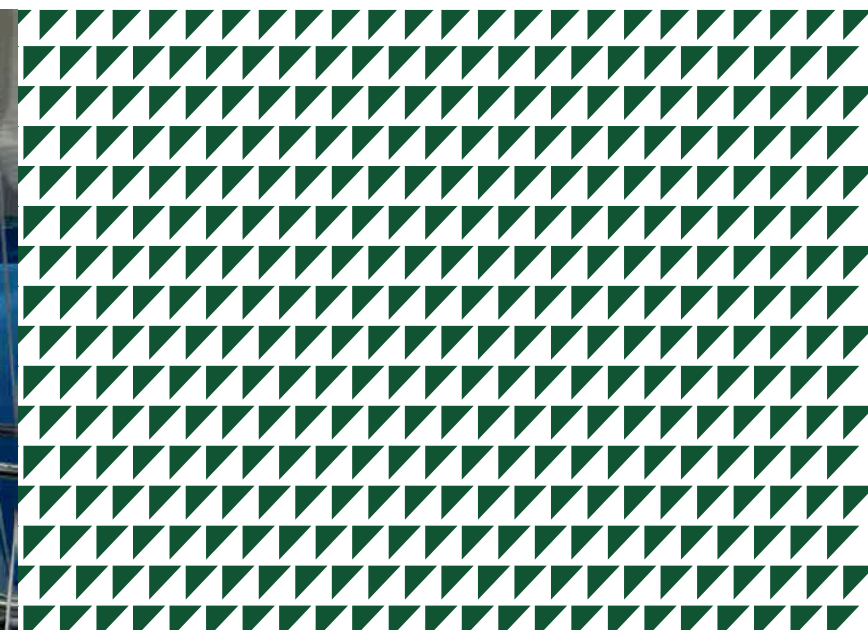


Carding

Card clothing for short staple applications



The carding technology

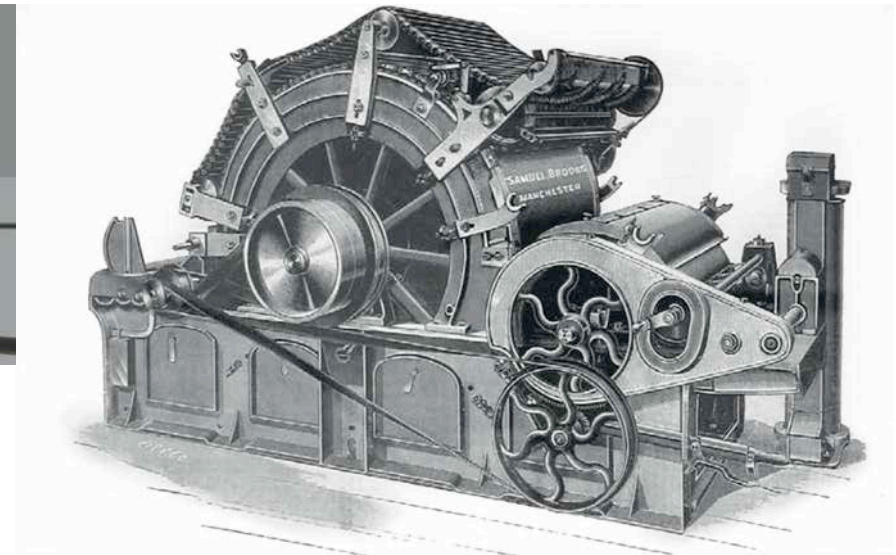
Groz-Beckert is the world's leading provider of industrial machine needles, precision parts and fine tools as well as systems and services for the production and joining of textile fabrics. The products and services support the fields of knitting, weaving, felting, tufting, carding and sewing. In the product group Carding Groz-Beckert offers a wide range of tools and services relating to all aspects of carding from a single source: from consulting, product recommendation and the entire product range through mounting service and special roll repair to start-up service. The portfolio includes card clothing for the short staple spinning industry.



Carding

The sayings used among experts “the card is the heart of a spinning mill” and “well carded is half spun” highlight the importance of carding for the final spinning result and the quality of the yarn produced.

In addition to the revolving flat card, the tools in the revolving flat card – the card clothing – also play a key role. They are responsible for the gentle separation of the fiber tufts, through to the individual fibers and bringing them together to create a thin web.



Historical revolving flat card



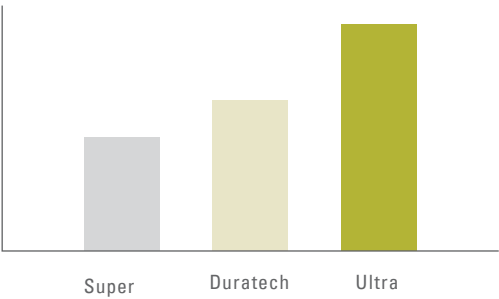
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Card clothing range

Groz-Beckert Carding offers a complete range of high-quality products for carding in the short-staple spinning industry. The selection includes all metallic card clothing, from the blowroom to the revolving flat card, and covers the cylinder, doffer, licker-in and stripping roller wires, as well as revolving tops, stationary flats and cleaning fillets. As an independent card clothing manufacturer, Groz-Beckert offers its customers state-of-the-art technical solutions for all card models and applications and provides support to achieve optimal results with regard to throughput, quality and lifetime of the card clothing.

