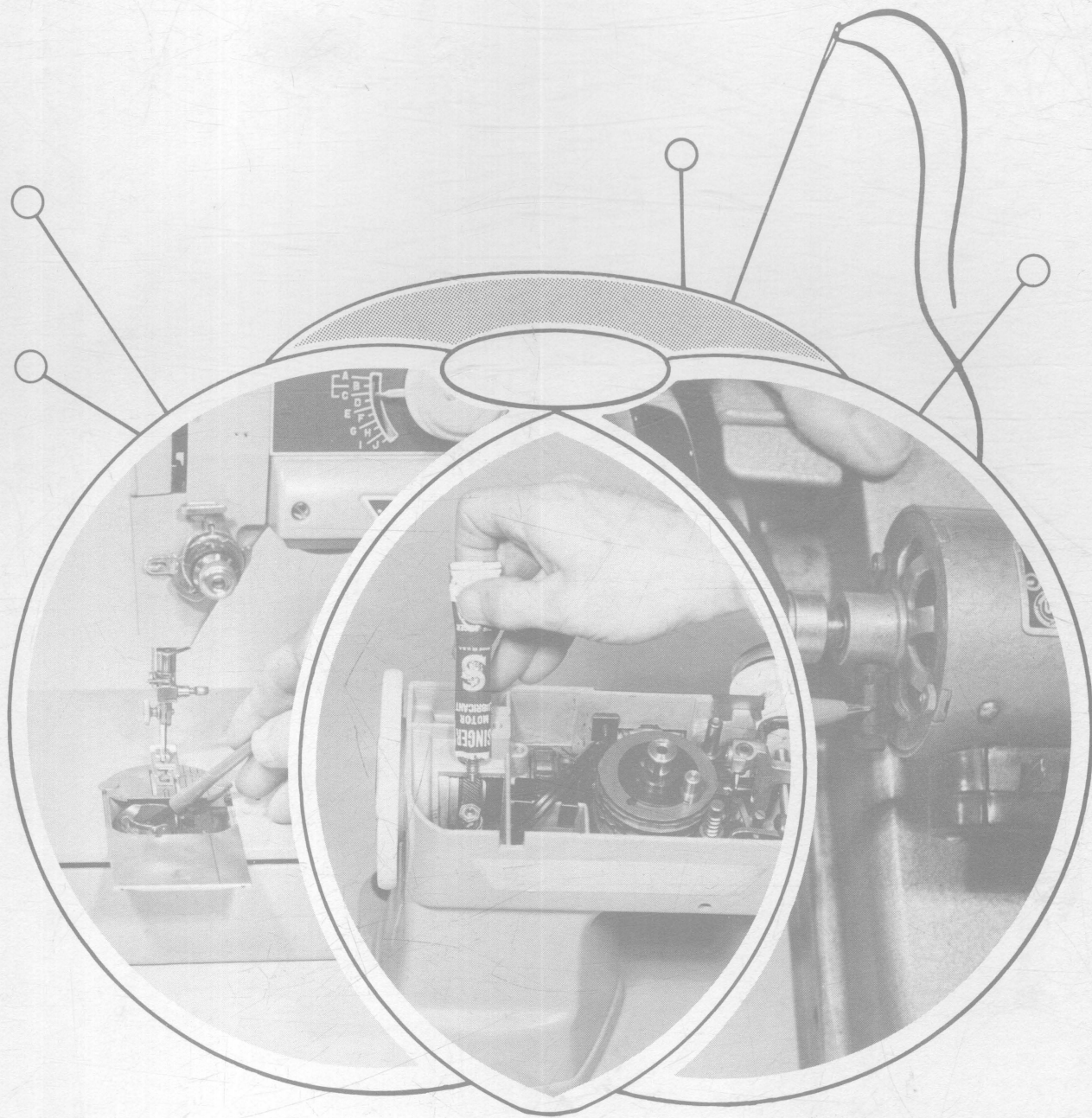


Solving Sewing Machine Problems



Solving Sewing Machine Problems

Written by **William E. Gill**, Extension Agricultural Engineer, in collaboration with **Norma Deyo and Orena Haynes**, Extension Clothing Specialists, The Ohio State University

The best way to determine the cause of any sewing machine trouble is to check one item at a time. A good sequence is first to clean and oil the machine, then rethread, and finally, check the settings of the machine. If all these are correct, then the problem is likely to be the choice of needle, thread, or material used.

