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Superior Threads Workshop Notes

Have you ever said,

"My machine won't do that."

"I could never do that!"

"That fancy thread never works for me."

"Decorative threads break, fray, and shred."

If you have experienced frustrations when working with specialty and decorative threads, this guide will help you solve 95% of them. Problems with threads can usually be traced to five causes:

1. **Quality.** If you use a budget, low quality thread, you cannot expect your machine to compensate. It cannot make a poor quality thread better. Start with quality thread that is worthy of your machine and your project. It does not make sense to spend thousands of dollars on a machine and then try to save a couple dollars on low quality thread.
2. **Needles.** Select the right type and size for the thread you are using.
3. **Tension.** Never changing the top tension on your machine is like buying a new TV and never changing the channel. Quick and easy adjustments can make it perform as it should. Even if the machine has automatic tension, learn how to override it. Most machines are factory preset for sewing (not for quilting or embroidering) with a fine 50 or 60 wt. polyester sewing thread. The tension must be adjusted for decorative, sensitive, and medium and heavier threads.
4. **Delivery system.** Some threads have a straight-wind pattern on a spool. Others are a cross-wind pattern on a cone. Either type is OK but the delivery system is different for each.
5. **Condition of machine.** Machines require maintenance to stay in the best condition. A gradual decrease in performance is not readily noticed. Keep your machine clean and in good condition.

Thread

The higher the quality of the thread, the fewer the problems. Poor quality thread is often linty and breaks easily and can make any sewing project frustrating. Consider some basic questions for each project. What fabric am I using? What would be the best thread to use for the desired effect? What is the content and weight of the thread? What needle type and size is best? Do I need to change the tension? Each type of thread has specific characteristics and behaves differently.

A common mistake is not realizing the importance of thread quality or using a thread outside its intended application. For example, a \$3.00 cone of bargain bin serger thread is not the thread to use for piecing, quilting, or general sewing – it is for serging. Serger thread is often made from lower quality spun polyester, may be quite linty, and is not as strong as other types of polyester threads. This thread may be fine for serging because multiple threads form an interlocking stitch to produce a strong seam, but if used for other sewing applications, it can cause frustrations.

Thread construction How are threads made?

- **Spun Threads** - Spun threads are created by spinning staples (lengths of fiber which are spun together to make up the strands) together to create a long strands which are then twisted together to make the thread. Spun threads are available in cotton, polyester, and silk.
- **Core threads** Core threads are created by twisting a very fine cotton or spun polyester thread around a multi-filament polyester core. Also known as poly-wrapped poly or cotton-wrapped poly or core-spun.
- **Texturized threads** Texturized threads are created by treating strands of polyester or nylon to make the thread fuzzy and stretchy. This type of thread is commonly referred to as “woolly” thread and is usually for sergers.
- **Filament threads** Filament threads are created by twisting long strands of polyester fibers together. Filament threads usually have a higher sheen and strength than spun polyester threads. Except for monofilament, these threads are multi-filament threads.
- **Monofilament threads** Monofilament threads are created by extruding a single strand of nylon or polyester.

Thread fiber types

Cotton

There is a wide range in the quality of cotton threads. Quality is determined by two factors, the quality of the cotton fibers and the methods of processing. Cotton is classified by the length of the staple, or fibers. We often hear the term long staple cotton but we rarely hear the term short staple cotton, although most cotton thread is short staple. If the label does not specify the staple length, it is short staple cotton.

Classifications of cotton fibers

1. Short staple
2. Long staple
3. Extra-long staple (ELS)

A long-staple cotton thread may cost 50% more than a short staple thread. Likewise, an extra-long staple cotton thread may cost 50% more than a long staple thread. It is worth the extra cost to use the higher grade cotton. The increased value is evident in strength, resulting in less breakage and less down time and also in the reduced amount of lint, which means less wear on your machine and less cleaning time.

