

# SEWING FOCUS

TECHNICAL SEWING INFORMATION

SERVICEHOUSE



## Denim

### Checklist for Sewing Denim

#### Sewing Parameters: SCHMETZ Tip:

Needle size	NM	SIZE
	70 – 140	10 – 22
	Depending on the thickness of the material also available as SERV 7 version.	

**Needle point** Mostly round or ball points are used, “SES” (for light denim) or “SUK” (for medium to heavy denim).

**Sewing thread** Depending on appearance, fabric, requirements and customer wishes, 100 % polyester, 100 % cotton or cotton with polyester (core spun) are used.

**Machine** In the production of denims, flatbed, postbed, and free-arm sewing machines are used. More and more automatic machinery is also used like automatic pocket setters, bartack machines as well as short seam automats etc.

#### Other factors:

**Thread tension** The required thread tension depends on material, thread and sewing machine. The thread tension should be as low as possible to allow optimal stitch formation.

**Stitch type** Double lockstitch (stitch type 301), double chain stitch (stitch type 401), overedge chain stitch (stitch type 503) or safety stitch (combined stitch types 401.503); all stitch types according to DIN 61400.

**Stitch density** 2.5 – 3.5 stitches/cm, depending on required seam strength and desired appearance.

## Quick Reference for Typical Sewing Problems in Denim Manufacturing

Symptoms	Effect	Cause
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### Skip stitches/Thread breakage

No interlacing/interlooping of needle thread and bobbin/looper thread	Reduced seam strength, especially with double chain stitch	Incorrect thread tension
Needle thread breaks	Sub-standard, defective seam appearance	Incorrect needle system
Ravelling of the needle thread	Opening of the whole seam especially with double chain stitch	Needle incorrectly fitted
	Thread breakage after skip stitch	Adhesion of melted residues, clogging of the needle eye and needle groove
	Partly or whole melting through of the needle thread	Use of an oversized sewing thread in relation to the needle size
		Needle deflection due to extremely thick layers of material at cross seams
		Oversized aperture of throat plate, material is pulled into it and prevents the loop formation
		Undersized aperture of the throat plate, material is jammed
		Overheating of sewing machine needle
		Mechanical damage to needle, throat plate, feed etc.
		“Tipping over” of the needle thread loop
		Arching up of the material due to insufficient presser foot pressure
		Jamming of the sewing thread between needle and fabric
		Incorrect thread guidance

### Uneven seam appearance

Stitch sequence is irregular, resulting in a zig-zagging seam	Reduced seam strength	Incorrect adjustment of the sewing accessories, such as hook/looper, feed etc.
	Sub-standard, defective seam appearance	Incorrect balance of thread tension
		Incorrect thread guidance
		Needle deflection too heavy
		Damaged thread guiding elements

Solution			
NM SIZE	Point style	Thread	Machine
			

<p>Use the SCHMETZ SERV 7 needle</p> <p>Adjust needle size to the material and amount of layers and thread size</p> <p>Change needle regularly (after every shift or after a shorter interval depending on the stress)</p> <p>BLUKOLD needle with Teflon coating. This needle coating prevents or greatly reduces the adhesion of melted residues</p> <p><b>CAUTION:</b> Use of the BLUKOLD needle does not reduce the needle temperature which is caused by excessive sewing speed</p> <p>Check needle eye and groove for damage, if in doubt: change needle</p>	<p>Check point for damage</p>	<p>Adjust sewing thread size to the needle size</p> <p>Optimize thread tension</p> <p>Use core-spun threads</p>	<p>Optimize the hook/looper setting</p> <p>Examine the thread guiding elements</p> <p>Adjust the sewing accessories, such as throat plate, feed etc. depending on material thickness and sewing thread/needle</p> <p>Reduce sewing speed</p> <p>Change worn out or defective sewing accessories regularly, such as thread guiding elements, hook/looper, throat plate etc.</p> <p>Use the right presser foot and the right adjustment of the presser foot pressure</p> <p>Check throat plate for damage</p>
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<p>Use the SCHMETZ SERV 7 needle</p> <p>Adjust needle size to the material and amount of layers</p>	<p>Optimize thread tension</p> <p>Check thread flow</p> <p>Choose the right sewing thread size according to the needle size and the fabric</p>	<p>Examine the thread guiding elements</p> <p>Check and adjust the material transport</p>
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## Quick Reference for Typical Sewing Problems in Denim Manufacturing

