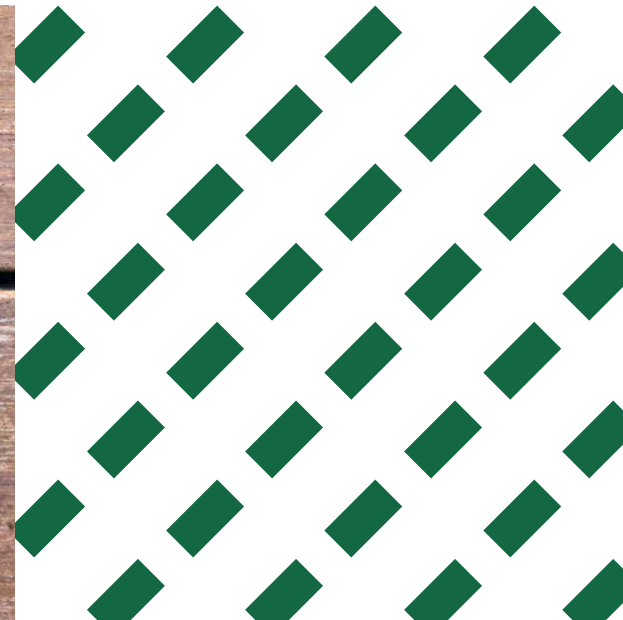


# Sewing

Machine needles and awls for shoemaking



## Machine needles and awls from Groz-Beckert for shoemaking

Groz-Beckert has been a reliable partner across the textile value chain since 1852. Sewing machine needles have been part of the product range for more than 30 years. This also includes shoe machine needles and awls used for shoemaking and for processing soles.



Shoes have been with us for thousands of years. Whether moccasin or sport shoe, boot or sandal, safety shoe or elegant low shoe – good wearing characteristics, durability and sharp looks top the list in footwear. Sewing and shoe machine needles from Groz-Beckert help make shoes to precisely fulfill these requirements. It's not just fancy seams that come out perfect, welt seams on welted shoes also deliver on what they promise.





# Contents

Machine needles and awls from Groz-Beckert for shoemaking	2
Shoemaking	4
The structure of a shoe	5
Sewing applications for shoemaking	6
Shoe machine needles and awls from Groz-Beckert for the manufacture of shoe bottoms and soles	10
The classification of shoe machine needles and awls	11
The point styles of shoe machine needles and awls	12
Sewing machine needles for processing shoe uppers	13
Point styles for shoemaking	14
Recommended points for upper processing	15
More services from Groz-Beckert	16

# Shoemaking

During pre-industrial times, cobblers made shoes entirely by hand. Even today, in times of industrial mass production, a comparatively high proportion of manual work is still required in shoemaking.

The six main steps for creating a shoe are outlined below:

## 1. Development and design

The trims are made from wood or plastic. Then the shoe design is produced as a drawing on paper and used to create the templates for the upper parts.



## 2. Cutting and preparing

The upper parts are cut to size. During this step, it is important to ensure that valuable leather is used optimally with regard to both quality and quantity.



## 3. Sewing room

The individual upper parts are joined to create one piece. This is achieved mainly by sewing or gluing.



## 4. Base processing

The parts for the shoe base are produced.



## 5. Assembly

The upper and the shoe base are stretched around the wooden or plastic strips and sewn or glued to create a finished shoe.

