Learning to Love Specialty Threads

Have you ever said,

"My machine won't do that."

"I could never do that!"

"That fancy thread never works."

"Specialty threads break, jam, and shred."

If you have experienced frustrations when working with specialty and decorative threads, this is for you. If you have wondered why a specific thread works wonderfully for a teacher or a friend but not for you, hopefully this guide will help you solve the problem.

Problems with specialty threads can usually be traced to five causes. Let's compare a top-of-the-line machine to a high performance automobile and work through the problems.

1. **Quality**

   Would you put low-grade gasoline in a Ferrari? If you are using a cheap, low quality thread, you cannot expect your expensive machine to compensate. That is not possible. It cannot make a poor quality thread better. Start with quality thread that is worthy of your machine. It does not make sense to spend $5,000 on a machine and then try to save $1.00 on a budget thread.

2. **Needles**

   Using the wrong type of needle is like putting diesel fuel in your Ferrari. It won't work. The needle is the least expensive part of most projects. Select the right type and start with a new needle every time you start a new project.

3. **Tension**

   Running your machine at the wrong tension is like racing a sports car on tires that are half flat. An easy adjustment can make it run as it should. Even if your machine has an auto tensioner, learn how to override it. Most machines are factory set for a thin 40 or 50 wt. sewing thread. If you feed a heavier thread through the preset tension guides, the tight squeeze flattens out the thread which will then shred as it hits the eye of the needle.

4. **Delivery system**

   Some threads are meant to unwind over the top of the spool. These are usually cone-shaped spools with a cross-wind. If the spool or cone of thread is bell-shaped and has a large opening at the base which does not fit onto your machine's spool holder, use a thread stand. Thread stands are inexpensive ($5.00 for a lightweight plastic and $10.00 for metal). If the spool of thread is the traditional sewing spool type, with symmetrical flanges on each end, the thread has most likely been wound in a straight-wind pattern. This type of spool works best when positioned in a manner that allows the spool to rotate as the thread unwinds. This allows the thread to unwind without pulling over the end of the spool, and thereby avoid twisting. Most machines have a

vertical spool pin adapter which accommodates this setup. Pulling the thread over one end of the spool is not the intended delivery system for this type of spool.

5. **Condition of machine**

Cars need frequent oil changes and tuneups. So does your machine. It is estimated that at any time, approximately 10% of machines are in need of adjustment or repair. A gradual decrease in performance is not readily noticed. Keep your machine clean and in good condition.

Now that the top five causes of frustration have been identified, let's look more closely at each one.

Thread

The higher the quality of the thread, the less special handling will be required. Poor quality thread breaks easily and can make any sewing project more labor than love. Look for a guarantee. If you are not satisfied with the thread, can you return it for a refund? The best brands are not afraid to guarantee their products. Look at more than one brand and try new threads. Make sure the thread you select is intended for your application. New threads are exciting and provide new capabilities. All projects are not the same. Ask some basic questions for each project. What fabric am I using? What stabilizer? What is the content and weight of the thread? What about needle type and size? Do I need to change the tension? What would be the best thread to use? When it all comes together, the result will be a completed project that is looked upon with pride.
Each type of thread has specific characteristics and will behave differently on sewing machines. Threads are either made of a natural fiber (cotton, wool, silk, linen) or synthetic fibers (rayon, polyester, nylon).

Thread construction methods

Spun thread	Cotton or polyester staple fibers are spun into single yarns and then twisted together.
Core thread	Spun cotton or polyester staple fibers wrapped around a continuous filament of polyester fibers.
Texturized thread	Continuous filament polyester or nylon that has been mechanically texturized and heat set to make the thread fuzzy and stretchy.
Monofilament	Single nylon or polyester filament.