Symptoms	Effect	Cause
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### Fabric damage

Damage to fabric	Reduced tensile strength of the material	Oversized needle and/or wrong point style
Stitch holes with melted residue of fabric threads	Sub-standard, defective seam appearance	Excessive sewing speed
Pulled out weft and warp threads	Reduced seam strength	Defective/worn out needles
Stitch holes visible, weft or warp threads destroyed		Unsuitable finish
		Undersized aperture of the throat plate, material is jammed
		Damaged sewing accessories, such as throat plate, feed etc.

### Thermal damage

	Individual layers of material are sticking together	Excessive needle temperature due to friction especially when sewing densely woven fabrics
	Melted particles cling to the fabric	Excessive sewing speed
	Thread breakage caused by melted thread	Needle smeared or needle eye clogged with melted residue
	Needle thread breaks	Melting of the thread surface and as a result mechanical breakage of the weakened thread
	Needle eye is clogged	
	Needle groove is clogged	

### Needle breakage

	Broken needle parts remain in fabric	Needle deflection too heavy
	Fabric is damaged	Damaged point, resulting in excessive penetration force
		Needle size and material thickness are not adjusted to each other
		Use of an undersized needle

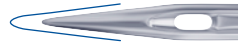
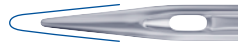
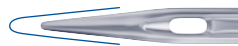


Solution			
NM SIZE	Point style	Thread	Machine
			

<p>Use the SCHMETZ SERV 7 needle</p> <p>Adjust needle size to the material and amount of layers</p>	<p>SES Light ball point</p> <p>SUK Medium ball point</p> <p><b>CAUTION:</b> After every change of shifts or in short intervals according to the needle stress we recommend to change the needle</p>	<p>Choose the right sewing thread size according to the needle size and the fabric</p>	<p>Adjust the sewing accessories, such as throat plate, feed etc. depending on material thickness and sewing thread/needle</p> <p>Check and adjust the material transport</p>
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<p>BLUKOLD needle with Teflon coating. This needle coating prevents or greatly reduces the adhesion of melted residues</p> <p><b>CAUTION:</b> The use of the BLUKOLD needle does not reduce the needle temperature which is caused by excessive sewing speeds</p>	<p>SES Light ball point</p> <p>SUK Medium ball point</p> <p>are available in BLUKOLD</p>	<p>Select a well finished sewing thread</p> <p>Alternatively use an extra thread lubricant (exp. silicone oil)</p>	<p>Reduce sewing speed</p> <p>Use needle cooling through compressed air</p>
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<p>Use the SCHMETZ SERV 7 needle</p> <p>Adjust needle size to the material and amount of layers</p> <p><b>CAUTION:</b> After every change of shifts or in short intervals according to the needle stress we recommend to change the needle</p>			<p>Check and adjust the material transport</p> <p>Adjust the sewing accessories, such as throat plate, feed etc. depending on material thickness and sewing thread/needle</p> <p><b>CAUTION:</b> After a needle breakage it is necessary to check the throat plate for damage</p>
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**Selection of Point Style and Needle Size**

