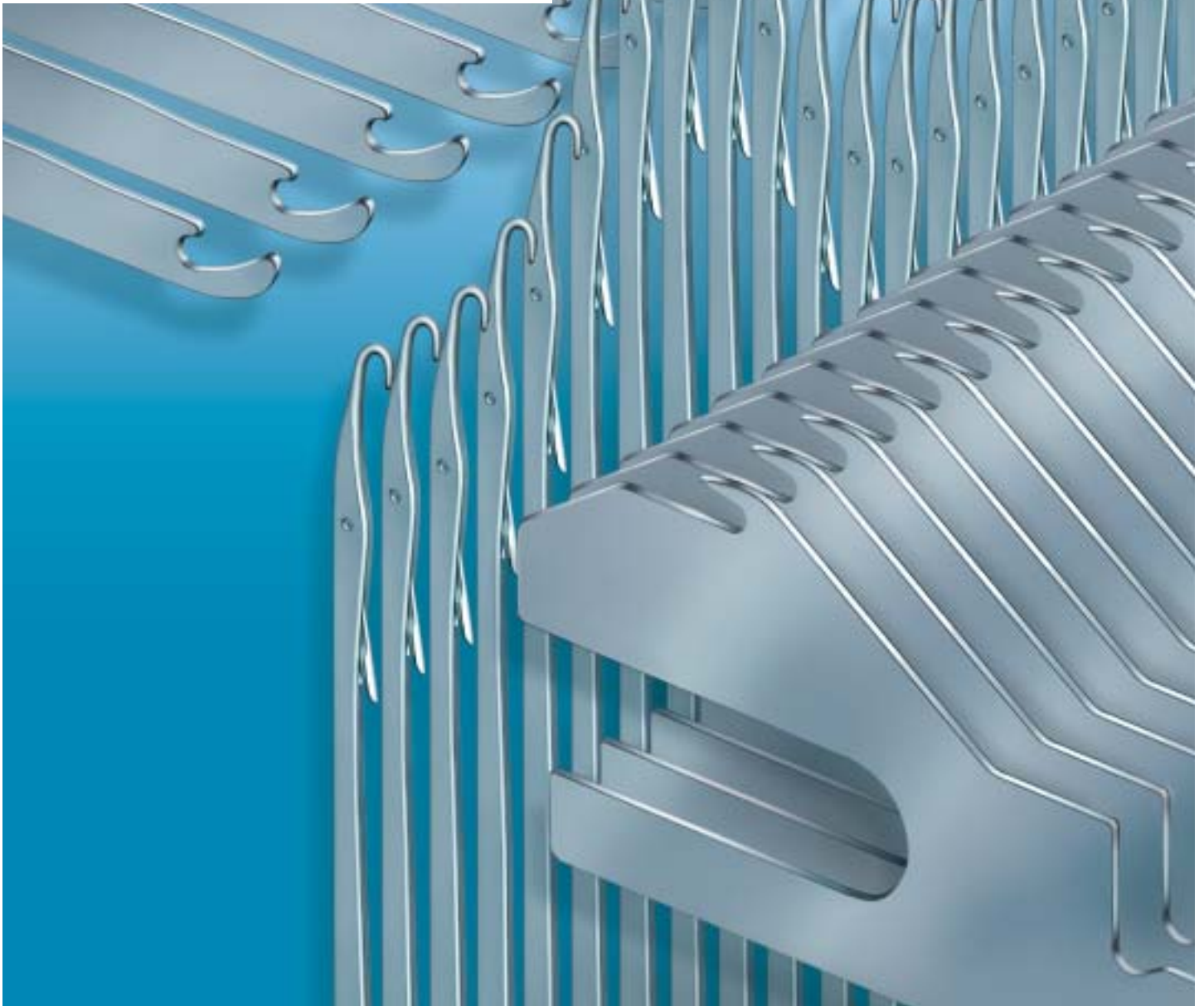


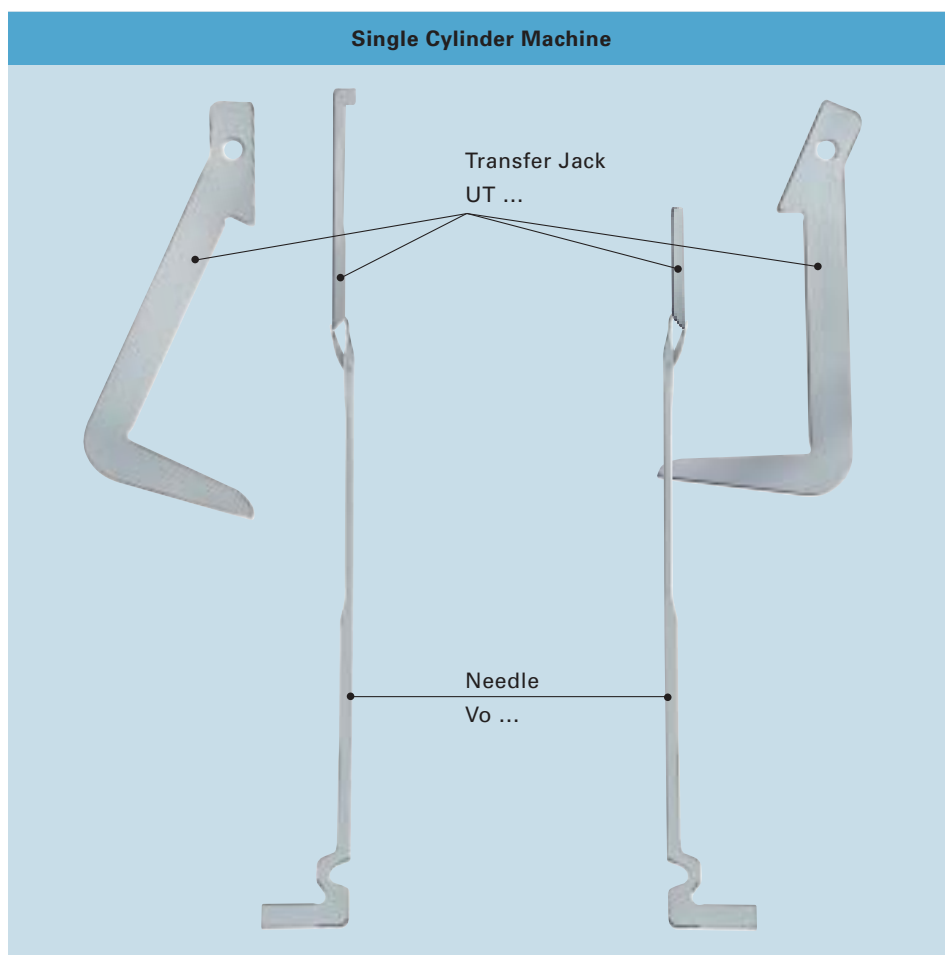
