

# **KOHL'S**

## **Minimum Construction Standards**

### **Footwear/Slippers/Flip Flops**

Minimum quality and construction standards for footwear/slippers/flip flops

## Contents

### Introduction

General Guidelines, Workmanship, & Appearance	3
---	---

### Internal Components

Toe Boxes	9
Heel Counters	10
Insole Boards	11
Composite Midsoles	16
Molded Midsoles	17
Heels	18

### External Components

Outsoles	26
Toplines	31
Moccasin Stitching	32
Toe Posts	34

### Trims & Stitching

Thread	37
Elastic & Goring	40
Miscellaneous Trims	42

## Introduction

Kohl's is committed to providing our customers with quality product. Building a strong foundation of minimum construction standards establishes the benchmark in which Kohl's products are made.

As a vendor partner, the acceptance of an order placed by Kohl's for Private and Exclusive Branded product requires that these standards, in combination with applicable laws and regulations, are strictly followed.

## General Guidelines, Workmanship, & Appearance

First quality materials must be used – no seconds. The lot must be cut from only one shade of material – matching pieces must all be the same shade.

Your samples are a reflection of your reputation as a vendor partner – samples should always represent the level of craftsmanship you want to be known for.

Samples must always be clean and free from:

- Defects including excessive glue, dirt, flaws, oil, raw/unfinished edges, repair marks, shade differences, stains, mismatched sizing/heights within a pair
- Mold and chemical odors (use anti-mold sheets or box stickers)
- Irregularities in coloration/pigmentation or surface irregularities that are not inherent to the product

**For more details on defects, please see [Defect Classification List](#) on K-link.**

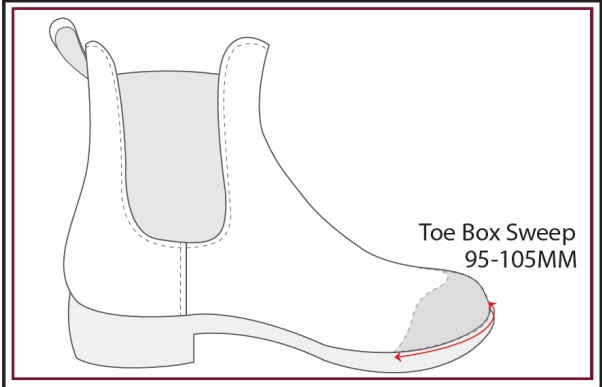
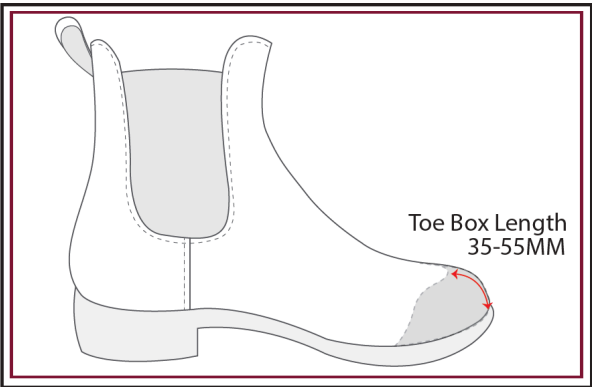
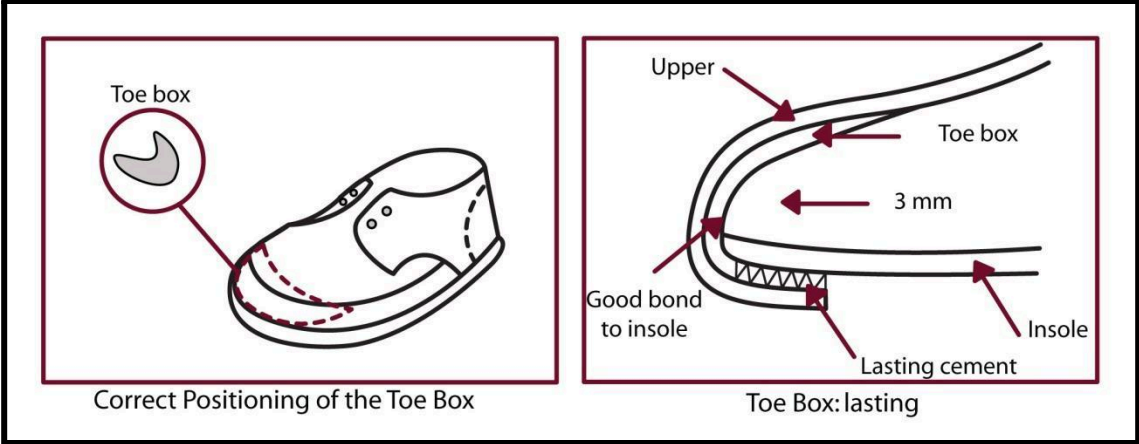
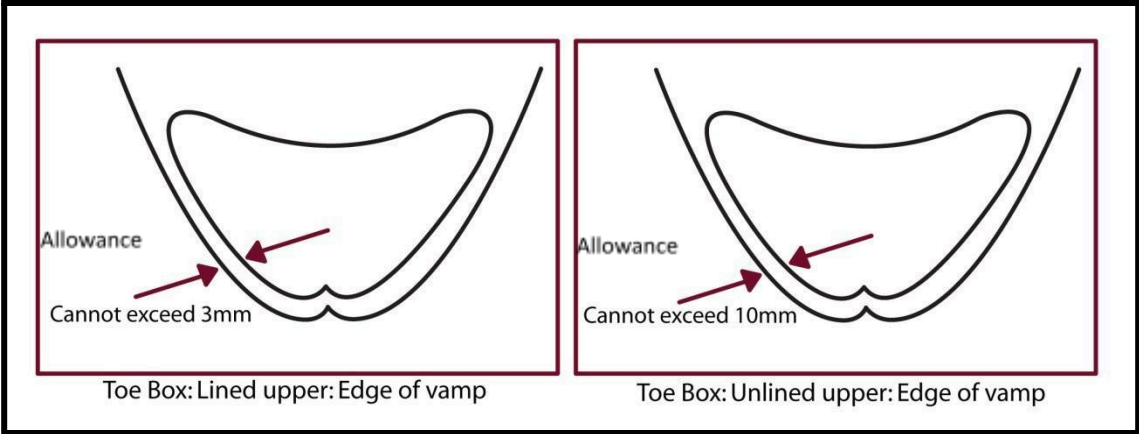
# Internal Components

- Toe Boxes
- Heel Counters
- Insole Boards
- Composite Midsoles
- Molded Midsoles
- Heels



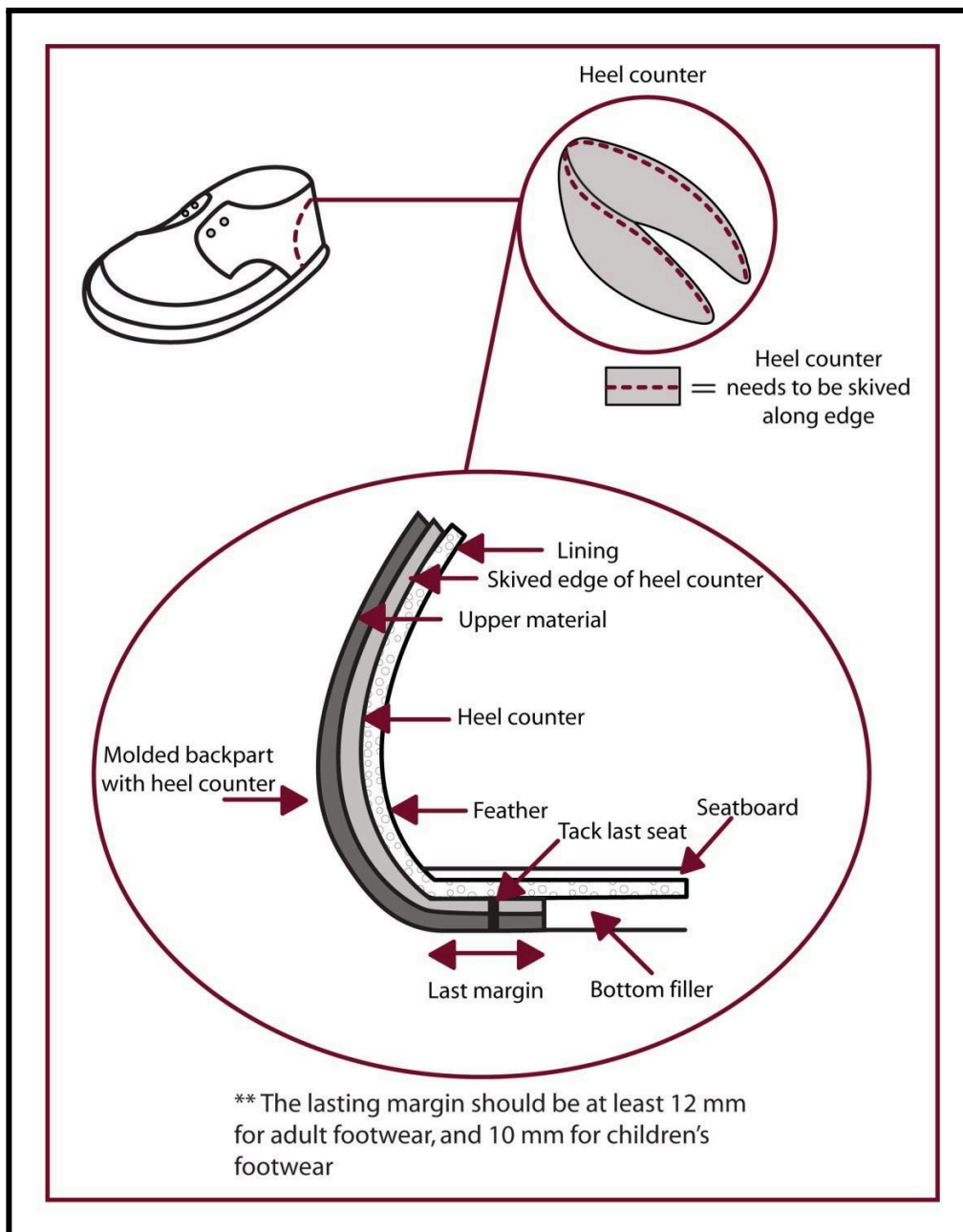
**Toe Boxes**

The 'toe box' is typically a firmer material, such as thermoplastic, inserted between the upper and lining to help the toe maintain shape. Toe box should not reach the ball of the foot. It is meant to keep toe shape and not interfere with flexing of the phalange metatarsal joints (where the toes meet the ball of foot).