Material	Number of layers	Needle size NM / SIZE	Point style
Light or fine denim with or without elastomeric fibres	2 – 4 6 – 8 8 – 10	70 – 90 / 10 – 14 100 – 120 / 16 – 19 120 – 140 / 19 – 22	SES light ball point 
Medium denim	2 – 4 6 – 10	100 – 110 / 16 – 18 110 – 140 / 18 – 22	SUK medium ball point 
Heavy and coarse denim, including stone- and sand-washed denim	2 – 4 6 – 10	120 – 140 / 19 – 22 140 / 22	SUK medium ball point 
Leather label	2 – 6	90 – 120 / 14 – 19	SD1 round point with small triangular tip or D triangular tip  

General recommendation for denim:

Use of the SERV 7 needle version with the appropriate point style



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## 1. Manufacturing of denim

The jeans – from the American slang word “genes”, derived from cotton trousers from the Genoa area – is made using hard-wearing, (indigo) blue cotton fabric in twill weave. It is also called “denim” (after “Serge de Nimes”, of the french city of Nimes). That is were Levi Strauss, in the 19th century, got his indigo serge from, which he used for his famous workers’ trousers for gold diggers. The first jeans however were manufactured using a brown sailcloth.

In days gone by, jeans were only worn by gold diggers, farmers, mine workers and lumberjacks. During the second world war, the jeans came to Europe.

Today, “jeans” are a particular fashion trend and no longer only a type of fabric. That is why today we have light and heavy denim as well as stretchable mixed fabrics made from cotton, elastomeric fibres and polyamide.



## 1.1 Typical sewing problems

The robust, dense and hard cotton fibre, with material thickness of up to twelve multiple layers at cross seam sections, waistband, crotch and hem, puts great demands on the needle.

The sewing of several layers of tight fabric, for example when closing the crotch seam, is a particularly critical step in the production of jeans. The result can be an untidy seam with skip stitches and needle breakage. The main problem for producing an optimal and high-quality seam appearance lies in the combination of many material layers and changing total height of the material due to cross seams.

The result can be thermal damage in mixed fabrics with synthetic fibres due to the friction energy that is released at the needle blade when sewing speed is high.

When selecting synthetic sewing threads, high needle temperatures of 200 °C (392 °F) should be avoided in order to prevent smearing of the needle, skip stitches and damage to the material because of melted material at the stitch hole.

The right needle as far as stability, needle size and needle point style are concerned as well as the right sewing thread, can all prevent the above mentioned problems.

Thick, heavy, stiff fabric and many layers of material are the main reasons for the typical problems when sewing denim:

- Skip stitches/Thread breakage
- Damage to the fabric
- Needle breakage
- Thermal damage
- Uneven seam appearance

## 1.2 Quality seams with the right sewing parameters

The interaction of needle and machine settings such as thread tension, feed and throat plate depending on thread and fabric must all be matched in order to achieve adequate seam quality. Changes to the sewing parameters can change the appearance of the seam. In order to ensure successful and undisturbed production, these parameters must be checked regularly.

## Needle

### 2. Selection of the right needle

The choice of needle depends on the material used. The main criteria are needle size and point style. A common problem in the production of thick and heavy materials such as denim also is the stability of the needle. When sewing denim, the choice of the correct SCHMETZ needle keeps possible problems to a minimum. The cost of spare parts as well as downtime are reduced considerably.

#### 2.1 Needle size

The size of the needle indicates stability which means resistance against breakage. The needle is chosen according to material composition and sewing thread. Depending on fabric and thread, the recommended needle size is between NM 70 – 140. The size of the needle determines the size of the needle eye. A thin needle therefore automatically requires thin sewing thread. With today's common synthetic threads, which are relatively strong, this no longer represents a problem for the stability of the seam. In addition, a thin needle decreases the likelihood of displacement puckering.