Service life



Steel qualities

Groz-Beckert Carding offers metallic card clothing in three different steel qualities:

Super is a special carbon steel for cylinder wires, doffer wires and plain rib licker-in wires for the highest technological demands and low production outputs. A service life of up to 600 tons is usually achieved for the cylinder card clothing.

Duratech is a micro-alloyed steel quality for cylinder wires, interlocked licker-in wires and stationary flats with a higher wear resistance compared to the Super steel quality. Duratech products are an attractive option for the most demanding applications in the medium-to-high production output range. The service life of the cylinder wires with a consistent sliver quality is over 800 tons.

Ultra is the most valuable steel quality for special cylinder wires, interlocked licker-in wires and stationary flats. The steel quality is recommended for all modern revolving flat cards and the highest production outputs. The higher wear resistance enables a service life of over 1,200 tons to be achieved for the cylinder wires.

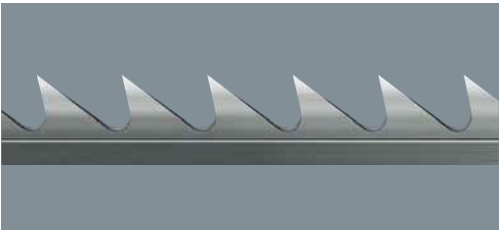
The lifetime of metallic card clothing depends on several factors:

- Throughput
- Raw material
- Quality requirements in the spinning mill

Groz-Beckert Carding has the experience and the technical knowledge to choose the best card clothing to suit the customer requirements.

Licker-in wires

The licker-in wires are responsible for opening the fiber batt in the revolving flat card and transferring the opened fibers to the cylinder. A lot of impurities are removed at the licker-in. A gentle and even opening of the fibers at the licker-in is the key for the card sliver and yarn quality, as well as for achieving the best possible lifetime for the cylinder wires and revolving tops.



Groz-Beckert offers interlocked licker-in wires, as well as licker-in wires for grooved rollers. Grooved licker-ins are mostly used on older cards. The front angle is dictated by the application and fiber types being processed. Grooved licker-ins are available in several rib thicknesses to suit the grooved roller on particular card types. The more modern, high-speed cards are utilizing interlocking type licker-in designs. The specification for interlocking licker-in is in most cases card specific.

Interlocking licker-in wires are available in Super, Du-
ratech and Ultra steel qualities. We recommend Ultra
steel quality for maximum lifetime.

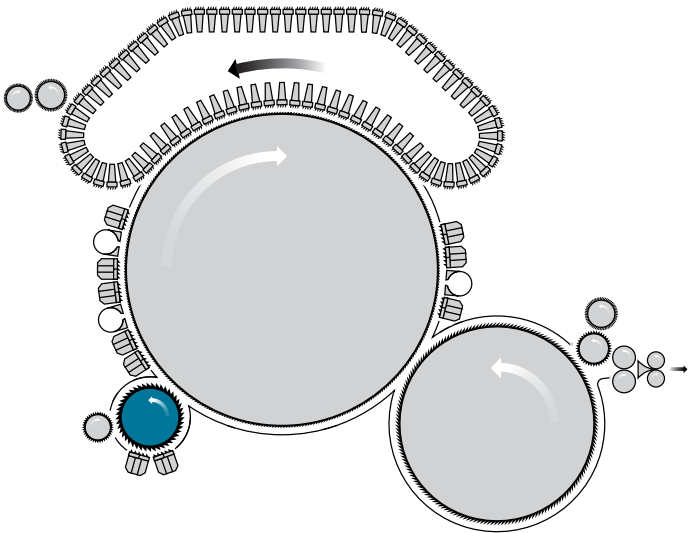
Interlocked

Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
V8-00-42	5,00	3,17	4,70	0	42
V8-05-40	5,00	3,17	5,30	5	40
V8-10-40	5,00	3,17	5,30	10	40
V12-05-113	5,00	2,12	2,70	5	113
V12-10-113	5,00	2,12	2,70	10	113
V16-10-210 C*	5,00	1,59	1,95	10	210
V16-20-160 C*	5,00	1,59	2,50	20	160
V16-20-200 C*	5,00	1,59	1,95	20	210

Grooved

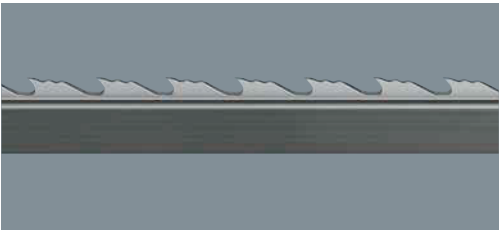
Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
L55-00-28	5,50	depending on width of groove	7,60	0	28
L55-00-42	5,50	depending on width of groove	4,80	0	42
L55-05-29	5,50	depending on width of groove	7,10	0	29
L55-05-40	5,50	depending on width of groove	5,10	0	40
L55-05-76	5,50	depending on width of groove	2,70	5	76
L55-10-40	5,50	depending on width of groove	5,10	10	40