Thread types

Rayon

- Produced by pressing cellulose acetate through small holes and solidifying it in the form of filaments. The most common size is 120d x 2 (40 wt.).
- Characteristics of rayon:
  - high sheen
  - soft, and works well in detail
  - relatively heat resistant
  - not colorfast
  - not as strong as polyester
  - less durable than polyester

Polyester

- Synthetically produced by pressing polymer resins through small holes and solidifying in the form of filaments.
- Characteristics of polyester:
  - durable. designed for heavy duty use
  - stronger, more tensile strength than rayon
  - colorfast
  - retains shape
  - recovers stretch
  - spun poly is strong, with a matte appearance
  - trilobal poly has a sheen equal to rayon but is not as strong as spun poly

Nylon

- A synthetic thread most commonly in the form as a monofilament clear thread or as a texturized fuzzy thread.
- Characteristics of nylon:
  - strong
  - low melting temperature. not heat resistant.
  - not colorfast. will yellow over time.
  - becomes brittle through laundering

Cotton

- The only 100% natural fiber thread made for high speed machines. Cotton has various finishes, each providing specific results.
- Mercerized The thread is treated is a solution, causing the fibers to swell. This allows the dye to better penetrate the fibers and increases the luster of the thread. It also increases the strength of the thread.
- Gassed The thread is passed through a flame at high speed to reduce the fuzz.
- Glazed The thread is treated with wax or other chemicals, them polished to create a higher luster. Although the result is a glossy, hard finish which protects the thread, the glaze does rub off and can gum up the needle and machine.
- Characteristics of cotton thread:
  - soft
  - strong and durable
  - easily adjusts to changes in the fabric (such as shrinkage) since it is a natural fiber
  - available in various thread weights
  - easy care

Metallics

- The quality of metallic thread ranges from very high to very low. A good metallic thread does not require a lubricant. (See diagram of how Metallic Thread is made **here**[2].)
- Quality metallic thread has the following components:
  - Nylon core. A nylon core offers the most strength. Polyester and rayon cores are inferior.
  - Rice paper construction. This adds strength and cohesiveness and makes the thread more soft and supple, reducing the wiry feel. It also reduces tangling.
  - Outer coating. Lower end metallics have no outer coating. This means the metal foil rubs against the needle, creating friction, resulting in discoloring and shredding. A good metallic has an outer coating which reduces friction and acts as a protective layer.
- Laminate or Flat thread. Produced by bonding layers of polyester together and slicing to a desired width. Usually available in either 2 ply or 5 ply.

- colorfast
- brilliant, reflective, colors
- heat resistant. can be ironed
- 5 ply does not require special handling for good results. 2 ply usually requires special handling for good results.
- able to produce in a hologram effect

Thread size measurement

The weight or size of thread is an important consideration for any sewing or quilting project. A thinner thread will blend whereas a heavier thread will show. Three primary methods of thread measurement are weight, denier, and tex.

- **Weight** This is the most commonly understood method and is accurate for natural fibers such as cotton and silk although synthetic fibers such as polyester and rayon have arbitrarily adopted this method. The weight of a thread is actually a length measurement. A thread is labeled 40 weight because 40 kilometers weighs 1 kilogram. If it takes only 30 kilometers of a heavier thread to weigh 1 kg., it would be a 30-weight thread. Smaller numbers indicate heavier threads.
- **Denier.** This method is intended for synthetic fibers. Denier is the weight in grams of 9,000 meters of thread. If 9,000 meters weighs 120 grams, it is a 120-denier thread. Most embroidery threads are 120d/2, which means two strands of 120-denier thread twisted together making 240 denier total. Larger numbers indicate heavier thread.
- **Tex.** Weight in grams of 1,000 meters of thread. If 1,000 meters weighs 25 grams, it is a Tex 25. Larger numbers indicate heavier thread.
- **Conversion chart** 40 weight = 225 denier = tex 25

Importance of understanding thread types and weight

The type and weight of the thread relates to several aspects of your project, including needle type and size, tension settings, and final result. Quilters often ask the following questions:

Q. Should I use a 30 wt. thread or a 40 wt. thread for quilting?

A. It depends whether you want the thread to blend or stand out. Bob's rule #1:
"30 wt. to show, 40 wt. to blend."
If you use a decorative thread, most likely you want to add dimension to the project and highlight the thread. Therefore a heavier thread is better. A 40 wt. variegated thread will not be nearly as visible as a 30 wt. variegated thread.

