

# PRODUCT FOCUS

## PRODUCT INFORMATION

SERVICEHOUSE



## Schiffli Embroidery

### The right needle for the production of Schiffli embroidery

“Schiffli” is derived from the Swiss designation (east Swiss dialect) for the shuttle type hook system. All shuttle embroidery machines are equipped with these shuttle type hook systems. Switzerland is the leading nation for this type of embroidery and therefore the designations “Schiffli embroidery” or “Schiffli machine” are used world-wide within this industry.

Schiffli machines are used for

- large-area production of textile surfaces, e.g. lace, curtains, net curtains
- large-area decoration of textile surfaces, e.g. tulle, knitwear

Schiffli machines (or shuttle embroidery machines) are equipped with up to 2,200 “Schiffli needles” depending on the embroidery length (up to 33.4 yards = approx. 30.5 m) and the repeat (distance from one embroidery motive to the other, the smallest repeat is 4/4 French inch = 27.07 mm). The needles are set in the machine in one or two rows. The embroidery frame – equipped with the base fabric – moves around in order to generate the embroidery motives. Therefore all needles are embroidering the same motive.

In the manufacture of Schiffli embroidery, many parameters have to be considered. Only when all the parameters – needle, thread, material and machine – are coordinated precisely a

perfect embroidery of high quality can be guaranteed. Choosing the suitable SCHMETZ Schiffli needle can avoid or at least reduce manufacturing problems in most cases. The Product Focus “Schiffli Embroidery” offers practical assistance to choose the right needle. This includes the use of needles with special needle geometries, as well as recommendations for suitable points.

### Our solutions for the manufacture of Schiffli embroidery

- SCHMETZ 854 S
- SCHMETZ 110 S
- SCHMETZ L 83 TOP
- SCHMETZ TOP needle design
- SCHMETZ SPEC needle design
- SCHMETZ SA needle design
- SCHMETZ round and ball points “NORMAL“, “SUK“, “STR“
- SCHMETZ needles for repair work 130 N and DBXK5
- SCHMETZ colour coding

**SCHMETZ information**

**Special needle systems in Schiffli embroidery**

Besides some odd types, today there are mainly two different Schiffli systems in use. The “insider” talks about two basically different machine types and needle types:

- Needles for Schiffli machines of system Plauen
- Needles for Schiffli machines of system Saurer

The main difference between the two needle types is the position (angle) of the shank flattening and the shank diameter.



System Plauen



System Saurer

Threading direction in relation to shank flattening of inserted needle

In both systems (Plauen and Saurer) there are needles for normal shuttle embroidery machines, where the needles are fixed on a needle beam, and colour change versions, where the needles are fixed in individual needle bars. The only difference between these two needle variations is the shank diameter. In the needle system designation for colour change machines the “S” for “Schiffli” is left out and a “0” is put in front of the system designation, e.g. 854 S for normal and 0854 for colour change machines. The position of the shank flattening and the butt-to-eye length as well as the total needle length remain the same.

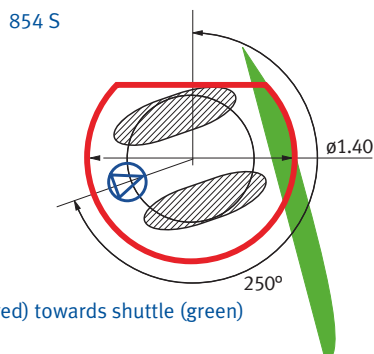
**Needle system 854 S**

This needle system is used in Schiffli machines of system Plauen; system 854 S for normal and system 0854 for colour change machines. Needles of system 854 S TOP are 4 mm longer in their butt-to-eye length and therefore used for machines with larger TOP shuttles.