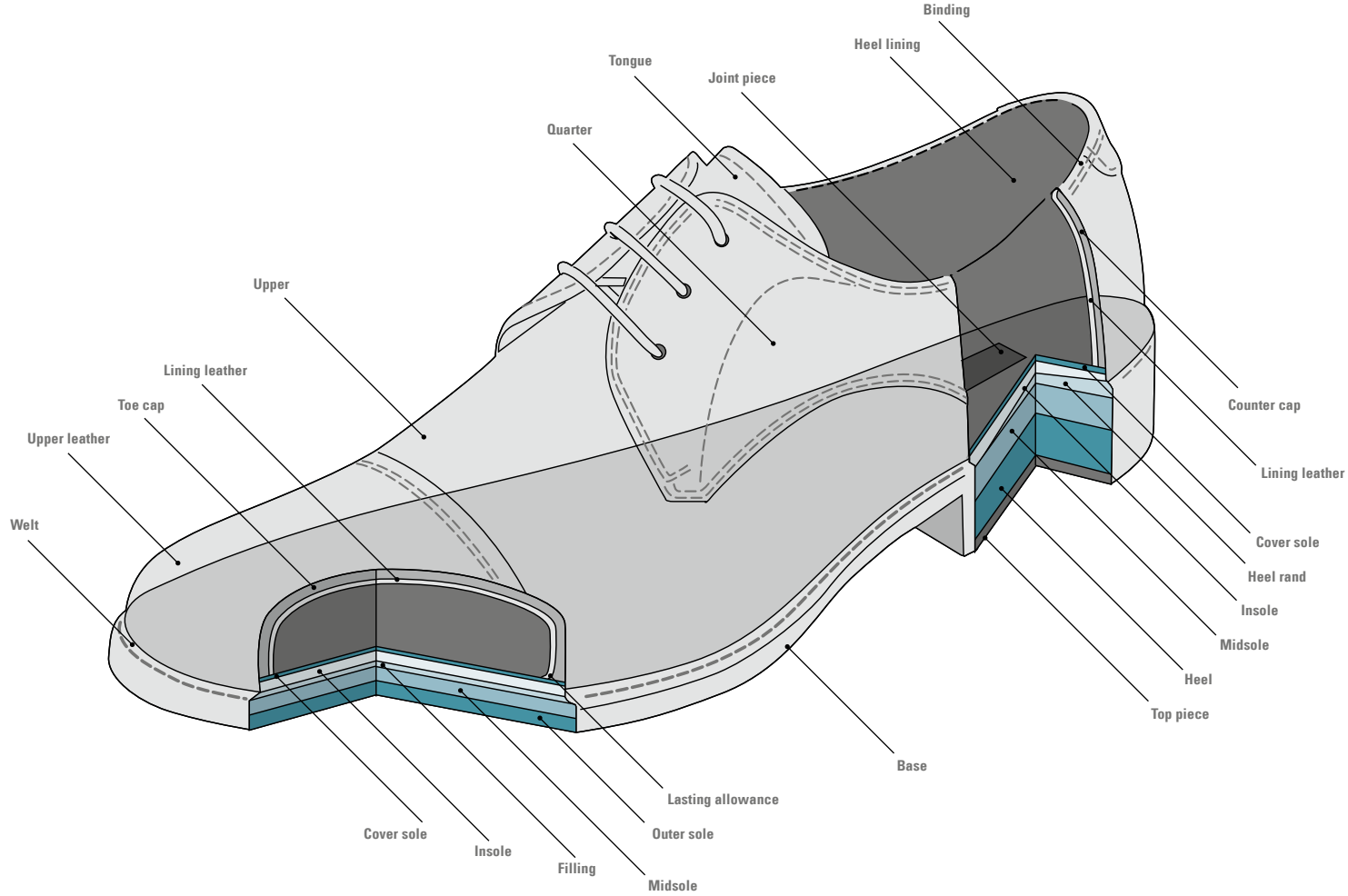


## 6. Finishing

The shoe is visually prepared, for example through polishing, fitted with shoelaces where applicable, and then prepared for sale.

# The structure of a shoe

A shoe is generally divided into two main components: The top part of the shoe – the upper – and the bottom part of the shoe – the base. The constituent parts vary depending on the lasting or shoe type.



Structure of a welted shoe

## Sewing applications for shoemaking

Shoe manufacturing distinguishes between different types of lasting. Different sewing applications are necessary depending on production type.

In addition to normal lock stitching, used primarily on the upper, special operations are performed on the sole and bottom such as rapid stitching, solestitching and inseam operations.

### Overview of the lasting types

Type of lasting	Rapid stitch	Solestitch	Inseaming	Overlock seam	Upper processing
AGO shoe					x
AGO-Flex shoe	x				x
Flexibly sewn shoe	x				x
Moccasin	x	x			x
California shoe			x		x
McKay shoe		x			x
Welted shoe	x		x		x
Double stitched shoe	x		x		x
Directly soled shoe				x	x



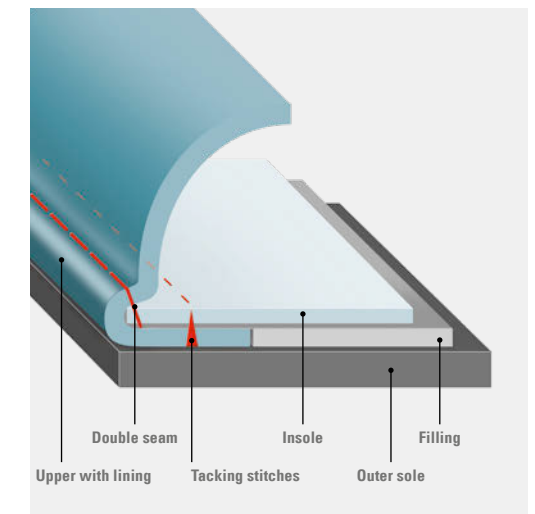
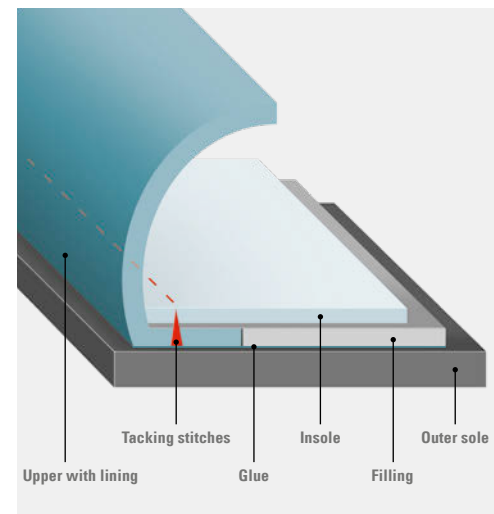
The AGO shoe (glued shoe)

The outer sole of the shoe is glued to the upper. This means that sewing applications only take place on the upper.



