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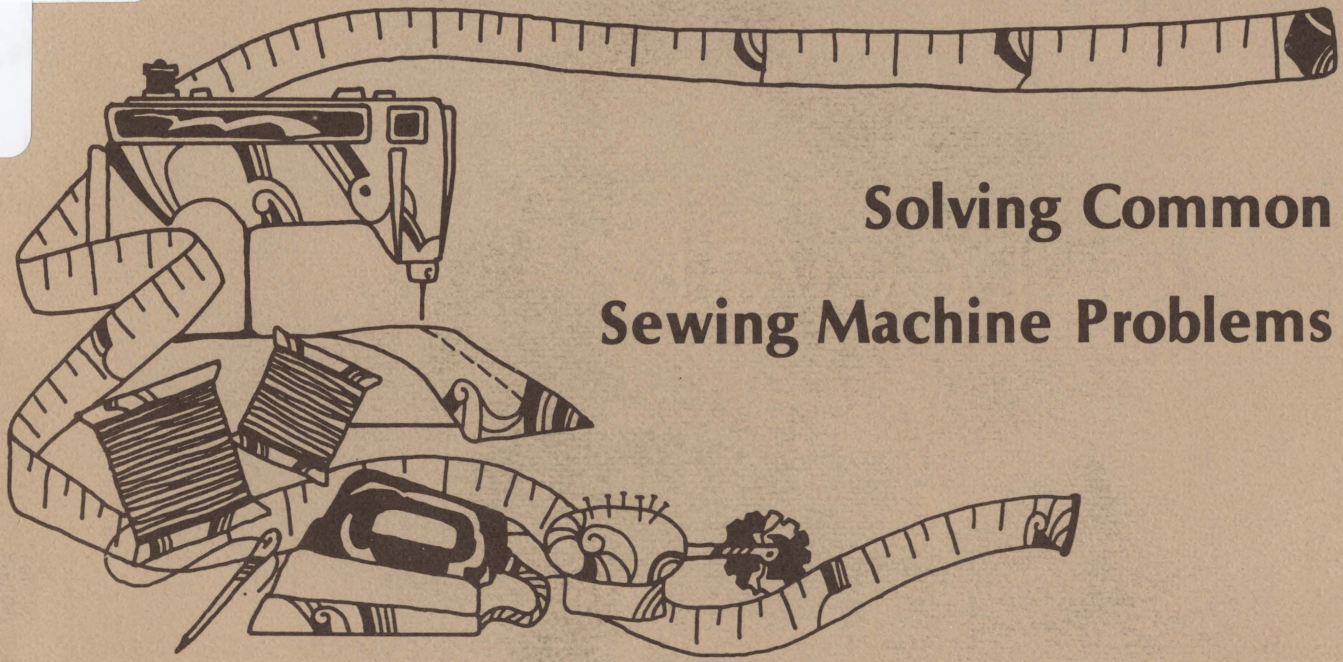
Measure Your Sew-How



Solving Common Sewing Machine Problems

Texas Agricultural Extension Service · The Texas A&M University System · Daniel C. Pfannstiel, Director, College Station, Texas

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SOLVING COMMON SEWING MACHINE PROBLEMS

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Sewing can be a relaxing, creative and money-saving talent when the sewing machine behaves properly. But when the home sewer experiences problems with the machine, sewing can be a frustrating task.

Preventing sewing machine problems is often as simple as learning a few principles or guidelines. In general, keep the machine in good working condition and learn to adjust the machine to the fabric you are sewing.

Machine Parts

To use the machine properly, learn the names of the various parts and their intended use (see Figure 1). The major parts of a typical machine are named and explained below; however, sewing machine models and brands vary greatly. *Refer to the manufacturer's manual for specific parts, their location and intended function.*