Shank diameter: 1.40 mm    Shank flattening: 250°



= Threading direction



View from needle shank (red) towards shuttle (green)



Needle system 854 S



Needle system 0854

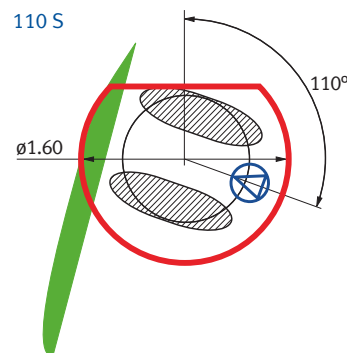
**Application in the Schiffli industry:**

- For Schiffli machines of system Plauen, made by Zangs (Germany), Hiraoka (Japan), Comerio Ercole (Italy), Metalmeccanica (Italy), Wems (Japan)

**Needle system 110 S**

This needle system is used in Schiffli machines of system Saurer; system 110 S in normal machines, 0110 in colour change machines and system 110 S TOP in machines with TOP shuttles.

Shank diameter: 1.60 mm    Shank flattening: 110°



Needle system 110 S



Needle system 110 S TOP



Needle system 0110

**Application in the Schiffli industry:**

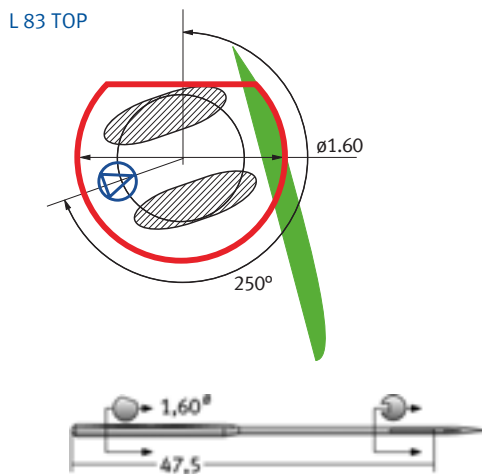
- For Schiffli machines of system Saurer, made by Saurer (Switzerland), Lässer (Switzerland)

**Needle system L 83 TOP**

The needle system L 83 TOP is used in machines made by the Lässer company, Switzerland. This system is only made as TOP version, therefore it is also frequently called simply L 83.

Needles of this system have the same shank diameter as system 110 S but the same shank flattening (and therefore threading direction) as system 854 S.

Shank diameter: 1.60 mm      Shank flattening: 250°



Needle system L 83 TOP

**Application in the Schiffli industry:**

- For Schiffli machines made by Lässer

**SCHMETZ information**
**Needles with special geometry:  
SCHMETZ TOP needles**

Some needle systems contain the supplement "TOP". The butt-to-eye length of these needles is 4 mm longer than the usual specification.

**Application in the Schiffli industry:**

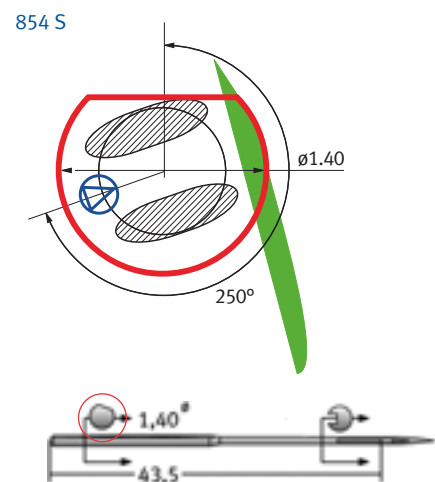
- For machines using the so-called TOP shuttles with large thread supply

**Embroidery Problem:  
Skip stitches**

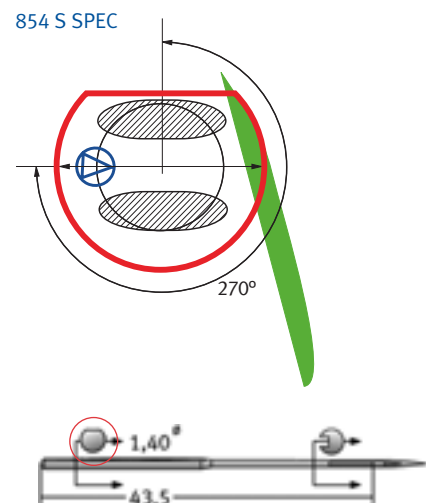
Highly twisted embroidery threads have a strong tendency to cause skipping with normal needles because the thread loop which is formed during stitch formation tends to be unstable and to tilt to one side of the needle.