**Heel Counters**

- Thermoplastic
- 1 full shoe size per cut counter size
- Upper edge needs to be skived, should not be full thickness
- Counter should not extend 5mm beyond each side of heel breast
- Lasting margin: counter must be lasted under insole at least 6mm
- Counter must be securely adhered to heel pocked without wrinkles
- Minimum Thickness
  - o Men's, Young Men's: 1.5mm
  - o Women's: 1.0 – 1.2mm



### Insole Boards

**Kohl's Preferred Suppliers for insole boards are Bontex and Texon.** Any alternative qualities must be reviewed and approved by the Kohl's team.

Pre-Approved Qualities from our Preferred Suppliers

Shoe Type	Texon	Bontex
Wmns Heels >40mm	T507	347FF
Wmns Heels <39mm	T516	347FF
Flat Wmns, Mens, Childrens	ECO100	BxTe

### Recommended Insole Board Thickness

	Cellulose	Non-Woven
Wms Athletics w/EVA or Filon Midsole	1.00 mm	1.00 mm
Wms Pumps, Casuals, Sandals / Youth / Toddler / Infant	1.25 mm	1.25 mm
Wms Athletic & Service	1.25 mm	1.25 mm
Mens Athletics w/EVA or Filon Midsole	1.25 mm	1.25 mm
Mens Athletic, Dress & Casual	1.50 mm	1.50 mm
Mens Boots (welt, work, sport & hiker)	2.00 mm	1.50 mm

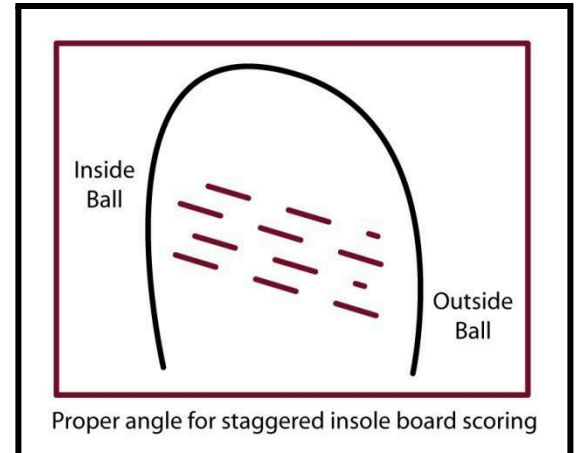
### Costing

TEXON <i>valid thru 06/30/19</i>				
Article #	Thickness	USD/sqm	USD/Sheet	Est USD/Pair
T507	1.00 mm	\$ 1.43	\$2.4424	\$0.06
	1.25 mm	\$ 1.70	\$2.9036	\$0.07
	1.50 mm	\$ 2.05	\$3.5014	\$0.09
	1.75 mm	\$ 2.41	\$4.1163	\$0.10
	2.00 mm	\$ 2.83	\$4.8336	\$0.12
T516	1.00 mm	\$ 1.24	\$2.0667	\$0.05
	1.25 mm	\$ 1.56	\$2.6645	\$0.07
	1.50 mm	\$ 1.87	\$3.1940	\$0.08
	1.75 mm	\$ 2.42	\$4.1334	\$0.11
	2.00 mm	\$ 2.76	\$4.7141	\$0.12
ECO100	1.00 mm	\$ 1.36	\$3.1579	\$0.06
	1.25 mm	\$ 1.64	\$3.8081	\$0.07
	1.50 mm	\$ 1.97	\$4.5743	\$0.09
	1.75 mm	\$ 2.42	\$5.6192	\$0.11
	2.00 mm	\$ 2.79	\$6.4784	\$0.12

BONTEX <i>valid thru 12/31/19</i>			
Article #	Thickness	USD/Sheet	Est USD/Pair
BX347FFE	1.00 mm	\$1.88	\$0.05
	1.25 mm	\$2.30	\$0.07
	1.50 mm	\$2.80	\$0.08
	1.75 mm	\$3.30	\$0.09
	2.00 mm	\$3.90	\$0.11
BXTE	1.00 mm	\$1.45	\$0.04
	1.25 mm	\$1.71	\$0.05
	1.50 mm	\$2.12	\$0.06
	1.75 mm	\$2.48	\$0.07
	2.00 mm	\$3.13	\$0.09

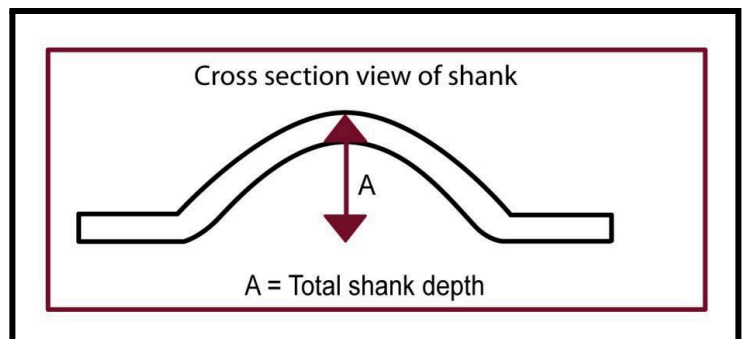
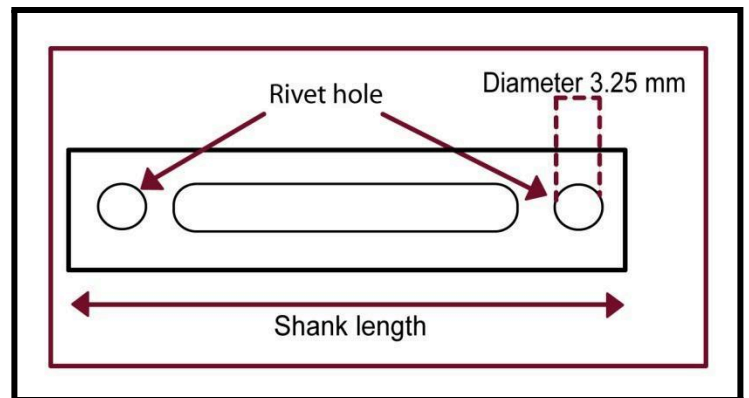
### Scored Insole Board

- Rows of scoring across the insole board from inside to outside ball for flexibility
- Scored rows need to be offset (see diagram).
  - o Mns = 5 rows
  - o Wms & Youth = 4 rows
  - o Toddler & Infant = 3 rows
- Insole bottom filler must be used when board lasting thick uppers to prevent concave soles.



### Steel Shanks

- 3.25 mm suggested minimum rivet holes diameter (actual variance is 3.17-3.25 mm)
- The attachment positions of the rivet holes should be as close as possible to the front & back edges.
- The full height of the flute should extend as close to the eyelet holes as possible, without interfering with the shank attachment.
- Measurements of the total shank depth are normally made 32 mm from the back end of the shank.
- The flat edges of either side of the shank should be as flat as possible
- There should be no abrupt reduction in width, more than 10 mm from the front & back ends of the shank.
- Be cautious about using flat or slightly fluted shanks with heels > 70 mm high and underset < 15 mm, due to potentially low back rigidity.
- Shank length is dictated by the need to position the front & back ends relative to specific parts of the shoe to ensure proper support.
- Prongs or holes with ragged edges for temporary attachment to buried shank insoles are acceptable if they are within 10 mm of the end of the shank.



## Shank Dimensions – Men's &amp; Women's

- The table below gives recommendations for fluted shank depth based on their width. Based on 1.2 mm thick, tempered steel shanks (46-53 degrees C Rockwell C hardness).
- The heel height referred to in the table is measured vertically at the back of the footwear. (Refer to diagram).

Heel Height (mm)	Minimum total shank depths (mm) for shank widths		
	12 mm wide	14 mm wide	16 mm wide
> 100	Not recommended	3.76	3.45
75-99	3.40*	3.12	2.82
50-74	2.82	2.49	2.18
< 50	2.18	1.85	1.22

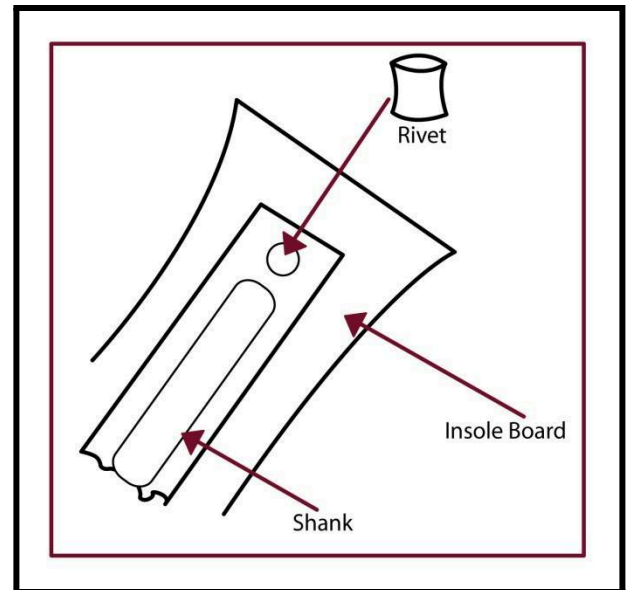
\* Some manufacturers cannot guarantee achieving a total shank depth of 3.40 mm for shanks 9.5 mm wide. In these instances, for heel heights of 75-99 mm, a wider shank is recommended.

- Be cautious about using flat or slightly fluted shanks with heels > 70 mm high and underset < less than 15 mm, due to potentially low back rigidity.
- Shank length is dictated by the need to position the front & back ends relative to specific parts of the shoe to ensure proper support.
- 10mm shank must always be flat, not fluted, and only used on heel heights <25mm

## Shank Attachment

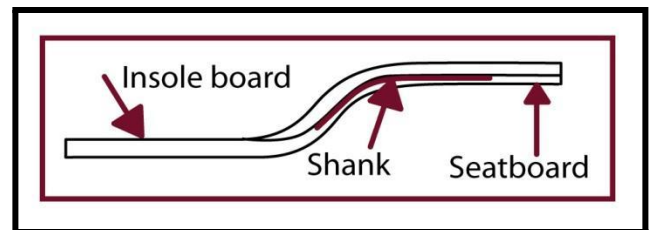
### via Insole Board

- Steel shanks should be attached to the insole using a rivet at each end of the shank.
- The eyelets size should no more than 0.13 mm smaller than the hole diameter in the shank.
- The barrel diameter of the rivet would be 3.12 mm for a shank hole diameter of 3.25 mm. Rivet barrel diameter can vary from 3.05-3.12 mm, depending on the shank hole diameter.
- When inserted and clenched, the rivet should expand to fill out the hole in the shank.
- The rivet barrel should be 1.5 mm longer than the combined thickness of the shank and insole board it passes through, to ensure proper clench on the insole side.



