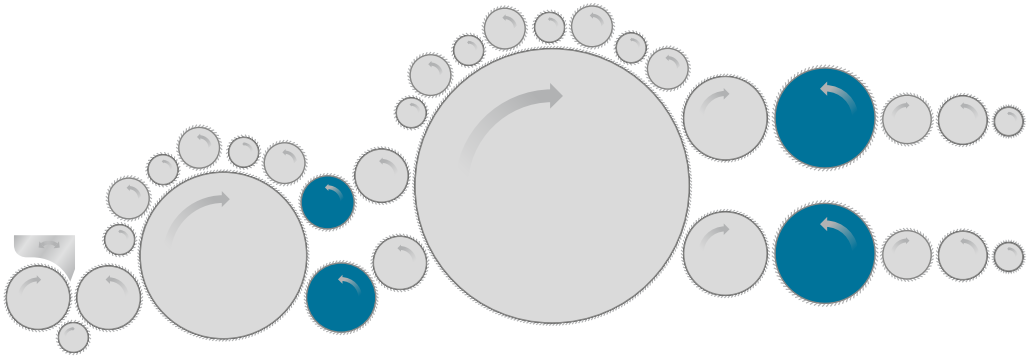
Stripper rollers guide the fibers from the worker back to the breast/main cylinder. The card clothing is ideally interlocked with a working angle between 15° and 40°, depending on the speed of the strippers. Today, the same working angle as with worker rollers is used for high speeds in order to improve the fiber control. Furthermore wires with striations are used in some applications.

- Workers breast cylinder are normally equipped with interlocked and plain rib wires.
- Workers main cylinder can either be equipped with interlocked and plain rib wires depending on the application.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
VF12/500/70+	4.70	2.12	5.00	20°	70°	61
VF16/400/75+	4.50	1.59	4.00	15°	75°	101
VF16/360/50+	4.50	1.59	3.60	40°	50°	113
VF20/360/50+	4.50	1.27	3.60	40°	50°	141
VF20/300/70+	3.80	1.27	3.00	20°	70°	169
VF16/420/75+	3.80	1.59	4.20	15°	75°	97

Card clothing for intermediate doffers and doffers





Intermediate doffers

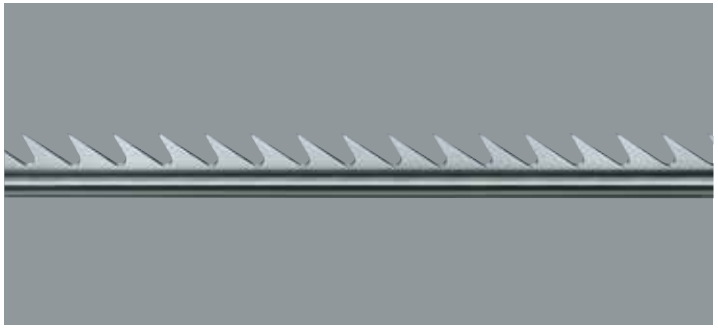
A card may have one or two intermediate doffers, depending on the configuration. The card clothing used has a working angle of 40° and can also be equipped with striations, if this is required by the throughput or the speed of the intermediate doffers. The special EvoStep™, SiroLock™, or SiroLock™ plus shapes are also recommended for particularly demanding applications.

