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Threading and Manipulation

Learning to use a sewing machine can be exciting. There are some general guidelines that will help you have an enjoyable, rather than a frustrating, experience.

First, you need to learn the parts of a sewing machine and the purpose of each before attempting to use them. The parts can be grouped as follows:

- tension parts.
- bobbin.
- upper threading system.
- pressure foot.
- fabric feeders.
- stitching regulators.
- others.
A closer look at each of the previously listed parts is helpful in understanding the mechanics of the sewing machine.

**Tension Parts**

*Tension Control* — is used to select the correct amount of tension for the stitch, thread and fabric you are using. When tightened, the pressure on the thread is increased. When loosened, the pressure is decreased.

*Tension Disc* — is used to regulate the amount of tension (drag) on the thread as it comes through the needle.

*Check Spring* — is used to soften the sharp tugs of the take-up lever on the thread.

**Upper Threading System**

*Spool Pin* — holds upper thread spool(s), may be vertical or horizontal.

*Thread Guides* — are used to guide the upper thread from the spool, to the tension discs, to the check spring, to the take-up lever, and to the needle. All sewing machines are threaded in this order. The number and placement of thread guides may vary.

*Take-up Lever* — is used to control the flow of the upper thread through the needle.

*Hand-Wheel* — controls the operation of the take-up lever and needle and is used on some sewing machines to start the sewing operation. The fly wheel loosens the clutch for bobbin winding.

**Bobbin**

*Bobbin Winder Tension Disc* (could also be listed above) — is used to regulate thread tension when winding the bobbin.

*Bobbin Case Tension Screw* — is used to adjust bobbin tension (on rare occasions).

*Bobbin* — holds the lower thread.

*Bobbin Winder* — holds the bobbin in place for filling.

*Slide Plate* — slides or tilts to expose the bobbin area.
**Pressure Foot**

**Pressure Foot** — serves the purpose of firmly holding the fabric in place against the feed dog. There are several styles used for specific purposes. They may fasten with a screw or snap bar. If pressure on the presser foot is correct, you will be able to sew fabric without stopping the sewing machine.

**Presser Foot Lifter** — is used to raise and lower the presser foot. When raised, this releases the tension, drag or pull on the thread.

Presser Foot Lifter

![Diagram of Presser Foot Lifter](image)

**Pressure Control** — regulates the presser foot pressure on the fabric. Some newer sewing machines may have universal pressure. Some have a spring or screw at the top or back or inside the face plate.

Push Bar  Dial on Top  Dial on Side  Screw  PRESSURE CONTROLS

**Needle Clamp** — is used to hold the needle in place.

Needle Clamp

![Diagram of Needle Clamp](image)

**Fabric Feeders**

**Feed Dog** — moves the fabric at an even speed under the pressure foot. This is the fabric handling mechanism. Feed dogs may be teeth-like metal grooves or flat grippers of rubber, Teflon®, or plastic. For some sewing operations, the feed dog will need to be lowered or covered. The type of sewing machine will determine whether the feed dog is lowered or covered.

Saw Tooth  Diamond  Rubber

Dropped Feed  Covered Feed

**Throat Plate** — encloses the feed dog and provides an opening for the needle to go through to the bobbin area. It is important to use the correct throat plate. Use:

- straight stitch throat plate for straight stitching (single hole).
- zigzag stitch throat plate for zigzag stitching (wide hole). If you only have the zigzag throat plate, you may need to place tape over the needle hole when sewing straight stitches, especially on sheer or lightweight fabrics OR place needle in left needle position. Do not put tape on the feed dog.
- darning plate cover for darning or embroidering.

Straight Stitch  Zig Zag Stitch

Darning Plate

![Diagram of Throat Plate](image)

**Needle hole (tape over it for sheer fabrics)**

![Diagram of Needle Hole](image)

No tape here
Stitching Regulators

Stitch Length Control — is used to determine the desired stitch length. The stitch length may be measured in stitches per inch (7-20) or per millimeter (0-5).

Stitch Width Regulator — enables you to have a variety of stitch widths (from wide to narrow) on zigzag sewing machines.

Reverse Stitch — is a lever or button which allows you to instantly reverse the direction of stitching.

Stitching Speed — allows you to adjust the speed at which the sewing machine operates from slow to fast. This regulator may be a dial, a slide, or a button on machine or on foot control.

Built-In Light — illuminates the needle area.
Light Switch — turns the light on and off. On some models it is combined with the power switch.
Foot Control — controls the speed of the machine.
Thread Cutter — is a sharp area conveniently located for cutting sewing thread.

How to Thread the Machine

When you learn how to thread a sewing machine, you should be able to thread all sewing machines. Remember to follow the thread guides.

