



# TNT—Thread, Needle, Tension

## T: Thread

Thread is just as important as fabric is in the quilting world. Thread has become a specialized instrument for creativity and stitch expression. It can play a supporting, technical role, or be the star of the show. Knowing the properties of various threads will open up new possibilities for your creative work. Other than color, the two primary considerations to think about are fiber content and thread weight.

When selecting your threads consider the use and the appearance of the threads. Are you going to use it for piecing, appliqué, embellishing, couching and/or quilting. Do you want the quilting to really show, or to blend in.

You also need to consider the purpose of the quilt. Will it be a wall-quilt or a well used, often washed lap or bed quilt? You need a wide range of thread types and fibers because you need the right tools for the job at hand.

### Types of Threads:

Thread is defined as a fine fiber, filament, or combination of filaments twisted together and spun out to considerable length. Thread comes in a variety of types: Polyester, Cotton, Rayon, Silk, Wool, Metallic, Mylar/Holographic Threads. As well as several specialized threads: Monofilament, Water Soluble, Heat Shrinking, Fusible, and Elastic. Each thread type is known for its specific properties and characteristics.

### Thread Weight:

Three spools of thread from different manufactures, each marked 40, may have three different Thickness. Confusion stems from the fact there is no commonly used measurement system for thread. Often you will find two sets of numbers on a spool of thread. The first number is a measurement of the thread: the second is the number of piles or strands in the thread.

### **Markings Indicating Weight examples**

WT 50      #50      No 50      50/2      NE50

Most Manufacturers also color code their spools so you know by looking at the color of the spool and not looking for a number.

Auriful: 50 weight - Orange  
40 weight - Green  
28 weight - Grey

Sulky: 30 weight - Brown  
12 weight - Orange

Mettler: 50 weight - Purple  
40 weight - Brown

The **lower the weight number**, the heavier or thicker the thread. While weight defines thread thickness, ply indicates the number of fibers twisted together to form the thread and give it strength. Three ply will generally be stronger than two ply. It may be easier to think of thread in size groupings.

Ultra Fine: 70-100. Consists mainly of Polyester and Silk threads.

Fine: 50-60 mostly considered piecing and utility threads in Cotton, Cotton/poly and polyester.

Medium: 35-40 weight, both utility and decorative. This includes most construction threads, Cotton, Rayon, and Silk threads, as well as most metallic and specialty threads.

Heavy: 12-30 weight threads available in both cotton, rayon, wool blends, and silk. These heavy threads make a big impact in your stitch work.

- 12 is the thickest thread you can put through the needle on your machine.

Ultra Heavy: 5-8 weight crochet threads and heavy cord should only be used in the bobbin.

Common Phrases and treatments of threads.

- **Mercerized:** Nearly all cotton thread is mercerized. This is the process of treating the thread with a solution causing the fibers to swell. This process better allows the dye to penetrate the fibers, thereby increasing the luster.
- **Staple:** the length of the raw material. The longer the staple the stronger the thread.
- **Gassing:** Refers to passing a cotton thread at high speed through a flame, burning off the excess fuzz in order to create a high sheen and makes the thread less linty.
- **Glazed:** thread is heated and then coated with a wax. This thread is great for hand quilting but not recommended for use in your sewing machine.

## N: NEEDLE

The needle is the most important part on your sewing machine. There are almost as many types of needles as there are fabrics and threads, and for good reason. Each is specialized to do a specific job well. You want to select a needle that is compatible with both your materials (threads and fabric) and the technique you're using (piecing, appliqué, embroidery, or quilting).

Needles for Domestic machines range from 60 - 120 (European) and 8 - 20 (US). This is the size of wire used in making the needles. Packages are usually labeled with both sizes. The larger the number, the Larger the needle.

A smaller needle will make a smaller hole in your quilt sandwich. If you are using a fine fabric, such as a lightweight china silk or cotton lawn, you will want to select a small needle. If your project includes heavy upholstery fabrics or Denim or has lots of layers of fused cloth, you will want a larger eyed needle.