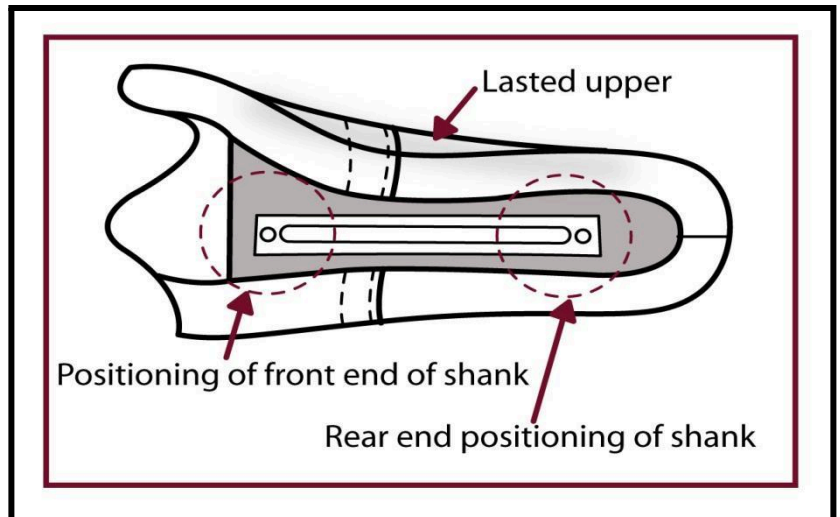
### via Combination Board

- It is only necessary to attach the shank at one end (to hold it in position while the insole is combined) as long as there is a good bond between the 2 insole boards to keep it in position. A back rivet, or adhesive attachment should be satisfactory. A front attachment rivet may be necessary for heel heights of >100.
- Temporary attachment by means of prongs or ragged holes punched into the shank is satisfactory (see illustration for positioning).
- FOR MNS FOOTWEAR WITH HEEL HEIGHTS 50 MM, permanent attachment of the shank is not critical. Hot melt or a similar technique may be sufficient.



**Positioning**

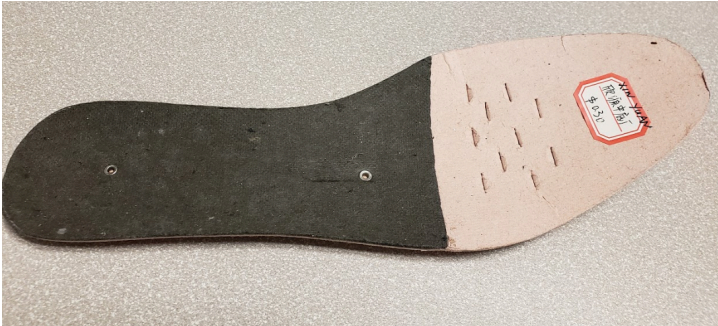
- Women's: The back end of the shank should normally be 12-20 mm from the back edge of the footwear.
- Men's: The back end of the shank should extend at least 25 mm behind the heel breast.





**Composite Midsoles**

These traditional midsoles are comprised of the insole board, tuck board, and shank combined into one package. Composite midsoles can be used for most footwear categories and genders.

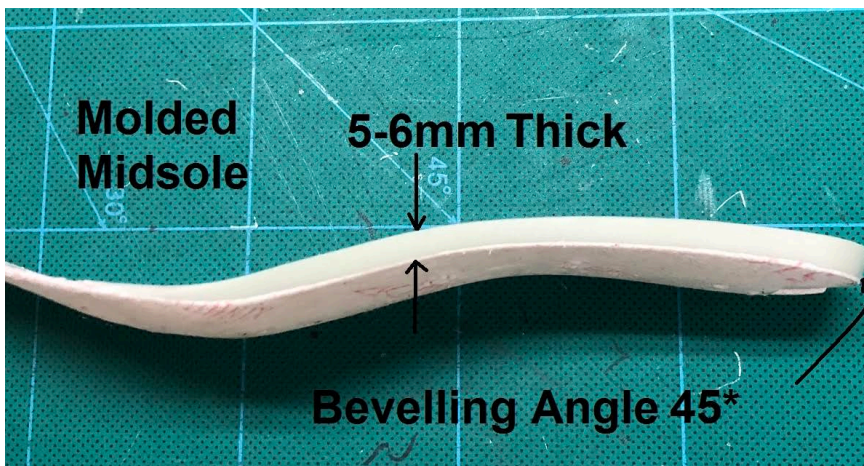




## Molded Midsoles

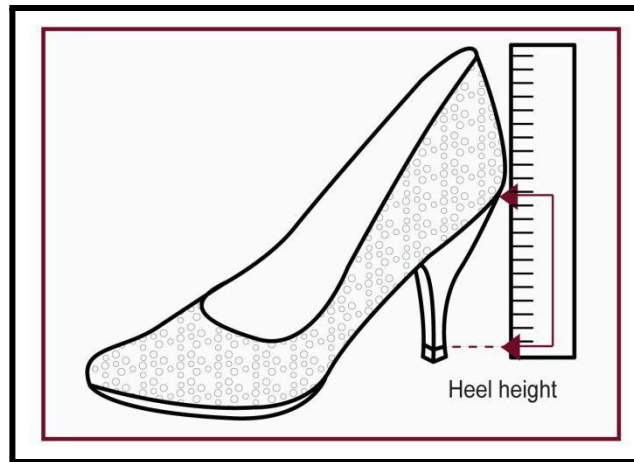
With large order quantities, molded midsoles can be an efficient alternative to traditional midsoles. This method combines the insole board and shank via injection mold to create the midsole.

- 3.0 – 6.0mm thickness
- Includes steel shank, 12 – 16mm wide, 1.2mm thickness
- Edges of heel area of midsole should be beveled around 45° and match the heel
- **For heel attachment, see page 15 for screw length minimums. Screw length must be an additional 6-8mm long to clear the thickness of the molded midsole.**

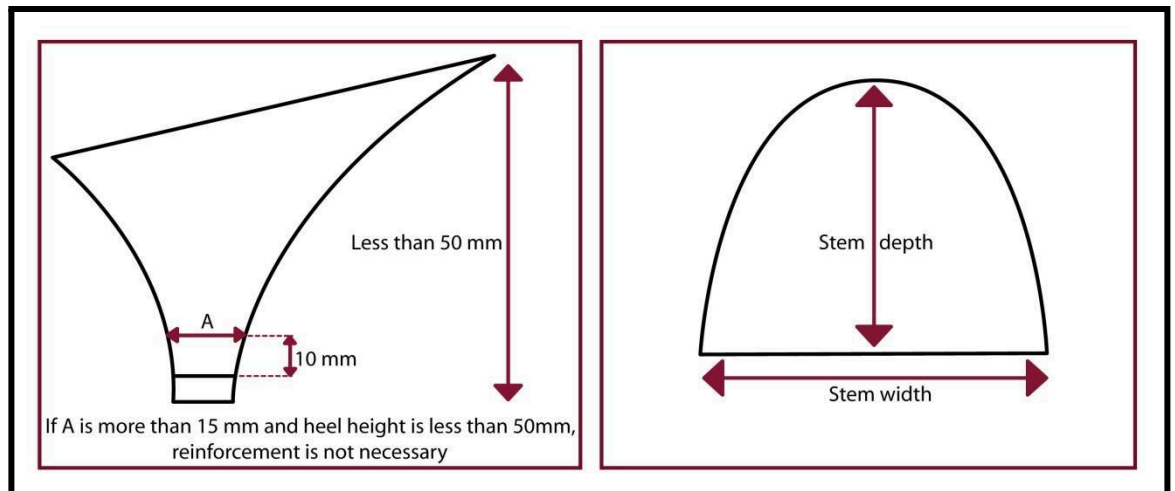


### Heels

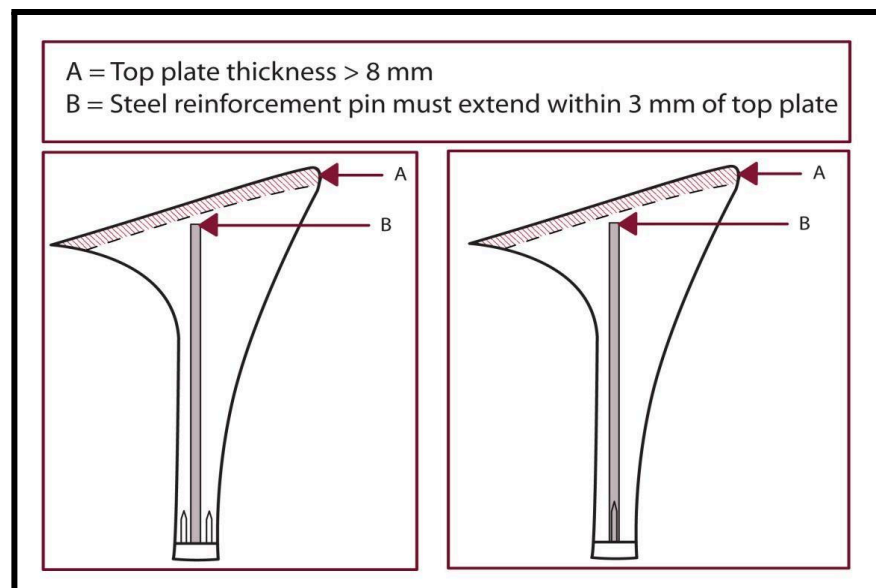
Heel Height Point of Measure (POM)



Heel Height & Shaft Diameter Points of Measure



Heel Reinforcement



**Heel Attachment will be checked both in fit evaluation and intermittently via inspections. Confirmation samples, fit samples, and production samples should all match in heel attachment. BOM and Construction tab in OnePLM should also match.**

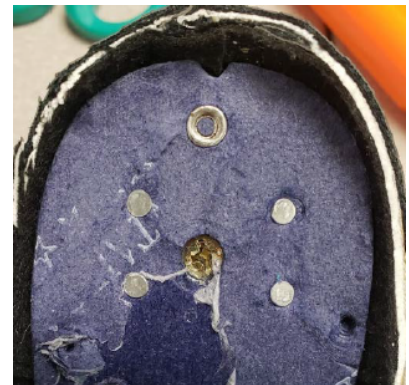
### 3 Screw Method

The preferred heel attachment method for Kohl's Private Branded Footwear is the 3-screw method due to its superior strength and integrity – especially for skinnier heels 65mm or higher. Should the factory have recommendations for an alternative heel attachment, please reach out to Kohl's TD.