**SCHMETZ solution**
**Needles with special geometry:  
SCHMETZ SPEC needles**

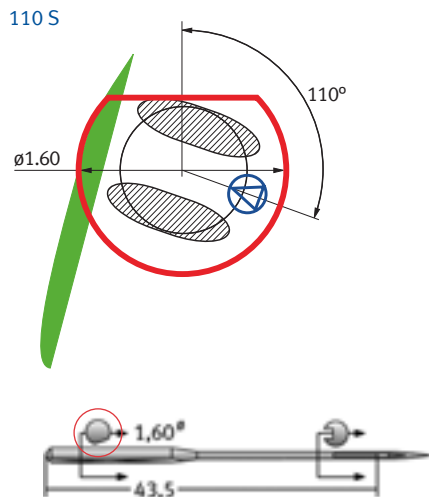
Needles with system supplement "SPEC" (=SPECIAL) have the shank flattening angle changed by 20 degrees.



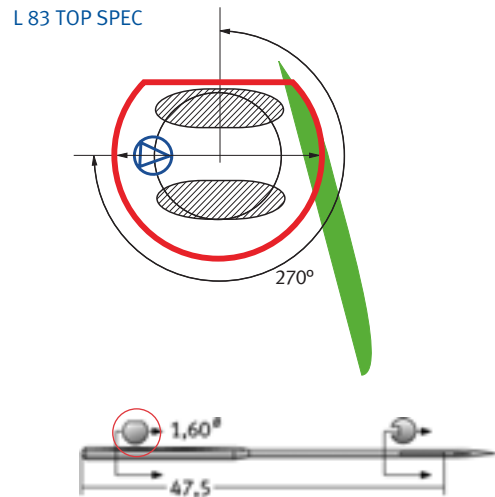
Needle system 854 S



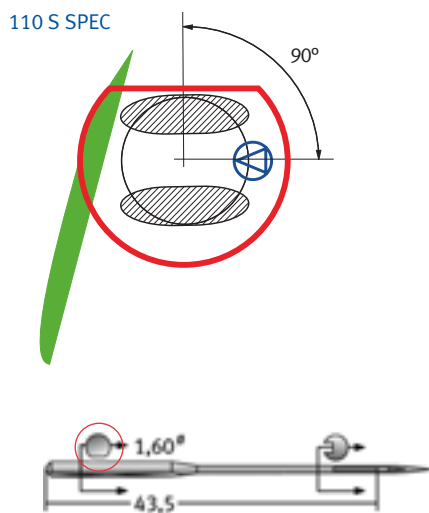
Needle system 854 S SPEC



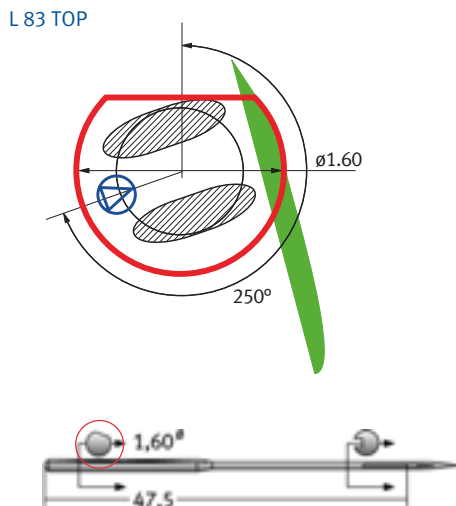
Needle system 110 S



Needle system L 83 TOP SPEC



Needle system 110 S SPEC



Needle system L 83 TOP

**The advantages of the “SPEC” geometry:**

- By changing the shank flattening angle the needle is turned towards the shuttle trace
- The unstable needle thread loop is picked up easier by the shuttle
- Skipping can be overcome

**Application in the Schiffler industry:**

- For highly twisted cotton embroidery threads with a strong tendency to skip stitches

**Embroidery Problem: Thread breakage**

In Schiffler embroidery – such as in multiple head embroidery – coarse and decorative embroidery threads can be used, too. In case of Schiffler needles with conventional eye the embroidery thread might become damaged or even thread breakage can happen due to the high friction between eye and thread.