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Parts of a Typical Machine

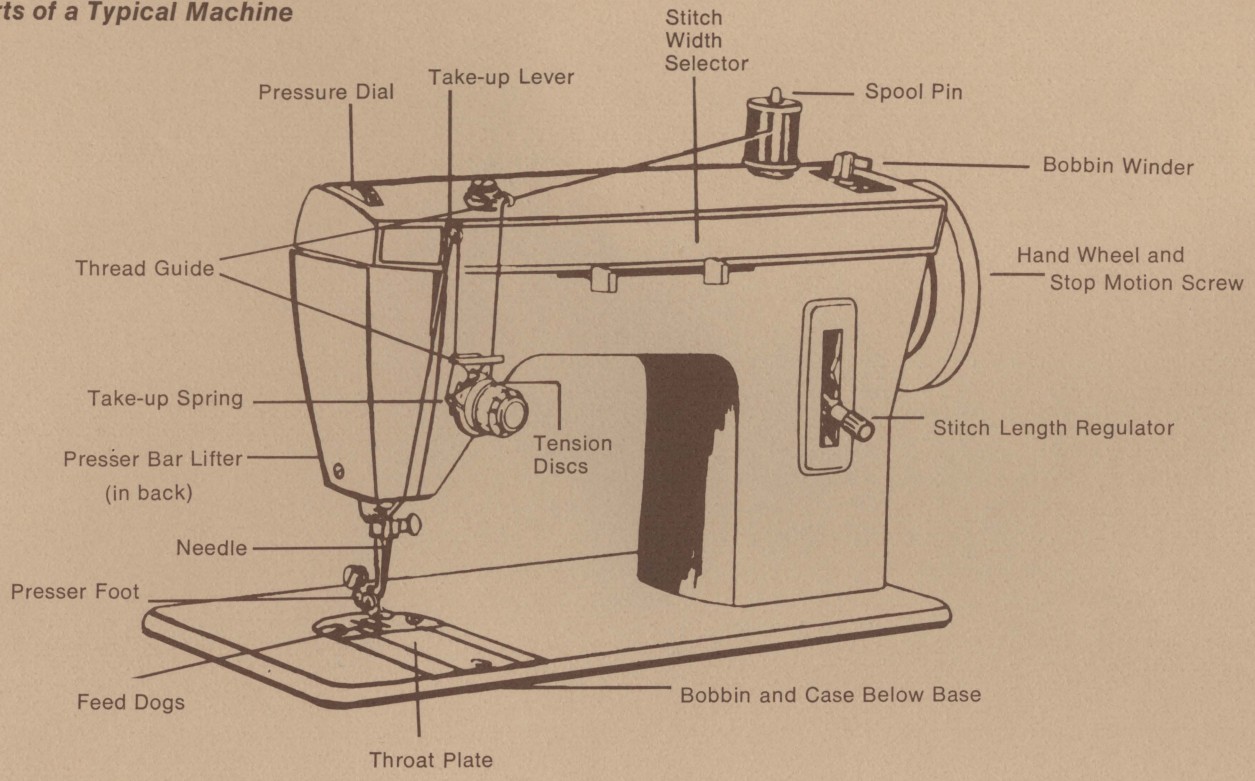
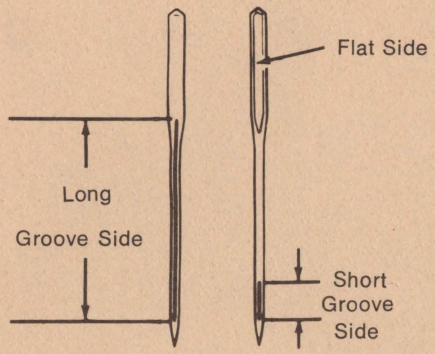


Figure 1

- Machine head—the entire part of the machine above the base.