Q. I heard that I should use only cotton thread in my quilts. Why?

A. About 70% of quilters are traditional quilters, using only cotton fabric, cotton batting, and cotton thread. Recent trends show a growing percentage of quilters seek an effect that plain cotton thread cannot provide. Many of the winning quilts at shows are done in metallics, high-sheen variegated polyester, and other decorative threads. Some say that polyester thread is too strong and will tear the fabric. If the fabric ever tears as a result of heavy use, most likely it will tear at the seams. The seams are the true stress points of a quilt, not the machine quilted areas. One solution is to piece with cotton thread, thereby matching the nature of the fabric fibers with the thread fibers. This equalizes the stress points of the quilt. Then, use other threads such as metallics, polyester, and 30 wt. cotton to decorate and enhance the quilt by creative quilting. If a polyester thread is used in decorative quilting, it will not tear the fabric under normal or even heavy use because there is minimal stress away from the seams. Bob's rule #2: "Piece with cotton, quilt with any."

Q. Does the bobbin thread need to match the top thread in type and size?

A. No. The bobbin thread can be a lighter weight than the top thread and still provide sufficient strength without adding bulk. Using a cotton top thread with a poly bobbin thread is fine. Using a 50 wt. cotton bobbin thread with a 30 wt. cotton top thread will also work. If you want a reversible look to show off decorative thread on both sides, of course it is fine to use the same thread on top and in the bobbin.

Needles

One of the most significant parts of today's home sewing/embroidery machines is often the least appreciated and often ignored – the needle. We spend thousands of dollars on the most advanced machines, acquire the best digitized designs, use the most beautiful threads and fabrics to produce our projects, but all too often this is all for naught because we either use an old, worn, damaged, or wrong needle. Needles can be damaged by normal use. You don't have to hit a pin while sewing to damage it. They can become dull or bent through normal sewing. Even some new needles have defects. Any of these conditions will contribute to frustrating thread breaks and a frayed look on your finished projects. The best advice is this: When you start a new project, start with a new needle. It's the least expensive part of the entire project. Overall, a clean, well functioning needle will result in sharp, well-shaped stitches. Needles are inexpensive and easy to change. Keeping a good needle in your sewing machine is one of the easiest, least expensive ways to improve your embroidery and quilting projects.
The eye of the needle is punched out during the manufacturing process and it is difficult to make the eye smooth. Only thirty percent of manufactured needles pass inspection and the other seventy percent are melted down to start over. It is estimated that ten percent of new needles have burs that may snag the thread. If you have a problem with a particular thread, first change the needle, even if it is new. This may solve the problem.

Needle type and size

A 75/11 or 80/12 needle may be just right for a 40 wt. thread but will not work well with a heavier thread. If you are using a 35 wt. or 30 wt. thread, a larger needle (90/14 or 100/16) is essential. If you are using a heavier thread, a Topstitch needle works best since it has a deeper groove in which the thread lies as it moves through the fabric. If you are having problems running specialty threads, try a Topstitch size 90/14 or 100/16 and the trouble will likely disappear.

Sharp vs. ball point

Needles fall into two primary categories for embroidery – ballpoint and sharp. It is important to use the correct needle. Ballpoint needles are designed so that a sharp point does not cut a hole in knit or loosely woven materials. The cross fibers which constitute the knit or loosely woven materials are relatively far apart as compared to those in tightly woven materials. If a knit strand of thread is cut with a sharp needle, it will enlarge when the loose fibers pull back from the cut. To prevent this, the ballpoint needle is designed to push aside the individual strands of the knit. This assumes that the ballpoint needle point is in good condition. If you notice rough edges on your embroidery or other developing irregularities, it is time to change to a new needle. Sharp needles are designed for woven fabrics. Because of the tightness of the weave, individual cut fibers will not pull away and make holes. For this exact reason it is important not to use ballpoint needles on wovens. The blunt force of a ballpoint will tear through the fibers and actually pull them in the process, resulting in uneven, irregular embroidery and damage to the fabric. Sharp needles can be used on all wovens as well as dense fabrics such as leather, vinyl, and canvas.