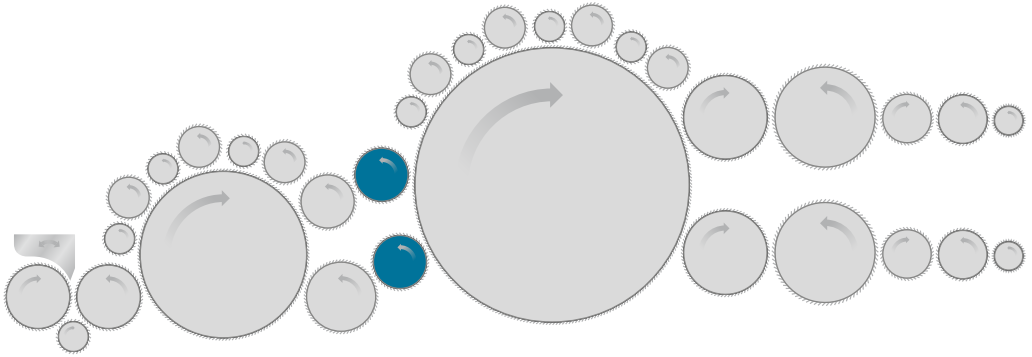
Doffers

Cards can be equipped with one, two, or three doffers. The doffer wire is of greater importance when considering the correct relationship between production performance and web quality. The fiber characteristics, desired web weight, and required web quality, in addition to the throughput, play a decisive role. The working angle of doffer wires is between 30° and 45°; striations or special surface treatments are also optionally available. Specially polished card clothing can also be used. The PPSI varies between 60 up to more than 350 depending on the application. Card clothing with special geometries like EvoStep™, SiroLock™, or even the high-performance doffer wire from the Groz-Beckert InLine series SiroLock™ plus is recommended for very high speeds or particularly high web weights.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
VL20/360/53+	5.30	1.27	3.60	37°	53°	141
VL20/360/50+	5.30	1.27	3.60	40°	50°	141
VL24/360/50+	5.30	1.06	3.60	40°	50°	169
VL24/360/50 EvoStep™+	5.30	1.06	3.60	40°	50°	169
VL24/250/50+	5.30	1.06	2.50	40°	50°	243
VL16/360/53+	5.00	1.59	3.60	37°	53°	113
P100/360/50+	5.00	1.00	3.60	40°	50°	179
P100/220/50+	5.00	1.00	2.20	40°	50°	293
VF20/360/50+	4.50	1.27	3.60	40°	50°	141
VF24/360/50+	4.50	1.06	3.60	40°	50°	169
VF20/250/50+	4.50	1.27	2.50	40°	50°	203
Groz-Beckert SiroLock™ VG28/250/50x SL Plattinium	4.50	0.91	2.50	40°	50°	284
VF28/250/50+	4.50	0.91	2.50	40°	50°	284
P095/250/50+	4.00	0.95	2.50	40°	50°	272
P095/210/50+	4.00	0.95	2.10	40°	50°	323
Groz-Beckert InLine SiroLock™ plus P080/250/40H40 SL+ F8	4.00	0.80	2.50	40°	50°	323