There are special procedures to follow when sewing certain woven synthetics and lightweight jerseys. These are mentioned in the problem-solving guide section under a specific problem.

CLEANING THE MACHINE

Many problems are caused by lint, dust, and pieces of thread collecting in the working parts of the machine. Brush cleaning, before using the machine, is a good way to prevent trouble. (See Figure 1.) It is very important to keep the area under the needle plate, around the feed dog, and the bobbin case free from lint and thread. This area should be cleaned each time the machine is to be used.

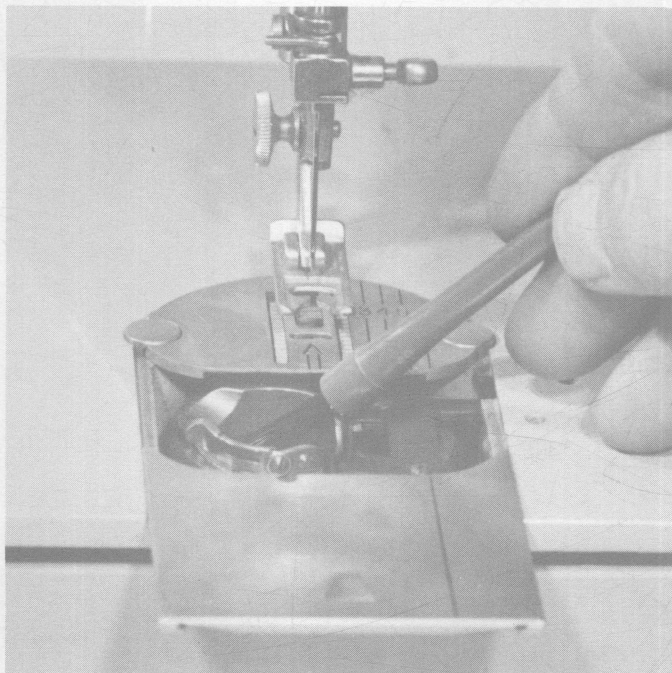


FIGURE 1. Cleaning the bobbin case area before starting to sew helps to prevent thread jamming.

Clean the working parts of the machine with a dry brush, either a nylon brush that comes with the machine or a narrow paint brush. Use a needle or tweezers to remove any lint and thread that cannot be brushed out.

OILING AND LUBRICATING THE MACHINE

A general overall cleaning and oiling should be done at least twice a year, more often when the machine is used a lot. Oil machines as recommended in the instruction book. All oil holes (Figure 2.) and any moving



FIGURE 2. Put one drop of oil in each oil hole every 5 to 10 hours of use.

parts should have one to two **drops** of good quality oil every 5 to 10 hours of use. Over-oiling may be as bad as not oiling, and too much oil on parts in the bobbin area may cause skipped stitches. Gears, found on some machines, (Figure 3.) should be lubricated with a light grease. Follow recommendations in the instruction book.

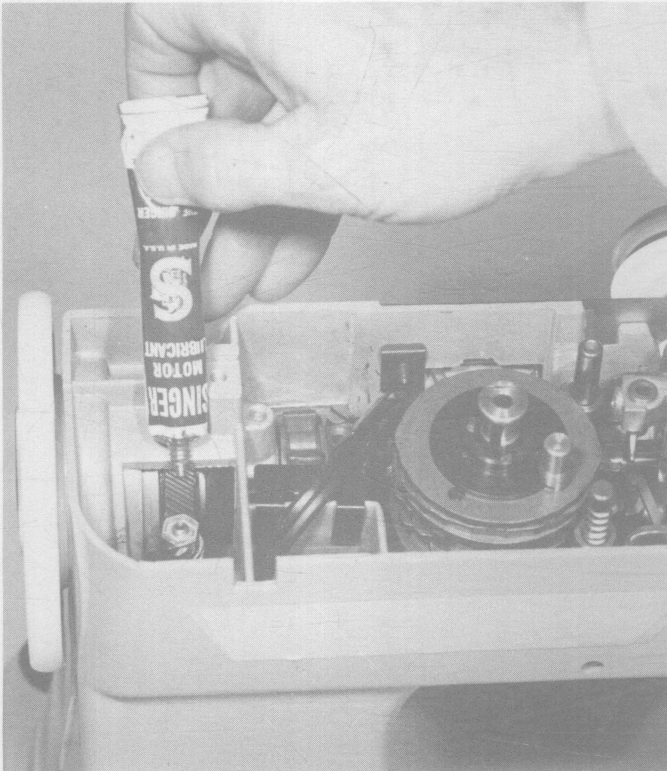


FIGURE 3. Lubricate gears with grease once or twice a year.

