SOLVING UNSOLVEABLE SEWING PROBLEMS

THREAD BREAKAGE

The breaking of thread during sewing is broadly due to:

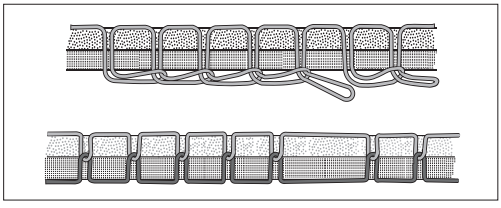
1. Tensile stress
2. Fraying
3. Needle heating
4. Combination of the above

The specific causes of thread breakage can be tackled as follows:

CAUSE	RECOMMENDATION
Thread tension too light, too loose.	Readjust tension.
Hook/looper not adjusted correctly.	Readjust hook/looper setting.
Hook/looper point damaged.	Polish hook/looper point or replace with new hook/looper.
Burrs on thread guiding elements.	Polish thread guiding elements.
Insufficient hook lubrication.	Ensure sufficient oil supply by paper test.
Needle bar height not correct.	Reset to standard and check loop formation.
Wrong needle system.	Change to correct needle system.
Check spring not properly adjusted.	Readjust check spring.
Needle clogged by melted residues.	Replace needle, change to anti-clog finish, lubricate thread.

CAUSE	RECOMMENDATION
Poor thread quality.	Change to thread with correct finish.
Throat plate needle hole burred.	Polish needle hole or replace throat plate.
Wrong needle size.	Change needle size to match thread size.
Needle thread not unwinding.	Adjust overhead thread properly from coneguides, check cone.
Needle thread snarling before tension discs.	Increase wraps on pre-tension thread guides and/ or increase tension.
Excessive needle heat.	Apply needle coolers like thread lubrication /air or use corespun thread.

SKIPPED STITCHES



Skipped stitches ocur when the loop of the needle thread is not picked up by the point of the hook or the looper. There are many ways to tackle it.

CAUSE	RECOMMENDATION
Check spring not properly adjusted.	Readjust check spring.
Thread tension too light, too loose.	Readjust tension.
Wrong hook/looper timing.	Reset to standard setting, check loop formation.
Hook/looper point damaged.	Polish hook/looper point or replace with new hook/looper.
Wrong needle bar height.	Reset to standard setting.
Wrong needle system.	Change to correct needle system.
Needle clogged by melted residues.	Replace needle, change to anti-clog finish, and lubricate thread.
Poor thread quality.	Change to quality thread with correct finish.
Sewing thread elongation too high.	Change to thread with lower elongation.
Flagging by highly elastic fabric.	Adjust throat plate needle to fit needle size, use ball point needle.
Wrong needle size.	Change needle size to match thread size.
Throat needle plate hole too big.	Change to throate plate with smaller needle hole.
Poor loop formation due to wrong machine timing.	Reset to standard machine timing.
Flagging of fabric due to poor presser foot contact.	Readjust foot pressure, use special presser foot.
Needle deflection or needle bent.	Reset needle guard, change needle size and replace needle.
Poor loop formation due to thread quality.	Change to thread with lower elongation and better finish.

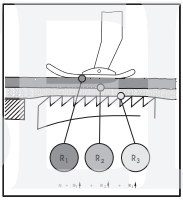
SEAM PUCKERING

Seam puckering is a result of unintentional puckering formed during or after sewing. It's of three types: transportation puckering, displacement puckering and relaxation puckering. To help you grasp the subtle differences, we've dealt with each type of puckering in detail.

TRANSPORTATION PUCKERING

The reason for this is different friction conditions during transport of the fabric. When using a machine with the hopper, transport puckering occurs under the following conditions:

- High friction between feed dog and fabric (R1)
- Low friction between upper and lower fabric (R2)
- High friction between upper fabric and presser foot (R3) R1+R2+R3 = Transportion puckering



Transportation Puckering

A combination of these three cause transportation puckering. This puckering can be prevented by different measures. For example one can use Teflon coated presser foot to decrease friction between upper and presser foot. Another way out is to use sewing machines with top and drop feed.

DISPLACEMENT PUCKERING

The insertion of the sewing thread in the fabric displaces the yarns near the stitch hole resulting in tension that leads to puckering. The higher the fabric count and the thicker the sewing thread, the higher the chance of puckering.


Displacement Puckering

Proposals that have been made to solve this problem are controversial (use of needles with cutting points) or can only be carried out with additional expenditure (positioning of the seam at an angle of 15 degrees to the warp direction).