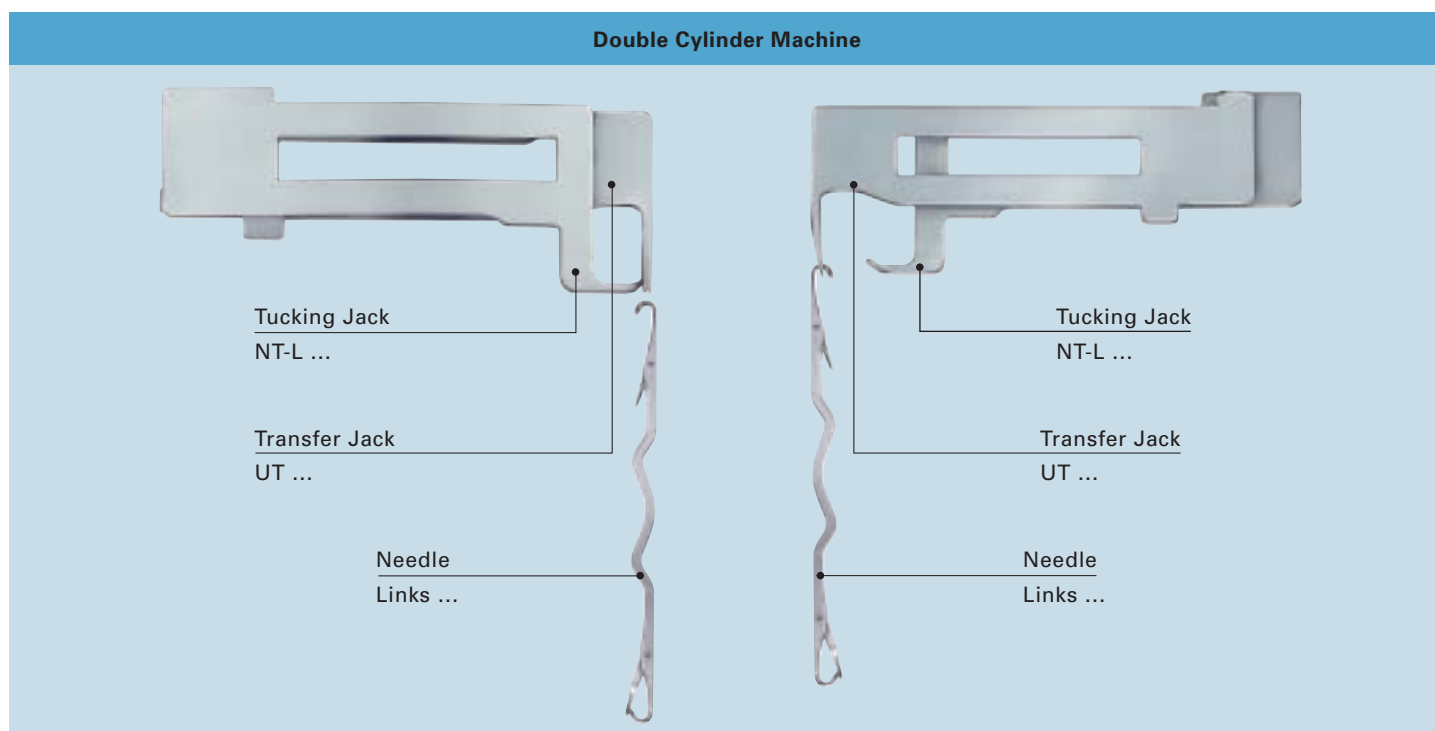
**GROZ-BECKERT NEEDLES
AND SYSTEM PARTS**
FOR SOCK, SEAMLESS AND
BODYSIZE MACHINES