* curved tooth design



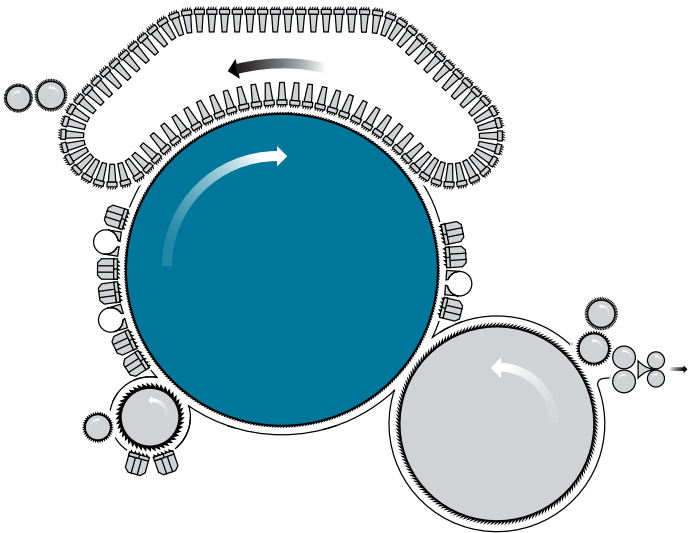
Cylinder wires

The cylinder wire takes over the fibers from the licker-in and is responsible for the main carding action with the revolving tops. As such, the selection of cylinder wire is important for optimum carding performance.



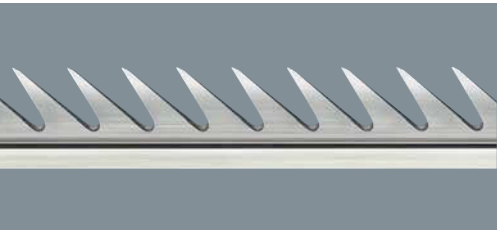
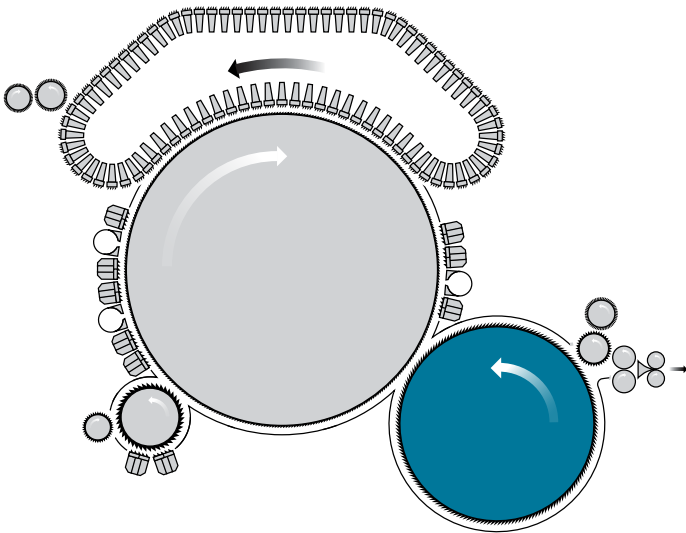
The heights 1.8 mm and 2.0 mm are usually used for processing cotton or cotton blends, while the height 2.5 mm is usually recommended for synthetic fibers. In order to fulfill the customer requirements in terms of yarn quality (taking into account the fiber type, fiber quality and carding performance), Groz-Beckert offers rib sizes from 0.38 mm for a wide range of applications and different working angles, through to special card clothing geometries.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
C18-40-10	1,80	0,38	1,70	40	1.000
C18-40-95-CMF	1,80	0,40	1,70	40	950
C20-25-81	2,00	0,50	1,60	25	810
C20-30-75	2,00	0,50	1,70	30	750
C20-30-76	2,00	0,65	1,30	30	760
C20-30-86	2,00	0,50	1,50	30	860
C20-30-95	2,00	0,40	1,70	30	950
C20-35-86	2,00	0,50	1,50	35	860
C20-35-95	2,00	0,40	1,70	35	950
C20-40-95-CMF	2,00	0,40	1,70	40	950
C20-40-95	2,00	0,40	1,70	40	950
C25-20-63	2,50	0,60	1,70	20	630
C25-20-72	2,50	0,60	1,50	20	720
C25-20-80	2,50	0,60	1,34	20	800
C25-25-72	2,50	0,60	1,50	25	720
C25-25-80	2,50	0,50	1,60	25	800
C25-30-72	2,50	0,60	1,50	30	720
C25-30-86	2,50	0,50	1,50	30	860



Doffer wires

The doffer wire takes over the fibers from the cylinder. The transfer ratio and the uniform transfer of the fibers is key for achieving an optimal carding result. The quality of the doffer wire, in conjunction with precise settings, determines the correct function of the fiber take-up from the cylinder to the doffer. The higher the production rate, the more important the function of the doffer wire.



Most card models use standard doffer wires with a height of 4.00 mm and a working angle of 30°. Doffer wires with a height of 3.70 mm and 4.70 mm, as well as curved doffers, complete the portfolio. Doffer wires with striations increase fiber cohesion, which is particularly important for processing synthetic fibers at high production speeds. One special card clothing is the patented doffer wire D40-30-31ES CBF, which makes the fiber take-up and control significantly easier.

Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI	No. of striations	
D37-30-40	3,70	0,90	1,90	30	400		
D37-30-40R5	3,70	0,90	1,90	30	400	5	
D40-30-30R2	4,00	1,00	2,16	30	300	2	
D40-30-31ES CBF	4,00	1,00	2,10	30	310		
D40-30-36	4,00	0,90	2,00	30	360		
D40-30-36R2	4,00	0,90	2,00	30	360	2	
D40-30-36R4	4,00	0,90	2,00	30	360	4	
D40-30-40	4,00	0,80	2,10	30	400		
D47-30-30R2	4,70	1,00	2,16	30	300	2	

Curved doffers

Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI	No. of striations	
D40-30-36C	4,00	0,90	2,00	30	360		
D40-30-36CR2	4,00	0,90	2,00	30	360	2	
D40-30-36CR4	4,00	0,90	2,00	30	360	4	
D40-30-52C	4,00	0,70	1,77	30	520		

CBF (Clean Bright Finish)

is an optional surface version for the entire product range of doffer wires.