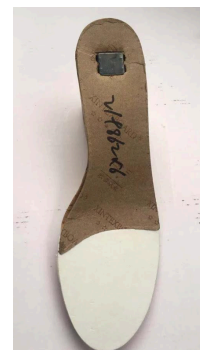
### 4 Nail + 1 Center Screw Method

The less stable, but more efficient 4 nail + 1 center screw method can be submitted on an individual style basis for Kohl's approval. This method is recommended for lower, chunky or block heels, 64mm or lower. As heel strength and integrity could be compromised depending on heel construction, a passing test report must be submitted.











### Ultrasonic Plate

Ultrasonic plates are recommended only for lower, chunky heels (<50mm) or wedges/platforms – but can be submitted on an individual style basis for Kohl's approval. A passing test report must also be submitted.



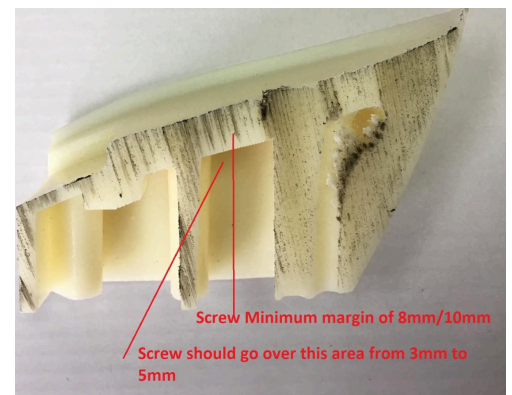
### Recommended Heel Attachment by Heel Type

SKETCH	HEEL TYPE	3*SCREWS	4*NAILS+1*SCREW	1 SCREW
	STILETTO	≥65MM	<65MM	N/A
	CONE HEEL	≥65MM	<65MM	N/A
	KITTEN HEEL	≥65MM	<65MM	N/A
	SPOOL HEEL	≥65MM	<65MM	N/A
	LOUIS HEEL	≥65MM	<65MM	N/A
	WEDGE	NO NEED	NO NEED	If it's extra sock lining or heel seat design, then can put 1 screw, otherwise, only cement
	BLOCK	NO NEED	YES	N/A
	CHUNKY HEEL	NO NEED	YES	N/A

### Recommended Screw Length Minimums

Heel Height	Minimum Screw Size
< 50mm	19mm length + 6mm head diameter
50 – 74mm	21mm length + 6mm head diameter
75 – 99mm	23mm length + 6mm head diameter
100mm+	25mm length + 6mm head diameter

- Screws must be of high quality metals to promote strong integrity, and resistance to cracking
- Screws or staples must go into heel at least **8 mm**
- 30-35mm screws are typically only used on high platform constructions, to attach the insole to the platform

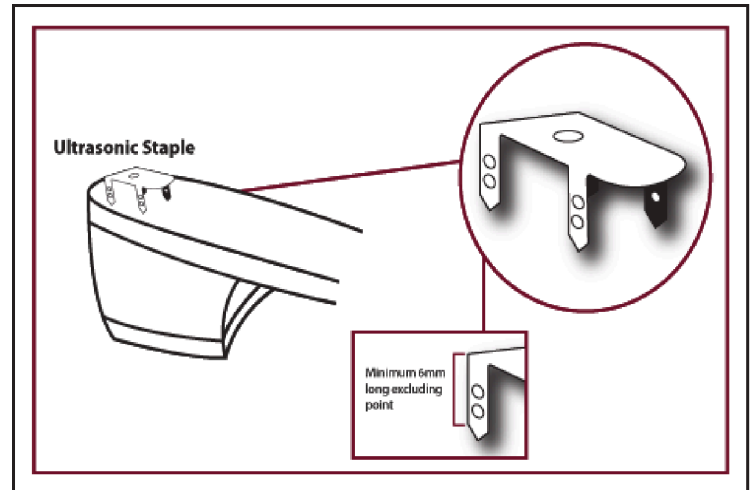




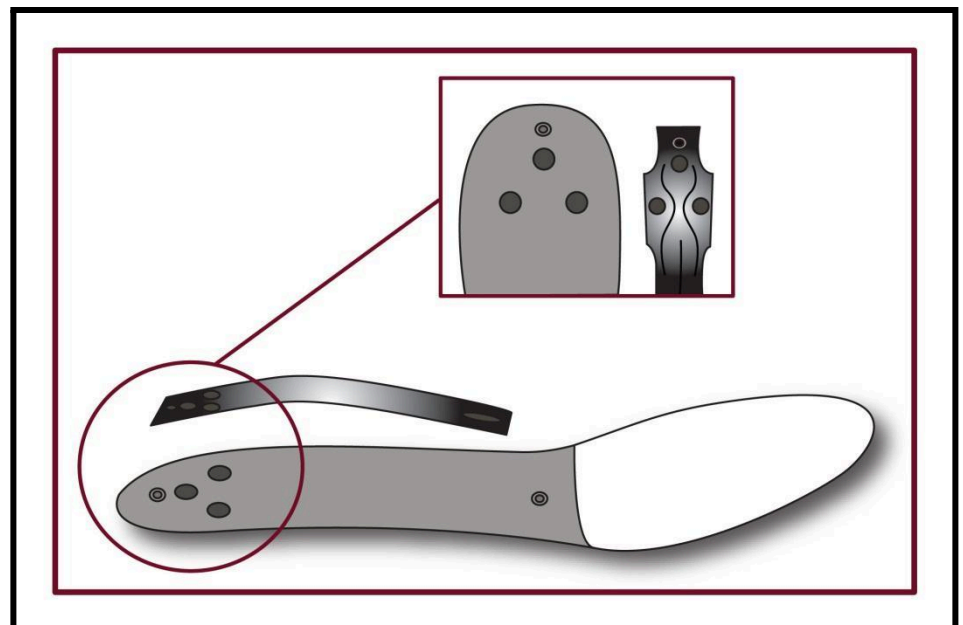
**Do not use nails or staples w/TPR, PU, or Rubber outsoles**

Ultrasonic Staples – for lower, chunky heels (<50mm) or wedges/platforms

- Choose longest staple, but ensure that the legs do not damage the sides of the heel.
- The main point of attachment should be taken as the point where the center line of the front legs pass through the insole.
- Staples must go at least 8mm into heel, not including pointed end.
- Do not use staples with TPR unit outsoles.
- Cover the head of all staples with a thin piece of rubber or upper material on the insole.

**Shanks & Screws****Specialized Shank & Screws**

- If the heel silhouette is so too small/shallow to attach with nails, then a shank with a special back part is required. The back part of the shank, and the heel seat board it is riveted to, is made with holes positioned so that 2 heel attachment screws can be driven in side by side.

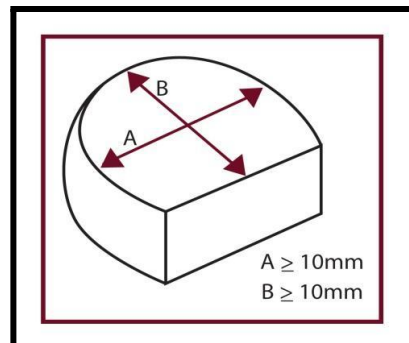


### Toplift

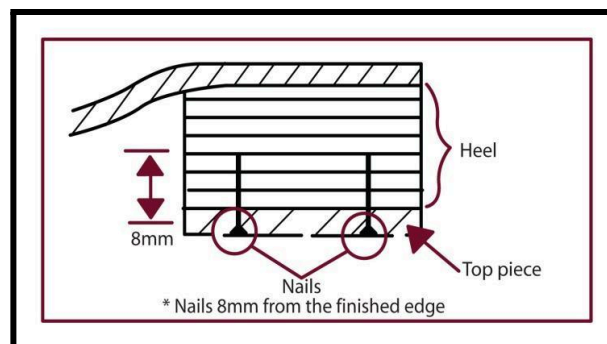
Thickness of Toplift				
Type of Toplift	Men's and Children's Over 25mm wide	Recommended minimum thickness (mm)		
		Over 25mm wide	15-25mm wide	Less than 15mm wide
Sheet	6	4.5	6	Not Recommended
Molded (Autoloc type)	6	4.5	6	Not Recommended
Molded (With metal spigot)	N/A	4.5	6	6

