

Reducing Needle Cutting

Introduction

Needle cutting is the breaking of yarns in the fabric as the needle enters the seam. On knit goods that are made with interlooping yarn constructions, a cut yarn will result in a "run" along the seam line. Therefore, when the needle enters the seam, the needle point should not cut the yarns but push them aside as it penetrates the fabric. Below is a checklist that will aid in reducing needle cutting.

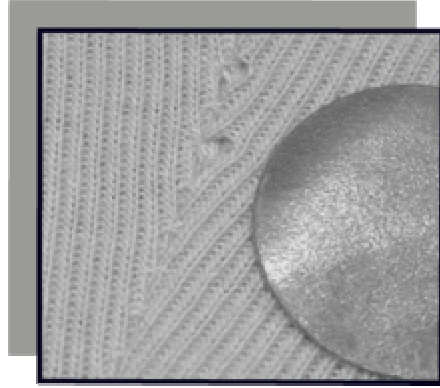


Figure 1. Example of Needle Cutting

Needles & Thread

- Use a ball pointed needle as small as possible. A ball pointed needle should not cut the yarns in the fabric as the needle penetrates the seam but shift the yarns to one side. This also requires a small diameter thread.
- A small diameter thread with a high tenacity is generally required to give the required seam strength. Typical thread types and sizes used for seaming knits would include the following. In most cases, high performance threads are not necessary when sewing knit garment with an overedge or coverstitch construction. However, there may be cases where a high tenacity, high performance thread is required. A&E's T-18 and T-24 Perma Core™ have a very high tenacity and are recommended on demanding operations that require good sewability and seam performance.

Weight of Fabric	Thread Type & Size	Metric Needle Size
Light weight knits	T-18 textured polyester or T-21 spun polyester	55, 60, 65, & 70
Medium weight knits	T-24 textured polyester or T-27 spun polyester	70, 75, & 80
Heavy weight knits	T-35 textured polyester or T-40 spun polyester	90 & 100

- Use a tapered blade needle with a ball point if it is available. A tapered blade needle allows the use of the smallest possible needle with minimum needle breakage.

- Inspect the needles at regular intervals and replace them if they show signs of having a sharp or burred point. Sometimes, the sewing machine can be out of adjustment, which allows metal to metal contact that will damage the point. Readjust the sewing machine if necessary to minimize this condition.
- Check for signs of needle heat that may be melting the fibers. If needle heat is identified as the problem (note melted fibers around the needle hole), reduce the needle heat by one of the following methods: a) use a double grooved needle if available; b) make sure the thread has a good lubricant on it; and c) use some type of needle cooler.

Other Machine Parts

- Check for any sharp edges on the needle plate, feed dog, and presser foot. Slightly bevel or radius the top of the needle plate if necessary. Remove all sharp edges that might snag the fabric as it is being sewn. Care should be taken not to remove too much to allow excessive flagging or the material.
- Use minimum presser foot pressure so the fibers in the fabric are allowed to shift as the needle penetrates the seam. Sometimes a presser foot with a special plunger or yielding section is used to reduce the pressure on the seam at the needle.

Other Causes of Fabric Damage

Not all fabric damage attributed to needle cutting is caused by the needle during sewing. Many times the "cuts" are created before the sewing process. A way of determining if the problem is being caused by the needle or something else is determining if holes are occurring at the seam where the needle enters the seam or at other locations away from the seam. If the "cuts" are found away from the stitch line, the holes could be caused by: a) staple holes caused by attaching the marker on the lay before cutting; and b) other rough surfaces that the fabric might come in contact with during handling.

Fabric Storage

Fabric storage is very important when sewing 100% cotton piece goods. Some fabrics can dry out and become brittle if they are not stored properly. If you suspect that the fabric is particularly susceptible to needle cutting, try the following:

- Try conditioning the fabric in a humidity chamber prior to the sewing process.
- If this helps, store your piece goods in a controlled environment.
- Try not to pre-heat the garment pieces prior to sewing that might dry out the fabric. Cotton yarns are actually stronger when they are wet.
- Ask your fabric supplier or an independent test company to test the strength of the fabric and evaluate if the fabric has been finished properly. Even the best fabric suppliers sometime make inferior piece goods.

Summary

As you can see from the preceding comments, many factors can contribute to needle cutting or fabric damage. In many cases, not a single solution exists that will resolve a needle cutting problem. Each case of needle cutting must be examined to determine the appropriate steps that must be taken to minimize or eliminate the problem.