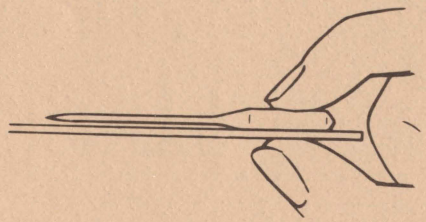
- Hand wheel—controls the position of the needle; generally used only to insert the needle in fabric or to remove the needle when a seam is finished.
- Stop-motion screw—(inside hand wheel) loosens hand wheel so needle does not move when threading bobbin.
- Spool pin—holds the thread spool.
- Thread guides—guide the thread along the machine head and into necessary machine parts.
- Bobbin winder—for winding thread on bobbin.
- Take-up lever—controls the amount of thread removed from the spool.
- Tension unit—regulates the amount of tension applied to thread as the stitch is formed.
- Pressure dial or screw—controls the amount of pressure placed on the presser foot as fabric is led by the feed dog. Some newer models do not need manual pressure control because they are self-adjusting.
- Needle—part through which thread flows in making the stitch.
- Presser foot—holds fabric in place around the needle.
- Feed dogs—toothed edges which move back and forth to pull fabric under the presser foot and past the needle.
- Throat plate—metal area around feed dogs on base of machine with round and/or oval opening for needle.
- Presser bar lifter—raises presser foot up and down.
- Stitch length regulator—regulates number of stitches per inch.
- Stitch width selector—regulates width of zigzag or decorative stitches.
- Bobbin case—holds bobbin; has thread guides and tension control for lower thread.
- Bobbin—holds lower thread.

Check Points



Flat and Grooved Sides of Needle (Enlarged)

Figure 2



Test needle for straightness

Figure 3

Before beginning each sewing project, adjust the machine to the fabric. Each fabric type and weight requires a certain needle size and type, thread size and type, stitch length, thread tension and presser foot pressure. *Do not be afraid to touch the dials on the machine.* The dials are there to enable you to adjust the machine to the many fabrics available on today's market.

Needles

Coordinate needle size with fabric weight and type. A small needle diameter is needed for delicate, lightweight fabrics while larger diameter needles are needed for heavyweight fabrics. The smaller the needle diameter, the smaller the number used to identify needle size. Refer to the "Guide to Sewing Charts" (on page 10) for specific sizes. When sewing with large topstitching thread, use a size 16 (100) needle because the larger opening prevents fraying of the thread.

Needle length is governed by machine brand and type. Be sure the needle is *placed in the machine correctly* as far up as it will go and tightly held in place. The needle is usually threaded from the position of the last thread guide. Machines may thread from the left to the right, right to left or front to back, but the needle is always threaded from the long grooved side (rounded at the top) to the short grooved side (flat at top) as shown in Figure 2. Incorrectly placed or threaded needles are common sewing problems which are easy to solve. Refer to your machine manual for correct threading instructions and needle style (length) and placement.

Change needles frequently, especially when sewing synthetics because these fabrics dull needles quickly. Dull, bent or burred needles cause sewing problems and can damage fabrics. Check needles for straightness against a flat surface (see Figure 3).

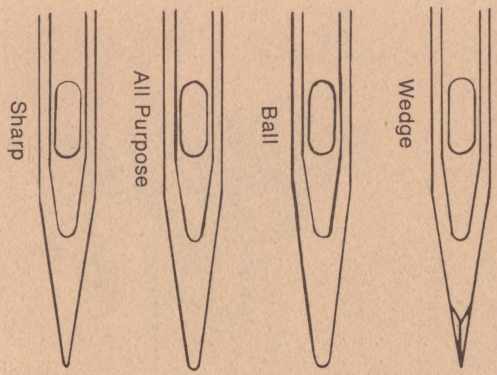


Figure 4

Needle type is coordinated with fabric type. In general, use sharps with wovens and non-wovens and ball points with knits; or use today's universal or all-purpose needles designed to sew either knits or wovens. An all-purpose needle has a fine ball point with an elongated scarf and is sized as other needles. When sewing leather or vinyl, use a wedge needle (see Figure 4).

Thread

Coordinate thread size and type with fabric type and weight. Refer to Extension publication B-1266 *Thread Tips* and the "Guide to Sewing Chart" on page 10 for specific information. *Always use the same type and size of thread in the needle and bobbin unless using a special top stitching thread or doing machine embroidery.*

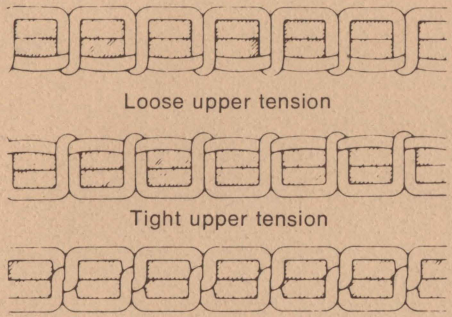
Stitch Length

Coordinate stitch length with type and weight of fabric. The lighter weight the fabric, the more stitches per inch needed. Basting usually means 6-8 stitches per inch. Some machine stitch length regulators are marked with number of stitches per inch (example: 0, 6, 10, 12, 15, 20). Other machines are marked with numbers 0-4 (based on metric measurements). The following chart serves as a guide:

0—neutral (fabric does not move)
1—18-20 stitches per inch (or a stitch 1 mm long)
2—12-15 stitches per inch (or a stitch 2 mm long)
3—10-12 stitches per inch (or a stitch 3 mm long)
4— 6-10 stitches per inch (or a stitch 4 mm long)

For specific information on recommended length of stitches, refer to the "Guide to Sewing Chart" on page 10.

Stitch Diagrams



Loose upper tension

Tight upper tension

Both tensions correct

Figure 5

Thread Tension

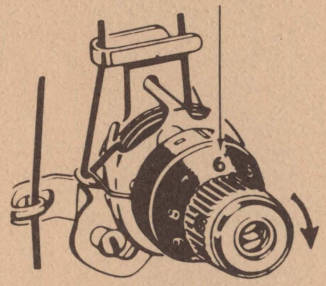
To correctly adjust the thread tension, make a test seam on two layers (right sides together) of the fashion fabric before sewing the garment. This will eliminate the need for taking out seams because of puckering, skipped or uneven stitches.

A perfect stitch locks between layers of fabric. If the stitch locks on the top side, the upper thread tension is too tight. If the stitch locks on the under side, the upper tension is too loose (see Figure 5).

Adjust tension to fabric type and weight. For example, decrease (loosen) tension for lightweight fabrics and many synthetics; increase (tighten) tension on heavy and tightly woven fabrics. Refer to the "Guide to Sewing Chart" on page 10 for specific information.

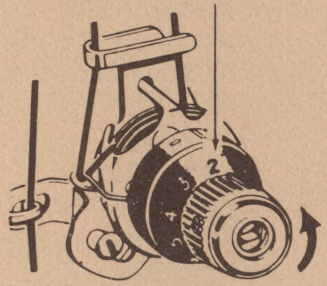
To *increase* upper thread tension, turn the tension dial, screw or knob clockwise, to a greater number, or toward the plus sign (+), depending on the machine. To *decrease* upper tension, turn the tension dial, screw or knob counterclockwise, to a smaller number, or toward the minus sign (—) (see Figure 6).

Increase Tension



To increase tension, turn the thumb nut to the right (clockwise) until required tension is obtained. The higher the number, the higher the tension.

Decrease Tension



To decrease tension, turn the thumb nut to the left (counterclockwise) until the required tension is obtained. The lower the number, the lower the tension.

Figure 6

Thumb Screw

To increase pressure, turn thumb screw to the right (clockwise).

To decrease pressure, turn thumb screw to the left (counterclockwise).

Pressure Dial

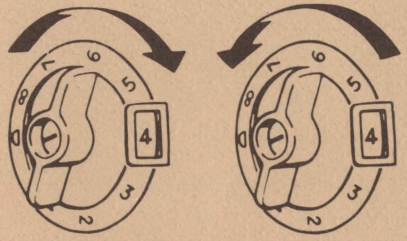


Figure 7

Presser Foot Pressure

Coordinate presser foot pressure with the weight and type of fabric. Some of today's machines have a built-in "self-adjusting" pressure. But if the machine does not, adjust the pressure on the presser foot for each new fabric when making a test seam.

Stitching without thread clearly shows the effect of presser foot pressure. If the top layer of fabric is pushed ahead of the bottom layer, the pressure is too tight. If the bottom layer is pushed ahead of the top layer, the pressure is too loose. Also, if the fabric does not feed evenly under the presser foot, the pressure is too loose.

To *increase* pressure on the presser foot, turn the dial or screw clockwise or to a greater number. To *decrease* pressure, turn counterclockwise or to a smaller number (see Figure 7).