*\*Toplift must be at least 10mm in any direction*

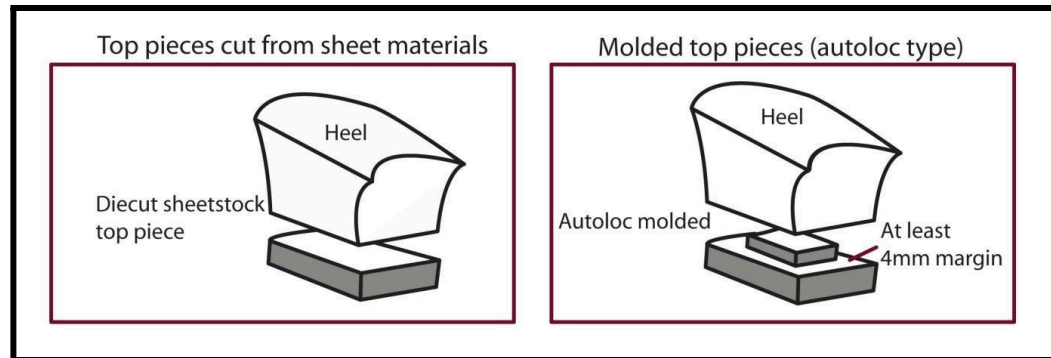
### Toplift Diameter



### Toplift Nailed

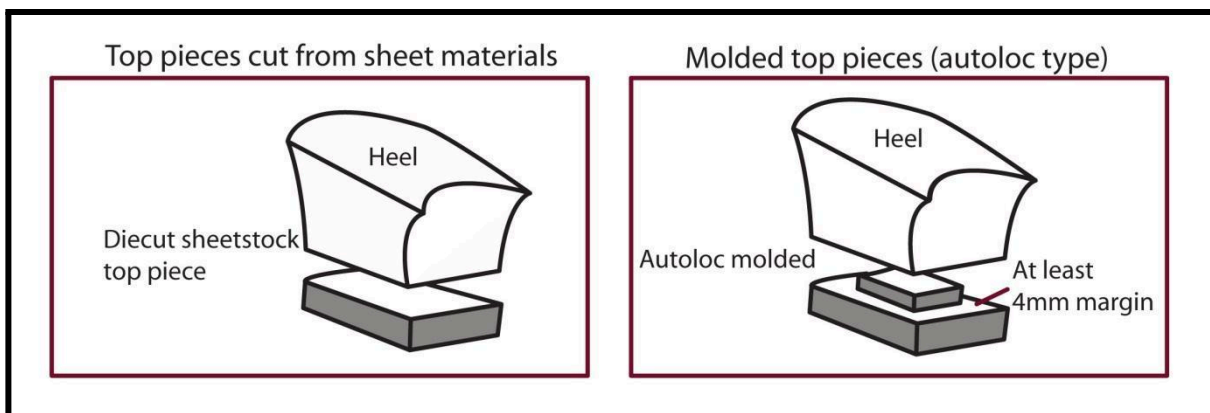


## Sheet Material and Molded Toplifts

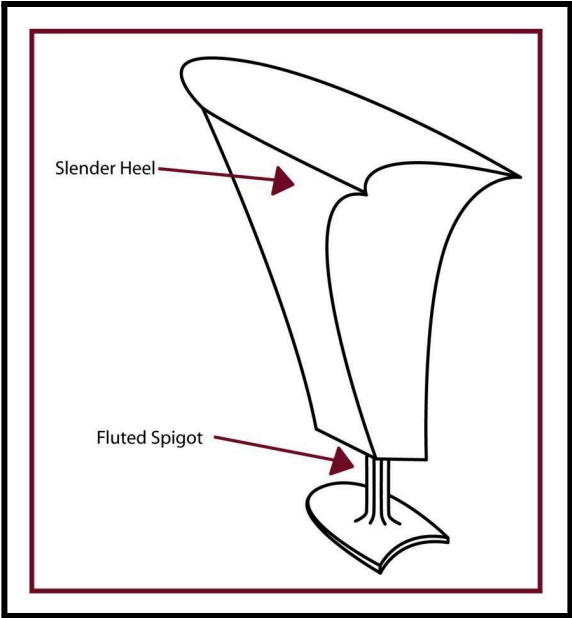


## Autoloc Toplift Illustrations

- The heel cavity is designed to give an interference fit with a plastic extension molded onto the Toplift.
- The cross section of the plastic spigot (extension) should be non-circular to prevent the Toplift from turning in the heel cavity.
- The heel wall must be thick enough to prevent the high stresses at Toplift insertion from cracking the heel plastic and should be at least 4mm thick.
- There should be no sharp corners in the cavity.
- Slender heels less than 15mm across in either direction at the tip will not normally provide a thick enough wall section to be used with an autoloc type Toplift.



Molded Toplift with Spigot





# External Components

- Outsoles
- Toplines
- Toe Posts

## Outsoles

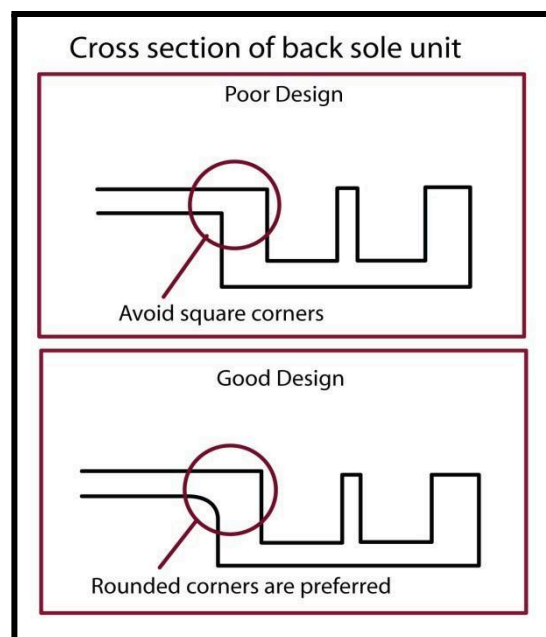
### Soling Materials for All Footwear (including hanging)

Compounds Containing Recycled Materials - the recycled material content of outsole compounds cannot exceed **35%**. The results of using more than 35% recycled materials in an outsole compound are low abrasion, poor slip resistance, and strong chemical odors.

### Outsole Unit Design

- The width of the bonding margin should be at least 10 mm.
- There should be no lettering molded into the surface of the molding margin.
- The angle of the undercutting of the margin should be at least 45 degrees.
- The thickness of the material before undercutting must be at least 3.2 mm.
- The thickness of the sidewall should be at least 7 mm.
- Rounded internal corners in patterns are recommended to help reduce stress points caused by the pattern design.
- A curve with a radius of one third of the channel width is recommended.

### Heel Breast Design



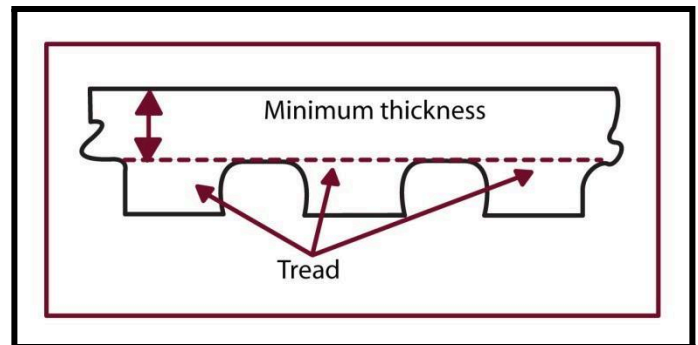
## Patterned Sole Design

Outsole thickness prior to patterning:

- 2 mm for hard materials
- 4 mm for soft materials
- It is recommended that patterns are not cored out.

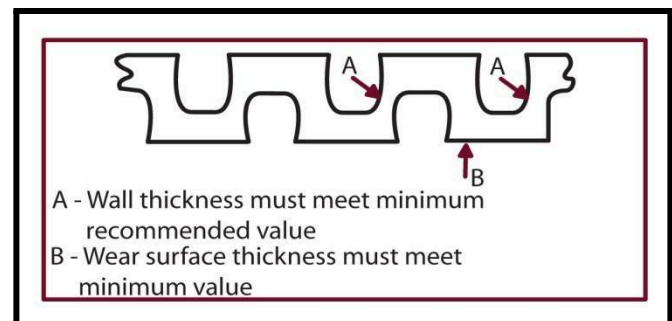
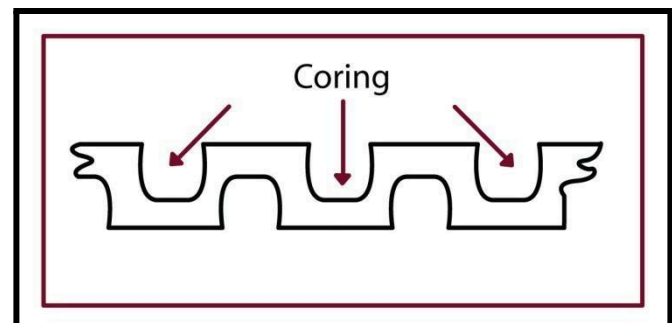
## Unit Sole Cross Section

- If the pattern is cored out, the wall thickness should not be less than the wearing surface thickness.

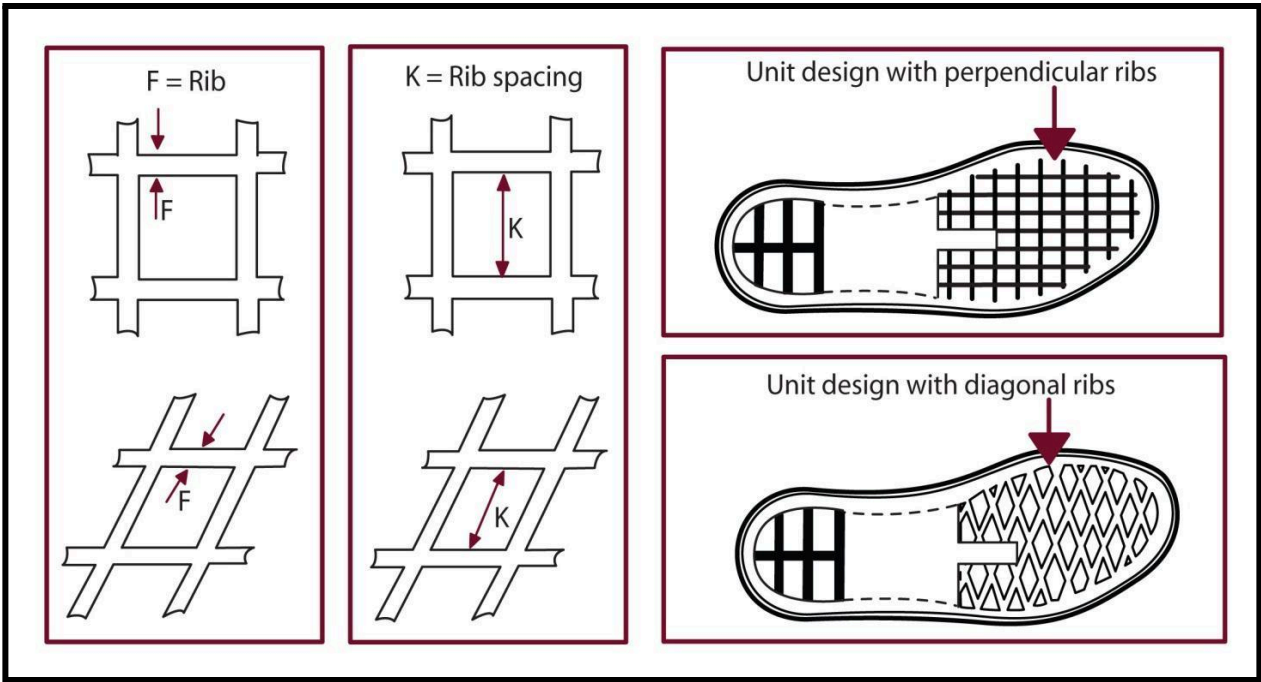
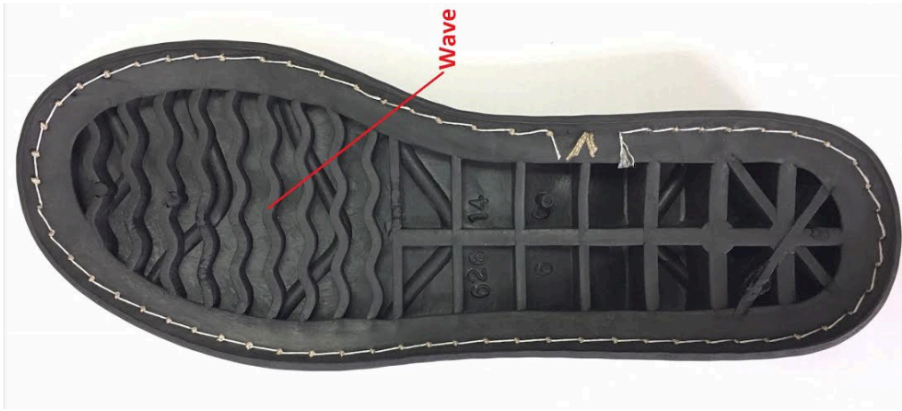
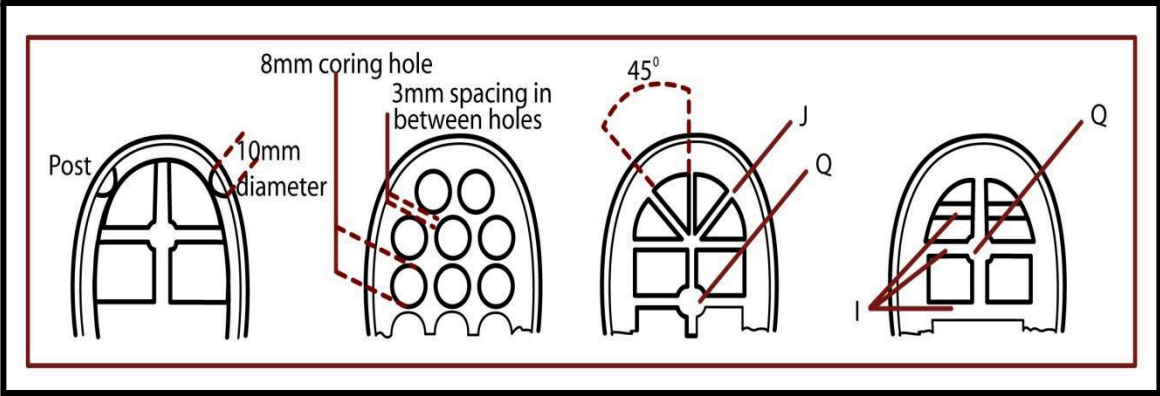