Needle sizes

Needles range in size from a very fine 60/8 to a heavy duty 120/19. Most needles use two number measuring systems. The higher number relates to the metric system and defines the needle shaft diameter in hundredths of a millimeter. The lower number relates to the system in the U.S. and is an arbitrary number used to indicate relative needle shaft diameter.

Parts of the Needle

Shank The shank is the part of the needle that is inserted into the sewing machine. The shank is the heaviest part of the needle and is designed so to minimize needle movement by attaching it firmly to the needle bar.

Shaft The shaft is the long narrow portion of the needle that supports the functional parts of the needle. Needle sizes refer to the diameter of the shaft.

Groove The groove protects the thread by hiding it as it passes through the fabric on its way to join with the bobbin thread. Some needles (i.e. Topstitch needles) have deeper groves to protect the thread. A needle that is too small for the size of thread being used will result in inconsistent stitches and broken threads.

Eye The eye of the needle is the hole through which the thread passes. As the size of the eye increases, the size of the shaft increases to support it. Different types of needles have different shaped eyes.

Point The point of the needle is a primary distinguishing feature in needles. Points can be sharp or ball, or a hybrid of both. All are designed for a specific purpose and all give the operator unique applications.

Scarf The scarf is the cut away portion on the back of the needle just above the eye. This area accommodates the hook mechanism as it rotates past the needle to engage the thread loop formed by the lifting needle.

Types of needles

Universal A general purpose needle that can be used for general sewing on both wovens and knits. It has a sharp, but slightly rounded point and an elongated scarf.

Ballpoint The ballpoint needle has a rounded point of varying degrees. Its primary application is to sew on knit type fabrics. The rounded tip slips between yarns rather than cutting them. This prevents broken fibers and unraveling.

Denim The denim (jeans) needle has a very sharp, acute point with a slender eye and a strong shaft. The sharp point is necessary to penetrate heavy fabrics like denim and canvas. The slender eye holds the thread in place for proper loop formation. The strong shaft prevents deflection of the needle and insures accurate needle placement for stitch formation.

Embroidery The embroidery needle has a sharp point, a large eye and a special scarf to protect threads.

Leather The leather needle has a wedge shaped point, which gives it the piercing strength it needs to penetrate heavy fabrics like leather and vinyl.

Metallic Metallic needles have a large, elongated eye, larger scarf and a larger groove to protect fragile metallic threads during stitch formation.

Quilting The quilting needle has a tapered point for stitching through multiple layers and across seams. The shape of the point minimizes damage to the quilting fabric.

Microtex The Microtex needle is sharper than the universal point with a more slender shaft. It is used primarily on fine wovens, heirloom sewing on very fine fabrics, synthetic suede, and on tightly woven fabrics such as batiks.

Topstitch The Topstitch needle is a favorite of many professional embroiderers and quilters. It has an extra large rectangular-shaped eye which allows for smoother movement of thread. It also has a much deeper groove which works wonders with heavier threads. The deeper groove allows a heavier thread to lie in it, thereby reducing friction on the thread as it moves. The most popular sizes are 90/14 or 100/16.

Tension

Thread tension is a combination of the thread passing through thread guides and the pressure applied to the tension disks via the tension spring. Tension is applied to the thread as it passes between a pair of tension disks. Increased pressure on the tension spring increases tension on the thread. Most machines are factory preset for thin 50 wt. or 40 wt. threads and require tension adjusting for heavier threads. Tension can be adjusted manually by means of a thumbwheel or electronically through the computer. Don't be afraid to change the upper tension. This will not hurt your machine. You can always change it back. If the tension is too high, the thread will break or will be damaged as it is pressed between the tension disks. If the tension is too low, the thread will loop on the back of the fabric. When instructions recommend lowering the top tension, the purpose it to make the upper thread more loose, which then is pulled by the lower bobbin thread, snugly through your project. This makes the stitch look formed and definite, which adds to the beauty of the project. Lowering the top tension also prevents the bobbin thread from showing on top.