Do not oil the tension discs (Figure 4.) or the hand wheel release clutch (Figure 5.) of any machine. Some machines have bearings that are either nylon or graphite impregnated bronze and do not require oil or grease. Certain other new machines never require oiling as they are designed with oil impregnated in the bearing castings.

Several newer machines have electric motors with sealed bearings that never need oiling. Lubricate



FIGURE 5. Do not oil or grease the hand release clutch or it may slip, and the machine may not sew.

motors that require oiling or grease lubrication (Figure 6.) once a year. One or two drops per bearing is sufficient; over-oiling may ruin the motor. A sewing machine company oil or a good quality light oil is satisfactory to use. If you select a lightweight household oil, be sure it says "non-gum-forming" and "non-corrosive" on the container. On a grease-fitted bearing, fill the grease cups once a year.

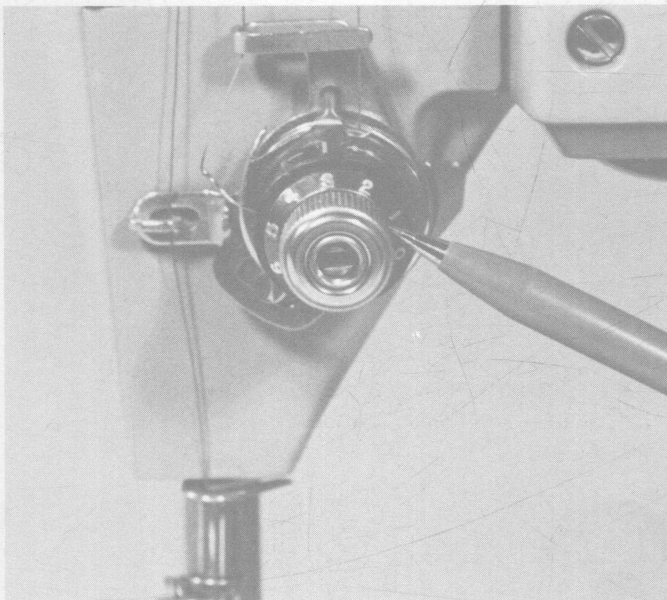


FIGURE 4. Do not oil upper thread tension or machine may skip stitches.



FIGURE 6. Lubricate motors that require oiling or greasing, once a year.