## Cored Unit Cross Section

- Where a dual density sole is used, coring of the pattern is acceptable if the coring is filled with an infill material.



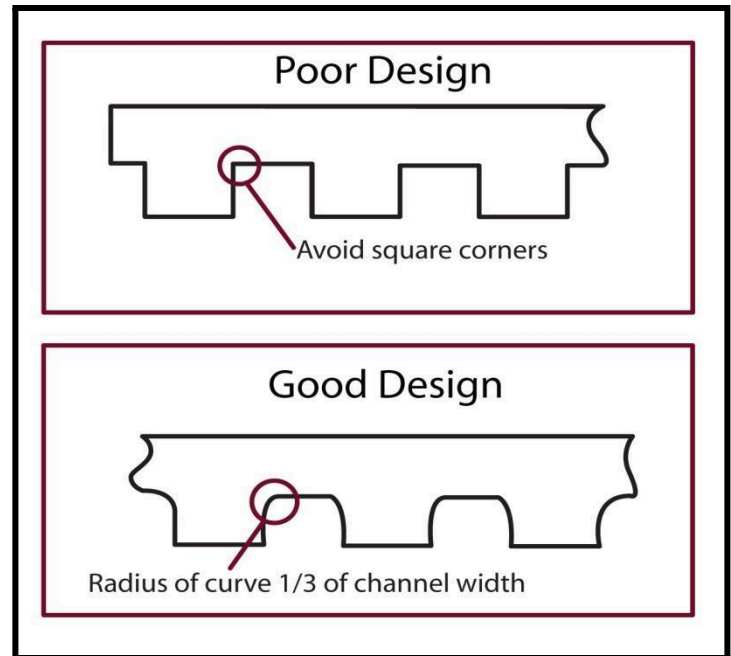
Rib Spacing and Unit Design



### Poor & Good Sole Designs

The more leading edges in the sole pattern, the better the frictional properties.

- For soles where the pattern runs transversely across the sole, the compound type must be chosen carefully since these types of patterns are more prone to cracking.



### Internal Flex Grooves

- Horizontal grooves in the top of the unit, at the forefoot of the shoe designed to promote flexion
- Recommended indentation around 1.5mm



### Soling Materials – Minimum Thickness

Soling Material	Recommended Thickness (mm)	
	Utility & Hikers	Casual & Dress
Resin Rubber	4.3	2.7
Vulcanized Rubber	5.0	4.0
Microcellular Rubber -low density*	8.0	6.0
Microcellular EVA – low density*	8.0	6.0
Microcellular EVA – high density	4.3	2.7
TPR Unit – hard grade	6.0	5.0
TPR Unit – soft grade	5.0	3.0
Polyurethane – single density	5.0	3.0
Polyurethane – dual density – outsole - midsole	2.0 4.0	2.0 3.0
Crepe Rubber	6.0	5.0
Leather - cemented	3.5	3.0
Leather – welted & machine stitched	4.0	3.5

*\* Not recommended for children's footwear*

### Soling Materials – Stitched Sole Thicknesses

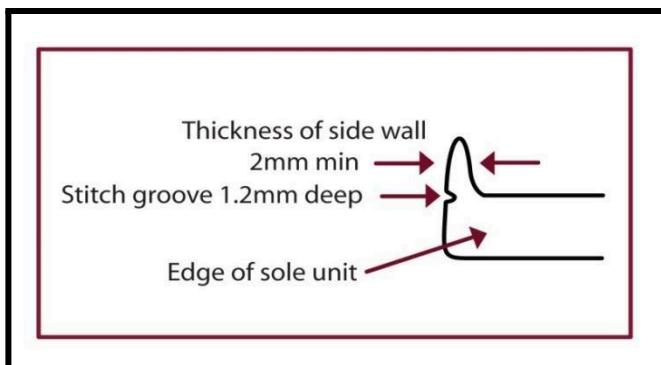
Stitching through the bottom of the sole:

- The thickness of the soling material under the stitch should be at least 3 mm.
- The stitching groove in the bottom of the sole should be 1 mm deep.

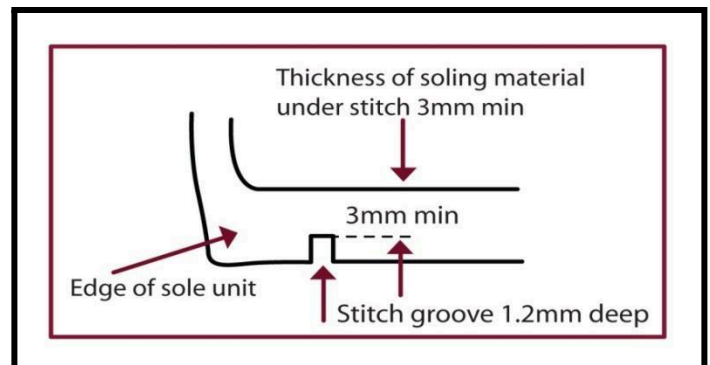
Stitching through the sidewall of the sole:

- The thickness of the sidewall should be at least 2 mm.
- It is recommended that the sidewall have a shallow stitching groove.

Bottom Stitch



Sidewall Stitch

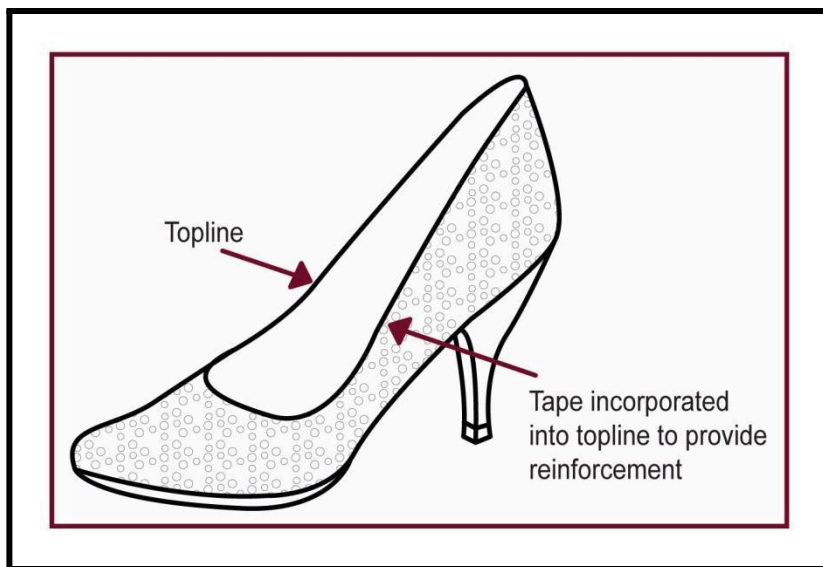


## Toplines

It is important to add Reinforcement Tape along the topline to cover any raw edges and prevent fraying.

Upper Material	Minimum Tape Width (mm)
Synthetics 0.8 mm or thicker	1.6 mm
Synthetics thinner than 0.8 mm	2.4 mm
Synthetics, stretch	2.4 mm
Leathers thicker than 1.2 mm	1.6 mm
Leathers 1.2 mm or thinner	2.4 mm
Leathers, stretchy	2.4 mm
Leather, patent	2.4 mm
Textile	2.4 mm

### Topline Reinforcement



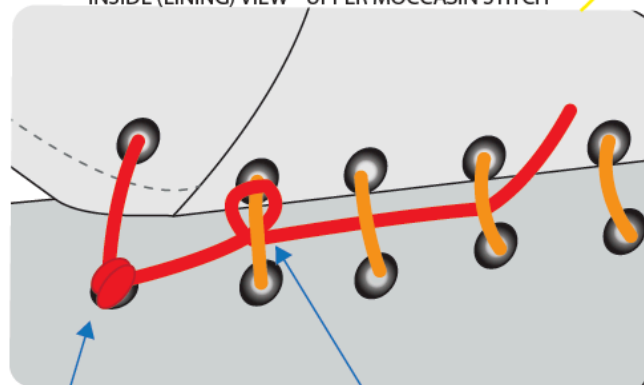
**Moccasin overcast “whip stitching” technique - Machine Stitched**

1. Nylon reinforcement tape must be used to reinforce the perfs located at both the start and stop at the moc seam.
2. The moc stitch must be properly tied off - Double knotted, and the loose end must be wrapped around the first row of stitch, then placed under the next three rows of sewing stitch; as shown in the drawing below.
3. All knots used to tie moc stitching must be flattened to prevent it from being felt during Wear.
4. Outer edge of the perfs must be positioned 2mm from the edge of both the vamp and plug, to prevent them from tearing out during wear. Center of the perfs should be positioned 3mm from the edge of both the vamp and plug.
5. If the thread being used breaks, fray or tension is too tight anywhere along the moc seam or is not long enough to cover the entire seam, The moc stitch must be completely removed and replaced with an entirely new/correct length of thread.

