



**COLONIAL
NEEDLE**

EST. 1925

Problem	Causes	Solutions
Upper thread breaks	<ul style="list-style-type: none"> ▪ Incorrect threading ▪ Knots or twists in thread ▪ Tension too tight ▪ Damaged/old needle ▪ Needle too small 	<ul style="list-style-type: none"> ▪ Re-thread machine correctly ▪ Replace thread ▪ Reset bobbin and top thread tension ▪ Replace needle ▪ Use correct needle for thread and application
Bobbin thread breaks	<ul style="list-style-type: none"> ▪ Bobbin case not correctly threaded ▪ Bobbin case incorrectly inserted ▪ Bobbin does not turn smoothly in bobbin case ▪ Lint in bobbin case ▪ Bobbin tension too tight 	<ul style="list-style-type: none"> ▪ Remove bobbin and re-thread with bobbin turning counterclockwise ▪ Remove and re-insert bobbin case ▪ Check bobbin case and bobbin are in “round”; replace if necessary ▪ Clean bobbin case and surrounding machine area ▪ Check and reset bobbin tension
Skipped stitches	<ul style="list-style-type: none"> ▪ Thread tension too tight ▪ Needle damaged ▪ Needle wrong size ▪ Sewing machine out of adjustment 	<ul style="list-style-type: none"> ▪ Reset top and bobbin tension ▪ Replace needle ▪ Use correct needle size ▪ Have sewing machine adjusted for timing, hook to needle clearance and needle bar height
Frayed stitches	<ul style="list-style-type: none"> ▪ Needle too small ▪ Tension too tight ▪ Damaged thread 	<ul style="list-style-type: none"> ▪ Increase needle size ▪ Reset tension ▪ Replace thread
Thread loops on bottom	<ul style="list-style-type: none"> ▪ Thread not in top tension ▪ Machine incorrectly threaded ▪ Top tension too loose ▪ Burr on hook mechanism 	<ul style="list-style-type: none"> ▪ Rethread machine with presser foot “up” ▪ Rethread machine incorporating take up lever ▪ Reset top tension ▪ Remove burr
Irregular Stitches or Malformed Stitches	<ul style="list-style-type: none"> ▪ Wrong needle size ▪ Incorrect threading ▪ Upper tension too loose ▪ Operator pulling fabric ▪ Bobbin wound unevenly 	<ul style="list-style-type: none"> ▪ Ensure correct needle for fabric and thread ▪ Un-thread machine and carefully rethread ▪ Reset lower and upper thread tension ▪ Check presser foot pressure ▪ Rewind bobbin
Fabric puckers	<ul style="list-style-type: none"> ▪ Excessive stitch length ▪ Needle point is blunt ▪ Excessive thread tension ▪ Fabric is too soft ▪ Thread displacement – too much thread in a small area ▪ Fabric not feeding 	<ul style="list-style-type: none"> ▪ Decrease stitch length ▪ Change needle often ▪ Check bobbin and upper tension ▪ Use stabilizer ▪ Decrease field density, scale embroidery designs, increase stitch length ▪ Check presser foot, needle plate and feed dogs



Thread size measurement – Two primary methods, indirect and direct.

Remember, thread size does not mean thread diameter. A 40-weight spun poly will have a higher diameter than a 40-weight filament rayon simply because of the construction. Thread sizes only give the “weight of thread per linear measurement”.

Indirect – For indirect measurements, higher numbers reflect finer threads. The “weight” of a particular type of thread refers to the length of a given weight of thread.

Metric - For the metric system just think the length in meters of one gram of thread. Dividing the length of thread by a set weight derives the exact measurement of a thread weight. A thread is labeled 40-weight because one gram is 40 meters long. A thread is labeled 30-weight because 1 gram is 30 meters long. A 30-weight thread is a “heavier” thread, meaning thicker cross section, because a much shorter thread weighs the same as the 40-weight thread.

Yarn Size - The Yarn size is a measurement used to indicate the number of 840yd hanks of thread that equals one pound and is many times also referred to as the spun size. The yarn size generally includes both the yarn size and number of ply, i.e. 40/3.

Thread count of “1” means 840 yards = 1 lb.

Thread count of “2” means 1680 yards = 1 lb.

Higher numbers = finer threads

Direct – In direct measurements, higher numbers reflect thicker or heavier threads.

Denier - Denier refers to the weight in grams of 9000 meters of thread. If 9000 meters weighs 120 grams, it is a 120 d thread. Most embroidery threads are 120/2, which equals 2 strands of 120-denier thread for a 240 denier total.