1. Be sure presser foot is up.
2. Place the thread spool on the spool pin.
3. Draw the thread through the thread guide(s) (or there may not be a thread guide).
4. Lead the thread through the tension discs, making sure the check spring is in action.
5. Next there will be one or more thread guides.
6. The thread guides lead to the take-up lever where the thread slips or is threaded through the hole.
7. There will usually be one or more thread guides between the take-up lever and the needle.
8. The last thread guide is the key to threading the needle. It indicates the side of the needle through which you will draw the thread through the eye — front to back, right to left, or left to right.

Proper placement of the needle is very important. The needle is placed so the long groove is on the same side as the thread guide.
Remember upper threading always follows:

- tension.
- take-up lever.
- needle.

**The Bobbin**

Refer to the instruction booklet on how to thread the bobbin. Then consider these general suggestions:

- Put the presser foot up.
- Do not wind thread on top of another thread.
- Always check the bobbin for rough spots. These will cause stitching problems.
- When winding thread on the bobbin, place thread in the threading hole from inside to outside.
- As you begin winding, grasp thread end until it breaks.
- Be sure the bobbin winds evenly. If it does not, adjust (check instruction book) until it does.

- If the sewing machine does not stop automatically when filling the bobbin, stop before it overfills. It will not slip into the bobbin case or area if it is overfilled.
- Use same type of thread — top and bottom.
- Do not wind polyester thread too quickly, as it will stretch. When you sew, it relaxes and may cause puckered seams.

Sewing machines have either a removable bobbin case or one built into the sewing machine. Follow these general suggestions:

- On most machines, place bobbins so the thread comes around and turns back into the slot (winding clockwise around the bobbin). Check instruction booklet for correct method.
- Thread must be in the slot as this is where the tension is placed on the thread.

**Getting Ready to Sew**

Now that the sewing machine is threaded, you need to bring the bobbin thread to the top of the throat plate. Grasp the upper thread loosely and turn the handwheel one complete turn. Remember that the take-up lever should be in the higher position, so the machine will not be unthreaded when beginning to stitch.

Pull the thread to the right and back of the presser foot when you begin to stitch. Hold the thread ends until three or four stitches are formed. This will eliminate bunching of thread and unevenness in stitching at the beginning of a seam.

**Summary**

Learning the parts of the sewing machine and the purposes of each is important when you are learning how to use a sewing machine. Correct threading of both the upper thread and lower thread (the bobbin) is essential for proper stitch formation. The exciting and rewarding experience of sewing lies ahead.

**Stitch Width and Length**

**Stitch Length**

Stitch length refers to the number of stitches (forward and reverse) per inch or per millimeter. All sewing machines have a dial or sliding bar for selecting the desired stitch length.

If a sewing machine has numbers similar to 7-20, the machine’s stitches are measured in inches. Numbers 0-5 mean that the stitches are measured in millimeters.
**How Stitch Length Works**

As the sewing machine makes a stitch, the feed dog moves the fabric forward or backward. The length of this motion is determined by where you have set the dial or sliding bar for the desired stitch length.

**Long Stitch** — 7-8 stitches per inch (2.5 cm). Use for:
- heavy fabrics.
- dense fabrics.
- plastic-coated fabrics.
- controlling thread for gathering.
- machine basting.
- top stitching.

**Why Is Stitch Length Important?**

Some fabrics and sewing operations require different stitch lengths in order to achieve the desired stitching. If an incorrect stitch length is selected, seams may pucker, stitches may not be correctly formed, or the fabric may not feed through the machine.

**Short Stitch** — 15-20 stitches per inch (2.5 cm). Use for:
- thin, sheer fabrics.
- lightweight fabrics.
- curves or sharp corners in medium weight fabrics.
- reinforcement.

**Medium Stitch** — 10-12 stitches per inch (2.5 cm). Use for:
- medium weight fabrics.
- curves or sharp corners in heavy fabrics.

**Stitch Width**

Stitch width refers to the width of the stitch, which is a side-to-side motion of the sewing machine. Zigzag sewing machines will have a control to select the desired stitch width. Some machines may have preset built-in width for special stitches.

The sewing machine will straight stitch when stitch width control is set on zero. The larger the number the wider the stitch.

**How Stitch Width Works**

As the sewing machine makes a stitch the needle swings from side to side. The width of this sideways motion is determined by where one has set the control.

Zigzag stitches are both functional and decorative. Primary functional uses are for:
- sewing knits.
- reinforcing stress areas.
- mending rips and tears.
- finishing edges.
Summary

Important features of sewing machines are stitch length and width. It is important that you understand these concepts as a foundation for sewing.

**Most Common Built-in Stitches**

Many sewing machines have some basic built-in stitches, which have been developed for specific uses and fabrics. Let’s look at their purpose and suggested uses.