Card clothing for transfer rollers



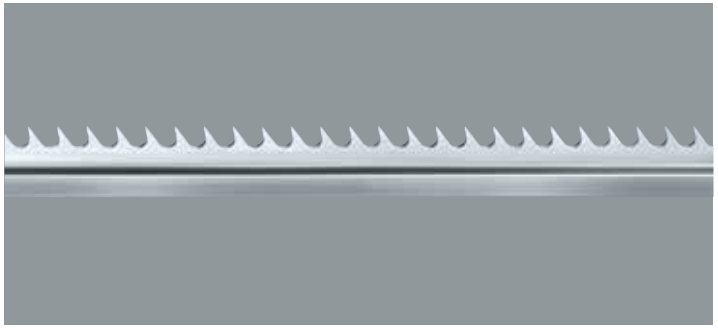


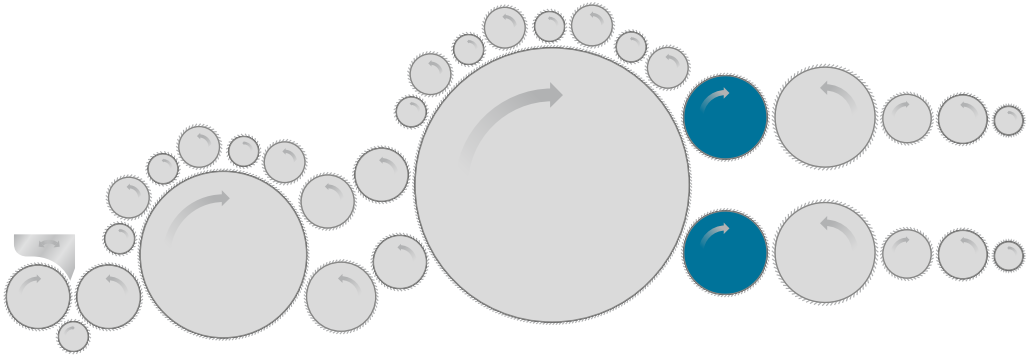
Transfer rollers

The fibers are transferred from the breast cylinder to the main cylinder, or from the intermediate doffer to the main cylinder, using the transfer rollers. The card clothing geometry in combination with the speed difference ensures transmission from one roller to another. The card clothing should normally have a working angle of 30°, but a working angle of up to 40° can also be of benefit in exceptional cases. Interlocked wires of V10 to V20 are used depending on the card configuration and fiber fineness.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
VF12/500/60+	4.70	2.12	5.00	30°	60°	61
VF12/360/60+	4.70	2.12	3.60	30°	60°	85
VF14/360/60+	4.70	1.81	3.60	30°	60°	99
VF16/360/60+	4.50	1.59	3.60	30°	60°	113
VF20/360/60+	4.50	1.27	3.60	30°	60°	141

Card clothing for random rollers





Random rollers

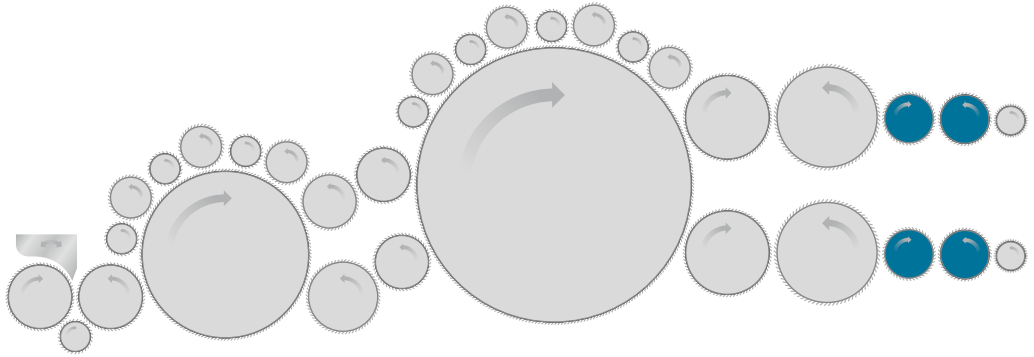
Random rollers are used to create a random fiber orientation for a better MC/CD ratio. The random rollers take fibers from the main cylinder against the tooth direction, thus resulting in a reorientation of the fibers as well as intensive carding. Cards with random rollers are often used in sanitary hydroentanglement systems. The card clothing used on random rollers is generally the finest within the card and deliver 500 points per square inch for a working angle of 10° to 20°.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
P090/130/70+	3.20	0.90	1.30	20°	70°	551
P090/130/75+	3.20	0.90	1.30	15°	75°	551
P090/130/80+	3.20	0.90	1.30	10°	80°	551

Card clothing for condensing rollers

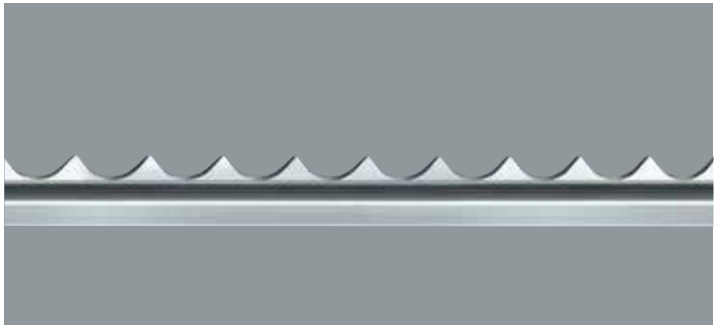
Condensing rollers

The fiber orientation can be influenced and the MD/CD ratio moved in the direction of 1:1 using condensing rollers. The fibers are also moved in the third dimension, which considerably increases the volume. One or two condensing rollers can be used depending on the card configuration. The fiber is reoriented while the web weight is increased at the same time due to the speed difference to the doffer and the adapted card clothing with significantly fewer points per square inch and a working angle of 40°. The Plattinium surface finish of the condenser card clothing ensures a high process reliability for sensitive applications with fine fibers.



