SPECIAL TECHNIQUES FOR SEWING SPECIAL MATERIAL

1. SEWING OF LEATHER

The special structure of a natural material such as leather makes great demands on the needle during sewing.

SELECTION OF THE SUITABLE NEEDLE SIZE

On the one hand, the needle should make holes in the material which are as small as possible and close up again. This, among other things, requires a small needle diameter. On the other hand, however, most leathers offer a considerably stronger resistance to the penetrating needle than fabrics. For this, as strong a needle as possible is required. A larger needle size is also required when thicker sewing threads are used, particularly for fancy stitching on leather, to ensure that the needle eye is large enough to accommodate the thicker sewing threads. The needle size should therefore be chosen, so that it matches the sewing threads selected. Then again, there are the various types of leather. From the most delicate kid leather to all kinds of patent, nappa and suede leather and strong buff leather, you have different varieties each with its characteristic properties. Considering the wide variety of leathers, as well as the fact that frequently cardboard or plastic stiffeners have to be sewn with leather, it is practically impossible to make a general recommendation on the most suitable needle sizes.

SELECTION OF THE SUITABLE NEEDLE POINT FOR SEWING LEATHER

Decisive for the appearance of the seam, when sewing leathers and other materials having a similarly uniform structure, is the shape of the needle point. It can be rounded or provided with cutting edges.

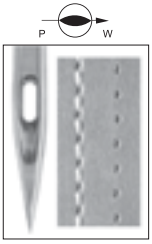
Because of their low coefficient of friction, points with cutting edges are ordinarily preferred as far as the sewing of leather is concerned. However, round points will always be employed when leather is sewn together with textiles. In the latter case, before employing needles with cutting points, it must be established whether or not the woven or knitted fabric will be cut.

NEEDLES WITH CUTTING POINTS FOR SEWING LEATHER

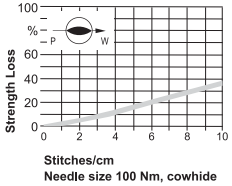
The effect of cutting points reduces the relatively high resistance with which the leather counters the penetrating needle. Moreover, the appearance of the seam is influenced by the position and shape of the cutting point. Comprehensive studies have shown that 5 different cutting points are sufficient to fulfill all of the leather industry's requirements with regard to the seam appearance.

WEDGE POINT (W/P)

Point Design	It is ground in the shape of a wedge. The cutting edge is parallel to the threading direction.
Resultant Stitch Hole	Cuts leather at right angles to the sewing direction.
Seam Appearance	The sewing thread is drawn on at an inclined position pointing slightly to the left. The thread lies on the leather like a bead.
Strength Loss	Of the 5 different cutting points, the Wedge Point results in the smallest strength loss.
Needle Heating	If the needle heating with a round point is taken as 100%, the needle temperature is reduced by approx. 5% when using wedge point.
Notes on Application	Produces seams of high strength despite high stitch density.



Relationship between
Stitches/cm and Strength Loss



CROSS POINT (CR/S)

Point Design	It is ground in the form of a wedge. The cutting edge is positioned at an angle of 90 degrees to the threading direction.
Resultant Stitch Hole	Cuts leather in the direction of the seam.
Seam Appearance	The sewing thread is drawn in straight and particularly strongly into the stitch holes.
Strength Loss	Only the Triangular Point results in a greater strength loss than the cross point.
Needle Heating	If the needle heating with a round point is taken as 100%, the needle temperature is reduced by 15% when using cross point.
Notes on Application	Produces straight seams with a well drawn-in thread. Do not select a high stitch density.

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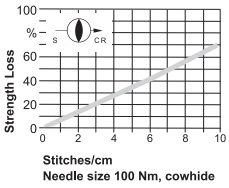

TWIST POINT (TW/LL)

Point Design	It is ground in the form of a wedge. The cutting edge is positioned at an angle of 315 degrees to the threading direction.
Resultant Stitch Hole	The leather is cut from top left to bottom right, as seen in the direction of transportation.
Seam Appearance	The sewing thread is drawn straight into the stitch holes.
Strength Loss	The strength loss when using a twist point corresponds to the strength loss which results from the use of Reverse Twist Point.
Needle Heating	If the needle heating with a round point is taken as 100%, the needle temperature is reduced by approx. 10% when using a Twist Point.
Notes on Application	The Twist Point produces a straight seam with drawn in sewing threads. The shape of the point enables straight seam with a higher stitch density than is attainable with the cross point.

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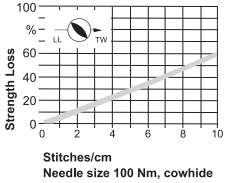

REVERSE TWIST POINT (RTW/LR)

Point Design	It is ground in the form of a wedge. The cutting edge is positioned at an angle of 45 degrees to the threading direction.
Resultant Stitch Hole	The leather is cut from top right to bottom left, as seen in the direction of transportation.
Seam Appearance	The sewing thread is drawn into the stitch hole diagonally, from top left to bottom right.
Strength Loss	The strength loss when using a Reverse Twist Point is between the Wedge point and the Cross point.
Needle Heating	If the needle heating with a round point is taken as 100%, the needle temperature is reduced by approx. 10% using Reverse Twist Point.
Notes on Application	Needles with a Reverse Twist Point are used to attain decorative effects, on account of the inclined angle of the sewing thread.