Since 1852 Groz-Beckert is well known in the textile industry as producer of knitting and warp knitting needles. On the basis of this production know-how Groz-Beckert has now evolved into a supplier of entire knitting systems offering innovations that

open new perspectives. The product range of system parts for the needle selection has been completed in close cooperation with machine builders by system parts which are used in the loop forming process.

GROZ-BECKERT NEEDLES AND TOE CLOSING ELEMENTS



In double cylinder machines Groz-Beckert Links needles have been used for decades throughout the world.

To complete this product range, Groz-Beckert now also produces system parts required for the toe closing process.

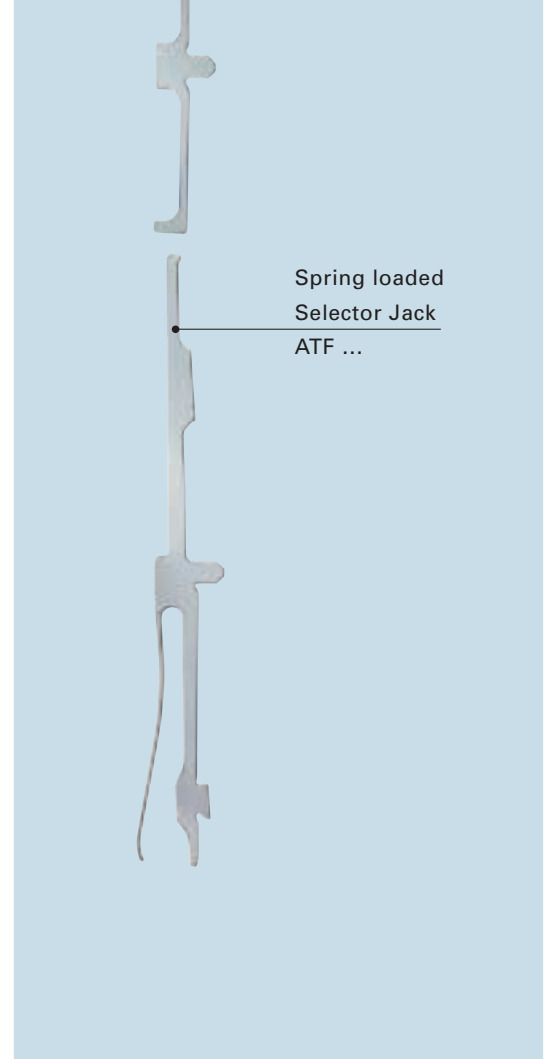
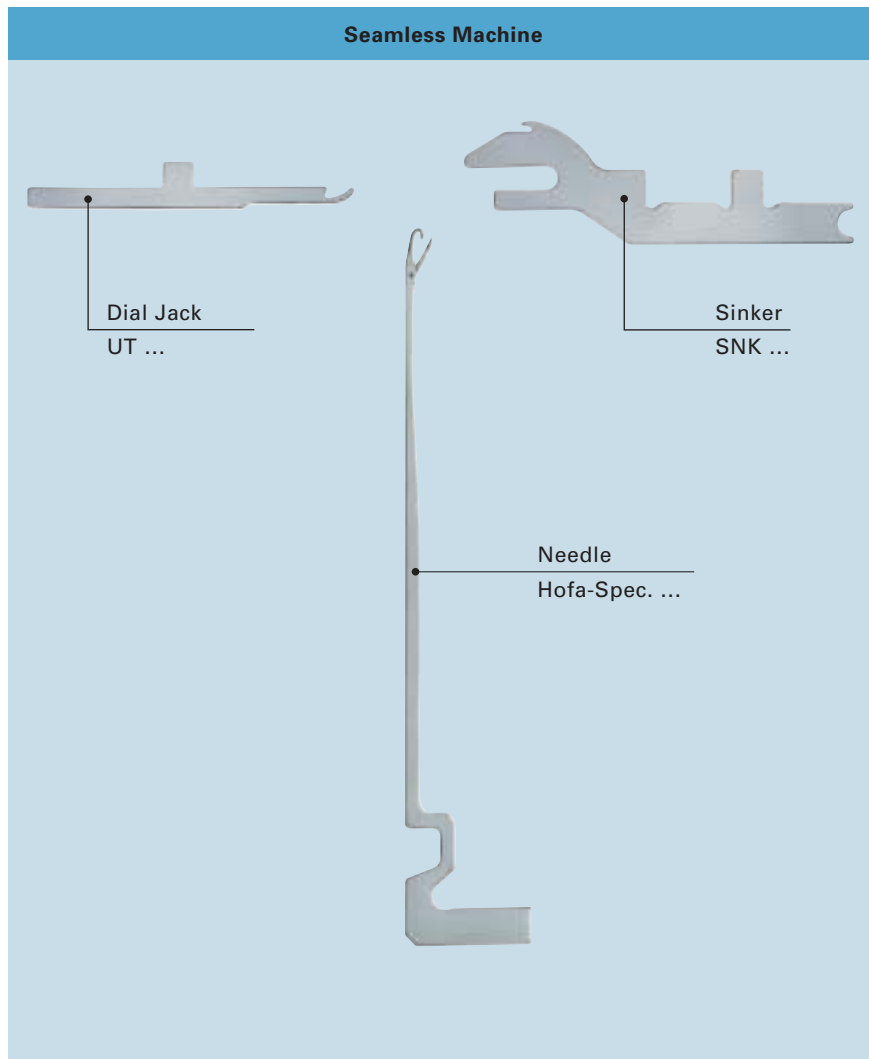
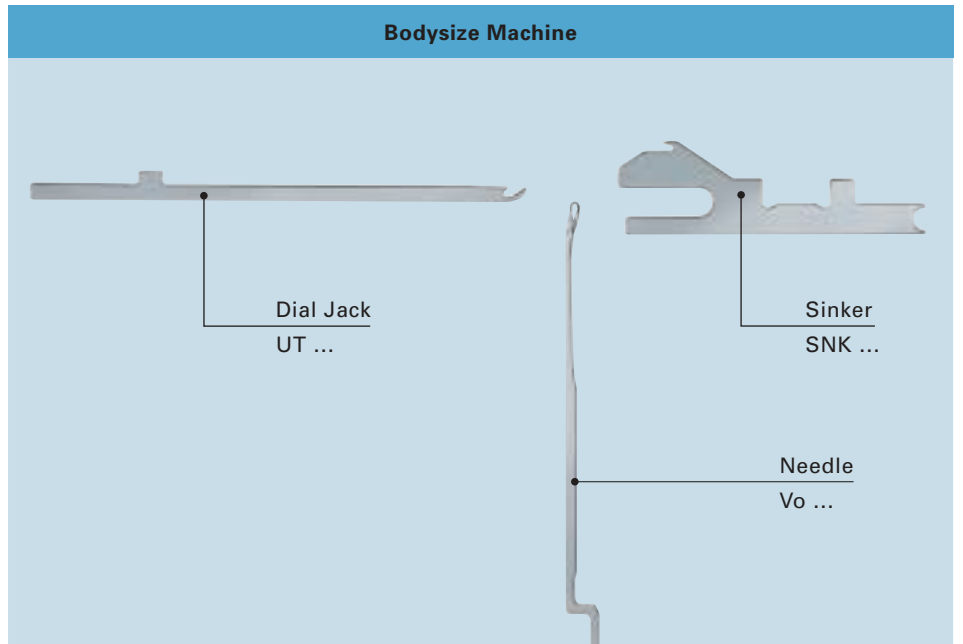
In single cylinder sock machines the needle types Vo, Vosa, Vora-Spec, Vosara-Spec, Hofa and Hofasa are being used.