TEX – TEX refers to the weight in grams of 1000 meters of thread. If 1000 meters weighs 25 grams, it is a Tex 25. If 1000 meters of thread weights 30 grams it is a Tex 30. Same length of thread but more weight (product) produces a heavier threads.

Rule of Thumb - $40 \text{ Wt.} = 240 \text{ denier} = \text{TEX } 25$. All work in a size 75/11 needle. It is generally recommended that the diameter of the eye of the needle should be 40% larger than the diameter of the thread. Using the rule of thumb, consider a larger needle when using threads heavier than 40wt/240denier/tex25. Consider using a smaller needle when using finer threads

Conversion factors

Weight to Denier	$9000/\text{weight}$
Weight to Tex	$1000/\text{weight}$
Denier to Weight	$9000/\text{denier}$
Denier to Tex	$\text{denier} \times 0.111$
Tex to Denier	$\text{Tex} \times 9$
Tex to Weight	$1000/\text{tex}$
40 weight = 225 denier = Tex 25	
30 weight = 300 denier = Tex 33	

The physical dimension of a thread affects:

- Both top and bobbin tensions. Changing the thread physically changes the tension. When thread size is changed, the upper and lower tensions should be checked.
- Thread displacement – too many thread fibers in a set space make the fabric pucker. Reduce field density, scale pattern or increase stitch length.
- Needle selection. Eye of needle should be 40% larger than the diameter of the thread. When going to a larger size of thread, a larger needle should be used.



Needle Sizes

Most needles are marked in with two size designations. The first is the physical measurement of the shaft in millimeters multiplied by 100 (to get rid of the decimal). The second number is the corresponding Singer or Asian size designation. The result is 75/11, 80/12, 90/14, etc.

The size of the needle eye is usually 40% of the width of the shaft. As the shaft increases in diameter size so does the size of the eye width. There are three exceptions:

The embroidery needle has an eye one size larger than standard.

The metallic needle has an eye that is 2mm long in all sizes

The topstitch needle has an eye that is 2mm long in all sizes

To make sure your needle is large enough to accommodate the thread you intend to use simply insert the thread into the needle holding it parallel to the ground. Lower one end of the thread to result in a 45° angle to the ground. The needle should easily slide down to the declined thread end.

Needle Types

For every sewing application there is a “Best” style sewing machine needle. Take the time to find that best needle style and size and you’ll improve the quality of every stitch.

Universal Needle – General sewing of knit and woven fabrics. Slight ball point. Available sizes 8/60, 9/65, 10/70, 11/75, 12/80, 14/90, 16/100, 18/110 through 19/120.

Microtex Needle – Sharp point for straight stitches on delicate and microfiber fabrics. Available sizes 8/60, 9/65, 10/70, 11/75, 12/80, 14/90.

Denim/Jeans Needle – For denim or other densely woven fabrics or when a very straight stitch is required on multilayer fabrics. Very sharp point and stiff shaft. Can be used for quilting if needle deflection problems are anticipated. Available sizes 10/70, 11/75, 12/80, 14/90, 16/100, 18/110.

Stretch Needle – Designed for synthetic suedes or elastic knitwear. Designed with a deep scarf to prevent skipped stitches. Available in sizes 11/75 and 14/90.

Topstitch Needle – Extra sharp with an enlarged groove to accommodate large diameter threads and dense fabrics. Available in sizes 12/80, 14/90, and 16/100.

Quilting Needle – Special taper to shaft and sharp point to prevent damage to material sewn in layers. Available sizes 11/75, 12/80, 14/90.

Embroidery Needle – Designed for rayon and polyester embroidery applications. Available sizes 11/75, 12/80, 14/90.

Metallic Needle – Designed with an enlarged polished eye to accommodate specialty threads by preventing shredding. Available sizes 12/80, 14/90.

Singer MR needle conversion

Singer MR needle	conventional needle
MR1	60/8
MR2	65/9 – 70/10
MR2.5	75/11 – 80/12
MR3	85/13 – 90/14
MR3.5	95/15 – 100/16
MR4	105/17 – 110/18
MR5	120/19 – 130/21
MR6	140/22 – 160/23
MR7	180/24 – 200/25

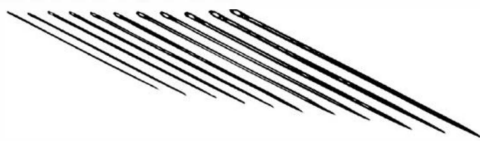


HAND SEWING NEEDLES & THEIR USES

Appliqué.