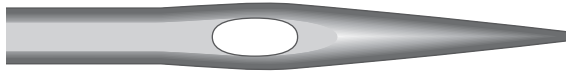
**SCHMETZ solution**

**Needles with special geometry: SCHMETZ SA needles**

Needle systems with the additional designation “SA” indicate needles with an extremely wide eye for very heavy embroidery threads. Compared to the standard eye, the “SA” eye is approximately 20% wider.



Standard eye



"SA" eye

### The advantages of the "SA" eye:

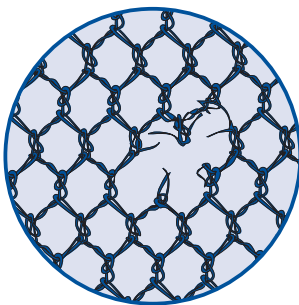
- Easy threading
- Optimised thread guidance due to less friction
- Reduction of damages of embroidery thread
- Less thread breakage
- Minimisation of repair work

### Application of the "SA" eye in the Schiffler industry:

- For stitching of very heavy embroidery thread
- With use of decorative threads with slubs

## Embroidery Problem: Material damage

In Schiffler embroidery, the base material – especially knit fabric – is frequently damaged because often inadequate big needle sizes are used to avoid excessive deflection of the long Schiffler needles. Apart from the use of oversized needles, another main cause for damages is the use of unsuitable needle point shapes.



Material damage

### SCHMETZ solution

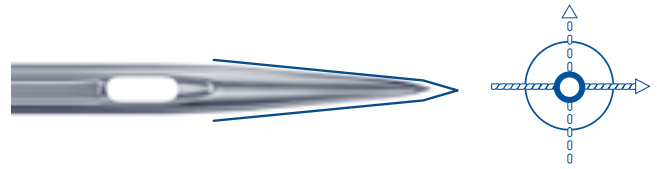
## Special point styles: Round and ball points "NORMAL", "SUK" and "STR"

Schiffler needles are mainly used in three different point shapes:

- Schiffler round point "NORMAL"
- Medium ball point "SUK"
- Special point for embroidery "STR"

## Schiffler round point "NORMAL"

The "NORMAL" point is a very slim round point, especially for the Schiffler embroidery. The system designation does not use a special supplement for this point.



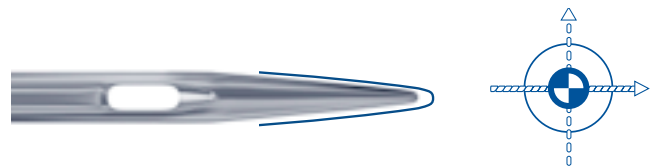
### The advantages of the "NORMAL" point:

- Exact penetration, dense materials as well
- Accurate border lines of embroidery

However, if damage occurs as a result of piercing fabric threads, it is recommended to use the medium ball point "SUK" or – for coarser base materials – the special point for embroidery "STR".

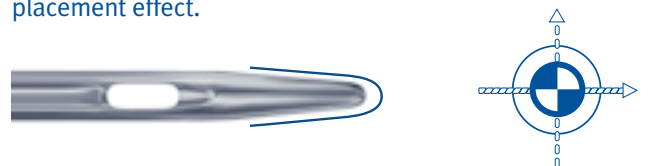
## Medium ball point "SUK"

The medium ball point "SUK" displaces the fabric threads with its rounded point and thus directly pierces the spaces between them and avoids damaging the base material.



## Special point for embroidery "STR"

The special point for embroidery "STR" is more rounded than the medium ball point "SUK". This increases the displacement effect.



### The advantages of the medium ball point "SUK" and the special point for embroidery "STR":

- Increased displacement effect compared to the "NORMAL" point
- Less penetration force than the "NORMAL" point
- Prevention of material damage

**Application in the Schiffli industry:**

- The Schiffli round point “NORMAL” is the standard point for all noncritical base materials and most woven fabrics
- The “NORMAL” point is also used for embroidery that requires exact penetration, such as dense woven fabric
- The medium ball point “SUK” is the best point shape for fine knitted base material like jersey
- The special point for embroidery “STR” is especially suitable for base materials with broad, coarse structures such as coarse tulle or net fabric

**Embroidery Problem:**  
**Missing stitches and defective embroidery appearance**

Even if the greatest care is taken in the production process, there are repeated instances when embroidery must be re-stitched. For example, due to thread breakage during the embroidery process the embroidery is not of the desired quality.