The AGO-Flex shoe (San Crispino shoe)

The insole, which protrudes over the edge all around on this lasting type, is joined with the upper later with a seam. This creates the typical sole edge fancy seam.





**The flexibly sewn shoe**

The upper edge wrapped around the outside is joined with the insole all around with a double lockstitch seam.



**The moccasin**

The midsole is joined with the upper base via a vertical rapid stitch. One version is the moccasin joined via a solestitch seam.



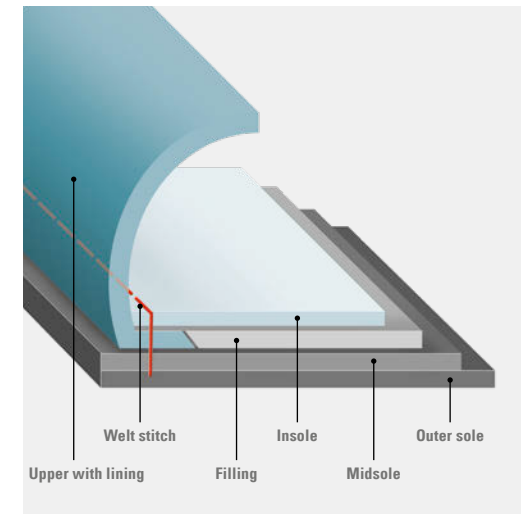
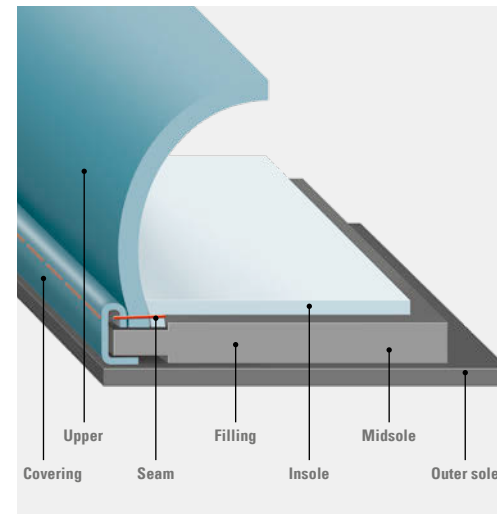
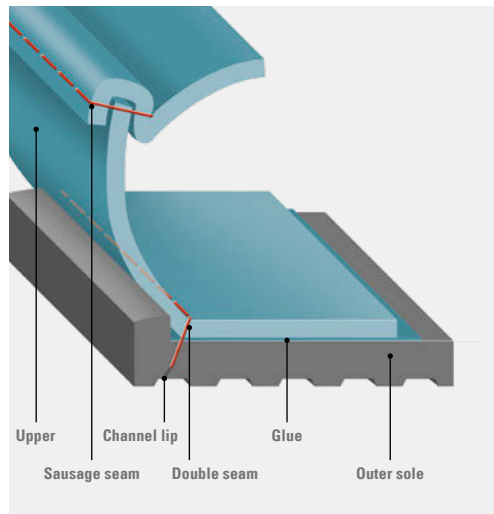
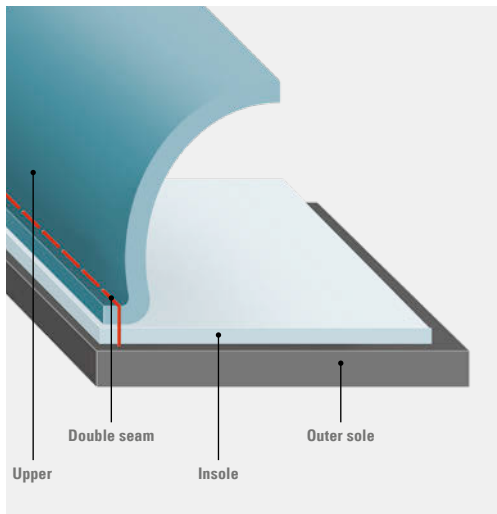
**The California shoe**

Before lasting, the upper, the covering of the midsole and the insole are joined with a seam. This seam is no longer visible later.



**The McKay shoe (stitched shoe)**

The insole, lasting allowance and midsole are stitched to join them together.





**The welted shoe (Goodyear)**

The upper is joined with the insole with a welt stitch. The seam also incorporates a welt that is joined with the midsole with a double seam.



**The double stitched shoe (Epler)**

The upper is joined with the insole with a welt stitch. The parallel running welt is later wrapped around to the outside at an angle with the upper and joined with the midsole or outer sole with a rapid seam.