CBF improves the fiber control and also reduces the loading of the doffer wire.

Revolving tops

The revolving tops have the extremely important task of separating the fibers and removing neps, short fibers, dust and trash particles. They therefore play a key role in the quality of the carding process and, ultimately, the yarn quality. During the carding process the revolving tops must absorb high forces whilst at the same time be sufficiently flexible so as to limit fiber damage. The so called foundation in which the teeth are embedded provides the critical support for the teeth whilst also giving sufficient flexibility for the revolving tops to perform an optimal carding quality. For this reason, careful selection of materials is paramount. All wire is of high fatigue steel and the colored foundation is designed for high-speed carding. The steel quality of all wires is designed to ensure optimal function of the revolving top at high production outputs.

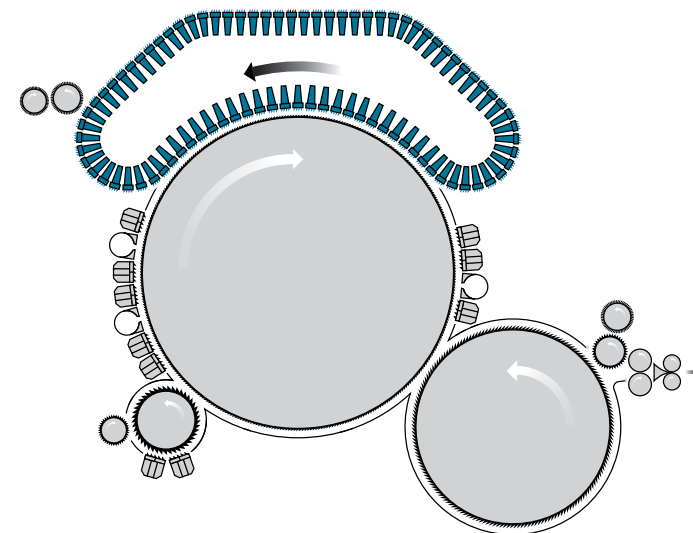
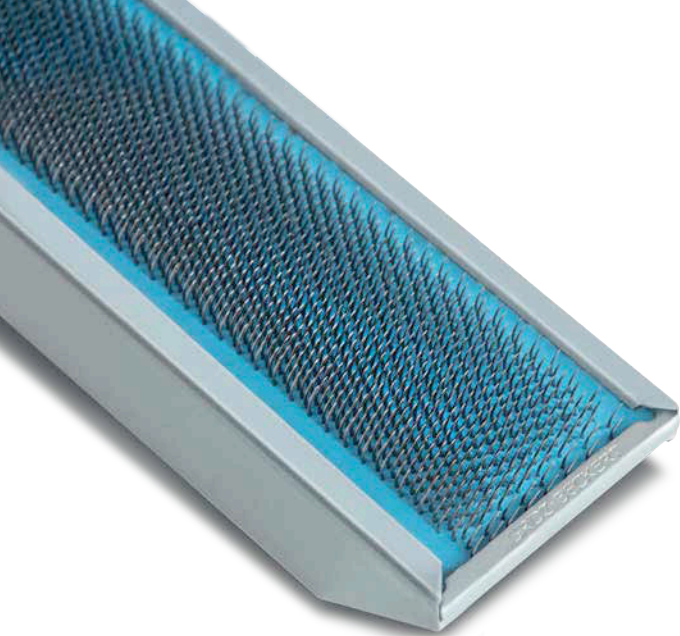
The product quality and quality assurance are traditionally a top priority in the manufacture of revolving tops at Groz-Beckert:

- Stable and consistent setting pattern
- Consistent side-grinding and backing-off of the teeth to achieve optimum tooth shape
- Clean and polished finish of the teeth
- Extra hardened points to prolong point quality
- Minimal height deviations thanks to computer-assisted height monitoring

The quality of Groz-Beckert revolving tops allows our customers to achieve:

- Optimum setting of revolving tops to cylinder
- High nep reduction
- Low maintenance requirements
- Longer grinding intervals for the revolving tops, resulting in a longer lifetime





Single densitiy tops

Product	Height (mm)	PPSI
TX33	8,00	330
TX40 (M)	8,00	400
TL44 (M)	7,50	440

M = specially designed for synthetic fibers and blends

Semi-rigid range

Product	Height (mm)	PPSI
TP32	7,50	320
TP40	7,50	400

Variable densitiy tops

Product	Height (mm)	PPSI
TV45 (M)	7,50	450
TB52	8,00	520
TV53 (M)	7,50	530
TB55	7,50	550
TV55	7,50	550
TV56	7,50	560
TN60	7,50	600