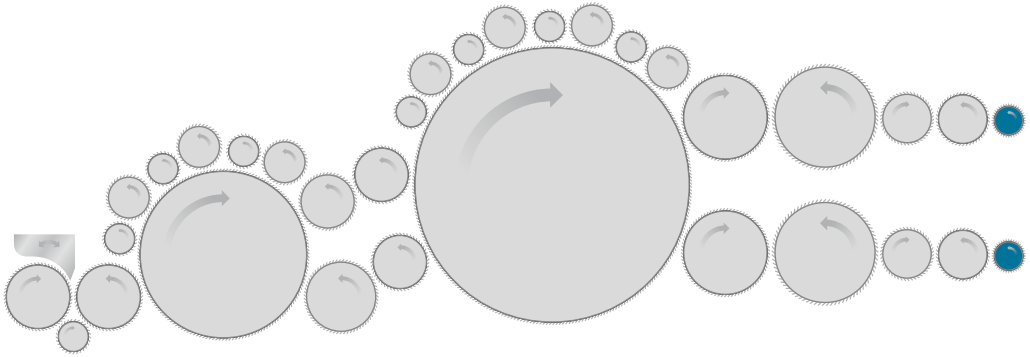
Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
P140/420/50+	5.50	1.40	4.20	40°	50°	110
P120/420/50+	5.50	1.20	4.20	40°	50°	128
P125/420/50+	5.00	1.25	4.20	40°	50°	123
P125/360/50+	5.00	1.25	3.60	40°	50°	143

Card clothing for take-off rollers



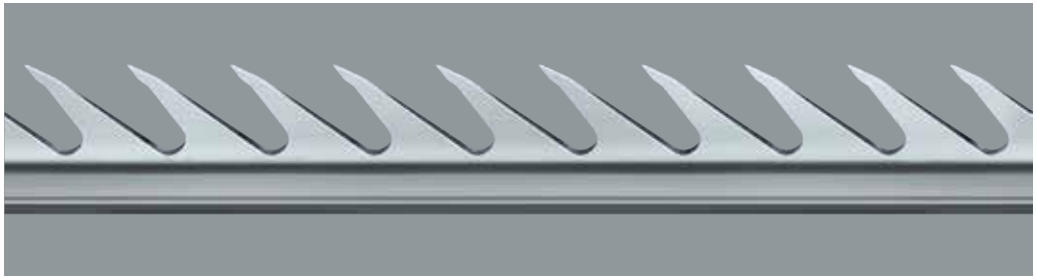
Take-off roller

Card clothing for take-off rollers has a special geometry and the Plattinium surface, with a PPSI of 50 to 120. This ensures that the web is taken smoothly from the doffer wire or condenser wire, moving securely to the conveyor belt.



Product	Height (mm)	Rib (mm)	Pitch (mm)	Working angle	Front angle	PPSI
P180/325/117	4.06	1.80	3.06	-27°	117°	117
P150/440/100+	4.00	1.50	4.40	-10°	100°	98
P300/380/130+	3.00	3.00	3.80	-40°	130°	57

Special shapes: EvoStep™ and SiroLock™



EvoStep™

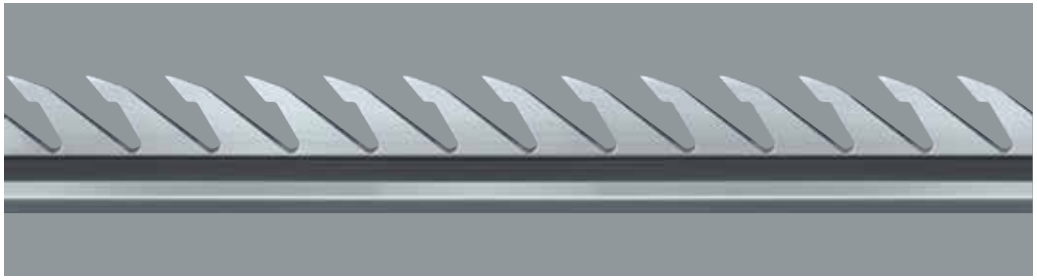
EvoStep™ is a card clothing series for doffer and worker rollers with a unique slanted-step undercut on the tooth brush whose angle is more pronounced compared to the working angle. Thanks to this "evolutionary" section, EvoStep™ fiber take-up and retention is higher by up to 30% compared to conventional wires.