Egyptian cotton Most labels claiming the cotton is Egyptian cotton are misleading. Egypt does not grow enough cotton to produce all those “Egyptian cotton” towels, sheets, and clothing. As far as we can determine, Superior Threads cotton is the only cotton thread that can honestly be labeled as Egyptian-grown extra-long staple cotton. This is the highest grade cotton available.

Processing Techniques of Cotton Thread

Although the main difference in quality is determined by the staple length, processing also contributes to the quality of the thread. Cotton thread has various processes and finishes, each providing specific results.

Mercerized The thread is treated in 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. Even if the label does not specify “Mercerized Cotton,” most likely it is mercerized. Superior’s cotton threads are all mercerized.

Gassed An expensive finishing process where the thread is passed at high speed over a flame to reduce the fuzz. The highest quality cotton threads are gassed. Although we do not print “gassed” on our labels, all Superior’s cotton threads are all gassed.

Glazed Only for hand stitching. Glazed threads will clog up machines. Cotton thread is treated with wax, starches, or other chemicals. The result is a lint-free, glossy, strong thread for hand stitching.

Characteristics of cotton thread

- soft
- strong and durable if a high quality cotton
- available in various thread weights
- easy care
- most cotton is colorfast. Some hand-dyed cottons are not.
- iron safe

Polyester

Polyester is synthetically produced from resins. There are five types of polyester thread.

1. Spun polyester threads are made by spinning short lengths of polyester fibers and then twisting multiple strands together. This is similar to the way cotton threads are made. Spun polyester threads give the look of a cotton thread, but provide superior strength and durability. (Sew Sassy is a spun polyester thread.)
2. Poly-wrapped poly core thread or core spun polyester threads are a combination of a multi-filament polyester core thread wrapped with spun polyester. The benefit of using a core spun polyester thread is the added strength of the multi-filament polyester core. (Omni, Omni-V, Sergin’ General, and Sew Complete are core spun polyester threads.)
3. Filament Polyester threads are made with multiple strands of continuous poly fibers. Some hear the word filament and incorrectly assume it is monofilament. Monofilament is just one type of filament thread. Most filament threads are multiple-strand filaments twisted together. Multi-filament strands are smooth and lint free, but are not transparent. The advantage of these threads is that they are lint free. (Bottom Line, So Fine! #30 and #50, MicroQuilter, and all trilobal polyester threads (see below) are multi-filament polyester threads.)
4. Trilobal Polyester is a high-sheen multi-filament, twisted, continuous fiber thread. It has the bright appearance of rayon or silk, but the strength and colorfastness of polyester. (Rainbows is a trilobal polyester thread.)
5. High Tenacity (strength) Trilobal Polyester is a much stronger trilobal polyester thread. (Magnifico, Twist, and Fantastico are this type of polyester.)

6. Monofilament is a colorless single strand of polyester (MonoPoly).

Characteristics of polyester

- Durable and designed for heavy duty or high speed use
- Stronger than rayon and cotton
- Colorfast
- Retains shape
- Recovers stretch
- Can be made with a matte finish to look like cotton or with a high sheen finish to look like silk.

Metallics

Superior Metallic thread is ideal for quilting, embellishment, and embroidery. Available in 25 colors, including two variegated colors, Superior Metallic thread is strong enough to handle longarm machine quilting and high speed commercial embroidery machines. What makes Superior Metallics so superior? The highest quality raw materials combined with advanced processing results in a vibrant, strong, and smooth metallic thread. Although metallic thread is considered to be delicate thread, if you loosen the top tension to 1.0 (for home machines) and use a #90/14 Topstitch needle, you will enjoy using metallic thread in your projects.

The special construction method in which our Metallic Thread is created

Characteristics of quality metallic thread

- strong nylon inner core. Polyester and rayon cores are weak.
- rice paper construction. This makes the thread more soft and supple, reducing the wiry feel. It also reduces tangling.
- protective outer surface. Superior Metallic has an outer protective surface which reduces friction and acts as a protective layer.