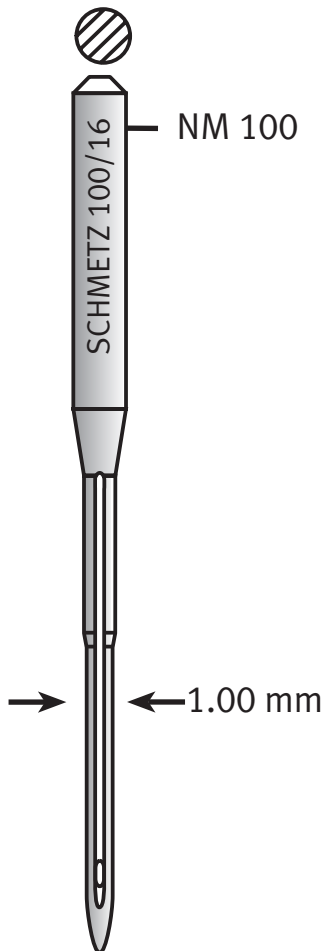
Thread breakage due to high friction that is the result of a mismatch of needle eye size and thread must be avoided.

For a stronger seam, stitch density can be increased and multiple seams can be used. As a result, seam strain is distributed across several seams, e.g. the side seam of jeans.

Damage to the fabric is usually caused by using needles with too large a diameter or the wrong needle point style. The bigger the diameter of the needle the greater the damage to the fabric. In order to avoid this, needles should be as thin as possible. On the other hand, the needle should be able to withstand the thick denim fabric, which can have up to twelve layers of cross seam sections. Fabric damage in sensitive denim is often the result of strongly twisted fabric threads (five or more twists per cm), which are stretched considerably when the needle pierces the fabric and thus encourages fabric thread breakage. Further triggers may be: Density and strength of fabric weave as well as special finishes like the use of starch and crease-resistant finishes.



Multi-directional sewing also puts considerable strain on the needles in the case of automatic machinery and embroidery. The size of the needle must be determined beforehand and made to fit material and sewing.



The light ball point “SES” displaces the fabric thread of fine and light denims and also of elastic fabrics, i.e. denim with elastomeric threads. It pierces directly into gaps and thus decreases the danger of fabric thread bursting.

For the sewing of medium to coarse denims and for stone- and sand-washed denims, medium ball point “SUK” should be used (especially with thick needles). They have a more pronounced, more rounded tip than the light ball point “SES” and optimally prevent damage to the denim fabric threads.

SES light ball point



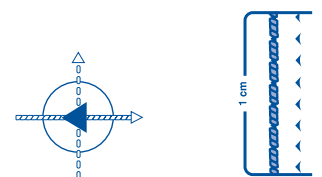
SUK medium ball point



For sewing leather labels to the waistband, the “SD1” point (round point with small triangular tip) is used. This point style constitutes a compromise between a cutting point and a round point (displacement point). The small triangular tip cuts around 10 % of the stitch hole, 90 % is displaced by the cone-shaped point. The result is a straight seam and tidy seam appearance. In addition, there is less needle deflection than would be the case with a round point and fewer incisions than with a cutting point.

## 2.2 Point style

The most important characteristic of a high-quality needle (apart from its size) is the right needle point. In order to avoid fabric damage, the choice of point style is very important. Together with the diameter of the needle, the normal and acute round point (“R” and “SPI”) can puncture the fabric thread and cause it to break. In order to avoid such damage, one should use a light to medium ball point, which only displaces the fabric thread. The choice of needle point is determined by the quality and the weight of the material.



SD1 round point with small triangular tip



## 2.3 SERV 7 needle construction

We recommend the use of the special SCHMETZ SERV 7 needle in combination with the “SES” and “SUK” ball points. This needle in particular meets the special demands of sewing denim.

Skip stitches and needle breakages are a common problem when sewing denim. SERV 7, the special needle design developed by SCHMETZ, prevents these problems.