Benefits

- Improved fiber control
- Reduced fiber fly
- Increased throughput
- Higher transmission rate
- Easy maintenance: Card can be restarted simply and without issue, reducing downtimes for maintenance to an absolute minimum.

Application fields

- Needle felt carpets
- Needled/thermally-bonded geotextiles
- Bedding (siliconized PES)
- Textiles in automotive production
- Carpet backing/mattress protectors (shoddy wool)



SiroLock™

SiroLock™ is a metallic card clothing series for doffer and worker rollers and is characterized by a pronounced step below the tip of the tooth. SiroLock™ controls fibers not only with the saw tooth and tooth flank, but with the step below the tip of the tooth as well. This enables the worker and doffer rollers to pick up and manage significantly more fiber.

Benefits

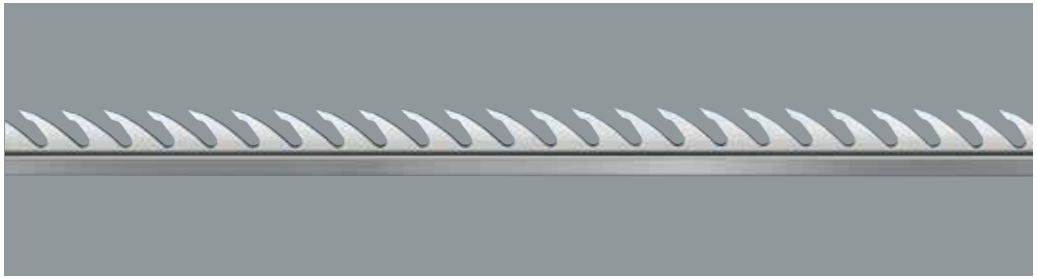
- Increased performance: higher delivery speeds and/or higher web weights.
- Reduced fiber fly
- Better blending

Application fields

SiroLock™ card clothing then shows its full potential exceeding the limits of production performance and speed.

- High-speed systems for spunlace
- High-speed systems for thermal bonding
- Special applications for heavy nonwovens

Special shape: SiroLock™ plus



SiroLock™ card clothing was originally developed for processing wool in order to protect the long fibers used there from damage. The benefits of SiroLock™ in the nonwovens industry quickly became apparent as well. The higher delivery speed and web weights enable customers to achieve higher profit margins even though it is necessary to use slightly more material for the higher throughputs. To make high delivery speeds possible without using more raw material, Groz-Beckert developed a successor to the proven SiroLock™ card clothing, the SiroLock™ plus.

As card clothing from the Groz-Beckert InLine family, the SiroLock™ plus is impressive not just because of its lower rib height and higher stability of the wire tooth. Its special tooth geometry, which has been improved to the very last detail and is based on the proven SiroLock™ card clothing, optimizes the ratio of fiber take-up to fiber release. The protected Groz-Beckert production process makes it possible to manufacture very fine, durable card clothing geometries. The result is an optimal SiroLock™ plus product family covering the sophisticated specifications of any customer application.

Benefits

- Increased lifetime via stable tooth tip
- Higher delivery speeds
- High web uniformity, even for light web weights
- Raw material savings

Application fields

- High-speed systems for hygiene applications (spun lace, thermobonding)
- Roller top cards for filtration (finest fibers)
- Processing secondary raw materials

Global mounting service

In the nonwovens industry, a well-done service plays an important role, as service quality influences the performance of the card clothing. Card down-time can only be reduced to a minimum with efficient and proficient service. Groz-Beckert services offer the best solutions around the world, carried out by qualified service technicians as well as partners and workshops. Everything in the standard Groz-Beckert quality – secure, fast, innovative, flexible, and reliable.