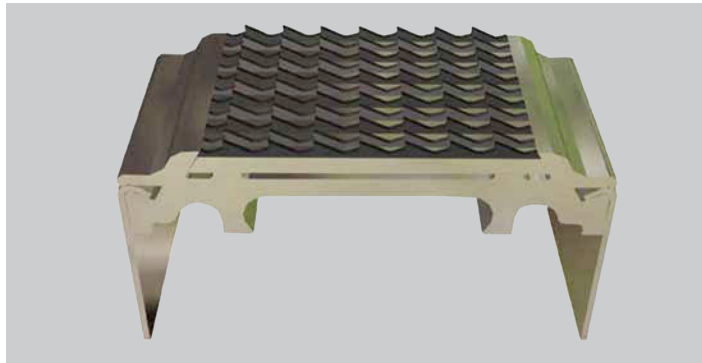
M = specially designed for synthetic fibers and blends

Stationary flats

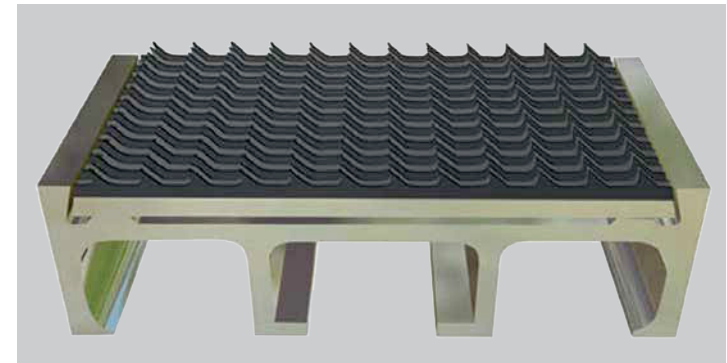
Stationary flats in the licker-in area and in the pre carding zone fulfill an important task in high-performance carding. They support the revolving tops and also protect it from overloading by opening the fiber tufts before they enter the revolving top area. Choosing the correct stationary flat type and stationary flat quality for every application is key here. Stationary flats in the post carding zone with high PPSI (points per square inch) support the parallelization of the fibers and guarantee a smooth transition of the fibers from the cylinder to the doffer. As an option for the attractive and proven Duratech steel quality, Groz-Beckert also offers the entire range of stationary flats in Ultra steel quality – with improved wear resistance for a longer lifetime. Stationary flats have a major impact on the lifetime of cylinder card clothing and revolving tops.

The stationary flats portfolio includes all the required basic designs and covers all card types. The selection of PPSI (points per square inch) serves the entire scope of application in the short-staple spinning industry.

All stationary flats have colored endplates to enable easy identification of the points/inch².