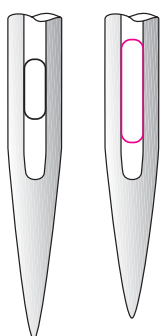
**SCHMETZ solution**

**Needles for replacing missing stitches:  
 SCHMETZ 130 N and SCHMETZ DBXK5**

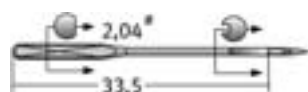
For repair work in embroidery, the use of special stitch replacement needles is recommended.

**SCHMETZ 130 N**

The 130 N has an extra long eye. The eye length of 2 mm stays the same in all needle sizes. The shank is flattened.



Standard 130 N



130 N

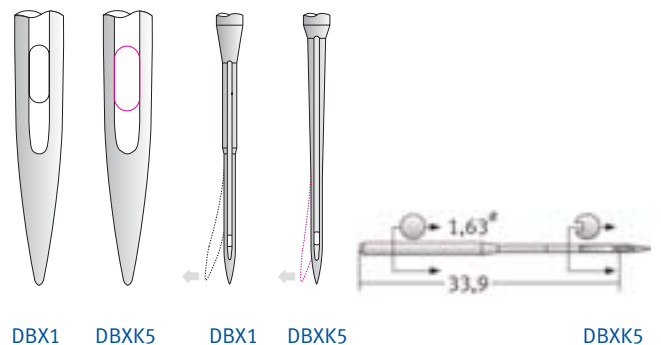
**The advantages of the SCHMETZ 130 N:**

- The long eye enables easier threading of embroidery threads
- Less friction in the eye minimises damages especially on the slightly twisted embroidery threads predominantly used in Schiffli embroidery
- Prevention of thread breakage
- The flattened shank ensures that the needle is always fixed in exactly the same position in the needle bar and that it cannot be inserted at an angle

**SCHMETZ DBXK5**

The SCHMETZ DBXK5 has the following features:

- The eye is 2 NM bigger in relation to the needle size, that means, for example, in an NM/SIZE 70/10 needle the eye corresponds to that of a needle size NM/SIZE 90/14
- Hump between the eye and the scarf
- Conical blade



DBX1 DBXK5 DBX1 DBXK5 DBXK5

**The advantages of the SCHMETZ DBXK5:**

- The bigger eye reduces friction and minimises damages to the embroidery thread
- Minimisation of thread breakage
- Decrease of skip stitches because the optimised hump scarf allows better loop formation
- The conical blade prevents deflection, especially with very densely embroidered patterns
- Less needle breakage and thus a longer durability of the needles
- Less downtime for the machines
- Reduction of damage to machine parts such as the tip of the hook and the throat plate
- Very precise border lines of embroidery due to straight penetration



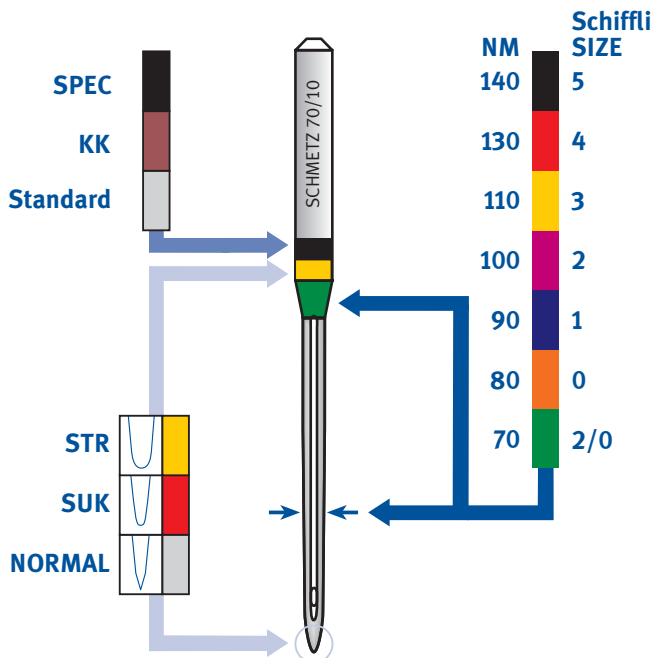
**Application of the SCHMETZ 130 N and the SCHMETZ DBXK5 in the Schifflí embroidery industry:**