1. 9 micron polyester shell (an average strand of human hair is about 60 microns thick)

2. Gold or other coloring

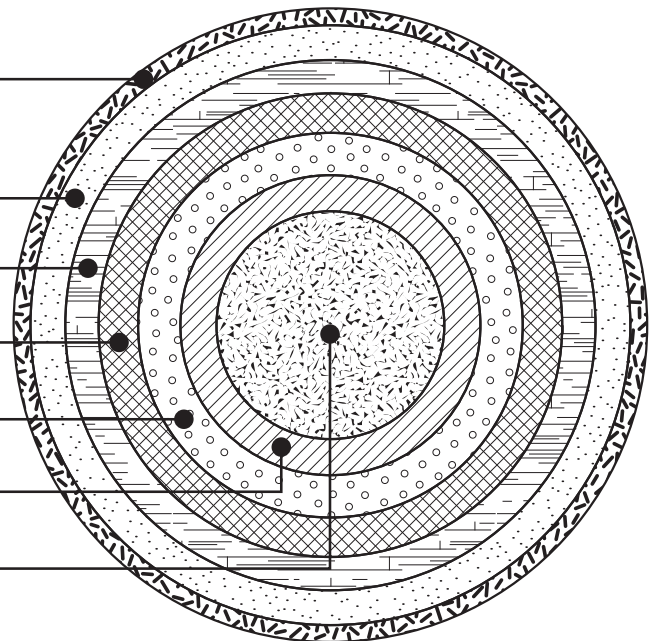
3. Pure Silver Foil

4. Oxidation Preventive Coating

5. Adhesive

6. Rice Paper

7. Extra-strength Nylon Core



Hologram, Mylar, or flat thread (Glitter)

Hologram thread is created by bonding layers of metalized polyester together and then precision

cutting to a form a narrow strip of flat thread. Use the same settings as with metallic thread. Loosen the top tension to 1.0 and use a #90/14 Topstitch needle.

Characteristics of hologram thread

- Colorfast
- Brilliant, reflective, colors. More bling than regular metallic thread.
- Heat tolerant. May be ironed on low heat.

Rayon

Most rayon is not colorfast and it is not as strong as polyester. Superior Threads does not use, sell, or recommend rayon threads.

Silk

Silk multi-filament thread is made from continuous silk fibers which are unwound from silk worm cocoons to produce a smooth, beautiful thread. (Our silk threads range from a very fine #100 Kimono Silk thread to a heavy buttonhole silk thread.)

Nylon

For most home sewing, nylon should exist in your sewing supplies only as a fusible (melting) thread. Charlotte's Fusible Web is an example of a nylon fusible thread. There is no other good reason to use a nylon thread. Many monofilament threads are nylon and not recommend because nylon melts at low temperatures, goes brittle over time, and yellows. Some nylon threads are labeled "polyamide" to lead us to think it is polyester, but polyamide is the chemical name for nylon.

Thread Measurements

There are many standards of thread measurement. Some companies use the Tex standard while others use the weight standard, the number standard, or the denier standard. Some mix up the standards resulting in confusion. One spool of thread may be labeled No. 50, another labeled Tex 50, another labeled 50 wt., and yet another labeled #50/3. All four of these are measured using different standards and are probably not all the same size. When comparing threads, use a consistent standard of measurement.

The top five standards for thread measurement

1. Weight. This is the most commonly understood method. Although intended for natural fibers such as cotton and silk, synthetic fibers such as polyester and rayon frequently adopt this method. Smaller numbers indicate heavier threads.
2. Number. This method is used on many thinner threads and is written as no. 50 (#50) or no. 100 (#100). Some confuse this with a weight measurement and incorrectly suppose a No. 100 thread is a 100 wt. thread. The Number standard was developed in Japan and is known as the Gunze Count system. The smaller the number, the heavier the thread.
3. Composition. This standard was developed for cotton thread but has also been adopted for polyester threads. A cotton thread and a polyester thread with identical Composition numbers will be similar, but not exactly the same size. The Composition standard uses numbers like 30/3 and 50/3. The first number represents the same number used in the Number Standard. The second number represents the number of plies of thread twisted together. For example, a 30/3 means the thread is a No. 30, 3-ply thread. This is the most accurate measurement standard.