**Zigzag** — is a side-to-side stitch, which may be narrow or wide (width), close together or far apart (length). This stitch is used to:
- finish raveled edges
- make bar tacks.
- stitch over cord.
- gather.
- decorate with appliqué.
- do machine embroidery.
- apply elastic.
- add stretch to seams.

**Multiple or Stitched Zigzag** — is three stitches that make a stronger zigzag. Multiple or stitched zigzag is used to:
- mend tears.
- finish edges.
- make bar tacks.
- apply elastic.

**Blind Hem** — is three to four straight stitches and one zigzag stitch to left. This stitch is used to:
- hem.
- finish edges.
- make a shell hem on soft fabrics.
Stretch Blind Hem — is three to four narrow zigzag stitches and a zigzag stitch to left. The stretch blind hem stitch is used to:

- hem stretch fabrics.
- make decorative edge (especially when stitched over crochet thread or pearl cotton).

Overlock — represents different stitches on the sewing machine that use reverse motion. The overlock usually includes a straight stitch and some type of side-to-side stitch. The zigzag stitch is usually to the right. This stitch is used to stitch seams at the same time you finish the edge. It is appropriate for heavy and stretch fabrics.

Know Your Needles

At one time there was only one type of sewing machine needle. Today that is not the case. Because of the many different fabrics, finishes and weights of fabric, there are several different types of needles. Selecting the correct needle is closely related to stitch quality and appearance.

If a needle is too fine for the fabric it can be easily bent or broken. If it is too heavy it may leave holes, cause damage to the fabric, or make uneven stitches or even skipped stitches.

Needles may be of nickel or chrome. Chrome needles are considered to have better quality.

Many of today’s fabrics (man-made) and finishes are tough and cause needles to become dull. Therefore, it is important to use a new needle for each project. Dull needles can cause skipped stitches, snagging, puckering, and damage to the sewing machine hook or needle plate.

Summary

Many built-in stitches have been developed to meet the needs of the home sewer. You will want to become familiar with these basic stitches so that you can select the stitch that will best meet your sewing needs.
To assure the smooth operation of your sewing machine, always be sure your needle is straight. Place needle on a flat surface to check for straightness.

In order to know how to properly insert the needle in the machine, you need to understand the parts of a needle. All sewing machine needles have an eye, shank, long groove, scarf and flat side. The needle is inserted in the machine so you can thread through the long groove side (refer to your instruction booklet).

Sizes of Needles

Needle size refers to the diameter of the needle. The needle size is printed on the shank or some have color coded shanks. Needle size is selected based on the weight and type of fabric. The size of the eye is directly related to the needle size (except for topstitch needle).

Here is a simple chart showing metric (European size) and non-metric (American equivalent) measurements of needles:

European size/American equivalents

- 60/8
- 65/9
- 70/10
- 75/11
- 80/12
- 90/14
- 100/16
- 110/18
- 120/19

Remember:
- The higher the number, the thicker the needle.
- The eye size of the needle increases as the needle size increases.
- There is no such thing as a regular needle.
- There are a variety of needle sizes, point styles, and eye sizes.
- Type refers to the shape of the point of the needle.

**Types of Needles**

There are several different types of sewing machine needles. Some are designed for specific fabrics or purposes. In order to eliminate stitching problems, let's learn to select the one most suited for the task.

**Ball Point** — has a rounded point that goes between the fibers to prevent piercing or snagging thread that could cause a run. Ball point needles are used on knit and stretch fabrics. They will make a wavy stitch line on woven fabrics. Size range is 9-16 or 70-90.

![Ball Point Needle]

**Modified Ball Point** — has a slightly tapered scarf on the needle to make a larger loop of thread in the hook area. This tapered scarf is to prevent skipped stitches. Can be used on most knits and wovens.

![Modified Ball Point Needle]

**All Purpose or Universal** — is used on most types and weights of fabrics. Sizes range from 8-19 or 60-120.

![All Purpose/Universal Needle]

**Wedge** — has a knife-like point (three-sided point) that makes a slit. A wedge needle is used only on leather, leather-like materials and vinyls. Size range is 14-18 or 90-100.

![Wedge Needle]

**Double-eyed** — has two eyes for two threads. This needle is used for topstitching, decorative stitching and basting. When basting, thread top eye only and use zigzag stitch. This makes a long stitch.

![Double Eyed Needle]

**Heavy Duty Point** — has a very sharp (denim) point. This needle is used on denim and other tightly woven fabrics.

![Heavy Duty Needle]

**Slotted** — has a slot on the side of the needle to slip thread into. Slotted needles are designed for those with impaired vision or other handicaps.

![Slotted Needle]

**Twin** — has one body and two (shafts) needles. A twin needle is used for making two rows of straight or decorative stitching.

![Twin Needle]
**Triple** — has one body and three needles. This needle is used for making three rows of straight stitching.