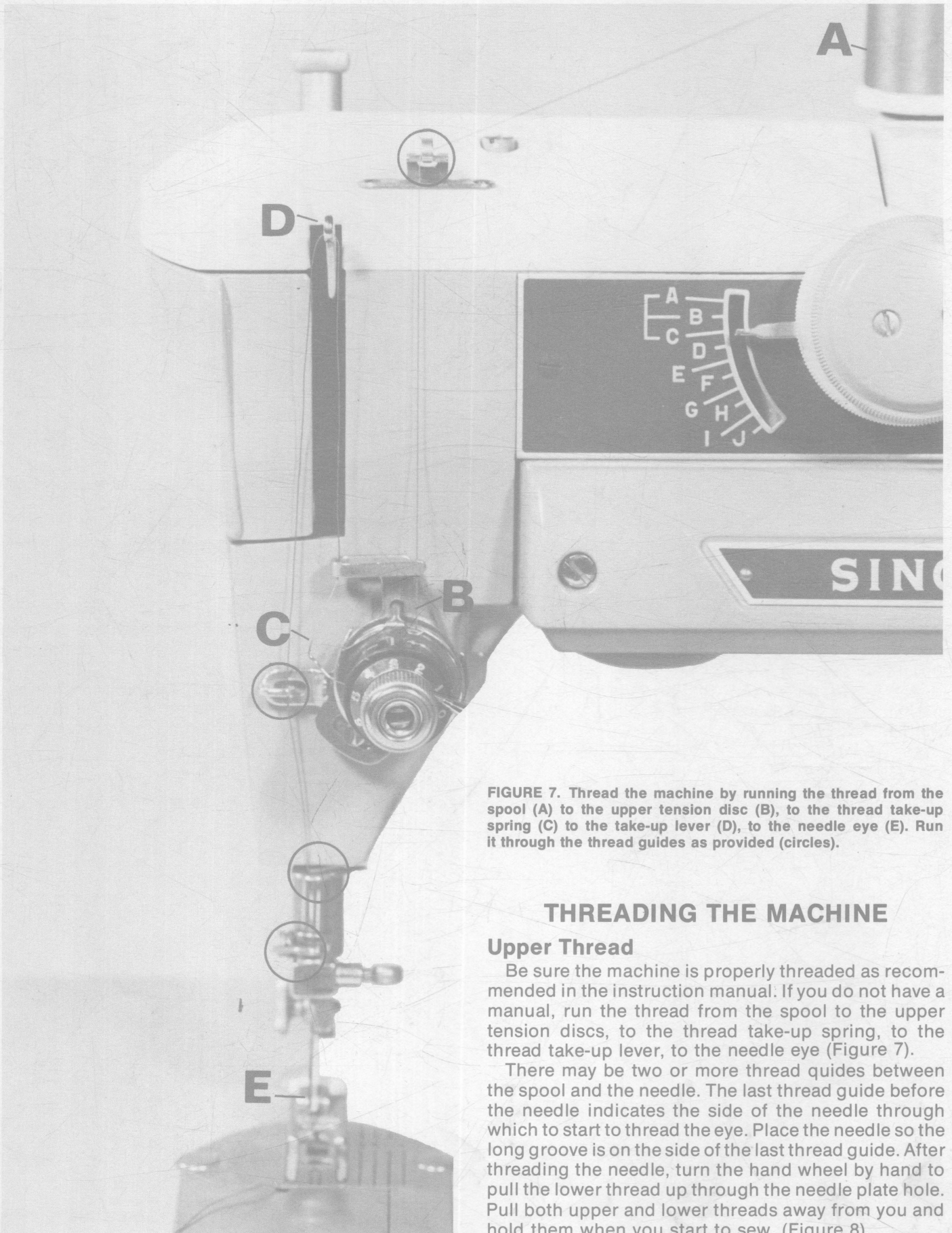


FIGURE 7. Thread the machine by running the thread from the spool (A) to the upper tension disc (B), to the thread take-up spring (C) to the take-up lever (D), to the needle eye (E). Run it through the thread guides as provided (circles).

THREADING THE MACHINE

Upper Thread

Be sure the machine is properly threaded as recommended in the instruction manual. If you do not have a manual, run the thread from the spool to the upper tension discs, to the thread take-up spring, to the thread take-up lever, to the needle eye (Figure 7).

There may be two or more thread guides between the spool and the needle. The last thread guide before the needle indicates the side of the needle through which to start to thread the eye. Place the needle so the long groove is on the side of the last thread guide. After threading the needle, turn the hand wheel by hand to pull the lower thread up through the needle plate hole. Pull both upper and lower threads away from you and hold them when you start to sew (Figure 8).