**The directly soled shoe**

The outer sole is cast, molded or vulcanized directly on to the mounted upper. The insole is joined with the edge of the upper with an overlock seam.

**Sewing applications on the shoe:**

**Rapid stitching:**

The upper is sewn onto the midsole or the outer sole.

**Sole stitching:**

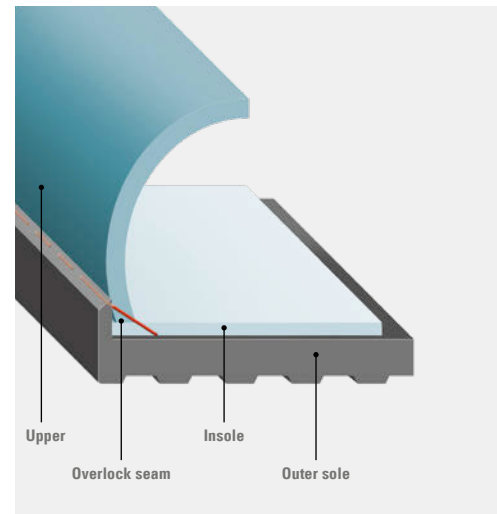
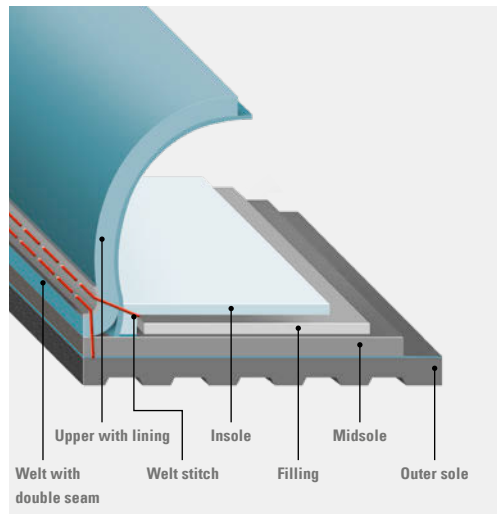
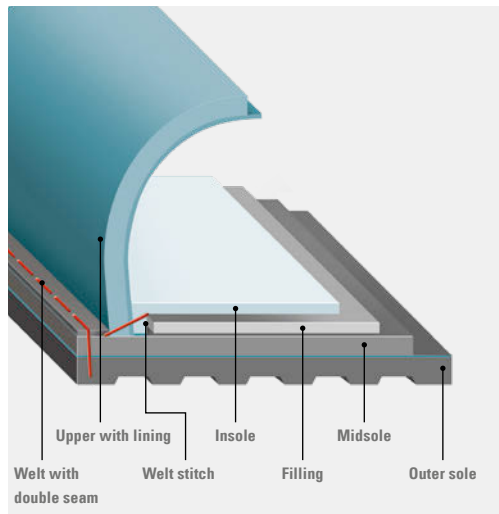
The lasting allowance is sewn onto the midsole through the insole.

**Inseaming:**

The welt is sewn onto the upper and the lip band.

**Overlock seam (Strobel construction):**

The insole is joined with the edge of the upper.







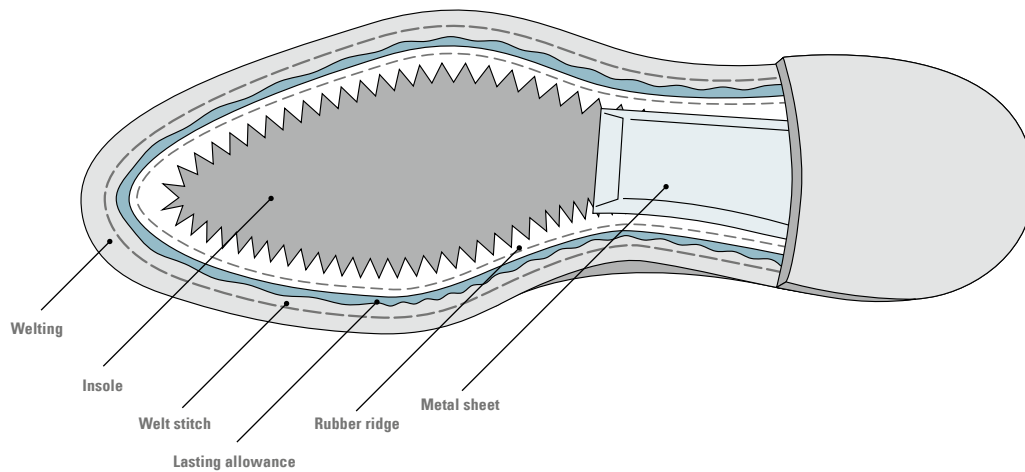
### Sewn shoes

On sewn shoes, the upper and the base are sewn onto the insole.

On stitched shoes, the sole is sewn on through the insole and the upper edge.