![Triple Needle](image)

**Wing** — has flat extensions on the sides of the shaft which make large holes. This needle is used for decorative stitching and hem-stitching.

![Wing Needle](image)

**Top-Stitching** — has a longer eye and deeper groove that makes it easier to thread with two threads or a heavier thread.

![Top Stitching Needle](image)

**Summary**

Many needles have been developed to meet the needs of the home sewer. You will want to become familiar with these needles so that you can select the one that will best meet the needs of each of your sewing projects.

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**Know Your Thread**

The correct thread selection for use on your sewing machine is important. Select a thread that is appropriate for the fiber content of your fabric, the sewing job and the sewing machine needle. Generally speaking:

- use man-made thread with man-made fibers.
- use natural thread with natural fibers.
- use fine thread with lightweight fabrics.
- use heavy thread with heavy-weight fabrics.

---

**Types of Thread**

Select the thread that is best suited for your sewing project. Learn the types of thread and their basic purposes.

- **Mercerized** — is 100% cotton with a finish to increase strength, luster and improve colorfastness.
- **Spun** — is 100% cotton that will shed easily.
- **Staplespun** — is short fibers that are spun together.
- **Tow Spun** — is 100% polyester of longer fibers twisted together and then twisted again.
- **Continuous Filament** — is 100% nylon or silk made of long fibers.
- **Core** — is polyester core wrapped with cotton.
Special Purpose Threads

There are several threads designed for specific uses. Here are some of the more popular ones:

Heavy Duty — is used on fabrics/garments that will need strong seams. Heavy duty thread may be cotton, polyester, or a cotton/polyester.

Buttonhole/Button Twist — is used for hand worked buttonholes, topstitching, sewing on buttons or other fasteners. This thread may be silk or polyester. It is a strong thread.

Quilting — is used for hand quilting.

Machine Embroidery — is a fine, smooth thread used when doing machine embroidery. This thread is 100% cotton or 100% rayon. Machine embroidery thread is lightweight and has a luster. It comes in solid or variegated colors.

Metallic — is used for decorative stitching. Some metallic threads may be used on both the top and on the bobbin. It can be flat or core wrapped.

Fastening Ends

There are several ways to fasten thread ends. Which method you select is dependent upon the fabric of your sewing project. A build-up of stitches is not good on lightweight or sheer fabrics. You may:

• tie thread ends by hand.
• thread a needle and pull back into stitching.
• backstitch three to four stitches.
• raise presser foot and take three to four stitches.
• set stitch length at 0 and take three to four stitches.

Some Thread Hints

Select the thread most suited for the fabric and the job. This will prevent puckers, skipped stitches and poor tension.
Use the same thread on top and in the bobbin (except for special effects).

Select good quality thread to prevent uneven feeding, uneven stitching, excessive lint and frayed ends. Using poor quality thread can cause breaking, shedding, knotting, tangling and peeling.

**Summary**

Many different threads are available to meet the needs of the home sewer. You will want to become familiar with the different threads so you can select the one that will best meet the needs of each of your sewing projects.

**What About Tension?**

Most individuals using a sewing machine are uncomfortable about making tension adjustments. Even though some of the newer sewing machines make some tension adjustments automatically, manual adjustment may be needed for certain fabrics or sewing projects.

Having a better understanding of what tension is, what it does, and how to adjust it should make one feel more comfortable in making the needed adjustment.

**What Is Tension?**

Tension allows you to control the pull or drag on the thread as it passes through the upper tension discs and the lower tension slot in order to perfect the stitch quality in all types of fabrics.

**How Is Tension Adjusted?**

The upper tension is controlled by a dial that indicates a + (more tension) or a - (less tension) OR by a number dial that increases (more tension) or decreases (less tension) in numbers. The lower bobbin tension is adjusted by turning a small screw to the right (more tension) or to the left (less tension).

**How to Recognize Good Tension**

Tension is used to achieve a balanced stitch where the top and bottom thread interlock in the center of the fabric. A balanced stitch will look and feel smooth and be straight on both sides.

Look carefully at the stitch. You should not be able to see the contrasting thread on top and bottom.

**How to Check Tension**

Use contrasting colors of the same weight thread on top and bottom. Straight stitch on a double thickness of fabric. Use the same fabric that will be used in your sewing project. Use a stitch length of 10-12 stitches per inch (2.5 cm) or zigzag stitch on the fabric. Look carefully for a sharp point at the corner.
How to Correct Tension

If the bobbin thread is visible or pulled to the top, loosen the upper tension.

Be sure to check bobbin tension as the screw could be turned too tightly or loosely.

Hints

About 90 percent of the tension adjustments can be made by adjusting the top tension.

Remember to make only a slight adjustment and check until you have the correct tension adjustment. Always be sure the presser bar is up before threading through the tension discs.
Test tension for each new fabric and/or thread type.