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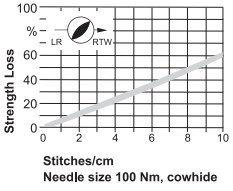
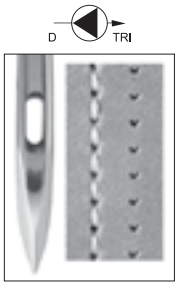
Stitches/cm and Strength Loss



TRIANGULAR POINT (TRI/D)

Point Design	It has 3 cutting edges. One of the cutting edges is parallel to the threading direction, while the other two are at an angle of 90 degrees to the threading direction.
Resultant Stitch Hole	The triangular point cuts the leather strongly in the direction of transportation and slightly less at right angles to the direction of transportation.
Seam Appearance	The sewing thread is drawn strongly into the stitch holes, at a very slight inclination pointing to the left.
Strength Loss	The triangular point has the greatest cutting effect and leads to the highest strength losses of all types of leather according to the number of stitches per cm.
Needle Heating	If the needle heating with a round point is taken as 100%, the needle temperature is reduced by approx. 20% when using a triangular point.
Notes on Application	Needles with a triangular point should be used on thick hard leathers. In due consideration of the strength loss which results from the use of the triangular point, it is of vital importance to select an appropriate number of stitches per cm.



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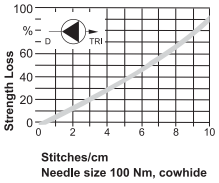


2. SEWING OF KNITTED FABRICS

Knitted fabrics are a combination of loops in a row. Their sewability depends on factors like the type and size of the yarn, nature of the raw material, the density, size and regularity of the loops and their finish.

So while sewing knitted fabrics, the choice of the needle with the correct size and point form a vital importance.

SELECTION OF THE SUITABLE NEEDLE SIZE

While sewing knitted fabrics, the choice of the needle has to be a thinner one. The yarns of finer variety are used for manufacturing knitted fabrics. So needles more than Nm 90 cannot be used.

While changing from thicker to thinner needles, the needle plate should also be changed. It is important when sewing elastic materials that the hole in the needle plate matches the thickness of the needle to avoid material being pulled into the hole of the needle plate.

SELECTION OF THE SUITABLE NEEDLE POINT

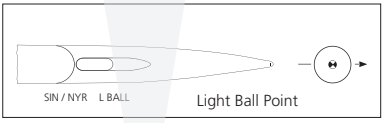
It has been found that knitwear cannot be sewn with the normal round point as the inter looping are often hit and pierced by the needle. When there is elasticity in the material, the meshes get easily damaged. Therefore, needle with the ball point pushes the yarn aside at the time of penetration, leaving the material from getting damaged. For the circular and warp knitted materials, light ballpoint is the needlepoint to be used. Heavier materials require medium ballpoint needles.

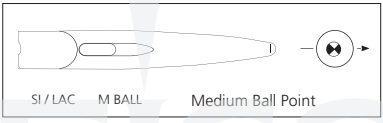
While sewing knitwear, point form is vital and the point or tip should be absolutely free from burrs or sharp edges. Even slightest unevenness in the point will result in greater damage to the material than the needles that are too thick or with the wrong points. It is important to check the condition of the needle regularly and change them whenever necessary. The same conditions apply to the needle plate, presser foot and feed dog as well.

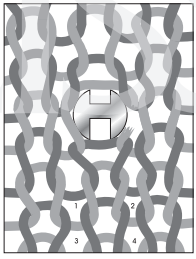
Besides the above, humidity plays a great role in damage to the materials. Dry air creates brittleness to the material. Correct air temperature in the storing rooms and sewing rooms should be maintained. Sewability can be further enhanced by using a thread lubricant, which forms a film on the surface of the needle, thereby reducing the friction between the needle and the material. Use of silicon oil also makes the meshes more elastic.

Nowadays, there is a habit of sewing leather and imitation leather along with the knitted goods. While cutting points are generally used for sewing leather, it should under no condition be applied here. In such cases, only "round point" needles must be used.

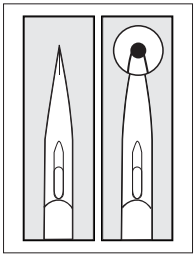
Needle Point Selection







Normal round point cuts the yarn



The diameter of the Ball Point needle tip is 15%
of the diameter of the thickness of the needle