RELAXATION PUCKERING

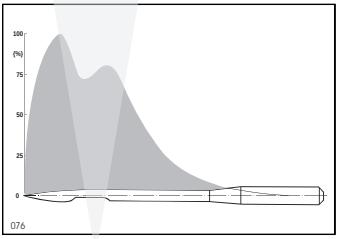
This is limited to seams stitched with every elastic sewing thread and high thread tension. The thread which has been inserted with high tension will pucker after sewing (this may take several hours). Variations in humidity and temperature can also play a role.

Relaxation Puckering

A detailed treatment of the causes of seam puckering and solutions are given below.

CAUSE	RECOMMENDATION
► Wrong tension of needle/bobbin thread.	Re-adjust tension of needle/ bobbin thread.
► Sewing thread not shrink-free.	Change to better quality thread.
► Sewing thread with very high elongation.	Change to thread with lower elongation.
► Thread finish not sufficient	Use correctly finished thread.
► Needle size too big.	Choose the right needle size.
► Throat plate needle hole does not fit needle size.	Change to throat plate with smaller needle hole.
► Presser foot pressure too high.	Reduce presser foot pressure.
► Machine does not use compound feed.	Use machine with compound feed.

NEEDLE HEATING



Needle heating depends on:

- Fabric (kind of fibre, weave, knitted goods, finish, number of plies, fabric combinations)
- Sewing machine (speed, stitch type)
- Thread (kind of fibre, finish, construction)
- Needle (size, surface, point, shape)
- Environment conditions (humidity)

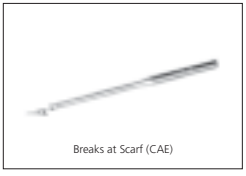
Under certain conditions the maximum temperature of the needle can reach 450 degrees C. This tempering effect (reduction in hardness, loss of elasticity) can quickly lead to a worthless needle.

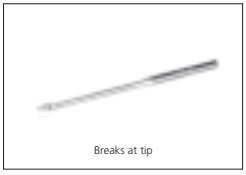
The highest needle temperature is usually measured at the eye (exceptions are needles with a conical blade, supplementary shoulder or when sewing a large amount of plies). There is an analogy between the distribution of heat along the needle and the penetration force. The highest temperatures are measured on that part of the needle with the highest penetration force.

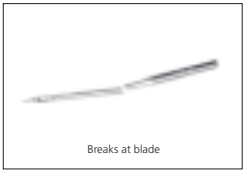
CAUSE	RECOMMENDATION
Damage of sewing goods.	Use smaller needle size, reduce needle temperature.
Melted residues on needle surface.	Change to needle with anti-clog surface.
Needle eye clogged.	Use needle with anti-clog surface.
Poor quality thread finish.	Change to quality thread with correct finish.
Poor finish of fabric.	Contact fabric supplier for better finish.
Thread breakage.	Lower machine speed, use thread lubrication or needle cooler.

NEEDLE BREAKAGE

Different needles break at different points due to different stresses. Knowledge of the same will help you save needless energy, time and money. Listed below is a ready reckoner for understanding needle breakage:


Breaks at Scarf (CAE)


Breaks at tip


Breaks at blade

I. Routine breakage: This arises because of buckling stress. A needle invariably breaks at the CAE (Clearance Above Eye) only at the end of its useful life. The sole reason for this is wear and tear.

2. Breakage due to faulty machine setting: If a needle breaks too often at the CAE, it may not be because of the needle quality. In such cases it pays to examine the tip. There's a good chance that the needle would have hit a machine part due to faulty machine setting.

3. Breakage at the blade: If a needle breaks at the blade, it means that the garment has been pulled manually during sewing or that the thread tension is high or that the sewing is over cross seams. All of these make the needle move sideways, thereby leading to bending stress which in turn leads to breakage.

CAUSE	RECOMMENDATION
Bent or damaged needles.	Replace bent or damaged needles.
Wrong needle system.	Use correct needle system for the machine class.
Faulty positioning of hook.	Check exact positioning of the hook, feed dog, loop tacking position.
Faulty cut out of pressure foot and throat plate.	Correct cut out of pressure foot and throat plate.
Mismatch between needle size and thread count.	Check the relationship of the needle size to thread count.
High needle temperature.	Avoid extreme needle heating.
High thread tension.	Avoid too high thread tension.
Sewing across pins.	Avoid sewing across pins.
Lapse in checking of tip smoothness.	Checking of tip smoothness at least every two days.
Needle isn't centered in the needle plate hole.	Adjust the needle bar, slightly indent the needle plate hole.
Bent bobbin.	Change new bobbin.
Too short needle fix screw.	Change the lengthy needle fix screw.