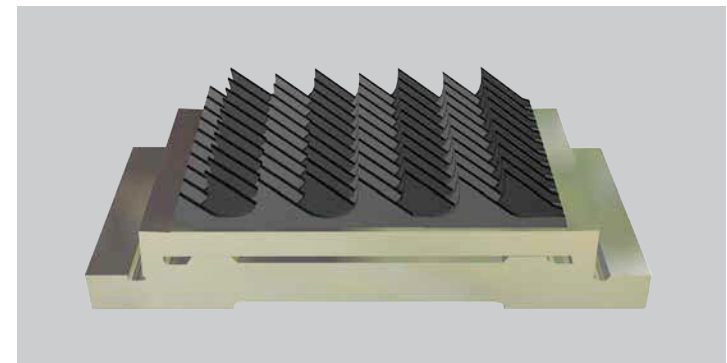
Cliptech CT



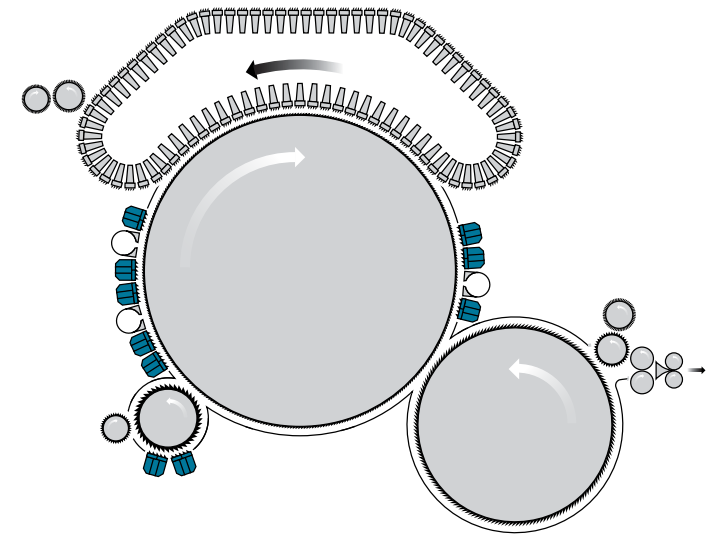
Supertech ST



Spezial Supertech XT



LT

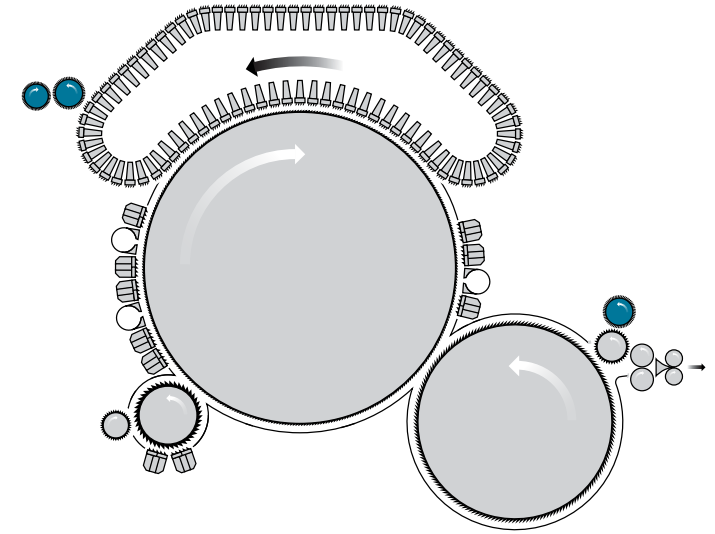


Application	Profile shapes	Red	Brown	Blue	Yellow	Gray	Black	White	Green	Magenta	Orange	Cyan
Stationary flats for under licker-in	Supertech ST	ST57	ST65	ST88	-	-	-	-	-	-	-	-
	Special Supertech XT	-	-	XT88	-	-	-	-	-	-	-	-
	Supertech LW	-	-	LW88	-	-	-	-	-	-	-	-
	Cliptech CT	-	CT65	CT88	-	-	-	-	-	-	-	-
	Hitech HT	HT57	-	-	-	-	-	-	-	-	-	-
	LT	-	LT65	LT88	-	-	-	-	-	-	-	-
	DT	DT57	DT65	-	-	-	-	-	-	-	-	-
	LTS2	-	LTS2 65	LTS2 88	-	-	-	-	-	-	-	-
	LTC2	-	-	LTC2 88	-	-	-	-	-	-	-	-
Stationary flats for pre carding zone	Supertech ST	-	-	ST88	ST160	ST270	ST330	ST440	-	-	-	-
	Special Supertech XT	-	-	XT88	XT160	XT270	XT330	XT440	-	-	-	-
	Supertech LW	-	-	LW88	LW160	LW270	LW330	LW440	-	-	-	-
	Cliptech CT	-	CT65	CT88	CT160	CT270	CT330	CT440	-	-	-	-
Stationary flats for post carding zone	Supertech ST	-	-	-	-	-	ST330	ST440	ST550	ST560VT*	ST660	ST720
	Special Supertech XT	-	-	-	-	-	XT330	XT440	XT550		XT660	-
	Supertech LW	-	-	-	-	-	LW330	LW440	LW550		LW660	-
	Cliptech CT	-	-	-	-	-	CT330	CT440	CT550	CT560VT*	CT660	-
Stationary flats for blowroom	LT	-	LT65	-	-	-	-	-	-	-	-	-

*VT = V-Tech (V-shaped disposed card wire at the stationary flat)

Cleaning fillets

Cleaning fillets of revolving flat cards play a key role in ensuring a trouble-free carding process. A perfect cleaning system not only guarantees high availability of the revolving flat card, but also enables the full service life potential of the card clothing to be achieved. Groz-Beckert offers low-speed- and high-speed top cleaning fillets and doffer cleaning fillets suitable for all card types. All cleaning fillets are nickel-plated as standard and offer a high, long-lasting flexibility. This is essential for a long service life.



Low-speed top cleaning fillet

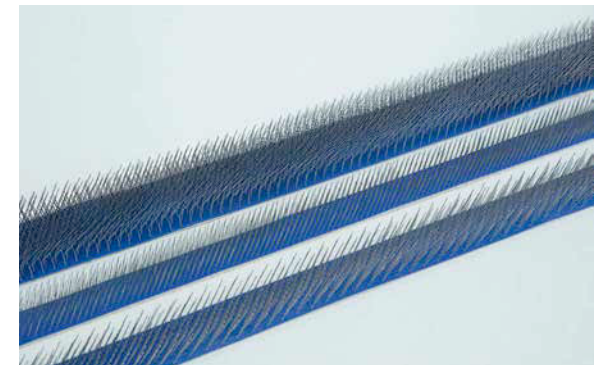
The low-speed top cleaning fillet is the most important cleaning fillet of a revolving flat card. It ensures that revolving tops filled with flat strips are cleaned before they are returned to the carding position. Only a fully cleaned revolving top is capable of collecting trash, short fibers and dust again. When cleaning the revolving tops, the correct flexibility, the right wire angle and the correct gauge of the points on the low-speed top cleaning fillet are essential. The low-speed top cleaning fillet enters the revolving top slowly with its fine, flexible wire points and removes the flat strips gently and thoroughly. The same also applies for the top cleaning strips, which are used as an alternative depending on the card type.

High-speed top cleaning fillet

High-speed top cleaning fillets ensure that the short fibers with trash and dust collected by the low-speed top cleaning fillet can be transferred to the card extraction system. The passive (negative) angle of the high-speed top cleaning fillet, combined with the difference in speed compared with the low-speed top cleaning fillet, ensures the safe take-over of the flat strip and transfer to the extraction system. The top cleaning system requires cleaning fillets in a fault-free state to guarantee the lasting function of the revolving tops. Precise settings and timely replacement of worn cleaning fillets are key here.

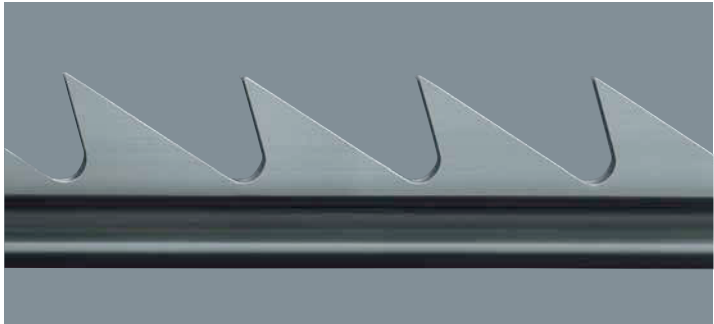
Doffer cleaning fillet

The doffer cleaning fillet helps to prevent damage to the doffer wire, particularly during start-up of the card. All uncontrolled fibers that are not transferred immediately to the card sliver during start-up, enter the carding extraction via the doffer cleaning fillet. This prevents lapping on the stripping roller or fiber rolls from occurring, which always pose a risk of damage to the sensitive doffer wire. The doffer cleaning fillet is nickel-plated like all cleaning fillets supplied by Groz-Beckert and is therefore not only protected against corrosion, but is also extremely efficient and wear-resistant.