Due to the constant availability of its customer service and the high availability of its card clothing, Groz-Beckert is able to respond individually and at short notice to special customer needs and crash situations.

In addition to the card clothing mounting service, the maintenance and cleaning of card clothing also plays an important role in carding results. Here Groz-Beckert offers its customers as well as its service technicians a broad portfolio of service tools.

Groz-Beckert provides the nonwovens industry with an extensive range of services – in its own workshops and on-site with the customer:

Mobile service:

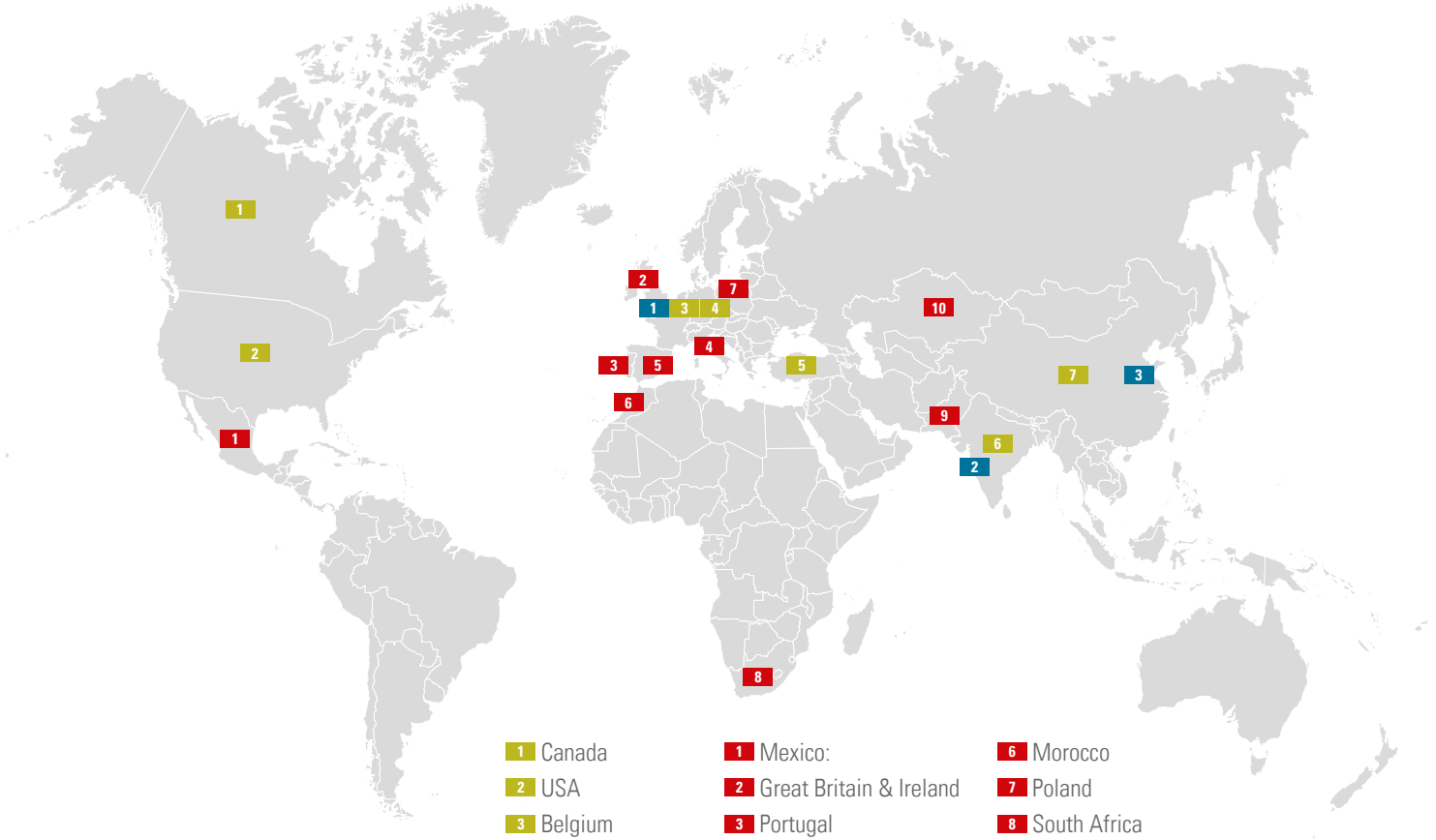
- Evaluating the card clothing status
- Installation and dismantling of cards for mounting
- Concentricity check for rollers
- Mounting new card clothing both in the card and the mounting frame
- Mounting flexible card clothing
- Setting roller distances
- Start-up of the roller card