When a 40 wt. thread is replaced by a heavier thread (35 wt. or 30 wt.), the larger thread diameter pushes the tension disks apart, increasing pressure on the tension spring, resulting in more tension, and most likely, problems. Therefore, it is essential to adjust the tension by loosening the tension disks and/or reducing the number of thread guides through which the threads flows. Bypassing the fist and/or last thread guide is sometimes the key to making a heavier thread work better because each thread guide adds to the overall tension. Whenever you change threads, remember to take the diameter of the new thread into consideration and make adjustments as necessary.

Thread delivery system

The trend of the future is larger thread spool sizes. Traditional machine spools cannot hold as much thread as the cone-shaped king spools or mini-king spools. Much of the cost of a spool of thread is in the winding process, so the larger the spool, the greater the savings. If you use a cone shaped king spool or mini-king spool, you will need a thread stand. The thread stand is advantageous over other home remedies such as a mason jar or coffee cup. The vertical arm of the thread stand lifts the thread higher than the machine which then facilitates an even feed without added tension. Thread stands can accommodate any type of thread which is wound on a king spool or mini king spool. The thread on these spools is cross-wound, which is meant to pull straight off the top as the spool sits flat on the thread stand. For small mini king spools, there are adapters available which fit onto the vertical pin spool holder. These are fine as long as the spool of thread is not too heavy. A heavy thread or a heavy spool placed on the vertical pin holder puts too much drag on the thread and prevents smooth rotation. If in doubt, choose a thread stand over a pin adapter.

The machine

Today's home sewing and embroidery machines have capabilities beyond even their more expensive commercial counterparts. Success is achieved by synchronizing quality threads, proper operator techniques in the use of threads, fabrics, and software, and the condition of the sewing machine. The latest embroidery machines are technological wonders and as with any mechanical device, settings and tolerances can be off, needles bent, moving parts become dirty or worn with use. All of this can affect the performance of the machine. It is vitally important to keep the machine clean and well adjusted. Proper operator techniques and annual trips to a qualified technician will enhance the overall sewing experience. There are differences among the many machine types. A specific thread may work better on one type of machine than another. This is because machines are preset to different tensions and running speeds. Some machines run specialty threads more easily than others.

At any given time, about 10% of machines are not functioning properly. If you have trouble running a quality thread, it may not be thread's fault. Many things on an embroidery machine can cause thread

breaks, but not all are obvious. The tension setting, timing mechanism, amount of lint buildup, and type of fabric and backing all contribute to the outcome. Adhesive from sprays and backings can also adhere to the thread, causing excess tension. Adhesives can also partially clog the eye of the needle, leaving less space for the thread to flow through freely. Have a can of compressed air nearby to keep the bobbin and feed dog areas free of lint. Clean these areas every time you change the bobbin.

Machine Embroidery with Metallic Thread
Metallic embroidery thread sometimes presents special challenges with machine embroidery and quilting applications. Both the machine and the thread are technologically advanced products that require special attention to reach their optimum performance.

Thread, cones, and spools

- Look for uniform wind. Lack of uniformity results from improper winding and could indicate damaged thread. If a manufacturer is cutting costs resulting in poor-quality winding, they are most likely cutting costs in overall quality.
- Look for uniform color. Any non-standard appearance indicates winding tensions were too high and damage to the thread has resulted.
- Look for bruises or flat spots. Damage can occur in handling and will result in thread breaks. Thread can be defective because of improper construction. If defective, return it or throw it away to avoid machine damage and frustration.
- Do not store metallic thread with adhesive tape to prevent unwinding. The adhesive rubs off onto the thread and then accumulates in the tension disks and the eye of the needle.