With pressure for non-treated woven muslin considered the norm, and realizing that machine reaction to different fabrics varies, the following rules may serve as a guide:

- Soft, sheer fabrics require light pressure
- Crisp, sheer fabrics require moderate to light pressure
- Spongy, thick fabrics require medium to heavy pressure
- Heavy, dense fabrics require heavy pressure
- Refer to the "Guide to Sewing Chart" for specific information.

Guide to Sewing Chart

Fabrics	*Needle Size*	*Thread Size*	*Stitch Length Setting*	*Thread Tension*	*Presser Foot Pressure*
Delicate (examples: tulle, chiffon, fine lace, fine tricot)	9 (65)	fine (100-150)	15-20 (#1)	light	light
Lightweight (examples: organdy jersey, voile, crepe, taffeta)	11 (75)	fine (80-100)	12-15 (#2)	light	light
Mediumweight (examples: gingham, linen, satin, velvet)	14 (90)	medium (60-80)	12-15 (#2-#3)	medium	medium
Medium heavy (examples: gabardine, sail cloth, denim, coatings)	16 (100)	medium (40-60)	10-12 (#3)	medium to heavy	medium to heavy
Heavy (examples: canvas, upholstery fabrics)	18 (110)	heavy duty (20-40)	6-10 (#4)	heavy	heavy

* Metric needle sizes are based on American Homesewing Association conversions.

Solutions to Common Problems

Before becoming frustrated with sewing, taking the machine in for costly adjustments or vowing never to sew again, learn to correct sewing machine problems. Quickly check to see if the machine is threaded correctly and all dials properly adjusted (see Figure 8). For specific problems and possible solutions, refer to the following chart.

Troubleshooter Check List

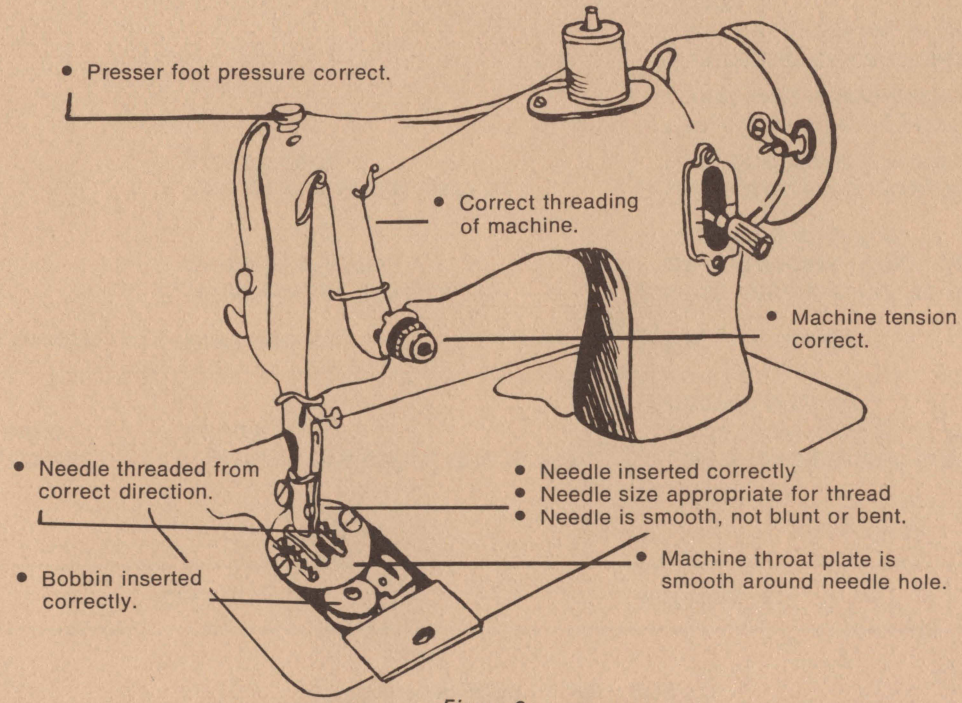


Figure 8

Problems and Solutions

Problem	*Cause*	*Solution*
Needle		
• needle comes unthreaded	1. Take up level pulled thread from needle.	1. Pull thread through needle and hold while moving take up lever to highest position.
• needle breaks	1. Bent needle.	1. Replace needle.
	2. Needle loose in holder or dropped slightly.	2. Push needle in holder as far as it will go and secure firmly. Secure presser foot firmly in place.
	3. Needle hits throat plate or presser foot.	3. Use correct throat plate and presser foot for needle position. Use center needle position with round hole throat plate. Use zigzag foot and oval throat plate opening for zigzag or decorative stitch.
	4. Needle too long.	4. Check manual. Use correct needle style.
	5. Needle too fine for fabric.	5. Use a larger size needle.
	6. Needle hitting pins.	6. Do not sew over pins.