4. 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 a heavier thread.

5. Denier. This method is intended for synthetic fibers and most commonly used for rayon threads. 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.

Thread Measurement Cross Reference Chart					
Weight	Tex	No. (#)	Composition	Denier	Example
12	88	# 20	20/3	750	Sew Sassy
30	60	# 30	30/3	530	So Fine #30, Treasure
40	44	# 40	40/3	400	King Tut
40	30	# 40		300	Magnifico, Fantastico, Twist, OMNI
40	25	# 40	40/2	240	Rainbows, So Fine #40, Metallic
50	20	# 50	50/3	180	So Fine #50, MasterPiece
60	18	# 60	60/2	140	Bottom Line
100	12	# 100	100/2	138	Kimono Silk, MicroQuilter

Tension tug-of-war

Tension is adjusted so that the top and bottom thread form even stitches. Think of the top and bottom thread as having a tug-of-war. If the threads are identical and you are sewing or quilting, both sides have equal strength and the result will be a draw. The sewing should therefore produce perfectly even stitches with no top thread showing underneath and no bobbin thread showing on top. However, in the real world, the teams are rarely equal. One team will be stronger or bigger or faster than the other. We may use decorative threads on top. We often use different fibers for the top and bottom threads. We also add stabilizer or batting. Sometimes we might use a cotton bobbin thread and other times we use a polyester bobbin thread. All these factors make it necessary to adjust the tension for each project. By adjusting the top tension either tighter or looser, we are able to add or take away strength on the top thread team to equalize the tug of war battle.

Following is a list of things that affect stitch results

- *Batting.* Adds drag on the thread.
- *Fabric type.* Dense fabric puts more stress on the thread.
- *Top thread thickness and type.* Some threads are less flexible than others. Heavier threads may require a longer stitch length.
- *Bobbin thread type.* Cotton bobbin thread tends to grab more than a smooth filament polyester. Sometimes grabbing is preferred (when piecing) and sometimes it is not preferred (such as when using a metallic thread on top). A smooth filament polyester thread in the bobbin will work better with metallic because its smooth finish acts almost like a lubricant, sliding nicely with the thread.

Prewound bobbins

Approximately 90% of home sewing machines use either a Class 15 or L-style bobbin. Prewound bobbins are perfectly safe to use in all brands. There is a myth that machine warranties will be voided

if prewound bobbins are used. This is not true. Many sewing machine companies ship their machines with prewound bobbins. If there is any risk in using prewound bobbins, it is only in the quality of thread used. Using quality prewound bobbins, whether cotton or polyester, can prevent skipped stitches and keep lint to a minimum.

The real advantages of using prewound bobbins include:

- Convenience and time saving by not winding your own bobbins.
- Consistent and even winding. An even wind results in consistent tension.
- Fewer bobbin changes.
- 40-80% more thread on a prewound bobbin than on a self-wound bobbin.

Needles

The needle is one of the most important parts of a sewing machine, but it is often the least appreciated and ignored. We spend thousands of dollars on the most advanced machines, use the most beautiful threads and fabrics to produce our projects, but experience problems because we either use an old, worn, damaged, or wrong needle. When you start a new project, start with a new needle. It is the least expensive part of the entire project. Overall, a clean, well-functioning needle will result in sharp, well-shaped stitches. Keeping a good needle in your sewing machine is one of the easiest, least expensive ways to improve your sewing projects.

Topstitch Needle (refer to figure 1 on the last page)

A Topstitch needle is recommended by professionals and educators because it just seems to work best. It has a light-sharp point, an oversized eye, and a deeper groove. If you using a high quality thread and are experiencing thread problems, change to a Topstitch needle and lower the upper tension setting. The trouble will likely disappear. Our Superior Topstitch needles are titanium-coated which means they last 5 to 8 times longer than standard needles.