Thread Path
Make sure the machine is threaded correctly. It is OK and sometimes preferable to skip the last thread guide.

- Make sure all thread guides are free of grooves that will damage metallic thread. Polyester threads are abrasive and over time can cause thread grooves.
- Keep your machine clean. Dust and lint buildups interfere with thread flow.

Tensioner
The tension assembly should provide even pressure to produce even stitches.

- Buildup of lint or thread particles can make tension adjustments impossible.
- Threads can wear grooves in tension disks and leave deposits on disks.

Needle This is a most important part of sewing application.

- Use a new Metallic or Topstitch needle and change it if in doubt.
- The needle should be inserted all the way into the needle bar and square with the sewing hook.
- Select needle type and size appropriate to application.

Presser foot
Check the condition of the presser foot. If it is bent or has rough spots, it will affect the embroidery and may cause thread breaks.

Needle plate
The needle plate has potential for thread abrasion or cuts. It should be smooth and free of nicks. The needle should be centered front to back in the needle plate to prevent needle strikes.

Sewing hook
The sewing hook should be smooth and timed precisely to engage the thread loop. It should have no scratches or rough spots that would damage the thread fibers. It should be properly adjusted in relation to the needle and the sewing motion.

Bobbin case
The bobbin case holds the bobbin and sets the tension for the stitch. The bobbin case and tension spring must be clean and free of lint to ensure consistent tension. Bobbin cases are fragile. If dropped, they can become out of round and can result in 'wandering tensions.'

Bobbins
Bobbins should be wound evenly to provide consistent tension when fed through the tension spring. Sideless prewound bobbins can leave an adhesive residue that affects tensions and thread movement.

Hooping
Fabric should be snugly hooped without any deformations or loose areas.

Backing and adhesives
Backing and adhesives should only be used to the extent necessary.
More is not always better. Excessive backing produces stiff embroidery and applies greater friction to the needle and increases thread breaks. Excessive use of adhesives and stick-on backings can result in deposit buildups in the eye of the needle, causing friction and needle breaks.

Fabric
Embroidering thick or dense fabrics will cause increased friction. To compensate, use a larger needle and reduce sewing speed.

Tension
It is recommended to set the top tension very low when using metallic threads. Since metallic thread is a multi-layer thread, excessive tension will cause the discs to grab the thread, which results in shredding. Lowering the tension will increase the space between the tension discs and allow the thread to move through with ease.

Digitizing
Digitizing is an art, not a science. Knowledge of threads, machines and fabric to be embroidered is essential to a good design. Recurring problems with the same design may reflect digitizing problems rather than technique or equipment problems.

- Very short stitches result in a single point of thread going through the eye of the needle up to 60 times. Compensate by reducing sewing speed.
- Very long stitches result in increased tension on the thread due to the movement of the sewing field. Compensate by reducing sewing speed.
- Excessive stitches in a single zone increase the density of the fabric and can result in thread breaks. This can be either a digitizing problem or a machine feed motion problem.

Selecting the Proper Backing
Many factors can affect your embroidery stitching. Machine tension, proper hooping tension, needles, the threads you choose, stitch count and density are some of the major players. With all of these variables, it is important to choose a backing for your work that can provide the foundation needed for a solid, stable embroidered design. The entire purpose of using a backing is to provide a secure base under the fabric for your stitches to keep your image from becoming distorted and to help hold up after washing.
There are two main categories of non-woven backing: tearaway and cutaway. As its name implies, a tearaway backing is easily torn away after your design is complete. It is best used on more stable fabrics such as denim, terry cloth or on caps. Cutaway backings are normally more stable and softer than tearaways, with the excess amount being removed by cutting around the finished design. Since it provides more stability, it is often used for knits or other fabrics that need extra support.