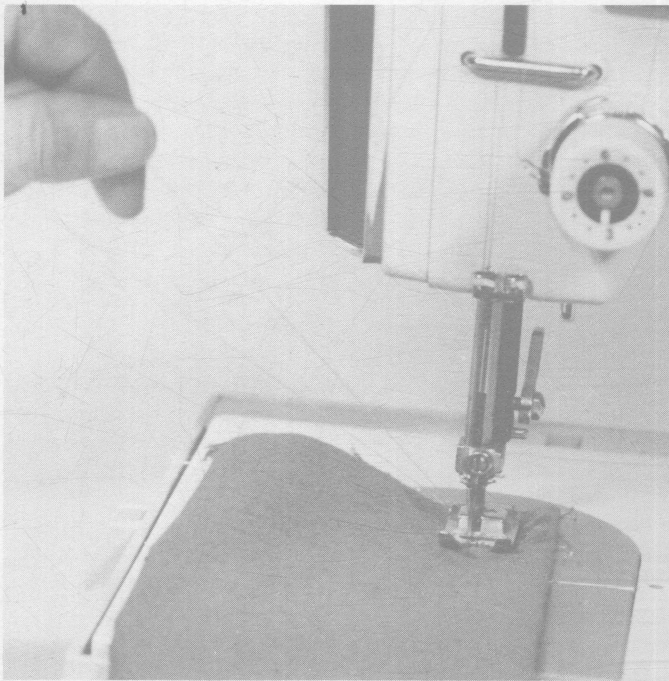


FIGURE 8. To avoid looped stitches under the fabric when starting to sew—pull both the upper and lower threads away from you and hold them when you start to sew.

Lower Thread

Be sure the bobbin is wound evenly. See your instruction manual for procedure. Place the bobbin in the bobbin case in such a manner that when pulling the thread the bobbin will rotate in the same direction as the thread slot in the case is pointing. Then pull the thread under the tension spring on the outside of the bobbin case. This applies to all machines except the Singer Touch and Sew. The tension may need adjusting when balancing upper and lower thread tensions. You can adjust this by tightening or loosening the spring tension screw (Figure 9).

ADJUSTING THE MACHINE

Needle

First, be sure the needle is the proper length. Use the needle length or number recommended in your manual. A Singer 15 x 1 needle is the correct length for the majority of machines on the market today.

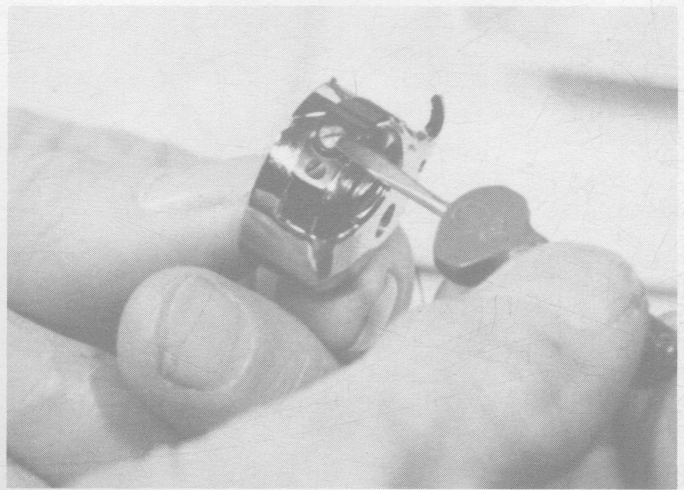


FIGURE 9. Adjust tension screw on bobbin case when necessary to get a balanced stitch.

Second, use a needle with a diameter that is suitable for the fabric and thread size. Charts in your operator's manual or in a sewing machine center give the recommended size for sewing different thread sizes. Using a larger diameter needle results in an unattractive stitch with the needle holes in the fabric being larger than necessary.

Third, be sure the needle is straight and does not have a dull point or hook.

Fourth, choose needles for sewing special fabrics such as the ballpoint for knits and the wedge for leather.

The needle should be inserted in the needle-bar clamp, with **the long groove side of the needle on the same side as the last thread guide just above the needle clamp.** It should be inserted all the way into the clamp until it hits the stop pin. On machines with adjustable needle-bar housing such as the older White Rotary, adjust the position of the needle bar until the needle goes through the center of the needle hole in the needle plate.

Needle Plate (Throat Plate)

Manufacturers of some machines recommend using the needle plate with the round hole when straight stitching (Figure 10.) and the elongated hole when

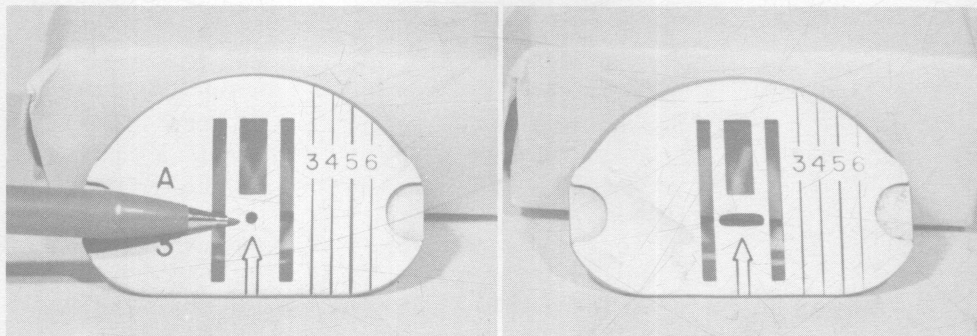


FIGURE 10. To avoid skipped stitches with some fabrics, use the needle plate with the small round hole for straight stitching. You will have to use the plate with the elongated hole when using the zig zag stitch.