OUTSIDE VIEW - UPPER MOCCASIN STITCH



INSIDE (LINING) VIEW - UPPER MOCCASIN STITCH



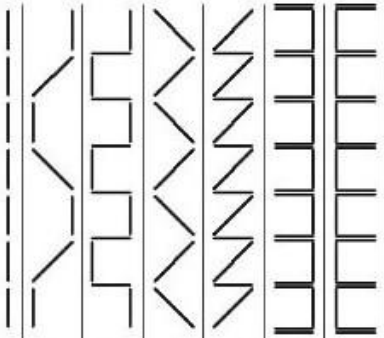
Tied Knot -  
Double knotted

Loose end must be wrapped  
around the first row of stitch,  
then placed under the next three  
rows of sewing stitch

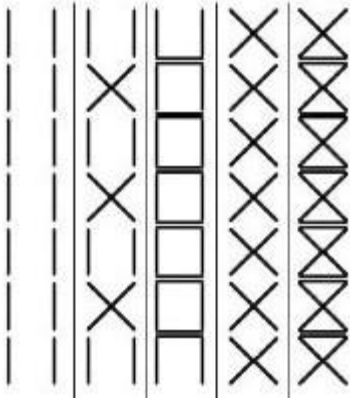


**Approved Moccasin stitches-**

**1. Single needle**



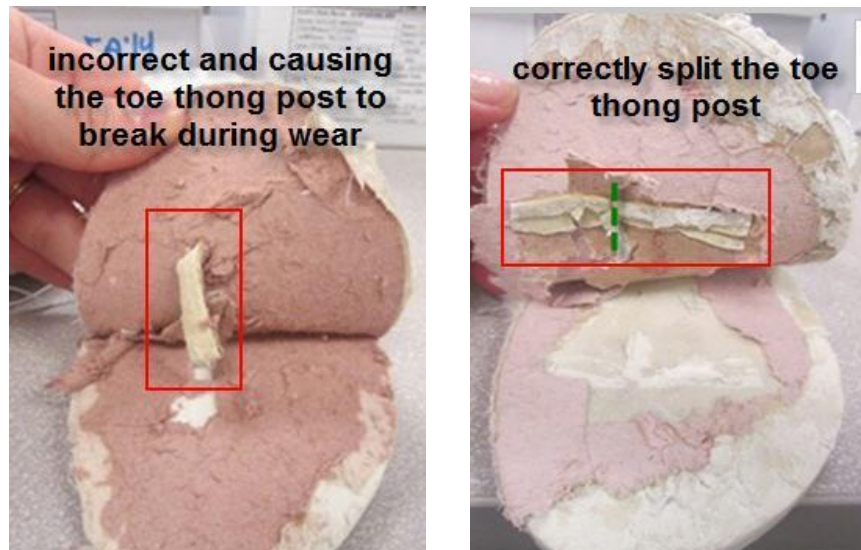
**2. Double needle**



***\*If the factory does not have moccasin machine stitch capabilities, you must notify the tech design team on how to proceed.***

## Toe Post Construction Standards

The base of the toe thong must be split a minimum of 2-3 times under the footbed to ensure it does not pull through during wear.



Toe post must stand vertically – **not** angled/pulled back, as this holds the foot back.





Minimum Toe Post Length

Women's	
5-6 or S	25.9 mm
7-8 or M	27.1 mm
9-10 or L	28.3 mm
11-12 or XL	28.9 mm

Men's	
6-7 or S	28.6 mm
8-9 or M	29.7 mm
10-11 or L	30.9mm
12-13 or XL	32.1 mm

Boys Accessories	
12-13 or XS	25.4 mm
1-2 or S	25.4 mm
3-4 or M	25.4 mm
5-6 or L	25.4 mm
7-8 or XL	28.6 mm

Youth	
10-11 or S	21.8 mm
12-13 or M	22.9 mm
1-2 or L	24.1 mm
3-4 or XL	25.3 mm

Toddler	
1-2 yrs or 4/5	17.7 mm
3-4 yrs or 6/7	18.8 mm
4-5 yrs or 8/9	20 mm

# Trims

- Thread
- Elastic & Goring
- Other Trims

### Thread

Preferred Suppliers include American & Efird, Inc. (A&E) and Coats – for a complete list, please see [“Preferred Trim Supplier Contact List – Apparel”](#) on K-link.

#### Thread Size Reference

	Children/Slippers/Casual		Sports/Hiking Shoes		Hiking/Work Shoes	
Operation	Thread Size	Fiber Type	Thread Size	Fiber Type	Thread Size	Fiber Type
<b>Upper Stitching</b>						
Needle Thread	M40	Nylon 6.6	M30	Nylon 6.6	M20	Nylon 6.6
Bobbin Thread	M41	Nylon 6.6	M31	Nylon 6.6	M21	Nylon 6.6
<b>Water Repellent</b>						
Needle Thread	M40	Nylon 6.6	M30	Nylon 6.6	M20	Nylon 6.6
Bobbin Thread	M40	Nylon 6.6	M30	Nylon 6.6	M20	Nylon 6.6
<b>Embroidery</b>						
Needle Thread	M120	Trilobal Polyester	M120	Trilobal Polyester	M120	Trilobal Polyester
Bobbin Thread	M160	Spun Polyester	M160	Spun Polyester	M160	Spun Polyester
<b>Mocassin</b>						
Hand Stitching	1.0mm	Braided Polyester, Waxed for pile/brushed fabrics	1.2mm	Braided Polyester, Waxed for pile/brushed fabrics	1.2mm	Braided Polyester, Waxed for pile/brushed fabrics
<b>Welt Outsole</b>						
Needle/Awl	M9	Continuous Fiber Polyester	M7	Continuous Fiber Polyester	M7	Continuous Fiber Polyester
Bobbin Thread	1.0mm	Braided Polyester	1.0mm	Braided Polyester	1.0mm	Braided Polyester
Bobbin Thread	1.0mm	Braided Polyester	1.2mm	Braided Polyester	1.2mm	Braided Polyester
<b>Welt/Inseaming</b>						
Needle Thread	M5	Continuous Fiber Polyester	M5	Continuous Fiber Polyester	M5	Continuous Fiber Polyester
Bobbin Thread	M4	Monocord Polyester	M4	Monocord Polyester	M4	Monocord Polyester
<b>Cupsole/Sidewall</b>						
Needle Thread	M10	Nylon 6.6		Nylon 6.6		Nylon 6.6
Bobbin Thread		Nylon 6.6		Nylon 6.6		Nylon 6.6

### Thread Definitions

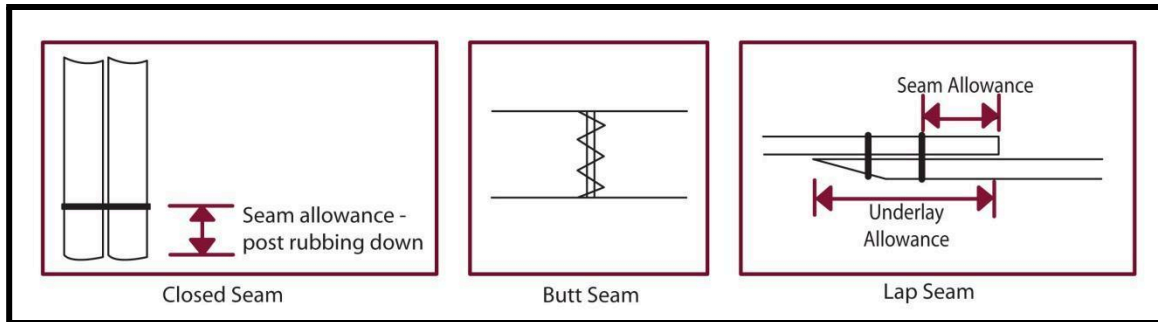
- Nylon 6.6 (Polyamide) – High tenacity nylon continuous filament yarn, bonded by resin and finished by special heat-setting
- Trilobal Polyester – Multiple filament, twisted, high-sheen continuous fiber thread. Triangular shaped fibers reflect more light, resulting in high sheen
- Spun (or Staple) Polyester – Individual fibers are rarely longer than a few centimeters and thread strength depends on the degree of twist when the fibers are spun into yarns.
- Braided Polyester – 3 or more yarns braided together. Less likely to untwist.
- Continuous Fiber Polyester – The individual fibers are many miles long. Bundles of fibers are spun together to form yarns, and the yarns combine to form thread.
- Monocord Polyester – bonded monocord polyester, displaying a flat, ribbon-like cross section for low-profile stitches. Excellent seam strength, very good colorfastness, and good overall sewing performance.

### Seam Allowance Guidelines

Minimum Seam Allowance				
	Closed Seam	Lap Seam		
		Underlay	Seam Allowance	Distance Between Rows
<b>Patent Leather</b>	2mm	9mm	1.5mm	1.5mm
<b>Other Leathers, Including Suede</b>	2-3mm	9mm	1.5-2.0mm	1.5mm
<b>Coated Textiles &amp; Poromerics</b>	3mm	9mm	3mm	2mm
<b>Textiles</b>	4mm	9mm	3mm	2mm
<b>Meshes</b>	3mm*	11mm*	3mm*	3mm*
<b>Moccasin Plug Seam</b>	4mm			

*\*Distance must exceed the width of the openings in the mesh pattern.*

### Seam Illustrations



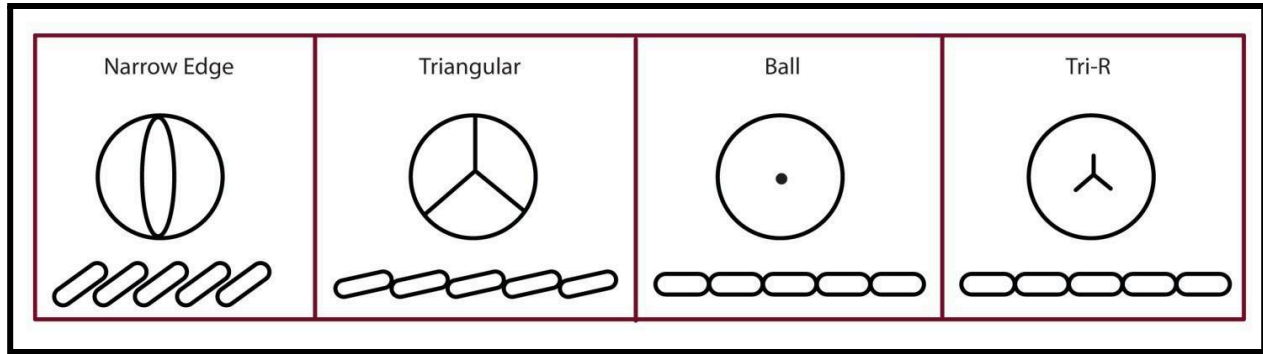
### Functional Seams: Needle Types & Maximum Stitch Density