Workshop:

- Concentricity check
- Mounting standard and special rollers
- Mounting of card clothing for special applications, for example multiple wiring
- Mounting flexible card clothing
- Mounting the base wire
- Balancing rollers

On-site service with global presence

You benefit from our commitment to local service supported by our global presence. You can rely on our global network of production sites, service organizations, and the facilities of our partners to ensure that your requirements are met quickly and efficiently. All locations and facilities guarantee service even beyond their national borders.



Carding production locations

Groz-Beckert Carding service organizations

Service facilities of carding partners

1 Deerlijk, Belgium
2 Pune, India
3 Wuxi, China

1 Canada
2 USA
3 Belgium
4 Germany
5 Turkey
6 India
7 China

1 Mexico:
2 Great Britain & Ireland
3 Portugal
4 Italy
5 Spain

6 Morocco
7 Poland
8 South Africa
9 Pakistan
10 Uzbekistan

Groz-Beckert Academy

Groz-Beckert has long been supporting its customers and partners with product know-how and fundamental knowledge within the textile value chain as well as its application advice. Since 2012, this part of its extensive range of services has had its own name: The Groz-Beckert Academy has made it its mission to pass on knowledge, to share experiences, and to make know-how and expertise accessible.

The current training program for download

Whether knitting, warp knitting, weaving, felting, carding, tufting, or sewing – the Groz-Beckert Academy offers a comprehensive training program that covers the most important textile production and joining procedures. With a combination of practice and theory, our experienced trainers pass on expert knowledge and know-how. This ensures that participants are optimally equipped for their tasks in the textile world.

The range of courses includes basic, supplemental, and specialized training, all of which is held in the Technology and Development Center (TDC) in Albstadt. The Groz-Beckert Academy also offers individual training on-site at the customer.

All courses are offered in both German and English. Select courses are also available in other languages, such as Chinese and Spanish.