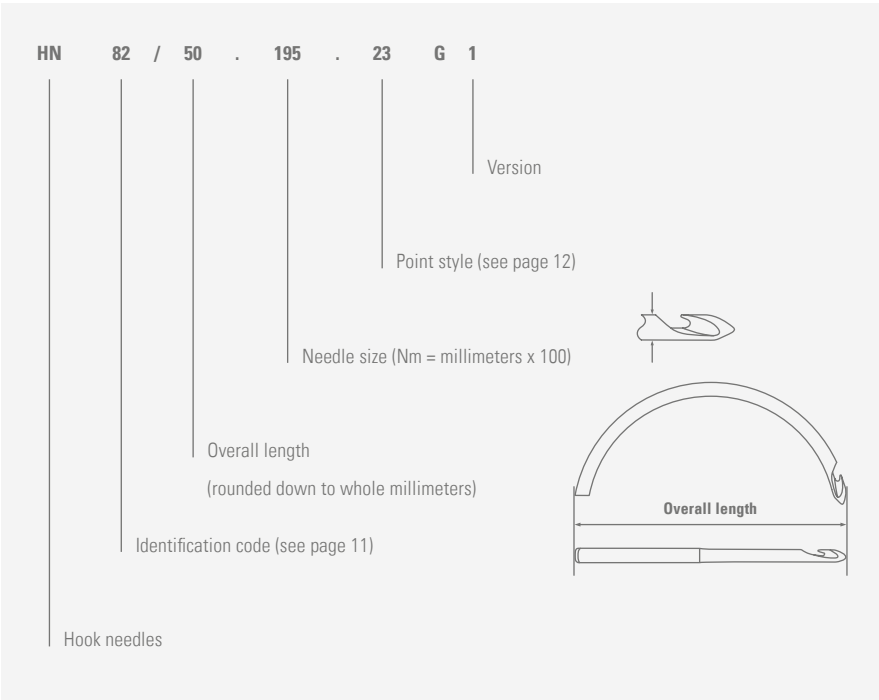
On welted shoes, on the other hand, an edge known as the rubber ridge is stuck on the insole beforehand.

In a further step, the upper is fixed on the insole with a leather strip (the welt) running all around via a welt stitch. Finally, the outer sole is sewn on to the welt running all around the shoe with a double seam.



# Shoe machine needles and awls from Groz-Beckert for the manufacture of shoe bottoms and soles

Groz-Beckert offers around 150 different needles and awls for the manufacture of shoe bottoms and soles. The awls are used to prepunch the holes; this makes it easier to feed the thread through with the actual needles to create the seam.



**Other needle designations**

There are also other common designations for shoe machine needles and awls: The European and the American designations.

These are listed in the table in the data sheet "Shoe machine needles and awls".



Identification of shoe machine needles and awls from Groz-Beckert

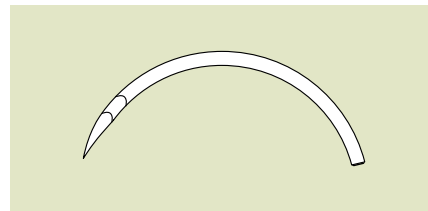


More information on the assignment of needles to awls in the data sheet "Shoe machine needles and awls"

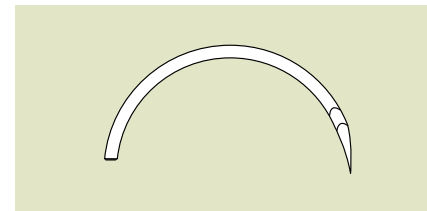
## The classification of shoe machine needles and awls

Shoe machine needles and awls are divided into different groups based on their shape and use.

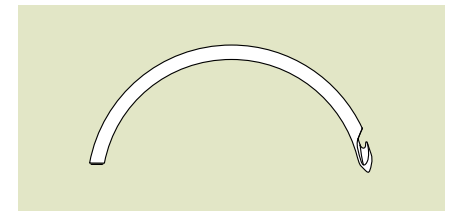
Identification code	Description
HN 80	<b>Inseam needles</b> curved hook needles with cutting points, right twisted groove
HN 81	<b>Eppler welt needles</b> curved hook needles with cutting points, left twisted groove
HN 82	<b>Rapid stitch needles</b> curved hook needles with round points
HN 83	<b>Solestitch needles (Blake, McKay)</b> straight hook needles with cutting points
HN 84	<b>Multi needles</b> straight hook needles with round points
HN 86	<b>Special needles</b> looper spindles, lacing needles, Frobana, etc.
HN 87	<b>Welt turn needles</b> curved hook needles
HN 90	<b>Rapid awls</b> curved awls
HN 91	<b>Multi awls</b> straight awls
HN 93	<b>Special awls</b> straight awls with profile blades/shanks
HN 96	<b>Machine parts</b> drivers