- Superior Topstitch Needle #70/10 for finest threads
- Superior Topstitch Needle #80/12 for 50 wt. threads
- Superior Topstitch Needle #90/14 for medium wt. threads
- Superior Topstitch Needle #100/16 for heavier threads

Needle size

Needles range in size from a very fine #60/8 to a large #120/19. Most needles use a dual number measuring system. The first number relates to the metric system and defines the needle shaft diameter in hundredths of a millimeter. The second number is a generic number. The larger the number, the larger the needle.

Tension

Tension is the term we give to the process of balancing the top and bottom threads so the machine will sew a good stitch. Even if the machine has automatic tension, it is important to learn how to override that and manually adjust it. Not adjusting the top tension is like buying a new TV and never changing the channel. We always start with the top tension setting. Rarely do we need to adjust the bobbin tension on home machines.

Thread tension is a combination of the thread passing through thread guides and the pressure applied to the tension discs. Most machines are factory preset to sew with 50 wt. or 60 wt. polyester sewing threads with the top tension preset to a 5 (on a scale of 0 to 10). When we use a medium or heavier

thread or a sensitive or delicate thread, adjusting the top tension (usually downward) is essential. Top tension can be adjusted in all machines. Do not be afraid to change the upper tension. 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 is to open up the tension discs to apply less pressure on the top thread. For example, when a 50 wt. thread is replaced by a heavier thread, the larger thread diameter pushes the tension discs apart, increasing pressure on the tension spring, resulting in more tension applied to the thread. Therefore, it is essential to adjust the tension by loosening the tension discs. Whenever you change threads, remember to take the type and diameter of the new thread into consideration and make adjustments as necessary.

Thread delivery system

Thread delivery defines the method which thread unwinds from a cone or spool. If thread is unwound incorrectly, it can increase the tension applied to the thread. The way in which threads are wound onto a spool or cone is the same manner in which they should unwind.

Stack wound (sometimes referred to as straight or parallel wound). Thread is wound around the spool core evenly (not cross wound). These spools should unwind from the side (the spool will rotate as you sew) and not over the end of the spool. This allows the thread to come off the spool without any twisting.

Cross-wound. Thread is wound onto the cone in a crisscross manner. The thread should unwind over the top (the cone should not rotate as you sew). If thread from a cross-wound cone is unwound from the side, it creates added tension because the cone is forced to rotate.
(see figure 2 on the last page)

Not every sewing machine has a horizontal and vertical spool pin to accommodate spools of straight-wound threads. We created our Superior Thread Holder so all thread types of spools and cones can be used on any home sewing machine.

The machine

Success is achieved by using quality threads, proper operator techniques, using the appropriate needle style and size, properly adjusting the top tension, and maintaining the condition of the sewing machine. There are differences among the many machine types, but any well maintained machine should successfully run quality thread. If you have gone through all the above steps and still have trouble running a quality thread, it may not be thread at fault. The tension setting, timing mechanism, lint buildup, and type of fabric and batting all contribute to the outcome. Adhesive sprays and glazed or coated threads can clog your machine, leaving less space for the thread to flow through freely.

Summary

- Use a high quality thread on both top and bottom.
- Make sure the machine is threaded correctly. (This is a common problem)
- Properly adjust tension for the desired thread.
- Use the correct type and size of needle and check that it is inserted correctly.
- Make sure the bobbin case is in a good clean condition.
- Decrease sewing speed if necessary.
- Instead of relying on the preset tension setting and using whatever needle is already there, discover what works for you and your machine. Make necessary adjustments until you make the perfect stitch.

Myths, Rumors, and Truths

Q. Should I use a 12, 30, 40, or 50 wt. thread for quilting?

A. It depends whether you want the thread to blend or stand out. Use medium or heavy threads to show. Use fine threads to blend. Variegated threads are intended to be visible so they are usually medium or heavier threads.