App myGrozBeckert

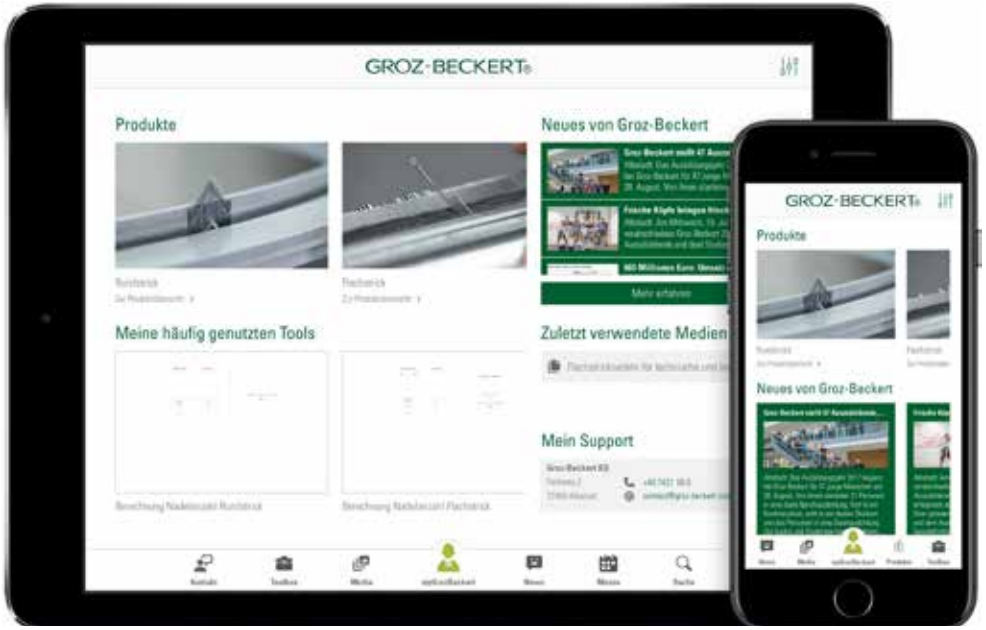
Your personal work tool

As one of the most important requirements for effective work, the transmission of knowledge and experience traditionally plays a fundamental role at Groz-Beckert. In order to make this know-how mobile and available offline, Groz-Beckert developed an app in 2011 that contains well-founded knowledge from within the textile value chain and on the company.

myGrozBeckert has been further developed continuously since then and in 2017 was given a completely customizable navigation system in 2017 as part of a relauch.

This enables users to define favorites and preferred topics themselves and to change them at any time as required. myGrozBeckert is therefore your personal work tool for the textile world.

myGrozBeckert works with all iOS and Android smartphones and tablets, and is available in German, English, and Chinese. You can download it through the Google Play Store, the Apple Store, or through various Chinese app stores.



myGrozBeckert
Custom information on your personal dashboard

Products
The extensive Groz-Beckert product and service portfolio

Toolbox
Recommendations, tools, and calculation assistance

Contact
The Groz-Beckert contact partners – worldwide

Media
Animations, videos, and brochures

News
News about the textile world of Groz-Beckert

Trade fairs
Facts and data on Groz-Beckert's trade fair presence

Search
Key word search across all areas

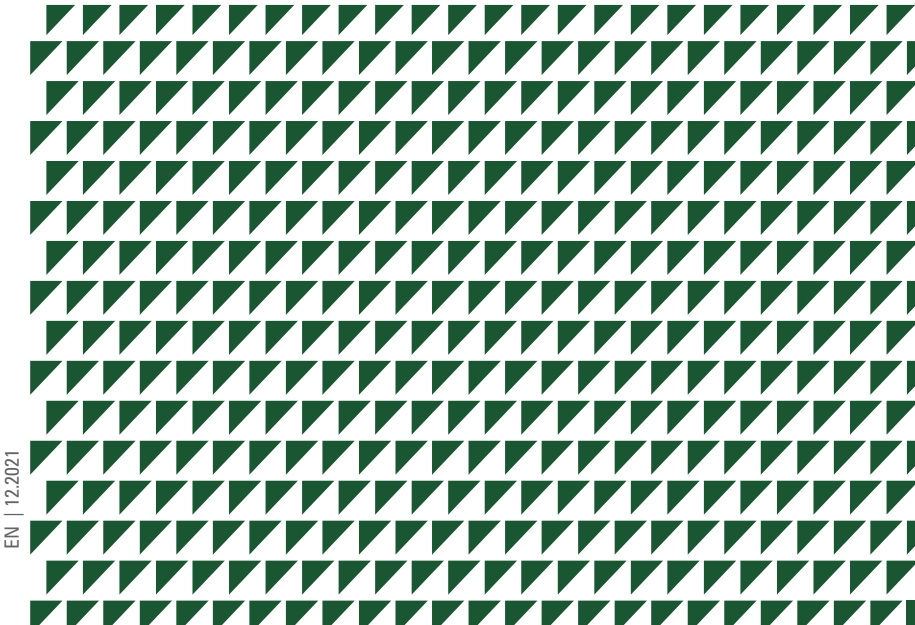
Download on the App Store

GET IT ON Google Play

Groz-Beckert KG
Parkweg 2
72458 Albstadt, Germany
Phone +49 7431 10 -0
Fax +49 7431 10-2777
contact-carding@groz-beckert.com
www.groz-beckert.com

GROZ-BECKERT

KNITTING | WEAVING | FELTING | TUFTING | CARDING | SEWING



EN | 12.2021