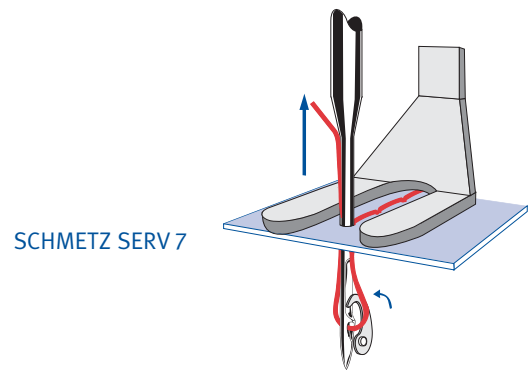
SERV 7 is a needle that avoids skip stitches and needle breakage. The needle comes with various different point styles, depending on the material used. The distinctive feature of the SERV 7 needle is the so-called hump scarf and the extra blade reinforcement. The optimized hump scarf (hump on the transition from the scarf to the needle eye) creates a larger loop so that the hook/looper can catch it easily. Skip stitches are thus reduced significantly.

The SERV 7 blade reinforcement makes the needle particularly stable and thus needle deflection is minimized. This keeps needle breakage to a minimum and the centric penetration produces a better, more tidy seam appearance. Low needle deflection also lowers the number of skip stitches. Depending on the right combination, a thinner needle can be used on occasions. When sewing many layers of denim, the stability of the needle is extremely important. Needles without blade reinforcement can easily be deflected when the material is very thick. Such needles can cause uneven seam appearance and needle breakage because the needle does not penetrate centrally.

In order to avoid breakage, the needle must be stable but not too thick. That is why the special needle SERV 7 with its distinctive geometry is particularly useful for sewing jeans/denim.

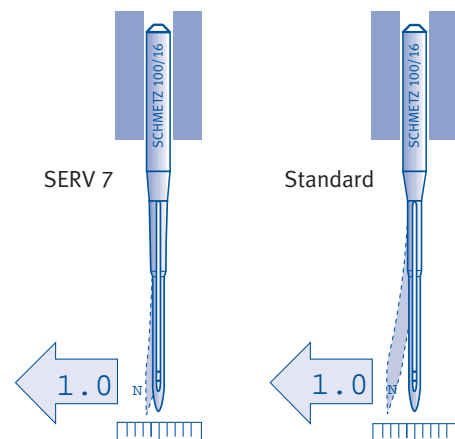
### SCHMETZ Tip:

**Benefit 1: SERV 7 hump scarf produces optimum stitch formation and prevents skip stitches.**



### SCHMETZ Tip:

**Benefit 2: SERV 7 needle has higher stability increasing needle life.**



## 2.4 Changing of the needle

The needle must be changed regularly. Depending on use, wear and tear, and type of fabric, this should happen at least every 3 to 4 hours.

Once the needle is damaged, the fabric can get damaged, too. The needle can be checked using the nail test.



Illustration of a damaged needle point

### SCHMETZ Tip:

Testing methods such as the nail test inform about the state of the needle. The needle point is run across the finger nail. The damage can be felt (nail will be scratched).

## Sewing thread

### 3. Selection of sewing threads and stitch parameters

Typical for the production of jeans is a large amount of material layers and strong twill weave fabrics. Seam strength as well as an undamaged and straight seam are all indispensable for high-quality seams. The material and the quality of the sewing thread determine the seam quality to a significant degree.

#### 3.1 Composition and size of the sewing thread

The choice of sewing thread determines the quality of the seam, seam strength and seam appearance. Depending on requirements and customer needs, there are several yarns to choose from:

- 100 % polyester core spun threads
- 100 % cotton sewing yarn  
(not very strong and thus not suitable for machines)
- cotton polyester core spun threads

The use of threads with polyester core, so-called core spun threads, ensures a high degree of tensile strength while retaining a fine cross-section. In order to meet the high demands of jeans, the denim must have certain characteristics: high tensile strength and abrasion resistance are very important; elasticity should be well-balanced and the fabric must be either stainable or colorfast (depending on the customer's wishes). In addition, this thread is highly suitable for multi-directional sewing machines or 2-needle-machines due to its twist.

As far as the type of sewing thread is concerned, standards already exist for typical denim fashion. For example, for the finish, threads like polyester-polyester core spun or polyester-cotton core spun are used, especially when, on a safety stitch machine, a seam is closed and an edge serged at the same time.