making the zig-zag stitch. Unless you use the proper needle plate, you may experience skipped stitches when making a straight stitch. This is especially true with some synthetic fabrics.

Feed Dog

The teeth on the feed dog should project above the needle plate so that the bottom of the teeth, or serrations, are on a level with the top of the needle plate when the dog is in its uppermost position. The stitch-length control lever determines the distance the dog moves the material back before the next stitch is made by the needle.

A good general setting is one that results in 10 to 12 stitches per inch of seam. On very thin and fine material it may be necessary to use a shorter stitch length, giving 14 to 16 stitches per inch of seam. On leather or vinyl, a longer stitch may be more desirable, resulting in 6 to 10 stitches per inch of seam.

Presser Foot

There should be just enough pressure on the presser foot to hold the material on the feed dog so that a uniform length of stitch is made. Pressure may be increased by pushing down on an inner pin, or de-

creased by releasing an outer ring as shown in Figure 11. Other machines may have a thumb screw or a dial to regulate pressure.

On slippery fabrics, loosely knitted material, vinyl or velvet, a roller type presser foot may result in better feeding than the standard presser foot.

When darning, either reduce the pressure on the presser foot or lower the feed dog on machines having a drop feed button, or use a cover plate.

Thread Tension

To get a balanced stitch (where the upper thread and lower thread are locked between the two pieces of material), it may be necessary to adjust both the upper thread tension dial and the lower thread tension adjustment screw on the bobbin case.

If the upper thread is in a straight line on top of the material—tighten the lower thread tension until the stitch is balanced. Sometimes you cannot get the stitches balanced without the material puckering. If puckering occurs, loosen the tension on the upper thread until the stitch is balanced. If the lower thread is a straight line on the bottom of the material as it is being sewn, then tighten the upper thread tension until the stitch is balanced between the two pieces of material. Again, if the fabric puckers, loosen the tension on the lower thread until the stitch is balanced.

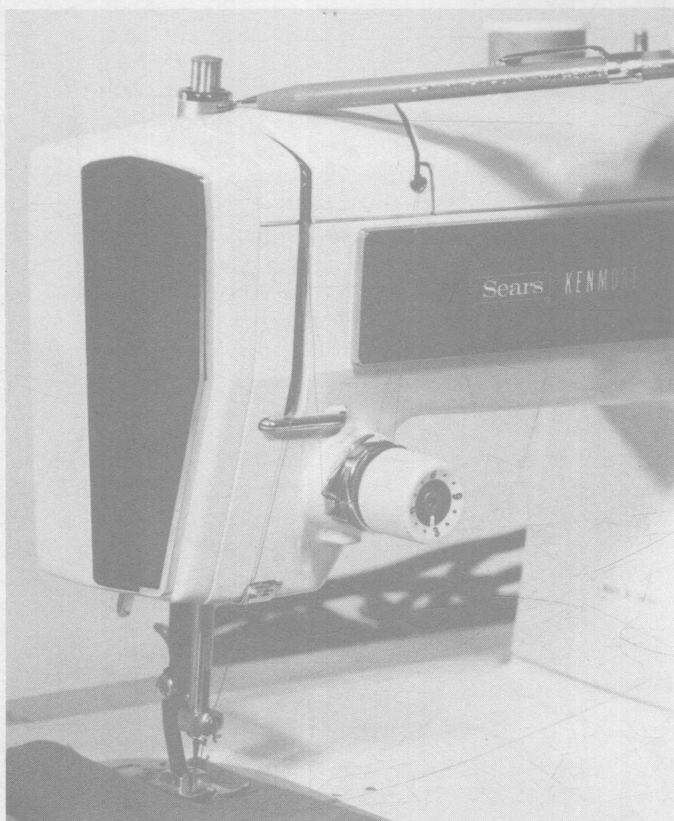


FIGURE 11. On this machine, pressure on the presser foot may be adjusted by depressing the pin or releasing the ring on top of the presser foot bar.