Material	Preferred Needle Type **	Recommend Stitch Density (stitches per inch)
Patent leather	Narrow or extra narrow wedge	10 - 12 SPI *
All other leathers	Narrow wedge or any needle with cutting point precise type	10 - 12 SPI *
Coated textiles & Poromerics (Breathable)	Round or Tri-R point (Tri-R is a round point needle w/triangular tip) *	8 - 10 SPI *
Mesh Knits	Smallest round point needle (do not exceed #14 needle size)	8 - 10 SPI *
Textiles (Uncoated)	Round (Ball) or Tri-R point (Tri-R is a round point needle w/triangular tip) *	8 - 10 SPI *
<p>* An extra narrow wedge may be used for a neater seam appearance.  ** Needle size should match the thread size.</p>		

### Average SPI (based on application)

- 3.5-4 SPI for Opanka stitching
- 4 SPI for hand whipped, hand laced plug
- 5 SPI for handsewn plug (genuine or prepunched)
- 5 SPI for machine sewn laid on welt
- 5 SPI for Littleway sole attachment
- 8-13 SPI for machine sewn upper (varies by style, casual vs. dress)

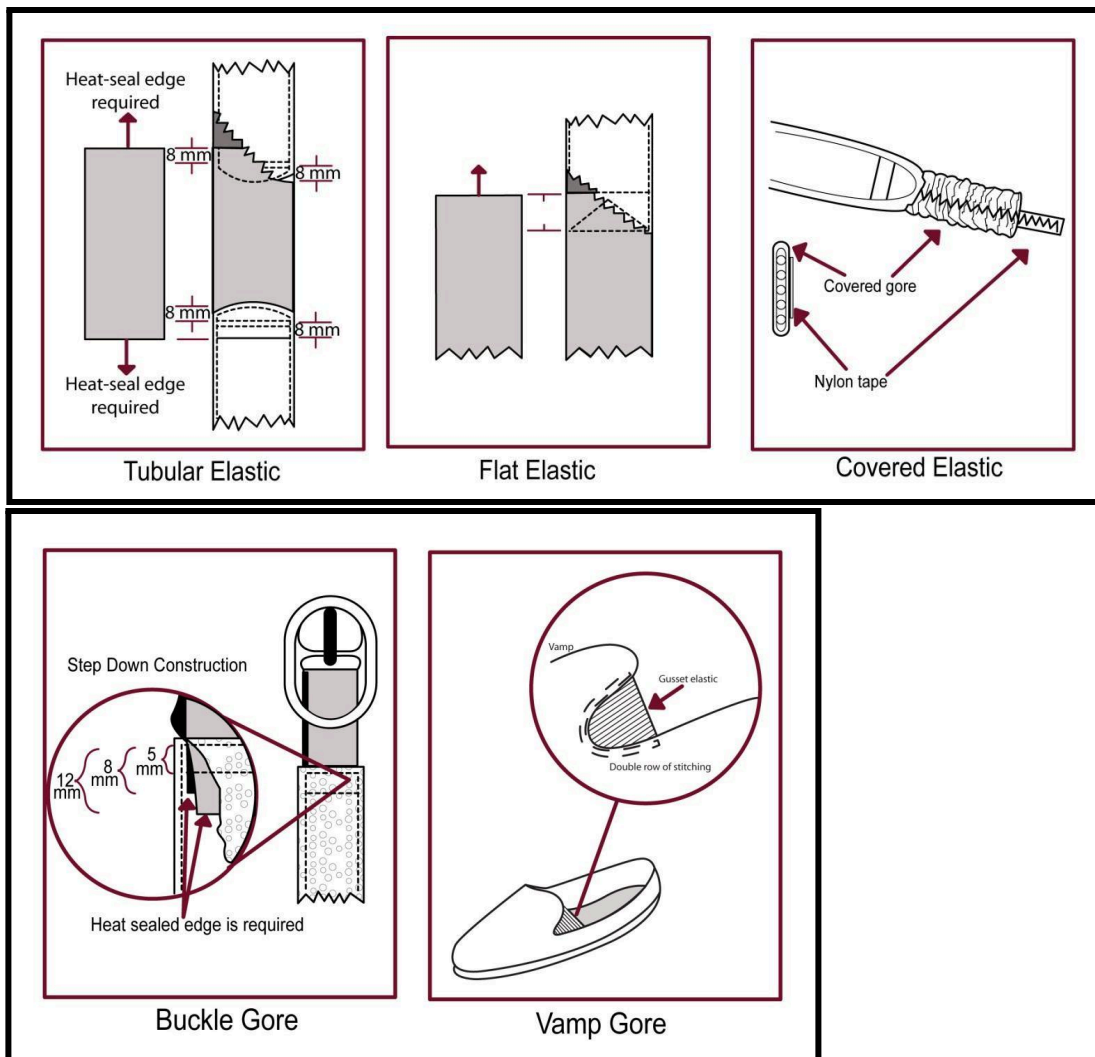
### Needle Type Illustrations



**Elastic & Goring**

To maintain high quality goring, please use a high recovery, knit elastic.

**Goring Applications**



Gore covers must be completely split to function fully.

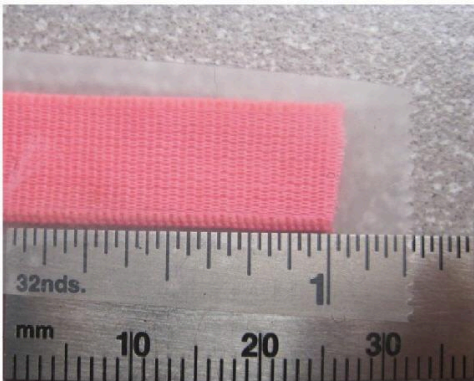




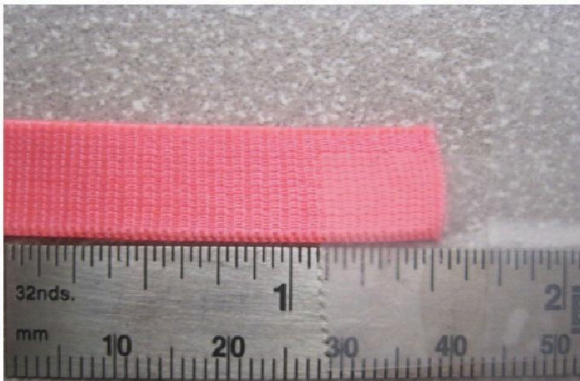
Elastic with a stretch ratio of 1:1.5 is required in order to maintain the shape of an upper pattern while providing stretch (see below for example)

Elastic with a 1:1.5 Stretch Ratio

Relaxed Elastic



Stretched Elastic

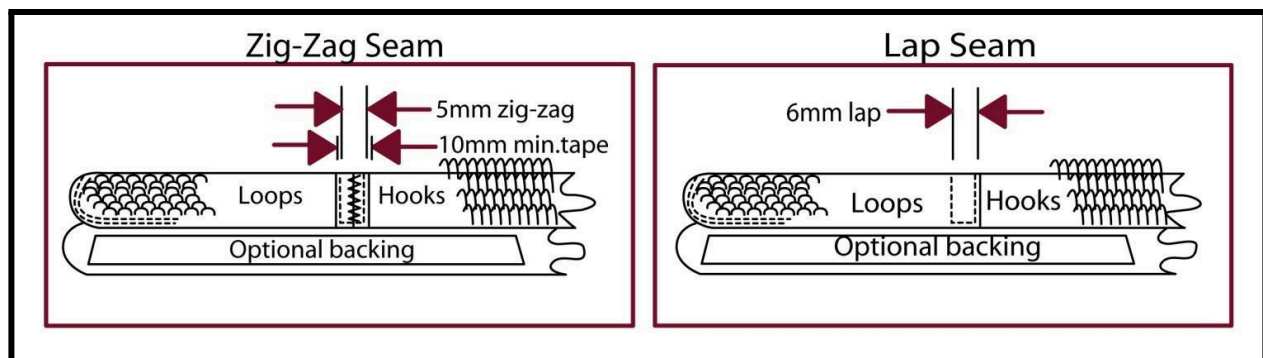


### Other Trims

- Metal/metallic components must be free from any corrosion
- Must pass care label instructions and not crack, chip, discolor, rust, or melt
- Must be securely fastened with no sharp or rough edges, reinforced, and colorfast
- Nickel cannot be used for surface plating.
- Plastic buckle assemblies should be made using ABS (acrylonitrile butadiene styrene) plastic or nylon 6.
- Single ply fabric or leather must have a reinforcement backing for eyelet attachment.

### Hook & Loop Fasteners

For children's product only, use rounded corners for hook & loop closures to prevent sharp edges.



### Strength Standards

Property	Test Method	Number of Samples	Requirement
Shear Strength	SATRA TM123	1 sample for each direction	<ul style="list-style-type: none"> <li>- Lengthwise (original): 10 lbs./in sqrd</li> <li>- Lengthwise (after 1000 cycles) &gt; 50% of the original (Mod.)</li> <li>- Widthwise (original): 5.5 lbs./in sqrd</li> <li>- Widthwise (after 1000 cycles) &gt; 50% of the original (Mod.)</li> </ul>
Peel Strength	SATRA TM123	1 Sample	<ul style="list-style-type: none"> <li>- Original: 0.4 lb/in.</li> <li>- After 1000 cycles: 0.3 lbs/in. (mod.)</li> </ul>

**Zippers**

- For a list of approved zipper suppliers, please see “[Preferred Trim Supplier Contact List – Apparel](#)” on K-link.
- All zippers need to have a zipper guard. Exceptions would have to be considered on a style by style basis and approved by both the Product Manager and Technical Design.
- Recommended 2mm zipper tape allowance between zipper teeth and upper



**Rivets**

- When using a rivet to attach an ornament to an upper, the rivet should NOT come in contact with the foot. This includes rivets used for decorative purpose.
- On molded uppers, a recess should be molded into the upper for the rivet to be set into (see example below).
- On non-molded uppers (PU, leather, textile etc.), the rivet should lay flush with the lining/ inside of strap to not cause irritation to the foot.
- Example: The sample on the left is incorrect. The rivet sits on top of the upper and comes in contact with the foot. The sample on the right is correct. The rivet is recessed into the upper and does not come in contact with the foot.