As a completion to this needle program Groz-Beckert now also manufactures system parts required in the toe closing process.

GROZ-BECKERT NEEDLES AND SYSTEM PARTS

For many years Groz-Beckert is producing system parts for the needle selection. The know-how that has been developed in manufacturing these parts has benefited Groz-Beckert in also producing system parts that are in contact with the yarn during the knitting process.

In the field of bodysize and seamless knitting machines, Groz-Beckert has expanded its product range by now also offering dial jacks, transfer jacks and sinkers.



GROZ-BECKERT NEEDLES WITH TRANSFER WING

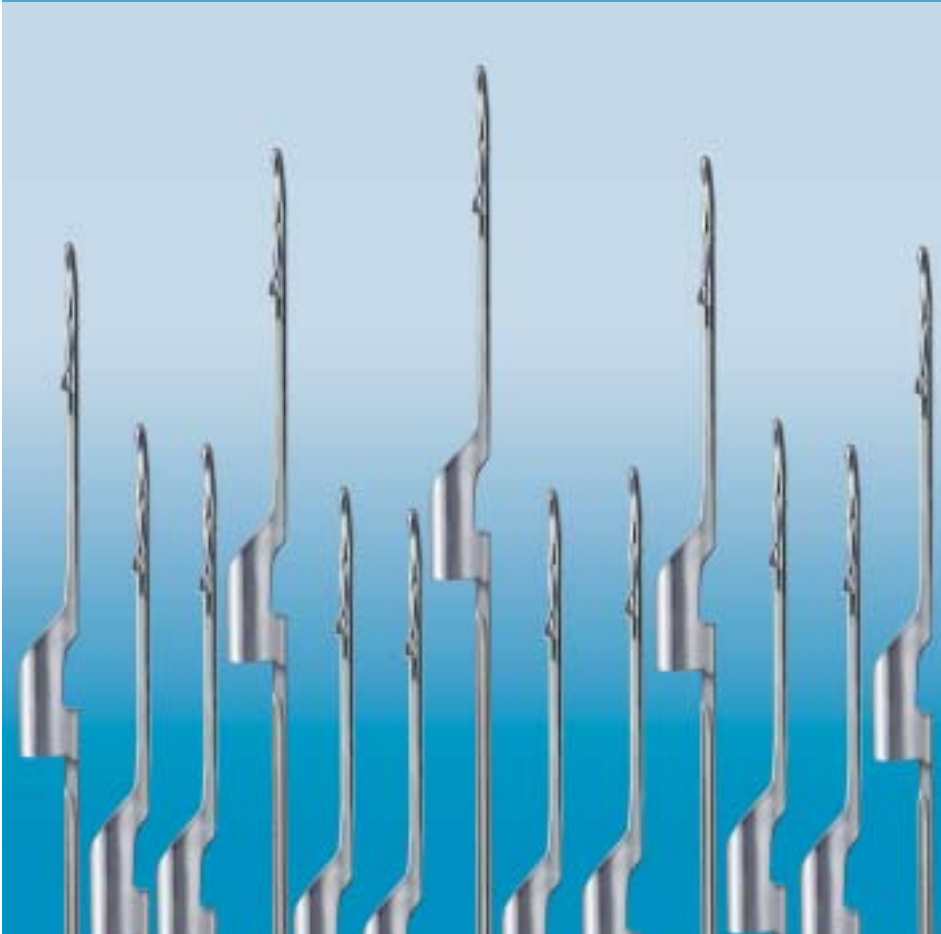


Transfer wing



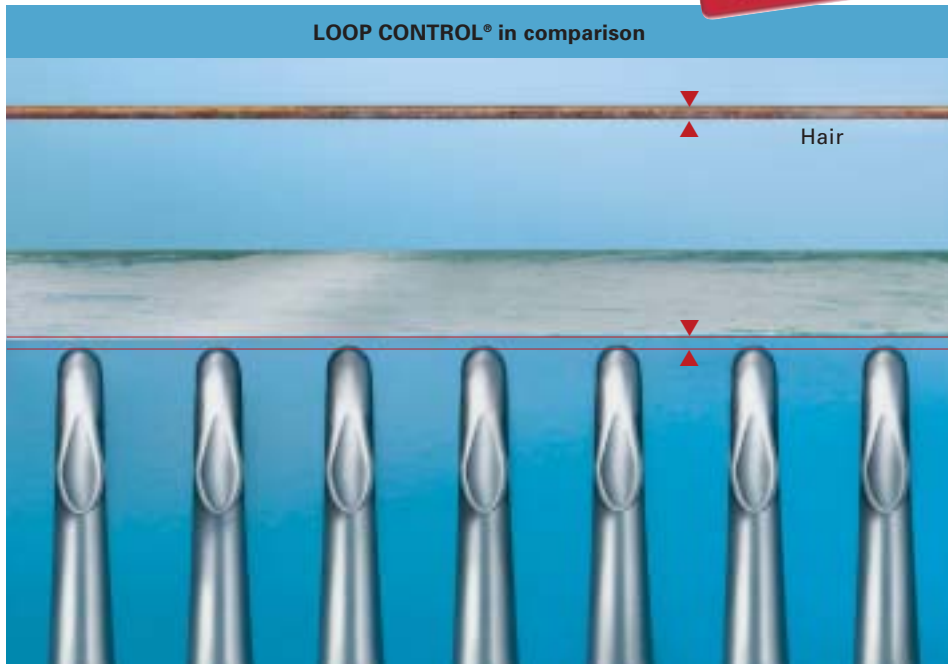
A needle with a transfer wing is equipped with a transfer area in the shape of a wing in between the loop forming area and the needle butt. This wing is part of the needle shank.