60/8 (smallest)	90/14
70/10	100/16
75/11	110/18
80/12 (most common)	120/20 (thickest)

### Anatomy of a Needle

**Shank** - the portion of the needle that slides up into the needle shaft on your machine.

**Shaft** - the full length of the needle from the shank to the eye

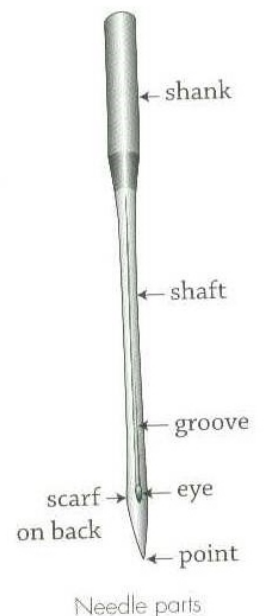
**Groove** - the channel that runs down the front of the needle, which protects the thread from friction and abrasion.

**Eye** - the hole the thread passes through.

**Scarf** - the "scooped out place" on the back of the needle. As the needle descends to the lowest point in the bobbin area, the hook of the bobbin travels around the needle at the scarf area. The needle and bobbin threads lock together and form a stitch. If your needle isn't inserted into the shaft properly, the bobbin hook can't do its job.

**Point** - the part of the needle that pierces the material. Points are designed differently depending on the type of the needle.

Select a needle where the groove and eye match the weight and type of thread you will be using. If the groove and eye are too large, the thread will flop around and form a sloppy-looking stitch. If the groove and eye are too small, the thread will sit on the outside of the needle and become frayed as you stitch and break.



## When to Change Needles

Since we are asking needles to do things other than stitch together layers of cloth like when piecing, it is important to remember they get worn out and dull more quickly than when piecing the quilt top. Machine manuals say you should change the needle every 8-12 hours of stitching, or every four to five bobbins used completely.

### When REALLY is it time to change the needle?:

First, listen to the sound of a nice, new, sharp needle. Then listen to a needle that you have used for many hours. When the needle starts making a “thunk” or dull popping sound, it is time to change the needle.

Second, if the “oops” moment has happened. You managed to sew through a thick seam, over a pin, or didn't get the bobbin case all the way inserted and it pops out when you start to sew, change the needle out.

Third, if the needle lasts through an entire project, it probably is time to change the needle. If you are not sure carefully run your fingernail down the shaft of the needle. If you feel even a tiny snag, rough, or dull spot, change the needle.

If you can't remember the last time you changed the needle, it is time to change the needle.

### Thread to Needle Chart

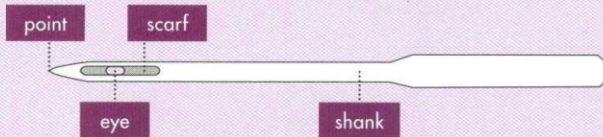
100-60	Weight	→	70/10 needle
60-40	Weight	→	80/12 needle
40-30	Weight	→	90/14 needle
28-12	Weight	→	100/16 needle
12-5	Weight	→	Use in Bobbin



# PFAFF

## needle know how

Needles are a key element to sewing. With so many choices in fabric, it is important to choose the correct needle to complete your project. It is also important to change your needle often, as a variety of fabrics contribute to the rapid dulling of the tip. Ideally, you should change your needle after every two garments. Here are more tips and techniques to guide you in the needle selection process.



### PARTS OF A NEEDLE:



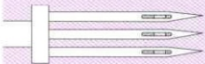
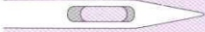






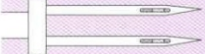
- point** The type of point is one of the main differences in needles. There are many different types to choose from including: ball-point, knife blade, sharp and universal.
- eye** The hole through which the thread passes.
- shank** The body of the needle that is inserted into the machine.
- scarf** The indentation at the back of the needle around the eye.