Problems with tension may be caused by the thread, needle, tension setting, machine condition, or type of stitch being used.

Summary

Learning to make adjustments in tension are often difficult for the home sewer. You will want to become familiar with both the upper and lower tension adjustments in order to achieve a balanced stitch on each of your sewing projects.

What About Pressure?

Pressure holds the fabric layers against the feed dog so the fabric moves evenly under the presser foot. Pressure may be:

- automatically adjusted.
- adjusted by a dial or button.
- adjusted by a spring button.
- adjusted by a screw.

Why is Pressure Important?

Correct pressure is needed for the kind of fabric being used in order to:

- form uniform stitches.
- hold the fabric securely.
- move the two layers through the machine evenly.

If pressure is too light, you may discover one or more of the following signs:

- fabric may move from side to side and may not feed smoothly, thus causing uneven stitching.
- machine may skip stitches.
- seams may pucker.

Correct by increasing pressure.

If pressure is too heavy, one or more of the following may occur:

- fabric may not feed at all.
- fabric layers may not feed evenly.
- fabric may stretch causing fabric to be wavy or out of shape and ends of seams to be uneven.
- feed dog may mark the fabric.
- the sewing machine may not run smoothly.
- zigzag stitches may pile up.

Correct by decreasing pressure.

How To Check Pressure

Use the same fabric and thread that will be used in sewing project. Use two 4-inch x 8-inch (10 x 20.5 cm) strips of fabric with long edge on straight of grain. Place a straight pin 1 inch (2.5 cm) from the bottom.

Stitch seam to pin. If top layer shifts and leaves bubble near pin, pressure is too heavy. If fabric slips and slides and stitching is uneven, pressure is too light.

Summary

Learning to make adjustments in pressure is important to the home sewer. You will want to become familiar with pressure adjustments so that the fabric will move evenly under the presser foot.
## Know Your Feet

There are many “feet” or accessories that can assist in special sewing functions. Most sewing machines will come with a few basic accessories. Other feet may be available for your machine. The chart below lists each foot or accessory, its purpose and description. If interested, ask your dealer which ones are available for your sewing machine.

<table>
<thead>
<tr>
<th>FOOT</th>
<th>ILLUSTRATION</th>
<th>DESCRIPTION</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight Stitch</td>
<td><img src="image1" alt="Illustration" /></td>
<td>Small hole, two toes with one thicker and longer.</td>
<td>To do straight stitching.</td>
</tr>
<tr>
<td>Zigzag</td>
<td><img src="image2" alt="Illustration" /></td>
<td>Wide oval hole, flat bottom, may be see-through plastic.</td>
<td>To do zigzag stitching and all other stitching.</td>
</tr>
<tr>
<td>Embroidery or Satin Stitch</td>
<td><img src="image3" alt="Illustration" /></td>
<td>Wide channel on bottom of foot behind the needle hole helps stitches move smoothly without flattening. May be see-through plastic.</td>
<td>To do design stitching, appliqué and satin stitching.</td>
</tr>
<tr>
<td>Rolled Hem</td>
<td><img src="image4" alt="Illustration" /></td>
<td>Scroll portion encloses raw edge as fabric moves through foot.</td>
<td>To make narrow hems (shirtdail), predetermined by the foot.</td>
</tr>
<tr>
<td>Quilting Foot with Guide</td>
<td><img src="image5" alt="Illustration" /></td>
<td>Has one toe; the guide slides into an adjustable hole or slot to the right.</td>
<td>To make even rows when quilting, top-stitching, cording and piping.</td>
</tr>
<tr>
<td>Zipper</td>
<td><img src="image6" alt="Illustration" /></td>
<td>Foot is to one side of the needle. Can be positioned to right or left.</td>
<td>To stitch close to zippers; sometimes used for cording and piping.</td>
</tr>
<tr>
<td>Clear, Transparent</td>
<td><img src="image7" alt="Illustration" /></td>
<td>Wide hole, flat bottom.</td>
<td>To do straight stitching and all other stitching.</td>
</tr>
</tbody>
</table>
Darning or Free Embroidery

Foot moves up and down with needle.
To do free-hand quilting, darning and machine embroidery.

Blind Hem

Blade or edge is placed against the fold of the hem.
To make blind hems.

Button

No toes.
To sew flat 2- to 4-hole buttons.

Buttonhole

Various shapes and sizes. Usually the underside has a wide groove in front and two smaller channels behind it.
To make buttonholes.

Sliding Buttonhole

Marked for measuring length of buttonhole.
To make a uniform length.

Overcast Guide

Metal blade follows the edge of the fabric holding thread taut so fabric will not tunnel, and the wing in the foot makes guiding the fabric easier.
To prevent tunneling or curling under when zigzagging.