Transfer Process



This transfer wing helps to transfer a loop from one cylinder needle to its neighboring cylinder needle. With this technology it is possible to transfer loops within the same needle bed.

ABSOLUTE ACCURACY – THE LOOP CONTROL® BY GROZ-BECKERT



Hofa-Spec **LOOP CONTROL®** Needles are made by Groz-Beckert with such precision that the spread of the production variations which determine the uniformity of the loop formation is less than the thickness of a human hair. For identification purposes these needles are designated with a G 007xxx or G 07xxx number in the needle description, the last three digits in most cases are matching our previous standard needle execution

Example:

Standard Needle:

Hofa-Spec. 70.34 G 01934

Needle in LOOP CONTROL® Quality:

Hofa-Spec. 70.34 G 007934

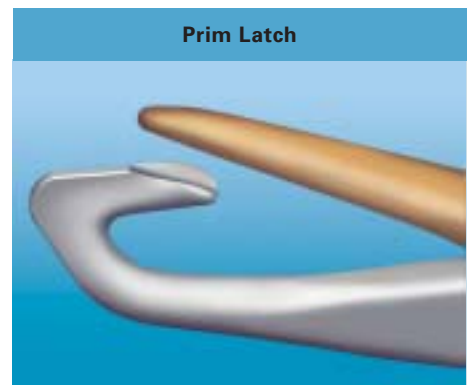
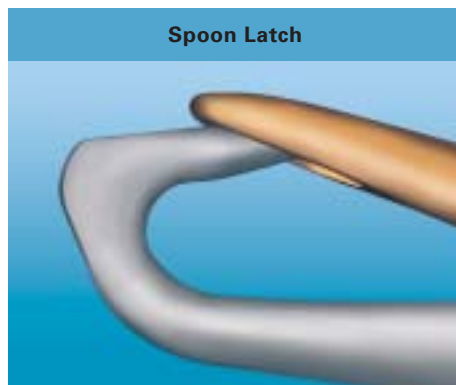
LOOP CONTROL® Characteristics:

- **Extremely narrow production variations**
 - avoiding panel streaks
 - avoiding single needle lines
- **Uniform loop structure**



FLOATING HOOK – THE SPECIALLY DESIGNED HOOK FOR RELIABLE FLOATING

By pressing both sides of the hook Groz-Beckert moved the dividing point higher up to create a more pronounced hook shape, thereby floating is made significantly easier. This hook version has the advantage over a round outer hook curve that floating is made considerably easier and is much more reliable.



GROZ-BECKERT NEEDLES WITH PREDETERMINED BREAKING LINE FOR SINGLE CYLINDER SOCK MACHINES

GROZ-BECKERT- PATENT
US No 6,629,438

Needle butt with predetermined breaking line



The predetermined breaking line is positioned on the needle butt in such a way that after inserting the needle in the cylinder it is placed right above the cylinder wall. Thanks to the predetermined breaking line the needle butt is breaking when overloaded in a straight line at a lower shearing force than on a needle without predetermined breaking line.

Thanks to this breaking characteristic the usage of Groz-Beckert needles with predetermined breaking line avoids costly damages to cylinder, cams and needles.

All Groz-Beckert needles with predetermined breaking line also feature coined butt edges that are perfectly smooth and thereby minimize wear to needle butts and needle cams.

In small diameter knitting machines often needles with different butt heights are being used. With increasing butt height the force on the needle butt increases. In order to compensate for this load characteristic Groz-Beckert has developed a special predetermined breaking line execution. This new patented innovation of Groz-Beckert is a further contribution in trying to optimize the reliability of the knitting process.

Broken needle butt with predetermined breaking line



Advantages of needles with predetermined breaking line:

- No bent or damaged cylinder walls
- No damaged cams caused by bent or partially broken butts
- Defined breaking line, no chipping of needle butt when breaking