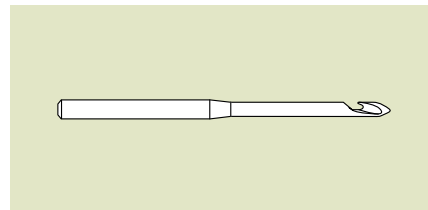
HN 80/47.240...G1



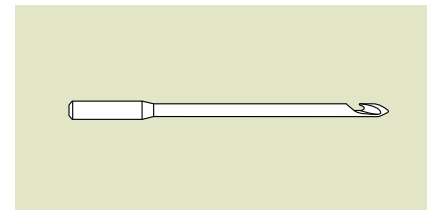
HN 81/52.275...G1



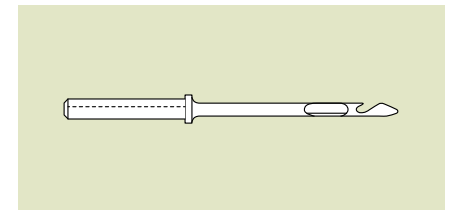
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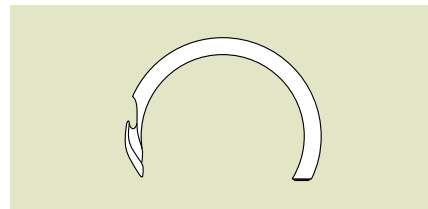
HN 83/53.210...G1



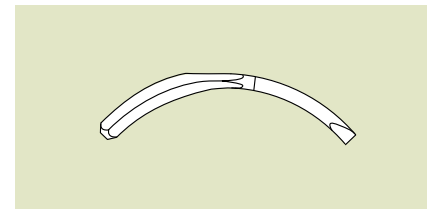
HN 84/55.200...G1



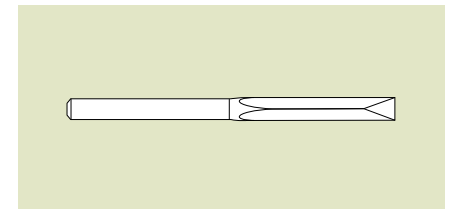
HN 86/56.225...G1



Example HN 87



Example HN 90



Example HN 91

## The point styles of shoe machine needles and awls

Shoe machine needles and awls from Groz-Beckert are available with a wide range of different point styles. These are tailored to the relevant sewing applications on the shoe.



Double awl with diagonal cutting edge 10° (Code 67)



Double needle with rounded round point 10° (Code 23)

The entire supply range can be found in the data sheet "Shoe machine needles and awls"