Hand sewers usually use Milliner/Straw needles for hand appliqué. (See Milliner/Straw)

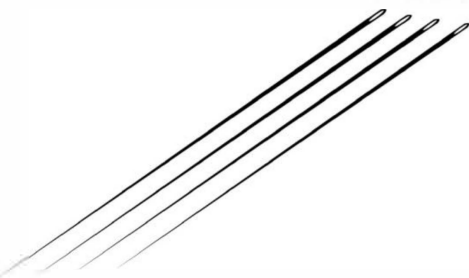
10 9 8 7 6 5 4 3 1 18 15



Beading.

Very fine, long needles with long eyes for stringing beads and sewing beads on fabric.

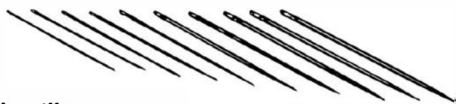
10 12 13 15



Between.

Between needles are shorter than Sharps and have a small round eye. Tailors use Between for fine stitching on heavy fabrics. Quiltmakers use Between for hand quilting.

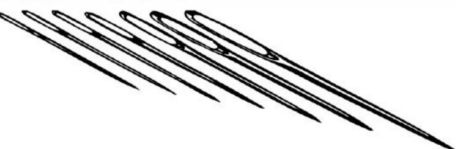
10 9 8 7 6 5 4 3 2 1



Chenille.

Large eye needles with sharp points for crewel and ribbon embroidery. Often used for Big Stitch (also called Utility) Quilting with perle cotton thread.

24 22 20 18 16 14 13



Darners.

Long needles with sharp points and long eyes used for basting, tailoring and for basting quilting layers together. The needle used most often for mending (darning) cotton and wool.

9 7 5 3 1 18 17 16 15 14 13



Easy Threading.

Easy Threading Needles have a slotted threading eye at the top through which the thread is passed into the lower eye. Often used by people who have difficulty threading ordinary sewing needles.

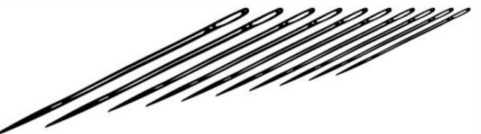
4 6 8



Embroidery/Crewel.

Most common needle used for hand embroidery. They are the same as a Sharps sewing needle but they have a long, extra large eye. Often used with multiple strands of embroidery floss. The larger sizes are sometimes used for Big Stitch (Utility) quilting and Sashiko (Japanese-style quilting).

1 2 3 4 5 6 7 8 9 10



Leather/Glovers

An unusual triangulated point enable these needles to pass through tough materials. Suitable for leather, suede and soft plastics.

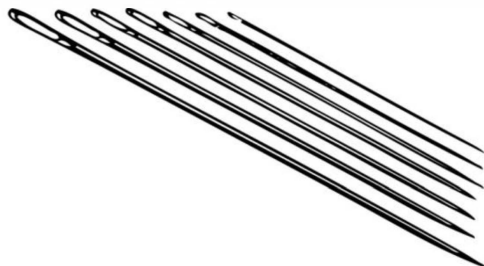
8 7 6 5 4 3 2 1



Long Darners.

Use long darners for picture smocking and ribbon work such as bullion roses. A mending needle for heavy fabrics.

15 17 1 3 5 7 9



Milliners/Straws.

Similar to a Sharps needle but longer and thinner. Used for pleating, fancy decorative stitching, some types of beadwork, and hand appliqué.

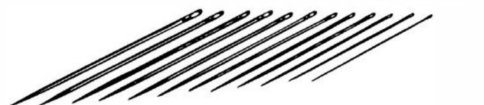
10 9 8 7 6 5 4 3 1 18 15



Sharps.

All purpose sewing needles.

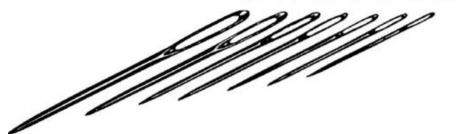
1 2 3 4 5 6 7 8 9 10 11 12



Tapestry.

Large-eye needles with blunt points for needlepoint, counted cross-stitch, and sewing together sections of knitted or crocheted projects. The blunt point enables this needle to pass between fabrics and yarns without splitting or tearing the fibers. Use with wool yarns, perle cottons and embroidery floss on canvas, fabrics, and Aida cloth.

13 14 16 18 22 24 26



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