In general, for serging of pocket bags on the other hand and for invisible closing seams and those without a decorative effect, thinner threads such as polyester core spun threads No. 120 are used. There is a danger that thick thread and thick needles will result in tension and displacement puckering.

A careful choice of thread color from the yellow-brown to dark brown spectrum, gives the jeans their typical appearance.

When producing jeans in the worn look, the shade is lightened using a bleach or a chlorine wash. For these jeans, there is a choice of two types of thread: Either one chooses a thread that changes together with the bleaching of the fabric (100 % cotton sewing thread) or one chooses a thread (cotton/polyester core spun thread or polyester core spun thread) where color matches the bleached fabric and does not change color during bleaching or changes together with the changing colour of the fabric.

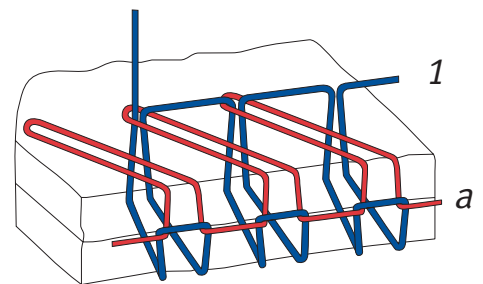
When using 100 % cotton sewing thread, the sewing machine needs extra adjustment because cotton and polyester threads vary with respect to strength and elasticity.

In the case of automats, we recommend threads twisted with double or multiple strands, so that multi-directional sewing does not lead to the thread untwisting.

### 3.2 Stitch type

Stitch type depends on the desired seam. When sewing jeans, the stitch type should ensure very stable seams. Thus, lockstitch and chain stitch with up to four needles and depending on the desired appearance can be used. Lap seams (for yoke and crotch seam) and safety seams can also be used.

Stitch type 503 – 2-thread overedge stitch (edge covering)

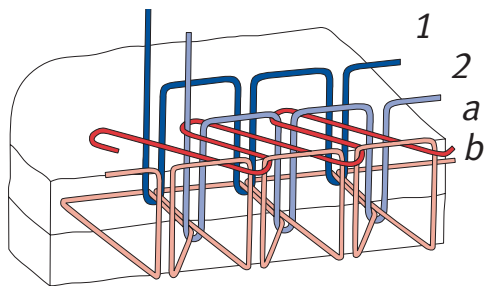


For serging the edges (e.g. serging of pocket bags)

Core Spun								
Thread type	Polyester/Cotton				Polyester/Polyester			
	Yarn size		Needle size		Yarn size		Needle size	
	No*	tex*	NM	SIZE	No*	tex*	NM	SIZE
Medium	40	75	100-120	16-19	40	75	90-110	14-18
	50	60	100-120	16-19	50	60	90-100	14-16
	60	50	100-110	16-18	60/70	50	90-100	14-16
	75	40	90-100	14-16	80	40	70-90	10-14
	80/90	38/33	80-90	12-14	90	38/33	65-80	9-12
Fine	100	30	70-90	10-14	100	30	70-80	10-12
	120	25	70-80	10-12	120	25	70-80	10-12
					140	21	60-70	8-10
	150/160	20/19	65-70	9-10	150/160	20/19	50-60	5-8
	180	17	50-65	5-9	180	17	50-60	5-8

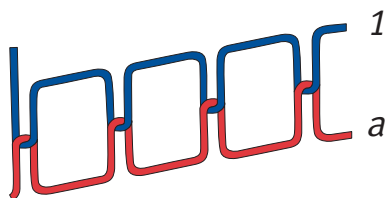
\* No = Label number  
 \* tex = Unit of size 1 g/1000 m (e.g. 17 tex = 1000 m yarn weigh 17 g)

Stitch type 512 – 4-thread overedge stitch  
(mock safety stitch)