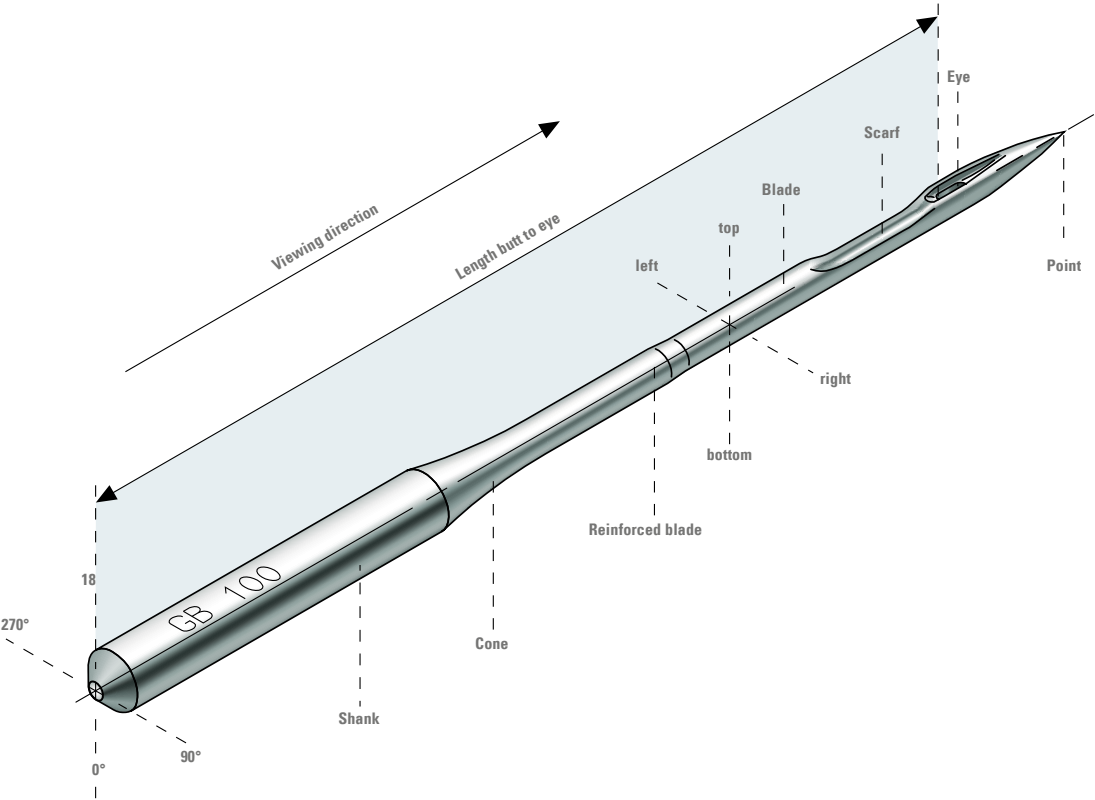


### Overview of the key point styles

Code	Description	Drawing	Symbol
01	Round point		
23	Round point, rounded		
25	Ball point (Landis)		
31	Chisel point		
53	Welt-Eppler cross point		
55	Diagonal cutting edge 15°		
59	Spear point		
61	Long, oval point		
62	McKay point		
63	Sole stitch point		
67	Diagonal cutting edge 10°		
68	Diagonal cutting edge 27°		
69	Welt point, medium		
72	Welt-GIS point		
91	Chisel point, short		

# Sewing machine needles for processing shoe uppers

In addition to the shoe machine needles for processing soles and shoe bottoms, Groz-Beckert also offers an extensive range of sewing machine needles for upper processing. The needle systems 134 and 134-35 are the most common here.



Parts of a sewing machine needle



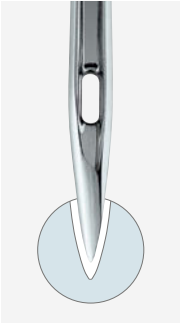
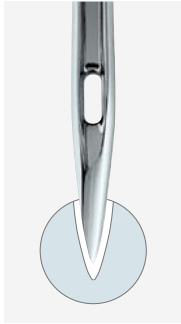
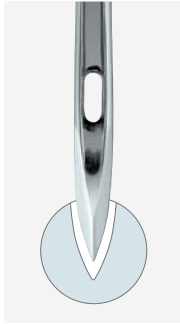
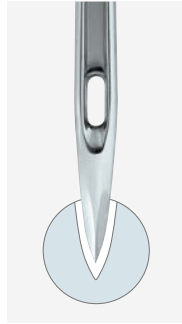
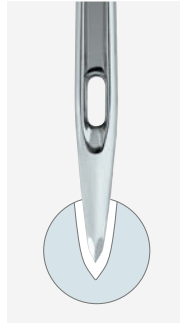
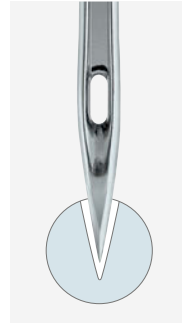
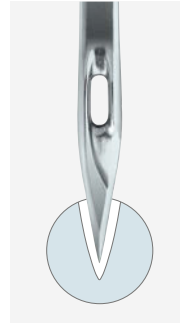
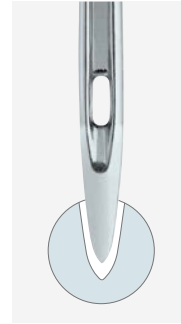
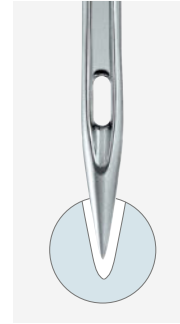
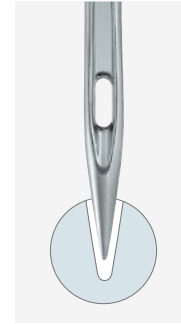





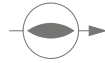


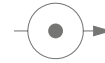
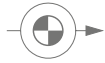
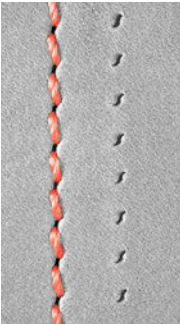
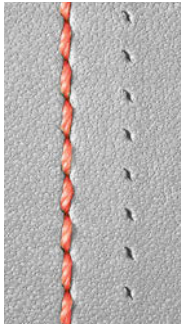
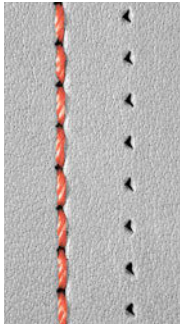
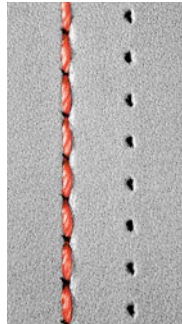
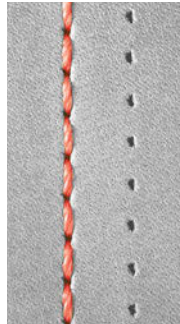
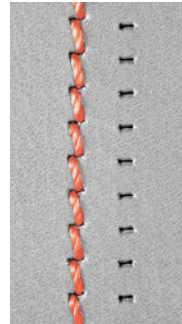
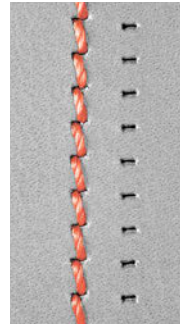
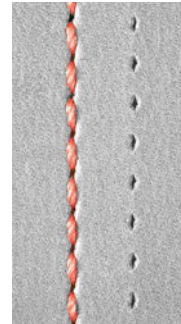
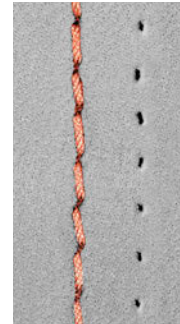