OPERATING TIPS

1. Always be sure the machine is oiled, that it is properly threaded and that the bobbin area is lint-free before starting to sew.
2. Use a needle size suitable for fabric and thread weight. Be sure the needle is the correct length, is straight and is sharp. Change needles frequently when sewing synthetic fabrics. Ball point needles help prevent damage to knit fabrics.
3. Use the same thread in the bobbin as on the spool unless for special effect.
4. Pull the bobbin thread through the needle hole in the needle plate before starting to stitch.
5. As you start to stitch, hold both threads under the presser foot to the rear.
6. Turn the hand wheel to start the stitch, if needed.
7. Start and stop the machine with the needle and thread take-up lever in their highest position.
8. Once the tension on the upper thread and bobbin thread are balanced, it should be necessary to change only the upper thread tension for slight variations as needed.
9. To turn a corner, stop the machine while the needle is still in the material. Raise the presser foot and turn the fabric using the needle as a pivot point. Lower the presser foot and resume sewing.

PROBLEM SOLVING GUIDE

A machine that is kept clean, oiled, and properly adjusted should produce quality stitching. The following procedure is suggested in locating and correcting a specific trouble:

- Look through the following list of troubles until you find the specific problem you have with your machine.
- Look over each possible cause listed and try the one which seems most likely. Try the machine after making the necessary correction.

If the first attempt does not solve the trouble, try another possible cause until you find the one that solves the difficulty.

Imperfect Stitching

Thread Bunches Up at Start of Stitch

- Machine improperly threaded—top or bottom thread
- Bobbin thread not pulled up through needle hole in needle plate before starting to sew
- Started to sew without both threads placed under presser foot and drawn back to the rear
- Started sewing before lowering presser foot

Unbalanced Stitch

- Upper thread is a straight line on top of fabric
 - Upper tension too tight
 - Lower tension too loose
- Lower thread in a straight line along the bottom side of cloth
 - Upper tension too loose
 - Lower tension too tight

Looped Stitches on Top Side of Fabric

- Bobbin tension much too loose
- Bobbin incorrectly threaded
- Dirt, lint, or pieces of thread under bobbin tension spring
- Groove worn in bobbin tension spring
- Lower thread not under tension spring

Looped Stitches on Under Side of Fabric

- Machine improperly threaded
- Upper tension much too loose
- Dirt, lint, or thread between upper thread tension discs
- Thread catches on a rough place on the bobbin tension spring or on the shuttle or hook
- No tension on upper or spool thread

Staggered Stitches

- Too little pressure on presser foot
- Take-up spring weak, broken, missing
- Incorrect adjustment of take-up spring
- Using too large a needle

Stitches of Uneven Length

- Too little or too much pressure on presser foot
- Stitch length lever loose and floating
- Feed dog teeth filled with dirt
- Feed dog too low or in darn position

Skipped Stitches

- Needle too large for the thread
- Needle set with long groove on wrong side
- Needle too long or too short

- Needle set too high or too low
- Needle not positioned correctly
- Incorrect threading of needle
- Needle bent or blunt
- Oil on needle or too much oil on shuttle race
- Straight stitching with a zig-zag needle plate
- Problem fabrics (try tissue paper on bottom side of seam)

Corded Zig-Zag Stitches

- Top tension too tight for stitch width
- Fabric too sheer for wide zig-zag stitch (use backing on fabric or reduce width of zig-zag stitch)
- Stitch length too short
- Wrong presser foot

Fabric Puckering

Yarns Pulled

- Dull or damaged needle
- Too large a needle for the fabric
- Feed dog sits too high

Fabric "Gathered"

- One or both thread tensions too tight in relation to the fabric or thickness of fabric
- Stitch length too long or too short for the fabric
- Presser foot pressure too great, holds back top layer
- Feed dog out of time
- Thread too coarse for fabric
- Wrong needle plate
- Problem fabrics (try tissue paper under fabric)