- For incompletely stitched embroidery patterns
- Repair work caused by thread breakage during the embroidery process
- For use in industrially used household machines: SCHMETZ 130 N
- For use in special machines for replacing missed stitches: SCHMETZ DBXK5

**SCHMETZ information**

**Colour coding of Schifflí needles**

For quick identification of needle size and point shape, SCHMETZ Schifflí needles are manufactured with a colour code printed on the lower shank and shoulder. Aim of the colour code is to make it easily visible to the machine operator that all needles in the machine are the same. It is especially helpful if the needles have been changed (size and/or point shape) for a different fabric and will be put back into the machine out of the box (not original package).



Colour coding of SCHMETZ Schifflí needles

When viewing from the shank, the first colour identifies special designs, the second colour the point style and the third colour the needle size (see illustration). The standard design and the round point “NORMAL” for regular, noncritical base materials remain without special marks. However, ball point

needles are colour coded (red for the medium ball point “SUK” and yellow for the special point for embroidery “STR”).

**The advantages of the colour coding:**

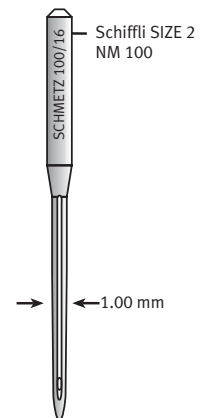
- Rapid identification of needle size and point shape
- Prevention of installing wrong needle sizes and points when changing needles
- Smooth, trouble-free replacement of needles
- High-quality embroidered products
- Economical production

**Application of colour coded needles in the Schifflí industry:**

- All SCHMETZ Schifflí needles up to NM 140/Schifflí SIZE 7 are colour coded

In general, everywhere within the Schifflí embroidery industry the metric needle size (NM = **N**umber **M**etric) designation is not in use but a special sizing system:

Schifflí SIZE	Metric Size (NM)
00 or 2/0	70
0	80
1	90
2	100
3	110
4	130
5	140
6	160
7	170



The metric size designation indicates the diameter of the needle blade in hundredths of a millimetre, measured in the cylindrical area above the short groove and below the shank.

**Our advice**

This Product Focus offers a selection of needles with especially beneficial properties for Schifflí embroidery production. You will find the most frequently used SCHMETZ needle systems for Schifflí embroidery in the enclosed needle list. The experts from **SCHMETZ SERVICEHOUSE** will be pleased to advise you on the right choice of needle.

**Challenge us –  
let us show our competence!**

# Form to copy and fax: + 49 (0) 24 06 / 85-186

Do you have further questions about Schiffl embroidery?  
Would you like support in solving your individual embroidery problem?  
Would you like recommendations on needle selection and sewability of your fabrics in advance of production?  
Challenge the SERVICEHOUSE experts and take advantage of our offer.

We will be pleased to send you information.

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Company name
Attention
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Postcode/City
Country
Phone
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E-Mail

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#### SAMPLE NEEDLES

Sample needles, tips and information

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Sewing reports tailored to match your sewing goods as well as solutions for your complex sewing demands

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### INFORMATION

#### SEWING FOCUS

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#### PRODUCT FOCUS

Product information for special industries and applications

#### GUIDE TO SEWING TECHNIQUES

Manual for sewing industry

### TRAINING/SYMPOSIUM

#### TRAINING-ON-SITE

Industry specific training including the latest information on needles, threads, machines and applications

#### SYMPOSIUM

Interdisciplinary knowledge sharing and exchange of expertise for skilled sewing industry staff