Roller

A roller mechanism in front and back of the needle position.
To evenly feed difficult fabrics such as plastic-coated ones.
Faggoting

Has box or wing in front of foot to guide fabric.
To hold fabric edges apart for stitching.

Pintucking

Has many narrow channels on bottom. “Fits” over tucks.
To make evenly spaced pin tucks and even rows when using twin needles.

Tucker

Width and space are controlled by adjusting a screw.
To make even tucks.

Felling

Has a long toe and one that has a slight tilt.
To make flat fell seams.

Gathering

May have a slot to slip in fabric.
To make evenly spaced gathers. The longer the stitch, the more gathers.

Walking or Even Feed

Provides feed dog-type action on top layer of fabric.
To evenly feed top and bottom layers of fabrics that stick, stretch, slip or need to be matched, such as plaids.

Thin Material

A bar rests on the needle clamp screw, foot raises and lowers as needle raises and lowers.
To prevent puckering of lightweight fabric.
Braiding

Has a clip or adjustable hole that accommodates up to a 1/4-inch-thick (6 mm) braid which is threaded into the foot.

To guide narrow braids, ribbon or elastic.

Fringe or Tailor Tacking

Has a raised bar that thread goes over.

To make thread fringe and tailor tacks.

Multiple Cord

Has up to 5 holes in front of foot to feed cord through.

To hold up to 5 cords in place for stitching.

Ruffler

Has a screw and adjuster for determining amount of gathers or pleats.

To create pleated-shirred fabric. Can make separate ruffle or attach and ruffle at the same time.

Circular Sewing

Has a thumb tack-like device to hold center of circle.

To guide fabric in in circular direction.

Carpet Fork or Weaver’s Reed

Yarn is wound around a weaver’s reed and stitched with straight stitch.

To attach fringe or yarn.

Note: Some machines may have a buttonhole attachment with templates for making eyelets, rounded and keyhole buttonholes.

Sewing Machine Problems

One of the most frustrating experiences when making a garment is for stitching problems to occur. Sewing machine problems may be: skipped stitches, jammed machine, broken needle, puckered fabric, uneven feeding of fabric layers, broken thread, looped thread, stripped thread, bunched thread, cored zigzag stitches, stationary fabric, pulled yarns in fabric, uneven feeding, or fabric “eating.”

All of these sewing machine problems try your patience. Unfortunately, for each problem there are several possible causes. First, always check to be sure that your sewing machine is clean and oiled. Second, check to be sure the bobbin is wound evenly, the machine is properly threaded, and the needle is correctly inserted. The following information provides a list of additional items for you to check.
Skipped Stitches

Skipped stitches usually mean a needle problem:
- needle too large for fabric.
- needle not inserted correctly.
- needle not the right size or type for fabric.
- needle blunt or bent.
- oil on needle.
- needle not clean (build-up of fabric finish on needle).

Sometimes skipped stitches are caused by other problems:
- oil in bobbin area.
- incorrectly threaded machine.
- fabric that needs to be pre-washed.
- incorrect tension.
- incorrect pressure.
- incorrect presser foot.
- incorrect throat plate.
- incorrect size or type of thread for fabric.

Broken Needle

A broken needle could be caused by:
- pulled fabric while stitching.
- stitched-over pins.
- loose presser foot.
- pulled thread when presser bar lifter is down.
- careless approach to seams when sewing thick layers of fabric.
- incorrect needle size for fabric.
- incorrect throat plate (straight stitch when stitching zigzag).
- bent needle.
- changed needle position without changing presser foot.

Jammed Machine

If your sewing machine jams, you could look for:
- failure to bring bobbin thread up to top.
- failure to hold threads to side back as you begin stitching.
- loose threads or lint in bobbin area.
- failure to oil machine.
- no fabric when running threaded machine.
- incorrectly threaded top.
- seam started by backstitching on a sheer fabric.
- incorrect size of bobbin.

Puckered Fabric

Fabric that puckers could be caused by:
- tension that’s too tight.
- pressure that’s too great.
- incorrect needle.
- incorrect thread.
- incorrect stitch length.
- incorrect presser foot.
- incorrect throat plate.
- problem fabric.
- dull needle.
- incorrectly threaded machine.
- single layer of fabric stitched.
- incorrect needle position.

Corded Zigzag Stitches

For corded zigzag stitches look for:
- tension that’s too tight.
- fabric that’s too lightweight.
- incorrect stitch length.
- incorrect stitch width.
- incorrect presser foot.
Pulled Yarns in Fabric
If the yarn in your fabric pulls, you might have:
- blunt needle.
- needle that's too large.
- rough feed dogs.
- rough throat plate.
- rough buttonhole attachment.
- nicked shuttle.

Fabric That Doesn't Move
For stuck fabric, check for:
- stitch length at 0.
- lowered feed dog.
- loosened fly wheel.