Imperfect Feeding of Fabric

Fabric Does Not Feed Through the Machine

- Presser foot tension much too tight for thickness of seam
- Stitch length set at zero
- Feed dog lowered—set in darning position
- Much too little pressure on the presser foot

Doesn't Feed Fabric in a Straight Line

- Not enough pressure on presser foot
- Loose presser foot
- Presser foot set at an angle
- Feed dog set at an angle
- One side of feed dog low
- Wrong presser foot

Uneven Feeding of Seam Layers

- Presser foot tension too little or too much
- Improper presser foot for fabric
- Type of fabric

Thread Breaking

Upper Thread Breaks

- Machine incorrectly threaded
- Needle set too high or too low
- Needle threaded incorrectly
- Needle bent or blunt
- Too sharp edges on needle eye

Needle rubbing against needle plate, presser foot, etc.
Defective thread
Needle eye too small for thread
Upper tension much too tight
Rough places on hook, bobbin case, tension spring
Notch in spool in wrong position on spool spindle
Rough or sharp edges around needle hole in needle plate
Rough edges on thread guides, etc., that shred the thread
Dull hook or shuttle point
Spool spins on spindle

Lower Thread Breaks

Bobbin tension much too tight
Rough or sharp edges in needle hole on needle plate
Bobbin wound unevenly or too full
Rough or sharp edges on bobbin, bobbin tension spring, or bobbin case shoulder
Defective thread
Bobbin inserted the wrong way in the bobbin case
Lint packed in bobbin or bobbin case
Lint or thread packed around centerpost of shuttle

Unsatisfactory Machine Operation

Machine Locks or Jams and Will Not Run

Thread or pieces of thread jammed in shuttle when machine is not kept clean
Lower thread not pulled up through hole in needle plate before starting to stitch
Lower and upper threads not put under presser foot and pulled to the rear when starting to sew
(To remedy, try turning hand wheel back. Pick threads out of bobbin area)
Running threaded machine without fabric under presser foot
Needs oil "frozen"

Needle Breaks

Needle bent
Pulling the material while sewing
Needle incorrectly inserted
Needle too long or set too low
Failure to raise needle clear up before removing material
Attempting to change from straight to zig-zag stitch with needle in material

Bobbin Winds Irregularly

The bobbin is not pressed in far enough on some machines

The machine is not correctly threaded for bobbin winding
The thread guide for bobbin winding is not correctly adjusted
Rubber tire on bobbin winder wheel loose, oily, or worn
Cam wheel that operates thread guide on older machines incorrectly set or not turning freely
Drive wheel on bobbin winder not bearing heavily enough on hand wheel or belt

Clutch Not Releasing Hand Wheel When Winding Bobbin

Hand wheel bearing filled with gum or rust
Clutch bound with thread or gummed with dirt and oil
Hand wheel bearing needs oiling
Pronged washer in clutch needs rotating ½ turn
Pronged washer in clutch needs reversing—wrong side towards hand wheel

Machine Runs Hard

Lack of oil
Gummed oil and dirt in bearings—(clean with Kerosene)
Thread wound around hand wheel or other bearings
Tight bearings—(Have repairman adjust as needed)
Belt or friction drive too tight
Needle bar bent or bearing filled with dirt and oil
Bobbin winder engaged when sewing

Machine Will Not Sew In Reverse

Stitch control set on "Stretch Stitch" or "Buttonhole"
Reverse lever not in correct position
Automatic mechanism "fouled up"

Feed Dog Teeth Mark Fabric

Feed dog set too high
Excessive tension on presser foot

Upper Thread Tension Continually Decreases

Upper thread tension nut unwinds when sewing (Split stud needs spreading)

Motor Runs But Machine Will Not Run

Belt loose or pressure washer on hand wheel release clutch too loose or reversed
Clutch released—(set for winding bobbin)

Electric Motor Does Not Run

Plug not connected to live electrical outlet
Power and light switch turned off
Wire in power cord broken
Poor cord connections
Foot feed or knee feed malfunctioning

To simplify information, trade names of products have been used. No endorsement is intended, nor is criticism implied of similar products not named.

Educational programs, projects, and activities conducted by the Ohio Cooperative Extension Service are available to all persons regardless of race, color, creed, or national origin.