Blowroom wires

Plain rib					
Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
ERM 10/10	10,00	2,50	10,00	10	26
ERM 10/0	10,00	2,50	10,00	0	26
ERM 20/10	10,00	2,50	20,00	10	14
ERM 20/0	10,00	2,50	20,00	0	14
356	10,00	2,20	12,25	-10	24
B455	4,00	1,40	10,20	35	45



V8 / NT3A



V6 / TR13

Interlocking					
Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
V5/9,9/75	8,50	5,08	9,90	15	13
V5/9,9/70	8,50	5,08	9,90	20	13
VA06/F100	5,50	4,23	8,10	-6	19
V6/TR10	5,50	4,23	8,50	10	18
V6/TR15	5,50	4,23	8,50	10	18
V6/TR11	5,50	4,23	5,40	-10	28
V6/TR35	5,50	4,23	5,00	15	31
VA06/8,5/70	5,50	4,23	8,50	20	18
V6/TR2	5,50	4,23	5,00	20	31
VA06/6,5/70	5,50	4,23	6,50	20	23
V6/TR8	5,50	4,23	6,50	30	23
V6/TR6	5,50	4,23	5,50	-36	28
V6/NT1A	6,00	4,23	15,00	10	10
V6/NT2A	6,00	4,23	7,80	20	20
V6/TR13	7,50	4,23	15,00	10	10
V6/TR14	7,50	4,23	15,00	10	10
V6/CR1	7,50	4,23	7,50	10	20
V6/TR4	7,50	4,23	10,00	20	15
V8/NT3A	6,00	3,17	6,30	20	32
V10/9020	4,20	2,54	13,60	0	19

Ancillary wires

Stripping roller wires

Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
R2	3,50	1,00	3,17	-15/30	204
CS4	4,06	1,80	3,06	-27	117

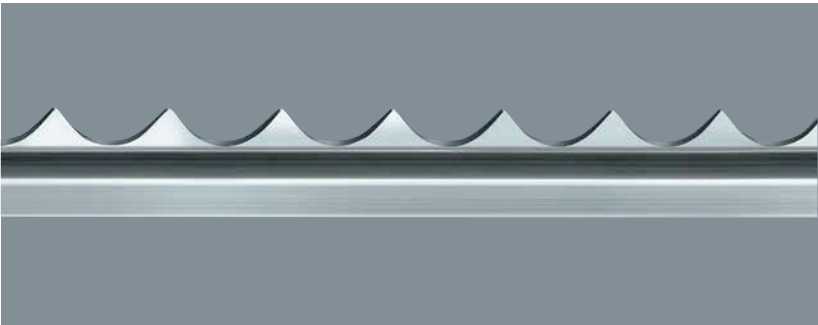
Stripping roller wires are supplied with F4 Platinum finish as standard, for easy fiber release.

Feed roller – Plain rib

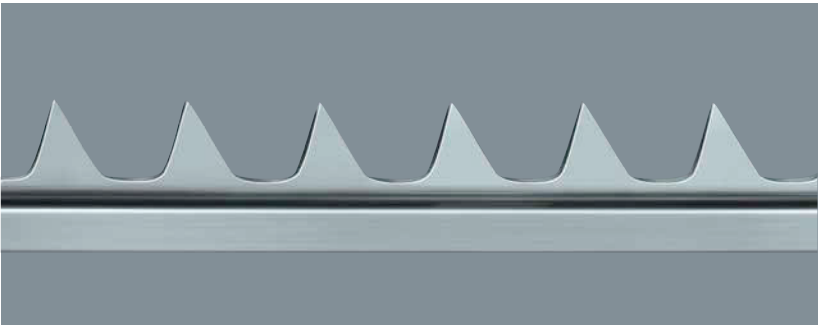
Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
TR20	2,50	2,00	2,83	0	114
FR90	3,00	3,00	3,80	0	57
FR130	3,00	3,00	3,80	-40	57

Feed roller – Interlocking

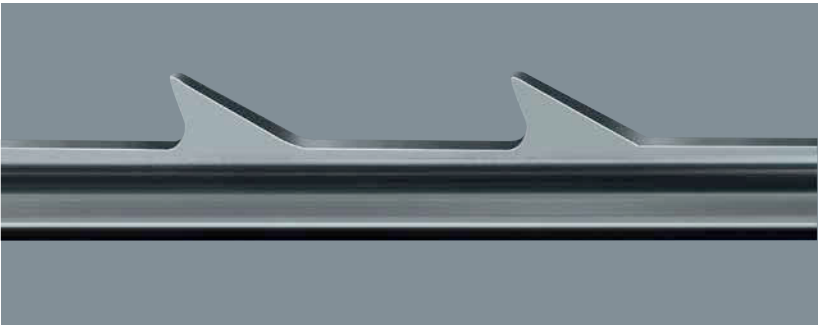
Product	Height (mm)	Rib (mm)	Pitch (mm)	Angle	PPSI
V6/TR5	5,00	4,23	11,90	20	13
V6/RA2	5,00	4,23	6,60	17	23



CS4 F4



R2 F4



V6/TR5

Card clothing maintenance – the key to success

The quality of the card clothing is key for ensuring a good carding result. To maintain the carding result over the long term, the revolving tops, cylinder and doffer wires must be sharpened regularly and the licker-in wires and stationary flats replaced in due time.