Q. Will polyester thread tear the fabric?

A. This is the biggest myth in the quilting world. Many quilters have been taught to use only cotton fabric, cotton batting, and cotton thread. Back in Grandma's time, most of the available thread was cotton and the quilting was usually done along the pieced seams (stitch-in-the-ditch). Recent trends show a growing percentage of machine quilters seek an effect that cotton thread may not provide. Many of the winning quilts at shows are done in metallics, high-sheen variegated polyester, and other decorative threads. Times have changed and machine quilting has opened up a new world. No longer is quilting done only along the seams. Machine stitching can enhance the beauty of the quilt by adding intricate and complementary designs throughout the entire quilt. Machine quilting does not add stress to the quilt. Everywhere the thread goes, it strengthens the overall piece. Polyester thread will not tear the fabric. Piecing with cotton (MasterPiece) allows high-heat ironing during the piecing process. Use quality metallic, polyester, or cotton threads to decorate and enhance the quilt.

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

A. No. The bobbin thread may be a lighter weight than the top thread and still provide sufficient strength without adding bulk. Using a cotton top thread with a polyester bobbin thread is fine. Using a 50 wt. cotton bobbin thread with a 30 wt. cotton top thread will also work.

Q. What type of bobbin thread is best?

A. Because the bobbin thread does not go through a needle, there are fewer problems with bobbin threads than with top threads. Choose a quality cotton or polyester or a decorative bobbin thread for best results.

Troubleshooting

Problem: The top thread frays.

Probable Cause: The needle is too small or the top tension is too tight or you have a low quality thread.

Problem: The bobbin thread shows through on the top.

Probable Cause: The bobbin tension is too loose, lint in the tension spring, or the top tension is too tight.

Problem: The thread gathers under the needle plate.

Probable Cause: Either the top tension is too loose or the machine is threaded incorrectly.

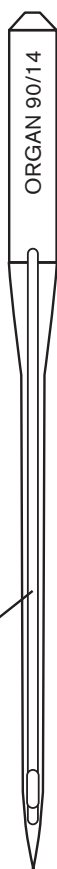
Please refer to our company booklet where you will find troubleshooting guides, tension guides, and machine guides listed. They are a great help.

Figure 1

Needle Diameter

mm	Nm	American
0.6 x 100 = 60	=	#8
0.7 x 100 = 70	=	#10
0.8 x 100 = 80	=	#12
0.9 x 100 = 90	=	#14
1.0 x 100 = 100	=	#16

Groove



Needle Size / Diameter

MICROTEX / SHARP #60/8



TOPSTITCH #70/10



TOPSTITCH #80/12



TOPSTITCH #90/14

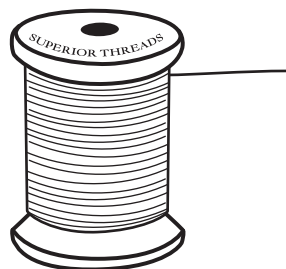


TOPSTITCH #100/16



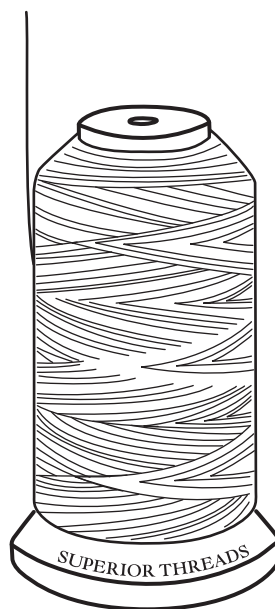
In 1942 standard needle sizes were put in place and a metric size designation under the abbreviation Nm (Number Metric) was introduced. It indicates the diameter of the needle blade in hundredths of a millimeter measured above the scarf. For example, an Nm 90 needle is .9 millimeter in diameter, while a Nm 60 needle is .6 millimeter in diameter. The alternative standard needle sizing method is the Singer/Asia numbering system sometimes referred to as the American system that uses a number that represents a size. For example an Nm 90 needle is designated as a #90/14.

Figure 2



Stack Wound

Thread needs to come off the side.
Spool rotates.



Cross Wound

Thread needs to come off over top.
Cone stands still.