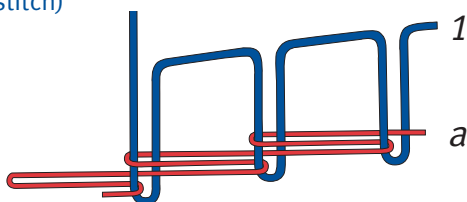
For joining seams and serging at the same time  
(e.g. closing side seam)

Stitch type 301 – double lockstitch



For joining and closing seams  
(e.g. joining pocket facing to pocket bag)

Stitch type 401 – double chain stitch  
(2-thread chain stitch)



For elastic closing seams  
(e.g. closing side seam)

#### SCHMETZ Tip:

**SCHMETZ SERVICEHOUSE** is pleased to assist with any questions on optimizing stitch type, stitch density, needle and sewing thread!

### 3.3 Stitch density

Apart from stability, the appearance of the seam is decisive when choosing stitch density. Stitch density is mostly between 2.5 and 3.5 stitches per cm. In the case of elastic fabrics, higher stitch density (up to 4.5 stitches/cm) is possible because the elasticity of the seam increases with stitch density.

### 3.4 Thread tension

In order to avoid tension puckering, that is, to achieve an even and pucker-free seam appearance, thread tension should be as low as possible. Ideally, thread tension should be coordinated with material, type of stitch, sewing thread and needle.

## Machine

### 4. Sewing machines for the manufacturing of denim

For the industrial production of jeans, the use of automats is preferred. The most commonly used automats are bar-tackers for belt loop attaching and back pocket bar-tacking or automatic pocket setters for back pockets and labels. These automats use the double lock stitch, the button hole automats use a zig-zag double chain stitch.

Apart from these, feed-off-the-arm double chain stitch machines are used for lap seams at the side seam of jeans.

Double chain stitch machines are used for pre-sewing belt loops, for closing side seams or generally for sewing closing seams.

Double lockstitch machines are used for sewing pockets and flies as well as for hemming.



**Flatbed Sewing Machine** Closing and attaching seams, topstitching



**Postbed Sewing Machines** Securing closing seams on small parts and round parts



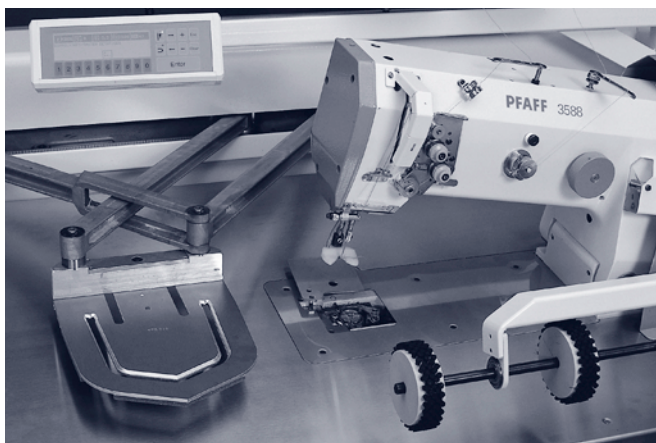
**Free-Arm Sewing Machine** Securing closing seams and round parts

**Feed-off-the-arm Double Chain Stitch Machine** Lap seams

(without illustration)

**Sewing Automats** For attaching pockets, button sewing, sewing of button holes, bar-tacks, piping, labels

(see pict. 1)

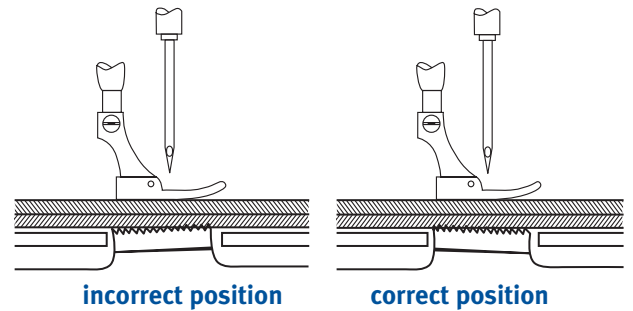


Pict. 1: Automatic Pocket Setter (3588)

Source: Pfaff AG

## 4.1 Feed

The majority of high-speed sewing machines have a so-called drop feed. Ideally, a fine-toothed feed dog should be used. It should be positioned in such a way that the back of the feed dog is slightly raised (see right hand illustration below). This resembles the stretching puller effect.