HOW TO AVOID MESH LOOP DESTRUCTION

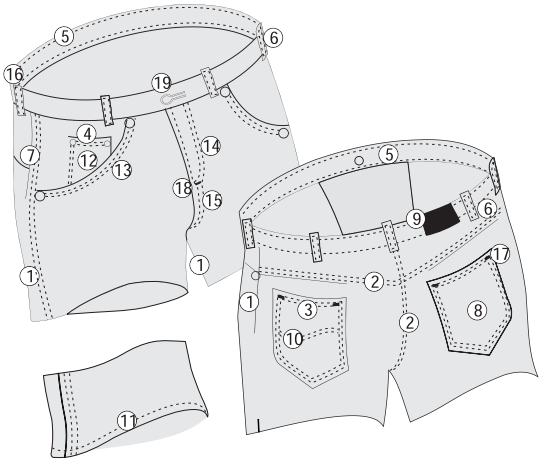
To prevent the destruction of mesh fibres, the following requirements should be observed.	X	✓
use sewing machine needles with ball point		
do not use damaged needles		
use the smallest possible needle size	 Nm 100	 Nm 70
throat plate, presser foot, feed dog must be burr free		
knit fabric should be used with the appropriate finishing.		

3. SEWING OF JEANS

Denim is a thick, hard, unwashed fabric. The penetration resistance to the needle is very high and large size needles are used. This is especially the case when sewing multiple plies or sewing over seams.

As everybody is conscious of the needle breakage and are uncertain about the size of the needle to be used, needles of larger size than necessary is chosen. This results in damage to the fabric, which is visible only after washing. This makes the choice of the needle size.

The most commonly used denim is 14 Oz. For softer, lighter weight or stretch fabrics, choose a needle approximately 2 sizes smaller.



GENERAL TIPS AND SUGGESTIONS

LIFE OF THE NEEDLE

The wear and tear of the needle is influenced by a multitude of factors. The most important one is the condition of the point. To avoid garment rejects caused by damaged points, needles should be changed every 8 hours in operations involving multiple plies such as double felled seams, attaching pockets and bartacking on automatic machines.

Tip: Change needles every 24 hours on other operations but always check the tip regularly.

Sewing machine needles deflect more when sewing denim and can hit the machine parts. This not only ruins the tip of the needle but also the fabric thread when sewn with that needle. The use of slightly rounded point, than the normal round point helps in avoiding this problem. But this is true only in the 2 needle chain stitch systems UY128 GAS, 149X3 and B63.

SEWING SPEED

While sewing over seams, there is undue stress for the needle, which results in premature breakage. To avoid needle breakage, slow down the machine speed.

Tip: Denim with elastomer (stretch) should not be sewn at full speed to avoid thermal damage to the fibres.

SEWING THREAD

Sewing thread plays a crucial role in sewing denim. Hence, use of quality thread is very vital. The seams are strained especially as the jeans are washed and/or bleached after completion. Moreover seams have to be decorative. It is recommended that core spun thread be used.

The size of the sewing thread should correlate to the size of the needle. Details are furnished below:

NEEDLE SIZE	THREAD SIZE
100 - 110	50
110 - 130	30 -35
130 -160	20 -25

POINT STYLE OF THE NEEDLE

Use of normal round point is recommended for all the sewing operations. Use of rounded points (ballpoint) recommended for special applications mentioned above.

Tip: Always use a light ball point when sewing stretch denim or denim with a combination of elastic fabric in order to avoid material damage.

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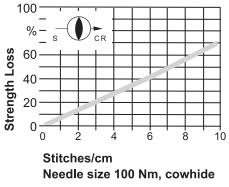

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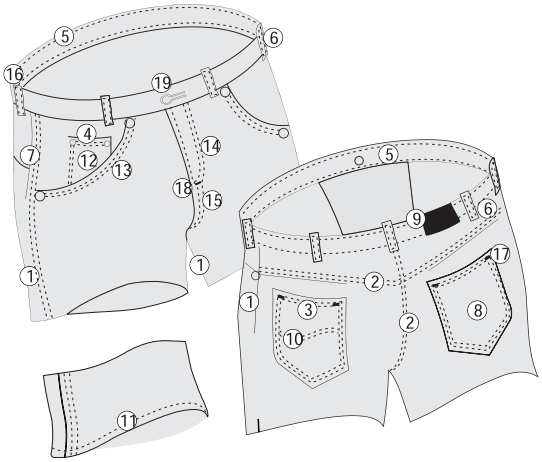

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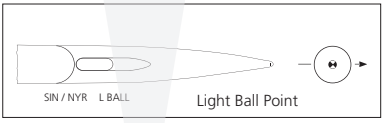

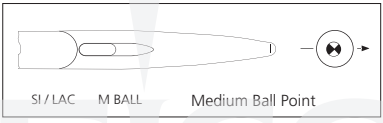

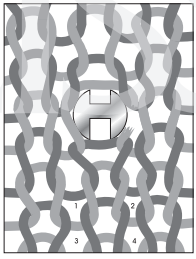

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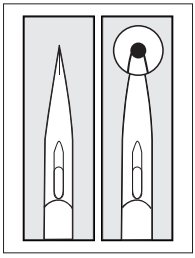

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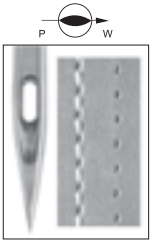

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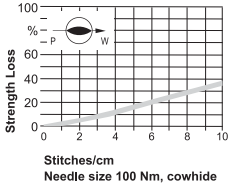

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