Fabric That Doesn't Feed Straight
If your fabric doesn't feed straight, check for:
- incorrect pressure.
- incorrect presser foot.
- worn feed dogs.

Fabric Layers That Feed Unevenly
If layers of fabric feed unevenly, it could mean:
- incorrect pressure.
- incorrect presser foot.
- difficult fabric.
- incorrect handling of fabric while stitching.

Thread Breaks — Upper
Thread breaks in the upper system could mean:
- incorrect threading.
- incorrectly inserted needle.
- bent or blunt needle.
- needle that rubs against throat plate.
- defective or poor quality thread.
- upper tension too tight.
- thread caught under spool.
- rough metal edge.
- sewing done too quickly.

Thread Breaks — Lower
Broken thread in the lower system could mean you have:
- bobbin tension too tight.
- rough metal edge.
- bobbin wound unevenly.
- defective or poor quality thread.
- bobbin inserted incorrectly.

Thread Loops on Top
If the thread loops on top, look for:
- top tension too tight.
- bobbin tension too loose.
- bobbin not threaded correctly.
- thread type in bobbin different than top thread.
Thread Loops on Bottom

If the thread loops on the bottom, look for:
- incorrect threading on top.
- top tension too loose.
- bobbin tension too tight.
- thread type in bobbin different than top thread.

Fabric That’s “Eaten”

If your machine “eats” your fabric, the problem could be:
- thread ends not held for the first few stitches.
- incorrect throat plate.
- incorrect needle.

Summary

Learning to solve sewing machine problems is important to the home sewer. This list should provide convenient reference material when trying to solve specific sewing machine problems.

Tricks of the Trade

Bobbins — Before beginning a sewing project, fill enough bobbins to complete it so you don’t have to stop and rewind.

Needles — To avoid sewing machine needle confusion, mark ballpoint needles with a dot of nail polish.
**Pucker Seams** — When having trouble with pucker seams, try holding the fabric taut in front and behind the presser foot.

**Thread Removal** — Use a size 4 crochet hook to remove basting threads or to rip seams. The rounded point prevents damage to the fabric.

**Oil Removal** — After oiling your sewing machine, absorb spilled oil by stitching through a scrap of blotting paper.

**Thread Use** — Use odds and ends of spool and bobbin thread for machine basting.

**Gathering** — Pull bobbin thread when gathering.

**Edges** — Staystitch on seamline of pocket seams for an easy turn under.

**Bias Seams** — Stretch bias seams as you sew.

**Fabric Handling** — Keep bulk of fabric to the left of the sewing machine.

**Stitching** — Place needle in fabric, then lower the presser foot.

**Even Edge Stitching** — The blade of the blind hem foot, when placed next to an edge, will provide a guide for a 1/8-inch (3 mm) row of stitching.

**Sharp Corners** — Leave needle in fabric, raise presser foot lifter, turn fabric, lower presser foot lifter and continue sewing.

**Belt Loops** — Zigzag over a piece of elastic thread for professional looking belt loops.

**Second Spool of Thread** — If your sewing machine doesn’t have a second spool pin, place a straw on the one you have to make it tall enough for two spools of thread or place a second spool in a glass to the back of the sewing machine.

**Buttonhole Cutting** — Using a seam ripper, drag the long pointed end of the ripper backwards several times down the middle of the buttonhole cutting space. This will weaken the fibers. Place straight pins at the ends of the buttonhole to prevent cutting too far. Then use the ripper to open the buttonhole by using the cutting blade of the ripper and cutting to the middle from each end.

**Bobbin Thread Retrieval** — After taking a complete turn of the hand wheel, use the upper thread (instead of scissors) by holding it horizontally in two hands and running it under the presser foot from front to back. This will bring the bobbin thread out from under the foot.
**Topstitching** — Use two spools of regular thread instead of topstitching thread. This will enable the sewer to use the exact color needed while eliminating the expense of topstitching thread.

Use 2 Spools of Regular Thread

**Use of Scissors as Snippers** — Grip the blades for quick clipping of threads.

**Basting** — When basting a very stretchy fabric, use a wide and long zigzag with loosened upper tension. (Center of zigzag should be seamline.) This will stretch while trying on the garment and pull out easily.

Design Transferral — For machine embroidery use set-up for darning (no foot, lower feed dog) with design drawn on paper. Place paper on top of fabric. Stitch freehand a straight stitch through paper. Remove paper. This method eliminates the chance of design fading away with handling and can be removed if design idea changes.

**Tight Clutch** — If handwheel clutch is too tight, place a wooden spool under the needle clamp. This will serve as a resistance and help when loosening the clutch.

**Thickness Changes** — When going from one thickness to four or five thicknesses, place a wedge made of four or five thicknesses of fabric under back of presser foot. The machine will easily glide over fabric. Remove wedge gradually as it approaches the needle. Use smaller wedge to help machine down off thickness.