Position of the feed-dog

Source: Gütermann

When sewing fabrics with low elasticity, the puller feed can be adjusted to stretch the fabric in order to avoid tension puckering. When sewing elastic materials, it is advisable to sew without a puller to avoid overstretching and expansion of the fabric, which could in turn cause puckering.

Adjusting the speed of bottom feed, top feed and needle feed avoids puckering and prevents the layers from shifting.



### Differential bottom feed and puller top feed

Differential feeds and puller feeds are preferred when sewing lap seams. The puller powered from above works right behind the presser foot and thus optimizes the feed.

The puller roll can be smooth (covered with plastic) or teathed (made from steel). It is particularly useful if the puller and the presser foot pressures can be regulated independently.

Depending on the setting, the lower fabric layer can be stretched as well as crimped.



**Compound feed, alternating presser foot top feed**

The most commonly used feed for medium to heavy materials. As a result, layers do not shift, the stitches are evenly distributed and seam puckering is avoided.



**Bottom feed and needle feed**

For fabric feed when using material that is difficult to feed, useful for top-stitching (ensures even stitches, makes corner sewing easier).

**4.2. Throat plate/Throat plate aperture size**

The choice of throat plate is determined by type of feed, needle size and the use of additional accessories.

The throat plate aperture size has to be matched to the particular fabric's needle size. That means that needle and thread should be able to move through the throat plate aperture easily without the fabric being pulled into the throat plate aperture when the needle moves downwards. If the opening of the throat plate aperture is too large, this can result in damage to the material and skip stitches.

The suitable throat plate aperture sizes in relation to the needle size can be found in the following table:

Needle size / Throat plate aperture size								
Needle sizes [NM]	60	65	70	80	90	100	110	120
Throat plate aperture size [mm]	1.00	1.20	1.20	1.40	1.60	1.60	2.00	2.00

Relationship of needle size to throat plate aperture size

**4.3 Sewing speed**

Maximum sewing speed for chain stitch machines is 4,600 – 6,000 stitches/min.

For double lockstitch machines, depending on type of machine, 4,000 – 5,000 stitches/min.

The sewing speed of bar-tackers goes up to 2,700 stitches / min, pocket setting machines up to 4,000 stitches/min and button hole automates up to 2,200 stitches/min.

In practice, however, the maximum speed is rarely reached. In the case of long seams (side seams), average sewing speed is between 4,000 – 5,000 stitches/min. Sewing speed for small seams is correspondingly lower.

**5. Our advice**

You can achieve damage-free quality seams if all the sewing parameters are precisely coordinated with one another.

Material, needle, thread and machine are the key variables. The **SCHMETZ SERVICEHOUSE** offers various service packages:

From recommending the ideal needle for your fabrics to sending out sample needles and providing assistance with special sewing requirements. In addition the **SCHMETZ SERVICEHOUSE** offers competent on-site advice on your production line and training courses for your employees.

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



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

Do you have further questions about sewing denim?  
Would you like support in solving your individual sewing 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 on:

## Our range of service:

### CONSULTING

#### SAMPLE NEEDLES

Sample needles, tips and information

#### DOCUMENTED SEWING REPORTS

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

#### EXPRESS CONSULTING

Express consulting by phone, fax or e-mail

### INFORMATION

#### SEWING FOCUS

Sewing information for special industries and applications

#### 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



Company name
Attention
Position
Address
Postcode/City
Country
Phone
Fax
E-Mail