### SIZING:

Needles are available in sizes ranging from 60 to 120 and should be used according to the type of fabric being sewn.

Type of Fabric	Size
Lightweight Fabrics	60/7 – 65/9 – 70/10
Mediumweight Fabrics	70/10 – 80/12 – 90/14 – 100/16
Heavyweight Fabrics	100/16 – 110/18 – 120/20

### TYPES OF NEEDLES:

Name	Use
 Universal	Used for general sewing and known for its slightly rounded point.
 Ball Point	A commonly used needle, the ballpoint has a very round point and actually wiggles through the threads of fabric rather than cutting the fibers.
 Drilling/Triple	Similar to twin needles and used for sewing multiple rows of decorative stitches.
 Embroidery	Has a round point to avoid damage to thread and fabric and a slightly larger eye.
 Jeans & Microte	The needles with the sharpest points available. Used to pierce through tightly woven fabrics.
 Leather	Has a wedge point that cuts a hole as it's passing through leather.
 Quilting	Has a special tapered point and light ball point to allow it to penetrate layers of both fabric and batting.
 Self-Threading	Designed with a small slit at one side of the eye in order to make threading easy. Weaker than regular needles due to the slit.
 Stretch	Features a rounded point and a deep scarf. Perfect for sewing on fabrics such as Lycra as well as synthetic suede and leathers.
 Topstitching	Due to its large eye, topstitching needles are perfect for sewing with heavy threads.
 Twin/Double	Have both functional and decorative uses but can only be used on front threading zigzag machines.



## T: TENSION

Are you afraid to touch your tension dial? First, if the manufacturers didn't want us to touch the thread tension, they wouldn't have designed sewing machines with the tension dial accessible to adjusting. Machine manufacturers realize that different combinations of thread, fabric, and sometimes batting will often require adjustments to get a balanced tension.

If you're having tension problems, the first thing to check is how your machine is threaded. Think of tension as a tug of war between a team holding the needle thread and a team holding the bobbin thread. When the needle carries the top thread down into the bobbin area, the hook on the bobbin passes through the loop created by the needle thread and wraps around it, forming the stitch. Ideally, when your machine completes a stitch, the needle and bobbin threads should cross each other exactly in the middle of the fabric pieces or the quilt sandwich—in other words, the teams are evenly matched in strength.

The Tension Balance figure shows properly balanced tension and the two basic problems—the tension on the top is too tight or the tension on the bottom is too tight.

In the real world, at least ninety percent of all tension can be solved by adjusting the needle thread tension. When the bobbin thread pops up to the top, in the tug of war, the needle team is stronger, pulling the bobbin thread to the top. You need to loosen the top tension.

When the needle thread shows through on the bottom side (also known as pokies or loopies), your bobbin team is winning. You need to tighten the top tension.

### Needle Thread Tension:

On all sewing machines the tensions settings are set for a 40 weight thread. If you are using a finer thread, the discs will need to be closer together (higher/tighter tension) to create sufficient tension. If you are using a heavyweight machine quilting thread, you may need to loosen the tension to permit the heavier thread to pass through the discs without fraying or breaking.

The most notable exception would be monofilament and some decorative threads. These threads can stretch or easily break, so they tend to prefer a significantly lower tension.

### Bobbin Thread Tension:

Winding the bobbin with proper tension and setting the thread properly in the bobbin tension spring is just as important as having proper tension for the needle thread. The bobbin thread should be wound snugly, with no loops, bubbles, or unevenness. If the thread on the bobbin is "mushy"—it is probably not wound snugly or smoothly enough.

### Q&A

1. After sewing for a while your thread breaks, the end of the thread is shredded?

2.1. Your thread breaks right away, as you start to sew

3. There are bird nests (thread loops/knots) on the back of your piecing or quilting

4. You notice skipped stitches in your piecing

5. You notice "dots" of bobbin thread (color) on the top of your quilted pieced