**Corded Buttonhole** — Make a prettier buttonhole on medium to heavy fabrics by placing a loop or cord (pearl cotton or buttonhole twist) under the presser foot, so that a strand will be under each side of buttonhole. When buttonhole is completed, pull the loop of cord tight. Then pull cord through fabric, using needle threader, to the wrong side and tie ends. This will also prevent a buttonhole from stretching out of shape in a knit.

**Buttons** — Place a piece of transparent tape over each button and proceed to sew buttons in place with zigzag stitch. Tape can then be removed. Tape will hold all the buttons in place for you. If a shank is needed, place a toothpick on top of each button and tape to fabric.

**Spool Backlash** — This can cause tension and sewing problems. Use a felt circle under spool on spool pin or place a metal washer on top of spool of thread.

**Spool Backlash or Thread Falling Off Of Spool** — Place drinking straw down center of spool.

**Third Hand** — When pinning or trimming something and a third hand is needed, place fabric under presser foot.

**Soft Stretchy Fabrics** — Place transparent tape along edge to be sewn to prevent fabric from being pulled out of shape. Do not stitch through tape.
Sheer Fabrics — Place transparent tape over hole in throat plate to eliminate bunching of fabric. Be sure not to place tape on feed dogs.

Other Hints

Tape a paper bag to your sewing table for "trims."

Clip threads

Glue a tape measure to your sewing table for quick measures.

Clip the threads as you sew.

Cut the thread on a diagonal, then wet behind the needle hole for ease in threading the needle.

Sewing Machine Care

Proper care of your sewing machine will eliminate many of your sewing problems. This means cleaning out lint and loose threads frequently, oiling as recommended in your manual, lubricating (if needed) as recommended in your manual, and changing needles frequently.

It has been estimated that 80 percent of all service to sewing machines could be avoided if individuals properly cared for their sewing machines on a regular basis. Think of maintenance on a sewing machine just like maintenance on a car.

Be sure that you have carefully read your sewing machine manual relating to care of your machine. This is your best reference.

Keep the following items handy to assist you in cleaning your sewing machine:

- lint brush.
- screwdriver.
- tweezers.
- clean cloth.
- sewing machine oil.
- sewing machine lubricant, if needed.

Remove the lint from your sewing machine regularly by using a lint brush and/or tweezers. Do this, at least, after completing each project. Some fabrics are "more linty" and will require more frequent cleaning. Remember to occasionally clean the tension discs with a fabric scrap pulled through them.
Always follow your manual for where to oil and how often to oil your sewing machine. Before oiling be sure to remove the top thread, bobbin and lint. Sewing machines usually need oiling after about 10 hours of use. Some sewing machines may not require oiling.

Remember to "not drown" the machine; use only 1 drop. It is also important to use only sewing machine oil.

After applying the oil, operate the sewing machine a minute or two. Let the sewing machine rest for about 15 minutes, then use a cloth to wipe off any excess.

Because of today's fabrics and finishes needles become blunt more quickly. To eliminate stitching problems, change your sewing machine needle after every garment. Also, always pre-wash washable fabrics to remove excess finish. Stitching over pins should be avoided, since this dulls or breaks the needle.

The feed dog, presser foot and throat plate should be protected from scratches or burrs, since these can create problems.

Place a fabric scrap over the feed dog and lower the presser foot when you complete your sewing for the day. Also, cover the machine to prevent dust and dirt from accumulating.

Here are some points to consider when you need to take your sewing machine to be repaired:

**For repair or tune-up costs, get several estimates:**
- $25 to $35 is average and should include thorough cleaning, oiling and adjusting.
- The cheapest isn't necessarily the best.
- A quote lower than $25 usually means only a brush cleaning.

Low service estimates are often used as a come-on to get you looking at machines.

**Take your machine to an authorized dealer or repair service:**
- Dealers have people who have received training from the manufacturer.
- Certificates are given for completing seminars and you may ask to see the repairman's credentials.
- A reputable company that guarantees work for 90 days or more will be anxious to satisfy customers.

**If you don't know where to take your machine, ask for a recommendation:**
- Sales people in local fabric stores talk to lots of home sewers.
- Call a high school or college that teaches sewing, since school machines are regularly maintained.
- Call the Chamber of Commerce or Better Business Bureau to see if complaints have been filed.
When parts are changed in your machine, request the old one, if your machine is no longer under warranty:

This gives the evidence of repair.

Major manufacturers offer from 20- to 30-year warranties on defective parts or workmanship.

Ask about replacements:
Why were they necessary?
Were the old parts faulty?
Were they installed properly?
Should the manufacturer be contacted?

(Trade names mentioned in this publication are for illustrative purposes only and do not reflect any preference of the author, the University of Florida, or the Cooperative Extension Service.

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