The higher the stress on the card clothing – due to the production output or inadequate quality of the fiber raw material to be processed – the higher the wear. Licker-in wires and stationary flats can not be re-sharpened and are therefore replaced if needed. Replacing them in time pays off, as only sharp licker-in wires and stationary flats can relieve the stress on the cylinder wire and revolving tops. They thus help to achieve the full service life potential of the card clothing.

Only with optimal resharpening the full service life potential of the cylinder wires and flat tops can be achieved. Choosing the correct time and the correct degree of resharpening is key here, depending on the relevant wear pattern of the card clothing.

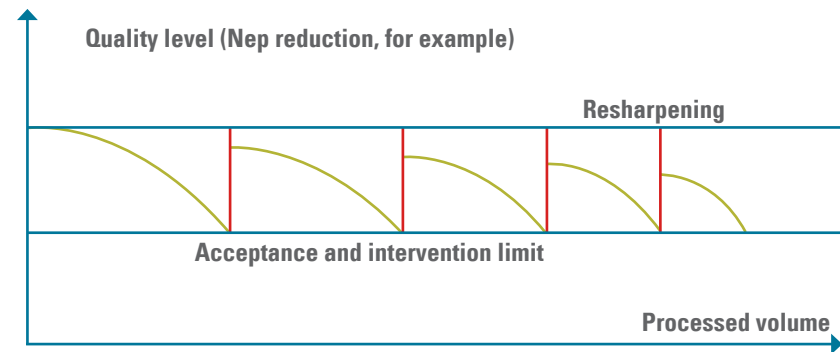
In practice, we differentiate between two maintenance principles for resharpening and replacement of the card clothing:

- **Volume based**

The maintenance is based on the fiber throughput.

- **Quality based**

Maintenance is arranged if the quality level is not achieved anymore (neps in the card sliver and yarn values).



Schematic maintenance plan for cylinder wires and revolving tops based on the quality of the card sliver

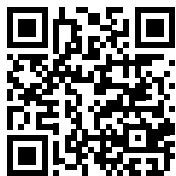
App myGrozBeckert

Academy – Your textile training program

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

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



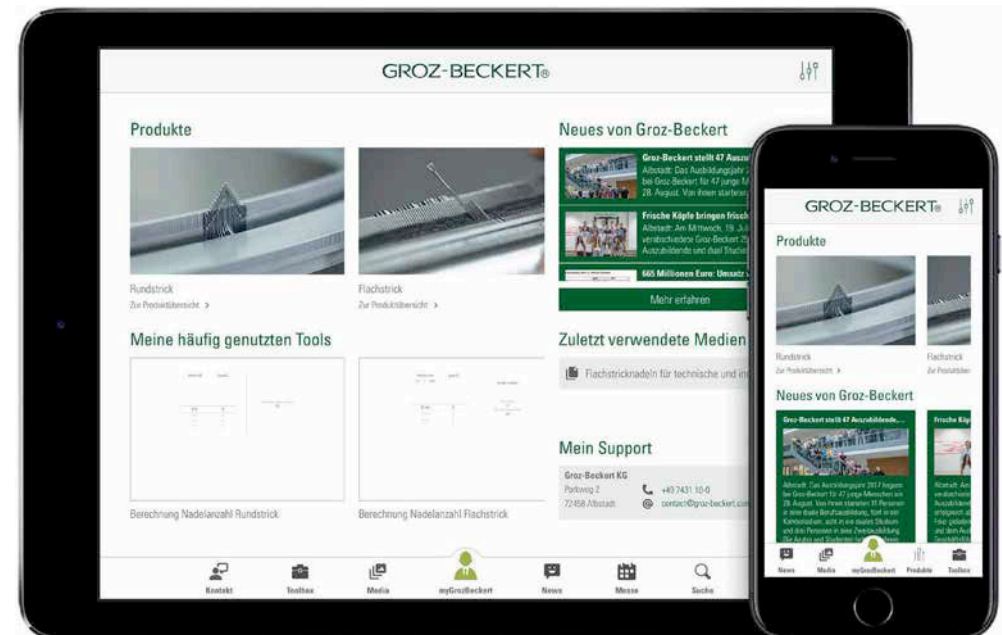
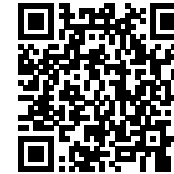
More information on the Groz-Beckert Academy is available on the website and in the training program

App – Your personal work tool

myGrozBeckert has brought the textile world together in one app since 2011. Providing information on Groz-Beckert products as well as the company itself. The highlight of the app is the Toolbox, which provides the user with useful conversion and calculation tools. The app also informs you of any news and events relating to Groz-Beckert.

The newest version of the app was released to app stores in 2017 with fully customizable navigation. This enables users to define favourites and preferred topics themselves and to change them at any time as required.

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



Groz-Beckert Academy



The current training program
for download

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.

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.



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