More information  
on the needle points  
from Groz-Beckert in  
the media library

## Point styles for shoemaking

The different point styles are extremely important when processing shoe uppers. For leather shoes, it is advisable to use a cutting point. For shoes made from textile or material combinations, it is advisable to use a R or FFG point.

One of the following point styles should be used depending on the sewing application and desired seam appearance:

LR	LL	D	DH	SD	P	PCL	S	R	FFG
									
									
									
Cuts leather at 45° in direction of transport, slanted slightly right	Cuts leather at 45° in direction of transport, slanted slightly left	Marked triangular cut in leather, straight seam	Medium triangular cut in leather, straight seam	Round point with rough-polished triangle on outside of point, straight seam	Cuts leather at 90° crosswise to direction of transport, slanted thread provides marked decorative effect in thick and hard leathers	P point with side coding	Cuts leather in direction of transport, straight seam	Standard round point without cutting effect, predominately straight, slightly irregular seam pattern	Light ball point, use in knitted fabrics and material combinations

# Recommended points for upper processing

Groz-Beckert recommends using the following points for common sewing applications on the upper:

### Cross and multidirectional seams

R point



### Staying and closing seams

P point



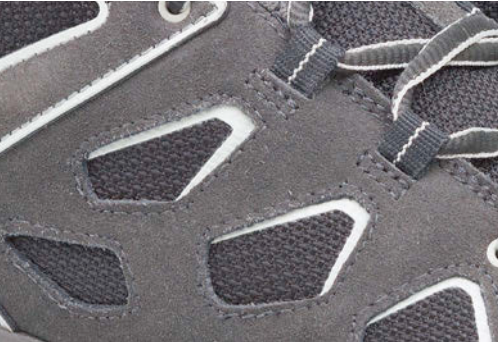
### Fancy seams

R, LL, S or LR point  
(depending on the desired seam appearance)



### Material combinations (for example leather with textile)

R or FFG point



When sewing leather, the durability of the seams, i.e. the seam strength, is extremely important. The stitch density has a major impact on this:

**The higher the stitch density (number of stitches per cm), the more thread there is in the seam and the more durable it is.**

But the leather seam strength also contributes to the durability of the seams: **The larger the cut the sewing needle makes in the leather, the worse the durability will be.**

The needle thickness must therefore be selected so that it is sufficiently stable for the sewing operation. But excessively large holes should also be avoided.





## More services from Groz-Beckert



### Sewing<sup>5</sup>

Top quality products are the basis for satisfied customers and for competing in the global market. This means that the focus is increasingly on factors like sustainable improvements in productivity and efficiency and additional services. Groz-Beckert is addressing these aspects with the 5-star service concept Sewing<sup>5</sup>: Supply, Solutions, Service, Superiority and Sustainability – the key words for consistent customer focus.





Further information  
in the Groz-Beckert  
media library



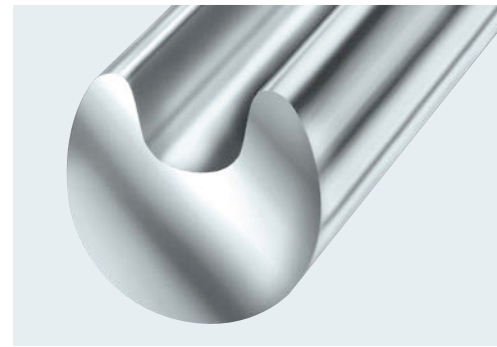
### **The online customer portal**

The Groz-Beckert digital customer portal offers a wealth of information on all aspects of sewing technology and different services, like the newly developed product catalog. All information and services on the customer portal are available around the clock and offer direct contact with Groz-Beckert. In addition to detailed information on the products, you will find impressive animations on various types of stitch formation on the portal.



### **Sewing and joining service**

Groz-Beckert offers the sewing and joining service for quick solutions to application problems. The sewing laboratories at the different sites, as well as the Technology and Development Center (TEZ) and the Groz-Beckert Academy offer extensive expertise in all areas of the sewing industry.



### **Loop Control®**

Stable loop formation with maximum sewing thread protection and high level of protection against skipped stitches – this is what characterizes the unique Loop Control® geometry. This ensures that the perfect loop is created even when sewing upper leather with sewing machine needles from Groz-Beckert.

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