Numerous styles and weights of backing are available and they are becoming more and more specialized. Choosing the style that best suits your needs may take a little experimentation. As a rule of thumb, keeping a mid-weight tearaway and a soft, but stable cutaway on hand will allow you to tackle most any design. It is important to find a tearaway that will tear cleanly away while still holding your stitches and a cutaway backing that will not stretch too much in any direction. Having too much stretch can cause puckering or distortion of your design once your garment is out of the hoop. This distortion can also happen if you have to pull too hard to remove your excess tearaway.
Specific backing decisions are up to the individual embroiderer. Not everything will work for everyone. Your style of stitching can influence your choice in backing as much as the fabric or stitch count can. Have fun and experiment. Sew out several designs with different weights of backing on various fabrics to see the effect on the finished product and before long you will be able to see what works the best for you.
We need to ask some basic questions for each independent project. What fabric am I using? What stabilizer? What is the content and weight of the thread? What about needle type and size? Do I need to change the tension? What would be the best thread to use? When it all comes together, the result will be a completed project that is looked upon with pride.

Troubleshooting helps
If you are experiencing trouble with broken threads or skipped stitches, the following may help.

1. Is the needle size appropriate for the thread and project? A needle too small or too large in relation to the thread size makes it difficult for loops to form.
2. Check the thread path from the cone to the needle. Is it threaded correctly? Are you using the proper size needle for the thread you are using? Are any of the thread guides too small for the thread you are using? It is often OK to bypass the final thread guide.
3. Is the needle in correctly? Is it square to the face of the machine? Is the scarf to the back? Are you using the correct needle for the job?
4. Is the bobbin tension correct in relation to the top tension? Is the bobbin positioned correctly? Is there lint or other debris under the tension spring? Has the tension spring been deformed by over-tightening?
5. Is the top tension adjusted properly?
6. Is the needle coming down in the center of the darning foot? Is the needle rubbing on the darning foot?
7. Change speed according to the job. The wider a satin stitch, the faster the machine can run. The narrower a satin stitch, the slower the machine should be run. It is OK to change the machine speed while running a design.
8. Check the timing. If the timing is off, the bobbin hook will not catch the loop.

Tension problems
Tension is the term we give to the process of balancing the top and bottom threads so the machine will sew a good stitch with as few problems as possible.

Problem: The top thread frays.

Probable Cause: The needle is too small or the wrong type. Tension is set too high.

Problem: The bobbin thread shows through on the top.

Probable Cause: The bobbin is too loose, dirt under the tension spring, or the top tension is set too high.

Problem: The bobbin thread does not show on the bottom.

Probable Cause: The bobbin is too tight or the top is too loose.

Problem: The top thread snaps and leaves a small hook at the point of the break.

Probable Cause: The top thread is too tight or the needle type and size is incorrect.

Problem: The thread gathers under the needle plate.

Probable Cause: Either the top tension is too low or the machine is threaded incorrectly, bypassing the take-up lever.

Field Density

It is important to select the appropriate thread for the project. Most digitized designs are created for 40 wt. thread. If a heavier thread is desired, adjustments are required. This can be done by either reducing the field density by one-third or by increasing the design size to 125% of the original size. Increasing the stitch length will also help.

Summary

To successfully use specialty threads, the operator must be aware of the abilities and special requirements of both the thread and the machine.

- Use a high quality thread
- Ensure the machine is threaded correctly
- Ensure the entire machine is free of scratches and grooves along the thread path
- Properly adjust tensions for the desired application
- Use the correct type and size of needle and make check that it is inserted correctly
- Ensure the machine is adjusted properly
- Ensure the hook mechanism is lubricated every 8-10 sewing hours
- Ensure the bobbin case is in good condition
- Use backing only to the extent required
- Adjust sewing speed to compensate for other limitations

From Your Guide:

A special thank you to Superior Threads[3] for sharing this wonderful information and taking the mystery out of understanding thread! If you ever have the opportunity to take their class in person, I strongly recommend it! The demonstrations with an extra large needle make the entire concept easy to understand.

Visit Superior Threads[4] for free downloadable designs, online catalog, embroidery tips, projects and more!