Thread

• thread snarls or jams	1. Machine or bobbin not threaded properly	1. Check and rethread.
	2. Thread knots at beginning of a seam.	2. Pull upper and bobbin threads slightly to the right and/or hold thread while taking the first few stitches.
	3. Fabric not feeding through machine.	3. Lower presser foot.
• upper thread breaks	1. Machine not threaded correctly.	1. Check and rethread accordng to manual.
	2. Tension too tight.	2. Reduce upper tension.
	3. Needle too fine for fabric.	3. Use a larger size needle.
	4. Damaged needle.	4. Be sure needle is not burred or bent. Replace if needed.
	5. Defective thread.	5. Replace spool of thread.
	6. Thread is caught on or under spool.	6. Remove thread under spool, rewind and place spool on pin with notch or split on top.
• bobbin thread breaks	1. Bobbin not wound smoothly.	1. Rewind bobbin.
	2. Bobbin case not threaded correctly.	2. Rethread bobbin case according to manual.
	3. Damaged bobbin and bobbin case.	3. Replace damaged part.

Stitches

• skipped stitches	1. Dull, bent or burred needle.	1. Insert new needle.
	2. Needle wrong length.	2. Check manual for correct needle style.
	3. Needle wrong type.	3. Coordinate needle type with fabric (sharp, ball point, wedge, etc.—see section on needles).
	4. Incorrect presser foot pressure.	4. Increase or decrease pressure as needed.
	5. Needle threaded incorrectly.	5. Thread machine correctly according to machine manual.
• puckered seams	1. Tension too tight.	1. Reduce tension.
	2. Pressure is too heavy.	2. Reduce presser foot pressure (or use even feed roller foot).
	3. Stitch length too long.	3. Increase number of stitches per inch (see "Guide to Sewing Chart").
	4. Damaged or dull needle.	4. Replace needle.
	5. Too heavy thread for fabric.	5. Use finer thread.
	6. Machine threaded incorrectly.	6. Rethread machine according to manual. (Note: If all of above fails, stitch seams over paper.)
• uneven stitches	1. Tension too loose.	1. Increase top thread tension.
	2. Bobbin is unevenly wound.	2. Rewind bobbin smoothly.
	3. Feed dogs not pulling fabric through—in "darn" position.	3. Change feed dog to "up" position.
	4. Operator pulling fabric past needle.	4. Allow feed dogs to pull fabric under presser foot.

Machine		
• won't turn, hand wheel frozen	1. Stop motion screw released.	1. Tighten stop motion screw on hand wheel.
	2. Thread caught in botton case or shuttle area.	2. Remove bobbin and extra thread.
	3. Failure to oil machine.	3. If possible, loosen wheel by moving back and forth and oil machine. If not, call or take machine to a service man.
• machine noisy	1. Machine is dirty.	1. Clean lint from machine parts, especially feed dog and bobbin case area.
	2. Machine needs oiling.	2. Oil machine as directed by machine manual.
	3. Blunt needle or incorrect size.	3. Replace needle.
	4. Timing is off.	4. Call or take to a service man.

Keep Machine in Good Condition

Clean and oil your machine frequently to keep it operating well. Frequently remove lint from the feed dogs and the bobbin case with a brush. Oil according to manual instructions with sewing machine oil, not all-purpose oil.

Now you can enjoy creative, trouble-free sewing!

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Cooperative Extension Work in Agriculture and Home Economics, The Texas A&M University System and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8, 1914, as amended, and June 30, 1914.
20M—2-81, Reprint

CLO 3-1